



# Maintenance and Service Guide

## **SUMMARY**

This guide provides information about spare parts, removal and replacement of parts, security, backing up, and more.

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## Product notice

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

Not all features are available in all editions 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

Reduce the possibility of heat-related injuries or of overheating the computer by following the practices described.

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 **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 come into contact with 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.

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# 1 Product description

This table provides detailed product information.

**Table 1-1 Product components and their descriptions**

Category	Description
<b>Product Name</b>	HP Envy 17 Laptop PC HP ENVY 17m Laptop PC Model number: 17-ch0xxx, 17m-ch0xxx CTO model number: 17t-ch000
<b>Processors</b>	<b>10th Generation Intel® Core™ processors</b> Intel® i7-1165G7 (2.80 GHz, turbo up to 4.7 GHz, 3200 MHz FSB, 12 MB L3 cache, quad core, 12 W) Intel Core i5-1135G7 (2.40 GHz, turbo up to 4.2 GHz, 3200 MHz FSB, 8 MB L3 cache, quad core, 12 W)
<b>Graphics</b>	NVIDIA® GeForce® MX450 2 GB GDDR6 Graphics Controller Supports HDMI
<b>Display</b>	<b>43.9 cm (17.3 in), narrow bezel, UWVA</b> Full high definition (FHD) (1920 × 1080), antiglare, WLED, flat (3.2 mm), 45% NTSC, eDP 1.2, 300 nits, 60 Hz Ultra high definition (UHD), antiglare, WLED, (3840 × 2160), 45% NTSC, eDP 1.4 + PSR, 400 nits, 60 Hz
<b>Memory</b>	Two customer-accessible memory module slots supporting up to 32 GB of RAM DDR4-3200 dual-channel support Supports the following configurations: <ul style="list-style-type: none"><li>• 16 GB (8 × 2)</li><li>• 8 GB (8 × 1 or 4 × 2)</li><li>• 4 GB (4 × 1)</li><li>• 12 GB (1 × 8 or 1 × 4)</li><li>• 32 GB (2 × 16)</li></ul> DDR4- 2400 1.2v SODIMM Supports the following configurations: <ul style="list-style-type: none"><li>• 16 GB (1 × 16)</li></ul>
<b>Primary storage</b>	<b>PCIe, NVMe, M.2 2280 solid-state drives</b> <ul style="list-style-type: none"><li>• 1 TB, 2280 PCIe NVMe Value, TLC</li><li>• 1 TB, 2280 PCIe-3 × 2 × 2 NVMe + 32 GB with 3D Xpoint</li><li>• 512 GB, PCIe NVMe Value, TLC</li><li>• 512 GB, 2280 PCIe-3 × 2 × 2 NVMe + 32 GB with 3D Xpoint</li></ul>

**Table 1-1 Product components and their descriptions (continued)**

<b>Category</b>	<b>Description</b>
<b>Audio and video</b>	<b>Audio brand:</b> BANG and OLUFSEN
	<b>Audio control panel:</b> BANG and OLUFSEN Audio Control
	Supports HP Audio Boost 2.0 (with discrete amplifier)
	Dual speakers
	Supports Far-Field Cortana
	Supports Alexa
	<b>HP Wide Vision HD Camera:</b> indicator LED, USB 2.0, HD BSI sensor, f2.0, WDR, 88° WFOV
	720p by 30 frames per second
Dual-array digital microphone with appropriate software: beam forming, echo cancellation, noise suppression	
<b>Wireless</b>	<b>Wireless Local Area Network (WLAN)</b>
	Intel Wireless Wi-Fi6 AX 201 2 × 2 Wi-Fi + Bluetooth® 5 (non-vPro) (MU-MIMO)
<b>Media card reader</b>	Supports microSD™, SDHC™, SDXC™
	Push-push insertion/removal
<b>Ports</b>	AC Smart Pin adapter plug
	HDMI v2.0a supporting: up to 4096 × 2160 @ 60 Hz with HDCP 2.2
	Audio-out (headphone)/audio-in (microphone) combo jack
	USB 4.0 Gen 3 Type C with Thunderbolt™ (left side)
	USB 3.2 Gen 2 Type A (supports HP Sleep & Charge; left side)
	USB 3.2 Gen 1 Type A (2) (right side)
	Hot plug/unplug and autodetect for correct output to wide-aspect vs. standard aspect video (auto-adjust panel resolution to fit embedded panel and external monitor connected)
<b>Keyboard/pointing devices</b>	<b>Keyboard</b>
	Full size, backlit, 3-coat paint, island style
	<b>Touchpad</b>
	Clickpad with image sensor
	Multitouch gestures enabled
	Precision touchpad support
	Support for Modern Trackpad Gestures
	Taps enabled as default
<b>Power requirements</b>	<b>Battery</b>
	4 cell, 55 Whr, polymer, HP Long Life
	HP Fast Charge Technology
	<b>Smart AC adapters</b>

**Table 1-1 Product components and their descriptions (continued)**

<b>Category</b>	<b>Description</b>
	90 W, slim barrel, PFC, 4.5 mm
	65 W, slim barrel, non-PFC, 1.8 m
	<b>Power cord</b>
	C5, 1 m (3.3 ft)
<b>Security</b>	Supports Trusted Platform Module (TPM) 2.0, firmware based
	Integrated fingerprint reader
	Privacy camera
	Mic mute
<b>Operating system</b>	Windows® 10 Home 64
	Windows 10 Home 64 Advanced
	Windows 10 Home 64 Plus
	Windows 10 Home 64 Plus Single Language
	Windows 10 Home 64 Plus Single Language Africa market
	Win 10 Home 64 Single Language
	Win 10 Pro 64
	Win 10 Home 64 Advanced Single Language
<b>Serviceability</b>	<b>End user replaceable parts</b>
	AC adapter

# 2 Components

## Locating hardware

To find out what hardware is installed on your computer, type `device manager` in the taskbar search box, and then select the **Device Manager** app.

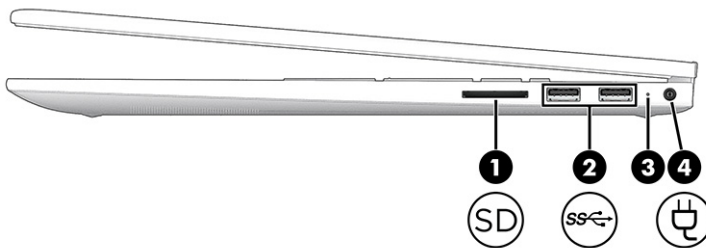
For information about system hardware components and the system BIOS version number, press `fn+esc` (select products only).

## Locating software



To find out what software is installed on your computer, right-click the **Start** button, and then select **Apps and Features**.

## Right side


Identify the components on the right side of the computer.



**Table 2-1** Right-side components and their descriptions

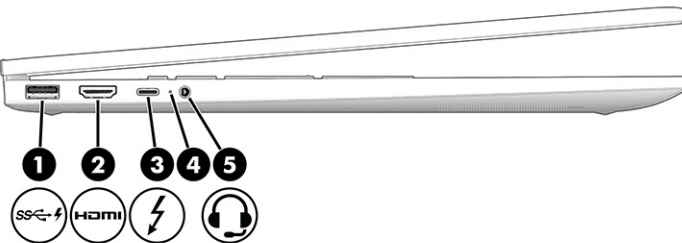
Component	Description
(1)  Memory card reader	<p>Reads optional memory cards that enable you to store, manage, share, or access information.</p> <p>To insert a card:</p> <ol style="list-style-type: none"><li>1. Hold the card label-side up, with connectors facing the computer.</li><li>2. Insert the card into the memory card reader, and then press in on the card until it is firmly seated.</li></ol> <p>To remove a card:</p> <ul style="list-style-type: none"><li>▲ Press in on the card, and then remove it from the memory card reader.</li></ul>
(2)  USB SuperSpeed ports (2)	<p>Connect a USB device, provide high-speed data transfer, and (for select products) charge small devices (such as a smartphone) when the computer is on or in Sleep mode.</p>

**Table 2-1 Right-side components and their descriptions (continued)**



Component	Description
(3) AC adapter and battery light	<p><b>NOTE:</b> Use a standard USB Type-A charging cable or cable adapter (purchased separately) when charging a small external device.</p> <ul style="list-style-type: none"> <li>• White: The AC adapter is connected and the battery is fully charged.</li> <li>• Blinking amber: The AC adapter is disconnected and the battery has reached a low battery level.</li> <li>• Amber: The AC adapter is connected and the battery is charging.</li> <li>• Off: The battery is not charging.</li> </ul> <p><b>NOTE:</b> If you connect both the USB Type-C and the barrel AC adapters to your computer at the same time, only one AC adapter and battery light turns on. The light next to the USB Type-C power connector turns on when the Type-C adapter power rating is more than the barrel adapter rating. The light next to the barrel power connector turns on when the barrel AC adapter power rating is the same or greater than the Type-C adapter rating.</p>
(4)  Power connector	<p>Connects an AC adapter.</p> <p><b>NOTE:</b> Some computers might ship with two separate AC adapters and power cords. Be sure to match the connector end of the power cord to the corresponding USB Type-C or barrel power connector of your computer.</p>

## Left side

Identify the components on the left side of the computer.



**Table 2-2 Left-side components and their descriptions**

Component	Description
(1)  USB SuperSpeed port with HP Sleep and Charge	<p>Connects a USB device, provides high-speed data transfer, and charges small devices (such as a smartphone), even when the computer is off.</p> <p><b>NOTE:</b> Use a standard USB Type-A charging cable or cable adapter (purchased separately) when charging a small external device.</p>
(2)  HDMI port	<p>Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component,</p>

**Table 2-2 Left-side components and their descriptions (continued)**

Component	Description
(3)  USB Type-C® power connector and Thunderbolt™ port with HP Sleep and Charge	<p>or a high-speed High-Definition Multimedia Interface (HDMI) device.</p> <p>Connects an AC adapter that has a USB Type-C connector, supplying power to the computer and, if needed, charging the computer battery.</p> <p>– and –</p> <p>Connects a USB device, provides high-speed data transfer, and charges small devices (such as a smartphone), even when the computer is off.</p> <p><b>NOTE:</b> Use a standard USB Type-C charging cable or cable adapter (purchased separately) when charging a small external device.</p> <p>– and –</p> <p>Connects a display device that has a USB Type-C connector, providing DisplayPort™ output.</p> <p><b>NOTE:</b> Your computer might also support a Thunderbolt docking station.</p> <p><b>NOTE:</b> Some computers might ship with two separate AC adapters and power cords. Be sure to match the connector end of the power cord to the corresponding USB Type-C or barrel power connector of your computer.</p>
(4) AC adapter and battery light	<ul style="list-style-type: none"> <li>• White: The AC adapter is connected and the battery is fully charged.</li> <li>• Blinking amber: The AC adapter is disconnected and the battery has reached a low battery level.</li> <li>• Amber: The AC adapter is connected and the battery is charging.</li> <li>• Off: The battery is not charging.</li> </ul> <p><b>NOTE:</b> If you connect both the USB Type-C and the barrel AC adapters to your computer at the same time, only one AC adapter and battery light turns on. The light next to the USB Type-C power connector turns on when the Type-C adapter power rating is more than the barrel adapter rating. The light next to the barrel power connector turns on when the barrel AC adapter power rating is the same or greater than the Type-C adapter rating.</p>
(5)  Audio-out (headphone)/Audio-in (microphone) combo jack	<p>Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. This jack does not support optional standalone microphones.</p> <p><b>WARNING!</b> To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, 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>

**Table 2-2 Left-side components and their descriptions (continued)**

Component	Description
	<b>NOTE:</b> When a device is connected to the jack, the computer speakers are disabled.

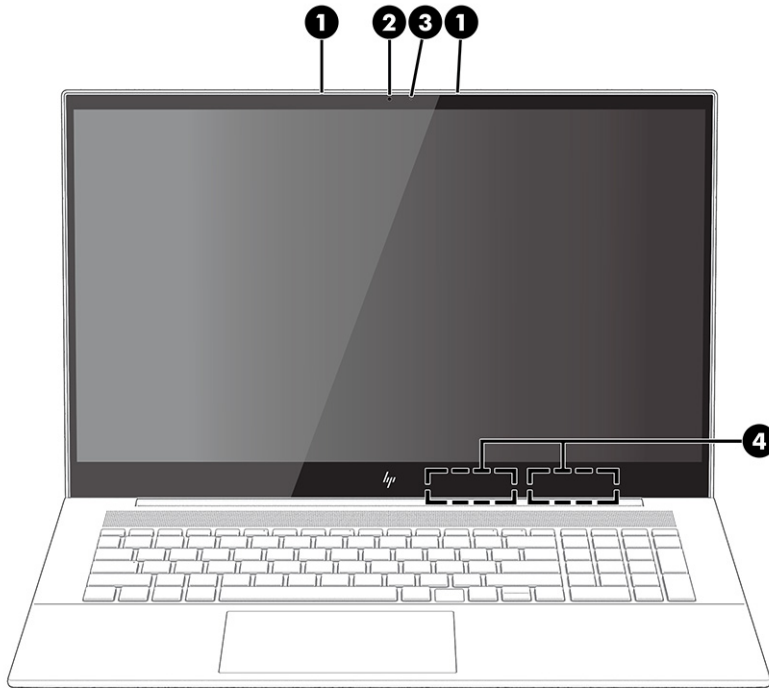
## Display

The computer display can include essential components such as speakers, antennas, cameras, and microphones.

### Low blue light mode (select products only)

Your 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 you are 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) Internal microphones (2)	Record sound.
(2) Camera	Allows you to video chat, record video, and record still images.
	<b>NOTE:</b> Camera functions vary depending on the camera hardware and software installed on your product.

**Table 2-3 Display components and their descriptions (continued)**

Component	Description
(3) Camera light	On: The camera is in use.
(4) WLAN antennas*	Send and receive wireless signals to communicate with wireless local area networks (WLANs).

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

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

To access this guide:

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

## Keyboard area

Keyboards can vary by language.

## Touchpad settings and components

Learn the touchpad settings and components

### Touchpad settings

Learn how to adjust touchpad settings.

#### Adjusting touchpad settings

Use these steps to adjust touchpad settings and gestures.

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

#### Turning on the touchpad

Follow these steps to turn on the touchpad.

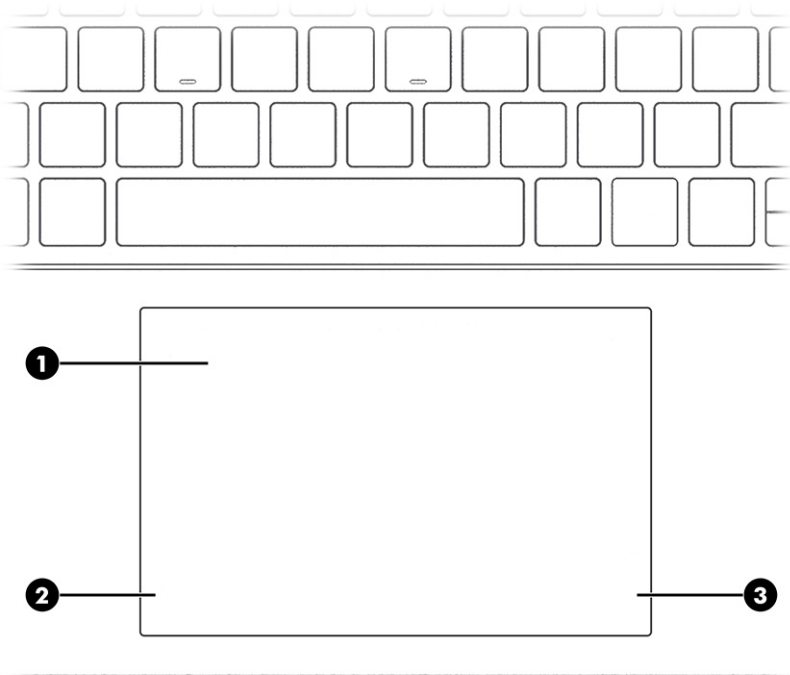
1. Type `touchpad settings` in the taskbar search box, and then press `enter`.
2. Using an external mouse, click the **touchpad** button.

If you are not using an external mouse, press the `Tab` key repeatedly until the pointer rests on the **touchpad** button. Then press the `spacebar` to select the button.

## Touchpad components

Identify the touchpad components.



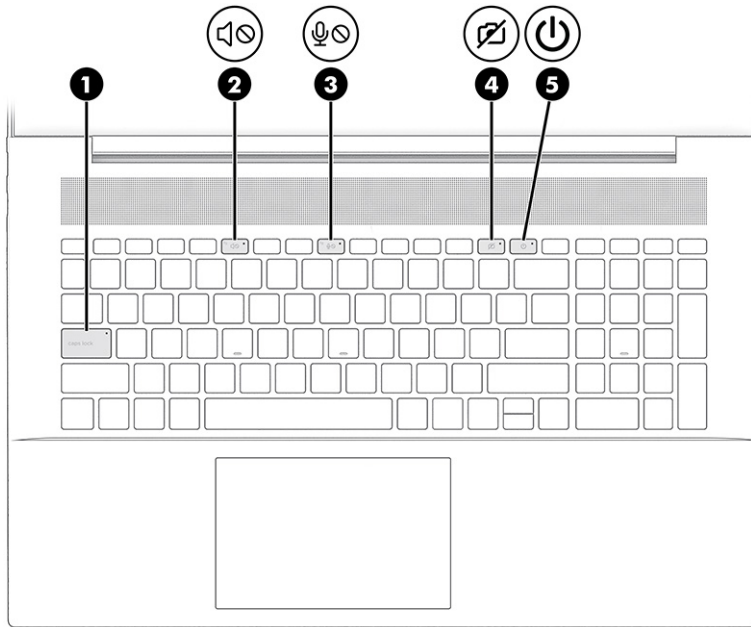


**Table 2-4 Touchpad components and their descriptions**





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

## Lights

Identify the lights on the computer.

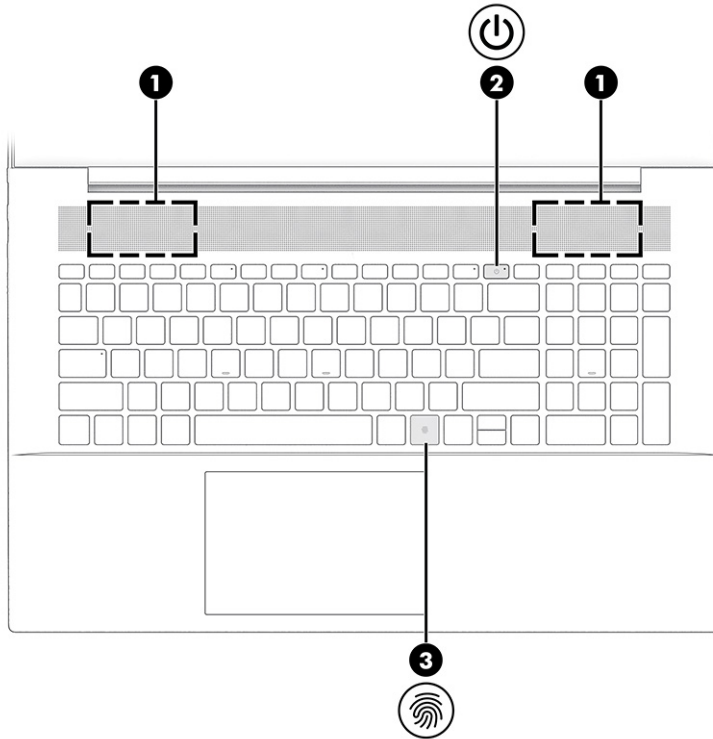


**Table 2-5** Lights and their descriptions

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: Microphone is off.</li> <li>• Off: Microphone is on.</li> </ul>
(4)  Camera privacy light	<ul style="list-style-type: none"> <li>• On: The camera is off.</li> <li>• Off: The camera is on.</li> </ul>
(5)  Power light	<ul style="list-style-type: none"> <li>• On: The computer is on.</li> <li>• Blinking (select products only): 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, vents, and fingerprint reader

Identify the computer button, vents and fingerprint reader.





Fingerprint readers, which enable a fingerprint logon, can be located on the touchpad, on a side panel of the computer, or on the top cover below the keyboard.

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

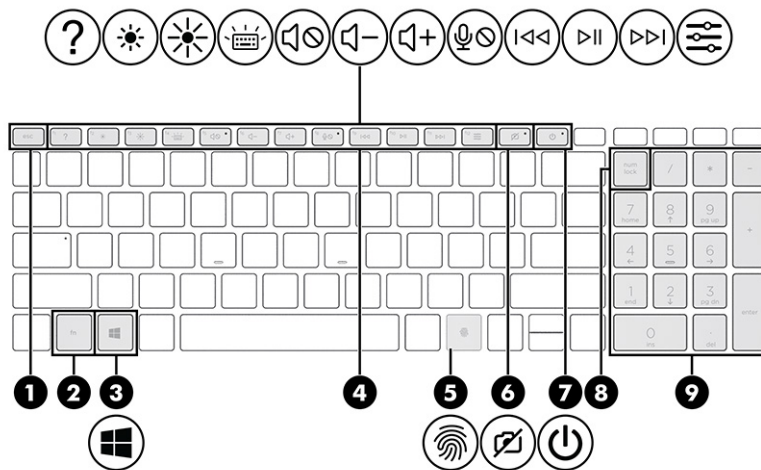
Component	Description
(1) Vents	Enable airflow to cool internal components.  <b>NOTE:</b> The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(2)  Power button	<ul style="list-style-type: none"> <li>• When the computer is off, press the button briefly 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>

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



Component	Description
	<ul style="list-style-type: none"> <li>▲ Right-click the <b>Power</b> icon , and then select <b>Power Options</b>.</li> </ul>
<p>(3)  Fingerprint reader</p>	<p>Allows a fingerprint logon to Windows, instead of a password logon.</p> <ul style="list-style-type: none"> <li>▲ Touch your finger to the fingerprint reader.</li> </ul> <p><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.</p>

## Special keys




Identify the special keys.



**Table 2-7 Special keys and their descriptions**

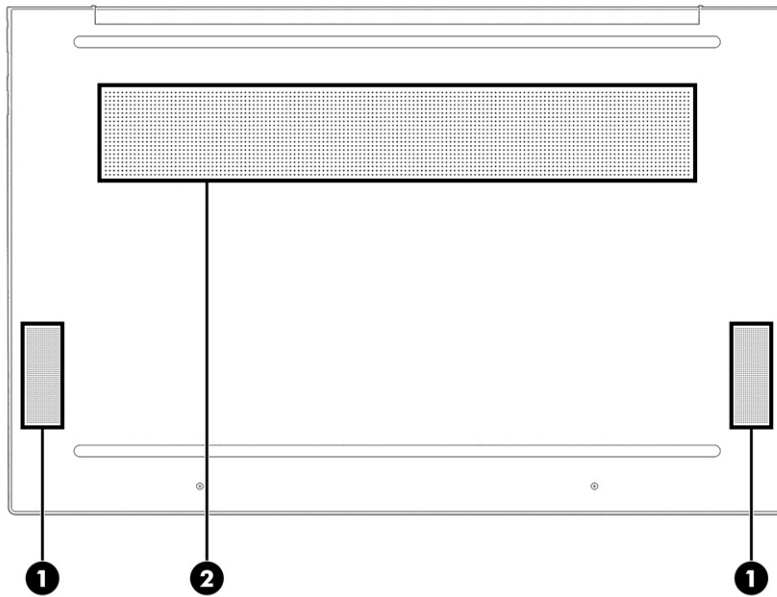
Component	Description
<p>(1) <code>esc</code> key</p>	<p>Displays system information when pressed in combination with the <code>fn</code> key.</p>
<p>(2) <code>fn</code> key</p>	<p>Executes specific functions when pressed in combination with another key.</p>
<p>(3)  Windows key</p>	<p>Opens the Start menu.</p> <p><b>NOTE:</b> Pressing the Windows key again will close the Start menu.</p>
<p>(4) Action keys</p>	<p>Execute frequently used system functions as defined by the icon symbols on <code>f1</code> through <code>f12</code> function keys.</p>
<p>(5)  Fingerprint reader</p>	<p>Allows a fingerprint logon to Windows, instead of a password logon.</p> <ul style="list-style-type: none"> <li>▲ Touch your finger to the fingerprint reader.</li> </ul>

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

Component	Description
(6)  Camera privacy key	<p><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.</p> <p>Turns the camera off and on.</p>
(7)  Power button	<ul style="list-style-type: none"><li>• When the computer is off, press the button briefly 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> <ul style="list-style-type: none"><li>▲ Right-click the <b>Power</b> icon , and then select <b>Power Options</b>.</li></ul>
(8) <a href="#">num lk</a> 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 <a href="#">num lk</a> is pressed, the integrated 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

Identify the bottom components.



**Table 2-8** Bottom components and their descriptions

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

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

## Labels

The labels affixed to the computer provide information 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:** Labels described in this section may be located at the bottom of the computer, inside the battery bay, under the service door, on the back of the display, or on the bottom of a tablet kickstand.

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



**Table 2-9 Service label components**

<b>Component</b>	
<b>(1)</b>	Serial number
<b>(2)</b>	Product ID
<b>(3)</b>	HP product name, model number

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



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## 3 Illustrated parts catalog

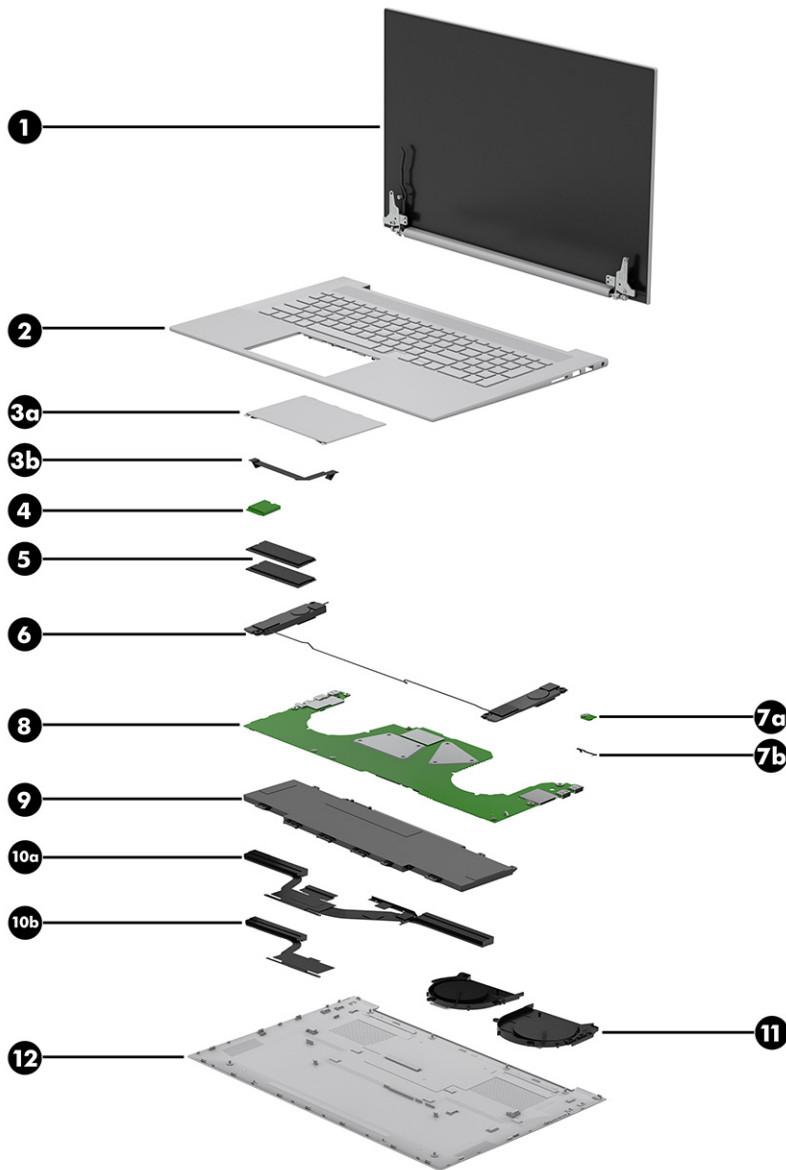
Use this table to determine the spare parts that are available for the computer.

### Computer major components

To identify the computer major components, use this illustration and table.

- 
-  **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.
  -  **NOTE:** Details about your computer, including model, serial number, product key, and length of warranty, are on the service tag at the bottom of your computer.
-





**Table 3-1 Computer major component descriptions and part numbers**

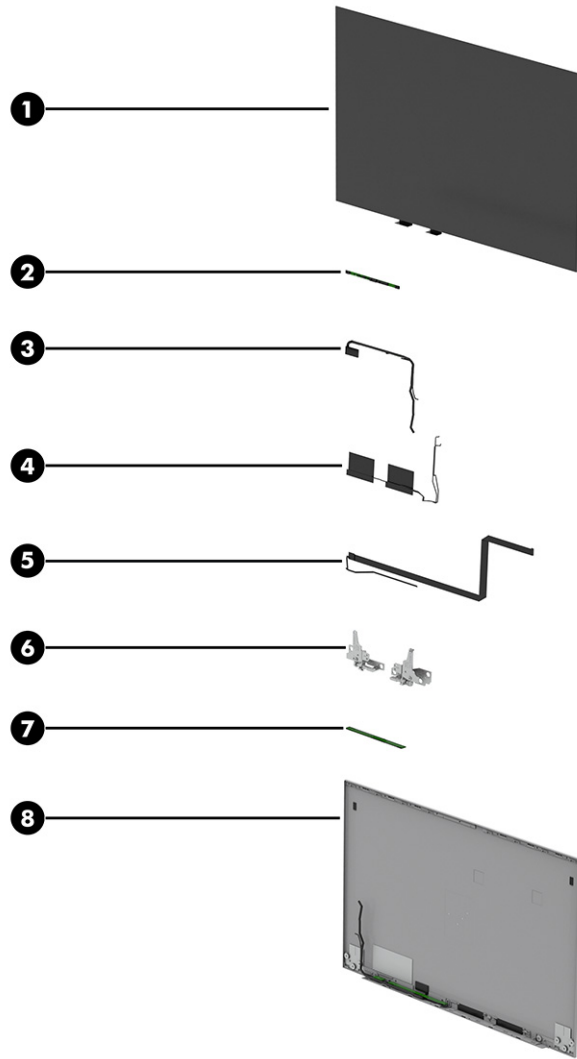
Item	Component	Spare part number
(1)	<b>Display assembly</b>  <b>NOTE:</b> Display spare parts are available as subcomponents, not as whole units. Display subcomponent spare parts are available. For spare part information, see <a href="#">Display assembly subcomponents on page 18</a> .	not available as a spare part
(2)	<b>Top cover/keyboard</b>  <b>NOTE:</b> For a detailed list of country codes, see ( <a href="#">Keyboard with top cover on page 55</a> ).  For use in all models in natural silver finish with backlight	M45795-001
(3a)	<b>Touchpad</b>	M45774-001
(3b)	<b>Touchpad cable</b>	M45779-001
(4)	<b>WLAN module</b>	

**Table 3-1 Computer major component descriptions and part numbers (continued)**

Item	Component	Spare part number
	Intel Wireless Wi-Fi6 AX 201 2 × 2 Wi-Fi + Bluetooth® 5 (non-vPro) (MU-MIMO)	L92724-005
<b>(5)</b>	<b>Memory modules</b>	
	4 GB DDR4-3200 1.2v	L83673-005
	8 GB 3200MHz 1.2v DDR4	L46598-005
	16 GB DDR4-3200 1.2v	L67710-005
<b>(6)</b>	<b>Speaker kit</b>	M45789-001
<b>(7a)</b>	<b>IR sensor board</b>	M45773-001
<b>(7b)</b>	<b>IR sensor board cable</b>	M45780-001
<b>(8)</b>	<b>System board</b> (includes integrated processor)	
	<b>NOTE:</b> All system board spare part kits include replacement thermal material.	
	All system boards use the following part numbers:	
	xxxxxx-001: Non-Windows operating systems	
	xxxxxx-601: Windows operating system	
	Intel Core i5-1135 G7 processor with unified memory architecture (UMA) graphics memory	M45791-001
	Intel Core i7-1165 G7 processor with UMA graphics memory	M45792-001
	Intel Core i5-1135 G7 processor and 2 GB of discrete graphics memory	M45793-001
	Intel Core i7-1165 G7 processor and 2 GB of discrete graphics memory	M45794-001
<b>(9)</b>	<b>Battery</b> (4 cell, 55 Whr)	M24563-005
<b>(10a)</b>	<b>Heat sink</b> (includes replacement thermal material)	
	For use in models with discrete graphics	M45784-001
	For use in models with UMA graphics	M45785-001
<b>(11)</b>	<b>Fans</b>	
	CPU fan	M45786-001
	GPU fan	M45787-001
<b>(12)</b>	<b>Bottom cover</b>	
	For use in models with discrete graphics	M45776-001
	For use in model with UMA graphics	M45777-001

## Display assembly subcomponents

To identify the display assembly subcomponents, use this illustration and table.



**Table 3-2 Display component descriptions and part numbers**

Item	Component	Spare part number
<b>(1)</b>	<b>Display panel</b>	
	Full High Definition (FHD) antiglare, touch screen, UWVA	M45769-001
	FHD antiglare, nontouch screen, AR UWVA	M45767-001
	FHD antiglare, nontouch screen, UWVA	M45768-001
	UHD antiglare, nontouch screen, UWVA	M55014-001
<b>(2)</b>	<b>Webcam</b>	M45775-001
<b>(3)</b>	<b>Display panel cable</b>	
	Display panel cable for touch screens with touch control	M45781-001
	Display panel cable for FHD nontouch screen	M45782-001
	Display panel cable for Ultra High Definition (UHD) nontouch screen	M55014-001

**Table 3-2 Display component descriptions and part numbers (continued)**

Item	Component	Spare part number
(4)	<b>Antenna (dual)</b>	M44996-001
(5)	<b>Webcam cable</b>	M45778-001
(6)	<b>Hinges (left and right)</b>	M45772-001
(7)	<b>Touch screen board (in touch screen panel kit)</b>	M45769-001
(8)	<b>Back cover (with antenna)</b>	
	The antenna that is separate from the bottom cover is available as spare part number M44996-001.	
	For models in natural silver finish	M45771-001

## Mass storage devices

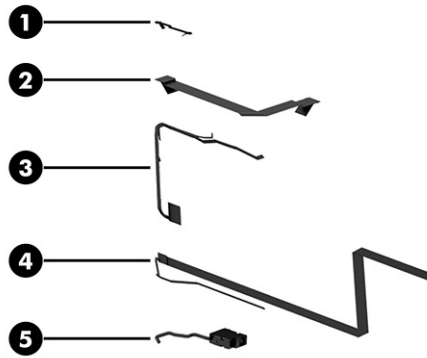
To identify the mass storage devices, use this illustration and table.

**Table 3-3 Mass storage device descriptions and part numbers**

Item	Component	Spare part number
(1)	<b>Solid-state drives</b>	
	1 T, M2 2280 PCIe-NVMe value	L85370-005
	512 GB, M2 2280 PCIe NVMe value	L85364-005
	32 GB/1 T, M2 2280, PCIe-NVMe, Gen 3 × 4 TLC SS (Optane® Memory Module/solid-state drive combination drive)	L85374-005
	32 GB/512 GB, M2 2280, PCIe-NVMe, Gen 3 × 4 TLC SS (Optane Memory Module/solid-state drive combination drive)	L85366-005
(2)	<b>External optical drive (not pictured)</b>	747080-001

## Cables

To identify the cables, use this illustration and table.



**Table 3-4 Cable descriptions and part numbers**

Item	Component	Spare part number
(1)	<b>IR sensor board cable</b>	M45780-001
(2)	<b>Touchpad cable</b>	M45779-001
(3)	<b>Display panel cable</b>	
	For use with touch screens	M45781-001
	For use with Full High Definition (FHD) nontouch screens	M45782-001
	For use with Ultra High Definition (UHD) nontouch screens	M55014-001
(4)	<b>Webcam cable</b>	M45778-001
(5)	<b>Power connector/cable</b>	M45783-001

## Miscellaneous parts

To identify the miscellaneous parts, use this table.

**Table 3-5 Miscellaneous part descriptions and part numbers**

Component	Spare part number
<b>AC adapters</b>	
90 W Smart AC adapter (Smart PFC, 4.5 mm, RA 1.8 m)	937532-850
65 W AC adapter (slim, non-PFC, 4.5 mm, USB-C, STRT, 1.8 m)	L04650-850
65 W AC adapter (slim, non-PFC, 4.5 mm, 1.8 m)	L24008-001
<b>Screw Kit</b>	M45790-001
<b>Power cords (C5, 1.0 m)</b>	
North America	L22319-001
United Kingdom	L22320-001
Europe	L22321-001
Denmark	L22322-001
Israel	L22323-001

**Table 3-5 Miscellaneous part descriptions and part numbers (continued)**

<b>Component</b>	<b>Spare part number</b>
Switzerland	L22324-001
South Africa	L22325-001
<b>HDMI to VGA Adapter</b>	701943-001
<b>USB to Gigabit RJ45 Adapter</b>	829941-001
<b>USB-C to VGA Adapter</b>	831751-001
<b>USB-C to RJ45 Adapter</b>	855560-001
<b>USB-C to USB-A Hub</b>	916838-001
<b>USB-C to Multi-Port Hub</b>	919666-001
<b>Elite USB-C Multi Port Hub</b>	L39572-001
<b>Display panel adhesive</b>	L90544-001
<b>Rubber kit</b>	M45788-001
<b>Thermal pads</b>	
For use with heat sink	M45462-001
For use with solid-state drives	M46333-001

---

## 4 Removal and replacement procedures preliminary requirements

Use this information to properly prepare to disassemble and reassemble the computer.

### Tools required


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

- Tweezers
- Nonconductive, nonmarking pry tool
- Magnetic Phillips P1 screwdriver

### Service considerations

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

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

---


### Plastic parts

Using excessive force during disassembly and reassembly can damage plastic parts.

### Cables and connectors

Handle cables with extreme care to avoid damage.

---

 **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.

---

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 so that they cannot be caught or snagged as you remove or replace parts. Handle flex cables with extreme care; these cables tear easily.

### Drive handling

Note the following guidelines when handling drives.



**IMPORTANT:** Drives are fragile components. Handle them 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 inch) of shock-proof foam.

Avoid dropping drives from any height onto any surface.

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

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

Avoid exposing a drive to temperature extremes or liquids.

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

## Electrostatic discharge information

A sudden discharge of static electricity from your finger or other conductor can destroy static-sensitive devices or microcircuitry. Often the spark is neither felt nor heard, but damage occurs. An electronic device exposed to electrostatic discharge (ESD) might not appear to be affected at all and can work perfectly throughout a normal cycle. The device might function normally for a while, but it has been degraded in the internal layers, reducing its life expectancy.

Networks built into many integrated circuits provide some protection, but in many cases, the discharge contains enough power to alter device parameters or melt silicon junctions.



**IMPORTANT:** To prevent damage to the device when you remove or install 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 [Personal grounding methods and equipment on page 25](#).

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.

## Generating static electricity

Follow these static electricity guidelines.

- Different activities generate different amounts of static electricity.
- Static electricity increases as humidity decreases.

**Table 4-1** Static electricity occurrence based on activity and humidity

Event	Relative humidity		
	55%	40%	10%
Walking across carpet	7,500 V	15,000 V	35,000 V



**Table 4-1 Static electricity occurrence based on activity and humidity (continued)**

	Relative humidity		
Walking across vinyl floor	3,000 V	5,000 V	12,000 V
Motions of bench worker	400 V	800 V	6,000 V
Removing DIPs (dual in-line packages) from plastic tube	400 V	700 V	2,000 V
Removing DIPs from vinyl tray	2,000 V	4,000 V	11,500 V
Removing DIPs from polystyrene foam	3,500 V	5,000 V	14,500 V
Removing bubble pack from PCB (printed circuit board)	7,000 V	20,000 V	26,500 V
Packing PCBs in foam-lined box	5,000 V	11,000 V	21,000 V

Multiple electric components can be packaged together in plastic tubes, trays, or polystyrene foam.

 **NOTE:** As little as 700 V can degrade a product.

## Preventing electrostatic damage to equipment

Many electronic components are sensitive to ESD. Circuitry design and structure determine the degree of sensitivity. The following packaging and grounding precautions are necessary to prevent static electricity damage to electronic components.

- To avoid hand contact, transport products in static-safe containers such as tubes, bags, or boxes.
- Protect all electrostatic parts and assemblies with conductive or approved containers or packaging.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free stations.
- Place items on a grounded surface before removing them from their container.
- Always be properly grounded when touching a sensitive component or assembly.
- Avoid contact with pins, leads, or circuitry.
- Place reusable electrostatic-sensitive parts from assemblies in protective packaging or conductive foam.

## Personal grounding methods and equipment

Using certain equipment can prevent static electricity damage to electronic components.

- **Wrist straps** are flexible straps with a maximum of  $1\text{ M}\Omega \pm 10\%$  resistance in the ground cords. To provide proper ground, a strap must be worn snug against bare skin. The ground cord must be connected and fit snugly into the banana plug connector on the grounding mat or workstation.
- **Heel straps/Toe straps/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 them on both feet with a maximum of  $1\text{ M}\Omega \pm 10\%$  resistance between the operator and ground.

**Table 4-2 Static shielding protection levels**

Static shielding protection levels	
Method	Voltage
Antistatic plastic	1,500

**Table 4-2 Static shielding protection levels (continued)**

Static shielding protection levels	
Carbon-loaded plastic	7,500
Metallized laminate	15,000

## Grounding the work area

To prevent static damage at the work area, follow these precautions.

- Cover the work surface with approved static-dissipative material.
- Use a wrist strap connected to a properly grounded work surface and use properly grounded tools and equipment.
- Use static-dissipative mats, foot straps, or air ionizers to give added protection.
- Handle electrostatic sensitive components, parts, and assemblies by the case or PCB laminate. Handle them only at static-free work areas.
- Turn off power and input signals before inserting and removing connectors or test equipment.
- Use fixtures made of static-safe materials when fixtures must directly contact dissipative surfaces.
- Keep the work area free of nonconductive materials, such as ordinary plastic assembly aids and polystyrene foam.
- Use conductive field service tools, such as cutters, screwdrivers, and vacuums.
- Avoid contact with pins, leads, or circuitry.

## Recommended materials and equipment

HP recommends certain materials and equipment to prevent static electricity.

- Antistatic tape
- Antistatic smocks, aprons, or sleeve protectors
- Conductive bins and other assembly or soldering aids
- Conductive foam
- Conductive tabletop workstations with ground cord of  $1\text{ M}\Omega \pm 10\%$  resistance
- Static-dissipative table or floor mats with hard tie to ground
- Field service kits
- Static awareness labels
- Wrist straps and footwear straps providing  $1\text{ M}\Omega \pm 10\%$  resistance
- Material handling packages
- Conductive plastic bags
- Conductive plastic tubes
- Conductive tote boxes
- Opaque shielding bags

- Transparent metallized shielding bags
- Transparent shielding tubes

## Cleaning your computer

Cleaning your computer regularly removes dirt and debris so that your device continues to operate at its best. Use the following information to safely clean the external surfaces of your computer.

### Enabling HP Easy Clean (select products only)

HP Easy Clean helps you to avoid accidental input while you clean the computer surfaces. This software disables devices such as the keyboard, touch screen, and touchpad for a preset amount of time so that you can clean all computer surfaces.

1. Start HP Easy Clean in one of the following ways:
  - Select the **Start** menu, and then select **HP Easy Clean**.  
– or –
  - Select the **HP Easy Clean** icon in the taskbar.  
– or –
  - Select **Start**, and then select the **HP Easy Clean** tile.
2. Now that your device is disabled for a short period, see [Removing dirt and debris from your computer on page 27](#) for the recommended steps to clean the high-touch, external surfaces on your computer. After you remove the dirt and debris, you can also clean the surfaces with a disinfectant. See [Cleaning your computer with a disinfectant on page 28](#) for guidelines to help prevent the spread of harmful bacteria and viruses.


### Removing dirt and debris from your computer

Here are the recommended steps to clean dirt and debris from your computer.

For computers with wood veneer, see [Caring for wood veneer \(select products only\) on page 29](#).

1. Wear disposable gloves made of latex (or nitrile gloves, if you are latex-sensitive) when cleaning the surfaces.
2. Turn off your device and unplug the power cord and other connected external devices. Remove any installed batteries from items such as wireless keyboards.


---

 **CAUTION:** To prevent electric shock or damage to components, never clean a product while it is turned on or plugged in.

---

3. Moisten a microfiber cloth with water. The cloth should be moist, but not dripping wet.


---

 **IMPORTANT:** To avoid damaging the surface, avoid abrasive cloths, towels, and paper towels.

---

4. Wipe the exterior of the product gently with the moistened cloth.

---

 **IMPORTANT:** Keep liquids away from the product. Avoid getting moisture in any openings. If liquid makes its way inside your HP product, it can cause damage to the product. Do not spray liquids directly on the product. Do not use aerosol sprays, solvents, abrasives, or cleaners containing hydrogen peroxide or bleach that might damage the finish.

---

5. Start with the display (if applicable). Wipe carefully in one direction, and move from the top of the display to the bottom. Finish with any flexible cables, like power cord, keyboard cable, and USB cables.
6. Be sure that surfaces have completely air-dried before turning the device on after cleaning.
7. Discard the gloves after each cleaning. Clean your hands immediately after you remove the gloves.

See [Cleaning your computer with a disinfectant on page 28](#) for recommended steps to clean the high-touch, external surfaces on your computer to help prevent the spread of harmful bacteria and viruses.

## Cleaning your computer with a disinfectant

The World Health Organization (WHO) recommends cleaning surfaces, followed by disinfection, as a best practice for preventing the spread of viral respiratory illnesses and harmful bacteria.

After cleaning the external surfaces of your computer using the steps in [Removing dirt and debris from your computer on page 27](#), [Caring for wood veneer \(select products only\) on page 29](#), or both, you might also choose to clean the surfaces with a disinfectant. A disinfectant that is within HP's cleaning guidelines is an alcohol solution consisting of 70% isopropyl alcohol and 30% water. This solution is also known as rubbing alcohol and is sold in most stores.

Follow these steps when disinfecting high-touch, external surfaces on your computer:

1. Wear disposable gloves made of latex (or nitrile gloves, if you are latex-sensitive) when cleaning the surfaces.
2. Turn off your device and unplug the power cord and other connected external devices. Remove any installed batteries from items such as wireless keyboards.


---

 **CAUTION:** To prevent electric shock or damage to components, never clean a product while it is turned on or plugged in.


---

3. Moisten a microfiber cloth with a mixture of 70% isopropyl alcohol and 30% water. The cloth should be moist, but not dripping wet.

---

 **CAUTION:** Do not use any of the following chemicals or any solutions that contain them, including spray-based surface cleaners: bleach, peroxides (including hydrogen peroxide), acetone, ammonia, ethyl alcohol, methylene chloride, or any petroleum-based materials, such as gasoline, paint thinner, benzene, or toluene.


---

 **IMPORTANT:** To avoid damaging the surface, avoid abrasive cloths, towels, and paper towels.

---

4. Wipe the exterior of the product gently with the moistened cloth.

---

 **IMPORTANT:** Keep liquids away from the product. Avoid getting moisture in any openings. If liquid makes its way inside your HP product, it can cause damage to the product. Do not spray liquids directly on the product. Do not use aerosol sprays, solvents, abrasives, or cleaners containing hydrogen peroxide or bleach that might damage the finish.

---

5. Start with the display (if applicable). Wipe carefully in one direction, and move from the top of the display to the bottom. Finish with any flexible cables, like power cord, keyboard cable, and USB cables.
6. Be sure that surfaces have completely air-dried before turning the device on after cleaning.
7. Discard the gloves after each cleaning. Clean your hands immediately after you remove the gloves.

## Caring for wood veneer (select products only)

Your product might feature high-quality wood veneer. As with all natural wood products, proper care is important for best results over the life of the product. Because of the nature of natural wood, you might see unique variations in the grain pattern or subtle variations in color, which are normal.

- Clean the wood with a dry, static-free microfiber cloth or chamois.
- Avoid cleaning products containing substances such as ammonia, methylene chloride, acetone, turpentine, or other petroleum-based solvents.
- Do not expose the wood to sun or moisture for long periods of time.
- If the wood becomes wet, dry it by dabbing with an absorbent, lint-free cloth.
- Avoid contact with any substance that might dye or discolor the wood.
- Avoid contact with sharp objects or rough surfaces that might scratch the wood.

See [Removing dirt and debris from your computer on page 27](#) for the recommended steps to clean the high-touch, external surfaces on your computer. After you remove the dirt and debris, you can also clean the surfaces with a disinfectant. See [Cleaning your computer with a disinfectant on page 28](#) for sanitizing guidelines to help prevent the spread of harmful bacteria and viruses.

## 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.


## Accessing support information

Use this information to find the HP support that you need.

**Table 4-3 Support information locations**


Service consideration	Path to access information
Records of reported failure incidents stored on the computer	<b>Windows:</b> Pre-operating system failures are logged in the BIOS Event Log. To view the BIOS Event Log: <ol style="list-style-type: none"><li>1. Press the power button.</li><li>2. Immediately and repeatedly press <b>esc</b> when the power button light turns white.</li></ol>


**Table 4-3 Support information locations (continued)**

Service consideration	Path to access information
	<p><b>NOTE:</b> If you do not press <code>esc</code> at the appropriate time, you must restart the computer and again repeatedly press <code>esc</code> when the power button light turns white to access the utility.</p> <ol style="list-style-type: none"><li>3. Press <code>f10</code> to enter the BIOS setup.</li><li>4. (On commercial products) Under the <b>Main</b> tab, select <b>BIOS event log</b>, and then select <b>View BIOS Event Log</b>.</li></ol> <p>- or -</p> <p>(On consumer products) Under the <b>Main</b> tab, select <b>System Log</b>.</p> <p>Post operating system failures are logged in the Event Viewer.</p> <ol style="list-style-type: none"><li>1. Turn on the computer and allow the operating system to open.</li><li>2. Click the search icon  in the taskbar.</li><li>3. Type <code>Event Viewer</code>, and then press <code>enter</code>.</li><li>4. Select the log from the left panel. Details display in the right panel.</li></ol> <p><b>Chrome:</b></p> <ol style="list-style-type: none"><li>1. Go to <a href="http://support.google.com/chrome">support.google.com/chrome</a>.</li><li>2. Search <code>collect Chrome device logs</code>.</li></ol>
Technical bulletins	<p>To locate technical bulletins:</p> <ol style="list-style-type: none"><li>1. Go to <a href="http://www.hp.com">www.hp.com</a>.</li><li>2. Place the cursor over <b>Problem solving</b> to display more options.</li><li>3. Select <b>Support &amp; Troubleshooting</b>.</li><li>4. Type the serial number, product number, or product name to go to the product support page.</li><li>5. Select <b>Advisories</b> to view technical bulletins.</li></ol>
Repair professionals	<p>To locate repair professionals:</p> <ol style="list-style-type: none"><li>1. Go to <a href="http://www.hp.com">www.hp.com</a>.</li><li>2. Place the cursor over <b>Support resources</b> to display more options.</li><li>3. Select <b>Authorized service providers</b>.</li></ol>
Component and diagnosis information, failure detection, and required action	<p>To locate diagnosis information and actions:</p> <ol style="list-style-type: none"><li>1. Go to <a href="http://www.hp.com/go/techcenter/pcdiags">http://www.hp.com/go/techcenter/pcdiags</a>.</li><li>2. Select <b>Get Support</b>.</li><li>3. Near the bottom of the window, select <b>Notebook PCs</b>, and then select your location.</li></ol>

# 5 Removal and replacement procedures for authorized service provider parts

This chapter provides removal and replacement procedures for authorized service provider parts.

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

 **NOTE:** Details about your computer, including model, serial number, product key, and length of warranty, are on the service tag at the bottom of your computer.

## Component replacement procedures

To remove and replace computer components, use these procedures.

 **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.

You must remove, replace, or loosen as many as 60 screws when you service the parts described in this chapter. Make special note of each screw size and location during removal and replacement.

## Preparation for disassembly

To remove and replace computer components, use these procedures.

See [Removal and replacement procedures preliminary requirements on page 23](#) for initial safety procedures.

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

## Bottom cover and rubber feet

To remove the bottom cover, use this procedure and illustration.

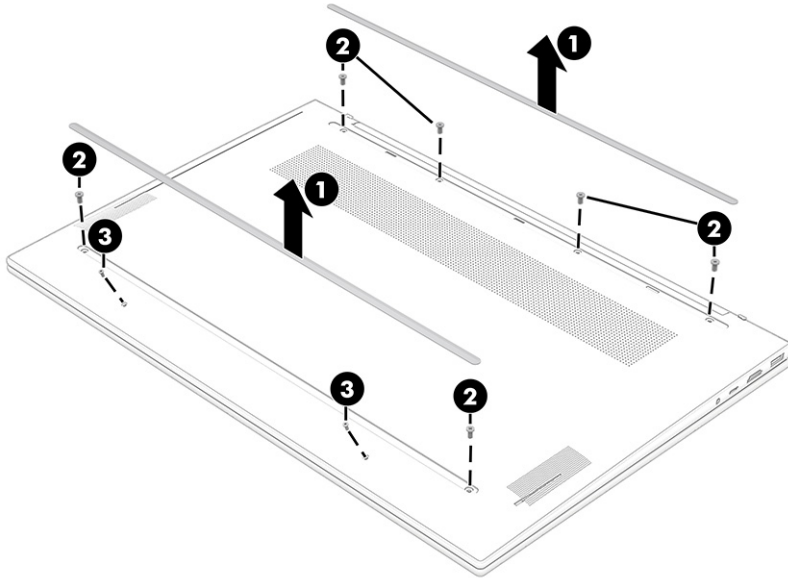
**Table 5-1 Bottom cover description and part number**

Description	Spare part number
Bottom cover for models with discrete graphics	M45776-001
Bottom cover for models with UMA graphics	M45777-001
Rubber foot kit	M45788-001

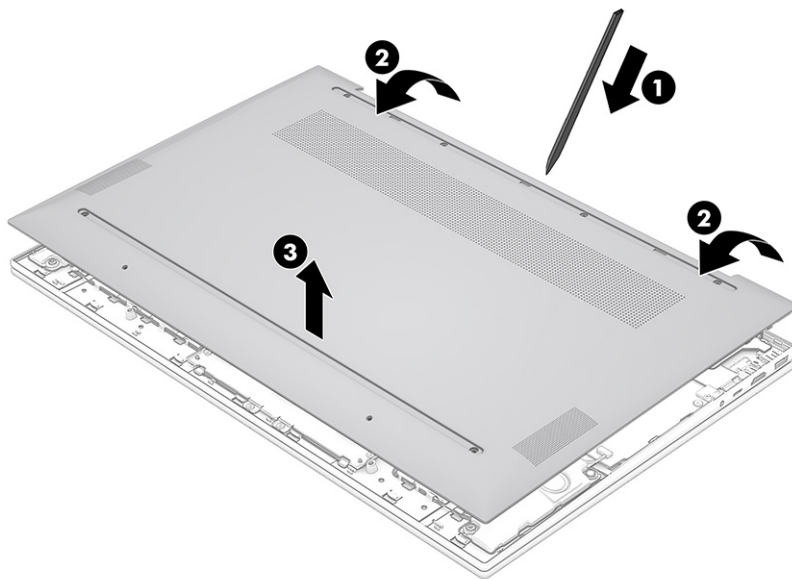
Before removing the bottom cover, prepare the computer for disassembly ([Preparation for disassembly on page 31](#)).

Remove the bottom cover and rubber feet:

1. Peel the two rubber feet off the bottom of the computer **(1)**.
2. Remove the six Phillips M2.0 × 4.0 screws **(2)** that secure the bottom cover to the computer.
3. Remove the two M2.0 × 3.0 screws from each side of the computer **(3)**.



4. Use a nonmarking, nonconductive tool to release the edges of the bottom cover from the computer **(1)**.
5. Rotate the bottom cover forward **(2)**, and then remove the bottom cover from the computer **(3)**.



To replace the bottom cover, reverse the removal procedures.

## Battery

To remove the battery, use this procedure and illustration.



**Table 5-2 Battery description and part number**


Description	Spare part number
Battery (4 cell, 55 Whr)	M24563-005


 **WARNING!** To avoid personal injury and damage to the product:

- Do *not* puncture, twist, or crack the battery.
- Do *not* cause an external puncture or rupture to the battery. They can cause a short inside the battery, which can result in battery thermal runaway.
- Do *not* handle or touch the battery enclosure with sharp objects such as tweezers or pliers, which might puncture the battery.
- Do *not* compress or squeeze the battery case with tools or heavy objects stacked on top of the case. These actions can apply undue force on the battery.
- Do *not* touch the connectors with any metallic surface or object, such as metal tools, screws, or coins, which can cause shorting across the connectors.

Before removing the battery, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 31](#)).
2. Remove the bottom cover ([Bottom cover and rubber feet on page 31](#)).

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

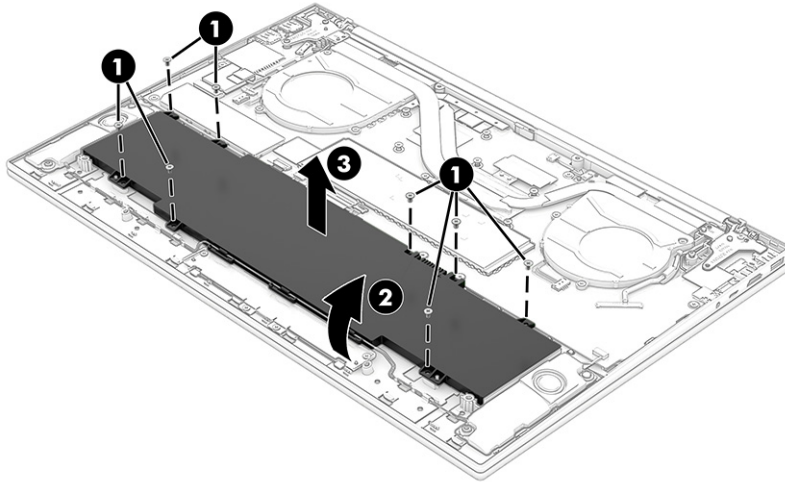
 **IMPORTANT:** Removing a battery that is the sole power source for the computer can cause loss of information. To prevent loss of information, save your work or shut down the computer through Windows before you remove the battery.

Before removing the battery, release the speaker cable from the three clips that secure it, away from the battery.

Remove the battery:

1. Remove the eight Phillips M2.0 × 3.5 screws **(1)** that secure the battery to the computer.

2. Rotate the battery upwards **(2)**, and then remove the battery from the computer **(3)**.



To insert the battery, reverse the removal procedures.

## Speakers

To remove the speakers, use this procedure and illustration.

**Table 5-3 Speaker description and part number**

Description	Spare part number
Speaker Kit	M45789-001

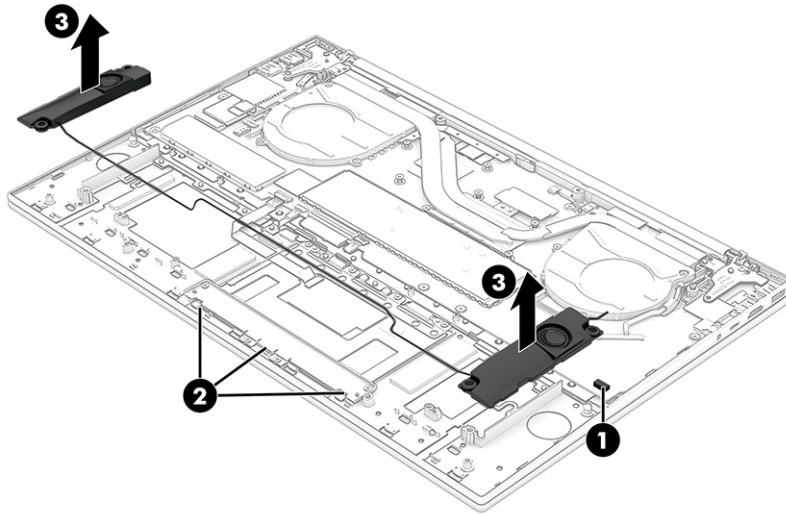
Before removing the speakers, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 31](#)).
2. Remove the bottom cover ([Bottom cover and rubber feet on page 31](#)).
3. Remove the battery (see [Battery on page 32](#)).

Remove the speakers:

1. Disconnect the speaker cable from the connector **(1)**.
2. Remove the speaker cable from the three clips that secure it **(2)**.

3. Remove each speaker **(3)**.



Reverse this procedure to install the speakers.

## IR sensor board

To remove the IR sensor board, use this procedure and illustration.

**Table 5-4** IR sensor board description and part number

Description	Spare part number
IR sensor board	M45773-001
IR sensor board cable	M45780-001

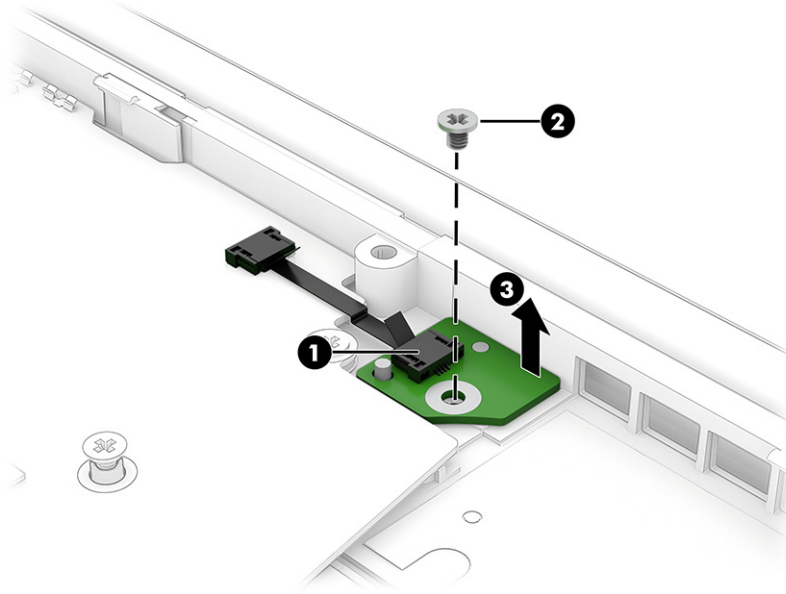
Before removing the USB board, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 31](#)).
2. Remove the bottom cover ([Bottom cover and rubber feet on page 31](#)).
3. Remove the battery (see [Battery on page 32](#)).

Remove the USB board:

1. Disconnect the cable from the system board ZIF connector **(1)**.
2. Remove the Phillips M2.0 × 5.0 screw **(2)** that secures the IR sensor board to the computer.

3. Remove the board from the computer **(3)**.



Reverse this procedure to install the IR sensor board.

## Memory modules

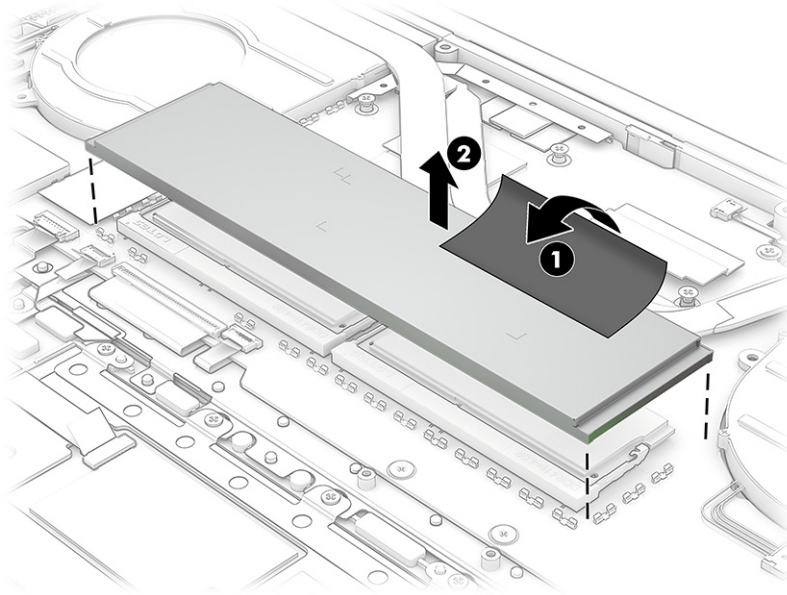
To remove the memory modules, use this procedure and illustration.

**Table 5-5** Memory module descriptions and part numbers


Description	Spare part number
16 GB, DDR4-3200	L67710-005
8 GB, DDR4-3200	L46598-005
4 GB, DDR4-3200	L83673-005

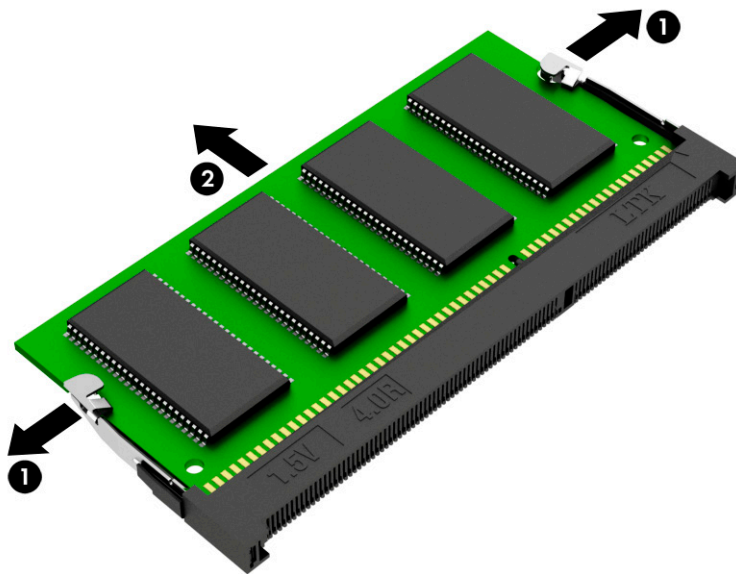
Before removing the memory, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 31](#)).
2. Remove the bottom cover ([Bottom cover and rubber feet on page 31](#)).
3. Remove the battery (see [Battery on page 32](#)).
1. Remove the tape from the memory module cover **(1)**, and then remove the memory module cover **(2)**.



2. Spread the two retention clips outward **(1)** until the memory module tilts up at a 45° angle, and then remove the module **(2)**. Use the same procedure to remove all memory modules.

 **IMPORTANT:** To prevent damage to the memory module, hold the memory module by the edges only. Do not touch the components on the memory module.

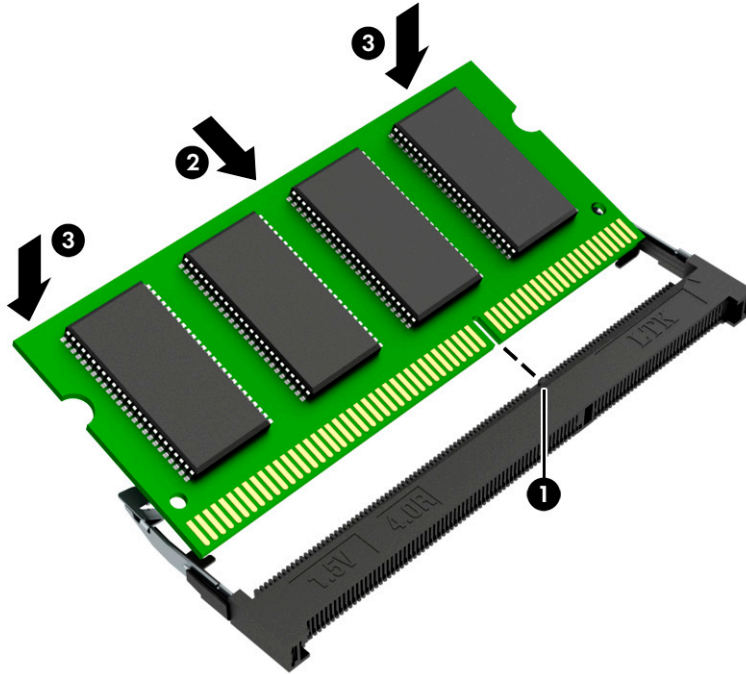


To protect a memory module after removal, place it in an electrostatic-safe container.

To install a memory module:

1. Align the notched edge of the module with the tab in the slot **(1)**, and then press the module into the slot at an angle until it is seated **(2)**.

2. Press down on the module until the side retention clips snap into place **(3)**.



## WLAN module

To remove the WLAN module, use this procedure and illustration.

**Table 5-6 WLAN module descriptions and part numbers**

Description	Spare part number
Intel Wireless Wi-Fi6 AX 201 2 x 2 Wi-Fi + Bluetooth® 5 (non-vPro) (MU-MIMO)	L92724-005

**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:

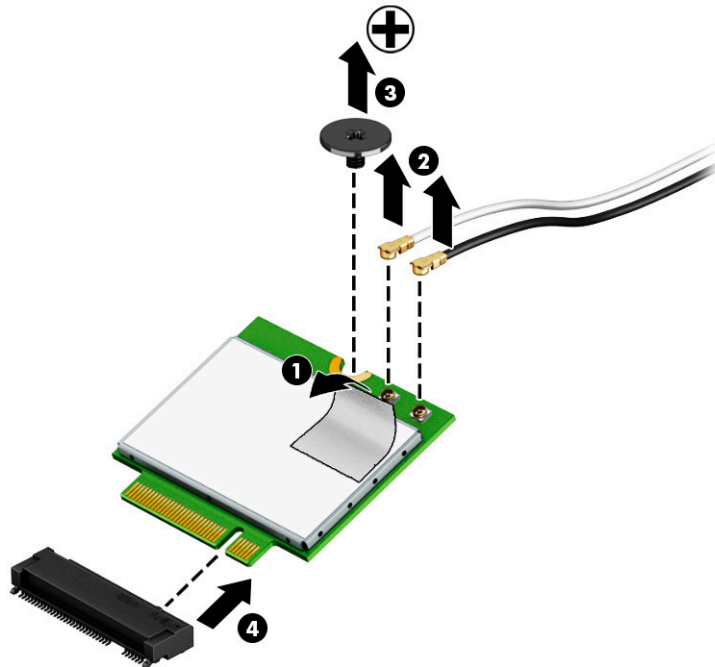
1. Prepare the computer for disassembly ([Preparation for disassembly on page 31](#)).
2. Remove the bottom cover ([Bottom cover and rubber feet on page 31](#)).
3. Remove the battery (see [Battery on page 32](#)).

Remove the WLAN module:

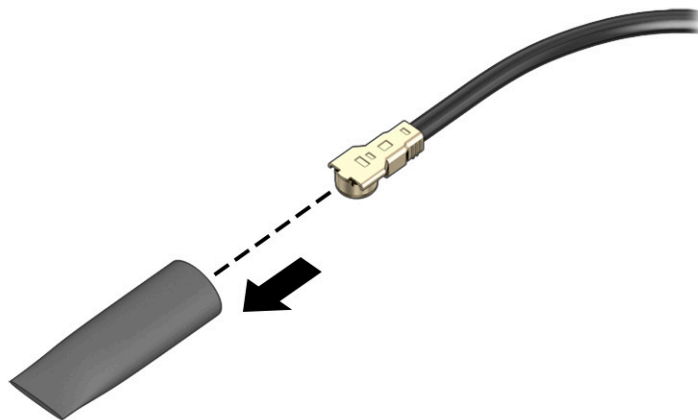
1. Peel back the plastic that covers the antenna cables **(1)**, and carefully disconnect the two antenna cables from the module **(2)**.

2. Remove the Phillips M2.0 × 2.0 screw and then remove the WLAN module (3).

 **NOTE:** Models have either one or two WLAN antennas. On models with two antennas, 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 #1 Aux terminal.



3. If the WLAN antenna is not connected to the terminal on the WLAN module, install a protective sleeve on the antenna connector, as shown in the following illustration.



Reverse this procedure to install the WLAN module.

## Solid-state drive

To remove the M.2 solid-state drive, use this procedure and illustration.

**Table 5-7 Solid-state drive descriptions and part numbers**

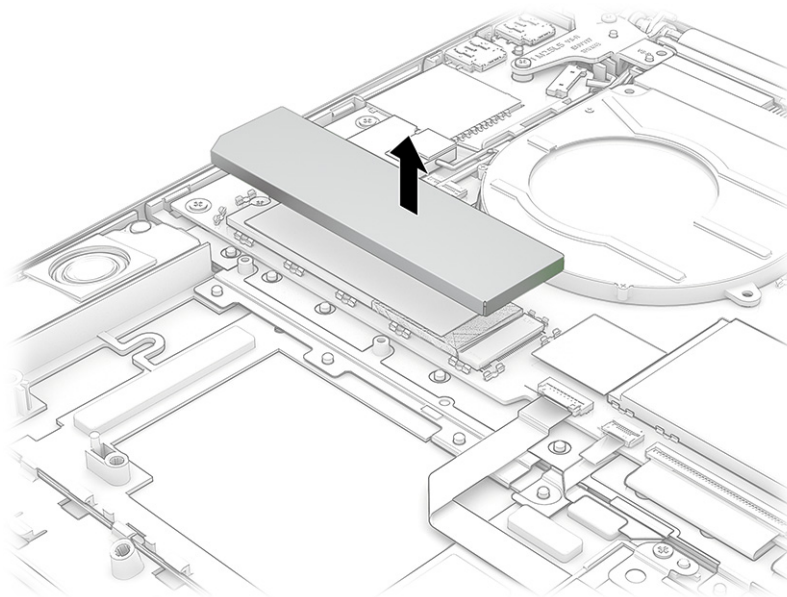
Description	Spare part number
1 T, M2 2280 PCIe-NVMe value	L85370-005
512 GB, M2 2280 PCIe NVMe value	L85364-005
32 GB/1 T, M2 2280, PCIe-NVMe, Gen 3 × 4 TLC SS (Optane Memory Module/solid-state drive combination drive)	L85374-005
32 GB/512 GB, M2 2280, PCIe-NVMe, Gen 3 × 4 TLC SS (Optane Memory Module/solid-state drive combination drive)	L85366-005

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

1. Prepare the computer for disassembly ([Preparation for disassembly on page 31](#)).
2. Remove the bottom cover ([Bottom cover and rubber feet on page 31](#)).
3. Remove the battery (see [Battery on page 32](#)).

Remove the solid-state drive:

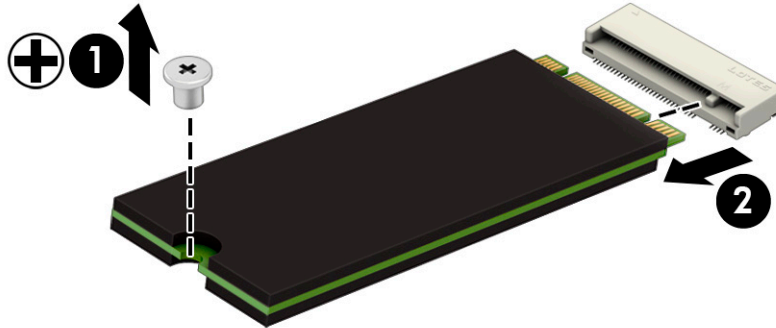
1. Remove the solid-state drive cover.




2. Remove the Phillips M2.0 × 2.0 screw **(1)** that secures the drive to the computer.



3. Pull the drive away from the socket to remove it **(2)**.



To install the solid-state drive, reverse the removal procedures.

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

## Fan

To remove the fan, use this procedure and illustration.

**Table 5-8 Fan description and part number**

Description	Spare part number
Fan assembly	xxxxxx-001

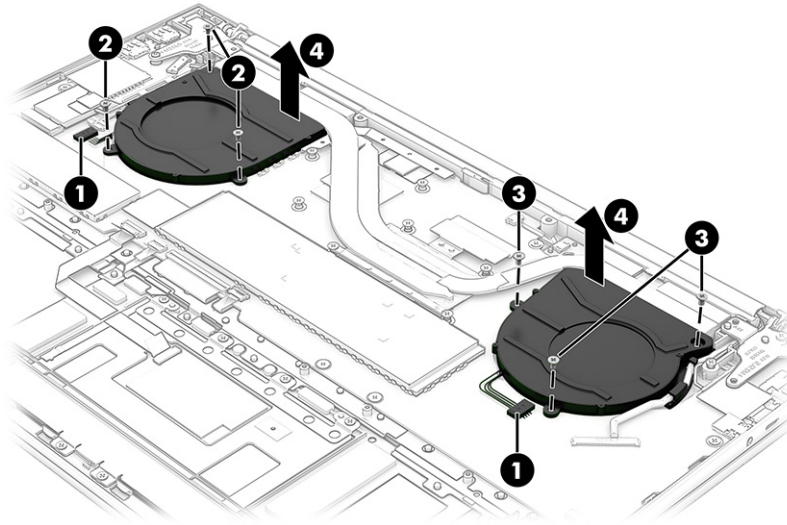
Before removing the fan, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 31](#)).
2. Remove the bottom cover ([Bottom cover and rubber feet on page 31](#)).
3. Remove the battery (see [Battery on page 32](#)).

Remove the fan assembly:

1. Disconnect the fan cable from the system board **(1)**.
2. Remove the three Phillips M2.0 × 3.5 screws from the left fan **(2)** and remove the three Phillips M2.0 × 3.5 screws from the right fan **(3)**.

3. Remove both fans from the computer (4).



Reverse this procedure to install the fan assembly.

## Heat sink

To remove the heat sink, use these procedures and illustrations.

**Table 5-9 Heat sink descriptions and part numbers**

Description	Spare part number
Heat sink for use in models with discrete graphics	M45784-001
Heat sink for use in models with UMA graphics	M45785-001

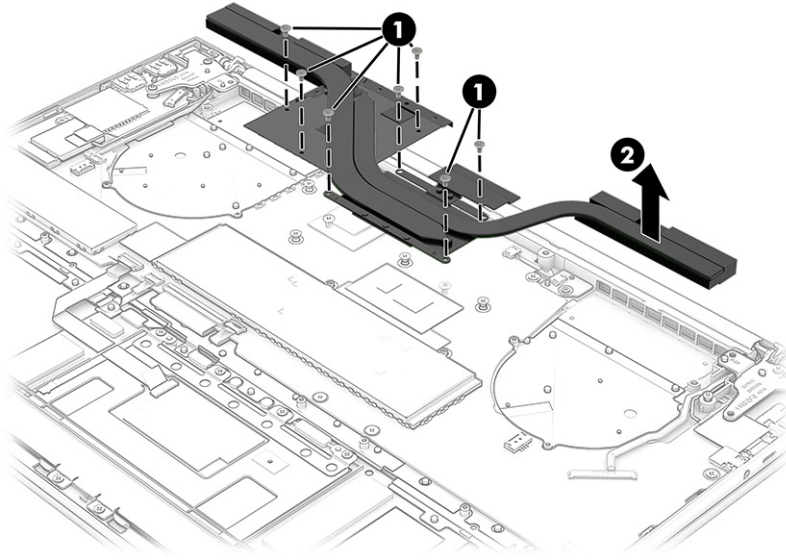
Before removing the heat sink, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 31](#)).
2. Remove the bottom cover ([Bottom cover and rubber feet on page 31](#)).
3. Remove the battery (see [Battery on page 32](#)).

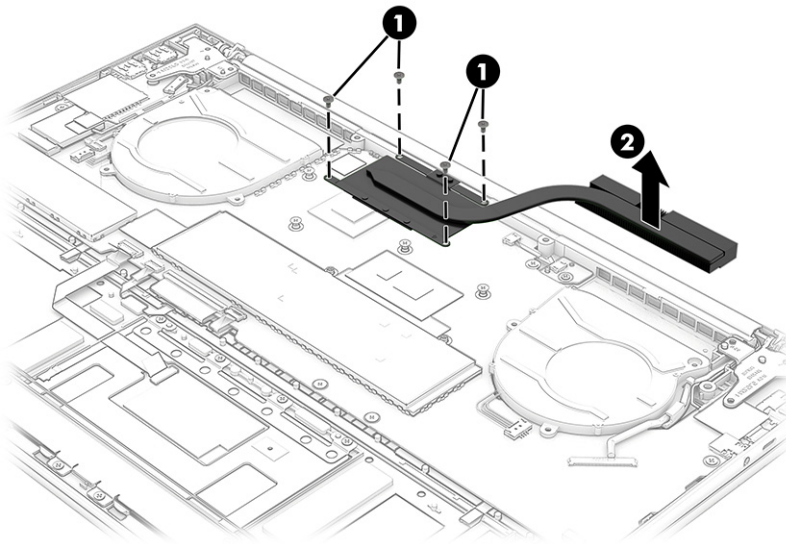
Remove the discrete and UMA heat sinks:

1. In the order indicated on the discrete heat sink, remove the seven Phillips M2.0 × 3.5 screws (1) that secure the heat sink to the computer.

2. Remove the heat sink from the computer (2).

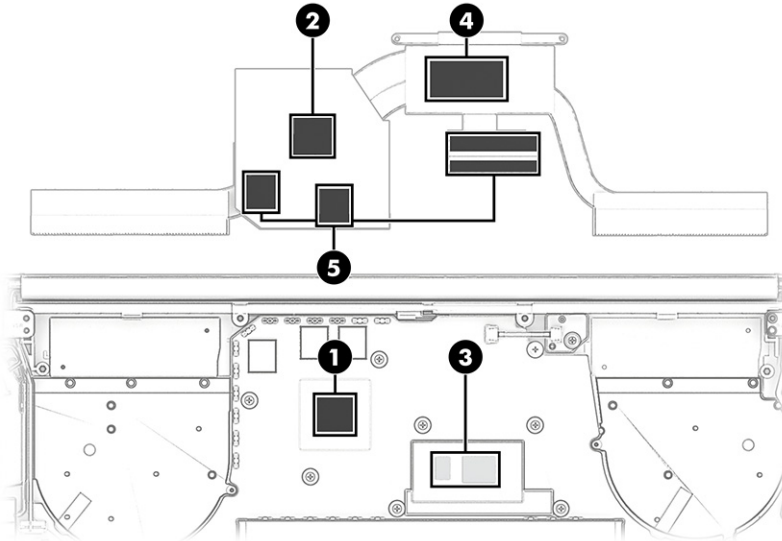


3. In the order indicated on the UMA heat sink, remove the four Phillips M2.0 × 3.5 screws (1) that secure the heat sink to the computer, and then remove the heat sink from the computer (2).



4. Thoroughly clean the thermal material from the surfaces of the heat sink and the system board components each time the heat sink is removed. Replacement thermal material is included with the heat sink and system board spare part kits. The following illustration shows the replacement thermal material locations.

Thermal paste is used on the system board components **(3)** and on the heat sink areas **(1), (2), (4), (5)** that service them.



Reverse this procedure to install the heat sink.

## Display panel

To remove the display panel from the base enclosure, use this procedure and illustration.

**Table 5-10** Display panel description and part numbers

Description	Spare part number
Display panel	
<b>35.6 cm</b> (14.0 in) Touch screen, Brightview 400 nits, LP NWBZ, flat	M30901-001
<b>35.6 cm</b> (14.0 in) Non touch screen, antiglare, 400 nits LP NWBZ, flat	M30902-001

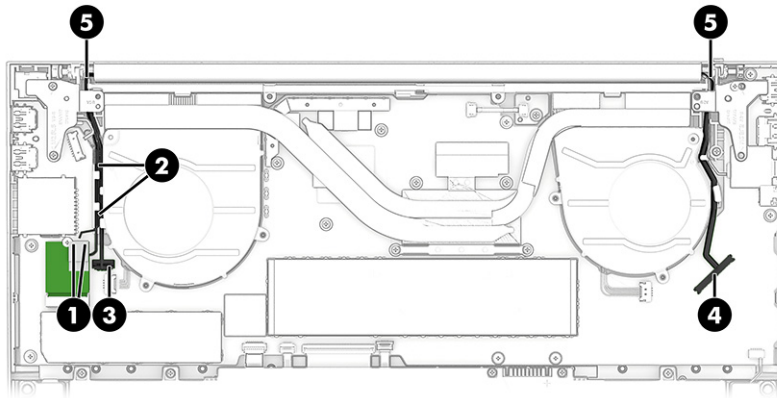
Before removing the display panel, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 31](#)).
2. Remove the bottom cover ([Bottom cover and rubber feet on page 31](#)).
3. Remove the battery (see [Battery on page 32](#)).

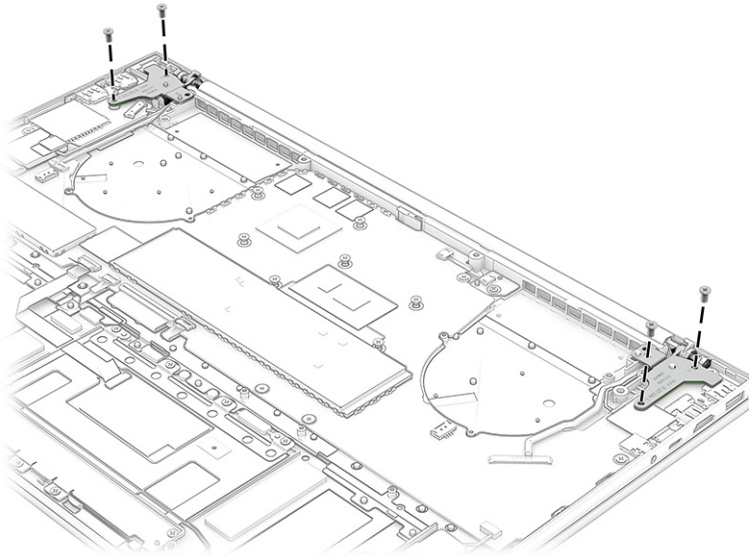
Remove the display panel from the computer:

1. Disconnect the antenna cables from the WLAN module **(1)**, and then remove the webcam cable from the clips that secure the cable **(2)**.
2. Disconnect the webcam cable **(3)**, and then disconnect the display panel cable **(4)**.

3. Remove the webcam cable and the display panel cables from the clips that secure them (5).



4. Remove the four Phillips M2.5 × 2.5 screws that secure the display panel to the base enclosure and remove the display panel.



Reverse this procedure to install the display panel.

## Power connector

To remove the power connector cable, use this procedure and illustration.

**Table 5-11 Power connector cable description and part number**

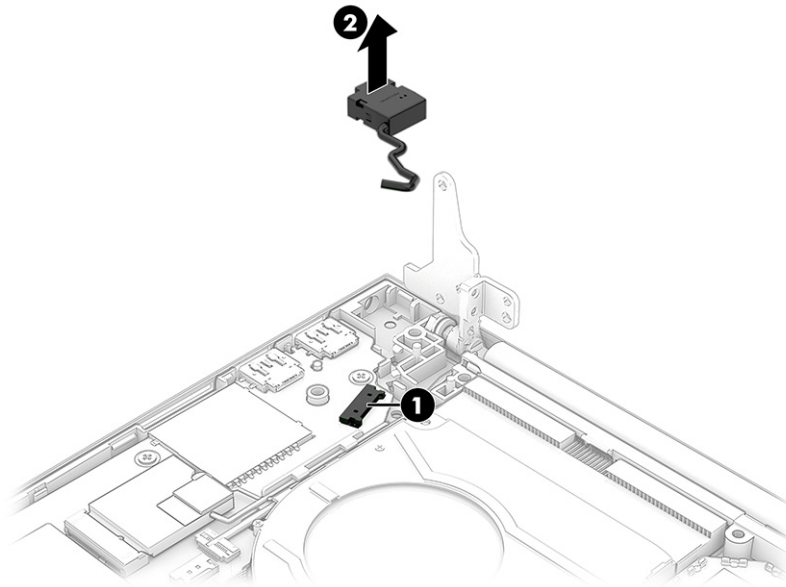
Description	Spare part number
Power connector and cable	M45783-001

Before removing the power connector cable, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 31](#)).
2. Remove the bottom cover ([Bottom cover and rubber feet on page 31](#)).
3. Remove the battery (see [Battery on page 32](#)).

Remove the power connector cable:

1. Disconnect the power connector cable from the system board **(1)**.
2. Remove the power connector cable from the computer **(2)**.



Reverse this procedure to install the power connector cable.

## Touchpad

To remove the touchpad, use this procedure and illustration.

**Table 5-12 Touchpad description and part number**

Description	Spare part number
Touchpad	M45774-001
Touchpad cable	M45779-001

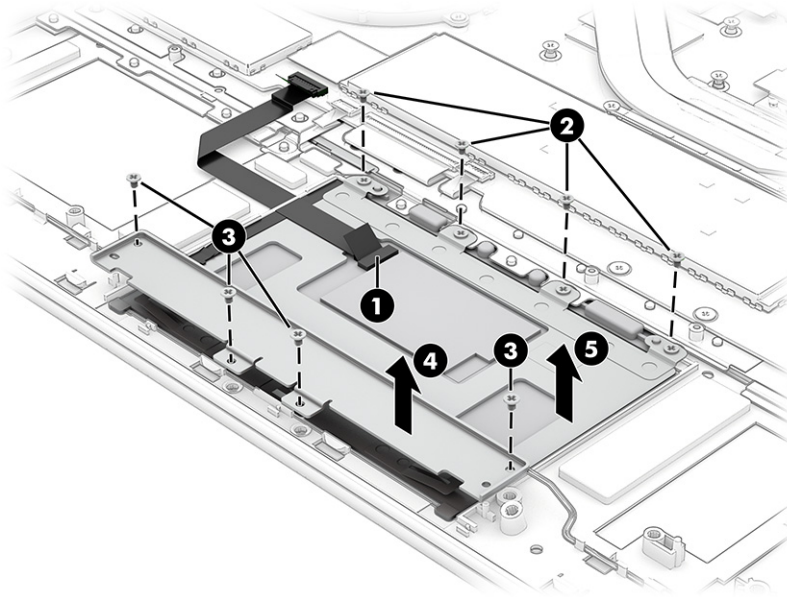
Before removing the touchpad, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 31](#)).
2. Remove the bottom cover ([Bottom cover and rubber feet on page 31](#)).
3. Remove the battery (see [Battery on page 32](#)).

Remove the touchpad:

1. Disconnect the touchpad cable **(1)**
2. Remove the four Phillips M2.0 × 5.0 screws **(2)** that secure the touchpad top bracket to the computer.

3. Remove the three Phillips M2.0 × 5.0 screws (3) that secure the touchpad bottom bracket to the computer.
4. Remove the touchpad bracket from the computer (4).



Reverse this procedure to install the touchpad.

## System board

To remove the system board, use these procedures and illustrations.

**Table 5-13 System board descriptions and part numbers**

Description	Spare part number
<b>System board</b> (includes processor):	
All system boards use the following part numbers:	
xxxxxx-001: Non-Windows operating system	
xxxxxx-601: Windows 10 operating system	
Intel Core i5-1135 G7 processor with unified memory architecture (UMA) graphics memory	M45791-001
Intel Core i7-1165 G7 processor with UMA graphics memory	M45792-001
Intel Core i5-1135 G7 processor and 2 GB of discrete graphics memory	M45793-001
Intel Core i7-1165 G7 processor and 2 GB of discrete graphics memory	M45794-001

Before removing the system board, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 31](#)).
2. Remove the bottom cover ([Bottom cover and rubber feet on page 31](#)).
3. Remove the battery (see [Battery on page 32](#)).

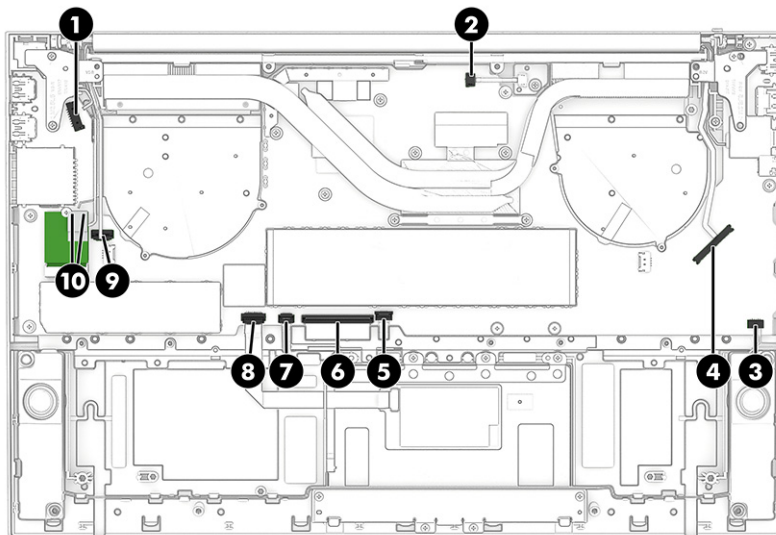
When you replace the system board, be sure to remove the following components (as applicable) from the defective system board and install them on the replacement system board:

- Memory modules (see [Memory modules on page 36](#)).
- WLAN module (see [WLAN module on page 38](#)).
- Heat sink (see [Heat sink on page 42](#)).

Remove the system board:

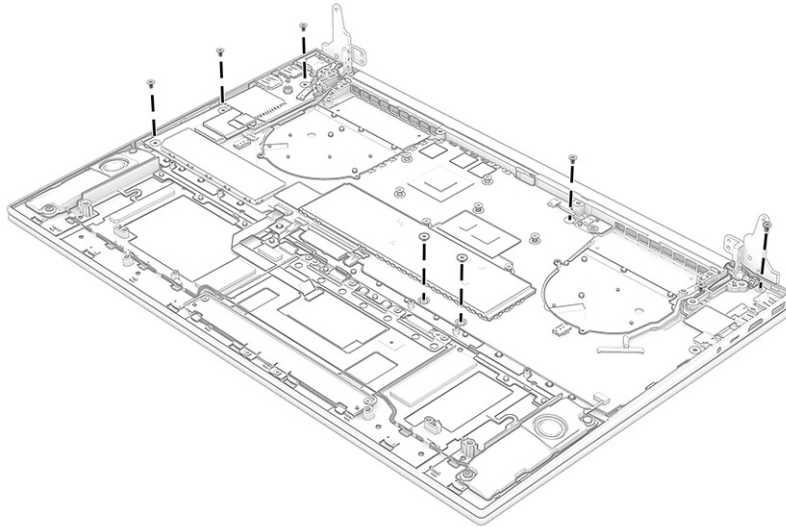
**1.** Disconnect the following cables from the system board:

- Power connector cable **(1)**
- IR sensor cable **(2)**
- Speaker cable **(3)**
- Display panel cable (ZIF) **(4)**
- Backlight cable (ZIF) **(5)**
- Keyboard cable **(6)**
- Fingerprint reader cable **(7)**
- Touchpad cable (ZIF) **(8)**
- Webcam cable **(9)**
- Antenna cables **(10)**

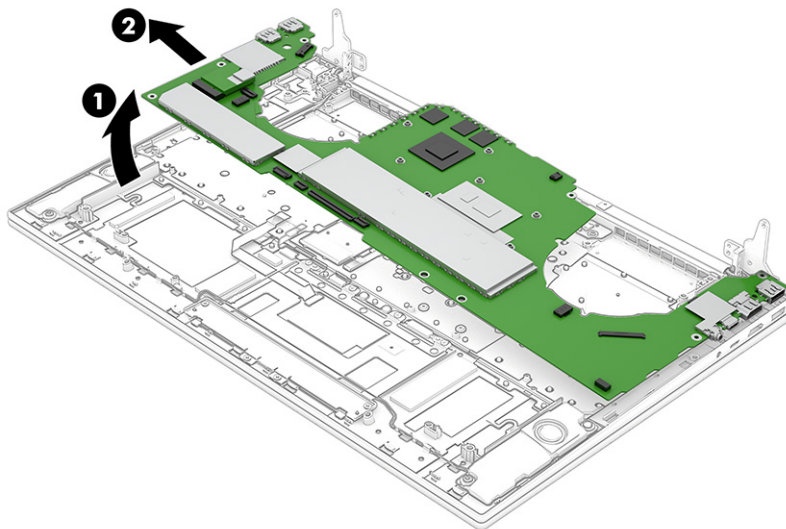




2. Remove the seven Phillips M2.0 × 3.5 screws that secure the system board to the computer **(2)**.



3. Tilt the system board up **(1)**, and then remove the system board **(2)**.



Reverse this procedure to install the system board.

## Display assembly

To remove and disassemble the display assembly, use these procedures and illustrations.

Full hinge-up displays are not available as spare parts. Spare parts for displays are available only at the subcomponent level.



**NOTE:** For touch screens, please update to the latest firmware after replacing the panel or touch control board. More information can be found in Advisory: c06220255 - Download and Install the Touch Panel Firmware During Service.

For the Dynamic Calibration (Color Calibration) feature, reload the calibration data after replacing the panel kit. More information can be found in Advisory: c06640672 - HP Display Control Panel Color Calibration Data Reload Process.

Before removing the display panel, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 31](#)).
2. Remove the bottom cover ([Bottom cover and rubber feet on page 31](#)).
3. Remove the battery (see [Battery on page 32](#)).

Remove the display assembly:

Display panels are available as the following spare part numbers:

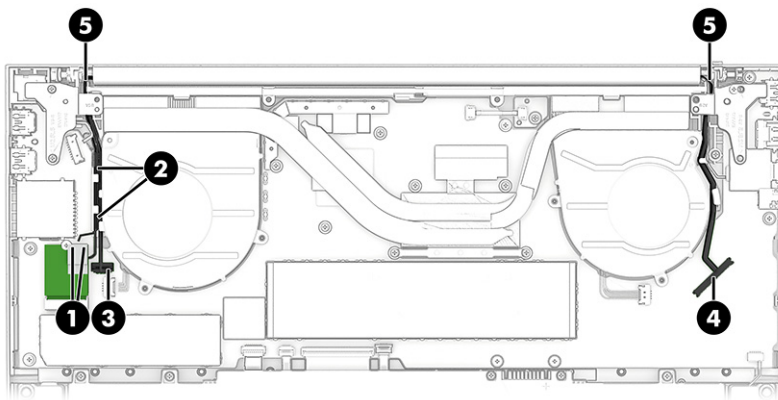
Full High Definition (FHD) antiglare, touch screen, UWVA, M45769-001

FHD antiglare, nontouch screen, AR UWVA, M45767-001

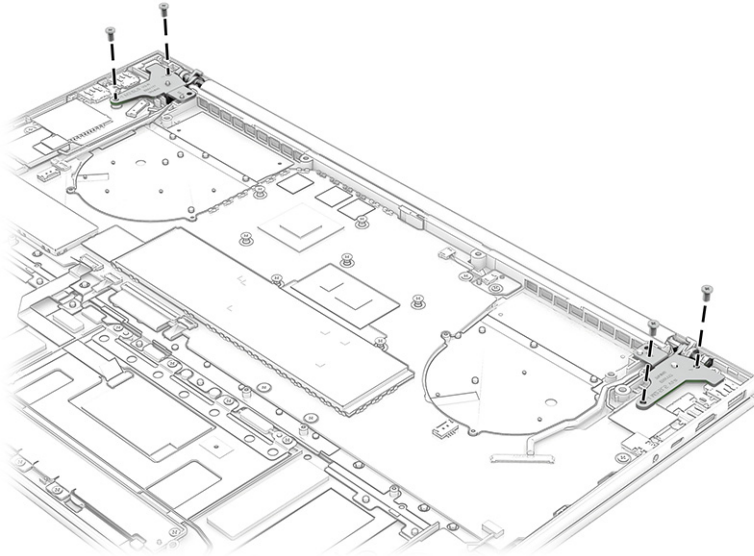
FHD antiglare, nontouch screen, UWVA, M45768-001

Ultra High Definition antiglare, nontouch screen, UWVA, M55014-001

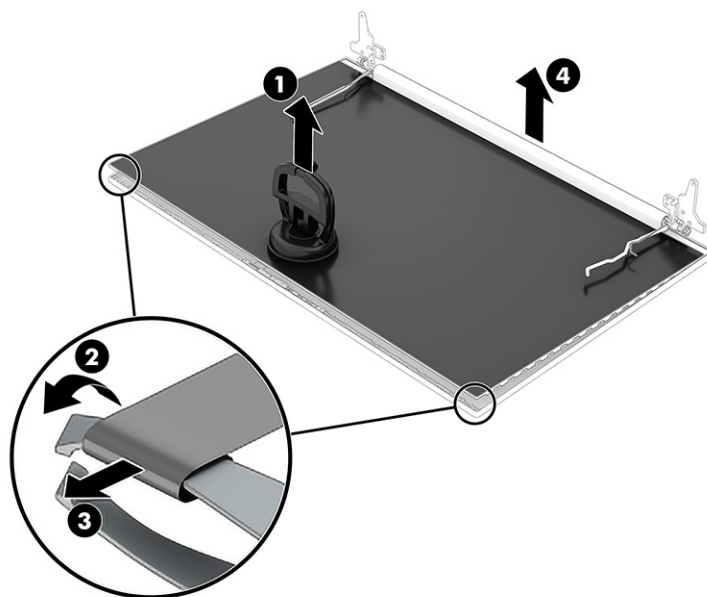
1. Disconnect the antenna cables from the WLAN module **(1)**, and then remove the webcam cable from the clips that secure the cable **(2)**.
2. Disconnect the webcam cable **(3)**, and then disconnect the display panel cable **(4)**.
3. Remove the webcam cable and the display panel cables from the clips that secure them **(5)**.



4. Remove the four Phillips M2.5 × 2.5 screws that secure the display panel to the base enclosure and remove the display panel.

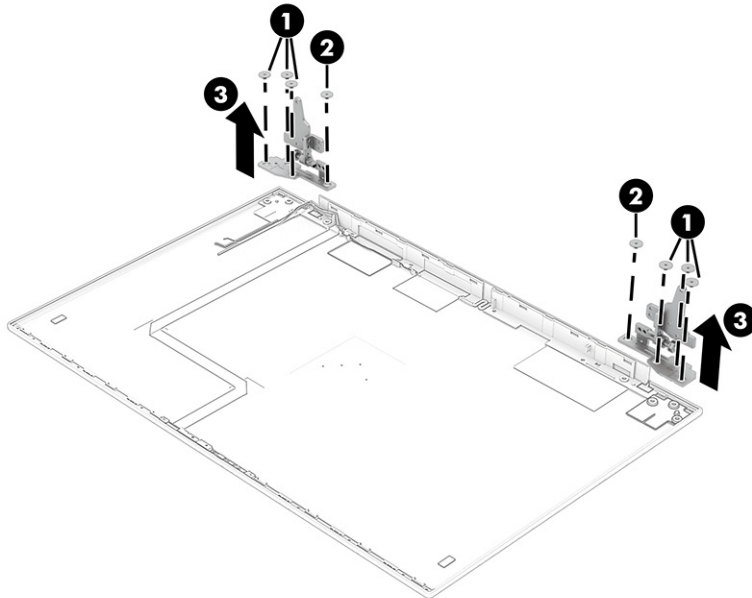


5. If you need to remove the display panel on a touch screen model:
  - a. Position a suction cup tool at the illustrated locations on the display panel, and then rotate the locking lever down to lock the cup. You may use a plastic tool as you pull the suction tool handle to disengage the panel from the computer **(1)**.
  - b. The display panel is secured to the display enclosure with tape that is installed under the left and right sides of the panel. To remove the panel, use tweezers to grasp the end of the tape **(2)**. While turning the tweezers, wrap the tape around the tweezers as you continue to pull the tape out from behind the display panel **(3)**. You must pull the tape multiple times before it is completely removed.
  - c. Remove the panel **(4)**.



6. If you need to remove the hinges from the display enclosure:
  - a. Remove the six Phillips broadhead M2.5 × 5.0 screws **(1)** from each hinge.
  - b. Remove the two Phillips M2.5 × 5.0 screws **(2)** from each hinge.
  - c. Remove the hinges from the display **(3)**.

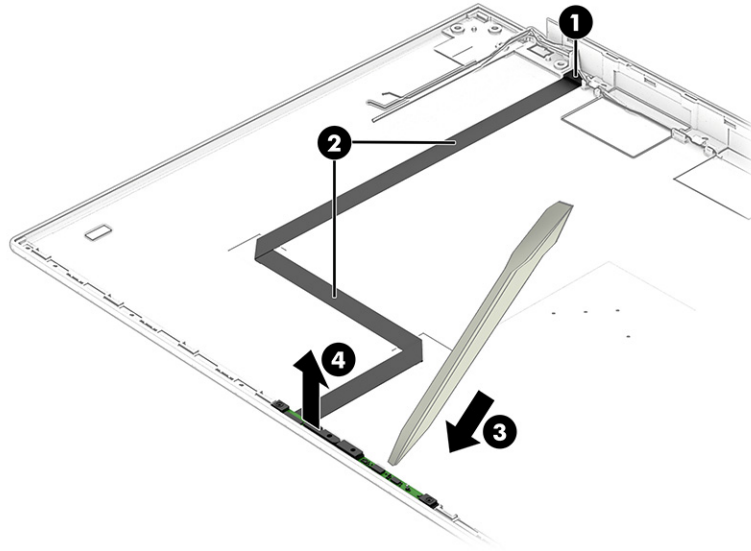
The display hinges are available as spare part number M45772-001.



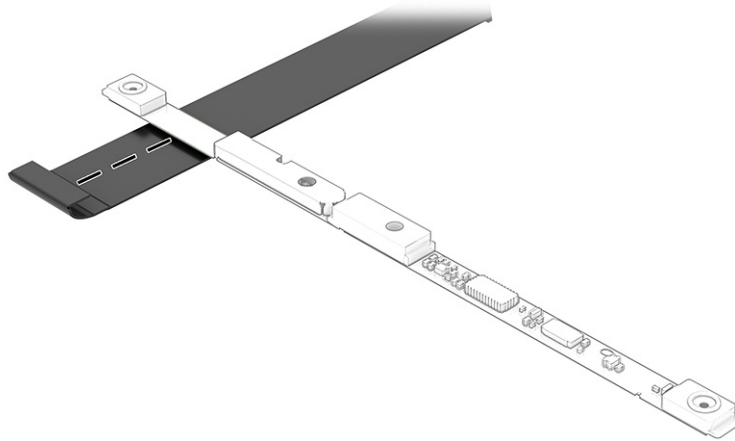
7. If you need to remove the camera module:
  - a. Disconnect the cable from the reverse ZIF connector on the module **(1)**.
  - b. Lift up evenly across the module and peel the module up from the display back cover **(2)**.

- c. Insert a plastic tool between the foil and camera module to carefully remove the camera module (3).

The camera module is available as spare part number M45775-001.



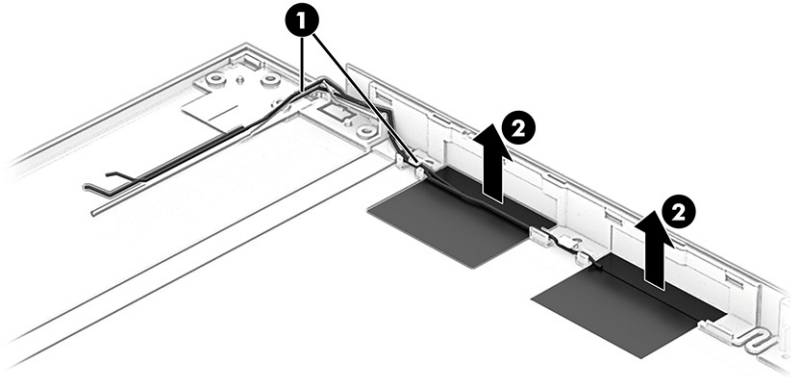
- 8. If you need to remove the camera module from the camera module cable, peel the tape carefully from the camera module.



9. If you need to remove the antenna cables, remove the cables from the clips at the bottom of the cover (1), and then remove the antennas and cables (2).


Antennas are available as spare part number M44996-001.

Display back covers are available as spare part number M45771-001.

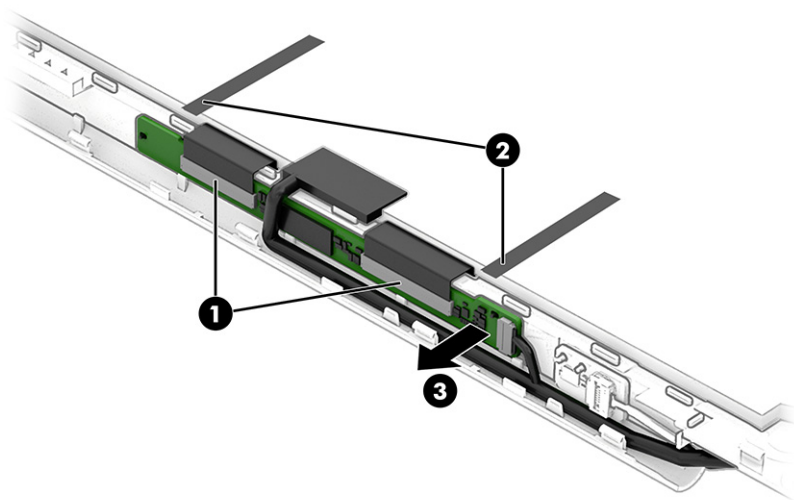


10. If it is necessary to remove or replace the touch screen board for your touch screen, remove the touch screen board cable from the touch screen board on the display assembly (1). Release the adhesive tape from the touch screen board (2), and then remove the touch screen board (3).

The touch screen board is available in the touch screen panel kit as spare part number M45769-001 and the touch screen board cable is available as spare part number M45781-001.

 **NOTE:** For touch screens, please update to the latest firmware after replacing the panel or touch control board. More information can be found in Advisory: c06220255 - Download and Install the Touch Panel Firmware During Service.

For the Dynamic Calibration (Color Calibration) feature, reload the calibration data after replacing the panel kit. More information can be found in Advisory: c06640672 - HP Display Control Panel Color Calibration Data Reload Process.



## Keyboard with top cover

The top cover with keyboard remains after removing all other spare parts from the computer. In this section, the first table provides the main spare part number for the top cover/keyboards. The second table provides the country codes.

**Table 5-14 Keyboard with top cover descriptions and part numbers**


Description	Spare part number
Keyboard with top cover, in natural silver finish with backlight	M45795-001

**Table 5-15 Spare part country codes**

For use in country or region	Spare part number	For use in country or region	Spare part number	For use in country or region	Spare part number
Belgium	-A41	Iceland	-DD1	Slovenia	-BA1
Brazil	-201	India	-D61	South Korea	-AD1
Bulgaria	-261	Israel	-BB1	Spain	-071
Chile	-161	Italy	-061	Switzerland	-BG1
Czech Republic/Slovakia	-FL1	Japan	-291	Taiwan	-AB1
Denmark, Finland, and Norway	-DH1	The Netherlands	-B31	Thailand	-281
French Canada	-DB1	Northern Africa	-FP1	Turkey	-141
France	-051	Portugal	-131	Ukraine	-BD1
Germany	-041	Romania	-271	United Kingdom	-031
Greece	-151	Russia	-251	United States	-001
Hungary	-211	Saudi Arabia	-171		


## 6 Using Setup Utility (BIOS)

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

 **NOTE:** To start Setup Utility on convertible computers, your computer must be in notebook mode and you must use the keyboard attached to your notebook.

### Starting Setup Utility (BIOS)

You have several ways to access the Setup Utility (BIOS).

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

▲ Turn on or restart the computer and quickly press **f10**.

– or –

Turn on or restart the computer, quickly press **esc**, and then press **f10** when the Start menu is displayed.

### Updating Setup Utility (BIOS)

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

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

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

– or –

Select the question mark icon in the taskbar.


  2. Select **My notebook**, and then select **Specifications**.
- Setup Utility (BIOS)
  1. Start Setup Utility (BIOS) (see [Starting Setup Utility \(BIOS\) on page 56](#)).
  2. Select **Main**, and then make note of the BIOS version.
  3. Select **Exit**, select one of the options, and then follow the on-screen instructions.
- In Windows, press `ctrl+alt+s`.

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




## Preparing for a BIOS update

Be sure to follow all prerequisites before downloading and installing 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 from the computer by unplugging the power cord from the AC outlet.
- Do not shut down the computer or initiate Sleep.
- Do not insert, remove, connect, or disconnect any device, cable, or cord.

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

## Downloading a BIOS update

After you review the prerequisites, you can check for and download BIOS updates.

1. Type `support` in the taskbar search box, and then select the **HP Support Assistant** app.  
– or –  
Select the question mark icon in the taskbar.
2. Select **Updates**, and then select **Check for updates and messages**.
3. Follow the on-screen instructions.
4. At the download area, follow these steps:
  - a. Identify the most recent BIOS update and compare it to the BIOS version currently installed on your computer. If the update is more recent than your BIOS version, make a note of the date, name, or other identifier. You 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.

## Installing a BIOS update

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

1. Type `file` in the taskbar search box, and then select **File Explorer**.
2. Select your hard drive designation. The hard drive designation is typically Local Disk (C:).
3. Using the hard drive path you recorded earlier, open the folder that contains the update.
4. Double-click the file that has an `.exe` extension (for example, `filename.exe`).  
The BIOS installation begins.
5. Complete the installation by following the on-screen instructions.



---

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

---

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

HP provides several tools to help set up and protect your computer.

## 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 hard drives, display, keyboard, mouse, and printer). Computer Setup includes settings for types of devices installed, the startup sequence of the computer, and amount of system and extended memory.

---

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

---

To start 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

You can navigate and select in Computer Setup using one or more methods.

- 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

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

---


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

---

1. Start Computer Setup. See [Using Computer Setup on page 59](#).
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 [Using Computer Setup on page 59](#).
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 [Preparing for a BIOS update on page 60](#).

### Preparing for a BIOS update

Be sure to follow all prerequisites before downloading and installing 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.

---

### Downloading a BIOS update

After you review the prerequisites, you can check for and download BIOS updates.

1. Type `support` in the taskbar search box, and then select the HP Support Assistant app.  
– or –  
Select the question mark icon in the taskbar.
2. Select **Updates**, and then select **Check for updates and messages**.
3. Follow the on-screen instructions.
4. At the download area, follow these steps:
  - a. Identify the most recent BIOS update and compare it to the BIOS version currently installed on your computer. 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.

### Installing a BIOS update

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)

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

---

 **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.

 **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 [Using Computer Setup on page 59](#).
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.

---

## 8 Backing up, restoring, and recovering

You can use Windows tools or HP software to back up your information, create a restore point, reset your computer, create recovery media, or restore your computer to its factory state. Performing these standard procedures can return your computer to a working state faster.

---

 **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


These methods of creating recovery media and backups are available on select products only.

#### Using Windows tools for backing up

HP recommends that you back up your information immediately after initial setup. You can do this task either using Windows Backup locally with an external USB drive or using online tools.

---

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

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

---


#### 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.

 **IMPORTANT:** HP recommends that you follow the [Restoring and recovery methods on page 64](#) to restore your computer before you obtain and use the HP recovery discs. Using a recent backup can return your machine to a working state sooner than using the HP recovery discs. After the system is restored, reinstalling all the operating system software released since your initial purchase can be a lengthy process.

---

### Restoring and recovering your system

You have several tools available to recover your system both within and outside of Windows if the desktop cannot load.

HP recommends that you attempt to restore your system using the [Restoring and recovery methods on page 64](#).

## Creating a system restore

System Restore is available in Windows. The System Restore software can automatically or manually create restore points, or snapshots, of the system files and settings on the computer at a particular point.


When you use System Restore, it returns your computer to its state at the time you made the restore point. Your personal files and documents should not be affected.

## Restoring and recovery methods

After you run the first method, test to see whether the issue still exists before you proceed to the next method, which might now be unnecessary.

1. Run a Microsoft System Restore.
2. Run Reset this PC.

---

 **NOTE:** The options **Remove everything** and then **Fully clean the drive** can take several hours to complete and leave no information on your computer. It is the safest way to reset your computer before you recycle it.


---

3. Recover using HP Recovery media. For more information, see [Recovering using HP Recovery media on page 64](#).

For more information about the first two methods, see the Get Help app:

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

---

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


---

## 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 63](#).

---


 **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.

---


 **NOTE:** HP recommends that you follow the [Restoring and recovery methods on page 64](#) to restore your computer before you obtain and use the HP recovery discs. Using a recent backup can return your machine to a working state sooner than using the HP recovery discs. After the system is restored, reinstalling all the operating system software released since your initial purchase can be a lengthy process.

---

## Changing the computer boot order

If your computer does not restart using the HP Recovery media, you can change the computer boot order, the order of devices listed in BIOS for startup information. You can select an optical drive or a USB flash drive, depending on the location of your HP Recovery media.

---

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

---



To change the boot order:

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 press and hold the volume up button, and then select **f9**.  
– or –  
Turn on or restart the tablet, quickly press and hold 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 operating system (OS) recovery solution built into the hardware and software. 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>. Follow the on-screen instructions to find your product and locate your documentation.

---

## 9 Using HP PC Hardware Diagnostics

You can use the HP PC Hardware Diagnostics utility to determine whether your computer hardware is running properly. The three versions are HP PC Hardware Diagnostics Windows, HP PC Hardware Diagnostics UEFI (Unified Extensible Firmware Interface), and (for select products only) Remote HP PC Hardware Diagnostics UEFI, a firmware feature.

### 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 67](#).

### Using an HP PC Hardware Diagnostics Windows hardware failure ID code

When HP PC Hardware Diagnostics Windows detects a failure that requires hardware replacement, a 24-digit failure ID code is generated for select component tests. For interactive tests, such as keyboard, mouse, or audio and video palette, you must perform troubleshooting steps before you can receive a failure ID.

- ▲ You have several options after you receive a failure ID:
  - Select **Next** to open the Event Automation Service (EAS) page, where you can log the case.  
– or –
  - Scan the QR code with your mobile device, which takes you to the EAS page, where you can log the case.  
– or –
  - Select the box next to the 24-digit failure ID to copy your failure code and send it to support.

### Accessing HP PC Hardware Diagnostics Windows

After HP PC Hardware Diagnostics Windows is installed, you can access it from HP Help and Support, HP Support Assistant, or the Start menu.

### Accessing HP PC Hardware Diagnostics Windows from HP Help and Support (select products only)

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

1. Select the **Start** button, and then select **HP Help and Support**.
2. Select **HP PC Hardware Diagnostics Windows**.
3. 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**.


---

## Accessing HP PC Hardware Diagnostics Windows from Support Assistant

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

1. Type `support` in the taskbar search box, and then select the **HP Support Assistant** app.  
– or –  
Select the question mark icon in the taskbar.
2. Select **Troubleshooting and fixes**.
3. Select **Diagnostics**, and then select **HP PC Hardware Diagnostics Windows**.
4. 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**.

---

## Accessing HP PC Hardware Diagnostics Windows from the Start menu (select products only)

After HP PC Hardware Diagnostics Windows is installed, follow these steps to access it from the Start menu.

1. Select the **Start** button.
2. Right-click **HP PC Hardware Diagnostics for Windows**, select **More**, and then select **Run as administrator**.
3. 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**.

---

## 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 from HP

To download HP PC Hardware Diagnostics Windows from HP, 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 the specific Windows diagnostics version to download to your computer or a USB flash drive.

The tool downloads to the selected location.

### Downloading the HP PC Hardware Diagnostics Windows from the Microsoft Store

You can download the HP PC Hardware Diagnostics Windows from the Microsoft Store.

1. Select the Microsoft Store 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)

You can download HP PC Hardware Diagnostics Windows by product name or number.

---

 **NOTE:** For some products, you might have to download the software to a USB flash drive by using the product name or number.

---

1. Go to <http://www.hp.com/support>.
2. Select **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, 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

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.

---

 **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 69](#).

---

If your PC does not start in Windows, you can use HP PC Hardware Diagnostics UEFI to diagnose hardware issues.

## Using an HP PC Hardware Diagnostics UEFI hardware failure ID code

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 this procedure.

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 69](#).

- 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 some 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, follow this procedure.

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)

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



**NOTE:** For some products, you might have to download the software to a USB flash drive by using the product name or number.

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

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

You can 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 Remote Diagnostics**, and then select **Run**.

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

You can download HP Remote 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.

1. Go to <http://www.hp.com/support>.
2. Select **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 several 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.

# 10 Specifications

This chapter provides specifications for your computer.

## Computer specifications

This section provides specifications for your computer. When you travel with your computer, the computer dimensions and weights, as well as input power ratings and operating specifications, provide helpful information.

**Table 10-1 Computer specifications**

	Metric	U.S.
<b>Dimensions</b>		
Width	<b>39.9 mm</b>	15.70 in
Depth	<b>259 mm</b>	10.19 in
Height (front to back)	<b>1.99 mm</b>	0.78 in
<b>Weight</b>		
For models with UMA graphics	<b>2542 g</b>	5.60 lbs
For models with discrete graphics	<b>2617 g</b>	5.76 lbs
<b>Input power</b>		
Operating voltage and current	19.5 V dc @ 3.33 A – 65 W	
	19.5 V dc @ 4.62 A – 90 W	
<b>Temperature</b>		
Operating	<b>5°C to 35°C</b>	41°F to 95°F
Nonoperating	<b>-20°C to 60°C</b>	-4°F to 140°F
<b>Relative humidity</b> (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
<b>Maximum altitude</b> (unpressurized)		
Operating	<b>-15 m to 3,048 m</b>	-50 ft to 10,000 ft
Nonoperating	<b>-15 m to 12,192 m</b>	-50 ft to 40,000 ft
<b>NOTE:</b> Applicable product safety standards specify thermal limits for plastic surfaces. The device operates well within this range of temperatures.		

## 43.9 cm (17.3 in) display specifications

This section provides specifications for your display.



**Table 10-2 Display specifications**

	<b>Metric</b>	<b>U.S.</b>
Active diagonal size	<b>39.6 cm</b>	15.6 in
Resolution	1920 × 1080 (FHD) 3840 × 2160 (UHD)	
Surface treatment	Antiglare (FHD, UHD panels)	
Brightness	300 nits (FHD, 72% NTSC/100% sRGB panels) 400 nits (UHD panel)	
Viewing angle	UWVA	
Backlight	WLED	
Display panel interface	eDP	

## Solid-state drive specifications

This section provides specifications for your solid-state drives.

**Table 10-3 Solid-state drive specifications**

	<b>256 GB*</b>	<b>512 GB*</b>	<b>1 TB*</b>
<b>Dimensions</b>			
Height	1.0 mm	1.0 mm	1.0 mm
Length	50.8 mm	50.8 mm	50.8 mm
Width	28.9 mm	28.9 mm	28.9 mm
Weight	< 10 g	< 10 g	< 10 g
<b>Interface type</b>			
Ready time, maximum (to not busy)	1.0 ms	< 1.0 ms	1.0 ms
Access times, logical	0.1 ms	0.1 ms	0.1 ms
<b>Transfer rate</b>			
Sequential read	up to 2150 MB/s	up to 2150 MB/s	up to 2150 MB/s
Random read	Up to 300,000 IOPs	Up to 300,000 IOPs	Up to 300,000 IOPs
Sequential write	up to 1550 MB/s	up to 1550 MB/s	up to 1550 MB/s
Random write	Up to 100,000 IOPs	Up to 100,000 IOPs	Up to 100,000 IOPs
<b>Total logical sectors</b>	468,883,296	1,000,215,216	1,500,336,388
<b>Operating temperature</b>	<b>0°C to 70°C (32°F to 158°F)</b>		

\*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less. Actual drive specifications may differ slightly.

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

## Solid-state drive specifications (SATA-3)

This section provides specifications for your solid-state drive.

**Table 10-4 Solid-state drive specifications**

	<b>128 GB*</b>
<b>Dimensions</b>	
Height	1.35 mm
Weight	< 10 g
<b>Interface type</b>	
Ready time, maximum (to not busy)	1.0 ms
Access times, logical	0.1 ms
<b>Transfer rate</b>	
	up to 540 MB/s
<b>Total logical sectors</b>	
	234,441,648
<b>Operating temperature</b>	
	<b>0°C to 70°C</b> (32°F to 158°F)
*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less. Actual drive specifications can differ slightly.	
<b>NOTE:</b> Certain restrictions and exclusions apply. Contact support for details.	

# 11 Power cord set requirements

This chapter provides power cord requirements for countries and regions.

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

The three-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

These power cord 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 V ac 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

To determine power cord requirements for specific countries and regions, use this table.

**Table 11-1 Power cord requirements for specific countries and regions**

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

**Table 11-1 Power cord requirements for specific countries and regions (continued)**

Country/region	Accredited agency	Applicable note number
India	BIS	1
Israel	SII	1
Italy	IMQ	1
Japan	JIS	3
Netherlands	KEMA	1
New Zealand	SANZ	1
Norway	NEMKO	1
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
United Kingdom	ASTA	1
United States	UL	2

1. The flexible cord must be Type H05VV-F, three-conductor, 0.75 mm<sup>2</sup> conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.
2. The flexible cord must be Type SVT/SJT or equivalent, No. 18 AWG, three-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.
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, three-conductor, 0.75 mm<sup>2</sup> or 1.25 mm<sup>2</sup> conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V ac) configuration.
4. The flexible cord must be Type RVV, three-conductor, 0.75 mm<sup>2</sup> conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the CCC certification mark.
5. The flexible cord must be Type H05VV-F three-conductor, 0.75 mm<sup>2</sup> conductor size. KTL logo and individual approval number must be on each element. Approval number and logo must be printed on a flag label.
6. The flexible cord must be Type HVCTF three-conductor, 1.25 mm<sup>2</sup> conductor size. Power cord set fittings (appliance coupler, cable, and wall plug) must bear the BSMI certification mark.
7. For 127 V ac, the flexible cord must be Type SVT or SJT 3-conductor, 18 AWG, with plug NEMA 5-15P (15 A, 125 V ac), with UL and CSA or C-UL marks. For 240 V ac, the flexible cord must be Type H05VV-F three-conductor, 0.75 mm<sup>2</sup> or 1.00 mm<sup>2</sup> conductor size, with plug BS 1363/A with BSI or ASTA marks.

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## 12 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>.

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