



## Maintenance and Service Guide

HP ENVY x360 15 Convertible PC  
IMPORTANT! This document is intended for  
HP authorized service providers only.

© Copyright 2020 HP Development Company, L.P.

AMD is a trademark of Advanced Micro Devices, Inc. Bluetooth is a trademark owned by its proprietor and used by HP Inc. under license. Microsoft and Windows are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. SD Logo is a trademark of its proprietor. DisplayPort™ and the DisplayPort™ logo are trademarks owned by the Video Electronics Standards Association (VESA®) in the United States and other countries.

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

First Edition: April 2020

Document Part Number: L84425-001

## 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 or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. Go to <http://www.microsoft.com> for details.

To access the latest user guides, go to <http://www.hp.com/support>, and follow the instructions to find your product. Then select **Manuals**.


## Software terms

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

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

## Safety warning notice

---

 **WARNING!** To reduce the possibility of heat-related injuries or of overheating the computer, do not place the computer directly on your lap or obstruct the computer air vents. Use the computer 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 computer and the AC adapter comply with the user-accessible surface temperature limits defined by applicable safety standards.

---





---

# Table of contents

1 Product description .....	1
2 Components .....	3
Locating hardware .....	3
Locating software .....	3
Right side .....	4
Left side .....	5
Display .....	6
Low blue light mode (select products only) .....	6
Keyboard area .....	7
Touchpad .....	7
Touchpad settings .....	7
Lights .....	8
Button, speakers, and fingerprint reader .....	9
Special keys .....	10
Bottom .....	11
Labels .....	12
3 Illustrated parts catalog .....	14
Computer major components .....	15
Display components .....	18
Miscellaneous parts .....	19
4 Removal and replacement procedures preliminary requirements .....	20
Tools required .....	20
Service considerations .....	20
Plastic parts .....	20
Cables and connectors .....	20
Drive handling .....	21
Electrostatic discharge damage .....	21
Packaging and transporting guidelines .....	22
Workstation guidelines .....	23
Equipment guidelines .....	23
5 Removal and replacement procedures .....	25
Component replacement procedures .....	25

Bottom cover .....	25
Front speakers .....	27
Solid-state drive .....	28
Memory module .....	30
WLAN module .....	32
Fan .....	34
Heat sink .....	35
Infrared board cable .....	37
Infrared board .....	38
Display assembly .....	39
Power connector cable .....	46
Subwoofer .....	48
Battery .....	49
Touchpad cable .....	50
Touchpad .....	51
System board .....	53

## 6 Computer Setup (BIOS), TPM, and HP Sure Start ..... 56

Using Computer Setup .....	56
Starting Computer Setup .....	56
Navigating and selecting in Computer Setup .....	56
Restoring factory settings in Computer Setup .....	56
Updating the BIOS .....	57
Determining the BIOS version .....	57
Downloading a BIOS update .....	57
Changing the boot order using the f9 prompt .....	58
TPM BIOS settings (select products only) .....	58
Using HP Sure Start (select products only) .....	59

## 7 Backing up, restoring, and recovering ..... 60

Backing up information and creating recovery media .....	60
Using Windows tools .....	60
Using the HP Cloud Recovery Download Tool to create recovery media (select products only) .....	60
Restoring and recovery .....	61
Restoring, resetting, and refreshing using Windows tools .....	61
Recovering using HP Recovery media .....	61
Changing the computer boot order .....	61
Using HP Sure Recover (select products only) .....	62

<b>8 Using HP PC Hardware Diagnostics</b>	<b>63</b>
Using HP PC Hardware Diagnostics Windows (select products only)	63
Downloading HP PC Hardware Diagnostics Windows	63
Downloading the latest HP PC Hardware Diagnostics Windows version	64
Downloading HP Hardware Diagnostics Windows by product name or number (select products only)	64
Installing HP PC Hardware Diagnostics Windows	64
Using HP PC Hardware Diagnostics UEFI	64
Starting HP PC Hardware Diagnostics UEFI	65
Downloading HP PC Hardware Diagnostics UEFI to a USB flash drive	65
Downloading the latest HP PC Hardware Diagnostics UEFI version	65
Downloading HP PC Hardware Diagnostics UEFI by product name or number (select products only)	66
Using Remote HP PC Hardware Diagnostics UEFI settings (select products only)	66
Downloading Remote HP PC Hardware Diagnostics UEFI	66
Downloading the latest Remote HP PC Hardware Diagnostics UEFI version	66
Downloading Remote HP PC Hardware Diagnostics UEFI by product name or number ...	66
Customizing Remote HP PC Hardware Diagnostics UEFI settings	66
<b>9 Specifications</b>	<b>68</b>
Computer specifications	68
<b>10 Power cord set requirements</b>	<b>70</b>
Requirements for all countries	70
Requirements for specific countries and regions	71
<b>11 Recycling</b>	<b>73</b>
<b>Index</b>	<b>74</b>



# 1 Product description

Table 1-1 Product description

Category	Description
Product Name	HP ENVY x360 15 Convertible PC
Processor	<ul style="list-style-type: none"><li>• AMD® Ryzen7-4750U 2.0 GHz (turbo up to 4.2 GHz) eight core processor (8.0 MB L3 cache, 25 W)</li><li>• AMD Ryzen5-4500U 2.375 GHz six core processor (8.0 MB L3 cache, 25 W)</li><li>• AMD Ryzen3-4300U 2.7 GHz (turbo up to 3.8 GHz) four core processor (4.0 MB L3 cache, 25 W)</li></ul>
Chipset	AMD Integrated soldered-on-circuit (SoC) fusion controller hub (FCH)
Graphics	AMD Radeon integrated graphics
Panel	<p>15.6 inch, liquid crystal display (LCD), touchscreen, full high-definition (FHD) (1920×1080), antiglare, white light-emitting (WLED), UWVA, eDP1.4+PSR, low power display panel with narrow bezel; typical brightness: 400 nits</p> <p>15.6 inch, LCD, touchscreen, FHD (1920×1080), antiglare, WLED, UWVA, eDP1.2, 45% NTSC, bent display panel with narrow bezel; typical brightness: 250 nits</p>
Memory	Support for DDR4-3200 1.2 v, nonupgradeable, onboard system memory in 16 GB and 8 GB configurations
Storage	<p>Support for the following solid-state drives:</p> <ul style="list-style-type: none"><li>• 1 TB, 2280, peripheral component interconnect express (PCIe)-3×4, non-volatile memory express (NVMe), solid-state drive with triple layer cell (TLC)</li><li>• 512 GB, M.2 2280, PCIe 3×4, NVMe, solid-state drive with TLC</li><li>• 512 GB, 2280, PCIe, NVMe value solid-state drive</li><li>• 256 GB, M.2 2280, PCIe 3×4, NVMe solid-state drive with TLC</li><li>• 256 GB, 2280, PCIe, NVMe value solid-state drive</li></ul>
Audio and video	<p>Fixed (no tilt), 720p HD camera integrated into display assembly</p> <p>Dual-array digital microphone with appropriate software: beam-forming, echo-cancellation, noise-suppression</p> <p>BANG and OLUFSEN speakers</p> <p>HP support for Far Field Cortana</p> <p>HP support for HP Audio Boost 2.0</p> <p>Support for speaker swap</p> <p>Three speakers</p>
Wireless	<p>Integrated wireless local area network (WLAN)</p> <p>Support for the following WLAN modules:</p> <ul style="list-style-type: none"><li>• Intel Wi-Fi 6 AX200 ax 2×2 + Bluetooth® 5.0 MU-MIMO M.2 2230 non-vPro 160 MHz PCI-e + USB WW with 2 antenna(s)</li><li>• Realtek ac 2×2 + Bluetooth 5.0 M.2 2230 PCI-e + USB WW</li></ul>

**Table 1-1** Product description (continued)

Category	Description
<b>Ports</b>	<ul style="list-style-type: none"> <li>• AC Smart Pin adapter plug</li> </ul>
<b>Ports</b> <i>(continued)</i>	<ul style="list-style-type: none"> <li>• High-definition multimedia interface (HDMI) v2.0 + high-bandwidth digital content protection (HDCP) v2.2</li> <li>• Headphone/microphone combo jack</li> <li>• USB 3.2 Gen 2 type-C port</li> <li>• USB 3.2 Gen 1 type-A ports (2)</li> </ul>
<b>Expansion</b>	<p>One next generation form factor (NGFF) slot for a solid-state drive</p> <p>One NGFF slot for a WLAN module</p>
<b>Multimedia card</b>	HP Multi-Format Digital Media Card Reader
<b>Keyboard/pointing devices</b>	<p>Island-style keyboard with 3-coat paint, backlit, with numeric keypad in natural silver finish</p> <p>Touchpad with image sensor with the following requirements:</p> <ul style="list-style-type: none"> <li>• Clickpad with image sensor</li> <li>• Multitouch gestures enabled</li> <li>• Precision touchpad supported</li> <li>• Support modern trackpad gestures</li> <li>• Taps enabled as default</li> </ul>
<b>Power requirements</b>	<p>Support for a 3 cell, 51 WHr, 4.45 AHr, Li-ion battery</p> <p>Support for 65 W AC adapter (non-PFC, slim, 4.5 mm, straight)</p> <p>Support for a 1.0 meter, C5 premium power cord with sticker</p>
<b>Security</b>	<p>Fingerprint reader (Secure Payment)</p> <p>Trusted Platform Module (TPM) 2.0 firmware</p>
<b>Sensors</b>	<ul style="list-style-type: none"> <li>• Accelerometer</li> <li>• Accelerometer + gyroscope + eCompass + magnetometer</li> <li>• Infrared thermal sensor</li> <li>• Sensor hub</li> </ul>
<b>Operating system</b>	<p><b>Preinstalled:</b></p> <ul style="list-style-type: none"> <li>• Windows® 10 Home 64-bit</li> <li>• Windows 10 Home 64-bit Plus</li> <li>• Windows 10 Home 64-bit Plus Single Language</li> <li>• Windows 10 Home 64-bit Plus Single Language Africa Market PPP</li> </ul>
<b>Operating system</b> <i>(continued)</i>	<ul style="list-style-type: none"> <li>• Windows 10 Professional 64-bit</li> </ul>
<b>Serviceability</b>	<b>End user replaceable parts:</b> AC adapter

---

## 2 Components

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

### Locating hardware

To find out what hardware is installed on the computer:

- ▲ Type `device manager` in the taskbar search box, and then select the **Device Manager** app.

A list displays all the devices installed on the computer.

For information about system hardware components and the system BIOS version number, press `fn+esc` (select products only).

### Locating software

Software can vary by product. To find out what software is installed on the computer:

- ▲ Right-click the **Start** button, and then select **Apps and Features**.

# Right side

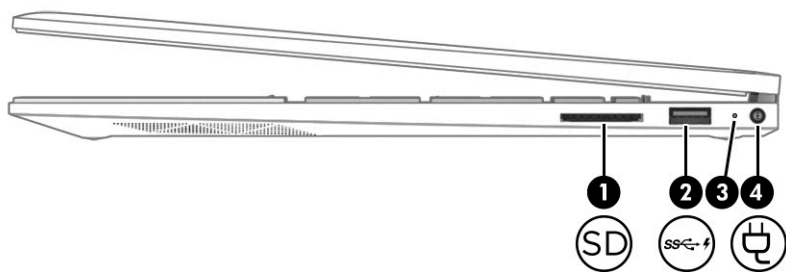




Table 2-1 Right-side components and their descriptions

Component		Description
(1)	<div>SD</div> <div>Memory card reader</div>	<div>Reads optional memory cards that enable you to store, manage, share, or access information.</div> <div>To insert a card:</div> <div><div>1.</div><div>Hold the card label-side up, with connectors facing the computer.</div></div> <div><div>2.</div><div>Insert the card into the memory card reader, and then press in on the card until it is firmly seated.</div></div> <div>To remove a card:</div> <div><div>▲</div><div>Press in on the card, and then remove it from the memory card reader.</div></div>
(2)	<div></div> <div>USB SuperSpeed port with HP Sleep and Charge</div>	<div>Connects a USB device, provides high-speed data transfer, and even when the computer is off, charges most products such as a cell phone, camera, activity tracker, or smartwatch.</div>
(3)	<div></div> <div>AC adapter and battery light</div>	<div><div>•</div><div>White: The AC adapter is connected and the battery is fully charged.</div></div> <div><div>•</div><div>Blinking white: The AC adapter is disconnected and the battery has reached a low battery level.</div></div> <div><div>•</div><div>Amber: The AC adapter is connected and the battery is charging.</div></div> <div><div>•</div><div>Off: The battery is not charging.</div></div>
(4)	<div></div> <div>Power connector</div>	<div>Connects an AC adapter.</div>



# Left side

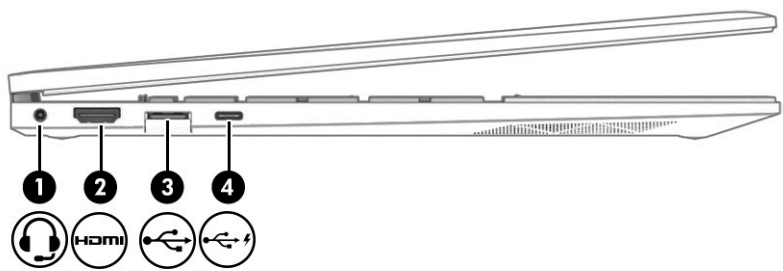






Table 2-2 Left-side components and their descriptions

Component	Description
(1)  Audio-out (headphone)/Audio-in (microphone) combo jack	<p>Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. This jack does not support optional standalone microphones.</p> <p><b>WARNING!</b> To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, see the <i>Regulatory, Safety, and Environmental Notices</i>.</p> <p>To access this guide:</p> <ul style="list-style-type: none"><li>▲ Type <b>HP Documentation</b> in the taskbar search box, and then select <b>HP Documentation</b>.</li></ul> <p><b>NOTE:</b> When a device is connected to the jack, the computer speakers are disabled.</p>
(2)  HDMI port	<p>Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component, or an HDMI device.</p>
(3)  USB SuperSpeed port with HP Sleep and Charge	<p>Connects a USB device, provides high-speed data transfer, and even when the computer is off, charges most products such as a cell phone, camera, activity tracker, or smartwatch.</p>
(4)  USB SuperSpeed Type-C port with HP Sleep and Charge	<p>Connects a USB device that has a Type-C connector, provides data transfer, and even when the computer is off, charges most products such as a cell phone, camera, activity tracker, or smartwatch.</p> <p>– and –</p> <p>Connects a display device that has a USB Type-C connector, providing DisplayPort™ output.</p> <p><b>NOTE:</b> Cables, adapters, or both (purchased separately) might be required.</p>

# Display

## Low blue light mode (select products only)

The computer display is shipped from the factory in low blue light mode for improved eye comfort and safety. Also, blue light mode automatically adjusts blue light emissions when using the computer at night or for reading.

**⚠ WARNING!** To reduce the risk of serious injury, read the *Safety & Comfort Guide*. It describes proper workstation setup and proper posture, health, and work habits for computer users. The *Safety & Comfort Guide* also provides important electrical and mechanical safety information. The *Safety & Comfort Guide* is available on the web at <http://www.hp.com/ergo>.

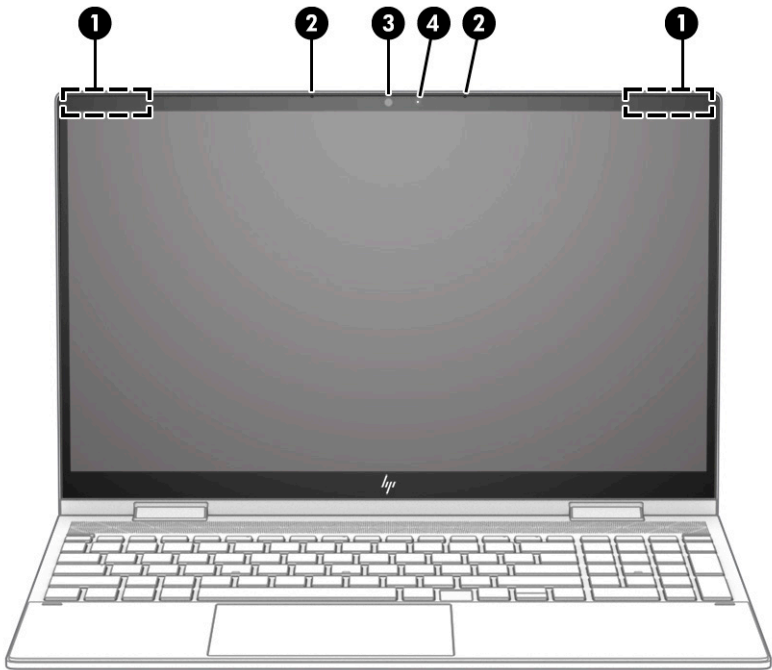


Table 2-3 Display components and their descriptions

Component		Description
(1)	WLAN antenna(s)*	Send and receive wireless signals to communicate with WLANs.
(2)	Internal microphones	Record sound.
(3)	Camera	Allows video chat, video recording, and still image recording. 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 the product.
(4)	Camera light	On: The camera is in use.

\*The antenna(s) are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antenna(s) 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:

- ▲ Type **HP Documentation** in the taskbar search box, and then select **HP Documentation**.

# Keyboard area

Keyboards can vary by language.

## Touchpad

### Touchpad settings

To adjust touchpad settings and gestures, or to turn off the touchpad:

- 1. Type `touchpad settings` in the taskbar search box, and then press `enter`.
- 2. Choose a setting.

To turn on the touchpad:

- 1. Type `touchpad settings` in the taskbar search box, and then press `enter`.
- 2. Using an external mouse, click the **touchpad** button.

– or –

- ▲ Press the `Tab` key repeatedly until the pointer rests on the **touchpad** button. Then press the `spacebar` to select the button.

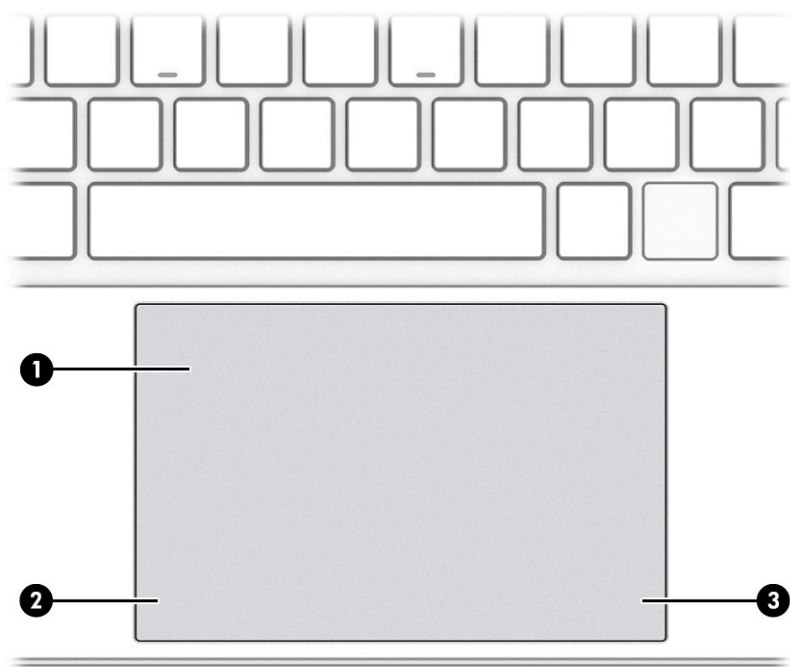


Table 2-4 Touchpad components and their descriptions

Component		Description
(1)	Touchpad zone	Reads 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

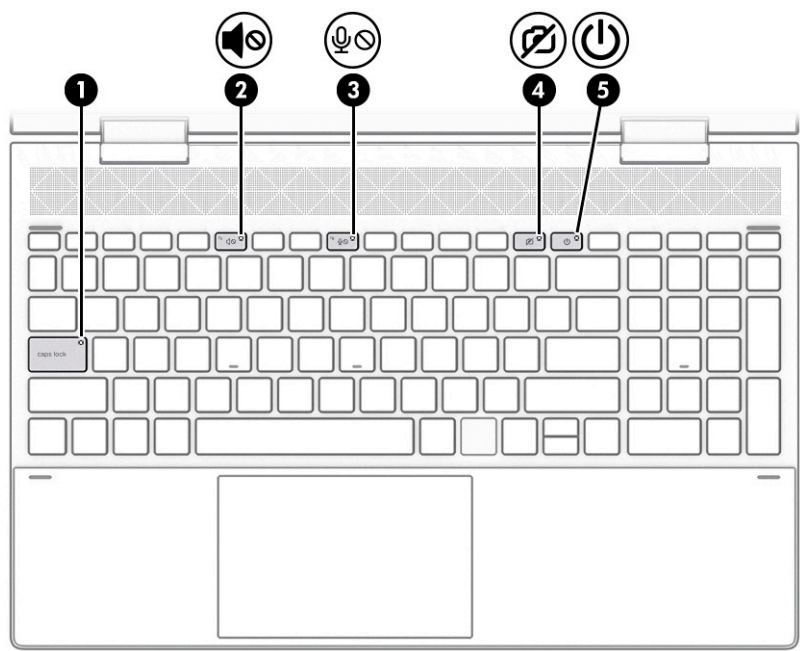




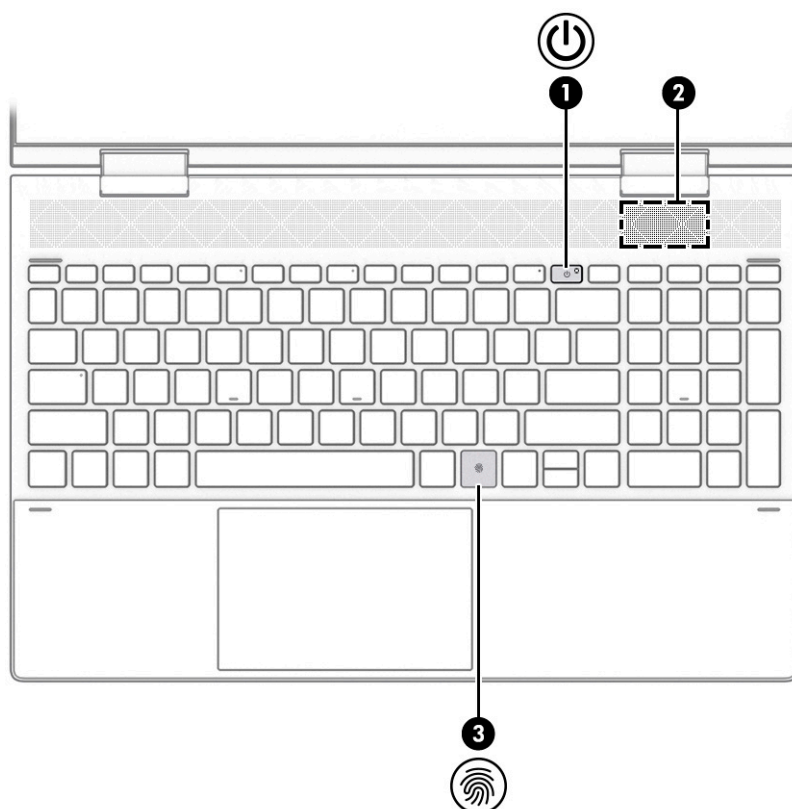


Table 2-5 Lights and their descriptions

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>
(3)	 Microphone mute light	<ul style="list-style-type: none"><li>On: The microphone is on.</li><li>Off: The microphone is off.</li></ul>
(4)	 Camera privacy light	<ul style="list-style-type: none"><li>On: An integrated camera is off.</li><li>Off: The integrated camera is on.</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 unnecessary components.</li><li>Off: Depending on your computer model, the computer is off, in Hibernation, or in Sleep. Hibernation is the power-saving state that uses the least amount of power.</li></ul>

## Button, speakers, and fingerprint reader



**Table 2-6** Button, speakers, and fingerprint reader and their descriptions



Component		Description
(1)	 Power button	<ul style="list-style-type: none"><li>• When the computer is off, press the button to turn on the computer.</li><li>• When the computer is on, press the button briefly to initiate Sleep.</li><li>• When the computer is in the Sleep state, press the button briefly to exit Sleep (select products only).</li><li>• When the computer is in Hibernation, press the button briefly to exit Hibernation.</li></ul> <p><b>IMPORTANT:</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 10 seconds to turn off the computer.</p> <p>To learn more about your power settings, see your power options.</p>
(2)	Speaker	Produces sound.
(3)	 Fingerprint reader	<p>Allows a fingerprint logon to Windows, instead of a password logon.</p> <p>▲ Touch your finger to the fingerprint reader.</p>

Table 2-6 Button, speakers, and fingerprint reader and their descriptions (continued)

Component	Description
	<b>IMPORTANT:</b> To prevent fingerprint logon issues, make sure when you register your fingerprint that all sides of your finger are registered by the fingerprint reader.

Special keys

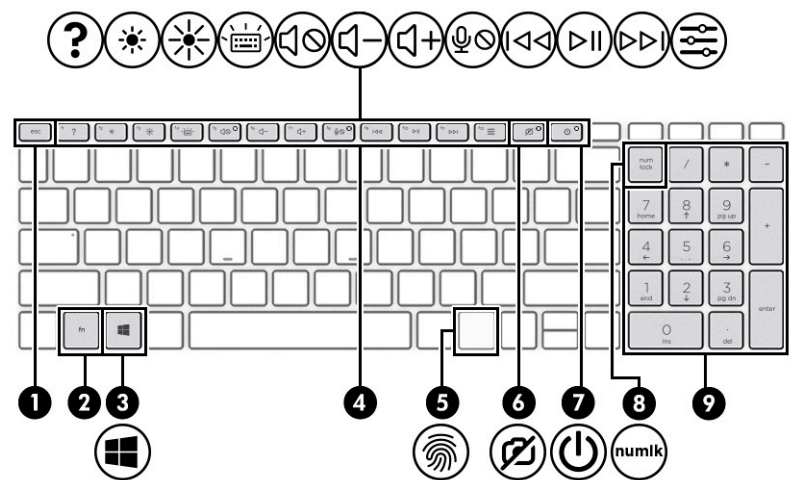


Table 2-7 Special keys and their descriptions





Component	Description
(1) <span>esc</span> key	Displays system information when pressed in combination with the <span>fn</span> key.
(2) <span>fn</span> 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 as defined by the icon symbols on the <span>f1</span> through <span>f12</span> function keys. The action keys vary by computer.
(5)  Fingerprint reader (select products only)	Allows a fingerprint logon to Windows, instead of a password logon.
(6)  Camera privacy key	Turns the camera off and on.
(7)  Power button	<ul style="list-style-type: none"><li>When the computer is off, press the button to turn on the computer.</li><li>When the computer is on, press the button briefly to initiate Sleep.</li><li>When the computer is in the Sleep state, press the button briefly to exit Sleep (select products only).</li></ul>

Table 2-7 Special keys and their descriptions (continued)

Component	Description
	<ul style="list-style-type: none"><li>When the computer is in Hibernation, press the button briefly to exit Hibernation.</li></ul> <p><b>IMPORTANT:</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 10 seconds to turn off the computer.</p> <p>To learn more about your power settings, see your power options.</p>
(8) num lock key	Alternates between the navigational and numeric functions on the integrated numeric keypad.
(9) Integrated numeric keypad	<p>A separate keypad to the right of the alphabet keyboard. When <b>num lock</b> is pressed, the keypad can be used like an external numeric keypad.</p> <p><b>NOTE:</b> If the keypad function is active when the computer is turned off, that function is reinstated when the computer is turned back on.</p>

Bottom

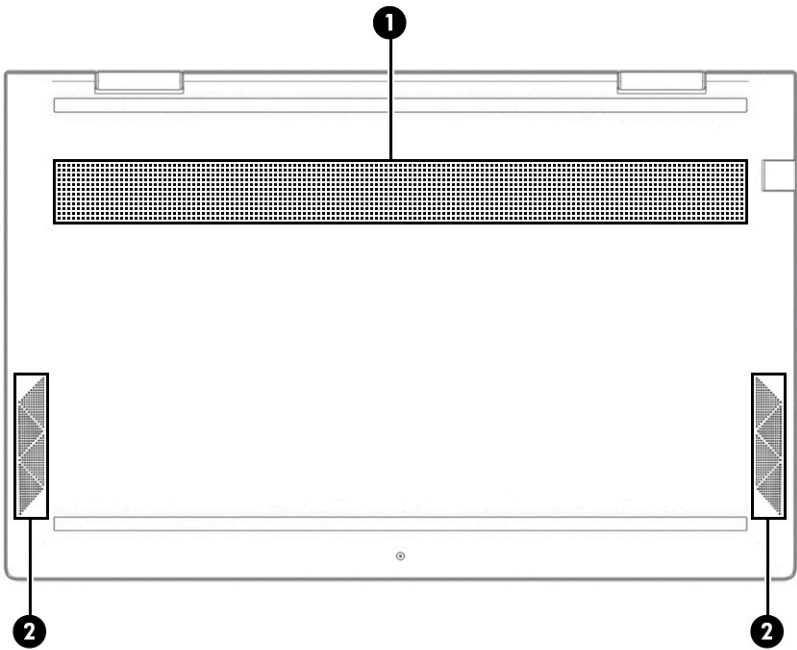


Table 2-8 Bottom components and their descriptions

Component	Description
(1) Vent	Enables airflow to cool internal components.

Table 2-8 Bottom components and their descriptions (continued)

Component	Description
	<b>NOTE:</b> The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(2) Speakers	Produce sound.

## Labels

The labels affixed to the computer provide information that you might need when you troubleshoot system problems or travel internationally with the computer. Labels can 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 might 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 following examples. Refer to the illustration that most closely matches the service label on your computer.

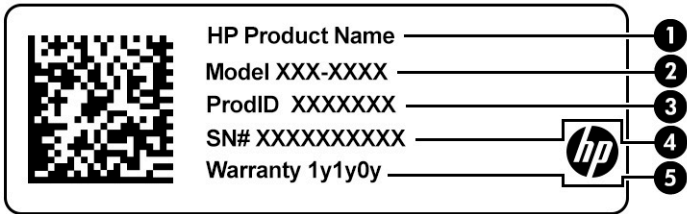
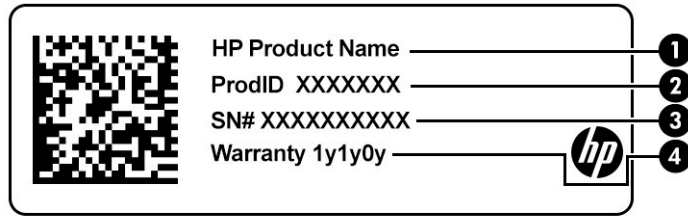


Table 2-9 Service label components

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





**Table 2-10** Service label components


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

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

---

## 3 Illustrated parts catalog

---

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

---

# Computer major components

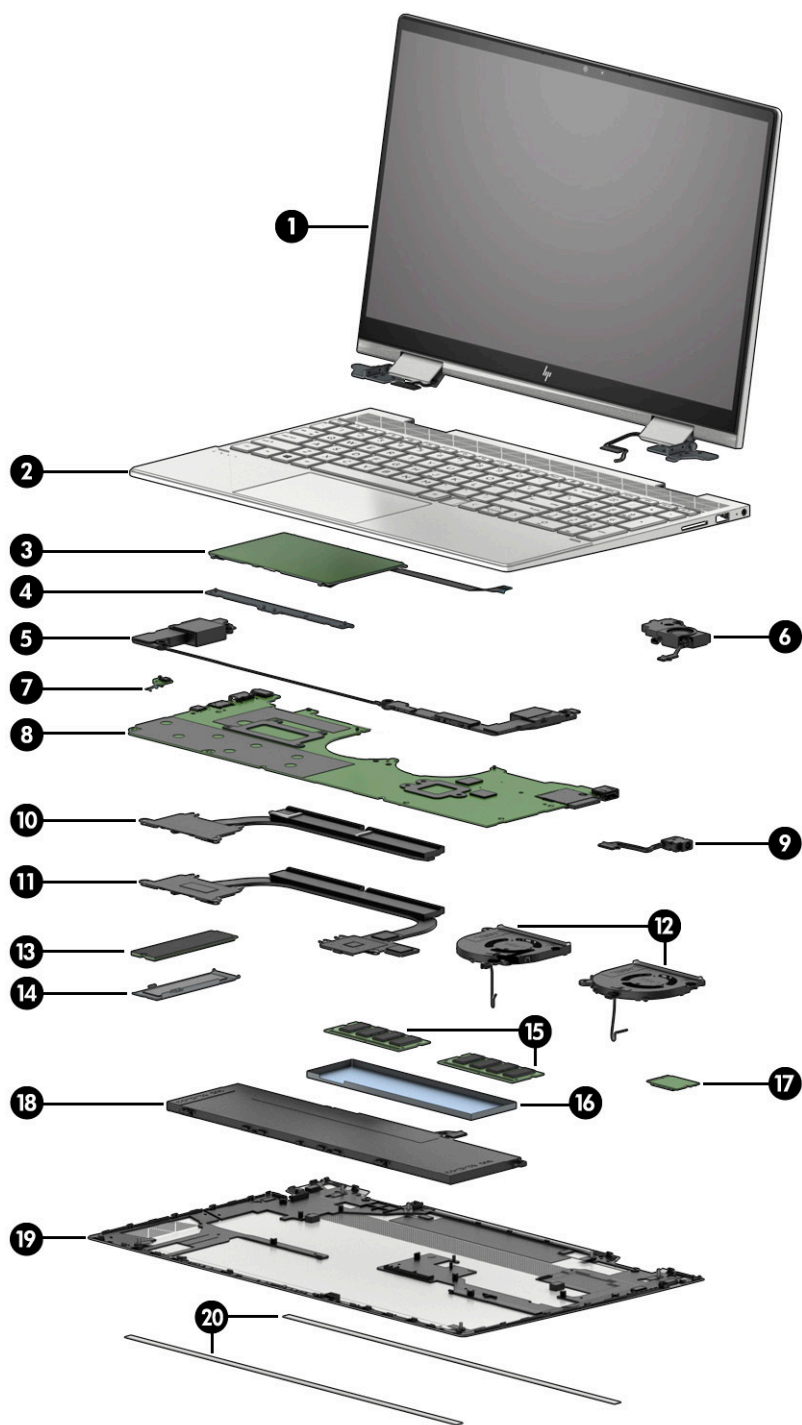


Table 3-1 Major component spare part information

Item	Component	Spare part number
(1)	<b>Display assembly:</b> The display assembly is available as spare parts at the subcomponent level only. For more display assembly spare part information, see <a href="#">Display components on page 18</a> .	
(2)	<b>Keyboard/top cover</b> in nightfall black (top cover) and sky black (keyboard) finishes (includes keyboard cable):	

**Table 3-1 Major component spare part information (continued)**

Item	Component	Spare part number
	For use in Belgium	L93119-A41
	For use in Canada	L93119-DB1
	For use in the Czech Republic and Slovakia	L93119-FL1
	For use in Denmark, Finland, and Norway	L93119-DH1
	For use in France	L93119-051
	For use in Germany	L93119-041
	For use in Italy	L93119-061
	For use in Japan	L93119-291
	For use in the Netherlands	L93119-B31
	For use in Russia	L93119-251
	For use in Switzerland	L93119-BG1
	For use in the United Kingdom	L93119-031
	For use in the United States	L93119-001
(3)	<b>Touchpad</b>	L93186-001
	<b>Touchpad cable</b> (not illustrated)	L93187-001
(4)	<b>Touchpad bracket</b> (not available as a spare part)	
(5)	<b>Front speakers</b> (include left and right front speakers, cables, and 4 rubber isolators)	L93196-001
(6)	<b>Subwoofer</b> (includes cable and 1 rubber isolator)	L94317-001
(7)	<b>Infrared board</b>	L93188-001
	<b>Infrared board cable</b> (not illustrated)	L93189-001
(8)	<b>System board</b> (includes processor, graphics subsystem with UMA memory, replacement thermal material, and Windows 10 operating system):	
	Equipped with an AMD Ryzen7 4750U processor	L93114-601
	Equipped with an AMD Ryzen5 4500U processor	L93113-601
	Equipped with an AMD Ryzen3 4300U processor	L93112-601
(9)	<b>Power connector cable</b>	L93195-001
(10)	<b>Heat sink</b> (includes replacement thermal material)	L93192-001
	<b>Thermal Pad Kit</b> (not illustrated)	L93867-001
(11)	<b>Fan</b> (includes cable):	
	Serves the processor	L93193-001
	Serves the graphics subsystem (for use only on computer models equipped with a graphics subsystem with discrete memory)	L93194-001
(12)	<b>WLAN module:</b>	
	Intel Wi-Fi 6 AX200 ax 2×2 + Bluetooth 5.0 MU-MIMO M.2 2230 non-vPro 160 MHz PCI-e + USB WW with 2 antenna(s)	L35282-005

**Table 3-1** Major component spare part information (continued)

Item	Component	Spare part number
	Realtek ac 2×2 + Bluetooth 5.0 M.2 2230 PCI-e + USB WW	L44796-005
<b>(13)</b>	<b>Solid-state drive:</b>	
	1 TB, M.2 2280, PCIe, NVMe 3×4, SS solid-state drive with TLC	L85348-005
	512 GB, M.2 2280, PCIe 3×4, SS solid-state drive with TLC	L85360-005
	512 GB, M.2 2280, PCIe, NVMe value solid-state drive	L85364-005
	256 GB, M.2 2280, PCIe 3×4, SS solid-state drive with TLC	L85350-005
	256 GB, M.2 2280, PCIe, NVMe value solid-state drive	L85354-005
<b>(14)</b>	<b>Memory modules</b> (2, DDR4-3200 MHz, 1.2 v):	
	8 GB	L83673-005
	4 GB	L46598-005
<b>(15)</b>	<b>Battery</b> (3 cell, 51 WHr, 4.45 Ahr, Li-ion; includes cable)	L77034-005
<b>(16)</b>	<b>Bottom cover</b>	L94070-001
<b>(17)</b>	<b>Rubber feet</b>	L93198-001
	<b>USB port cover</b> (not illustrated)	L94319-001

# Display components

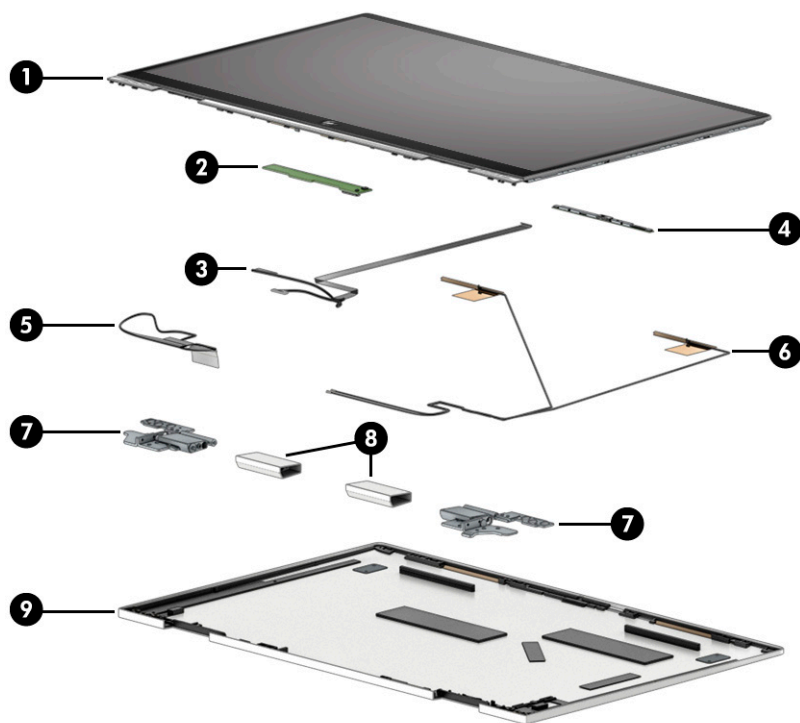


Table 3-2 Display component spare part information

Item	Component	Spare part number
(1)	<b>Display panel assembly</b> (includes display bezel and display panel):	
	15.6 in, FHD, 400 nits in nightfall black finish	L93183-001
	15.6 in, FHD, 250 nits in nightfall black finish	L93181-001
(2)	<b>Touchscreen board</b> (includes double-sided adhesive)	L93199-001
(3)	<b>Webcam module cable</b> (includes touchscreen board cable)	L93200-001
(4)	<b>Webcam module</b> (includes double-sided adhesive)	L93866-001
(5)	<b>Display panel cable</b>	L93201-001
(6)	<b>Wireless Antenna Kit</b> (not illustrated, includes left and right antenna cables and transceivers)	L93206-001
(7)	<b>Display hinges</b> (2, includes left and right hinges)	L93205-001
(8)	<b>Display hinge cover</b> (2, includes left and right hinge covers)	L93208-001
(9)	<b>Display back cover</b> (includes the wireless antenna cables and transceivers)	L93204-001

## Miscellaneous parts

**Table 3-3** Miscellaneous spare part information

Component	Spare part number
<b>AC adapter:</b>	
65 W HP Smart AC adapter (slim, 4.5 mm, 1.8 m)	L24008-001
AC adapter, C5, for use only in Japan	226768-001
<b>Adapter:</b>	
HP USB-to-Gigabit RJ45 adapter	829941-001
HP USB-C-to-HDMI-2.0 adapter	935325-001
HP USB-C-to-Multi-Port hub	919666-001
HP USB-C-to-RJ45 adapter	855560-001
HP USB-C-to-USB-A dongle	833960-001
HP USB-C-to-USB-A hub	916838-001
HP USB-C-to-VGA adapter	831751-001
<b>HP USB external DVD-RW Drive</b>	747080-001
<b>Zenvo pen in nightfall black finish with cable</b>	L95615-001
<b>Power cord (C5, 1.0 m, premium with sticker):</b>	
For use in Australia	L22327-001
For use in Denmark	L22322-001
For use in Europe	L22321-001
For use in Japan	L22330-001
For use in North America	L22319-001
For use in Switzerland	L22324-001
For use in the United Kingdom	L22320-001
<b>Screw Kit</b>	L93210-001
<b>Sunwoda stylus active pen in dark ash finish</b>	920241-001

---

## 4 Removal and replacement procedures preliminary requirements

### Tools required

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

- Flat-bladed screwdriver
- Magnetic screwdriver
- Phillips P0 and P1 screwdrivers
- Case utility tool or similar thin plastic tool

### 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


---

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

---

### Cables and connectors

---

 **IMPORTANT:** 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



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

- Before removing or inserting a hard drive, shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
- Before handling a drive, be sure that you are discharged of static electricity. While handling a drive, avoid touching the connector.
- Before removing an optical drive, be sure that a disc is not in the drive and be sure that the optical drive tray is closed.
- Handle drives on surfaces covered with at least 2.54 cm (1 in.) of shock-proof foam.
- Avoid dropping drives from any height onto any surface.
- After removing a hard drive or an optical drive, place it in a static-proof bag.
- Avoid exposing an internal hard drive to products that have magnetic fields, such as monitors or speakers.
- Avoid exposing a drive to temperature extremes or liquids.
- If a drive must be mailed, place the drive in a bubble pack mailer or other suitable form of protective packaging and label the package "FRAGILE."

## Electrostatic discharge damage

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

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

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



**IMPORTANT:** To prevent damage to the tablet when you are removing or installing internal components, observe these precautions:

- Keep components in their electrostatic-safe containers until you are ready to install them.
- Before touching an electronic component, discharge static electricity by using the guidelines described in this section.
- Avoid touching pins, leads, and circuitry. Handle electronic components as little as possible.
- If you remove a component, place it in an electrostatic-safe container.

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



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

**Table 4-1** Typical electrostatic voltage levels

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 polystyrene foam	14,500 V	5,000 V	3,500 V
Removing bubble pack from PCB	26,500 V	20,000 V	7,000 V
Packing PCBs in foam-lined box	21,000 V	11,000 V	5,000 V

## Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

## Workstation guidelines

Follow these grounding workstation guidelines:

- Cover the workstation with approved static-shielding material.
- Use a wrist strap connected to a properly grounded work surface and use properly grounded tools and equipment.
- Use conductive field service tools, such as cutters, screw drivers, and vacuums.
- When fixtures must directly contact dissipative surfaces, use fixtures made only of static-safe materials.
- Keep the work area free of nonconductive materials, such as ordinary plastic assembly aids and polystyrene foam.
- 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  $1\text{ M}\Omega \pm 10\%$  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  $1\text{ M}\Omega \pm 10\%$  resistance between the operator and ground. To be effective, the conductive must be worn in contact with the skin.

HP recommends the following grounding equipment 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  $1\text{ M}\Omega \pm 10\%$  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.

**Table 4-2** 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

 **IMPORTANT:** 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 about supported parts for the computer, go to <http://partsurfer.hp.com>, select the country or region, and then follow the on-screen instructions.

### Component replacement procedures

There are as many as 57 screws that must be removed, replaced, or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

#### Bottom cover

**Table 5-1** Bottom cover spare part information

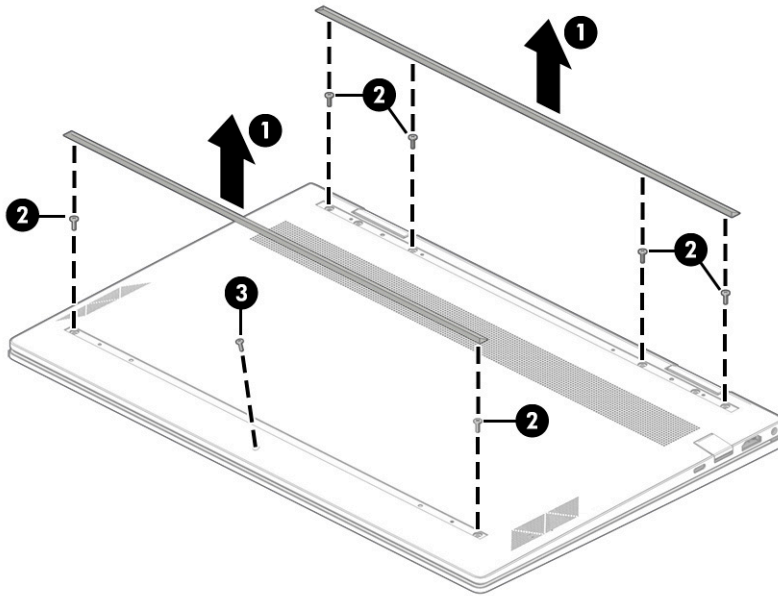
Description	Spare part number
Bottom cover	L94070-001

Remove the bottom cover:

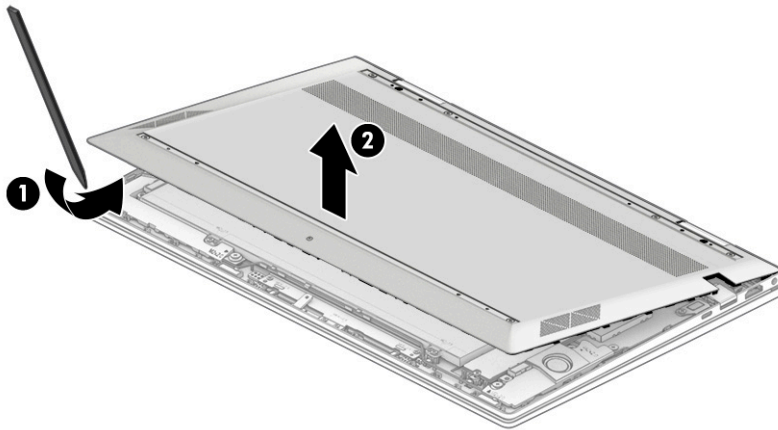
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Close the computer and position it upside down.
5. Remove the front **(1)** and rear rubber foot strips.

The rubber foot strips are available using spare part number L93198-001.

6. Remove the six Phillips M2.0×6.6 screws **(2)** the Torx5 M2.0×2.7 screw **(3)** that secure the bottom cover to the keyboard/top cover.



7. Use a thin plastic tool **(1)** to separate the front edge of the bottom cover from the keyboard/top cover.
8. Remove the bottom cover **(2)**.



Reverse this procedure to install the bottom cover.

## Front speakers

Table 5-2 Speaker spare part information


Description	Spare part number
Front speakers (include left and right front speakers, cables, and 4 rubber isolators)	L93196-001

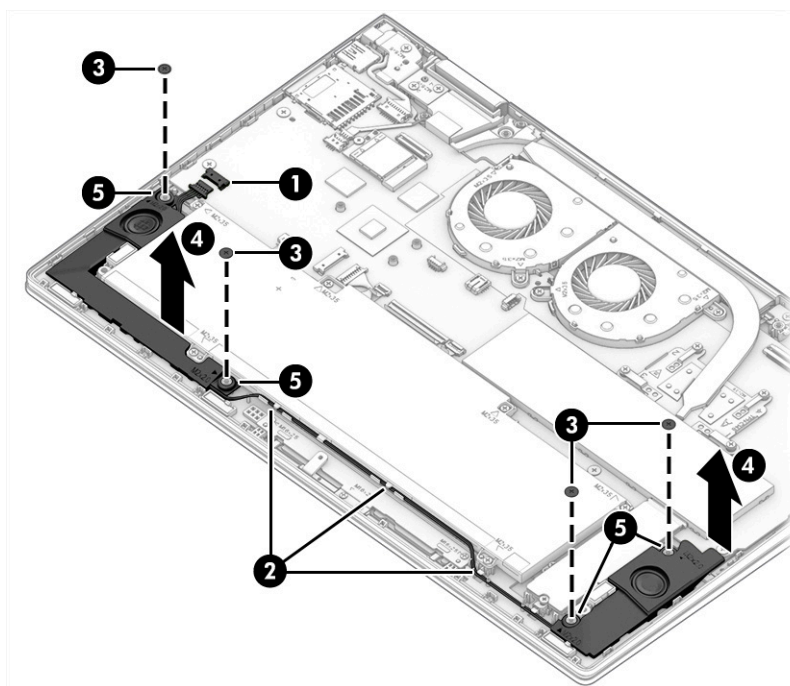
Before removing the front speakers, follow these steps:

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 bottom cover (see [Bottom cover on page 25](#)).
5. Disconnect the battery cable from the system board (see [Front speakers on page 27](#)).

Remove the front speakers:

1. Disconnect the front speaker cable (1) from the system board.
2. Release the front speaker cable from the routing clips (2) and channel built into the battery.
3. Remove the four Phillips M2.0×4.2 broad head screws (3) that secure the front speakers to the keyboard/top cover.
4. Remove the front speakers (4).

 **NOTE:** When removing the front speakers, make note of the location of the four rubber isolators (5). The absence of or damage to these isolators can result in degraded front speaker performance.



Reverse this procedure to install the front speakers.

## Solid-state drive

**Table 5-3** Solid-state drive spare part information

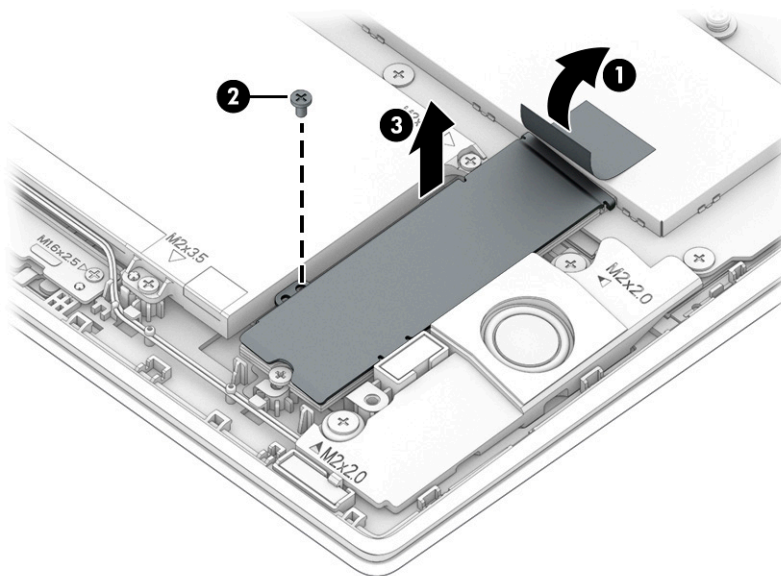
Description	Spare part number
1 TB, M.2 2280, PCIe, NVMe 3×4, SS solid-state drive with TLC	L85348-005
512 GB, M.2 2280, PCIe 3×4, SS solid-state drive with TLC	L85360-005
512 GB, M.2 2280, PCIe, NVMe value solid-state drive	L85364-005
256 GB, M.2 2280, PCIe 3×4, SS solid-state drive with TLC	L85350-005
256 GB, M.2 2280, PCIe, NVMe value solid-state drive	L85354-005

Before removing the solid-state 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 bottom cover (see [Bottom cover on page 25](#)).
5. Disconnect the battery cable from the system board (see [Front speakers on page 27](#)).

Remove the solid-state drive:

1. Detach the tape (1) that secures the solid-state drive shield to the memory module shield.
2. Remove the Phillips M2.0×4.1 screw (2) that secures the solid-state drive shield to the keyboard/top cover.
3. Remove the solid-state drive shield (3).



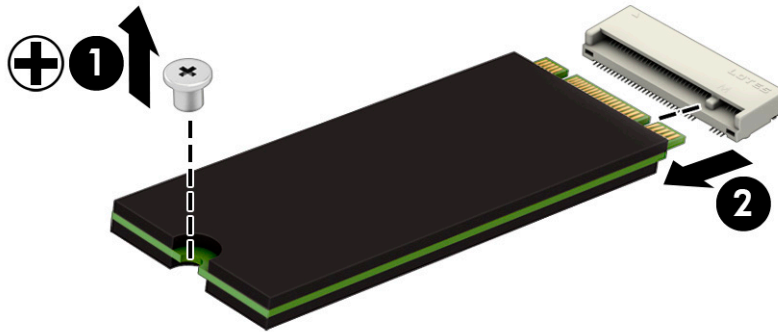
4. Remove the Phillips M2.0×3.5 screw (1) that secures the solid-state drive to the keyboard/top cover.



5. Remove the solid-state drive (2) by sliding it away from the slot at an angle.



**NOTE:** Solid-state drives are notched to prevent incorrect installation.



Reverse this procedure to install the solid-state drive.

## Memory module

Table 5-4 Memory module spare part information

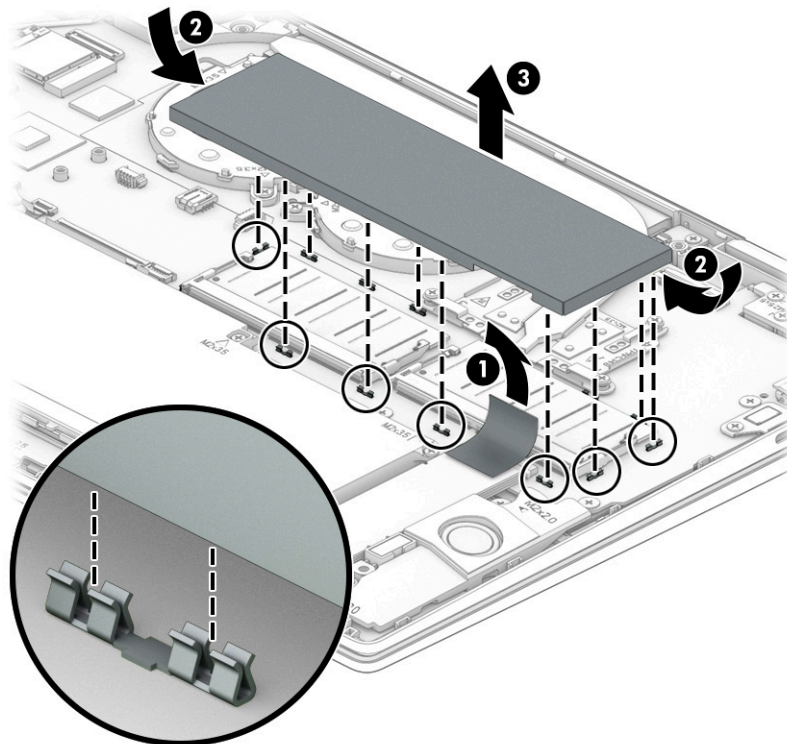
Description	Spare part number
8 GB (DDR4-3200 MHz, 1.2 v)	L83673-005
4 GB (DDR4-3200 MHz, 1.2 v)	L46598-005

Before removing the 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 bottom cover (see [Bottom cover on page 25](#)).
5. Disconnect the battery cable from the system board (see [Front speakers on page 27](#)).

Remove the memory module:

1. Detach the tape (1) that secures the memory module shield to the solid-state drive shield.
2. Detach the left (2) and right sides of the memory module shield from the retention clips built onto the system board.
3. Remove the memory module shield (3).

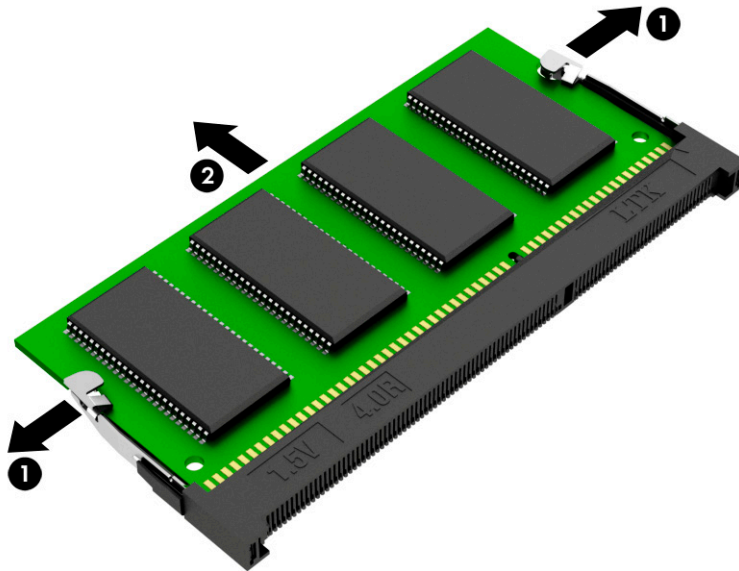


4. Spread the retention tabs (1) on either side of the memory module. (The memory module tilts up.)

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



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



Reverse this procedure to install the memory module.

## WLAN module

**Table 5-5 WLAN module spare part information**

Description	Spare part number
Intel Wi-Fi 6 AX200 ax 2×2 + Bluetooth 5.0 MU-MIMO M.2 2230 non-vPro 160 MHz PCI-e + USB WW with 2 antenna(s)	L35282-005
Realtek ac 2×2 + Bluetooth 5.0 M.2 2230 PCI-e + USB WW	L44796-005



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

Before removing the WLAN module, follow these steps:

1. 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 bottom cover (see [Bottom cover on page 25](#)).
5. Disconnect the battery cable from the system board (see [Front speakers on page 27](#)).

Remove the WLAN module:

1. Remove the Mylar cover **(1)** that secures the WLAN antenna cables to the WLAN module terminals.
2. Disconnect the WLAN antenna cables **(2)** from the WLAN module terminals.



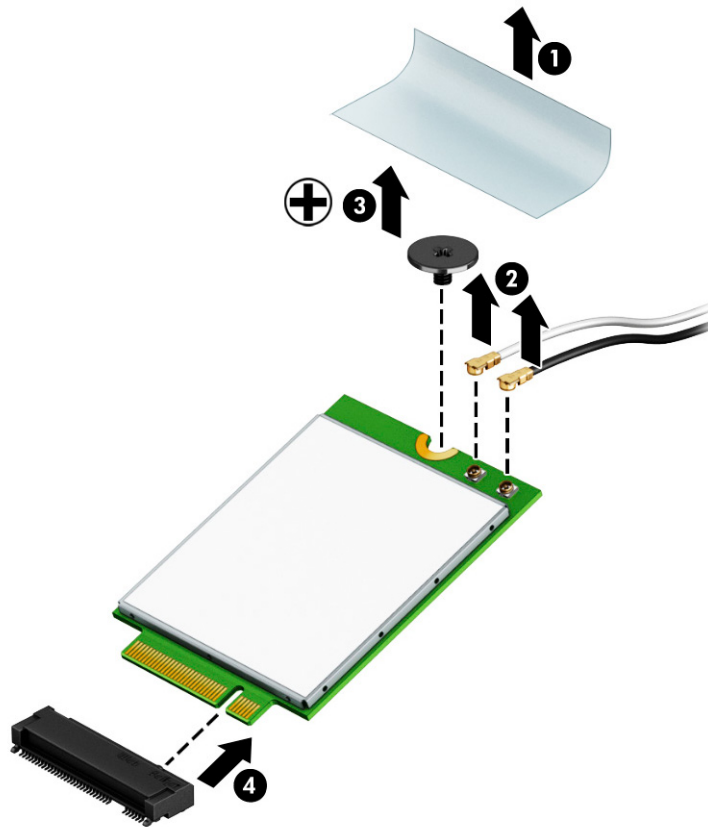
**NOTE:** The #1/white WLAN antenna cable connects to the WLAN module **#1/Main** terminal. The #2/black WLAN antenna cable connects to the WLAN module **#2/Aux** terminal.

3. Remove the Phillips M2.0×3.5 screw **(3)** that secures the WLAN module to the system board. (The WLAN module tilts up.)

4. Remove the WLAN module (4) by pulling the module away from the slot at an angle.



**NOTE:** WLAN modules are notched to prevent incorrect installation.



Reverse this procedure to install the WLAN module.

## Fan

**Table 5-6 Fan spare part information**

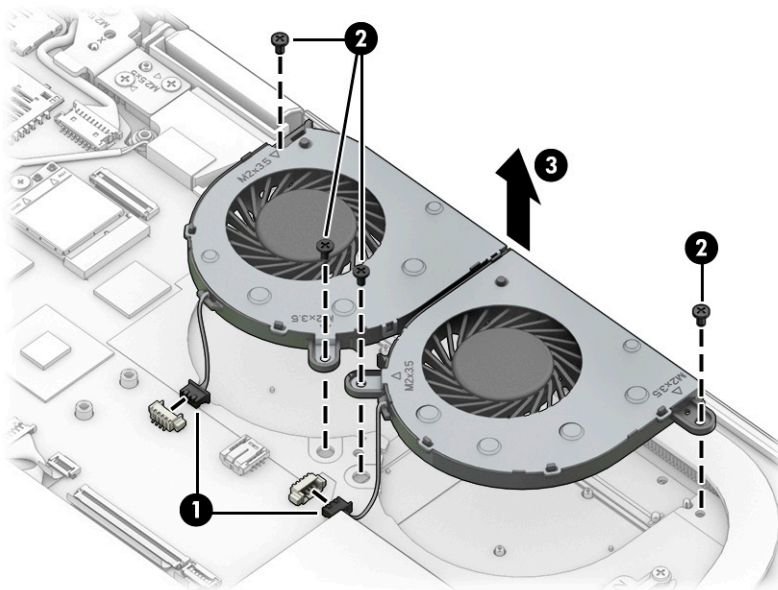
Description	Spare part number
Serves the processor	L93193-001
Serves the graphics subsystem (for use only on computer models equipped with a graphics subsystem with discrete memory)	L93194-001

Before removing the fans, 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 bottom cover (see [Bottom cover on page 25](#)).
5. Disconnect the battery cable from the system board (see [Front speakers on page 27](#)).

Remove the fans:

1. Disconnect the fan cables (1) from the system board.
2. Remove the four Phillips M2.0×4.1 screws (2) that secure the fans to the system board.
3. Remove the fans (3).



Reverse this procedure to install the fans.

## Heat sink

**Table 5-7** Heat sink spare part information

Description	Spare part number
Heat sink (includes replacement thermal material. Replacement thermal material is also available in the Thermal Pad Kit, spare part number L93867-001.)	L93192-001

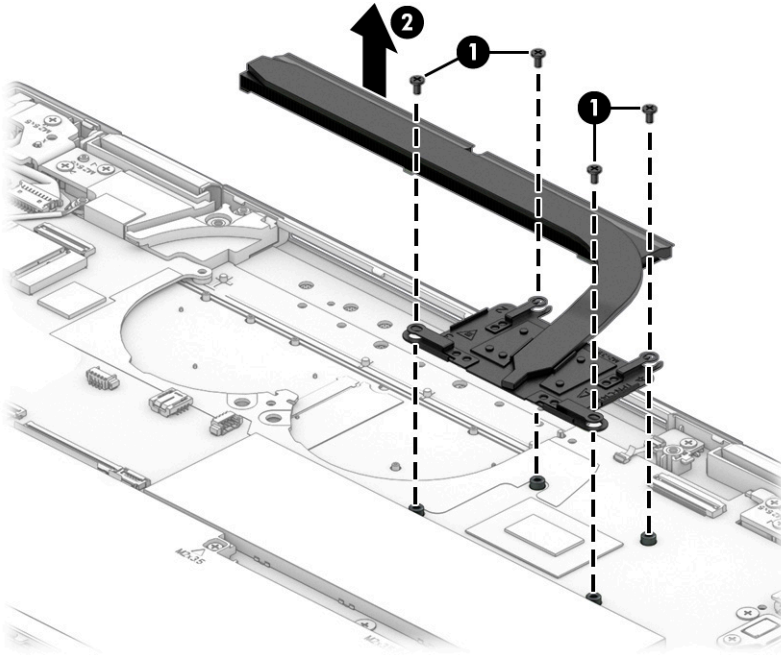
Before removing the heat sink, follow these steps:

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 bottom cover (see [Bottom cover on page 25](#)).
5. Disconnect the battery cable from the system board (see [Front speakers on page 27](#)).
6. Remove the fan (see [Fan on page 34](#)).

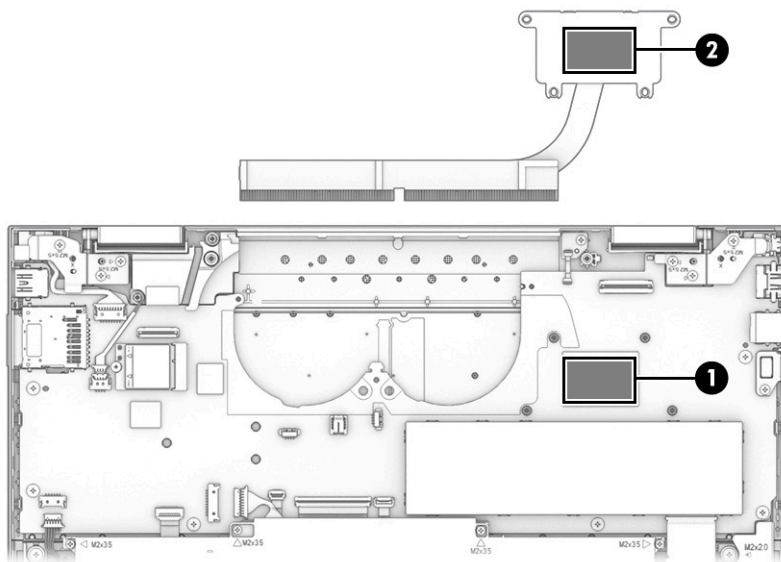
Remove the heat sink:

1. Remove the four Phillips M2.0×4.1 screws (1) that secure the heat sink to the system board.

2. Remove the heat sink (2).



Each time the heat sink is removed, thoroughly clean the thermal material from the processor component (1) and the surface of the heat sink (2). Replacement thermal material is included with the heat sink and system board spare part kits. Replacement thermal material is also available in the Thermal Pad Kit, spare part number L93867-001.



Reverse this procedure to install the heat sink.



## Infrared board cable

**Table 5-8** Infrared board cable spare part information

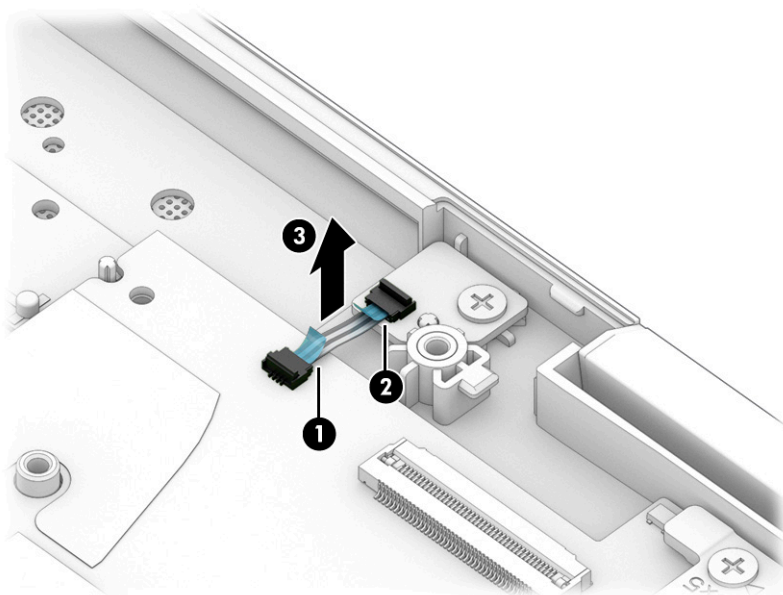
Description	Spare part number
Infrared board cable	L93189-001

Before removing the infrared board 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 bottom cover (see [Bottom cover on page 25](#)).
5. Disconnect the battery cable from the system board (see [Front speakers on page 27](#)).
6. Remove the fan (see [Fan on page 34](#)).
7. Remove the heat sink (see [Heat sink on page 35](#)).

Remove the infrared board cable:

1. Release the zero insertion force (ZIF) connector **(1)** to which the infrared board cable is connected, and then disconnect the infrared board cable from the system board.
2. Release the ZIF connector **(2)** to which the infrared board cable is connected, and then disconnect the infrared board cable from the infrared board.
3. Remove the infrared board cable **(3)**.



Reverse this procedure to install the infrared board cable.

## Infrared board

Table 5-9 Infrared board spare part information

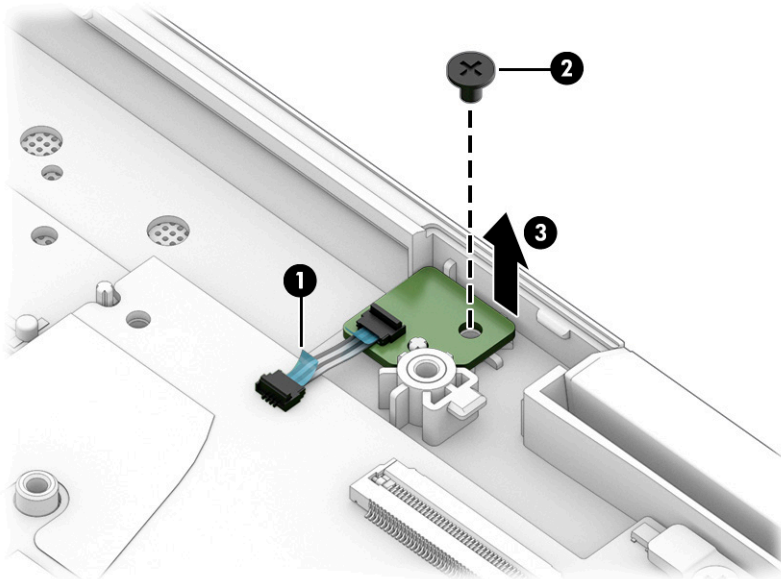
Description	Spare part number
Infrared board	L93188-001

Before removing the infrared 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 bottom cover (see [Bottom cover on page 25](#)).
5. Disconnect the battery cable from the system board (see [Front speakers on page 27](#)).
6. Remove the fan (see [Fan on page 34](#)).
7. Remove the heat sink (see [Heat sink on page 35](#)).

Remove the infrared board:

1. Release the ZIF connector (1) to which the infrared board cable is connected, and then disconnect the infrared board cable from the system board.
2. Remove the Phillips M2.0×3.5 screw (2) that secures the infrared board to the keyboard/top cover.
3. Remove the infrared board (3) and cable.



Reverse this procedure to install the infrared board.

## Display assembly


 **NOTE:** The display assembly is available as spare parts at the subcomponent level only. See the removal section for each component for information.

Before removing the display assembly, follow these steps:

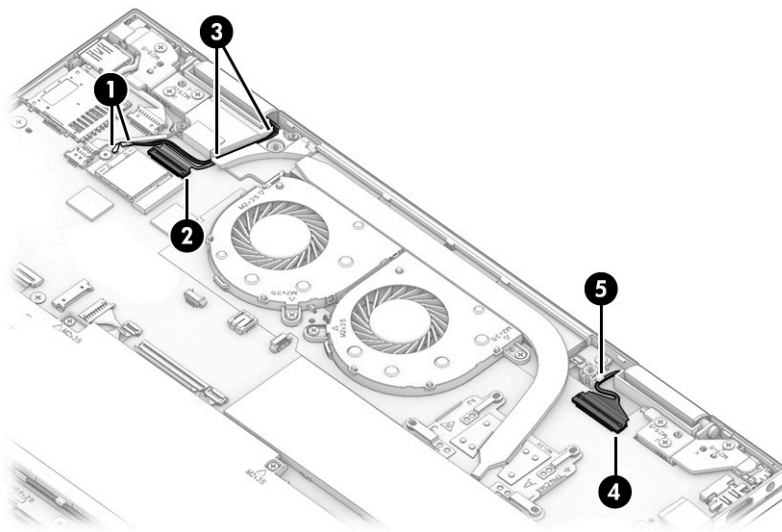
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Bottom cover on page 25](#)).
5. Disconnect the battery from the system board (see [Front speakers on page 27](#)).

Remove the display assembly:

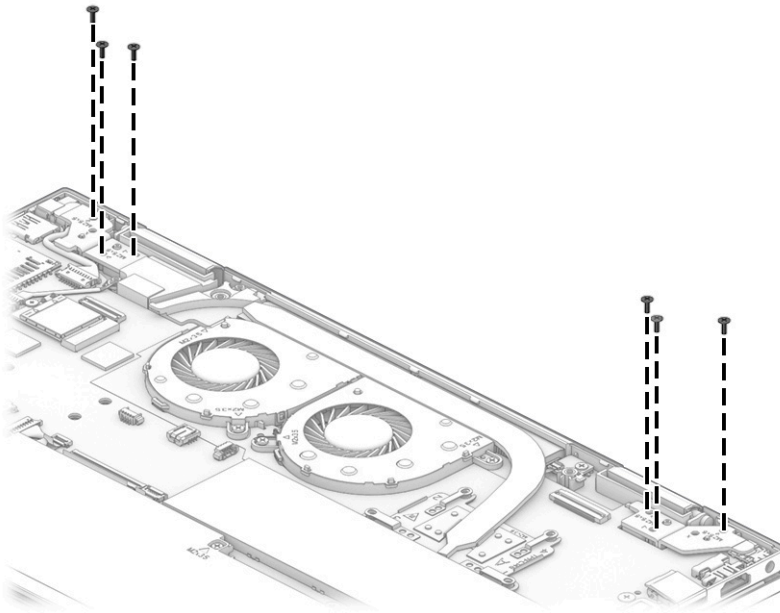
1. Remove the Mylar cover that secures the WLAN antenna cables to the WLAN module terminals.
2. Disconnect the WLAN antenna cables (1) from the WLAN module terminals.

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

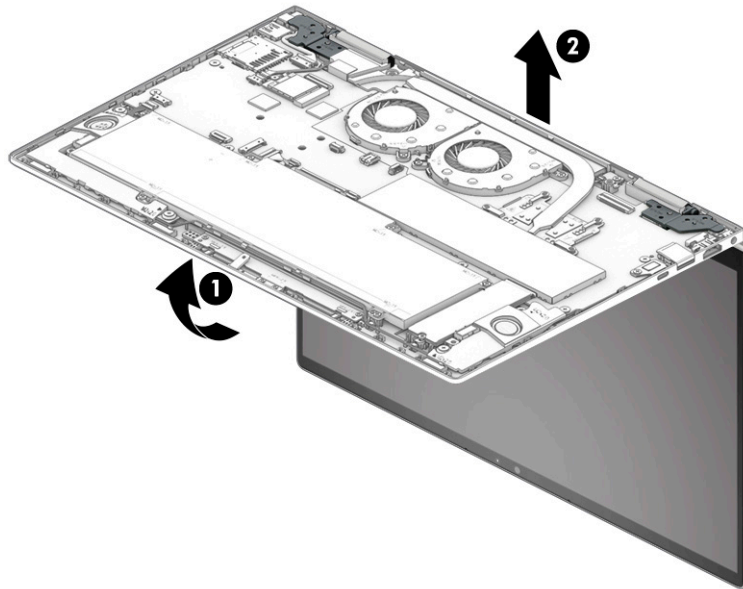
3. Release the ZIF connector (2) to which the webcam cable is connected, and then disconnect the webcam cable from the system board.
4. Release the WLAN antenna cables (3) and the webcam cable from the routing channel built into the rear speaker.
5. Release the ZIF connector (4) to which the display panel cable is connected, and then disconnect the display panel cable from the system board.
6. Release the display panel cable from the retention clip (5) built into the keyboard/top cover.



7. Remove the six Phillips M2.5×5.2 screws that secure the display assembly to the keyboard/top cover.



8. Swing the front edge of the keyboard/top cover (1) up and away from the display assembly. (The keyboard/top cover disengages from the display assembly hinges.)
9. Separate the keyboard/top cover (2) from the display assembly.




10. If it is necessary to replace the display panel assembly or any of the internal display components, follow these steps:

---

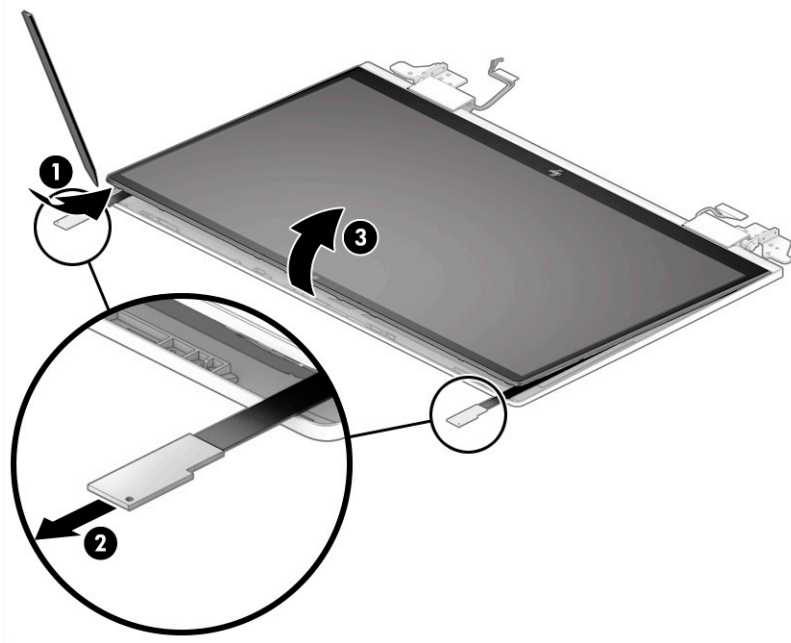
**⚠ CAUTION:** The display panel is extremely fragile. Using excessive force can damage the panel. Use caution when removing the display panel.

---

- a. Use a case utility tool or similar thin plastic tool to partially separate the top corner edges of the display panel assembly from the display back cover.

 **NOTE:** Slow, steady pressure is required when working with the pull-to-release tabs in substep b. Pulling too fast can result in the tabs breaking and the release action being incomplete.

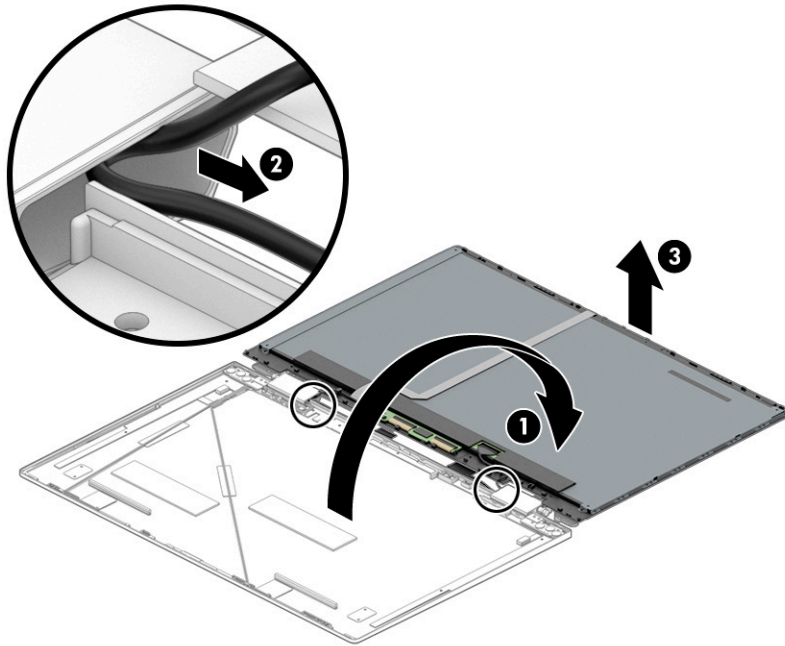
- b. Grasp the pull-to-release tabs located in the top corners of the display panel assembly and pull them as far as they will release.
- c. Separate the top edge (3) of the display panel assembly from the display back cover.



- d. Swing the top edge (1) of the display panel assembly up and forward until it rests upside down in front of the display assembly.
- e. Release the display panel cable (2), the webcam cable, and the WLAN antenna cables from the display hinges.

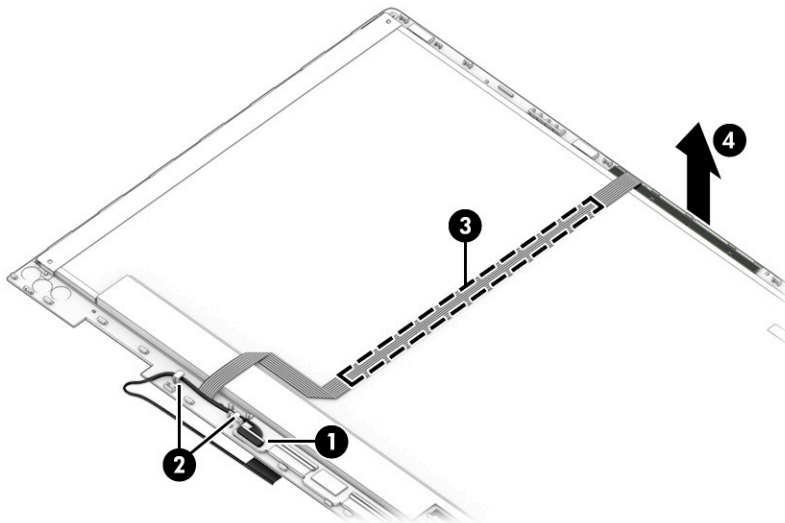
- f. Remove the display panel assembly (3).

The display panel assembly is available using spare part numbers L93183-001 (15.6 in, FHD, 400 nit display panel assembly) and L93181-001 (15.6 in, FHD, 250 nit display panel assembly).



11. If it is necessary to replace the webcam module and webcam module cable, follow these steps:

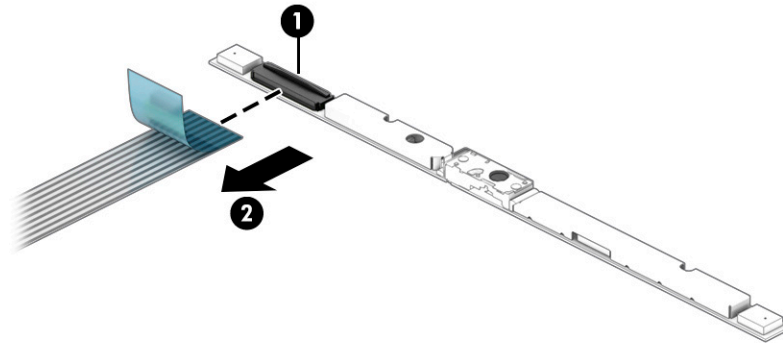
- Remove the display panel assembly.
- Disconnect the webcam module cable (1) from the touchscreen board.
- Release the webcam module cable from the retention clips (2) built into the display panel assembly.
- Detach the webcam module cable (3) from the display panel. (The webcam module cable is attached to the display panel with double-sided adhesive.)
- Detach the webcam module (4) from the display panel. (The webcam module is attached to the display panel with double-sided adhesive.)



- f. Turn the webcam module and webcam module cable right side up with the bottom toward you.
- g. Release the ZIF connector **(1)** to which the webcam module cable is connected, and then disconnect the webcam module cable **(2)** from the webcam module.

The webcam module is available using spare part number L93866-001.

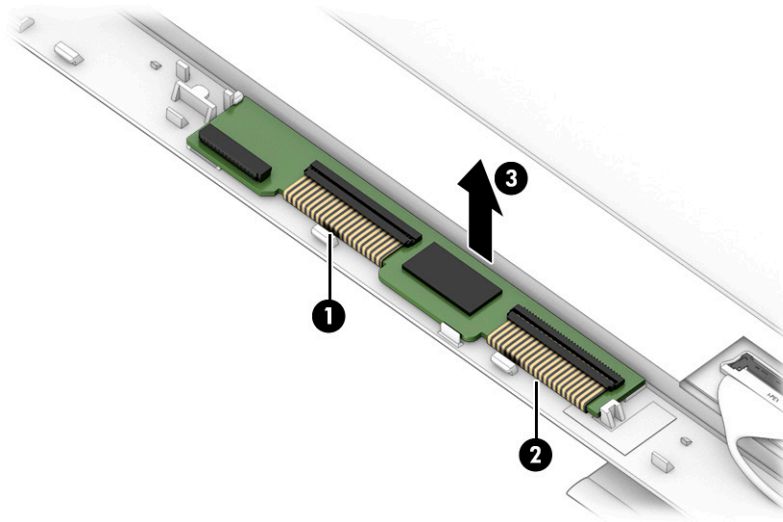
The webcam module cable is available using spare part number L93200-001.



**12.** If it is necessary to replace the touchscreen board, follow these steps:

- a. Remove the display panel assembly.
- b. Remove the webcam module cable.
- c. Release the ZIF connectors **(1)** and **(2)** to which the touchscreen board cables are connected, and then disconnect the touchscreen board cables from the touchscreen board.
- d. Detach the touchscreen board **(3)** from the display panel. (The touchscreen board is attached to the display panel with double-sided tape.)

The touchscreen board is available using spare part number L93199-001.

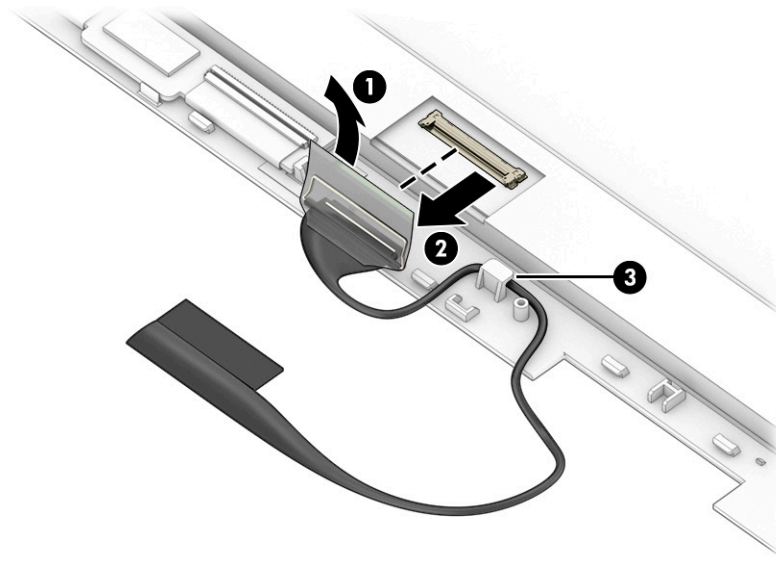


**13.** If it is necessary to replace the display panel cable, follow these steps:

- a. Remove the display panel assembly.
- b. Release the adhesive support strip **(1)** that secures the display panel cable to the display panel.



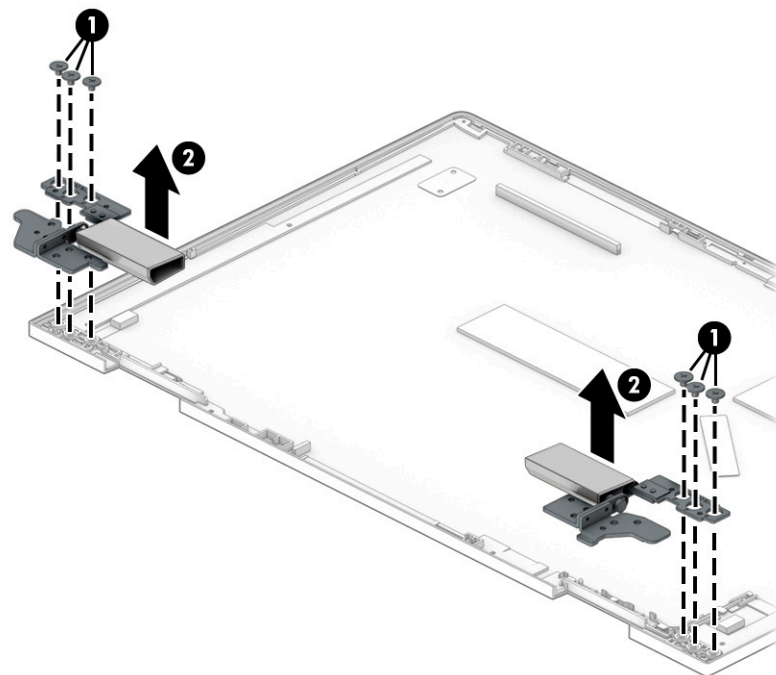
- c. Disconnect the display panel cable (2) from the display panel.
  - d. Release the display panel cable from the retention clips (3) built into the display panel.
- The display panel cable is available using spare part number L93201-001.



14. If it is necessary to replace the display hinges, follow these steps:

- a. Remove the display panel assembly.
- b. Remove the six Phillips M2.5×2.9 screws (1) that secure the display hinges to the display back cover.
- c. Remove the hinges (2).

The display hinges are available using spare part number L93205-001.

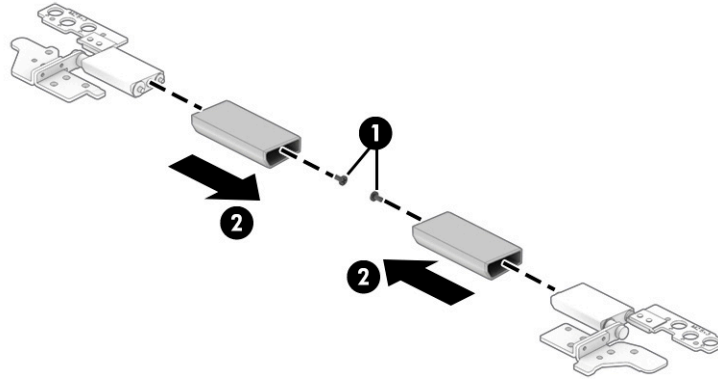


15. If it is necessary to replace the display hinge covers, follow these steps:



- a. Remove the display panel assembly.
- b. Remove the display hinges.
- c. Remove the two Phillips M2.0×4.1 screws **(1)** that secure the display hinge covers to the display hinges.
- d. Remove the display hinge covers **(2)**.

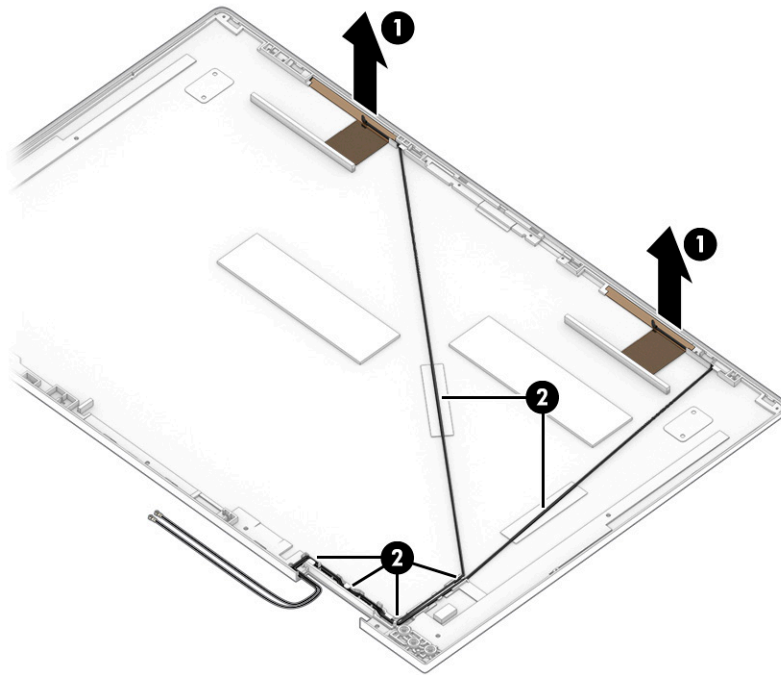
The display hinge covers are available using spare part number L93208-001.



**16.** If it is necessary to replace the WLAN antenna(s), follow these steps:

- a. Remove the display panel assembly.
- b. Remove the right display hinge.
- c. Detach the antenna transceivers **(1)** from the display back cover. (The antenna transceivers are attached to the display back cover with double-sided tape.)

- d. Release the antenna cables from the routing channels **(2)** built into the display back cover.



- e. Remove the WLAN antenna cables and transceivers.

The WLAN antenna(s) are available using spare part number L93206-001.

Reverse this procedure to reassemble and install the display assembly.

## Power connector cable

**Table 5-10** Power connector cable spare part information

Description	Spare part number
Power connector cable	L93195-001

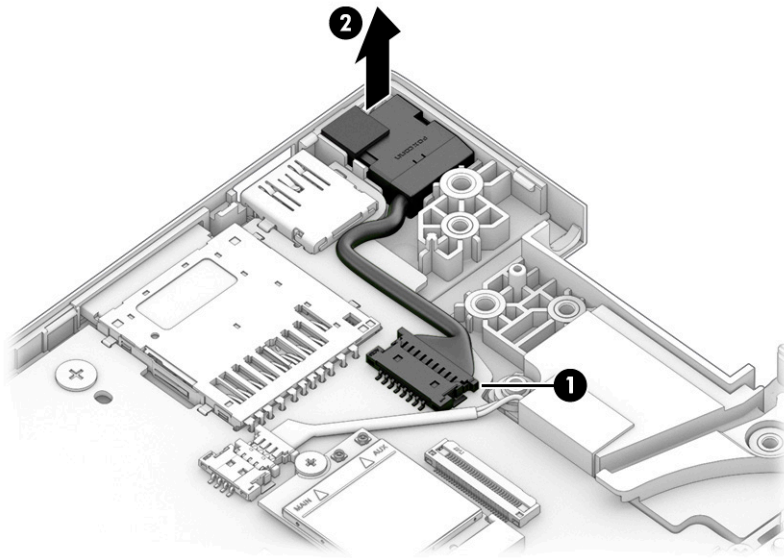
Before removing the power connector cable, follow these steps:

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 bottom cover (see [Bottom cover on page 25](#)).
5. Disconnect the battery from the system board (see [Front speakers on page 27](#)).
6. Remove the display assembly (see [Display assembly on page 39](#)).

Remove the power connector cable:

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

2. Remove the power connector cable (2).



Reverse this procedure to install the power connector cable.

# Subwoofer

Table 5-11 Subwoofer spare part information


Description	Spare part number
Subwoofer (include left and right speakers, cables, and 2 rubber isolators)	L94317-001

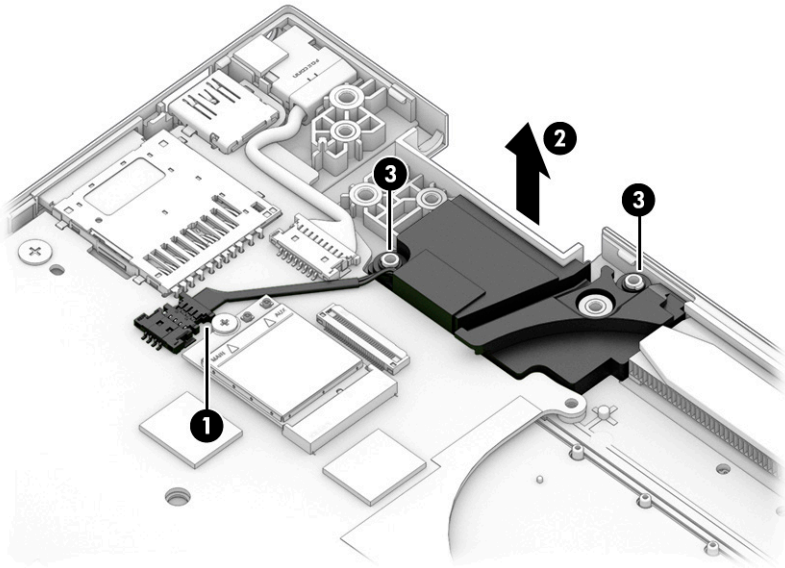
Before removing the subwoofer, follow these steps:

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 bottom cover (see [Bottom cover on page 25](#)).
5. Disconnect the battery cable from the system board (see [Front speakers on page 27](#)).

Remove the subwoofer:

1. Disconnect the subwoofer cable (1) from the system board.
2. Remove the subwoofer (2).

 **NOTE:** When removing the subwoofer, make note of the location of the one rubber isolator (3). The absence of or damage to this isolator can result in degraded subwoofer performance.



Reverse this procedure to install the subwoofer.

## Battery

**Table 5-12** Battery spare part information

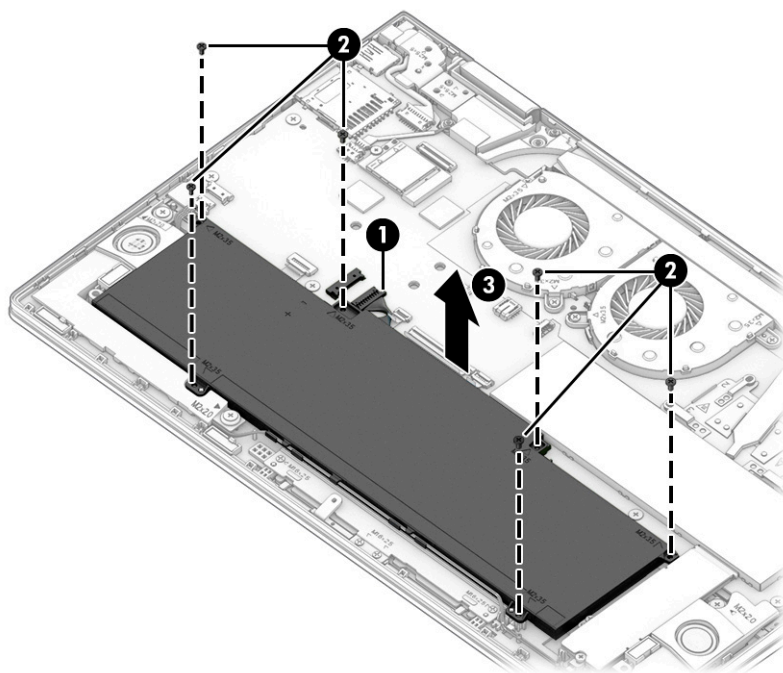
Description	Spare part number
Battery (3 cell, 51 WHr, 4.45 AHr, Li-ion; includes cable)	L77034-005

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. Remove the keyboard/top cover (see [Bottom cover on page 25](#)).
5. Remove the speakers (see [Front speakers on page 27](#)).

Remove the battery:

1. Disconnect the battery cable (1) from the system board.
2. Remove the six Phillips M2.0×4.1 screws (2) that secure the battery to the keyboard/top cover.
3. Remove the battery (3).



Reverse this procedure to install the battery.

# Touchpad cable

Table 5-13 Touchpad cable spare part information

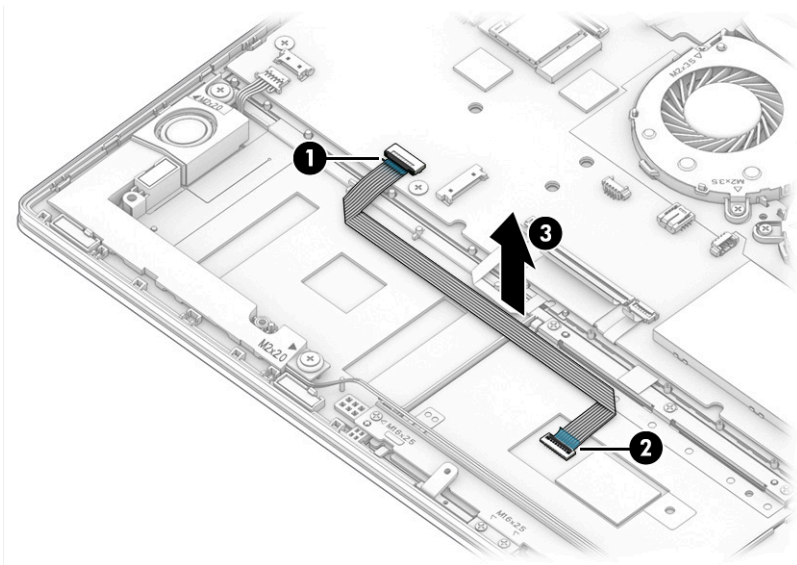
Description	Spare part number
Touchpad cable	L93187-001

Before removing the touchpad 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 bottom cover (see [Bottom cover on page 25](#)).
5. Remove the battery (see [Battery on page 49](#)).

Remove the touchpad cable:

1. Release the ZIF connector (1) to which the touchpad cable is connected, and then disconnect the touchpad cable from the system board.
2. Release the ZIF connector (2) to which the touchpad cable is connected, and then disconnect the touchpad cable from the touchpad.
3. Remove the touchpad cable (3).



Reverse this procedure to install the touchpad cable.

## Touchpad

Table 5-14 Touchpad spare part information

Description	Spare part number
Touchpad	L93186-001

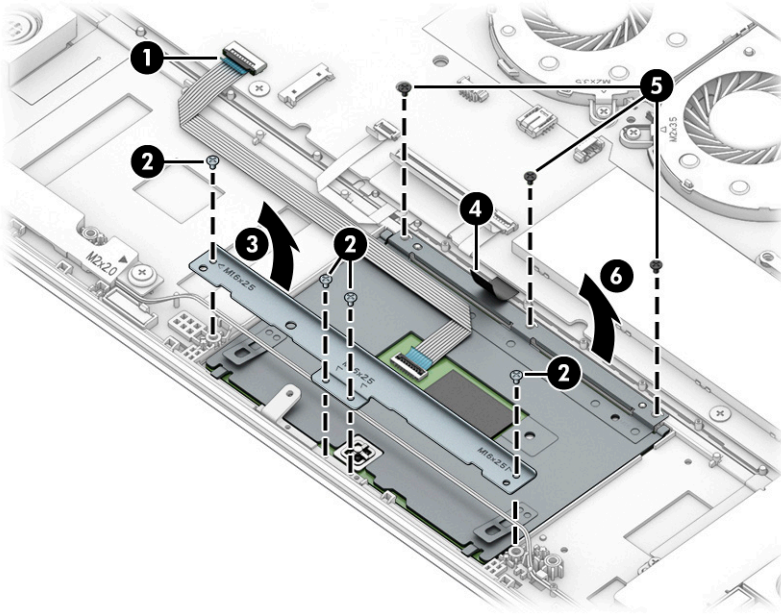
Before removing the touchpad, follow these steps:

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 bottom cover (see [Bottom cover on page 25](#)).
5. Remove the battery (see [Battery on page 49](#)).

Remove the touchpad:

1. Release the ZIF connector **(1)** to which the touchpad cable is connected, and then disconnect the touchpad cable from the system board.
2. Remove the four Phillips M1.5×2.7 screws **(2)** that secure the touchpad and touchpad bracket to the keyboard/top cover.
3. Remove the touchpad bracket **(3)**.  
The touchpad bracket is available using spare part number L89791-001.
4. Release the grounding tape **(4)** that secures the touchpad to the keyboard/top cover.
5. Remove the three Phillips M1.6×2.5 broad head screws **(5)** that secure the touchpad to the keyboard/top cover.

6. Remove the touchpad (6) and cable.



Reverse this procedure to install the touchpad.



## System board



**NOTE:** The system board spare part kit includes the processor, a graphics subsystem with UMA memory, replacement thermal material, and the Windows 10 operating system.

**Table 5-15** System board spare part information

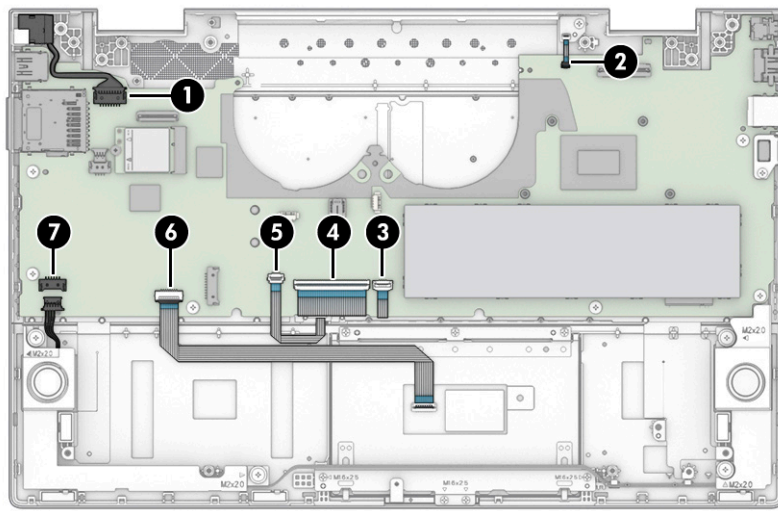
Description	Spare part number
Equipped with an AMD Ryzen7 4750U processor	L93114-601
Equipped with an AMD Ryzen5 4500U processor	L93113-601
Equipped with an AMD Ryzen3 4300U processor	L93112-601

Before removing the system board, follow these steps:

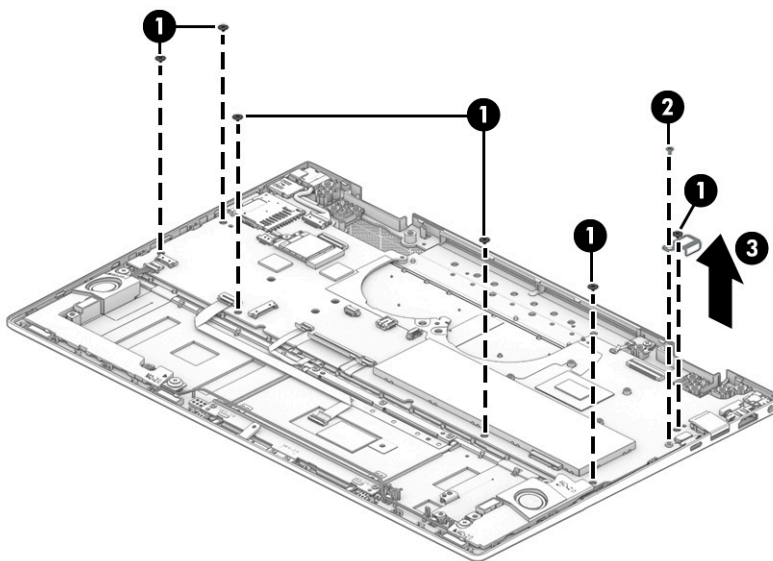
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Bottom cover on page 25](#)), and then remove the following components:
  - a. Solid-state drive (see [Solid-state drive on page 28](#))
  - b. Fan (see [Fan on page 34](#))
  - c. Heat sink (see [Heat sink on page 35](#))
  - d. Display assembly (see [Display assembly on page 39](#))
  - e. Subwoofer (see [Subwoofer on page 48](#))
  - f. Battery (see [Battery on page 49](#))

Remove the system board:

1. Disconnect the following cables from the system board:
  - (1) Power connector cable
  - (2) Infrared board ZIF connector cable
  - (3) Backlight ZIF connector cable
  - (4) Keyboard ZIF connector cable
  - (5) Fingerprint reader ZIF connector cable
  - (6) Touchpad ZIF connector cable
  - (7) Front speaker cable

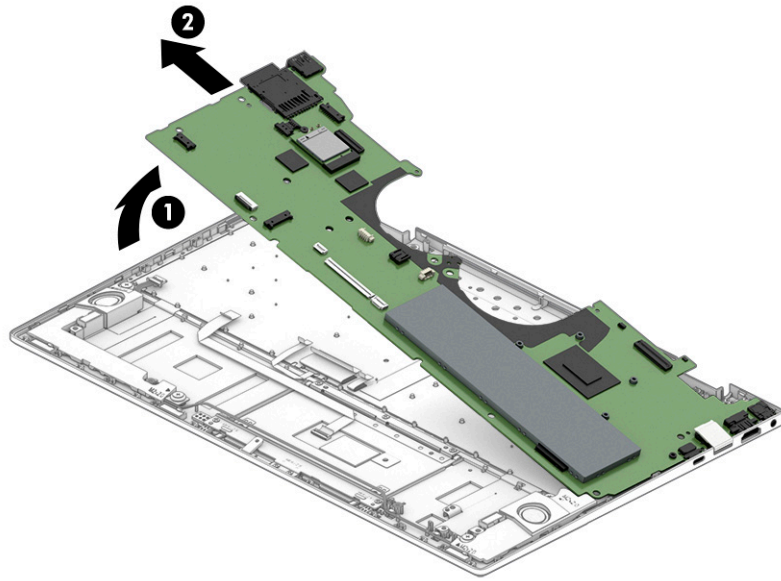


2. Remove the six Phillips M2.0×2.4 broad head screws (1) and the Phillips M2.0×4.1 screws (2) that secure the system board to the keyboard/top cover.
3. Remove the I/O bracket (3).



4. Lift the left side the system board (1) until it rests at an angle.

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



Reverse this procedure to install the system board.

## 6 Computer Setup (BIOS), TPM, and HP Sure Start

### Using Computer Setup

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

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

### Starting Computer Setup

- ▲ Turn on or restart the computer, and when the HP logo appears, press **F10** to enter Computer Setup.

### Navigating and selecting in Computer Setup

- To select a menu or a menu item, use the **tab** key and the keyboard arrow keys and then press **enter**, or use a pointing device to select the item.
- To scroll up and down, select the up arrow or the down arrow in the upper-right corner of the screen, or use the up arrow key or the down arrow key on the keyboard.
- To close open dialog boxes and return to the main Computer Setup screen, press **esc**, and then follow the on-screen instructions.

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

- To exit Computer Setup menus without saving your changes, select **Main**, select **Ignore Changes and Exit**, and then select **Yes**.

 **NOTE:** If you are using arrow keys to highlight your choice, you must then press **enter**.

- To save your changes and exit Computer Setup menus, select **Main**, select **Save Changes and Exit**, and then select **Yes**.

 **NOTE:** If you are using arrow keys to highlight your choice, you must then press **enter**.

Your changes go into effect when the computer restarts.


### Restoring factory settings in Computer Setup

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

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

1. Start Computer Setup. See [Starting Computer Setup on page 56](#).
2. Select **Main**, select **Apply Factory Defaults and Exit**, and then select **Yes**.

 **NOTE:** If you are using arrow keys to highlight your choice, you must then press **enter**.

 **NOTE:** On select products, the selections might display **Restore Defaults** instead of **Apply Factory Defaults and Exit**.

---

Your changes go into effect when the computer restarts.

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

---

## Updating the BIOS

Updated versions of the BIOS might 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 Computer Setup (BIOS), first determine the BIOS version on your computer.

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


1. Start Computer Setup. See [Starting Computer Setup on page 56](#).
2. Select **Main**, and then select **System Information**.
3. To exit Computer Setup menus without saving your changes, select **Main**, select **Ignore Changes and Exit**, and then select **Yes**.

 **NOTE:** If you are using arrow keys to highlight your choice, you must then press **enter**.

---

To check for later BIOS versions, see [Downloading a BIOS update on page 57](#).

## Downloading a BIOS update

 **IMPORTANT:** 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 on the computer by unplugging the power cord from the AC outlet.

Do not shut down the computer or initiate Sleep.

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

---

1. 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. Make a note of the date, name, or other identifier. You might need this information to locate the update later, after it has been downloaded to your hard drive.
- b. Follow the on-screen instructions to download your selection to the hard drive.

Make a note of the path to the location on your hard drive where the BIOS update is downloaded. You will need to access this path when you are ready to install the update.



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

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

1. 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.

## Changing the boot order using the f9 prompt

To dynamically choose a boot device for the current startup sequence, follow these steps:

1. Access the Boot Device Options menu:
  - Turn on or restart the computer, and when the HP logo appears, press **f9** to enter the Boot Device Options menu.
2. Select a boot device, press **enter**, and then follow the on-screen instructions.

## TPM BIOS settings (select products only)



**IMPORTANT:** Before enabling Trusted Platform Module (TPM) functionality on this system, you must ensure that your intended use of TPM complies with relevant local laws, regulations and policies, and approvals or licenses must be obtained if applicable. For any compliance issues arising from your operation or usage of TPM that violates the previously mentioned requirement, you shall bear all the liabilities wholly and solely. HP will not be responsible for any related liabilities.

TPM provides additional security for your computer. You can modify the TPM settings in Computer Setup (BIOS).



**NOTE:** If you change the TPM setting to Hidden, TPM is not visible in the operating system.

To access TPM settings in Computer Setup:

1. Start Computer Setup. See [Starting Computer Setup on page 56](#).
2. Select **Security**, select **TPM Embedded Security**, and then follow the on-screen instructions.

## Using HP Sure Start (select products only)

Select computer models are configured with HP Sure Start, a technology that monitors the computer's BIOS for attacks or corruption. If the BIOS becomes corrupted or is attacked, HP Sure Start automatically restores the BIOS to its previously safe state, without user intervention.


HP Sure Start is configured and already enabled so that most users can use the HP Sure Start default configuration. Advanced users can customize the default configuration.

To access the latest documentation on HP Sure Start, go to <http://www.hp.com/support>. Select **Find your product**, and then follow the on-screen instructions.

## 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 60](#)).
- **Creating a restore point**—You can use Windows tools to create a restore point (see [Using Windows tools on page 60](#)).
- **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 60](#)).
- **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 60](#)).

 **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.

For details:

- ▲ Go to <http://www.hp.com/support>, search for HP Cloud Recovery, and then select the result that matches the type of computer that you have.





**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 60](#).

### Recovering using HP Recovery media

You can use HP Recovery media 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 60](#).



**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.

## Using HP Sure Recover (select products only)

Select computer models are configured with HP Sure Recover, a PC OS recovery solution built into the hardware and firmware. HP Sure Recover can fully restore the HP OS image without installed recovery software.

Using HP Sure Recover, an administrator or user can restore the system and install:

- Latest version of the operating system
- Platform-specific device drivers
- Software applications, in the case of a custom image

To access the latest documentation for HP Sure Recover, go to <http://www.hp.com/support>. Select **Find your product**, 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 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 63](#).

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. Select **HP PC Hardware Diagnostics Windows**.

– 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 that you want to run, and then follow the on-screen instructions.



**NOTE:** To stop a diagnostic test, select **Cancel**.

When HP PC Hardware Diagnostics Windows detects a failure that requires hardware replacement, a 24-digit Failure ID code is generated. The screen displays one of the following options:

- A Failure ID link is displayed. Select the link and follow the on-screen instructions.
- Instructions for calling support are displayed. Follow those instructions.

### Downloading HP PC Hardware Diagnostics Windows

- The HP PC Hardware Diagnostics Windows downloading 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. Select **Download HP Diagnostics Windows**, and then select a location on your computer or a USB flash drive.

The tool downloads to the selected location.

– or –

You can use the following steps to download the HP PC Hardware Diagnostics Windows from the Microsoft Store:

1. Select the Microsoft app on your desktop or enter `Microsoft Store` in the taskbar search box.
2. Enter `HP PC Hardware Diagnostics Windows` in the **Microsoft Store** search box.
3. Follow the on-screen directions.

The tool downloads to the selected location.

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



**NOTE:** For some products, you might have 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 **Diagnostics** section, select **Download**, and then follow the on-screen instructions to select the specific Windows diagnostics version to be downloaded to your computer or USB flash drive.

The tool downloads 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 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 65](#).

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 does not start in 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 solving the problem:

- ▲ Select **Contact HP**, accept the HP privacy disclaimer, and then use a mobile device to scan the Failure ID code that appears on the next screen. The HP Customer Support - Service Center page appears with your Failure ID and product number automatically filled in. Follow the on-screen instructions.

– or –

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 65](#).

---

- 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 preinstallation 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 downloading 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. Select **Download HP Diagnostics UEFI**, and then select **Run**.

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



**NOTE:** For some products, you might have 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 might upload results to a preconfigured server. For more information about 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 you can download 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. Select **Download Remote Diagnostics**, and then select **Run**.

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



**NOTE:** For some products, you might have 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 hard 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 that you use 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

The power information in this section may be helpful if you plan to travel internationally with the computer.

The computer operates on DC power, which can be supplied by an AC or a DC power source. The AC power source must be rated at 100 V–240 V, 50 Hz–60 Hz. Although the computer can be powered from a standalone DC power source, it should be powered only with an AC adapter or a DC power source that is supplied and approved by HP for use with this computer.

The computer can operate on DC power within the following specifications. Operating voltage and current varies by platform. The voltage and current for your computer is located on the regulatory label.

**Table 9-1** Computer specifications

	Metric	U.S.
<b>Dimensions:</b>		
Width	35.8 cm	14.1 in
Depth	23.0 cm	9.1 in
Height	1.9 cm	0.8 in
<b>Weight</b>	1.8 kg	4.0 lbs
<b>Input power</b>	<b>Rating</b>	
Operating voltage and current	5 V dc @ 2 A / 12 V dc @ 3 A / 15 V dc @ 3 A – 45 W USB-C	
	5 V dc @ 3 A / 9 V dc @ 3 A / 12 V dc @ 3.75 A / 15 V dc @ 3 A – 45 W USB-C	
	5 V dc @ 3 A / 9 V dc @ 3 A / 10 V dc @ 3.75 A / 12 V dc @ 3.75 A / 15 V dc @ 3 A / 20 V dc @ 2.25 A – 45 W USB-C	
	5 V dc @ 3 A / 9 V dc @ 3 A / 12 V dc @ 5 A / 15 V dc @ 4.33 A / 20 V dc @ 3.25 A – 65 W USB-C	
	5 V dc @ 3 A / 9 V dc @ 3 A / 10 V dc @ 5 A / 12 V dc @ 5 A / 15 V dc @ 4.33 A / 20 V dc @ 3.25 A – 65 W USB-C	
	5 V dc @ 3 A / 9 V dc @ 3 A / 10 V dc @ 5 A / 12 V dc @ 5 A / 15 V dc @ 5 A / 20 V dc @ 4.5 A – 90 W USB-C	
	19.5 V dc @ 2.31 A – 45 W	
	19.5 V dc @ 3.33 A – 65 W	
	19.5 V dc @ 4.62 A – 90 W	
	19.5 V dc @ 6.15 A – 120 W	
	19.5 V dc @ 6.9 A – 135 W	
	19.5 V dc @ 7.70 A – 150 W	
	19.5 V dc @ 10.3 A – 200 W	
	19.5 V dc @ 11.8 A – 230 W	
	19.5 V dc @ 16.92 A – 330 W	



**Table 9-1** Computer specifications (continued)

	Metric	U.S.
<b>Temperature</b>		
Operating	5°C to 35°C	41°F to 95°F
Nonoperating	–20°C to 60°C	–4°F to 140°F
<b>Relative humidity</b> (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
<b>Maximum altitude</b> (unpressurized)		
Operating	–15 m to 3,048 m	–50 ft to 10,000 ft
Nonoperating	–15 m to 12,192 m	–50 ft to 40,000 ft
<b>NOTE:</b> Applicable product safety standards specify thermal limits for plastic surfaces. The device operates well within this range of temperatures.		

---

## 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

**Table 10-1** Power cord requirements

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.

**Table 10-1 Power cord requirements (continued)**

Country/region	Accredited agency	Applicable note number
		<p>2. The flexible cord must be Type SVT/SJT or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V ac) or NEMA 6-15P (15 A, 250 V ac) configuration. CSA or C-UL mark. UL file number must be on each element.</p> <p>3. The appliance coupler, flexible cord, and wall plug must bear a "T" mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCTF, 3-conductor, 0.75 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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>

---

# 11 Recycling

When a nonrechargeable 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 website at <http://www.hp.com/recycle>.

---

# Index

## A

- AC adapter and battery light 4
- AC adapter, spare part numbers 19
- action keys 10
- adapter
  - spare part numbers 19
- antenna(s)
  - removal 45
  - spare part number 46
- antenna(s), spare part number 18
- audio, product description 1
- audio-out (headphone)/audio-in (microphone) combo jack 5

## B

- backup, creating 60
- backups 60
- battery
  - removal 49
  - spare part number 17, 49
- BIOS
  - determining version 57
  - downloading an update 57
  - updating 57
- Bluetooth label 13
- boot order
  - changing using the f9 prompt 58
- boot order, changing 61
- bottom components 11
- bottom cover
  - removal 25
  - spare part number 25
- bottom cover, spare part number 17
- buttons
  - left touchpad 7
  - power 9, 10
  - right touchpad 7

## C

- camera 6
- camera light 6
- camera privacy key 10
- camera privacy light 8
- caps lock light 8
- chipset, product description 1

## components

- bottom 11
- display 6
- keyboard area 7
- left side 5
- right side 4
- computer major components 15
- Computer Setup
  - navigating and selecting 56
  - restoring factory settings 56
  - starting 56
- computer setup 56
- computer specifications 68
- connectors
  - power 4

## D

- display assembly
  - removal 39
  - spare part numbers 39
- display back cover
  - spare part number 18
- display components 6, 18
- display panel
  - product description 1
- display panel assembly
  - removal 40
  - spare part numbers 18, 42
- display panel cable
  - removal 43
  - spare part number 18, 44

## E

- electrostatic discharge 21
- equipment guidelines 23
- esc key 10
- expansion, product description 2

## F

- fan
  - removal 34
  - spare part numbers 16, 34
- fingerprint reader 9, 10
- fn key 10

## foot strip

- removal 25
- spare part number 25
- front speakers
  - removal 27
  - spare part number 16, 27

## G

- graphics, product description 1
- grounding guidelines 21
- guidelines
  - equipment 23
  - grounding 21
  - packaging 22
  - transporting 22
  - workstation 23

## H

- hardware, locating 3
- HDMI port 5
- heat sink
  - removal 35
  - spare part number 16
  - spare part numbers 35
- hinge
  - removal 44
  - spare part number 18, 44
- hinge cover
  - removal 44
  - spare part number 18, 45
- HP PC Hardware Diagnostics UEFI
  - downloading 65
  - starting 65
  - using 64
- HP PC Hardware Diagnostics Windows
  - downloading 63
  - installing 64
  - using 63
- HP Recovery media
  - recovery 61
- HP Sure Recover 62

## I

- I/O bracket
  - removal 54

- infrared board
  - removal 38
  - spare part number 16, 38
- infrared board cable
  - removal 37
  - spare part number 16, 37
- integrated numeric keypad 11
- internal microphones 6

## J

- jacks
  - audio-out (headphone)/audio-in (microphone) 5

## K

- keyboard/top cover
  - spare part numbers 15
- keypad, integrated numeric 11
- keys
  - action 10
  - camera privacy 10
  - esc 10
  - fn 10
  - num lock 11
  - Windows 10

## L

- labels
  - Bluetooth 13
  - regulatory 13
  - serial number 12
  - service 12
  - wireless certification 13
  - WLAN 13
- left side components 5
- lights
  - AC adapter and battery 4
  - camera 6
  - camera privacy 8
  - caps lock 8
  - microphone mute 8
  - mute 8
  - power 8

## M

- memory module
  - removal 30
  - spare part numbers 17, 30
- memory, product description 1
- microphone mute light 8
- microphone, product description 1

- model name 1
- multimedia card, product
  - description 2
- mute light 8

## O

- operating system, product
  - description 2
- optical drive, spare part number 19

## P

- packaging guidelines 22
- pen
  - spare part number 19
- ports
  - HDMI 5
  - USB SuperSpeed port with HP Sleep and Charge 4, 5
  - USB SuperSpeed Type-C with HP Sleep and Charge 5
- ports, product description 2
- power button 9, 10
- power connector 4
- power connector cable
  - removal 46
  - spare part number 16, 46
- power cord
  - requirements for all countries 70
  - requirements for specific countries and regions 71
  - set requirements 70
  - spare part numbers 19
- power lights 8
- power requirements, product
  - description 2
- processor, product description 1
- product description
  - audio 1
  - chipset 1
  - display panel 1
  - expansion 2
  - graphics 1
  - memory 1
  - microphone 1
  - multimedia card 2
  - operating system 2
  - ports 2
  - power requirements 2
  - processors 1
  - product name 1

- security 2
- sensors 2
- serviceability 2
- storage 1
- video 1
- wireless 1
- product name 1
- product name and number, computer 12

## R

- recovery 60
  - discs 61
  - HP Recovery partition 61
  - media 61
  - USB flash drive 61
- recovery media
  - creating using HP Cloud Recovery Download Tool 60
  - creating using Windows tools 60
- regulatory information
  - regulatory label 13
  - wireless certification labels 13
- Remote HP PC Hardware Diagnostics UEFI settings
  - customizing 66
  - using 66
- removal/replacement procedures 25
- restoring 60
- right side components 4
- rubber feet, spare part number 17

## S

- Screw Kit, spare part number 19
- security, product description 2
- sensors, product description 2
- serial number, computer 12
- service labels, locating 12
- serviceability, product description 2
- setup utility
  - navigating and selecting 56
  - restoring factory settings 56
- slots
  - memory card reader 4
- software
  - locating 3
- software installed
  - locating 3

- solid-state drive
  - removal 28
  - spare part numbers 17, 28
- solid-state drive shield, removal 28
- speakers 9
  - location 12
  - removal 27, 48
  - spare part numbers 16, 27, 48
- special keys, using 10
- specifications 68
- storage, product description 1
- stylus
  - spare part number 19
- subwoofer
  - removal 48
  - spare part number 16, 48
- Sure Start
  - using 59
- system board
  - removal 53
  - spare part numbers 16, 53
- system restore point, creating 60

## T

- thermal pad
  - replacement 36
  - spare part number 36
- Thermal Pad Kit, spare part number 16, 35, 36
- touchpad
  - removal 51
  - settings 7
  - spare part number 16, 51
- touchpad bracket
  - removal 51
  - spare part number 51
- touchpad buttons 7
- touchpad cable
  - removal 50
  - spare part number 16, 50
- touchpad zone 7
- touchscreen board
  - removal 43
  - spare part number 18, 43
- TPM settings 58
- transporting guidelines 22
- traveling with the computer 13

## U

- USB port cover, spare part number 17
- USB SuperSpeed port with HP Sleep and Charge 4, 5
- USB SuperSpeed Type-C port with HP Sleep and Charge 5

## V

- vent 11
- video, product description 1

## W

- webcam module
  - removal 42
  - spare part number 18, 43
- webcam module cable
  - removal 42
  - spare part number 18, 43
- Windows
  - backup 60
  - recovery media 60
  - system restore point 60
- Windows key 10
- Windows tools, using 60
- Wireless Antenna Kit, spare part number 18
- wireless antenna(s)
  - removal 45
  - spare part number 46
- wireless antenna(s), spare part number 18
- wireless certification label 13
- wireless, product description 1
- WLAN antenna(s) 6
  - removal 45
- WLAN antenna(s), spare part number 18
- WLAN antennas
  - spare part number 46
- WLAN device 13
- WLAN label 13
- WLAN module
  - removal 32
  - spare part numbers 16, 32
- workstation guidelines 23