



Maintenance and Service Guide

HP Pavilion x360 14 Convertible PC

IMPORTANT! This document is intended for HP authorized service providers only.

© Copyright 2019 HP Development Company, L.P.

Bluetooth is a trademark owned by its proprietor and used by HP Inc. under license. Intel, Core, and Pentium are trademarks of Intel Corporation or its subsidiaries in the U.S. and/or other countries. NVIDIA and GeForce are trademarks and/or registered trademarks of NVIDIA Corporation in the U.S. and other countries. MicroSD, SDHC, and SDXC are trademarks or registered trademarks of SD-3C in the United States, other countries or both. Windows is either a registered trademark or trademark of Microsoft Corporation in the United States and/or other countries.

The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

First Edition: March 2019

Document Part Number: L52090-001

Product notice

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

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

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

Software terms

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

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

Safety warning notice


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

Table of contents

1 Product description	1
2 Getting to know your computer	5
Right side	5
Left side	6
Display	8
Keyboard area	9
TouchPad	9
Lights	10
Speakers and fingerprint reader	11
Special keys	12
Bottom	13
Labels	14
3 Illustrated parts catalog	15
Computer major components	15
Display assembly subcomponents	19
Mass storage devices	21
Cables	22
Miscellaneous parts	23
4 Removal and replacement procedures preliminary requirements	25
Tools required	25
Service considerations	25
Plastic parts	25
Cables and connectors	25
Drive handling	26
Workstation guidelines	26
Electrostatic discharge information	26
Generating static electricity	27
Preventing electrostatic damage to equipment	27
Personal grounding methods and equipment	28
Grounding the work area	28
Recommended materials and equipment	28
Packaging and transporting guidelines	29

5 Removal and replacement procedures for authorized service provider parts	30
Component replacement procedures	30
Preparation for disassembly	30
Bottom cover and Rubber Foot Kit	31
Battery	34
WLAN module	35
Hard drive and hard drive cover	37
Solid-state drive	40
Memory module and cover	41
Power button board	44
Power button	45
TouchPad	46
Speakers	47
Heat sink	49
Fingerprint reader board	52
Fan	53
USB/audio board	54
System board	56
Display assembly	59
Power connector	67
Keyboard/top cover	68
6 Using Setup Utility (BIOS)	69
Starting Setup Utility (BIOS)	69
Updating Setup Utility (BIOS)	69
Determining the BIOS version	69
Downloading a BIOS update	70
7 Using HP PC Hardware Diagnostics	71
Using HP PC Hardware Diagnostics Windows (select products only)	71
Downloading HP PC Hardware Diagnostics Windows	71
Downloading the latest HP PC Hardware Diagnostics Windows version	72
Downloading HP Hardware Diagnostics Windows by product name or number (select products only)	72
Installing HP PC Hardware Diagnostics Windows	72
Using HP PC Hardware Diagnostics UEFI	72
Starting HP PC Hardware Diagnostics UEFI	73
Downloading HP PC Hardware Diagnostics UEFI to a USB flash drive	73
Downloading the latest HP PC Hardware Diagnostics UEFI version	73
Downloading HP PC Hardware Diagnostics UEFI by product name or number (select products only)	73

Using Remote HP PC Hardware Diagnostics UEFI settings (select products only)	74
Downloading Remote HP PC Hardware Diagnostics UEFI	74
Downloading the latest Remote HP PC Hardware Diagnostics UEFI version	74
Downloading Remote HP PC Hardware Diagnostics UEFI by product name or number	74
Customizing Remote HP PC Hardware Diagnostics UEFI settings	74
8 Backing up, restoring, and recovering	76
Backing up information and creating recovery media	76
Using Windows tools	76
Using the HP Cloud Recovery Download Tool to create recovery media (select products only)	76
Restoring and recovery	77
Restoring, resetting, and refreshing using Windows tools	77
Recovering using HP Recovery media	77
Changing the computer boot order	77
9 Specifications	78
10 Power cord set requirements	79
Requirements for all countries	79
Requirements for specific countries and regions	80
11 Recycling	82
Index	83

1 Product description

Table 1-1 Product components and their descriptions

Category	Description
Product Name	HP Pavilion x360 14 Convertible PC Model numbers: 14-dh0xxx, 14q-dh0xxx, 14t-dh000
Processor	8th generation Intel® Core™ processors Intel Core i7-8565U (1.8 GHz, turbo up to 4.6 GHz), 2400 MHz FSB, 8 MB L3 cache, quad core, 15 W Intel Core i5-8265U (1.6 GHz, turbo up to 3.9 GHz), 2400 MHz FSB, 6 MB L3 cache, dual core, 15 W Intel Core i3-8145U (2.1 GHz, turbo up to 3.9 GHz), 2400 MHz FSB, 4 MB L3 cache, dual core, 15 W Intel Pentium® processor Intel Pentium Silver N5000 1.10 GHz (turbo up to 2.70 GHz) quad core processor, 2400 MHz FSB, 4 MB L2 cache, 6 W
Graphics	Internal graphics Intel UHD Graphics 620 (Core processors) Intel UHD Graphics 605 (Pentium processor) Supports HD decode, DX12, and HDMI Hybrid graphics NVIDIA® GeForce® MX250 with up to 2048 MB of dedicated GDDR5 video memory (Core i7 processor) NVIDIA GeForce MX130 with up to 2048 MB of dedicated GDDR5 video memory (Core i5/i3 processors) Supports Optimus Supports FPS (GPU Performance Scaling)
Panel	35.6 cm (14.0-in) WLED, anti glare, slim-flat (3.0 mm), eDP, narrow bezel, touch; 16:9 ultra wide aspect ratio High-definition (HD) (1366 × 768), SVA; typical brightness: 220 nits Full high-definition (FHD) (1920 × 1080), UWVA; typical brightness: 250 nits Touch solution with flush glass, multitouch enabled Supports active stylus Supports simultaneous pen and touch
Memory	Two SODIMM slots, non-accessible/non-upgradeable DDR4-2400 dual channel support Supports up to 16 GB maximum system memory in the following configurations: <ul style="list-style-type: none">• 16 GB (8 GB × 2)• 12 GB (8 GB × 1 + 4 GB × 1)

Table 1-1 Product components and their descriptions (continued)

Category	Description
	<ul style="list-style-type: none"> 8 GB (8 GB × 1 or 4 GB × 2) 4 GB (4 GB × 1)
Storage	<p>Supports 6.35 cm (2.50 in), 7.2 mm SATA hard drives</p> <p>Support for solid-state drive + hard drive</p> <p>M.2 solid-state drive expansion capability on single hard drive models</p> <p>Accelerometer/hard drive protection support</p> <p>Single hard drive configurations</p> <p>1 TB, 5400 rpm, 7.2 mm</p> <p>500 GB, 5400 rpm, 7.0 mm</p> <p>Solid-state/hard drive configurations</p> <p>1 TB, 5400 rpm, 7.0 mm SSHD with 8 GB NAND</p> <p>Dual storage configurations</p> <p>256 GB, PCIe, solid-state drive + 1 TB hard drive</p> <p>128 GB, SATA-3, TLC, solid-state drive + 1 TB hard drive</p> <p>M.2, SATA-3, solid-state drive</p> <p>128 GB, TLC</p> <p>PCIe, NVMe, M.2 solid-state drives</p> <p>512 GB</p> <p>256 GB</p> <p>Intel Optane (3D Xpoint) Solution PCIe, Gen3 × 2, M.2 solid-state drive</p> <p>16 GB (Optane) + 1 TB, 5400 rpm, 7.2 mm hard drive</p>
Audio	<p>Audio brand: B&O Play</p> <p>Audio control panel: B&O Play Audio Control</p> <p>Supports HP Audio Boost</p> <p>Dual speakers</p>
Video	<p>HP Wide Vision HD Camera - indicator LED, USB2.0, HD BSI sensor, f2.0, WDR, 88° WFOV</p> <p>720p by 30 frames per second</p> <p>Dual array digital microphone with appropriate software - beam forming, echo cancellation, noise suppression</p>
Sensors	<p>Gyroscope/E-compass/Accelerometer</p> <p>Accelerometer (two – one for hard drive protection/CoolSense, the other for panel rotation)</p> <p>Sensor hub</p>
Wireless	<p>Support for Miracast</p> <p>Wi-Fi BIOS SAR</p>

Table 1-1 Product components and their descriptions (continued)

Category	Description
	Integrated wireless options with dual antennas (M.2/PCIe):
	Realtek RTL8822BE 802.11ac 2 × 2 Wi-Fi + Bluetooth® 4.2 Combo Adapter (MU-MIMO supported)
	Integrated wireless options with single antennas (M.2/MIPI/BRI):
	Intel Wireless-AC 9461 802.11ac 1 × 1 Wi-Fi + Bluetooth 5 (non-vPro) (MU-MIMO supported)
	Integrated wireless options with single antenna (M.2/PCIe):
	Realtek RTL8821CE 802.11ac 1 × 1 Wi-Fi + Bluetooth 4.2 Combo Adapter (MU-MIMO supported)
Ports	HP Smart Plug AC adapter (4.5 mm barrel)
	Headphone/microphone combo jack
	High-definition multimedia interface (HDMI) v.1.4, supporting up to 1920 × 1080 at 60 Hz
	Hot plug/unplug and auto detect for correct output to wide-aspect vs. standard aspect video (auto adjust panel resolution to fit embedded panel and external monitor connected)
	USB 3.1 Gen 1 Type A ports (2)
	USB 3.1 Gen 1 Type-C port (supports data transfer)
Media card	Supports microSD/SDHC/SDXC
	Push-push insertion/removal
Internal card expansion	One M.2 slot for WLAN
	One M.2 slot for solid-state drive
Keyboard/pointing devices	Keyboard
	Full-sized, textured, island-style, keyboard (ash gray)
	Full-size, two coat UV paint, island-style keyboard (natural silver, luminous gold)
	Full-size, backlit, two coat UV paint, island-style keyboard (ash silver)
	Full-size, backlit, three coat UV paint, island-style keyboard (natural silver, luminous gold)
	TouchPad requirements
	ClickPad with image sensor
	Multitouch gestures enabled
	Precision Touchpad supported
	Support for modern trackpad gestures
	Taps enabled as default
Power requirements	Battery
	Supports a 3-cell, 41 Whr, polymer/prismatic-mix battery
	Battery life enhancement
	Supports battery fast charge
	AC adapter
	65 W HP Smart AC adapter (non-PFC, standard barrel, 4.5 mm, right angle)

Table 1-1 Product components and their descriptions (continued)

Category	Description
	65 W HP Smart AC adapter (non-PFC, standard barrel, 4.5 mm) for use in Argentina
	65 W EM HP Smart AC adapter (non-PFC, standard barrel, 4.5 mm)
	45 W HP Smart AC adapter (non-PFC, standard barrel, 4.5 mm, right angle)
	45 W HP Smart AC adapter (non-PFC, standard barrel, 4.5 mm) for use in Argentina
	Power cord
	1 m conventional power cord (C5)
	1 m conventional power cord (C5) + Japan plug adapter
Security	Trusted Platform Module (fTPM) 2.0, firmware based
	Kensington Nano Security Lock
	Fingerprint reader (select models)
	U2F (Universal 2nd Factor Authentication)
Operating system	Preinstalled
	Windows® 10 Home 64
	Windows 10 Home 64 Chinese Market CPPP
	Windows 10 Home 64 High-End Chinese Market CPPP
	Windows 10 Home 64 Plus
	Windows 10 Home 64 Plus Single Language
	Windows 10 Home 64 Plus Single Language Africa Market
	Windows 10 Home 64 Plus Single Language APAC EM PPP
	Windows 10 Home 64 Plus Single Language India Market
	Windows 10 Home 64 Plus Single Language Indonesia Market
	Windows 10 Home 64 Single Language
	Windows 10 Home 64 Single Language Africa Market PPP
	Windows 10 Home 64 Single Language APAC EM PPP
	Windows 10 Home 64 Single Language India Market PPP
	Windows 10 Home 64 Single Language Indonesia Market PPP
	Windows 10 Home S 64
	Windows 10 Home S 64 Single Language
	Windows 10 Home S 64 Value
	Windows 10 Pro 64
	FreeDOS 2.0
Serviceability	End-user replaceable parts:
	AC adapter

2 Getting to know your computer

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

Right side

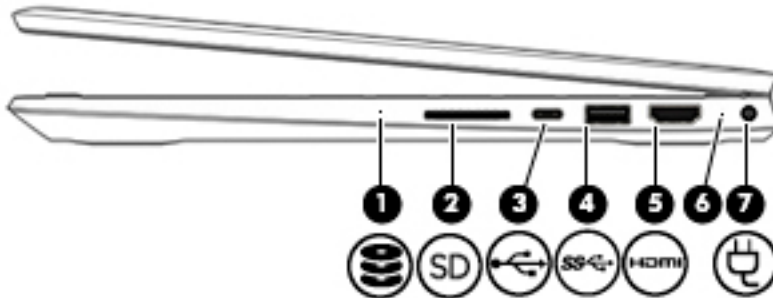


Table 2-1 Right-side components and their descriptions








Component	Description
(1) 	<p>Drive light</p> <ul style="list-style-type: none"> Blinking white: The hard drive is being accessed. Amber: HP 3D DriveGuard has temporarily parked the hard drive.
(2) 	<p>Memory card reader</p> <p>Reads optional memory cards that enable you to store, manage, share, or access information.</p> <p>To insert a card:</p> <ol style="list-style-type: none"> Hold the card label-side up, with connectors facing the computer. Insert the card into the memory card reader, and then press in on the card until it is firmly seated. <p>To remove a card:</p> <ul style="list-style-type: none"> ▲ Press in on the card, and then remove it from the memory card reader.
(3) 	<p>USB Type-C port</p> <p>Connects a USB device, such as a cell phone, camera, activity tracker, or smartwatch, and provides data transfer.</p> <p>NOTE: Cables and/or adapters (purchased separately) may be required.</p>
(4) 	<p>USB SuperSpeed port</p> <p>Connects a USB device, such as a cell phone, camera, activity tracker, or smartwatch, and provides high-speed data transfer.</p>
(5) 	<p>HDMI port</p> <p>Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component, or a high-speed High-Definition Multimedia Interface (HDMI) device.</p>
(6) 	<p>AC adapter and battery light</p> <ul style="list-style-type: none"> White: The AC adapter is connected and the battery is fully charged. Blinking white: The AC adapter is disconnected and the battery has reached a low battery level. Amber: The AC adapter is connected and the battery is charging.

Table 2-1 Right-side components and their descriptions (continued)

Component	Description
	<ul style="list-style-type: none"> Off: The battery is not charging.
(7) 	<p>Power connector</p> <p>Connects an AC adapter.</p>

Left side

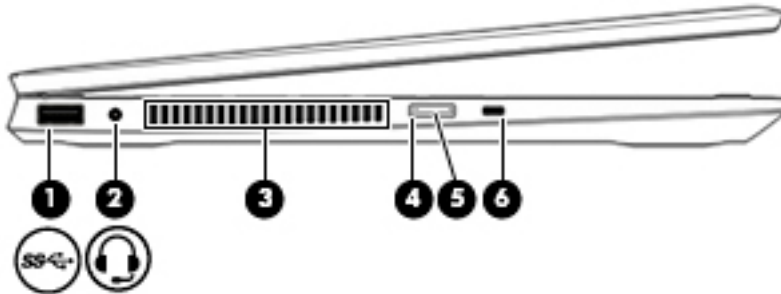


Table 2-2 Left-side components and their descriptions







Component	Description
(1) 	<p>USB SuperSpeed port</p> <p>Connects a USB device, such as a cell phone, camera, activity tracker, or smartwatch, and provides high-speed data transfer.</p>
(2) 	<p>Audio-out (headphone)/Audio-in (microphone) combo jack</p> <p>Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. This jack does not support optional standalone microphones.</p> <p>WARNING! To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, see the <i>Regulatory, Safety, and Environmental Notices</i>.</p> <p>To access this guide:</p> <ul style="list-style-type: none"> ▲ Select the Start button, select HP Help and Support, and then select HP Documentation. <p>NOTE: When a device is connected to the jack, the computer speakers are disabled.</p>
(3)	<p>Vent</p> <p>Enables airflow to cool internal components.</p> <p>NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.</p>
(4) 	<p>Power button</p> <ul style="list-style-type: none"> When the computer is off, press the button to turn on the computer. When the computer is on, press the button briefly to initiate Sleep. When the computer is in the Sleep state, press the button briefly to exit Sleep (select products only). When the computer is in Hibernation, press the button briefly to exit Hibernation. <p>CAUTION: Pressing and holding down the power button results in the loss of unsaved information.</p>

Table 2-2 Left-side components and their descriptions (continued)

Component	Description
	<p>If the computer has stopped responding and shutdown procedures are ineffective, press and hold the power button down for at least 5 seconds to turn off the computer.</p> <p>To learn more about your power settings, see your power options:</p> <ul style="list-style-type: none">▲ Right-click the Power icon , and then select Power Options.
(5) 	<p>Power light</p> <ul style="list-style-type: none">• On: The computer is on.• Blinking: The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other unneeded components.• Off: The computer is off or in Hibernation. Hibernation is a power-saving state that uses the least amount of power.
(6) 	<p>Security cable slot</p> <p>Attaches an optional security cable to the computer.</p> <p>NOTE: The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.</p>

Display

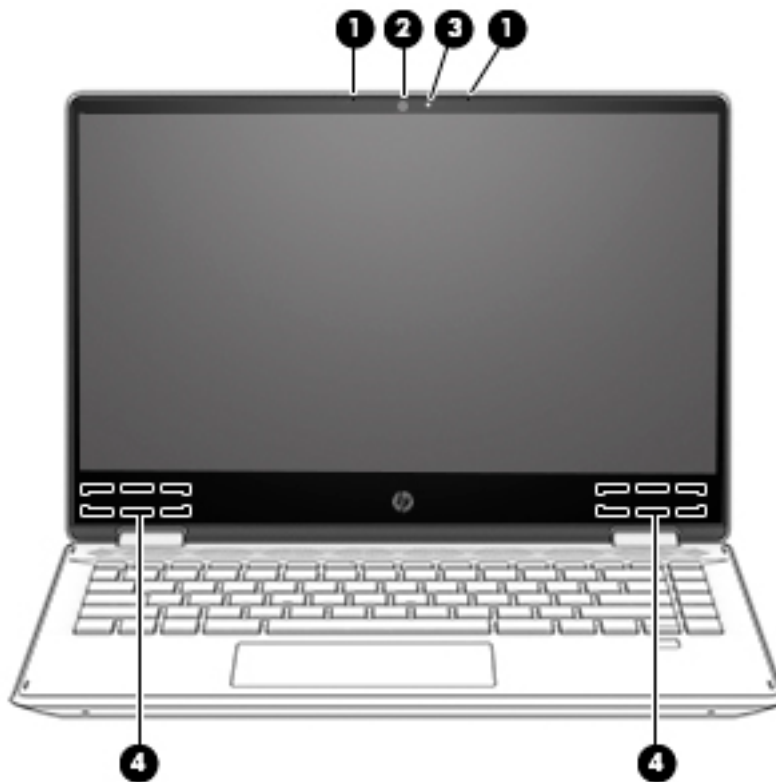


Table 2-3 Display components and their descriptions

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: The camera is in use.
(4) WLAN antenna(s)*	Send and receive wireless signals to communicate with wireless local area networks (WLANs). NOTE: Depending on the model, your computer may have one or two wireless antennas.

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

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

To access this guide:

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

Keyboard area

TouchPad

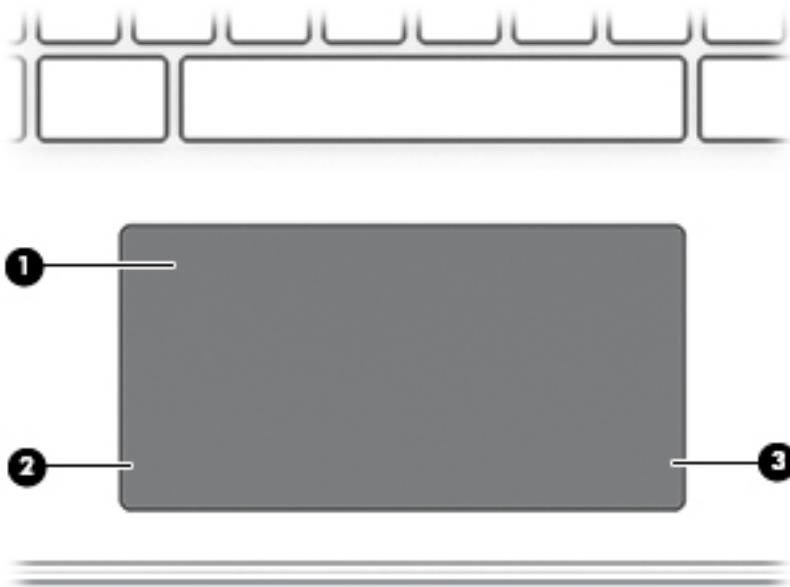


Table 2-4 TouchPad components and their descriptions

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

Lights

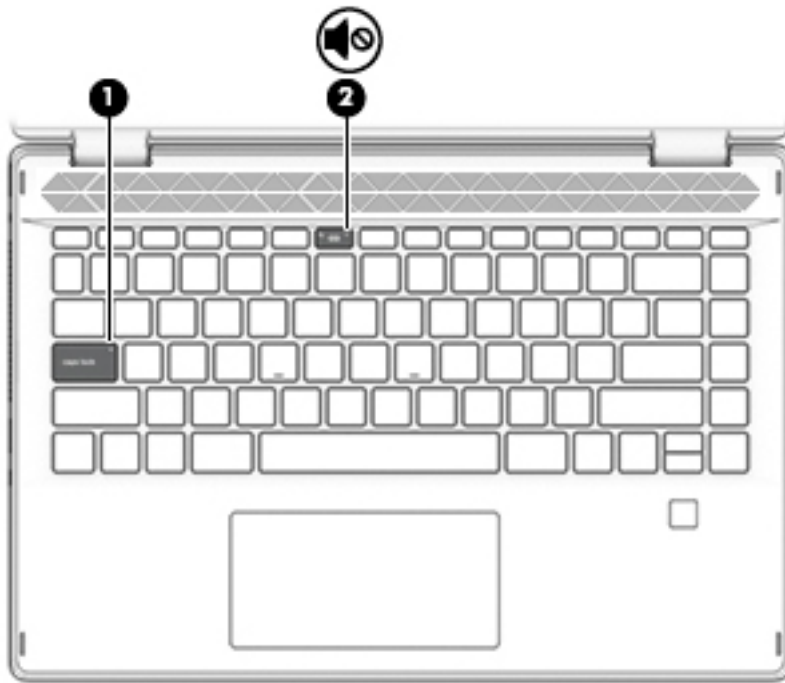



Table 2-5 Lights and their descriptions

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

Speakers and fingerprint reader

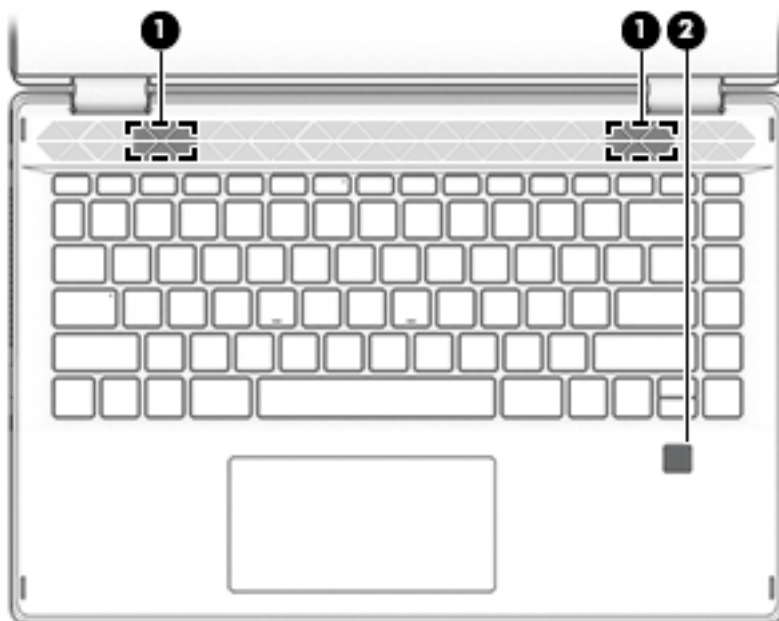


Table 2-6 Speakers and fingerprint reader and their descriptions

Component	Description
(1) Speakers	Produce sound.
(2) Fingerprint reader (select products only)	Allows a fingerprint logon to Windows, instead of a password logon. ▲ To use the fingerprint reader, place your finger on the fingerprint reader until it reads your fingerprint.

Special keys

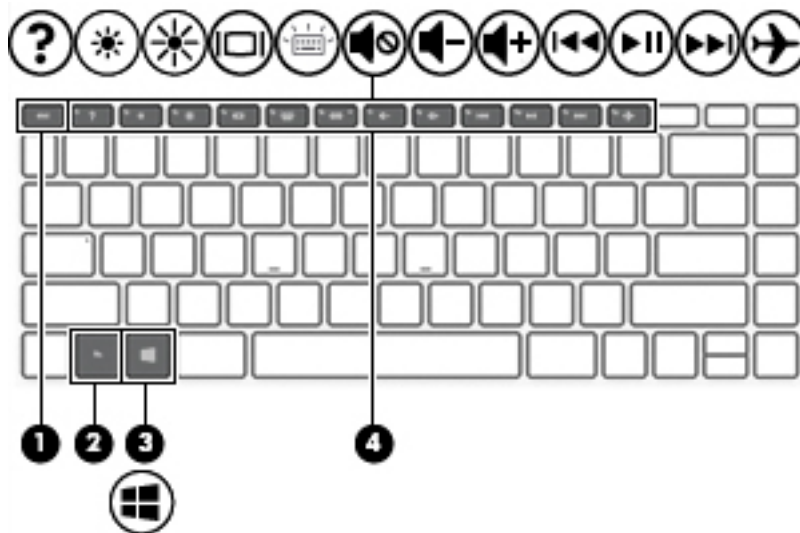



Table 2-7 Special keys and their descriptions

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

Bottom

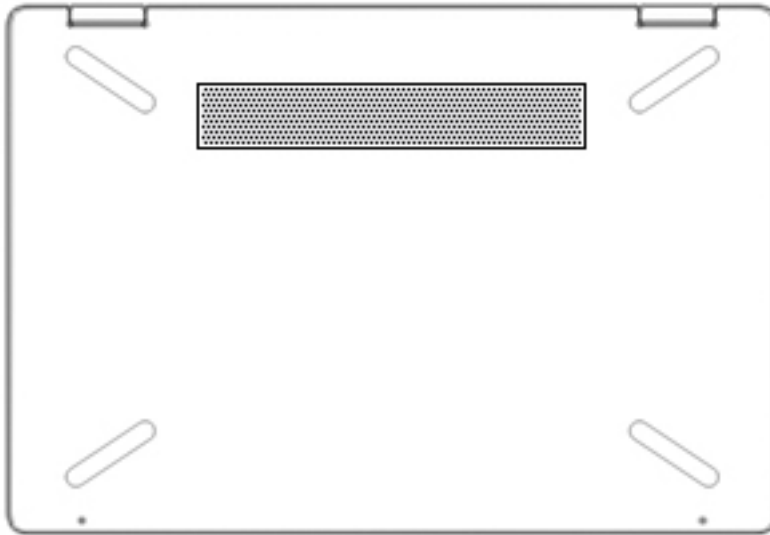


Table 2-8 Bottom components and their descriptions

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

Labels

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

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

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

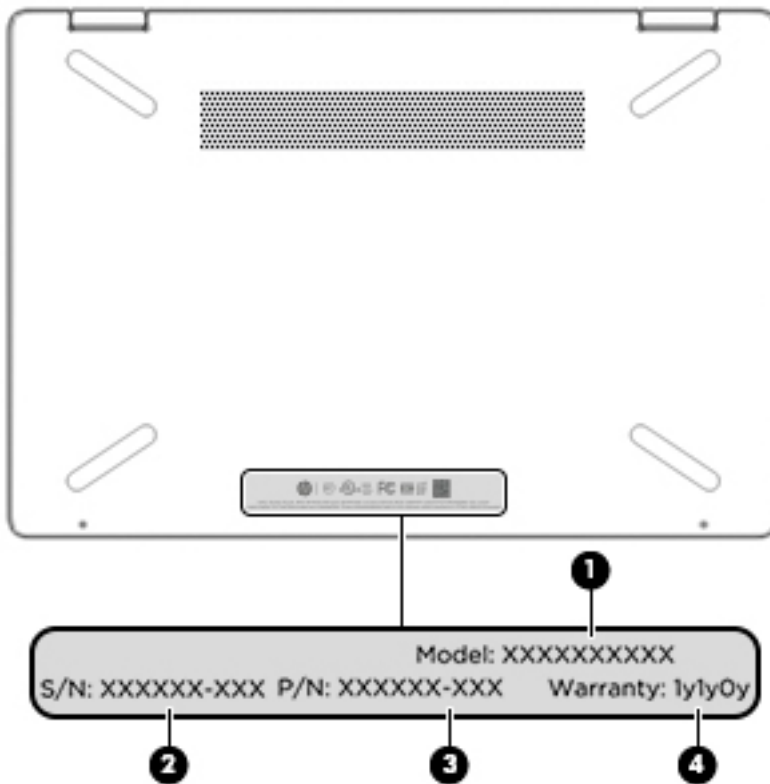


Table 2-9 Service label components

Component
(1) Model number
(2) Serial number
(3) Part number
(4) Warranty period

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

3 Illustrated parts catalog

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

Computer major components

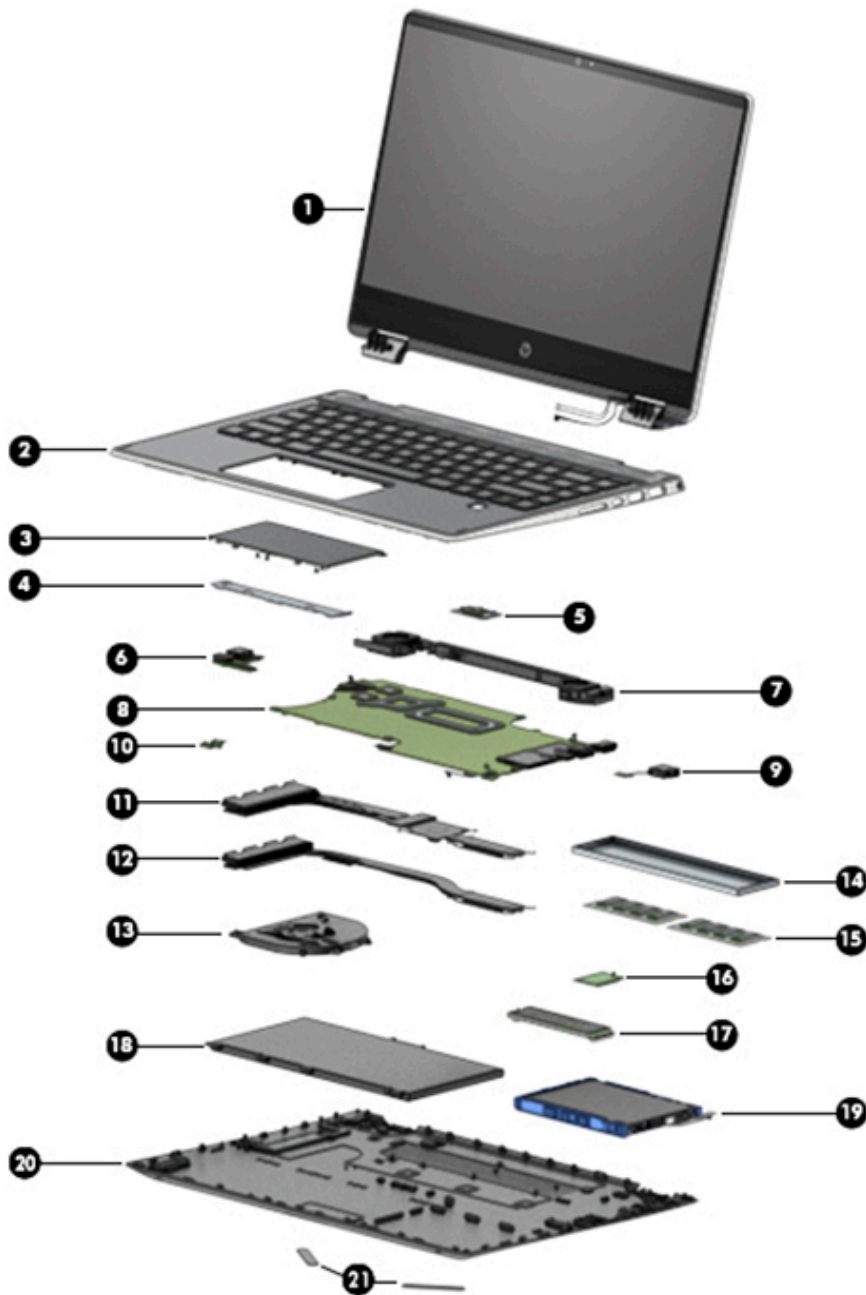


Table 3-1 Computer major components and their descriptions

Item	Component	Spare part number
(1)	Display assembly: The display assembly is spared at the subcomponent level only. For more display assembly spare part information, see Display assembly subcomponents on page 19 .	
(2)	Keyboard/top cover (includes keyboard cable) For a detailed list of country codes, see Keyboard/top cover on page 68 For use in models with a backlit keyboard:	
	<ul style="list-style-type: none"> Fingerprint reader; top cover: mineral silver; keyboard: natural silver 	L53785-xx1
	<ul style="list-style-type: none"> Fingerprint reader; top cover: warm gold; keyboard: luminous gold 	L53787-xx1
	<ul style="list-style-type: none"> Fingerprint reader; top cover: pale gold; keyboard: ash gray 	L53793-xx1
	<ul style="list-style-type: none"> Fingerprint reader; top cover: natural silver; keyboard: ash gray 	L53797-xx1
	<ul style="list-style-type: none"> No fingerprint reader; top cover: cloud blue; keyboard: ash gray 	L53789-xx1
	<ul style="list-style-type: none"> No fingerprint reader; top cover: pale gold; keyboard: ash gray 	L53791-xx1
	<ul style="list-style-type: none"> No fingerprint reader; top cover: natural silver; keyboard: ash gray 	L53795-xx1
	For use in models without a backlit keyboard:	
	<ul style="list-style-type: none"> Fingerprint reader; top cover: mineral silver; keyboard: natural silver 	L53784-xx1
	<ul style="list-style-type: none"> Fingerprint reader; top cover: warm gold; keyboard: luminous gold 	L53786-xx1
	<ul style="list-style-type: none"> Fingerprint reader; top cover: pale gold; keyboard: ash gray 	L53792-xx1
	<ul style="list-style-type: none"> Fingerprint reader; top cover: natural silver; keyboard: ash gray 	L53796-xx1
	<ul style="list-style-type: none"> No fingerprint reader; top cover: cloud blue; keyboard: ash gray 	L53788-xx1
	<ul style="list-style-type: none"> No fingerprint reader; top cover: pale gold; keyboard: ash gray 	L53790-xx1
	<ul style="list-style-type: none"> No fingerprint reader; top cover: natural silver; keyboard: ash gray 	L53794-xx1
(3)	TouchPad (includes bracket) NOTE: The TouchPad spare part kit does not include the TouchPad cable. The TouchPad cable is available using spare part number L51092-001.	
	Ash silver	L51115-001
	Natural silver	L51116-001
	Luminous gold	L51117-001
(4)	TouchPad bracket	included with TouchPad
(5)	Power button board NOTE: The power button board spare part kit does not include the cable. The cable is available using spare part number L51094-001.	L51112-001
(6)	USB/audio board (includes audio jack and USB port) NOTE: The USB/audio board spare part kit does not include the cable. The cable is available using spare part number L51093-001.	
	For use in models without a fingerprint reader	L51109-001
	For use in models with a fingerprint reader	L51110-001

Table 3-1 Computer major components and their descriptions (continued)

Item	Component	Spare part number
(7)	Speakers (include left and right speakers and cable)	L51127-001
(8)	System board (includes processor) NOTE: All system board spare part kits include replacement thermal material. All system boards use the following part numbers: xxxxxx-001: Non-Windows operating systems xxxxxx-601: Windows operating system For use in models with discrete graphics memory:	
	• Intel Core i7-8565U processor and 2 GB GeForce MX250 graphics memory	L51138-xx1
	• Intel Core i5-8265U processor and 2 GB GeForce MX130 graphics memory	L51137-xx1
	• Intel Core i3-8145U processor and 2 GB GeForce MX130 graphics memory	L51136-xx1
	For use in models with UMA graphics memory:	
	• Intel Core i7-8565U processor	L51134-xx1
	• Intel Core i5-8265U processor	L51133-xx1
	• Intel Core i3-8145U processor	L51132-xx1
	• Pentium N5000 processor	L51135-xx1
	Thermal pad , for use in models with discrete graphics memory (not illustrated)	L21302-001
(9)	Power connector cable	L51098-001
(10)	Fingerprint reader	
	Ash silver	L51113-001
	Natural silver	L51840-001
	Luminous gold	L51841-001
(11)	Heat sink (includes replacement thermal material) For use in models with an Intel Core processor and with discrete graphics.	L51101-001
(12)	Heat sink (includes replacement thermal material) For use in models with a fan with an Intel Core processor and with UMA graphics	L51100-001
	Heat sink (includes replacement thermal material) (not illustrated) For use in fanless models with an Intel Pentium processor and with UMA graphics (not illustrated)	L51099-001
(13)	Fan	L51102-001
(14)	Memory cover	L51104-001
(15)	Memory module (DDR4)	
	8 GB	937236-855
	4 GB	L10598-855
(16)	WLAN module	

Table 3-1 Computer major components and their descriptions (continued)

Item	Component	Spare part number
	Realtek RTL8822BE 802.11ac 2 × 2 Wi-Fi + Bluetooth 4.2	924813-855
	Realtek RTL8821CE 802.11ac 1 × 1 Wi-Fi + Bluetooth 4.2	L17365-005
(17)	Solid-state drive (M.2)	
	512 GB, PCIe, TLC	L60104-001
	512 GB, PCIe, value	L51130-001
	256 GB, PCIe	L51129-001
	128 GB, SATA-3, TLC	L51128-001
	16 GB, PCIe (Optane Memory Module)	L51131-001
(18)	Battery (3-cell, 41 Whr)	L11119-856
(19)	Hard drive	
	1 TB, 5400 rpm, hybrid 8 GB SSD	924036-860
	1 TB, 5400 rpm	L30422-006
	500 GB, 5400 rpm	778186-005
(20)	Bottom cover	
	For use in models with discrete graphics memory:	
	• Ash gray	L51085-001
	• Natural silver	L51089-001
	• Luminous gold	L51090-001
	For use in models with UMA graphics memory:	
	• Ash gray	L51086-001
	• Natural silver	L51087-001
	• Luminous gold	L51088-001
(21)	Rubber Foot Kit	
	Ash gray	L51123-001
	Natural silver	L51124-001
	Power button (not illustrated)	
	Mineral silver	L54104-001
	Warm gold	L54104-002
	Cloud blue	L54104-003
	Pale gold	L54104-004
	Natural silver	L54104-005
	Luminous gold	L51125-001

Display assembly subcomponents

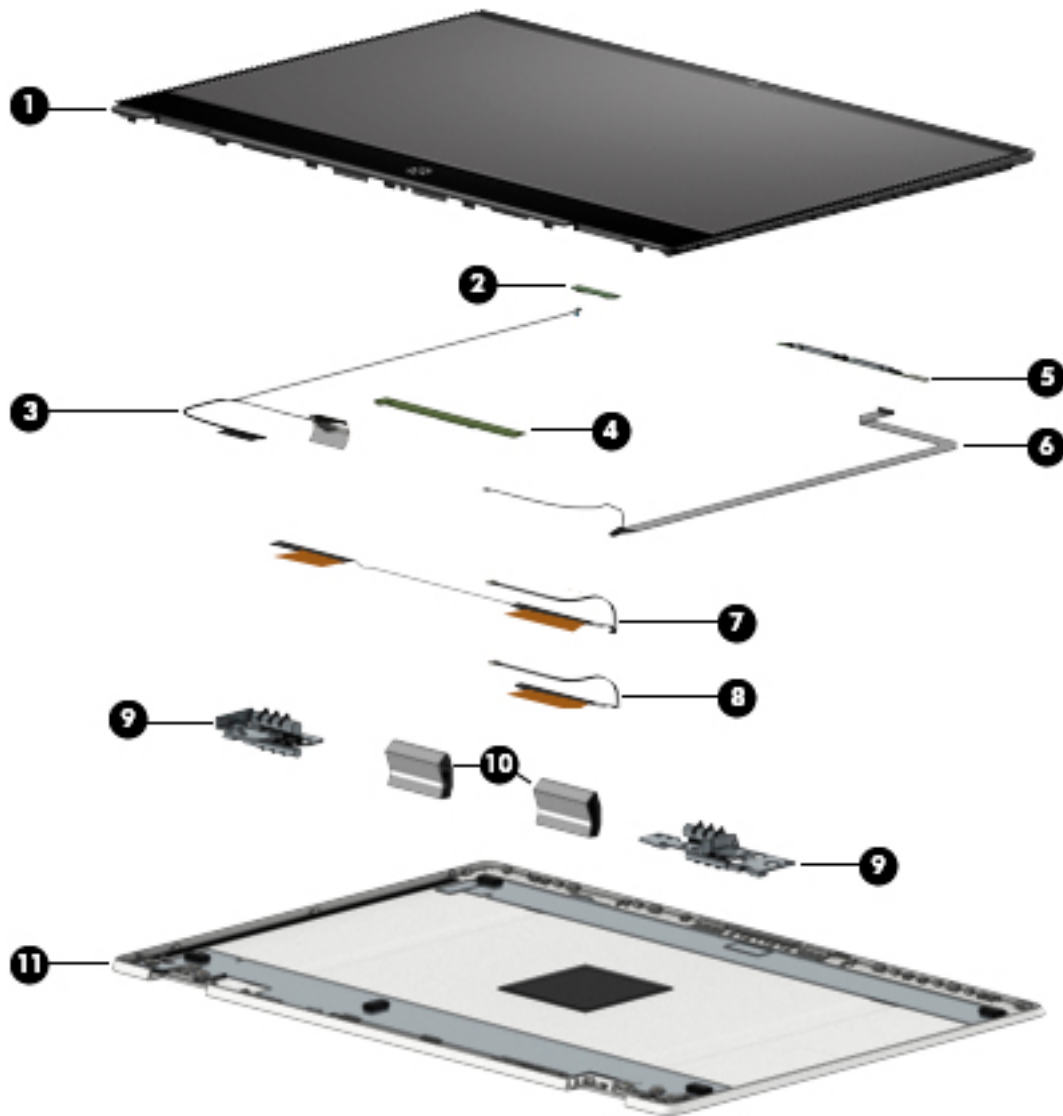


Table 3-2 Display assembly components and their descriptions

Item	Component	Spare part number
(1)	Display panel	
	FHD, 250 nit	L51119-001
	FHD, 400 nit	L54600-001
	HD	L51120-001
(2)	G-sensor board	L51111-001
(3)	Display/touch control cable	L51097-001
(4)	Touch control board	L51114-001
(5)	Camera/microphone module (includes double-sided adhesive)	L51139-001

Table 3-2 Display assembly components and their descriptions (continued)

Item	Component	Spare part number
(6)	Webcam cable	L51091-001
(7)	WLAN antenna Dual	L51076-001
(8)	WLAN antenna Single	L52530-001
(9)	Display Hinge Kit (includes left and right display hinges) For use in models with an FHD display panel	L51105-001
	For use in models with an HD display panel	L51106-001
(10)	Hinge covers For use in models with an FHD display panel	L51107-001
	For use in models with an HD display panel	L51108-001
(11)	Display enclosure For use in models with an HD display	
	<ul style="list-style-type: none">Natural silver	L51077-001
	<ul style="list-style-type: none">Pale gold	L51078-001
	<ul style="list-style-type: none">Cloud blue	L51079-001
	For use in models with an FHD display	
	<ul style="list-style-type: none">Natural silver	L51080-001
	<ul style="list-style-type: none">Pale gold	L51081-001
	<ul style="list-style-type: none">Cloud blue	L51082-001
	<ul style="list-style-type: none">Mineral silver	L51083-001
	<ul style="list-style-type: none">Warm gold	L51084-001

Mass storage devices

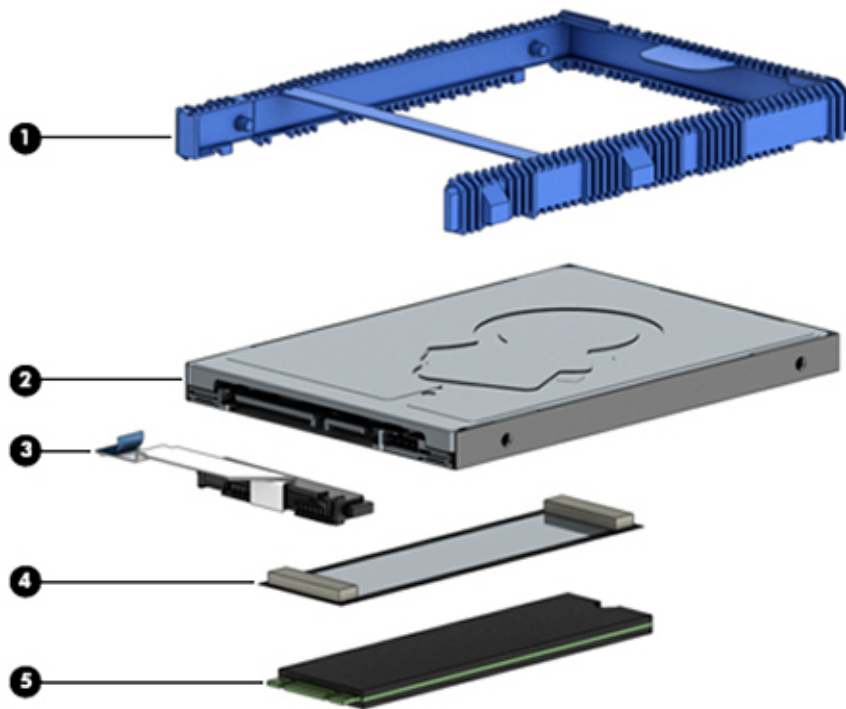


Table 3-3 Mass storage devices and their descriptions

Item	Component	Spare part number
(1)	Hard drive cover	
	For use in models without a fingerprint reader	L51121-001
	For use in models with a fingerprint reader	L51122-001
(2)	Hard drive	
	1 TB, 5400 rpm, hybrid 8 GB SSD	924036-860
	1 TB, 5400 rpm	L30422-006
	500 GB, 5400 rpm	778186-005
(3)	Hard drive cable	L51095-001
(4)	Solid-state drive module foil cover	L51103-001
(5)	Solid-state drive (M.2)	
	512 GB, PCIe, TLC	L60104-001
	512 GB, PCIe, value	L51130-001
	256 GB, PCIe	L51129-001
	128 GB, SATA-3, TLC	L51128-001
	16 GB, PCIe (Optane Memory Module)	L51131-001

Cables

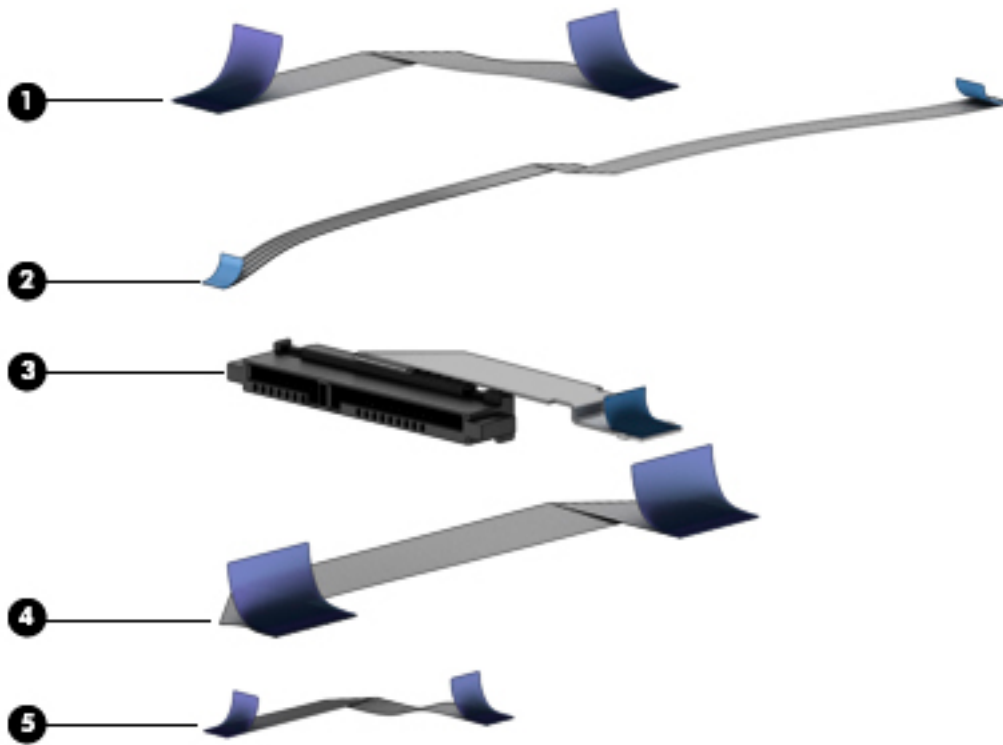


Table 3-4 Cables and their descriptions

Item	Component	Spare part number
(1)	TouchPad cable	L51092-001
(2)	Power button board cable	L51094-001
(3)	Hard drive cable	L51095-001
(4)	USB/audio board cable	L51093-001
(5)	Fingerprint reader cable	L51096-001

Miscellaneous parts

Table 3-5 Miscellaneous parts and their descriptions

Component	Spare part number
65 W HP Smart AC adapter (non-PFC, EM, RC, 4.5 mm)	913691-850
65 W AC adapter (non-PFC, S-3P, 4.5 mm)	710412-001
65 W AC adapter (non-PFC, S-3P, 4.5 mm) for use in Argentina	710340-850
45 W HP Smart AC adapter (non-PFC, RC, 4.5 mm, non-slim)	741727-001
45 W HP Smart AC adapter (non-PFC, RC, 4.5 mm) for use in Argentina	741553-852
Power cord, (C5, 1.00 m)	
For use in Argentina	L19357-001
For use in Australia	L19358-001
For use in Brazil	L19359-001
For use in Denmark	L19360-001
For use in Europe	L19361-001
For use in India	L19363-001
For use in Israel	L19362-001
For use in Italy	L19364-001
For use in Japan	L19365-001
For use in North America	L19367-001
For use in the People's Republic of China	L19368-001
For use in South Africa	L19369-001
For use in South Korea	L19366-001
For use in Switzerland	L19370-001
For use in Taiwan	L19372-001
For use in Thailand	L19371-001
For use in the United Kingdom	L19373-001
Power cord, (duckhead, for use in Japan)	L33157-001
Miscellaneous Kit (includes heat sink protective cover, conductive tape, and gasket, WLAN module gasket)	L54102-001
Stylus, active pen	910942-001
Pen tip	L04536-001
Adapter, USB-C-to-USB-A	833960-001
HP USB External DVD-RW Drive	747080-001
HP HDMI-to-VGA adapter	701943-001
HP USB-to-Gigabit RJ-45 adapter	829941-001

Table 3-5 Miscellaneous parts and their descriptions (continued)

Component	Spare part number
HP USB-C-to-RJ-45 adapter	855560-001
Screw Kit	L51126-001

4 Removal and replacement procedures preliminary requirements


Tools required

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

- Non-marking, non-conductive pry tool
- Magnetic Phillips P1 screwdriver

Service considerations


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

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

Plastic parts

 **IMPORTANT:** Using excessive force during disassembly and reassembly can damage plastic parts.

Cables and connectors

 **IMPORTANT:** 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



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

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

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

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

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

Avoid dropping drives from any height onto any surface.

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

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

Avoid exposing a drive to temperature extremes or liquids.

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

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.

Electrostatic discharge information

A sudden discharge of static electricity from your finger or other conductor can destroy static-sensitive devices or microcircuitry. Often the spark is neither felt nor heard, but damage occurs. An electronic device exposed to electrostatic discharge (ESD) may not appear to be affected at all and can work perfectly throughout a normal cycle. The device may function normally for a while, but it has been degraded in the internal layers, reducing its life expectancy.

Networks built into many integrated circuits provide some protection, but in many cases, the discharge contains enough power to alter device parameters or melt silicon junctions.



IMPORTANT: To prevent damage to the device 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.

Generating static electricity

Note the following:

- Different activities generate different amounts of static electricity.
- Static electricity increases as humidity decreases.

Table 4-1 Static electricity occurrence based on activity and humidity

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

Electronic components are then multi-packaged inside plastic tubes, trays, or Styrofoam.



NOTE: As little as 700 volts can degrade a product.

Preventing electrostatic damage to equipment

Many electronic components are sensitive to ESD. Circuitry design and structure determine the degree of sensitivity. The following packaging and grounding precautions are necessary to prevent static electricity damage to electronic components.

- To avoid hand contact, transport products in static-safe containers such as tubes, bags, or boxes.
- Protect all electrostatic parts and assemblies with conductive or approved containers or packaging.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free stations.
- Place items on a grounded surface before removing them from their container.
- Always be properly grounded when touching a sensitive component or assembly.

- Avoid contact with pins, leads, or circuitry.
- Place reusable electrostatic-sensitive parts from assemblies in protective packaging or conductive foam.

Personal grounding methods and equipment

Use the following equipment to prevent static electricity damage to electronic components:

- **Wrist straps** are flexible straps with a maximum of one-megohm \pm 10% resistance in the ground cords. To provide proper ground, a strap must be worn snug against bare skin. The ground cord must be connected and fit snugly into the banana plug connector on the grounding mat or workstation.
- **Heel straps/Toe straps/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 them on both feet with a maximum of one-megohm \pm 10% resistance between the operator and ground.

Table 4-2 Static shielding protection levels

Static shielding protection levels	
Method	Voltage
Antistatic plastic	1,500
Carbon-loaded plastic	7,500
Metallized laminate	15,000

Grounding the work area

To prevent static damage at the work area, use the following precautions:

- Cover the work surface with approved static-dissipative material. Provide a wrist strap connected to the work surface and properly grounded tools and equipment.
- Use static-dissipative mats, foot straps, or air ionizers to give added protection.
- Handle electrostatic sensitive components, parts, and assemblies by the case or PCB laminate. Handle them only at static-free work areas.
- Turn off power and input signals before inserting and removing connectors or test equipment.
- Use fixtures made of static-safe materials when fixtures must directly contact dissipative surfaces.
- Keep work area free of nonconductive materials such as ordinary plastic assembly aids and Styrofoam.
- Use field service tools, such as cutters, screwdrivers, and vacuums, that are conductive.

Recommended materials and equipment

Materials and equipment that are recommended for use in preventing static electricity include:

- Antistatic tape
- Antistatic smocks, aprons, or sleeve protectors
- Conductive bins and other assembly or soldering aids
- Conductive foam
- Conductive tabletop workstations with ground cord of one-megohm \pm 10% resistance
- Static-dissipative table or floor mats with hard tie to ground


- Field service kits
- Static awareness labels
- Wrist straps and footwear straps providing one-megohm +/- 10% resistance
- Material handling packages
- Conductive plastic bags
- Conductive plastic tubes
- Conductive tote boxes
- Opaque shielding bags
- Transparent metallized shielding bags
- Transparent shielding tubes

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.

5 Removal and replacement procedures for authorized service provider parts

 **IMPORTANT:** 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.

 **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.

Component replacement procedures

There are as many as 50 screws that must be removed, replaced, and/or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

Preparation for disassembly

See [Removal and replacement procedures preliminary requirements on page 25](#) for initial safety procedures.

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 unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.

Bottom cover and Rubber Foot Kit

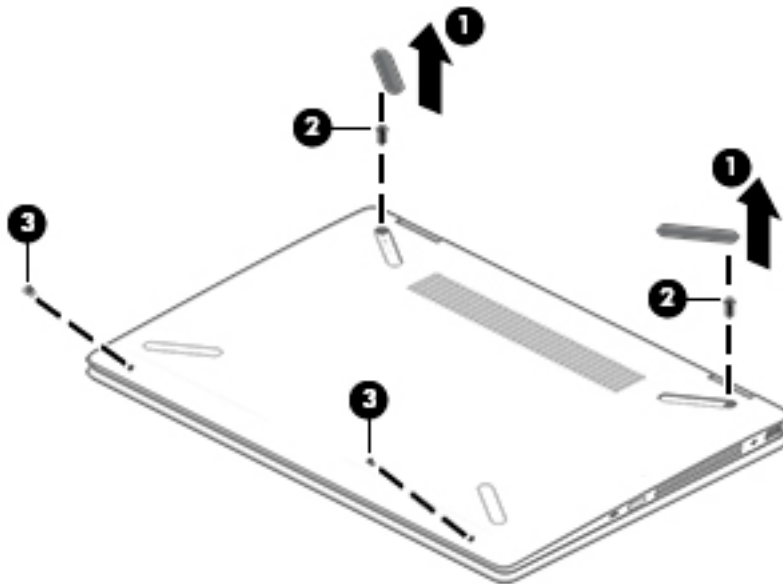
Table 5-1 Bottom cover and Rubber Foot Kit descriptions and part numbers

Description	Spare part number
Bottom cover for use in models with discrete graphics memory:	
<ul style="list-style-type: none">Ash gray	L51085-001
<ul style="list-style-type: none">Natural silver	L51089-001
<ul style="list-style-type: none">Luminous gold	L51090-001
Bottom cover for use in models with UMA graphics memory:	
<ul style="list-style-type: none">Ash gray	L51086-001
<ul style="list-style-type: none">Natural silver	L51087-001
<ul style="list-style-type: none">Luminous gold	L51088-001
Rubber Foot Kit:	
<ul style="list-style-type: none">Ash gray	L51123-001
<ul style="list-style-type: none">Natural silver	L51124-001
<ul style="list-style-type: none">Luminous gold	L51125-001

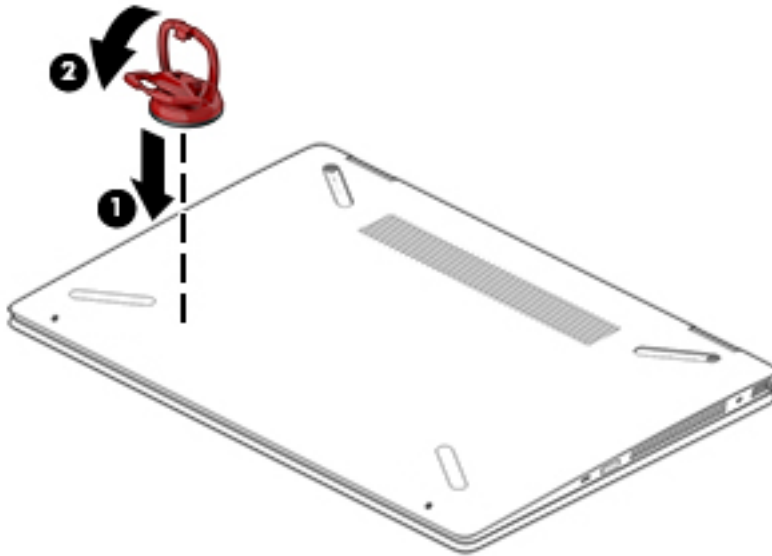
▲ Prepare the computer for disassembly ([Preparation for disassembly on page 30](#)).

Remove the bottom cover:

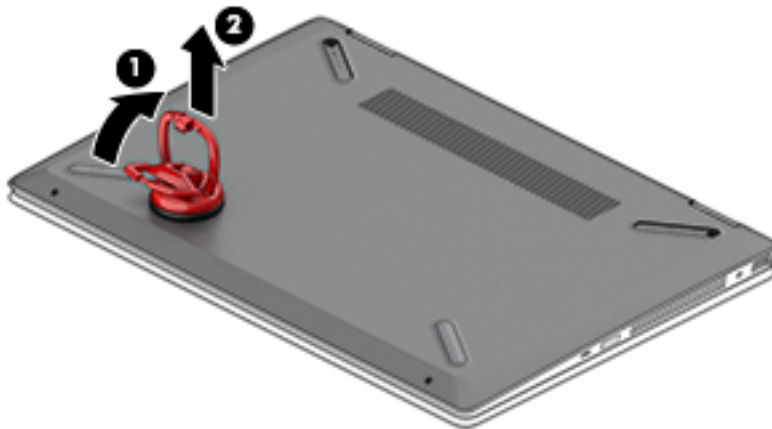
1. Peel the two upper rubber feet off the bottom of the computer **(1)**.
2. Remove the two Phillips M2.0 × 8.0 screws from under the feet **(2)** and the two Phillips M2.0 × 4.0 screws from the bottom edge **(3)**.



3. Place a suction cup on the bottom cover **(1)**, and then pull the lever to secure the cup **(2)**.

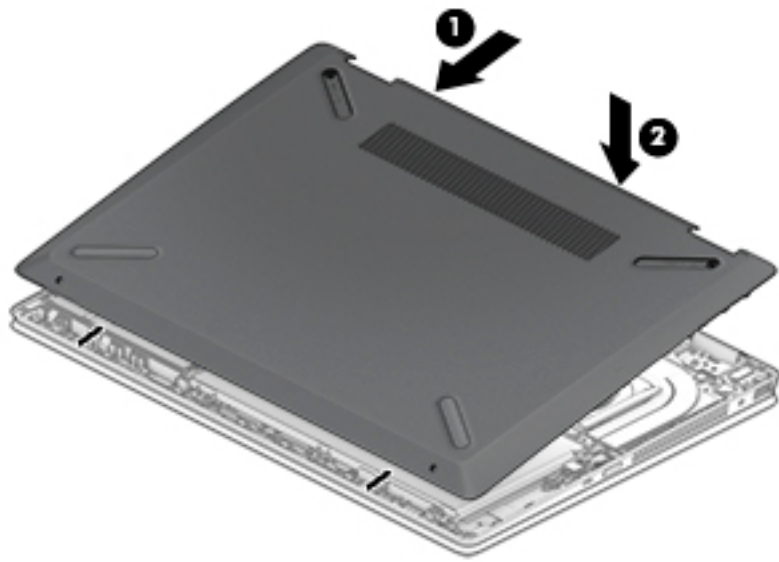


4. Use the suction cup handle to pull the bottom cover up to disengage it from the computer **(1)**, and then remove the bottom cover from the computer **(2)**.



To install the bottom cover:

1. With the computer upside down, place the front of the cover on the top of the computer **(1)**, and then rotate the cover into place **(2)**.



2. Replace the screws and feet.

Battery

Table 5-2 Battery description and part number

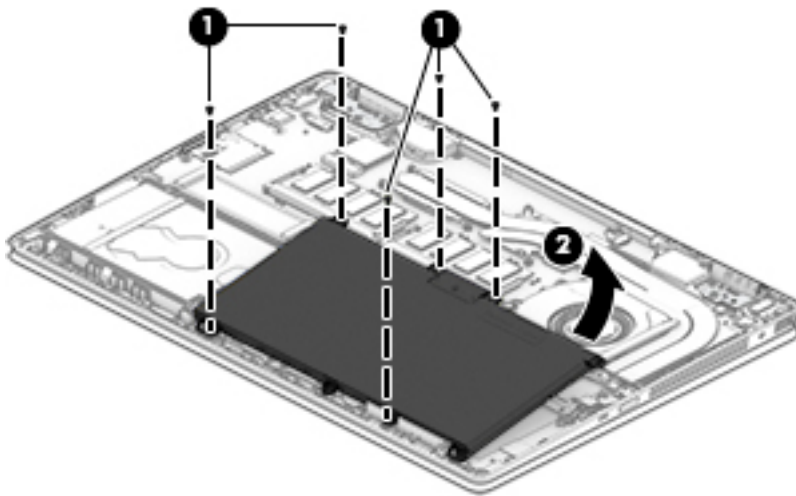
Description	Spare part number
Battery (3-cell, 41 Whr)	L11119-856

Before removing the battery, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 30](#)).
2. Remove the bottom cover (see [Bottom cover and Rubber Foot Kit on page 31](#)).

Remove the battery:

1. Remove the five Phillips M2.0 × 3.0 screws (**1**) that secure the battery to the computer.
2. Remove the battery from the computer (**2**).




Reverse this procedure to install the battery.

WLAN module

Table 5-3 WLAN module descriptions and part numbers

Description	Spare part number
Realtek RTL8821CE 802.11ac 1 × 1 Wi-Fi + Bluetooth 4.2	L17365-005
Realtek RTL8822BE 802.11ac 2 × 2 Wi-Fi + Bluetooth 4.2	924813-855
WLAN module gasket (included in Miscellaneous kit)	L54102-001

 **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. Prepare the computer for disassembly ([Preparation for disassembly on page 30](#)).
2. Remove the bottom cover (see [Bottom cover and Rubber Foot Kit on page 31](#)).
3. Disconnect the battery (see [Battery on page 34](#)).

Remove the WLAN module:

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

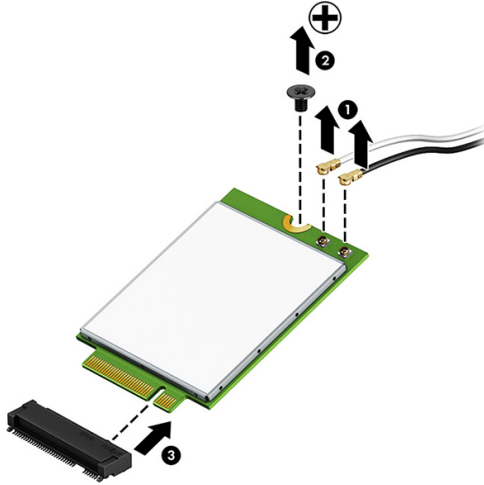


NOTE: Models have either one or two WLAN antennas. On models with two antennas, the #1/white WLAN antenna cable connects to the WLAN module #1/Main terminal. The #2/black WLAN antenna cable connects to the WLAN module #1/Aux terminal.

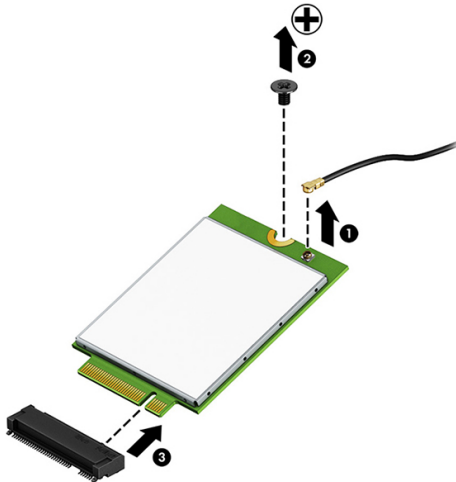
2. Remove the Phillips M2.0 × 2.5 screw **(2)** that secures the WLAN module to the bottom cover. (The WLAN module tilts up.)

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

Models with two antennas



Models with one antenna



NOTE: If the WLAN antenna is not connected to the terminal on the WLAN module, a protective sleeve must be installed on the antenna connector, as shown in the following illustration.



Reverse this procedure to install the WLAN module.

Hard drive and hard drive cover

Table 5-4 Hard drive and hard drive cover descriptions and part numbers

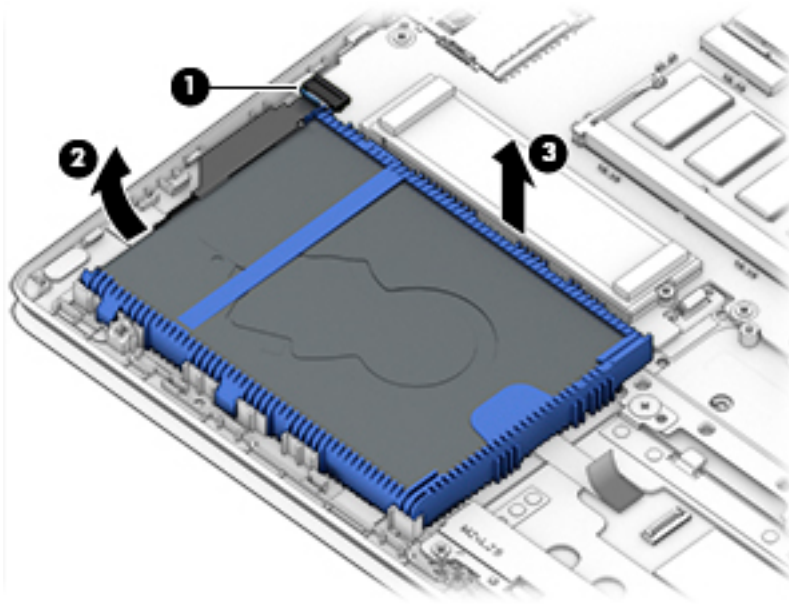
Description	Spare part number
Hard drive, 1 TB, 5400 rpm, hybrid 8 GB SSD	924036-860
Hard drive, 1 TB, 5400 rpm	L30422-006
Hard drive, 500 GB, 5400 rpm	778186-005
Hard drive cover for use in models without a fingerprint reader	L51121-001
Hard drive cover for use in models with a fingerprint reader	L51122-001

Before removing the hard drive, follow these steps:

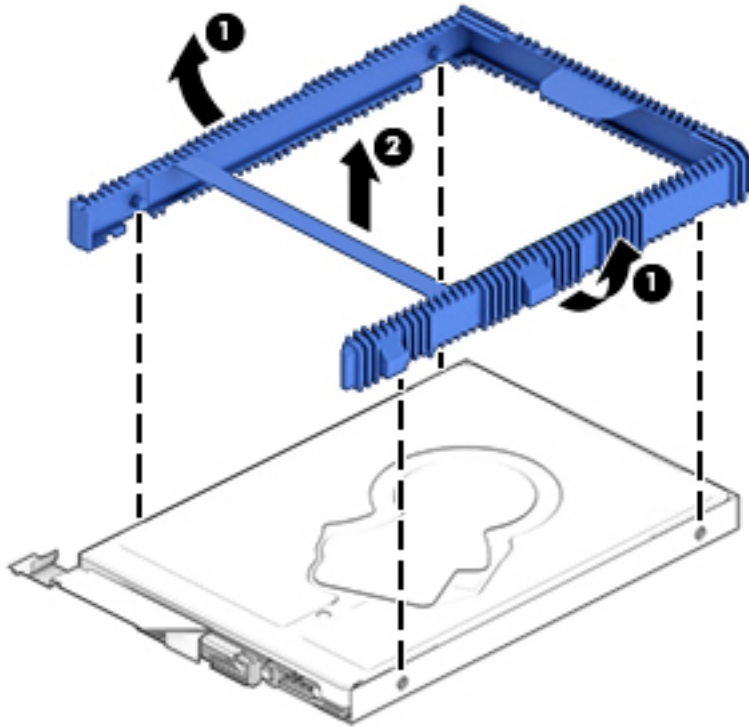
1. Prepare the computer for disassembly ([Preparation for disassembly on page 30](#)).
2. Remove the bottom cover (see [Bottom cover and Rubber Foot Kit on page 31](#)).
3. Disconnect the battery (see [Battery on page 34](#)).

Remove the hard drive:

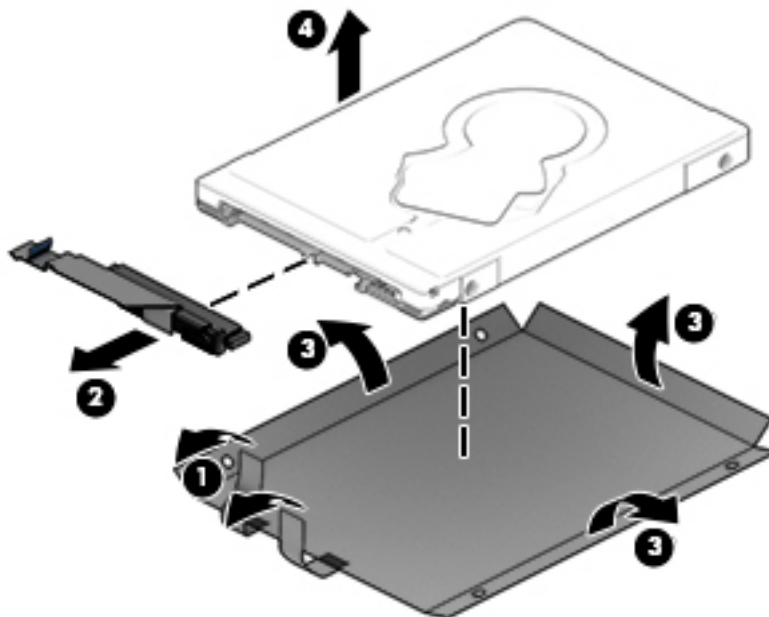
1. Disconnect the hard drive cable from the system board ZIF connector **(1)**.
2. Lift up the connector side of the hard drive **(2)**, and then remove the hard drive from the computer **(3)**.



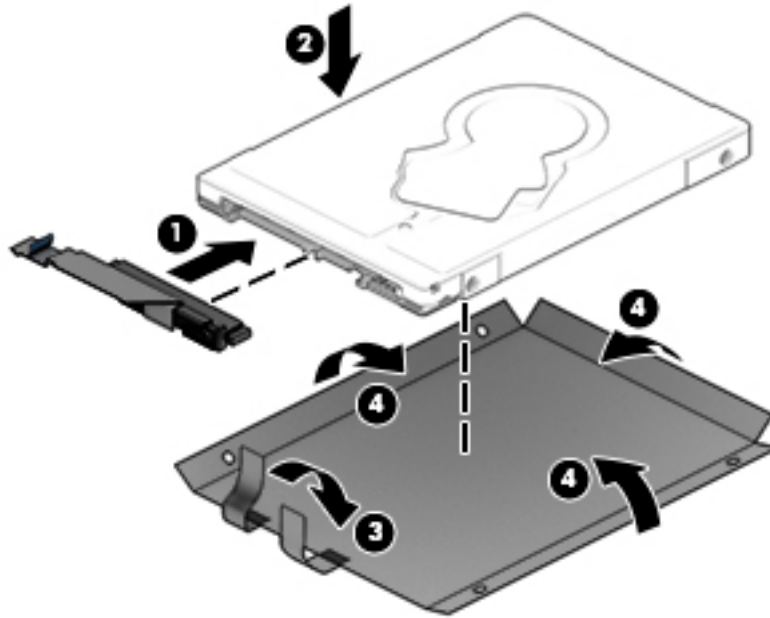
3. If it is necessary to remove the rubber hard drive cover, pull the sides of the cover outward **(1)**, and then remove the cover from the hard drive **(2)**.



4. If it is necessary to remove the foil from the hard drive, lift the two foil tabs from on top of the connector **(1)**, disconnect the connector from the rear of the drive **(2)**, pull to disengage the sides of the foil **(3)**, and then remove the hard drive from the foil **(4)**.



5. If it is necessary to install foil on the hard drive, insert the connector onto the rear of the drive **(1)**, center the hard drive to the foil **(2)**, place the foil tabs over the connector **(3)**, and then adhere the sides of foil onto the sides of the hard drive **(4)**.



Reverse this procedure to reassemble and install the hard drive.

Solid-state drive

Table 5-5 Solid-state drive descriptions and part numbers

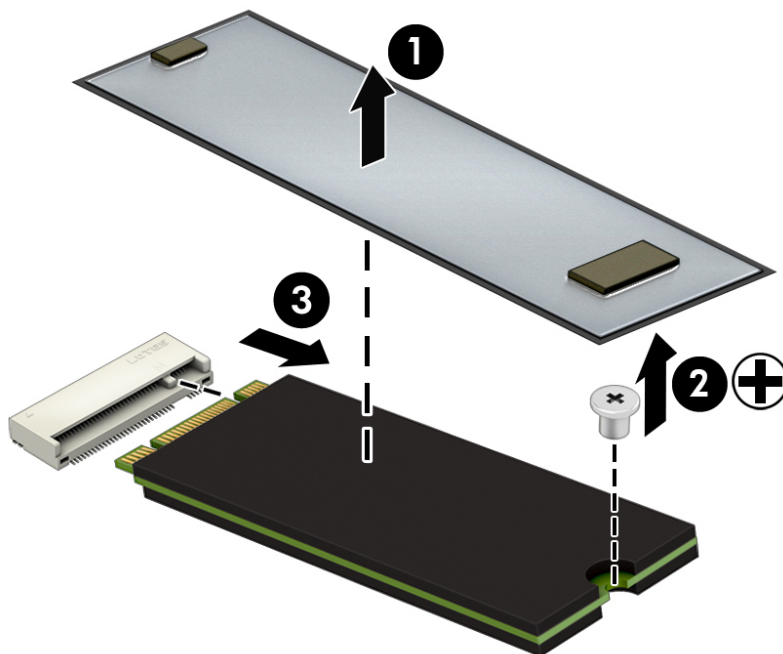
Description	Spare part number
512 GB, PCIe, TLC	L60104-001
512 GB, PCIe, value	L51130-001
256 GB, PCIe	L51129-001
128 GB, SATA-3, TLC	L51128-001
16 GB, PCIe (Optane Memory Module)	L51131-001
Solid-state drive module foil cover	L51103-001

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

1. Prepare the computer for disassembly ([Preparation for disassembly on page 30](#)).
2. Remove the bottom cover (see [Bottom cover and Rubber Foot Kit on page 31](#)).
3. Remove the battery (see [Battery on page 34](#)).

Remove the solid-state drive:

1. Remove the cover from on top of the drive **(1)**.
2. Remove the Phillips M2.0 × 3.0 screw **(2)**, and then pull the solid-state drive module from the socket **(3)**.



Reverse this procedure to install the solid-state drive.

Memory module and cover

Table 5-6 Memory module descriptions and part numbers

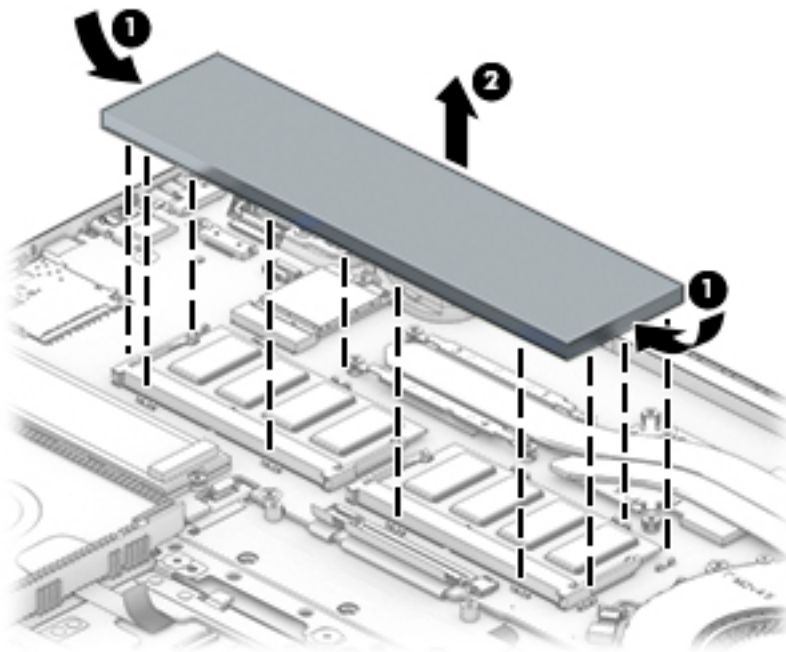
Description	Spare part number
Memory cover	L51104-001
Memory module, 8 GB	937236-855
Memory module, 4 GB	L10598-855

Before removing the memory modules, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 30](#)).
2. Remove the bottom cover (see [Bottom cover and Rubber Foot Kit on page 31](#)).
3. Remove the battery (see [Battery on page 34](#)).

Remove the memory modules:

1. Squeeze the ends of the memory cover (1), and then lift the cover off the system board (2).

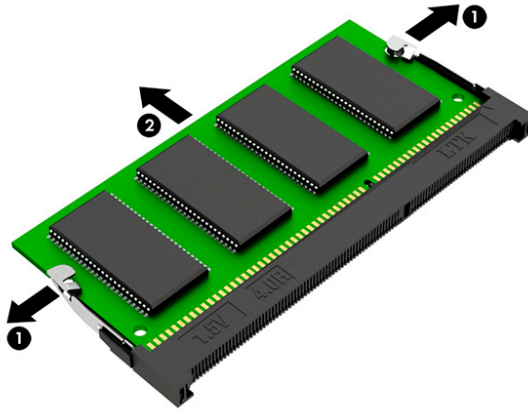


2. For each memory module, spread the two retention clips outward (1) until the memory module tilts up at a 45-degree angle.

3. Grasp the edge of the memory module (2), and then gently pull the module out of the slot. Use the same procedure to remove both memory modules.

CAUTION: To prevent damage to the memory module, hold the memory module by the edges only. Do not touch the components on the memory module.

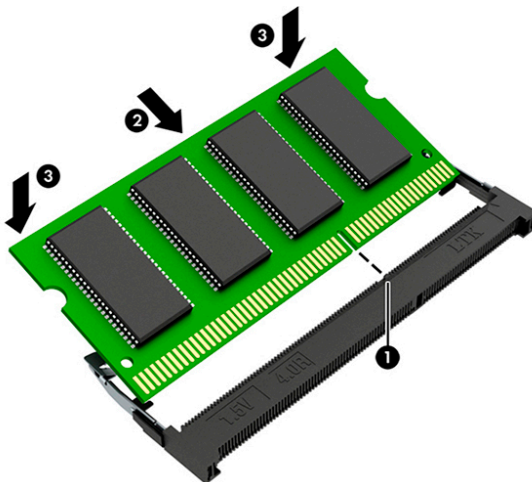
To protect a memory module after removal, place it in an electrostatic-safe container.



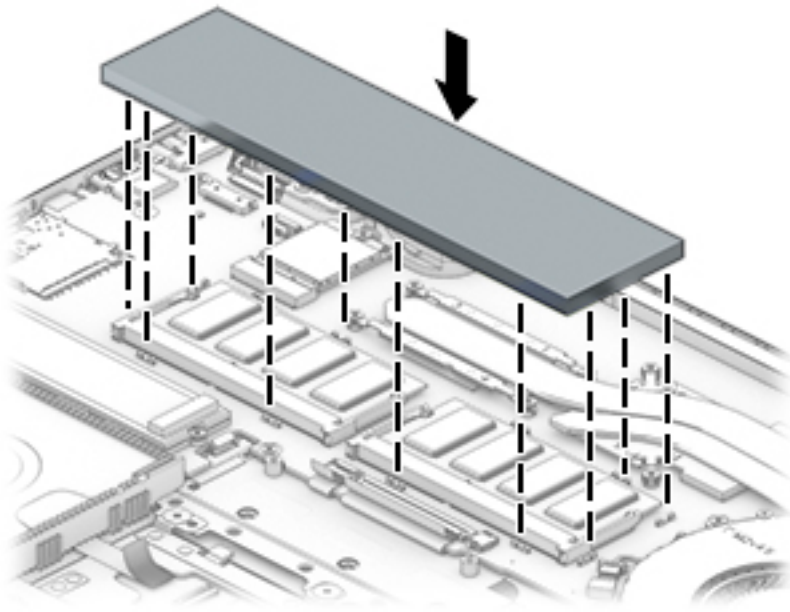
Install the memory modules:

IMPORTANT: To prevent damage to the memory module, hold the memory module by the edges only. Do not touch the components on the memory module. Do not bend the memory module.

1. Align the notched edge of the memory module with the tab in the memory module slot (1).
2. Press the module into the slot until seated (2).
3. Gently press down on the module edges until the side retention clips snap into place (3). Use the same procedure to install both memory modules.



To replace the memory cover, insert the edges of the cover into the clips on the system board.



Power button board


 **NOTE:** The power button board spare part kit does not include the power button board cable. The power button board cable is available using spare part number L51094-001.

Table 5-7 Power button board description and part number

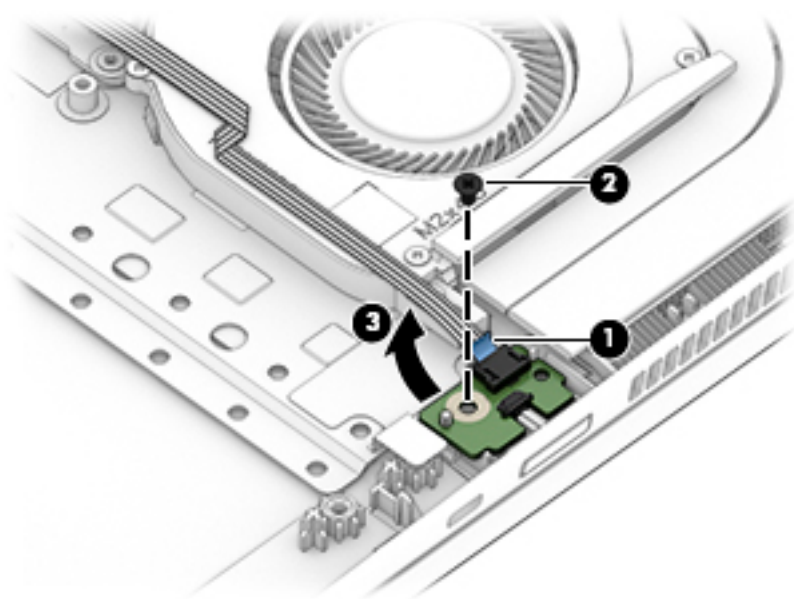
Description	Spare part number
Power button board	L51112-001

Before removing the power button board, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 30](#)).
2. Remove the bottom cover (see [Bottom cover and Rubber Foot Kit on page 31](#)).
3. Remove the battery (see [Battery on page 34](#)).

Remove the power button board:

1. Disconnect the cable from the ZIF connector on the power button board **(1)**.
2. Remove the Phillips M2.0 × 3.0 screw **(2)** that secures the power button board to the computer.
3. Rotate the inside of the board up, and then lift it out of the computer **(3)**.



Reverse this procedure to install the power button board.

Power button

Table 5-8 Power button description and part numbers

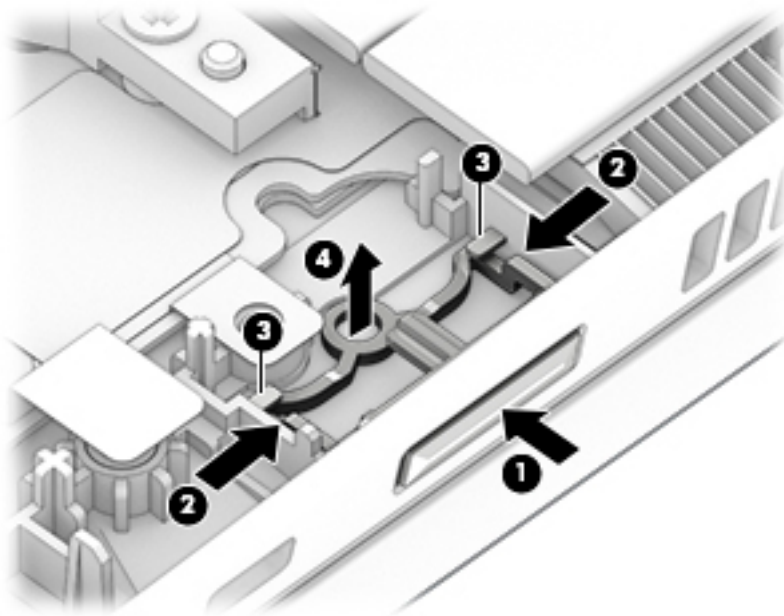
Description	Spare part number
Power button, mineral silver	L54104-001
Power button, warm gold	L54104-002
Power button, cloud blue	L54104-003
Power button, pale gold	L54104-004
Power button, natural silver	L54104-005

Before removing the power button, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 30](#)).
2. Remove the bottom cover (see [Bottom cover and Rubber Foot Kit on page 31](#)).
3. Remove the battery (see [Battery on page 34](#)).

Remove the power button:

1. Push the power button into the computer **(1)**.
2. Remove the power button arms **(2)** from the clips **(3)** that secure the power button to the computer.
3. Remove the power button from the computer **(4)**.



Reverse this procedure to install the power button.

TouchPad



NOTE: The TouchPad spare part kit does not include the TouchPad cable. The TouchPad cable is available using spare part number L51092-001.

Table 5-9 TouchPad descriptions and part numbers

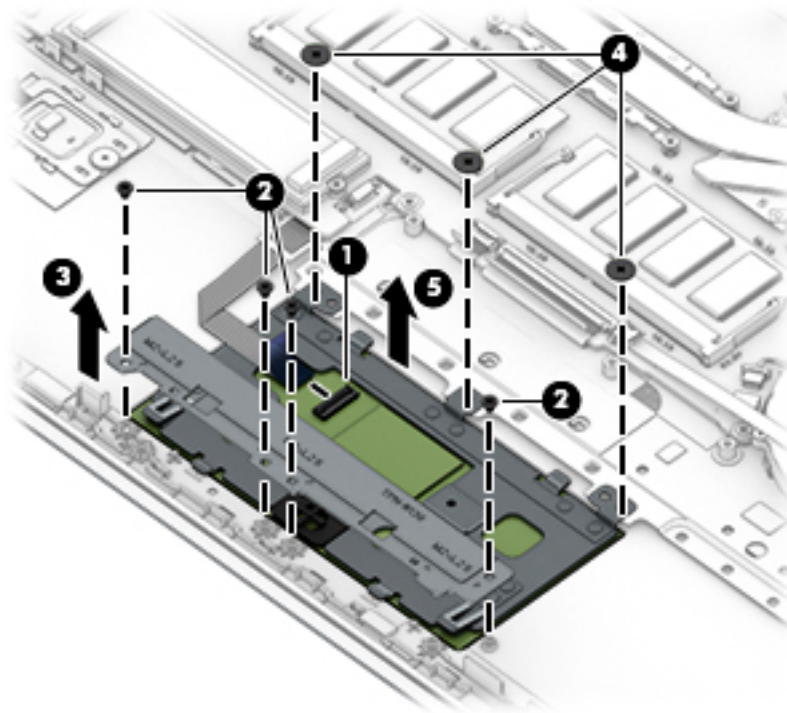
Description	Spare part number
TouchPad, ash silver	L51115-001
TouchPad, natural silver	L51116-001
TouchPad, luminous gold	L51117-001

Before removing the TouchPad , follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 30](#)).
2. Remove the bottom cover (see [Bottom cover and Rubber Foot Kit on page 31](#)).
3. Remove the battery (see [Battery on page 34](#)).

Remove the TouchPad:

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



Reverse this procedure to install the TouchPad.

Speakers

Table 5-10 Speaker description and part number

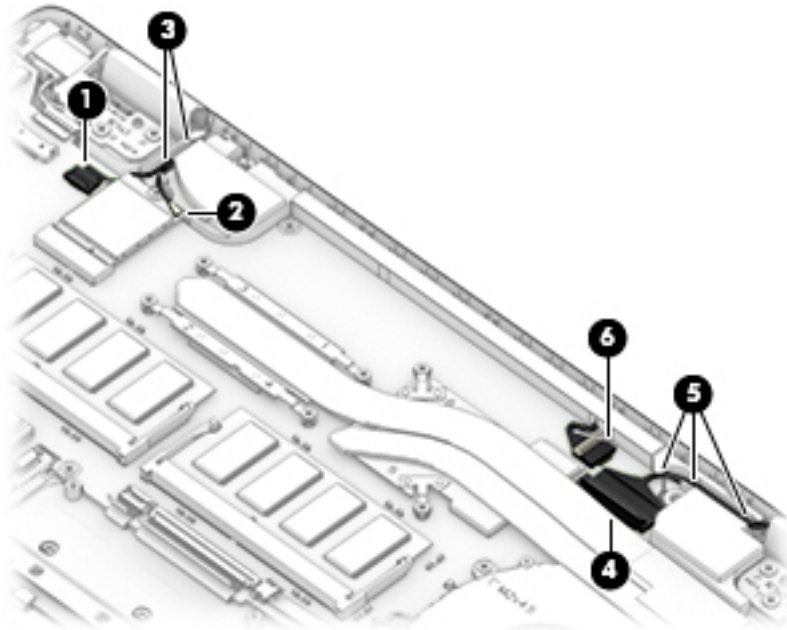
Description	Spare part number
Speakers (includes left and right speakers and cables)	L51127-001

Before removing the speakers, follow these steps:

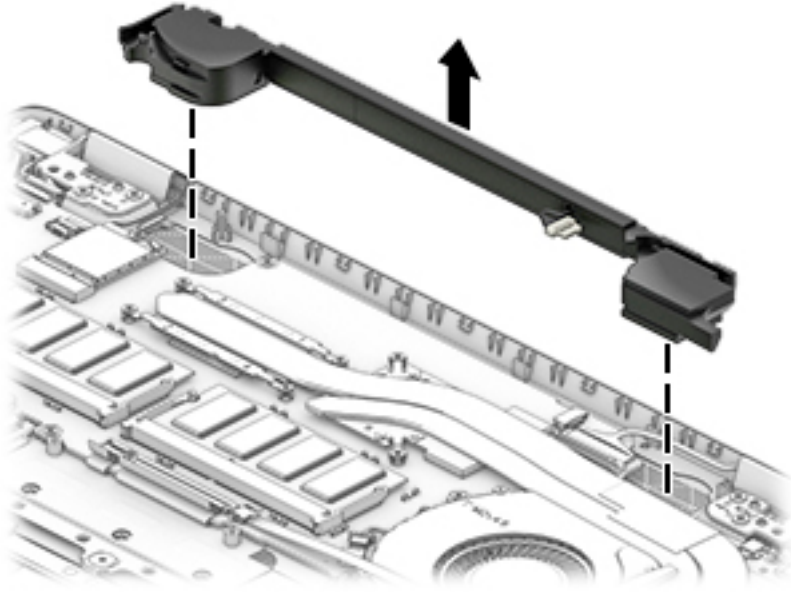
1. Prepare the computer for disassembly ([Preparation for disassembly on page 30](#)).
2. Remove the bottom cover (see [Bottom cover and Rubber Foot Kit on page 31](#)).
3. Remove the battery (see [Battery on page 34](#)).

Remove the speakers:

1. Disconnect the speaker cable from the system board **(1)**.
2. Disconnect the antenna cable from the WLAN module **(2)**.
3. Release the cables from the routing over the speaker **(3)**.
4. Disconnect the display cable from the system board **(4)**.
5. Remove the display cable from the routing over the speaker **(5)**.
6. Disconnect the CCD (webcam) cable from the system board **(6)**.



7. Remove the speakers from the computer.



Reverse this procedure to install the speakers.

Heat sink

Table 5-11 Heat sink descriptions and part numbers

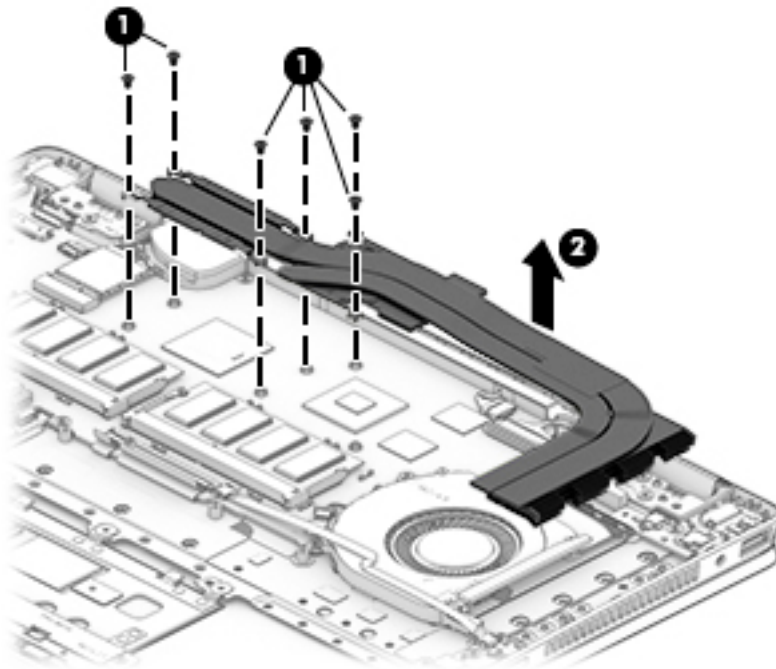
Description	Spare part number
Heat sink for use in fanless models with an Intel Pentium processor and with UMA graphics	L51099-001
Heat sink for use in models with a fan with an Intel Core processor and with UMA graphics	L51100-001
Heat sink for use in models with an Intel Core processor and with discrete graphics	L51101-001
Miscellaneous kit (includes heat sink Mylar, heat sink conductive tape, heat sink gasket, and WLAN module gasket)	L54102-001

Before removing the heat sink, follow these steps:

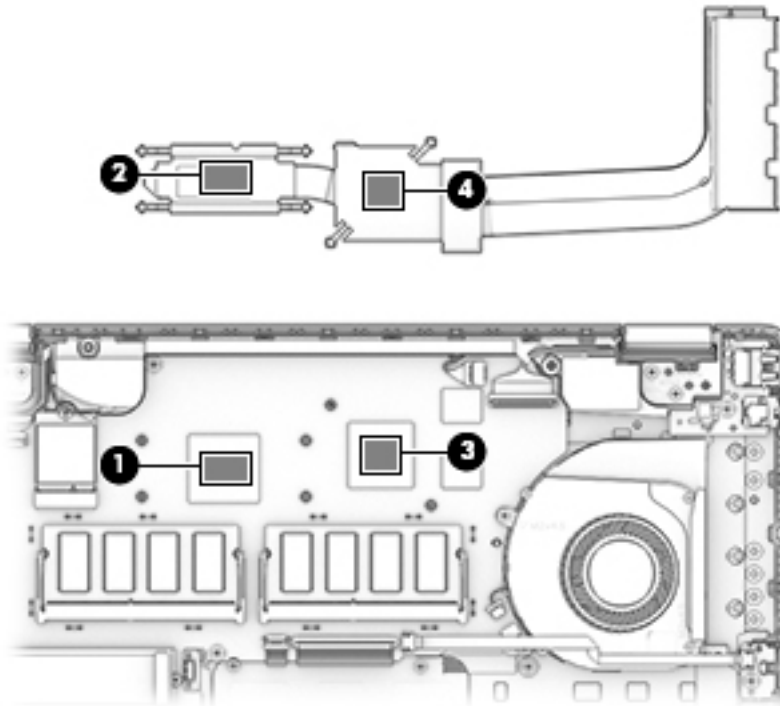
1. Prepare the computer for disassembly ([Preparation for disassembly on page 30](#)).
2. Remove the bottom cover (see [Bottom cover and Rubber Foot Kit on page 31](#)).
3. Remove the battery (see [Battery on page 34](#)).

Remove the heat sink from models with discrete graphics:

1. Remove the six Phillips M2.0 × 4.0 screws **(1)** that secure the heat sink to the system board.
2. Remove the heat sink **(2)**.

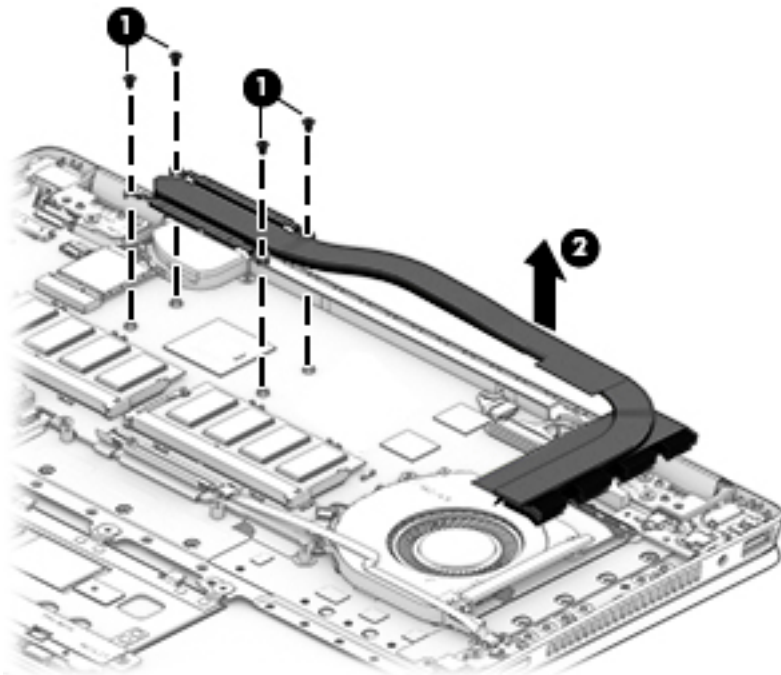


3. Clean thermal material from the surfaces of the system board components **(1)** **(3)** and the heat sink **(2)** **(4)** each time the heat sink is removed. The reapply.

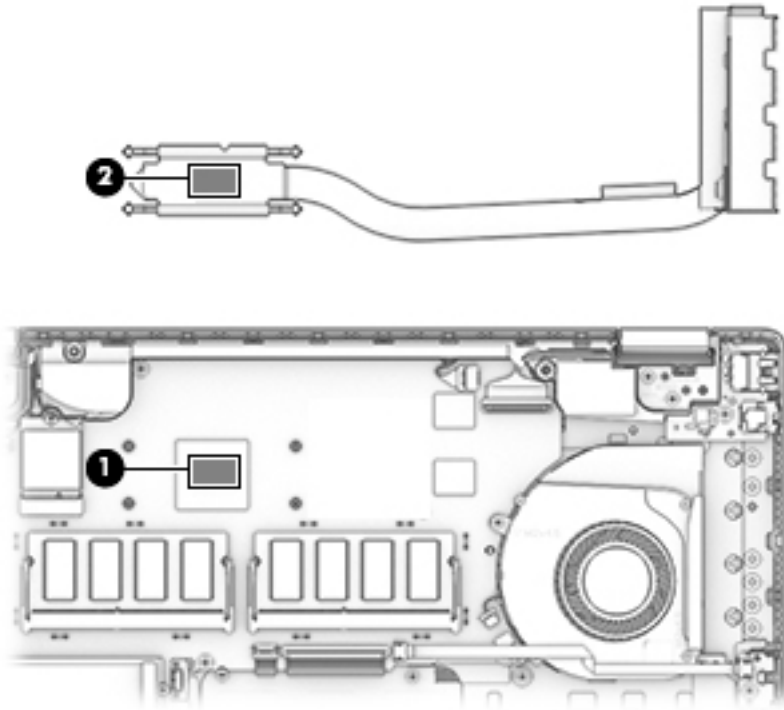


Remove the heat sink from models with integrated UMA graphics:

1. Remove the four Phillips M2.0 × 4.0 screws **(1)** that secure the heat sink to the system board.
2. Remove the heat sink **(2)**.



3. Clean thermal material from the surfaces of the system board component **(1)** and the heat sink **(2)** each time the heat sink is removed. Then reapply.



Reverse this procedure to install the heat sink.

Fingerprint reader board

Table 5-12 Fingerprint reader board descriptions and part numbers

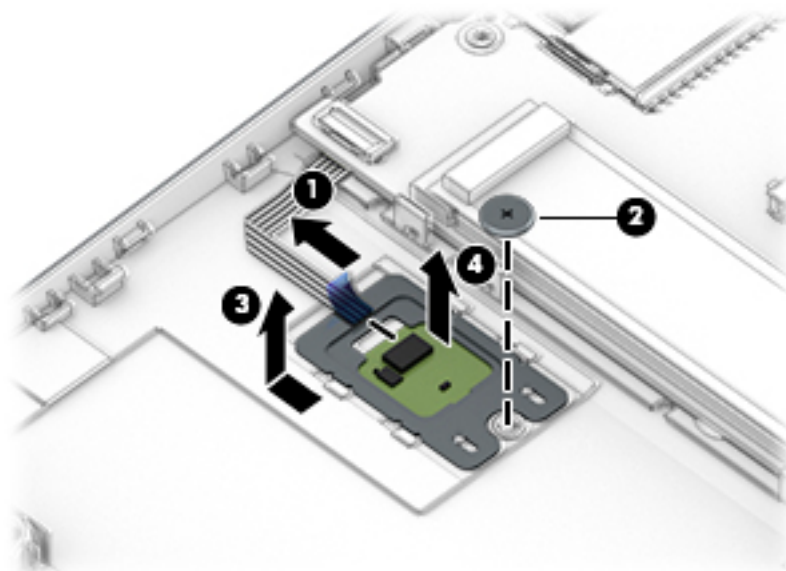
Description	Spare part number
Fingerprint reader board, ash silver	L51113-001
Fingerprint reader board, natural silver	L51840-001
Fingerprint reader board, luminous gold	L51841-001

Before removing the fingerprint reader board, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 30](#)).
2. Remove the bottom cover (see [Bottom cover and Rubber Foot Kit on page 31](#)).
3. Remove the battery (see [Battery on page 34](#)).
4. Remove the hard drive (see [Hard drive and hard drive cover on page 37](#)).

Remove the fingerprint reader board:

1. Disconnect the cable from the reverse ZIF connector on the fingerprint reader board **(1)**.
2. Remove the Phillips M2.0 × 2.0 screw **(2)** that secures the fingerprint reader board bracket to the computer.
3. Slide the bracket toward the side of the computer, and then remove it **(3)**.
4. Remove the fingerprint reader board from the computer **(4)**.



Reverse this procedure to install the fingerprint reader board.

Fan

Table 5-13 Fan description and part number

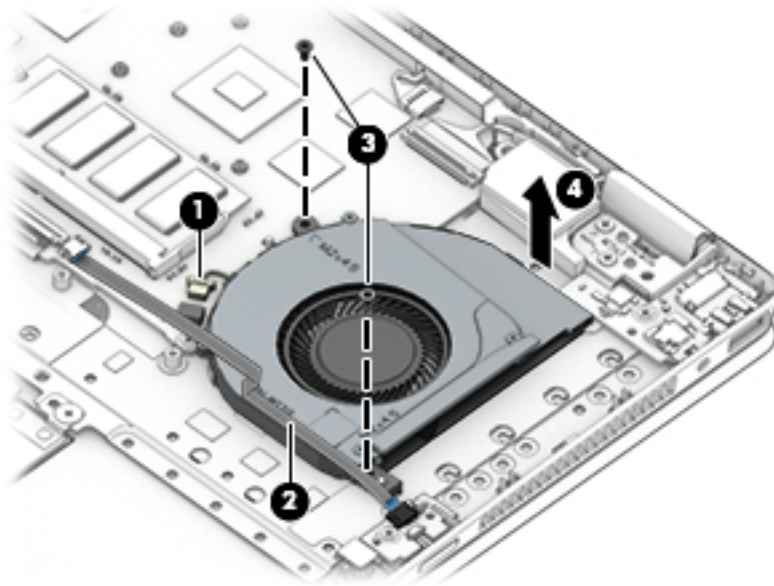
Description	Spare part number
Fan	L51102-001

Before removing the fan, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 30](#)).
2. Remove the bottom cover (see [Bottom cover and Rubber Foot Kit on page 31](#)).
3. Remove the battery (see [Battery on page 34](#)).
4. Remove the heat sink (see [Heat sink on page 49](#)).

Remove the fan:

1. Disconnect the fan cable from the system board **(1)**.
2. Remove the power button cable from the fan **(2)**.
3. Remove the two Phillips M2.0 × 4.0 screws **(3)** that secure the fan to the computer.
4. Remove the fan from the computer **(4)**.



Reverse this procedure to install the fan.

USB/audio board


 **NOTE:** The USB/audio board spare part kit does not include the audio/USB board cable. The cable is available using spare part number L51093-001.

Table 5-14 USB/audio board descriptions and part numbers

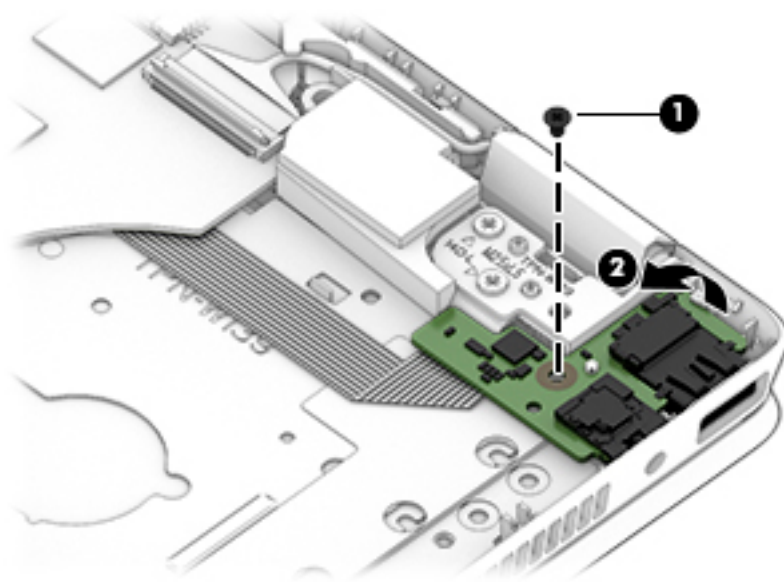
Description	Spare part number
USB/audio board for use in models without a fingerprint reader	L51109-001
USB/audio board for use in models with a fingerprint reader	L51110-001

Before removing the USB/audio board, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 30](#)).
2. Remove the bottom cover (see [Bottom cover and Rubber Foot Kit on page 31](#)).
3. Disconnect the battery (see [Battery on page 34](#)).

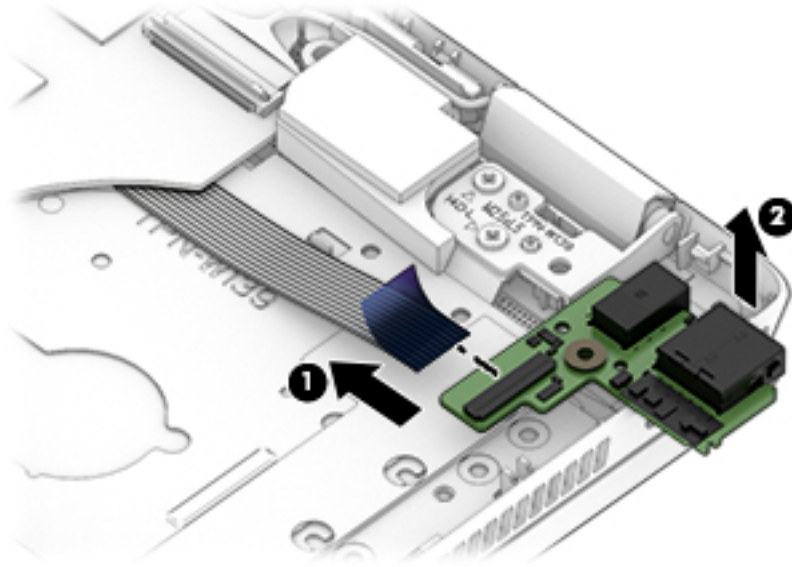
Remove the USB/audio board

1. Remove the Phillips M2.0 × 3.0 screw **(1)** that secures the board to the computer.
2. Turn the board upside down to access the connector underneath **(2)**.



3. Disconnect the cable from the ZIF connector on the audio/USB board **(1)**.

4. Remove the board from the computer (2).



Reverse this procedure to install the USB/audio board

System board



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

All system boards use the following part numbers:

xxxxxx-001: Non-Windows operating systems

xxxxxx-601: Windows operating system

Table 5-15 System board descriptions and part numbers

Description	Spare part number
System board for use in models with discrete graphics memory:	
• Intel Core i7-8565U processor and 2 GB GeForce MX250 graphics memory	L51138-xx1
• Intel Core i5-8265U processor and 2 GB GeForce MX130 graphics memory	L51137-xx1
• Intel Core i3-8145U processor and 2 GB GeForce MX130 graphics memory	L51136-xx1
System board for use in models with UMA graphics memory:	
• Intel Core i7-8565U processor	L51134-xx1
• Intel Core i5-8265U processor	L51133-xx1
• Intel Core i3-8145U processor	L51132-xx1
• Pentium N5000 processor	L51135-xx1
Thermal pad, for use in models with discrete graphics memory	L21302-001

Before removing the system board, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 30](#)).
2. Remove the bottom cover (see [Bottom cover and Rubber Foot Kit on page 31](#)).
3. Remove the battery (see [Battery on page 34](#)).
4. Remove the WLAN module (see [WLAN module on page 35](#)).
5. Remove the solid-state drive (see [Solid-state drive on page 40](#)).
6. Remove the USB/audio board (see [USB/audio board on page 54](#)).

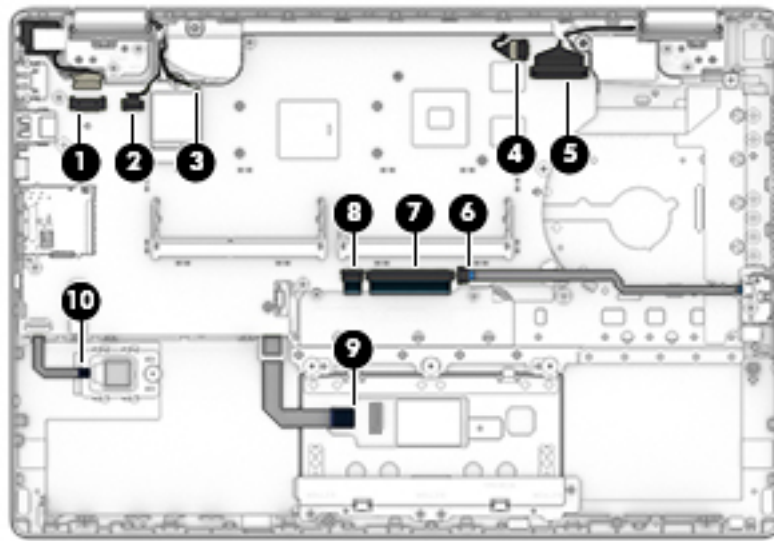
Remove the system board:

1. Disconnect the following cables from the system board:
 - (1) Power connector cable
 - (2) Webcam (CCD) cable (ZIF)
 - (3) WLAN module antennas
 - (4) Speaker cable
 - (5) Display cable (ZIF)
 - (6) Power button board cable (ZIF)
 - (7) Keyboard cable (ZIF)

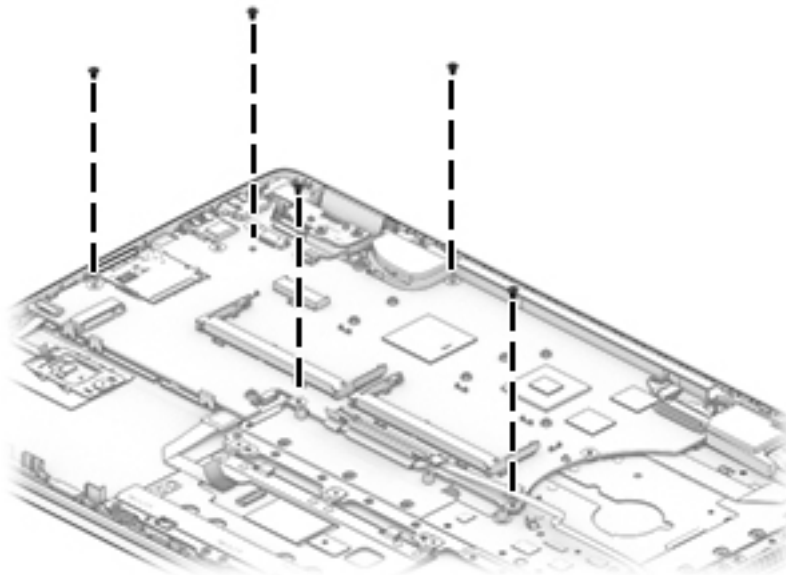
(8) Backlight cable (ZIF)

(9) TouchPad cable from TouchPad (ZIF)

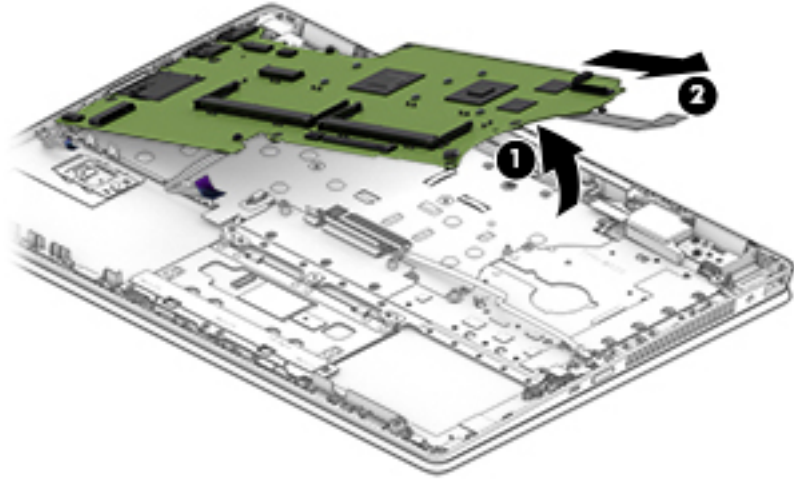
(10) Fingerprint board cable from fingerprint board (ZIF)



- 2.** Remove the five Phillips M2.0 × 3.0 screws that secure the system board to the computer.




3. Lift the right side of the system board **(1)**, and then pull the system board to the right to remove it from the computer **(2)**.



Reverse this procedure to install the system board.

Display assembly

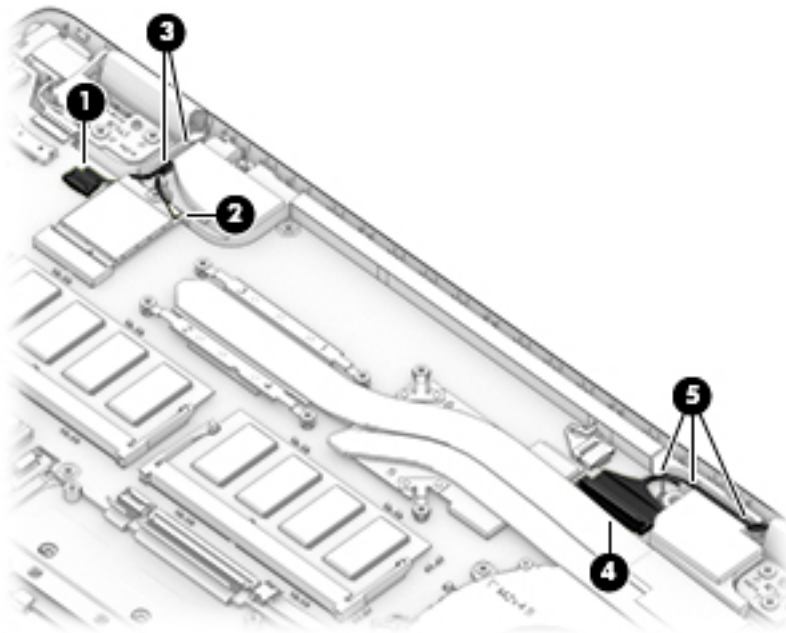
 **NOTE:** The display assembly is spared at the subcomponent level only. For more display assembly spare part information, see the individual removal subsections.

Before removing the display assembly, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 30](#)).
2. Remove the bottom cover (see [Bottom cover and Rubber Foot Kit on page 31](#)).
3. Remove the battery (see [Battery on page 34](#)).

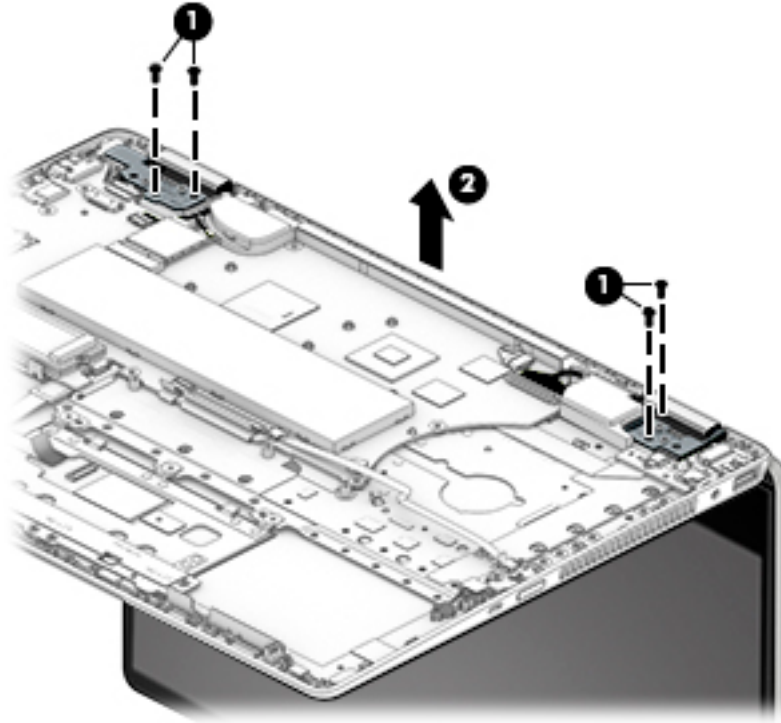
Remove the display assembly:

1. Disconnect the webcam (CCD) cable from the ZIF connector on the system board **(1)**.
2. Disconnect the antenna cables from the WLAN module **(2)**.
3. Remove the webcam cable and antenna cables from the routing channel in the speaker **(3)**.
4. Disconnect the display cable from the ZIF connector on the system board **(4)**.
5. Remove the display cable from the routing channel in the speaker **(5)**.



6. Open the display.
7. Remove the two Phillips M2.5 × 5.0 screws **(1)** from each hinge.

8. Separate the display from the computer by pulling the chassis away from the display **(2)**.



9. To remove the display panel:

- a. Use a plastic tool and work around the entire display to separate it from the display enclosure **(1)**.
- b. Remove the display panel **(2)**.

Display panels are available using spare part number L51119-001 for FHD, 250 nit panels, L54600-001 for FHD, 400 nit panels, and L51120-001 for HD panels.

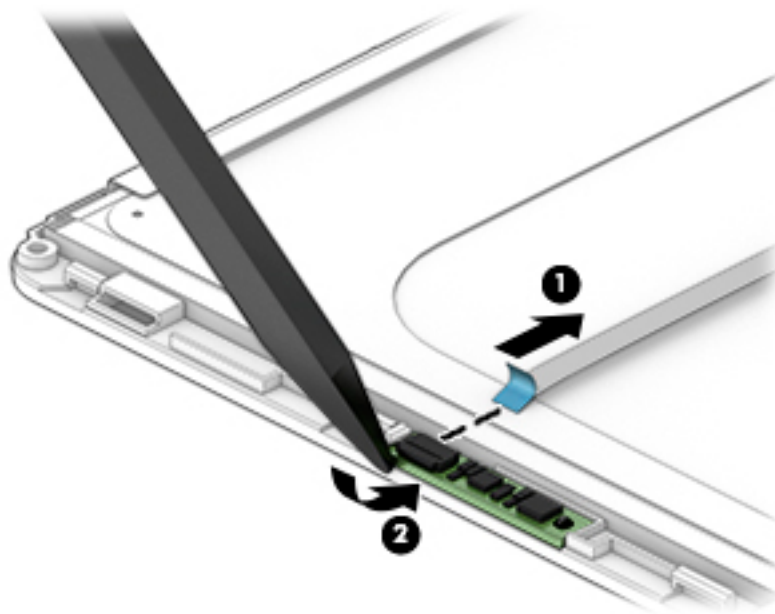


10. If it is necessary to replace the g-sensor board from the display panel:

- a. Disconnect the cable from the ZIF connector on the g-sensor board **(1)**.

- b.** Use a plastic tool to detach the board from the top of the display **(2)**. The g-sensor board is attached to the display with double-sided adhesive.

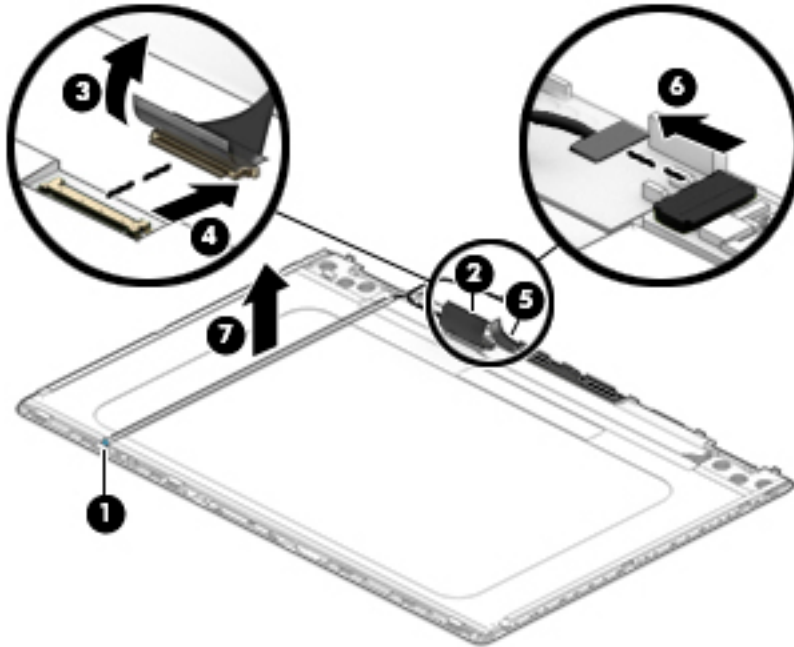
The g-sensor board is available using spare part number L51111-001.



- 11.** If it is necessary to replace the display/touch control board cable from the display panel:
 - a.** Disconnect the cable from the ZIF connector on the board **(1)**.
 - b.** Peel the tape from the top of the display connector at the bottom of the panel **(2)**.
 - c.** Peel the clear tape from the top of the connector **(3)**, and then pull the cable out of the connector **(4)**.

- d. Lift the tape from the touch control board connector (5), and then disconnect the cable from the connector (6).

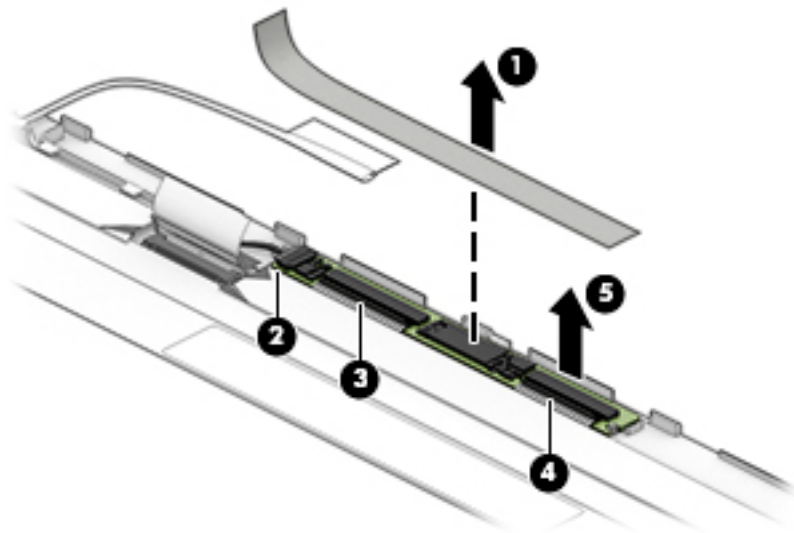
The display/touch control board cable is available using spare part number L51097-001.



12. If it is necessary to replace the touch control board from the display panel:

- a. Peel the tape from the top of the touch control board (1).
- b. Disconnect the cable from the end of the board (2).
- c. Disconnect the two cables from the two ZIF connectors on the board (3) (4).
- d. Remove the board from the panel (5).

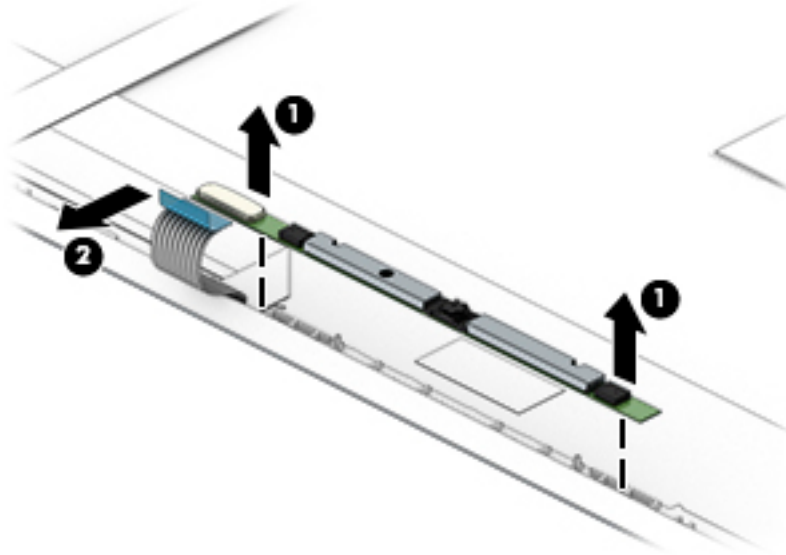
The touch control board is available using spare part number L51114-001.



13. If it is necessary to replace the camera/microphone module:

- a. Lift evenly on both sides of the module to detach the module from the display back cover **(1)**. The camera/microphone module is attached to the display back cover with double-sided adhesive.
- b. Disconnect the cable **(2)** from the camera/microphone module.

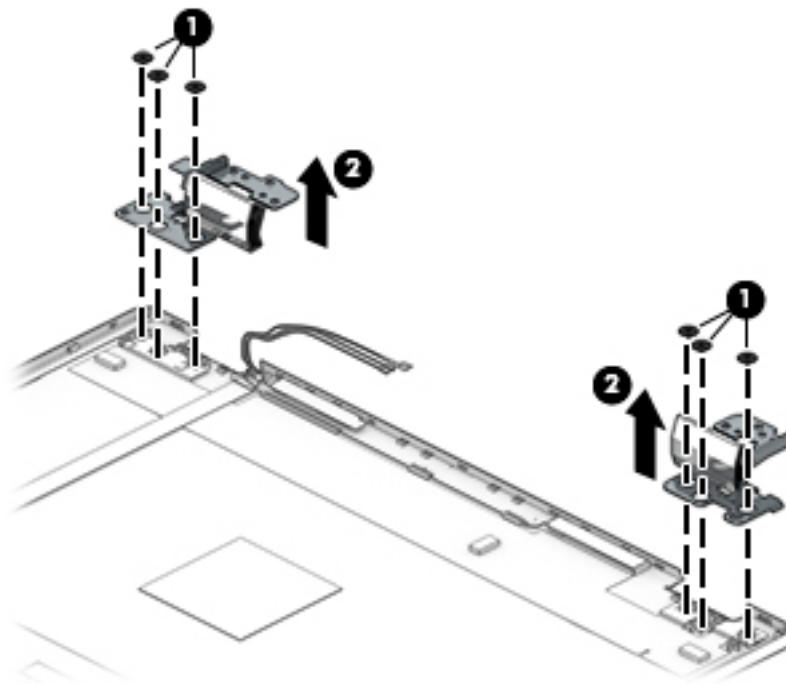
The camera/microphone module is available using spare part number L51139-001.



14. If it is necessary to replace the display hinges:

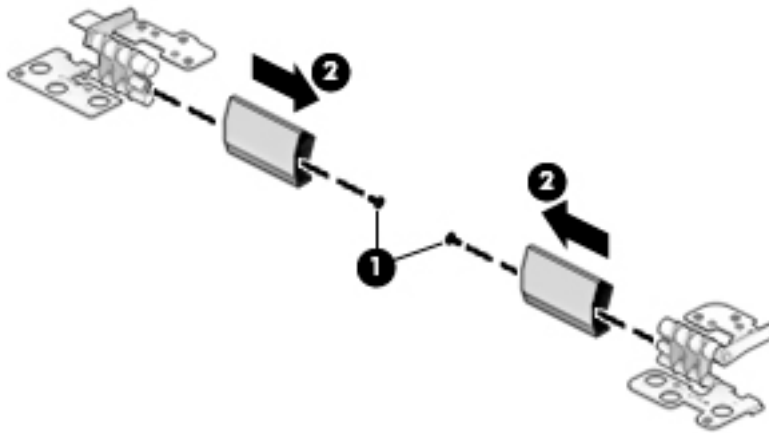
- a. Remove the three Phillips M2.0 × 3.0 screws **(1)** that secure each display hinge to the display back cover.
- b. Remove the display hinges **(2)**.

The display hinges are available using spare part number L51105-001 for models with an FHD display and L51106-001 for models with an HD display.



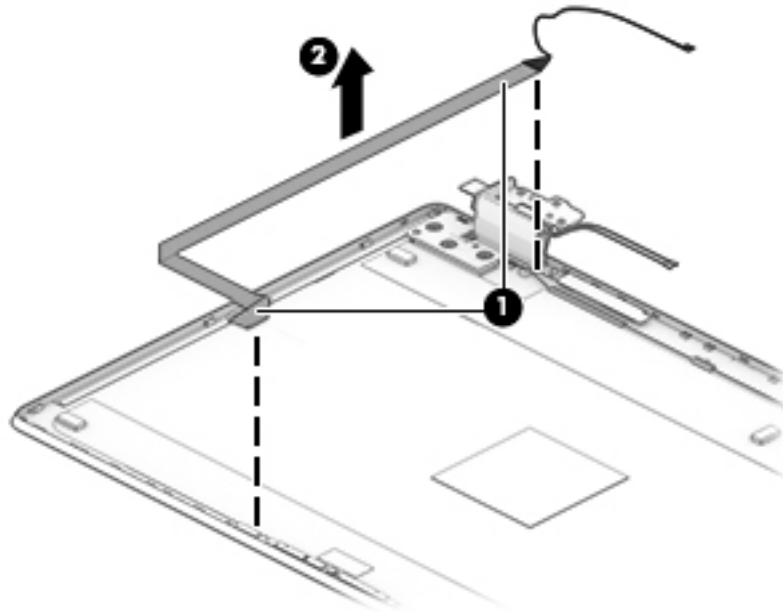
15. If it is necessary to remove the hinge covers from the hinges, remove the Phillips 2.0 × 3.0 screw from the inside of each hinge **(1)**, and then slide the hinge covers off the hinges **(2)**.

Hinge covers are available using spare part number L51107-001 for models with an FHD display and L51108-001 for models with an HD display.



16. If it is necessary to replace the webcam panel cable:
 - a. Release the webcam cable from the display back cover **(1)**.
 - b. Remove the webcam cable **(2)**.

The webcam cable is available using spare part number L51091-001.

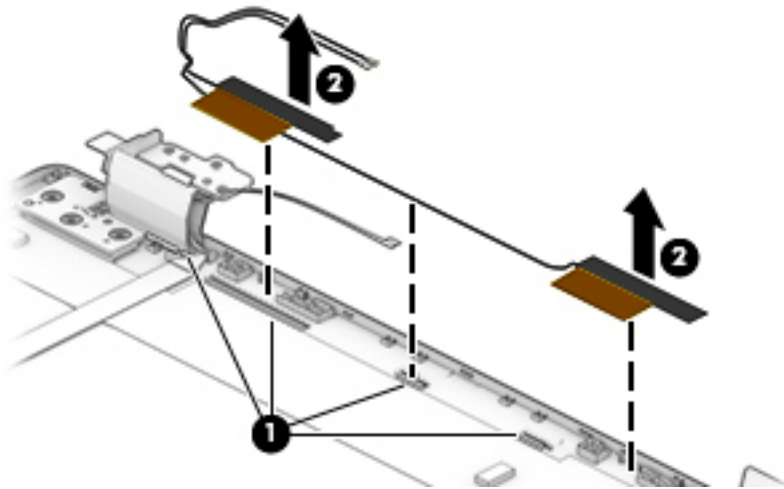


17. If it is necessary to replace the WLAN antennas and cables:
 - a. Release the cables from the clips and routing channel built into the bottom of the display back cover **(1)**.

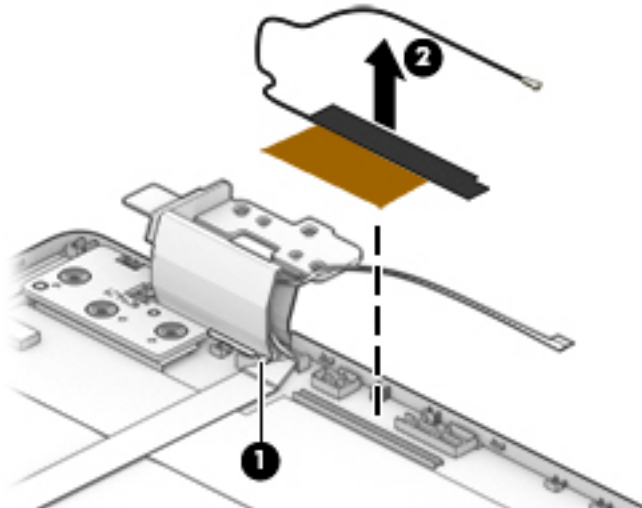
- b. Detach the WLAN antennas (2) from the display back cover. (The antennas are attached to the display back cover with double-sided adhesive.)

The WLAN antennas and cables are available using spare part number L52530-001 for a models that use a single antenna and L51076-001 for models that use dual antennas.

 **NOTE:** The following illustration shows dual antennas.



 **NOTE:** The following illustration shows a single antenna.



Display enclosure is available using the following spare part numbers:

L51077-001: HD display, natural silver

L51078-001: HD display, pale gold

L51079-001: HD display, cloud blue

L51080-001: FHD display, natural silver

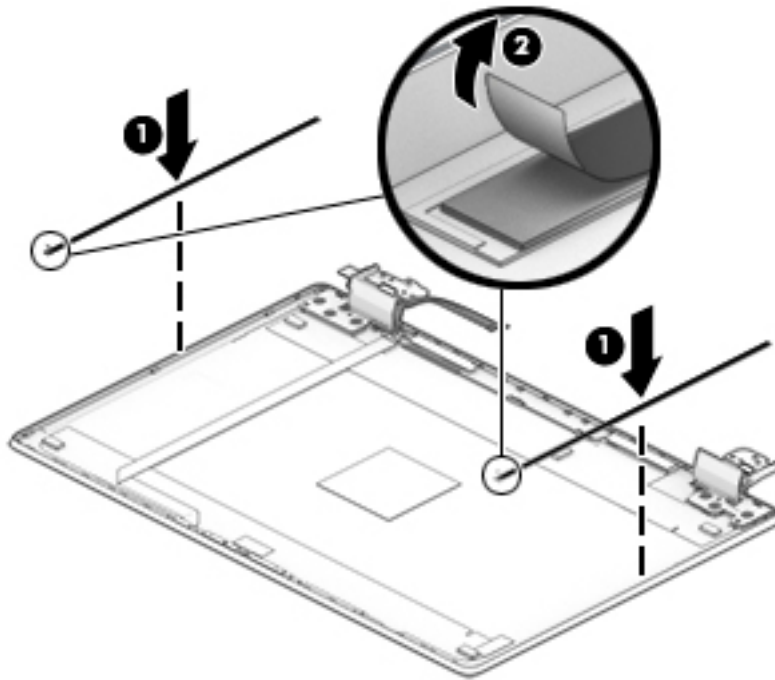
L51081-001: FHD display, pale gold

L51082-001: FHD display, cloud blue

L51083-001: FHD display, mineral silver

L51084-001: FHD display, warm gold

18. Use the following images to install the display panel:
- a. Install the tape on both sides of the display back cover (1).
 - b. Pull the backing off the top of the tape (2).



- c. Insert the panel into the display back cover (1), and then press it downward into place (2).
- d. Use a tool to make sure the display cable and antennas/webcam cable are routed correctly through the hinge caps on the inside of the hinges (3).



Reverse this procedure to reassemble install the display assembly.

Power connector

Table 5-16 Power connector description and part number

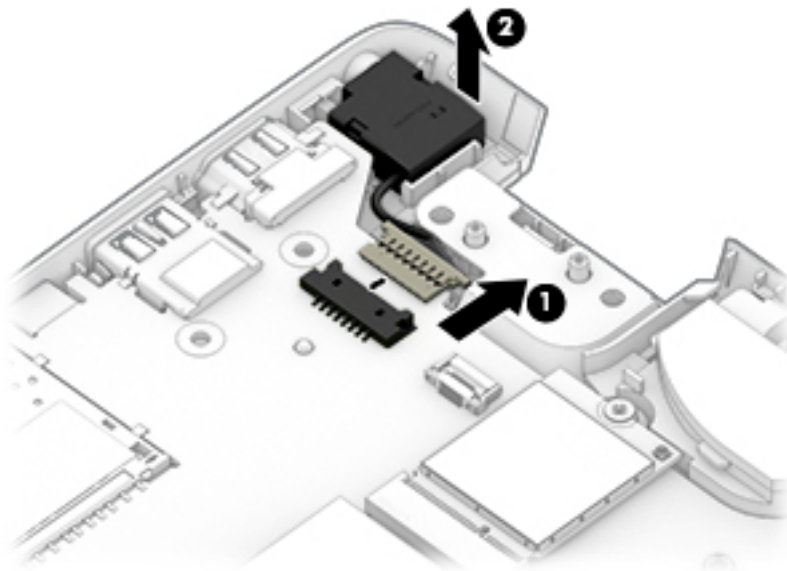
Description	Spare part number
Power connector	L51098-001

Before removing the power connector, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 30](#)).
2. Remove the bottom cover (see [Bottom cover and Rubber Foot Kit on page 31](#)).
3. Remove the battery (see [Battery on page 34](#)).
4. Remove the display (see [Display assembly on page 59](#)).

Remove the power connector cable:

1. Disconnect the power connector cable from the system board (**1**).
2. Remove the power connector and cable from the computer (**2**).



Reverse this procedure to install the power connector cable.

Keyboard/top cover

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

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

Table 5-17 Keyboard/top cover descriptions and part numbers


Description	Spare part number
Keyboard/top cover:	
• No backlight; fingerprint reader; top cover: mineral silver; keyboard: natural silver	L53784-xx1
• Backlight; fingerprint reader; top cover: mineral silver; keyboard: natural silver	L53785-xx1
• No backlight; fingerprint reader; top cover: warm gold; keyboard: luminous gold	L53786-xx1
• Backlight; fingerprint reader; top cover: warm gold; keyboard: luminous gold	L53787-xx1
• No backlight; no fingerprint reader; top cover: cloud blue; keyboard: ash gray	L53788-xx1
• Backlight; no fingerprint reader; top cover: cloud blue; keyboard: ash gray	L53789-xx1
• No backlight; no fingerprint reader; top cover: pale gold; keyboard: ash gray	L53790-xx1
• Backlight; no fingerprint reader; top cover: pale gold; keyboard: ash gray	L53791-xx1
• No backlight; fingerprint reader; top cover: pale gold; keyboard: ash gray	L53792-xx1
• Backlight; fingerprint reader; top cover: pale gold; keyboard: ash gray	L53793-xx1
• No backlight; no fingerprint reader; top cover: natural silver; keyboard: ash gray	L53794-xx1
• Backlight; no fingerprint reader; top cover: natural silver; keyboard: ash gray	L53795-xx1
• No backlight; fingerprint reader; top cover: natural silver; keyboard: ash gray	L53796-xx1
• Backlight; fingerprint reader; top cover: natural silver; keyboard: ash gray	L53797-xx1

Table 5-18 Keyboard country codes

For use in country or region	Spare part number	For use in country or region	Spare part number	For use in country or region	Spare part number
Belgium	-A41	Israel	-BB1	Slovenia	-BA1
Bulgaria	-261	Italy	-061	Spain	-071
Czech Republic and Slovakia	-FL1	Japan	-291	Switzerland	-BG1
Denmark, Finland, and Norway	-DH1	Latin America	-161	Taiwan	-AB1
France	-051	The Netherlands	-B31	Thailand	-281
French Canada	-DB1	Portugal	-131	Turkey	-141
Germany	-041	Romania	-271	Ukraine	-BD1
Greece	-151	Russia	-251	United Kingdom	-031
Hungary	-211	Saudi Arabia	-171	United States	-001
India	-002				

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 and quickly press **f10**.

– or –

Turn on or restart the computer, quickly press **esc**, and then press **f10** when the Start menu is displayed.

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 [Starting Setup Utility \(BIOS\) on page 69](#)).
 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.
- In Windows, press **CTRL+Alt+S**.

To check for later BIOS versions, see [Downloading a BIOS update on page 70](#).

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 71](#).

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**.

When HP PC Hardware Diagnostics Windows detects a failure that requires hardware replacement, a 24-digit Failure ID code is generated. The screen displays one of the following options:

- A Failure ID link is displayed. Select the link and follow the on-screen instructions.
- A Quick Response (QR) code is displayed. With a mobile device, scan the code and then follow the on-screen instructions.
- Instructions for calling support are displayed. Follow those instructions.

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. Select **Download HP Diagnostics Windows**, 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 **Diagnostics** section, select **Download**, and then follow the on-screen instructions to select the specific Windows diagnostics version to be downloaded to your computer or 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 [Downloading HP PC Hardware Diagnostics UEFI to a USB flash drive on page 73](#).

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 Windows detects a failure that requires hardware replacement, a 24-digit Failure ID code is generated. For assistance in solving the problem:

- ▲ Select **Get Support**, and then use a mobile device to scan the QR code that displays on the next screen. The HP Customer Support - Service Center page displays, with your Failure ID and product number automatically filled in. Follow the on-screen instructions.

– or –

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 73](#).

- 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. Select **Download HP Diagnostics UEFI**, 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 about 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. 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 Backing up, restoring, and recovering

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


- **Backing up your personal information**—You can use Windows tools to back up your personal information (see [Using Windows tools on page 76](#)).
- **Creating a restore point**—You can use Windows tools to create a restore point (see [Using Windows tools on page 76](#)).
- **Creating recovery media** (select products only)—You can use the HP Cloud Recovery Download Tool (select products only) to create recovery media (see [Using the HP Cloud Recovery Download Tool to create recovery media \(select products only\) on page 76](#)).
- **Restoring and recovery**—Windows offers several options for restoring from backup, refreshing the computer, and resetting the computer to its original state (see [Using Windows tools on page 76](#)).

 **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.

Backing up information and creating recovery media

Using Windows tools


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

You can use Windows tools to back up personal information and create system restore points and recovery media.

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

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

1. Select the **Start** button, and then select the **Get Help** app.
2. Enter the task you want to perform.

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

Using the HP Cloud Recovery Download Tool to create recovery media (select products only)

You can use the HP Cloud Recovery Download Tool to create HP Recovery media on a bootable USB flash drive.

To download the tool:

- ▲ Go to the Microsoft Store and search for HP Cloud Recovery.

For details, go to <http://www.hp.com/support>, search for HP Cloud Recovery, and then select "HP PCs – Using the Cloud Recovery Tool (Windows 10, 7)."



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.

Restoring and recovery

Restoring, resetting, and refreshing using Windows tools

Windows offers several options for restoring, resetting, and refreshing the computer. For details, see [Using Windows tools on page 76](#).

Recovering using HP Recovery media

HP Recovery media is used to recover the original operating system and software programs that were installed at the factory. On select products, it can be created on a bootable USB flash drive using the HP Cloud Recovery Download Tool. For details, see [Using the HP Cloud Recovery Download Tool to create recovery media \(select products only\) on page 76](#).



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.

To recover your system:

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

Changing the computer boot order

If your computer does not restart using the HP Recovery media, 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.

9 Specifications

Table 9-1 Computer specifications

	Metric	U.S.
Computer dimensions		
Width	324.0 mm	12.76 in
Depth	223.0 mm	8.78 in
Height, FHD models	19.7 mm	0.78 in
Height, HD models	20.5 mm	0.81 in
Weight, solid-state drive	1591.0 g	3.51 lbs
Weight, solid-state drive + hard drive	1690.0 g	3.73 lbs
Input power		
Operating voltage and current	Rating	
	19.5 V dc @ 2.31 A – 45 W	
	19.5 V dc @ 3.33 A – 65 W	
Temperature		
Operating	5°C to 35°C	41°F to 95°F
Nonoperating	-20°C to 60°C	-4°F to 140°F
Relative humidity (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	-15 m to 3,048 m	-50 ft to 10,000 ft
Nonoperating	-15 m to 12,192 m	-50 ft to 40,000 ft
NOTE: Applicable product safety standards specify thermal limits for plastic surfaces. The device operates well within this range of temperatures.		

10 Power cord set requirements

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

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

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

Requirements for all countries

The following requirements are applicable to all countries and regions:

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

Requirements for specific countries and regions

Table 10-1 Power cord requirements for specific countries and regions

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

1. The flexible cord must be Type H05VV-F, 3-conductor, 0.75 mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.

Table 10-1 Power cord requirements for specific countries and regions (continued)

Country/region	Accredited agency	Applicable note number
		2. The flexible cord must be Type SVT/SJT or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V ac) or NEMA 6-15P (15 A, 250 V ac) configuration. CSA or C-UL mark. UL file number must be on each element.
		3. The appliance coupler, flexible cord, and wall plug must bear a “T” mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCTF, 3-conductor, 0.75 mm ² or 1.25 mm ² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V ac) configuration.
		4. The flexible cord must be Type RVV, 3-conductor, 0.75 mm ² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the CCC certification mark.
		5. The flexible cord must be Type H05VV-F 3-conductor, 0.75 mm ² conductor size. KTL logo and individual approval number must be on each element. Corset approval number and logo must be printed on a flag label.
		6. The flexible cord must be Type HVCTF 3-conductor, 1.25 mm ² conductor size. Power cord set fittings (appliance coupler, cable, and wall plug) must bear the BSMI certification mark.
		7. For 127 V ac, the flexible cord must be Type SVT or SJT 3-conductor, 18 AWG, with plug NEMA 5-15P (15 A, 125 V ac), with UL and CSA or C-UL marks. For 240 V ac, the flexible cord must be Type H05VV-F 3-conductor, 0.75 mm ² or 1.00 mm ² conductor size, with plug BS 1363/A with BSI or ASTA marks.

11 Recycling

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

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

Index

A

- AC adapter and battery light, identifying 5
- action keys
 - identifying 12
- antenna
 - removal 64
 - spare part numbers 20, 65
- audio, product description 2
- audio-out (headphone)/audio-in (microphone) combo jack, identifying 6

B

- backup, creating 76
- backups 76
- battery
 - removal 34
 - spare part number 18, 34
- BIOS
 - determining version 69
 - downloading an update 70
 - starting the Setup Utility 69
 - updating 69
- Bluetooth label 14
- boot order, changing 77
- bottom components 13
- bottom cover
 - removal 31
 - spare part number 31
- bottom cover, spare part numbers 18
- buttons
 - left TouchPad 9
 - power 6
 - right TouchPad 9

C

- camera
 - identifying 8
- camera light, identifying 8
- caps lock light, identifying 10
- cautions
 - electrostatic discharge 26

- components
 - bottom 13
 - display 8
 - keyboard area 9
 - left side 6
 - right side 5
- computer major components 15
- connectors
 - power 6

D

- display assembly
 - removal 59
 - subcomponents 19
- display bezel
 - removal 60
 - spare part numbers 60
- display components 8
- display enclosure, spare part number 20
- display hinge
 - removal 63
- Display Hinge Kit, spare part number 20, 63
- display panel
 - product description 1
 - spare part numbers 19
- display/touch control board cable
 - removal 61
 - spare part number 62
- display/touch control cable
 - spare part number 19
- drive light, identifying 5

E

- electrostatic discharge (ESD) 26
 - preventing damage 27
- esc key, identifying 12

F

- fan
 - removal 53
 - spare part number 17, 53

- fingerprint reader board
 - removal 52
 - spare part number 52
- fingerprint reader, identifying 11
- fn key, identifying 12

G

- g-sensor board
 - removal 60
 - spare part numbers 19
- graphics, product description 1
- grounding methods 28
- guidelines
 - packaging 29
 - transporting 29
 - workstation 26

H

- hard drive
 - removal 37
 - spare part number 21
 - spare part numbers 37
- hard drive cable
 - spare part number 21
- hard drive cover
 - spare part number 21
- HDMI port
 - identifying 5
- heat sink
 - removal 49
 - spare part number 17, 49
- hinge
 - spare part number 20, 63
- hinge cover
 - spare part numbers 20
- HP PC Hardware Diagnostics UEFI
 - downloading 73
 - starting 73
 - using 72
- HP PC Hardware Diagnostics Windows
 - downloading 71
 - installing 72
 - using 71
- HP Recovery Manager
 - correcting boot problems 77

- HP Recovery media
 - recovery 77
- I**
- internal card expansion, product description 3
- internal microphones, identifying 8
- J**
- jacks
 - audio-out (headphone)/audio-in (microphone) 6
- K**
- keyboard/top cover
 - removal 68
 - spare part numbers 16, 68
- keys
 - action 12
 - esc 12
 - fn 12
 - Windows 12
- L**
- labels
 - Bluetooth 14
 - regulatory 14
 - serial number 14
 - service 14
 - wireless certification 14
 - WLAN 14
- left side components 6
- lights
 - AC adapter and battery 5
 - camera 8
 - caps lock 10
 - drive 5
 - mute 10
 - power 7
- M**
- media card reader, product description 3
- memory module
 - removal 41
 - spare part numbers 17, 41
- memory, product description 1
- microphone
 - product description 2
- model name 1
- mute light, identifying 10
- O**
- operating system, product description 4
- P**
- packaging guidelines 29
- ports
 - HDMI 5
 - product description 3
 - USB SuperSpeed 5, 6
 - USB Type-C 5
- power button board
 - removal 44, 45
 - spare part number 16, 44, 45
- power button board cable, spare part number 16, 44
- power button, identifying 6
- power connector
 - identifying 6
- power connector cable
 - removal 67
 - spare part number 17, 67
- power cord
 - requirements for all countries 79
 - requirements for specific countries and regions 80
 - set requirements 79
 - spare part numbers 23
- power lights, identifying 7
- power requirements, product description 3
- processor, product description 1
- product description
 - audio 2
 - display panel 1
 - graphics 1
 - internal card expansion 3
 - media card reader 3
 - memory 1
 - microphone 2
 - operating system 4
 - ports 3
 - power requirements 3
 - processors 1
 - product name 1
 - sensors 2
 - serviceability 4
 - storage 2
 - video 2
 - wireless 2
- product name 1
- product name and number, computer 14
- R**
- recovery 76
 - discs 77
 - HP Recovery partition 77
 - media 77
 - USB flash drive 77
- recovery media
 - creating using HP Cloud Recovery Download Tool 76
 - creating using Windows tools 76
- regulatory information
 - regulatory label 14
 - wireless certification labels 14
- Remote HP PC Hardware Diagnostics
 - UEFI settings
 - customizing 74
 - using 74
- removal/replacement procedures 30
- restoring 76
- right side components 5
- Rubber Foot Kit, spare part numbers 18, 31
- S**
- Screw Kit, spare part number 24
- security cable slot, identifying 7
- sensoirs, product description 2
- serial number, computer 14
- service labels, locating 14
- serviceability, product description 4
- slots
 - memory card reader 5
 - security cable 7
- solid-state drive
 - removal 40
 - spare part number 18, 21
 - spare part numbers 40
- speakers
 - identifying 11
 - removal 47
 - spare part number 17, 47
- special keys, using 12
- static electricity 27

- storage, product description 2
- system board
 - removal 56
 - spare part numbers 56
- system restore point, creating 76

T

- touch control board
 - removal 62
 - spare part number 19, 62
- TouchPad
 - removal 46
 - spare part numbers 16, 46
- TouchPad buttons
 - identifying 9
- TouchPad cable, spare part number 16, 46
- TouchPad zone, identifying 9
- transporting guidelines 29
- traveling with the computer 14

U

- USB SuperSpeed port, identifying 5, 6
- USB Type-C port, identifying 5
- USB/audio board
 - removal 54
 - spare part numbers 16, 54
- USB/audio board cable, spare part number 16, 54

V

- vent, identifying 6, 13
- video, product description 2

W

- webcam cable
 - removal 64
 - spare part number 20, 64
- webcam/microphone module
 - removal 62
 - spare part number 19, 61, 63
- Windows
 - backup 76
 - recovery media 76
 - system restore point 76
- Windows key, identifying 12
- Windows tools, using 76
- wireless antenna
 - removal 64
 - spare part numbers 20, 65

- wireless certification label 14
- wireless, product description 2
- WLAN antenna
 - removal 64
 - spare part number 20, 65
- WLAN antennas, identifying 8
- WLAN device 14
- WLAN label 14
- WLAN module
 - removal 35
 - spare part numbers 17, 35
- workstation guidelines 26