HP Pavilion x360 15 Convertible PC

Maintenance and Service Guide

IMPORTANT! This document is intended for HP authorized service providers only.
Product notice

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

Not all features are available in all editions of Windows 10. This computer may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows 10 functionality. See for details.
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

## 2 External component identification

- Display .................................................................................................................. 4
- Speakers .................................................................................................................. 5
- TouchPad ................................................................................................................ 5
- Left side .................................................................................................................. 6
- Right side ............................................................................................................... 7
- Bottom ................................................................................................................... 8

## 3 Illustrated parts catalog

- Labels ..................................................................................................................... 9
- Computer major components .............................................................................. 9
- Display assembly subcomponents ...................................................................... 16
- Miscellaneous parts .......................................................................................... 18

## 4 Removal and replacement preliminary requirements

- Tools required ...................................................................................................... 19
- Service considerations ......................................................................................... 19
  - Plastic parts ...................................................................................................... 19
  - Cables and connectors ...................................................................................... 19
  - Drive handling ................................................................................................. 20
- Grounding guidelines ......................................................................................... 21
- Electrostatic discharge damage ......................................................................... 21
  - Packaging and transporting guidelines .......................................................... 22
  - Workstation guidelines .................................................................................. 22

## 5 Removal and replacement procedures

- Component replacement procedures ................................................................ 24
  - Keyboard/top cover ......................................................................................... 24
  - TouchPad cable ............................................................................................... 28
  - TouchPad .......................................................................................................... 29
  - Battery ............................................................................................................. 30
  - Hard drive ....................................................................................................... 31
  - Audio jack board cable ................................................................................... 33
  - Audio jack board ............................................................................................. 34
Power button board cable .................................................................................................................. 35
Power button board .......................................................................................................................... 36
Speakers ............................................................................................................................................ 37
System board .................................................................................................................................... 38
WLAN module .................................................................................................................................. 42
Fan/heat sink assembly .................................................................................................................... 43
Memory module .................................................................................................................................... 45
Power connector cable ....................................................................................................................... 47
Display assembly ............................................................................................................................... 48

6 Computer Setup (BIOS), TPM, and HP Sure Start ........................................................................ 58
Using Computer Setup ..................................................................................................................... 58
Starting Computer Setup .................................................................................................................. 58
Navigating and selecting in Computer Setup .................................................................................... 58
Restoring factory settings in Computer Setup .................................................................................. 59
Updating the BIOS ............................................................................................................................ 60
  Determining the BIOS version ........................................................................................................ 60
  Downloading a BIOS update ........................................................................................................... 60
  Changing the boot order using the f9 prompt .................................................................................... 61
TPM BIOS settings (select products only) ......................................................................................... 62
Using HP Sure Start (select products only) ....................................................................................... 62

7 HP PC Hardware Diagnostics (UEFI) ............................................................................................ 63
  Downloading HP PC Hardware Diagnostics (UEFI) to a USB device ............................................. 64

8 Specifications ........................................................................................................................................ 65

9 Power cord set requirements ........................................................................................................... 66
  Requirements for all countries .......................................................................................................... 66
  Requirements for specific countries and regions .............................................................................. 66

10 Recycling ........................................................................................................................................... 68

Index .................................................................................................................................................... 69
## 1 Product description

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Product Name** | HP Pavilion x360 15 Convertible PC (model number 15-br1xx)  
HP Pavilion x360 15 Convertible PC (model number 15-br0xx) |
| **Processors** | For use only on computer models with model number 15-br1xx:  
- Intel® Core™ i7-8550U 1.80-GHz (SC turbo up to 4.00-GHz) quad core processor (8.0-GB L3 cache, 2400-MHz FSB, 15-W)  
For use on all computer models:  
- Intel Core i7-7500U 2.70-GHz (SC turbo up to 3.56-GHz) dual core processor (4.0-GB L3 cache, 2133-MHz FSB, 15-W)  
- Intel Core i5-7200U 2.56-GHz (SC turbo up to 3.10-GHz) dual core processor (3.0-GB L3 cache, 2133-MHz FSB, 15-W)  
- Intel Core i3-7100U 2.40-GHz dual core processor (3.0-GB L3 cache, 2133-MHz FSB, 15-W)  
- Intel Pentium™ 4415U 2.36-GHz dual core processor (2.0-GB L3 cache, 2133-MHz FSB, 15-W) |
| **Chipset** | Integrated with soldered-on-circuit (SoC) |
| **Graphics** | **Switchable discrete graphics:**  
AMD Radeon® 530 R17M-M1-70 (Meso Pro) with up to 4096-MB of discrete video memory (512-MB×16 DDR3×4 pieces; available only on computer models equipped with an Intel Core i7-7500U processor)  
AMD Radeon 530 R17M-M1-70 (Meso Pro) with up to 2048-MB of discrete video memory (256-MB×16 DDR3×4 pieces; available only on computer models equipped with an Intel Core i5-7200U processor or an Intel Core i3-7100U processor)  
**Internal graphics:**  
Intel HD Graphics 620 (available only on computer models equipped with an Intel Core i5 processor or an Intel Core i3 processor)  
Intel HD Graphics (available only on computer models equipped with an Intel Pentium 4415U processor)  
Support for HD decode, DX12, and high-definition multimedia interface (HDMI) |
| **Panel** | 15.6-in, full high-definition (FHD), white light-emitting (WLED), BrightView (1920×1080), slim/flat (3.2-mm), UWVA, eDP, 220 nits, 16:9 ultra wide aspect ratio TouchScreen display assembly  
15.6-in, high-definition (HD), WLED, AntiGlare (1366×768), slim/flat (3.2-mm), SVA, eDP, 220 nits, 16:9 ultra wide aspect ratio TouchScreen display assembly  
Support for active stylus |
| **Memory** | Two SODIMM memory module slots, non-customer-accessible/non-upgradable  
Supports up to 16-GB of system memory  
DDR4-2133 dual channel support (DDR4-2400 downgrade to DDR4-2133)  
Supports the following configurations:  
- 16384 MB (8192 MB × 2)  
- 8192 MB (8192 MB × 1)  
- 6144 MB (4096 MB + 2048 MB) |
<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Memory (continued)</strong></td>
<td>● 4096 MB (4096 MB × 1)</td>
</tr>
<tr>
<td><strong>Storage</strong></td>
<td>Single hard drive configurations:&lt;br&gt;1-TB, 5400-rpm, 7.2-mm hard drive&lt;br&gt;500-GB, 5400-rpm, 7.0-mm hard drive&lt;br&gt;Solid-state hard drive configurations:&lt;br&gt;1-TB, 5400-rpm, 7.2-mm solid-state hard drive with 8-GB NAND&lt;br&gt;500-GB, 5400-rpm, 7.0-mm solid-state hard drive with 8-GB NAND&lt;br&gt;<strong>Solid-state drive:</strong>&lt;br&gt;Support for M.2 SATA solid-state drive (support for storage function, port 1; not available on computer models equipped with an Intel Pentium processor)&lt;br&gt;Support for Serial Advanced Technology Attachment (SATA)&lt;br&gt;Support for hard drive and solid-state drive&lt;br&gt;For use only on computer models with model number 15-cc7xx:&lt;br&gt;● 512-GB, 2280, Peripheral Component Interconnect Express (PCIe), Non-Volatile Memory Express (NVMe) solid-state drive&lt;br&gt;● 256-GB, 2280, PCIe, NVMe solid-state drive&lt;br&gt;For use on all computer models:&lt;br&gt;M.2 SATA-3 solid-state drive with Triple-Level Cell (TLC):&lt;br&gt;● 512-GB&lt;br&gt;● 256-GB&lt;br&gt;● 128-GB&lt;br&gt;M.2 SATA-3 solid-state drive: 256-GB and 128-GB&lt;br&gt;Dual storage configurations (not available on computer models equipped with an Intel Pentium processor):&lt;br&gt;1-TB, 5400-rpm, 7.2-mm hard drive with 128-GB M.2 SATA-3 solid-state drive&lt;br&gt;500-GB, 5400-rpm, 7.0-mm hard drive with 128-GB M.2 SATA-3 solid-state drive</td>
</tr>
<tr>
<td><strong>Optical drive</strong></td>
<td>HP external DVD±RW DL SuperMulti Drive</td>
</tr>
<tr>
<td><strong>Audio and video</strong></td>
<td>Support for the following cameras:&lt;br&gt;HP Wide Vision FHD infrared camera with indicator light and 2 infrared lights, USB 2.0, FHD hybrid BSI sensor, f2.2, WDR, 88° wide field of vision, 1080p by 30 frames per second (available only on computer models equipped with an FHD display assembly, an Intel I7 processor and a graphics subsystem with discrete video memory and computer models equipped with an FHD display assembly and an Intel Pentium processor)&lt;br&gt;HP Wide Vision HD camera with indicator light, USB 2.0, HD BSI sensor, f2.0, WDR, 88° wide field of vision, 720p by 30 frames per second&lt;br&gt;Support for B&amp;O Play&lt;br&gt;Support for B&amp;O Play Audio Control&lt;br&gt;Support for dual-array digital microphones with appropriate beam-forming, echo-cancellation, noise-suppression software&lt;br&gt;Support for dual speakers&lt;br&gt;Support for HP Audio Boost</td>
</tr>
<tr>
<td>Category</td>
<td>Description</td>
</tr>
<tr>
<td>----------</td>
<td>-------------</td>
</tr>
<tr>
<td><strong>Audio and video</strong> (continued)</td>
<td>Support for Windows Hello</td>
</tr>
</tbody>
</table>
| **Sensors** | • Accelerometer (ST Micro HP2DC)  
• Gyroscope/E-compass/Accelerometer (ST Micro HP9DS1)  
• Integrated sensor hub |
| **Wireless** | **WLAN:**  
Integrated wireless local area network (WLAN) options by way of wireless module  
Two M.2/PCIe WLAN antennas built into display assembly  
Integrated wireless personal area network (PAN) supported by Bluetooth® 4.2 combo card  
Support for the Intel Dual Band Wireless-AC 7265 802.11 AC 2×2 WiFi + Bluetooth 4.2 Combo Adapter (non-vPro) and Intel Dual Band Wireless-AC 3168 802.11AC 1×1 WiFi + Bluetooth 4.2 Combo Adapter (non-vPro) formats |
| **External media cards** | Micro-Secure Digital (SD®) media reader slot |
| **Ports** | • AC Smart Pin adapter plug  
• Audio-out (headphone)/audio-in (microphone) combo jack  
• HDMI v1.4 supporting up to 1920×1080 @ 60Hz  
• USB 3.x ports (2)  
• USB Type-C port |
| **Keyboard/pointing devices** | Full-sized, three-coat, backlit, island-style keyboard with numeric keypad  
TouchPad requirements:  
• ClickPad with image sensor  
• MultiTouch gestures enabled  
• Support for Modern TrackPad gestures  
• Taps enabled as default |
| **Power requirements** | Support for a 3-cell, 48-WHr, 4.2-AHr, Li-ion battery  
Support for the following AC adapters:  
• 90-W AC adapter (PFC, S-3P, 4.5-mm)  
• 65-W HP Smart AC adapter (non-PFC, EM, RC, 4.5-mm)  
• 65-W AC adapter (non-PFC, S-3P, 4.5-mm)  
• 45-W HP Smart AC adapter (non-PFC, RC, 4.5-mm, non-slim)  
Support for a 1.00-m power cord with a C5 connector in 12 countries/regions. |
| **Security** | Security cable lock slot  
Support for Trusted Platform Module (TPM) 2.0 (firmware-based) |
| **Operating system** | Preinstalled: Windows 10 and Windows 10 Professional  
For developed market (ML): Windows 10 Home ML and Windows 10 Home Plus ML  
| **Serviceability** | End user replaceable part: AC adapter |
## 2  External component identification

### Display

<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
</table>
| (1)  | WLAN antennas (2)* | Send and receive wireless signals to communicate with WLANs.  
**NOTE:** The position of the WLAN antennas may differ, depending on model. |
| (2)  | Internal microphone | Records sound. |
| (3)  | Webcam | Records video, captures still photographs, and allows video conferences and online chat by means of streaming video. |
| (4)  | Webcam light | On: The webcam is in use. |
| (5)  | Internal display switch | Turns off the display or initiates Sleep if the display is closed while the power is on.  
**NOTE:** The display switch is not visible from the outside of the computer. |

*The antennas, IR emitters (select models only), and sensors are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennas, IR emitters, and sensors free from obstructions. For wireless regulatory notices, see the section of the *Regulatory, Safety, and Environmental Notices* that applies to your country or region.*
### Speakers

![Image of a laptop with speakers highlighted]

<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Speakers</td>
<td>Produce sound.</td>
</tr>
</tbody>
</table>

### TouchPad

![Image of a laptop touchpad with numbered zones]

<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>TouchPad zone</td>
<td>Moves the on-screen pointer and selects or activates items on the screen.</td>
</tr>
<tr>
<td>(2)</td>
<td>Left control zone</td>
<td>Textured area that allows you to perform additional gestures.</td>
</tr>
<tr>
<td>(3)</td>
<td>Right control zone</td>
<td>Textured area that allows you to perform additional gestures.</td>
</tr>
</tbody>
</table>
## Left side

<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
</table>
| (1)  | Security cable slot | Attaches an optional security cable to the computer.  
**NOTE:** The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen. |
| (2)  | Power connector | Connects an AC adapter. |
| (3)  | AC adapter light |  
- White: The AC adapter is connected and the battery is charged.  
- Amber: The AC adapter is connected and the battery is charging.  
- Off: The computer is using battery power. |
| (4)  | Memory card reader | Reads optional memory cards that store, manage, share, or access information.  
To insert a card:  
▲ Hold the card label-side up, with connectors facing the slot, insert the card into the slot, and then push in on the card until it is firmly seated.  
To remove a card:  
▲ Press in on the card it until it pops out. |
## Right side

<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
</table>
| (1)  | Power light | - White: Computer is on.  
- Blinking white: Computer is in Sleep mode.  
- Off: The computer is off. |
| (2)  | Audio-out (headphone)/Audio-in (microphone) 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 microphone-only devices.  
**WARNING!** To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset.  
**NOTE:** When a device is connected to the jack, the computer speakers are disabled.  
**NOTE:** Be sure that the device cable has 4-conductor connector that supports both audio-out (headphone) and audio-in (microphone). |
| (3)  | USB 2.0 port | Connect optional USB devices, such as a keyboard, mouse, external drive, printer, scanner or USB hub. |
| (4)  | USB 3.0 charging (powered) port | Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub. Standard USB ports will not charge all USB devices or will charge using a low current. Some USB devices require power and require you to use a powered port. |
| (5)  | 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. |
## Bottom

<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Speakers (2)</td>
<td>Produce sound.</td>
</tr>
</tbody>
</table>
3 Illustrated parts catalog

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, select your country or region, and then follow the on-screen instructions.

Labels

The labels affixed to the computer provide information that may be needed when troubleshooting system problems or travelling 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, on the back of the display, or on the bottom of a tablet kickstand.

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

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

Component

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

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>HP product name (select products only)</td>
</tr>
<tr>
<td>2</td>
<td>Product number</td>
</tr>
<tr>
<td>3</td>
<td>Serial number</td>
</tr>
<tr>
<td>4</td>
<td>Warranty period</td>
</tr>
</tbody>
</table>

**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: The display assembly is spared at the subcomponent level only. For more display assembly spare part information, see <a href="#">Display assembly subcomponents on page 16</a>.</td>
<td></td>
</tr>
<tr>
<td>(2)</td>
<td>Keyboard/top cover</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In ash silver finish with backlight for use only on computer models equipped with a graphics subsystem with discrete memory (includes backlight cable and keyboard cable):</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For use in Canada</td>
<td>924525-DB1</td>
</tr>
<tr>
<td></td>
<td>For use in the United States</td>
<td>924525-001</td>
</tr>
<tr>
<td></td>
<td>In ash silver finish with backlight for use only on computer models equipped with a graphics subsystem with UMA memory (includes backlight cable and keyboard cable):</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For use in Canada</td>
<td>924524-DB1</td>
</tr>
<tr>
<td></td>
<td>For use in the United States</td>
<td>924524-001</td>
</tr>
<tr>
<td><strong>Keyboard/top cover</strong></td>
<td>For use in Belgium</td>
<td>924523-A41</td>
</tr>
<tr>
<td></td>
<td>For use in Bulgaria</td>
<td>924523-261</td>
</tr>
<tr>
<td></td>
<td>For use in Canada</td>
<td>924523-DB1</td>
</tr>
<tr>
<td></td>
<td>For use in the Czech Republic and Slovakia</td>
<td>924523-FL1</td>
</tr>
<tr>
<td></td>
<td>For use in Denmark, Finland, and Norway</td>
<td>924523-DH1</td>
</tr>
<tr>
<td></td>
<td>For use in France</td>
<td>924523-051</td>
</tr>
<tr>
<td></td>
<td>For use in Germany</td>
<td>924523-041</td>
</tr>
<tr>
<td></td>
<td>For use in Greece</td>
<td>924523-151</td>
</tr>
<tr>
<td></td>
<td>For use in Hungary</td>
<td>924523-211</td>
</tr>
<tr>
<td></td>
<td>For use in India</td>
<td>924523-002</td>
</tr>
<tr>
<td></td>
<td>For use in Israel</td>
<td>924523-BB1</td>
</tr>
<tr>
<td></td>
<td>For use in Italy</td>
<td>924523-061</td>
</tr>
<tr>
<td></td>
<td>For use in Latin America</td>
<td>924523-161</td>
</tr>
<tr>
<td></td>
<td>For use in the Netherlands</td>
<td>924523-B31</td>
</tr>
<tr>
<td></td>
<td>For use in Portugal</td>
<td>924523-131</td>
</tr>
<tr>
<td></td>
<td>For use in Romania</td>
<td>924523-271</td>
</tr>
<tr>
<td></td>
<td>For use in Russia</td>
<td>924523-251</td>
</tr>
<tr>
<td></td>
<td>For use in Saudi Arabia</td>
<td>924523-171</td>
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<td></td>
<td>For use in Slovenia</td>
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<td></td>
<td>For use in Spain</td>
<td>924523-071</td>
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<td></td>
<td>For use in Switzerland</td>
<td>924523-BG1</td>
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<tr>
<td></td>
<td>For use in Turkey</td>
<td>924523-141</td>
</tr>
<tr>
<td>Item</td>
<td>Component</td>
<td>Spare part number</td>
</tr>
<tr>
<td>------</td>
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</tr>
<tr>
<td></td>
<td>For use in the United Kingdom</td>
<td>924523-031</td>
</tr>
<tr>
<td></td>
<td>For use in the United States</td>
<td>924523-001</td>
</tr>
<tr>
<td><strong>Keyboard/top cover</strong></td>
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</tr>
<tr>
<td></td>
<td>In ash silver finish for use only on computer models equipped with a graphics subsystem with UMA memory (includes keyboard cable):</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For use in Belgium</td>
<td>924522-A41</td>
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<tr>
<td></td>
<td>For use in Saudi Arabia</td>
<td>924522-171</td>
</tr>
<tr>
<td></td>
<td>For use in Slovenia</td>
<td>924522-BA1</td>
</tr>
<tr>
<td></td>
<td>For use in Spain</td>
<td>924522-071</td>
</tr>
<tr>
<td></td>
<td>For use in Switzerland</td>
<td>924522-BG1</td>
</tr>
<tr>
<td></td>
<td>For use in Turkey</td>
<td>924522-141</td>
</tr>
<tr>
<td></td>
<td>For use in the United Kingdom</td>
<td>924522-031</td>
</tr>
<tr>
<td></td>
<td>For use in the United States</td>
<td>924522-001</td>
</tr>
<tr>
<td><strong>(3)</strong></td>
<td><strong>TouchPad cable</strong> (includes double-sided adhesive)</td>
<td>924509-001</td>
</tr>
<tr>
<td><strong>(4)</strong></td>
<td><strong>TouchPad</strong> (does not include TouchPad bracket or TouchPad cable)</td>
<td>924529-001</td>
</tr>
<tr>
<td><strong>NOTE:</strong></td>
<td>The TouchPad bracket is available using spare part number 924517-001. The TouchPad cable is available using spare part number 924509-001.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>TouchPad bracket</strong> (not illustrated)</td>
<td>924517-001</td>
</tr>
<tr>
<td><strong>(5)</strong></td>
<td><strong>Battery</strong> (3-cell, 48-WHr, 4.2-AHr, Li-ion)</td>
<td>916812-855</td>
</tr>
<tr>
<td>Item</td>
<td>Component</td>
<td>Spare part number</td>
</tr>
<tr>
<td>------</td>
<td>-----------</td>
<td>------------------</td>
</tr>
<tr>
<td>(6)</td>
<td>Hard drive (does not include hard drive rubber sleeve):</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1-TB, 5400-rpm, SATA, 8-GB hybrid hard drive</td>
<td>924036-856</td>
</tr>
<tr>
<td></td>
<td>1-TB, 5400-rpm, SATA hard drive</td>
<td>762888-859</td>
</tr>
<tr>
<td></td>
<td>500-GB, 5400-rpm, SATA, 8-GB hybrid hard drive</td>
<td>731863-858</td>
</tr>
<tr>
<td></td>
<td>500-GB, 5400-rpm, SATA hard drive</td>
<td>683839-859</td>
</tr>
</tbody>
</table>

**NOTE:** The hard drive rubber sleeve is available using spare part number 924515-001.

<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>(7)</td>
<td>Audio jack board cable (includes double-sided adhesive)</td>
<td>924510-001</td>
</tr>
<tr>
<td>(8)</td>
<td>Audio jack board (includes audio jack, volume control actuators, and hard drive activity light; does not include audio jack board cable)</td>
<td>924527-001</td>
</tr>
<tr>
<td>(9)</td>
<td>Power button board cable (includes double-sided adhesive)</td>
<td>924511-001</td>
</tr>
<tr>
<td>(10)</td>
<td>Power button board (does not include power button board cable)</td>
<td>924526-001</td>
</tr>
<tr>
<td>(11)</td>
<td>Speakers (includes cables and 4 rubber isolators)</td>
<td>924538-001</td>
</tr>
<tr>
<td>(12)</td>
<td>System board (includes processor and replacement thermal material):</td>
<td></td>
</tr>
</tbody>
</table>

For use only on computer models with model number 15-br1xx:

- Equipped with an Intel Core i7-8550U 1.80-GHz (SC turbo up to 4.00-GHz) quad core processor (8.0-GB L3 cache, 2400-MHz FSB, 15-W), an AMD Radeon 530 R17M-M1-70 (Meso Pro) with up to 4096-MB of discrete video memory (512-MB×16 DDR3×4 pieces), and the Windows 10 operating system
  - 936031-601
- Equipped with an Intel Core i7-8550U 1.80-GHz (SC turbo up to 4.00-GHz) quad core processor (8.0-GB L3 cache, 2400-MHz FSB, 15-W), an AMD Radeon 530 R17M-M1-70 (Meso Pro) with up to 4096-MB of discrete video memory (512-MB×16 DDR3×4 pieces), and a non-Windows operating system
  - 936031-001

For use on all computer models:

- Equipped with an Intel Core i7-7500U 2.70-GHz (SC turbo up to 3.56-GHz) dual core processor (4.0-GB L3 cache, 2133-MHz FSB, 15-W), an AMD Radeon 530 R17M-M1-70 (Meso Pro) with up to 4096-MB of discrete video memory (512-MB×16 DDR3×4 pieces), and the Windows 10 operating system
  - 924080-601
- Equipped with an Intel Core i7-7500U 2.70-GHz (SC turbo up to 3.56-GHz) dual core processor (4.0-GB L3 cache, 2133-MHz FSB, 15-W), an AMD Radeon 530 R17M-M1-70 (Meso Pro) with up to 4096-MB of discrete video memory (512-MB×16 DDR3×4 pieces), and a non-Windows operating system
  - 924080-001
- Equipped with an Intel Core i5-7200U 2.56-GHz (SC turbo up to 3.10-GHz) dual core processor (3.0-GB L3 cache, 2133-MHz FSB, 15-W), an AMD Radeon 530 R17M-M1-70 (Meso Pro) with up to 2048-MB of discrete video memory (256-MB×16 DDR3×4 pieces), and the Windows 10 operating system
  - 924081-601
- Equipped with an Intel Core i5-7200U 2.56-GHz (SC turbo up to 3.10-GHz) dual core processor (3.0-GB L3 cache, 2133-MHz FSB, 15-W), an AMD Radeon 530 R17M-M1-70 (Meso Pro) with up to 2048-MB of discrete video memory (256-MB×16 DDR3×4 pieces), and a non-Windows operating system
  - 924081-001
- Equipped with an Intel Core i5-7200U 2.56-GHz (SC turbo up to 3.10-GHz) dual core processor (3.0-GB L3 cache, 2133-MHz FSB, 15-W), an Intel HD Graphics 620 subsystem with UMA video memory, and the Windows 10 operating system for use only computer models equipped with an infrared camera
  - 924077-601

**Computer major components**  13
<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipped with an Intel Core i5-7200U 2.56-GHz (SC turbo up to 3.10-GHz) dual core processor (3.0-GB L3 cache, 2133-MHz FSB, 15-W), an Intel HD Graphics 620 subsystem with UMA video memory, and a non-Windows operating system for use only computer models equipped with an infrared camera</td>
<td>924077-001</td>
<td></td>
</tr>
<tr>
<td>Equipped with an Intel Core i3-7100U 2.40-GHz dual core processor (3.0-GB L3 cache, 2133-MHz FSB, 15-W), an AMD Radeon 530 R17M-M1-70 (Meso Pro) with up to 2048-MB of discrete video memory (256-MB×16 DDR3×4 pieces), and the Windows 10 operating system</td>
<td>924082-601</td>
<td></td>
</tr>
<tr>
<td>Equipped with an Intel Core i3-7100U 2.40-GHz dual core processor (3.0-GB L3 cache, 2133-MHz FSB, 15-W), an Intel HD Graphics 620 subsystem with UMA video memory, and the Windows 10 operating system</td>
<td>924078-601</td>
<td></td>
</tr>
<tr>
<td>Equipped with an Intel Core i3-7100U 2.40-GHz dual core processor (3.0-GB L3 cache, 2133-MHz FSB, 15-W), an Intel HD Graphics 620 subsystem with UMA video memory, and a non-Windows operating system</td>
<td>924078-001</td>
<td></td>
</tr>
<tr>
<td>Equipped with an Intel Pentium 4415U 2.36-GHz dual core processor (2.0-GB L3 cache, 2133-MHz FSB, 15-W), an Intel HD Graphics subsystem with UMA video memory, and the Windows 10 operating system</td>
<td>924079-601</td>
<td></td>
</tr>
<tr>
<td>Equipped with an Intel Pentium 4415U 2.36-GHz dual core processor (2.0-GB L3 cache, 2133-MHz FSB, 15-W), an Intel HD Graphics subsystem with UMA video memory, and a non-Windows operating system</td>
<td>924079-001</td>
<td></td>
</tr>
</tbody>
</table>

(13) **Fan/heat sink assembly** (includes fan cable and replacement thermal material):

- For use only on computer models equipped with an Intel Core i7-8550U processor | 934962-001 |
- For use only on computer models with model number 15-br0xx equipped with a graphics subsystem with discrete memory | 924514-001 |
- For use only on computer models with model number 15-br0xx equipped with a graphics subsystem with UMA memory | 924513-001 |

(14) **WLAN module:**

- Intel Dual Band Wireless-AC 7265 802.11 AC 2×2 WiFi + Bluetooth 4.2 Combo Adapter (non-vPro) | 901229-855 |
- Intel Dual Band Wireless-AC 3168 802.11AC 1×1 WiFi + Bluetooth 4.2 Combo Adapter (non-vPro) | 863934-855 |

(15) **Memory modules** (2, does not include memory shield):

- 8-MB, DDR4-2400, 1.2-V | 820570-005 |
- 4-MB, DDR4-2400, 1.2-V | 862397-855 |
- 2-MB, DDR4-2133, 1.2-V | 864271-855 |

**NOTE:** The memory module shield is available using spare part number 925378-001.

(16) **Solid-state drive:**

- For use only on computer models with model number 15-br1xx:
  - 256-GB, M.2 SATA-3 solid-state drive with TLC | 934960-001 |
  - 128-GB, M.2 SATA-3 solid-state drive with TLC | 934959-001 |

- For use on all computer models:
<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>512-GB, M.2 SATA-3 solid-state drive with TLC</td>
<td>924083-001</td>
<td></td>
</tr>
<tr>
<td>512-GB, 2280, PCIe, NVMe solid-state drive</td>
<td>L01520-001</td>
<td></td>
</tr>
<tr>
<td>256-GB, 2280, PCIe, NVMe solid-state drive</td>
<td>L01521-001</td>
<td></td>
</tr>
<tr>
<td>256-GB, M.2 SATA-3 solid-state drive</td>
<td>924085-001</td>
<td></td>
</tr>
<tr>
<td>128-GB, M.2 SATA-3 solid-state drive</td>
<td>924084-001</td>
<td></td>
</tr>
<tr>
<td><strong>Solid-State Drive Rubber Kit</strong> (not illustrated)</td>
<td>925033-001</td>
<td></td>
</tr>
<tr>
<td><strong>Solid-state drive counterbalance weight</strong> (not illustrated)</td>
<td>934083-001</td>
<td></td>
</tr>
<tr>
<td>(17)</td>
<td><strong>Power connector cable</strong> (does not include power connector cable bracket)</td>
<td>808155-024</td>
</tr>
<tr>
<td></td>
<td><strong>NOTE:</strong> The power connector cable bracket is available using spare part number 924516-001.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Power connector cable bracket</strong> (not illustrated)</td>
<td>924516-001</td>
</tr>
<tr>
<td>(18)</td>
<td><strong>Base enclosure:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In natural silver finish</td>
<td>924505-001</td>
</tr>
<tr>
<td></td>
<td>In silk gold finish</td>
<td>924506-001</td>
</tr>
<tr>
<td></td>
<td><strong>Rubber Foot Kit</strong> (not illustrated, includes rear rubber feet):</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In natural silver finish</td>
<td>924886-001</td>
</tr>
<tr>
<td></td>
<td>In silk gold finish</td>
<td>924887-001</td>
</tr>
<tr>
<td></td>
<td><strong>Screw Mylar Kit</strong> (not illustrated, includes Mylar screw cover):</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In natural silver finish</td>
<td>924534-001</td>
</tr>
<tr>
<td></td>
<td>In silk gold finish</td>
<td>924535-001</td>
</tr>
</tbody>
</table>
### Display assembly subcomponents

1. **Display Panel Kit** (includes display panel cable):
   - 15.6-in, FHD, WLED, BrightView, TouchScreen equipped with an FHD infrared camera: 924530-001
   - 15.6-in, FHD, WLED, BrightView, TouchScreen equipped with an HD non-infrared camera: 925711-001
   - 15.6-in, HD, WLED, AntiGlare, TouchScreen equipped with an HD non-infrared camera: 924531-001

2. **TouchScreen board** (includes G-sensor board and double-sided adhesive): 929145-001

3. **Webcam/microphone module** (includes Mylar and double-sided adhesive):
   - FHD infrared webcam/microphone module: 924477-001
   - HD non-infrared webcam/microphone module: 924478-001

4. **Hinge cover**:
   - Left hinge cap for use only on computer models equipped with an FHD display panel: 926720-001
   - Right hinge cap for use only on computer models equipped with an FHD display panel: 926721-001
<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left hinge cap for use only on computer models equipped with an HD display panel</td>
<td>926718-001</td>
<td></td>
</tr>
<tr>
<td>Right hinge cap for use only on computer models equipped with an HD display panel</td>
<td>926719-001</td>
<td></td>
</tr>
<tr>
<td><strong>(5)</strong> Hinge (2, includes left and right display hinges):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For use only on computer models equipped with an FHD display panel</td>
<td>924519-001</td>
<td></td>
</tr>
<tr>
<td>For use only on computer models equipped with an HD display panel</td>
<td>924518-001</td>
<td></td>
</tr>
<tr>
<td><strong>(6)</strong> WLAN antenna (includes left and right WLAN cables and transceivers)</td>
<td>924476-001</td>
<td></td>
</tr>
<tr>
<td><strong>(7)</strong> Display panel cable (includes the webcam/microphone module cable)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For use only on computer models equipped with an FHD infrared webcam/microphone module</td>
<td>924507-001</td>
<td></td>
</tr>
<tr>
<td>For use only on computer models equipped with an HD non-infrared webcam/microphone module</td>
<td>924508-001</td>
<td></td>
</tr>
<tr>
<td><strong>(8)</strong> TouchScreen board cable (includes the G-sensor board cable)</td>
<td>924512-001</td>
<td></td>
</tr>
<tr>
<td><strong>(9)</strong> Display enclosure (includes rubber padding and shielding):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For use only on computer models equipped with an FHD display assembly:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In natural silver finish</td>
<td>924501-001</td>
<td></td>
</tr>
<tr>
<td>In silk gold finish</td>
<td>924502-001</td>
<td></td>
</tr>
<tr>
<td>For use only on computer models equipped with an HD display assembly:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In natural silver finish</td>
<td>924499-001</td>
<td></td>
</tr>
<tr>
<td>In silk gold finish</td>
<td>924500-001</td>
<td></td>
</tr>
</tbody>
</table>
## Miscellaneous parts

<table>
<thead>
<tr>
<th>Component</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AC adapter:</strong></td>
<td></td>
</tr>
<tr>
<td>For use only on computer models with model number 15-br1xx:</td>
<td></td>
</tr>
<tr>
<td>90-W AC adapter (PFC, S-3P, 4.5-mm)</td>
<td>710413-001</td>
</tr>
<tr>
<td>For use on all computer models:</td>
<td></td>
</tr>
<tr>
<td>65-W HP Smart AC adapter (non-PFC, EM, RC, 4.5-mm)</td>
<td>913691-850</td>
</tr>
<tr>
<td>65-W AC adapter (non-PFC, S-3P, 4.5-mm)</td>
<td>710412-001</td>
</tr>
<tr>
<td>45-W HP Smart AC adapter (non-PFC, RC, 4.5-mm, non-slim)</td>
<td>741553-850</td>
</tr>
<tr>
<td><strong>HP HDMI-to-VGA adapter</strong></td>
<td>701943-001</td>
</tr>
<tr>
<td><strong>HP external DVD±RW DL SuperMulti Drive</strong></td>
<td>747080-001</td>
</tr>
<tr>
<td><strong>HP USB-to-Gigabit RJ45 adapter</strong></td>
<td>829941-001</td>
</tr>
<tr>
<td><strong>HP USB-C-to-USB-A dongle</strong></td>
<td>833960-001</td>
</tr>
<tr>
<td><strong>Power cord</strong> (C5 connector, 1.00-m):</td>
<td></td>
</tr>
<tr>
<td>For use in Argentina</td>
<td>920688-003</td>
</tr>
<tr>
<td>For use in Australia</td>
<td>920688-011</td>
</tr>
<tr>
<td>For use in Denmark</td>
<td>920688-007</td>
</tr>
<tr>
<td>For use in Europe</td>
<td>920688-005</td>
</tr>
<tr>
<td>For use in India</td>
<td>920688-016</td>
</tr>
<tr>
<td>For use in Israel</td>
<td>920688-008</td>
</tr>
<tr>
<td>For use in Italy</td>
<td>920688-002</td>
</tr>
<tr>
<td>For use in North America</td>
<td>920688-001</td>
</tr>
<tr>
<td>For use in the People’s Republic of China</td>
<td>920688-014</td>
</tr>
<tr>
<td>For use in South Africa</td>
<td>920688-010</td>
</tr>
<tr>
<td>For use in Switzerland</td>
<td>920688-009</td>
</tr>
<tr>
<td>For use in the United Kingdom and Singapore</td>
<td>920688-006</td>
</tr>
<tr>
<td><strong>Rubber Foot Kit</strong> (includes bottom cover rear feet):</td>
<td></td>
</tr>
<tr>
<td>In natural silver finish</td>
<td>924886-001</td>
</tr>
<tr>
<td>In silk gold finish</td>
<td>924887-001</td>
</tr>
<tr>
<td><strong>Screw Kit</strong></td>
<td>924537-001</td>
</tr>
<tr>
<td><strong>Screw Mylar Kit</strong> (includes Mylar screw cover):</td>
<td></td>
</tr>
<tr>
<td>In natural silver finish</td>
<td>924534-001</td>
</tr>
<tr>
<td>In silk gold finish</td>
<td>924535-001</td>
</tr>
<tr>
<td><strong>Stylus</strong> (active pen in Pike silver finish)</td>
<td>910942-001</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 computer, 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 computer, be sure that cables are placed in their proper locations during the reassembly process. Improper cable placement can damage the computer.

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

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

Before removing or inserting a drive, shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

Before handling a drive, be sure that you are discharged of static electricity. While handling a drive, avoid touching the connector.

Before removing a diskette drive or optical drive, be sure that a diskette or disc is not in the drive and be sure that the optical drive tray is closed.

Handle drives on surfaces covered with at least one inch of shock-proof foam.

Avoid dropping drives from any height onto any surface.

After removing drive, place it in a static-proof bag.

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

Avoid exposing a drive to temperature extremes or liquids.

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

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

A discharge of static electricity from a finger or other conductor can destroy static-sensitive devices or microcircuitry. Even if the spark is neither felt nor heard, damage 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 computer 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></td>
<td>10%</td>
</tr>
<tr>
<td>Walking across carpet</td>
<td>35,000 V</td>
</tr>
<tr>
<td>Walking across vinyl floor</td>
<td>12,000 V</td>
</tr>
<tr>
<td>Motions of bench worker</td>
<td>6,000 V</td>
</tr>
<tr>
<td>Removing DIPS from plastic tube</td>
<td>2,000 V</td>
</tr>
<tr>
<td>Removing DIPS from vinyl tray</td>
<td>11,500 V</td>
</tr>
<tr>
<td>Removing DIPS from Styrofoam</td>
<td>14,500 V</td>
</tr>
<tr>
<td>Removing bubble pack from PCB</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 computerop 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

This chapter provides removal and replacement procedures for Authorized Service Provider only parts.

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

CAUTION: This computer does not have user-replaceable parts. Only HP authorized service providers should perform the removal and replacement procedures described here. Accessing the internal part could damage the computer or void the warranty.

Component replacement procedures

NOTE: Details about your computer, including model, serial number, product key, and length of warranty, are on the service tag at the bottom of your computer. See Labels on page 9 for details.

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, select your country or region, and then follow the on-screen instructions.

There are as many as 58 screws that must be removed, replaced, and/or loosened when servicing Authorized Service Provider only parts. Make special note of each screw size and location during removal and replacement.

Keyboard/top cover

<table>
<thead>
<tr>
<th>For use in country/region</th>
<th>Spare part number</th>
<th>For use in country/region</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>In ash silver finish with backlight for use only on computer models equipped with a graphics subsystem with discrete memory (includes backlight cable and keyboard cable):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For use in Canada</td>
<td>924525-DB1</td>
<td>For use in the United States</td>
<td>924525-001</td>
</tr>
<tr>
<td>In ash silver finish with backlight for use only on computer models equipped with a graphics subsystem with UMA memory (includes backlight cable and keyboard cable):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For use in Canada</td>
<td>924524-DB1</td>
<td>For use in the United States</td>
<td>924525-001</td>
</tr>
<tr>
<td>In ash silver finish for use only on computer models equipped with a graphics subsystem with discrete memory (includes keyboard cable):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For use in Belgium</td>
<td>924523-A41</td>
<td>For use in Latin America</td>
<td>924523-161</td>
</tr>
<tr>
<td>For use in Bulgaria</td>
<td>924523-261</td>
<td>For use in the Netherlands</td>
<td>924523-B31</td>
</tr>
<tr>
<td>For use in Canada</td>
<td>924523-DB1</td>
<td>For use in Portugal</td>
<td>924523-131</td>
</tr>
<tr>
<td>For use in the Czech Republic and Slovakia</td>
<td>924523-FL1</td>
<td>For use in Romania</td>
<td>924523-271</td>
</tr>
<tr>
<td>For use in Denmark, Finland, and Norway</td>
<td>924523-DH1</td>
<td>For use in Russia</td>
<td>924523-251</td>
</tr>
<tr>
<td>For use in France</td>
<td>924523-051</td>
<td>For use in Saudi Arabia</td>
<td>924523-171</td>
</tr>
<tr>
<td>For use in Germany</td>
<td>924523-041</td>
<td>For use in Slovenia</td>
<td>924523-BA1</td>
</tr>
</tbody>
</table>
Before disassembling the computer, 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.

Remove the keyboard/top cover:

1. Turn the computer upside down on a flat surface.
2. Position the computer with the front toward you.
3. Remove the rear rubber feet (1).
   The rear rubber feet are included in the Rubber Foot Kits, spare part numbers 924886-001 (in natural silver finish) and 924887-001 (in silk gold finish).
4. Remove the Mylar screw cover (2).
   The Mylar screw cover is included in the Screw Mylar Kit, spare part numbers 924834-001 (in natural silver finish) and 924835-001 (in silk gold finish).
5. Remove the four Phillips PM2.0×4.9 screws (3) and the two Phillips PM2.5×7.6 screws (4) that secure the keyboard/top cover to the base enclosure.

6. Turn the computer right side up.

7. Open the computer and position it on its left side with the bottom toward you.

8. Insert a keyboard release tool (1) into the empty screw holes under the rubber feet.

9. Press on the keyboard release tool until the keyboard/top cover (2) releases from the computer.
10. Lift the front edge of the keyboard/top cover (1) until the keyboard cable, backlight cable, and TouchPad cable connectors are accessible.

11. Release the zero insertion force (ZIF) connector (2) to which keyboard cable is connected, and then disconnect the keyboard cable from the system board.

12. Release the ZIF connector (3) to which backlight cable is connected, and then disconnect the backlight cable from the system board.

13. Release the ZIF connector (4) to which TouchPad cable is connected, and then disconnect the TouchPad cable from the system board.

14. Remove the keyboard/top cover.

Reverse this procedure to install the keyboard/top cover.
**TouchPad cable**

*NOTE:* The TouchPad cable is available using spare part number 924509-001.

Before removing the TouchPad cable, follow these steps:

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

2. Disconnect all external devices connected to the computer.

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

4. Remove the keyboard/top cover (see *Keyboard/top cover on page 24*).

Remove the TouchPad cable:

1. Release the ZIF connector (1) to which TouchPad cable is connected, and then disconnect the TouchPad cable (2) from the TouchPad.

2. Detach the TouchPad cable (3) from the keyboard/top cover. (The TouchPad cable is attached to the keyboard/top cover with double-sided adhesive.)

3. Remove the TouchPad cable.

Reverse this procedure to install the TouchPad cable.
NOTE: The TouchPad spare part kit does not include the TouchPad bracket or TouchPad cable. The TouchPad bracket is available using spare part number 924517-001. The TouchPad cable is available using spare part number 924509-001.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>TouchPad</td>
<td>924529-001</td>
</tr>
</tbody>
</table>

Before removing the TouchPad, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see Keyboard/top cover on page 24).

Remove the TouchPad:

1. Turn the keyboard/top cover upside down with the front toward you.
2. Remove the four Phillips PM2.0×2.8 screws (1) that secure the TouchPad bracket to the keyboard/top cover.
3. Remove the TouchPad bracket (2).
4. Remove the three Phillips PM2.0×2.3 broad head screws (1) that secure the TouchPad to the keyboard/top cover.
Remove the TouchPad (2).

Reverse this procedure to install the TouchPad.

**Battery**

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-cell, 48-WHr, 4.2-AHr, Li-ion battery</td>
<td>916812-855</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 keyboard/top cover (see Keyboard/top cover on page 24).

Remove the battery:

1. Release the ZIF connector (1) to which audio jack board cable is connected, and then disconnect the audio jack board cable (2) from the system board.
2. Detach the audio jack board cable (2) from the battery. (The audio jack board cable is attached to the battery with double-sided adhesive.)
3. Remove the seven Phillips PM2.0×4.6 screws (3) that secure the battery to the computer.
4. Remove the battery (4).

Reverse this procedure to install the battery.

**Hard drive**

NOTE: The hard drive spare part kit does not include the hard drive rubber sleeve. The hard drive rubber sleeve is available using spare part number 924283-001.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-TB, 5400-rpm, SATA, 8-GB hybrid hard drive</td>
<td>924036-856</td>
</tr>
<tr>
<td>1-TB, 5400-rpm, SATA hard drive</td>
<td>762888-859</td>
</tr>
<tr>
<td>500-GB, 5400-rpm, SATA, 8-GB hybrid hard drive</td>
<td>731863-858</td>
</tr>
<tr>
<td>500-GB, 5400-rpm, SATA hard drive</td>
<td>683839-859</td>
</tr>
</tbody>
</table>

Before removing the hard 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 keyboard/top cover (see Keyboard/top cover on page 24).

5. Remove the battery (see Battery on page 30).

Remove the hard drive:
1. Release the ZIF connector (1) to which the hard drive cable is connected, and then disconnect the hard drive cable from the system board.

2. Detach the hard drive cable (2) from the base enclosure. (The hard drive cable is attached to the base enclosure with double-sided adhesive.)

3. Use the tab (3) on the hard drive rubber sleeve to remove the hard drive.

4. If it is necessary to remove the hard drive from the rubber sleeve, spread the open end of the rubber sleeve (1), and then remove the hard drive (2).

Reverse this procedure to reassemble and install the hard drive.
**Audio jack board cable**

*NOTE:* The audio jack board cable is available using spare part number 924510-001.

Before removing the audio jack board cable, follow these steps:

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

2. Disconnect all external devices connected to the computer.

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

4. Remove the keyboard/top cover (see Keyboard/top cover on page 24).

5. Remove the battery (see Battery on page 30).

Remove the audio jack board cable:

1. Release the ZIF connector (1) to which audio jack board cable is connected, and then disconnect the audio jack board cable (2) from the audio jack board.

2. Remove the audio jack board cable.

Reverse this procedure to install the audio jack board cable.
Audio jack board

NOTE: The audio jack board spare part kit does not include the audio jack board cable. The audio jack board cable is available using spare part number 924278-001.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio jack board (includes audio jack, volume control actuators, and hard drive activity light; does not include audio jack board cable)</td>
<td>924527-001</td>
</tr>
</tbody>
</table>

Before removing the audio jack 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 keyboard/top cover (see Keyboard/top cover on page 24).
5. Remove the battery (see Battery on page 30).

Remove the audio jack board:

1. Remove the two Phillips PM2.0×4.6 screws (1) that secure the audio jack board to the base enclosure.
2. Remove the audio jack board (2).

Reverse this procedure to install the audio jack board.
**Power button board cable**

*NOTE:* The power button board cable is available using spare part number 924511-001.

Before removing the audio jack board cable, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see Keyboard/top cover on page 24).
5. Remove the battery (see Battery on page 30).

Remove the power button board cable:

1. Release the ZIF connector (1) to which power button board cable is connected, and then disconnect the power button board cable from the system board.
2. Release the ZIF connector (2) to which power button board cable is connected, and then disconnect the power button board cable from the power button board.
3. Detach the power button board cable (3) from the fan. (The power button board cable is attached to the fan with double-sided adhesive.)

4. Remove the power button board cable.

Reverse this procedure to install the power button board cable.
Power button board

**NOTE:** The power button board spare part kit does not include the power button board cable. The power button board cable is available using spare part number 924511-001.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power button board</td>
<td>924526-001</td>
</tr>
</tbody>
</table>

Before removing the power button 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 keyboard/top cover (see **Keyboard/top cover on page 24**).
5. Remove the battery (see **Battery on page 30**).

Remove the power button board:

1. Release the ZIF connector (1) to which power button board cable is connected, and then disconnect the power button board cable from the system board.
2. Detach the power button board cable (2) from the fan. (The power button board cable is attached to the fan with double-sided adhesive.)
3. Remove the Phillips PM2.0×4.6 screw (3) that secures the power button board to the base enclosure.
4. Remove the power button board (4).

Reverse this procedure to install the power button board.
Speakers

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speakers (includes cables and 3 rubber isolators)</td>
<td>924538-001</td>
</tr>
</tbody>
</table>

Before removing the speakers, 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 keyboard/top cover (see Keyboard/top cover on page 24).
5. Remove the battery (see Battery on page 30).

Remove the speakers:

1. Disconnect the speaker cable (1) from the system board
2. Release the display speaker cable from the retention clips (2) built into the base enclosure.
3. Remove the four Phillips PM2.0×5.5 broad head shoulder screws (3) that secure the speakers to the base enclosure.
4. Remove the speakers (4).

**IMPORTANT:** When removing the speakers, make note of the location of the four rubber isolators (5). Failure to properly install or damage to these isolators can result in degraded speaker performance.

Reverse this procedure to install the speakers.
### System board

**NOTE:** All system board spare part kits include a processor and replacement thermal material.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>For use only on computer models with model number 15-br1xx:</td>
<td></td>
</tr>
<tr>
<td>Equipped with an Intel Core i7-8550U 1.80-GHz (SC turbo up to 4.00-GHz) quad core processor (8.0-GB L3 cache, 2400-MHz FSB, 15-W), an AMD Radeon 530 R17M-M1-70 (Meso Pro) with up to 4096-MB of discrete video memory (512-MB×16 DD3×4 pieces), and the Windows 10 operating system</td>
<td>936031-601</td>
</tr>
<tr>
<td>Equipped with an Intel Core i7-8550U 1.80-GHz (SC turbo up to 4.00-GHz) quad core processor (8.0-GB L3 cache, 2400-MHz FSB, 15-W), an AMD Radeon 530 R17M-M1-70 (Meso Pro) with up to 4096-MB of discrete video memory (512-MB×16 DD3×4 pieces), and a non-Windows operating system</td>
<td>936031-001</td>
</tr>
<tr>
<td>For use on all computer models:</td>
<td></td>
</tr>
<tr>
<td>Equipped with an Intel Core i7-7500U 2.70-GHz (SC turbo up to 3.56-GHz) dual core processor (4.0-GB L3 cache, 2133-MHz FSB, 15-W), an AMD Radeon 530 R17M-M1-70 (Meso Pro) with up to 4096-MB of discrete video memory (512-MB×16 DD3×4 pieces), and the Windows 10 operating system</td>
<td>924080-601</td>
</tr>
<tr>
<td>Equipped with an Intel Core i7-7500U 2.70-GHz (SC turbo up to 3.56-GHz) dual core processor (4.0-GB L3 cache, 2133-MHz FSB, 15-W), an AMD Radeon 530 R17M-M1-70 (Meso Pro) with up to 4096-MB of discrete video memory (512-MB×16 DD3×4 pieces), and a non-Windows operating system</td>
<td>924080-001</td>
</tr>
<tr>
<td>Equipped with an Intel Core i5-7200U 2.56-GHz (SC turbo up to 3.10-GHz) dual core processor (3.0-GB L3 cache, 2133-MHz FSB, 15-W), an AMD Radeon 530 R17M-M1-70 (Meso Pro) with up to 2048-MB of discrete video memory (256-MB×16 DD3×4 pieces), and the Windows 10 operating system</td>
<td>924081-601</td>
</tr>
<tr>
<td>Equipped with an Intel Core i5-7200U 2.56-GHz (SC turbo up to 3.10-GHz) dual core processor (3.0-GB L3 cache, 2133-MHz FSB, 15-W), an AMD Radeon 530 R17M-M1-70 (Meso Pro) with up to 2048-MB of discrete video memory (256-MB×16 DD3×4 pieces), and a non-Windows operating system</td>
<td>924081-001</td>
</tr>
<tr>
<td>Equipped with an Intel Core i5-7200U 2.56-GHz (SC turbo up to 3.10-GHz) dual core processor (3.0-GB L3 cache, 2133-MHz FSB, 15-W), an Intel HD Graphics 620 subsystem with UMA video memory, and the Windows 10 operating system for use only computer models equipped with an infrared camera</td>
<td>924077-601</td>
</tr>
<tr>
<td>Equipped with an Intel Core i5-7200U 2.56-GHz (SC turbo up to 3.10-GHz) dual core processor (3.0-GB L3 cache, 2133-MHz FSB, 15-W), an Intel HD Graphics 620 subsystem with UMA video memory, and a non-Windows operating system for use only computer models equipped with an infrared camera</td>
<td>924077-001</td>
</tr>
<tr>
<td>Equipped with an Intel Core i3-7100U 2.40-GHz dual core processor (3.0-GB L3 cache, 2133-MHz FSB, 15-W), an AMD Radeon 530 R17M-M1-70 (Meso Pro) with up to 2048-MB of discrete video memory (256-MB×16 DD3×4 pieces), and the Windows 10 operating system</td>
<td>924082-601</td>
</tr>
<tr>
<td>Equipped with an Intel Core i3-7100U 2.40-GHz dual core processor (3.0-GB L3 cache, 2133-MHz FSB, 15-W), an AMD Radeon 530 R17M-M1-70 (Meso Pro) with up to 2048-MB of discrete video memory (256-MB×16 DD3×4 pieces), and a non-Windows operating system</td>
<td>924082-001</td>
</tr>
<tr>
<td>Equipped with an Intel Core i3-7100U 2.40-GHz dual core processor (3.0-GB L3 cache, 2133-MHz FSB, 15-W), an Intel HD Graphics 620 subsystem with UMA video memory, and the Windows 10 operating system</td>
<td>924078-601</td>
</tr>
<tr>
<td>Equipped with an Intel Core i3-7100U 2.40-GHz dual core processor (3.0-GB L3 cache, 2133-MHz FSB, 15-W), an Intel HD Graphics 620 subsystem with UMA video memory, and a non-Windows operating system</td>
<td>924078-001</td>
</tr>
<tr>
<td>Equipped with an Intel Pentium 4415U 2.36-GHz dual core processor (2.0-GB L3 cache, 2133-MHz FSB, 15-W), an Intel HD Graphics subsystem with UMA video memory, and the Windows 10 operating system</td>
<td>924079-601</td>
</tr>
<tr>
<td>Equipped with an Intel Pentium 4415U 2.36-GHz dual core processor (2.0-GB L3 cache, 2133-MHz FSB, 15-W), an Intel HD Graphics subsystem with UMA video memory, and a non-Windows operating system</td>
<td>924079-001</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 keyboard/top cover (see Keyboard/top cover on page 24).
5. Remove the battery (see Battery on page 30).
6. Remove the speakers (see Speakers on page 37).

When replacing the system board, be sure to remove the following components from the defective system board and install them on the replacement system board:

- WLAN module (see WLAN module on page 42)
- Fan/heat sink assembly (see Fan/heat sink assembly on page 43)
- Memory modules (see Memory module on page 45)

Remove the system board:

1. Release the adhesive strip (1) that secures the display panel cable connector to the system board.
2. Release the ZIF connector (2) to which display panel cable is connected, and then disconnect the display panel cable from the system board.
3. Release the display panel cable from the retention clips (3) and routing channel built into the fan/heat sink assembly.
4. Release the ZIF connector (4) to which power button board cable is connected, and then disconnect the power button board cable from the system board.
5. Disconnect the wireless antenna cables (5) from the WLAN module.

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

6. Release the adhesive strip (6) that secures the TouchScreen cable connector to the system board.
7. Release the ZIF connector (7) to which TouchScreen cable is connected, and then disconnect the TouchScreen cable from the system board.
8. Disconnect the power connector cable (8) from the system board.
9. Release the ZIF connector (9) to which hard drive cable is connected, and then disconnect the hard drive cable from the system board.

10. Remove the 10 Phillips PM2.0×4.6 screws (1) that secure the system board to the base enclosure.

11. Remove the Phillips PM2.0×3.7 screw (2) that secures the WLAN module to the base enclosure.

12. Lift the left side of the system board (1) until it rests at an angle.
13. Remove the system board (2) by sliding it up and to the left at an angle.

Reverse this procedure to install the system board.
### WLAN module

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel Dual Band Wireless-AC 7265 802.11 AC 2×2 WiFi + Bluetooth 4.2 Combo Adapter (non-vPro)</td>
<td>901229-855</td>
</tr>
<tr>
<td>Intel Dual Band Wireless-AC 3168 802.11AC 1×1 WiFi + Bluetooth 4.2 Combo Adapter (non-vPro)</td>
<td>863934-855</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. 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 keyboard/top cover (see Keyboard/top cover on page 24), and then remove the following components:
   a. Battery (see Battery on page 30)
   b. Speakers (see Speakers on page 37)
   c. System board (see System board on page 38)

Remove the WLAN module:

1. Turn the system board upside down with the front toward you.
2. Remove the WLAN module by pulling the module away from the slot at an angle.

⚠️ **NOTE:** WLAN modules are designed with a notch to prevent incorrect insertion.

Reverse this procedure to install the WLAN module.
Fan/heat sink assembly

NOTE: The fan/heat sink assembly spare part kit includes the fan cable and replacement thermal material.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>For use only on computer models equipped with a graphics subsystem with discrete memory</td>
<td>924514-001</td>
</tr>
<tr>
<td>For use only on computer models equipped with a graphics subsystem with UMA memory</td>
<td>924513-001</td>
</tr>
</tbody>
</table>

Before removing the fan/heat sink 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 keyboard/top cover (see Keyboard/top cover on page 24), and then remove the following components:
   a. Battery (see Battery on page 30)
   b. Speakers (see Speakers on page 37)
   c. System board (see System board on page 38)

Remove the fan/heat sink assembly:

1. Turn the system board upside down with the front toward you.
2. Disconnect the fan cable (1) from the system board.
3. Detach the piece of tape (2) that secures the fan cable to the system board.
4. Loosen the six Phillips PM2.0×6.2 captive screws (3) that secure the fan/heat sink assembly to the system board.

NOTE: Computer models equipped with a graphics subsystem with UMA memory will only have four screws securing the fan/heat sink assembly to the system board.
5. Remove the fan/heat sink assembly (4).

**NOTE:** The thermal material must be thoroughly cleaned from the surfaces of the fan/heat sink assembly and the system board components each time the fan/heat sink assembly is removed. Replacement thermal material is included with the fan/heat sink assembly and system board spare part kits.

Thermal paste is used on the processor (1) and the heat sink section (2) that services it. Thermal paste is also used on the VGA component (3) and the heat sink section (4) that services it.

**NOTE:** Computer models equipped with a graphics subsystem with UMA memory will not have the components identified by callouts 3 and 4 present on the system board and fan/heat sink assembly.

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

**NOTE:** The memory module spare part kit does not include the memory module bracket. The memory module bracket is available using spare part number 925378-001.

**NOTE:** Primary and expansion memory is installed in a side-by-side configuration in the bottom of the computer. If only one memory module is installed, it must be installed in the socket labeled 1.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-MB, DDR4-2400, 1.2-V</td>
<td>820570-005</td>
</tr>
<tr>
<td>4-MB, DDR4-2400, 1.2-V</td>
<td>862397-855</td>
</tr>
<tr>
<td>2-MB, DDR4-2133, 1.2-V</td>
<td>864271-855</td>
</tr>
</tbody>
</table>

**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**, and then 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. 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 keyboard/top cover (see [Keyboard/top cover on page 24](#)), and then remove the following components:
   a. Battery (see [Battery on page 30](#))
   b. Speakers (see [Speakers on page 37](#))
   c. System board (see [System board on page 38](#))

Remove the memory module:

1. Turn the system board upside down with the front toward you.
2. Remove the memory module shield.
   The memory module shield is available using spare part number 925378-001.

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:** Memory modules are designed with a notch to prevent incorrect insertion.

Reverse this procedure to install a memory module.
**Power connector cable**

**NOTE:** The power connector cable spare part kit does not include the power connector cable bracket. The power connector cable bracket is available using spare part number 924516-001.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power connector cable (does not include bracket)</td>
<td>808155-024</td>
</tr>
</tbody>
</table>

Before removing the power connector cable, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see Keyboard/top cover on page 24), and then remove the following components:
   a. Battery (see Battery on page 30)
   b. Speakers (see Speakers on page 37)
   c. System board (see System board on page 38)

Remove the power connector cable:

1. Lift the right side of the power connector cable bracket (1) to release the bracket from the power connector.
2. Remove the power connector cable bracket (2).
3. Remove the power connector cable (3).
Reverse this procedure to install the power connector cable.

**Display assembly**

> NOTE: The display assembly is spared at the subcomponent level. For display assembly spare part information, see the individual removal subsections.

Before removing the display assembly, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see Keyboard/top cover on page 24), and then remove the following components:
   a. Battery (see Battery on page 30)
   b. Speakers (see Speakers on page 37)
   c. System board (see System board on page 38)

Remove the display assembly:

1. Remove the five Phillips PM2.5×5.7 screws (1) the Phillips PM2.5×4.6 screw (2) that secure the display assembly to the base enclosure.
2. Remove the display assembly (3).

3. If it is necessary to replace the display panel assembly or any of the display assembly subcomponents:

> NOTE: The display panel assembly can be removed and replaced without removing the display assembly from the base enclosure.
a. Insert a case utility tool (1) or similar thin, plastic tool between the top edges of the display panel assembly and the display back cover.

b. Release the top edge of the display panel assembly (2) from the display back cover.

c. Swing the display panel assembly (3) forward until it rests on the keyboard.

d. Detach the two pieces of tape (1) that secure the TouchScreen board and TouchScreen board cables to the display panel assembly.
e. Disconnect both ends of the TouchScreen board cable (2) from the two connectors on the TouchScreen board.

f. Release the adhesive strip (1) that secures the display panel cable connector to the display panel.

g. Disconnect the display panel cable (2) from the display panel.

h. Remove the display panel assembly (3).

The display panel assembly is available using the following spare part numbers:

- 924530-001 – 15.6-in, FHD, WLED, BrightView, TouchScreen equipped with an FHD infrared camera
- 925711-001 – 15.6-in, FHD, WLED, BrightView, TouchScreen equipped with an HD non-infrared camera
- 924531-001 – 15.6-in, HD, WLED, AntiGlare, TouchScreen equipped with an HD non-infrared camera
4. If it is necessary to replace the TouchScreen board:

\[ \text{NOTE:} \quad \text{The TouchScreen board can be removed and replaced without removing the display assembly from the base enclosure.} \]

a. Remove the display panel assembly.

\[ \text{CAUTION:} \quad \text{Before turning the display panel assembly upside down, make sure the work surface is clear of tools, screws, and any other foreign objects. Failure to follow this caution can result in damage to the display panel.} \]

b. Turn the display panel assembly upside down with the bottom edge toward you.

c. Release the two ZIF connectors (1) to which display panel cables are connected, and then disconnect the display panel cables from the TouchScreen board.
d. Remove the TouchScreen board (2).
   The TouchScreen board is available using spare part number 929145-001 and includes the G-sensor board.

5. If it is necessary to replace the webcam/microphone module:

   **NOTE:** The webcam/microphone module can be removed and replaced without removing the display assembly from the base enclosure.

   a. Remove the display panel assembly.
   b. Disconnect the webcam/microphone module cable (1) from the webcam/microphone module.
c. Detach the webcam/microphone module (2) from the display back cover. (The webcam/microphone module is attached to the display back cover with double-sided adhesive.)

![Diagram showing the attachment of the webcam/microphone module]

d. Remove the webcam/microphone module.

The webcam/microphone module is available using spare part numbers 924477-001 (FHD infrared webcam/microphone module) and 924478-001 (HD non-infrared webcam/microphone module).

6. If it is necessary to replace the display hinges:

![NOTE: It is necessary to remove the display assembly to remove and replace the display hinge.]

- a. Remove the display panel assembly.
- b. Remove the six Phillips PM2.5×2.9 broad head screws (1) that secure the hinges to the display back cover.
- c. Rotate the hinges (2) toward the inside of the display back cover to release them from the display back cover.
d. Remove the display hinges (3).

The display hinges are available using spare part numbers 924519-001 (for use only on computer models equipped with an FHD display panel) and 924518-001 (for use only on computer models equipped with an HD display panel).

7. If it is necessary to replace the display hinge covers:

**NOTE:** It is necessary to remove the display assembly to remove and replace the display hinge covers.

a. Remove the display panel assembly.

b. Remove the display hinge.

c. Remove the Phillips PM2.0×4.0 screw (1) that secures the hinge cover to the hinge.

d. Remove the display hinge cover (2).

The display hinge covers are available using the following spare part numbers:

- 926720-001 – Left hinge cap for use only on computer models equipped with an FHD display panel
- 926721-001 – Right hinge cap for use only on computer models equipped with an FHD display panel
- 926718-001 – Left hinge cap for use only on computer models equipped with an HD display panel
- 926719-001 – Right hinge cap for use only on computer models equipped with an HD display panel
8. If it is necessary to replace the TouchScreen board cable:

   **NOTE:** It is necessary to remove the display assembly to remove and replace the TouchScreen board cable.

   a. Remove the display panel assembly.
   b. Remove the TouchScreen board cable from the cavity in the bottom edge of the display back cover. The TouchScreen board cable is available using spare part number 924512-001 and includes the G-sensor board cable.

9. If it is necessary to replace the wireless antenna cables and transceivers:

   a. Remove the display panel assembly.
   b. Remove the right display hinge.
   c. Detach the wireless antenna transceivers (1) from the display back cover. (The wireless antenna transceivers are attached to the display back cover with double-sided adhesive.)
   d. Release the shielding material (2) that secures the wireless antenna cables to the display back cover.
   e. Release the wireless antenna cables from the retention clips (3) and routing channel built into the top, right, and bottom edges of the display back cover.
f. Remove the wireless antenna cables and transceivers (4).

The wireless antenna cables and transceivers are available using spare part number 924476-001.

10. If it is necessary to replace the display panel cable:
   a. Remove the display panel assembly.
   b. Remove the left display hinge.
   c. Release the left wireless antenna transceiver.
   d. Disconnect the webcam/microphone module cable (1) from the webcam/microphone module.
   e. Release the shielding material (2) that secures the display panel cable to the display back cover.
   f. Release the display panel cable from the retention clips (3) and routing channel built into the top, left, and bottom edges of the display back cover.
g. Remove the display panel cable (4).

The display panel cable is available using spare part numbers 924507-001 (for use only on computer models equipped with an FHD display panel) and 924508-001 (for use only on computer models equipped with an HD display panel) and includes the webcam/microphone module cable.

Reverse this procedure to reassemble and install the display assembly.
6  Computer Setup (BIOS), TPM, and HP Sure Start

Using Computer Setup

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

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

Starting Computer Setup

**NOTE:** An external keyboard or mouse connected to a USB port can be used with Computer Setup only if USB legacy support is enabled.

To start Computer Setup, follow these steps:

▲ Start Computer Setup.

● Computers or tablets with keyboards:

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

● Tablets without keyboards:

▲ Turn off the tablet. Press the power button in combination with the volume down button until the Startup menu is displayed, and then tap **F10** to enter Computer Setup.

Navigating and selecting in Computer Setup

● To select a menu or a menu item, use the **tab** key and the keyboard arrow keys and then press **enter**, or use a pointing device to select the item.

**NOTE:** On tablets without keyboards, you can use your finger to make selections.

● To scroll up and down, select the up arrow or the down arrow in the upper-right corner of the screen, or use the up arrow key or the down arrow key on the keyboard.

● To close open dialog boxes and return to the main Computer Setup screen, press **esc**, and then follow the on-screen instructions.
To exit Computer Setup menus, choose one of the following methods:

- To exit Computer Setup menus without saving your changes:
  Select the Exit icon in the lower-right corner of the screen, and then follow the on-screen instructions.
  – or –
  Select Main, select Ignore Changes and Exit, and then press enter.

- To save your changes and exit Computer Setup menus:
  Select the Save icon in the lower-right corner of the screen, and then follow the on-screen instructions.
  – or –
  Select Main, select Save Changes and Exit, and then press enter.

Your changes go into effect when the computer restarts.

**Restoring factory settings in Computer Setup**

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

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

2. Select Main, and then select Apply Factory Defaults and Exit.
   
   *NOTE:* On select products, the selections may display Restore Defaults instead of Apply Factory Defaults and Exit.

3. Follow the on-screen instructions.
4. To save your changes and exit, select the Save icon in the lower-right corner of the screen, and then follow the on-screen instructions.
   – or –
   Select Main, select Save Changes and Exit, and then press enter.

Your changes go into effect when the computer restarts.

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

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

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

2. Select Main, and then select System Information.
3. To exit Computer Setup without saving your changes, select the Exit icon in the lower-right corner of the screen, and then follow the on-screen instructions.
   – or –
   Select Main, select Ignore Changes and Exit, and then press enter.

To check for later BIOS versions, see Downloading a BIOS update on page 60.

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 on the computer by unplugging the power cord from the AC outlet.

Do not shut down the computer or initiate Sleep.

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

1. Type support in the taskbar search box, and then select the HP Support Assistant app.
   – or –
   Select the question mark icon in the taskbar.
2. Select Updates, and then select Check for updates and messages.
3. Follow the on-screen instructions.
4. At the download area, follow these steps:
   a. Identify the most recent BIOS update and compare it to the BIOS version currently installed on your computer. Make a note of the date, name, or other identifier. You 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.
**NOTE:** If you connect your computer to a network, consult the network administrator before installing any software updates, especially system BIOS updates.

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

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

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

---

**Changing the boot order using the f9 prompt**

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

1. Access the Boot Device Options menu:
   - Computers or tablets with keyboards:
     - Turn on or restart the computer, and when the HP logo appears, press `f9` to enter the Boot Device Options menu.
   - Tablets without keyboards:
     - Turn off the tablet. Press the power button in combination with the volume down button until the Startup menu is displayed, and then tap **F9** to enter the Boot Device Options menu.
2. Select a boot device, then press enter.
TPM BIOS settings (select products only)

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

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

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

To access TPM settings in Computer Setup:

2. Select Security, select TPM Embedded Security, and then follow the on-screen instructions.

Using HP Sure Start (select products only)

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

HP Sure Start is configured and already enabled so that most users can use the HP Sure Start default configuration. The default configuration can be customized by advanced users.

To access the latest documentation on HP Sure Start, go to http://www.hp.com/support, and select your country. Select Drivers & Downloads, and then follow the on-screen instructions.
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 is generated. This ID 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, quickly press esc.

   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.

2. Press or tap f2.

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

   a. Connected USB drive

   NOTE: To download the HP PC Hardware Diagnostics (UEFI) tool to a USB drive, see Downloading HP PC Hardware Diagnostics (UEFI) to a USB device on page 64.

   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.
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, click the **Download** link, and then select **Run**.

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

1. Go to [http://www.hp.com/support](http://www.hp.com/support), and then select your country. The HP Support page is displayed.
2. Click **Drivers & Downloads**.
3. In the text box, enter the product name, and then click **Go**.
   - or –
   Click **Find 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.
## 8 Specifications

<table>
<thead>
<tr>
<th></th>
<th>Metric</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Computer dimensions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width</td>
<td>30.0 cm</td>
<td>11.8 in</td>
</tr>
<tr>
<td>Depth</td>
<td>20.6 cm</td>
<td>8.1 in</td>
</tr>
<tr>
<td>Height</td>
<td>2.1 cm</td>
<td>0.8 in</td>
</tr>
<tr>
<td>Weight</td>
<td>1.3 kg</td>
<td>2.9 lbs</td>
</tr>
<tr>
<td><strong>Temperature</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating</td>
<td>5°C to 35°C</td>
<td>41°F to 95°F</td>
</tr>
<tr>
<td>Nonoperating</td>
<td>-20°C to 60°C</td>
<td>-4°F to 140°F</td>
</tr>
<tr>
<td><strong>Relative humidity</strong> (noncondensing)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating</td>
<td>10% to 90%</td>
<td></td>
</tr>
<tr>
<td>Nonoperating</td>
<td>5% to 95%</td>
<td></td>
</tr>
<tr>
<td><strong>Maximum altitude</strong> (unpressurized)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating</td>
<td>-15 m to 3,048 m</td>
<td>-50 ft to 10,000 ft</td>
</tr>
<tr>
<td>Nonoperating</td>
<td>-15 m to 12,192 m</td>
<td>-50 ft to 40,000 ft</td>
</tr>
</tbody>
</table>

**NOTE:** Applicable product safety standards specify thermal limits for plastic surfaces. The device operates well within this range of temperatures.
9 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>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>EANSW</td>
<td>1</td>
</tr>
<tr>
<td>Austria</td>
<td>OVE</td>
<td>1</td>
</tr>
<tr>
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1. The flexible cord must be Type HO5VV-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.
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, spare part numbers 18
antenna
  location 4
  removal 55
  spare part number 56
  spare part numbers 17
audio jack board
  removal 34
  spare part number 13, 34
audio jack board cable
  removal 33
  spare part number 13, 33, 34
audio, product description 2, 3
audio-in jack 7
audio-out jack 7

B
base enclosure, spare part numbers 15
battery
  removal 30
  spare part number 12, 30
BIOS
  determining version 60
  downloading an update 60
  updating 60
bottom component 8

C
cables, service considerations 19
chipset, product description 1
components
  bottom 8
  display 4
  left side 6
  right side 7
  speakers 5
  TouchPad 5
computer major components 10
Computer Setup
  navigating and selecting 58
  restoring factory settings 59
connectors, service considerations 19

D
display assembly
  removal 48
  spare part numbers 48
  subcomponents 16
display components 4
display enclosure, spare part number 17
display panel assembly
  removal 48
  spare part numbers 50
display panel cable
  removal 56
  spare part numbers 17, 57
Display Panel Kit
  spare part numbers 16
display panel, product description 1
display switch 4
  precautions 20
  preventing damage 20

E
electrostatic discharge 21
equipment guidelines 23

F
fan/heat sink assembly
  removal 43
  spare part numbers 14, 43
HDMI port 7
HDMI-to-VGA adapter, spare part number 18
headphone jack 7
hinge
  removal 53
  spare part numbers 17, 54
hinge cover
  removal 54
  spare part numbers 16, 54
HP PC Hardware Diagnostics (UEFI)
  using 63

J
jacks
  audio-in 7
  audio-out 7
  headphone 7
  microphone 7

K
keyboard, product description 3
keyboard/top cover
  removal 24
  spare part numbers 11, 12, 24

L
left-side component 6
legacy support, USB 58
lights
  power 7
  webcam 4
Index

M
memory module
  product description 1, 2
  removal 45
  spare part numbers 14, 45
memory module bracket
  product description 1
  spare part number 45
memory module shield
  product description 1
  removal 46
  spare part number 14, 46
microphone
  location 4
  product description 2, 3
microphone jack 7
model number 1

O
operating system, product description 3
optical drive
  product description 2
  optical drive, spare part number 18

P
packaging guidelines 22
plastic parts, service considerations 19
pointing device, product description 3
ports
  HDMI 7
  product description 3
  USB 7
power button board
  removal 36
  spare part number 13, 36
power button board cable
  removal 35
  spare part number 13, 35, 36
power connector cable
  removal 47
  spare part number 15, 47
power connector cable bracket
  removal 47
  spare part number 15, 47
power cord
  set requirements 66
power light 7
power requirements, product description 3
processor, product description 1
product description
  audio 2, 3
  chipset 1
  display panel 1
  external media cards 3
  graphics 1
  hard drive 2
  keyboard 3
  memory module 1, 2
  microphone 2, 3
  operating system 3
  optical drive 2
  pointing device 3
  ports 3
  power requirements 3
  processors 1
  product name 1
  security 3
  sensors 3
  serviceability 3
  solid-state drive 2
  storage 2
  video 2, 3
  wireless 3
  product name 1

R
removal/replacement procedures 24
right-side components 7
rubber feet
  removal 25
  spare part numbers 25
Rubber Foot Kit, spare part numbers 15, 18, 25

S
screw cover
  removal 25
  spare part numbers 25
Screw Kit, spare part number 18
Screw Mylar Kit, spare part numbers 15, 18, 25
security cable slot 6
security, product description 3
  sensors, product description 3
  service considerations
  cables 19

T
tools required 19
TouchPad
  removal 29
  spare part number 12, 29
TouchPad bracket
  spare part number 12, 29
TouchPad cable
  removal 28
  spare part number 12, 28, 29
TouchPad component 5
TouchPad zone 5
TouchScreen board
  removal 51
  spare part number 16, 52
TouchScreen board cable
  removal 55
  spare part number 17, 55
TPM settings 62
transporting guidelines 22

U
USB legacy support 58
USB port 7
USB-to-Gigabit RJ45 adapter, spare part number 18
USB–C-to-USB–A dongle, spare part number 18

V
video, product description 2, 3

W
webcam light 4
webcam, location 4
webcam/microphone module
  removal 52
  spare part numbers 16, 53
webcam/microphone module cable
  spare part numbers 57
wireless antenna
  location 4
  removal 55
  spare part number 56
  spare part numbers 17
wireless, product description 3
WLAN antenna
  location 4
  removal 55
  spare part number 17, 56
WLAN module
  removal 42
  spare part numbers 14, 42
workstation guidelines 22