



# HP Spectre x2 12 Detachable PC (model numbers 12-c000 through 12-c099)

**Maintenance and Service Guide**  
**IMPORTANT! This document is intended for HP authorized service providers only.**

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**Product notice**


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





## Safety warning notice

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

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# 1 Product description

Category	Description
<b>Product Name</b>	HP Spectre x2 12 Detachable PC (model numbers 12-c000 through 12-c099)
<b>Processors</b>	Intel® Core™ i7-7560U 2.40-GHz (turbo up to 3.80-GHz) dual core processor (1866-MHz FSB, 4.0-GB L3 cache, 15-W)  Intel Core i5-7260U 2.20-GHz (turbo up to 3.40-GHz) dual core processor (1866-MHz FSB, 4.0-GB L3 cache, 15-W)
<b>Chipset</b>	Integrated soldered-on-circuit (SoC)
<b>Graphics</b>	<b>Internal graphics:</b> Intel Iris Graphics Plus 640
<b>Panel</b>	12.3-in, 3K2K, white light-emitting (WLED), BrightView (3000×2000), uslim-flat (1.95-mm), UWVA, eDP+PSR, 3:2 ultra wide aspect ratio, flush-glass panel, TouchScreen display assembly  Support for Intel Precise Stylus  Support for Active Stylus writing  Windows Ink certification
<b>Memory</b>	On-board system memory, non-customer-accessible/non-upgradable  Support for LPDDR3-1866 dual channel  Supports up to 16-GB of system memory  Supports the following configurations:  16384-MB (256M×32×4×4 pieces) FBGA178  8192-MB (256M×16×4×4 pieces) FBGA178
<b>Storage</b>	Support for the following Peripheral Component Interconnect Express (PCIe-3×4), Non-Volatile Memory Express (NVMe) / SATA M.2, 2280 SuperSpeed (SS) solid-state drives with triple-level cell <ul style="list-style-type: none"><li>• 1-TB</li><li>• 512-GB</li><li>• 360-GB</li><li>• 256-GB</li><li>• 128-GB</li></ul>
<b>Optical drive</b>	HP external DVD±RW DL SuperMulti Drive
<b>Audio and video</b>	<b>Audio:</b>  Bang & Olufsen  Support for dual speakers  Support for HP Audio Boost  <b>Microphones:</b>  Enable HP Noise Cancellation  Support for Voice Recognition  <b>Video:</b>

Category	Description
<b>Audio and video</b> <i>(continued)</i>	<p>HP front-facing infrared camera: MIPI, with infrared LED, and infrared VGA sensor</p> <p>HP front-facing Wide Vision camera: 5-MP, MIPI, BSI sensor, f2.0, 88° WFOV, fixed focus (2592×1944)</p> <p>HP rear-facing camera: 13-MP, MIPI, BSI sensor, f2.0, auto focus (4208×3210)</p>
<b>Sensors</b>	<ul style="list-style-type: none"> <li>• Accelerometer</li> <li>• Ambient light sensor</li> <li>• Digital compass</li> <li>• Gyroscope</li> </ul>
<b>Wireless</b>	<p>Integrated wireless local area network (WLAN) options by way of wireless module incorporated onto system board</p> <p>Dual WLANs antenna built into tablet</p> <p>Integrated wireless personal area network (PAN) supported by Bluetooth® 4.2 combo card</p> <p>Support for the following WLAN format: Intel Dual band wireless-AC 8265 802.11AC 2×2 WiFi + Bluetooth 4.2 Combo Adapter (non-vPro)</p> <p>Compatible with Miracast-certified devices</p> <p>WiFi SAR enabled in BIOS</p>
<b>External media cards</b>	Micro-Secure Digital (SD®) media reader slot
<b>Ports</b>	<ul style="list-style-type: none"> <li>• Audio-out (headphone)/audio-in (microphone) combo jack</li> <li>• HDMI v1.4 supporting up to 1920×1080 @ 60Hz</li> <li>• POGO-pin docking connector</li> <li>• USB 3.1 Generation 1 ports (2)</li> </ul>
<b>Keyboard/pointing devices</b>	<p>Soft cover, backlit keyboard in dark ash finish</p> <p>TouchPad requirements:</p> <ul style="list-style-type: none"> <li>• MultiTouch gestures enabled</li> <li>• Support for Modern TrackPad gestures</li> <li>• Taps enabled as default</li> </ul>
<b>Power requirements</b>	<p>Support for a 4-cell, 41-WHr, 2.7-AHr, Li-ion battery</p> <p>Support for a 65-W, USB Type-C, 3-pin, non-PFC, AC adapter</p> <p>Support for a 1.00-m power cord with a C5 connector in 6 countries/regions.</p>
<b>Security</b>	Support for Trusted Platform Module (TPM) 2.0
<b>Operating system</b>	<p><b>Preinstalled:</b> Windows 10 and Windows 10 Professional</p> <p><b>For developed market (ML):</b> Windows 10 Home ML and Windows 10 Home High-End ML</p> <p><b>For emerging market (EM/SL):</b></p> <ul style="list-style-type: none"> <li>• Windows 10 Home EM/SL</li> <li>• Windows 10 Home High-End EM/SL</li> <li>• CPPP Windows 10 Home China Language Edition</li> <li>• SEAP Windows 10 Home Single Language Edition</li> </ul>

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<b>Category</b>	<b>Description</b>
<b>Operating system</b> <i>(continued)</i>	<ul style="list-style-type: none"><li>• SEAP Windows 10 Home High-End</li></ul>
<b>Serviceability</b>	<b>End user replaceable part:</b> AC adapter and kickstand

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## 2 Getting to know your computer

### Locating hardware

To find out what hardware is installed on the computer:

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

A list displays all the devices installed on the computer.

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

### Locating software

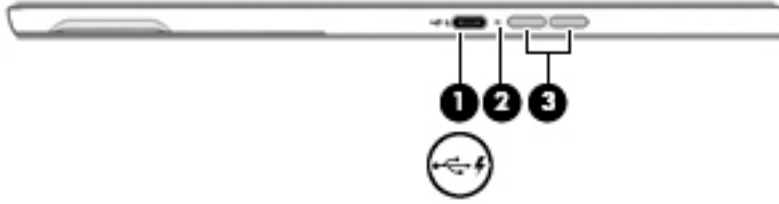
To find out what software is installed on your computer:


- ▲ Select the **Start** button.

– or –

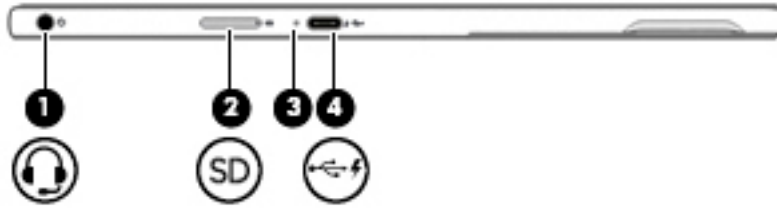
Right-click the **Start** button, and then select **Programs and Features**.




## Right side



Item	Icon	Component	Description
(1)		USB Type-C power connector and charging port	<p>Connects an AC adapter that has a USB Type-C connector, supplying power to the computer and, if needed, charging the computer battery.</p> <p>– or –</p> <p>Connects and charges a USB device that has a USB Type-C connector, such as a cell phone, camera, activity tracker, or smartwatch, and provides high-speed data transfer.</p> <p>– or –</p> <p>Connects to various USB, video, HDMI, and LAN devices.</p> <p><b>NOTE:</b> Cables and/or adapters (purchased separately) may be required.</p>
(2)		AC adapter and battery light	<ul style="list-style-type: none"> <li>• White: The AC adapter is connected and the battery is fully charged.</li> <li>• Blinking white: The AC adapter is disconnected and the battery has reached a low battery level.</li> <li>• Amber: The AC adapter is connected and the battery is charging.</li> <li>• Off: The battery is not charging.</li> </ul>
(3)		Volume buttons	Control speaker volume on the computer.

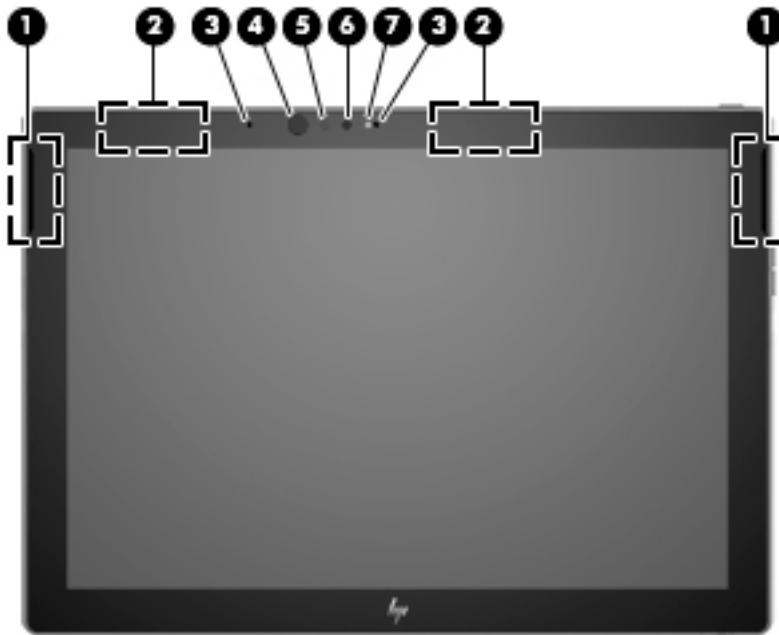
## Left side



Item	Icon	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 standalone devices.</p> <p><b>WARNING!</b> 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 guide:</p> <ul style="list-style-type: none"> <li>▲ Select the <b>Start</b> menu, select <b>HP Help and Support</b>, and then select <b>HP Documentation</b>.</li> </ul> <p><b>NOTE:</b> When a device is connected to the jack, the computer speakers are disabled.</p>
(2)		MicroSD memory card reader	<p>Reads optional memory cards that store, manage, share, or access information.</p>
(3)		AC adapter and battery light	<ul style="list-style-type: none"> <li>• White: The AC adapter is connected and the battery is fully charged.</li> <li>• Blinking white: The AC adapter is disconnected and the battery has reached a low battery level.</li> <li>• Amber: The AC adapter is connected and the battery is charging.</li> <li>• Off: The battery is not charging.</li> </ul>
(4)		USB Type-C power connector and charging port	<p>Connects an AC adapter that has a USB Type-C connector, supplying power to the computer and, if needed, charging the computer battery.</p> <p>– or –</p> <p>Connects and charges a USB device that has a USB Type-C connector, such as a cell phone, camera, activity tracker, or smartwatch, and provides high-speed data transfer.</p> <p>– or –</p> <p>Connects to various USB, video, HDMI, and LAN devices.</p> <p><b>NOTE:</b> Cables and/or adapters (purchased separately) may be required.</p>



## Front



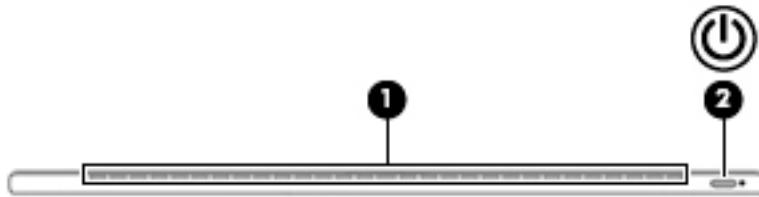
Item	Component	Description
(1)	Speakers (2)	Produce sound.
(2)	WLAN antennas* (2)	Send and receive wireless signals to communicate with WLANs.
(3)	Internal microphones (2)	Record sound.
(4)	Infrared camera light	On: The infrared camera is in use.
(5)	Infrared camera	Allows a facial recognition logon to Windows, instead of a password logon.
(6)	Front camera	Allows you to video chat, record video, and record still images.
(7)	Front camera light	On: The camera is in use.


\*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.

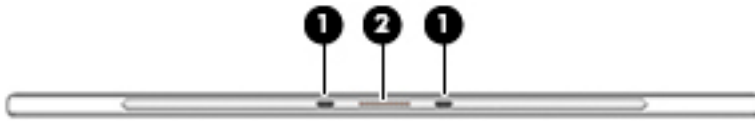
To access this guide:

- ▲ Select the **Start** button, select **HP Help and Support**, and then select **HP Documentation**.



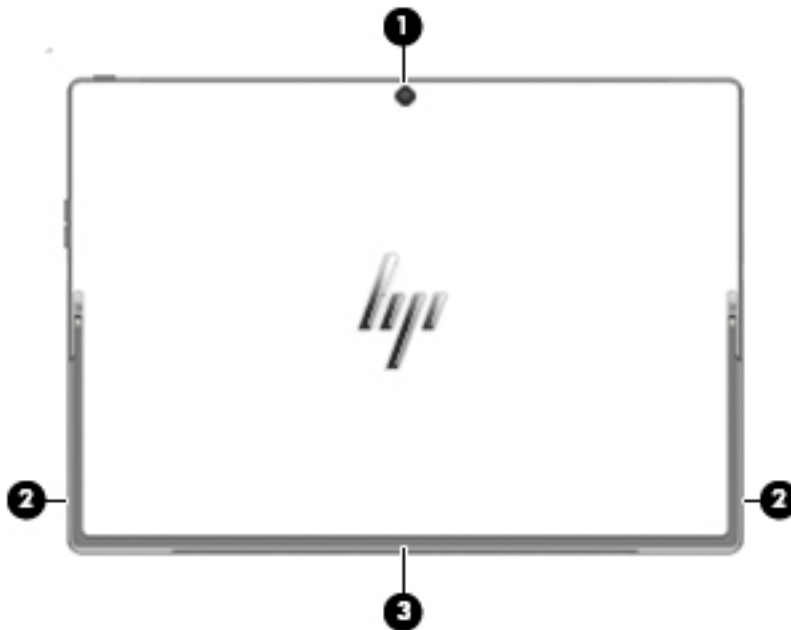
Item	Icon	Component	Description
(1)		Vents	<p>Enable airflow to cool internal components.</p> <p><b>NOTE:</b> The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.</p>
(2)		Power button	<ul style="list-style-type: none"> <li>• When the computer is off, press the button to turn on the computer.</li> <li>• When the computer is on, press the button briefly to initiate Sleep.</li> <li>• When the computer is in the Sleep state, press the button briefly to exit Sleep.</li> <li>• When the computer is in Hibernation, press the button briefly to exit Hibernation.</li> </ul> <p><b>CAUTION:</b> 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> <ul style="list-style-type: none"> <li>▲ Type <code>power</code> in the taskbar search box, and then select <b>Power &amp; sleep options</b>.</li> </ul> <p>– or –</p> <p>Right-click the <b>Start</b> button, and then select <b>Power Options</b>.</p>

## Bottom



Item	Component	Description
(1)	Alignment post connectors (2)	Connect to the alignment posts on the keyboard.
(2)	Docking connector	Connects the tablet to the keyboard.

## Rear



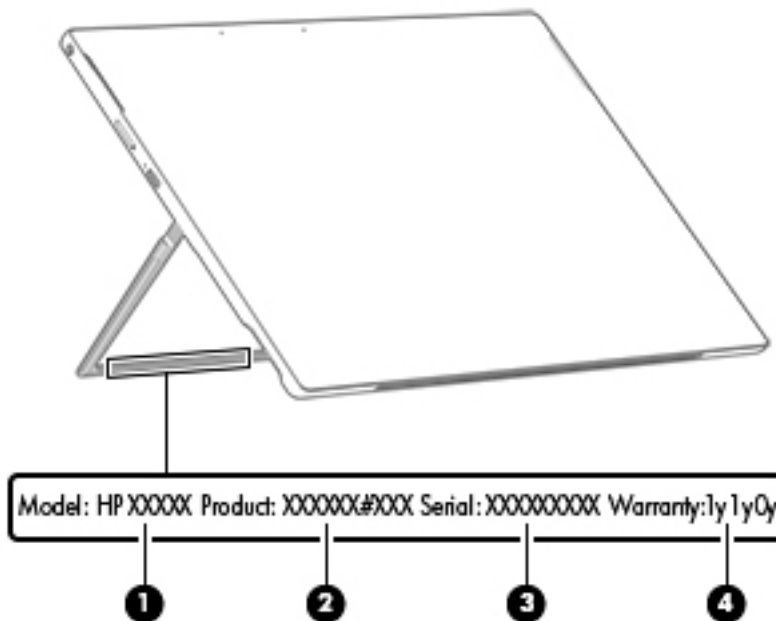
Item	Component	Description
(1)	Rear camera	Allows you to video chat, record video, and record still images.
(2)	Kickstand tabs (2)	Provide access to lift the kickstand away from the back of the tablet.
(3)	Kickstand	Provides stability and a variety of viewing angles.

## 3 Illustrated parts catalog

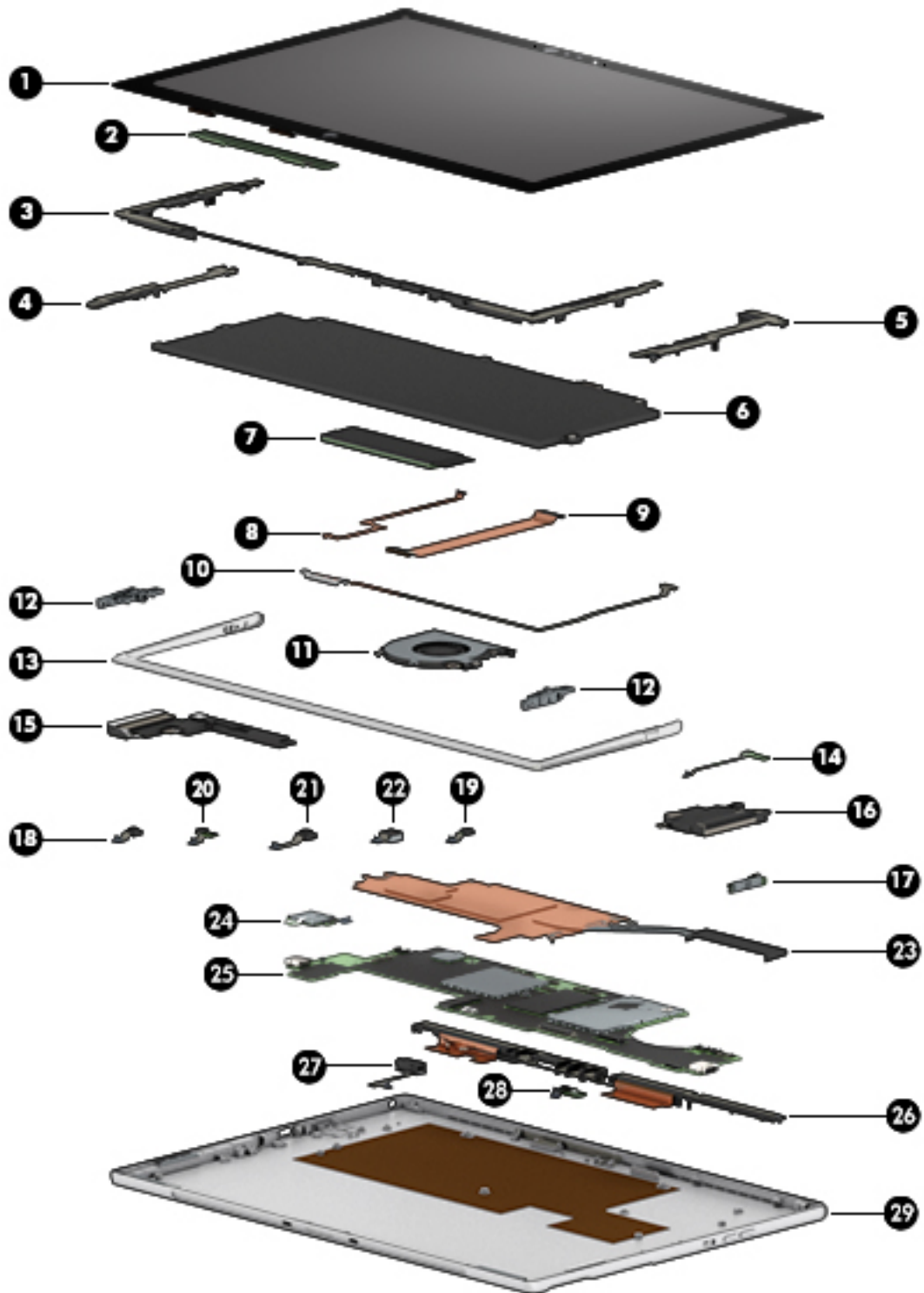
 **NOTE:** HP continually improves and changes product parts. For complete and current information on supported parts for your computer, go to <http://partsurfer.hp.com>, select your country or region, and then follow the on-screen instructions.

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

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



# Computer components



Item	Component	Spare part number
(1)	<b>Display panel assembly</b> (12.3-in, 3K2K, WLED, BrightView (3000×2000), uslim-flat (1.95-mm), UWVA, eDP+PSR, 3:2 ultra wide aspect ratio, flush-glass panel, TouchScreen)	907565-001

Item	Component	Spare part number
	<b>Display Panel Adhesive Kit</b>	924176-001
(2)	<b>Touchscreen board</b> (includes double-sided adhesive)	924179-001
	<b>NOTE:</b> The Touchscreen board spare part kit does not include the Touchscreen board cable. The Touchscreen board cable is available using spare part number 924172-001.	
	<b>Bezels (4):</b>	
(3)	Bottom bezel, left side	924167-001
	Bottom bezel, right side (not illustrated)	924166-001
(4)	Left bezel	924165-001
(5)	Right bezel	924164-001
(6)	<b>Battery</b> (4-cell, 41-WHr, 2.7-AHr, Li-ion; includes cable)	902500-855
(7)	<b>Solid-state drive</b> (2280 M.2, SATA-3):	
	1-TB, PCIe-3×4 NVMe solid-state drive with TLC	920540-001
	512-GB, PCIe-3×4 NVMe solid-state drive with TLC	920539-001
	360-GB, PCIe-3×4 NVMe solid-state drive with TLC	920542-001
	256-GB, PCIe-3×4 NVMe solid-state drive with TLC	920538-001
	128-GB, PCIe-3×4 NVMe solid-state drive with TLC	920541-001
(8)	<b>Touchscreen board cable</b> (includes double-sided adhesive)	924172-001
(9)	<b>Display panel cable</b> (includes double-sided adhesive)	924171-001
(10)	<b>Docking connector cable</b> (includes double-sided adhesive)	924173-001
	<b>Docking connector Mylar</b> (not illustrated)	924182-001
(11)	<b>Fan</b> (includes cable)	924174-001
(12)	<b>Hinges</b> (2)	933241-001
(13)	<b>Kickstand</b>	922577-001
(14)	<b>Power button board</b> (includes cable and double-sided adhesive)	924169-001
	<b>Speakers</b> (2, include cables):	
(15)	Left speaker	924838-001
(16)	Right speaker	924846-001
(17)	<b>Volume button board</b> (includes cable)	924170-001
	<b>Microphones</b> (2, include cables and rubber isolators):	
(18)	Left microphone	924840-001
(19)	Right microphone	924839-001
	<b>Webcams</b> (3, include cables):	
(20)	Infrared camera	924841-001
(21)	Front webcam	924842-001
(22)	Rear webcam	924843-001

<b>Item</b>	<b>Component</b>	<b>Spare part number</b>
<b>(23)</b>	<b>Heat sink</b> (includes replacement thermal material)	924845-001
<b>(24)</b>	<b>MicroSD memory card reader board</b> (includes replacement thermal material)	924835-001
	<b>MicroSD memory card reader bezel</b> (not illustrated)	924175-001
<b>(25)</b>	<b>System board</b> (includes processor and replacement thermal material):	
	Equipped with an Intel Core i7-7560U 2.40-GHz (turbo up to 3.80-GHz) dual core processor (1866-MHz FSB, 4.0-GB L3 cache, 15-W), an Intel Iris Graphics Plus 640 graphics subsystem with UMA video memory, 16-GB system memory, and the Windows 10 operating system	920545-601
	Equipped with an Intel Core i7-7560U 2.40-GHz (turbo up to 3.80-GHz) dual core processor (1866-MHz FSB, 4.0-GB L3 cache, 15-W), an Intel Iris Graphics Plus 640 graphics subsystem with UMA video memory, 16-GB system memory, and a non-Windows operating system	920545-001
	Equipped with an Intel Core i7-7560U 2.40-GHz (turbo up to 3.80-GHz) dual core processor (1866-MHz FSB, 4.0-GB L3 cache, 15-W), an Intel Iris Graphics Plus 640 graphics subsystem with UMA video memory, 8-GB system memory, and the Windows 10 operating system	920544-601
	Equipped with an Intel Core i7-7560U 2.40-GHz (turbo up to 3.80-GHz) dual core processor (1866-MHz FSB, 4.0-GB L3 cache, 15-W), an Intel Iris Graphics Plus 640 graphics subsystem with UMA video memory, 8-GB system memory, and a non-Windows operating system	920544-001
	Equipped with an Intel Core i5-7260U 2.20-GHz (turbo up to 3.40-GHz) dual core processor (1866-MHz FSB, 4.0-GB L3 cache, 15-W), an Intel Iris Graphics Plus 640 graphics subsystem with UMA video memory, 8-GB system memory, and the Windows 10 operating system	920546-601
	Equipped with an Intel Core i5-7260U 2.20-GHz (turbo up to 3.40-GHz) dual core processor (1866-MHz FSB, 4.0-GB L3 cache, 15-W), an Intel Iris Graphics Plus 640 graphics subsystem with UMA video memory, 8-GB system memory, and a non-Windows operating system	920546-001
<b>(26)</b>	<b>Wireless Antenna Kit</b> (includes left and right wireless antenna cables, transceivers, and double-sided adhesive)	924213-001
<b>(27)</b>	<b>Audio jack board</b> (includes audio jack and cable)	924836-001
<b>(28)</b>	<b>Infrared LED board</b> (does not include infrared board cable)	924837-001
	<b>Infrared LED board cable</b> (not illustrated; includes double-sided adhesive)	924168-001
<b>(29)</b>	<b>Back cover</b>	924163-001

## Miscellaneous parts

Component	Spare part number
<b>65-W, USB Type-C, 3-pin, non-PFC, AC adapter</b>	860209-850
<b>Duck head adapter:</b>	
For use in Australia	914724-001
For use in North America	854702-001
For use in the People's Republic of China	914725-001
For use in South Korea	854703-001
For use in the United Kingdom	914723-001
<b>HP black, 12.3-in sleeve</b>	923398-001
<b>HP USB Type-C adapter:</b>	
USB Type-C-to-HDMI adapter	831752-001
USB Type-C-to-RJ45 adapter	855560-001
USB Type-C-to-VGA adapter	831751-001
<b>HP USB Type-C-to-USB Type-A dongle</b>	833960-001
<b>Keyboard in dark ash silver finish with backlight and TouchPad:</b>	
For use in Canada	922576-DB1
For use in France	922576-051
For use in Japan	922576-061
For use in Latin America	922576-161
For use in South Korea	922576-AD1
For use in the United Kingdom	922576-031
For use in the United States	922576-001
<b>Power cord (C5-connector, 1.00-m):</b>	
For use in Australia	213356-013
For use in Europe	213350-014
For use in Japan	349756-006
For use in North America	213349-015
For use in the People's Republic of China	286497-013
For use in the United Kingdom and Singapore	213351-013
<b>Screw Kit</b>	922578-001
<b>Stylus</b> (active pen)	920241-001



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## 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.


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

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### Plastic parts

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 **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.

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## Cables and connectors

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**⚠ 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.

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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

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**⚠ 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."

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# 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

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

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

**CAUTION:** This tablet does not have user-replaceable parts. Only HP authorized service providers should perform the removal and replacement procedures described here. Accessing the internal part could damage the tablet or void the warranty.

## Component replacement procedures

**NOTE:** Details about your tablet, including model, serial number, product key, and length of warranty, are on the service tag at the bottom of the tablet. See [Locating the serial number, model number, product number, and warranty information on page 10](#) for details.

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

There are as many as 44 screws that must be removed, replaced, and/or loosened when servicing Authorized Service Provider only parts. Make special note of each screw size and location during removal and replacement.

## Display panel assembly

Description	Spare part number
12.3-in, 3K2K, WLED, BrightView (3000×2000), uslim-flat (1.95-mm), UWVA, eDP+PSR, 3:2 ultra wide aspect ratio, flush-glass panel, TouchScreen display assembly	907565-001
Back cover	924163-001

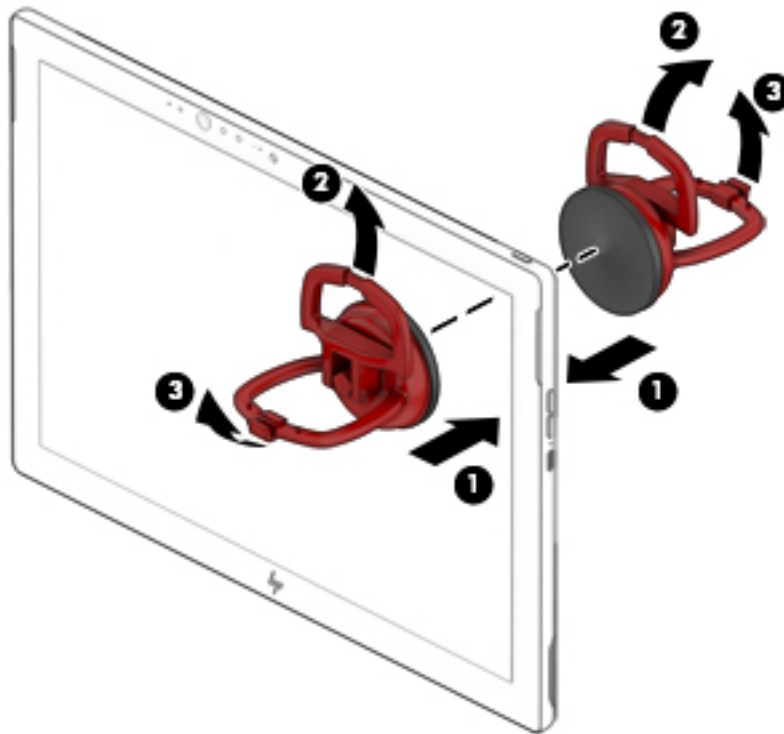
Before disassembling the tablet, follow these steps:

1. Shut down the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the tablet.
3. Disconnect the power from the tablet by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the tablet.

Remove the display panel assembly:

1. Position the tablet with the front toward you.
2. Attach suction cups **(1)** to the display panel and back cover.
3. Place the suction cup handles **(2)** to the closed position.

4. Lock the suction cups into place (3).

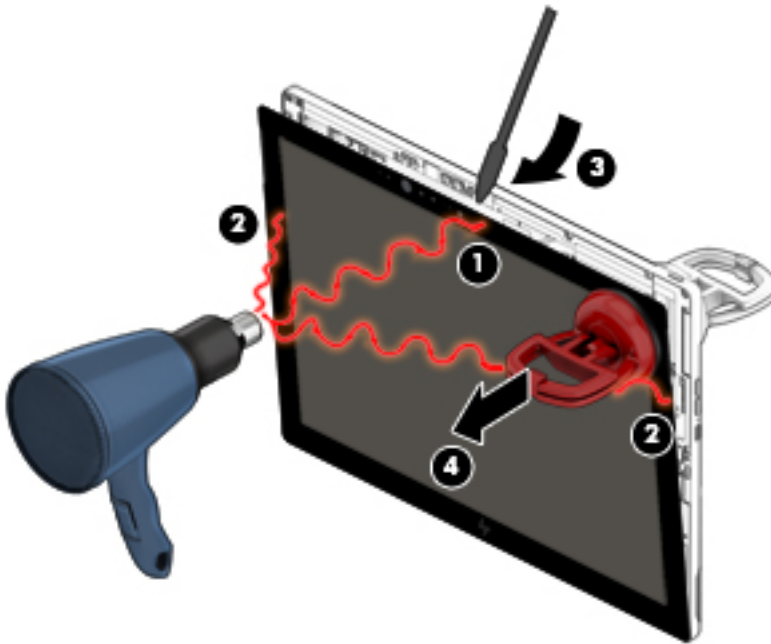


5. Use a heating gun to heat the top (1) and left (2) and right edges of the tablet to release the adhesive securing the display panel assembly to the back cover.



**NOTE:** The adhesive used to secure the display panel assembly to the back cover is available in the Display Panel Adhesive Kit, spare part 924176-001.

6. Use a case utility tool **(3)** or similar thin, plastic tool, and the suction cups to separate the display panel assembly **(4)** from the back cover.



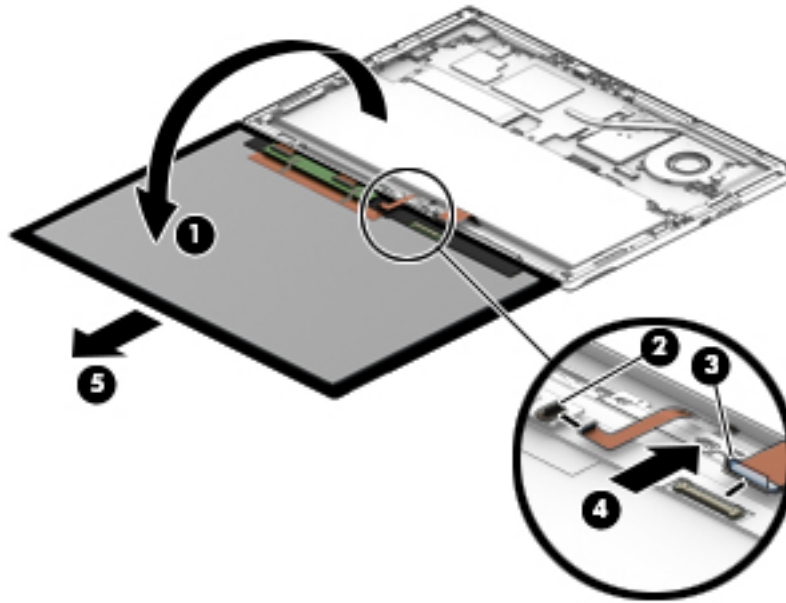
7. Remove the suction cups.

**⚠ CAUTION:** Before releasing the display panel assembly, 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 assembly.

8. Swing the display panel assembly **(1)** forward until it rests upside down in front of the back cover.
9. Release the zero insertion force (ZIF) connector **(2)** to which the Touchscreen board cable is connected, and then disconnect the Touchscreen board cable from the display panel assembly.
10. Release the adhesive support strip **(3)** that secures the display panel cable connector to the display panel assembly.
11. Disconnect the display panel cable **(4)** from the display panel assembly.



12. Remove the display panel assembly (5).



Reverse this procedure to install the display panel assembly.

## Touchscreen board

Description	Spare part number
Touchscreen board	924179-001

**NOTE:** The Touchscreen board spare part kit does not include the Touchscreen board cable. The Touchscreen board cable is available using spare part number 924172-001.

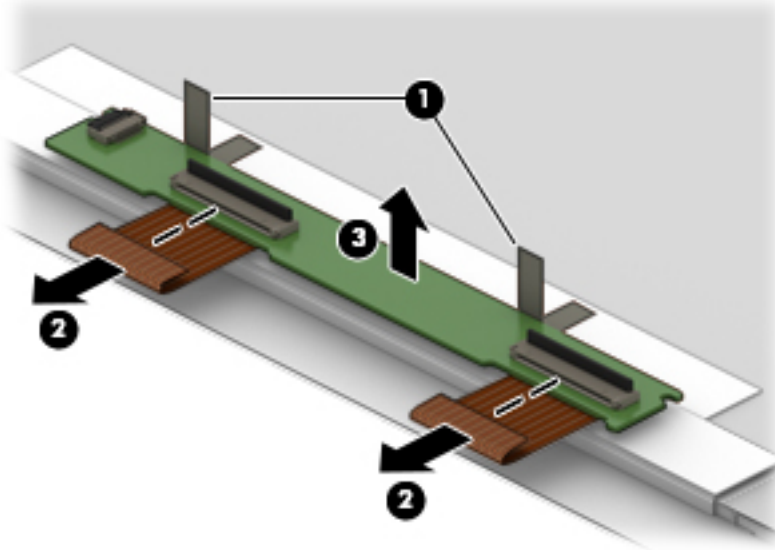
Before removing the Touchscreen board, follow these steps:

1. Shut down the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the tablet.
3. Disconnect the power from the tablet by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the tablet.
4. Remove the display panel assembly (see [Display panel assembly on page 20](#)).

Remove the Touchscreen board:

1. Detach the two pieces of grounding tape that secure the Touchscreen board (1) to the display panel assembly.
2. Release the two ZIF connectors (2) to which the Touchscreen board cables are connected, and then disconnect the Touchscreen board cables from the display panel assembly.

3. Detach the Touchscreen board **(3)** from the display panel assembly. (The Touchscreen board is attached to the display panel assembly with double-sided adhesive.)



4. Remove the Touchscreen board.

Reverse this procedure to install the Touchscreen board.

## Bottom bezel

Description	Spare part number
Bottom bezel	924167-001

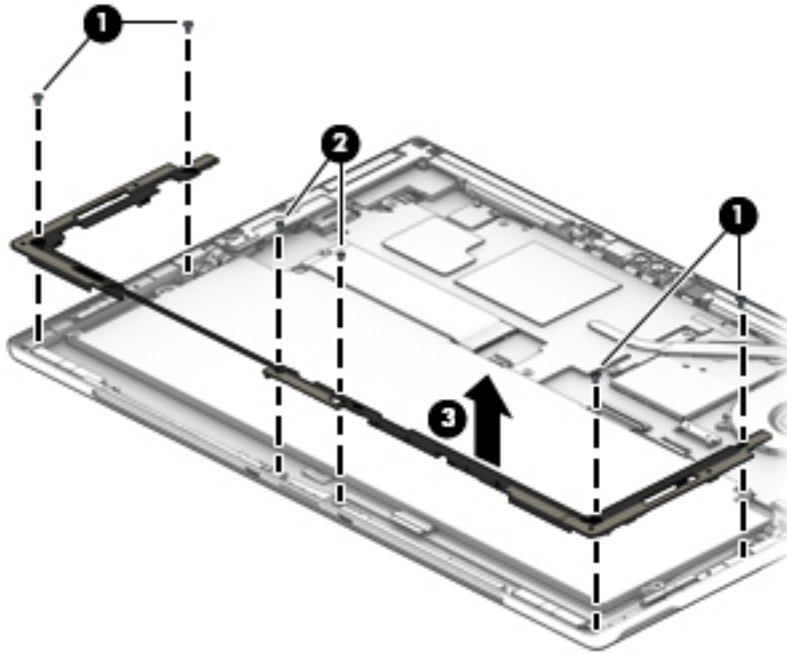
Before removing the bottom bezel, follow these steps:

1. Shut down the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the tablet.
3. Disconnect the power from the tablet by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the tablet.
4. Remove the display panel assembly (see [Display panel assembly on page 20](#)).

Remove the bottom bezel:

1. Remove the four Phillips PM2.0×3.8 screws **(1)** that secure the bottom bezel to the back cover.
2. Remove the two Phillips PM2.0×2.2 screws **(2)** that secure the bottom bezel to the back cover.

3. Remove the bottom bezel **(3)**.



4. Remove the bottom bezel.

Reverse this procedure to install the bottom bezel.

## Battery

Description	Spare part number
4-cell, 41-WHr, 2.7-AHr, Li-ion battery (includes cable)	902500-855

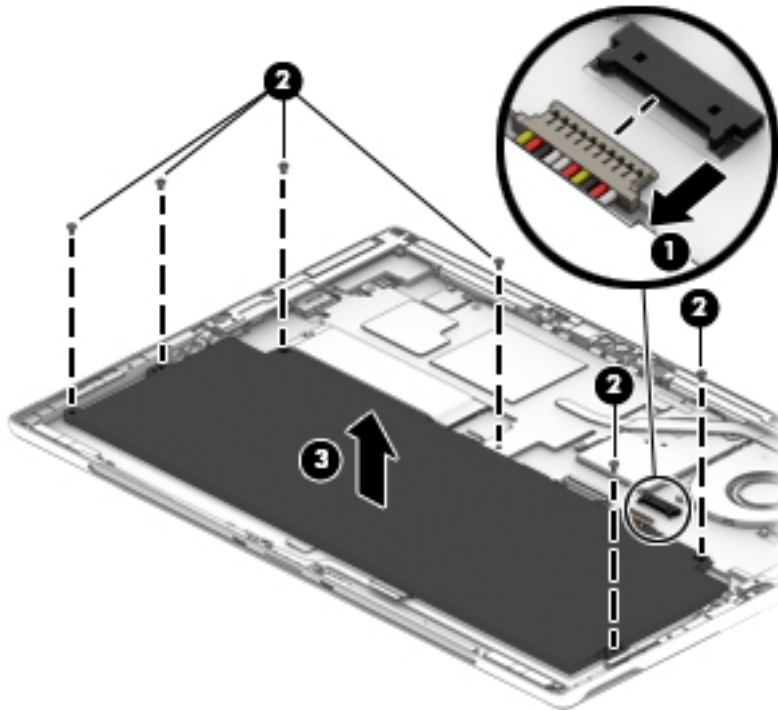
Before removing the battery, follow these steps:

1. Shut down the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the tablet.
3. Disconnect the power from the tablet by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the tablet.
4. Remove the display panel assembly (see [Display panel assembly on page 20](#)).
5. Remove the bottom bezel (see [Bottom bezel on page 24](#)).

Remove the battery:

1. Disconnect the battery cable **(1)** from the system board.
2. Remove the six Phillips PM2.0×2.8 screws **(2)** that secure the battery to the back cover.

3. Remove the battery (3).



Reverse this procedure to install the battery.

## Solid-state drive


Description	Spare part number
1-TB, PCIe-3×4 NVMe solid-state drive with TLC	920540-001
512-GB, PCIe-3×4 NVMe solid-state drive with TLC	920539-001
360-GB, PCIe-3×4 NVMe solid-state drive with TLC	920542-001
256-GB, PCIe-3×4 NVMe solid-state drive with TLC	920538-001
128-GB, PCIe-3×4 NVMe solid-state drive with TLC	920541-001

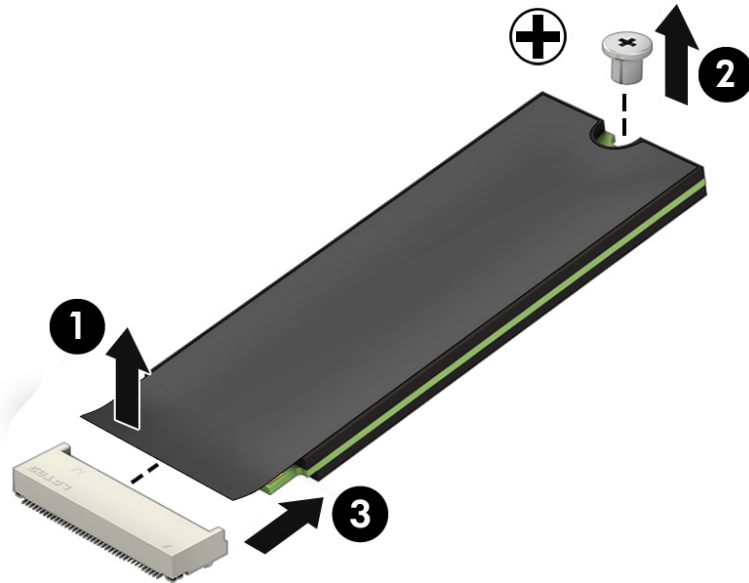
Before removing the solid-state drive, follow these steps:

1. Shut down the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the tablet.
3. Disconnect the power from the tablet by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the tablet.
4. Remove the display panel assembly (see [Display panel assembly on page 20](#)).
5. Remove the bottom bezel (see [Bottom bezel on page 24](#)).
6. Remove the battery (see [Battery on page 25](#)).

Remove the solid-state drive:

1. Release the Mylar shield **(1)** that secures the solid-state drive to the system board.
2. Remove the Phillips PM2.0×2.5 screw **(2)** that secures the drive to the system board. (The solid-state drive tilts up.)
3. Remove the solid-state drive **(3)** by pulling it away from the connector.

 **NOTE:** Solid-state drives are designed with notches to prevent incorrect insertion.



Reverse this procedure to install the solid-state drive.

## Touchscreen board cable

Description	Spare part number
Touchscreen board cable (includes double-sided adhesive)	924172-001

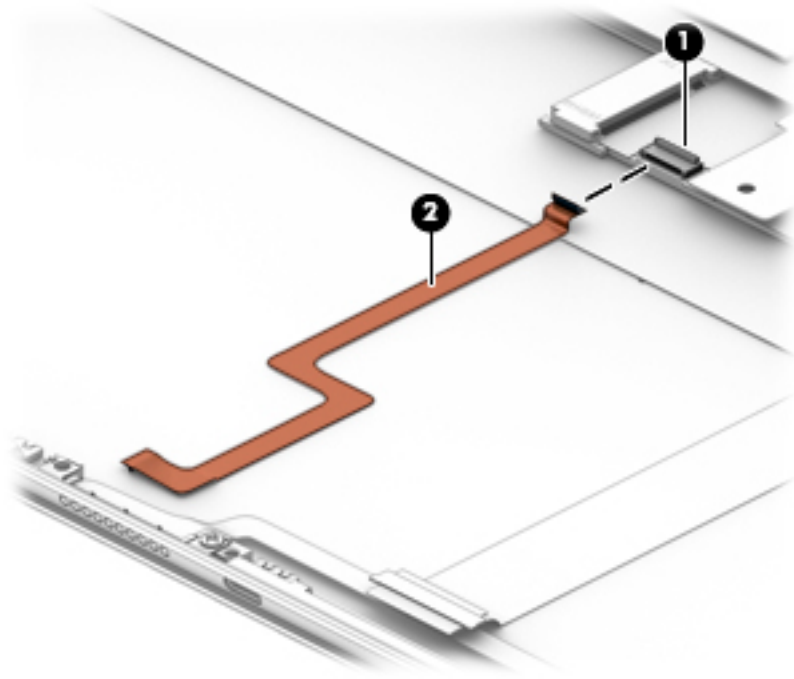
Before removing the Touchscreen board cable, follow these steps:

1. Shut down the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the tablet.
3. Disconnect the power from the tablet by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the tablet.
4. Remove the display panel assembly (see [Display panel assembly on page 20](#)).
5. Remove the bottom bezel (see [Bottom bezel on page 24](#)).
6. Remove the battery (see [Battery on page 25](#)).

Remove the Touchscreen board cable:

1. Release the ZIF connector **(1)** to which Touchscreen board cable is connected, and then disconnect the Touchscreen board cable from the system board.

2. Detach the Touchscreen board cable (2) from the back cover. (The Touchscreen board cable is attached to the back cover with double-sided adhesive.)



3. Remove the Touchscreen board cable.  
Reverse this procedure to install the Touchscreen board cable.

## Display panel cable

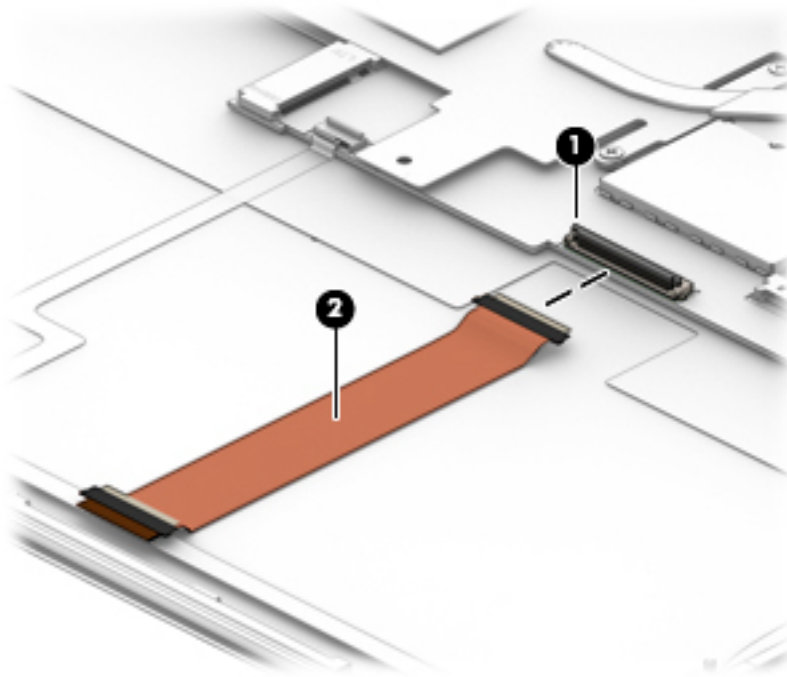
Description	Spare part number
Display panel cable (includes double-sided adhesive)	924171-001

Before removing the display panel cable, follow these steps:

1. Shut down the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the tablet.
3. Disconnect the power from the tablet by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the tablet.
4. Remove the display panel assembly (see [Display panel assembly on page 20](#)).
5. Remove the bottom bezel (see [Bottom bezel on page 24](#)).
6. Remove the battery (see [Battery on page 25](#)).

Remove the display panel cable:

1. Release the ZIF connector **(1)** to which display panel cable is connected, and then disconnect the display panel cable from the system board.
2. Detach the display panel cable **(2)** from the back cover. (The display panel cable is attached to the back cover with double-sided adhesive.)



3. Remove the display panel cable.

Reverse this procedure to install the display panel cable.

## POGO pin connector cable

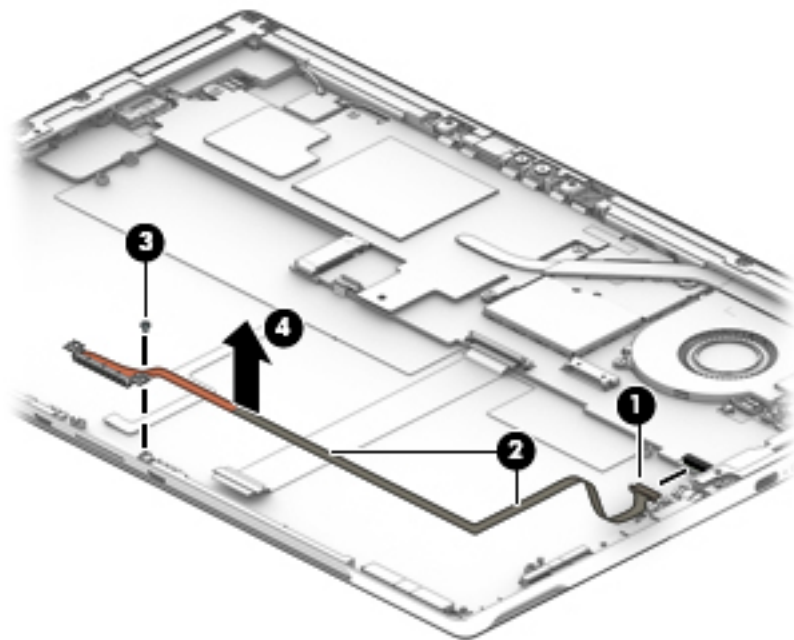
Description	Spare part number
Display panel cable (includes double-sided adhesive)	924173-001

Before removing the POGO pin connector cable, follow these steps:

1. Shut down the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the tablet.
3. Disconnect the power from the tablet by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the tablet.
4. Remove the display panel assembly (see [Display panel assembly on page 20](#)).
5. Remove the bottom bezel (see [Bottom bezel on page 24](#)).
6. Remove the battery (see [Battery on page 25](#)).

Remove the POGO pin connector cable:

1. Disconnect the POGO pin connector cable **(1)** from the system board.
2. Detach the POGO pin connector cable **(2)** from the back cover. (The POGO pin connector cable is attached to the back cover with double-sided adhesive in two locations.)
3. Remove the Phillips PM1.5×2.2 screw **(3)** that secures the POGO pin connector to the back cover.
4. Remove the POGO pin connector cable **(4)**.



5. Remove the POGO pin connector cable.

Reverse this procedure to install the POGO pin connector cable.



## Fan

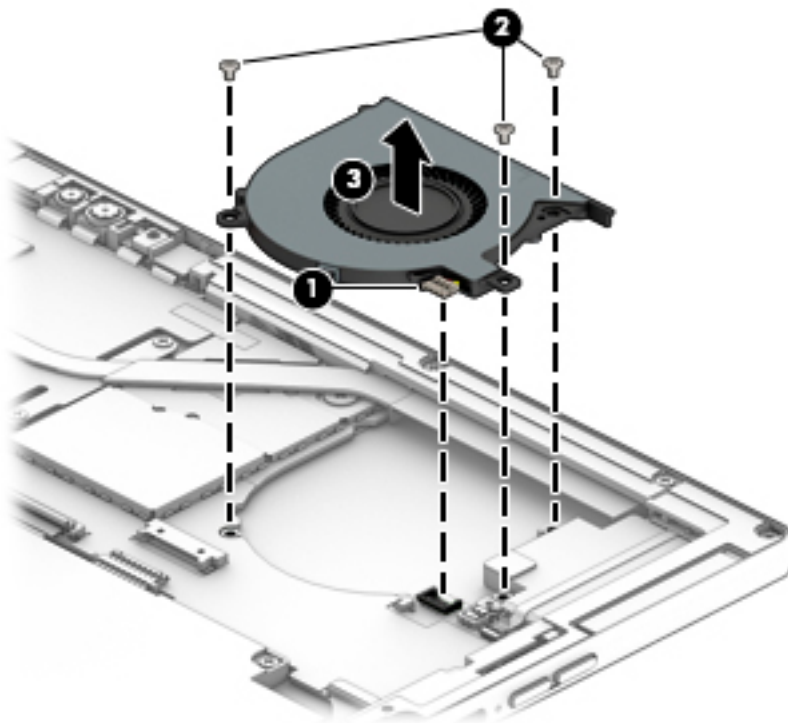
Description	Spare part number
Fan (includes cable)	924174-001

Before removing the fan, follow these steps:

1. Shut down the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the tablet.
3. Disconnect the power from the tablet by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the tablet.
4. Remove the display panel assembly (see [Display panel assembly on page 20](#)).
5. Remove the bottom bezel (see [Bottom bezel on page 24](#)).
6. Remove the battery (see [Battery on page 25](#)).

Remove the fan:

1. Disconnect the fan cable (1) from the system board.
2. Remove the three Phillips PM2.0×2.8 screws (2) that secure the fan to the back cover.
3. Remove the fan (3).



Reverse this procedure to install the fan.

## Kickstand

Description	Spare part number
Kickstand	922577-001

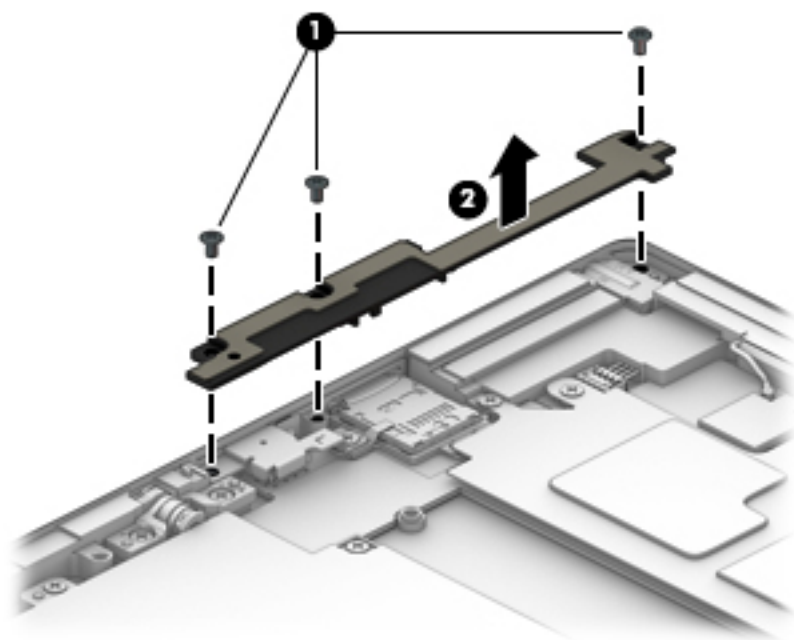
Before removing the kickstand, follow these steps:

1. Shut down the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the tablet.
3. Disconnect the power from the tablet by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the tablet.
4. Remove the display panel assembly (see [Display panel assembly on page 20](#)).
5. Remove the bottom bezel (see [Bottom bezel on page 24](#)).
6. Remove the battery (see [Battery on page 25](#)).

Remove the kickstand:

1. Remove the three Phillips PM2.0×3.8 screws **(1)** that secure the left bezel to the back cover.
2. Remove the left bezel **(2)**.

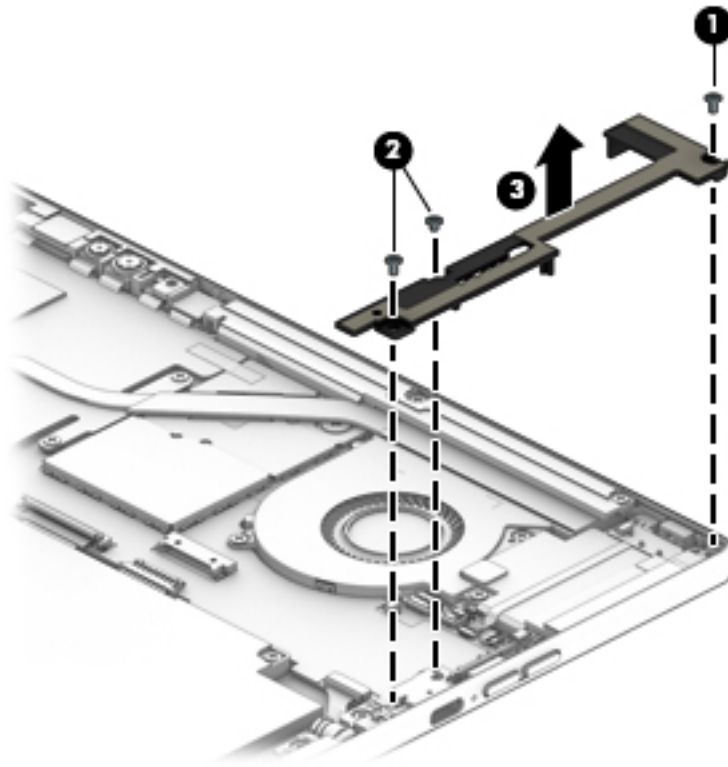
The left bezel is available using spare part number 924165-001.



3. Remove the PM2.0×2.8 screw **(1)** that secures the right bezel to the back cover.
4. Remove the two Phillips PM2.0×3.8 screws **(2)** that secure the right bezel to the back cover.

5. Remove the right bezel (3).

The right bezel is available using spare part number 924164-001.



6. Position the tablet on its left side.
7. Open the kickstand.

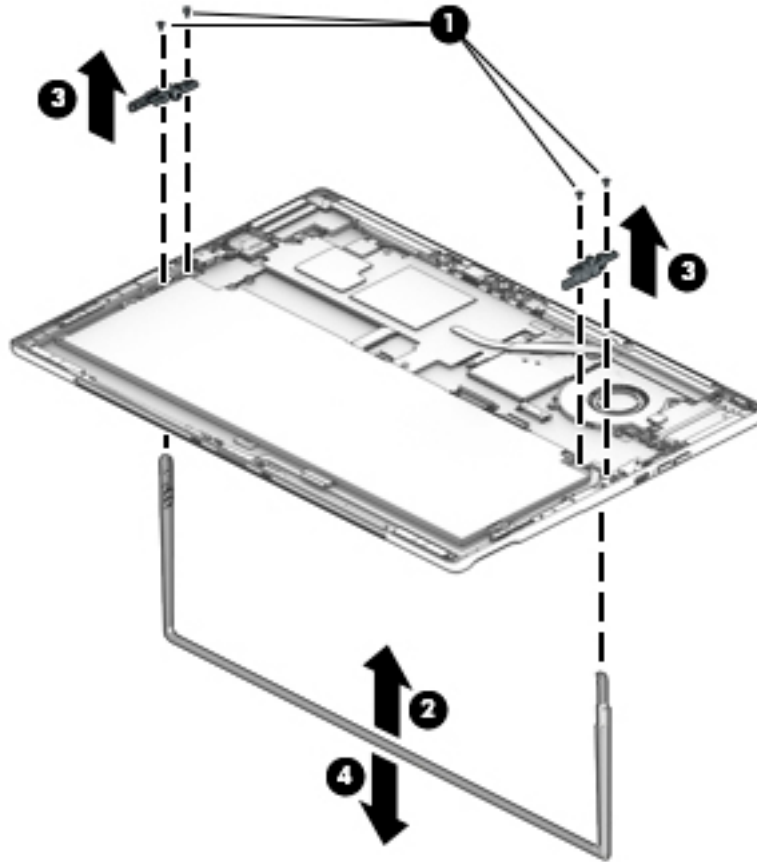
8. Remove the four Torx4 M2.0×2.8 screws that secure the kickstand to the hinges.



9. Remove the four Phillips PM2.0×3.8 screws **(1)** that secure the hinges to the back cover.
10. Slide the kickstand **(2)** toward the back cover to release the hinges from the back cover.
11. Remove the hinges **(3)**.

The hinges are available using spare part number 933241-001.

12. Remove the kickstand (4).



Reverse this procedure to install the kickstand.

## Volume button board

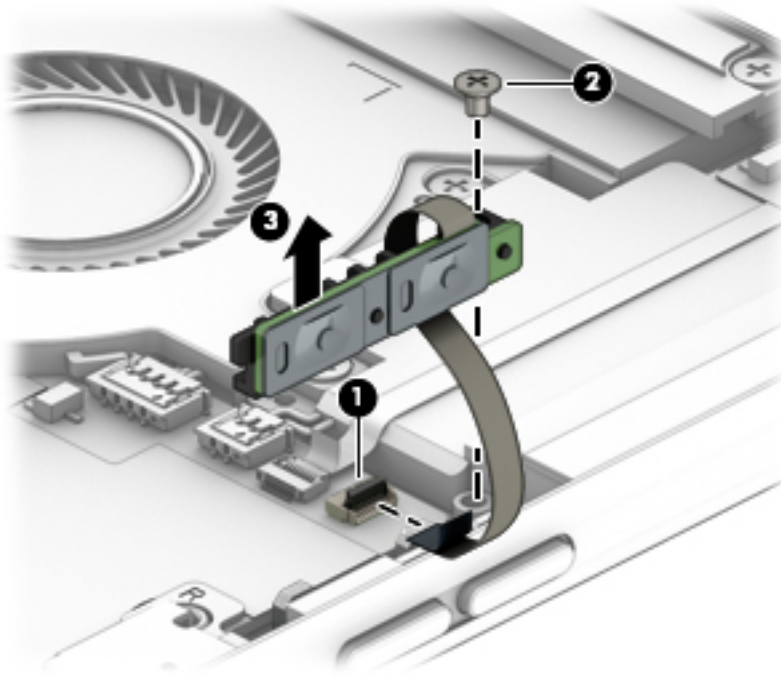
Description	Spare part number
Volume button board (includes cable)	924170-001

Before removing the volume button board, follow these steps:

1. Shut down the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the tablet.
3. Disconnect the power from the tablet by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the tablet.
4. Remove the display panel assembly (see [Display panel assembly on page 20](#)).
5. Remove the bottom bezel (see [Bottom bezel on page 24](#)).
6. Remove the battery (see [Battery on page 25](#)).
7. Remove the right bezel (see [Kickstand on page 32](#)).

Remove the volume button board:

1. Release the ZIF connector **(1)** to which the volume button board cable is connected, and then disconnect the volume button board cable from the system board.
2. Remove the Phillips PM1.5×2.2 screw **(2)** that secures the volume button board to the back cover.
3. Remove the volume button board **(3)**.



Reverse this procedure to install the volume button board.

## Right speaker

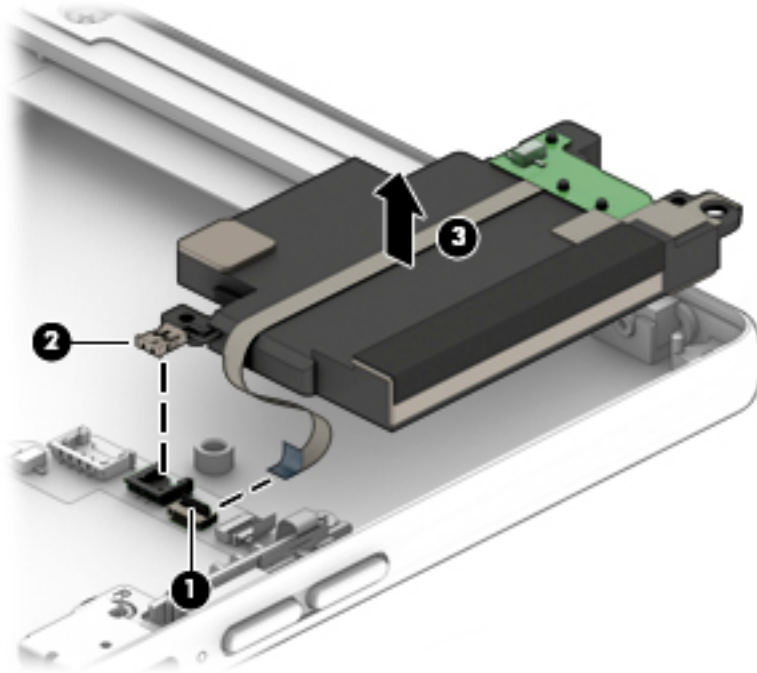
Description	Spare part number
Right speaker (includes cable)	924846-001

Before removing the right speaker, follow these steps:

1. Shut down the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the tablet.
3. Disconnect the power from the tablet by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the tablet.
4. Remove the display panel assembly (see [Display panel assembly on page 20](#)).
5. Remove the bottom bezel (see [Bottom bezel on page 24](#)).
6. Remove the battery (see [Battery on page 25](#)).
7. Remove the right bezel (see [Kickstand on page 32](#)).

Remove the right speaker:

1. Release the ZIF connector (1) to which the power button board cable is connected, and then disconnect the power button board cable from the system board.
2. Disconnect the right speaker cable (2) from the system board.
3. Remove the right speaker (3).



Reverse this procedure to install the right speaker.

## Power button board

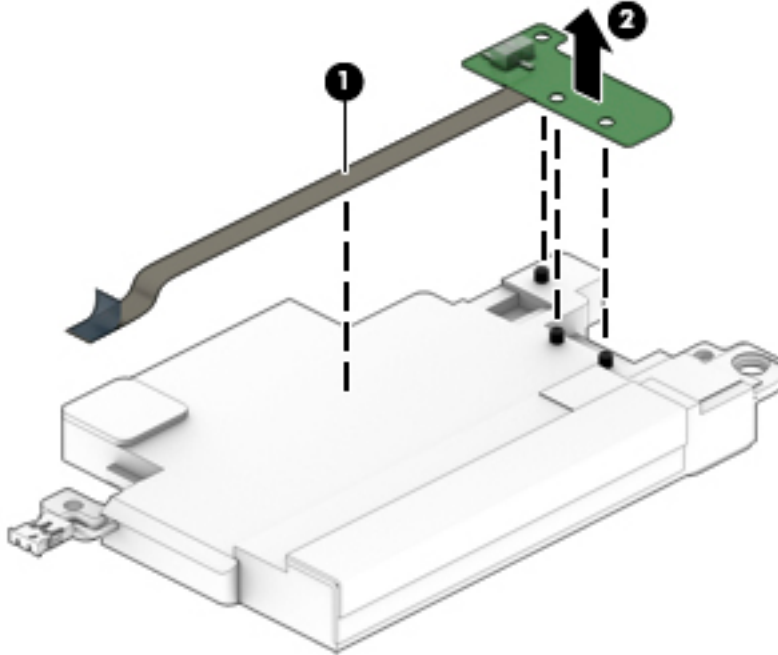
Description	Spare part number
Power button board (includes cable)	924169-001

Before removing the power button board, follow these steps:

1. Shut down the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the tablet.
3. Disconnect the power from the tablet by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the tablet.
4. Remove the display panel assembly (see [Display panel assembly on page 20](#)), and then remove the following components:
  - a. Bottom bezel (see [Bottom bezel on page 24](#))
  - b. Battery (see [Battery on page 25](#))
  - c. Right bezel (see [Kickstand on page 32](#))
  - d. The right speaker (see [Right speaker on page 36](#))

Remove the power button board:

1. Detach the power button board cable **(1)** from the right speaker. (The power button board cable is attached to the right speaker with double-sided adhesive.)
2. Detach the power button board **(2)** from the back cover. (The power button board is attached to the back cover with double-sided adhesive.)



3. Remove the power button board and cable.

Reverse this procedure to install the power button board.

## Microphones

Description	Spare part number
Left microphone (includes cable and rubber isolators)	924840-001
Right microphone (includes cable and rubber isolators)	924839-001

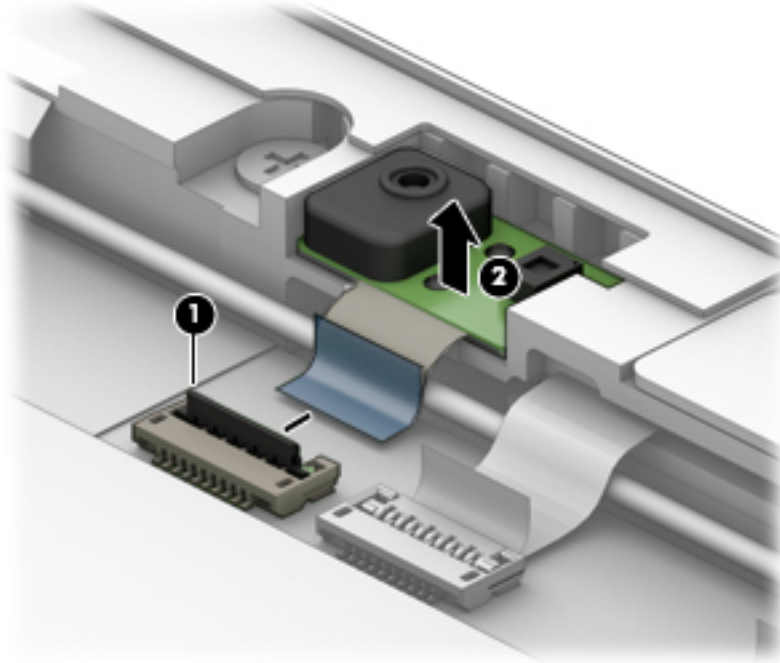
Before removing the microphones, follow these steps:

1. Shut down the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the tablet.
3. Disconnect the power from the tablet by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the tablet.
4. Remove the display panel assembly (see [Display panel assembly on page 20](#)).
5. Remove the bottom bezel (see [Bottom bezel on page 24](#)).
6. Remove the battery (see [Battery on page 25](#)).



Remove the left microphone:

1. Release the ZIF connector **(1)** to which the left microphone cable is connected, and then disconnect the left microphone cable from the system board.
2. Detach the left microphone **(2)** from the back cover. (The left microphone is attached to the back cover with double-sided adhesive.)

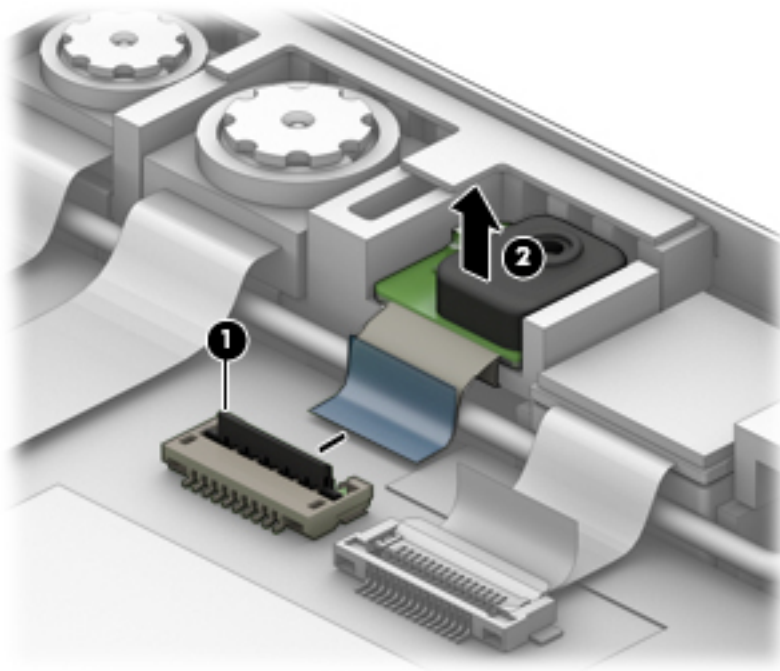


3. Remove the left microphone.

Remove the right microphone:

1. Release the ZIF connector **(1)** to which the right microphone cable is connected, and then disconnect the right microphone cable from the system board.

2. Detach the right microphone **(2)** from the back cover. (The right microphone is attached to the back cover with double-sided adhesive.)



3. Remove the right microphone.  
Reverse this procedure to install the microphones.

## Webcams

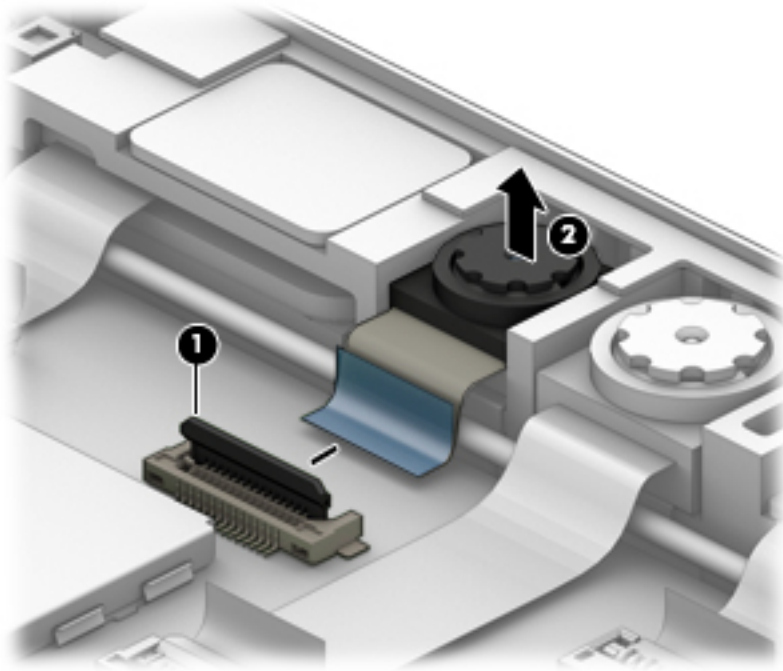
Description	Spare part number
Infrared camera (includes cable)	924841-001
Front-facing webcam (includes cable)	924842-001
Rear-facing webcam (includes cable)	924843-001

Before removing the webcams, follow these steps:

1. Shut down the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the tablet.
3. Disconnect the power from the tablet by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the tablet.
4. Remove the display panel assembly (see [Display panel assembly on page 20](#)).
5. Remove the bottom bezel (see [Bottom bezel on page 24](#)).
6. Remove the battery (see [Battery on page 25](#)).

Remove the infrared camera:

1. Release the ZIF connector **(1)** to which the infrared camera cable is connected, and then disconnect the infrared camera cable from the system board.
2. Detach the infrared camera **(2)** from the back cover. (The infrared camera is attached to the back cover with double-sided adhesive.)

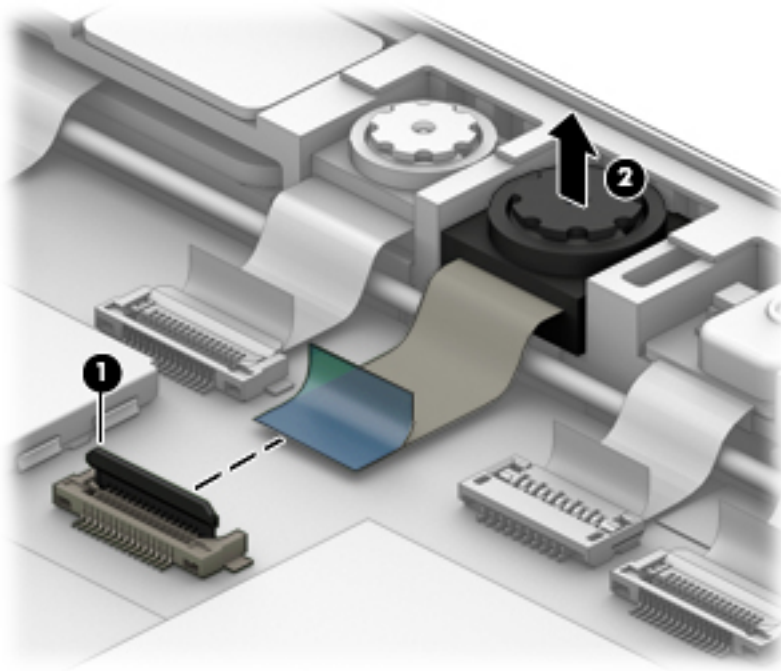


3. Remove the infrared camera.

Remove the front-facing webcam:

1. Release the ZIF connector **(1)** to which the front-facing webcam cable is connected, and then disconnect the front-facing webcam cable from the system board.

2. Detach the front-facing webcam (2) from the back cover. (The front-facing webcam is attached to the back cover with double-sided adhesive.)

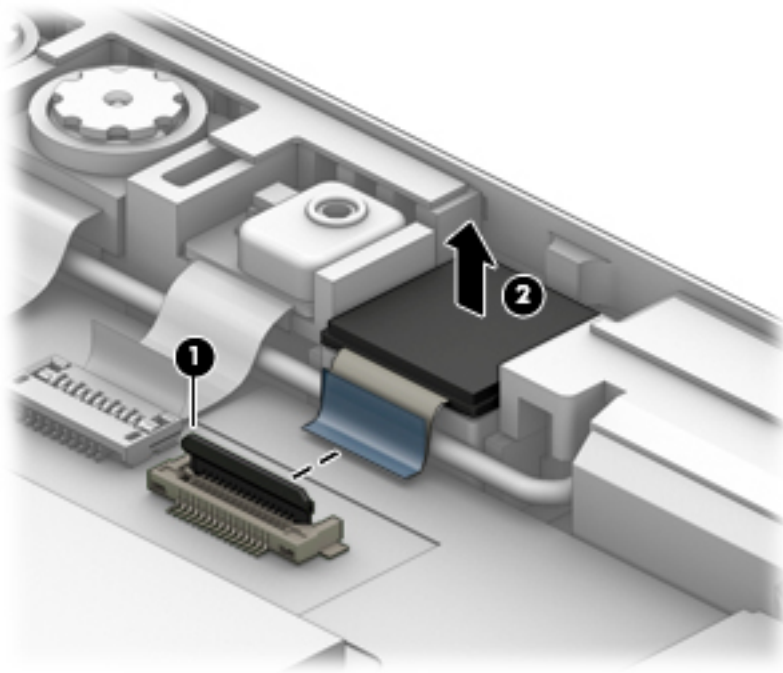


3. Remove the front-facing webcam.

Remove the rear-facing webcam:

1. Release the ZIF connector (1) to which the rear-facing webcam cable is connected, and then disconnect the rear-facing webcam cable from the system board.

2. Detach the rear-facing webcam **(2)** from the back cover. (The rear-facing webcam is attached to the back cover with double-sided adhesive.)



3. Remove the rear-facing webcam.  
Reverse this procedure to install the webcams.

## Heat sink

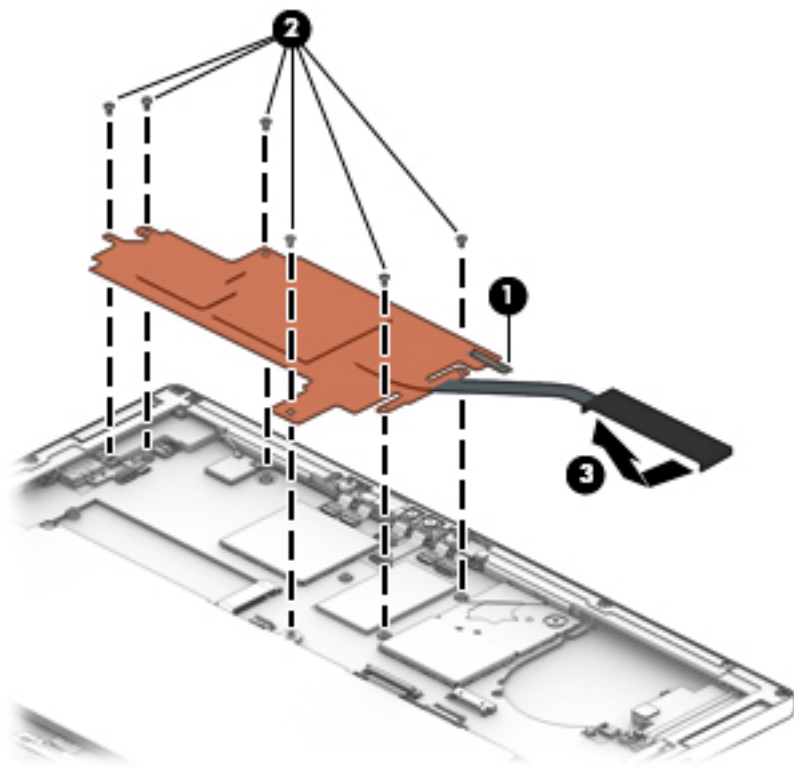
Description	Spare part number
Heat sink (includes replacement thermal material)	924845-001


Before removing the heat sink, follow these steps:

1. Turn off the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.
2. Disconnect the power from the tablet by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the tablet.
3. Disconnect all external devices from the tablet.
4. Remove the display panel assembly (see [Display panel assembly on page 20](#)), and then remove the following components:
  - a. Bottom bezel (see [Bottom bezel on page 24](#))
  - b. Battery (see [Battery on page 25](#))
  - c. Fan (see [Fan on page 31](#))

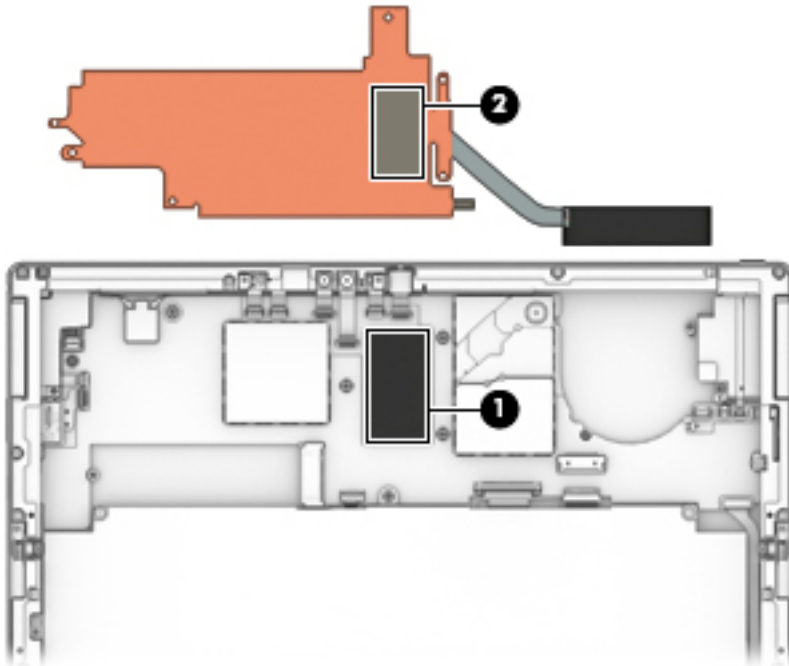
Remove the heat sink:

1. Release the grounding tape **(1)** that secures the heat sink to the system board.
2. Remove the six Phillips PM2.0×2.8 screws **(2)** that secure the heat sink to the system board.
3. Slide the heat sink **(3)** forward and then up and remove it.



 **NOTE:** The thermal material must be thoroughly cleaned from the surfaces of the heat sink and the system board components each time the heat sink is removed. Replacement thermal material is included with the heat sink and system board spare part kits.

Thermal 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:** All system board spare part kits include a processor and replacement thermal material.

Description	Spare part number
Equipped with an Intel Core i7-7560U 2.40-GHz (turbo up to 3.80-GHz) dual core processor (1866-MHz FSB, 4.0-GB L3 cache, 15-W), an Intel Iris Graphics Plus 640 graphics subsystem with UMA video memory, 16-GB system memory, and the Windows 10 operating system	920545-601
Equipped with an Intel Core i7-7560U 2.40-GHz (turbo up to 3.80-GHz) dual core processor (1866-MHz FSB, 4.0-GB L3 cache, 15-W), an Intel Iris Graphics Plus 640 graphics subsystem with UMA video memory, 16-GB system memory, and a non-Windows operating system	920545-001
Equipped with an Intel Core i7-7560U 2.40-GHz (turbo up to 3.80-GHz) dual core processor (1866-MHz FSB, 4.0-GB L3 cache, 15-W), an Intel Iris Graphics Plus 640 graphics subsystem with UMA video memory, 8-GB system memory, and the Windows 10 operating system	920544-601
Equipped with an Intel Core i7-7560U 2.40-GHz (turbo up to 3.80-GHz) dual core processor (1866-MHz FSB, 4.0-GB L3 cache, 15-W), an Intel Iris Graphics Plus 640 graphics subsystem with UMA video memory, 8-GB system memory, and a non-Windows operating system	920544-001
Equipped with an Intel Core i5-7260U 2.20-GHz (turbo up to 3.40-GHz) dual core processor (1866-MHz FSB, 4.0-GB L3 cache, 15-W), an Intel Iris Graphics Plus 640 graphics subsystem with UMA video memory, 8-GB system memory, and the Windows 10 operating system	920546-601
Equipped with an Intel Core i5-7260U 2.20-GHz (turbo up to 3.40-GHz) dual core processor (1866-MHz FSB, 4.0-GB L3 cache, 15-W), an Intel Iris Graphics Plus 640 graphics subsystem with UMA video memory, 8-GB system memory, and a non-Windows operating system	920546-001

Before removing the system board, follow these steps:

1. Shut down the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the tablet.
3. Disconnect the power from the tablet by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the tablet.
4. Remove the display panel assembly (see [Display panel assembly on page 20](#)), and then remove the following components:
  - a. Bottom bezel (see [Bottom bezel on page 24](#))
  - b. Battery (see [Battery on page 25](#))
  - c. Fan (see [Fan on page 31](#))
  - d. Heat sink (see [Heat sink on page 44](#))


When replacing the system board, be sure to remove the microSD memory card reader board (see [MicroSD memory card reader board on page 49](#)) from the defective system board and install it on the replacement system board.

Remove the system board:

1. Disconnect the following cables from the system board:
  - (1) Audio jack board ZIF connector cable
  - (2) Left speaker cable



### (3) WLAN antenna cables

 **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.

(4) Left microphone ZIF connector cable

(5) Infrared LED board ZIF connector cable

(6) Infrared camera ZIF connector cable

(7) Front-facing webcam ZIF connector cable

(8) Right microphone ZIF connector cable

(9) Rear-facing webcam ZIF connector cable

(10) Right speaker cable

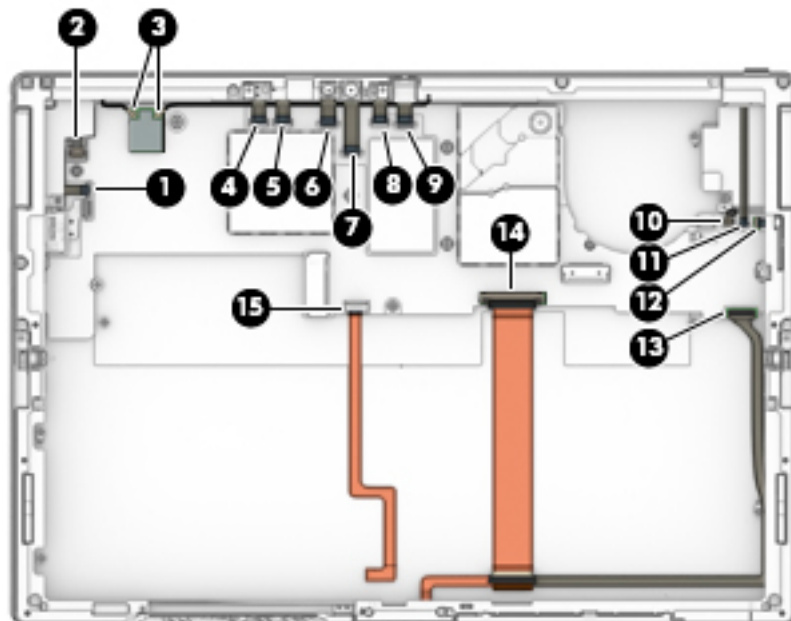
(11) Power button board ZIF connector cable

(12) Volume button board ZIF connector cable

(13) POGO pin ZIF connector cable

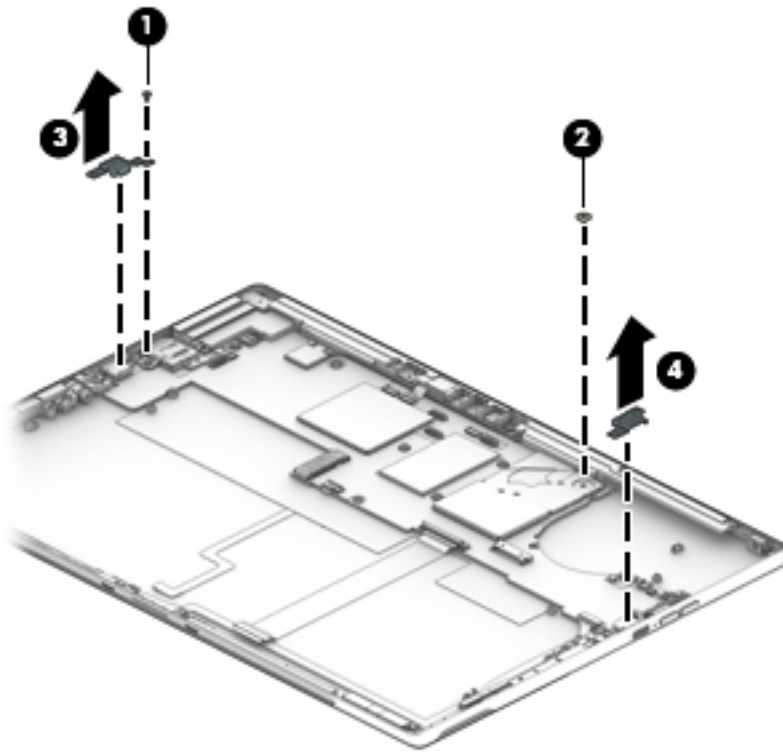
(14) Display panel ZIF connector cable

(15) Touchscreen board ZIF connector cable

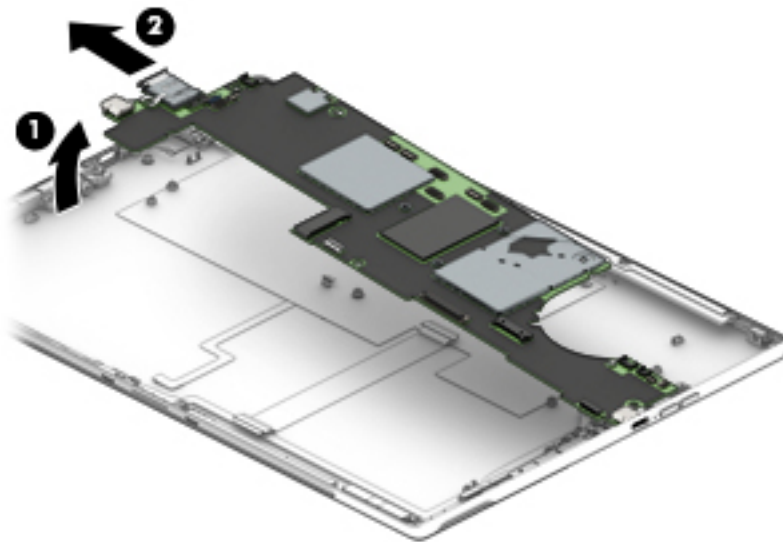


2. Remove the Phillips PM2.0×2.8 screw (1) that secures the system board to the back cover.
3. Remove the Phillips PM2.0×2.2 broad head screw (2) that secures the system board to the back cover.

4. Remove the left **(3)** and right I/O brackets **(4)**.



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



Reverse this procedure to install the system board.

## MicroSD memory card reader board

Description	Spare part number
MicroSD memory card reader board (includes cable and double-sided adhesive)	924835-001
MicroSD memory card reader bezel	924175-001

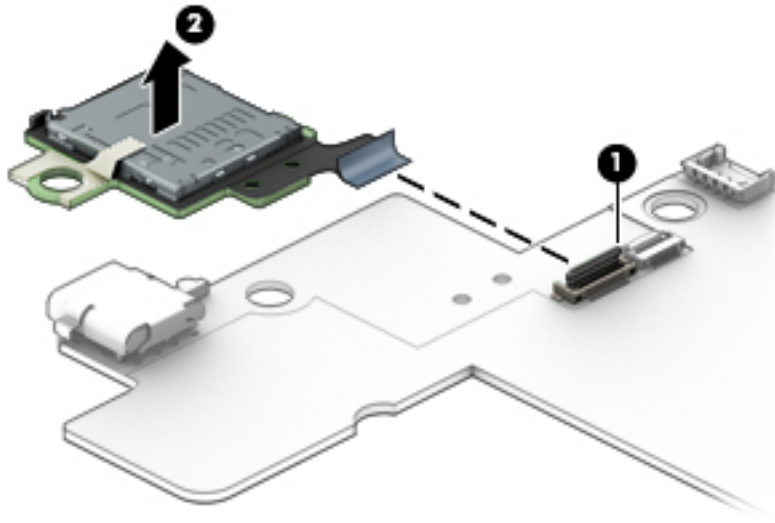
Before removing the microSD memory card reader board, follow these steps:

1. Shut down the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the tablet.
3. Disconnect the power from the tablet by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the tablet.
4. Remove the display panel assembly (see [Display panel assembly on page 20](#)), and then remove the following components:
  - a. Bottom bezel (see [Bottom bezel on page 24](#))
  - b. Battery (see [Battery on page 25](#))
  - c. Fan (see [Fan on page 31](#))
  - d. Microphones (see [Microphones on page 38](#))
  - e. Webcams (see [Webcams on page 40](#))
  - f. Heat sink (see [Heat sink on page 44](#))
  - g. System board (see [System board on page 46](#))

Remove the microSD memory card reader board:

1. Release the ZIF connector **(1)** to which microSD memory card reader board cable is connected, and then disconnect the microSD memory card reader board cable from the system board.

2. Detach the microSD memory card reader board **(2)** from the back cover. (The microSD memory card reader board is attached to the back cover with double-sided adhesive.)



3. Remove the microSD memory card reader board.

Reverse this procedure to install the microSD memory card reader board.

## Wireless antenna

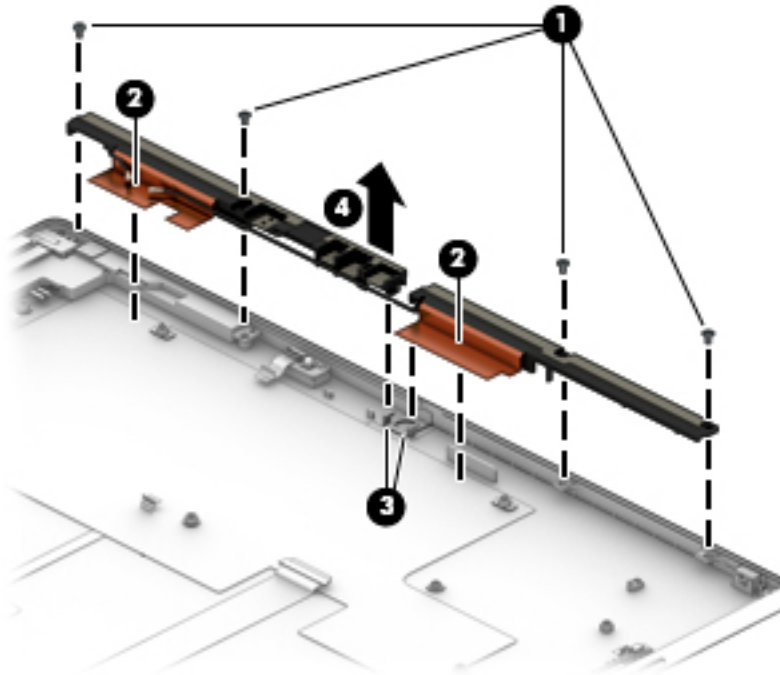
Description	Spare part number
Wireless antenna (includes left and right wireless antenna cables, transceivers, and double-sided adhesive)	924213-001

Before removing the wireless antenna, follow these steps:

1. Shut down the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the tablet.
3. Disconnect the power from the tablet by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the tablet.
4. Remove the display panel assembly (see [Display panel assembly on page 20](#)), and then remove the following components:
  - a. Bottom bezel (see [Bottom bezel on page 24](#))
  - b. Battery (see [Battery on page 25](#))
  - c. Fan (see [Fan on page 31](#))
  - d. Microphones (see [Microphones on page 38](#))
  - e. Webcams (see [Webcams on page 40](#))
  - f. Heat sink (see [Heat sink on page 44](#))
  - g. System board (see [System board on page 46](#))

Remove the wireless antenna:

1. Remove the four Phillips PM2.0×3.8 screws **(1)** that secure the wireless antenna transceivers to the back cover.
2. Detach the wireless antenna transceivers **(2)** from the back cover. (The wireless antenna transceivers are attached to the back cover with double-sided adhesive.)
3. Release the wireless antenna cable from the retention clip **(3)** built into the back cover.
4. Remove the wireless antenna cables **(4)** and transceivers.



Reverse this procedure to install the wireless antenna.

## Left speaker

Description	Spare part number
Left speaker (includes cable)	924846-001

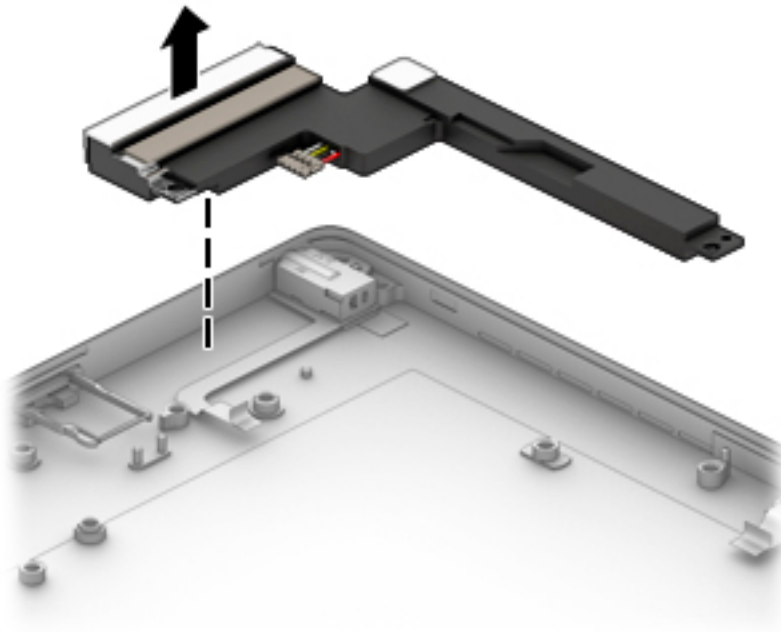
Before removing the left speaker, follow these steps:

1. Shut down the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the tablet.
3. Disconnect the power from the tablet by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the tablet.
4. Remove the display panel assembly (see [Display panel assembly on page 20](#)), and then remove the following components:
  - a. Bottom bezel (see [Bottom bezel on page 24](#))
  - b. Battery (see [Battery on page 25](#))

- c. Fan (see [Fan on page 31](#))
- d. Microphones (see [Microphones on page 38](#))
- e. Webcams (see [Webcams on page 40](#))
- f. Heat sink (see [Heat sink on page 44](#))
- g. System board (see [System board on page 46](#))
- h. Wireless antenna (see [Wireless antenna on page 50](#))

Remove the left speaker:

- ▲ Remove the left speaker.



Reverse this procedure to install the left speaker.

## Audio jack board

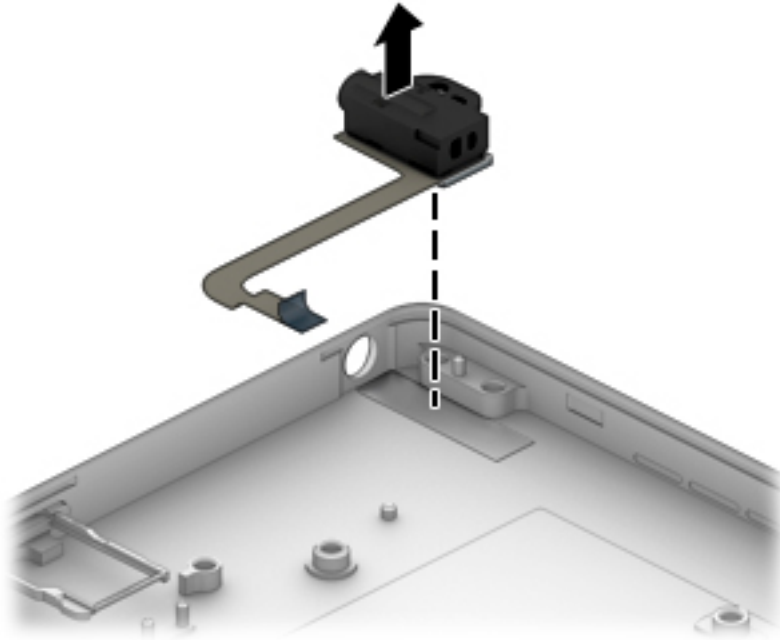
Description	Spare part number
Audio jack board (includes audio jack and cable)	924836-001

Before removing the audio jack board, follow these steps:

1. Shut down the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the tablet.
3. Disconnect the power from the tablet by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the tablet.
4. Remove the display panel assembly (see [Display panel assembly on page 20](#)), and then remove the following components:
  - a. Bottom bezel (see [Bottom bezel on page 24](#))
  - b. Battery (see [Battery on page 25](#))
  - c. Fan (see [Fan on page 31](#))
  - d. Microphones (see [Microphones on page 38](#))
  - e. Webcams (see [Webcams on page 40](#))
  - f. Heat sink (see [Heat sink on page 44](#))
  - g. System board (see [System board on page 46](#))
  - h. Wireless antenna (see [Wireless antenna on page 50](#))
  - i. Left speaker (see [Left speaker on page 51](#))

Remove the audio jack board:

- ▲ Remove the audio jack board.



Reverse this procedure to install the audio jack board.



## Infrared LED board cable

Description	Spare part number
Infrared LED board cable (includes double-sided adhesive)	924168-001

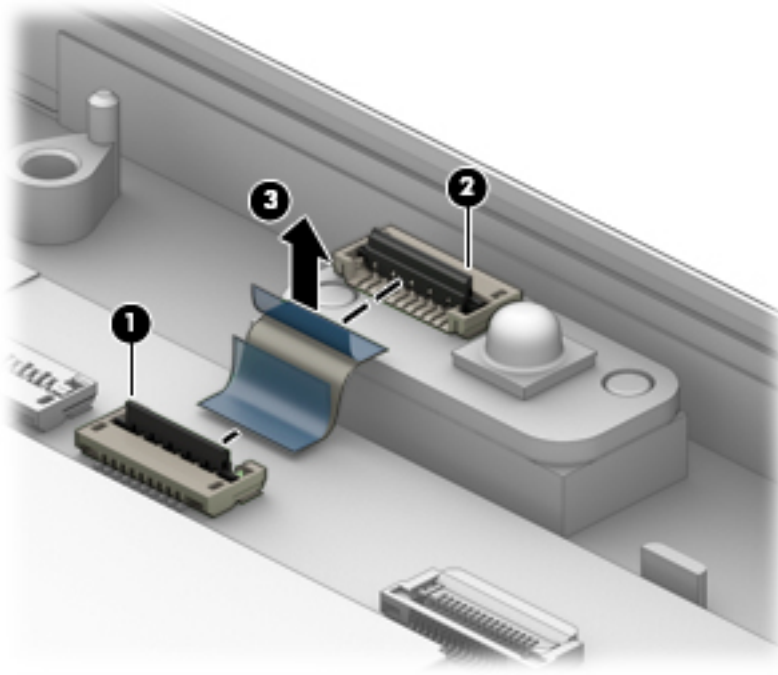
Before removing the infrared LED board cable, follow these steps:

1. Shut down the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the tablet.
3. Disconnect the power from the tablet by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the tablet.
4. Remove the display panel assembly (see [Display panel assembly on page 20](#)), and then remove the following components:
  - a. Bottom bezel (see [Bottom bezel on page 24](#))
  - b. Battery (see [Battery on page 25](#))
  - c. Fan (see [Fan on page 31](#))
  - d. Microphones (see [Microphones on page 38](#))
  - e. Webcams (see [Webcams on page 40](#))
  - f. Heat sink (see [Heat sink on page 44](#))
  - g. System board (see [System board on page 46](#))
  - h. Wireless antenna (see [Wireless antenna on page 50](#))

Remove the infrared LED board cable:

1. Release the ZIF connector **(1)** to which infrared LED board cable is connected, and then disconnect the infrared LED board cable from the system board.
2. Release the ZIF connector **(2)** to which infrared LED board cable is connected, and then disconnect the infrared LED board cable from the infrared LED board.

3. Detach the infrared LED board cable (3) from the back cover. (The infrared LED board cable is attached to the back cover with double-sided adhesive.)



4. Remove the infrared LED board cable.  
Reverse this procedure to install the infrared LED board cable.

## Infrared LED board

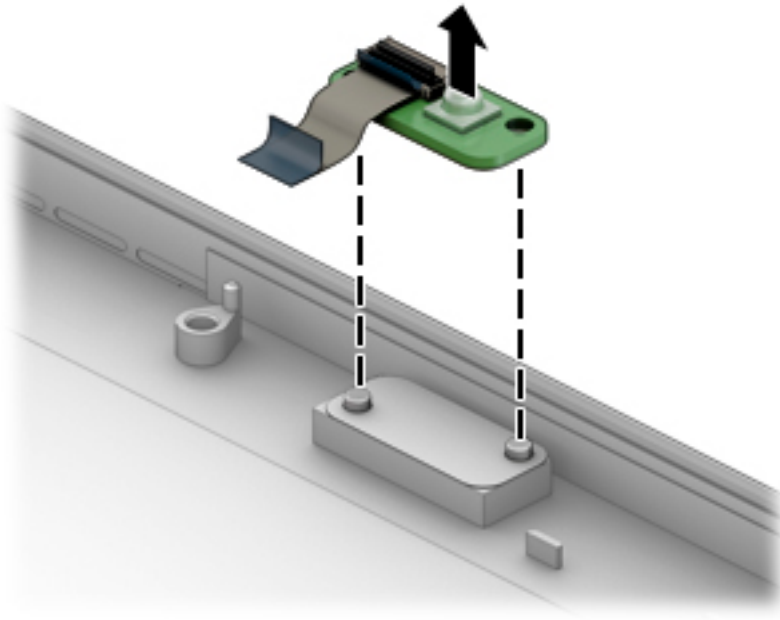
Description	Spare part number
Infrared LED board (does not include infrared board cable)	924837-001
<b>NOTE:</b> The infrared LED board spare part kit does not include the infrared LED board cable. The infrared LED board cable is available using spare part number 924168-001.	

Before removing the infrared LED board, follow these steps:

1. Shut down the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the tablet.
3. Disconnect the power from the tablet by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the tablet.
4. Remove the display panel assembly (see [Display panel assembly on page 20](#)), and then remove the following components:
  - a. Bottom bezel (see [Bottom bezel on page 24](#))
  - b. Battery (see [Battery on page 25](#))
  - c. Fan (see [Fan on page 31](#))
  - d. Microphones (see [Microphones on page 38](#))
  - e. Webcams (see [Webcams on page 40](#))
  - f. Heat sink (see [Heat sink on page 44](#))
  - g. System board (see [System board on page 46](#))
  - h. Wireless antenna (see [Wireless antenna on page 50](#))

Remove the infrared LED board:

- ▲ Remove the infrared LED board




Reverse this procedure to install the infrared LED board.

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## 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.


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 **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.

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### Starting Setup Utility (BIOS)

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

---

- 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 up 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*), use one of these options.

- HP Support Assistant
  1. Type `support` in the taskbar search box, and then select the **HP Support Assistant** app.
    - or –
    - Select the question mark icon in the taskbar.
  2. Select **My PC**, and then select **Specifications**.
- Setup Utility (BIOS)


1. Start Setup Utility (BIOS) (see [Starting Setup Utility \(BIOS\) on page 59](#)).
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 60](#).

## 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 –  
Select the question mark icon in the taskbar.
2. Select **Updates**, and then select **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. Select 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 or double-tap 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) 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.


When HP PC Hardware Diagnostics UEFI detects a failure that requires hardware replacement, a 24-digit Failure ID code is generated. This ID code can then be provided to support to help determine how to correct the problem.

To start HP PC Hardware Diagnostics (UEFI), follow these steps:


1. Start BIOS.
  - 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 up 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 61](#).
  - 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.

---

 **NOTE:** To stop a test, press the button you used to access UEFI.

---

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

 **NOTE:** The HP PC Hardware Diagnostics (UEFI) download instructions are provided in English only, and you must use a Windows computer to download and create the HP UEFI support environment because only .exe files are offered.

---

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, select the **Download** link, and then select **Run**.

### Download any version of UEFI for a specific product

1. Go to <http://www.hp.com/support>.
2. Select **Get Software and drivers**.
3. Enter the product name or number.

– or –

Select **Identify 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.
<b>Computer dimensions</b>		
<b>Width</b>	<b>37.8 cm</b>	14.9 in
<b>Depth</b>	<b>25.2 cm</b>	9.9 in
<b>Height</b>	<b>2.5 cm</b>	0.9 in
<b>Weight</b>	<b>1.9 kg</b>	4.4 lbs
<b>Temperature</b>		
Operating	<b>5°C to 35°C</b>	41°F to 95°F
Nonoperating	<b>-20°C to 60°C</b>	-4°F to 140°F
<b>Relative humidity</b> (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
<b>Maximum altitude</b> (unpressurized)		
Operating	<b>-15 m to 3,048 m</b>	-50 ft to 10,000 ft
Nonoperating	<b>-15 m to 12,192 m</b>	-50 ft to 40,000 ft
<b>NOTE:</b> Applicable product safety standards specify thermal limits for plastic surfaces. The device operates well within this range of temperatures.		

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## 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 –

Select 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 tablet to the keyboard base 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 64](#). For information on the recovery options that are available using the recovery media, see [Using Windows tools on page 65](#).
- 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 66](#).

---

 **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 65](#).

- 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 tablet to the keyboard base 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 66](#).

## 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 66](#). If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 64](#).
- 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 66](#).
- 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 69](#).


## 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 64](#).

### 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 64](#).
- 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 64](#).
- 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 tablet to the keyboard base 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 up button; then select **f11**.
- or –
- Turn on or restart the tablet, and then quickly hold down the volume down 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 68](#).

---

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 tablet to the keyboard base before beginning these steps.

---

1. Insert the HP Recovery media.
2. Access the system **Startup** menu.

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 up button; then select **f9**.

– or –

Turn on or restart the tablet, and then quickly hold down the volume down 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 64](#).



**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



<b>Country/region</b>	<b>Accredited agency</b>	<b>Applicable note number</b>
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-mm<sup>2</sup> 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-mm<sup>2</sup> 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-mm<sup>2</sup> 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-mm<sup>2</sup> 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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