HP ENVY 13 Laptop PC

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

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Product notice

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

Not all features are available in all editions of Windows 10. This computer may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows 10 functionality. See http://www.microsoft.com for details.

Safety warning notice

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

Table of contents

1 Product description

Category	Description
Product Name	HP ENVY 13 Laptop PC (model number 13-ah1xxx)
Processor	- Intel® Core™ i7-8565U 1.80-GHz quad core processor (2133-MHz FSB, 8.0-MB L3 cache, 15.0-W) - Intel Core i5-8265U 1.60-GHz quad core processor (2133-MHz FSB, 6.0-MB L3 cache, 15.0-W) - Intel Core i3-8145U 2.20-GHz (turbo boost up to 3.40-GHz) dual core processor (2133-MHz FSB, 4.0-MB L3 cache, 15.0-W)
Chipset	Intel integrated soldered-on-circuit (SoC)
Graphics	**Discrete graphics:** NVIDIA® N17S-LG GeForce MX150 (256-MB×32, 2 pieces) GDDR5 graphics subsystem with 2048-MB video memory **Internal graphics:** Intel UHD 620 graphics subsystem
Panel	13.3-in, ultrahigh-definition (UHD) (3840×2160), BrightView, white light-emitting diode (WLED), liquid crystal display (LCD), UWVA 72 340, eDP 1.3+PSR, ultraslim, TouchScreen display assembly with narrow bezel 13.3-in, full high-definition (FHD) (1920×1080), BrightView, WLED, LCD, UWVA 72 300, eDP 1.3+PSR, ultraslim, TouchScreen display assembly with narrow bezel 13.3-in, UHD (3840×2160), BrightView, WLED, LCD, UWVA 72 340, eDP 1.3+PSR, ultraslim, non-TouchScreen, flush glass display assembly with narrow bezel 13.3-in, UHD (3840×2160), BrightView, WLED, LCD, UWVA 72 340, eDP+PSR, ultraslim, non-TouchScreen display assembly with narrow bezel 13.3-in, FHD (1920×1080), BrightView, WLED, LCD, UWVA 72 300, eDP 1.3+PSR, ultraslim, non-TouchScreen display assembly with narrow bezel 13.3-in, FHD (1920×1080), BrightView, WLED, LCD, UWVA 72 300, eDP+PSR, ultraslim, non-TouchScreen display assembly with narrow bezel 13.3-in, FHD (1920×1080), AntiGlare, WLED, LCD, UWVA 72 300, eDP 1.3+PSR, ultraslim, non-TouchScreen display assembly with privacy filter 13.3-in, FHD (1920×1080), AntiGlare, WLED, LCD, UWVA 72 300, eDP 1.3+PSR, ultraslim, non-TouchScreen, flush glass display assembly with narrow bezel and privacy filter 13.3-in, FHD (1920×1080), AntiGlare, WLED, LCD, UWVA 72 300, eDP 1.3+PSR, ultraslim, TouchScreen display assembly with narrow bezel and privacy filter 13.3-in, FHD (1920×1080), BrightView, WLED, LCD, UWVA 72 400, eDP 1.3+PSR, low power, ultraslim, non-TouchScreen, flush glass display assembly with narrow bezel 13.3-in, FHD (1920×1080), BrightView, WLED, LCD, UWVA 72 400, eDP 1.3+PSR, low power, ultraslim, TouchScreen display assembly with narrow bezel
Memory	Supports LPDDR3 1.2-V IC 32-GB×32memory Supports on-board system memory in the following configurations: 16-GB 2133 8-GB 2133 8-GB 2133

Category	Description
	• 4-GB 1866
Storage	Supports the following solid-state drives:
	• 1-TB, 2280, peripheral component interconnect express (PCIe), non-volatile memory express (NVMe) SuperSpeed (SS) solid-state drive with triple-level cell (TLC)
	• 512-GB, M.2 2280, PCIe, NVMe, SS solid-state drive with TLC
	• 512-GB, 2280, PCIe, NVMe solid-state drive
Storage *(continued)*	• 360-GB, 2280, PCIe, NVMe solid-state drive (Asia Pacific Japan only)
	• 256-GB, 2280, PCIe, NVMe solid-state drive
	• 256-GB, M.2 2280, PCIe, NVMe, SS solid-state drive with TLC
	• 128-GB, M.2 2280-SATA3 solid-state drive with TLC
Optical drive	External DVD+/-RW SM DL Drive
Audio and video	Fixed (no tilt) integrated webcam, with LED
	Dual array microphones
	Quad Band&Olufsen speakers
	Support for HP Audio Boost 2.0
Wireless	Integrated wireless local area network (WLAN) options by way of on-board wireless module
	Two built-in WLAN antennas
	Compatible with Miracast-certified devices
	WiFi SAR enabled in BIOS (available only on computer models equipped with the Windows 10 operating system)
	Supports the following WLAN modules:
	• Intel 9560 ac 2×2 + Bluetooth 5 M.2 2230 non-vPro PCI-e+USB world-wide with 2 antennas
Ports	• Headphone/microphone combo jack
	• HP Smart AC adapter
	• MicroSD memory card reader
	• USB 3.1 Gen1 Type A (2)
	• USB 3.1 Gen1 Type C
Power requirements	Supports a 4-cell, 53-WHr, 3.54-AHr, Li-ion battery
	Supports the following AC adapters:
	• 65-W HP Smart AC adapter non-PFC, EM, RC, 4.5-mm
	• 65-W HP Smart AC adapter non-PFC, 4.5-mm

2 External component identification

The computer features top-rated components. This chapter provides details about these components, where they are located, and how they work.

Locating hardware

To find out what hardware is installed on the computer:

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

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

A list displays all the devices installed on your computer.

Locating software

To find out what software is installed on the computer:

▲ Select the **Start** button.

– or –

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

Right side

Item		Component	Description
(1)		Fingerprint reader	Allows a fingerprint logon to Windows, instead of a password logon.
			▲ To use the fingerprint reader, tap or swipe your finger on the fingerprint reader.
(2)		USB port with HP Sleep and Charge	Connects a USB device, provides data transfer, and even when the computer is off, charges most products such as a cell phone, camera, activity tracker, or smartwatch.
(3)		AC adapter and battery light	● White: The AC adapter is connected and the battery is fully charged.
			● Blinking white: The AC adapter is disconnected and the battery has reached a low battery level.
			● Amber: The AC adapter is connected and the battery is charging.
			● Off: The battery is not charging.
(4)		Power connector	Connects an AC adapter.

Left side

Item	Component		Description
(1)		Audio-out (headphone)/Audio-in (microphone) jack	Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. This jack does not support optional microphone-only devices.
			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 *Regulatory, Safety, and Environmental Notices*.
			To access this guide:
			▲ Select the **Start** button, select **HP Help and Support**, and then select **HP Documentation**.
			NOTE: When a device is connected to the jack, the computer speakers are disabled.
(2)		USB port	Connects a USB device, such as a cell phone, camera, activity tracker, or smartwatch, and provides high-speed data transfer.
(3)		USB port with HP Sleep and Charge	Connects a USB device, provides data transfer, and even when the computer is off, charges most products such as a cell phone, camera, activity tracker, or smartwatch.
			– and –
			Connects a display device that has a USB Type-C connector, providing DisplayPort output.
			NOTE: Cables and/or adapters (purchased separately) may be required.
(4)	SD	Memory card reader	Reads optional memory cards that enable you to store, manage, share, or access information.
			To insert a card:
			1. Hold the card label-side up, with connectors facing the computer.
			2. Insert the card into the memory card reader, and then press in on the card until it is firmly seated.
			To remove a card:
			▲ Press in on the card, and then remove it from the memory card reader.

Display

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

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

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

To access this guide:

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

   – or –

   Click the question mark icon in the taskbar.

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

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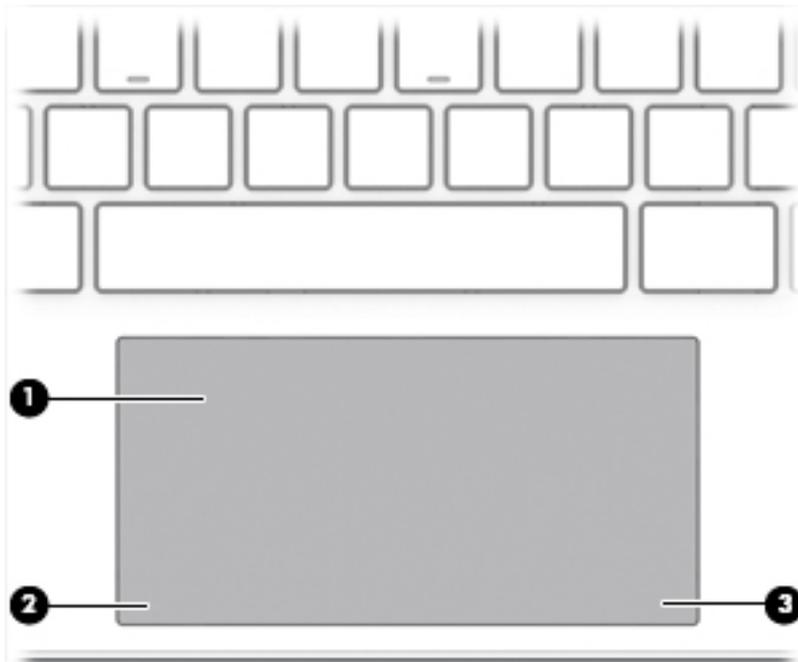
Item	Component	Description
(1)	TouchPad zone	Reads finger gestures to move the pointer or activate items on the screen.
(2)	Left TouchPad button	Functions like the left button on an external mouse.
(3)	Right TouchPad button	Functions like the right button on an external mouse.

Lights

Item	Component		Description
(1)		Power light	• 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	• On: Computer sound is off.
			• Off: Computer sound is on.

Button

Component	Description
![power icon] Power button	• When the computer is off, press the button to turn on the computer.
	• When the computer is in the Sleep state, press the button briefly to exit Sleep.
	• When the computer is on and you want to lock the screen, press the button until you see the sign-in screen appear. Pressing the power button during screen-lock mode turns off the computer.
	• When the computer is on and you want to turn it off, press and hold the button to lock the screen, and then continue to press the button until the computer turns off.

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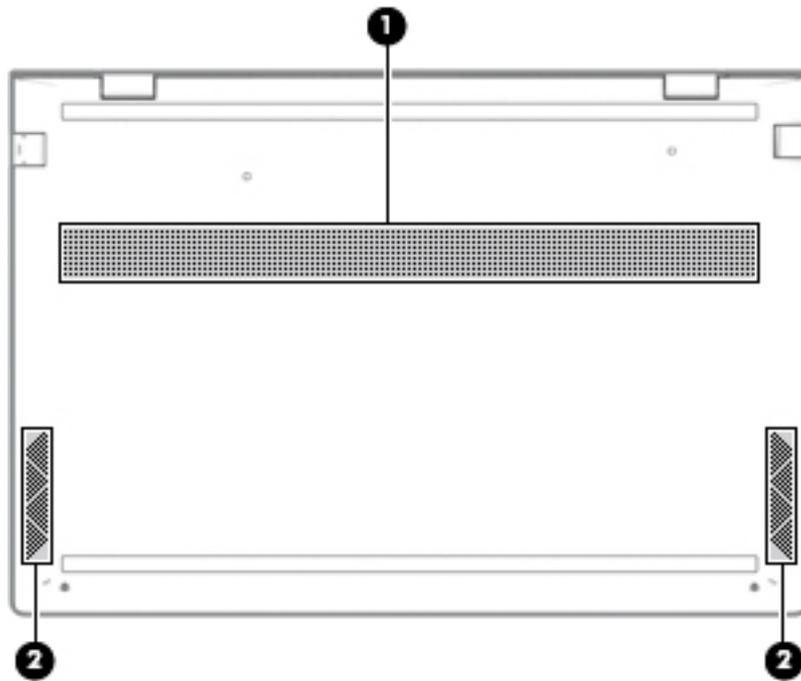
	Component	Description
(1)	Vent	Enables airflow to cool internal components.
(2)	Speakers (2)	Produce sound.

3 Illustrated parts catalog

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

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.
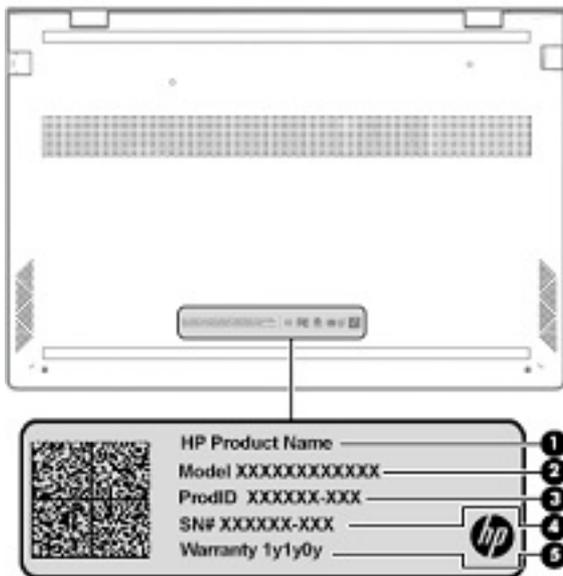
Component	
(1)	Product name
(2)	Model number
(3)	Product number
(4)	Serial number
(5)	Warranty period

Computer components
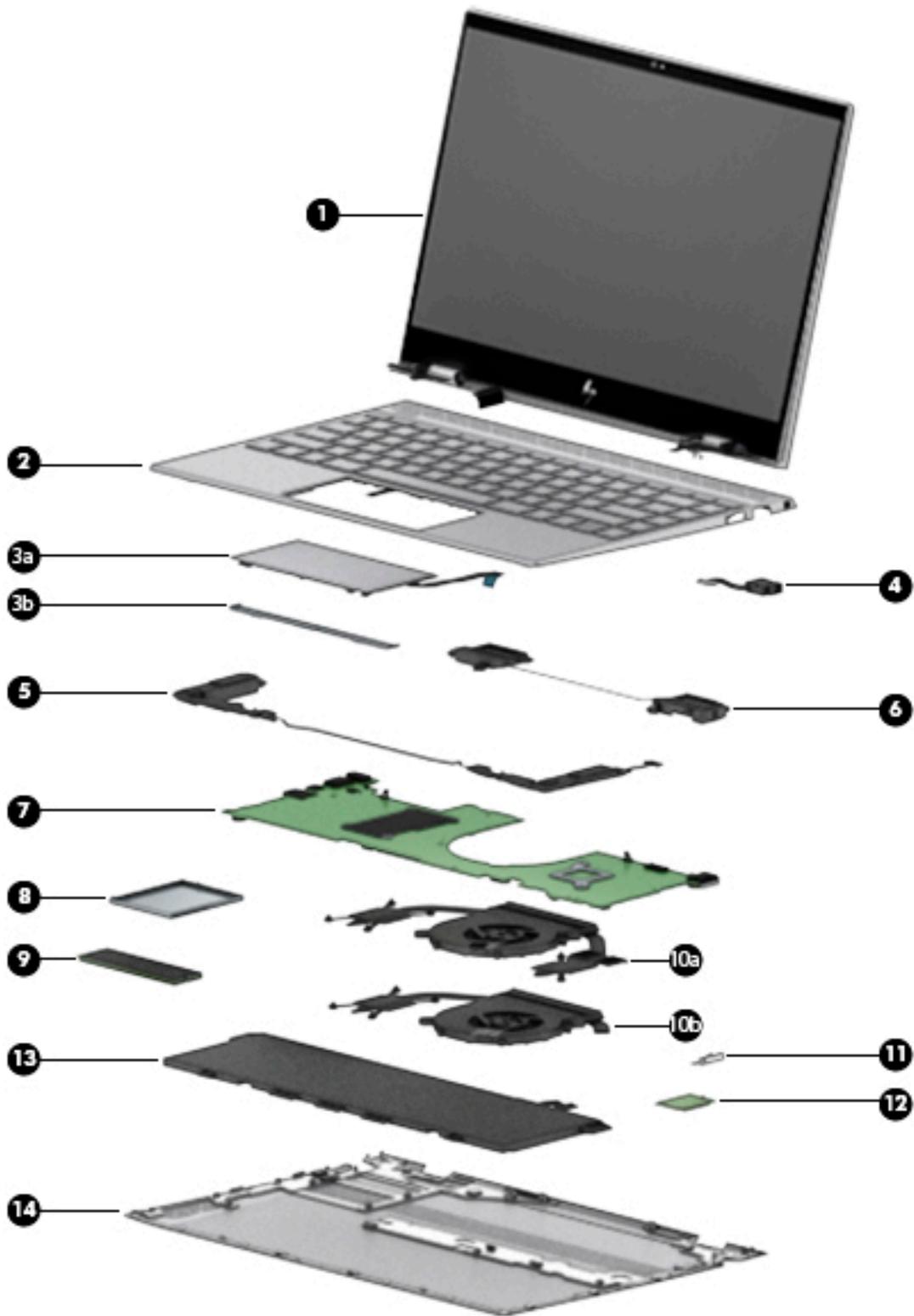
Item	Component	Spare part number
(1)	**13.3-in. display assembly:**	
	UHD, BrightView, TouchScreen display assembly in natural silver finish	L39192-001
	UHD, BrightView, TouchScreen display assembly in pale gold finish	L39194-001
	FHD, BrightView, TouchScreen display assembly in natural silver finish	L39191-001
	FHD, BrightView, TouchScreen display assembly in pale gold finish	L39193-001
	FHD, Antiglare, TouchScreen display assembly with privacy filter in natural silver finish	L36488-001
	FHD, BrightView, low-power, TouchScreen display assembly in natural silver finish	L38993-001
	FHD, BrightView, low-power, TouchScreen display assembly in pale gold finish	L38994-001
	UHD, BrightView, flush glass, non-TouchScreen display assembly in natural silver finish	L39188-001
	UHD, BrightView, flush glass, non-TouchScreen display assembly in pale gold finish	L39190-001
	UHD, BrightView, non-TouchScreen display assembly in natural silver finish	L39197-001
	UHD, BrightView, non-TouchScreen display assembly in pale gold finish	L39199-001
	FHD, AntiGlare, non-TouchScreen display assembly with privacy filter in natural silver finish	L39195-001
	FHD, BrightView, flush glass, non-TouchScreen display assembly in natural silver finish	L39187-001
	FHD, BrightView, flush glass, non-TouchScreen display assembly in pale gold finish	L39189-001
	FHD, Antiglare, flush glass, non-TouchScreen display assembly with privacy filter in natural silver finish	L36487-001
	FHD, BrightView, flush glass, low-power, non-TouchScreen display assembly in natural silver finish	L38991-001
	FHD, BrightView, flush glass, low-power, non-TouchScreen display assembly in pale gold finish	L38992-001
	FHD, BrightView, non-TouchScreen display assembly in natural silver finish	L39196-001
	FHD, BrightView, non-TouchScreen display assembly in pale gold finish	L39198-001
(2)	**Keyboard/top cover** with backlight (includes backlight cable and keyboard cable):	
	In natural silver finish:	
	For use in Belgium	L19540-A41
	For use in Bulgaria	L19540-261
	For use in Canada	L19540-DB1
	For use in the Czech Republic and Slovakia	L19540-FL1
	For use in Denmark, Finland, and Norway	L19540-DH1
	For use in France	L19540-051
	For use in Germany	L19540-041
	For use in Greece	L19540-151
	For use in Hungary	L19540-211
	For use in Israel	L19540-BB1

Item	Component	Spare part number
	For use in Italy	L19540-061
	For use in Japan	L19540-291
	For use in Latin America	L19540-161
	For use in the Netherlands	L19540-B31
	For use in Portugal	L19540-131
	For use in Romania	L19540-271
	For use in Russia	L19540-251
	For use in Saudi Arabia	L19540-171
	For use in Slovenia	L19540-BA1
	For use in South Korea	L19540-AD1
	For use in Spain	L19540-071
	For use in Switzerland	L19540-BG1
	For use in Taiwan	L19540-AB1
	For use in Thailand	L19540-281
	For use in Turkey	L19540-141
	For use in the United Kingdom	L19540-031
	For use in the United States	L19540-001
	In natural silver finish with privacy:	
	For use in Belgium	L19542-A41
	For use in Bulgaria	L19542-261
	For use in Canada	L19542-DB1
	For use in the Czech Republic and Slovakia	L19542-FL1
	For use in Denmark, Finland, and Norway	L19542-DH1
	For use in France	L19542-051
	For use in Germany	L19542-041
	For use in Greece	L19542-151
	For use in Hungary	L19542-211
	For use in Israel	L19542-BB1
	For use in Italy	L19542-061
	For use in Japan	L19542-291
	For use in Latin America	L19542-161
	For use in the Netherlands	L19542-B31
	For use in Portugal	L19542-131
	For use in Romania	L19542-271

Item	Component	Spare part number
	For use in Russia	L19542-251
	For use in Saudi Arabia	L19542-171
	For use in Slovenia	L19542-BA1
	For use in South Korea	L19542-AD1
	For use in Spain	L19542-071
	For use in Switzerland	L19542-BG1
	For use in Taiwan	L19542-AB1
	For use in Thailand	L19542-281
	For use in Turkey	L19542-141
	For use in the United Kingdom	L19542-031
	For use in the United States	L19542-001
	In pale gold finish:	
	For use in Belgium	L19541-A41
	For use in Bulgaria	L19541-261
	For use in Canada	L19541-DB1
	For use in the Czech Republic and Slovakia	L19541-FL1
	For use in Denmark, Finland, and Norway	L19541-DH1
	For use in France	L19541-051
	For use in Germany	L19541-041
	For use in Greece	L19541-151
	For use in Hungary	L19541-211
	For use in Israel	L19541-BB1
	For use in Italy	L19541-061
	For use in Japan	L19541-291
	For use in Latin America	L19541-161
	For use in the Netherlands	L19541-B31
	For use in Portugal	L19541-131
	For use in Romania	L19541-271
	For use in Russia	L19541-251
	For use in Saudi Arabia	L19541-171
	For use in Slovenia	L19541-BA1
	For use in South Korea	L19541-AD1
	For use in Spain	L19541-071
	For use in Switzerland	L19541-BG1

Item	Component	Spare part number
	For use in Taiwan	L19541-AB1
	For use in Thailand	L19541-281
	For use in Turkey	L19541-141
	For use in the United Kingdom	L19541-031
	For use in the United States	L19541-001
(3a)	**TouchPad** (does not include bracket or cable):	
	For use only on computer models in natural silver finish	L19518-001
	For use only on computer models in pale gold finish	L19519-001
(3b)	**TouchPad bracket**	L19759-001
(3c)	**TouchPad cable**	L19525-001
	Speakers:	
(5)	Front speakers (include left and right front speakers, cables, and four rubber isolators)	L19530-001
(6)	Rear speakers (include left and right front speakers, cables, and two rubber isolators)	L19531-001
(7)	**System board** (includes processor and replacement thermal material):	
	Equipped with an Intel Core i7-8565U 1.80-GHz quad core processor (2400-MHz FSB, 8.0-MB L3 cache, 15.0-W), an NVIDIA N17S-LG GeForce MX150 (256-MB×32, 2 pieces) GDDR5 graphics subsystem with 2048-MB video memory, 16-GB of system memory, and the Windows 10 operating system	L30287-601
	Equipped with an Intel Core i7-8565U 1.80-GHz quad core processor (2400-MHz FSB, 8.0-MB L3 cache, 15.0-W), an NVIDIA N17S-LG GeForce MX150 (256-MB×32, 2 pieces) GDDR5 graphics subsystem with 2048-MB video memory, 16-GB of system memory, and a non-Windows operating system	L30287-001
	Equipped with an Intel Core i7-8565U 1.80-GHz quad core processor (2400-MHz FSB, 8.0-MB L3 cache, 15.0-W), an NVIDIA N17S-LG GeForce MX150 (256-MB×32, 2 pieces) GDDR5 graphics subsystem with 2048-MB video memory, 8-GB of system memory, and the Windows 10 operating system	L30286-601
	Equipped with an Intel Core i7-8565U 1.80-GHz quad core processor (2400-MHz FSB, 8.0-MB L3 cache, 15.0-W), an NVIDIA N17S-LG GeForce MX150 (256-MB×32, 2 pieces) GDDR5 graphics subsystem with 2048-MB video memory, 8-GB of system memory, and a non-Windows operating system	L30286-001
	Equipped with an Intel Core i7-8565U 1.80-GHz quad core processor (2400-MHz FSB, 8.0-MB L3 cache, 15.0-W), an Intel UHD 620 graphics subsystem with UMA video memory, 8-GB of system memory, and the Windows 10 operating system	L30290-601
	Equipped with an Intel Core i7-8565U 1.80-GHz quad core processor (2400-MHz FSB, 8.0-MB L3 cache, 15.0-W), an Intel UHD 620 graphics subsystem with UMA video memory, 8-GB of system memory, and a non-Windows operating system	L30290-001
	Equipped with an Intel Core i5-8265U 1.60-GHz quad core processor (2400-MHz FSB, 6.0-MB L3 cache, 15.0-W), an NVIDIA N17S-LG GeForce MX150 (256-MB×32, 2 pieces) GDDR5 graphics subsystem with 2048-MB video memory, 8-GB of system memory, and the Windows 10 operating system	L30285-601
	Equipped with an Intel Core i5-8265U 1.60-GHz quad core processor (2400-MHz FSB, 6.0-MB L3 cache, 15.0-W), an NVIDIA N17S-LG GeForce MX150 (256-MB×32, 2 pieces) GDDR5 graphics subsystem with 2048-MB video memory, 8-GB of system memory, and a non-Windows operating system	L30285-001

Item	Component	Spare part number
	Equipped with an Intel Core i5-8265U 1.60-GHz quad core processor (2400-MHz FSB, 6.0-MB L3 cache, 15.0-W), an Intel UHD 620 graphics subsystem with UMA video memory, 8-GB of system memory, and the Windows 10 operating system	L30289-601
	Equipped with an Intel Core i5-8265U 1.60-GHz quad core processor (2400-MHz FSB, 6.0-MB L3 cache, 15.0-W), an Intel UHD 620 graphics subsystem with UMA video memory, 8-GB of system memory, and a non-Windows operating system	L30289-001
	Equipped with an Intel Core i3-8145U 2.20-GHz (turbo boost up to 3.40-GHz) dual core processor (2133-MHz FSB, 4.0-MB L3 cache, 15.0-W), an Intel UHD 620 graphics subsystem with UMA video memory, 4-GB of system memory, and the Windows 10 operating system	L30288-601
	Equipped with an Intel Core i3-8145U 2.20-GHz (turbo boost up to 3.40-GHz) dual core processor (2133-MHz FSB, 4.0-MB L3 cache, 15.0-W), an Intel UHD 620 graphics subsystem with UMA video memory, 4-GB of system memory, and a non-Windows operating system	L30288-001
(8)	**Memory shield**	L19760-001
(9)	**Solid-state drive:**	
	1-TB, 2280, PCIe, NVMe, SS solid-state drive with TLC	L19503-001
	512-GB, M.2 2280, PCIe, NVMe, SS solid-state drive with TLC	L19507-001
	512-GB, 2280, PCIe, NVMe solid-state drive	L19508-001
	360-GB, 2280, PCIe, NVMe solid-state drive (Asia Pacific Japan only)	L19506-001
	256-GB, 2280, PCIe, NVMe solid-state drive	L19505-001
	256-GB, M.2 2280, PCIe, NVMe, SS solid-state drive with TLC	L19504-001
	128-GB, M.2 2280-SATA3, SS solid-state drive with TLC	L19502-001
	Fan/heat sink assembly (includes replacement thermal material):	
(10a)	For use only on computer models equipped with a graphics subsystem with discrete video memory	L19526-001
(10b)	For use only on computer models equipped with a graphics subsystem with UMA video memory	L19527-001
	Fan (not illustrated, includes cable)	L23527-001
	Fan/heat sink assembly shielding (not illustrated)	L25819-001
(11)	**WLAN module:**	
	Intel 9260 ac 2×2 + Bluetooth 5 M.2 2230 non-vPro PCI-e+USB world-wide with 2 antennas	L22634-005
	Fingerprint reader (not illustrated, does not include bracket):	
	For use only on computer models in natural silver finish	L20689-001
	For use only on computer models in pale gold finish	L19521-001
(12)	**Fingerprint bracket**	L24829-001
(13)	**Battery** (4-cell, 53-WHr, 3.54-AHr, Li-ion, includes cable)	L08496-855
(14)	**Bottom cover:**	
	In natural silver finish	L19522-001
	In pale gold finish	L19523-001
	USB port cover (not illustrated):	

Item	Component	Spare part number
	For use only on computer models in natural silver finish	L19757-001
	For use only on computer models in pale gold finish	L19758-001
	Rubber Kit (not illustrated, includes bottom cover rubber foot strips):	
	In natural silver finish	L19528-001
	In pale gold finish	L19529-001

Miscellaneous parts

Component	Spare part number
AC adapter:	
65-W HP Smart AC adapter non-PFC, EM, RC, 4.5-mm	913691-850
65-W HP USB Type-C adapter, non-PFC, 4.5-mm, with mount	L24008-001
Adapter:	
Premium power cord (for use in Europe and South Korea)	854703-001
HP USB external DVD/RW drive	747080-001
HP USB-to-Gigabit RJ45 adapter	829941-001
HP USB–C-to-HDMI 2.0 adapter	935325-001
HP USB–C-to-MultiPort hub	919666-001
HP USB–C-to-RJ45 adapter	855560-001
HP USB–C-to-USB–A dongle	833960-001
HP USB–C-to-USB–A hub	916838-001
HP USB–C-to-VGA adapter	831751-001
Power cord (C5 connector, 1.00-m):	
For use in Argentina	L19339-001
For use in Australia	L19340-001
For use in Denmark	L19342-001
For use in Europe	L19343-001
For use in India	L19345-001
For use in Israel	L19344-001
For use in Italy	L19346-001
For use in Japan	L19347-001
For use in North America	L19348-001
For use in the People's Republic of China	L21930-001
For use in South Africa	L19350-001

Component	Spare part number
For use in Switzerland	L19351-001
For use in Taiwan	L19353-001
For use in Thailand	L19352-001
For use in the United Kingdom	L19354-001
Power cord for use in India (C5 connector, 1.00-m, STR, PRM)	L22624-001
Rubber Foot Kit (includes bottom cover rear foot strip):	
In natural silver finish	L19528-001
In pale gold finish	L19529-001
Screw Kit	L19532-001

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
- Torx5 screw driver

Service considerations

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

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

Plastic parts

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

Cables and connectors

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

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

Drive handling

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

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

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

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

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

Avoid dropping drives from any height onto any surface.

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

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

Avoid exposing a drive to temperature extremes or liquids.

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

Grounding guidelines

Electrostatic discharge damage

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

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

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

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

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

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

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

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

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

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

Typical electrostatic voltage levels			
	Relative humidity		
Event	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 ±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 11 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 50 screws that must be removed, replaced, and/or loosened when servicing Authorized Service Provider only parts. Make special note of each screw size and location during removal and replacement.

Bottom cover

Description	Spare part number
In natural silver finish	L19522-001
In pale gold finish	L19523-001

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 keyboard/top cover:

1. Remove the rear **(1)** and front rubber foot strips **(2)**.

    The rubber foot strips are included in the Rubber Kit, spare part numbers L19528-001 (in natural silver finish) and L19529-001 (in pale gold finish).

2. Remove the following screws that secure the bottom cover to the computer:

    (3) Five Phillips M2.5×6.6 screws (under the rear rubber foot strip)

    (4) Two Phillips M2.0×3.3 screws (under the front rubber foot strip)

    (5) Two Torx5 M2.0×4.3 screws (front edge of the computer)
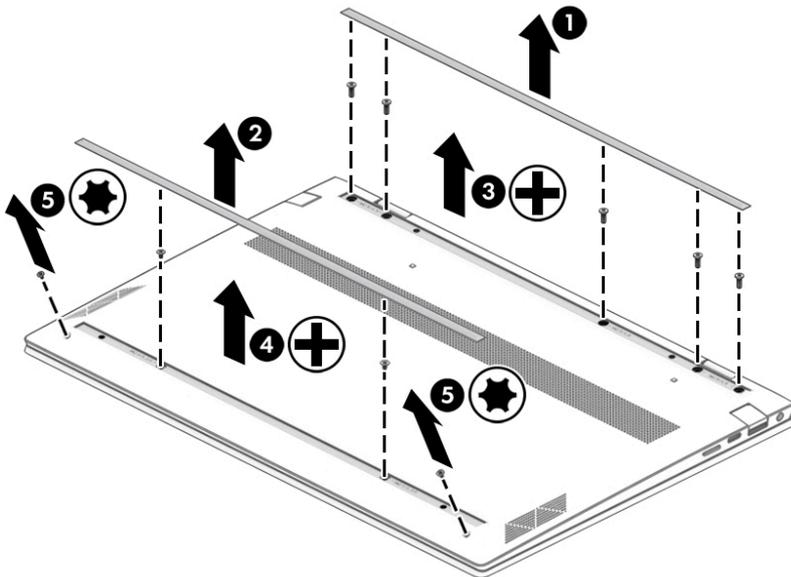
3. Use a case utility tool **(1)** or similar thin plastic tool to separate the rear edge of the bottom cover **(2)** from the computer.

4. Remove the bottom cover **(3)**.
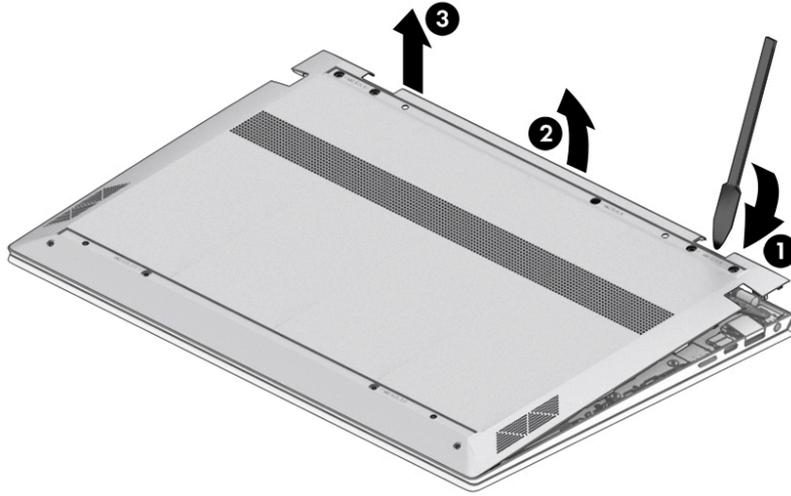
Reverse this procedure to install the bottom cover.

Battery

Description	Spare part number
4-cell, 53-WHr, 3.54-AHr, Li-ion battery (includes cable)	L08496-855

Before removing the battery, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.

4. Remove the bottom cover (see Bottom cover on page 26).

Remove the battery:

1. Disconnect the battery cable from the system board **(1)**.

2. Release the speaker cable from the routing path on the battery **(2)**.

3. Remove the four Phillips M2.0×3.9 screws **(2)** that secure the battery to the keyboard/top cover.
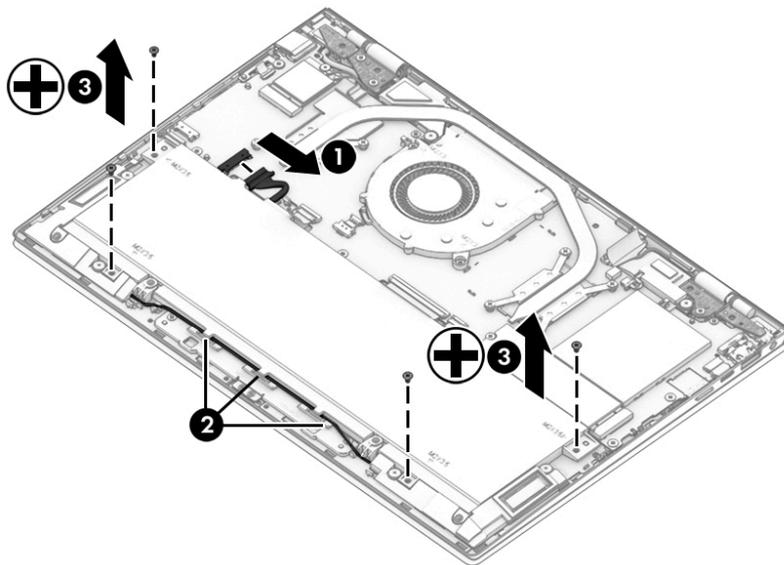
4. Release the battery **(1)** by sliding it toward the back of the computer.

5. Remove the battery **(2)**.
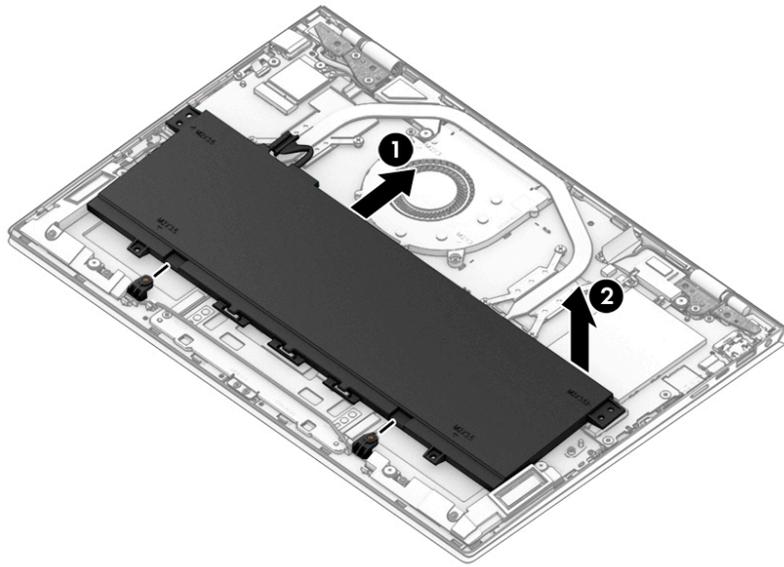
Reverse this procedure to install the battery.

Solid-state drive

Description	Spare part number
1-TB, 2280, PCIe, NVMe, SS solid-state drive with TLC	L19503-001
512-GB, M.2 2280, PCIe, NVMe, SS solid-state drive with TLC	L19507-001
512-GB, 2280, PCIe, NVMe solid-state drive	L19508-001
360-GB, 2280, PCIe, NVMe solid-state drive with TLC (Asia Pacific Japan only)	L19506-001
256-GB, 2280, PCIe, NVMe solid-state drive	L19505-001
256-GB, M.2 2280, PCIe, NVMe, SS solid-state drive with TLC	L19504-001
128-GB, M.2 2280-SATA3, SS solid-state drive with TLC	L19502-001

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).

5. Disconnect the battery cable from the system board (see).

Remove the solid-state drive:

1. Remove the Phillips M2.0×3.2 screw **(1)** that secures the solid-state drive to the system board.

2. Remove the solid-state drive **(2)** by pulling it away from the connector.

> **NOTE:** Solid-state drives are designed with notches to prevent incorrect insertion.
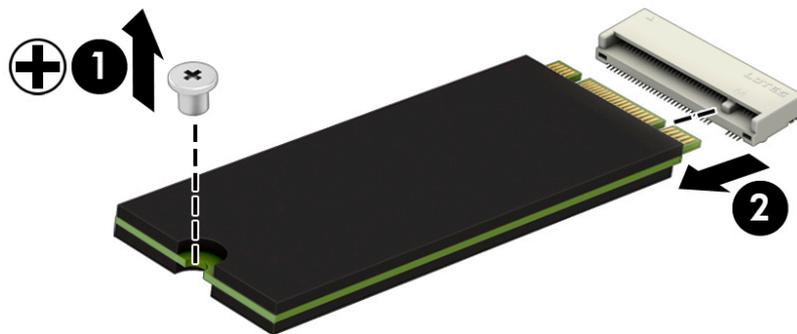
Reverse this procedure to install the solid-state drive.

WLAN module

Description	Spare part number
Intel 9260 ac 2×2 + Bluetooth 5 M.2 2230 non-vPro PCI-e+USB world-wide with 2 antennas	L16647-005

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

Before removing the WLAN module, follow these steps:

1. 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).

5. Disconnect the battery cable from the system board (see).

Remove the WLAN module:

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

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

2. Remove the Phillips M2.0×3.2 screw **(2)** that secures the solid-state drive to the system board. (The WLAN module tilts up.)

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

> **NOTE:** WLAN modules are designed with notches to prevent incorrect insertion.
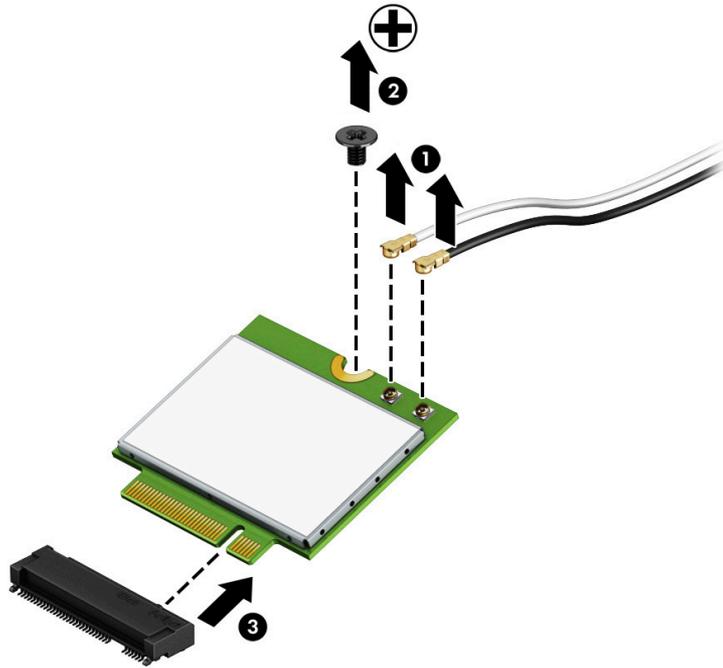
Reverse this procedure to install the WLAN module.

Front speakers

Description	Spare part number
Front speakers (include left and right front speakers, cables, and four rubber isolators)	L19530-001

Before removing the front 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 keyboard/top cover (see Bottom cover on page 26).

5. Disconnect the battery cable from the system board (see Battery on page 28).

Remove the front speakers:

1. Disconnect the front speaker cable **(1)** from the system board.

2. Release the front speaker cable **(2)** from the retention channel/retention clips built into the keyboard/top cover.

3. Remove the two Phillips M2.0×5.7 shoulder screws **(3)** that secure the front speakers to the keyboard/top cover.

4. Remove the speakers **(4)**.

> 📝 **NOTE:** Take note of the location and condition of the four rubber speaker isolators **(5)**. The absence of or damage to these isolators can degrade the front speaker performance.
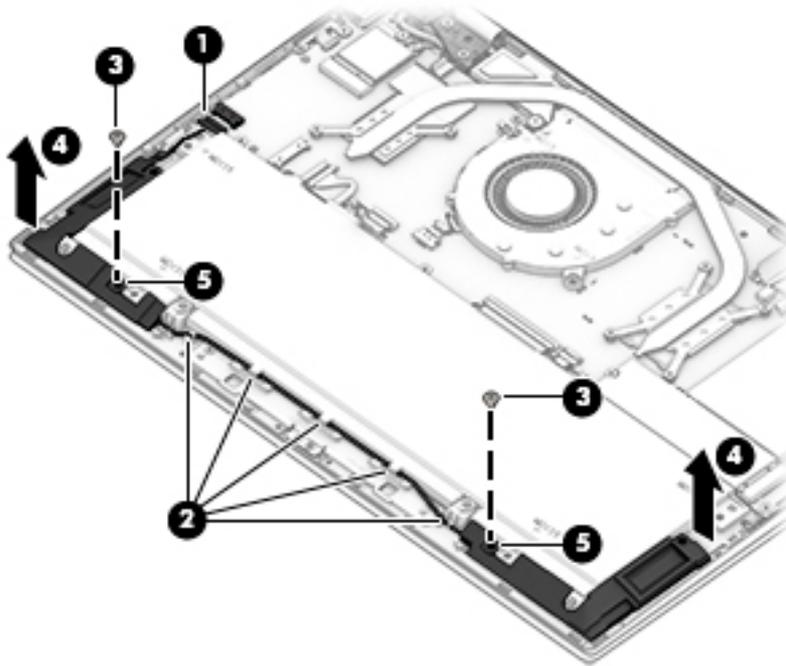
Reverse this procedure to install the front speakers.

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 quad core processor (2400-MHz FSB, 8.0-MB L3 cache, 15.0-W), an NVIDIA N17S-LG GeForce MX150 (256-MB×32, 2 pieces) GDDR5 graphics subsystem with 2048-MB video memory, 16-GB of system memory, and the Windows 10 operating system	L30287-601
Equipped with an Intel Core i7-8565U 1.80-GHz quad core processor (2400-MHz FSB, 8.0-MB L3 cache, 15.0-W), an NVIDIA N17S-LG GeForce MX150 (256-MB×32, 2 pieces) GDDR5 graphics subsystem with 2048-MB video memory, 16-GB of system memory, and a non-Windows operating system	L30287-001
Equipped with an Intel Core i7-8565U 1.80-GHz quad core processor (2400-MHz FSB, 8.0-MB L3 cache, 15.0-W), an NVIDIA N17S-LG GeForce MX150 (256-MB×32, 2 pieces) GDDR5 graphics subsystem with 2048-MB video memory, 8-GB of system memory, and the Windows 10 operating system	L30286-601
Equipped with an Intel Core i7-8565U 1.80-GHz quad core processor (2400-MHz FSB, 8.0-MB L3 cache, 15.0-W), an NVIDIA N17S-LG GeForce MX150 (256-MB×32, 2 pieces) GDDR5 graphics subsystem with 2048-MB video memory, 8-GB of system memory, and a non-Windows operating system	L30286-001
Equipped with an Intel Core i7-8565U 1.80-GHz quad core processor (2400-MHz FSB, 8.0-MB L3 cache, 15.0-W), an Intel UHD 620 graphics subsystem with UMA video memory, 8-GB of system memory, and the Windows 10 operating system	L30290-601
Equipped with an Intel Core i7-8565U 1.80-GHz quad core processor (2400-MHz FSB, 8.0-MB L3 cache, 15.0-W), an Intel UHD 620 graphics subsystem with UMA video memory, 8-GB of system memory, and a non-Windows operating system	L30290-001
Equipped with an Intel Core i5-8265U 1.60-GHz quad core processor (2400-MHz FSB, 6.0-MB L3 cache, 15.0-W), an NVIDIA N17S-LG GeForce MX150 (256-MB×32, 2 pieces) GDDR5 graphics subsystem with 2048-MB video memory, 8-GB of system memory, and the Windows 10 operating system	L30285-601
Equipped with an Intel Core i5-8265U 1.60-GHz quad core processor (2400-MHz FSB, 6.0-MB L3 cache, 15.0-W), an NVIDIA N17S-LG GeForce MX150 (256-MB×32, 2 pieces) GDDR5 graphics subsystem with 2048-MB video memory, 8-GB of system memory, and a non-Windows operating system	L30285-001
Equipped with an Intel Core i5-8265U 1.60-GHz quad core processor (2400-MHz FSB, 6.0-MB L3 cache, 15.0-W), an Intel UHD 620 graphics subsystem with UMA video memory, 8-GB of system memory, and the Windows 10 operating system	L30289-601
Equipped with an Intel Core i5-8265U 1.60-GHz quad core processor (2400-MHz FSB, 6.0-MB L3 cache, 15.0-W), an Intel UHD 620 graphics subsystem with UMA video memory, 8-GB of system memory, and a non-Windows operating system	L30289-001
Equipped with an Intel Core i3-8145U 2.20-GHz (turbo boost up to 3.40-GHz) dual core processor (2133-MHz FSB, 4.0-MB L3 cache, 15.0-W), an Intel UHD 620 graphics subsystem with UMA video memory, 4-GB of system memory, and the Windows 10 operating system	L30288-601
Equipped with an Intel Core i3-8145U 2.20-GHz (turbo boost up to 3.40-GHz) dual core processor (2133-MHz FSB, 4.0-MB L3 cache, 15.0-W), an Intel UHD 620 graphics subsystem with UMA video memory, 4-GB of system memory, and a non-Windows operating system	L30288-001

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 26).

**5.** Disconnect the battery cable from the system board (see Battery on page 28).

When replacing the system board, be sure to remove the fan/heat sink assembly (see Fan/heat sink assembly on page 38) and power connector cable (see Power connector cable on page 41) from the defective system board and install them on the replacement system board.

Remove the system board:

1. Disconnect the following connectors from the system board:

(1) Fingerprint reader zero insertion force (ZIF) connector cable

(2) WLAN antenna cables

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

(3) Webcam ZIF connector cable

(4) Adhesive strip supporting the display panel ZIF connector cable

(5) Display panel ZIF connector cable

(6) Rear speaker cable

(7) Backlight ZIF connector cable

(8) Keyboard ZIF connector cable

(9) TouchPad ZIF connector cable

(10) Front speaker cable
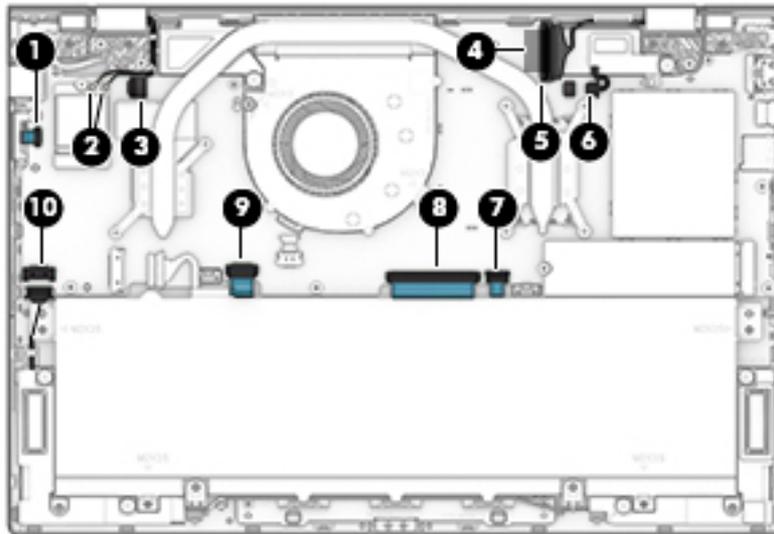
2. Remove the three Phillips M2.5×6.7 screws **(1)** that secure the display hinges to the keyboard/top cover.

3. Swing the display hinges **(2)** up and back.
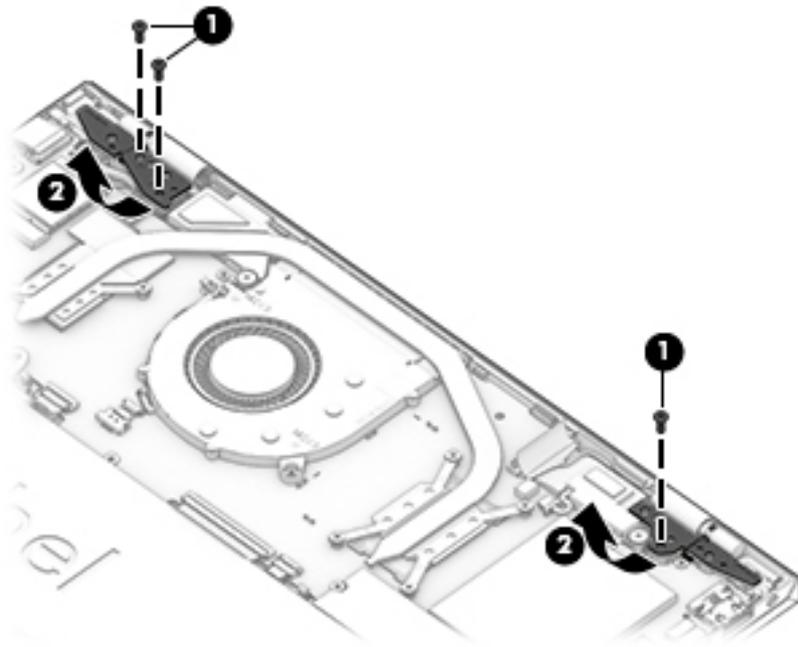
4. Remove the Phillips M2.5×4.0 screw **(1)** that secures the fingerprint reader bracket to the keyboard/top cover.

5. Remove the fingerprint reader bracket **(2)**.

The fingerprint reader bracket is available using spare part number L24829-001.
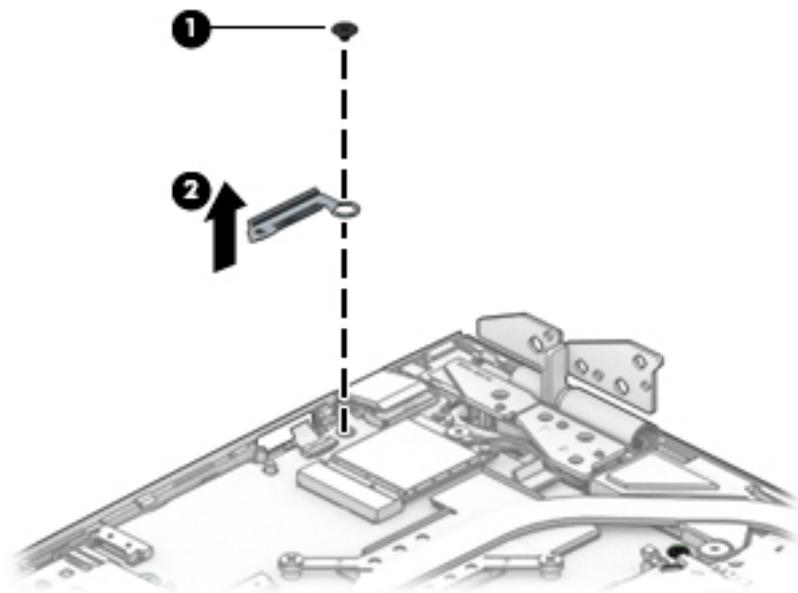
6. Remove the five Phillips M2.0×2.2 broad head screws **(1)** that secure the system board to the keyboard/top cover.

7. Remove the four Phillips M2.0×3.2 screws **(2)** that secure the system board to the keyboard/top cover.
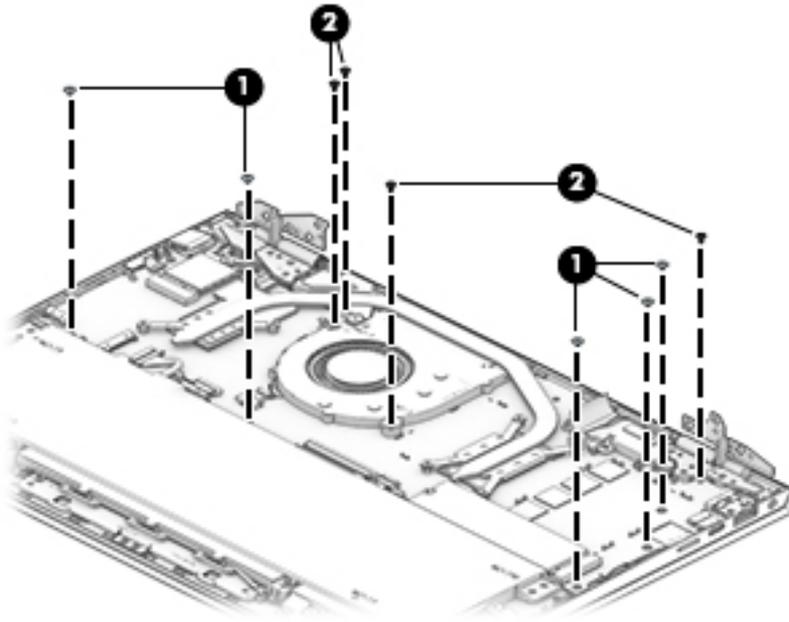
8. Release the power connector **(1)** from the clips built into the keyboard/top cover.

9. Remove the system board **(2)**.
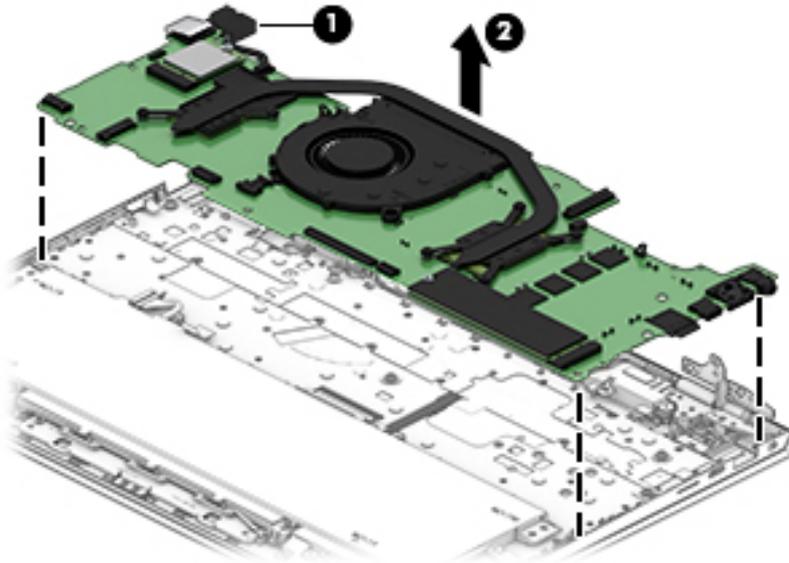
10. Remove the system board.

Reverse this procedure to install the system board.

Fan/heat sink assembly

📝 **NOTE:** All fan/heat sink assembly spare part kits include replacement thermal material.

Description	Spare part number
For use only on computer models equipped with a graphics subsystem with discrete video memory	L19526-001
For use only on computer models equipped with a graphics subsystem with UMA video memory	L19527-001

Before removing the fan/heat sink assembly, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

2. Disconnect the power from the computer by 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).

5. Disconnect the battery cable from the system board (see).

6. Remove the system board (see).

Remove the fan/heat sink assembly:

📝 **NOTE:** Steps 1 and 2 apply to computer models equipped with a graphics subsystem with discrete memory. See steps 3 and 4 for information for computer models equipped with a graphics subsystem with UMA memory.

1. Loosen the six Phillips M2.0×6.3 captive screws **(1)** that secure the discrete fan/heat sink assembly to the system board.

2. Remove the two Phillips M2.0×6.3 screws **(2)** that secure the discrete fan/heat sink assembly to the system board.

3. Remove the discrete fan/heat sink assembly **(3)**.
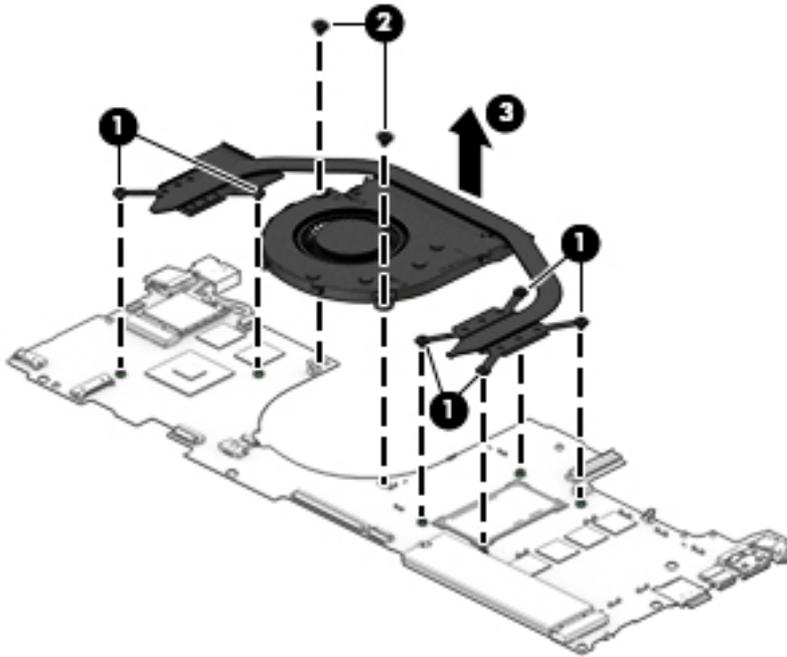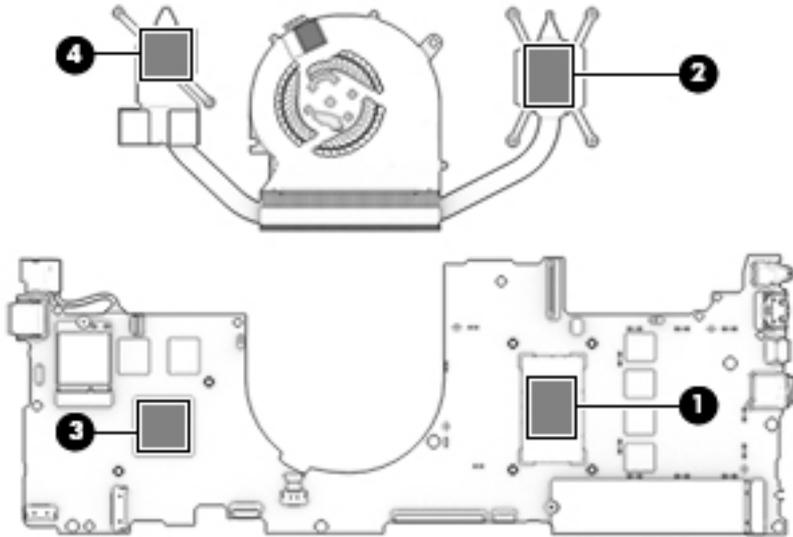

> **NOTE:** Steps 3 and 4 apply to computer models equipped with a graphics subsystem with UMA memory. See steps 1 and 2 for information for computer models equipped with a graphics subsystem with discrete memory.

4. Remove the four Phillips M2.0×6.3 captive screws **(1)** that secure the UMA fan/heat sink assembly to the system board.
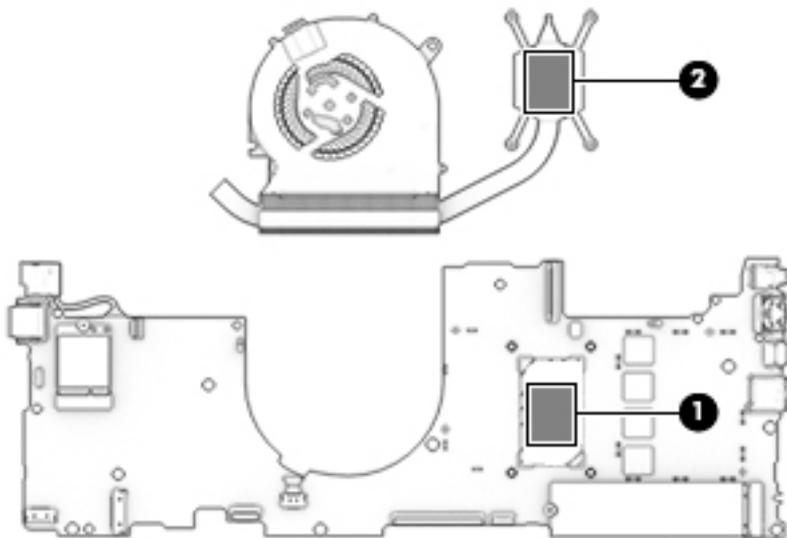
5. Remove the UMA fan/heat sink assembly **(2)**.
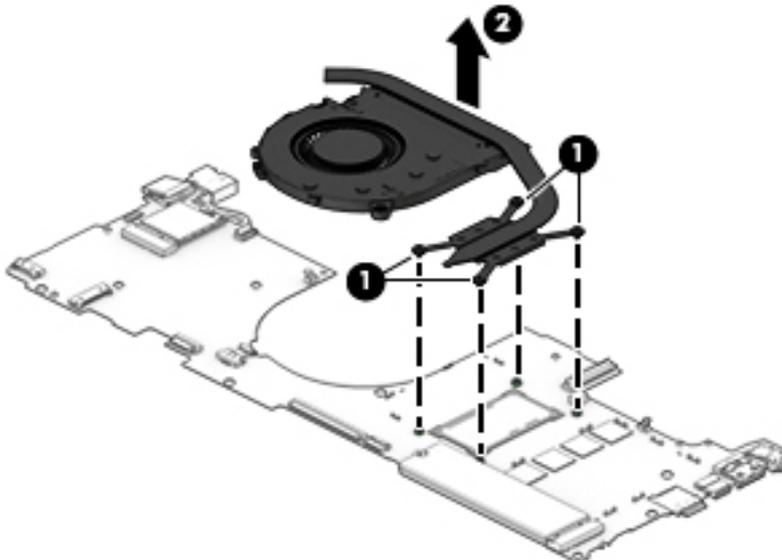
> **NOTE:** The thermal material must be thoroughly cleaned from the surfaces of the fan/heat sink assembly and the system board components each time the fan/heat sink assembly is removed. Replacement thermal material is included with the fan/heat sink assembly and system board spare part kits.

Computer model equipped with a graphics subsystem with discrete memory: Thermal paste is used on the processor **(1)** and the fan/heat sink assembly section **(2)** that services it. Thermal paste is also used on the graphics subsystem component **(3)** and the fan/heat sink assembly section **(4)** that services it.

Computer model equipped with a graphics subsystem with UMA memory: Thermal paste is used on the processor **(1)** and the fan/heat sink assembly section **(2)** that services it.

Reverse this procedure to install the fan/heat sink assembly.

Power connector cable

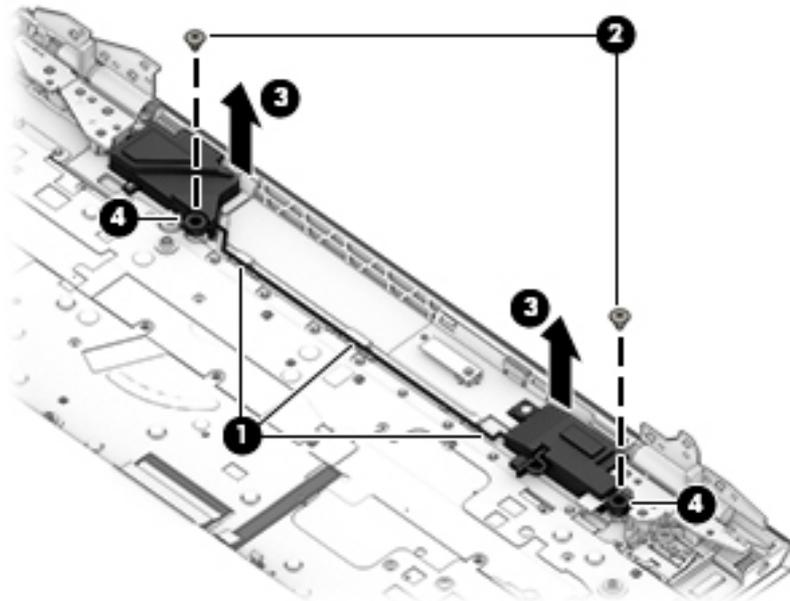| Description	Spare part number
Power connector cable	L19509-001

Before removing the power connector cable, 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 26).

5. Disconnect the battery cable from the system board (see Battery on page 28).

6. Remove the system board (see System board on page 34).

Remove the power connector cable:

1. Turn the system board upside down with the front toward you.

2. Disconnect the power connector cable from the system board.
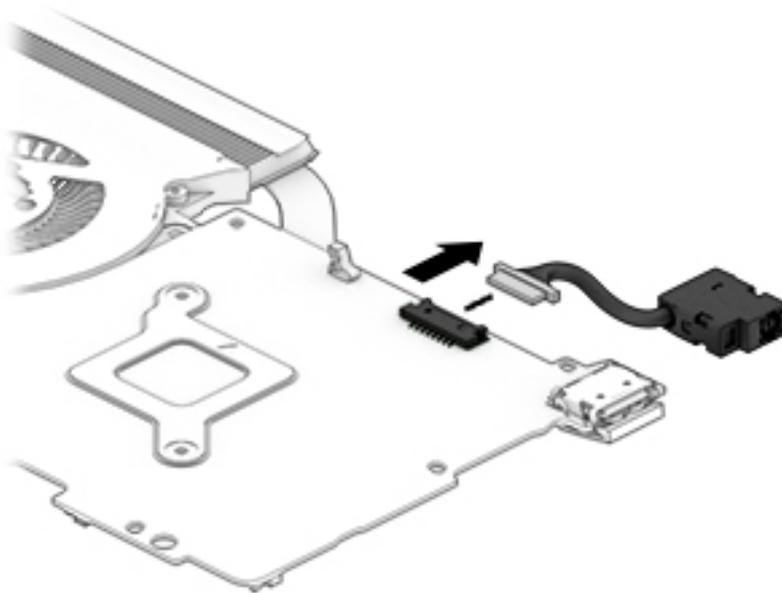
Reverse this procedure to install the power connector cable.

Rear speakers

Description	Spare part number
Rear speakers (include left and right front speakers, cables, and two rubber isolators)	L19531-001

Before removing the rear 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 26).

5. Disconnect the battery cable from the system board (see Battery on page 28).

6. Remove the system board (see System board on page 34).

Remove the rear speakers:

1. Release the rear speaker cable **(1)** from the retention channel/retention clips built into the keyboard/ top cover.

2. Remove the two Phillips M2.0×5.7 shoulder screws **(2)** that secure the rear speakers to the keyboard/ top cover.

3. Remove the rear speakers **(3)**.

> **NOTE:** When removing the rear speakers, make note of the location and condition of the two rubber isolators **(4)**. These isolators are critical to the performance of the rear speakers. The absence of these isolators or damage to them can degrade the rear speaker performance.

Reverse this procedure to install the rear speakers.
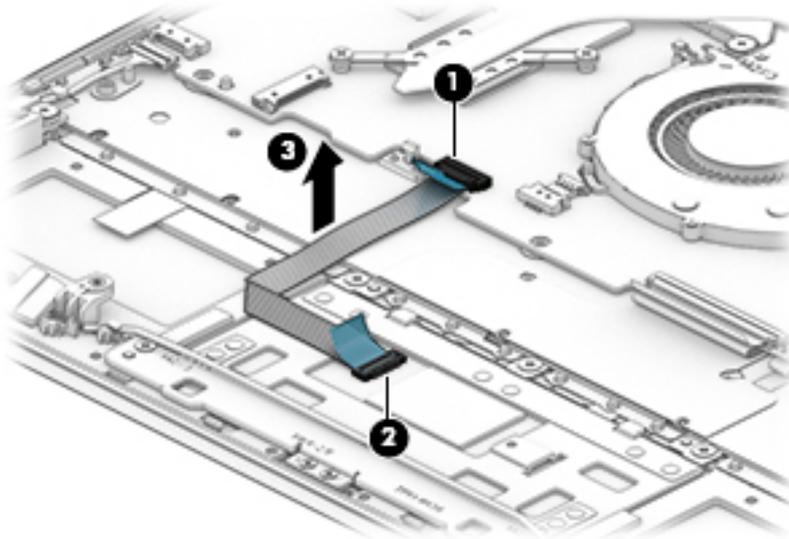
TouchPad cable

NOTE: The TouchPad spare part kit does not include the TouchPad cable. The TouchPad cable is available using spare part number L19525-001.

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 26).

5. Remove the battery (see Battery on page 28).

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. Remove the TouchPad cable **(3)**.

Reverse this procedure to install the TouchPad cable.

TouchPad

NOTE: The TouchPad spare part kit does not include the TouchPad bracket or TouchPad cable. The TouchPad bracket is available using spare part number L19759-001. The TouchPad cable is available using spare part number L19525-001.

Description	Spare part number
For use only on computer models in natural silver finish	L19518-001
For use only on computer models in pale gold finish	L19519-001

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 26).

5. Remove the battery (see Battery on page 28).

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. Remove the two Phillips M2.0×3.2 screws **(2)** that secure the TouchPad and TouchPad bracket to the keyboard/top cover.

3. Remove the two Phillips M1.5×2.7 screws **(3)** that secure the TouchPad and TouchPad bracket to the keyboard/top cover.

4. Remove the three Phillips M2.0×2.2 broad head screws **(4)** that secure the TouchPad to the keyboard/top cover.

5. Release the grounding tape **(5)**.
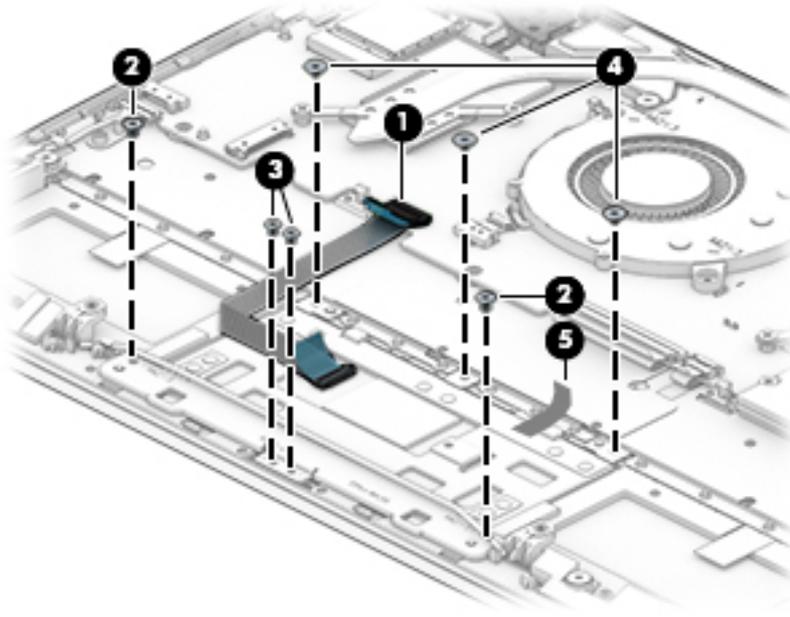
6. Remove the TouchPad bracket **(1)**.

7. Remove the TouchPad **(2)**.
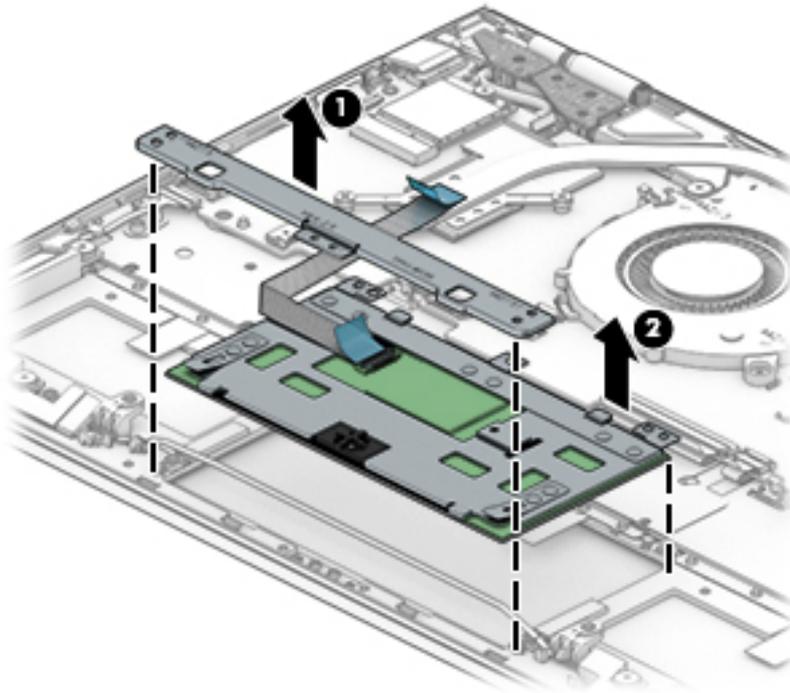
Reverse this procedure to install the TouchPad and bracket.

Display assembly

Description	Spare part number
13.3-in, UHD, BrightView, TouchScreen display assembly in natural silver finish	L39192-001
13.3-in, UHD, BrightView, TouchScreen display assembly in pale gold finish	L39194-001
13.3-in, FHD, BrightView, TouchScreen display assembly in natural silver finish	L39191-001
13.3-in, FHD, BrightView, TouchScreen display assembly in pale gold finish	L39193-001
13.3-in, FHD, Antiglare, TouchScreen display assembly with privacy filter in natural silver finish	L36488-001
13.3-in, FHD, BrightView, low-power, TouchScreen display assembly in natural silver finish	L38993-001
13.3-in, FHD, BrightView, low-power, TouchScreen display assembly in pale gold finish	L38994-001
13.3-in, UHD, BrightView, flush glass, non-TouchScreen display assembly in natural silver finish	L39188-001
13.3-in, UHD, BrightView, flush glass, non-TouchScreen display assembly in pale gold finish	L39190-001
13.3-in, UHD, BrightView, non-TouchScreen display assembly in natural silver finish	L39197-001
13.3-in, UHD, BrightView, non-TouchScreen display assembly in pale gold finish	L39199-001
13.3-in, FHD, AntiGlare, non-TouchScreen display assembly with privacy filter in natural silver finish	L39195-001
13.3-in, FHD, BrightView, flush glass, non-TouchScreen display assembly in natural silver finish	L39187-001
13.3-in, FHD, BrightView, flush glass, non-TouchScreen display assembly in pale gold finish	L39189-001
FHD, Antiglare, flush glass, non-TouchScreen display assembly with privacy filter in natural silver finish	L36487-001
FHD, BrightView, flush glass, low-power, non-TouchScreen display assembly in natural silver finish	L38991-001
FHD, BrightView, flush glass, low-power, non-TouchScreen display assembly in pale gold finish	L38992-001
13.3-in, FHD, BrightView, non-TouchScreen display assembly in natural silver finish	L39196-001
13.3-in, FHD, BrightView, non-TouchScreen display assembly in pale gold finish	L39198-001

Before removing the display assembly, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.

4. Remove the bottom cover (see Bottom cover on page 26).

5. Disconnect the battery cable from the system board (see Battery on page 28).
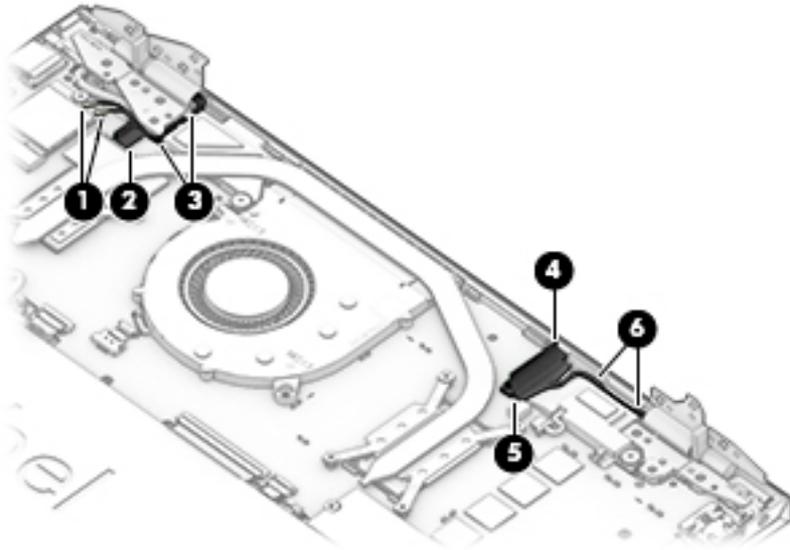
Remove the display assembly:

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

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

2. Release the ZIF connector **(2)** to which display webcam/microphone cable is connected, and then disconnect the display webcam/microphone cable from the system board.

3. Release the display webcam/microphone cable from the retention clips **(3)** and routing channels built into the keyboard/top cover.

4. Release the adhesive strip **(4)** that secures the display panel cable to the system board.

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

6. Release the display panel cable from the retention clips **(6)** and routing channels built into the keyboard/top cover.

7. Remove the three Phillips M2.5×6.7 screws **(1)** that secure the display hinges to the keyboard/top cover.

8. Swing the display hinges **(2)** up and back.
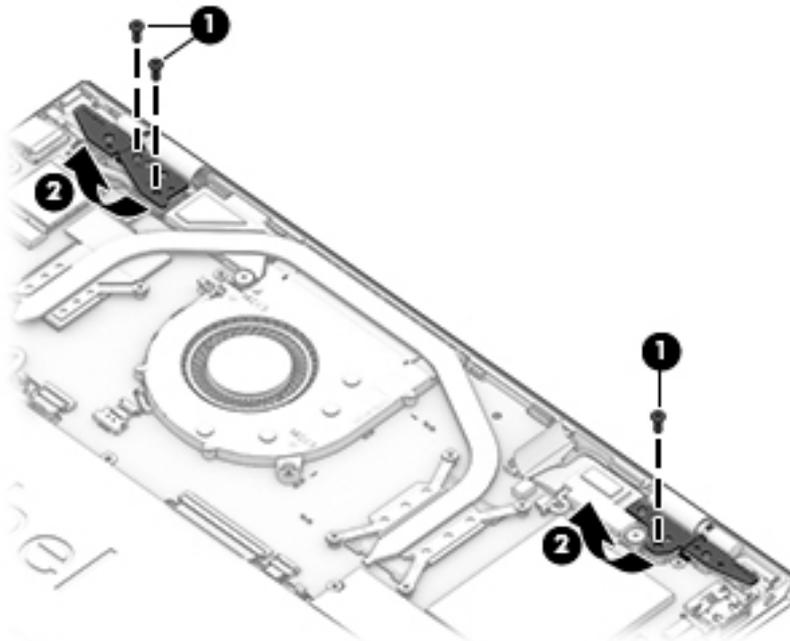
9. Lift the front edge of the keyboard/top cover **(1)** until it rests at an angle.

10. Slide the keyboard/top cover **(2)** up and away at an angle and separate it from the display assembly.
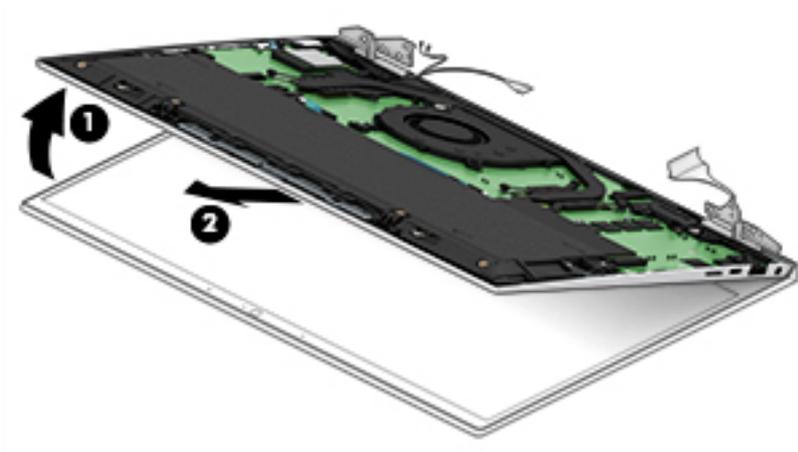
Reverse this procedure to install the display assembly.

6   Using Setup Utility (BIOS)

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

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

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 –

      Select the question mark icon in the taskbar.

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

- Setup Utility (BIOS)

  1.   Start Setup Utility (BIOS) (see).

  2.   Select **Main**, and then make note of the BIOS version.

  3.   Select **Exit**, select one of the options, and then follow the on-screen instructions.

To check for later BIOS versions, see .

Downloading a BIOS update

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

- Do not disconnect power from the computer by unplugging the power cord from the AC outlet.

- Do not shut down the computer or initiate Sleep.

- Do not insert, remove, connect, or disconnect any device, cable, or cord.

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

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

   – or –

   Select the question mark icon in the taskbar.

2. Select **Updates**, and then select **Check for updates and messages**.

3. Follow the on-screen instructions.

4. At the download area, follow these steps:

   a. Identify the most recent BIOS update and compare it to the BIOS version currently installed on your computer. If the update is more recent than your BIOS version, make a note of the date, name, or other identifier. You may need this information to locate the update later, after it has been downloaded to your hard drive.

   b. Follow the on-screen instructions to download your selection to the hard drive.

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

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

1. Type `file` in the taskbar search box, and then select **File Explorer**.

2. Select your hard drive designation. The hard drive designation is typically Local Disk (C:).

3. Using the hard drive path you recorded earlier, open the folder that contains the update.

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

   The BIOS installation begins.

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

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

7   Using HP PC Hardware Diagnostics

Using HP PC Hardware Diagnostics Windows (select products only)

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

If HP PC Hardware Diagnostics Windows is not installed on your computer, first you must download and install it. To download HP PC Hardware Diagnostics Windows, see Downloading HP PC Hardware Diagnostics Windows on page 51.

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

1. To access HP PC Hardware Diagnostics Windows from HP Help and Support:

    a. Select the **Start** button, and then select **HP Help and Support**.

    b. Right-click **HP PC Hardware Diagnostics Windows**, select **More**, and then select **Run as administrator**.

    – or –

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

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

        – or –

        Select the question mark icon in the taskbar.

    b. Select **Troubleshooting and fixes**.

    c. Select **Diagnostics**, and then select **HP PC Hardware Diagnostics Windows**.

2. When the tool opens, select the type of diagnostic test you want to run, and then follow the on-screen instructions.

    NOTE: If you need to stop a diagnostic test at any time, select **Cancel**.

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

Downloading HP PC Hardware Diagnostics Windows

*   The HP PC Hardware Diagnostics Windows download instructions are provided in English only.

*   You must use a Windows computer to download this tool because only .exe files are provided.

Downloading the latest HP PC Hardware Diagnostics Windows version

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

1. Go to http://www.hp.com/go/techcenter/pcdiags. The HP PC Diagnostics home page is displayed.

2. In the **HP PC Hardware Diagnostics** section, select **Download**, and then select a location on your computer or a USB flash drive.

    The tool is downloaded to the selected location.

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

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

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

1. Go to http://www.hp.com/support.

2. Select **Get software and drivers**, select your type of product, and then enter the product name or number in the search box that is displayed.

3. In the **HP PC Hardware Diagnostics** section, select **Download**, and then select a location on your computer or a USB flash drive.

    The tool is downloaded to the selected location.

Installing HP PC Hardware Diagnostics Windows

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

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

Using HP PC Hardware Diagnostics UEFI

NOTE: For Windows 10 S computers, you must use a Windows computer and a USB flash drive to download and create the HP UEFI support environment because only .exe files are provided. For more information, see .

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

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

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

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

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

Starting HP PC Hardware Diagnostics UEFI

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

1. Turn on or restart the computer, and quickly press esc.

2. Press f2.

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

    a. Connected USB flash drive

        > **NOTE:** To download the HP PC Hardware Diagnostics UEFI tool to a USB flash drive, see Downloading the latest HP PC Hardware Diagnostics UEFI version on page 53.

    b. Hard drive

    c. BIOS

3. When the diagnostic tool opens, select a language, select the type of diagnostic test you want to run, and then follow the on-screen instructions.

Downloading HP PC Hardware Diagnostics UEFI to a USB flash drive

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

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

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

Downloading the latest HP PC Hardware Diagnostics UEFI version

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

1. Go to http://www.hp.com/go/techcenter/pcdiags. The HP PC Diagnostics home page is displayed.

2. In the **HP PC Hardware Diagnostics UEFI** section, select **Download UEFI Diagnostics**, and then select **Run**.

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

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

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

1. Go to http://www.hp.com/support.

2. Enter the product name or number, select your computer, and then select your operating system.

3. In the **Diagnostics** section, follow the on-screen instructions to select and download the specific UEFI Diagnostics version for your computer.

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

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

Downloading Remote HP PC Hardware Diagnostics UEFI

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

Downloading the latest Remote HP PC Hardware Diagnostics UEFI version

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

1. Go to http://www.hp.com/go/techcenter/pcdiags. The HP PC Diagnostics home page is displayed.

2. In the **HP PC Hardware Diagnostics UEFI** section, select **Download Remote Diagnostics**, and then select **Run**.

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

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

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

1. Go to http://www.hp.com/support.

2. Select **Get software and drivers**, select your type of product, enter the product name or number in the search box that is displayed, select your computer, and then select your operating system.

3. In the **Diagnostics** section, follow the on-screen instructions to select and download the **Remote UEFI** version for the product.

Customizing Remote HP PC Hardware Diagnostics UEFI settings

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

*   Set a schedule for running diagnostics unattended. You can also start diagnostics immediately in interactive mode by selecting **Execute Remote HP PC Hardware Diagnostics**.

*   Set the location for downloading the diagnostic tools. This feature provides access to the tools from the HP website or from a server that has been preconfigured for use. Your computer does not require the traditional local storage (such as a disk drive or USB flash drive) to run remote diagnostics.

*   Set a location for storing the test results. You can also set the user name and password settings used for uploads.

*   Display status information about the diagnostics run previously.

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

1. Turn on or restart the computer, and when the HP logo appears, press f10 to enter Computer Setup.

2. Select **Advanced**, and then select **Settings**.

3. Make your customization selections.

4. Select **Main**, and then **Save Changes and Exit** to save your settings.

Your changes take effect when the computer restarts.

8 Specifications

	Metric	U.S.
Temperature		
Operating	**5°C to 35°C**	41°F to 95°F
Non-operating	**-20°C to 60°C**	-4°F to 140°F
Relative humidity (non-condensing)		
Operating	10% to 90%	
Non-operating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	**-15 m to 3,048 m**	-50 ft to 10,000 ft
Non-operating	**-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 creating backups and restoring and recovering your system.

Windows provides tools to back up your personal information, restore your computer from a backup, and recover the computer to its original state. See Using Windows tools for backing up, restoring, and recovering your computer on page 57.

In addition to the Windows tools, depending on the operating system preinstalled on your computer, your computer may also include tools provided by HP for additional functionality.

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.

Using Windows tools for backing up, restoring, and recovering your computer

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

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

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

Creating backups

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

To create a backup:

1. Select **Start**, select **Settings**, and then select **Update & Security**.

2. Select **Backup**, and then follow the on-screen instructions.

Restoring and recovering

Windows offers several options for restoring from backup, refreshing the computer, and resetting the computer to its original state.

To restore your system:

1. Select **Start**, select **Settings**, and then select **Update & Security**.

2. Select **Recovery**, and then follow the on-screen instructions.

Creating HP Recovery media (select products only)

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

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

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

On select products, you can use the HP Cloud Recovery Download Tool to create HP Recovery media on a bootable USB flash drive. For more information, see Using the HP Cloud Recovery Download Tool to create recovery media on page 59.

Using HP Recovery Manager to create recovery media

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

Before you begin

Before you begin, note the following:

- Only one set of recovery media can be created. Handle these recovery tools carefully, and keep them in a safe place.

- HP Recovery Manager examines the computer and determines the required media storage capacity.

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

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

  – If your computer has an optical drive with DVD writer capability, be sure to use only high-quality blank DVD-R, DVD+R, DVD-R DL, or DVD+R DL discs. Do not use rewritable discs such as CD±RW, DVD±RW, double-layer DVD±RW, or BD-RE (rewritable Blu-ray) discs, which are not compatible with HP Recovery Manager software.

  – If your computer does not include an integrated optical drive with DVD writer capability, you can use an external optical drive (purchased separately) to create recovery discs, as described above. If an external optical drive is used, you must connect it directly to a USB port on the computer. It cannot be connected to a USB port on an external device, such as a USB hub.

  – To create a recovery USB flash drive, use a high-quality blank USB flash drive.

- Be sure that the computer is connected to AC power before you begin creating the recovery media.

- The creation process can take an hour or more. Do not interrupt this process.

- If necessary, you can exit the program before you have finished creating all of the recovery media. HP Recovery Manager will finish the current DVD or USB flash drive. The next time you start HP Recovery Manager, you will be prompted to continue.

Creating the recovery media

To create HP Recovery media using HP Recovery Manager:

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

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

2. Select **Create recovery media**, and then follow the on-screen instructions.

If you need to recover the system, see .

Using the HP Cloud Recovery Download Tool to create recovery media

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

1. Go to http://www.hp.com/support.

2. Select **Software and Drivers**, and then follow the on-screen instructions.

Restoring and recovery

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

IMPORTANT: HP Recovery Manager and the HP Recovery partition are not available for Windows 10 S products.

Restoring, resetting, and refreshing using Windows tools

Windows offers several options for restoring, resetting, and refreshing the computer. For details, see .

Restoring using HP Recovery Manager and the HP Recovery partition

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

- **Resolving problems with preinstalled applications or drivers**—To correct a problem with a preinstalled application or driver:

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

  2. Select **Reinstall drivers and/or applications**, and then follow the on-screen instructions.

- **Using System Recovery**—To recover the Windows partition to original factory content, select the **System Recovery** option from the HP Recovery partition (select products only) or use the HP Recovery media. For more information, see . If you have not already created recovery media, see .

- **Using Factory Reset** (select products only)—Restores the computer to its original factory state by deleting all information from the hard drive and recreating the partitions and then reinstalling the operating system and the software that was installed at the factory (select products only). To use the **Factory Reset** option, you must use HP Recovery media. If you have not already created recovery media, see .

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

Recovering using HP Recovery Manager

You can use HP Recovery Manager software to recover the computer to its original factory state by using the HP Recovery media that you either created or that you obtained from HP, or by using the HP Recovery partition (select products only).

If you have not already created HP Recovery media, see Creating HP Recovery media (select products only) on page 58.

IMPORTANT: HP Recovery Manager does not automatically provide backups of your personal data. Before beginning recovery, back up any personal data that you want to retain. See Using Windows tools for backing up, restoring, and recovering your computer on page 57.

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

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

Before you begin, note the following:

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

- If the computer hard drive fails, HP Recovery media must be used. This media is created using HP Recovery Manager. See Creating HP Recovery media (select products only) on page 58.

- If your computer does not allow the creation of HP Recovery media or if the HP Recovery media does not work, contact support to obtain recovery media. Go to http://www.hp.com/support, select your country or region, and then follow the on-screen instructions.

Recovering using the HP Recovery partition (select products only)

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

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

To start HP Recovery Manager from the HP Recovery partition:

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

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

   – or –

   For computers or tablets with keyboards attached:

   ▲ Press f11 while the computer boots, or press and hold f11 as you press the power button.

   For tablets without keyboards:

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

2. Select **Troubleshoot** from the boot options menu.

3. Select **Recovery Manager**, and then follow the on-screen instructions.

Recovering using HP Recovery media

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

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

NOTE: If your computer does not automatically restart in HP Recovery Manager, change the computer boot order, and then follow the on-screen instructions. See Changing the computer boot order on page 61.

Changing the computer boot order

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

To change the boot order:

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

1. Insert the HP Recovery media.

2. Access the system **Startup** menu.

   For computers or tablets with keyboards attached:

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

   For tablets without keyboards:

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

   – or –

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

3. Select the optical drive or USB flash drive from which you want to boot, and then follow the on-screen instructions.

Removing the HP Recovery partition (select products only)

HP Recovery Manager software allows you to remove the HP Recovery partition (select products only) to free up hard drive space.

IMPORTANT: After you remove the HP Recovery partition, you will not be able to perform System Recovery or create HP Recovery media. Before removing the Recovery partition, create HP Recovery media. See Creating HP Recovery media (select products only) on page 58.

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 HO5VV-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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