# HP ENVY m6 Notebook PC
# HP ENVY Notebook PC

## 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 8. This computer may require upgraded and/or separately purchased hardware, drivers, and/or software to take full advantage of Windows 8 functionality. See for http://www.microsoft.com details.

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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).

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# 1 Product description

| Category | Description | UMA models | Discrete touch models | Discrete non-touch models |
|---|---|---|---|---|
| **Product Name** | HP ENVY Notebook PC | × | × | × |
| **Processors** | Intel™ Core™ i5-4200M 2.50-GHz (SC turbo up to 3.10-GHz) processor (1600-MHz FSB, 3.0-MB L3 cache, dual core, 37 W)<br><br>Intel Core i5-4210M 2.60-GHz (SC turbo up to 3.20-GHz) processor (1600-MHz FSB, 3.0-MB L3 cache, dual core, 37 W) | × | | |
| | Intel Core i7-4712HQ 2.3-GHz (SC turbo up to 3.3-GHz) processor (1600-MHz FSB, 6.0-MB L3 cache, 37 W<br><br>Intel Core i7-4722HQ 2.4-GHz (SC turbo up to 3.4-GHz) processor (1600-MHz FSB, 6.0-MB L3 cache, 37 W | | × | × |
| **Chipset** | Intel HM87 express chipset | × | × | × |
| **Graphics** | Intel graphics: Intel HD Graphics 4600<br><br>Support for HD decode, DX11, and HDMI | × | | |
| | Discrete graphics: Nvidia N15P-GT (GTX 850M) with 4GB of dedicated video memory<br><br>Support for HD decode, DX11, and HDMI<br><br>Supports Optimus<br><br>Supports GPS (GPU performance scaling) | | × | × |
| **Panel** | Support for low-voltage differential signalling LVDS, co-layout with eDP1.3+PSR)<br><br>Touchscreen and MultiTouch enabled<br><br>Airgap bonding | × | × | × |
| | • 15.6-in, full high-definition (FHD), white light-emitting diode (WLED), AntiGlare (1920×1080), slim (3.2-mm), SVA, color gamut 60%, TN, typical brightness 300 nits, 16:9 aspect ratio<br><br>• 15.6-in, high-definition (HD), white light-emitting diode (WLED), AntiGlare (1366×768), flat (3.8-mm), SVA, color camut 45%, typical brightness 200 nits, 16:9 aspect ratio | × | × | × |
| | • 15.6-in, full high-definition (FHD), white light-emitting diode (WLED), BrightView (1920×1080), slim (3.2-mm), SVA, color gamut 60%, TN, typical brightness 300 nits, 16:9 aspect ratio<br><br>• 15.6-in, high-definition (HD), white light-emitting diode (WLED), BrightView (1366×768), flat (3.8-mm), SVA, color camut 45%, typical brightness 200 nits, 16:9 aspect ratio | | × | |
| **Memory** | Two customer-accessible/upgradable memory module slots<br><br>Support for DDR3L (1600-MHz) dual channel<br><br>Support for 16834-MB of system RAM in the following configurations: | × | × | × |

| Category | Description | UMA models | Discrete touch models | Discrete non-touch models |
|---|---|---|---|---|
| | • 16834-MB (8192-MB×2)<br>• 12288-MB (8192-MB+4096-MB)<br>• 8192-MB (8192-MB×1, 4096-MB×2)<br>• 6144-MB (4096-MB+2048-MB)<br>• 4096-MB (4096-MB×1, 2048-MB×2) | | | |
| **Hard drive** | Support for 6.35-cm (2.5-in) hard drives in 7.0-mm (.28-in) and 9.5-mm (.37-in) thickness<br>Support for Accelerometer hard drive protection | × | × | × |
| | • 1.5-TB, 5400-rpm, 9.5-mm<br>• 1.0-TB, 5400-rpm, 9.5-mm<br>• 750-GB, 5400-rpm, 9.5-mm<br>• 500-GB, 5400-rpm, 7-mm | × | × | × |
| | Support for the following hard drives:<br>• 1.0-TB, 5400-rpm, 9.5-mm, 8-GB Hybrid<br>• 750-GB, 5400-rpm, 9.5-mm, 8-GB Hybrid<br>• 500-GB, 5400-rpm, 7.0-mm, 8-GB Hybrid | | × | × |
| **Audio and video** | Stereo speakers (2)<br>Subwoofer<br>Dual array digital microphones with appropriate beam-forming, echo-cancellation, noise-suppression software<br>HD Audio<br>Beats Audio<br>Integrated HP TrueVision HD webcam (fixed [no tilt], activity LED, 1280×720 by 30 frames per second) | × | × | × |
| **Ethernet** | Integrated 10/100/1000 network interface card (NIC) | × | × | × |
| **Wireless** | Integrated wireless local area network (WLAN) options by way of wireless module<br>Two WLAN antennas built into display assembly | × | × | × |
| | Support for the following WLAN modules:<br>• Support for the Qualcomm Atheros AR9565 802.11b/g/n 1×1 WiFi + Bluetooth™ 4.0 Combo Adapter<br>• Qualcomm QCA9565 802.11bgn 1x1 Wi-Fi + BT4.0 Combo Adapter<br>• Intel Dual Band Wireless-AC 3160 802.11ac 1×1 WiFi + BT 4.0 Combo Adapter<br>• Realtek RTL8188EE 802.11bgn Wi-Fi Adapter<br>• Intel Dual Band Wireless-AC 7260 802.11 ac 2×2 WiFi + BT 4.0 Combo Adapter | × | × | × |

| Category | Description | UMA models | Discrete touch models | Discrete non-touch models |
|---|---|---|---|---|
| | • Broadcom BCM43142 802.11 bgn 1x1 Wi-Fi + BT4.0 HMC Combo Adapter<br>• Ralink RT3290LE 802.11b/g/n 1×1 WiFi and Bluetooth 4.0 Combo Adapter | | | |
| **External media cards** | HP Multi-Format Digital Media Card Reader<br>Supports SD/SDHC/SDXC<br>Push-Push Insertion/Removal | × | × | × |
| **Internal card expansion** | One half-size mini-card slot for WLAN | × | × | × |
| **Ports** | • AC adapter, HP Smart<br>• Audio-in (mono microphone)/audio-out (stereo headphone) combo jack<br>• HDMI v1.4 supporting up to 1920×1080 @ 60Hz<br>• RJ-45 (Ethernet)<br>• USB: two USB 3.0 ports, two USB 2.0 ports | × | × | × |
| **Keyboard/pointing devices** | Full-size, backlit, island-style keyboard with numeric keypad and DuraCoat, Clickpad with image sensor<br>HP Control Zone Trackpad<br>Gesture support: MultiTouch gestures enabled, two-finger scrolling, and pinch-zoom as default<br>Taps enabled by default<br>Support for Microsoft™ Windows™ 8 modern trackpad | × | × | × |
| **Power requirements** | Support for the following AC adapters: | | | |
| | • 65-W HP Smart AC adapter (non-PFC, 4.5-mm) | × | | |
| | • 120-W HP Slim AC adapter (PFC, S, 4.5-mm) | | × | × |
| | Support for the following batteries<br>• 6-cell, 62-Wh, 2.80-Ah, Li-ion battery<br>• 6-cell, 47-Wh, 2.20-Ah, Li-ion battery | × | × | × |
| **Security** | Support for the following:<br>• Security cable lock<br>• Trusted Platform Module (TPM)<br>• HP SimplePass support | × | × | × |
| **Operating system** | **Preinstalled:**<br>Microsoft Windows 8.1 Standard<br>Microsoft Windows 8.1 (CPPP)(only for People's Republic of China) | | × | × |
| | Ubuntu Linux | | × | × |
| **Serviceability** | **End user replaceable parts:** | × | × | × |

| Category | Description | UMA models | Discrete touch models | Discrete non-touch models |
|---|---|---|---|---|
| | • AC adapter<br>• Battery (system)<br>• Hard drive<br>• Memory modules (expansion and primary)<br>• WLAN module | | | |

# 2 External component identification

## Finding your hardware and software information

### Locating hardware

To find out what hardware is installed on your computer:

1. From the Start screen, type `control panel`, and then select **Control Panel**.
2. Select **System and Security**, select **System**, and then click **Device Manager** in the left column.

   A list reveals all the devices installed in your computer.

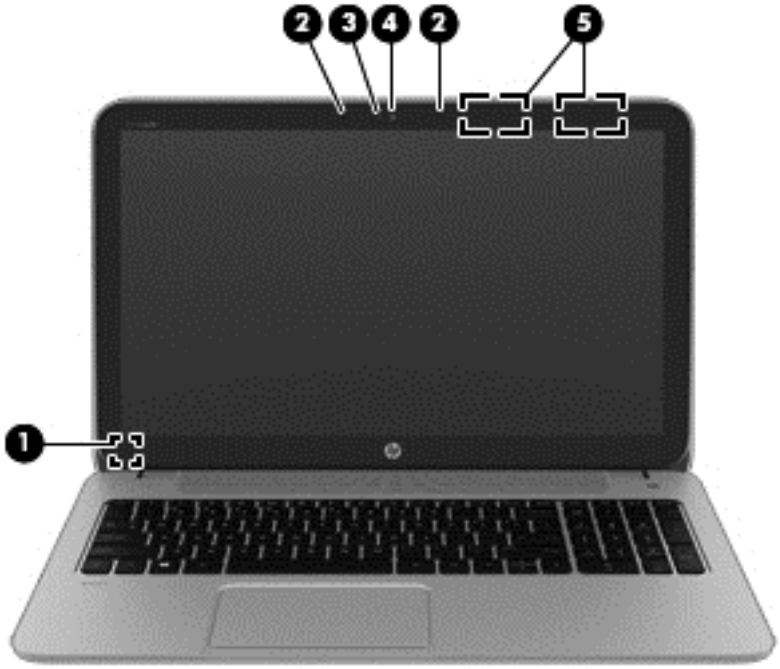
To find out information about system hardware components and the system BIOS version number, press fn +esc.

### Locating software

To find out what software is installed on your computer:

- From the Start screen, click the down arrow in the lower-left corner of the screen.

# Display




| Component | | Description |
|---|---|---|
| **(1)** | Internal display switch | Turns off the display and initiates Sleep if the display is closed while the power is on.<br><br>**NOTE:** The internal display switch is not visible from the outside of the computer. |
| **(2)** | Internal microphones | Record sound. |
| **(3)** | Webcam light | On: The webcam is in use. |
| **(4)** | Webcam<br><br>– or —<br><br>3D camera (select models only) | Records video and captures photographs. Some models allow you to video conference and chat online using streaming video.<br><br>To use the webcam or 3D camera:<br><br>• From the Start screen, type `camera`, and then select **Camera** from the list of applications.<br><br>**NOTE:** A 3D camera captures 3D images and displays them on the computer screen. It includes additional hardware (a 3D camera sensor and a 3D laser projector) plus special software. To learn more about using a 3D camera, open the Intel RealSense app **Welcome to Intel RealSense**. To access the 3D camera apps, go to the **Intel RealSense Technology** app. |
| **(5)** | WLAN antennas* | Send and receive wireless signals to communicate with wireless local area networks (WLANs). |

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

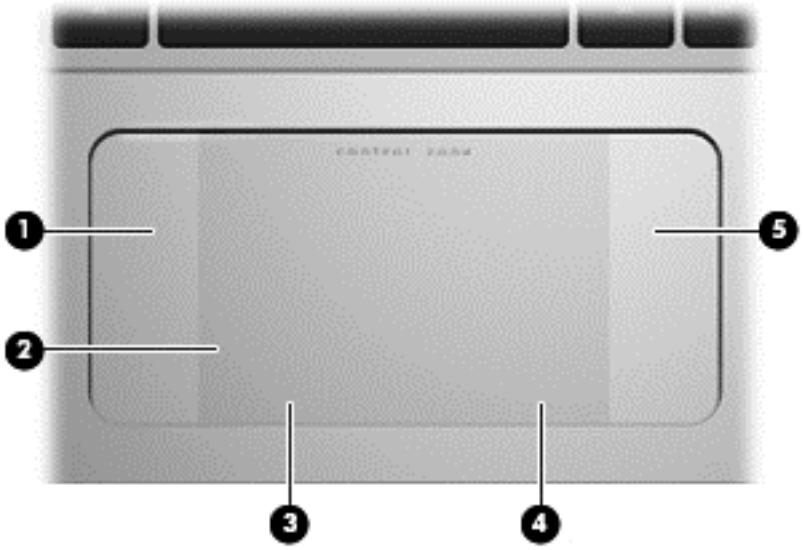
To access this document:

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

| Component | Description |
|---|---|
| – or – | |
| From the Windows desktop, click the question mark icon in the notification area, at the far right of the taskbar. | |

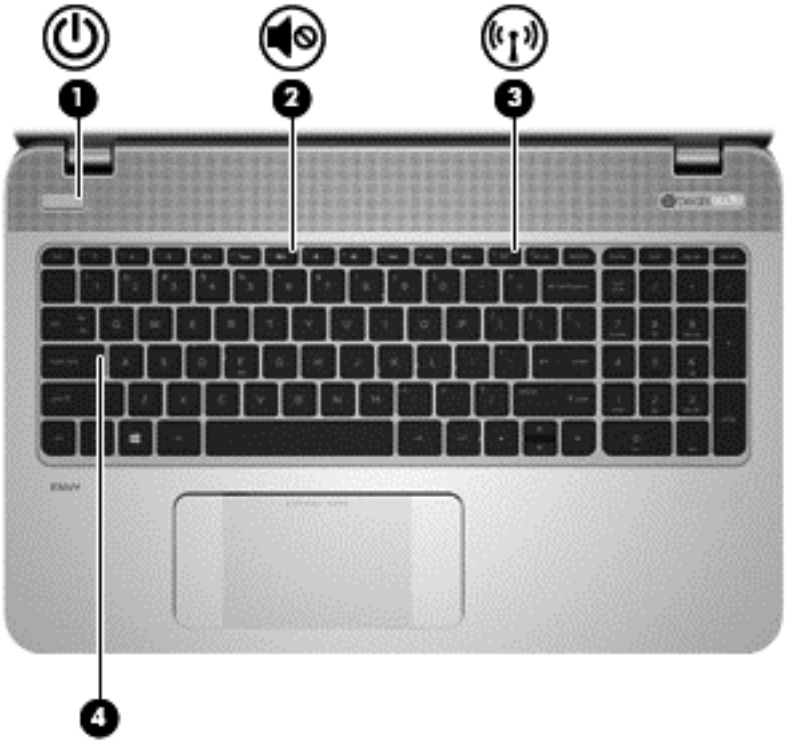
# Top

## TouchPad



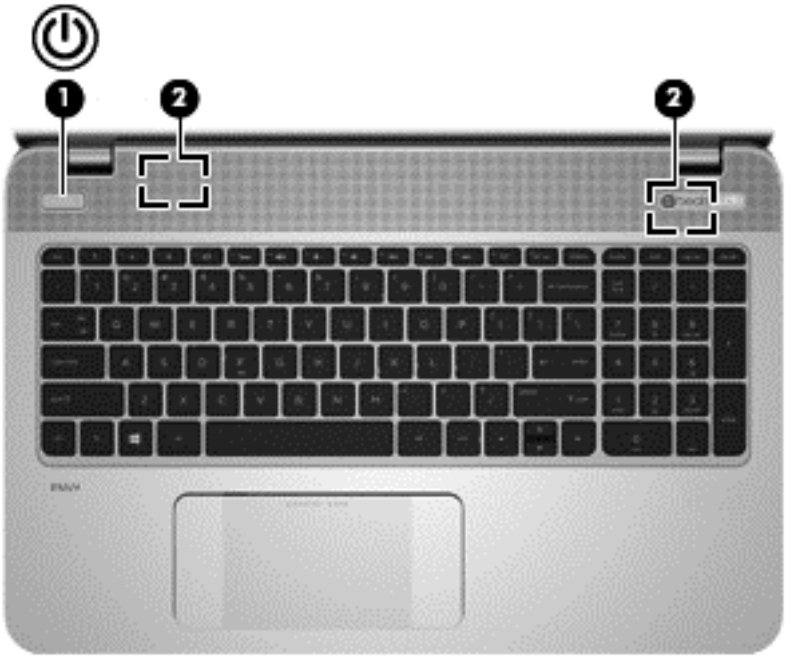

| Component | | Description |
|---|---|---|
| **(1)** | Left control zone | Textured area that allows you to perform additional gestures. |
| **(2)** | TouchPad zone | Reads your finger gestures to move the pointer or activate items on the screen.<br>**NOTE:** The TouchPad also supports edge-swipe gestures. |
| **(3)** | Left TouchPad button | Functions like the left button on an external mouse. |
| **(4)** | Right TouchPad button | Functions like the right button on an external mouse. |
| **(5)** | Right control zone | Textured area that allows you to perform additional gestures. |

## Lights



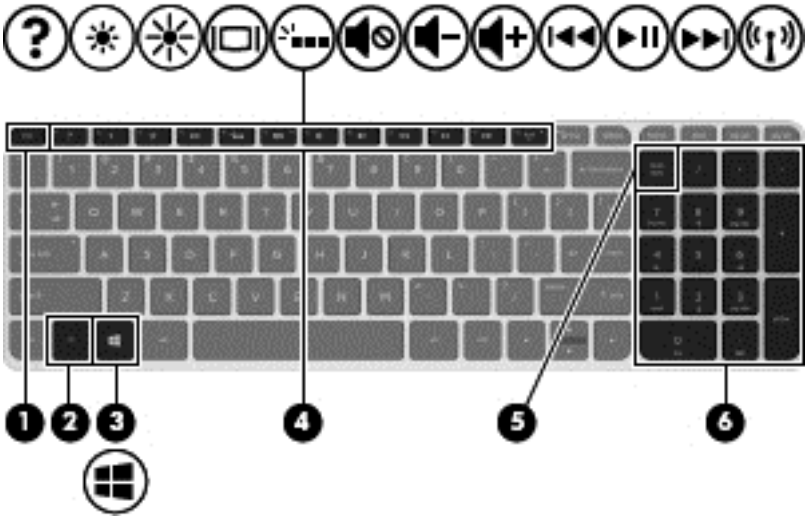

| Component | | | Description |
|---|---|---|---|
| (1) | | Power light | • On: The computer is on.<br>• Blinking: The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other unneeded components.<br>• Off: The computer is off or in Hibernation. Hibernation is a power-saving state that uses the least amount of power.<br>**NOTE:** For select models, the Intel® Rapid Start Technology feature is enabled at the factory. Rapid Start Technology allows your computer to resume quickly from inactivity. |
| (2) | | Mute light | • Amber: Computer sound is off.<br>• Off: Computer sound is on. |
| (3) | | Wireless light | On: An integrated wireless device, such as a wireless local area network (WLAN) device and/or a Bluetooth® device, is on.<br>**NOTE:** On some models, the wireless light is amber when all wireless devices are off. |
| (4) | | Caps lock light | On: Caps lock is on, which switches the keys to all capital letters. |
| (5) | | Fingerprint reader light (select models only) | • White: The finger swipe is successful.<br>• Amber: There is an error with the finger swipe. |

# Buttons, speakers, and fingerprint reader (select models only)




| Component | | Description |
|---|---|---|
| **(1)** | Power button | • When the computer is off, press the button to turn on the computer.<br>• When the computer is on, press the button briefly to initiate Sleep.<br>• When the computer is in the Sleep state, press the button briefly to exit Sleep.<br>• When the computer is in Hibernation, press the button briefly to exit Hibernation.<br>**CAUTION:** Pressing and holding down the power button will result in the loss of unsaved information.<br>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.<br>To learn more about your power settings, see your power options:<br>• From the Start screen, type `power`, select **Power and sleep settings**, and then select **Power and sleep** from the list of applications.<br>– or –<br>From the Windows desktop, right-click the **Start** button, and then select **Power Options**. |
| **(2)** | Speakers | Produce sound. |
| **(3)** | Fingerprint reader (select models only) | Allows a fingerprint logon to Windows, instead of a password logon. |

## 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 b key or the spacebar. |
| **(3)** | Windows key | Returns you to the Start screen from an open app or the Windows desktop.<br>**NOTE:** Pressing the Windows key again will return you to the previous screen. |
| **(4)** | Action keys | Execute frequently used system functions.<br>**NOTE:** On select models, the f5 action key turns the radiance backlight keyboard feature off or on. |
| **(5)** | num lk key | Alternates between the navigational and numeric functions on the integrated numeric keypad. |
| **(6)** | Integrated numeric keypad | When num lk has been enabled, it can be used like an external numeric keypad. |

## Using the action keys

Depending on the model, your computer may have the function key features as described in this table.

An action key performs an assigned function. The icon on each of the action keys illustrates the assigned function for that key.

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

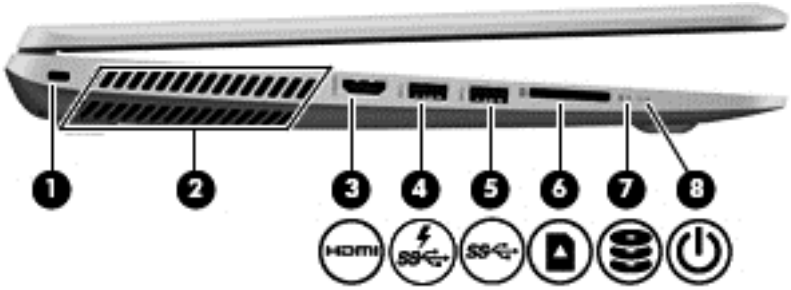
⚠ **CAUTION:** Use extreme care when making changes in Setup Utility (BIOS). Errors can prevent the computer from operating properly.

**NOTE:** The action key feature is enabled at the factory. You can disable this feature in Setup Utility (BIOS). Refer to Help and Support for additional information.

After you have disabled the action key feature, you can still perform each function by pressing the fn key in combination with the appropriate action key.

| Icon | Description |
|---|---|
| | Opens Help and Support, which provides tutorials, information about the Windows operating system and your computer, answers to questions, and updates to your computer.<br>Help and Support also provides automated troubleshooting tools and access to support. |
| | Decreases the screen brightness incrementally as long as you hold down the key. |
| | Increases the screen brightness incrementally as long as you hold down the key. |
| | Switches the screen image between display devices connected to the system. For example, if a monitor is connected to the computer, repeatedly pressing this key alternates the screen image from the computer display to the monitor display to a simultaneous display on both the computer and the monitor. |
| | Turns the radiance backlight keyboard (also known as keyboard backlight) feature off or on.<br>**NOTE:** To conserve battery power, turn off this feature. |
| | Mutes or restores speaker sound. |
| | Decreases speaker volume incrementally while you hold down the key. |
| | Increases speaker volume incrementally while you hold down the key. |
| | Plays the previous track of an audio CD or the previous section of a DVD or a BD. |
| | Begins, pauses, or resumes playback of an audio CD, a DVD, or a BD. |
| | Plays the next track of an audio CD or the next section of a DVD or a BD. |
| | Turns the wireless feature on or off.<br>**NOTE:** A wireless network must be set up before a wireless connection is possible. |

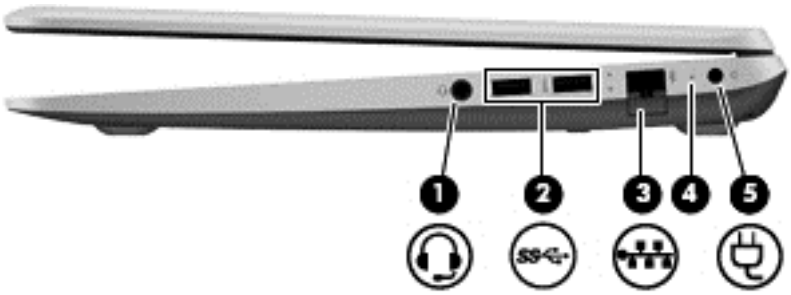
# Left side




| Component | | | Description |
|---|---|---|---|
| **(1)** | | Security cable slot | Attaches an optional security cable to the computer.<br>**NOTE:** The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen. |
| **(2)** | | Vent | Enables airflow to cool internal components.<br>**NOTE:** The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation. |
| **(3)** | | HDMI port | Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component, or a high-speed High-Definition Multimedia Interface (HDMI) device. |
| **(4)** | | USB 3.0 charging (powered) port | Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub. Standard USB ports will not charge all USB devices or will charge using a low current. Some USB devices require power and require you to use a powered port.<br>**NOTE:** USB charging ports can also charge select models of cell phones and MP3 players, even when the computer is off. |
| **(5)** | | USB 3.0 port | Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub. |
| **(6)** | | Memory card reader | Reads optional memory cards that store, manage, share, or access information.<br>To insert a card:<br>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.<br>To remove a card:<br>Press in on the card it until it pops out. |
| **(7)** | | Hard drive light | • Blinking white: The hard drive is being accessed.<br>• Amber: HP 3D DriveGuard has temporarily parked the hard drive. |
| **(8)** | | Power light | • On: The computer is on.<br>• Blinking: The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other components. |

| Component | Description |
|---|---|
| | • Off: The computer is off or in Hibernation. Hibernation is a power-saving state that uses the least amount of power. |

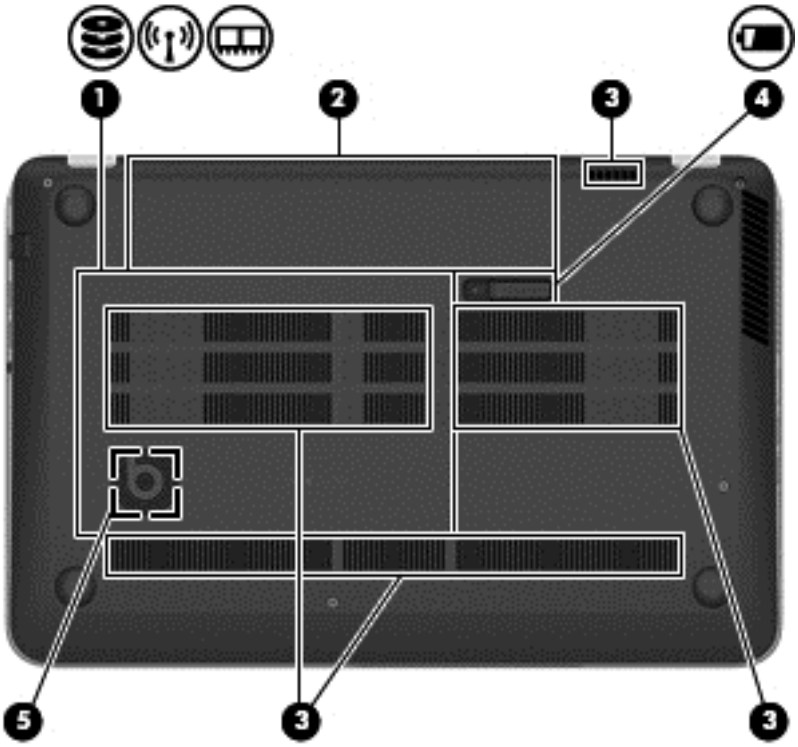
# Right side




| Component | | | Description |
|---|---|---|---|
| (1) | | 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.<br>**WARNING!** To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, refer to the *Regulatory, Safety, and Environmental Notices*.<br>To access this document:<br>• From the Start screen, type `support`, and then select the **HP Support Assistant** app.<br>– or –<br>From the Windows desktop, click the question mark icon in the notification area, at the far right of the taskbar.<br>**NOTE:** When a device is connected to the jack, the computer speakers are disabled.<br>**NOTE:** Be sure that the device cable has a 4-conductor connector that supports both audio-out (headphone) and audio-in (microphone). |
| (2) | | USB 2.0 ports | Connect optional USB devices, such as a keyboard, mouse, external drive, printer, scanner or USB hub. |
| (3) | | RJ-45 (network) jack/status lights | Connects a network cable.<br>• White: The network is connected.<br>• Amber: Activity is occurring on the network. |
| (4) | | AC adapter light | • On: The AC adapter is connected and the battery is charged.<br>• Off: The computer is using battery power.<br>– or –<br>• White: The computer is connected to external power and the battery is charged from 90 to 99 percent. |

| Component | | | Description |
|---|---|---|---|
| | | | • Amber: The computer is connected to external power and the battery is charged from 0 to 90 percent.<br>• Blinking amber: A battery that is the only available power source has reached a low battery level. When the battery reaches a critical battery level, the battery light begins blinking rapidly.<br>• Off: The battery is fully charged. |
| **(5)** | | Power connector | Connects an AC adapter. |

# Bottom

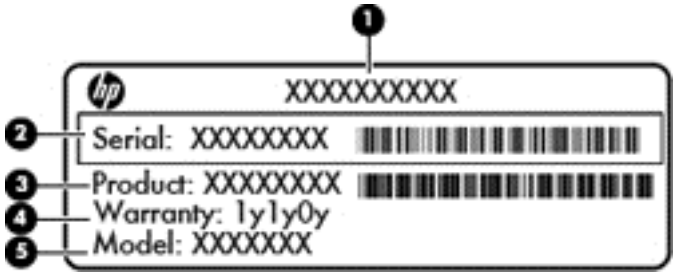



| Component | | | Description |
|---|---|---|---|
| **(1)** | | Service door | Provides access to the hard drive bay, the wireless LAN (WLAN) module slot and the memory module slots.<br>**CAUTION:** To prevent an unresponsive system, replace the wireless module only with a wireless module authorized 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 computer functionality, and then contact support through Help and Support. From the Start screen, type `help`, and then select **Help and Support**. |
| **(2)** | | Battery bay | Holds the battery. |

| Component | | Description |
|---|---|---|
| **(3)** | Vents (4) | Enable airflow to cool internal components.<br>**NOTE:** The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation. |
| **(4)** | Battery release latch | Releases the battery. |
| **(5)** | HP Triple Bass Reflex Subwoofer | Provides superior bass sound. |

# Service tag

When ordering parts or requesting information, provide the computer serial number and model number provided on the service tag.

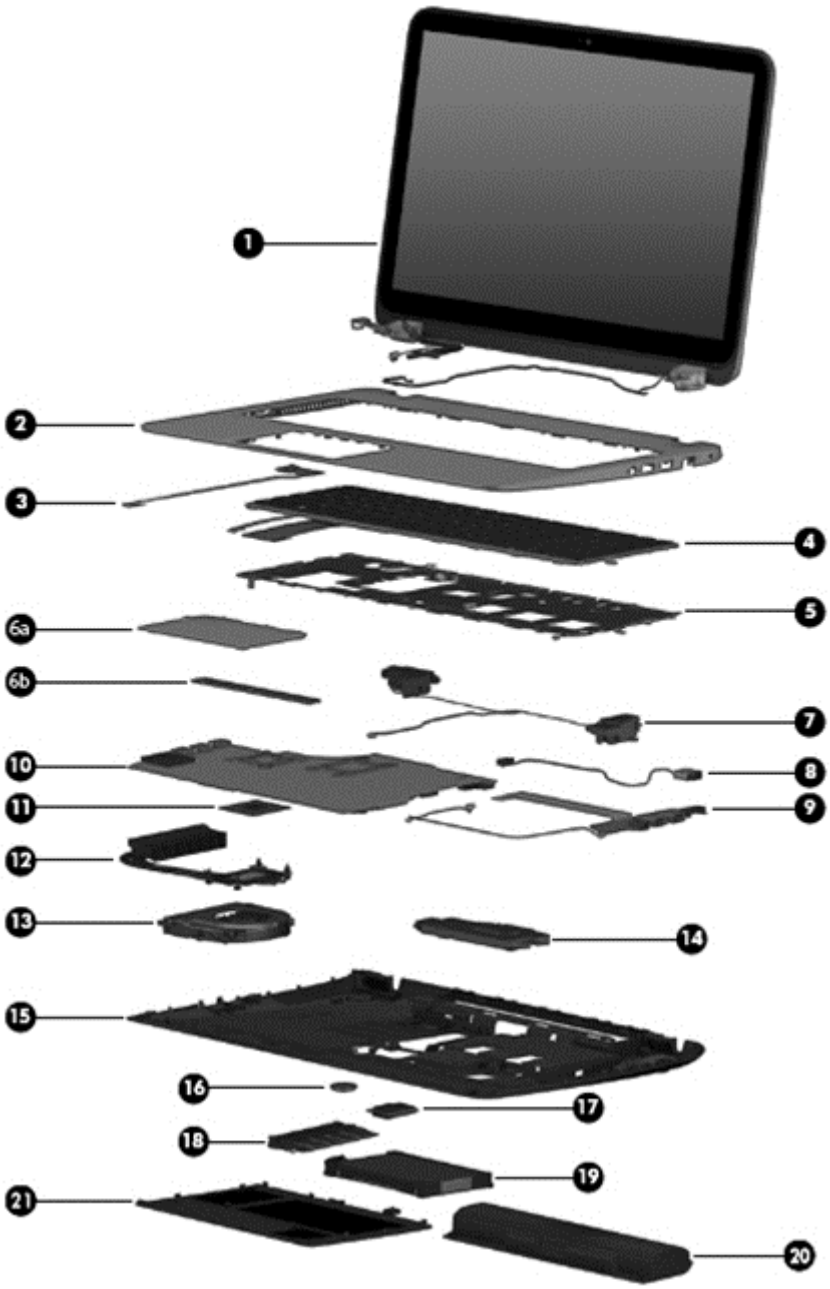



| Item | Description | Function |
|---|---|---|
| **(1)** | Product name | This is the product name affixed to the front of the computer. |
| **(2)** | Serial number (s/n) | This is an alphanumeric identifier that is unique to each product. |
| **(3)** | Part number/Product number (p/n) | This number provides specific information about the product's hardware components. The part number helps a service technician to determine what components and parts are needed. |
| **(4)** | Warranty period | This number describes the duration of the warranty period for the computer. |
| **(5)** | Model description | This is the alphanumeric identifier used to locate documents, drivers, and support for the computer. |

# 3 Illustrated parts catalog

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

## Computer major components



| Item | Component | Spare part number |
|---|---|---|
| **(1)** | **Display assembly** (includes webcam/microphone module and wireless antenna cables): | |
| | 15.6-in, AntiGlare, FHD, LED, TouchScreen display assembly for use on all computer models | 788475-001 |
| | 15.6-in, AntiGlare, HD, LED, TouchScreen display assembly for use on all computer models | 788474-001 |
| | 15.6-in, BrightView, FHD, LED, non-TouchScreen display assembly for use only on computer models equipped with an Intel processor | 720552-001 |
| | 15.6-in, BrightView, HD, LED, non-TouchScreen display assembly for use only on computer models equipped with an Intel processor | 720551-001 |
| | The subcomponents for the non-TouchScreen display assembly are also available as spare part kits. For more display assembly spare part information, see Display assembly subcomponents on page 21). | |
| **(2)** | **Top cover:** | |
| | Includes red Beats logo | 760040-001 |
| | Includes grey Beats logo | 774153-001 |
| **(3)** | **Power button board** (includes cable) | 720553-001 |
| **(4)** | **Keyboard** (includes keyboard cable and backlight cable): | |
| | For use in Canada | 760743-DB1 |
| | For use in Latin America | 760743-161 |
| | For use in Japan | 760743-291 |
| | For use in South Korea | 760743-AD1 |
| | For use in Taiwan | 760743-AB1 |
| | For use in Thailand | 760743-281 |
| | For use in the United States | 760743-001 |
| **(5)** | **Keyboard shield** | 734817-001 |
| **(6a)** | **TouchPad assembly** (includes TouchPad bracket **(6b)**, TouchPad button board, TouchPad, and cables) | 760041-001 |
| | **Tape kit**, includes tape, gasket, Mylar insulator, top case insulator, and gasket boss (not illustrated) | 807975-001 |
| **(7)** | **Speakers** (include left and right speakers, 2 cables, and 4 isolators) | 720561-001 |
| **(8)** | **Power connector cable** | |
| | For use in models with UMA graphics | 720537-001 |
| | For use in models with discrete graphics | 720538-001 |
| **(9)** | **Connector board** (includes audio jack, RJ-45 jack, USB port, and 2 cables) | |
| | For use only on models equipped with a graphics subsystem with discrete memory | 765146-001 |
| | For use only on models equipped with a graphics subsystem with UMA memory | 765145-001 |
| **(10)** | **System board** (includes replacement thermal material): | |
| | For use only on computer models equipped with an Intel Core i7-4702HQ processor, a graphics subsystem with discrete memory, and the Windows 8 Professional operating system | 765736-601 |

| Item | Component | Spare part number |
|---|---|---|
| | For use only on computer models equipped with an Intel Core i7-4702HQ processor, a graphics subsystem with discrete memory, and the Windows 8 Professional Standard system | 765736-501 |
| | For use only on computer models equipped with an Intel Core i7-4702HQ processor, a graphics subsystem with discrete memory, and a non-Windows 8 operating system | 765736-001 |
| | For use only on computer models equipped with an Intel Core i7-4722HQ processor, a graphics subsystem with discrete memory, and the Windows 8 Professional operating system | 801521-601 |
| | For use only on computer models equipped with an Intel Core i7-4722HQ processor, a graphics subsystem with discrete memory, and the Windows 8 Professional Standard system | 801521-501 |
| | For use only on computer models equipped with an Intel Core i7-4722HQ processor, a graphics subsystem with discrete memory, and a non-Windows 8 operating system | 801521-001 |
| | For use only on computer models equipped with a separate processor, a graphics subsystem with UMA memory, and the Windows 8 Professional operating system | 760289-601 |
| | For use only on computer models equipped with a separate processor, a graphics subsystem with UMA memory, and the Windows 8 Standard operating system | 760289-501 |
| | For use only on computer models equipped with a separate processor, a graphics subsystem with UMA memory, and a non-Windows 8 operating system | 760289-001 |
| **(11)** | **Processor** (includes replacement thermal material):<br>**NOTE:** Separate processors can only be used in system board with spare part numbers 760289-001, 760289-501, and 760289-601. | |
| | Intel Core i5-4210M 2.60-GHz (SC turbo up to 3.20-GHz) processor (1600-MHz FSB, 3.0-MB L3 cache, dual core, 37 W) | 768420-001 |
| | Intel Core i5-4200M 2.50-GHz (SC turbo up to 3.10-GHz) processor (1600-MHz FSB, 3.0-MB L3 cache, dual core, 37 W) | 737328-001 |
| **(12)** | **Heat sink** (includes replacement thermal material): | |
| | For use only on computer models equipped with an Intel processor and a graphics subsystem with discrete memory | 765737-001 |
| | For use only on computer models equipped with an Intel processor and a graphics subsystem with UMA memory | 720541-001 |
| **(13)** | **Fan** (includes cable) | 720235-001 |
| **(14)** | **Subwoofer** (includes cable and 3 isolators) | 720563-001 |
| **(15)** | **Base enclosure** (includes 4 rubber feet, battery lock latch, battery release latch, and RJ-45 cover): | |
| | Includes red Beats logo | 760035-001 |
| | Includes grey Beats logo | 774152-001 |
| | **Rubber Kit** (not illustrated, includes front and rear rubber feet, base enclosure screw cover, and display bezel rubber screw covers) | 720559-001 |
| **(16)** | **RTC battery:** | 718440-001 |
| **(17)** | **WLAN module:** | |
| | Broadcom BCM43142 802.11 bgn 1x1 Wi-Fi + BT4.0 HMC Combo Adapter | 753076-001 |
| | Intel Dual Band Wireless-AC 3160 802.11ac 1×1 WiFi + BT 4.0 Combo Adapter | 710662-001 |

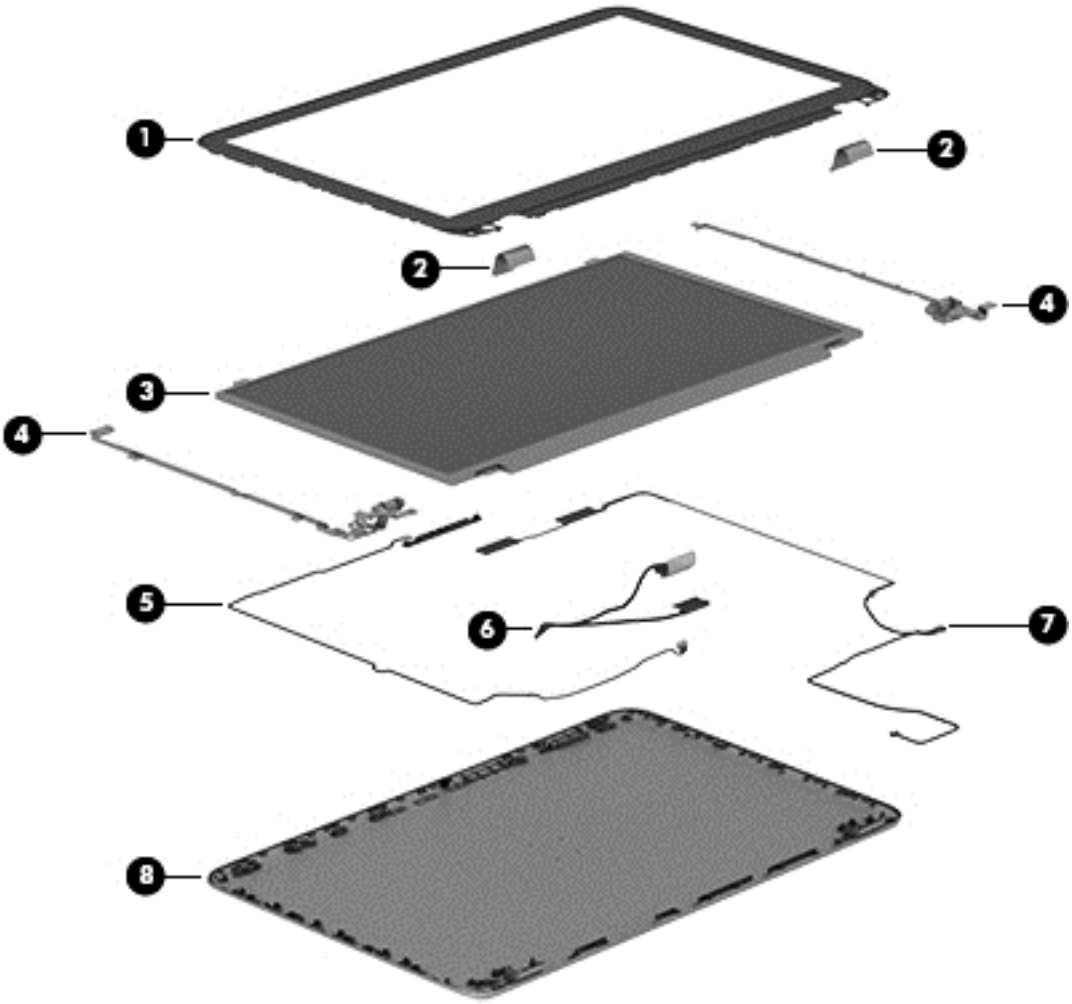
| Item | Component | Spare part number |
|---|---|---|
| | Ralink RT3290LE 802.11b/g/n 1×1 WiFi and Bluetooth 4.0 Combo Adapter | 690020-001 |
| | Realtek RTL8188EE 802.11bgn Wi-Fi Adapter | 709848-001 |
| | Intel Dual Band Wireless-AC 7260 802.11 ac 2×2 WiFi + BT 4.0 Combo Adapter | 756753-001 |
| | Intel Dual Band Wireless-AC 3160 802.11 ac 1x1 WiFi + BT 4.0 Combo Adapter | 784638-001 |
| | Intel Dual Band Wireless-AC 7260 802.11AC 2x2+ BT 4.0 Combo Adapter | 784650-001 |
| **(18)** | **Memory module** (PC3L, 12800, 1600-MHz): | |
| | 8-GB | 693374-001 |
| | 4-GB | 691740-001 |
| | 2-GB | 691739-001 |
| **(19)** | **Hard drive** (does not include hard drive bracket or hard drive connector cable): | |
| | For use on all computer models: | |
| | 1.5-TB, 5400-rpm, 9.5-mm | 747375-001 |
| | 1.0-TB, 5400-rpm, 9.5-mm | 778192-001 |
| | 750-GB, 5400-rpm, 9.5-mm | 652012-001 |
| | 750-GB, 5400-rpm, 9.5-mm, 8-GB hybrid | 732001-001 |
| | 1.0-TB, 5400-rpm, SATA, 7.0-mm, hybrid 8-GB | 731999-001 |
| | 500-GB, 5400-rpm, SATA, 9.5-mm | 778186-001 |
| | 500-GB, 5400-rpm, SATA, 7.0-mm, hybrid 8-GB | 732000-001 |
| | **Hard Drive Hardware Kit** (not illustrated, includes hard drive bracket and hard drive connector cable) | 720545-001 |
| **(20)** | **Battery:** | |
| | 6-cell, 62-Wh, 2.80-Ah, Li-ion battery | 710417-001 |
| | 6-cell, 47-Wh, 2.20-Ah, Li-ion battery | 710416-001 |
| **(21)** | **Service cover** | 720555-001 |

# Miscellaneous parts

| Component | Spare part number |
|---|---|
| **AC adapter:** | |
| 120-W HP Slim AC adapter (PFC, S, 4.5-mm) | 710415-001 |
| 65-W HP Smart AC adapter (non-PFC, 4.5-mm) | 710412-001 |
| **HDMI-to-VGA adapter** | 701943-001 |
| **Power cord** (3-pin, black, 1.00-m): | |
| For use in Australia | 755530-011 |
| For use in Europe, the Middle East, and Africa | 755530-021 |
| For use in India | 755530-D61 |
| For use in Japan | 755530-291 |
| For use in North America | 755530-001 |
| For use in the People's Republic of China | 755530-AA1 |
| For use in South Korea | 755530-AD1 |
| For use in Taiwan | 755530-AB1 |
| For use in the United Kingdom and Singapore | 755530-031 |
| **Screw Kit** | 720560-001 |

# Display assembly subcomponents

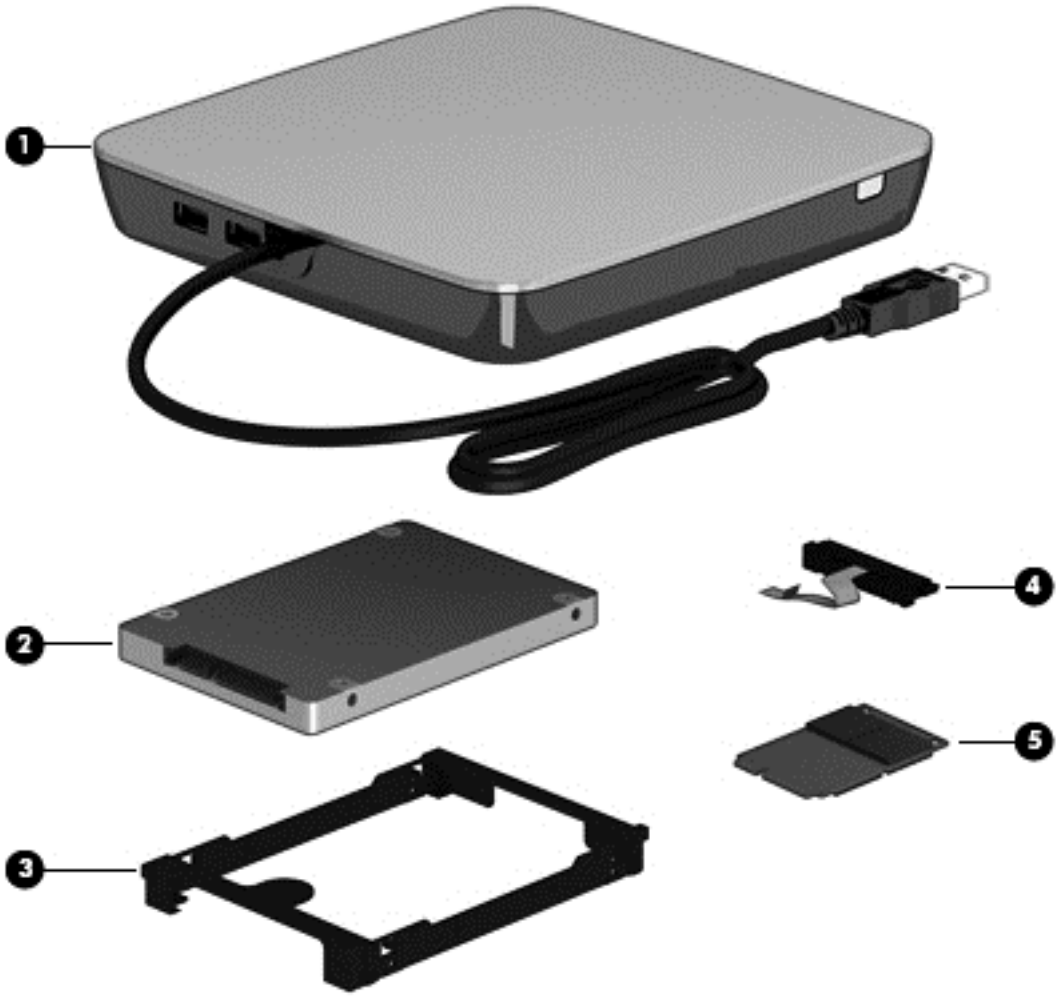
**NOTE:** The information in this section applies only to computer models equipped with an Intel processor.




| Item | Description | Spare part number |
|---|---|---|
| **(1)** | **Display bezel** | 720535-001 |
| | **Display hinges**, includes: | 720548-001 |
| **(2)** | Left and right hinge covers | |
| **(3)** | Left and right hinges and brackets | |
| **(4)** | **Display panel:** | |
| | 15.6-in, BrightView, FHD, LED, non-TouchScreen display panel | 720557-001 |
| | 15.6-in, BrightView, HD, LED, non-TouchScreen display panel | 720556-001 |
| **(5)** | **Webcam/microphone module** (includes webcam/microphone module cable and double-sided adhesive) | 720273-001 |
| **(6)** | **Display panel cable** (includes display panel cable and webcam/microphone module cable) | 720536-001 |

| Item | Description | Spare part number |
|---|---|---|
| (7) | **Antenna Kit** (includes left and right wireless antenna cables and transceivers) | 720532-001 |
| (8) | **Display enclosure** | 720533-001 |

# Mass storage devices




| Item | Component | Spare part number |
|---|---|---|
| (1) | **External USB DVD±RW Double-Layer with SuperMulti Drive** | 747080-001 |
| (2) | **Hard drive** (does not include hard drive bracket or hard drive connector cable): | |
| | 1.5-TB, 5400-rpm, 9.5-mm | 747375-001 |
| | 1.0-TB, 5400-rpm, 9.5-mm | 778192-001 |
| | 750-GB, 5400-rpm, 9.5-mm | 652012-001 |
| | 750-GB, 5400-rpm, 9.5-mm, 8-GB hybrid | 732001-001 |

| Item | Component | Spare part number |
|---|---|---|
| | 1.0-TB, 5400-rpm, SATA, 7.0-mm, hybrid 8-GB | 731999-001 |
| | 500-GB, 5400-rpm, SATA, 9.5-mm | 778186-001 |
| | 500-GB, 5400-rpm, SATA, 7.0-mm, hybrid 8-GB | 732000-001 |
| | **Hard Drive Hardware Kit**, includes: | 720545-001 |
| **(3)** | Hard drive bracket | |
| **(4)** | Hard drive connector cable | |

# Sequential part number listing

| Spare part number | Description |
|---|---|
| 652012-001 | 750-GB, 5400-rpm, SATA, 9.5-mm hard drive for use on all computer models (does not include hard drive bracket or hard drive connector cable)<br>**NOTE:** The hard drive bracket and screws are included in the Hard Drive Hardware Kit, spare part number 720545-001. |
| 690020-001 | Ralink RT3290LE 802.11b/g/n 1×1 WiFi and Bluetooth 4.0 Combo Adapter for use only on computer models equipped with an Intel processor |
| 691739-001 | 2-GB memory module (PC3L, 12800, 1600-MHz) |
| 691740-001 | 4-GB memory module (PC3L, 12800, 1600-MHz) |
| 693374-001 | 8-GB memory module (PC3L, 12800, 1600-MHz) |
| 701943-001 | HDMI-to-VGA adapter |
| 709848-001 | Realtek RTL8188EE 802.11bgn Wi-Fi Adapter for use only on computer models equipped with an Intel processor |
| 710412-001 | 65-W HP Smart AC adapter (non-PFC, 4.5-mm) |
| 710415-001 | 120-W HP Slim AC adapter (PFC, S, 4.5-mm) |
| 710416-001 | 6-cell, 47-Wh, 2.20-Ah, Li-ion battery |
| 710417-001 | 6-cell, 62-Wh, 2.80-Ah, Li-ion battery |
| 710662-001 | Intel Dual Band Wireless-AC 3160 802.11ac 1×1 WiFi + BT 4.0 Combo Adapter for use only on computer models equipped with an Intel processor |
| 718440-001 | RTC battery |
| 720235-001 | Fan (includes cable) |
| 720273-001 | Webcam/microphone module (for use only on computer models equipped with an Intel processor and a non-TouchScreen display assembly) |
| 720532-001 | Antenna Kit (for use only on computer models equipped with an Intel processor and a non-TouchScreen display assembly; includes left and right wireless antenna cables and transceivers) |
| 720533-001 | Display enclosure (for use only on computer models equipped with an Intel processor and a non-TouchScreen display assembly) |
| 720535-001 | Display bezel (for use only on computer models equipped with an Intel processor and a non-TouchScreen display assembly) |

| Spare part number | Description |
|---|---|
| 720536-001 | Display panel cable (for use only on computer models equipped with an Intel processor and a non-TouchScreen display assembly; includes display panel cable and webcam/microphone module cable) |
| 720537-001 | Power connector cable for use in models with UMA graphics |
| 720538-001 | Power connector cable for use in models with discrete graphics |
| 720541-001 | Heat sink for use only on computer models equipped with a graphic subsystem with discrete memory (includes replacement thermal material) |
| 720545-001 | Hard Drive Hardware Kit (includes hard drive bracket and hard drive connector cable) |
| 720547-001 | Counterbalance weight |
| 720548-001 | Display Hinge Kit (for use only on computer models equipped with an Intel processor and a non-TouchScreen display assembly; includes left and right display hinges and hinge brackets) |
| 720551-001 | 15.6-in, BrightView, HD, LED, non-TouchScreen display assembly for use only on computer models equipped with an Intel processor (includes webcam/microphone module and wireless antenna cables) |
| 720552-001 | 15.6-in, BrightView, FHD, LED, non-TouchScreen display assembly for use only on computer models equipped with an Intel processor (includes webcam/microphone module and wireless antenna cables) |
| 720553-001 | Power button board (includes cable) |
| 720555-001 | Service cover |
| 720556-001 | 15.6-in, BrightView, HD, LED, non-TouchScreen display panel for use only on computer models equipped with an Intel processor |
| 720557-001 | 15.6-in, BrightView, FHD, LED, non-TouchScreen display panel for use only on computer models equipped with an Intel processor |
| 720559-001 | Rubber Kit (includes front and rear rubber feet, base enclosure screw cover, and display bezel rubber screw covers) |
| 720560-001 | Screw Kit |
| 720561-001 | Speakers (include left and right speakers, 2 cables, and 4 isolators) |
| 720563-001 | Subwoofer (includes cable and 3 rubber isolators) |
| 731999-001 | 1-TB, 5400-rpm, SATA, 7.0-mm, hybrid 8-GB hard drive (does not include hard drive bracket or hard drive connector cable)<br>**NOTE:** The hard drive bracket and screws are included in the Hard Drive Hardware Kit, spare part number 720545-001. |
| 732000-001 | 500-GB, 5400-rpm, SATA, 7.0-mm, hybrid 8-GB hard drive (does not include hard drive bracket or hard drive connector cable)<br>**NOTE:** The hard drive bracket and screws are included in the Hard Drive Hardware Kit, spare part number 720545-001. |
| 732001-001 | 750-GB, 5400-rpm, SATA, 9.5-mm 8-GB hybrid hard drive (does not include hard drive bracket or hard drive connector cable)<br>**NOTE:** The hard drive bracket and screws are included in the Hard Drive Hardware Kit, spare part number 720545-001. |
| 734817-001 | Keyboard shield |
| 737328-001 | Intel Core i5-4200M 2.50-GHz (SC turbo up to 3.10-GHz) processor (1600-MHz FSB, 3.0-MB L3 cache, dual core, 37 W; includes replacement thermal material)<br>**NOTE:** Separate processors can only be used in system board with spare part numbers 760289-001, 760289-501, and 760289-601. |

| Spare part number | Description |
|---|---|
| 747080-001 | External USB DVD±RW Double-Layer with SuperMulti Drive |
| 747375-001 | 1.5-TB, 5400-rpm, SATA, 9.5-mm hard drive (does not include hard drive bracket or hard drive connector cable)<br>**NOTE:** The hard drive bracket and screws are included in the Hard Drive Hardware Kit, spare part number 720545-001. |
| 753076-001 | Broadcom BCM43142 802.11 bgn 1x1 Wi-Fi + BT4.0 HMC Combo Adapter |
| 755530-001 | Power cord (3-pin, black, 1.00-m) for use in North America |
| 755530-011 | Power cord (3-pin, black, 1.00-m) for use in Australia |
| 755530-021 | Power cord (3-pin, black, 1.00-m) for use in Europe, the Middle East, and Africa |
| 755530-031 | Power cord (3-pin, black, 1.00-m) for use in the United Kingdom and Singapore |
| 755530-201 | Power cord (3-pin, black, 1.00-m) for use in Thailand |
| 755530-291 | Power cord (3-pin, black, 1.00-m) for use in Japan |
| 755530-AA1 | Power cord (3-pin, black, 1.00-m) for use in the People's Republic of China |
| 755530-AB1 | Power cord (3-pin, black, 1.00-m) for use in Taiwan |
| 755530-AD1 | Power cord (3-pin, black, 1.00-m) for use in South Korea |
| 755530-D61 | Power cord (3-pin, black, 1.00-m) for use in India |
| 756753-001 | Intel Dual Band Wireless-AC 7260 802.11 ac 2×2 WiFi + BT 4.0 Combo Adapter |
| 760035-001 | Base enclosure; includes red Beats logo (includes 4 rubber feet, battery lock latch, battery release latch, and RJ-45 cover) |
| 760040-001 | Top cover; includes red Beats logo |
| 760041-001 | TouchPad assembly (includes TouchPad, TouchPad bracket, TouchPad button board, and cables) |
| 760289-001 | System board for use only on computer models equipped with a separate processor, a graphics subsystem with UMA memory, and a non-Windows 8 operating system (includes replacement thermal material) |
| 760289-501 | System board for use only on computer models equipped with a separate processor, a graphics subsystem with UMA memory, and the Windows 8 Standard operating system (includes replacement thermal material) |
| 760289-601 | System board for use only on computer models equipped with a separate processor, a graphics subsystem with UMA memory, and the Windows 8 Professional operating system (includes replacement thermal material) |
| 760743-001 | Keyboard in natural silver finish with backlight for use in the United States (includes backlight cable and keyboard cable) |
| 760743-161 | Keyboard in natural silver finish with backlight for use in the Latin America (includes backlight cable and keyboard cable) |
| 760743-281 | Keyboard in natural silver finish with backlight for use in the Thailand (includes backlight cable and keyboard cable) |
| 760743-291 | Keyboard in natural silver finish with backlight for use in the Japan (includes backlight cable and keyboard cable) |
| 760743-AB1 | Keyboard in natural silver finish with backlight for use in the Taiwan (includes backlight cable and keyboard cable) |

| Spare part number | Description |
|---|---|
| 760743-AD1 | Keyboard in natural silver finish with backlight for use in the South Korea (includes backlight cable and keyboard cable) |
| 760743-DB1 | Keyboard in natural silver finish with backlight for use in Canada (includes backlight cable and keyboard cable) |
| 765145-001 | Connector board for use only on computer models equipped with a graphics subsystem with UMA memory (includes audio jack, RJ-45 jack, USB port, and 2 cables) |
| 765146-001 | Connector board for use only on computer models equipped with a graphics subsystem with discrete memory (includes audio jack, RJ-45 jack, USB port, and 2 cables) |
| 765736-001 | System board for use only on computer models equipped with an Intel Core i7-4702HQ processor, a graphics subsystem with discrete memory, and a non-Windows 8 operating system (includes replacement thermal material) |
| 765736-501 | System board for use only on computer models equipped with an Intel Core i7-4702HQ processor, a graphics subsystem with discrete memory, and the Windows 8 Standard operating system (includes replacement thermal material) |
| 765736-601 | System board for use only on computer models equipped with an Intel Core i7-4702HQ processor, a graphics subsystem with discrete memory, and the Windows 8 Professional operating system (includes replacement thermal material) |
| 765737-001 | Heat sink for use only on computer models equipped with a graphics subsystem with discrete memory |
| 768420-001 | Intel Core i5-4210M 2.60-GHz (SC turbo up to 3.20-GHz) processor (1600-MHz FSB, 3.0-MB L3 cache, dual core, 37 W; includes replacement thermal material)<br>**NOTE:** Separate processors can only be used in system board with spare part numbers 760289-001, 760289-501, and 760289-601. |
| 774152-001 | Base enclosure; includes grey Beats logo (includes 4 rubber feet, battery lock latch, battery release latch, and RJ-45 cover) |
| 774153-001 | Top cover; ncludes grey Beats logo |
| 778186-001 | 500-GB, 5400-rpm, SATA, 9.5-mm hard drive (does not include hard drive bracket or hard drive connector cable)<br>**NOTE:** The hard drive bracket and screws are included in the Hard Drive Hardware Kit, spare part number 720545-001. |
| 778192-001 | 1.0-TB, 5400-rpm, SATA, 9.5-mm hard drive for use on all computer models (does not include hard drive bracket or hard drive connector cable)<br>**NOTE:** The hard drive bracket and screws are included in the Hard Drive Hardware Kit, spare part number 720545-001. |
| 784638-001 | Intel Dual Band Wireless-AC 3160 802.11 ac 1x1 WiFi + BT 4.0 Combo Adapter |
| 784650-001 | Intel Dual Band Wireless-AC 7260 802.11AC 2x2+ BT 4.0 Combo Adapter |
| 788474-001 | 15.6-in, AntiGlare, HD, LED, TouchScreen display assembly for use on all computer models (includes webcam/microphone module and wireless antenna cables) |
| 788475-001 | 15.6-in, AntiGlare, FHD, LED, TouchScreen display assembly for use on all computer models (includes webcam/microphone module and wireless antenna cables) |
| 801521-001 | System board for use only on computer models equipped with an Intel Core i7-4722HQ processor, a graphics subsystem with discrete memory, and a non-Windows 8 operating system (includes replacement thermal material) |
| 801521-501 | System board for use only on computer models equipped with an Intel Core i7-4722HQ processor, a graphics subsystem with discrete memory, and the Windows 8 Standard operating system (includes replacement thermal material) |

| Spare part number | Description |
|---|---|
| 801521-601 | System board for use only on computer models equipped with an Intel Core i7-4722HQ processor, a graphics subsystem with discrete memory, and the Windows 8 Professional operating system (includes replacement thermal material) |
| 801975-001 | Tape kit, includes tape, gasket, Mylar insulator, top case insulator, and gasket boss |

# 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**

| | Relative humidity | | |
|---|---|---|---|
| **Event** | **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 ±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 Customer Self-Repair parts

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

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

## Component replacement procedures

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

**NOTE:** Details about your computer, including model, serial number, product key, and length of warranty, are on the service tag at the bottom of your computer. See Service tag on page 16 for details.

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

There are as many as 4 screws that must be removed, replaced, and/or loosened when servicing Customer Self-Repair parts. Make special note of each screw size and location during removal and replacement.

## Battery

| Description | Spare part number |
|---|---|
| 6-cell, 62-Wh, 2.80-Ah, Li-ion battery | 710417-001 |
| 6-cell, 47-Wh, 2.20-Ah, Li-ion battery | 710416-001 |

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.

Remove the battery:

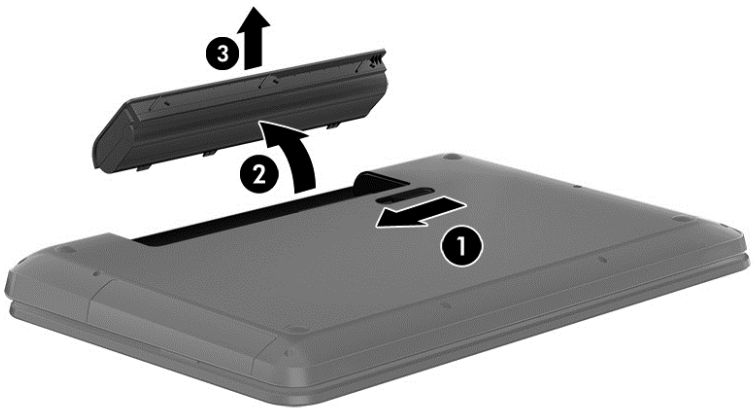
**WARNING!** To reduce potential safety issues, use only the user-replaceable battery provided with the computer, a replacement battery provided by HP, or a compatible battery purchased from HP.

**CAUTION:** Removing a user-replaceable battery that is the sole power source for the computer can cause loss of information. To prevent loss of information, save your work or shut down the computer through Windows before removing the battery.

1. Turn the computer upside down on a flat surface.
2. Slide the battery release latch **(1)** to release the battery.

**NOTE:** The battery release latch automatically returns to its original position.

3. Pivot the battery **(2)** upward.
4. Remove the battery **(3)** from the computer.




Reverse this procedure to install the battery.

## WLAN module

| Description | Spare part number |
|---|---|
| **For use only on computer models equipped with an Intel processor:** | |
| Broadcom BCM43142 802.11 bgn 1x1 Wi-Fi + BT4.0 HMC Combo Adapter | 753076-001 |
| Intel Dual Band Wireless-AC 7260 802.11 ac 2×2 WiFi + BT 4.0 Combo Adapter | 756753-001 |
| Intel Dual Band Wireless-AC 3160 802.11ac 1×1 WiFi + BT 4.0 Combo Adapter | 710662-001 |
| Ralink RT3290LE 802.11b/g/n 1×1 WiFi and Bluetooth 4.0 Combo Adapter | 690020-001 |
| Realtek RTL8188EE 802.11bgn Wi-Fi Adapter | 709848-001 |
| Intel Dual Band Wireless-AC 3160 802.11 ac 1x1 WiFi + BT 4.0 Combo Adapter | 784638-001 |
| Intel Dual Band Wireless-AC 7260 802.11AC 2x2+ BT 4.0 Combo Adapter | 784650-001 |

⚠ **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:

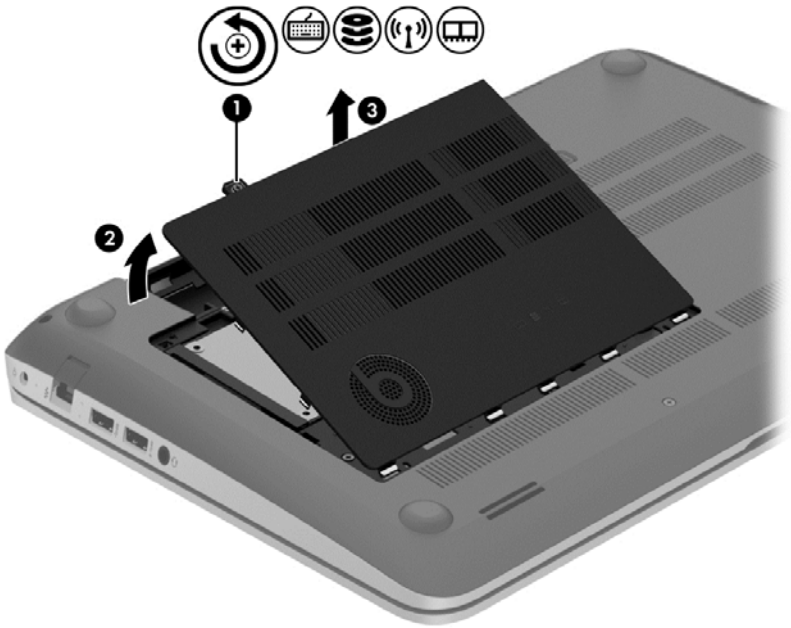
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 34).

Remove the WLAN module:

1. Close the computer.
2. Turn the computer upside down with the front toward you.
3. Loosen the Phillips PM2.5×5.0 captive screw **(1)** that secures the service cover to the computer.
4. Lift the back edge of the service cover **(2)** until it detaches from the computer.

5. Remove the service cover **(3)**.

   The service cover is available using spare part number 720555-001.

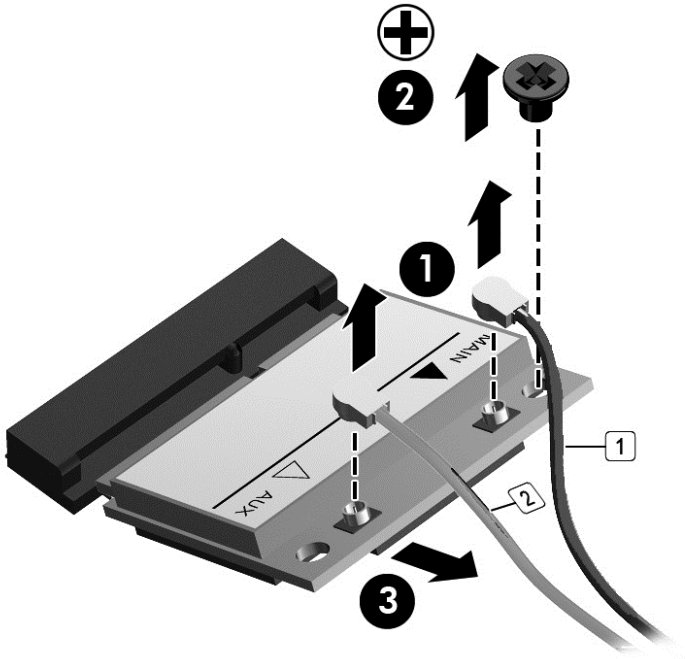


6. Disconnect the WLAN antenna cables **(1)** from the terminals on the WLAN module.

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

7. Remove the Phillips PM2.0×2.5 screw **(2)** that secures the WLAN module to the system board. (The WLAN module tilts up.)

8. Remove the WLAN module **(3)** by pulling the module away from the slot at an angle.



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

Reverse this procedure to install the WLAN module.

## Hard drive

**NOTE:** The hard drive spare part kit does not include the hard drive bracket or hard drive connector cable. The hard drive bracket and hard drive connector cable are included in the Hard Drive Hardware Kit, spare part number 720545-001.

| Description | Spare part number |
|---|---|
| For use on all computer models: | |
| 1.5-TB, 5400-rpm, 9.5-mm | 747375-001 |
| 1.0-TB, 5400-rpm, 9.5-mm | 778192-001 |
| 750-GB, 5400-rpm, 9.5-mm | 652012-001 |
| 750-GB, 5400-rpm, 9.5-mm, 8-GB hybrid | 732001-001 |
| 1.0-TB, 5400-rpm, SATA, 7.0-mm, hybrid 8-GB | 731999-001 |
| 500-GB, 5400-rpm, SATA, 9.5-mm | 778186-001 |
| 500-GB, 5400-rpm, SATA, 7.0-mm, hybrid 8-GB | 732000-001 |

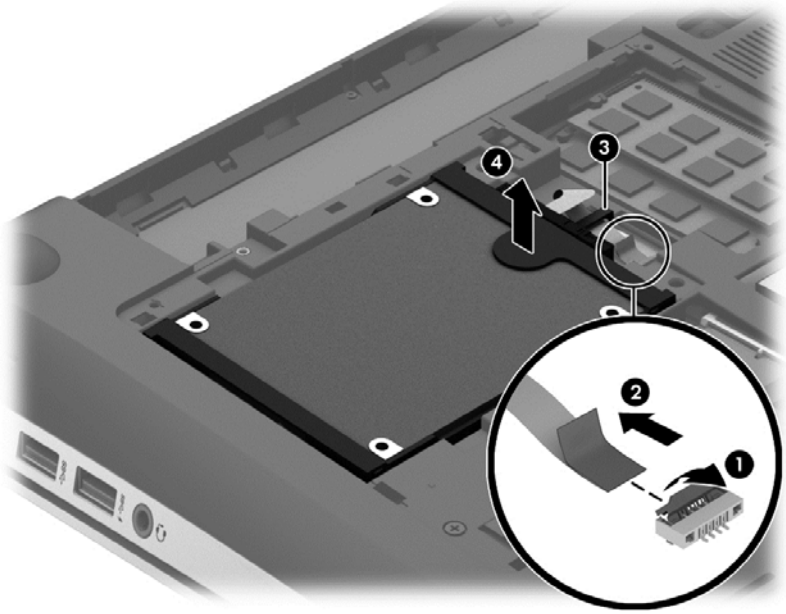
Before removing the hard drive, follow these steps:

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 battery (see Battery on page 34).
5. Remove the service cover (see WLAN module on page 35).

Remove the hard drive:

1. Release the zero insertion force (ZIF) connector **(1)** to which the hard drive connector cable is attached, and then disconnect the hard drive connector cable **(2)** from the system board.
2. Release the hard drive connector cable from the tab **(3)** in the base enclosure.

3. Lift up on the hard drive tab **(4)** to remove the hard drive from the hard drive bay.




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

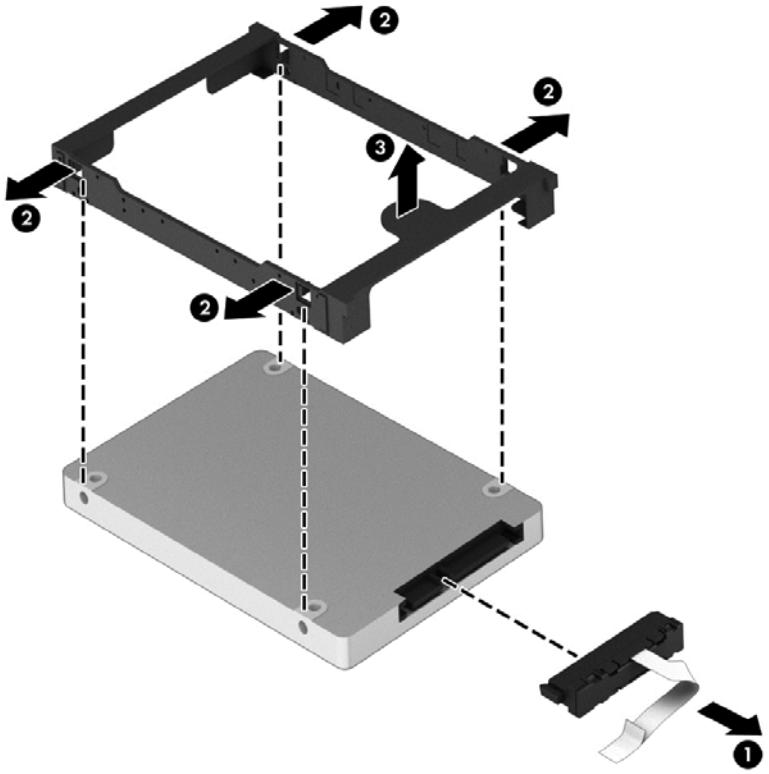
   a. Position the hard drive with the connector toward you.

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

   c. Spread the left and right sides **(2)** of the hard drive bracket outward to separate the bracket from the hard drive.

   d. 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 718432-001.



Reverse this procedure to install the RTC battery.

## Memory module

| Description | Spare part number |
|---|---|
| 8-GB (PC3L, 12800, 1600-MHz) | 693374-001 |
| 4-GB (PC3L, 12800, 1600-MHz) | 691740-001 |
| 2-GB (PC3L, 12800, 1600-MHz) | 691739-001 |

### Update BIOS before adding memory modules

Before adding new memory, make sure you update the computer to the latest BIOS.

⚠ **CAUTION:** Failure to update the computer to the latest BIOS prior to installing new memory may result in various system problems.

To update BIOS:

1. Navigate to www.hp.com.
2. Click **Support & Drivers > click Drivers & Software**.
3. In the **Enter a product name/number box**, type the computer model information, and then click **Search**.
4. Click the link for the computer model.
5. Select the operating system, and then click **Next**.
6. Under **Step 2: Select a Download**, click the **BIOS** link.

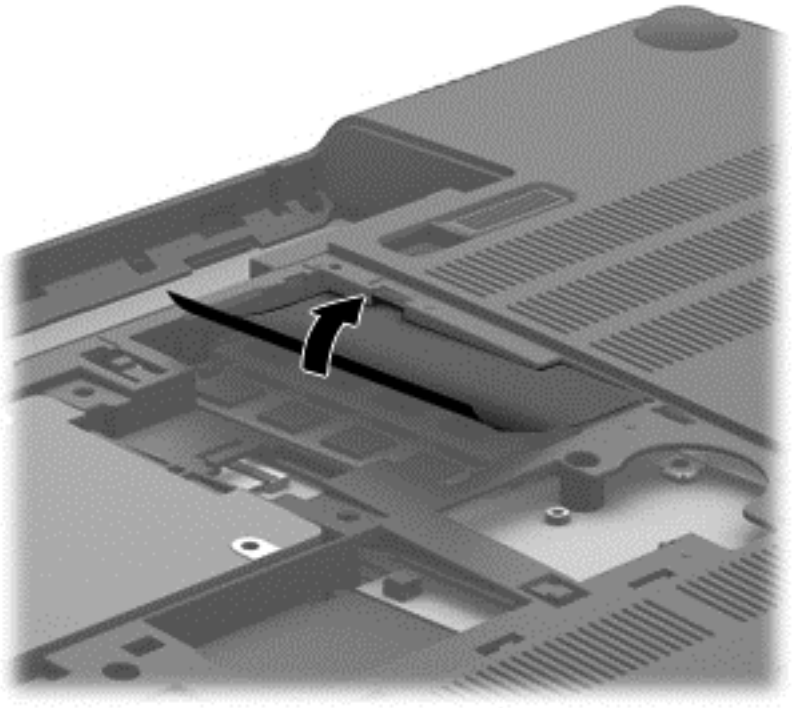
7. Click the link for the most recent BIOS.
8. Click the **Download** button, and then follow the on-screen instructions.

Before removing a memory module, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 34).
5. Remove the service cover (see WLAN module on page 35).

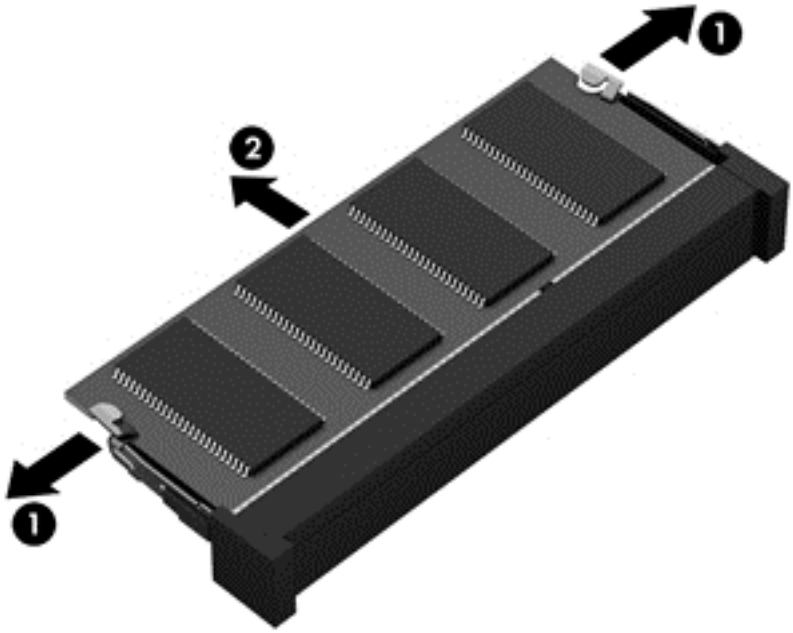
Remove the memory module:

1. Lift the left edge of the memory module shield and swing it up and to the right until the memory modules are accessible.



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 the module away from the slot at an angle.




Reverse this procedure to install a memory module.

# 6 Removal and replacement procedures for Authorized Service Provider parts

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

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

## Component replacement procedures

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

There are as many as 94 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.

### RTC battery

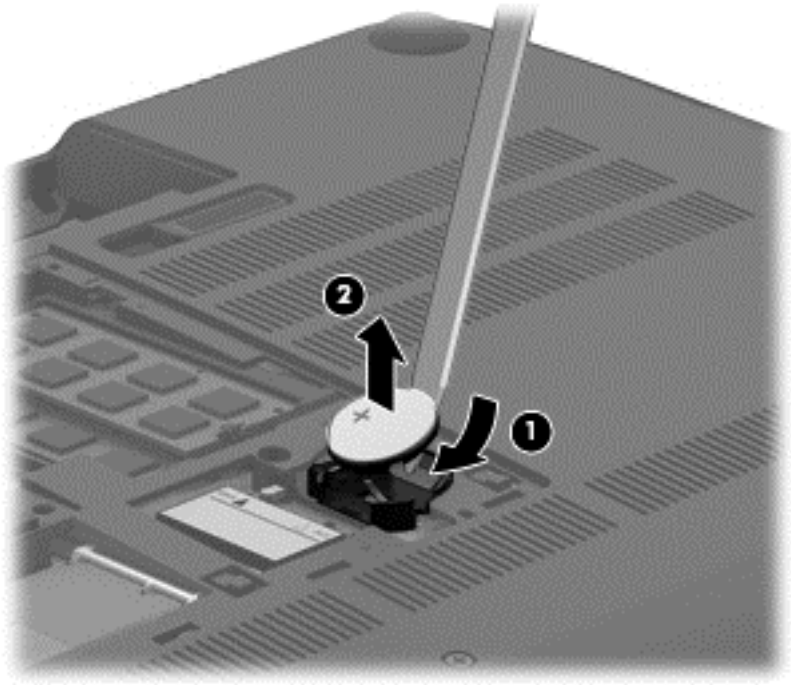
| Description | Spare part number |
|---|---|
| RTC battery | 718440-001 |

Before removing the RTC 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 battery (see Battery on page 34).
5. Remove the service cover (see WLAN module on page 35).

Remove the RTC battery:

▲ Use a thin, non-conductive tool **(1)** to remove the disc cell RTC battery **(2)** from the socket on the system board.




Reverse this procedure to install the RTC battery. When installing the disc cell RTC battery, make sure the “+” sign faces up.

## Base enclosure

| Description | Spare part number |
|---|---|
| Base enclosure; includes red Beats logo | 760035-001 |
| Base enclosure; includes grey Beats logo | 774152-001 |

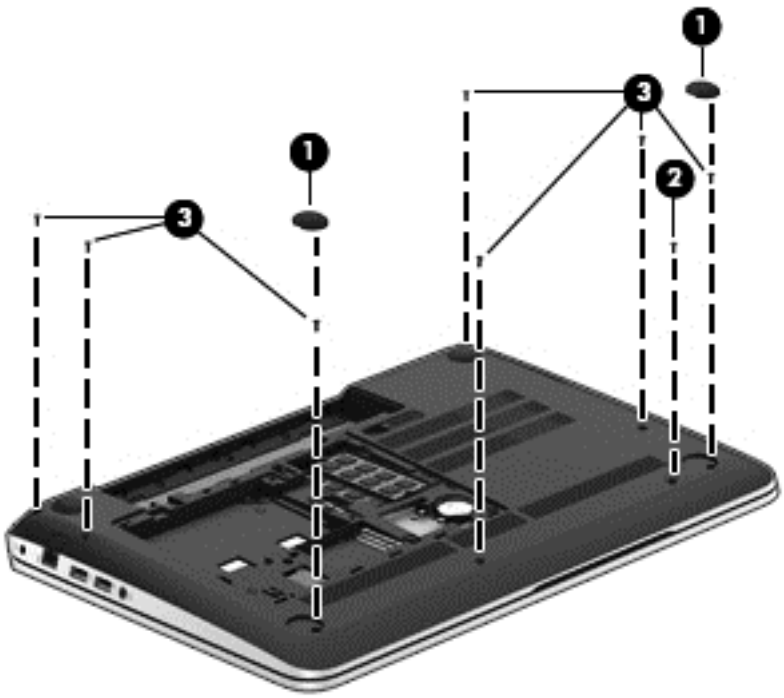
Before removing the base enclosure, follow these steps:

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 battery (see Battery on page 34).
5. Remove the solid-state drive (see WLAN module on page 35).
6. Remove the hard drive (see Hard drive on page 38).

Remove the base enclosure:

1. Remove the front rubber feet **(1)**.
2. Remove the screw cover **(2)**.

   The front rubber feet and the screw cover are included in the Rubber Kit, spare part number 720559-001.
3. Remove the eight Phillips PM2.5×5.5 screws **(2)** that secure the base enclosure to the computer.

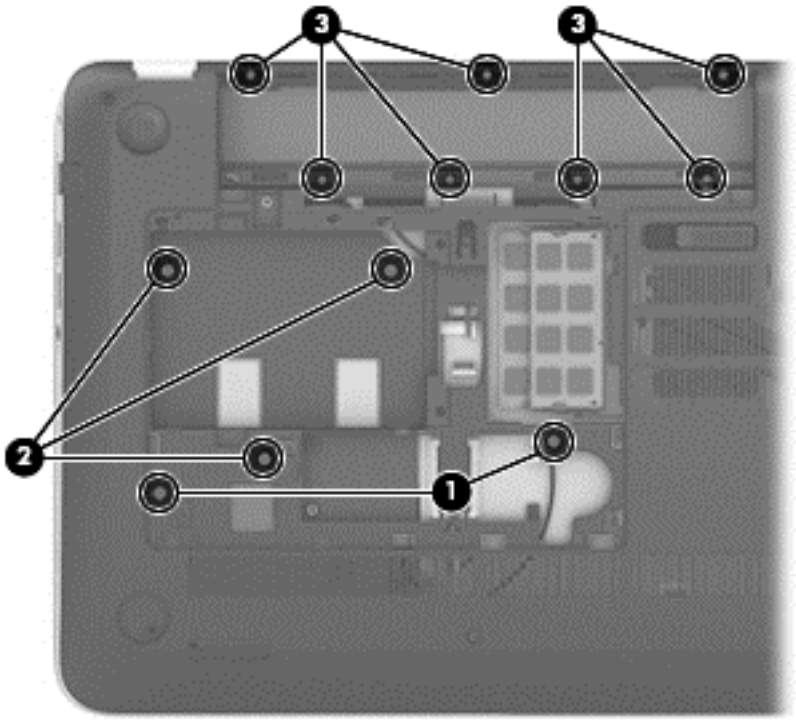


4. Remove the following screws:

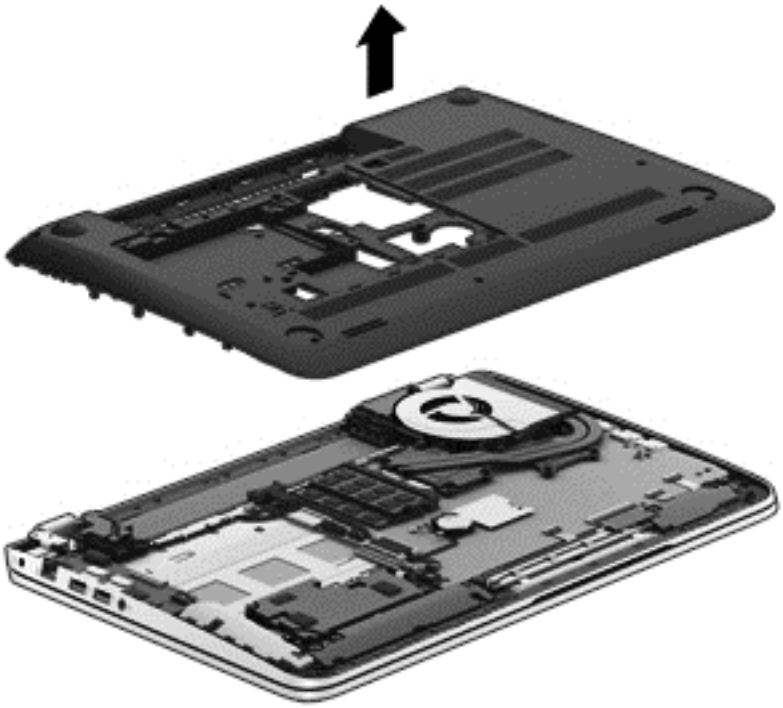
   **(1)** Two Phillips PM2.5×5.5 screws under the front edge of the service cover

   **(2)** Three Phillips PM2.5×3.0 screws in the hard drive bay

   **(3)** Seven Phillips PM1.5×2.0 screws in the battery bay




5. Remove the base enclosure.



Reverse this procedure to install the base enclosure.

## Display assembly

| Description | Spare part number |
|---|---|
| 15.6-in, AntiGlare, FHD, LED, TouchScreen display assembly for use on all computer models | 788475-001 |
| 15.6-in, AntiGlare, HD, LED, TouchScreen display assembly for use on all computer models | 788474-001 |
| 15.6-in, BrightView, FHD, LED, non-TouchScreen display assembly for use only on computer models equipped with an Intel processor | 720552-001 |
| 15.6-in, BrightView, HD, LED, non-TouchScreen display assembly for use only on computer models equipped with an Intel processor | 720551-001 |

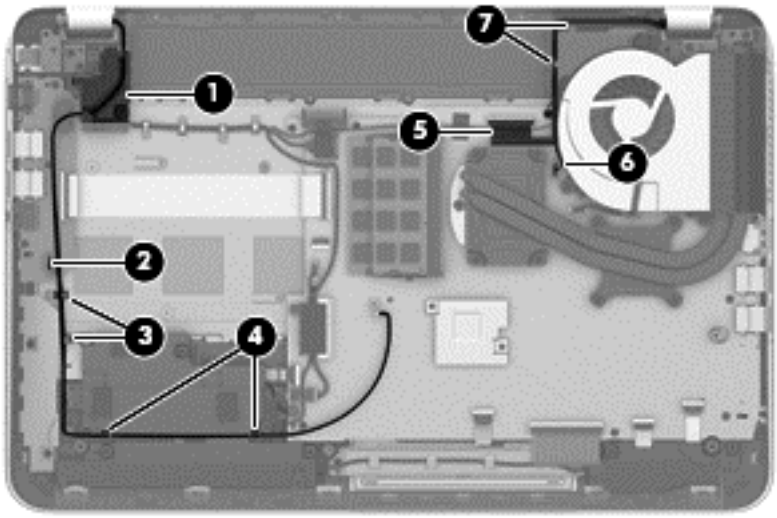
To remove the display assembly and access the display assembly subcomponents, follow these steps:

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 battery (see Battery on page 34).
5. Disconnect the wireless antenna cables from the WLAN module (see WLAN module on page 35).
6. Remove the hard drive (see Hard drive on page 38).
7. Remove the base enclosure (see Base enclosure on page 45).

Remove the display assembly:

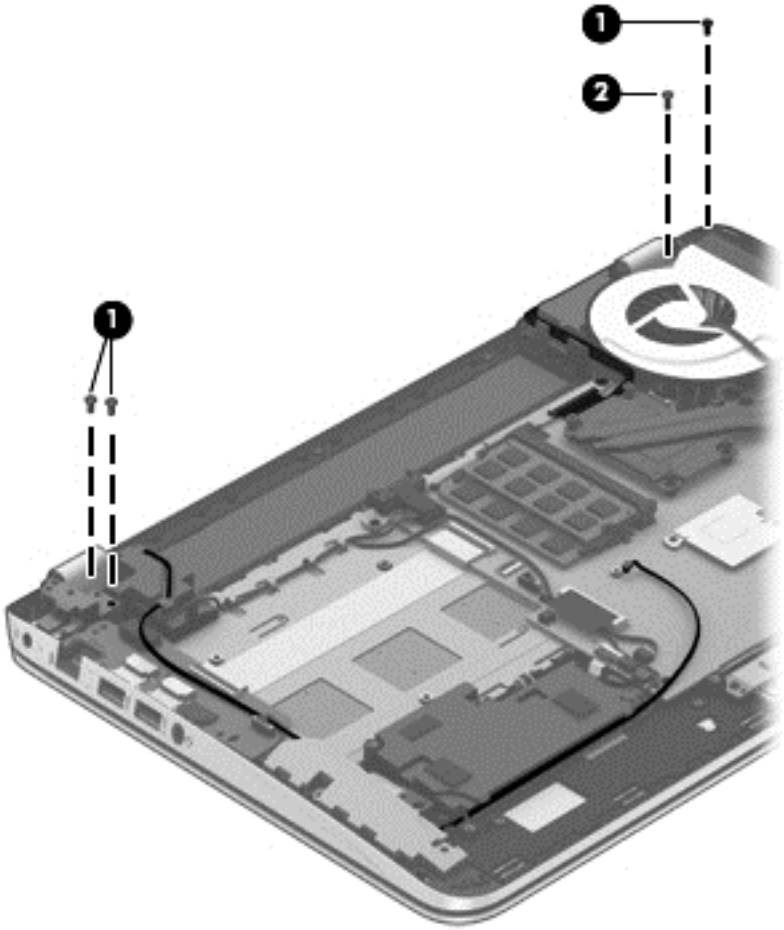
1. Release the wireless antenna cables from the retention clips built into the left rear speaker **(1)**, connector board **(2)**, and top cover **(3)**.
2. Release the wireless antenna cables from the retention clips **(4)** built into the subwoofer.
3. Release the ZIF connector to which the display panel cable is attached, and then disconnect the display panel cable **(5)** from the system board.
4. Disconnect the the webcam/microphone module cable **(6)** from the system board.

5. Release the display panel cable and the webcam/microphone module cable from the clips and routing channel built into the right rear speaker **(7)**.



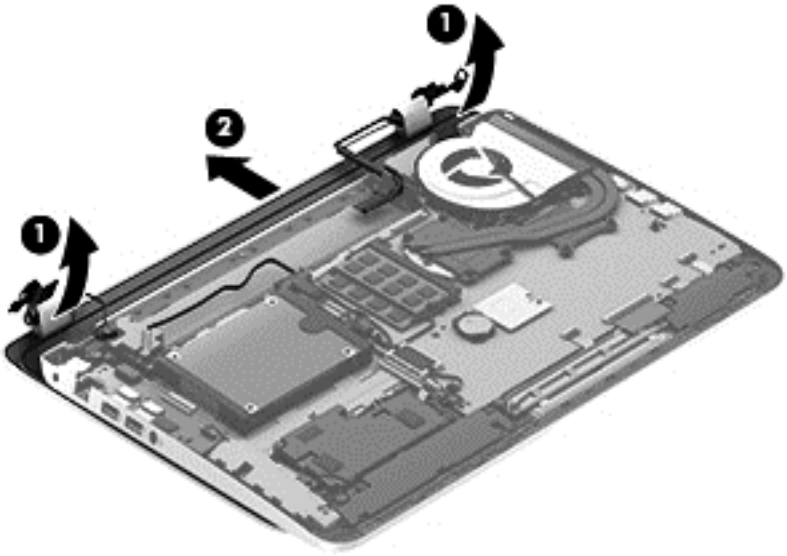

6. Remove the three Phillips PM2.5×4.5 screws **(1)** (two on the left hinge, one on the right hinge) that secure the display assembly to the top cover.

7. Remove the Phillips PM2.5×6.5 screw **(2)** on the right hinge that secures the display assembly to the top cover.




8. Open the display hinges **(1)** as far as they will open.

9. Remove the display assembly **(2)** from the computer.

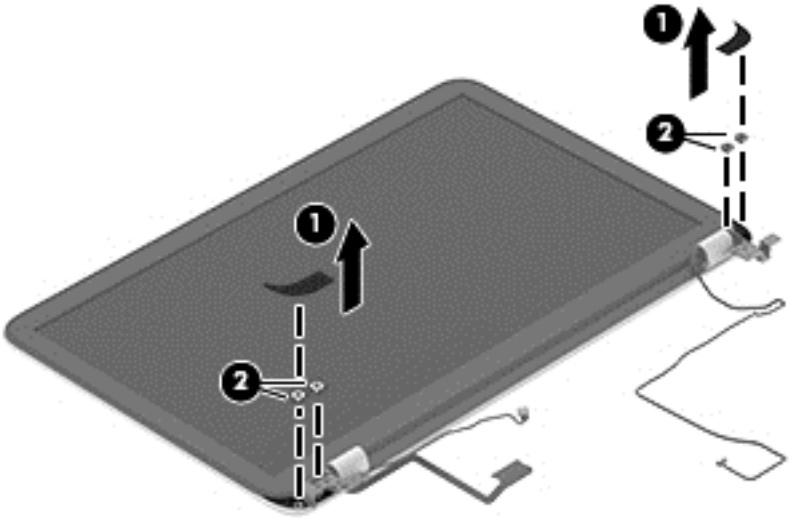


**NOTE:** Steps 10 through 16 apply only to computer models equipped with an Intel processor.

10. If it is necessary to replace the display bezel or any of the display assembly subcomponents:

    a. Remove the two screw covers **(1)** and the four Phillips PM2.5×3.2 broad head screws **(2)** that secure the display bezel to the display assembly.

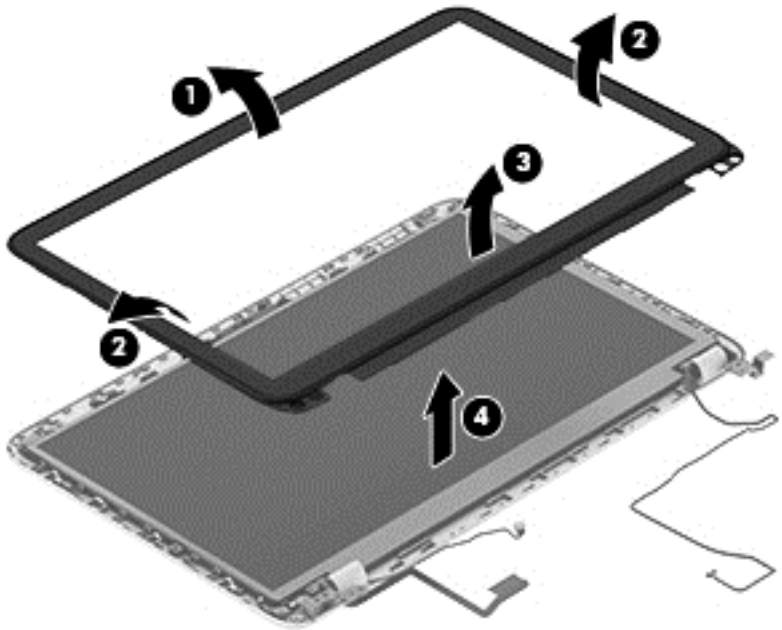
       The screw covers are available in the Rubber Kit, spare part number 720559-001.



    b. Flex the inside edges of the top edge **(1)**, the left and right sides **(2)**, and the bottom edge **(3)** of the display bezel until the bezel disengages from the display enclosure.

c. Remove the display bezel **(4)**.

The display bezel is available using spare part number 720535-001.

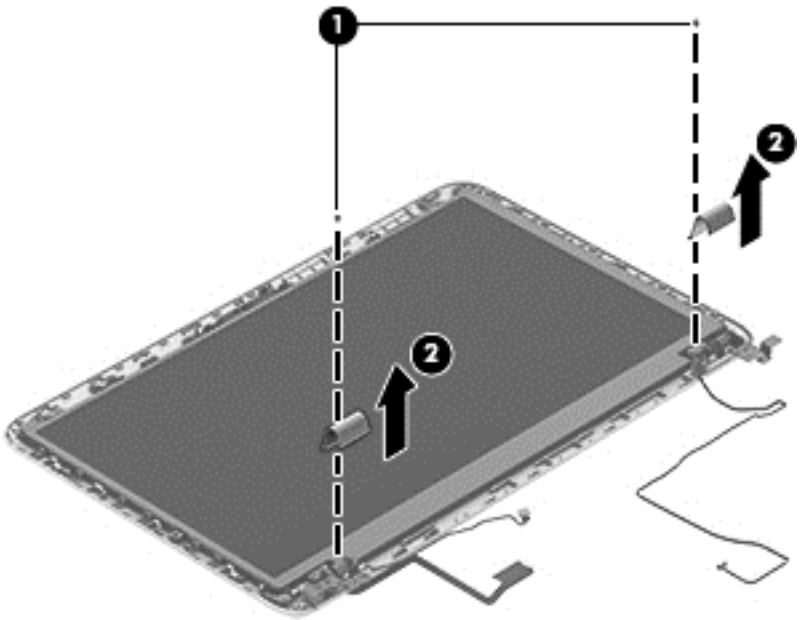



11. If it is necessary to replace the display hinge covers:

a. Remove the four Phillips PM2.0×2.9 screws **(1)** that secure the display hinge covers to the display enclosure.

b. Remove the display hinge covers **(2)**.

The display hinge covers are available using spare part number 720548-001.

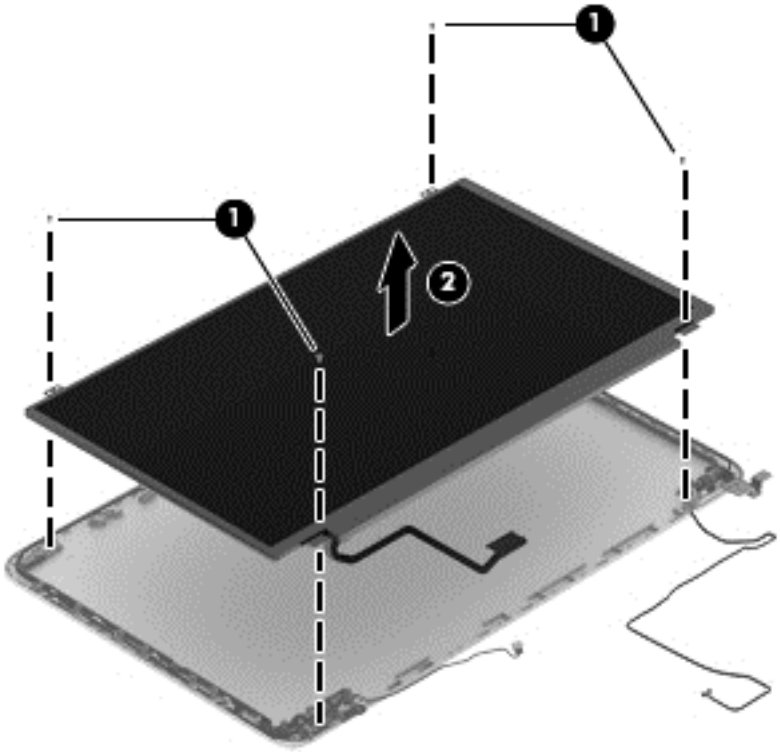



12. If it is necessary to replace the display panel:

**a.** Remove the four Phillips PM2.0×2.9 screws **(1)** that secure the display panel to the display enclosure.

**b.** Lift the display panel **(2)** straight up and remove it from the display enclosure.

The display panel is available using spare part numbers 720557-001 (15.6-in, BrightView, FHD, LED, non-TouchScreen display panel) and 720556-001 (15.6-in, BrightView, HD, LED, non-TouchScreen display panel).

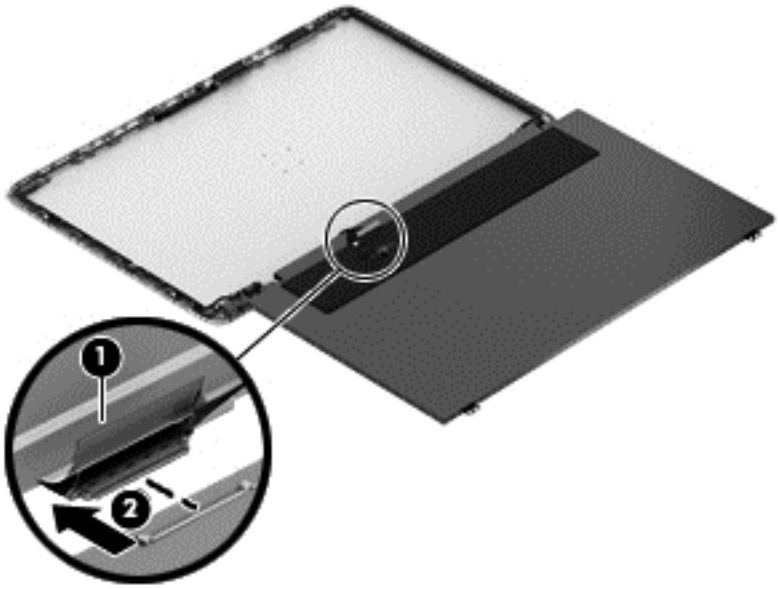



**13.** If it is necessary to replace the display panel cable:

**CAUTION:** Before turning the display panel upside down, make sure the work surface is clear of tools, screws, and any other foreign objects. Failure to follow this caution can result in damage to the display panel.

**a.** Turn the display panel upside down with the bottom edge toward you.

**b.** Release the adhesive strip **(1)** that secures the display panel cable to the display panel, and then disconnect the display panel cable **(2)** from the display panel.




**c.** Remove the display panel cable.

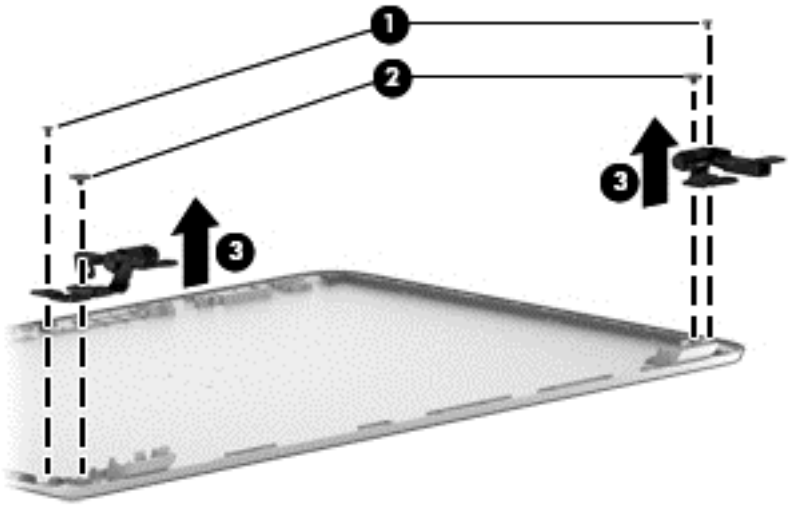
The display panel cable is available using spare part number 720536-001.

**14.** If it is necessary to replace the display hinges and brackets:

**a.** Remove the two Phillips PM2.0×2.9 screws **(1)** and the two Phillips PM2.5×3.2 broad head screws **(2)** that secure the display hinges to the display enclosure.

**b.** Remove the display hinges **(3)**.

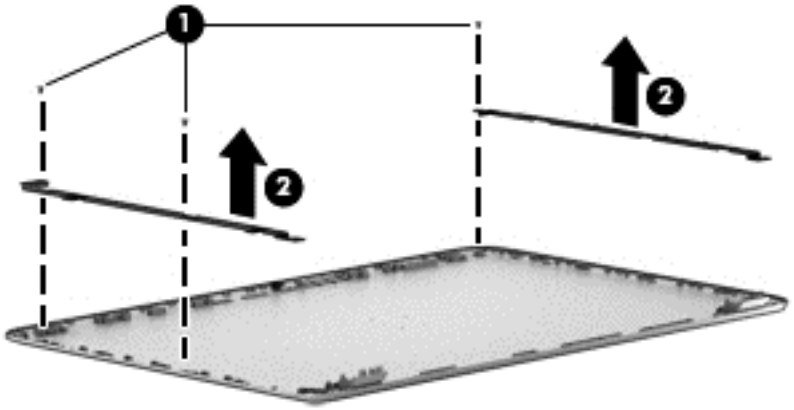
The display hinges are available using spare part number 720548-001.




**c.** Remove the three Phillips PM2.0×2.9 screws **(1)** that secure the left and right display hinge brackets to the display enclosure.

**d.** Remove the left and right display hinge brackets **(2)**.

The display hinge brackets are available using spare part number 720548-001.

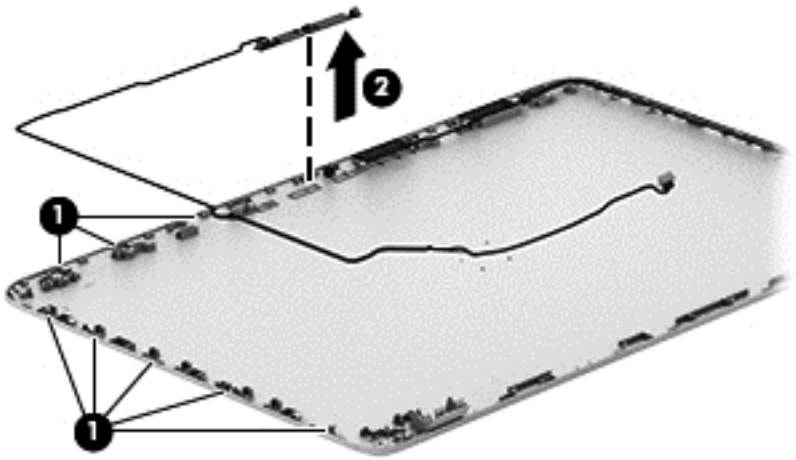


**15.** If it is necessary to replace the webcam/microphone module:

**CAUTION:** Handle the webcam/microphone module with caution. This module has a thin profile and is susceptible to damage when not handled carefully.

**a.** Release the webcam/microphone module cable **(1)** from the clips and routing channel built into the left and top edges of the display enclosure.

**b.** Detach the webcam/microphone module **(2)** from the display enclosure. (The webcam/microphone module is attached to the display enclosure with double-sided adhesive.)



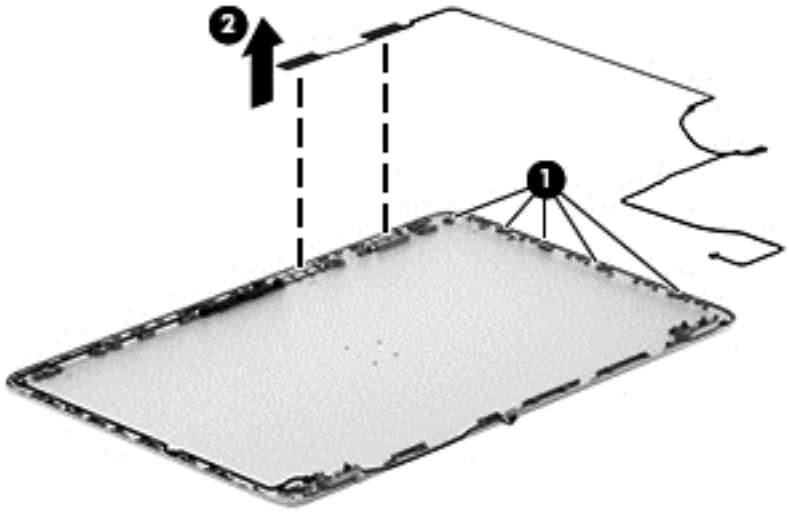
**c.** Remove the webcam/microphone module.

The webcam/microphone module is available using spare part number 720273-001, and includes the webcam/microphone module cable.

**16.** If it is necessary to replace the wireless antenna:

**a.** Release the wireless antenna cables from the clips **(1)** and routing channel built into the right edge of the display enclosure.

**b.** Detach the wireless antenna transceivers **(2)** from the display enclosure. (The wireless antenna transceivers are attached to the display enclosure with double-sided adhesive.)



**c.** Remove the wireless antenna.

The wireless antenna are available using spare part number 720532-001.

Reverse this procedure to reassemble and install the display assembly.

## Fan

| Description | Spare part number |
|---|---|
| Fan (includes cable) | 720235-001 |

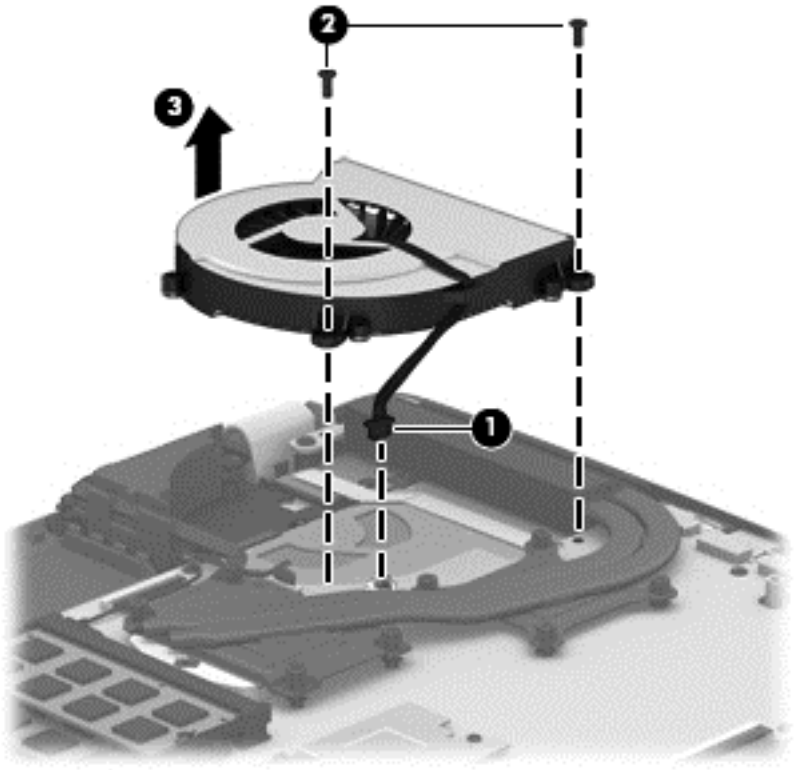
Before removing the fan, follow these steps:

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 battery (see Battery on page 34), and then remove the following components:
   **a.** Service cover (see WLAN module on page 35)
   **b.** Hard drive (see Hard drive on page 38)
   **c.** Base enclosure (see Base enclosure on page 45)
   **d.** Display assembly (see Display assembly on page 47)

Remove the fan:

1. Disconnect the fan cable **(1)** from the system board.
2. Remove the two Phillips PM2.5×4.5 screws **(2)** that secure the fan to the top cover.

3. Remove the fan **(3)**.




Reverse this procedure to install the fan.

## System board

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

| Description | Spare part number |
|---|---|
| For use only on computer models equipped with an Intel Core i7-4702HQ processor, a graphics subsystem with discrete memory, and the Windows 8 Professional operating system | 765736-601 |
| For use only on computer models equipped with an Intel Core i7-4702HQ processor, a graphics subsystem with discrete memory, and the Windows 8 Professional Standard system | 765736-501 |
| For use only on computer models equipped with an Intel Core i7-4702HQ processor, a graphics subsystem with discrete memory, and a non-Windows 8 operating system | 765736-001 |
| For use only on computer models equipped with an Intel Core i7-4722HQ processor, a graphics subsystem with discrete memory, and the Windows 8 Professional operating system | 801521-601 |
| For use only on computer models equipped with an Intel Core i7-4722HQ processor, a graphics subsystem with discrete memory, and the Windows 8 Professional Standard system | 801521-501 |
| For use only on computer models equipped with an Intel Core i7-4722HQ processor, a graphics subsystem with discrete memory, and a non-Windows 8 operating system | 801521-001 |
| For use only on computer models equipped with a separate processor, a graphics subsystem with UMA memory, and the Windows 8 Professional operating system | 760289-601 |

| Description | Spare part number |
|---|---|
| For use only on computer models equipped with a separate processor, a graphics subsystem with UMA memory, and the Windows 8 Standard operating system | 760289-501 |
| For use only on computer models equipped with a separate processor, a graphics subsystem with UMA memory, and a non-Windows 8 operating system | 760289-001 |

Before removing the system board, follow these steps:

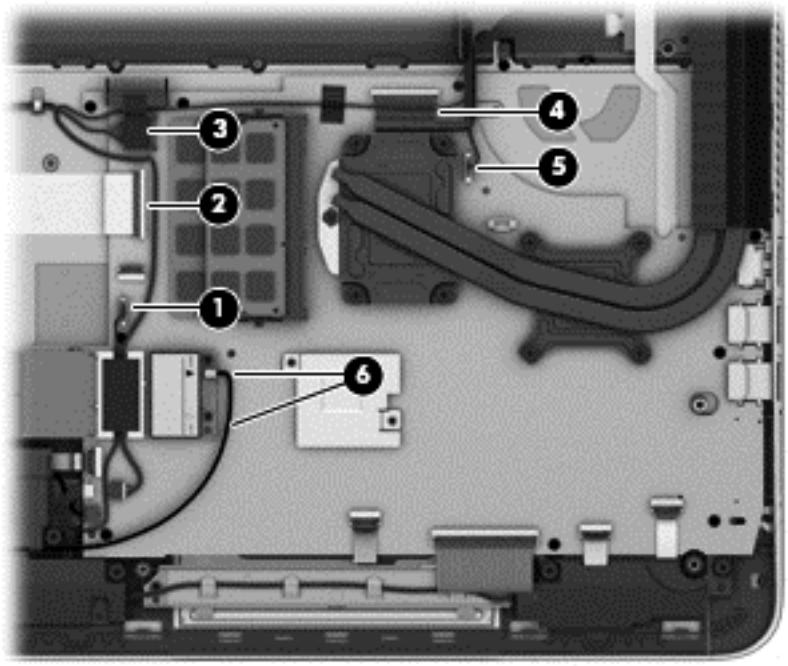
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 34), and then remove the following components:
   a. Service cover (see WLAN module on page 35)
   b. Hard drive (see Hard drive on page 38)
   c. Base enclosure (see Base enclosure on page 45)
   d. Display assembly (see Display assembly on page 47)
   e. Fan (see Fan on page 55)

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

- Memory module (see Memory module on page 40)
- Heat sink (see Heat sink on page 60)
- Processor (see Processor on page 62)

Remove the system board:

1. Disconnect the following cables from the system board:
   **(1)** Connector board cable
   **(2)** Connector board ribbon cable
   **(3)** Power connector cable
   **(4)** Display panel cable
   **(5)** Webcam/microphone module cable
   **(6)** Wireless antenna cables




2. Disconnect the following cables from the system board:

   **(1)** Speaker cable

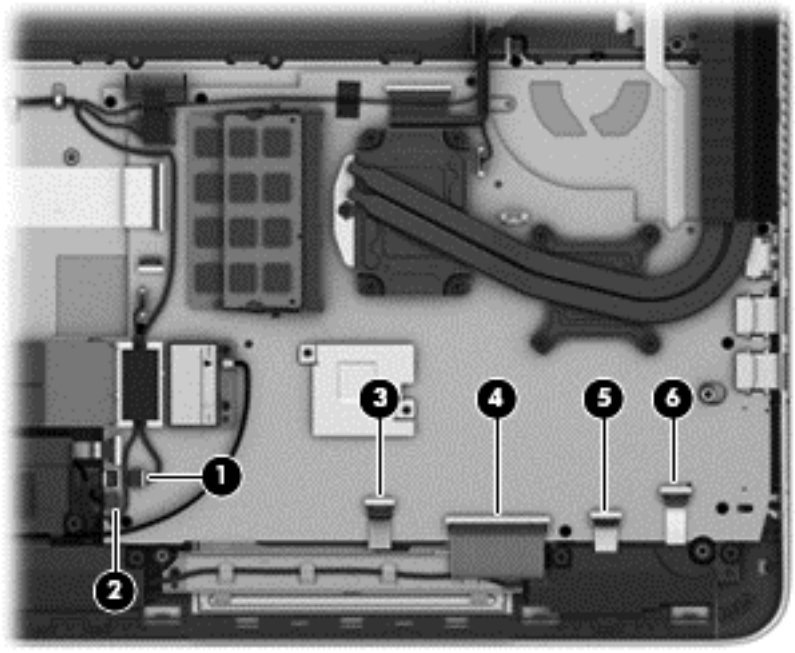
   **(2)** Subwoofer cable

   **(3)** TouchPad cable

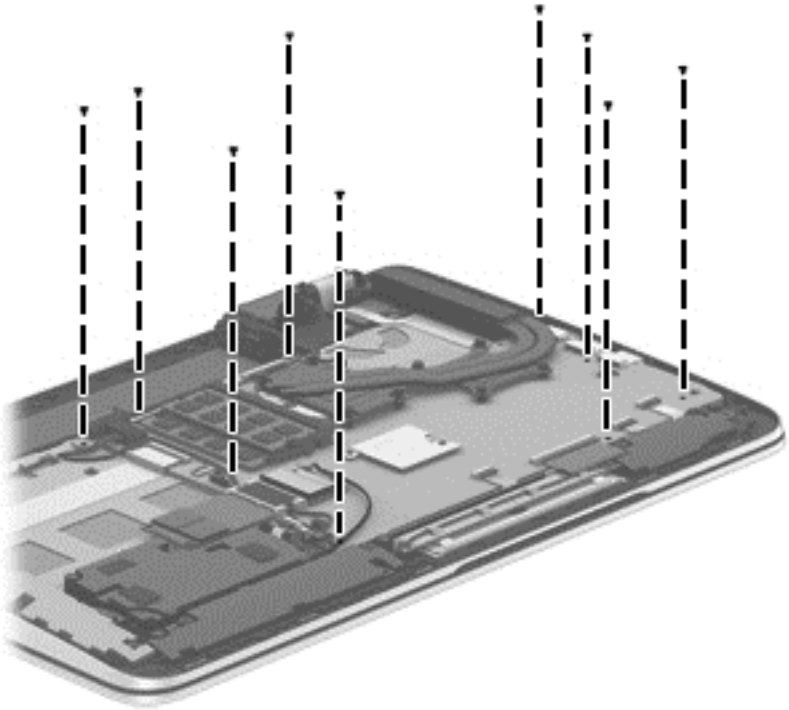
   **(4)** Keyboard cable

   **(5)** Keyboard backlight cable

   **(6)** Power button board cable



3. Remove the nine Phillips PM2.0×2.9 screws that secure the system board to the top cover.



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

Reverse this procedure to install the system board.

## Heat sink

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

| Description | Spare part number |
|---|---|
| For use only on computer models equipped with an Intel processor and a graphics subsystem with discrete memory | 765737-001 |
| For use only on computer models equipped with an Intel processor and a graphics subsystem with UMA memory | 720541-001 |

Before removing the heat sink, follow these steps:

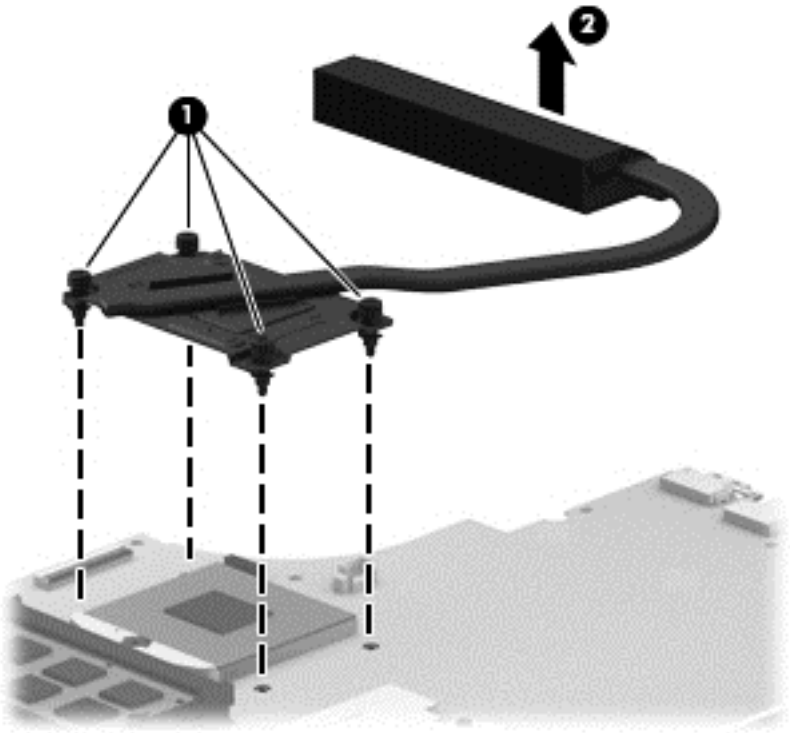
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 34), and then remove the following components:
   a. Service cover (see WLAN module on page 35)
   b. Hard drive (see Hard drive on page 38)
   c. Base enclosure (see Base enclosure on page 45)
   d. Display assembly (see Display assembly on page 47)
   e. Fan (see Fan on page 55)
   f. System board (see System board on page 56)

Remove the heat sink:

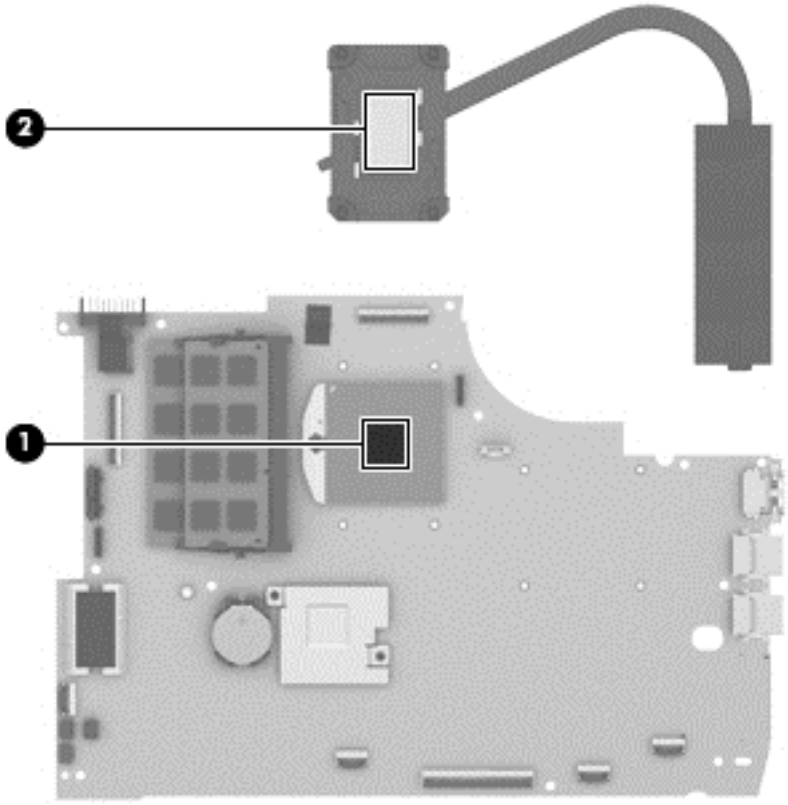
1. Turn the system board upside down, with the front toward you.
2. Following the 1 through 4 sequence stamped into the heat sink, loosen the four Phillips PM2.0×11.0 captive screws **(1)** that secure the heat sink to the system board.

3. 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.




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




Reverse this procedure to install the heat sink.

## Processor

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

**NOTE:** Separate processors can only be used in system board with spare part numbers 760289-001, 760289-501, and 760289-601.

| Description | Spare part number |
|---|---|
| Intel Core i5-4210M 2.60-GHz (SC turbo up to 3.20-GHz) processor (1600-MHz FSB, 3.0-MB L3 cache, dual core, 37 W) | 768420-001 |
| Intel Core i5-4200M 2.50-GHz (SC turbo up to 3.10-GHz) processor (1600-MHz FSB, 3.0-MB L3 cache, dual core, 37 W) | 737328-001 |

Before removing the processor, 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 battery (see Battery on page 34), and then remove the following components:

a. Service cover (see WLAN module on page 35)

b. Hard drive (see Hard drive on page 38)

c. Base enclosure (see Base enclosure on page 45)

d. Display assembly (see Display assembly on page 47)

e. Fan (see Fan on page 55)

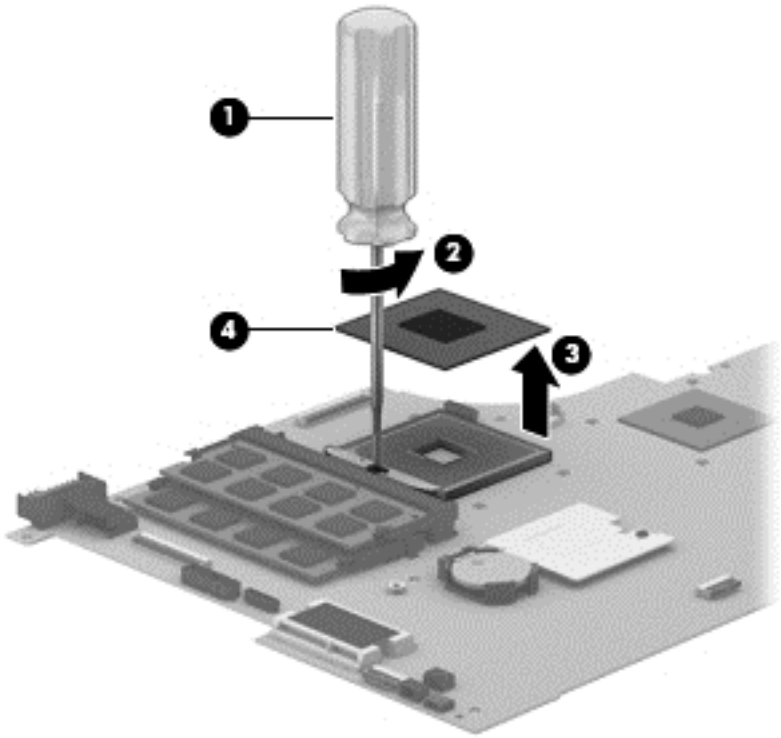
f. System board (see System board on page 56)

g. Heat sink (see Heat sink on page 60)

Remove the processor:

1. Use a flat-bladed screw driver **(1)** to turn the processor locking screw one-half turn counterclockwise **(2)**, until you hear a click.
2. Lift the processor **(3)** straight up, and remove it.

**NOTE:** The gold triangle **(4)** on the processor must be aligned with the triangle icon embossed on the processor socket when you install the processor.




Reverse this procedure to install the processor.

## Connector board

**NOTE:** The connector board spare part kit includes the audio jack, RJ-45 jack, USB port, and 2 cables.

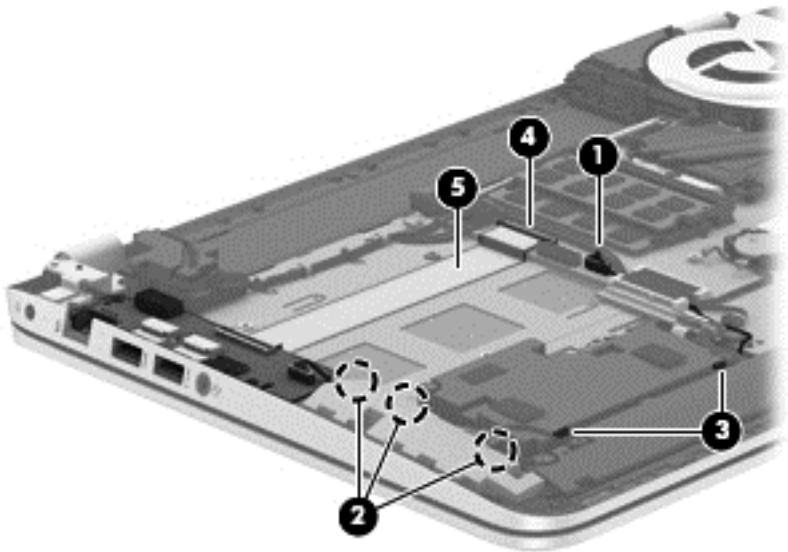
| Description | Spare part number |
|---|---|
| For use only on computer models equipped with a graphics subsystem with discrete memory | 765146-001 |
| For use only on computer models equipped with a graphics subsystem with UMA memory | 765145-001 |

Before removing the connector board, follow these steps:

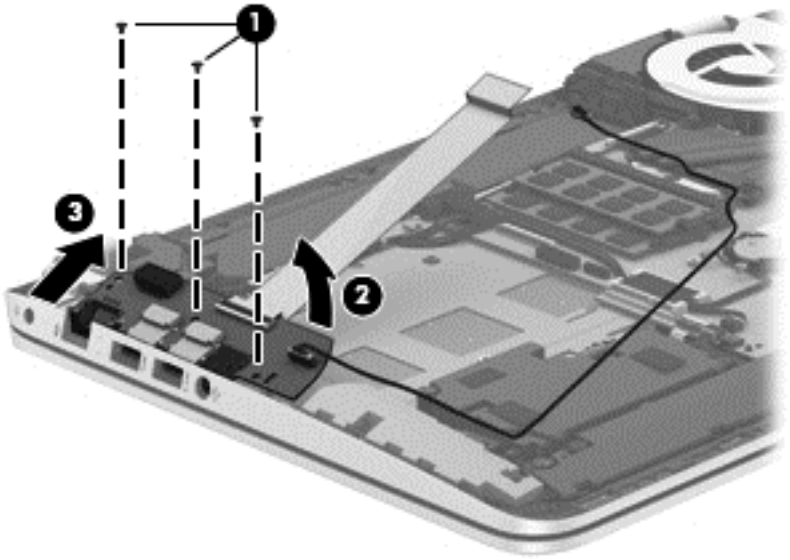
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 34), and then remove the following components:
   a. Service cover (see WLAN module on page 35)
   b. Hard drive (see Hard drive on page 38)
   c. Base enclosure (see Base enclosure on page 45)

Remove the connector board:

1. Disconnect the connector board cable **(1)** from the system board.
2. Release the connector board cable from the retention clips built into the top cover **(2)** and the subwoofer **(3)**.
3. Release the ZIF connector **(4)** to which the connector board ribbon cable is attached, and then disconnect the connector board ribbon cable from the system board.
4. Detach the connector board ribbon cable **(5)** from the base enclosure. (The connector board ribbon cable is attached to the top cover with double-sided tape.)



5. Remove the three Phillips PM2.0×2.9 screws **(1)** that secure the connector board to the top cover.
6. Lift the right side of the connector board **(2)** until it rests at an angle.
7. Remove the connector board **(3)** by sliding it up and to the right at an angle.




Reverse this procedure to install the connector board.

## Power connector cable

| Description | Spare part number |
|---|---|
| Power connector cable for use in models with UMA graphics | 720537-001 |
| Power connector cable for use in models with discrete graphics | 720538-001 |

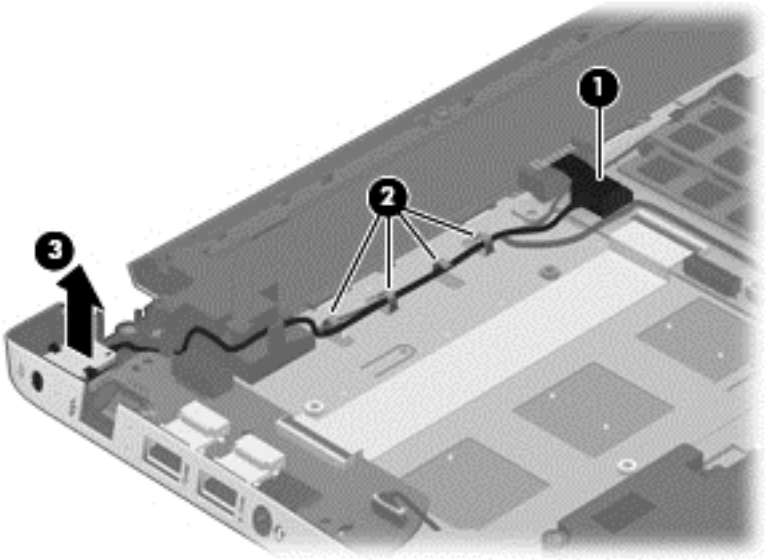
Before removing the power connector cable, follow these steps:

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 battery (see Battery on page 34), and then remove the following components:
   a. Service cover (see WLAN module on page 35)
   b. Hard drive (see Hard drive on page 38)
   c. Base enclosure (see Base enclosure on page 45)

Remove the power connector cable:

1. Disconnect the power cable **(1)** from the system board.
2. Release the power connector cable from the clips **(2)** built into the keyboard shield.

3. Release the power connector **(3)** from the clips and mold built into the top cover.




4. Remove the power connector cable.

Reverse this procedure to install the power connector cable.

## Subwoofer

| Description | Spare part number |
|---|---|
| Subwoofer (includes cable and 3 isolators) | 720563-001 |

Before removing the subwoofer, follow these steps:

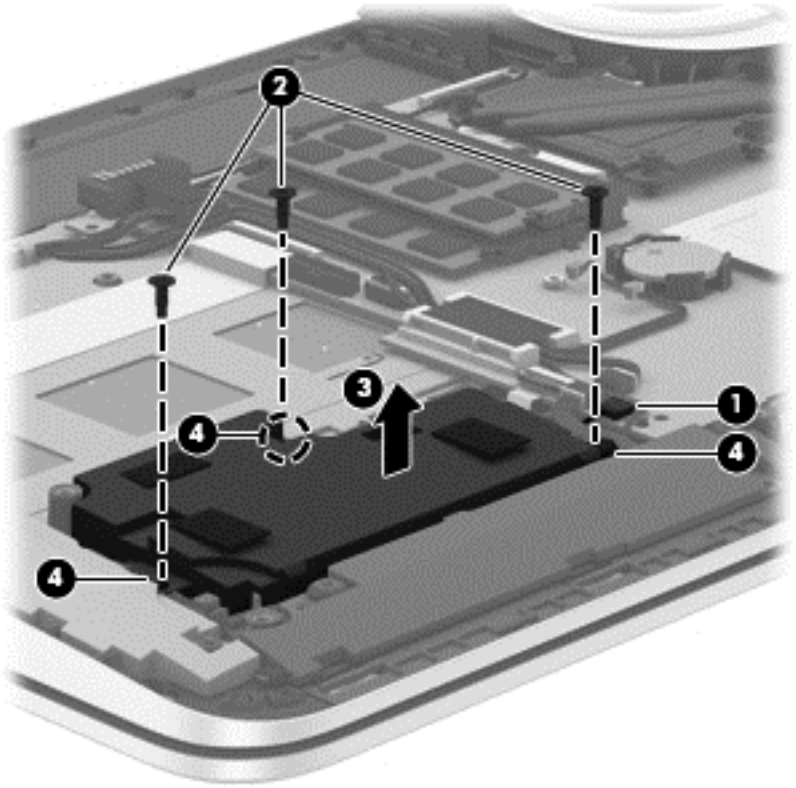
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 34), and then remove the following components:
   a. Service cover (see WLAN module on page 35)
   b. Hard drive (see Hard drive on page 38)
   c. Base enclosure (see Base enclosure on page 45)

Remove the subwoofer:

1. Disconnect the subwoofer cable **(1)** from the system board.
2. Remove the three Phillips PM2.5×6.2 screws **(2)** that secure the subwoofer to the top cover.

3. Remove the subwoofer **(3)**.

**NOTE:** The subwoofer includes three rubber isolators **(4)**. These isolators are crucial to the performance of the subwoofer.




Reverse this procedure to install the subwoofer.

## Speakers

| Description | Spare part number |
|---|---|
| Speakers (include left and right speakers, 2 cables, and 4 isolators) | 720561-001 |

Before removing the speakers, follow these steps:

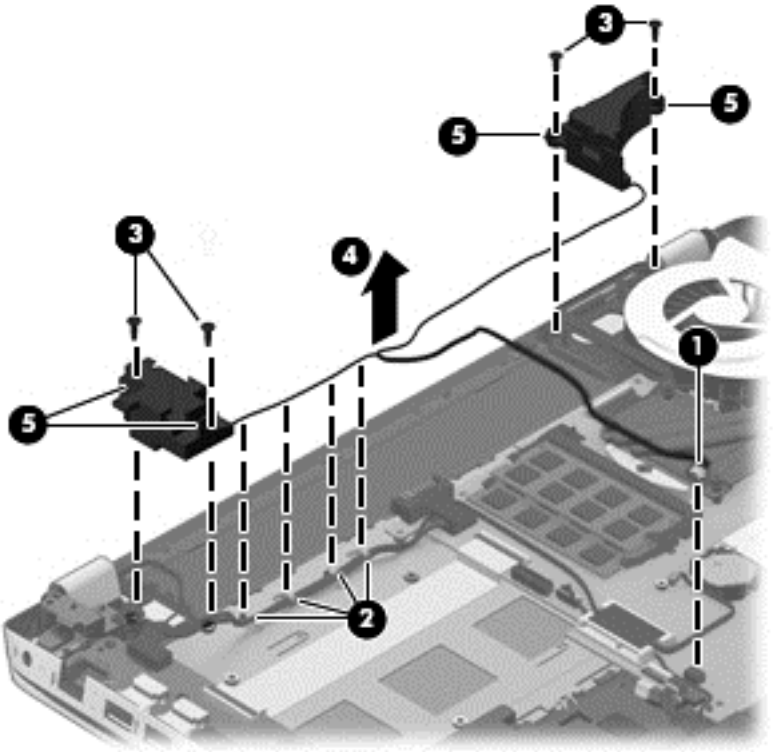
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 34), and then remove the following components:
   a. Service cover (see WLAN module on page 35)
   b. Hard drive (see Hard drive on page 38)
   c. Base enclosure (see Base enclosure on page 45)

Remove the speakers:

1. Disconnect the speaker cable **(1)** from the system board.
2. Release the speaker cables from the clips **(2)** and routing channel built into the top cover.
3. Remove the four Phillips PM2.5×6.2 screws **(3)** that secure the speakers to the top cover.

4. Remove the speakers **(4)**.

**NOTE:** The speakers includes four rubber isolators **(5)**. These isolators are crucial to the performance of the speakers.




Reverse this procedure to install the speakers.

## TouchPad assembly

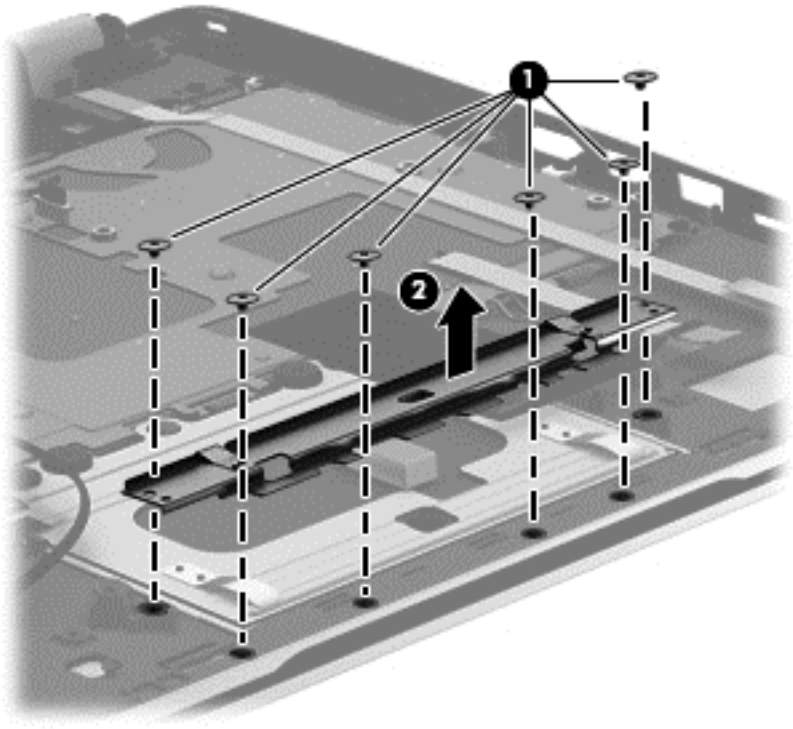
| Description | Spare part number |
|---|---|
| TouchPad assembly (includes TouchPad bracket, TouchPad button board, TouchPad, and cables) | 760041-001 |
| Tape kit, includes tape, gasket, Mylar insulator, top case insulator, and gasket boss | 801975-001 |

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 battery (see Battery on page 34), and then remove the following components:
   a. Service cover (see WLAN module on page 35)
   b. Hard drive (see Hard drive on page 38)
   c. Base enclosure (see Base enclosure on page 45)
   d. System board (see System board on page 56)

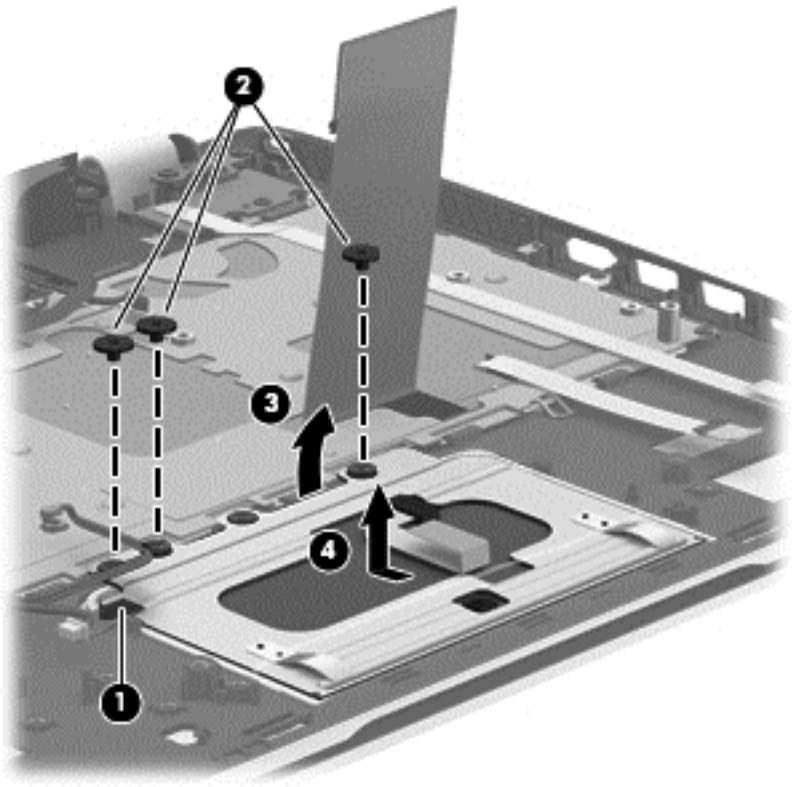
Remove the TouchPad:

1. Remove the six Phillips PM2.0×2.9 screws **(1)** that secure the TouchPad bracket to the top cover.
2. Remove the TouchPad bracket **(2)**.




3. Release the grounding tape **(1)** that connects the TouchPad to the top cover.

4. Remove the three Phillips PM2.5×2.5 broad head screws **(2)** that secure the TouchPad to the top cover.
5. Lift the rear edge of the TouchPad **(3)** until it rests at an angle.
6. Slide the TouchPad **(4)** toward the back of the top cover, and then lift the TouchPad straight up and remove it.




Reverse this procedure to install the TouchPad.

## Power button board

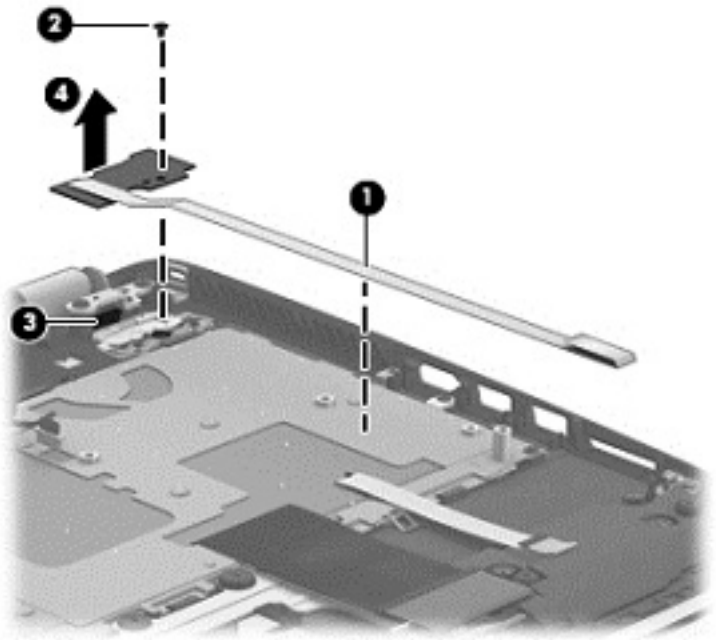
| Description | Spare part number |
|---|---|
| Power button board (includes cable) | 720553-001 |

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 battery (see Battery on page 34), and then remove the following components:
   a. Service cover (see WLAN module on page 35)
   b. Hard drive (see Hard drive on page 38)
   c. Base enclosure (see Base enclosure on page 45)
   d. System board (see System board on page 56)

Remove the power button board:

1. Detach the power button board cable **(1)** from the top cover. (The power button board cable is attached to the top cover with double-sided tape.)
2. Remove the Phillips PM2.0×2.9 screw **(2)** that secures the power button board to the top cover.
3. Release the clip **(3)** that secures the power button board to the top cover.
4. Remove the power button board **(4)**.




Reverse this procedure to install the power button board.

## Keyboard

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

| For use in country/region | | | Spare part number |
|---|---|---|---|
| Keyboard in natural silver finish with backlight (includes keyboard cable and backlight cable): | | | |
| For use in Canada | 760743-DB1 | For use in Taiwan | 760743-AB1 |
| For use in Japan | 760743-291 | For use in Thailand | 760743-281 |
| For use in Latin America | 760743-161 | For use in the United States | 760743-001 |
| For use in South Korea | 760743-AD1 | | |

Before removing the keyboard, 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 battery (see Battery on page 34), and then remove the following components:
   a. Service cover (see WLAN module on page 35)
   b. Hard drive (see Hard drive on page 38)
   c. Base enclosure (see Base enclosure on page 45)
   d. System board (see System board on page 56)
   e. Connector board (see Connector board on page 64)
   f. Subwoofer (see Subwoofer on page 66)
   g. Rear speaker (see Speakers on page 68)
   h. Power button board (see Power button board on page 72)

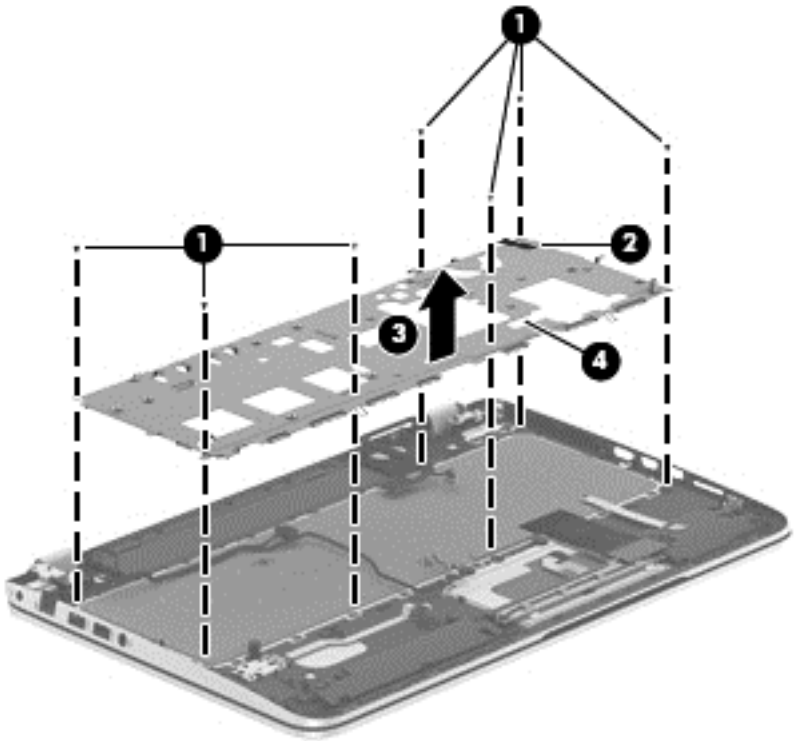
Remove the keyboard:

1. Remove the seven Phillips PM2.0×2.9 screws **(1)** that secure the keyboard shield to the computer.
2. Release the ground loop tape **(2)**.

3. Remove the keyboard shield **(3)**.

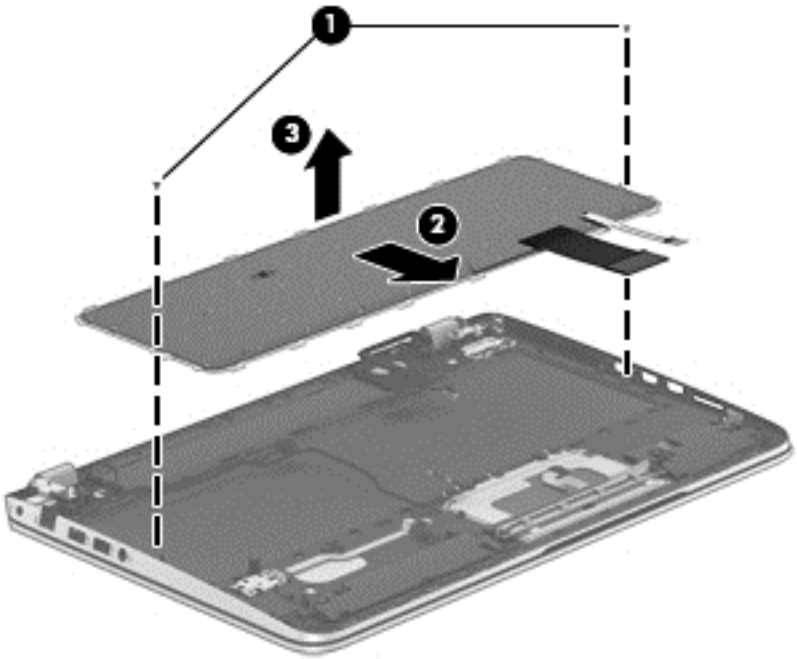
**CAUTION:** When removing the keyboard shield, make sure the keyboard cable and backlight cable are not damaged when being released through the opening in the keyboard shield.

The keyboard shield is available using spare part number 734817-001.




4. Partially open the computer.
5. Insert a thin tool into the keyboard release hole in the memory module compartment, and then press on the back of the keyboard until the keyboard disengages from the computer.
6. Turn the computer right-side up with the front toward you.
7. Remove the two Phillips PM2.0×2.9 screws **(1)** that secure the keyboard to the top cover.
8. Release the keyboard **(2)** by sliding it toward the TouchPad.

9. Remove the keyboard **(3)**.




Reverse this procedure to install the keyboard.

# 7 Using Setup Utility (BIOS)

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.

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

- 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 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, and then selecting **System Information**, or by using Setup Utility (BIOS).

1. Start Setup Utility (BIOS) (see Starting Setup Utility (BIOS) on page 76).
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.

# 8 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.

To start HP PC Hardware Diagnostics (UEFI):

1. Start Setup Utility:
   - Computers or tablets with keyboards:
     - ▲ Turn on or restart the computer, quickly press esc.
2. Press or tap f2.

   The BIOS searches 3 places for the diagnostic tools, in the following order:

   a. Connected USB drive

   **NOTE:** To download the HP PC Hardware Diagnostics (UEFI) tool to a USB drive, see Downloading HP PC Hardware Diagnostics (UEFI) to a USB device on page 78.

   b. Hard drive

   c. BIOS
3. When the diagnostic tool opens, use the keyboard arrow keys to select the type of diagnostic test you want to run, and then follow the on-screen instructions.

**NOTE:** If you need to stop a diagnostic test, press or tap esc.

**NOTE:** To start the Setup Utility, 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 the Setup Utility.

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

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

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

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

1. Go to http://hp.com/go/techcenter/pcdiags.
2. Click the UEFI **Download** link, and then select **Run**.

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

1. Go to http://www.hp.com.
2. Point to **Support**, located at the top of the page, and then click **Download Drivers**.

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

   – or –

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

4. Select your computer model, and then select your operating system.
5. In the **Diagnostic** section, click **HP UEFI Support Environment**.

   – or –

   Click **Download**, and then select **Run**.

# 9 Specifications

## Computer specifications

| | Metric | U.S. |
|---|---|---|
| **Dimensions** | | |
| **HP ENVY TouchSmart 15 Notebook PC** | | |
| Width | **37.95 cm** | 14.94 in |
| Depth | **25.07 cm** | 9.87 in |
| Height (front to rear) | **1.89 to 2.99 cm** | 0.74 to 1.18 in |
| Weight | **2.76 kg** | 6.08 lbs |
| **Input power** | | |
| Operating voltage and current | 19.5 V dc @ 3.33 A – 65 W<br>19.5 V dc @ 4.62 A – 90 W<br>19.5 V dc @ 6.15 A – 120 W (select models only) | |
| **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.

# 10 Backing up, restoring, and recovering

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.

**IMPORTANT:** If you will be using F11 startup recovery or USB media recovery to recover your system, the tablet battery must have at least 70% battery power remaining before starting the recovery process.

## 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 81. For information on the recovery options that are available using the recovery media, see Recovering using HP Recovery Manager on page 83.
- Use Windows tools to create system restore points and create backups of personal information.

  For more information, see Using Windows tools on page 82.

**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:

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

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 83.

# 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 83.

- 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 83. If you have not already created recovery media, see Creating HP Recovery media (select models only) on page 81.

- 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 83.

- 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 85.

## 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 81.

### 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 81.

- 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 81.
- 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:

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

1. From the Start screen, type `recovery`, select **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 85.

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:

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

1. Insert the HP Recovery media.
2. Start Computer Setup:

   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 computers or tablets without keyboards attached:

   ▲ Turn on or restart the computer, quickly press the volume down button, and then tap f9 for boot options.

   - or -

   Turn on or restart the computer, quickly press the Windows button, and then tap 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 81.

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.

# 11 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 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 |
| South Korea | EK | 4 |

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

1. The flexible cord must be Type HO5VV-F, 3-conductor, 1.0-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.
2. The flexible cord must be Type SPT-3 or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V) or NEMA 6-15P (15 A, 250 V) configuration.
3. The appliance coupler, flexible cord, and wall plug must bear a “T” mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCT or VCTF, 3-conductor, 1.00-mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V) configuration.
4. The flexible cord must be Type RVV, 3-conductor, 0.75-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.
5. The flexible cord must be Type VCTF, 3-conductor, 0.75-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.

# 12 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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