Product notice

This guide describes features that are common to most products. 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.

To access the latest user guide, go to http://www.hp.com/support, and select your country. Select Drivers & Downloads, and then follow the on-screen instructions.

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).
# Table of contents

## 1 Product description

## 2 Internal components identification

- Right side
- Left side
- Display (dual WLAN)
- Display (Touchscreen)
- Top
  - TouchPad
  - Lights
  - Buttons and speakers
  - Keys
- Bottom

## 3 Illustrated parts catalog

- Computer major components
- Display assembly subcomponents
- Miscellaneous parts
- Mass storage devices

## 4 Removal and replacement procedures preliminary requirements

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

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

- Component replacement procedures
  - Battery
  - Optical drive
# 6 Removal and replacement procedures for Authorized Service Provider parts

Component replacement procedures ................................................................. 31
   Bottom cover .................................................................................................. 32
   Remove Display .............................................................................................. 35
   Hard drive ...................................................................................................... 36
   WLAN module ............................................................................................... 37
   RTC battery .................................................................................................... 40
   Memory module .............................................................................................. 41
   Fan .................................................................................................................. 42
   Heat sink assembly ......................................................................................... 43
   Optical drive connector ................................................................................ 47
   System board ................................................................................................. 48
   USB board ..................................................................................................... 51
   Speakers ......................................................................................................... 52
   Power button board ..................................................................................... 53
   Power connector ........................................................................................... 54
   TouchPad ........................................................................................................ 55
   Display assembly, non-touch ....................................................................... 57
   Display assembly, touch ............................................................................. 62

# 7 Computer Setup (BIOS), TPM, and HP Sure Start – Windows 10

Using Computer Setup ..................................................................................... 69
   Starting Computer Setup ............................................................................... 69
   Navigating and selecting in Computer Setup .............................................. 70
   Restoring factory settings in Computer Setup ........................................... 70
   Updating the BIOS ....................................................................................... 71
      Determining the BIOS ............................................................................... 71
      Downloading a BIOS update .................................................................. 71
   Changing the boot order using the f9 prompt ............................................ 72
   TPM BIOS settings (select products only) .................................................. 73
   Using HP Sure Start (select products only) .................................................. 73

# 8 Computer Setup (BIOS), MultiBoot, and System Diagnostics – Windows 8

Using Computer Setup ..................................................................................... 75
   Starting Computer Setup ............................................................................... 75
   Navigating and selecting in Computer Setup .............................................. 75
   Restoring default settings in Computer Setup ........................................... 76
   Updating the BIOS ....................................................................................... 77
      Determining the BIOS version ............................................................... 77
      Downloading a BIOS update .................................................................. 77
# 1 Product description

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product name</td>
<td>HP Pavilion Notebook 17</td>
</tr>
</tbody>
</table>
| Processors    | **AMD™ AB-7410** (2.2 GHz, SC turbo up to 2.5 GHz), Max 1600 MHz/2 MB L2, quad core 15 W  
                     **A10-B700P** (1.8 GHz, SC turbo up to 3.2 GHz), Max1600 MHz/2 MB L2, quad core 15 W  
                     **A4-6210** (1.8 GHz), 1600 MHz/2 MB L2, quad core 15 W  
                     **A6-6310** (1.8 GHz, up to 2.4 GHz), 1600 MHz/2 MB L2, quad core 15 W |
| Chipset       | AMD Integrated SOC FCH                                                                                                                      |
| Graphics      | **Internal graphics:**  
                     **AMD Radeon™ R5 Graphics**  
                     **AMD Radeon R6 Graphic**  
                     **AMD Radeon R3 Graphics**  
                     **AMD Radeon R4 Graphics** |
|               | **Switchable discrete graphics:**  
                     **AMD Radeon R7 M360** (Meso-XT) with up to 2048 MB of dedicated video memory (256 Mx16 DDR3 900 MHz x 4 PCs, 1 GHz bridge to 900 MHz), TDP 25 W  
                     **AMD R7 M360** (Meso-XT) with up to 2048 MB of dedicated video memory (256Mx16 DDR3 900MHz x 4 PCs, 1GHz bridge to 900MHz) (i5/i7 processors)  
                     Support HD Decode, DX11, and PX7 |
| Panel         | **16:9 Ultra Wide Aspect Ratio** (43.9-cm 17.3in), HD, WLED, SVA, LVDS BrightView, (1600x900) wedge display, 6.0 mm; typical brightness: 220 nits (non-touch screen only)  
                     **16:9 Ultra Wide Aspect Ratio** (43.9-cm 17.3in), HD, WLED, SVA, LVDS, AntiGlare, (1600×900) wedge display, 6.0 mm; typical brightness: 220 nits (Touch screen only)  
                     **16:9 Ultra Wide Aspect Ratio** (43.9-cm 17.3in), FHD, WLED, SVA, AntiGlare, (1920×1080) flat display, 4.0 mm; UWVA, eDP typical brightness: 220 nits (non-touch/touch screen)  
                     Touch screen with flush glass, multi-touch enabled (select models only)  
                     Supports LVDS (co-layout with eDP1.3+PSR)  
                     Supports eDP1.3 without PSR |
| Memory        | **Two SODIMM slots - NON customer accessible / upgradeable**  
                     DDR3L-1600-MHz Single Channel Support  
                     DDR3L-1600-MHz Dual Channel Support  
                     Supports up to 16 GB of system RAM in the following configurations:  
                     ● 16384-MB total system memory (8192×2)  
                     ● 12288-MB total system memory (8192×1) + (4096×1) |
<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard drives</td>
<td>Supports <strong>6.35-cm</strong> (2.5-in) SATA hard drives in <strong>9.5 mm</strong> (.37 in) and <strong>7.0 mm</strong> (.28 in) thicknesses. 7 mm/9.5 mm share the same bracket. Accelerometer / HDD protection support.</td>
</tr>
<tr>
<td></td>
<td><strong>Single HDD configurations:</strong></td>
</tr>
<tr>
<td></td>
<td>● 2-TB, 5400-rpm, 9.5-mm</td>
</tr>
<tr>
<td></td>
<td>● 1-TB, 5400-rpm, 9.5-mm</td>
</tr>
<tr>
<td></td>
<td>● 750-GB, 5400-rpm, 9.5-mm</td>
</tr>
<tr>
<td></td>
<td>● 500-GB, 5400-rpm, 7.0-mm</td>
</tr>
<tr>
<td></td>
<td><strong>Hybrid HDD configurations:</strong></td>
</tr>
<tr>
<td></td>
<td>● 1-TB, 5400-rpm, 9.5-mm SSDN w/8GB NAND</td>
</tr>
<tr>
<td>Optical drive</td>
<td>Fixed, serial SATA, 9.5-mm tray load</td>
</tr>
<tr>
<td></td>
<td>DVD+/-RW Double-Layer SuperMulti</td>
</tr>
<tr>
<td></td>
<td>Supports M-disc</td>
</tr>
<tr>
<td>Audio/video</td>
<td>HP TrueVision HD: HD camera (fixed, no tilt with activity LED, 1280×720 by 30 frames per second)</td>
</tr>
<tr>
<td></td>
<td>Dual array digital microphone with appropriate software - beam forming, echo cancellation, noise suppression</td>
</tr>
<tr>
<td></td>
<td>Dual speakers</td>
</tr>
<tr>
<td></td>
<td>Enable HP Noise Cancellation</td>
</tr>
<tr>
<td></td>
<td>HD audio</td>
</tr>
<tr>
<td></td>
<td>B&amp;O Play</td>
</tr>
<tr>
<td>Sensors</td>
<td>Accelerometer</td>
</tr>
<tr>
<td>Ethernet</td>
<td>Integrated 10/100 network interface card (NIC)</td>
</tr>
<tr>
<td>Wireless</td>
<td>Intel WiDi support</td>
</tr>
<tr>
<td></td>
<td>Compatible with Miracast-certified devices</td>
</tr>
<tr>
<td></td>
<td><strong>Integrated Wireless options with single antenna (M.2/PCIe):</strong></td>
</tr>
<tr>
<td></td>
<td>● Broadcom BCM43142 802.11 b/g/n 1x1 Wi-Fi + Bluetooth 4.0 M.2 Combo Adapter</td>
</tr>
<tr>
<td></td>
<td>● Realtek RTL8723BE 802.11b/g/n 1x1 Wi-Fi + Bluetooth 4.0 Combo Adapter</td>
</tr>
<tr>
<td></td>
<td>● Realtek RTL8188EE 802.11b/g/n 1x1 Wi-Fi Adapter</td>
</tr>
<tr>
<td></td>
<td>● Realtek RTL8723BE 802.11b/g/n 1x1 Wi-Fi + Bluetooth 4.0 Combo Adapter</td>
</tr>
<tr>
<td></td>
<td><strong>Integrated Wireless options with dual antenna (M.2/PCIe):</strong></td>
</tr>
<tr>
<td></td>
<td>● Intel Dual Band Wireless-AC 3160 802.11 ac 1x1 WiFi + Bluetooth 4.0 Combo Adapter</td>
</tr>
<tr>
<td></td>
<td>● Intel Dual Band Wireless-AC 3165 802.11 ac 1x1 WiFi + Bluetooth 4.0 Combo Adapter for use with Windows 10</td>
</tr>
<tr>
<td></td>
<td>Compatible with Miracast-certified devices</td>
</tr>
<tr>
<td>Internal card expansion</td>
<td>One M.2 slot for WLAN</td>
</tr>
<tr>
<td>Category</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>External media card</td>
<td>HP Multi-Format Digital Media Card Reader</td>
</tr>
<tr>
<td></td>
<td>Support SD/SDHC/SDXC</td>
</tr>
<tr>
<td></td>
<td>Push-Push Insertion/Removal</td>
</tr>
<tr>
<td>Ports</td>
<td>HDMI version 1.4 supporting 1920 ×1200 @ 60Hz</td>
</tr>
<tr>
<td></td>
<td>Hot Plug/unplug and auto detect for correct output to wide-aspect vs. standard aspect video</td>
</tr>
<tr>
<td></td>
<td>RJ-45 (Ethernet, includes link and activity lights)</td>
</tr>
<tr>
<td></td>
<td>USB 3.0 (1 on left side, one on right side)</td>
</tr>
<tr>
<td></td>
<td>USB 2.0 (1 on left side)</td>
</tr>
<tr>
<td></td>
<td>AC Smart Pin adapter plug</td>
</tr>
<tr>
<td></td>
<td>Headphone jack/Microphone jack</td>
</tr>
<tr>
<td>Keyboard/pointing</td>
<td>Full size standard textured island-style keyboard with numeric keypad</td>
</tr>
<tr>
<td>devices</td>
<td>Full size standard three coat paint island-style backlit keyboard with numeric keypad</td>
</tr>
<tr>
<td></td>
<td>ClickPad with multi-touch gestures, 2-finger scrolling, and pinch-zoom enabled</td>
</tr>
<tr>
<td></td>
<td>Taps enabled by default</td>
</tr>
<tr>
<td></td>
<td>Support Win8 Modern Trackpad Gestures</td>
</tr>
<tr>
<td>Power requirements</td>
<td>Battery:</td>
</tr>
<tr>
<td></td>
<td>4-cell, 41-Whr, 2.8Ah, li-ion battery</td>
</tr>
<tr>
<td></td>
<td><strong>AC adapters:</strong></td>
</tr>
<tr>
<td></td>
<td>AC Adapter 65-W Smart nPFC, 3 pin, RC 4.5mm connector (models with discrete graphics only)</td>
</tr>
<tr>
<td></td>
<td>AC Adapter 65-W EM Smart nPFC, 3 pin, RC 4.5mm connector (models with discrete graphics in India/China only)</td>
</tr>
<tr>
<td></td>
<td>AC Adapter 45-W Smart nPFC, 3 pin, RC 4.5mm connector (models with UMA graphics only)</td>
</tr>
<tr>
<td></td>
<td>1 meter power cord</td>
</tr>
<tr>
<td></td>
<td>Battery life enhancement</td>
</tr>
<tr>
<td>Security</td>
<td>Security Lock</td>
</tr>
<tr>
<td>Operating system</td>
<td>Preinstalled:</td>
</tr>
<tr>
<td></td>
<td>Windows 10</td>
</tr>
<tr>
<td></td>
<td>● Windows 8.1</td>
</tr>
<tr>
<td></td>
<td>● Ubuntu</td>
</tr>
<tr>
<td></td>
<td>● FreeDOS 2.0</td>
</tr>
<tr>
<td>Serviceability</td>
<td>End-user replaceable parts:</td>
</tr>
<tr>
<td></td>
<td>● AC adapter</td>
</tr>
<tr>
<td></td>
<td>● Battery</td>
</tr>
<tr>
<td></td>
<td>● Optical drive</td>
</tr>
</tbody>
</table>
2 Internal components identification
### Right side

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
</table>
| **(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)** Hard drive light | - **Blinking white:** The hard drive is being accessed. |
| **(3)** 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 microphone-only devices.  
**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.  
**NOTE:** When a device is connected to the jack, the computer speakers are disabled.  
**NOTE:** Be sure that the device cable has a 4-conductor connector that supports both audio-out (headphone) and audio-in (microphone). |
| **(4)** USB 3.0 port | Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub. |
| **(5)** HDMI port | Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component, or a high-speed High-Definition Multimedia Interface (HDMI) device. |
| **(6)** Vent | Enables airflow to cool internal components.  
**NOTE:** The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation. |
| **(7)** 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. |
### Left side

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Power connector</td>
<td>Connects an AC adapter.</td>
</tr>
</tbody>
</table>
| (2) AC adapter/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. |
| (3) RJ-45 (network) jack/status lights | Connects a network cable.  
- White: The network is connected.  
- Amber: Activity is occurring on the network. |
| (4) USB 2.0 port | Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub. |
| (5) Memory card reader | Reads optional memory cards that enable you to store, manage, share, or access information.  
To insert a card:  
1. Hold the card label-side up, with connectors facing the computer.  
2. Insert the card into the memory card reader, and then press in on the card until it is firmly seated.  
To remove a card:  
▲ Press in on the card, and then remove it from the memory card reader. |
| (6) USB 3.0 port | Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub. |
| (7) Optical drive | Depending on your computer model, reads an optical disc or reads and writes to an optical disc. |
| (8) Optical drive eject button | Opens the optical drive tray. |
# Display (dual WLAN)

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
</table>
| (1) Internal display switch | Turns off the display and initiates Sleep if the display is closed while the power is on.  

**NOTE:** The internal display switch is not visible from the outside of the computer. |
| (2) WLAN antennas* (2) | Sends and receives wireless signals to communicate with wireless local area networks (WLANs). |
| (3) Internal microphones (2) | Records sound. |
| (4) Webcam light | On: The webcam is in use. |
| (5) Webcam  
  – or –  
  3D camera (select products only) | Records video and captures photographs. Some models allow you to video conference and chat online using streaming video. |

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

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

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
</table>
| (1) Internal display switch   | Turns off the display and initiates Sleep if the display is closed while the power is on.  
**NOTE:** The internal display switch is not visible from the outside of the computer. |
| (2) Internal microphones (2)  | Records sound.                                                              |
| (3) Webcam light              | On: The webcam is in use.                                                  |
| (4) Webcam                    | Records video and captures photographs. Some models allow you to video conference and chat online using streaming video.  
—or—  
3D camera (select products only) |
| (5) WLAN antennas* (2)       | Sends and receives wireless signals to communicate with wireless local area networks (WLANs). |

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

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

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

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
</table>
| **(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 | • Amber: Computer sound is off.  
• Off: Computer sound is on. |
## Buttons and speakers

### Component Description

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Power button</td>
<td></td>
</tr>
<tr>
<td>● When the computer is off, press the button to turn on the computer.</td>
<td></td>
</tr>
<tr>
<td>● When the computer is on, press the button briefly to initiate Sleep.</td>
<td></td>
</tr>
<tr>
<td>● When the computer is in the Sleep state, press the button briefly to exit Sleep.</td>
<td></td>
</tr>
<tr>
<td>● When the computer is in Hibernation, press the button briefly to exit Hibernation.</td>
<td></td>
</tr>
<tr>
<td><strong>CAUTION:</strong> Pressing and holding down the power button results in the loss of unsaved information.</td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>(2) Speakers (2)</td>
<td>Produce sound.</td>
</tr>
</tbody>
</table>

---

12 Chapter 2 Internal components identification
# Keys

![Keyboard with keys labeled](image)

<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 frequently used system functions when pressed in combination with the esc key, action keys, or the spacebar.</td>
</tr>
<tr>
<td>(3) Windows key</td>
<td>Opens the Start menu. NOTE: Pressing the Windows key again will close the Start menu.</td>
</tr>
<tr>
<td>(4) Action keys</td>
<td>Execute frequently used system functions. NOTE: On select models, the f5 action key turns the backlight keyboard feature off or on.</td>
</tr>
<tr>
<td>(5) num lock key</td>
<td>Alternates between the navigational and numeric functions on the integrated numeric keypad.</td>
</tr>
<tr>
<td>(6) Integrated numeric keypad</td>
<td>When num lock is on, the keypad can be used like an external numeric keypad.</td>
</tr>
</tbody>
</table>
### Bottom

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Vents (4)</td>
<td>Enable airflow to cool internal components.</td>
</tr>
<tr>
<td><strong>NOTE:</strong></td>
<td>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.</td>
</tr>
<tr>
<td>(2) Battery lock</td>
<td>Locks the battery in the battery bay.</td>
</tr>
<tr>
<td>(3) Battery bay</td>
<td>Holds the battery.</td>
</tr>
<tr>
<td>(4) Battery release latch</td>
<td>Releases the battery.</td>
</tr>
</tbody>
</table>
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, select your country or region, and then follow the on-screen instructions.
<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Spare part number</th>
</tr>
</thead>
</table>
| (1)  | **Display assembly** [43.9-cm 17.3-in] HD/FHD, touch, non-touchscreen  
   **NOTE:** Touch displays are spared both as entire hinge-ups and at the subcomponent level. Non-touch displays are only spared at the subcomponent level.  
   **NOTE:** For display assembly spare part information, see [Display assembly subcomponents on page 19](#). | |
| (2)  | **Top cover/keyboard (ash silver)** (the keyboard and top cover are spared together) | 809302-A41  
For use in Belgium  
For use in the Czech Republic and Slovakia  
For use in Denmark, Finland, and Norway  
For use in French Canada  
For use in France  
For use in Germany  
For use in Greece  
For use in Hungary  
For use in Italy  
For use in the Netherlands  
For use in Portugal  
For use in Romania  
For use in Russia  
For use in Saudi Arabia  
For use in Slovenia  
For use in Switzerland  
For use in Turkey  
For use in the United Kingdom  
For use in the United States  
For use in Spain | 809302-001  
809302-031  
809302-041  
809302-051  
809302-061  
809302-081  
809302-131  
809302-151  
809302-171  
809302-211  
809302-271  
809302-291  
809302-301  
809302-311  
809302-321  
809302-331  
809302-341  
809302-351  
809302-361  
809302-371  
809302-381  
809302-391  
809302-401  
809302-411  
809302-421  
809302-431  
809302-441  
809302-451  
809302-461  
809302-471  
809302-481  
809302-491  
809302-501  
809302-511  
809302-521  
809302-531  
809302-541  
809302-551  
809302-561  
809302-571  
809302-581  
809302-591  
809302-601  
809302-611  
809302-621  
809302-631  
809302-641  
809302-651  
809302-661  
809302-671  
809302-681  
809302-691  
809302-701  
809302-711  
809302-721  
809302-731  
809302-741  
809302-751  
809302-761  
809302-771  
809302-781  
809302-791  
809302-801  
809302-811  
809302-821  
809302-831  
809302-841  
809302-851  
809302-861  
809302-871  
809302-881  
809302-891  
809302-901  
809302-911  
809302-921  
809302-931  
809302-941  
809302-951  
809302-961  
809302-971  
809302-981  
809302-991  |
| (3)  | **Touchpad** (includes bracket) | 811552-001  
**Touchpad** for pale gold models (includes bracket)  
**Touchpad** bracket (incuded with Touchpad)  
**Touchpad rear bracket** (incuded with Touchpad) | 836868-001  
836869-001  
836870-001  |
<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>(6)</td>
<td>Battery connector cable (includes the optical drive connector cable)</td>
<td>810928-001</td>
</tr>
<tr>
<td>(7)</td>
<td>Speakers (includes left and right speakers and cable)</td>
<td>809316-001</td>
</tr>
<tr>
<td>(8)</td>
<td>System board (includes replacement thermal materials):&lt;br&gt;All system boards use the following part numbers:&lt;br&gt;xxxxxx-001: Without the Windows operating system&lt;br&gt;xxxxxx-501: Windows 8.1 Standard&lt;br&gt;xxxxxx-601: Windows 10&lt;br&gt;For use in models with UMA graphics:&lt;br&gt;● AMD A4-6210 UMA LVDS (1.8 GHz), 1600 MHz/2 MB L2, quad core 15 W</td>
<td>809397-xxx</td>
</tr>
<tr>
<td></td>
<td>&lt;br&gt;● AMD A6-6310 UMA LVDS (1.8 GHz, up to 2.4 GHz), 1600 MHz/2 MB L2, quad core 15 W</td>
<td>809398-xxx</td>
</tr>
<tr>
<td></td>
<td>&lt;br&gt;● AMD A8-7410 UMA LVDS (2.2 GHz, SC turbo up to 2.5 GHz), Max 1600 MHz/2 MB L2, quad core 15 W</td>
<td>809399–xxx</td>
</tr>
<tr>
<td></td>
<td>&lt;br&gt;● AMD A10-8700P LVDS (1.8 GHz, SC turbo up to 3.2 GHz), Max1600 MHz/2 MB L2, quad core 15 W</td>
<td>809400—xxx</td>
</tr>
<tr>
<td></td>
<td>&lt;br&gt;● AMD A8-7410 discrete R7M360 LVDS (2.2 GHz, SC turbo up to 2.5 GHz), Max 1600 MHz/2 GB L2, quad core 15 W</td>
<td>809401-xxx</td>
</tr>
<tr>
<td></td>
<td>&lt;br&gt;● AMD A8-7410 discrete R7M360 LVDS (2.2 GHz, SC turbo up to 2.5 GHz), Max 1600 MHz/2 GB L2, quad core 15 W eDP</td>
<td>810937–xxx</td>
</tr>
<tr>
<td></td>
<td>&lt;br&gt;● AMD A10-8700P R7M360 (1.8 GHz, SC turbo up to 3.2 GHz), Max1600 MHz/2 MB L2, quad core 15 W eDP</td>
<td>809403–xxx</td>
</tr>
<tr>
<td></td>
<td>&lt;br&gt;● AMD A10-8700P R7M360 LVDS (1.8 GHz, SC turbo up to 3.2 GHz), Max1600 MHz/2 MB L2, quad core 15 W</td>
<td>810936–xxx</td>
</tr>
<tr>
<td>(9)</td>
<td>WLAN module:&lt;br&gt;Intel Dual Band Wireless-AC 3160 802.11 ac 1x1 WiFi + Bluetooth 4.0 Combo Adapter</td>
<td>784644-005</td>
</tr>
<tr>
<td></td>
<td>Realtek RTL8188EE 802.11b/g/n 1x1 Wi-Fi Adapter</td>
<td>792609-005</td>
</tr>
<tr>
<td></td>
<td>Broadcom BCM43142 802.11 b/g/n 1x1 Wi-Fi + Bluetooth 4.0 M.2 Combo Adapter</td>
<td>792608-005</td>
</tr>
<tr>
<td></td>
<td>Intel Dual Band Wireless-AC 3165 802.11 ac 1x1 WiFi + Bluetooth 4.0 Combo Adapter for Windows 10</td>
<td>806723-005</td>
</tr>
<tr>
<td>(10)</td>
<td>Optical Drive Connector Cable Kit (includes the battery connector cable)</td>
<td>810928–001</td>
</tr>
<tr>
<td>(11)</td>
<td>USB board (includes cable)</td>
<td>809927-001</td>
</tr>
<tr>
<td>(12)</td>
<td>Power button board (includes cable)</td>
<td>809310-001</td>
</tr>
<tr>
<td>(13)</td>
<td>Memory module (PC3L, 12800, 1600-MHz):&lt;br&gt;8-GB</td>
<td>693374-005</td>
</tr>
<tr>
<td></td>
<td>4 GB</td>
<td>691740-005</td>
</tr>
<tr>
<td></td>
<td>2 GB</td>
<td>691739-005</td>
</tr>
<tr>
<td>(14)</td>
<td>Power connector cable</td>
<td>809295-001</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>(15)</td>
<td>Heat sink assembly (includes replacement thermal materials):</td>
<td></td>
</tr>
<tr>
<td>For use in models with discrete AMD Radeon R7 M360 (Meso-XT) graphics</td>
<td>806760-001</td>
<td></td>
</tr>
<tr>
<td>For use in models with discrete graphics</td>
<td>809105-001</td>
<td></td>
</tr>
<tr>
<td>For use in models with UMA graphics AMD Radeon R5</td>
<td>806759-001</td>
<td></td>
</tr>
<tr>
<td>For use in models with UMA AMD Radeon R6 graphics</td>
<td>809104-001</td>
<td></td>
</tr>
<tr>
<td>(16)</td>
<td>Fan</td>
<td>806747-001</td>
</tr>
<tr>
<td>(17)</td>
<td>RTC battery</td>
<td>811080-001</td>
</tr>
<tr>
<td>(18)</td>
<td>Hard drive (does not include bracket):</td>
<td></td>
</tr>
<tr>
<td>For spare part numbers and details, see Mass storage devices on page 22.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(19)</td>
<td>Hard drive bracket</td>
<td>809296-001</td>
</tr>
<tr>
<td>(20)</td>
<td>DVD+/-RW Double-Layer SuperMulti Drive</td>
<td></td>
</tr>
<tr>
<td>For spare part numbers and details, see Mass storage devices on page 22.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(21)</td>
<td>Battery (4-cell, 41-Whr, 2.8-Ah Li-ion)</td>
<td>800049-001</td>
</tr>
<tr>
<td>(22)</td>
<td>Bottom cover</td>
<td></td>
</tr>
<tr>
<td>For use in violet purple models</td>
<td>809290-001</td>
<td></td>
</tr>
<tr>
<td>For use in sunset red models</td>
<td>809286-001</td>
<td></td>
</tr>
<tr>
<td>For use in blizzard white models</td>
<td>809287-001</td>
<td></td>
</tr>
<tr>
<td>For use in cobalt blue models</td>
<td>809288-001</td>
<td></td>
</tr>
<tr>
<td>For use in natural silver models</td>
<td>809285-001</td>
<td></td>
</tr>
<tr>
<td>For use in peachy pink models</td>
<td>809289-001</td>
<td></td>
</tr>
<tr>
<td>For use in sparkling black models</td>
<td>810949–001</td>
<td></td>
</tr>
<tr>
<td>For use in pale gold models</td>
<td>836858-001</td>
<td></td>
</tr>
<tr>
<td>Base enclosure hinge caps (not pictured), (left and right)</td>
<td>809312-001</td>
<td></td>
</tr>
<tr>
<td>Rubber screw covers (not pictured)</td>
<td>809314-001</td>
<td></td>
</tr>
</tbody>
</table>
Display assembly subcomponents

<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td><strong>Display bezel</strong> (includes screw covers)</td>
<td>809291-001</td>
</tr>
<tr>
<td>(2)</td>
<td><strong>Touch screen sensor</strong> touch screen sensor is spared with the display panel</td>
<td></td>
</tr>
<tr>
<td>(3)</td>
<td><strong>Webcam/microphone module</strong> touch screen</td>
<td>810961-001</td>
</tr>
<tr>
<td></td>
<td><strong>Webcam/microphone module</strong> touch screen and non-touch screen</td>
<td>806758-001</td>
</tr>
<tr>
<td>(4)</td>
<td><strong>Display panel</strong> (16:9 Ultra Wide Aspect Ratio [43.9-cm 17.3-in]; includes screw covers)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Antiglare HD+ touch screen</td>
<td>809300-001</td>
</tr>
<tr>
<td></td>
<td>Antiglare FHD+ touch screen</td>
<td>809301-001</td>
</tr>
<tr>
<td></td>
<td>WLED Brightview HD+ non-touch screen</td>
<td>809313-001</td>
</tr>
<tr>
<td></td>
<td>WLED Antiglare FHD non-touch screen</td>
<td>809347-001</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>(5)</td>
<td>Panel Bracket (included with the Display Panel touch screen)</td>
<td></td>
</tr>
<tr>
<td>(6)</td>
<td>Display cable HD non-touch screen (includes screw covers)</td>
<td>809292-001</td>
</tr>
<tr>
<td></td>
<td>Display cable FHD non-touch screen (includes screw covers)</td>
<td>809293-001</td>
</tr>
<tr>
<td></td>
<td>Display cable FHD touch screen (includes screw covers)</td>
<td>809294-001</td>
</tr>
<tr>
<td></td>
<td>Display cable HD touch screen (includes screw covers)</td>
<td>809932-001</td>
</tr>
<tr>
<td>(7)</td>
<td>Antennas touch screen (includes wireless antenna cables and transceivers; includes screw covers)</td>
<td>809272-001</td>
</tr>
<tr>
<td></td>
<td>Antennas non-touch screen (includes wireless antenna cables and transceivers; includes screw covers)</td>
<td>809271-001</td>
</tr>
<tr>
<td>(8)</td>
<td>Hinges touch screen (left and right, includes screw covers)</td>
<td>809299-001</td>
</tr>
<tr>
<td></td>
<td>Hinges HD non-touch screen (left and right, includes screw covers)</td>
<td>809297-001</td>
</tr>
<tr>
<td></td>
<td>Hinges FHD non-touch screen (left and right, includes screw covers)</td>
<td>809298-001</td>
</tr>
<tr>
<td>(9)</td>
<td>Display enclosure:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cobalt blue models touch screen</td>
<td>809281-001</td>
</tr>
<tr>
<td></td>
<td>Sunset red models touch screen</td>
<td>809280-001</td>
</tr>
<tr>
<td></td>
<td>Blizzard white models touch screen</td>
<td>809284-001</td>
</tr>
<tr>
<td></td>
<td>Natural silver models touch screen</td>
<td>809279-001</td>
</tr>
<tr>
<td></td>
<td>Violet purple models touch screen</td>
<td>809283-001</td>
</tr>
<tr>
<td></td>
<td>Peachy pink models touch screen</td>
<td>809282-001</td>
</tr>
<tr>
<td></td>
<td>Cobalt blue models non-touchscreen</td>
<td>809275-001</td>
</tr>
<tr>
<td></td>
<td>Sunset red models non-touchscreen</td>
<td>809274-001</td>
</tr>
<tr>
<td></td>
<td>Blizzard white models non-touchscreen</td>
<td>809278-001</td>
</tr>
<tr>
<td></td>
<td>Natural silver models non-touchscreen</td>
<td>809273-001</td>
</tr>
<tr>
<td></td>
<td>Violet purple models non-touchscreen</td>
<td>809277-001</td>
</tr>
<tr>
<td></td>
<td>Peachy pink models non-touchscreen</td>
<td>809276-001</td>
</tr>
<tr>
<td></td>
<td>Sparkling black models non-touch screen</td>
<td>810947-001</td>
</tr>
<tr>
<td></td>
<td>Sparkling black models for use with touch screen</td>
<td>810948-001</td>
</tr>
<tr>
<td></td>
<td>Pale gold models non-touch screen</td>
<td>836856-001</td>
</tr>
<tr>
<td></td>
<td>Pale gold models for use with touch screen</td>
<td>836857-001</td>
</tr>
</tbody>
</table>

**Miscellaneous parts**

<table>
<thead>
<tr>
<th>Component</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP Smart AC adapter:</td>
<td></td>
</tr>
<tr>
<td>65-W, non-PFC, 3P 4.5 mm</td>
<td>710412-001</td>
</tr>
</tbody>
</table>
### Component | Spare part number
--- | ---
45-W non-PFC, non-slim HP Smart AC adapter (for use in all countries and regions except for the People’s Republic of China and India) | 741727-001

**Power cord** (3-pin, black, 1.0-m):

- For use in Denmark | 755530-081
- For use in Europe, the Middle East, and Africa | 755530-021
- For use in North America | 755530-001
- For use in Switzerland | 755530-111
- For use in the United Kingdom and Singapore | 755530-031
- For use in Australia | 755530-011

**Rubber Kit** (includes front and rear feet) | 809314-001

**Screw Kit** | 809315-001

**HDMI to VGA adapter** | 701943-001
## Mass storage devices

<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td><strong>DVD+/-RW Double-Layer SuperMulti Drive</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>For use in natural silver models</td>
<td>809304-001</td>
</tr>
<tr>
<td></td>
<td>For use in blizzard white models</td>
<td>809305-001</td>
</tr>
<tr>
<td></td>
<td>For use in cobalt blue models</td>
<td>809307-001</td>
</tr>
<tr>
<td></td>
<td>For use in peachy pink models</td>
<td>809308-001</td>
</tr>
<tr>
<td></td>
<td>For use in violet purple models</td>
<td>809309-001</td>
</tr>
<tr>
<td></td>
<td>For use in sunset red models</td>
<td>809306-001</td>
</tr>
<tr>
<td></td>
<td>For use in sparkling black models</td>
<td>810950-001</td>
</tr>
<tr>
<td></td>
<td><strong>Battery/Optical drive cable kit</strong></td>
<td>810928-001</td>
</tr>
<tr>
<td>(2)</td>
<td><strong>Hard drive</strong> (does not include bracket):</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2-TB, 5400-rpm, 2.5-inch</td>
<td>801808-005</td>
</tr>
<tr>
<td></td>
<td>1-TB, 5400-rpm, 2.5-inch, hybrid 8 GB SSD</td>
<td>731999-005</td>
</tr>
<tr>
<td></td>
<td>1-TB, 5400-rpm, 2.5-in</td>
<td>778192-005</td>
</tr>
<tr>
<td></td>
<td>750-GB, 5400-rpm, 2.5-in</td>
<td>778190-005</td>
</tr>
<tr>
<td></td>
<td>500-GB, 5400-rpm, 2.5 inch</td>
<td>778186-005</td>
</tr>
<tr>
<td></td>
<td><strong>Hard drive hardware kit</strong> (not illustrated)</td>
<td>809296-001</td>
</tr>
<tr>
<td>(2a)</td>
<td>Side brackets (left and right)</td>
<td></td>
</tr>
<tr>
<td>(2b)</td>
<td>Connector</td>
<td></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 parts. Apply pressure only at the points designated in the maintenance instructions.

Cables and connectors

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

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

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

- Before removing or inserting a 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 a diskette drive or optical drive, be sure that a diskette or disc is not in the drive and be sure that the optical drive tray is closed.
- Handle drives on surfaces covered with at least one inch of shock-proof foam.
- Avoid dropping drives from any height onto any surface.
- After removing a hard drive, an optical drive, or a diskette 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>Relative humidity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10%</td>
</tr>
<tr>
<td>Walking across carpet</td>
<td>35,000 V</td>
</tr>
<tr>
<td>Walking across vinyl floor</td>
<td>12,000 V</td>
</tr>
<tr>
<td>Motions of bench worker</td>
<td>6,000 V</td>
</tr>
<tr>
<td>Removing DIPS from plastic tube</td>
<td>2,000 V</td>
</tr>
<tr>
<td>Removing DIPS from vinyl tray</td>
<td>11,500 V</td>
</tr>
<tr>
<td>Removing DIPS from Styrofoam</td>
<td>14,500 V</td>
</tr>
<tr>
<td>Removing bubble pack from PCB</td>
<td>26,500 V</td>
</tr>
<tr>
<td>Packing PCBs in foam-lined box</td>
<td>21,000 V</td>
</tr>
</tbody>
</table>

### Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

- To avoid hand contact, transport products in static-safe tubes, bags, or boxes.
- Protect ESD-sensitive parts and assemblies with conductive or approved containers or packaging.
- Keep ESD-sensitive parts in their containers until the parts arrive at static-free workstations.
- Place items on a grounded surface before removing items from their containers.
- Always be properly grounded when touching a component or assembly.
- Store reusable ESD-sensitive parts from assemblies in protective packaging or non-conductive 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 Styrofoam.
- Handle ESD-sensitive components, parts, and assemblies by the case or PCM laminate. Handle these items only at static-free workstations.
- Avoid contact with pins, leads, or circuitry.
- Turn off power and input signals before inserting or removing connectors or test equipment.
**Equipment guidelines**

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

- When seated, wear a wrist strap connected to a grounded system. Wrist straps are flexible straps with a minimum of one megohm ±10% resistance in the ground cords. To provide proper ground, wear a strap snugly against the skin at all times. On grounded mats with banana-plug connectors, use alligator clips to connect a wrist strap.

- When standing, use foot straps and a grounded floor mat. Foot straps (heel, toe, or boot straps) can be used at standing workstations and are compatible with most types of shoes or boots. On conductive floors or dissipative floor mats, use foot straps on both feet with a minimum of one megohm resistance between the operator and ground. To be effective, the conductive must be worn in contact with the skin.

The following grounding equipment is recommended to prevent electrostatic damage:

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

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

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

⚠️ CAUTION: The Customer Self-Repair program is not available in all locations. Installing a part not supported by the Customer Self-Repair program may void your warranty. Check your warranty to determine if Customer Self-Repair is supported in your location.

-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.

Component replacement procedures

-note: Please read and follow the procedures described here to access and replace Customer Self-Repair parts successfully.

-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.

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

There are as many as 3 screws that must be removed, replaced, or loosened when servicing Customer Self-Repair parts. Make special note of each screw size and location during removal and replacement.

Battery

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-cell, 41-Whr, 2.8-Ah Li-ion battery</td>
<td>800049-001</td>
</tr>
</tbody>
</table>

Before disassembling the computer, follow these steps:

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

To remove the battery:

1. Position the computer upside down on a flat surface.
2. Slide the battery lock latch (1), and then slide the battery release latch (2) to release the battery.
3. Rotate the battery upward (3), and then remove the battery from the computer (4).

---

**Optical drive**

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Optical drive</strong> (DVD+/−RW Double-Layer SuperMulti)</td>
<td></td>
</tr>
<tr>
<td>For use in natural silver models</td>
<td>809304-001</td>
</tr>
<tr>
<td>For use in blizzard white models</td>
<td>809305-001</td>
</tr>
<tr>
<td>For use in cobalt blue models</td>
<td>809307-001</td>
</tr>
<tr>
<td>For use in peachy pink models</td>
<td>809308-001</td>
</tr>
<tr>
<td>For use in violet purple models</td>
<td>809309-001</td>
</tr>
<tr>
<td>For use in sunset red models</td>
<td>809306-001</td>
</tr>
<tr>
<td>For use in sparkling black models</td>
<td>810950-001</td>
</tr>
</tbody>
</table>

Before removing the optical drive, follow these steps:

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

2. Disconnect all external devices connected to the computer.

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

4. Remove the battery (see Battery on page 27).

To remove the optical drive:

1. Remove the Phillips PM2.5×7.0 screw (1) that secures the optical drive to the computer.
2. Remove the optical drive (2) by sliding it out of the optical drive bay.

Reverse this procedure to reassemble and install the optical drive.
6 Removal and replacement procedures for Authorized Service Provider parts

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

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

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.

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

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

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bottom cover hinge caps</strong></td>
<td>809312-001</td>
</tr>
<tr>
<td><strong>Rubber screw covers</strong></td>
<td>809314-001</td>
</tr>
<tr>
<td><strong>Bottom cover</strong></td>
<td></td>
</tr>
<tr>
<td>For use in violet purple models</td>
<td>809290-001</td>
</tr>
<tr>
<td>For use in sunset red models</td>
<td>809286-001</td>
</tr>
<tr>
<td>For use in blizzard white models</td>
<td>809287-001</td>
</tr>
<tr>
<td>For use in cobalt blue models</td>
<td>809288-001</td>
</tr>
<tr>
<td>For use in natural silver models</td>
<td>809285-001</td>
</tr>
<tr>
<td>For use in peachy pink models</td>
<td>809289-001</td>
</tr>
<tr>
<td>For use in twinkling black models</td>
<td>810949-001</td>
</tr>
<tr>
<td><strong>Top cover/keyboard ash silver</strong></td>
<td></td>
</tr>
<tr>
<td>For use in Belgium</td>
<td>809302-A41</td>
</tr>
<tr>
<td>For use in the Czech Republic and Slovakia</td>
<td>809302-FL1</td>
</tr>
<tr>
<td>For use in Denmark, Finland, and Norway</td>
<td>809302-DH1</td>
</tr>
<tr>
<td>For use in French Canada</td>
<td>809302-DB1</td>
</tr>
<tr>
<td>For use in France</td>
<td>809302-051</td>
</tr>
<tr>
<td>For use in Germany</td>
<td>809302-041</td>
</tr>
<tr>
<td>For use in Greece</td>
<td>809302-151</td>
</tr>
<tr>
<td>For use in Italy</td>
<td>809302-061</td>
</tr>
<tr>
<td>For use in the Netherlands</td>
<td>809302-831</td>
</tr>
<tr>
<td>For use in Portugal</td>
<td>809302-131</td>
</tr>
<tr>
<td>For use in Romania</td>
<td>809302-271</td>
</tr>
<tr>
<td>For use in Russia</td>
<td>809302-251</td>
</tr>
<tr>
<td>For use in Spain</td>
<td>809302-071</td>
</tr>
<tr>
<td>For use in Slovenia</td>
<td>809302-8A1</td>
</tr>
<tr>
<td>For use in Switzerland</td>
<td>809302-8G1</td>
</tr>
<tr>
<td>For use in the United Kingdom</td>
<td>809302-031</td>
</tr>
<tr>
<td>For use in the United States</td>
<td>809302-001</td>
</tr>
<tr>
<td>For use in Hungary</td>
<td>809302-211</td>
</tr>
<tr>
<td><strong>Top cover/keyboard black</strong></td>
<td></td>
</tr>
<tr>
<td>For use in the United States</td>
<td>809303-001</td>
</tr>
<tr>
<td>For use in French Canada</td>
<td>809303-0B1</td>
</tr>
</tbody>
</table>
**Description** | **Spare part number**
--- | ---
For use in the United States (touchscreen) | 836859-001
For use in French Canada (touchscreen) | 836860-001

Before removing the bottom cover, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 27).
5. Remove the optical drive (see Optical drive on page 28).

To remove the bottom cover:

1. Position the computer upside down with the front toward you.
2. Remove the four Phillips PM2.5×12.0 screws (1) that secure the hinge covers to the computer, and then lift the covers off the computer (2).
3. Remove the two screw covers (1) from near the battery bay.
   Remove the two Phillips PM2.5×6.5 screws from near the battery bay (2).
   Remove the two Phillips PM2.0×2.0 flat screws from the optical drive bay (3).

4. Remove the seventeen Phillips PM screws that secure the top cover to the computer.
5. Use a non-marking tool to disengage the bottom cover from the computer. Work around the seams on all sides of the computer.

⚠️ **CAUTION:** To avoid damaging the cover, do not pry the cover near the optical drive bay.

Reverse this procedure to install the bottom cover.

### Remove Display

⚠️ **NOTE:** The display panel can be removed once the bottom cover is removed. See the Display assembly, touch on page 62 or the Display assembly, non-touch on page 57 sections for disassembling the non-touch screen and the touch screen display.
NOTE: The hard drive spare part kit does not include the hard drive bracket.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-TB, 5400-rpm, 2.5-inch</td>
<td>801808-005</td>
</tr>
<tr>
<td>1-TB, 5400-rpm, 2.5-inch, hybrid 8 GB SSD</td>
<td>731999-005</td>
</tr>
<tr>
<td>1-TB, 5400-rpm, 2.5-in</td>
<td>778192-005</td>
</tr>
<tr>
<td>750 GB, 5400 rpm, 2.5 in</td>
<td>778190-005</td>
</tr>
<tr>
<td>500-GB, 5400-rpm, 7 mm, hybrid 8 GB SSD</td>
<td>778186-005</td>
</tr>
<tr>
<td>Hard Drive Hardware Kit (brackets and connector)</td>
<td>809296-001</td>
</tr>
</tbody>
</table>

Before removing the hard drive, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 27).
5. Remove the optical drive (see Optical drive on page 29).
6. Remove the bottom cover (see Bottom cover on page 32).

To remove the hard drive:

1. Disconnect the hard drive cable from the system board (1).
2. Lift the hard drive from the computer (2).

3. Disconnect the hard drive connector and cable (1) from the hard drive.

4. To disassemble the hard drive, pull the brackets away from each side of the hard drive (2).

Reverse this procedure to reassemble and install the hard drive.

**WLAN module**

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel Dual Band Wireless-AC 3160 802.11 ac 1x1 WiFi + Bluetooth 4.0 Combo Adapter</td>
<td>784644-005</td>
</tr>
<tr>
<td>Realtek RTL8188EE 802.11b/g/n 1x1 Wi-Fi Adapter</td>
<td>792609-005</td>
</tr>
</tbody>
</table>
**CAUTION:** To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module to restore device functionality, and then contact support.

Before removing the WLAN module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 27).
5. Remove the optical drive (see Optical drive on page 28).
6. Remove the bottom cover (see Bottom cover on page 32).

To remove the WLAN module:

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

**NOTE:** The #1 WLAN antenna cable is connected to the WLAN module Main terminal. The #2 WLAN antenna cable is connected to the WLAN module Aux terminal.

2. Remove the Phillips PM2.0×3.0 screw (2) that secures the WLAN module to the system board. (The WLAN module tilts up.)
3. Remove the WLAN module by pulling the module away from the slot at an angle (3).

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

Reverse this procedure to install the WLAN module.
RTC battery

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTC battery</td>
<td>811080-001</td>
</tr>
</tbody>
</table>

Before removing the RTC battery, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 27).
5. Remove the optical drive (see Optical drive on page 28).
6. Remove the bottom cover (see Bottom cover on page 32).

To remove the RTC battery:

1. Access the system board.
2. Using a thin tool or screwdriver, disengage the battery from the socket (1), and then remove the battery (2).

Reverse this procedure to install the RTC battery.
Memory module

### Description

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-GB (PC3L, 12800, 1600-MHz)</td>
<td>693374-005</td>
</tr>
<tr>
<td>4-GB (PC3L, 12800, 1600-MHz)</td>
<td>691740-005</td>
</tr>
<tr>
<td>2-GB (PC3L, 12800, 1600-MHz)</td>
<td>691739-005</td>
</tr>
</tbody>
</table>

Before removing a memory module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 27).
5. Remove the optical drive (see Optical drive on page 28).
6. Remove the bottom cover (see Bottom cover on page 32).

To remove a memory module:

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 it away from the slot at an angle.

Reverse this procedure to install a memory module.
Fan

NOTE: The fan spare part kit includes replacement thermal materials.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fan</td>
<td>806747-001</td>
</tr>
</tbody>
</table>

NOTE: To properly ventilate the computer, allow at least 7.6 cm (3.0 in) of clearance on the left side of the computer. The computer uses an electric fan for ventilation. The fan is controlled by a temperature sensor and is designed to turn on automatically when high temperature conditions exist. These conditions are affected by high external temperatures, system power consumption, power management/battery conservation configurations, battery fast charging, and software requirements. Exhaust air is displaced through the ventilation grill located on the left side of the computer.

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

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 27).
5. Remove the optical drive (see Optical drive on page 28).
6. Remove the bottom cover (see Bottom cover on page 32).

To remove the fan:

1. Position the computer upright and open it.
2. Disconnect the fan cable (1) from the system board.
3. Remove the two Phillips PM3.0×3.0 screws (2) that secure the fan to the computer.
4. Remove the fan from the computer (3).

Reverse this procedure to install the fan.

**Heat sink assembly**

**NOTE:** The heat sink assembly spare part kit includes replacement thermal materials.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>For use in models with UMA graphics AMD Radeon R5</td>
<td>806759-001</td>
</tr>
<tr>
<td>For use in models with discrete AMD Radeon R7 M360 (Meso-XT) graphics</td>
<td>806760-001</td>
</tr>
<tr>
<td>For use in models with UMA AMD Radeon R6 graphics</td>
<td>809104-001</td>
</tr>
<tr>
<td>For use in models with discrete graphics</td>
<td>809105-001</td>
</tr>
</tbody>
</table>

**NOTE:** To properly ventilate the computer, allow at least 7.6 cm (3.0 in) of clearance on the left side of the computer. The computer uses an electric fan for ventilation. The fan is controlled by a temperature sensor and is designed to turn on automatically when high temperature conditions exist. These conditions are affected by high external temperatures, system power consumption, power management/battery conservation configurations, battery fast charging, and software requirements. Exhaust air is displaced through the ventilation grill located on the left side of the computer.

Before removing the heat sink assembly, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 27).

5. Remove the optical drive (see Optical drive on page 28).

6. Remove the bottom cover (see Bottom cover on page 32).

7. Remove the fan (see Fan on page 42).

To remove the heat sink assembly:

1. Position the computer upright and open it.

2. If you have a model with discrete graphics, in the order indicated, remove the six Phillips PM2.0×3.0 screws (1) that secure the heat sink to the system board.

3. Remove the heat sink (2) from the system board.

4. If you have a model with UMA graphics, in the order indicated, remove the six Phillips PM2.0×3.0 screws (1) that secure the heat sink to the system board.
5. Remove the heat sink (2) from the system board.

- **Discrete graphics:** Thermal paste is used on the processor and associated heat sink area (1)(2), as well as the graphics chip and associated heat sink area (3)(4).

- **UMA graphics:** Thermal paste is used on the heat sink (1) and the processor (2).
Reverse this procedure to reassemble and install the heat sink assembly.
Optical drive connector

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optical drive connector (included in the power connector kit)</td>
<td>810928-001</td>
</tr>
</tbody>
</table>

Before removing the optical drive connector, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 27).
5. Remove the optical drive (see Optical drive on page 28).
6. Remove the bottom cover (see Bottom cover on page 32).

To remove the optical drive connector:

1. Position the computer upright.
2. Disconnect the optical drive connector cable from the system board (1).
3. Remove the two Phillips PM2.5×3.0 screws (2) that secure the optical drive connector to the computer.
4. Remove the optical drive connector and cable (3).

Reverse this procedure to install the optical drive connector.
**System board**

NOTE: The system board spare part kit includes replacement thermal materials.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>System board</strong> (includes replacement thermal materials):</td>
<td></td>
</tr>
<tr>
<td>All system boards use the following part numbers:</td>
<td></td>
</tr>
<tr>
<td>xxxxxxxx-001: Without the Windows operating system</td>
<td></td>
</tr>
<tr>
<td>xxxxxxxx-501: Windows 8.1 Standard</td>
<td></td>
</tr>
<tr>
<td>xxxxxxxx-601: Windows 10</td>
<td></td>
</tr>
<tr>
<td>● AMD A4-6210 UMA LVDS (1.8 GHz), 1600 MHz/2 MB L2, quad core 15 W</td>
<td>809397-xxx</td>
</tr>
<tr>
<td>● AMD A6-6310 UMA LVDS (1.8 GHz, up to 2.4 GHz), 1600 MHz/2 MB L2, quad core 15 W</td>
<td>809398-xxx</td>
</tr>
<tr>
<td>● AMD A8-7410 UMA LVDS (2.2 GHz, SC turbo up to 2.5 GHz), Max 1600 MHz/2 MB L2, quad core 15 W</td>
<td>809399-xxx</td>
</tr>
<tr>
<td>● AMD A10-8700P LVDS (1.8 GHz, SC turbo up to 3.2 GHz), Max1600 MHz/2 MB L2, quad core 15 W</td>
<td>809400-xxx</td>
</tr>
<tr>
<td>● AMD A10-8700P (1.8 GHz, SC turbo up to 3.2 GHz), Max1600 MHz/2 MB L2, quad core 15 W eDP</td>
<td>809402-xxx</td>
</tr>
</tbody>
</table>

For use in models with discrete graphics (AMD R7 M360 (Meso-XT)):

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>● AMD A8-7410 discrete R7M360 LVDS (2.2 GHz, SC turbo up to 2.5 GHz), Max 1600 MHz/2 GB L2, quad core 15 W</td>
<td>809401-xxx</td>
</tr>
<tr>
<td>● AMD A8-7410 discrete R7M360 LVDS (2.2 GHz, SC turbo up to 2.5 GHz), Max 1600 MHz/2 GB L2, quad core 15 W eDP</td>
<td>810937-xxx</td>
</tr>
<tr>
<td>● AMD A10-8700P R7M360 (1.8 GHz, SC turbo up to 3.2 GHz), Max1600 MHz/2 MB L2, quad core 15 W eDP</td>
<td>809403-xxx</td>
</tr>
<tr>
<td>● AMD A10-8700P R7M360 (1.8 GHz, SC turbo up to 3.2 GHz), Max1600 MHz/2 MB L2, quad core 15 W LVDS</td>
<td>810936-xxx</td>
</tr>
</tbody>
</table>

Before removing the system board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 27).
5. Remove the optical drive (see Optical drive on page 28).
6. Remove the bottom cover (see Bottom cover on page 32).
7. Remove the fan (see Fan on page 42).
8. Remove the heat sink (see Heat sink assembly on page 43).

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

- Memory modules (see Memory module on page 41)
- WLAN module (see WLAN module on page 37)
To remove the system board:

1. Position the computer upright, and then disconnect the following cables from the system board:
   - (1): Clickpad cable
   - (2): Touchpad cable
   - (3): Hard drive cable
   - (4): Optical drive cable
   - (5): Keyboard cable
   - (6): Power connector cable
   - (7): Display cable
   - (8): Speaker cable
   - (9): Power button board

2. Remove the four Phillips PM2.0×3.0 screws (1) that secure the system board to the computer.
3. Lift the right side of the system board, and then lift the right side of the system board up to gain access to the USB board cable and connector underneath (2).

4. Disconnect the USB board cable from the connector under the system board. See USB board on page 51 for cable removal instructions.

Reverse this procedure to install the system board.
**USB board**

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>USB board</strong> (includes cable)</td>
<td>809927-001</td>
</tr>
</tbody>
</table>

Before removing the USB board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 27](#)).
5. Remove the optical drive (see [Optical drive on page 28](#)).
6. Remove the bottom cover (see [Bottom cover on page 32](#)).

To remove the USB board:

1. Position the computer upright.
2. Disconnect the larger cable from the system board (1).
3. Disconnect the smaller cable from the USB board that routes to the power button board (2).
4. Remove the two Phillips PM2.5×3.0 screws (3) that secure the USB board to the computer.
5. Remove the USB board (4).

Reverse this procedure to install the USB board.
Speakers

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speakers (includes left and right speakers and cable)</td>
<td>809316-001</td>
</tr>
</tbody>
</table>

Before removing the speakers, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 27).
5. Remove the optical drive (see Optical drive on page 28).
6. Remove the bottom cover (see Bottom cover on page 32).
7. Remove the system board (see System board on page 48).

To remove the speakers:

1. Remove the speaker wire from the clips between the speakers (1).
2. Remove the display cable from the channel at the top of the left speaker (2), (3).
3. Remove the two Phillips screws (4).
4. Remove the speakers from the computer (5).

Reverse this procedure to install the speakers.
Power button board

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power button board (includes cable)</td>
<td>809310-001</td>
</tr>
</tbody>
</table>

Before removing the power button board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 27).
5. Remove the optical drive (see Optical drive on page 28).
6. Remove the bottom cover (see Bottom cover on page 32).
7. Remove the system board (see System board on page 48).

To remove the power button board:

1. Disconnect the cable (1).
2. Remove the Phillips PM2.0×2.5 screw (2) that secures the power button board to the computer.
3. Remove the power button board from the computer (3).

Reverse this procedure to install the power button board and cable.
Before removing the power connector cable, follow these steps:

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

2. Disconnect all external devices connected to the computer.

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

4. Remove the battery (see Battery on page 27).

5. Remove the optical drive (see Optical drive on page 28).

6. Remove the bottom cover (see Bottom cover on page 32).

7. Remove the system board (see System board on page 48).

To remove the power connector cable:

1. Pull the tab away from the connector (1).

2. Remove the cable (2) from the left hinge that sits above the power connector.

3. Remove the power connector (3) from the computer.

Reverse this procedure to install the power connector cable.
Before removing the TouchPad, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 27).
5. Remove the optical drive (see Optical drive on page 28).
6. Remove the bottom cover (see Bottom cover on page 32).
7. Remove the system board (see System board on page 48).

To remove the TouchPad:

1. Remove the three Phillips PM2.5×3.0 screws (1) that secure the TouchPad bracket to the computer.
2. Remove the bracket (2).

3. Lift the keyboard cable (1) to gain access to the TouchPad screws.
4. Remove the three broadhead Phillips PM2.0×2.0 screws (2) that secure the rear bracket and the TouchPad to the computer.
5. Lift the bottom of Touchpad and rear bracket up, and then pull it away from computer.(3).

**NOTE:** When installing the TouchPad, note that the metal protrusion that extents from the touchpad is installed UNDER the keyboard shield (4).

Reverse this procedure to install the touchpad.
Before removing the display assembly, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 27).
5. Remove the optical drive (see Optical drive on page 28).
6. Remove the bottom cover (see Bottom cover on page 32).

To remove the display assembly:

1. Position the computer upside down with the display partially open.
2. Remove the four Phillips PM2.5×5.0 screws (1) that secure the display assembly to the computer.
3. Open the display to rotate the hinges upward to an angle (2).
4. Separate the display assembly from the computer (3).

If it is necessary to replace any of the display assembly subcomponents:

1. Pry up on each side of the display to disengage the cover and remove the display cover.
2. Turn the display with the bezel down and the back of the panel up. Disconnect the display cables from the panel and bezel(1), (2). Release the connections (3), (4) and lift the panel (5).

3. To remove the webcam/microphone module, position the display assembly with the top edge toward you.

4. Disconnect the webcam/microphone module (1) and remove from the display (2).

1. To remove the display from the bezel.
a. Position the display assembly with the top edge toward you.

b. Remove the two Phillips PM2.0×3.0 screws that secure the display panel to the top of the bezel (1).

c. Remove the four Phillips PM2.0×3.0 screws that secure the display panel to the base of the bezel (2).

d. Lift the top of the panel (3).

2. To remove the display hinges:

▲ Remove the four screws on the display hinges (1) and slide the display hinges off of the panel (2).
To remove the wireless antenna cables and transceivers, release the wireless antenna cables from the clips (1) built into the back of the display, and then remove the antenna cables and transceivers (2). Antennas for non-touch models are available using spare part number 809271-001.

**NOTE:** Number of antennas and transceivers may vary.

To remove the display/webcam cable, disconnect the cable (1).

Remove the cable from the clips built into the display panel (2), and then remove the cable from the display (3).

If replacing the display enclosure, be sure that the subcomponents (including the webcam/microphone module, the antenna receivers, and all associated cables and hardware) are transferred to the new enclosure.

Reverse this procedure to reassemble and install the display assembly.
Display assembly, touch

<table>
<thead>
<tr>
<th>Component</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display bezel (includes screw covers)</td>
<td>809291-001</td>
</tr>
<tr>
<td>Touch screen connector board</td>
<td></td>
</tr>
<tr>
<td>Webcam/microphone module touch screen</td>
<td>810961-001</td>
</tr>
<tr>
<td>Raw display panel (16:9 Ultra Wide Aspect Ratio [43.9-cm 17.3-in]; includes screw covers)</td>
<td>809300-001</td>
</tr>
<tr>
<td>Antiglare HD+ touch screen</td>
<td>809301-001</td>
</tr>
<tr>
<td>Panel Bracket (included with the Display Panel touch screen)</td>
<td>809294-001</td>
</tr>
<tr>
<td>Display cable FHD touch screen (includes screw covers)</td>
<td>809295-001</td>
</tr>
<tr>
<td>Display cable HD touch screen (includes screw covers)</td>
<td>809932-001</td>
</tr>
<tr>
<td>Antennas touch screen (includes wireless antenna cables and transceivers; includes screw covers)</td>
<td>809272-001</td>
</tr>
<tr>
<td>Hinges touch screen (left and right, includes screw covers)</td>
<td>809299-001</td>
</tr>
<tr>
<td>Display enclosure:</td>
<td></td>
</tr>
<tr>
<td>Cobalt blue models touch screen</td>
<td>809281-001</td>
</tr>
<tr>
<td>Sunset red models touch screen</td>
<td>809280-001</td>
</tr>
<tr>
<td>Blizzard white models touch screen</td>
<td>809284-001</td>
</tr>
<tr>
<td>Natural silver models touch screen</td>
<td>809279-001</td>
</tr>
<tr>
<td>Violet purple models touch screen</td>
<td>809283-001</td>
</tr>
<tr>
<td>Peachy pink models touch screen</td>
<td>809282-001</td>
</tr>
<tr>
<td>Sparkling black models for use with touch screen</td>
<td>810948-001</td>
</tr>
<tr>
<td>Pale gold models for use with touch screen</td>
<td>836857-001</td>
</tr>
</tbody>
</table>

Before removing the display assembly, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 27).
5. Remove the optical drive (see Optical drive on page 28).
6. Remove the bottom cover (see Bottom cover on page 32).

To remove the display assembly:

1. Position the computer on its side, partially open.
2. Remove the four Phillips PM2.5×5.0 screws (1) that secure the display assembly to the computer.
3. Open the display to rotate the hinges upward to an angle (2).
4. Separate the display assembly from the computer (3).

If it is necessary to replace any of the display assembly subcomponents:

1. To remove the display cover:
   a. Pry up on each side of the display to disengage the cover and remove the back cover.
b. Turn the display with the bezel down and the back of the panel up. Disconnect the display cables from the panel and bezel (1), (2). Release the connections (3), (4) and lift the panel (5).

2. To remove the webcam/microphone module, position the display assembly with the top edge toward you.
   a. Disconnect the cable (1) from the module.
   b. Remove the webcam/microphone module from the display (2).

3. To remove the display panel:
   a. Position the display assembly with the top edge toward you.
   b. Remove the six Phillips PM2.0×1.5 screws (1) that secure the display panel to the bezel.
c. Lift the top of the panel (2).

4. To remove the display hinges:
   a. Remove the six Phillips PM2.5×2.0 screws (1) from the bottom of the hinges, and the two Phillips PM2.0×2.5 screws from the top of the hinges that secure the display hinges to the display.
   b. Remove the display hinges (2).
5. To remove the wireless antenna cables and transceivers, release the wireless antenna cables from the clips (1) built into the display enclosure, peel the transceivers from the enclosure (2), and then remove the antenna cables and transceivers.

The antennas are available using spare part number 811201-001.

NOTE: Number of antennas and transceivers may vary.

6. To remove the display/webcam cable, disconnect the cable (1).

7. Remove the cable from the clips built into the display panel (2), and then remove the cable from the display (3).

8. If replacing the display enclosure, be sure that the subcomponents (including the webcam/microphone module, the antenna receivers, and all associated cables and hardware) are transferred to the new enclosure.

Reverse this procedure to reassemble and install the display assembly.
Remove the touch screen sensor

1. Place the panel bezel face down.

2. Release the sensor clips (1) and remove the sensor (2).
Chapter 6   Removal and replacement procedures for Authorized Service Provider parts
Using Computer Setup

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

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

Starting Computer Setup

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

To start Computer Setup, follow these steps:

▲ Start Computer Setup.

- Computers or tablets with keyboards:
  ▲ Turn on or restart the computer, and when the HP logo appears, press f10 to enter Computer Setup.

- Tablets without keyboards:
  ▲ Turn off the tablet. Press the power button in combination with the volume down button until the Startup menu is displayed, and then tap F10 to enter Computer Setup.
Navigating and selecting in Computer Setup

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

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

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

- To close open dialog boxes and return to the main Computer Setup screen, press esc, and then follow the on-screen instructions.

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

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

  Select Main, select Ignore Changes and Exit, and then press enter.

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

  Select Main, select Save Changes and Exit, and then press enter.

Your changes go into effect when the computer restarts.

Restoring factory settings in Computer Setup

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

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

2. Select Main, and then select Apply Factory Defaults and Exit.

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

3. Follow the on-screen instructions.
4. To save your changes and exit, select the Save icon in the lower-right corner of the screen, and then follow the on-screen instructions.

  – or –

  Select Main, select Save Changes and Exit, and then press enter.

Your changes go into effect when the computer restarts.

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

Updated versions of the BIOS may be available on the HP website.

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

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

Determining the BIOS

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

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

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

To check for later BIOS versions, see Downloading a BIOS update on page 71.

Downloading a BIOS update

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

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

Do not shut down the computer or initiate Sleep.

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

1. Type support in the taskbar search box, and then select the HP Support Assistant app.
   – or –
   Select the question mark icon in the taskbar.
2. Select Updates, and then select Check for updates and messages.
3. Follow the on-screen instructions.
4. At the download area, follow these steps:
   a. Identify the most recent BIOS update and compare it to the BIOS version currently installed on your computer. Make a note of the date, name, or other identifier. You may need this information to locate the update later, after it has been downloaded to your hard drive.
   b. Follow the on-screen instructions to download your selection to the hard drive.

Make a note of the path to the location on your hard drive where the BIOS update is downloaded. You will need to access this path when you are ready to install the update.
NOTE: If you connect your computer to a network, consult the network administrator before installing any software updates, especially system BIOS updates.

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

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

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

Changing the boot order using the f9 prompt

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

1. Access the Boot Device Options menu:
   ● Computers or tablets with keyboards:
     ▲ Turn on or restart the computer, and when the HP logo appears, press f9 to enter the Boot Device Options menu.
   ● Tablets without keyboards:
     ▲ Turn off the tablet. Press the power button in combination with the volume down button until the Startup menu is displayed, and then tap F9 to enter the Boot Device Options menu.

2. Select a boot device, then press enter.
TPM BIOS settings (select products only)

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

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

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

To access TPM settings in Computer Setup:

1. Start Computer Setup. See [Starting Computer Setup on page 69](#).
2. Select Security, select **TPM Embedded Security**, and then follow the on-screen instructions.

**Using HP Sure Start (select products only)**

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

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

To access the latest documentation on HP Sure Start, go to [http://www.hp.com/support](http://www.hp.com/support), and select your country. Select **Drivers & Downloads**, and then follow the on-screen instructions.
Using Computer Setup

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

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

Starting Computer Setup

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

To start Computer Setup, follow these steps:

1. Turn on or restart the computer, and then press `esc` while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.
2. Press `f10` to enter Computer Setup.

Navigating and selecting in Computer Setup

To navigate and select in Computer Setup, follow these steps:

1. Turn on or restart the computer, and then press `esc` while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.

**NOTE:** You can use either a pointing device (TouchPad, pointing stick, or USB mouse) or the keyboard to navigate and make selections in Computer Setup.

2. Press `f10` to enter Computer Setup.

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

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

   ● To close open dialog boxes and return to the main Computer Setup screen, press `esc`, and then follow the on-screen instructions.

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

- To exit Computer Setup menus without saving your changes:
  
  Click the **Exit** icon in the lower-right corner of the screen, and then follow the on-screen instructions.

- or –
Use the **tab** key and the arrow keys to select **File > Ignore Changes and Exit**, and then press **enter**.

- To save your changes and exit Computer Setup menus:
  
  - Click the **Save** icon in the lower-right corner of the screen, and then follow the on-screen instructions.
  
  - or -

  - Use the **tab** key and the arrow keys to select **File > Save Changes and Exit**, and then press **enter**.

Your changes go into effect when the computer restarts.

**Restoring default settings in Computer Setup**

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

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

1. Turn on or restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.

2. Press **f10** to enter Computer Setup.

3. Use a pointing device or the arrow keys to select **File > Restore Defaults**.

4. Follow the on-screen instructions.

5. To save your changes and exit, click the **Save** icon in the lower-right corner of the screen, and then follow the on-screen instructions.

   - or -

   - Use the arrow keys to select **File > Save Changes and Exit**, and then press **enter**.

Your changes go into effect when the computer restarts.

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

Updated versions of the BIOS may be available on the HP website.

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

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

Determining the BIOS version

To determine whether available BIOS updates contain later BIOS versions than those currently installed on the computer, you need to know the version of the system BIOS currently installed.

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

2. Use a pointing device or the arrow keys to select File > System Information.
3. To exit Computer Setup without saving your changes, click the Exit icon in the lower-right corner of the screen, and then follow the on-screen instructions.
   – or –
   Use the tab key and the arrow keys to select File > Ignore Changes and Exit, and then press enter.

Downloading a BIOS update

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

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

Do not shut down the computer or initiate Sleep.

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

1. From the Start screen, select the HP Support Assistant app.
2. Select Updates and tune-ups, and then select Check for HP updates now.
3. At the download area, follow these steps:
   a. Identify the most recent BIOS update and compare it to the BIOS version currently installed on your computer. Make a note of the date, name, or other identifier. You may need this information to locate the update later, after it has been downloaded to your hard drive.
   b. Follow the on-screen instructions to download your selection to the hard drive.

   If the update is more recent than your BIOS, make a note of the path to the location on your hard drive where the BIOS update is downloaded. You will need to access this path when you are ready to install the update.

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

   BIOS installation procedures vary. Follow any instructions that are displayed on the screen after the download is complete. If no instructions are displayed, follow these steps:
1. From the Start screen, type `e`, and then click **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 on your hard drive that contains the update.

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

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

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

---

**Using MultiBoot**

**About the boot device order**

As the computer starts, the system attempts to boot from enabled devices. The MultiBoot utility, which is enabled at the factory, controls the order in which the system selects a boot device. Boot devices can include optical drives, diskette drives, a network interface card (NIC), hard drives, and USB devices. Boot devices contain bootable media or files that the computer needs to start and operate properly.

**NOTE:** Some boot devices must be enabled in Computer Setup before they can be included in the boot order.

You can change the order in which the computer searches for a boot device by changing the boot order in Computer Setup. You can also press `esc` while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen, and then press `f9`. Pressing `f9` displays a menu that shows the current boot devices and allows you to select a boot device. Or, you can use MultiBoot Express to set the computer to prompt you for a boot location each time the computer turns on or restarts.

**Choosing MultiBoot preferences**

You can use MultiBoot in the following ways:

- To set a new boot order that the computer uses each time it is turned on, by changing the boot order in Computer Setup.

- To dynamically choose the boot device, by pressing `esc` while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen, and then pressing `f9` to enter the Boot Device Options menu.

- To use MultiBoot Express to set variable boot orders. This feature prompts you for a boot device each time the computer is turned on or restarted.
**Setting a new boot order in Computer Setup**

To start Computer Setup and set a boot device order that the computer uses each time it is turned on or restarted, follow these steps:

1. Turn on or restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.

2. Press **f10** to enter Computer Setup.

3. Use a pointing device or the arrow keys to select the **Legacy Boot Order** list, and then press **enter**.

4. To move the device up in the boot order, use a pointing device to click the up arrow, or press the **+** key.
   – or –
   To move the device down in the boot order, use a pointing device to click the down arrow, or press the **-** key.

5. To save your changes and exit Computer Setup, click the **Save** icon in the lower-left corner of the screen, and then follow the on-screen instructions.
   – or –
   Use the arrow keys to select **File > Save Changes and Exit**, and then press **enter**.

**Dynamically choosing a boot device using the f9 prompt**

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

1. Open the Select Boot Device menu by turning on or restarting the computer, and then pressing **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.

2. Press **f9**.

3. Use a pointing device or the arrow keys to select a boot device, then press **enter**.
Setting a MultiBoot Express prompt

To start Computer Setup and set the computer to display the MultiBoot startup location menu each time the computer is started or restarted, follow these steps:

1. Turn on or restart the computer, and then press esc while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.

2. Press f10 to enter Computer Setup.

3. Use a pointing device or the arrow keys to select System Configuration > Boot Options, and then press enter.

4. In the MultiBoot Express Popup Delay (Sec) field, enter the length of time in seconds that you want the computer to display the startup location menu before it defaults to the current MultiBoot setting. (When 0 is selected, the Express Boot startup location menu is not displayed.)

5. To save your changes and exit Computer Setup, click the Save icon in the lower-left corner of the screen, and then follow the on-screen instructions.

   – or –

   Use the arrow keys to select File > Save Changes and Exit, and then press enter.

Your changes go into effect when the computer restarts.

Entering MultiBoot Express preferences

When the Express Boot menu is displayed during startup, you have the following choices:

- To specify a boot device from the Express Boot menu, select your preference within the allotted time, and then press enter.

- To prevent the computer from defaulting to the current MultiBoot setting, press any key before the allotted time expires. The computer will not start until you select a boot device and press enter.

- To allow the computer to start according to the current MultiBoot settings, wait for the allotted time to expire.
Using System Diagnostics

System Diagnostics allows you to run diagnostic tests to determine if the computer hardware is functioning properly. The following diagnostic tests may be available in System Diagnostics:

- **System Tune-Up**—This group of additional tests checks your computer to make sure that the main components are functioning correctly. System Tune-Up runs longer and more comprehensive tests on memory modules, hard drive SMART attributes, the hard drive surface, the battery (and battery calibration), video memory, and the WLAN module status.

- **Start-up test**—This test analyzes the main computer components that are required to start the computer.

- **Run-in test**—This test repeats the start-up test and checks for intermittent problems that the start-up test does not detect.

- **Hard disk test**—This test analyzes the physical condition of the hard drive, and then checks all data in every sector of the hard drive. If the test detects a damaged sector, it attempts to move the data to a good sector.

- **Memory test**—This test analyzes the physical condition of the memory modules. If it reports an error, replace the memory modules immediately.

- **Battery test**—This test analyzes the condition of the battery and calibrates the battery if necessary. If the battery fails the test, contact HP support to report the issue and purchase a replacement battery.

- **BIOS Management**—You can update or rollback the version of the BIOS on the system. Do not shut down or remove external power during the process. You will be given a confirmation screen before your BIOS is modified. Select **BIOS update**, **BIOS Rollback**, or **Back to main menu**.

You can view system information and error logs or select languages in the System Diagnostics window.

To start System Diagnostics:

1. Turn on or restart the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press **esc**. When the Startup Menu is displayed, press **f2**.

2. Click the diagnostic test you want to run, and then follow the on-screen instructions.

**NOTE:** If you need to stop a diagnostics test while it is running, press **esc**.
9 Using HP PC Hardware Diagnostics (UEFI) in Windows 10

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.

**NOTE:** To start BIOS on a convertible computer, your computer must be in notebook mode and you must use the keyboard attached to your tablet. The on-screen keyboard, which displays in tablet mode, cannot access BIOS.

To start HP PC Hardware Diagnostics UEFI:

1. **Start BIOS:**
   - Computers or tablets with keyboards:
     ▲ Turn on or restart the computer, quickly press `esc`.
   - Tablets without keyboards:
     ▲ Turn on or restart the tablet, and then quickly hold down the volume down button.
     - or -
     Turn on or restart the tablet, and then quickly hold down the Windows button.

2. Press or tap `f2`.

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

   a. Connected USB drive

      **NOTE:** To download the HP PC Hardware Diagnostics (UEFI) tool to a USB drive, see Downloading HP PC Hardware Diagnostics (UEFI) to a USB device on page 83.

   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. On a tablet, press the volume down button to stop a diagnostic test.

   **NOTE:** If you need to stop a diagnostic test on computers or tablets with a keyboard, press `esc`.

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

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

**Download the latest UEFI version:**


2. In the HP PC Hardware Diagnostics section, click the **Download** link, and then select **Run**.
Download any version of UEFI for a specific product:

1. Go to http://www.hp.com/support, and then select your country. The HP Support page is displayed.

2. Click Drivers & Downloads.

3. In the text box, enter the product name, and then click Go.

   – or –

   Click Find Now to let HP automatically detect your product.

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

5. In the Diagnostic section, follow the on-screen instructions to select and download the UEFI version you want.
10 Using HP PC Hardware Diagnostics (UEFI) in Windows 8.1

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.

To start HP PC Hardware Diagnostics (UEFI):

1. Start Setup Utility:
   ▲ Turn on or restart the computer, quickly press esc.

2. Press or tap f2.
   The BIOS searches 3 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 83.

   b. Hard drive
   c. BIOS

3. When the diagnostic tool opens, use the keyboard arrow keys to 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 or tap esc.

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

 Denis NOTE: Instructions for downloading HP PC Hardware Diagnostics (UEFI) are provided in English only.

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

Option 1: HP PC Diagnostics homepage—Provides access to the latest UEFI version


2. Click the UEFI Download link, and then select Run.

Option 2: Support and Drivers pages—Provide downloads for a specific product for earlier and later versions


2. Point to Support, located at the top of the page, and then click Download Drivers.

3. In the text box, enter the product name, and then click Go.
   – or –
   Click Find Now to let HP automatically detect your product.
4. Select your computer model, and then select your operating system.

5. In the Diagnostic section, click HP UEFI Support Environment.
   
   – or –

   Click Download, and then select Run.
## 11 Specifications

### Computer specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Metric</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions</strong> (touch models)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depth</td>
<td>286.75 mm</td>
<td>11.28 in</td>
</tr>
<tr>
<td>Width</td>
<td>418.8 mm</td>
<td>15.14 in</td>
</tr>
<tr>
<td>Height (rear)</td>
<td>27.15 mm</td>
<td>1.06 in</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Touch</td>
<td>2.795 kg</td>
<td>6.17 lb</td>
</tr>
<tr>
<td>Non-touch</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Input power</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating voltage and current</td>
<td>18.5 V dc @ 3.5 A or 19.5 V dc @ 3.33 A – 65 W</td>
<td></td>
</tr>
<tr>
<td></td>
<td>19.5 V dc @ 2.31 A – 45 W</td>
<td></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.
# 43.9-cm (17.3-in) display specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Metric</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active diagonal size</td>
<td>43.9-cm</td>
<td>17.3-in</td>
</tr>
<tr>
<td>Thickness</td>
<td>6.0 mm or 4.0 mm</td>
<td>0.157 inch or 0.236 inch</td>
</tr>
<tr>
<td>Resolution</td>
<td>1920x1080 (FHD)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1600x900 (HD)</td>
<td></td>
</tr>
<tr>
<td>Surface treatment</td>
<td>AntiGlare or BrightView</td>
<td></td>
</tr>
<tr>
<td>Contrast ratio</td>
<td>300:1 (typical)</td>
<td></td>
</tr>
<tr>
<td>Brightness</td>
<td>220 nits (typical)</td>
<td></td>
</tr>
<tr>
<td>Viewing angle</td>
<td>SVA</td>
<td></td>
</tr>
<tr>
<td>Backlight</td>
<td>WLED</td>
<td></td>
</tr>
<tr>
<td>Companion standard</td>
<td>eDP</td>
<td></td>
</tr>
</tbody>
</table>
## Hard drive specifications

<table>
<thead>
<tr>
<th></th>
<th>2-TB*</th>
<th>1-TB*</th>
<th>750-GB*</th>
<th>500-GB*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td>9.5 mm</td>
<td>9.5 mm</td>
<td>9.5 mm</td>
<td>7.0 mm or 9.5 mm</td>
</tr>
<tr>
<td>Length</td>
<td>100.4 mm</td>
<td>100.4 mm</td>
<td>100.4 mm</td>
<td>100.6 mm</td>
</tr>
<tr>
<td>Width</td>
<td>69.9 mm</td>
<td>69.9 mm</td>
<td>69.9 mm</td>
<td>70.1 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>115.0 g</td>
<td>115.0 g</td>
<td>115.0 g</td>
<td>92.0 g</td>
</tr>
<tr>
<td><strong>Interface type</strong></td>
<td>SATA</td>
<td>SATA</td>
<td>SATA</td>
<td>SATA</td>
</tr>
<tr>
<td><strong>Transfer rate</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Synchronous (maximum)</td>
<td>300 MB/sec</td>
<td>300 MB/sec</td>
<td>300 MB/sec</td>
<td>300 MB/sec</td>
</tr>
<tr>
<td>Security</td>
<td>ATA security</td>
<td>ATA security</td>
<td>ATA security</td>
<td>ATA security</td>
</tr>
<tr>
<td><strong>Seek times</strong> (typical read, including setting)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single track</td>
<td>1.4 ms</td>
<td>1.4 ms</td>
<td>1.5 ms</td>
<td>3 ms</td>
</tr>
<tr>
<td>Average (read/write)</td>
<td>10 ms</td>
<td>10 ms</td>
<td>11 ms</td>
<td>13 ms</td>
</tr>
<tr>
<td>Maximum</td>
<td>12 ms</td>
<td>12 ms</td>
<td>14 ms</td>
<td>24 ms</td>
</tr>
<tr>
<td><strong>Logical blocks</strong></td>
<td>3,877,842,922</td>
<td>1,938,921,461</td>
<td>1,465,149,168</td>
<td>1,048,576,000</td>
</tr>
<tr>
<td><strong>Disk rotational speed</strong></td>
<td>5400 rpm</td>
<td>5400 rpm</td>
<td>5400 rpm</td>
<td>5400 rpm</td>
</tr>
<tr>
<td><strong>Operating temperature</strong></td>
<td>0°C to 60°C (32°F to 140°F)</td>
<td></td>
<td></td>
<td></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.
# DVD±RW SuperMulti DL Drive specifications

<table>
<thead>
<tr>
<th>Applicable disc</th>
<th>Read:</th>
<th>Write:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD,</td>
<td>DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM,</td>
</tr>
<tr>
<td></td>
<td>9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM</td>
<td></td>
</tr>
<tr>
<td>Center hole diameter</td>
<td>1.5 cm (0.59 in)</td>
<td></td>
</tr>
<tr>
<td>Disc diameter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard disc</td>
<td>12 cm (4.72 in)</td>
<td></td>
</tr>
<tr>
<td>Mini disc</td>
<td>8 cm (3.15 in)</td>
<td></td>
</tr>
<tr>
<td>Disc thickness</td>
<td>1.2 mm (0.047 in)</td>
<td></td>
</tr>
<tr>
<td>Track pitch</td>
<td>0.74 µm</td>
<td></td>
</tr>
<tr>
<td>Access time</td>
<td>CD</td>
<td>DVD</td>
</tr>
<tr>
<td>Random</td>
<td>&lt; 175 ms</td>
<td>&lt; 230 ms</td>
</tr>
<tr>
<td>Full stroke</td>
<td>&lt; 285 ms</td>
<td>&lt; 335 ms</td>
</tr>
<tr>
<td>Audio output level</td>
<td>Line-out, 0.7 Vrms</td>
<td></td>
</tr>
<tr>
<td>Cache buffer</td>
<td>2 MB</td>
<td></td>
</tr>
<tr>
<td>Data transfer rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24X CD-ROM</td>
<td>3,600 KB/sec</td>
<td></td>
</tr>
<tr>
<td>8X DVD-ROM</td>
<td>10,800 KB/sec</td>
<td></td>
</tr>
<tr>
<td>24X CD-R</td>
<td>3,600 KB/sec</td>
<td></td>
</tr>
<tr>
<td>16X CD-RW</td>
<td>2,400 KB/sec</td>
<td></td>
</tr>
<tr>
<td>8X DVD+R</td>
<td>10,800 KB/sec</td>
<td></td>
</tr>
<tr>
<td>4X DVD+RW</td>
<td>5,400 KB/sec</td>
<td></td>
</tr>
<tr>
<td>8X DVD-R</td>
<td>10,800 KB/sec</td>
<td></td>
</tr>
<tr>
<td>4X DVD-RW</td>
<td>5,400 KB/sec</td>
<td></td>
</tr>
<tr>
<td>4X DVD+R(9)</td>
<td>2,700 KB/sec</td>
<td></td>
</tr>
<tr>
<td>5X DVD-RAM</td>
<td>6,750 KB/sec</td>
<td></td>
</tr>
<tr>
<td>Transfer mode</td>
<td>Multiword DMA Mode</td>
<td></td>
</tr>
<tr>
<td>Startup time</td>
<td>&lt; 15 seconds</td>
<td></td>
</tr>
<tr>
<td>Stop time</td>
<td>&lt; 6 seconds</td>
<td></td>
</tr>
</tbody>
</table>
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 –

Click 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 keyboard to the keyboard dock before beginning any recovery process.

### Creating recovery media and backups

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

- Use HP Recovery Manager to create HP Recovery media after you successfully set up the computer. This step creates a backup of the HP Recovery partition on the computer. The backup can be used to reinstall the original operating system in cases where the hard drive is corrupted or has been replaced. For information on creating recovery media, see Creating HP Recovery media (select products only) on page 92. For information on the recovery options that are available using the recovery media, see Using Windows Tools on page 93.

- Use Windows tools to create system restore points and create backups of personal information.

For more information, see Recovering using HP Recovery Manager on page 94.

**NOTE:** If storage is 32 GB or less, System Restore is disabled by default.
Creating HP Recovery media (select products only)

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

- If your computer does not list the Windows partition and the Recovery partition, you can obtain recovery media for your system from support. See the Worldwide Telephone Numbers booklet included with the computer. You can also find contact information on the HP website. Go to http://www.hp.com/support, select your country or region, and follow the on-screen instructions.

You can use Windows tools to create system restore points and create backups of personal information, see Using Windows tools on page 61.

- If your computer does list the Recovery partition and the Windows partition, you can use HP Recovery Manager to create recovery media after you successfully set up the computer. HP Recovery media can be used to perform system recovery if the hard drive becomes corrupted. System recovery reinstalls the original operating system and software programs that were installed at the factory and then configures the settings for the programs. HP Recovery media can also be used to customize the system or restore the factory image if you replace the hard drive.
  ◦ Only one set of recovery media can be created. Handle these recovery tools carefully, and keep them in a safe place.
  ◦ HP Recovery Manager examines the computer and determines the required storage capacity for the media that will be required.
  ◦ To create recovery discs, your computer must have an optical drive with DVD writer capability, and you must use only high-quality blank DVD-R, DVD+R, DVD-R DL, or DVD+R DL discs. Do not use rewritable discs such as CD±RW, DVD±RW, double-layer DVD±RW, or BD-RE (rewritable Blu-ray) discs; they are not compatible with HP Recovery Manager software. Or, instead, you can use a high-quality blank USB flash drive.
  ◦ If your computer does not include an integrated optical drive with DVD writer capability, but you would like to create DVD recovery media, you can use an external optical drive (purchased separately) to create recovery discs. If you use an external optical drive, it must be connected directly to a USB port on the computer; the drive cannot be connected to a USB port on an external device, such as a USB hub. If you cannot create DVD media yourself, you can obtain recovery discs for your computer from HP. See the Worldwide Telephone Numbers booklet included with the computer. You can also 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:

**IMPORTANT:** For a tablet with a detachable keyboard, connect the keyboard to the keyboard dock 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 94.
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, System Restore is disabled by default.

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

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

### Restore and recovery

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

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

- Windows offers several options for restoring from backup, refreshing the computer, and resetting the computer to its original state. For more information see the Get started app.

  ▲ Select the **Start** button, and then select the **Get started** 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 **Recovering using HP Recovery Manager on page 94**. If you have not already created recovery media, see **Creating HP Recovery media (select products only) on page 92**.

- 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 94**.

- 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 **Removing the HP Recovery partition (select products only) on page 96**.
Recovering using HP Recovery Manager

HP Recovery Manager software allows you to recover the computer to its original factory state by using the HP Recovery media that you either created or that you obtained from HP, or by using the HP Recovery partition (select products only). If you have not already created recovery media, see Creating HP Recovery media (select products only) on page 92.

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.

- To use the Factory Reset option (select products only), you must use HP Recovery media. If you have not already created recovery media, see Creating HP Recovery media (select products only) on page 92.

- 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. See the Worldwide Telephone Numbers booklet included with the computer. You can also find contact information from the HP website. Go to http://www.hp.com/support, select your country or region, and follow the on-screen instructions.

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

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

**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 reinstall 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 keyboard to the keyboard dock before beginning these steps (select products only).

1. Type *recovery* in the taskbar search box, select *Recovery Manager*, and then select *HP 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 down button; then select f11.
   - or –
   Turn on or restart the tablet, and then quickly hold down the Windows 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 96](#).

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 keyboard to the keyboard dock before beginning these steps.

1. Insert the HP Recovery media.
2. Access BIOS:
   - 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 down button; then select `f9`.
     - or –
     - Turn on or restart the tablet, and then quickly hold down the Windows button; then select `f9`.
3. Select the optical drive or USB flash drive from which you want to boot.
4. Follow the on-screen instructions.

Removing the HP Recovery partition (select products only)

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

**IMPORTANT:** After you remove the HP Recovery partition, you will not be able to perform System Recovery or create HP recovery media from the HP Recovery partition. So before you remove the Recovery partition, create HP Recovery media; see Creating HP Recovery media (select products only) on page 92.

**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.
13 Back up your information – Windows 8

To protect your information, use Windows backup and restore utilities to back up individual files and folders, back up your entire hard drive, create system repair media (select models only) by using the installed optical drive (select models only) or an optional external optical drive, or create system restore points. In case of system failure, you can use the backup files to restore the contents of your computer.

In Windows 8, from the Start screen, type restore, click Settings, and then select from the list of displayed options.

- or -

In Windows 8.1, from the Start screen, type restore, and then select from the list of displayed options.

**NOTE:** For detailed instructions on various backup and restore options, perform a search for these topics in HP Support Assistant. To access HP Support Assistant on the Start screen, select the HP Support Assistant app.

In case of system instability, HP recommends that you print the recovery procedures and save them for later use.

**NOTE:** Windows includes the User Account Control feature to improve the security of your computer. You may be prompted for your permission or password for tasks such as installing software, running utilities, or changing Windows settings. Refer to HP Support Assistant. To access HP Support Assistant on the Start screen, select the HP Support Assistant app.

### Backing up your information

Recovery after a system failure is as good as your most recent backup. You should create system repair media and your initial backup immediately after initial system setup. As you add new software and data files, you should continue to back up your system on a regular basis to maintain a reasonably current backup. The system repair media (select models only) are used to start up (boot) the computer and repair the operating system in case of system instability or failure. Your initial and subsequent backups allow you to restore your data and settings if a failure occurs.

On Start screen, type backup, click Settings, and then select Save backup copies of your files with File History.

You can back up your information to an optional external hard drive or a network drive.

Note the following when backing up:

- Store personal files in the Documents library, and back it up regularly.
- Back up templates that are stored in their associated programs.
- Save customized settings that appear in a window, toolbar, or menu bar by taking a screen shot of your settings. The screen shot can be a time-saver if you have to reset your preferences.

To create a backup using Backup and Restore in Windows 8.0:

**NOTE:** Be sure that the computer is connected to AC power before you start the backup process.

**NOTE:** The backup process may take over an hour, depending on file size and the speed of the computer.
1. From the Start screen, type backup, and then click Settings.

2. Click Save backup copy of your files with file history.
   File History windows are launched.

3. Follow the on-screen instructions to use file history to backup files.
   - or -
   Click recovery to create a recovery drive using a USB flash drive.
   - or -
   Click Windows 7 file recovery, and then click create a system image to create a system image.

To create a backup using Backup and Restore in Windows 8.1:

- **NOTE:** Be sure that the computer is connected to AC power before you start the backup process.
- **NOTE:** The backup process may take over an hour, depending on file size and the speed of the computer.

1. From the Start screen, type backup.

2. Click Save backup copy of your files with file history.
   File History windows are launched.

3. Follow the on-screen instructions to use file history to backup files.
   - or -
   Click recovery to create a recovery drive using a USB flash drive.
   - or -
   Click System Image Backup to create a system image.
Performing a system recovery

In case of system failure or instability, the computer provides the following tools to recover your files:

- **Windows recovery tools**: You can use Windows Backup and Restore to recover information you have previously backed up. You can also use Windows Automatic Repair to fix problems that might prevent Windows from starting correctly.

- **f11 recovery tools**: You can use the f11 recovery tools to recover your original hard drive image. The image includes the Windows operating system and software programs installed at the factory.

**NOTE:** If you are unable to boot (start up) your computer and you cannot use the system repair media you previously created (select models only), you must purchase Windows 8 operating system media to reboot the computer and repair the operating system.

Using f11 recovery tools

**CAUTION:** Using f11 completely erases hard drive contents and reformats the hard drive. All files that you have created and any software that you have installed on the computer are permanently removed. The f11 recovery tool reinstalls the operating system and HP programs and drivers that were installed at the factory. Software not installed at the factory must be reinstalled.

To recover the original hard drive image using f11:

1. If possible, back up all personal files.
2. If possible, check for the presence of the Recovery Image partition: From the Start screen, type C, and then select Computer.

**NOTE:** If the Recovery Image partition is not listed, you must recover your operating system and programs using the Windows 8 operating system media and the Driver Recovery media (both purchased separately).

3. If the Recovery Image partition is listed, restart the computer, and then press esc while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.
4. Press f11 while the “Press <F11> for recovery” message is displayed on the screen.
5. Choose your language.
6. Choose your keyboard layout.
7. Select Troubleshoot from the boot options menu.
8. Select Reset your PC, and follow the on-screen instructions.
Using Windows 8 operating system media (purchased separately)

To order a Windows 8 operating system DVD, go to [http://www.hp.com/support](http://www.hp.com/support), select your country or region, and follow the on-screen instructions. You can also order the DVD by calling support. For contact information, see the *Worldwide Telephone Numbers* booklet included with the computer.

⚠️ **CAUTION:** Using a Windows 8 operating system media completely erases hard drive contents and reformats the hard drive. All files that you have created and any software that you have installed on the computer are permanently removed. When reformatting is complete, the recovery process helps you restore the operating system, as well as drivers, software, and utilities.

To initiate recovery using a Windows 8 operating system DVD:

**NOTE:** This process takes several minutes.

1. If possible, back up all personal files.
2. Restart the computer, and then insert the Windows 8 operating system DVD into the optical drive before the Windows operating system loads.
3. Power off the computer.
4. Power on the computer, and then press F9 to show the BIOS boot menu.
5. When the DVD is booting, select the DVD from the UEFI Boot Sources.
7. Follow the on-screen instructions.

After the installation is completed:

1. Eject the Windows 8 operating system media and then insert the Driver Recovery media.
2. Install the Hardware Enabling Drivers first, and then install Recommended Applications.
Using Windows Refresh for quick and easy recovery

When your computer is not working properly and you need to regain system stability, the Windows Refresh option allows you to start fresh and keep what is important to you.

**IMPORTANT:** Refresh removes any traditional applications that were not originally installed on the system at the factory.

**NOTE:** During Refresh, a list of removed traditional applications will be saved so that you have a quick way to see what you might need to reinstall. See HP Support Assistant for instructions on reinstalling traditional applications. To access HP Support Assistant on the Start screen, select the **HP Support Assistant** app.

**NOTE:** You may be prompted for your permission or password when using Refresh. See HP Support Assistant for more information. To access HP Support Assistant on the Start screen, select the **HP Support Assistant** app.

To start Refresh:

1. On the Start screen, point to the far-right upper or lower corner of the screen to display the charms.
2. Click **Settings**.
3. Click **Change PC settings** in the bottom-right corner of the screen.
4. In Windows 8.0, select **General** from the PC settings screen.
   - or -
   In Windows 8.1, select **Update and Recovery**, and then select **Recovery**.
5. Scroll the right-side choices down to display **Refresh your PC without affecting your files**.
6. Under **Refresh your PC without affecting your files**, select **Get started**, and follow the on-screen instructions.

Remove everything and reinstall Windows

Sometimes you want to perform detailed reformatting of your computer, or you want to remove personal information before you give away or recycle your computer. The process described in this section provides a speedy, simple way to return the computer to its original state. This option removes all personal data, apps, and settings from your computer, and reinstall Windows.

**IMPORTANT:** This option does not provide backups of your information. Before using this option, back up any personal information you wish to retain.

You can initiate this option by using the **f11** key or from the Start screen.

To use the **f11** key:

1. Press **f11** while the computer boots.
   - or -
   Press and hold **f11** as you press the power button.
2. Choose your language.
3. Choose your keyboard layout.
4. Select **Troubleshoot** from the boot options menu.
5. Select **Reset your PC**, and follow the on-screen instructions.

To use the Start screen:
1. On the Start screen, point to the far-right upper or lower corner of the screen to display the charms.
2. Click Settings.
3. Click Change PC settings in the bottom-right corner of the screen.
4. In Windows 8.0, select General from the PC settings screen.
   - or -
   In Windows 8.1, select Update and Recovery, and then select Recovery.
5. Scroll the right-side choices down to display Remove everything and reinstall Windows.
6. Under Remove everything and reinstall Windows, select Get started, and follow the on-screen instructions.

**Using HP Software Setup**

HP Software Setup can be used to reinstall drivers or select software that has been corrupted or deleted from the system.

1. From the Start screen, type HP Software Setup, and select Apps.
2. Open HP Software Setup.
3. Follow the on-screen directions to reinstall drivers or select software.
14 Power cord set requirements

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

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

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

Requirements for all countries

The following requirements are applicable to all countries and regions:

- The length of the power cord set must be at least 1.5 m (5.0 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>
</tr>
<tr>
<td>Belgium</td>
<td>CEBEC</td>
<td>1</td>
</tr>
<tr>
<td>Brazil</td>
<td>ABNT</td>
<td>1</td>
</tr>
<tr>
<td>Canada</td>
<td>CSA</td>
<td>2</td>
</tr>
<tr>
<td>Chile</td>
<td>IMQ</td>
<td>1</td>
</tr>
<tr>
<td>Denmark</td>
<td>DEMKO</td>
<td>1</td>
</tr>
<tr>
<td>Finland</td>
<td>FIMKO</td>
<td>1</td>
</tr>
<tr>
<td>France</td>
<td>UTE</td>
<td>1</td>
</tr>
<tr>
<td>Germany</td>
<td>VDE</td>
<td>1</td>
</tr>
<tr>
<td>India</td>
<td>ISI</td>
<td>1</td>
</tr>
<tr>
<td>Israel</td>
<td>SII</td>
<td>1</td>
</tr>
<tr>
<td>Italy</td>
<td>IMQ</td>
<td>1</td>
</tr>
<tr>
<td>Japan</td>
<td>JIS</td>
<td>3</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>KEMA</td>
<td>1</td>
</tr>
<tr>
<td>New Zealand</td>
<td>SANZ</td>
<td>1</td>
</tr>
<tr>
<td>Norway</td>
<td>NEMKO</td>
<td>1</td>
</tr>
<tr>
<td>The People's Republic of China</td>
<td>CCC</td>
<td>4</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>SASO</td>
<td>7</td>
</tr>
<tr>
<td>Singapore</td>
<td>PSB</td>
<td>1</td>
</tr>
<tr>
<td>South Africa</td>
<td>SABS</td>
<td>1</td>
</tr>
<tr>
<td>South Korea</td>
<td>KTL</td>
<td>5</td>
</tr>
<tr>
<td>Sweden</td>
<td>SEMKO</td>
<td>1</td>
</tr>
<tr>
<td>Switzerland</td>
<td>SEV</td>
<td>1</td>
</tr>
<tr>
<td>Taiwan</td>
<td>BSMI</td>
<td>6</td>
</tr>
<tr>
<td>Thailand</td>
<td>TISI</td>
<td>1</td>
</tr>
<tr>
<td>The United Kingdom</td>
<td>ASTA</td>
<td>1</td>
</tr>
<tr>
<td>The United States</td>
<td>UL</td>
<td>2</td>
</tr>
</tbody>
</table>

1. The flexible cord must be Type H05VV-F, 3-conductor, 0.75mm² 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, 0.75mm² or 1.25mm² 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, 0.75mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the CCC certification mark.

5. The flexible cord must be Type H05VVF-F 3X0.75mm² 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 3X1.25mm² 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 x 18 AWG, with plug NEMA S-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 3X0.75/1.00mm² conductor size, with plug BS 1363/A with BSI or ASTA marks.
15 Recycling

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

HP encourages customers to recycle used electronic hardware, HP original print cartridges, and rechargeable batteries. For more information about recycling programs, see the HP Web site at http://www.hp.com/recycle.
Symbols/Numerics
3D camera, identifying 8, 9

A
action keys
identifying 13
antennas
illustrated 20, 57, 62
removing 61, 66
audio, product description 2
audio-out (headphone)/audio-in (microphone) jack, identifying 6

B
Backup and Restore 97, 98
base enclosure hinge caps
illustrated 18
battery
illustrated 18
removing 27
battery connector cable
spare part number 17
battery cover, identifying 14
battery lock, identifying 14
battery release latch 14
BIOS
determining version 77
downloading an update 77
updating 77
bottom cover
illustrated 18
removing 32
buttons
left TouchPad 10
power 12
right TouchPad 10

cables, service considerations 23
caps lock light, identifying 11
chipset, product description 1
components
bottom 14
display 8, 9
left side 7

D
display assembly
illustrated 16
removing 57, 62
spare part numbers 16
display assembly subcomponents
illustrated 19
removing 57, 62
display bezel
illustrated 19, 57, 62
removing 58, 59, 63
display cable
illustrated 20, 57, 62
removing 60, 65
display enclosure
illustrated 20, 57, 62
removing 61, 66
display panel
illustrated 19, 57, 62
removing 60, 64, 65
display specifications 88
DVD±RW SuperMulti DL Drive
specifications 90

E
electrostatic discharge 24
equipment guidelines 26
esc key, identifying 13
Ethernet, product description 2
external media cards 3

F
f11 recovery 99
fan
illustrated 18
removing 42
fn key, identifying 13

g
graphics, product description 1
grounding guidelines 24
guidelines
equipment 26
grounding 24
packaging 25
transporting 25
workstation 25

H
hard drive
illustrated 18, 22
precautions 24
product description 2
removing 36
specifications 89
hard drive bracket
illustrated 18
removing 37
Hard drive hardware kit
illustrated 22
hard drive light 6
hard drive recovery 99
HDMI port
identifying 6
heat sink assembly
illustrated 18
removing 18, 43
hinge caps
illustrated 18
hinges
illustrated 20, 57, 62
removing 60, 64, 65

Index 109
HP PC Hardware Diagnostics (UEFI)
downloading 85
using 83

I
integrated numeric keypad,
identifying 13
internal card expansion 2
internal display switch, identifying 8, 9
internal microphones, identifying 8, 9

J
jacks
audio-out (headphone)/audio-in (microphone) 6
network 7
RJ-45 (network) 7

K
keyboard
illustrated 16, 32
product description 3
keys
action 13
esc 13
fn 13
Windows 13

L
latch, battery release 14
legacy support, USB 75
lights
caps lock 11
hard drive 6
mute 11
power 6, 11
RJ-45 (network) status 7

M
mass storage devices
illustrated 22
precautions 24
memory card reader, identifying 7
memory card, identifying 7
memory module
illustrated 17
product description 1
removing 41
microphone
illustrated 19, 57, 62
product description 2
model name 1
mute light, identifying 11

N
network jack, identifying 7

O
operating system 3
optical drive
illustrated 18, 22, 28
precautions 24
product description 2
removing 28
specifications 90
optical drive cable
illustrated 17
optical drive connector
removing 47
spare part number 47
optical drive, identifying 7

P
packaging guidelines 25
plastic parts, service considerations 23
pointing device 3
ports
HDMI 6
product description 3
USB 2.0 7
USB 3.0 6, 7
power button board
illustrated 17
removing 53
power button, identifying 12
power connector cable
illustrated 17
removing 54
power connector, identifying 7
power cord
requirements for all countries 103
requirements for specific countries and regions 104
set requirements 103
power light, identifying 7
power lights, identifying 6, 11
power requirements 3
processor
product description 1
product description audio 2
chipset 1
display panel 1
Ethernet 2
external media cards 3
graphics 1
hard drive 2
internal card expansion 2
keyboard 3
memory module 1
microphone 2
operating system 3
optical drive 2
pointing device 3
ports 3
power requirements 3
processor 1
product name 1
security 3
sensors 2
serviceability 3
video 2
wireless 2
product name 1

R
recovery 101
recovery partition 99
recycle computer 101
refresh 101
removal/replacement preliminaries 23
procedures 27, 31
remove everything and reinstall
Windows 101
reset computer 101
steps 101
restoring the hard drive 99
RJ-45 (network) jack, identifying 7
RJ-45 (network) status lights, identifying 7
RTC battery
illustrated 18
removing 40

110 Index
security cable slot, identifying 6
security, product description 3
sensors, product description 2
service considerations
cables 23
connectors 23
plastic parts 23
serviceability, product description 3
setup utility
navigating and selecting 75
restoring default settings 76
slots
memory card reader 7
security cable 6
speakers
identifying 12
illustrated 17
removing 52
specifications
computer 87
display 88
DVD±RW SuperMulti DL Drive 90
hard drive 89
optical drive 90
system board
removing 48
spare part number 17, 48
System Diagnostics 81

T
tools required 23
top cover
illustrated 16, 32
TouchPad
buttons 10
removing 55
spare part number 16, 55
TouchPad bracket
spare part number 16
TouchPad rear bracket
spare part number 16
TouchPad zone, identifying 10
transporting guidelines 25

U
USB 2.0 port, identifying 7
USB 3.0 port, identifying 6, 7
USB board
removing 51
spare part number 17, 51
USB legacy support 75

V
vents, identifying 6, 14
video, product description 2

W
webcam
identifying 8, 9
illustrated 19, 57, 62
webcam light, identifying 8, 9
webcam/microphone cable
illustrated 20, 57, 62
removing 60, 64, 65
webcam/microphone module
removing 59, 64
Windows
Refresh 101
reinstall 101
remove everything and reinstall option 101
reset 101
Windows 8 operating system DVD 100
Windows key, identifying 13
wireless antennas
illustrated 20, 57, 62
removing 61, 66
wireless, product description 2
WLAN antennas, identifying 8, 9
WLAN module
illustrated 17
removing 37
workstation guidelines 25