



## HP 14 Laptop PC

**Maintenance and Service Guide**  
**IMPORTANT! This document is intended for HP**  
**authorized service providers only.**

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### **Product notice**

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

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

### **Software terms**

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

## Safety warning notice

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

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# 1 Product description

Category	Description
<b>Product Name</b>	<b>HP 14 Laptop PC</b>
	Model numbers:
	World Wide 14-cf0xxx, 14-cf1xxx
	China & India LFR: 14s-cf0xxx, 14s-cf1xxx
	China & India IT Mall: 14s-cr0xxx, 14s-cr1xxx
	China & India OLS: 14s-cs0xxx, 14s-cs1xxx
	EMEA MM: 14-ma0xxx
	Windows 10 S: 14-df0xxx
	CTO model number: 14t-cf000, 14t-cf100
	CTO Model for Windows 10 S:14t-df000
<b>Processor</b>	<b>8th-generation Intel® Core™ processors:</b>
	i7-8565U 1.80-GHz (SC turbo up to 4.60 GHz) quad-core processor (8.0 MB L3 cache, 2400 MHz FSB, 15 W)
	i7-8550U 1.80-GHz (SC turbo up to 4.00 GHz) quad core processor (8.0 MB L3 cache, 2400 MHz FSB, 15 W)
	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)
	i5-8250U 1.60-GHz (SC turbo up to 3.40 GHz) quad core processor (6.0 MB L3 cache, 2400 MHz FSB, 15 W)
	i3-8130U 2.26 GHz dual core processor (4 MB L3 cache, 2400 MHz FSB, 15W)
	<b>7th-generation Intel Core processors:</b>
	i3-7100U 2.30-GHz dual core processor (3.0-MB L3 cache, 2133-MHz FSB, 15 W)
	i3-7020U 2.40-GHz dual core processor (3.0-MB L3 cache, 2133-MHz FSB, 15 W)
	<b>Intel Pentium® and Celeron® processors:</b>
	Intel Pentium Silver N5000
	Intel Celeron N4000
<b>Graphics</b>	Supports HD decode, DX12, and HDMI
	<b>Internal graphics:</b>
	Intel UHD Graphics 620 (8th generation Intel processors)
	Intel UHD Graphics 605 (Intel Pentium processors)
	Intel UHD Graphics 600 (Intel Celeron processors)
	Intel HD Graphics 620 (7th generation Intel processors)
	<b>External graphics:</b> (Intel Core processors)
	AMD Radeon 530 with 4 GB of dedicated video memory

Category	Description
	AMD Radeon 530 with 2 GB of dedicated video memory
	Supports MR Ready (min. requirements: i7/i5 processors, UHD 620/HD 620 graphics)
<b>Panel</b>	<b>35.6-cm (14.0-in), WLED, eDP, slim-flat (3.0 mm), 16:9 ultra wide aspect ratio, narrow bezel, non-touch, 220 nits:</b>
	High definition (HD)(1366×768), BrightView, SVA
	HD (1366×768), anti glare, SVA
	Full high-definition (FHD) (1920×1080), anti glare, UWVA
	FHD (1920×1080), BrightView, UWVA
	FHD (1920×1080), anti glare, SVA 45
<b>Memory</b>	<b>Two memory module slots</b> (Intel Core processors):
	Memory is non-customer accessible/non-upgradeable
	DDR4-2666 bridge to DDR4-2400 dual channel support (i7-8565U, i5-8265U processors)
	DDR4-2400 dual channel support (i7-8500U, i5-8250U i3-8130U processors)
	DDR4-2133 dual channel support (i3-7100U, i3-7020U processors)
	Supports up to 16 GB of system RAM in the following configurations:
	<ul style="list-style-type: none"> <li>• 16384 MB (8192 MB×2)</li> <li>• 12288 MB (8192 MB×1 + 4096 MB×1)</li> <li>• 8192 MB (8192 MB×1 + 4096×2)</li> <li>• 4096 MB (4096 MB×1 or 2048×2)</li> </ul>
	<b>One memory module slot</b> (Intel Pentium and Celeron processors):
	Memory is non-customer accessible/non-upgradeable
	DDR4-2400 single channel support
	Supports up to 8 GB of system RAM in the following configurations:
	<ul style="list-style-type: none"> <li>• 8192 MB (8192 MB×1)</li> <li>• 4096 MB (4096 MB×1)</li> </ul>
<b>Primary storage</b>	<b>Single hard drive configurations, 6.35 cm (2.5-in), 7.0/7.2 mm, SATA hard drives:</b>
	1 TB, 5400 rpm, 7.2 mm
	500 GB, 5400 rpm, 7.0 mm
	<b>M.2, SATA-3, TLC, solid-state drives:</b>
	256 GB
	128 GB
	<b>PCIe, NVMe, M.2 solid-state drives</b> (Intel Core processors):
	512 GB
	256 GB
	<b>Dual storage configurations</b> (Intel Core processors):

Category	Description
	256 GB, PCIe, solid-state drive + 1 TB, 5400 rpm hard drive
	128 GB, SATA-3, TLC, solid-state drive + 1 TB, 5400 rpm hard drive
	16 GB Optane memory module + 1 TB, 5400 rpm hard drive
	<b>eMMC configurations</b> (Pentium and Celeron processors):
	64 GB
<b>Camera</b>	<b>HP TrueVision HD Camera</b> - indicator LED, USB2.0, HD BSI sensor, f2.0
	720p by 30 frames per second
	Single digital microphone
<b>Audio</b>	<b>Audio Application Name:</b> HP Audio Control
	Dual speakers
<b>Ethernet</b>	Ethernet Integrated 10/100/1000 NIC
<b>Wireless networking</b>	Compatible with Miracast-certified devices
	<b>Integrated Wireless options with dual antennas (M.2/PCIe):</b>
	Intel Dual band wireless-AC 3168 802.11AC 1×1 WiFi + Bluetooth 4.2 Combo Adaptor (non-vPro)
	Realtek RTL8822BE 802.11 ac 2×2 WiFi + Bluetooth 4.2 Combo Adapter (MU-MIMO supported)
	<b>Integrated Wireless options with single antenna (M.2/PCIe):</b>
	Intel Dual Band Wireless-AC 9461 802.11 AC 1×1 WiFi + BT5 Combo Adapter (non-vPro) (MU-MIMO supported)
	Realtek RTL8821CE 802.11 ac 1×1 WiFi + Bluetooth 4.2 Combo Adapter (MU-MIMO supported)
	Realtek RTL8723DE 802.11 bgn 1×1 WiFi + Bluetooth 4.2 Combo Adapter
<b>External media cards</b>	<b>HP Multi-Format Digital Media Card Reader</b>
	Supports SD/SDHC/SDXC
	Push-pull insertion/removal
<b>Internal card expansion</b>	One M.2 slot for solid-state drive (Intel Core processors)
	One M.2 slot for WLAN
<b>Ports</b>	Hot plug/unplug and auto detect for correct output to wide-aspect vs. standard aspect video (auto adjust panel resolution to fit embedded panel and external monitor connected)
	HDMI v1.4 supporting: up to 1920×1080 @ 60Hz
	USB Type-C 3.1 Gen1 port (left side)
	(2) USB Type-A 3.1 Gen 1 ports (right side)
	RJ-45/Ethernet
	Audio-out (headphone)/audio-in (microphone) combo jack
	AC Smart Pin adapter plug
<b>Keyboard/pointing devices</b>	<b>Keyboard:</b>
	Full-size, textured, island-style keyboard (snow flake white, ash silver)
	Full-size, two coat paint, backlit, island-style keyboard (ash silver)

Category	Description
	Full-size, two coat paint, island-style keyboard (ash silver)
	Full-size, four coat paint, island-style keyboard (snow flake white)
	Full-size, four coat paint, backlit, island-style keyboard (snow flake white)
	<b>TouchPad:</b>
	Multitouch gestures enabled
	Support Modern Trackpad Gestures
	Taps enabled by default
<b>Power requirements</b>	<b>Battery:</b>
	3-cell, 41 Whr, li-ion
	Supports battery fast charge, 90 mins/90% charge
	<b>AC adapter, standard barrel:</b>
	65 W Smart, nPFC, right angle, 4.5 mm (models with discrete graphics)
	65 W Smart, nPFC, 4.5 mm, EM
	45 W Smart, nPFC, right angle, 4.5 mm (models with UMA graphics)
	45 W Smart, nPFC, 4.5 mm, for use in Argentina (models with UMA graphics)
	<b>Power cord (C5):</b>
	1 m, conventional
<b>Security</b>	Kensington Mini Security Slot
	Supports firmware-based Trusted Platform Module (fTPM) 2.0
<b>Operating system</b>	FreeDOS 2.0
	Windows 10 Home 64
	Windows 10 Home 64 Chinese Market CPPP
	Windows 10 Home 64 High-End Chinese Market CPPP
	Windows 10 Home 64 Plus
	Windows 10 Home 64 Plus Single Language
	Windows 10 Home 64 Plus Single Language APAC EM PPP
	Windows 10 Home 64 Plus Single Language India Market PPP
	Windows 10 Home 64 Plus Single Language Indonesia Market PPP
	Windows 10 Home 64 Plus Web/Kiosk
	Windows 10 Home 64 Single Language
	Windows 10 Home 64 Single Language APAC EM PPP
	Windows 10 Home 64 Single Language India Market PPP
	Windows 10 Home 64 Single Language Indonesia Market PPP
	Windows 10 Home 64 Single Language Value APAC EM PPP

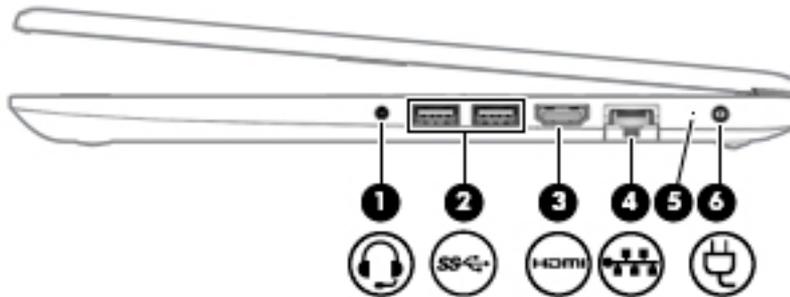
<b>Category</b>	<b>Description</b>
	Windows 10 Home 64 Single Language Value India Market PPP
	Windows 10 Home 64 Single Language Value Indonesia Market PPP
	Windows 10 Home 64 Value Notebook Compact
	Windows 10 Home 64 Value Notebook Compact Web/Kiosk
	Windows 10 Home 64 Value Notebook Single Language
	Windows 10 Home 64 Value Notebook Single Language Compact
	Windows 10 Home 64 Value Notebook Single Language SEAP
	Windows 10 Home 64 Value Notebook Single Language select GEO
	Windows 10 Home 64 Value Notebook Single Language select GEO Compact
	Windows 10 Home 64 Web/Kiosk
	Windows 10 Home S 64
	Windows 10 Home S 64 Web/Kiosk
	Windows 10 Home S 64 Value Compact
	Windows 10 Home S 64 Value Compact Web/Kiosk
	Windows 10 Pro 64
<b>Serviceability</b>	<b>End user replaceable parts:</b>
	AC adapter



## 2 Getting to know your computer

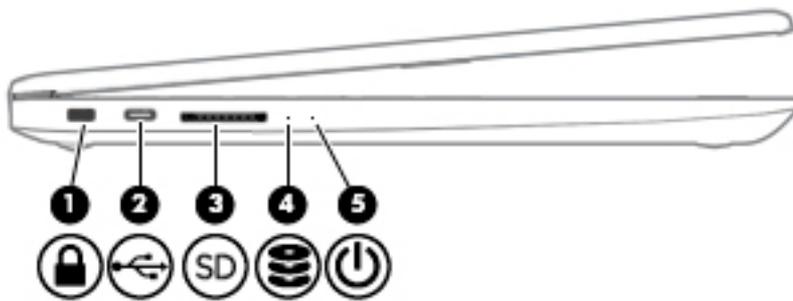
Your computer features top-rated components. This chapter provides details about your components, where they are located, and how they work.

### Right side



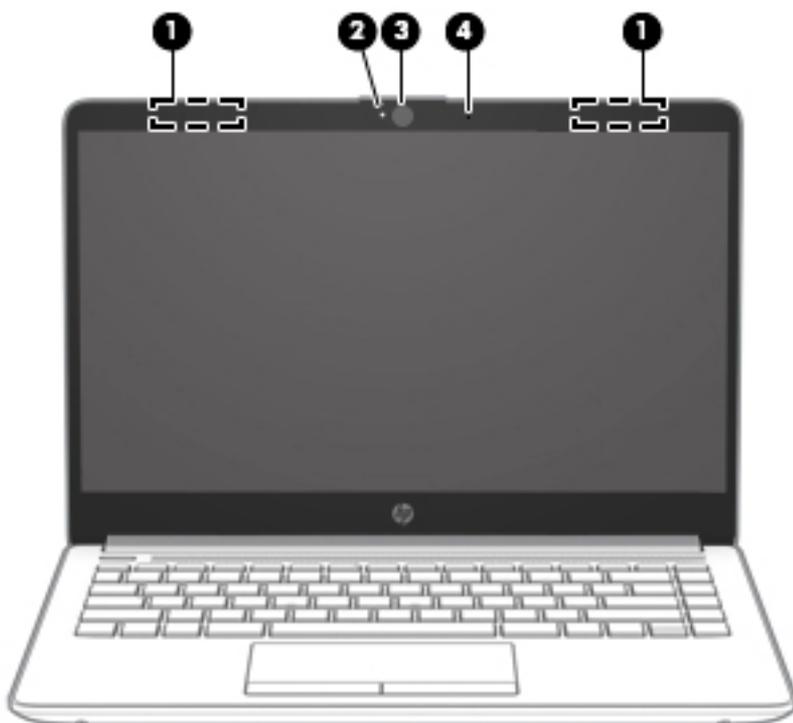
Component	Description
(1)  Audio-out (headphone)/ Audio-in (microphone) combo jack	Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. This jack does not support optional standalone microphones.  <b>WARNING!</b> To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, see the <i>Regulatory, Safety, and Environmental Notices</i> .  To access this guide: <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> <b>NOTE:</b> When a device is connected to the jack, the computer speakers are disabled.
(2)  USB SuperSpeed ports (2)	Connect a USB device, such as a cell phone, camera, activity tracker, or smartwatch, and provide high-speed data transfer.
(3)  HDMI port	Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component, or a high-speed High-Definition Multimedia Interface (HDMI) device.
(4)  RJ-45 (network) jack/status lights	Connects a network cable. <ul style="list-style-type: none"><li>• White: The network is connected.</li><li>• Amber: Activity is occurring on the network.</li></ul>
(5) 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>
(6)  Power connector	Connects an AC adapter.

## Left side



Component	Description
(1)  Security cable slot	Attaches an optional security cable to the computer. <b>NOTE:</b> The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.
(2)  USB Type-C port	Connects a USB device, such as a cell phone, camera, activity tracker, or smartwatch, and provides data transfer. <b>NOTE:</b> Cables and/or adapters (purchased separately) may be required.
(3)  Memory card reader	Reads optional memory cards that enable you to store, manage, share, or access information. To insert a card: <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> To remove a card: <ul style="list-style-type: none"><li>▲ Press in on the card, and then remove it from the memory card reader.</li></ul>
(4)  Drive light	<ul style="list-style-type: none"><li>• Blinking white: The storage device is being accessed.</li></ul>
(5)  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>

# Display



Component	Description
(1) WLAN antennas*	Send and receive wireless signals to communicate with wireless local area networks (WLANs).
(2) Camera light	On: One or more cameras are in use.
(3) Camera	Allows you to video chat, record video, and record still images. Some cameras also allow a facial recognition logon to Windows, instead of a password logon. <b>NOTE:</b> Camera functions vary depending on the camera hardware and software installed on your product.
(4) Internal microphone	Records sound.

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

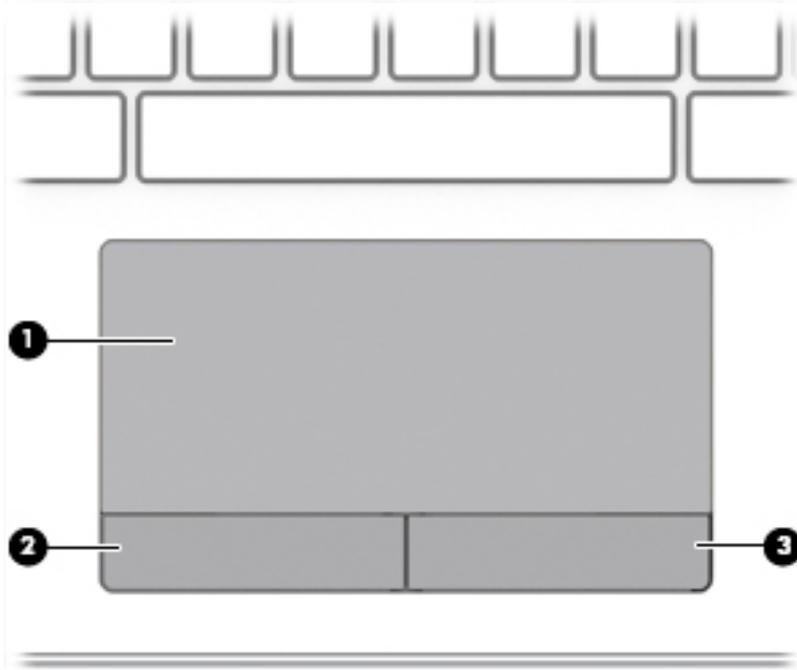
For wireless regulatory notices, see the section of the *Regulatory, Safety, and Environmental Notices* that applies to your country or region.

To access this guide:

- ▲ Select the **Start** button, select **HP Help and Support**, and then select **HP Documentation**.

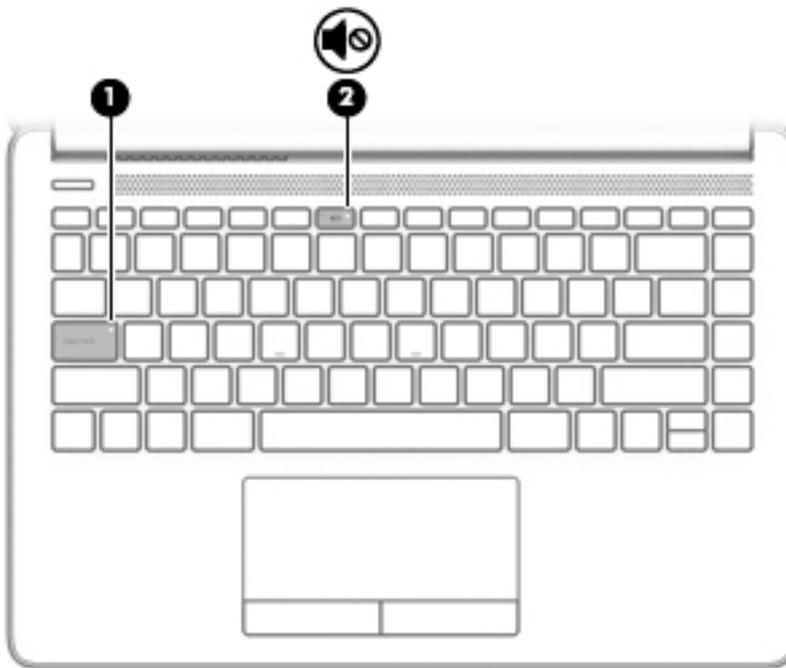
# Keyboard area

## TouchPad



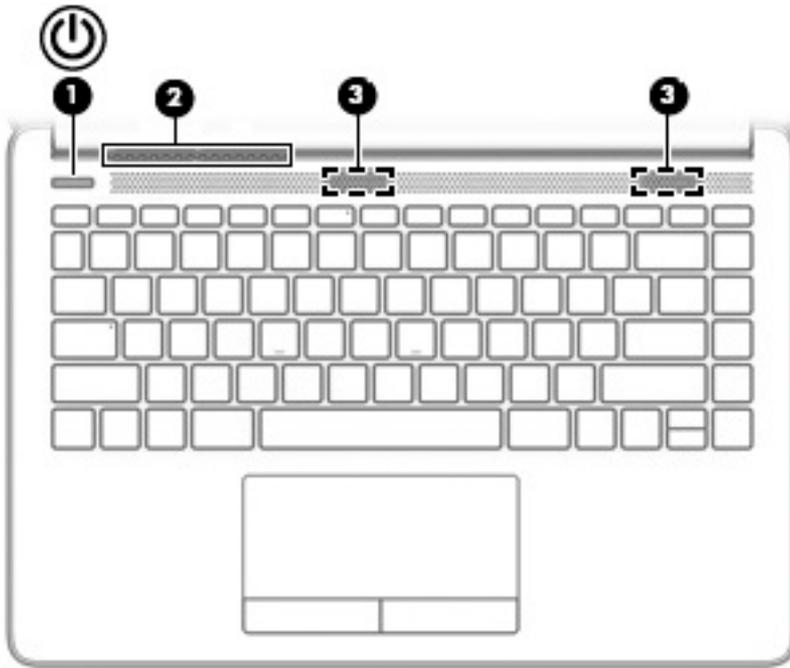
Component		Description
(1)	TouchPad zone	Reads your finger gestures to move the pointer or activate items on the screen.
(2)	Left TouchPad button	Functions like the left button on an external mouse.
(3)	Right TouchPad button	Functions like the right button on an external mouse.

## Lights



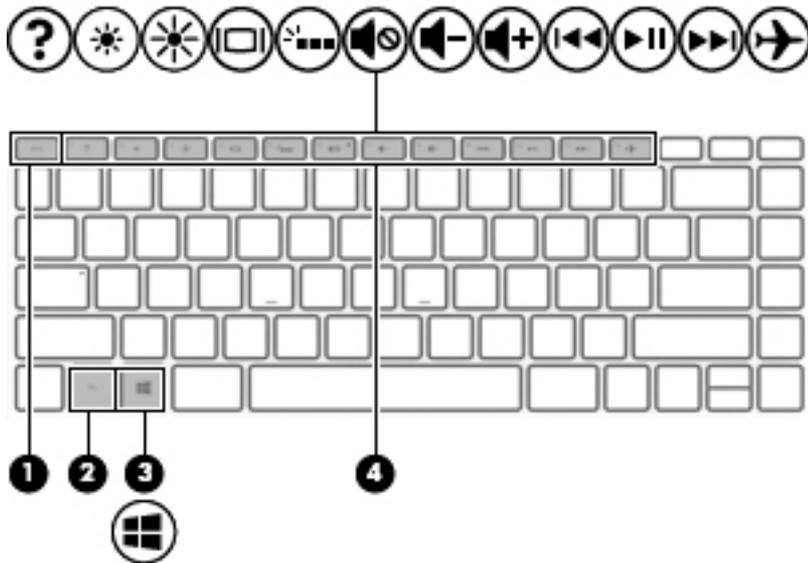
Component	Description
(1) Caps lock light	On: Caps lock is on, which switches the key input to all capital letters.
(2)  Mute light	<ul style="list-style-type: none"><li>• On: Computer sound is off.</li><li>• Off: Computer sound is on.</li></ul>

## Button, vent, and speakers



Component	Description
<p>(1)  Power button</p>	<ul style="list-style-type: none"><li>• When the computer is off, press the button to turn on the computer.</li><li>• When the computer is on, press the button briefly to initiate Sleep.</li><li>• When the computer is in the Sleep state, press the button briefly to exit Sleep.</li><li>• When the computer is in Hibernation, press the button briefly to exit Hibernation.</li></ul> <p><b>CAUTION:</b> Pressing and holding down the power button 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>
<p>(2) Vent</p>	<p>Enables airflow to cool internal components.</p> <p><b>NOTE:</b> The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.</p>
<p>(3) Speakers (2)</p>	<p>Produce sound.</p>

## 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 Start menu. <b>NOTE:</b> Pressing the Windows key again will close the Start 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.

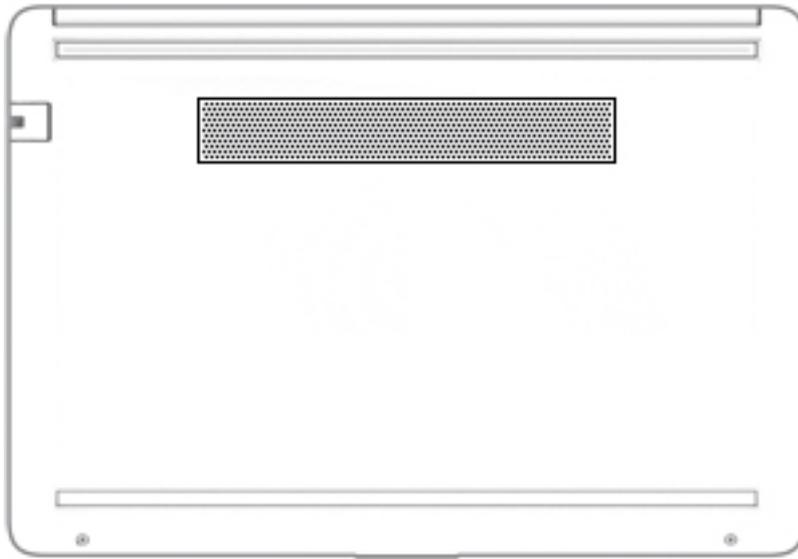
## Action keys

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 13](#).

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

Icon	Description
	Opens the “How to get help in Windows 10” webpage.
	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. To conserve battery power, turn off this feature.
	Mutes or restores speaker sound.
	Decreases speaker volume incrementally while you hold down the key.
	Increases speaker volume incrementally while you hold down the key.
	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.
	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. <b>NOTE:</b> A wireless network must be set up before a wireless connection is possible.

## Bottom



Component	Description
Vent	Enables airflow to cool internal components. <b>NOTE:</b> The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.

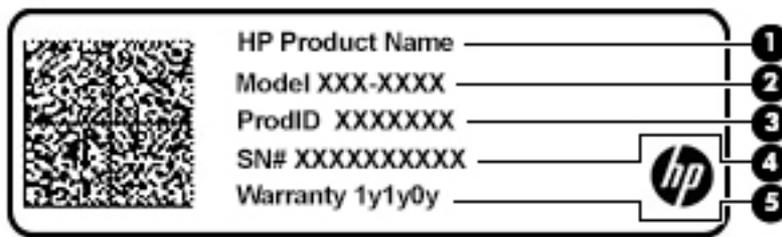
# Labels

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.

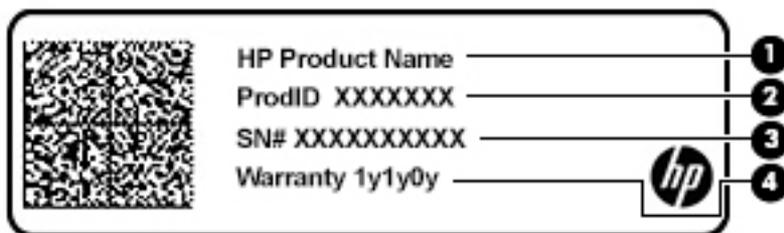
- Service label—Provides important information to identify your computer. When contacting support, you may be asked for the serial number, the product number, or the model number. Locate this information before you contact support.

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

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**Component**

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**(3)** Serial number

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**(4)** Warranty period

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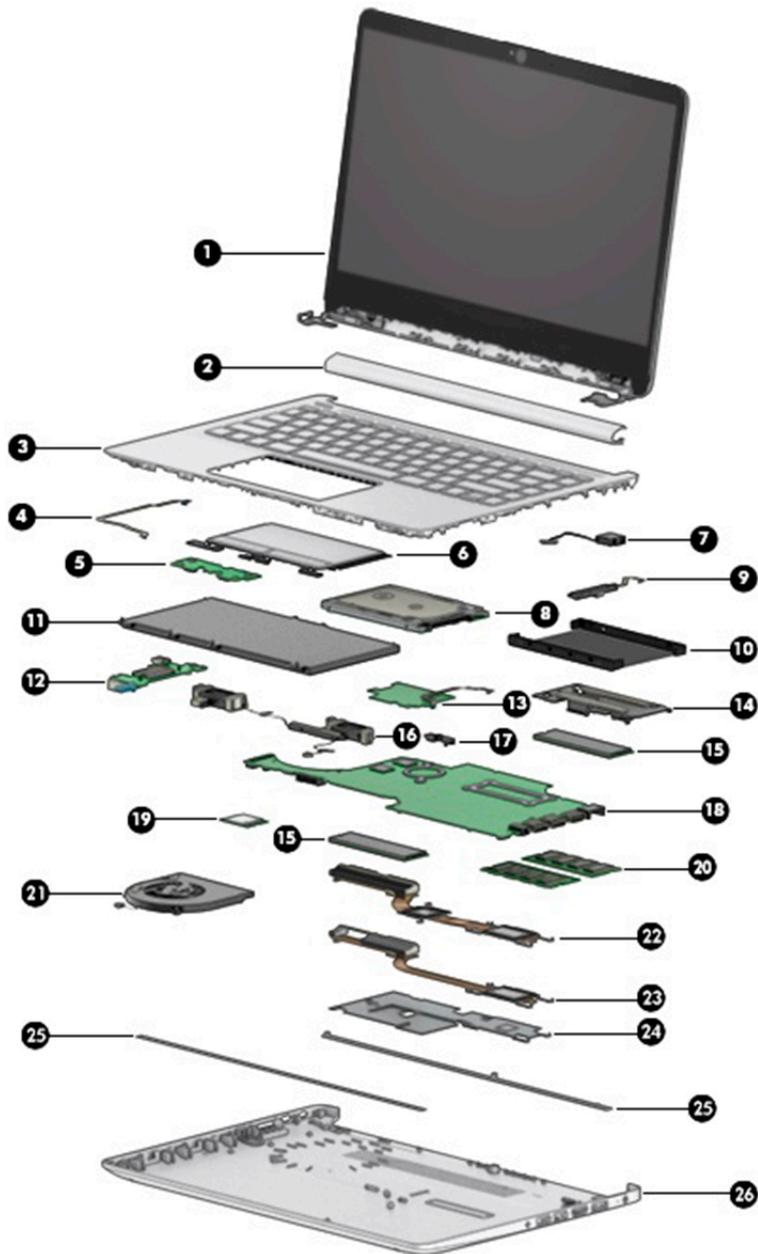
- Regulatory label(s)—Provide(s) regulatory information about the computer.
- Wireless certification label(s)—Provide(s) information about optional wireless devices and the approval markings for the countries or regions in which the devices have been approved for use.



# 3 Illustrated parts catalog

## Computer major components

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

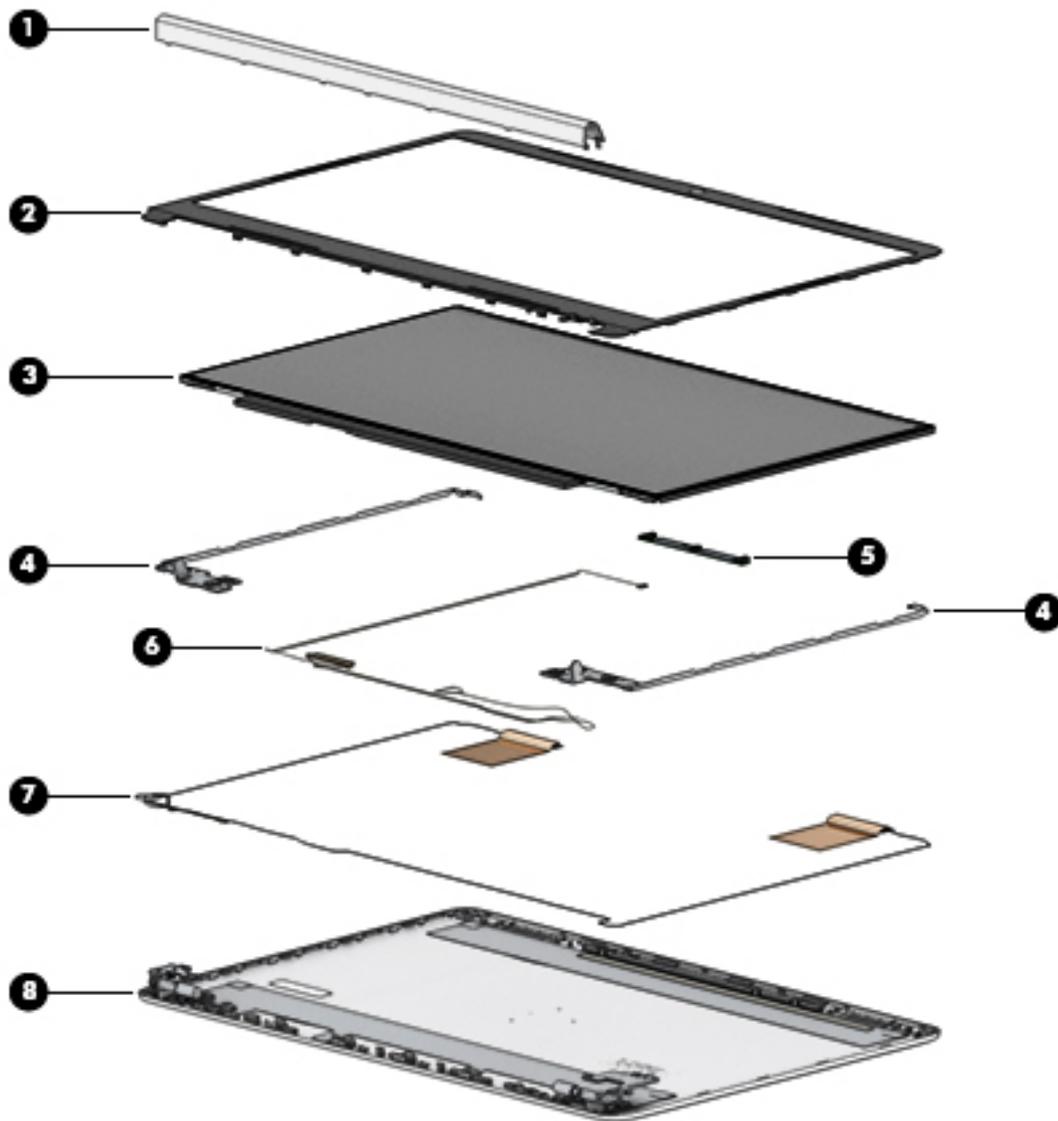


Item	Component	Spare part number
(1)	<b>Display assembly</b> (14 inch) <b>NOTE:</b> Displays are only spared at the subcomponent level. For display assembly spare part information, see <a href="#">Display assembly subcomponents on page 23</a> .	
(2)	<b>Hinge cover</b> <b>NOTE:</b> For hinge cover spare part information, see <a href="#">Display assembly subcomponents on page 23</a> .	
	Natural silver	L24474-001
	Pale gold	L24471-001
	Snow flake white	L24472-001
	Tranquil pink	L24473-001
(3)	<b>Top cover/keyboard</b> (includes TouchPad and TouchPad top mylar; does not include TouchPad board or TouchPad click board) <b>NOTE:</b> For a detailed list of keyboard country codes, see <a href="#">Top cover/keyboard on page 64</a> .	
	Ash silver, not backlit	L24818-xx1
	Ash silver, backlit	L24817-xx1
	Snow flake white, backlit	L24819-xx1
	Snow flake white, not backlit	L24820-xx1
(4)	<b>TouchPad board cable</b>	L23184-001
(5)	<b>TouchPad board</b>	L24484-001
(6)	<b>TouchPad click board</b> <b>NOTE:</b> The TouchPad click board cable is available using spare part number L24485-001.	L24486-001
(7)	<b>Power connector</b>	L23188-001
(8)	<b>Hard drive</b> (does not include bracket)	
	1-TB, 5400-rpm, 7 mm	762990-005
	500-GB, 5400-rpm, 7 mm	778186-005
(9)	<b>Hard drive cable</b>	L23187-001
(10)	<b>Hard drive bracket</b>	L24490-001
(11)	<b>Battery</b> , 3 cell, 41 Whr, 3.6 Ah Li-ion	L11119-855
(12)	<b>USB board</b>	L24483-001
	<b>USB board cable</b> (not illustrated)	L23186-001
(13)	<b>eMMC board</b> (use for 2nd solid-state drive installation)	L23397-001
(14)	<b>Solid-state drive bracket</b> , not shown	L24488-001
	<b>Solid-state drive board</b>	L24487-001
(15)	<b>Solid-state drive</b>	
	PCIe:	
	• 512 GB	L25984-001

Item	Component	Spare part number
	<ul style="list-style-type: none"> <li>256 GB</li> </ul>	L25983-001
	SATA-3, TLC:	
	<ul style="list-style-type: none"> <li>256 GB</li> </ul>	L25982-001
	<ul style="list-style-type: none"> <li>128 GB</li> </ul>	L25981-001
	<b>Optane memory module, 16 GB</b>	L34406-001
<b>(16)</b>	<b>Speakers</b>	L24489-001
<b>(17)</b>	<b>System board hook</b>	L23206-001
<b>(18)</b>	<p><b>System board</b> (includes replacement thermal materials)</p> <p>All system boards use the following part numbers:</p> <p>xxxxxx-001: non-Windows operating system</p> <p>xxxxxx-601: Windows operating system</p> <p>For use in models with discrete graphics:</p> <ul style="list-style-type: none"> <li>Intel Core i3-7020U processor and 2 GB of dedicated video memory</li> <li>Intel Core i5-8250U processor and 2 GB of dedicated video memory</li> <li>Intel Core i5-8265U processor and 2 GB of dedicated video memory</li> <li>Intel Core i7-8550U processor and 2 GB of dedicated video memory</li> <li>Intel Core i7-8550U processor and 4 GB of dedicated video memory</li> <li>Intel Core i7-8565U processor and 2 GB of dedicated video memory</li> </ul> <p>For use in models with UMA graphics:</p> <ul style="list-style-type: none"> <li>Intel Core i5-8265U processor</li> <li>Intel Core i5-8250U processor</li> <li>Intel Core i3-8130U processor</li> <li>Intel Core i3-7100U processor</li> <li>Intel Core i3-7020U processor</li> <li>Intel Pentium N5000 processor</li> <li>Intel Pentium N5000 processor with 64 GB eMMC</li> <li>Intel Celeron N4000 processor</li> <li>Intel Celeron N4000 processor with 64 GB eMMC</li> </ul>	
<b>(19)</b>	<p><b>WLAN</b></p> <p>Dual antenna:</p> <ul style="list-style-type: none"> <li>Intel Dual band wireless-AC 3168 802.11AC 1×1 WiFi + BT 4.2 Combo Adaptor (non-vPro)</li> <li>Realtek RTL8822BE 802.11 ac 2×2 WiFi + BT 4.2 Combo Adapter (MU-MIMO supported)</li> </ul> <p>Single antenna:</p> <ul style="list-style-type: none"> <li>Realtek RTL8821CE 802.11 ac 1×1 WiFi + BT 4.2 Combo Adapter (MU-MIMO supported)</li> </ul>	
		863934-855
		924813-855
		L17365-005

Item	Component	Spare part number
	<ul style="list-style-type: none"> <li>Realtek RTL8723DE 802.11 bgn 1×1 WiFi + BT 4.2 Combo Adapter</li> </ul>	L21480-005
	<ul style="list-style-type: none"> <li>Intel Dual Band Wireless-AC 9461 802.11 AC 1×1 WiFi + Bluetooth 5 Combo Adapter (non-vPro) (MU-MIMO supported)</li> </ul>	L25889-005
<b>(20)</b>	<b>Memory module</b>	
	4 GB	862397-859
	8 GB	862398-855
<b>(21)</b>	<b>Fan</b> , for discrete systems	L23189-001
	<b>Fan insert</b> , plastic placeholder for UMA fanless systems (not shown)	L31017-001
<b>(22)</b>	<b>Heat sink assembly</b> , discrete, (includes replacement thermal materials)	L23192-001
<b>(23)</b>	<b>Heat sink assembly</b> , UMA (includes replacement thermal materials)	L23191-001
<b>(24)</b>	<b>Heat sink assembly</b> , for fanless systems (includes replacement thermal materials)	L23190-001
<b>(25)</b>	<b>Rubber Feet</b> (includes front and rear feet)	
	Natural silver	L24482-001
	Pale gold	L24479-001
	Snow flake white	L24480-001
	Tranquil pink	L24481-001
<b>(26)</b>	<b>Bottom cover</b>	
	Natural silver	L24478-001
	Pale gold	L24475-001
	Snow flake white	L24476-001
	Tranquil pink	L24477-001

## Display assembly subcomponents



Item	Component	Spare part number
(1)	<b>Hinge cover</b>	
	Natural silver	L24474-001
	Pale gold	L24471-001
	Snow flake white	L24472-001
	Tranquil pink	L24473-001
(2)	<b>Display bezel</b>	L24465-001
(3)	<b>Raw display panel (14 inch)</b>	
	FHD, anti-glare, WLED UWVA	L25977-001
	FHD, BrightView, WLED UWVA	L25978-001

Item	Component	Spare part number
	HD, anti-glare, WLED SVA	L25979-001
	HD, BrightView, WLED SVA	L25980-001
<b>(4)</b>	<b>Hinges</b> (left and right)	L24470-001
<b>(5)</b>	<b>Webcam/microphone module</b>	L23237-001
<b>(6)</b>	<b>Display cable</b>	
	HD display	L24492-001
	FHD display	L24493-001
<b>(7)</b>	<b>Antennas</b>	
	Dual	L24640-001
	Single	L29012-001
<b>(8)</b>	<b>Display enclosure</b>	
	Natural silver	L24469-001
	Pale gold	L24466-001
	Snow flake white	L24467-001
	Tranquil pink	L24468-001

## Miscellaneous parts

Component	Spare part number
<b>Adhesive tape kit</b>	L24491-001
<b>HP Smart AC adapter</b>	
45 W, RC 4.5 mm, NPFC, non-slim	741727-001
45 W, NPFC, SB 4.5 RA - Argentina	741553-852
65 W, NPFC, S-3P 4.5 mm	710412-001
65 W, NPFC, RC 4.5 mm, EM	913691-850
65 W, NPFC, SB 4.5 RA - Argentina	710340-850
<b>Power cord</b> (3-pin, black, 1.0-m) for use in:	
For use in Argentina	L19357-001
For use in Australia	L19358-001
For use in Denmark	L19360-001
For use in Europe	L19361-001
For use in India	L19363-001
For use in Israel	L19362-001
For use in Italy	L19364-001

<b>Component</b>	<b>Spare part number</b>
For use in Japan	L19365-001
For use in North America	L19367-001
For use in the People's Republic of China	L19368-001
For use in South America	L19369-001
For use in South Korea	L19366-001
For use in Switzerland	L19370-001
For use in Thailand	L19371-001
For use in Taiwan	L19372-001
For use in the United Kingdom	L19373-001
<b>HP HDMI-to-VGA adapter</b>	701943-001
<b>Screw Kit</b>	L24494-001



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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
- Pick
- Tweezers

## Service considerations

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

---

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

---

## Plastic parts

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

---

## Cables and connectors

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

---

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

## Drive handling

---

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

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

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

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

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

Avoid dropping drives from any height onto any surface.

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

Avoid exposing 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.

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

---

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

---

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

## Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

## Workstation guidelines

Follow these grounding workstation guidelines:

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

## Equipment guidelines

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

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

The following grounding equipment is recommended to prevent electrostatic damage:

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

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

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

# 5 Removal and replacement procedures for Authorized Service Provider parts

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

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

## Component replacement procedures

 **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.

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

There are as many as 58 screws that must be removed, replaced, or loosened when servicing Authorized Service Provider only parts. Make special note of each screw size and location during removal and replacement.

## Computer feet

Description	Spare part number
<b>Computer feet (included in the rubber kit)</b>	
Natural silver	L24482-001
Pale gold	L24479-001
Snow flake white	L24480-001
Tranquil pink	L24481-001

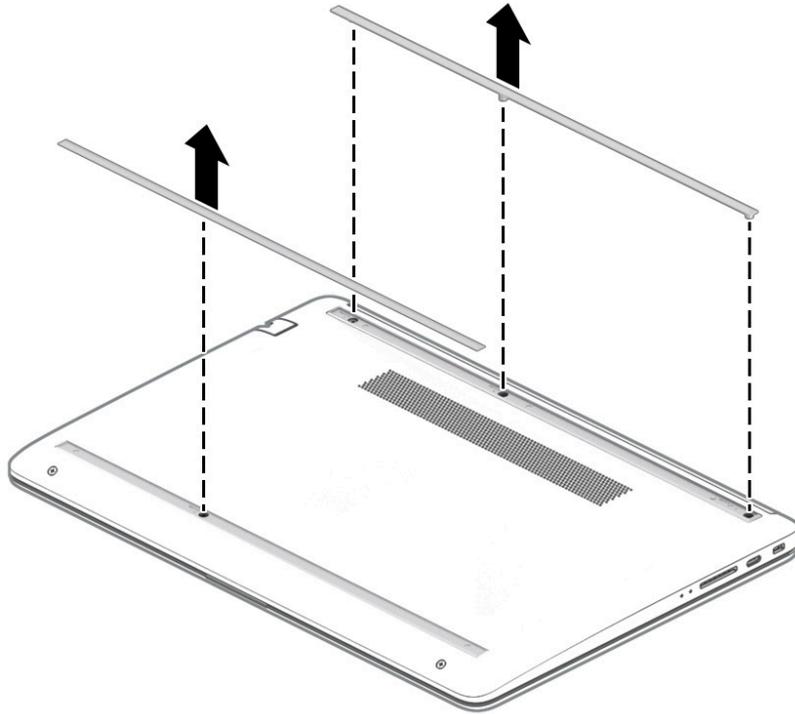
Before replacing the computer feet, follow these steps:

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

Remove the computer feet:

1. Close the computer and position it upside down, with the front toward you.
2. Insert a tool with no sharp edges between the base enclosure and one end of the rubber feet.

3. Pull up the rubber feet lightly and quickly.



To install the rubber feet, refit them on the adhesive backing.



**NOTE:** The bottoms of the computer feet are ribbed. These ribs are designed to fit only one way in the grooves that are in the enclosure. Make sure the feet are positioned in those grooves when reinstalling the feet.

## Bottom cover

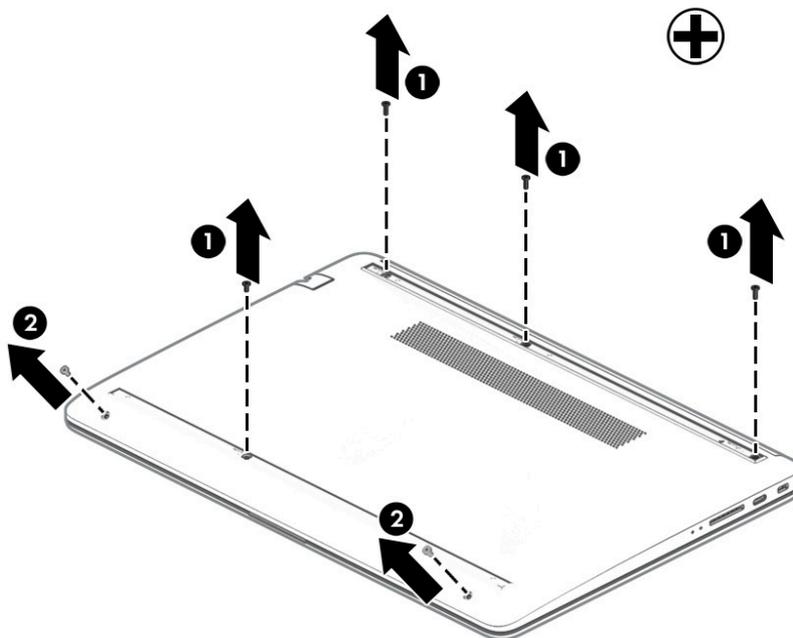
Description	Spare part number
<b>Bottom cover for use in models of the following colors:</b>	
Natural silver	L24478-001
Pale gold	L24475-001
Snow flake white	L24476-001
Tranquil pink	L24477-001

Before removing the bottom cover, follow these steps:

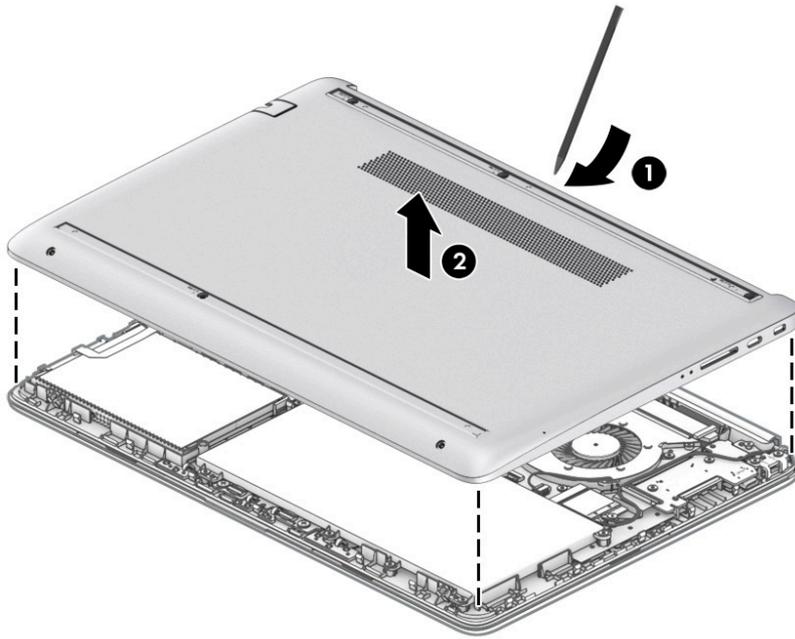
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Position the computer upside down with the front toward you.
5. Remove the rubber feet (see [Computer feet on page 31](#)).

To remove the bottom cover:

1. Remove the four M2.5\*6 Phillips head screws **(1)** in the feet area, and then two M2.5\*4 Phillips head screws **(2)** in the front part of the bottom cover.



2. Use a thin plastic tool **(1)** to release the back cover. Work your way around prying to disengage the bottom cover from the computer, and then remove the cover **(2)**.



Reverse this procedure to install the bottom cover.

## Battery

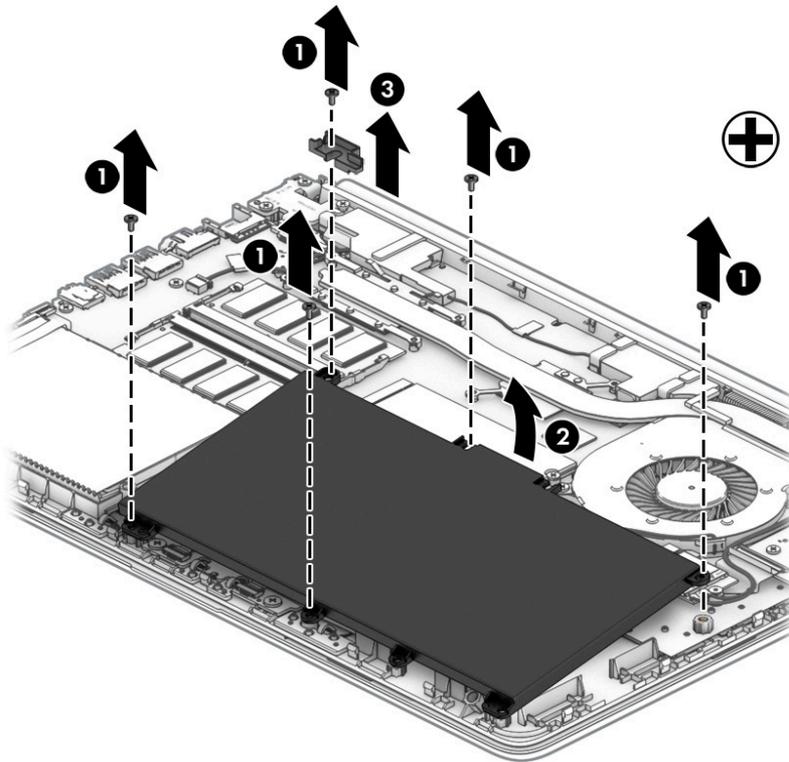
Description	Spare part number
Battery, 3 cell, 41 Whr, 3.6 Ah Li-ion	L11119-855
System board hook	L23206-001

Before removing the battery, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Position the computer upside down with the front toward you.
5. Remove the rubber feet (see [Computer feet on page 31](#)).
6. Remove the bottom cover (see [Bottom cover on page 33](#)).

To remove the battery:

1. Remove the five screws (1) securing the battery.
2. Lift the top of the battery (2), and then remove the system board hook (3).



Reverse this procedure to install the battery.

## Hard drive



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

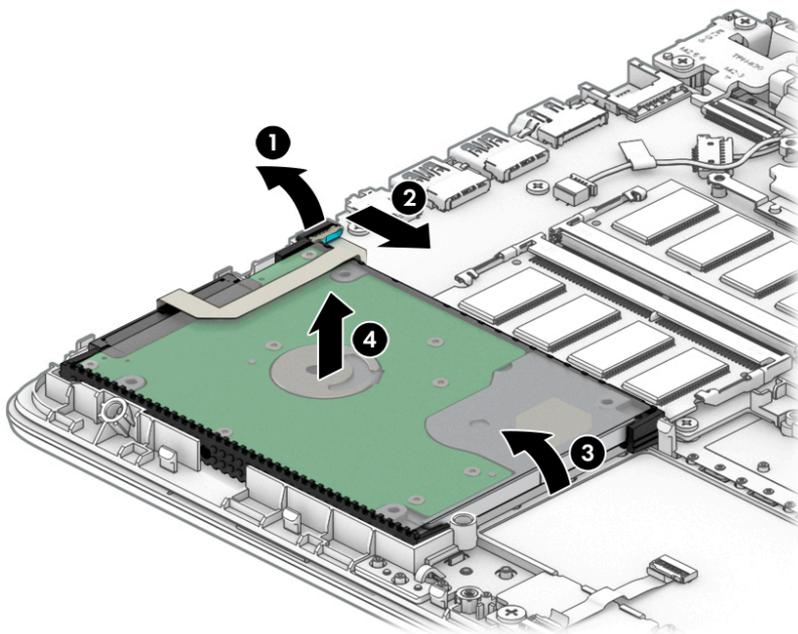
Description	Spare part number
Hard drive, 1 TB, 5400 rpm, 7 mm	762990-005
Hard drive, 500 GB, 5400 rpm, 7 mm	778186-005
Hard drive cable	L23187-001
Hard drive bracket	L24490-001

Before removing the hard drive, follow these steps:

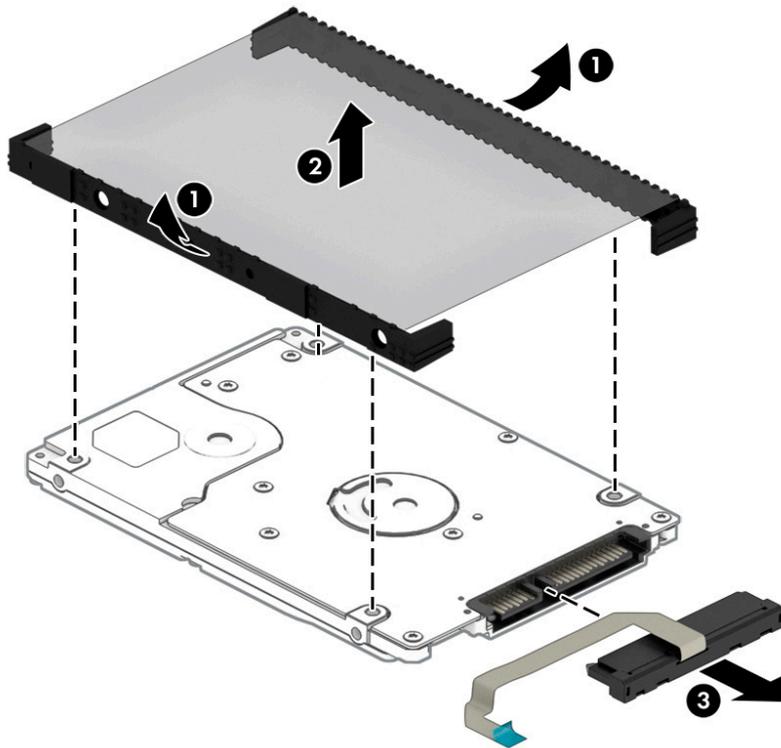
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the rubber feet (see [Computer feet on page 31](#)).
5. Remove the bottom cover (see [Bottom cover on page 33](#)).
6. Remove the battery (see [Battery on page 35](#)).

To remove the hard drive:

1. Disconnect the cable **(1)** from the system board and remove the cable **(2)**.
2. Lift the hard drive **(3)**, and then remove it **(4)** from the computer.



3. To remove the hard drive bracket, pull the holder sides **(1)** up and away from the hard drive, and then remove the bracket cover **(2)** from the hard drive.
4. To remove the hard drive connector, pull the connector **(3)** away from the hard drive.



Reverse this procedure to reassemble and install the hard drive.

## WLAN module

Description	Spare part number
<b>Dual Antenna</b>	
Intel Dual band wireless-AC 3168 802.11AC 1x1 WiFi + BT 4.2 Combo Adaptor (non-vPro)	863934-855
Realtek RTL8822BE 802.11 ac 2x2 WiFi + BT 4.2 Combo Adapter (MU-MIMO supported)	924813-855
<b>Single Antenna</b>	
Realtek RTL8821CE 802.11 ac 1x1 WiFi + BT 4.2 Combo Adapter (MU-MIMO supported)	L17365-005
Realtek RTL8723DE 802.11 bgn 1x1 WiFi + BT 4.2 Combo Adapter	L21480-005
Intel Dual Band Wireless-AC 9461 802.11 AC 1x1 WiFi + Bluetooth 5 Combo Adapter (non-vPro) (MU-MIMO supported)	L25889-005

 **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 support.

Before removing the WLAN module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the rubber feet (see [Computer feet on page 31](#)).
5. Remove the bottom cover (see [Bottom cover on page 33](#)).
6. Remove the battery (see [Battery on page 35](#)).

To remove the WLAN module:

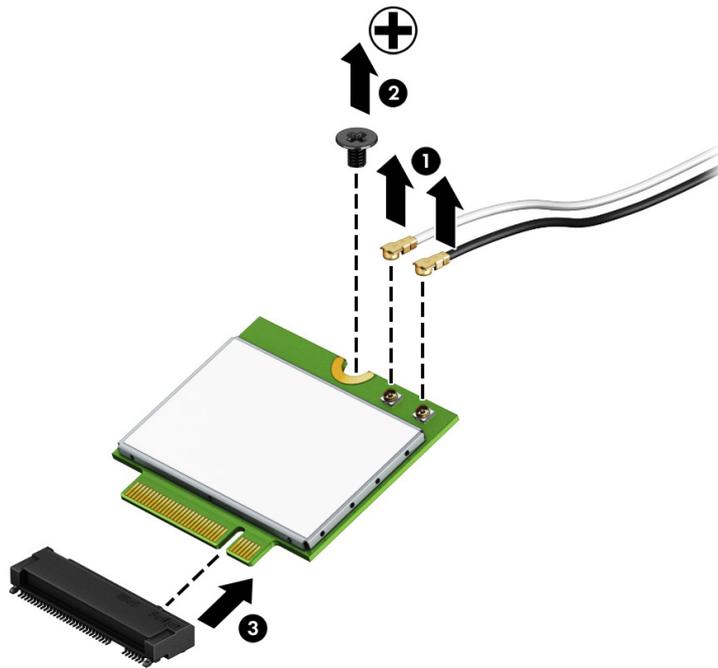
1. Disconnect the WLAN antenna cables **(1)** from the terminals on the WLAN module.



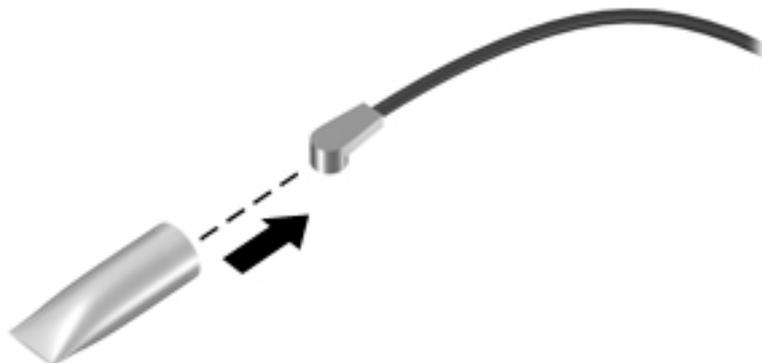
**NOTE:** The #1 WLAN antenna cable is connected to the WLAN module Main terminal. The #2 WLAN antenna cable is connected to the WLAN module Aux terminal.

2. Remove the Phillips PM2.0x3.0 screw **(2)** that secures the WLAN module to the system board. (The WLAN module tilts up.)

3. Remove the WLAN module by pulling the module away from the slot at an angle (3).



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



Reverse this procedure to install the WLAN module.

## Memory module

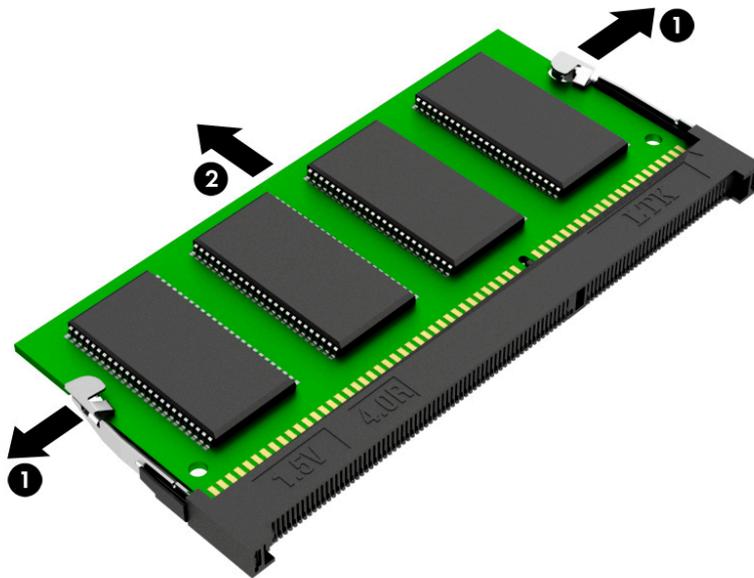
Description	Spare part number
SODIMM, 4 GB, 2400 MHz, 1.2 v, DDR4	862397-859
SODIMM, 8 GB, 2400 MHz, 1.2 v, DDR4	862398-855

Before removing a memory module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the rubber feet (see [Computer feet on page 31](#)).
5. Remove the bottom cover (see [Bottom cover on page 33](#)).
6. Remove the battery (see [Battery on page 35](#)).

To remove a memory module:

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



Reverse this procedure to install a memory module.

## Solid-state drive

Description	Spare part number
<b>Solid-state drive, PCIe:</b>	
<ul style="list-style-type: none"><li>512 GB</li></ul>	L25984-001
<ul style="list-style-type: none"><li>256 GB</li></ul>	L25983-001
<b>Solid-state drive, SATA-3, TLC:</b>	
<ul style="list-style-type: none"><li>256 GB</li></ul>	L25982-001
<ul style="list-style-type: none"><li>128 GB</li></ul>	L25981-001
<b>Optane memory module, 16 GB</b>	L34406-001
<b>Solid-state drive bracket</b>	L24488-001
<b>Solid-state drive board</b>	L24487-001

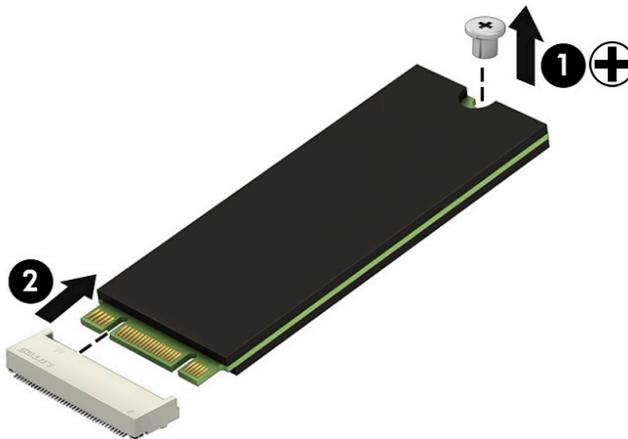
Before removing the solid-state drive, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Remove the rubber feet (see [Computer feet on page 31](#)).
4. Remove the bottom cover (see [Bottom cover on page 33](#)).
5. Remove the battery (see [Battery on page 35](#)).

Remove the solid-state drive:

1. Remove the Phillips PM2.0×2.0 screw **(1)** that secures the drive to the system board.
2. Remove the drive **(2)** by pulling it away from the connector.

 **NOTE:** Solid-state drives are designed with notches to prevent incorrect insertion.



Reverse this procedure to install the solid-state drive.

## Speakers

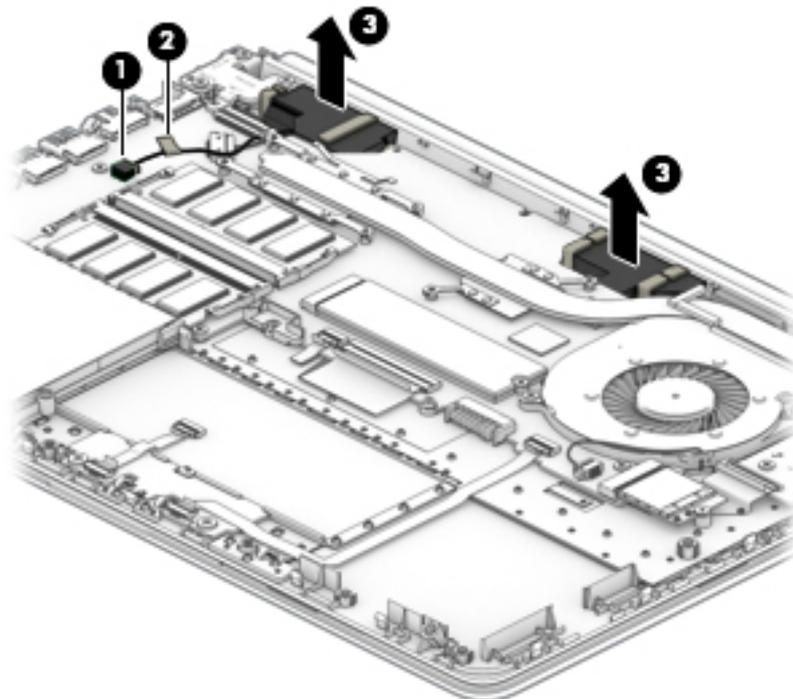
Description	Spare part number
Speakers (includes left and right speakers and cable)	926558-001

Before removing the speakers, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the rubber feet (see [Computer feet on page 31](#)).
5. Remove the bottom cover (see [Bottom cover on page 33](#)).
6. Remove the battery (see [Battery on page 35](#)).

To remove the speakers:

1. Disconnect the speaker cable from the system board **(1)**.
2. Remove the tape **(2)** securing the cable.
3. Lift the speakers out of the computer **(3)**.



Reverse this procedure to install the speakers.

## Power connector

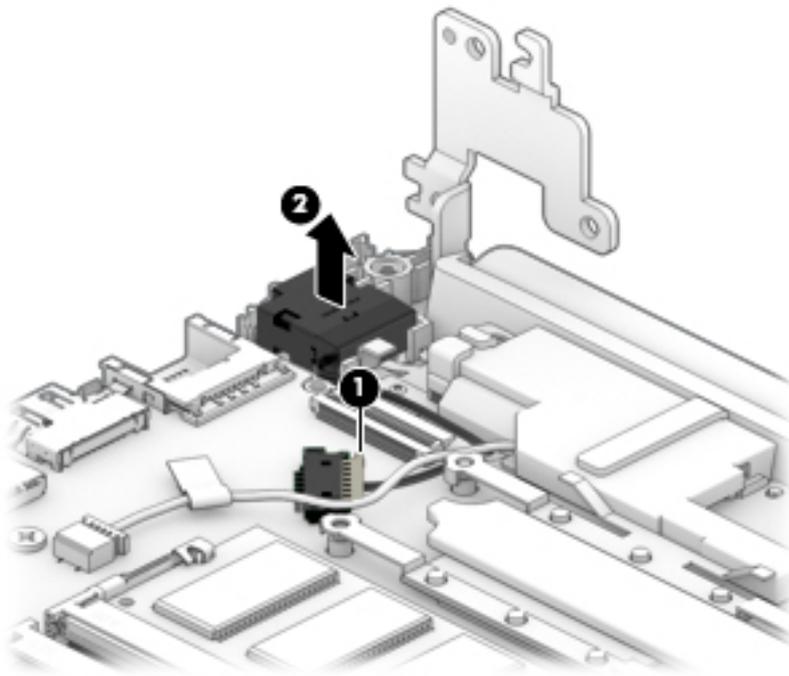
Description	Spare part number
Power connector	L23188-001

Before removing the power connector cable, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the rubber feet (see [Computer feet on page 31](#)).
5. Remove the bottom cover (see [Bottom cover on page 33](#)).
6. Remove the battery (see [Battery on page 35](#)).
7. Remove the right hinge screw and lift the right hinge (see [Display assembly on page 57](#)).

To remove the power connector:

1. Disconnect the power connector cable **(1)** from the system board.
2. Lift the power connector **(2)** to remove it.



Reverse this procedure to install the power connector.

## TouchPad click board

Description	Spare part number
TouchPad click board	L24486-001
TouchPad board cable	L23184-001
TouchPad click board cable	L24485-001

Before removing the TouchPad click board, follow these steps:

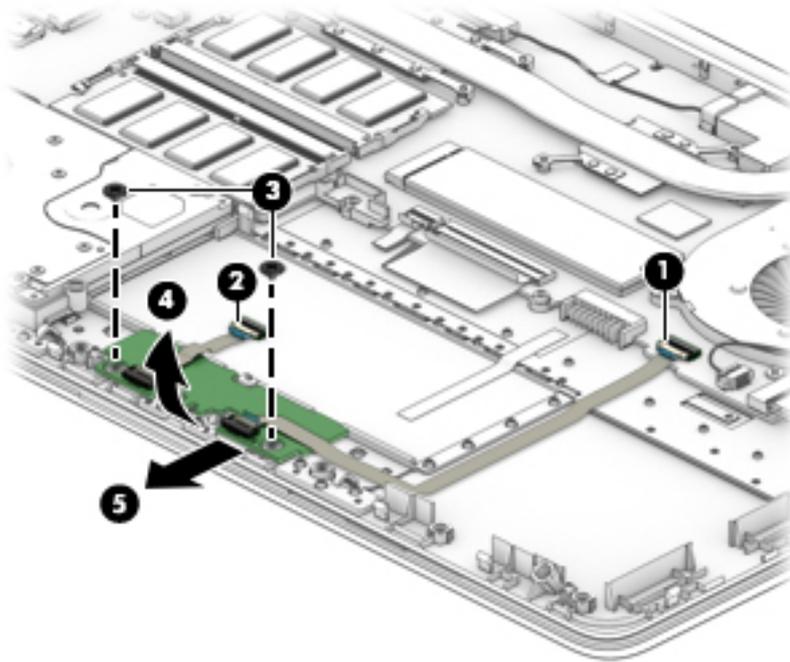
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the rubber feet (see [Computer feet on page 31](#)).
5. Remove the bottom cover (see [Bottom cover on page 33](#)).
6. Remove the battery (see [Battery on page 35](#)).

To remove the TouchPad click board:

1. Disconnect the TouchPad cable **(1)** from the system board, and then disconnect from the TouchPad click board cable **(2)** TouchPad.
2. Remove the two Phillips M2.0×2.0 screws **(3)** that secure the TouchPad click board to the computer.

3. Lift the board (4), and then slide it outward from under the clips that hold it on place to remove it (5).

 **TIP:** The edge of the board sits under clips. Be sure to slide the board out from under the clips to prevent damage to the board or clips.



Reverse this procedure to install the TouchPad click board.

## TouchPad

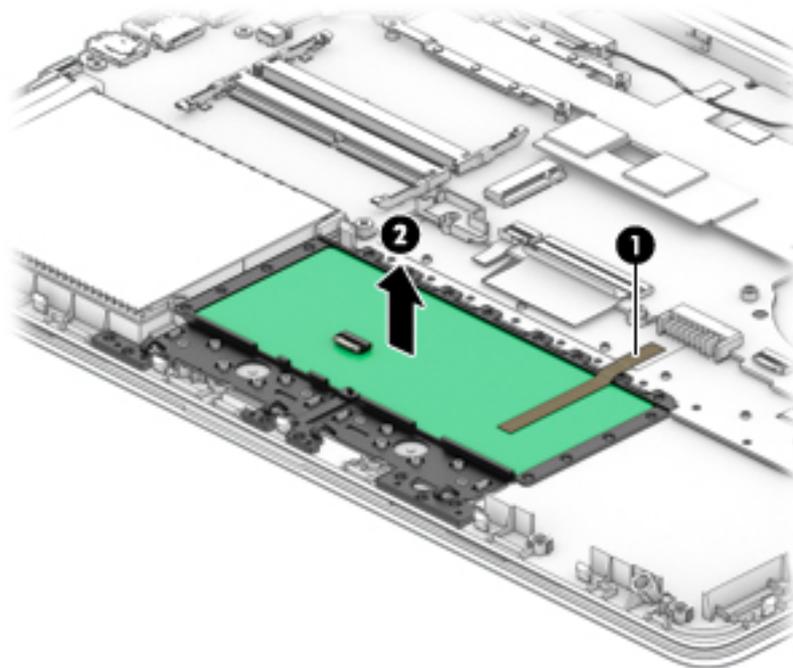
Description	Spare part number
TouchPad	L24484-001

Before removing the TouchPad, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the rubber feet (see [Computer feet on page 31](#)).
5. Remove the bottom cover (see [Bottom cover on page 33](#)).
6. Remove the battery (see [Battery on page 35](#)).
7. Remove the TouchPad click board (see [TouchPad click board on page 44](#)).

To remove the TouchPad:

1. Peel the conductive tape off the keyboard **(1)**.
2. Lift the TouchPad to remove it from the computer **(2)**.



Reverse this procedure to install the TouchPad click board.

## USB board

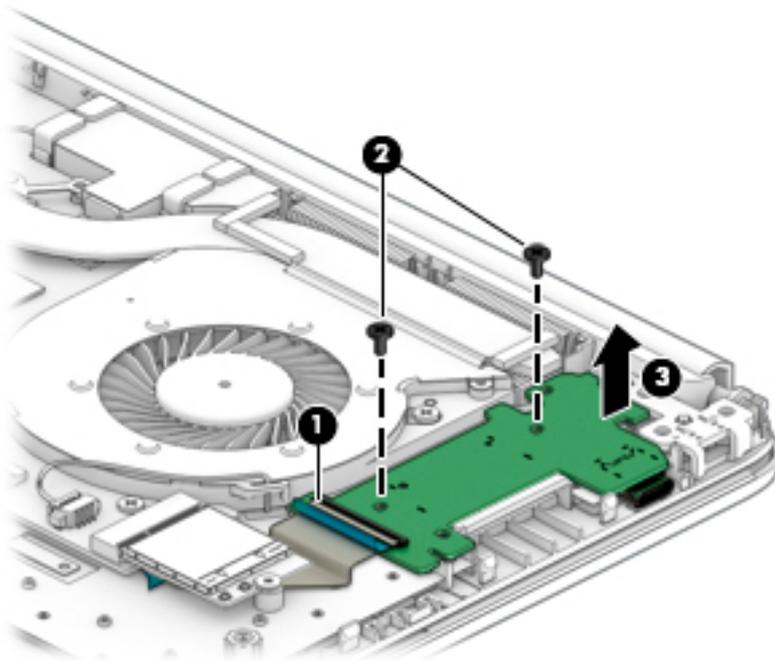
Description	Spare part number
USB board	L24483-001
USB board cable	L23186-001

Before removing the USB board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the rubber feet (see [Computer feet on page 31](#)).
5. Remove the bottom cover (see [Bottom cover on page 33](#)).
6. Remove the battery (see [Battery on page 35](#)).

To remove the USB board:

1. Disconnect the cable from the USB board **(1)**
2. Remove the 2 Phillips M2.0×3.0 screws **(2)** that secure the USB board to the computer.
3. Remove the USB board from the computer **(3)**.



Reverse this procedure to install the USB board.

## Fan

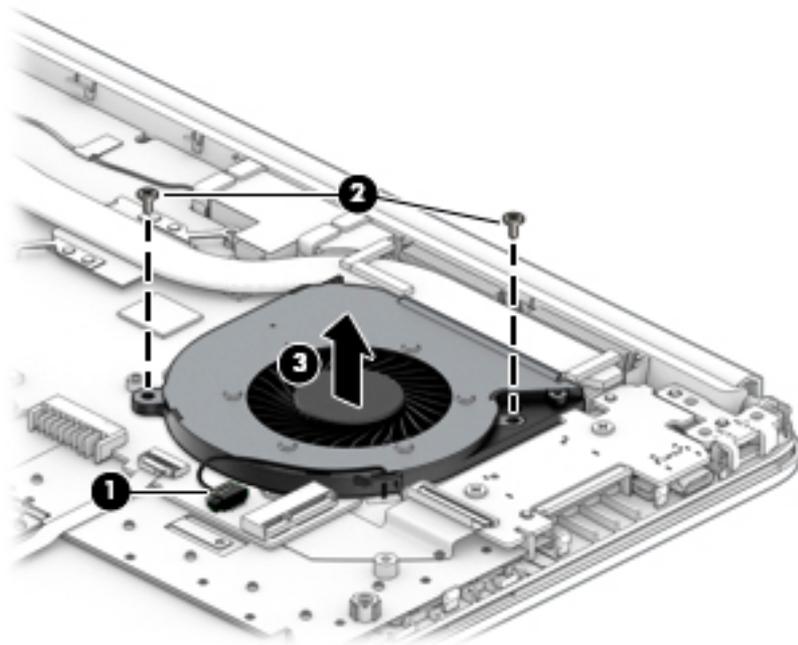
Description	Spare part number
Fan, for discrete systems	L23189-001
Fan insert, plastic placeholder for UMA fanless systems	L31017-001

Before removing the fan, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the rubber feet (see [Computer feet on page 31](#)).
5. Remove the bottom cover (see [Bottom cover on page 33](#)).
6. Remove the battery (see [Battery on page 35](#)).

To remove the fan:

1. Disconnect the fan cable from the system board **(1)**.
2. Remove the two Phillips M2.5×5.0 screws **(2)** that secure the fan to the computer.
3. Lift the fan out of the computer **(3)**.



Reverse this procedure to install the fan.

## System board



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

Description	Spare part number
<b>System board</b> (includes replacement thermal materials):	
All system boards use the following part numbers:	
xxxxxx-001: Non-Windows operating system	
xxxxxx-601: Windows operating system	
For use in models with discrete graphics:	
<ul style="list-style-type: none"><li>Intel Core i3-7020U processor and 2 GB of dedicated video memory</li></ul>	L24453-xxx
<ul style="list-style-type: none"><li>Intel Core i5-8250U processor and 2 GB of dedicated video memory</li></ul>	L24454-xxx
<ul style="list-style-type: none"><li>Intel Core i5-8265U processor and 2 GB of dedicated video memory</li></ul>	L38210-xxx
<ul style="list-style-type: none"><li>Intel Core i7-8550U processor and 2 GB of dedicated video memory</li></ul>	L24455-xxx
<ul style="list-style-type: none"><li>Intel Core i7-8550U processor and 4 GB of dedicated video memory</li></ul>	L24456-xxx
<ul style="list-style-type: none"><li>Intel Core i7-8565U processor and 2 GB of dedicated video memory</li></ul>	L38211-xxx
For use in models with UMA graphics:	
<ul style="list-style-type: none"><li>Intel Core i5-8265U processor</li></ul>	L38212-xxx
<ul style="list-style-type: none"><li>Intel Core i5-8250U processor</li></ul>	L24460-xxx
<ul style="list-style-type: none"><li>Intel Core i3-8130U processor</li></ul>	L33910-xxx
<ul style="list-style-type: none"><li>Intel Core i3-7100U processor</li></ul>	L41568-xxx
<ul style="list-style-type: none"><li>Intel Core i3-7020U processor</li></ul>	L24459-xxx
<ul style="list-style-type: none"><li>Intel Pentium N5000 processor</li></ul>	L24461-xxx
<ul style="list-style-type: none"><li>Intel Pentium N5000 processor with 64 GB eMMC</li></ul>	L24462-xxx
<ul style="list-style-type: none"><li>Intel Celeron N4000 processor</li></ul>	L24457-xxx
<ul style="list-style-type: none"><li>Intel Celeron N4000 processor with 64 GB eMMC</li></ul>	L24458-xxx
<b>System board hook</b>	L23206-001

Before removing the system board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the rubber feet (see [Computer feet on page 31](#)).
5. Remove the bottom cover (see [Bottom cover on page 33](#)).

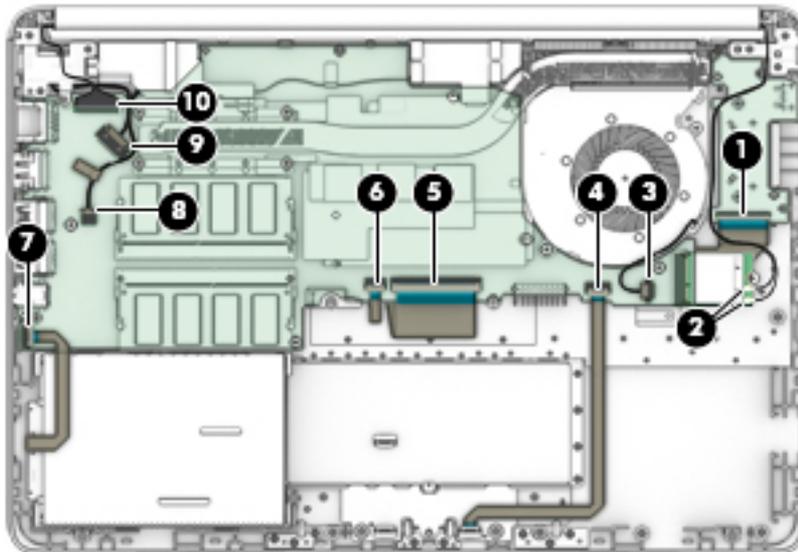
6. Remove the battery (see [Battery on page 35](#)).
7. Remove the fan (see [Fan on page 48](#)).

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

- WLAN module (see [WLAN module on page 38](#))
- Memory modules (see [Memory module on page 40](#))
- Solid-state drive (if installed) (see [Solid-state drive on page 41](#))
- Heat sink assembly (see [Heat sink assembly on page 52](#))

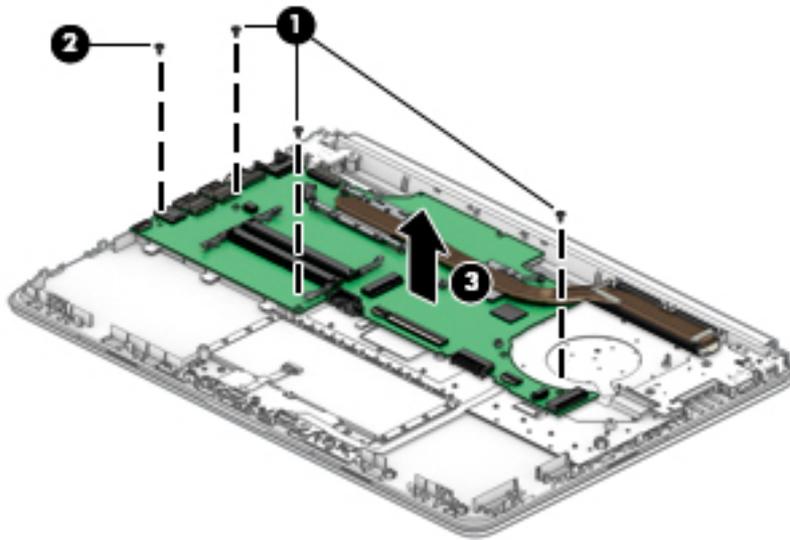
To remove the system board:

1. Position the computer upright, and then disconnect the following cables from the system board:
  - (1): USB board cable
  - (2): WLAN antenna cables
  - (3): Fan cable
  - (4): TouchPad button board cable
  - (5): Keyboard cable
  - (6): Backlight cable
  - (7): Hard drive cable
  - (8): Speaker cable
  - (9): Power connector cable
  - (10): Display cable



2. Remove the three Phillips silver M2.0×2.0 screws **(1)** that secure the system board to the computer.
3. Remove the Phillips broad head black M2.0×3.0 screw **(2)** that secures the system board to the computer.

4. Lift the system board out of the computer (3).



Reverse this procedure to install the system board.

## Heat sink assembly



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

Description	Spare part number
Heat sink assembly, discrete, (includes replacement thermal materials)	L23192-001
Heat sink assembly, UMA (includes replacement thermal materials)	L23191-001
Heat sink assembly, for fanless systems (includes replacement thermal materials)	L23190-001

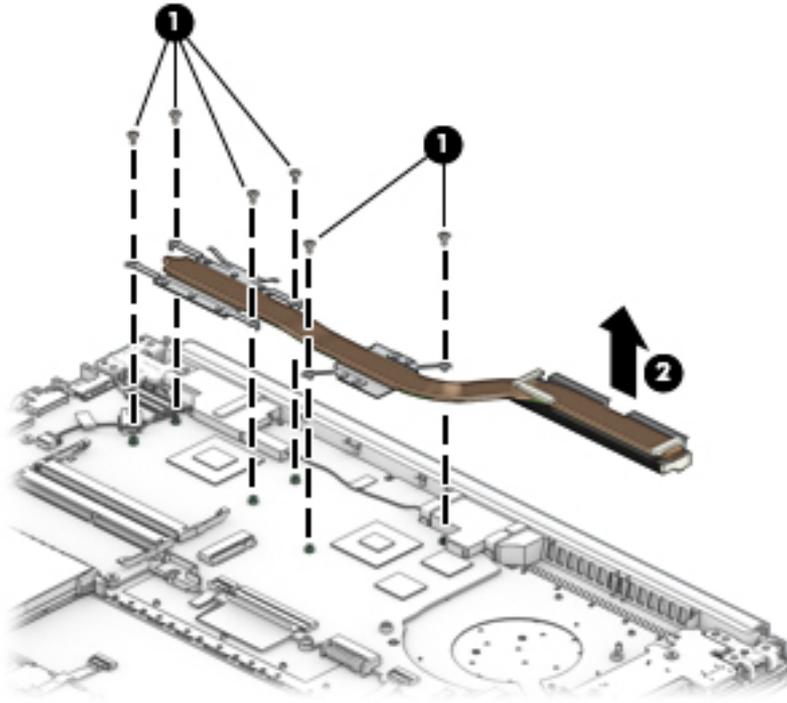
Before removing the heat sink assembly, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the rubber feet (see [Computer feet on page 31](#)).
5. Remove the bottom cover (see [Bottom cover on page 33](#)).
6. Remove the battery (see [Battery on page 35](#)).

To remove the heat sink assembly:

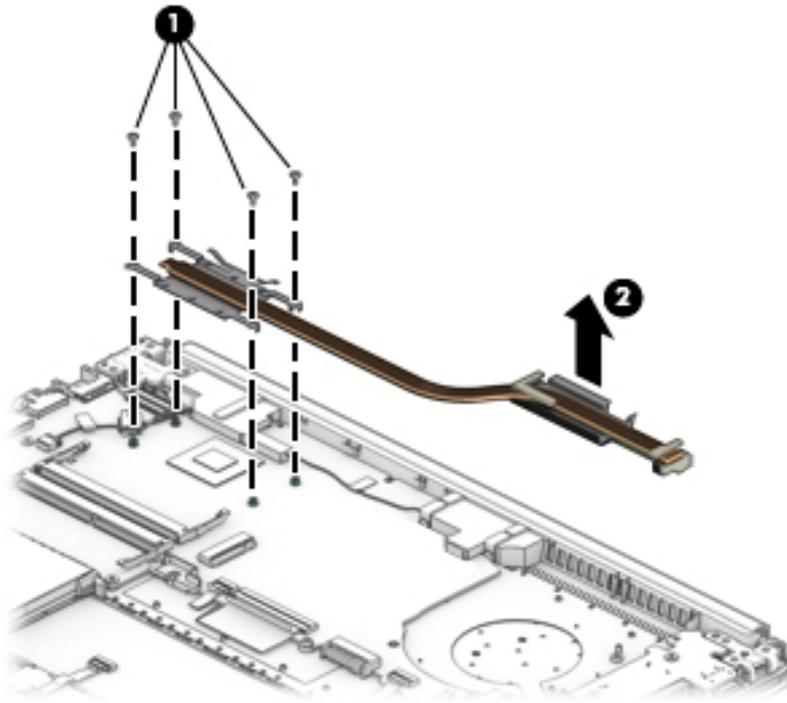
1. If you have a model with discrete graphics:
  - a. In the order indicated on the heat sink, remove the six Phillips M2.0×4.0 screws **(1)** that secure the heat sink to the system board.

- b. Remove the heat sink **(2)** from the system board.



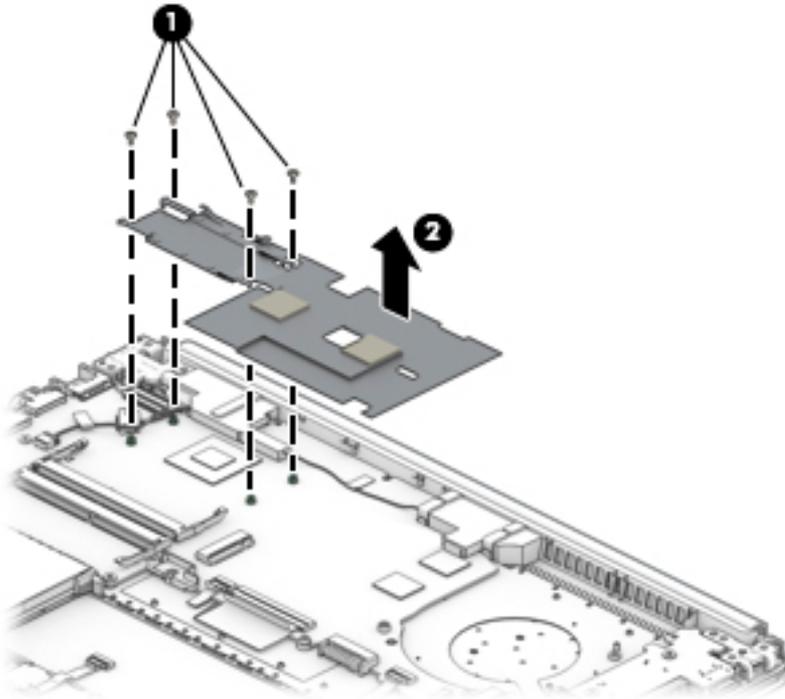
- 2. If you have a model with UMA graphics and fan:

- a. In the order indicated on the heat sink, remove the four Phillips M2.0×4.0 screws **(1)** that secure the heat sink to the system board.
- b. Remove the heat sink **(2)** from the system board.



- 3. If you have a model with UMA graphics and no fan:

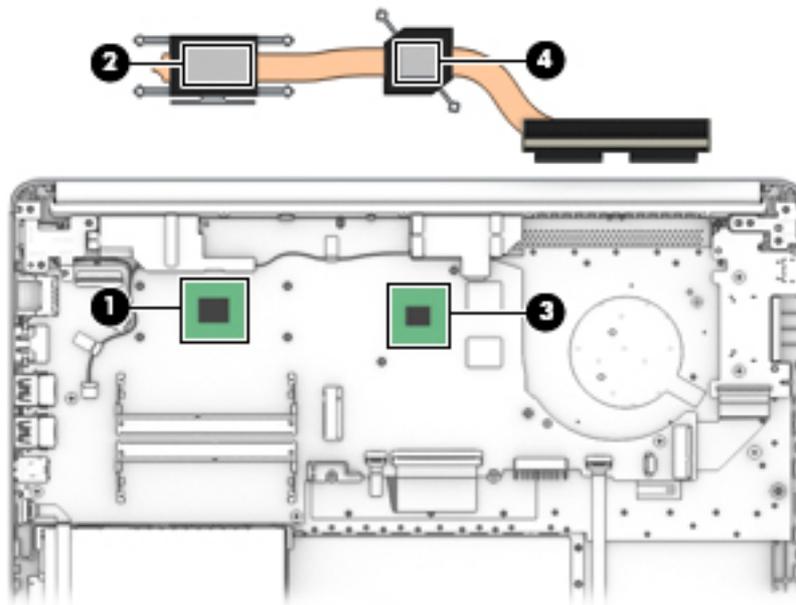
- a. In the order indicated on the heat sink, remove the four Phillips M2.0×4.0 screws **(1)** that secure the heat sink to the system board.
- b. Remove the heat sink **(2)** from the system board.



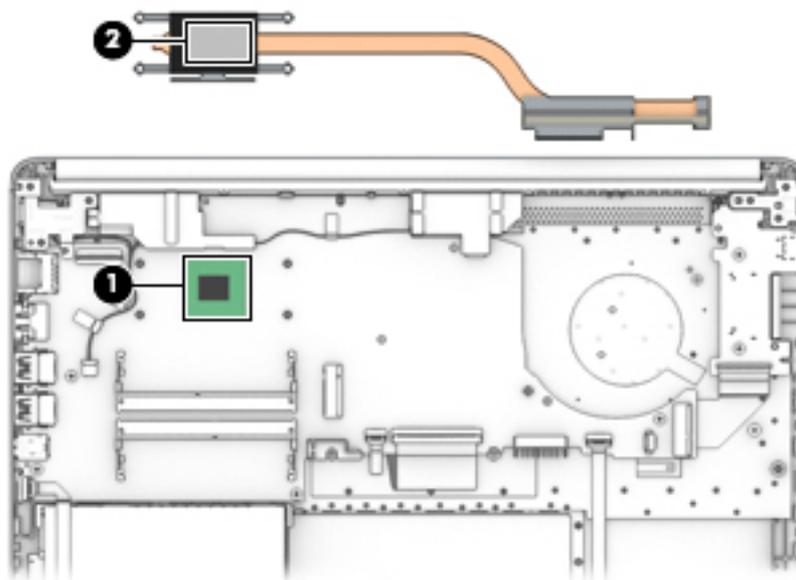
 **NOTE:** The thermal material must be thoroughly cleaned from the surfaces of the heat sink and the system board components each time the heat sink is removed. Replacement thermal material is included with the heat sink, processor, and system board spare part kits.

The following illustrations show the replacement thermal material locations.

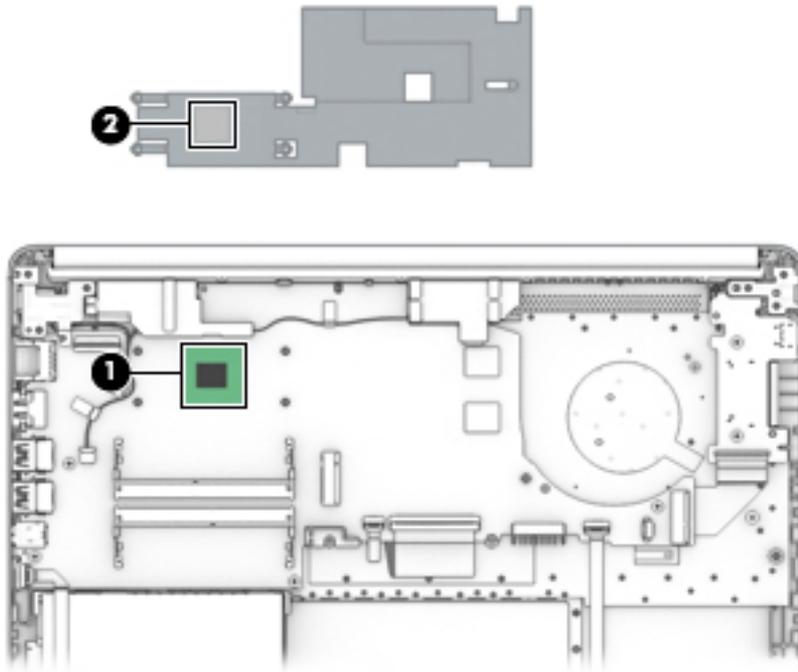
- **Discrete graphics:** Thermal paste is used on the heat sink **(2) (4)** and associated system board components **(1) (3)**.



- **UMA graphics on models with fan:** Thermal paste is used on the heat sink (2) and associated system board component (1).



- **UMA graphics on models without fan:** Thermal paste is used on the heat sink **(2)** and associated system board component **(1)**.



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

## Display assembly

Description	Spare part number
<b>Hinge covers</b>	
Natural silver	L24474-001
Pale gold	L24471-001
Snow flake white	L24472-001
Tranquil pink	L24473-001
<b>Display bezel</b>	
	L24465-001
<b>Webcam/microphone module</b>	
	L23237-001
<b>Raw display panel (14 in)</b>	
FHD, anti-glare, WLED UWVA	L25977-001
FHD, BrightView, WLED UWVA	L25978-001
HD, anti-glare, WLED SVA	L25979-001
HD, BrightView, WLED SVA	L25980-001
<b>Hinges (left and right)</b>	
	L24470-001
<b>Display cable</b>	
HD display	L24492-001
FHD display	L24493-001
<b>Antennas</b>	
Dual	L24640-001
Single	L29012-001
<b>Display enclosure</b>	
Natural silver	L24469-001
Pale gold	L24466-001
Snow flake white	L24467-001
Tranquil pink	L24468-001

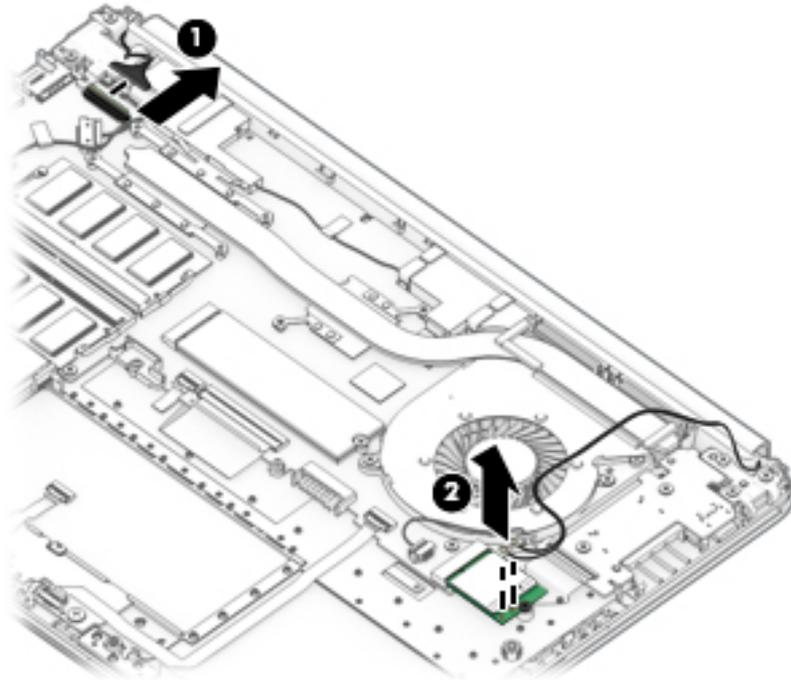
Before removing the display assembly, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the rubber feet (see [Computer feet on page 31](#)).

5. Remove the bottom cover (see [Bottom cover on page 33](#)).
6. Remove the battery (see [Battery on page 35](#)).

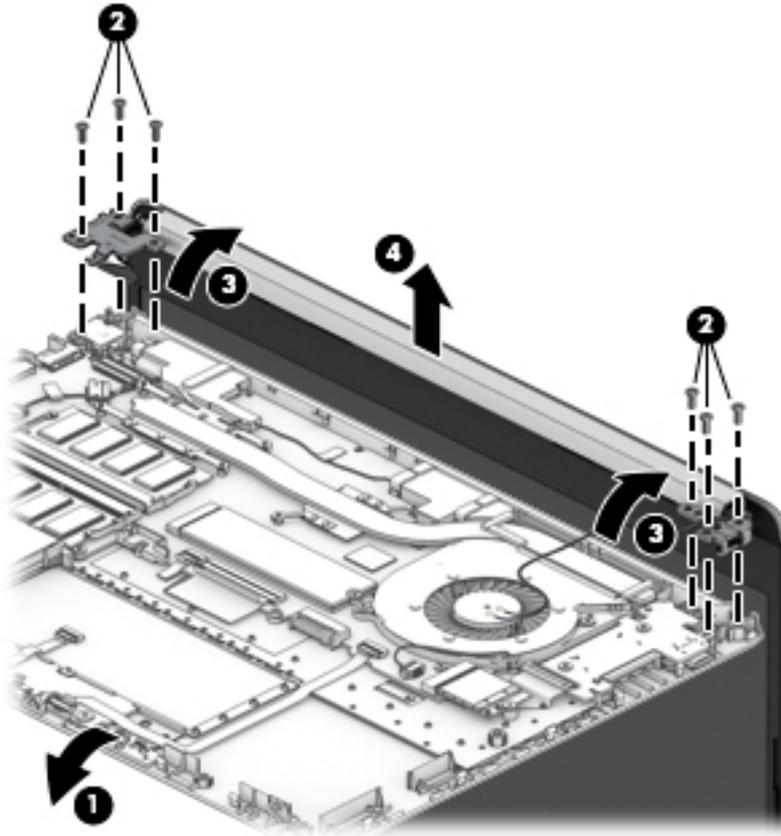
To remove the display assembly:

1. Disconnect the display cable from the system board **(1)**.
2. Disconnect the wireless antenna cables from the WLAN module **(2)**.



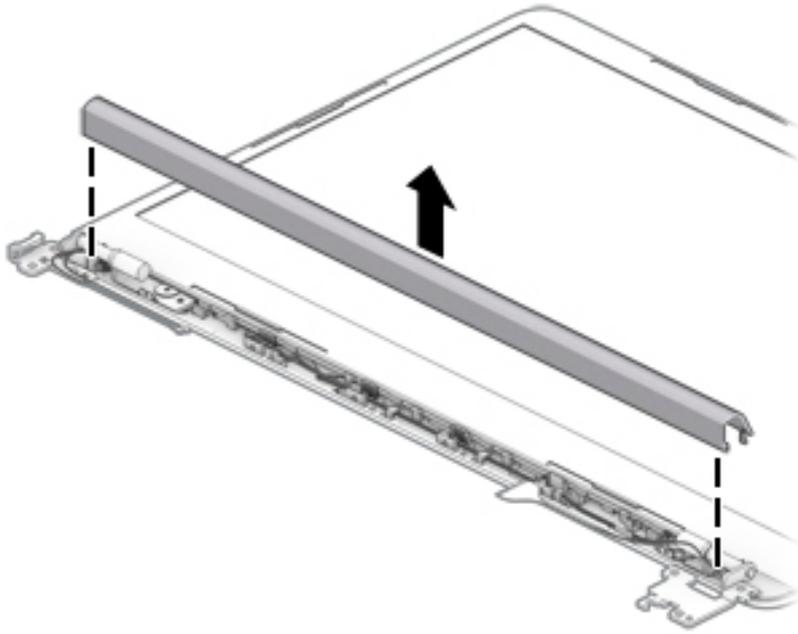
3. Position the computer so it is open with the display hanging off the table **(1)**.
4. Remove the six Phillips M2.5×6.0 screws **(2)** from the display hinges.

5. Rotate the hinges upward to an angle **(3)**, and then remove the display **(4)**.

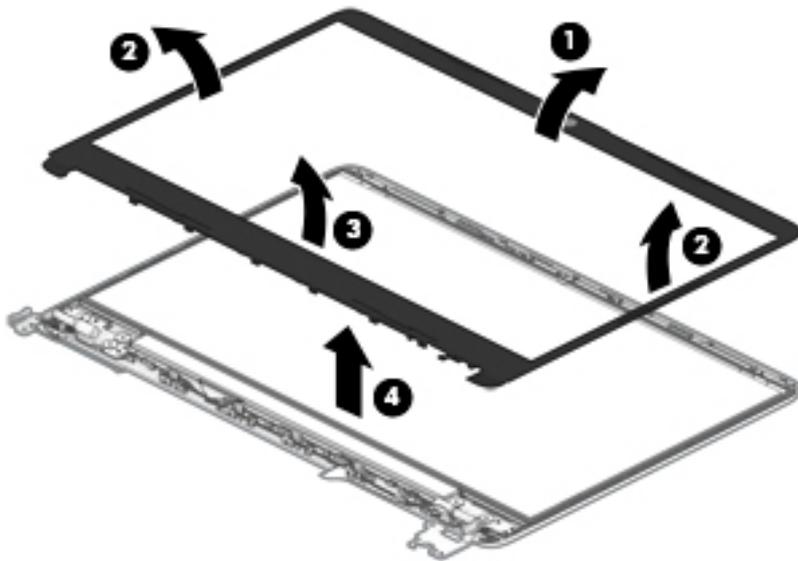


If it is necessary to replace any of the display assembly subcomponents:

1. Lift the hinge cap to remove it from display.

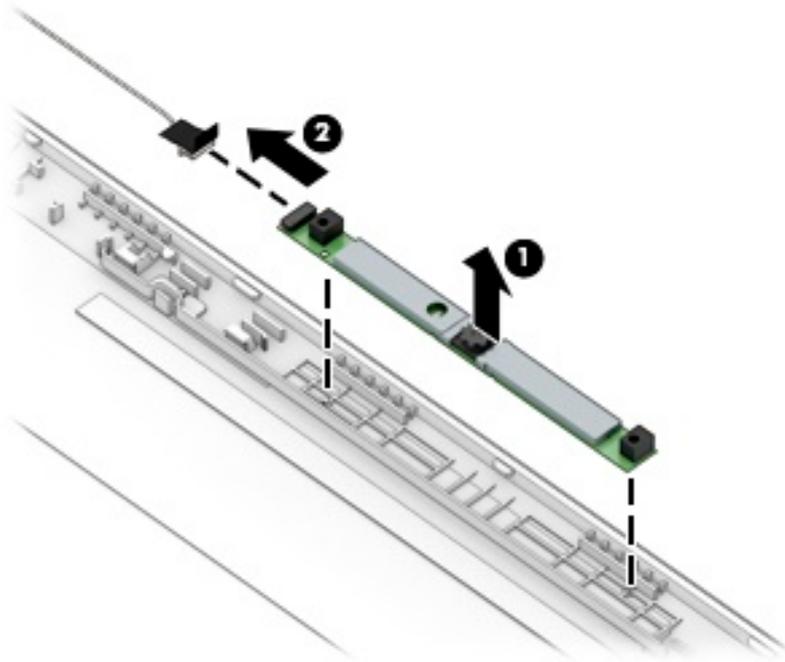


2. Flex the inside of the top edge **(1)**, left and right sides **(2)**, and the inside of the bottom edge **(3)** of the display bezel until the bezel disengages from the display enclosure.
3. Remove the display bezel **(4)**.



4. To remove the webcam/microphone module:
  - a. Position the display assembly with the top edge toward you.
  - b. Lift the webcam module to disengage the adhesive that secures the module to the display **(1)**.

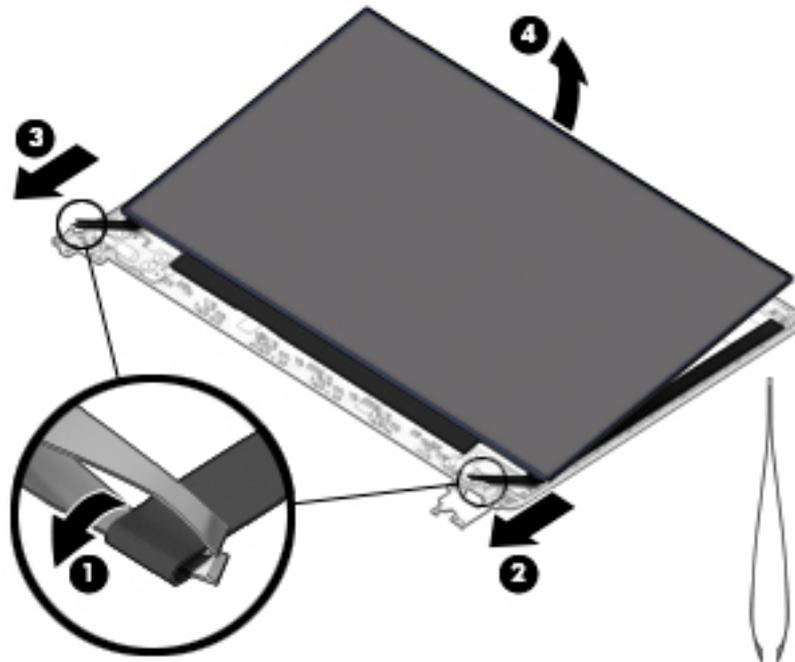
- c. Disconnect the cable (2) from the module.



5. To remove the display panel:

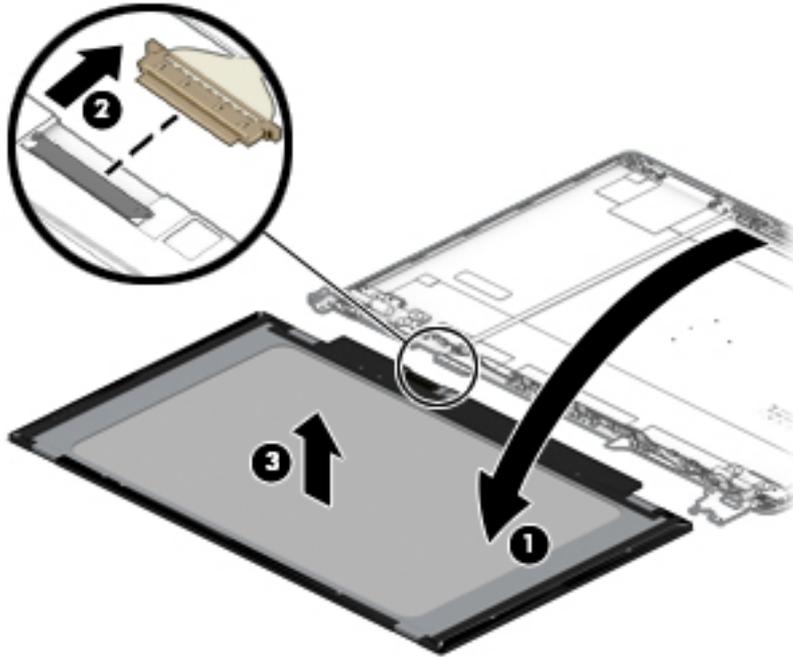
- a. Use a tweezer to grasp the adhesive tape (1) near the bottom corners of the display panel. Pull the tape out from under the right (2) and left (3) corners of the display panel until it is completely removed. Lift the top of the panel (4).

 **TIP:** You must pull the tape several times to remove it.

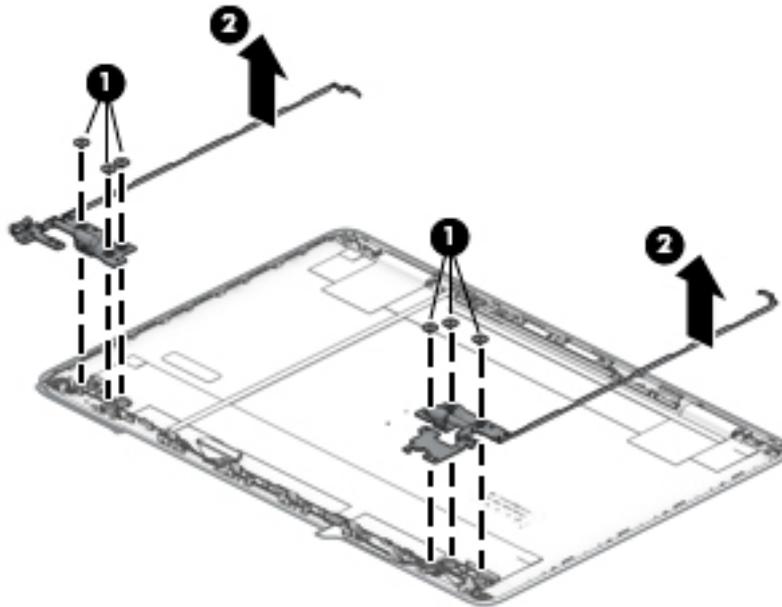


- b. Rotate the display panel onto the keyboard (1) to gain access to the display cable connection on the back of the panel.

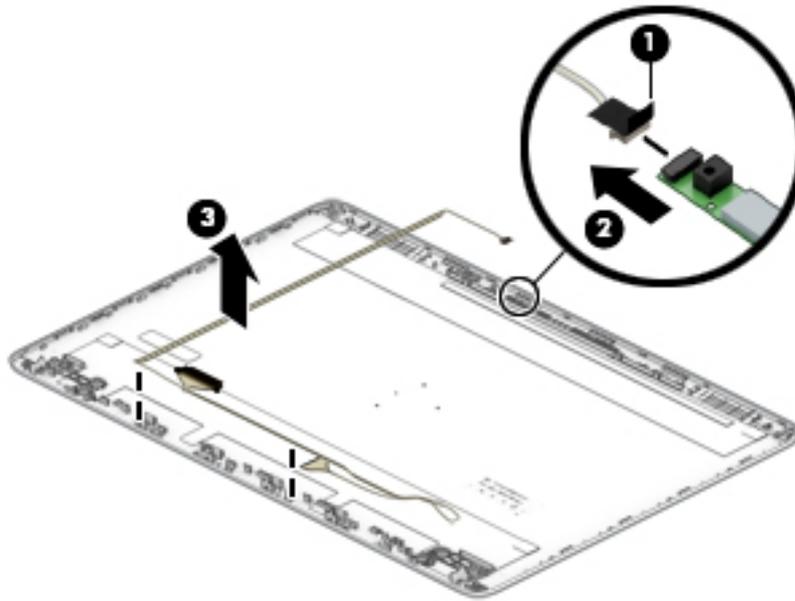
- c. On the back of the display panel, release the adhesive strip that secures the display panel cable to the display panel, and then disconnect the cable **(2)**.
- d. Lift the display panel **(3)** to remove it.



- 6. To remove the display hinges:
  - a. Remove the three Phillips M2.5×2.5 screw **(1)** from the bottom of each hinge.
  - b. Remove the display hinges from the enclosure **(2)**.

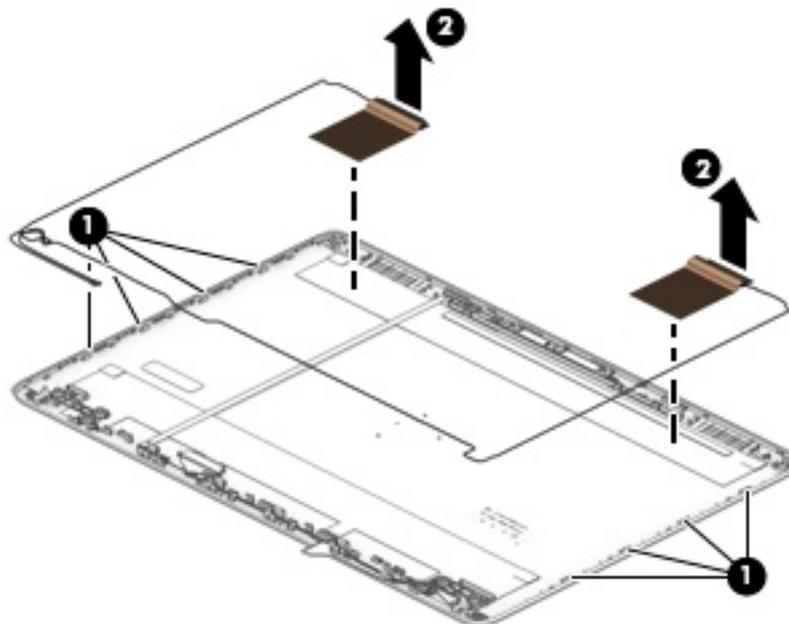


7. To remove the display/webcam cable, lift the tape from atop the connector on the webcam module (1), and then disconnect the cable from the webcam module (2). Lift the cable from the display enclosure to disengage the adhesive that secures it (3).



8. To remove the wireless antennas and cables, release the wireless antenna cables from the clips (1) built into the side of the display enclosure, and then peel the antennas of the display enclosure (2) to remove the antennas and cables.

 **NOTE:** Number of antennas and transceivers may vary.



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

Reverse this procedure to reassemble and install the display assembly.

## Top cover/keyboard

In this section, the first table provides the main spare part number for the keyboard. The second table provides the country codes.



**NOTE:** All top cover/keyboard spare part kits include TouchPad and TouchPad top mylar. Kits do not include TouchPad board or TouchPad click board.

Description	Spare part number
Ash silver, not backlit	L24818-xx1
Ash silver, backlit	L24817-xx1
Snow flake white, backlit	L24819-xx1
Snow flake white, not backlit	L24820-xx1

For use in country or region	Spare part number	For use in country or region	Spare part number	For use in country or region	Spare part number
Belgium	-A41	Israel	-BB1	Slovenia	-BA1
Bulgaria	-261	Italy	-061	South Korea	-AD1
Canada	-DB1	Japan	-291	Spain	-071
Czech Republic and Slovakia	-FL1	Latin America	-161	Switzerland	-BG1
Denmark, Finland, and Norway	-DH1	The Netherlands	-B31	Taiwan	-AB1
France	-051	Portugal	-131	Thailand	-281
Germany	-041	Romania	-271	Turkey	-141
Greece	-151	Russia	-251	United Kingdom	-031
Hungary	-211	Saudi Arabia	-171	United States	-001
India	-002				

The top cover/keyboard spare part kit includes the keyboard, keyboard cable and the keyboard backlight cable.

The top cover/keyboard spare part remains after all other spare parts have been removed.

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## 6 Using Setup Utility (BIOS)

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.

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 **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.

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### Starting Setup Utility (BIOS)

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

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- ▲ 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.

To reveal the BIOS version information (also known as *ROM date* and *System BIOS*), use one of these options.

- HP Support Assistant
  1. Type `support` in the taskbar search box, and then select the **HP Support Assistant** app.  
– or –  
Select the question mark icon in the taskbar.
  2. Select **My notebook**, and then select **Specifications**.
- Setup Utility (BIOS)
  1. Start Setup Utility (BIOS) (see [Starting Setup Utility \(BIOS\) on page 65](#)).
  2. Select **Main**, and then make note of the BIOS version.
  3. Select **Exit**, select one of the options, and then follow the on-screen instructions.

To check for later BIOS versions, see [Downloading a BIOS update on page 66](#).

## 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 –  
Select the question mark icon in the taskbar.
2. Select **Updates**, and then select **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. Select 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.

---

# 7 Backing up, restoring, and recovering

This chapter provides information about the following processes, which are standard procedure for most products:

- **Backing up your personal information**—You can use Windows tools to back up your personal information (see [Using Windows tools on page 67](#)).
- **Creating a restore point**—You can use Windows tools to create a restore point (see [Using Windows tools on page 67](#)).
- **Creating recovery media** (select products only)—You can use the HP Cloud Recovery Download Tool (select products only) to create recovery media (see [Using the HP Cloud Recovery Download Tool to create recovery media \(select products only\) on page 67](#)).
- **Restoring and recovery**—Windows offers several options for restoring from backup, refreshing the computer, and resetting the computer to its original state (see [Using Windows tools on page 67](#)).

---

 **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.

---

## Backing up information and creating recovery media

### Using Windows tools

---

 **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.

---

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

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

1. Select the **Start** button, and then select the **Get Help** app.
2. Enter the task you want to perform.

---

 **NOTE:** You must be connected to the Internet to access the Get Help app.

---

### Using the HP Cloud Recovery Download Tool to create recovery media (select products only)

You can use the HP Cloud Recovery Download Tool to create HP Recovery media on a bootable USB flash drive, as follows:

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



---

**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.

---

## Restoring and recovery

### Restoring, resetting, and refreshing using Windows tools

Windows offers several options for restoring, resetting, and refreshing the computer. For details, see [Using Windows tools on page 67](#).

### Recovering using HP Recovery media

HP Recovery media is used to recover the original operating system and software programs that were installed at the factory. On select products, it can be created on a bootable USB flash drive using the HP Cloud Recovery Download Tool. For details, see [Using the HP Cloud Recovery Download Tool to create recovery media \(select products only\) on page 67](#).



---

**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.

---

To recover your system:

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

### Changing the computer boot order

If your computer does not restart using the HP Recovery media, 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.

# 8 Using HP PC Hardware Diagnostics

## Using HP PC Hardware Diagnostics Windows (select products only)

HP PC Hardware Diagnostics Windows is a Windows-based utility that allows you to run diagnostic tests to determine whether the computer hardware is functioning properly. The tool runs within the Windows operating system in order to diagnose hardware failures.

If HP PC Hardware Diagnostics Windows is not installed on your computer, first you must download and install it. To download HP PC Hardware Diagnostics Windows, see [Downloading HP PC Hardware Diagnostics Windows on page 69](#).

After HP PC Hardware Diagnostics Windows is installed, follow these steps to access it from HP Help and Support or HP Support Assistant.

1. To access HP PC Hardware Diagnostics Windows from HP Help and Support:
  - a. Select the **Start** button, and then select **HP Help and Support**.
  - b. Right-click **HP PC Hardware Diagnostics Windows**, select **More**, and then select **Run as administrator**.

– or –

To access HP PC Hardware Diagnostics Windows from HP Support Assistant:

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

– or –

Select the question mark icon in the taskbar.
  - b. Select **Troubleshooting and fixes**.
  - c. Select **Diagnostics**, and then select **HP PC Hardware Diagnostics Windows**.
2. When the 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 at any time, select **Cancel**.

3. When HP PC Hardware Diagnostics Windows detects a failure that requires hardware replacement, a 24-digit Failure ID code is generated. For assistance in correcting the problem, contact support, and then provide the Failure ID code.

## Downloading HP PC Hardware Diagnostics Windows

- The HP PC Hardware Diagnostics Windows download instructions are provided in English only.
- You must use a Windows computer to download this tool because only .exe files are provided.

## Downloading the latest HP PC Hardware Diagnostics Windows version

To download HP PC Hardware Diagnostics Windows, follow these steps:

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 **Download**, and then select a location on your computer or a USB flash drive.

The tool is downloaded to the selected location.

## Downloading HP Hardware Diagnostics Windows by product name or number (select products only)

---

 **NOTE:** For some products, it may be necessary to download the software to a USB flash drive by using the product name or number.

---

To download HP PC Hardware Diagnostics Windows by product name or number, follow these steps:

1. Go to <http://www.hp.com/support>.
2. Select **Get software and drivers**, select your type of product, and then enter the product name or number in the search box that is displayed.
3. In the **HP PC Hardware Diagnostics** section, select **Download**, and then select a location on your computer or a USB flash drive.

The tool is downloaded to the selected location.

## Installing HP PC Hardware Diagnostics Windows

To install HP PC Hardware Diagnostics Windows, follow these steps:

- ▲ Navigate to the folder on your computer or the USB flash drive where the .exe file was downloaded, double-click the .exe file, and then follow the on-screen instructions.

## Using HP PC Hardware Diagnostics UEFI

---

 **NOTE:** For Windows 10 S computers, you must use a Windows computer and a USB flash drive to download and create the HP UEFI support environment because only .exe files are provided. For more information, see [Downloading HP PC Hardware Diagnostics UEFI to a USB flash drive on page 71](#).

---

HP PC Hardware Diagnostics UEFI (Unified Extensible Firmware Interface) 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.

If your PC will not boot into Windows, you can use HP PC Hardware Diagnostics UEFI to diagnose hardware issues.

When HP PC Hardware Diagnostics UEFI detects a failure that requires hardware replacement, a 24-digit Failure ID code is generated. For assistance in correcting the problem, contact support, and provide the Failure ID code.

---

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

---

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

---

## Starting HP PC Hardware Diagnostics UEFI

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 flash drive



**NOTE:** To download the HP PC Hardware Diagnostics UEFI tool to a USB flash drive, see [Downloading the latest HP PC Hardware Diagnostics UEFI version on page 71](#).

- b. Hard drive
- c. BIOS

3. When the diagnostic tool opens, select a language, select the type of diagnostic test you want to run, and then follow the on-screen instructions.

## Downloading HP PC Hardware Diagnostics UEFI to a USB flash drive

Downloading HP PC Hardware Diagnostics UEFI to a USB flash drive can be useful in the following situations:

- HP PC Hardware Diagnostics UEFI is not included in the preinstall image.
- HP PC Hardware Diagnostics UEFI is not included in the HP Tool partition.
- The hard drive is damaged.



**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 provided.

## Downloading the latest HP PC Hardware Diagnostics UEFI version

To download the latest HP PC Hardware Diagnostics UEFI version to a USB flash drive:

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 UEFI** section, select **Download UEFI Diagnostics**, and then select **Run**.

## Downloading HP PC Hardware Diagnostics UEFI by product name or number (select products only)



**NOTE:** For some products, it may be necessary to download the software to a USB flash drive by using the product name or number.

To download HP PC Hardware Diagnostics UEFI by product name or number (select products only) to a USB flash drive:

1. Go to <http://www.hp.com/support>.
2. Enter the product name or number, select your computer, and then select your operating system.
3. In the **Diagnostics** section, follow the on-screen instructions to select and download the specific UEFI Diagnostics version for your computer.

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

Remote HP PC Hardware Diagnostics UEFI is a firmware (BIOS) feature that downloads HP PC Hardware Diagnostics UEFI to your computer. It can then execute the diagnostics on your computer, and it may upload results to a preconfigured server. For more information on Remote HP PC Hardware Diagnostics UEFI, go to <http://www.hp.com/go/techcenter/pcdiags>, and then select **Find out more**.

## Downloading Remote HP PC Hardware Diagnostics UEFI

---

 **NOTE:** HP Remote PC Hardware Diagnostics UEFI is also available as a Softpaq that can be downloaded to a server.

---

### Downloading the latest Remote HP PC Hardware Diagnostics UEFI version

To download the latest Remote HP PC Hardware Diagnostics UEFI version, follow these steps:

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 UEFI** section, select **Download Remote Diagnostics**, and then select **Run**.

### Downloading Remote HP PC Hardware Diagnostics UEFI by product name or number

---

 **NOTE:** For some products, it may be necessary to download the software by using the product name or number.

---

To download HP Remote PC Hardware Diagnostics UEFI by product name or number, follow these steps:

1. Go to <http://www.hp.com/support>.
2. Select **Get software and drivers**, select your type of product, enter the product name or number in the search box that is displayed, select your computer, and then select your operating system.
3. In the **Diagnostics** section, follow the on-screen instructions to select and download the **Remote UEFI** version for the product.

## Customizing Remote HP PC Hardware Diagnostics UEFI settings

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.

To customize Remote HP PC Hardware Diagnostics UEFI settings, follow these steps:

1. Turn on or restart the computer, and when the HP logo appears, 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.



# 9 Specifications

## Computer specifications

	<b>Metric</b>	<b>U.S.</b>
<b>Dimensions</b>		
Depth	<b>324 mm</b>	12.76 in
Width	<b>226 mm</b>	8.9 in
Height (rear)	<b>19.9 mm</b>	0.78 in
<b>Weight</b>		
SSD/eMMC	<b>1474 g</b>	3.33 lb
Hard drive	<b>1511 g</b>	3.35 lb
SSD+HDD	<b>1519 g</b>	5.67 lb
<b>Input power</b>		
Operating voltage and current	19.5 V dc @ 2.31 A – 45 W	
	19.5 V dc @ 3.33 A – 65 W	
<b>Temperature</b>		
Operating	<b>5°C to 35°C</b>	41°F to 95°F
Nonoperating	<b>-20°C to 60°C</b>	-4°F to 140°F
<b>Relative humidity</b> (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
<b>Maximum altitude</b> (unpressurized)		
Operating	<b>-15 m to 3,048 m</b>	-50 ft to 10,000 ft
Nonoperating	<b>-15 m to 12,192 m</b>	-50 ft to 40,000 ft
<b>NOTE:</b> Applicable product safety standards specify thermal limits for plastic surfaces. The device operates well within this range of temperatures.		

## 37.97 cm (14.95 in) display specifications

	Metric	U.S.
Active diagonal size	37.97 cm	14.95 in
Thickness	3.0 mm	0.118 inch
Resolution	1920x1080 FHD 1366x768 HD	
Surface treatment	AntiGlare or BrightView	
Brightness	220 nits	
Viewing angle	SVA (HD) UWVA (FHD)	
Backlight	WLED	
Graphics adapter	eDP	

## Hard drive specifications

	1-TB*	500-GB*
<b>Dimensions</b>		
Height	7.2 mm or 9.5 mm	7.2 mm
Length	100.4 mm	100.6 mm
Width	69.9 mm	70.1 mm
Weight	115.0 g	92.0 g
<b>Interface type</b>	SATA	SATA
<b>Transfer rate</b>		
Synchronous (maximum)	300 MB/sec	300 MB/sec
Security	ATA security	ATA security
<b>Seek times</b> (typical read, including setting)		
Single track	1.4 ms	3 ms
Average (read/write)	10 ms	13 ms
Maximum	12 ms	24 ms
<b>Logical blocks</b>	1,938,921,461	1,048,576,000
<b>Disk rotational speed</b>	5400 rpm	5400 rpm
<b>Operating temperature</b>	0°C to 60°C (32°F to 140°F)	
*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less.		
<b>NOTE:</b> Certain restrictions and exclusions apply. Contact technical support for details.		

## Solid-state drive specifications

	128-GB*	256-GB*
<b>Dimensions</b>		
Height	1 mm	1 mm
Length	50.8 mm	50.8 mm
Width	28.9 mm	28.9 mm
Weight	< 10 g	< 10 g
<b>Interface type</b>	SATA-3 (6 Gbps)	SATA-3 (6 Gbps)
<b>Transfer rate</b>		
Sequential Read	Up to 520 MB/s	Up to 540 MB/s
Random Read	Up to 60K IOPs	Up to 85K IOPs
Sequential Write	Up to 160 MB/s	Up to 280 MB/s
Random Write	Up to 34K IOPs	Up to 67K IOPs
<b>Ready time, Maximum (to not busy)</b>	1.0 s	1.0 s
<b>Access times</b>		
Logical	0.1 ms	0.1
<b>Total logical sectors</b>	250,069,680	500,118,192
<b>Operating temperature</b>		
Operating	0° to 70°C (32°F to 158°F)	0° to 70°C (32°F to 158°F)
Non-operating	-40° to 95°C (-40°F to 203°F)	-55° to 90°C (-67°F to 194°F)
*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less.		
<b>NOTE:</b> Certain restrictions and exclusions apply. Contact technical support for details.		



---

# 10 Power cord set requirements

The wide-range input feature of the computer permits it to operate from any line voltage from 100 to 120 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 H05VV-F, 3-conductor, 0.75 mm<sup>2</sup> conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.
2. The flexible cord must be Type SVT/SJT or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V 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.	



---

# 11 Recycling

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

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



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