



HP ENVY x2 Detachable (model numbers 12-e001 through 12-e099)

Maintenance and Service Guide
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First Edition: December 2017

Document Part Number: L12736-001

Product notice

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

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

In accordance with Microsoft's support policy, HP does not support the Windows 8 or Windows 7 operating system on this product or provide any Windows 8 or Windows 7 drivers on <http://support.hp.com>.

Software terms

By installing, copying, downloading, or otherwise using any software product preinstalled on this computer, you agree to be bound by the terms of the HP End User License Agreement (EULA). If you do not accept these license terms, your sole remedy is to return the entire unused product (hardware and software) within 14 days for a full refund subject to the refund policy of your seller.

For any further information or to request a full refund of the price of the computer, please contact your seller.

Safety warning notice


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

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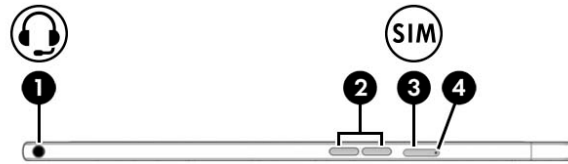
1 Product description


Category	Description
Product Name	HP ENVY x2 Detachable
Processors	Qualcomm® Snapdragon™ 835 Mobile PC Platform (up to 2.6GHz, 8 cores, 1866MHz, 2 MB L2 cache)
Graphics	Internal graphics: Qualcomm Adreno™ 540
Panel	12.3-in WUXGA+ white light-emitting diod (WLED), BrightView (1920×1280), uslim-bent (1.96mm), ultra-wide viewing angle (UWVA), and panel self-refresh (PSR)
Memory	Support for up to 8192 MB of LPDDR4X 1866 MHz system memory in the following configurations: 8192 MB (8192 MB × 1) 4096 MB (4096 MB × 1)
Hard drive	Support for the following universal flash storage (USF) configurations: 128 GB 256 GB
Optical drive	Support for external 9.5 mm tray load, SATA, DVD+/-RW DL SuperMulti drive
Audio and video	Support for the following integrated cameras: Front: HP Wide Vision camera: high definition (2592×1944) 5 MP, fixed (no tilt), wide dynamic range (WDR) Rear: HP Wide Vision camera: high definition (4160×3120) 13 MP, fixed (no tilt), WDR Triple digital microphone array w/ appropriate software - beam forming, echo cancellation, noise suppression Dual speakers Bang & Olufsen Audio
Wireless	Qualcomm WCN3990 802.11.AC 2×2 Dual-Phy Wi-Fi MU-MIMO with Bluetooth-5 Compatible with Miracast-certified devices
External media cards	Micro Secure Digital (SD) Media Reader with pin-injection technology
Ports	AC adapter: HP Smart pin plug Audio: one combo audio-out (headphone)/audio-in (microphone) jack (1) USB Type-C (Generation 1) on left side
Keyboard/pointing devices	3-coat paint island-style keyboard in Oxford Blue color Clickpad with image sensor Multitouch gestures enabled by default Support for Modern Trackpad gestures

Category	Description
	Taps enabled by default
Power requirements	45-W Smart AC USB Type-C adapter (duckhead style) with localized cable plug support 1 meter power cord 3-cell, 49-Whr polymer battery
Security	Qualcomm Mobile Security Solutions
Operating system	Preinstalled Windows 10 S
Serviceability	End user replaceable parts: AC adapter Soft cover keyboard/keyboard cover

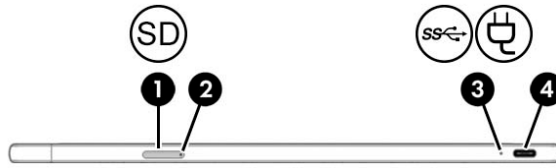
2 External component identification


Right side



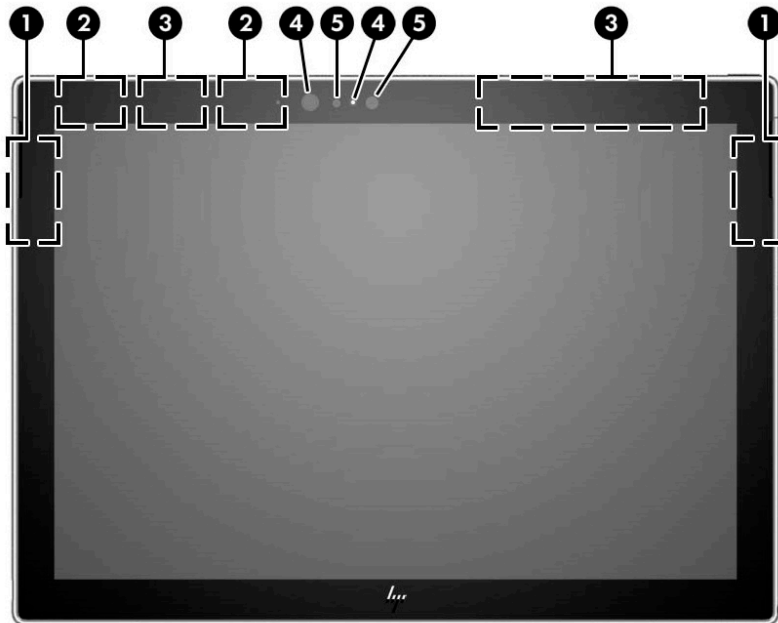
Component	Description
(1)  Audio-out (headphone)/Audio-in (microphone) combo jack	<p>Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. This jack does not support optional standalone microphones.</p> <p>WARNING! To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, refer to the <i>Regulatory, Safety, and Environmental Notices</i>.</p> <p>To access this guide:</p> <ul style="list-style-type: none">▲ Select the Start button, select HP Help and Support, and then select HP Documentation. <p>NOTE: When a device is connected to the jack, the computer speakers are disabled.</p>
(2) Volume buttons	Control speaker volume on the computer.
(3) SIM Nano SIM card slot	<p>Supports a wireless subscriber identity module (SIM) card.</p> <p>For SIM card installation steps, see Inserting a nano SIM card on page 18.</p>
(4) Card tray access hole	Insert the removal tool or a small straightened paper clip into the hole and press in to release the tray.

Left side



Component	Description
(1) SD	<p>MicroSD memory card reader</p> <p>Reads optional memory cards that store, manage, share, or access information. For installation instructions, see Using the microSD memory card reader on page 19.</p>
(2)	<p>Card tray access hole</p> <p>Insert the removal tool or a small straightened paper clip into the hole and press in to release the tray.</p>
(3)	<p>AC adapter and battery light</p> <ul style="list-style-type: none"> • White: The AC adapter is connected and the battery is fully charged. • Blinking white: The AC adapter is disconnected and the battery has reached a low battery level. • Amber: The AC adapter is connected and the battery is charging. • Off: The battery is not charging.
(4) 	<p>USB Type-C power connector and SuperSpeed port</p> <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>– and –</p> <p>Connects a USB device that has a Type-C connector, such as a cell phone, camera, activity tracker, or smartwatch, and provides high-speed data transfer.</p> <p>– and –</p> <p>Connects a display device that has a USB Type-C connector, providing DisplayPort output.</p> <p>NOTE: Cables and/or adapters (purchased separately) may be required.</p>

Display



Component	Description
(1) Speakers	Produce sound.
(2) WLAN antennas*	Send and receive wireless signals to communicate with wireless local area networks (WLANs).
(3) WWAN antennas*	Send and receive wireless signals to communicate with wireless wide area networks (WWANs).
(4) Camera lights	On: One or more front cameras are in use.
(5) Cameras	Allow you to video chat, record video, and record still images. Some cameras also allow a facial recognition logon to Windows, instead of a password logon. NOTE: Camera functions vary depending on the camera hardware and software installed on your product.

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

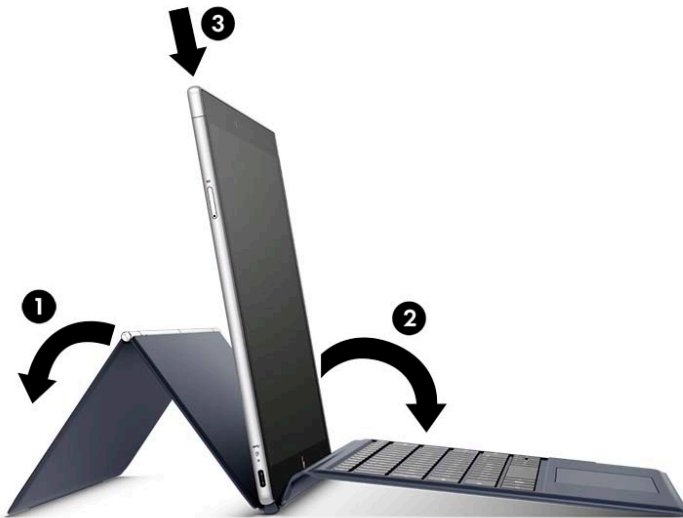
For wireless regulatory notices, see the section of the *Regulatory, Safety, and Environmental Notices* that applies to your country or region,

To access the user guides, select **Start**, select **HP Help and Support**, and then select **HP Documentation**.

Keyboard area

Connecting the keyboard

1. Rotate the softcover top portion **(1)** downward from the hinge until it creates a stand at the angle you want.
2. Flip the softcover keyboard **(2)** downward.
3. To connect the keyboard, lower the computer into the softcover **(3)** until the connectors click into place.

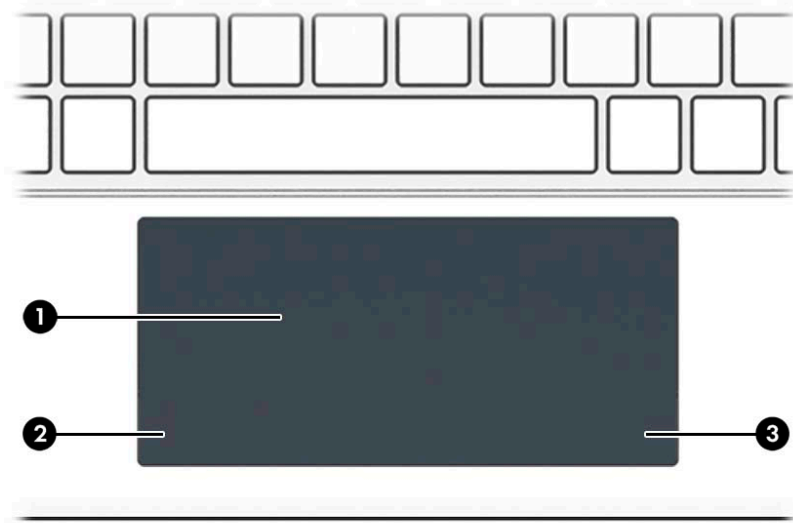


Removing the keyboard

1. To remove the computer from the keyboard, pull the keyboard **(1)** away from the back of the stand.
2. Separate the tablet **(2)** and keyboard **(2)**.

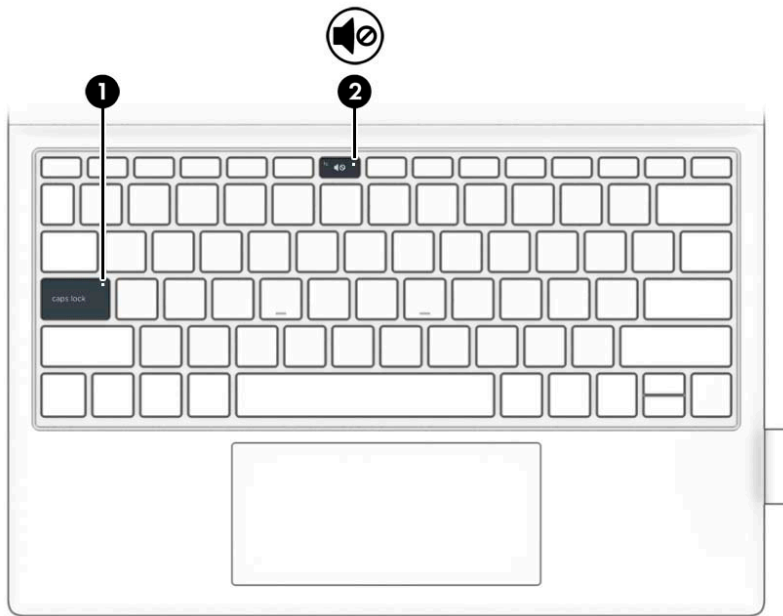



TouchPad



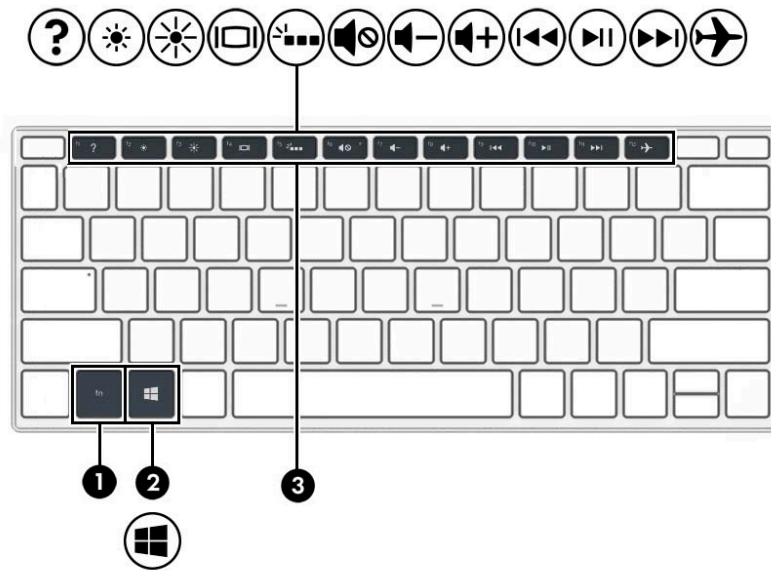
Component		Description
(1)	TouchPad zone	Reads your finger gestures to move the pointer or activate items on the screen.
(2)	Left TouchPad button	Functions like the left button on an external mouse.
(3)	Right TouchPad button	Functions like the right button on an external mouse.

Lights



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

Special keys















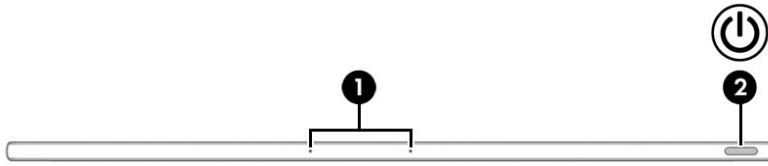
Component	Description
(1) fn key	Executes specific functions when pressed in combination with another key.
(2) Windows® key	Opens the Start menu. NOTE: Pressing the Windows key again will close the Start menu.
(3) Action keys	Execute frequently used system functions. NOTE: On select products, the f5 action key turns the keyboard backlight feature off or on.



Action keys

An action key performs the function indicated by the icon on the key. To determine which keys are on your product, see [Special keys on page 10](#).

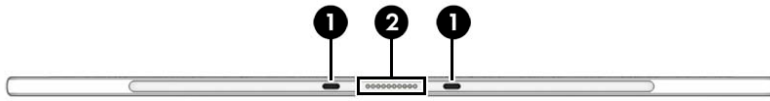
- ▲ To use an action key, press and hold the key.

Icon	Description
	Opens the “How to get help in Windows 10” webpage.
	Decreases the screen brightness incrementally as long as you hold down the key.
	Increases the screen brightness incrementally as long as you hold down the key.
	Switches the screen image between display devices connected to the system. For example, if a monitor is connected to the computer, repeatedly pressing this key alternates the screen image from the computer display to the monitor display to a simultaneous display on both the computer and the monitor.
	Turns the keyboard backlight off or on. NOTE: To conserve battery power, turn off this feature.
	Mutes or restores speaker sound.
	Decreases speaker volume incrementally while you hold down the key.
	Increases speaker volume incrementally while you hold down the key.
	Plays the previous track of an audio CD or the previous section of a DVD or a Blu-ray Disc (BD).
	Starts, pauses, or resumes playback of an audio CD, a DVD, or a BD.
	Plays the next track of an audio CD or the next section of a DVD or a BD.
	Turns the airplane mode and wireless feature on or off. NOTE: The airplane mode key is also referred to as the wireless button. NOTE: A wireless network must be set up before a wireless connection is possible.



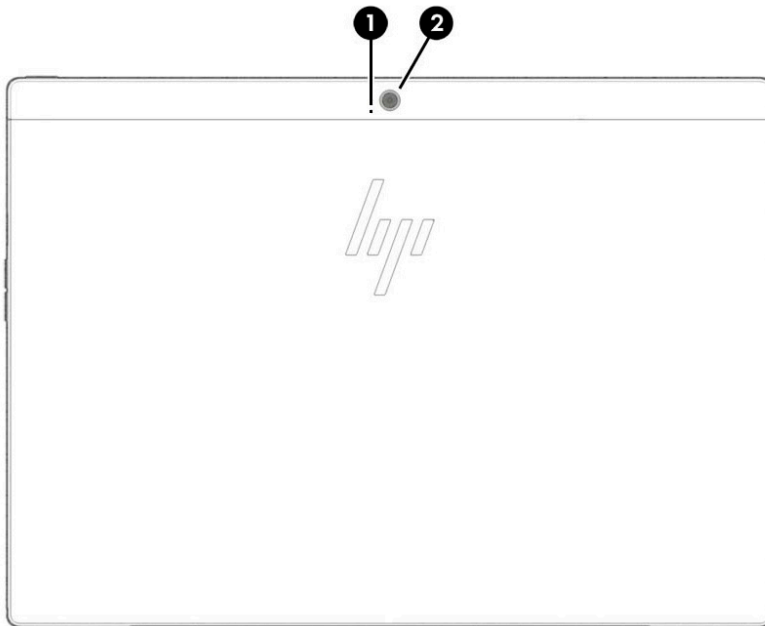
Component		Description
(1)	Internal microphones	Record sound.
(2)	 Power button	<ul style="list-style-type: none">• When the computer is off, press the button to turn on the computer.• When the computer is on, press the button briefly to initiate Sleep.• When the computer is in the Sleep state, press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

Bottom



Component		Description
(1)	Alignment post connectors (2)	Connect to the alignment posts on the keyboard.
(2)	Keyboard connector	Connects the computer to the keyboard.

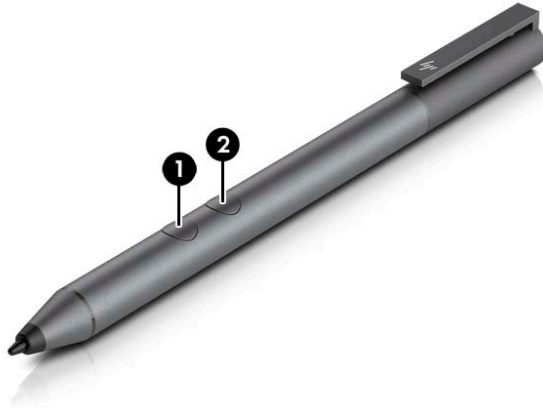
Rear



Component		Description
(1)	Rear internal microphone	Records sound.
(2)	Rear camera	Allows you to video chat, record video, and record still images.

Pen

You can use the active pen provided with the computer to navigate the computer screen. Turn on the pen by tapping the tip to any part of the screen.



Component	Description
(1) Button	Press to erase.
(2) Button	Press to select an item or perform a right-click function.

NOTE: Depending on the application, these button functions might vary. The button functions cannot be customized.

For more information about the pen, refer to the documentation provided with the pen.

Also refer to Pen & Windows Ink.

1. Select **Start**, and then select **Settings**.
2. Select **Devices**, select **Pen & Windows Ink**, and then follow the on-screen instructions.



When not using the pen, store it in the pen holder on the keyboard. Make sure to face the buttons toward the computer when storing the pen so as to avoid unintentional activation and battery drain.

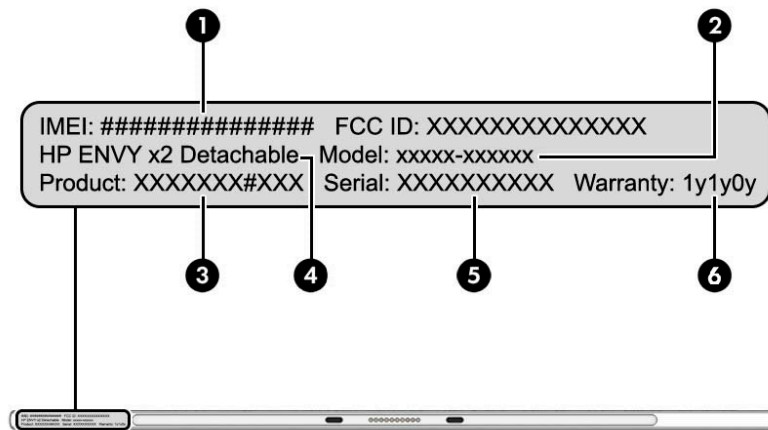
Labels

The labels affixed to the computer provide information you may need when you troubleshoot system problems or travel internationally with the computer.

IMPORTANT: Check the following locations for the labels described in this section: the bottom of the computer, inside the battery bay, under the service door, on the back of the display, or on the bottom of a tablet kickstand.

- Service label—Provides important information to identify your computer. When contacting support, you may be asked for the serial number, the product number, or the model number. Locate this information before you contact support.

Your service label will contain the information shown below.



Component	
(1)	IMEI number
(2)	Model number
(3)	Product ID
(4)	HP product name (select products only)
(5)	Serial number
(6)	Warranty period

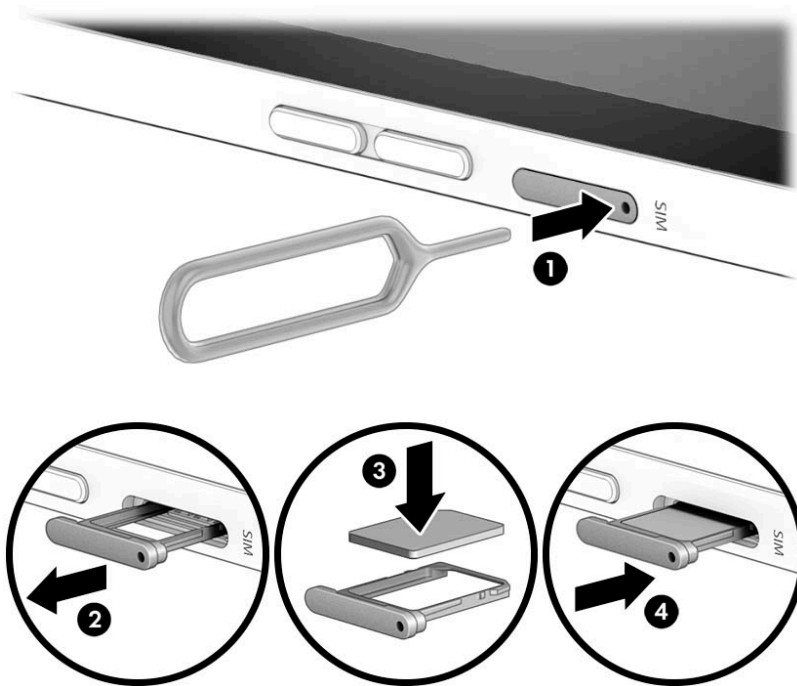
- Regulatory label(s)—Provide(s) regulatory information about the computer.
- Wireless certification label(s)—Provide(s) information about optional wireless devices and the approval markings for the countries or regions in which the devices have been approved for use.

Inserting a nano SIM card

CAUTION: To prevent damage to the connectors, use minimal force when inserting a nano SIM card.

CAUTION: To prevent damage to a SIM card or a computer, do not change the size of a SIM card by cutting or sanding the card.

1. Position the computer display-side up on a flat surface.
2. Insert the removal tool or a small straightened paper clip **(1)** into the card tray access hole.
3. Press the tool or clip in gently until the card tray is ejected.
4. Remove the tray **(2)** from the computer and insert the card **(3)**.
5. Replace the tray in the computer. Press in gently on the tray **(4)** until it is firmly seated.



To remove a SIM card, reverse the steps.

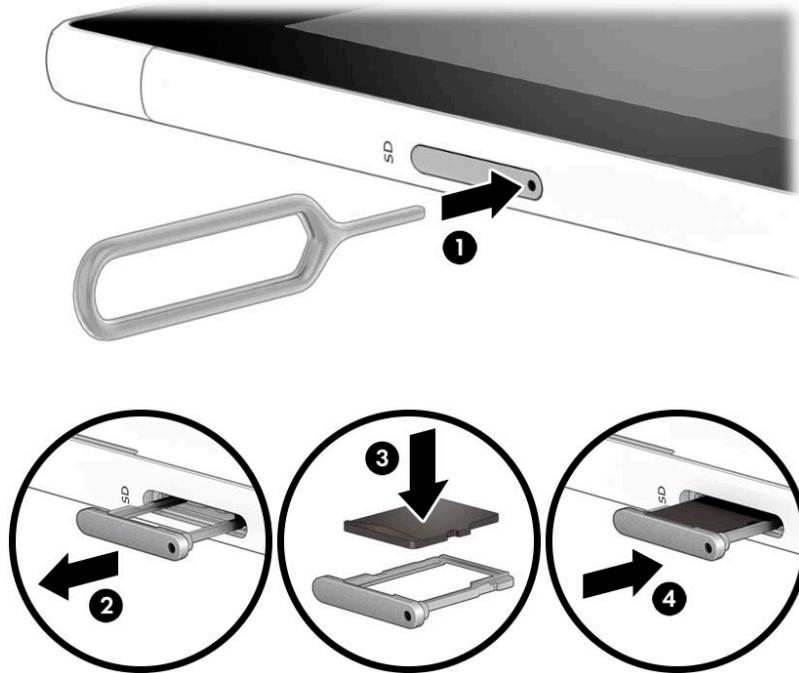
Using the microSD memory card reader

Optional microSD memory cards provide secure data storage and convenient data sharing. These cards are often used with digital cameras and smartphones as well as with other computers.

Inserting a microSD memory card

⚠ CAUTION: To prevent damage to a microSD memory card or the computer, do not use force to remove or replace the tray.


1. Position the computer display-side up on a flat surface.
2. Insert the card removal tool or a small straightened paper clip **(1)** into the card tray access hole.
3. Press the tool or clip in gently until the card tray is ejected.
4. Remove the tray **(2)** from the computer and insert the card **(3)**.
5. Replace the tray in the computer. Press in gently on the tray **(4)** until it is firmly seated.

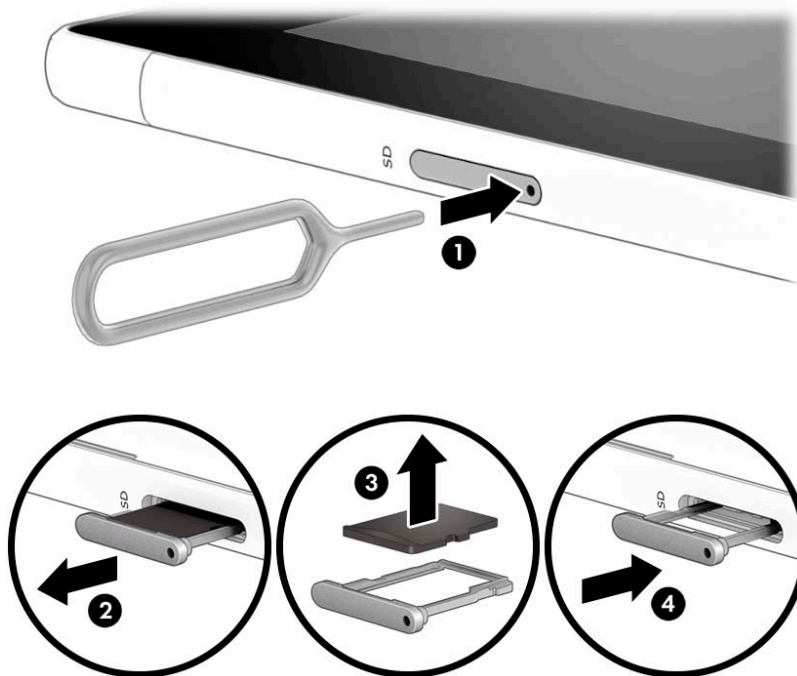


You will hear a sound when the device has been detected, and a menu of options may be displayed.

Removing a microSD memory card

CAUTION: To reduce the risk of loss of data or an unresponsive system, use the following procedure to safely remove the microSD memory card.


1. Save your information and close all programs associated with the microSD memory card.
2. Select the **Safely Remove Hardware and Eject Media** icon  in the notification area, at the far right of the taskbar. Then follow the on-screen instructions.
3. Place the computer display side up on a flat surface.
4. Insert the card removal tool or a small straightened paper clip **(1)** into the card tray access hole.
5. Press the tool or clip in gently until the card tray is ejected.
6. Remove the tray **(2)** from the computer and remove the card **(3)**.
7. Replace the tray in the computer. Press in gently on the tray **(4)** until it is firmly seated.

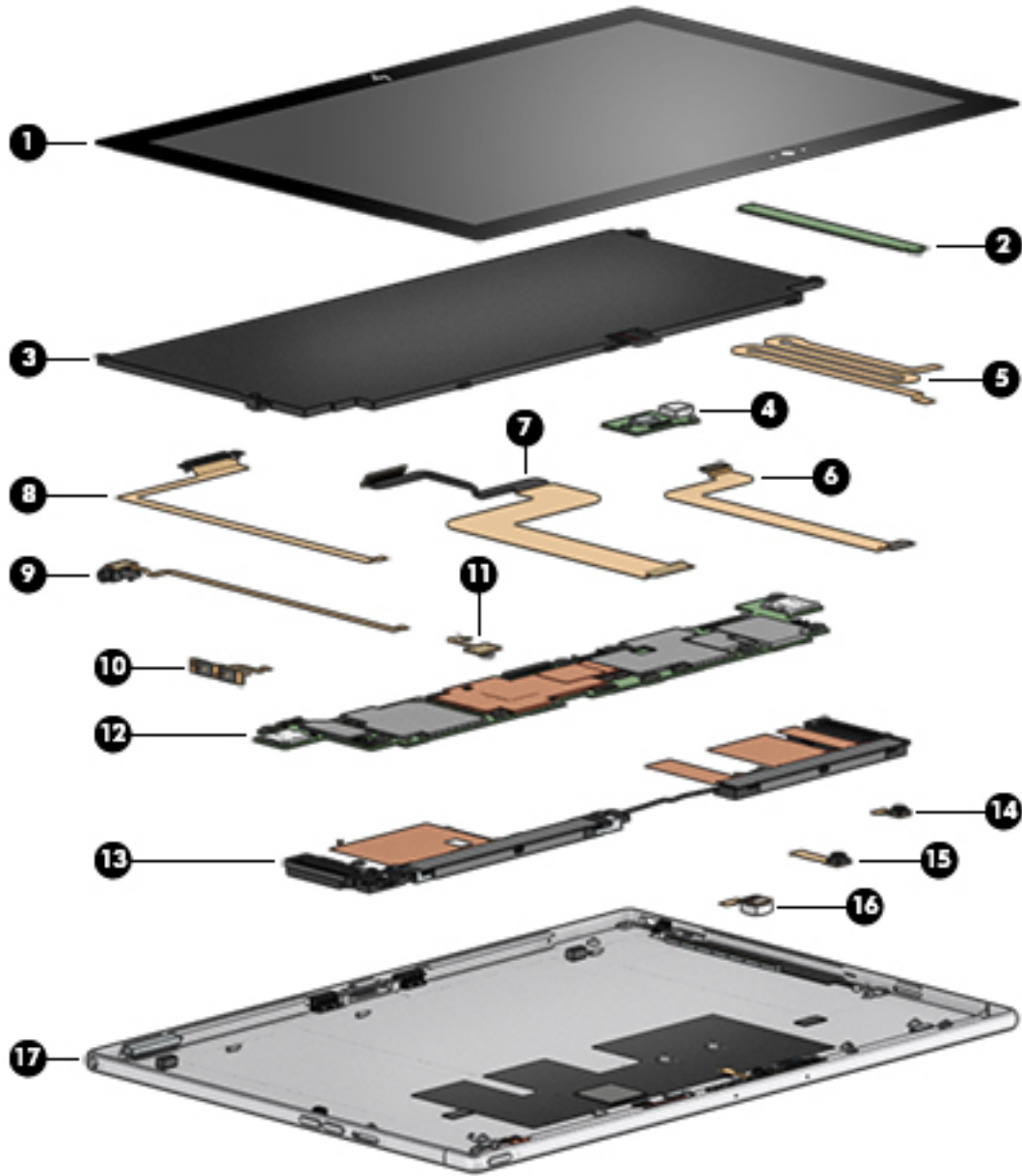


3 Illustrated parts catalog

Computer major components

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

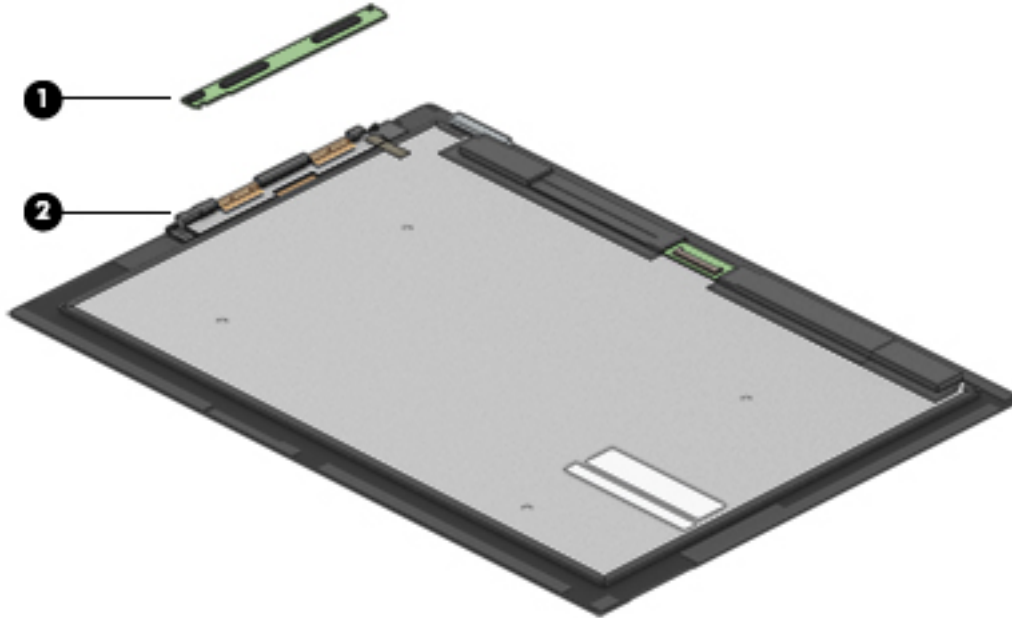
 **NOTE:** Details about your computer, including model, serial number, product key, and length of warranty, are on the service tag at the bottom of your computer. See [Labels on page 17](#) for details.



Item	Component	Spare part number
(1)	Display panel (12.3-in, WUXGA, WLED, BrightView (1920×1280), uslim-bent (1.96-mm), UWVA, PSR, 3:2 ultra wide aspect ratio, flush-glass panel, TouchScreen display assembly)	L10651-001
(2)	Touchscreen board	L05114-001
(3)	Battery (3-cell, 49-WHr, 4.4-AHr, Li-ion)	924961-855
(4)	USB Type-C board	L05115-001
(5)	Touchscreen board cable	L05095-001
(6)	USB Type-C cable	L05097-001
(7)	Display panel cable	L05102-001

Item	Component	Spare part number
(8)	POGO pin cable	L05101-001
(9)	Audio board (includes cable)	L05096-001
(10)	Volume button board (includes cable)	L05099-001
(11)	Power button board (includes cable)	L05098-001
(12)	System board	
	Equipped with a Qualcomm® Snapdragon™ 835 Mobile PC processor (up to 2.6-GHz) eight-core processor (1866-MHz FSB, 2.0-MB L2 cache), a Qualcomm Adreno™ 540 graphics subsystem, 8-GB system memory, and the Windows 10 S operating system for use with the 256-GB solid-state hard drive	L10649-601
	Equipped with a Qualcomm Snapdragon 835 Mobile PC processor (up to 2.6-GHz) eight-core processor (1866-MHz FSB, 2.0-MB L2 cache), a Qualcomm Adreno 540 graphics subsystem, 8-GB system memory, and a non-Windows operating system for use with the 256-GB solid-state hard drive	L10649-001
	Equipped with a Qualcomm Snapdragon 835 Mobile PC processor (up to 2.6-GHz) eight-core processor (1866-MHz FSB, 2.0-MB L2 cache), a Qualcomm Adreno 540 graphics subsystem, 4-GB system memory, and the Windows 10 S operating system for use with the 128-GB solid-state hard drive	L05122-601
	Equipped with a Qualcomm Snapdragon 835 Mobile PC processor (up to 2.6-GHz) eight-core processor (1866-MHz FSB, 2.0-MB L2 cache), a Qualcomm Adreno 540 graphics subsystem, 4-GB system memory, and a non-Windows operating system for use with the 128-GB solid-state hard drive	L05122-001
(13)	Speakers	
	Left speaker	L05120-001
	Right speaker	L05121-001
(14)	Infrared camera	L05125-001
(15)	Front camera	L05124-001
(16)	Rear camera	L05123-001
(17)	Back cover	L05094-001

Display assembly subcomponents



Item	Component	Spare part number
(1)	Touchscreen board	L05114-001
(2)	Display panel (12.3-in, WUXGA, WLED, BrightView (1920×1280), uslim-bent (1.96-mm), UWVA, PSR, 3:2 ultra wide aspect ratio, flush-glass panel, TouchScreen display assembly)	L10651-001

Miscellaneous parts

Component	Spare part number
65-W, USB Type-C, 3-pin, non-PFC, AC adapter	860210-850
Antenna	L05093-001
Tablet assembly (for use outside the United States only)	
Equipped with a Qualcomm Snapdragon 835 Mobile PC processor (up to 2.6-GHz) eight-core processor (1866-MHz FSB, 2.0-MB L2 cache), a Qualcomm Adreno 540 graphics subsystem, 8-GB system memory, and a non-Windows operating system for use with the 256-GB solid-state hard drive in Australia	L14124-001
Equipped with a Qualcomm Snapdragon 835 Mobile PC processor (up to 2.6-GHz) eight-core processor (1866-MHz FSB, 2.0-MB L2 cache), a Qualcomm Adreno 540 graphics subsystem, 8-GB system memory, and a non-Windows operating system for use with the 256-GB solid-state hard drive in the United Kingdom	L14124-031
Equipped with a Qualcomm Snapdragon 835 Mobile PC processor (up to 2.6-GHz) eight-core processor (1866-MHz FSB, 2.0-MB L2 cache), a Qualcomm Adreno 540 graphics subsystem, 4-GB system memory, and a non-Windows operating system for use with the 128-GB solid-state hard drive in Australia	L10650-001
Equipped with a Qualcomm Snapdragon 835 Mobile PC processor (up to 2.6-GHz) eight-core processor (1866-MHz FSB, 2.0-MB L2 cache), a Qualcomm Adreno 540 graphics subsystem, 4-GB system memory, and a non-Windows operating system for use with the 128-GB solid-state hard drive in the United Kingdom	L10650-031
Plastics kit	
Left display bezel	L05117-001
Right display bezel	L05118-001
USB board spacer	L05116-001
Power cord (C5-connector, 1.00-m):	
For use in Australia	L05162-006
For use in Europe	L05162-012
For use in Japan	L05162-008
For use in North America	L05162-011
For use in the United Kingdom	L05162-002
Screw kit	L05119-001
Soft keyboard (in Oxford Blue)	
For use in France	L05112-051
For use in Japan	L05112-291
For use in Spain	L05112-071
For use in the United Kingdom	L05112-031
For use in the United States	L05112-001

4 Removal and replacement procedures preliminary requirements

Tools required

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

- Flat-bladed screwdriver
- Magnetic screwdriver
- Phillips P0 and P1 screwdrivers

Service considerations

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



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

Plastic parts



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

Cables and connectors

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

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

Drive handling

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

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

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

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

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

Avoid dropping drives from any height onto any surface.

After removing a hard drive or an optical drive, place it in a static-proof bag.

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

Avoid exposing a drive to temperature extremes or liquids.

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

Grounding guidelines

Electrostatic discharge damage

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

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

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

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

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

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

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

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

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

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

Typical electrostatic voltage levels			
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 plastic foam	14,500 V	5,000 V	3,500 V
Removing bubble pack from PCB	26,500 V	20,000 V	7,000 V
Packing PCBs in foam-lined box	21,000 V	11,000 V	5,000 V

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

Workstation guidelines

Follow these grounding workstation guidelines:

- Cover the workstation with approved static-shielding material.
- Use a wrist strap connected to a properly grounded work surface and use properly grounded tools and equipment.
- Use conductive field service tools, such as cutters, screwdrivers, and vacuums.
- When fixtures must directly contact dissipative surfaces, use fixtures made only of static safe materials.
- Keep the work area free of nonconductive materials, such as ordinary plastic assembly aids and plastic foam.
- 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 equipment must be worn in contact with the skin.


The following grounding equipment is recommended to prevent electrostatic damage:

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

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


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

5 Removal and replacement procedures

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

CAUTION: This computer 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 computer or void the warranty.

Component replacement procedures


 **NOTE:** Details about your computer, including model, serial number, product key, and length of warranty, are on the service tag at the bottom of your computer. See [Labels on page 17](#) for details.

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

There are as many as 28 screws that must be removed, replaced, and/or loosened when servicing the parts described in this chapter. Make special note of each screw size and location during removal and replacement.

Display panel assembly

Description	Spare part number
12.3-in, WUXGA, WLED, BrightView (1920×1280), uslim-bent (1.96-mm), UWVA, PSR, 3:2 ultra wide aspect ratio, flush-glass panel, TouchScreen display assembly	L10651-001
Back cover	L05094-001

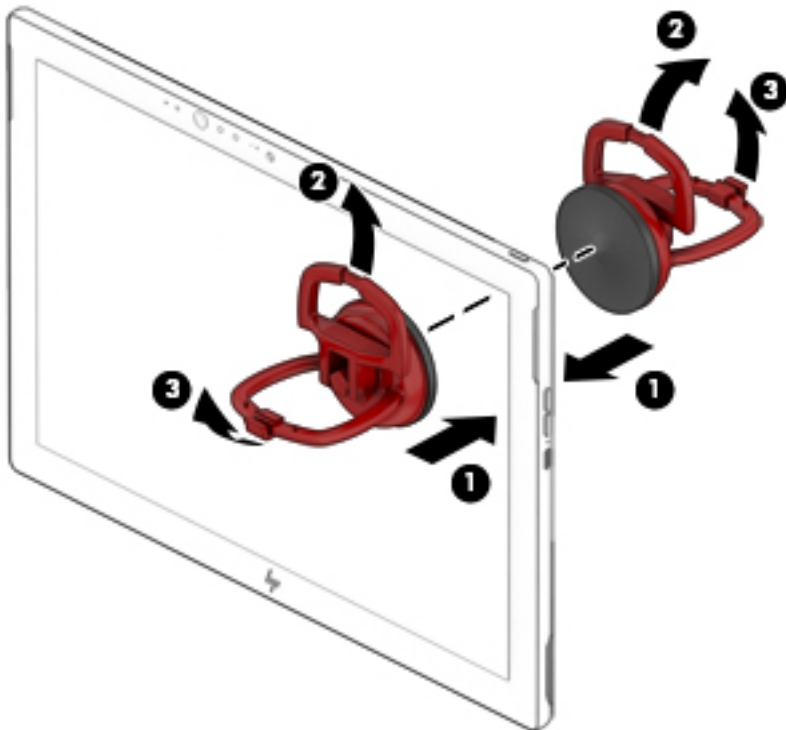
 **IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

Before disassembling the tablet, follow these steps:

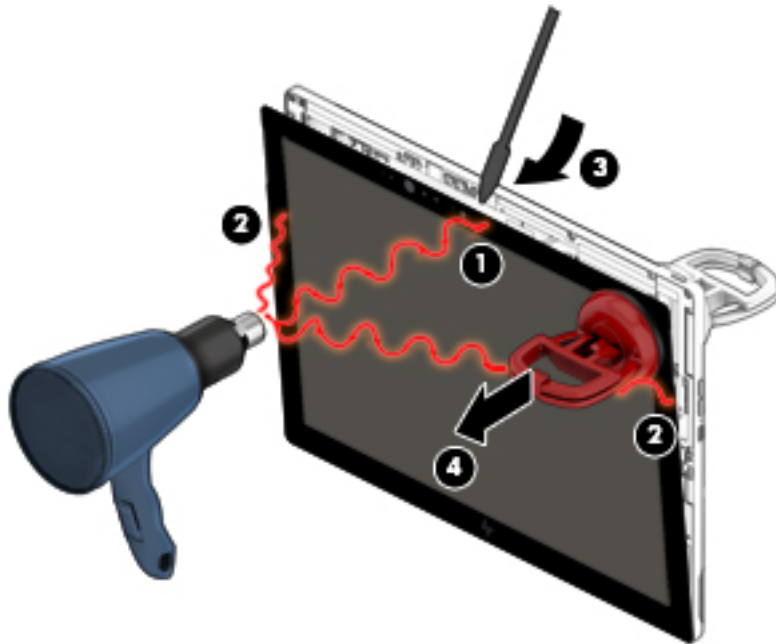
1. Shut down the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the tablet.
3. Disconnect the power from the tablet by first unplugging the power cord from the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

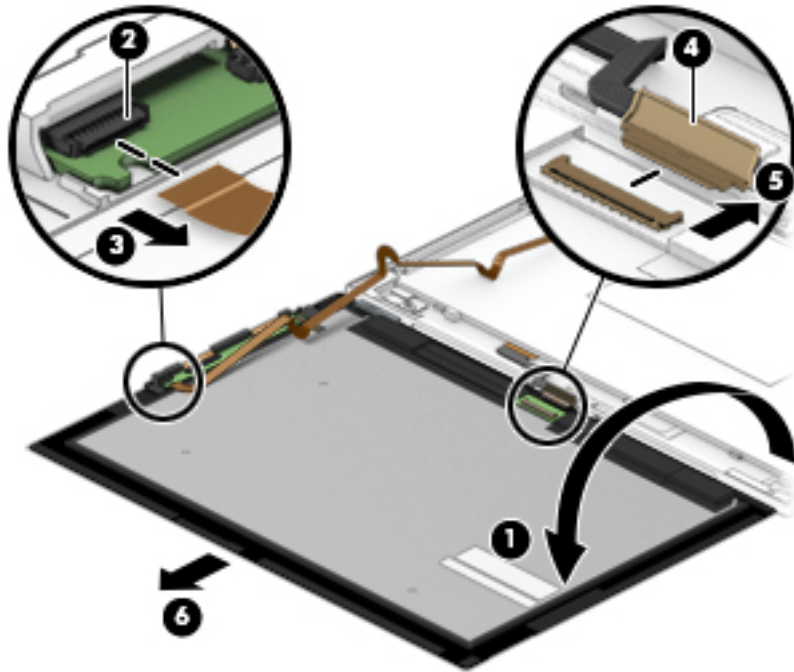


7. Remove the suction cups.

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 **(3)**.
10. Release the ZIF connector to which the display panel cable is connected, and then disconnect the display panel cable **(5)** from the display panel assembly.

11. Remove the display panel assembly (6).



Reverse this procedure to replace the panel.

Touchscreen board

Description	Spare part number
Touchscreen board	L05114-001

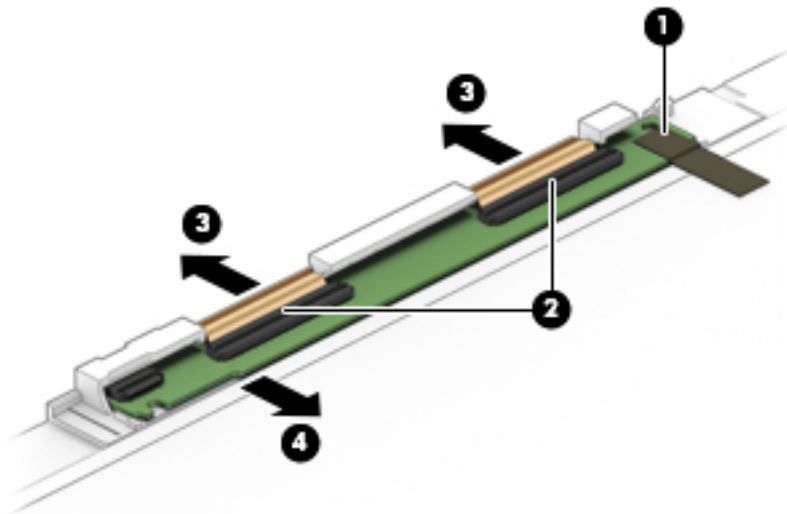
NOTE: The Touchscreen board spare part kit does not include the Touchscreen board cable. The Touchscreen board cable is available using spare part number L05095-001.

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 32](#)).

Remove the Touchscreen board:

1. Detach the piece of grounding tape that secures 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).
3. Detach the Touchscreen board (4) 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.

Battery

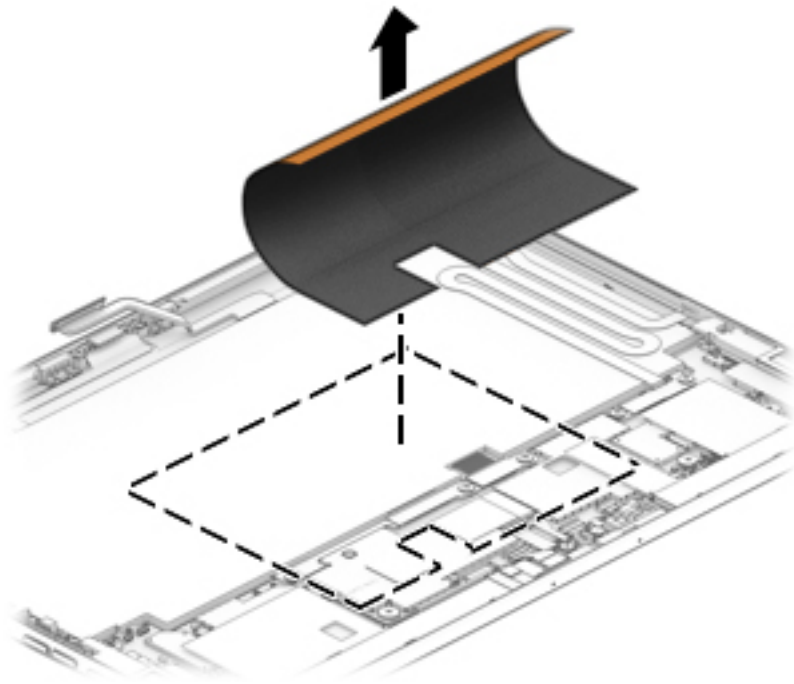
Description	Spare part number
3-cell, 49-WHr, 4.4-AHr, Li-ion battery	924961-855

Before removing the battery, follow these steps:

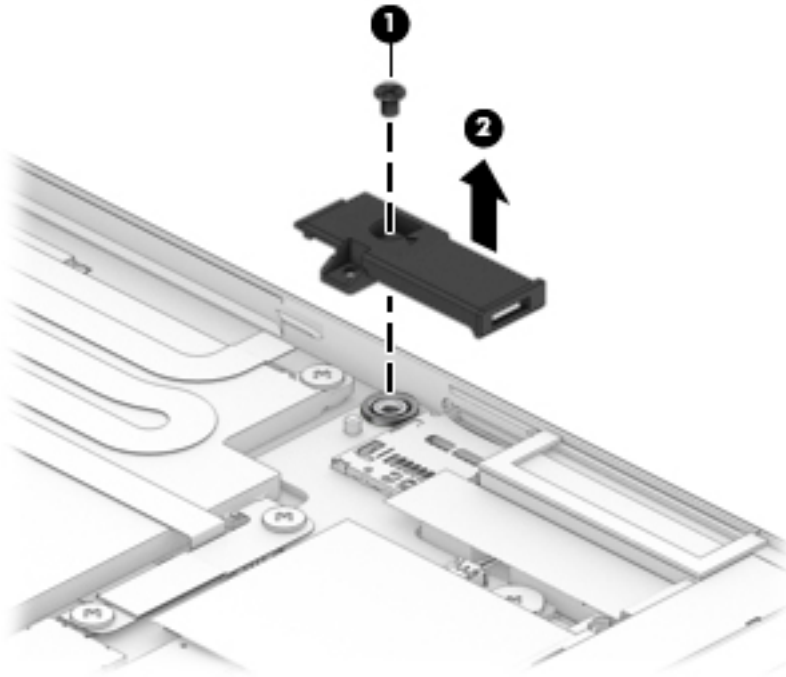
1. Shut down the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the tablet.
3. Disconnect the power from the tablet by first unplugging the power cord from the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

Remove the battery:

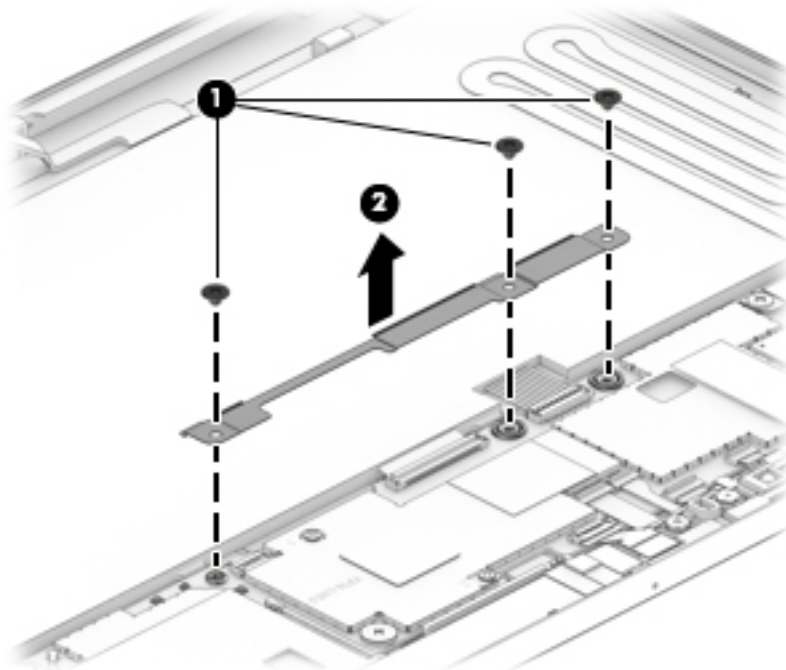
1. Remove the graphite tape covering part of the battery and system components.



2. Remove the one Phillips PM2.0×2.0 screw that secures the SD card reader bracket to the enclosure **(1)**, and then remove the bracket **(2)**.

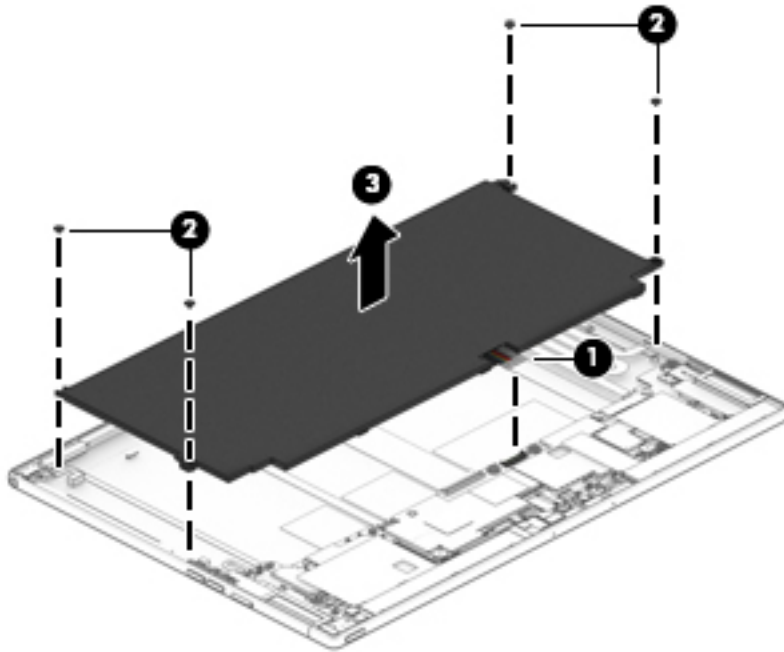


3. Remove the three Phillips PM2.0×2.8 screws that secure the bracket to the enclosure **(1)**, and then remove the bracket **(2)**.



4. Disconnect the battery cable **(1)** from the system board.
5. Remove the four Phillips PM2.0×2.0 screws **(2)** that secure the battery to the back cover.

6. Remove the battery (3).



Reverse this procedure to install the battery.

USB Type-C board

Description	Spare part number
USB Type-C Board	L05115-001

NOTE: The USB Type-C board spare part kit does not include the USB Type-C board cable or USB Type-C board support bracket. The USB Type-C board cable is available using spare part number L05097-001. The USB Type-C board support bracket is available using spare part number L05109-001.



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

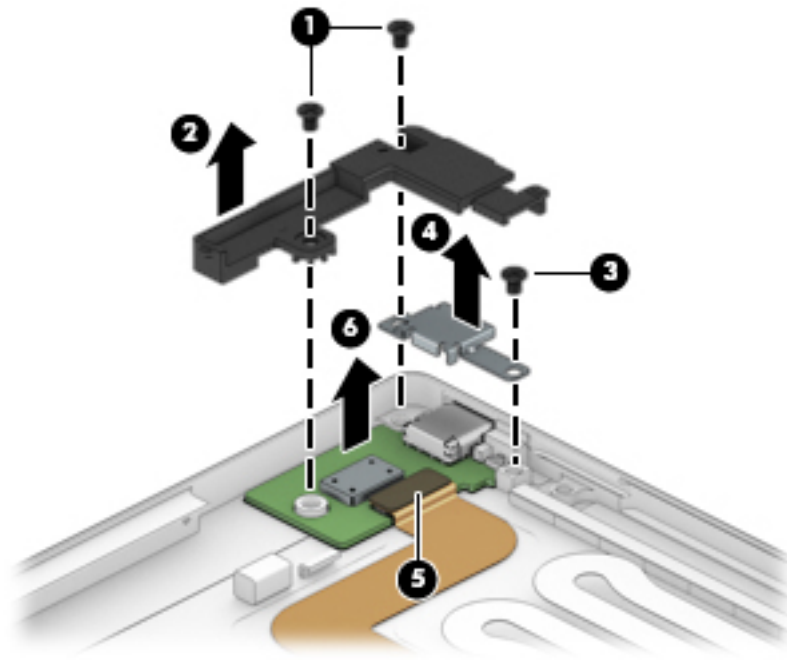
Before removing the USB Type-C Board, follow these steps:

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 32](#)), and then remove the following components:
 - ▲ Battery (see [Battery on page 36](#))

Remove the USB Type-C Board:

1. Remove the two Phillips PM2.0×2.0 screws **(1)** that secure the USB Type-C board cover to the enclosure, and then remove the cover **(2)**.
2. Remove the one Phillips PM2.0×2.5 screw **(3)** that secures the USB Type-C board bracket to the enclosure, and then remove the bracket **(2)**.

3. Disconnect the USB Type-C board cable from the ZIF connector (5), and then remove the board (6).



Reverse this procedure to install the USB Type-C board.

USB Type-C cable

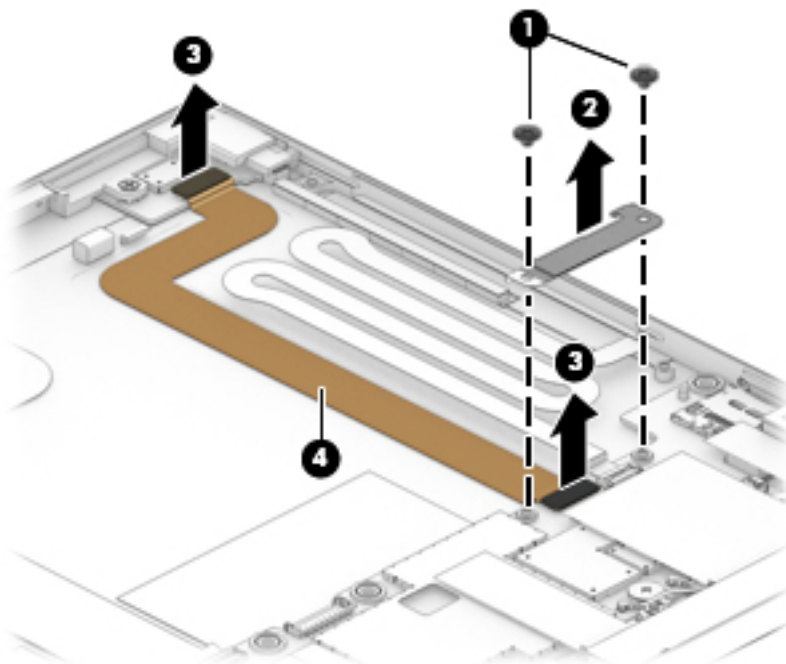
Description	Spare part number
USB Type-C cable (includes double-sided adhesive)	L05097-001

Before removing the USB Type-C 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 32](#)), and then remove the following components:
 - ▲ Battery (see [Battery on page 36](#))

Remove the USB Type-C cable:

1. Remove the two Phillips PM2.0×2.5 screws **(1)** that secure the bracket to the enclosure, and then remove the bracket **(2)**.
2. Release the ZIF connectors **(3)** to which the USB Type-C cable is connected, and then disconnect the USB Type-C cable from the system board.
3. Detach the USB Type-C cable **(4)** from the back cover. (The USB Type-C cable is attached to the back cover with double-sided adhesive.)



4. Remove the USB Type-C cable.

Reverse this procedure to install the Touchscreen board cable.

Touchscreen board cable

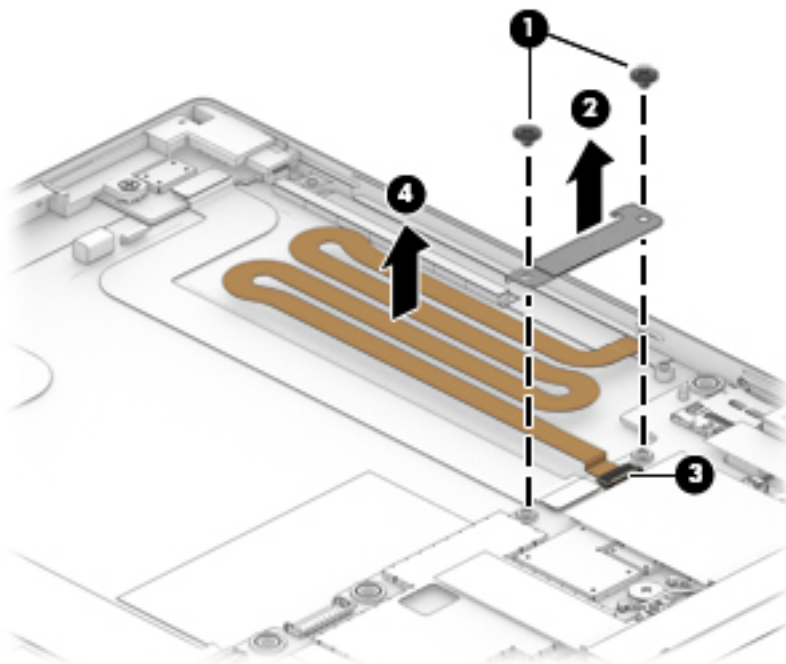
Description	Spare part number
Touchscreen board cable (includes double-sided adhesive)	L05095-001

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 32](#)), and then remove the following components:
 - ▲ Battery (see [Battery on page 36](#))

Remove the Touchscreen board cable:

1. Remove the two Phillips PM2.0×2.5 screws **(1)** that secure the bracket to the enclosure, and then remove the bracket **(2)**.
2. Release the ZIF connector **(3)** to which the Touchscreen board cable is connected, and then disconnect the Touchscreen board cable from the system board.
3. Detach the Touchscreen board cable **(4)** from the back cover. (The Touchscreen board cable is attached to the back cover with double-sided adhesive.)



4. Remove the Touchscreen board cable.

Reverse this procedure to install the Touchscreen board cable.

Display panel cable

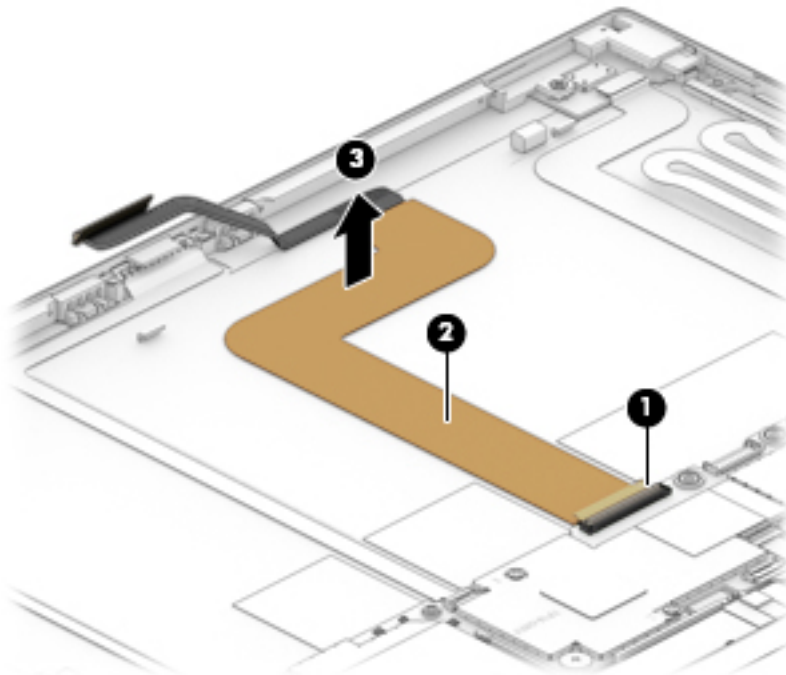
Description	Spare part number
Display panel cable (includes double-sided adhesive)	L05102-001

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 32](#)), and then remove the following components:
 - ▲ Battery (see [Battery on page 36](#))

Remove the display panel cable:

1. Release the ZIF connector **(1)** to which the 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) and remove the cable **(3)**.



3. Remove the display panel cable.

Reverse this procedure to install the display panel cable.

POGO pin connector cable

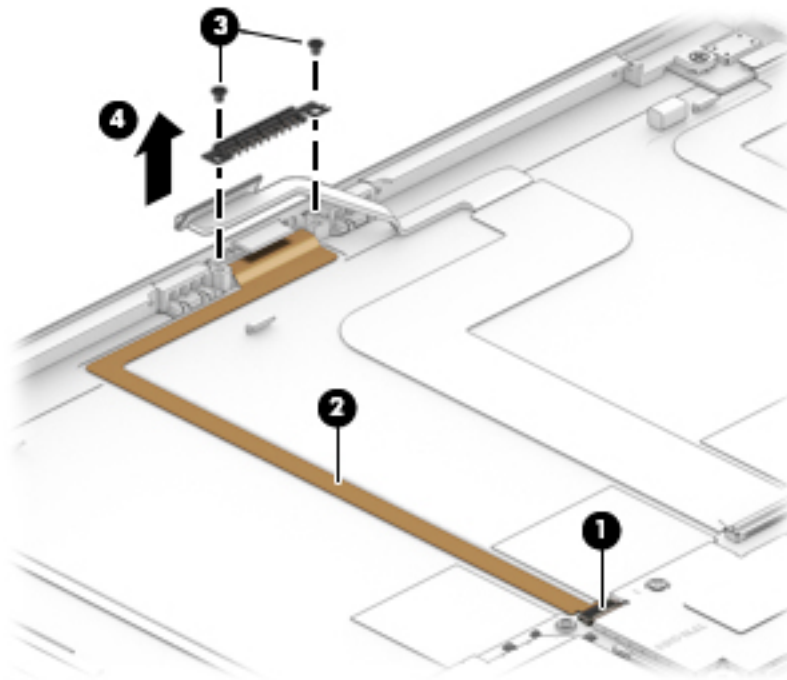
Description	Spare part number
POGO pin connector cable (includes double-sided adhesive)	L05101-001

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 32](#)), and then remove the following components:
 - ▲ Battery (see [Battery on page 36](#))

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 two Phillips PM1.6×2.0 screws **(3)** that secure 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.

Audio board

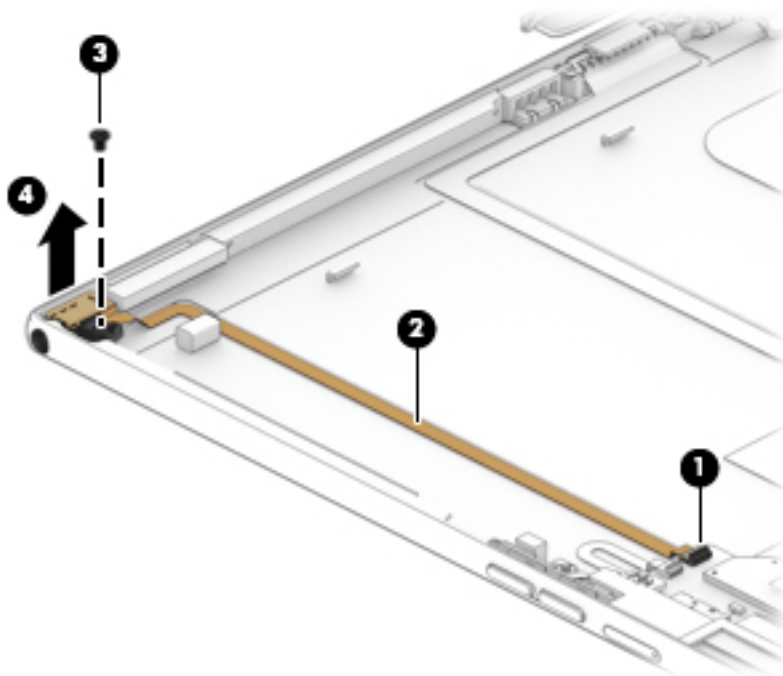
Description	Spare part number
Audio board (includes cable)	L05096-001

Before removing the audio 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 32](#)), and then remove the following components:
 - ▲ Battery (see [Battery on page 36](#))

Remove the audio board:

1. Release the ZIF connector attaching the audio board cable to the system board **(1)**, and detach the cable from the back cover (the audio board cable is attached to the back cover with double-sided adhesive in two locations) **(2)**.
2. Remove the one Phillips PM2.0×2.5 screw **(3)** that secures the audio board to the back cover.
3. Remove the audio board **(4)**.



Reverse this procedure to install the audio board.

Volume button board

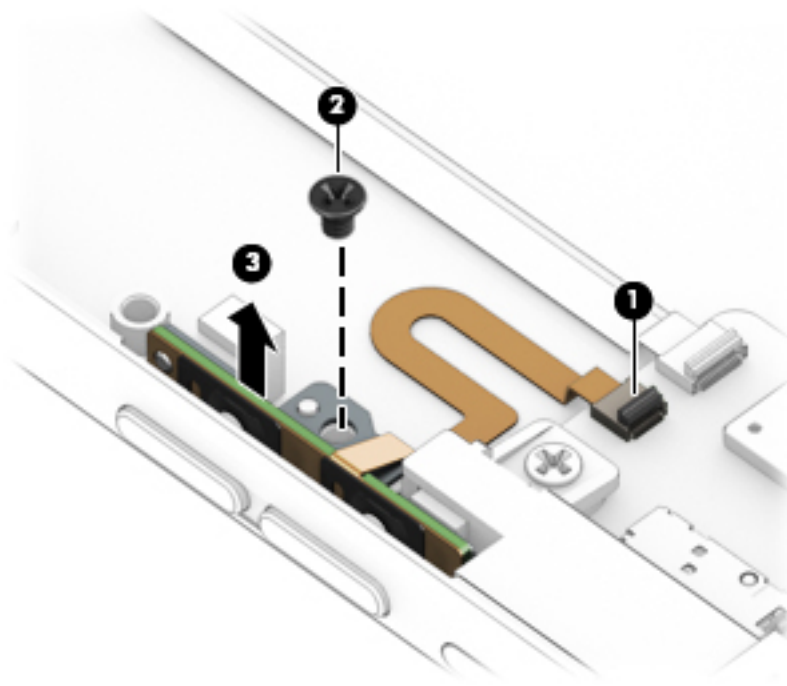
Description	Spare part number
Volume button board (includes cable)	L05099-001

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 32](#)), and then remove the following components:
 - ▲ Battery (see [Battery on page 36](#))

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 PM2.0×2.5 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.

Power button board

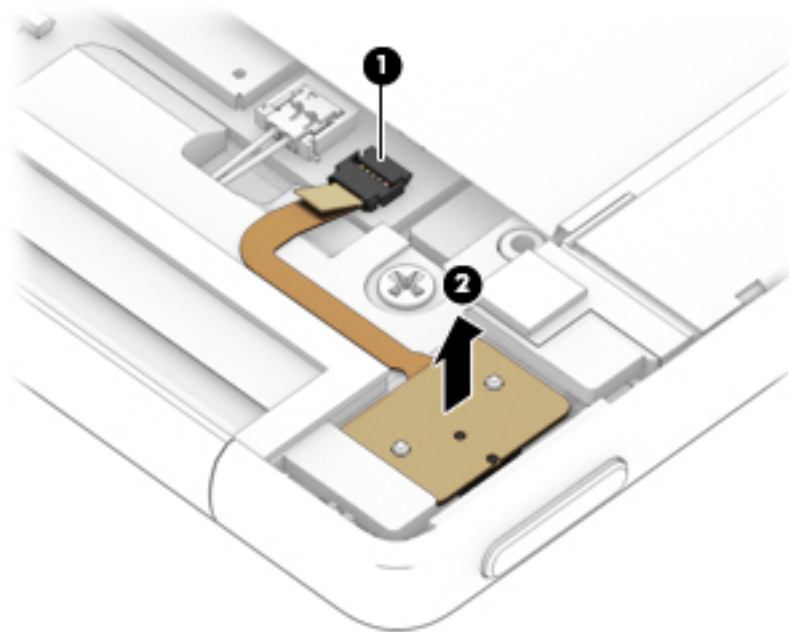
Description	Spare part number
Power button board (includes cable)	L05098-001

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 32](#)), and then remove the following components:
 - ▲ Battery (see [Battery on page 36](#))

Remove the power button board:

1. Release the power button board cable from the ZIF connector on the system board **(1)**, and then remove the power button board **(2)**.



2. Remove the power button board and cable.

Reverse this procedure to install the power button board.

Webcams

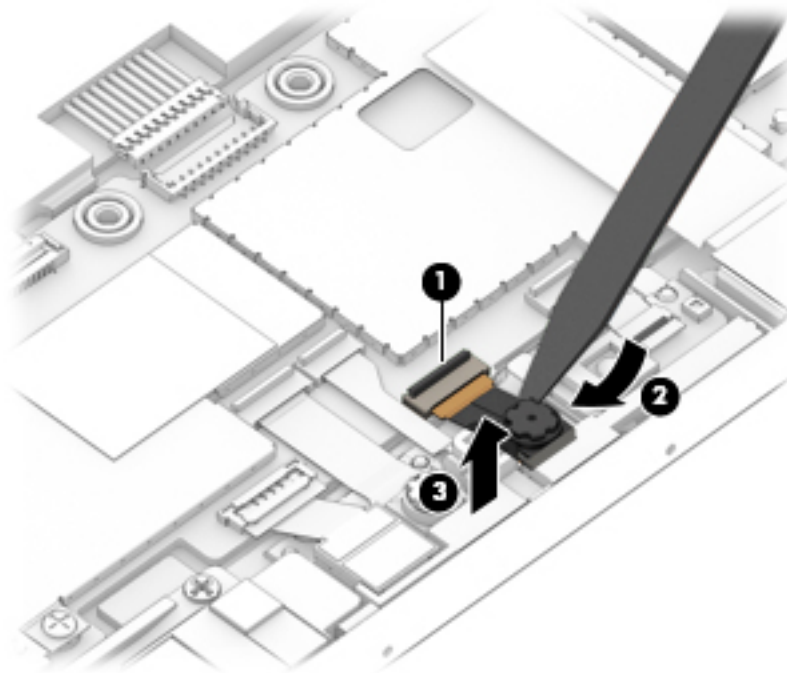
Description	Spare part number
Infrared camera (includes cable)	L05125-001
Front-facing webcam (includes cable)	L05124-001
Rear-facing webcam (includes cable)	L05123-001

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 32](#)), and then remove the following components:
 - ▲ Battery (see [Battery on page 36](#))

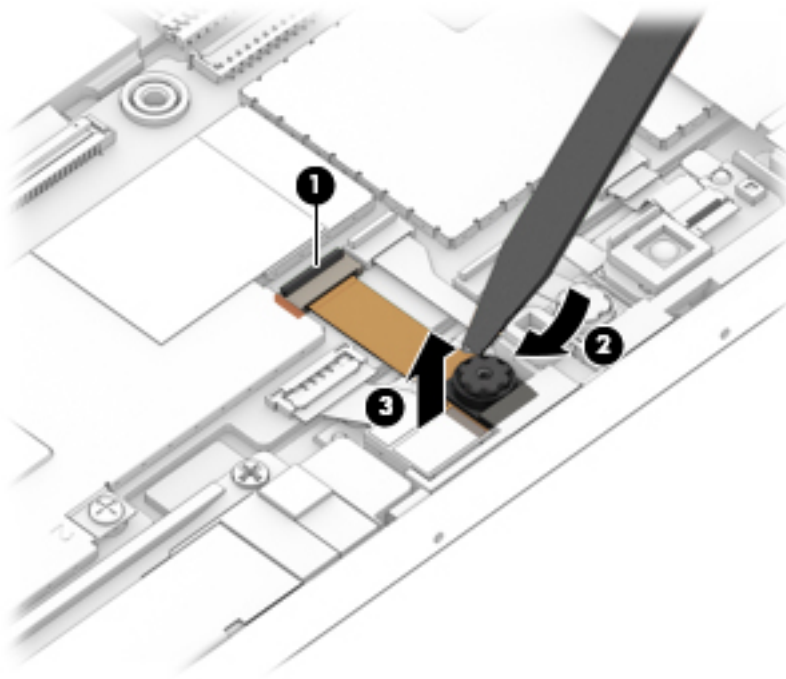
Remove the infrared camera:

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 **(3)** from the back cover.



Remove the front-facing webcam:

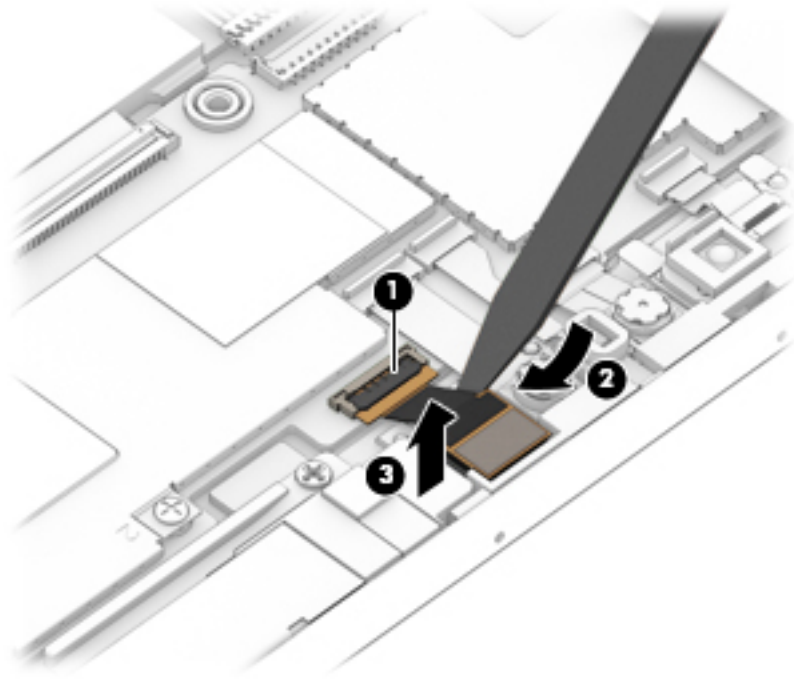
1. Release the ZIF connector **(1)** to which the infrared camera cable is connected, and then disconnect the infrared camera cable from the system board.
2. Detach the front-facing camera **(2)** from the back cover. (The infrared camera is attached to the back cover with double-sided adhesive.)
3. Remove the front-facing camera **(3)** from the back cover.



Remove the rear-facing webcam:

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

3. Remove the rear-facing camera **(3)** from the back cover.



Reverse this procedure to install the webcams.

SIM card tray bracket

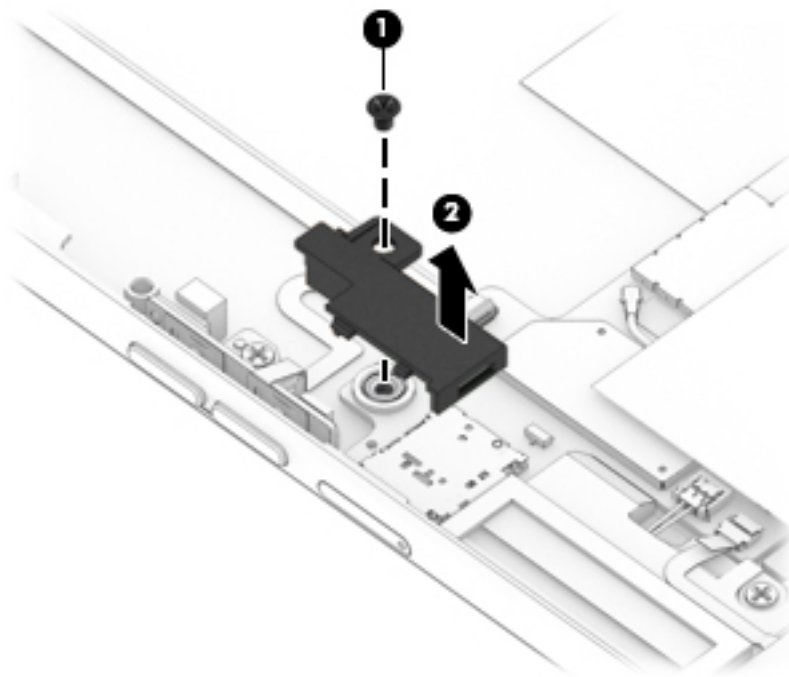
Description	Spare part number
SIM card tray	L05105-001

Before removing the SIM card tray bracket, 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 32](#)), and then remove the following components:
 - a. Battery (see [Battery on page 36](#))
 - b. USB Type-C board (see [USB Type-C board on page 39](#))
 - c. Audio board (see [Audio board on page 45](#))
 - d. Volume button board (see [Volume button board on page 46](#))

Remove the SIM card tray bracket:

1. Remove the Phillips PM2.0×2.5 screw **(1)** that secures the volume button board to the back cover.
2. Remove the SIM card tray bracket **(2)**.



Reverse this procedure to install the SIM card tray bracket.

System board



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

Description	Spare part number
Equipped with a Qualcomm® Snapdragon™ 835 Mobile PC processor (up to 2.6-GHz) eight-core processor (1866-MHz FSB, 2.0-MB L2 cache), a Qualcomm Adreno™ 540 graphics subsystem, 8-GB system memory, and the Windows 10 S operating system for use with the 256-GB solid-state hard drive	L10649-601
Equipped with a Qualcomm Snapdragon 835 Mobile PC processor (up to 2.6-GHz) eight-core processor (1866-MHz FSB, 2.0-MB L2 cache), a Qualcomm Adreno 540 graphics subsystem, 8-GB system memory, and a non-Windows operating system for use with the 256-GB solid-state hard drive	L10649-001
Equipped with a Qualcomm Snapdragon 835 Mobile PC processor (up to 2.6-GHz) eight-core processor (1866-MHz FSB, 2.0-MB L2 cache), a Qualcomm Adreno 540 graphics subsystem, 4-GB system memory, and the Windows 10 S operating system for use with the 128-GB solid-state hard drive	L05122-601
Equipped with a Qualcomm Snapdragon 835 Mobile PC processor (up to 2.6-GHz) eight-core processor (1866-MHz FSB, 2.0-MB L2 cache), a Qualcomm Adreno 540 graphics subsystem, 4-GB system memory, and a non-Windows operating system for use with the 128-GB solid-state hard drive	L05122-001

Before removing the system board, follow these steps:

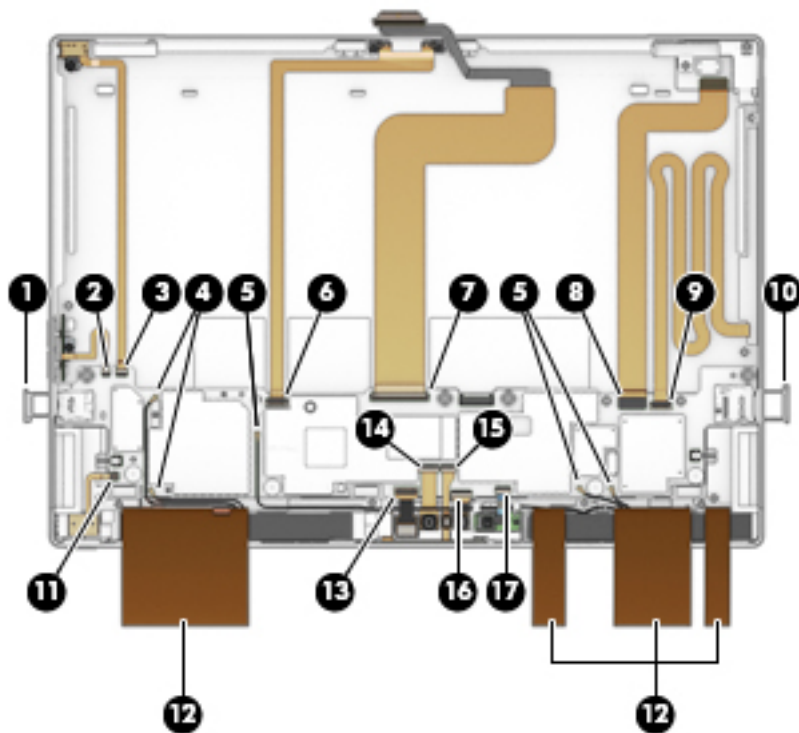
1. Shut down the tablet. If you are unsure whether the tablet is off or in Hibernation, turn the tablet on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the tablet.
3. Disconnect the power from the tablet by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the tablet.
4. Remove the display panel assembly (see [Display panel assembly on page 32](#)), and then remove the following components:
 - a. Battery (see [Battery on page 36](#))
 - b. USB Type-C board (see [USB Type-C board on page 39](#))
 - c. Audio board (see [Audio board on page 45](#))
 - d. Volume button board (see [Volume button board on page 46](#))
 - e. Power button board (see [Power button board on page 47](#))
 - f. SIM card tray bracket (see [SIM card tray bracket on page 51](#))

When replacing the system board, be sure to remove the microSD memory card reader board (see [MicroSD memory card reader board on page 55](#)) from the defective system board and install it on the replacement system board.

Remove the system board:

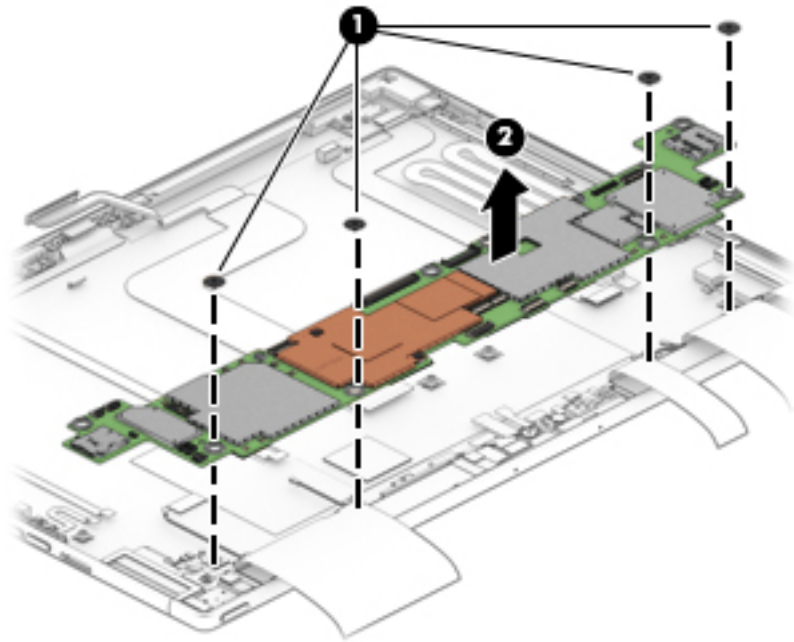
1. Disconnect the following cables and items from the system board:
 - (1) SIM card tray
 - (2) Volume button board ZIF connector cable
 - (3) Audio board ZIF connector cable
 - (4) Main WLAN antenna cables

- (5) Secondary WLAN antenna cables
- (6) POGO pin ZIF connector cable
- (7) Display panel ZIF connector cable
- (8) USB Type-C board ZIF connector cable
- (9) Touchscreen board ZIF connector cable
- (10) Ejecting SD card tray
- (11) Power button board ZIF connector cable
- (12) Antenna foils
- (13) Rear-facing webcam ZIF connector cable
- (14) Front-facing webcam ZIF connector cable
- (15) Front microphone cable
- (16) Infrared webcam cable
- (17) Infrared webcame LED cable



2. Remove the four Phillips PM2.0×2.0 screws (1) that secure the system board to the back cover.

3. Remove the system board (2).



Reverse this procedure to install the system board.

MicroSD memory card reader board

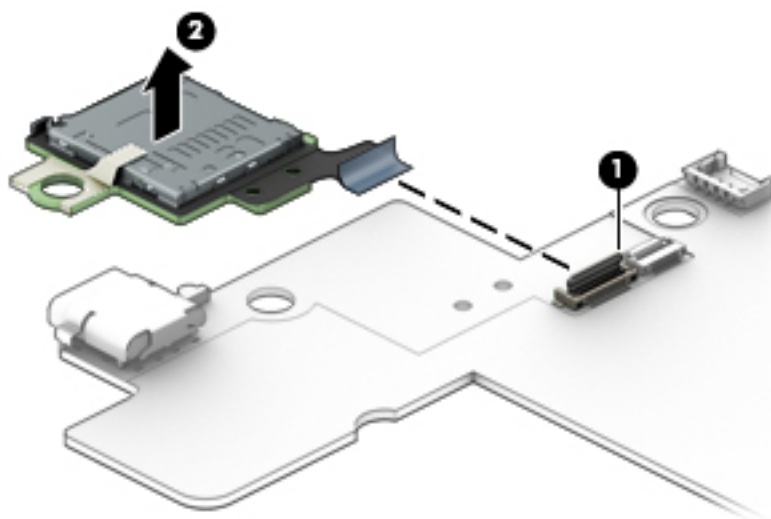
Description	Spare part number
MicroSD memory card reader board (includes cable and double-sided adhesive)	L05103-001

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 32](#)), and then remove the following components:
 - a. Battery (see [Battery on page 36](#))
 - b. USB Type-C board (see [USB Type-C board on page 39](#))
 - c. Audio board (see [Audio board on page 45](#))
 - d. Volume button board (see [Volume button board on page 46](#))
 - e. SIM card tray bracket (see [SIM card tray bracket on page 51](#))
 - f. System board (see [System board on page 52](#))

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.

Speakers

Description	Spare part number
Left speaker (includes cable)	L05120-001
Right speaker (includes cable)	L05121-001

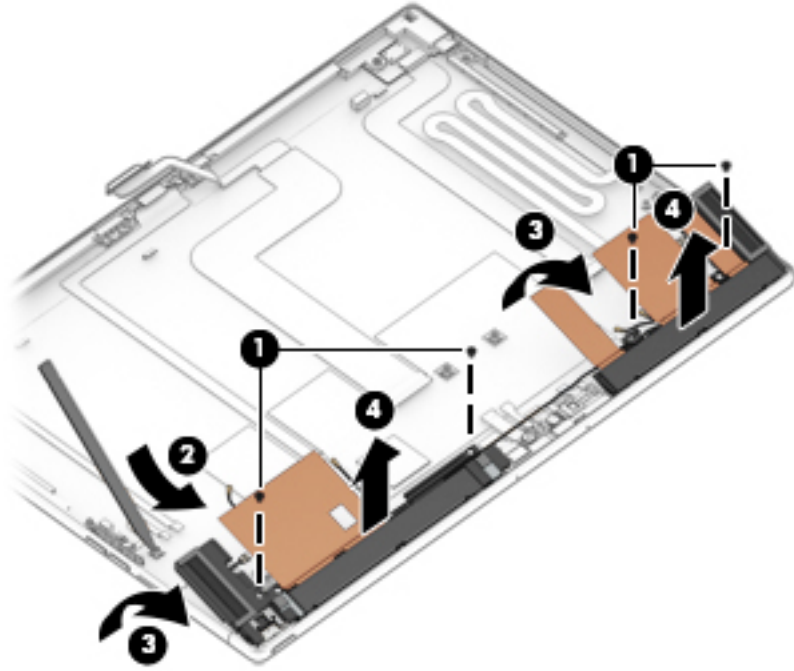
Before removing the speaker, follow these steps:

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 32](#)), and then remove the following components:
 - a. Battery (see [Battery on page 36](#))
 - b. USB Type-C board (see [USB Type-C board on page 39](#))
 - c. Audio board (see [Audio board on page 45](#))
 - d. Volume button board (see [Volume button board on page 46](#))
 - e. SIM card tray bracket (see [SIM card tray bracket on page 51](#))
 - f. System board (see [System board on page 52](#))

Remove the speaker:

1. Disconnect the cable connecting the two speakers.
2. Remove the two Phillips PM2.0×2.5 screws **(1)** that secure each speaker to the back cover.
3. Using a case utility tool **(2)**, carefully remove the speaker from the retaining bracket.


4. Rotate the speaker toward the back of the tablet **(3)** and then remove the speaker **(4)**.




Reverse this procedure to install the speakers.

6 Using Setup Utility (BIOS)

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

 **NOTE:** To start Setup Utility, your computer must be in notebook mode and you must use the keyboard attached to your notebook.

Starting Setup Utility (BIOS)


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

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


Updating Setup Utility (BIOS)

Updated versions of Setup Utility (BIOS) are available through Windows updates. When an update is available, it is automatically downloaded and installed.

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. Select **Start**.
2. Select **Settings**.
3. Select **Update & security**, and then select **Windows Update**.
4. Select **Check for updates**.
5. Follow the on-screen instructions.

7 Backing up, restoring, and recovering

This chapter provides information about the following processes:

- Creating backups
- Restoring and recovering your system



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 backups

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

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

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



NOTE: You must be connected to the Internet to access the Get Help app.

1. Select **Start**, select **Settings**, then select **Update & security**.
2. Select **Backup**, and then follow the on-screen instructions.

Restore and recovery

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 Help app.

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



NOTE: You must be connected to the Internet to access the Get Help app.


1. Select **Start**, select **Settings**, then select **Update & security**.
2. Select **Recovery**, and then follow the on-screen instructions.

8 Using HP PC Hardware Diagnostics UEFI

HP PC Hardware Diagnostics UEFI (Unified Extensible Firmware Interface) 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.

If your PC will not boot into Windows, you can use HP PC Hardware Diagnostics UEFI to diagnose hardware issues.

When HP PC Hardware Diagnostics UEFI detects a failure that requires hardware replacement, a 24-digit Failure ID code is generated. For assistance in correcting the problem, contact support, and provide the Failure ID code.

 **NOTE:** Your computer must be in notebook mode, and you must use the attached keyboard.

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

1. Turn on or restart the computer, and quickly press **esc**.
2. Press **f2**.

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

- a. Connected USB drive

 **NOTE:** To download the HP PC Hardware Diagnostics UEFI tool to a USB drive, see [Downloading the latest HP PC Hardware Diagnostics UEFI version on page 62](#).

- 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:** If you need to stop a diagnostic test, press **esc**.

Downloading HP PC Hardware Diagnostics UEFI to a USB device

Downloading HP PC Hardware Diagnostics UEFI to a USB device (flash drive) can be useful in the following situations:

- HP PC Hardware Diagnostics UEFI is not included in the preinstall image.
- HP PC Hardware Diagnostics UEFI is not included in the HP Tool partition.
- The hard drive is damaged.

 **IMPORTANT:** You must use a separate Windows computer to download and create the HP UEFI support environment. You cannot download the tool on a Windows 10 S computer.

 **NOTE:** The HP PC Hardware Diagnostics UEFI download instructions are provided in English only.

Downloading the latest HP PC Hardware Diagnostics UEFI version

To download the latest HP PC Hardware Diagnostics UEFI version to a flash drive:

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

9 Specifications

Input power

The power information in this section may be helpful if you plan to travel internationally with the computer.

The computer operates on DC power, which can be supplied by an AC or a DC power source. The AC power source must be rated at 100–240 V, 50–60 Hz. Although the computer can be powered from a standalone DC power source, it should be powered only with an AC adapter or a DC power source that is supplied and approved by HP for use with this computer.

The computer can operate on DC power within the following specifications. Operating voltage and current varies by platform. The voltage and current for your computer is located on the regulatory label.

Input power	Rating
Operating voltage and current	5 V dc @ 2 A / 12 V dc @ 3 A / 15 V dc @ 3 A – 45 W USB-C
	5 V dc @ 3 A / 9 V dc @ 3 A / 10 V dc @ 3.75 A / 12 V dc @ 3.75 A / 15 V dc @ 3 A / 20 V dc @ 2.25 A – 45 W USB-C
	5 V dc @ 3 A / 9 V dc @ 3 A / 10 V dc @ 5 A / 12 V dc @ 5 A / 15 V dc @ 4.33 A / 20 V dc @ 3.25 A – 65 W USB-C
	5 V dc @ 3 A / 9 V dc @ 3 A / 10 V dc @ 5 A / 12 V dc @ 5 A / 15 V dc @ 5 A / 20 V dc @ 4.5 A – 90 W USB-C
	19.5 V dc @ 2.31 A – 45 W
	19.5 V dc @ 3.33 A – 65 W
	19.5 V dc @ 4.62 A – 90 W
	19.5 V dc @ 6.15 A – 120 W
	19.5 V dc @ 7.70 A – 150 W
	19.5 V dc @ 10.3 A – 200 W
19.5 V dc @ 11.8 A – 230 W	
19.5 V dc @ 16.92 A – 330 W	

DC plug of external HP power supply (select products only)



NOTE: This product is designed for IT power systems in Norway with phase-to-phase voltage not exceeding 240 V rms.

Operating environment

Factor	Metric	U.S.
Temperature		
Operating	5°C to 35°C	41°F to 95°F
Nonoperating	-20°C to 60°C	-4°F to 140°F
Relative humidity (noncondensing)		
Operating	10% to 90%	10% to 90%
Nonoperating	5% to 95%	5% to 95%
Maximum altitude (unpressurized)		
Operating	-15 m to 3,048 m	-50 ft to 10,000 ft
Nonoperating	-15 m to 12,192 m	-50 ft to 40,000 ft

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 V ac, or from 220 to 240 V 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 or regions must meet the requirements of the country and 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 A and a nominal voltage rating of 125 or 250 V ac, as required by the power system of each country or region.
- The appliance coupler must meet the mechanical configuration of an EN 60 320/IEC 320 Standard Sheet C13 connector for mating with the appliance inlet on the back of the computer.

Requirements for specific countries and regions

Country/region	Accredited agency	Applicable note number
Argentina	IRAM	1
Australia	SAA	1
Austria	OVE	1
Belgium	CEBEC	1
Brazil	ABNT	1
Canada	CSA	2
Chile	IMQ	1
Denmark	DEMKO	1
Finland	FIMKO	1
France	UTE	1
Germany	VDE	1
India	BIS	1
Israel	SII	1
Italy	IMQ	1
Japan	JIS	3
The Netherlands	KEMA	1
New Zealand	SANZ	1
Norway	NEMKO	1
The People's Republic of China	CCC	4
Saudi Arabia	SASO	7
Singapore	PSB	1
South Africa	SABS	1
South Korea	KTL	5
Sweden	SEMKO	1
Switzerland	SEV	1
Taiwan	BSMI	6
Thailand	TISI	1
The United Kingdom	ASTA	1
The United States	UL	2

1. The flexible cord must be Type H05VV-F, 3-conductor, 0.75 mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.
2. The flexible cord must be Type SVT/SJT 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 ac) or NEMA 6-15P (15 A, 250 V ac) configuration. CSA or C-UL mark. UL file number must be on each element.

Country/region	Accredited agency	Applicable note number
		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 VCTF, 3-conductor, 0.75 mm ² or 1.25 mm ² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V ac) configuration.
		4. The flexible cord must be Type RVV, 3-conductor, 0.75 mm ² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the CCC certification mark.
		5. The flexible cord must be Type H05VV-F 3-conductor, 0.75 mm ² conductor size. KTL logo and individual approval number must be on each element. Corset approval number and logo must be printed on a flag label.
		6. The flexible cord must be Type HVCTF 3-conductor, 1.25 mm ² conductor size. Power cord set fittings (appliance coupler, cable, and wall plug) must bear the BSMI certification mark.
		7. For 127 V ac, the flexible cord must be Type SVT or SJT 3-conductor, 18 AWG, with plug NEMA 5-15P (15 A, 125 V ac), with UL and CSA or C-UL marks. For 240 V ac, the flexible cord must be Type H05VV-F 3-conductor, 0.75 mm ² or 1.00 mm ² conductor size, with plug BS 1363/A with BSI or ASTA marks.

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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