



HP Pavilion Notebook PC (model numbers used: 11-s000 through 11-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 10. This computer may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows 10 functionality. See <http://www.microsoft.com> for details.

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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 Notebook PC (model numbers used: 11-s000 through 11-s099)
Processor	Intel® Celeron™ N3050 1.60-GHz (SC turbo up to 2.16-GHz) dual core processor (1600-MHz front-side bus (FSB), 2.0-MB L2 cache, 4.0 W)
Chipset	Intel integrated soldered-on-circuit (SoC)
Graphics	Internal Graphics: Intel HD Graphics Support for HD decode, DX12, and HDMI
Panel	11.6-in, high-definition (HD), AntiGlare (1366×768), UWVA, white light-emitting diode (WLED), slim (3.0 mm); 16:9 aspect ratio; typical brightness: 220 nits, eDP;
Memory	Support for DDR3L-1600 single channel on-board 2.0-GB system memory Support for up to 4.0-GB maximum on-board system memory <ul style="list-style-type: none">• 4096-MB (256 MB × 16 × 8 pieces)• 2048-MB (256 MB × 16 × 4 pieces)
Storage	Support for all 7.2- and 7.0-mm, SATA, 2.5-inch hard drives Support for 500-GB, 5400-rpm, SATA, 7.0-mm hard drive Support for Accelerometer hard drive protection
Audio and video	HP TrueVision HD webcam, fixed (no tilt) integrated activity light, 1280×720 by 30 frames per second Dual array digital microphones with appropriate beam-forming, echo-cancellation, noise-suppression software Two speakers B&O Play Sound
Wireless	Integrated wireless local area network (WLAN) options by way of wireless module One or two built-in WLAN antennas, varying by computer model Support for the following WLAN modules: <ul style="list-style-type: none">• Broadcom BCM43142 802.11b/g/n 1×1 Wi-Fi + Bluetooth® 4.0 M.2 Combo Adapter• Realtek RTL8723BE 802.11b/g/n 1×1 Wi-Fi + Bluetooth 4.0 Combo Adapter
Ports	<ul style="list-style-type: none">• HP Smart Plug AC adapter (4.5-mm barrel)• Headphone/microphone combo jack• High-definition multimedia interface (HDMI) v.1.4b, supporting up to 1080b, 1920×1080 at 60 Hz• USB 3.0 port• USB 2.0 port
External media cards	HP 2-in-1 multifunction Digital Media Reader Slot with push-push technology. Reads data from and writes data to digital memory cards such as Secure Digital (SD).

Category	Description
Keyboard/pointing devices	<p>Full-sized, textured, island-style keyboard</p> <p>Touchpad requirements:</p> <p>Clickpad with image sensor</p> <p>Multitouch gestures enabled (2-finger scroll, pinch, rotate, 2-finger tap, 3-finger flick)</p> <p>Support for modern trackpad gestures</p> <p>Taps enabled as default</p>
Power requirements	<p>Support for a 2-cell, 37-WHr, 4.96-AHr, Li-Ion battery</p> <p>Support for a 65-W HP Smart AC adapter (non-PFC, EM, 4.5-mm) and 45-W HP Smart AC adapter (non-PFC, RC, 4.5-mm)</p>
Security	<p>Trusted platform module (TPM) 2.0</p> <p>Security cable lock</p>
Operating system	<p>Preinstalled: Windows® 10</p> <p>For developed market (ML): Windows 10 Home Value Notebook</p> <p>For Emerging Market (EM/SL):</p> <ul style="list-style-type: none"> • Windows 10 Home China Language Edition CPPP • Windows 10 Home Value Notebook • Windows 10 Home Value Notebook SEAP • FreeDos 2.0
Serviceability	End-user replaceable part: AC adapter

2 Getting to know your computer

Locating hardware

To find out what hardware is installed on your computer:

- ▲ Type `device manager` in the taskbar search box, and then select the **Device Manager** app.

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 products only).

Locating software

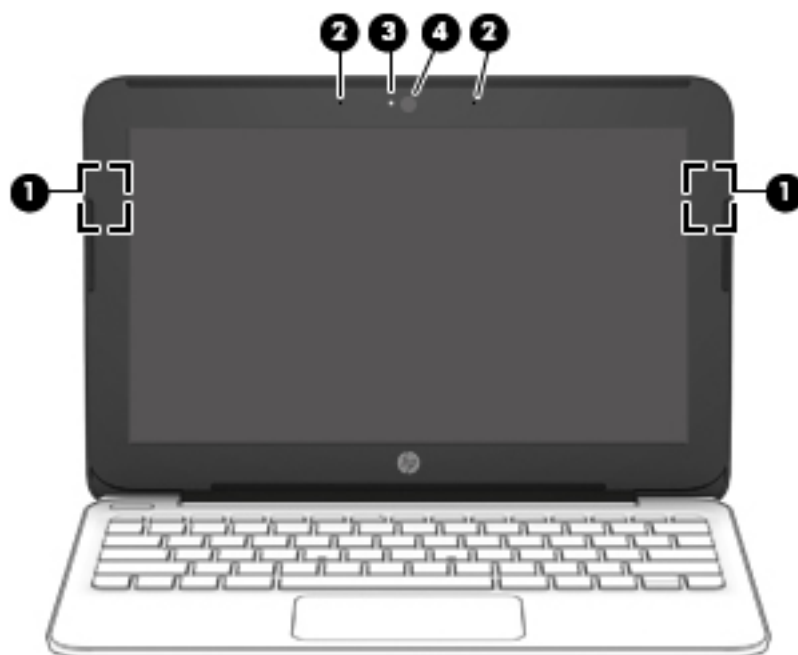
To find out what software is installed on your computer:

- ▲ Select the **Start** button, and then select **All apps**.

— or —

Right-click the **Start** button, and then select **Programs and Features**.

Display



Item	Component	Description
(1)	WLAN antennas* (right WLAN antenna on select products only)	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. To use the webcam: ▲ Type camera in the taskbar search box, and then select Camera .

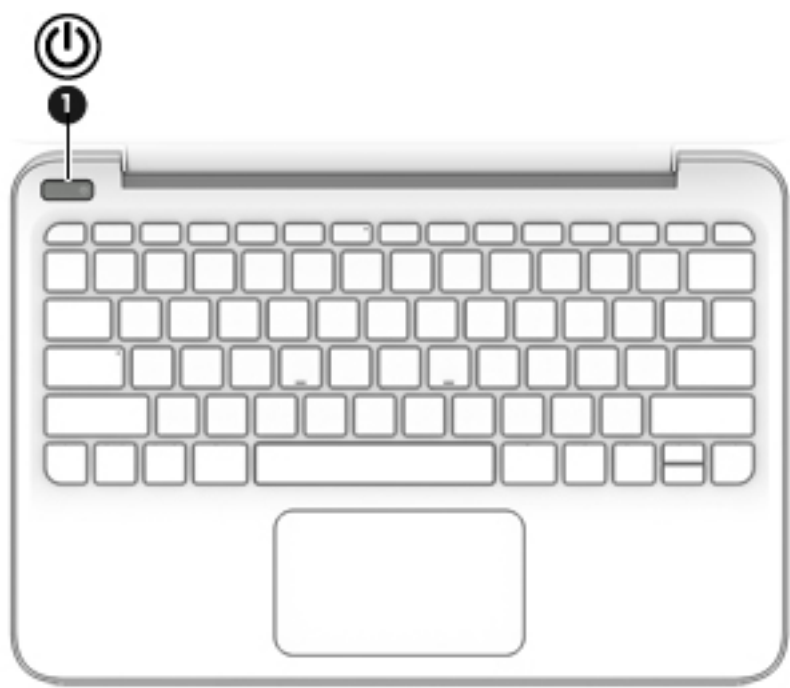
*The antennas are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennas free from obstructions.

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:

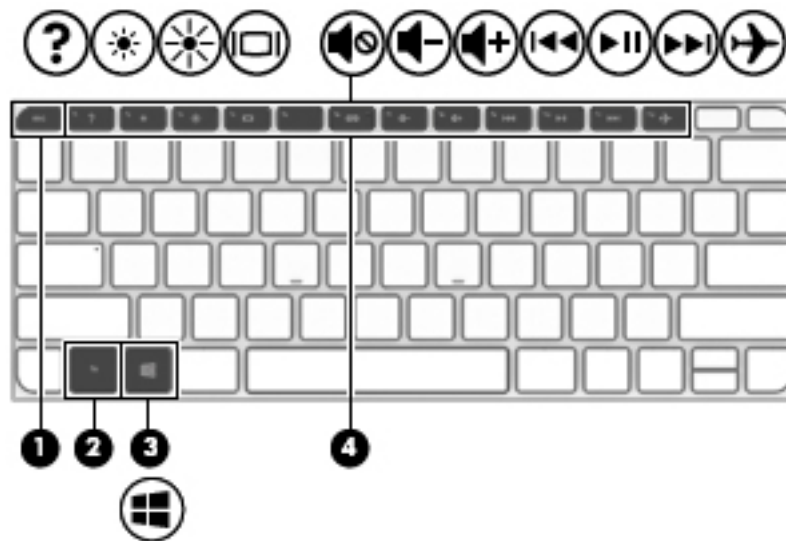
Select the **Start** button, select **All apps**, select **HP Help and Support**, and then select **HP Documentation**.

Button



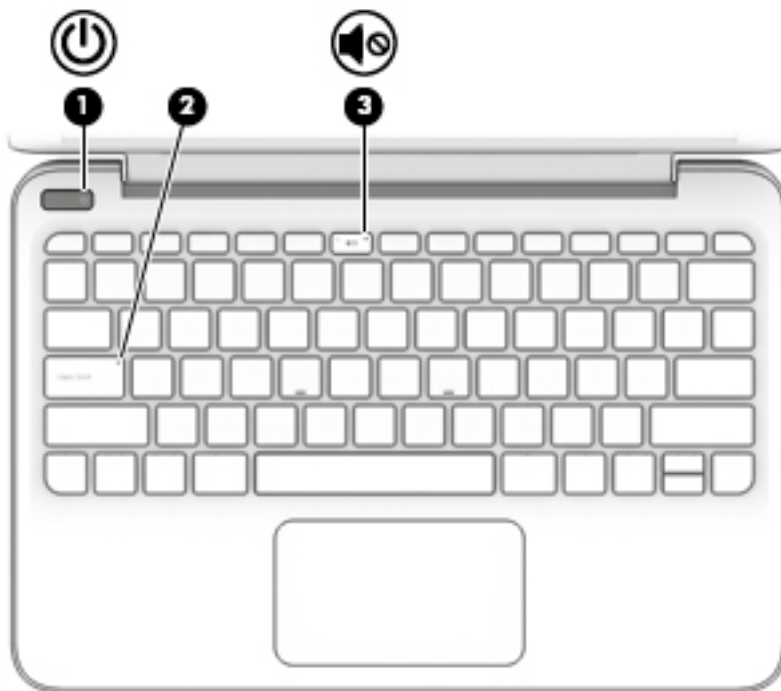
Item	Component	Description
(1)	Power button	<ul style="list-style-type: none">• When the computer is off, press the button to turn on the computer.• When the computer is on, press the button briefly to initiate Sleep.• When the computer is in the Sleep state, press the button briefly to exit Sleep.• When the computer is in Hibernation, press the button briefly to exit Hibernation. <p>CAUTION: Pressing and holding down the power button results in the loss of unsaved information.</p> <p>If the computer has stopped responding and shutdown procedures are ineffective, press and hold the power button down for at least 5 seconds to turn off the computer.</p> <p>To learn more about your power settings, see your power options.</p> <p>▲ Type <code>power</code> in the taskbar search box, and then select Power and sleep settings.</p> <p>– or –</p> <p>Right-click the Start button, and then select Power Options.</p>

Keys



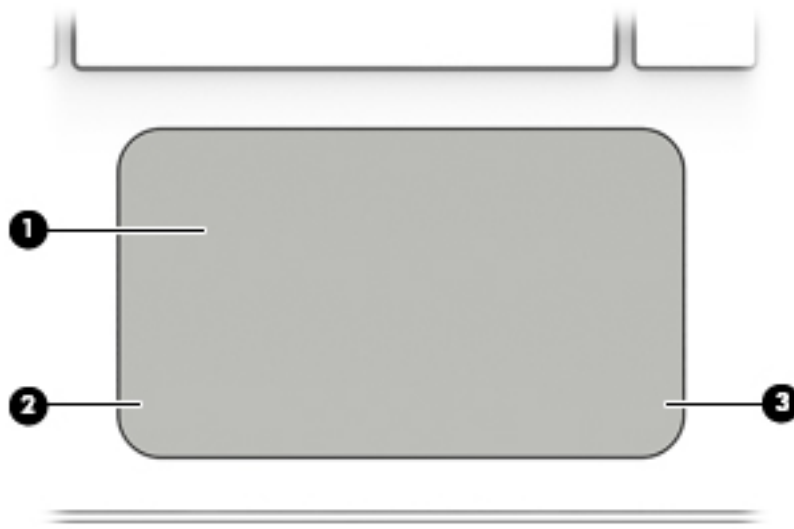
Item	Component	Description
(1)	esc key	Displays system information when pressed in combination with the fn key.
(2)	fn key	Executes frequently used system functions when pressed in combination with the esc key, action keys, or the spacebar .
(3)	Windows key	Opens the Start menu. NOTE: Pressing the Windows key again will close the Start menu.
(4)	Action keys	Execute frequently used system functions.

Lights



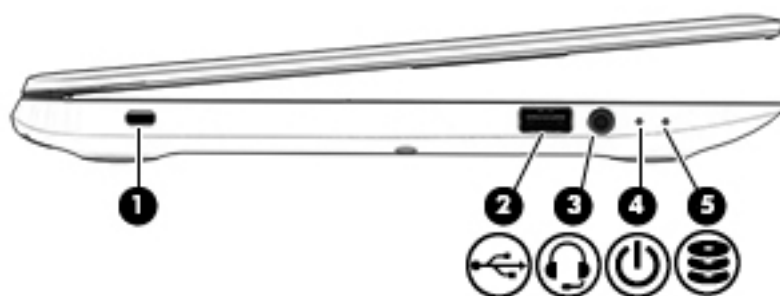
Item	Component	Description
(1)	Power light	<ul style="list-style-type: none">On: The computer is on.Blinking: The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other unneeded components.Off: The computer is off or in Hibernation. Hibernation is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

TouchPad



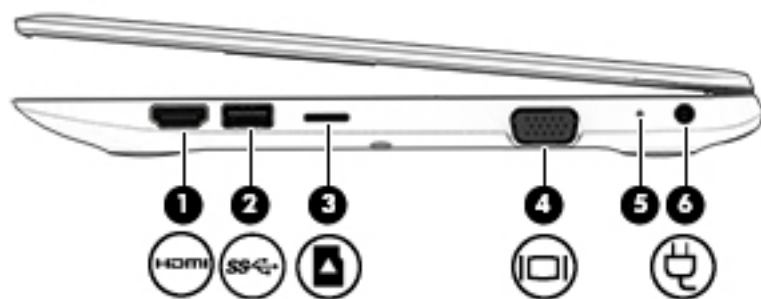
Item	Component	Description
(1)	TouchPad zone	Reads your finger gestures to move the pointer or activate items on the screen.
(2)	Left TouchPad button	Functions like the left button on an external mouse.
(3)	Right TouchPad button	Functions like the right button on an external mouse.

Left side



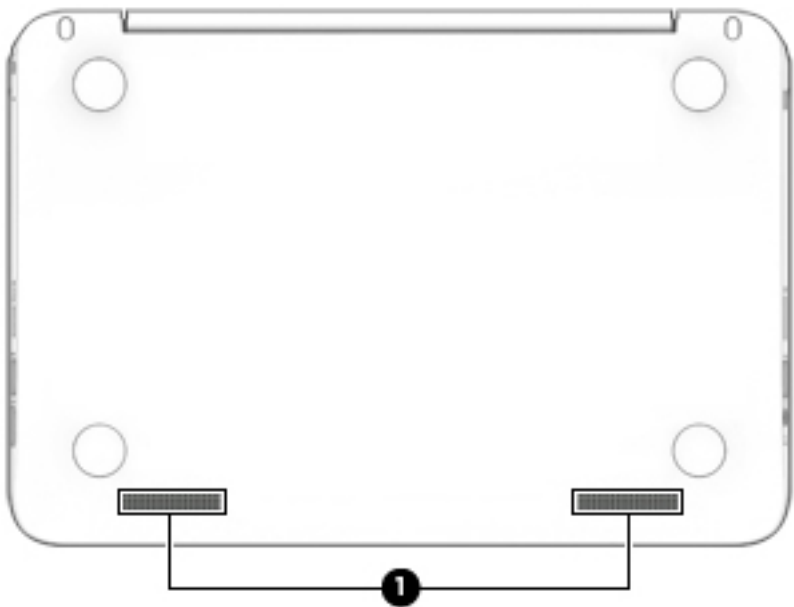
Item	Component	Description
(1)	Security cable slot	<p>Attaches an optional security cable to the computer.</p> <p>NOTE: The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.</p>
(2)	USB 2.0 port	<p>Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub.</p>
(3)	Audio-out (headphone)/audio-in (microphone) combo 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>
(4)	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.
(5)	Hard drive light	<p>Blinking white: The hard drive is being accessed.</p> <p>Amber: HP 3D DriveGuard has temporarily parked the hard drive.</p>

Right side



Item	Component	Description
(1)	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 HDMI device.
(2)	USB 3.0 port	Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub.
(3)	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> <ol style="list-style-type: none">1. Hold the card label-side up, with connectors facing the computer.2. Insert the card into the memory card reader, and then press 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, and then remove it from the memory card reader.
(4)	External monitor port	Connects an external VGA monitor or projector.
(5)	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.
(6)	Power connector	Connects an AC adapter.

Bottom



Item	Component	Description
(1)	Speakers (2)	Produce sound.

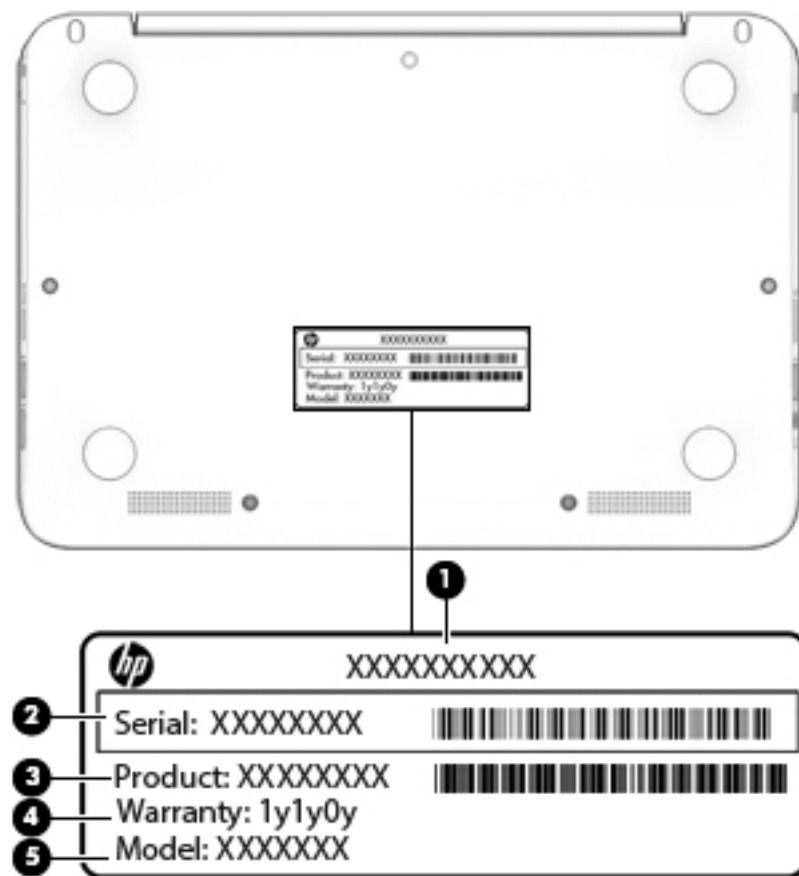
3 Illustrated parts catalog



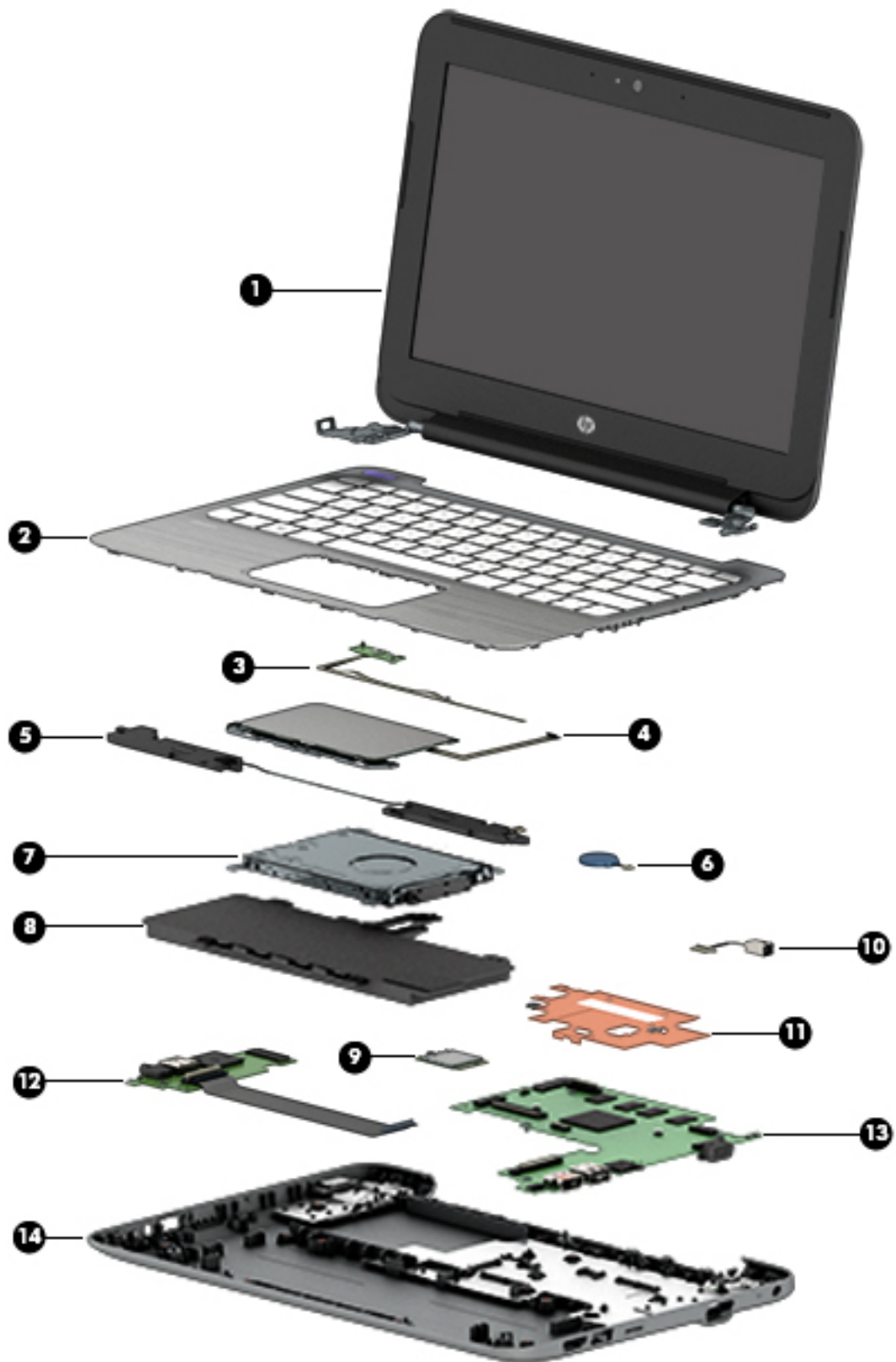
NOTE: HP continually improves and changes product parts. For complete and current information on supported parts for your computer, go to <http://partsurfer.hp.com>, select your country or region, and then follow the on-screen instructions.

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

The product name **(1)**, serial number **(2)**, product number **(3)**, warranty information **(4)**, and model number **(5)**, are located on the bottom of the computer. This information may be needed when travelling internationally or when contacting support.



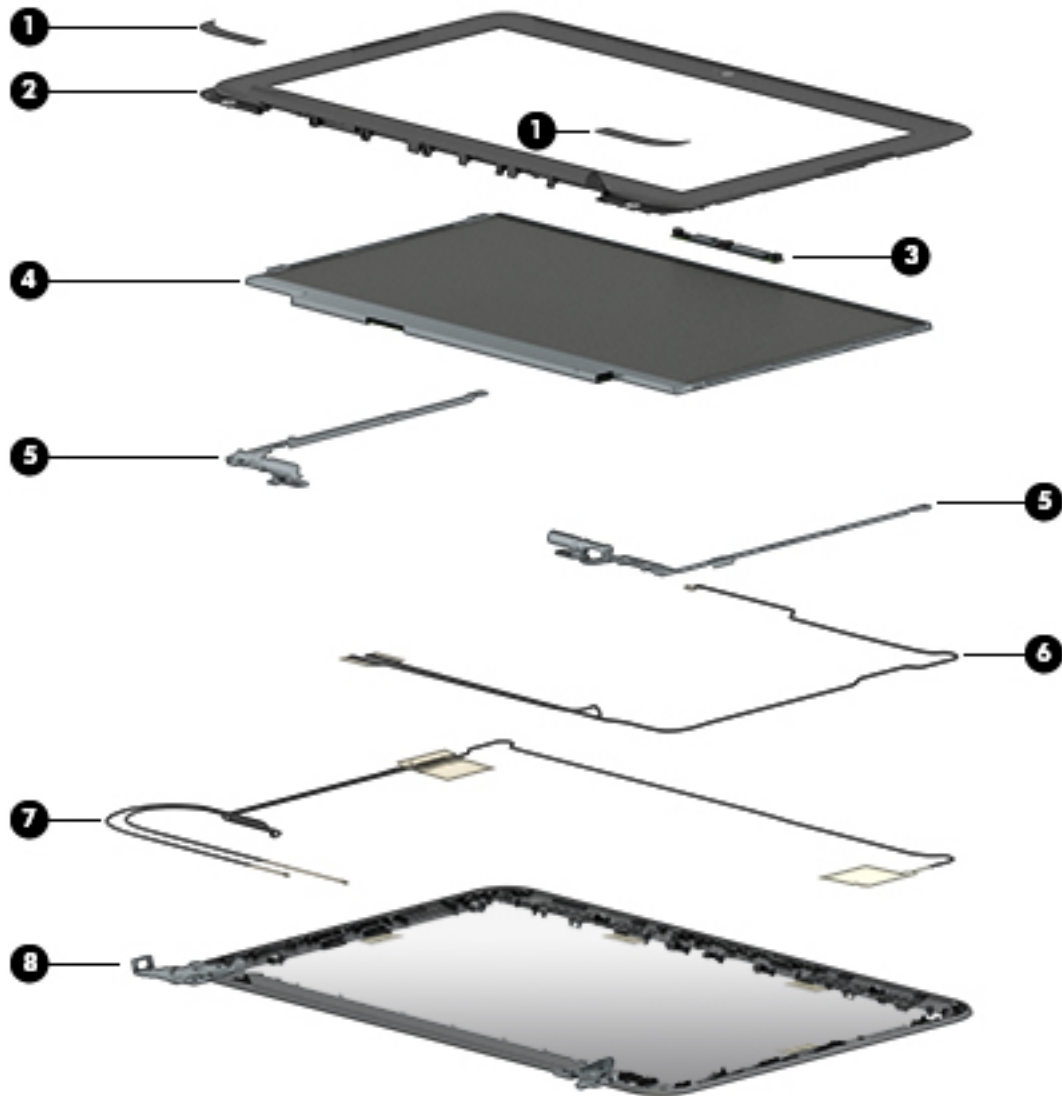
Computer major components



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 subcomponents on page 16 .	
(2)	Keyboard/top cover (includes keyboard cable):	
	For use in Japan	837608-291
	For use in South Korea	837608-AD1
	For use in Taiwan	837608-AB1
	For use in Thailand	837608-281
	For use in the United States	837608-001
(3)	Power button board NOTE: The power button board spare part kit does not include the power button board cable. The power button board cable is available using spare part number 830757-001.	830756-001
(4)	TouchPad board (includes double-sided adhesive): NOTE: The TouchPad board spare part kit does not include the TouchPad board cable. The TouchPad board cable is available using spare part number 830763-001.	837600-001
(5)	Speakers (include left and right speakers and cables)	830761-001
(6)	RTC battery (includes cable and double-sided adhesive)	830764-001
(7)	Hard drive (500-GB, 5400-rpm, SATA, 7.0-mm) NOTE: The hard drive spare part kit does not include the hard drive bracket or hard drive cable adapter. The hard drive bracket and hard drive cable adapter are included in the Hard Drive Hardware Kit, spare part number 837602-001.	778186-005
(8)	Battery (2-cell, 37-WHr, 4.96-AHr, Li-ion; includes cable)	824538-005
(9)	WLAN module:	
	Intel 3165NGWG 1 ac 1×1 + Bluetooth 4.0 LE PCIe+USB NGFF 2230	806723-005
	Realtek RTL8723BE 802.11bgn Wi-Fi Adapter	792610-005
(10)	Power connector cable	743480-002
(11)	Heat sink (includes replacement thermal material)	830781-001
(12)	Connector board (includes audio jack and USB port): NOTE: The connector board spare part kit does not include the connector board cable. The connector board cable is available using spare part number 837596-001.	830801-001
(13)	System board (includes HDMI port, microSD card reader slot, USB port, WLAN slot, and replacement thermal material):	
	Equipped with an Intel Celeron N3050 1.60-GHz (SC turbo up to 2.16-GHz) dual core processor (1600-MHz FSB, 2.0-MB L2 cache, 4.0 W), 2.0-GB of system memory, and the Windows 10 operating system	837616-601
	Equipped with an Intel Celeron N3050 1.60-GHz (SC turbo up to 2.16-GHz) dual core processor (1600-MHz FSB, 2.0-MB L2 cache, 4.0 W), 2.0-GB of system memory, and a non-Windows operating system	837616-001
(14)	Bottom cover:	
	In sunset red finish	839530-001
	In twinkle black finish	839531-001

Item	Component	Spare part number
	Rubber Kit (not illustrated, includes 2 display bezel screw covers, 4 computer feet, and 2 bottom cover screw covers):	
	In sunset red finish	837603-001
	In twinkle black finish	837604-001

Display assembly subcomponents



Item	Component	Spare part number
(1)	Display bezel screw covers: The display bezel screw covers are available in the Rubber Kits and are included in all display component spare part kits:	
	Rubber Kit in sunset red finish	837603-001
	Rubber Kit in twinkle black finish	837604-001
(2)	Display bezel	832493-001
(3)	Webcam/microphone module (includes double-sided adhesive)	832675-001
(4)	Display panel (11.6-in, HD, AntiGlare, (1366×768), SVA, LED, slim (3.0 mm))	837615-001
(5)	Display Hinge Kit (includes left and right display hinges)	832570-001
(6)	Display panel cable (includes webcam/microphone module cable)	832755-001
(7)	WLAN antenna (includes left and right WLAN cables and transceivers)	832568-001

Item	Component	Spare part number
(8)	Display back cover (includes rubber padding and shielding):	
	In sunset red finish	837598-001
	In twinkle black finish	837599-001

Hard Drive Hardware Kit



Item	Component	Spare part number
	Hard Drive Hardware Kit , includes:	778186-005
(1)	Hard drive bracket	
(2)	Hard drive cable adapter	

Miscellaneous parts

Component	Spare part number
AC adapter:	
65-W HP Smart AC adapter (non-PFC, EM, 4.5-mm)	741553-850
45-W HP Smart AC adapter (non-PFC, RC, 4.5-mm)	714635-850
HP RJ-45-to-USB dongle	539614-001
HP USB external DVD-RW Drive	747080-001
Power cord (3-pin, black, 1.00-meter):	
For use in Australia	755530-011
For use in Europe	755530-021
For use in India	755530-D61
For use in North America	755530-001
For use in the People's Republic of China	755530-AA1
For use in Taiwan	755530-AB1
For use in Thailand	755530-201
For use in South Korea	755530-AD1
For use in the United Kingdom and Singapore	755530-031
Rubber Kit (includes 2 display bezel screw covers, 4 rubber feet, and 2 rubber screw covers):	
For use on computer models in sunset red finish	837603-001
For use on computer models in twinkle black finish	837604-001
Screw Kit	830769-001

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

Plastic parts


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

Cables and connectors

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

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

Drive handling

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

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

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

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

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

Avoid dropping drives from any height onto any surface.

After removing drive, place it in a static-proof bag.

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

Avoid exposing a drive to temperature extremes or liquids.

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


Grounding guidelines

Electrostatic discharge damage

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

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

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

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


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

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

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

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

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

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

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

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

Workstation guidelines

Follow these grounding workstation guidelines:

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

Equipment guidelines

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

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


The following grounding equipment is recommended to prevent electrostatic damage:


- Antistatic tape
- Antistatic smocks, aprons, and sleeve protectors
- Conductive bins and other assembly or soldering aids
- Nonconductive foam
- Conductive computerop 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

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

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

Component replacement procedures

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


Keyboard/top cover

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

Description	Spare part number	Description	Spare part number
For use in Japan	837608-291	For use in Thailand	837608-281
For use in South Korea	837608-AD1	For use in the United States	837608-001
For use in Taiwan	837608-AB1		

Before removing the keyboard/top cover, follow these steps:

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

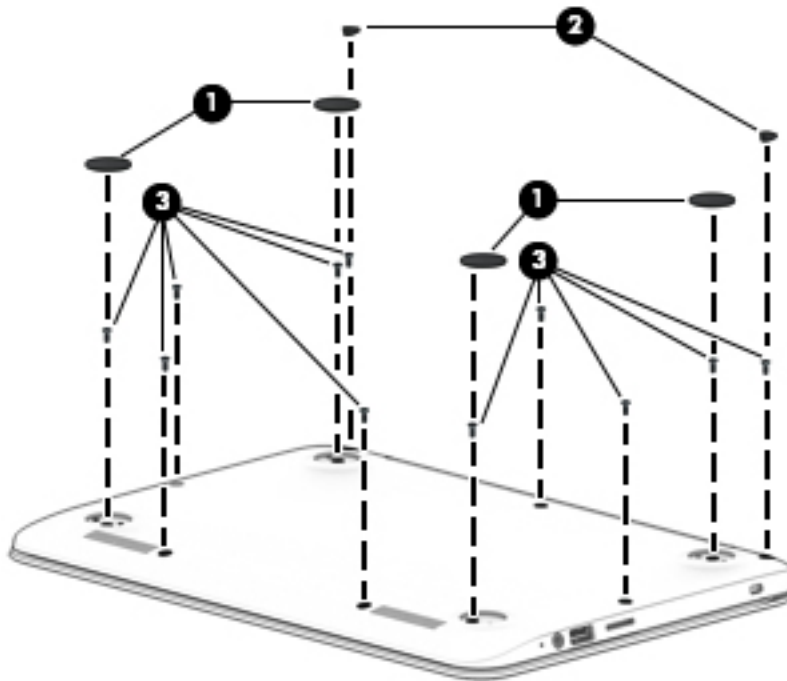
 **NOTE:** When replacing the keyboard/top cover, be sure that the TouchPad board (see [TouchPad board on page 28](#)) and power button board (see [Power button board on page 29](#)) are removed from the defective keyboard/top cover and installed on the replacement keyboard/top cover.

Remove the keyboard/top cover:

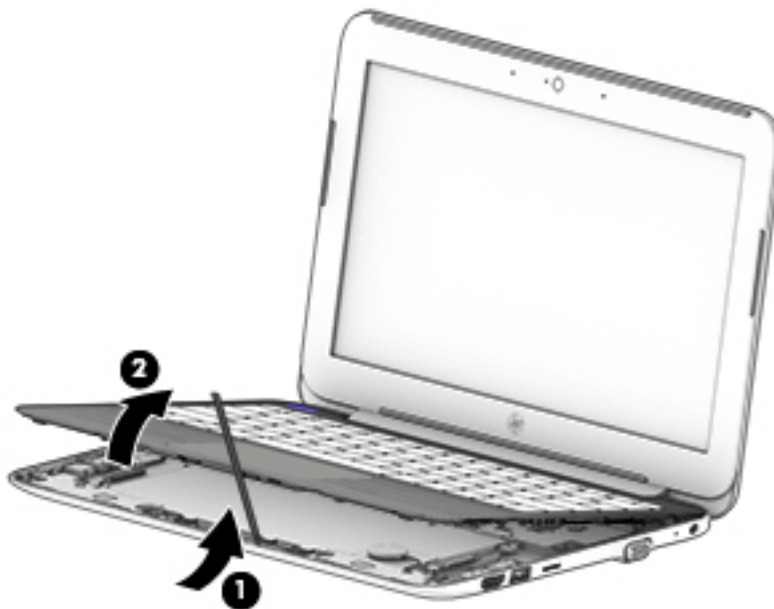
1. Remove the four computer feet **(1)**.
2. Remove the two screw covers **(2)**.

The computer feet and screw covers are included in the Rubber Kits, spare part number 837603-001 (for use on computer models in sunset red finish) and spare part number 837604-001 (for use on computer models in twinkle black finish).

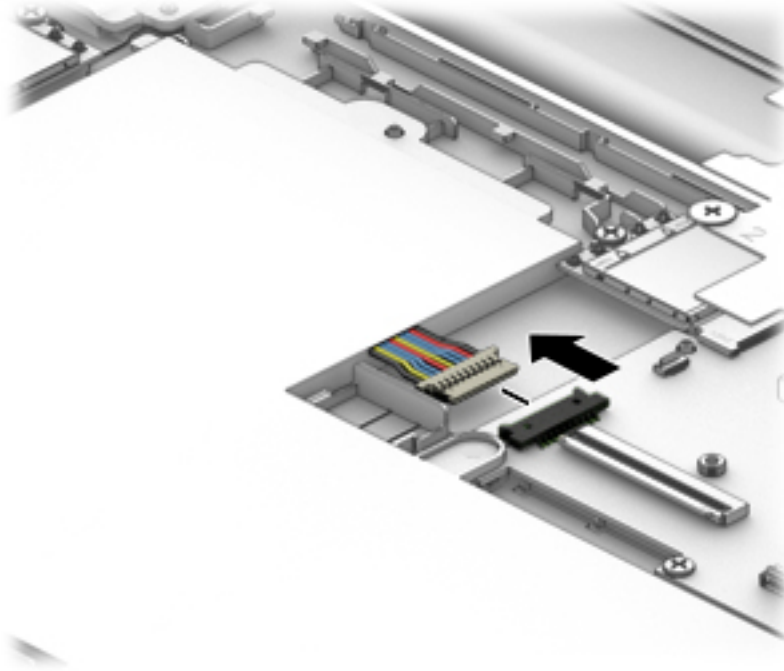
3. Remove the eleven Phillips PM2.0×5.7 screws (**3**) that secure the keyboard/top cover to the bottom cover.



4. Turn the computer right-side up with the front toward you.
5. Open the computer as far as it will open.
6. Insert a case utility tool (**1**) or similar thin, plastic tool between the front edge of the keyboard/top cover and the bottom cover.
7. Lift the front edge (**2**) of the keyboard/top cover until it separates from the front edge of the bottom cover.



8. Disconnect the battery cable from the system board.




9. Release the zero insertion force (ZIF) connector **(1)** to which the power button board cable is attached, and then disconnect the power button board cable from the system board.
10. Release the ZIF connector **(2)** to which the keyboard cable is attached, and then disconnect the keyboard cable from the system board.
11. Release the ZIF connector **(3)** to which the TouchPad board cable is attached, and then disconnect the TouchPad board cable from the system board.

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



Reverse this procedure to install the keyboard/top cover.

TouchPad board

 **NOTE:** The TouchPad board spare part kit does not include the TouchPad board cable. The TouchPad board cable is available using spare part number 830763-001.

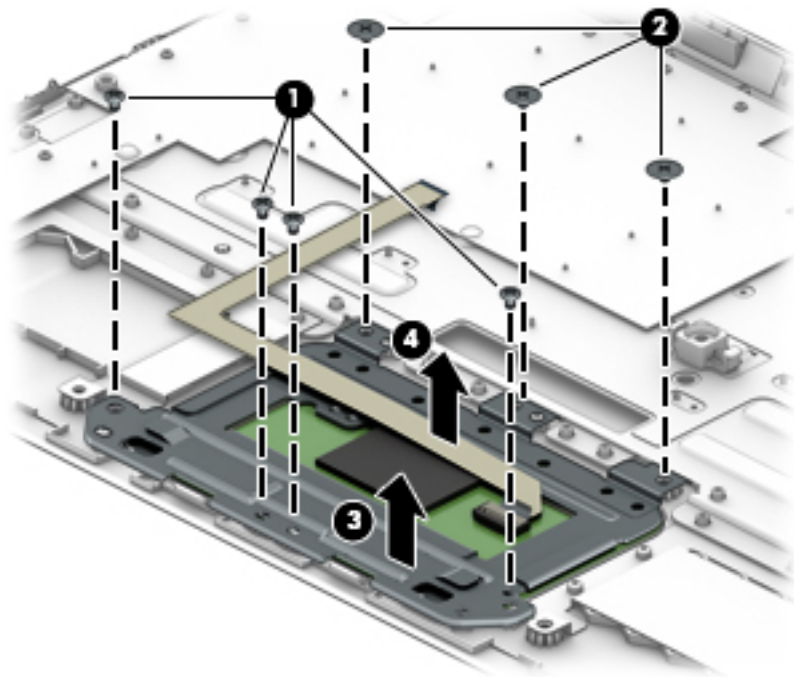
Description	Spare part number
TouchPad board	837600-001

Before removing the TouchPad 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 24](#)).

Remove the TouchPad board:

1. Turn the keyboard/top cover upside down with the front toward you.
2. Remove the four Phillips PM2.0×2.8 screws **(1)** that secure the TouchPad board bracket and TouchPad board to the top cover.
3. Remove the three Phillips PM2.0×2.2 broadhead screws **(2)** that secure the TouchPad board to the top cover.
4. Remove the TouchPad board bracket **(3)**.
5. Remove the TouchPad board **(4)** and cable.



Reverse this procedure to install the TouchPad board.

Power button board



NOTE: The power button board spare part kit does not include the power button board cable. The power button board cable is available using spare part number 830757-001.

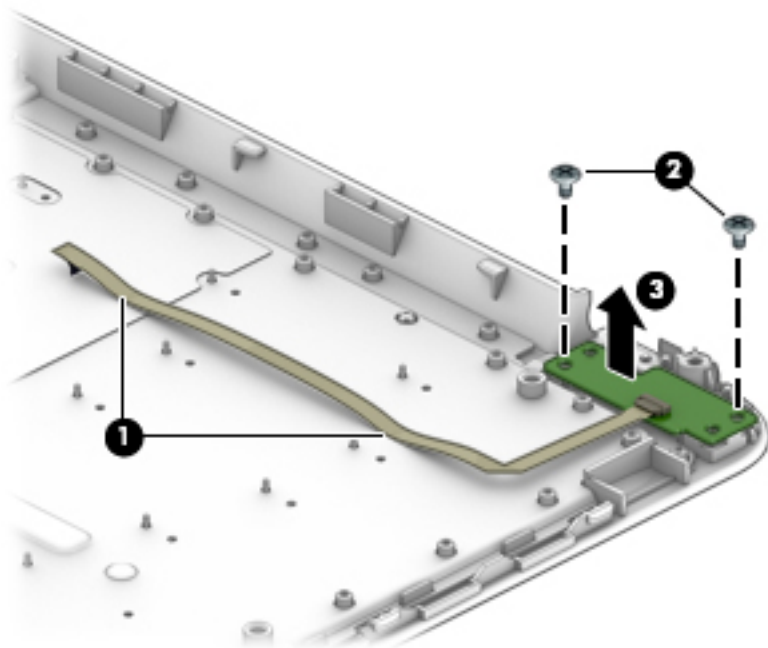
Description	Spare part number
Power button board	830756-001

Before removing the power button board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 24](#)).

Remove the power button board:

1. Turn the keyboard/top cover upside down with the front toward you.
2. Detach the power button board cable **(1)** from the keyboard/top cover. (The power button board cable is attached to the keyboard/top cover with double-sided adhesive at two locations.)
3. Remove the two Phillips PM2.0×2.8 screws **(2)** that secure the power button board to the keyboard/top cover.
4. Remove the power button board **(3)** and cable.



Reverse this procedure to install the power button board.

Speakers

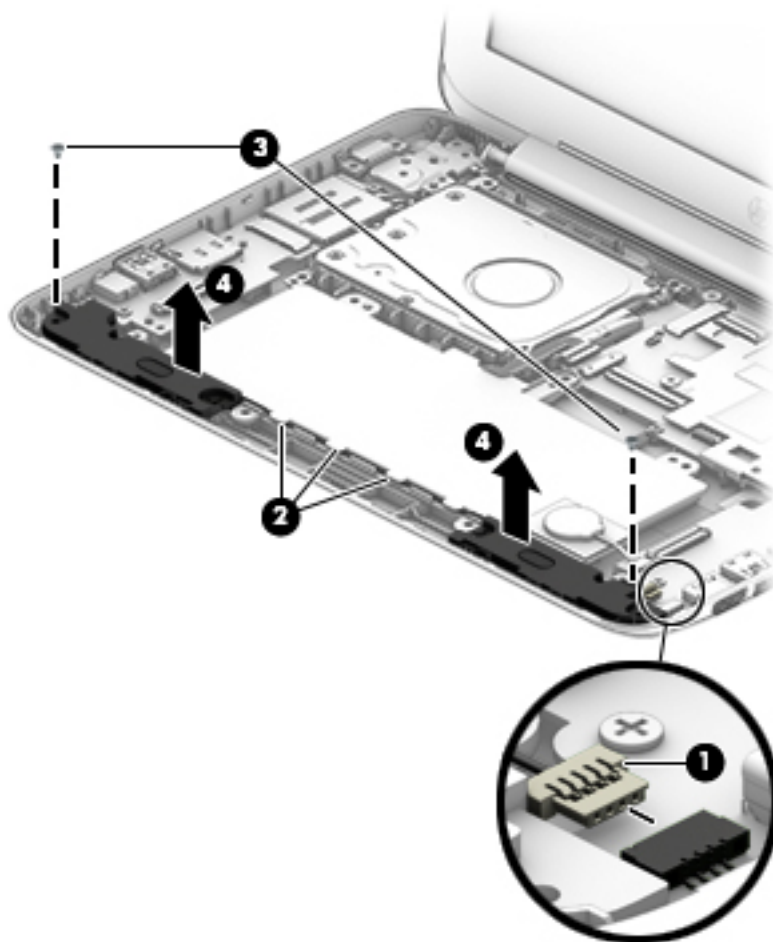
Description	Spare part number
Speakers (includes left and right speakers and cables)	830761-001

Before removing the speakers, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 24](#)).

Remove the speakers:

1. Disconnect the speaker cable from the system board **(1)**.
2. Release the speaker cables from the routing clips **(2)** built into the battery.
3. Remove the two Phillips PM2.0×3.3 screws **(3)** that secure the speakers to the bottom cover.
4. Remove the speakers **(4)**.



Reverse this procedure to install the speakers.

RTC battery

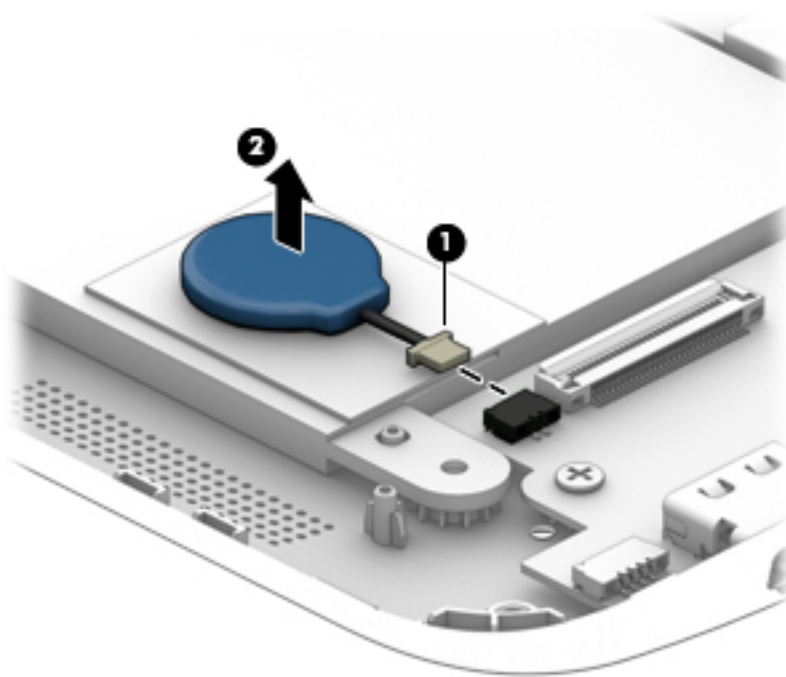
Description	Spare part number
RTC battery (includes cable and double-sided adhesive)	830764-001

Before removing the RTC battery, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 24](#)).

Remove the RTC battery:

1. Disconnect the RTC battery cable **(1)** from the system board.
2. Detach the RTC battery **(2)** from the battery. (The RTC battery is attached to the battery with double-sided adhesive.)



3. Remove the RTC battery and cable.

Reverse this procedure to install the RTC battery.

Battery

Description	Spare part number
Battery (2-cell, 37-WHr, 4.96-AHr, Li-ion; includes cable)	824538-005

Before removing the battery, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 24](#)).

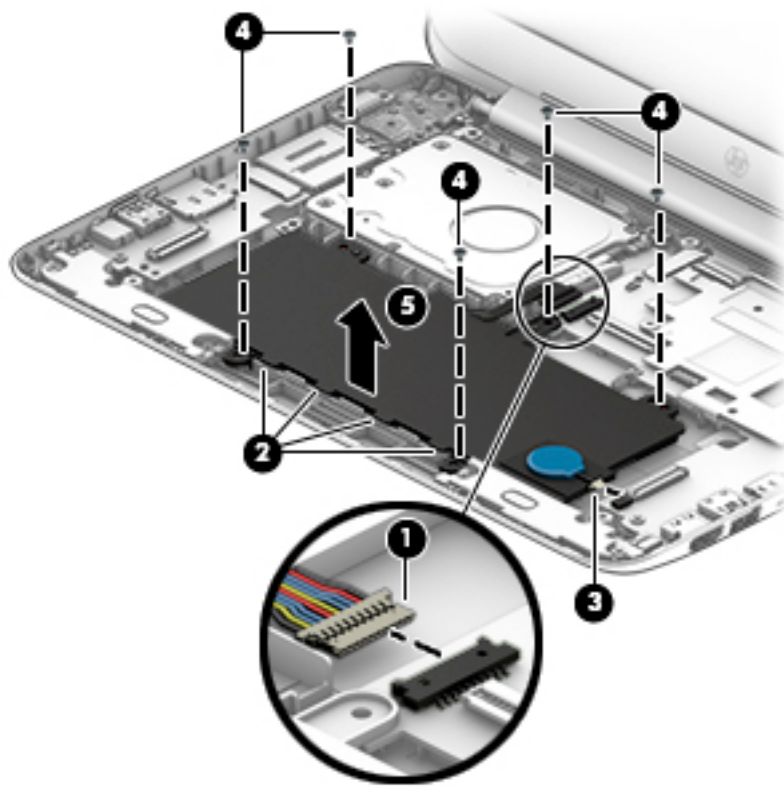


NOTE: When replacing the battery, be sure that the RTC battery (see [RTC battery on page 31](#)) is removed from the defective battery and installed on the replacement battery.

Remove the battery:

1. Disconnect the battery cable **(1)** from the system board.
2. Release the speaker cables from the routing clips **(2)** built into the battery.
3. Disconnect the RTC battery cable **(3)** from the system board.
4. Remove the six Phillips PM2.0×3.3 screws **(4)** that secure the battery to the bottom cover.
5. Slide the battery **(5)** up and back.

6. Remove the battery (6).



Reverse this procedure to install the battery.

WLAN module

Description	Spare part number
Intel 3165NGWG 1 ac 1×1 + Bluetooth 4.0 LE PCIe+USB NGFF 2230	806723-005
Realtek RTL8723BE 802.11bgn Wi-Fi 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:

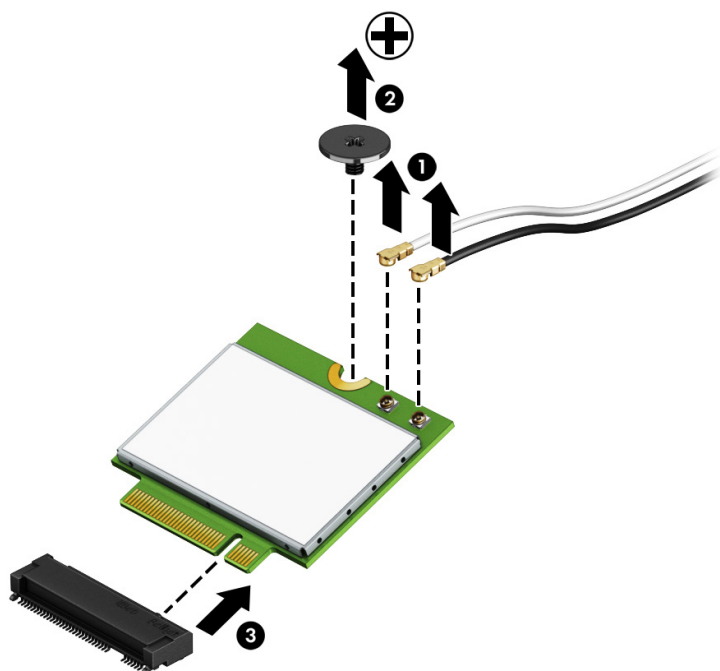
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord 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 24](#)).


Remove the WLAN module:

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

 **NOTE:** The #1/white WLAN antenna cable connects to the WLAN module #1/Main terminal. The #2/black WLAN antenna cable connects to the WLAN module #2/Aux terminal.

2. Remove the Phillips PM2.0×3.3 screw **(2)** that secures the WLAN module to the bottom cover. (The WLAN module tilts up.)
3. Remove the WLAN module **(3)** by pulling the module away from the slot at an angle.



 **NOTE:** If the WLAN antenna is not connected to the terminal on the WLAN module, a protective sleeve should be placed over the antenna connector, as shown in the following illustration.



Reverse this procedure to install the WLAN module.

Hard drive

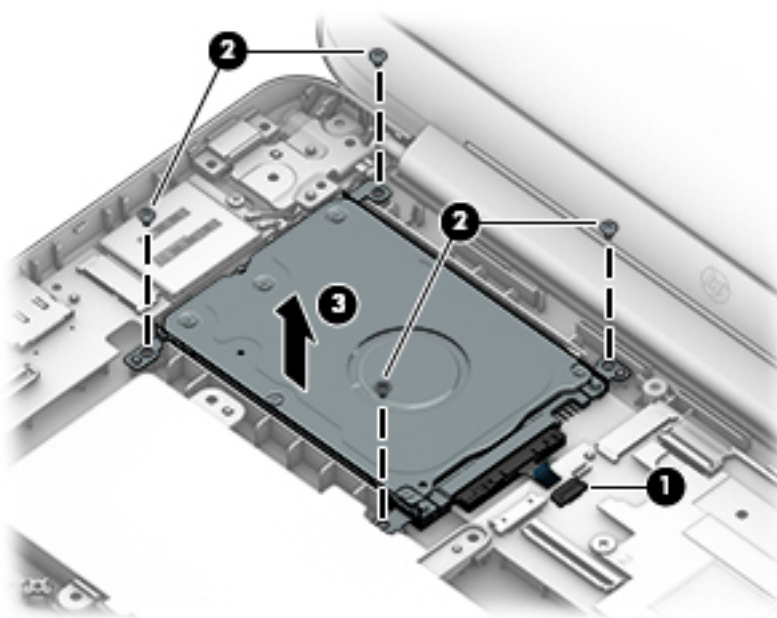
Description	Spare part number
Hard drive (500-GB, 5400-rpm, SATA, 7.0-mm)	778186-005
NOTE: The hard drive spare part kit does not include the hard drive bracket or hard drive cable adapter. The hard drive bracket and hard drive cable adapter are included in the Hard Drive Hardware Kit, spare part number 837602-001.	

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 24](#)).


Remove the hard drive:

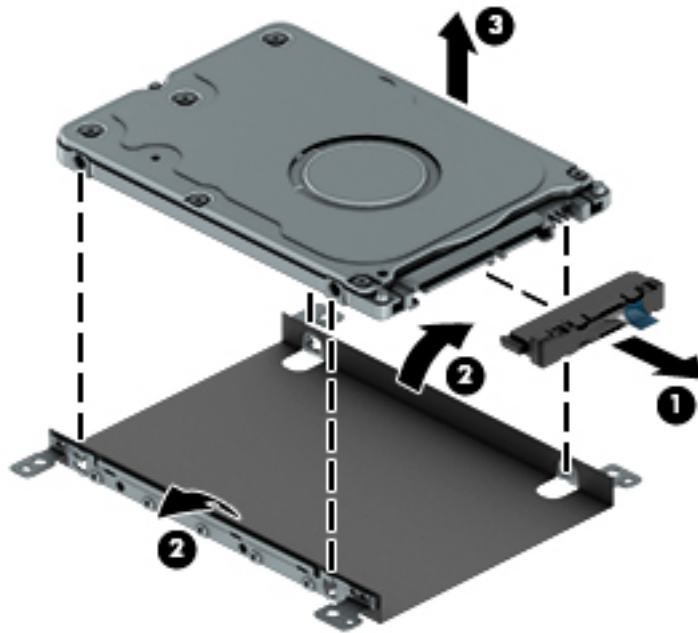
1. Release the ZIF connector **(1)** to which the hard drive connector cable is attached, and then disconnect the hard drive connector cable from the system board.
2. Remove the four Phillips PM2.0×3.0 screws **(2)** that secure the hard drive to the bottom cover.
3. Remove the hard drive **(3)**.



4. If it is necessary to disassemble the hard drive:
 - a. Disconnect the hard drive cable adapter **(1)** from the hard drive.
 - b. Spread the left and right sides of the hard drive bracket **(2)** to release the bracket from the hard drive.

- c. Remove the hard drive **(3)** from the hard drive bracket.

 **NOTE:** The hard drive bracket and the hard drive cable adapter are included in the Hard Drive Hardware Kit, spare part number 837602-001.



Reverse this procedure to reassemble and install the hard drive.

Power connector cable

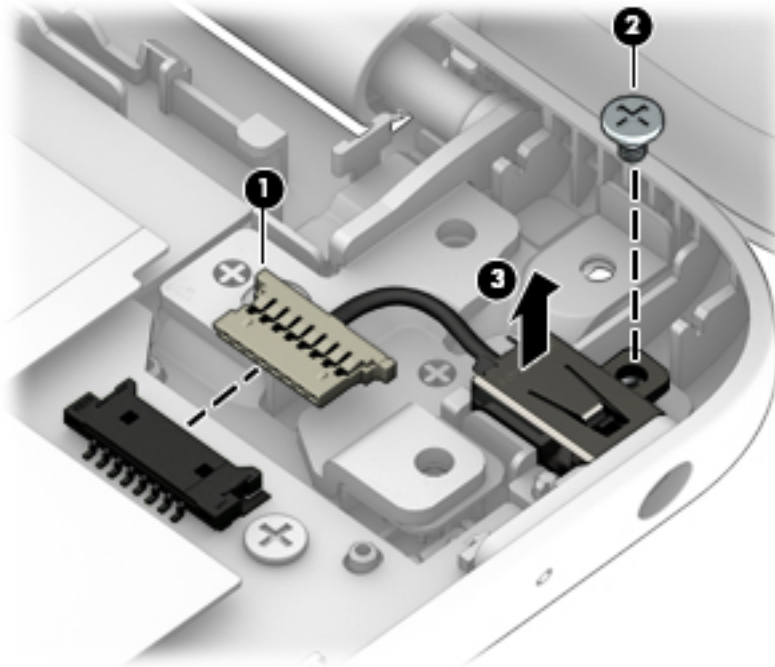
Description	Spare part number
Power connector cable	743480-002

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 24](#)).

Remove the power connector cable:

1. Disconnect the power connector cable **(1)** from the system board.
2. Remove the Phillips PM2.0×3.3 screw **(2)** that secures the power connector to the bottom cover.
3. Remove the power connector cable **(3)**.



Reverse this procedure to install the power connector cable.

Connector board



NOTE: The connector board spare part kit does not include the connector board cable. The connector board cable is available using spare part number 837596-001.

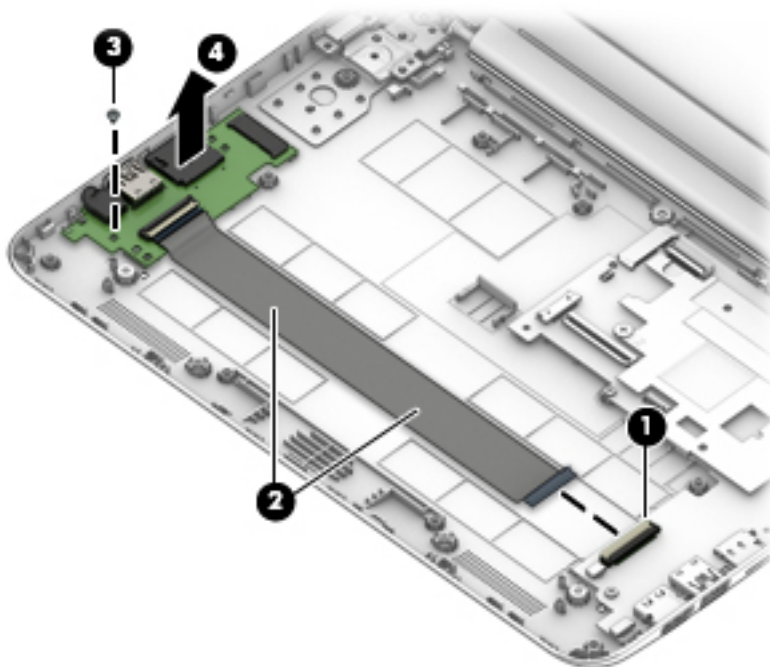
Description	Spare part number
Connector board (includes audio jack and USB port)	830801-001

Before removing the connector 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 24](#)).
5. Remove the battery (see [Battery on page 32](#)).

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 bottom cover. (The connector board cable is attached to the bottom cover with double-sided adhesive.)
3. Remove the Phillips PM2.0×3.3 screw **(3)** that secures the connector board to the bottom cover.
4. Remove the connector board **(4)**.



Reverse this procedure to install the connector board.

Heat sink

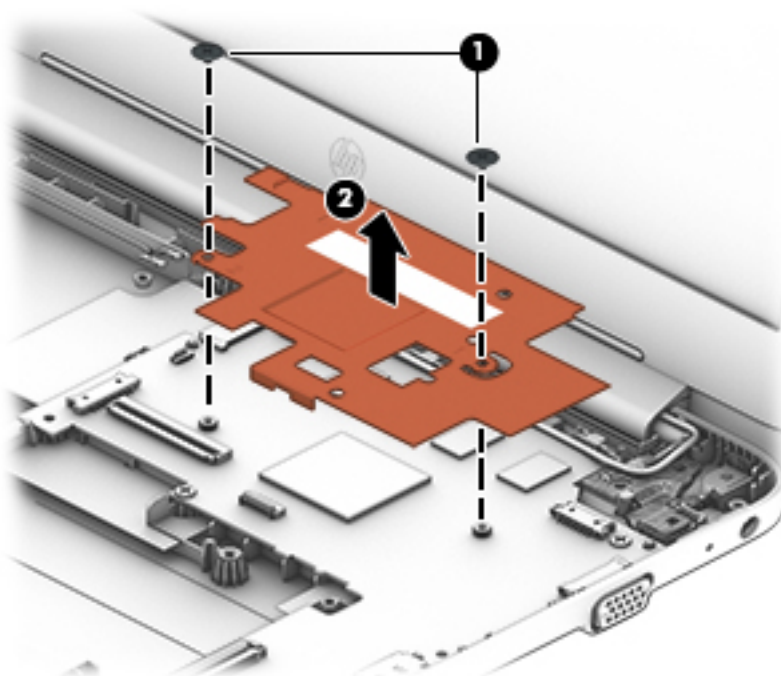
Description	Spare part number
Heat sink (includes replacement thermal material)	830781-001


Before removing the heat sink, follow these steps:

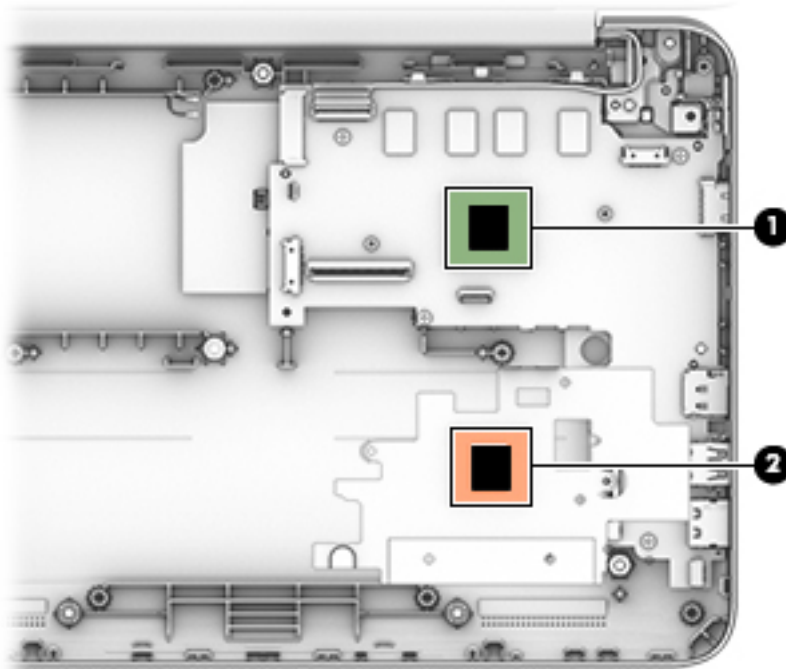
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 24](#)).
5. Remove the battery (see [Battery on page 32](#)).

Remove the heat sink:

1. Remove the two Phillips PM2.0×2.2 broadhead screws **(1)** that secure the heat sink to the system board.
2. Remove the heat sink **(2)**.



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



Reverse this procedure to install the heat sink.

System board



NOTE: The system board spare part kit includes an HDMI port, microSD card reader slot, USB port, WLAN slot, and replacement thermal material.

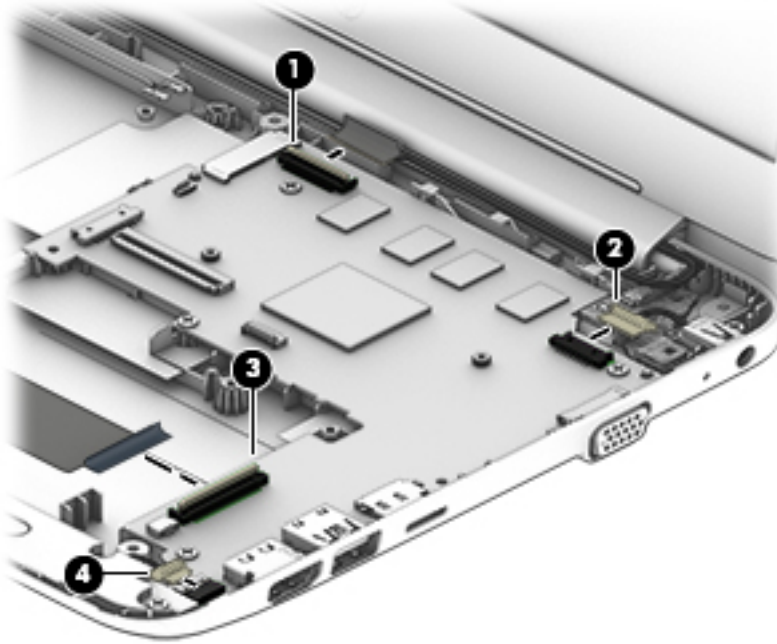
Description	Spare part number
Equipped with an Intel Celeron N3050 1.60-GHz (SC turbo up to 2.16-GHz) dual core processor (1600-MHz FSB, 2.0-MB L2 cache, 4.0 W), 2.0-GB of system memory, and the Windows 10 operating system	837616-601
Equipped with an Intel Celeron N3050 1.60-GHz (SC turbo up to 2.16-GHz) dual core processor (1600-MHz FSB, 2.0-MB L2 cache, 4.0 W), 2.0-GB of system memory, and a non-Windows operating system	837616-001

Before removing the system board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 24](#)).
5. Remove the battery (see [Battery on page 32](#)).
6. Remove the WLAN module (see [WLAN module on page 33](#)).
7. Remove the heat sink (see [Heat sink on page 39](#)).

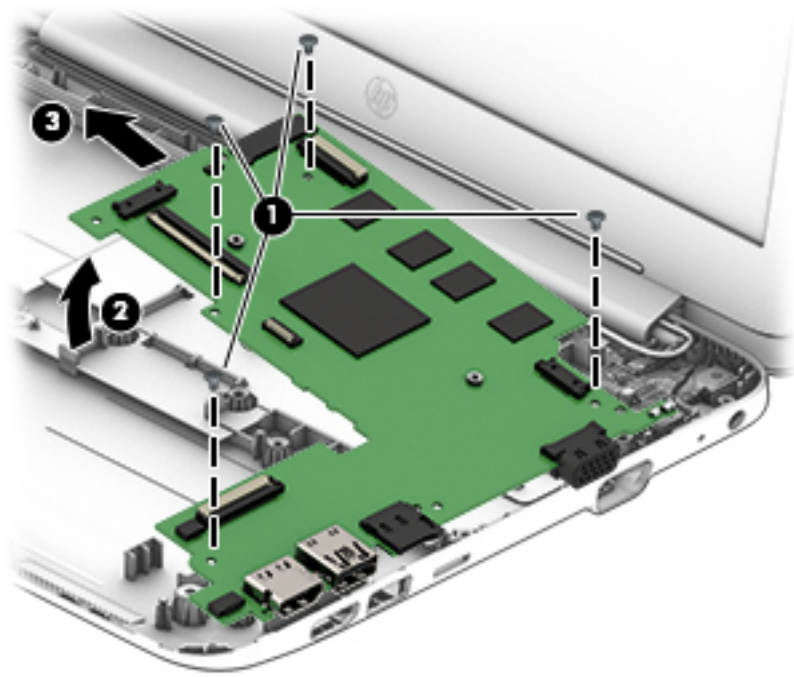
Remove the system board:

1. Release the ZIF connector **(1)** to which the display panel cable is attached, and then disconnect the display panel cable from the system board.
2. Disconnect the power connector cable **(2)** from the system board.
3. Release the ZIF connector **(3)** to which the connector board cable is attached, and then disconnect the connector board cable from the system board.
4. Disconnect the speaker cable **(4)** from the system board.




5. Remove the four Phillips PM2.0×3.3 screws **(1)** that secure the system board to the bottom cover.
6. Release the system board by lifting the left side of the system board **(2)** until it rests at an angle.

7. Remove the system board **(3)** by sliding it up and to the left at an angle.



Reverse this procedure to install the system board.

Display assembly


 **NOTE:** The display assembly is spared at the subcomponent level only. For more 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 24](#)).

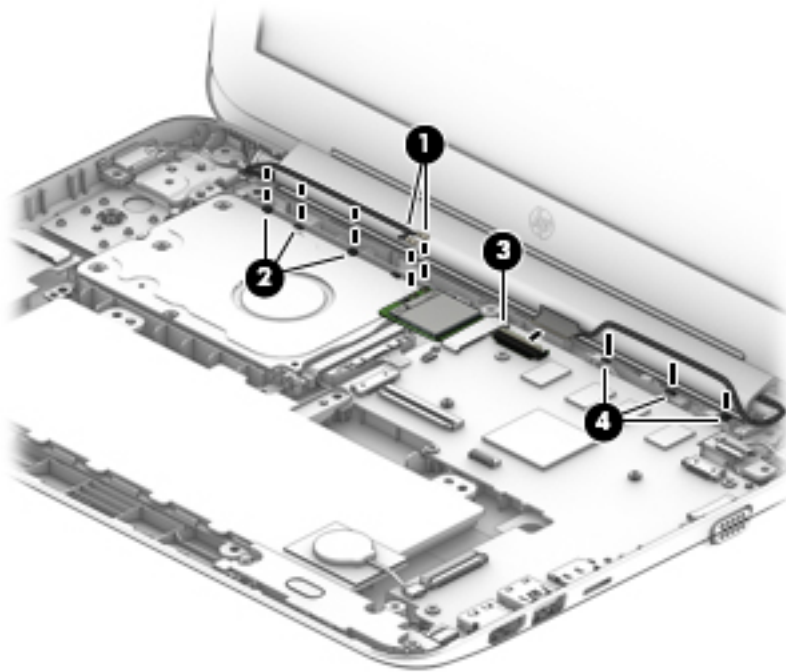
Remove the display assembly:

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

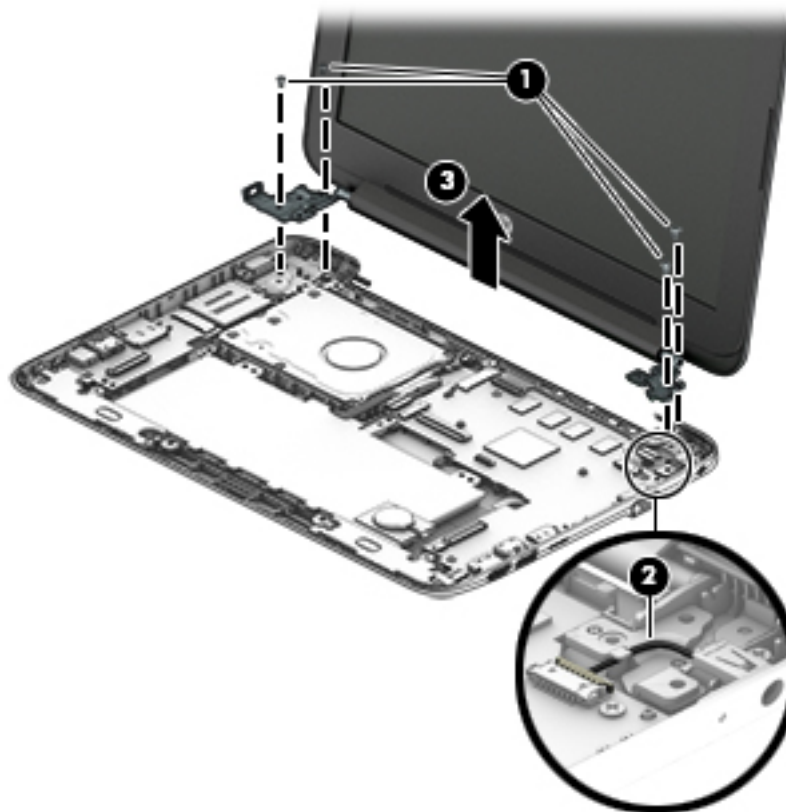
 **NOTE:** The #1/white WLAN antenna cable connects to the WLAN module #1/Main terminal. The #2/black WLAN antenna cable connects to the WLAN module #2/Aux terminal.

2. Release the WLAN antenna cables from the routing clips **(2)** built into the bottom cover.
3. Release the ZIF connector **(3)** to which the display panel cable is attached, and then disconnect the display panel cable from the system board.

4. Release the display panel cable from the routing clips **(4)** and channel built into the bottom cover.



5. Remove the four Phillips PM2.4×4.6 screws **(1)** that secure the display assembly to the bottom cover.
6. Release the power connector cable **(2)** from the right hinge area.
7. Remove the display assembly **(3)**.

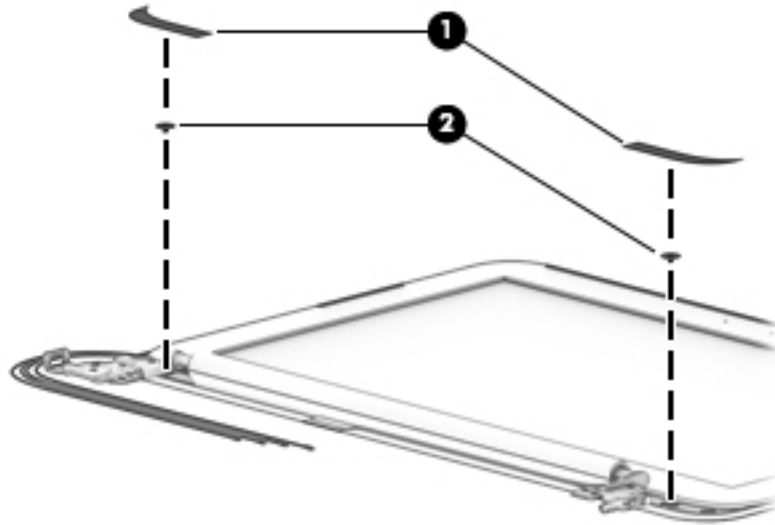


8. If it is necessary to replace the display bezel or any of the display assembly subcomponents:

- a.** Remove the two display bezel screw covers **(1)**.

The display bezel screw covers are included in the Rubber Kit, spare part numbers 837603-001 (for use on computer models in sunset red finish) and 837604-001 (for use on computer models in twinkle black finish).

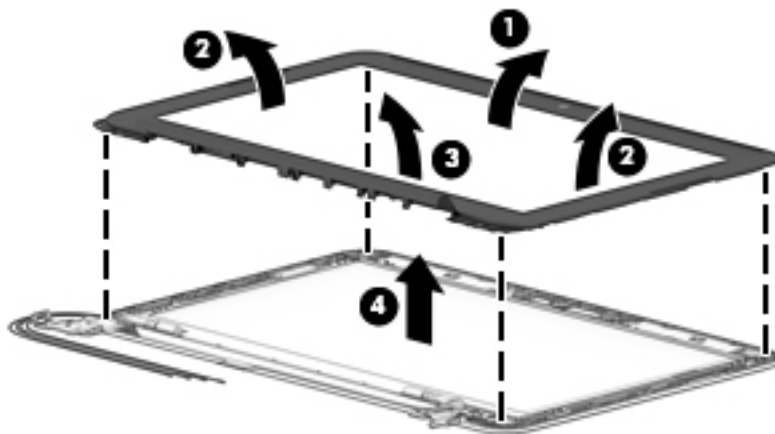
- b.** Remove the two Phillips PM2.0×2.2 broadhead screws **(2)** that secure the display bezel to the display assembly.



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

- d.** Remove the display bezel **(4)**.

The display bezel is available using spare part number 832493-001.



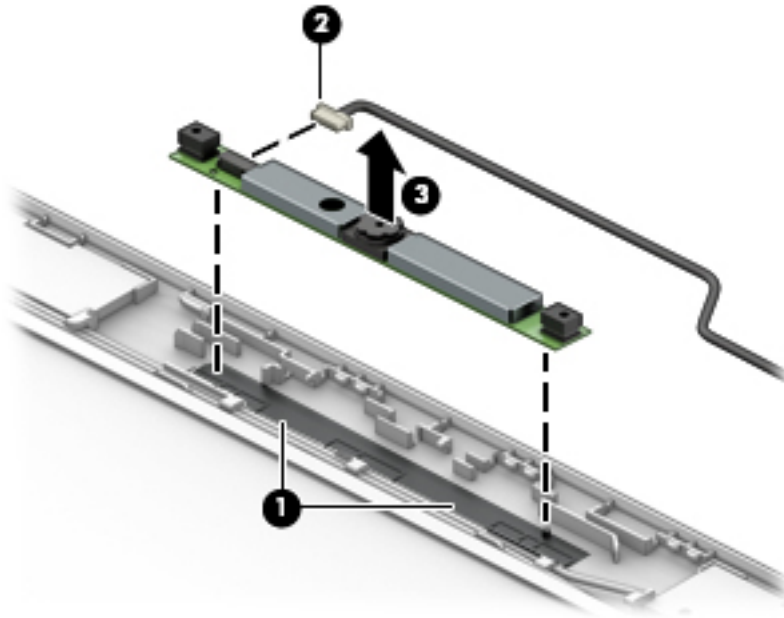
9. If it is necessary to replace the webcam/microphone module:

- a.** 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 at two locations.)

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

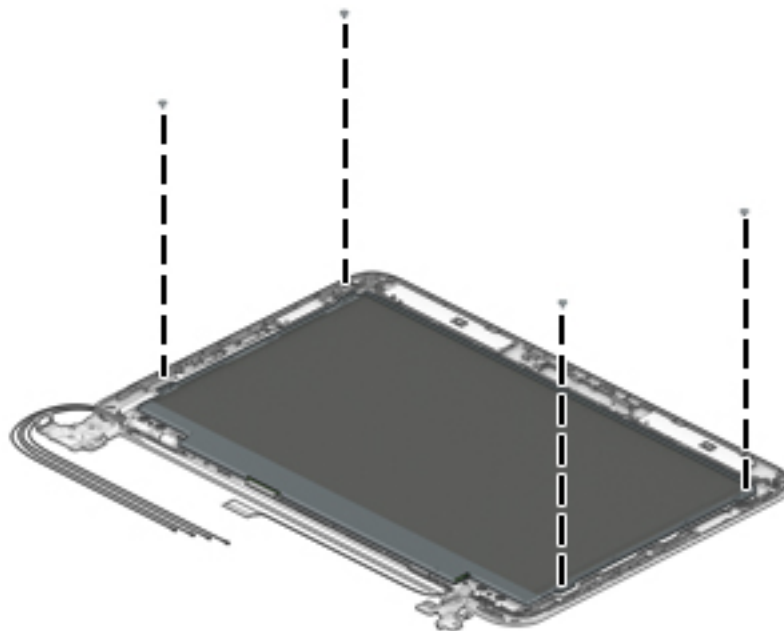
- c. Remove the webcam/microphone module (3).

The webcam/microphone module is available using spare part number 832675-001.



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

- a. Remove the four Phillips PM2.0×3.3 screws that secure the display panel to the display back cover.

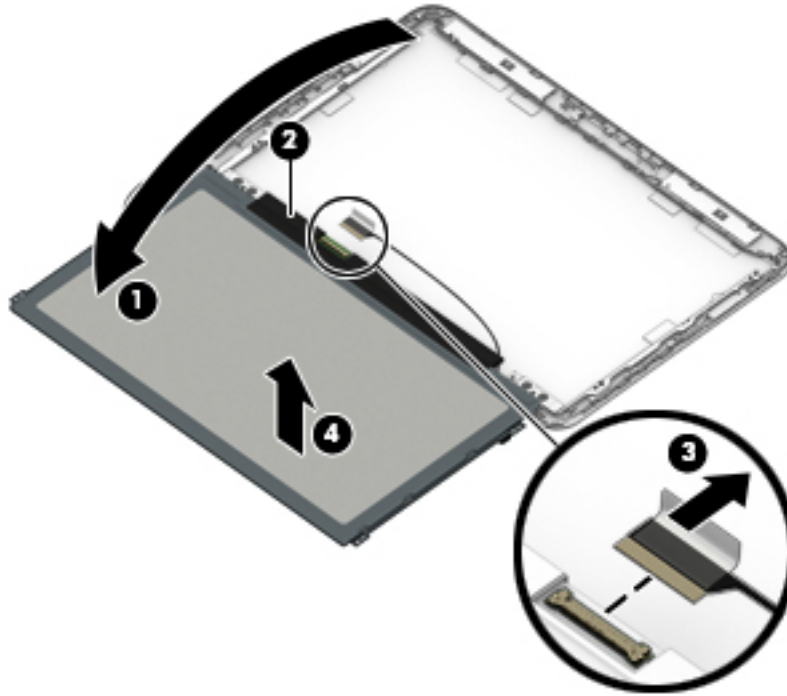


CAUTION: Before turning the display panel upside down, make sure the work surface is clear of tools, screws, and any other foreign objects. Failure to follow this caution can result in damage to the display panel.

- b. Lift the top edge of the display panel (1) and swing it up and forward until it rests upside down in front of the display back cover.

- c. Release the adhesive strip **(2)** that secures the display panel cable connector to the display panel.
- d. Disconnect the display panel cable **(3)** from the display panel.
- e. Remove the display panel **(4)**.

The display panel is available using spare part number 837615-001.

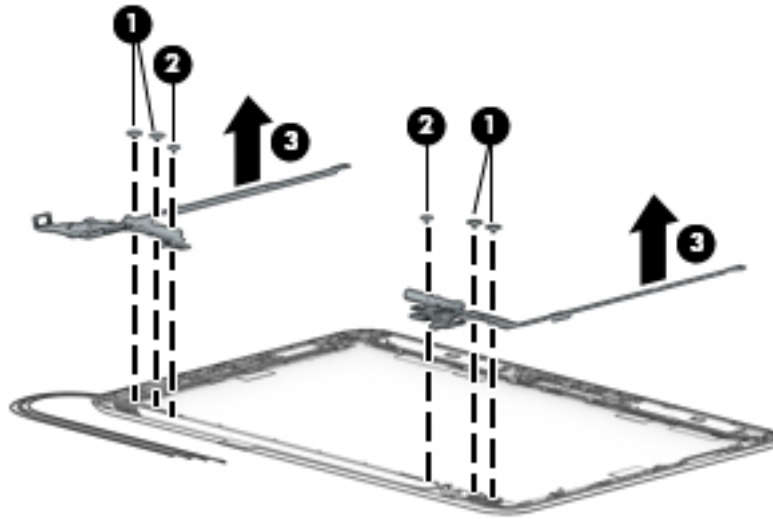


11. If it is necessary to replace the display hinges:

- a. Remove the four Phillips PM2.5×3.2 broadhead screws **(1)** that secure the display hinges to the display back cover.
- b. Remove the two Phillips PM2.0×2.9 broadhead screws **(2)** that secure the display hinges to the display back cover.

- c. Remove the display hinges (**3**).

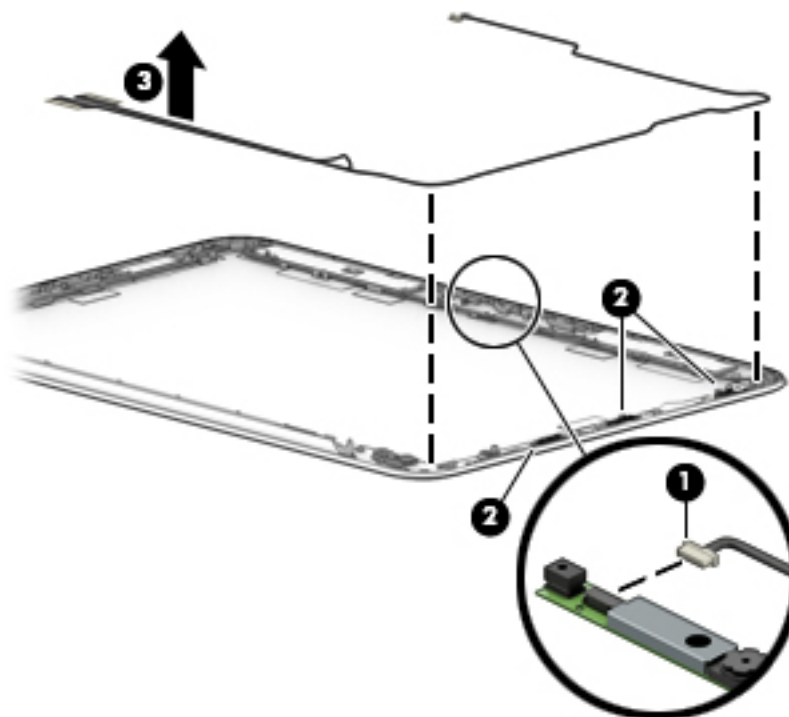
The display hinges are included in the Display Hinge Kit, spare part number 832570-001.



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

- a. Disconnect the display panel cable (**1**) from the webcam/microphone module.
- b. Release the display panel cable from the retention clips (**2**) and routing channel built into the right side of the display back cover.
- c. Remove the display panel cable (**3**).

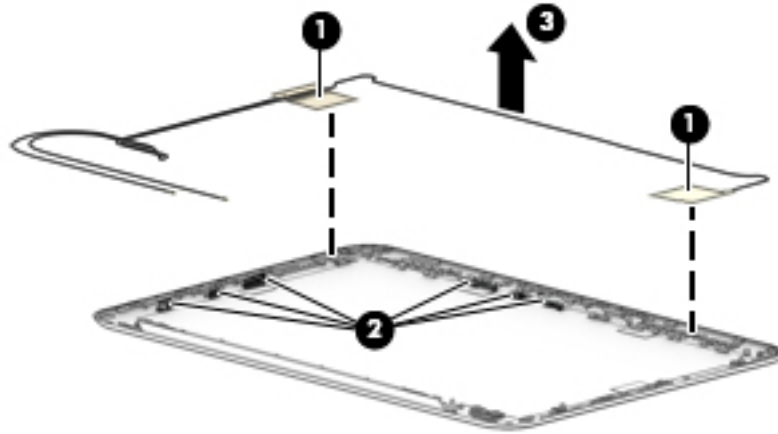
The display panel cable is available using spare part number 832755-001.



- 13. If it is necessary to replace the WLAN antenna cables and transceivers:

- a. Detach the WLAN antenna transceivers **(1)** from the display back cover. (The WLAN antenna transceivers are attached to the display back cover with double-sided adhesive.)
- b. Release the WLAN antenna cables from the clips **(2)** and routing channel built into the top and left edges of the display back cover.
- c. Remove the WLAN antenna cables and transceivers **(3)**.

The WLAN antenna cables and transceivers are available using spare part number 832568-001.



Reverse this procedure to reassemble install the display assembly.

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.



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

Starting Setup Utility (BIOS)



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



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

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

Updating Setup Utility (BIOS)

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

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

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

Determining the BIOS version

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

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

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

Click the question mark icon in the taskbar.

2. Select **My PC**, and then select **Specifications**.

– or –


- ▲ Use Setup Utility (BIOS).

To use Setup Utility (BIOS):


1. Start Setup Utility (BIOS) (see [Starting Setup Utility \(BIOS\) on page 49](#)).
2. Select **Main**, select System Information, and then make note of the BIOS version.
3. Select **Exit**, select **No**, and then follow the on-screen instructions.

To check for later BIOS versions, see [Downloading a BIOS update on page 50](#).

Downloading a BIOS update

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

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

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

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

– or –

Click the question mark icon in the taskbar.

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

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

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

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

4. Double-click the file that has an .exe extension (for example, *filename.exe*).

The BIOS installation begins.

5. Complete the installation by following the on-screen instructions.



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

Synchronizing a tablet and keyboard (select products only)


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



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

7 Using HP PC Hardware Diagnostics (UEFI)

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

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


To start HP PC Hardware Diagnostics UEFI:

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

2. Press or tap **f2**.


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

- a. Connected USB drive

 **NOTE:** To download the HP PC Hardware Diagnostics (UEFI) tool to a USB drive, see [Downloading HP PC Hardware Diagnostics \(UEFI\) to a USB device on page 52](#).

- b. Hard drive
- c. BIOS

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

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

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

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

Download the latest UEFI version:

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

Download any version of UEFI for a specific product:

1. Go to <http://www.hp.com/support>, and then select your country. The HP Support page is displayed.
2. Click **Drivers & Downloads**.
3. In the text box, enter the product name, and then click **Go**.
– or –
Click **Find Now** to let HP automatically detect your product.
4. Select your computer, and then select your operating system.
5. In the **Diagnostic** section, follow the on-screen instructions to select and download the UEFI version you want.

8 Specifications

	Metric	U.S.
Computer dimensions		
Width	30.0 cm	11.8 in
Depth	20.6 cm	8.1 in
Height	2.1 cm	0.8 in
Weight	1.3 kg	2.9 lbs
Input power		
Rating		
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 dc @ 4.62 A – 90 W	
	19.5 V dc @ 6.15 A – 120 W	
	19.5 V dc @ 7.69 A – 150 W	
The computer operates on DC power, which can be supplied by an AC or a DC power source. The AC power source must be rated at 100–240 V, 50–60 Hz. Although the computer can be powered from a standalone DC power source, it should be powered only with an AC adapter or a DC power source that is supplied and approved by HP for use with this computer.		
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 products.

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

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

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

– or –

Click the question mark icon in the taskbar.



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

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

Creating recovery media and backups

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

- Use HP Recovery Manager to create HP Recovery media after you successfully set up the computer. This step creates a backup of the HP Recovery partition on the computer. The backup can be used to reinstall the original operating system in cases where the hard drive is corrupted or has been replaced. For information on creating recovery media, see [Creating HP Recovery media \(select products only\) on page 55](#). For information on the recovery options that are available using the recovery media, see [Using Windows tools on page 56](#).
- Use Windows tools to create system restore points and create backups of personal information.

For more information, see [Recovering using HP Recovery Manager on page 57](#).



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

Creating HP Recovery media (select products only)

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

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

You can use Windows tools to create system restore points and create backups of personal information, see [Using Windows tools on page 56](#).

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

To create HP Recovery media:



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

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

If you ever need to recover the system, see [Recovering using HP Recovery Manager on page 57](#).

Using Windows tools

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



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

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

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

Restore and recovery

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



IMPORTANT: Not all methods are available on all products.

- Windows offers several options for restoring from backup, refreshing the computer, and resetting the computer to its original state. For more information see the Get started app.
 - ▲ Select the **Start** button, and then select the **Get started** app.
- If you need to correct a problem with a preinstalled application or driver, use the Reinstall drivers and/or applications option (select products only) of HP Recovery Manager to reinstall the individual application or driver.
 - ▲ Type `recovery` in the taskbar search box, select **HP Recovery Manager**, select **Reinstall drivers and/or applications**, and then follow the on-screen instructions.
- If you want to recover the Windows partition to original factory content, you can choose the System Recovery option from the HP Recovery partition (select products only) or use the HP Recovery media. For more information, see [Recovering using HP Recovery Manager on page 57](#). If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 55](#).
- On select products, if you want to recover the computer's original factory partition and content, or if you have replaced the hard drive, you can use the Factory Reset option of HP Recovery media. For more information, see [Recovering using HP Recovery Manager on page 57](#).
- On select products, if you want to remove the recovery partition to reclaim hard drive space, HP Recovery Manager offers the Remove Recovery Partition option.

For more information, see [Removing the HP Recovery partition \(select products only\) on page 60](#).

Recovering using HP Recovery Manager

HP Recovery Manager software allows you to recover the computer to its original factory state by using the HP Recovery media that you either created or that you obtained from HP, or by using the HP Recovery partition (select products only). If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 55](#).

What you need to know before you get started

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



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

- HP Recovery media must be used if the computer hard drive fails. If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 55](#).
- To use the Factory Reset option (select products only), you must use HP Recovery media. If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 55](#).
- If your computer does not allow the creation of HP Recovery media or if the HP Recovery media does not work, you can obtain recovery media for your system from support. See the *Worldwide Telephone Numbers* booklet included with the computer. You can also find contact information from the HP

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



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

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



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

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

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

Using the HP Recovery partition (select products only)

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

To start HP Recovery Manager from the HP Recovery partition:



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

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

- or -

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

For tablets without keyboards:

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

- or -

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

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

Using HP Recovery media to recover

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

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



NOTE: If the computer does not automatically restart in HP Recovery Manager, change the computer boot order. See [Changing the computer boot order on page 59](#).

3. Follow the on-screen instructions.

Changing the computer boot order

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

To change the boot order:



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

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

For computers or tablets with keyboards attached:

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

For tablets without keyboards:

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

- or -

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

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

Removing the HP Recovery partition (select products only)

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



IMPORTANT: After you remove the HP Recovery partition, you will not be able to perform System Recovery or create HP recovery media from the HP Recovery partition. So before you remove the Recovery partition, create HP Recovery media; see [Creating HP Recovery media \(select products only\) on page 55](#).



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

Follow these steps to remove the HP Recovery partition:

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

10 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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