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).
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## 1 Product description

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<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Name</td>
<td>HP Pavilion g7 Notebook PC</td>
</tr>
<tr>
<td>Processors</td>
<td><strong>AMD A10-4600M processor</strong> (3.2 GHz/2.3 GHz, 1600 MHz/4.0 MB L2 cache, DDR3, quad core, 35W)</td>
</tr>
<tr>
<td></td>
<td><strong>AMD A8-4500M processor</strong> (2.8 GHz/1.9 GHz, 1600 MHz/4.0 MB L2 cache, DDR3, quad core, 35W)</td>
</tr>
<tr>
<td></td>
<td><strong>AMD A6-4400M processor</strong> (3.2 GHz/2.7 GHz, 1600 MHz/1.0 MB L2 cache, DDR3, dual core, 35W)</td>
</tr>
<tr>
<td></td>
<td><strong>AMD A4-4300M processor</strong> (3.0 GHz/2.5 GHz, 1600 MHz/1.0 MB L2 cache, DDR3, dual core, 35W)</td>
</tr>
<tr>
<td>Chipset</td>
<td>AMD A70M FCH</td>
</tr>
<tr>
<td>Graphics</td>
<td><strong>Internal Graphics (UMA):</strong></td>
</tr>
<tr>
<td></td>
<td>● AMD Radeon HD 7660G graphics supporting HD decode, DX11, and HDMI for use with computer models equipped with an AMD A10-4600M processor</td>
</tr>
<tr>
<td></td>
<td>● AMD Radeon HD 7640G graphics supporting HD decode, DX11, and HDMI for use with computer models equipped with an AMD A8-4500M processor</td>
</tr>
<tr>
<td></td>
<td>● AMD Radeon HD 7520G graphics supporting HD decode, DX11, and HDMI for use with computer models equipped with an AMD A6-4400M processor</td>
</tr>
<tr>
<td></td>
<td>● AMD Radeon HD 7420G graphics supporting HD decode, DX11, and HDMI for use with computer models equipped with an AMD A4-4300M processor</td>
</tr>
<tr>
<td></td>
<td><strong>Switchable Discrete Graphics:</strong></td>
</tr>
<tr>
<td></td>
<td>● AMD Radeon HD 7670M with 1 GB of dedicated video memory (64 MB × 16 DDR3 @ 900 MHz × 8 pcs); 128 bit M2 package, supports HD Decode, DX11, HDMI, and PX5</td>
</tr>
<tr>
<td></td>
<td><strong>Dual Graphics:</strong></td>
</tr>
<tr>
<td></td>
<td>● AMD Radeon HD 7660G+HD 7670M Dual Graphics for computer models equipped with an AMD A10-4600M APU and AMD Radeon HD 7670M graphics card</td>
</tr>
<tr>
<td></td>
<td>● AMD Radeon HD 7640G+HD 7670M Dual Graphics for computer models equipped with an AMD A8-4500M APU and AMD Radeon HD 7670M graphics card</td>
</tr>
<tr>
<td></td>
<td>● AMD Radeon HD 7520G+HD 7670M Dual Graphics for computer models equipped with an AMD A6-4400M APU and AMD Radeon HD 7670M graphics card (no support for 1 DIMM memory)</td>
</tr>
<tr>
<td>Display panel</td>
<td><strong>43.9 cm</strong> (17.3 in), high-definition plus (HD+), light-emitting diode (LED), SVA BrightView (1600×900) display; typical brightness: 200 cd/m² (nits)</td>
</tr>
<tr>
<td></td>
<td>All display assemblies include two wireless local area network (WLAN) antenna cables</td>
</tr>
<tr>
<td></td>
<td>Supports 16:9 ultra-wide aspect ratio</td>
</tr>
<tr>
<td>Memory</td>
<td>Two customer-accessible/upgradable SODIMM memory module slots</td>
</tr>
<tr>
<td>Category</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Supports dual-channel memory</td>
</tr>
<tr>
<td></td>
<td>Supports up to 8 GB of system RAM</td>
</tr>
<tr>
<td></td>
<td>DDR3-1600 MHz, PC3-12800</td>
</tr>
<tr>
<td></td>
<td>Supports the following configurations:</td>
</tr>
<tr>
<td></td>
<td>- 8192 MB total system memory (4096 MB × 2), no support for 32 bit operating systems</td>
</tr>
<tr>
<td></td>
<td>- 6144 MB total system memory (4096 MB × 1 + 2048 MB × 1), no support for 32 bit operating systems</td>
</tr>
<tr>
<td></td>
<td>- 4096 MB total system memory (4096 MB × 1 or 2048 MB × 2)</td>
</tr>
<tr>
<td></td>
<td>- 2048 MB total system memory (2048 MB × 1)</td>
</tr>
<tr>
<td>Hard drives</td>
<td>Supports <strong>6.35 cm</strong> (2.5 in) hard drives in <strong>9.5 mm</strong> (.37 in) thicknesses</td>
</tr>
<tr>
<td></td>
<td>Customer-accessible</td>
</tr>
<tr>
<td></td>
<td>Serial ATA (SATA)</td>
</tr>
<tr>
<td></td>
<td>Supports HP 3D Drive Guard</td>
</tr>
<tr>
<td></td>
<td>Supports the following single hard drive configurations:</td>
</tr>
<tr>
<td></td>
<td>- 1 TB, 5400 rpm, 9.5 mm</td>
</tr>
<tr>
<td></td>
<td>- 750 GB, 7200 rpm, 9.5 mm</td>
</tr>
<tr>
<td></td>
<td>- 750 GB, 5400 rpm, 9.5 mm</td>
</tr>
<tr>
<td></td>
<td>- 640 GB, 5400 rpm, 9.5 mm</td>
</tr>
<tr>
<td></td>
<td>- 500 GB, 7200 rpm, 9.5 mm</td>
</tr>
<tr>
<td></td>
<td>- 500 GB, 5400 rpm, 9.5 mm</td>
</tr>
<tr>
<td></td>
<td>- 320 GB, 7200 rpm, 9.5 mm</td>
</tr>
<tr>
<td></td>
<td>- 320 GB, 5400 rpm, 9.5 mm</td>
</tr>
<tr>
<td>Optical drive</td>
<td>Fixed</td>
</tr>
<tr>
<td></td>
<td>SATA</td>
</tr>
<tr>
<td></td>
<td>12.7 mm tray load</td>
</tr>
<tr>
<td></td>
<td>Customer-accessible</td>
</tr>
<tr>
<td></td>
<td>Supports Blu-ray ROM DVD±R/RW Super Multi Double-Layer Drive</td>
</tr>
<tr>
<td></td>
<td>Supports DVD±RW Super Multi Double-Layer Combination Drive</td>
</tr>
<tr>
<td></td>
<td>Supports zero-power optical drive</td>
</tr>
<tr>
<td>Audio and video</td>
<td>One digital microphone</td>
</tr>
<tr>
<td></td>
<td>HD audio</td>
</tr>
<tr>
<td></td>
<td>Supports Dolby Advanced Audio v2</td>
</tr>
<tr>
<td></td>
<td>Two Altec Lansing speakers</td>
</tr>
<tr>
<td>Category</td>
<td>Description</td>
</tr>
<tr>
<td>------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Supports</strong></td>
<td>Microsoft® Premium requirements</td>
</tr>
<tr>
<td><strong>HP TrueVision</strong></td>
<td>HD camera (fixed, no tilt) with activity LED, USB 2.0, MJPEG, 1280 x 720 by 30 frames per second</td>
</tr>
<tr>
<td><strong>Ethernet</strong></td>
<td>Integrated 10/100 network interface card (NIC)</td>
</tr>
<tr>
<td><strong>Wireless</strong></td>
<td>Integrated wireless local area network (WLAN) options by way of wireless module</td>
</tr>
<tr>
<td><strong>Customer-accessible</strong></td>
<td>Two WLAN antennas built into display</td>
</tr>
<tr>
<td><strong>Support</strong></td>
<td>for the following WLAN formats:</td>
</tr>
<tr>
<td><strong>Qualcomm Atheros AR9485 802.11 b/g/n 1×1 WiFi Adapter</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Ralink RT3290LE 802.11 b/g/n 1x1 WiFi and Bluetooth 4.0 Combo Adapter</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Ralink RT5390R 802.11 b/g/n 1×1 WiFi (select models only)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>External media card</strong></td>
<td>HP Multi-Format Digital Media Reader slot with push-push technology, supporting the following digital card formats:</td>
</tr>
<tr>
<td><strong>Secure Digital (SD) Memory Card</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Secure Digital High Capacity (SDHC) Memory Card</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Secure Digital Extended Capacity (SDXC) Memory Card</strong></td>
<td></td>
</tr>
<tr>
<td><strong>MultiMediaCard (MMC)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Internal media card</strong></td>
<td>One half-size Mini Card slot for WLAN</td>
</tr>
<tr>
<td><strong>Ports</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Audio-in</strong></td>
<td>(digital microphone)</td>
</tr>
<tr>
<td><strong>Audio-out</strong></td>
<td>(stereo headphone)</td>
</tr>
<tr>
<td><strong>HDMI version 1.4</strong></td>
<td>supporting up to 1920×1200 @ 60Hz, 24 bits per pixel (bpp)</td>
</tr>
<tr>
<td><strong>HP Smart Pin AC power adapter</strong></td>
<td></td>
</tr>
<tr>
<td><strong>RJ-45</strong> (Ethernet, includes link and activity lights)</td>
<td></td>
</tr>
<tr>
<td><strong>USB 3.0</strong></td>
<td>(two ports)</td>
</tr>
<tr>
<td><strong>USB 2.0</strong></td>
<td>(one port)</td>
</tr>
<tr>
<td><strong>VGA (Dsub 15 pin)</strong></td>
<td>supporting:</td>
</tr>
<tr>
<td><strong>up to 1920×1600 external resolution @ 60Hz</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Hot plug and unplug and auto-detection for correct output to wide-aspect versus standard aspect video</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Keyboard/pointing devices</strong></td>
<td>Full-size, textured, island-style keyboard with numeric keypad</td>
</tr>
<tr>
<td><strong>TouchPad</strong></td>
<td>with two buttons:</td>
</tr>
<tr>
<td><strong>Multitouch gesture support enabled as default</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Taps enabled by default</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Supports edge-swipe gestures</strong></td>
<td></td>
</tr>
</tbody>
</table>
## Power requirements

**AC adapter:**
- 90 W RC V HP Smart AC adapter with PFC and localized cable plug support (3-wire plug with ground pin, supports 3-pin DC connector) (for computer models equipped with a graphics subsystem with switchable discrete memory only)
- 65 W RC V HP Smart AC adapter with localized cable plug support (3-wire plug with ground pin, supports 3-pin DC connector) (for computer models equipped with a graphics subsystem with UMA memory only)

## Support for the following batteries:
- 6 cell, 47 Whr, 2.20 Ah, Li-ion battery
- 6 cell, 55 Whr, 2.55 Ah, Li-ion battery (select models only)

Supports fast charge

## Security

Security cable slot

## Operating system

**Preinstalled:**
- Windows® 8 Standard 64 bit
- FreeDOS 1.0

## Serviceability

**End-user replaceable parts:**
- AC adapter
- Battery
- Hard drive
- Keyboard
- Memory modules (2)
- Optical drive
- WLAN module
2 External component identification

Finding your hardware and software information

Locating hardware

To find out what hardware is installed on your computer:

1. From the Start screen, type c, and then select Control Panel.
2. Select System and Security, and then in the System area, click Device Manager.

A list displays all the devices installed in your computer.

Locating software

To find out what software is included on your computer, from the Start screen, right-click using the mouse to display the apps, and select the All apps icon.

Display

<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>WLAN antennas (2)*</td>
<td>Send and receive wireless signals to communicate with WLAN devices.</td>
</tr>
<tr>
<td>Item</td>
<td>Component</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>(2)</td>
<td>Internal microphone</td>
<td>Records sound.</td>
</tr>
<tr>
<td>(3)</td>
<td>Webcam</td>
<td>Records video and captures still photographs. To use the webcam, from the Start screen type c, and then select CyberLink YouCam.</td>
</tr>
<tr>
<td>(4)</td>
<td>Webcam light</td>
<td>On: The webcam is in use.</td>
</tr>
</tbody>
</table>

*The antennas are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennas free from obstructions. To see wireless regulatory notices, see the section of the Regulatory, Safety, and Environmental Notices that applies to your country or region. To access this guide, select the HP Support Assistant app on the Start screen, select My computer, and then select User guides.*
### Component Description

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
</table>
| (1) Power button | - When the computer is off, press the button to turn on the computer.
  - When the computer is in the Sleep state, press the button briefly to exit Sleep.
  - When the computer is in Hibernation, press the button down briefly to exit Hibernation.  
  **CAUTION:** Pressing and holding down the power button will result in the loss of unsaved information.
  If the computer has stopped responding and Windows shutdown procedures are ineffective, press and hold the power button down for at least 5 seconds to turn off the computer.
  To learn more about your power settings:
  1. From the Start screen, type `power options`. Click Settings, and then select `Power Options` from the options displayed.
<p>| (2) Speakers (2) | Produce sound. |</p>
<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>Displays system information when pressed in combination with the esc key.</td>
</tr>
<tr>
<td>(3) Windows 8 logo key</td>
<td>Displays the Windows Start menu.</td>
</tr>
<tr>
<td>(4) Action keys</td>
<td>Execute frequently used system functions.</td>
</tr>
<tr>
<td>(5) Windows 8 applications key</td>
<td>Displays the App bar.</td>
</tr>
<tr>
<td>(6) num lock key</td>
<td>Controls the function of the integrated numeric keypad. Press the key to alternate between the standard numeric function of an external keypad (selected at the factory) and the navigational function (indicated by the arrows on the keys). <strong>NOTE:</strong> The keypad function that is active when the computer is turned off is reinstated when the computer is turned back on.</td>
</tr>
<tr>
<td>(7) Integrated numeric keypad</td>
<td>Set at the factory to function like an external numeric keypad. To alternate between this numeric function and the navigational function (indicated by the arrows on the keys), press the num lock key.</td>
</tr>
</tbody>
</table>
# Lights

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
</table>
| (1) Power light | • White: The computer is on.  
• Blinking white: The computer is in the Sleep state, which is an energy-saving mode. The computer shuts off power to the display and other unneeded components.  
• Off: The computer is off or in Hibernation. Hibernation is an energy-saving mode that uses the least amount of power. |
| (2) Caps lock light | White: Caps lock is on, which switches the keys to all capital letters. |
| (3) Mute light    | • Amber: Computer sound is off.  
• Off: Computer sound is on. |
| (4) Wireless light | • White: An integrated wireless device, such as a wireless local area network (WLAN) device and/or a Bluetooth® device, is on.  
• Amber: All wireless devices are off. |
| (5) TouchPad light | • Amber: The TouchPad is off.  
• Off: The TouchPad is on. |
# TouchPad

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>TouchPad on/off button</td>
</tr>
</tbody>
</table>
| (2) | TouchPad light | - Amber: The TouchPad is off.  
- Off: The TouchPad is on. |
| (3) | TouchPad zone | Moves the on-screen pointer and selects or activates items on the screen. The TouchPad also supports edge-swipe gestures. |
| (4) | Left TouchPad button | Functions like the left button on an external mouse. |
| (5) | Right TouchPad button | Functions like the right button on an external mouse. |
## Left side

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) <img src="image" alt="External monitor port" /></td>
<td>Connects an external VGA monitor or projector.</td>
</tr>
</tbody>
</table>
| (2) ![Vents (2)](image) | Enable airflow to cool internal components.  
**NOTE:** The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation. |
| (3) ![HDMI port](image) | Connects an optional video or audio device, such as a high-definition television, or any compatible digital or audio device. |
| (4) ![RJ-45 (network) jack](image) | Connects a network cable. |
| (5) ![USB 3.0 ports (2)](image) | Connect optional USB 3.0 compatible devices and provide enhanced USB power performance. |
| (6) ![Audio-in (microphone) jack](image) | Connects an optional computer headset microphone, stereo array microphone, or monaural microphone. |
Component Description

(7) Audio-out (headphone) jack

Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable.

**WARNING!** To reduce the risk of personal injury, adjust the volume before using headphones, earbuds, or a headset. For additional safety information, see the Regulatory, Safety and Environmental Notices.

**NOTE:** When a device is connected to a headphone jack, the computer speakers are disabled.

(8) Digital Media Slot

Supports the following digital card formats:
- SD
- SDHC
- SDXC
- MMC

---

### Right side

![Right side of the computer](image)

**Component** | **Description**
--- | ---
(1) Optical drive | Reads and writes to an optical disc.
(2) Optical drive light | 
- Green or amber: The optical drive is being accessed.
- Off: The optical drive is idle.
(3) Optical drive eject button | Releases the disc tray.
(4) Power light | 
- White: The computer is on.
- Blinking white: The computer is in the Sleep state, which is an energy-saving mode. The computer shuts off power to the display and other unneeded components.
- Off: The computer is off or in Hibernation. Hibernation is an energy-saving mode that uses the least amount of power.
<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
</table>
| (5) Hard drive light | - Blinking white: The hard drive is being accessed.  
- Amber: HP 3D DriveGuard has temporarily parked the hard drive. |
| (6) USB 2.0 port | Connects an optional USB 2.0 compatible device. |
| (7) AC adapter light | - White: The AC adapter is connected and the battery is charged.  
- Blinking white: The battery has reached a low battery level.  
- Amber: The AC adapter is connected and the battery is charging.  
- Off: The computer is using DC power. |
| (8) Power connector | Connects an AC adapter. |
| (9) 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. |
### Bottom components

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Battery bay</td>
<td>Holds the battery.</td>
</tr>
<tr>
<td>(2) Battery release latch</td>
<td>Releases the battery from the battery bay.</td>
</tr>
<tr>
<td>(3) Vents (5)</td>
<td>Enable airflow to cool internal components. <strong>NOTE:</strong> 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>(4) Service door</td>
<td>The service door provides access to the keyboard, optical drive, hard drive bay, wireless compartment and memory module compartment. <strong>CAUTION:</strong> 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 computer functionality, and then contact support through Help and Support. From the Start screen, type <code>h</code>, and then select <code>Help and Support</code>.</td>
</tr>
</tbody>
</table>
3 Illustrated parts catalog

Service label

When ordering parts or requesting information, provide the computer serial number and model description provided on the service label. The service label is located inside the battery bay. It is necessary to remove the battery to obtain these numbers. See Battery on page 33 for battery removal instructions.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Product name</td>
<td>This is the model name for the computer.</td>
</tr>
<tr>
<td>(2)</td>
<td>Serial number</td>
<td>This is an alphanumeric identifier that is unique to each product.</td>
</tr>
<tr>
<td>(3)</td>
<td>Product part number</td>
<td>This number provides specific information about the product's hardware components. The part number helps a service technician to determine what components and parts are needed.</td>
</tr>
<tr>
<td>(4)</td>
<td>Warranty period</td>
<td>This number describes the duration of the warranty period for the computer.</td>
</tr>
<tr>
<td>(5)</td>
<td>Model description (select models only)</td>
<td>This is the alphanumeric identifier needed to locate documents, drivers, and support for the computer.</td>
</tr>
</tbody>
</table>
Computer major components
<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Spare part number</th>
</tr>
</thead>
</table>
| (1)  | **43.9 cm (17.3 in), HD+, LED, SVA BrightView display assembly**: The display assembly is spared at the subcomponent level only.  

**NOTE:** For a full list of display spare parts, see Display assembly subcomponents on page 20. |
| (2)  | Keyboard, with black finish (includes keyboard cable):  
  • For use in the Adriatic Region 699146-BA1  
  • For use in Belgium 699146-A41  
  • For use in Canada 699146-D81  
  • For use in France 699146-051  
  • For use in Germany 699146-041  
  • For use in Greece 699146-151  
  • For use in Hungary 699146-211  
  • For use Internationally 699146-B31  
  • For use in the Nordic Region 699146-DH1  
  • For use in Portugal 699146-131  
  • For use in Romania 699146-271  
  • For use in Russia 699146-251  
  • For use in Spain 699146-071  
  • For use in Switzerland 699146-BG1  
  • For use in Turkey 699146-141  
  • For use in the United Kingdom 699146-031  
  • For use in the United States 699146-001 |
| (3)  | **Top cover** (includes TouchPad):  
  • Bright purple 682760-001  
  • Ruby red 682761-001  
  • Winter blue 682762-001  
  • Sparkling black 682763-001 |
| (4)  | **Power button board** (includes cable) 682751-001 |
| (5)  | **TouchPad LED board** (includes cable) 683849-001 |
| (6)  | **TouchPad button board** (includes cable) 682753-001 |
| (7)  | **Speaker Kit** (includes left and right speakers and cable) 682759-001 |
| (8)  | **System board** (includes replacement thermal material):  
  • For use only with computer models equipped with UMA video memory and Windows 8 Standard 683029-501 |
<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Platform Controller Hub (PCH) heat sink</td>
<td>683843-001</td>
</tr>
<tr>
<td>10</td>
<td>Processor (includes replacement thermal material):</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• AMD A10-4600M processor (3.2 GHz/2.3 GHz, 1600 MHz/4.0 MB L2 cache, DDR3, quad core, 35W)</td>
<td>683046-001</td>
</tr>
<tr>
<td></td>
<td>• AMD A8-4500M processor (2.8 GHz/1.9 GHz, 1600 MHz/4.0 MB L2 cache, DDR3, quad core, 35W)</td>
<td>683048-001</td>
</tr>
<tr>
<td></td>
<td>• AMD A6-4400M processor (3.2 GHz/2.7 GHz, 1600 MHz/1.0 MB L2 cache, DDR3, dual core, 35W)</td>
<td>683047-001</td>
</tr>
<tr>
<td></td>
<td>• AMD A4-4300M processor (3.0 GHz/2.5 GHz, 1600 MHz/1.0 MB L2 cache, DDR3, dual core, 35W)</td>
<td>685990-001</td>
</tr>
<tr>
<td>11</td>
<td>RTC battery</td>
<td>637193-001</td>
</tr>
<tr>
<td>12</td>
<td>Fan and heat sink (includes replacement thermal material):</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Heat sink for use only with computer models equipped with switchable discrete video memory</td>
<td>683028-001</td>
</tr>
<tr>
<td></td>
<td>• Heat sink for use only with computer models equipped with UMA video memory</td>
<td>683027-001</td>
</tr>
<tr>
<td></td>
<td>• Fan</td>
<td>680551-001</td>
</tr>
<tr>
<td>13</td>
<td>Power connector</td>
<td>682744-001</td>
</tr>
<tr>
<td>14</td>
<td>USB board (includes cable)</td>
<td>682752-001</td>
</tr>
<tr>
<td>15</td>
<td>Optical drive cable (includes optical drive connector)</td>
<td>682742-001</td>
</tr>
<tr>
<td>16</td>
<td>Battery:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 6 cell, 47 Whr, 2.20 Ah, Li-ion battery</td>
<td>593553-001</td>
</tr>
<tr>
<td></td>
<td>• 6 cell, 55 Whr, 2.55 Ah, Li-ion battery (select models only)</td>
<td>593554-001</td>
</tr>
<tr>
<td>17</td>
<td>Base enclosure</td>
<td>708037-001</td>
</tr>
<tr>
<td></td>
<td>Rubber Feet Kit (not illustrated, includes four rubber feet)</td>
<td>680563-001</td>
</tr>
<tr>
<td>18</td>
<td>Hard drive (9.5 mm (0.37 in) × 6.35 cm (2.50 in) SATA, does not include hard drive bumpers, bracket, or cable):</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 1 TB, 5400 rpm</td>
<td>676521-001</td>
</tr>
<tr>
<td></td>
<td>• 750 GB, 7200 rpm</td>
<td>633252-001</td>
</tr>
<tr>
<td></td>
<td>• 750 GB, 5400 rpm</td>
<td>634250-001</td>
</tr>
<tr>
<td></td>
<td>• 640 GB, 5400 rpm</td>
<td>669300-001</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></td>
<td>• 500 GB, 7200 rpm</td>
<td>634925-001</td>
</tr>
<tr>
<td></td>
<td>• 500 GB, 5400 rpm</td>
<td>669299-001</td>
</tr>
<tr>
<td></td>
<td>• 320 GB, 7200 rpm</td>
<td>641672-001</td>
</tr>
<tr>
<td></td>
<td>• 320 GB, 5400 rpm</td>
<td>622643-001</td>
</tr>
<tr>
<td></td>
<td><strong>Hard Drive Hardware Kit</strong>, not illustrated (includes hard drive bracket and bracket screws, cable, and two bumpers)</td>
<td>682745-001</td>
</tr>
<tr>
<td>(19)</td>
<td><strong>Memory modules</strong> (two, DDR3-1600 MHz, PC3-12800):</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 4 GB</td>
<td>641369-001</td>
</tr>
<tr>
<td></td>
<td>• 2 GB</td>
<td>652972-001</td>
</tr>
<tr>
<td>(20)</td>
<td><strong>WLAN module:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Qualcomm Atheros AR9485 802.11 b/g/n 1×1 WiFi Adapter</td>
<td>675794-001</td>
</tr>
<tr>
<td></td>
<td>• Ralink RT3290LE 802.11 b/g/n 1×1 WiFi and Bluetooth 4.0 Combo Adapter</td>
<td>690020-001</td>
</tr>
<tr>
<td></td>
<td>• Ralink RT5390R 802.11 b/g/n 1×1 WiFi (select models only)</td>
<td>691415-001</td>
</tr>
<tr>
<td>(21)</td>
<td><strong>Optical drive</strong> (includes bezel and bracket):</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Blu-ray ROM DVD±R/RW Super Multi Double-Layer Drive</td>
<td>682750-001</td>
</tr>
<tr>
<td></td>
<td>• DVDs±RW Super Multi Double-Layer Combination Drive</td>
<td>682749-001</td>
</tr>
<tr>
<td>(22)</td>
<td><strong>Service door</strong> (includes one captive screw) — available in the Plastics Kit</td>
<td>682754-001</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>Display bezel</td>
<td>682741-001</td>
</tr>
<tr>
<td>(2)</td>
<td>Webcam/microphone module HD</td>
<td>703461-001</td>
</tr>
<tr>
<td>(3)</td>
<td>Display Hinge Kit (includes left and right display hinges and brackets)</td>
<td>682746-001</td>
</tr>
<tr>
<td>(4)</td>
<td>43.9 cm (17.3 in), HD+, LED, SVA BrightView display panel</td>
<td>682755-001</td>
</tr>
<tr>
<td>(5)</td>
<td>Antenna Kit (includes left and right wireless antenna cables and transceivers)</td>
<td>682735-001</td>
</tr>
<tr>
<td>(6)</td>
<td>Display Panel Cable Kit (includes display panel cable and webcam/microphone module cable)</td>
<td>682743-001</td>
</tr>
<tr>
<td>(7)</td>
<td>Display hinge covers (2)</td>
<td>682747-001</td>
</tr>
<tr>
<td>(8)</td>
<td>Display enclosure:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Bright purple</td>
<td>682736-001</td>
</tr>
<tr>
<td></td>
<td>● Ruby red</td>
<td>682737-001</td>
</tr>
<tr>
<td></td>
<td>● Winter blue</td>
<td>682738-001</td>
</tr>
<tr>
<td></td>
<td>● Sparkling black</td>
<td>682739-001</td>
</tr>
<tr>
<td></td>
<td><strong>Display Screw Kit</strong> (not illustrated)</td>
<td>682758-001</td>
</tr>
</tbody>
</table>
## 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>Optical drive</strong> <em>(includes bezel and bracket):</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Blu-ray ROM DVD±R/RW Super Multi Double-Layer Drive</td>
<td>682750-001</td>
</tr>
<tr>
<td></td>
<td>● DVD±RW Super Multi Double-Layer Combination Drive</td>
<td>682749-001</td>
</tr>
<tr>
<td>(2)</td>
<td><strong>Hard drive</strong> <em>(9.5 mm (0.37 in) × 6.35 cm (2.50 in) SATA, does not include hard drive bumpers, bracket, or cable):</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td>● 1 TB, 5400 rpm</td>
<td>676521-001</td>
</tr>
<tr>
<td></td>
<td>● 750 GB, 7200 rpm</td>
<td>633252-001</td>
</tr>
<tr>
<td></td>
<td>● 750 GB, 5400 rpm</td>
<td>634250-001</td>
</tr>
<tr>
<td></td>
<td>● 640 GB, 5400 rpm</td>
<td>669300-001</td>
</tr>
<tr>
<td></td>
<td>● 500 GB, 7200 rpm</td>
<td>634925-001</td>
</tr>
<tr>
<td></td>
<td>● 500 GB, 5400 rpm</td>
<td>669299-001</td>
</tr>
<tr>
<td></td>
<td>● 320 GB, 7200 rpm</td>
<td>641672-001</td>
</tr>
<tr>
<td></td>
<td>● 320 GB, 5400 rpm</td>
<td>622643-001</td>
</tr>
<tr>
<td></td>
<td><strong>Hard Drive Hardware Kit</strong>, <em>(not illustrated) includes:</em></td>
<td>682745-001</td>
</tr>
<tr>
<td></td>
<td>● Hard drive bumpers (2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Hard drive bracket and screws</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Hard drive cable</td>
<td></td>
</tr>
</tbody>
</table>
## Miscellaneous parts

<table>
<thead>
<tr>
<th>Component</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HP Smart AC adapter:</strong></td>
<td></td>
</tr>
<tr>
<td>• 90 W RC V HP Smart AC adapter with Power Factor Correction (PFC) (for computer models equipped with a graphics subsystem with switchable discrete memory only)</td>
<td>693712-001</td>
</tr>
<tr>
<td>• 65 W RC V HP Smart AC adapter (for computer models equipped with a graphics subsystem with UMA memory only)</td>
<td>693711-001</td>
</tr>
<tr>
<td><strong>Power cord</strong> (3-pin, black, 1.83 m):</td>
<td></td>
</tr>
<tr>
<td>• For use in Denmark</td>
<td>490371-081</td>
</tr>
<tr>
<td>• For use in Europe</td>
<td>490371-021</td>
</tr>
<tr>
<td>• For use in Israel</td>
<td>490371-881</td>
</tr>
<tr>
<td>• For use in North America</td>
<td>490371-001</td>
</tr>
<tr>
<td>• For use in Switzerland</td>
<td>490371-111</td>
</tr>
<tr>
<td>• For use in the United Kingdom and Singapore</td>
<td>490371-031</td>
</tr>
<tr>
<td><strong>Screw Kit</strong></td>
<td>682757-001</td>
</tr>
<tr>
<td><strong>Thermal Material Kit</strong></td>
<td>680571-001</td>
</tr>
</tbody>
</table>

## Sequential part number listing

<table>
<thead>
<tr>
<th>Spare part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>490371-001</td>
<td>Power cord for use in North America (black, 3-pin, 1.83 m)</td>
</tr>
<tr>
<td>490371-021</td>
<td>Power cord for use in Europe (black, 3-pin, 1.83 m)</td>
</tr>
<tr>
<td>490371-031</td>
<td>Power cord for use in the United Kingdom and Singapore (black, 3-pin, 1.83 m)</td>
</tr>
<tr>
<td>490371-081</td>
<td>Power cord for use in Denmark (black, 3-pin, 1.83 m)</td>
</tr>
<tr>
<td>490371-111</td>
<td>Power cord for use in Switzerland (black, 3-pin, 1.83 m)</td>
</tr>
<tr>
<td>490371-BB1</td>
<td>Power cord for use in Israel (black, 3-pin, 1.83 m)</td>
</tr>
<tr>
<td>593553-001</td>
<td>6 cell, 47 Whr, 2.20 Ah, Li-ion battery</td>
</tr>
<tr>
<td>593554-001</td>
<td>6 cell, 55 Whr, 2.55 Ah, Li-ion battery (select models only)</td>
</tr>
<tr>
<td>622643-001</td>
<td>320 GB, 5400 rpm hard drive (9.5 mm (0.37 in) × 6.35 cm (2.50 in) SATA, does not include hard drive bumpers, bracket, or cable)</td>
</tr>
<tr>
<td>633252-001</td>
<td>750 GB, 7200 rpm hard drive (9.5 mm (0.37 in) × 6.35 cm (2.50 in) SATA, does not include hard drive bumpers, bracket, or cable)</td>
</tr>
<tr>
<td>634250-001</td>
<td>750 GB, 5400 rpm hard drive (9.5 mm (0.37 in) × 6.35 cm (2.50 in) SATA, does not include hard drive bumpers, bracket, or cable)</td>
</tr>
<tr>
<td>Spare part number</td>
<td>Description</td>
</tr>
<tr>
<td>------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>634925-001</td>
<td>500 GB, 7200 rpm hard drive (9.5 mm (0.37 in) × 6.35 cm (2.50 in) SATA, does not include hard drive bumpers, bracket, or cable)</td>
</tr>
<tr>
<td>637193-001</td>
<td>RTC battery</td>
</tr>
<tr>
<td>641369-001</td>
<td>4 GB memory module (DDR3-1600 MHz, PC3-12800)</td>
</tr>
<tr>
<td>641672-001</td>
<td>320 GB, 7200 rpm hard drive (9.5 mm (0.37 in) × 6.35 cm (2.50 in) SATA, does not include hard drive bumpers, bracket, or cable)</td>
</tr>
<tr>
<td>652972-001</td>
<td>2 GB memory module (DDR3-1600 MHz, PC3-12800)</td>
</tr>
<tr>
<td>669299-001</td>
<td>500 GB, 5400 rpm hard drive (9.5 mm (0.37 in) × 6.35 cm (2.50 in) SATA, does not include hard drive bumpers, bracket, or cable)</td>
</tr>
<tr>
<td>669300-001</td>
<td>640 GB, 5400 rpm hard drive (9.5 mm (0.37 in) × 6.35 cm (2.50 in) SATA, does not include hard drive bumpers, bracket, or cable)</td>
</tr>
<tr>
<td>675794-001</td>
<td>Qualcomm Atheros AR9485 802.11 b/g/n 1×1 WiFi Adapter</td>
</tr>
<tr>
<td>676521-001</td>
<td>1 TB, 5400 rpm hard drive (9.5 mm (0.37 in) × 6.35 cm (2.50 in) SATA, does not include hard drive bumpers, bracket, or cable)</td>
</tr>
<tr>
<td>680551-001</td>
<td>Fan</td>
</tr>
<tr>
<td>680563-001</td>
<td>Rubber Feet Kit (includes four rubber feet)</td>
</tr>
<tr>
<td>680571-001</td>
<td>Thermal Material Kit (includes replacement thermal paste and pads)</td>
</tr>
<tr>
<td>682735-001</td>
<td>Antenna Kit (includes left and right wireless antenna cables and transceivers)</td>
</tr>
<tr>
<td>682736-001</td>
<td>Display enclosure, bright purple</td>
</tr>
<tr>
<td>682737-001</td>
<td>Display enclosure, ruby red</td>
</tr>
<tr>
<td>682738-001</td>
<td>Display enclosure, winter blue</td>
</tr>
<tr>
<td>682739-001</td>
<td>Display enclosure, sparkling black</td>
</tr>
<tr>
<td>682741-001</td>
<td>Display bezel</td>
</tr>
<tr>
<td>682742-001</td>
<td>Optical drive cable (includes optical drive connector)</td>
</tr>
<tr>
<td>682743-001</td>
<td>Display Panel Cable Kit (includes display panel cable and webcam/microphone module cable)</td>
</tr>
<tr>
<td>682744-001</td>
<td>Power connector</td>
</tr>
<tr>
<td>682745-001</td>
<td>Hard Drive Hardware Kit (includes hard drive bracket and bracket screws, cable, and two bumpers)</td>
</tr>
<tr>
<td>682746-001</td>
<td>Display Hinge Kit (includes left and right display hinges and brackets)</td>
</tr>
<tr>
<td>682747-001</td>
<td>Display hinge covers (2)</td>
</tr>
<tr>
<td>682749-001</td>
<td>DVD±RW Super Multi Double-Layer Combination Drive (includes bezel and bracket)</td>
</tr>
<tr>
<td>682750-001</td>
<td>Blu-ray ROM DVD±R/RW Super Multi Double-Layer Drive (includes bezel and bracket)</td>
</tr>
<tr>
<td>682751-001</td>
<td>Power button board (includes cable)</td>
</tr>
<tr>
<td>682752-001</td>
<td>USB board (includes cable)</td>
</tr>
<tr>
<td>682753-001</td>
<td>TouchPad button board (includes cable)</td>
</tr>
<tr>
<td>Spare part number</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>682754-001</td>
<td>Plastics Kit (includes service door)</td>
</tr>
<tr>
<td>682755-001</td>
<td>43.9 cm (17.3 in), HD+, LED, SVA BrightView display panel</td>
</tr>
<tr>
<td>682757-001</td>
<td>Screw Kit</td>
</tr>
<tr>
<td>682758-001</td>
<td>Display Screw Kit</td>
</tr>
<tr>
<td>682759-001</td>
<td>Speaker Kit (includes left and right speakers and cable)</td>
</tr>
<tr>
<td>682760-001</td>
<td>Top cover, bright purple (includes TouchPad)</td>
</tr>
<tr>
<td>682761-001</td>
<td>Top cover, ruby red (includes TouchPad)</td>
</tr>
<tr>
<td>682762-001</td>
<td>Top cover, winter blue (includes TouchPad)</td>
</tr>
<tr>
<td>682763-001</td>
<td>Top cover, sparkling black (includes TouchPad)</td>
</tr>
<tr>
<td>683027-001</td>
<td>Heat sink for use only with computer models equipped with UMA video memory</td>
</tr>
<tr>
<td>683028-001</td>
<td>Heat sink for use only with computer models equipped with switchable discrete video memory</td>
</tr>
<tr>
<td>683029-001</td>
<td>System board for use only with computer models equipped with UMA video memory and FreeDOS 1.0 (includes replacement thermal material)</td>
</tr>
<tr>
<td>683029-501</td>
<td>System board for use only with computer models equipped with UMA video memory and Windows 8 Standard (includes replacement thermal material)</td>
</tr>
<tr>
<td>683030-001</td>
<td>System board for use only with computer models equipped with a graphics subsystem with 1 GB of dedicated switchable discrete video memory and FreeDOS 1.0 (includes replacement thermal material)</td>
</tr>
<tr>
<td>683030-501</td>
<td>System board for use only with computer models equipped with a graphics subsystem with 1 GB of dedicated switchable discrete video memory and Windows 8 Standard (includes replacement thermal material)</td>
</tr>
<tr>
<td>683046-001</td>
<td>AMD A10-4600M processor (3.2 GHz/2.3 GHz, 1600 MHz/4.0 MB L2 cache, DDR3, quad core, 35W)</td>
</tr>
<tr>
<td>683047-001</td>
<td>AMD A6-4400M processor (3.2 GHz/2.7 GHz, 1600 MHz/1.0 MB L2 cache, DDR3, dual core, 35W)</td>
</tr>
<tr>
<td>683048-001</td>
<td>AMD A8-4500M processor (2.8 GHz/1.9 GHz, 1600 MHz/4.0 MB L2 cache, DDR3, quad core, 35W)</td>
</tr>
<tr>
<td>683843-001</td>
<td>PCH heat sink</td>
</tr>
<tr>
<td>683849-001</td>
<td>TouchPad LED board (includes cable)</td>
</tr>
<tr>
<td>685990-001</td>
<td>AMD A4-4300M processor (3.0 GHz/2.5 GHz, 1600 MHz/1.0 MB L2 cache, DDR3, dual core, 35W)</td>
</tr>
<tr>
<td>690020-001</td>
<td>Ralink RT3290LE 802.11 b/g/n 1x1 WiFi and Bluetooth 4.0 Combo Adapter</td>
</tr>
<tr>
<td>691415-001</td>
<td>Ralink RT5390R 802.11 b/g/n 1x1 WiFi Adapter (select models only)</td>
</tr>
<tr>
<td>693711-001</td>
<td>65 W HP Smart AC adapter (for computer models equipped with a graphics subsystem with UMA memory only)</td>
</tr>
<tr>
<td>693712-001</td>
<td>90 W HP Smart AC adapter with Power Factor Correction (PFC) (for computer models equipped with a graphics subsystem with switchable discrete memory only)</td>
</tr>
<tr>
<td>Spare part number</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>699146-001</td>
<td>Keyboard with black finish for use in the United States (includes cable)</td>
</tr>
<tr>
<td>699146-031</td>
<td>Keyboard with black finish for use in the United Kingdom (includes cable)</td>
</tr>
<tr>
<td>699146-041</td>
<td>Keyboard with black finish for use in Germany (includes cable)</td>
</tr>
<tr>
<td>699146-051</td>
<td>Keyboard with black finish for use in France (includes cable)</td>
</tr>
<tr>
<td>699146-071</td>
<td>Keyboard with black finish for use in Spain (includes cable)</td>
</tr>
<tr>
<td>699146-131</td>
<td>Keyboard with black finish for use in Portugal (includes cable)</td>
</tr>
<tr>
<td>699146-141</td>
<td>Keyboard with black finish for use in Turkey (includes cable)</td>
</tr>
<tr>
<td>699146-151</td>
<td>Keyboard with black finish for use in Greece (includes cable)</td>
</tr>
<tr>
<td>699146-211</td>
<td>Keyboard with black finish for use in Hungary (includes cable)</td>
</tr>
<tr>
<td>699146-251</td>
<td>Keyboard with black finish for use in Russia (includes cable)</td>
</tr>
<tr>
<td>699146-271</td>
<td>Keyboard with black finish for use in Romania (includes cable)</td>
</tr>
<tr>
<td>699146-A41</td>
<td>Keyboard with black finish for use in Belgium (includes cable)</td>
</tr>
<tr>
<td>699146-B31</td>
<td>Keyboard with black finish for use Internationally (includes cable)</td>
</tr>
<tr>
<td>699146-BA1</td>
<td>Keyboard with black finish for use in the Adriatic Region (includes cable)</td>
</tr>
<tr>
<td>699146-BG1</td>
<td>Keyboard with black finish for use in Switzerland (includes cable)</td>
</tr>
<tr>
<td>699146-DB1</td>
<td>Keyboard with black finish for use in Canada (includes cable)</td>
</tr>
<tr>
<td>699146-DH1</td>
<td>Keyboard with black finish for use in the Nordic Region (includes cable)</td>
</tr>
<tr>
<td>703461-001</td>
<td>Webcam/microphone module HD</td>
</tr>
<tr>
<td>708037-001</td>
<td>Base enclosure</td>
</tr>
</tbody>
</table>
4 Removal and replacement procedures

Preliminary replacement 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.

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>10%</th>
<th>40%</th>
<th>55%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking across carpet</td>
<td>35,000 V</td>
<td>15,000 V</td>
<td>7,500 V</td>
</tr>
<tr>
<td>Walking across vinyl floor</td>
<td>12,000 V</td>
<td>5,000 V</td>
<td>3,000 V</td>
</tr>
<tr>
<td>Motions of bench worker</td>
<td>6,000 V</td>
<td>800 V</td>
<td>400 V</td>
</tr>
<tr>
<td>Removing DIPS from plastic tube</td>
<td>2,000 V</td>
<td>700 V</td>
<td>400 V</td>
</tr>
<tr>
<td>Removing DIPS from vinyl tray</td>
<td>11,500 V</td>
<td>4,000 V</td>
<td>2,000 V</td>
</tr>
<tr>
<td>Removing DIPS from Styrofoam</td>
<td>14,500 V</td>
<td>5,000 V</td>
<td>3,500 V</td>
</tr>
<tr>
<td>Removing bubble pack from PCB</td>
<td>26,500 V</td>
<td>20,000 V</td>
<td>7,000 V</td>
</tr>
<tr>
<td>Packing PCBs in foam-lined box</td>
<td>21,000 V</td>
<td>11,000 V</td>
<td>5,000 V</td>
</tr>
</tbody>
</table>
Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

Workstation guidelines

Follow these grounding workstation guidelines:

- Cover the workstation with approved static-shielding material.
- Use a wrist strap connected to a properly grounded work surface and use properly grounded tools and equipment.
- Use conductive field service tools, such as cutters, screwdrivers, and vacuums.
- When fixtures must directly contact dissipative surfaces, use fixtures made only of static-safe materials.
- Keep the work area free of nonconductive materials, such as ordinary plastic assembly aids and 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>
Component replacement procedures

This chapter provides removal and replacement procedures.

**IMPORTANT:** There may be as many as 67 screws that must be removed, replaced, or loosened when servicing the computer. Make special note of each screw and screw lock size and location during removal and replacement.

Service label

When ordering parts or requesting information, provide the computer serial number and model number provided on the service label. The service label is located inside the battery bay. It is necessary to remove the battery to obtain these numbers. See Battery on page 33 for battery removal instructions.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Product name</td>
<td>The name affixed to the front of the computer.</td>
</tr>
<tr>
<td>(2)</td>
<td>Serial number</td>
<td>This is an alphanumeric identifier that is unique to each product.</td>
</tr>
<tr>
<td>(3)</td>
<td>Product part number</td>
<td>This number provides specific information about the product’s hardware components. The part number helps a service technician to determine what components and parts are needed.</td>
</tr>
<tr>
<td>(4)</td>
<td>Warranty period</td>
<td>This number describes the duration of the warranty period for the computer.</td>
</tr>
<tr>
<td>(5)</td>
<td>Model description (select models only)</td>
<td>This is the alphanumeric identifier needed to locate documents, drivers, and support for the computer.</td>
</tr>
</tbody>
</table>
Computer feet

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rubber Feet Kit</td>
<td>680563-001</td>
</tr>
</tbody>
</table>

The computer feet are adhesive-backed rubber pads. There are four rubber feet that attach to the base enclosure in the locations illustrated below.
Battery

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 cell, 55 Whr, 2.55 Ah, Li-ion battery (select models only)</td>
<td>593554-001</td>
</tr>
<tr>
<td>6 cell, 47 Whr, 2.20 Ah, Li-ion battery</td>
<td>593553-001</td>
</tr>
</tbody>
</table>

Before disassembling the computer, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

Remove the battery:

1. Slide the battery release latch (1) to release the battery.
2. Pivot the front edge of the battery (2) up and back.
3. Remove the battery (3) from the computer.

To insert the battery:

1. Align the tabs on the rear edge of the battery (1) with the notches on the rear edge of the battery bay.
2. Pivot the front edge of the battery (2) down into the battery bay until it is fully seated. (The battery release latch will automatically lock into place.)
Service door

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plastics Kit (contains the service door)</td>
<td>682754-001</td>
</tr>
</tbody>
</table>

Before removing the service door, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 33).

Remove the service door:

1. Using a small Phillips screwdriver, loosen the service door screw (1).
2. Slide the service door (2) forward slightly and lift the front right corner (3) to tilt the service door.
3. Remove the service door (4) at an angle.

Reverse this procedure to replace the service door.
Optical drive

NOTE: The optical drive spare part kit includes a bezel and bracket.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blu-ray ROM DVD±R/RW Super Multi Double-Layer Drive</td>
<td>682750-001</td>
</tr>
<tr>
<td>DVD±RW and CD-RW Super Multi Double-Layer Combination Drive</td>
<td>682749-001</td>
</tr>
</tbody>
</table>

Before removing the optical drive, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 33).
5. Remove the service door (see Service door on page 34).

Remove the optical drive:

1. Using a small Phillips screwdriver, remove the Phillips M2.5 x 6.5 screw (1) that secures the optical drive to the computer.
2. Insert a screwdriver or other narrow tool through the release access hole (2) in the bottom of the computer. Push the rear of the optical drive until it is released.
3. Pull the optical drive \((3)\) out from the front until the optical drive is completely removed from the computer.

4. Remove the two Phillips M2.0 x 3.0 screws \((1)\) that secure the optical drive bracket to the optical drive and then remove the bracket \((2)\) from the optical drive.
5. Insert a straightened paper clip into the release access opening (1) in the bezel.
6. Press the release tab (2) and remove the bezel from the tab side (3).
7. Remove the bezel (4) from the optical drive.

Reverse this procedure to reassemble and install the optical drive.
Hard drive

NOTE: The hard drive spare part kit does not include the hard drive cable, hard drive bumpers, or hard drive bracket and screws.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.5 mm (0.37 in) × 6.35 cm (2.50 in) SATA</td>
<td></td>
</tr>
<tr>
<td>1 TB, 5400 rpm</td>
<td>676521-001</td>
</tr>
<tr>
<td>750 GB, 7200 rpm</td>
<td>633252-001</td>
</tr>
<tr>
<td>750 GB, 5400 rpm</td>
<td>634250-001</td>
</tr>
<tr>
<td>640 GB, 5400 rpm</td>
<td>669300-001</td>
</tr>
<tr>
<td>500 GB, 7200 rpm</td>
<td>634925-001</td>
</tr>
<tr>
<td>500 GB, 5400 rpm</td>
<td>669299-001</td>
</tr>
<tr>
<td>320 GB, 7200 rpm</td>
<td>641672-001</td>
</tr>
<tr>
<td>320 GB, 5400 rpm</td>
<td>622643-001</td>
</tr>
<tr>
<td><strong>Hard Drive Hardware Kit</strong> (includes hard drive cable, hard drive bumpers, and hard drive bracket and screws)</td>
<td>682745-001</td>
</tr>
</tbody>
</table>

Before removing the hard drive, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see **Battery on page 33**).
5. Remove the service door (see **Service door on page 34**).

Remove the hard drive:

1. Disconnect the hard drive cable (1) from the computer.
2. Lift the hard drive at an angle (2), and then remove the hard drive (3).

3. Disconnect the hard drive cable (1). Remove the front bumper (2) and back bumper (3).

4. Remove the four Phillips M3.0×3.5 screws (4), and then remove the bracket (5) from the hard drive.

To install a hard drive, reverse the removal procedure.
Memory module

⚠️ **WARNING!** To reduce the risk of electric shock and damage to the equipment, unplug the power cord and remove all batteries before installing a memory module.

⚠️ **CAUTION:** Electrostatic discharge (ESD) can damage electronic components. Before beginning any procedure, ensure that you are discharged of static electricity by touching a grounded metal object.

⚠️ **NOTE:** To use a dual-channel configuration with a second memory module, be sure that both memory modules are identical.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 GB (DDR3-1600 MHz, PC3-12800)</td>
<td>641369-001</td>
</tr>
<tr>
<td>2 GB (DDR3-1600 MHz, PC3-12800)</td>
<td>652972-001</td>
</tr>
</tbody>
</table>

Before removing a memory module, follow these steps:

⚠️ **CAUTION:** To prevent information loss or an unresponsive system, shut down the computer before adding or replacing memory modules. Do not remove a memory module while the computer is on or in the Sleep state.

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see *Battery on page 33*).
5. Remove the service door (see *Service door on page 34*).

To add or replace a memory module:

1. Spread the retention clips (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.

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

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

3. Align the notched edge (1) of the memory module with the tab in the memory module slot.

4. With the memory module at a 45-degree angle from the surface of the memory module compartment, press the module into the memory module slot (2) until it is fully seated.
5. Gently press the memory module (3) down, applying pressure to both the left and right edges of the module, until the retention clips snap into place.

6. Replace the service door.
7. Replace the battery.
8. Turn the computer right-side up, and then reconnect external power and external devices.
9. Turn on the computer.
## WLAN module

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualcomm Atheros AR9485 802.11 b/g/n 1×1 WiFi Adapter</td>
<td>675794-001</td>
</tr>
<tr>
<td>Ralink RT3290LE 802.11 b/g/n 1×1 WiFi and Bluetooth 4.0 Combo Adapter</td>
<td>690020-001</td>
</tr>
<tr>
<td>Ralink RT5390R 802.11 b/g/n 1×1 WiFi Adapter (select models only)</td>
<td>691415-001</td>
</tr>
</tbody>
</table>

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

Before removing the WLAN module, follow these steps:

1. Shut down the computer.
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 33).
5. Remove the service door (see Service door on page 34).

Remove the WLAN module:

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

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

2. Remove the Phillips M2.5×2.5 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:** The WLAN module is designed with a notch to prevent incorrect installation into the WLAN module socket.

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

Reverse this procedure to install the WLAN module.
Keyboard

**NOTE:** The keyboard spare part kit includes a keyboard cable.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keyboard with black finish for use in the Adriatic Region</td>
<td>699146-BA1</td>
</tr>
<tr>
<td>Keyboard with black finish for use in Belgium</td>
<td>699146-A41</td>
</tr>
<tr>
<td>Keyboard with black finish for use in Canada</td>
<td>699146-DB1</td>
</tr>
<tr>
<td>Keyboard with black finish for use in France</td>
<td>699146-051</td>
</tr>
<tr>
<td>Keyboard with black finish for use in Germany</td>
<td>699146-041</td>
</tr>
<tr>
<td>Keyboard with black finish for use in Greece</td>
<td>699146-151</td>
</tr>
<tr>
<td>Keyboard with black finish for use in Hungary</td>
<td>699146-211</td>
</tr>
<tr>
<td>Keyboard with black finish for use Internationally</td>
<td>699146-B31</td>
</tr>
<tr>
<td>Keyboard with black finish for use in the Nordic Region</td>
<td>699146-DH1</td>
</tr>
<tr>
<td>Keyboard with black finish for use in Portugal</td>
<td>699146-131</td>
</tr>
<tr>
<td>Keyboard with black finish for use in Romania</td>
<td>699146-271</td>
</tr>
<tr>
<td>Keyboard with black finish for use in Russia</td>
<td>699146-251</td>
</tr>
<tr>
<td>Keyboard with black finish for use in Spain</td>
<td>699146-071</td>
</tr>
<tr>
<td>Keyboard with black finish for use in Switzerland</td>
<td>699146-BG1</td>
</tr>
<tr>
<td>Keyboard with black finish for use in Turkey</td>
<td>699146-141</td>
</tr>
<tr>
<td>Keyboard with black finish for use in the United Kingdom</td>
<td>699146-031</td>
</tr>
<tr>
<td>Keyboard with black finish for use in the United States</td>
<td>699146-001</td>
</tr>
</tbody>
</table>

Before removing the keyboard, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 33).
5. Remove the service door (see Service door on page 34).
6. Remove the hard drive (see Hard drive on page 38).
Remove the keyboard:

1. Remove the Phillips M2.5×6.5 screw that secures the keyboard to the computer.

2. Turn the computer right-side up with the front toward you and open the display.

3. Stand the computer on its left side.

4. Insert a thin non-conducting tool into one of the two keyboard release holes, and then press on the back of the keyboard until the keyboard disengages from the computer.

   **NOTE:** The keyboard icon ![keyboard icon] indicates the point to apply pressure.

5. Turn the computer right-side up with the front toward you.
6. Lift the rear edge (1) of the keyboard, and then move the keyboard (2) toward the display panel.

7. Tilt the keyboard forward (1) onto the palm rest. Release the zero insertion force (ZIF) connector (2) to which the keyboard cable is attached, and then disconnect the keyboard cable (3) from the system board.

8. Remove the keyboard.

Reverse this procedure to install the keyboard.
**Top cover**

**NOTE:** The top cover spare part kit includes the TouchPad.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bright purple</td>
<td>682760-001</td>
</tr>
<tr>
<td>Ruby red</td>
<td>682761-001</td>
</tr>
<tr>
<td>Winter blue</td>
<td>682762-001</td>
</tr>
<tr>
<td>Sparkling black</td>
<td>682763-001</td>
</tr>
</tbody>
</table>

Before removing the top cover, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 33](#)).
5. Remove the service door (see [Service door on page 34](#)).
6. Remove the optical drive (see [Optical drive on page 35](#)).
7. Remove the hard drive (see [Hard drive on page 38](#)).
8. Remove the keyboard (see [Keyboard on page 45](#)).

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

- Power button board and cable (see [Power button board on page 52](#)).
- TouchPad button board and cable (see [TouchPad button board on page 54](#)).
- TouchPad LED board and cable (see [TouchPad LED board on page 55](#)).
- Speakers and cable (see [Speakers on page 51](#)).
Remove the top cover:

1. Disconnect these cables from the system board:
   - (1) Power button board ZIF cable
   - (2) Speaker cable
   - (3) TouchPad button board ZIF cable

2. Remove the three Phillips M2.5 x 6.5 screws under the keyboard:

3. Close the computer.

4. Turn the computer upside down, with the front toward you.
5. Remove the 15 Phillips M2.5 x 7.0 screws that secure the top cover to the computer.

6. Turn the computer right-side up, with the front toward you.

7. Open the computer.

8. Lift the left edge of the top cover (1) until the left side disengages from the base enclosure.

9. Remove the top cover (2) at an angle.

Reverse this procedure to install the top cover.
## Speakers

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speaker Kit (includes left and right speakers and cable)</td>
<td>682759-001</td>
</tr>
</tbody>
</table>

Before removing the speakers, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 33).
5. Remove the service door (see Service door on page 34).
6. Remove the optical drive (see Optical drive on page 35).
7. Remove the hard drive (see Hard drive on page 38).
8. Remove the keyboard (see Keyboard on page 45).
9. Remove the top cover (see Top cover on page 48).

Remove the speakers:

1. Release the speaker clips holding the left speaker into the top cover (1).
2. Rotate and lift the left speaker (2), and then remove the speaker cable from the routing clips built into the top cover.
3. Remove the Phillips M2.5 x 3 screw (3) from the right speaker.

**NOTE:** This screw also secures the power button board to the top cover.
4. Lift the speakers (4) to remove them from the top cover.

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>682751-001</td>
</tr>
</tbody>
</table>

Before removing the power button board, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 33).
5. Remove the service door (see Service door on page 34).
6. Remove the optical drive (see Optical drive on page 35).
7. Remove the hard drive (see Hard drive on page 38).
8. Remove the keyboard (see Keyboard on page 45).
9. Remove the top cover (see Top cover on page 48).
10. Remove the speakers (see Speakers on page 51).

Remove the power button board:

1. Turn the top cover upside down, with the front toward you.
2. Remove the power button board and cable.

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

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 33).
5. Remove the service door (see Service door on page 34).
6. Remove the optical drive (see Optical drive on page 35).
7. Remove the hard drive (see Hard drive on page 38).
8. Remove the keyboard (see Keyboard on page 45).
9. Remove the top cover (see Top cover on page 48).

Remove the TouchPad button board and cable:

1. Turn the top cover upside down, with the front toward you.
2. Release the ZIF connector to which the TouchPad button board cable is connected, and then disconnect the TouchPad button board cable (1) from the back of the TouchPad.
3. Lift the front edge of the TouchPad button board (2) until it is released from the clips built into the top cover.
4. Lift the TouchPad button board (3) slightly to perform the next step.
5. Carefully invert the TouchPad button board (1).

6. Release the ZIF connector to which the TouchPad LED board cable is connected, and then disconnect the TouchPad LED board cable (2) from the TouchPad button board.

7. Lift the TouchPad button board away from the top cover (3).

Reverse this procedure to install the TouchPad button board and cable.

**TouchPad LED board**

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>TouchPad LED board (includes cable)</td>
<td>683849-001</td>
</tr>
</tbody>
</table>

Before removing the TouchPad LED board, follow these steps:

1. Shut down the computer.

2. Disconnect all external devices connected to the computer.

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

4. Remove the battery (see [Battery on page 33](#)).

5. Remove the service door (see [Service door on page 34](#)).

6. Remove the optical drive (see [Optical drive on page 35](#)).

7. Remove the hard drive (see [Hard drive on page 38](#)).

8. Remove the keyboard (see [Keyboard on page 45](#)).

9. Remove the top cover (see [Top cover on page 48](#)).

10. Remove the TouchPad button board (see [TouchPad button board on page 54](#)).
Remove the TouchPad LED board and cable:

1. Turn the top cover upside down, with the front toward you.
2. Apply slight pressure to the retaining clips (1) of the top cover.
3. Lift the TouchPad LED board on the right front corner (2) up and away from the top cover.

4. Remove the TouchPad LED board and cable.

Reverse this procedure to install the TouchPad LED board and cable.
## Display assembly

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>43.9 cm (17.3 in), HD+, LED, SVA BrightView display panel</strong></td>
<td>682755-001</td>
</tr>
<tr>
<td><strong>Antenna Kit</strong> (includes left and right wireless antenna cables and transceivers)</td>
<td>682735-001</td>
</tr>
<tr>
<td><strong>Display bezel</strong></td>
<td>682741-001</td>
</tr>
<tr>
<td><strong>Display enclosure:</strong></td>
<td></td>
</tr>
<tr>
<td>• Bright purple</td>
<td>682736-001</td>
</tr>
<tr>
<td>• Ruby red</td>
<td>682737-001</td>
</tr>
<tr>
<td>• Winter blue</td>
<td>682738-001</td>
</tr>
<tr>
<td>• Sparkling black</td>
<td>682739-001</td>
</tr>
<tr>
<td><strong>Display hinge covers (2)</strong></td>
<td>682747-001</td>
</tr>
<tr>
<td><strong>Display Hinge Kit</strong> (includes left and right display hinges and brackets)</td>
<td>682746-001</td>
</tr>
<tr>
<td><strong>Display Panel Cable Kit</strong> (includes display panel cable and webcam/microphone module cable)</td>
<td>682743-001</td>
</tr>
<tr>
<td><strong>Display Screw Kit</strong></td>
<td>682758-001</td>
</tr>
<tr>
<td><strong>Webcam/microphone module HD</strong></td>
<td>703461-001</td>
</tr>
</tbody>
</table>

Before removing the display assembly, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 33](#)).
5. Remove the service door (see [Service door on page 34](#)).
6. Remove the optical drive (see [Optical drive on page 35](#)).
7. Remove the hard drive (see [Hard drive on page 38](#)).
8. Remove the keyboard (see [Keyboard on page 45](#)).
9. Remove the top cover (see [Top cover on page 48](#)).

Remove the display assembly:

1. Disconnect the display panel cable (1) from the system board.
2. Release the wireless antenna cables (2) from the clips and the opening in the base enclosure.

**NOTE:** It may be necessary to release the USB board ZIF cable to remove the wireless antenna cables.

**CAUTION:** Support the display assembly when removing the following screws. Failure to support the display assembly can result in damage to the display and other computer components.

3. Remove the four Phillips M2.5 × 6.5 screws (1) that secure the display assembly to the computer.

4. Remove the display assembly by lifting straight up (2).
5. If it is necessary to replace the display bezel or any of the display assembly subcomponents:
   a. Remove the plastic screw covers (1) and the two Phillips M2.5 × 3.5 screws (2) that secure
      the display bezel to the display assembly.
   b. Flex the inside edges of the top edge (1), the left and right sides (2), and the bottom
      edge (3) of the display bezel until the bezel disengages from the display enclosure.
   c. Remove the display bezel (4).

6. If it is necessary to replace the webcam/microphone module:
   a. Detach and release the webcam/microphone module (1) as far as the webcam/microphone
      module cable allows. (The webcam/microphone module is attached to the display enclosure
      with double-sided tape.)
b. Disconnect the webcam/microphone cable (2) from the webcam/microphone module.

c. Remove the webcam/microphone module.

7. If it is necessary to replace the hinge covers:
   a. The hinge covers are held in place by the same screws as the previously removed bezel.
   b. Using a small tool to pry, remove the hinge covers.
8. If it is necessary to replace the display panel:
   a. Remove the four bottom Phillips M2.5 × 3.5 screws and the two top Phillips M2.5 × 2.5 screws that secure the display panel to the display enclosure.

   b. Lift the top edge of the display enclosure, (1) and then swing it up and forward until it is perpendicular to the display panel.
c. Release the adhesive strip (2) that secures the display panel cable to the display panel, and then disconnect the display panel cable (3) from the display panel.

d. Remove the display panel.

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

a. Remove the four Phillips M2.0 × 3.0 screws (1) that secure the display hinges to the display panel.

b. Remove the display hinges (2).
10. If it is necessary to replace the display panel cable:
   
   a. Release the adhesive and tabs (1) on the display enclosure shielding that secure the display panel cable to the display enclosure.
   
   b. Release the display panel cable from the clips and remove the display panel cable (2). The display panel cable includes the webcam/microphone module cable and is available in the Display Panel Cable Kit.

11. If it is necessary to replace the wireless antenna cables and transceivers:
   
   a. Release the wireless antenna cables from the clips (1) built into the display enclosure.
   
   b. Release the wireless antenna transceivers (2) from the display enclosure. (The wireless antenna transceivers are attached to the display enclosure with double-sided tape.)
c. Remove the wireless antenna cables and transceivers.

Reverse this procedure to reassemble and install the display assembly.

### Optical drive cable

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optical drive cable (includes optical drive connector)</td>
<td>682742-001</td>
</tr>
</tbody>
</table>

Before removing the optical drive cable, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 33).
5. Remove the service door (see Service door on page 34).
6. Remove the optical drive (see Optical drive on page 35).
7. Remove the hard drive (see Hard drive on page 38).
8. Remove the keyboard (see Keyboard on page 45).
9. Remove the top cover (see Top cover on page 48).

Remove the optical drive cable:

1. Disconnect the optical drive cable (1) from the system board.
2. Release the optical drive cable (2) from the clips built into the base enclosure.
3. Release the optical drive connector from the base enclosure by prying the clips (3) that secure the optical drive connector to the base enclosure.

4. Remove the optical drive cable from the base enclosure (4).

Reverse this procedure to install the optical drive cable.
USB board

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>USB board (includes cable)</td>
<td>682752-001</td>
</tr>
</tbody>
</table>

Before removing the USB board, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 33).
5. Remove the service door (see Service door on page 34).
6. Remove the optical drive (see Optical drive on page 35).
7. Remove the hard drive (see Hard drive on page 38).
8. Remove the keyboard (see Keyboard on page 45).
9. Remove the top cover (see Top cover on page 48).

Remove the USB board:

1. If not released already, release the ZIF connector (1) to which the USB board cable is connected, and then disconnect the USB board cable from the system board.
2. Pry the clip (2) that secures the USB board to the base enclosure.
3. Remove the USB board and cable by lifting straight up (3).
Reverse this procedure to install the USB board.

## Power connector

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power connector (includes cable)</td>
<td>682744-001</td>
</tr>
</tbody>
</table>

Before removing the power connector, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 33).
5. Remove the service door (see Service door on page 34).
6. Remove the optical drive (see Optical drive on page 35).
7. Remove the hard drive (see Hard drive on page 38).
8. Remove the keyboard (see Keyboard on page 45).
9. Remove the top cover (see Top cover on page 48).

Remove the power connector:

1. Disconnect the power connector cable (1) from the system board.
2. Remove the power connector from the base enclosure (2).

Reverse this procedure to install the power connector.
**System board**

**NOTE:**  The system board Thermal Material Kit, part number 680571-001, includes replacement thermal paste and pads.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>For use only with computer models equipped with UMA video memory and Windows 8 Standard</td>
<td>683029-501</td>
</tr>
<tr>
<td>For use only with computer models equipped with UMA video memory and FreeDOS 1.0</td>
<td>683029-001</td>
</tr>
<tr>
<td>For use only with computer models equipped with 1 GB of dedicated switchable discrete video memory and Windows 8 Standard</td>
<td>683030-501</td>
</tr>
<tr>
<td>For use only with computer models equipped with 1 GB of dedicated switchable discrete video memory and FreeDOS 1.0</td>
<td>683030-001</td>
</tr>
</tbody>
</table>

Before removing the system board, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 33).
5. Remove the service door (see Service door on page 34).
6. Remove the optical drive (see Optical drive on page 35).
7. Remove the hard drive (see Hard drive on page 38).
8. Remove the keyboard (see Keyboard on page 45).
9. Remove the top cover (see Top cover on page 48).

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 module (see Memory module on page 40)
- RTC battery (see RTC battery on page 70)
- Fan and heat sink (see Fan and heat sink on page 72)
- PCH heat sink (see PCH heat sink on page 75)
- Processor (see Processor on page 76)
Remove the system board:

1. Disconnect the following cables from the system board:
   (1) Display panel cable
   (2) Optical drive cable
   (3) USB board cable
   (4) Power connector cable

2. Remove the Phillips M2.5 x 4.5 screw (1) that secures the system board to the base enclosure.

3. Lift the right side of the system board (2) until it rests at an angle.

4. Remove the system board (3) by sliding it up and to the right at an angle.

Reverse this procedure to install the system board.
RTC battery

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTC battery</td>
<td>637193-001</td>
</tr>
</tbody>
</table>

Before removing the RTC battery, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 33).
5. Remove the service door (see Service door on page 34).
6. Remove the optical drive (see Optical drive on page 35).
7. Remove the hard drive (see Hard drive on page 38).
8. Remove the keyboard (see Keyboard on page 45).
9. Remove the top cover (see Top cover on page 48).
10. Remove the system board (see System board on page 68).

Remove the RTC battery:

1. Turn the system board upside down, with the front toward you.
2. Disconnect the RTC battery cable (1) from the system board.
3. Remove the RTC battery (2) from the system board. (The RTC battery is attached to the system board with double-sided tape.)
Reverse this procedure to install the RTC battery.
**Fan and heat sink**

*NOTE:* The fan and heat sink spare part kits include replacement thermal material.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat sink for use only with computer models equipped with switchable discrete video memory</td>
<td>683028-001</td>
</tr>
<tr>
<td>Heat sink for use only with computer models equipped with UMA video memory</td>
<td>683027-001</td>
</tr>
<tr>
<td>Fan</td>
<td>680551-001</td>
</tr>
</tbody>
</table>

*NOTE:* To properly ventilate the computer, allow at least 7.6 cm (3 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 and heat sink, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery](#) on page 33).
5. Remove the service door (see [Service door](#) on page 34).
6. Remove the optical drive (see [Optical drive](#) on page 35).
7. Remove the hard drive (see [Hard drive](#) on page 38).
8. Remove the keyboard (see [Keyboard](#) on page 45).
9. Remove the top cover (see [Top cover](#) on page 48).
10. Remove the system board (see [System board](#) on page 68).

Remove the fan and heat sink:

1. Turn the system board upside down, with the front toward you.
2. Disconnect the fan cable (1) from the system board.

⚠️ **CAUTION:** To prevent damage to heat sinks and/or processors, loosen/tighten captive screws in sequence as numerically labeled.

*NOTE:* The heat sink and fan appearance and the number of screws may be different from the heat sink and fan pictured.
3. Loosen the four captive screws (2) and the three captive screws (3) that secure the heat sink to the system board.

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

4. Remove the fan and heat sink (4).

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

- Thermal paste is used on the processor (1) and the heat sink section (2) that services it
- A thermal pad is used on the graphics subsystem chip (3) and the heat sink section (4) that services it (only on computer models equipped with a graphics subsystem with switchable discrete memory)
1. If it is necessary to replace the fan, turn the fan and heat sink upside down with the fan toward you.

2. Remove the two Phillips M1.5 × 2.5 screws (1) that secure the fan to the heat sink.

3. Disengage the two clips that secure the fan to the heat sink and remove the heat sink (2) from the fan.

Reverse this procedure to reassemble and install the fan and heat sink.
### PCH heat sink

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCH heat sink</td>
<td>683843-001</td>
</tr>
</tbody>
</table>

Before removing the PCH heat sink, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 33](#)).
5. Remove the service door (see [Service door on page 34](#)).
6. Remove the optical drive (see [Optical drive on page 35](#)).
7. Remove the hard drive (see [Hard drive on page 38](#)).
8. Remove the keyboard (see [Keyboard on page 45](#)).
9. Remove the top cover (see [Top cover on page 48](#)).
10. Remove the system board (see [System board on page 68](#)).

Remove the PCH heat sink:

1. Remove the two Phillips M2.0 x 3.0 screws (1) that secure the PCH heat sink to the system board.
2. Remove the PCH heat sink by lifting straight up (2).

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

Reverse this procedure to install the PCH heat sink.

### Processor

**NOTE:** The processor spare part kit includes replacement thermal material.

<table>
<thead>
<tr>
<th>Description</th>
<th>Spare part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMD A10-4600M processor (3.2 GHz/2.3 GHz, 1600 MHz/4.0 MB L2 cache, DDR3, quad core, 35W)</td>
<td>683046-001</td>
</tr>
<tr>
<td>AMD A8-4500M processor (2.8 GHz/1.9 GHz, 1600 MHz/4.0 MB L2 cache, DDR3, quad core, 35W)</td>
<td>683048-001</td>
</tr>
<tr>
<td>AMD A6-4400M processor (3.2 GHz/2.7 GHz, 1600 MHz/1.0 MB L2 cache, DDR3, dual core, 35W)</td>
<td>683047-001</td>
</tr>
<tr>
<td>AMD A4-4300M processor (3.0 GHz/2.5 GHz, 1600 MHz/1.0 MB L2 cache, DDR3, dual core, 35W)</td>
<td>685990-001</td>
</tr>
</tbody>
</table>

Before removing the processor, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

4. Remove the battery (see Battery on page 33).

5. Remove the service door (see Service door on page 34).

6. Remove the optical drive (see Optical drive on page 35).

7. Remove the hard drive (see Hard drive on page 38).

8. Remove the keyboard (see Keyboard on page 45).

9. Remove the top cover (see Top cover on page 48).

10. Remove the system board (see System board on page 68).

11. Remove the heat sink (see Fan and heat sink on page 72).

Remove the processor:

1. Use a flat-bladed screw driver (1) to turn the processor locking screw one-half turn counterclockwise, until you hear a click.

2. Lift the processor (2) straight up, and remove it.

**NOTE:** The gold triangle on the processor (3) must be aligned with the triangle icon embossed on the processor socket when you install the processor.

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

**Starting Setup Utility (BIOS)**

To start Setup Utility (BIOS), turn on or restart the computer, quickly press esc, and then press f10.

Information about how to navigate in Setup Utility (BIOS) is located at the bottom of the screen.

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

**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 revealed by pressing fn + esc (if you are already in Windows) or by using Setup Utility (BIOS).

1. Start Setup Utility (BIOS) (see Starting Setup Utility (BIOS) on page 78).
2. Use the arrow keys to select Main.
3. To exit Setup Utility (BIOS) without saving your changes, use the arrow keys to select Exit, select Exit Discarding Changes, 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 from the computer by unplugging the power cord from the AC outlet.

Do not shut down the computer or initiate Sleep.

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

1. From the Start screen, select the **HP Support Assistant** app.
2. Click **Updates and tune-ups**, and then click **Check for HP updates now**.
3. Follow the on-screen instructions.
4. At the download area, follow these steps:
   a. Identify the most recent BIOS update and compare it to the BIOS version currently installed on your computer. If the update is more recent than your BIOS, 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 revealed on the screen after the download is complete. If no instructions are revealed, follow these steps:

   1. From the Start screen, type `e`, and then select **File Explorer**.
   2. Click your hard drive designation. The hard drive designation is typically Local Disk (C:).
   3. Using the hard drive path you recorded earlier, open the folder 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 System Diagnostics

System Diagnostics allows you to run diagnostic tests to determine if the computer hardware is functioning properly.

To start System Diagnostics:

1. Turn on or restart the computer, quickly press `esc`, and then 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 diagnostic test while it is running, press `esc`. 
## 6 Specifications

### Computer specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Metric</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width</td>
<td>41.2 cm</td>
<td>16.23 in</td>
</tr>
<tr>
<td>Depth</td>
<td>26.77 cm</td>
<td>10.5 in</td>
</tr>
<tr>
<td>Height (front to back)</td>
<td>3.11 cm to 3.68 cm</td>
<td>1.23 in to 1.45 in</td>
</tr>
<tr>
<td><strong>Weight:</strong></td>
<td>2.98 kg</td>
<td>6.57 lbs</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 V dc @ 4.74 A or 19.5 V dc @ 4.62 A – 90 W</td>
<td></td>
</tr>
<tr>
<td><strong>Temperature</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating (writing to optical disc)</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></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 (14.7 to 10.1 psia)</td>
<td>-15 m to 3,048 m</td>
<td>-50 ft to 10,000 ft</td>
</tr>
<tr>
<td>Nonoperating (14.7 to 4.4 psia)</td>
<td>-15 m to 12,192 m</td>
<td>-50 ft to 40,000 ft</td>
</tr>
<tr>
<td><strong>Shock</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating</td>
<td>125 g, 2 ms, half-sine</td>
<td></td>
</tr>
<tr>
<td>Nonoperating</td>
<td>200 g, 2 ms, half-sine</td>
<td></td>
</tr>
<tr>
<td><strong>Random vibration</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating</td>
<td>0.75 g zero-to-peak, 10 Hz to 500 Hz, 0.25 oct/min sweep rate</td>
<td></td>
</tr>
<tr>
<td>Nonoperating</td>
<td>1.50 g zero-to-peak, 10 Hz to 500 Hz, 0.5 oct/min sweep rate</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** Applicable product safety standards specify thermal limits for plastic surfaces. The computer operates well within this range of temperatures.
43.9 cm (17.3 in) display specifications

<table>
<thead>
<tr>
<th>Metric</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions</strong></td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td>23.3 cm</td>
</tr>
<tr>
<td>Width</td>
<td>39.9 cm</td>
</tr>
<tr>
<td>Diagonal</td>
<td>43.9 cm</td>
</tr>
<tr>
<td><strong>Number of colors</strong></td>
<td>262 K (6 bit)</td>
</tr>
<tr>
<td><strong>Contrast ratio</strong></td>
<td>500:1 (typical)</td>
</tr>
<tr>
<td><strong>Brightness</strong></td>
<td>200 cd/m² (nits), (typical)</td>
</tr>
<tr>
<td><strong>Backlight</strong></td>
<td>LED</td>
</tr>
<tr>
<td><strong>Total power consumption</strong> (varies by display)</td>
<td>5.3 W (max)</td>
</tr>
<tr>
<td><strong>Viewing angle</strong></td>
<td>±45° horizontal, +15° up &amp; -35° down vertical (typical)</td>
</tr>
</tbody>
</table>

Hard drive specifications

<table>
<thead>
<tr>
<th>1 TB*</th>
<th>750 GB*</th>
<th>640 GB*</th>
<th>500 GB*</th>
<th>320 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>9.5 mm</td>
</tr>
<tr>
<td>Width</td>
<td>70 mm</td>
<td>70 mm</td>
<td>70 mm</td>
<td>70 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>107 g max</td>
<td>107 g max</td>
<td>107 g max</td>
<td>107 g max</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>300 MB/sec</td>
<td>300 MB/sec</td>
<td>300 MB/sec</td>
<td>300 MB/sec</td>
</tr>
<tr>
<td><strong>Security</strong></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>1.5 ms</td>
<td>1.0 ms</td>
<td>1.0 ms</td>
<td>1.5 ms</td>
</tr>
<tr>
<td>Average</td>
<td>11.0 ms</td>
<td>14.0 ms</td>
<td>14.0 ms</td>
<td>12.0 ms</td>
</tr>
<tr>
<td>Maximum</td>
<td>22.0 ms</td>
<td>24.0 ms</td>
<td>22.0 ms</td>
<td>22.0 ms</td>
</tr>
<tr>
<td><strong>Logical blocks</strong></td>
<td>1,953,525,168</td>
<td>1,465,128,359</td>
<td>1,250,242,867</td>
<td>976,752,240</td>
</tr>
<tr>
<td><strong>Disk rotational speed</strong></td>
<td>5400 rpm</td>
<td>7200 rpm and 5400 rpm</td>
<td>5400 rpm</td>
<td>7200 rpm and 5400 rpm</td>
</tr>
<tr>
<td><strong>Operating temperature</strong></td>
<td>5°C to 55°C (41°F to 131°F)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1 TB* 750 GB* 640 GB* 500 GB* 320 GB*

*Size refers to hard drive storage capacity. Actual accessible capacity is less. Actual drive specifications may differ slightly.

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

## DVD±RW SuperMulti Double-Layer Combination Drive specifications

### Applicable disc


### Random access time

| DVD | < 230 ms |
| CD | < 175 ms |

### Cache buffer

2 MB

### Data transfer rate

| 24X CD-ROM | 3,600 KB/sec |
| 8X DVD-ROM | 10,800 KB/sec |
| 24X CD-R | 3,600 KB/sec |
| 16X CD-RW | 2,400 KB/sec |
| 8X DVD+R | 10,800 KB/sec |
| 4X DVD+RW | 5,400 KB/sec |
| 8X DVD-R | 10,800 KB/sec |
| 4X DVD-RW | 5,400 KB/sec |
| 2.4X DVD+(R)(9) | 2,700 KB/sec |
| 5X DVD-RAM | 6,750 KB/sec |

### Transfer mode

Multiword DMA Mode
# BD ROM DVD±R/RW Super Multi Double-Layer Drive specifications

## Applicable disc

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Write</td>
<td>DVD-RAM (Ver.2), DVD+R, DVD-R, CD-R, and CD-ROM</td>
</tr>
</tbody>
</table>

## Random access time

<table>
<thead>
<tr>
<th>Disc</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>BD</td>
<td>&lt; 230 ms</td>
</tr>
<tr>
<td>DVD</td>
<td>&lt; 180 ms</td>
</tr>
<tr>
<td>CD</td>
<td>&lt; 180 ms</td>
</tr>
</tbody>
</table>

## Cache buffer

- 4.5 MB

## Data transfer rate

<table>
<thead>
<tr>
<th>Transfer mode</th>
<th>24X CD-ROM</th>
<th>8X DVD-ROM</th>
<th>4X BD</th>
<th>24X CD-R</th>
<th>16X CD-RW</th>
<th>8X DVD+R</th>
<th>4X DVD+RW</th>
<th>8X DVD-R</th>
<th>4X DVD-RW</th>
<th>2.4X DVD+R(9)</th>
<th>5X DVD-RAM</th>
<th>1X BD-ROM</th>
<th>1X BD-R read</th>
<th>1X BD-RE read</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate</td>
<td>3,600 KB/sec</td>
<td>10,800 KB/sec</td>
<td>18,000 KB/sec</td>
<td>3,600 KB/sec</td>
<td>2,400 KB/sec</td>
<td>10,800 KB/sec</td>
<td>5,400 KB/sec</td>
<td>10,800 KB/sec</td>
<td>5,400 KB/sec</td>
<td>2,700 KB/sec</td>
<td>6,750 KB/sec</td>
<td>4,500 KB/sec</td>
<td>4,500 KB/sec</td>
<td>4,500 KB/sec</td>
</tr>
</tbody>
</table>

## Transfer mode

- Multiword DMA Mode
7 Backing up, restoring, and recovering (Windows 8)

Your computer includes tools provided by HP and the operating system to help you safeguard your information and retrieve it if you ever need to. These tools will help you return your computer to a proper working state or even back to the original factory state, all with simple steps.

This chapter provides information about the following processes:

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

NOTE: This guide describes an overview of backing up, restoring and recovering options. For more details about the tools provided, see Help and Support. From the Start screen, type h, and then select Help and Support.

Creating recovery media and backups

Recovery after a system failure is only as good as your most recent backup.

1. After you successfully set up the computer, create HP Recovery media. 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.

   HP Recovery media you create will provide the following recovery options:
   - System Recovery—Reinstalls the original operating system and the programs that were installed at the factory.
   - Minimized Image Recovery—Reinstalls the operating system and all hardware-related drivers and software, but not other software applications.
   - Factory Reset—Restores the computer to its original factory state by deleting all information from the hard drive and re-creating the partitions. Then it reinstalls the operating system and the software that was installed at the factory.

   See Creating HP Recovery media on page 86.

2. As you add hardware and software programs, create system restore points. A system restore point is a snapshot of certain hard drive contents saved by Windows System Restore at a specific time. A system restore point contains information that Windows uses, such as registry settings. Windows creates a system restore point for you automatically during a Windows update and during other system maintenance (such as a software update, security scanning, or system diagnostics). You can also manually create a system restore point at any time. For more information and steps for creating specific system restore points, see Help and Support. From the Start screen, type h, and then select Help and Support.

3. As you add photos, video, music, and other personal files, create a backup of your personal information. Windows File History can be set to regularly and automatically back up files from...
libraries, desktop, contacts, and favorites. If files are accidentally deleted from the hard drive and they can no longer be restored from the Recycle Bin, or if files become corrupted, you can restore the files that you backed up using File History. Restoring files is also useful if you ever choose to reset the computer by reinstalling Windows or choose to recover using HP Recovery Manager.

**NOTE:** File History is not enabled by default, so you must turn it on. For more information and steps for enabling Windows File History, see Help and Support. From the Start screen, type `h`, and then select **Help and Support**.

### Creating HP Recovery media

HP Recovery Manager is a software program that offers a way 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 the software programs installed at the factory, and then configures the settings for the programs. HP Recovery media can also be used to customize the system or aid in the replacement of a hard drive.

- Only one set of HP 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 blank USB flash drive or the number of blank DVD discs 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, or you can obtain recovery discs for your computer from the HP website. For U.S. support, go to [http://www.hp.com/go/contactHP](http://www.hp.com/go/contactHP). For worldwide support, go to [http://welcome.hp.com/country/us/en/wwcontact_us.html](http://welcome.hp.com/country/us/en/wwcontact_us.html). 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.

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

- The creation process can take up to 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, and the remaining discs will be burned.

To create HP Recovery media:

1. From the Start screen, type `recovery`, and then select **HP Recovery Manager**.

2. Select **Recovery Media Creation**, and then follow the on-screen instructions.

If you ever need to recover the system, see **Recovering using HP Recovery Manager on page 89**.
Restore and recovery

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

- If you need to restore your personal files and data, you can use Windows File History to restore your information from the backups you created. For more information and steps for using File History, see Help and Support. From the Start screen, type `h`, and then select Help and Support.

- If you need to correct a problem with a preinstalled application or driver, use the Drivers and Applications Reinstall option of HP Recovery Manager to reinstall the individual application or driver. From the Start screen, type `recovery`, select HP Recovery Manager, select Drivers and Applications Reinstall, and then follow the on-screen instructions.

- If you want to restore the system to a previous state without losing any personal information, Windows System Restore is an option. System Restore allows you to restore without the requirements of Windows Refresh or a reinstallation. Windows creates system restore points automatically during a Windows update and other system maintenance events. Even if you did not manually create a restore point, you can choose to restore to a previous point, automatically created. For more information and steps for using Windows System Restore, see Help and Support. From the Start screen, type `h`, and then select Help and Support.

- If you want a quick and easy way to recover the system without losing your personal information, settings, or apps that came preinstalled on your computer or were purchased from the Windows Store, consider using Windows Refresh. This option does not require backing up data to another drive. See Using Windows Refresh for quick and easy recovery on page 88.

- If you want to reset your computer to its original state, Windows provides an easy way to remove all personal data, apps, and settings, and reinstall Windows. For more information, see Remove everything and reinstall Windows on page 88.

- If you want to reset your computer using a minimized image, you can choose the HP Minimized Image Recovery option from the HP Recovery partition (select models only) or HP Recovery media. Minimized Image Recovery installs only drivers and hardware-enabling applications. Other applications included in the image continue to be available for installation through the Drivers and Applications Reinstall option in HP Recovery Manager. For more information, see Recovering using HP Recovery Manager on page 89.

- If you want to recover the computer’s original factory partitioning and content, you can choose the System Recovery option from the HP Recovery media. For more information, see Recovering using HP Recovery Manager on page 89.

- If you have replaced the hard drive, you can use the Factory Reset option of HP Recovery media to restore the factory image to the replacement drive. For more information, see Recovering using HP Recovery Manager on page 89.

- If you wish to remove the recovery partition to reclaim hard drive space, HP Recovery Manager offers the Remove Recovery Partition option. For more information, see Removing the HP Recovery partition on page 90.
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 Help and Support for instructions on reinstalling traditional applications. From the Start screen, type \texttt{h}, and then select \texttt{Help and Support}.

NOTE: You may be prompted for your permission or password when using Refresh. See Help and Support for more information. From the Start screen, type \texttt{h}, and then select \texttt{Help and Support}.

To start Refresh:

1. From the Start screen, point to the upper-right or lower-right corner of the screen to reveal the charms.
2. Click \texttt{Settings}.
3. Click \texttt{Change PC settings} in the bottom-right corner of the screen, and then select \texttt{General} from the PC settings screen.
4. Under \texttt{Refresh your PC without affecting your files}, select \texttt{Get started}, and then 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 reinstalls 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 \texttt{f11} key or from the Start screen.

To use the \texttt{f11} key:

1. Press \texttt{f11} while the computer boots.
   - or -
   Press and hold \texttt{f11} as you press the power button.
2. Select \texttt{Troubleshoot} from the boot options menu.
3. Select \texttt{Reset your PC}, and then follow the on-screen instructions.

To use the Start screen:

1. From the Start screen, point to the upper-right or lower-right corner of the screen to reveal the charms.
2. Click \texttt{Settings}.
3. Click **Change PC settings** in the bottom-right corner of the screen, and then select **General** from the PC settings screen.


**Recovering using HP Recovery Manager**

HP Recovery Manager software allows you to recover the computer to its original factory state. Using the HP Recovery media you created, you can choose from one of the following recovery options:

- **System Recovery**—Reinstalls the original operating system, and then configures the settings for the programs that were installed at the factory.
- **Minimized Image Recovery**—Reinstalls the operating system and all hardware-related drivers and software, but not other software applications.
- **Factory Reset**—Restores the computer to its original factory state by deleting all information from the hard drive and re-creating the partitions. Then it reinstalls the operating system and the software that was installed at the factory.

The HP Recovery partition (select models only) allows Minimized Image Recovery.

**What you need to know**

- 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.
- Recovery through HP Recovery Manager should be used as a final attempt to correct computer issues.
- HP Recovery media must be used if the computer hard drive fails.
- To use the Factory Reset or System Recovery options, you must use HP Recovery media.

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

**Using the HP Recovery partition to recover a minimized image (select models only)**

The HP Recovery partition (select models only) allows you to perform a minimized image recovery without the need for recovery discs or a recovery USB flash drive. This type of recovery can only be used if the hard drive is still working.
To start HP Recovery Manager from the HP Recovery partition:

1. Press f11 while the computer boots.
   – or –
   Press and hold f11 as you press the power button.
2. Select Troubleshoot from the boot options menu.
3. Select HP Recovery Manager, and 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 first HP Recovery disc you created into the optical drive on your computer or into an optional external optical drive, and then restart the computer.
   – or –
   Insert the HP Recovery USB flash drive you created into a USB port on your computer, 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 90.

3. Follow the on-screen instructions.

Changing the computer boot order

If 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 for an optical drive or a USB flash drive.

To change the boot order:

1. Insert the HP Recovery media you created.
2. Restart the computer.
3. Press and hold esc while the computer is restarting, and then press f9 for boot options.
4. Select the optical drive or USB flash drive you want to boot from.
5. Follow the on-screen instructions.

Removing the HP Recovery partition

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

**IMPORTANT:** Removing the HP Recovery partition means you can no longer use Windows Refresh, the Windows Remove everything and reinstall Windows option, or the HP Recovery Manager option for minimized image recovery. Create HP Recovery media before removing the Recovery partition to ensure you have recovery options; see Creating HP Recovery media on page 86.
Follow these steps to remove the HP Recovery partition:

1. From the Start screen, type `recovery`, and then select **HP Recovery Manager**.
2. Select **Remove Recovery Partition**, and then follow the on-screen instructions.
8 Power cord set requirements

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

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

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

Requirements for all countries

The following requirements are applicable to all countries and regions:

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

<table>
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1. The flexible cord must be Type H05VV-F, 3-conductor, 0.75 mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.

2. The flexible cord must be Type SVT/SJT or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V ac) or NEMA 6-15P (15 A, 250 V ac) configuration. CSA or C-UL mark. UL file number must be on each element.

3. The appliance coupler, flexible cord, and wall plug must bear a “T” mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCTF, 3-conductor, 0.75 mm² or 1.25 mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V ac) configuration.

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

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

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

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

When a battery has reached the end of its useful life, do not dispose of the battery in general household waste. Follow the local laws and regulations in your area for battery disposal. HP encourages customers to recycle used electronic hardware, HP original print cartridges, and rechargeable batteries.

For more information about recycling programs, see the HP website at www.hp.com/recycle.
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