



HP Pavilion x360 Convertible
HP x360 310 G2

Maintenance and Service Guide
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Product notice

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

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

Software terms

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

For any further information or to request a full refund of the computer, please contact your local point of sale (the seller).

Safety warning notice


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

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1 Product description

| Category | Description | x360 Convertible | x360 310 |
|--|--|------------------|----------|
| Product Name | HP Pavilion x360 Convertible | √ | |
| | HP x360 310 G2 | | √ |
| Processor | Intel Braswell processors | √ | √ |
| | Intel Pentium N3700 processor (1.6 GHz, turbo up to 2.4 GHz, 2 MB L2, 1600 MHz), quad core | | |
| | Intel Celeron N3050 processor (1.6 GHz, turbo up to 2.16 GHz, 2 MB L2, 1600 MHz), dual core | | |
| | Intel Broadwell processor | √ | |
| | Intel® Core™ M-5Y10c processor (0.8 GHz, turbo up to 2.0 GHz, 4 MB L3, 1600 MHz), dual core | | |
| | Intel Skylake processor | √ | |
| | Intel Core M3-6Y30 (0.9GHz, turbo up to 2.2 GHz, 4MB L3 cache, 1600MHz), dual core | | |
| Chipset | Integrated SoC PCH | √ | √ |
| Graphics | Internal graphics: | √ | √ |
| | Intel HD Graphics (Intel Pentium and Celeron processors) | | |
| | Support for HD decode, HDMI, and DX11.1 | | |
| | Intel HD Graphics 5300 (Intel Core™ processors) | √ | |
| Panel | 11.6-in [29.5-cm] (1366×768), high-definition (HD), white light emitting diode (WLED), IPS/UVVA, eDP, AntiGlare, 16:9 ultra-wide aspect ratio; typical brightness: 220 nits; slim (3.0-mm) | √ | √ |
| | Touch solution with flush glass, multitouch enable | | |
| | Supports low-voltage differential signaling (LVDS) (co-layout with eDP1.3) | | |
| | 11.6-in [29.5-cm] (1366×768), high-definition (HD), white light emitting diode (WLED), SVA, AntiGlare, 16:9 ultra-wide aspect ratio; typical brightness: 220 nits; flat (3.6-mm) | √ | |
| Memory | On-board system memory | √ | |
| | DDR3L-1600 dual channel support | | |
| | Supports up to 8 GB onboard system memory | | |
| | On-board system memory + one SODIMM slot (not customer accessible) (only for models with Intel Pentium and Celeron processors) | | |
| | DDR3L-1600 single channel support | | |
| | Supports up to 2 GB maximum on-board system memory | | |
| | Supports up to 8 GB maximum system memory | | |
| One SODIMM slot (not customer accessible) | | | √ |

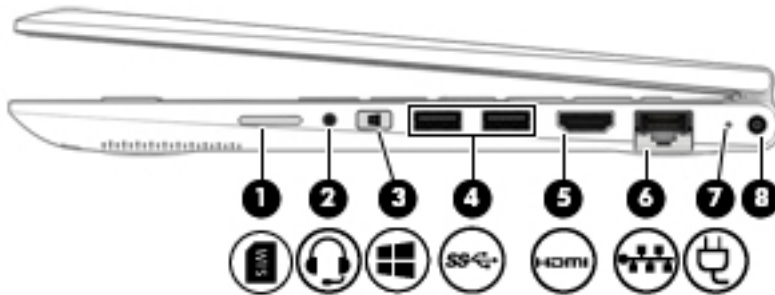
| Category | Description | x360 Convertible | x360 310 |
|------------------------|---|---------------------|-------------|
| | DDR3L-1600 single channel support Supports up to 8 GB maximum system memory | | |
| Storage | Support for 6.35-cm (2.5-in) hard drives in 7.0-mm/7.2-mm (.28-in) thickness Support for Accelerometer hard drive protection Single HDD / Hybrid HDD configurations <ul style="list-style-type: none"> • 1-TB, 5400-rpm, 7.2-mm • 500-GB, 5400-rpm, 7.2-mm • 500-GB, 5400-rpm + 8 GB NAND Hybrid, 7.0-mm Single SSD configurations (TLC) Support for M.2 SATA SSD as storage <ul style="list-style-type: none"> • 128 GB M.2 SATA | √ | |
| | <ul style="list-style-type: none"> • 256 GB M.2 SATA • 128 GB M.2 SATA • 64 GB M.2 SATA | | √ |
| Optical drive | Support for external 9.5 mm tray load, SATA, DVD+/-RW DL SuperMulti drive only | √ | √ |
| Audio and video | Integrated HP TrueVision camera: HD (1280×720 by 30 frames per second), fixed (no tilt), with activity light Dual array Digital Microphones w/ appropriate software - beam forming, echo cancellation, noise suppression Dual speakers B&O Play Support HP Noise Cancellation | √ | √ |
| Ethernet | Integrated 10/100 network interface card (NIC) Integrated 10/100/1000 network interface card (NIC) | √ | √ |
| Sensor | Sensor Hub Accelerometer + Gyroscope + e-Compass Accelerometer IC x2 TPM IC | √ | |
| Wireless | Integrated wireless options with single antenna (M.2/PCIe): <ul style="list-style-type: none"> • Realtek RTL8723BE 802.11b/g/n 1x1 Wi-Fi + BT4.0 Combo Adapter • Intel Dual Band Wireless-AC 3165 802.11 ac 1x1 WiFi + BT 4.0 Combo Adapter Integrated wireless options with dual antenna (M.2/PCIe): <ul style="list-style-type: none"> • Intel Dual Band Wireless-AC 3160 802.11 ac 1x1 WiFi + BT 4.0 Combo Adapter Intel WiDi support Compatible with Miracast-certified devices | √ | |
| | <ul style="list-style-type: none"> • Realtek RTL8723BE 802.11b/g/n 1x1 Wi-Fi + BT4.0 Combo Adapter • Intel Dual Band Wireless-AC 3165 802.11 ac 1x1 WiFi + BT 4.0 Combo Adapter | | √ |



| Category | Description | x360 Convertible | x360 310 |
|-----------------------------------|--|---------------------|-------------|
| | <ul style="list-style-type: none"> Intel Dual Band Wireless-AC 7265 802.11 ac 2x2 WiFi + BT 4.0 Combo Adapter (non-vPro) <p>Intel WiDi 5.1 support</p> <p>Compatible with Miracast-certified devices</p> | | |
| External media cards | HP Multi-Format Digital Media Card Reader with push-push technology. Supports SD/SDHC/SDXC. | √ | √ |
| Internal card expansion | <p>One M.2 slot for SSD</p> <p>One M.2 slot for WLAN</p> | √ | √ |
| Ports | <p>AC Smart Pin adapter plug</p> <p>Headphone / Microphone Combo Jack</p> <p>HDMI: v. 1.4, supporting up to 2560×1600 at 60 Hz</p> <p>RJ-45/Ethernet</p> <p>(2) USB 3.0</p> <p>(1) USB 2.0</p> <p>VGA (Dsub 15-pin), hot plug/unplug and auto-detection for correct output to wide-aspect vs. standard aspect video</p> | √ | √ |
| Keyboard/ pointing devices | <p>Full size, textured island-style keyboard</p> <p>Stylus writing support</p> <p>ClickPad requirements:</p> <p>Taps enabled as default</p> <p>Multitouch gestures enabled: 2-finger scroll, pinch</p> <p>Support for Windows 8 Modern TouchPad Gestures</p> | √ | √ |
| Power requirements | <p>Support for the following AC adapters:</p> <ul style="list-style-type: none"> 45-W HP Smart AC adapter (non-PFC, with 26.5 mm z-height adapter [non-slim]) (not for India/People's Republic of China) 65-W HP Smart AC adapter (non-PFC, EM, 4.5-mm) (only for India/People's Republic of China) <p>1 m length power cord</p> <p>Support for the following battery:</p> <ul style="list-style-type: none"> Embedded 2-cell, 32-Wh, 4.2 Ah Li-ion battery <p>Supports battery fast charge</p> | √ | |
| | <p>Support for the following AC adapters:</p> <ul style="list-style-type: none"> 45-W HP Smart AC adapter (non-PFC, with 26.5 mm z-height adapter [non-slim])a) <p>1.8 m length power cord</p> <p>Support for the following batteries:</p> <ul style="list-style-type: none"> Embedded 2-cell, 32-Wh, 4.2 Ah Li-ion battery Embedded 3-cell, 48-Wh, 4.21 Ah Li-ion battery | | √ |





| Category | Description | x360 Convertible | x360 310 |
|--------------------------|---|---------------------|-------------|
| Security | Kensington Lock slot | √ | √ |
| | TPM (Trusted Platform Module) 2.0 | | |
| Operating system | Preinstalled: | √ | |
| | Windows 8.1 CPPP | | |
| | Windows 8.1 Small Screen | | |
| | Windows 10 | | |
| | Windows 10 Value 2in1 | | |
| | Windows 8.1 SST 64 | | √ |
| | Windows 8.1 Professional 64 | | |
| | Windows 8.1 Core for Higher Education (ML) 64 | | |
| | Windows 8.1 Professional StF MSNA | | |
| | Windows 8.1 Professional StF MSNA EM | | |
| | Web support: | | √ |
| | Windows 8.1 64 | | |
| | Windows 10 Home 64 | | |
| | Windows 10 Professional 64 | | |
| Windows 10 Enterprise 64 | | | |
| Serviceability | End user replaceable parts: | √ | √ |
| | AC adapter | | |

2 External component identification

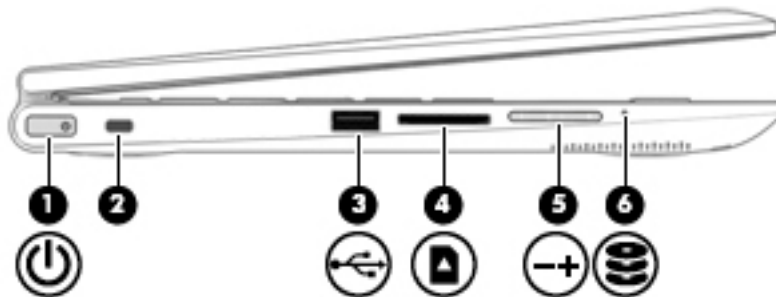
Right side









| Component | Description |
|--|---|
| (1)  SIM slot (select models only) | Supports a wireless subscriber identity module (SIM) card. The SIM slot is located on the right side of the computer. |
| (2)  Audio-out (headphone)/Audio-in (microphone) jack | Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. This jack does not support optional microphone-only devices. WARNING! To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, refer to the <i>Regulatory, Safety, and Environmental Notices</i> . To access this document: Windows 8.1: From the Start screen, type <code>support</code> , and then select the HP Support Assistant app. – or – From the Windows desktop, click the question mark icon in the notification area, at the far right of the taskbar. Windows 10: Select Start , select All apps , select HP Help and Support , and then select HP Documentation . NOTE: When a device is connected to the jack, the computer speakers are disabled. NOTE: Be sure that the device cable has a 4-conductor connector that supports both audio-out (headphone) and audio-in (microphone). |
| (3) Windows button | Returns you to the Start screen from an open app or the Windows desktop. NOTE: Pressing the Windows button again will return you to the previous screen. |

| | | | |
|-----|---|------------------------------------|---|
| (4) |  | USB 3.0 ports (2) | Connect optional USB devices, such as a keyboard, mouse, external drive, printer, scanner or USB hub. |
| (5) |  | HDMI port | Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component, or a high-speed High-Definition Multimedia Interface (HDMI) device. |
| (6) |  | RJ-45 (network) jack/status lights | Connects a network cable. <ul style="list-style-type: none"> • White: The network is connected. • Amber: Activity is occurring on the network. |
| (7) |  | AC adapter light | <ul style="list-style-type: none"> • White: The computer is connected to external power and the battery is fully charged. • Blinking white: The computer is disconnected from external power and the battery has reached a low battery level. • Amber: The computer is connected to external power and the battery is charging. • Off: The battery is not charging. |
| (8) | | Power connector | Connects an AC adapter. |

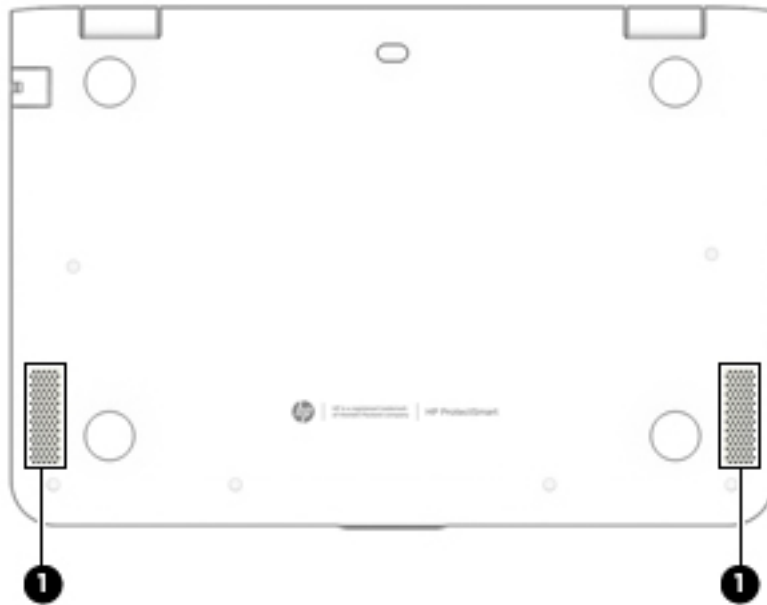
Left side



| Component | Description |
|--|--|
| (1)  Power button | <ul style="list-style-type: none"> • When the computer is off, press the button to turn on the computer. • When the computer is on, press the button briefly to initiate Sleep. • When the computer is in the Sleep state, press the button briefly to exit Sleep. • When the computer is in Hibernation, press the button briefly to exit Hibernation. <p>CAUTION: Pressing and holding down the power button will result in the loss of unsaved information.</p> <p>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.</p> <p>To learn more about your power settings, see your power options:</p> |

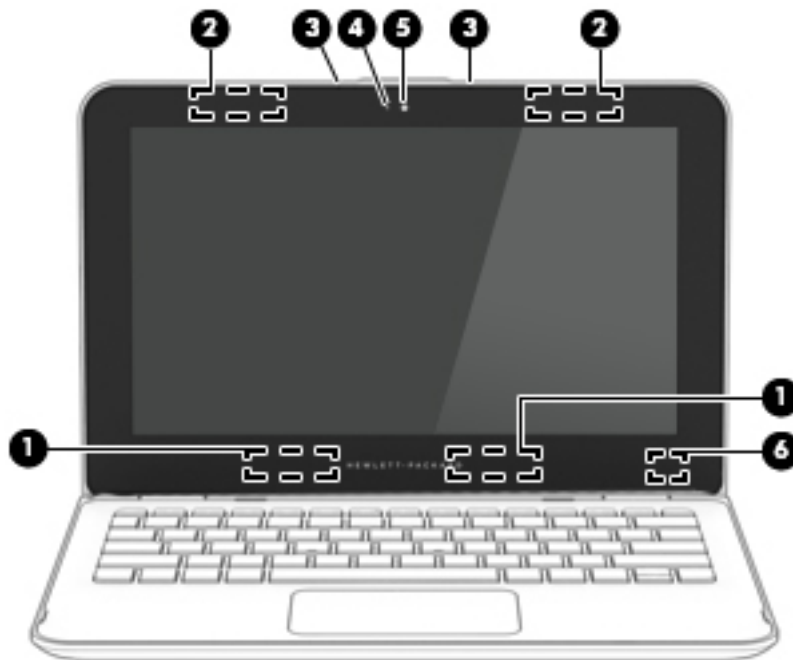
| Component | Description |
|--|---|
| | <p>Windows 8.1::</p> <ul style="list-style-type: none"> ▲ From the Start screen, type <code>power</code>, select Power and sleep settings, and then select Power and sleep from the list of applications. – or – From the Windows desktop, right-click the Start button, and then select Power Options. <p>Windows 10:</p> <ul style="list-style-type: none"> ▲ Type <code>power</code> in the taskbar search box, and then select Power and sleep settings. – or – Right-click the Start button, and then select Power Options. |
| <p>(2)  Security cable slot</p> | <p>Attaches an optional security cable to the computer.</p> <p>NOTE: The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.</p> |
| <p>(3)  USB 2.0 port</p> | <p>Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub.</p> |
| <p>(4)  Memory card reader</p> | <p>Reads optional memory cards that enable you to store, manage, share or access information.</p> <p>To insert a card:</p> <ul style="list-style-type: none"> ▲ Hold the card label-side up, with connectors facing the slot, insert the card into the slot, and then push in on the card until it is firmly seated. <p>To remove a card:</p> <ul style="list-style-type: none"> ▲ Press in on the card it until it pops out. |
| <p>(5)  Volume button</p> | <p>Controls speaker volume.</p> <ul style="list-style-type: none"> • To decrease speaker volume, press the – edge of the button. • To increase speaker volume, press the + edge of the button. |
| <p>(6)  Hard drive light</p> | <ul style="list-style-type: none"> • Blinking white: The hard drive is being accessed. • Amber: HP 3D DriveGuard has temporarily parked the hard drive. |

Bottom



| Component | Description |
|-----------|----------------------------|
| (1) | Speakers Produce sound. |

Display



| Component | Description |
|---|--|
| (1) WLAN antenna(s)* (Includes 1 or 2 antennas depending on the model) | Send and receive wireless signals to communicate with wireless local area networks (WLANs). |
| (2) WWAN antennas* (select models only) | Send and receive wireless signals to communicate with wireless wide area networks (WWAN). |
| (3) Internal microphones | Record sound. |
| (4) Webcam light | On: The webcam is in use. |
| (5) Webcam | <p>Records video and captures photographs. Some models allow you to video conference and chat online using streaming video.</p> <p>To use the webcam:</p> <ul style="list-style-type: none"> ▲ Windows 8.1: From the Start screen, type <code>camera</code>, and then select Camera from the list of applications. ▲ Windows 10: Type <code>camera</code> in the taskbar search box, and then select Camera. |
| (6) Internal display switch | <p>Turns off the display and initiates Sleep if the display is closed while the power is on.</p> <p>NOTE: The internal display switch is not visible from the outside of the computer.</p> |

*The antennas are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennas free from obstructions. For wireless regulatory notices, see the section of the *Regulatory, Safety, and Environmental Notices* that applies to your country or region.

To access this document in **Windows 8.1**:

From the Start screen, type `support`, and then select the **HP Support Assistant** app.

– or –

From the Windows desktop, click the question mark icon in the notification area, at the far right of the taskbar.

To access this document in **Windows 10**:

Select **Start**, select **All apps**, select **HP Help and Support**, and then select **HP Documentation**.

Your computer can function as a classic notebook and, in addition, the display can be rotated so that the computer transforms into an entertainment stand or a tablet.

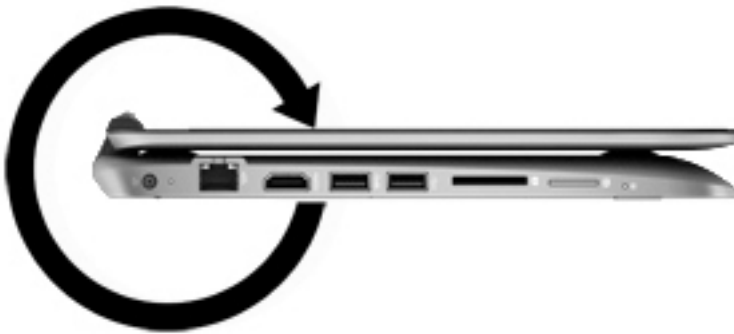
Changing your notebook to an entertainment stand

To change your notebook to an entertainment stand, raise the display, and then rotate the display backward to a stand position (about 315 degrees).



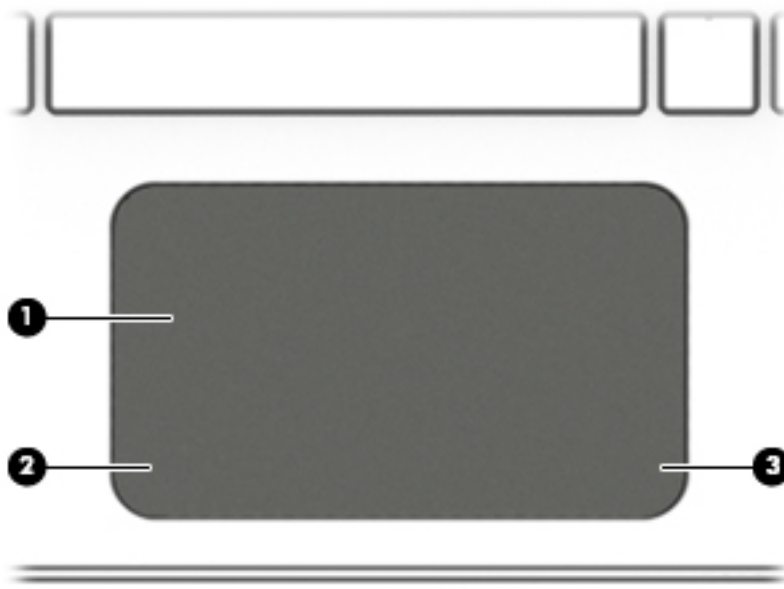
Changing your notebook to a tablet

To change your notebook to a tablet, raise the display, and then rotate the display backward until it is flush with the computer bottom (360 degrees).



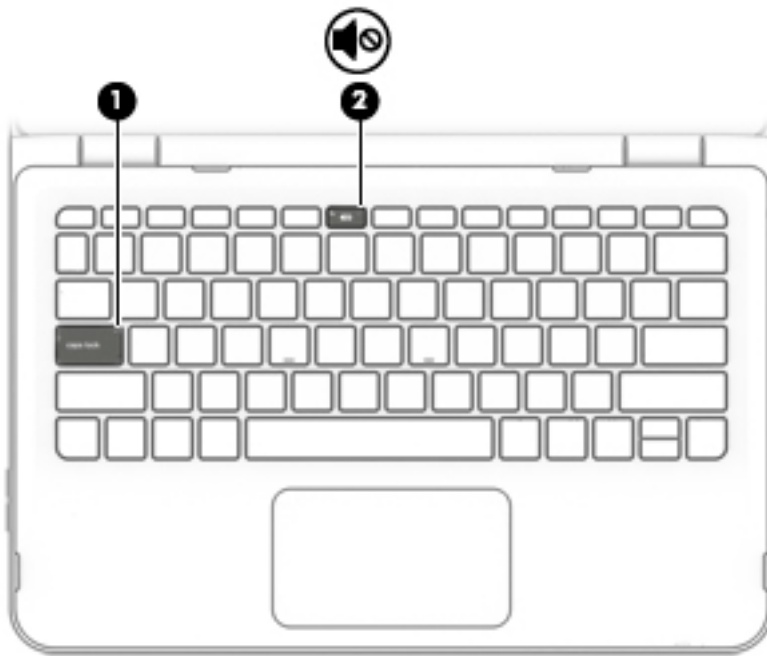
Top


TouchPad



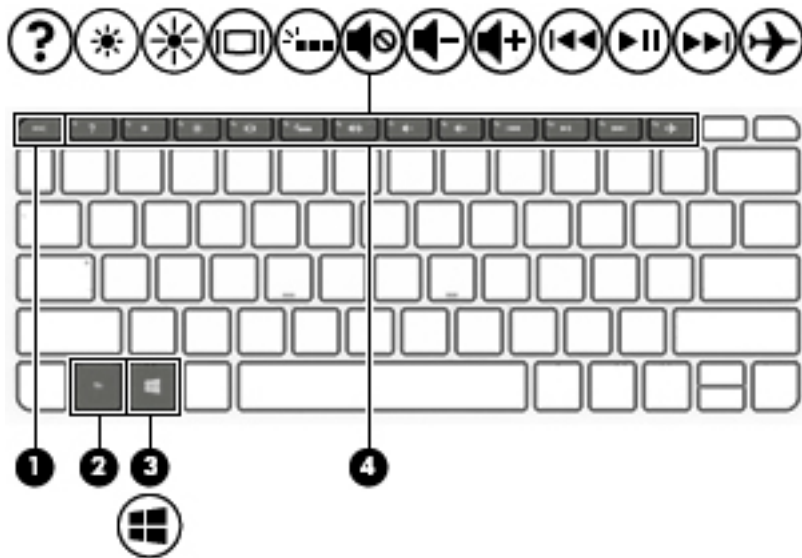
| Component | Description |
|-----------|--|
| (1) | TouchPad zone Reads your finger gestures to move the pointer or activate items on the screen. |
| (2) | Left TouchPad button Functions like the left button on an external mouse. |
| (3) | Right TouchPad button Functions like the right button on an external mouse. |


Lights



| Component | | Description |
|-----------|--|--|
| (1) | Caps lock light | On: Caps lock is on, which switches the keys to all capital letters. |
| (2) |  Mute light | <ul style="list-style-type: none">• Amber: Computer sound is off.• Off: Computer sound is on. |


Keys



| Component | Description |
|---|---|
| (1) esc key | Displays system information when pressed in combination with the fn key. |
| (2) fn key | Executes frequently used system functions when pressed in combination with the esc key, or on select models, the spacebar . |
| (3)  Windows key | <p>Windows 8.1: Returns you to the Start screen from an open app or the Windows desktop.</p> <p>NOTE: Pressing the Windows key again will return you to the previous screen.</p> <p>Windows 10: Opens the Start menu.</p> <p>NOTE: Pressing the Windows key again will close the Start menu.</p> |
| (4) Action keys | <p>Execute frequently used system functions.</p> <p>NOTE: On select models, the f5 action key turns the radiance backlight keyboard feature off or on.</p> |

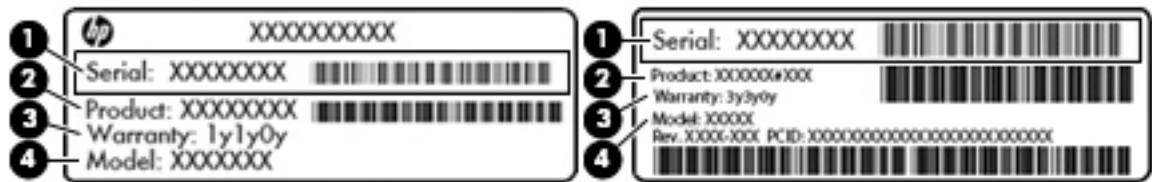
Labels

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

 **IMPORTANT:** Check the following locations for the labels described in this section: the bottom of the computer, inside the battery bay, under the removable service door, or on the back of the display.

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


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



Component

- | | |
|-----|-----------------------------------|
| (1) | Serial number |
| (2) | Product number |
| (3) | Warranty period |
| (4) | Model number (select models only) |


- Microsoft® Certificate of Authenticity label (select models only prior to Windows 8)—Contains the Windows Product Key. You may need the Product Key to update or troubleshoot the operating system. HP platforms with Windows 8 or Windows 8.x preinstalled do not have the physical label. Instead a Digital Product Key is electronically installed.

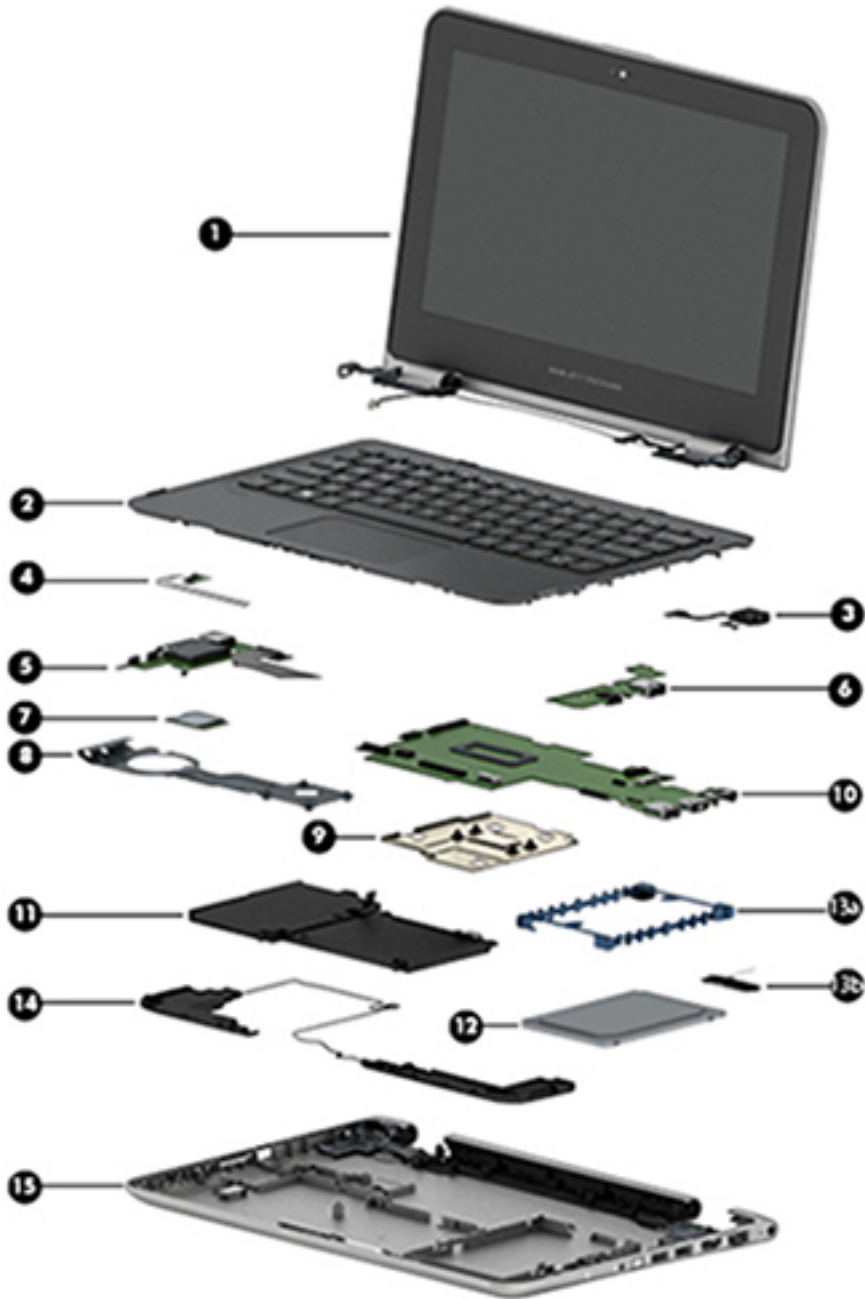
 **NOTE:** The Digital Product Key is automatically recognized and activated by Microsoft operating systems when a Windows 8 or Windows 8.x operating system is reinstalled using HP-approved recovery methods.

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

3 Illustrated parts catalog

Computer major components

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

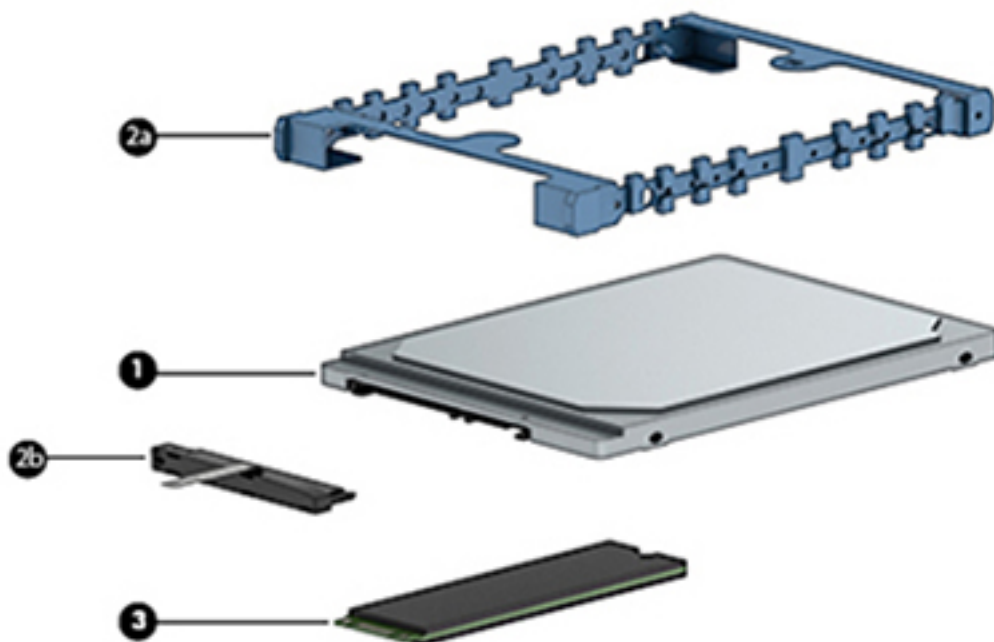


| Item | Component | Spare part number |
|------|--|-------------------|
| (1) | Display assembly | not spared |
| (2) | Top cover (includes keyboard and TouchPad) NOTE: For a list of keyboard country codes, see Top cover on page 29 . | |
| | For use in HP Pavilion x360 models | 809543-xxx |
| | For use in silver HP x360 310 G2 models with a 2 cell battery | 824136-xxx |
| | For use in silver HP x360 310 G2 models with a 3 cell battery | 835536-xxx |
| (3) | Power connector cable | 807522-001 |
| (4) | Power button board (includes cable) | |
| | For use in HP Pavilion x360 models | 809546-001 |
| | For use in HP x360 310 G2 models | 824140-001 |
| (5) | USB/card reader board (includes cable) | |
| | For use in models with an Intel Core processor | 809544-001 |
| | For use in models with an Intel Pentium or Celeron processor | 819789-001 |
| (6) | USB/audio jack board (includes cable) | 809545-001 |
| (7) | WLAN module: | |
| | Intel Dual Band Wireless-AC 3165 802.11 ac 1x1 WiFi + BT 4.0 Combo Adapter | 806723-005 |
| | Intel Dual Band Wireless-AC 3160 802.11 ac 1x1 WiFi + BT 4.0 Combo Adapter | 784644-005 |
| | Realtek RTL8723BE 802.11b/g/n 1x1 Wi-Fi + BT4.0 Combo Adapter | 792610-005 |
| | Intel Dual Band Wireless-AC 7265 802.11 ac 2x2 WiFi + BT 4.0 Combo Adapter | 793839-001 |
| | Intel Dual Band Wireless-AC 7265NV 802.11 ac 2x2 WiFi + BT 4.0 Combo Adapter | 793840-001 |
| | Heat sink (includes replacement thermal material) | |
| (8) | For use in HP Pavilion x360 models with Braswell Intel Pentium and Celeron processors | 819788-001 |
| | For use in HP x360 310 G2 models with Braswell Intel Pentium and Celeron processors (includes replacement thermal material) | 824134-001 |
| (9) | For use in models with Broadwell Intel Core processors | 809536-001 |
| | For use in models with Skylake processors (includes replacement thermal material) | 827662-001 |
| (10) | System board (includes integrated processor): NOTE: System board spare part kits include replacement thermal material. | |
| | For use in HP Pavilion x360 models equipped with: | |
| | • Intel Core M3-6Y30C processor and a Windows 10 operating system | 827663-601 |
| | • Intel Core M3-6Y30C processor and a non-Windows operating system | 827663-001 |
| | • Intel CoreT M-5Y10C processor and the Windows 8.1 Standard operating system | 809560-501 |
| | • Intel CoreT M-5Y10C processor and a non-Windows 8 operating system | 809560-001 |
| | • Intel Pentium N3700 processor and the Windows 10 operating system | 828895-601 |
| | • Intel Pentium N3700 processor and a non-Windows operating system | 828895-001 |

| Item | Component | Spare part number |
|--------------|--|-------------------|
| | <ul style="list-style-type: none"> Intel Pentium N3700 processor and the Windows 8.1 Standard operating system | 809557-501 |
| | <ul style="list-style-type: none"> Intel Pentium N3700 processor and the Windows 7 operating system | 809557-001 |
| | <ul style="list-style-type: none"> Intel Celeron N3050 processor and the Windows 10 operating system | 829211-601 |
| | <ul style="list-style-type: none"> Intel Celeron N3050 processor and a non-Windows operating system | 829211-001 |
| | <ul style="list-style-type: none"> Intel Celeron N3050 processor and the Windows 8.1 Standard operating system | 809556-501 |
| | <ul style="list-style-type: none"> Intel Celeron N3050 processor and a non-Windows 8 operating system | 809556-001 |
| | System board for use in HP x360 310 G2 models equipped with: | |
| | <ul style="list-style-type: none"> Intel Pentium N3700 processor and the Windows 8.1 or Windows 10 operating system | 824146-601 |
| | <ul style="list-style-type: none"> Intel Pentium N3700 processor and a non-Windows operating system | 824146-001 |
| | <ul style="list-style-type: none"> Intel Celeron N3050 processor and the Windows 8.1 or Windows 10 operating system | 824144-601 |
| | <ul style="list-style-type: none"> Intel Celeron N3050 processor and a non-Windows operating system | 824144-001 |
| (11) | Li-ion battery | |
| | 2-cell, 32-Wh, 4.2-Ah, for use in all models | 796355-005 |
| | 3-cell, 48-Wh, 4.21-Ah, for use in HP x360 310 G2 models | 817184-005 |
| (12) | Hard drive (does not include hard drive bracket, hard drive connector cable, or screws): | |
| | 1-TB, 5400-rpm, 7.0-mm | 762990-005 |
| | 500-GB, 5400-rpm, 7.0-mm | 778186-005 |
| | 500-GB, 5400-rpm, 8 GB hybrid SSD, 7.0-mm | 732000-005 |
| | Hard Drive Hardware Kit includes: | 809537-001 |
| (13a) | Hard drive bracket | |
| (13b) | Hard drive connector cable | |
| | Solid-State Drive (not illustrated) | |
| | HP Pavilion x360 Convertible models: | |
| | <ul style="list-style-type: none"> 128 GB, TLC | 809555-001 |
| | <ul style="list-style-type: none"> 128 GB, value | 830391-001 |
| | HP x360 310 G2 models: | |
| | <ul style="list-style-type: none"> 256 GB, TLC | 824143-001 |
| | <ul style="list-style-type: none"> 128 GB, TLC | 824142-001 |
| | <ul style="list-style-type: none"> 64 GB, MLC | 833656-001 |
| (14) | Speaker Kit (includes left and right speakers and cable) | 809554-001 |
| (15) | Bottom cover | |
| | HP Pavilion x360 Convertible models: | |
| | <ul style="list-style-type: none"> Red models | 809574-001 |
| | <ul style="list-style-type: none"> Silver models | 809670-001 |

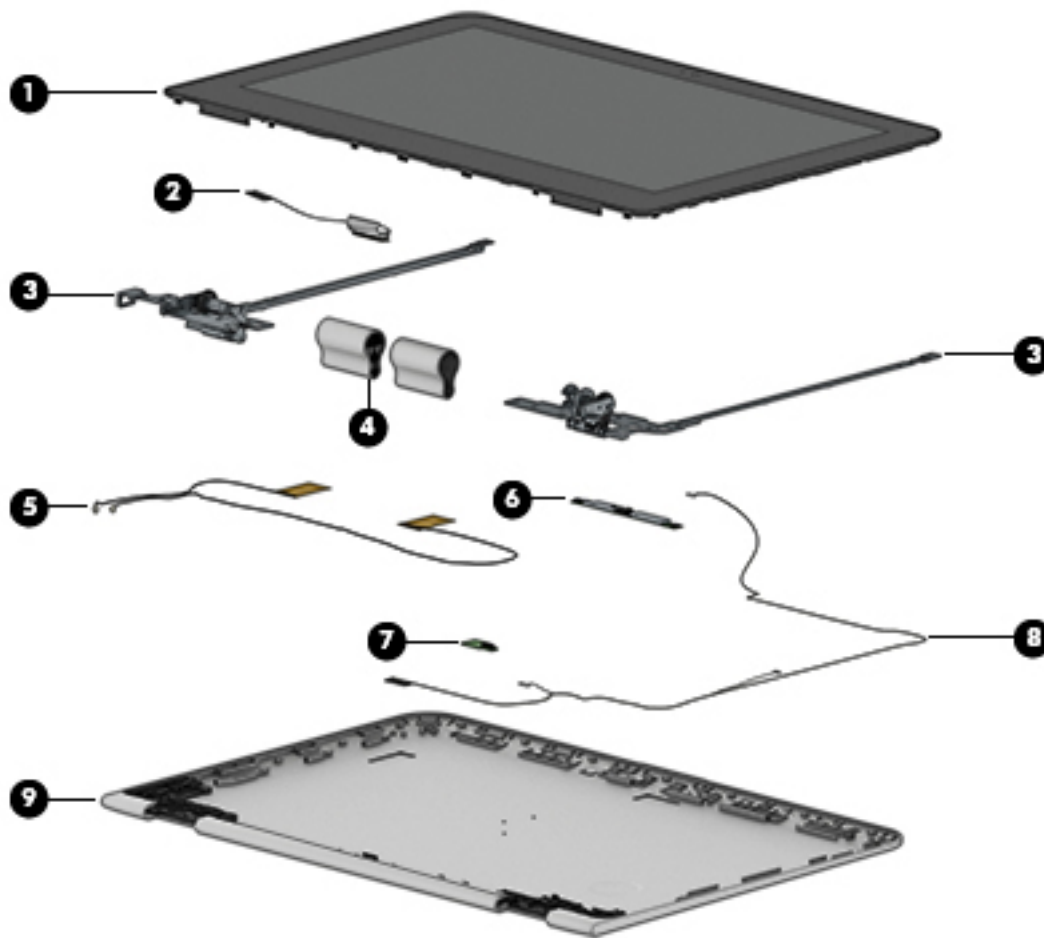
| Item | Component | Spare part number |
|-------------|--|--------------------------|
| | <ul style="list-style-type: none"> • Green models | 809672-001 |
| | <ul style="list-style-type: none"> • Purple models | 816504-001 |
| | HP x360 310 G2 models_ | |
| | <ul style="list-style-type: none"> • Silver models | 824202-001 |
| (*) | Memory modules (DDR3L-1600; not illustrated) | |
| | IMPORTANT: The memory modules are not customer replaceable. | |
| | For use in HP Pavilion x360 models: | |
| | <ul style="list-style-type: none"> • 8-GB | 693374-005 |
| | <ul style="list-style-type: none"> • 4-GB | 691740-005 |
| | For use in HP x360 310 G2 models: | |
| | <ul style="list-style-type: none"> • 8-GB | 670034-001 |
| | <ul style="list-style-type: none"> • 4-GB | 641369-001 |
| (*) | RTC battery (not illustrated) | |
| | For use in models with Braswell processors | 683502-001 |
| | For use in models with Skylake processors | 739562-001 |

Mass storage devices



| Component | Spare part number |
|---|-------------------|
| (1) Hard drive (does not include hard drive bracket, hard drive connector cable, or screws): | |
| 1-TB, 5400-rpm, 7.0-mm | 762990-005 |
| 500-GB, 5400-rpm, 7.0-mm | 778186-005 |
| 500-GB, 5400-rpm, 8 GB hybrid SSD, 7.0-mm | 732000-005 |
| Hard Drive Hardware Kit , includes: | 809537-001 |
| (2a) Hard drive bracket | |
| (2b) Connector cable | |
| (3) Solid-State Drive, M.2 | |
| HP Pavilion x360 Convertible models: | |
| • 128 GB, TLC | 809555-001 |
| • 128 GB, value | 830391-001 |
| HP x360 310 G2 models: | |
| • 256 GB, TLC | 824143-001 |
| • 128 GB, TLC | 824142-001 |
| • 64 GB, MLC | 833656-001 |
| Solid-state Drive Hardware Kit | 809538-001 |
| External DVD±RW Double-Layer with SuperMulti Drive (not illustrated) | 747080-001 |

Display assembly subcomponents



| Item | Component | Spare part number |
|------------|---|-------------------|
| (1) | Display panel (raw) | |
| | SVA | 809548-001 |
| | UWVA | 809549-001 |
| (2) | Display cable | 809576-001 |
| (3) | Display hinges (left and right; includes rubber cap) | 809539-001 |
| (4) | Display hinge covers (left and right) | |
| | For use in red HP Pavilion x360 models | 809541-001 |
| | For use in silver HP Pavilion x360 models | 809540-001 |
| | For use in green HP Pavilion x360 models | 809542-001 |
| | For use in purple HP Pavilion x360 models | 809828-001 |
| | For use in silver HP x360 310 G2 models | 824135-001 |
| (5) | Antennas (primary and secondary) | 809530-001 |
| (6) | Webcam | 807542-001 |

| Item | Component | Spare part number |
|------------|--|-------------------|
| (7) | Sensor board (not illustrated) | |
| | For use in models with an Intel Core processor | 809547-001 |
| | For use in models with an Intel Pentium or Celeron processor | 819790-001 |
| (8) | Webcam/sensor/touch control board cable | 809534-001 |
| (9) | Display enclosure | |
| | HP Pavilion x360 models: | |
| | • Silver models | 809573-001 |
| | • Red models | 809574-001 |
| | • Green models | 809575-001 |
| | • Purple models | 816503-001 |
| | HP x360 310 G2 models: | |
| | • Silver models | 824201-001 |

Miscellaneous parts

| Component | Spare part number |
|--|-------------------|
| AC adapter | |
| 45-W HP Smart AC adapter (non-PFC, 4.5-mm, non-slim) | 741727-001 |
| 65-W HP Smart AC adapter (non-PFC, EM, 4.5-mm) | 714657-001 |
| 65-W HP Smart AC adapter (non-PFC, 4.5-mm) | 693711-001 |
| Power cord (3-pin, black, 1.0-m): | |
| For use in Argentina | 755530-D01 |
| For use in Australia | 755530-011 |
| For use in Brazil | 755530-202 |
| For use in the People's Republic of China | 755530-AA1 |
| For use in Denmark | 755530-081 |
| For use in Europe | 755530-021 |
| For use in India | 755530-D61 |
| For use in Israel | 755530-BB1 |
| For use in Italy | 755530-061 |
| For use in Japan | 755530-291 |
| For use in North America | 755530-001 |
| For use in South Africa | 755530-AR1 |
| For use in South Korea | 755530-AD1 |

| Component | Spare part number |
|--|--------------------------|
| For use in Switzerland | 755530-111 |
| For use in Taiwan | 755530-AB1 |
| For use in Thailand | 755530-201 |
| For use in the United Kingdom and Singapore | 755530-031 |
| Power cord (3-pin, black, 1.83-m): | |
| For use in Australia | 490371-011 |
| For use in Europe | 490371-021 |
| For use in Denmark | 490371-081 |
| Israel | 490371-BB1 |
| Italy | 490371-061 |
| For use in North America | 490371-001 |
| For use in South Africa | 490371-AR1 |
| For use in Switzerland | 490371-111 |
| For use in the United Kingdom and Singapore | 490371-031 |
| Rubber Kit (includes 2 rear rubber feet and rubber screw cover) | |
| For use in silver HP Pavilion x360 models | 809550-001 |
| For use in red HP Pavilion x360 models | 809551-001 |
| For use in green HP Pavilion x360 models | 809552-001 |
| For use in purple HP Pavilion x360 models | 816522-001 |
| For use in silver HP x360 310 G2 models | 824141-001 |
| Screw Kit | 809553-001 |
| Synaptics Active Pen | 773175-001 |
| Mouse, USB, laser | 674318-001 |
| Mouse, HP Comfort Grip, wireless | 691922-001 |
| HDMI to VGA adapter | 701943-001 |
| HP Smart AC adapter dongle, 7.4 mm | 734734-001 |
| Essential top load case | 679921-001 |
| Essential backpack | 679923-001 |
| HP Slim Ultrabook Top Load case | 747078-001 |
| HP Slim Ultrabook Backpack | 747079-001 |
| HP 11.6 Sleeve | 776497-001 |
| Port replicator, USB 3.0 | 690650-001 |
| USB 3.0. A-to-B cable, 0.5 m (for use with port replicator) | 690652-001 |

4 Removal and replacement procedures preliminary requirements


Tools required

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


- Flat-bladed screw driver
- Magnetic screw driver
- Phillips P0 and P1 screw drivers

Service considerations

The following sections include some of the considerations that you must keep in mind during disassembly and assembly procedures.

 **NOTE:** As you remove each subassembly from the computer, place the subassembly (and all accompanying screws) away from the work area to prevent damage.

Plastic parts

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

Cables and connectors

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

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

Drive handling

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

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

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

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

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

Avoid dropping drives from any height onto any surface.

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

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

Avoid exposing a drive to temperature extremes or liquids.

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

Grounding guidelines

Electrostatic discharge damage

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

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

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

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

Keep components in their electrostatic-safe containers until you are ready to install them.

Before touching an electronic component, discharge static electricity by using the guidelines described in this section.

Avoid touching pins, leads, and circuitry. Handle electronic components as little as possible.

If you remove a component, place it in an electrostatic-safe container.

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

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

| Typical electrostatic voltage levels | | | |
|--------------------------------------|-------------------|----------|---------|
| Event | Relative humidity | | |
| | 10% | 40% | 55% |
| Walking across carpet | 35,000 V | 15,000 V | 7,500 V |
| Walking across vinyl floor | 12,000 V | 5,000 V | 3,000 V |
| Motions of bench worker | 6,000 V | 800 V | 400 V |
| Removing DIPS from plastic tube | 2,000 V | 700 V | 400 V |
| Removing DIPS from vinyl tray | 11,500 V | 4,000 V | 2,000 V |
| Removing DIPS from Styrofoam | 14,500 V | 5,000 V | 3,500 V |
| Removing bubble pack from PCB | 26,500 V | 20,000 V | 7,000 V |
| Packing PCBs in foam-lined box | 21,000 V | 11,000 V | 5,000 V |

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

Workstation guidelines

Follow these grounding workstation guidelines:

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

Equipment guidelines

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

- When seated, wear a wrist strap connected to a grounded system. Wrist straps are flexible straps with a minimum of one megohm $\pm 10\%$ 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.

| Material | Use | Voltage protection level |
|-----------------------|------------|--------------------------|
| Antistatic plastics | Bags | 1,500 V |
| Carbon-loaded plastic | Floor mats | 7,500 V |
| Metallized laminate | Floor mats | 5,000 V |

5 Removal and replacement procedures for Authorized Service Provider parts

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

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

Component replacement procedures

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

There are as many as 57 screws that must be removed, replaced, and/or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

Top cover

In this section, the first table includes the main spare part number for the keyboards. The second table provides the country codes.

| Description | Spare part number |
|---|-------------------|
| Base enclosure: | |
| For use in red HP Pavilion x360 Convertible models | 809671-001 |
| For use in silver HP Pavilion x360 Convertible models | 809670-001 |
| For use in green HP Pavilion x360 Convertible models | 809672-001 |
| For use in purple HP Pavilion x360 Convertible models | 816504-001 |
| For use in silver HP x360 310 G2 models | 824202-001 |
| Top cover with keyboard and TouchPad: | |
| For use in HP Pavilion x360 models | 809543-xxx |
| For use in silver HP x360 310 G2 models with a 2 cell battery | 824136-xxx |
| For use in silver HP x360 310 G2 models with a 3 cell battery | 835536-xxx |

| For use in country or region | Spare part number | For use in country or region | Spare part number | For use in country or region | Spare part number |
|------------------------------|-------------------|------------------------------|-------------------|------------------------------|-------------------|
| Belgium | -A41 | India | -D61 | Saudi Arabia | -171 |
| Brazil | -201 | Israel | -BB1 | Slovenia | -BA1 |
| Bulgaria | -261 | Italy | -061 | South Korea | -AD1 |
| Canada | -DB1 | Japan | -291 | Spain | -071 |
| Czech Republic and Slovakia | -FL1 | Latin America | -161 | Sweden and Finland | -B71 |
| Denmark | -081 | The Netherlands | -B31 | Switzerland | -BG1 |
| Denmark, Finland, and Norway | -DH1 | Northern Africa | -FP1 | Taiwan | -AB1 |
| France | -051 | Norway | -091 | Thailand | -281 |
| Germany | -041 | Portugal | -131 | Turkey | -141 |
| Greece | -151 | Romania | -271 | United Kingdom | -031 |
| Hungary | -211 | Russia | -251 | United States | -001 |
| Iceland | -DD1 | | | | |

Before removing the top cover, follow these steps:

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

Remove the top cover:

1. Position the computer upside-down.
2. Pry the two rear rubber feet off the bottom cover **(1)**.
3. Pry the screw cover off the bottom cover **(2)**.

Rubber feet and rubber screw cover are available in the Rubber Kit, spare part numbers:

Silver HP Pavilion x360 models: 809550-001

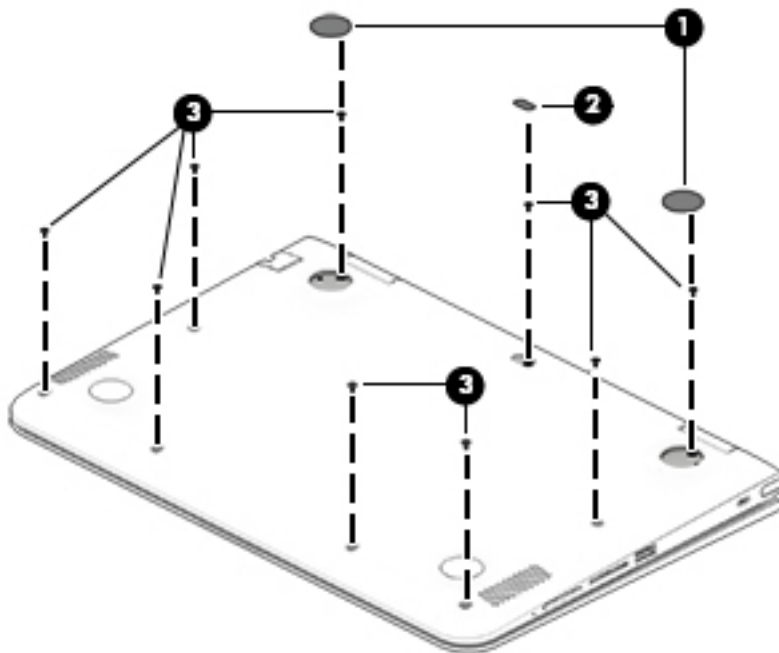
Red HP Pavilion x360 models: 809551-001

Green HP Pavilion x360 models: 809552-001

Purple HP Pavilion x360 models: 816522-001


Silver HP x360 310 G2 models: 824141-001


4. Remove the nine Phillips PM2.5×6.0 screws **(3)** that secure the top cover to the computer.

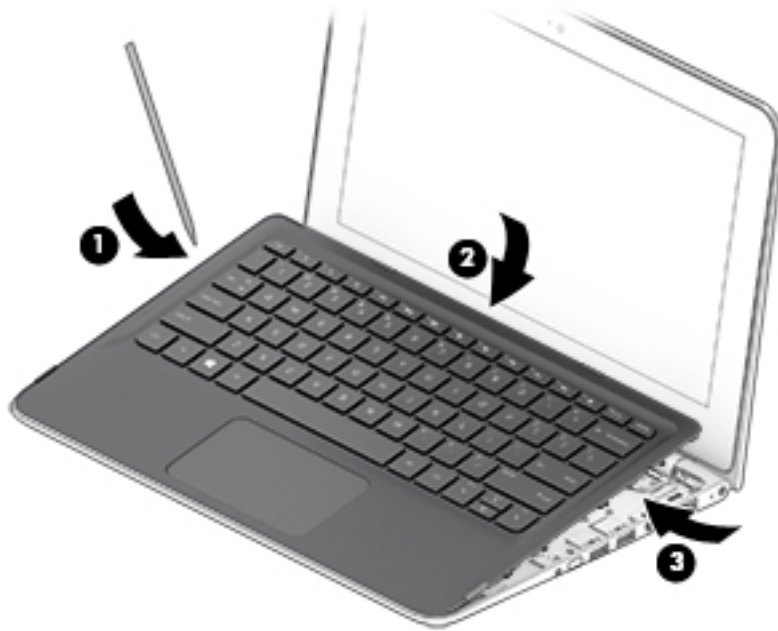


5. Position the computer upright, and then open the computer as far as possible.

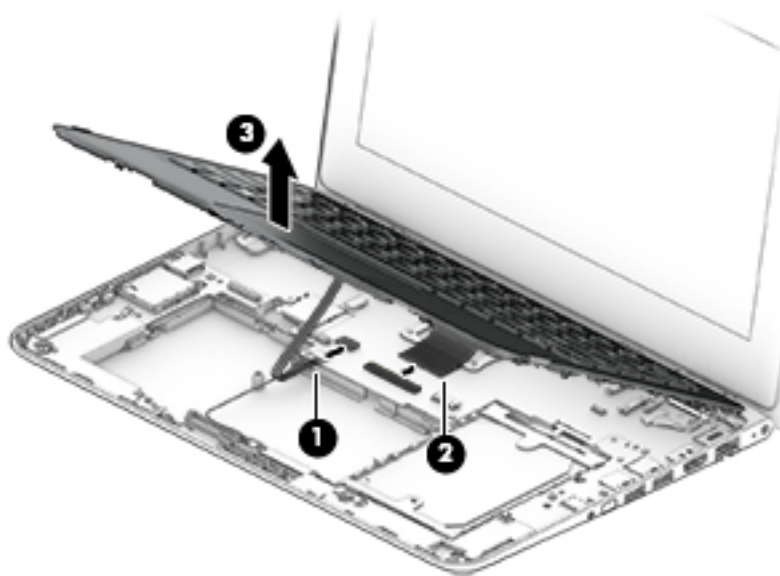
6. Run a plastic, non-marking tool around the seam to disengage the top cover from the computer. Separate the top cover from the computer by separating and lifting up at the seam on the left side **(1)**, top **(2)**, and right side **(3)**, far enough to access the keyboard and touchpad connectors on the system board.

 **NOTE:** You can use a plastic, non-marking tool inserted in the seam to disengage the top cover.

 **NOTE:** When you lift the top cover, the keyboard cable and the touchpad cable are connected to the system board. Be sure not to pull the cables loose when lifting the bottom cover.



7. Disconnect the touchpad cable **(1)** and the keyboard cable **(2)** from the system board, and then remove the top cover from the computer **(3)**.



Reverse this procedure to install the top cover.

TouchPad

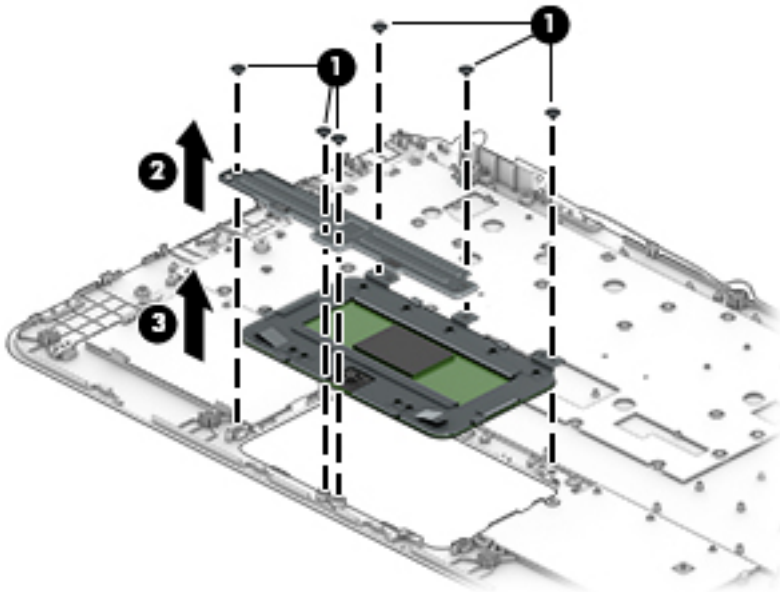
| Description | Spare part number |
|-------------|-------------------|
| TouchPad | not spared |

Before removing the TouchPad, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Top cover on page 29](#)).
5. Remove the battery (see [Battery on page 53](#)).

Remove the TouchPad:

1. Position the top cover upside down.
2. Remove the six broadhead Phillips PM2.0×2.0 screws **(1)** that secure the touchpad and the bracket.
3. Lift the bracket off the top cover **(2)**.
4. Lift the touchpad off the computer **(3)**.



Reverse this procedure to install the TouchPad.

Hard drive

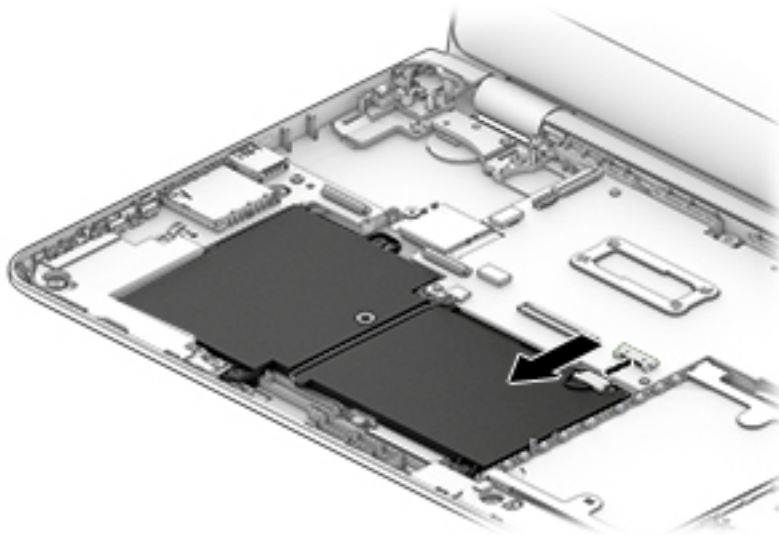


NOTE: The Hard Drive Hardware Kit, spare part number 809537-001, includes the hard drive bracket and hard drive connector cable.

| Description | Spare part number |
|--|-------------------|
| 1-TB, 5400-rpm, 7.0-mm | 762990-005 |
| 500-GB, 5400-rpm, 7.0-mm | 778186-005 |
| 500-GB, 5400-rpm, 8 GB hybrid SSD, 7.0-mm | 732000-005 |
| Hard Drive Hardware Kit (includes hard drive bracket and connector cable) | 809537-001 |

Before removing the hard drive, follow these steps:

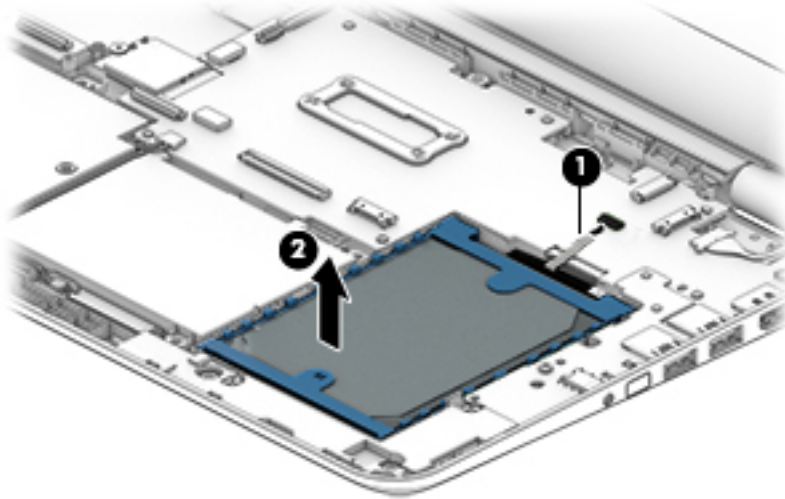
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the top cover (see [Top cover on page 29](#)).
5. Disconnect the battery.



Remove the hard drive:

1. Disconnect the hard drive connector cable **(1)** from the system board.

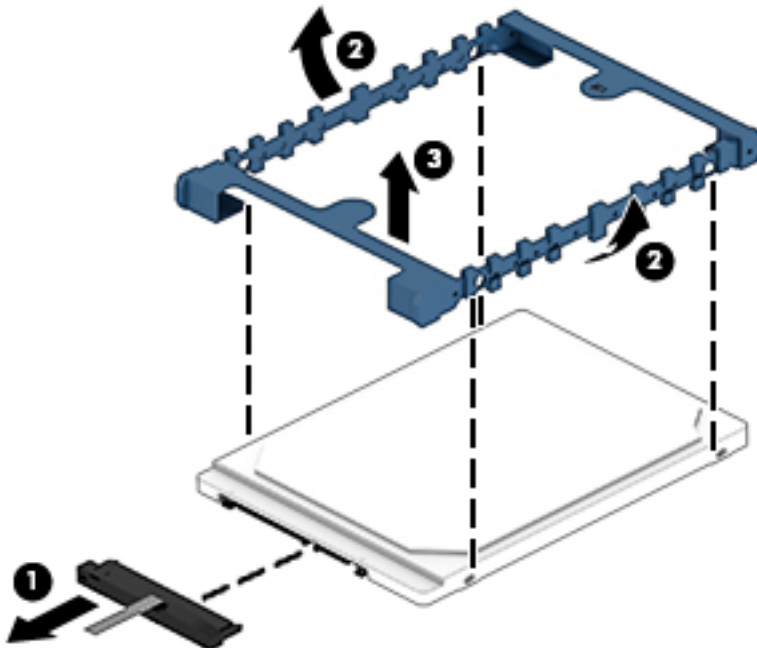
2. Lift the hard drive out of the computer (2).



3. If it is necessary to disassemble the hard drive, perform the following steps:

- a. Disconnect the hard drive connector cable (1) from the hard drive.
- b. Pull the sides of the bracket away from the drive (2) to remove the pegs that secure the bracket to the hard drive.
- c. Remove the hard drive bracket (3) from the hard drive.

The hard drive bracket and hard drive connector cable are available in the Hard Drive Hardware Kit, spare part number 809537-001.



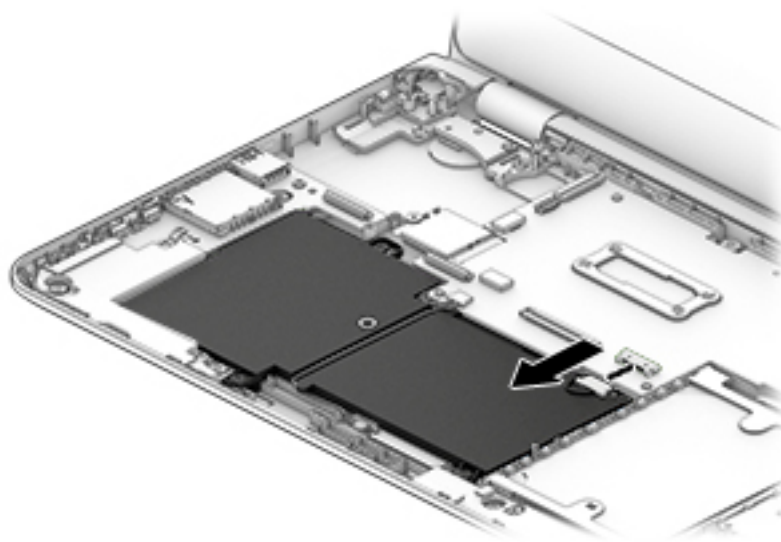
Reverse this procedure to install the hard drive.

Solid-state drive (M.2)

| Description | Spare part number |
|---|-------------------|
| HP Pavilion x360 Convertible models: | |
| <ul style="list-style-type: none">• 128 GB, TLC | 809555-001 |
| <ul style="list-style-type: none">• 128 GB, value | 830391-001 |
| HP x360 310 G2 models: | |
| <ul style="list-style-type: none">• 256 GB, TLC | 824143-001 |
| <ul style="list-style-type: none">• 128 GB, TLC | 824142-001 |
| <ul style="list-style-type: none">• 64 GB, MLC | 833656-001 |

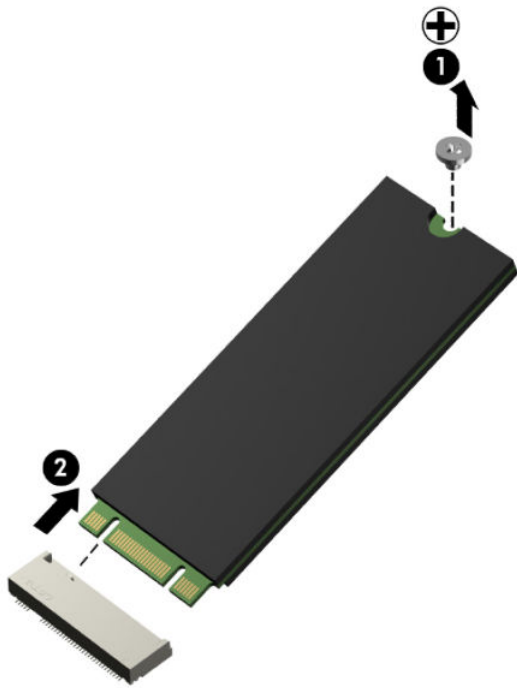
Before removing the solid-state drive, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Top cover on page 29](#)).
5. Disconnect the battery.



Remove the solid-state drive:

1. Remove the Phillips PM2.0×3.5 screw **(1)** that secures the solid-state drive to the system board.
2. Remove the solid-state drive **(2)** by pulling the drive away from the slot at an angle.



Reverse this procedure to install the solid-state drive.

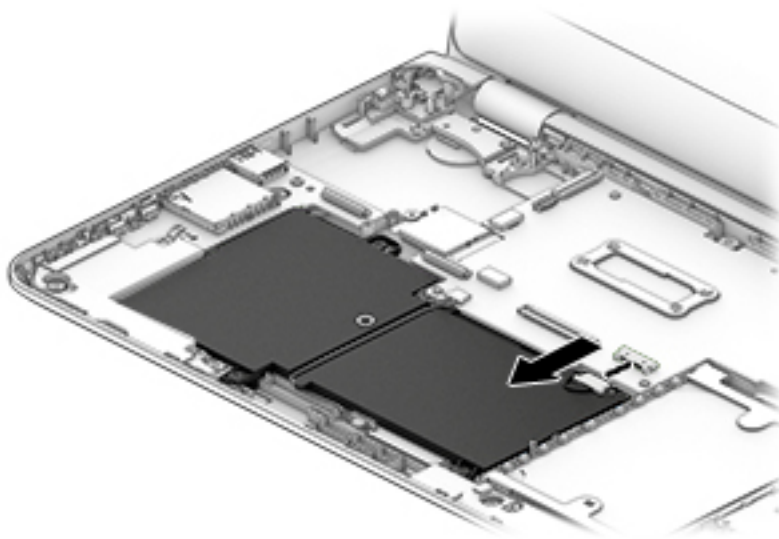
USB/audio jack board (right side)

| Description | Spare part number |
|---------------------------------------|-------------------|
| USB/audio jack board (includes cable) | 809545-001 |

The USB/audio jack board is located on the right side of the computer. Do not confuse this board with the USB/card reader/volume board on the left side of the computer.

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

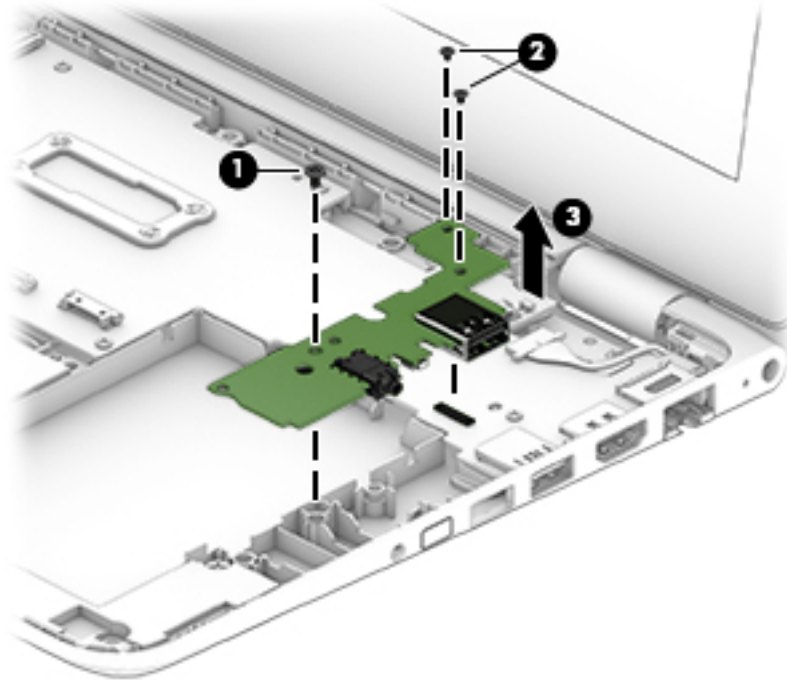
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the top cover (see [Top cover on page 29](#)).
5. Disconnect the battery.



To remove the USB/audio jack board:

1. Remove the Phillips PM2.5×4.0 screw **(1)**.
2. Remove the two Phillips PM2.0×2.0 screws **(2)**.

3. Lift the board straight up to disconnect it from the connector on the system board **(3)**.



Reverse this procedure to install the USB/audio board.

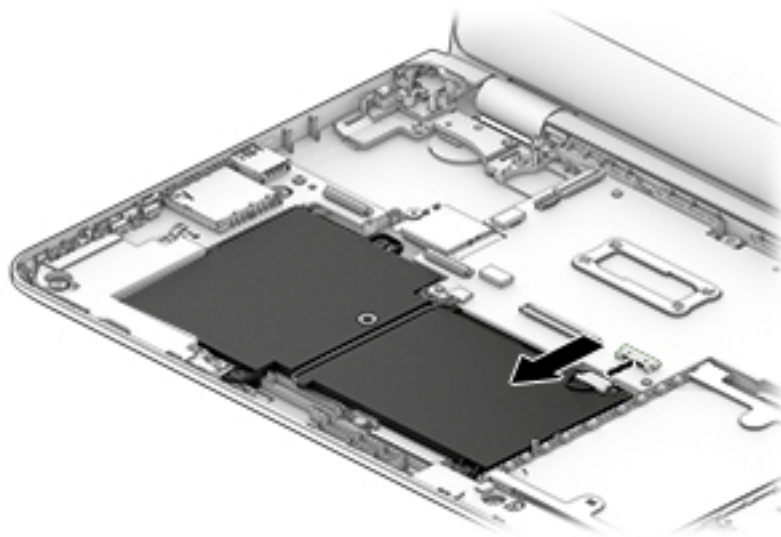
USB/card reader board (left side)

| Description | Spare part number |
|---|-------------------|
| USB/card reader board for use in models with an Intel Core processor (includes cable) | 809544-001 |
| USB/card reader board for use in models with an Intel Pentium or Celeron processor (includes cable) | 819789-001 |

The USB/card reader/volume board is located on the left side of the computer. Do not confuse this board with the USB/audio jack board on the right side of the computer.

Before removing the USB/card reader board, follow these steps:

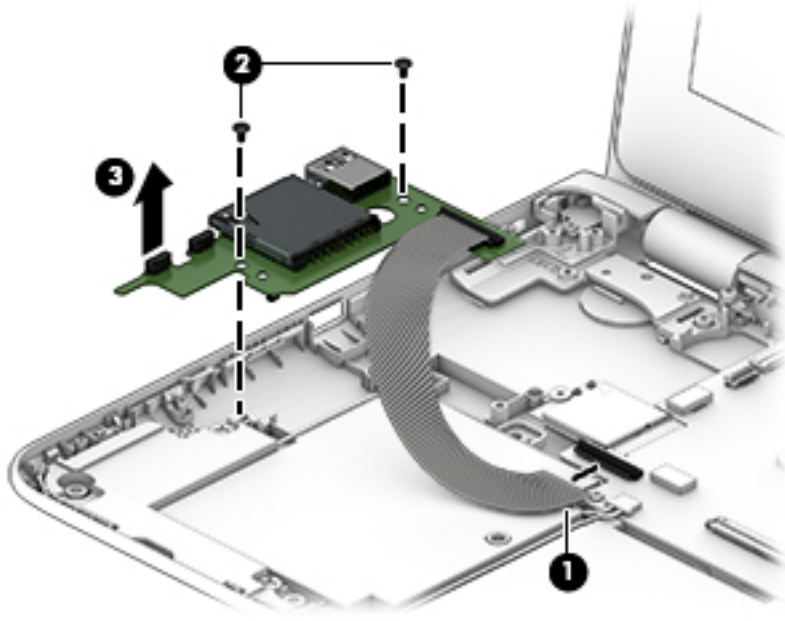
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the top cover (see [Top cover on page 29](#)).
5. Disconnect the battery.



To remove the USB/card reader board:

1. Disconnect the cable from the system board **(1)**.
2. Remove the two Phillips PM2.5×4.0 screws **(2)**.

3. Remove the board from the computer (3).



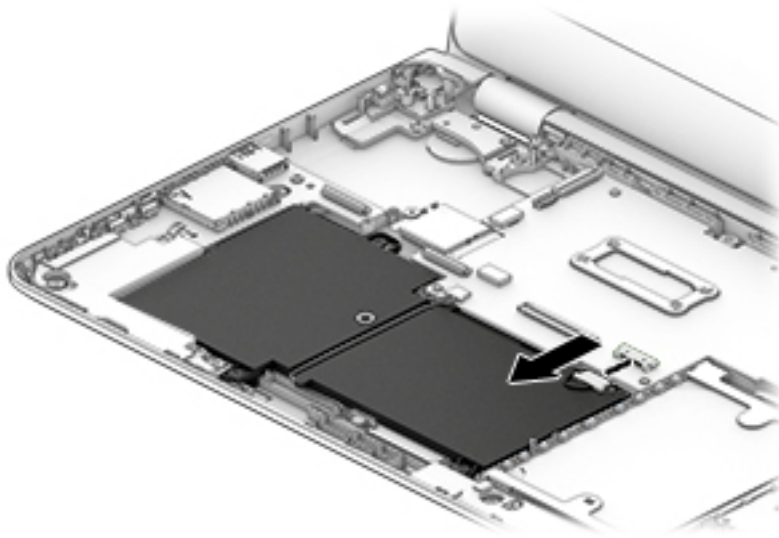
Reverse this procedure to install the USB/card reader board.

Speakers

| Description | Spare part number |
|--|-------------------|
| Speaker Kit (includes left and right speakers and cable) | 809554-001 |

Before removing the speakers, follow these steps:


1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the top cover (see [Top cover on page 29](#)).
5. Disconnect the battery.

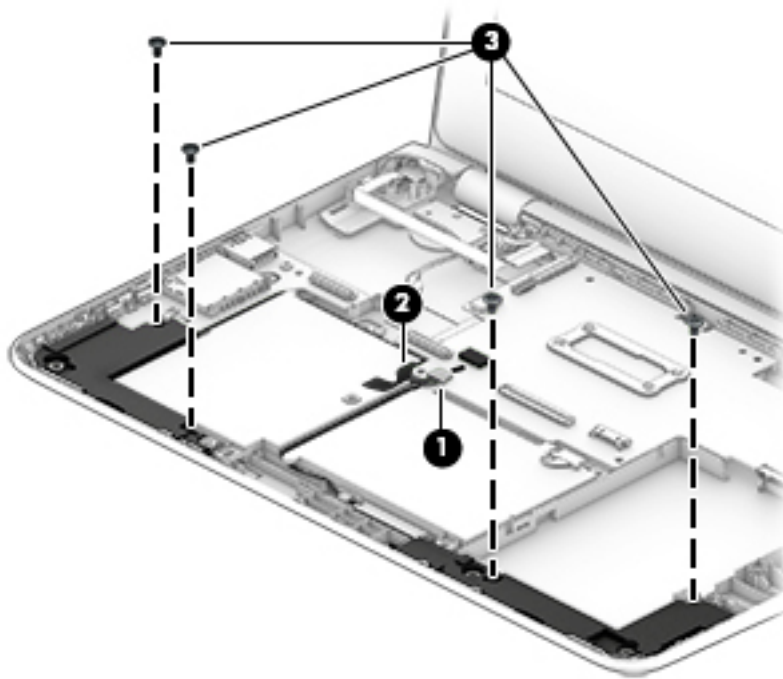


Remove the speakers:

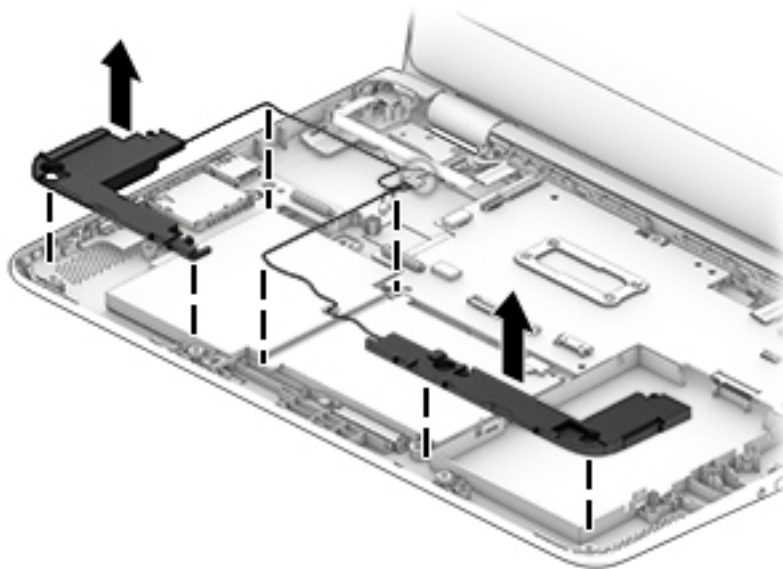
1. Disconnect the speaker cable from the system board **(1)**.
2. Remove the tape **(2)** that secures the speaker cable to the top of the battery.

3. Remove the four Phillips PM2.5×6.0 screws (3) that secure the speakers to the computer.

 **NOTE:** Rubber gaskets fit around each screw. For installation, make sure the gaskets are properly installed.



4. Lift the speakers from the computer, noting the proper cable routing for reinstallation.



Reverse this procedure to install the speakers.

System board



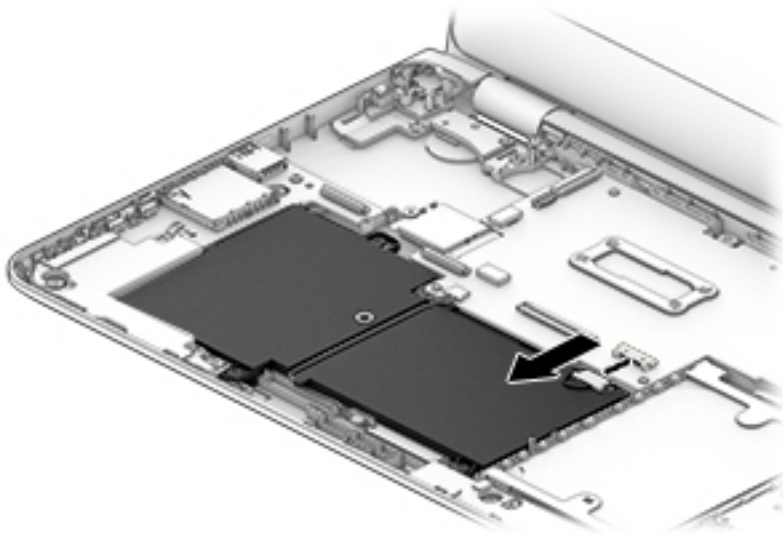
NOTE: The system board spare part kit includes replacement thermal material.


| Description | Spare part number |
|--|-------------------|
| System board for use in HP Pavilion x360 models equipped with: | |
| Intel Core M3-6Y30C processor and a Windows 10 operating system | 827663-601 |
| Intel Core M3-6Y30C processor and a non-Windows operating system | 827663-001 |
| Intel CoreT M-5Y10C processor and the Windows 8.1 Standard operating system | 809560-501 |
| Intel CoreT M-5Y10C processor and a non-Windows 8 operating system | 809560-001 |
| Intel Pentium N3700 processor and the Windows 10 operating system | 828895-601 |
| Intel Pentium N3700 processor and a non-Windows operating system | 828895-001 |
| Intel Pentium N3700 processor and the Windows 8.1 Standard operating system | 809557-501 |
| Intel Pentium N3700 processor and the Windows 7 operating system | 809557-001 |
| Intel Celeron N3050 processor and the Windows 10 operating system | 829211-601 |
| Intel Celeron N3050 processor and a non-Windows operating system | 829211-001 |
| Intel Celeron N3050 processor and the Windows 8.1 Standard operating system | 809556-501 |
| Intel Celeron N3050 processor and a non-Windows 8 operating system | 809556-001 |
| System board for use in HP x360 310 G2 models equipped with: | |
| Intel Pentium N3700 processor and the Windows 8.1 or Windows 10 operating system | 824146-601 |
| Intel Pentium N3700 processor and a non-Windows operating system | 824146-001 |
| Intel Celeron N3050 processor and the Windows 8.1 or Windows 10 operating system | 824144-601 |
| Intel Celeron N3050 processor and a non-Windows operating system | 824144-001 |

Before removing the system board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the top cover (see [Top cover on page 29](#)).

5. Disconnect the battery.

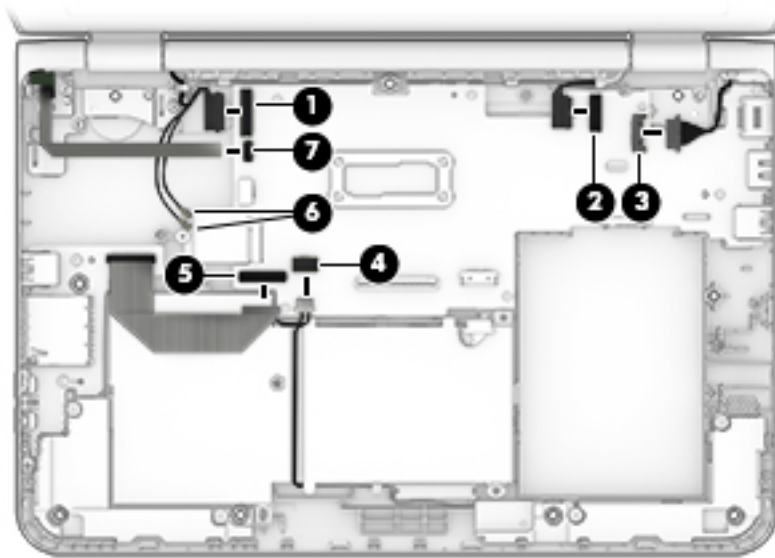


 **NOTE:** When replacing the system board, be sure that the following components (as necessary) are removed from the defective system board and installed on the replacement system board:

- WLAN module (see [WLAN module on page 49](#))
- Solid-state drive (see [Solid-state drive \(M.2\) on page 35](#))
- Heat sink (see [Heat sink on page 50](#))

Remove the system board:

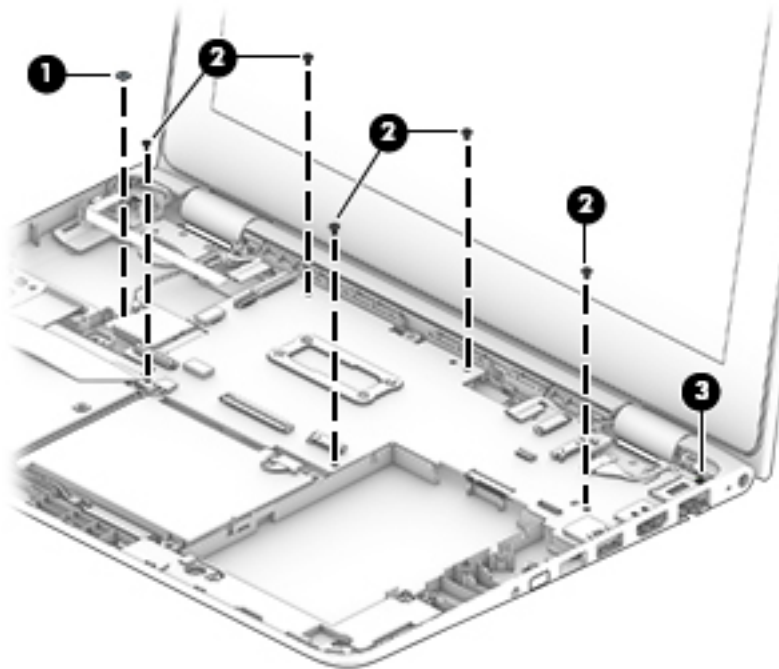
1. Disconnect the following cables from the system board:
 - (1): Display cable
 - (2): Touch board cable
 - (3): Power connector cable
 - (4): Speaker cable
 - (5): USB/card reader board cable
 - (6): Wireless antennas (may include one or two antennas)
 - (7): Power button board cable



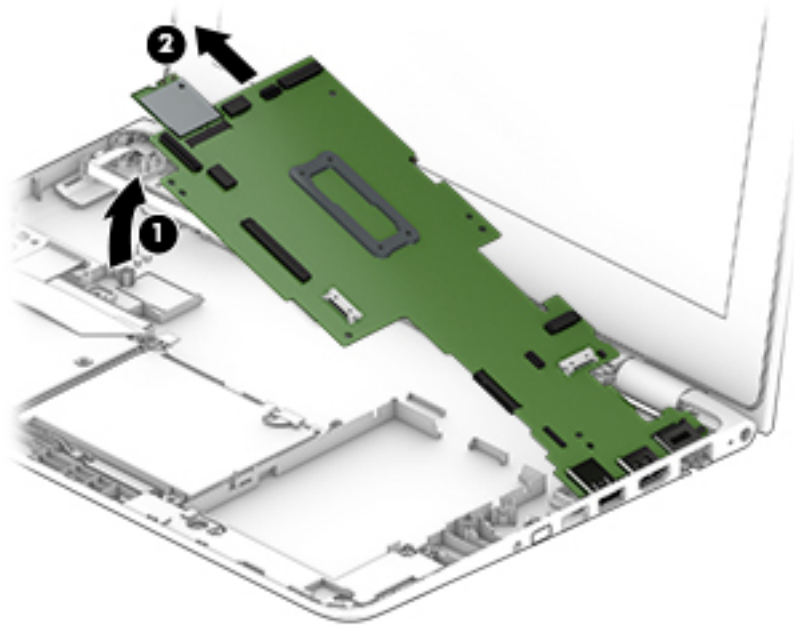
2. Remove the Phillips PM2.5×3.0 screw from the WLAN module (1).

CAUTION: To avoid damaging the WLAN module, do not remove the module from the system board socket until AFTER you removing the system board from the computer.

3. Remove the five Phillips PM2.5×4.0 screws (2) that secure the system board to the computer.
4. Loosen the captive screw in the upper right corner of the system board (3).



5. Lift the left side of the system board **(1)**, and then pull the system board toward the left to remove it from the computer **(2)**.



Reverse this procedure to install the system board.

Memory module

| Description | Spare part number |
|---|-------------------|
| Memory modules for use in HP Pavilion x360 models: | |
| 8-GB | 693374-005 |
| 4-GB | 691740-005 |
| Memory modules for use in HP x360 310 G2 models: | |
| 8-GB | 670034-001 |
| 4-GB | 641369-001 |



IMPORTANT: The memory modules are not customer replaceable.

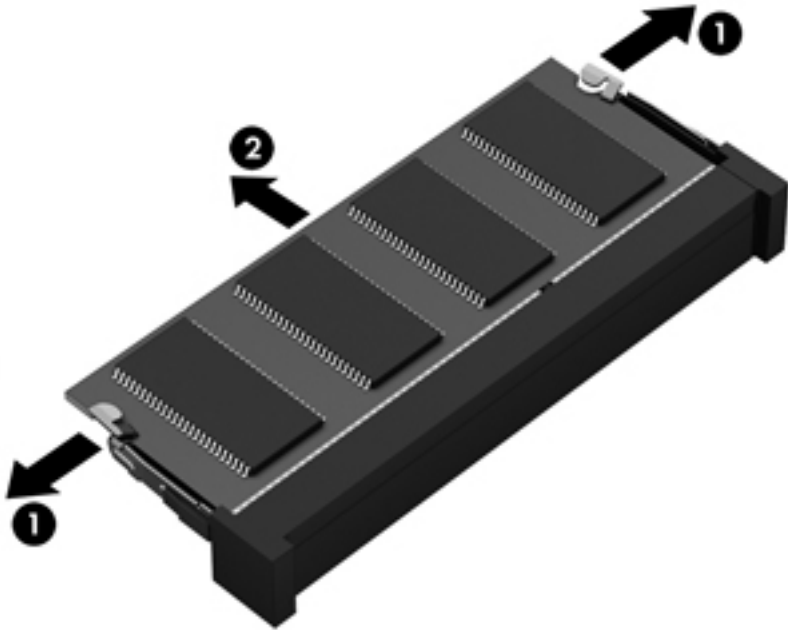
Before removing a memory module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the top cover (see [Top cover on page 29](#)).
5. Remove the system board (see [System board on page 43](#)).

To remove a memory module:

1. Remove the memory shielding.
2. Spread the retaining tabs **(1)** on each side of the memory module slot to release the memory module. (The memory module tilts up.)

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



Reverse this procedure to install a memory module.

WLAN module

| Description | Spare part number |
|--|-------------------|
| Intel Dual Band Wireless-AC 3165 802.11 ac 1x1 WiFi + BT 4.0 Combo Adapter | 806723-005 |
| Intel Dual Band Wireless-AC 3160 802.11 ac 1x1 WiFi + BT 4.0 Combo Adapter | 784644-005 |
| Realtek RTL8723BE 802.11b/g/n 1x1 Wi-Fi + BT4.0 Combo Adapter | 792610-005 |
| Intel Dual Band Wireless-AC 7265 802.11 ac 2x2 WiFi + BT 4.0 Combo Adapter | 793839-001 |
| Intel Dual Band Wireless-AC 7265NV 802.11 ac 2x2 WiFi + BT 4.0 Combo Adapter | 793840-001 |

CAUTION: To avoid damaging the boards, do not remove the WLAN module with the system board installed in the computer. Remove the system board, and then disconnect the WLAN module from the removed system board.

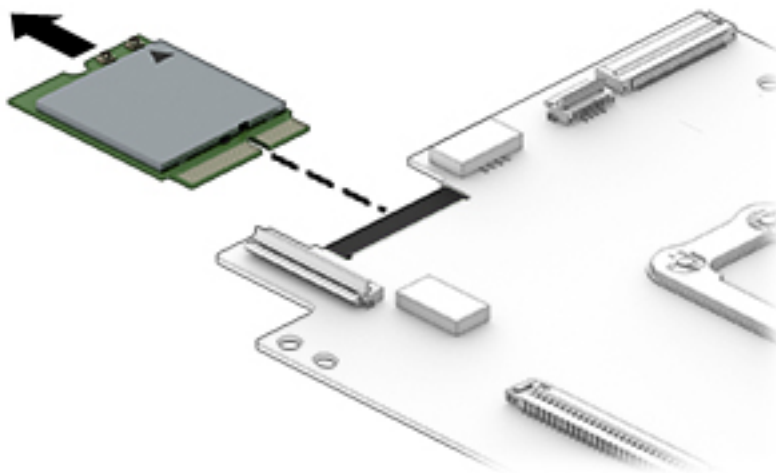
CAUTION: To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module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

Before removing the WLAN module, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the top cover (see [Top cover on page 29](#)).
5. Remove the system board (see [System board on page 43](#)).

Remove the WLAN module:

- ▲ From the removed system board, remove the WLAN module by pulling the module away from the slot.



Reverse this procedure to install the WLAN module.

Heat sink

| Description | Spare part number |
|---|-------------------|
| Heat sink for use in models with Broadwell Intel Core processors (includes replacement thermal material) | 809536-001 |
| Heat sink for use in HP Pavilion x360 Convertible models with Braswell Intel Pentium and Celeron processors (includes replacement thermal material) | 819788-001 |
| Heat sink for use in HP x360 310 G2 models with Braswell Intel Pentium and Celeron processors (includes replacement thermal material) | 824134-001 |
| Heat sink for use in models with Skylake processors (includes replacement thermal material) | 827662-001 |


Before removing the heat sink, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the top cover (see [Top cover on page 29](#)).
5. Remove the system board (see [System board on page 43](#)).

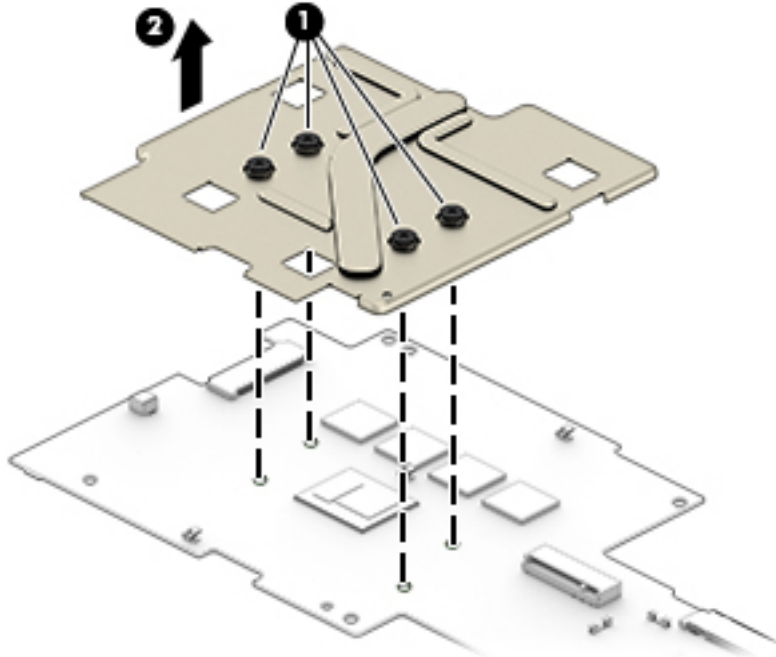
Remove the heat sink:

1. Following the 1 through 4 sequence stamped into the heat sink, loosen the four captive Phillips screws **(1)** that secure the heat sink to the system board.

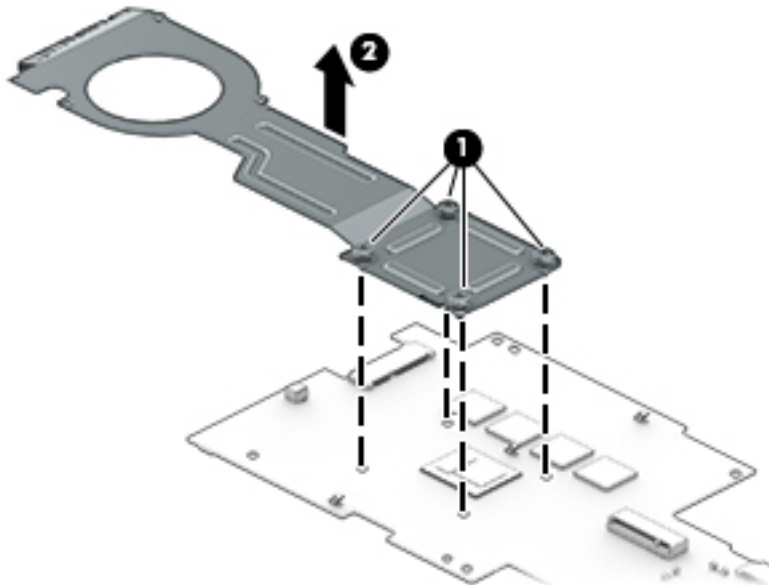
2. Remove the heat sink (2).


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

Models with Intel Pentium or Celeron processors:

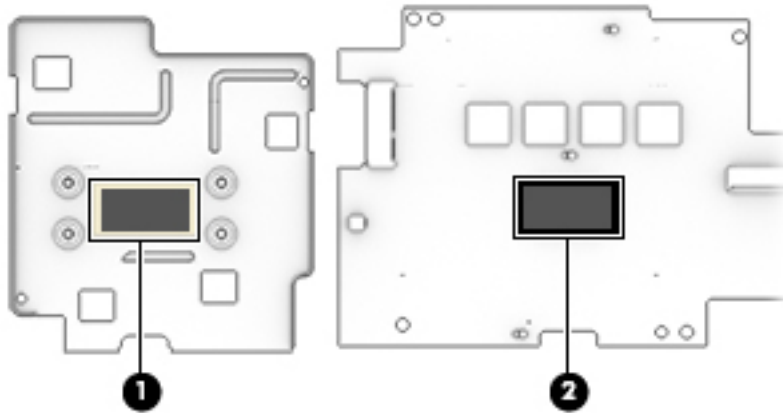


Models with Intel Core processors:

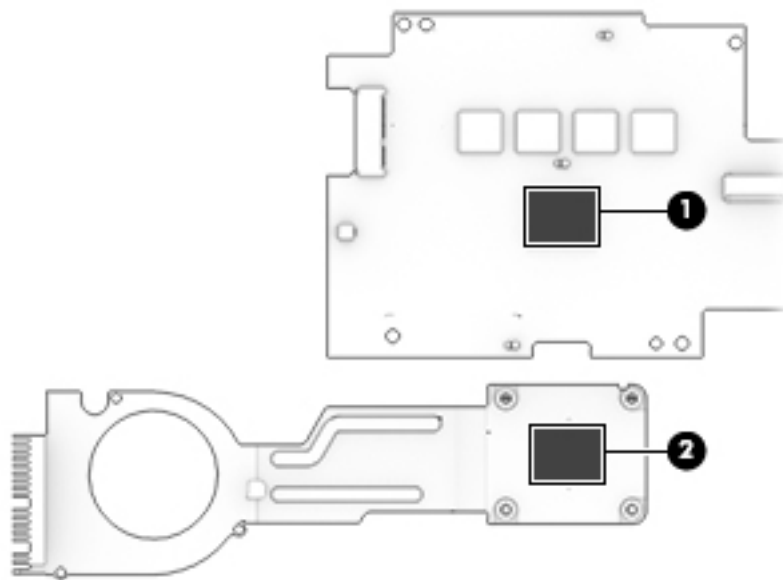


 **NOTE:** The thermal material must be thoroughly cleaned from the surfaces of the heat sink and the system board components each time the heat sink is removed. Thermal paste is used on the processor (1) and the heat sink section (2) that services it

Models with Intel Pentium or Celeron processors:



Models with Intel Pentium or Celeron processors:



Reverse this procedure to install the heat sink.

Battery

| Description | Spare part number |
|---|-------------------|
| 2-cell, 32-Wh, 4.2-Ah, Li-ion battery for use in all models | 796355-005 |
| 3-cell, 48-Wh, 4.21-Ah, Li-ion battery for use in HP x360 310 G2 models | 817184-005 |

Before removing the battery, follow these steps:

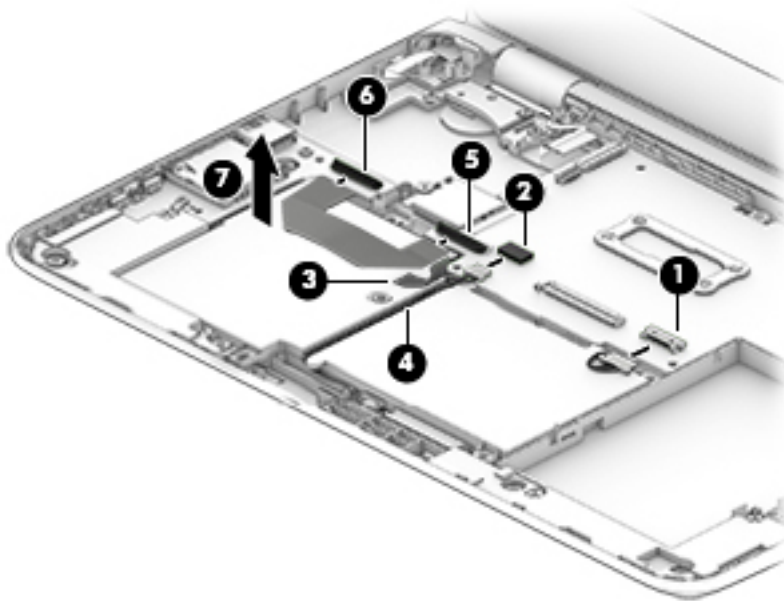
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the top cover (see [Top cover on page 29](#)).

Remove the battery:

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

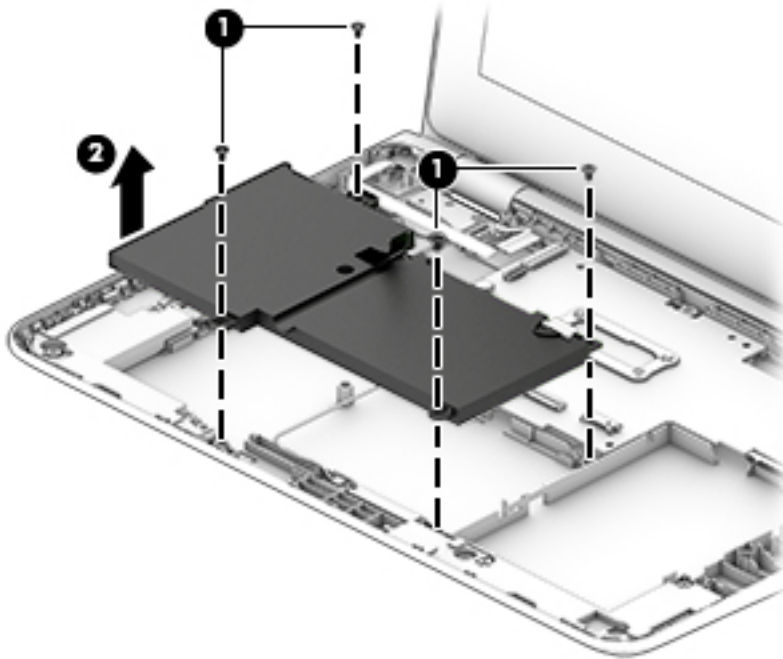
1. Disconnect the battery cable from the system board **(1)**.
2. Disconnect the speaker cable from the system board **(2)**, lift the tape that secures the cable to the battery **(3)**, and remove the cable from atop the battery **(4)**.
3. Disconnect the USB/card reader board cable from the system board **(5)** and the USB/card reader board **(6)**, and then (if replacing the battery) remove the cable from atop the battery **(7)**.

📝 NOTE: If replacing the battery, be sure to attach the flat USB/card reader cable to the top of the new battery.



4. Remove the four Phillips PM2.5×4.0 screws **(1)** that secure the battery to the computer.

5. Remove the battery (2).



Reverse this procedure to install the battery.

Display assembly

The display is only spared at the subcomponent level. The full hinge-up is not spared.

Before removing the display assembly, follow these steps:

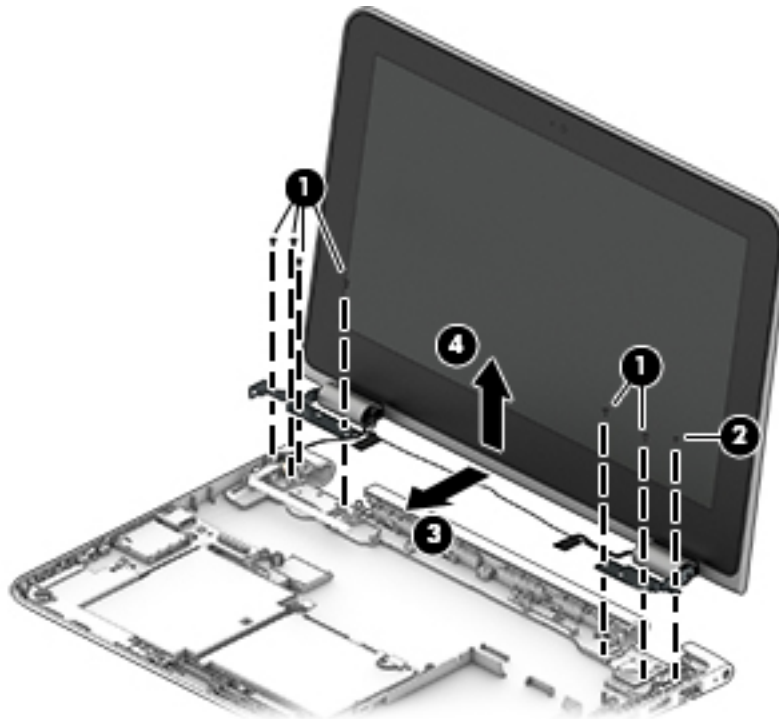
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the top cover (see [Top cover on page 29](#)).
5. Remove the system board (see [System board on page 43](#)).

To remove the display assembly:

1. Remove the six Phillips PM2.5×4.0 screws **(1)** and the Phillips PM2.0×2.5 screw **(2)** that secures the display assembly to the computer.


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

2. Pull the display into the computer to remove hinges from computer **(3)**.
3. Separate the display assembly from the computer **(4)**.



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

1. To remove the display enclosure:

 **NOTE:** The display enclosure is available using the following spare part numbers:

809574-001 for red models


809573-001 for silver HP Pavilion x360 Convertible models

809575-001 for green HP Pavilion x360 Convertible models


816503-001 for purple HP Pavilion x360 Convertible models

824201-001 for silver HP x360 310 G2 models

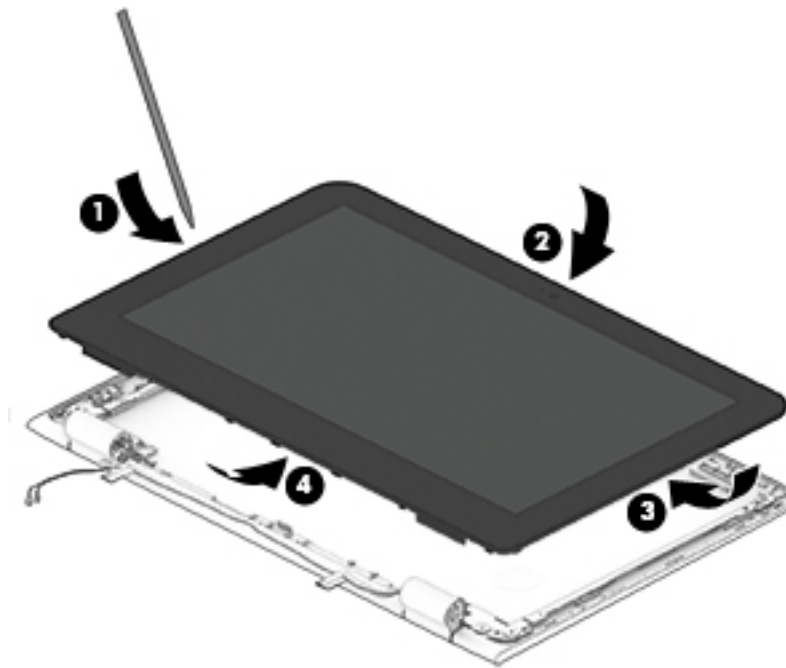
- a. Use a thin plastic tool to run along the entire seam of the display to loosen the cover from the display.

 **CAUTION:** To avoid damaging the display, be sure to only run the tool in one direction.

- b. Separate the left side (1), top (2), right side (3), and bottom (4) of the display cover from the display.

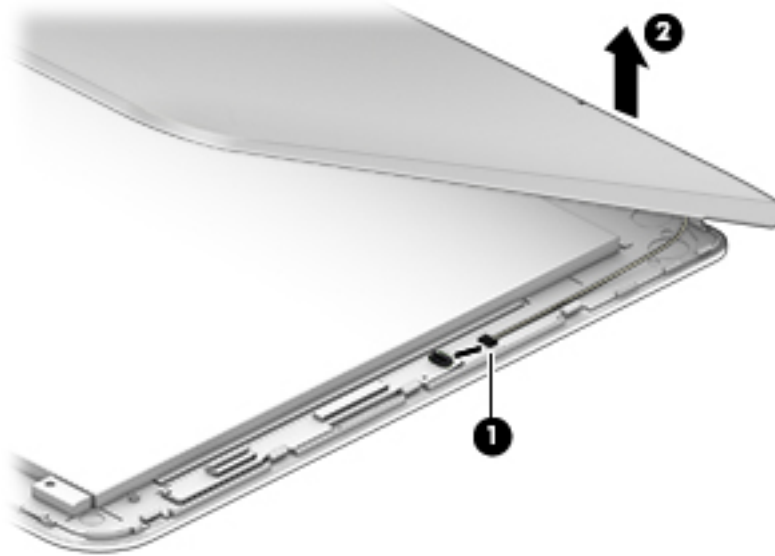
 **NOTE:** Separate the cover from display just enough to gain access to the touch control cable that routes to the connector on the board on the side of the display panel.

The raw display panel is available using spare part number 809548-001 for SVA panels and 809549-001 for UVWA panels.



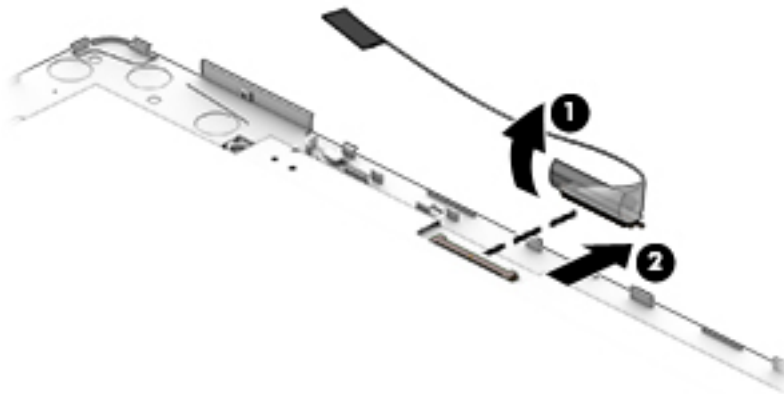
- c. Disconnect the cable from the touch control board (1), and then separate the display enclosure from the display (2).

Position the display enclosure next to the display panel so you can access the display cable connected to the back of the display panel.




- d. Disconnect the display cable from the back of the display panel by lifting the tape that secures the cable in the connector (1), and then pull the cable out of the connector (2).

The display cable is available using spare part number 809576-001.

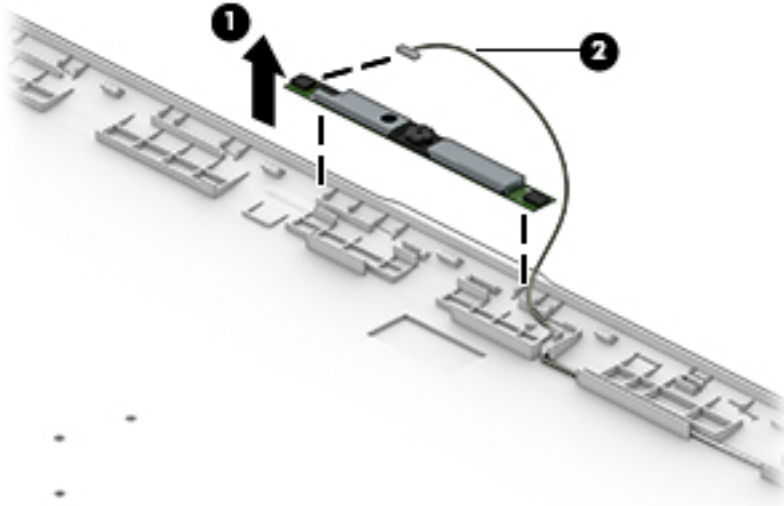


2. To remove the webcam module:

 **NOTE:** The webcam is available using spare part number 807542-001.

- a. Lift the webcam module (1) enough to gain access to the cable.

- b. Disconnect the cable (2) from the module.

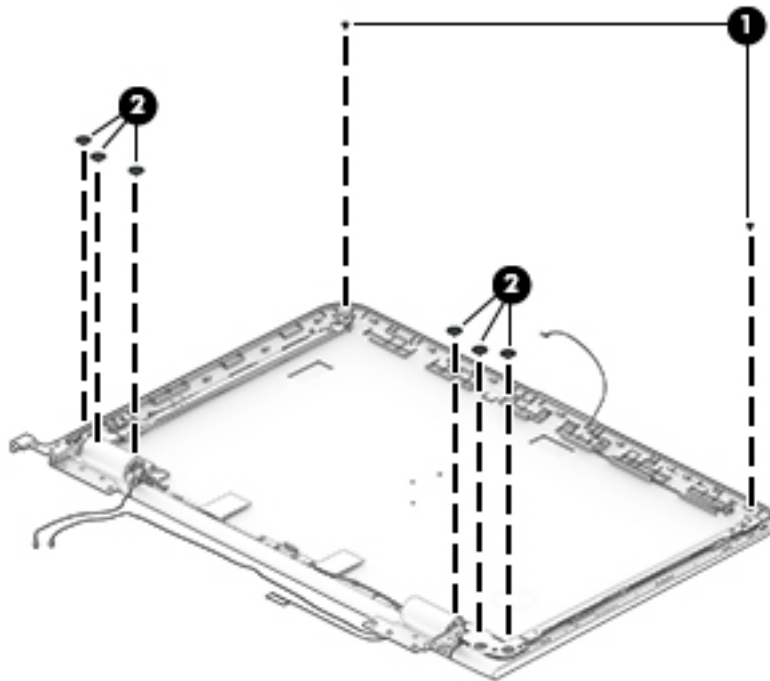


3. To remove the display hinges:

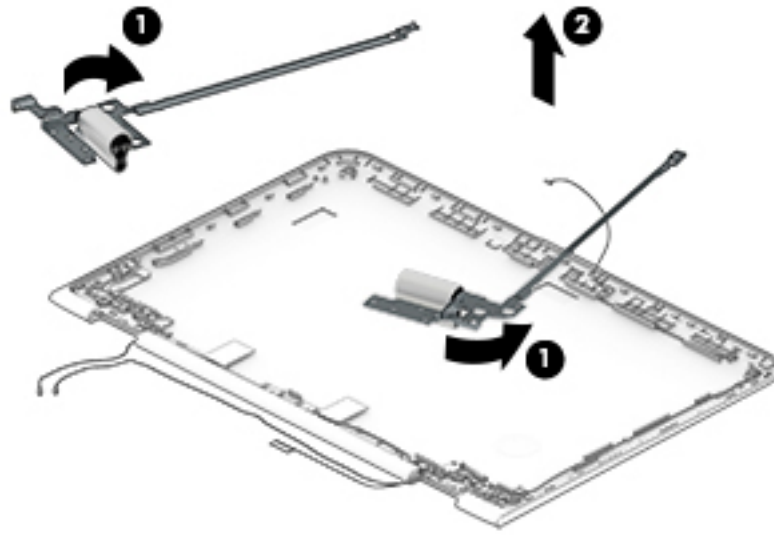


NOTE: The display hinges are available using spare part number 809539-001.


- a. Position the display enclosure upright.
- b. Remove the Phillips PM2.0×2.0 screw (1) from the top of each hinge and the three broadhead Phillips PM2.5×2.0 screws (2) from the bottom of each hinge that secure the hinges to the display.



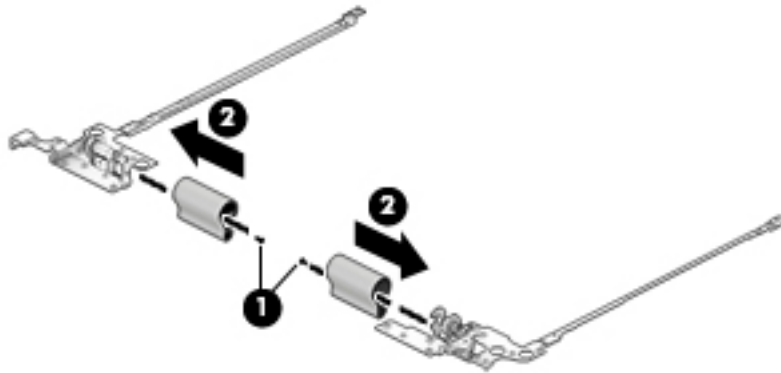
- c. Rotate the top of the hinges inward so that the hinges are at an angle, **(1)**, and then remove the hinges **(2)**.




4. To remove the display hinge covers:

 **NOTE:** The display hinge covers are available using spare part number 809541-001 for red HP Pavilion x360 models, 809540-001 for silver HP Pavilion x360 models, 809542-001 for green HP Pavilion x360 models, 809828-001 for purple HP Pavilion x360 models, and 824135-001 for silver HP x360 310 G2 models.

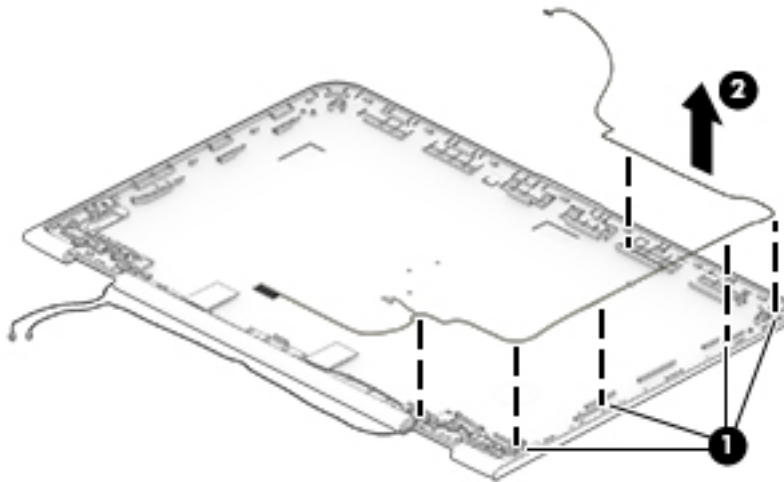
- a. Remove the Phillips PM2.0×3.0 screw **(1)** that secures the hinge cover to the hinge.
b. Separate the hinge cover from the hinge **(2)**.




5. To remove the display cable:

 **NOTE:** The display cable is available using spare part number 809576-001.

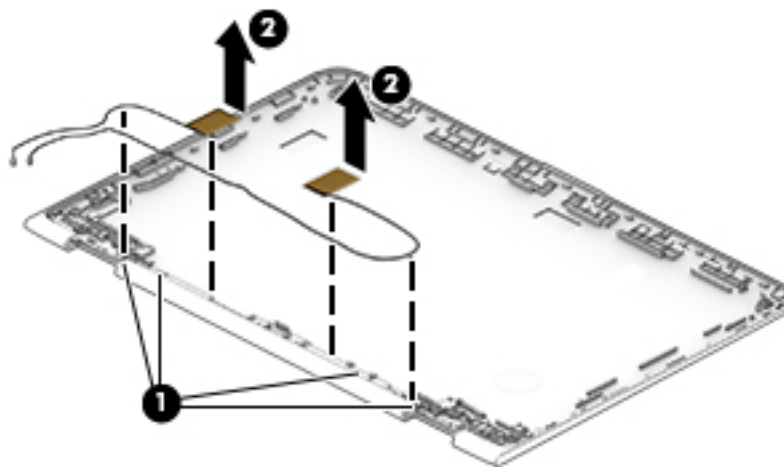
- ▲ Remove the cable from the tape and clips **(1)** that secure it to the display enclosure, and then lift the display cable from the display enclosure **(2)**.




6. To remove the antenna cables:

 **NOTE:** The antenna cables are available using spare part number 809530-001.

- ▲ Remove the cables from the tape and clips **(1)** that secure them to the display enclosure, peel the transceivers from the enclosure, and then lift the cables and transceivers from the display enclosure **(2)**.

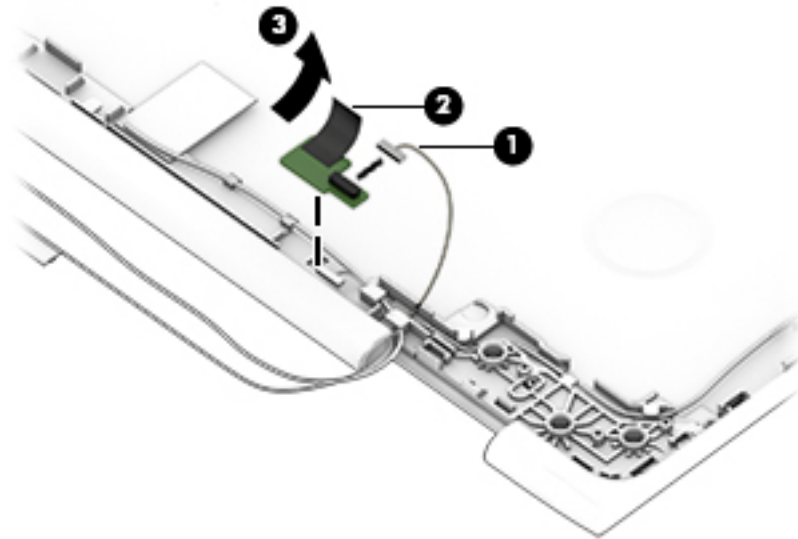


7. To remove the sensor board:

 **NOTE:** The sensor board is available using spare part number 809547-001 on models with an Intel Core processor or 819790-001 on models with an Intel Pentium or Celeron processor.

- a. Disconnect the cable from the board **(1)**.
- b. Remove the tape that secures the board to the display **(2)**.

- c. Remove the sensor board from the display (3).



Reverse this procedure to reassemble and install the display assembly.

Power button board

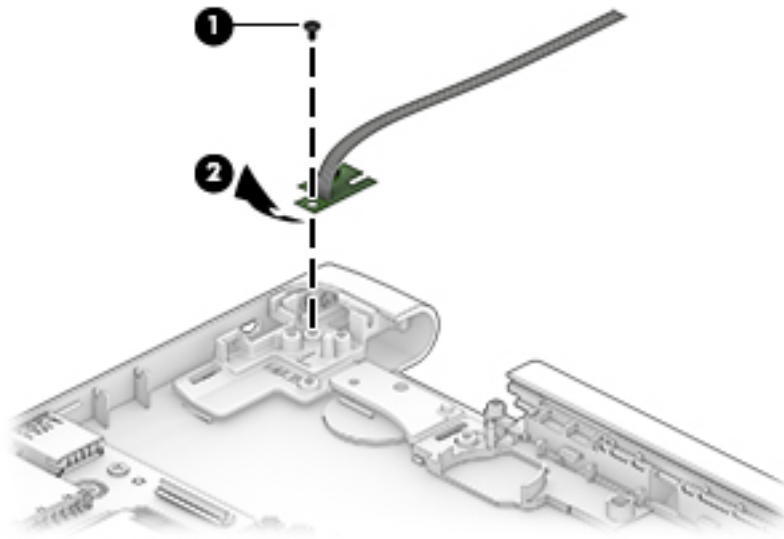
| Description | Spare part number |
|--|-------------------|
| Power button board for use in HP Pavilion x360 models (includes cable) | 809546-001 |
| Power button board for use in HP x360 310 G2 models (includes cable) | 824140-001 |

Before removing the power button board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the top cover (see [Top cover on page 29](#)).
5. Remove the system board (see [System board on page 43](#)).
6. Remove the display (see [Display assembly on page 55](#)).

Remove the power button board:

1. Remove the Phillips PM2.5×3.0 screw **(1)** that secures the power button board to the computer.
2. Remove the power button board and cable **(2)**.



Reverse this procedure to install the power button board.

Power connector cable

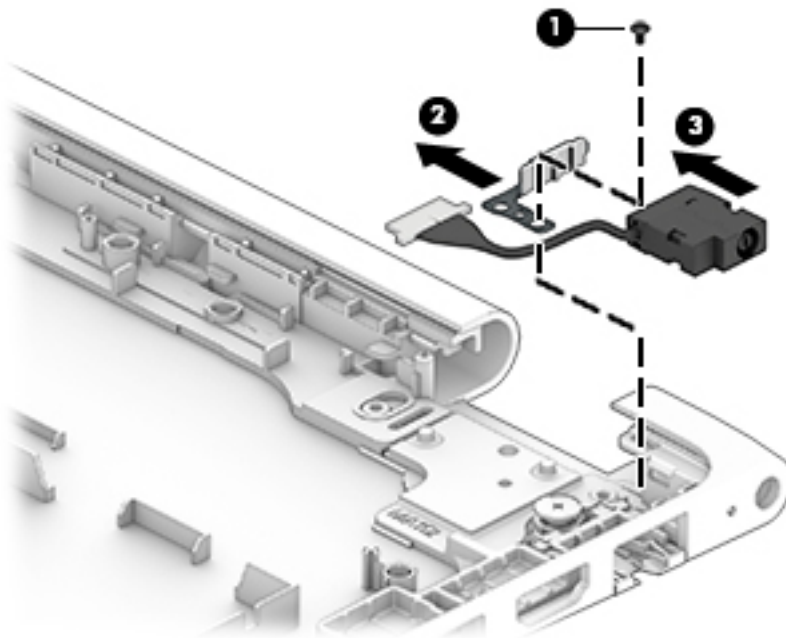
| Description | Spare part number |
|-----------------------|-------------------|
| Power connector cable | 807522-001 |

Before removing the power connector cable, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the top cover (see [Top cover on page 29](#)).
5. Remove the system board (see [System board on page 43](#)).
6. Remove the display (see [Display assembly on page 55](#)).

Remove the power connector cable:

1. Remove the Phillips PM2.0×2.0 screw **(1)** that secures the bracket to the computer.
2. Remove the bracket from the computer **(2)**.
3. Pull the connector out from under the rear corner of the computer **(3)**.




4. Remove the power connector cable.

Reverse this procedure to install the power connector cable.

6 Using Setup Utility (BIOS) in Windows 8.1

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)

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

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

Updating 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 the one currently installed on the computer, you need to know the version of the system BIOS that is installed.


BIOS version information (also known as *ROM date* and *System BIOS*) can be revealed from the Start screen by typing *support*, selecting the **HP Support Assistant** app, selecting **My computer**, and then selecting **System Information**, or by using Setup Utility (BIOS).

1. Start Setup Utility (BIOS) (see [Starting Setup Utility \(BIOS\) on page 64](#)).
2. Select **Main**, and then make note of your BIOS version.
3. Select **Exit**, select **Exit Discarding Changes**, and then follow the on-screen instructions.

Downloading a BIOS update

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

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

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

1. From the Start screen, type `support`, and then select the **HP Support Assistant** app.

– or –

From the Windows desktop, click the question mark icon in the notification area, at the far right of the taskbar.

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.

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

1. From the Start screen, type `file`, and then select **File Explorer**.

– or –

From the Windows desktop, right-click the **Start** button, 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.


7 Using Setup Utility (BIOS) in Windows 10

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

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

Starting Setup Utility (BIOS)

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

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

- Computers or tablets with keyboards:
 - ▲ Turn on or restart the computer, quickly press [esc](#), and then press [f10](#).
- Tablets without keyboards:
 1. Turn on or restart the tablet, and then quickly hold down the volume down button.
- or -
Turn on or restart the tablet, and then quickly hold down the Windows button.
 2. Tap **f10**.

Updating Setup Utility (BIOS)

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

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

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

Determining the BIOS version

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

To reveal the BIOS version information (also known as *ROM date* and *System BIOS*):

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

– or –

- Click the question mark icon in the taskbar.
2. Select **My PC**, and then select **Specifications**.

– or –


- ▲ Use Setup Utility (BIOS).

To use Setup Utility (BIOS):


1. Start Setup Utility (BIOS) (see [Starting Setup Utility \(BIOS\) on page 66](#)).
2. Select **Main**, select System Information, and then make note of the BIOS version.
3. Select **Exit**, select **No**, and then follow the on-screen instructions.

To check for later BIOS versions, see [Downloading a BIOS update on page 67](#).

Downloading a BIOS update

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

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

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

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

– or –

Click the question mark icon in the taskbar.

2. Click **Updates**, and then click **Check for updates and messages**.
3. Follow the on-screen instructions.
4. At the download area, follow these steps:
 - a. Identify the most recent BIOS update and compare it to the BIOS version currently installed on your computer. If the update is more recent than your BIOS version, make a note of the date, name, or other identifier. You may need this information to locate the update later, after it has been downloaded to your hard drive.
 - b. Follow the on-screen instructions to download your selection to the hard drive.

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

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

1. Type `file` in the taskbar search box, and then select **File Explorer**.
2. Click your hard drive designation. The hard drive designation is typically Local Disk (C:).
3. Using the hard drive path you recorded earlier, open the folder that contains the update.

4. Double-click the file that has an .exe extension (for example, *filename.exe*).
The BIOS installation begins.
5. Complete the installation by following the on-screen instructions.



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

Synchronizing a tablet and keyboard (select products only)

For a tablet with a detachable keyboard, when you attach the tablet to the keyboard and restart the computer, Setup Utility (BIOS) checks to see if the Embedded Controller firmware on the keyboard needs to be synchronized. If so, synchronization begins. If the synchronization is interrupted, a notification screen displays for 10 seconds before the tablet restarts and attempts to synchronize again.



NOTE: The Embedded Controller firmware will synchronize **ONLY** if the tablet or keyboard battery is more than 50% charged, or if your tablet is connected to AC power.

8 Backing up, restoring, and recovering in Windows 8.1

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

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

For additional information, refer to the HP Support Assistant.

- ▲ From the Start screen, type `support`, and then select the **HP Support Assistant** app.

- or -


From the Windows desktop, click the question mark icon in the notification area, at the far right of the taskbar.

Creating recovery media and backups


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

- Use HP Recovery Manager after you successfully set up the computer to 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. For information on creating recovery media, see [Creating HP Recovery media \(select models only\) on page 69](#). For information on the recovery options that are available using the recovery media, see [Recovering using HP Recovery Manager on page 71](#).
- Use Windows tools to create system restore points and create backups of personal information.

For more information, see [Using Windows tools on page 70](#).

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

Creating HP Recovery media (select models only)

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

HP Recovery Manager is a software program that allows you 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 restore the factory image if you replace the hard drive.

- Only one set of recovery media can be created. Handle these recovery tools carefully, and keep them in a safe place.
- HP Recovery Manager examines the computer and determines the required storage capacity for the media that will be required.
- To create recovery discs, your computer must have an optical drive with DVD writer capability, and you must use only high-quality blank DVD-R, DVD+R, DVD-R DL, or DVD+R DL discs. Do not use rewritable discs such as CD±RW, DVD±RW, double-layer DVD±RW, or BD-RE (rewritable Blu-ray) discs; they are not compatible with HP Recovery Manager software. Or, instead, you can use a high-quality blank USB flash drive.
- If your computer does not include an integrated optical drive with DVD writer capability, but you would like to create DVD recovery media, you can use an external optical drive (purchased separately) to create recovery discs, or you can obtain recovery discs for your computer from support. See the *Worldwide Telephone Numbers* booklet included with the computer. You can also find contact information from the HP website. Go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions. 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 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 71](#).

Using Windows tools

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

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

- ▲ From the Start screen, type `help`, and then select **Help and Support**.

– or –

From the Windows desktop, click the question mark icon in the notification area, at the far right of the taskbar.

For more information and steps, see Help and Support.

Restore and recovery

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

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

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

- ▲ From the Start screen, type `support`, and then select the **HP Support Assistant** app.

- or -

From the Windows desktop, click the question mark icon in the notification area, at the far right of the taskbar.

- 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.
- On select models, 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 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 71](#).

- If you want to recover the Windows partition to original factory content, you can choose the System Recovery option from the HP Recovery partition (select models only) or use the HP Recovery media. For more information, see [Recovering using HP Recovery Manager on page 71](#). If you have not already created recovery media, see [Creating HP Recovery media \(select models only\) on page 69](#).
- On select models, if you want to recover the computer's original factory partition and content, or if you have replaced the hard drive, you can use the Factory Reset option of HP Recovery media. For more information, see [Recovering using HP Recovery Manager on page 71](#).
- On select models, if you want to remove the recovery partition to reclaim hard drive space, HP Recovery Manager offers the Remove Recovery Partition option.

For more information, see [Removing the HP Recovery partition \(select models only\) on page 73](#).

Recovering using HP Recovery Manager

HP Recovery Manager software allows you to recover the computer to its original factory state by using the HP Recovery media that you either created or that you obtained from support, or by using the HP Recovery partition (select models only). If you have not already created recovery media, see [Creating HP Recovery media \(select models only\) on page 69](#).

What you need to know before you get started


- HP Recovery Manager recovers only software that was installed at the factory. For software not provided with this computer, you must either download the software from the manufacturer's website or reinstall the software from the media provided by the manufacturer.




IMPORTANT: Recovery through HP Recovery Manager should be used as a final attempt to correct computer issues.

- HP Recovery media must be used if the computer hard drive fails. If you have not already created recovery media, see [Creating HP Recovery media \(select models only\) on page 69](#).
- To use the Factory Reset option (select models only), you must use HP Recovery media. If you have not already created recovery media, see [Creating HP Recovery media \(select models only\) on page 69](#).
- If your computer does not allow the creation of HP Recovery media or if the HP Recovery media does not work, you can obtain recovery media for your system from support. See the *Worldwide Telephone Numbers* booklet included with the computer. You can also find contact information from the HP

website. Go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions.

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

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

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

- System Recovery—Reinstalls the original operating system, and then configures the settings for the programs that were installed at the factory.
- Minimized Image Recovery (select models only)—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 System Recovery and Minimized Image Recovery (select models only).

Using the HP Recovery partition (select models only)

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


To start HP Recovery Manager from the HP Recovery partition:

1. From the Start screen, type `recovery`, select **HP Recovery Manager**, and then select **HP Recovery Environment**.
- or -
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 **Recovery Manager**, and then follow the on-screen instructions.

Using HP Recovery media to recover

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

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

 **NOTE:** If the computer does not automatically restart in HP Recovery Manager, change the computer boot order. See [Changing the computer boot order on page 72](#).

3. Follow the on-screen instructions.

Changing the computer boot order

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

To change the boot order:

1. Insert the HP Recovery media.
2. Start Computer Setup:
 - ▲ Turn on or restart the computer, quickly press [esc](#), and then press [f9](#) for boot options.
3. Select the optical drive or USB flash drive from which you want to boot.
4. Follow the on-screen instructions.

Removing the HP Recovery partition (select models only)

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



IMPORTANT: After you remove the HP Recovery partition, you can no longer use the Windows Refresh option or the Windows option to remove everything and reinstall Windows. In addition, you will not be able to perform System Recovery or Minimized Image Recovery from the HP Recovery partition. So before you remove the Recovery partition, create HP Recovery media; see [Creating HP Recovery media \(select models only\) on page 69](#).

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.

9 Backing up, restoring, and recovering in Windows 10

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

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

For additional information, refer to the HP support assistant app.

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

– or –

Click the question mark icon in the taskbar.



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

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

Creating recovery media and backups

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

- Use HP Recovery Manager to create HP Recovery media after you successfully set up the computer. This step creates a backup of the HP Recovery partition on the computer. The backup can be used to reinstall the original operating system in cases where the hard drive is corrupted or has been replaced. For information on creating recovery media, see [Creating HP Recovery media \(select products only\) on page 74](#). For information on the recovery options that are available using the recovery media, see [Using Windows tools on page 75](#).

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

For more information, see [Recovering using HP Recovery Manager on page 76](#).



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

Creating HP Recovery media (select products only)


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

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

You can use Windows tools to create system restore points and create backups of personal information, see [Using Windows tools on page 75](#).

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

To create HP Recovery media:


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

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

If you ever need to recover the system, see [Recovering using HP Recovery Manager on page 76](#).

Using Windows tools

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


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

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

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

Restore and recovery

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

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

- Windows offers several options for restoring from backup, refreshing the computer, and resetting the computer to its original state. For more information see the Get started app.
 - ▲ Select the **Start** button, and then select the **Get started** app.
- If you need to correct a problem with a preinstalled application or driver, use the Reinstall drivers and/or applications option (select products only) of HP Recovery Manager to reinstall the individual application or driver.
 - ▲ Type `recovery` in the taskbar search box, select **HP Recovery Manager**, select **Reinstall drivers and/or applications**, and then follow the on-screen instructions.
- If you want to recover the Windows partition to original factory content, you can choose the System Recovery option from the HP Recovery partition (select products only) or use the HP Recovery media. For more information, see [Recovering using HP Recovery Manager on page 76](#). If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 74](#).
- On select products, if you want to recover the computer's original factory partition and content, or if you have replaced the hard drive, you can use the Factory Reset option of HP Recovery media. For more information, see [Recovering using HP Recovery Manager on page 76](#).
- On select products, if you want to remove the recovery partition to reclaim hard drive space, HP Recovery Manager offers the Remove Recovery Partition option.


For more information, see [Removing the HP Recovery partition \(select products only\) on page 78](#).

Recovering using HP Recovery Manager

HP Recovery Manager software allows you to recover the computer to its original factory state by using the HP Recovery media that you either created or that you obtained from HP, or by using the HP Recovery partition (select products only). If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 74](#).


What you need to know before you get started

- HP Recovery Manager recovers only software that was installed at the factory. For software not provided with this computer, you must either download the software from the manufacturer's website or reinstall the software from the media provided by the manufacturer.


 **IMPORTANT:** Recovery through HP Recovery Manager should be used as a final attempt to correct computer issues.

- HP Recovery media must be used if the computer hard drive fails. If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 74](#).
- To use the Factory Reset option (select products only), you must use HP Recovery media. If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 74](#).
- If your computer does not allow the creation of HP Recovery media or if the HP Recovery media does not work, you can obtain recovery media for your system from support. See the *Worldwide Telephone Numbers* booklet included with the computer. You can also find contact information from the HP

website. Go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions.

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

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

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


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

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

Using the HP Recovery partition (select products only)

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

To start HP Recovery Manager from the HP Recovery partition:

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

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

- or -

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

For tablets without keyboards:

Turn on or restart the tablet, and then quickly hold down the volume down button; then select **f11**.

- or -


Turn on or restart the tablet, and then quickly hold down the Windows button; then select **f11**.

2. Select **Troubleshoot** from the boot options menu.
3. Select **Recovery Manager**, and then follow the on-screen instructions.

Using HP Recovery media to recover

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

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


 **NOTE:** If the computer does not automatically restart in HP Recovery Manager, change the computer boot order. See [Changing the computer boot order on page 78](#).

3. Follow the on-screen instructions.

Changing the computer boot order

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

To change the boot order:

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

1. Insert the HP Recovery media.
2. Access BIOS:

For computers or tablets with keyboards attached:

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

For tablets without keyboards:

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


- or -


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

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

Removing the HP Recovery partition (select products only)

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

 **IMPORTANT:** After you remove the HP Recovery partition, you will not be able to perform System Recovery or create HP recovery media from the HP Recovery partition. So before you remove the Recovery partition, create HP Recovery media; see [Creating HP Recovery media \(select products only\) on page 74](#).


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

Follow these steps to remove the HP Recovery partition:

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

10 Using HP PC Hardware Diagnostics (UEFI)

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

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


To start HP PC Hardware Diagnostics UEFI:

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

2. Press or tap **f2**.


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

- a. Connected USB drive

 **NOTE:** To download the HP PC Hardware Diagnostics (UEFI) tool to a USB drive, see [Downloading HP PC Hardware Diagnostics \(UEFI\) to a USB device on page 80](#).

- b. Hard drive
- c. BIOS

3. When the diagnostic tool opens, select the type of diagnostic test you want to run, and then follow the on-screen instructions. On a tablet, press the volume down button to stop a diagnostic test.

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

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

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

Download the latest UEFI version:

1. Go to <http://www.hp.com/go/techcenter/pcdiags>. The HP PC Diagnostics home page is displayed.
2. In the HP PC Hardware Diagnostics section, click the **Download** link, and then select **Run**.

Download any version of UEFI for a specific product:

1. Go to <http://www.hp.com/support>, and then select your country. The HP Support page is displayed.
2. Click **Drivers & Downloads**.
3. In the text box, enter the product name, and then click **Go**.

– or –

Click **Find Now** to let HP automatically detect your product.

4. Select your computer, and then select your operating system.
5. In the **Diagnostic** section, follow the on-screen instructions to select and download the UEFI version you want.

11 Specifications

Computer specifications

| | Metric | U.S. |
|---|---------------------------|---------------------|
| Dimensions | | |
| Width | 306 mm | 12.13 in |
| Depth | 208 mm | 8.47 in |
| Height | 22.5 mm | 0.86 in |
| Weight with solid-state drive | 1362.9 g | 3.01 lbs |
| Weight with hard drive | 1462.9 g | 3.23 lbs |
| Input power | | |
| Operating voltage and current | 19.5 V dc @ 3.33 A – 65 W | |
| | 19.5 V dc @ 2.31 A – 45 W | |
| Temperature | | |
| Operating | 5°C to 35°C | 41°F to 95°F |
| Nonoperating | -20°C to 60°C | -4°F to 140°F |
| Relative humidity (noncondensing) | | |
| Operating | 10% to 90% | |
| Nonoperating | 5% to 95% | |
| Maximum altitude (unpressurized) | | |
| Operating | -15 m to 3,048 m | -50 ft to 10,000 ft |
| Nonoperating | -15 m to 12,192 m | -50 ft to 40,000 ft |
| NOTE: Applicable product safety standards specify thermal limits for plastic surfaces. The device operates well within this range of temperatures. | | |

Hard drive specifications

| | 1-TB, 5400-rpm* | 500-GB, 5400-rpm* |
|--|-----------------------------|-----------------------------|
| Dimensions | | |
| Height | 7.0 mm | 7.0 mm |
| Length | 100.4 mm | 100.4 mm |
| Width | 69.9 mm | 69.9 mm |
| Weight | 110 g | 110 g |
| Interface type | SATA | SATA |
| Transfer rate (synchronous, maximum) | 1.2 GB/sec | 1.1 GB/sec |
| Security | ATA security | ATA security |
| Seek times (typical read, including setting) | | |
| Single track | 3 ms | 1.5 ms |
| Average (read/write) | 13 ms | 11/13 ms |
| Maximum | 24 ms | 22 ms |
| Logical blocks | 1,953,525,168 | 976,773,168 |
| Disk rotational speed | 5400 rpm | 5400 rpm |
| Operating temperature | 0°C to 60°C (32°F to 140°F) | 0°C to 60°C (32°F to 140°F) |
| *1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less. | | |
| NOTE: Certain restrictions and exclusions apply. Contact technical support for details. | | |

Solid-state drive specifications

| | 128-GB* | 256-GB* |
|-----------------------------------|-----------------------------|------------------|
| Height | 1.35 mm | 1.35 mm |
| Weight | < 10 g | < 10 g |
| Form factor | M.2 2280-D2-B-M | M.2 2280-D2-B-M |
| Transfer rate | up to 540 MB/sec | up to 540 MB/sec |
| Interface type | SATA-3 | SATA-3 |
| Ready time, maximum (to not busy) | 1.0 ms | < 1.0 ms |
| Access times, logical | 0.1 ms | 0.1 ms |
| Total logical sectors | 234,441,648 | 468,883,296 |
| Operating temperature | 0°C to 70°C (32°F to 158°F) | |

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

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

29.5-cm (11.6-in) HD+ display specifications

| | Metric | U.S. |
|--------------------------------|--|----------|
| Dimensions | | |
| Height | 20.6 cm | 8.11 in |
| Width | 28.9 cm | 11.38 in |
| Diagonal | 29.5 cm | 11.6 in |
| Number of colors | up to 16.8 million | |
| Contrast ratio | 200:1 (typical) | |
| Brightness | 220 nits (typical) | |
| Pixel resolution | | |
| Pitch | 0.197 × 0.197 mm | |
| Format | HD (1366 × 768) | |
| Configuration | RGB vertical stripe | |
| Backlight | LED | |
| Character display | 80 × 25 | |
| Total power consumption | 3.46 W | |
| Viewing angle | ±65° horizontal, ±50° vertical (typical) | |

12 Power cord set requirements

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

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

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

Requirements for all countries

The following requirements are applicable to all countries and regions:

- The length of the power cord set must be at least 1.0 m (3.3 ft) and no more than 2.0 m (6.5 ft).
- All power cord sets must be approved by an acceptable accredited agency responsible for evaluation in the country or region where the power cord set will be used.
- The power cord sets must have a minimum current capacity of 10 amps and a nominal voltage rating of 125 or 250 V AC, as required by the power system of each country or region.
- The appliance coupler must meet the mechanical configuration of an EN 60 320/IEC 320 Standard Sheet C13 connector for mating with the appliance inlet on the back of the computer. Requirements for all countries 113

Requirements for specific countries and regions

| Country/region | Accredited agency | Applicable note number |
|--------------------------------|-------------------|------------------------|
| Australia | EANSW | 1 |
| Austria | OVE | 1 |
| Belgium | CEBC | 1 |
| Canada | CSA | 2 |
| Denmark | DEMKO | 1 |
| Finland | FIMKO | 1 |
| France | UTE | 1 |
| Germany | VDE | 1 |
| Italy | IMQ | 1 |
| Japan | METI | 3 |
| The Netherlands | KEMA | 1 |
| Norway | NEMKO | 1 |
| The People's Republic of China | COC | 5 |

| Country/region | Accredited agency | Applicable note number |
|--------------------|-------------------|------------------------|
| South Korea | EK | 4 |
| Sweden | CEMKO | 1 |
| Switzerland | SEV | 1 |
| Taiwan | BSMI | 4 |
| The United Kingdom | BSI | 1 |
| The United States | UL | 2 |


1. The flexible cord must be Type H05VV-F, 3-conductor, 1.0-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.
2. The flexible cord must be Type SPT-3 or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V) or NEMA 6-15P (15 A, 250 V) configuration.
3. The appliance coupler, flexible cord, and wall plug must bear a “T” mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCT or VCTF, 3-conductor, 1.00-mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V) configuration.
4. The flexible cord must be Type RVV, 3-conductor, 0.75-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.
5. The flexible cord must be Type VCTF, 3-conductor, 0.75-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.

13 Statement of memory volatility

The purpose of this chapter is to provide general information regarding nonvolatile memory in HP Business PCs. This chapter also provides general instructions for restoring nonvolatile memory that can contain personal data after the system has been powered off and the hard drive has been removed.


HP Business PC products that use Intel®-based or AMD®-based system boards contain volatile DDR memory. The amount of nonvolatile memory present in the system depends upon the system configuration. Intel-based and AMD-based system boards contain nonvolatile memory subcomponents as originally shipped from HP, assuming that no subsequent modifications have been made to the system and assuming that no applications, features, or functionality have been added to or installed on the system.


Following system shutdown and removal of all power sources from an HP Business PC system, personal data can remain on volatile system memory (DIMMs) for a finite period of time and will also remain in nonvolatile memory. Use the steps below to remove personal data from the PC, including the nonvolatile memory found in Intel-based and AMD-based system boards.


 **NOTE:** If your tablet has a keyboard base, connect to the keyboard base before beginning steps in this chapter.


Current BIOS steps

1. Follow steps (a) through (l) below to restore the nonvolatile memory that can contain personal data. Restoring or reprogramming nonvolatile memory that does not store personal data is neither necessary nor recommended.
 - a. Turn on or restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.

 **IMPORTANT:** If the **Main** menu displays **Restore Defaults** instead of **Apply Factory Defaults and Exit**, go to [Legacy BIOS Steps on page 88](#).

 **NOTE:** If the system has a BIOS administrator password, enter the password at the prompt.
 - b. Select **Main**, select **Apply Factory Defaults and Exit**, and then select **Yes** to load defaults.
The computer will reboot.
 - c. During the reboot, press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.

 **NOTE:** If the system has a BIOS administrator password, enter the password at the prompt.
 - d. Select the **Security** menu, select **Restore Security Settings to Factory Defaults**, and then select **Yes** to restore security level defaults.
The computer will reboot.
 - e. During the reboot, press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.

 **NOTE:** If the system has a BIOS administrator password, enter the password at the prompt.
 - f. If an asset or ownership tag is set, select the **Security** menu and scroll down to the **Utilities** menu. Select **System IDs**, and then select **Asset Tracking Number**. Clear the tag, and then make the selection to return to the prior menu.

- g. If a DriveLock password is set, select the **Security** menu, and scroll down to **Hard Drive Utilities** under the **Utilities** menu. Select **Hard Drive Utilities**, select **DriveLock**, then uncheck the checkbox for **DriveLock password on restart**. Select **OK** to proceed.
- h. Select the **Main** menu, and then select **Reset BIOS Security to factory default**. Click **Yes** at the warning message.
The computer will reboot.
- i. During the reboot, press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.



NOTE: If the system has a BIOS administrator password, enter the password at the prompt.

- j. Select the **Main** menu, select **Apply Factory Defaults and Exit**, select **Yes** to save changes and exit, and then select **Shutdown**.
 - k. Reboot the system. If the system has a Trusted Platform Module (TPM) and/or fingerprint reader, one or two prompts will appear—one to clear the TPM and the other to Reset Fingerprint Sensor; press or tap **F1** to accept or **F2** to reject.
 - l. Remove all power and system batteries for at least 24 hours.
2. Complete one of the following:
- Remove and retain the storage drive.
 - or –
 - Clear the drive contents by using a third party utility designed to erase data from an SSD.
 - or –
 - Clear the contents of the drive by using the following BIOS Setup Secure Erase command option steps:



IMPORTANT: If you clear data using Secure Erase, it cannot be recovered.

- a. Turn on or restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.
- b. Select the **Security** menu and scroll down to the **Utilities** menu.
- c. Select **Hard Drive Tools**.
- d. Under **Utilities**, select **Secure Erase**, select the hard drive storing the data you want to clear, and then follow the on-screen instructions to continue.

Legacy BIOS Steps

Use the steps for older versions of BIOS.




NOTE: If you already completed the steps in [Current BIOS steps on page 87](#), skip this section.

1. Follow steps (a) through (i) below to restore the nonvolatile memory that can contain personal data. Restoring or reprogramming nonvolatile memory that does not store personal data is neither necessary nor recommended.



NOTE: If you have not already done so, access the BIOS menu.


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


 **NOTE:** If the system has a BIOS administrator password, enter the password at the prompt.

- a. Select **Main**, select **Restore Defaults**, and then select **Yes** to load defaults.
 - b. Select the **Security** menu, select **Restore Security Level Defaults**, and then select **Yes** to restore security level defaults.
 - c. If an asset or ownership tag is set, select the **Security** menu and scroll down to the **Utilities** menu. Select **System IDs**, and then select **Asset Tracking Number**. Clear the tag, and then make the selection to return to the prior menu.
 - d. If a DriveLock password is set, select the **Security** menu, and scroll down to **Hard Drive Tools** under the **Utilities** menu. Select **Hard Drive Tools**, select **DriveLock**, then uncheck the checkbox for **DriveLock password on restart**. Select **OK** to proceed.
 - e. If an Automatic DriveLock password is set, select the **Security** menu, scroll down to **Hard Drive Tools** under the **Utilities** menu. Select **Hard Drive Tools**, scroll down to **Automatic DriveLock**, then select the desired hard drive and disable protection. At the automatic drive lock warning screen, select **Yes** to continue. Repeat this procedure if more than one hard drive has an Automatic DriveLock password.
 - f. Select the **Main** menu, and then select **Reset BIOS Security to factory default**. Click **Yes** at the warning message.
 - g. Select the **Main** menu, select **Save Changes and Exit**, select **Yes** to save changes and exit, and then select **Shutdown**.
 - h. Reboot the system. If the system has a Trusted Platform Module (TPM) and/or fingerprint reader, one or two prompts will appear—one to clear the TPM and the other to Reset Fingerprint Sensor; press or tap **F1** to accept or **F2** to reject.
 - i. Remove all power and system batteries for at least 24 hours.
2. Complete one of the following:
- Remove and retain the storage drive.
 - or –
 - Clear the drive contents by using a third party utility designed to erase data from an SSD.
 - or –
 - Clear the contents of the drive by using the following BIOS Setup Secure Erase command option steps:

 **IMPORTANT:** If you clear data using Secure Erase, it cannot be recovered.

- a. Turn on or restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.
 - b. Select the **Security** menu and scroll down to the **Utilities** menu.
 - c. Select **Hard Drive Tools**.
 - d. Under **Utilities**, select **Secure Erase**, select the hard drive storing the data you want to clear, and then follow the on-screen instructions to continue.
- or –
- Clear the contents of the drive by using the following Disk Sanitizer command steps:

 **IMPORTANT:** If you clear data using Disk Sanitizer, it cannot be recovered.

 **NOTE:** The amount of time it takes for Disk Sanitizer to run can take several hours. Plug the computer into an AC outlet before starting.

- a. Turn on or restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.
- b. Select the **Security** menu and scroll down to the **Utilities** menu.
- c. Select **Hard Drive Tools**.
- d. Under **Utilities**, select **Disk Sanitizer**, select the hard drive storing the data you want to clear, and then follow the on-screen instructions to continue.

Nonvolatile memory usage

| Nonvolatile Memory Type | Amount (Size) | Does this memory store customer data? | Does this memory retain data when power is removed? | What is the purpose of this memory? | How is data input into this memory? | How is this memory write-protected? |
|---|---|---------------------------------------|---|--|--|--|
| HP Sure Start flash (select models only) | 2 MBytes | No | Yes | Provides protected backup of critical System BIOS code, EC firmware, and critical PC configuration data for select platforms that support HP Sure Start. For more information, see Using HP Sure Start (select models only) on page 94. | Data cannot be written to this device via the host processor. The content is managed solely by the HP Sure Start Embedded Controller. | This memory is protected by the HP Sure Start Embedded Controller. |
| Real Time Clock (RTC) battery backed-up CMOS configuration memory | 256 Bytes | No | Yes | Stores system date and time and noncritical data. | RTC battery backed-up CMOS is programmed using the Computer Setup (BIOS), or changing the Microsoft Windows date & time. | This memory is not write-protected. |
| Controller (NIC) EEPROM | 64 KBytes (not customer accessible) | No | Yes | Stores NIC configuration and NIC firmware. | NIC EEPROM is programmed using a utility from the NIC vendor that can be run from DOS. | A utility is required to write data to this memory and is available from the NIC vendor. Writing data to this ROM in an inappropriate manner will render the NIC non-functional. |
| DIMM Serial Presence Detect (SPD) configuration data | 256 Bytes per memory module, 128 Bytes programmable (not customer accessible) | No | Yes | Stores memory module information. | DIMM SPD is programmed by the memory vendor. | Data cannot be written to this memory when the module is installed in a PC. The specific write-protection method varies by memory vendor. |
| System BIOS | 4 MBytes to 5 MBytes | Yes | Yes | Stores system BIOS code and PC configuration data. | System BIOS code is programmed at the factory. Code is updated when the system BIOS is updated. Configuration data and settings are input using the Computer Setup (BIOS) or a custom utility. | NOTE: Writing data to this ROM in an inappropriate manner can render the PC non-functional. A utility is required for writing data to this memory and is available on the HP website; go to http://www.hp.com/support , and select your country. Select Drivers & |

| Nonvolatile Memory Type | Amount (Size) | Does this memory store customer data? | Does this memory retain data when power is removed? | What is the purpose of this memory? | How is data input into this memory? | How is this memory write-protected? |
|--|------------------------|---------------------------------------|---|---|---|---|
| Intel Management Engine Firmware (present in only specific ZBook and EliteBook models. For more information, go to http://www.hp.com/support , and select your country. Select Drivers & Downloads , and then follow the on-screen instructions.) | 1.5 MBytes or 5 MBytes | Yes | Yes | Stores Management Engine Code, Settings, Provisioning Data and iAMT third-party data store. | Management Engine Code is programmed at the factory. Code is updated via Intel secure firmware update utility. Unique Provisioning Data can be entered at the factory or by an administrator using the Management Engine (MEBx) setup utility. The third party data store contents can be populated by a remote management console or local applications that have been registered by an administrator to have access to the space. | Downloads , and then follow the on-screen instructions. The Intel chipset is configured to enforce hardware protection to block all direct read/write access to this area. An Intel utility is required for updating the firmware. Only firmware updates digitally signed by Intel can be applied using this utility. |
| Bluetooth flash | 2 Mbit | No | Yes | Stores Bluetooth configuration and firmware. | Bluetooth flash is programmed at the factory. Tools for writing data to this memory are not publicly available but can be obtained from the silicon vendor. | A utility is required for writing data to this memory and is made available through newer versions of the driver whenever the flash requires an upgrade. |
| 802.11 WLAN EEPROM | 4 Kbit to 8 Kbit | No | Yes | Stores configuration and calibration data. | 802.11 WLAN EEPROM is programmed at the factory. Tools for writing data to this memory are not made public. | A utility is required for writing data to this memory and is typically not made available to the public unless a firmware upgrade is necessary to address a unique issue. |
| Web camera | 64 Kbit | No | Yes | Stores webcam configuration and firmware. | Webcam memory is programmed using a utility from the device manufacturer that can be run from Windows. | A utility is required for writing data to this memory and is typically not made available to the public unless a firmware upgrade is necessary to address a unique issue. |
| Fingerprint reader | 512 KByte flash | Yes | Yes | Stores fingerprint templates. | Fingerprint reader memory is programmed by user enrollment in HP ProtectTools Security Manager. | Only a digitally signed application can make the call to write to the flash. |

Questions and answers

1. How can the BIOS settings be restored (returned to factory settings)?



IMPORTANT: Restore defaults does not securely erase any data on your hard drive. See question and answer 6 for steps to securely erase data.

Restore defaults does not reset the Custom Secure Boot keys. See question and answer 7 for information about resetting the keys.

- a. Turn on or restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.
- b. Select **Main**, and then select **Restore defaults**.
- c. Follow the on-screen instructions.
- d. Select **Main**, select **Save Changes and Exit**, and then follow the on-screen instructions.

2. What is a UEFI BIOS, and how is it different from a legacy BIOS?

The Unified Extensible Firmware Interface (UEFI) BIOS is an industry-standard software interface between the platform firmware and an operating system (OS). It is a replacement for the older BIOS architecture, but supports much of the legacy BIOS functionality.

Like the legacy BIOS, the UEFI BIOS provides an interface to display the system information and configuration settings and to change the configuration of your computer before an OS is loaded. BIOS provides a secure run-time environment that supports a Graphic User Interface (GUI). In this environment, you can use either a pointing device (Touchscreen, TouchPad, pointing stick, or USB mouse) or the keyboard to navigate and make menu and configuration selections. The UEFI BIOS also contains basic system diagnostics.

The UEFI BIOS provides functionality beyond that of the legacy BIOS. In addition, the UEFI BIOS works to initialize the computer’s hardware before loading and executing the OS; the run-time environment allows the loading and execution of software programs from storage devices to provide more functionality, such as advanced hardware diagnostics (with the ability to display more detailed system information) and advanced firmware management and recovery software.

HP has provided options in Computer Setup (BIOS) to allow you to run in legacy BIOS, if required by the operating system. Examples of this requirement would be if you upgrade or downgrade the OS.

3. Where does the UEFI BIOS reside?

The UEFI BIOS resides on a flash memory chip. A utility is required to write to the chip.


4. What kind of configuration data is stored on the DIMM Serial Presence Detect (SPD) memory module? How would this data be written?

The DIMM SPD memory contains information about the memory module, such as size, serial number, data width, speed/timing, voltage, and thermal information. This information is written by the module manufacturer and stored on an EEPROM. This EEPROM cannot be written to when the memory module is installed in a PC. Third-party tools do exist that can write to the EEPROM when the memory module is not installed in a PC. Various third-party tools are available to read SPD memory.

5. What is meant by “Restore the nonvolatile memory found in Intel-based system boards”?

This message relates to clearing the Real Time Clock (RTC) CMOS memory that contains PC configuration data.

6. How can the BIOS security be reset to factory defaults and data erased?

 **IMPORTANT:** Resetting will result in the loss of information.

These steps will not reset Custom Secure Boot Keys. See question and answer 7 for information about resetting the keys.

- a. Turn on or restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.
- b. Select **Main**, and then select **Reset BIOS Security to Factory Default**.
- c. Follow the on-screen instructions.
- d. Select **Main**, select **Save Changes and Exit**, and then follow the on-screen instructions.

7. How can the Custom Secure Boot Keys be reset?

Secure Boot is a feature to ensure that only authenticated code can start on a platform. If you enabled Secure Boot and created Custom Secure Boot Keys, simply disabling Secure Boot will not clear the keys. You must also select to clear the Custom Secure Boot Keys. Use the same Secure Boot access procedure you used to create the Custom Secure Boot Keys, but make the selection to clear or delete all Secure Boot Keys.

- a. Turn on or restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.
- b. Select the **Security** menu, select **Secure Boot Configuration**, and then follow the on-screen instructions.
- c. At the **Secure Boot Configuration** window, select **Secure Boot**, select **Clear Secure Boot Keys**, and then follow the on-screen instructions to continue.

Using HP Sure Start (select models only)

Select computer models are configured with HP Sure Start, a technology that continuously monitors your computer's BIOS for attacks or corruption. If the BIOS becomes corrupted or is attacked, HP Sure Start restores the BIOS to its previously safe state, without user intervention. Those select computer models ship with HP Sure Start configured and enabled. HP Sure Start is configured and already enabled so that most users can use the HP Sure Start default configuration. The default configuration can be customized by advanced users.

To access the latest documentation on HP Sure Start, go to <http://www.hp.com/support>, and select your country. Select **Drivers & Downloads**, and then follow the on-screen instructions.

14 Recycling

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

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

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