



## Maintenance and Service Guide

HP Spectre x360 13 Convertible PC  
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HP authorized service providers only.

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### Product notice

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

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

### Software terms

By installing, copying, downloading, or otherwise using any software product preinstalled on this computer, you agree to be bound by the terms of the HP End User License Agreement (EULA). If you do not accept these license terms, your sole remedy is to return the entire unused product (hardware and software) within 14 days for a full refund subject to the refund policy of your seller.

For any further information or to request a full refund of the price of the computer, please contact your seller.

## Safety warning notice

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 **WARNING!** To reduce the possibility of heat-related injuries or of overheating the device, do not place the device directly on your lap or obstruct the device air vents. Use the device only on a hard, flat surface. Do not allow another hard surface, such as an adjoining optional printer, or a soft surface, such as pillows or rugs or clothing, to block airflow. Also, do not allow the AC adapter to contact the skin or a soft surface, such as pillows or rugs or clothing, during operation. The device and the AC adapter comply with the user-accessible surface temperature limits defined by the International Standard for Safety of Information Technology Equipment (IEC 60950-1).

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# 1 Product description

Category	Description
Product Name	HP Spectre x360 13 Convertible PC Model: 13-ap0xxx, 13t-ap000
Processors	Intel Core i7-8565U 1.80-GHz (SC turbo up to 4.60-GHz) quad core processor (2400-MHz FSB, 8.0-MB L3 cache, 15.0-W) Intel Core i5-8265U 1.60-GHz (SC turbo up to 3.90-GHz) quad core processor (6.0-MB L3 cache, 2400-MHz FSB, 15 W)
Chipset	Intel integrated system-on-a-chip (SoC)
Graphics	Internal graphics: Intel UHD 620 graphics subsystem
Panel	<ul style="list-style-type: none"><li>13.3-in., liquid crystal display (LCD), full high-definition (FHD) (1920×1080), AntiGlare, white light-emitting diode (WLED), UWVA, 72 300, eDP 1.3+PSR, ultraslim, TouchScreen display with Privacy</li><li>13.3-in., liquid crystal display (LCD), full high-definition (FHD) (1920×1080), BrightView white light-emitting diode (WLED), UWVA, 72 400, eDP 1.4+PSR2, ultraslim, low power, TouchScreen display assembly with narrow bezel</li><li>13.3-in., liquid crystal display (LCD), ultra high-definition (UHD) (3840×2160), BrightView, white light-emitting diode (WLED), UWVA, 72 400, eDP 1.4+PSR, ultraslim, TouchScreen display assembly with narrow bezel</li></ul>
Memory	DDR4-2400 in the following configurations: <ul style="list-style-type: none"><li>16GB 2400 DDR4 1.2v IC 16Gb x16</li><li>8GB 2400 DDR4 1.2v IC 8Gb x16</li></ul>
Storage	Support for the following solid-state drives: <ul style="list-style-type: none"><li>2-TB, 2280, peripheral component interconnect express (PCIe)-3×4, non-volatile memory express (NVMe), DS solid-state drive with triple-level cell (TLC)</li><li>1-TB, 2280, peripheral component interconnect express (PCIe)-3×4, non-volatile memory express (NVMe), DS solid-state drive with triple-level cell (TLC)</li><li>512-GB, 2280, peripheral component interconnect express (PCIe)-3×4, non-volatile memory express (NVMe), super speed (SS) solid-state drive with triple-level cell (TLC)</li><li>256-GB, 2280, peripheral component interconnect express (PCIe)-3×4, non-volatile memory express (NVMe), super speed (SS) solid-state drive with triple-level cell (TLC)</li></ul>
Camera	<ul style="list-style-type: none"><li>HP Integrated FHD infrared camera, USB 2.0</li><li>1080p by 30 frames per second</li><li>Dual array Digital Microphones with appropriate software - beam forming, echo cancellation, noise suppression</li></ul>
Audio	<ul style="list-style-type: none"><li><b>Audio brand:</b>BANG &amp; OLUFSEN Play</li><li><b>Audio control panel:</b>BANG &amp; OLUFSEN Play Audio Control</li><li>Quad speakers</li><li>Support for HP Audio Boost 2.0</li></ul>
Memory card	<ul style="list-style-type: none"><li>HP Multi-Format Digital microSD Memory Card Reader</li></ul>

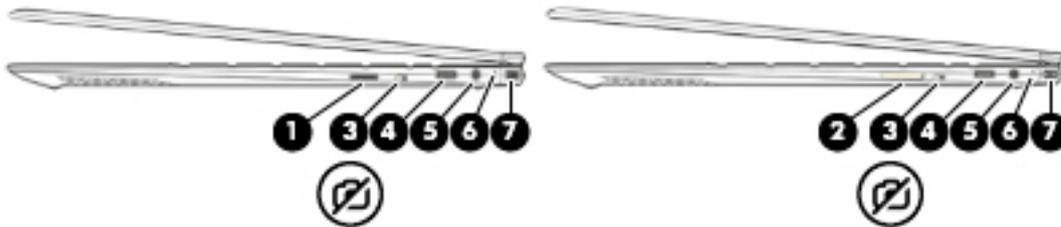
Category	Description
	<ul style="list-style-type: none"> <li>SIM slot: Micro Secure Digital (SD) flash memory slot with push-push technology and Nano Sim combo tray</li> </ul>
<b>Sensor</b>	<p>Accelerometer</p> <p>Accelerometer + Gyroscope + eCompass</p>
<b>Wireless</b>	<p>Integrated wireless local area network (WLAN) options by way of on-board wireless module</p> <p>Two built-in WLAN antennas</p> <p>Supports the following WLAN modules:</p> <p>Intel 9560 ac 2x2 + Bluetooth 5 M.2 1216 non-vPro PCI-e+USB world-wide with 2 antennas</p> <p>WWAN support (select products only)</p> <p>Intel XMM 7560 LTE-Advanced Pro</p>
<b>Ports</b>	<ul style="list-style-type: none"> <li>Headphone/microphone combo jack</li> <li>USB 3.1 Gen2 Type A (1)</li> <li>USB 3.1 Gen2 Type C (2), Thunderbolt</li> </ul>
<b>Keyboard/pointing devices</b>	<p>Keyboard</p> <p>Full-sized island-style keyboard</p> <p>TouchPad:</p> <p>Image sensor</p> <p>MultiTouch gestures enabled</p> <p>Support for Modern TrackPad gestures</p> <p>Taps enabled as default</p>
<b>Power requirements</b>	<p>Supports a 4 Cell WHr 61 Long Life -PL Fast Charge battery</p> <p>Supports the following AC adapters:</p> <p>65-W HP Smart AC adapter non-PFC</p> <p>Power cord: 1.0 m conventional power cord with a C5 connector</p> <ul style="list-style-type: none"> <li>1M premium power cord w/ sticker label (C5)</li> <li>1M premium power cord w/ sticker label (C5) with plug adapter for Japan</li> <li>1M duckhead power cord w/ sticker label (C5)</li> </ul>
<b>Operating system</b>	<p>Win 10 Home 64 Advanced 2C18</p> <p>Win 10 Home 64 Advanced Microsoft Signature 2C18</p> <p>Win 10 Home 64 Advanced Single Language 2C18</p> <p>Win 10 Home 64 Advanced Web/Kiosk 2C18</p> <p>Win 10 Home 64 High-end Chinese Market CPPP 2C18</p> <p>Win 10 Home 64 Plus 2C18</p> <p>Win 10 Home 64 Plus Single Language 2C18</p> <p>Win 10 Home 64 Plus Single Language APAC EM PPP 2C18</p>

<b>Category</b>	<b>Description</b>
	Win 10 Home 64 Plus Single Language India Market PPP 2C18
	Win 10 Home 64 Plus Single Language Indonesia Market PPP 2C18
	Win 10 Pro 64 2C18
<b>Serviceability</b>	<b>End user replaceable parts:</b>
	AC Adaptor

## 2 External component identification

### Right side

Refer to the illustration that most closely matches your computer.

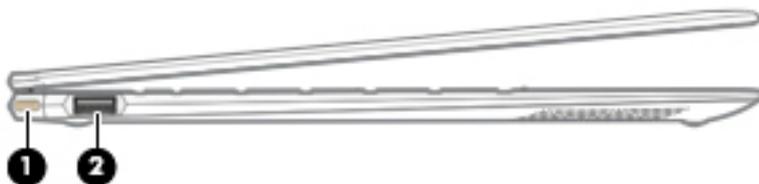


Component	Description
(1) MicroSD memory card reader (select products only)	<p>Reads optional memory cards that enable you to store, manage, share, or access information.</p> <p>To insert a card:</p> <ol style="list-style-type: none"><li>1. Hold the card label-side up, with connectors facing the computer.</li><li>2. Insert the card into the memory card reader, and then press in on the card until it is firmly seated.</li></ol> <p>To remove a card:</p> <ul style="list-style-type: none"><li>▲ Press in on the card, and then remove it from the memory card reader.</li></ul>
(2) MicroSD memory card reader/nano SIM card reader combo (select products only)	<p>Reads optional memory cards that enable you to store, manage, share, or access information, and supports a wireless subscriber identity module (nano SIM) card.</p> <p><b>CAUTION:</b> Inserting a SIM card of the wrong size could damage the SIM card or cause the SIM card to become stuck in the slot. The use of nano SIM card adapters is not recommended. To prevent damage to the nano SIM card or the connectors, use minimal force when inserting a nano SIM card.</p> <p><b>NOTE:</b> Before purchasing a nano SIM card, follow these instructions to determine the correct nano SIM card size for your computer:</p> <ol style="list-style-type: none"><li>1. Go to <a href="http://www.hp.com/support">http://www.hp.com/support</a>, and then search for your computer by product name or number.</li><li>2. Select <b>Product Information</b>.</li><li>3. Refer to the listed options to determine which card to purchase.</li></ol> <p>For installation steps, see <a href="#">Inserting a microSD card or a nano SIM card (select products only) on page 17</a>.</p>
(3)  Camera privacy switch	Turns the camera off and on.

Component	Description
(4) USB Type-C power connector and Thunderbolt™ port with HP Sleep and Charge	<p>Connects an AC adapter that has a USB Type-C connector, supplying power to the computer and, if needed, charging the computer battery.</p> <p>- and -</p> <p>Even when the computer is off, connects and charges most USB devices that have a Type-C connector, such as a cell phone, camera, activity tracker, or smartwatch, and provides high-speed data transfer.</p> <p>- and -</p> <p>Connects a display device that has a USB Type-C connector, providing DisplayPort output.</p> <p><b>NOTE:</b> Your computer may also support a Thunderbolt docking station.</p> <p><b>NOTE:</b> Cables and/or adapters (purchased separately) may be required.</p>
(5) Audio-out (headphone)/Audio-in (microphone) combo 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 standalone microphones.</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> <ul style="list-style-type: none"> <li>▲ Select the <b>Start</b> button, select <b>HP Help and Support</b>, and then select <b>HP Documentation</b>.</li> </ul> <p><b>NOTE:</b> When a device is connected to the jack, the computer speakers are disabled.</p>
(6) AC adapter and 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) USB Type-C power connector and Thunderbolt port with HP Sleep and Charge	<p>Connects an AC adapter that has a USB Type-C connector, supplying power to the computer and, if needed, charging the computer battery.</p> <p>- and -</p> <p>Even when the computer is off, connects and charges most USB devices that have a Type-C connector, such as a cell phone, camera, activity tracker, or smartwatch, and provides high-speed data transfer.</p> <p>- and -</p> <p>Connects a display device that has a USB Type-C connector, providing DisplayPort output.</p> <p><b>NOTE:</b> Your computer may also support a Thunderbolt docking station.</p>

Component	Description
	<b>NOTE:</b> Cables and/or adapters (purchased separately) may be required.

## Left side



Component	Description
(1) Power button	<ul style="list-style-type: none"><li>• When the computer is off, press the button to turn on the computer.</li><li>• When the computer is on, press the button briefly to initiate Sleep.</li><li>• When the computer is in the Sleep state, press the button briefly to exit Sleep (select products only).</li><li>• When the computer is in Hibernation, press the button briefly to exit Hibernation.</li></ul> <p><b>CAUTION:</b> Pressing and holding down the power button results in the loss of unsaved information.</p> <p>If the computer has stopped responding and shutdown procedures are ineffective, press and hold the power button down for at least 5 seconds to turn off the computer.</p> <p>To learn more about your power settings, see your power options:</p> <ul style="list-style-type: none"><li>▲ Right-click the <b>Power</b> icon , and then select <b>Power Options</b>.</li></ul>
(2) USB SuperSpeed port with HP Sleep and Charge	Connects a USB device, provides high-speed data transfer, and even when the computer is off, charges most products such as a cell phone, camera, activity tracker, or smartwatch.

# Display



Component	Description
(1) WWAN antennas* (select products only)	Send and receive wireless signals to communicate with wireless wide area networks (WWANs).
(2) WLAN antennas*	Send and receive wireless signals to communicate with wireless local area networks (WLANs).
(3) Internal microphones	Record sound.
(4) Camera lights	On: One or more cameras are in use.
(5) Camera	Allows you to video chat, record video, and record still images. <b>NOTE:</b> Camera functions vary depending on the camera hardware and software installed on your product.

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

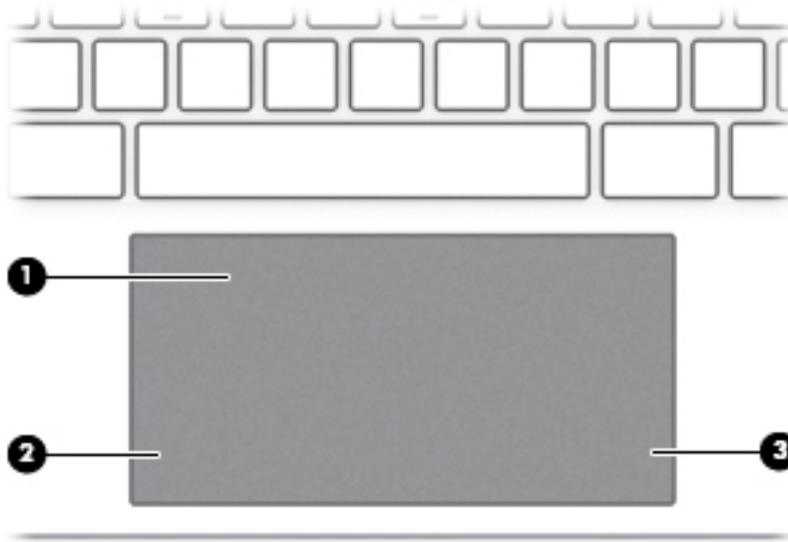
For wireless regulatory notices, see the section of the *Regulatory, Safety, and Environmental Notices* that applies to your country or region.

To access this guide:

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 notebook**, select the **Specifications** tab, and then select **User Guides**.

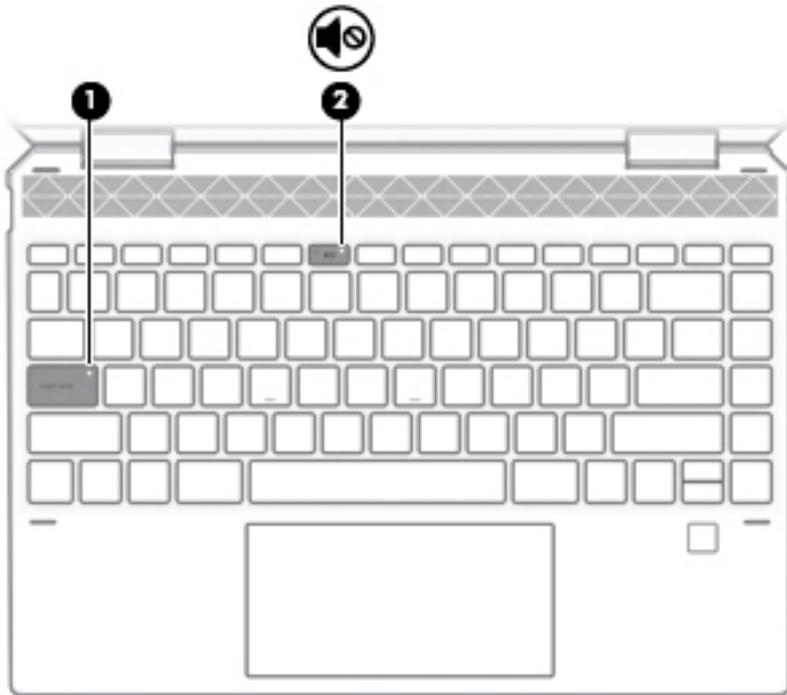
# Keyboard area

## TouchPad



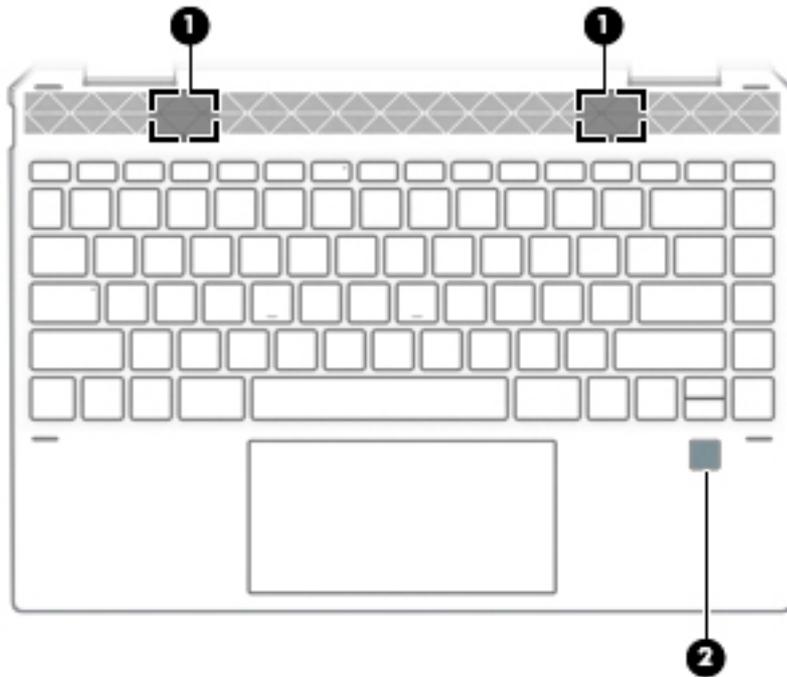
Component	Description
(1) TouchPad zone	Reads your finger gestures to move the pointer or activate items on the screen.
(2) Left TouchPad button	Functions like the left button on an external mouse.
(3) Right TouchPad button	Functions like the right button on an external mouse.

## Lights



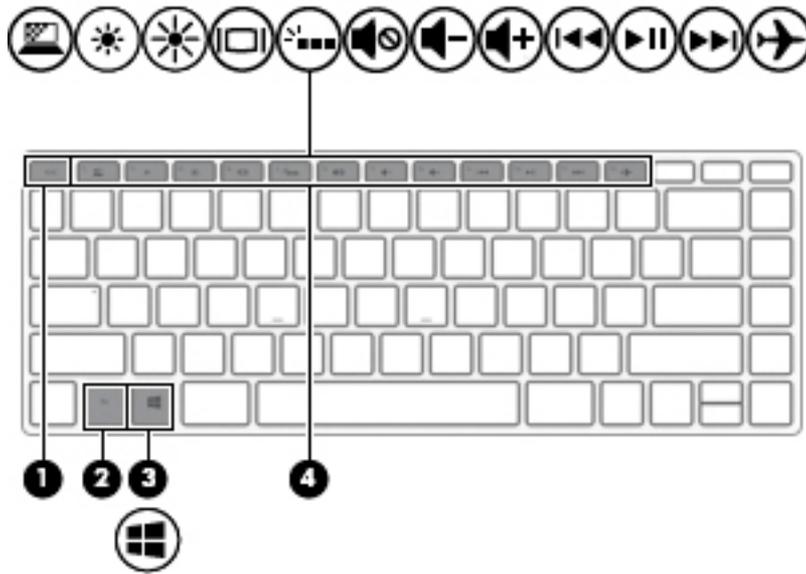
Component	Description
(1) Caps lock light	On: Caps lock is on, which switches the key input to all capital letters.
(2)  Mute light	<ul style="list-style-type: none"><li>• On: Computer sound is off.</li><li>• Off: Computer sound is on.</li></ul>

## Speakers and fingerprint reader



Component	Description
(1) Speakers	Produce sound.
(2) Fingerprint reader	Allows a fingerprint logon to Windows, instead of a password logon.

## Special keys

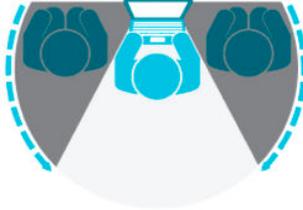


Component	Description
(1) <a href="#">esc</a> key	Displays system information when pressed in combination with the <a href="#">fn</a> key.
(2) <a href="#">fn</a> key	Executes specific functions when pressed in combination with another key.
(3)  Windows key	Opens the <b>Start</b> menu. <b>NOTE:</b> Pressing the Windows key again will close the <b>Start</b> menu.
(4) Action keys	Execute frequently used system functions. <b>NOTE:</b> On select products, the <a href="#">F5</a> action key turns the keyboard backlight feature off or on.

## Action keys

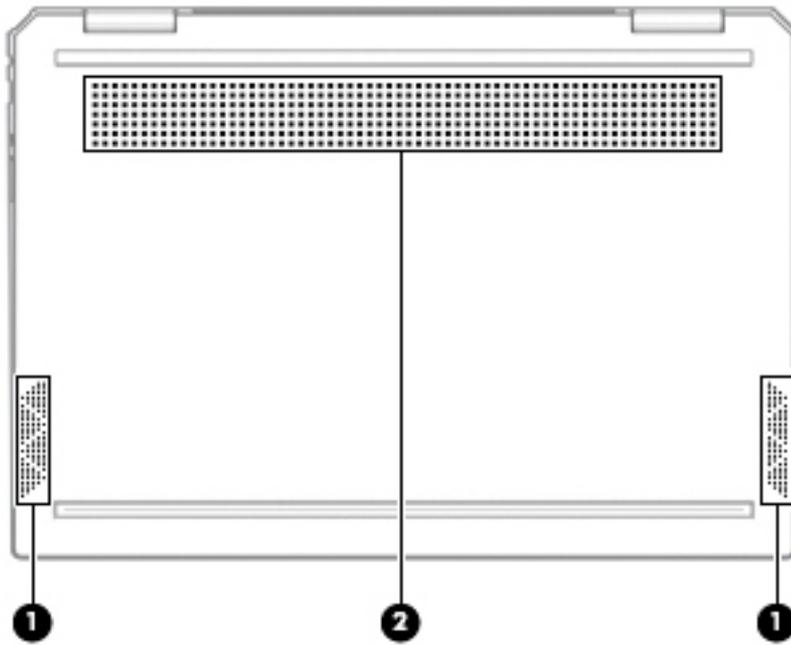
An action key performs the function indicated by the icon on the key. To determine which keys are on your product, see [Special keys on page 12](#).

- ▲ To use an action key, press and hold the key.

Icon	Description
	Helps prevent side-angle viewing from onlookers (select products only). If needed, decrease or increase brightness for well-lit or darker environments. Press the key again to turn off the privacy screen.
	
	Decreases the screen brightness incrementally as long as you hold down the key.
	Increases the screen brightness incrementally as long as you hold down the key.
	Switches the screen image between display devices connected to the system. For example, if a monitor is connected to the computer, repeatedly pressing this key alternates the screen image from the computer display to the monitor display to a simultaneous display on both the computer and the monitor.
	Turns the keyboard backlight off or on. On select products, you can adjust the brightness of the keyboard backlight. Press the key repeatedly to adjust the brightness from high (when you first start up the computer), to low, to off. After you adjust the keyboard backlight setting, the backlight will revert to your previous setting each time you turn on the computer. The keyboard backlight will turn off after 30 seconds of inactivity. To turn the keyboard backlight back on, press any key or tap the TouchPad (select products only). To conserve battery power, turn off this feature.
	Plays the previous track of an audio CD or the previous section of a DVD or a Blu-ray Disc (BD).
	Starts, pauses, or resumes playback of an audio CD, a DVD, or a BD.
	Plays the next track of an audio CD or the next section of a DVD or a BD.
	Decreases speaker volume incrementally while you hold down the key.
	Increases speaker volume incrementally while you hold down the key.
	Mutes or restores speaker sound.
	Turns the airplane mode and wireless feature on or off. <b>NOTE:</b> The airplane mode key is also referred to as the wireless button.

Icon	Description
	<b>NOTE:</b> A wireless network must be set up before a wireless connection is possible.

## Bottom



Component		Description
(1)	Speakers (2)	Produce sound.
(2)	Vent	Enables airflow to cool internal components.

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

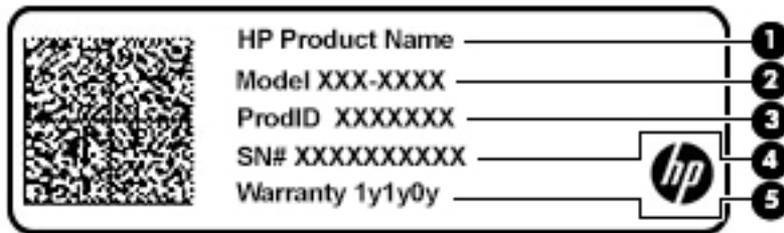
# Labels

The labels affixed to the computer provide information you may need when you troubleshoot system problems or travel internationally with the computer. Labels may be in paper form or imprinted on the product.

 **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, on the back of the display, or on the bottom of a tablet kickstand.

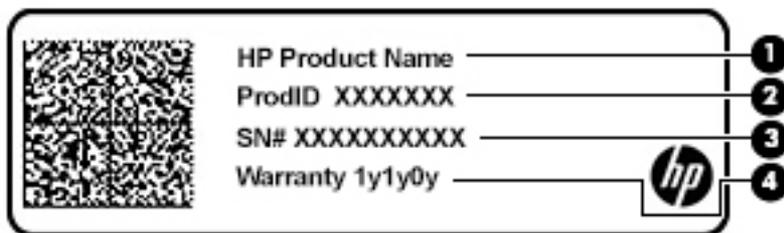
- Service label—Provides important information to identify your computer. When contacting support, you may be asked for the serial number, the product number, or the model number. Locate this information before you contact support.

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



### Component

- |     |                 |
|-----|-----------------|
| (1) | HP product name |
| (2) | Model number    |
| (3) | Product ID      |
| (4) | Serial number   |
| (5) | Warranty period |



### Component

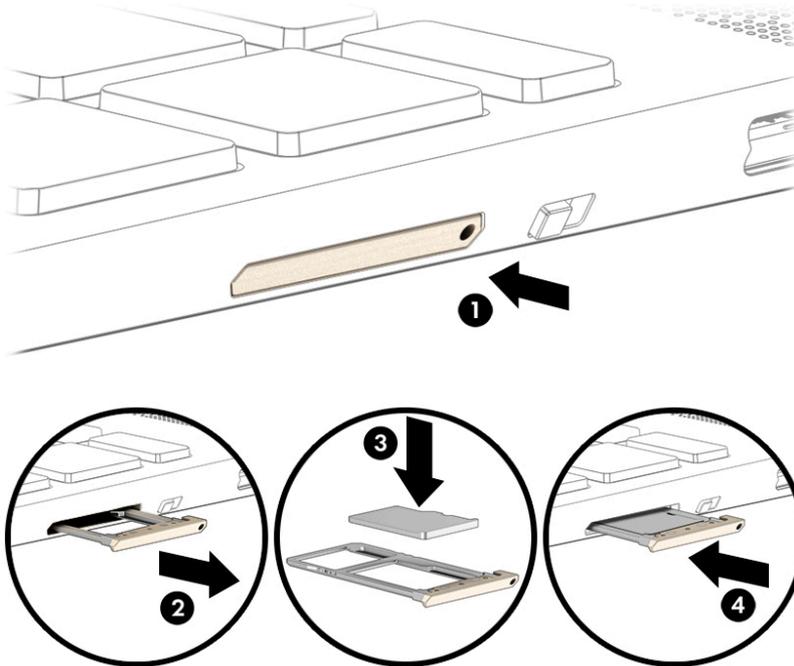
- |     |                 |
|-----|-----------------|
| (1) | HP product name |
| (2) | Product ID      |
| (3) | Serial number   |
| (4) | Warranty period |

- 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.

## Inserting a microSD card or a nano SIM card (select products only)

To insert a microSD or a nano SIM card into the SIM card slot, follow these steps:

1. Position the computer display-side up on a flat surface.
2. Insert a small straightened paper clip into the card tray access hole.
3. Press in gently on the clip until the card tray is ejected. **(1)**
4. Remove the tray **(2)** from the computer and insert the card **(3)**.
5. Replace the tray in the computer. Press in gently on the tray **(4)** until it is firmly seated.



**⚠ CAUTION:** Inserting a SIM card of the wrong size could damage the SIM card or cause the SIM card to become stuck in the slot. The use of nano SIM card adapters is not recommended. To prevent damage to the nano SIM card or the connectors, use minimal force when inserting a nano SIM card.

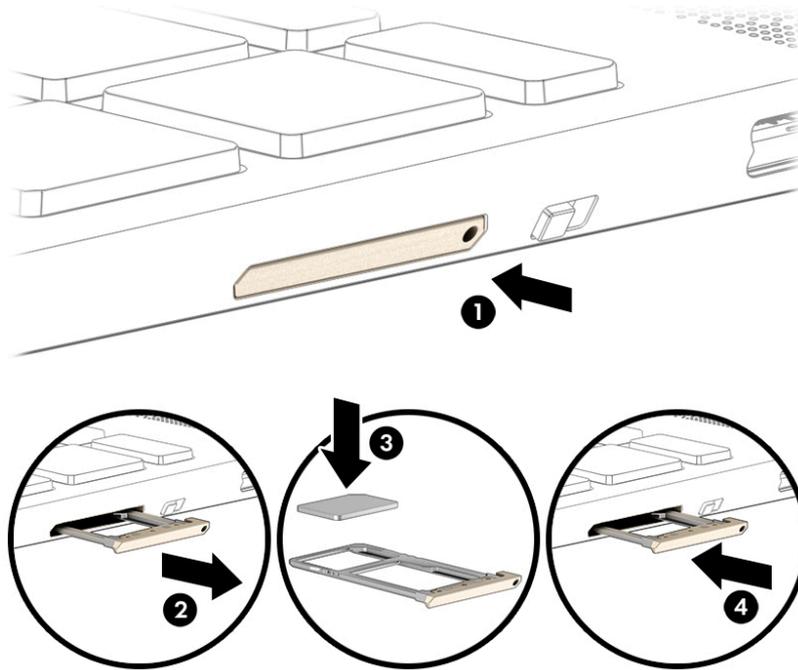
**📋 NOTE:** Before purchasing a nano SIM card, follow these instructions to determine the correct nano SIM card size for your computer:

1. Go to <http://www.hp.com/support>, and then search for your computer by product name or number.
2. Select **Product Information**.
3. Refer to the listed options to determine which card to purchase.

To insert a nano SIM card, follow these steps:

1. Position the computer display-side up on a flat surface.
2. Insert a small straightened paper clip into the card tray access hole.
3. Press in gently on the clip until the card tray is ejected **(1)**.
4. Remove the tray **(2)** from the computer and insert the card **(3)**.

5. Replace the tray in the computer. Press in gently on the tray (4) until it is firmly seated.



To remove the card:

1. Release the card tray as described above, and then remove the card.
2. Replace the tray in the computer. Press in gently on the tray until it is firmly seated.

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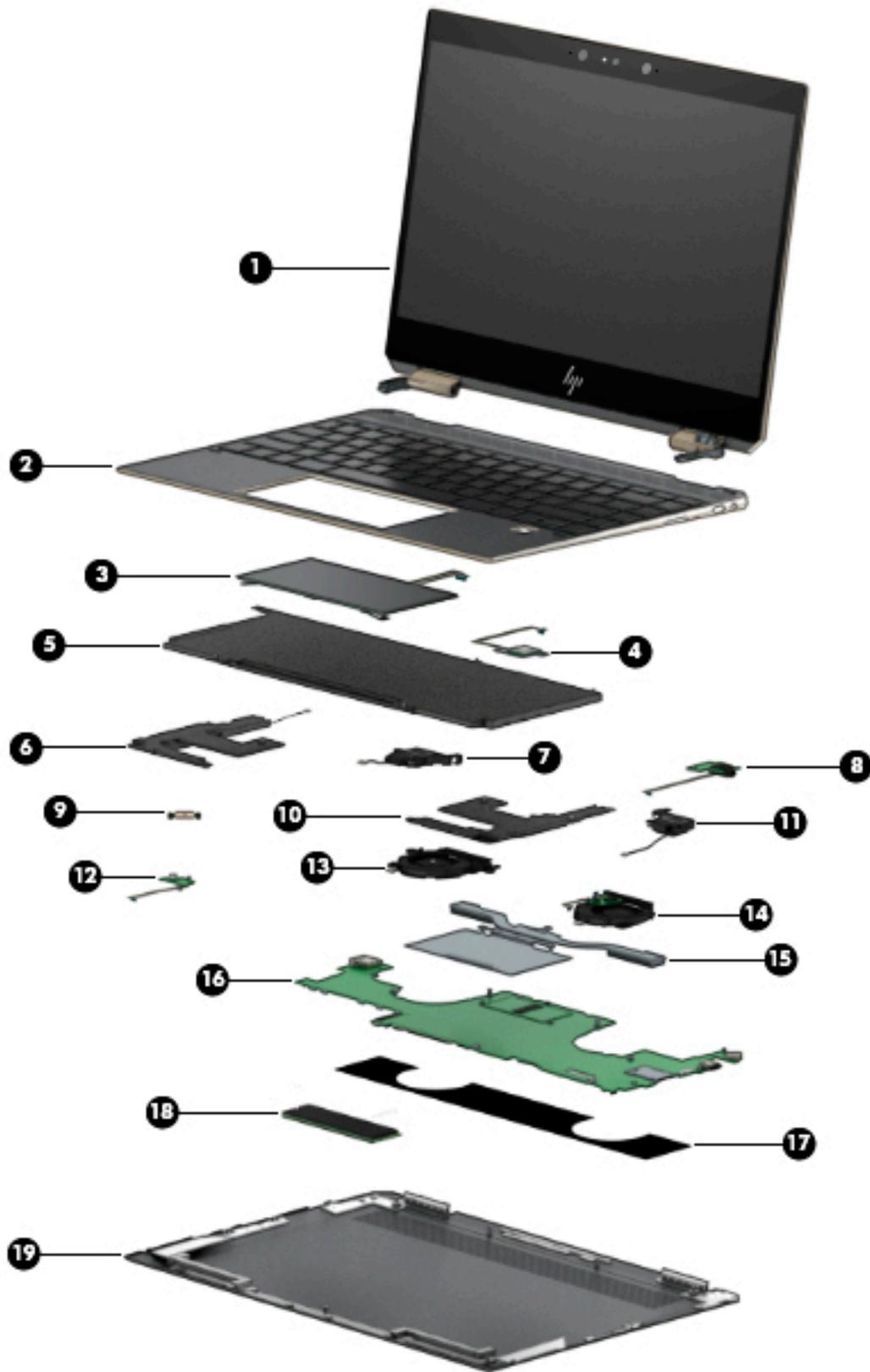
# 3 Illustrated parts catalog

## Computer major components

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 **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.

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Item	Component	Spare part number
<b>(1)</b>	<b>Display assembly.</b>	
	13.3-in, FHD, AntiGlare, Ultra Slim TouchScreen display assembly with privacy filter	L37646-001
	13.3-in, FHD, AntiGlare, Ultra Slim TouchScreen display assembly with privacy filter	L37647-001
	13.3-in, FHD, BrightView, Ultra Slim TouchScreen display assembly	L37648-001
	13.3-in, FHD, BrightView, Ultra Slim TouchScreen display assembly	L37649-001
	13.3-in, UHD, BrightView, Ultra Slim TouchScreen display assembly	L37650-001
	13.3-in, UHD, BrightView, Ultra Slim TouchScreen display assembly	L37651-001
	13.3-in, FHD, AntiGlare, Ultra Slim TouchScreen display assembly with privacy filter with WWAN	L37905-001
	13.3-in, FHD, BrightView, Ultra Slim TouchScreen display assembly with WWAN	L37906-001
	13.3-in, FHD, BrightView, Ultra Slim TouchScreen display assembly with WWAN	L37907-001
<b>(2)</b>	<b>Top cover with keyboard</b> with backlight (includes backlight cable and keyboard cable):	
	In dark ash silver finish:	
	For use in Belgium	L37681-A41
	For use in Bulgaria	L37681-261
	For use in Canada	L37681-DB1
	For use in the Czech Republic and Slovenia	L37681-FL1
	For use in France	L37681-051
	For use in Greece	L37681-151
	For use in Israel	L37681-BB1
	For use in Italy	L37681-061
	For use in Japan	L37681-291
	For use in Korea	L37681-AD1
	For use in Latin America	L37681-161
	For use in the Netherlands	L37681-B31
	For use in Denmark, Finland, Norway, and Sweden	L37681-DH1
	For use in Portugal	L37681-131
	For use in Romania	L37681-271
	For use in Russia	L37681-251
	For use in Saudi Arabia	L37681-171
	For use in Slovenia	L37681-BA1
	For use in Spain	L37681-071
	For use in Switzerland	L37681-BG1
	For use in Thailand	L37681-281

Item	Component	Spare part number
	For use in Turkey	L37681-141
	For use in Taiwan	L37681-AB1
	For use in the United Kingdom	L37681-031
	For use in the United States	L37681-001
	In dark ash silver finish with privacy filter:	
	For use in Belgium	L37682-A41
	For use in Bulgaria	L37682-261
	For use in Canada	L37682-DB1
	For use in the Czech Republic and Slovenia	L37682-FL1
	For use in Denmark, Norway, Finland, and Sweden	L37682-DH1
	For use in France	L37682-051
	For use in Germany	L37682-041
	For use in Greece	L37682-151
	For use in Israel	L37682-BB1
	For use in Italy	L37682-061
	For use in Japan	L37682-291
	For use in Korea	L37682-AD1
	For use in Latin America	L37682-161
	For use in Netherlands	L37682-B31
	For use in Portugal	L37682-131
	For use in Romania	L37682-271
	For use in Russia	L37682-251
	For use in Saudi Arabia	L37682-171
	For use in Slovenia	L37682-BA1
	For use in Spain	L37682-071
	For use in Thailand	L37682-281
	For use in Turkey	L37682-141
	For use in Taiwan	L37682-AB1
	For use in the United Kingdom	L37682-031
	For use in the United States	L37682-001
	In Poseidon blue finish with privacy filter:	
	For use in Belgium	L37683-A41
	For use in Bulgaria	L37683-261
	For use in Canada	L37683-DB1

Item	Component	Spare part number
	For use in the Czech Republic and Slovenia	L37683-FL1
	For use in Denmark, Norway, Finland, and Sweden	L37683-DH1
	For use in France	L37683-051
	For use in Germany	L37683-041
	For use in Greece	L37683-151
	For use in Israel	L37683-BB1
	For use in Italy	L37683-061
	For use in Japan	L37683-291
	For use in Korea	L37683-AD1
	For use in Latin America	L37683-161
	For use in Netherlands	L37683-B31
	For use in Portugal	L37683-131
	For use in Romania	L37683-271
	For use in Russia	L37683-251
	For use in Saudi Arabia	L37683-171
	For use in Slovenia	L37683-BA1
	For use in Spain	L37683-071
	For use in Switzerland	L37683-BG1
	For use in Thailand	L37683-281
	For use in Turkey	L37683-141
	For use in Taiwan	L37683-AB1
	For use in the United Kingdom	L37683-031
	For use in the United States	L37683-001
	In Poseidon blue finish with privacy filter:	
	For use in Belgium	L37684-A41
	For use in Bulgaria	L37684-261
	For use in Canada	L37684-DB1
	For use in the Czech Republic and Slovenia	L37684-FL1
	For use in Denmark, Norway, Finland, and Sweden	L37684-DH1
	For use in France	L37684-051
	For use in Germany	L37684-041
	For use in Greece	L37684-151
	For use in Israel	L37684-BB1
	For use in Italy	L37684-061

Item	Component	Spare part number
	For use in Japan	L37684-291
	For use in Korea	L37684-AD1
	For use in Latin America	L37684-161
	For use in Netherlands	L37684-B31
	For use in Portugal	L37684-131
	For use in Romania	L37684-271
	For use in Russia	L37684-251
	For use in Saudi Arabia	L37684-171
	For use in Slovenia	L37684-BA1
	For use in Spain	L37684-071
	For use in Switzerland	L37684-BG1
	For use in Thailand	L37684-281
	For use in Turkey	L37684-141
	For use in Taiwan	L37684-AB1
	For use in the United Kingdom	L37684-031
	For use in the United States	L37684-001
	In dark ash silver with WWAN	
	For use in Belgium	L37903-A41
	For use in Bulgaria	L37903-261
	For use in Canada	L37903-DB1
	For use in the Czech Republic and Slovenia	L37903-FL1
	For use in Denmark, Norway, Finland, and Sweden	L37903-DH1
	For use in France	L37903-051
	For use in Germany	L37903-041
	For use in Greece	L37903-041
	For use in Israel	L37903-BB1
	For use in Italy	L37903-061
	For use in Japan	L37903-291
	For use in Korea	L37903-AD1
	For use in Latin America	L37903-161
	For use in the Netherlands	L37903-B31
	For use in Portugal	L37903-131
	For use in Romania	L37903-271
	For use in Russia	L37903-251

Item	Component	Spare part number
	For use in Saudi Arabia	L37903-171
	For use in Slovenia	L37903-BA1
	For use in the Spain	L37903-071
	For use in Switzerland	L37903-BG1
	For use in Thailand	L37903-281
	For use in Turkey	L37903-141
	For use in Taiwan	L37903-AB1
	For use in the United Kingdom	L37903-031
	For use in the United States	L37903--001
	In dark ash silver with privacy filter and WWAN:	
	For use in the Belgium	L37904-A41
	For use in Bulgaria	L37904-261
	For use in Canada	L37903-DB1
	For use in the Czech Republic and Slovenia	L37903-FL1
	For use in Denmark, Norway, Finland, and Sweden	L37903-DH1
	For use in France	L37903-051
	For use in the Germany	L37903-041
	For use in Greece	L37903-151
	For use in Israel	L37903-BB1
	For use in Italy	L37903-061
	For use in Japan	L37904-291
	For use in Korea	L37904-AD1
	For use in Latin America	L37904-161
	For use in the Netherlands	L37904-B31
	For use in Portugal	L37904-131
	For use in the Romania	L37904-271
	For use in Russia	L37904-251
	For use in Saudi Arabia	L37904-171
	For use in Slovenia	L37904-BA1
	For use in Spain	L37904-071
	For use in Switzerland	L37904-BG1
	For use in Thailand	L37904-281
	For use in Turkey	L37904-141
	For use in Taiwan	L37904-AB1

Item	Component	Spare part number
	For use in the United Kingdom	L37904-031
	For use in the United States	L37904-001
<b>(3)</b>	<b>TouchPad</b>	
	<b>NOTE:</b> The TouchPad cable is available using spare part number L37663-001.	
	In dark ash silver finish	L37661-001
	In Poseidon blue finish	L37662-001
<b>(4)</b>	<b>Fingerprint reader</b>	
	The Fingerprint reader cable is available using spare part number L37674-001	
	In dark ash silver finish	L37672-001
	In Poseidon blue finish	L37673-001
<b>(5)</b>	<b>Battery</b>	
	(4-cell, 61-WHr, 3.99-AHr, Li-ion)	L28764-005
<b>(6)</b>	<b>Front speaker (speaker kit)</b>	L37668-001
<b>(7)</b>	<b>Rear speaker (speaker kit)</b>	L37668-001
<b>(8)</b>	<b>Audio board</b>	L37655-001
<b>(9)</b>	<b>Power button</b>	
	In dark ash silver finish	L37714-001
	In Poseidon blue finish	L38639-001
<b>(10)</b>	<b>Front speaker (speaker kit)</b>	L37668-001
<b>(11)</b>	<b>Rear speaker (speaker kit)</b>	L37668-001
<b>(12)</b>	<b>Power button board</b>	L37653-001
<b>(13)</b>	<b>Fan, left</b>	L37660-001
<b>(14)</b>	<b>Fan, right</b>	L38013-001
<b>(15)</b>	<b>Heat sink</b>	L37659-001
<b>(16)</b>	<b>System board</b>	
	For use in models with UMA graphics equipped with the following processors:	
	Intel Core i7-8565U processor (WWAN)	L37641-001
	Intel Core i7-8565U processor	L37640-001
	Intel Core i7-8565U processor	L37639-001
	Intel Core i7-8565U processor	L37638-001
	Intel Core i5-8265U processor	L37637-001
<b>(17)</b>	<b>Mylar</b> (covering system board)	L42790-001
<b>(18)</b>	<b>Solid-state drives</b>	
	2-TB, 2280, PCIe3×4, NVMe solid-state drive with TLC	L37644-001

Item	Component	Spare part number
	1-TB, 2280, PCIe3×4, NVMe solid-state drive with TLC	L37642-001
	512-GB, M.2 2280, PCIe3×4, NVMe, SS solid-state drive with TLC	L37645-001
	256-GB, M.2 2280, PCIe3×4, NVMe, SS solid-state drive with TLC	L37643-001
<b>(19)</b>	<b>Base enclosure</b>	
	In dark ash silver finish	L37664-001
	In Poseidon blue finish	L37665-001
	In dark ash silver finish with WWAN	L37908-001

## Miscellaneous parts

Component	Spare part number
<b>AC Adapter</b>	
65-W AC adapter (non-PFC, Slim, 1.8-mm)	L04650-850
<b>Adapters</b>	
HP USB-to-Gigabit RJ45 adapter	829941-001
HP USB-C-to-VGA adapter	831751-001
HP USB-C-to-USB -A dongle	833960-001
HP USB-C-to-RJ45 adapter	855560-001
HP USB -C-to-USB -A hub	916838-001
HP USB-C-to-MultiPort hub	919666-001
HP USB-C-to-HDMI 2.0 adapter	935325-001
<b>Stylus pen</b>	
Impreza pen in dark ash silver finish	929863-001
Impreza pen tip	L04536-002
Sunwoda pen in dark ash silver finish	920241-001
Sunwoda pen tip in natural silver finish	L04536-001
<b>Power cord (C5 connector, STR, PRM, 1.00-m):</b>	
For use in Argentina	L30811-001
For use in Australia	L22327-001
For use in Denmark	L22321-001
For use in Europe	L36820-001
For use in Israel	L22323-001
For use in Italy	L30813-001
For use in Japan	L22330-001

<b>Component</b>	<b>Spare part number</b>
For use in Korea	L22328-001
For use in North America	L22328-001
For use in People's Republic of China	L36823-001
For use in Saudi Arabia	L22325-001
For use in Switzerland	L22324-001
For use in Thailand	L22326-001
For use in United Kingdom	L22320-001
Duck head power cord for use in India	L37135-001
Duck head power cord for use in Japan	L33157-001
Duck head power cord for use in the People's Republic and China	L37131-001
<b>External DVD±RW DL SuperMulti Drive</b>	747080-001
<b>Rubber strip kit</b> for use in dark ash silver models (includes bottom cover rear feet)	L37666-001
<b>Rubber strip kit</b> for use in Poseidon blue models (includes bottom cover rear feet)	L37667-001
<b>Screw kit</b>	L37675-001
<b>Sleeve (13.3 case sleeve)</b>	L01136-001
<b>WWAN module</b>	
HP 7560 LTE/ADV+ 4G with GPS M.2	L27188-005

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## 4 Removal and replacement procedures preliminary requirements

### Tools required

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

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

### Service considerations

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

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

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### Plastic parts

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

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### Cables and connectors

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

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

## Drive handling

**⚠ 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 an optical drive, be sure that a disc is not in the drive and be sure that the optical drive tray is closed.

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

Avoid dropping drives from any height onto any surface.

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

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

Avoid exposing a drive to temperature extremes or liquids.

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

## 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 tablet 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

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

## Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

## Workstation guidelines

Follow these grounding workstation guidelines:

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

# Equipment guidelines

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

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

The following grounding equipment is recommended to prevent electrostatic damage:

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

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

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

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# 5 Removal and replacement procedures for authorized service provider parts

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

**CAUTION:** This computer does not have user-replaceable parts. Only HP authorized service providers should perform the removal and replacement procedures described here. Accessing the internal part could damage the computer or void the warranty.

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## Component replacement procedures

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 **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.

 **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.

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There are as many as 40 screws that must be removed, replaced, and/or loosened when servicing the parts described in this chapter. Make special note of each screw size and location during removal and replacement.

## Bottom cover

Description	Spare part number
Bottom cover for use in dark ash silver models	L37681-001
Bottom cover for use in dark ash silver models with privacy filter	L37682-001
Bottom cover for use in Poseidon blue models	L37683-001
Bottom cover for use in Poseidon blue models with privacy filter	L37684-001
Bottom cover for use in dark ash silver models with WWAN	L37903-001
Bottom cover for use in dark ash silver models with WWAN with privacy filter	L37904-001

 **IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

Before removing the bottom cover, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

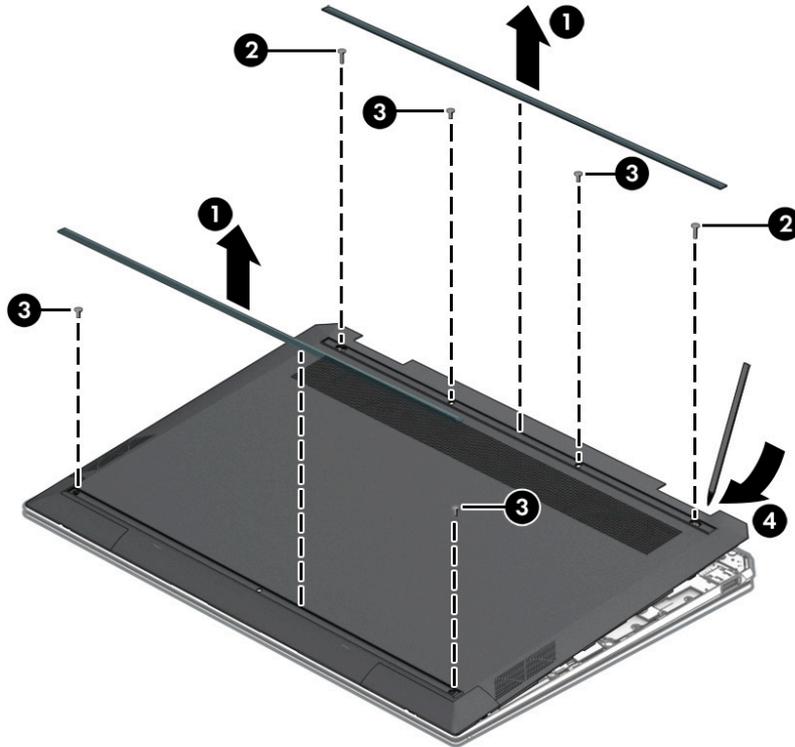
Remove the bottom cover:

1. Remove the rubber strips with a tweezer **(1)**.

 **NOTE:** The rubber strips are available using spare part number L37666-001 for dark ash silver models and L37667-001 for Poseidon blue models.

2. Remove the two Phillips M2.0×5.5 screws securing the bottom cover to the computer **(2)**.
3. Remove the four Phillips M2.0×3.5 screws **(3)**.

4. Remove the bottom cover (4).



Reverse this procedure to install the bottom cover.

## Battery

Description	Spare Part Number
Battery	L28764-005

 **IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

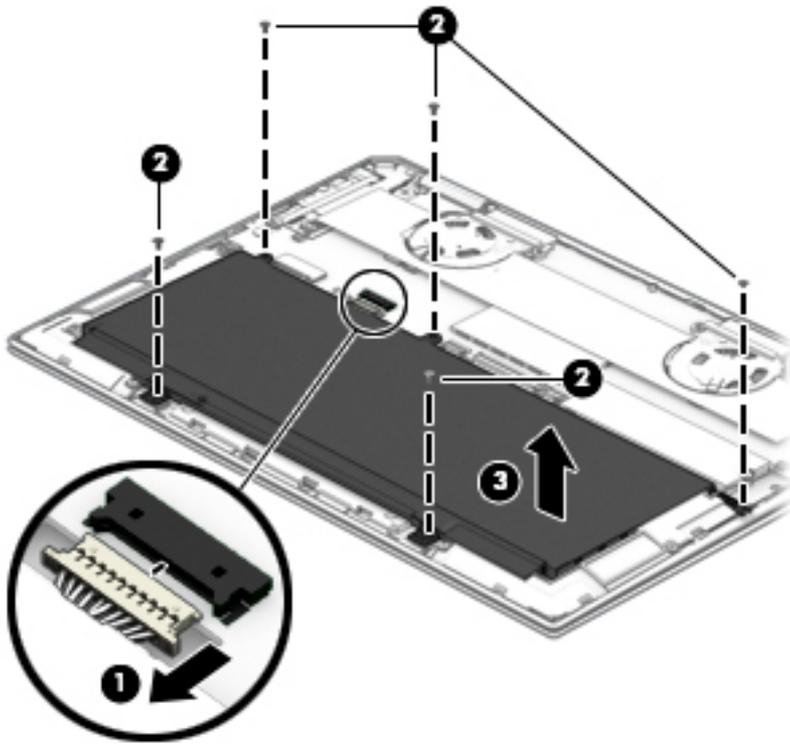
Before removing the battery, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Bottom cover on page 34](#)).

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

Remove the battery:

1. Disconnect the battery cable (1).
2. Remove the five Phillips M2.0×2.5 screws securing the battery to the computer (2).
3. Remove the battery (3).



Reverse this procedure to install the battery.

# TouchPad

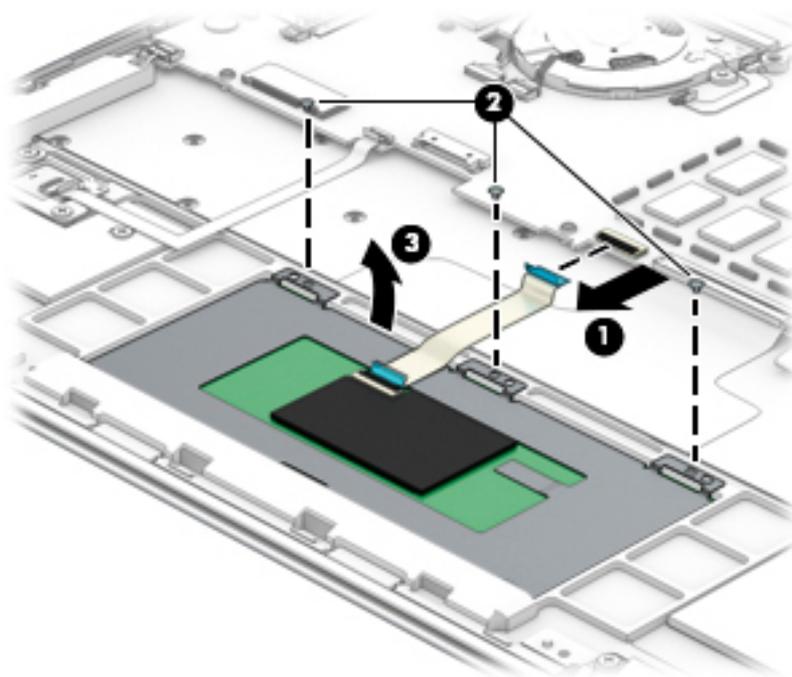
Description	Spare part number
TouchPad for use in dark ash silver models	L37661-001
TouchPad for use in Poseidon blue models	L37662-001

Before removing the TouchPad, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 34](#)).
5. Remove the battery (see [Battery on page 35](#)).

Remove the TouchPad:

1. Remove the TouchPad cable (1).
2. Remove the three Phillips M1.6×2.0-I screws (2).
3. Remove the TouchPad (3).



To insert the TouchPad, reverse the removal procedures.

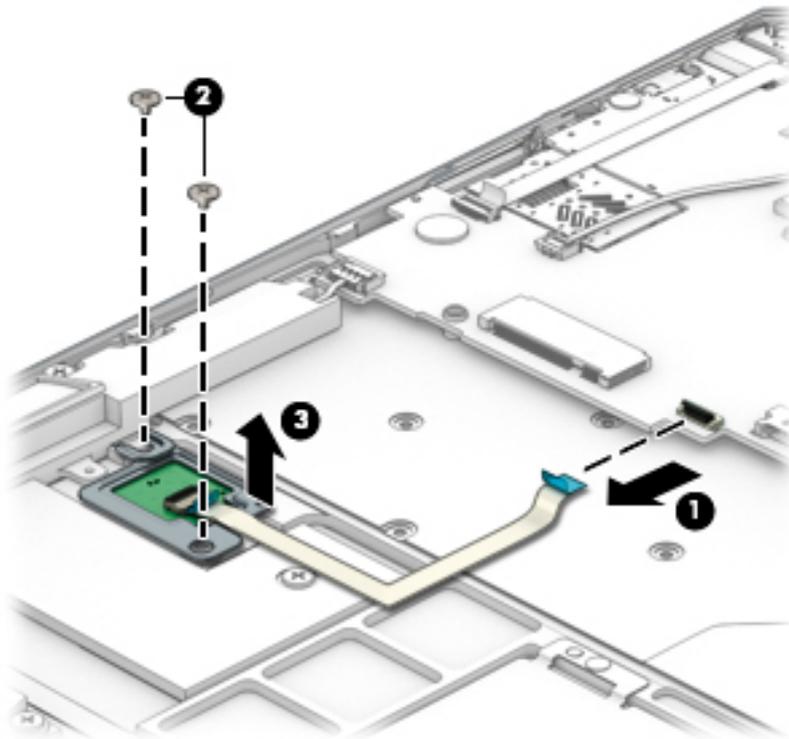
# Fingerprint Reader

Description	Spare part number
Fingerprint Reader for use in dark ash silver models	L37672-001
Fingerprint reader for use in Poseidon blue models	L37673-001

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.
4. Remove the bottom cover (see [Bottom cover on page 34](#)).
5. Remove the battery (see [Battery on page 35](#)).
6. Remove the TouchPad.

Remove the fingerprint reader:

1. Disconnect the fingerprint reader cable from the computer **(1)**.
2. Remove the two Phillips M1.6×2.0-I screws securing the fingerprint reader to the keyboard/top cover **(2)**.
3. Remove the fingerprint reader **(3)**.



Reverse this procedure to install the fingerprint reader.

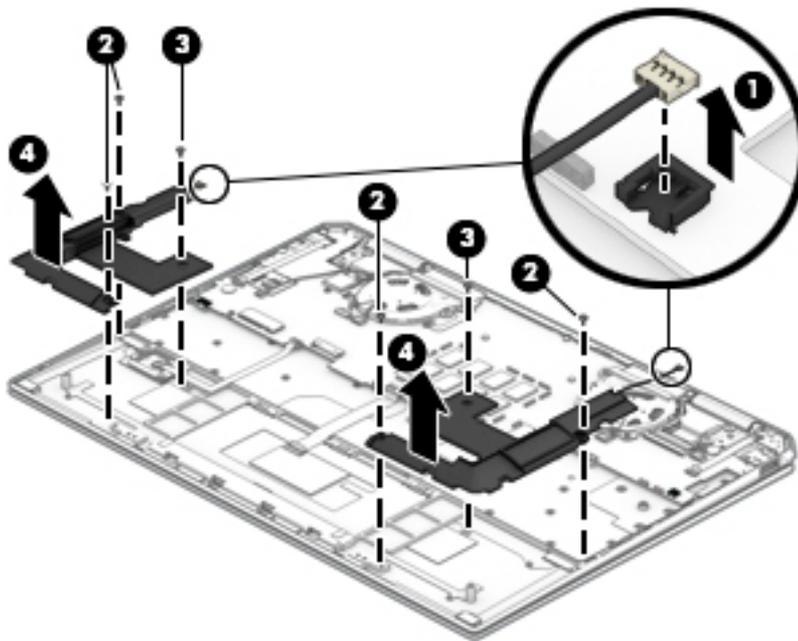
## Speakers (front)

Description	Spare part number
Speaker kit (front speakers)	L37668-001

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.
4. Remove the bottom cover (see [Bottom cover on page 34](#)).
5. Remove the battery (see [Battery on page 35](#)).

Remove the front speakers:

1. Remove the cables securing each front speaker to the computer (1).
2. Remove the four Phillips M1.6×2.0-I screws securing each of the two front speakers to the computer (2).
3. Remove the two Phillips M1.6×3.2-I screws securing each of the two front speakers to the computer (3).
4. Remove the front speakers (4).



Reverse this procedure to install the front speakers.

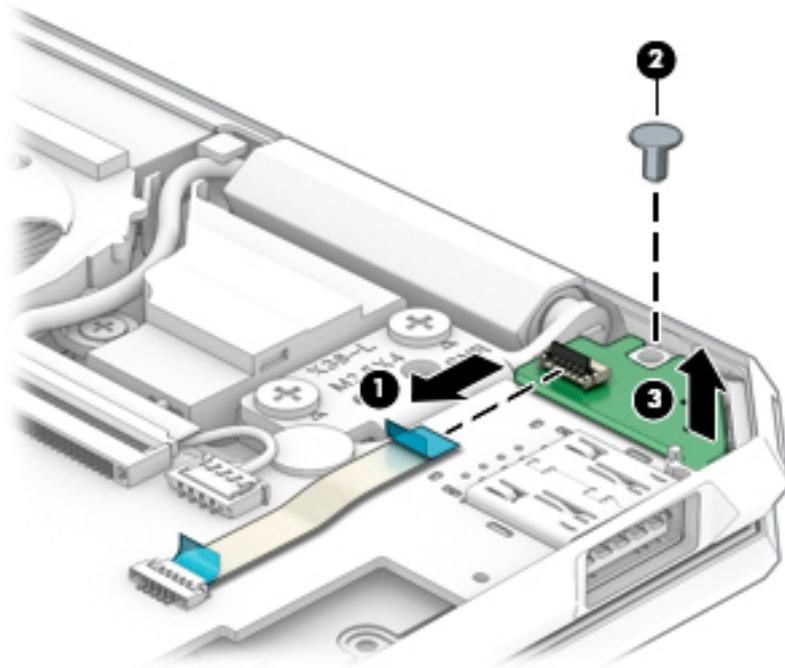
## Power button board

Description	Spare part number
Power button board	L37653-001

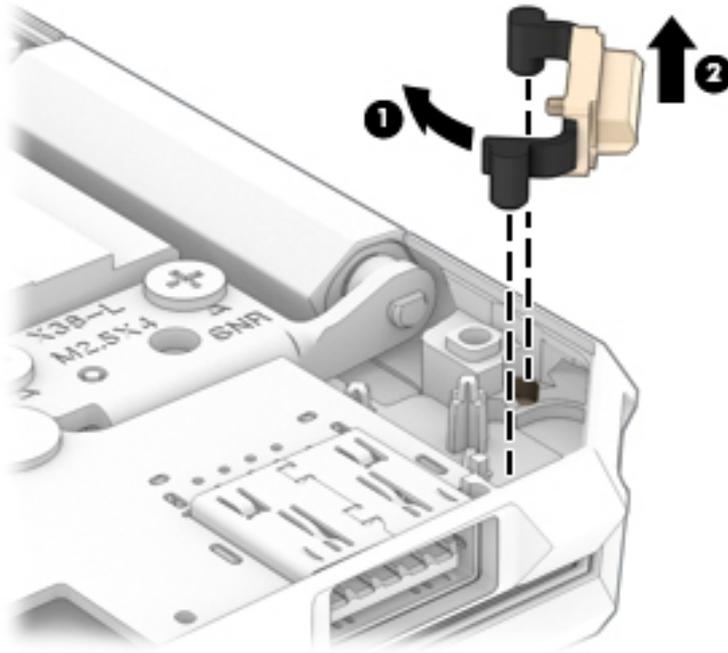
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 34](#)).
5. Remove the battery (see [Battery on page 35](#)).
6. Remove the TouchPad (see [TouchPad on page 37](#)).

Remove the power button board:

1. Release the power button board ZIF connector from the power button board (1).
2. Remove the Phillips M2.0×2.5-I screw securing the power button board (2).
3. Remove the power button board (3).



4. Rotate the power button (1), and then remove the power button (2).



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

## WWAN module

Description	Spare part number
HP 7560 LTE/ADV+ 4G with GPS M.2	L27188-005

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

**IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

Before removing the WWAN module, follow these steps

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 35](#)).
5. Remove the TouchPad (see [TouchPad on page 37](#)).

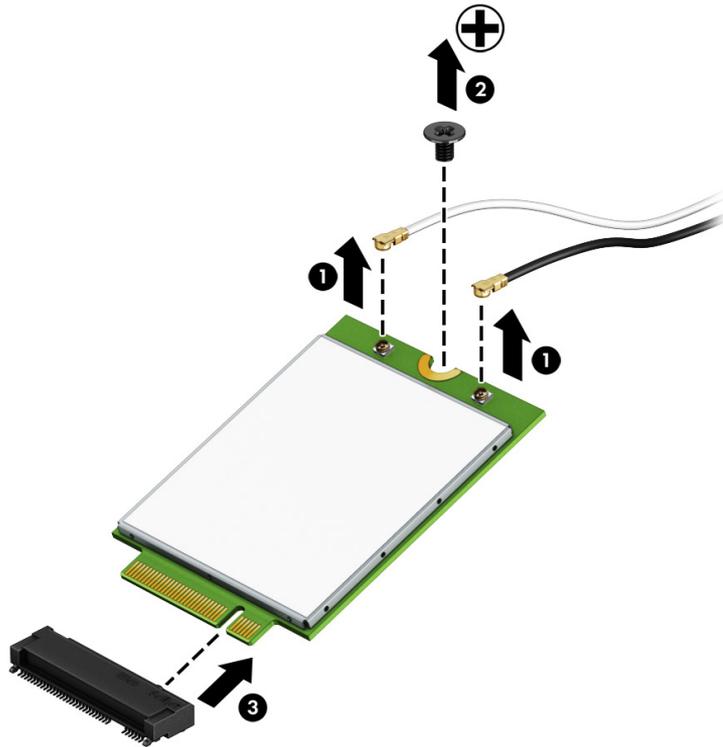
Remove the WWAN module:

---

 **NOTE:** The #5/red WWAN antenna cable connects to the WWAN module #5/Main terminal. The #6/blue WWAN antenna cable connects to the WWAN module #6/Aux terminal.

---

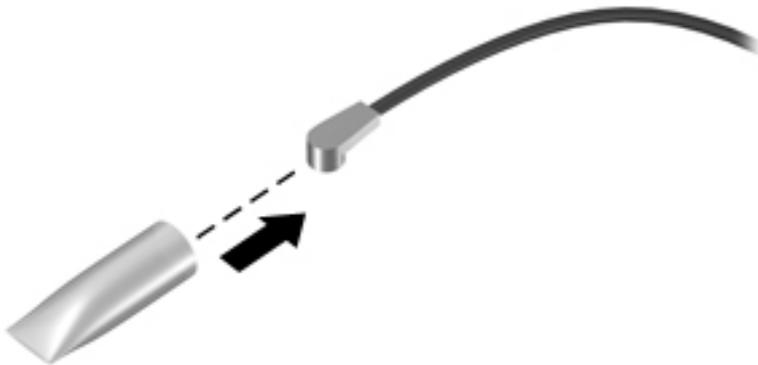
1. Disconnect the WWAN antenna cables (1) from the terminals on the WWAN module.
2. Remove the Phillips M2.0×2.4 screw (2) that secures the WWAN module to the system board. (The WWAN module tilts up.)
3. Remove the WWAN module (3) by pulling the board away from the slot at an angle.



---

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

---



## Solid-state drive

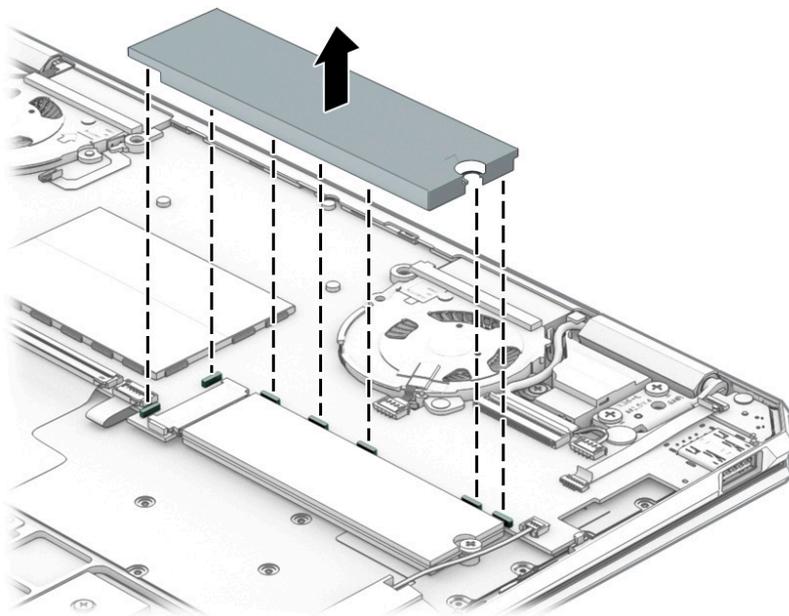
Description	Spare part number
1-TB, 2280, PCIe3×4, NVMe solid-state drive with TLC	L37642-001
256-GB, M.2 2280, PCIe3×4, NVMe, SS solid-state drive with TLC	L37643-001
2-TB, 2280, PCIe3×4, NVMe solid-state drive with TLC	L37644-001
512-GB, M.2 2280, PCIe3×4, NVMe, SS solid-state drive with TLC	L37645-001

 **IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

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 34](#)).
5. Remove the battery (see [Battery on page 35](#)).

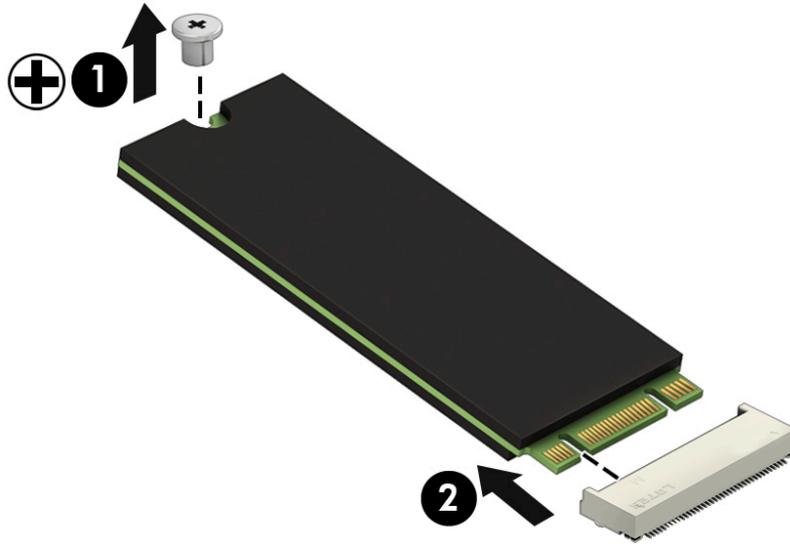
Remove the solid-state drive module:

1. Remove the metal cover on top of the solid-state drive module.



2. Remove the Phillips M2.0×3.0 screw that secures the solid-state drive module to the computer (1).

3. Remove the solid-state drive by pulling it away from the socket (2).



Reverse this procedure to install the solid-state drive.

## Fans

Description	Spare part number
Fan (left)	L37660-001
Fan (right)	L38013-001

**IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

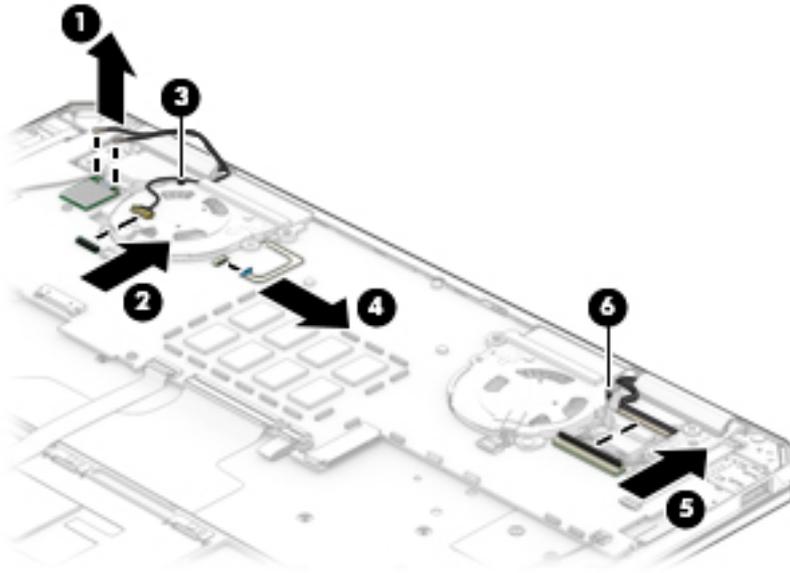
Before removing the fan, follow these steps:

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. 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.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 34](#)).
5. Remove the battery (see [Battery on page 35](#)).

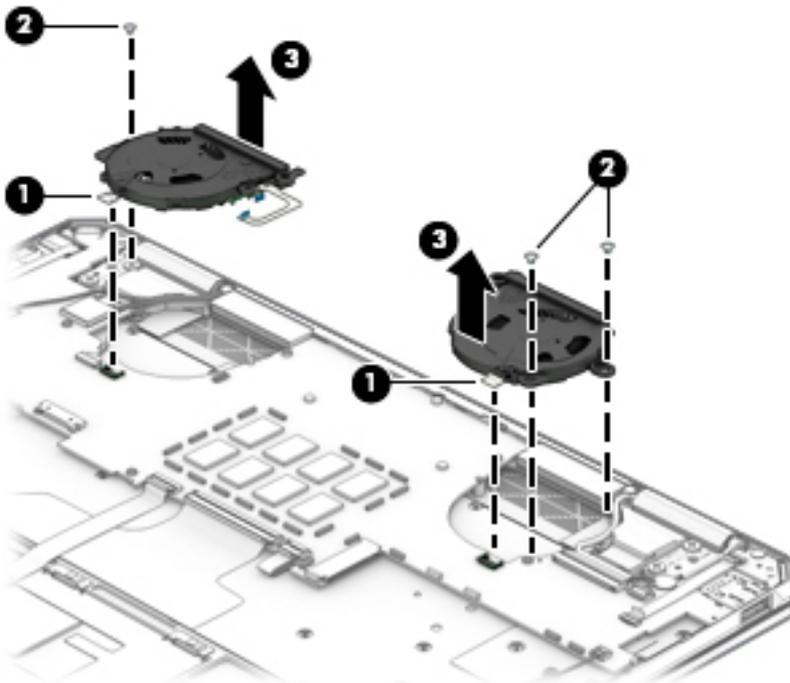
Remove the fan:

1. Disconnect the antenna cables (1).
2. Release the ZIF connector (2), and then disconnect the fan cable (3).
3. Disconnect the IR sensor cable (4).

4. Release the ZIF connector (5), and then remove the cable (6).



5. Disconnect the fan cable (1).
6. Remove the one Phillips M2.0×3.5-I screw on the right fan, and the two Phillips M2.0×2.5-I screws on the left fan (2).
7. Remove both fans (3).



Reverse this procedure to install the fans.

## IR sensor

Description	Spare Part Number
IR sensor	L37657-001

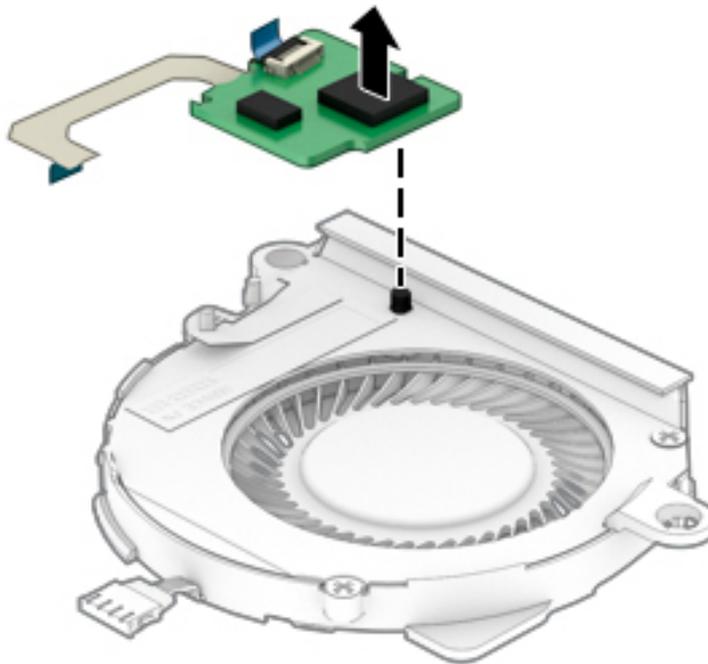
 **IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

Before removing the IR sensor, 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 34](#)).
5. Remove the battery (see [Battery on page 35](#)).

Remove the IR sensor:

- ▲ Turn over the left fan, and pull off the IR sensor.



Reverse this procedure to install the IR sensor.

## System board

 **NOTE:** All system board spare part kits include a processor and replacement thermal material.

Description	Spare part number
System board	
System board for use in models with UMA graphics equipped with the following processors:	
Intel Core i7-8565U processor (WWAN)	L37641-001
Intel Core i7-8565U processor	L37640-001
Intel Core i7-8565U processor	L37639-001
Intel Core i7-8565U processor	L37638-001
Intel Core i5-8265U processor	L37637-001

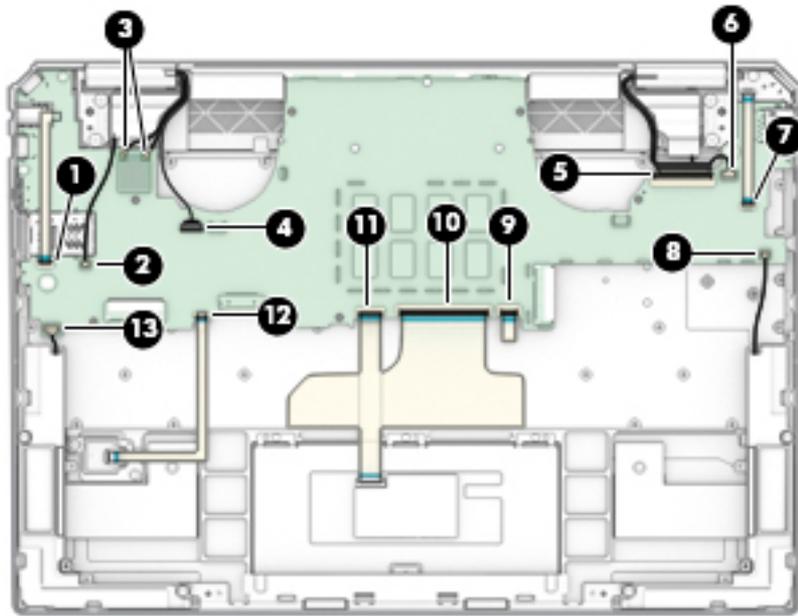
 **IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

Before removing the system board, follow these steps:

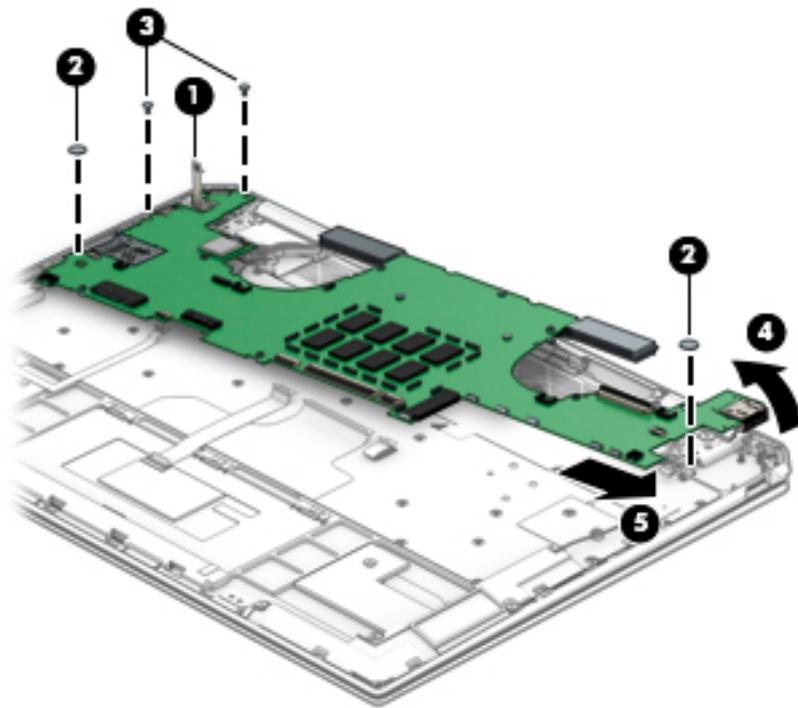
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 34](#)).
5. Remove the battery (see [Battery on page 35](#)).
6. Remove the fan (see [Fans on page 44](#)).

Remove the system board:

1. Disconnect the following cables:
  - (1) Audio board
  - (2) Rear right speaker
  - (3) Antenna cable
  - (4) Webcam cable
  - (5) Display cable
  - (6) Rear left speaker cable
  - (7) Power button cable
  - (8) Front left speaker cable
  - (9) Backlight cable
  - (10) Keyboard cable
  - (11) TouchPad cable
  - (12) Fingerprint cable
  - (13) Front speaker cable



2. Make sure the audio cable is disconnected (1).
3. Remove the two Phillips M2×1.5-I (2).
4. Remove the Phillips M2.0×3.5-I screw that secures the system board to the computer. (3)
5. Lift the system board (4), and then remove the system board (5).



Reverse this process to install the system board.

# Heat sink

Description	Spare part number
Heat sink	L37659-001

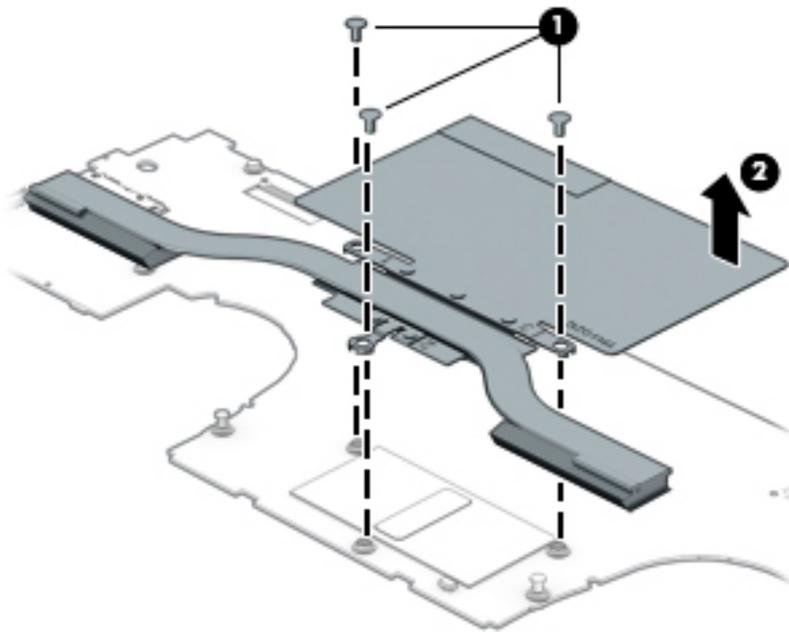
 **IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

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 first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 34](#)), and then remove the following components:
  - a. Battery (see [Battery on page 35](#)).
  - b. TouchPad (see [TouchPad on page 37](#)).
  - c. Fans (see [Fans on page 44](#)).
  - d. System board (see [System board on page 46](#)).

Remove the heat sink:

1. Turn the system board over, and then remove the 3 Phillips M2.0×2.5-I screws securing the heat sink to the system board (1).
2. Remove the heat sink (2).



Reverse this procedure to install the heat sink on the system board.

## Audio board

Description	Spare part numbers
Audio board	L37655-001
Audio board cable	L37656-001

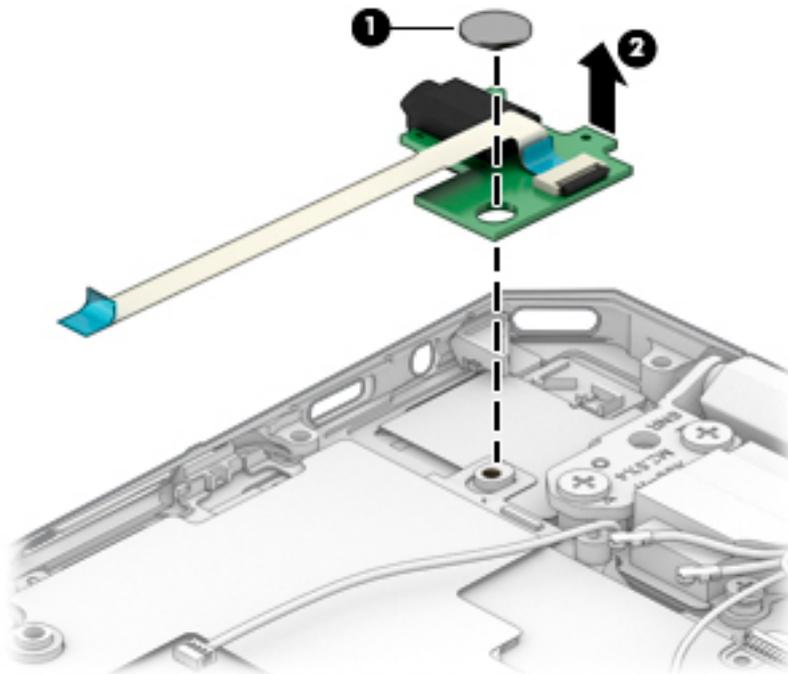
 **IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

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 34](#)).
5. Remove the battery (see [Battery on page 35](#)).
6. Remove the fans (see [Fans on page 44](#)).
7. Remove the system board (see [System board on page 46](#)).

Remove the audio board:

1. Remove the screw securing the audio board (1).
2. Remove the audio board (2).



Reverse this procedure to install the audio board.

## Display assembly

Description	Spare part numbers
13.3-in, FHD, AntiGlare, Ultra Slim TouchScreen display assembly with privacy filter	L37647-001
13.3-in, FHD, BrightView, Ultra Slim TouchScreen display assembly	L37648-001
13.3-in, FHD, BrightView, Ultra Slim TouchScreen display assembly	L37649-001
13.3-in, UHD, BrightView, Ultra Slim TouchScreen display assembly	L37650-001
13.3-in, UHD, BrightView, Ultra Slim TouchScreen display assembly	L37651-001
13.3-in, FHD, AntiGlare, Ultra Slim TouchScreen display assembly with privacy filter with WWAN	L37905-001
13.3-in, FHD, BrightView, Ultra Slim TouchScreen display assembly with WWAN	L37906-001
13.3-in, FHD, BrightView, Ultra Slim TouchScreen display assembly with WWAN	L37907-001

 **IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

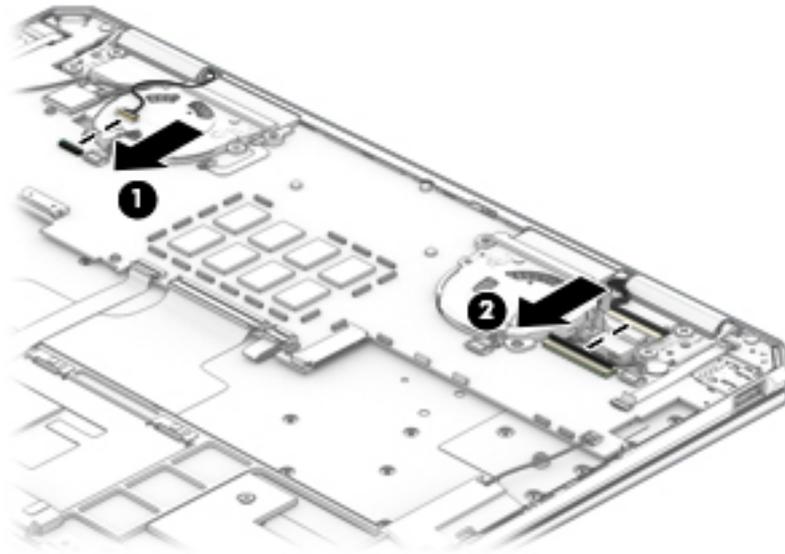
1. Turn off the computer. If you are unsure whether the computer is off/or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.

Before removing the display assembly, follow these steps:

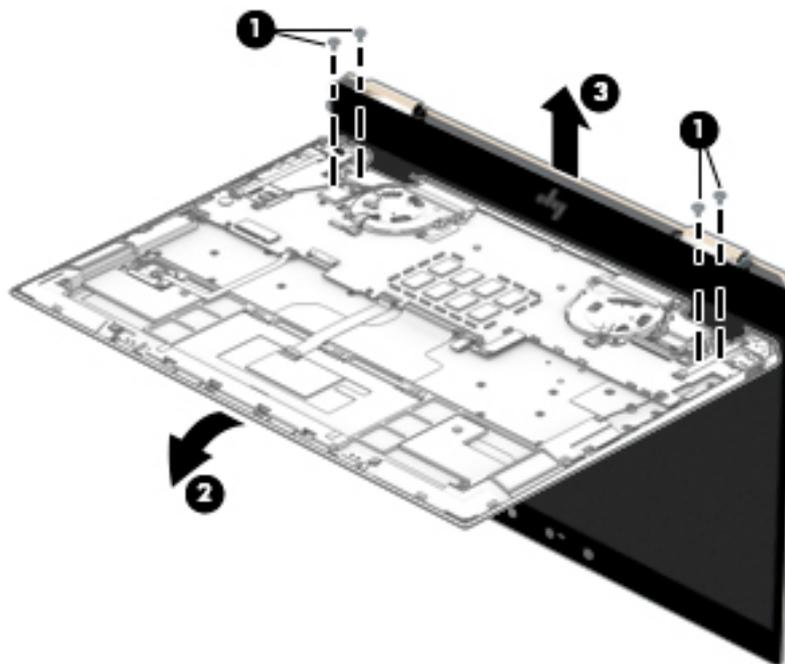
1. Remove the bottom cover (see [Bottom cover on page 34](#)).
2. Remove the battery (see [Battery on page 35](#)).
3. Remove the TouchPad (see [TouchPad on page 37](#)).
4. Remove the fans (see [Fans on page 44](#)).
5. Remove the system board (see [System board on page 46](#)).

Remove the display assembly:

1. Disconnect the left display cable **(1)**, and then disconnect the right display cable **(2)**.



2. Remove the four Phillips M2.5x2.2-I screws securing the display assembly to the base enclosure (1).
3. Pull the base enclosure forward (2), and then remove the display assembly (3).



Reverse this procedure to install the display assembly.

## Speakers (rear)

Description	Spare part number
Speaker kit (rear speakers)	L37668-001

---

 **IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

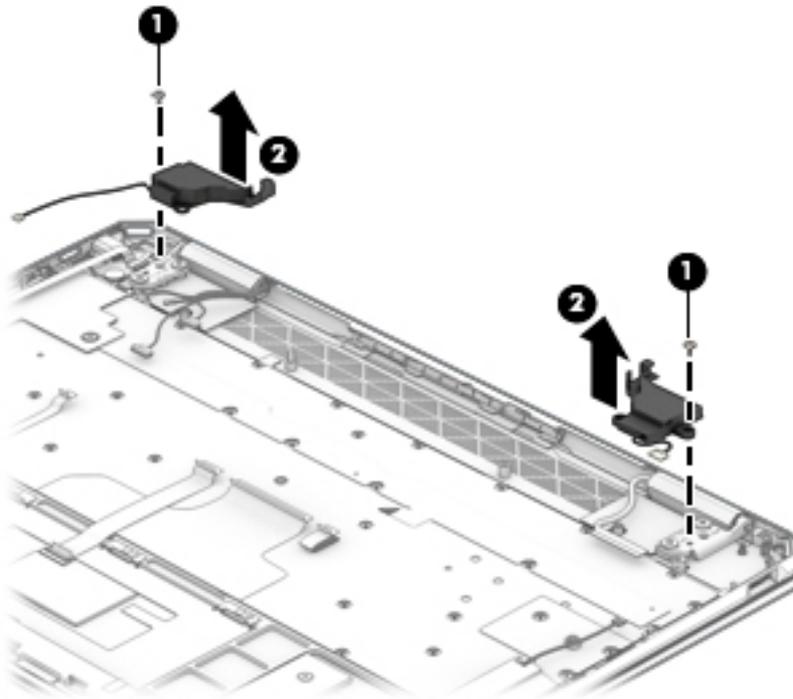
---

Before removing the rear speakers, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off/or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 34](#)).
5. Remove the battery (see [Battery on page 35](#)).
6. Remove the fans (see [Fans on page 44](#)).
7. Remove the display assembly (see [Display assembly on page 51](#)).

Remove the rear speakers:

1. Remove the two screws securing each speaker to the base enclosure (1).
2. Remove each of the two rear speakers (2).



Reverse this procedure to install the rear speakers.

---

## 6 Backing up, restoring, and recovering

This chapter provides information about creating backups and restoring and recovering your system.

Windows provides tools to back up your personal information, restore your computer from a backup, and recover the computer to its original state. See [Using Windows tools for backing up, restoring, and recovering your computer on page 54](#).

In addition to the Windows tools, depending on the operating system preinstalled on your computer, your computer may also include tools provided by HP for additional functionality.

---

 **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 tablet to the keyboard base before beginning any recovery process.

---

### Using Windows tools for backing up, restoring, and recovering your computer

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 **IMPORTANT:** Windows is the only option that allows you to back up your personal information. Schedule regular backups to avoid information loss.

You can use Windows tools to back up personal information and create system restore points and recovery media, allowing you to restore from backup, refresh the computer, and reset the computer to its original state.

---

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

---

### Creating backups

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

To create a backup:

1. Select **Start**, select **Settings**, and then select **Update & Security**.
2. Select **Backup**, and then follow the on-screen instructions.

### Restoring and recovering

Windows offers several options for restoring from backup, refreshing the computer, and resetting the computer to its original state.

To restore your system:

1. Select **Start**, select **Settings**, and then select **Update & Security**.
2. Select **Recovery**, and then follow the on-screen instructions.

## Creating HP Recovery media (select products only)

After you have successfully set up the computer, use HP Recovery Manager to create a backup of the HP Recovery partition on the computer. This backup is called HP Recovery media. In cases where the hard drive is corrupted or has been replaced, the HP Recovery media can be used to reinstall the original operating system.

To check for the presence of the Recovery partition in addition to the Windows partition, right-click the **Start** button, select **File Explorer**, and then select **This PC**.

---

 **NOTE:** If your computer does not list the Recovery partition in addition to the Windows partition, contact support to obtain recovery discs. Go to <http://www.hp.com/support>, select your country or region, and then follow the on-screen instructions.

---

On select products, you can use the HP Cloud Recovery Download Tool to create HP Recovery media on a bootable USB flash drive. For more information, see [Using the HP Cloud Recovery Download Tool to create recovery media on page 56](#).

## Using HP Recovery Manager to create recovery media

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 **NOTE:** If you cannot create recovery media yourself, contact support to obtain recovery discs. Go to <http://www.hp.com/support>, select your country or region, and then follow the on-screen instructions.

---

### Before you begin

Before you begin, note the following:

- 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 media storage capacity.
- To create recovery media, use one of the following options:

---

 **NOTE:** If the computer does not have a recovery partition, HP Recovery Manager displays the Windows Create a Recovery Drive feature. Follow the on-screen instructions to create a recovery image on a blank USB flash drive or hard drive.

---

- If your computer has an optical drive with DVD writer capability, be sure to 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, which are not compatible with HP Recovery Manager software.
- If your computer does not include an integrated optical drive with DVD writer capability, you can use an external optical drive (purchased separately) to create recovery discs, as described above. If an external optical drive is used, you must connect it directly to a USB port on the computer. It cannot be connected to a USB port on an external device, such as a USB hub.
- To create a recovery USB flash drive, use a high-quality blank USB flash drive.
- 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 this process.
- If necessary, you can exit the program before you have finished creating all of the recovery media. HP Recovery Manager will finish the current DVD or USB flash drive. The next time you start HP Recovery Manager, you will be prompted to continue.

## Creating the recovery media

To create HP Recovery media using HP Recovery Manager:

---

 **IMPORTANT:** For a tablet with a detachable keyboard, connect the tablet to the keyboard base 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 need to recover the system, see [Recovering using HP Recovery Manager on page 57](#).

## Using the HP Cloud Recovery Download Tool to create recovery media

To create HP Recovery media using the HP Cloud Recovery Download Tool:

1. Go to <http://www.hp.com/support>.
2. Select **Software and Drivers**, and then follow the on-screen instructions.

## Restoring and recovery

Restoring and recovery can be performed using one or more of the following options: Windows tools, HP Recovery Manager, or the HP Recovery partition.

---

 **IMPORTANT:** HP Recovery Manager and the HP Recovery partition are not available for Windows 10 S products.

---

## Restoring, resetting, and refreshing using Windows tools

Windows offers several options for restoring, resetting, and refreshing the computer. For details, see [Using Windows tools for backing up, restoring, and recovering your computer on page 54](#).

## Restoring using HP Recovery Manager and the HP Recovery partition

You can use HP Recovery Manager and the HP Recovery partition (select products only) to restore the computer to the original factory state:

- **Resolving problems with preinstalled applications or drivers**—To correct a problem with a preinstalled application or driver:
  1. Type `recovery` in the taskbar search box, and then select **HP Recovery Manager**.
  2. Select **Reinstall drivers and/or applications**, and then follow the on-screen instructions.
- **Using System Recovery**—To recover the Windows partition to original factory content, select 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 57](#). If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 55](#).
- **Using Factory Reset** (select products only)—Restores the computer to its original factory state by deleting all information from the hard drive and recreating the partitions and then reinstalling the operating system and the software that was installed at the factory (select products only). To use the **Factory Reset** option, you must use HP Recovery media. If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 55](#).

---

 **NOTE:** If you have replaced the hard drive in the computer, you can use the Factory Reset option to install the operating system and the software that was installed at the factory.

---

## Recovering using HP Recovery Manager

You can use HP Recovery Manager software 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 HP Recovery media, see [Creating HP Recovery media \(select products only\) on page 55](#).

---

 **IMPORTANT:** HP Recovery Manager does not automatically provide backups of your personal data. Before beginning recovery, back up any personal data that you want to retain. See [Using Windows tools for backing up, restoring, and recovering your computer on page 54](#).

**IMPORTANT:** Recovery through HP Recovery Manager should be used as a final attempt to correct computer issues.

---

 **NOTE:** When you start the recovery process, only the options available for your computer are displayed.

Before you begin, note the following:

- 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.
- If the computer hard drive fails, HP Recovery media must be used. This media is created using HP Recovery Manager. See [Creating HP Recovery media \(select products only\) on page 55](#).
- If your computer does not allow the creation of HP Recovery media or if the HP Recovery media does not work, contact support to obtain recovery media. Go to <http://www.hp.com/support>, select your country or region, and then follow the on-screen instructions.

## Recovering using the HP Recovery partition (select products only)

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

The HP Recovery partition (select products only) allows System Recovery only.

To start HP Recovery Manager from the HP Recovery partition:

---

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

1. Type `recovery` in the taskbar search box, select **HP Recovery Manager**, and then select **Windows 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, quickly hold down the volume up button, and then select **f11**.

2. Select **Troubleshoot** from the boot options menu.
3. Select **Recovery Manager**, and then follow the on-screen instructions.

---

 **NOTE:** If your computer does not automatically restart in HP Recovery Manager, change the computer boot order, and then follow the on-screen instructions. See [Changing the computer boot order on page 58](#).

---

## Recovering using HP Recovery media

If your computer does not have an HP Recovery partition or if the hard drive is not working properly, you can use HP Recovery media to recover the original operating system and software programs that were installed at the factory.

- ▲ Insert the HP Recovery media, and then restart the computer.

 **NOTE:** If your computer does not automatically restart in HP Recovery Manager, change the computer boot order, and then follow the on-screen instructions. See [Changing the computer boot order on page 58](#).

---

## Changing the computer boot order

If your computer does not restart in HP Recovery Manager, you can change the computer boot order. This 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, depending on the location of your HP Recovery media.

To change the boot order:

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

---

1. Insert the HP Recovery media.
2. Access the system **Startup** menu.

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, quickly hold down the volume up button, and then select **f9**.

– or –

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

3. Select the optical drive or USB flash drive from which you want to boot, and then 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 (select products only) 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. Before removing the Recovery partition, create HP Recovery media. See [Creating HP Recovery media \(select products only\) on page 55](#).

---

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.

---

# 7 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.

When HP PC Hardware Diagnostics (UEFI) detects a failure that requires hardware replacement, a 24-digit Failure ID code is generated. This ID code can then be provided to support to help determine how to correct the problem.

---

 **NOTE:** To start diagnostics on a convertible computer, your computer must be in notebook mode and you must use the keyboard attached.

---

To start HP PC Hardware Diagnostics (UEFI), follow these steps:

1. Turn on or restart the computer, and quickly press **esc**.
2. 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 60](#).

---

- 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.

---

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

---

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

 **NOTE:** The HP PC Hardware Diagnostics (UEFI) download instructions are provided in English only, and you must use a Windows computer to download and create the HP UEFI support environment because only .exe files are offered.

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, select the **Download** link, and then select **Run**.

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

1. Go to <http://www.hp.com/support>.
2. Select **Get software and drivers**.
3. Enter the product name or number.
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.

## Using Remote HP PC Hardware Diagnostics (UEFI) settings (select products only)

Your computer supports Remote HP PC Hardware Diagnostics (UEFI). This is a firmware (BIOS) feature that downloads HP PC Hardware Diagnostics UEFI to your computer.

It executes the diagnostics on your computer, and then may upload results to a preconfigured server.

Using the Remote HP PC Hardware Diagnostics setting in Computer Setup (BIOS), you can perform the following customizations:

- Set a schedule for running diagnostics unattended. You can also start diagnostics immediately in interactive mode by selecting **Execute Remote HP PC Hardware Diagnostics**.
- Set the location for downloading the diagnostic tools. This feature provides access to the tools from the HP website or from a server that has been preconfigured for use. Your computer does not require the traditional local storage (such as a disk drive or USB flash drive) to run remote diagnostics.
- Set a location for storing the test results. You can also set the user name and password settings used for uploads.
- Display status information about the diagnostics run previously.

## Customizing Remote HP PC Hardware Diagnostics (UEFI) settings

1. Turn on or restart the computer, and press **F10** to enter Computer Setup.
2. Select **Advanced**, and then select **Settings**.
3. Make your customization selections.
4. Select **Main**, and then **Save Changes and Exit** to save your settings.

Your changes take effect when the computer restarts.

To access documentation on using Remote HP PC Hardware Diagnostics (UEFI) to configure a server for remote diagnostics or to customize which diagnostic tests are run, go to <http://www.hp.com/support>. Select **Find your product**, and then follow the on-screen instructions.

# 8 Specifications

## Computer specifications

	Metric	U.S.
<b>Dimensions</b>		
Width	308.87mm	15.18 in
Depth	217.9mm	10.15 in
Height (front to back)	14.7 mm for models with WLAN modules 14.5mm for models with WWAN modules	.89 in
<b>Weight</b>		
	1.32 kg for models with WLAN modules 1.33 kg for models with WWAN modules	4.61 lb or 5.05 (depending on configuration)
<b>Input power</b>		
Operating voltage and current	19.5 V dc @ 3.33 A - 65 W 19 V dc @ 4.62 A - 90 W 19.5 V dc @ 2.31 - 45 W (select models only)	
<b>Temperature</b>		
Operating	5°C to 35°C	41°F to 95°F
Nonoperating	-20°C to 60°C	-4°F to 140°F
<b>Relative humidity</b> (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
<b>Maximum altitude</b> (unpressurized)		
Operating	-15 m to 3,048 m	-50 ft to 10,000 ft
Nonoperating	-15 m to 12,192 m	-50 ft to 40,000 ft
<b>NOTE:</b> Applicable product safety standards specify thermal limits for plastic surfaces. The device operates well within this range of temperatures.		

## xx cm (xx-in) display specifications

	Metric	U.S.
<b>Dimensions</b>		
Height	20.77 cm	8.175 in
Width	37.78 cm	14.875 in
Diagonal	39.62 cm	15.6 in
<b>Number of colors</b>	Up to 16.8 million	
<b>Contrast ratio</b>	500:1 (typical)	
<b>Brightness</b>	200 nits	
<b>Pixel resolution</b>		
Pitch	0.252mm x 0.252mm	
Format	1366×768	
Configuration	RGB vertical stripe	
<b>Backlight</b>	LED	
<b>Character display</b>	80 × 25	
<b>Total power consumption</b>	2.0 W	
<b>Viewing angle</b>	±65° horizontal, ±50° vertical (typical)	

## Hard drive specifications

	500 GB*	750 GB*
<b>Dimensions</b>		
Height	9.5 mm	9.5 mm
Width	70 mm	70 mm
Weight	107 g max	102 g max
<b>Interface type</b>	SATA	SATA
<b>Transfer rate</b>	300 MB/sec	300 MB/sec
<b>Security</b>	ATA security	ATA security
<b>Seek times</b> (typical read, including setting)		
Single track	1.5 ms	1.1 ms
Average	12.0 ms	12.0 ms
Maximum	22.0 ms	21.0 ms
<b>Logical blocks</b>	976,752,240	1,465,149,168
<b>Disk rotational speed</b>	5400 rpm	5400 rpm
<b>Operating temperature</b>	0°C to 60°C (0°F to 140°F)	0°C to 60°C (0°F to 140°F)

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500 GB\*

750 GB\*

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\*Size refers to hard drive storage capacity. Actual accessible capacity is less. Actual drive specifications may differ slightly.

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**NOTE:** Certain restrictions and exclusions apply. Contact support for details.

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## 9 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	BIS	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.
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.

Country/region	Accredited agency	Applicable note number
3.	The appliance coupler, flexible cord, and wall plug must bear a “T” mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCTF, 3-conductor, 0.75 mm <sup>2</sup> or 1.25 mm <sup>2</sup> conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V ac) configuration.	
4.	The flexible cord must be Type RVV, 3-conductor, 0.75 mm <sup>2</sup> conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the CCC certification mark.	
5.	The flexible cord must be Type H05VV-F 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.	
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.	
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.	

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# 10 Recycling

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

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

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