



HP Pavilion 14 Notebook PC (Intel) (model numbers 14-ab000 through 14-ab099)

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 <http://www.microsoft.com> for details.

The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

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Important Notice about Customer Self-Repair Parts

 **CAUTION:** Your computer includes Customer Self-Repair parts and parts that should only be accessed by an authorized service provider. See Chapter 5, "Removal and replacement procedures for Customer Self-Repair parts," for details. Accessing parts described in Chapter 6, "Removal and replacement procedures for Authorized Service Provider only parts," can damage the computer or void your warranty.

Safety warning notice


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

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1 Product description

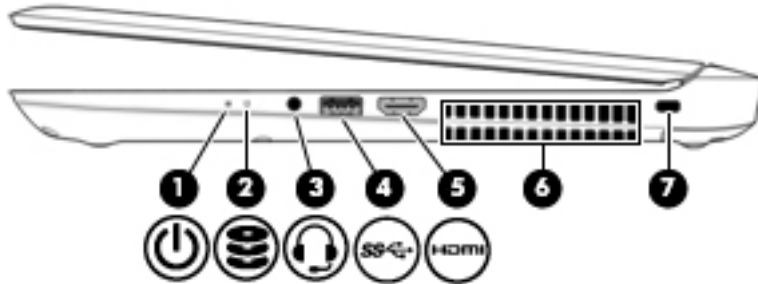
Category	Description
Product Name	HP Pavilion Notebook PC
Processors	<ul style="list-style-type: none">• Intel™ Core® i7-5500U (2.4GHz, SC turbo up to 3.0GHz), 1600-MHz/4-MB L3, Dual 15W• Intel Core i5-5200U (2.2GHz, SC turbo up to 2.7GHz), 1600-MHz/3-MB L3, Dual 15W• Intel Core i3-5010U (2.0GHz), 1600-MHz/3-MB L3, Dual 15W
Chipset	Intel Wildcat Point-LP processor controlled hub (PCH)
Graphics	<p>Internal graphics:</p> <ul style="list-style-type: none">• Intel HD Graphics 5500 <p>External graphics:</p> <ul style="list-style-type: none">• NVIDIA® N16S-GT (GeForce 940M) with up to 2048-MB of dedicated video memory (256Mx16 DDR3 900-MHz × 4 PCs, 1GHz bridge to 900-MHz)• AMD® R7 M360 (Meso-XT) with up to 2048-MB of dedicated video memory (256Mx16 DDR3 900-MHz × 4 PCs, 1GHz bridge to 900-MHz)
Panel	<ul style="list-style-type: none">• 14.0" [35.5 cm] (1366×768), high definition (eDP), light-emitting diode (LED), BrightView, 16:9 UltraWide Aspect Ratio, 220 nits• 14.0" [35.5 cm] (1366×768), high definition (eDP), light-emitting diode (LED), BrightView, 16:9 UltraWide Aspect Ratio, touch on panel (TOP), 200 nits <p>Touch solution with flush glass, multitouch enabled</p> <p>Supports low-voltage differential signaling (LVDS) (co-layout with eDP 1.2)</p>
Memory	16384 MB (8192 MB × 2) 12288 MB (8192 MB +4096 MB) 8192 MB (8192 MB × 1) 8192 MB (4096 MB × 2) 6144 MB (2048 MB × 1 + 4096 MB × 1) 4096 MB (4096 MB × 1) 4096 MB (2048 MB × 2)
Hard drive	2 TB (5400) 9.5mm 1 TB (5400) 9.5mm 750 GB (5400) 9.5mm 500 GB (5400) 7mm/9.5mm 1 TB (5400) + 8 GB NAND Hybrid HDD 9.5mm
Optical drive	DVD±RW Double-Layer SuperMulti drive Support for Zero-Power ODD Support for M-disc Support for external 9.5 mm tray load, SATA, DVD±RW DL SuperMulti drive





Category	Description
Audio and video	Integrated HP TrueVision camera: HD (1280×720 by 30 frames/sec), fixed (no tilt), with activity light Dual digital microphones with appropriate software - echo cancellation, noise suppression Dual speakers
Ethernet	Integrated 10/100 NIC
Wireless	<p>Integrated Wireless options with single antenna:</p> <ul style="list-style-type: none"> • Broadcom BCM943142 802.11 bgn 1×1 Wi-Fi + Bluetooth 4.0 M.2 Combo Adapter • Realtek RTL8188EE 802.11 bgn Wi-Fi Adapter <p>Integrated Wireless options with dual antennas:</p> <ul style="list-style-type: none"> • Intel Dual Band Wireless-AC 3160 802.11 ac 1×1 WiFi + Bluetooth 4.0 Combo Adapter
External media cards	HP Multi-Format Digital Media Card Reader with push-push technology. Supports SD/SDHC/SDXC.
Ports	AC adapter: HP Smart pin plug (4.5mm barrel) Audio: one combo audio-out (headphone)/audio-in (microphone) jack HDMI: v. 1.4 supporting up to 1080p, 1920x1080 at 60Hz RJ-45/Ethernet (2) USB 3.0 (1 on the left side, 1 on the right side) (1) USB 2.0 (left side)
Keyboard/pointing devices	<ul style="list-style-type: none"> • Full size standard textured island-style keyboard with numeric keypad • Full size standard dura coat island-style backlit keyboard with numeric keypad <p>Clickpad requirements:</p> <ul style="list-style-type: none"> • Multitouch gestures enabled • Support for Windows 8.1 Modern TouchPad gestures • Taps enabled as default
Power requirements	<p>Supports the following Smart AC power adapters:</p> <ul style="list-style-type: none"> • 45 W • 65 W • 65 W EM • 65 W Slim Travel adapter <p>1 meter power cord</p> <p>Supports the following batteries:</p> <ul style="list-style-type: none"> • 4-cell battery, 48-Whr, Li-ion battery • 4-cell battery, 41-Whr, Li-ion battery
Security	Security cable slot Trusted platform module (TPM) 2.0 support
Operating system	<p>Preinstalled:</p> <p>Windows 8.1</p>

Category	Description
	Windows 7 Professional
Serviceability	End user replaceable parts: <ul style="list-style-type: none">• Optical drive• Battery• AC Adapter

2 External component identification

Right side



Component	Description
(1)  Power light	<ul style="list-style-type: none">• On: The computer is on.• Blinking: The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other components.• Off: The computer is off or in Hibernation. Hibernation is a power-saving state that uses the least amount of power.
(2)  Hard drive/optical drive light	<ul style="list-style-type: none">• Blinking white: The hard drive or optical drive is being accessed.• Amber: HP 3D DriveGuard has temporarily parked the hard drive.
(3)  Audio-out (headphone)/Audio-in (microphone) jack	<p>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.</p> <p>WARNING! To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, refer to the <i>Regulatory, Safety, and Environmental Notices</i>.</p> <p>NOTE: When a device is connected to the jack, the computer speakers are disabled.</p> <p>NOTE: Be sure that the device cable has a 4-conductor connector that supports both audio-out (headphone) and audio-in (microphone).</p>
(4)  USB 3.0 port	Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub.
(5)  HDMI port	Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component, or a high-speed High-Definition Multimedia Interface (HDMI) device.
(6) Vents (2)	Enable airflow to cool internal components.

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

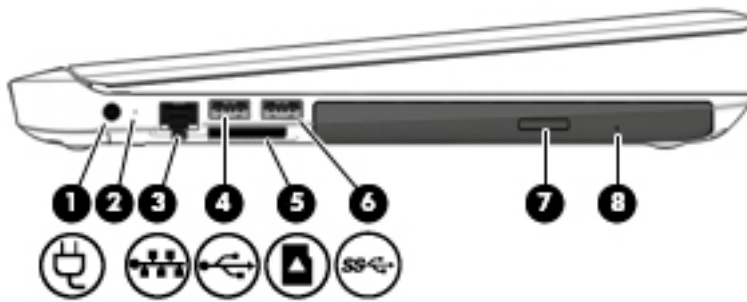
(7) Security cable slot











Attaches an optional security cable to the computer.

NOTE: The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.


Left side

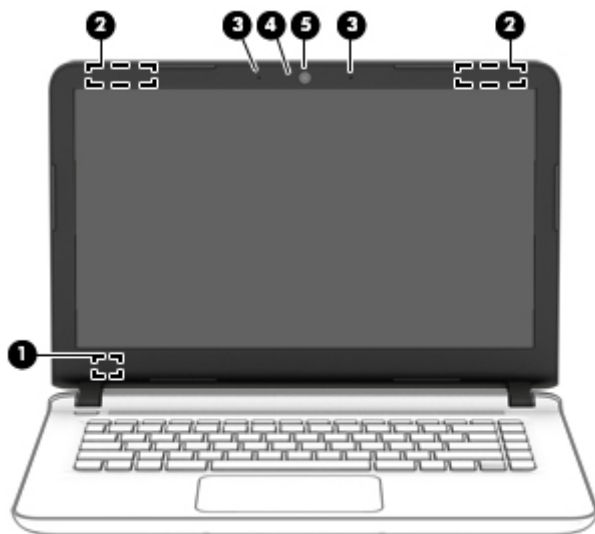


Component	Description
(1) 	Power connector Connects an AC adapter.
(2) 	AC adapter/battery light <ul style="list-style-type: none"> White: The AC adapter is connected and the battery is fully charged. Blinking white: The AC adapter is disconnected and the battery has reached a low battery level. Amber: The AC adapter is connected and the battery is charging. Off: The battery is not charging.
(3) 	RJ-45 (network) jack/status lights Connects a network cable. <ul style="list-style-type: none"> White: The network is connected. Amber: Activity is occurring on the network.
(4) 	USB 2.0 port Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub.
(5) 	Memory card reader Reads optional memory cards that enable you to store, manage, share or access information. To insert a card: <ol style="list-style-type: none"> Hold the card label-side up, with connectors facing the computer. Insert the card into the slot, and then push in on the card until it is firmly seated. To remove a card: <ul style="list-style-type: none"> Press in on the card until it pops out.
(6) 	USB 3.0 port Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub.
(7) 	Optical drive eject button Releases the disc tray.
(8) 	Optical drive Depending on your computer model, reads an optical disc or reads and writes to an optical disc.

Component	Description
	NOTE: For disc compatibility information, go to the Help and Support web page. Follow the web page instructions to select your computer model. Select Drivers & Downloads , and then follow the on-screen instructions.

Display

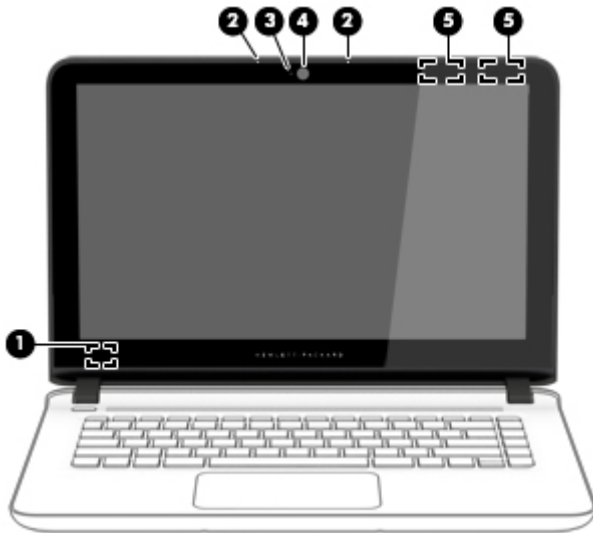
 **NOTE:** Refer to the illustration that most closely matches your computer.



Component	Description
(1) Internal display switch	Turns off the display and initiates Sleep if the display is closed while the power is on. NOTE: The internal display switch is not visible from the outside of the computer.
(2) WLAN antennas*	Send and receive wireless signals to communicate with wireless local area networks (WLANs).
(3) Internal microphones (2)	Record sound.
(4) Webcam light	On: The webcam is in use.
(5) Webcam	Records video and captures photographs. Some models allow you to video conference and chat online using streaming video. To use the webcam: ▲ To use the webcam, select <i>Start > All Programs > Communications and Chat > CyberLink YouCam.</i>

*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 guide, select **Start > HP Support Assistant > Next > My computer > User Guides.**



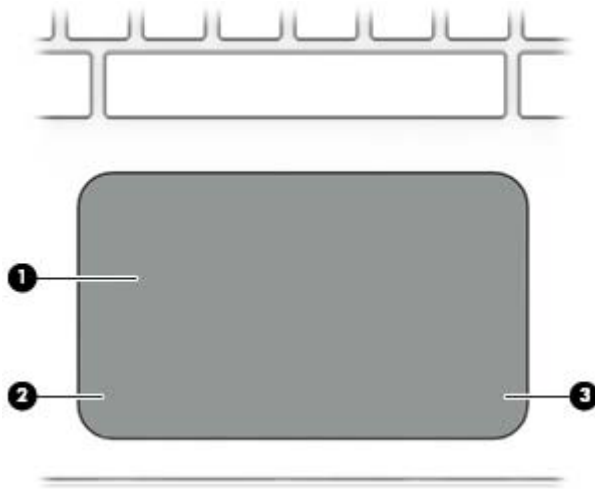
Component	Description
(1) Internal display switch	Turns off the display and initiates Sleep if the display is closed while the power is on. NOTE: The internal display switch is not visible from the outside of the computer.
(2) Internal microphones (2)	Record sound.
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(5) 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.

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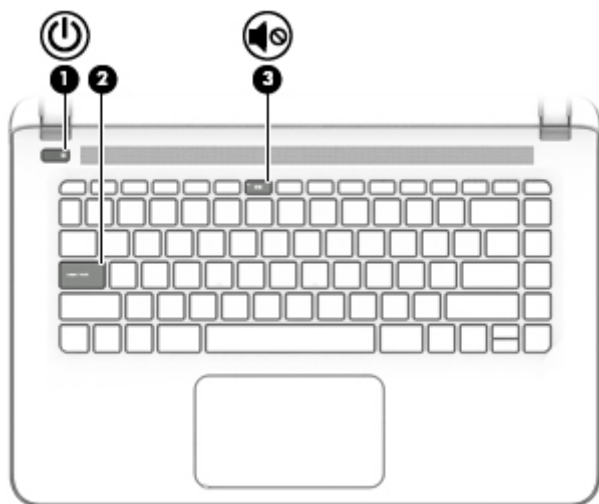
Top



TouchPad



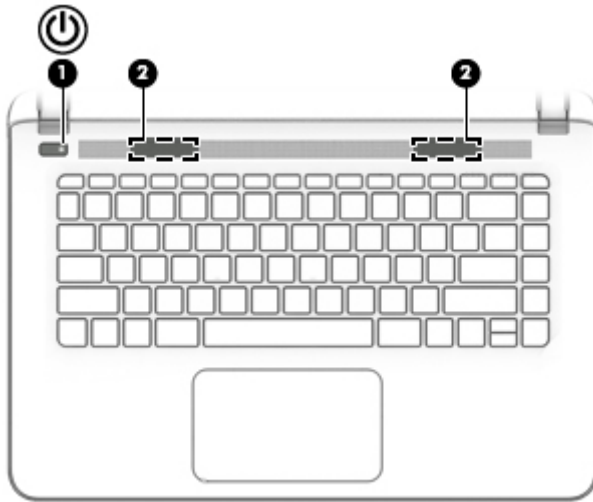
Component	Description
(1) TouchPad zone	Reads your finger gestures to move the pointer or activate items on the screen.
(2) Left TouchPad button	Functions like the left button on an external mouse.
(3) Right TouchPad button	Functions like the right button on an external mouse.


Lights



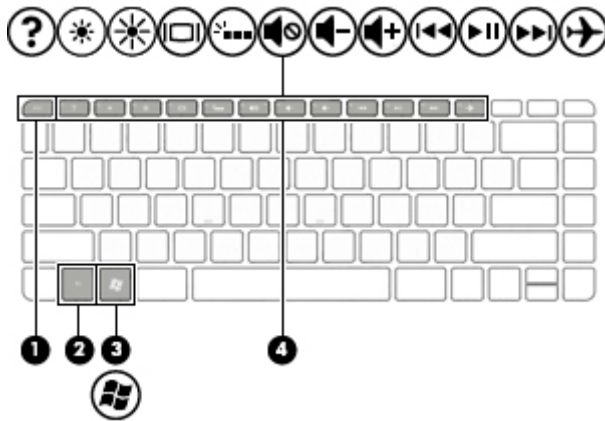
Component	Description
(1)  Power light	<ul style="list-style-type: none">• On: The computer is on.• Blinking: The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other unneeded components.• Off: The computer is off or in Hibernation. Hibernation is a power-saving state that uses the least amount of power.
(2) Caps lock light	On: Caps lock is on, which switches the keys to all capital letters.
(3)  Mute light	<ul style="list-style-type: none">• Amber: Computer sound is off.• Off: Computer sound is on.


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



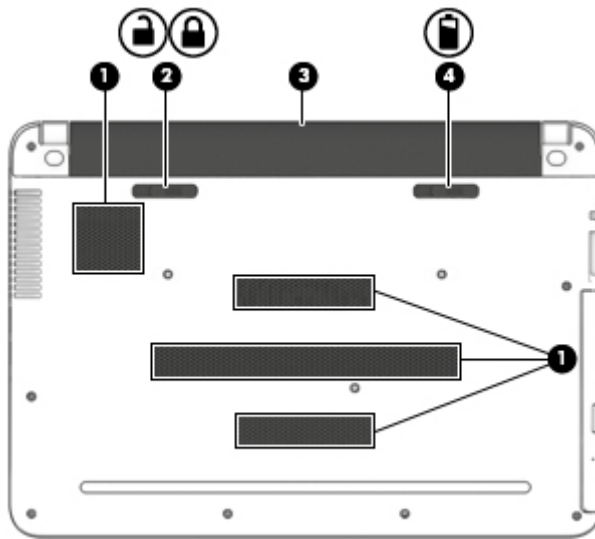
Component	Description
<p>(1)  Power button</p>	<ul style="list-style-type: none">• When the computer is off, press the button to turn on the computer.• When the computer is on, press the button briefly to initiate Sleep.• When the computer is in the Sleep state, press the button briefly to exit Sleep.• When the computer is in Hibernation, press the button briefly to exit Hibernation. <p>CAUTION: Pressing and holding down the power button will result in the loss of unsaved information.</p> <p>If the computer has stopped responding and Windows shutdown procedures are ineffective, press and hold the power button down for at least 5 seconds to turn off the computer.</p>
<p>(2) Speakers (2)</p>	<p>Produce sound.</p>



Keys



Component	Description
(1) esc key	Displays system information when pressed in combination with the fn key.
(2) fn key	Displays system information when pressed in combination with the esc key.
(3)  Windows key	Displays the Windows Start menu.
(4) Action keys	Execute frequently used system functions. NOTE: On select models, the f5 action key turns the radiance backlight keyboard feature off or on.

Bottom

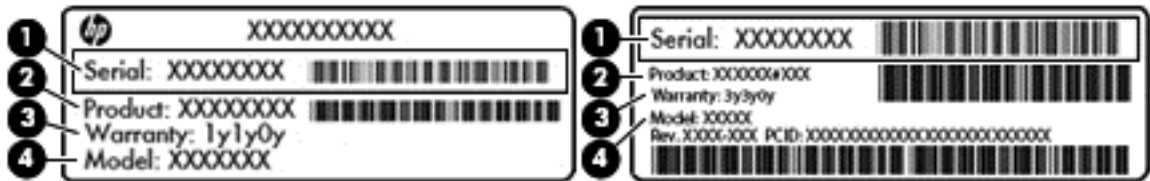


Component	Description
(1)	Vents (4) Enable airflow to cool internal components. NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(2) 	Battery lock Locks the battery in the battery bay.
(3)	Battery bay Holds the battery.
(4) 	Battery release latch Releases the battery.

Locating system information

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

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



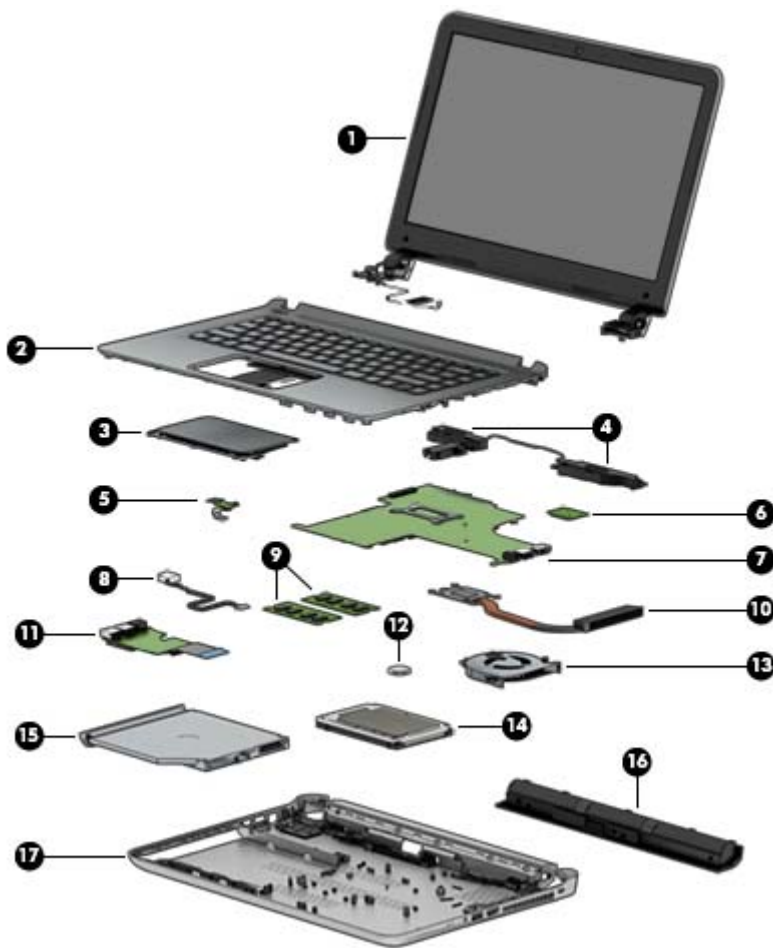
Using Windows, briefly press the **fn+esc** key combination to display the System Information screen, which provides the product name and serial number of your computer, as well as information about the memory, processor, BIOS, and keyboard.

3 Illustrated parts catalog

Computer major components

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

NOTE: Details about your computer, including model, serial number, product key, and length of warranty, are on the service tag at the bottom of your computer. See [Locating system information on page 15](#) for details.



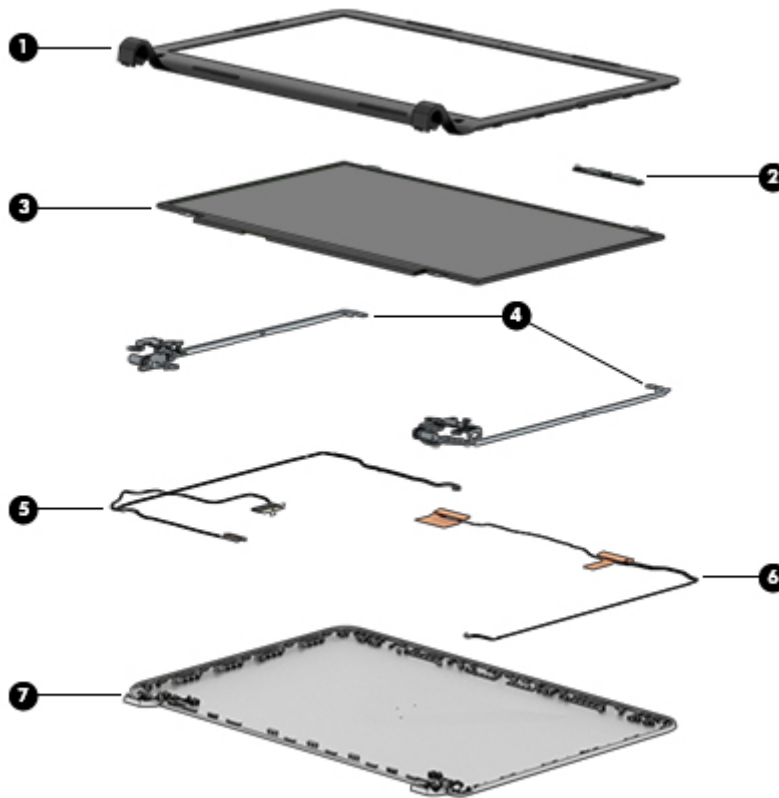
Item	Component	Spare part number
(1)	Display assembly: For display assembly spare part information for non-TouchScreen models, see Display assembly (non-TouchScreen) (select models only) on page 56 . For TouchScreen models, see Display assembly (TouchScreen) (select models only) on page 61	
(2)	Keyboard/Top cover:	
	For use in Brazil	806756-201

Item	Component	Spare part number
	For use in Canada	806756-DB1
	For use in South Korea	806756-AD1
	For use in Taiwan	806756-AB1
	For use in Thailand	806756-281
	For use in the United States	806756-001
	For use in Canada (with backlight)	806757-DB1
	For use in Latin America (with backlight)	806757-161
	For use in the United States (with backlight)	806757-001
(3)	TouchPad board (includes cable)	811580-001
(4)	Speakers	806755-001
(5)	Power button board (includes cable)	806749-001
(6)	WLAN module:	
	Broadcom BCM43142 802.11 b/g/n 1x1 Wi-Fi + Bluetooth 4.0 Combo Adapter	792608-005
	Intel Dual Band Wireless-AC 3160 802.11 ac 1×1 WiFi + Bluetooth 4.0 Combo Adapter	784644-005
	Realtek RTL8188EE 802.11b/g/n Wi-Fi Adapter	792609-005
(7)	System board (includes processor and replacement thermal material):	
	Equipped with an Intel Core i7-5500U 2.40-GHz (SC turbo up to 3.00-GHz) processor (1600-MHz FSB, 4.00-MB L3 cache, dual core, 15 W), a graphics subsystem with UMA memory, and the Windows 8 Professional operating system	806832-601
	Equipped with an Intel Core i7-5500U 2.40-GHz (SC turbo up to 3.00-GHz) processor (1600-MHz FSB, 4.00-MB L3 cache, dual core, 15 W), a graphics subsystem with UMA memory, and the Windows 8 Standard operating system	806832-501
	Equipped with an Intel Core i7-5500U 2.40-GHz (SC turbo up to 3.00-GHz) processor (1600-MHz FSB, 4.00-MB L3 cache, dual core, 15 W), a graphics subsystem with UMA memory, and a non-Windows 8 operating system	806832-001
	Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W), an NVIDIA N165-GT (GeForce 940M) graphics subsystem with up to 2.0-GB of discrete memory, and the Windows 8 Professional operating system	806835-601
	Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W), an NVIDIA N165-GT (GeForce 940M) graphics subsystem with up to 2.0-GB of discrete memory, and the Windows 8 Standard operating system	806835-501
	Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W), an NVIDIA N165-GT (GeForce 940M) graphics subsystem with up to 2.0-GB of discrete memory, and a non-Windows 8 operating system	806835-001
	Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W), an AMD R7 M360 graphics subsystem with up to 2.0-GB of discrete memory, and the Windows 8 Professional operating system	806834-601
	Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W), an AMD R7 M360 graphics subsystem with up to 2.0-GB of discrete memory, and the Windows 8 Standard operating system	806834-501

Item	Component	Spare part number
	Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W), an AMD R7 M360 graphics subsystem with up to 2.0-GB of discrete memory, and a non-Windows 8 operating system	806834-001
	Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W), a graphics subsystem with UMA memory, and the Windows 8 Professional operating system	806831-601
	Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W), a graphics subsystem with UMA memory, and the Windows 8 Standard operating system	806831-501
	Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W), a graphics subsystem with UMA memory, and a non-Windows 8 operating system	806831-001
	Equipped with an Intel Core i3-5010U 2.00-GHz processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W), a graphics subsystem with UMA memory, and the Windows 8 Professional operating system	806830-601
	Equipped with an Intel Core i3-5010U 2.00-GHz processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W), a graphics subsystem with UMA memory, and the Windows 8 Standard operating system	806830-501
	Equipped with an Intel Core i3-5010U 2.00-GHz processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W), a graphics subsystem with UMA memory, and a non-Windows 8 operating system	806830-001
	Equipped with an Pentium N3700 1.60-GHz (SC Turbo up to 2.40-GHz) processor (1600-MHz FSB, 2.00-MB L2 cache, dual core, 6 W), a graphics subsystem with UMA memory, and the Windows 8 Professional operating system	806833-601
	Equipped with an Pentium N3700 1.60-GHz (SC Turbo up to 2.40-GHz) processor (1600-MHz FSB, 2.00-MB L2 cache, dual core, 6 W), a graphics subsystem with UMA memory, and the Windows 8 Standard operating system	806833-501
	Equipped with an Pentium N3700 1.60-GHz (SC Turbo up to 2.40-GHz) processor (1600-MHz FSB, 2.00-MB L2 cache, dual core, 6 W), a graphics subsystem with UMA memory, and a non-Windows 8 operating system	806833-001
(8)	Power connector cable	806746-001
(9)	Memory module (PC3, 12800, 1600):	
	8 GB	693374-005
	4 GB	691740-005
	2 GB	691739-005
(10)	Heat sink (includes replacement thermal material):	
	For use only on computer models equipped with an Intel Core processor and a graphics subsystem with discrete memory	806827-001
	For use only on computer models equipped with an Intel Core processor and a graphics subsystem with UMA memory	806826-001
	For use only on computer models equipped with an Intel Pentium processor and a graphics subsystem with UMA memory	809106-001
(11)	USB connector board (includes cable):	
	For use only with computer models equipped with an Intel Core processor	809108-001
	For use only with computer models equipped with an Intel Pentium processor	809109-001

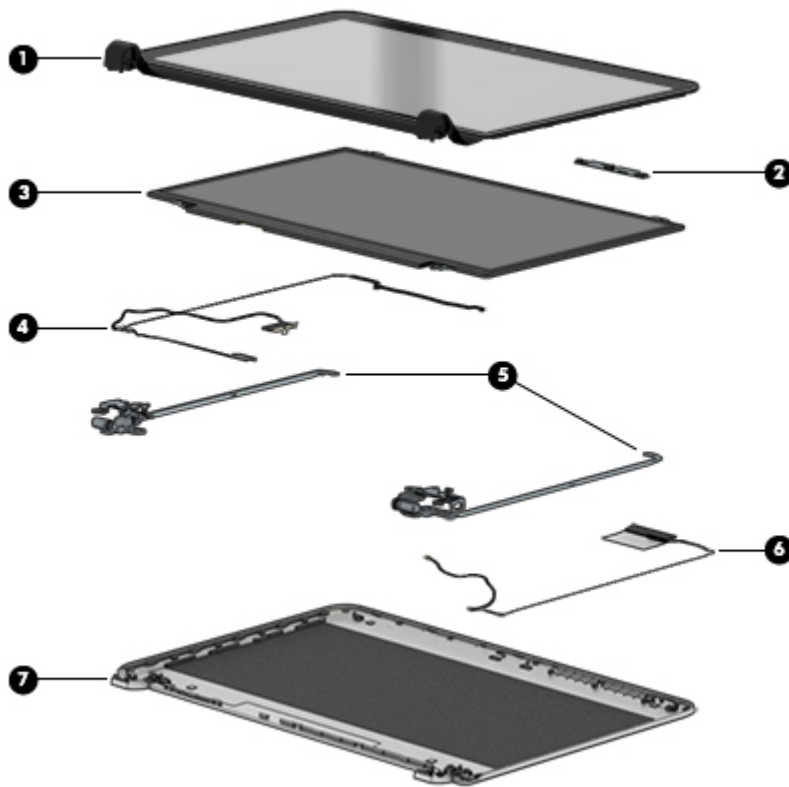
Item	Component	Spare part number
(12)	RTC battery	811080-001
(13)	Fan	806747-001
(14)	Hard drive (does not include the hard drive bracket, connector cable, isolators, or screws. These components are included in the Hard Drive Hardware Kit, spare part number 806751-001):	
	2 TB, 5400 rpm, 9.5mm	801808-005
	1 TB, 5400 rpm, 9.5mm	778192-005
	750 GB, 5400 rpm, 9.5mm	778190-005
	500 GB, 5400 rpm, 7mm/9.5mm	778188-005
	1 TB, 5400 rpm + 8 GB NAND Hybrid HDD, 9.5mm	731999-005
	Hard Drive Hardware Kit (not illustrated, includes the hard drive bracket, connector cable, isolators, and screws)	806751-001
(15)	Optical disc drive:	
	DVD±RW Double-Layer SuperMulti Drive in blizzard white finish	810325-001
	DVD±RW Double-Layer SuperMulti Drive in cobalt blue finish	810322-001
	DVD±RW Double-Layer SuperMulti Drive in natural silver finish	810320-001
	DVD±RW Double-Layer SuperMulti Drive in peachy pink finish	810323-001
	DVD±RW Double-Layer SuperMulti Drive in sunset red finish	810321-001
	DVD±RW Double-Layer SuperMulti Drive in violet purple finish	810324-001
(16)	Battery (4-cell, 41-WHr, 2.8-AH, Li-ion)	800049-001
(17)	Base enclosure:	
	Base enclosure in blizzard white finish	806743-001
	Base enclosure in cobalt blue finish	806740-001
	Base enclosure in natural silver finish	806738-001
	Base enclosure in peachy pink finish	806741-001
	Base enclosure in sunset red finish	806739-001
	Base enclosure in violet purple finish	806742-001

Display assembly subcomponents (non-TouchScreen) (select models only)



Item	Component	Spare part number
(1)	Display bezel	806744-001
(2)	Webcam and microphone module	806758-001
(3)	Display panel (14 in, LED, HD, BrightView SVA display panel)	806766-001
(4)	Display hinges	806748-001
(5)	Display panel cable	806745-001
(6)	WLAN Antenna Kit (includes transceiver and cable)	806731-001
(7)	Display enclosure:	
	Display enclosure in blizzard white finish	806737-001
	Display enclosure in cobalt blue finish	806734-001
	Display enclosure in natural silver finish	806732-001
	Display enclosure in peachy pink finish	806735-001
	Display enclosure in sunset red finish	806733-001
	Display enclosure in violet purple finish	806736-001

Display assembly subcomponents (TouchScreen) (select models only)



Item	Component	Spare part number
(1)	Display bezel	806744-001
(2)	Webcam and microphone module	810961-001
(3)	Display panel (14 in, LED, HD, BrightView SVA, TouchScreen display panel)	811079-001
(4)	Display hinges	809112-001
(5)	Display panel cable	810963-001
(6)	WLAN Antenna Kit (includes transceiver and cable)	809113-001
(7)	Display enclosure:	
	Display enclosure in blizzard white finish	807377-001
	Display enclosure in cobalt blue finish	807374-001
	Display enclosure in natural silver finish	806752-001
	Display enclosure in peachy pink finish	807375-001
	Display enclosure in sunset red finish	806829-001
	Display enclosure in violet purple finish	807376-001

Miscellaneous parts

Component	Spare part number
HP Smart AC Adapter:	
65-W PFC RC V EM 3-wire HP Smart AC adapter (for use only in India)	710412-001
65-W PFC RC V 3-wire HP Smart AC adapter (for use in all countries and regions except India)	714657-001
45-W PFC RC V 3-wire HP Smart AC adapter (for use in all countries and regions except India)	741727-001
HDMI to VGA adapter	701943-001
Power cord (3-pin, black, 1.83-m):	
For use in Argentina	755530-D01
For use in Australia	755530-011
For use in Brazil	755530-202
For use in Europe	755530-021
For use in India	755530-D61
For use in Italy	755530-061
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 Thailand	755530-201
For use in the United Kingdom and Singapore	755530-031
Rubber Kit	806754-001
Screw Kit	806761-001

4 Removal and replacement procedures preliminary requirements


Tools required

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


- Flat-bladed screwdriver
- Magnetic screwdriver
- Phillips PMP0 and P1 screwdrivers

Service considerations

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

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

Plastic parts

 **CAUTION:** Using excessive force during disassembly and reassembly can damage plastic parts. Use care when handling the plastic

Cables and connectors

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

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

Drive handling

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

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

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

Before removing 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.

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

Avoid exposing a drive to temperature extremes or liquids.

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

Grounding guidelines

Electrostatic discharge damage

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

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

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

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

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

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

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

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

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

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

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

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

Workstation guidelines

Follow these grounding workstation guidelines:

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

Equipment guidelines

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

- When seated, wear a wrist strap connected to a grounded system. Wrist straps are flexible straps with a minimum of one megohm $\pm 10\%$ resistance in the ground cords. To provide proper ground, wear a strap snugly against the skin at all times. On grounded mats with banana-plug connectors, use alligator clips to connect a wrist strap.
- When standing, use foot straps and a grounded floor mat. Foot straps (heel, toe, or boot straps) can be used at standing workstations and are compatible with most types of shoes or boots. On conductive floors or dissipative floor mats, use foot straps on both feet with a minimum of one megohm resistance between the operator and ground. To be effective, the conductive must be worn in contact with the skin.

The following grounding equipment is recommended to prevent electrostatic damage:


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

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


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


5 Removal and replacement procedures for Customer Self-Repair parts

This chapter provides 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.

Component replacement procedures

 **NOTE:** Details about your computer, including model, serial number, product key, and length of warranty, are on the service tag at the bottom of your computer. See [Locating system information on page 15](#) for details.

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

There are as many as 20 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
4-cell, 41-Whr, 2.8-Ah, Li-ion battery	800049-001

Before disassembling the computer, 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. Position the computer upside down on a flat surface.
2. Slide the battery lock latch **(1)** to release the battery lock.
3. Slide the battery release latch **(2)** to release the battery.
4. Pivot the front edge of the battery **(3)** up and back.
5. Pull the battery up to remove it from the computer **(4)**.



To insert the battery, reverse the removal procedures.

Optical drive

Description	Spare part number
DVD±RW Double-Layer SuperMulti in natural silver finish	810320-001
DVD±RW Double-Layer SuperMulti in sunset red finish	810321-001
DVD±RW Double-Layer SuperMulti in cobalt blue finish	810322-001
DVD±RW Double-Layer SuperMulti in peachy pink finish	810323-001
DVD±RW Double-Layer SuperMulti in violet purple finish	810324-001
DVD±RW Double-Layer SuperMulti in blizzard white finish	810325-001

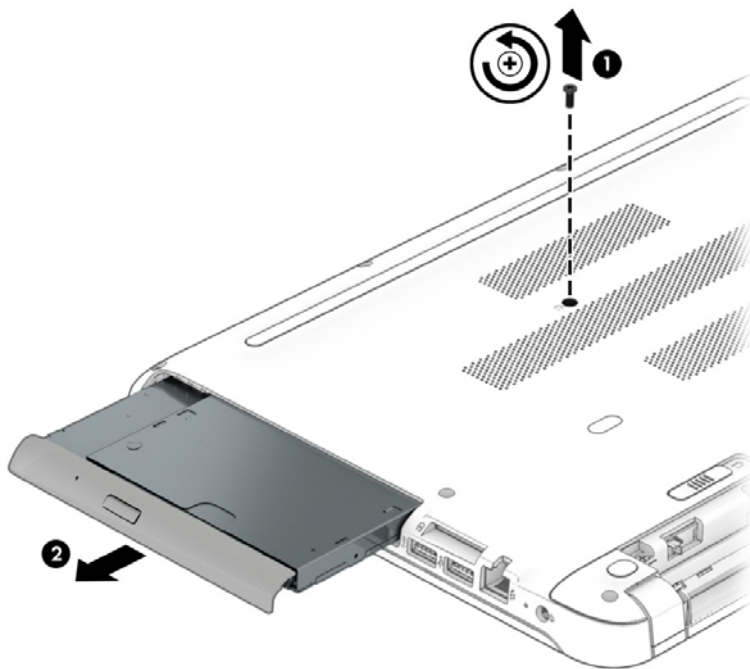
 **IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

Before removing the optical drive, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 29](#)).

Remove the optical drive:

1. Remove the one Phillips PM2.5×7.2 screw (1) that secures the optical drive to the computer.
2. Slide the optical drive out of the computer (2).




3. To remove the optical drive bracket, remove the one Phillips PM2×3.87 screw **(1)** that secures the bracket to the drive **(2)**.




Reverse this procedure to install the optical drive.

6 Removal and replacement procedures for Authorized Service Provider parts

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

Component replacement procedures

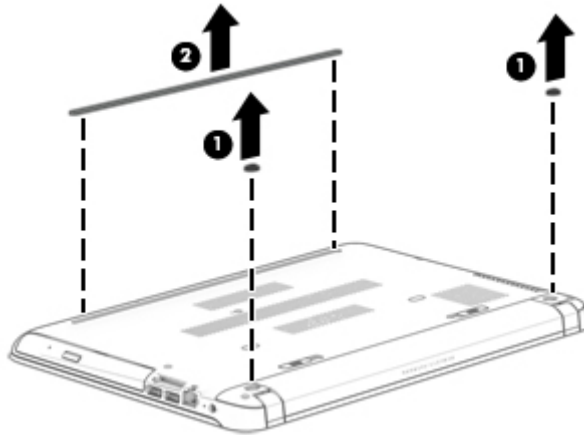
 **NOTE:** Details about your computer, including model, serial number, product key, and length of warranty, are on the service tag at the bottom of your computer. See [Locating system information on page 15](#) for details.

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

There are as many as 55 screws that must be removed, replaced, and/or loosened when servicing Authorized Service Provider only parts. Make special note of each screw size and location during removal and replacement.


Computer feet

The computer feet are adhesive-backed rubber pads. There are 3 rubber feet that attach to the base enclosure in the locations illustrated below. The feet **(1)** that cover two screws are round. The foot along the front of the computer **(2)** is long and thin. All 3 feet are available in the Rubber Kit, spare part number 806754-001.



Base enclosure

Description	Spare part number
Base enclosure in natural silver finish	806738-001
Base enclosure in sunset red finish	806739-001
Base enclosure in cobalt blue finish	806740-001
Base enclosure in peachy pink finish	806741-001
Base enclosure in violet purple finish	806742-001
Base enclosure in blizzard white finish	806743-001

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

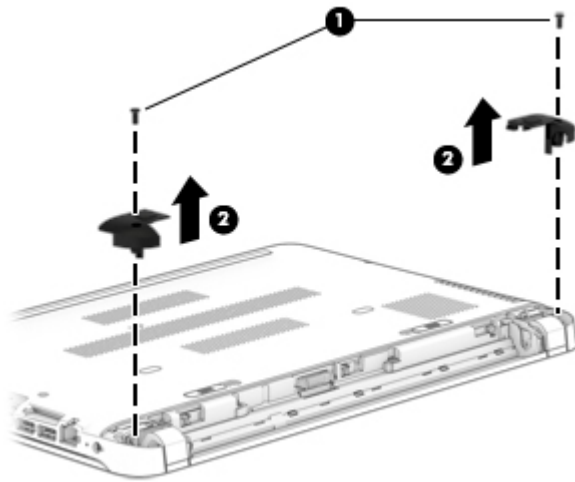
Before removing the base enclosure, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 29](#)).

Remove the bottom corner covers:

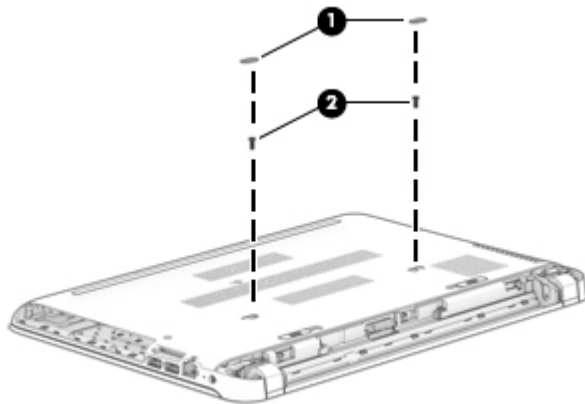
1. Remove the two Phillips PM2.5×7.2 screws **(1)** that secure the bottom corner covers.

2. Lift the corner covers away from the computer **(2)**.

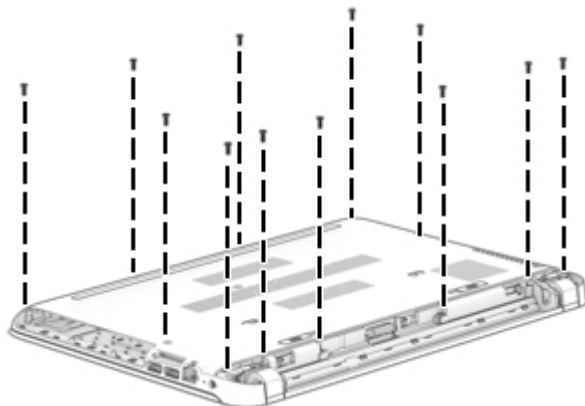


Remove the bottom screw covers and screws:

1. Remove the two screw covers **(1)**.
2. Remove the two Phillips PMPM 2.5×7.2 screws **(2)** that secure the base enclosure to the computer.

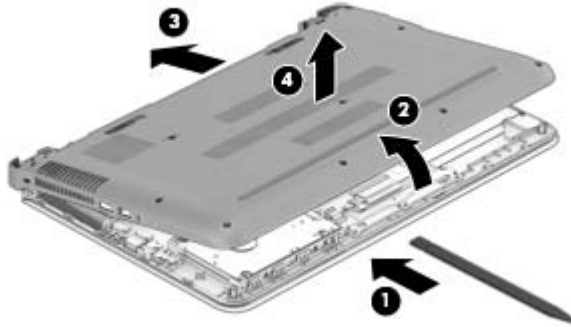


3. Remove the remaining twelve Phillips PM2.5×7.2 screws that secure the base enclosure to the computer.



Release the base enclosure:


1. Slide a case utility tool into a space between the base enclosure and the frame of the computer, exerting gentle pressure until the clips release **(1)**.
2. Tilt the base enclosure up at the front of the computer **(2)**.
3. Slide the base enclosure toward the rear of the computer **(3)**.
4. Lift and remove the base enclosure from the computer **(4)**.



Reverse this procedure to install the base enclosure.

Hard drive

Description	Spare part number
2 TB, 5400 rpm, 9.5mm	801808-005
1 TB, 5400 rpm, 9.5mm	778192-005
750 GB, 5400 rpm, 9.5mm	778190-005
500 GB, 5400 rpm, 7mm/9.5mm	778188-005
1 TB, 5400 rpm + 8 GB NAND Hybrid HDD, 9.5mm	731999-005
Hard Drive Hardware Kit (not illustrated, includes the hard drive bracket, connector cable, isolators, and screws)	806751-001

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

Before removing the hard drive, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 29](#)), and then remove the following components:
 - a. Optical drive (see [Optical drive on page 30](#)).
 - b. Base enclosure (see [Base enclosure on page 33](#)).

Remove the hard drive:

1. Release the hard drive connector cable from the ZIF (zero insertion force) connector **(1)** on the system board.
2. Tilt the hard drive up at an angle **(2)**.
3. Remove the hard drive **(3)**.



Disassemble the hard drive bracket:

1. Disconnect the hard drive connector cable **(1)** from the hard drive.
2. Remove the hard drive brackets **(2)**.



Reverse this procedure to install the hard drive.

Memory module


Description	Spare part number
8 GB	693374-005
4 GB	691740-005
2 GB	691739-005

Before removing the memory, follow these steps:

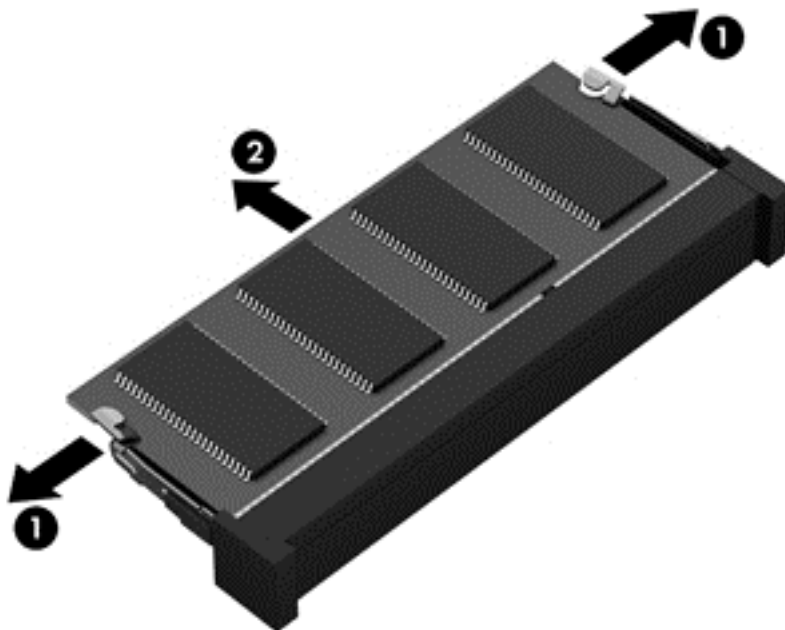
1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 29](#)), and then remove the following components:
 - a. Optical drive (see [Optical drive on page 30](#)).
 - b. Base enclosure (see [Base enclosure on page 33](#)).

Remove the memory:

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

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


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



Reverse this procedure to install the memory module.

WLAN module

Description	Spare part number
Broadcom BCM43142 802.11 b/g/n 1x1 Wi-Fi + Bluetooth 4.0 Combo Adapter	792608-005
Intel Dual Band Wireless-AC 3160 802.11 ac 1×1 WiFi + Bluetooth 4.0 Combo Adapter	784644-005
Realtek RTL8188EE 802.11b/g/n Wi-Fi Adapter	792609-005

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

Before removing the WLAN module, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 29](#)), and then remove the following components:
 - a. Optical drive (see [Optical drive on page 30](#)).
 - b. Base enclosure (see [Base enclosure on page 33](#)).

Remove the WLAN module:

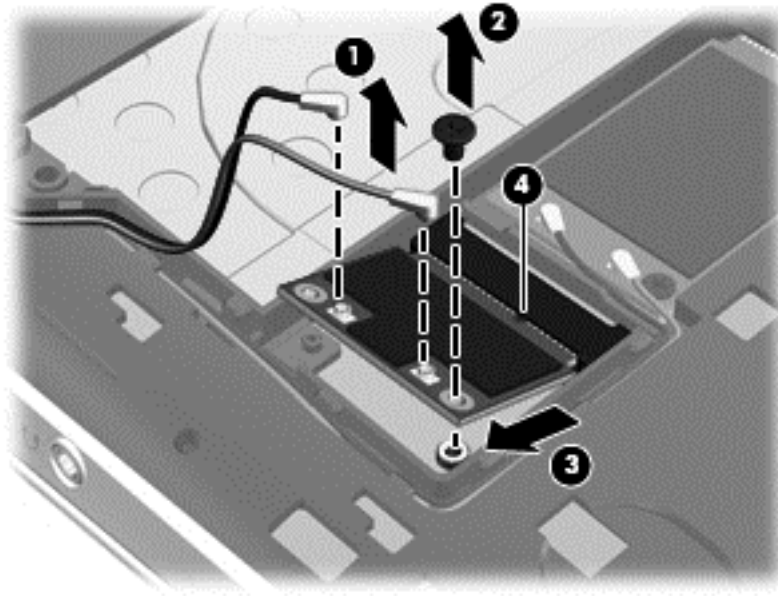
1. Disconnect the WLAN antenna cable(s) from the WLAN module **(1)**.




NOTE: The #1 WLAN antenna cable is connected to the WLAN module #1 terminal. The #2 WLAN antenna cable, if present, is connected to the WLAN module #2 terminal.

2. Remove the one Phillips PM2.0×3.7 screw **(2)** that secures the WLAN module to the system board.
3. Tilt the module up and away from the retention post **(3)**.

4. Remove the WLAN module by pulling the module away from the slot at an angle (4).




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



Reverse this procedure to install the WLAN module.

Fan

Description	Spare part number
Fan	806747-001

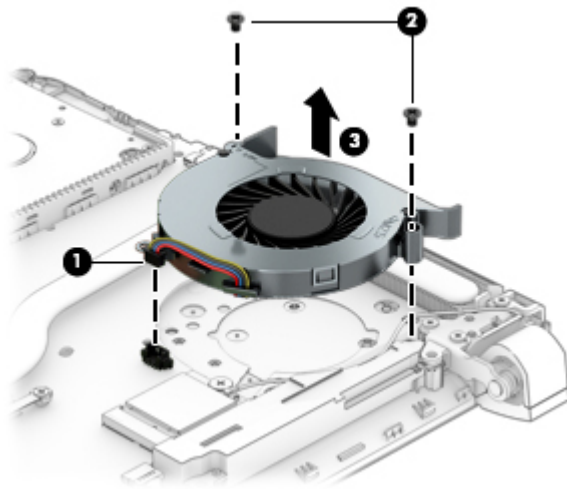
 **IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

Before removing the fan, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 29](#)), and then remove the following components:
 - a. Optical drive (see [Optical drive on page 30](#)).
 - b. Base enclosure (see [Base enclosure on page 33](#)).


Remove the fan:

1. Disconnect the fan power cable **(1)**.
2. Remove the two Phillips PM2.5×3.7 screws **(2)** that secure the fan to the keyboard/top cover.
3. Lift fan away from the computer **(3)**.




Reverse this procedure to install the fan.

USB Connector board

 **NOTE:** The connector board spare part kit includes the connector board cable.

Description	Spare part number
Connector board with cable (Intel Pentium)	809109-001
Connector board with cable (Intel Core)	809108-001

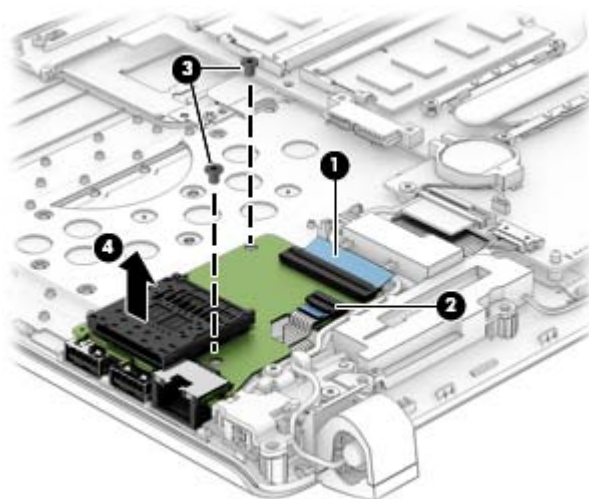
 **IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

Before removing the connector board, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 29](#)), and then remove the following components:
 - a. Optical drive (see [Optical drive on page 30](#)).
 - b. Base enclosure (see [Base enclosure on page 33](#)).

Remove the connector board:

1. Disconnect the connector board cable **(1)**.
2. Disconnect the power button board cable **(2)**.
3. Remove the two 2.5×3.7 screws **(3)** that secure the connector board to the keyboard/top cover.
4. Lift connector board away from computer **(4)**.



Reverse this procedure to install the connector board.


System board



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

Description	Spare part number
Equipped with an Intel Core i7-5500U 2.40-GHz (SC turbo up to 3.00-GHz) processor (1600-MHz FSB, 4.00-MB L3 cache, dual core, 15 W), a graphics subsystem with UMA memory, and the Windows 8 Professional operating system	806832-601
Equipped with an Intel Core i7-5500U 2.40-GHz (SC turbo up to 3.00-GHz) processor (1600-MHz FSB, 4.00-MB L3 cache, dual core, 15 W), a graphics subsystem with UMA memory, and the Windows 8 Standard operating system	806832-501
Equipped with an Intel Core i7-5500U 2.40-GHz (SC turbo up to 3.00-GHz) processor (1600-MHz FSB, 4.00-MB L3 cache, dual core, 15 W), a graphics subsystem with UMA memory, and a non-Windows 8 operating system	806832-001
Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W), an NVIDIA N165-GT (GeForce 940M) graphics subsystem with up to 2.0-GB of discrete memory, and the Windows 8 Professional operating system	806835-601
Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W), an NVIDIA N165-GT (GeForce 940M) graphics subsystem with up to 2.0-GB of discrete memory, and the Windows 8 Standard operating system	806835-501
Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W), an NVIDIA N165-GT (GeForce 940M) graphics subsystem with up to 2.0-GB of discrete memory, and a non-Windows 8 operating system	806835-001
Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W), an AMD R7 M360 graphics subsystem with up to 2.0-GB of discrete memory, and the Windows 8 Professional operating system	806834-601
Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W), an AMD R7 M360 graphics subsystem with up to 2.0-GB of discrete memory, and the Windows 8 Standard operating system	806834-501
Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W), an AMD R7 M360 graphics subsystem with up to 2.0-GB of discrete memory, and a non-Windows 8 operating system	806834-001
Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W), a graphics subsystem with UMA memory, and the Windows 8 Professional operating system	806831-601
Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W), a graphics subsystem with UMA memory, and the Windows 8 Standard operating system	806831-501
Equipped with an Intel Core i5-5200U 2.20-GHz (SC turbo up to 2.70-GHz) processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W), a graphics subsystem with UMA memory, and a non-Windows 8 operating system	806831-001
Equipped with an Intel Core i3-5010U 2.00-GHz processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W), a graphics subsystem with UMA memory, and the Windows 8 Professional operating system	806830-601
Equipped with an Intel Core i3-5010U 2.00-GHz processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W), a graphics subsystem with UMA memory, and the Windows 8 Standard operating system	806830-501
Equipped with an Intel Core i3-5010U 2.00-GHz processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W), a graphics subsystem with UMA memory, and a non-Windows 8 operating system	806830-001
Equipped with an Pentium N3700 1.60-GHz (SC Turbo up to 2.40-GHz) processor (1600-MHz FSB, 2.00-MB L2 cache, dual core, 6 W), a graphics subsystem with UMA memory, and the Windows 8 Professional operating system	806833-601

Description	Spare part number
Equipped with an Pentium N3700 1.60-GHz (SC Turbo up to 2.40-GHz) processor (1600-MHz FSB, 2.00-MB L2 cache, dual core, 6 W), a graphics subsystem with UMA memory, and the Windows 8 Standard operating system	806833-501
Equipped with an Pentium N3700 1.60-GHz (SC Turbo up to 2.40-GHz) processor (1600-MHz FSB, 2.00-MB L2 cache, dual core, 6 W), a graphics subsystem with UMA memory, and a non-Windows 8 operating system	806833-001

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


Before removing the system board, follow these steps:


1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 29](#)), and then remove the following components:
 - a. Optical drive (see [Optical drive on page 30](#)).
 - b. Base enclosure (see [Base enclosure on page 33](#)).
 - c. WLAN module (see [WLAN module on page 38](#)).
 - d. Memory (see [Memory module on page 37](#)).
 - e. Fan (see [Fan on page 40](#)).

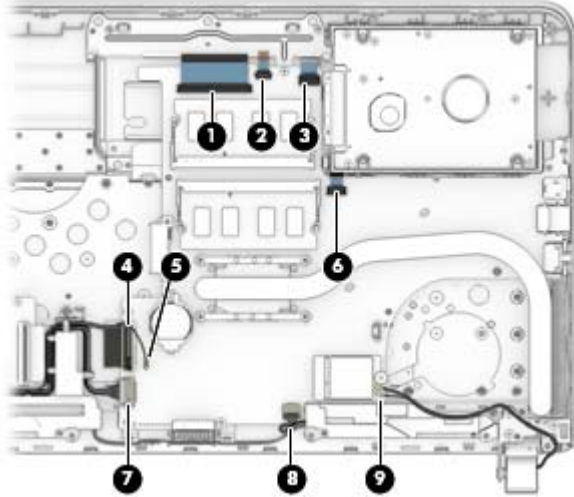
Remove the system board:

1. Release the ZIF connector **(1)** to which the keyboard cable is attached, and then disconnect the keyboard cable from the system board.
2. Release the ZIF connector **(2)** to which the keyboard backlight cable is attached, and then disconnect the keyboard backlight cable from the system board (select models only).
3. Release the ZIF connector **(3)** to which the TouchPad cable is attached, and then disconnect the TouchPad cable from the system board.
4. Release the ZIF connector **(4)** to which the display panel cable is attached, and then disconnect the display panel cable from the system board.
5. Disconnect the ambient sensor light cable **(5)** (select models only).
6. Release the ZIF connector **(6)** to which the hard drive connector cable is attached, and then disconnect the hard drive connector cable from the system board.
7. Disconnect the power connector cable **(7)**.
8. Disconnect the speaker cable **(8)**.

9. Disconnect the WLAN antenna cable (9).

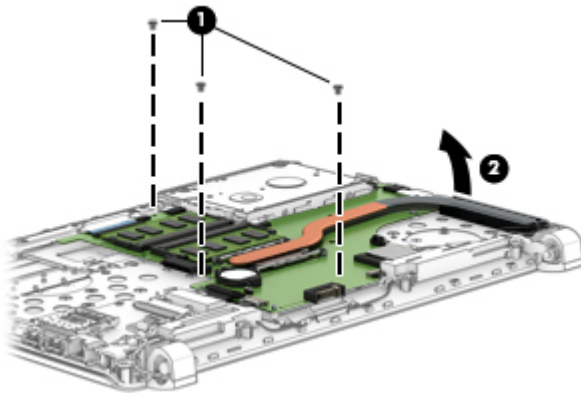
 **NOTE:** If you have already removed the WLAN module (see [WLAN module on page 38](#)), then this cable has already been disconnected.

 **NOTE:** On select models, you may need to disconnect two WLAN antenna cables.



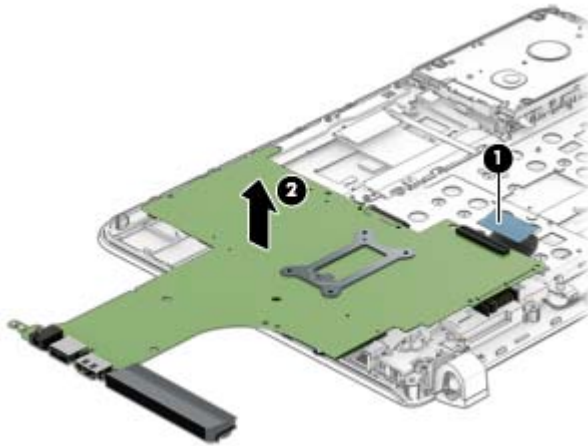
10. Remove three Phillips PM2.5×3.7 screws (1) that secure the system board to the keyboard/top cover.

11. Turn the system board upside-down, from left to right (2).



12. Disconnect the USB connector board cable from the ZIF connector (1).

13. Remove the system board (2).




Reverse this procedure to install the system board.

Heat sink (with discrete memory)

 **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 Core processor and a graphics subsystem with discrete memory	806827-001


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

Before removing the heat sink, follow these steps:


1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 29](#)), and then remove the following components:
 - a. Optical drive (see [Optical drive on page 30](#)).
 - b. Base enclosure (see [Base enclosure on page 33](#)).

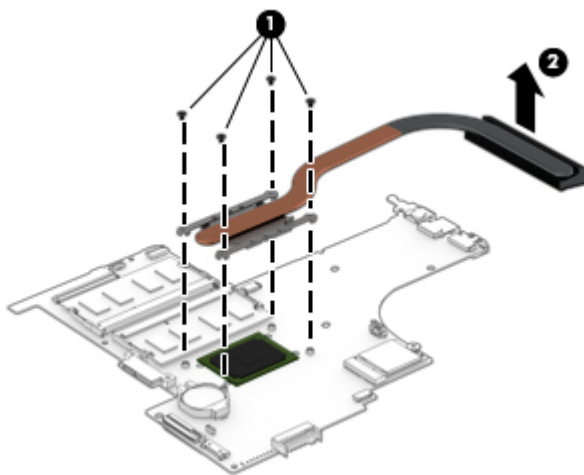
Remove the heat sink:


1. Loosen four Phillips PM2.0×4.0 captive screws **(1)** that secure the heat sink to the system board.

 **CAUTION:** Screws should be loosened in the order embossed on the heat sink plate. Failing to remove the screws in this order could damage the computer's processor.

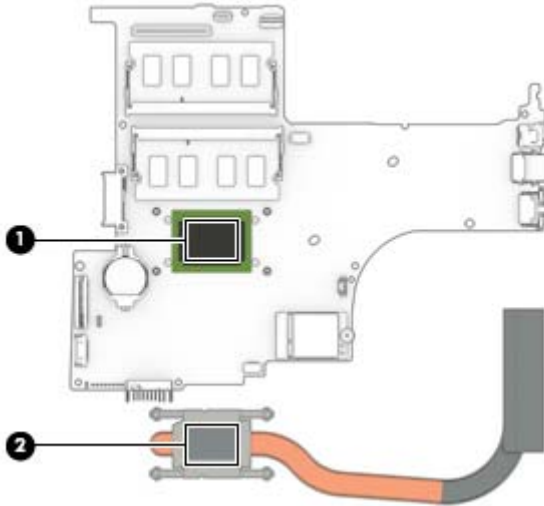
2. Lift heat sink away from system board **(2)**.

 **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 and system board spare part kits. Thermal material is used in the following locations:

- Thermal material is used on the processor **(1)** and the heat sink section **(2)** that services it.




Reverse this procedure to install the heat sink.

Heat sink (with UMA memory) (select models only)

 **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 Core processor and a graphics subsystem with UMA memory	806826-001
For use only on computer models equipped with an Intel Pentium processor and a graphics subsystem with UMA memory	809106-001


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


Before removing the heat sink, follow these steps:

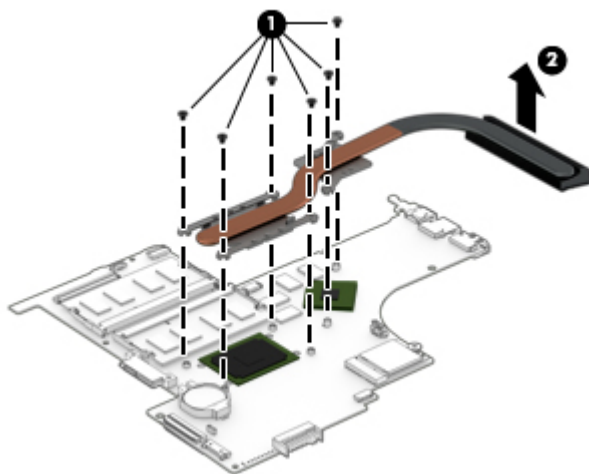
1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 29](#)), and then remove the following components:
 - a. Optical drive (see [Optical drive on page 30](#)).
 - b. Base enclosure (see [Base enclosure on page 33](#)).


Remove the heat sink:

1. Loosen the six Phillips PM2.0×4.0 captive screws **(1)** that secure the heat sink to the system board.

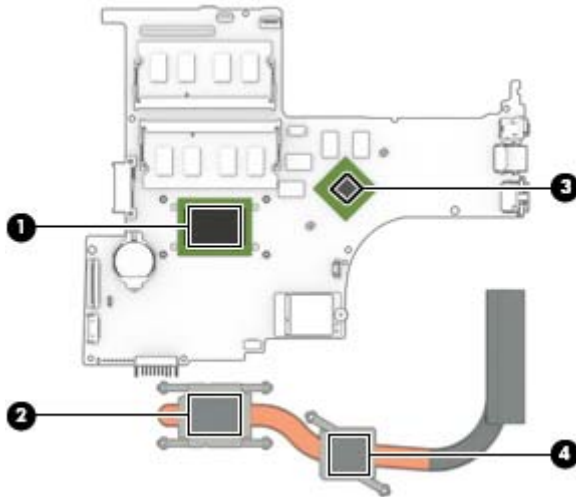
 **CAUTION:** Screws should be loosened in the order embossed on the heat sink plates. Failing to remove the screws in this order could damage the computer's processor or video components.
2. Lift heat sink away from system board **(2)**.

 **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 and system board spare part kits. Thermal material is used in the following locations:

- Thermal material is used on the processor **(1)** and the heat sink section **(2)** that services it.
- A thermal pad is also used on the graphics subsystem component **(3)** and the heat sink section **(4)** that services it.




Reverse this procedure to install the heat sink.

TouchPad

 **NOTE:** The TouchPad spare part kit includes the cable.

Description	Spare part number
TouchPad board with cable	811580-001

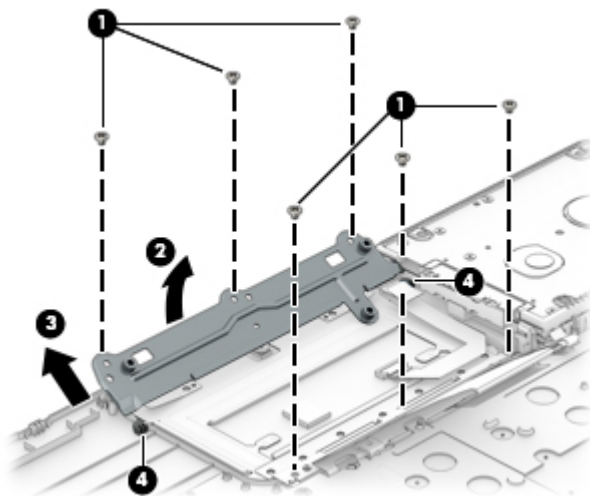
 **IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

Before removing the TouchPad, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 29](#)), and then remove the following components:
 - a. Optical drive (see [Optical drive on page 30](#)).
 - b. Base enclosure (see [Base enclosure on page 33](#)).
 - c. WLAN module (see [WLAN module on page 38](#)).
 - d. Memory (see [Memory module on page 37](#)).
 - e. Fan (see [Fan on page 40](#)).
 - f. System board (see [System board on page 42](#)).

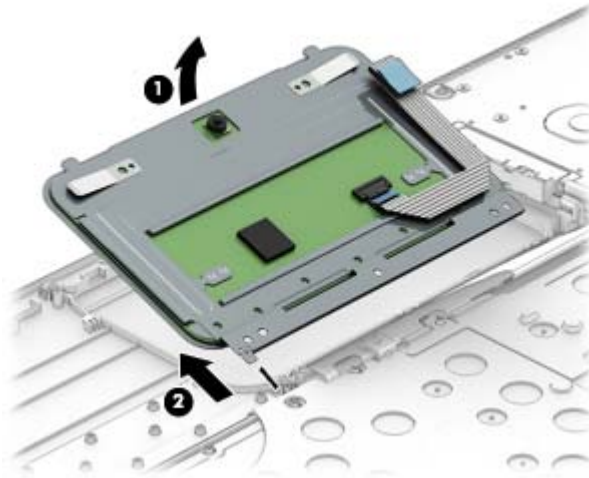
Remove the TouchPad bracket:

1. Remove the six Phillips PM2×2.3 screws **(1)** that secure the TouchPad and TouchPad bracket to the keyboard/top cover.
2. Rotate the TouchPad bracket upward **(2)**.
3. Remove the bracket **(3)** from the sockets **(4)**.




Remove the TouchPad:

1. Release the TouchPad by tilting upward at the front **(1)**.
2. Pull the TouchPad away from the computer at an angle **(2)**.



Reverse this procedure to install the TouchPad.

Removing the display

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

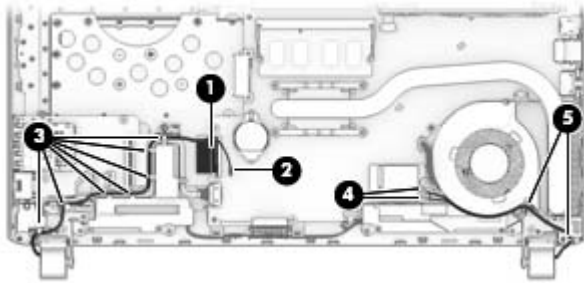
Before removing the display, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 29](#)), and then remove the following components:
 - a. Optical drive (see [Optical drive on page 30](#)).
 - b. Base enclosure (see [Base enclosure on page 33](#)).

Disconnect the display:

1. Disconnect the display cable from the ZIF connector **(1)** on the system board .
2. Disconnect the ambient light sensor cable **(2)** from the system board.
3. Remove the display cable from the clips in the routing path **(3)**.
4. Disconnect the WLAN antenna cable(s)**(4)** from the WLAN module.

5. Remove the WLAN antenna cable(s) from the routing path clips (5).

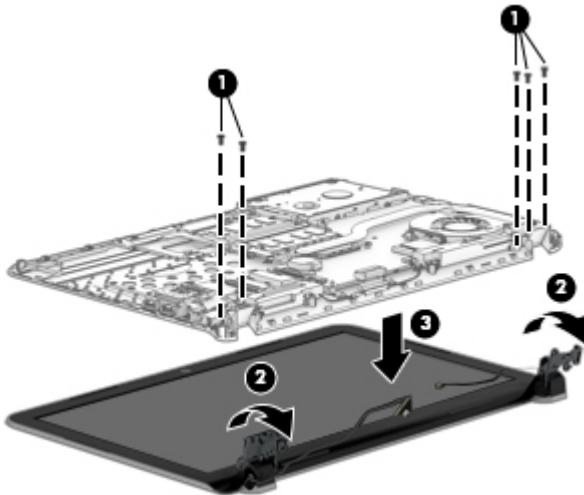


Remove the display:

1. Remove the five Phillips PM2.5×5.6 screws (1) that secure the display assembly to the computer.

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

2. Rotate the hinges away from the base enclosure (2).
3. Lift the base enclosure away from the display assembly (3).



Reverse this procedure to install the display assembly.

Speakers

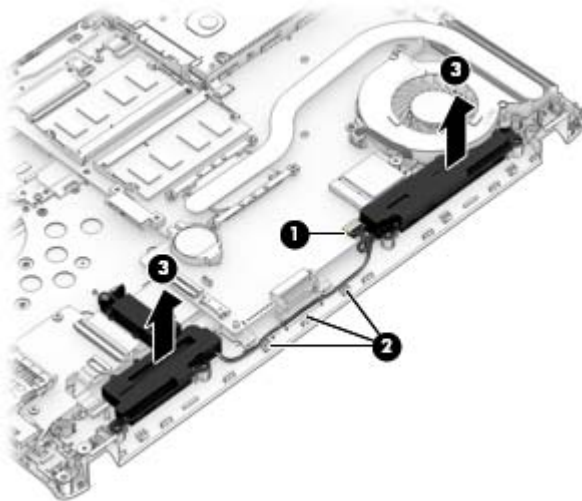
Description	Spare part number
Speakers	806755-001

Before removing the speakers, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 29](#)), and then remove the following components:
 - a. Optical drive (see [Optical drive on page 30](#)).
 - b. Base enclosure (see [Base enclosure on page 33](#)).
 - c. Display assembly (see [Removing the display on page 51](#)).

Remove the speakers:

1. Disconnect the speaker cable from the system board **(1)**.
2. Disconnect the speaker cable from the clips on the base enclosure **(2)**.
3. Lift the speakers away from the base enclosure **(3)**.



Reverse this procedure to install the speakers.

Power connector cable

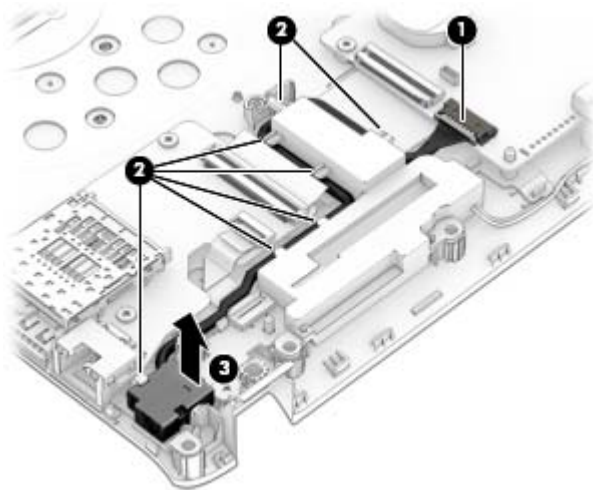
Description	Spare part number
DC-in power connector	806746-001

Before removing the power connector cable, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 29](#)), and then remove the following components:
 - a. Optical drive (see [Optical drive on page 30](#)).
 - b. Base enclosure (see [Base enclosure on page 33](#)).
 - c. Display assembly (see [Removing the display on page 51](#)).
 - d. Speakers (see [Speakers on page 53](#)).


Remove the power connector cable:

1. Disconnect power connector cable **(1)**.
2. Remove the cable from the base enclosure clips **(2)**.
3. Lift the power connector from the base enclosure **(3)**.




Reverse this procedure to install the power connector cable.

Power button board

 **NOTE:** The power button board spare part kit includes the power connector cable.

Description	Spare part number
Power button board	806749-001

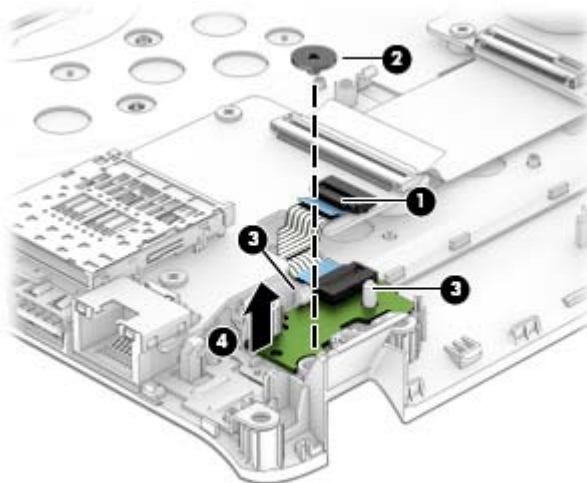
 **IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

Before removing the power button board, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 29](#)), and then remove the following components:
 - a. Optical drive (see [Optical drive on page 30](#)).
 - b. Base enclosure (see [Base enclosure on page 33](#)).
 - c. Display assembly (see [Removing the display on page 51](#)).
 - d. Speakers (see [Speakers on page 53](#)).
 - e. Power connector cable (see [Power connector cable on page 54](#)).

Remove the power button board:

1. Disconnect power connector cable **(1)**.
2. Remove the one Phillips PM2×2 broad head screw **(2)** that secures the board to the keyboard/top cover.
3. Remove the power button board from the base enclosure retention clips **(3)**.
4. Lift the power button board up at an angle and remove from the base enclosure **(4)**.



Reverse this procedure to install the power button board.

Display assembly (non-TouchScreen) (select models only)

Description	Spare part number
Display enclosure in blizzard white finish	806737-001
Display enclosure in cobalt blue finish	806734-001
Display enclosure in natural silver finish	806732-001
Display enclosure in peachy pink finish	806735-001
Display enclosure in sunset red finish	806733-001
Display enclosure in violet purple finish	806736-001
Display bezel	806744-001
Display cable	806745-001
Display hinges	806748-001
Display panel — AntiGlare, FHD	811081-001
Display panel — BrightView, HD	806766-001



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

Before disassembling the display panel, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 29](#)), and then remove the following components:
 - a. Optical drive (see [Optical drive on page 30](#)).
 - b. Base enclosure (see [Base enclosure on page 33](#)).
 - c. Display assembly (see [Removing the display on page 51](#)).

Remove the display bezel:

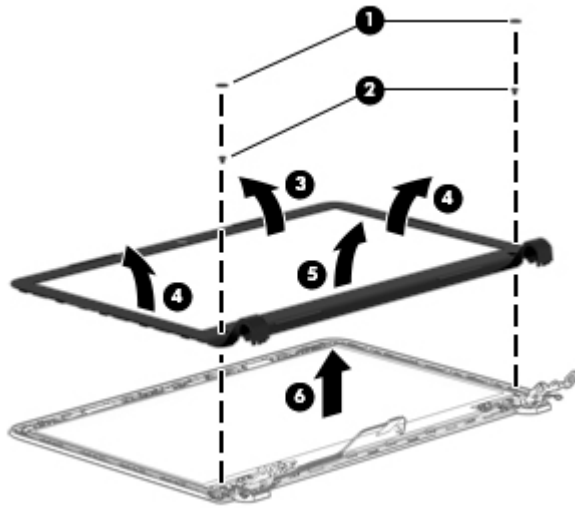
1. Remove the two screw covers **(1)**.
2. Remove two Phillips PM2.5×4.2 screws **(2)** that secure the bezel to the display enclosure.
3. Using a case utility tool, gently pry the bezel away from the display enclosure **(3)**.



CAUTION: Do not insert the case utility tool or other device at the top of the bezel near the webcam. Doing so could damage the webcam and other components.

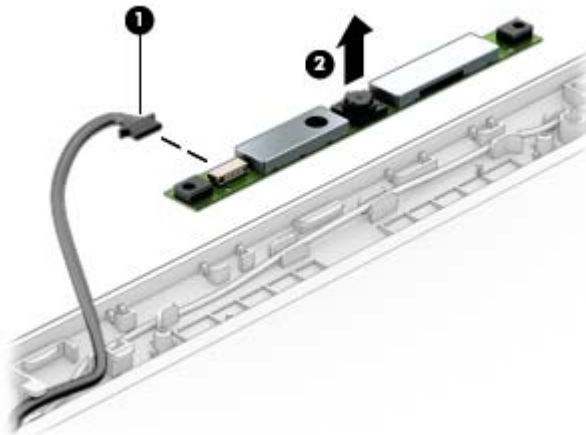
4. Continue to pry the bezel apart from the enclosure on the sides of the display **(4)**.
5. Complete the separation of the bezel from the display enclosure at the bottom of the display **(5)**.

6. Lift the bezel away from the display enclosure (6).



Remove the webcam and microphone module:

1. Disconnect the webcam cable (1).
2. Lift the webcam away from the display enclosure (2).

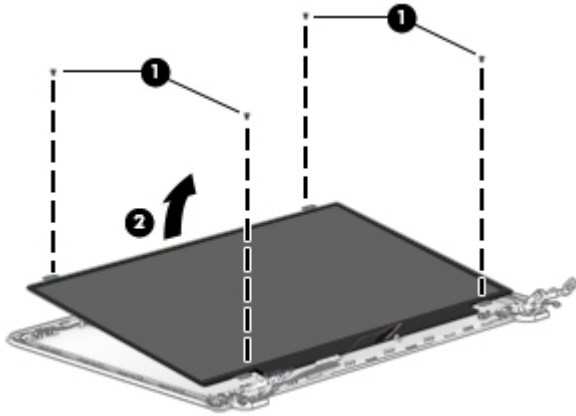


⚠ CAUTION: The webcam is attached to the display enclosure with adhesive. Use gentle pressure while removing the webcam to avoid breaking the component.

Release the display panel:

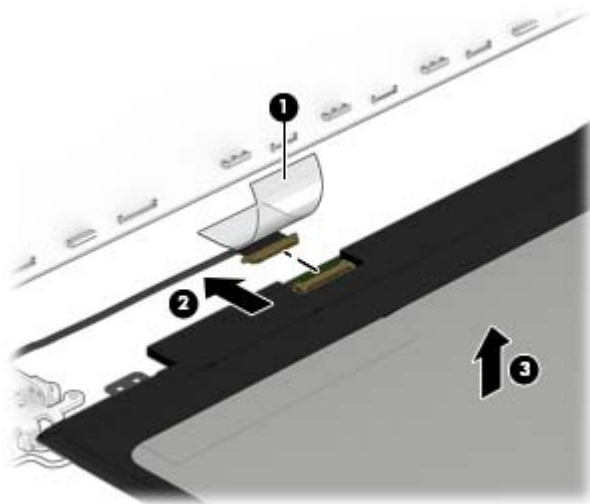
1. Remove the four Phillips PM1.9×2.85 screws (1) that secure the display to the display enclosure.

2. Lift the display panel away from the display enclosure at an angle **(2)**.



Remove the display panel:

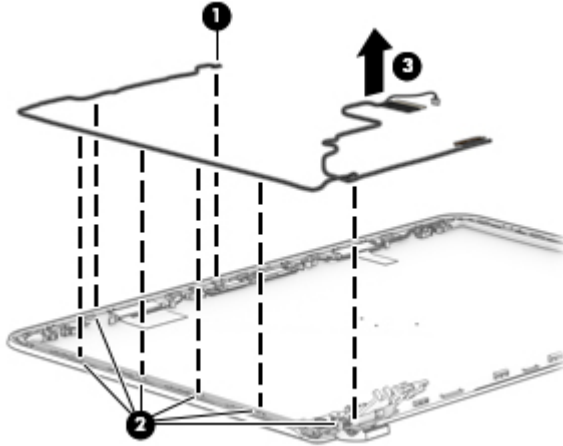
1. Remove adhesive covering display panel connector **(1)**.
2. Disconnect display panel cable **(2)**.
3. Lift the display panel away from the display enclosure **(3)**.



Remove the display panel cable:

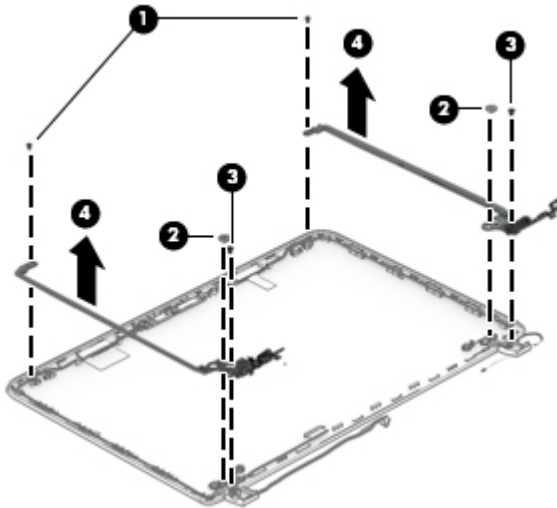
1. Disconnect display panel cable from webcam **(1)**.
2. Remove cable from routing clips on display enclosure **(2)**.

3. Remove cable from display enclosure (3).



Remove the display panel hinges:

1. Remove the two Phillips PM1.9×3.5 screws (1) that secure the hinges to the display enclosure.
2. Remove the two Phillips PM2.5×3.22 broad head screws (2) that secure the hinges to the display enclosure.
3. Remove the two Phillips PM2.4×4.7 screws (3) that secure the hinges to the display enclosure.
4. Remove the hinges from display enclosure (4).



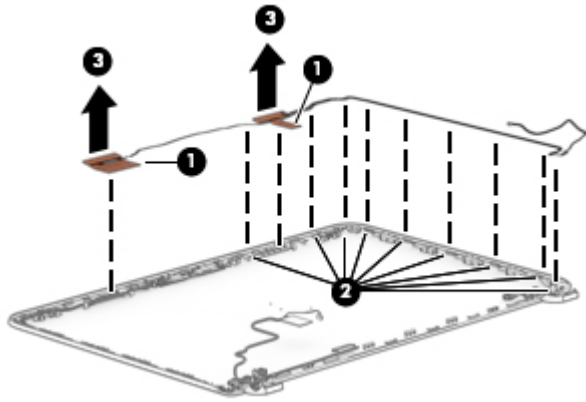
Remove the WLAN module antenna cable:

1. Release the WLAN transceivers (1).

CAUTION: The transceivers are attached to the display enclosure with adhesive. To avoid damaging the components, use only gentle pressure when removing them from the enclosure.

2. Release the antenna cable from the routing clips on the right side of the enclosure (2).

3. Remove antenna cable from enclosure **(3)**.



Reverse this procedure to reassemble and install the display panel.

Display assembly (TouchScreen) (select models only)

Description	Spare part number
Display enclosure in blizzard white finish	807377-001
Display enclosure in cobalt blue finish	807374-001
Display enclosure in natural silver finish	806752-001
Display enclosure in peachy pink finish	807375-001
Display enclosure in sunset red finish	806829-001
Display enclosure in violet purple finish	807376-001
Display cable	810963-001
Display cable top	811584-001
Display hinges	809112-001
Display panel — AntiGlare, FHD	806767-001
Display panel — BrightView, HD	811079-001



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

Before disassembling the display panel, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 29](#)), and then remove the following components:
 - a. Optical drive (see [Optical drive on page 30](#)).
 - b. Base enclosure (see [Base enclosure on page 33](#)).
 - c. Display assembly (see [Removing the display on page 51](#)).

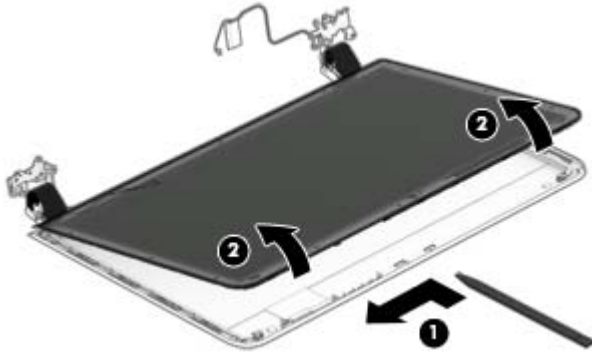
Remove the display panel from the top enclosure:

1. Using a case utility tool, carefully separate the panel from the display enclosure **(1)**.



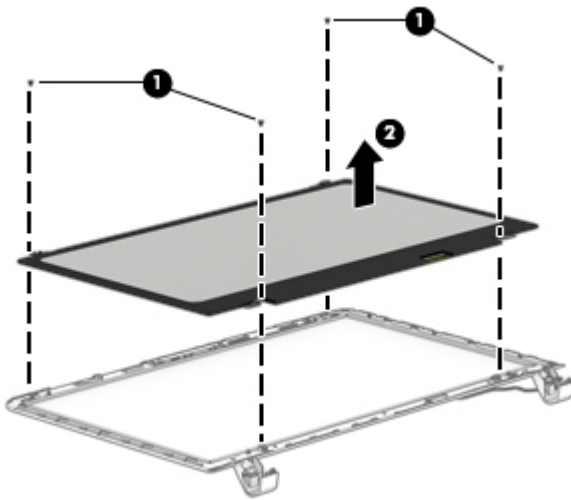
CAUTION: Do not insert the case utility tool or other device at the top of the bezel near the webcam. Doing so could damage the webcam and other components.

2. Lift the panel away from the display enclosure (2).



Remove the TouchScreen from the display panel:

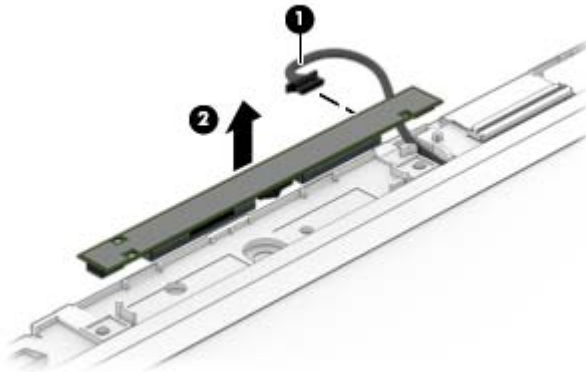
1. Remove the four Phillips PM1.9×2.9 screws (1) that secure the display to the display enclosure.
2. Lift the panel up from the display enclosure (2).



Remove the webcam and microphone module:

1. Disconnect the webcam cable (1).

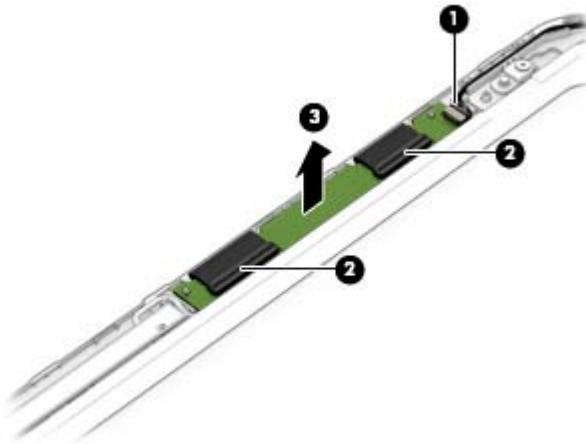
2. Lift the webcam away from the display enclosure (2).



CAUTION: The webcam is attached to the display enclosure with adhesive. Use gentle pressure while removing the webcam to avoid breaking the component.

Release the TouchScreen interface board:

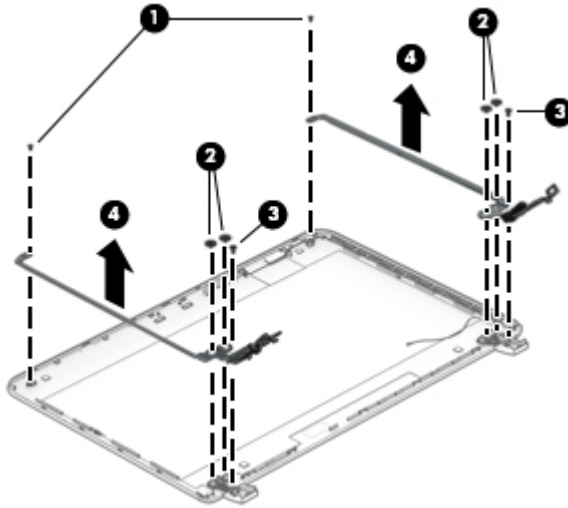
1. Disconnect the TouchScreen interface board cable (1).
2. Detach the clips from the board (2).
3. Lift the TouchScreen interface board away from the display enclosure (3).



Remove the display panel hinges:

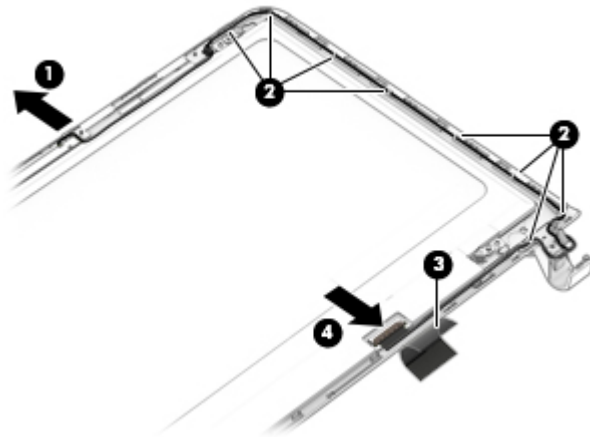
1. Remove the two Phillips PM1.9×3.5 screws (1) that secure the hinges to the display enclosure.
2. Remove the four Phillips PM2.5×3.22 broad head screws (2) that secure the hinges to the display enclosure.
3. Remove the two Phillips PM2.4×4.7 screws (3) that secure the hinges to the display enclosure.

4. Remove the hinges from display enclosure (4).



Remove the display panel cable:

1. Disconnect display panel cable from webcam (1).
2. Remove cable from routing clips on display enclosure (2).
3. Remove tape cover display panel cable connector (3).
4. Disconnect the display panel cable from the TouchScreen (4).



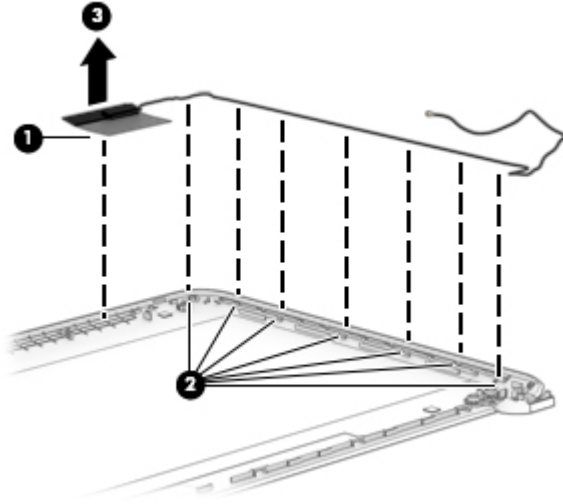
Remove the WLAN module antenna cable:

1. Release the WLAN transceiver (1).

CAUTION: The transceiver are attached to the display enclosure with adhesive. To avoid damaging the component, use only gentle pressure when removing them from the enclosure.

2. Release the antenna cable from the routing clips on the right side of the enclosure (2).

3. Remove antenna cable and transceiver from enclosure **(3)**.




Reverse this procedure to reassemble and install the display panel.

7 Using Setup Utility (BIOS) and HP PC Hardware Diagnostics (UEFI) in Windows 8.1

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.

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

Updating Setup Utility (BIOS)

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

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

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

Determining the BIOS version

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


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

To use Setup Utility (BIOS):


1. Start Setup Utility (BIOS) (see [Starting Setup Utility \(BIOS\) on page 66](#)).
2. Select **Main**, and then make note of the BIOS version.
3. Select **Exit**, select **Exit Discarding Changes**, and then follow the on-screen instructions.

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

Downloading a BIOS update

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

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

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


1. 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 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 version, make a note of the date, name, or other identifier. You may need this information to locate the update later, after it has been downloaded to your hard drive.
 - b. Follow the on-screen instructions to download your selection to the hard drive.

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

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

1. 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 that contains the update.
4. Double-click the file that has an `.exe` extension (for example, `filename.exe`).

The BIOS installation begins.
5. Complete the installation by following the on-screen instructions.

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

Using 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. Turn on or restart the computer, and then 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 68](#).

- b. Hard drive

- c. Setup Utility (BIOS)

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



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

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



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.

Download the latest UEFI version:

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

Download any version of UEFI for a specific product:

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

– or –

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


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

8 Using Setup Utility (BIOS) and System Diagnostics in Windows 7

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

Starting Setup Utility (BIOS)

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

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

Updating the BIOS

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

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

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

Determining the BIOS version

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


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

To use Setup Utility (BIOS):

1. Start Setup Utility (BIOS).
2. Use the arrow keys to select **Main**, and then make note of your current BIOS version.
3. To exit Setup Utility (BIOS) without saving your changes, use the tab key and the arrow keys to select **Exit > Exit Discarding Changes**, and then press **enter**.

To check for later BIOS versions, see [Downloading a BIOS update on page 70](#).

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 or Hibernation.

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

1. Select **Start**, type `hp support assistant`, and then select the **HP Support Assistant** program.
2. Follow the on-screen instructions to identify your computer and access the BIOS update you want to download.
3. At the download area, follow these steps:
 - a. Identify the BIOS update that is later than the BIOS version currently installed on your computer. If the update is more recent than your BIOS version, make a note of the date, name, or other identifier. You may need this information to locate the update later, after it has been downloaded to your hard drive.
 - b. Follow the on-screen instructions to download your selection to the hard drive.


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

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

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

1. Open Windows Explorer by selecting **Start > Computer**.
2. Double-click your hard drive designation. The hard drive designation is typically Local Disk (C:).
3. Using the hard drive path you recorded earlier, open the folder that contains the update.
4. Double-click the file that has an .exe extension (for example, *filename.exe*).

The BIOS installation begins.
5. Complete the installation by following the on-screen instructions.

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

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. Turn on or restart the computer, quickly press [esc](#), and then press [f2](#).

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

- a. Connected USB drive



NOTE: To download the HP PC Hardware Diagnostics (UEFI) tool to a USB drive, see [Downloading HP PC Hardware Diagnostics \(UEFI\) to a USB device on page 71](#).

- b. Hard drive

- c. Setup Utility (BIOS)

2. 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 [esc](#).

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.

Download the latest UEFI version:

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

Download any version of UEFI for a specific product:

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

– or –

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

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

9 Backing up, restoring, and recovering in Windows 8.1

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

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

For additional information, refer to Help and Support.

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

- or -

From the Windows desktop, click the question mark icon in the taskbar.

Creating recovery media and backups

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

- Use HP Recovery Manager to create HP Recovery media after you successfully set up the computer. This step creates a backup of the HP Recovery partition on the computer. The backup can be used to reinstall the original operating system in cases where the hard drive is corrupted or has been replaced. For information on creating recovery media, see [Creating HP Recovery media \(select models only\) on page 72](#). For information on the recovery options that are available using the recovery media, see [Recovering using HP Recovery Manager on page 74](#).
- Use Windows tools to create system restore points and create backups of personal information.

For more information, see [Using Windows tools on page 73](#).



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 Create recovery media option, you can obtain recovery media for your system from HP. See the *Worldwide Telephone Numbers* booklet included with the computer. You can also find contact information on the HP website. Go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions.

HP Recovery Manager is a software program that allows you to create recovery media (using either a flash drive or a set of DVDs) after you successfully set up the computer. HP Recovery media can be used to perform system recovery if the hard drive becomes corrupted. System recovery reinstalls the original operating system and software programs that were installed at the factory and then configures the settings for the programs. HP Recovery media can also be used to customize the system or restore the factory image if you replace the hard drive.

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

To create HP Recovery media:


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

1. From the Start screen, type `recovery`, and then select **HP Recovery Manager**.
2. Select **Create recovery media**, and then follow the on-screen instructions.

If you ever need to recover the system, see [Recovering using HP Recovery Manager on page 74](#).

Using Windows tools

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

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

For more information and steps, see Help and Support.

- ▲ From the Start screen, type `help`, and then select **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 `help`, and then select **Help and Support**.
- If you need to correct a problem with a preinstalled application or driver, use the Drivers and Applications Reinstall option of HP Recovery Manager to reinstall the individual application or driver.
 - ▲ From the Start screen, type `recovery`, select **HP Recovery Manager**, select **Reinstall drivers and/or applications**, 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 Reinstall drivers and/or applications option in HP Recovery Manager.

For more information, see [Recovering using HP Recovery Manager on page 74](#).

- 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 74](#). If you have not already created recovery media, see [Creating HP Recovery media \(select models only\) on page 72](#).
- 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 74](#).
- 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 76](#).

Recovering using HP Recovery Manager

HP Recovery Manager software allows you to recover the computer to its original factory state by using the HP Recovery media that you either created or that you obtained from HP, or by using the HP Recovery partition (select models only). If you have not already created recovery media, see [Creating HP Recovery media \(select models only\) on page 72](#).


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 72](#).
- 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 72](#).
- 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, on select models, Minimized Image Recovery.

Using the HP Recovery partition (select models only)

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


To start HP Recovery Manager from the HP Recovery partition:

1. From the Start screen, type *recovery*, select **HP Recovery Manager**, and then select **HP Recovery Environment**.
- or -
Press **f11** while the computer boots, or press and hold **f11** as you press the power button.
2. Select **Troubleshoot** from the boot options menu.
3. Select **Recovery Manager**, and then follow the on-screen instructions.

Using HP Recovery media to recover

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

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

 **NOTE:** If the computer does not automatically restart in HP Recovery Manager, change the computer boot order. See [Changing the computer boot order on page 75](#).

3. Follow the on-screen instructions.

Changing the computer boot order


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

To change the boot order:

1. Insert the HP Recovery media.
2. Turn on or restart the computer or tablet, quickly press `esc`, and then press `f9` for boot options.
3. Select the optical drive or USB flash drive from which you want to boot.
4. Follow the on-screen instructions.

Removing the HP Recovery partition (select models only)

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

 **IMPORTANT:** After you remove the HP Recovery partition, you can no longer use the Windows Refresh option or the Windows option to remove everything and reinstall Windows. In addition, you will not be able to perform System Recovery or Minimized Image Recovery from the HP Recovery partition. So before you remove the Recovery partition, create HP Recovery media; see [Creating HP Recovery media \(select models only\) on page 72](#).

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.

10 Backing up, restoring, and recovering in Windows 7

Your computer includes tools provided by the operating system and HP to help you safeguard your information and retrieve it if ever needed.

Creating backups

1. Use HP Recovery Manager to create recovery media immediately after you set up the working computer.
2. As you add hardware and software programs, create system restore points.
3. As you add photos, video, music, and other personal files, create a backup of your system and personal information.

Creating recovery media to recover the original system

After you successfully set up the computer, you should create recovery discs or a recovery flash drive using HP Recovery Manager. You will need these recovery discs or recovery flash drive to perform a system recovery should the hard drive become corrupted. A system recovery reinstalls the original operating system, and then configures the settings for the default programs.

What you need to know

- 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 flash drive or the number of blank DVD discs that will be required.

Use DVD-R, DVD+R, DVD-R DL, DVD+R DL discs or a flash drive. Do not use rewriteable discs such as CD ±RW, DVD±RW, double-layer DVD±RW, and BD-RE (rewritable Blu-ray) discs; they are not compatible with HP Recovery Manager software.
- If your computer does not include an integrated optical drive, you can use an optional external optical drive (purchased separately) to create recovery discs, or you can obtain recovery discs for your computer from the HP website. If you use an external optical drive, it must be connected directly to a USB port on the computer, not to a USB port on an external device, such as a USB hub.
- Be sure that the computer is connected to AC power before you begin creating the recovery media.
- The creation process can take up to an hour or more. Do not interrupt the creation process.
- Store the recovery media in a safe location, separate from the computer.
- If necessary, you can exit the program before you have finished creating the recovery media. The next time you open HP Recovery Manager, you will be prompted to continue the process.

Creating the recovery media

1. Select **Start** and type `recovery` in the search field. Select **HP Recovery Manager** from the list. Allow the action to continue, if prompted.
2. Click **Recovery Media Creation**.
3. Follow the on-screen instructions to continue.

To recover, see [Recovering the original system using HP Recovery Manager on page 80](#).

Creating system restore points

A system restore point is a snapshot of certain hard drive contents saved by Windows System Restore at a specific time. A restore point contains information such as registry settings that Windows uses. Restoring to a previous restore point allows you to reverse changes that have been made to the system since the restore point was created.

Restoring to an earlier system restore point does not affect data files saved or emails created since the last restore point, but it does affect software you may have installed.

For example, if you download a photo from a digital camera and then restore the computer to the state it was on the previous day, the photo remains on the computer.

However, if you install photo viewing software and then restore your computer to the state it was on the previous day, the software will be uninstalled, and you won't be able to use it.

What you need to know

- If you restore to a restore point and then change your mind, you can undo the restoration.
- You should create system restore points:
 - Before you add or change software or hardware
 - Periodically, whenever the computer is running normally
- System Restore also saves shadow copies of files that have been changed since the last restore point was created. For more information about using shadow copies to restore, see Help and Support.

Creating a system restore point

1. Select **Start > Control Panel > System and Security > System**.
2. In the left pane, click **System Protection**.
3. Click the **System Protection** tab.
4. Click **Create**, and follow the on-screen instructions.

To restore, see [Restoring to a previous system restore point on page 80](#).

Backing up system and personal information

Your computer stores information that is important to you, such as files, emails, and photos, and you will want to keep that information even if you download a virus or the system stops working properly. How completely you are able to recover your files depends on how recent your backup is. As you add new software and data files, you should create backups on a regular basis.

Tips for a successful backup

- Number backup discs before inserting them into the optical drive.
- Store personal files in the Documents, Music, Pictures, and Videos libraries, and back up these folders periodically.
- Save customized settings in a window, toolbar, or menu bar by taking a screen shot of your settings. The screen shot can be a time-saver if you have to re-enter your preferences.

To create a screen shot:

1. Display the screen you want to save.
2. Copy the screen image:
To copy only the active window, press **alt+prt sc**.
To copy the entire screen, press **prt sc**.
3. Open a word-processing document or graphics editing program, and then select **Edit > Paste**. The screen image is added to the document.
4. Save and print the document.

What you need to know

- You can back up your information to an optional external hard drive, a flash drive, a network drive, or discs.
- Connect the computer to AC power during backups.
- Allow enough time for the backup. Depending on files sizes, it may take more than an hour.
- Verify the amount of free space on your backup storage device before you back up.
- You should back up:
 - Before adding or changing software or hardware.
 - Before the computer is repaired or restored.
 - On a regular schedule to be sure you have recent copies of personal information.
 - After you add many files—for example, if you saved videos from a birthday party.
 - Before using antivirus software to remove a malicious program.
 - After adding information that is hard to replace, such as pictures, videos, music, project files, or data records.

Creating a backup using Windows Backup and Restore

Windows allows you to back up files using Windows Backup and Restore. You can select the level you want to back up, from individual folders to drives. The backups are compressed to save space. To back up:

1. Select **Start > Control Panel > System and Security > Backup and Restore**.
2. Follow the on-screen instructions to schedule and create a backup.



NOTE: Windows includes the User Account Control feature to improve the security of the computer. You may be prompted for your permission or password for tasks such as installing software, running utilities, or changing Windows settings. See Help and Support for more information.

To restore, see [Restoring specific files using Windows Backup and Restore on page 80](#).

Restore and recovery

Restoring to a previous system restore point

Sometimes installing a software program causes your computer or Windows to behave unpredictably. Usually uninstalling the software fixes the problems. If uninstalling does not fix the problems, you can restore the computer to a previous system restore point (created at an earlier date and time).

To restore to a previous system restore point, when the computer was running correctly:

1. Select **Start > Control Panel > System and Security > System**.
2. In the left pane, click **System Protection**.
3. Click the **System Protection** tab.
4. Click **System Restore**, and follow the on-screen instructions.

Restoring specific files

If files are accidentally deleted from the hard disk and they can no longer be restored from the Recycle Bin, or if files become corrupt, restoring specific files is useful. Restoring specific files is also useful if you ever choose to recover the original system using HP Recovery Manager. You can only restore specific files that you have backed up before.

Restoring specific files using Windows Backup and Restore

Windows allows you to restore files that were backed up using Windows Backup and Restore:

1. Select **Start > Control Panel > System and Security > Backup and Restore**.
2. Follow the on-screen instructions to restore your backup.



NOTE: Windows includes the User Account Control feature to improve the security of the computer. You may be prompted for your permission or password for tasks such as installing software, running utilities, or changing Windows settings. See Help and Support for more information.

Recovering the original system using HP Recovery Manager

HP Recovery Manager software allows you to repair or recover the computer to its original factory state.

What you need to know

- HP Recovery Manager recovers only software that was installed at the factory. For software not provided with this computer, you must either download the software from the manufacturer's website or reinstall the software from the disc provided by the manufacturer.
- A system recovery should be used as a final attempt to correct computer issues. If you have not already tried restore points (see [Restoring to a previous system restore point on page 80](#)) and partial restores (see [Restoring specific files on page 80](#)), try them before using HP Recovery Manager to recover your system.
- A system recovery must be performed if the computer hard drive fails or if all attempts to correct any functional computer issues fail.

- If the recovery media do not work, you can obtain recovery discs for your system from the HP website.
- The Minimized Image Recovery option is recommended for advanced users only. All hardware-related drivers and software are re-installed, but other software applications are not. Do not interrupt the process until it is complete, otherwise the recovery will fail.

Recovering using HP Recovery partition (select models only)

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

To check for the presence of a recovery partition, select **Start**, right-click **Computer** then select **Manage > Disk Management**. If the recovery partition is present, a Recovery drive is listed in the window.



NOTE: Recovery discs have been included if your computer did not ship with a recovery partition.

1. Access HP Recovery Manager in either of the following ways:
 - Select **Start** and type `recovery` in the search field. Select **HP Recovery Manager** from the list.
 - or –
 - Turn on or restart the computer, and then press `esc` while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen. Then press `f11` while the “F11 (System Recovery)” message is displayed on the screen.
2. Click **System Recovery** in the **HP Recovery Manager** window.
3. Follow the on-screen instructions.

Recovering using the recovery media

1. If possible, back up all personal files.
2. Insert the first recovery disc into the optical drive on your computer or an optional external optical drive, and then restart the computer.

– or –

Insert the recovery flash drive into a USB port on your computer, and then restart the computer.



NOTE: If the computer does not automatically restart in HP Recovery Manager, change the computer boot order. See [Changing the computer boot order on page 81](#).

3. Press `f9` at system bootup.
4. Select the optical drive or the flash drive.
5. Follow the on-screen instructions.

Changing the computer boot order

To change the boot order for recovery discs:

1. Restart the computer.
2. Press `esc` while the computer is restarting, and then press `f9` for boot options.
3. Select **Internal CD/DVD ROM Drive** from the boot options window.

To change the boot order for a recovery flash drive:

1. Insert the flash drive into a USB port.
2. Restart the computer.
3. Press `esc` while the computer is restarting, and then press `f9` for boot options.
4. Select the flash drive from the boot options window.

11 Specifications

Computer specifications

	Metric	U.S.
Dimensions		
Width	34.54 cm	13.60 in
Depth	24.25 cm	9.55 in
Height (front to back)	2.26 cm	.89 in
Weight	1.96 or 2.10 kg (depending on configuration)	4.32 or 4.63 lb (depending on configuration)
Input power		
Operating voltage and current	19.5 V dc @ 3.33 A – 65 W	
	19.5 V dc @ 2.31 – 45 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.		

12 Power cord set requirements

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

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

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

Requirements for all countries

The following requirements are applicable to all countries and regions:

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

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

13 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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