HP ENVY 17m Laptop PC
HP ENVY 17 Laptop PC

Maintenance and Service Guide
IMPORTANT! This document is intended for HP authorized service providers only.
Product notice

This user 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. This computer may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows functionality. Go to http://www.microsoft.com for details.

In accordance with Microsoft’s support policy, HP does not support the Windows 8 or Windows 7 operating system on this product or provide any Windows 8 or Windows 7 drivers on http://support.hp.com.

Software terms

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

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

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

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| **Product Name** | HP ENVY 17m Laptop PC (model numbers 17m-ae001 through 17m-ae199)  
HP ENVY 17 Laptop PC (model numbers 17-ae001 through 17-ae199) |
| **Processors** | For use on computer models with model numbers 17m-ae001 through 17m-ae099 and models 17-ae001 through 17-ae099  
- Intel® Core™ i7-7500U (2.5 GHz, turbo up to 3.1 GHz), 2133 MHz/3 MB L3 cache, Dual 15W  
- Intel Core i5-7200U (2.5 GHz, turbo up to 3.1 GHz, HDCP 2.2), 2133 MHz/3 MB L3, Dual 15W  
For use on computer models with model numbers 17m-ae100 through 17m-ae199 and models 17-ae100 through 17-ae199  
- Intel Core i7-8550U (1.8 GHz, turbo up to 4.0 GHz), 2400 MHz/8 MB L3, Quad 15W  
- Intel Core i5-8250U (1.6 GHz, turbo up to 3.4 GHz), 2400 MHz/6 MB L3, Quad 15W |
| **Chipset** | Integrated SoC |
| **Graphics** | For use on all computer models with internal graphics:  
Intel® HD Graphics 620  
Hybrid graphics:  
For use on computer models with model numbers 17m-ae100 through 17m-ae199 and models 17-ae100 through 17-ae199  
NVIDIA N17S-G1 (GeForce MX150) with up to 2048 MB of dedicated video memory (256 Mx32, GDDR5, x 2 PCs, 1 GHz@1.5V)  
NVIDIA N17S-G1 (GeForce MX150) with up to 4096 MB of dedicated video memory (256 Mx32, GDDR5, x 4 PCs, 1 GHz@1.5V)  
Support for HD Decode, DX12, and HDMI  
Support for Optimus (discrete only)  
Support for GPU Performance Scaling (discrete only)  
For use on computer models with model numbers 17m-ae001 through 17m-ae099 and models 17-ae001 through 17-ae099  
NVIDIA N16S-GTR-S (GeForce 940MX) with up to 2048MB of dedicated video memory (256 Mx16, DDR3, x 4 PCs, 1GHz@1.5V)  
NVIDIA N16S-GTR-S (GeForce 940MX) with up to 4096MB of dedicated video memory (256 Mx16, DDR3, x 8 PCs, 1GHz@1.5V)  
Support for HD Decode, DX12, and HDMI  
Support for Optimus (discrete only)  
Support for GPU Performance Scaling (discrete only) |
| **Panels** | 16:9 Ultra Wide Aspect Ratio  
17.3” FHD WLED AntiGlare (1920x1080) flat-flat (4.2mm) UWVA, eDP1.2 (DBCG)  
17.3” FHD WLED AntiGlare (1920x1080) flat-flat (4.2mm) UWVA, eDP1.2 (DBTS)  
17.3” UHD WLED AntiGlare (3840x2160) flat-flat (4.2mm) UWVA, eDP1.3+PSR (DBCG) |
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<td>Touch solution</td>
<td>with flush glass, multitouch enabled</td>
</tr>
<tr>
<td>Support Active</td>
<td>Stylus</td>
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<tr>
<td>Memory</td>
<td><strong>Two SODIMM slots - Non-accessible/non-upgradeable</strong>&lt;br&gt;DDR4-2400 Dual Channel Support (DDR4-2400 downgrade to DDR4-2133)&lt;br&gt;Supports up to 16 GB max system memory&lt;br&gt;8192 MB (4096 MB x 2)&lt;br&gt;12288 MB (8192 MB + 4096 MB)&lt;br&gt;16384 MB (8192 MB x 2)</td>
</tr>
<tr>
<td>Storage</td>
<td><strong>Support for all 7.2mm/9.5mm, SATA 2.5&quot; hard drives</strong>&lt;br&gt;Support for next generation form factor (NGFF) M.2 solid-state drive, with SATA/Peripheral Component Interconnect Express (SATA/PCI)e co-layout port&lt;br&gt;Support for solid-state drive + hard drive&lt;br&gt;Support for M.2 solid-state drive (support storage function, assuming solid-state drive (\geq 128) G, Port1)&lt;br&gt;Accelerometer / hard drive protection support&lt;br&gt;<strong>Single hard drive configurations:</strong>&lt;br&gt;● 1TB (7200) 9.5mm/7mm&lt;br&gt;<strong>Dual storage configurations:</strong>&lt;br&gt;● 128 GB SATA TLC solid-state drive (Value) + 1 TB (7200) hard drive&lt;br&gt;● 256 GB PCIe NVMe TLC solid-state drive + 1 TB (7200) hard drive&lt;br&gt;● 256 GB PCIe NVMe Value solid-state drive + 1TB (7200) hard drive&lt;br&gt;<strong>PCle NVMe TLC M.2 solid-state drive</strong>&lt;br&gt;● 360 GB&lt;br&gt;● 512 GB&lt;br&gt;● 1 TB&lt;br&gt;<strong>PCle NVMe Value M.2 solid-state drive</strong>&lt;br&gt;● 512 GB</td>
</tr>
<tr>
<td>Optical drive</td>
<td><strong>9.0mm tray load - SATA - Fixed (not modular)</strong>&lt;br&gt;DVD+/-RW Double-Layer Dual&lt;br&gt;Supports Zero-Power ODD&lt;br&gt;Supports M-disc</td>
</tr>
<tr>
<td>Camera and</td>
<td><strong>HP Wide Vision FHD IR Camera - indicator LED &amp; 2x IR LEDs, USB2.0, FHD Hybrid B</strong>&lt;br&gt;1080p by 30 frames per second&lt;br&gt;Supports Windows® Hello&lt;br&gt;Dual array Digital Microphones w/ appropriate software - beam forming, echo cancellation, noise suppression</td>
</tr>
<tr>
<td>microphone</td>
<td></td>
</tr>
<tr>
<td>Audio</td>
<td><strong>BANG &amp; OLUFSEN</strong>&lt;br&gt;<strong>BANG &amp; OLUFSEN Audio Control</strong>&lt;br&gt;Supports HP Audio Boost 2.0 (with discrete amplifier)</td>
</tr>
<tr>
<td>Category</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Dual Speakers</td>
<td></td>
</tr>
<tr>
<td>Ethernet</td>
<td>Integrated 10/100/1000 NIC</td>
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<tr>
<td>Sensor</td>
<td>Accelerometer</td>
</tr>
</tbody>
</table>
| Wireless networking | **Integrated Wireless options with dual antennas (M.2/PCIe):**  
  Intel Dual Band Wireless-AC 7265 802.11 AC 2x2 WiFi + BT 4.2 Combo Adapter (non-vPro)  
  Realtek RTL8822BE 802.11 ac 2x2 WiFi + BT 4.2 Combo Adapter (MU-MIMO supported)  
  Compatible with Miracast-certified devices                                                                 |
| External card       | **HP Multi-Format Digital Media Card Reader**                                                                                                  |
| expansion           | Supports SD/SDHC/SDXC                                                                                                                        |
|                     | Push-Push Insertion/Removal                                                                                                                  |
| Internal card       | One M.2 slot for SSD                                                                                                                         |
| expansion           | One M.2 slot for WLAN                                                                                                                        |
| Input/Output        | Hot Plug / Unplug and auto detect for correct output to wide-aspect vs. standard aspect video                                               |
|                     | HDMI v2.0a (HDR) + HDCP2.2 supporting: up to 4096x2160 @ 60Hz                                                                              |
|                     | Headphone/Line-out and Mic-in (combo)                                                                                                          |
|                     | **USB type A 3.1 ports on Unit:**  
  3 (2 on the left side; 1 on the right side)                                                                                              |
|                     | Support HP Sleep & Charge (1 on the right side)                                                                                                |
|                     | **USB type C 3.1 port Gen 1 on Unit (left side):**                                                                                           |
|                     | 1 (1 on the left side)                                                                                                                       |
|                     | Support data transfer                                                                                                                        |
|                     | Support Display Port (DP1.2+ HDCP 2.2 supporting up to 4096x2160 @ 60Hz)                                                                    |
|                     | Support HP Sleep & Charge (without BC 1.2)                                                                                                   |
|                     | RJ-45 / Ethernet                                                                                                                             |
|                     | AC Smart Pin adapter plug                                                                                                                   |
| Keyboard            | **Keyboard:**  
  Full Size Backlit island-style Keyboard with numeric keypad, Pike Silver (15.6”/17.3”)                                               |
|                     | **Touchpad Requirements:**                                                                |
|                     | ClickPad with image sensor                                                                                                                   |
|                     | Multitouch gestures enabled                                                                                                                  |
|                     | Support Modern Trackpad Gestures                                                                                                             |
|                     | Taps enabled as default                                                                                                                      |
| Mechanical          | **Chassis buttons**  
  Power                                                                                                                                         |
<p>| requirements        | LED indicators                                                                                                                               |
| Power requirements  | <strong>Battery:</strong>                                                                                                                                |</p>
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<tr>
<td></td>
<td>3 cell Prismatic battery - 55.8Whr (3S1P, 4835mAh)</td>
</tr>
<tr>
<td></td>
<td>Support battery fast charge</td>
</tr>
<tr>
<td></td>
<td><strong>AC adapter</strong></td>
</tr>
<tr>
<td></td>
<td>Barrel Type:</td>
</tr>
<tr>
<td></td>
<td>65W with duckhead and/or duckhead power cords</td>
</tr>
<tr>
<td></td>
<td>90W</td>
</tr>
<tr>
<td></td>
<td><strong>Power Cord/Duckhead/Duckhead Power Cord:</strong></td>
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<tr>
<td></td>
<td>Duckhead (C5)</td>
</tr>
<tr>
<td></td>
<td>1M duckhead power cord w/ tag label (C5)</td>
</tr>
<tr>
<td></td>
<td>1M premium power cord w/ tag label (C5)</td>
</tr>
<tr>
<td>Security</td>
<td>TPM 2.0</td>
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<td></td>
<td>Kensington Security Lock</td>
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<tr>
<td>Operating system</td>
<td><strong>Preinstalled:</strong></td>
</tr>
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<td></td>
<td>Windows 10</td>
</tr>
<tr>
<td></td>
<td>Windows 10 Pro</td>
</tr>
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<td></td>
<td><strong>For Developed Market (ML):</strong></td>
</tr>
<tr>
<td></td>
<td>Windows 10 Home ML</td>
</tr>
<tr>
<td></td>
<td>Windows 10 Home Plus ML</td>
</tr>
<tr>
<td></td>
<td><strong>For Emerging Market (EM/SL):</strong></td>
</tr>
<tr>
<td></td>
<td>Windows 10 Home EM/SL</td>
</tr>
<tr>
<td></td>
<td>Windows 10 Home Plus EM/SL</td>
</tr>
<tr>
<td></td>
<td><strong>For China Market:</strong></td>
</tr>
<tr>
<td></td>
<td>CPPP Windows 10 Home High End China Language Edition</td>
</tr>
<tr>
<td></td>
<td>CPPP Windows 10 Home China Language Edition</td>
</tr>
<tr>
<td></td>
<td><strong>For APJ SEAP Market (EM/SL):</strong></td>
</tr>
<tr>
<td></td>
<td>SEAP Windows 10 Home EM/SL</td>
</tr>
<tr>
<td></td>
<td>SEAP Windows 10 Home Plus</td>
</tr>
<tr>
<td>Serviceability</td>
<td><strong>End user replaceable parts:</strong></td>
</tr>
<tr>
<td></td>
<td>AC adapter</td>
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<td></td>
<td>Raw Panel Replacement</td>
</tr>
</tbody>
</table>
2 External component identification

Right side

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Optical drive</td>
<td>Depending on your computer model, reads an optical disc or reads and writes to an optical disc.</td>
</tr>
<tr>
<td>(2) Optical drive eject button</td>
<td>Releases the optical drive disc tray.</td>
</tr>
<tr>
<td>(3) USB 3.1x SuperSpeed port with HP Sleep and Charge</td>
<td>Connects a USB device, provides high-speed data transfer, and even when the computer is off, charges most products such as a cell phone, camera, activity tracker, or smartwatch.</td>
</tr>
</tbody>
</table>
| (4) AC adapter and battery light | ● White: The AC adapter is connected and the battery is fully charged.  
● Blinking white: The AC adapter is disconnected and the battery has reached a low battery level.  
● Amber: The AC adapter is connected and the battery is charging.  
● Off: The battery is not charging. |
| (5) Power connector        | Connects an AC adapter.                                                     |

Left side
<table>
<thead>
<tr>
<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) RJ-45 (network) jack/status lights | Connects a network cable.  
- White: The network is connected.  
- Amber: Activity is occurring on the network. |
| (3) HDMI port | Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component, or a high-speed High-Definition Multimedia Interface (HDMI) device. |
| (4) USB 3.x SuperSpeed ports (2) | Connect a USB device, such as a cell phone, camera, activity tracker, or smartwatch, and provide high-speed data transfer. |
| (5) USB Type-C port with HP Sleep and Charge | When the computer is on, connects and charges a USB device that has a Type-C connector, such as a cell phone, camera, activity tracker, or smartwatch, and provides high-speed data transfer.  
- or -  
Connects to various USB, video, HDMI, and LAN devices.  
**NOTE:** Cables and/or adapters (purchased separately) may be required.  
- or -  
Connects a DisplayPort device that has a USB Type-C connector, providing display output. |
| (6) Audio-out (headphone)/Audio-in (microphone) combo jack | Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. This jack does not support optional standalone microphones.  
**WARNING!** To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset.  
For additional safety information, refer to the *Regulatory, Safety, and Environmental Notices*.  
To access this guide:  
▲ Select the **Start** button, select **HP Help and Support**, and then select **HP Documentation**.  
**NOTE:** When a device is connected to the jack, the computer speakers are disabled. |
| (7) Drive light |  
- Blinking white: The hard drive is being accessed.  
- Amber: HP 3D DriveGuard has temporarily parked the hard drive. |
| (8) Memory card reader | Reads optional memory cards that enable you to store, manage, share, or access information.  
To insert a card:  
1. Hold the card label-side up, with connectors facing the computer. |
<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Insert the card into the memory card reader, and then press in on the card until it is firmly seated. To remove a card: ▲ Press in on the card, and then remove it from the memory card reader.</td>
</tr>
</tbody>
</table>
### Display

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) WLAN antennas* (2)</td>
<td>Send and receive wireless signals to communicate with wireless local area networks (WLANs).</td>
</tr>
<tr>
<td>(2) Camera light(s)</td>
<td>On: One or more cameras are in use.</td>
</tr>
<tr>
<td>(3) Internal microphones (2)</td>
<td>Record sound.</td>
</tr>
<tr>
<td>(4) Camera(s)</td>
<td>Allow you to video chat, record video, and record still images. Some cameras also allow a facial recognition logon to Windows, instead of a password logon.</td>
</tr>
</tbody>
</table>

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

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

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

To access this guide:

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

## TouchPad

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

## Lights
### Component Description

1. **Power light**
   - **On:** The computer is on.
   - **Blinking:** The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other unneeded components.
   - **Off:** The computer is off or in Hibernation. Hibernation is a power-saving state that uses the least amount of power.

2. **Caps lock light**
   - **On:** Caps lock is on, which switches the key input to all capital letters.

3. **Mute light**
   - **On:** Computer sound is off.
   - **Off:** Computer sound is on.

### Button and speakers

**Component**  
1. **Power button**
   - **On:** The computer is on.
   - **Blinking:** The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other unneeded components.
   - **Off:** The computer is off or in Hibernation. Hibernation is a power-saving state that uses the least amount of power.

   **Description**
   - **On:** Caps lock is on, which switches the key input to all capital letters.
   - **Off:** Computer sound is on.

   **Component**
   1. **Power button**
      - **When the computer is off,** press the button to turn on the computer.
      - **When the computer is on,** press the button briefly to initiate Sleep.
      - **When the computer is in the Sleep state,** press the button briefly to exit Sleep.
      - **When the computer is in Hibernation,** press the button briefly to exit Hibernation.

      **CAUTION:** Pressing and holding down the power button results in the loss of unsaved information.
If the computer has stopped responding and shutdown procedures are ineffective, press and hold the power button down for at least 5 seconds to turn off the computer.

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

▲ Right-click the Start button, and then select **Power Options**.

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

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) esc key</td>
<td>Displays system information when pressed in combination with the fn key.</td>
</tr>
<tr>
<td>(2) fn key</td>
<td>Executes specific functions when pressed in combination with another key.</td>
</tr>
</tbody>
</table>
| (3) Windows key | Opens the Start menu.  
**NOTE:** Pressing the Windows key again will close the Start menu. |
| (4) num lock key | Alternates between the navigational and numeric functions on the integrated numeric keypad. |
| (5) Integrated numeric keypad | A separate keypad to the right of the alphabet keyboard. When num lock is pressed, the keypad can be used like an external numeric keypad.  
**NOTE:** If the keypad function is active when the computer is turned off, that function is reinstated when the computer is turned back on. |

## Action keys

An action key performs the function indicated by the icon on the key. To determine which keys are on your product, see Special keys on page 12.

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

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Opens the &quot;How to get help in Windows 10&quot; webpage.</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Decreases the screen brightness incrementally as long as you hold down the key.</td>
</tr>
<tr>
<td>Icon</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
</tr>
<tr>
<td>☀</td>
<td>Increases the screen brightness incrementally as long as you hold down the key.</td>
</tr>
<tr>
<td>⌠⌡</td>
<td>Switches the screen image between display devices connected to the system. For example, if a monitor is connected to the computer, repeatedly pressing this key alternates the screen image from the computer display to the monitor display to a simultaneous display on both the computer and the monitor.</td>
</tr>
</tbody>
</table>
| 🌠   | Turns the keyboard backlight off or on.  
      | **NOTE:** To conserve battery power, turn off this feature. |
| 🔊   | Mutes or restores speaker sound. |
| 🔊-   | Decreases speaker volume incrementally while you hold down the key. |
| 🔊+   | Increases speaker volume incrementally while you hold down the key. |
| ⏪⏪   | Plays the previous track of an audio CD or the previous section of a DVD or a Blu-ray Disc (BD). |
| ⏫⏩   | Starts, pauses, or resumes playback of an audio CD, a DVD, or a BD. |
| ⏫⏩   | Plays the next track of an audio CD or the next section of a DVD or a BD. |
| 🛩   | Turns the airplane mode and wireless feature on or off.  
      | **NOTE:** The airplane mode key is also referred to as the wireless button.  
      | **NOTE:** A wireless network must be set up before a wireless connection is possible. |
## Bottom

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vent</td>
</tr>
</tbody>
</table>

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

Important system information is located on the bottom edge of the tablet or on the keyboard base. You may need the information when travelling internationally or when you contact support:

(1): Serial number
(2): Product number
(3): Model number
(4): Warranty period

Using Windows, briefly press the fn+esc key combination to display the System Information screen, which provides the product name and serial number of your computer, as well as information about the memory, processor, BIOS, and keyboard.
3 Illustrated parts catalog

Computer major components

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

**NOTE:** 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 [Locating system information on page 15](#) for details.
<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Display assembly (see Display on page 29)</td>
<td></td>
</tr>
<tr>
<td>(2)</td>
<td>Top cover/keyboard (see Top cover/keyboard on page 58)</td>
<td></td>
</tr>
<tr>
<td>(3)</td>
<td>TouchPad module</td>
<td>935941-001</td>
</tr>
<tr>
<td>(4)</td>
<td>TouchPad cable</td>
<td>925459-001</td>
</tr>
<tr>
<td>(5)</td>
<td>Speakers</td>
<td>925476-001</td>
</tr>
<tr>
<td>(6)</td>
<td>Power connector (includes cable)</td>
<td>810326-012</td>
</tr>
<tr>
<td>(7)</td>
<td>USB board</td>
<td></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>8L</td>
<td></td>
<td>925470-001</td>
</tr>
<tr>
<td>10L</td>
<td></td>
<td>L02141-001</td>
</tr>
<tr>
<td></td>
<td>Cable, USB FFC</td>
<td>928573-001</td>
</tr>
<tr>
<td></td>
<td>Cable, USB</td>
<td>925458-001</td>
</tr>
<tr>
<td>(8)</td>
<td><strong>System board</strong> (see System board on page 50)</td>
<td></td>
</tr>
<tr>
<td>(9)</td>
<td><strong>WLAN module</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>WLAN Assembly, 11AC+BT INT 7265NV M.2 D1 MOW</td>
<td>901229-855</td>
</tr>
<tr>
<td></td>
<td>WLAN Assembly RT CARTIER AC 2X2</td>
<td>924813-855</td>
</tr>
<tr>
<td>(10)</td>
<td><strong>Memory</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SODIMM 4 GB 2400 MHz 1.2v DDR4</td>
<td>862397-855</td>
</tr>
<tr>
<td></td>
<td>SODIMM 8 GB 2400 MHz 1.2v DDR4</td>
<td>862398-855</td>
</tr>
<tr>
<td>(11)</td>
<td><strong>Solid-state drive</strong> (see Solid-state drive on page 33)</td>
<td></td>
</tr>
<tr>
<td>(12)</td>
<td><strong>Heat sink</strong></td>
<td></td>
</tr>
<tr>
<td>(13)</td>
<td><strong>Fan</strong></td>
<td></td>
</tr>
<tr>
<td>(14)</td>
<td><strong>Hard drive</strong></td>
<td></td>
</tr>
<tr>
<td>(15)</td>
<td><strong>Optical drive</strong></td>
<td></td>
</tr>
<tr>
<td>(16)</td>
<td><strong>Battery</strong></td>
<td></td>
</tr>
<tr>
<td>(17)</td>
<td><strong>Base enclosure</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Miscellaneous parts**

<table>
<thead>
<tr>
<th>Component</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC adapter, 90W</td>
<td>710413-001</td>
</tr>
<tr>
<td>AC adapter, 65W</td>
<td>854117-850</td>
</tr>
<tr>
<td>Adapter, HP HDMI to VGA</td>
<td>701943-001</td>
</tr>
<tr>
<td>Dongle, USB-C to USB-A</td>
<td>833960-001</td>
</tr>
<tr>
<td>Pen</td>
<td>910942-001</td>
</tr>
<tr>
<td>Hook</td>
<td>933393-001</td>
</tr>
<tr>
<td><strong>Power cord, AC line, 1.0 m</strong></td>
<td></td>
</tr>
<tr>
<td>For use in North America</td>
<td>213349-015</td>
</tr>
<tr>
<td>For use in Europe</td>
<td>213350-014</td>
</tr>
<tr>
<td>For use in the United Kingdom</td>
<td>213351-013</td>
</tr>
<tr>
<td>For use in Denmark</td>
<td>213353-013</td>
</tr>
<tr>
<td>Component</td>
<td>Spare part number</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>For use in Switzerland</td>
<td>213354-013</td>
</tr>
<tr>
<td>For use in South Africa</td>
<td>361240-007</td>
</tr>
<tr>
<td>For use in Israel</td>
<td>398063-008</td>
</tr>
<tr>
<td>For use in Israel</td>
<td>398063-008</td>
</tr>
<tr>
<td><strong>Power cord, C5, 1.0 m</strong></td>
<td></td>
</tr>
<tr>
<td>For use in North America</td>
<td>920689-001</td>
</tr>
<tr>
<td>For use in Europe</td>
<td>920689-005</td>
</tr>
<tr>
<td>For use in the United Kingdom</td>
<td>920689-006</td>
</tr>
<tr>
<td>For use in Denmark</td>
<td>920689-007</td>
</tr>
<tr>
<td>For use in Israel</td>
<td>920689-008</td>
</tr>
<tr>
<td>For use in Switzerland</td>
<td>920689-009</td>
</tr>
<tr>
<td>For use in South America</td>
<td>920689-010</td>
</tr>
<tr>
<td><strong>Rubber kit</strong></td>
<td>935940-001</td>
</tr>
<tr>
<td><strong>Screw kit</strong></td>
<td>925475-001</td>
</tr>
</tbody>
</table>
4 Removal and replacement procedures
preliminary requirements

Tools required

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

- Flat-bladed screwdriver
- Magnetic screwdriver
- Phillips P0 and P1 screwdrivers

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

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

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

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

Avoid dropping drives from any height onto any surface.

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

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

Avoid exposing a drive to temperature extremes or liquids.

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

Electrostatic discharge damage

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

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

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

⚠️ CAUTION: To prevent damage to the 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>10%</th>
<th>40%</th>
<th>55%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking across carpet</td>
<td>35,000 V</td>
<td>15,000 V</td>
<td>7,500 V</td>
</tr>
<tr>
<td>Walking across vinyl floor</td>
<td>12,000 V</td>
<td>5,000 V</td>
<td>3,000 V</td>
</tr>
<tr>
<td>Motions of bench worker</td>
<td>6,000 V</td>
<td>800 V</td>
<td>400 V</td>
</tr>
<tr>
<td>Removing DIPS from plastic tube</td>
<td>2,000 V</td>
<td>700 V</td>
<td>400 V</td>
</tr>
<tr>
<td>Removing DIPS from vinyl tray</td>
<td>11,500 V</td>
<td>4,000 V</td>
<td>2,000 V</td>
</tr>
<tr>
<td>Removing DIPS from plastic foam</td>
<td>14,500 V</td>
<td>5,000 V</td>
<td>3,500 V</td>
</tr>
<tr>
<td>Removing bubble pack from PCB</td>
<td>26,500 V</td>
<td>20,000 V</td>
<td>7,000 V</td>
</tr>
<tr>
<td>Packing PCBs in foam-lined box</td>
<td>21,000 V</td>
<td>11,000 V</td>
<td>5,000 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, screwdrivers, 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 plastic foam.
- 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 equipment must be worn in contact with the skin.

The following grounding equipment is recommended to prevent electrostatic damage:

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

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

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

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

⚠️ **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 [Locating system information on page 15](#) 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](http://partsurfer.hp.com), select your country or region, and then follow the on-screen instructions.

There are as many as 62 screws that must be removed, replaced, and/or loosened when servicing the parts described in this chapter. Make special note of each screw size and location during removal and replacement.
**Base enclosure**

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base enclosure</td>
<td>925454-001</td>
</tr>
</tbody>
</table>

**IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

Before removing the base enclosure, follow these steps:

1. Shut down the computer.
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 base enclosure:

1. Insert a paper clip (1) to release the optical drive, slide the optical drive out (2), and then remove the screw (3).
2. Remove the rubber strip (1).
3. Remove 3 screws under the rubber strip (2).
4. Remove 4 screws (3).
5. Lift the base enclosure (4), and then remove it (5).

Reverse this procedure to install the base enclosure.
**Battery**

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery, 3-cell 55Whr 4.8Ah LI LK03055XL-PR</td>
<td>916814-855</td>
</tr>
</tbody>
</table>

**IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

Before removing the battery, follow these steps:

1. Shut down the computer.
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 base enclosure (see [Base enclosure on page 26](#)).

Remove the battery:

▲ Remove 7 screws (1), and then lift the battery (2) to remove it.

Reverse this procedure to install the battery.
Display

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hinge-up Kit</strong></td>
<td></td>
</tr>
<tr>
<td>HU LCD 17.3 FHD AG UWVA (Touch screen)</td>
<td>925547-001</td>
</tr>
<tr>
<td>HU LCD 17.3 FHD AG UWVA</td>
<td>935938-001</td>
</tr>
<tr>
<td>LCD 17.3 UHD AG UWVA with bezel</td>
<td>935939-001</td>
</tr>
<tr>
<td>Hinge covers</td>
<td>933394-001</td>
</tr>
</tbody>
</table>

**IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

Before removing the display panel, 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 unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the base enclosure [Base enclosure on page 26].
5. Remove the battery (see [Battery on page 28]).
6. Remove the following components:
   a. Base enclosure (see [Base enclosure on page 26]).
   b. Battery (see [Battery on page 28]).

Remove the display assembly:

▲ Remove three screws from each hinge bracket (1), turn the display assembly over (2), and then lift the display to remove it (e).
Reverse this procedure to replace the display assembly.
## Hard drive

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard drive, 1TB 7200 RPM SATA RAW 9.5mm</td>
<td>766644-005</td>
</tr>
<tr>
<td>Cable, hard drive</td>
<td>925456-001</td>
</tr>
<tr>
<td>Rubber, sleeve holder</td>
<td>925465-001</td>
</tr>
</tbody>
</table>

**IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

Before removing the hard drive, follow these steps:

1. Shut down the computer.
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 following components:
   a. Base enclosure (see Base enclosure on page 26).
   b. Battery (see Battery on page 28).

Remove the hard drive:

1. Disconnect the hard drive cable from the system board (1).
2. Lift the hard drive cable (2), and then lift the hard drive (3) to remove it.
If it is necessary to disassemble the hard drive:

▲ Remove the hard drive cable (1), remove the plastic hard drive bracket (2), and then lift the hard drive bracket (3) to remove it.

Reverse this procedure to install the hard drive.
## Solid-state drive

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid-state drive</td>
<td></td>
</tr>
<tr>
<td>SSD 128 GB 2280 M2 SATA3 Value RS</td>
<td>827560-043</td>
</tr>
<tr>
<td>SSD 256 GB 2280 M2 PCIe3x4SS NVMe TLC RS</td>
<td>847109-019</td>
</tr>
<tr>
<td>SSD 512 GB 2280 M2 PCIe3x4SS NVMe TLC RS</td>
<td>847110-016</td>
</tr>
<tr>
<td>SSD 1 TB 2280 PCIe-3x4 NVMe TLC 2Side RS</td>
<td>865697-008</td>
</tr>
<tr>
<td>SSD 360 GB 2280 PCIe3x4 NVMe TLC RS</td>
<td>917818-010</td>
</tr>
<tr>
<td>SSD 256 GB 2280 PCIe NVMe Value RS</td>
<td>933705-001</td>
</tr>
<tr>
<td>SSD 512 GB 2280 PCIe NVMe Value RS</td>
<td>933706-001</td>
</tr>
</tbody>
</table>

**IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

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

1. Shut down the computer.
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 following components:
   a. Base enclosure (see Base enclosure on page 26).
   b. Battery (see Battery on page 28).
   c. Hard drive (see Hard drive on page 31).

Remove the solid-state drive:

1. Remove the Phillips screw (1) that secures the solid-state drive to the system board.
2. Remove the solid-state drive (2) by pulling the drive away from the slot at an angle.

Reverse this procedure to install the solid-state drive.
## Memory

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>SODIMM 4 GB 2400 MHz 1.2v DDR4</td>
<td>862397-855</td>
</tr>
<tr>
<td>SODIMM 8 GB 2400 MHz 1.2v DDR4</td>
<td>862398-855</td>
</tr>
</tbody>
</table>

⚠️ **IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

Before removing the memory, follow these steps:

1. Shut down the computer.
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 following components:
   a. Base enclosure (see Base enclosure on page 26).
   b. Battery (see Battery on page 28).
   c. Hard drive (see Hard drive on page 31).
   d. Solid-state drive (see Solid-state drive on page 33).

Remove the memory:

1. Spread the retaining tabs (1) on each side of the memory module slot to release the memory module. (The memory module tilts up.)
2. Remove the memory module (2) by pulling the module away from the slot at an angle.
Reverse this procedure to install the memory.
## WLAN module

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>WLAN module</td>
<td></td>
</tr>
<tr>
<td>11 AC+Bluetooth INT 7265NV M.2 D1 MOW</td>
<td>901229-855</td>
</tr>
<tr>
<td>RT CARTIER AC 2X2</td>
<td>924813-855</td>
</tr>
</tbody>
</table>

**IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

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

Before removing the WLAN module, follow these steps:

1. Shut down the computer.
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 following components:
   - a. Base enclosure (see Base enclosure on page 26).
   - b. Battery (see Battery on page 28).
   - c. Hard drive (see Hard drive on page 31).
   - d. Solid-state drive (see Solid-state drive on page 33).
   - e. Memory (see Memory on page 35).

Remove the WLAN module:

1. Disconnect the WLAN antenna cables (1) from the terminals on the WLAN module.

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

2. Remove the Phillips screw (2) that secures the WLAN module to the system board. (The WLAN module tilts up.)
3. Remove the WLAN module (3) by pulling the module away from the slot at an angle.

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

Reverse this procedure to install the WLAN module.
Before removing the optical drive, follow these steps:

1. Shut down the computer.
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 following components:
   a. Base enclosure (see Base enclosure on page 26).
   b. Battery (see Battery on page 28).
   c. Hard drive (see Hard drive on page 31).
   d. Solid-state drive (see Solid-state drive on page 33).
   e. Memory (see Memory on page 35).
   f. WLAN module (see WLAN module on page 37).

Remove the optical drive:

▲ Remove 3 screws (1), disconnect the optical drive cable(2), and then slide the optical drive out (3) to remove it.
If it is necessary to remove the optical drive bracket:

▲ Remove 3 screws (1), and then remove the optical drive brackets (2).

Reverse this procedure to install the optical drive.
## Input/output brackets

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracket, right input/output</td>
<td>925462-001</td>
</tr>
<tr>
<td>Bracket, left input/output</td>
<td>925463-001</td>
</tr>
</tbody>
</table>

**IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

Before removing the Input/out brackets, follow these steps:

1. Shut down the computer.
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 following components:
   - a. Base enclosure (see Base enclosure on page 26).
   - b. Battery (see Battery on page 28).
   - c. Hard drive (see Hard drive on page 31).
   - d. Solid-state drive (see Solid-state drive on page 33).
   - e. Memory (see Memory on page 35).
   - f. WLAN module (see WLAN module on page 37).
   - g. Optical drive (see Optical drive on page 39).

Remove the left input/output bracket:

1. Remove 1 screw (1).
2. Remove 2 screws (2), and then lift the left I/O bracket (3) to remove it.

Remove the right input/output bracket:

▲ Remove 1 screw (1), and then lift the right I/O bracket (2) to remove it.

Reverse this procedure to install the input/output brackets.
### Fan

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fan</td>
<td>925461-001</td>
</tr>
<tr>
<td>Heat sink</td>
<td>925478-001</td>
</tr>
</tbody>
</table>

**IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

Before removing the fan, follow these steps:

1. Shut down the computer.
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 following components:
   a. Base enclosure (see Base enclosure on page 26).
   b. Battery (see Battery on page 28).
   c. Hard drive (see Hard drive on page 31).
   d. Solid-state drive (see Solid-state drive on page 33).
   e. Memory (see Memory on page 35).
   f. WLAN module (see WLAN module on page 37).
   g. Optical drive (see Optical drive on page 39).

Remove the fan:

1. Disconnect the fan cable from the system board (1).
2. Remove 3 screws (2).
3. Release the fan cable from the routing (3), and then lift the fan (4) to remove it.

Reverse this procedure to install the fan.
**TouchPad**

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>TouchPad</td>
<td>935941-001</td>
</tr>
<tr>
<td>TouchPad bracket</td>
<td>925466-001</td>
</tr>
</tbody>
</table>

**IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

Before removing the TouchPad, follow these steps:

1. Shut down the computer.
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 following components:
   a. Base enclosure (see *Base enclosure on page 26*).
   b. Battery (see *Battery on page 28*).
   c. Hard drive (see *Hard drive on page 31*).
   d. Solid-state drive (see *Solid-state drive on page 33*).
   e. Memory (see *Memory on page 35*).
   f. WLAN module (see *WLAN module on page 37*).
   g. Optical drive (see *Optical drive on page 39*).

Remove the TouchPad:

1. Remove 4 screws (1), and then lift the bracket (2) to remove it.
2. Disconnect the TouchPad cable (1), and then release the cable (2).
3. Remove 3 screws (3), and then lift the TouchPad (4) to remove it.
4. Disconnect the TouchPad cable from the system board (1) and the TouchPad (2), release the cable (3), and then lift the TouchPad cable (4) to remove it.

Reverse this procedure to install the TouchPad.
## USB board

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>USB board, 8L</td>
<td>925470-001</td>
</tr>
<tr>
<td>USB board, 10L</td>
<td>L02141-001</td>
</tr>
<tr>
<td>Cable, USB FFC</td>
<td>928573-001</td>
</tr>
<tr>
<td>Cable, USB</td>
<td>925458-001</td>
</tr>
</tbody>
</table>

**IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

Before removing the USB board, follow these steps:

1. Shut down the computer.
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 following components:
   a. Base enclosure (see Base enclosure on page 26).
   b. Battery (see Battery on page 28).
   c. Hard drive (see Hard drive on page 31).
   d. Solid-state drive (see Solid-state drive on page 33).
   e. Memory (see Memory on page 35).
   f. WLAN module (see WLAN module on page 37).
   g. Optical drive (see Optical drive on page 39).
   h. System board (see System board on page 50).

Remove the USB board:

1. Disconnect the webcam cable (1) and the USB cable (2) from the system board.
2. Release the cable from the routing (3).
3. Release the USB cable from the tape holding it (4).
4. Remove 1 screw (5).
5. Lift the USB board to remove it (6).

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

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>System board</td>
<td></td>
</tr>
<tr>
<td>Discrete graphics 940MX 2 GB i5-7200U</td>
<td>925395-001</td>
</tr>
<tr>
<td>Discrete graphics 940MX 2 GB i5-7200U and the Windows operating system</td>
<td>925395-601</td>
</tr>
<tr>
<td>Discrete graphics 940MX 2 GB i7-7500U</td>
<td>925396-001</td>
</tr>
<tr>
<td>Discrete graphics 940MX 2 GB i7-7500U and the Windows operating system</td>
<td>925396-601</td>
</tr>
<tr>
<td>Discrete graphics 940MX 4 GB i5-7500U</td>
<td>925397-001</td>
</tr>
<tr>
<td>Discrete graphics 940MX 4 GB i5-7500U and the Windows operating system</td>
<td>925397-601</td>
</tr>
<tr>
<td>Discrete graphics MX150 2 GB i5-8250U</td>
<td>940818-001</td>
</tr>
<tr>
<td>Discrete graphics MX150 2 GB i5-8250U and the Windows operating system</td>
<td>940818-601</td>
</tr>
<tr>
<td>Discrete graphics MX150 2 GB i7-8550U</td>
<td>940819-001</td>
</tr>
<tr>
<td>Discrete graphics MX150 2 GB i7-8550U and the Windows operating system</td>
<td>940819-601</td>
</tr>
<tr>
<td>Discrete graphics MX150 4 GB i7-8550U</td>
<td>940820-001</td>
</tr>
<tr>
<td>Discrete graphics MX150 4 GB i7-8550U and the Windows operating system</td>
<td>940820-601</td>
</tr>
</tbody>
</table>

**IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

Before removing the system board, follow these steps:

1. Shut down the computer.
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 following components:
   a. Base enclosure (see Base enclosure on page 26).
   b. Battery (see Battery on page 28).
   c. Hard drive (see Hard drive on page 31).
   d. Solid-state drive (see Solid-state drive on page 33).
   e. Memory (see Memory on page 35).
   f. WLAN module (see WLAN module on page 37).
   g. Optical drive (see Optical drive on page 39).

Disconnect the following cables from the system board:

1. Panel cable (1)
2. Touch board (2)
3. Webcam cable and USB board cable (3)
4. USB board ribbon cable (4)
5. Backlit cable (75)
6. Keyboard cable (6)
7. Hard drive cable (7)
8. TouchPad cable (8)
9. WLAN antenna cable (9)
10. Speaker cable (10)

Remove the system board:
▲ Remove 6 screws (1), lift the system board (2), and then remove it (3).
Reverse this procedure to install the system board.
**Heat sink**

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat sink</td>
<td>925478-001</td>
</tr>
</tbody>
</table>

**IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

Before removing the heat sink, follow these steps:

1. Shut down the computer.
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 following components:
   a. Base enclosure (see Base enclosure on page 26).
   b. Battery (see Battery on page 28).
   c. Hard drive (see Hard drive on page 31).
   d. Solid-state drive (see Solid-state drive on page 33).
   e. Memory (see Memory on page 35).
   f. WLAN module (see WLAN module on page 37).
   g. Optical drive (see Optical drive on page 39).
   h. System board (see System board on page 50).

Remove the heat sink:

1. Remove 7 screws holding the heat sink (1) to the system board.
2. Lift the heat sink to remove it (2).

Thermal material locations are shown as follows:

Reverse this procedure to install the heat sink.
Speakers

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speaker Kit</td>
<td>925476-001</td>
</tr>
</tbody>
</table>

**IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

Before removing the speakers, follow these steps:

1. Shut down the computer.
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 following components:
   a. Base enclosure (see Base enclosure on page 26).
   b. Battery (see Battery on page 28).
   c. Hard drive (see Hard drive on page 31).
   d. Solid-state drive (see Solid-state drive on page 33).
   e. Memory (see Memory on page 35).
   f. WLAN module (see WLAN module on page 37).
   g. Optical drive (see Optical drive on page 39).
   h. System board (see System board on page 50).

Remove the speakers:

1. Remove the tapes holding the speaker cable (1).
2. Release the speaker cable from the routing (2).
3. Release the display cable from the routing (3).
4. Lift the speakers to remove them (4).

Reverse this procedure to install the speakers.
Power connector

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power connector (includes cable)</td>
<td>810326-012</td>
</tr>
</tbody>
</table>

**IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

Before removing the speakers, follow these steps:

1. Shut down the computer.
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 following components:
   a. Base enclosure (see Base enclosure on page 26).
   b. Battery (see Battery on page 28).
   c. Hard drive (see Hard drive on page 31).
   d. Solid-state drive (see Solid-state drive on page 33).
   e. Memory (see Memory on page 35).
   f. WLAN module (see WLAN module on page 37).
   g. Optical drive (see Optical drive on page 39).
   h. System board (see System board on page 50).

Remove the power connector:

1. Disconnect the power connector cable (1).
2. Release the power connector cable from the routing (2).
3. Lift the power connector to remove it (3).

Reverse this procedure to install the power connector.

**Top cover/keyboard**

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

<table>
<thead>
<tr>
<th>For use in country or region</th>
<th>Spare part number</th>
<th>For use in country or region</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>For use in the United States</td>
<td>925477-001</td>
<td>For use in Russia</td>
<td>925477-251</td>
</tr>
<tr>
<td>For use in the United Kingdom</td>
<td>925477-031</td>
<td>For use in Romania</td>
<td>925477-271</td>
</tr>
<tr>
<td>For use in Germany</td>
<td>925477-041</td>
<td>For use in Belgium</td>
<td>925477-A41</td>
</tr>
<tr>
<td>For use in France</td>
<td>925477-051</td>
<td>For use internationally</td>
<td>925477-B31</td>
</tr>
<tr>
<td>For use in Italy</td>
<td>925477-061</td>
<td>For use in Slovenia</td>
<td>925477-BA1</td>
</tr>
<tr>
<td>For use in Spain</td>
<td>925477-071</td>
<td>For use in Israel</td>
<td>925477-BB1</td>
</tr>
<tr>
<td>For use in Portugal</td>
<td>925477-131</td>
<td>For use in Switzerland</td>
<td>925477-BG1</td>
</tr>
<tr>
<td>For use in Turkey</td>
<td>925477-141</td>
<td>For use in Canada</td>
<td>925477-DB1</td>
</tr>
<tr>
<td>For use in Greece</td>
<td>925477-151</td>
<td>For use in Denmark, Norway, Finland, and Sweden</td>
<td>925477-DH1</td>
</tr>
<tr>
<td>For use in Saudi Arabia</td>
<td>925477-171</td>
<td>For use in the Czech Republic and Slovakia</td>
<td>925477-FL1</td>
</tr>
<tr>
<td>For use in Hungary</td>
<td>925477-211</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The top cover/keyboard spare part remains after all other spare parts have been removed.
Starting Setup Utility (BIOS)

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

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

Updating Setup Utility (BIOS)

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

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

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

Determining the BIOS version

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

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

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

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

To check for later BIOS versions, see Downloading a BIOS update on page 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 from the computer by unplugging the power cord from the AC outlet.
- Do not shut down the computer or initiate Sleep.
- Do not insert, remove, connect, or disconnect any device, cable, or cord.

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

1. Type support in the taskbar search box, and then select the HP Support Assistant app.
    - or –
    Click the question mark icon in the taskbar.

2. Click Updates, and then click Check for updates and messages.

3. Follow the on-screen instructions.

4. At the download area, follow these steps:

   a. Identify the most recent BIOS update and compare it to the BIOS version currently installed on your computer. If the update is more recent than your BIOS version, make a note of the date, name, or other identifier. You may need this information to locate the update later, after it has been downloaded to your hard drive.

   b. Follow the on-screen instructions to download your selection to the hard drive.
      Make a note of the path to the location on your hard drive where the BIOS update is downloaded. You will need to access this path when you are ready to install the update.

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

1. Type file in the taskbar search box, and then select File Explorer.

2. Click your hard drive designation. The hard drive designation is typically Local Disk (C:).

3. Using the hard drive path you recorded earlier, open the folder that contains the update.

4. Double-click the file that has an .exe extension (for example, filename.exe).
   The BIOS installation begins.

5. Complete the installation by following the on-screen instructions.

▶️ NOTE: After a message on the screen reports a successful installation, you can delete the downloaded file from your hard drive.
7 Using HP PC Hardware Diagnostics (UEFI)

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

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

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

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

1. Turn on or restart the computer, and quickly press `esc`.
2. Press `f2`.
   
   The BIOS searches three places for the diagnostic tools, in the following order:
   
   a. **Connected USB drive**
      
      **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 62](#).
   
   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`. 
NOTE: The HP PC Hardware Diagnostics (UEFI) download instructions are provided in English only, and you must use a Windows computer to download and create the HP UEFI support environment because only .exe files are offered.

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

**Download the latest UEFI version**

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

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

2. Select **Get software and drivers**.
3. Enter the product name or number.
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 Backing up, restoring, and recovering

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

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

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

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

– or –

Select the question mark icon in the taskbar.

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

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

Creating recovery media and backups

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

- Use HP Recovery Manager to create HP Recovery media after you successfully set up the computer. This step creates a backup of the HP Recovery partition on the computer. The backup can be used to reinstall the original operating system in cases where the hard drive is corrupted or has been replaced. For information on creating recovery media, see Using HP Recovery media (select products only) on page 63. For information on the recovery options that are available using the recovery media, see Using Windows tools on page 64.
- Use Windows tools to create system restore points and create backups of personal information. See Using Windows tools on page 64.
- On select products, use the HP Cloud Recovery Download Tool to create a bootable USB flash drive for your HP recovery media. For more information, see Using the HP Cloud Recovery Download Tool (select products only) on page 65.

Using HP Recovery media (select products only)

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

- If your computer does not list the Windows partition and the Recovery partition, you can obtain recovery media for your system from support. You can find contact information on the HP website. Go to http://www.hp.com/support, select your country or region, and follow the on-screen instructions.
- If your computer does list the Recovery partition and the Windows partition, you can use HP Recovery Manager to create recovery media after you successfully set up the computer. HP Recovery media can be
used to perform system recovery if the hard drive becomes corrupted. System recovery reinstall the original operating system and software programs that were installed at the factory and then configures the settings for the programs. HP Recovery media can also be used to customize the system or restore the factory image if you replace the hard drive.

– Only one set of recovery media can be created. Handle these recovery tools carefully, and keep them in a safe place.

– HP Recovery Manager examines the computer and determines the required storage capacity for the media that will be required.

– To create recovery discs, your computer must have an optical drive with DVD writer capability, and you must use only high-quality blank DVD-R, DVD+R, DVD-R DL, or DVD+R DL discs. Do not use rewritable discs such as CD±RW, DVD±RW, double-layer DVD±RW, or BD-RE (rewritable Blu-ray) discs; they are not compatible with HP Recovery Manager software. Or, instead, you can use a high-quality blank USB flash drive.

– If your computer does not include an integrated optical drive with DVD writer capability, but you would like to create DVD recovery media, you can use an external optical drive (purchased separately) to create recovery discs. If you use an external optical drive, it must be connected directly to a USB port on the computer; the drive cannot be connected to a USB port on an external device, such as a USB hub. If you cannot create DVD media yourself, you can obtain recovery discs for your computer from HP. You can find contact information on the HP website. Go to http://www.hp.com/support, select your country or region, and follow the on-screen instructions.

– Be sure that the computer is connected to AC power before you begin creating the recovery media.

– The creation process can take an hour or more. Do not interrupt the creation process.

– If necessary, you can exit the program before you have finished creating all of the recovery DVDs. HP Recovery Manager will finish burning the current DVD. The next time you start HP Recovery Manager, you will be prompted to continue.

To create HP Recovery media using HP recovery manager:

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

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

2. Select **Create recovery media**, and then follow the on-screen instructions.

If you ever need to recover the system, see **Recovering using HP Recovery Manager on page 65**.

### Using Windows tools

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

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

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

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

**NOTE:** You must be connected to the Internet to access the Get Help app.
Using the HP Cloud Recovery Download Tool (select products only)

To create HP Recovery media using the HP Cloud Recovery Download Tool:

2. Select Software and Drivers, and then follow the on-screen instructions.

Restore and recovery

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

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

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

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

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

- If you want to recover the Windows partition to original factory content, you can choose the System Recovery option from the HP Recovery partition (select products only) or use the HP Recovery media. For more information, see Recovering using HP Recovery Manager on page 65. If you have not already created recovery media, see Using HP Recovery media (select products only) on page 63.

- On select products, if you want to recover the computer’s original factory partition and content, or if you have replaced the hard drive, you can use the Factory Reset option of HP Recovery media. For more information, see Recovering using HP Recovery Manager on page 65.

- On select products, if you want to remove the Recovery partition to reclaim hard drive space, HP Recovery Manager offers the Remove Recovery Partition option.

  For more information, see Removing the HP Recovery partition (select products only) on page 67.

Recovering using HP Recovery Manager

HP Recovery Manager software allows you to recover the computer to its original factory state by using the HP Recovery media that you either created or that you obtained from HP, or by using the HP Recovery partition (select products only). If you have not already created recovery media, see Using HP Recovery media (select products only) on page 63.

What you need to know before you get started

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

- HP Recovery media must be used if the computer hard drive fails. If you have not already created recovery media, see [Using HP Recovery media (select products only) on page 63](#).
- To use the Factory Reset option (select products only), you must use HP Recovery media. If you have not already created recovery media, see [Using HP Recovery media (select products only) on page 63](#).
- If your computer does not allow the creation of HP Recovery media or if the HP Recovery media does not work, you can obtain recovery media for your system from support. You can find contact information from the HP website. Go to [http://www.hp.com/support](http://www.hp.com/support), select your country or region, and follow the on-screen instructions.

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

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

**NOTE:** Only the options available for your computer display when you start the recovery process.

- System Recovery—Reinstalls the original operating system, and then configures the settings for the programs that were installed at the factory.
- Factory Reset—Restores the computer to its original factory state by deleting all information from the hard drive and re-creating the partitions. Then it reinstalls the operating system and the software that was installed at the factory.

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

**Using the HP Recovery partition (select products only)**

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

To start HP Recovery Manager from the HP Recovery partition:

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

1. Type `recovery` in the taskbar search box, select **HP Recovery Manager**, and then select **Windows Recovery Environment**.
   - or –
   
   For computers or tablets with keyboards attached, press `f11` while the computer boots, or press and hold `f11` as you press the power button.

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

2. Select **Troubleshoot** from the boot options menu.

3. Select **Recovery Manager**, and then follow the on-screen instructions.
**Using HP Recovery media to recover**

You can use HP Recovery media to recover the original system. This method can be used if your system does not have an HP Recovery partition or if the hard drive is not working properly.

1. If possible, back up all personal files.
2. Insert the HP Recovery media, and then restart the computer.

   **NOTE:** If the computer does not automatically restart in HP Recovery Manager, change the computer boot order. See [Changing the computer boot order on page 67](#).

3. Follow the on-screen instructions.

**Changing the computer boot order**

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

To change the boot order:

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

1. Insert the HP Recovery media.
2. Access the system **Startup** menu.

   For computers or tablets with keyboards attached:

   ▲ Turn on or restart the computer or tablet, quickly press `esc`, and then press `f9` for boot options.

   For tablets without keyboards:

   ▲ Turn on or restart the tablet, and then quickly hold down the volume up button; then select `f9`.

   – or –

   Turn on or restart the tablet, and then quickly hold down the volume down button; then select `f9`.

3. Select the optical drive or USB flash drive from which you want to boot.
4. Follow the on-screen instructions.

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

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

**IMPORTANT:** After you remove the HP Recovery partition, you will not be able to perform System Recovery or create HP Recovery media from the HP Recovery partition. So before you remove the Recovery partition, create HP Recovery media; see [Using HP Recovery media (select products only) on page 63](#).

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

Follow these steps to remove the HP Recovery partition:

1. Type `recovery` in the taskbar search box, and then select **HP Recovery Manager**.
2. Select **Remove Recovery Partition**, and then follow the on-screen instructions.
9 Specifications

Computer specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Metric</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width</td>
<td>41.6 cm</td>
<td>15.18 in</td>
</tr>
<tr>
<td>Depth</td>
<td>28.3 cm</td>
<td>10.15 in</td>
</tr>
<tr>
<td>Height (front to back)</td>
<td>2.33 cm</td>
<td>.89 in</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>2.9 or 3.05 kg (depending on configuration)</td>
<td>6.41 or 6.73 (depending on configuration)</td>
</tr>
<tr>
<td><strong>Input power</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating voltage and current</td>
<td>19.5 V dc @ 3.33 A – 65 W</td>
<td>19 V dc @ 4.62 A – 90 W</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.

Display Specifications (17.3)

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Metric</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width</td>
<td>32.4 cm</td>
<td>12.8 in</td>
</tr>
<tr>
<td>Height</td>
<td>19.3 cm</td>
<td>7.6 in</td>
</tr>
<tr>
<td>Diagonal</td>
<td>35.56 cm</td>
<td>14.0 in</td>
</tr>
<tr>
<td><strong>Brightness</strong></td>
<td>300 nits</td>
<td>72% color gamut</td>
</tr>
<tr>
<td>Metric</td>
<td>U.S.</td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>----------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>300 nits, 95% color gamut</td>
<td>FHD WLED (1920x1080) flat-flat (4.2mm) UWVA, eDP1.2 (DBCG)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FHD WLED AntiGlare (1920x1080) flat-flat (4.2mm) UWVA, eDP1.2 (DBTS)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>UHD WLED AntiGlare (3840x2160) flat-flat (4.2mm) UWVA, eDP1.3+PSR (DBCG)</td>
<td></td>
</tr>
</tbody>
</table>
# Hard drive specifications

| **1-TB*** |  
|---|---|
| **Dimensions** |  
| Height | 9.5 mm |
| Length | 100.4 mm |
| Width | 69.9 mm |
| Weight | 110 g |
| **Interface type** | SATA |
| **Transfer rate** |  
| Synchronous (maximum) | 1.1 GB/sec |
| Security | ATA security |
| **Seek times** (typical read, including setting) |  
| Single track | 1.5 ms |
| Average (read/write) | 11/13 ms |
| Maximum | 22 ms |
| **Logical blocks** | 1,953,525,168 |
| **Disk rotational speed** | 7200 rpm |
| **Operating temperature** | 0°C to 60°C (32°F to 140°F) |

*1 TB = 1 trillion bytes when referring to hard drive storage capacity. Actual accessible capacity is less.

**1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less.

**NOTE:** Certain restrictions and exclusions apply. Contact technical support for details.
## M.2 solid-state drive specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>256-GB*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions</strong></td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td>1 mm</td>
</tr>
<tr>
<td>Length</td>
<td>50.8 mm</td>
</tr>
<tr>
<td>Width</td>
<td>28.9 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>&lt; 10 g</td>
</tr>
<tr>
<td><strong>Interface type</strong></td>
<td>ATA-7</td>
</tr>
<tr>
<td><strong>Transfer rate</strong></td>
<td></td>
</tr>
<tr>
<td>Sequential Read</td>
<td>Up to 540 MB/s</td>
</tr>
<tr>
<td>Random Read</td>
<td>Up to 85K IOPs</td>
</tr>
<tr>
<td>Sequential Write</td>
<td>Up to 280 MB/s</td>
</tr>
<tr>
<td>Random Write</td>
<td>Up to 67K IOPs</td>
</tr>
<tr>
<td><strong>Ready time, Maximum (to not busy)</strong></td>
<td>1.0 s</td>
</tr>
<tr>
<td><strong>Access times</strong></td>
<td></td>
</tr>
<tr>
<td>Logical</td>
<td>0.1</td>
</tr>
<tr>
<td><strong>Total logical sectors</strong></td>
<td>500,118,192</td>
</tr>
<tr>
<td><strong>Operating temperature</strong></td>
<td></td>
</tr>
<tr>
<td>Operating</td>
<td>0° to 70°C (32°F to 158°F)</td>
</tr>
<tr>
<td>Non-operating</td>
<td>-55° to 90°C (-67°F to 194°F)</td>
</tr>
</tbody>
</table>

*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less.

**NOTE:** Certain restrictions and exclusions apply. Contact technical support for details.
## M.2 solid-state drive specifications

<table>
<thead>
<tr>
<th></th>
<th>128-GB*</th>
<th>256-GB*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width</td>
<td>1 mm</td>
<td>1 mm</td>
</tr>
<tr>
<td>Length</td>
<td>50.8 mm</td>
<td>50.8 mm</td>
</tr>
<tr>
<td>Width</td>
<td>28.9 mm</td>
<td>28.9 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>&lt; 10 g</td>
<td>&lt; 10 g</td>
</tr>
<tr>
<td><strong>Interface type</strong></td>
<td>ATA-7</td>
<td>ATA-7</td>
</tr>
<tr>
<td><strong>Transfer rate</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sequential Read</td>
<td>Up to 520 MB/s</td>
<td>Up to 535 MB/s</td>
</tr>
<tr>
<td>Random Read</td>
<td>Up to 60K IOPs</td>
<td>Up to 97K IOPs</td>
</tr>
<tr>
<td>Sequential Write</td>
<td>Up to 160 MB/s</td>
<td>Up to 515 MB/s</td>
</tr>
<tr>
<td>Random Write</td>
<td>Up to 34K IOPs</td>
<td>Up to 59K IOPs</td>
</tr>
<tr>
<td><strong>Ready time, Maximum (to not busy)</strong></td>
<td>1.0 s</td>
<td>1.0 s</td>
</tr>
<tr>
<td><strong>Access times</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logical</td>
<td>0.1 ms</td>
<td>0.1 ms</td>
</tr>
<tr>
<td><strong>Total logical sectors</strong></td>
<td>250,069,680</td>
<td>500,118,192</td>
</tr>
<tr>
<td><strong>Operating temperature</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating</td>
<td>0° to 70°C (32°F to 158°F)</td>
<td>0° to 70°C (32°F to 158°F)</td>
</tr>
<tr>
<td>Non-operating</td>
<td>-40° to 85°C (-40°F to 185°F)</td>
<td>-40° to 85°C (-40°F to 185°F)</td>
</tr>
</tbody>
</table>

*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less.

**NOTE:** Certain restrictions and exclusions apply. Contact technical support for details.
### M.2 PCIe solid-state drive specifications

<table>
<thead>
<tr>
<th></th>
<th>256-GB*</th>
<th>512-GB*</th>
<th>1-TB*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td>1 mm</td>
<td>1 mm</td>
<td>1 mm</td>
</tr>
<tr>
<td>Length</td>
<td>50.8 mm</td>
<td>50.8 mm</td>
<td>50.8 mm</td>
</tr>
<tr>
<td>Width</td>
<td>28.9 mm</td>
<td>28.9 mm</td>
<td>28.9 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>&lt; 10 g</td>
<td>&lt; 10 g</td>
<td>&lt; 10 g</td>
</tr>
<tr>
<td><strong>Interface type</strong></td>
<td>ATA-7</td>
<td>ATA-7</td>
<td>ATA-7</td>
</tr>
<tr>
<td><strong>Transfer rate</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sequential Read</td>
<td>Up to 2150 MB/s</td>
<td>Up to 2150 MB/s</td>
<td>Up to 2150 MB/s</td>
</tr>
<tr>
<td>Random Read</td>
<td>Up to 300,000 IOPs</td>
<td>Up to 300,000 IOPs</td>
<td>Up to 300,000 IOPs</td>
</tr>
<tr>
<td>Sequential Write</td>
<td>Up to 1260 MB/s</td>
<td>Up to 1550 MB/s</td>
<td>Up to 1550 MB/s</td>
</tr>
<tr>
<td>Random Write</td>
<td>Up to 100,000 IOPs</td>
<td>Up to 100,000 IOPs</td>
<td>Up to 100,000 IOPs</td>
</tr>
<tr>
<td><strong>Ready time, Maximum (to not busy)</strong></td>
<td>1.0 s</td>
<td>1.0 s</td>
<td>1.0 s</td>
</tr>
<tr>
<td><strong>Access times</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logical</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td><strong>Total logical sectors</strong></td>
<td>500,118,192</td>
<td>1,000,215,216</td>
<td>1,500,336,388</td>
</tr>
<tr>
<td><strong>Operating temperature</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating</td>
<td>0° to 70°C (32°F to 158°F)</td>
<td>0° to 70°C (32°F to 158°F)</td>
<td>0° to 70°C (32°F to 158°F)</td>
</tr>
<tr>
<td>Non-operating</td>
<td>-40° to 80°C (-40°F to 176°F)</td>
<td>-40° to 85°C (-40°F to 185°F)</td>
<td>-40° to 85°C (-40°F to 185°F)</td>
</tr>
</tbody>
</table>

*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less.

**NOTE:** Certain restrictions and exclusions apply. Contact technical support for details.
10 Power cord set requirements

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

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

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

Requirements for all countries

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 A 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 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>Argentina</td>
<td>IRAM</td>
<td>1</td>
</tr>
<tr>
<td>Australia</td>
<td>SAA</td>
<td>1</td>
</tr>
<tr>
<td>Austria</td>
<td>OVE</td>
<td>1</td>
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<tr>
<td>Belgium</td>
<td>CEBEC</td>
<td>1</td>
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<tr>
<td>Brazil</td>
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<td>1</td>
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<tr>
<td>Canada</td>
<td>CSA</td>
<td>2</td>
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<tr>
<td>Chile</td>
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<tr>
<td>Denmark</td>
<td>DEMKO</td>
<td>1</td>
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<tr>
<td>Finland</td>
<td>FIMKO</td>
<td>1</td>
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<td>France</td>
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<tr>
<td>Germany</td>
<td>VDE</td>
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<tr>
<td>India</td>
<td>ISI</td>
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</tr>
<tr>
<td>Israel</td>
<td>SII</td>
<td>1</td>
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<tr>
<td>Italy</td>
<td>IMQ</td>
<td>1</td>
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<tr>
<td>Japan</td>
<td>JIS</td>
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<td>New Zealand</td>
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<td>1</td>
</tr>
<tr>
<td>The United States</td>
<td>UL</td>
<td>2</td>
</tr>
</tbody>
</table>

1. The flexible cord must be Type HO5VV-F, 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.

2. The flexible cord must be Type SVT/SJT 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 ac) or NEMA 6-15P (15 A, 250 V ac) configuration. CSA or C-UL mark. UL file number must be on each element.
3. The appliance coupler, flexible cord, and wall plug must bear a “T” mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCTF, 3-conductor, 0.75 mm² or 1.25 mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard CB303 (7 A, 125 V ac) 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 CCC certification mark.

5. The flexible cord must be Type H05VV-F 3-conductor, 0.75 mm² conductor size. KTL logo and individual approval number must be on each element. Corset approval number and logo must be printed on a flag label.

6. The flexible cord must be Type HVCTF 3-conductor, 1.25 mm² conductor size. Power cord set fittings (appliance coupler, cable, and wall plug) must bear the BSMI certification mark.

7. For 127 V ac, the flexible cord must be Type SVT or SJT 3-conductor, 18 AWG, with plug NEMA 5-15P (15 A, 125 V ac), with UL and CSA or C-UL marks. For 240 V ac, the flexible cord must be Type H05VV-F 3-conductor, 0.75 mm² or 1.00 mm² conductor size, with plug BS 1363/A with BSI or ASTA marks.
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.
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