



Maintenance and Service Guide

HP 14 Laptop PC

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Product notice

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

Not all features are available in all editions 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**.

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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 applicable safety standards.

Table of contents

1 Product description	1
2 Getting to know your computer	5
Right side	5
Left side	6
Display	7
Low blue light mode (select products only)	7
Keyboard area	8
Touchpad	8
Touchpad settings	8
Lights	9
Button, vent, speakers, and fingerprint reader	10
Special keys	11
Bottom	12
Labels	13
3 Illustrated parts catalog	14
Computer major components	14
Display assembly subcomponents	17
Cables	19
Miscellaneous parts	20
4 Removal and replacement procedures preliminary requirements	21
Tools required	21
Service considerations	21
Plastic parts	21
Cables and connectors	21
Drive handling	22
Workstation guidelines	22
Electrostatic discharge information	22
Generating static electricity	23
Preventing electrostatic damage to equipment	23
Personal grounding methods and equipment	24
Grounding the work area	24
Recommended materials and equipment	24
Packaging and transporting guidelines	25

5 Removal and replacement procedures for authorized service provider parts	26
Component replacement procedures	26
Preparation for disassembly	26
Bottom cover	27
Battery	29
Memory module	30
Solid-state drive	32
WLAN module	33
Power button/card reader board	36
Touchpad	37
Fingerprint reader board	38
Fan	39
Vent cover (interior) on fanless models	40
Heat sink (thermal module)	41
Battery connector (fanless products only)	44
System board	45
Speaker assembly	48
Display assembly	50
Power connector	58
Keyboard/top cover	59
6 Using Setup Utility (BIOS)	60
Starting Setup Utility (BIOS)	60
Updating Setup Utility (BIOS)	60
Determining the BIOS version	60
Downloading a BIOS update	61
7 Using HP PC Hardware Diagnostics	62
Using HP PC Hardware Diagnostics Windows (select products only)	62
Downloading HP PC Hardware Diagnostics Windows	62
Downloading the latest HP PC Hardware Diagnostics Windows version	63
Downloading HP Hardware Diagnostics Windows by product name or number (select products only)	63
Installing HP PC Hardware Diagnostics Windows	63
Using HP PC Hardware Diagnostics UEFI	63
Starting HP PC Hardware Diagnostics UEFI	64
Downloading HP PC Hardware Diagnostics UEFI to a USB flash drive	64
Downloading the latest HP PC Hardware Diagnostics UEFI version	64
Downloading HP PC Hardware Diagnostics UEFI by product name or number (select products only)	64
Using Remote HP PC Hardware Diagnostics UEFI settings (select products only)	65

Downloading Remote HP PC Hardware Diagnostics UEFI	65
Downloading the latest Remote HP PC Hardware Diagnostics UEFI version	65
Downloading Remote HP PC Hardware Diagnostics UEFI by product name or number	65
Customizing Remote HP PC Hardware Diagnostics UEFI settings	65
8 Backing up, restoring, and recovering	67
Backing up information and creating recovery media	67
Using Windows tools	67
Using the HP Cloud Recovery Download Tool to create recovery media (select products only)	67
Restoring and recovery	68
Restoring, resetting, and refreshing using Windows tools	68
Recovering using HP Recovery media	68
Changing the computer boot order	68
9 Specifications	69
Computer specifications	69
35.6 cm (14.0 in) display specifications	70
M.2 SATA solid-state drive specifications	70
M.2 PCIe solid-state drive specifications	71
10 Power cord set requirements	72
Requirements for all countries	72
Requirements for specific countries and regions	73
11 Recycling	75
Index	76

1 Product description

Table 1-1 Product components and their descriptions

Category	Description
Product Name	HP 14 Laptop PC Model numbers: 14-dq0xxx, 14z-dq000
Processor	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, quad 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 Core i3-8130U (2.26 GHz, 2400 MHz FSB, 4 MB L3 cache, dual core, 15 W) Intel Core i3-7020U (2.3 GHz, 2133 MHz FSB, 3 MB L3 cache, dual core, 15 W) Intel Pentium™ Gold 5405U (2.3 GHz, 2133 MHz FSB, 2 MB L3 cache, dual core, 15 W) Intel Pentium Gold 4417U (2.3 GHz, 2133 MHz FSB, 2 MB L3 cache, dual core, 15 W) Intel Pentium Silver N5000 (1.1 GHz, turbo up to 2.7 GHz, 2400 MHz FSB, 4 MB L3 cache, quad core, 6 W) Intel Celeron™ N4000 (1.1 GHz, turbo up to 2.6 GHz, 2400 MHz FSB, 4 MB L2 cache, dual core, 6 W)
Graphics	Internal graphics Intel UHD Graphics 620 (Intel Core processors) Intel UHD Graphics 610 (Pentium Gold 5405U processor) Intel UHD Graphics 605 (Pentium Silver N5000 processor) Intel UHD Graphics 600 (Celeron N4000 processor) Intel HD Graphics 620 (Intel Core i3-7020U) Intel HD Graphics 610 (Pentium Gold 4417U processor) Supports HD decode, DX12, and HDMI
Display panel	35.6 cm (14.0 in), WLED, slim-flat (3.0 mm), narrow bezel, 45% NTSC High-definition (HD) (1366 × 768), antiglare, SVA, 220 nits HD, BrightView, SVA, 220 nits HD, BrightView, SVA, 220 nits, Touch-on Panel (TOP) Full high-definition (FHD) (1920 × 1080), antiglare, UWVA, 250 nits FHD, BrightView, UWVA, 250 nits
Memory	Two SODIMM slots, not customer accessible or upgradeable Intel Core and Pentium Gold 5404U and 4417U processors DDR4-2400 dual-channel support (DDR4-3200 bridge to 2666, DDR4-2666 downgrade to DDR4-2400) Supports up to 16 GB maximum system memory in the following configurations:

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

Category	Description
	<ul style="list-style-type: none"> • 16 GB (8 GB × 2) • 12 GB (8 GB × 1 + 4 GB × 1) • 8 GB (8 GB × 1 or 4 GB × 2) • 4 GB (4 GB × 1)
	<p>Pentium Silver N5000 and Celeron N4000 processors</p> <p>DDR4-2133 dual channel support (DDR4-3200 bridge to 2666, DDR4-2666 downgrade to DDR4-2133)</p> <p>Supports up to 8 GB maximum system memory in the following configurations:</p> <ul style="list-style-type: none"> • 8 GB (8 GB × 1) • 4 GB (4 GB × 1)
Storage	<p>M.2, SATA, solid-state drive</p> <ul style="list-style-type: none"> • 512 GB, PCIe, TLC • 512 GB, PCIe, value • 256 GB, PCI, value • 128 GB, SATA-3, TLC <p>eMMC configuration, version 5.0</p> <ul style="list-style-type: none"> • 64 GB
Audio	<p>Audio control panel: HP Audio Control</p> <p>Dual speakers</p>
Video	<p>HP TrueVision HD Camera - indicator LED, USB 2.0, HD sensor, f2.0</p> <p>720p by 30 frames per second</p> <p>Dual-array digital microphone with appropriate software: beam forming, echo cancellation, noise suppression</p>
Wireless networking	<p>Integrated wireless option with dual antennas (M.2/PCIe)</p> <ul style="list-style-type: none"> • Realtek RTL8822CE 802.11ac 2 × 2 Wi-Fi + Bluetooth® 5.0 (MU-MIMO supported) <p>Integrated wireless option with single antenna (M.2/MIPI/BRI)</p> <ul style="list-style-type: none"> • Realtek RTL8821CE 802.11ac 1 × 1 Wi-Fi + Bluetooth 4.2 (MU-MIMO supported) • Realtek RTL8723DE 802.11bgn 1 × 1 Wi-Fi + Bluetooth 4.2 <p>Turbo Lite WLAN SVTP</p> <p>Support for Wi-Fi CERTIFIED Miracast™ devices</p>
Ports	<p>HP Smart Pin AC adapter</p> <p>Audio-out (headphone)/Audio-in (microphone) combo jack</p> <p>High-definition multimedia interface (HDMI) v.1.4 supporting up to 1920 × 1080 at 60 Hz</p> <p>Hot plug/unplug and autodetect for correct output to wide-aspect vs. standard aspect video (auto-adjust panel resolution to fit embedded panel and external monitor connected)</p>

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

Category	Description
	(3) USB 3.1 Type A ports
	(1) USB 3.1 Gen 1 Type-C port (supports data transfer)
Media card reader	Supports microSD™, SDHC™, SDXC™ Push-pull insertion and removal
Internal card expansion	One M.2 slot for WLAN One M.2 slot for solid-state drive
Keyboard/pointing devices	Keyboard Full-sized, island style, backlit Full-sized Touchpad requirements Touchpad with image sensor Multitouch gestures enabled Support for precision touchpad Support for modern trackpad gestures Taps enabled as default
Power requirements	Battery 3 cell, 41 Wh, polymer battery Supports battery life enhancement Supports battery fast charge (45 minutes, 50% charged) Smart AC adapter (PFC, slim barrel, 4.5 mm) 45 W, right angle 45 W, for use in Argentina 65 W Power cord (1 m, conventional) C5
Security	Trusted Platform Module (fTPM) 2.0, firmware based Universal 2nd Factor Authentication Fingerprint reader
Operating system	Preinstalled Windows® 10 Home 64 Windows 10 Home 64 Chinese Market CPPP Windows 10 Home 64 Entry Single Language Windows 10 Home 64 High-End Chinese Market CPPP

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

Category	Description
	Windows 10 Home 64 Plus
	Windows 10 Home 64 Plus Single Language
	Windows 10 Home 64 Plus Single Language Africa Market PPP
	Windows 10 Home 64 Plus Single Language APAC EM PPP
	Windows 10 Home 64 Plus Single Language India Market PPP
	Windows 10 Home 64 Plus Single Language Indonesia Market PPP
	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 Entry Africa Market PPP
	Windows 10 Home 64 Single Language Entry APAC EM PPP
	Windows 10 Home 64 Single Language Entry India Market PPP
	Windows 10 Home 64 Single Language Entry Indonesia Market PPP
	Windows 10 Home 64 Single Language India Market PPP
	Windows 10 Home 64 Single Language Indonesia Market PPP
	Windows 10 Home 64 Single Language Value Africa Market PPP
	Windows 10 Home 64 Single Language Value APAC EM PPP
	Windows 10 Home 64 Single Language Value India Market PPP
	Windows 10 Home 64 Single Language Value Indonesia Market PPP
	Windows 10 Home 64 Value Single Language
	Windows 10 Home S 64
	Windows 10 Home S Entry
	Windows 10 Home S Entry Single Language
	Windows 10 Home S Value
	Windows 10 Pro 64
	FreeDOS 3.0
Serviceability	End-user replaceable part
	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

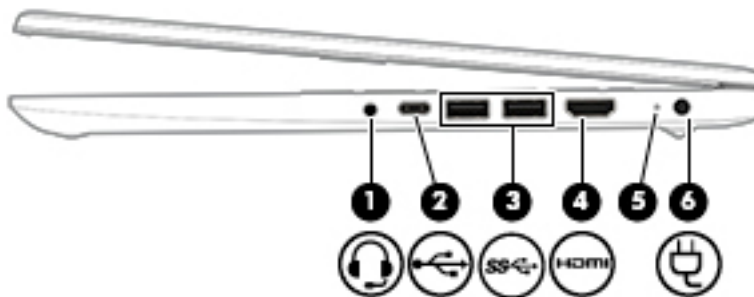


Table 2-1 Right-side components and their descriptions






Component	Description
(1)  Audio-out (headphone)/Audio-in (microphone) combo jack	<p>Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. This jack does not support optional standalone microphones.</p> <p>WARNING! To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, 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>
(2)  USB Type-C port	<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>
(3)  USB SuperSpeed ports (2)	<p>Connect a USB device, such as a cell phone, camera, activity tracker, or smartwatch, and provide high-speed data transfer.</p>
(4)  HDMI port	<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>
(5) AC adapter and battery light	<ul style="list-style-type: none">• White: The AC adapter is connected and the battery is fully charged.• Blinking white: The AC adapter is disconnected and the battery has reached a low battery level.• Amber: The AC adapter is connected and the battery is charging.

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

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

Left side

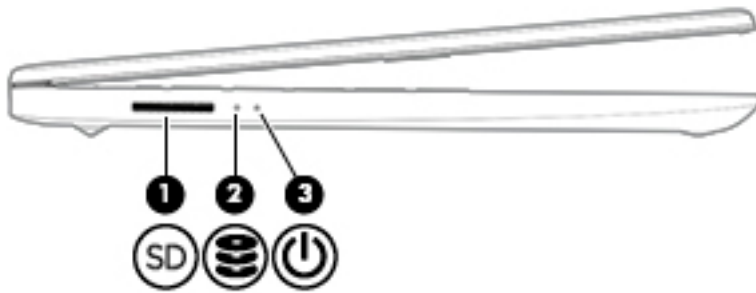





Table 2-2 Left-side components and their descriptions

Component	Description
(1)  Memory card reader	Reads optional memory cards that enable you to store, manage, share, or access information. To insert a card: <ol style="list-style-type: none">1. Hold the card label-side up, with connectors facing the computer.2. Insert the card into the memory card reader, and then press in on the card until it is firmly seated. To remove a card: <ul style="list-style-type: none">▲ Pull the card out of the memory card reader.
(2)  Drive light (select products only)	<ul style="list-style-type: none">• Blinking white: The solid-state drive is being accessed.
(3)  Power light	<ul style="list-style-type: none">• On: The computer is on.• Blinking: The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other unneeded components.• Off: The computer is off or in Hibernation. Hibernation is a power-saving state that uses the least amount of power.

Display

Low blue light mode (select products only)

Your computer display is shipped from the factory in low blue light mode for improved eye comfort and safety. Also, low blue light mode automatically adjusts blue light emissions when you are using the computer at night or for reading.

⚠ WARNING! To reduce the risk of serious injury, read the *Safety & Comfort Guide*. It describes proper workstation setup and proper posture, health, and work habits for computer users. The *Safety & Comfort Guide* also provides important electrical and mechanical safety information. The *Safety & Comfort Guide* is available on the web at <http://www.hp.com/ergo>.

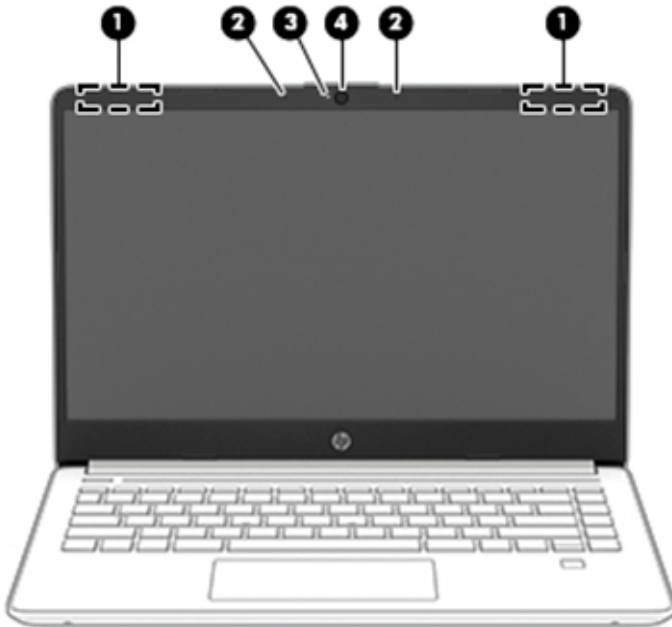


Table 2-3 Display components and their descriptions

Component	Description
(1) WLAN antennas* (select products only)	Send and receive wireless signals to communicate with wireless local area networks (WLANs).
(2) Internal microphones	Record sound.
(3) Camera light	On: The camera is in use.
(4) 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.

*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

Touchpad settings

To adjust touchpad settings and gestures, or to turn off the touchpad:

1. Type `touchpad settings` in the taskbar search box, and then press `enter`.
2. Choose a setting.

To turn on the touchpad:

1. Type `touchpad settings` in the taskbar search box, and then press `enter`.
2. Using an external mouse, click the **touchpad** button.

– or –

- ▲ Press the **Tab** key repeatedly until the pointer rests on the **touchpad** button. Then press the **spacebar** to select the button.

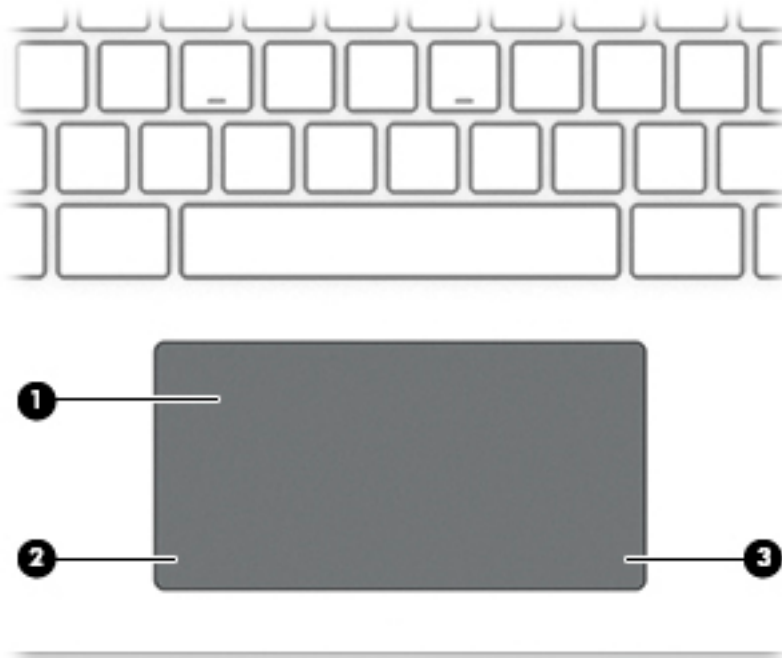


Table 2-4 Touchpad components and their descriptions

Component	Description
(1) Touchpad zone	Reads your finger gestures to move the pointer or activate items on the screen.
(2) Left control zone	Textured area that allows you to perform additional gestures.
(3) Right control zone	Textured area that allows you to perform additional gestures.

Lights

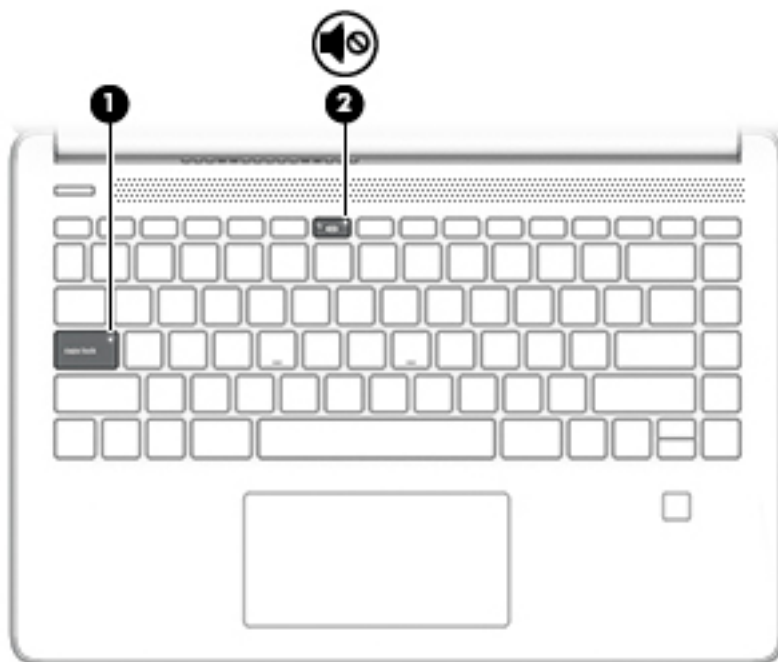



Table 2-5 Lights and their descriptions

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.

Button, vent, speakers, and fingerprint reader

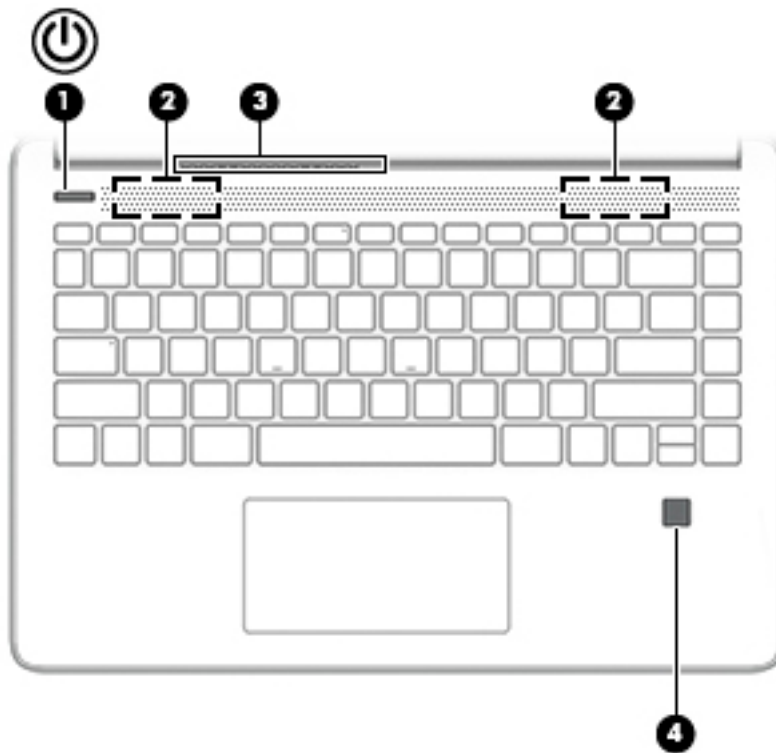


Table 2-6 Button, vent, speakers, and fingerprint reader and their descriptions



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

Table 2-6 Button, vent, speakers, and fingerprint reader and their descriptions (continued)

Component	Description
(4)	<p>Fingerprint reader (select products only)</p> <p>Allows a fingerprint logon to Windows, instead of a password logon.</p> <p>▲ Swipe down across the fingerprint reader.</p> <p>IMPORTANT: To prevent fingerprint logon issues, make sure when you register your fingerprint that all sides of your finger are registered by the fingerprint reader.</p>

Special keys

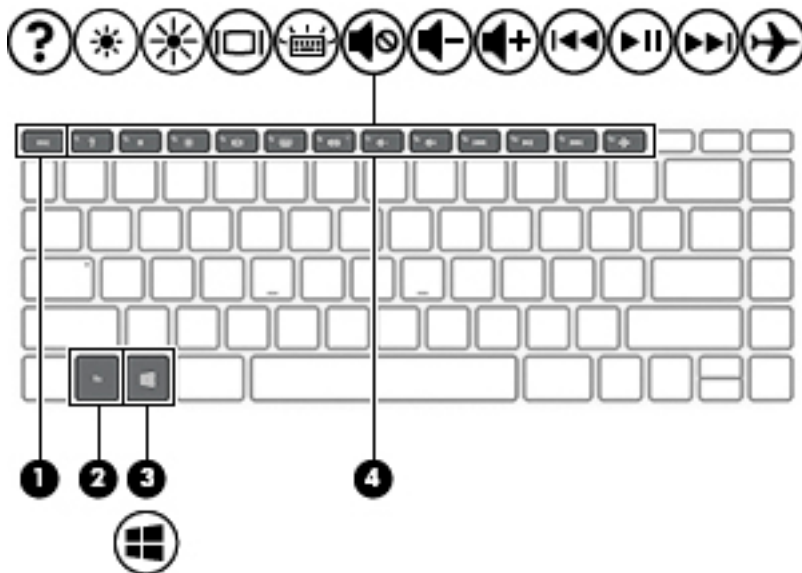



Table 2-7 Special keys and their descriptions

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.

Bottom

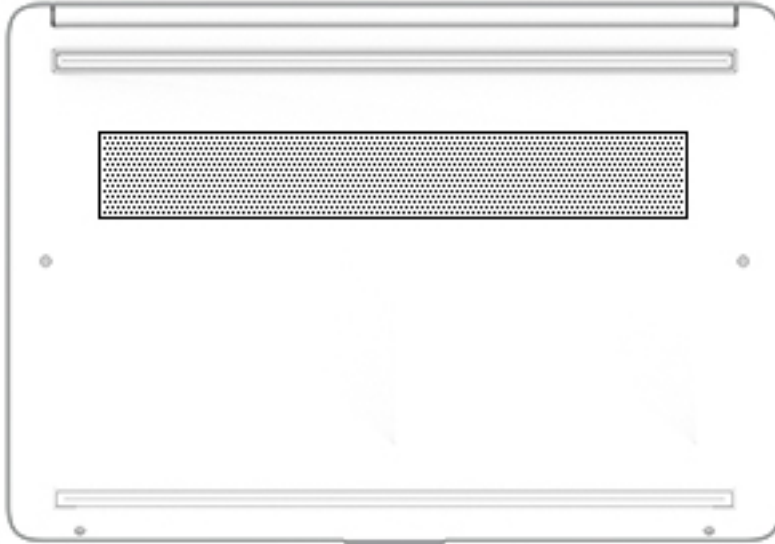


Table 2-8 Bottom components and their descriptions

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.

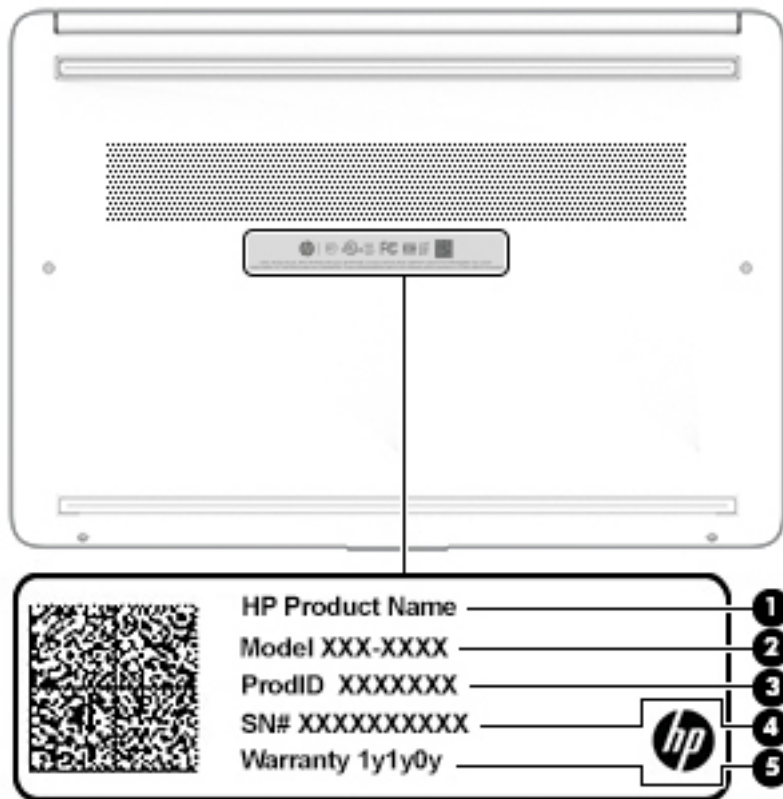


Table 2-9 Service label components


Component
(1) HP product name
(2) Model number
(3) Product ID
(4) Serial number
(5) 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

Computer major components

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

 **NOTE:** Details about your computer, including model, serial number, product key, and length of warranty, are on the service tag at the bottom of your computer. See [Labels on page 13](#) for details.

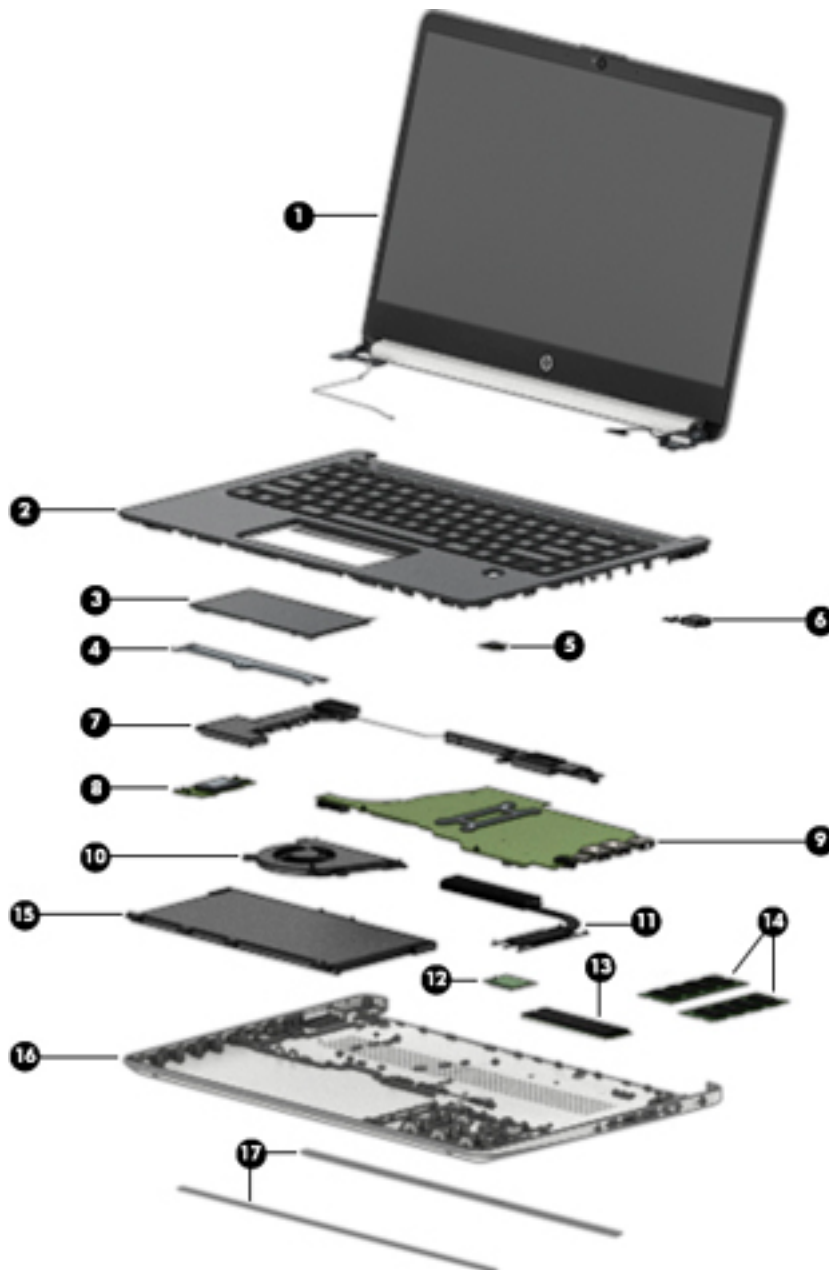


Table 3-1 Computer major components and their descriptions

Item	Component	Spare part number
(1)	Display assembly NOTE: Display assemblies are offered as spare parts only at a subcomponent level.	
(2)	Keyboard/top cover: For a detailed list of country codes, see Keyboard/top cover on page 59 .	
	Top cover: pale gold; keyboard: ash silver; no backlight	L61504-xx1
	Top cover: pale gold; keyboard: ash silver; backlit	L61505-xx1
	Top cover: natural silver; keyboard: natural silver; no backlight	L61506-xx1
	Top cover: natural silver; keyboard: natural silver; backlit	L61507-xx1
	Top cover: snowflake white; keyboard: snow white; no backlight	L61508-xx1
	Top cover: snowflake white; keyboard: snow white; backlit	L61509-xx1
(3)	Touchpad: The touchpad cable is available as spare part number L64900-001.	
	Natural silver	L64897-001
	Ash silver	L64898-001
	Snowflake white	L64899-001
(4)	Touchpad bracket	not available as spare part
(5)	Fingerprint reader board NOTE: The fingerprint reader board cable is available as spare part number L64902-001.	L64901-001
(6)	Power connector cable	808155-010
(7)	Speaker assembly	L64893-001
(8)	Power button/card reader board NOTE: The power button/card reader board cable is available as spare part number L64887-001 for models with a 15 W processor and L64888-001 for models with a 6 W processor.	L64886-001
(9)	System board (includes processor): All system boards use the following part numbers: xxxxxx-001: Non-Windows operating system xxxxxx-601: Windows 10 operating system	
	Intel Core i7-8565U processor	L61954-xx1
	Intel Core i5-8265U processor	L61953-xx1
	Intel Core i3-8145U processor	L61952-xx1
	Intel Core i3-7020U processor	L61951-xx1
	Intel Pentium 5405U processor	L70052-xx1
	Intel Pentium 4417U processor	L61955-xx1
	Intel Pentium N5000 processor	L61956-xx1

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

Item	Component	Spare part number
	Intel Celeron N4000 processor	L61950-xx1
(10)	Fan:	
	For use in models with a backlit keyboard	L63587-001
	For use in models without a backlit keyboard	L63588-001
(11)	Heat sink	L64890-001
(12)	WLAN module:	
	Realtek RTL8822CE 802.11ac 2 × 2 Wi-Fi + Bluetooth 5.0	L44796-005
	Realtek RTL8723DE 802.11bgn 1 × 1 Wi-Fi + Bluetooth 4.2	L21480-005
	Realtek RTL8821CE 802.11ac 1 × 1 Wi-Fi + Bluetooth 4.2	L17365-005
(13)	Solid-state drive (M.2):	
	512 GB, PCIe, Gen 3 × 4, TLC	L72365-001
	512 GB, PCIe, value	L61960-001
	256 GB, PCIe, value	L61959-001
	128 GB, SATA-3, TLC	L61958-001
	64 GB, eMMC	L61957-001
(14)	Memory modules (DDR4-2666):	
	8 GB	937236-855
	4 GB	L10598-855
(15)	Battery (3 cell, 41 Wh)	L11119-855
(16)	Bottom cover:	
	Natural silver	L64894-001
	Pale gold	L64895-001
	Snowflake white	L64896-001
(17)	Rubber feet:	
	Silver	L65866-001
	Gold	L66226-001
	Vent cover (interior) (not illustrated)	L68313-001

Display assembly subcomponents

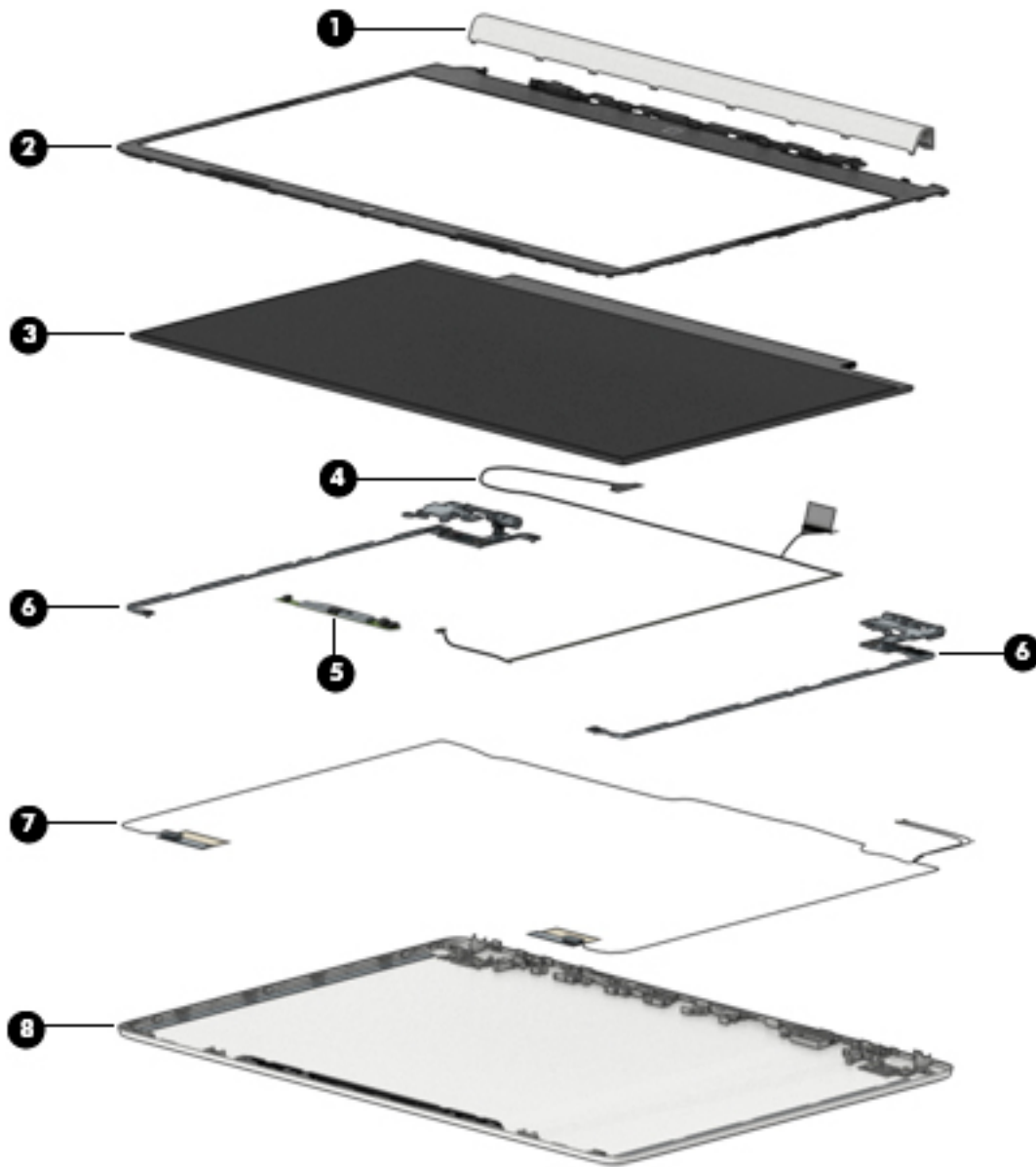


Table 3-2 Display components and their descriptions

Item	Component	Spare part number
(1)	Hinge cover:	
	Natural silver	L64911-001
	Pale gold	L64912-001
	Snowflake white	L64913-001
(2)	Display bezel	L64907-001
(3)	Display panel:	
	NOTE: Display panel adhesive is available in the miscellaneous parts kits as spare part number L64916-001.	

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

Item	Component	Spare part number
	FHD, antiglare, 250 nits	L61945-001
	FHD, BrightView, 250 nits	L61946-001
	HD, antiglare, 220 nits	L61947-001
	HD, BrightView, 220 nits	L61948-001
	HD, BrightView, 220 nits, Touch-on Panel (TOP)	L61949-001
(4)	Display panel cable (includes bezel adhesive tape):	
	For use with touch displays	L64908-001
	For use with non-touch displays	L64909-001
(5)	Webcam/microphone module (includes bezel adhesive tape)	L64914-001
(6)	Display hinges (left and right; includes bezel and display cover adhesive)	L64910-001
(7)	Wireless antennas (includes bezel adhesive tape and display cover tape):	
	Dual antennas	L64905-001
	Single antenna	L64906-001
(8)	Display back cover (includes bezel adhesive tape):	
	Natural silver	L66227-001
	Pale gold	L66228-001
	Snowflake white	L66229-001

Cables

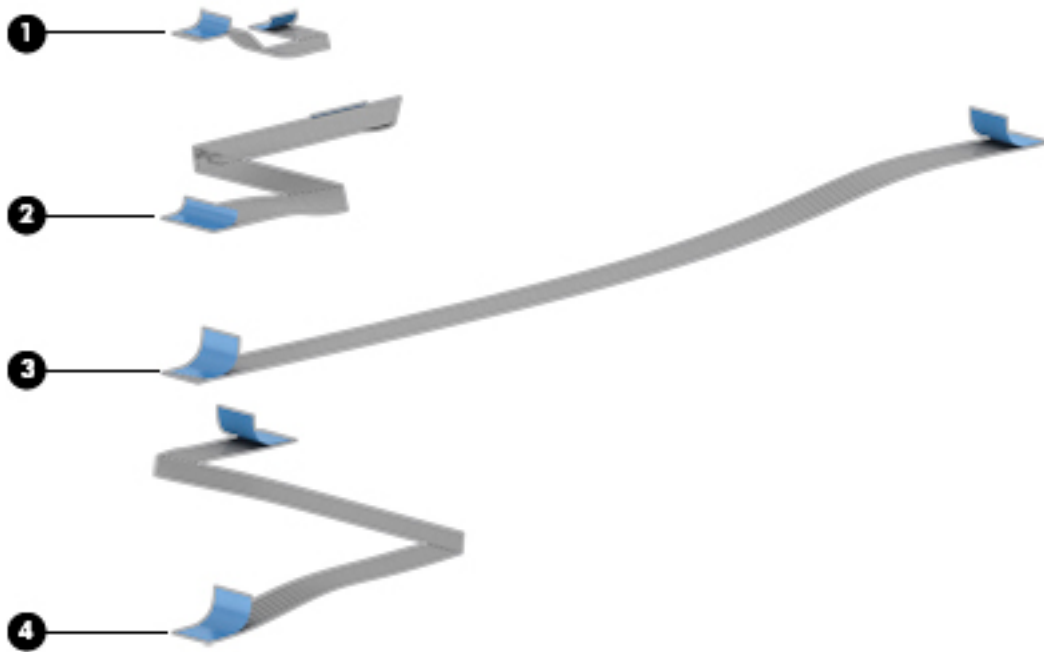


Table 3-3 Cables and their descriptions

Item	Component	Spare part number
(1)	Fingerprint reader board cable	L64902-001
(2)	Touchpad cable	L64900-001
(3)	Power button/card reader board cable (for use in models with a 6 W processor)	L64887-001
(4)	Power button/card reader board cable (for use in models with a 15 W processor)	L64888-001

Miscellaneous parts

Table 3-4 Miscellaneous parts and their descriptions

Component	Spare part number
AC adapter (PFC, slim, 4.5 mm):	
65 W	913691-850
45 W	741727-001
Power cord (C5, 1.0 m):	
For use in Argentina	L19357-001
For use in Australia	L19358-001
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 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
External optical drive	747080-001
Miscellaneous parts kit (includes panel conductive tape, display cover tape, and bezel adhesives)	L64916-001
HDMI-to-VGA adapter	701943-001
USB-to-RJ-45 adapter	829941-001
Screw Kit	L64915-001

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
- Tweezers

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 2.54 cm (1 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 polystyrene foam.
- Handle ESD-sensitive components, parts, and assemblies by the case or PCM laminate. Handle these items only at static-free workstations.
- Avoid contact with pins, leads, or circuitry.
- Turn off power and input signals before inserting or removing connectors or test equipment.

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) might not appear to be affected at all and can work perfectly throughout a normal cycle. The device might 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 polystyrene foam	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 can be packaged together in plastic tubes, trays, or polystyrene foam.



NOTE: As little as 700 V 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 $1\text{ M}\Omega \pm 10\%$ 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 $1\text{ M}\Omega \pm 10\%$ 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, take 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 polystyrene foam.
- Use field service tools, such as cutters, screwdrivers, and vacuums, that are conductive.

Recommended materials and equipment

HP recommends the following materials and equipment to prevent static electricity:

- 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 $1\text{ M}\Omega \pm 10\%$ resistance


- Static-dissipative table or floor mats with hard tie to ground
- Field service kits
- Static awareness labels
- Wrist straps and footwear straps providing $1\text{ M}\Omega \pm 10\%$ 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 be accessed only 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 about 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 52 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 21](#) 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

Table 5-1 Bottom cover descriptions and part numbers

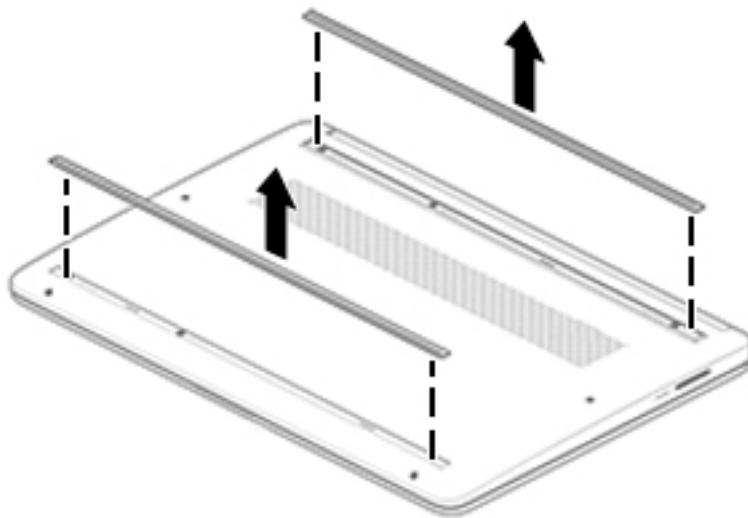
Description	Spare part number
Bottom cover, natural silver	L64894-001
Bottom cover, pale gold	L64895-001
Bottom cover, snowflake white	L64896-001
Rubber feet, gold	L66226-001
Rubber feet, silver	L65866-001

Before removing the bottom cover, follow this step:

- ▲ Prepare the computer for disassembly ([Preparation for disassembly on page 26](#)).

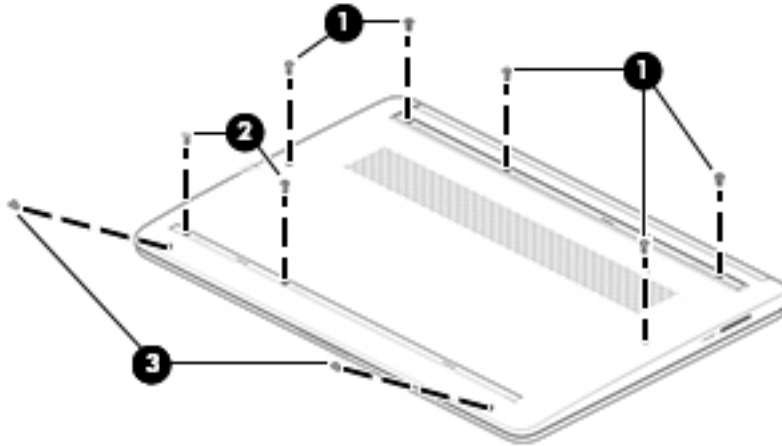
Remove the bottom cover:

1. Peel the two rubber feet off the bottom cover.

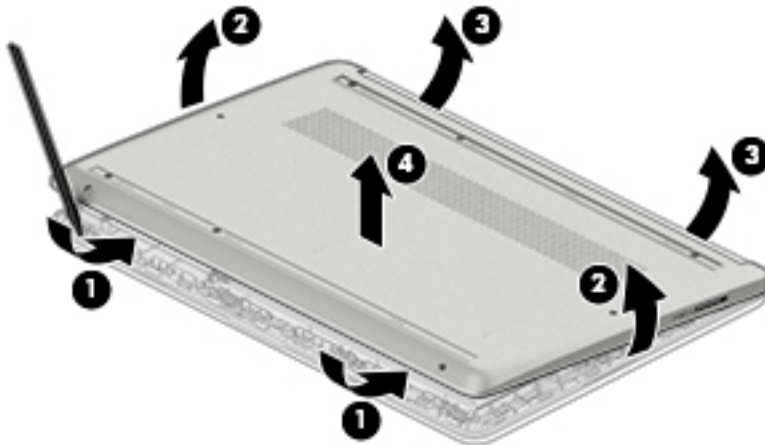


2. Remove the five Phillips M2.0 × 6.0 screws **(1)** from the bottom cover.
3. Remove the two Phillips M2.5 × 6.0 screws **(2)** from the bottom cover.

4. Remove the two Phillips M2.0 × 4.0 screws **(3)** from the bottom edge of the bottom cover.



5. Insert a plastic tool between the bottom cover and the computer chassis **(1)**, and then flex and lift the sides **(2)** and the top edge **(3)** of the bottom cover enough to separate it from the computer.
6. Remove the bottom cover from the computer **(4)**.



Reverse this procedure to install the bottom cover.

Battery

Table 5-2 Battery description and part number

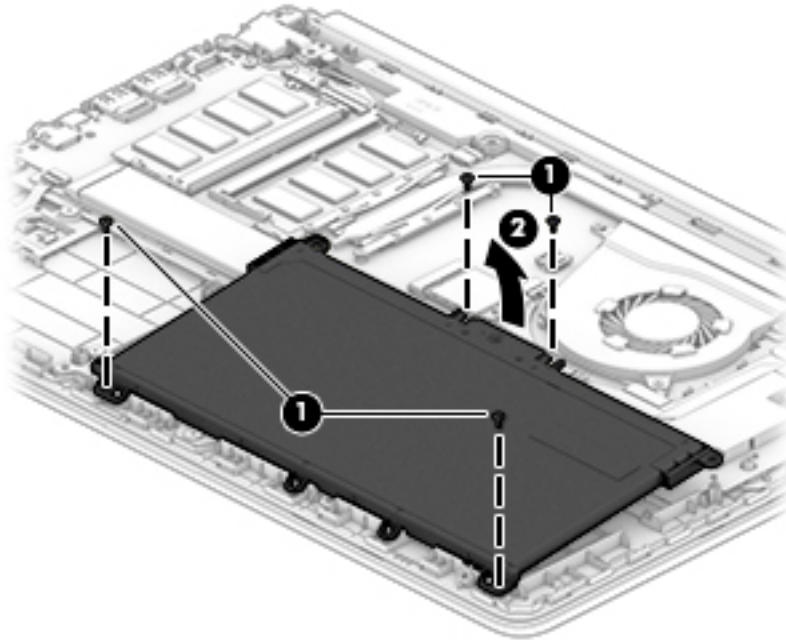
Description	Spare part number
Battery, 3 cell, 41 Wh	L11119-855

Before removing the battery, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 26](#)).
2. Remove the bottom cover (see [Bottom cover on page 27](#)).

Remove the battery:

1. Remove the four 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.

Memory module

Table 5-3 Memory descriptions and part numbers


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

Before removing the memory modules, follow these steps:

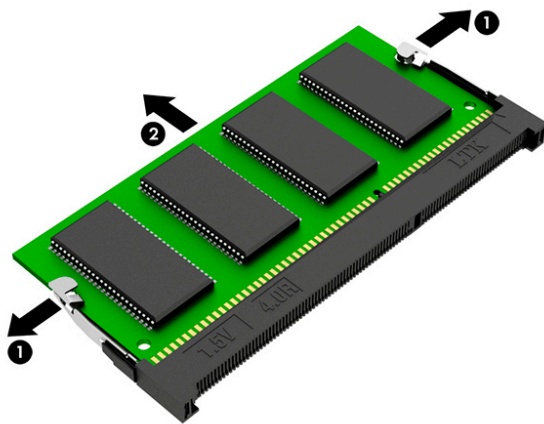
1. Prepare the computer for disassembly ([Preparation for disassembly on page 26](#)).
2. Remove the bottom cover (see [Bottom cover on page 27](#)).
3. Remove the battery (see [Battery on page 29](#)).


Remove the memory modules:

1. Spread the two retention clips outward **(1)** until the memory module tilts up at a 45° angle.
2. 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.

 **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.

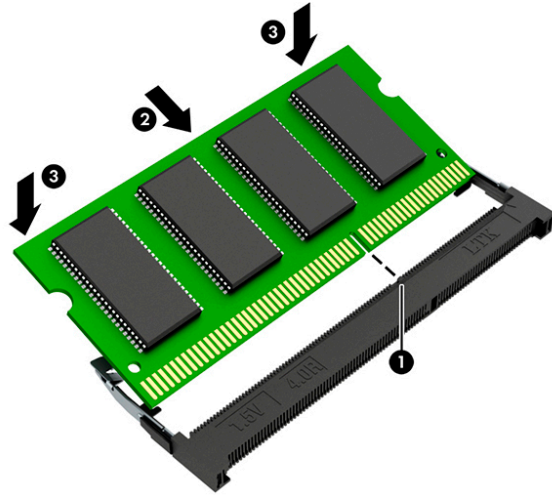
To protect a memory module after removal, place it in an electrostatic-safe container.



 **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)**.



Solid-state drive

Table 5-4 Solid-state drive descriptions and part numbers

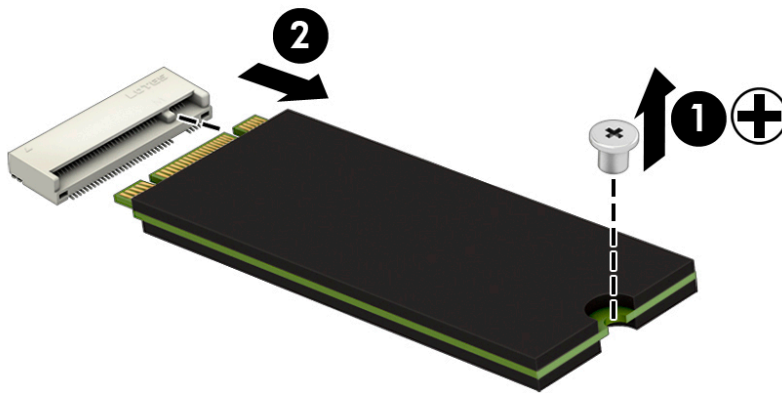
Description	Spare part number
512 GB, PCIe, Gen 3 × 4, TLC	L72365-001
512 GB, PCIe, value	L61960-001
256 GB, PCIe, value	L61959-001
128 GB, SATA-3, TLC	L61958-001
64 GB, eMMC	L61957-001

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

1. Prepare the computer for disassembly ([Preparation for disassembly on page 26](#)).
2. Remove the bottom cover (see [Bottom cover on page 27](#)).
3. Remove the battery (see [Battery on page 29](#)).

Remove the solid-state drive:

- ▲ Remove the Phillips M2.0 × 2.5 screw **(1)**, and then pull the drive from the socket **(2)**.




Reverse this procedure to install the solid-state drive.

WLAN module

Table 5-5 WLAN module description and part number

Description	Spare part number
Realtek RTL8822CE 802.11ac 2 × 2 Wi-Fi + Bluetooth 5.0	L44796-005
Realtek RTL8723DE 802.11bgn 1 × 1 Wi-Fi + Bluetooth 4.2	L21480-005
Realtek RTL8821CE 802.11ac 1 × 1 Wi-Fi + Bluetooth 4.2	L17365-005


 **IMPORTANT:** 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 26](#)).
2. Remove the bottom cover (see [Bottom cover on page 27](#)).
3. Remove the battery (see [Battery on page 29](#)).

Remove the WLAN module:

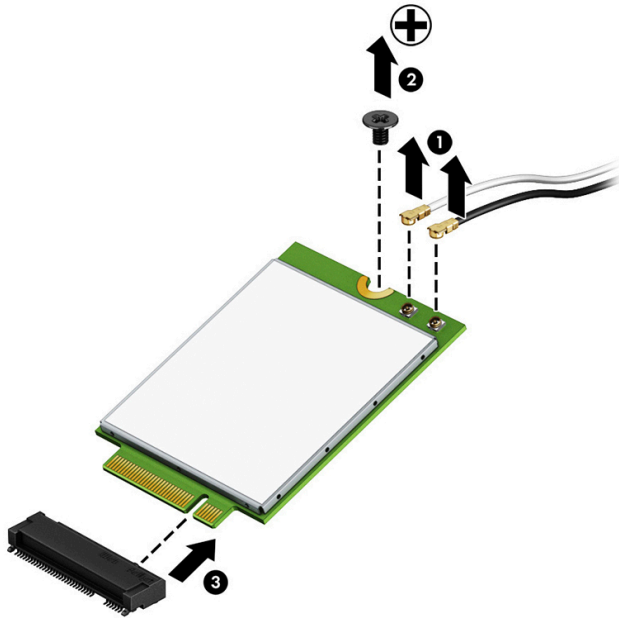
1. Disconnect the WLAN antenna cables **(1)** from the terminals on the WLAN module.

 **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.

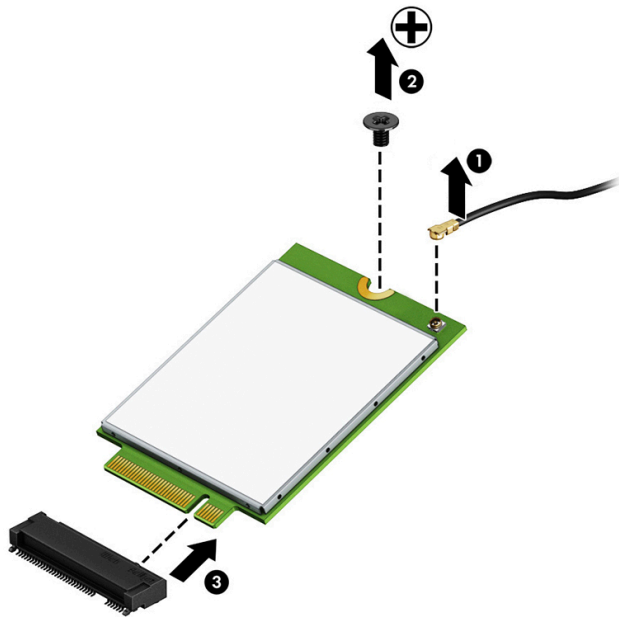
2. Remove the Phillips M2.0 × 2.0 screw **(2)** that secures the WLAN module to the bottom cover. (The WLAN module tilts up.)

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

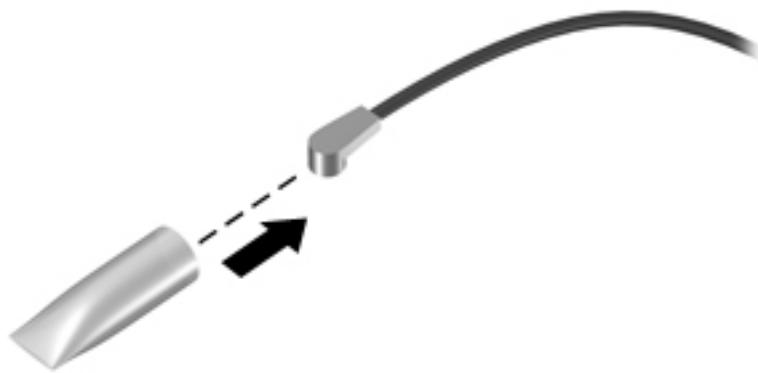
Models with two antennas



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.

Power button/card reader board

Table 5-6 Power button/card reader board description and part number

Description	Spare part number
Power button/card reader board	L64886-001


NOTE: The power button board spare part kit does not include the cable. The cable is available as spare part number L64887-001 in models with a 15 W processor and L64888-001 in models with a 6 W processor.

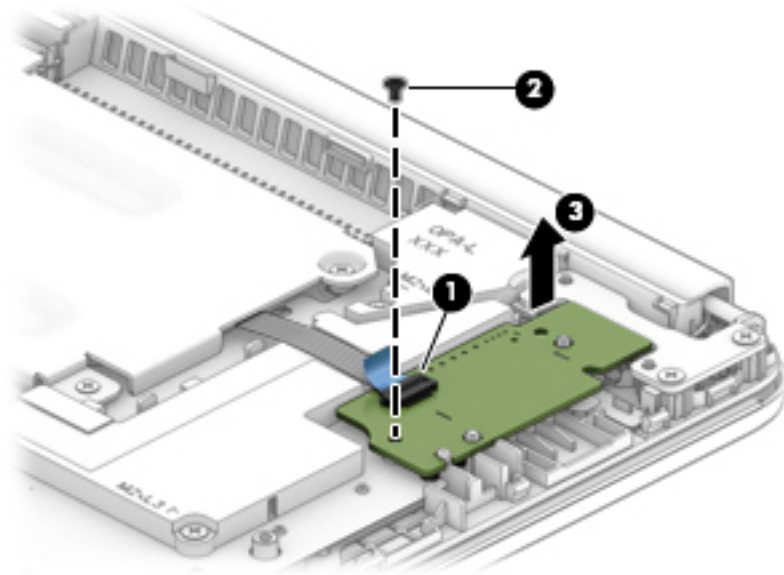
Before removing the power button/card reader board, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 26](#)).
2. Remove the bottom cover (see [Bottom cover on page 27](#)).
3. Remove the battery (see [Battery on page 29](#)).

Remove the power button/card reader board:

1. Disconnect the cable from the board **(1)**.
2. Remove the Phillips M2.0 × 3.0 screw **(2)** that secures the board to the computer.
3. Remove the board from the computer **(3)**.

 **NOTE:** The following illustration shows a fanless model. Computer appearance can vary.



Reverse this procedure to install the power button/card reader board.

Touchpad

Table 5-7 Touchpad description and part number

Description	Spare part number
Touchpad, natural silver	L64897-001
Touchpad, ash silver	L64898-001
Touchpad, snowflake white	L64899-001

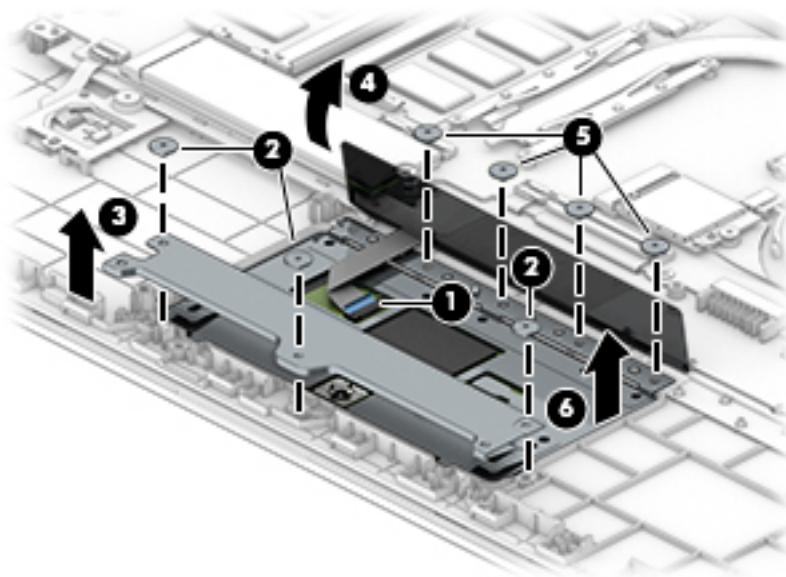
NOTE: The touchpad spare part kit does not include the cable. The cable is available as spare part number L64900-001.

Before removing the touchpad, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 26](#)).
2. Remove the bottom cover (see [Bottom cover on page 27](#)).
3. Remove the battery (see [Battery on page 29](#)).

Remove the touchpad:

1. Disconnect the cable from the ZIF connector on the touchpad **(1)**.
2. Remove the three Phillips M2.0 × 2.0 screws **(2)** that secure the touchpad bracket to the computer, and then remove the bracket **(3)**.
3. Lift the tape that covers the screws on the top of the touchpad **(4)**.
4. Remove the four Phillips M2.0 × 2.0 screws **(5)** that secure the touchpad to the computer, and then remove the touchpad **(6)**.



Reverse this procedure to install the touchpad.

Fingerprint reader board

Table 5-8 Fingerprint reader board description and part number

Description	Spare part number
Fingerprint reader board	L64901-001

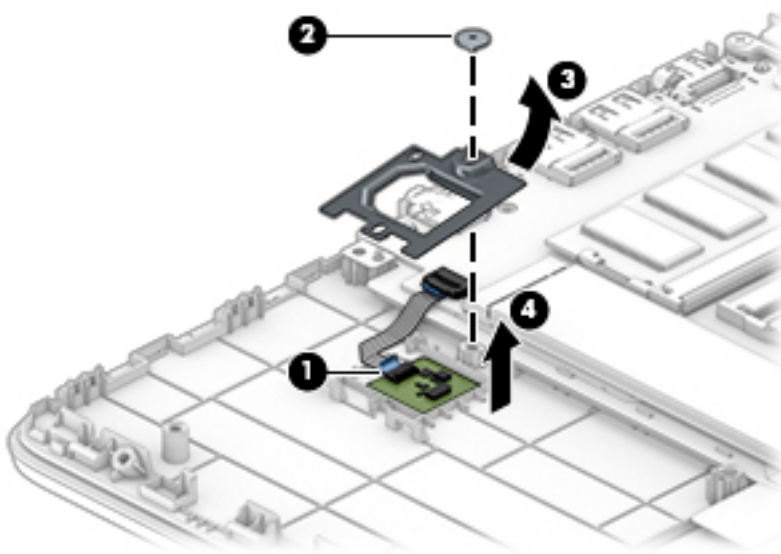
NOTE: The fingerprint reader board spare part kit does not include the cable. The cable is available as spare part number L64902-001.

Before removing the fingerprint reader board, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 26](#)).
2. Remove the bottom cover (see [Bottom cover on page 27](#)).
3. Remove the battery (see [Battery on page 29](#)).

Remove the fingerprint reader board:

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



Reverse this procedure to install the fingerprint reader board.

Fan

Table 5-9 Fan description and part number

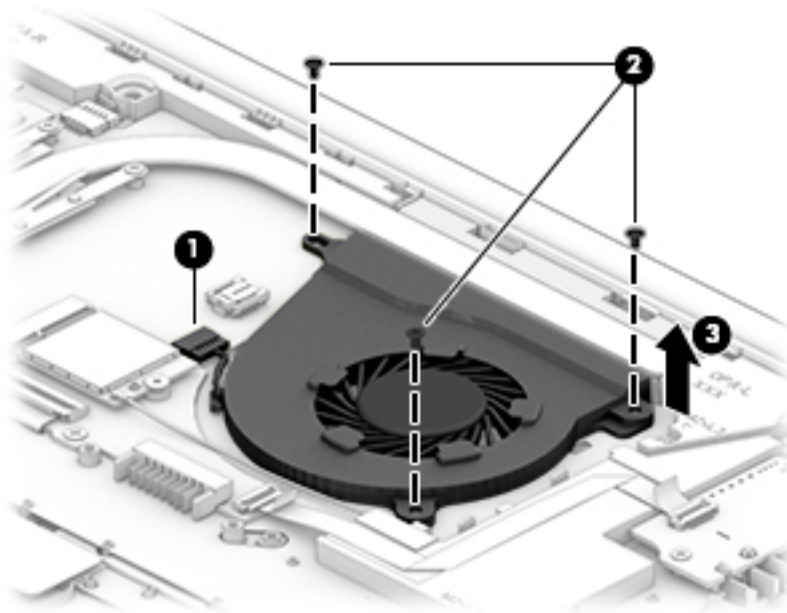
Description	Spare part number
Fan for use in models with a backlit keyboard	L63587-001
Fan for use in models without a backlit keyboard	L63588-001

Before removing the fan, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 26](#)).
2. Remove the bottom cover (see [Bottom cover on page 27](#)).
3. Remove the battery (see [Battery on page 29](#)).

Remove the fan:

1. Disconnect the fan cable from the system board **(1)**.
2. Remove the three Phillips M2.0 × 3.0 screws **(2)** that secure the fan to the computer.
3. Remove the fan from the computer **(3)**.




Reverse this procedure to install the fan.

Vent cover (interior) on fanless models

Table 5-10 Vent cover description and part number

Description	Spare part number
Vent cover	L68313-001

Fanless models require that you install a cover on the inside of the computer over the air vent holes.

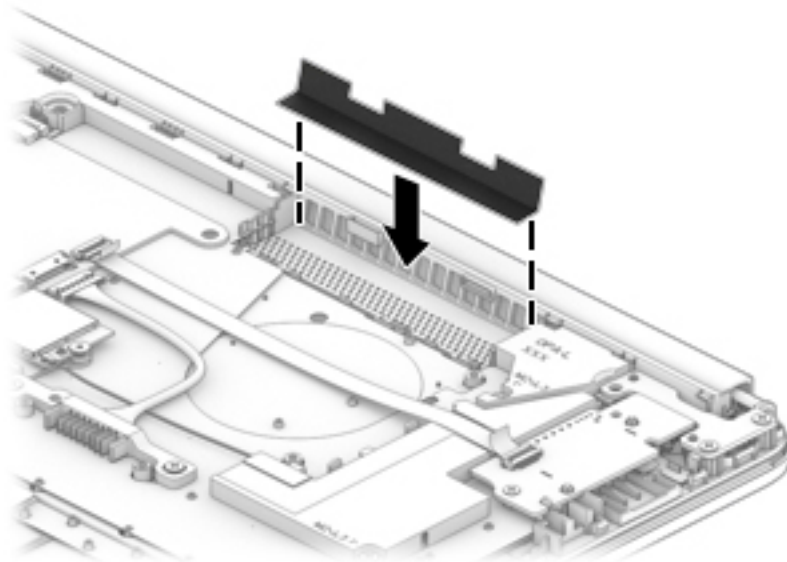
 **IMPORTANT:** Do not install the vent cover in models with a fan. Doing so will cause thermal performance problems.

Before installing the interior vent cover, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 26](#)).
2. Remove the bottom cover (see [Bottom cover on page 27](#)).
3. Remove the battery (see [Battery on page 29](#)).

Install the interior vent cover:

1. Fold the cover along the dotted lines in the middle of the cover.
2. Install the cover of the fan vent, making sure the cover aligns correctly with the hooks along the top of the vent.



Heat sink (thermal module)

Table 5-11 Heat sink assembly, thermal pad, and thermal grease descriptions and part numbers

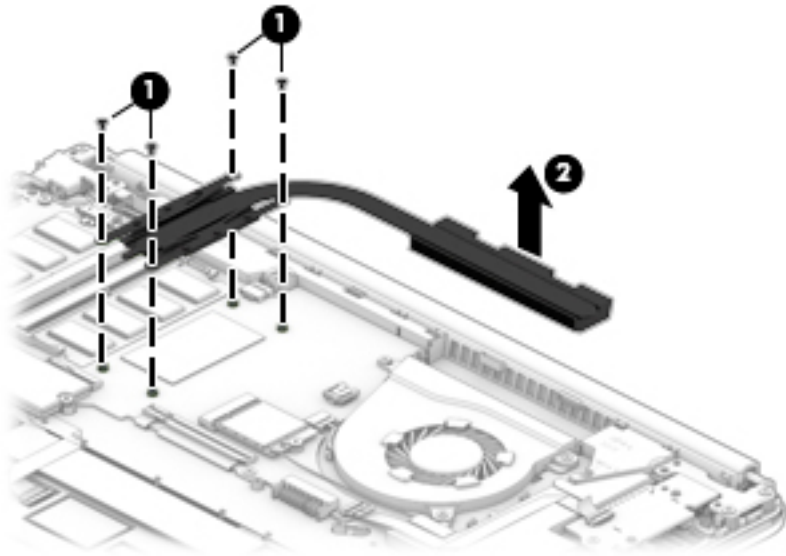
Description	Spare part number
Heat sink	L64890-001

Before removing the heat sink, follow these steps:

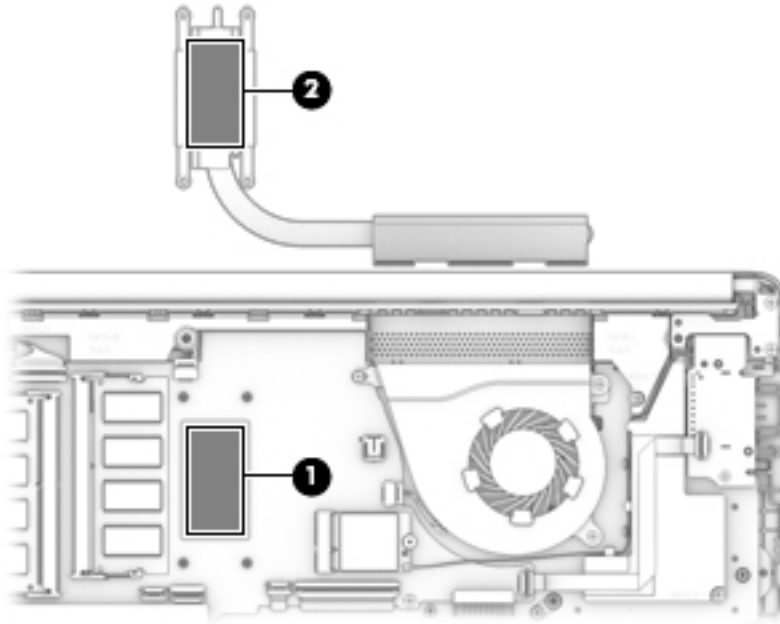
1. Prepare the computer for disassembly ([Preparation for disassembly on page 26](#)).
2. Remove the bottom cover (see [Bottom cover on page 27](#)).
3. Remove the battery (see [Battery on page 29](#)).

Remove the heat sink:

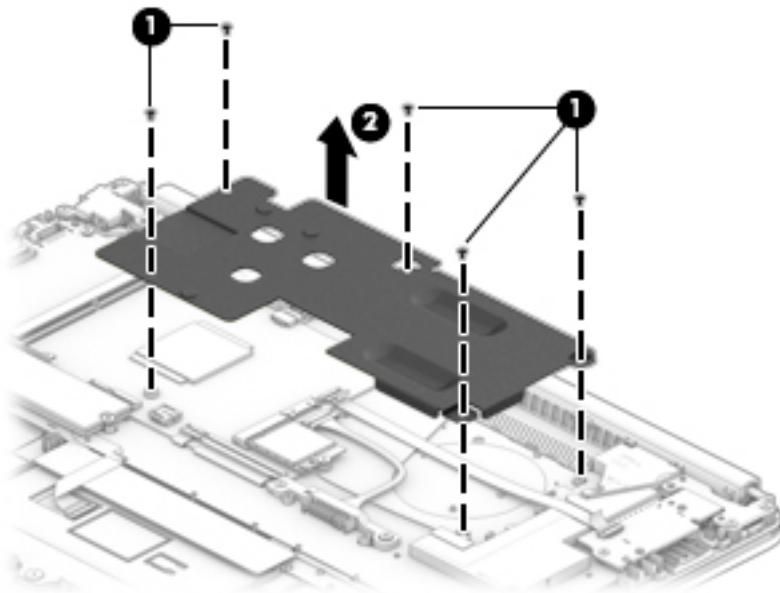
1. **Models with a fan:** Remove the four Phillips M2.0 × 2.5 screws (**1**) in the order indicated on the heat sink.
2. Remove the heat sink (**2**).



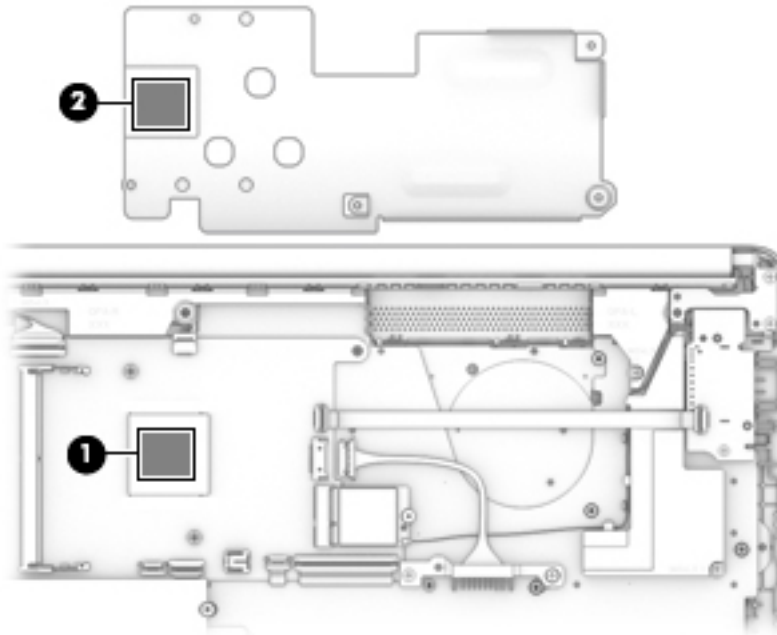
3. Apply thermal grease to the integrated processor on the system board (1) and associated location on the heat sink (2).



4. **Fanless models:** Remove the five Phillips M2.0 × 2.5 screws (1) in the order indicated on the heat sink.
5. Remove the heat sink (2).



6. Apply thermal grease to the integrated processor on the system board **(1)** and associated location on the heat sink **(2)**.



Reverse this procedure to install the heat sink.

Battery connector (fanless products only)

Table 5-12 Battery connector description and part number

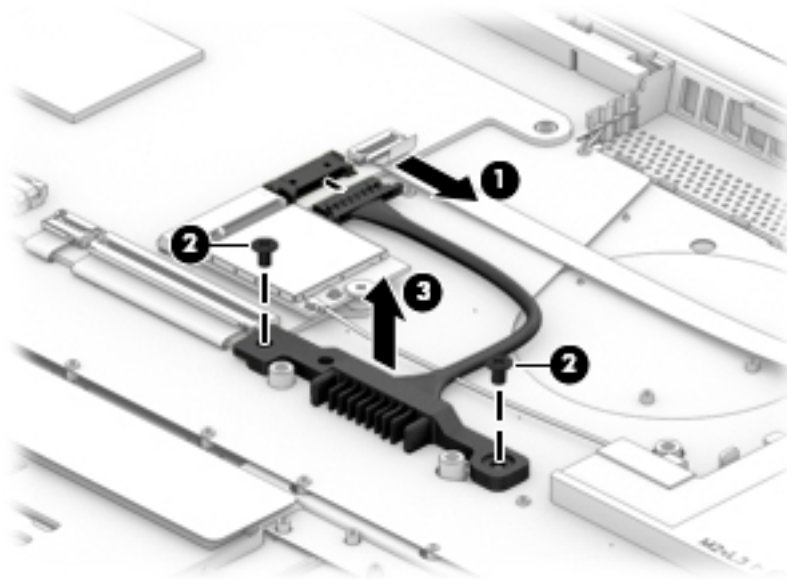
Description	Spare part number
Battery connector	L64889-001

Before removing the battery connector, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 26](#)).
2. Remove the bottom cover (see [Bottom cover on page 27](#)).
3. Remove the battery (see [Battery on page 29](#)).
4. Remove the heat plate (see [Heat sink \(thermal module\) on page 41](#)).

Remove the battery connector:

1. Disconnect the battery connector cable from the system board **(1)**.
2. Remove the two Phillips M2.0 × 3.0 screws **(2)** that secure the connector to the computer.
3. Lift the battery connector out of the computer **(3)**.



Reverse this procedure to install the battery connector.

System board

All system boards use the following part numbers:

xxxxxx-001: Non-Windows operating system

xxxxxx-601: Windows 10 operating system

Table 5-13 System board descriptions and part numbers

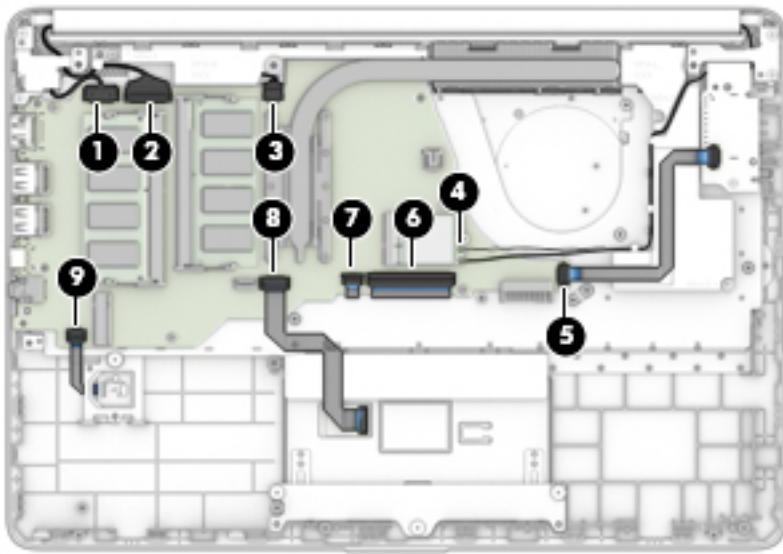
Description	Spare part number
Intel Core i7-8565U processor	L61954-xx1
Intel Core i5-8265U processor	L61953-xx1
Intel Core i3-8145U processor	L61952-xx1
Intel Core i3-7020U processor	L61951-xx1
Intel Pentium 5405U processor	L70052-xx1
Intel Pentium 4417U processor	L61955-xx1
Intel Pentium N5000 processor	L61956-xx1
Intel Celeron N4000 processor	L61950-xx1

Before removing the system board, follow these steps:

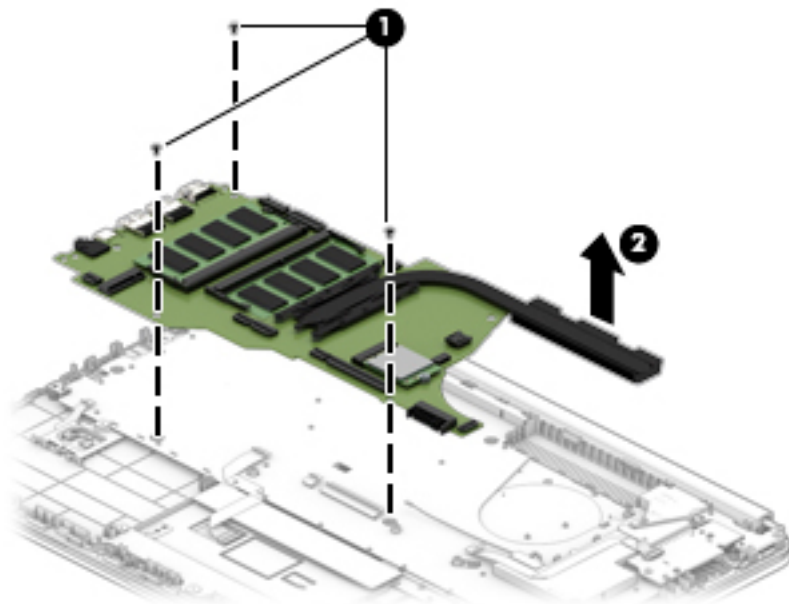
1. Prepare the computer for disassembly ([Preparation for disassembly on page 26](#)).
2. Remove the bottom cover (see [Bottom cover on page 27](#)).
3. Remove the battery (see [Battery on page 29](#)).
4. Remove the heat sink (see [Heat sink \(thermal module\) on page 41](#)).

Remove the system board:

1. **Models with a fan:** Disconnect the following cables from the system board:
 - a. Power connector cable **(1)**
 - b. Display cable **(2)**
 - c. Speaker cable **(3)**
 - d. WLAN module antennas **(4)**
 - e. Power button/card reader board cable (ZIF) **(5)**
 - f. Keyboard cable (ZIF) **(6)**
 - g. Keyboard backlight cable (ZIF) **(7)**
 - h. Touchpad cable (ZIF) **(8)**
 - i. Fingerprint reader cable (ZIF) **(9)**

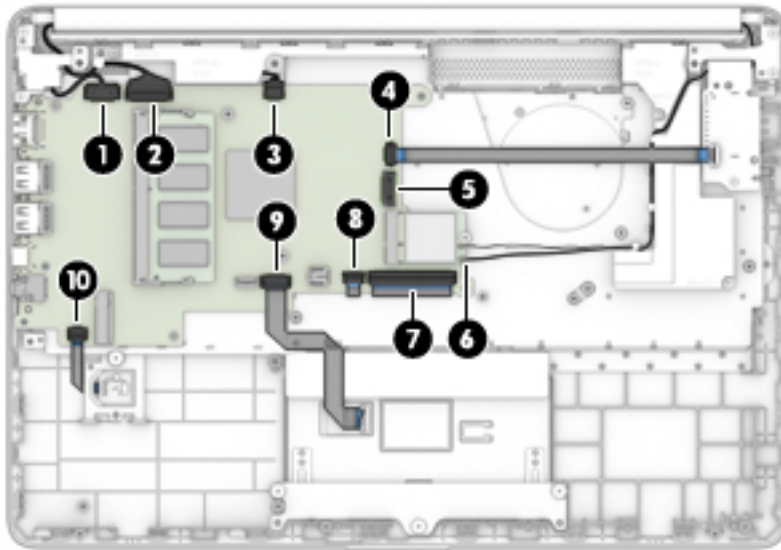


2. Remove the three Phillips M2.0 × 2.0 screws (1) that secure the system board to the computer.
3. Remove the system board from the computer (2).

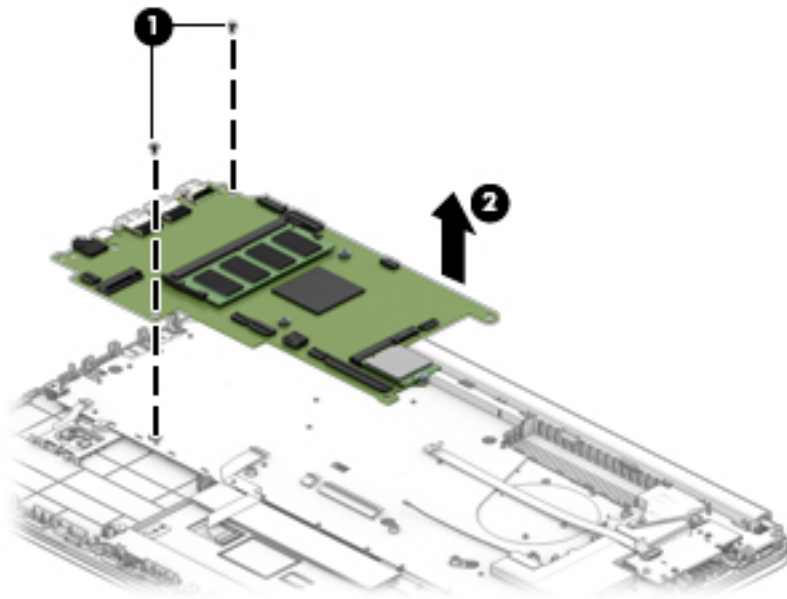


4. **Fanless models:** Disconnect the following cables from the system board:
 - a. Power connector cable (1)
 - b. Display cable (2)
 - c. Speaker cable (3)
 - d. Power button/card reader board cable (ZIF) (4)
 - e. Battery connector cable (5)
 - f. WLAN module antennas (6)
 - g. Keyboard cable (ZIF) (7)

- h. Keyboard backlight cable (ZIF) **(8)**
- i. Touchpad cable (ZIF) **(9)**
- j. Fingerprint reader cable (ZIF) **(10)**



- 5. Remove the two Phillips M2.0 × 3.0 screws **(1)** that secure the system board to the computer.
- 6. Remove the system board from the computer **(2)**.



Reverse this procedure to install the system board.

Speaker assembly

Table 5-14 Speaker assembly description and part number

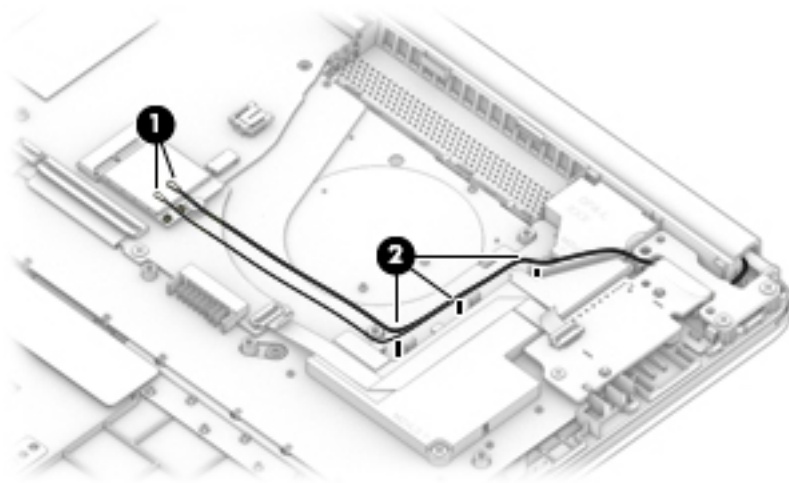
Description	Spare part number
Speaker assembly	L64893-001

Before removing the speaker assembly, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 26](#)).
2. Remove the bottom cover (see [Bottom cover on page 27](#)).
3. Remove the battery (see [Battery on page 29](#)).
4. Remove the fan (see [Fan on page 39](#)).
5. Remove the heat sink (see [Heat sink \(thermal module\) on page 41](#)).

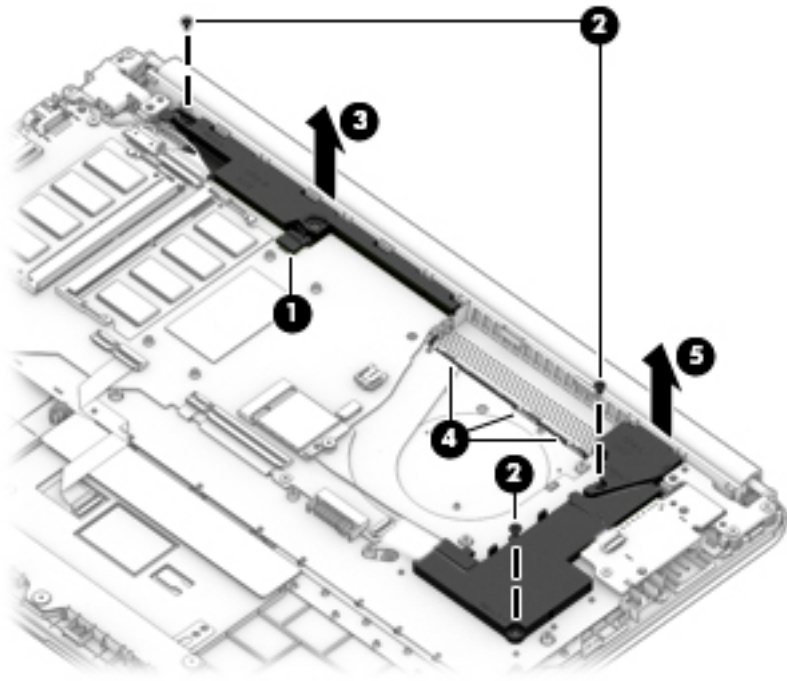
Remove the speakers:

1. Disconnect the antennas from the WLAN module **(1)**, and then remove the antenna cables from the channel in the left speaker **(2)**.




2. Disconnect the speaker cable from the system board **(1)**.
3. Remove the three Phillips M2.0 × 3.0 screws **(2)** that secure the speakers to the computer.

4. Lift the left speaker up from the computer (3), remove the speaker cable from the clips in the computer chassis (4), and then remove the right speaker from the computer (5).



Reverse this procedure to install the speaker assembly.

Display assembly

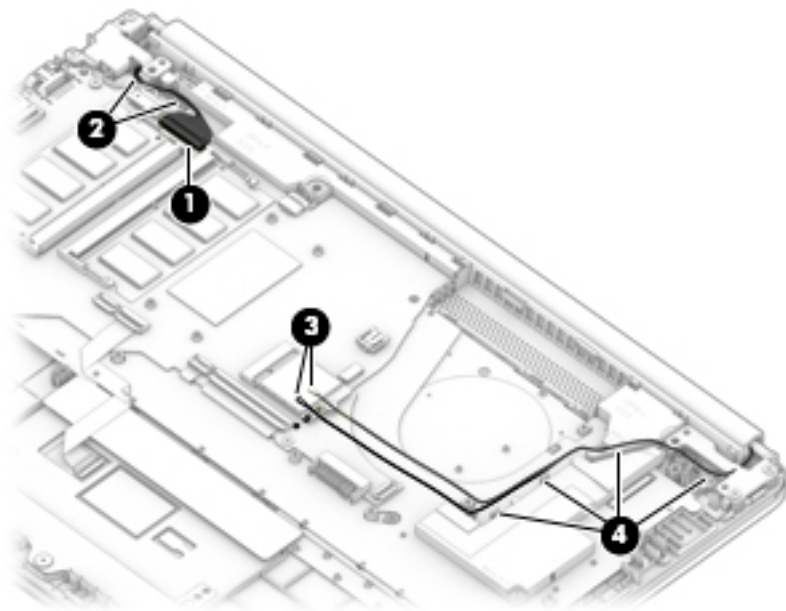
 **NOTE:** Display assemblies are offered as spare parts only at a subcomponent level.

Before removing the display assembly, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 26](#)).
2. Remove the bottom cover (see [Bottom cover on page 27](#)).
3. Remove the battery (see [Battery on page 29](#)).
4. Remove the power button/card reader board (see [Power button/card reader board on page 36](#)).

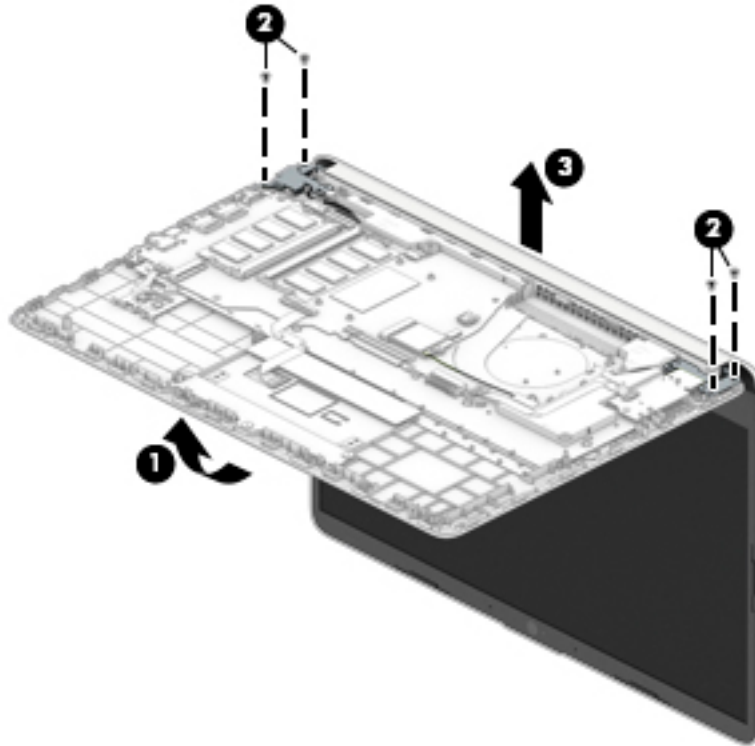
Remove the display assembly:

1. Disconnect the display cable from the system board **(1)**, and then remove the cable from the clips in the left hinge **(2)**.
2. Disconnect the wireless antenna cables from the WLAN module **(3)**, and then remove the cables from the channel and clips in the right speaker **(4)**.



3. Open the display **(1)**.
4. Remove the two Phillips M2.5 × 5.0 screws **(2)** from each hinge.

5. Separate the display from the computer (3).



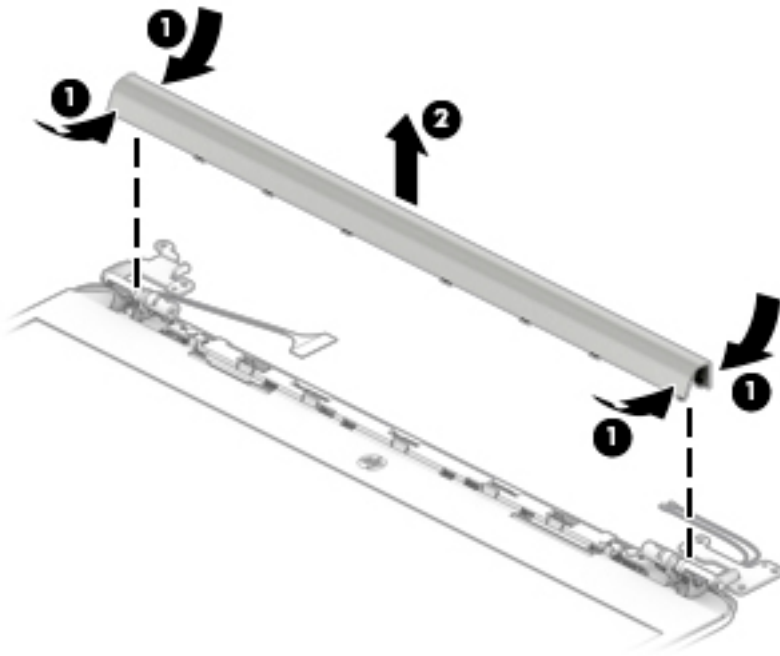
6. If it is necessary to replace display assembly subcomponents:
 - a. Remove the hinge cover by squeezing both ends of the cover (1), and then pulling the cover off the display (2).

The hinge cover is available as the following spare part numbers:

L64911-001: Natural silver

L64912-001: Pale gold

L64913-001: Snowflake white



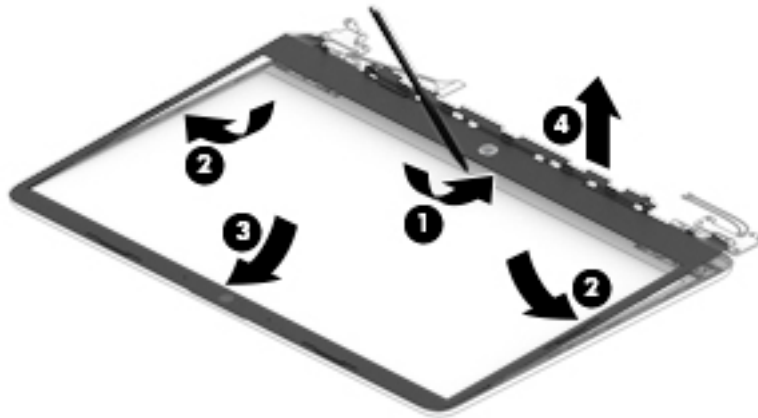
- b. Use a tool to release the bottom edge of the display bezel **(1)** from the display assembly.



IMPORTANT: Be careful not to bend or break the narrow sections of the bezel when removing.

- c. Release the left and right edges of the display bezel **(2)** from the display assembly.
- d. Release the top of the display bezel **(3)** from the display assembly.
- e. Remove the display bezel **(4)**.

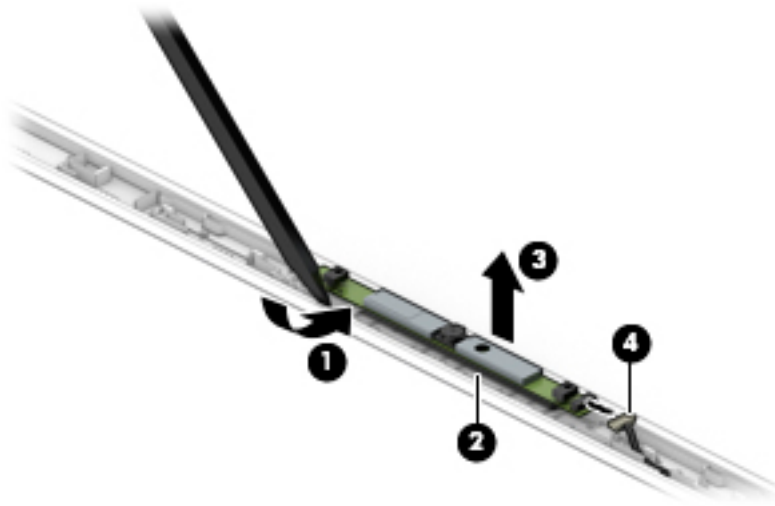
The display bezel is available as spare part number L64907-001.



7. If it is necessary to remove the webcam module:


- ▲ Starting from the side, use a tool to lift and release **(1)** the webcam module from the metal tape behind it **(2)**. Remove the module from the display back cover **(3)**, and then disconnect the cable **(4)**.

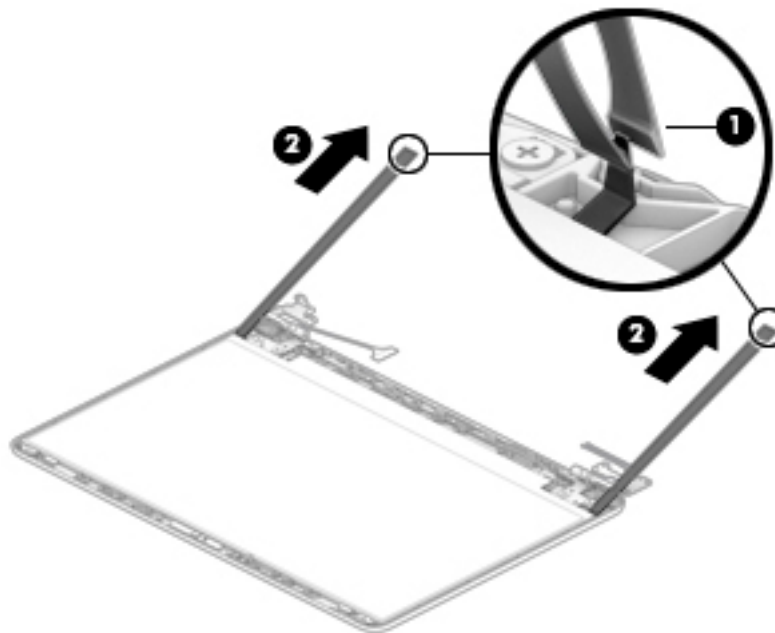
The webcam is available as spare part number L64914-001.



8. If it is necessary to remove the display panel:

- a. Use tweezers to grasp the tape that routes behind both the left and right sides of the display panel (1).
- b. Pull the tape from behind the left and right sides of the panel (2).

 **IMPORTANT:** You have to pull on the tape multiple times before it is completely removed. To avoid tearing the tape, pull the tape evenly and carefully. Rolling the tape around the tweezer or the shaft of a screwdriver as you pull it can help to avoid pulling too hard and breaking the tape. Be sure to pull the tape straight out – do not pull it out along the sides of the panel.



- c. Rotate the display panel over and place next to the display back cover (1).

- d. Lift the tape from the connector on the rear of the panel **(2)**, and then disconnect the cable from the panel **(3)**.

Display panels are available as the following spare part numbers:

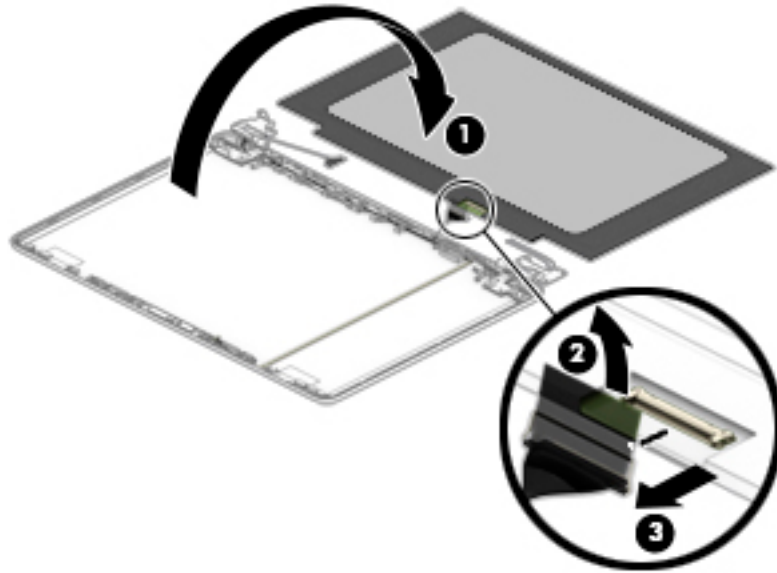
L61945-001: FHD, antiglare, 250 nits

L61946-001: FHD, BrightView, 250 nits

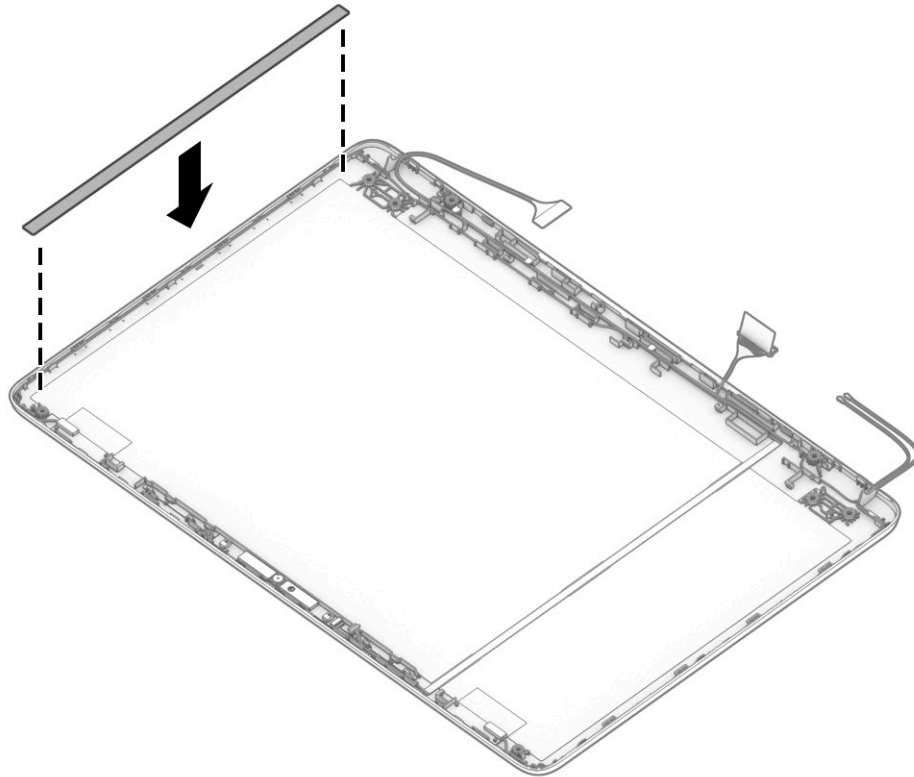
L61947-001: HD, antiglare, 220 nits

L61948-001: HD, BrightView, 220 nits

L61949-001: HD, BrightView, 220 nits, Touch-on Panel (TOP)



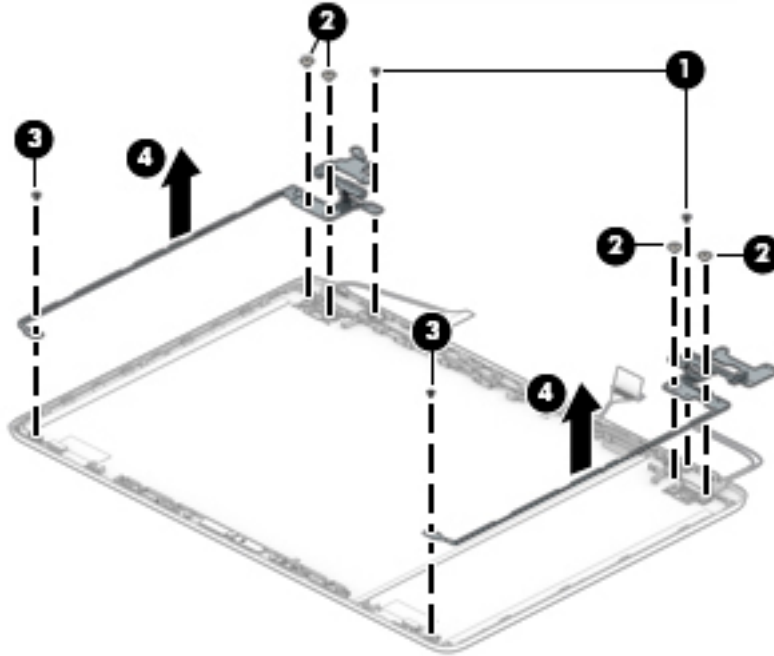
- e. When installing the display panel, apply the adhesive in the location as shown in the following illustration.



9. If it is necessary to remove the display hinges:
- Remove the Phillips M2.0 × 2.5 screw **(1)** from the bottom of each hinge.
 - Remove the two Phillips M2.5 × 2.5 screws **(2)** from the bottom of each hinge.
 - Remove the Phillips M2.5 × 3.0 screw **(2)** from the top of each hinge.

- d. Remove the display hinges from the display back cover (4).

The display hinges are available as spare part number L64910-001.



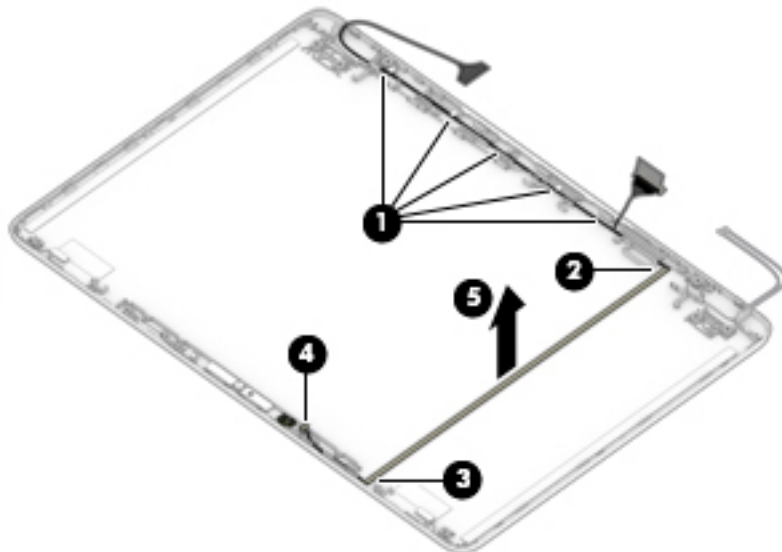
10. If it is necessary to remove the display panel cable:

- a. Remove the cable from the channel at the bottom of the display back cover (1).
- b. Remove the cable from the bottom (2) and top (3) of the display back cover.
- c. Disconnect the cable from the webcam module (4), and then remove the cable from the display back cover (5).

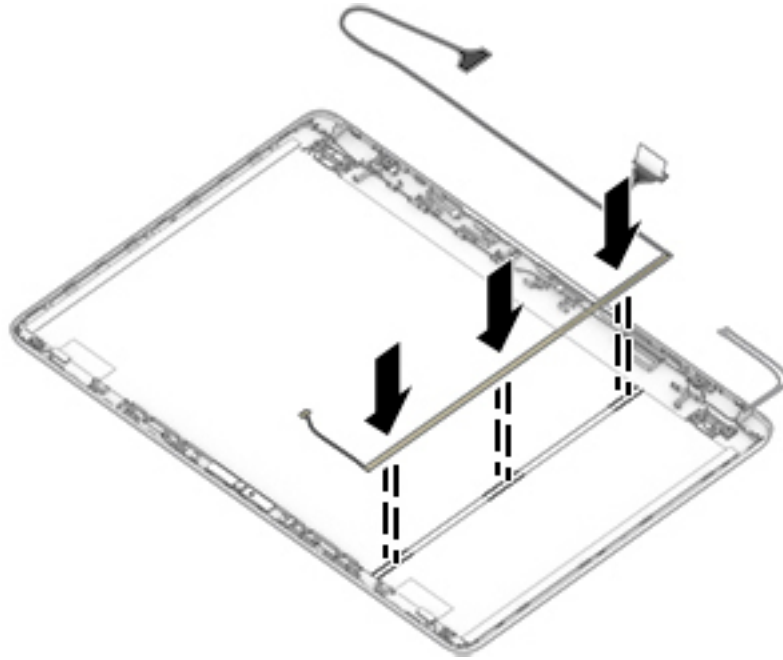
The display cable is available as the following spare part numbers:

L64908-001: Touch displays

L64909-001: Non-touch displays



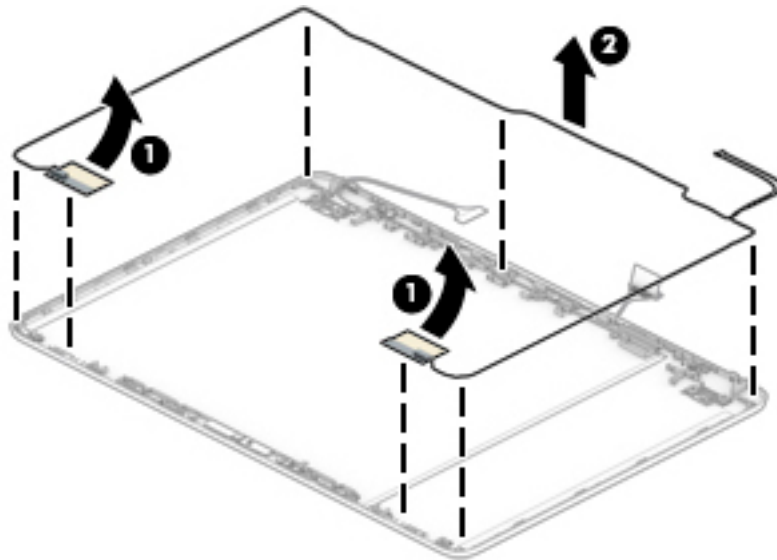
- d. When installing the display cable, position the cable in the middle of the alignment notch as marked on the inside of the display back cover.



11. If it is necessary to remove the wireless antennas:
 - a. Peel the antennas off the top of the display back cover **(1)**.
 - b. Remove the antenna cables from the display back cover **(2)**.

The wireless antennas are available as spare part number L64905-001 for dual antennas and L64906-001 for single antenna.

The display back cover is available as spare part number L66227-001 for use in natural silver models, L66228-001 for use in pale gold models, and L66229-001 for use in snowflake white models.



Reverse this procedure to install the display assembly.

Power connector

Table 5-15 Power connector description and part number

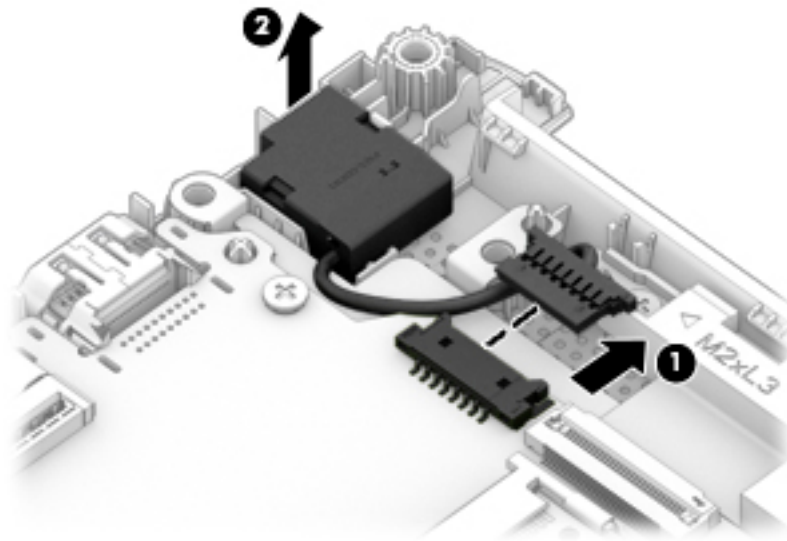
Description	Spare part number
Power connector	808155-010

Before removing the power connector cable, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 26](#)).
2. Remove the bottom cover (see [Bottom cover on page 27](#)).
3. Remove the battery (see [Battery on page 29](#)).
4. Remove the display assembly (see [Display assembly on page 50](#)).

Remove the power connector cable:

1. Disconnect the 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 spare parts from the computer.

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

Table 5-16 Keyboard/top cover description and part number


Description	Spare part number
Top cover: pale gold; keyboard: ash silver; no backlight	L61504-xx1
Top cover: pale gold; keyboard: ash silver; backlit	L61505-xx1
Top cover: natural silver; keyboard: natural silver; no backlight	L61506-xx1
Top cover: natural silver; keyboard: natural silver; backlit	L61507-xx1
Top cover: snowflake white; keyboard: snow white; no backlight	L61508-xx1
Top cover: snowflake white; keyboard: snow white; backlit	L61509-xx1

Table 5-17 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	South Korea	-AD1
Bulgaria	-261	Italy	-061	Spain	-071
Czech Republic and Slovakia	-FL1	Latin America	-161	Switzerland	-BG1
Denmark, Finland, and Norway	-DH1	The Netherlands	-B31	Taiwan	-AB1
France	-051	Portugal	-131	Thailand	-281
French Arabic	-FP1	Romania	-271	Turkey	-141
French Canada	-DB1	Russia	-251	Ukraine	-BD1
Germany	-041	Saudi Arabia	-171	United Kingdom	-031
Greece	-151	Slovenia	-BA1	United States	-001
Hungary	-211				

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 60](#)).
 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 61](#).

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 62](#).

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. Select **HP PC Hardware Diagnostics Windows**.

– 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 64](#).

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


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

When HP PC Hardware Diagnostics UEFI detects a failure that requires hardware replacement, a 24-digit Failure ID code is generated. For assistance in 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 64](#).

- 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 67](#)).
- **Creating a restore point**—You can use Windows tools to create a restore point (see [Using Windows tools on page 67](#)).
- **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 67](#)).
- **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 67](#)).

 **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 67](#).

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 67](#).



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

Computer specifications

Table 9-1 Computer specifications

	Metric	U.S.
Computer dimensions		
Width	324.0 mm	12.8 in
Depth	225.0 mm	8.9 in
Height	18.0 mm	0.7 in
Weight (lowest configuration)	1468.0 g	3.24 lbs
Input power		
	Rating	
Operating voltage and current	18.5 V dc @ 3.5 A – 65 W or 45 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.		

35.6 cm (14.0 in) display specifications

	Metric	U.S.
Active diagonal size	35.6 cm	14.0 in
Resolution	FHD: 1920 × 1080 HD: 1366 × 768	
Surface treatment	Antiglare or BrightView	
Brightness	HD: 220 nits FHD: 250 nits	
Viewing angle	HD: SVA FHD: UWVA	
Backlight	LED	
Aspect ratio	16:9	
Display panel interface	eDP	

M.2 SATA solid-state drive specifications

	128 GB*
Height	1.35 mm
Weight	< 10 g
Form factor	M.2 2280-D2-B-M
Transfer rate	up to 540 MB/sec
Interface type	SATA-3
Ready time, maximum (to not busy)	1.0 ms
Access times, logical	0.1 ms
Total logical sectors	234,441,648
Operating temperature	0°C to 70°C (32°F to 158°F)
*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less. Actual drive specifications may differ slightly.	
NOTE: Certain restrictions and exclusions apply. Contact technical support for details.	

M.2 PCIe solid-state drive specifications

	256 GB*	512 GB*
Dimensions		
Height	1 mm	1 mm
Length	50.8 mm	50.8 mm
Width	28.9 mm	28.9 mm
Weight	< 10 g	< 10 g
Interface type		
	ATA-7	ATA-7
Transfer rate		
Sequential Read	Up to 2150 MB/s	Up to 2150 MB/s
Random Read	Up to 300,000 IOPs	Up to 300,000 IOPs
Sequential Write	Up to 1260 MB/s	Up to 1550 MB/s
Random Write	Up to 100,000 IOPs	Up to 100,000 IOPs
Ready time, Maximum (to not busy)		
	1.0 sec	1.0 sec
Access times		
Logical	0.1	0.1
Total logical sectors		
	500,118,192	1,000,215,216
Operating temperature		
Operating	0° to 70°C (32°F to 158°F)	0° to 70°C (32°F to 158°F)
Non-operating	-40° to 80°C (-40°F to 176°F)	-40° to 85°C (-40°F to 185°F)
*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less.		
NOTE: Certain restrictions and exclusions apply. Contact technical support for details.		

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 11
 - antenna
 - removal 57
 - antennas
 - spare part number 57
 - audio, product description 2
 - audio-out (headphone)/audio-in (microphone) combo jack, identifying 5
- B**
 - back cover
 - spare part number 18
 - backup, creating 67
 - backups 67
 - battery
 - removal 29
 - spare part number 16, 29
 - battery connector
 - removal 44
 - spare part number 44
 - bezel
 - spare part number 17, 52
 - BIOS
 - determining version 60
 - downloading an update 61
 - starting the Setup Utility 60
 - updating 60
 - Bluetooth label 13
 - boot order, changing 68
 - bottom components 12
 - bottom cover
 - removal 27
 - spare part number 27
 - bottom cover, spare part numbers 16
 - buttons
 - power 10
- C**
 - camera
 - identifying 7
 - camera light, identifying 7
 - caps lock light, identifying 9
 - card reader board
 - removal 36
 - spare part number 36
 - cautions
 - electrostatic discharge 22
 - components
 - bottom 12
 - display 7
 - keyboard area 8
 - left side 6
 - right side 5
 - computer major components 14
 - computer specifications 69
 - connectors
 - power 6
 - control zone 8
- D**
 - display assembly
 - removal 50
 - display back cover
 - spare part number 57
 - display cable
 - removal 56
 - display components 7
 - display panel
 - product description 1
 - removal 53
 - spare part numbers 17
 - display panel cable
 - spare part numbers 18, 56
 - display specifications 70
 - drive light, identifying 6
- E**
 - electrostatic discharge (ESD) 22
 - preventing damage 23
 - esc key, identifying 11
- F**
 - fan
 - removal 39
 - spare part number 16, 39
 - fingerprint reader board
 - removal 38
 - spare part number 15
 - spare part numbers 38
 - fingerprint reader board cable
 - spare part number 19
 - fingerprint reader board cable, spare part number 15, 38
 - fingerprint reader, identifying 11
 - fn key, identifying 11
- G**
 - graphics, product description 1
 - grounding methods 24
 - guidelines
 - packaging 25
 - transporting 25
 - workstation 22
- H**
 - HDMI port
 - identifying 5
 - heat sink
 - spare part number 16
 - heat sink assembly
 - removal 41
 - spare part number 41
 - hinge
 - removal 55
 - spare part number 56
 - hinge cover
 - spare part number 17
 - hinges
 - spare part number 18
 - HP PC Hardware Diagnostics UEFI
 - downloading 64
 - starting 64
 - using 63
 - HP PC Hardware Diagnostics Windows
 - downloading 62

- installing 63
- using 62

HP Recovery media

- recovery 68

I

- internal card expansion, product description 3
- internal microphones, identifying 7

J

- jacks
 - audio-out (headphone)/audio-in (microphone) 5

K

- keyboard/pointing devices, product description 3
- keyboard/top cover
 - removal 59
 - spare part numbers 15, 59
- keys
 - action 11
 - esc 11
 - fn 11
 - Windows 11

L

- labels
 - Bluetooth 13
 - regulatory 13
 - serial number 13
 - service 13
 - wireless certification 13
 - WLAN 13
- left control zone, identifying 8
- left side components 6
- lights
 - AC adapter and battery 5
 - camera 7
 - caps lock 9
 - drive 6
 - mute 9
 - power 6

M

- M.2 solid-state drive
 - specifications 71
- media card reader, product description 3

- memory module
 - removal 30
 - spare part numbers 30
- memory, product description 1
- microphone
 - product description 2
- model name 1
- mute light, identifying 9

O

- operating system, product description 3

P

- packaging guidelines 25
- ports
 - HDMI 5
 - product description 2
 - USB SuperSpeed 5
 - USB Type-C 5
- power button board cable, spare part number 36
- power button, identifying 10
- power button/card reader board
 - removal 36
 - spare part number 15, 36
- power button/card reader board cable
 - spare part number 19
- power button/card reader board,
 - spare part number 15
- power connector
 - identifying 6
- power connector cable
 - removal 58
 - spare part number 15, 58
- power cord
 - requirements for all countries 72
 - requirements for specific countries and regions 73
 - set requirements 72
 - spare part numbers 20
- power lights, identifying 6
- power requirements, product description 3
- processor, product description 1
- product description
 - audio 2
 - display panel 1
 - graphics 1

- internal card expansion 3
- keyboard/pointing devices 3
- media card reader 3
- memory 1
- microphone 2
- operating system 3
- ports 2
- power requirements 3
- processors 1
- product name 1
- security 3
- serviceability 4
- storage 2
- video 2
- wireless networking 2

product name 1

product name and number, computer 13

R

- recovery 67
 - discs 68
 - HP Recovery partition 68
 - media 68
 - USB flash drive 68
- recovery media
 - creating using HP Cloud Recovery Download Tool 67
 - creating using Windows tools 67
- regulatory information
 - regulatory label 13
 - wireless certification labels 13
- Remote HP PC Hardware Diagnostics
 - UEFI settings
 - customizing 65
 - using 65
- removal/replacement procedures 26
- restoring 67
- right control zone, identifying 8
- right side components 5
- rubber feet, spare part numbers 16

S

- Screw Kit, spare part number 20
- security, product description 3
- serial number, computer 13
- service labels, locating 13
- serviceability, product description 4

- slots
 - memory card reader 6
- solid-state drive
 - removal 32
 - spare part number 16
 - spare part numbers 32
 - specifications 70
- speaker assembly
 - removal 48
 - spare part number 48
- speakers
 - identifying 10
 - spare part number 15
- special keys, using 11
- specifications
 - computer 69
 - display 70
 - M.2 solid-state drive 71
 - solid-state drive 70
- static electricity 23
- storage, product description 2
- system board
 - removal 45
 - spare part numbers 45
- system restore point, creating 67

T

- touchpad
 - removal 37
 - settings 8
 - spare part numbers 15, 37
- touchpad cable
 - spare part number 19
- Touchpad zone, identifying 8
- transporting guidelines 25
- traveling with the computer 13

U

- USB SuperSpeed port, identifying 5
- USB Type-C port, identifying 5

V

- vent cover
 - removal 40
 - spare part number 40
- vent cover, spare part number 16
- vents, identifying 10, 12
- video, product description 2

W

- webcam
 - spare part number 52
- webcam module
 - removal 52
- webcam/microphone module
 - spare part number 18
- Windows
 - backup 67
 - recovery media 67
 - system restore point 67
- Windows key, identifying 11
- Windows tools, using 67
- wireless antennas
 - spare part number 57
- wireless certification label 13
- wireless networking, product
 - description 2
- WLAN antennas, identifying 7
- WLAN device 13
- WLAN label 13
- WLAN module
 - removal 33
 - spare part numbers 16, 33
- workstation guidelines 22