



HP ENVY x360 13 Convertible PC

Maintenance and Service Guide
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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.

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).

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1 Product description

Category	Description
Product Name	HP ENVY x360 13 Convertible PC Model numbers: 13-ag0000 ~ 13-ag0999 CTO model: 13z-ag000
Processors	AMD® Ryzen™ mobile processors: AMD Ryzen 7 2700U Mobile Processor (2.2 GHz, turbo up to 3.8 GHz, 2-MB L2 + 4 GB L3 cache, 2400 MHz, quad core, 15 W) with Radeon RX Vega 10 Graphics AMD Ryzen 5 2500U Mobile Processor (2.0 GHz, turbo up to 3.6 GHz, 2-MB L2 + 4 GB L3 cache, 2400 MHz, quad core, 15 W) with Radeon Vega 8 Graphics AMD Ryzen 3 2300U Mobile Processor (2.0 GHz, turbo up to 3.4 GHz, 2-MB L2 + 4 GB L3 cache, DDR4-2400 MHz, dual core, 15 W) with Radeon Vega 6 Graphics
Graphics	Internal graphics: Radeon RX Vega 10 Mobile Graphics (Ryzen 7 2700U processor) Radeon Vega 8 Mobile Graphics (Ryzen 5 2500U processor) Radeon Vega 6 Mobile Graphics (Ryzen 3 2300U processor) Supports HD decode, DX12, and HDMI
Panel	13.3-in, white light-emitting (WLED), UWVA, 72% color gamut, ultra slim, eDP 1.3+PSR, touch screen: Full high-definition (FHD) (1920×1080), BrightView FHD (1920×1080), anti glare, privacy screen Ultra-high definition (UHD) (3840×2160), BrightView Touch solution with flush glass or bezel, multi-touch enabled Supports Active Stylus Supports Simultaneous Pen & Touch
Memory	On-board system memory, non-customer-accessible/non-upgradable Supports up to 16-GB of system memory DDR4-2400 dual channel support Supports the following configurations: <ul style="list-style-type: none">• 16384 GB• 8192 GB• 4096 GB
Storage	Support for M.2 SATA/PCIe 2280 solid-state hard drives: 1-TB, PCIe-3×4, NVMe, TLC

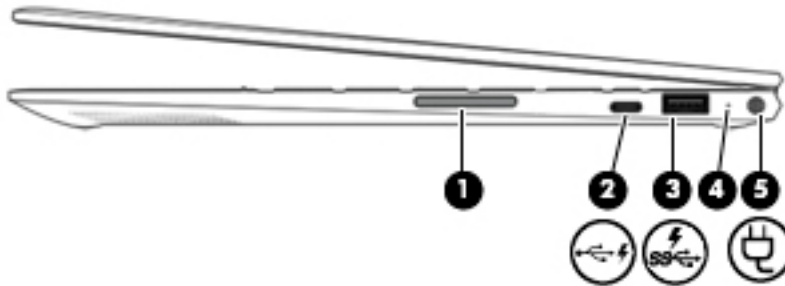
Category	Description
	512-GB, PCIe-3x4, NVMe, TLC
	512-GB, PCIe, NVMe, value
	256-GB, PCIe-3x4, NVMe, TLC
	256-GB, PCIe, NVMe, value
	128-GB, SATA-3, TLC
Camera	HP Wide Vision HD IR Camera , indicator LED & 2x IR LEDs, USB2.0, HD BSI sensor + IR sensor, f2.2, WDR, 88° WFOV 720p by 30 frames per second Dual array digital microphone w/ appropriate software - beam forming, echo cancellation, noise suppression
Audio	Audio brand: BANG and OLUFSEN Supports HP Audio Boost 2.0 Quad speakers
Wireless	Compatible with Miracast-certified devices WiFi SAR enabled in BIOS Integrated wireless options with dual antennas (M.2/PCIe): <ul style="list-style-type: none"> Intel Dual Band Wireless AC-9260, 2x2 WiFi + Bluetooth 5.0 Combo Adapter (vPro) Intel Dual Band Wireless-AC 7265 802.11 AC 2x2 WiFi + Bluetooth 4.2 Combo Adapter (non-vPro) Realtek RTL8822BE 802.11 ac 2x2 WiFi + Bluetooth 4.2 Combo Adapter (MU-MIMO supported)
External media cards	HP Multi-Format Digital Media Card Reader Supports micro SD
Internal card expansion	One M.2 slot for solid-state drive One M.2 slot for WLAN
Ports	Hot plug/unplug and auto detect for correct output to wide-aspect vs standard aspect video (auto adjust panel resolution to fit embedded panel and external monitor connected) AC Smart Pin adapter plug Audio-out (headphone)/audio-in (microphone) combo jack (2) USB 3.1 Gen 1 ports (1 left, 1 right); supports HP Sleep & Charge (right) (1) USB Type-C port; USB 3.1 Gen 1 – supports HDMI v2.0b + HDCP2.2 up to 4096x2160 @ 60Hz through Type-C port using adapter – supports DP1.4 + HDCP2.2 up to 4096x2160 @ 60Hz through Type-C port using adapter – supports HP Sleep & Charge – supports power delivery 3.0 using USB Type-C adapter (65W/90W) – supports data transfer
Keyboard/ TouchPad	Keyboard: Island-style backlit keyboard Island-style backlit keyboard, privacy




Category	Description
	TouchPad: Image sensor
Power requirements	Battery: 4-cell, 53.2-WHr, long-life battery Supports battery fast charge AC adapter: 65-W HP Smart AC adapter, nPFC, slim black barrel, straight, 4.5 mm 65-W HP Smart AC adapter, nPFC, slim black barrel, straight, 4.5 mm - EM 45-W HP Smart AC adapter, nPFC, wall-mount barrel, right angle, 4.5 mm Power cord: 1.0 m premium power cord (C5) 1.0 m premium power cord, fixed duckhead (C5)
Sensors	Accelerometer Accelerometer + gyroscope + eCompass
Security	Trusted Platform Module (TPM) 2.0 Firmware
Operating system	Preinstalled: Windows 10 Home 64 Windows 10 Home 64 Advanced Windows 10 Home 64 Advanced Single Language Windows 10 Home 64 Chinese Market CPPP Windows 10 Home 64 High-End Chinese Market CPPP Windows 10 Home 64 Plus Windows 10 Home 64 Plus Single Language Windows 10 Home 64 Plus Single Language APAC EM PPP Windows 10 Home 64 Plus Single Language Indonesia Market PPP Windows 10 Home 64 Single Language Windows 10 Home 64 Single Language APAC EM PPP Windows 10 Home 64 Single Language Indonesia Market PPP Windows 10 Pro 64
Serviceability	End user replaceable parts: AC adapter

2 Getting to know your computer

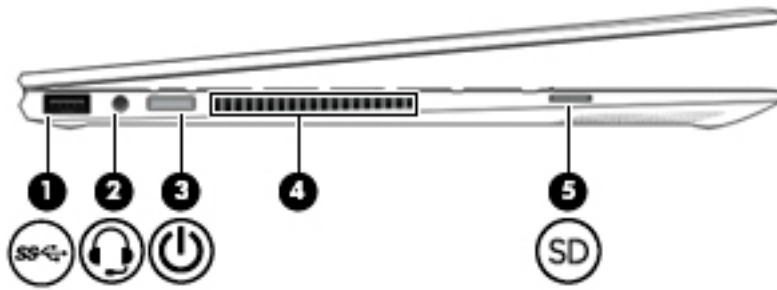
Your computer features top-rated components. This chapter provides details about your components, where they're located, and how they work.





Right side



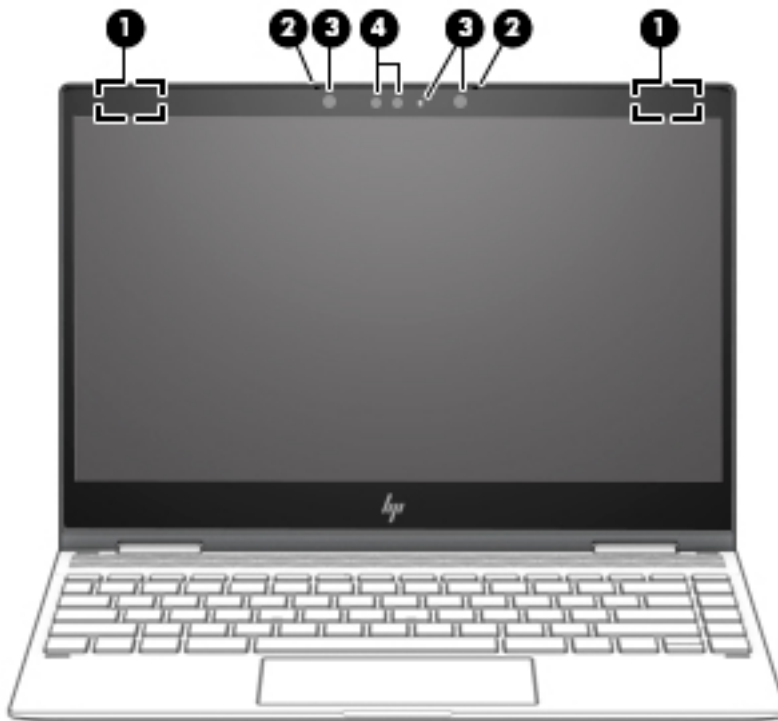
Component	Description
(1)	Volume button Controls speaker volume on the computer.
(2) 	USB Type-C port with HP Sleep and Charge Connects an AC adapter that has a USB Type-C connector, supplying power to the computer and, if needed, charging the computer battery. – and – Connects a USB device that has a Type-C connector, provides data transfer, and even when the computer is off, charges most products such as a cell phone, camera, activity tracker, or smartwatch. – and – Connects a display device that has a USB Type-C connector, providing DisplayPort output. NOTE: Cables and/or adapters (purchased separately) may be required.
(3) 	USB SuperSpeed port with HP Sleep and Charge Connects a USB device, provides high-speed data transfer, and even when the computer is off, charges most products such as a cell phone, camera, activity tracker, or smartwatch.
(4)	AC adapter and battery light <ul style="list-style-type: none">• White: The AC adapter is connected and the battery is fully charged.• Amber: The AC adapter is connected and the battery is charging.• Off: The battery is not charging.
(5) 	Power connector Connects an AC adapter.

Left side



Component	Description
<p>(1) </p>	<p>USB SuperSpeed port</p> <p>Connects a USB device, such as a cell phone, camera, activity tracker, or smartwatch, and provides high-speed data transfer.</p>
<p>(2) </p>	<p>Audio-out (headphone)/Audio-in (microphone) combo jack</p> <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>
<p>(3) </p>	<p>Power button and light</p> <ul style="list-style-type: none"> • On: The computer is on. • Blinking: The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other unneeded components. • Off: The computer is off or in Hibernation. Hibernation is a power-saving state that uses the least amount of power.
<p>(4)</p>	<p>Vent</p> <p>Enables airflow to cool internal components.</p> <p>NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.</p>
<p>(5) </p>	<p>MicroSD memory card reader</p> <p>Reads optional memory cards that enable you to store, manage, share, or access information.</p> <p>To insert a card:</p> <ol style="list-style-type: none"> 1. Hold the card label-side up, with connectors facing the computer. 2. Insert the card into the memory card reader, and then press in on the card until it is firmly seated. <p>To remove a card:</p> <ul style="list-style-type: none"> ▲ Press in on the card, and then remove it from the memory card reader.

Display



Component	Description
(1) WLAN antennas*	Send and receive wireless signals to communicate with wireless local area networks (WLANs).
(2) Internal microphones	Record sound.
(3) Camera light(s)	On: One or more cameras are in use.
(4) Camera(s)	Allow(s) 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 this guide:

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

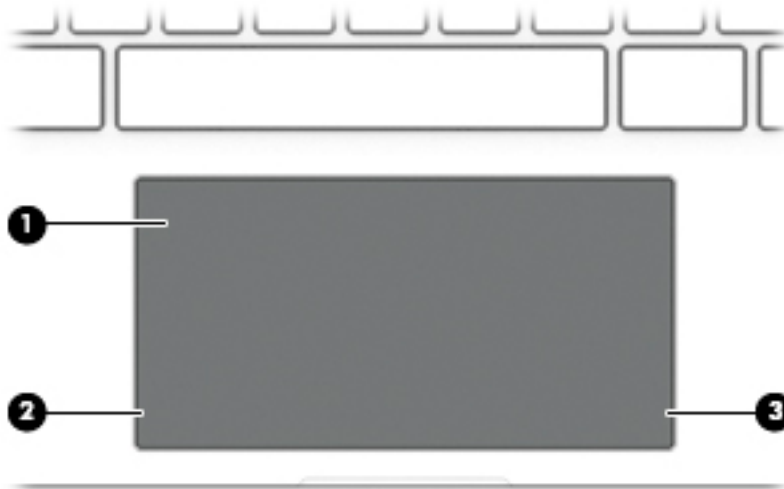
– or –

Click the question mark icon in the taskbar.

2. Select **My PC**, select the **Specifications** tab, and then select **User Guides**.

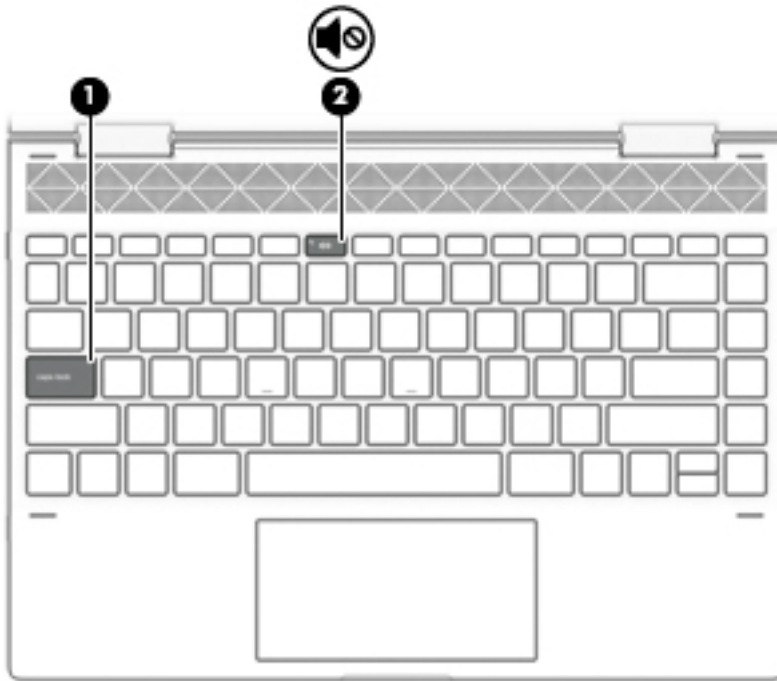
Keyboard area


TouchPad



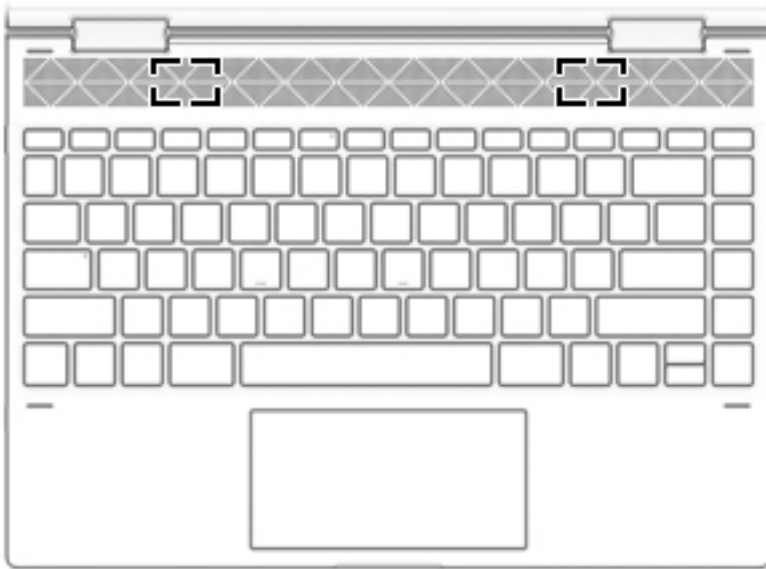
Component		Description
(1)	TouchPad zone	Reads your finger gestures to move the pointer or activate items on the screen.
(2)	Left TouchPad button	Functions like the left button on an external mouse.
(3)	Right TouchPad button	Functions like the right button on an external mouse.

Lights



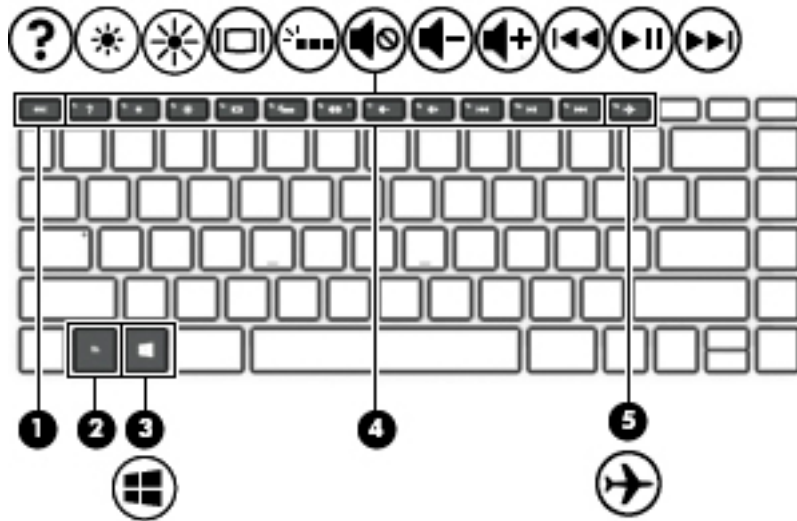
Component	Description
(1) Caps lock light	On: Caps lock is on, which switches the key input to all capital letters.
(2)  Mute light	<ul style="list-style-type: none">• On: Computer sound is off.• Off: Computer sound is on.



Speakers



Component	Description
Speakers	Produce sound.

Special keys

















Component	Description
(1) <code>esc</code> key	Displays system information when pressed in combination with the <code>fn</code> key.
(2) <code>fn</code> key	Executes specific functions when pressed in combination with another key.
(3)  Windows key	Opens the Start menu. NOTE: Pressing the Windows key again will close the Start menu.
(4) Action keys	Execute frequently used system functions. NOTE: On select products, the <code>f5</code> action key turns the keyboard backlight feature off or on. On select products, the <code>f1</code> action key turns the privacy display feature off or on.
(5)  Airplane mode key (also referred to as the wireless button)	Turns the airplane mode and wireless feature on or off. NOTE: A wireless network must be set up before a wireless connection is possible.

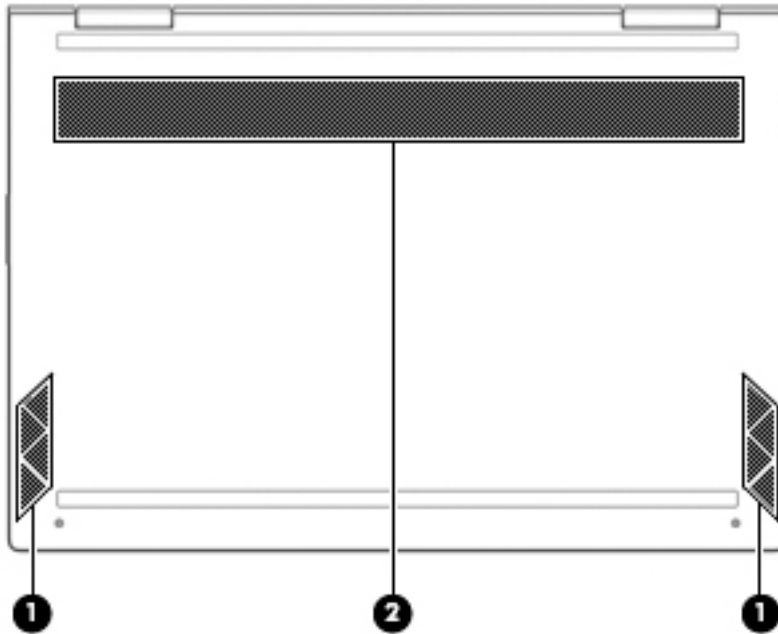
Action keys

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
	Helps prevent side-angle viewing from onlookers. If needed, decrease or increase brightness for well-lit or darker environments. Press the key again to turn off the privacy screen.
(select products only)	
	Opens the “How to get help in Windows 10” webpage.
(select products only)	
	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.

Bottom




Component		Description
(1)	Speakers	Produce sound.
(2)	Vent	Enables airflow to cool internal components.

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

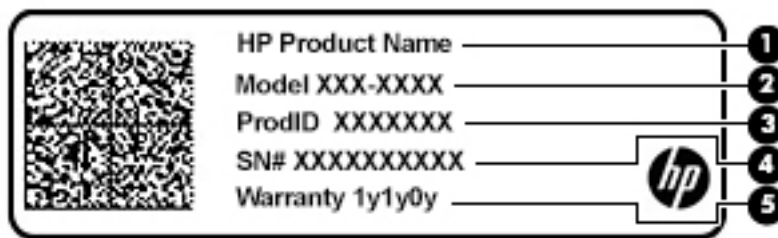
Labels

The labels affixed to the computer provide information you may need when you troubleshoot system problems or travel internationally with the computer. Labels may be in paper form or imprinted on the product.

 **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.

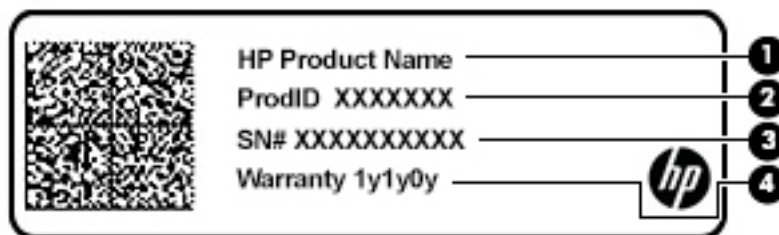
- Service label—Provides important information to identify your computer. When contacting support, you may be asked for the serial number, the product number, or the model number. Locate this information before you contact support.

Your service label will resemble one of the examples shown below. Refer to the illustration that most closely matches the service label on your computer.



Component

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



Component

- (1) HP product name (select products only)
- (2) Product ID

Component

(3) Serial number

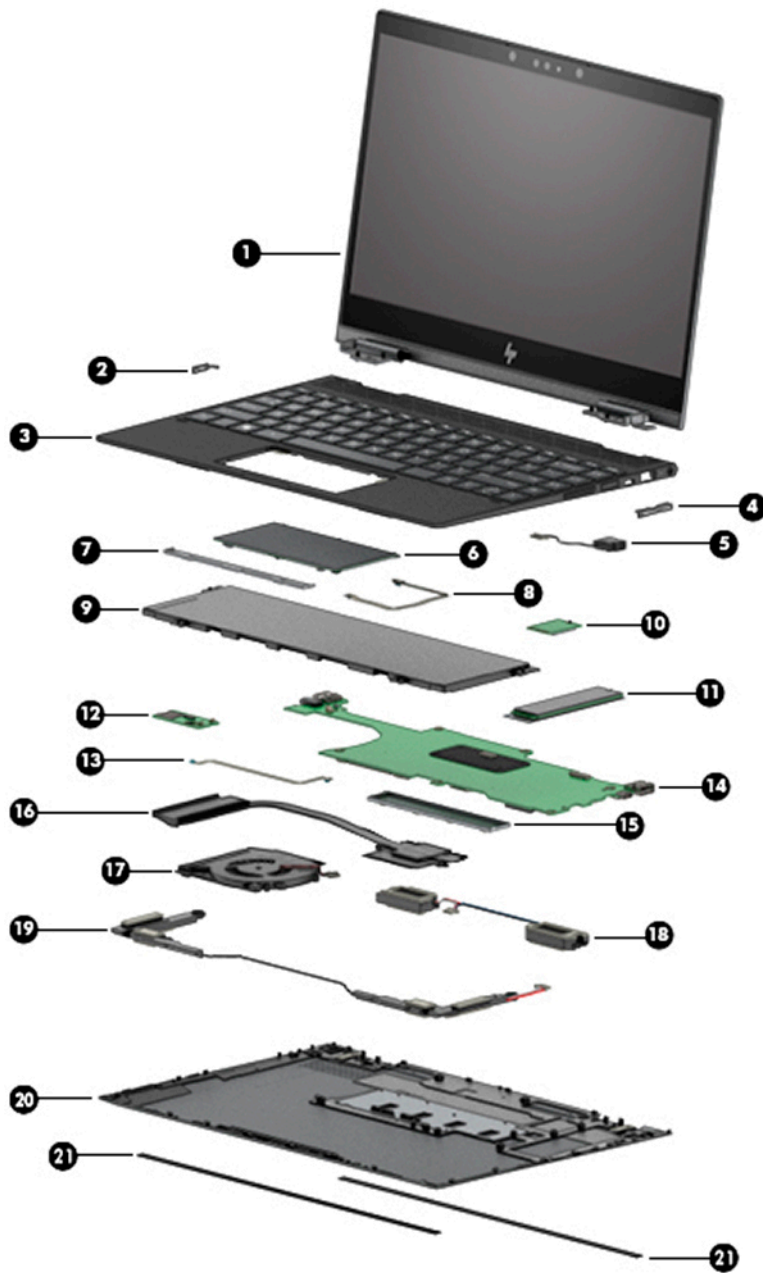
(4) Warranty period

- 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.

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.

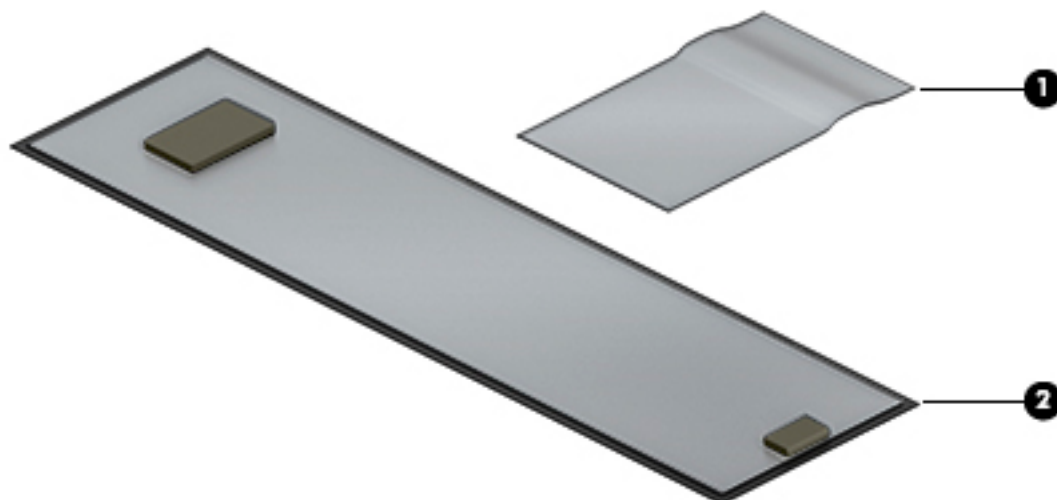
Computer components



Item	Component	Spare part number
(1)	Display assembly	
	IMPORTANT: The display assembly is only spared as an entire hinge-up. Display subcomponents are not spared.	
	FHD, anti glare, privacy	L19576-001
	HD, BrightView, non-privacy	L19577-001
	UHD, BrightView, non-privacy	L19578-001
(2)	Power button	L28981-001
(3)	Top cover with backlit keyboard	
	Non-privacy	L19586-xx1
	Privacy	L19587-xx1
(4)	Volume button	L28982-001
(5)	Power connector cable	L19588-001
(6)	TouchPad	L19594-001
	NOTE: The TouchPad cable is available using spare part number L19597-001.	
(7)	TouchPad bracket	L19788-001
(8)	TouchPad cable	L19597-001
(9)	Battery (3-cell, 41-WHr, 3.6-AHr, Li-ion)	L08496-855
(10)	WLAN module:	
	Intel Dual Band Wireless-AC 7265 802.11 AC 2x2 WiFi + Bluetooth 4.2 Combo Adapter (non-vPro)	901229-855
	Realtek RTL8822BE 802.11 ac 2x2 WiFi + Bluetooth 4.2 Combo Adapter (MU-MIMO supported)	924813-855
	Intel Dual Band Wireless AC-9260, 2x2 WiFi + Bluetooth 5.0 Combo Adapter (vPro)	L16647-005
(11)	Solid-state drive (2280 M.2):	
	1-TB, PCIe, TLC	L19583-001
	512-GB, PCIe, TLC	L19582-001
	512-GB, PCIe, value	L19585-001
	256-GB, PCIe, TLC	L19580-001
	256-GB, PCIe, value	L19584-001
	128-GB, SATA-3, TLC	L19579-001
(12)	Card reader board	L19593-001
	NOTE: The card reader cable is available using spare part number L19598-001.	
(13)	Card reader cable	L19598-001
(14)	System board (includes processor and replacement thermal material):	
	All system boards use the following part numbers:	
	xxxxxx-001: Non-Windows operating systems	

Item	Component	Spare part number
	xxxxxx-601: Windows operating system	
	Ryzen 7 2700U processor and 8 GB system memory	L26110-xx1
	Ryzen 5 2500U processor and 16 GB system memory	L19574-xx1
	Ryzen 5 2500U processor and 8 GB system memory	L19573-xx1
	Ryzen 3 2300U processor and 8 GB system memory	L19572-xx1
	Ryzen 3 2300U processor and 4 GB system memory	L19571-xx1
(15)	Memory shield	L19789-001
(16)	Thermal module (includes fan and heat sink; includes replacement thermal material)	L19599-001
(17)	Fan	L23528-001
(18)	Top speakers	L19601-001
(19)	Bottom speakers	L19602-001
(20)	Bottom cover	L19595-001
(21)	Rubber Foot Kit	L19600-001
	Fingerprint reader module (not illustrated)	L23655-001

Foil Kit



Item	Component	Spare part number
	Foil Kit , includes:	L19790-001
(1)	USB Type-C absorber	
(2)	Solid-state drive foil	

Miscellaneous parts

Component	Spare part number
AC adapter , 65-W HP Smart AC adapter (non-PFC, 4.5-mm)	913691-850
AC adapter , 45-W HP Smart AC adapter (non-PFC, RC, 4.5-mm)	854116-850
AC adapter , 45-W HP Smart AC adapter (non-PFC, RC, 4.5-mm), for use only in LA MERC0	L32926-001
Power cord (C5 connector, 1.0 m):	
For use in Argentina	L19339-001
For use in Australia	L19340-001
For use in Denmark	L19342-001
For use in Europe	L19343-001
For use in Israel	L19344-001
For use in Italy	L19346-001
For use in Japan	L19347-001
For use in North America	L19348-001
For use in the People's Republic of China	L19349-001
For use in South Africa	L19350-001
For use in Switzerland	L19351-001
For use in Thailand	L19352-001
For use in the United Kingdom	L19354-001
Adapters	
HP USB to Gigabit RJ45 adapter	829941-001
HP USB-C to VGA adapter	831751-001
USB-C to USB-A adapter	833960-001
HP USB-C to RJ-45 adapter	855560-001
HP USB-C to HDMI 2.0 adapter	935325-001
Pens	
Stylus, active pen	920241-001
Ash silver pen	929863-001
Cadillac pen tip	L04536-001
Impreza pen tip	L04536-002
HP USB-C to USB-A hub	916838-001
HP USB-C to Multi-Port hub	919666-001
Impreza USB Type-C to USB Type-A cable	L12232-001

Component	Spare part number
HP USB external DVD±RW drive	747080-001
Screw Kit	L19603-001

4 Removal and replacement preliminary requirements

Tools required

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

- Non-marking plastic pry tool
- Phillips P0 screwdriver
- Phillips P1 screwdriver
- Torx T5 screwdriver

Service considerations

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



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

Plastic parts



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

Cables and connectors

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

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

Drive handling

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

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

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

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

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

Avoid dropping drives from any height onto any surface.

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

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

Avoid exposing a drive to temperature extremes or liquids.

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

Grounding guidelines

Electrostatic discharge damage

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

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

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

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

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

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

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

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

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

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

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

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

Workstation guidelines

Follow these grounding workstation guidelines:

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

Equipment guidelines

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

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

The following grounding equipment is recommended to prevent electrostatic damage:


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

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

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


5 Removal and replacement procedures for Authorized Service Provider parts

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

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

CAUTION: 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 13](#) 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 45 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.

Bottom cover

Description	Spare part number
Bottom cover	L19595-001

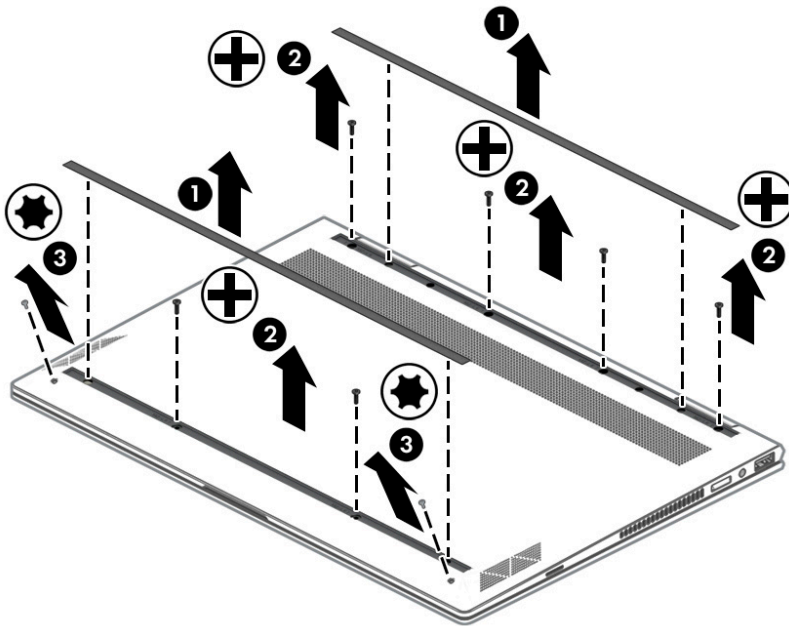
Before removing the bottom cover, follow these steps:

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

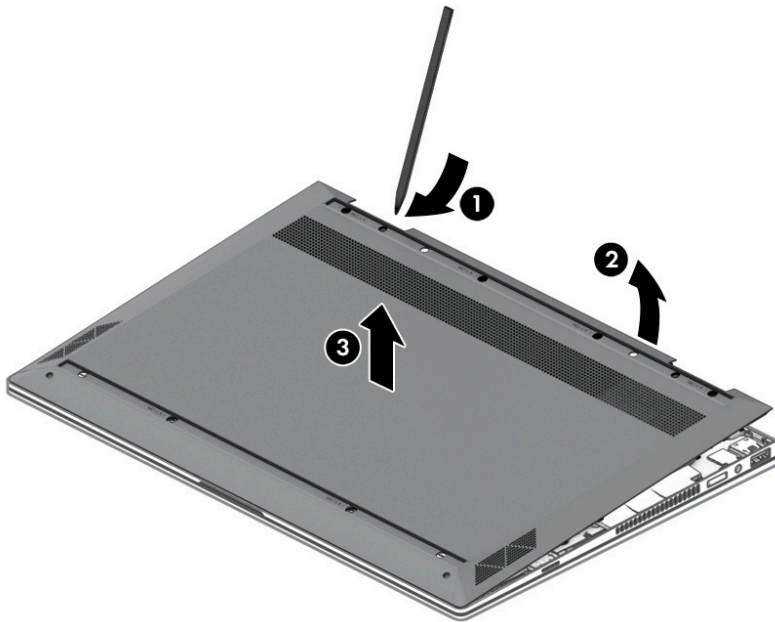
Remove the bottom cover:

1. Remove the two rubber feet from the bottom of the computer **(1)**.
The rubber feet are available using spare part number L19600-001.
2. Remove the six Phillips M2.0×6.0 screws **(2)** under the rubber strips.

3. Remove the two Torx T5 2.0×4.0 screws (3).



4. Starting under the hinges, use a thin plastic tool (1) to pry the bottom cover off the computer (2).
5. Remove the bottom cover (3).



Reverse this procedure to install the bottom cover.

Battery

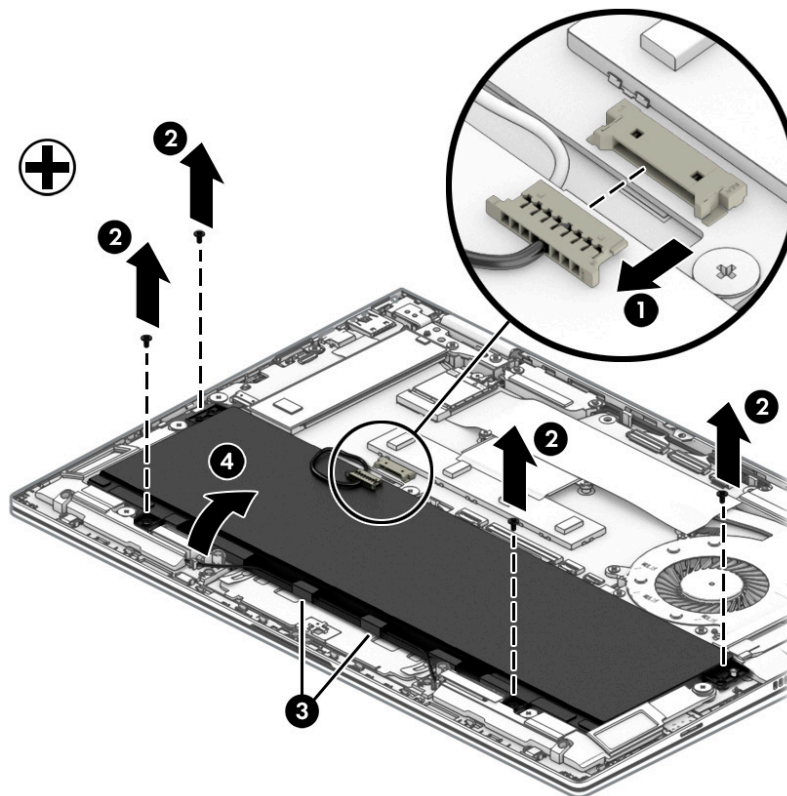
Description	Spare part number
3-cell, 41-WHr, 3.6-AHr, Li-ion battery	L08496-855

Before removing the battery, follow these steps:

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

Remove the battery:


1. Disconnect the battery cable from the system board **(1)**.
2. Remove the four Phillips M2.0×3.5 screws **(2)** that secure the battery to the computer.
3. Remove the speaker cable from the clips on the bottom of the battery **(3)**.
4. Lift the bottom of the battery, and then remove it from the computer **(4)**.



Reverse this procedure to install the battery.

WLAN module

Description	Spare part number
Intel Dual Band Wireless-AC 7265 802.11 AC 2x2 WiFi + Bluetooth 4.2 Combo Adapter (non-vPro)	901229-855
Realtek RTL8822BE 802.11 ac 2x2 WiFi + Bluetooth 4.2 Combo Adapter (MU-MIMO supported)	924813-855
Intel Dual Band Wireless AC-9260, 2x2 WiFi + Bluetooth 5.0 Combo Adapter (vPro)	L16647-005

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

Before removing the WLAN module, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 25](#)).
5. Disconnect the battery (see [Battery on page 27](#)).

Remove the WLAN module:

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



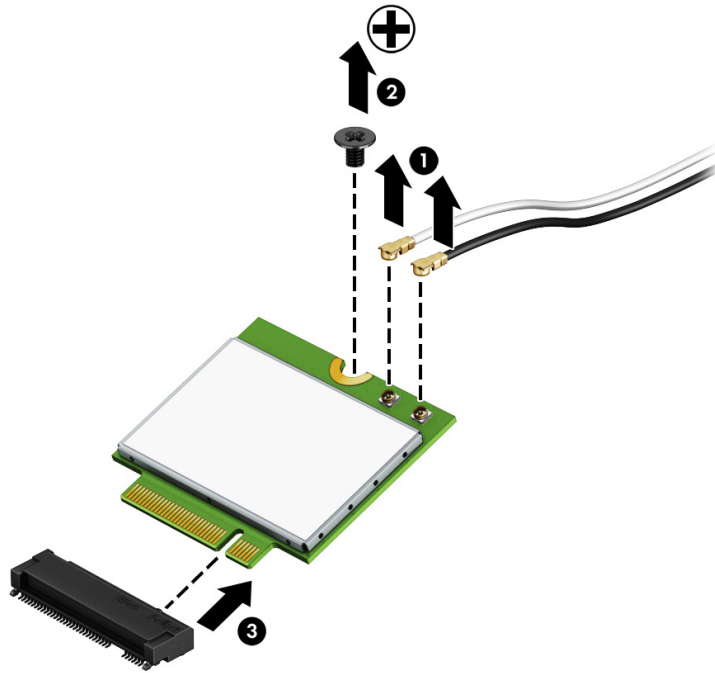
NOTE: The WLAN antenna cable labeled "1/MAIN" connects to the WLAN module "Main" terminal. The WLAN antenna cable labeled "2/AUX" connects to the WLAN module "Aux" terminal.

2. Remove the Phillips M2.0x3.0 screw **(2)** that secures the WLAN module to the computer. (The WLAN module tilts up.)

3. Remove the WLAN module **(3)** by pulling the module away from the slot at an angle.



NOTE: The WLAN module is designed with a notch to prevent incorrect insertion.



Reverse this procedure to install the WLAN module.

Solid-state drive

Description	Spare part number
1-TB, PCIe, TLC	L19583-001
512-GB, PCIe, TLC	L19582-001
512-GB, PCIe, value	L19585-001
256-GB, PCIe, TLC	L19580-001
256-GB, PCIe, value	L19584-001
128-GB, SATA-3, TLC	L19579-001
Solid-state drive Mylar shield	L19790-001 (Foil Kit)

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

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Bottom cover on page 25](#)).
5. Disconnect the battery (see [Battery on page 27](#)).

Remove the solid-state drive module:

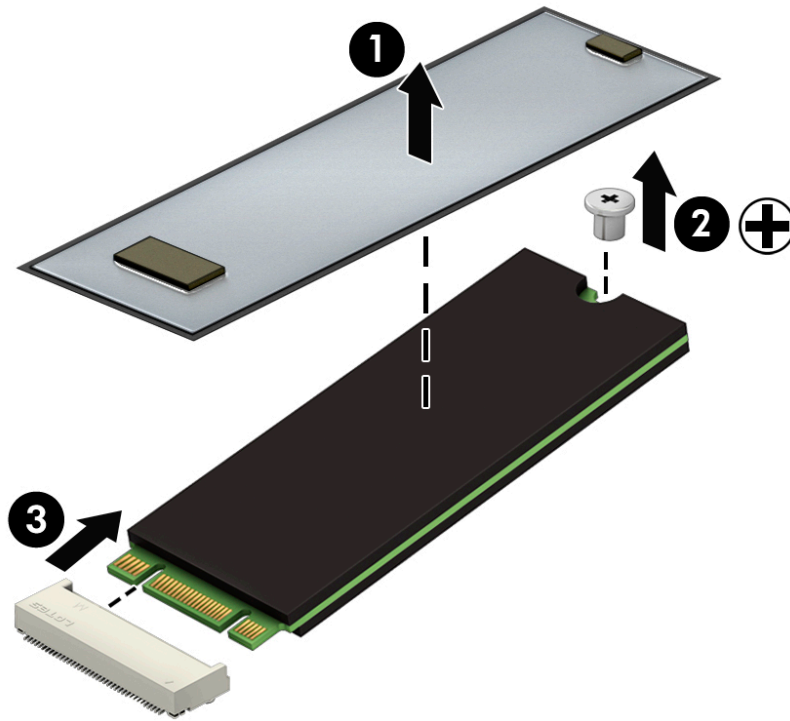
1. Remove the Mylar shield from on top of the module **(1)**.



NOTE: The Mylar shield is available in the Foil Kit, spare part number L19790-001.

2. Remove the Phillips M2.0×3.0 screw **(2)** that secures the module to the computer.


3. Remove the module (3) by pulling it away from the connector.



Reverse this procedure to install a solid-state drive.

Memory shield

Description	Spare part number
Memory shield	L19789-001

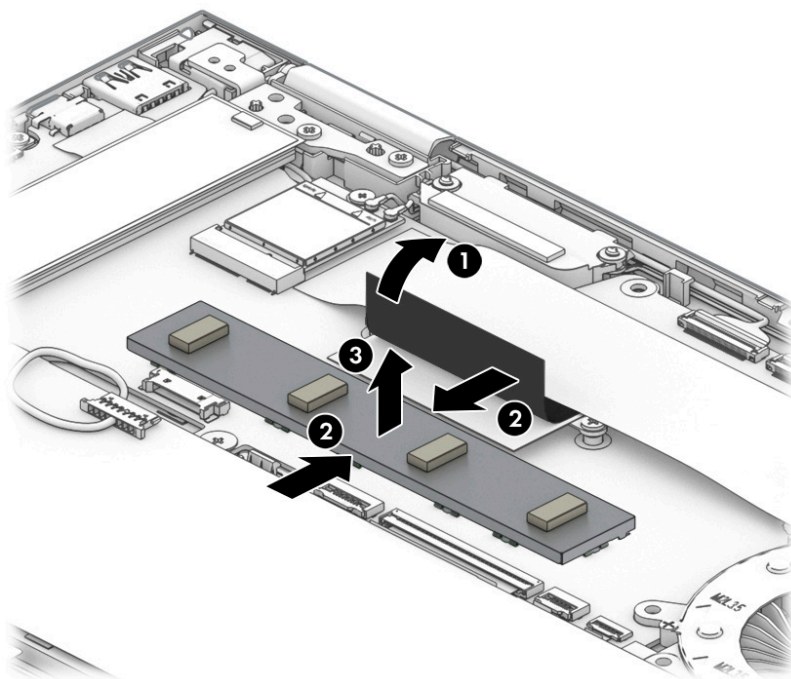
 **IMPORTANT:** The memory is integrated into the system board and is not removable or upgradeable.

Before removing the memory shield, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 25](#)).
5. Disconnect the battery (see [Battery on page 27](#)).

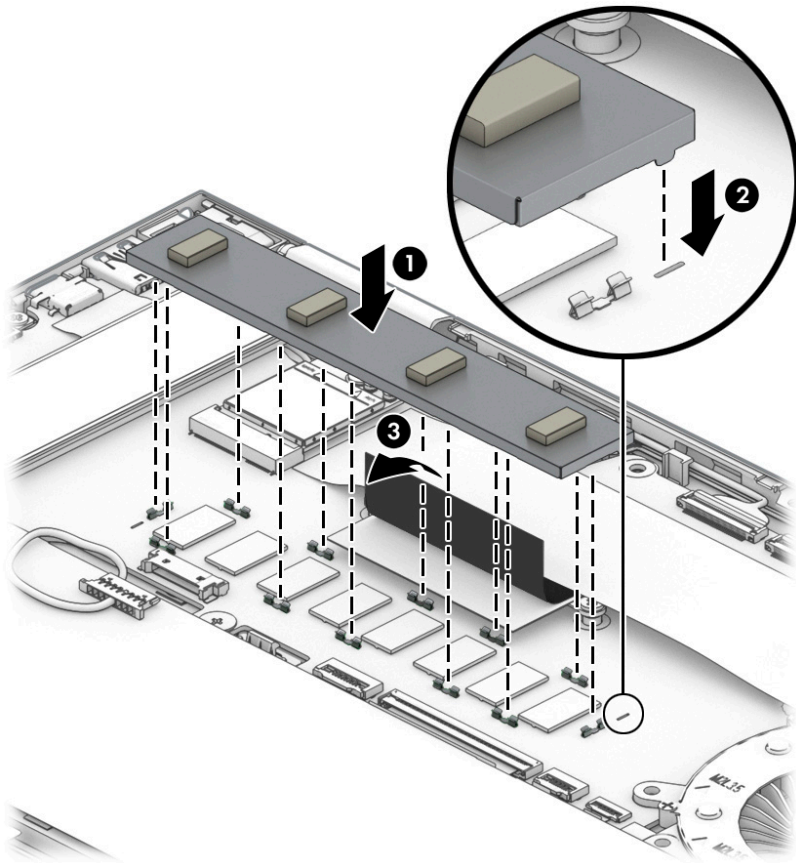
Remove the memory shield:

1. Lift the tape from the top of the shield **(1)**.
2. Squeeze the shield to disengage it from clips on system board **(2)**, and then remove the shield **(3)**.



Reverse this procedure to install the memory shield.

To replace the memory shield, position the shield over the system board **(1)**, align the bottom edges of the cover with the small clips on the system board **(2)**, and then insert the cover into the clips **(3)**.



Display assembly

Description	Spare part number
Display assembly, FHD, anti glare, privacy	L19576-001
Display assembly, HD, BrightView, non-privacy	L19577-001
Display assembly, UHD, BrightView, non-privacy	L19578-001

Before removing the display assembly, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Bottom cover on page 25](#)).
5. Disconnect the battery (see [Battery on page 27](#)).

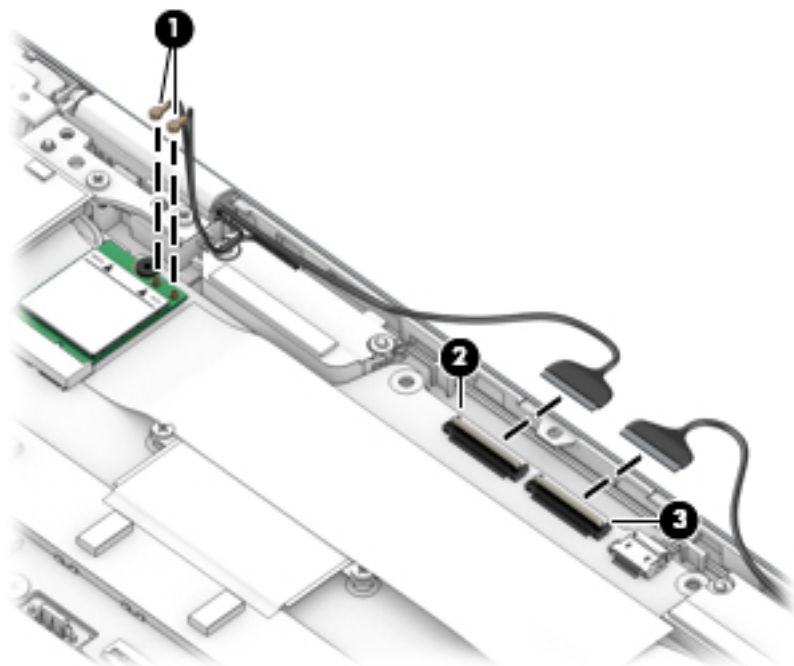
Remove the display assembly:

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



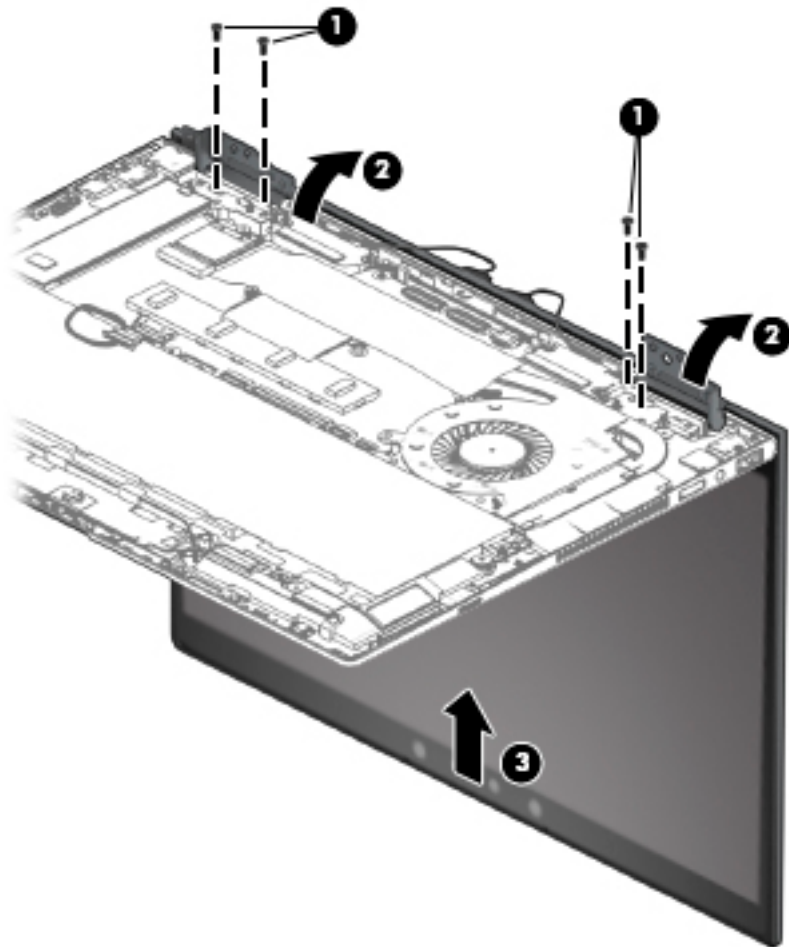
NOTE: The WLAN antenna cable labeled "1/MAIN" connects to the WLAN module "Main" terminal. The WLAN antenna cable labeled "2/AUX" connects to the WLAN module "Aux" terminal.

2. Disconnect the display cable from the system board ZIF connector **(2)**.
3. Disconnect the camera cable from the system board ZIF connector **(3)**.



4. Remove the four Phillips M2.5×5.0 screws **(1)** that secure the display assembly to the computer.

5. Rotate the hinges upward to about 90 degrees (2).
6. Separate the display from the computer (3).



Reverse this procedure to install the display assembly.

Top speakers

Description	Spare part number
Top speakers (include cable)	L19601-001


Before removing the top speakers, follow these steps:

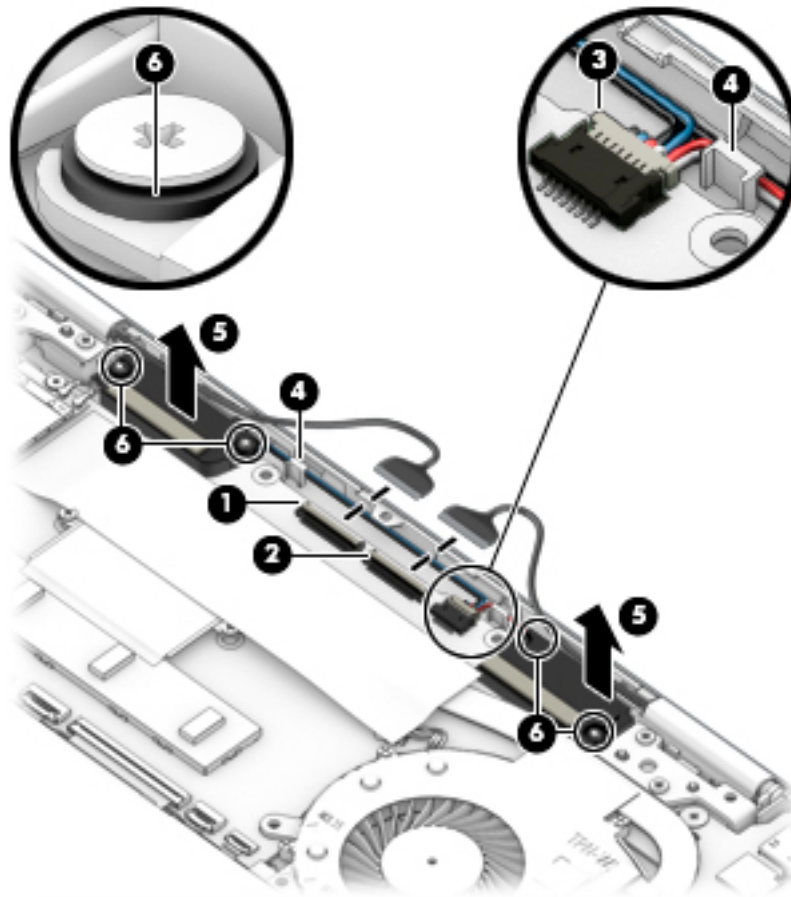
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 25](#)).
5. Disconnect the battery (see [Battery on page 27](#)).

Remove the top speakers:

1. Disconnect the display cable from the system board ZIF connector **(1)**.
2. Disconnect the camera cable from the system board ZIF connector **(2)**.
3. Disconnect the speaker cable from the system board **(3)**.
4. Remove the speaker cable from the clip near the right speaker **(4)**.

5. Remove the speakers (5).

 **IMPORTANT:** When installing the speakers, make sure the rubber post washers (6) are correctly installed.



Reverse this procedure to install the speakers.

Bottom speakers

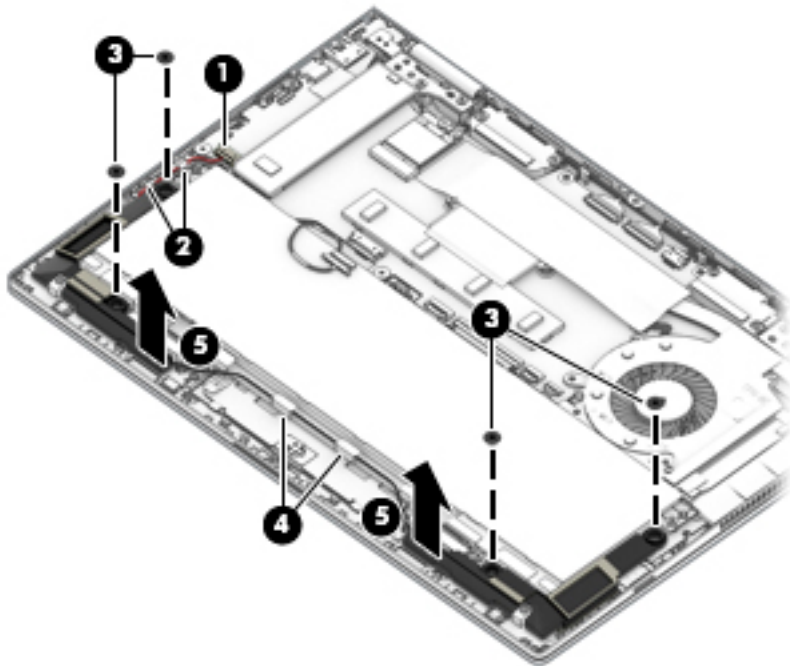
Description	Spare part number
Bottom speakers (include cables)	L19602-001

Before removing the bottom speakers, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 25](#)).
5. Disconnect the battery (see [Battery on page 27](#)).

Remove the bottom speakers:

1. Disconnect the speaker cable from the system board **(1)**.
2. Remove the cable from the two clips in the computer **(2)**.
3. Remove the four Phillips M2.0×2.0 screws **(3)** that secure the speaker assembly to the computer.
4. Remove the cable that connects the speakers from the two clips on the bottom of the battery **(4)**.
5. Remove the speakers **(5)**.



Reverse this procedure to install the bottom speakers.

Card reader board

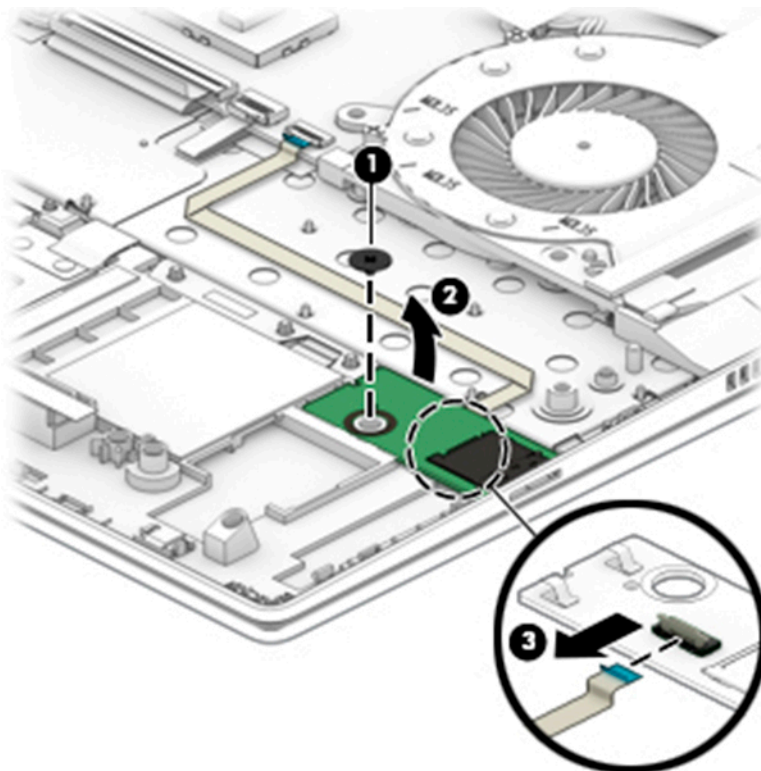
Description	Spare part number
Card reader board	L19593-001
Card reader board cable	L19598-001

Before removing the card reader board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Bottom cover on page 25](#)).
5. Remove the battery (see [Battery on page 27](#)).
6. Remove the bottom speaker (see [Bottom speakers on page 38](#)).

Remove the card reader board:

1. Remove the Phillips broad head M2.0×2.0 screw **(1)** that secures the board to the computer.
2. Rotate the board upside down to access the connector underneath **(2)**.
3. Disconnect the cable from the ZIF connector on the bottom of the board **(3)**.



Reverse this procedure to install the card reader board.

TouchPad

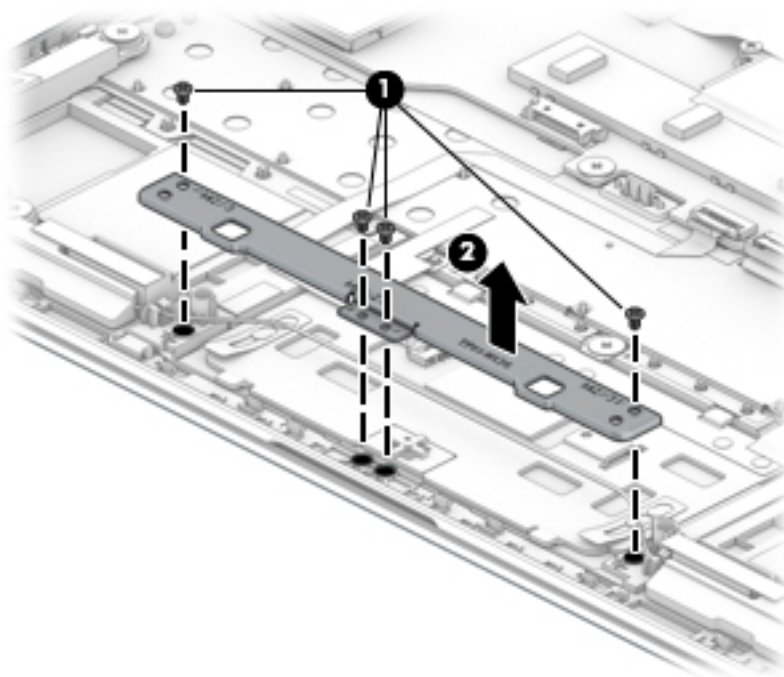
Description	Spare part number
TouchPad	L19594-001
TouchPad cable	L19597-001
TouchPad bracket	L19788-001

Before removing the TouchPad, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Bottom cover on page 25](#)).
5. Remove the battery (see [Battery on page 27](#)).

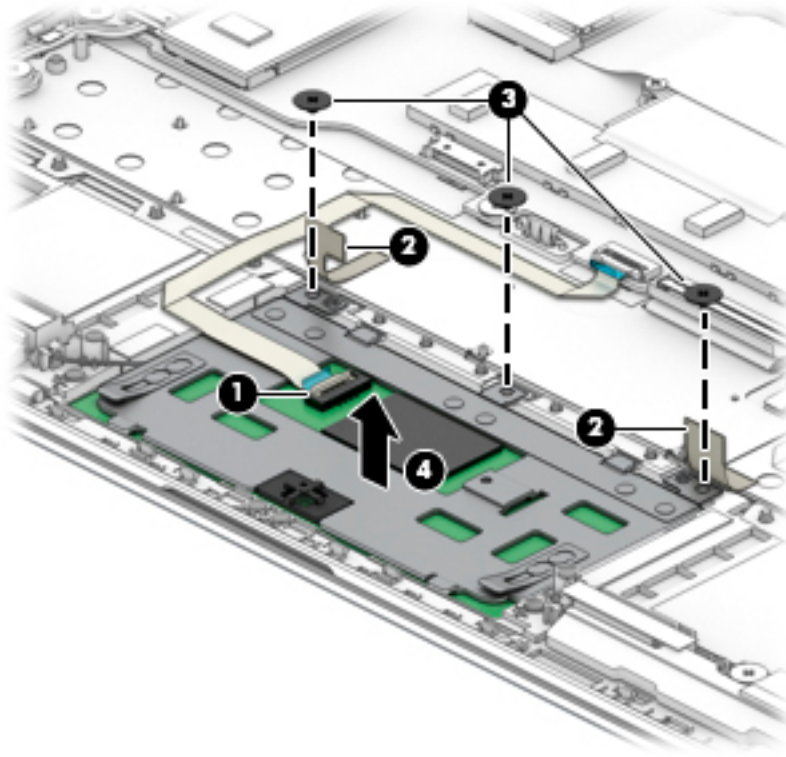
Remove the TouchPad:

1. Remove the four Phillips M2.0×2.5 screws **(1)** that secure the TouchPad bracket to the computer.
2. Remove the bracket **(2)**.



3. Disconnect the cable from the ZIF connector on the TouchPad **(1)**.
4. Remove the conductive tape from the TouchPad **(2)**.
5. Remove the three Phillips M2.0×2.0 broad head screws **(3)** that secure the TouchPad to the computer.

6. Remove the TouchPad from the computer (4).



Reverse this procedure to install the TouchPad.

Thermal module



NOTE: The thermal module assembly spare part kit includes replacement thermal material.

Description	Spare part number
Thermal module (includes fan and heat sink)	L19599-001

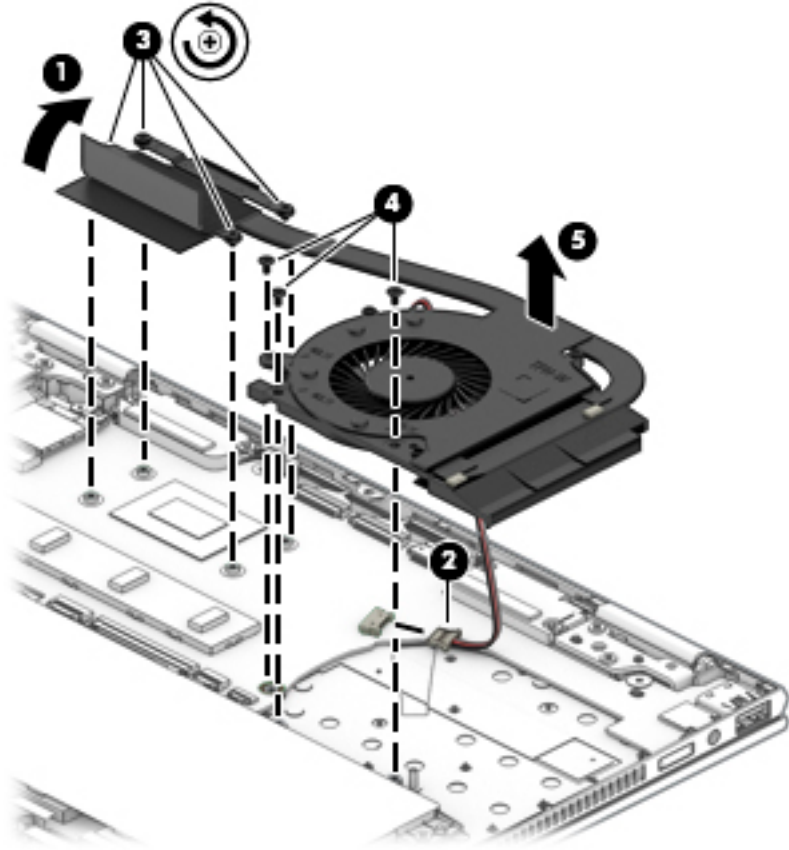
Before removing the thermal module, follow these steps:


1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 25](#)).
5. Remove the battery (see [Battery on page 27](#)).

Remove the thermal module:

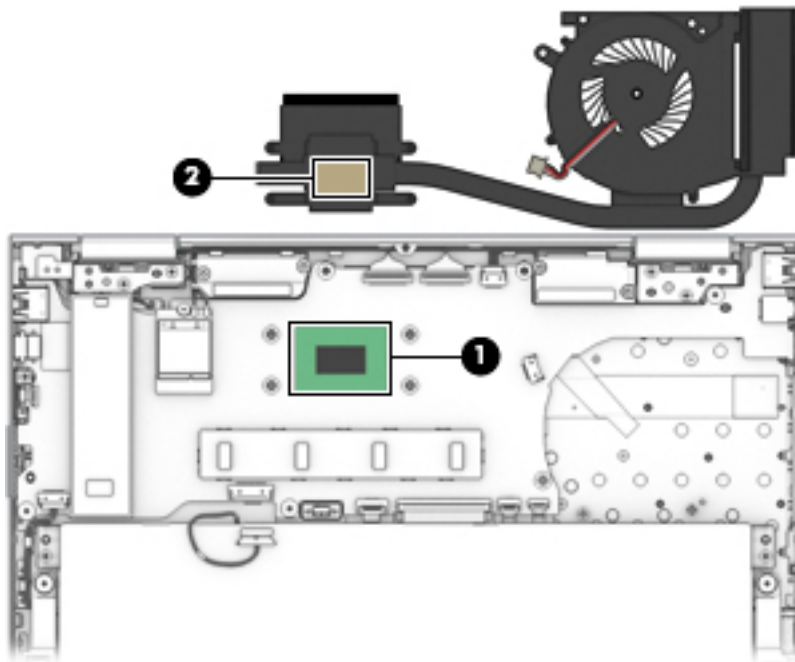
1. Lift the tape from the system board **(1)** while leaving the tape connected to the heat sink.
2. Disconnect the fan cable from the system board **(2)**.
3. In the order indicated on the heat sink, loosen the four Phillips screws **(3)** that secure the heat sink to the system board.
4. Remove the three Phillips M2.0×3.5 screws **(4)** that secure the fan to the system board.

5. Remove the thermal module (5).



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

Thermal paste is used on the system board component (1) and associated heat sink section (2).



Reverse this procedure to install the thermal module.

Fan

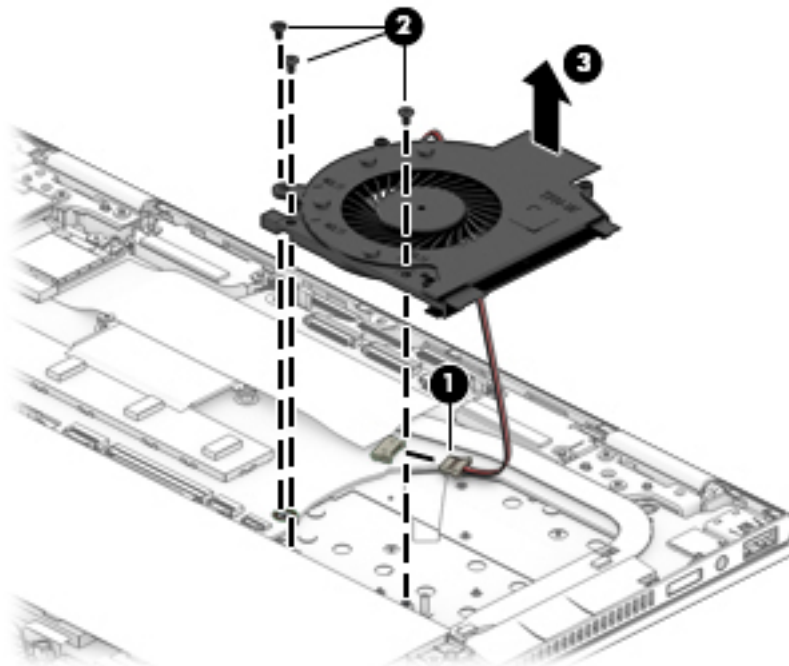
Description	Spare part number
Fan	L23528-001

Before removing the fan, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 25](#)).
5. Remove the battery (see [Battery on page 27](#)).

Remove the fan:

1. Disconnect the fan cable from the system board **(1)**.
2. Remove the three Phillips M2.0×3.5 screws **(2)** that secure the fan to the system board.
3. Remove the fan **(3)**.



Reverse this procedure to install the fan.

System board



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

All system boards use the following part numbers:

xxxxxx-001: Non-Windows operating systems

xxxxxx-601: Windows operating system

Description	Spare part number
System board with integrated Ryzen 7 2700U processor and 8 GB system memory	L26110-xx1
System board with integrated Ryzen 5 2500U processor and 16 GB system memory	L19574-xx1
System board with integrated Ryzen 5 2500U processor and 8 GB system memory	L19573-xx1
System board with integrated Ryzen 3 2300U processor and 8 GB system memory	L19572-xx1
System board with integrated Ryzen 3 2300U processor and 4 GB system memory	L19571-xx1

Before removing the system board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Bottom cover on page 25](#)).
5. Remove the battery (see [Battery on page 27](#)).

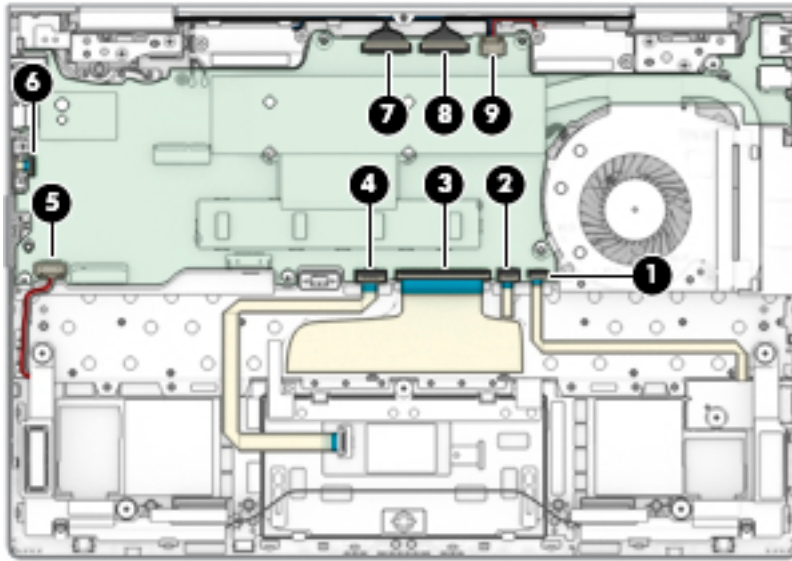
When replacing the system board, be sure to remove the following components from the defective system board and install them on the replacement system board:

- WLAN module (see [WLAN module on page 28](#))
- Solid-state drive (see [Solid-state drive on page 30](#))
- Heat sink (see [Thermal module on page 42](#))

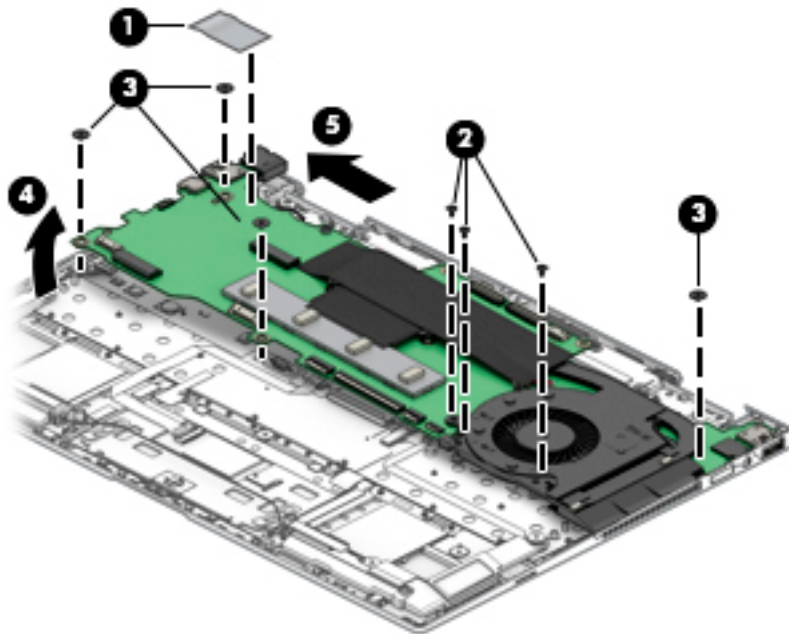
Remove the system board:

1. Disconnect the following cables:
 - (1) Card reader cable
 - (2) Backlight cable
 - (3) Keyboard cable
 - (4) TouchPad cable
 - (5) Bottom speaker cable
 - (6) Fingerprint reader cable
 - (7) Display cable
 - (8) Camera cable

(9) Top speaker cable



2. Lift the square shield from the system board **(1)**.
3. Remove the three Phillips M2.0×3.5 screws **(2)** that secure the fan to the computer.
4. Remove the four Phillips M2.0×2.0 screws **(3)** that secure the system board to the computer.
5. Lift the side of the system board up **(4)**.
6. Pull the system board to the left to remove it from the computer **(5)**.



Reverse this procedure to install the system board.

Power button

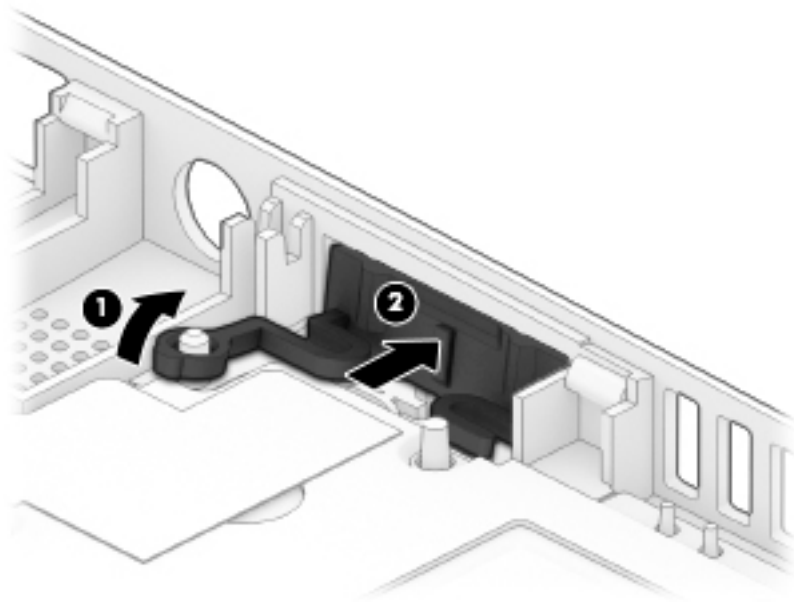
Description	Spare part number
Power button	L28981-001

Before removing the power button, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Bottom cover on page 25](#)).
5. Remove the battery (see [Battery on page 27](#)).
6. Remove the system board (see [System board on page 46](#)).

Remove the power button:

1. Lift the eyelet from the post **(1)**.
2. Push the power button out of the chassis **(2)**.



Reverse this procedure to install the power button.

Volume button

Description	Spare part number
Volume button	L28982-001

Before removing the volume button, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Bottom cover on page 25](#)).
5. Remove the battery (see [Battery on page 27](#)).
6. Remove the system board (see [System board on page 46](#)).

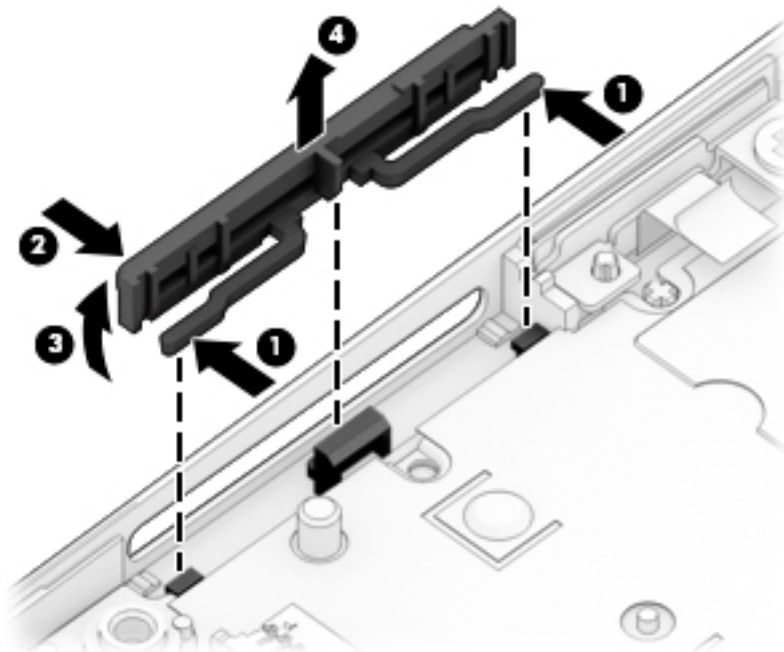
Remove the volume button:

1. Press the two legs in to release them from the clips in the computer **(1)**.
2. Push inward on the side of the button to disengage it from the computer **(2)**.



NOTE: Be sure to press the side of the button (not the center). You can press either side of the button to release it.

3. Lift the disengaged side up to release the button from the computer **(3)**.
4. Remove button from the computer **(4)**.



Reverse this procedure to install the volume button.

Fingerprint reader module

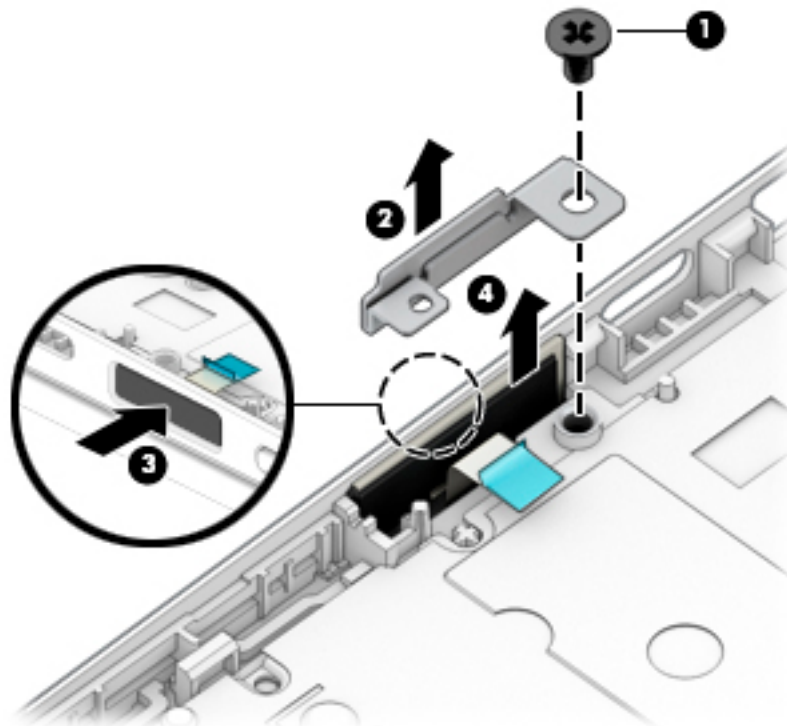
Description	Spare part number
Fingerprint reader module	L23655-001

Before removing the fingerprint reader module, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 25](#)).
5. Remove the battery (see [Battery on page 27](#)).
6. Remove the system board (see [System board on page 46](#)).

Remove the fingerprint reader module:

1. Remove the Phillips M2.0×3.0 screw (1) that secures the fingerprint reader bracket to the computer.
2. Lift the bracket off the fingerprint reader (2).
3. From the outside of the chassis, push the fingerprint reader module into the chassis to disengage it (3).
4. Remove the fingerprint reader module from the computer (4).



Reverse this procedure to install the fingerprint reader module.

Power connector cable

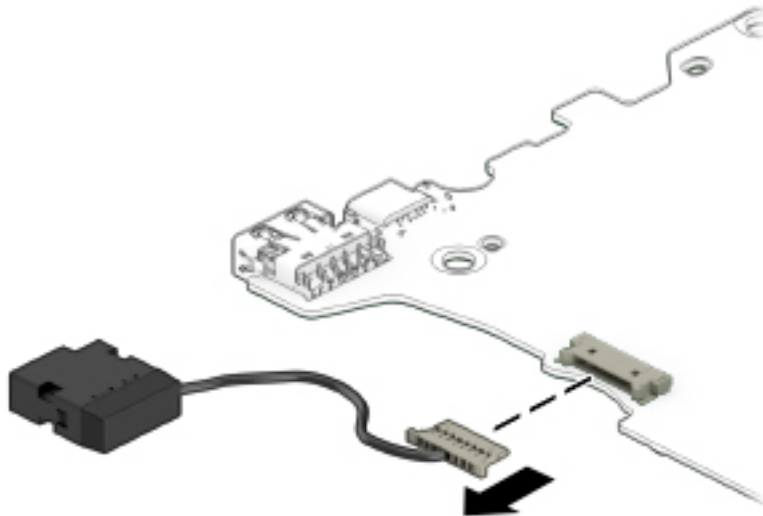
Description	Spare part number
Power connector cable	L19588-001

Before removing the power connector cable, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Bottom cover on page 25](#)).
5. Remove the battery (see [Battery on page 27](#)).
6. Remove the system board (see [System board on page 46](#)).

Remove the power connector cable:

1. Position the system board with the power connector toward you.
2. Disconnect the power connector cable from the system board.



Reverse this procedure to install the power connector cable.

Top cover with keyboard

The top cover with keyboard remains after removing all other spared parts from the computer.


In this section, the first table provides the main spare part number for the keyboards. The second table provides the country codes.

Description	Spare part number
Top cover with backlit keyboard, non-privacy	L19586-xx1
Top cover with backlit keyboard, privacy	L19587-xx1

For use in country or region	Spare part number	For use in country or region	Spare part number	For use in country or region	Spare part number
Belgium	-A41	Israel	-BB1	Saudi Arabia	-171
Canadian French	-DB1	Italy	-061	Spain	-071
Czech Republic and Slovakia	-FL1	Japan	-291	Switzerland	-BG1
Denmark, Finland, and Norway	-DH1	Latin America	-161	Thailand	-281
France	-051	The Netherlands	-B31	Turkey	-141
Germany	-041	Portugal	-131	United Kingdom	-031
Greece	-151	Russia	-251	United States	-001

6 Using Setup Utility (BIOS)

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

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

Starting Setup Utility (BIOS)

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

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

Updating Setup Utility (BIOS)

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

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

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

Determining the BIOS version


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

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 –
Click 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 53](#)).
 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 54](#).

Downloading a BIOS update

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

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

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


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

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

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

1. Type `file` in the taskbar search box, and then select **File Explorer**.
2. Click your hard drive designation. The hard drive designation is typically Local Disk (C:).
3. Using the hard drive path you recorded earlier, open the folder that contains the update.
4. Double-click the file that has an `.exe` extension (for example, `filename.exe`).

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

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

7 Using HP PC Hardware Diagnostics

Using HP PC Hardware Diagnostics Windows

HP PC Hardware Diagnostics Windows is a Windows-based utility that allows you to run diagnostic tests to determine whether the computer hardware is functioning properly. The tool runs within the Windows operating system in order to diagnose hardware failures.

If HP PC Hardware Diagnostics Windows is not installed on your computer, first you must download and install it. To download HP PC Hardware Diagnostics Windows, see [Downloading HP PC Hardware Diagnostics Windows on page 55](#).

After HP PC Hardware Diagnostics Windows is installed, follow these steps to access it from HP Help and Support or HP Support Assistant.

1. To access HP PC Hardware Diagnostics Windows from HP Help and Support:
 - a. Select the **Start** button, and then select **HP Help and Support**.
 - b. Right-click **HP PC Hardware Diagnostics Windows**, select **More**, and then select **Run as administrator**.

– or –

To access HP PC Hardware Diagnostics Windows from HP Support Assistant:

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

– or –

Select the question mark icon in the taskbar.
 - b. Select **Troubleshooting and fixes**.
 - c. Select **Diagnostics**, and then select **HP PC Hardware Diagnostics Windows**.
2. When the 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 at any time, select **Cancel**.

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

Downloading HP PC Hardware Diagnostics Windows

- The HP PC Hardware Diagnostics Windows download instructions are provided in English only.
- You must use a Windows computer to download this tool because only .exe files are provided.

Downloading the latest HP PC Hardware Diagnostics Windows version

To download HP PC Hardware Diagnostics Windows, follow these steps:

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 the installation location:
To run the tool on your computer, download it to the computer desktop.
– or –
To run the tool from a USB flash drive, download it to a USB flash drive.
3. Select **Run**.

Downloading HP Hardware Diagnostics Windows by product name or number (select products only)



NOTE: For some products, it may be necessary to download the software to a USB flash drive by using the product name or number.

To download HP PC Hardware Diagnostics Windows by product name or number (select products only), follow these steps:

1. Go to <http://www.hp.com/support>.
2. Select **Get software and drivers**, and then enter the product name or number.
3. In the **HP PC Hardware Diagnostics** section, select **Download**, and then select the installation location:
To run the tool on your computer, download it to the computer desktop.
– or –
To run the tool from a USB flash drive, download it to a USB flash drive.
4. Select **Run**.

Installing HP PC Hardware Diagnostics Windows

To install HP PC Hardware Diagnostics Windows, follow these steps:

- ▲ Navigate to the folder on your computer or the flash drive where the .exe file was downloaded, double-click the .exe file, and then follow the on-screen instructions.

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: To start diagnostics on a convertible computer, your computer must be in notebook mode, and you must use the attached keyboard.

 **NOTE:** If you need to stop a diagnostic test, press [esc](#).

Starting HP PC Hardware Diagnostics UEFI

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 flash drive



NOTE: To download the HP PC Hardware Diagnostics UEFI tool to a USB flash drive, see [Downloading the latest HP PC Hardware Diagnostics UEFI version on page 57](#).

- 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.

Downloading HP PC Hardware Diagnostics UEFI to a USB flash drive

Downloading HP PC Hardware Diagnostics UEFI to a USB 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.



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 provided.

Downloading the latest HP PC Hardware Diagnostics UEFI version

To download the latest HP PC Hardware Diagnostics UEFI version to a USB 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 UEFI** section, select **Download UEFI Diagnostics**, and then select **Run**.

Downloading HP PC Hardware Diagnostics UEFI by product name or number (select products only)



NOTE: For some products, it may be necessary to download the software to a USB flash drive by using the product name or number.


To download HP PC Hardware Diagnostics UEFI by product name or number (select products only) to a USB flash drive:

1. Go to <http://www.hp.com/support>.
2. Enter the product name or number, select your computer, and then select your operating system.
3. In the **Diagnostics** section, follow the on-screen instructions to select and download the specific UEFI Diagnostics version for your computer.

Using Remote HP PC Hardware Diagnostics UEFI settings (select products only)

Remote HP PC Hardware Diagnostics UEFI is a firmware (BIOS) feature that downloads HP PC Hardware Diagnostics UEFI to your computer. It can then execute the diagnostics on your computer, and it may upload results to a preconfigured server. For more information on Remote HP PC Hardware Diagnostics UEFI, go to <http://www.hp.com/go/techcenter/pcdiags>, and then select **Find out more**.

Downloading Remote HP PC Hardware Diagnostics UEFI


 **NOTE:** HP Remote PC Hardware Diagnostics UEFI is also available as a Softpaq that can be downloaded to a server.

Downloading the latest Remote HP PC Hardware Diagnostics UEFI version

To download the latest Remote HP PC Hardware Diagnostics UEFI version, follow these steps:

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 UEFI** section, select **Download Remote Diagnostics**, and then select **Run**.

Downloading Remote HP PC Hardware Diagnostics UEFI by product name or number

 **NOTE:** For some products, it may be necessary to download the software by using the product name or number.

To download HP Remote PC Hardware Diagnostics UEFI by product name or number, follow these steps:

1. Go to <http://www.hp.com/support>.
2. Select **Get software and drivers**, enter the product name or number, select your computer, and then select your operating system.
3. In the **Diagnostics** section, follow the on-screen instructions to select and download the **Remote UEFI** version for the product.

Customizing Remote HP PC Hardware Diagnostics UEFI settings

Using the Remote HP PC Hardware Diagnostics setting in Computer Setup (BIOS), you can perform the following customizations:

- Set a schedule for running diagnostics unattended. You can also start diagnostics immediately in interactive mode by selecting **Execute Remote HP PC Hardware Diagnostics**.
- Set the location for downloading the diagnostic tools. This feature provides access to the tools from the HP website or from a server that has been preconfigured for use. Your computer does not require the traditional local storage (such as a disk drive or USB flash drive) to run remote diagnostics.
- Set a location for storing the test results. You can also set the user name and password settings used for uploads.
- Display status information about the diagnostics run previously.

To customize Remote HP PC Hardware Diagnostics UEFI settings, follow these steps:

1. Turn on or restart the computer, and when the HP logo appears, press **f10** to enter Computer Setup.
2. Select **Advanced**, and then select **Settings**.

3. Make your customization selections.
4. Select **Main**, and then **Save Changes and Exit** to save your settings.


Your changes take effect when the computer restarts.

8 Backing up, restoring, and recovering


This chapter provides information about the following processes, which are standard procedure for most products:

- **Backing up your personal information**—You can use Windows tools to back up your personal information (see [Using Windows tools on page 60](#)).
- **Creating a restore point**—You can use Windows tools to create a restore point (see [Using Windows tools on page 60](#)).
- **Creating recovery media** (select products only)—You can use HP Recovery Manager or HP Cloud Recovery Download Tool (select products only) to create recovery media (see [Creating HP Recovery media \(select products only\) on page 60](#)).
- **Restoring and recovery**—Windows offers several options for restoring from backup, refreshing the computer, and resetting the computer to its original state (see [Using Windows tools on page 60](#)).
- **Removing the Recovery Partition**—To remove the Recovery partition to reclaim hard drive space (select products only), select the **Remove Recovery Partition** option of HP Recovery Manager. For more information, see [Removing the HP Recovery partition \(select products only\) on page 64](#).

Using Windows tools


 **IMPORTANT:** Windows is the only option that allows you to back up your personal information. Schedule regular backups to avoid information loss.

You can use Windows tools to back up personal information and create system restore points and recovery media, allowing you to restore from backup, refresh the computer, and reset the computer to its original state.

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

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.

Creating HP Recovery media (select products only)


After you have successfully set up the computer, use HP Recovery Manager to create a backup of the HP Recovery partition on the computer. This backup is called HP Recovery media. In cases where the hard drive is corrupted or has been replaced, the HP Recovery media can be used to reinstall the original operating system.

To check for the presence of the Recovery partition in addition to the Windows partition, right-click the **Start** button, select **File Explorer**, and then select **This PC**.

 **NOTE:** If your computer does not list the Recovery partition in addition to the Windows partition, contact support to obtain recovery discs. Go to <http://www.hp.com/support>, select your country or region, and then follow the on-screen instructions.

On select products, you can use the HP Cloud Recovery Download Tool to create HP Recovery media on a bootable USB flash drive. For more information, see [Using the HP Cloud Recovery Download Tool to create recovery media on page 62](#).


Using HP Recovery Manager to create recovery media

 **NOTE:** If you cannot create recovery media yourself, contact support to obtain recovery discs. Go to <http://www.hp.com/support>, select your country or region, and then follow the on-screen instructions.

Before you begin

Before you begin, note the following:


- 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 media storage capacity.
- To create recovery media, use one of the following options:

 **NOTE:** If the computer does not have a recovery partition, HP Recovery Manager displays the Windows Create a Recovery Drive feature. Follow the on-screen instructions to create a recovery image on a blank USB flash drive or hard drive.

- If your computer has an optical drive with DVD writer capability, be sure to 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, which are not compatible with HP Recovery Manager software.
- If your computer does not include an integrated optical drive with DVD writer capability, you can use an external optical drive (purchased separately) to create recovery discs, as described above. If an external optical drive is used, you must connect it directly to a USB port on the computer. It cannot be connected to a USB port on an external device, such as a USB hub.
- To create a recovery flash drive, use a high-quality blank USB flash drive.
- 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 this process.
- If necessary, you can exit the program before you have finished creating all of the recovery media. HP Recovery Manager will finish the current DVD or flash drive. The next time you start HP Recovery Manager, you will be prompted to continue.

Creating the recovery media

To create HP Recovery media using HP Recovery Manager:

 **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 need to recover the system, see [Recovering using HP Recovery Manager on page 62](#).

Using the HP Cloud Recovery Download Tool to create recovery media

To create HP Recovery media using the HP Cloud Recovery Download Tool:

1. Go to <http://www.hp.com/support>.
2. Select **Software and Drivers**, and then follow the on-screen instructions.

Restoring and recovery

Restoring and recovery can be performed using one or more of the following options: Windows tools, HP Recovery Manager, or the HP Recovery partition.

 **IMPORTANT:** Not all methods are available on all products.


Restoring, resetting, and refreshing using Windows tools

Windows offers several options for restoring, resetting, and refreshing the computer. For details, see [Using Windows tools on page 60](#).

Restoring using HP Recovery Manager and the HP Recovery partition

You can use HP Recovery Manager and the HP Recovery partition (select products only) to restore the computer to the original factory state:


- **Resolving problems with preinstalled applications or drivers**—To correct a problem with a preinstalled application or driver:
 1. Type `recovery` in the taskbar search box, and then select **HP Recovery Manager**.
 2. Select **Reinstall drivers and/or applications**, and then follow the on-screen instructions.
- **Using System Recovery**—To recover the Windows partition to original factory content, select 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 62](#). If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 60](#).
- **Using Factory Reset** (select products only)—Restores the computer to its original factory state by deleting all information from the hard drive and recreating the partitions and then reinstalling the operating system and the software that was installed at the factory (select products only). To use the **Factory Reset** option, you must use HP Recovery media. If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 60](#).

 **NOTE:** If you have replaced the hard drive in the computer, you can use the Factory Reset option to install the operating system and the software that was installed at the factory.


Recovering using HP Recovery Manager

You can use HP Recovery Manager software 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 HP Recovery media, see [Creating HP Recovery media \(select products only\) on page 60](#).

 **IMPORTANT:** HP Recovery Manager does not automatically provide backups of your personal data. Before beginning recovery, back up any personal data that you want to retain. See [Using Windows tools on page 60](#).

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

 **NOTE:** When you start the recovery process, only the options available for your computer are displayed.

Before you begin, note the following:


- 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.
- If the computer hard drive fails, HP Recovery media must be used. This media is created using HP Recovery Manager. See [Creating HP Recovery media \(select products only\) on page 60](#).
- If your computer does not allow the creation of HP Recovery media or if the HP Recovery media does not work, contact support to obtain recovery media. Go to <http://www.hp.com/support>, select your country or region, and then follow the on-screen instructions.

Recovering using the HP Recovery partition (select products only)

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

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

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 **HP Recovery Manager**, and then select **Windows 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, quickly hold down the volume up button, and then select **f11**.


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

 **NOTE:** If your computer does not automatically restart in HP Recovery Manager, change the computer boot order, and then follow the on-screen instructions. See [Changing the computer boot order on page 64](#).

Recovering using HP Recovery media

If your computer does not have an HP Recovery partition or if the hard drive is not working properly, you can use HP Recovery media to recover the original operating system and software programs that were installed at the factory.


- ▲ Insert the HP Recovery media, and then restart the computer.

 **NOTE:** If your computer does not automatically restart in HP Recovery Manager, change the computer boot order, and then follow the on-screen instructions. See [Changing the computer boot order on page 64](#).

Changing the computer boot order

If your computer does not restart in HP Recovery Manager, you can change the computer boot order. This 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, depending on the location of your HP Recovery media.

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, quickly hold down the volume up button, and then select **f9**.


– or –

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

3. Select the optical drive or USB flash drive from which you want to boot, and then 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 (select products only) 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. Before removing the Recovery partition, create HP Recovery media. See [Creating HP Recovery media \(select products only\) on page 60](#).

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.

9 Specifications

	Metric	U.S.
Computer dimensions		
Width	306.7 mm	12.08 in
Depth	214.6 mm	8.45 in
Height	14.9 mm	0.59 in
Weight	1301 g	2.87 lbs
Temperature		
Operating	5°C to 35°C	41°F to 95°F
Nonoperating	-20°C to 60°C	-4°F to 140°F
Relative humidity (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	-15 m to 3,048 m	-50 ft to 10,000 ft
Nonoperating	-15 m to 12,192 m	-50 ft to 40,000 ft

NOTE: Applicable product safety standards specify thermal limits for plastic surfaces. The device operates well within this range of temperatures.

10 Power cord set requirements

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

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

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

Requirements for all countries

The following requirements are applicable to all countries and regions:

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

Requirements for specific countries and regions

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

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

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

11 Recycling

When a non-rechargeable or rechargeable battery has reached the end of its useful life, do not dispose of the battery in general household waste. Follow the local laws and regulations in your area for battery disposal.

HP encourages customers to recycle used electronic hardware, HP original print cartridges, and rechargeable batteries. For more information about recycling programs, see the HP Web site at <http://www.hp.com/recycle>.

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