



HP Pavilion x360 Convertible PC (model numbers: 13-s000 through 13-s099)

Maintenance and Service Guide
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Product notice

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

Not all features are available in all editions of Windows 8. This computer may require upgraded and/or separately purchased hardware, drivers, and/or software to take full advantage of Windows 8 functionality. See for <http://www.microsoft.com> details.

Safety warning notice

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

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1 Product description

Category	Description
Product Name	HP Pavilion x360 Convertible PC (model numbers: 13-s000 through 13-s099)
Processor	<ul style="list-style-type: none">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)Intel Core i3-5010U 2.10-GHz processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W)
Chipset	Intel LP processor controller hub (PCH)
Graphics	Internal Graphics: Intel HD Graphics 5500 Support for DX11, HD decode, and HDMI
Panel	13.3-in (1920×1080), full high-definition (FHD), light-emitting diode (LED), AntiGlare, TouchScreen with flush glass and MultiTouch enabled; 16:9 ultra-wide aspect ratio; typical brightness: 220 nits; slim (3.0-mm), In-plane switching (IPS), eDP; 13.3-in (1366×768), high-definition (HD), LED, AntiGlare, TouchScreen with flush glass and MultiTouch enabled; 16:9 ultra-wide aspect ratio; typical brightness: 220 nits; slim (3.0-mm), UWVA, eDP
Memory	2 SODIMM slots DDR3L-1600 Support for DDR3L-1600 Support for dual channel Supports up to 16384-MB maximum on-board system memory
Hard drive	Support for 6.35-cm (2.5-in) hard drives in 7.2-mm (.28-in) and 7.0-mm (.28-in) thicknesses Support for Accelerometer hard drive protection Support for the following single hard drive configurations: <ul style="list-style-type: none">1-TB, 5400-rpm, 7.2-mm750-GB, 5400-rpm, 7.2-mm500-GB, 5400-rpm, 7.0-mm Support for 500-GB, 5400-rpm, 7.0-mm + 8-GB NAND Hybrid hard drive Support for M2 SATA-3 next generation form factor (NGFF) 128-MB triple-level cell (TLC) solid-state drive
Optical drive	9.5-mm tray load, SATA, external, USB, DVD±RW DL SuperMulti Drive
Audio and video	Webcam: HP TrueVision HD, fixed (no tilt), with activity light, 1280×720 by 30 frames per second Dual digital microphones with appropriate echo-cancellation and noise-suppression software Two speakers
Sensors	Accelerometer eCompass

Category	Description
Sensors <i>(continued)</i>	Gyroscope Sensor hub
Ethernet	Integrated 10/100 network interface card (NIC)
Wireless	<p>Integrated wireless local area network (WLAN) option by way of wireless module with dual antennas (M.2/PCIe): Intel Dual Band Wireless-AC 3160 802.11 ac 1×1 WiFi + Bluetooth 4.0 Combo Adapter;</p> <p>Integrated WLAN options by way of wireless module with single antenna (M.2/PCIe): Realtek RTL8723BE 802.11b/g/n 1×1 Wi-Fi + Bluetooth 4.0 Combo Adapter;</p> <p>Support for Intel WiDi 5.1</p> <p>Compatible with Miracast-certified devices</p>
External media cards	HP multiformat Micro Digital Media Reader Slot with push-push technology. Reads data from and writes data to digital memory cards such as Secure Digital (SD).
Ports	<ul style="list-style-type: none"> • AC adapter HP Smart plug (4.5mm barrel) • Audio: one combo audio-out (headphone)/audio-in (microphone) jack, supports jack auto-detection • High-definition multimedia interface (HDMI) v.1.4, supporting up to 1080p, 1920×1080 at 60 Hz • RJ45/Ethernet • USB 3.0 (2) • USB 2.0
Keyboard/pointing devices	<p>Full-size, textured, island-style keyboard,</p> <p>Touchpad requirements:</p> <ul style="list-style-type: none"> • Clickpad with image sensor • Taps enabled as default • Multi-touch gestures enabled • Support for Microsoft® Windows® 8.1 modern TouchPad gestures
Power requirements	<p>Support for 45-W HP Smart adapter (non-PFC, RC, 3-wire, 4.5-mm) AC adapter</p> <p>Support for a 3-cell, 48-WWhr, 4.2-AhR, Li-ion battery (includes cable)</p>
Security	<p>Support for security cable lock</p> <p>Support for Trust Platform Module (TPM) 2.0</p>
Operating system	<p>Microsoft Windows 8.1</p> <p>FreeDOS</p> <p>Ubuntu</p>
Serviceability	End user replaceable parts: AC adapter

2 External component identification

Locating hardware

To find out what hardware is installed on the computer:

1. From the Start screen, type `control panel`, and then select **Control Panel**.

– or –

From the Windows desktop, right-click the **Start** button, and then select **Control Panel**.

2. Select **System and Security**, select **System**, and then click **Device Manager** in the left column.

A list displays all the devices installed on your computer.

For information about system hardware components and the system BIOS version number, press `fn+esc` (select models only).

Locating software

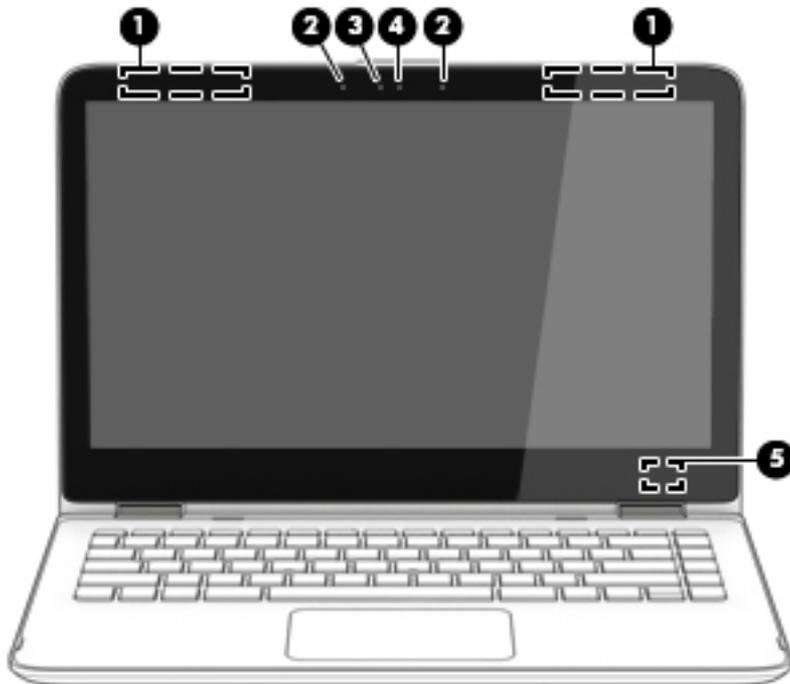
To find out what software is installed on your computer:

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

– or –

From the Windows desktop, right-click the **Start** button, and then select **Programs and Features**.

Display



Item	Component	Description
(1)	WLAN antennas (2)*	Send and receive wireless signals to communicate with WLANs.
(2)	Internal microphones (2)	Record sound.
(3)	Webcam light	On: The webcam is in use.
(4)	Webcam	Records video and captures photographs. Some models allow you to video conference and chat online using streaming video.
(5)	Windows button	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.

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

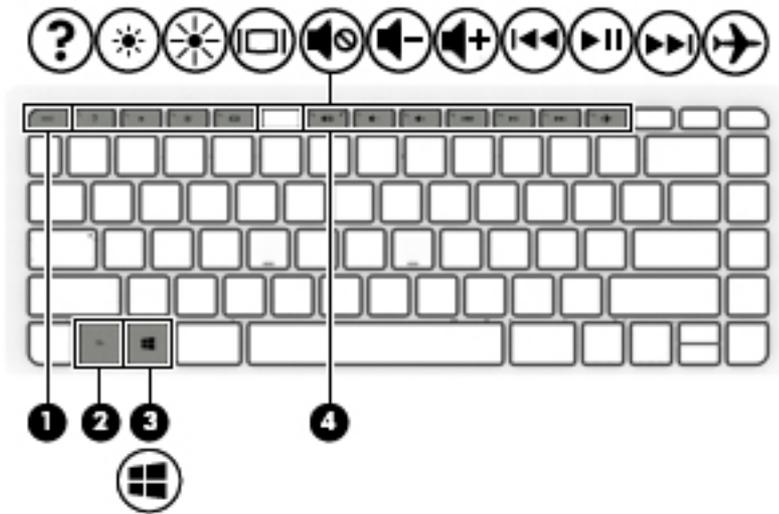
To access this document:

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

– or –

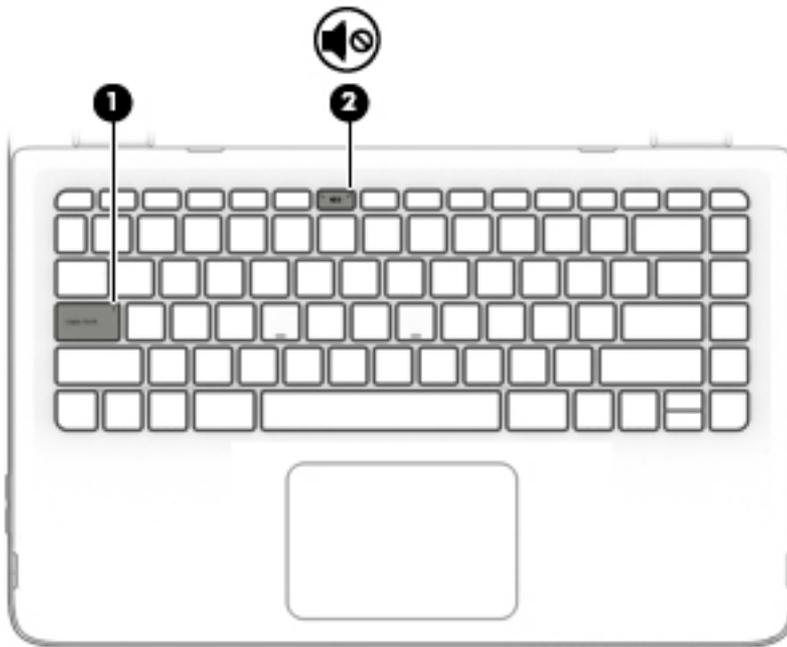
From the Windows desktop, click the question mark icon in the taskbar area of the Windows desktop.

Keys



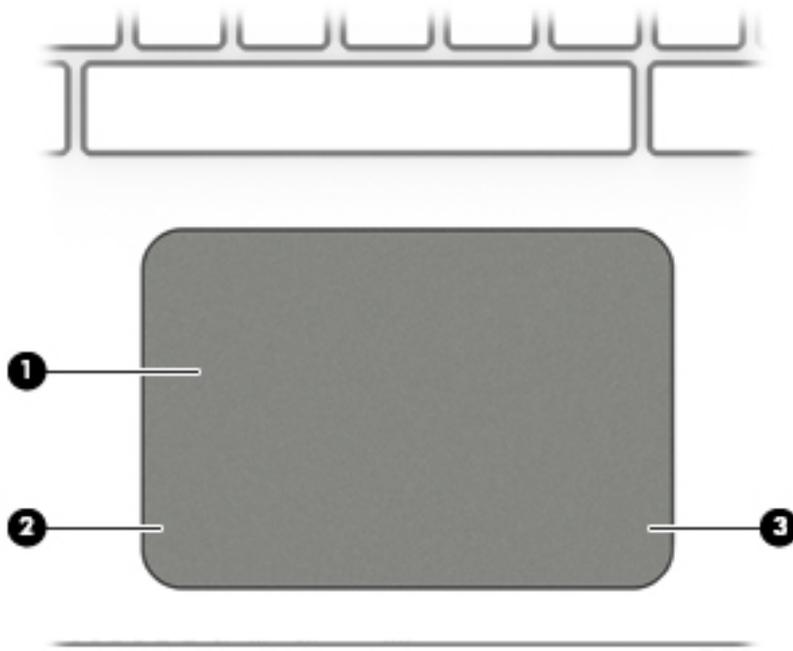
Item	Component	Description
(1)	esc key	Displays system information when pressed in combination with the fn key.
(2)	fn key	Executes frequently used system functions when pressed in combination with the esc key.
(3)	Windows key	Returns you to the Start screen from an open app or the Windows desktop. NOTE: Pressing the Windows key again will return you to the previous screen.
(4)	Action keys	Execute frequently used system functions.

Lights



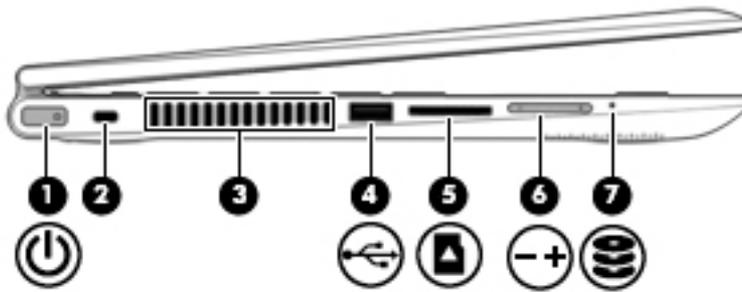
Item	Component	Description
(1)	Caps lock light	On: Caps lock is on, which switches the keys to all capital letters.
(2)	Mute light	<ul style="list-style-type: none">• Amber: Computer sound is off.• Off: Computer sound is on.

TouchPad



Item	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.

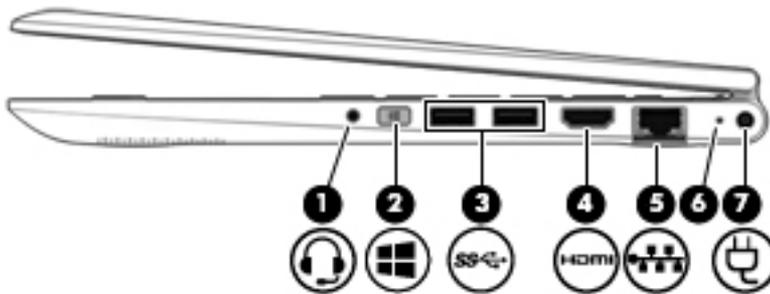
Left side



Item	Component	Description
(1)	Power button	<ul style="list-style-type: none"> When the tablet is off, press the button to turn on the tablet. When the tablet is on, press the button briefly to initiate Sleep. When the tablet is in the Sleep state, press the button briefly to exit Sleep. When the tablet 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 tablet 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 tablet.</p> <p>To learn more about your power settings, see your power options. From the Start screen, type <code>power</code>, select Power and sleep settings, and then select Power and sleep from the list of applications.</p>
(2)	Security cable slot	<p>Attaches an optional security cable to the computer.</p> <p>NOTE: The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.</p>
(3)	Vent	<p>Enable airflow to cool internal components.</p> <p>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.</p>
(4)	USB 2.0 port	<p>Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub.</p>
(5)	Memory card reader	<p>Reads optional memory cards that enable you to store, manage, share or access information.</p> <p>To insert a card:</p> <ul style="list-style-type: none"> ▲ Hold the card label-side up, with connectors facing the slot, insert the card into the slot, and then push in on the card until it is firmly seated. <p>To remove a card:</p> <ul style="list-style-type: none"> ▲ Press in on the card until it pops out.
(6)	Volume button	<p>Controls speaker volume on the tablet.</p>

Item	Component	Description
		<ul style="list-style-type: none"> To increase speaker volume, press the + edge of the button. To decrease speaker volume, press the – edge of the button.
(7)	Hard drive light	<ul style="list-style-type: none"> Blinking white: The hard drive is being accessed. Amber: HP 3D DriveGuard has temporarily parked the hard drive.

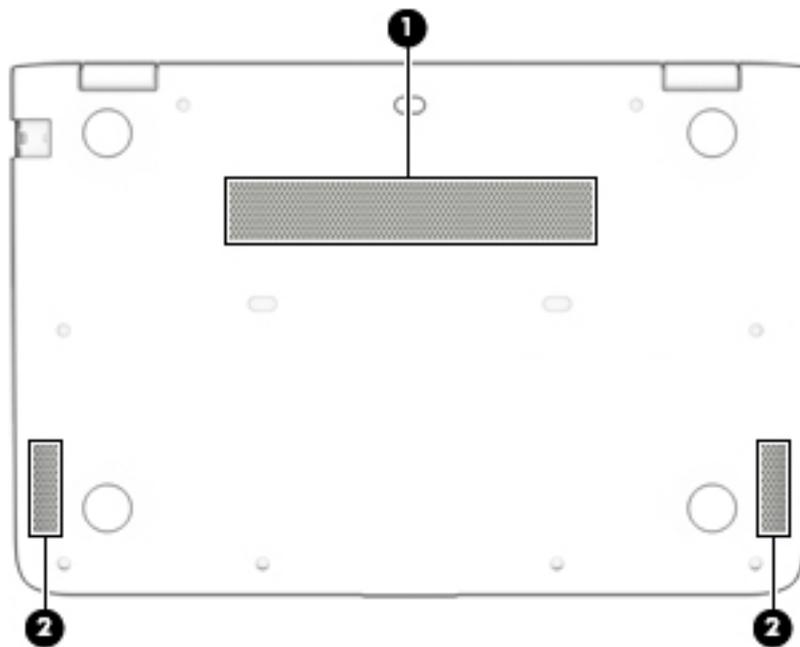
Right side



Item	Component	Description
(1)	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>To access this document:</p> <ul style="list-style-type: none"> ▲ From the Start screen, type <code>support</code>, and then select the HP Support Assistant app. <p>– or –</p> <p>From the Windows desktop, click the question mark icon in the taskbar area of the Windows desktop.</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>
(2)	Windows button	<p>Returns you to the Start screen from an open app or the Windows desktop.</p> <p>NOTE: Pressing the Windows key again will return you to the previous screen.</p>
(3)	USB 3.0 ports	<p>Connect an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub.</p>
(4)	HDMI port	<p>Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component,</p>

Item	Component	Description
		or a high-speed High-Definition Multimedia Interface (HDMI) device.
(5)	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.
(6)	AC adapter light	<ul style="list-style-type: none"> White: The computer is connected to external power and the battery is fully charged. Blinking white: The AC adapter is disconnected and the battery has reached a low battery level. Amber: The computer is connected to external power and the battery is charging. Off: The battery is not charging.
(7)	Power connector	Connects an AC adapter.

Bottom



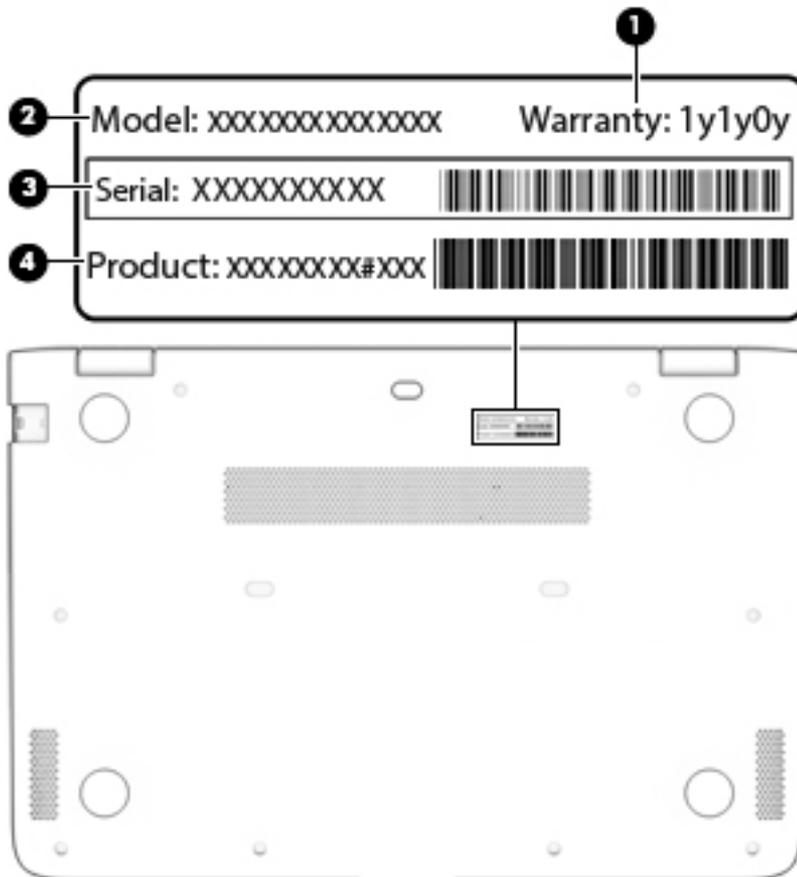
Item	Component	Description
(1)	Vents (2)	Enable airflow to cool internal components. <p>NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.</p>
(2)	Speakers (2)	Produce sound.

3 Illustrated parts catalog

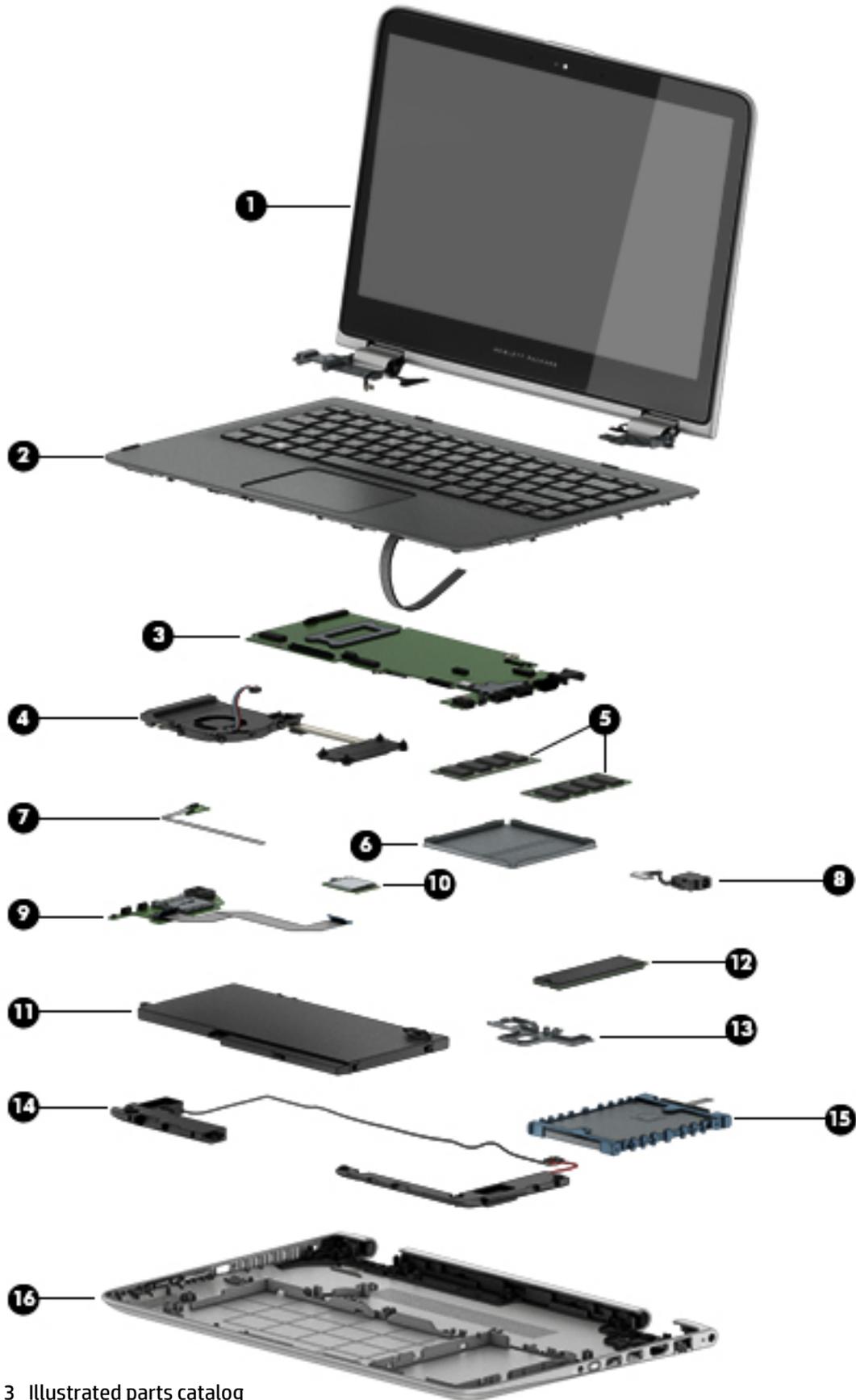
 **NOTE:** HP continually improves and changes product parts. For complete and current information on supported parts for your computer, go to <http://partsurfer.hp.com>, select your country or region, and then follow the on-screen instructions.

Locating the warranty information, model number, serial number, and product number

The warranty information **(1)**, model number **(2)**, serial number **(3)**, and product number **(4)** are located on the bottom of the computer. You may need this information when you travel internationally or when you contact support.



Computer major components

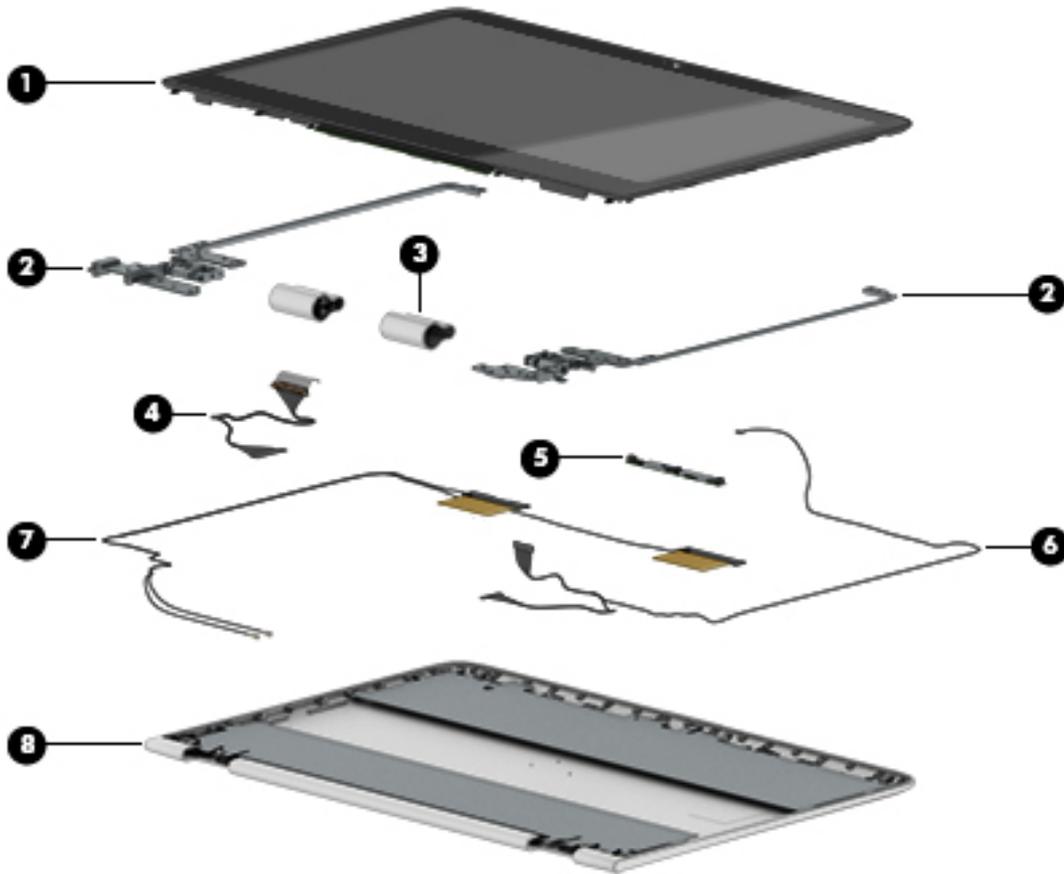


Item	Component	Spare part number
(1)	Display assembly: The display assembly is spared at the subcomponent level only. For more display assembly spare part information, see Display assembly components on page 16 .	
(2)	Keyboard/top cover (includes keyboard cable and TouchPad and TouchPad cable):	
	For use in Belgium	809829-A41
	For use in Bulgaria	809829-261
	For use in Canada	809829-DB1
	For use in the Czech Republic and Slovakia	809829-FL1
	For use in Denmark, Finland, and Norway	809829-DH1
	For use in France	809829-051
	For use in Germany	809829-041
	For use in Greece	809829-151
	For use in Hungary	809829-211
	For use in Israel	809829-BB1
	For use in Italy	809829-061
	For use in Latin America	809829-161
	For use in the Netherlands	809829-B31
	For use in Portugal	809829-131
	For use in Romania	809829-271
	For use in Russia	809829-251
	For use in Saudi Arabia	809829-171
	For use in Slovenia	809829-BA1
	For use in Spain	809829-071
	For use in Switzerland	809829-BG1
	For use in Turkey	809829-141
	For use in the United Kingdom and Singapore	809829-031
	For use in the United States	809829-001
(3)	System board (includes a graphics subsystem with UMA memory, the memory shield, and replacement thermal material):	
	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 solid-state drive slot, and the Windows 8 Professional operating system	809842-601
	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 solid-state drive slot, and the Windows 8 Standard operating system	809842-501
	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 solid-state drive slot, and a non-Windows 8 operating system	809842-001

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) and the Windows 8 Professional operating system	809841-601
	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) and the Windows 8 Standard operating system	809841-501
	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) and a non-Windows 8 operating system	809841-001
	Equipped with an Intel Core i3-5010U 2.10-GHz processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W) and the Windows 8 Professional operating system	809840-601
	Equipped with an Intel Core i3-5010U 2.10-GHz processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W) and the Windows 8 Standard operating system	809840-501
	Equipped with an Intel Core i3-5010U 2.10-GHz processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W) and a non-Windows 8 operating system	809840-001
(4)	Fan/heat sink assembly (includes fan cable, 4 captive screws [secured by C-clips], and replacement thermal material)	809825-001
(5)	Memory module (PC3L, 12800, 1600):	
	8 GB	693374-005
	4 GB	691740-005
	2 GB	691739-005
(6)	Memory shield (included with the system board spare part kit)	
(7)	Power button board (includes cable)	809830-001
(8)	Power connector cable	809824-001
(9)	Connector board (includes cable, SD card slot, USB port, and double-sided adhesive)	809831-001
(10)	WLAN module:	
	Intel Dual Band Wireless-AC 3160 802.11 ac 1×1 WiFi + Bluetooth 4.0 Combo Adapter	784644-005
	Realtek RTL8723BE 802.11b/g/n 1×1 Wi-Fi + Bluetooth 4.0 Combo Adapter	792610-005
(11)	Battery , 3-cell, 48-WHr, 4.2-AHr, Li-ion (includes cable)	796356-005
(12)	Solid-state drive (128-GB, M2, SATA3, supporting TLC)	809839-001
	NOTE: The solid-state drive bracket and solid-state drive connector adapter are included in the solid-state drive Hardware Kit, spare part number 809826-001.	
(13)	Solid-state drive bracket: The solid-state drive bracket and solid-state drive connector adapter are included in the solid-state drive Hardware Kit, spare part number 809826-001.	
(14)	Speaker Kit (includes left and right speakers and cables)	809838-001
(15)	Hard drive (5400-rpm, SATA, 7.0-mm, does not include hard drive bracket or hard drive connector adapter):	
	NOTE: The hard drive bracket and hard drive connector adapter are included in the Hard Drive Hardware Kit, spare part number 808238-001.	
	1-TB	762990-005
	750-GB	752099-005
	500-GB	778186-006

Item	Component	Spare part number
	500-GB, Hybrid 8-GB	732000-005
(16)	Base enclosure:	
	For use only on computer models in natural silver finish	809819-001
	For use only on computer models in sunset red finish	809820-001
	For use only on computer models in violet purple finish	809821-001
	Rubber Kit (not illustrated, includes base enclosure rear feet, screw plugs, screws covers, and display bezel screw covers):	
	For use only on computer models in natural silver finish	809834-001
	For use only on computer models in sunset red finish	809835-001
	For use only on computer models in violet purple finish	809836-001

Display assembly components



Item	Description	Spare part number
(1)	Display panel assembly (13.3-in, LED, AG, LVDS, eDP, TouchScreen; includes display bezel):	
	FHD, (1920×1080), UWVA, IPS, display panel assembly	809833-001
	HD, (1366×768), UWVA display panel assembly	809832-001
(2)	Display Hinge Kit (includes left and right display hinges)	809827-001
(3)	Display hinge covers (includes left and right display hinge covers and cable retainers):	
	For use only on computer models in natural silver finish	809540-001
	For use only on computer models in sunset red finish	809541-001
	For use only on computer models in violet purple finish	809828-001
(4)	Display panel cable:	
	For use only on computer models equipped with the FHD, (1920×1080), UWVA, IPS, display panel assembly, spare part number 809833-001	810712-001
	For use only on computer models equipped with the HD, (1366×768), UWVA display panel assembly, spare part number 809832-001	809822-001
(5)	Webcam/microphone module (includes double-sided adhesive)	809843-001
(6)	Webcam/microphone module cable	809823-001

Item	Description	Spare part number
(7)	Antenna Kit (includes wireless antenna cables and transceivers)	809815-001
(8)	Display back cover	
	For use only on computer models in natural silver finish	809816-001
	For use only on computer models in sunset red finish	809817-001
	For use only on computer models in violet purple finish	809818-001

Miscellaneous parts

Component	Spare part number
45-W HP Smart adapter (non-PFC, RC, 3-wire, 4.5-mm)	741727-001
HP HDMI-to-VGA adapter	701943-001
HP USB external DVD-RW Drive	747080-001
Power cord (3-pin, black, 1.00-m):	
For use on all computer models:	
For use in Argentina	755530-D01
For use in Denmark	755530-081
For use in Europe	755530-021
For use in Israel	755530-BB1
For use in Italy	755530-061
For use in North America	755530-001
For use in South Africa	755530-AR1
For use in Switzerland	755530-111
For use in the United Kingdom and Singapore	755530-031
Rubber Kit (includes base enclosure rear feet, screw plugs, screws covers, and display bezel screw covers)	
For use only on computer models in natural silver finish	809834-001
For use only on computer models in sunset red finish	809835-001
For use only on computer models in violet purple finish	809836-001
Screw Kit	809837-001

4 Removal and replacement preliminary requirements

Tools required

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

- Flat-bladed screw driver
- Magnetic screw driver
- Phillips P0 screw driver

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 tablet, place the subassembly (and all accompanying screws) away from the work area to prevent damage.

Plastic parts

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

Cables and connectors

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

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.

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 tablet when you are removing or installing internal components, observe these precautions:

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

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

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

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

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

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

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

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

Workstation guidelines

Follow these grounding workstation guidelines:

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

Equipment guidelines

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

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

The following grounding equipment is recommended to prevent electrostatic damage:

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

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

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

5 Removal and replacement procedures

 **NOTE:** This chapter provides removal and replacement procedures for Authorized Service Provider only components. Components described in this chapter should only be accessed by an authorized service provider. Accessing these components can damage the computer or void the warranty.

There are as many as 51 screws that must be removed, replaced, and/or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

 **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.

Keyboard/top cover

 **NOTE:** The keyboard/top cover spare part kit includes the keyboard cable, TouchPad, and TouchPad cable.

For use in country or region	Spare part number	For use in country or region	Spare part number
For use in Belgium	809829-A41	For use in the Netherlands	809829-B31
For use in Bulgaria	809829-261	For use in Portugal	809829-131
For use in Canada	809829-DB1	For use in Romania	809829-271
For use in the Czech Republic and Slovakia	809829-FL1	For use in Russia	809829-251
For use in Denmark, Finland, and Norway	809829-DH1	For use in Saudi Arabia	809829-171
For use in France	809829-051	For use in Slovenia	809829-BA1
For use in Germany	809829-041	For use in Spain	809829-071
For use in Greece	809829-151	For use in Switzerland	809829-BG1
For use in Hungary	809829-211	For use in Turkey	809829-141
For use in Israel	809829-BB1	For use in the United Kingdom and Singapore	809829-031
For use in Italy	809829-061	For use in the United States	809829-001
For use in Latin America	809829-161		

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 keyboard/top cover:

1. Close the computer.
2. Turn the computer upside down with the front toward you.
3. Remove the following components:

(1) Two bottom cover rear feet

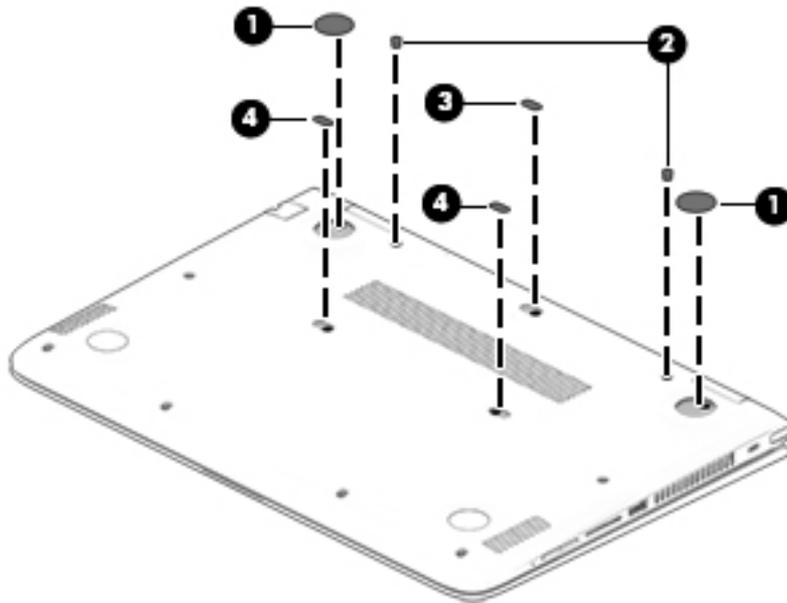
(2) Two rubber screw plugs

(3) One rubber screw cover

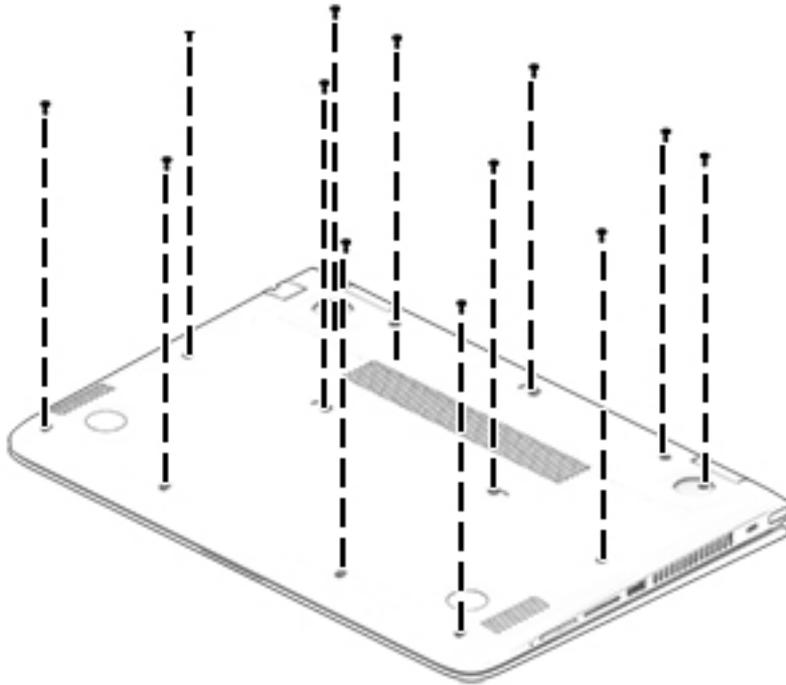
(4) Two plastic screw covers

The bottom cover rear feet, screw plugs, and screws covers are included in the Rubber Kits, using the following spare part numbers:

- 809834-001 – For use only on computer models in natural silver finish
- 809835-001 – For use only on computer models in sunset red finish
- 809836-001 – For use only on computer models in violet purple finish



4. Remove the 13 Phillips PM2.5×6.6 screws that secure the keyboard/top cover to the bottom cover.

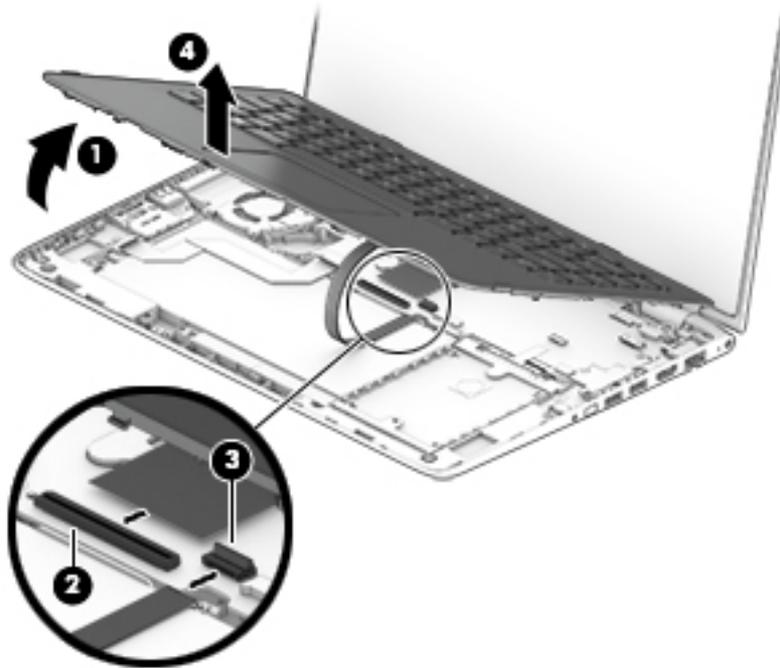


5. Turn the computer right side up with the front toward you.
6. Open the computer.

⚠ CAUTION: Do not completely separate the keyboard/top cover from the bottom cover in the next step. There are 2 ribbon cables connecting the keyboard/top cover to the system board that can be damaged if too much separation is achieved.

7. Lift the front edge **(1)** of the keyboard/top cover until it separates from the bottom cover.
8. Release the zero insertion force (ZIF) connector **(2)** to which the keyboard cable is attached, and then disconnect the keyboard cable from the system board.
9. Release the ZIF connector **(3)** to which the TouchPad cable is attached, and then disconnect the TouchPad cable from the system board.

10. Remove the keyboard/top cover (4).



Reverse this procedure to install the keyboard/top cover.

Battery

Description	Spare part number
Battery, 3-cell, 48-WHr, 4.2-AHr, Li-ion (includes cable)	796356-005

Before removing the battery, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 22](#)).

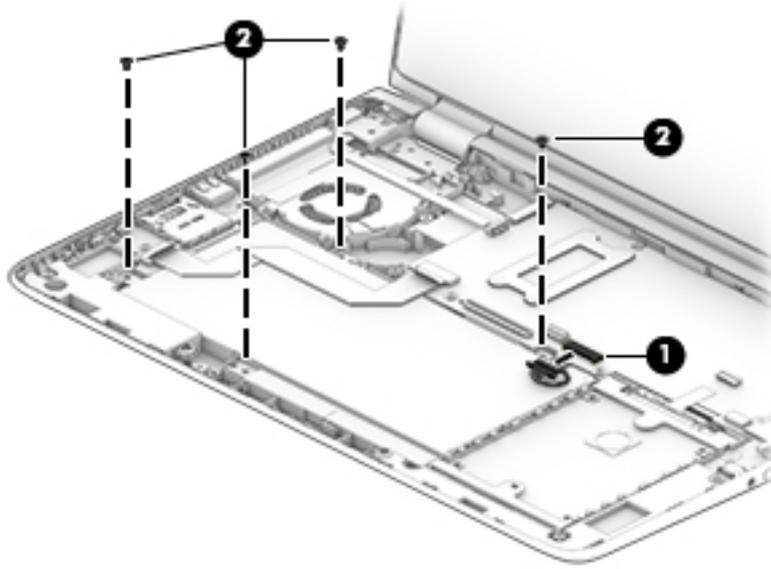
WARNING! To reduce potential safety issues, use only the battery provided with the computer, a replacement battery provided by HP, or a compatible battery purchased from HP.

CAUTION: Removing a 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.

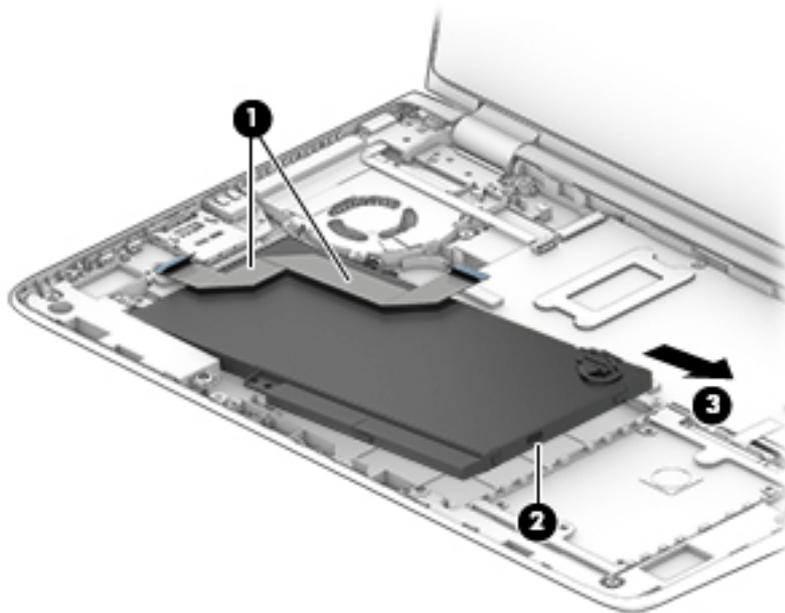
Remove the battery:

1. Disconnect the battery cable (1) from the system board.

2. Remove the four PM2.5×4.4 screws **(1)** that secure the battery to the base enclosure.



3. Detach the connector board cable **(1)** from the battery. (The connector board cable is attached to the battery with double-sided adhesive.)
4. Use the release slot **(2)** on the right side of the battery to lift the right side of the battery until it rests at an angle.
5. Remove the battery **(3)** by sliding it up and to the right.



Reverse this procedure to install the battery.

Hard drive

 **NOTE:** The hard drive spare kit does not include the hard drive bracket or hard drive connector adapter. The hard drive bracket and hard drive connector adapter are included in the Hard Drive Hardware Kit, spare part number 808238-001.

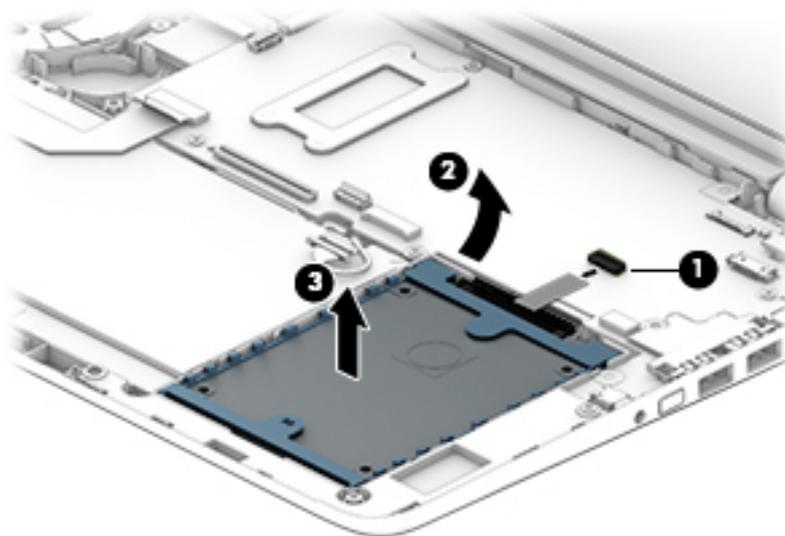
Description	Spare part number
1-TB, 5400-rpm	762990-005
750-GB, 5400-rpm	752099-005
500-GB, 5400-rpm	683802-006
500-GB, 5400-rpm, Hybrid 8-GB	732000-005

Before removing the hard drive, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 22](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 25](#)).

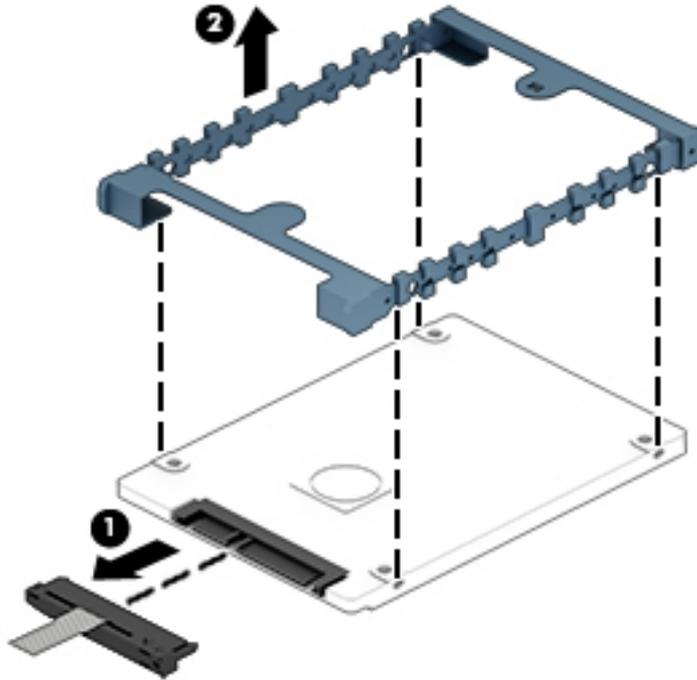
Remove the hard drive:

1. Release the ZIF connector **(1)** to which the hard drive cable is attached, and then disconnect the hard drive cable from the system board.
2. Lift the rear edge of the hard drive **(2)** until it rests at an angle.
3. Remove the hard drive **(3)** by sliding it up and back at an angle.



4. If it is necessary to replace the hard drive connector adapter, slide the adapter **(1)** off of the front end of the hard drive.
5. If it is necessary to replace the hard drive bracket, release the sides of the bracket from the hard drive, and then lift the bracket straight up **(2)** and remove the bracket from the hard drive.

The hard drive bracket and hard drive connector adapter are included in the Hard Drive Hardware Kit, spare part number 808238-001



Reverse this procedure to reassemble and install the hard drive.

Connector board

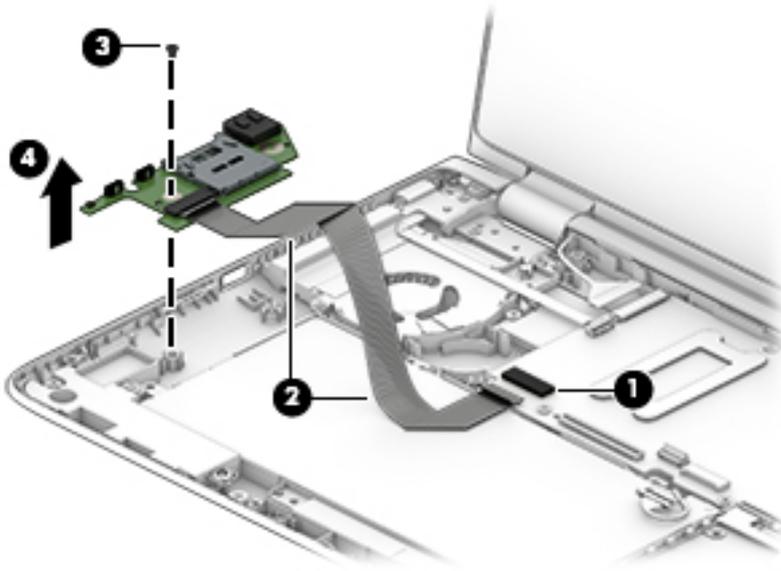
Description	Spare part number
Connector board (includes cable, SD card slot, USB port, and double-sided adhesive)	809831-001

Before removing the connector board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 22](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 25](#)).

Remove the connector board:

1. Release the ZIF connector **(1)** to which the connector board cable is attached, and then disconnect the connector board cable from the system board.
2. Detach the connector board cable **(2)** from the battery. (The connector board cable is attached to the battery with double-sided adhesive.)
3. Remove the Phillips PM2.5×4.4 screw **(3)** that secures the connector board to the base enclosure.
4. Remove the connector board **(4)**.



Reverse this procedure to install the connector board.

WLAN module

Description	Spare part number
Intel Dual Band Wireless-AC 3160 802.11 ac 1×1 WiFi + Bluetooth 4.0 Combo Adapter	784644-005
Realtek RTL8723BE 802.11b/g/n 1×1 Wi-Fi + Bluetooth 4.0 Combo Adapter	792610-005

⚠ 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:

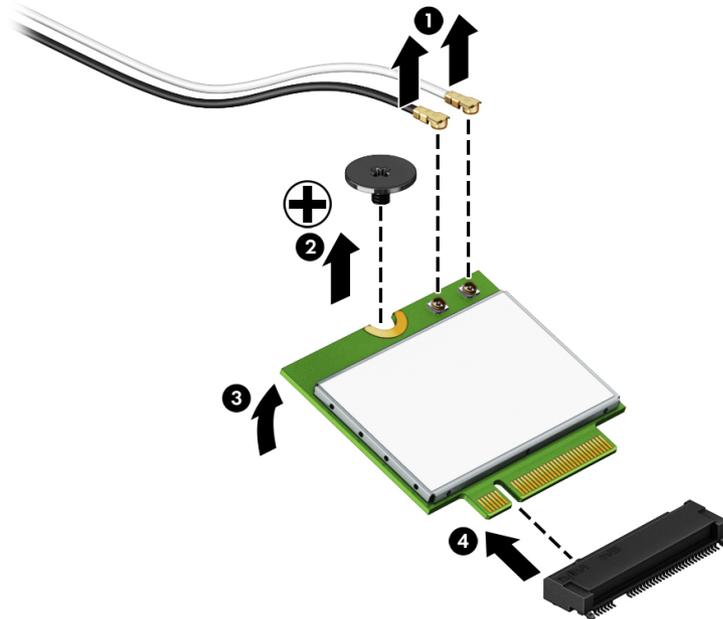
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 22](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 25](#)).

Remove the WLAN module:

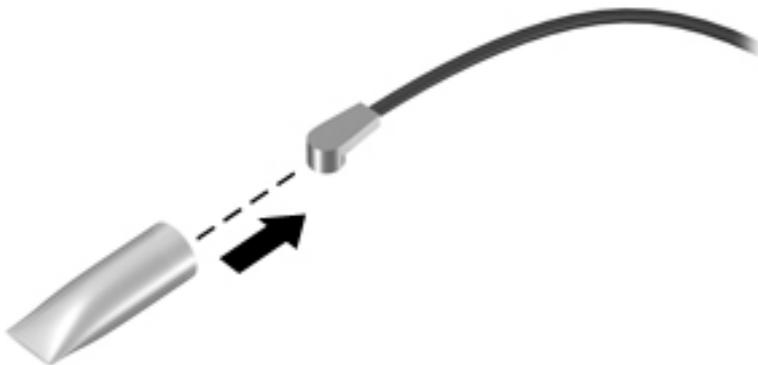
1. Disconnect the WLAN antenna cables **(1)** from the terminals on the WLAN module.

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

2. Remove the Phillips PM2.0×4.1 screw **(2)** that secures the WLAN module to the base enclosure. (The WLAN module tilts up **(3)**.)
3. Remove the WLAN module **(4)** by pulling the module away from the slot at an angle.



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



Reverse this procedure to install the WLAN module.

System board

Description	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), a solid-state drive slot, and the Windows 8 Professional operating system	809842-601
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 solid-state drive slot, and the Windows 8 Standard operating system	809842-501
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 solid-state drive slot, and a non-Windows 8 operating system	809842-001
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) and the Windows 8 Professional operating system	809841-601
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) and the Windows 8 Standard operating system	809841-501
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) and a non-Windows 8 operating system	809841-001
Equipped with an Intel Core i3-5010U 2.10-GHz processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W) and the Windows 8 Professional operating system	809840-601
Equipped with an Intel Core i3-5010U 2.10-GHz processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W) and the Windows 8 Standard operating system	809840-501
Equipped with an Intel Core i3-5010U 2.10-GHz processor (1600-MHz FSB, 3.00-MB L3 cache, dual core, 15 W) and a non-Windows 8 operating system	809840-001

Before removing the system board, follow these steps:

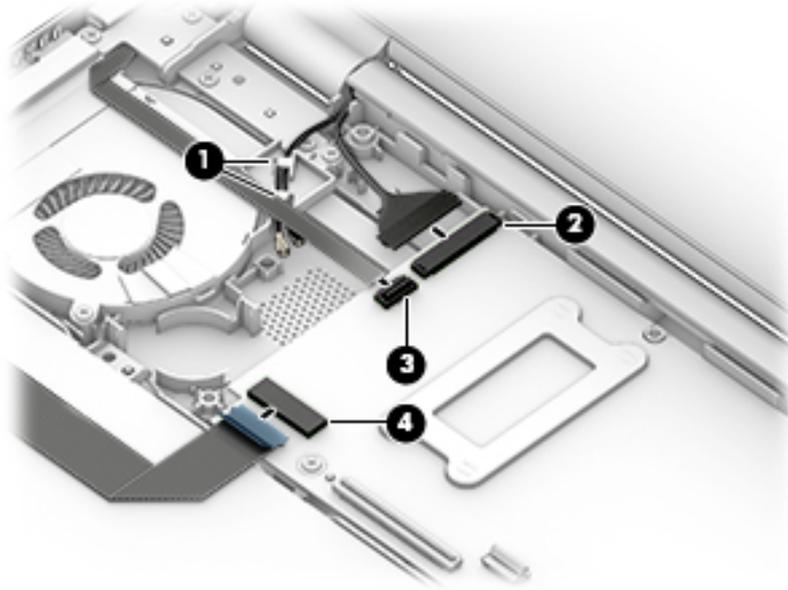
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 22](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 25](#)).
6. Remove the WLAN module (see [WLAN module on page 29](#)).

When replacing the system board, be sure that the fan/heat sink assembly (see [Fan/heat sink assembly on page 34](#)) and the memory modules (see [Memory module on page 35](#)) are removed from the defective system board and installed on the replacement system board.

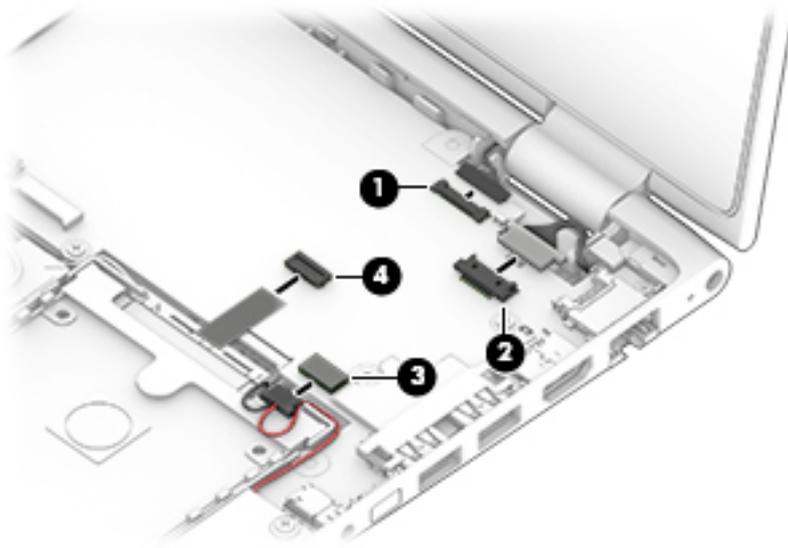
Remove the system board:

1. Release the wireless antenna cables from the retention clips **(1)** built into the fan/heat sink assembly.

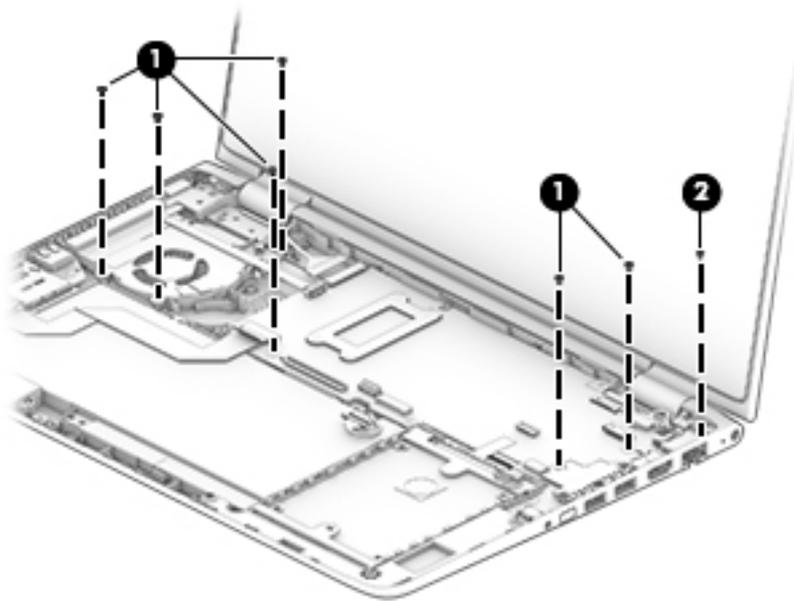
2. Disconnect the following cables from the system board:
 - (2) Display panel cable from the ZIF connector on the system board
 - (3) Power button board cable from the ZIF connector on the system board
 - (4) Connector board cable from the ZIF connector on the system board



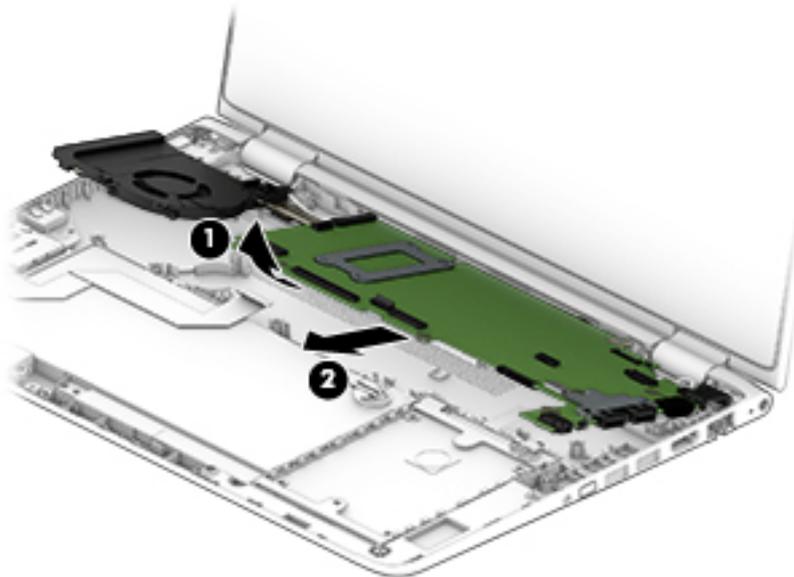
3. Disconnect the following cables from the system board:
 - (1) Webcam/microphone cable
 - (2) Power connector cable
 - (3) Speaker cable
 - (4) Hard drive cable from the ZIF connector on the system board



4. Remove the six Phillips PM2.5×4.4 screws **(1)** and the Phillips PM2.0×4.1 screw **(2)** that secure the system board to the base enclosure.



5. Lift the front edge of the system board **(1)** until it rests at an angle.
6. Remove the system board **(2)** by sliding it up and forward at an angle.



Reverse this procedure to install the system board.

Fan/heat sink assembly

Description	Spare part number
Fan/heat sink assembly (includes fan cable, 4 captive screws [secured by C-clips], and replacement thermal material)	809825-001

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

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 22](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 25](#)).
6. Remove the WLAN module (see [WLAN module on page 29](#)).
7. Remove the system board (see [System board on page 31](#)).

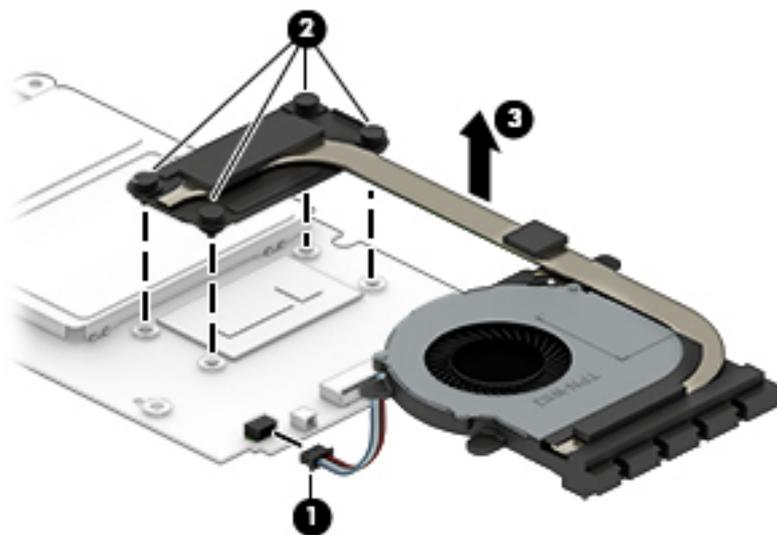
Remove the fan/heat sink assembly:

1. Turn the system board upside down with the front toward you.
2. Disconnect the fan cable **(1)** from the system board.
3. Loosen the four captive screws **(2)** that secure the fan/heat sink assembly to the system board.

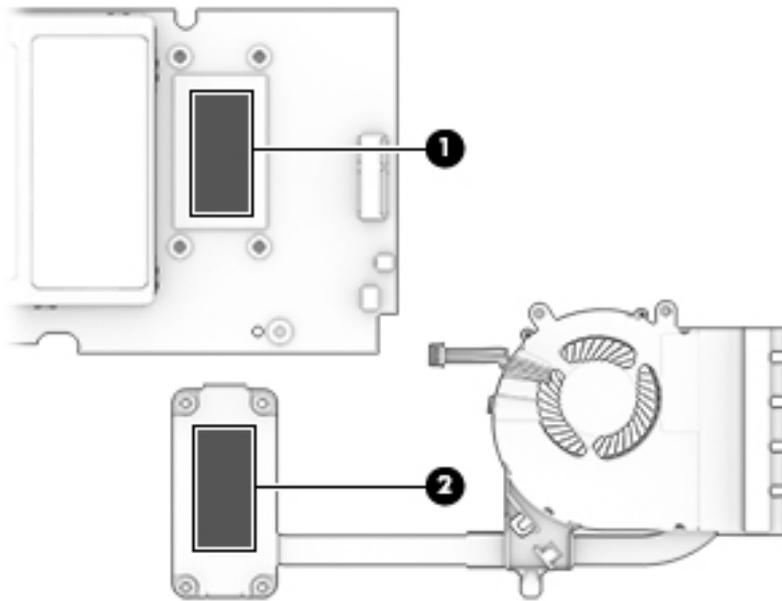


NOTE: Due to the adhesive quality of the thermal material located between the fan/heat sink assembly and system board components, it may be necessary to move the fan/heat sink assembly from side to side to detach it.

4. Remove the fan/heat sink assembly **(3)**.



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



Reverse this procedure to install the fan/heat sink assembly.

Memory module

Description	Spare part number
8-GB (PCL3, 12800, 1600)	693374-005
4-GB (PCL3, 12800, 1600)	691740-005
2-GB (PCL3, 12800, 1600)	691739-005

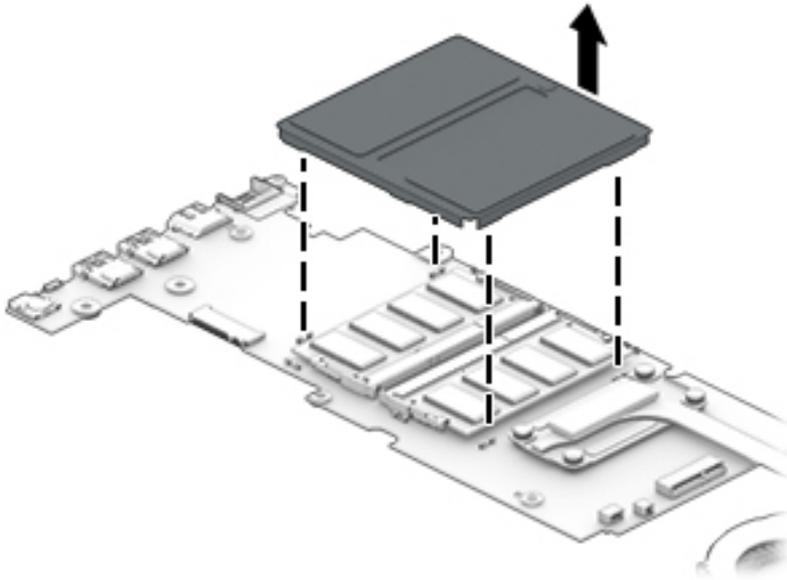
Before removing the memory module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 22](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 25](#)).
6. Remove the WLAN module (see [WLAN module on page 29](#)).
7. Remove the system board (see [System board on page 31](#)).

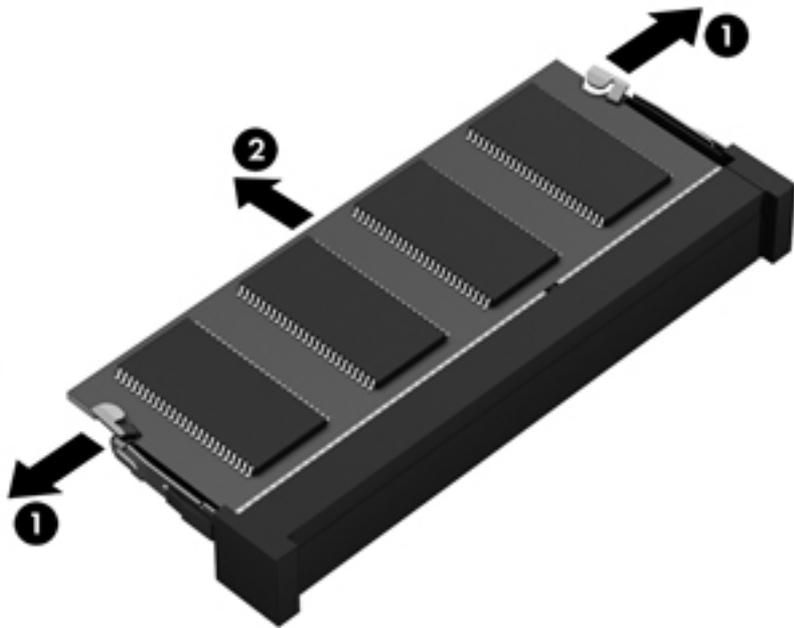
Remove the memory module:

1. Turn the system board upside down with the front toward you.

2. Remove the memory shield that covers the memory module slots.



3. Spread the retaining tabs **(1)** on each side of the memory module slot to release the memory module. (The memory module tilts up.)
4. Remove the memory module **(2)** by pulling it away from the slot at an angle.



Reverse this procedure to install a memory module.

Speakers

Description	Spare part number
Speaker Kit (includes left and right speakers and cables)	809838-001

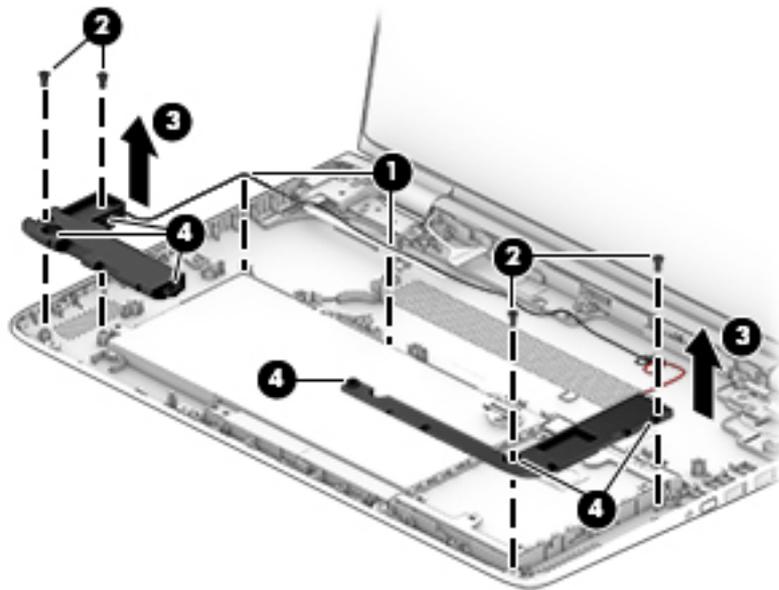
Before removing the speakers, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 22](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 25](#)).
6. Remove the WLAN module (see [WLAN module on page 29](#)).
7. Remove the system board (see [System board on page 31](#)).

Remove the speakers:

1. Release the speaker cables from the retention clips **(1)** built into the base enclosure.
2. Remove the three Phillips PM2.0×5.8 shoulder screws **(2)** that secure the speakers to the base enclosure.
3. Remove the speakers **(3)**.

 **NOTE:** When removing the speakers, make note of the location of the six rubber isolators **(4)**. Removal of or damage to these isolators can cause degradation to speaker performance.



Reverse this procedure to install the speakers.

Display assembly

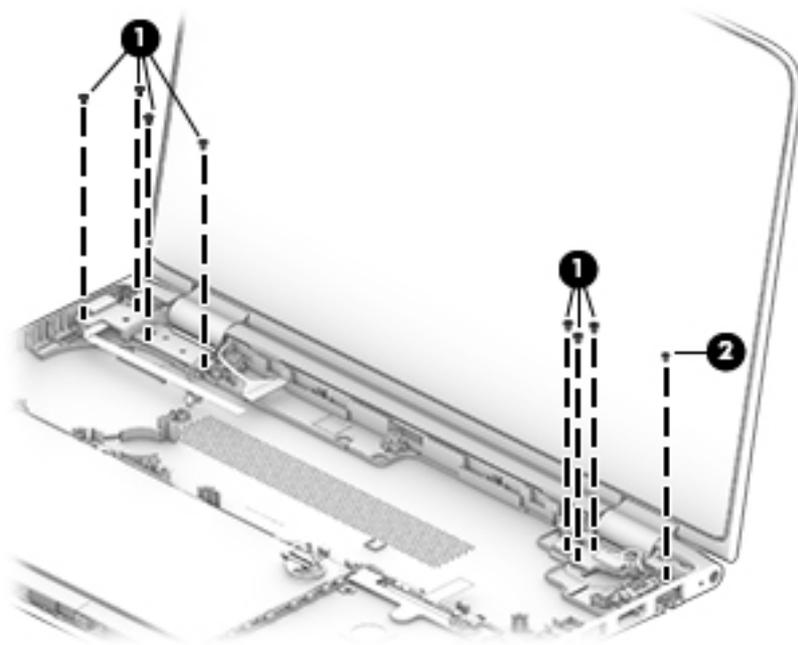
 **NOTE:** The display assembly is spared at the subcomponent level only. For display assembly spare part information, see the individual removal subsections.

Before removing the display assembly, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 22](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 25](#)).
6. Remove the WLAN module (see [WLAN module on page 29](#)).
7. Remove the system board (see [System board on page 31](#)).

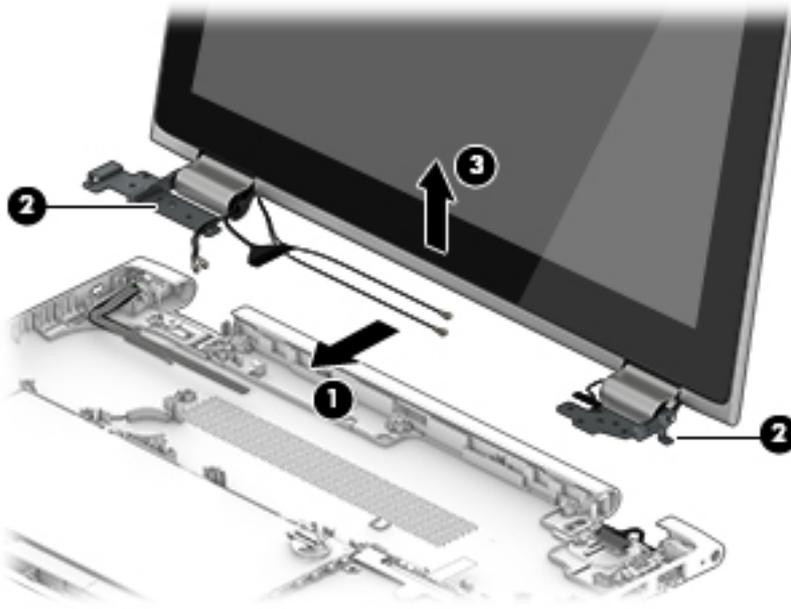
Remove the display assembly:

1. Open the computer to the interactive position, as shown in the following illustration.
2. Remove the seven Phillips PM2.5×4.4 screws **(1)** and the Phillips PM2.0×4.1 screw **(2)** that secure the display assembly to the base enclosure.



3. Slide the display assembly **(1)** forward until the display hinges **(2)** clear the base enclosure.

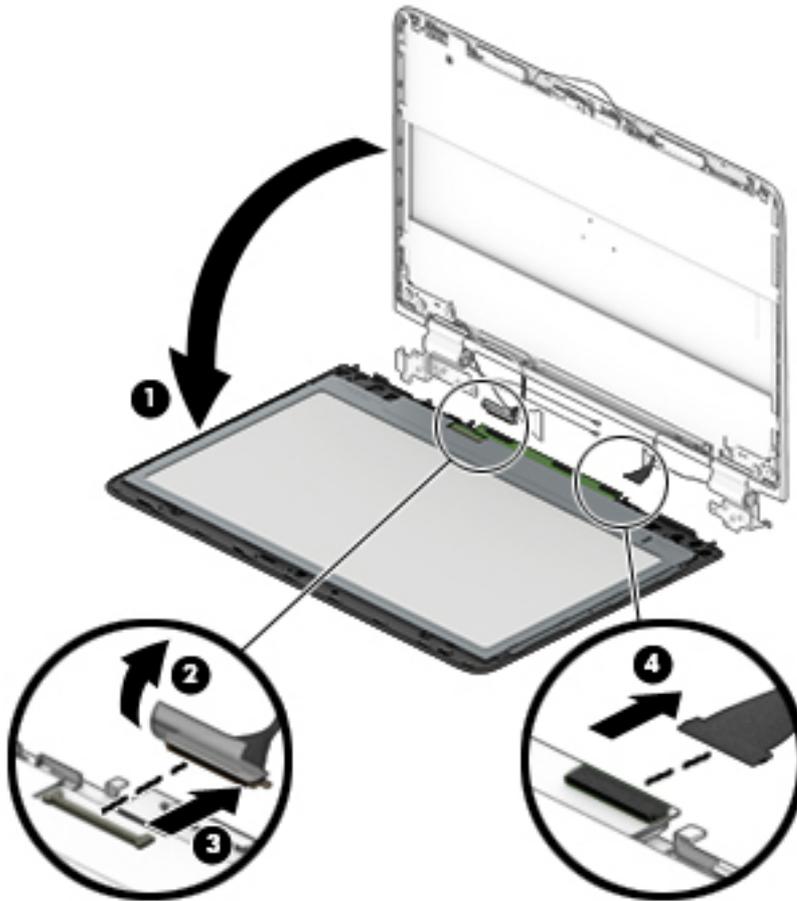
4. Remove the display assembly (3).



5. If it is necessary to replace the display panel assembly or any of the display assembly internal components:
 - a. Release the top edge of the display panel assembly (1) by pulling it away from the display enclosure.
 - b. Release the adhesive support strip (2) that secures the display panel cable to the display panel assembly.
 - c. Disconnect the display panel cable (3) from the display panel assembly.
 - d. Disconnect the TouchScreen cable (4) from the TouchScreen board.

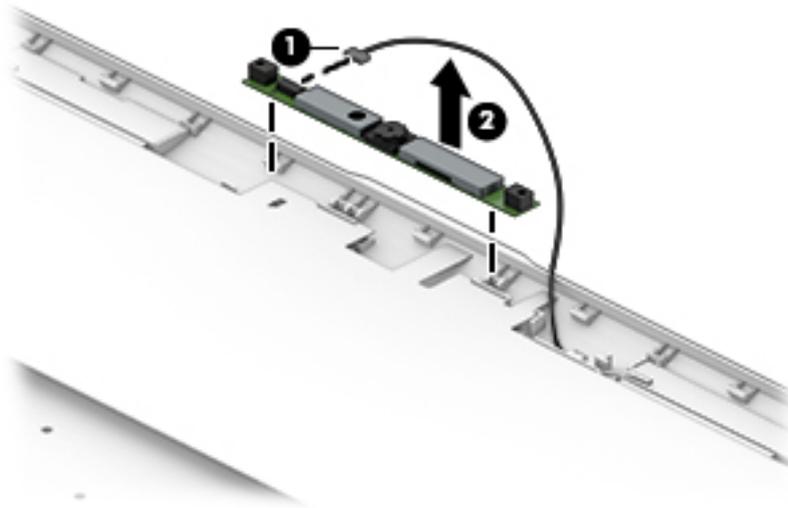
- e. Remove the display panel assembly **(5)**.

The display panel assembly includes the display bezel and the display panel and is available using spare part numbers 809833-001 (FHD, (1920×1080), UWVA, IPS, display panel assembly) and 809832-001 (HD, (1366×768), UWVA display panel assembly).



- 6. If it is necessary to replace the webcam/microphone module:
 - a. Remove the display panel assembly.
 - b. Detach the webcam/microphone module **(1)** from the display back cover. (The webcam/microphone module is attached to the display back cover with double-sided adhesive.)

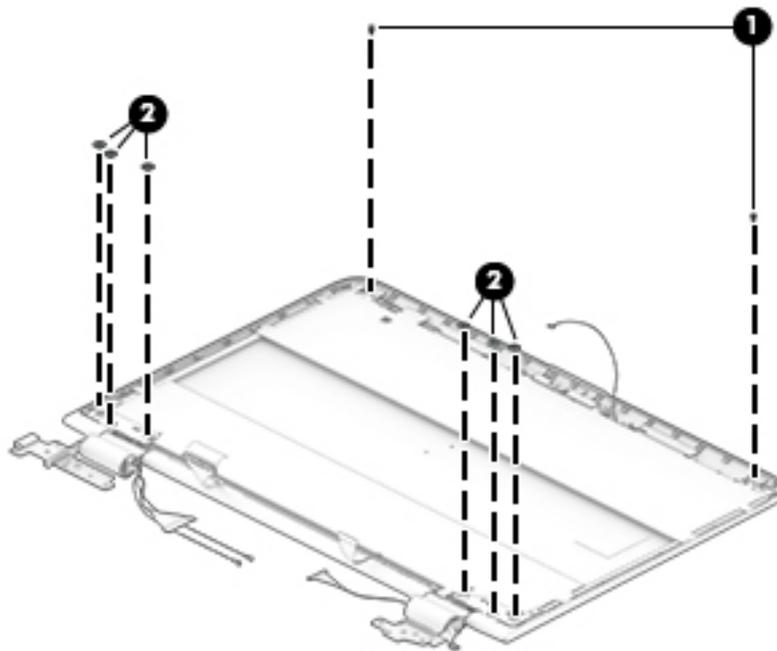
- c. Disconnect the webcam/microphone module cable **(2)** from the webcam/microphone module.



- d. Remove the webcam/microphone module.
The webcam/microphone module is available using spare part number 809843-001.

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

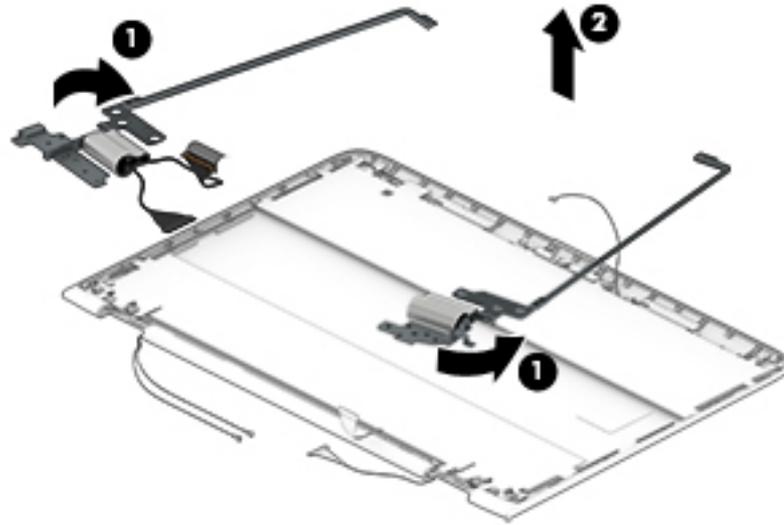
- a. Remove the display panel assembly.
- b. Remove the two Phillips PM2.0×2.8 screws **(1)** that secure the display hinges to the display enclosure.
- c. Remove the six Phillips PM2.5×3.6 broad head screws **(2)** that secure the display hinges to the display enclosure.



- d. Rotate the display hinges **(1)** inward until the hinges are clear of the display back cover.

- e. Remove the display hinges (2).

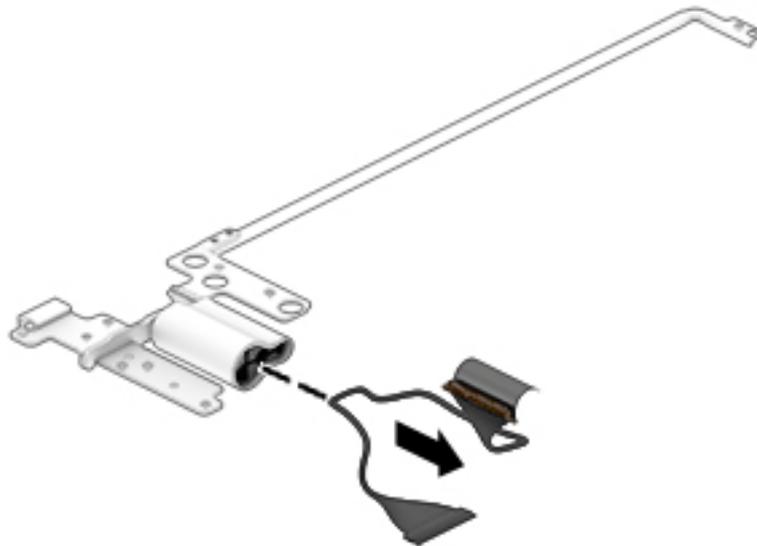
The display hinges are included in the Display Hinge Kit, spare part number 809827-001.



- 8. If it is necessary to replace the display panel cable:

- a. Remove the display panel assembly.
- b. Remove the display hinges.
- c. Remove the display panel cable from the left display hinge.

The display panel cable is available using spare part numbers 810712-001 (for use only on computer models equipped with the FHD, (1920×1080), UWVA, IPS, display panel assembly, spare part number 809833-001) and 809822-001-001 (for use only on computer models equipped with the HD, (1366×768), UWVA display panel assembly, spare part number 809832-001).

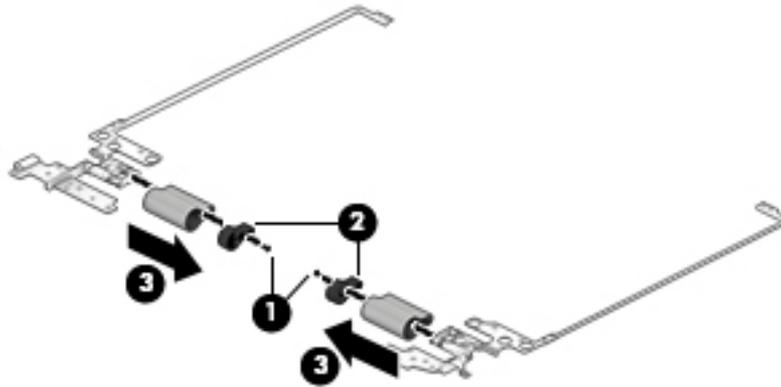


- 9. If it is necessary to replace the display hinge covers:

- a. Remove the display panel assembly.
- b. Remove the display hinges.
- c. Remove the Phillips PM2.0×4.1 screw **(1)** that secures the display hinge cover to the display hinge.
- d. Remove the rubber cable retainer **(2)** from inside the hinge cover.
- e. Remove the display hinge cover **(3)**.

The display hinge covers are available using the following spare part numbers:

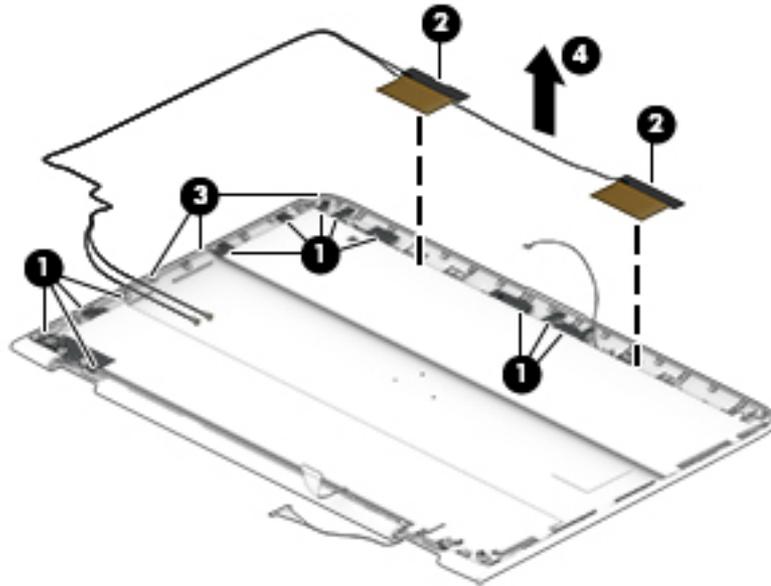
- 809540-001 – For use only on computer models in natural silver finish
- 809541-001 – For use only on computer models in sunset red finish
- 809828-001 – For use only on computer models in violet purple finish



10. If it is necessary to replace the WLAN antenna cables and transceivers:
 - a. Remove the display panel assembly.
 - b. Remove the left display hinge.
 - c. Release the tabs **(1)** on the top edge, left side, and left hinge area of the display enclosure that secure the WLAN antenna cables.
 - d. Detach the WLAN antenna transceivers **(2)** from the display enclosure. (The WLAN antenna transceivers are attached to the display enclosure with double-sided adhesive.)
 - e. Release the WLAN antenna cables from the retention clips **(3)** and channels built into the left edge of the display enclosure.

- f. Remove the WLAN antenna cables and transceivers (4).

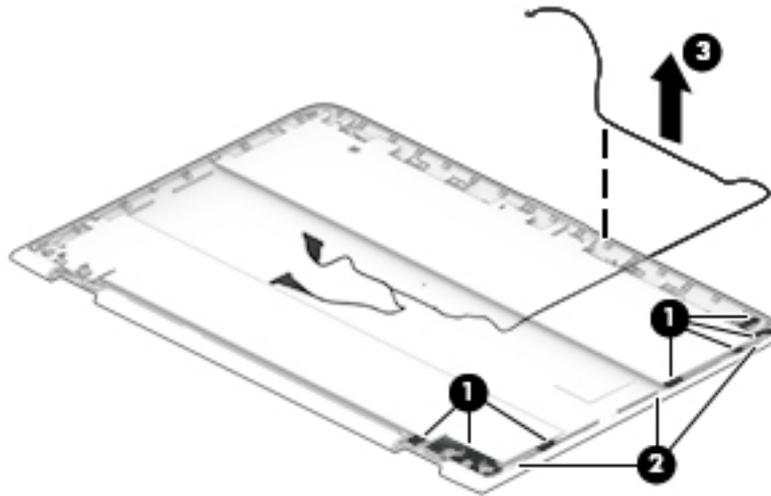
The WLAN antenna cables and transceivers are included in the Antenna Kit, spare part number 809815-001.



11. If it is necessary to replace the webcam/microphone module cable:
- Remove the display panel assembly.
 - Remove the right display hinge.
 - Remove the WLAN antenna cables and transceivers.
 - Release the tabs (1) on the top edge, right side, and right hinge area of the display enclosure that secure the webcam/microphone cable.
 - Release the webcam/microphone module cable from the retention clips (2) and channels built into the right edge of the display enclosure.

- f. Remove the webcam/microphone module cable (3).

The webcam/microphone module cable is available using spare part number 809823-001.



Reverse this procedure to reassemble and install the display assembly.

Power button board

Description	Spare part number
Power button board (includes cable)	809830-001

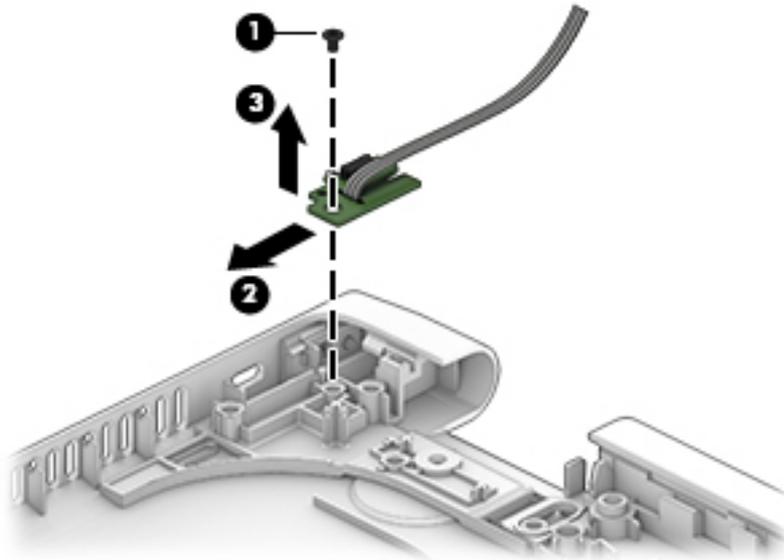
Before removing the power button board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 22](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 25](#)).
6. Remove the WLAN module (see [WLAN module on page 29](#)).
7. Remove the system board (see [System board on page 31](#)).
8. Remove the display assembly (see [Display assembly on page 38](#)).

Remove the power button board:

1. Remove the Phillips PM2.0×4.1 screw (1) that secures the power button board to the base enclosure.
2. Slide the power button board (2) forward until it is clear of the base enclosure.

3. Remove the power button board (3) and cable.



Reverse this procedure to install the power button board.

Power connector cable

Description	Spare part number
Power connector cable	809824-001

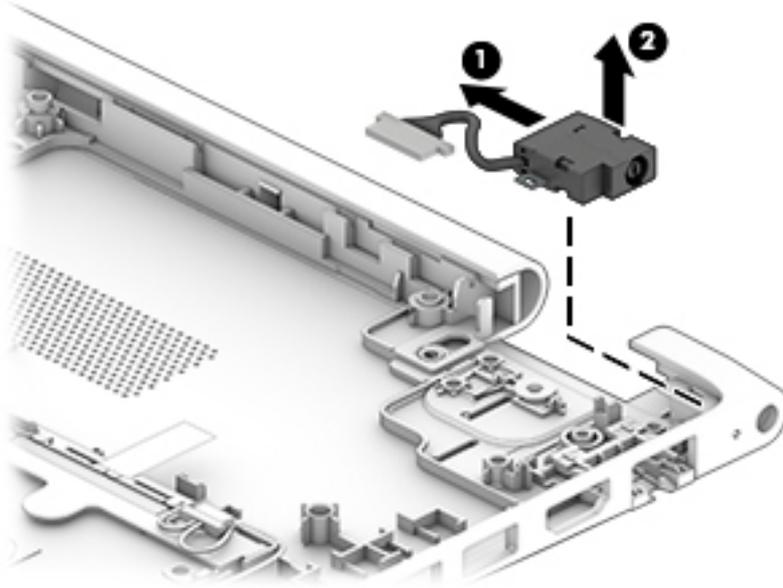
Before removing the power connector cable, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 22](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 25](#)).
6. Remove the WLAN module (see [WLAN module on page 29](#)).
7. Remove the system board (see [System board on page 31](#)).
8. Remove the display assembly (see [Display assembly on page 38](#)).

Remove the power connector cable:

1. Slide the power connector cable (1) out of the cavity in the base enclosure.

2. Remove the power connector cable (2).



Reverse this procedure to install the power connector cable.

6 Using Setup Utility (BIOS)

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

Starting Setup Utility (BIOS)

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

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

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

Updating the BIOS

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

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

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

Determining the BIOS version

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

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

1. Start Setup Utility (BIOS) (see [Starting Setup Utility \(BIOS\) on page 48](#)).
2. Select **Main**, and then make note of your BIOS version.
3. Select **Exit**, select **Exit Discarding Changes**, and then follow the on-screen instructions.

Downloading a BIOS update

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

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

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

1. From the Start screen, type `support`, and then select the **HP Support Assistant** app.
– or –
From the Windows desktop, click the question mark icon in the taskbar area of the Windows desktop.
2. Click **Updates and tune-ups**, and then click **Check for HP updates now**.
3. Follow the on-screen instructions.
4. At the download area, follow these steps:
 - a. Identify the most recent BIOS update and compare it to the BIOS version currently installed on your computer. If the update is more recent than your BIOS, make a note of the date, name, or other identifier. You may need this information to locate the update later, after it has been downloaded to your hard drive.
 - b. Follow the on-screen instructions to download your selection to the hard drive.

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

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

1. From the Start screen, type `file`, and then select **File Explorer**.
– or –
From the Windows desktop, right-click the **Start** button, and then select **File Explorer**.
2. Click your hard drive designation. The hard drive designation is typically Local Disk (C:).
3. Using the hard drive path you recorded earlier, open the folder on your hard drive that contains the update.
4. Double-click the file that has an `.exe` extension (for example, `filename.exe`).

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

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

7 Using HP PC Hardware Diagnostics (UEFI)

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

To start HP PC Hardware Diagnostics (UEFI):

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

2. Press or tap **f2**.

The BIOS searches 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 50](#).

- b. Hard drive

- c. BIOS

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

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

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

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

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

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

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

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

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

3. In the text box, enter the product name, and then click **Go**.
– or –
Click **Find Now** to let HP automatically detect your product.
4. Select your computer model, and then select your operating system.
5. In the **Diagnostic** section, click **HP UEFI Support Environment**.
– or –
Click **Download**, and then select **Run**.

8 Specifications

	Metric	U.S.
Tablet dimensions		
Width	32.7 cm	12.89 in
Depth	22.4 cm	8.82 in
Height	2.3 cm	0.91 in
Weight (equipped with a hard drive)	1.77 kg	3.89 lbs
Weight (equipped with a solid-state drive)	1.66 kg	3.67 lbs
Input power		
Operating voltage and current	19.5 V dc @ 2.31 A – 45 W	
	19.5 V dc @ 3.33 A – 65 W	
	19.5 V @ 3.33 A – 65 W	
	19.5 V @ 4.62 A – 90 W	
	19.5 V @ 6.15 A – 120 W	
	19.5 V @ 7.69 A – 150 W	
Temperature		
Operating	5°C to 35°C	41°F to 95°F
Nonoperating	-20°C to 60°C	-4°F to 140°F
Relative humidity (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	-15 m to 3,048 m	-50 ft to 10,000 ft
Nonoperating	-15 m to 12,192 m	-50 ft to 40,000 ft
NOTE: Applicable product safety standards specify thermal limits for plastic surfaces. The device operates well within this range of temperatures.		

9 Backing up, restoring, and recovering

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

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

For additional information, refer to Help and Support.

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



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

Creating recovery media and backups

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

- Use HP Recovery Manager after you successfully set up the computer to create HP Recovery media. This step creates a backup of the HP Recovery partition on the computer. The backup can be used to reinstall the original operating system in cases where the hard drive is corrupted or has been replaced. For information on creating recovery media, see [Creating HP Recovery media \(select models only\) on page 54](#). For information on the recovery options that are available using the recovery media, see [Recovering using HP Recovery Manager on page 55](#).
- Use Windows tools to create system restore points and create backups of personal information.

For more information, see [Using Windows tools on page 55](#).



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

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

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

To create HP Recovery media:

1. From the Start screen, type `recovery`, and then select **HP Recovery Manager**.
2. Select **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 55](#).

Using Windows tools

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

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

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 Reinstall drivers and/or applications 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 55](#).

- 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 55](#). If you have not already created recovery media, see [Creating HP Recovery media \(select models only\) on page 54](#).
- 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 55](#).
- 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 58](#).

Recovering using HP Recovery Manager

HP Recovery Manager software allows you to recover the computer to its original factory state by using the HP Recovery media that you either created or that you obtained from support, or by using the HP Recovery partition (select models only). If you have not already created recovery media, see [Creating HP Recovery media \(select models only\) on page 54](#).

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 54](#).
- 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 54](#).
- If your computer does not allow the creation of HP Recovery media or if the HP Recovery media does not work, you can obtain recovery media for your system from support. See the *Worldwide Telephone Numbers* booklet included with the computer. You can also find contact information from the HP website. Go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions.



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

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



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

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

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

Using the HP Recovery partition (select models only)

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

To start HP Recovery Manager from the HP Recovery partition:

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

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

- or -

Press **f11** while the computer boots, or press and hold **f11** as you press the power button.

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

Using HP Recovery media to recover

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

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

 **NOTE:** If the computer does not automatically restart in HP Recovery Manager, change the computer boot order. See [Changing the computer boot order on page 57](#).

3. Follow the on-screen instructions.

Changing the computer boot order

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

To change the boot order:

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

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

For computers or tablets with keyboards attached:

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

For computers or tablets without keyboards attached:

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

- or -

Turn on or restart the computer, quickly press the Windows button, and then tap **f9** for boot options.

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

Removing the HP Recovery partition (select models only)

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

 **IMPORTANT:** After you remove the HP Recovery partition, you can no longer use the Windows Refresh option or the Windows option to remove everything and reinstall Windows. In addition, you will not be able to perform System Recovery or Minimized Image Recovery from the HP Recovery partition. So before you remove the Recovery partition, create HP Recovery media; see [Creating HP Recovery media \(select models only\) on page 54](#).

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 Power cord set requirements

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

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

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

Requirements for all countries

The following requirements are applicable to all countries and regions:

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

Requirements for specific countries and regions

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

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

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

11 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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