



# Maintenance and Service Guide

HP EliteBook X Flip G2i 14 inch Notebook  
Next Gen AI PC

## **SUMMARY**

This guide provides maintenance information about such topics as spare parts, removal and replacement of parts, security, and backing up.

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### Product notice

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

Not all features are available in all editions or versions of Windows. Systems might require upgraded and/or separately purchased hardware, drivers, software, or BIOS update to take full advantage of Windows functionality. Windows is automatically updated, which is always enabled. High-speed internet and Microsoft account required. ISP fees might apply and additional requirements might apply over time for updates. See <http://www.windows.com>. **If your product ships with Windows in S Mode:** Windows in S Mode works exclusively with apps from the Microsoft Store within Windows. Certain default settings, features, and apps cannot be changed. Some accessories and apps that are compatible with Windows might not work (including some antivirus, PDF writers, driver utilities, and accessibility apps), and performance might vary, even if you switch out of S Mode. If you switch to Windows, you cannot switch back to S Mode. Learn more at [Windows.com/SmodeFAQ](https://www.windows.com/SmodeFAQ).

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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, 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, rugs or clothing, during operation. The computer and the AC adapter provided by HP comply with the user-accessible surface temperature limits defined by applicable safety standards.
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## Important notice about Customer Self-Repair parts

Your computer includes Customer Self-Repair parts and parts that should be accessed only by an authorized service provider.



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**IMPORTANT:** See [Removal and replacement procedures for Customer Self-Repair parts on page 37](#) for details.

Accessing parts described in [Removal and replacement procedures for authorized service provider parts on page 58](#) can damage the computer or void your warranty.

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# 1 Product description

This table provides detailed product information.



**NOTE:** For the latest specifications related to your computer, go to <http://www.hp.com/support> and follow the instructions to find your product. Select **Specifications & Accessories**, select **Product information**, and then select the specifications link.

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

Category	Description
<b>Product name</b>	HP EliteBook X Flip G21 14 inch Notebook Next Gen AI PC
<b>Processors</b>	<b>Intel® processors</b>
	Intel Core™ Ultra X7 368H
	Intel Core Ultra X7 358H
	Intel Core Ultra 7 366H
	Intel Core Ultra 7 356H
	Intel Core Ultra 5 338H
	Intel Core Ultra 5 335
	Intel Core Ultra 5 325
<b>Graphics</b>	<b>Intel graphics</b>
	Intel Graphics
<b>Display</b>	14.0 in (35.6 cm), touch screen
	2.8 K (2880 × 1800), OLED + low blue light, DCI-P3 100%, antiglare, ultrawide viewing angle (UWVA), 500 nits, 120 Hz (VRR)
	2.8 K (2880 × 1800), OLED + low blue light, DCI-P3 100%, BrightView, UWVA, 700 nits, 120 Hz (VRR), touch screen
	WUXGA (1920 × 1200), OLED + low blue light, antiglare, UWVA, DCI-P3 95%, 300 nits
	WUXGA (1920 × 1200), WLED + low blue light, low power, antiglare, UWVA, sRGB 100%, 400 nits
	WUXGA (1920 × 1200), low blue light, antiglare, UWVA, sRGB 100%, 800 nits, Sure View 6
<b>Memory</b>	Onboard memory is not accessible or upgradeable
	Supports LPDDR5x-9600 memory in the following configurations:
	<ul style="list-style-type: none"><li>• 64 GB</li><li>• 64 GB (for use in the People's Republic of China [PRC])</li><li>• 32 GB</li><li>• 32 GB (PRC)</li></ul>

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

Category	Description
	Supports LPDDR5x-8533 memory in the following configurations: <ul style="list-style-type: none"> <li>• 64 GB</li> <li>• 32 GB</li> <li>• 32 GB (PRC)</li> <li>• 24 GB</li> <li>• 24 GB (PRC)</li> <li>• 16 GB</li> </ul>
<b>Primary storage</b>	<b>PCIe, Non-Volatile Memory express (NVMe), M.2 2280 solid-state drives (SSDs)</b>
	2 TB, Gen5 × 4
	2 TB, Gen5 × 4 (PRC)
	2 TB, Gen5 × 4, self encrypting OPAL 2.0
	2 TB, Gen5, value
	2 TB, Gen5, value (PRC)
	1 TB, Gen5 × 4
	1 TB, Gen5 × 4 (PRC)
	1 TB, Gen5 × 4, self encrypting OPAL 2.0
	1 TB, Gen5
	1 TB, Gen5 (PRC)
	1 TB, Gen4, value
	1 TB, Gen4, value (PRC)
	512 GB, Gen5, value
	512 GB, Gen5, value (PRC)
	512 GB, Gen5, self encrypting OPAL 2.0, value
	512 GB, Gen4, value
	512 GB, Gen4, value (PRC)
	<b>eMMC v5.0</b>
	32 GB
<b>Audio and video</b>	Quad speakers
	Discrete amplifiers
	Poly Studio
	Dual-array microphones
<b>Video</b>	5 MP AI (AI Presence Detection + Voice AI) MIPI camera; IR camera
<b>Wireless LAN</b>	<b>Integrated wireless module</b> (M.2 1216 with dual antennas)
	Intel BE211 Wi-Fi® 7 + Bluetooth® 6.0 (non-vPro)

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

<b>Category</b>	<b>Description</b>
	Intel BE211 Wi-Fi 7 + Bluetooth 6.0 (vPro)
	<ul style="list-style-type: none"> <li>• MU-MIMO supported</li> <li>• Supports gigabit data rate</li> </ul>
<b>Wireless LPWAN</b>	<b>Wireless LPWAN (low power)</b> (select products only)
	HP RW220-GL LTE (CAT-1bis)
<b>Wireless WAN</b>	HP R18 5G Solution WWAN
	HP R18 5G Solution with HP Go
	HP R15 5G Solution WWAN
	HP R15 5G Solution with HP Go
<b>NFC</b>	<b>Near-field communication</b>
	NXP NFC Controller NPC300 I2C NCI
<b>Ports</b>	Audio-out (headphone)/audio-in (microphone) combo jack
	HDMI 2.1 (supports up to 4 K @ 60 Hz)
	Nano SIM slot
	USB 3.2 Gen 1 Type-A (right side)
	<ul style="list-style-type: none"> <li>• 5 Gbps signaling rate</li> <li>• Powered</li> </ul>
	USB-C® Thunderbolt (2) (left side)
	<ul style="list-style-type: none"> <li>• 40 Gbps signaling rate</li> <li>• USB power delivery</li> <li>• DisplayPort™ 2.1</li> </ul>
	USB-C (right side)
	<ul style="list-style-type: none"> <li>• 10 Gbps signaling rate</li> <li>• USB power delivery</li> <li>• DisplayPort 1.4</li> </ul>
<b>Keyboard/pointing devices</b>	<b>Keyboard</b> (backlit)
	Non-privacy
	Privacy
	Clickpad
	Haptic trackpad
<b>Power requirements</b>	<b>Battery</b> (HP Long Life, polymer)
	6 cell, 68 Wh
	3 cell, 56 Wh

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

<b>Category</b>	<b>Description</b>
	HP Fast Charge Technology
	<b>Smart AC adapters</b> (USB-C®) (select products only)
	100 W, Gallium Nitride (GaN), wall mount, halogen free, fixed
	100 W, GaN, wall mount, halogen free, foldable
	65 W, GaN, standard, straight
	65 W, GaN, wall mount, halogen free, foldable
	65 W, GaN, halogen free, wall mount, fixed
	<b>Power cord</b> (select products only)
	C5, conventional, 1 m (3.3 ft), sticker
	C5, conventional, red, straight, SA, 1 m (3.3 ft), sticker
	Nonstandard, black, straight, duckhead, halogen free
<b>Security</b>	Supports firmware-based Trusted Platform Module (TPM) 2.0
	Fingerprint sensor
	Nano security lock
	Camera privacy cover
<b>Sensors</b>	Hall Sensor (integrated)
	HP Sure Platform
	Thermal sensor
<b>Operating system</b>	Windows® 11 Enterprise 64
	Windows 11 Enterprise 64 LTSC 2404 (24H2)
	Windows 11 Home 64 Copilot+ Premium
	Windows 11 Home 64 Copilot+ Premium Chinese Market CPPP
	Windows 11 Home 64 Copilot+ Premium Single Language Africa Market PPP
	Windows 11 Home 64 Copilot+ Premium Single Language APAC EM PPP
	Windows 11 Home 64 Copilot+ Premium Single Language India Market PPP
	Windows 11 Home 64 Copilot+ Premium Single Language Indonesia Market PPP
	Windows 11 Home 64 Copilot+ Standard
	Windows 11 Home 64 Copilot+ Standard Chinese Market CPPP
	Windows 11 Home 64 Copilot+ Standard Single Language Africa Market PPP
	Windows 11 Home 64 Copilot+ Standard Single Language APAC EM PPP
	Windows 11 Home 64 Copilot+ Standard Single Language India Market PPP
	Windows 11 Home 64 Copilot+ Standard Single Language Indonesia Market PPP
	Windows 11 Pro 64 Copilot+ Premium
	Windows 11 Pro 64 Copilot+ Standard

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

<b>Category</b>	<b>Description</b>
	FreeDOS
	Ubuntu Linux 24.04 LTS
<b>Serviceability</b>	<b>End user replaceable parts</b>
	AC adapter
	Bottom cover
	Battery

## 2 Components

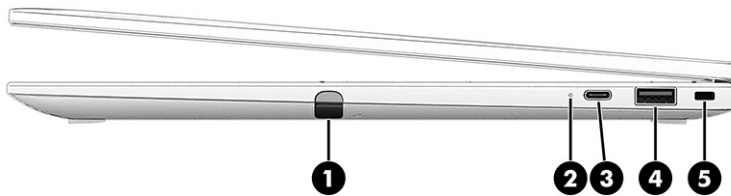
Your computer features top-rated components. This chapter provides details about your components, where they are located, and how they work.

### Right

Use this illustration and table to identify the components on the right side of the computer.




**NOTE:** Refer to the illustration that most closely matches your computer.

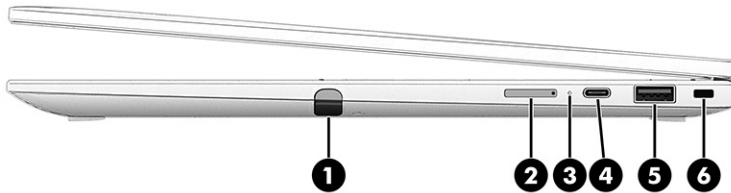


**Table 2-1** Right-side components and their descriptions

	Component	Description
(1)	Garaged pen	Holds an optional pen.
(2)	Battery light	When AC power is connected: <ul style="list-style-type: none"><li>• White: The battery charge is greater than 90%.</li><li>• Amber: The battery charge is from 0 to 90%.</li><li>• Off: The battery is not charging.</li></ul> When AC power is disconnected (battery not charging): <ul style="list-style-type: none"><li>• Blinking amber: The battery has reached a low battery level. When the battery has reached a critical battery level, the battery light begins blinking rapidly.</li><li>• Off: The battery is not charging.</li></ul>
(3)	USB Type-C® 10 Gbps port	Connects a display device that has a USB Type-C connector providing DisplayPort output. <b>NOTE:</b> Use a standard USB Type-C charging cable or cable adapter (purchased separately) when charging a small external device.
(4)	USB port	Connects a USB device, provides high-speed data transfer, and charges small devices (such as a smartphone). <b>NOTE:</b> Use a standard USB Type-A charging cable or cable adapter (purchased separately) when charging a small external device.

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


	Component	Description
(5)	 Security cable slot	Attaches an optional security cable to the computer.  <b>NOTE:</b> The security cable is designed to act as a deterrent, but it might not prevent the computer from being mishandled or stolen.



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

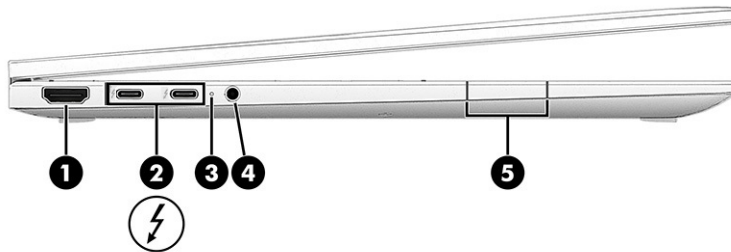
	Component	Description
(1)	Garaged pen	Holds an optional pen.
(2)	Nano SIM card slot (select products only)	Supports a wireless subscriber identity module (SIM) card.
(3)	Battery light	When AC power is connected: <ul style="list-style-type: none"> <li>• White: The battery charge is greater than 90%.</li> <li>• Amber: The battery charge is from 0 to 90%.</li> <li>• Off: The battery is not charging.</li> </ul> When AC power is disconnected (battery not charging): <ul style="list-style-type: none"> <li>• Blinking amber: The battery has reached a low battery level. When the battery has reached a critical battery level, the battery light begins blinking rapidly.</li> <li>• Off: The battery is not charging.</li> </ul>
(4)	USB Type-C 10 Gbps port	Connects a display device that has a USB Type-C connector providing DisplayPort output.  <b>NOTE:</b> Use a standard USB Type-C charging cable or cable adapter (purchased separately) when charging a small external device.
(5)	USB port	Connects a USB device, provides high-speed data transfer, and charges small devices (such as a smartphone).  <b>NOTE:</b> Use a standard USB Type-A charging cable or cable adapter (purchased separately) when charging a small external device.

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



	Component	Description
(6)	 Security cable slot	Attaches an optional security cable to the computer.  <b>NOTE:</b> The security cable is designed to act as a deterrent, but it might not prevent the computer from being mishandled or stolen.

## Left


Use this illustration and table to identify the components on the left side of the computer.



**Table 2-3** Left-side components and their descriptions

	Component	Description
(1)	 HDMI port	Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component, or a high-speed High Definition Multimedia Interface (HDMI) device.
(2)	 USB Type-C power connector and Thunderbolt port with HP Sleep and Charge and DisplayPort output (2)	Connects an AC adapter that has a USB Type-C connector, supplying power to the computer and, if needed, charging the computer battery.  - and -  Connects a USB device, provides high-speed data transfer, and charges small devices (such as a smartphone), even when the computer is off.  <b>NOTE:</b> Use a standard USB Type-C charging cable or cable adapter (purchased separately) when charging a small external device.  - and -  Connects a display device that has a USB Type-C connector, providing DisplayPort output.  <b>NOTE:</b> Your computer might also support a Thunderbolt docking station.

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

	Component	Description
(3)	Battery light	<p>When AC power is connected:</p> <ul style="list-style-type: none"> <li>• White: The battery charge is greater than 90%.</li> <li>• Amber: The battery charge is from 0 to 90%.</li> <li>• Off: The battery is not charging.</li> </ul> <p>When AC power is disconnected (battery not charging):</p> <ul style="list-style-type: none"> <li>• Blinking amber: The battery has reached a low battery level. When the battery has reached a critical battery level, the battery light begins blinking rapidly.</li> <li>• Off: The battery is not charging.</li> </ul>
(4)	 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>■ Select the <b>Search</b> icon in the taskbar, type <b>HP Documentation</b> in the search box, and then select <b>HP Documentation</b>.</li> </ul> <p><b>NOTE:</b> When a device is connected to the jack, the computer speakers are disabled.</p>
(5)	WWAN antennas	Send and receive wireless signals to communicate with wireless wide area networks (WWANs).

## 360 modes (select products only)

If your computer offers 360 modes, the following illustration shows how you can use and fold your device.



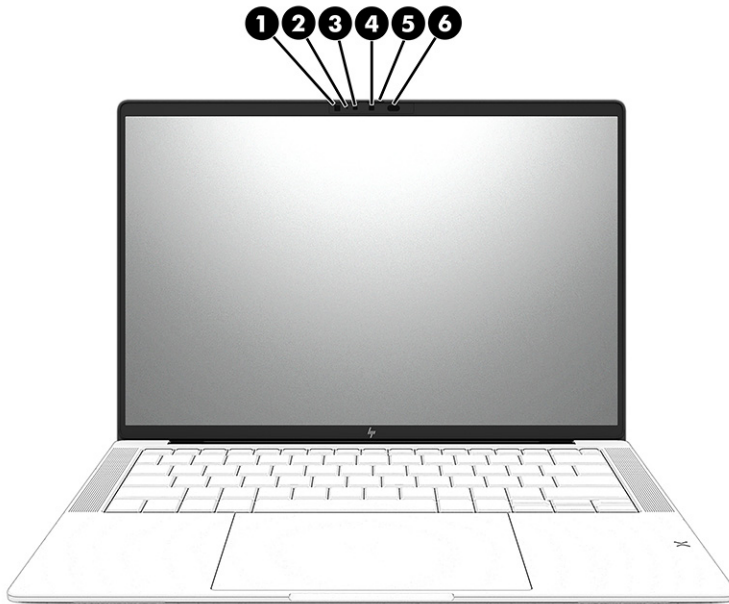
## Display

Use this illustration and table to identify the display components.

## 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 2-4** Display components and their descriptions


	Component	Description
(1)	IR Camera light	On: The IR camera is in use.
(2)	Webcam light	On: The webcam is in use.
(3)	IR camera	Allows you to video chat, record video, and record still images. Some cameras also allow a facial recognition logon to Windows, instead of a password logon. <b>NOTE:</b> Camera functions vary depending on the camera hardware and software installed on your product.
(4)	Webcam	Allows you to video chat, record video, and record still images. Some cameras also allow a facial recognition logon to Windows, instead of a password logon. <b>NOTE:</b> Camera functions vary depending on the camera hardware and software installed on your product.

**Table 2-4** Display components and their descriptions (continued)

	Component	Description
(5)	Camera privacy cover	By default, the camera lens is uncovered, but you can slide the camera privacy cover to block the camera's view. To use the camera, slide the camera privacy cover in the opposite direction to reveal the lens.  <b>NOTE:</b> If you have both front-facing and rear-facing cameras, when one camera lens is revealed and ready to use, the other is concealed.
(6)	Ambient light and color sensor	Adjusts the brightness of the display, depending on the ambient light, and manages and controls the color temperature. Color temperature enables you to measure and adjust the warmth or coolness of the light source.

## Keyboard area

Keyboards can vary by language.

 **NOTE:** The keyboard, including the function keys and power key (select products only), is disabled in stand, tent, and tablet modes. To enable the keyboard, including the power key, change to the clamshell mode.

## Touchpad

The touchpad settings and components are described here.

### Touchpad settings

You learn how to adjust the touchpad settings and components here.

#### Adjusting touchpad settings

Use these steps to adjust touchpad settings and gestures.

1. Select the **Search** icon in the taskbar, type `touchpad settings` in the search box, and then press `enter`.
2. Choose a setting.

#### Turning on the touchpad

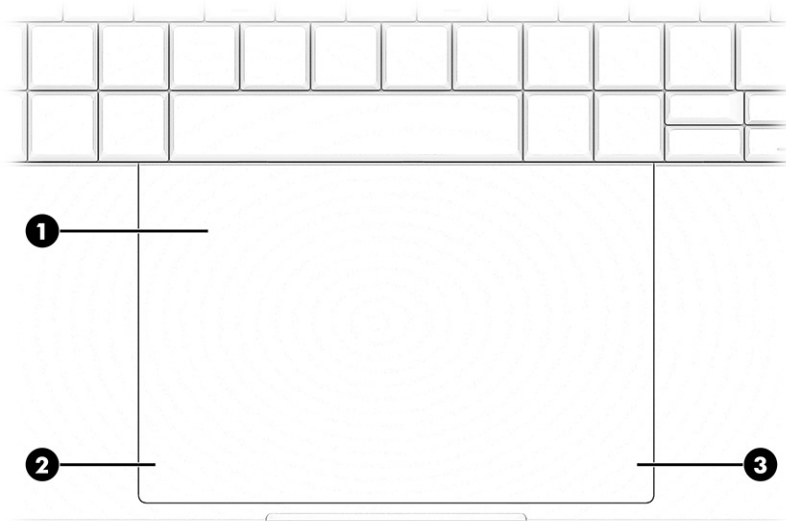
Follow these steps to turn on the touchpad.

1. Select the **Search** icon in the taskbar, type `touchpad settings` in the 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

Use this illustration and table to identify the touchpad components.

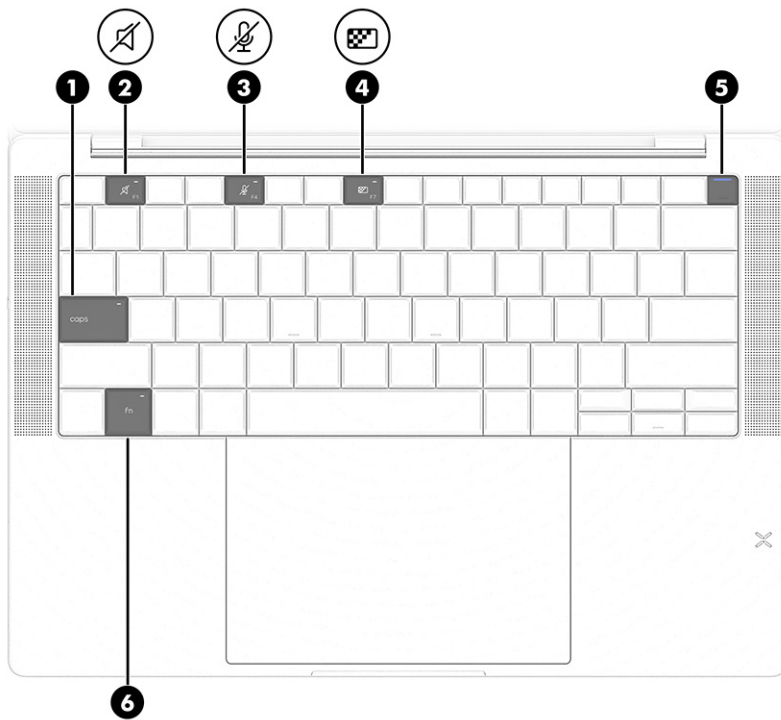


**Table 2-5** Touchpad components and their descriptions





	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

Use this illustration and table to identify the lights on the computer.




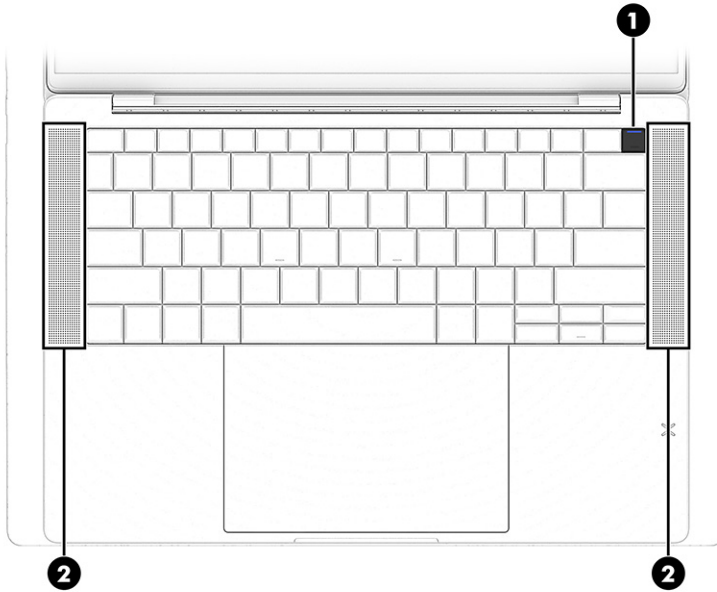
**Table 2-6** Lights and their descriptions

	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)	 Privacy key light	<p>On: Privacy screen is on, which helps prevent side-angle viewing.</p> <p><b>NOTE:</b> On models without a Sure View panel include a snipping tool key in place of the privacy key.</p>
(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>
(6)	Fn lock light	On: The <b>fn</b> key is locked.



## Buttons, speakers, and fingerprint reader

Fingerprint readers are located on the power button.

 **IMPORTANT:** To verify that your computer supports fingerprint reader sign-in, select the **Search** icon in the taskbar, type `Sign-in options` in the search box, and then select the **Sign-on options** app.



**Table 2-7** Buttons, speakers, and fingerprint reader and their descriptions

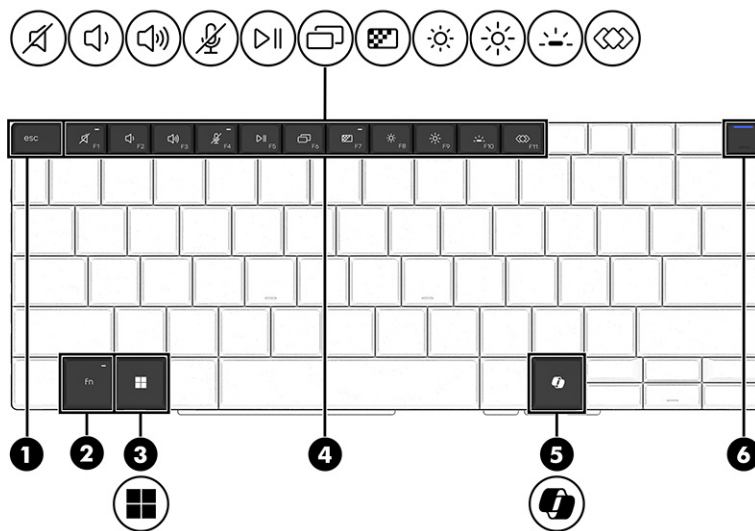
	Component	Description
(1) 	Power button	<ul style="list-style-type: none"><li>• When the computer is off, press the button briefly to turn on the computer.</li><li>• When the computer is on, press the button briefly to initiate sleep.</li><li>• When the computer is in the sleep state, press the button 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 shut down procedures are ineffective, press and hold the power button for at least 10 seconds to turn off the computer.</p> <p>To learn more about your power settings, use the <b>Power</b> icon.</p> <ul style="list-style-type: none"><li>▪ Right-click the <b>Power</b> icon , and then select <b>Power and sleep settings</b>.</li></ul>

**Table 2-7 Buttons, speakers, and fingerprint reader and their descriptions (continued)**

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

## Special keys




Use this illustration and table to identify the special keys.



**Table 2-8 Special keys and their descriptions**

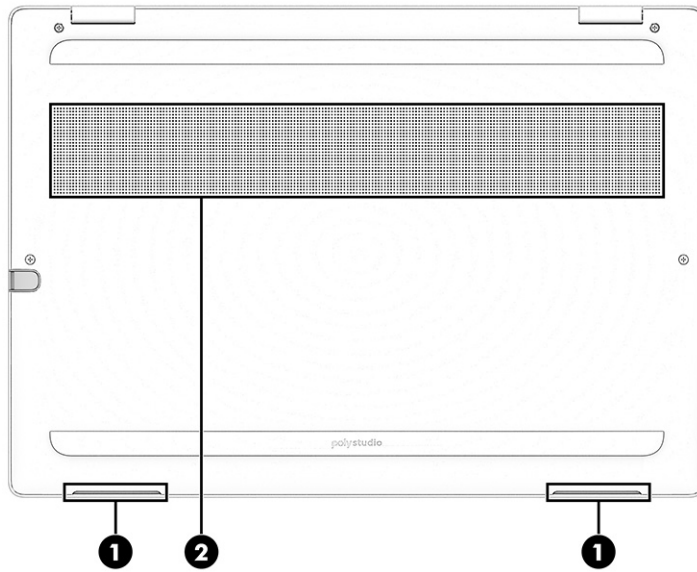
	Component	Description
(1)	esc key	Displays system information when pressed in combination with the <i>fn</i> key.
(2)	fn key	Executes frequently used system functions when pressed in combination with another key. Such key combinations are called <i>hot keys</i> .
(3)	Windows key	Opens the Start menu.  <b>NOTE:</b> Pressing the Windows key again will close the Start menu.
(4)	Action keys	Execute frequently used system functions.

**Table 2-8 Special keys and their descriptions (continued)**

	Component	Description
(5)		<p>Windows Copilot key with Context Menu</p> <p>Opens Windows Copilot (select products only).</p> <p><b>NOTE:</b> Copilot in Windows (select products only) requires Windows 11. Some features require a neural processing unit (NPU). The timing of feature delivery and availability varies by market and device. You must have a Microsoft account to use the Copilot feature. When the Copilot feature is not available, pressing the Copilot key opens the Bing search engine. See <a href="http://aka.ms/WindowsAIFeatures">http://aka.ms/WindowsAIFeatures</a>.</p>
(6)		<p>Power button</p> <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 shut down procedures are ineffective, press and hold the power button for at least 10 seconds to turn off the computer.</p> <p>To learn more about your power settings, use the Power icon.</p> <ul style="list-style-type: none"> <li>■ Right-click the <b>Power</b> icon , and then select <b>Power and sleep settings</b>.</li> </ul>

## Bottom

Use this illustration and table to identify the bottom components.



**Table 2-9** Bottom components and their descriptions

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

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

## Labels

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

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

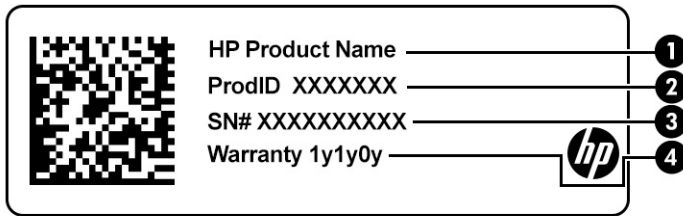
- Regulatory labels—Provide regulatory information about the computer.
- Wireless certification labels—Provide information about optional wireless devices and the approval markings for the countries or regions in which the devices have been approved for use.
- Service label—Provides important information to identify your computer. When contacting support, you might be asked for the serial number, the product number, or the model number. Locate this information before you contact support.

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



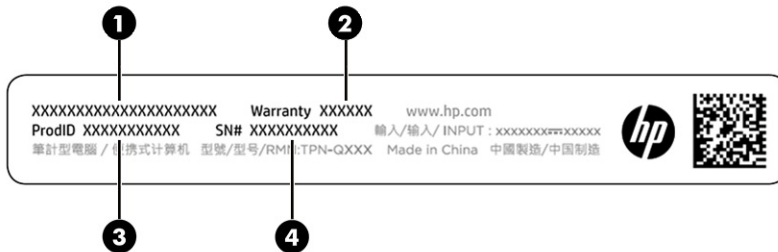
**Table 2-10** Service label components

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



**Table 2-11** Service label components

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




**Table 2-12** Service label components

Component	
(1)	HP product name

**Table 2-12 Service label components (continued)**


Component	
(2)	Warranty period
(3)	Product ID
(4)	Serial number

 **NOTE:** This is a sample QR code. Scan the QR code located on the bottom of your product for serial-number specific information about setting up and using the product, as well as access to support information.



## Using a SIM card (select products only)

Use these instructions to insert a SIM card.

 **IMPORTANT:** You can damage the SIM card if you insert the wrong size card or insert it or the SIM card tray in the wrong direction. The card might also become stuck in the slot. Do not use SIM card adapters. To prevent damage to the SIM card or connectors, use minimal force when inserting or removing a SIM card.

## Determining the correct SIM card size for your computer

Before purchasing a SIM card, follow these instructions to determine the correct SIM card size for your computer.

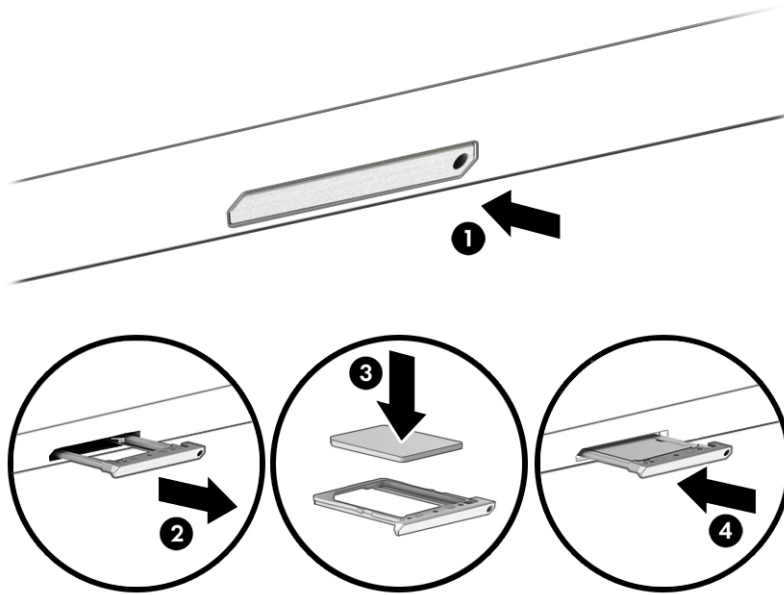
1. Go to <http://www.hp.com/support>, and then search for your computer by product name or number.
2. Select **Product Information**.
3. Refer to the listed options to determine which card to purchase.

## Inserting a nano SIM card

To insert a nano SIM card, follow these steps.

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

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



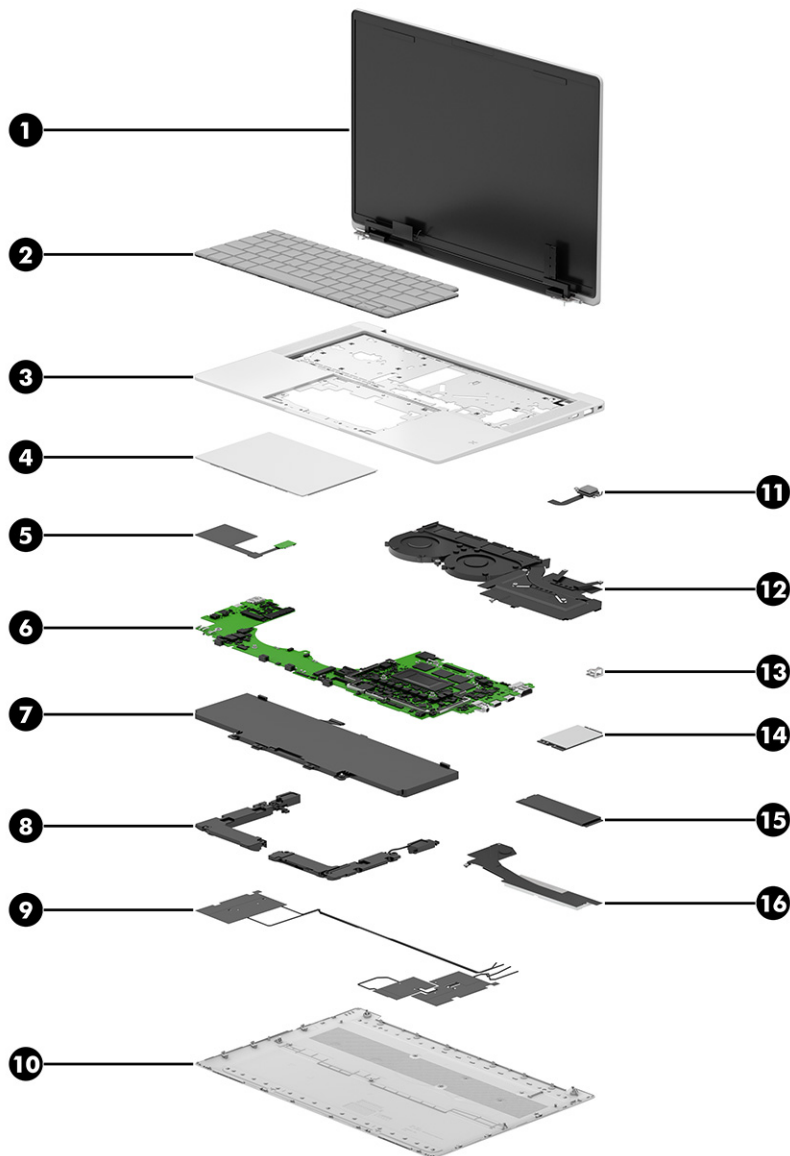
To remove the SIM card, press in gently on the SIM card access tray to disengage the SIM lock, and the tray will pop out of the slot. Remove the SIM card. Replace the tray in the computer and press in gently on the tray until it is firmly seated.

# 3 Illustrated parts catalog

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

## Computer major components

Use this illustration and table to identify the computer major components.



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

Item	Component	CSR category*	Spare part number
<b>(1)</b>	<b>Display assembly</b> (full hinge up)		
	2.8 K, OLED, 700 nits, antiglare, glacier silver models	N	P90104-001
	2.8 K, OLED, 700 nits, antiglare, atmospheric blue models	N	P90102-001
	2.8 K, OLED, 500 nits, antiglare, glacier silver models	N	P90092-001
	2.8 K, OLED, 500 nits, antiglare, atmospheric blue models	N	P90090-001
	WUXGA, 800 nits, antiglare, atmospheric blue models	N	P90074-001
	WUXGA, 800 nits, antiglare, glacier silver models	N	P90076-001
	WUXGA, 800 nits, BrightView, atmospheric blue models	N	P90086-001
	WUXGA, 800 nits, BrightView, glacier silver models	N	P90088-001
	WUXGA, 400 nits, antiglare, atmospheric blue models	N	P90078-001
	WUXGA, 400 nits, antiglare, glacier silver models	N	P90080-001
	WUXGA, 400 nits, BrightView, atmospheric blue models	N	P90084-001
	WUXGA, 400 nits, BrightView, glacier silver models	N	P90082-001
	WUXGA, 300 nits, antiglare, atmospheric blue models	N	P90096-001
	WUXGA, 300 nits, antiglare, glacier silver models	N	P90094-001
	WUXGA, 300 nits, BrightView, atmospheric blue models	N	P90098-001
	WUXGA, 300 nits, BrightView, glacier silver models	N	P90100-001
<b>(2)</b>	<b>Keyboard</b>		
	<b>NOTE:</b> For a detailed list of country codes, see <a href="#">Top cover on page 73</a> .		
	Atmospheric blue	B	P86838-xx1
	Atmospheric blue, privacy	B	P86839-xx1
	Glacier silver	B	P86840-xx1
	Glacier silver, privacy	B	P86841-xx1
<b>(3)</b>	<b>Top cover</b>		
	Glacier silver, models without WWAN, no pen	N	P86647-001
	Glacier silver, models without WWAN, with pen	N	P86648-001
	Glacier silver, models with WWAN, no pen	N	P86649-001
	Glacier silver, models with WWAN, with pen	N	P86650-001
	Atmospheric blue, models without WWAN, no pen	N	P86651-001
	Atmospheric blue, models without WWAN, with pen	N	P86652-001
	Atmospheric blue, models with WWAN, no pen	N	P86653-001
	Atmospheric blue, models with WWAN, with pen	N	P86654-001
<b>(4)</b>	<b>Touchpad</b> (includes cable)	N	

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

Item	Component	CSR category*	Spare part number
	Click, glacier silver	N	P87574-001
	Click, glacier silver, with NFC	N	P87575-001
	Click, atmospheric blue	N	P87576-001
	Click, atmospheric blue, with NFC	N	P87577-001
	Haptic, glacier silver	N	P87580-001
	Haptic, glacier silver, with NFC	N	P87581-001
	Haptic, atmospheric blue	N	P87582-001
	Haptic, atmospheric blue, with NFC	N	P87583-001
<b>(5)</b>	<b>NFC module</b> (with antenna)	N	M08706-001
<b>(6)</b>	<b>System board</b> (includes processor and system memory)		
	Intel Core Ultra X7 368H processor and 32 GB system memory (Operating System Recovery [OSR])	N	P86390-601
	Intel Core Ultra X7 358H processor and 64 GB system memory	N	P86386-601
	Intel Core Ultra X7 358H processor and 64 GB system memory (PRC)	N	P86389-601
	Intel Core Ultra X7 358H processor and 32 GB system memory	N	P86385-601
	Intel Core Ultra X7 358H processor and 32 GB system memory (PRC)	N	P86388-601
	Intel Core Ultra 7 366H processor and 64 GB system memory	N	P86387-601
	Intel Core Ultra 7 366H processor and 32 GB system memory	N	P86375-601
	Intel Core Ultra 7 366H processor and 32 GB system memory (PRC)	N	P86376-601
	Intel Core Ultra 7 366H processor and 32 GB system memory (OSR)	N	P86374-601
	Intel Core Ultra 7 366H processor and 24 GB system memory	N	P86373-601
	Intel Core Ultra 7 356H processor and 32 GB system memory	N	P86371-601
	Intel Core Ultra 7 356H processor and 32 GB system memory (PRC)	N	P86372-601
	Intel Core Ultra 7 356H processor and 24 GB system memory	N	P86384-601
	Intel Core Ultra 5 338H processor and 32 GB system memory (OSR)	N	P86382-601
	Intel Core Ultra 5 338H processor and 32 GB system memory (PRC)	N	P86383-601
	Intel Core Ultra 5 335 and 32 GB system memory	N	P86380-601
	Intel Core Ultra 5 335 and 32 GB system memory (OSR)	N	P86379-601
	Intel Core Ultra 5 335 and 32 GB system memory (PRC)	N	P86381-601
	Intel Core Ultra 5 335 and 24 GB system memory	N	P86370-601
	Intel Core Ultra 5 335 and 16 GB system memory	N	P86369-601
	Intel Core Ultra 5 325 and 32 GB system memory	N	P86378-601
	Intel Core Ultra 5 325 and 24 GB system memory	N	P86368-601
	Intel Core Ultra 5 325 and 24 GB system memory (PRC)	N	P86377-601
	Intel Core Ultra 5 325 and 16 GB system memory	N	P86367-601

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

<b>Item</b>	<b>Component</b>	<b>CSR category*</b>	<b>Spare part number</b>
<b>(7)</b>	<b>Battery</b> (includes revive kit)		
	Battery (6 cell, 68 Wh)	A	P92640-001
	Battery (3 cell, 56 Wh)	A	P92639-001
<b>(8)</b>	<b>Speakers</b> (left and right)		P86637-001
<b>(9)</b>	<b>WWAN antennas</b>	N	P86665-001
<b>(10)</b>	<b>Bottom cover</b>		
	Glacier silver, models without WWAN, no pen	A	P86655-001
	Glacier silver, models without WWAN, with pen	A	P86656-001
	Glacier silver, models with WWAN, no pen	A	P86657-001
	Glacier silver, models with WWAN, with pen	A	P86658-001
	Atmospheric blue, models without WWAN, no pen	A	P86659-001
	Atmospheric blue, models without WWAN, with pen	A	P86660-001
	Atmospheric blue, models with WWAN, no pen	A	P86661-001
	Atmospheric blue, models with WWAN, with pen	A	P86662-001
<b>(11)</b>	<b>Power button board/fingerprint reader</b> (includes cable)		
	Glacier silver	N	P87592-001
	Atmospheric blue	N	P87593-001
<b>(12)</b>	<b>Fan/heat sink assembly</b>	N	P86638-001
<b>(13)</b>	<b>Nano lock bracket</b>	N	918431-001
<b>(14)</b>	<b>WWAN module</b>		
	HP R15 5G Solution	N	P06930-001
	HP R15 5G Solution with HP Go	N	P26028-001
	HP RW220-GL LTE (CAT-1bis) (low power)	N	P47161-001
	HP R18 5G Solution	N	P62206-001
	HP R18 5G Solution with HP Go	N	P62207-001
<b>(15)</b>	<b>SSD</b>		
	2 TB, PCIe-5 × 4, nM	A	P41682-001
	2 TB, PCIe-5 × 4, value	A	P73031-001
	2 TB, PCIe-5 × 4, self-encrypting drive (SED)	A	P90258-001
	1 TB, PCIe-4 × 4, value	A	N77394-001
	1 TB, PCIe-5 × 4, nM	A	P32587-001
	1 TB, PCIe-5 × 4	A	P73030-001
	1 TB, PCIe-5 × 4, SED	A	P90257-001
	512 GB, PCIe-4 × 4, value	A	N44321-001

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

Item	Component	CSR category*	Spare part number
	512 GB, PCIe-5 × 4	A	P73029-001
	512 GB, PCIe-5 × 4, SED	A	P86946-001
(16)	SSD/WWAN module heat sink	N	P87602-001

**Table 3-2** CSR part categories\*

Category	Description	Replacement responsibility
CSR A	Self-service parts	Customers can replace these easily replaceable parts. Replacement by trained technicians might incur additional cost.
CSR B/C	Optional self-service parts	Skilled customers can replace these parts. Warranty replacement available via trained technicians.
CSR N	Non-self-service parts	Only trained service technicians should replace these complex parts.

## Miscellaneous parts

Use this table to identify the miscellaneous parts.

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

Component	Spare part number
<b>Screw Kit</b>	P87606-001
<b>Cable Kit</b> (includes cables for the ACS, camera, microphone module, NFC module, hub board, fingerprint reader, and touchpads)	P86636-001
<b>Misc Parts Kit</b> (includes middle hook, WLAN protective tape, thermal pads, gaskets, tapes, WWAN rubber spacer, top I/O holders, insulators, absorbers, SSD bumpers, and foam)	P86663-001
<b>Bracket Kit, glacier silver</b> (includes nano lock bracket, pen bracket, sim tray, and thermal pads)	P86641-001
<b>Bracket Kit, atmospheric blue</b> (includes nano lock bracket, pen bracket, sim tray, and thermal pads)	P86641-001
<b>Shielding Kit</b> (includes WWAN shield, WLAN shield, SSD shield, SSD foam, and SSD thermal pad)	P93176-001
<b>Pen, atmospheric blue</b>	P92599-001
<b>Pen, glacier silver</b>	P92600-001
<b>Thermal pad</b>	Q02317-001
<b>Nano lock</b>	918431-001
<b>HP USB Mouse</b>	L95713-001
<b>HP 435 Wireless Mouse</b>	M62277-001
<b>HP 715 Rechargeable Multidevice Mouse</b>	N21845-001
<b>HP 501/515 Rechargeable Mouse</b>	N86885-001
<b>HP 320K Wired Keyboard</b>	P24877-901
<b>Adapter</b>	

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

<b>Component</b>	<b>Spare part number</b>
HP HDMI-to-VGA adapter	701943-001
HP USB-C-to-RJ-45 adapter	M95985-001
HP USB-C-to-DisplayPort adapter	N81435-001
HP USB-C-to-HDMI adapter 2.0	935325-001
HP USB 3.0-to-gigabit RJ-45	M95984-001
USB adapter BT700 adapter	N46131-001
<b>Poly Voyager 4320 Headset</b>	N57159-001
<b>Poly Voyager Free 60 UC Headset</b>	N73088-001
<b>HP Business 14.1 Laptop Case</b>	M55007-001
<b>HP Executive 16 Laptop Bag</b>	N19980-001
<b>HP Executive 16 Laptop Backpack</b>	N19979-001
<b>HP Prelude Pro 15.6 Top Load Case</b>	M03618-001
<b>HP Prelude Pro 15.6 Backpack</b>	M03617-001
<b>Hub</b>	
USB Type-C G3, multiport, travel hub	N60372-001
HP USB Type-C universal multiport hub	M96882-001
<b>Docking stations</b>	
HP Thunderbolt 4 100 W G6 Dock (with WLAN)	P34015-001
HP Thunderbolt 4 100 W G6 Dock (without WLAN) (TAA)	P34016-001
HP Thunderbolt 4 180 W G6 Dock (with WLAN)	P34009-001
HP Thunderbolt 4 180 W G6 Dock (without WLAN) (TAA)	P34010-001
HP Thunderbolt 4 280 W G6 Dock (with WLAN)	P34012-001
HP Thunderbolt 4 280 W G6 Dock (with WLAN) (TAA)	P34013-001
HP USB-C 100 W G6 dock	P62168-001
HP USB-C 100 W G6 dock (TAA)	P62169-001
<b>Bottom case for use with Thunderbolt 4 G6 docking station</b>	P34055-001
<b>Top cover for use with Thunderbolt 4 G6 docking station</b>	P34054-001
<b>Cable Kit for use with Thunderbolt 4 100 W/180 W G6 docking station</b>	P34060-001
<b>Cable Kit for use with Thunderbolt 4 280 W G6 docking station</b>	P34061-001
<b>Cable Kit for use with USB-C 100 W USB-C G6 docking station</b>	P62172-001
<b>PCA board for use with Thunderbolt 4/USB-C G6 docking station (models with WLAN)</b>	P34056-001
<b>PCA board for use with Thunderbolt 4 G6 docking station (models without WLAN)</b>	P34057-001
<b>Power button for use with USB-C G6 docking station</b>	P62170-001
<b>Power button for use with Thunderbolt 4 G6 docking station</b>	P34106-001

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

Component	Spare part number
Fan for use with Thunderbolt 4 100 W G6 docking station	P34059-001
Fan for use with Thunderbolt 4 180 W/280 W G6 docking station	P34058-001
Screw Kit for use with Thunderbolt 4 G6 docking station	P34017-001
HP USB External DVD±RW Drive	747080-001
<b>AC adapter</b>	
330 W, PFC, smart, 4.5 mm, 3 pin	N80119-001
230 W, PFC, smart, 4.5 mm, 3 pin	N84766-001
120 W, PRC, smart, slim, 4.5 mm	M95377-001
100 W, USB-C, GaN, 2 pin, wall mount, 2.0 m (6.5 ft), FD	P58631-001
100 W, USB-C, GaN, 2 pin, wall mount, 2.0 m (6.5 ft), FX	P58632-001
65 W, USB-C, GaN, 2 pin, wall mount, 2.0 m (6.5 ft), FX	P58629-001
65 W, USB-C, GaN, 2 pin, wall mount, 2.0 m (6.5 ft), FD	P58630-001
65 W, USB-C, standard, straight	P38779-001
65 W, USB-C, wall mount, 2 pin	P68491-001
<b>Power cords</b> (C5, conventional, straight, 1.0 m [3.3 ft])	
Argentina	L19357-001
Australia	L19358-001
Denmark	L19360-001
Europe (Austria, Belgium, Finland, France, Germany, the Netherlands, Norway, and Sweden)	L19361-001
India	L19363-001
Israel	L19362-001
Italy	L19364-001
Japan	L19365-001
North America	L19367-001
PRC	L19368-001
South Africa	L19369-001
South Korea	L19366-001
Switzerland	L19370-001
Taiwan	L19372-001
Thailand	L19371-001
Thailand (bundle)	M85418-001
United Kingdom	L19373-001
<b>Power cord</b> (C13, 1.8 m [6.0 ft], straight, premium)	
For use in Argentina	L22104-001

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

<b>Component</b>	<b>Spare part number</b>
For use in Australia	L22339-001
For use in Brazil	L57198-001
For use in Denmark	L22334-001
For use in Europe	L22333-001
For use in India	L22343-001
For use in Israel	L22335-001
For use in Italy	L22103-001
For use in Japan	L22344-001
For use in North America	L22331-001
For use in South Africa	L22337-001
For use in South Korea	L22340-001
For use in Switzerland	L22336-001
For use in Taiwan	L22342-001
For use in Thailand	L22338-001
For use in Thailand (bundle)	M85413-001
For use in the United Kingdom	L22332-001
<b>Duckhead power cord (non-standard, halogen free)</b>	
Argentina	P57788-001
Australia	P57784-001
Europe (Austria, Belgium, Finland, France, Germany, the Netherlands, Norway, and Sweden)	P57782-001
India	P57790-001
Japan	L33157-001
PRC	P57787-001
South Korea	P57785-001
Thailand	P57786-001
United Kingdom	P57783-001

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## 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.

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### 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.


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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 or sleep mode, 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 in [Personal grounding methods and equipment on page 31](#).
  - 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	55% relative humidity	40% relative humidity	10% relative humidity
Walking across carpet	7500 V	15,000 V	35,000 V
Walking across vinyl floor	3000 V	5000 V	12,000 V
Motions of bench worker	400 V	800 V	6000 V
Removing dual in-line packages (DIPs) from plastic tube	400 V	700 V	2000 V
Removing DIPs from vinyl tray	2000 V	4000 V	11,500 V
Removing DIPs from polystyrene foam	3500 V	5000 V	14,500 V
Removing bubble pack from PCB (printed circuit board)	7000 V	20,000 V	26,500 V
Packing PCBs in foam-lined box	5000 V	11,000 V	21,000 V

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

 **NOTE:** As little as 700 V of static electricity 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, wear a strap snug against bare skin. Verify that the ground cord is connected and fits snugly into the banana plug connector on the grounding mat or workstation.
- You can use **heel straps, toe straps, and boot straps** at standing workstations. These straps 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**

Method	Voltage
Antistatic plastic	1500
Carbon-loaded plastic	7500
Metalized 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**.
  - Select the **HP Easy Clean** icon in the taskbar.
  - 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 33](#) 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 34](#) 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 35](#).

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 34](#) 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 33](#), [Caring for wood veneer \(select products only\) on page 35](#), 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.



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**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.

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**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 33](#) 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 34](#) 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	<p><b>Windows:</b></p> <p>Pre-operating system failures are logged in the BIOS Event Log. To view the BIOS Event Log:</p> <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> <p><b>NOTE:</b> If you do not press <b>esc</b> at the appropriate time, you must restart the computer and again repeatedly press <b>esc</b> when the power button light turns white to access the utility.</p> <ol style="list-style-type: none"><li>3. Press <b>f10</b> to enter the BIOS setup.</li><li>4. Complete one of these tasks:<ul style="list-style-type: none"><li>• (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><li>• (On consumer products) Under the <b>Main</b> tab, select <b>System Log</b>.</li></ul></li></ol> <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. Select the search icon  in the taskbar.</li><li>3. Type <code>Event Viewer</code>, and then press <b>enter</b>.</li><li>4. Select the log from the left panel. Details display in the right panel.</li></ol> <p><b>ChromeOS™:</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 and alerts	<p>To find technical bulletins, alerts, guides, and whitepapers:</p> <ol style="list-style-type: none"><li>1. Go to <a href="http://www.hp.com/support">www.hp.com/support</a>.</li><li>2. Follow the instructions to find your product.</li><li>3. Select <b>Bulletins and Alerts</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. Select <b>Authorized service providers</b>.</li><li>3. Select your location.</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 the issue you want to diagnose.</li></ol>

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


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


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

 **NOTE:** The [HP Support YouTube Channel](#) (in English) has videos that provide step-by-step removal and replacement instructions for many common parts and models.

## Component replacement procedures

Use these procedures to remove and replace computer components.

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

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

Make special note of each screw size and location during removal and replacement.

## Preparation for disassembly

Use these procedures to remove and replace computer components.

For initial safety procedures, see [Removal and replacement procedures preliminary requirements on page 29](#).

1. Turn off the computer. If you are unsure whether the computer is off or in hibernation or sleep mode, 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

Use this procedure and illustration to remove the bottom cover.

**Table 5-1 Bottom cover descriptions and part numbers**

Description	Spare part number
Glacier silver, models without WWAN, no pen	P86655-001
Glacier silver, models without WWAN, with pen	P86656-001
Glacier silver, models with WWAN, no pen	P86657-001


**Table 5-1 Bottom cover descriptions and part numbers (continued)**

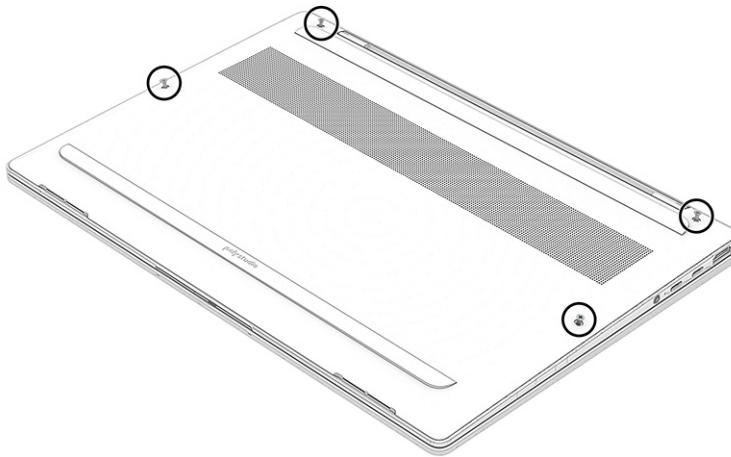
Description	Spare part number
Glacier silver, models with WWAN, with pen	P86658-001
Atmospheric blue, models without WWAN, no pen	P86659-001
Atmospheric blue, models without WWAN, with pen	P86660-001
Atmospheric blue, models with WWAN, no pen	P86661-001
Atmospheric blue, models with WWAN, with pen	P86662-001

Before removing the bottom cover, prepare the computer for disassembly (see [Preparation for disassembly on page 37](#)).

Remove the bottom cover:

1. Position the computer upside down.
2. Loosen the four captive Phillips screws on the bottom cover.

 **NOTE:** The bottom cover includes a captive (not removable) screw that causes the cover to pop up when you loosen the screw. After the cover pops up, do not continue to loosen the captive screw.

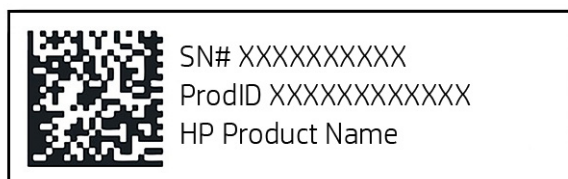


3. Insert a tool **(1)** into the seam near the captive screw at the top left of the bottom cover to release it.

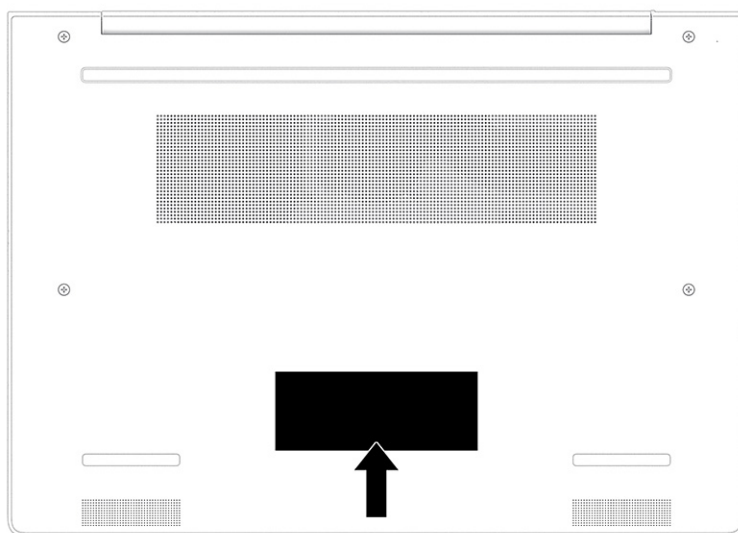


Hand write the product information onto the label of the new bottom cover. Use a ballpoint pen or marker to avoid smudging.

### Example of label information



### New bottom cover label location



## Battery

The battery removal procedure differs depending on whether you are removing and replacing the existing battery or installing a new battery. You must use a revive kit to install a new battery.

- To remove and replace the existing battery, see [Removing and reinstalling the same battery on page 40](#).
- To install a new battery, see [Installing a new battery on page 42](#).

### Removing and reinstalling the same battery

Use these procedures and illustrations to remove the battery and reinstall it.

**⚠ 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, which can cause a short inside the battery that 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.

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For additional battery information, see the *Regulatory, Safety, and Environmental Notices*. To access this guide, select the **Search** icon in the taskbar, type **HP Documentation** in the search box, and then select **HP Documentation**.

Before removing the battery, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 37](#)).
2. Remove the bottom cover (see [Bottom cover on page 37](#)).

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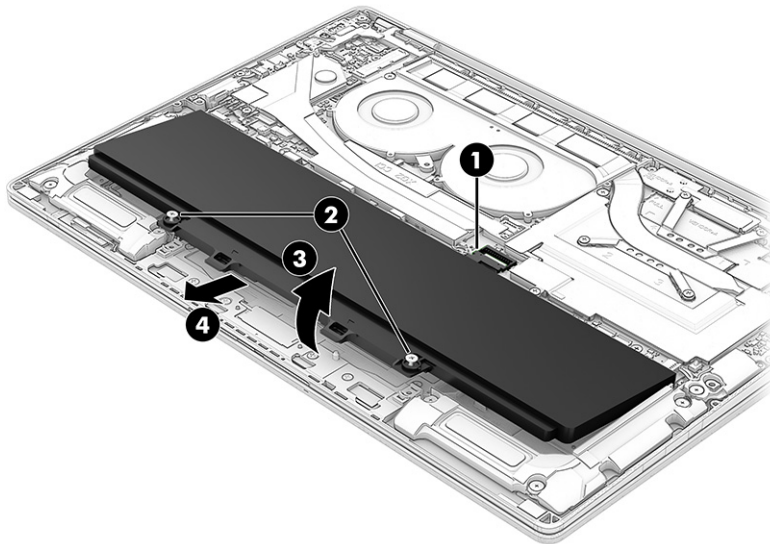
**⚠ WARNING!** To reduce potential safety issues, use only the user-replaceable battery provided with the computer, a replacement battery provided by HP, or a compatible battery purchased from HP.

**📌 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.

---

Remove the battery:

1. Use the tab **(1)** to pull the battery cable out of the system board connector.
2. Loosen the two captive Phillips screws **(2)** that secure the battery to the computer.
3. Lift the bottom of the battery **(3)** up to approximately 30°.
4. Pull the battery **(4)** up and away from the computer to remove it.



Reverse the removal procedures to reinstall the battery.



**NOTE:** When replacing the battery, be sure to completely reassemble the computer and plug in the AC adapter before turning the computer on.

## Installing a new battery

Use these procedures and illustrations to install a battery. You must use a revive kit to remove the old battery and install a new one. The revive kit includes an empty containment tray and a containment tray with a battery preinstalled.

**Table 5-2 Battery descriptions and part numbers**

Description	Spare part number
Battery, 6 cell, 68 Wh (includes revive kit)	P92640-001
Battery, 3 cell, 56 Wh (includes revive kit)	P92639-001

Before starting this replacement procedure:

- Ensure other individuals are sufficiently clear of your workspace.
- Ensure your workspace is clear of any flammable material such as paper or oils.
- Locate the nearest ABC dry chemical fire extinguisher for use in an emergency.



**WARNING!** This procedure requires removing the battery or disconnecting the battery cable. Use care to avoid bending, twisting, or puncturing the battery regardless of its condition. Failure to follow this replacement guide or to use HP recommended tools might damage the system and/or cause a safety hazard.

- Do *not* remove the battery from the containment tray.
- Do *not* handle or touch the battery enclosure with sharp objects such as tweezers or pliers, which might puncture 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.

Should a part become stuck or difficult to remove when opening a unit where a swollen battery is suspected, or if the battery becomes stuck in the unit, stop, and contact HP Support for assistance. Do not try to remove a battery by force.



**NOTE:** Screw locations, latch locations, and internal components might vary.

Before removing the battery, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 37](#)).

2. Remove the bottom cover (see [Bottom cover on page 37](#)).

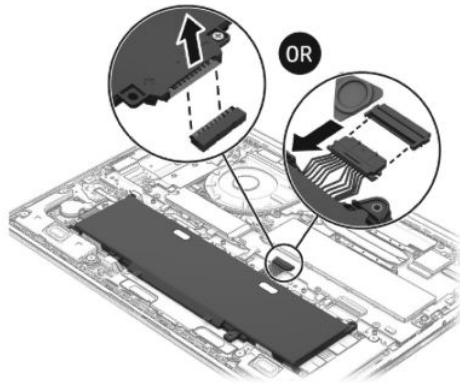
**⚠ WARNING!** To reduce potential safety issues, use only the user-replaceable battery provided with the computer, a replacement battery provided by HP, or a compatible battery purchased from HP.

**📄 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.

1. Remove the battery using the revive kit:

a. Disconnect the battery cable from the system board. The connector location might vary.

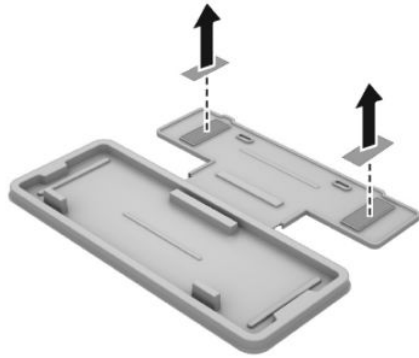
**📄 NOTE:** You can disconnect the cable from the battery. The battery spare part kit does not come with the battery cable, so be sure to use the old battery cable or order a new battery cable when replacing the battery.



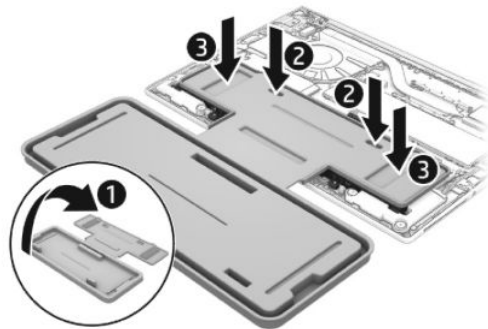
b. Open the empty battery containment tray.



- c. Remove the paper backing layer from the adhesive on the tray.

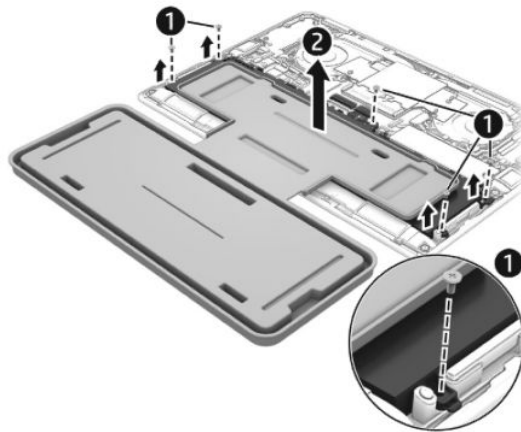


- d. Turn the tray (1) over so that the adhesive is facing down.
- e. Place the tray (2) centered on the battery.
- f. Press down on the indentations on the tray (3) to adhere it to the battery.

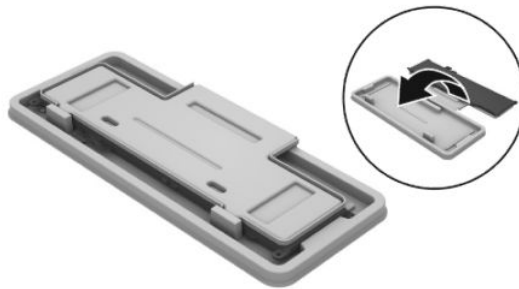


- g. Remove the Phillips screws (1) that secure the battery to the computer. Number of screws and screw locations might vary.


- h. Lift the top of the tray (2) to remove the battery from the computer.



- i. Rotate the battery up and over into the cavity of the containment tray.



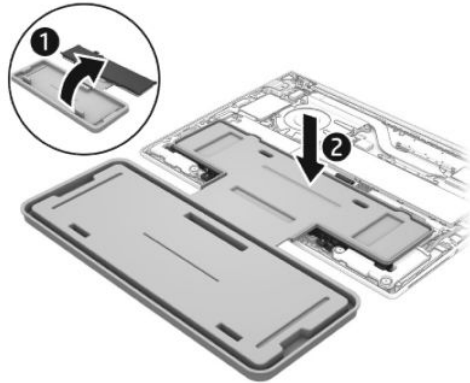
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 **NOTE:** Please recycle responsibly. For more information about recycling programs, see the HP website at <http://www.hp.com/recycle>.

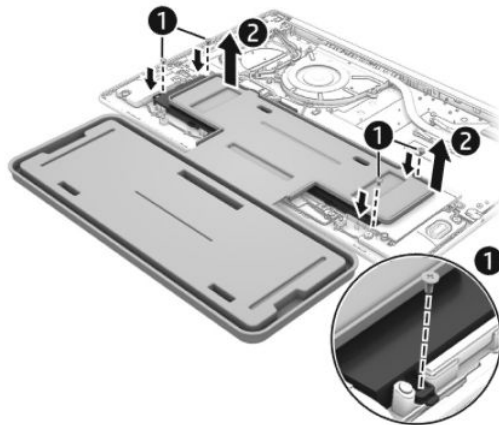
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- 2. Install the battery using the revive kit:
  - a. Open the containment tray that includes the new battery.

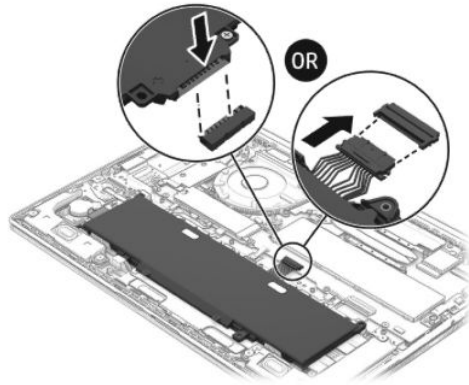
- b. Turn the tray (1) over so the battery is facing downward, and then insert the battery (2) into the computer. Adhesive secures the battery to the tray.



- c. Install the Phillips screws (1) to secure the battery. Number of screws and screw locations might vary.
- d. Lift the containment tray (2) off the battery.



- e. Connect the battery cable to the system board. The connector location might vary.



**NOTE:** When replacing the battery, be sure to completely reassemble the computer and plug in the AC adapter before turning the computer on.

## Keyboard

Use this procedure and illustration to remove the keyboard. The first table includes the keyboard spare part numbers. The second table includes keyboard country codes.

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

Description	Spare part number
Atmospheric blue	P86838-xx1
Atmospheric blue, privacy	P86839-xx1
Glacier silver	P86840-xx1
Glacier silver, privacy	P86841-xx1

**Table 5-4 Spare part country codes**

For use in country or region	Spare part number
Belgium	-A41
Czech Republic/Slovakia	-FL1
Denmark, Finland, and Norway	-DH1
French Canada	-DB1
France	-051
Germany	-041
Greece	-151
Israel	-BB1
Italy	-061
Japan	-291

**Table 5-4 Spare part country codes (continued)**

For use in country or region	Spare part number
Latin America	-161
The Netherlands	-B31
Russia	-251
Saudi Arabia	-171
Slovenia	-BA1
South Korea	-AD1
Spain	-071
Switzerland	-BG1
Taiwan	-AB1
Thailand	-281
Turkey	-141
Ukraine	-BD1
United Kingdom	-031
United States	-001

Before removing the keyboard, follow these steps:

- Prepare the computer for disassembly (see [Preparation for disassembly on page 37](#)).

#### **Disable the battery using Computer Setup (BIOS)**


Before replacing the keyboard, be sure to disable the battery as follows:

**⚠ CAUTION:** Failure to disable the battery before removing the keyboard can result in component damage.

1. Turn off the computer.
2. Disconnect the power and all external devices.
3. Ground yourself to prevent electrostatic discharge (ESD) (use a wrist strap or touch bare metal).
4. Disable the battery in Computer Setup:
  - a. Press the power button.
  - b. Press **F10** repeatedly to enter Computer Setup.
    - i. If **F10** is not functional, repeatedly press Esc to access the Startup menu, and then select **BIOS Setup (F10)**.
    - ii. If the keyboard is not functional, follow steps to enter Computer Setup from the operating system at <https://www.youtube.com/shorts/GdFCKLIPM3o>.
  - c. From the main setup menu, select **Prepare System for Hardware Change**. If this option is not available, Tamper Lock is enabled. Disable Tamper Lock to proceed.

- d. Select **Confirm** to continue.
5. Select **Esc** to exit, and then select **Yes** to save changes. The computer shuts down and the battery is disabled.

---

 **NOTE:** You must connect a power adapter to restart the computer.


---

### Change the keyboard language (if applicable)

To change the keyboard language, use the following steps:

1. Follow step 4b from the previous section to enter Computer Setup.
2. From the main menu, select **Advanced**.
3. Select **Keyboard Part Number Suffix After Replacement**.
4. Check the last 3-4 letters on the part box label for the new keyboard. If the letters match any of the four following codes, select the matching code: JPN2, KOR, BRZL, GR.

---

 **NOTE:** If there is no match, select **Others**.


---

5. To change keyboard layout and operating system language, follow the steps at:  
[https://support.hp.com/us-en/document/ish\\_9596154-9596198-16](https://support.hp.com/us-en/document/ish_9596154-9596198-16)

- or -

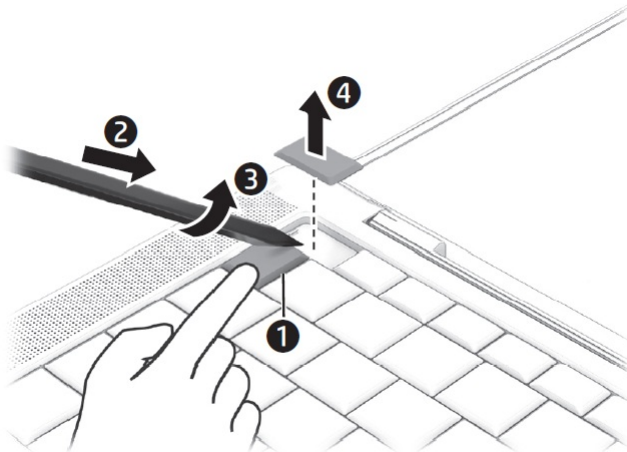
[Changing keyboard layout](#)

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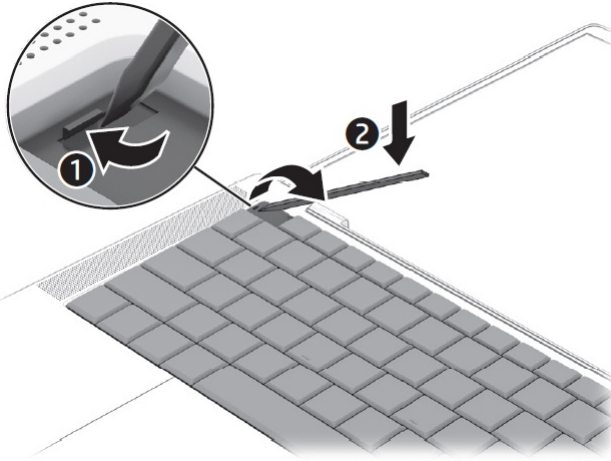
 **NOTE:** After installation, go to Diagnostics and select Component tests to confirm that the keyboard is functioning correctly. For more information, see  
<https://support.hp.com/us-en/help/hp-pc-hardware-diagnostics>.

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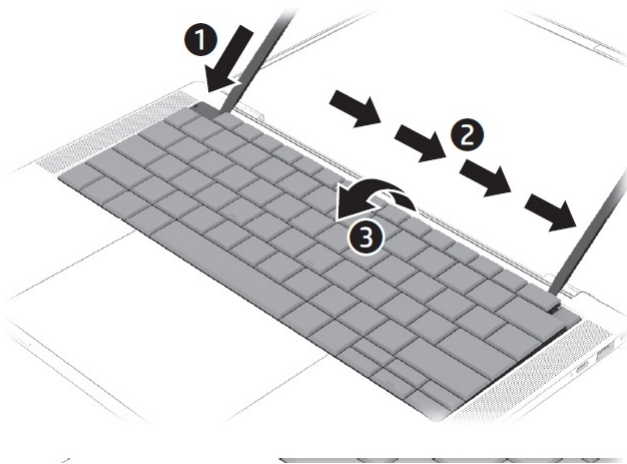
1. While pressing down on the key (1) next to the **Esc** key, insert a tool (2) under the **Esc** key, and then twist the tool (3) to remove the **Esc** key (4) from the keyboard.



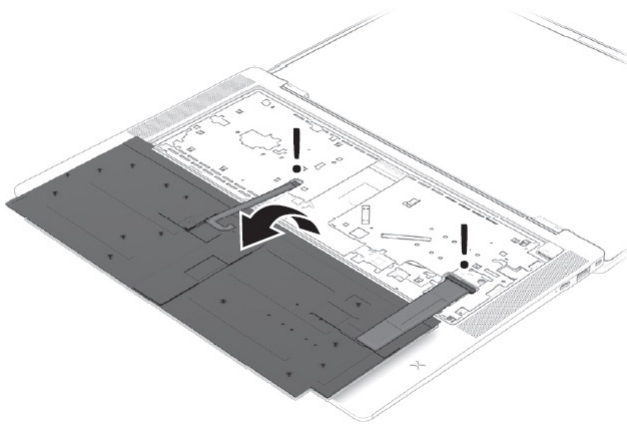
2. Insert a tool (1) under the tab on the left side of the **Esc** key cavity, and then push the tool (2) down to lift up the top of the keyboard.




3. Insert a tool (1) under the top left of the lifted keyboard, and then pull the tool (2) to the right to release the top of the keyboard. Lift the top of the keyboard (3) up and over onto the touchpad.

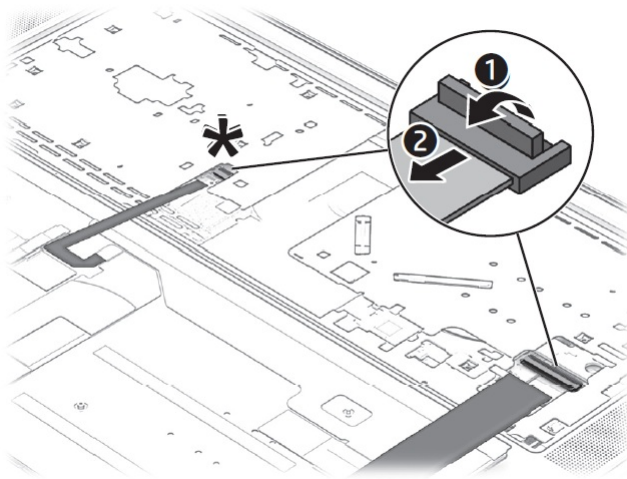


When lifting the keyboard over onto the touchpad, be sure not to accidentally disconnect the two cables from the connectors on the system board.




4. Disconnect the two cables from the ZIF connectors on the computer by lifting the latch **(1)** on the connector, and then pulling the cable **(2)** out of the connector. Remove the keyboard

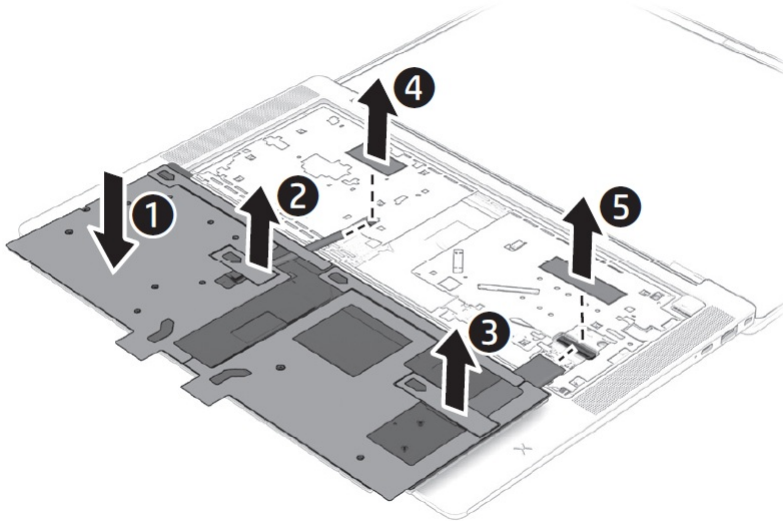
 **NOTE:** \*The left backlight cable is available only on select products.



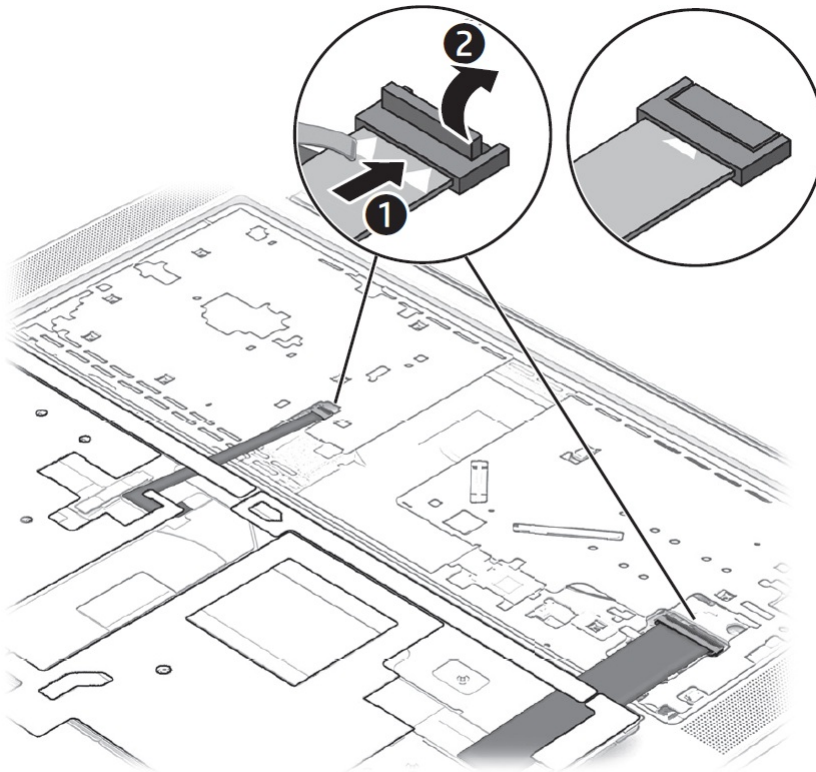
Install the new keyboard:

1. Place the new keyboard **(1)** onto the computer.
2. Remove the covers **(2)** **(3)** from the bottom of the keyboard.
3. Remove the covers **(4)** **(5)** from the cable connectors on the keyboard.

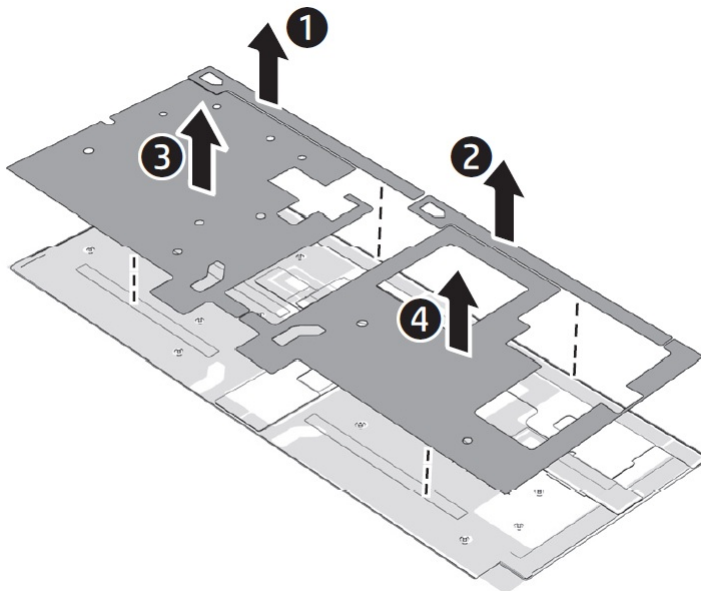
 **NOTE:** The backlight cable **(4)** is available only on select products.



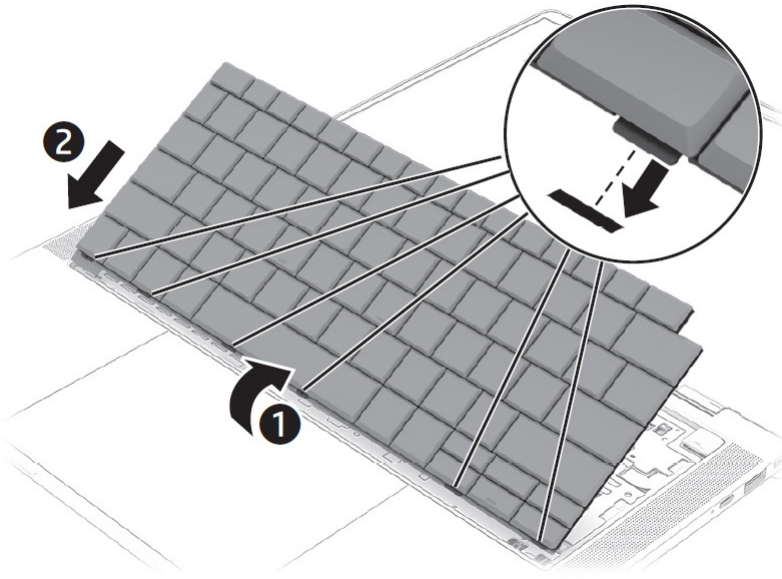
4. Insert the keyboard cables (1) into the connectors on the system board, and then close the latch (2) on the connectors.



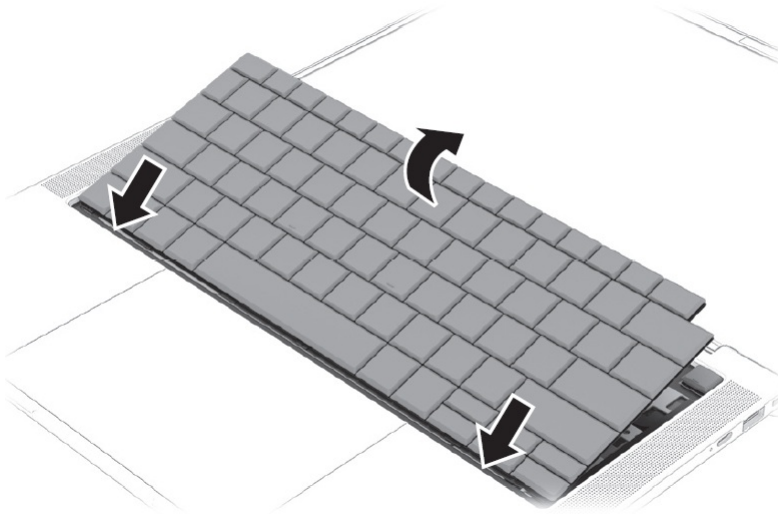
5. Remove the liner from the bottom of the keyboard in the order shown in the following illustration.



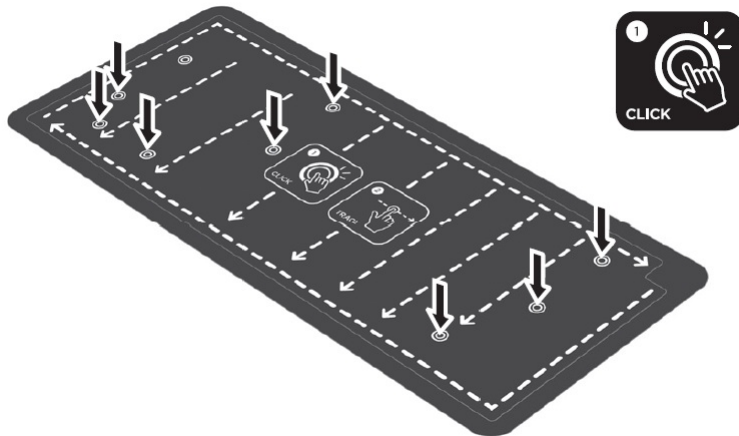
6. Insert the tabs (1) on the bottom of the keyboard into slots in the computer, and then push the keyboard (2) firmly down into the computer.



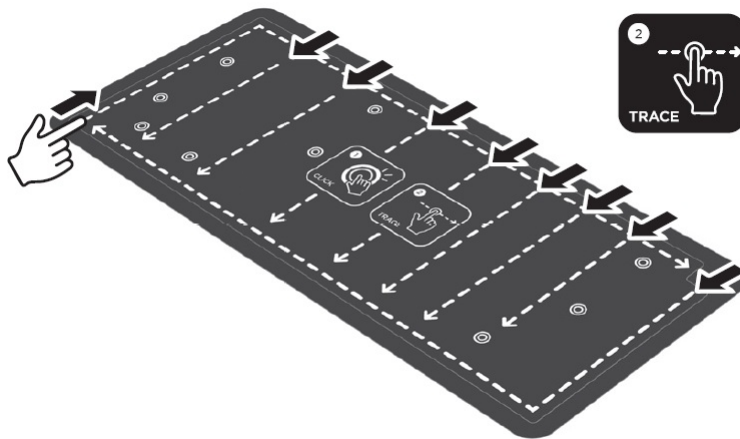
7. With the bottom of the keyboard inserted into the computer, rotate the top of the keyboard down into place.



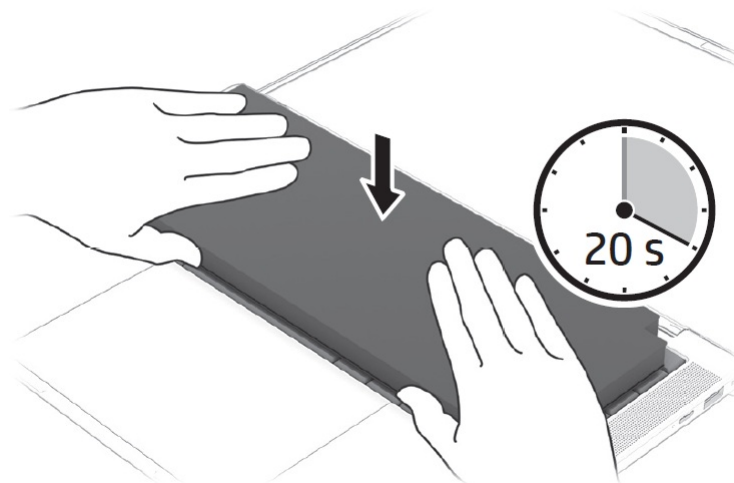
8. Press down on the circles on the keyboard to engage the mechanical hooks to the computer.



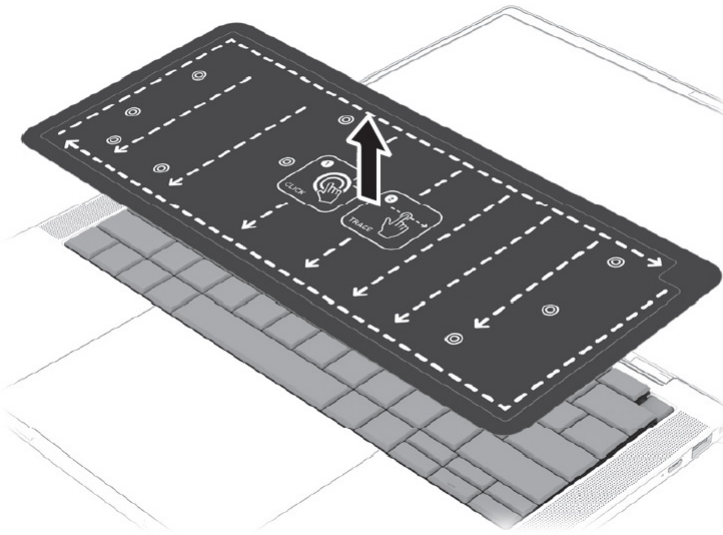
9. Press along the directions of the arrows on the keyboard to adhere it to the computer.



10. Use the block included in the kit to press down firmly and evenly on the keyboard for 20 seconds.



11. Remove the cover from the keyboard.



Reverse this procedure to install the keyboard.

## Solid-state drive

Use this procedure and illustration to remove the SSD.

**Table 5-5** SSD descriptions and part numbers

Description	Spare part number
2 TB, PCIe-5 × 4, nM	P41682-001
2 TB, PCIe-5 × 4, value	P73031-001
2 TB, PCIe-5 × 4, SED	P90258-001
1 TB, PCIe-4 × 4, value	N77394-001
1 TB, PCIe-5 × 4, nM	P32587-001
1 TB, PCIe-5 × 4	P73030-001
1 TB, PCIe-5 × 4, SED	P90257-001
512 GB, PCIe-4 × 4, value	N44321-001
512 GB, PCIe-5 × 4	P73029-001
512 GB, PCIe-5 × 4, SED	P86946-001
SSD shielding kit	P93176-001
SSD heat sink	P87602-001

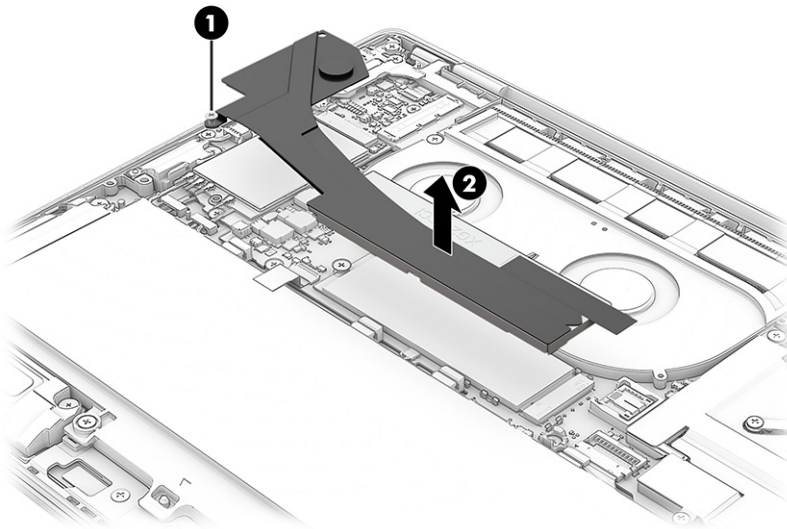
Before removing the SSD, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 37](#)).
2. Remove the bottom cover (see [Bottom cover on page 37](#)).

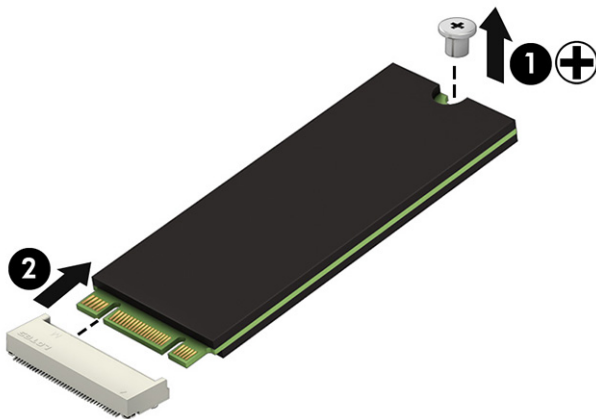
3. Disconnect the battery cable from the system board (see [Removing and reinstalling the same battery on page 40](#)).

Remove the SSD:

1. Loosen the captive Phillips screw **(1)** that secures the SSD/WWAN module heat sink.
2. Remove the heat sink **(2)** from the computer.

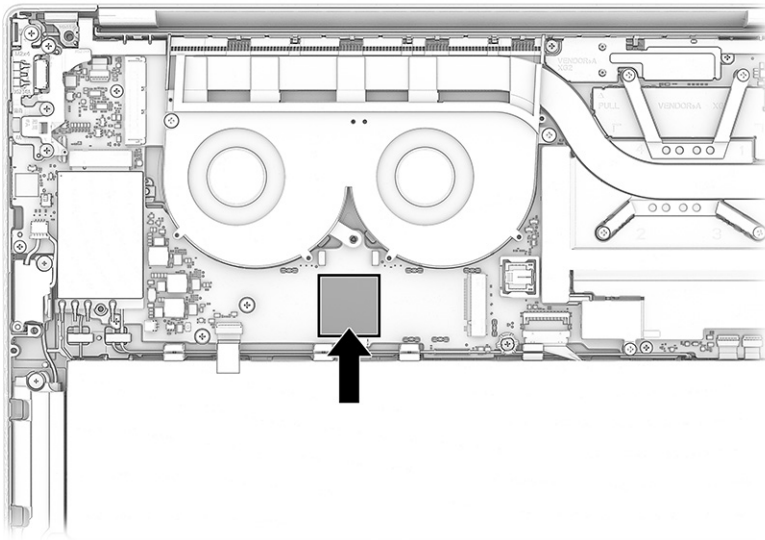


3. Remove the Phillips P2.0× 3.0 screw **(1)**, and then pull the SSD **(2)** out of the socket.

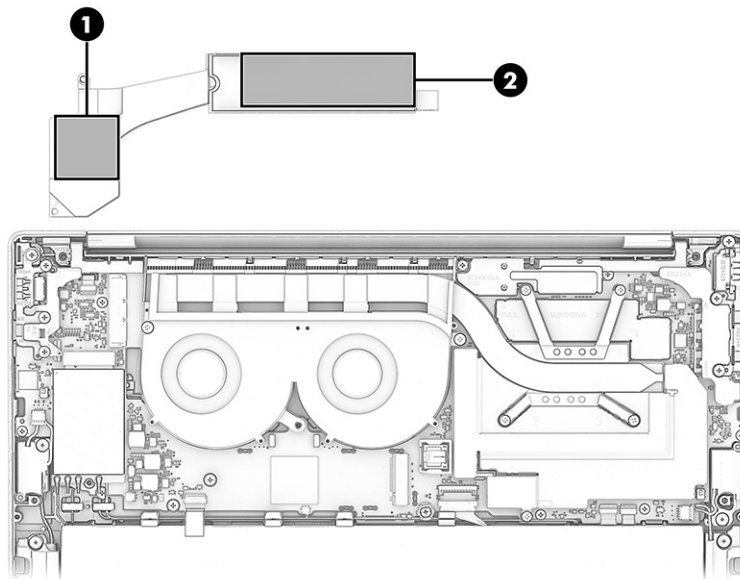



Reverse the removal procedures to install an SSD.

When installing an SSD, be sure a thermal pad is installed under of the SSD.




When installing the SSD/WWAN heat sink, be sure a thermal pad is installed on the bottom of the heat sink where it covers the WWAN module (1) and the SSD (2).





 **NOTE:** SSDs are designed with a notch to prevent incorrect insertion.

# 6 Removal and replacement procedures for authorized service provider parts

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


 **IMPORTANT:** Only an authorized service provider should access the components described in this chapter. 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.

 **NOTE:** The [HP Support YouTube Channel](#) (in English) has videos that provide step-by-step removal and replacement instructions for many common parts and models.

## Component replacement procedures

Use the procedures described in this section to remove and replace computer components.

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


Make special note of each screw size and location during removal and replacement.

## WWAN module

Use this procedure and illustration to remove the WWAN module.

**Table 6-1 WWAN module descriptions and part numbers**

Description	Spare part number
HP R15 5G Solution	P06930-001
HP R15 5G Solution with HP Go	P26028-001
HP RW220-GL LTE (CAT-1bis) (low power)	P47161-001
HP R18 5G Solution	P62206-001
HP R18 5G Solution with HP Go	P62207-001

 **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.

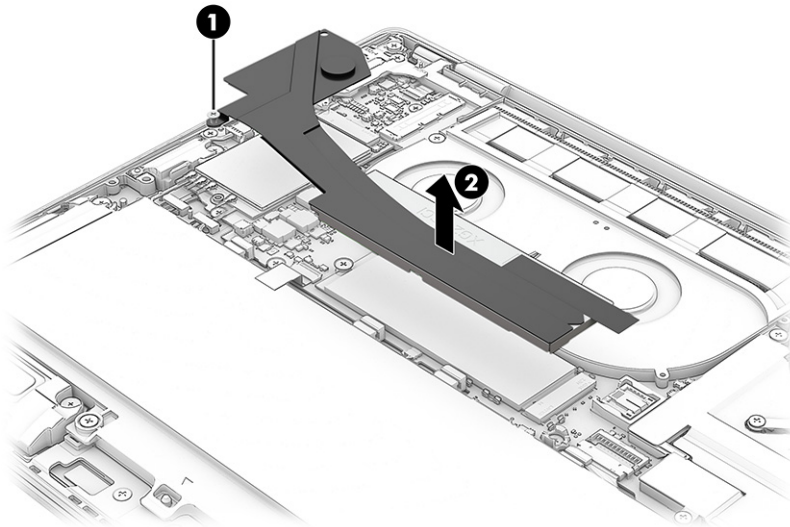
Before removing the WWAN module, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 37](#)).

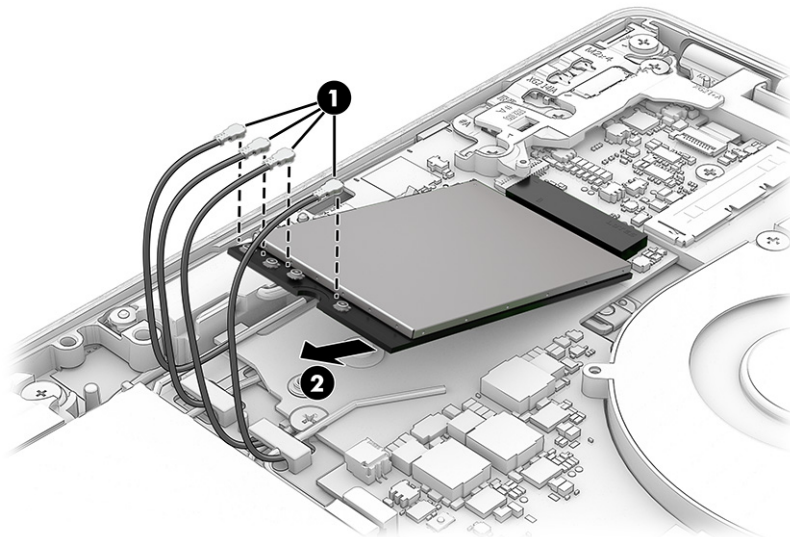
2. Remove the bottom cover (see [Bottom cover on page 37](#)).
3. Disconnect the battery cable from the system board (see [Removing and reinstalling the same battery on page 40](#)).

Remove the WWAN module:

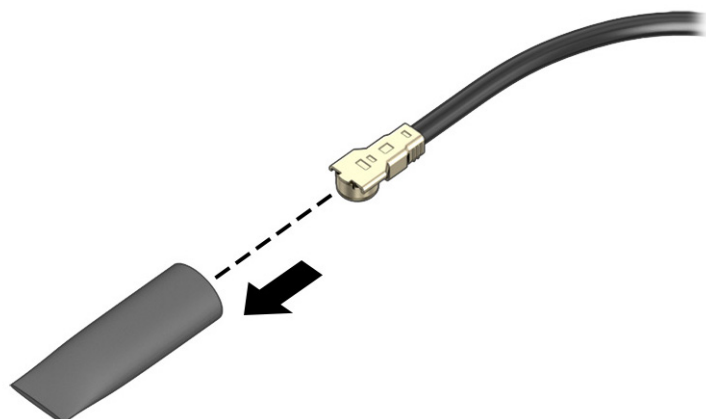
1. Loosen the captive Phillips screw (1) that secures the SSD/WWAN module heat sink.
2. Remove the heat sink (2) from the computer.



3. Disconnect the antenna cables (1) from the module terminals.
4. Remove the module (2) by pulling it away from the slot at an angle.



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



Reverse this procedure to install the WWAN module.

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

## Speakers

Use this procedure and illustration to remove the speakers.

**Table 6-2** Speaker descriptions and part numbers

Description	Spare part number
Speakers	P86637-001

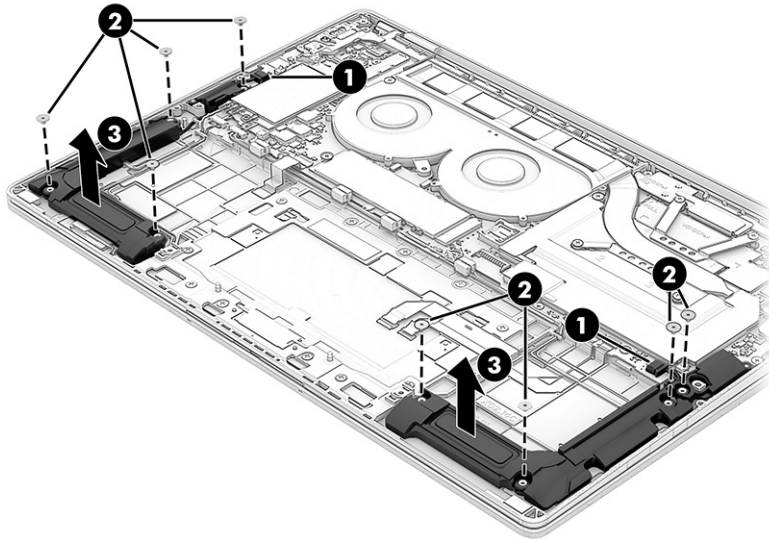
Before removing the speakers, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 37](#)).
2. Remove the bottom cover (see [Bottom cover on page 37](#)).
3. Disconnect the battery cable from the system board (see [Removing and reinstalling the same battery on page 40](#)).

Remove the speakers:

1. Disconnect the speaker cables **(1)** from the system board.
2. Remove the eight Phillips M2.0 × 2.0 screws **(2)** that secure the speakers.

3. Remove the speakers (**3**) from the computer. The speakers are also secured with adhesive.



Reverse this procedure to install the speakers.

## Touchpad

Use this procedure and illustration to remove the touchpad.

**Table 6-3** Touchpad descriptions and part numbers

Description	Spare part number
Click, glacier silver	P87574-001
Click, glacier silver, with NFC	P87575-001
Click, atmospheric blue	P87576-001
Click, atmospheric blue, with NFC	P87577-001
Haptic, glacier silver	P87580-001
Haptic, glacier silver, with NFC	P87581-001
Haptic, atmospheric blue	P87582-001
Haptic, atmospheric blue, with NFC	P87583-001

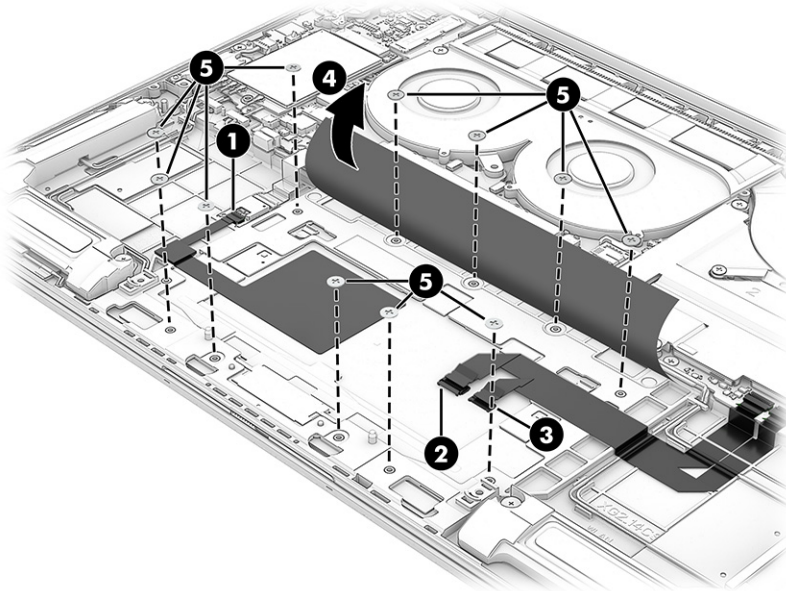
Before removing the touchpad, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 37](#)).
2. Remove the bottom cover (see [Bottom cover on page 37](#)).
3. Remove the battery (see [Removing and reinstalling the same battery on page 40](#)).

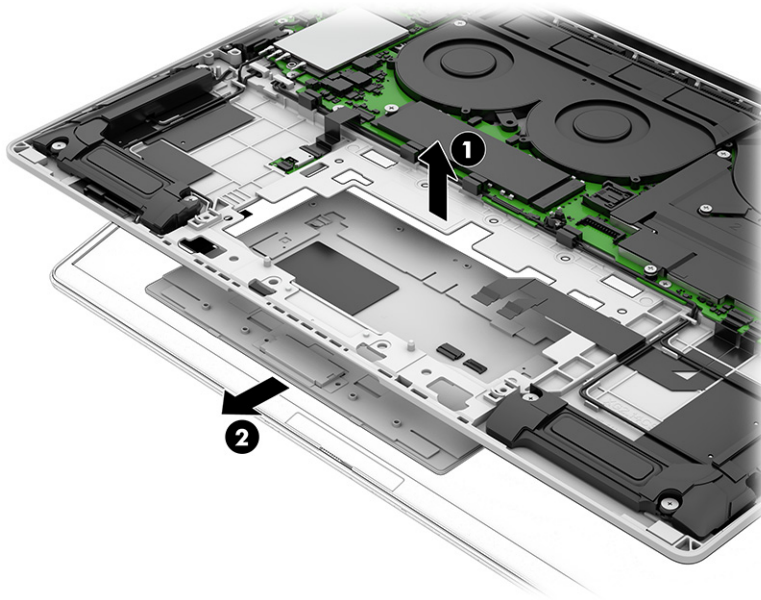
Remove the touchpad from models with an NFC module:

1. Disconnect the cable from the ZIF connector (**1**) on the NFC module.

2. Disconnect the cables from the ZIF connectors **(2) (3)** on the touchpad.
3. Lift the protective shielding **(4)** up from the top of the touchpad.
4. Remove the 11 Phillips M1.2 × 1.0 screws **(5)** from the touchpad.



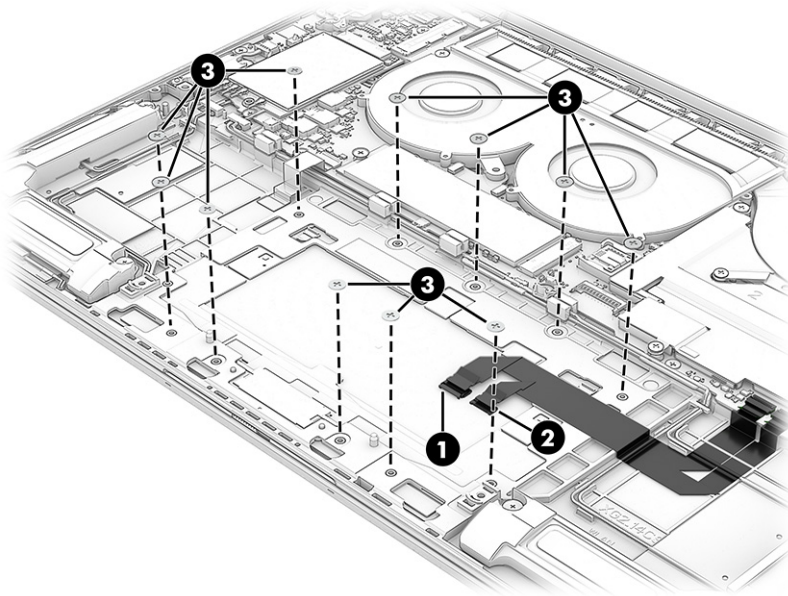
5. Lift the top cover **(1)** up off the touchpad, and then remove the touchpad **(2)** from under the top cover.



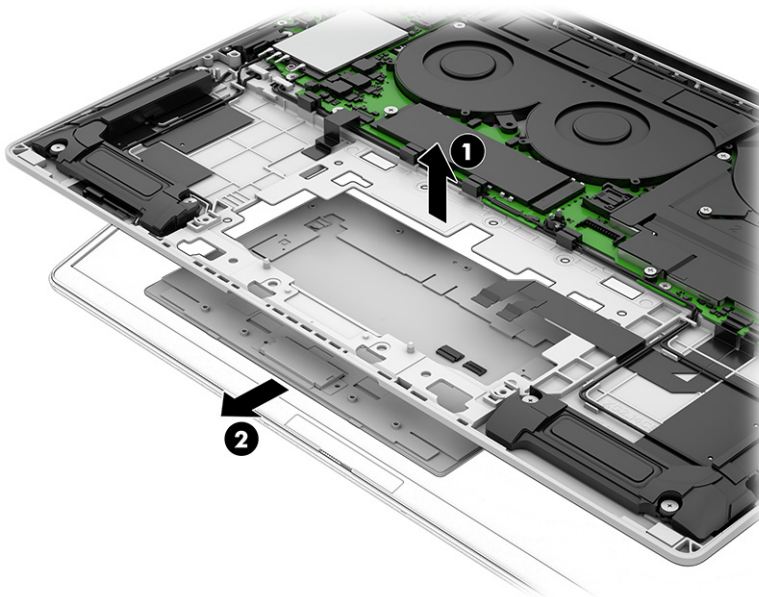
Remove the touchpad from models without an NFC module:

1. Disconnect the cables from the ZIF connectors **(1) (2)** on the touchpad.

2. Remove the 11 Phillips M1.2 × 1.0 screws (3) from the touchpad.

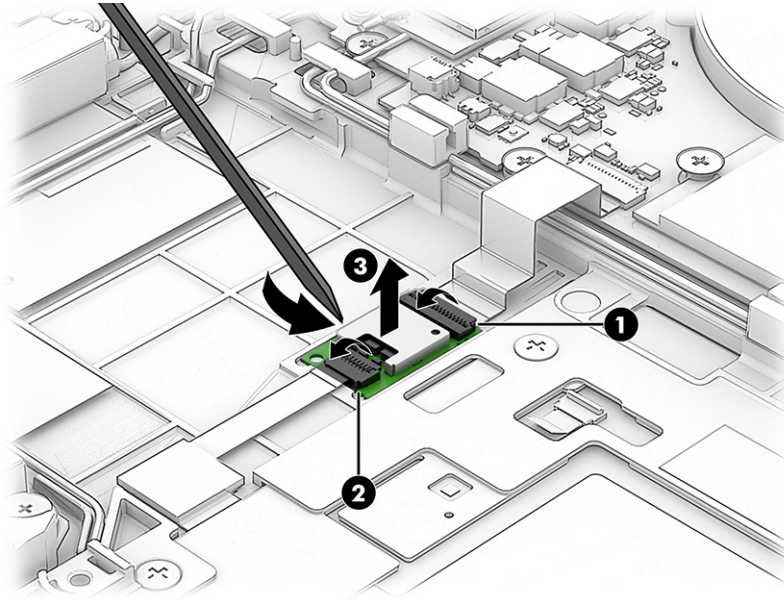


3. Lift the top cover (1) up off the touchpad, and then remove the touchpad (2) from under the top cover.



4. (NFC models) Disconnect the NFC cable (1) from the system board ZIF connector.
5. Disconnect the touchpad cable (2) from the system board ZIF connector.

6. Use a tool to release the NFC module **(3)** from the computer.



Reverse the removal procedures to install the touchpad.

## WWAN antennas

Use this procedure and illustration to remove the WWAN antennas.

**Table 6-4 WWAN antennas description and part number**

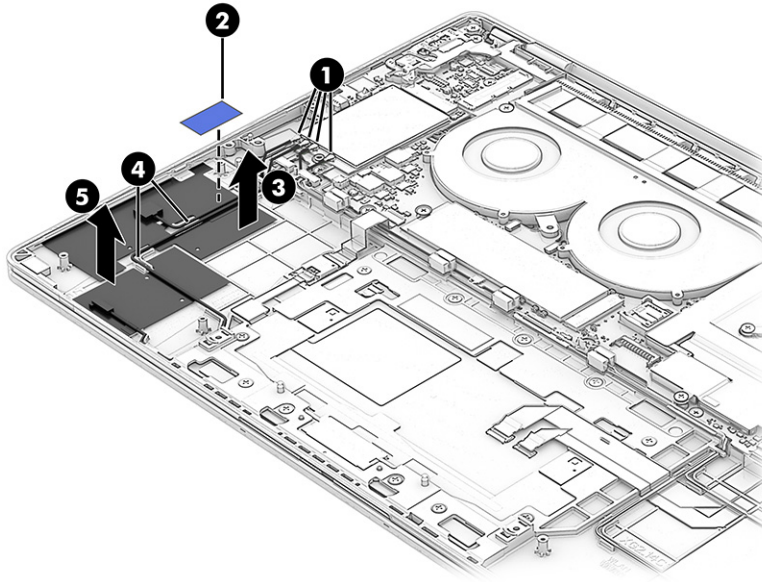
Description	Spare part number
WWAN antennas (left and right)	P86665-001

Before removing the WWAN antennas, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 37](#)).
2. Remove the bottom cover (see [Bottom cover on page 37](#)).
3. Remove the battery (see [Removing and reinstalling the same battery on page 40](#)).
4. Remove the speakers (see [Speakers on page 60](#)).

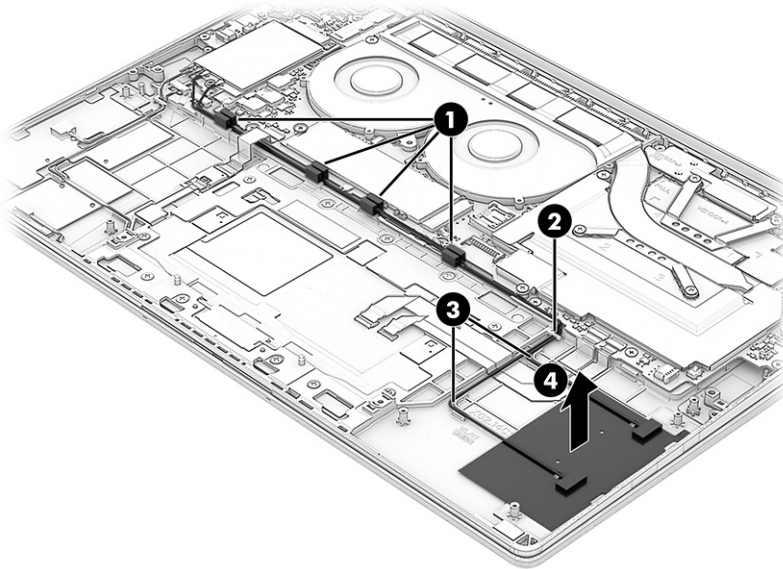
Remove the left WWAN antenna:

1. Disconnect the antenna cables **(1)** from the WWAN module.
2. Remove the blue tape **(2)** from the cables under the left speaker.
3. Remove the black tape **(3)** from the cables under the left speaker.
4. Remove the left two cables **(4)** from the routing channels below the WWAN module and routing under the left speaker.
5. Peel the left antenna **(5)** off the computer.



Remove the right WWAN antenna:

1. Remove the right two antenna cables from the four black rubber clips **(1)** under the system board.
2. Remove the right two antenna cables from the gray plastic clip **(2)** under the system board.
3. Remove the left two cables from the routing channels **(3)** near the right speaker.
4. Peel the right antenna **(4)** off the computer.



Reverse this procedure to install the WWAN antennas.

## Fan/heat sink assembly

Use this procedure and illustration to remove the fan/heat sink assembly.

**Table 6-5 Fan/heat sink assembly descriptions and part numbers**

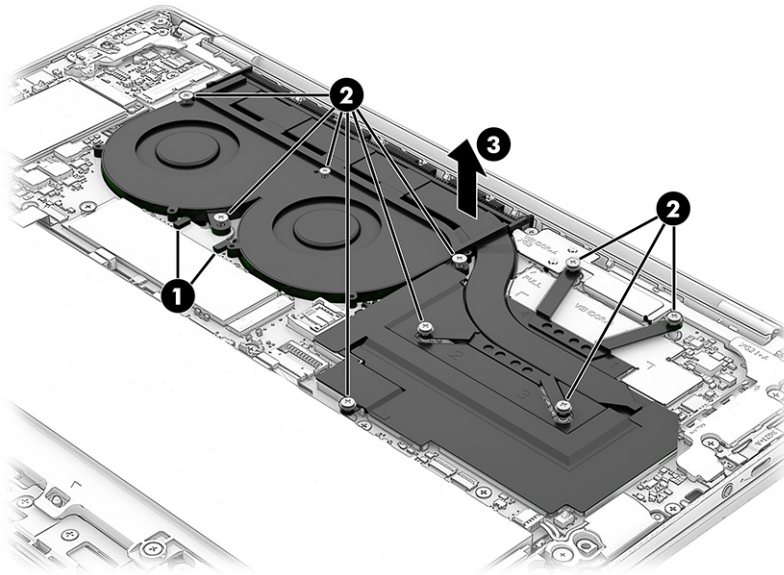
Description	Spare part number
Fan/heat sink assembly	P86638-001
Thermal pad	Q02317-001

Before removing the fan/heat sink assembly, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 37](#)).
2. Remove the bottom cover (see [Bottom cover on page 37](#)).
3. Disconnect the battery cable from the system board (see [Removing and reinstalling the same battery on page 40](#)).

Remove the fan/heat sink assembly:

1. Disconnect the two fan cables (1) from the system board.
2. Loosen the nine captive Phillips screws (2) from the assembly.
3. Lift the assembly (3) out of the computer.



Reverse this procedure to install the fan/heat sink assembly.

## System board

Use these procedures and illustrations to remove the system board.

**Table 6-6 System board descriptions and part numbers**

Description	Spare part number
<b>System board</b> (includes processor and system memory)	
Intel Core Ultra X7 368H processor and 32 GB system memory (Operating System Recovery [OSR])	P86390-601

**Table 6-6 System board descriptions and part numbers (continued)**

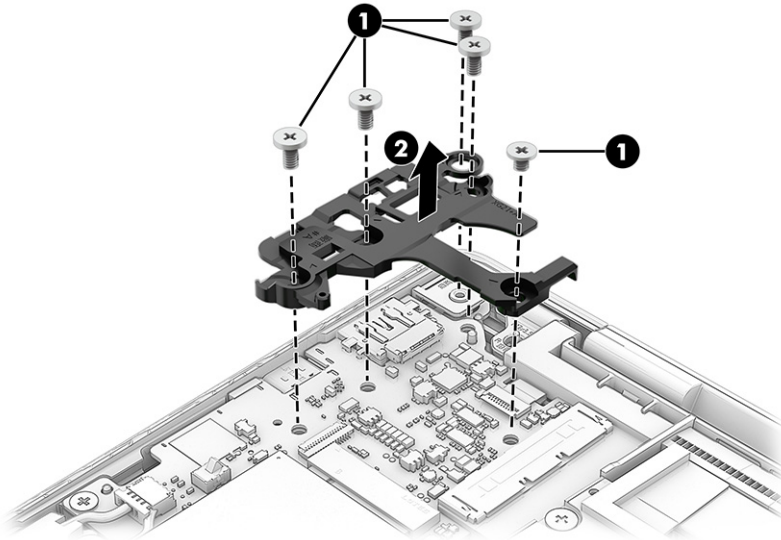
Description	Spare part number
Intel Core Ultra X7 358H processor and 64 GB system memory	P86386-601
Intel Core Ultra X7 358H processor and 64 GB system memory (PRC)	P86389-601
Intel Core Ultra X7 358H processor and 32 GB system memory	P86385-601
Intel Core Ultra X7 358H processor and 32 GB system memory (PRC)	P86388-601
Intel Core Ultra 7 366H processor and 64 GB system memory	P86387-601
Intel Core Ultra 7 366H processor and 32 GB system memory	P86375-601
Intel Core Ultra 7 366H processor and 32 GB system memory (PRC)	P86376-601
Intel Core Ultra 7 366H processor and 32 GB system memory (OSR)	P86374-601
Intel Core Ultra 7 366H processor and 24 GB system memory	P86373-601
Intel Core Ultra 7 356H processor and 32 GB system memory	P86371-601
Intel Core Ultra 7 356H processor and 32 GB system memory (PRC)	P86372-601
Intel Core Ultra 7 356H processor and 24 GB system memory	P86384-601
Intel Core Ultra 5 338H processor and 32 GB system memory (OSR)	P86382-601
Intel Core Ultra 5 338H processor and 32 GB system memory (PRC)	P86383-601
Intel Core Ultra 5 335 and 32 GB system memory	P86380-601
Intel Core Ultra 5 335 and 32 GB system memory (OSR)	P86379-601
Intel Core Ultra 5 335 and 32 GB system memory (PRC)	P86381-601
Intel Core Ultra 5 335 and 24 GB system memory	P86370-601
Intel Core Ultra 5 335 and 16 GB system memory	P86369-601
Intel Core Ultra 5 325 and 32 GB system memory	P86378-601
Intel Core Ultra 5 325 and 24 GB system memory	P86368-601
Intel Core Ultra 5 325 and 24 GB system memory (PRC)	P86377-601
Intel Core Ultra 5 325 and 16 GB system memory	P86367-601

Before removing the system board, follow these steps:

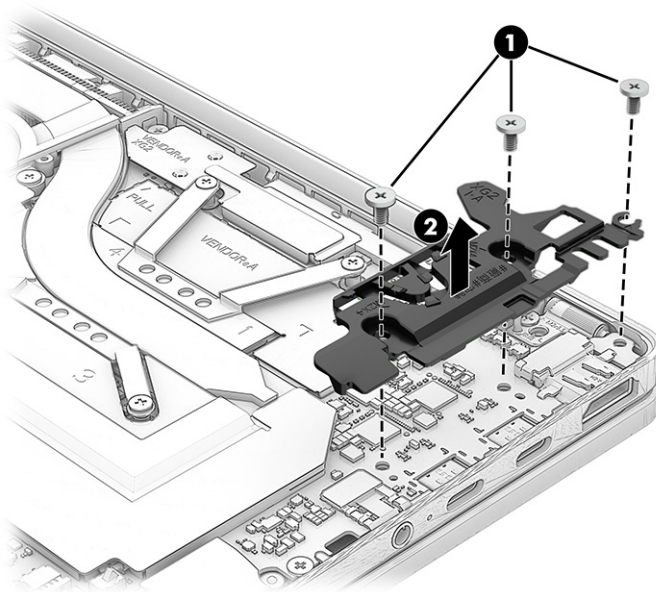
1. Prepare the computer for disassembly (see [Preparation for disassembly on page 37](#)).
2. Remove the bottom cover (see [Bottom cover on page 37](#)).
3. Disconnect the battery cable from the system board (see [Removing and reinstalling the same battery on page 40](#)).
4. Remove the SSD/WWAN heat sink and SSD (see [Solid-state drive on page 55](#)).
5. Remove the WWAN module (see [WWAN module on page 58](#)).
6. Remove the fan/heat sink assembly (see [Fan/heat sink assembly on page 65](#)).

Remove the system board:

1. Remove the five Phillips M2.0 × 4.0 screws (1) from the left bracket, and then lift the bracket (2) off the system board.

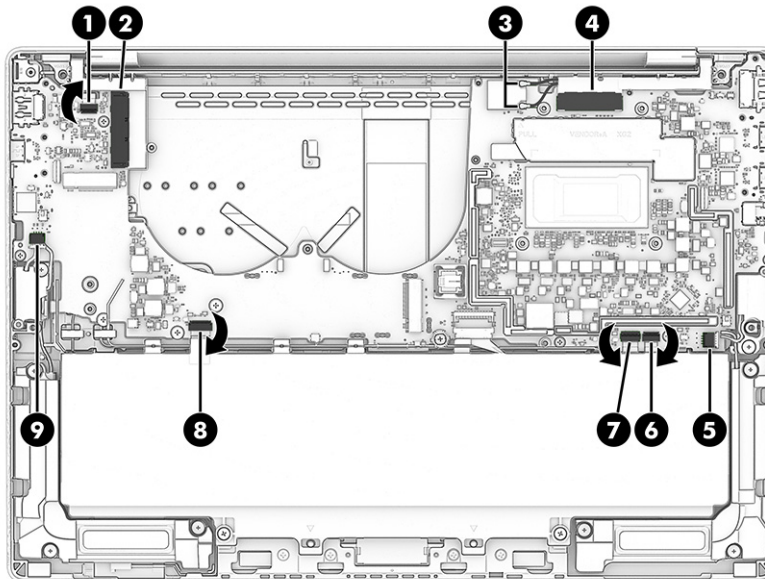


2. Remove the three Phillips M2.0 × 4.0 screws (1) from the right bracket, and then lift the bracket (2) off the system board.

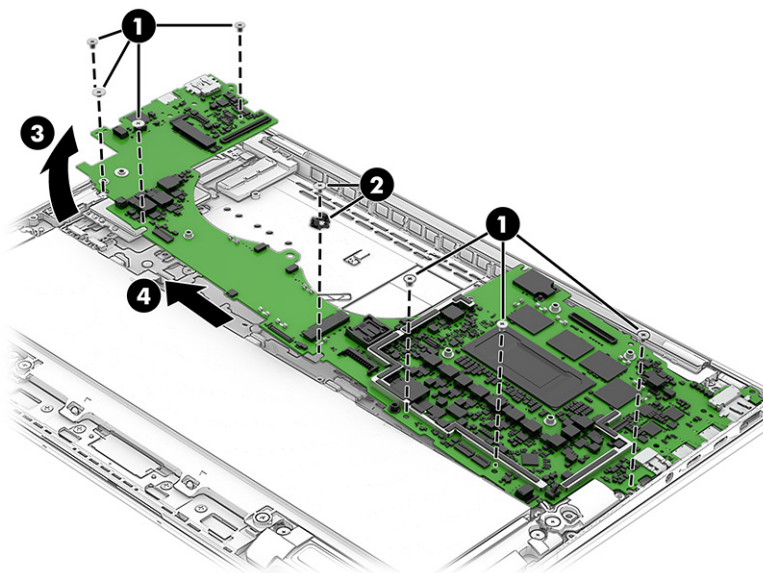


3. Disconnect the following cables from the system board:
  - Power button cable (ZIF) (1)
  - Camera cable (2)
  - Antenna cables from the integrated WLAN module (3)
  - Display cable (4)

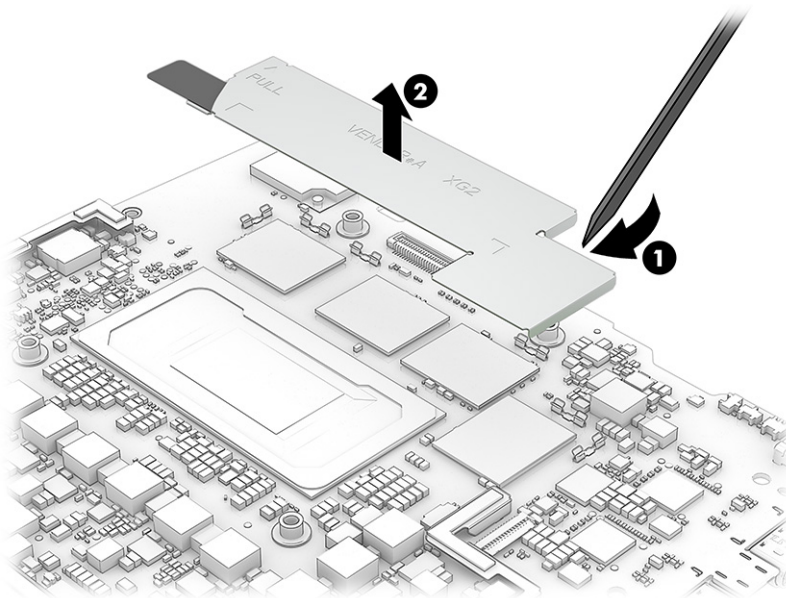
- Right speaker cable (5)
- Right touchpad cable (ZIF) (6)
- Touchpad cable (ZIF) (7)
- NFC cable (ZIF) (8) (select products only)
- Touchpad cable (ZIF) (9)



4. Remove the seven Phillips M2.0 × 2.5 screws (1) from the system board.
5. Remove the Phillips M2.0 × 2.5 screw with hook (2) from the system board.
6. Lift up the left side (3) of the board, and then pull the board (4) to the left and up to remove it from the computer.



7. When replacing the system board, be sure to remove the memory cover from the old board and install the cover onto the new board. Use a tool (1) to release the cover, and then lift the cover (2) off the system board.



Reverse this procedure to install a system board.

## Lock bracket

Use this procedure and illustration to remove the lock bracket.

**Table 6-7** Lock bracket description and part number

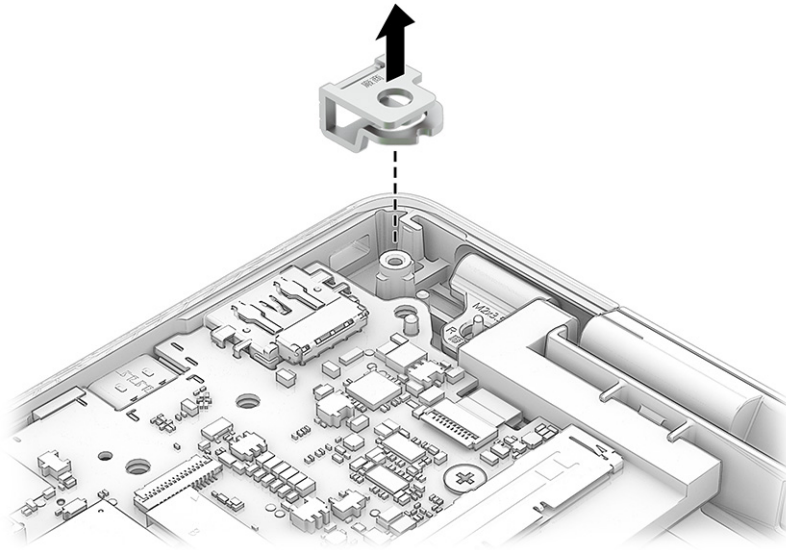
Description	Spare part number
Lock bracket	918431-001

Before removing the lock bracket, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 37](#)).
2. Remove the bottom cover (see [Bottom cover on page 37](#)).
3. Disconnect the battery cable from the system board (see [Removing and reinstalling the same battery on page 40](#)).
4. Remove the left system board bracket (see [System board on page 66](#)).

Remove the lock bracket:

- Lift the lock bracket out of the computer.



Reverse this procedure to install the lock bracket.

## Power button board/fingerprint reader

Use this procedure and illustration to remove the power button board.

**Table 6-8** Power button board descriptions and part numbers

Description	Spare part number
Glacier silver	P87592-001
Atmospheric blue	P87593-001

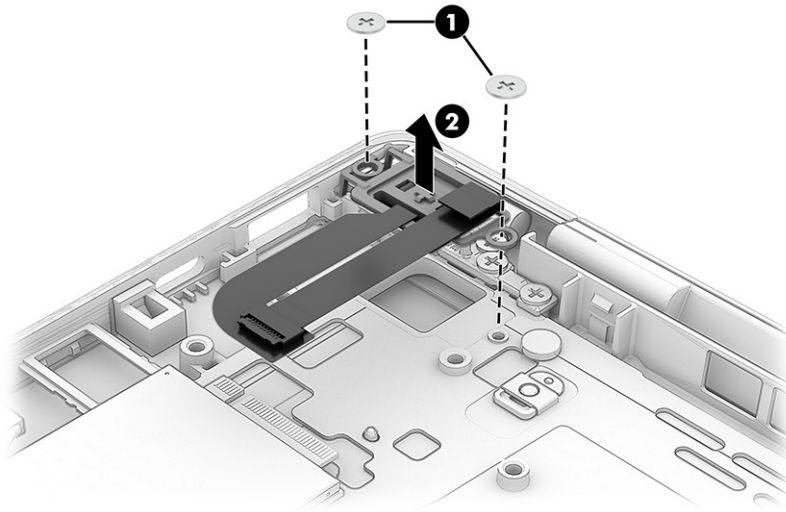
Before removing the power button board, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 37](#)).
2. Remove the bottom cover (see [Bottom cover on page 37](#)).
3. Disconnect the battery cable from the system board (see [Removing and reinstalling the same battery on page 40](#)).
4. Remove the system board (see [System board on page 66](#)).

Remove the power button board:

1. Remove the two Phillips 2.0 × 2.0 screws **(1)** from the board.

2. Lift the board and cable **(2)** out of the computer.



Reverse this procedure to install the power button board.

## Display assembly

Use these procedures and illustrations to remove the display assembly.



**NOTE:** The display assembly is only available as a full assembly. Individual spare parts are not available.

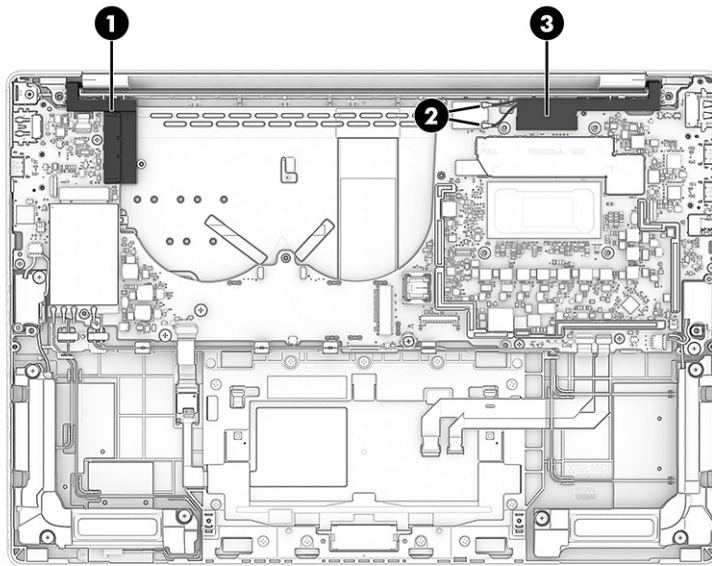
Before removing the display panel, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 37](#)).
2. Remove the bottom cover (see [Bottom cover on page 37](#)).
3. Disconnect the battery cable from the system board (see [Removing and reinstalling the same battery on page 40](#)).

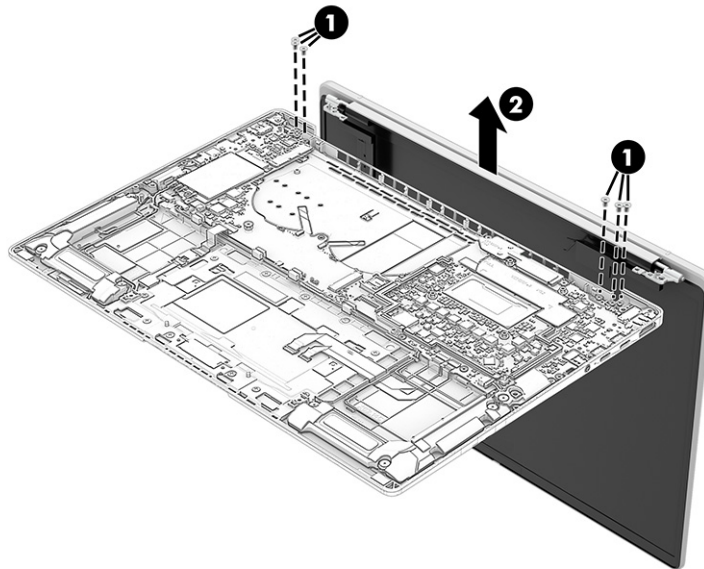
Remove the display assembly:

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

3. Disconnect the display cable (3) from the system board.



4. Open the display and place the computer keyboard-side down with the display hanging down off the side of a table.
5. Remove the six Phillips M2.5 × 3.5 screws (1) that secure the display assembly to the computer.
6. Separate the display (2) from the computer.



Reverse these procedures to replace the display assembly.

## Top cover

The top cover remains after removing all other spare parts from the computer.

**Table 6-9 Top cover descriptions and part numbers**


<b>Description</b>	<b>Spare part number</b>
Glacier silver, models without WWAN, no pen	P86647-001
Glacier silver, models without WWAN, with pen	P86648-001
Glacier silver, models with WWAN, no pen	P86649-001
Glacier silver, models with WWAN, with pen	P86650-001
Atmospheric blue, models without WWAN, no pen	P86651-001
Atmospheric blue, models without WWAN, with pen	P86652-001
Atmospheric blue, models with WWAN, no pen	P86653-001
Atmospheric blue, models with WWAN, with pen	P86654-001

---

## 7 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.

---

Use one of these options:

- Turn on or restart the computer and quickly press **f10**.
- 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. Perform one of these tasks:
    - Select the **Search** icon in the taskbar, type `support` in the search box, and then select the **HP Support Assistant** app.
    - Select the question mark icon in the taskbar.
  2. Under **My notebook**, select **Specifications**.
- Setup Utility (BIOS)


1. Start Setup Utility (BIOS) (see [Starting Setup Utility \(BIOS\) on page 75](#)).
  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 76](#).

## 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 HP AC adapter provided with the computer (select products only), a replacement AC adapter provided by HP, or an AC adapter with the power rating specified on the product label. 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. Perform one of these tasks:
  - Select the **Search** icon in the taskbar, type `support` in the search box, and then select the **HP Support Assistant** app.
  - Select the question mark icon in the taskbar.
2. Select **Updates**. The **Checking for Updates** window opens, and Windows checks for updates.
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. Select the **Search** icon in the taskbar, type `file` in the 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.

---

---

## 8 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, you must download and install it. To download HP PC Hardware Diagnostics Windows, see [Downloading HP PC Hardware Diagnostics Windows on page 79](#).

### 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.
- Scan the QR code with your mobile device, which takes you to the EAS page, where you can log the case.
- 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 Support Assistant or the Start menu.


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

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

1. Complete one of the following tasks:
  - Select the **Search** icon in the taskbar, type `support` in the search box, and then select the **HP Support Assistant** app.
  - Select the question mark icon in the taskbar.

2. Select **Fixes & Diagnostics**.
3. Select **Run hardware diagnostics**, and then select **Launch**.
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, and then select **All apps**.
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**.

---

## 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 **Diagnose PC Hardware issues in Windows**, scroll down to the expanded window that appears, and then select **Download**.
3. A pop-up that asks what you want to do with the file opens. Select **Open** or **Save As**. The latest version of the diagnostics tool opens or 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 select the **Search** icon in the taskbar, and then type `Microsoft Store` in the search box.
2. Type `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 Unified Extensible Firmware Interface (UEFI) 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 some products, 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 81](#).

---

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, complete one of these tasks:

- 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.
- Contact support, and provide the failure ID code.

## 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 82](#).

---

- b. Hard drive
- c. BIOS

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

## Starting HP PC Hardware Diagnostics UEFI through HP Hotkey Support software (select products only)

This section describes how to start HP PC Hardware Diagnostics UEFI through HP Hotkey Support software.



---

**NOTE:** You must disable Fast Boot to access HP PC Hardware Diagnostics UEFI from the HP System Information application.

To disable Fast Boot:

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 **Boot Options**.
3. Clear **Fast Boot**.
4. Select **Save Changes and Exit**, and then select **Yes**.

---

To start HP PC Hardware Diagnostics UEFI through HP Hotkey Support software, follow this procedure:

1. From the **Start** menu, open the HP System Information Application or press [fn+esc](#).
2. In HP System Information screen, select **Run System Diagnostics**, select **Yes** to run the application, and then select **Restart**.



---

**IMPORTANT:** To prevent loss of data, save your work in all open apps before restarting your computer.



---

**NOTE:** When the restart is complete, the computer opens the HP PC Hardware Diagnostics UEFI Application. Proceed with the troubleshooting tests.

---

## 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 these steps.

1. Go to <http://www.hp.com/go/techcenter/pcdiags>. The HP PC Diagnostics home page is displayed.
2. Select **Diagnose PC Hardware Issues outside of the OS**, scroll down to the expanded window that appears, and then select **Download**.
3. A pop-up that asks what you want to do with the file opens. Select **Open** or **Save As**. The latest version of the diagnostics tool opens or downloads to the selected location.

## 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 run 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>, select **Diagnose Other Potential Issues**, scroll down to **Remote PC Hardware Diagnostics UEFI**, and then select **Learn More**.

## Downloading Remote HP PC Hardware Diagnostics UEFI

Remote HP 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 Remote 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 **Diagnose PC Hardware Issues outside of the OS**, scroll down to the expanded window that appears, and then select **Download**.
3. A pop-up that asks what you want to do with the file opens. Select **Open** or **Save As**. The latest version of the diagnostics tool opens or downloads to the selected location.

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

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



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

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 UEFI**.
- 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**, then select **Save Changes and Exit** to save your settings.


Your changes take effect when the computer restarts.

---

## 9 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 are 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 flash drive or using online tools.

 **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 a recovery USB flash drive (select products only)

You can use the HP Cloud Recovery Download Tool to create an HP Recovery bootable USB flash drive.

For details:

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

 **NOTE:** In select countries, if you cannot create the HP Recovery USB flash drive yourself, contact support. 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 85](#) to restore your computer before you obtain and use the HP USB flash drive. Using a recent backup can return your machine to a working state sooner than using the HP USB flash drive. 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 85](#).

## 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 the HP Recovery USB flash drive. For more information, see [Recovering using the HP Recovery USB flash drive on page 85](#).

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

- Select the **Start** button, select **All apps**, 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 the HP Recovery USB flash drive

You can use the HP Recovery USB flash drive to recover the operating system and drivers that were installed at the factory. On select products, you can create recovery media 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 a recovery USB flash drive \(select products only\) on page 84](#).

---


 **NOTE:** In select countries, if you cannot create the HP Recovery USB flash drive yourself, contact support. 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 USB flash drive, and then restart the computer.

---


 **NOTE:** HP recommends that you follow the [Restoring and recovery methods on page 85](#) to restore your computer before you obtain and use the HP USB flash drive. Using a recent backup can return your machine to a working state sooner than using the HP USB flash drive. 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 USB flash drive, you can change the computer boot order, which is the order of devices listed in BIOS for startup information.

---

 **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 USB flash drive.
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, and then quickly press and hold one of the following buttons:
    - Volume up
    - Volume down

Then select **f9**.
3. Select the USB flash drive to boot from, 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 OS
- 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.

# 10 Specifications

This chapter provides specifications for your computer system.

## 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>312.7 mm</b>	12.31 in
Depth	<b>219.9 mm</b>	8.66 in
Height (front)	<b>7.9 mm</b>	0.31 in
Height (rear)	<b>13.16 mm</b>	0.52 in
<b>Weight</b> (lowest)	<b>1299 g</b>	2.86 lbs
<b>Input power</b>		
Operating voltage and current	5 V DC @ 3 A / 9 V DC @ 3 A / 12 V DC @ 5 A / 15 V DC @ 5 A / 20 V DC @ 5 A - 100 W USB-C	
	5 V DC @ 3 A / 9 V DC @ 3 A / 12 V DC @ 5 A / 15 V DC @ 4.33 A / 20 V DC @ 3.25 A - 65 W USB-C	
	5 V DC @ 3 A / 9 V DC @ 3 A / 10 V DC @ 5 A / 12 V DC @ 5 A / 15 V DC @ 4.33 A / 20 V DC @ 3.25 A - 65 W USB-C	
	5 V DC @ 3 A / 9 V DC @ 3 A / 12 V DC @ 3.75 A / 15 V DC @ 3 A - 45 W USB-C	
	5 V DC @ 3 A / 9 V DC @ 3 A / 10 V DC @ 3.75 A / 12 V DC @ 3.75 A / 15 V DC @ 3 A / 20 V DC @ 2.25 A - 45 W USB-C	
<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

**Table 10-1 Computer specifications (continued)**

	Metric	U.S.
Nonoperating	-15 m to 12,192 m	-50 ft to 40,000 ft



**NOTE:** Applicable product safety standards specify thermal limits for plastic surfaces. The device operates well within this range of temperatures.

## Display specifications

This section provides specifications for your display.

**Table 10-2 Display specifications**

	Metric	U.S.
Active diagonal size	<b>35.6 cm</b>	14.0 in
Resolution	2880 × 1800 (2.8 K) 1920 × 1200 (WUXGA)	
Surface treatment	BrightView (OLED) Antiglare (3 K, WUXGA)	
Brightness	300 nits (WUXGA) 400 nits (WUXGA) 500 nits (3 K, UUXGA) 700 nits (3 K) 800 nits (WUXGA)	
Viewing angle	UWVA	
Backlight	OLED LED	
Display panel interface	eDP	

## Solid-state drive specifications

This section provides specifications for your SSDs.

**Table 10-3 SSD specifications**

	512 GB*	1 TB*	2 TB*
<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

**Table 10-3 SSD specifications (continued)**

	<b>512 GB*</b>	<b>1 TB*</b>	<b>2 TB*</b>
Weight	< 10 g	< 10 g	< 10 g
<b>Interface type</b>	PCIe	PCIe	PCIe
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 MBps	up to 2150 MBps	up to 3800 MBps
Random read	Up to 300,000 IOPs	Up to 300,000 IOPs	Up to 300,000 IOPs
Sequential write	up to 1550 MBps	up to 1550 MBps	up to 2670 MBps
Random write	Up to 100,000 IOPs	Up to 100,000 IOPs	Up to 100,000 IOPs
<b>Total logical sectors</b>	1,000,215,216	1,500,336,388	2,998,846
<b>Operating temperature</b>	<b>0°C to 70°C</b> (32°F to 158°F)	<b>0°C to 70°C</b> (32°F to 158°F)	<b>0°C to 70°C</b> (32°F to 158°F)

\*Actual accessible capacity is less. Actual drive specifications might differ slightly.

Certain restrictions and exclusions apply. Contact support for details.

---

# 11 Statement of memory volatility

For general information regarding nonvolatile memory in HP business computers, and to restore nonvolatile memory that can contain personal data after the system has been turned off and the hard drive has been removed, use these instructions.

HP business computer products that use Intel-based or AMD-based system boards contain volatile DDR memory. The amount of nonvolatile memory present in the system depends upon the system configuration. Intel-based and AMD-based system boards contain nonvolatile memory subcomponents as originally shipped from HP, with the following assumptions:

- No subsequent modifications were made to the system.
- No applications, features, or functionality were added to or installed on the system.

Following system shutdown and removal of all power sources from an HP business computer system, personal data can remain on volatile system memory (DIMMs) for a finite period of time and also remains in nonvolatile memory. Use the following steps to remove personal data from the computer, including the nonvolatile memory found in Intel-based and AMD-based system boards.



---

**NOTE:** If your tablet has a keyboard base, connect to the keyboard base before beginning steps in this chapter.

---

## Current BIOS steps

Use these instructions to restore nonvolatile memory.

1. Follow these steps to restore the nonvolatile memory that can contain personal data. Restoring or reprogramming nonvolatile memory that does not store personal data is neither necessary nor recommended.
  - a. Turn on or restart the computer, and then quickly press **esc**.



---

**NOTE:** If the system has a BIOS administrator password, type the password at the prompt.

---

- b. Select **Main**, select **Apply Factory Defaults and Exit**, and then select **Yes** to load defaults. The computer restarts.
- c. During the restart, press **esc** while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.



---

**NOTE:** If the system has a BIOS administrator password, type the password at the prompt.

---

- d. Select the **Security** menu, select **Restore Security Settings to Factory Defaults**, and then select **Yes** to restore security level defaults. The computer restarts.
- e. During the restart, press **esc** while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.



---

**NOTE:** If the system has a BIOS administrator password, type the password at the prompt.

---

- f. If an asset or ownership tag is set, select the **Security** menu and scroll down to the **Utilities** menu. Select **System IDs**, and then select **Asset Tracking Number**. Clear the tag, and then make the selection to return to the prior menu.
- g. If a DriveLock password is set, select the **Security** menu, and scroll down to **Hard Drive Utilities** under the **Utilities** menu. Select **Hard Drive Utilities**, select **DriveLock**, and then clear the check box for **DriveLock password on restart**. Select **OK** to proceed.
- h. Select the **Main** menu, and then select **Reset BIOS Security to factory default**. Select **Yes** at the warning message. The computer restarts.
- i. During the restart, press **esc** while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.



---

**NOTE:** If the system has a BIOS administrator password, type the password at the prompt.

---

- j. Select the **Main** menu, select **Apply Factory Defaults and Exit**, select **Yes** to save changes and exit, and then select **Shutdown**.
  - k. Restart the system. If the system has a TPM, fingerprint reader, or both, one or two prompts will appear—one to clear the TPM and the other to Reset Fingerprint Sensor. Press or tap **f1** to accept or **f2** to reject.
  - l. Remove all power and system batteries for at least 24 hours.
2. Complete one of the following tasks:
- Remove and retain the storage drive.
  - Clear the drive contents by using a third-party utility designed to erase data from an SSD.
  - Clear the contents of the drive by using the following BIOS Setup Secure Erase command option steps:



---

**NOTE:** If you clear data using Secure Erase, you cannot recover it.

---

- a. Turn on or restart the computer, and then quickly press **esc**.
- b. Select the **Security** menu and scroll down to the **esc** menu.
- c. Select **Hard Drive Utilities**.
- d. Finish by completing one of these tasks:
  - Under **Utilities**, select **Secure Erase**, select the hard drive storing the data you want to clear, and then follow the on-screen instructions to continue.
  - Clear the contents of the drive using the following Disk Sanitizer commands steps:
    - i. Turn on or restart the computer, and then quickly press **esc**.
    - ii. Select the **Security** menu and scroll down to the **Utilities** menu.
    - iii. Select **Hard Drive Utilities**.

- iv. Under **Utilities**, select **Disk Sanitizer**, select the hard drive with the data that you want to clear, and then follow the on-screen instructions to continue.



**NOTE:** The amount of time it takes for Disk Sanitizer to run can be several hours. Plug the computer into an AC outlet before starting.

## Nonvolatile memory usage

Use this table to troubleshoot nonvolatile memory usage.

**Table 11-1** Troubleshooting information for nonvolatile memory usage

Description	Volatility description	Storage user data	How to erase
Primary storage device, holds the OS, applications, and application settings	Nonvolatile, 8-256 GB of eMMC or NVMe SSD storage, removable	Yes <sup>1</sup>	See <a href="#">Current BIOS steps on page 90</a> for information about erasing the primary storage device.
System memory (RAM), holds transient data during system operation	Volatile, SODIMM socket. Removable (4 GB/8 GB/16 GB)	Yes	Unplug unit from power.
Permanent system BIOS settings	Nonvolatile, 16 KB, stored	No <sup>2</sup>	See <a href="#">Current BIOS steps on page 90</a> for information about clearing BIOS settings.
System boot ROM (BIOS)	Nonvolatile memory, 128 Mbit (16 MB) socketed, removable	No	Download the latest BIOS for your model from the HP website and follow the instructions to flash the BIOS that are on the website.
RTC (CMOS) RAM	Volatile memory, 256 bytes located in AMD embedded System on Chip (SoC)	No	<p><b>Desktop computers with a CMOS button:</b></p> <p>Unplug unit from main power, remove top cover and press the <b>Clear CMOS</b> button.</p> <p><b>Notebook and desktop computers without a CMOS button:</b></p> <ol style="list-style-type: none"> <li>1. Press and hold power button for 12 seconds.</li> <li>2. Press <b>Windows key + V</b>, and then press power button.</li> </ol>
Keyboard/mouse (ROM)	Nonvolatile, 2 KB embedded in the super I/O controller (SIO2)	Yes	N/A
Keyboard/mouse (RAM)	Volatile, 256 bytes embedded in the super I/O controller (SIO2)	No	Unplug unit from main power.
LOM EEPROM	Nonvolatile, 2 MB embedded in LAN controller	No	N/A
TPM	Nonvolatile, 51 KB ROM for firmware and 38 KB system parametric data	No <sup>3</sup>	See <a href="#">Current BIOS steps on page 90</a> for information about clearing TPM.

<sup>1</sup> Under typical operation, the only user data stored on the primary storage device are preferences for device configuration and settings for connections. However, the administrator can configure the system to allow users to store data locally.


<sup>2</sup> The only user data potentially stored in BIOS Settings are the ownership and asset tags, administrator password, and startup password.

<sup>3</sup> The TPM might contain encrypted passwords or certificates generated from user or administrator input.

## Questions and answers

Use this section to answer your questions about nonvolatile memory.

### 1. How can the BIOS settings be restored (returned to factory settings)?

 **IMPORTANT:** The restore defaults feature does not securely erase any information on your hard drive. See question and answer 6 for steps to securely erase information.

The restore defaults feature does not reset the Custom Secure Boot keys. See question and answer 7 for information about resetting the keys.

- a. Turn on or restart the computer, and then quickly press **esc**.
- b. Select **Main**, and then select **Apply Factory Defaults and Exit**.
- c. Follow the on-screen instructions.
- d. Select **Main**, select **Save Changes and Exit**, and then follow the on-screen instructions.

### 2. What is a UEFI BIOS?

The Unified Extensible Firmware Interface (UEFI) BIOS is an industry-standard software interface between the platform firmware and an operating system (OS). It replaces the older legacy BIOS architecture.

The UEFI BIOS provides an interface to display the system information and configuration settings and to change the configuration of your computer before an OS is loaded. BIOS provides a secure runtime environment that supports a GUI. In this environment, you can use either a pointing device (touch screen, touchpad, pointing stick, or USB mouse) or the keyboard to navigate and make menu and configuration selections. The UEFI BIOS also contains basic system diagnostics.

In addition, the UEFI BIOS works to initialize the computer's hardware before loading and executing the OS; the runtime environment allows the loading and execution of software programs from storage devices to provide more functionality, such as advanced hardware diagnostics (with the ability to display more detailed system information) and advanced firmware management and recovery software.

### 3. Where is the UEFI BIOS located?

The UEFI BIOS is located on a flash memory chip. You must use a utility to write to the chip.

### 4. What kind of configuration data is stored on the DIMM Serial Presence Detect (SPD) memory module? How would this data be written?


The DIMM SPD memory contains information about the memory module, such as size, serial number, data width, speed and timing, voltage, and thermal information. This information is written by the module manufacturer and stored on an EEPROM. You cannot write to this EEPROM when the memory module is installed in a computer. Third-party tools do exist that can write to the EEPROM when the memory module is not installed in a computer. Various third-party tools are available to read SPD memory.

**5. What is meant by “Restore the nonvolatile memory found in Intel-based system boards”?**

This message relates to clearing the Real Time Clock (RTC) CMOS memory that contains computer configuration data.

**6. How can the BIOS security be reset to factory defaults and erase the data?**

---

 **IMPORTANT:** Resetting results in the loss of information.

These steps do not reset Custom Secure Boot Keys. See question and answer 7 for information about resetting the keys.

---

- a. Turn on or restart the computer, and then quickly press **esc**.
- b. Select **Main**, and then select **Reset Security to Factory Defaults**.
- c. Follow the on-screen instructions.
- d. Select **Main**, select **Save Changes and Exit**, and then follow the on-screen instructions.

**7. How can the Custom Secure Boot Keys be reset?**

Secure Boot is a feature to ensure that only authenticated code can start on a platform. If you enabled Secure Boot and created Custom Secure Boot Keys, disabling Secure Boot does not clear the keys. You must also select to clear the Custom Secure Boot Keys. Use the same Secure Boot access procedure that you used to create the Custom Secure Boot Keys, but select to clear or delete all Secure Boot Keys.

- a. Turn on or restart the computer, and then quickly press **esc**.
- b. Select the **Security** menu, select **Secure Boot Configuration**, and then follow the on-screen instructions.
- c. At the **Secure Boot Configuration** window, select **Secure Boot**, select **Clear Secure Boot Keys**, and then follow the on-screen instructions to continue.

## 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.

## 12 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 3-conductor power cord set included with the computer meets the requirements for use in the country or region where the equipment is purchased.

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

### Requirements for all countries

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 12-1** 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

**Table 12-1** Power cord requirements for specific countries and regions (continued)

Country/region	Accredited agency	Applicable note number
Germany	VDE	1
India	BIS	1
Israel	SII	1
Italy	IMQ	1
Japan	JIS	3
Netherlands	KEMA	1
New Zealand	SANZ	1
Norway	NEMKO	1
The People's Republic of China	CCC	4
Saudi Arabia	SASO	7
Singapore	PSB	1
South Africa	SABS	1
South Korea	KTL	5
Sweden	SEMKO	1
Switzerland	SEV	1
Taiwan	BSMI	6
Thailand	TISI	1
United Kingdom	ASTA	1
United States	UL	2

1. The flexible cord must be Type HO5VV-F, 3-conductor, 0.75 mm<sup>2</sup> conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.
2. The flexible cord must be Type SVT/SJT or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a 2-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, 3-conductor, 0.75 mm<sup>2</sup> or 1.25 mm<sup>2</sup> conductor size. The wall plug must be a 2-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V AC) configuration.
4. The flexible cord must be Type RVV, 3-conductor, 0.75 mm<sup>2</sup> conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the CCC certification mark.
5. The flexible cord must be Type HO5VV-F 3-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 3-conductor, 1.25 mm<sup>2</sup> conductor size. Power cord set fittings (appliance coupler, cable, and wall plug) must bear the BSMI certification mark.

7. For 127 V AC, the flexible cord must be Type SVT or SJT 3-conductor, 18 AWG, with plug NEMA 5-15P (15 A, 125 V AC), with UL and CSA or C-UL marks. For 240 V AC, the flexible cord must be Type H05VV-F 3-conductor, 0.75 mm<sup>2</sup> or 1.00 mm<sup>2</sup> conductor size, with plug BS 1363/A with BSI or ASTA marks.

---

# 13 Swelling or deformation of notebook battery

To protect your hardware from potential damage, HP recommends that if you are experiencing battery swelling, stop using the notebook until you can replace the battery.

You can contact HP to understand what battery replacement options are available. To learn more about lithium-ion batteries and the factors that can accelerate battery swelling, see [https://support.hp.com/us-en/document/ish\\_6824662-6824706-16](https://support.hp.com/us-en/document/ish_6824662-6824706-16).

## Swollen notebook batteries

You might notice that your notebook battery has become somewhat deformed or swollen over time. In some cases, the battery swelling might be significant enough to impact other components of the system including the touchpad, keyboard, and chassis.

### Swollen battery is not a safety issue

A swollen battery does not present a safety issue. It is the result of the generation of gases per the normal degradation of the battery cell over time.

HP has worked closely with our battery cell suppliers and third-party industry experts to help minimize the potential for HP batteries to swell over time and to identify that swollen batteries are not a safety issue.

### Discontinue using a swollen battery

To protect your hardware from potential damage, HP recommends that, if you are experiencing battery swelling, you stop using the notebook until the battery can be replaced.

You can contact <https://www.hp.com/go/contacthp> to understand what battery replacement options are available.

### Replace a swollen battery

If a battery is under warranty, HP will replace the battery per the terms and conditions of the HP Worldwide Limited Warranty or applicable HP Care Packs.

For batteries no longer under warranty, contact HP to purchase a genuine HP replacement battery.

## Minimize battery swelling

Multiple factors can accelerate battery swelling.

To help mitigate battery swelling over time, you can use either HP Adaptive Battery Optimizer (consumer notebooks) or HP Battery Health Manager (commercial notebooks) settings to improve battery longevity and performance for various use scenarios.

## Adaptive Battery Optimizer (consumer notebooks)

Adaptive Battery Optimizer technology can help mitigate the factors that cause the battery to swell. It is available on select HP OMEN, HP Spectre, HP Pavilion, and HP ENVY notebook computers.

Adaptive Battery Optimizer has been available on select gaming notebooks since 2019 and select consumer notebooks since 2020. To learn more about enabling Adaptive Battery Optimizer on your HP notebook, see [https://support.hp.com/us-en/document/ish\\_9908083-9908127-16](https://support.hp.com/us-en/document/ish_9908083-9908127-16).

## HP Battery Health Manager (commercial notebooks)

HP Battery Health Manager provides an easy-to-manage solution to help mitigate factors that cause the battery to swell. It is available on select HP ProBook and HP EliteBook notebook computers.

HP Battery Health Manager is available on select commercial notebooks manufactured since 2016. To learn more about HP Battery Health Manager, see [https://support.hp.com/us-en/document/ish\\_4449597-3519507-16](https://support.hp.com/us-en/document/ish_4449597-3519507-16).

---

# 14 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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