



Maintenance and Service Guide

HP Spectre 13 Laptop PC
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HP authorized service providers only.

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Second Edition: October 2018

First Edition: October 2017

Document Part Number: 937953-002

Product notice

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

Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. Go to <http://www.microsoft.com> for details.

To access the latest user guides, go to <http://www.hp.com/support>, and follow the instructions to find your product. Then select **User Guides**.

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 Spectre 13 Laptop PC (model number 13-af0xx and 13-af1xx)
Processors	<ul style="list-style-type: none">• Intel® Core™ i7-8565U 1.80-GHz (turbo up to 4.60-GHz) quad-core processor (2400-MHz, 8.0 MB L3 cache, 15-W)• Intel Core i7-8550U 1.80-GHz (turbo up to 4.00-GHz) quad-core processor (2400-MHz, 8.0 MB L3 cache, 15-W)• Intel Core i5-8265U 1.60-GHz (turbo up to 3.90-GHz) quad-core processor (2400-MHz, 6.0 MB L3 cache, 15-W)• Intel Core i5-8250U 1.60-GHz (turbo up to 3.40-GHz) quad-core processor (2400-MHz, 6.0 MB L3 cache, 15-W)
Chipset	Integrated soldered-on-circuit (SoC)
Graphics	Internal graphics: Intel ultra high-definition (UHD) Graphics 620 graphics subsystem with universal memory architecture (UMA) video memory Intel high-definition (HD) Graphics 620 graphics subsystem with UMA video memory
Panel	<ul style="list-style-type: none">• 13.3-inch, UHD, white light-emitting (WLED), BrightView (3840×2160), uslim-flat (2.0-mm), UWVA, eDP +PSR, 340 nits, 16:9 ultra wide aspect ratio, narrow bezel, TouchScreen display assembly with flush glass, multitouch enabled, MSFT HDR streaming capable• 13.3-inch, UHD, WLED, BrightView (3840×2160), uslim, UWVA, eDP 1.4+PSR, 400 nits, 16:9 ultra wide aspect ratio, narrow bezel, TouchScreen display assembly with flush glass, multitouch enabled, MSFT HDR streaming capable• 13.3-inch, full high-definition (FHD), WLED, BrightView (1920×1080), uslim-III-flat (2.0-mm), UWVA, eDP +PSR, 300 nits, 16:9 ultra wide aspect ratio, narrow bezel, TouchScreen display assembly with flush glass, multitouch enabled, MSFT HDR streaming capable
Memory	System memory built into system board Support for LPDDR3-2133 dual channel system memory Support for up to 16-GB of system memory in the following configurations: 16384-MB (256-MB × 32 × 4 × 4 pieces) 8192-MB (256-MB × 16 × 4 × 4 pieces)
Storage	Support for the following solid-state drives: <ul style="list-style-type: none">• 2-TB, M.2 2280-SATA-3/DS, Peripheral Component Interconnect Express (PCIe), Non-Volatile Memory Express (NVMe), solid-state drive with triple level cell (TLC)• 1-TB, M.2 2280-SATA-3/DS, PCIe, NVMe, TLC• 512-GB, M.2 2280-SATA-3/DS, PCIe, NVMe, solid-state drive with TLC• 360-GB, M.2 2280-SATA-3/DS, PCIe, NVMe, solid-state drive with TLC• 256-GB, M.2 2280-SATA-3/DS, PCIe, NVMe, solid-state drive with TLC
Audio and video	Audio:

Category	Description
Audio and video <i>(continued)</i>	<p>Bang & Olufsen</p> <p>Support for dual speakers</p> <p>Support for HP Audio Boost 2.0 (with discrete amplifier)</p> <p>Camera:</p> <p>HP Wide Vision HD infrared camera with indicator light, 2 infrared lights, USB 2.0, HD BSI sensor and infrared sensor, f2.2, WDR, 88° WFOV, 720p by 30 frames per second</p> <p>HP Wide Vision HD camera with indicator light, USB 2.0, HD BSI sensor, f2.2, WDR, 88° WFOV, 720p by 30 frames per second</p> <p>Microphones: Dual array digital microphones with appropriate beam-forming, echo-cancellation, noise-suppression software</p>
Wireless	<p>Integrated wireless local area network (WLAN) options by way of wireless module</p> <p>Dual PCIe WLAN antennas built into display assembly</p> <p>Support for Intel Dual Band Wireless-AC 8265 802.11ac 2x2 WiFi + BT 4.2 Combo Adapter (non-vPro) WLAN format</p> <p>Compatible with Miracast-certified devices</p>
Ports	<ul style="list-style-type: none"> • Audio-out (headphone)/audio-in (microphone) combo jack • USB Type-C port 3.1 Gen 2 with Thunderbolt™ Gen 3 technology (2 ports) – Support for the following functions: <ul style="list-style-type: none"> – Power delivery 3.0 – Data transfer – DisplayPort 1.4 – High-definition multimedia interface (HDMI) 2.0 (through a 3rd-party dongle) – High-bandwidth Digital Content Protection (HDCP) 2.2 (through a 3rd-party dongle) – HP Sleep & Charge • USB Type-C port 3.1 Gen 1 (1 port): <ul style="list-style-type: none"> – Power delivery 3.0 – Data transfer – DisplayPort 1.2 – High-definition multimedia interface (HDMI) 2.0 (through a 3rd-party dongle) – High-bandwidth Digital Content Protection (HDCP) 2.2 (through a 3rd-party dongle) – HP Sleep & Charge
Keyboard/pointing devices	<p>Full-size, backlit, island-style keyboard in ceramic white or dark ash silver finishes</p> <p>TouchPad requirements:</p> <ul style="list-style-type: none"> • Image sensor ClickPad with glass surface • MultiTouch gestures enabled • Support for Modern TrackPad gestures • Taps enabled as default
Power requirements	Support for a 4-cell, 43-Wh, 2.52-Ah, Li-ion battery

Category	Description
Power requirements <i>(continued)</i>	Support for the following AC adapters: <ul style="list-style-type: none"> • 65-W AC adapter (non-PFC, USB Type-C) in ceramic white finish • 65-W AC adapter (non-PFC, USB Type-C) in dark ash silver finish • 65-W AC adapter (non-PFC, USB Type-C) in ceramic white finish • 65-W AC adapter (non-PFC, USB Type-C) in dark ash silver finish Support for a 1.00-m power cord with a C5 connector
Sensors	Infrared thermal
Security	Trusted platform module 2.0 (TPM, discrete)
Operating system	Windows 10 Home 64-bit Advanced 2C18 Windows 10 Home 64-bit Advanced 3C17 Windows 10 Home 64-bit Advanced Single Language 2C18 Windows 10 Home 64-bit Advanced Single Language 3C17 Windows 10 Home 64-bit Advanced Web/Kiosk 3C17 Windows 10 Home 64-bit High-End Chinese Market CPPP 2C18 Windows 10 Home 64-bit High-End Chinese Market CPPP 3C17 Windows 10 Home 64-bit Plus 2C18 Windows 10 Home 64-bit Plus 3C17 Windows 10 Home 64-bit Plus Single Language 2C18 Windows 10 Home 64-bit Plus Single Language 3C17 Windows 10 Home 64-bit Plus Single Language APAC EM PPP 2C18 Windows 10 Home 64-bit Plus Single Language APAC EM PPP 3C17 Windows 10 Home 64-bit Plus Single Language India Market PPP 2C18 Windows 10 Home 64-bit Plus Single Language India Market PPP 3C17 Windows 10 Home 64-bit Plus Single Language Indonesia Market PPP 2C18 Windows 10 Home 64-bit Plus Single Language Indonesia Market PPP 3C17 Windows 10 Home 64-bit Plus Single Language SEAP 3C17 Windows 10 Home 64-bit Plus Web/Kiosk 3C17 Windows 10 Professional 64-bit 2C18 Windows 10 Professional 64-bit 3C17 Windows 10 Professional 64-bit Web/Kiosk 3C17
Serviceability	End user replaceable part: AC adapter

2 Computer external components

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

Locating hardware

To find out what hardware is installed on your computer:

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

A list displays all the devices installed on your computer.

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

Locating software

To find out what software is installed on your computer:

- ▲ Select the **Start** button.

– or –

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

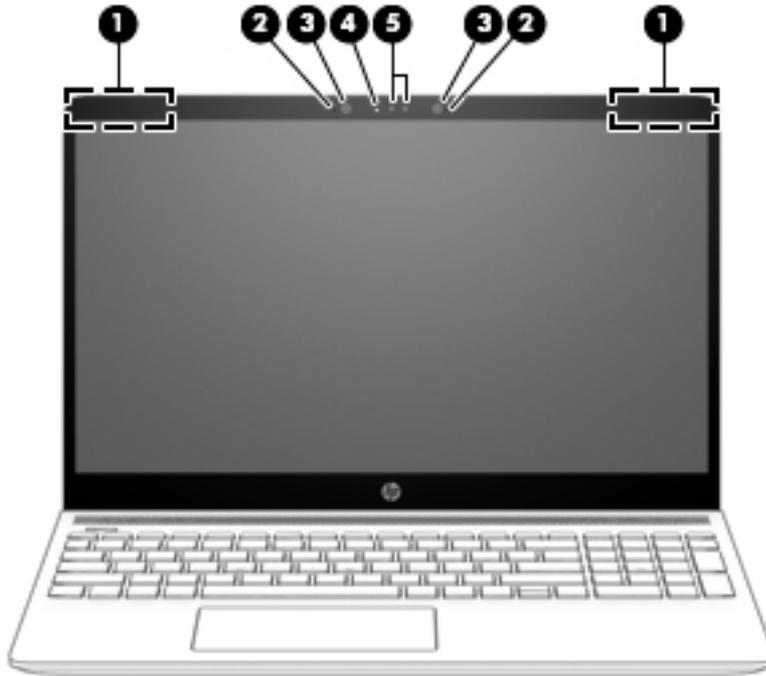
Rear



Component	Description
(1) AC adapter and battery light	<ul style="list-style-type: none"> • White: The AC adapter is connected and the battery is fully charged. • Blinking white: The AC adapter is disconnected and the battery has reached a low battery level. • Amber: The AC adapter is connected and the battery is charging. • Off: The battery is not charging.
(2)  USB Type-C power connector and port	<p>Connects an AC adapter that has a USB Type-C connector, supplying power to the computer and, if needed, charging the computer battery.</p> <p>– 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 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>
(3)  USB Type-C Thunderbolt ports	<p>Connects and charges 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>– or –</p> <p>Connects to various USB, video, HDMI, and LAN devices.</p> <p>NOTE: Cables and/or adapters (purchased separately) may be required.</p> <p>– or –</p> <p>Connects a display device that has a USB Type-C connector, providing display output.</p> <p>NOTE: Your computer may also support a Thunderbolt docking station.</p>
(4)  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>

Component	Description
	<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>

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 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, and antenna location varies. For optimal transmission, keep the areas immediately around the antennas free from obstructions.

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

To access this guide:

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

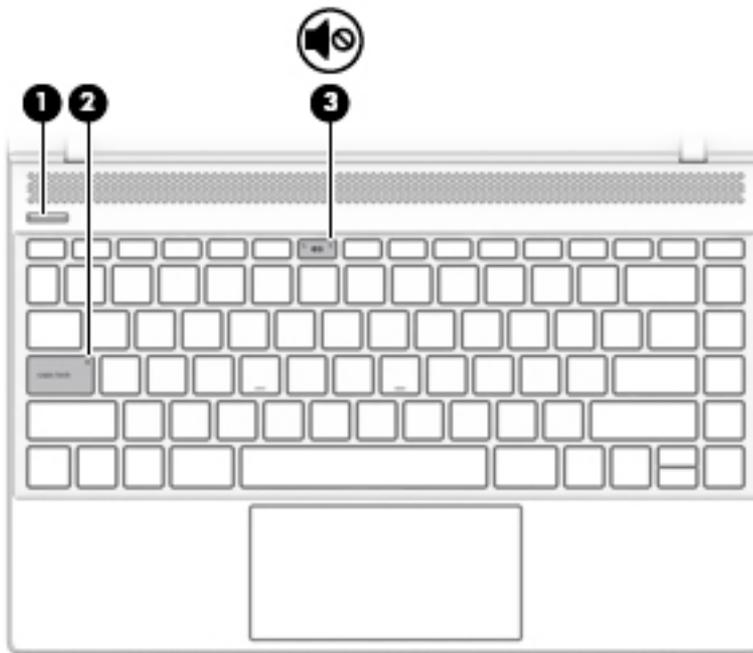
Keyboard area

TouchPad



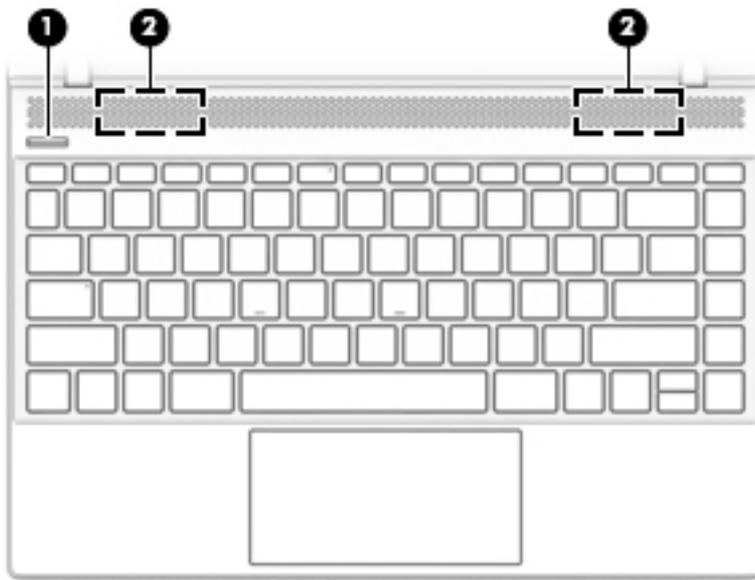
Component	Description
(1) TouchPad zone	Reads your finger gestures to move the pointer or activate items on the screen.
(2) Left TouchPad button	Functions like the left button on an external mouse.
(3) Right TouchPad button	Functions like the right button on an external mouse.

Lights



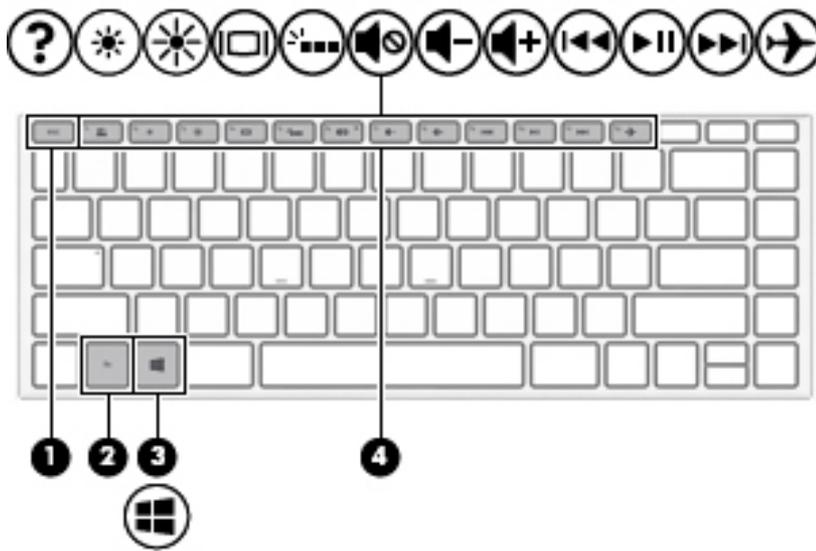
Component	Description
(1) Power light	<ul style="list-style-type: none">• On: The computer is on.• Blinking: The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other unneeded components.• Off: The computer is off or in Hibernation. Hibernation is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

Button and speakers



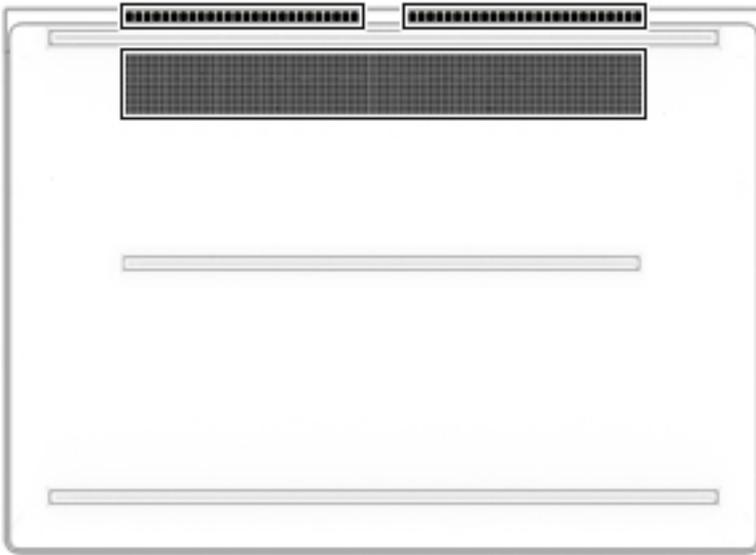
Component	Description
(1) Power button	<ul style="list-style-type: none">• When the computer is off, press the button to turn on the computer.• When the computer is on, press the button briefly to initiate Sleep.• When the computer is in the Sleep state, press the button briefly to exit Sleep.• When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

Bottom



Component	Description
Vents	Enable 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.

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.

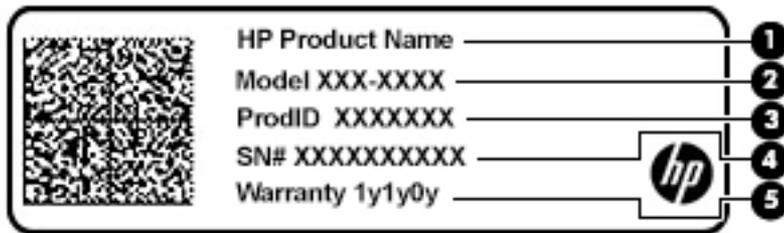
Labels

The labels affixed to the computer provide information that may be needed when troubleshooting system problems or travelling 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.

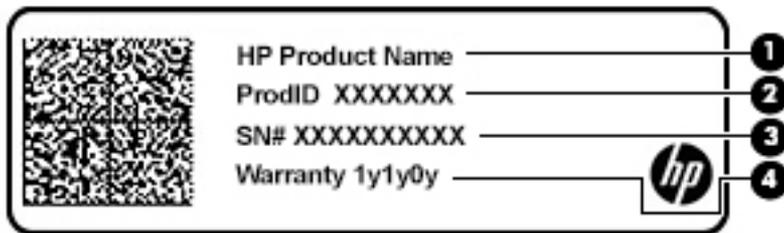
- Service label—Provides important information to identify your computer. When contacting support, you may be asked for the serial number, the product number, or the model number. Locate this information before you contact support.

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



Component

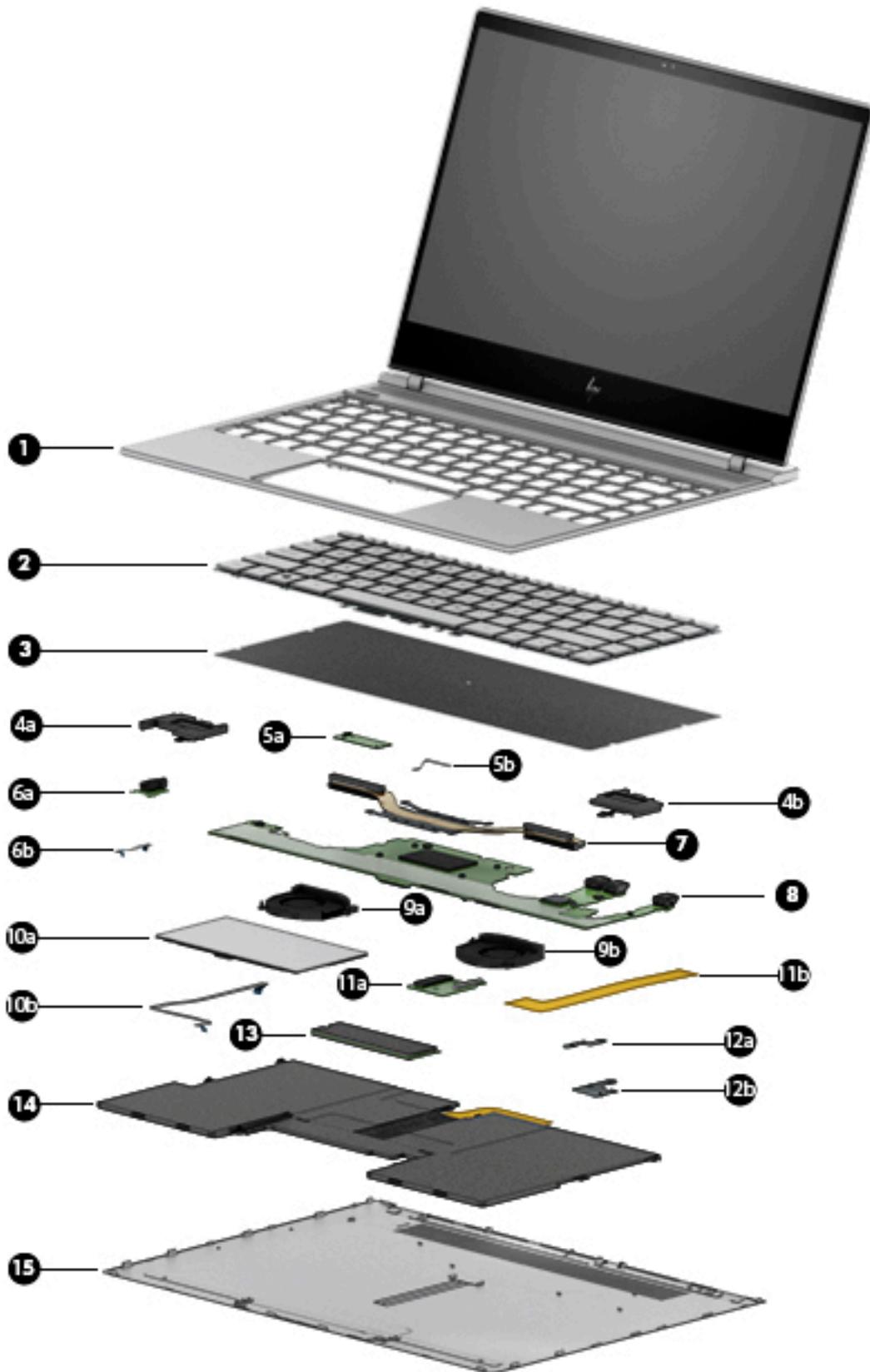
- (1) HP product name (select products only)
- (2) Model number
- (3) Product number
- (4) Serial number
- (5) Warranty period



Component

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

Computer components



Item	Component	Spare part number
(1)	13.3-inch., TouchScreen display/top cover assembly (includes display panel cable and wireless antenna cables):	
	Equipped with a UHD display assembly, an infrared HD webcam, narrow bezel, and a top cover in ceramic white finish for use in all countries and regions except Japan	L41577-001
	Equipped with a UHD display assembly, an infrared HD webcam, narrow bezel, and a top cover in ceramic white finish for use only in Japan	L41578-001
	Equipped with a UHD display assembly, an infrared HD webcam, narrow bezel, and a top cover in dark ash silver finish	L41576-001
	Equipped with a UHD display assembly, an infrared HD webcam, and a top cover in ceramic white finish for use in all countries and regions except Japan	941839-001
	Equipped with a UHD display assembly, an infrared HD webcam, and a top cover in ceramic white finish for use only in Japan	L04823-001
	Equipped with a UHD display assembly, an infrared HD webcam, and a top cover in dark ash silver finish	941838-001
	Equipped with a FHD display assembly, an infrared HD webcam, and a top cover in ceramic white finish for use in all countries and regions except Japan	941835-001
	Equipped with a FHD display assembly, an infrared HD webcam, and a top cover in ceramic white finish for use only in Japan	L04821-001
	Equipped with a FHD display assembly, an infrared HD webcam, and a top cover in dark ash silver finish	941834-001
	Equipped with a FHD display assembly, a non-infrared HD webcam, and a top cover in ceramic white finish for use in all countries and regions except Japan	941837-001
	Equipped with a FHD display assembly, a non-infrared HD webcam, and a top cover in ceramic white finish for use only in Japan	L04822-001
	Equipped with a FHD display assembly, a non-infrared HD webcam, and a top cover in dark ash silver finish	941836-001
(2)	Keyboard with backlight (includes backlight cable, keyboard cable, and keyboard shield):	
	In ceramic white finish:	
	For use in Belgium	L04544-A41
	For use in Canada	L04544-DB1
	For use in the Czech Republic and Slovakia	L04544-FL1
	For use in Denmark, Finland, and Norway	L04544-DH1
	For use in France	L04544-051
	For use in Germany	L04544-041
	For use in Italy	L04544-061
	For use in Japan	L04544-291
	For use in Latin America	L04544-161
	For use in the Netherlands	L04544-B31
	For use in Portugal	L04544-131
	For use in Russia	L04544-251

Item	Component	Spare part number
	For use in Saudi Arabia	L04544-171
	For use in South Korea	L04544-AD1
	For use in Spain	L04544-071
	For use in Switzerland	L04544-BG1
	For use in Taiwan	L04544-AB1
	For use in Thailand	L04544-281
	For use in Turkey	L04544-141
	For use in the United Kingdom	L04544-031
	For use in the United States	L04544-001
	In dark ash silver finish:	
	For use in Belgium	L04543-A41
	For use in Canada	L04543-DB1
	For use in the Czech Republic and Slovakia	L04543-FL1
	For use in Denmark, Finland, and Norway	L04543-DH1
	For use in France	L04543-051
	For use in Germany	L04543-041
	For use in Greece	L04543-151
	For use in Hungary	L04543-211
	For use in Israel	L04543-BB1
	For use in Italy	L04543-061
	For use in Japan	L04543-291
	For use in Latin America	L04543-161
	For use in the Netherlands	L04543-B31
	For use in Portugal	L04543-131
	For use in Russia	L04543-251
	For use in Saudi Arabia	L04543-171
	For use in South Korea	L04543-AD1
	For use in Spain	L04543-071
	For use in Switzerland	L04543-BG1
	For use in Taiwan	L04543-AB1
	For use in Thailand	L04543-281
	For use in Turkey	L04543-141
	For use in the United Kingdom	L04543-031
	For use in the United States	L04543-001

Item	Component	Spare part number
(3)	Keyboard shield (included with keyboard spare part kit)	
	Keyboard Screw Kit (not illustrated, includes 54 keyboard screws)	L04545-001
	Speakers (include cables):	
(4a)	Left speaker (includes cable and adhesive)	941847-001
(4b)	Right speaker (includes cable and adhesive)	941848-001
(5a)	Thermal sensor board (does not include cable)	941845-001
(5b)	Thermal sensor board cable	941846-001
(6a)	Audio jack board (does not include cable)	941843-001
(6b)	Audio jack board cable (includes adhesive)	941844-001
(7)	Heat sink (includes replacement thermal material)	
	For use only on computer models equipped with an Intel Core i7-8565U processor or an Intel Core i5-8265U processor	L40675-001
	For use only on computer models equipped with an Intel Core i7-8550U processor or an Intel Core i5-8250U processor	941826-001
(8)	System board (includes processor, on-board WLAN module, and replacement thermal material):	
	Equipped with an Intel Core i7-8565U 1.80-GHz (turbo up to 4.60-GHz) quad-core processor (2400-MHz, 8.0-MB L3 cache, 15-W), an Intel UHD 620 graphics subsystem with UMA video memory, 16-GB of system memory, and the Windows 10 operating system	L40673-601
	Equipped with an Intel Core i7-8565U 1.80-GHz (turbo up to 4.60-GHz) quad-core processor (2400-MHz, 8.0-MB L3 cache, 15-W), an Intel UHD 620 graphics subsystem with UMA video memory, 16-GB of system memory, and a non-Windows 10 operating system	L40673-001
	Equipped with an Intel Core i7-8565U 1.80-GHz (turbo up to 4.60-GHz) quad-core processor (2400-MHz, 8.0-MB L3 cache, 15-W), an Intel UHD 620 graphics subsystem with UMA video memory, 8-GB of system memory, and the Windows 10 operating system	L40674-601
	Equipped with an Intel Core i7-8565U 1.80-GHz (turbo up to 4.60-GHz) quad-core processor (2400-MHz, 8.0-MB L3 cache, 15-W), an Intel UHD 620 graphics subsystem with UMA video memory, 16-GB of system memory, and a non-Windows 10 operating system	L40674-001
	Equipped with an Intel Core i7-8550U 1.80-GHz (turbo up to 4.00-GHz) quad-core processor (2400-MHz, 8.0-MB L3 cache, 15-W), an Intel UHD 620 graphics subsystem with UMA video memory, 16-GB of system memory, and the Windows 10 operating system	941822-601
	Equipped with an Intel Core i7-8550U 1.80-GHz (turbo up to 4.00-GHz) quad-core processor (2400-MHz, 8.0-MB L3 cache, 15-W), an Intel UHD 620 graphics subsystem with UMA video memory, 16-GB of system memory, and a non-Windows operating system	941822-001
	Equipped with an Intel Core i7-8550U 1.80-GHz (turbo up to 4.00-GHz) quad-core processor (2400-MHz, 8.0-MB L3 cache, 15-W), an Intel UHD 620 graphics subsystem with UMA video memory, 8-GB of system memory, and the Windows 10 operating system	941823-601
	Equipped with an Intel Core i7-8550U 1.80-GHz (turbo up to 4.00-GHz) quad-core processor (2400-MHz, 8.0-MB L3 cache, 15-W), an Intel UHD 620 graphics subsystem with UMA video memory, 8-GB of system memory, and a non-Windows operating system	941823-001
	Equipped with an Intel Core i5-8265U 1.60-GHz (turbo up to 3.90-GHz) quad-core processor (2400-MHz, 6.0-MB L3 cache, 15-W), an Intel UHD 620 graphics subsystem with UMA video memory, 8-GB of system memory, and the Windows 10 operating system	L40672-601

Item	Component	Spare part number
	Equipped with an Intel Core i5-8265U 1.60-GHz (turbo up to 3.90-GHz) quad-core processor (2400-MHz, 6.0-MB L3 cache, 15-W), an Intel UHD 620 graphics subsystem with UMA video memory, 8-GB of system memory, and a non-Windows 10 operating system	L40672-001
	Equipped with an Intel Core i5-8250U 1.60-GHz (turbo up to 3.40-GHz) quad-core processor (2400-MHz, 6.0-MB L3 cache, 15-W), an Intel UHD 620 graphics subsystem with UMA video memory, 8-GB of system memory, and the Windows 10 operating system	941821-601
	Equipped with an Intel Core i5-8250U 1.60-GHz (turbo up to 3.40-GHz) quad-core processor (2400-MHz, 6.0-MB L3 cache, 15-W), an Intel UHD 620 graphics subsystem with UMA video memory, 8-GB of system memory, and a non-Windows operating system	941821-001
	WLAN module bracket (not illustrated)	L07401-001
	Fans (include cables):	
(9a)	Left fan	941827-001
(8b)	Right fan	941828-001
(10a)	TouchPad (does not include cable):	
	In ceramic white finish	941832-001
	In dark ash silver finish	941831-001
(10b)	TouchPad cable (includes adhesive)	941833-001
(11a)	Solid-state drive connector board (does not include cable)	941840-001
(11b)	Solid-state drive connector board cable (includes adhesive)	941842-001
	Solid-state drive brackets:	941841-001
(12a)	Solid-state drive connector board bracket	
(12b)	Solid-state drive bracket	
(13)	Solid-state drive (includes replacement thermal material and thermal shielding material):	
	2-TB, M.2 2280-SATA-3/DS, PCIe, NVMe, solid-state drive with TLC	L22026-001
	1-TB, M.2 2280-SATA-3/DS, PCIe, NVMe, solid-state drive with TLC	941850-001
	512-GB, M.2 2280-SATA-3/DS, PCIe, NVMe, solid-state drive with TLC	941853-001
	360-GB, M.2 2280-SATA-3/DS, PCIe, NVMe, solid-state drive with TLC	941852-001
	256-GB, M.2 2280-SATA-3/DS, PCIe, NVMe, solid-state drive with TLC	941851-001
(14)	Battery (4-cell, 43-Wh, 2.52-Ah, Li-ion, includes cable, adhesive, and thermal shielding material)	924960-855
	Battery tape (not illustrated)	L32854-001
(15)	Bottom cover:	
	In ceramic white finish	941825-001 and L36417-001
	In dark ash silver finish	941824-001
	Rubber Foot Kit (not illustrated, includes bottom cover feet):	
	In ceramic white finish	941830-001
	In dark ash silver finish	941829-001

Miscellaneous parts

Component	Spare part number
AC adapter:	
65-W AC adapter (non-PFC, USB Type-C) in ceramic white finish	L32394-001
65-W AC adapter (non-PFC, USB Type-C) in dark ash silver finish	L32392-001
65-W AC adapter (non-PFC, USB Type-C) in ceramic white finish	938800-850
65-W AC adapter (non-PFC, USB Type-C) in dark ash silver finish	860209-850
Duck head adapter:	
In ceramic white finish:	
For use in Australia	914724-002
For use in Europe and South Korea	854703-002
For use in India	914726-002
For use in the People's Republic of China	914725-002
For use in the United Kingdom	914723-002
For use in the United States	854702-004 and 27467-001
In dark ash silver finish:	
For use in Australia	914724-001
For use in Europe and South Korea	854703-001
For use in India	914726-001
For use in the People's Republic of China	914725-001
For use in the United Kingdom	914723-001
For use in the United States	854702-001
Duck head adapter (C5 connector):	
In white finish:	
For use in Australia	L37134-001
For use in India	L37135-001
For use in North America	L37133-001
For use in the People's Republic of China	L37131-001
For use in South Korea	L37130-001
For use in the United Kingdom	L37132-001
In black finish:	
For use in Australia	L37140-001
For use in India	L37141-001
For use in North America	L37139-001

Component	Spare part number
For use in the People's Republic of China	L37137-001
For use in South Korea	L37136-001
For use in the United Kingdom	L37138-001
HP 13.3-inch. sleeve:	
In black finish	940099-001
In gray finish	936249-001
HP USB Type-C adapter:	
USB Type-C-to-HDMI adapter	831752-001
USB Type-C-to-HDMI 2.0 adapter	935325-001
USB Type-C-to-MultiPort hub	919666-001
USB Type-C-to-RJ45 adapter	855560-001
USB Type-C-to-USB Type-A dongle	833960-001
USB Type-C-to-USB Type-A hub	916838-001
USB Type-C-to-VGA adapter	831751-001
Power cord (C5 connector, 1.00-m):	
In ceramic white finish:	
For use in Australia	213356-017
For use in Denmark	213353-017
For use in Europe	213350-018
For use in India	404827-012
For use in Japan	349756-010
For use in North America	213349-019
For use in the People's Republic of China	286497-017
For use in South Africa	361240-011
For use in Switzerland	213354-017
For use in Taiwan	393313-011
For use in Thailand	285096-016
For use in the United Kingdom	213351-017
In dark ash silver finish:	
For use in Australia	213356-013
For use in Denmark	213353-013
For use in Europe	213350-014
For use in India	404827-008
For use in Israel	398063-008

Component	Spare part number
For use in Japan	349756-006
For use in North America	213349-015
For use in the People's Republic of China	286497-013
For use in South Africa	361240-007
For use in Switzerland	213354-013
For use in Taiwan	393313-007
For use in Thailand	285096-012
For use in the United Kingdom	213351-013
Power cord (C5 connector, 1.00-m, FDH, Prime, Sticker):	
For use in Australia	L36816-001
For use in Denmark	L36817-001
For use in Europe	L36818-001
For use in India	L36820-001
For use in Israel	L36819-001
For use in Japan	L36821-001
For use in North America	L36822-001
For use in the People's Republic of China	L36823-001
For use in South Africa	L36824-001
For use in Switzerland	L36825-001
For use in Taiwan	L36827-001
For use in Thailand	L36826-001
For use in the United Kingdom	L36828-001
Power cord (C5 connector, 1.00-m, FDH, Prime, Tag, in white finish):	
For use in Australia	L36805-001
For use in Denmark	L36806-001
For use in Europe	L36807-001
For use in India	L36808-001
For use in Japan	L36809-001
For use in North America	L36810-001
For use in the People's Republic of China	L36811-001
For use in South Africa	L36953-001
For use in Switzerland	L36812-001
For use in Taiwan	L36952-001
For use in Thailand	L36813-001

Component	Spare part number
For use in the United Kingdom	L36814-001
Power cord (C5 connector, 1.00-m, DH, FX, PRM, TAG):	
For use in Europe	L30411-001
For use in North America	L30410-001
For use in the United Kingdom	L30412-001
Rubber Foot Kit (includes bottom cover rear foot strip):	
In ceramic white finish	941830-001
In dark ash silver finish	941829-001
Screw Kit	941849-001

4 Removal and replacement preliminary requirements

Tools required

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

- Flat-bladed screw driver
- Magnetic screw driver
- Phillips P00 and P0 screw drivers

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

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: 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 14](#) 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 87 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

 **NOTE:** The bottom cover spare part kit includes replacement thermal material.

Description	Spare part number
In ceramic white finish	941825-001 and L36417-001
In dark ash silver finish	941824-001

Before disassembling the computer, follow these steps:

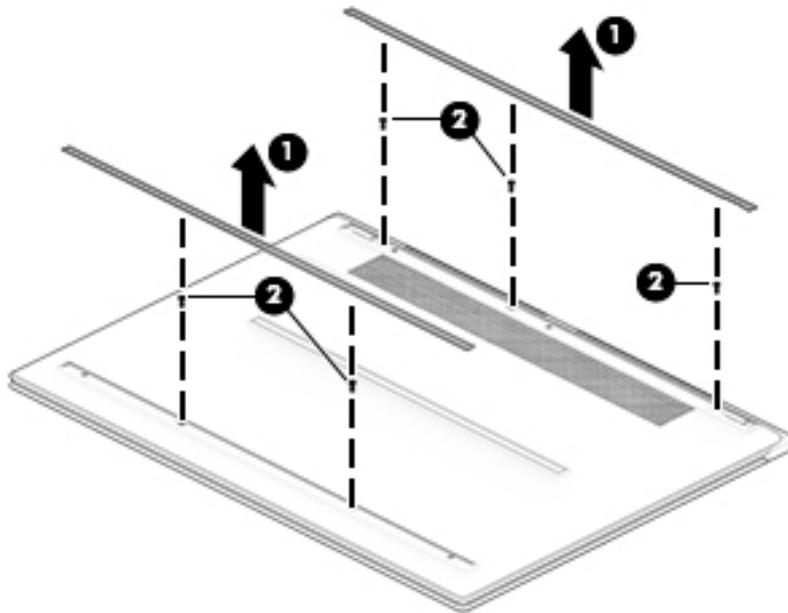
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord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

Remove the bottom cover:

1. Remove the computer rubber feet **(1)**.

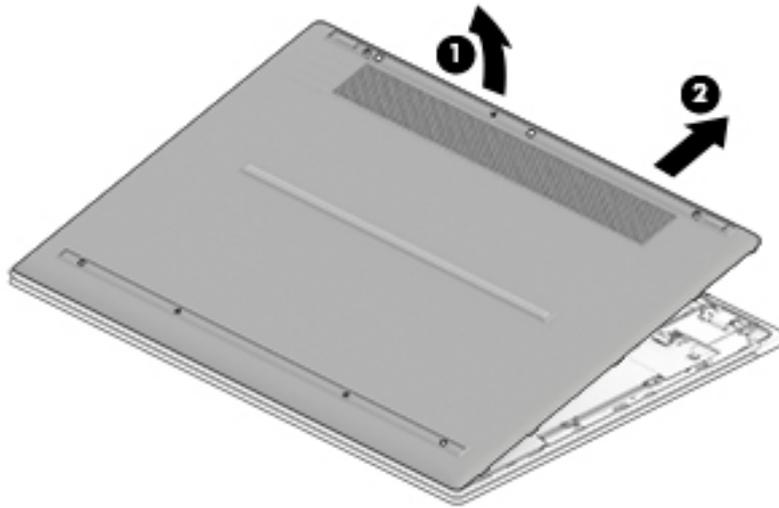
The rubber feet are included in the Rubber Foot Kit, spare part numbers 941830-001 (in ceramic white finish) and 941829-001 (in dark ash silver finish).

2. Remove the five Phillips M2.0×5.4 screws **(2)** that secure the bottom cover to the computer.



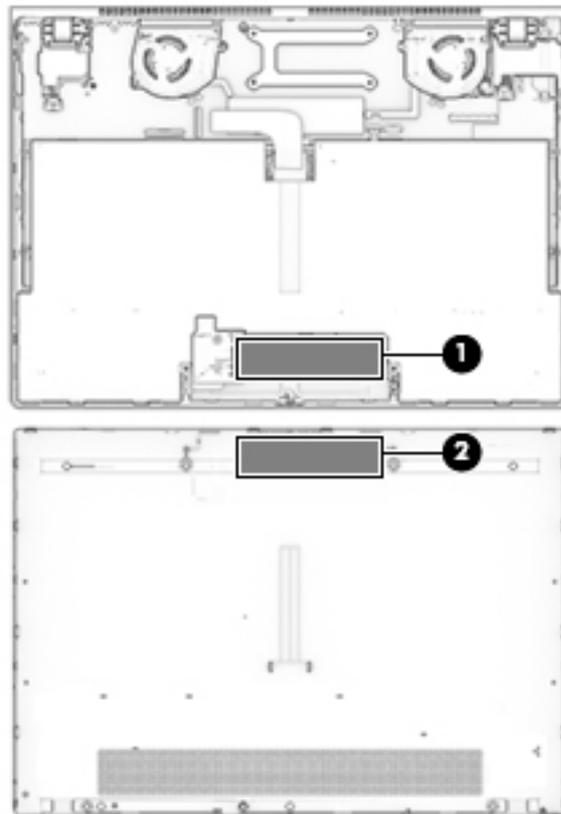
3. Lift the rear edge of the bottom cover **(1)** until it separates from the keyboard/top cover.

4. Remove the bottom cover (2).



 **NOTE:** The thermal material must be thoroughly cleaned from the surfaces of the solid-state drive and the bottom cover each time the bottom cover is removed. Replacement thermal material is included with the bottom cover and solid-state drive spare part kits.

Replacement thermal material is used on the solid-state drive (1) and the bottom cover section (2) that services it.



Reverse this procedure to install the bottom cover.

Battery

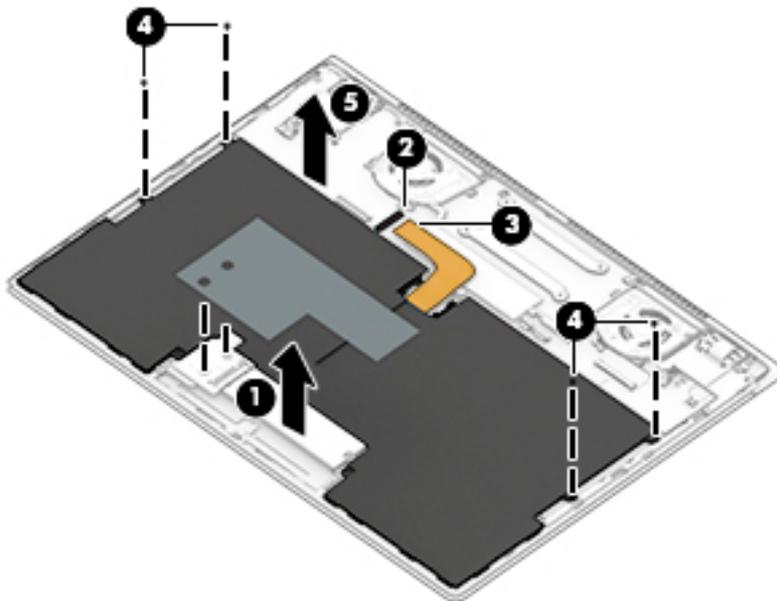
Description	Spare part number
4-cell, 43-Wh, 2.52-Ah, Li-ion battery (includes cable, battery tape, and thermal shielding material)	924960-855
Battery tape	924960-855

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 30](#)).

Remove the battery:

1. Remove the thermal shielding material **(1)** that secures the solid-state drive to the battery.
2. Release the zero insertion force (ZIF) connector **(2)** to which the battery cable is connected, and then disconnect the battery cable from the system board
3. Detach the battery cable **(3)** from the keyboard/top cover. (The battery cable is attached to the keyboard/top cover with adhesive.)
4. Remove the four Phillips M1.5×4.7 screws **(4)** that secure the battery to the keyboard/top cover.
5. Remove the battery **(5)**.



Reverse this procedure to install the battery.

Solid-state drive



NOTE: The solid-state drive spare part kit includes replacement thermal material and thermal shielding material.

Description	Spare part number
2-TB, M.2 2280-SATA-3/DS, PCIe, NVMe, solid-state drive with TLC	L22026-001
1-TB, M.2 2280-SATA-3/DS, PCIe, NVMe, solid-state drive with TLC	941850-001
512-GB, M.2 2280-SATA-3/DS, PCIe, NVMe, solid-state drive with TLC	941853-001
360-GB, M.2 2280-SATA-3/DS, PCIe, NVMe, solid-state drive with TLC	941852-001
256-GB, M.2 2280-SATA-3/DS, PCIe, NVMe, solid-state drive with TLC	941851-001

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

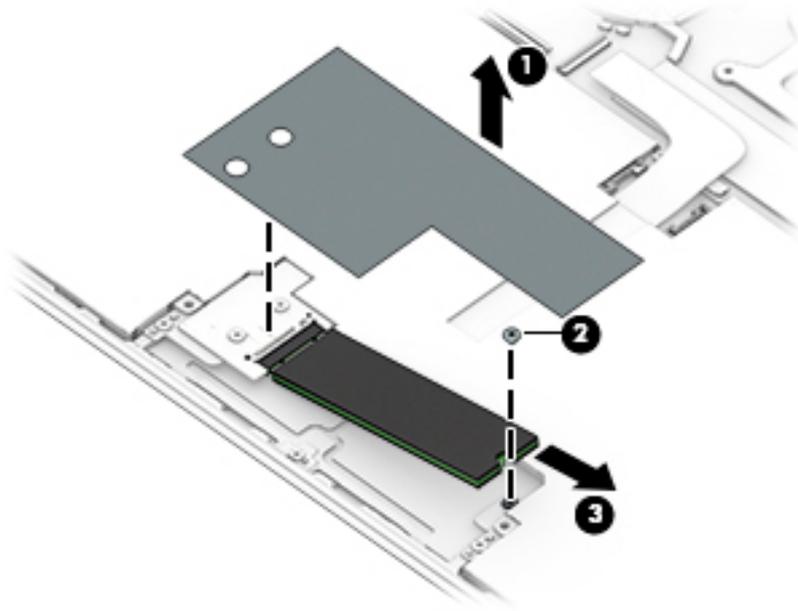
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Bottom cover on page 30](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 32](#)).

Remove the solid-state drive:

1. Remove the thermal shielding material **(1)** that secures the solid-state drive to the battery.
2. Remove the Phillips M2.0×1.8 screw **(2)** that secures the solid-state drive to the solid-state drive bracket.

3. Remove the solid-state drive (3) by pulling it away from the connector.

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



Reverse this procedure to reassemble and install the solid-state drive.

Audio jack board cable

Description	Spare part number
Audio jack board cable (includes adhesive)	941844-001

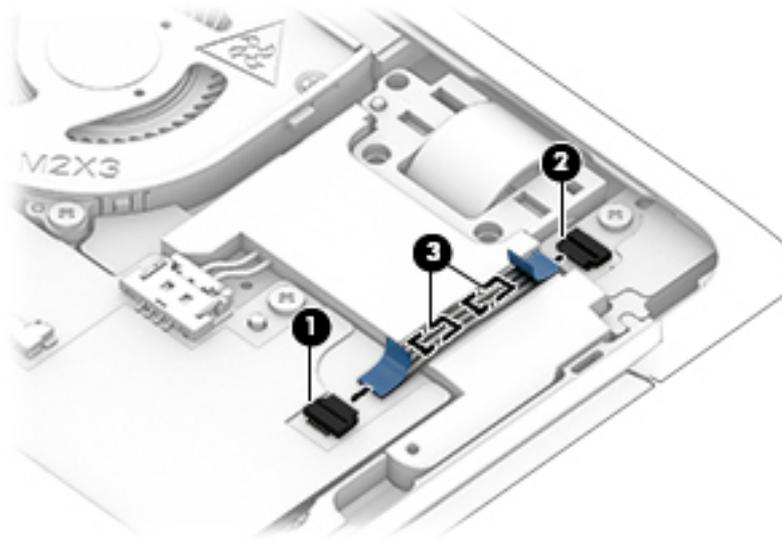
Before removing the audio jack board cable, follow these steps:

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 30](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 32](#)).

Remove the audio jack board cable:

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

3. Detach the audio jack board cable (3) from the left speaker. (The audio jack board cable is attached to the left speaker with adhesive.)



4. Remove the audio jack board cable.

Reverse this procedure to reassemble and install the audio jack board cable.

Solid-state drive connector board

 **NOTE:** The solid-state drive connector board spare part kit does not include the solid-state drive connector board cable. The solid-state drive connector board cable is available using spare part number 941842-001.

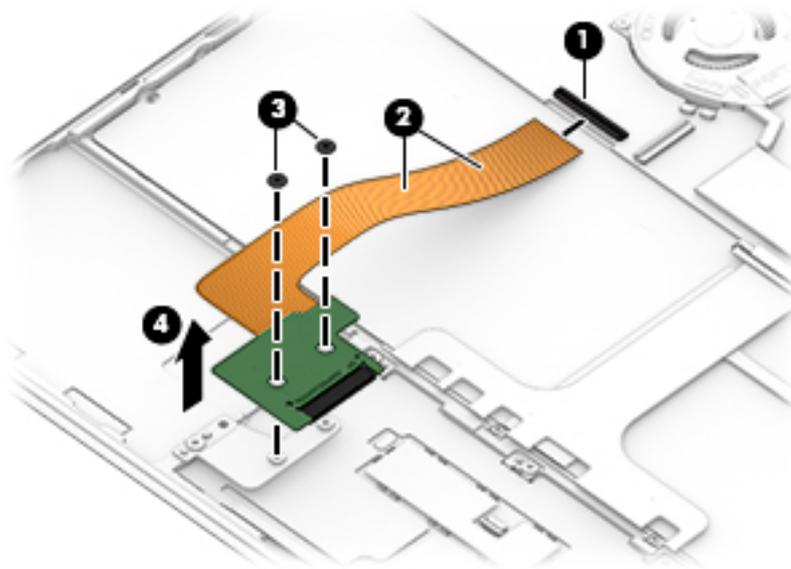
Description	Spare part number
Solid-state drive connector board	941840-001

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

1. 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.
2. Disconnect all external devices from the computer.
3. Remove the bottom cover (see [Bottom cover on page 30](#)).
4. Remove the battery (see [Battery on page 32](#)).
5. Remove the solid-state drive (see [Solid-state drive on page 33](#)).

Remove the solid-state drive connector board:

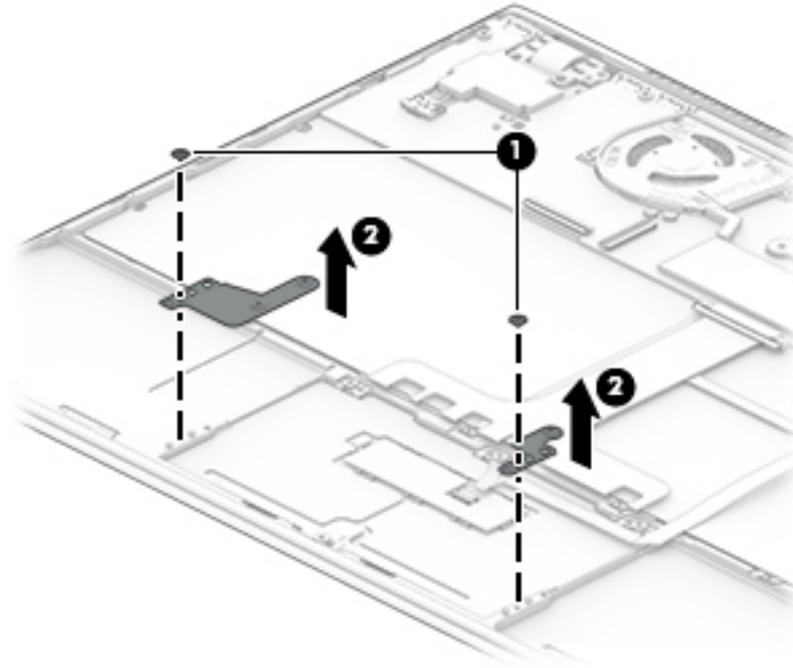
1. Release the ZIF connector (1) to which the solid-state drive connector board cable is connected, and then disconnect the solid-state drive connector board cable from the system board.
2. Detach the solid-state drive connector board cable (2) from the keyboard/top cover. (The solid-state drive connector board cable is attached to the keyboard/top cover with adhesive.)
3. Remove the two Phillips M2.0×1.8 screws (3) that secure the solid-state drive connector board to the solid-state drive bracket.
4. Remove the solid-state drive connector board (4).



5. If it is necessary to remove the solid-state drive brackets:
 - a. Remove the two Phillips M2.0×1.8 screws (1) that secure the solid-state drive brackets to the keyboard/top cover.

- b. Remove the solid-state drive brackets (2).

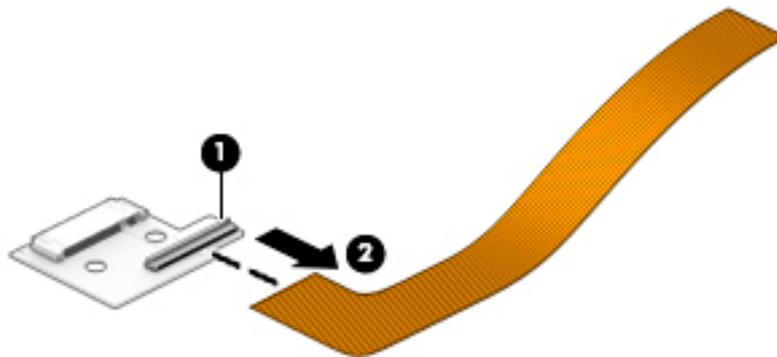
The solid-state drive brackets are available using spare part number 941841-001.



6. If it is necessary to remove the solid-state drive connector board cable:

- a. Turn the solid-state drive connector board upside down.
 - b. Release the ZIF connector (1) to which the solid-state drive connector board cable is connected, and then disconnect the solid-state drive connector board cable (2) from the solid-state drive connector board.

The solid-state drive connector board cable is available using spare part number 941842-001.



Reverse this procedure to install the solid-state drive connector board.

TouchPad cable

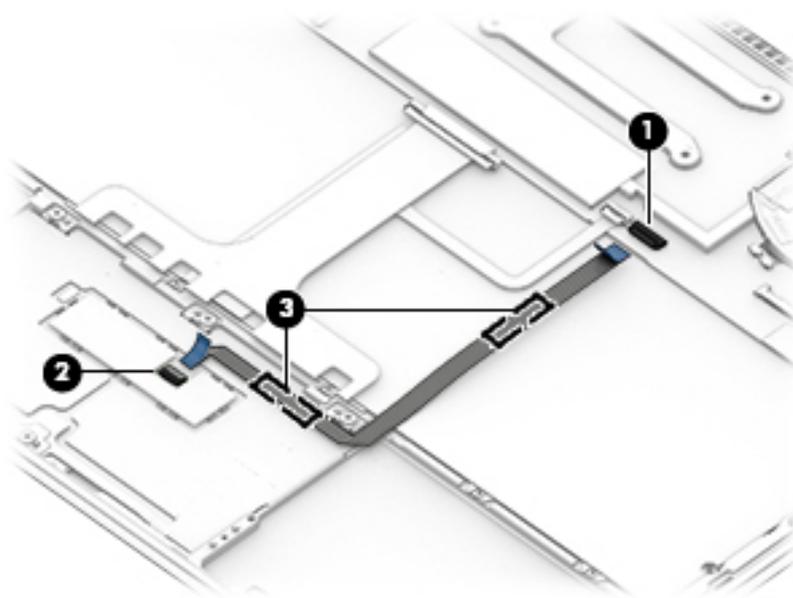
Description	Spare part number
TouchPad cable (includes adhesive)	941833-001

Before removing the TouchPad 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 30](#)).
5. Remove the battery (see [Battery on page 32](#)).

Remove the TouchPad cable:

1. Release the ZIF connector **(1)** to which TouchPad cable is connected, and then disconnect the TouchPad cable from the system board.
2. Release the ZIF connector **(2)** to which TouchPad cable is connected, and then disconnect the TouchPad cable from the TouchPad.
3. Detach the TouchPad cable **(3)** from the keyboard/top cover. (The TouchPad cable is attached to the keyboard/top cover with adhesive.)



4. Remove the TouchPad cable.

Reverse this procedure to install the TouchPad cable.

TouchPad

 **NOTE:** The TouchPad spare part kit does not include the TouchPad cable. The TouchPad cable is available using spare part number 941833-001.

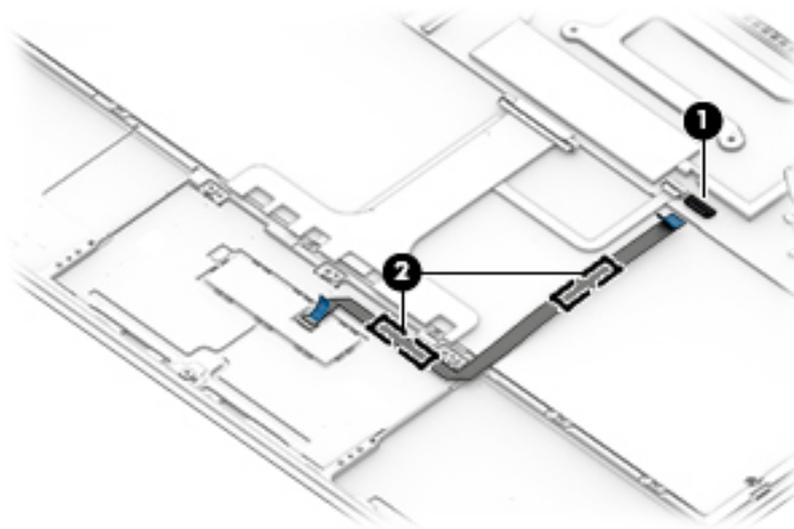
Description	Spare part number
In ceramic white finish	941832-001
In dark ash silver finish	941831-001

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 30](#)).
5. Remove the battery (see [Battery on page 32](#)).
6. Remove the solid-state drive (see [Solid-state drive on page 33](#)).
7. Remove the solid-state drive connector board and brackets (see [Solid-state drive connector board on page 36](#)).

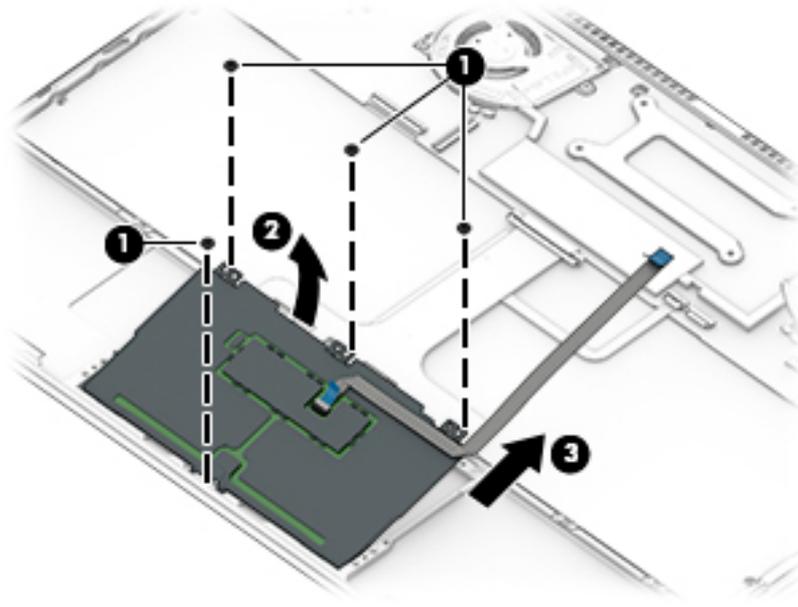
Remove the TouchPad:

1. Release the ZIF connector (1) to which TouchPad cable is connected, and then disconnect the TouchPad cable from the system board.
2. Detach the TouchPad cable (2) from the keyboard/top cover. (The TouchPad cable is attached to the keyboard/top cover with adhesive.)



3. Remove the four Phillips M2.0×1.8 screws (1) that secure the TouchPad to the keyboard/top cover.
4. Lift the top edge of the TouchPad (2) until it rests at an angle.

5. Remove the TouchPad **(3)** by sliding it up and back at an angle.



Reverse this procedure to install the TouchPad.

Fans

Description	Spare part number
Left fan (includes cable)	941827-001
Right fan (includes cable)	941828-001

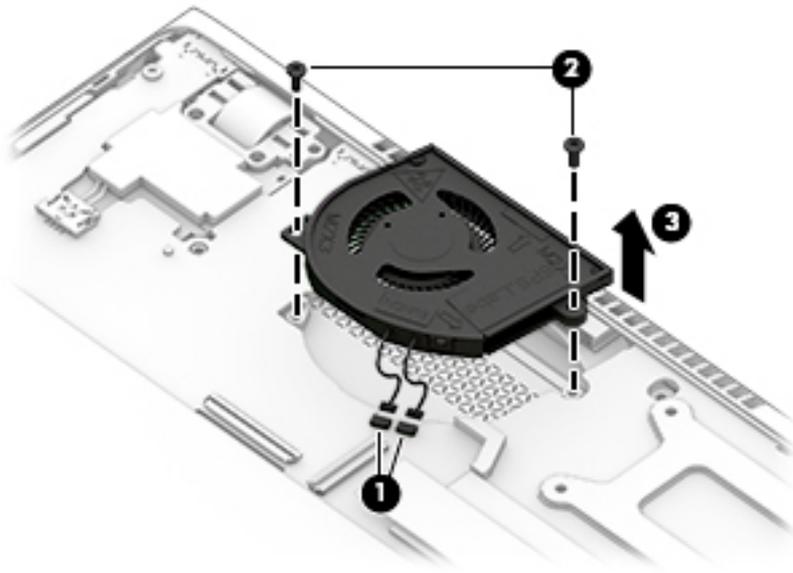
Before removing the fans, follow these steps:

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 30](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 32](#)).

Remove the right fan:

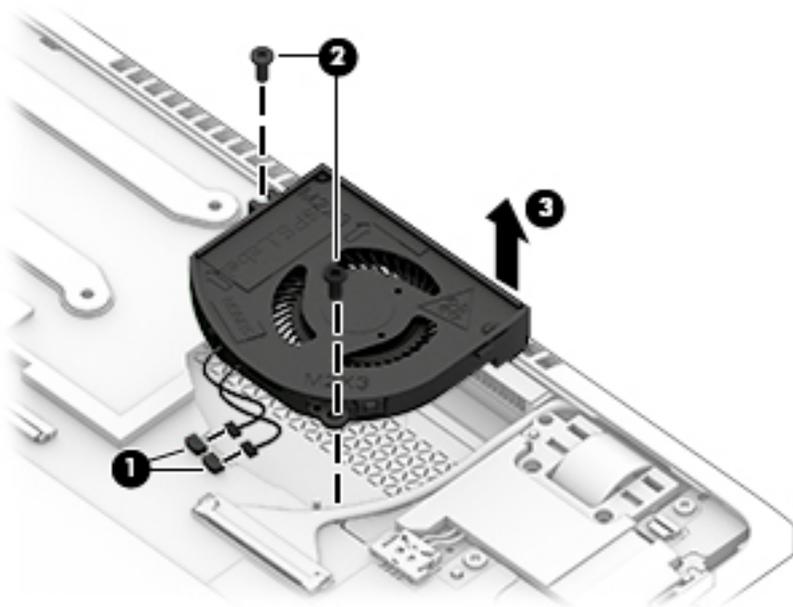
1. Disconnect the right fan cables **(1)** from the connectors on the system board.
2. Remove the two Phillips M2.0×3.2 screws **(2)** that secure the right fan to the keyboard/top cover.

3. Remove the right fan (3).



Remove the left fan:

1. Disconnect the left fan cables (1) from the connectors on the system board.
2. Remove the two Phillips M2.0×3.2 screws (2) that secure the left fan to the keyboard/top cover.
3. Remove the left fan (3).



Reverse this procedure to reassemble and install the fans.

System board



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

Description	Spare part number
Equipped with an Intel Core i7-8565U 1.80-GHz (turbo up to 4.60-GHz) quad-core processor (2400-MHz, 8.0-MB L3 cache, 15-W), an Intel UHD 620 graphics subsystem with UMA video memory, 16-GB of system memory, and the Windows 10 operating system	L40673-601
Equipped with an Intel Core i7-8565U 1.80-GHz (turbo up to 4.60-GHz) quad-core processor (2400-MHz, 8.0-MB L3 cache, 15-W), an Intel UHD 620 graphics subsystem with UMA video memory, 16-GB of system memory, and a non-Windows operating system	L40673-001
Equipped with an Intel Core i7-8565U 1.80-GHz (turbo up to 4.60-GHz) quad-core processor (2400-MHz, 8.0-MB L3 cache, 15-W), an Intel UHD 620 graphics subsystem with UMA video memory, 8-GB of system memory, and the Windows 10 operating system	L40674-601
Equipped with an Intel Core i7-8565U 1.80-GHz (turbo up to 4.60-GHz) quad-core processor (2400-MHz, 8.0-MB L3 cache, 15-W), an Intel UHD 620 graphics subsystem with UMA video memory, 8-GB of system memory, and a non-Windows operating system	L40674-001
Equipped with an Intel Core i7-8550U 1.80-GHz (turbo up to 4.00-GHz) quad-core processor (2400-MHz, 8.0-MB L3 cache, 15-W), an Intel UHD 620 graphics subsystem with UMA video memory, 16-GB of system memory, and the Windows 10 operating system	941822-601
Equipped with an Intel Core i7-8550U 1.80-GHz (turbo up to 4.00-GHz) quad-core processor (2400-MHz, 8.0-MB L3 cache, 15-W), an Intel UHD 620 graphics subsystem with UMA video memory, 16-GB of system memory, and a non-Windows operating system	941822-001
Equipped with an Intel Core i7-8550U 1.80-GHz (turbo up to 4.00-GHz) quad-core processor (2400-MHz, 8.0-MB L3 cache, 15-W), an Intel UHD 620 graphics subsystem with UMA video memory, 8-GB of system memory, and the Windows 10 operating system	941823-601
Equipped with an Intel Core i7-8550U 1.80-GHz (turbo up to 4.00-GHz) quad-core processor (2400-MHz, 8.0-MB L3 cache, 15-W), an Intel UHD 620 graphics subsystem with UMA video memory, 8-GB of system memory, and a non-Windows operating system	941823-001
Equipped with an Intel Core i5-8265U 1.60-GHz (turbo up to 3.90-GHz) quad-core processor (2400-MHz, 6.0-MB L3 cache, 15-W), an Intel UHD 620 graphics subsystem with UMA video memory, 8-GB of system memory, and the Windows 10 operating system	941821-601
Equipped with an Intel Core i5-8265U 1.60-GHz (turbo up to 3.90-GHz) quad-core processor (2400-MHz, 6.0-MB L3 cache, 15-W), an Intel UHD 620 graphics subsystem with UMA video memory, 8-GB of system memory, and a non-Windows operating system	941821-001
Equipped with an Intel Core i5-8250U 1.60-GHz (turbo up to 3.40-GHz) quad-core processor (2400-MHz, 6.0-MB L3 cache, 15-W), an Intel UHD 620 graphics subsystem with UMA video memory, 8-GB of system memory, and the Windows 10 operating system	L40672-601
Equipped with an Intel Core i5-8250U 1.60-GHz (turbo up to 3.40-GHz) quad-core processor (2400-MHz, 6.0-MB L3 cache, 15-W), an Intel UHD 620 graphics subsystem with UMA video memory, 8-GB of system memory, and a non-Windows operating system	L40672-001

Before removing the system board, follow these steps:

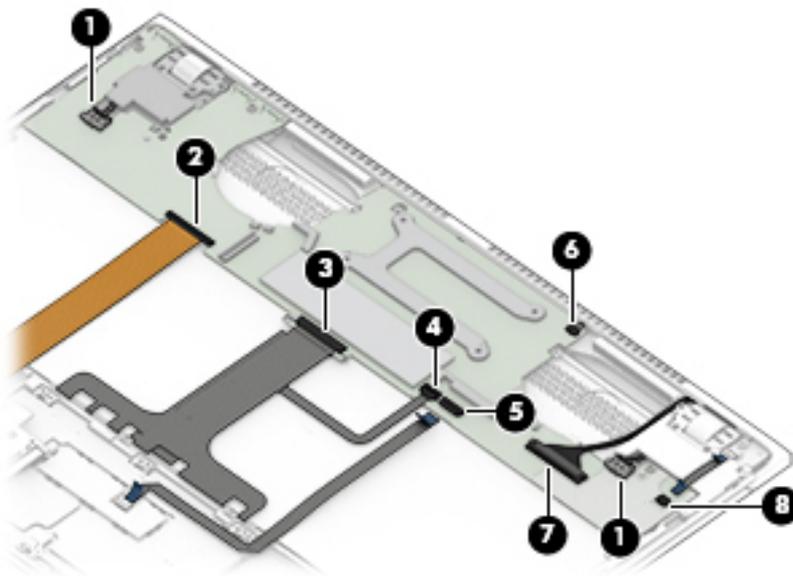
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord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

4. Remove the bottom cover (see [Bottom cover on page 30](#)).
5. Remove the battery (see [Battery on page 32](#)).
6. Remove the fans (see [Fans on page 40](#)).

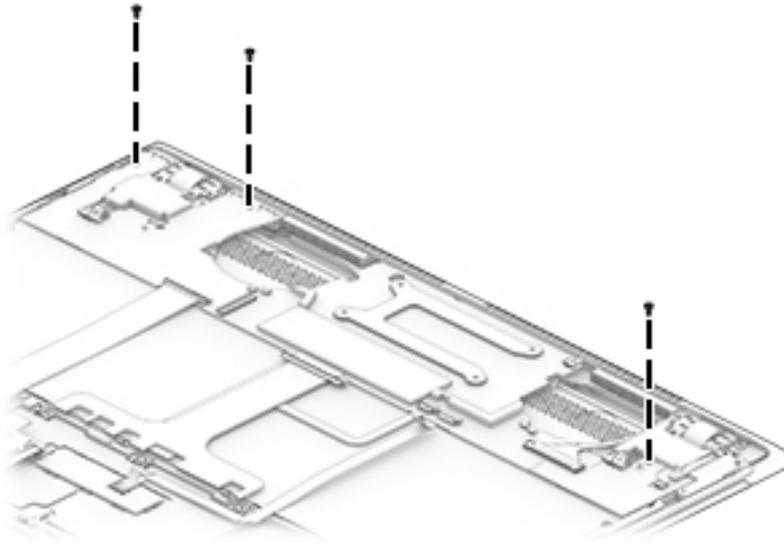
When replacing the system board, be sure to remove the heat sink (see [Heat sink on page 45](#)) from the defective system board and install it on the replacement system board.

Remove the system board:

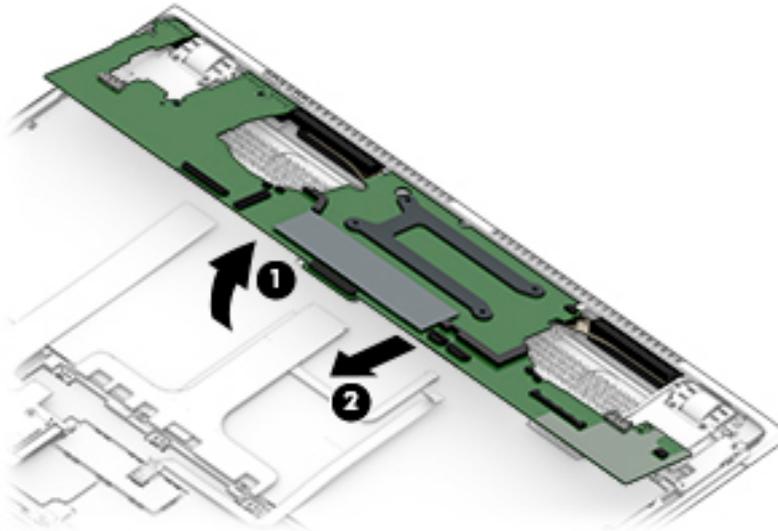
1. Disconnect the following cables from the system board:
 - (1) Speaker cables (two locations)
 - (2) Solid-state drive connector board ZIF connector cable
 - (3) Keyboard ZIF connector cable
 - (4) Backlight ZIF connector cable
 - (5) TouchPad ZIF connector cable
 - (6) Thermal sensor board ZIF connector cable
 - (7) Display panel cable
 - (8) Audio jack board ZIF connector cable



2. Remove the three Phillips M2.0×3.2 screws that secure the system board to the keyboard/top cover.



3. Lift the front edge of the system board (1) until it rests at an angle.
4. Slide the system board (2) forward until the rear edge of the system board is clear of the keyboard/top cover.

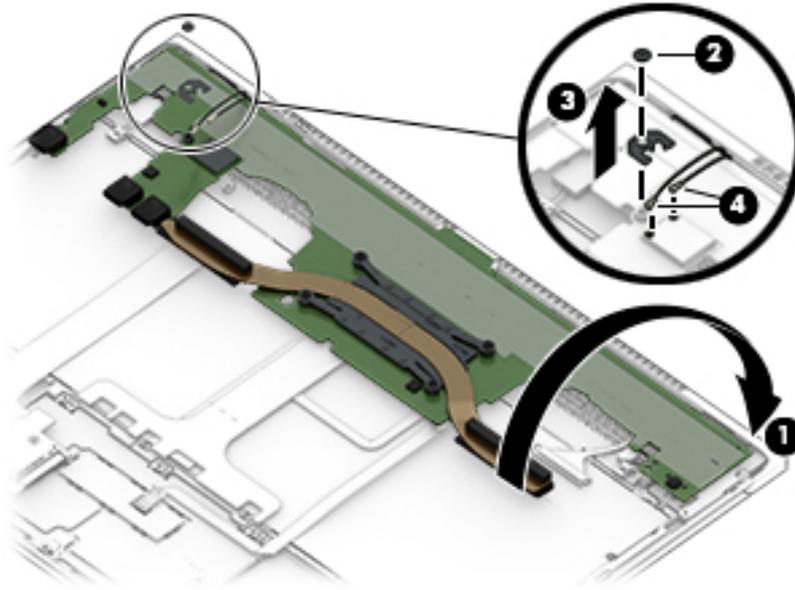


5. Swing the front edge of the system board (1) up and back until the system board rests upside down on the keyboard/top cover.
6. Remove the Phillips M2.0×1.8 screw (2) that secures the WLAN module bracket to the system board.
7. Remove the WLAN module bracket (3).

The WLAN module bracket is available using spare part number L07401-001.

8. Disconnect the WLAN antenna cables (4) from the WLAN module built onto the system board.

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



9. Remove the system board.

Reverse this procedure to install the system board.

Heat sink

 **NOTE:** The heat sink spare part kit includes replacement thermal material.

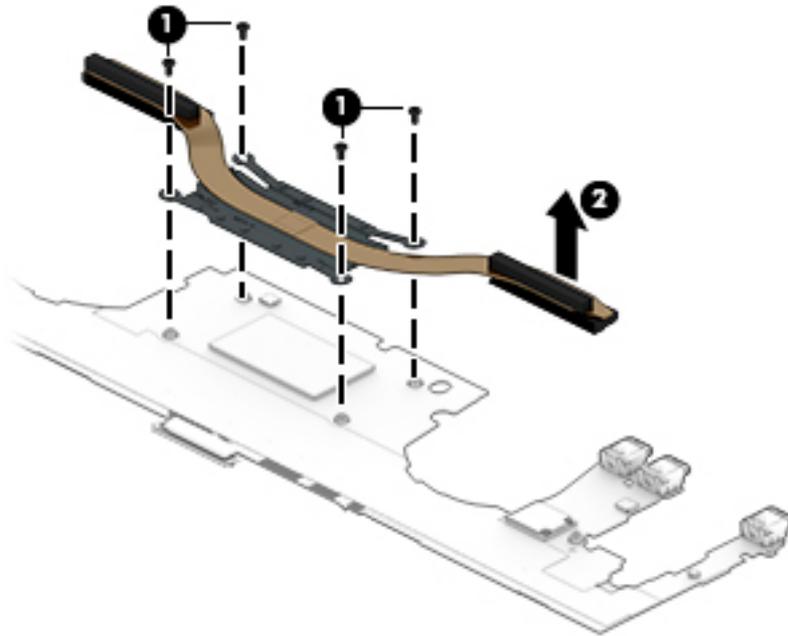
Description	Spare part number
For use only on computer models equipped with an Intel Core i7-8565U processor or an Intel Core i5-8265U processor	L40675-001
For use only on computer models equipped with an Intel Core i7-8550U processor or an Intel Core i5-8250U processor	941826-001

Before removing the heat sink, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by 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 30](#)), and then remove the following components:
 - a. Battery (see [Battery on page 32](#))
 - b. Fans (see [Fans on page 40](#))
 - c. System board (see [System board on page 42](#))

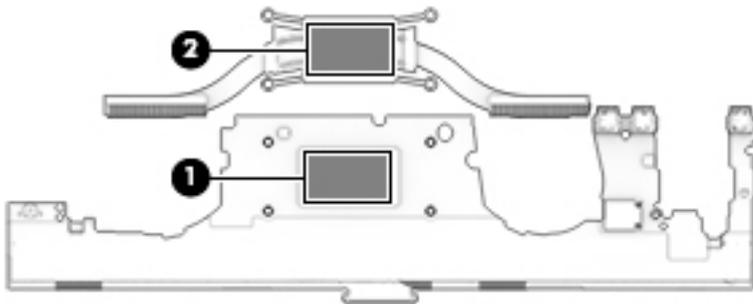
Remove the heat sink:

1. Remove the four Phillips M2.0×3.2 screws (1) that secure the heat sink to the system board.
2. Remove the heat sink (2).



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

Thermal paste is used on the processor (1) and the heat sink section (2) that services it.



Reverse this procedure to install the heat sink.

Keyboard



NOTE: All keyboard spare part kits include the backlight cover, backlight cable, and keyboard cable.

For use in country/region	Spare part number	For use in country/region	Spare part number
In ceramic white finish:		For use in Portugal	L04544-131
For use in Belgium	L04544-A41	For use in Russia	L04544-251
For use in Canada	L04544-DB1	For use in Saudi Arabia	L04544-171
For use in the Czech Republic and Slovakia	L04544-FL1	For use in South Korea	L04544-AD1
For use in Denmark, Finland, and Norway	L04544-DH1	For use in Spain	L04544-071
For use in France	L04544-051	For use in Switzerland	L04544-BG1
For use in Germany	L04544-041	For use in Taiwan	L04544-AB1
For use in Italy	L04544-061	For use in Thailand	L04544-281
For use in Japan	L04544-291	For use in Turkey	L04544-141
For use in Latin America	L04544-161	For use in the United Kingdom	L04544-031
For use in the Netherlands	L04544-B31	For use in the United States	L04544-001
In dark ash silver finish:		For use in Russia	L04543-251
For use in Canada	L04543-DB1	For use in Saudi Arabia	L04543-171
For use in the Czech Republic and Slovakia	L04543-FL1	For use in South Korea	L04543-AD1
For use in Denmark, Finland, and Norway	L04543-DH1	For use in Spain	L04543-071
For use in France	L04543-051	For use in Switzerland	L04543-BG1
For use in Germany	L04543-041	For use in Taiwan	L04543-AB1
For use in Japan	L04543-291	For use in Thailand	L04543-281
For use in Latin America	L04543-161	For use in Turkey	L04543-141
For use in the Netherlands	L04543-B31	For use in the United Kingdom	L04543-031
For use in Portugal	L04543-131	For use in the United States	L04543-001

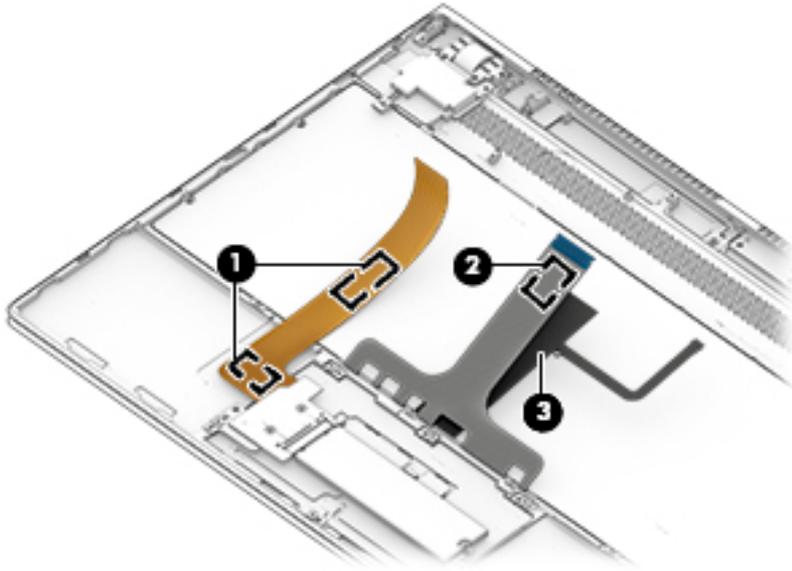
Before removing the keyboard, follow these steps:

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 30](#)), and then remove the following components:

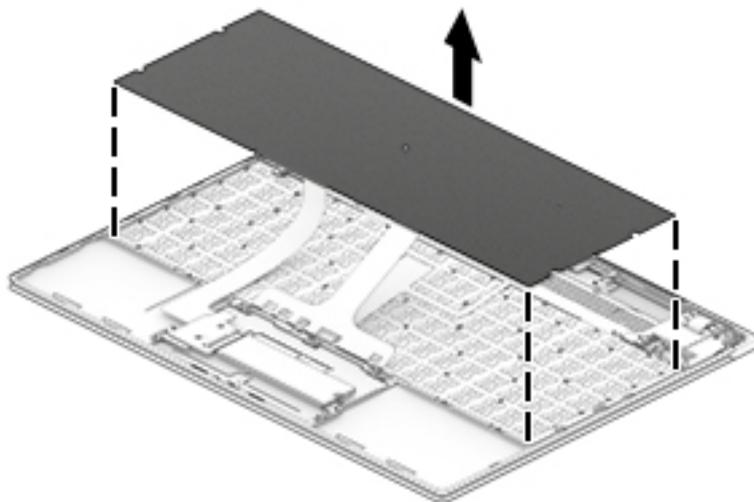
- a. Battery (see [Battery on page 32](#))
- b. Fans (see [Fans on page 40](#))
- c. System board (see [System board on page 42](#))

Remove the keyboard:

- 1. Detach the solid-state drive connector board cable (1) from the keyboard. (The solid-state drive connector board cable is attached to the keyboard with adhesive.)
- 2. Detach the keyboard cable (2) from the keyboard. (The keyboard cable is attached to the keyboard with adhesive.)
- 3. Detach the backlight cable (3) from the keyboard. (The backlight cable is attached to the keyboard with adhesive.)

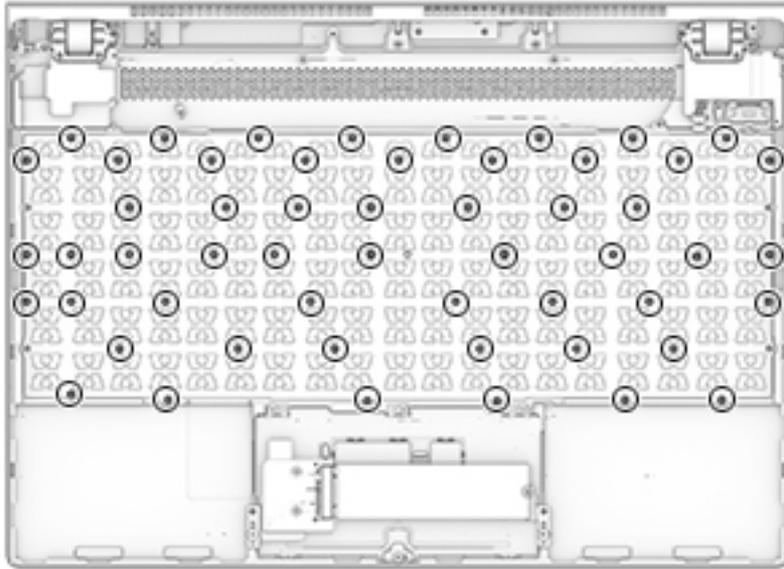


- 4. Detach the backlight cover from the keyboard. (The backlight cover is attached to the keyboard with adhesive.)

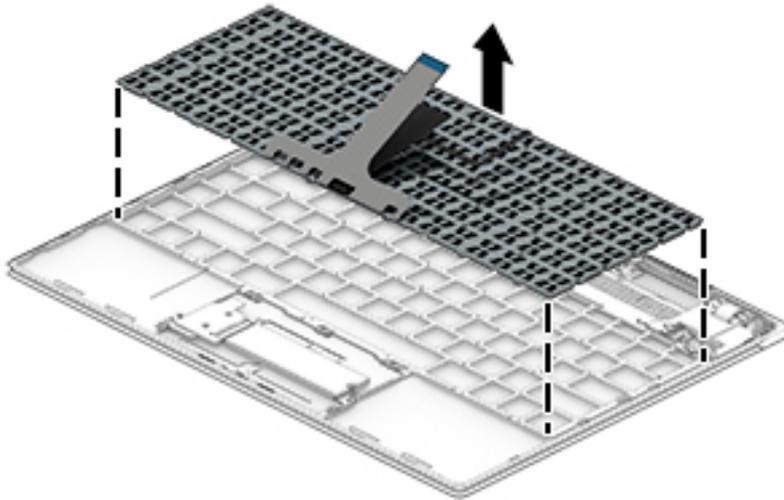


5. Remove the 54 Phillips M1.2×3.0 keyboard retention screws from the locations indicated in the illustration below.

The keyboard retention screws are available in the Keyboard Screw Kit, spare part number L04545-001.



6. Remove the keyboard.



Reverse this procedure to install the keyboard.

Speakers

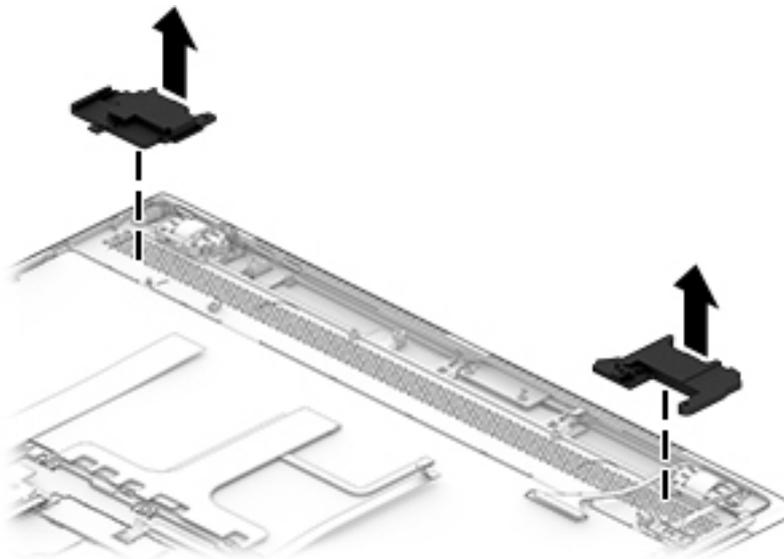
Description	Spare part number
Left speaker (includes cable and adhesive)	941847-001
Left speaker (includes cable and adhesive)	941848-001

Before removing the speakers, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by 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 30](#)), and then remove the following components:
 - a. Battery (see [Battery on page 32](#))
 - b. Fans (see [Fans on page 40](#))
 - c. System board (see [System board on page 42](#))

Remove the speakers:

- ▲ Detach the left and right speakers from the keyboard/top cover. (The speakers are attached to the keyboard/top cover with adhesive.)



Reverse this procedure to install the speakers.

Thermal sensor board

 **NOTE:** The thermal sensor board spare part kit does not include the thermal sensor board cable. The thermal sensor board cable is available using spare part number 941846-001.

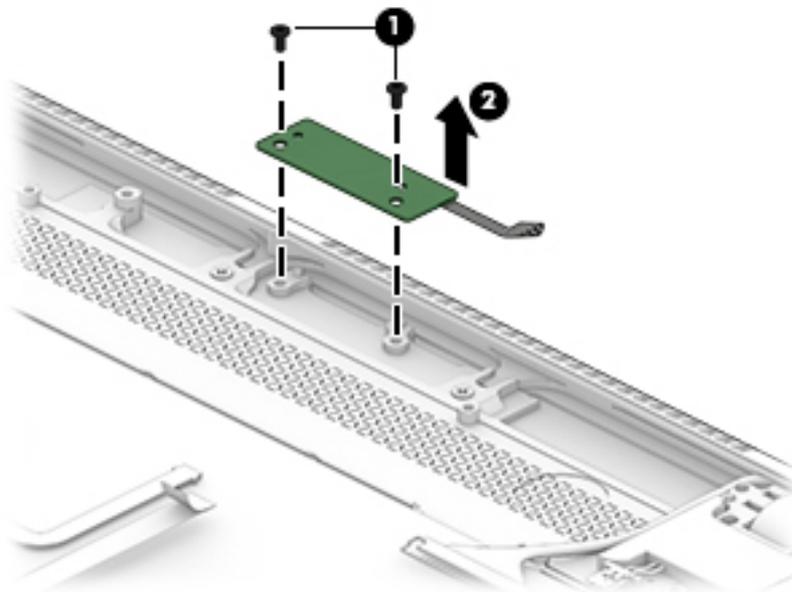
Description	Spare part number
Thermal sensor board	941845-001

Before removing the thermal sensor board, follow these steps:

1. 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.
2. Disconnect all external devices from the computer.
3. Remove the bottom cover (see [Bottom cover on page 30](#)), and then remove the following components:
 - a. Battery (see [Battery on page 32](#))
 - b. Fans (see [Fans on page 40](#))
 - c. System board (see [System board on page 42](#))

Remove the thermal sensor board:

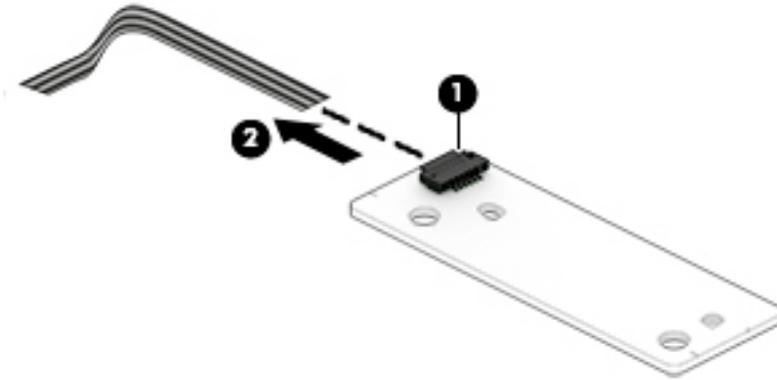
1. Remove the two Phillips M2.0×3.2 screws (1) that secure the thermal sensor board to the keyboard/top cover.
2. Remove the thermal sensor board (2).



3. If it is necessary to remove the thermal sensor board cable:
 - a. Turn the thermal sensor board upside down.

- b. Release the ZIF connector (1) to which the thermal sensor board cable is connected, and then disconnect the thermal sensor board cable (2) from the thermal sensor board.

The thermal sensor board cable is available using spare part number 941846-001.



Reverse this procedure to install the thermal sensor board.

Audio jack board

 **NOTE:** The audio jack board spare part kit does not include the audio jack board cable. The audio jack board cable is available using spare part number 941844-001.

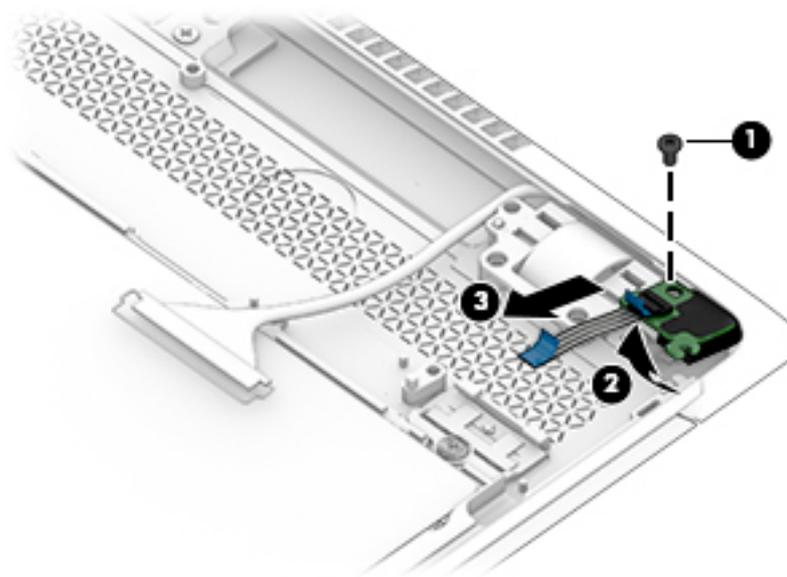
Description	Spare part number
Audio jack board	941843-001

Before removing the audio jack board, follow these steps:

1. 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.
2. Disconnect all external devices from the computer.
3. Remove the bottom cover (see [Bottom cover on page 30](#)), and then remove the following components:
 - a. Battery (see [Battery on page 32](#))
 - b. Fans (see [Fans on page 40](#))
 - c. System board (see [System board on page 42](#))
 - d. Left speaker (see [Speakers on page 50](#))

Remove the audio jack board:

1. Remove the Phillips M2.0×3.2 screw **(1)** that secures the audio jack board to the keyboard/top cover.
2. Lift the front edge of the audio jack board **(2)** until it rests at an angle.
3. Remove the audio jack board **(3)** by sliding it up and forward at an angle.



Reverse this procedure to install the audio jack board.

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 54](#)).
 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 55](#).

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 (UEFI)

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

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

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

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 HP PC Hardware Diagnostics \(UEFI\) to a USB device 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.

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

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

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

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

Download the latest UEFI version

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

Download any version of UEFI for a specific product

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

8 Specifications

	Metric	U.S.
Computer dimensions		
Width	30.8 cm	12.1 in
Depth	22.4 cm	8.8 in
Height	1.0 cm	0.4 in
Weight	1.1 kg	2.5 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.

9 Backing up, restoring, and recovering

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

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

For additional information, refer to the HP Support Assistant app.

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

– or –

Select the question mark icon in the taskbar.

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

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

Creating recovery media and backups

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

- Use HP Recovery Manager to create HP Recovery media after you successfully set up the computer. This step creates a backup of the HP Recovery partition on the computer. The backup can be used to reinstall the original operating system in cases where the hard drive is corrupted or has been replaced. For information on creating recovery media, see [Using HP Recovery media \(select products only\) on page 59](#). For information on the recovery options that are available using the recovery media, see [Using Windows tools on page 60](#).
- Use Windows tools to create system restore points and create backups of personal information. See [Using Windows tools on page 60](#).

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

- On select products, use the HP Cloud Recovery Download Tool to create a bootable USB flash drive for your HP recovery media. For more information, see [Using the HP Cloud Recovery Download Tool \(select products only\) on page 61](#).

Using HP Recovery media (select products only)

If possible, check for the presence of the Recovery partition and the Windows partition. Right-click the **Start** button, select **File Explorer**, and then select **This PC**.

- If your computer does not list the Windows partition and the Recovery partition, you can obtain recovery media for your system from support. You can find contact information on the HP website. Go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions.
- If your computer does list the Recovery partition and the Windows partition, you can use HP Recovery Manager to create recovery media after you successfully set up the computer. HP Recovery media can be

used to perform system recovery if the hard drive becomes corrupted. System recovery reinstalls the original operating system and software programs that were installed at the factory and then configures the settings for the programs. HP Recovery media can also be used to customize the system or restore the factory image if you replace the hard drive.

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

To create HP Recovery media 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 ever need to recover the system, see [Recovering using HP Recovery Manager on page 61](#).

Using Windows tools

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

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

For more information and steps, see the Get 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.

Using the HP Cloud Recovery Download Tool (select products only)

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.

Restore and recovery

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

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

- Windows offers several options for restoring from backup, refreshing the computer, and resetting the computer to its original state. For more information see the Get 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.

- If you need to correct a problem with a preinstalled application or driver, use the Reinstall drivers and/or applications option (select products only) of HP Recovery Manager to reinstall the individual application or driver.
 - ▲ Type *recovery* in the taskbar search box, select **HP Recovery Manager**, select **Reinstall drivers and/or applications**, and then follow the on-screen instructions.
- If you want to recover the Windows partition to original factory content, you can choose the System Recovery option from the HP Recovery partition (select products only) or use the HP Recovery media. For more information, see [Recovering using HP Recovery Manager on page 61](#). If you have not already created recovery media, see [Using HP Recovery media \(select products only\) on page 59](#).
- On select products, if you want to recover the computer's original factory partition and content, or if you have replaced the hard drive, you can use the Factory Reset option of HP Recovery media. For more information, see [Recovering using HP Recovery Manager on page 61](#).
- On select products, if you want to remove the Recovery partition to reclaim hard drive space, HP Recovery Manager offers the Remove Recovery Partition option.

For more information, see [Removing the HP Recovery partition \(select products only\) on page 63](#).

Recovering using HP Recovery Manager

HP Recovery Manager software allows you to recover the computer to its original factory state by using the HP Recovery media that you either created or that you obtained from HP, or by using the HP Recovery partition (select products only). If you have not already created recovery media, see [Using HP Recovery media \(select products only\) on page 59](#).

What you need to know before you get started

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

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

- HP Recovery media must be used if the computer hard drive fails. If you have not already created recovery media, see [Using HP Recovery media \(select products only\) on page 59](#).
- To use the Factory Reset option (select products only), you must use HP Recovery media. If you have not already created recovery media, see [Using HP Recovery media \(select products only\) on page 59](#).
- If your computer does not allow the creation of HP Recovery media or if the HP Recovery media does not work, you can obtain recovery media for your system from support. You can find contact information from the HP website. Go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions.

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

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

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

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

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

Using the HP Recovery partition (select products only)

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

To start HP Recovery Manager from the HP Recovery partition:

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

1. Type `recovery` in the taskbar search box, select **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, and then quickly hold down the volume up button; then select **f11**.

– or –

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

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

Using HP Recovery media to recover

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

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

 **NOTE:** If the computer does not automatically restart in HP Recovery Manager, change the computer boot order. See [Changing the computer boot order on page 63](#).

3. Follow the on-screen instructions.

Changing the computer boot order

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

To change the boot order:

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

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

For computers or tablets with keyboards attached:

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

For tablets without keyboards:

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

– or –

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

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

Removing the HP Recovery partition (select products only)

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

 **IMPORTANT:** After you remove the HP Recovery partition, you will not be able to perform System Recovery or create HP Recovery media from the HP Recovery partition. So before you remove the Recovery partition, create HP Recovery media; see [Using HP Recovery media \(select products only\) on page 59](#).

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

Follow these steps to remove the HP Recovery partition:

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

10 Power cord set requirements

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

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

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

Requirements for all countries

The following requirements are applicable to all countries and regions:

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

Requirements for specific countries and regions

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

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

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

11 Recycling

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

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

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