Product notice

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

In accordance with Microsoft’s support policy, HP does not support the Windows® 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation and forward processors or provide any Windows 8 or Windows 7 drivers on http://www.support.hp.com.

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

Software terms

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

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

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

1 Product description ............................................................................................................. 1

2 Getting to know your computer .......................................................................................... 4
   Right side .......................................................................................................................... 4
   Left side ............................................................................................................................. 5
   Display .................................................................................................................................. 7
   Keyboard area ...................................................................................................................... 8
      TouchPad ......................................................................................................................... 8
      Lights .............................................................................................................................. 9
      Speakers ......................................................................................................................... 10
      Special keys ................................................................................................................... 11
   Bottom .................................................................................................................................. 12
   Labels ................................................................................................................................... 13

3 Illustrated parts catalog ...................................................................................................... 14
   Computer major components ............................................................................................. 14
   Miscellaneous parts .......................................................................................................... 16

4 Removal and replacement preliminary requirements ......................................................... 17
   Tools required .................................................................................................................... 17
   Service considerations ....................................................................................................... 17
      Plastic parts .................................................................................................................... 17
      Cables and connectors ................................................................................................. 17
   Grounding guidelines ........................................................................................................ 18
      Electrostatic discharge damage .................................................................................... 18

5 Removal and replacement procedures ............................................................................... 21
   Bottom cover ..................................................................................................................... 22
   Battery ............................................................................................................................... 23
   Memory modules .............................................................................................................. 25
   WLAN module ................................................................................................................ 27
   Fans, left and right ............................................................................................................ 29
   Heat sink ........................................................................................................................... 31
   Speakers ............................................................................................................................ 33
   USB/audio/power connector board .................................................................................. 36
   Solid-state drive ............................................................................................................... 39
RTC battery ................................................................. 40
TouchPad ................................................................. 41
Volume board .......................................................... 43
Card reader board ...................................................... 45
Display assembly ......................................................... 47
System board ............................................................. 49
Top cover/keyboard ....................................................... 52

6 Using Setup Utility (BIOS) ........................................ 53
   Starting Setup Utility (BIOS) ........................................ 53
   Updating Setup Utility (BIOS) ....................................... 53
      Determining the BIOS version .................................. 53
      Downloading a BIOS update .................................. 54

7 Using HP PC Hardware Diagnostics (UEFI) ................ 55
   Downloading HP PC Hardware Diagnostics (UEFI) to a USB device .... 55

8 Backing up, restoring, and recovering ...................... 57
   Creating recovery media and backups ......................... 57
      Creating HP Recovery media (select products only) ...... 57
   Using Windows tools ................................................ 58
   Restore and recovery ................................................ 59
      Recovering using HP Recovery Manager .................. 59

9 Specifications .......................................................... 62

10 Power cord set requirements .................................. 63
   Requirements for all countries ................................... 63
   Requirements for specific countries and regions .............. 63

11 Recycling ............................................................. 65

Index ............................................................... 66
## Product description

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>15-bl100 – 15-bl199, 15t-bl100</th>
<th>15-bl000 – 15-bl099, 15t-bl000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product Name</strong></td>
<td>HP Spectre x360 Convertible PC</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Model numbers: 15-bl100 – 15-bl199, 15t-bl100</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Model numbers: 15-bl000 – 15-bl099, 15t-bl000</td>
<td></td>
<td>√</td>
</tr>
<tr>
<td><strong>Processor</strong></td>
<td>8th generation Intel® Core® processor</td>
<td></td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Intel Core i7-8550U 1.8-GHz, max turbo 4.0-GHz, 8 GB Intel Smart Cache, 15 W</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7th generation Intel Core processor</td>
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<td>√</td>
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<tr>
<td></td>
<td>Intel Core i7-7500U 2.7-GHz, max turbo 3.5-GHz, 4 GB Intel Smart Cache, 15 W</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Graphics</strong></td>
<td>Internal graphics</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Intel UHD Graphics 620</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Intel HD Graphics 620</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Discrete graphics</strong></td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>NVIDIA N17S-GTR-S (GeForce MX150) with 2048 MB of dedicated video memory</td>
<td></td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>NVIDIA N16S-GTR-S (GeForce 940MX) with 2048 MB of dedicated video memory</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Panel</strong></td>
<td>Touch screen; multi touch enabled; 16:9 ultra-wide aspect ratio; typical brightness: 340 nits</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>39.6 cm (15.6-in), UWVA (3840×2160), BrightView, ultra high-definition (UHD), white-light emitting (WLED), eDP, slim-flat 2.6-mm, narrow bezel</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Flush glass panel cover support</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Supports active stylus</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Windows Ink certification</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td><strong>Two SODIMM slots - not customer accessible/upgradeable</strong></td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Support for DDR4-2400 dual channel</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Support for DDR4-2133 dual channel (DDR4-2400 bridge to DDR4-2133)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Supports up to 16 GB maximum system memory in the following configurations</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>• 16 GB (8 GB × 2)</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>• 12 GB (8 GB + 4 GB)</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>• 8 GB (4 GB × 2)</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td><strong>Primary storage</strong></td>
<td><strong>PCIe, NVMe, TLC, M.2 SSD configuration as storage</strong></td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Support for single M.2 solid-state drive configuration as storage in the following configurations:</td>
<td>√</td>
<td>√</td>
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<tr>
<td>Category</td>
<td>Description</td>
<td>15-bl100 – 15-bl199, 15t-bl100</td>
<td>15-bl000 – 15-bl099, 15t-bl000</td>
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<td>● 2 TB</td>
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<td>● 1 TB</td>
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<td></td>
<td></td>
<td>● 512 GB</td>
<td>√</td>
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<td></td>
<td></td>
<td>● 360 GB</td>
<td>√</td>
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<tr>
<td></td>
<td></td>
<td>● 256 GB</td>
<td>√</td>
</tr>
<tr>
<td>Audio and video</td>
<td>BANG &amp; OLUFSEN</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Dual speakers</td>
<td></td>
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<tr>
<td></td>
<td>Supports HP Audio Boost</td>
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<tr>
<td></td>
<td>Cortana Certification</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Webcam and microphone</td>
<td>HP TrueVision Full HD IR camera with activity light, (2) IR lights, USB 2.0, FHD, BSI sensor</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1080p by 30 frames per second</td>
<td></td>
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<tr>
<td></td>
<td>Supports Windows Help</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Supports Voice Recognition</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Dual array digital microphones with appropriate beam-forming, echo-cancellation, noise-suppression software</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>HP Noise Cancellation enabled</td>
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<tr>
<td>Sensors</td>
<td>Accelerometer</td>
<td></td>
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<td></td>
<td>Gyroscope</td>
<td></td>
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<tr>
<td></td>
<td>Digital Compass</td>
<td></td>
<td></td>
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<tr>
<td>Wireless</td>
<td>Integrated Wireless options with dual antennas (M.2):</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Two built-in WLAN antennas (in display assembly)</td>
<td></td>
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<tr>
<td></td>
<td>Support for Miracast-certified devices (Windows 10 only)</td>
<td></td>
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<tr>
<td></td>
<td>Support for Intel WIDI (Intel 8265NV)</td>
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<tr>
<td></td>
<td>WiFi SAR enabled in BIOS (Intel WLAN only)</td>
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<tr>
<td></td>
<td>Support for the following WLAN modul:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Intel Dual Band Wireless-AC 8265 802.11 ac 2×2 WiFi + Bluetooth 4.2 Combo Adapter</td>
<td></td>
<td></td>
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<tr>
<td>External media cards</td>
<td>HP Multi-Format Digital Media Card Reader</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Supports SD/SDHC/SDXC</td>
<td></td>
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<tr>
<td></td>
<td>Push-push insertion/removal</td>
<td></td>
<td></td>
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<tr>
<td>Internal card expansion</td>
<td>One M.2 Slot for WLAN</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>One M.2 Slot for SSD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ports</td>
<td>USB 3.0 Type-A port</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category</td>
<td>Description</td>
<td>15-bl100 – 15-bl199, 15t-bl100</td>
<td>15-bl000 – 15-bl099, 15t-bl000</td>
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<td>--------------------------</td>
<td>-------------------------------------------------------------------------------</td>
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<tr>
<td></td>
<td>USB 3.1 Gen 1 port</td>
<td>√</td>
<td>√</td>
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<tr>
<td></td>
<td>USB 3.0 Type-C ports</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>USB 3.1 Gen 2 port with Thunderbolt™ Gen 3 technology</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>USB 3.1 Gen 1 port</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td><strong>All ports support data transfer, power delivery, and:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DisplayPort 1.2 supporting up to 3840×2160 @ 60 Hz</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>HDMI v2.0 output support up to 3840×2160 at 60 Hz with HDCP 2.2</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td><strong>Headphone output and microphone input combo jack (stereo)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>AC adapter through Type-C port</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>All ports support HP USB Boost</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Keyboard/pointing devices</td>
<td><strong>Full-size, Dura Coat, backlight, island-style keyboard</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Touchpad requirements</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Multi-touch gestures enabled</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>● Taps enabled as default</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>● Support for Windows modern TouchPad gestures</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>● ClickPad with image sensor</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Power requirements</td>
<td>AC adapter</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>USB Type-C, 90-W with power cords</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td><strong>Power cord</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 meter power cord with tag label</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td><strong>Battery</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6-cell, 79.2-WHr, 3.43-AH, Li-ion battery</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Security</td>
<td>Trusted Platform Module (TPM) 2.0 support</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Operating system</td>
<td><strong>Preinstalled</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Windows 10</td>
<td>√</td>
<td>√</td>
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<tr>
<td></td>
<td>Windows 10 Pro</td>
<td>√</td>
<td>√</td>
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<tr>
<td></td>
<td><strong>For Developed Markets (ML):</strong></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Windows 10 Home Plus ML</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td><strong>For Emerging Markets (EM):</strong></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Windows 10 Home Plus EM/SL</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>SEAP Windows 10 Home Plus</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>Serviceability</td>
<td><strong>End user replaceable part:</strong> AC adapter</td>
<td>√</td>
<td>√</td>
</tr>
</tbody>
</table>
2 Getting to know your computer

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

Right side

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Volume button</td>
<td>Controls speaker volume on the computer.</td>
</tr>
</tbody>
</table>
| (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.

| (3) HDMI port | Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component, or a high-speed High-Definition Multimedia Interface (HDMI) device. |
| (4) USB Type-C power connector and Thunderbolt port with HP Sleep and Charge | Connects an AC adapter that has a USB Type-C connector, supplying power to the computer and, if needed, charging the computer battery. – and – Connects and charges most USB devices that have a Type-C connector, such as a cell phone, camera, activity tracker, or smartwatch, and provides high-speed data transfer.  

**NOTE:** Cables and/or adapters (purchased separately) may be required. – and – Connects a display device that has a USB Type-C connector, providing DisplayPort output.  

**NOTE:** Your computer may also support a Thunderbolt docking station.

| AC adapter and battery light | • White: The AC adapter is connected and the battery is fully charged.  
| • Blinking white: The AC adapter is disconnected and the battery has reached a low battery level.  
| • Amber: The AC adapter is connected and the battery is charging. |
## Left side

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
</table>
| (6) USB Type-C power connector and port with HP Sleep and Charge | Connects an AC adapter that has a USB Type-C connector, supplying power to the computer and, if needed, charging the computer battery.  
– and –  
When the computer is off, charges most products such as a cell phone, camera, activity tracker, or smartwatch, and provides data transfer.  
**NOTE:** Cables and/or adapters (purchased separately) may be required. |

### Left side

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) USB 3.x SuperSpeed port with HP Sleep and Charge</td>
<td>Connects a USB device, provides high-speed data transfer, and even when the computer is off, charges most products such as a cell phone, camera, activity tracker, or smartwatch.</td>
</tr>
</tbody>
</table>
| (2) Audio-out (headphone)/Audio-in (microphone) combo jack | Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. This jack does not support optional standalone microphones.  
**WARNING!** To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, refer to the *Regulatory, Safety, and Environmental Notices*.  
To access this guide:  
▲ Select the **Start** button, select **HP Help and Support**, and then select **HP Documentation**.  
**NOTE:** When a device is connected to the jack, the computer speakers are disabled. |
| (3) Power button |  
● When the computer is off, press the button to turn on the computer.  
● When the computer is on, press the button briefly to initiate Sleep.  
● When the computer is in the Sleep state, press the button briefly to exit Sleep.  
● When the computer is in Hibernation, press the button briefly to exit Hibernation.  
**CAUTION:** Pressing and holding down the power button results in the loss of unsaved information.  
If the computer has stopped responding and shutdown procedures are ineffective, press and hold the power button down for at least 5 seconds to turn off the computer. |
## Component Description

To learn more about your power settings, see your power options:

▲ Right-click the **Power** icon [Power icon] and then select **Power Options**.

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
</table>
| (4) Power light | - On: The computer is on.  
- Blinking: The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other unneeded components.  
- Off: The computer is off or in Hibernation. Hibernation is a power-saving state that uses the least amount of power. |
| (5) 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. |
| (6) Memory card reader | Reads optional memory cards that enable you to store, manage, share, or access information.  
To insert a card:  
1. Hold the card label-side up, with connectors facing the computer.  
2. Insert the card into the memory card reader, and then press in on the card until it is firmly seated.  
To remove a card:  
▲ Press in on the card, and then remove it from the memory card reader. |
## Display

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) WLAN antennas* (2)</td>
<td>Send and receive wireless signals to communicate with wireless local area networks (WLANs).</td>
</tr>
<tr>
<td>(2) Internal microphones (2)</td>
<td>Record sound.</td>
</tr>
<tr>
<td>(3) Camera light(s)</td>
<td>On: One or more cameras are in use.</td>
</tr>
<tr>
<td>(4) Camera(s)</td>
<td>Allow 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.</td>
</tr>
</tbody>
</table>

**NOTE:** Camera functions vary depending on the camera hardware and software installed on your product.

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

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

To access this guide:

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

**TouchPad**

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) TouchPad zone</td>
<td>Reads your finger gestures to move the pointer or activate items on the screen.</td>
</tr>
<tr>
<td>(2) Left TouchPad button</td>
<td>Functions like the left button on an external mouse.</td>
</tr>
<tr>
<td>(3) Right TouchPad button</td>
<td>Functions like the right button on an external mouse.</td>
</tr>
</tbody>
</table>
## Lights

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Caps lock light</td>
<td>On: Caps lock is on, which switches the key input to all capital letters.</td>
</tr>
</tbody>
</table>
| (2) Mute light | - Amber: Computer sound is off.  
- Off: Computer sound is on. |
### Speakers

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speakers (2)</td>
<td>Produce sound.</td>
</tr>
</tbody>
</table>
**Special keys**

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) esc key</td>
<td>Displays system information when pressed in combination with the fn key.</td>
</tr>
<tr>
<td>(2) fn key</td>
<td>Executes specific functions when pressed in combination with another key.</td>
</tr>
</tbody>
</table>
| (3) Windows key | Opens the Start menu.  
**NOTE:** Pressing the Windows key again will close the Start menu. |
| (4) Action keys | Execute frequently used system functions.  
**NOTE:** On select products, the f5 action key turns the keyboard backlight feature off or on. |
## Bottom

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
</table>
| Vent      | Enables airflow to cool internal components.  

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

The labels affixed to the computer provide information you may need when you troubleshoot system problems or travel internationally with the computer.

**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, or on the back of the display.

- Service label—Provides important information to identify your computer. When contacting support, you will probably be asked for the serial number, and possibly for the product number or the model number. Locate these numbers before you contact support.

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

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Product name</td>
</tr>
<tr>
<td>(2)</td>
<td>Serial number</td>
</tr>
<tr>
<td>(3)</td>
<td>Product number</td>
</tr>
<tr>
<td>(4)</td>
<td>Warranty period</td>
</tr>
<tr>
<td>(5)</td>
<td>Model number</td>
</tr>
</tbody>
</table>

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

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

Computer major components
<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Display assembly (full hinge-up)</td>
<td>911082-001</td>
</tr>
<tr>
<td>(2)</td>
<td>Top cover and keyboard (includes TouchPad, keyboard cable, keyboard backlight cable; top cover/keyboard spare part kits include replacement rubber feet)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For use in Belgium</td>
<td>912995-A41</td>
</tr>
<tr>
<td></td>
<td>For use in Canada</td>
<td>912995-0B1</td>
</tr>
<tr>
<td></td>
<td>For use in Denmark, Finland, and Norway</td>
<td>912995-DH1</td>
</tr>
<tr>
<td></td>
<td>For use in France</td>
<td>912995-051</td>
</tr>
<tr>
<td></td>
<td>For use in Germany</td>
<td>912995-041</td>
</tr>
<tr>
<td></td>
<td>For use in Greece</td>
<td>912995-151</td>
</tr>
<tr>
<td></td>
<td>For use in Italy</td>
<td>912995-061</td>
</tr>
<tr>
<td></td>
<td>For use in the Netherlands</td>
<td>912995-B31</td>
</tr>
<tr>
<td></td>
<td>For use in Russia</td>
<td>912995-251</td>
</tr>
<tr>
<td></td>
<td>For use in Saudi Arabia</td>
<td>912995-171</td>
</tr>
<tr>
<td></td>
<td>For use in Switzerland</td>
<td>912995-BG1</td>
</tr>
<tr>
<td></td>
<td>For use in the United Kingdom and Singapore</td>
<td>912995-031</td>
</tr>
<tr>
<td></td>
<td>For use in the United States</td>
<td>912995-001</td>
</tr>
<tr>
<td>(3)</td>
<td>TouchPad (TouchPad spare part kits include replacement rubber feet)</td>
<td>913004-001</td>
</tr>
<tr>
<td>(4)</td>
<td>TouchPad cable (TouchPad cable spare part kits include replacement rubber feet)</td>
<td>912992-001</td>
</tr>
<tr>
<td>(5)</td>
<td>Battery, 6-cell, 79-WHr, 3.43-AHr, Li-ion (battery spare part kits include rubber feet)</td>
<td>902499-856</td>
</tr>
<tr>
<td>(6)</td>
<td>Card reader board (card reader board spare part kits include replacement rubber feet)</td>
<td>913005-001</td>
</tr>
<tr>
<td>(7)</td>
<td>Card reader board cable (card reader board cable spare part kits include replacement rubber feet)</td>
<td>912991-001</td>
</tr>
<tr>
<td>(8)</td>
<td>Solid-state drive (solid-state drive spare part kits include replacement rubber feet)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2-TB, PCIe solid-state drive (for use in models with 8th generation Intel Core processors)</td>
<td>941661-001</td>
</tr>
<tr>
<td></td>
<td>1-TB, PCIe solid-state drive</td>
<td>913015-001</td>
</tr>
<tr>
<td></td>
<td>512-GB, PCIe solid-state drive</td>
<td>913014-001</td>
</tr>
<tr>
<td></td>
<td>360-GB, PCIe solid-state drive</td>
<td>920299-001</td>
</tr>
<tr>
<td></td>
<td>256-GB, PCIe solid-state drive</td>
<td>913013-001</td>
</tr>
<tr>
<td>(9)</td>
<td>Intel Dual Band Wireless-AC 8265 802.11ac 2×2 WiFi + Bluetooth 4.2 Combo Adapter (WLAN module spare part kits include replacement rubber feet)</td>
<td>910264-856</td>
</tr>
<tr>
<td>(10)</td>
<td>RTC battery (RTC battery spare part kits include replacement rubber feet)</td>
<td>913007-001</td>
</tr>
<tr>
<td>(11)</td>
<td>USB/audio/power connector board (spare part kits include replacement rubber feet)</td>
<td>913006-001</td>
</tr>
<tr>
<td>(12)</td>
<td>USB/audio/power connector board cable (spare part kits include replacement rubber feet)</td>
<td>912993-001</td>
</tr>
<tr>
<td>(13)</td>
<td>Volume board cable (volume board cable spare part kits include replacement rubber feet)</td>
<td>913633-001</td>
</tr>
<tr>
<td>(14)</td>
<td>Volume board (volume board spare part kits include replacement rubber feet)</td>
<td>913634-001</td>
</tr>
</tbody>
</table>
### Item 15: System board
(includes processor and replacement thermal material; system board spare part kits include replacement rubber feet)

- **Intel Core i7-8550U processor, 2-GB of discrete graphics memory, and the Windows 10 operating system**
  - Spare part number: 941662-601
- **Intel Core i7-8550U processor, 2-GB of discrete graphics memory, and a non-Windows operating system**
  - Spare part number: 941662-001
- **Intel Core i7-7500U processor, 2-GB of discrete graphics memory, and the Windows 10 operating system**
  - Spare part number: 911083-601
- **Intel Core i7-7500U processor, 2-GB of discrete graphics memory, and a non-Windows operating system**
  - Spare part number: 911083-001

### Item 16: Heat sink
(includes replacement thermal material; heat sink spare part kits include replacement rubber feet)

- **Spare part number:** 911081-001

### Item 17: Fan, left
(fan spare part kits include replacement rubber feet)

- **Spare part number:** 912994-001

### Item 18: Fan, right
(fan spare part kits include replacement rubber feet)

- **Spare part number:** 919437-001

### Item 19: Memory modules
(DDR4-2400; memory spare part kits include replacement rubber feet)

- **8 GB**
  - **Spare part number:** 862398-857
- **4 GB**
  - **Spare part number:** 862397-857

### Item 20: Left Speaker Kit
(speaker spare part kits include replacement rubber feet)

- **Spare part number:** 913009-001

### Item 21: Right Speaker Kit
(speaker spare part kits include replacement rubber feet)

- **Spare part number:** 913008-001

### Item 22: Bottom cover
(includes rubber feet)

- **Spare part number:** 912990-001

### Miscellaneous parts

<table>
<thead>
<tr>
<th>Component</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AC adapter</strong>, 90-W, 3-pin, PFC, USB-C</td>
<td>904144-850</td>
</tr>
<tr>
<td><strong>USB-C to RJ-45 adapter</strong></td>
<td>855560-001</td>
</tr>
<tr>
<td><strong>USB-C to VGA adapter</strong></td>
<td>831751-001</td>
</tr>
<tr>
<td><strong>USB-C to USB-A adapter</strong></td>
<td>833960-001</td>
</tr>
<tr>
<td><strong>Power cord</strong>, (C5, 3-pin, 1.0-m)</td>
<td></td>
</tr>
<tr>
<td>For use in Denmark</td>
<td>213353-011</td>
</tr>
<tr>
<td>For use in Europe (Austria, Belgium, Finland, France, Germany, the Netherlands, Norway and Sweden)</td>
<td>213350-012</td>
</tr>
<tr>
<td>For use in North America</td>
<td>213349-013</td>
</tr>
<tr>
<td>For use in Switzerland</td>
<td>213354-011</td>
</tr>
<tr>
<td>For use in the United Kingdom and Singapore</td>
<td>213351-011</td>
</tr>
<tr>
<td><strong>Screw Kit</strong></td>
<td>910949-001</td>
</tr>
<tr>
<td><strong>Rubber feet</strong></td>
<td>910948-001</td>
</tr>
<tr>
<td><strong>Active pen</strong></td>
<td>920241-001</td>
</tr>
<tr>
<td><strong>Notebook sleeve case</strong></td>
<td>913622-001</td>
</tr>
</tbody>
</table>
4 Removal and replacement preliminary requirements

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

- Flat-bladed screw driver
- Magnetic screw driver
- Phillips P0 screw driver

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 tablet, place the subassembly (and all accompanying screws) away from the work area to prevent damage.

Plastic parts

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

Cables and connectors

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

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

Electrostatic discharge damage

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

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

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

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

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

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

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

<table>
<thead>
<tr>
<th>Event</th>
<th>Relative humidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking across carpet</td>
<td>10%</td>
</tr>
<tr>
<td>Walking across vinyl floor</td>
<td>35,000 V</td>
</tr>
<tr>
<td>Motions of bench worker</td>
<td>12,000 V</td>
</tr>
<tr>
<td>Removing DIPS from plastic tube</td>
<td>6,000 V</td>
</tr>
<tr>
<td>Removing DIPS from vinyl tray</td>
<td>2,000 V</td>
</tr>
<tr>
<td>Removing DIPS from Styrofoam</td>
<td>11,500 V</td>
</tr>
<tr>
<td>Removing bubble pack from PCB</td>
<td>14,500 V</td>
</tr>
<tr>
<td>Packing PCBs in foam-lined box</td>
<td>26,500 V</td>
</tr>
<tr>
<td>Packing PCBs in foam-lined box</td>
<td>21,000 V</td>
</tr>
</tbody>
</table>
Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

Workstation guidelines

Follow these grounding workstation guidelines:

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

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

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

The following grounding equipment is recommended to prevent electrostatic damage:

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

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

<table>
<thead>
<tr>
<th>Material</th>
<th>Use</th>
<th>Voltage protection level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antistatic plastics</td>
<td>Bags</td>
<td>1,500 V</td>
</tr>
<tr>
<td>Carbon-loaded plastic</td>
<td>Floor mats</td>
<td>7,500 V</td>
</tr>
<tr>
<td>Metallized laminate</td>
<td>Floor mats</td>
<td>5,000 V</td>
</tr>
</tbody>
</table>
5  Removal and replacement procedures

**NOTE:** This chapter provides removal and replacement procedures for Authorized Service Provider only components. Components described in this chapter should only be accessed by an authorized service provider. Accessing these components can damage the computer or void the warranty.

There are as many as 48 screws that must be removed, replaced, and/or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

**NOTE:** HP continually improves and changes product parts. For complete and current information on supported parts for your computer, go to [http://partsurfer.hp.com](http://partsurfer.hp.com), select your country or region, and then follow the on-screen instructions.
NOTE: The bottom cover spare part kit includes rubber feet.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottom cover</td>
<td>912990-001</td>
</tr>
</tbody>
</table>

Before disassembling the computer, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

3. Disconnect all external devices from the computer.

Remove the bottom cover:

1. Close the computer and position it upside down.

2. Pry the two rear feet of the bottom of the computer (1).

3. Remove the two Phillips M2.0×9.0 screws (2) from under the rear feet.

4. Remove the two Torx T8M2.0×3.5 screws (3) and the four Torx T8M2.0×9.0 screws (4) that secure the bottom cover to the computer.

5. Starting near the hinges, pry the bottom cover (5) off the computer.

Reverse this procedure to install the bottom cover.
Battery

Battery spare part kits include replacement rubber feet.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery, 6-cell, 79-WHr, 3.43-AHr, Li-ion</td>
<td>902499-856</td>
</tr>
</tbody>
</table>

Before removing the battery, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see Bottom cover on page 22).

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

⚠️ **CAUTION:** 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 removing the battery.

Remove the battery:

1. Disconnect the battery cable from the system board (1).
2. Remove the six Phillips M2.0×3.5 screws (2) that secure the battery to the computer.
3. Remove the battery (3) from the computer.

Reverse this procedure to install the battery.
Memory modules

Memory module spare part kits include replacement rubber feet.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-GB (PC4-2400)</td>
<td>862398-857</td>
</tr>
<tr>
<td>4-GB (PC4-2400)</td>
<td>862397-857</td>
</tr>
</tbody>
</table>

The memory modules are installed upside down under the memory cover. Remove the cover to access the memory modules.

**Update BIOS before adding memory modules**

Before adding new memory, make sure you update the computer to the latest BIOS.

⚠️ **CAUTION:** Failure to update the computer to the latest BIOS prior to installing new memory may result in various system problems.

To update BIOS:

2. Click Support & Drivers > click Drivers & Software.
3. In the Enter a product name/number box, type the computer model information, and then click Search.
4. Click the link for the computer model.
5. Select the operating system, and then click Next.
6. Under Step 2: Select a Download, click the BIOS link.
7. Click the link for the most recent BIOS.
8. Click the Download button, and then follow the on-screen instructions.

Before removing the memory module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see Bottom cover on page 22).
5. Disconnect the battery cable from the system board (see Battery on page 23).

⚠️ **CAUTION:** To prevent damage to internal components, be sure to disconnect the battery cable from the system board before removing the memory modules. You do not need to remove the battery to remove the memory modules.

Remove the memory module:

1. **To remove the memory cover:**
   
   Lift the Mylar off the right side of the memory cover (1) off the computer.
2. Pry around the edges of the memory cover, and then lift it off the system board (2).

3. Spread the retaining tabs (1) on each side of the memory module slot to release the memory module. (The edge of the module opposite the slot rises away from the computer.)

4. Remove the memory module (2) by pulling the module away from the slot at an angle.

**NOTE:** The memory modules are installed upside down.

Memory modules are designed with a notch to prevent incorrect insertion into the memory module slot.

Reverse this procedure to install a memory module.
WLAN module

WLAN module spare part kits include replacement rubber feet.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel Dual Band Wireless-AC 8265 802.11 ac 2×2 WiFi + Bluetooth 4.2 Combo Adapter</td>
<td>910264-856</td>
</tr>
</tbody>
</table>

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

Before removing the WLAN module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see Bottom cover on page 22).
5. Disconnect the battery cable from the system board (see Battery on page 23).

⚠️ **CAUTION:** To prevent damage to internal components, be sure to disconnect the battery cable from the system board before removing the WLAN module. You do not need to remove the battery to remove the WLAN module.

Remove the WLAN module:

1. If installed, remove the tape from atop the antenna connectors on the WLAN module.
2. Disconnect the WLAN antenna cables (1) from the terminals on the WLAN module.

👨‍💻 **NOTE:** The WLAN antenna cable labeled “1” connects to the WLAN module “Main” terminal labeled “1”. The WLAN antenna cable labeled “2” connects to the WLAN module “Aux” terminal labeled “2”.

3. Remove the Phillips PM2.0×2.7 screw (2) that secures the WLAN module to the top cover. (The WLAN module tilts up.)
4. Remove the WLAN module (3) by pulling the module away from the slot at an angle.

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

Reverse this procedure to install the WLAN module.

When replacing a WLAN module, after securing the antenna cables to the connectors on the module, be sure to replace the tape atop the antenna connectors.
**Fans, left and right**

Fan spare part kits include replacement rubber feet.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fan, left</td>
<td>912994-001</td>
</tr>
<tr>
<td>Fan, right</td>
<td>919437-001</td>
</tr>
</tbody>
</table>

Before removing the fans, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

4. Remove the bottom cover (see Bottom cover on page 22).

5. Disconnect the battery cable from the system board (see Battery on page 23).

⚠️ **CAUTION:** To prevent damage to internal components, be sure to disconnect the battery cable from the system board before removing the fans. You do not need to remove the battery to remove the fans.

6. Remove the system board (see System board on page 49).

Remove the fans:

1. **To remove the left fan:**
   
   Remove the RTC battery and right speaker cable from the clips in the fan housing (1).

2. Remove the two Phillips M2.0×3.5 screws (2) that secure the fan to the computer.

3. Disconnect the fan cable from the system board (3).
4. Remove the fan (4) from the computer.

5. To remove the left fan:
   - Remove the left speaker cable from the clips in the fan housing (1).

6. Disconnect the fan cable from the system board (2).

7. Remove the two Phillips PM2.0×3.5 screws (3) that secure the fan to the computer.

8. Remove the fan (4) from the computer.

Reverse this procedure to install the fans.
Heat sink

**NOTE:** The heat sink spare part kit includes replacement thermal material. Heat sink spare part kits include replacement rubber feet.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat sink</td>
<td>911081-001</td>
</tr>
</tbody>
</table>

Before removing the heat sink, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see Bottom cover on page 22).
5. Disconnect the battery cable from the system board (see Battery on page 23).

**CAUTION:** To prevent damage to internal components, be sure to disconnect the battery cable from the system board before removing the heat sink. You do not need to remove the battery to remove the heat sink.

6. Remove the fans (see Fans, left and right on page 29).

Remove the heat sink:

1. Remove the six Phillips M2.0×2.5 screws (1) that secure the heat sink to the system board.

**NOTE:** Due to the adhesive quality of the thermal material located between the heat sink and system board components, it may be necessary to move the heat sink from side to side to detach it.
2. Remove the heat sink (2) from the system board.

**NOTE:** The thermal material must be thoroughly cleaned from the surfaces of the heat sink and the system board each time the heat sink is removed. Thermal paste is used on the system board components (1)(3) and the heat sink (2)(4).

Reverse this procedure to install the heat sink.
**Speakers**

Speaker spare part kits include replacement rubber feet.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right Speaker Kit</td>
<td>913008-001</td>
</tr>
<tr>
<td>Left Speaker Kit</td>
<td>913009-001</td>
</tr>
</tbody>
</table>

Before removing the speakers, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Bottom cover on page 22](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 23](#)).

⚠️ **CAUTION:** To prevent damage to internal components, be sure to disconnect the battery cable from the system board before removing the speakers. You do not need to remove the battery to remove the speakers.

Remove the speakers:

1. **To remove the right speaker:**
   - Disconnect the speaker cable (1) from the system board.
2. Remove the speaker cable from the clips on the fan housing (2).
3. Remove the three Phillips M2.0×3.5 screws (3) that secure the speakers to the computer.
4. Remove the right speaker from the computer (4).

5. To remove the left speaker:
   Disconnect the speaker cable (1) from the system board.
6. Remove the speaker cable from the clips on the fan housing (2).
7. Remove the three Phillips M2.0×3.5 screws (3) that secure the speakers to the computer.
8. Remove the left speaker from the computer (4).

Reverse this procedure to install the speakers.
USB/audio/power connector board

USB/audio/power connector board and cable spare part kits include replacement rubber feet.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>USB/audio/power connector board</td>
<td>913006-001</td>
</tr>
<tr>
<td>USB/audio/power connector board cable</td>
<td>912993-001</td>
</tr>
</tbody>
</table>

Before removing the USB/audio/power connector board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

3. Disconnect all external devices from the computer.

4. Remove the bottom cover (see Bottom cover on page 22).

5. Disconnect the battery cable from the system board (see Battery on page 23).

⚠️ CAUTION: To prevent damage to internal components, be sure to disconnect the battery cable from the system board before removing the USB/audio/power board. You do not need to remove the battery to remove the board.

Remove the USB/audio/power connector board:

1. Lift the Mylar tape up from the board (1).

2. Disconnect the cable from the connector on the bottom of the board (2).

3. Remove the Phillips PM2.0×3.0 screw (3) that secures the board to the computer.
4. Remove the board (4) from the computer.

5. To remove the USB/audio/power connector board:
   Lift the Mylar tape up from the board (1).
6. Disconnect the ZIF connector from system board (2).
7. Disconnect the ZIF connector from board (3).
8. Remove the cable (4) from the computer.

Reverse this procedure to install the USB/audio board.
When replacing the USB/audio board, replace the acetate tape over the light, as shown in the following image. Tape size for this location is 8 mm × 24 mm.

**IMPORTANT:** The acetate tape is not spared and must be obtained locally.
## Solid-state drive

Solid-state drive spare part kits include replacement rubber feet.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-TB, PCIe solid-state drive (for use in models with 8th generation Intel Core processors)</td>
<td>941661-001</td>
</tr>
<tr>
<td>1-TB, PCIe solid-state drive</td>
<td>913015-001</td>
</tr>
<tr>
<td>512-GB, PCIe solid-state drive</td>
<td>913014-001</td>
</tr>
<tr>
<td>360-GB, PCIe solid-state drive</td>
<td>920299-001</td>
</tr>
<tr>
<td>256-GB, PCIe solid-state drive</td>
<td>913013-001</td>
</tr>
</tbody>
</table>

**IMPORTANT:** To remove the solid-state drive, you have to remove the power connector and USB/audio board cable.

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

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

4. Remove the bottom cover (see *Bottom cover on page 22*).

5. Disconnect the battery cable from the system board (see *Battery on page 23*).

**CAUTION:** To prevent damage to internal components, be sure to disconnect the battery cable from the system board before removing the solid-state drive. You do not need to remove the battery to remove the solid-state drive.

6. Remove the power connector and USB/audio board cable (see *USB/audio/power connector board on page 36*).

Remove the solid-state drive:

1. Remove the PM2.0×2.9 screw (1) that secures the solid-state drive to the bottom cover. (The solid-state drive tilts up.)

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

Reverse this procedure to install the solid-state drive.
**RTC battery**

RTC battery spare part kits include replacement rubber feet.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTC battery</td>
<td>913007-001</td>
</tr>
</tbody>
</table>

**IMPORTANT:** The RTC battery is located under the main system battery.

Before removing the RTC battery, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

3. Disconnect all external devices from the computer.

4. Remove the bottom cover (see Bottom cover on page 22).

5. Remove the battery (see Battery on page 23).

Remove the RTC battery:

1. Position the system board upside-down.

2. Use a tool to pry the battery out of the socket (1).

3. Remove the battery from the system board (2).

Reverse this procedure to install the RTC battery.
**TouchPad**

TouchPad board and cable spare part kits include replacement rubber feet.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>TouchPad</td>
<td>913004-001</td>
</tr>
<tr>
<td>TouchPad cable</td>
<td>912992-001</td>
</tr>
</tbody>
</table>

**IMPORTANT:** The TouchPad is located under the main system battery.

Before removing the TouchPad, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see **Bottom cover on page 22**).
5. Remove the battery (see **Battery on page 23**).

Remove the TouchPad:

1. Disconnect the TouchPad cable from the TouchPad board (1).
2. Remove the five Phillips M2.0×2.0 screws (2) that secure the TouchPad to the computer.
3. Remove the TouchPad from the computer (3).

Reverse this procedure to install the TouchPad.
Volume board

Volume board and cable spare part kits include replacement rubber feet.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume board</td>
<td>913634-001</td>
</tr>
<tr>
<td>Volume board cable</td>
<td>913633-001</td>
</tr>
</tbody>
</table>

**IMPORTANT:** You must remove the battery and right speaker to remove the volume board. The volume board cable routes under the right speaker.

Before removing the volume board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see Bottom cover on page 22).
5. Remove the battery (see Battery on page 23).
6. Remove the right speaker (see Speakers on page 33).

Remove the volume board:

1. Remove the Phillips PM2.0×3.5 screw (1) that secures the volume board to the computer.
2. Lift and rotate the board so you can access the connector underneath (2).
3. Disconnect the cable from the ZIF connector on the bottom of the board (3).
4. Remove the board (4) from the computer.

5. Remove the volume board.

Reverse this procedure to install the volume board.
Card reader board

Card reader board and cable spare part kits include replacement rubber feet.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Card reader board</td>
<td>913005-001</td>
</tr>
<tr>
<td>Card reader board cable</td>
<td>912991-001</td>
</tr>
</tbody>
</table>

**IMPORTANT:** You must remove the battery and left speaker to remove the card reader board.

Before removing the card reader board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see Bottom cover on page 22).
5. Remove the battery (see Battery on page 23).
6. Remove the left speaker (see Speakers on page 33).

Remove the card reader board:

1. Remove the Phillips M2.0×2.5 screw (1) that secures the card reader board to the computer.
2. Lift and position the card reader board so you can access the connector underneath (2).
3. Disconnect the cable from the ZIF connector on the bottom of the card reader board (3).
4. Remove the card reader board (4) from the computer.

Reverse this procedure to install the card reader board.
Display assembly

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display assembly (full hinge-up)</td>
<td>911082-001</td>
</tr>
</tbody>
</table>

Before removing the display assembly, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see Bottom cover on page 22).
5. Disconnect the battery cable from the system board (see Battery on page 23).

⚠️ CAUTION: To prevent damage to internal components, be sure to disconnect the battery cable from the system board before removing the display. You do not need to remove the battery to remove the display.

Remove the display assembly:

1. Open the computer all the way until it is flat (180 degrees).
2. Disconnect the webcam cable from the system board (2).
3. Disconnect the antenna cables from the WLAN module (3).
4. Disconnect the display panel cable from the ZIF connector on the system board (4).
5. Remove the four Phillips M2.5×4.0 screws (5) that secure the display assembly to the computer.
6. Pull the display assembly away from the computer (6).

Reverse this procedure to install the display assembly.
## System board

**NOTE:** The system board spare part kit includes processor, a graphics subsystem with 2 GB of discrete graphics memory and replacement thermal material.

System board spare part kits include replacement rubber feet.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>System board equipped with an Intel Core i7-8550U processor, 2-GB of discrete graphics memory, and the Windows 10 operating system</td>
<td>941662-601</td>
</tr>
<tr>
<td>System board equipped with an Intel Core i7-8550U processor, 2-GB of discrete graphics memory, and a non-Windows operating system</td>
<td>941662-001</td>
</tr>
<tr>
<td>System board equipped with an Intel Core i7-7500U processor, 2-GB of discrete graphics memory, and the Windows 10 operating system</td>
<td>911083-601</td>
</tr>
<tr>
<td>System board equipped with an Intel Core i7-7500U processor, 2-GB of discrete graphics memory, and a non-Windows operating system</td>
<td>911083-001</td>
</tr>
</tbody>
</table>

Before removing the system board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see Bottom cover on page 22).
5. Remove the battery (see Battery on page 23).
6. Remove the fans (see Fans, left and right on page 29).
7. Remove the heat sink (see Heat sink on page 31).

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

- Memory modules (see Memory modules on page 25)
- WLAN module (see WLAN module on page 27)
- Solid-state drive (see Solid-state drive on page 39)

Remove the system board:

1. Disconnect the following cables from the system board:
   - (1) Webcam cable
   - (2) Display cable
   - (3) RTC battery cable
   - (4) Left speaker cable
   - (5) Volume cable
   - (6) TouchPad cable
2. Lift the long Mylar strip from atop the system board (1).

3. Remove the two Phillips M2.0×3.5 screws (2) and the two Phillips broadhead M2.0×2.0 screws (3) that secure the system board to the computer.

4. Slide the system board toward the right (4), and then remove the system board from the computer (5).

Reverse this procedure to install the system board.
When replacing the system board, replace the acetate tape over the light, as shown in the following image. Tape size for this location is 5 mm × 12 mm.

**IMPORTANT:** The acetate tape is not spared and must be obtained locally.
Top cover/keyboard

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

Top cover/keyboard spare part kits include replacement rubber feet.

<table>
<thead>
<tr>
<th>For use in country or region</th>
<th>Spare part number</th>
<th>For use in country or region</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>For use in Belgium</td>
<td>912995-A41</td>
<td>For use in the Netherlands</td>
<td>912995-B31</td>
</tr>
<tr>
<td>For use in Canada</td>
<td>912995-081</td>
<td>For use in the Russia</td>
<td>912995-251</td>
</tr>
<tr>
<td>For use in Denmark, Finland, and Norway</td>
<td>912995-DH1</td>
<td>For use in Saudi Arabia</td>
<td>912995-171</td>
</tr>
<tr>
<td>For use in France</td>
<td>912995-051</td>
<td>For use in Switzerland</td>
<td>912995-BG1</td>
</tr>
<tr>
<td>For use in Germany</td>
<td>912995-041</td>
<td>For use in the United Kingdom and Singapore</td>
<td>912995-031</td>
</tr>
<tr>
<td>For use in Greece</td>
<td>912995-151</td>
<td>For use in the United States</td>
<td>912995-001</td>
</tr>
<tr>
<td>For use in Italy</td>
<td>912995-061</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Reverse this procedure to install the keyboard.

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

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

▲ Turn on or restart the computer, quickly press `esc`, and then press `f10`.

### Updating Setup Utility (BIOS)

Updated versions of Setup Utility (BIOS) may be available on the HP website.

Most BIOS updates on the HP website are packaged in compressed files called *SoftPaqs*.

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

### Determining the BIOS version

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

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

- **HP Support Assistant**
  1. Type `support` in the taskbar search box, and then select the *HP Support Assistant* app.
     
     – or –
     
     Click the question mark icon in the taskbar.
  2. Select *My PC*, and then select *Specifications*.

- **Setup Utility (BIOS)**
  1. Start Setup Utility (BIOS) (see *Starting Setup Utility (BIOS)* on page 53).
  2. Select *Main*, select *System Information*, and then make note of the BIOS version.
  3. Select *Exit*, select *No*, and then follow the on-screen instructions.

To check for later BIOS versions, see *Downloading a BIOS update on page 54*.
**Downloading a BIOS update**

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

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

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

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

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

1. Type `file` in the taskbar search box, and then select **File Explorer**.
2. Click 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.
Using HP PC Hardware Diagnostics (UEFI)

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

When HP PC Hardware Diagnostics (UEFI) detects a failure that requires hardware replacement, a 24-digit Failure ID code is generated. This ID code can then be provided to support to help determine how to correct the problem.

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

To start HP PC Hardware Diagnostics (UEFI), follow these steps:

1. Turn on or restart the computer, and quickly press `esc`.
2. Press `f2`.

   The BIOS searches three places for the diagnostic tools, in the following order:
   a. Connected USB drive
   b. Hard drive
   c. BIOS

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

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

**Downloading HP PC Hardware Diagnostics (UEFI) to a USB device**

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

There are two options to download HP PC Hardware Diagnostics to a USB device.

**Download the latest UEFI version**

2. In the HP PC Hardware Diagnostics section, select the Download link, and then select Run.

**Download any version of UEFI for a specific product**

2. Select Get software and drivers.
3. Enter the product name or number.
   – or –
   Select **Identify now** to let HP automatically detect your product.

4. Select your computer, and then select your operating system.

5. In the **Diagnostic** section, follow the on-screen instructions to select and download the UEFI version you want.

**Additional BIOS crisis recovery tool**

HP provides a BIOS crisis recovery tool through the HP PC Hardware Diagnostics 3-in-1 USB key. This tool can be used by HP authorized service providers to recover systems that have failed due to a corrupted BIOS. For more information about using the 3-in-1 USB key for BIOS crisis recovery, go to [http://www.hp.com/go/techcenter/pcdiags](http://www.hp.com/go/techcenter/pcdiags). Additional information is included in the web-based training offered by HP University. See the modules that cover HP PC Hardware Diagnostics (UEFI).
8 Backing up, restoring, and recovering

This chapter provides information about the following processes. The information in the chapter is standard procedure for most products.

- Creating recovery media and backups
- Restoring and recovering your system

For additional information, refer to the HP Support Assistant app.

▲ Type support in the taskbar search box, and then select the HP Support Assistant app.

– or –
Select the question mark icon in the taskbar.

**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.

Creating recovery media and backups

The following methods of creating recovery media and backups are available on select products only. Choose the available method according to your computer model.

- Use HP Recovery Manager to create HP Recovery media after you successfully set up the computer. This step creates a backup of the HP Recovery partition on the computer. The backup can be used to reinstall the original operating system in cases where the hard drive is corrupted or has been replaced. For information on creating recovery media, see Creating HP Recovery media (select products only) on page 57. For information on the recovery options that are available using the recovery media, see Using Windows tools on page 58.

- Use Windows tools to create system restore points and create backups of personal information. For more information, see Recovering using HP Recovery Manager on page 59.

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

- On select products, use the HP Cloud Recovery Download Tool to create a bootable USB drive for your HP recovery media. Go to https://support.hp.com/us-en/document/c05115630?openCLC=true, select your country or region, and follow the on-screen instructions.

Creating HP Recovery media (select products only)

If possible, check for the presence of the Recovery partition and the Windows partition. Right-click the Start menu, select File Explorer, and then select This PC.

- If your computer does not list the Windows partition and the Recovery partition, you can obtain recovery media for your system from support. You can find contact information on the HP website. Go to http://www.hp.com/support, select your country or region, and follow the on-screen instructions.
You can use Windows tools to create system restore points and create backups of personal information, see *Using Windows tools on page 58.*

- If your computer does list the Recovery partition and the Windows partition, you can use HP Recovery Manager to create recovery media after you successfully set up the computer. HP Recovery media can be used to perform system recovery if the hard drive becomes corrupted. System recovery reinstalls the original operating system and software programs that were installed at the factory and then configures the settings for the programs. HP Recovery media can also be used to customize the system or restore the factory image if you replace the hard drive.
  - Only one set of recovery media can be created. Handle these recovery tools carefully, and keep them in a safe place.
  - HP Recovery Manager examines the computer and determines the required storage capacity for the media that will be required.
  - To create recovery discs, your computer must have an optical drive with DVD writer capability, and you must use only high-quality blank DVD-R, DVD+R, DVD-R DL, or DVD+R DL discs. Do not use rewritable discs such as CD±RW, DVD±RW, double-layer DVD±RW, or BD-RE (rewritable Blu-ray) discs; they are not compatible with HP Recovery Manager software. Or, instead, you can use a high-quality blank USB flash drive.
  - If your computer does not include an integrated optical drive with DVD writer capability, but you would like to create DVD recovery media, you can use an external optical drive (purchased separately) to create recovery discs. If you use an external optical drive, it must be connected directly to a USB port on the computer; the drive cannot be connected to a USB port on an external device, such as a USB hub. If you cannot create DVD media yourself, you can obtain recovery discs for your computer from HP. You can find contact information on the HP website. Go to [http://www.hp.com/support](http://www.hp.com/support), select your country or region, and follow the on-screen instructions.
  - Be sure that the computer is connected to AC power before you begin creating the recovery media.
  - The creation process can take an hour or more. Do not interrupt the creation process.
  - If necessary, you can exit the program before you have finished creating all of the recovery DVDs. HP Recovery Manager will finish burning the current DVD. The next time you start HP Recovery Manager, you will be prompted to continue.

To create HP Recovery media:

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

1. Type *recovery* in the taskbar search box, and then select *HP Recovery Manager*.
2. Select *Create recovery media*, and then follow the on-screen instructions.

If you ever need to recover the system, see *Recovering using HP Recovery Manager on page 59.*

## Using Windows tools

You can create recovery media, system restore points, and backups of personal information using Windows tools.

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

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

▲ Select the *Start* button, and then select the *Get Help* app.
Restore and recovery

There are several options for recovering your system. Choose the method that best matches your situation and level of expertise:

**IMPORTANT:** Not all methods are available on all products.

- Windows offers several options for restoring from backup, refreshing the computer, and resetting the computer to its original state. For more information see the Get help app.
  - Select the Start button, and then select the Get Help app.

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

- If you need to correct a problem with a preinstalled application or driver, use the Reinstall drivers and/or applications option (select products only) of HP Recovery Manager to reinstall the individual application or driver.
  - Type recovery in the taskbar search box, select HP Recovery Manager, select Reinstall drivers and/or applications, and then follow the on-screen instructions.

- If you want to recover the Windows partition to original factory content, you can choose the System Recovery option from the HP Recovery partition (select products only) or use the HP Recovery media. For more information, see Recovering using HP Recovery Manager on page 59. If you have not already created recovery media, see Creating HP Recovery media (select products only) on page 57.

- On select products, if you want to remove the Recovery partition to reclaim hard drive space, HP Recovery Manager offers the Remove Recovery Partition option.
  - For more information, see Removing the HP Recovery partition (select products only) on page 61.

Recovering using HP Recovery Manager

HP Recovery Manager software allows you to recover the computer to its original factory state by using the HP Recovery media that you either created or that you obtained from HP, or by using the HP Recovery partition (select products only). If you have not already created recovery media, see Creating HP Recovery media (select products only) on page 57.

What you need to know before you get started

- HP Recovery Manager recovers only software that was installed at the factory. For software not provided with this computer, you must either download the software from the manufacturer's website or reinstall the software from the media provided by the manufacturer.
  - **IMPORTANT:** Recovery through HP Recovery Manager should be used as a final attempt to correct computer issues.

- HP Recovery media must be used if the computer hard drive fails. If you have not already created recovery media, see Creating HP Recovery media (select products only) on page 57.
To use the Factory Reset option (select products only), you must use HP Recovery media. If you have not already created recovery media, see Creating HP Recovery media (select products only) on page 57.

If your computer does not allow the creation of HP Recovery media or if the HP Recovery media does not work, you can obtain recovery media for your system from support. You can find contact information from the HP website. Go to http://www.hp.com/support, select your country or region, and follow the on-screen instructions.

IMPORTANT: HP Recovery Manager does not automatically provide backups of your personal data. Before beginning recovery, back up any personal data you want to retain.

Using HP Recovery media, you can choose from one of the following recovery options:

- System Recovery—Reinstalls the original operating system, and then configures the settings for the programs that were installed at the factory.

- Factory Reset—Restores the computer to its original factory state by deleting all information from the hard drive and re-creating the partitions. Then it reinstalls the operating system and the software that was installed at the factory.

The HP Recovery partition (select products only) allows System Recovery only.

Using the HP Recovery partition (select products only)

The HP Recovery partition allows you to perform a system recovery without the need for recovery discs or a recovery USB flash drive. This type of recovery can be used only if the hard drive is still working.

To start HP Recovery Manager from the HP Recovery partition:

IMPORTANT: For a tablet with a detachable keyboard, connect the tablet to the keyboard base before beginning these steps (select products only).

1. Type recovery in the taskbar search box, select HP Recovery Manager, and then select Windows Recovery Environment.

   - or -

   For computers or tablets with keyboards attached, press f11 while the computer boots, or press and hold f11 as you press the power button.

   For tablets without keyboards:
   - Turn on or restart the tablet, and then quickly hold down the volume up button; then select f11.
   - or -
   - Turn on or restart the tablet, and then quickly hold down the volume down button; then select f11.

2. Select Troubleshoot from the boot options menu.

3. Select Recovery Manager, and then follow the on-screen instructions.

Using HP Recovery media to recover

You can use HP Recovery media to recover the original system. This method can be used if your system does not have an HP Recovery partition or if the hard drive is not working properly.
1. If possible, back up all personal files.

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

   **NOTE:** If the computer does not automatically restart in HP Recovery Manager, change the computer boot order. See Changing the computer boot order on page 61.

3. Follow the on-screen instructions.

### Changing the computer boot order

If your computer does not restart in HP Recovery Manager, you can change the computer boot order, which is the order of devices listed in BIOS where the computer looks for startup information. You can change the selection to an optical drive or a USB flash drive.

To change the boot order:

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

1. Insert the HP Recovery media.

2. Access the system Startup menu.

   For computers or tablets with keyboards attached:
   - Turn on or restart the computer or tablet, quickly press *esc*, and then press *f9* for boot options.

   For tablets without keyboards:
   - Turn on or restart the tablet, and then quickly hold down the volume up button; then select *f9*.
   - or –
   - Turn on or restart the tablet, and then quickly hold down the volume down button; then select *f9*.

3. Select the optical drive or USB flash drive from which you want to boot.

4. Follow the on-screen instructions.

### Removing the HP Recovery partition (select products only)

HP Recovery Manager software allows you to remove the HP Recovery partition to free up hard drive space.

**IMPORTANT:** After you remove the HP Recovery partition, you will not be able to perform System Recovery or create HP Recovery media from the HP Recovery partition. So before you remove the Recovery partition, create HP Recovery media; see Creating HP Recovery media (select products only) on page 57.

**NOTE:** The Remove Recovery Partition option is only available on products that support this function.

Follow these steps to remove the HP Recovery partition:

1. Type `recovery` in the taskbar search box, and then select HP Recovery Manager.

2. Select Remove Recovery Partition, and then follow the on-screen instructions.
## Specifications

<table>
<thead>
<tr>
<th></th>
<th>Metric</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions</strong></td>
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</tr>
<tr>
<td>Width</td>
<td>359.7 mm</td>
<td>14.16 in</td>
</tr>
<tr>
<td>Depth</td>
<td>250.9 mm</td>
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<tr>
<td>Height</td>
<td>17.9 mm</td>
<td>0.71</td>
</tr>
<tr>
<td>Weight (equipped with solid-state drive)</td>
<td>2136 g</td>
<td>4.7 lbs</td>
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<tr>
<td><strong>Input power</strong></td>
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<td></td>
</tr>
<tr>
<td>Operating voltage and current</td>
<td>19.5 V dc @ 2.31 A – 45 W</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>19.5 V dc @ 3.33 A – 65 W</td>
</tr>
</tbody>
</table>

**NOTE:** This product is designed for IT power systems in Norway with phase-to-phase voltage not exceeding 240 V rms.

**NOTE:** The computer operating voltage and current can be found on the system regulatory label.

| **Temperature**   |           |           |
| Operating         | 5°C to 35°C | 41°F to 95°F |
| Nonoperating      | -20°C to 60°C | -4°F to 140°F |

| **Relative humidity** (noncondensing) |           |           |
| Operating | 10% to 90% |           |
| Nonoperating | 5% to 95% |           |

| **Maximum altitude** (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 |

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

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

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

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

Requirements for all countries

The following requirements are applicable to all countries and regions:

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

Requirements for specific countries and regions

<table>
<thead>
<tr>
<th>Country/region</th>
<th>Accredited agency</th>
<th>Applicable note number</th>
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<tbody>
<tr>
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<td>OVE</td>
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<td>The People's Republic of China</td>
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<td>Country/region</td>
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<td>The United Kingdom</td>
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<td>1</td>
</tr>
<tr>
<td>The United States</td>
<td>UL</td>
<td>2</td>
</tr>
</tbody>
</table>

1. The flexible cord must be Type H05VV-F, 3-conductor, 1.0-mm² 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 SPT-3 or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V) or NEMA 6-15P (15 A, 250 V) configuration.

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 VCT or VCTF, 3-conductor, 1.00-mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V) configuration.

4. The flexible cord must be Type RVV, 3-conductor, 0.75-mm² 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.

5. The flexible cord must be Type VCTF, 3-conductor, 0.75-mm² 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.
11 Recycling

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

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

A
AC adapter and battery light, identifying 4
AC adapter, spare part numbers 16
action keys
identifying 11
active pen, spare part number 16
audio, product description 2
audio-out (headphone)/audio-in (microphone) combo jack, identifying 5

B
backups 57
battery
removal 23
spare part number 15, 23
BIOS
determining version 53
downloading an update 54
starting the Setup Utility 53
upgrading 53
Bluetooth label 13
boot order
changing 61
bottom 13
bottom cover
removal 22
spare part numbers 16, 22
buttons
left TouchPad 8
power 5
right TouchPad 8

C
cables, service considerations 17
camera
identifying 7
camera light, identifying 7
caps lock light, identifying 9
card reader board
removal 45
spare part numbers 15, 45
card reader board cable
spare part numbers 15
components
bottom 12
display 7
left side 5
right side 4
computer
major components 14
specifications 62
connector, power 4, 5
connectors
service considerations 17
D
display assembly
removal 47
spare part numbers 47
display panel, product description 1
display assembly
removal 47
spare part numbers 47
display panel, product description 1
E
electrostatic discharge 18
equipment guidelines 20
esc key, identifying 11
external media cards, product description 2
F
fan
removal 29
spare part numbers 16, 29
fn key, identifying 11
G
graphics, product description 1
grounding guidelines 18
guidelines
equipment 20
grounding 18
packaging 19
transporting 19
workstation 19
H
HDMI port
identifying 4
heat sink
removal 31
spare part numbers 16, 31
HP PC Hardware Diagnostics (UEFI)
using 55
HP Recovery Manager
correcting boot problems 61
starting 60
HP Recovery media
creating 57
recovery 60
HP Recovery partition
recovery 60
removing 61
I
internal microphones, identifying 7
J
jacks
audio-out (headphone)/audio-in (microphone) 5
K
keyboard
removal 52
spare part numbers 15, 52
keys
action 11
esc 11
fn 11
Windows 11
L
labels
Bluetooth 13
regulatory 13
serial number 13
service 13
wireless certification 13
WLAN 13
left speaker kit
spare part number 16
lights
AC adapter and battery light 4
TouchPad zone, identifying 8
transporting guidelines 19
traveling with the computer 13

U
USB 3.x SuperSpeed port with HP Sleep and Charge, identifying 5
USB Type-C power connector and port with HP Sleep and Charge, identifying 5
USB Type-C power connector and Thunderbolt port with HP Sleep and Charge, identifying 4
USB-C to RJ-45 adapter 16
USB-C to USB-A adapter 16
USB-C to VGA adapter 16
USB/audio/power connector board removal 36
spare part number 15
spare part numbers 36
USB/audio/power connector board cable spare part number 15

V
vents, identifying 4, 6, 12
video, product description 2
volume board removal 43
spare part number 15, 43
volume board cable spare part number 15

W
Windows system restore point 57, 58
Windows key, identifying 11
Windows tools using 58
wireless certification label 13
wireless, product description 2
WLAN antennas, identifying 7
WLAN device 13
WLAN label 13
WLAN module removal 27
spare part numbers 15, 27
workstation guidelines 19