



# Maintenance and Service Guide

## SUMMARY

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

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### Product notice

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

Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows is automatically updated, which is always enabled. High-speed internet and Microsoft account required. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.microsoft.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 may not work (including some antivirus, PDF writers, driver utilities, and accessibility apps), and performance may 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://windows.com/SmodeFAQ).

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

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

## Safety warning notice

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

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 **WARNING!** To reduce the possibility of heat-related injuries or of overheating the computer, do not place the computer directly on your lap or obstruct the computer air vents. Use the computer only on a hard, flat surface. Do not allow another hard surface, such as an adjoining optional printer, or a soft surface, such as pillows or rugs or clothing, to block airflow. Also, do not allow the AC adapter to come into contact with the skin or a soft surface, such as pillows or rugs or clothing, during operation. The computer and the AC adapter comply with the user-accessible surface temperature limits defined by applicable safety standards.

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# Table of contents

<b>1 Product description.....</b>	<b>1</b>
<b>2 Getting to know your computer .....</b>	<b>4</b>
Locating hardware .....	4
Locating software.....	4
Right side .....	4
Left side .....	5
Display .....	6
Low blue light mode (select products only) .....	6
Keyboard area.....	7
Touchpad settings and components .....	8
Touchpad settings .....	8
Adjusting touchpad settings .....	8
Turning on the touchpad .....	8
Touchpad components .....	8
Lights .....	9
Button and speakers.....	10
Special keys .....	11
Action keys.....	12
HP Hubs Launcher (select products only) .....	13
Bottom .....	14
Labels.....	14
<b>3 Illustrated parts catalog .....</b>	<b>17</b>
Computer major components.....	17
Display assembly subcomponents.....	19
Cables.....	20
Miscellaneous parts.....	21
<b>4 Removal and replacement procedures preliminary requirements.....</b>	<b>23</b>
Tools required .....	23
Service considerations.....	23
Plastic parts .....	23
Cables and connectors.....	23
Drive handling.....	23
Electrostatic discharge information .....	24
Generating static electricity .....	24
Preventing electrostatic damage to equipment .....	25
Personal grounding methods and equipment .....	25
Grounding the work area .....	26



Recommended materials and equipment.....	26
Cleaning your computer .....	27
Enabling HP Easy Clean (select products only) .....	27
Removing dirt and debris from your computer.....	27
Cleaning your computer with a disinfectant .....	28
Caring for wood veneer (select products only) .....	29
Packaging and transporting guidelines .....	29
Accessing support information .....	29
<b>5 Removal and replacement procedures for authorized service provider parts.....</b>	<b>32</b>
Component replacement procedures.....	32
Preparation for disassembly .....	32
Bottom cover .....	32
Battery .....	33
Memory modules .....	34
WLAN module .....	36
Solid-state drive .....	38
Heat sink .....	39
Fan assembly .....	40
Display assembly panel .....	42
Power connector cable .....	43
System board.....	43
IR board.....	46
Speakers .....	47
Hall sensor board.....	49
Touchpad .....	50
RJ-45 door .....	51
Display assembly .....	52
Keyboard with top cover.....	56
<b>6 Using Setup Utility (BIOS) .....</b>	<b>58</b>
Starting Setup Utility (BIOS) .....	58
Updating Setup Utility (BIOS) .....	58
Determining the BIOS version .....	58
Preparing for a BIOS update .....	59
Downloading a BIOS update .....	59
Installing a BIOS update .....	59
<b>7 Computer Setup (BIOS), TPM, and HP Sure Start.....</b>	<b>61</b>
Using Computer Setup .....	61
Navigating and selecting in Computer Setup .....	61
Restoring factory settings in Computer Setup .....	61
Updating the BIOS.....	62
Determining the BIOS version .....	62
Preparing for a BIOS update .....	62
Downloading a BIOS update .....	63
Installing a BIOS update .....	63
Changing the boot order using the f9 prompt .....	63

TPM BIOS settings (select products only) .....	64
Using HP Sure Start (select products only) .....	64
<b>8 Backing up, restoring, and recovering .....</b>	<b>65</b>
Backing up information and creating recovery media .....	65
Using Windows tools for backing up .....	65
Using the HP Cloud Recovery Download Tool to create recovery media (select products only) .....	65
Restoring and recovering your system .....	65
Creating a system restore .....	66
Restoring and recovery methods .....	66
Recovering using HP Recovery media .....	66
Changing the computer boot order .....	67
Using HP Sure Recover (select products only) .....	67
<b>9 Using HP PC Hardware Diagnostics .....</b>	<b>68</b>
Using HP PC Hardware Diagnostics Windows (select products only) .....	68
Using an HP PC Hardware Diagnostics Windows hardware failure ID code .....	68
Accessing HP PC Hardware Diagnostics Windows.....	68
Accessing HP PC Hardware Diagnostics Windows from HP Support Assistant .....	68
Accessing HP PC Hardware Diagnostics Windows from the Start menu (select products only) .....	69
Downloading HP PC Hardware Diagnostics Windows .....	69
Downloading the latest HP PC Hardware Diagnostics Windows version from HP .....	69
Downloading the HP PC Hardware Diagnostics Windows from the Microsoft Store.....	69
Downloading HP Hardware Diagnostics Windows by product name or number (select products only) .....	69
Installing HP PC Hardware Diagnostics Windows .....	70
Using HP PC Hardware Diagnostics UEFI .....	70
Using an HP PC Hardware Diagnostics UEFI hardware failure ID code .....	70
Starting HP PC Hardware Diagnostics UEFI .....	70
Downloading HP PC Hardware Diagnostics UEFI to a USB flash drive .....	71
Downloading the latest HP PC Hardware Diagnostics UEFI version .....	71
Downloading HP PC Hardware Diagnostics UEFI by product name or number (select products only) .....	71
Using Remote HP PC Hardware Diagnostics UEFI settings (select products only) .....	72
Downloading Remote HP PC Hardware Diagnostics UEFI .....	72
Downloading the latest Remote HP PC Hardware Diagnostics UEFI version .....	72
Downloading Remote HP PC Hardware Diagnostics UEFI by product name or number .....	72
Customizing Remote HP PC Hardware Diagnostics UEFI settings .....	72
<b>10 Specifications.....</b>	<b>74</b>
Computer specifications .....	74
40.64 cm (16 in) display specifications .....	74
Solid-state drive specifications .....	75
Solid-state drive specifications (SATA-3) .....	76
<b>11 Power cord set requirements .....</b>	<b>77</b>
Requirements for all countries.....	77
Requirements for specific countries and regions .....	77

12 Recycling .....	79
Index .....	80

# 1 Product description

This table provides detailed product information.

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

Category	Description
Product Name	HP ENVY 16 Notebook PC
	Model number: 16-h00xxx
	CTO model number: 16t-h0000
Processors	<b>12th Generation Intel® Core™ processors</b>
	Intel Core i7-12700H (14C, 6 MB)
	Intel Core i5-12500H (12C, 4 MB)
Graphics	<b>Internal graphics</b>
	Intel® Iris® Xe Graphics
	<b>External graphics</b>
	NVIDIA® GeForce® RTX 3060 with 6 GB discrete memory
Display	Supports HDMI up to 4096 × 2160 @ 60 Hz with HDCP 2.3
	<b>40.6 cm (16.0 in), narrow bezel, ultrawide viewing angle (UWVA)</b>
	(3840 × 2400), Wide Quad Ultra Extended Graphics Array (WQUXGA), BrightView, Low Blue Light, UWVA DCI-P3, 400 nits, eDP 1.4 + PSR organic light-emitting diode (OLED) bent Panel
	(2560 × 1600) antiglare, Low Blue Light, UWVA, sRGB 400 nits, eDP 1.4+ PSR, 120Hz, flat Panel (DCBG)
Memory	(2560 × 1600) antiglare, Low Blue Light, UWVA, sRGB 400 nits, eDP 1.4+ PSR, 120Hz, flat Panel (TS DBTS)
	Two customer-accessible memory module slots (small outline dual in-line memory modules (SODIMMs) supporting up to 32 GB of RAM
	DDR5-4800 dual-channel support
	Supports the following configurations:
	<ul style="list-style-type: none"><li>• 32 GB (16 × 2)</li><li>• 16 GB (8 × 2)</li></ul>
Primary storage	<b>PCIe, (Non-Volatile Memory Express) NVMe, M.2 2280 solid-state drives</b>
	<ul style="list-style-type: none"><li>• 2 TB, PCIe-4 × 4, three-layer cell (TLC)</li><li>• 1 T, PCIe-4 × 4, NVMe value, TLC</li><li>• 512 GB, PCIe-4 × 4, NVMe value, TLC</li></ul>

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

Category	Description
<b>Audio and video</b>	<b>Audio brand:</b> Bang and Olufson
	HP True Vision 5MP Camera with Shutter Door - indicator LED, 1x IR LED, USB2.0, 5MP BSI sensor, f2.0, WDR/TNR, 76° NFOV
	5 MP by 30 frames per second
	Dual-array digital microphone with appropriate software: beam forming, echo cancellation, noise suppression
	Supports Windows Hello
<b>Wireless</b>	<b>Wireless Local Area Network (WLAN)</b>
	Intel Wi-Fi® 6e AX211 + Bluetooth® 5.2 (non-vPro) (802.11ax 2 × 2, 160 Mhz, supporting gigabit file transfer speeds)
	Mediatek Tequila MT7921 Wi-Fi 6 + Bluetooth 5.2, M.2 2230, PCI-e + USB, WLAN, WWAN
<b>Media card reader</b>	Supports microSD™, SDHC™, SDXC™
	Push-push insertion/removal
<b>Ports</b>	Hot plug/unplug and autodetect for correct output to wide-aspect vs. standard aspect video
	HDMI v2.0a supporting: up to 4096 × 2160 @ 60 Hz with HDCP 2.3
	Audio-out (headphone)/audio-in (microphone) combo jack
	USB 3.2 Gen 2 Type-C with Thunderbolt™ Gen 4 technology (2)
	USB 3.2 Gen 2 Type-A (2)
	RJ-45 (network) jack
	AC Smart Pin adapter plug
<b>Keyboard/pointing devices</b>	<b>Keyboard</b>
	Full size, backlit, 3-coat paint, island style
	<b>Touchpad</b>
	Clickpad with image sensor
	Multitouch gestures enabled
	Precision touchpad support
	Support for Modern Trackpad Gestures
	Taps enabled as default
<b>Power requirements</b>	<b>Battery</b>
	6 cell, 83 Whr, 3.59 Ah, polymer, HP Long Life
	HP Fast Charge Technology
	<b>Smart AC adapters</b>
	200 W, slim barrel, Power Factor Correction (PFC), 4.5 mm
	150 W, Smart PFC Slim Barrel 4.5 mm
	<b>Power cord</b>
	C5, premium, 1 m (3.3 ft), C13, premium, 1 m (3.3 ft)

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

Category	Description
Security	Supports Trusted Platform Module (TPM) 2.0, firmware based
	Privacy camera
	Microphone mute
Operating system	Windows® 11 Pro 64
	Windows 11 Pro 64 High End
	Windows 11 Home 64 Advanced
	Windows 11 Home 64 Advanced Single Language
	Windows 11 Home 64 High-End Chinese Market PPP
	Windows 11 Home 64 Plus Single Language Africa Market
	Windows 11 Home 64 Plus Single Language APAC EM PPP
	Windows 11 Home 64 Plus
	Windows 11 Home 64 Plus Single Language
	Windows 11 Home 64 Plus Single Language India Market
	Windows 11 Home 64 Plus Single Language Indonesia Market PPP
	FreeDOS 3.0
Serviceability	<b>End user replaceable parts</b>
	AC adapter
	Memory module
	Solid-state drive

# 2 Getting to know your computer

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

## Locating hardware

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

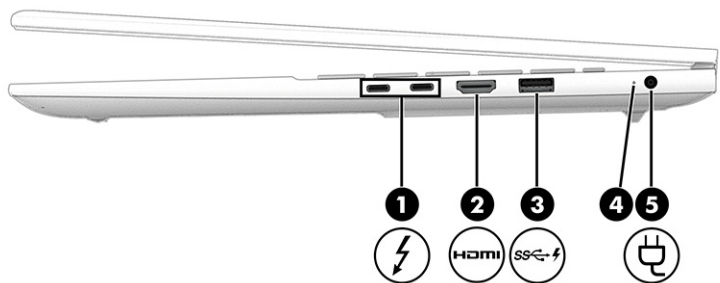
For information about system hardware components and the system BIOS version number, press `fn+esc` (select products only).

## Locating software

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

## Right side

Identify the components on the right side of the computer.



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





Component		Description
(1)		<p>USB Type-C® Thunderbolt™ ports with HP Sleep and Charge and DisplayPort™ output (2)</p> <p><b>NOTE:</b> Use a standard USB Type-C charging cable or cable adapter (purchased separately) when charging a small external device.</p> <p>— and —</p> <p>Connect a display device that has a USB Type-C connector, providing DisplayPort output.</p> <p><b>NOTE:</b> Your computer might also support a Thunderbolt docking station.</p>

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

Component	Description
(2)  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.
(3)  USB SuperSpeed 10 Gbps port with HP Sleep and Charge	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-A charging cable or cable adapter (purchased separately) when charging a small external device.
(4) AC adapter and battery light	<ul style="list-style-type: none"><li>• White: The AC adapter is connected and the battery is fully charged.</li><li>• Blinking amber: The AC adapter is disconnected and the battery has reached a low battery level.</li><li>• Amber: The AC adapter is connected and the battery is charging.</li><li>• Off: The battery is not charging.</li></ul>
(5)  Power connector	Connects an AC adapter.

## Left side

Identify the components on the left side of the computer.

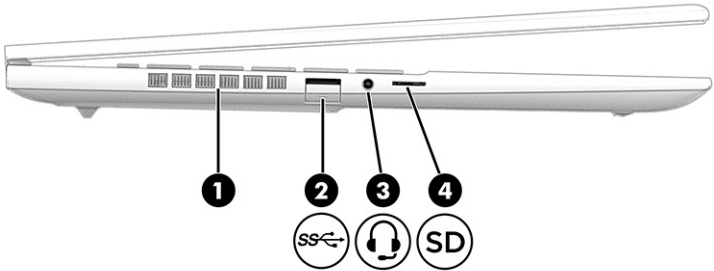





Table 2-2 Left-side components and their descriptions

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



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

Component	Description
(2)  USB SuperSpeed 10 Gbps port	<p>Connects a USB device, provides high-speed data transfer, and (for select products) charges small devices (such as a smartphone) when the computer is on or in Sleep mode.</p> <p><b>NOTE:</b> Use a standard USB Type-A charging cable or cable adapter (purchased separately) when charging a small external device.</p>
(3)  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>
(4)  microSD™ memory card reader	<p>Reads optional memory cards that enable you to store, manage, share, or access information.</p> <p>To insert a card:</p> <ol style="list-style-type: none"> <li>1. Hold the card label-side up, with connectors facing the computer.</li> <li>2. Insert the card into the memory card reader, and then press in on the card until it is firmly seated.</li> </ol> <p>To remove a card:</p> <ul style="list-style-type: none"> <li>■ Press in on the card, and then remove it from the memory card reader.</li> </ul>

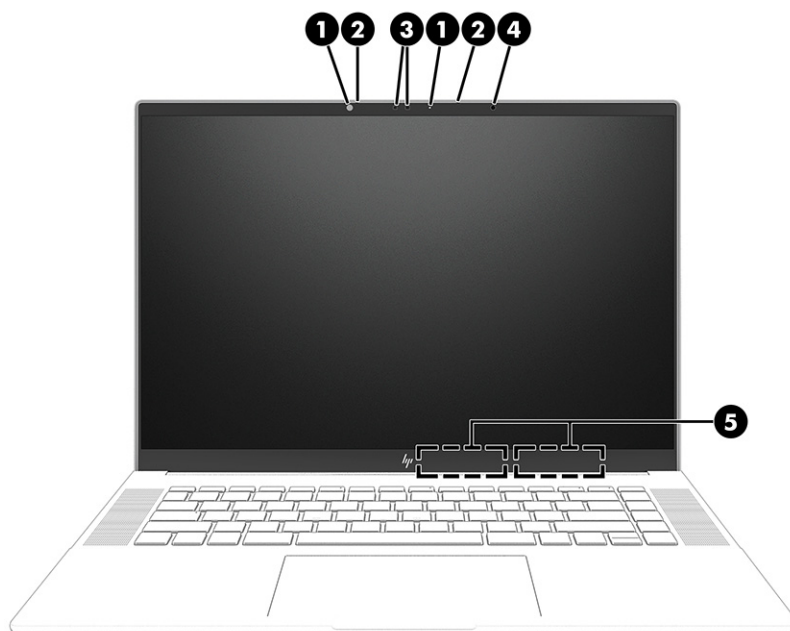
## Display

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

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

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

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



**Table 2-3** Display components and their descriptions

Component		Description
(1)	Camera light(s)	On: One or more cameras are in use.
(2)	Internal microphones	Record sound.
(3)	Camera(s)	Allow(s) 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)	Ambient light sensor	Adjusts the brightness of the display, depending on the ambient light.
(5)	WLAN antennas*	Send and receive wireless signals to communicate with wireless local area networks (WLANs).

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

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

To access this guide:

- Select the **Search** icon in the taskbar, type `HP Documentation` in the search box, and then select **HP Documentation**.

## Keyboard area

Keyboards can vary by language.



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

## Touchpad settings and components

Learn the touchpad settings and components.

### Touchpad settings

Learn how to adjust touchpad settings.

#### Adjusting touchpad settings

Use these steps to adjust touchpad settings and gestures.

1. 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

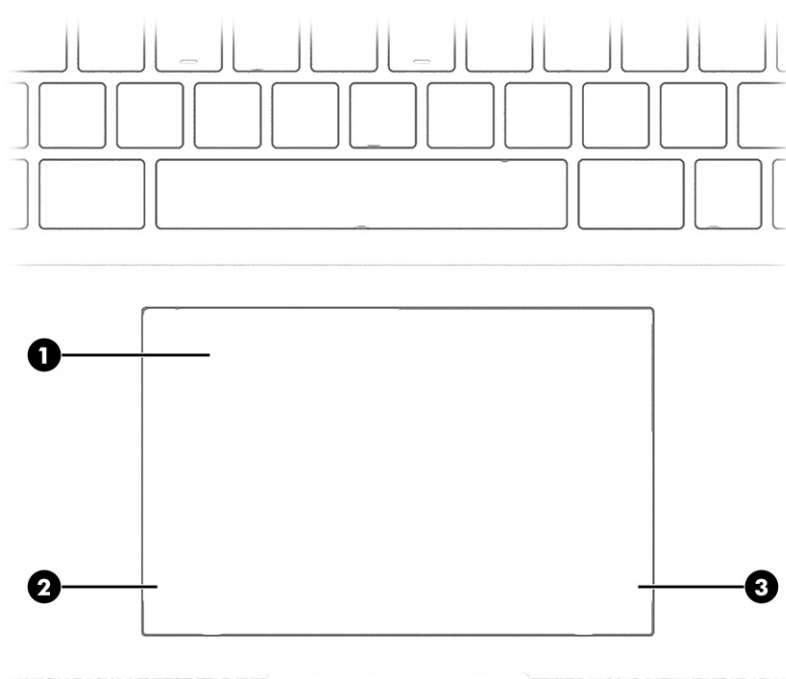
Follow these steps to turn on the touchpad.

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

Identify the touchpad components.

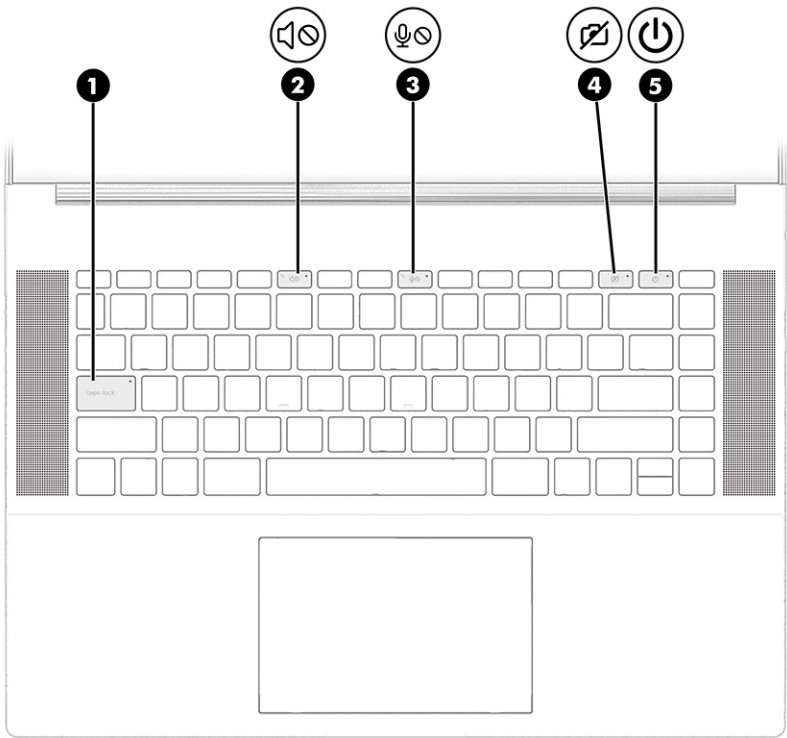


**Table 2-4** Touchpad components and their descriptions

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

## Lights

Identify the lights on the computer.



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





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

Table 2-5 Lights and their descriptions (continued)

Component		Description
(5)	 Power light	<ul style="list-style-type: none"><li>• On: The computer is on.</li><li>• Blinking (select products only): The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other unnecessary components.</li><li>• Off: Depending on your computer model, the computer is off, in Hibernation, or in Sleep. Hibernation is the power-saving state that uses the least amount of power.</li></ul>

Button and speakers

Identify the computer button and speakers.

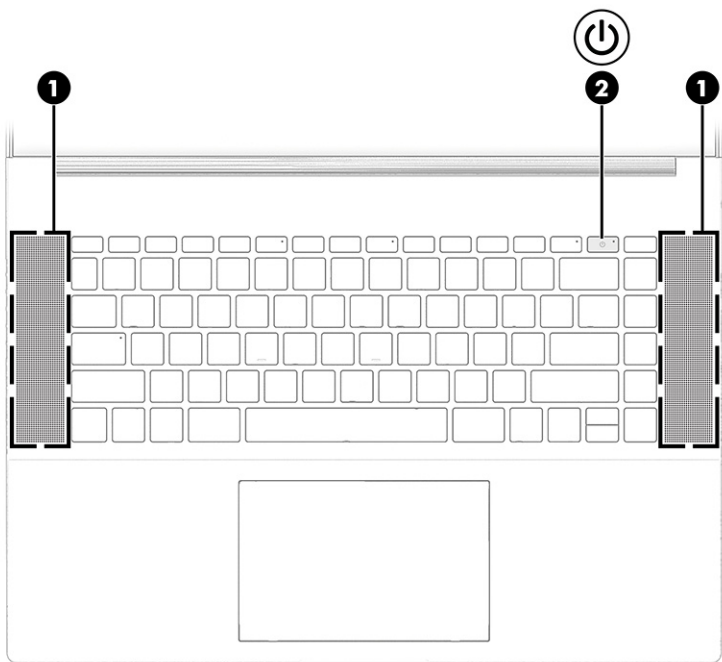




Table 2-6 Button and speakers and their descriptions

Component		Description
(1)	Speakers	Produce sound.

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

Component	Description
(2)  Power button	<ul style="list-style-type: none"><li>• When the computer is off, press the button briefly to turn on the computer.</li><li>• When the computer is on, press the button briefly to initiate Sleep.</li><li>• When the computer is in the Sleep state, press the button briefly to exit Sleep (select products only).</li><li>• When the computer is in Hibernation, press the button briefly to exit Hibernation.</li></ul> <p><b>IMPORTANT:</b> Pressing and holding down the power button results in the loss of unsaved information.</p> <p>If the computer has stopped responding and shutdown procedures are ineffective, press and hold the power button down for at least 10 seconds to turn off the computer.</p> <p>To learn more about your power and sleep settings:</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>

## Special keys

Identify the special keys.

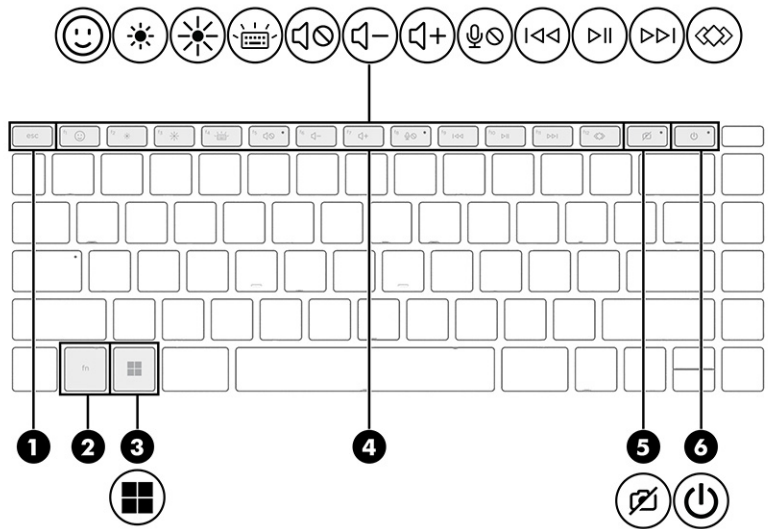





Table 2-7 Special keys and their descriptions

Component	Description
(1) <code>esc</code> key	Displays system information when pressed in combination with the <code>fn</code> key.
(2) <code>fn</code> key	Executes specific functions when pressed in combination with another key.

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


Component		Description
(3)	Windows key	<p>Opens the Start menu.</p> <p><b>NOTE:</b> Pressing the Windows key again will close the Start menu.</p>
(4)	Action keys	Execute frequently used system functions as defined by the icon symbols on <b>f1</b> through <b>f12</b> function keys.
(5)	 Camera privacy key	Turns the camera off and on.
(6)	 Power button	<ul style="list-style-type: none"> <li>When the computer is off, press the button briefly to turn on the computer.</li> <li>When the computer is on, press the button briefly to initiate Sleep.</li> <li>When the computer is in the Sleep state, press the button briefly to exit Sleep (select products only).</li> <li>When the computer is in Hibernation, press the button briefly to exit Hibernation.</li> </ul> <p><b>IMPORTANT:</b> Pressing and holding down the power button results in the loss of unsaved information.</p> <p>If the computer has stopped responding and shutdown procedures are ineffective, press and hold the power button down for at least 10 seconds to turn off the computer.</p> <p>To learn more about your power and sleep settings:</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>

## Action keys



Identify the action keys.

The action keys execute frequently used system functions as defined by the icon symbols on **f1** through **f12**. The action keys vary by computer.











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

 **NOTE:** On some products, you must press the **fn** key in combination with the action key.

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

Icon	Description
	Launches the Windows emoji keyboard for select applications.
	Decreases the screen brightness incrementally as long as you hold down the key.

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

Icon	Description
	Increases the screen brightness incrementally as long as you hold down the key.
	Turns the keyboard backlight off or on. On select products, you can adjust the brightness of the keyboard backlight. Press the key repeatedly to adjust the brightness from high (when you first start up the computer), to low, to off. After you adjust the keyboard backlight setting, the backlight will revert to your previous setting each time you turn on the computer. The keyboard backlight will turn off after 30 seconds of inactivity. To turn the keyboard backlight back on, press any key or tap the touchpad (select products only). To conserve battery power, turn off this feature.
	Mutes or restores speaker sound.
	Decreases speaker volume incrementally while you hold down the key.
	Increases speaker volume incrementally while you hold down the key.
	Mutes the microphone.
	Plays the previous track of an audio CD or the previous section of a DVD or a Blu-ray Disc (BD).
	Starts, pauses, or resumes playback of an audio CD, a DVD, or a BD.
	Plays the next track of an audio CD or the next section of a DVD or a BD.
	Opens HP Hubs Launcher, where you can open HP apps such as HP Command Center, OMEN Gaming Hub, myHP, and HP Palette, depending on your computer model. For more information, see <a href="#">HP Hubs Launcher (select products only) on page 13</a> .

## HP Hubs Launcher (select products only)

Press or hold **f12** to open the HP Hubs Launcher. From the HP Hubs Launcher, you can open HP apps such as HP Command Center, OMEN Gaming Hub, myHP, and HP Palette.

- Press **f12** briefly to open the HP Hubs Launcher. Then use the mouse pointer to select an app to open.

-or-

Hold **f12** to change the selected apps and then automatically open them.

Depending on your model, the following apps can be included in the HP Hubs Launcher:

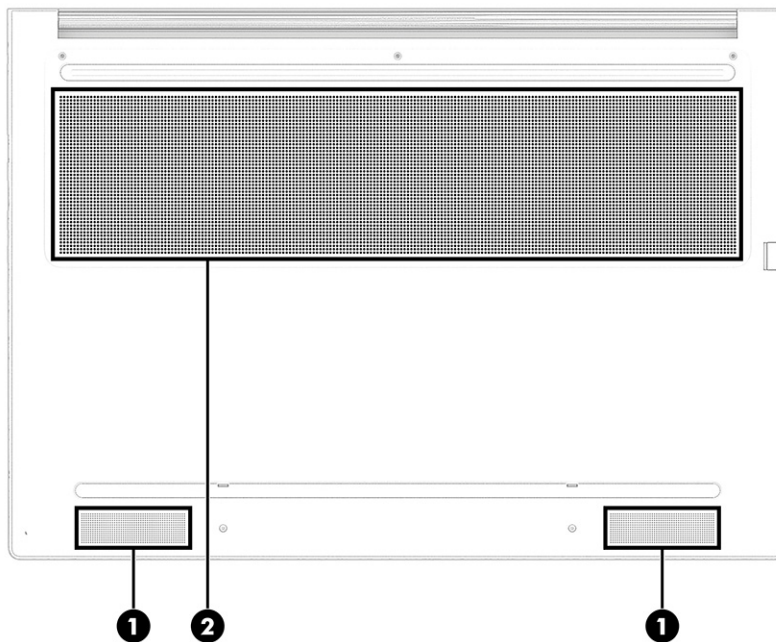
- HP Command Center
  - Select **System Control** to adjust the temperature or cooling preference on your computer.



- Select **GlamCam** to adjust camera-related settings for video calls.
- OMEN Gaming Hub, where you can customize your computer for your specific gaming needs.
- myHP, where you can learn more about your PC and the utilities that HP offers.
- HP Palette, which gives you access to creative tools in one place, simplifies the creative process, and helps find the right photos and assets in less time.

## Bottom

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 that you might need when you troubleshoot system problems or travel internationally with the computer. Labels can be in paper form or imprinted on the product.

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

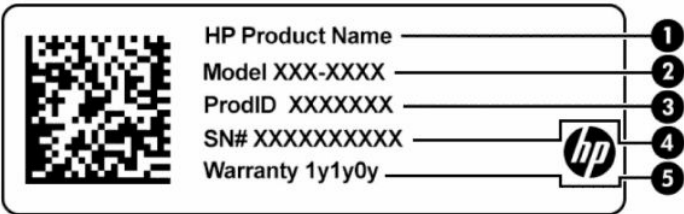
- Service label—Provides important information to identify your computer. When contacting support, you might be asked for the serial number, the product number, or the model number. Locate this information before you contact support.

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



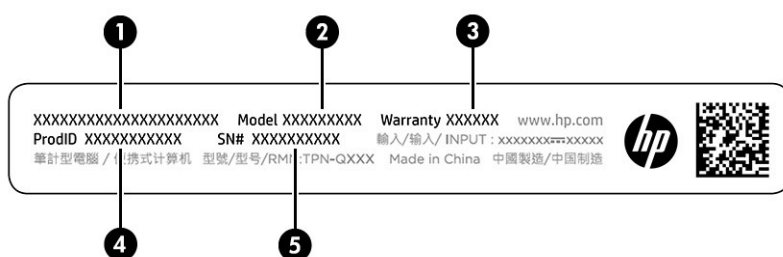
**Table 2-10 Service label components**

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



**Table 2-11 Service label components**

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



**Table 2-12 Service label components**

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

- 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.


## 3 Illustrated parts catalog

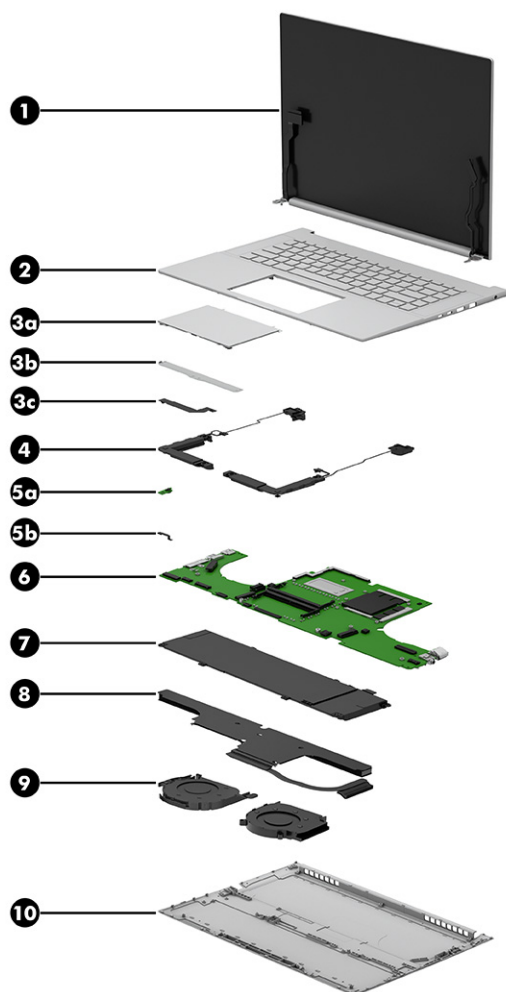
Use this chapter to determine the spare parts that are available for the computer.

### Computer major components

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

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

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



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

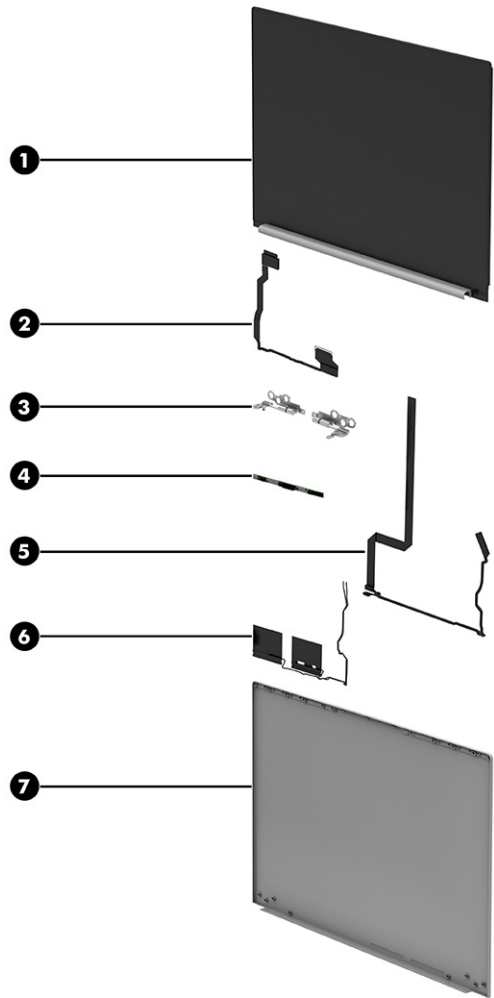
Item	Component	Spare part number
(1)	<b>Display assembly</b>  <b>NOTE:</b> Display spare parts are available as subcomponents, not as whole units. Display subcomponent spare parts are available. For spare part information, see <a href="#">Display assembly subcomponents on page 19</a> .	not available as a spare part
(2)	<b>Top cover/keyboard</b>  <b>NOTE:</b> For a detailed list of country codes, see <a href="#">Keyboard with top cover on page 56</a> .	
(3a)	<b>Touchpad</b>	N13371-001
(3b)	<b>Touchpad bracket</b>	not available as a spare
(3c)	<b>Touchpad cable</b>	N13375-001
(4)	<b>Speaker kit</b>	N13394-001
(5a)	<b>IR sensor board</b>	N13373-001
(5b)	<b>IR sensor board cable</b>	N13374-001
(6)	<b>System board</b> (includes integrated processor)  <b>NOTE:</b> All system board spare part kits include replacement thermal material.  All system boards use the following part numbers:  xxxxxx-001: Non-Windows operating systems  xxxxxx-601: Windows operating system	
	Intel Core i9-12900H, RTX 3060, 6 GB	N12357-601
	Intel Core i9-12900H, RTX 3060, for OLED, 6 GB	N14910-601
	Intel Core i7-12700H, RTX 3060, for OLED, 6 GB	N14909-601
	Intel Core i7-12700H, Arc A370M, for OLED, 4 GB	N14908-601
	Intel Core i7-12700H, RTX 3060, 6 GB	N12356-601
	Intel Core i7-12700H, Arc A370M, 4 GB	N12355-601
	Intel Core i5-12500H, Arc A370M, 4 GB	N12354-601
(7)	<b>Battery</b> (Battery (6 cell, 83 Whr, 3.59 Ah))	M48025-005
(8)	<b>Heat sink</b> (includes replacement thermal material)  Heat sink for use in 80 W models  Heat sink for use in 60 W models	N13390-001  N13389-001
(9)	<b>Fan</b>  Fan CPU (60 W models)  Fan GPU (60 W models)  Fan CPU (80 W models)  Fan GPU (80 W models)	N13387-001  N13388-001  N14836-001  N14837-001
(10)	<b>Bottom cover</b>	

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

Item	Component	Spare part number
	For use in 60 W models	N13383-001
	For use in 80 W models	N13384-001

## Display assembly subcomponents

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



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

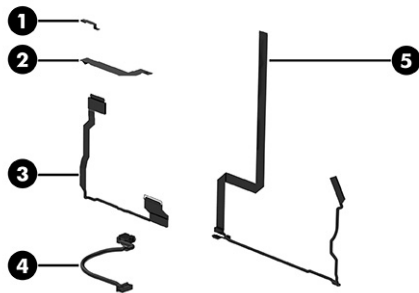
Item	Component	Spare part number
(1)	Display assembly panel	
	16.0 in Wide Quad Ultra Extended Graphics Array (WQUXGA), BrightView, (3840×2400), organic light-emitting diode (OLED) bent panel, eDP 1.4 + PSR, 400 nits	N13381-001
	16.0 in Wide Quad Extended Graphics Array (WQXGA) (2560×1600), antiglare, non-touchscreen, 400 nits	N13380-001

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

Item	Component	Spare part number
	16.0 in WQXGA (2560×1600), antiglare, 400 nits	N13379-001
(2)	Display panel cable	not available as a spare part
(3)	Display hinges	N13370-001
(4)	Camera module	N13382-001
(5)	Camera module cable	not available as a spare part
(6)	WLAN antennas	N13367-001
(7)	Back cover	
	Back cover with antennas	N13368-001
	Back cover with antennas (OLED)	N13369-001

## Cables

To identify the cables, use this illustration and table.

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

Item	Component	Spare part number
(1)	IR cable	N13374-001
(2)	Touchpad cable	N13375-001
(3)	Display panel cable	Not available as a spare part
(4)	Power connector cable	
	For 150 W models	N13377-001
	For 200 W models	N13378-001
(5)	Camera module cable	Not available as a spare part
	Hall sensor board cable (not pictured)	N13376-001

## Miscellaneous parts

To identify the miscellaneous parts, use this table.

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

Component	Spare part number
<b>AC adapters</b>	
150 W Smart AC adapter (Smart PFC, Slim Barrel, 4.5 mm)	L32661-001
200 W Smart AC adapter (Smart PFC, Slim Barrel, 4.5 mm)	L00818-850
<b>Adapters</b>	
HDMI to VGA	701943-001
USB Type-C® to VGA	831751-001
USB Type-C to USB-A	833960-001
USB Type-C to RJ-45	M95985-001
USB Type-C to USB-A	916838-001
USB Type-C to HDMI 2.0	935325-001
<b>Kits</b>	
Screw Kit	N13395-001
<b>Power cords (C5, 1.0 m), premium</b>	
Argentina	L30811-001
Australia	L22327-001
China	L21930-001
Denmark	L22322-001
Europe	L22321-001
India	L22624-001
Israel	L22323-001
Italy	L30813-001
Japan	L22330-001
Korea	L22328-001
Saudi Arabia	L22325-001
Switzerland	L22324-001
Taiwan	L22329-001
Thailand	L22326-001
United Kingdom	L22320-001
United States	L22319-001
<b>Power cords (C13, 1.0 m), premium</b>	
Argentina	L22104-001



**Table 3-4** Miscellaneous part descriptions and part numbers (continued)

<b>Component</b>	<b>Spare part number</b>
Australia	L22339-001
China	L22341-001
Denmark	L22334-001
Europe	L22333-001
India	L22343-001
Israel	L22335-001
Italy	L22103-001
Japan	L22344-001
Korea	L22340-001
Saudi Arabia	L22337-001
Switzerland	L22336-001
Taiwan	L22342-001
Thailand	L22338-001
Thailand	M85413-001
Thailand	M85421-001
United Kingdom	L22332-001
United States	L22331-001
<b>Elite USB-C multiport hub</b>	L39572-001
<b>WLAN insulator</b>	N10779-001
<b>Display adhesive kit</b>	N13392-001
<b>USB door for 60 W models</b>	N13385-001
<b>USB door for 80 W models</b>	N13386-001
<b>Memory cover</b>	N13393-001
<b>External DVD-RW drive</b>	747080-001
<b>Thermal pad</b>	N13391-001

---

## 4 Removal and replacement procedures preliminary requirements

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

### Tools required

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

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

### Service considerations

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



**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, 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 25](#).
  - Avoid touching pins, leads, and circuitry. Handle electronic components as little as possible.
  - If you remove a component, place it in an electrostatic-safe container.
- 

## Generating static electricity

Follow these static electricity guidelines:

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

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

Event	Relative humidity		
	55%	40%	10%
Walking across carpet	7,500 V	15,000 V	35,000 V
Walking across vinyl floor	3,000 V	5,000 V	12,000 V
Motions of bench worker	400 V	800 V	6,000 V
Removing DIPs (dual in-line packages) from plastic tube	400 V	700 V	2,000 V
Removing DIPs from vinyl tray	2,000 V	4,000 V	11,500 V
Removing DIPs from polystyrene foam	3,500 V	5,000 V	14,500 V
Removing bubble pack from PCB (printed circuit board)	7,000 V	20,000 V	26,500 V
Packing PCBs in foam-lined box	5,000 V	11,000 V	21,000 V
Multiple electric components can be packaged together in plastic tubes, trays, or polystyrene foam.			



**NOTE:** As little as 700 V 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, a strap must be worn snug against bare skin. The ground cord must be connected and fit snugly into the banana plug connector on the grounding mat or workstation.
- 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**

Static shielding protection levels	
Method	Voltage
Antistatic plastic	1,500
Carbon-loaded plastic	7,500
Metallized laminate	15,000

## Grounding the work area

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

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

## Recommended materials and equipment

HP recommends certain materials and equipment to prevent static electricity:

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

- Conductive plastic bags
- Conductive plastic tubes
- Conductive tote boxes
- Opaque shielding bags
- Transparent metallized shielding bags
- Transparent shielding tubes

## Cleaning your computer

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

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

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

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


### Removing dirt and debris from your computer

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

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

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

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

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



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

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



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**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.

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

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

## Cleaning your computer with a disinfectant

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

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

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

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



---

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

---

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



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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

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on the product. Do not use aerosol sprays, solvents, abrasives, or cleaners containing hydrogen peroxide or bleach that might damage the finish.

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

## Caring for wood veneer (select products only)

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

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

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

## Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:


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

## Accessing support information

To find the HP support that you need, use this information.



**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. <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> </li> <li>3. Press <b>f10</b> to enter the BIOS setup.</li> <li>4. (On commercial products) Under the <b>Main</b> tab, select <b>BIOS event log</b>, and then select <b>View BIOS Event Log</b>.</li> </ol> <p>- or -</p> <p>(On consumer products) Under the <b>Main</b> tab, select <b>System Log</b>.</p> <p>Post-operating system failures are logged in the Event Viewer.</p> <ol style="list-style-type: none"> <li>1. Turn on the computer and allow the operating system to open.</li> <li>2. 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>Chrome:</b></p> <ol style="list-style-type: none"> <li>1. Go to <a href="https://support.google.com/chrome">support.google.com/chrome</a>.</li> <li>2. Search <code>collect Chrome device logs</code>.</li> </ol>
Technical bulletins	<p>To locate technical bulletins:</p> <ol style="list-style-type: none"> <li>1. Go to <a href="https://www.hp.com">www.hp.com</a>.</li> <li>2. Place the cursor over <b>Problem solving</b> to display more options.</li> <li>3. Select <b>Support &amp; Troubleshooting</b>.</li> <li>4. Type the serial number, product number, or product name to go to the product support page.</li> <li>5. Select <b>Advisories</b> to view technical bulletins.</li> </ol>
Repair professionals	<p>To locate repair professionals:</p> <ol style="list-style-type: none"> <li>1. Go to <a href="https://www.hp.com">www.hp.com</a>.</li> <li>2. Place the cursor over <b>Support resources</b> to display more options.</li> <li>3. Select <b>Authorized service providers</b>.</li> </ol>


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

Service consideration	Path to access information
Component and diagnosis information, failure detection, and required action	<p>To locate diagnosis information and actions:</p> <ol style="list-style-type: none"><li>1. Go to <a href="http://www.hp.com/go/techcenter/pcdiags">http://www.hp.com/go/techcenter/pcdiags</a>.</li><li>2. Select <b>Get Support</b>.</li><li>3. Near the bottom of the window, select <b>Notebook PCs</b>, and then select your location.</li></ol>

## 5 Removal and replacement procedures for authorized service provider parts


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

 **IMPORTANT:** 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.

### Component replacement procedures

To remove and replace computer components, use the procedures described in this section.

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

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

### Preparation for disassembly

To remove and replace computer components, use these procedures:

For initial safety procedures, see [Removal and replacement procedures preliminary requirements on page 23](#).

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

### Bottom cover

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

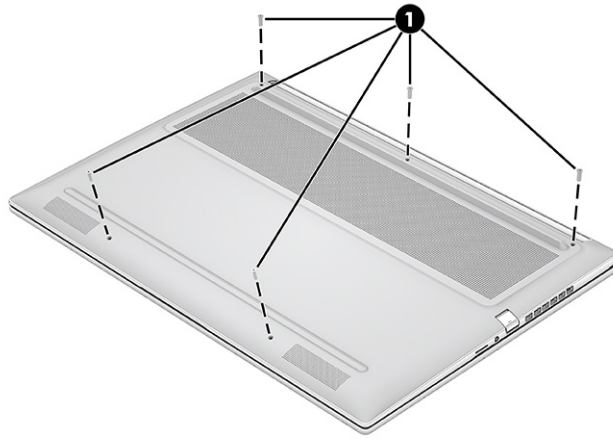
**Table 5-1** Bottom cover description and part number

Description	Spare part number
Bottom cover	
For use in 60 W models	N13383-001
For use in 80 W models	N13384-001

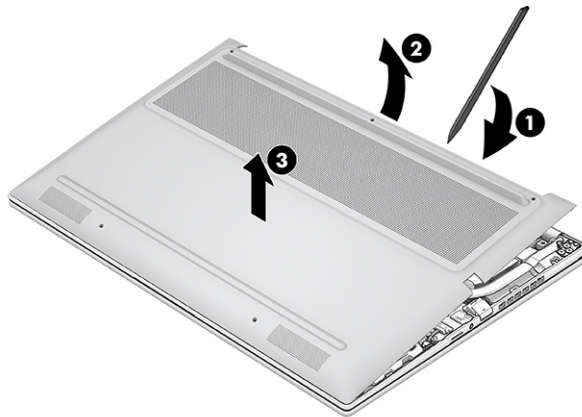
Before removing the bottom cover, prepare the computer for disassembly (see [Preparation for disassembly on page 32](#)).

Remove the bottom cover:

1. Remove the five Phillips M2.0 × 9.0 screws that secure the bottom cover to the computer.



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



To replace the bottom cover, reverse the removal procedures.

## Battery

To remove the battery, use this procedure and illustration.

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

Description	Spare part number
Battery (6 cell, 83 Whr, 3.59 Ah)	M48025-005

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

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

Before removing the battery, follow these steps:

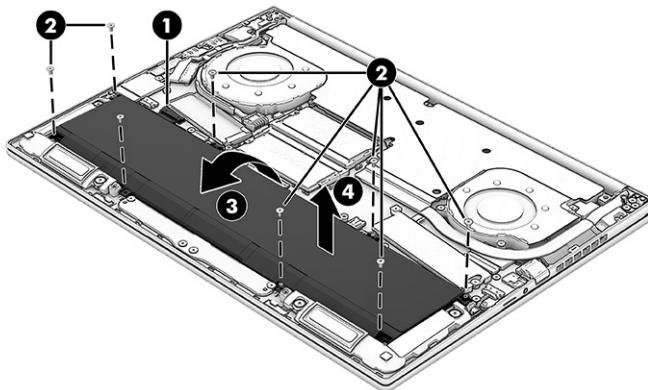
1. Prepare the computer for disassembly (see [Preparation for disassembly on page 32](#)).
2. Remove the bottom cover (see [Bottom cover on page 32](#)).

**⚠ 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. Disconnect the battery cable from the system board (1).
2. Remove the eight Phillips M2.0 × 4.5 screws (2) that secure the battery to the computer.
3. Rotate the battery upwards (3), and then remove the battery from the computer (4).



To insert the battery, reverse the removal procedures.

## Memory modules

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

**Table 5-3** Memory module descriptions and part numbers

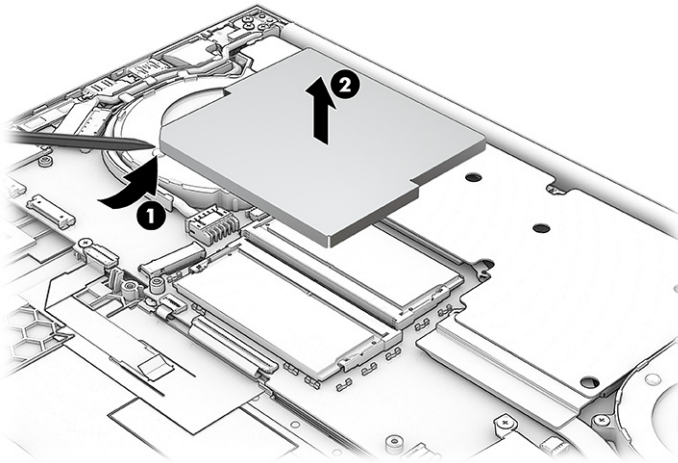
Description	Spare part number
16 GB, DDR4-4800	M97596-005
8 GB, DDR4-4800	M97595-005
Memory module cover	N13393-001

Before removing the memory, follow these steps:


1. Prepare the computer for disassembly (see [Preparation for disassembly on page 32](#)).
2. Remove the bottom cover (see [Bottom cover on page 32](#)).
3. Remove the battery (see [Battery on page 33](#)).

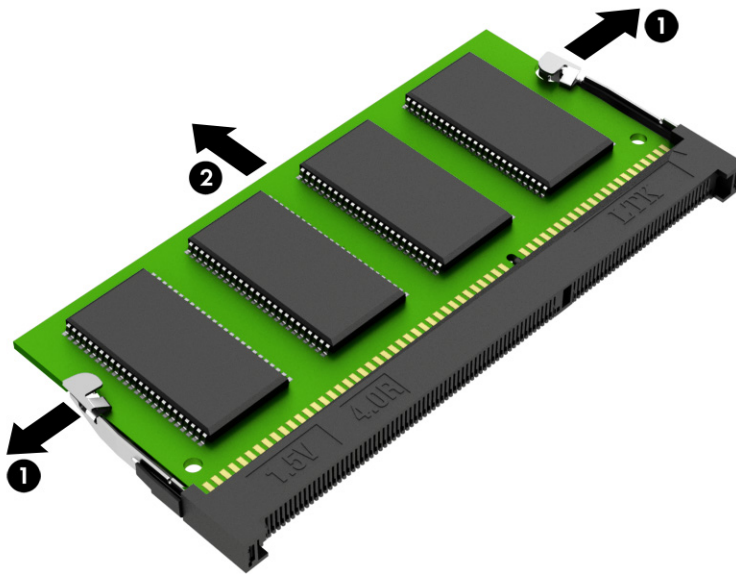
If you are replacing a memory module, remove the existing memory module:

1. Use a nonmarking, nonconductive tool to release the edges of the bottom cover from the system board (1), and then remove the memory module cover (2).



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

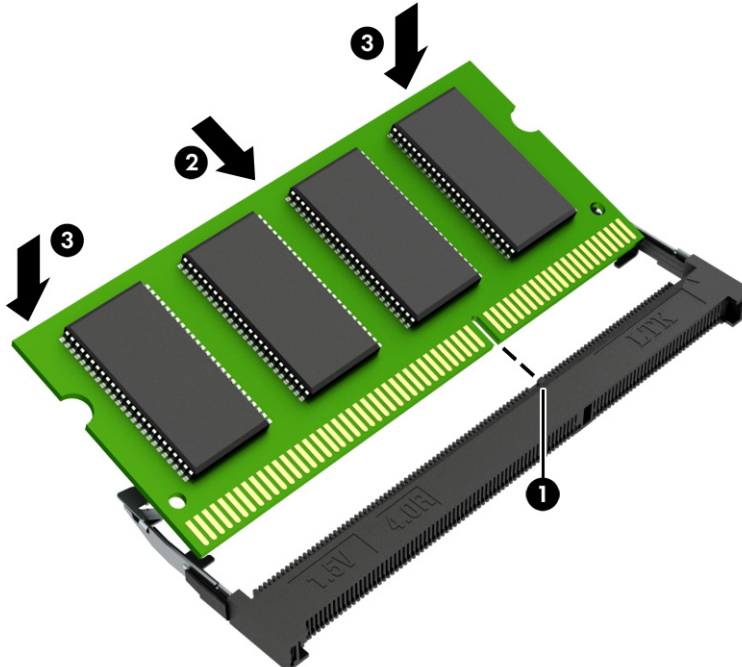
 **IMPORTANT:** To prevent damage to the memory module, hold the memory module by the edges only. Do not touch the components on the memory module.



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

To install a memory module:

1. Align the notched edge of the module with the tab in the slot (1), and then press the module into the slot at an angle until it is seated (2).
2. Press down on the module until the side retention clips snap into place (3).




## WLAN module

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

**Table 5-4 WLAN module descriptions and part numbers**

Description	Spare part number
Intel Wireless Wi-Fi6e AX 211 Wi-Fi + Bluetooth® 5, M.2 2230 (non-vPro)	M53366-005
Mediatek Tequila MT7921 Wi-Fi 6 + Bluetooth 5.2 M.2 2230 PCI-e + USB with WLAN	M53366-005
Transparent WLAN shield	N10779-001


 **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.

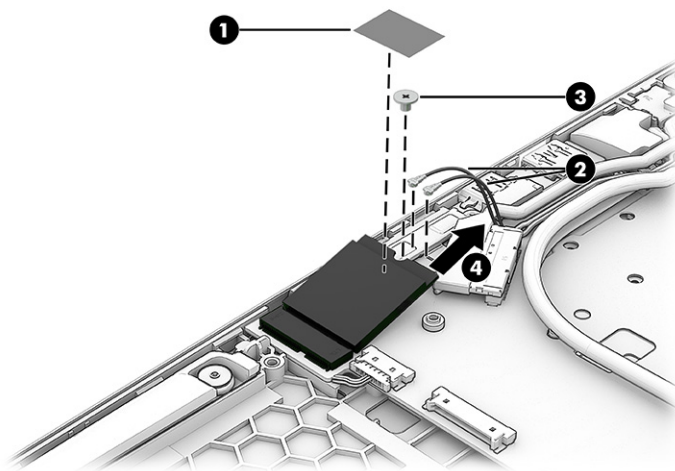
Before removing the WLAN module, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 32](#)).
2. Remove the bottom cover (see [Bottom cover on page 32](#)).
3. Remove the battery (see [Battery on page 33](#)).

Remove the WLAN module:

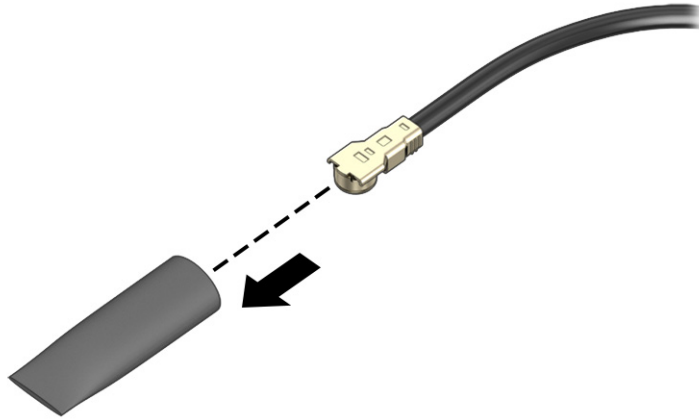
1. Remove the WLAN module shield (1).  
The WLAN module shield is available using spare part number N10779-001.
2. Carefully disconnect the two antenna cables from the module (2).
3. Remove the Phillips M2.0 × 2.5 screw (3) that secures the WLAN module to the system board.
4. Remove the WLAN module (4).

 **NOTE:** Models have either one or two WLAN antennas. On models with two antennas, the #1 white WLAN antenna cable connects to the WLAN module #1 Main terminal. The #2 black WLAN antenna cable connects to the WLAN module #1 Aux terminal.





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



Reverse this procedure to install the WLAN module.

## Solid-state drive

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

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

Description	Spare part number
2 T, M2 2280, PCIe-4 × 4, NVMe value, three-layer cell (TLC)	M52027-005
1 T, M2 2280, PCIe-4 × 4, NVMe value, TLC	M16560-005
512 GB, M2 2280 PCIe-4 × 4, NVMe value, TLC	M17436-005
Solid-state drive thermal pad	N13391-001

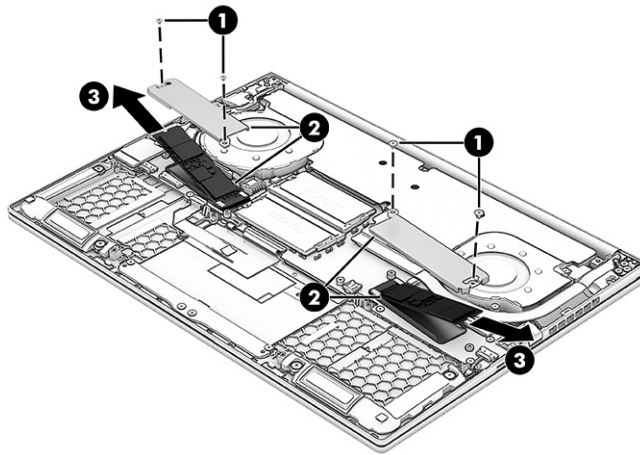
Before removing the solid-state drive, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 32](#)).
2. Remove the bottom cover (see [Bottom cover on page 32](#)).
3. Remove the battery (see [Battery on page 33](#)).

Remove the solid-state drive:

1. Remove the two Phillips M2.0 × 2.5 screws **(1)** that secure each solid-state drive covers to the computer.
2. Lift and remove each solid-state drive cover **(2)**.

3. Remove each solid-state drive (3).



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



**NOTE:** Solid-state drives are designed with a notch to prevent incorrect insertion. When installing, make sure the thermal pad is attached to the solid-state drive covers before replacement.

## Heat sink

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

**Table 5-6** Heat sink descriptions and part numbers

Description	Spare part number
Heat sink for use in 80 W models	N13390-001
Heat sink for use in 60 W models	N13389-001
Thermal gel	M81334-001
Thermal gel syringe	M81335-001
Thermal grease kit	M28157-001
Thermal grease syringe	M28158-001

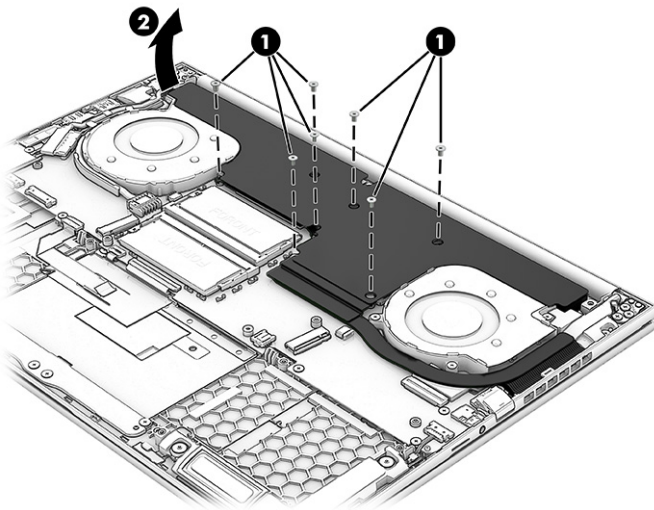
Before removing the heat sink, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 32](#)).
2. Remove the bottom cover (see [Bottom cover on page 32](#)).
3. Remove the battery (see [Battery on page 33](#)).

Remove the heat sink:

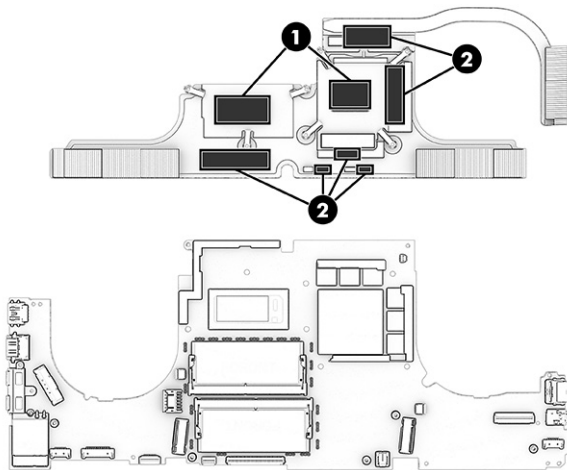
1. In the order indicated on the heat sink, remove the four Phillips M2.0 × 3.5 screws (1) that secure the heat sink to the computer.

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



3. Thoroughly clean the thermal material from the surfaces of the heat sink and the system board components each time the heat sink is removed. Replacement thermal material is included with the heat sink, system board and all other related parts. The following illustration shows the replacement thermal material locations.

Thermal grease (1) and thermal gel (2) are used on the system board components and on the heat sink areas that service them.



Reverse this procedure to install the heat sink.

## Fan assembly

To remove the fan, use this procedure and illustration.

**Table 5-7** Fan description and part number

Description	Spare part number
Fan CPU (60 W models)	N13387-001

**Table 5-7 Fan description and part number (continued)**

Description	Spare part number
Fan GPU (60 W models)	N13388-001
Fan CPU (80 W models)	N14836-001
Fan GPU (80 W models)	N14837-001

Before removing the fan, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 32](#)).
2. Remove the bottom cover (see [Bottom cover on page 32](#)).
3. Remove the battery (see [Battery on page 33](#)).
4. Remove the heat sink (see [Heat sink on page 39](#)).

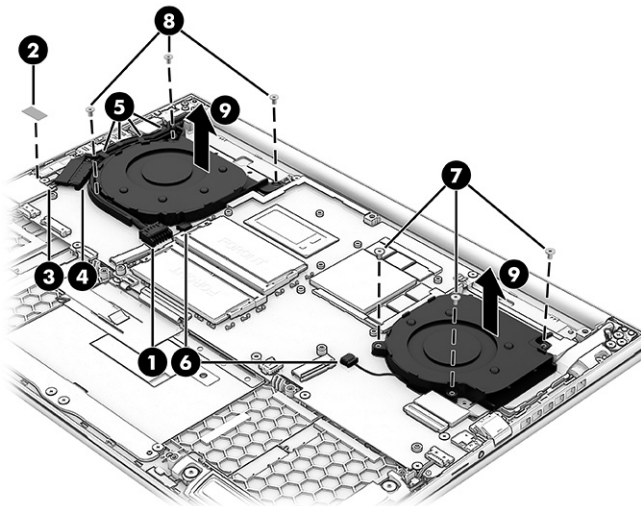
Remove the fan assembly:

1. Disconnect the power connector cable from the system board (1).
2. Remove the shield that secures the wireless antenna module (2) to the WLAN module terminals, and then disconnect the wireless antenna cables from the WLAN module terminals (3).



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

3. Disconnect the display panel cable (4), and then lift the cables from the right fan's retention clips (5).
4. Disconnect the left and right fan cables from the system board (6).
5. Remove the three Phillips M2.0 × 3.5 screws (7) that secure the left fan to the computer, and then remove the three Phillips M2.0 × 3.5 screws from the right fan (8).
6. Remove both fans from the computer (9).



Reverse this procedure to install the fan assembly.

## Display assembly panel

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

**Table 5-8** Display assembly panel description and part number

Description	Spare part number
16.0 in Wide Quad Ultra Extended Graphics Array (WQUXGA), BrightView, (3840×2400), organic light-emitting diode (OLED) bent panel, eDP 1.4 + PSR, 400 nits	N13381-001
16.0 in Wide Quad Extended Graphics Array (WQXGA) (2560×1600), antiglare, non-touchscreen, 400 nits	N13380-001
16.0 in WQXGA (2560×1600), antiglare, 400 nits	N13379-001

Before removing the display assembly panel, follow these steps:

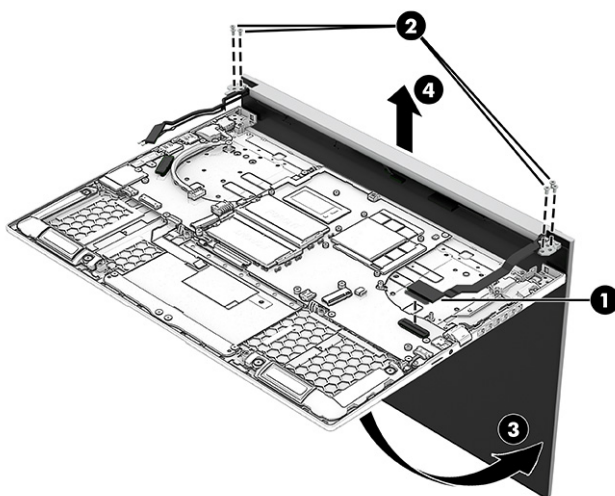
1. Prepare the computer for disassembly (see [Preparation for disassembly on page 32](#)).
2. Remove the bottom cover (see [Bottom cover on page 32](#)).
3. Remove the battery (see [Battery on page 33](#)).
4. Remove the heat sink (see [Heat sink on page 39](#)).
5. Remove the fans (see [Fan assembly on page 40](#)).

Remove the display assembly panel:



**NOTE:** The camera module cable and antenna cables should have already been disconnected before this process when the right-side fan was removed. See [Fan assembly on page 40](#).

1. Disconnect the display panel cable (1) from the system board.
2. Remove the six Phillips M2.0 × 4.5 screws that secure the display assembly to the top cover (2).
3. Swing the top edge of the display assembly (3) away from the top cover. (The display assembly hinges disengage from the top cover.)
4. Separate the top cover (4) from the display assembly.



Reverse this procedure to install the display panel.

## Power connector cable

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

**Table 5-9** Power connector cable description and part number

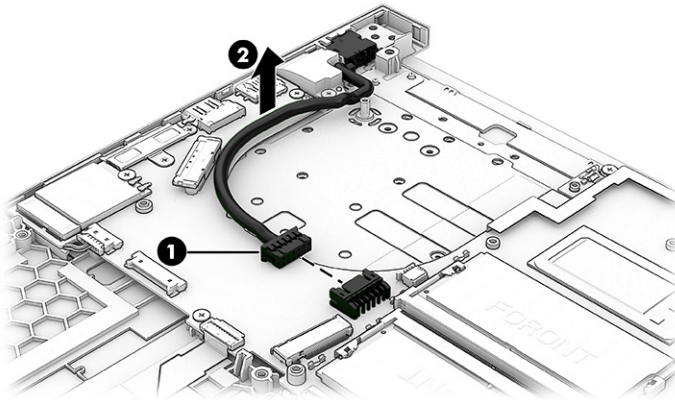
Description	Spare part number
Power connector cables	
For 150 W models	N13377-001
For 200 W models	N13378-001

Before removing the power connector cable, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 32](#)).
2. Remove the bottom cover (see [Bottom cover on page 32](#)).
3. Remove the battery (see [Battery on page 33](#)).
4. Remove the heat sink (see [Heat sink on page 39](#)).
5. Remove the fan assembly (see [Fan assembly on page 40](#)).
6. Remove the display panel assembly (see [Display assembly panel on page 42](#)).

Remove the power connector cable:

1. Make sure the power connector cable from the system board is disconnected (1).
2. Remove the power connector cable from the computer (2).



Reverse this procedure to install the power connector cable.

## System board

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

**Table 5-10 System board descriptions and part numbers**

Description	Spare part number
<b>System board</b> (includes processor):	
All system boards use the following part numbers:	
xxxxxx-001: Non-Windows operating system	
xxxxxx-601: Windows 10 operating system	
Intel Core i9-12900H, RTX 3060, 6 GB	N12357-601
Intel Core i9-12900H, RTX 3060, for OLED, 6 GB	N14910-601
Intel Core i7-12700H, RTX 3060, for OLED, 6 GB	N14909-601
Intel Core i7-12700H, Arc A370M, for OLED, 4 GB	N14908-601
Intel Core i7-12700H, RTX 3060, 6 GB	N12356-601
Intel Core i7-12700H, Arc A370M, 4 GB	N12355-601
Intel Core i5-12500H, Arc A370M, 4 GB	N12354-601

Before removing the system board, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 32](#)).
2. Remove the bottom cover (see [Bottom cover on page 32](#)).
3. Remove the battery (see [Battery on page 33](#)).
4. Remove the heat sink (see [Heat sink on page 39](#)).
5. Remove the fans (see [Fan assembly on page 40](#)).

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

- Memory modules (see [Memory modules on page 34](#)).
- WLAN module (see [WLAN module on page 36](#)).
- Display assembly panel (see [Display assembly panel on page 42](#)).

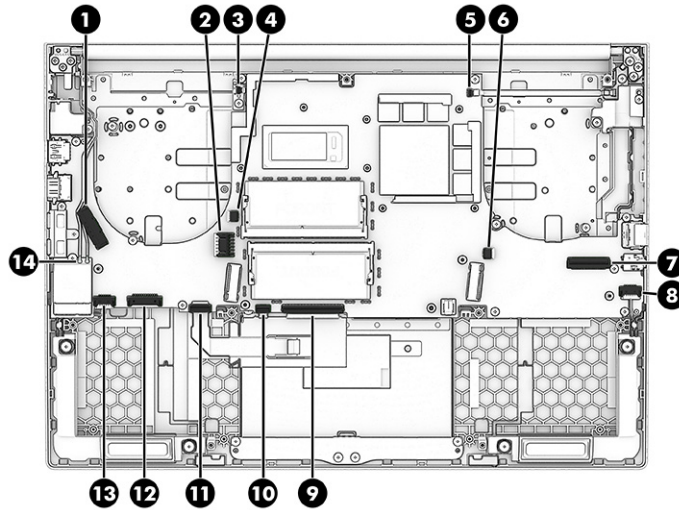


**IMPORTANT:** After replacing the system board or the display panel assembly, it is necessary to run the service tool to have the new ambient light sensor (ALS) data written to the system BIOS. Please search for the related advisory for more information.

Remove the system board:

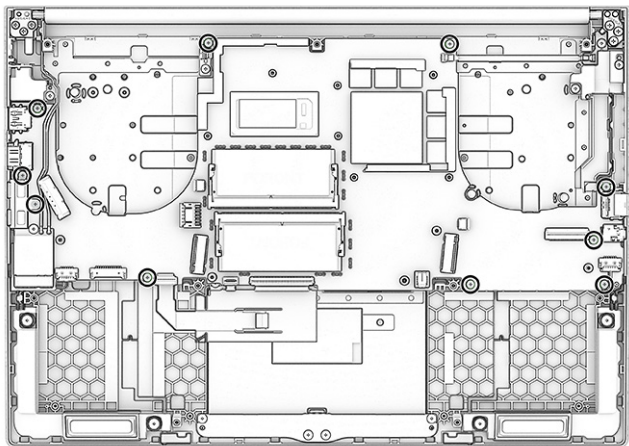
1. Identify the following cables, and make sure they have been disconnected from the system board:
  - Webcam cable (1)
  - Power connector cable (2)
  - IR board cable (ZIF) (3)

- Fan cable **(4)**
- Hall board cable (ZIF) **(5)**
- Fan cable **(6)**
- Display cable (ZIF) **(7)**
- Speaker cable **(8)**
- Keyboard cable (ZIF) **(9)**
- Backlight cable (ZIF ) **(10)**
- Touchpad cable (ZIF) **(11)**
- Battery cable **(12)**
- Speaker cable **(13)**
- WLAN cables **(14)**



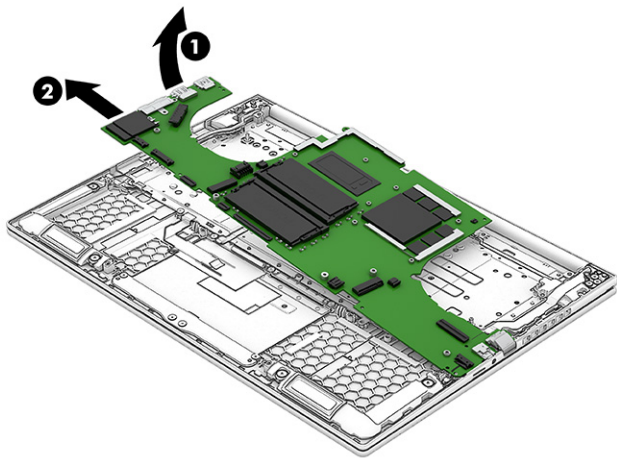


2. Remove the 10 Phillips M2.0 × 3.5 screws that secure the system board to the computer.



3. Lift the side of the system board upwards (1), and then pull the system board away from the connectors on the side of the computer to remove it (2).

 **NOTE:** Remove the IR board sensor cable by turning over the system board and removing it.



Reverse this procedure to install the system board.

IR board

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

Table 5-11 IR board description and part number

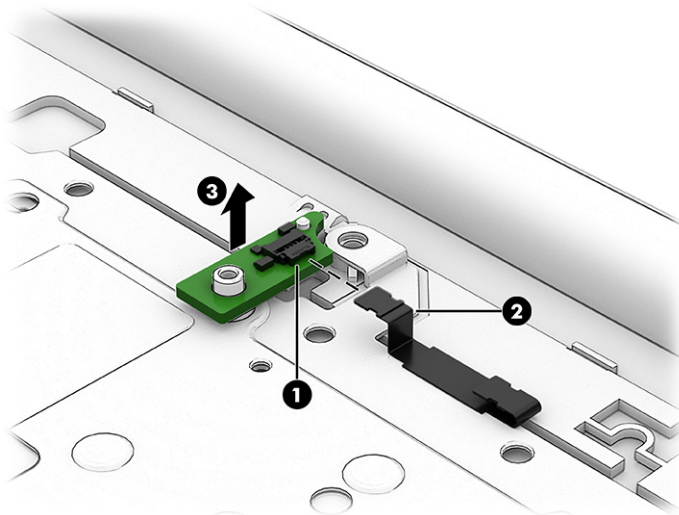
Description	Spare part number
IR sensor board	N13373-001
IR sensor board cable	N13374-001

Before removing the IR board, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 32](#)).
2. Remove the bottom cover (see [Bottom cover on page 32](#)).
3. Remove the battery (see [Battery on page 33](#)).
4. Remove the heat sink (see [Heat sink on page 39](#)).
5. Remove the fan assembly (see [Fan assembly on page 40](#)).
6. Remove the display panel assembly (see [Display assembly panel on page 42](#)).
7. Remove the system board (see [System board on page 43](#)).

Remove the IR board:

1. Open the IR board cable's ZIF connector (1) and then remove the IR board cable (2).
2. Remove the IR board (3).



Reverse this procedure to install the IR board.

## Speakers

To remove the speakers, use this procedure and illustration.

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

Description	Spare part number
Speaker Kit	N13394-001

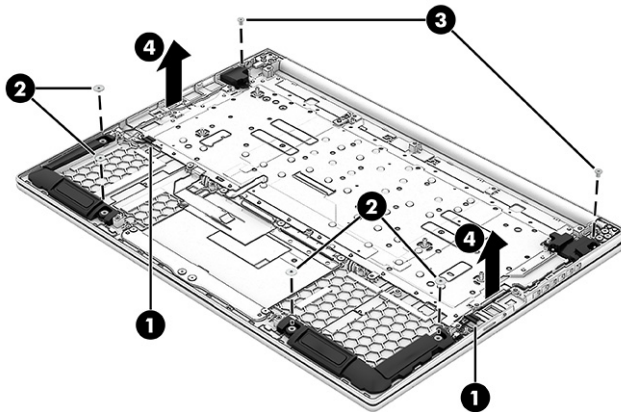
Before removing the speakers, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 32](#)).
2. Remove the bottom cover (see [Bottom cover on page 32](#)).
3. Remove the battery (see [Battery on page 33](#)).

4. Remove the heat sink (see [Heat sink on page 39](#)).
5. Remove the fans (see [Fan assembly on page 40](#)).
6. Remove the display assembly panel (see [Display assembly panel on page 42](#)).
7. Remove the system board (see [System board on page 43](#)).

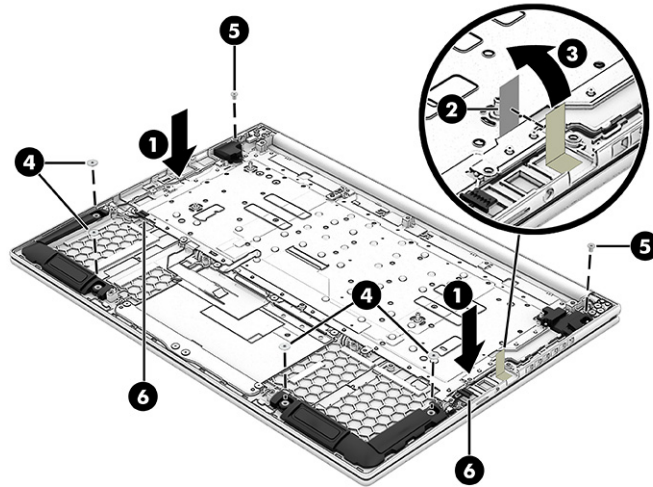
Remove the speakers:

1. Disconnect the speaker cables on each side of the computer (1).
2. Remove the four Phillips M2.0 × 1.88 screws (2) that secure the speakers to the computer.
3. Remove the two Phillips M2 × 3.5 screws (3) that secure each tweeter to the computer.
4. Remove the speakers from the computer (4).



5. To replace the speakers, insert the speaker wires into the retention clips (1). On the right side, pull the tab to release the conductive tape (2), and install the tape on the metal bracket (3). Install the four Phillips M2.0 × 1.88 screws (4) to secure the speakers to the computer. Install the two Phillips M2 × 3.5

screws that secure the tweeters to the computer (5), and then attach the left and right speaker cables to the system board (6).



## Hall sensor board

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

**Table 5-13** Hall sensor board description and part number

Description	Spare part number
Hall sensor board	N13372-001
Hall sensor board cable	N13376-001

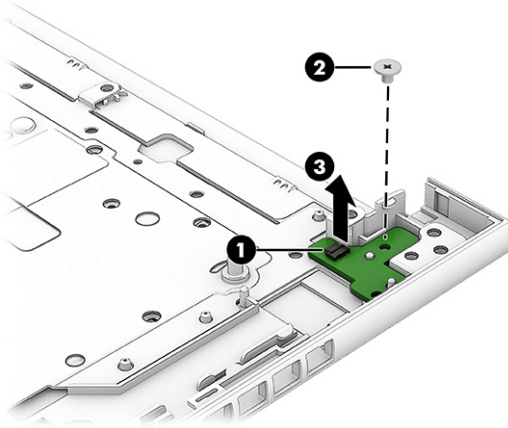
Before removing the hall sensor board, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 32](#)).
2. Remove the bottom cover (see [Bottom cover on page 32](#)).
3. Remove the battery (see [Battery on page 33](#)).
4. Remove the heat sink (see [Heat sink on page 39](#)).
5. Remove the display assembly panel (see [Display assembly panel on page 42](#)).
6. Remove the fan assembly (see [Fan assembly on page 40](#)).
7. Remove the system board (see [System board on page 43](#).)

Remove the hall sensor board:

1. Disconnect the hall sensor board cable (1).
2. Remove the Phillips M2.0 × 2.5 screw (2) that secures the hall sensor board to the computer.

3. Remove the hall sensor board (3).



Reverse this procedure to install the hall sensor board.

## Touchpad

To remove the touchpad, use this procedure and illustration.

**Table 5-14** Touchpad description and part number

Description	Spare part number
Touchpad	N13371-001
Touchpad cable	N13375-001

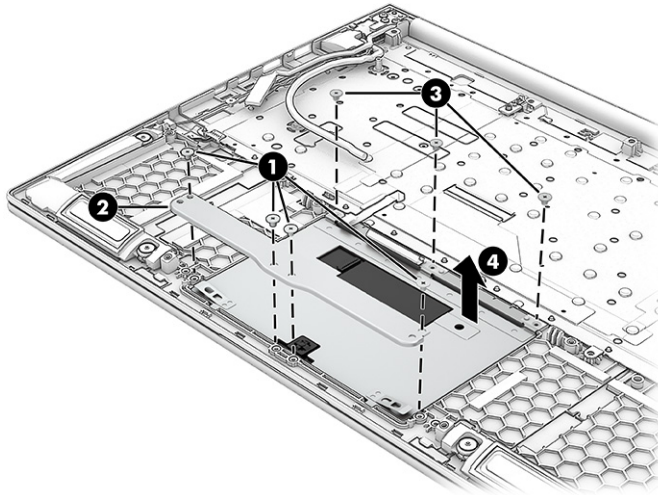
Before removing the touchpad, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 32](#)).
2. Remove the bottom cover (see [Bottom cover on page 32](#)).
3. Remove the battery (see [Battery on page 33](#)).
4. Remove the heat sink (see [Heat sink on page 39](#)).
5. Remove the fan (see [Fan assembly on page 40](#)).
6. Remove the display assembly panel ([Display assembly panel on page 42](#)).
7. Remove the system board (see [System board on page 43](#)).

Remove the touchpad:

1. Remove the four Phillips M2.0 × 2.5 screws (1) that secure the touchpad bracket to the computer and then remove the bracket (2).
2. Remove the three Phillips M2.0 × 2.5 screws (3) that secure the touchpad to the computer.

3. Remove the touchpad from the computer (4).



Reverse this procedure to install the touchpad.

## RJ-45 door

To remove the RJ-45 door, use this procedure and illustration.

**Table 5-15 RJ-45 door description and part number**

Description	Spare part number
For 60 W models	N13385-001
For 80 W models	N13386-001

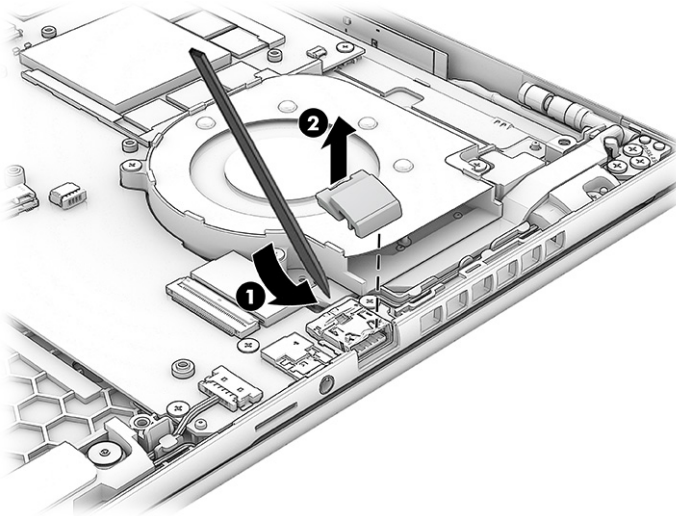
Before removing the RJ-45 door, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 32](#)).
2. Remove the bottom cover [Bottom cover on page 32](#)(see ).
3. Remove the battery (see [Battery on page 33](#)).
4. Remove the heat sink ([Heat sink on page 39](#)).
5. Remove the fans (see [Fan assembly on page 40](#)).
6. Remove the display assembly panel (see [Display assembly panel on page 42](#)).
7. Remove the system board (see [System board on page 43](#)).

Remove the RJ-45 door:

1. From the inside of the computer, insert a flat tool under the RJ-45 door (1).

2. Lift the door up to remove it (2).



Reverse this procedure to install the RJ-45 door.

## Display assembly

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

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

Before removing the display panel, follow these steps:



**NOTE:** Make sure the display assembly panel has been separated from the base enclosure. (See [Display assembly panel on page 42](#)).

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 32](#)).
2. Remove the bottom cover (see [Bottom cover on page 32](#)).
3. Remove the battery (see [Battery on page 33](#)).
4. Remove the heat sink (see [Heat sink on page 39](#)).
5. Remove the fans (see [Fan assembly on page 40](#)).
6. Remove the display assembly panel (see [Display assembly panel on page 42](#)).
1. If you need to remove the display panel:




**IMPORTANT:** After replacing the display panel assembly or the system board, it is necessary to run the service tool to have the new ambient light sensor (ALS) data written to the system BIOS. Please search for the related advisory for more information.



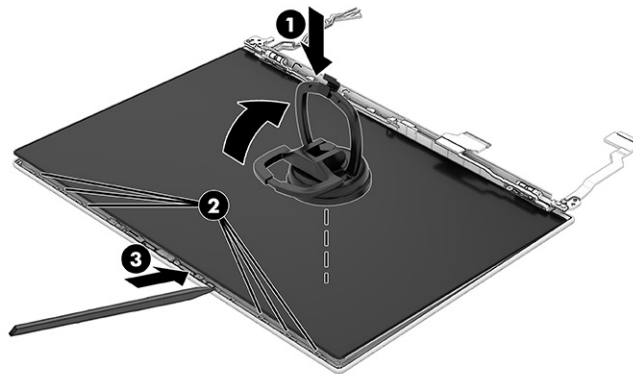
**IMPORTANT:** After replacing the display panel assembly, it is necessary to reload the calibration data. Refer to Service Advisory c06640672 for details on reloading the HP Display Control Panel Color Calibration Data Reload Process.



 **IMPORTANT:** After replacing the display panel assembly, it is necessary to update the Touch Panel Firmware. Navigate to Help and Support at <http://www.hp.com>. Select **Support**, and then select **Software & Drivers** to download and install the Touch Panel Firmware.

---

- a. Position a suction cup tool on the display panel glass, away from the camera module to avoid damage, and then rotate the locking lever down to lock the cup (1).
- b. Use the suction cup and a case utility tool to carefully separate the display panel assembly from the display back cover, making sure to disengage the hooks (2).
- c. Continue to create a gap so that the retention tape areas are accessible in the upper left (3) and right corners of the display panel assembly.



- d. The display panel is secured to the display enclosure with tape that is installed under the left and right sides of the panel. To remove the panel, use tweezers to grasp the end of the tape. While turning the tweezers, wrap the tape around the tweezers (1) as you continue to pull the tape out from behind the display panel (2). You must pull the tape multiple times before it is completely removed.
- e. Rotate the display panel over and remove it (3).

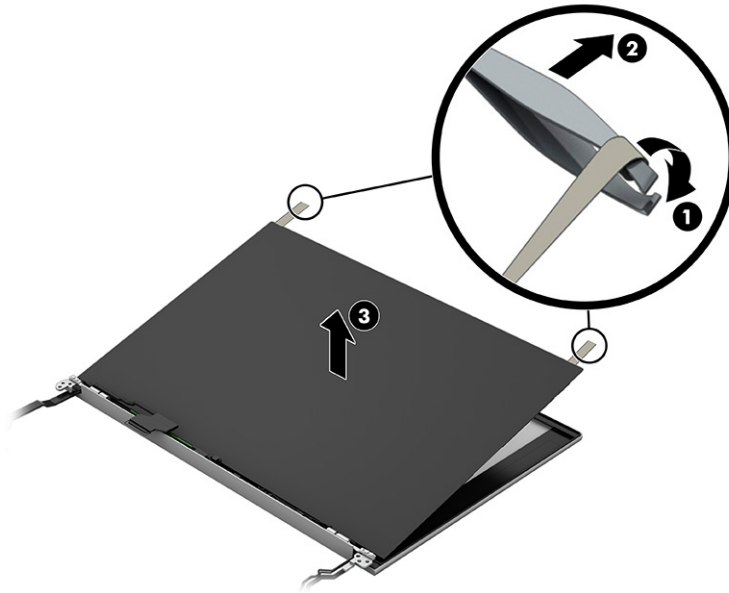
Display panels are available as the following spare part numbers:

N13381-001: 16.0 in, Wide Quad Ultra Extended Graphics Array (WQUXGA), (3840×2400), BrightView, organic light-emitting diode (OLED) bent panel, eDP 1.4 + PSR, 400 nits

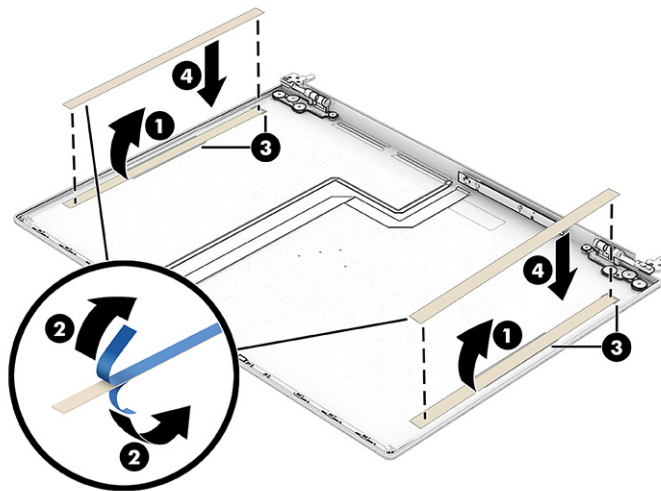
N13380-001: 16.0 in Wide Quad Extended Graphics Array (WQXGA) (2560×1600), antiglare, non-touchscreen, 400 nits

N13379-001: 16.0 in WQXGA (2560×1600), antiglare, 400 nits



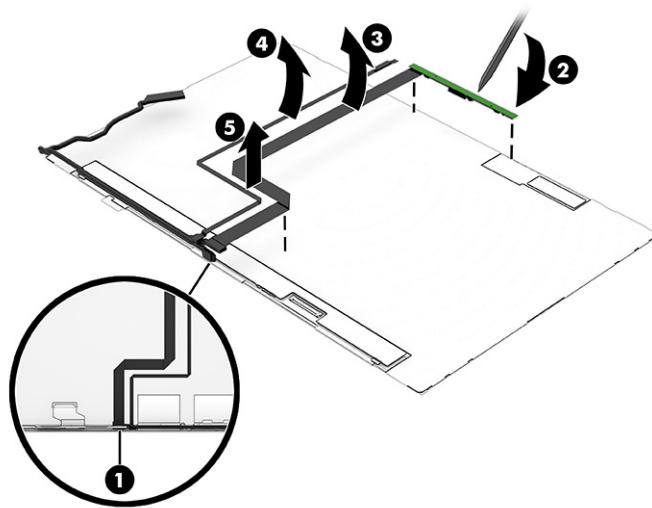


2. Before replacing the display panel assembly, thoroughly clean all adhesive residue from the display panel (1). Remove the protective backing from the new adhesive strips (2), align the strips to the correct locations on the panel (3), and then press down for 3 seconds to attach the strips to the display panel assembly (4).

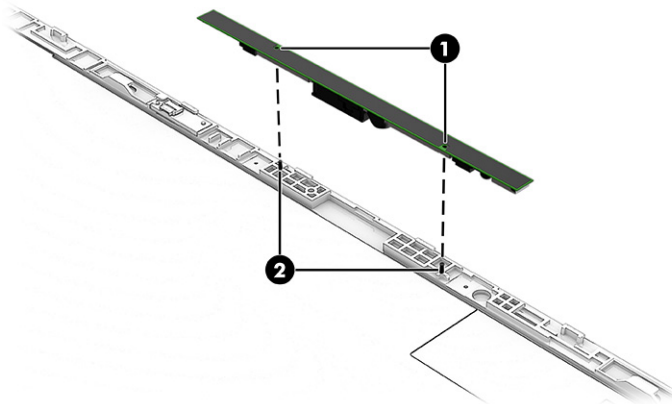


3. If you need to remove the camera module:
  - a. Disconnect the camera cable from the reverse ZIF connector (1).
  - b. Using a utility tool, lift up evenly across the module to remove the camera module (2), and then peel the module up from the display back cover (3).
  - c. Peel the IR board cable from the display back cover (4).
  - d. Remove the camera module and cable (5).

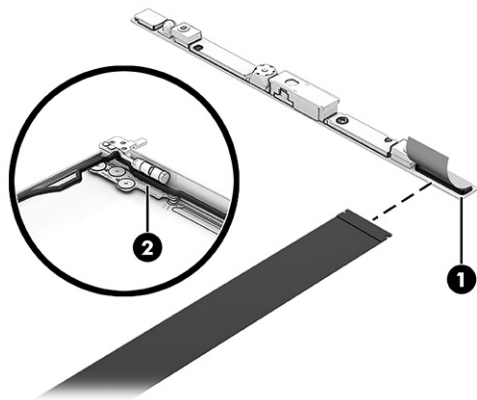
The camera module is available as spare part number N13382-001.



4. Before replacing the camera module, thoroughly clean all gasket adhesive residue from the display panel assembly before installing a new gasket. Remove the protective backing from the new gasket, align the holes (1) on the gasket with the pins (2) on the display panel assembly, and then attach the gasket to the display panel assembly.



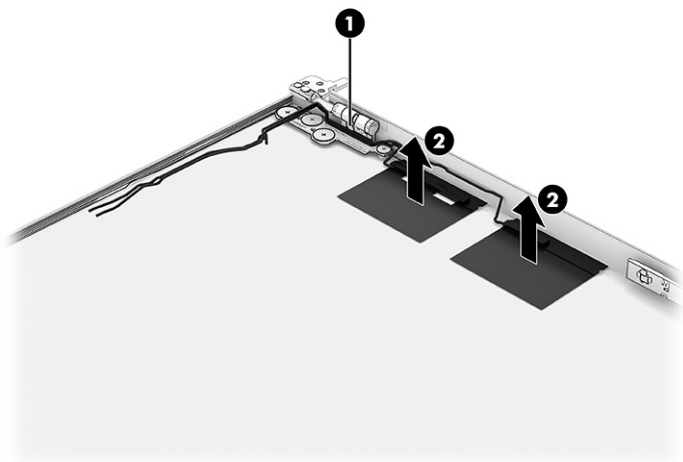
5. If you need to remove the display panel cable, peel the tape covering, and release the cable from the reverse ZIF connector (1), and then pull the cable sideways along the hinge to remove the cable (2).



6. If you need to remove the antenna cables, remove the cables from the clips at the bottom of the cover (1), and then peel to remove the antennas off the inside of the display back cover (2).

Antenna cables are available as spare part number N13367-001.

Display back covers are available as spare part number N13368-001 and N13368-001 for models with OLED.



Reverse this procedure to reassemble and replace the display assembly.

## Keyboard with top cover

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

**Table 5-16** Keyboard with top cover descriptions and part numbers

Description	Spare part number
Keyboard with top cover with backlight, in natural silver finish	N12772-001

**Table 5-17 Spare part country codes**

For use in country or region	Spare part number	For use in country or region	Spare part number	For use in country or region	Spare part number
Belgium	-A41	Iceland	-DD1	Saudi Arabia	-171
Brazil	-201	India	-D61	Slovenia	-BA1
Bulgaria	-261	Israel	-BB1	South Korea	-AD1
Chile	-161	Italy	-061	Spain	-071
Czech Republic/Slovakia	-FL1	Japan	-291	Switzerland	-BG1
Denmark, Finland, and Norway	-DH1	Kazakhstan	-DF1	Taiwan	-AB1
French Canada	-DB1	The Netherlands	-B31	Thailand	-281
France	-051	Northern Africa	-FP1	Turkey	-141
Germany	-041	Portugal	-131	Ukraine	-BD1
Greece	-151	Romania	-271	United Kingdom	-031
Hungary	-211	Russia	-251	United States	-001

## 6 Using Setup Utility (BIOS)

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



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

### Starting Setup Utility (BIOS)

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



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

- Turn on or restart the computer and quickly press **F10**.

– or –

Turn on or restart the computer, quickly press **Esc**, and then press **F10** when the Start menu is displayed.

### Updating Setup Utility (BIOS)

Updated versions of Setup Utility (BIOS) might be available on the HP website. Most BIOS updates on the HP website are packaged in compressed files called *SoftPaqs*. Some download packages contain a file named *Readme.txt*, which contains information regarding installing and troubleshooting the file.

### Determining the BIOS version

To decide whether you need to update Setup Utility (BIOS), first determine the BIOS version on your computer.

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

- HP Support Assistant
  1. Select the **Search** icon in the taskbar, type `support` in the search box, and then select the **HP Support Assistant** app.

– or –

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 58](#)).
  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 59](#).

## Preparing for a BIOS update

Be sure to follow all prerequisites before downloading and installing a BIOS update.



**IMPORTANT:** To reduce the risk of damage to the computer or an unsuccessful installation, download and install a BIOS update only when the computer is connected to reliable external power using the AC adapter. Do not download or install a BIOS update while the computer is running on battery power, docked in an optional docking device, or connected to an optional power source. During the download and installation, follow these instructions:

- Do not disconnect power from the computer by unplugging the power cord from the AC outlet.
- Do not shut down the computer or initiate Sleep.
- Do not insert, remove, connect, or disconnect any device, cable, or cord.



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

## Downloading a BIOS update

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

1. Select the **Search** icon in the taskbar, type `support` in the search box, and then select the **HP Support Assistant** app.

– or –

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.

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

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

## Using Computer Setup

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



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

To start Computer Setup, turn on or restart the computer, and when the HP logo appears, press **F10** to enter Computer Setup.

## Navigating and selecting in Computer Setup

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

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

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

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



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

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



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

Your changes go into effect when the computer restarts.

## Restoring factory settings in Computer Setup

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




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



1. Start Computer Setup. See [Using Computer Setup on page 61](#).
2. Select **Main**, select **Apply Factory Defaults and Exit**, and then select **Yes**.

---


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

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

---

Your changes go into effect when the computer restarts.

---

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

---

## Updating the BIOS

Updated versions of the BIOS might be available on the HP website. Most BIOS updates on the HP website are packaged in compressed files called *SoftPaqs*.

Some download packages contain a file named *Readme.txt*, which contains information regarding installing and troubleshooting the file.

### Determining the BIOS version

To decide whether you need to update Computer Setup (BIOS), first determine the BIOS version on your computer.

If you are already in Windows, you can access BIOS version information (also known as *ROM date* and *System BIOS*) by pressing **fn+esc** (select products only). Or you can use Computer Setup.

1. Start Computer Setup. See [Using Computer Setup on page 61](#).
2. Select **Main**, and then select **System Information**.
3. To exit Computer Setup menus without saving your changes, select **Main**, select **Ignore Changes and Exit**, and then select **Yes**.

---

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


---

To check for later BIOS versions, see [Preparing for a BIOS update on page 62](#).

### Preparing for a BIOS update

Be sure to follow all prerequisites before downloading and installing a BIOS update.

---

 **IMPORTANT:** To reduce the risk of damage to the computer or an unsuccessful installation, download and install a BIOS update only when the computer is connected to reliable external power using the AC adapter. Do not download or install a BIOS update while the computer is running on battery power, docked in an optional docking device, or connected to an optional power source. During the download and installation, follow these instructions:

Do not disconnect power on the computer by unplugging the power cord from the AC outlet.

Do not shut down the computer or initiate Sleep.

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

---

## Downloading a BIOS update

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

1. Select the **Search** icon in the taskbar, type `support` in the search box, and then select the **HP Support Assistant** app.  
– or –  
Select the question mark icon (select products only) in the taskbar.
2. Select **Updates**, and then select **Check for updates and messages**.
3. Follow the on-screen instructions.
4. At the download area, follow these steps:
  - a. Identify the most recent BIOS update and compare it to the BIOS version currently installed on your computer. Make a note of the date, name, or other identifier. You might need this information to locate the update later, after it has been downloaded to your hard drive.
  - b. Follow the on-screen instructions to download your selection to the hard drive.  
  
Make a note of the path to the location on your hard drive where the BIOS update is downloaded. You will need to access this path when you are ready to install the update.



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

## Installing a BIOS update

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

1. 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.

## Changing the boot order using the f9 prompt


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

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

## TPM BIOS settings (select products only)

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

---

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

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

---

To access TPM settings in Computer Setup:

1. Start Computer Setup. See [Using Computer Setup on page 61](#).
2. Select **Security**, select **TPM Embedded Security**, and then follow the on-screen instructions.

## Using HP Sure Start (select products only)


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


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

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

## 8 Backing up, restoring, and recovering

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

 **IMPORTANT:** If you will be performing recovery procedures on a tablet, the tablet battery must be at least 70% charged before you start the recovery process.


 **IMPORTANT:** For a tablet with a detachable keyboard, connect the tablet to the keyboard base before beginning any recovery process.


### Backing up information and creating recovery media

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

#### Using Windows tools for backing up

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

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


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


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

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

For details:

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

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

 **IMPORTANT:** HP recommends that you follow the [Restoring and recovery methods on page 66](#) to restore your computer before you obtain and use the HP recovery discs. Using a recent backup can return your machine to a working state sooner than using the HP recovery discs. After the system is restored, reinstalling all the operating system software released since your initial purchase can be a lengthy process.

### Restoring and recovering your system

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

HP recommends that you attempt to restore your system using the [Restoring and recovery methods on page 66](#).

## Creating a system restore

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

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

## Restoring and recovery methods

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

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



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

3. Recover using HP Recovery media. For more information, see [Recovering using HP Recovery media on page 66](#).

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 HP Recovery media

You can use HP Recovery media to recover the operating system and drivers that were installed at the factory. On select products, it can be created on a bootable USB flash drive using the HP Cloud Recovery Download Tool.

For details, see [Using the HP Cloud Recovery Download Tool to create recovery media \(select products only\) on page 65](#).



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

To recover your system:

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



**NOTE:** HP recommends that you follow the [Restoring and recovery methods on page 66](#) to restore your computer before you obtain and use the HP recovery discs. Using a recent backup can return your machine to a working state sooner than using the HP recovery discs. After the system is restored, reinstalling all the operating system software released since your initial purchase can be a lengthy process.

## Changing the computer boot order

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



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

To change the boot order:

1. Insert the HP Recovery media.
2. Access the system **Startup** menu.
  - For computers or tablets with keyboards attached, turn on or restart the computer or tablet, quickly press **esc**, and then press **f9** for boot options.
  - For tablets without keyboards, turn on or restart the tablet, quickly press and hold the volume up button, and then select **f9**.

– or –

Turn on or restart the tablet, quickly press and hold the volume down button, and then select **f9**.
3. Select the optical drive or USB flash drive from which you want to boot, and then follow the on-screen instructions.

## Using HP Sure Recover (select products only)

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

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

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

To access the latest documentation for HP Sure Recover, go to <http://www.hp.com/support>. Follow the on-screen instructions to find your product and locate your documentation.

---

## 9 Using HP PC Hardware Diagnostics

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

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

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

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

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

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

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

### Accessing HP PC Hardware Diagnostics Windows

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

#### Accessing HP PC Hardware Diagnostics Windows from HP Support Assistant

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

1. Select the **Search** icon in the taskbar, type `support` in the search box, and then select the **HP Support Assistant** app.  
– or –  
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 **Download HP Diagnostics Windows**, and then select the specific Windows diagnostics version to download to your computer or a USB flash drive.

The tool downloads to the selected location.

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

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

1. Select the Microsoft Store app on your desktop or 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.



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

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1. Go to <http://www.hp.com/support>.
2. Select **Software and Drivers**, select your type of product, and then enter the product name or number in the search box that is displayed.
3. In the **Diagnostics** section, select **Download**, and then follow the on-screen instructions to select the specific Windows diagnostics version to be downloaded to your computer or USB flash drive.

The tool downloads to the selected location.

## Installing HP PC Hardware Diagnostics Windows

To install HP PC Hardware Diagnostics Windows, navigate to the folder on your computer or the USB flash drive where the .exe file downloaded, double-click the .exe file, and then follow the on-screen instructions.

## Using HP PC Hardware Diagnostics UEFI

HP PC Hardware Diagnostics UEFI (Unified Extensible Firmware Interface) allows you to run diagnostic tests to determine whether the computer hardware is functioning properly. The tool runs outside the operating system so that it can isolate hardware failures from issues that are caused by the operating system or other software components.



**NOTE:** For 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 71](#).

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

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

When HP PC Hardware Diagnostics UEFI detects a failure that requires hardware replacement, a 24-digit failure ID code is generated.

For assistance in solving the problem:

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

– or –

Contact support, and provide the failure ID code.



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



**NOTE:** If you need to stop a diagnostic test, press [esc](#).

## Starting HP PC Hardware Diagnostics UEFI

To start HP PC Hardware Diagnostics UEFI, follow this procedure.

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

2. Press **f2**.

The BIOS searches three places for the diagnostic tools, in the following order:

- a. Connected USB flash drive



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

- 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.

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

Downloading HP PC Hardware Diagnostics UEFI to a USB flash drive can be useful in some situations.

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



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

## Downloading the latest HP PC Hardware Diagnostics UEFI version

To download the latest HP PC Hardware Diagnostics UEFI version to a USB flash drive, follow this procedure.

1. Go to <http://www.hp.com/go/techcenter/pcdiags>. The HP PC Diagnostics home page is displayed.
2. Select **Download HP Diagnostics UEFI**, and then select **Run**.

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

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



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

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

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

Remote HP PC Hardware Diagnostics UEFI is a firmware (BIOS) feature that downloads HP PC Hardware Diagnostics UEFI to your computer. It can then execute the diagnostics on your computer, and it might upload results to a preconfigured server.

For more information about Remote HP PC Hardware Diagnostics UEFI, go to <http://www.hp.com/go/techcenter/pcdiags>, and then select **Find out more**.

### Downloading Remote HP PC Hardware Diagnostics UEFI

HP Remote PC Hardware Diagnostics UEFI is also available as a SoftPaq that you can download to a server.

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

You can download the latest HP PC Hardware Diagnostics UEFI version to a USB flash drive.

1. Go to <http://www.hp.com/go/techcenter/pcdiags>. The HP PC Diagnostics home page is displayed.
2. Select **Download Remote Diagnostics**, and then select **Run**.

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

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



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

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

### Customizing Remote HP PC Hardware Diagnostics UEFI settings

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

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

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

1. Turn on or restart the computer, and when the HP logo appears, press **f10** to enter Computer Setup.

2. Select **Advanced**, and then select **Settings**.
3. Make your customization selections.
4. Select **Exit**, then select **Save Changes and Exit** to save your settings.

Your changes take effect when the computer restarts.

# 10 Specifications

This chapter provides specifications for your computer 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	357.5 mm	14.07 in
Depth	252.4 mm	9.94 in
Height (front to back)	19.9 mm	0.78 in
<b>Weight</b>		
	2.68 kg	5.91 lb
<b>Input power</b>		
Operating voltage and current	19.5 V dc @ 2.31 A – 45 W	
	19.5 V dc @ 3.33 A – 65 W	
	19.5 V dc @ 4.62 A – 90 W	
	19.5 V dc @ 7.70 A – 150 W	
	19.5 V dc @ 10.3 A – 200 W	
<b>Temperature</b>		
Operating	5°C to 35°C	41°F to 95°F
Nonoperating	–20°C to 60°C	–4°F to 140°F
<b>Relative humidity</b> (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
<b>Maximum altitude</b> (unpressurized)		
Operating	–15 m to 3,048 m	–50 ft to 10,000 ft
Nonoperating	–15 m to 12,192 m	–50 ft to 40,000 ft
<b>NOTE:</b> Applicable product safety standards specify thermal limits for plastic surfaces. The device operates well within this range of temperatures.		

## 40.64 cm (16 in) display specifications

This section provides specifications for your display.

**Table 10-2 Display specifications**

	<b>Metric</b>	<b>U.S.</b>
Active diagonal size	<b>40.64 cm</b>	16 in
Resolution	2560 × 1600 (WQXGA) 3840 × 2400 (WQUXGA)	
Surface treatment	Antiglare (FHD, UHD panels) Brightview (OLED panel)	
Brightness	400 nits	
Viewing angle	UWVA	
Backlight	WLED AMOLED	
Display panel interface	eDP	

## Solid-state drive specifications

This section provides specifications for your solid-state drives.

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

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

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

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

# Solid-state drive specifications (SATA-3)

This section provides specifications for your solid-state drive.

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

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

# 11 Power cord set requirements

This chapter provides power cord requirements for countries and regions.

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

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

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

## Requirements for all countries

These power cord requirements are applicable to all countries and regions.

- The length of the power cord set must be at least **1.0 m** (3.3 ft) and no more than **2.0 m** (6.5 ft).
- All power cord sets must be approved by an acceptable accredited agency responsible for evaluation in the country or region where the power cord set will be used.
- The power cord sets must have a minimum current capacity of 10 A and a nominal voltage rating of 125 V ac or 250 V ac, as required by the power system of each country or region.
- The appliance coupler must meet the mechanical configuration of an EN 60 320/IEC 320 Standard Sheet C13 connector for mating with the appliance inlet on the back of the computer.

## Requirements for specific countries and regions

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

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

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



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

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

1. The flexible cord must be Type H05VV-F, three-conductor, 0.75 mm<sup>2</sup> conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.
2. The flexible cord must be Type SVT/SJT or equivalent, No. 18 AWG, three-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V ac) or NEMA 6-15P (15 A, 250 V ac) configuration. CSA or C-UL mark. UL file number must be on each element.
3. The appliance coupler, flexible cord, and wall plug must bear a T mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCTF, three-conductor, 0.75 mm<sup>2</sup> or 1.25 mm<sup>2</sup> conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V ac) configuration.
4. The flexible cord must be Type RVV, three-conductor, 0.75 mm<sup>2</sup> conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the CCC certification mark.
5. The flexible cord must be Type H05VV-F three-conductor, 0.75 mm<sup>2</sup> conductor size. KTL logo and individual approval number must be on each element. Approval number and logo must be printed on a flag label.
6. The flexible cord must be Type HVCTF three-conductor, 1.25 mm<sup>2</sup> conductor size. Power cord set fittings (appliance coupler, cable, and wall plug) must bear the BSMI certification mark.
7. For 127 V ac, the flexible cord must be Type SVT or SJT 3-conductor, 18 AWG, with plug NEMA 5-15P (15 A, 125 V ac), with UL and CSA or C-UL marks. For 240 V ac, the flexible cord must be Type H05VV-F three-conductor, 0.75 mm<sup>2</sup> or 1.00 mm<sup>2</sup> conductor size, with plug BS 1363/A with BSI or ASTA marks.

---

## 12 Recycling

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

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

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# Index

## A

- AC adapter and battery light, identifying 5
- AC adapters, spare part numbers 21
- action key, identifying 12
- action keys
  - decrease screen brightness 12
  - HP Hubs Launcher app 13
  - identifying 12
  - increase screen brightness 13
  - keyboard backlight 13
  - mute microphone 13
  - mute volume 13
  - next track 13
  - pause 13
  - play 13
  - previous track 13
  - speaker volume 13
  - using 12
  - volume
    - mute 13
- ambient light sensor, identifying 7
- audio
  - adjusting volume 13
- audio-out (headphone)/audio-in (microphone) combo jack, identifying 6
- audio, product description 2

## B

- backup, creating 65
- backups 65
- battery
  - illustrated 18
  - spare part number 18
- BIOS
  - determining version 58, 62
  - downloading an update 59, 62, 63
  - starting the Setup Utility 58
  - updating 58, 62
- Bluetooth label 14
- boot order
  - changing using the f9 prompt 63
- boot order, changing 67

- bottom components 14
- bottom cover
  - illustrated 18
  - removal 32
  - spare part number 18, 32
- buttons
  - left touchpad 8, 9
  - power 11, 12
  - right touchpad 8, 9

## C

- cables
  - spare part numbers 20
- camera
  - identifying 7
- camera light, identifying 7
- camera privacy key, identifying 12
- camera privacy light, identifying 9
- caps lock light 9
- caring for your computer 27
- cautions
  - electrostatic discharge 23, 24
- cleaning your computer 27
  - caring for wood veneer 29
  - disinfecting 28
  - HP Easy Clean 27
  - removing dirt and debris 27
- components
  - bottom 14
  - display 6
  - keyboard area 7
  - left side 5
  - lights 9
  - right side 4
  - touchpad 8
- computer major components 17
- Computer Setup
  - navigating and selecting 61
  - restoring factory settings 61
  - starting 61
- computer specifications 74
- connectors
  - power 5
- control zone 8

## D

- decrease screen brightness action key 12
- display
  - specifications 74
- display assembly
  - subcomponents 19
- display assembly panel
  - removal 42
  - spare part numbers 42
- display back cover
  - illustrated 19
  - spare part number 19
- display bezel
  - illustrated 19
  - spare part number 19
- display cable
  - illustrated 19
  - spare part number 19
- display components 6
- display panel
  - illustrated 19
  - product description 1
  - spare part number 19

## E

- electrostatic discharge (ESD) 23, 24
  - preventing damage 23-25
- esc key, identifying 11

## F

- fan
  - illustrated 18
  - removal 40
  - spare part number 18, 40
- fn key, identifying 11

## G

- graphics, product description 1
- grounding methods 23-25
- guidelines
  - packaging 23, 29
  - transporting 23, 29
  - workstation 23

## H

- hall sensor board
  - removal 49
- hall sensor board
  - spare part numbers 49
- hard drive
  - product description 1
  - specifications 74
- hardware, locating 4
- HDMI port
  - identifying 5
- heat sink
  - illustrated 18
  - removal 39
  - spare part number 18
  - spare part numbers 39
- hinge
  - illustrated 19
  - spare part number 19
- hinge cover
  - illustrated 19
  - spare part number 19
- HP Hubs Launcher app key,
  - identifying 13
- HP PC Hardware Diagnostics UEFI
  - downloading 71
  - failure ID code 70
  - starting 70
  - using 70
- HP PC Hardware Diagnostics Windows
  - accessing 68, 69
  - downloading 69
  - failure ID code 68
  - installing 70
  - using 68
- HP Recovery media
  - recovery 66
- HP Sure Recover 67

## I

- illustrated parts catalog 17
- increase screen brightness action key 13
- internal microphones, identifying 7
- IR board
  - removal 46
  - spare part numbers 46

## J

- jacks
  - audio-out (headphone)/audio-in (microphone) 6

## K

- keyboard
  - product description 2
- keyboard backlight action key 13
- keyboard with top cover
  - spare part numbers 56
- keys
  - action 12
  - camera privacy 12
  - esc 11
  - fn 11
  - Windows 12

## L

- labels
  - Bluetooth 14
  - regulatory 14
  - serial number 14
  - service 14
  - wireless certification 14
  - WLAN 14
- left control zone, identifying 8
- left side components 5
- lights
  - AC adapter and battery 5
  - camera 7
  - camera privacy 9
  - caps lock 9
  - microphone mute 9
  - mute 9
  - power 10
  - touchpad 8
- low blue light mode 6

## M

- media card reader, product description 2
- memory module
  - product description 1
- memory modules
  - removal 34
  - spare part numbers 34
- microphone
  - product description 2
- microphone mute light, identifying 9
- model name 1
- mute light, identifying 9
- mute microphone action key 13
- mute volume action key 13

## N

- next track action key 13

## O

- operating system, product description 3

## P

- packaging guidelines 23, 29
- pause action key 13
- play action key 13
- pointing device, product description 2
- ports
  - HDMI 5
  - product description 2
  - USB SuperSpeed 6
  - USB SuperSpeed port with HP Sleep and Charge 5
  - USB Type-C Thunderbolt port with HP Sleep and Charge and DisplayPort output 4
- power button, identifying 11, 12
- power connector
  - identifying 5
- power connector cable
  - removal 43
  - spare part numbers 43
- power cord
  - requirements for all countries 77
  - requirements for specific countries and regions 77
  - set requirements 77
- power cords, spare part numbers 21
- power light, identifying 10
- power requirements, product description 2
- previous track action key 13
- primary storage
  - product description 1
- processor
  - product description 1
- product description
  - audio 2
  - display panel 1
  - graphics 1
  - hard drive 1
  - keyboard 2
  - media card reader 2
  - memory module 1
  - microphone 2
  - operating system 3
  - pointing device 2
  - ports 2
  - power requirements 2

- primary storage 1
- processors 1
- product name 1
- security 3
- serviceability 3
- solid-state drive 1
- video 2
- wireless 2
- product name 1
- product name and number, computer 14

## R

- recovery 65
  - discs 66
  - media 66
  - USB flash drive 66
- recovery media 65
  - creating using HP Cloud Recovery Download Tool 65
  - creating using Windows tools 65
- regulatory information
  - regulatory label 14
  - wireless certification labels 14
- Remote HP PC Hardware Diagnostics UEFI settings
  - customizing 72
  - using 72
- removal and replacement
  - procedures 32
  - solid-state drive 38
- restoring 65
- restoring and recovery methods 66
- right control zone, identifying 8
- right side components 4
- RJ-45 door
  - removal 51
  - spare part numbers 51

## S

- Screw Kit, spare part number 21
- security, product description 3
- serial number, computer 14
- service labels, locating 14
- serviceability, product description 3
- setup utility
  - navigating and selecting 61
  - restoring factory settings 61
- SIM slot, identifying 6
- slots
  - SIM card 6

- software
  - locating 4
- software installed
  - locating 4
- solid-state drive
  - product description 1
  - removal and replacement 38
  - specifications 75, 76
- spare part country codes 56
- speaker
  - removal 47
  - spare part number 47
- speaker volume action keys 13
- speakers 10, 14
- special keys
  - identifying 11
  - using 11
- specifications
  - computer 74
  - display 74
  - hard drive 74
  - solid-state drive 75, 76
- static electricity 23, 24
- support information 29
- Sure Start
  - using 64
- system board
  - illustrated 18
  - removal 43
  - spare part number 18
  - spare part numbers 43
- system restore 66
- system restore point, creating 65

## T

- Thunderbolt port with HP Sleep and Charge and DisplayPort output, identifying USB Type-C 4
- top cover/keyboard
  - illustrated 18
  - spare part number 18
- touchpad
  - illustrated 18
  - removal 50
  - settings 8
  - spare part number 18
  - spare part numbers 50
- touchpad buttons
  - identifying 8, 9
- touchpad cable
  - spare part number 20
- touchpad components 8
- touchpad light, identifying 8
- touchpad settings, adjusting 8

- touchpad zone, identifying 8, 9
- TPM settings 64
- transporting guidelines 23, 29
- traveling with the computer 14

## U

- USB board cable
  - spare part number 20
- USB SuperSpeed port with HP Sleep and Charge, identifying 5
- USB SuperSpeed port, identifying 6
- USB Type-C Thunderbolt port with HP Sleep and Charge and DisplayPort output, identifying 4

## V

- vents, identifying 5, 14
- video, product description 2
- volume
  - adjusting 13

## W

- Windows
  - backup 65
  - recovery media 65
  - system restore point 65
- Windows key, identifying 12
- Windows tools, using 65
- wireless antennas
  - illustrated 19
  - spare part number 19
- wireless antennas, identifying 7
- wireless certification label 14
- wireless, product description 2
- WLAN antennas, identifying 7
- WLAN device 14
- WLAN label 14
- WLAN module
  - removal 36
  - spare part numbers 36
- workstation guidelines 23