



HP Pavilion 14 Laptop PC

** Model numbers: 14-bk000 – bk099*

Maintenance and Service Guide

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

© Copyright 2017 HP Development Company, L.P.

AMD is a trademark of Advanced Micro Devices, Inc. Bluetooth is a trademark owned by its proprietor and used by HP Inc. under license. Intel, Celeron, and Pentium are trademarks of Intel Corporation in the U.S. and other countries. Microsoft and Windows are U.S. registered trademarks of the Microsoft group of companies.

In accordance with Microsoft's support policy, HP does not support the Windows 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation and forward processors or provide any Windows 8 or Windows 7 drivers on <http://www.support.hp.com>.

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

First Edition: April 2017

Document Part Number: 925629-001

Product notice

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

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

Software terms

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

For any further information or to request a full refund of the computer, please contact your local point of sale (the seller).

Safety warning notice

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

Table of contents

1 Product description	1
2 Getting to know your computer	5
Right side	5
Left side	6
Display	7
Keyboard area	8
TouchPad	8
Lights	9
Button and speakers	10
Special keys	11
Action keys	12
Bottom	13
Labels	14
3 Illustrated parts catalog	15
Computer major components	15
Mass storage devices	18
Display assembly subcomponents	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
Grounding guidelines	22
Electrostatic discharge damage	22
Packaging and transporting guidelines	23
Workstation guidelines	23
5 Removal and replacement procedures for Authorized Service Provider parts	25
Component replacement procedures	25
Display subcomponents (bezel, panel, camera)	25
Bottom cover	29

Battery	31
WLAN module	32
Memory module	34
Hard drive	35
Solid-state drive (SSD)	37
Fan	38
Heat sink	39
TouchPad board	42
USB board	43
System board	44
Speakers	47
Display assembly	48
Power button board	56
Power connector cable	57
Top cover/keyboard	58
6 Using Setup Utility (BIOS)	59
Starting Setup Utility (BIOS)	59
Updating Setup Utility (BIOS)	59
Determining the BIOS version	59
Downloading a BIOS update	60
7 Backing up, restoring, and recovering	61
Creating recovery media and backups	61
Creating HP Recovery media (select products only)	61
Using Windows tools	62
Restore and recovery	63
Recovering using HP Recovery Manager	63
What you need to know before you get started	63
Using the HP Recovery partition (select products only)	64
Using HP Recovery media to recover	64
Changing the computer boot order	65
Removing the HP Recovery partition (select products only)	66
8 Using HP PC Hardware Diagnostics (UEFI)	67
Downloading HP PC Hardware Diagnostics (UEFI) to a USB device	67
9 Specifications	69
Computer specifications	69
35.6-cm (14.0-in) display specifications	70

Hard drive specifications	70
M.2 solid-state drive specifications	71
10 Power cord set requirements	73
Requirements for all countries	73
Requirements for specific countries and regions	74
11 Recycling	77
Index	79

1 Product description

Category	Description	UMA	Discrete
Product name	HP Pavilion 14 Laptop PC <i>* Model numbers: 14-bk000 – bk099</i>	√	√
Processor	7th generation Intel® Core™ processors	√	√
	Intel Core i7-7500U (2.7-GHz, turbo up to 3.5 GHz, 2133-MHz/4-MB L3 cache, dual, 15W)	√	√
	Intel Core i5-7200U (2.5-GHz, turbo up to 3.1 GHz, 2133-MHz/3-MB L3 cache, dual, 15W)	√	√
	Intel Core i3-7100U (2.4-GHz, 2133-MHz/3-MB L3 cache, dual, 15W)	√	
	Intel Pentium® processor	√	
	Intel Pentium 4415U (2.3-GHz, 2133-MHz/2-MB L3 cache, dual, 15W)	√	
Graphics	Internal graphics	√	√
	Intel HD Graphics 620 (used with Core processors)	√	√
	Intel HD Graphics 610 (used with Pentium processors)	√	
	Hybrid graphics (used with Core i7/i5 processors)		√
	Nvidia N165-GTR (GeForce 940MX) with up to 2048MB		√
	Nvidia N165-GTR (GeForce 940MX) with up to 4096MB		√
	Supports HD Decode, DX12, and HDMI	√	√
	Support Optimus		√
	Supports GPS (GPU Performance Scaling)		√
Panel	35.6-cm (14.0-in), high-definition (HD), white light-emitting diode (WLED), SVA, BrightView (1366×768) display, slim-flat 3.0 mm, eDP; typical brightness: 220 nits	√	√
	35.6-cm (14.0-in), high-definition (HD), white light-emitting diode (WLED), SVA, anti glare (1366×768) display, slim-flat 3.0 mm, eDP; typical brightness: 220 nits	√	√
	35.6-cm (14.0-in), full high-definition (FHD), white light-emitting diode (WLED), UWVA, BrightView (1920×1080) display, slim-flat 3.0 mm, eDP; typical brightness: 250 nits, bridge to 220 nits	√	√
	35.6-cm (14.0-in), full high-definition (FHD), white light-emitting diode (WLED), UWVA, anti glare (1920×1080) display, slim-flat 3.0 mm, eDP; typical brightness: 250 nits, bridge to 220 nits	√	√
Memory	Two customer-accessible/upgradable OR non-accessible/non-upgradeable memory module slots	√	√
	DDR4-2133 dual channel support (DDR4-2400 downgrade to DDR4-2133)	√	√
	Supports up to 16 GB of system RAM in the following configurations:	√	√
	<ul style="list-style-type: none"> 16384-MB total system memory (8192×2) 	√	√
	<ul style="list-style-type: none"> 12288-MB total system memory (8192×1) + (4096×1) 	√	√

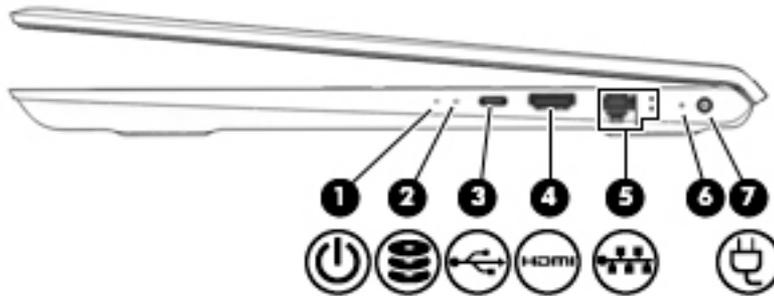
Category	Description	UMA	Discrete
	<ul style="list-style-type: none"> 8192-MB total system memory (8192×1) or (4096×2) 	✓	✓
	<ul style="list-style-type: none"> 6144-MB total system memory (4096×1) + (2048×1) 	✓	✓
	<ul style="list-style-type: none"> 4096-MB total system memory (4096×1) 	✓	✓
Hard drives	Supports 6.35-cm (2.5-in) SATA hard drives in 9.5-mm (.37-in) and 7.2-mm (.28-in) thicknesses	✓	✓
	Support for SSD + HDD	✓	✓
	Support for M.2 SATA SSD	✓	✓
	Accelerometer/hard drive protection support	✓	✓
	Single hard drive configurations:	✓	✓
	<ul style="list-style-type: none"> 1-TB, 5400 rpm, 7.2 mm 	✓	✓
	<ul style="list-style-type: none"> 500-GB, 5400 rpm, 7.0-mm 	✓	✓
	M.2 SATA-3 configurations (Value):	✓	✓
	<ul style="list-style-type: none"> 256 GB 	✓	✓
	<ul style="list-style-type: none"> 128 GB 	✓	✓
	M.2 SATA-3 configurations (TLC):	✓	✓
	<ul style="list-style-type: none"> 512 GB 	✓	✓
	Dual storage configurations:	✓	✓
	<ul style="list-style-type: none"> 256 GB Value SSD + 1 TB HDD 	✓	✓
	<ul style="list-style-type: none"> 128 GB Value SSD + 1 TB HDD 	✓	✓
Camera/mic	HP Wide Vision FHD IR Camera - indicator LED and 2x IR LEDs, USB2.0, FHD hybrid BSI sensor, f2.2, WDR, 88° WFOV	✓	✓
	1080p by 30 frames per second	✓	✓
	Supports Windows Hello	✓	✓
	Dual array digital microphones with appropriate software - beam forming, echo cancellation, noise suppression	✓	✓
	Supports WDR (Wide Dynamic Range)	✓	✓
	HP Wide Vision HD Camera - indicator LED, USB2.0, HD BSI sensor, f2.0, WDR, 88° WFOV	✓	✓
	720p by 30 frames per second		
	Dual array digital microphones with appropriate software - beam forming, echo cancellation, noise suppression	✓	✓
	Supports WDR (Wide Dynamic Range)	✓	✓
Audio	Audio brand: B&O Play	✓	✓
	Audio application name: B&O Play Audio Control	✓	✓
	Supports HP Audio Boost	✓	✓
	Dual speakers	✓	✓
Sensors	Accelerometer	✓	✓

Category	Description	UMA	Discrete
Ethernet	Integrated 10/100/1000 network interface card (NIC)	√	√
Wireless Network	Integrated wireless options with single antenna (M.2/PCIe):	√	√
	Compatible with Miracast-certified devices	√	√
	Support for the following WLAN formats:	√	√
	<ul style="list-style-type: none"> Realtek RTL8723DE 802.11 bgn 1x1 WiFi + Bluetooth 4.2 Combo Adapter 	√	√
	<ul style="list-style-type: none"> Realtek RTL8723BE-VB 802.11b/g/n 1x1 Wi-Fi + Bluetooth 4.0 Combo Adapter 	√	√
	Integrated wireless options with dual antennas (M.2/PCIe):	√	√
	Compatible with Miracast-certified devices	√	√
	Support for the following WLAN formats:	√	√
	<ul style="list-style-type: none"> Intel Dual Band Wireless-AC 3168 802.11 ac 1x1 WiFi + BT 4.2 Combo (non-vPro) 	√	√
	<ul style="list-style-type: none"> Intel Dual Band Wireless-AC 7265 802.11AC 2x2 WiFi + BT 4.2 Combo Adapter (non-vPro) 	√	√
External media card	HP Multi-Format Digital Media Reader	√	√
	Support SD/SDHC/SDXC	√	√
	Push-push insertion/removal	√	√
Internal Card Expansion	One M.2 slot for solid-state drive	√	√
	One M.2 slot for WLAN	√	√
Ports	Hot plug/unplug and auto detect for correct output to wide-aspect vs. standard aspect video	√	√
	HDMI v1.4b supporting up to 1920×1080 @60Hz	√	√
	RJ-45 (Ethernet)	√	√
	USB 3.0 (2)	√	√
	USB 3.1 Gen 1 Type-C port (supports data transfer)	√	√
	AC Smart Pin adapter plug	√	√
	Headphone/line out and microphone/line in combo jack	√	√
Keyboard/pointing devices	Keyboard	√	√
	Full-size textured, island style keyboard	√	√
	Full sized, backlit, 3-coat paint, island-style keyboard	√	√
	TouchPad	√	√
	Image sensor	√	√
	Multi-touch gestures enabled	√	√
	Taps enabled by default	√	√
	Supports Modern Trackpad Gestures	√	√
Power	AC adapters	√	√
	45-W	√	

Category	Description	UMA	Discrete
	65-W		✓
	Power cord	✓	✓
	1 meter premium power cord	✓	✓
	Battery	✓	✓
	3-cell, Prismatic battery, 41-Whr, 3610 mAh	✓	✓
	Supports battery fast charge	✓	✓
	Battery life enhancement	✓	✓
Security	TPM 2.0	✓	✓
	Kensington Security Lock	✓	✓
Operating system	Preinstalled	✓	✓
	Windows 10	✓	✓
	Windows 10 Professional	✓	✓
	For Developed Market (ML):	✓	✓
	Windows 10 Home ML	✓	✓
	Windows 10 Home Plus ML	✓	✓
	For Emerging Market (EM/SL):	✓	✓
	Windows 10 Home EM/SL	✓	✓
	Windows 10 Home Plus EM/SL	✓	✓
	Windows 10 Home Value NB EM/SL	✓	
	Windows 10 Home Value NB Select Geo EM/SL	✓	
	For China Market:	✓	✓
	CPPP Windows 10 Home High End China Language Edition	✓	✓
	CPPP Windows 10 Home China Language Edition	✓	✓
	For APJ SEAP Market (EM/SL):	✓	✓
	SEAP Windows 10 Home EM/SL	✓	✓
	SEAP Windows 10 Home Plus	✓	✓
	FreeDOS 2.0	✓	✓
Service	End-user replaceable parts	✓	✓
	AC adapter	✓	✓

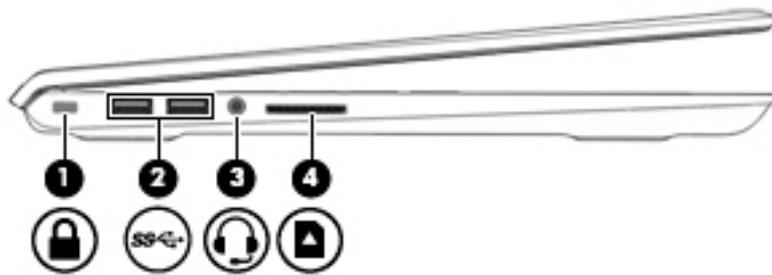
2 Getting to know your computer

Right side



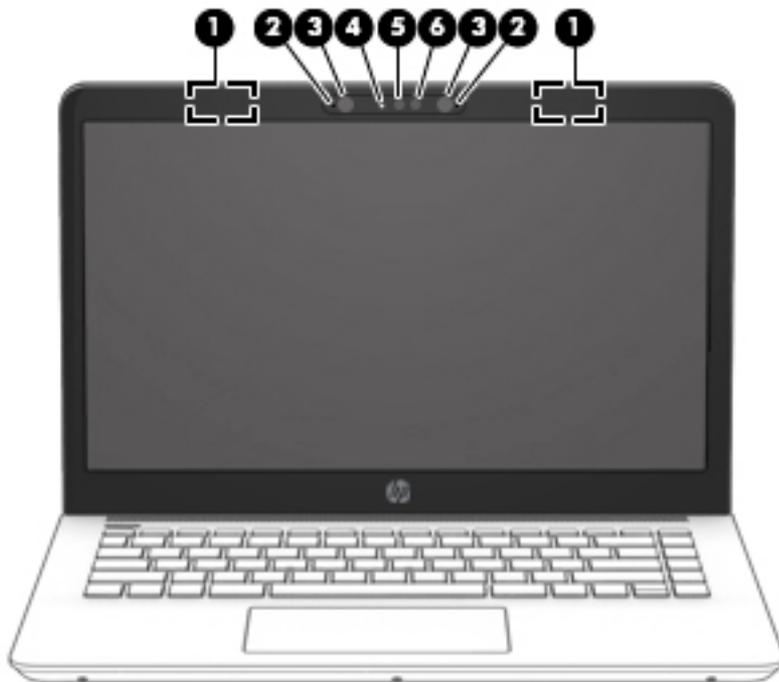
Component	Description
(1) 	<p>Power light</p> <ul style="list-style-type: none"> On: The computer is on. Blinking: The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other unneeded components. Off: The computer is off or in Hibernation. Hibernation is a power-saving state that uses the least amount of power.
(2) 	<p>Drive light</p> <ul style="list-style-type: none"> Blinking white: The hard drive is being accessed. Amber: HP 3D DriveGuard has temporarily parked the hard drive.
(3) 	<p>USB Type-C 3.x charging port</p> <p>When the computer is on, connects and charges a USB device that has a Type-C connector, such as a cell phone, camera, activity tracker, or smartwatch, and provides high-speed data transfer.</p> <p>– or –</p> <p>Connects to various USB, video, HDMI, and LAN devices.</p> <p>NOTE: Cables and/or adapters (purchased separately) may be required.</p>
(4) 	<p>HDMI port</p> <p>Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component, or a high-speed High-Definition Multimedia Interface (HDMI) device.</p>
(5) 	<p>RJ-45 (network) jack/status lights</p> <p>Connects a network cable.</p> <ul style="list-style-type: none"> White: The network is connected. Amber: Activity is occurring on the network.
(6)	<p>AC adapter and battery light</p> <ul style="list-style-type: none"> White: The AC adapter is connected and the battery is fully charged. Blinking white: The AC adapter is disconnected and the battery has reached a low battery level. Amber: The AC adapter is connected and the battery is charging. Off: The battery is not charging.
(7)	<p>Power connector</p> <p>Connects an AC adapter.</p>

Left side



Component	Description
(1)  Security cable slot	Attaches an optional security cable to the computer. NOTE: The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.
(2)  USB 3.x SuperSpeed ports (2)	Connect a USB device, such as a cell phone, camera, activity tracker, or smartwatch, and provides high-speed data transfer.
(3)  Audio-out (headphone)/Audio-in (microphone) combo jack	Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. This jack does not support optional standalone microphones. 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> . To access this guide: <ul style="list-style-type: none">▲ Select the Start button, select HP Help and Support, and then select HP Documentation. NOTE: When a device is connected to the jack, the computer speakers are disabled.
(4)  Memory card reader (select products only)	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">▲ Press in on the card, and then remove it from the memory card reader.

Display



Component	Description
(1) WLAN antennas* (1 or 2)	Send and receive wireless signals to communicate with wireless local area networks (WLANs).
(2) Internal microphones (1 or 2)	Record sound.
(3) Infrared camera lights (select products only)	On: The infrared camera is in use.
(4) Camera light	On: The camera is in use.
(5) Camera	Allows you to video chat, record video, and record still images.
(6) Infrared camera (select products only)	Allows a facial recognition logon to Windows, instead of a password logon.

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

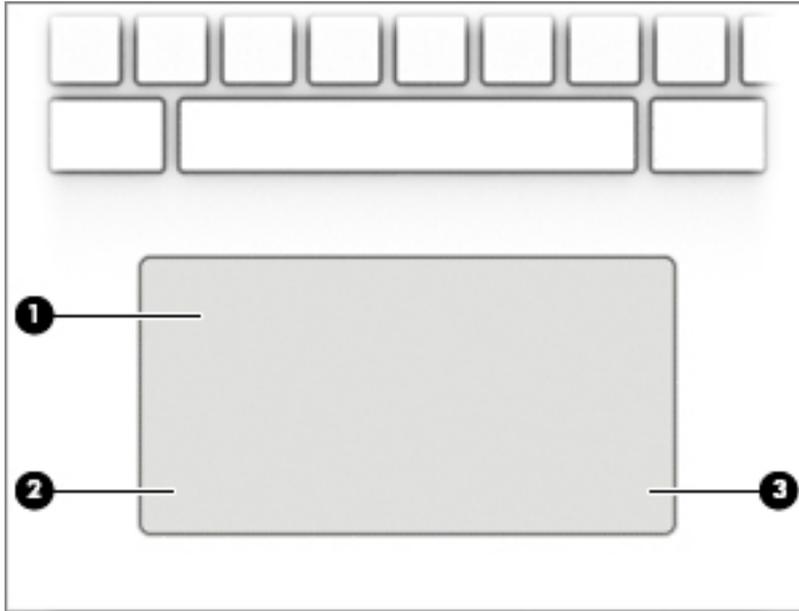
For wireless regulatory notices, see the section of the *Regulatory, Safety, and Environmental Notices* that applies to your country or region.

To access this guide:

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

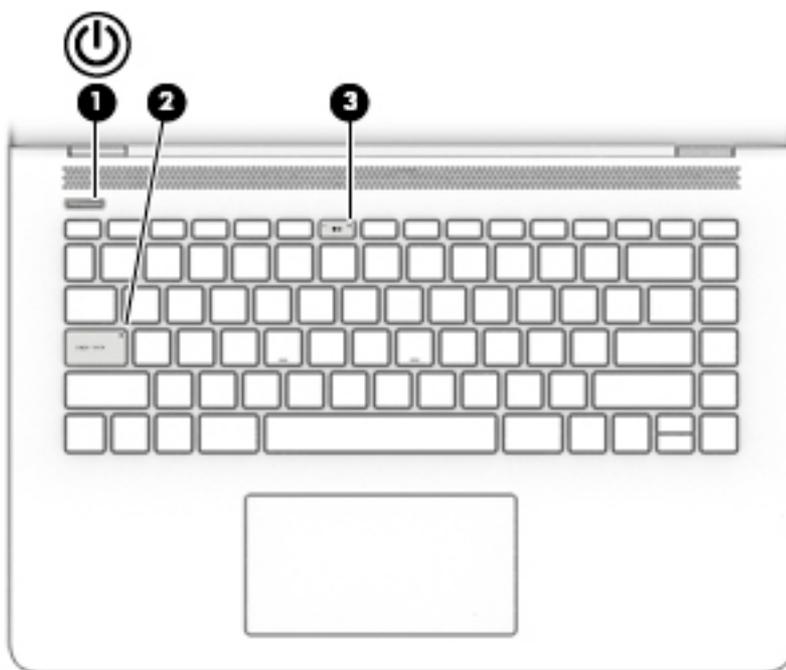
Keyboard area

TouchPad



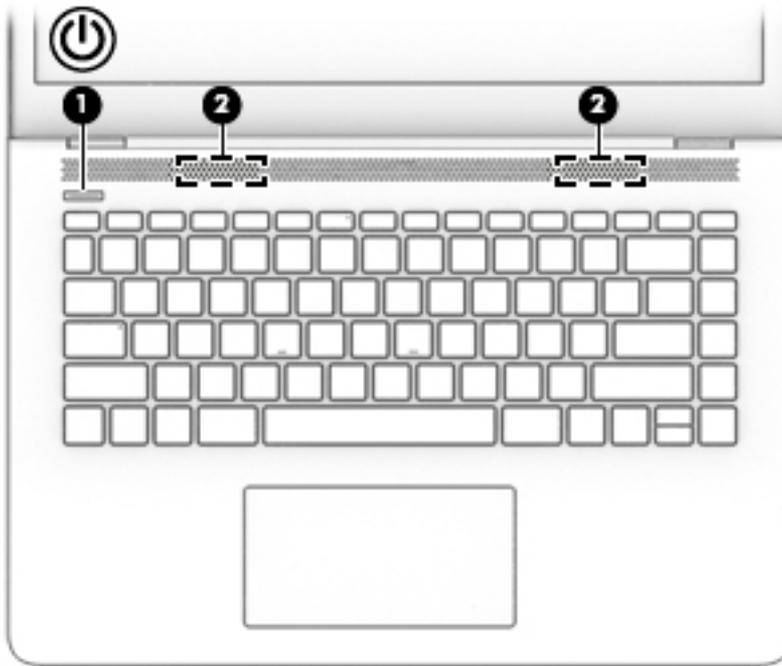
Component	Description
(1) TouchPad zone	Reads your finger gestures to move the pointer or activate items on the screen.
(2) Left TouchPad button	Functions like the left button on an external mouse.
(3) Right TouchPad button	Functions like the right button on an external mouse.

Lights



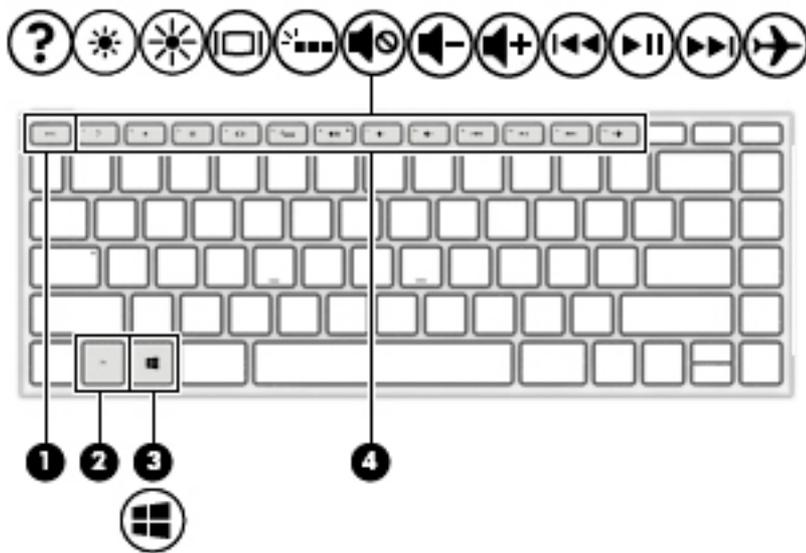
Component	Description
(1)  Power light	<ul style="list-style-type: none">• On: The computer is on.• Blinking: The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other unneeded components.• Off: The computer is off or in Hibernation. Hibernation is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

Button and speakers



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

Special keys



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

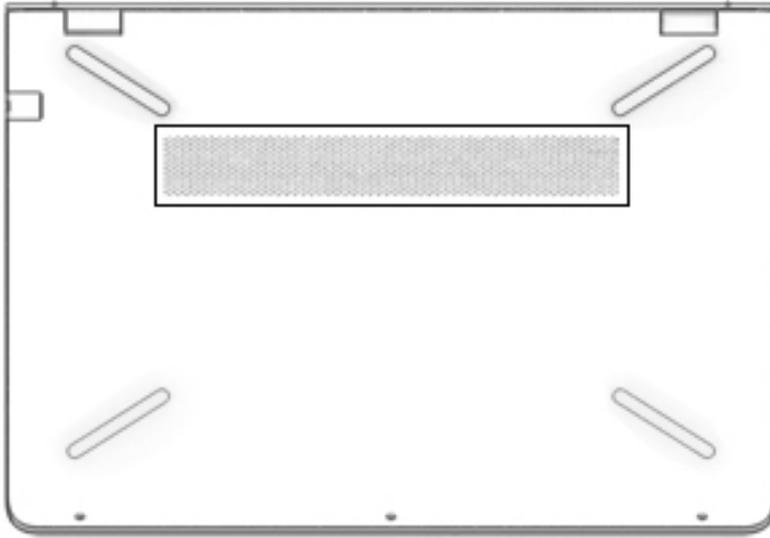
Action keys

An action key performs the function indicated by the icon on the key. To determine which keys are on your product, see [Special keys on page 11](#).

▲ To use an action key, press and hold the key.

Icon	Description
	Opens the Get started app.
	Decreases the screen brightness incrementally as long as you hold down the key.
	Increases the screen brightness incrementally as long as you hold down the key.
	Switches the screen image between display devices connected to the system. For example, if a monitor is connected to the computer, repeatedly pressing this key alternates the screen image from the computer display to the monitor display to a simultaneous display on both the computer and the monitor.
	Turns the keyboard backlight off or on. NOTE: To conserve battery power, turn off this feature.
	Mutes or restores speaker sound.
	Decreases speaker volume incrementally while you hold down the key.
	Increases speaker volume incrementally while you hold down the key.
	Plays the previous track of an audio CD or the previous section of a DVD or a Blu-ray Disc (BD).
	Starts, pauses, or resumes playback of an audio CD, a DVD, or a BD.
	Plays the next track of an audio CD or the next section of a DVD or a BD.
	Turns the airplane mode and wireless feature on or off. NOTE: The airplane mode key is also referred to as the wireless button. NOTE: A wireless network must be set up before a wireless connection is possible.

Bottom



Component	Description
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.

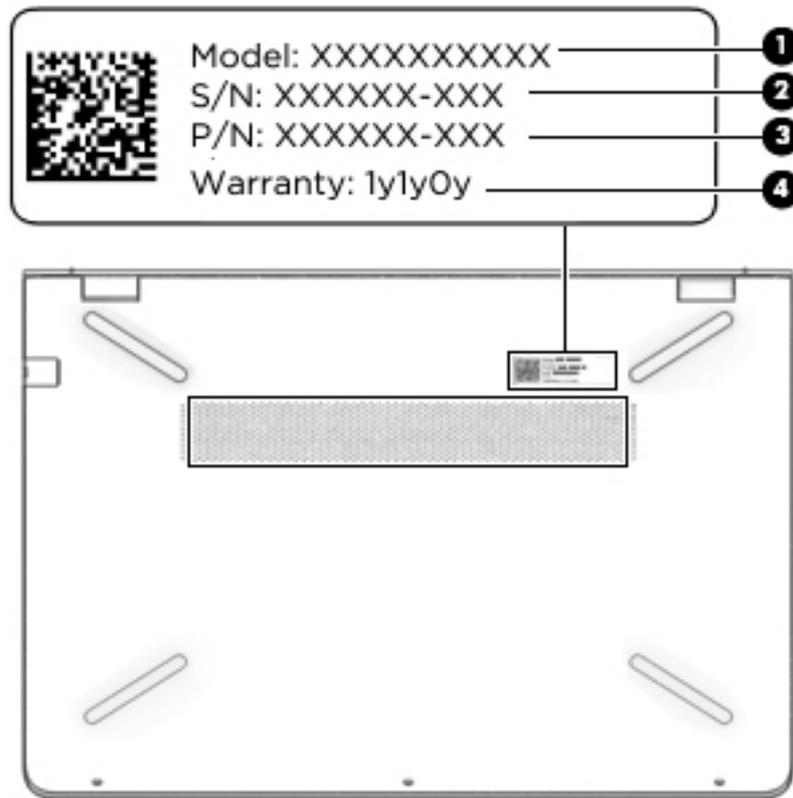
Labels

The labels affixed to the computer provide information you may need when you troubleshoot system problems or travel internationally with the computer.

 **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, or on the back of the display.

- Service label—Provides important information to identify your computer. When contacting support, you will probably be asked for the serial number, and possibly for the product number or the model number. Locate these numbers before you contact support.

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



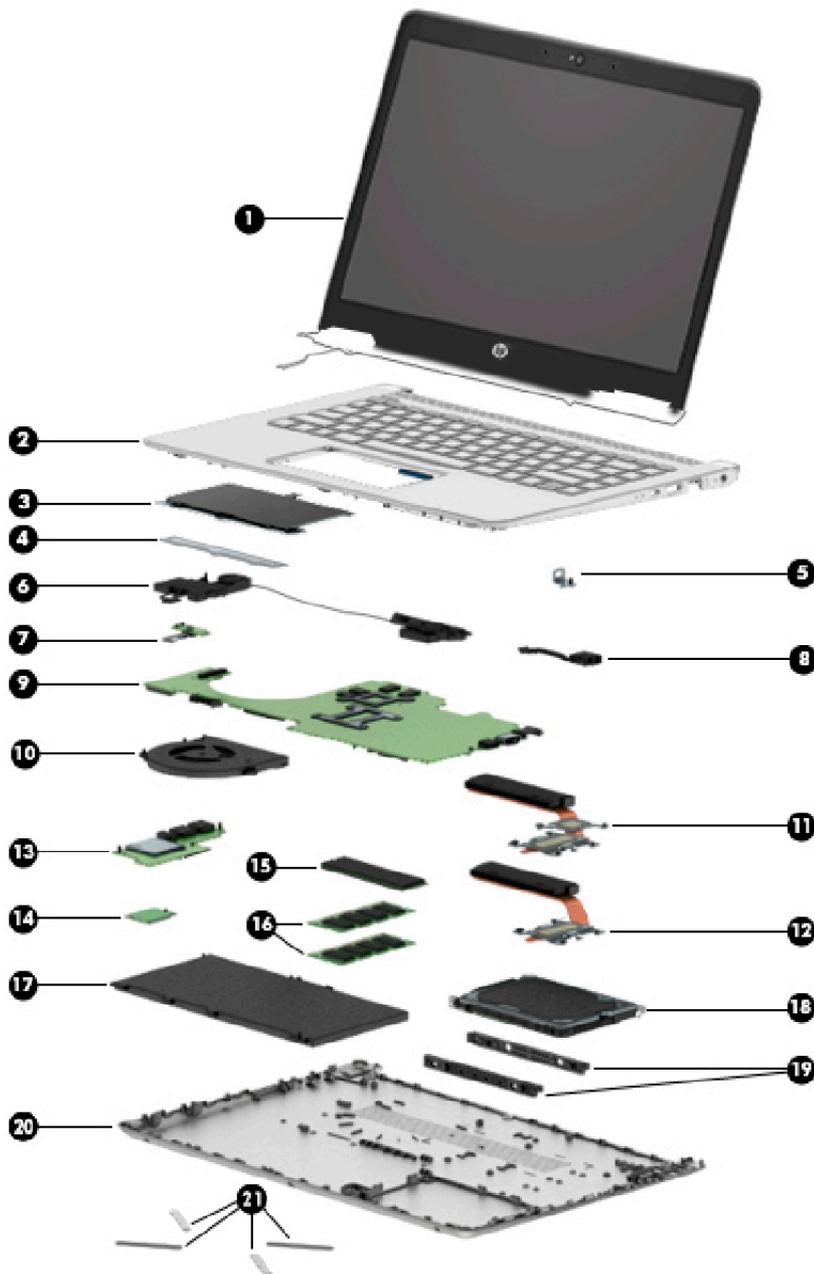
Component	
(1)	HP product name
(2)	Serial number
(3)	Product number
(4)	Warranty period

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

3 Illustrated parts catalog

Computer major components

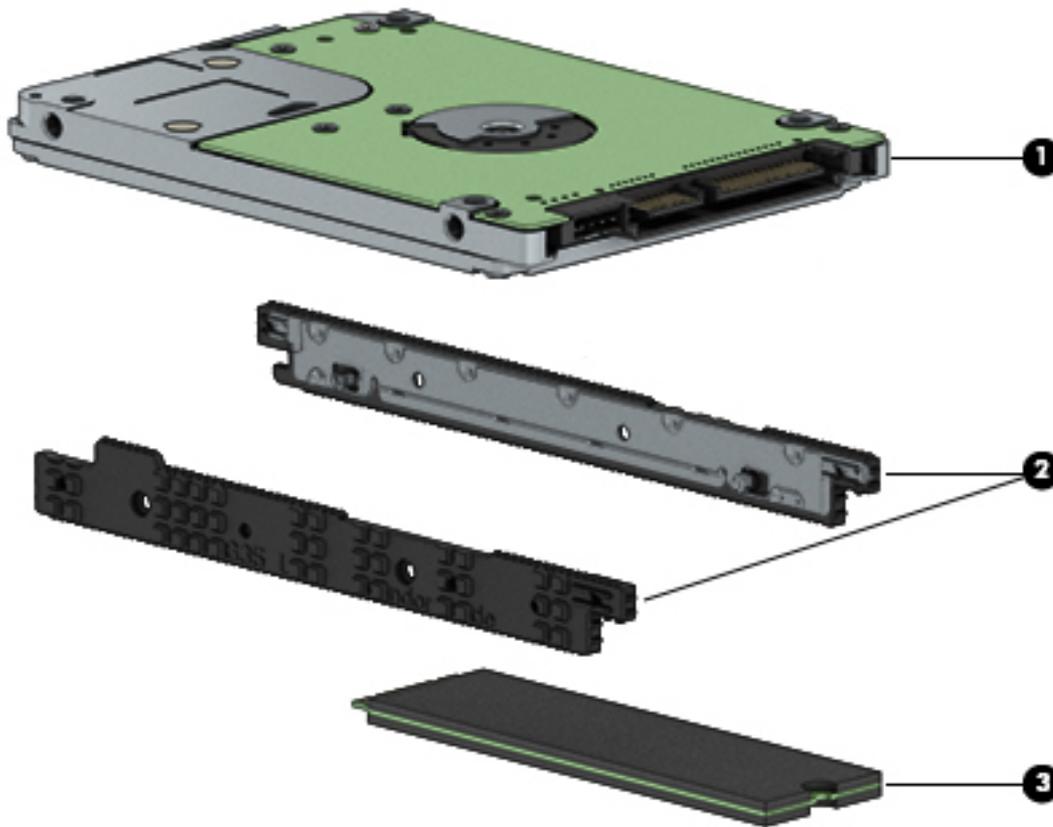
 **NOTE:** HP continually improves and changes product parts. For complete and current information on supported parts for your computer, go to <http://partsurfer.hp.com>, select your country or region, and then follow the on-screen instructions.



Item	Component	Spare part number
(1)	<p>Display assembly</p> <p>NOTE: Display assemblies are spared at the subcomponent level only. Entire display hinge-ups are not spared.</p> <p>Display assembly spare part information, see Display assembly subcomponents on page 19.</p>	
(2)	<p>Top cover/keyboard</p> <p>NOTE: For a detailed list of keyboard country codes, see Top cover/keyboard on page 58.</p> <p>Models with backlit keyboard:</p> <ul style="list-style-type: none"> Mineral silver 927904-xxx Silk gold 930259-xxx <p>Models without backlit keyboard:</p> <ul style="list-style-type: none"> Mineral silver 927903-xx1 Silk gold 930255-xx1 	
(3)	<p>TouchPad board</p> <p>NOTE: The TouchPad cable is available using spare part number 927916-001.</p>	927923-001
(4)	TouchPad bracket	926851-001
(5)	Lock bracket	927921-001
(6)	Speakers (includes left and right speakers and cable)	927929-001
(7)	<p>Power button board</p> <p>NOTE: The power button board cable is available using spare part number 927915-001.</p> <p>For use in models with 4 GB of discrete graphics memory 927926-001</p> <p>For use in models with UMA graphics memory or 2 GB of discrete graphics memory 927927-001</p>	
(8)	Power connector cable	808155-021
(9)	<p>System board (includes replacement thermal materials)</p> <p>All system boards use the following part numbers:</p> <p>xxxxxx-001: Non-Windows operating systems</p> <p>xxxxxx-601: Windows 10 operating system</p> <p>For use in models with discrete graphics memory:</p> <ul style="list-style-type: none"> Intel Core i7-7500U processor and 4 GB of discrete graphics memory 927269-xx1 Intel Core i7-7500U processor and 2 GB of discrete graphics memory 927268-xx1 Intel Core i5-7200U processor and 4 GB of discrete graphics memory 927271-xx1 Intel Core i5-7200U processor and 2 GB of discrete graphics memory 927270-xx1 <p>For use in models with UMA graphics memory:</p> <ul style="list-style-type: none"> Intel Core i7-7500U processor 927264-xx1 Intel Core i5-7200U processor 927265-xx1 Intel Core i3-7100U processor 927266-xx1 	

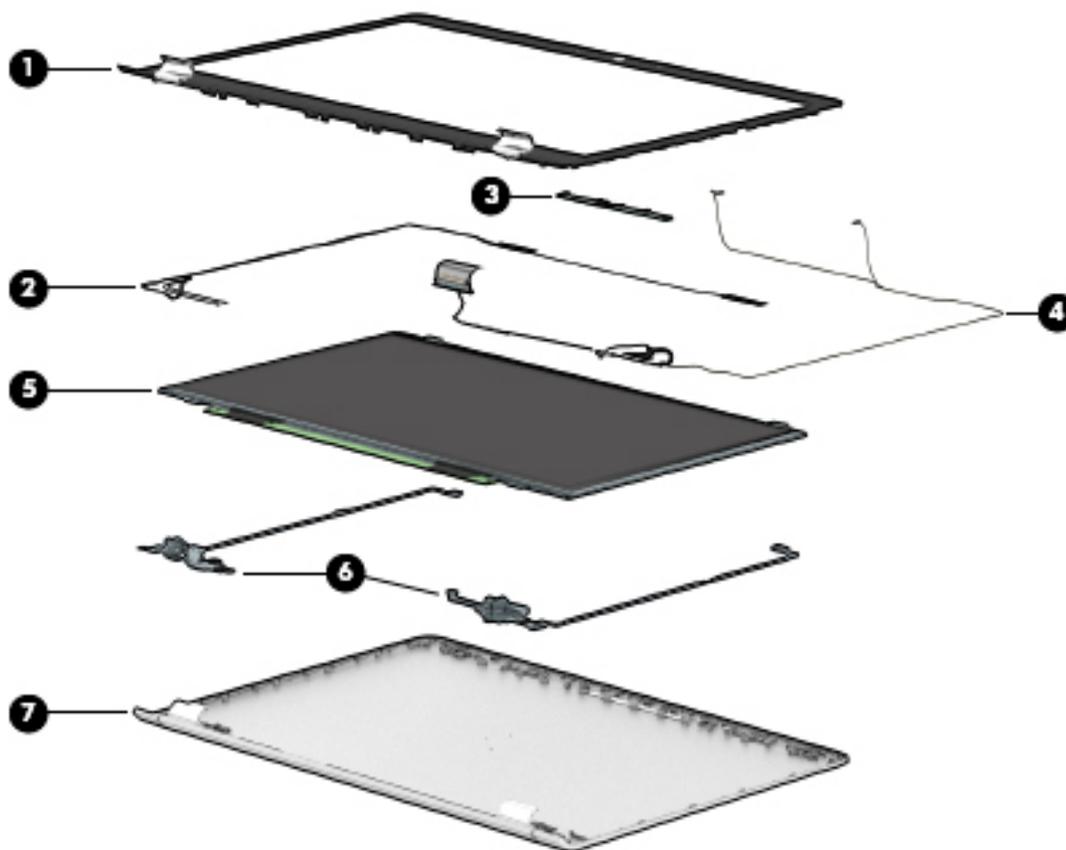
Item	Component	Spare part number
	<ul style="list-style-type: none"> Intel Pentium 4415U processor 	927267-xx1
(10)	Fan Heat sink assembly (includes replacement thermal materials)	927918-001
(11)	For use in models with discrete graphics	927920-001
(12)	For use in models with UMA graphics	927919-001
(13)	USB board NOTE: The USB board cable is available using spare part number 927914-001.	
	For use in models with 4 GB of discrete graphics memory	927924-001
	For use in models with UMA graphics memory or 2 GB of discrete graphics memory	927925-001
(14)	WLAN module Intel Dual Band Wireless-AC 7265 802.11AC 2x2 WiFi + BT 4.2 Combo Adapter (non-vPro) Realtek RTL8723DE 802.11 bgn 1x1 WiFi + BT 4.2 Combo Adapter Intel Dual Band Wireless-AC 3168 802.11 ac 1x1 WiFi + BT 4.2 Combo Adapter	901229-855 927230-855 863934-855
(15)	Solid-state drive, M.2 512 GB 256 GB 128 GB	763008-011 865902-012 827560-041
(16)	Memory module (DDR4-2400) 8-GB 4 GB 2 GB	862398-855 862397-855 864271-855
(17)	Battery (4 cell, 70 Wh, 4.55 Ah)	920070-855
(18)	Hard drive, 7 mm (does not include bracket or cable) NOTE: The hard drive cable is available using spare part number 927917-001.	
	1-TB, 5400-rpm	762990-005
	500-GB, 5400-rpm	778186-005
(19)	Hard drive brackets	933608-001
(20)	Bottom cover	927911-001
(21)	Rubber Kit	926855-001

Mass storage devices



Item	Component	Spare part number
(1)	Hard drive (7 mm, SATA; does not include brackets or cable):	
	1-TB, 5400-rpm	762990-005
	500-GB, 5400-rpm	778186-005
(2)	Hard drive brackets	933608-001
(*)	Hard drive connector/cable (not illustrated)	927917-001
(3)	Solid-state drive, M.2	
	512 GB	763008-011
	256 GB	865902-012
	128 GB	827560-041
(*)	External optical drive (not illustrated)	747080-001

Display assembly subcomponents



Item	Component	Spare part number
(1)	Display bezel	
	For use in models with an HD camera	927912-001
	For use in models with an FHD IR camera	928431-001
(2)	Antenna, dual (includes wireless antenna cable and transceiver)	927905-001
(3)	Camera/microphone module	
	HD camera	919573-002
	FHD IR camera	934137-001
(4)	Display cable (includes display panel cable and camera/microphone cable)	
	For use in models with an HD camera	927913-001
	For use in models with an FHD IR camera	928432-001
(5)	Raw display panel (35.6-cm [14.0-in])	
	UWVA, Brightview	847660-007
	UWVA, anti glare	821816-004
	SVA, Brightview	847664-007
	SVA, anti glare	916357-003

Item	Component	Spare part number
(6)	Hinge Kit (left and right)	927922-001
(7)	Display enclosure: (includes wireless antennas)	
	Mineral silver	927906-001
	Silk gold	927907-001

Miscellaneous parts

Component	Spare part number
HP Smart AC adapter (4.5 mm, non-PFC):	
65-W	710412-001
65-W, for use in Argentina	710340-850
45-W	741553-850
45-W, for use in Argentina	741553-852
Power cord, C5, 1.0 m	
For use in Argentina	920688-003
For use in Brazil	920688-004
For use in Denmark	920688-007
For use in Europe	920688-005
For use in Israel	920688-008
For use in Italy	920688-002
For use in North America	920688-001
For use in South Africa	920688-010
For use in Switzerland	920688-009
For use in the United Kingdom	920688-006
Screw Kit	927928-001
External optical drive	747080-001
USB-C to USB-A adapter	833960-001
HP HDMI to VGA Adapter	701943-001

4 Removal and replacement procedures preliminary requirements

Tools required

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

- Flat-bladed screwdriver
- Magnetic screwdriver
- Phillips P0 and P1 screwdrivers

Service considerations

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

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

Plastic parts

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

Cables and connectors

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

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

Drive handling

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

Before removing or inserting a 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.

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

Avoid dropping drives from any height onto any surface.

After removing a hard drive, 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."

Grounding guidelines

Electrostatic discharge damage

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

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

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

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

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

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

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

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

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

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

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

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

Workstation guidelines

Follow these grounding workstation guidelines:

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

Equipment guidelines

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

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

The following grounding equipment is recommended to prevent electrostatic damage:

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

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

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

5 Removal and replacement procedures for Authorized Service Provider parts

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

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

Component replacement procedures

 **NOTE:** Details about your computer, including model, serial number, product key, and length of warranty, are on the service tag at the bottom of your computer. See [Labels on page 14](#) for details.

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

There are as many as 53 screws that must be removed, replaced, or loosened when servicing Authorized Service Provider only parts. Make special note of each screw size and location during removal and replacement.

Display subcomponents (bezel, panel, camera)

 **NOTE:** Display assemblies are spared at the subcomponent level only.

This section illustrates how to remove the display bezel, display panel, and camera module without removing the display from the computer. [Display assembly on page 48](#) illustrates removing all display subcomponents.

To remove display assembly subcomponents, follow these steps:

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

Remove the display assembly subcomponents:

1. Open the computer as far as it will open.

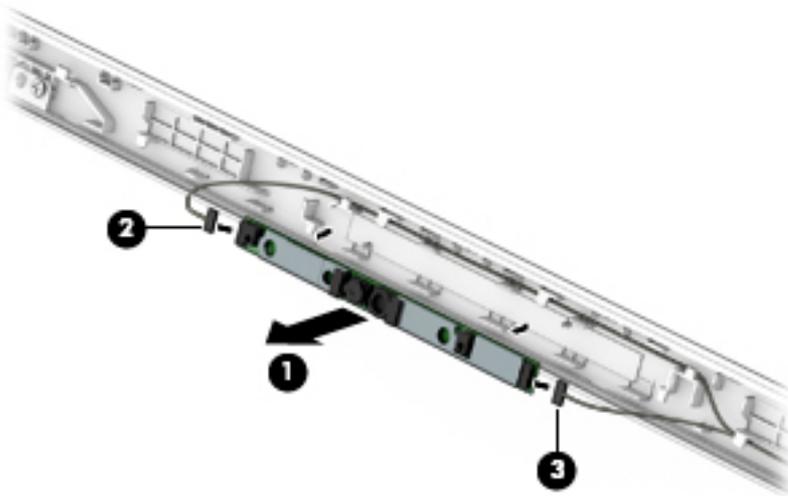
2. To remove the display bezel, flex the inside of the top edge (1), the left edge (2), the bottom edge (3), and the right edge (4) of the display bezel until the bezel disengages from the display enclosure.



3. To remove the standard camera/microphone module:

Standard webcam

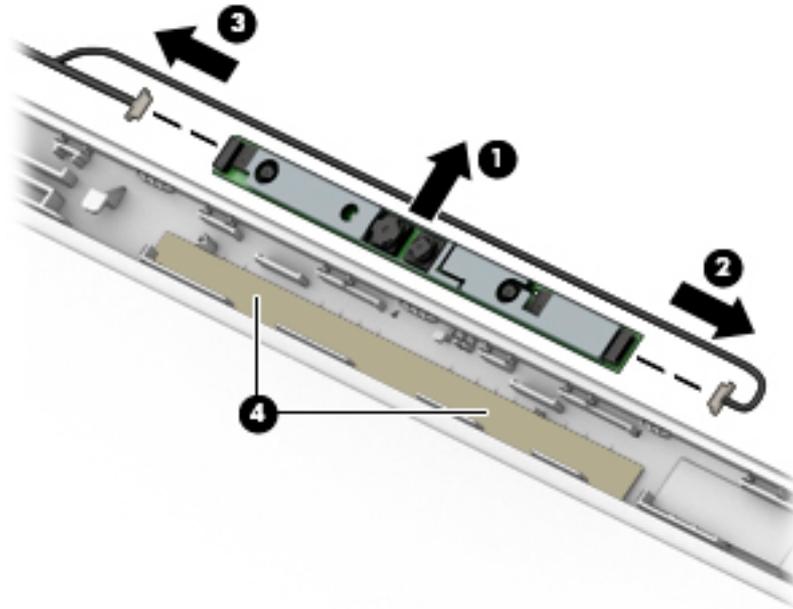
- a. Position the display assembly with the top edge toward you.
- b. Pry up to disengage the camera/microphone module from the adhesive that secures it to the display (1).
- c. Disconnect the cable (2) from the module.
- d. Remove the tape from the enclosure (3). Replacement cameras come with tape already installed.



4. To remove the infrared (IR) camera/microphone module:

IR webcam

- a. Position the display assembly with the top edge toward you.
- b. Pry up to disengage the camera/microphone module from the adhesive that secures it to the display **(1)**.
- c. Disconnect the cables from the right side of the camera **(2)** and the left side of the camera **(3)**.
- d. Remove the tape from the enclosure **(4)**. Replacement cameras come with tape already installed.

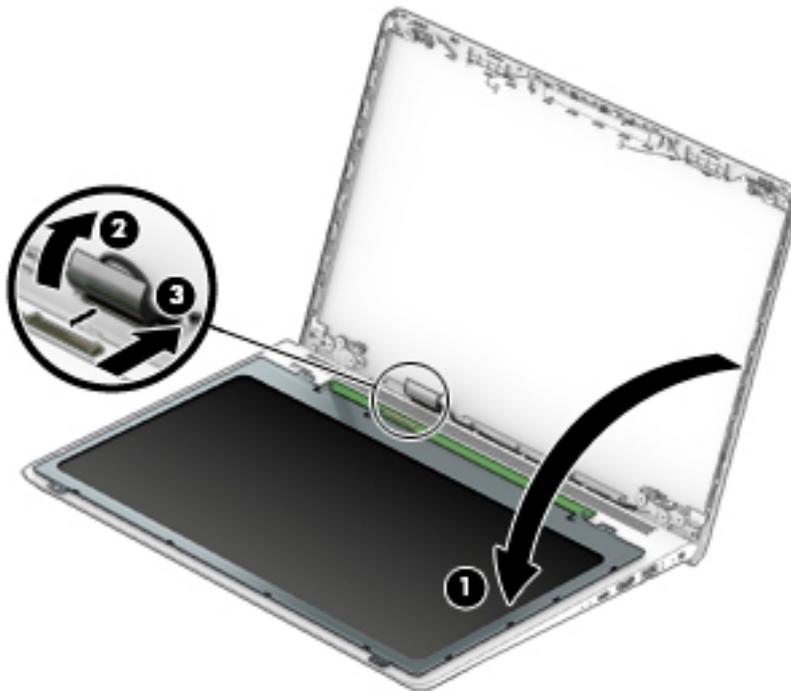


5. To remove the display panel:

- a. Remove the four Phillips PM2.0×3.0 screws **(1)** that secure the display panel to the top of the enclosure.



- b.** Rotate the display panel onto the keyboard **(1)** to gain access to the display cable connection on the back of the panel.
- c.** On the back of the display panel, release the adhesive strip **(2)** that secures the display panel cable to the display panel, and then disconnect the cable **(3)**.



Reverse this procedure to reassemble and install the display assembly components.

Bottom cover

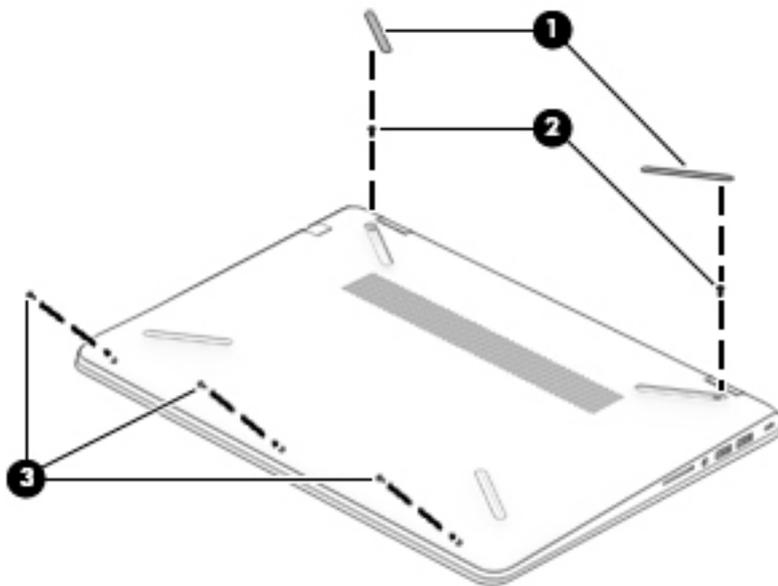
Description	Spare part number
Bottom cover	927911-001
Rubber Kit	926855-001

Before removing the bottom cover, follow these steps:

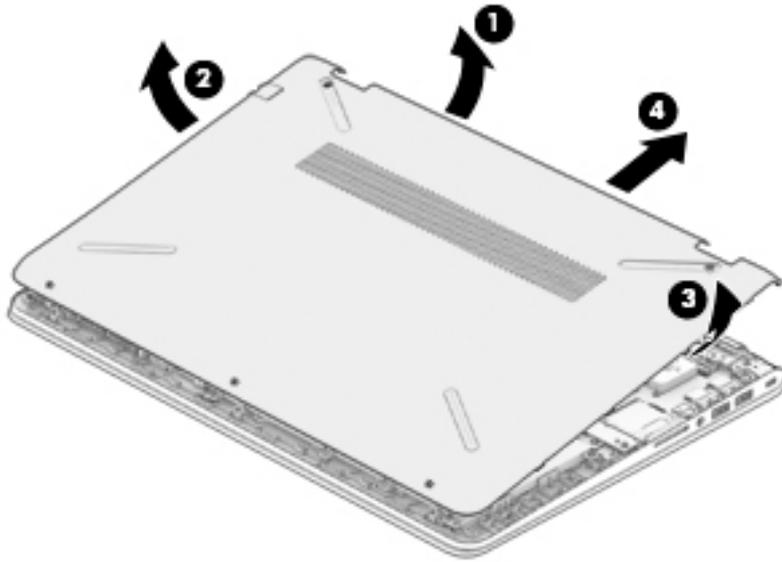
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 31](#)).

To remove the bottom cover:

1. Position the computer upside down with the front toward you.
2. Remove the upper rubber feet **(1)** so you can access the screws underneath.
3. Remove the two Phillips PM2.5×6.0 screws **(2)** that were under the upper rubber feet.
4. Remove the three remaining Phillips PM2.0×5.0 screws **(3)**.



5. Start prying along the bottom edge of the computer (1), then along the left (2) and right (3) sides, and then remove the bottom cover (4).



Reverse this procedure to install the bottom cover.

Battery

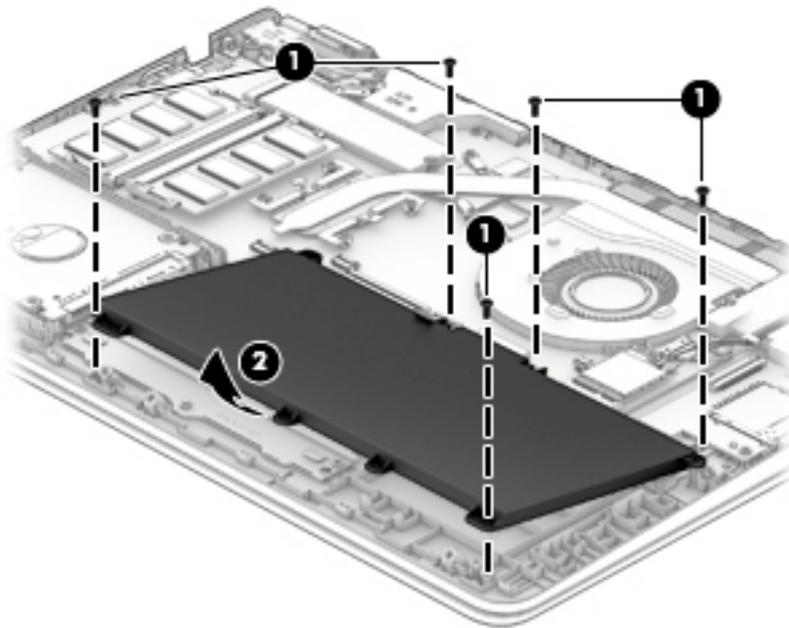
Description	Spare part number
Battery, 4 cell, 70 Wh, 4.55 Ah	920070-855

Before disassembling the computer, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Bottom cover on page 29](#)).

To remove the battery:

1. Remove the four Phillips PM2.0×5.0 screws **(1)** that secure the battery to the computer.
2. Pull the battery away from the system board connector, and then up and out of the computer **(2)**.



Reverse this procedure to install the battery.

WLAN module

Description	Spare part number
Intel Dual Band Wireless-AC 7265 802.11AC 2x2 WiFi + BT 4.2 Combo Adapter (non-vPro)	901229-855
Realtek RTL8723DE 802.11 bgn 1x1 WiFi + BT 4.2 Combo Adapter	927230-855
Intel Dual Band Wireless-AC 3168 802.11 ac 1x1 WiFi + BT 4.2 Combo Adapter	863934-855

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

Before removing the WLAN module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Bottom cover on page 29](#)).
5. Remove the battery (see [Battery on page 31](#)).

To remove the WLAN module:

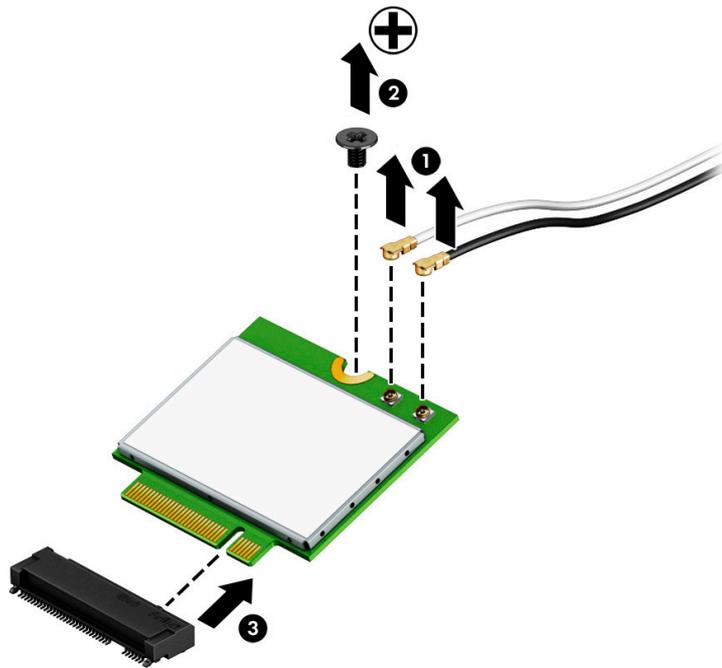
1. Disconnect the WLAN antenna cables **(1)** from the terminals on the WLAN module.



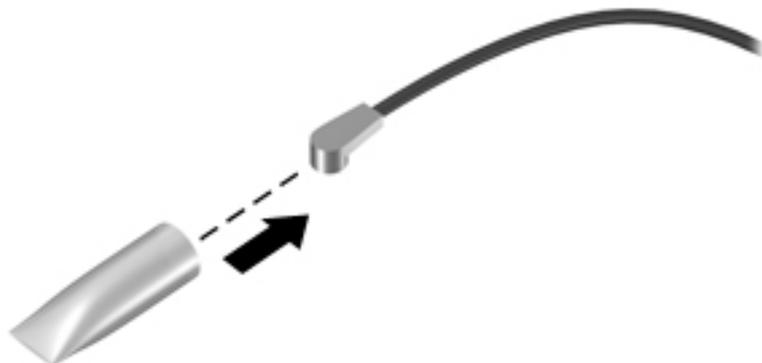
NOTE: The WLAN antenna cable labeled “1” connects to the WLAN module “Main” terminal labeled “1”. The WLAN antenna cable labeled “2” connects to the WLAN module “Aux” terminal labeled “2” (if applicable).

2. Remove the Phillips PM2.0×3.0 screw **(2)** that secures the WLAN module to the system board. (The WLAN module tilts up.)

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



 **NOTE:** If the WLAN antennas are not connected to the terminals on the WLAN module, the protective sleeves must be installed on the antenna connectors, as shown in the following illustration.



Reverse this procedure to install the WLAN module.

Memory module

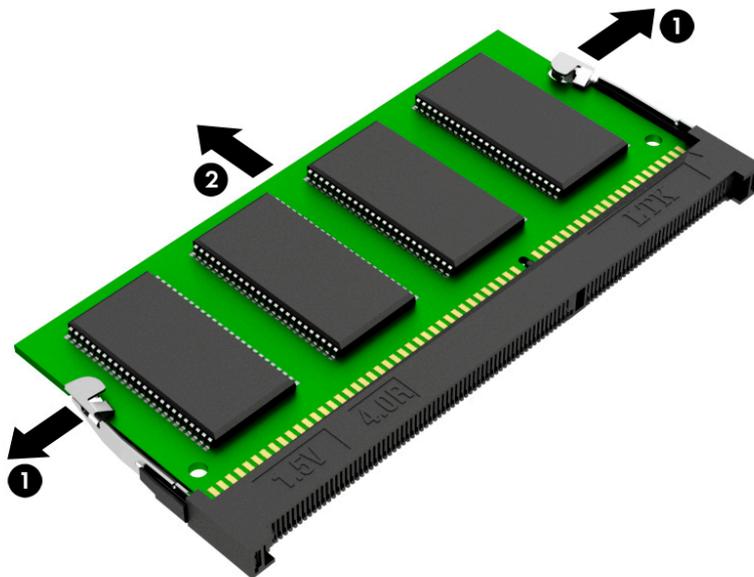
Description	Spare part number
Memory module (PC4-2400)	
8-GB	862398-855
4-GB	862397-855
2-GB	864271-855

Before removing a memory module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Bottom cover on page 29](#)).
5. Remove the battery (see [Battery on page 31](#)).

To remove a memory module:

1. Spread the retaining tabs **(1)** on each side of the memory module slot to release the memory module. (The memory module tilts up.)
2. Remove the memory module **(2)** by pulling it away from the slot at an angle.



Reverse this procedure to install a memory module.

Hard drive



NOTE: The hard drive spare part kit does not include the hard drive bracket or cable.

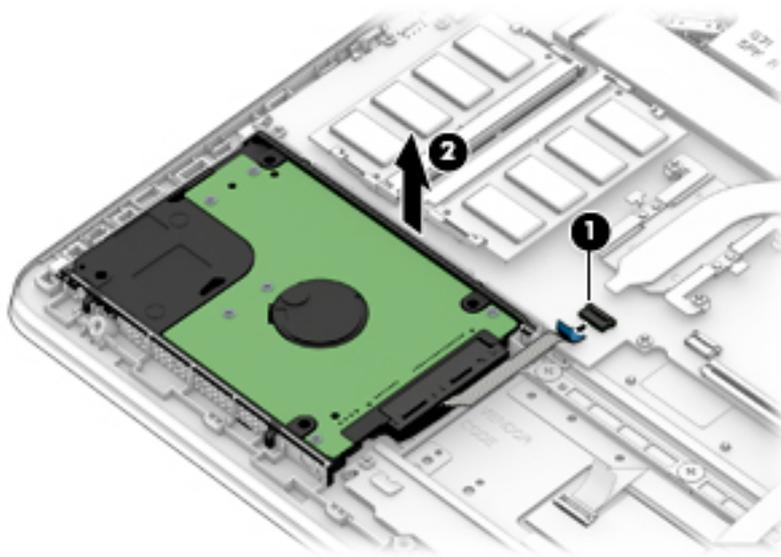
Description	Spare part number
Hard drives (7 mm):	
1-TB, 5400-rpm	762990-005
500-GB, 5400-rpm	778186-005
Hard drive bracket	933608-001
Hard drive cable	927917-001

Before removing the hard drive, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Bottom cover on page 29](#)).
5. Remove the battery (see [Battery on page 31](#)).

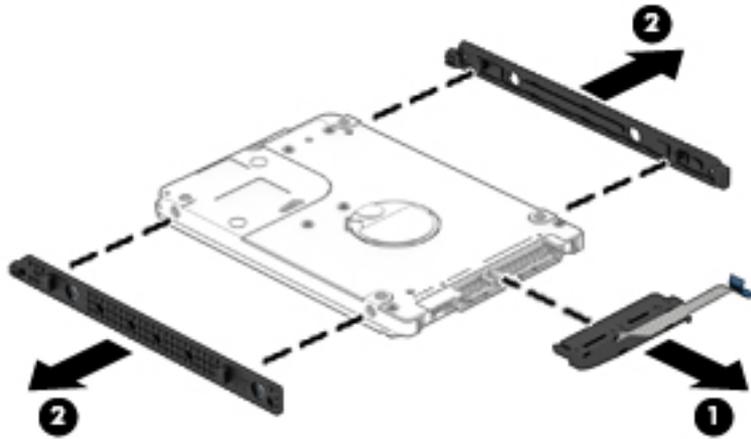
To remove the hard drive:

1. Disconnect the hard drive connector cable from the system board **(1)**.
2. Lift the hard drive out of the computer **(2)**.



3. To remove the hard drive bracket and connector, pull the connector away from the hard drive **(1)**.

4. Pull each bracket away from the sides of the hard drive (2).



Reverse this procedure to reassemble and install the hard drive.

Solid-state drive (SSD)

Description	Spare part number
512 GB	763008-011
256 GB	865902-012
128 GB	827560-041

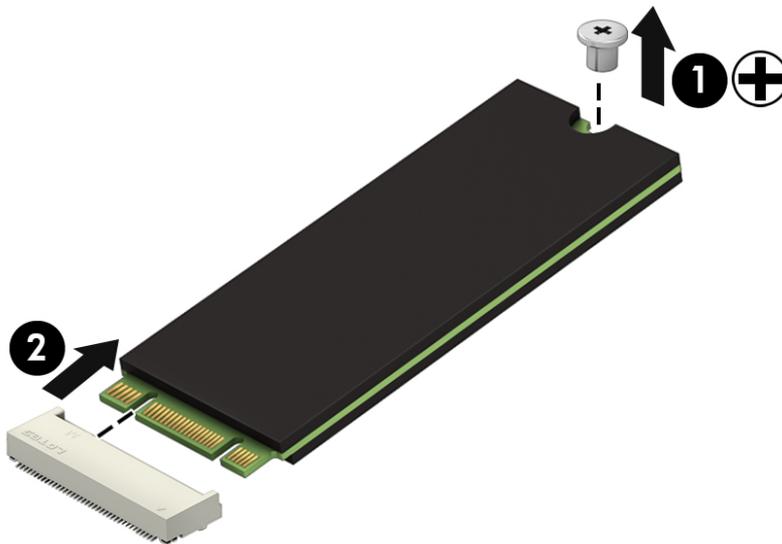
Before removing the solid-state drive, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Bottom cover on page 29](#)).
5. Remove the battery (see [Battery on page 31](#)).

Remove the solid-state drive:

1. Remove the Phillips PM2.0×2.0 screw **(1)** that secures the drive to the system board.
2. Remove the drive **(2)** by pulling it away from the connector.

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



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

Fan

Description	Spare part number
Fan	927918-001

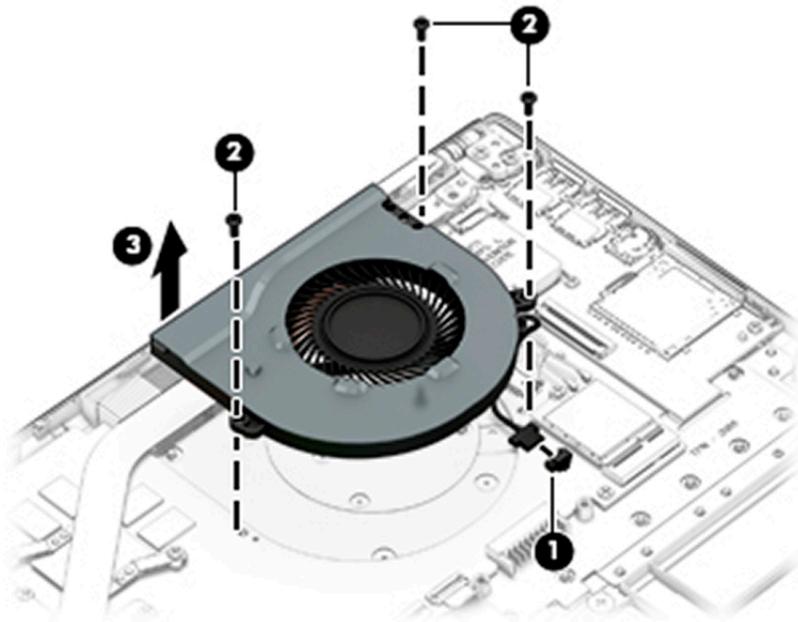
 **NOTE:** To properly ventilate the computer, allow at least **7.6 cm (3.0 in)** of clearance on the left side of the computer. The computer uses an electric fan for ventilation. The fan is controlled by a temperature sensor and is designed to turn on automatically when high temperature conditions exist. These conditions are affected by high external temperatures, system power consumption, power management/battery conservation configurations, battery fast charging, and software requirements. Exhaust air is displaced through the ventilation grill located on the left side of the computer.

Before removing the fan, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Bottom cover on page 29](#)).
5. Remove the battery (see [Battery on page 31](#)).

To remove the fan:

1. Disconnect the fan cable from the system board **(1)**.
2. Remove the three Phillips PM2.0×4.0 screws **(2)** that secure the fan to the computer.
3. Lift the fan out of the computer **(3)**.



Reverse this procedure to install the fan.

Heat sink



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

Description	Spare part number
Heat sink for use in models with UMA graphics	927919-001
Heat sink for use in models with discrete graphics	927920-001



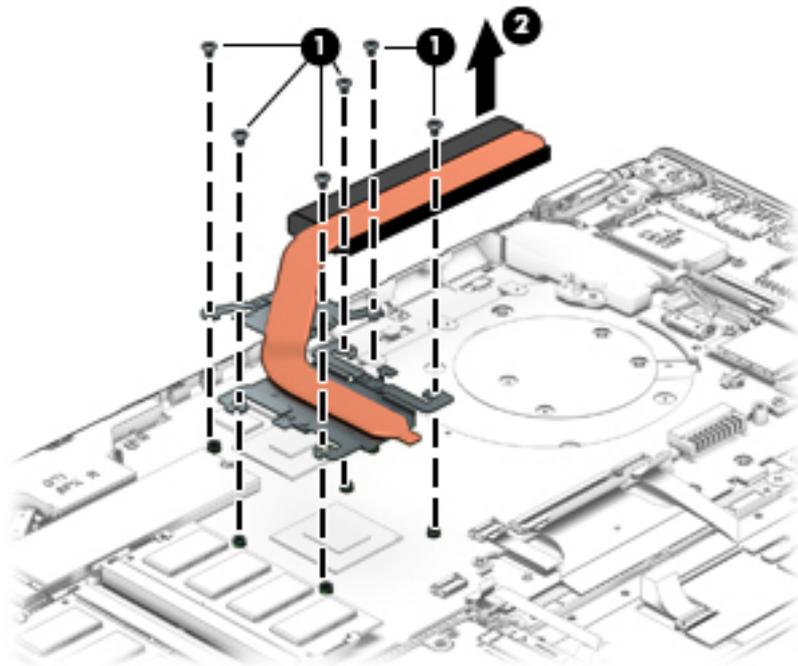
NOTE: To properly ventilate the computer, allow at least **7.6 cm (3.0 in)** of clearance on the left side of the computer. The computer uses an electric fan for ventilation. The fan is controlled by a temperature sensor and is designed to turn on automatically when high temperature conditions exist. These conditions are affected by high external temperatures, system power consumption, power management/battery conservation configurations, battery fast charging, and software requirements. Exhaust air is displaced through the ventilation grill located on the left side of the computer.

Before removing the heat sink, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Bottom cover on page 29](#)).
5. Remove the battery (see [Battery on page 31](#)).

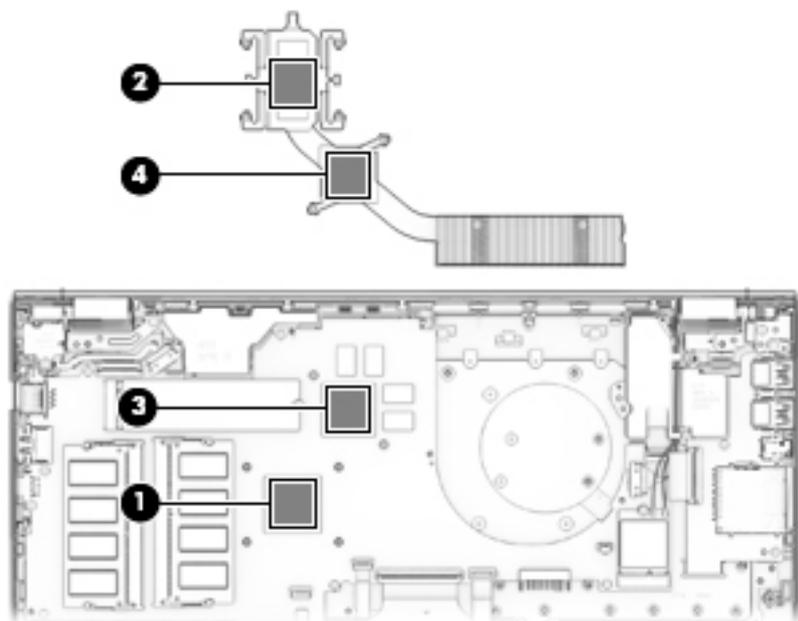
To remove the heat sink:

1. **Discrete graphics models:** In the order indicated on the heat sink, remove the six screws **(1)** that secure the heat sink to the system board.
2. Remove the heat sink from the system board **(2)**.

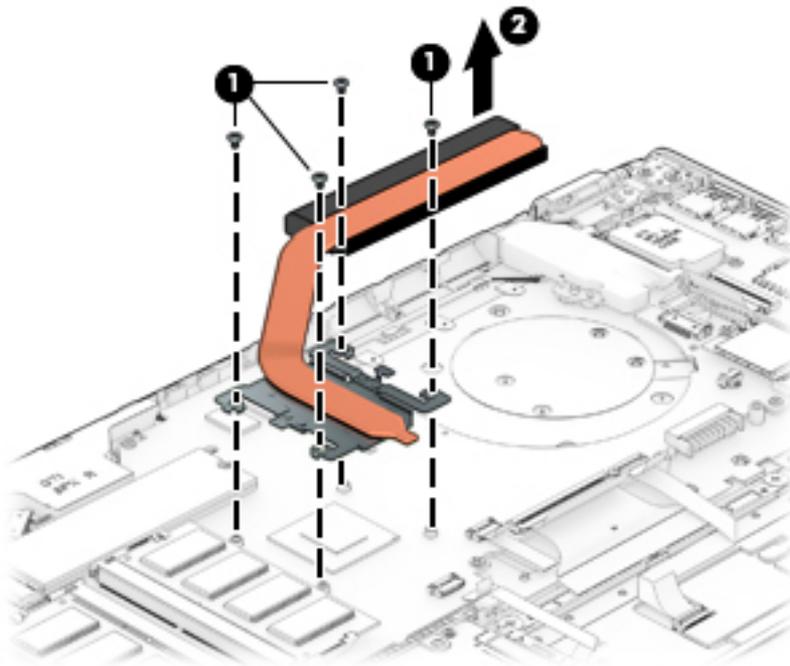


- Thermal paste is used on the processor (1) and associated heat sink area (2), as well as the graphics chip (3) and associated heat sink area (4).

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

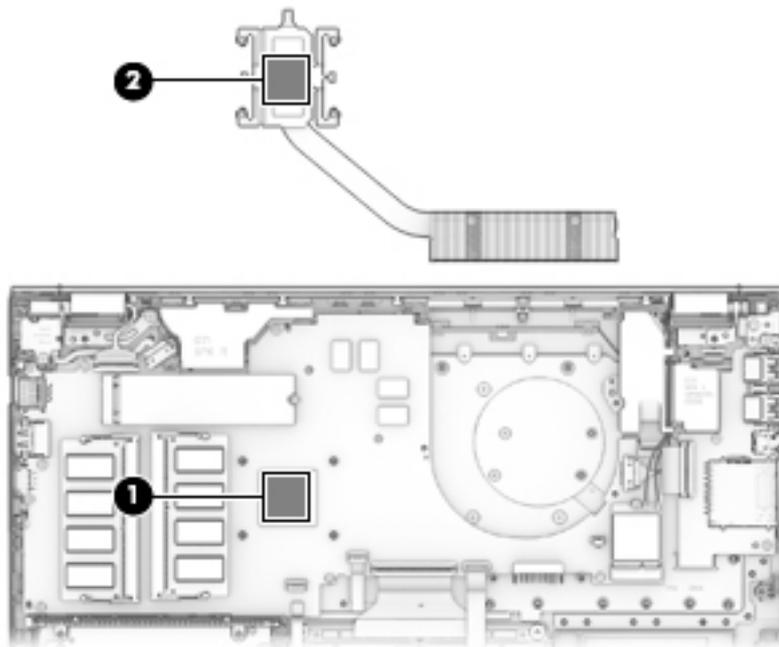


3. **UMA graphics models:** In the order indicated on the heat sink, remove the four screws (1) that secure the heat sink to the system board.
4. Remove the heat sink from the system board (2).



- Thermal paste is used on the processor **(1)** and associated heat sink area **(2)**.

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



Reverse this procedure to reassemble and install the heat sink.

TouchPad board

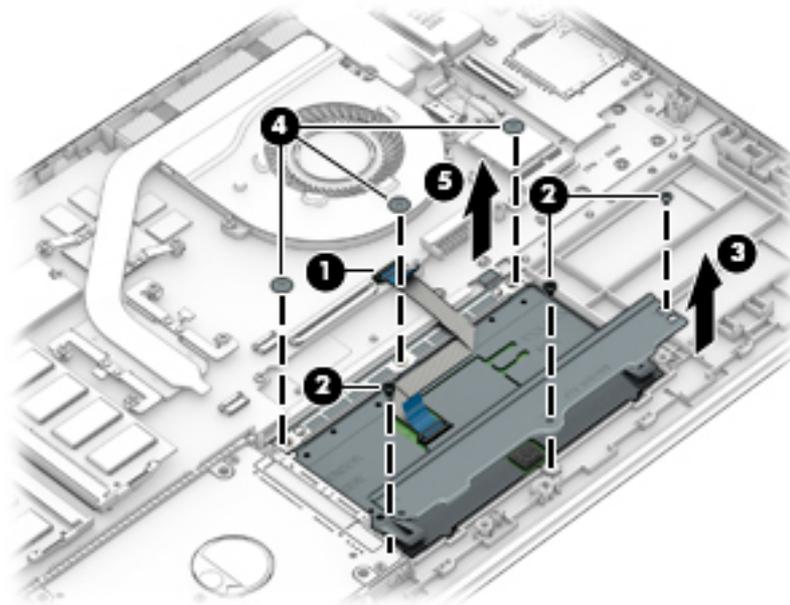
Description	Spare part number
TouchPad board	927923-001
TouchPad bracket	926851-001
TouchPad board cable	927916-001

Before removing the TouchPad board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Bottom cover on page 29](#)).
5. Remove the battery (see [Battery on page 31](#)).

To remove the TouchPad board:

1. Disconnect the cable from the system board **(1)**.
2. Remove the three Phillips PM2.0×3.0 screws **(2)** that secure the bracket to the computer, and the lift the bracket from atop the TouchPad **(3)**.
3. Remove the three Phillips broad head PM2.0×2.0 screws **(4)** that secure the TouchPad board to the computer, and the lift the TouchPad out of the computer **(5)**.



Reverse this procedure to install the TouchPad board.

USB board

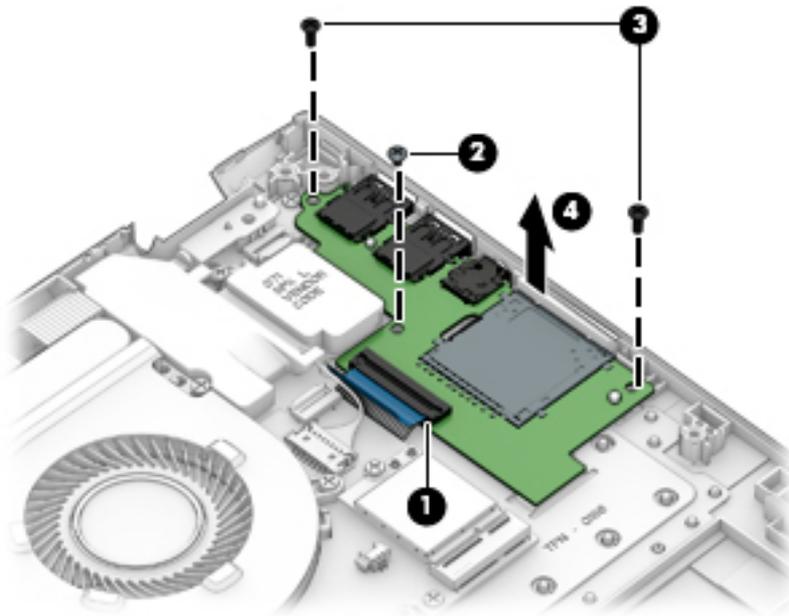
Description	Spare part number
USB board for use in models with 4 GB of discrete graphics memory	927924-001
USB board for use in models with UMA graphics memory or 2 GB of discrete graphics memory	927925-001
USB board cable	927914-001

Before removing the USB board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Bottom cover on page 29](#)).
5. Remove the battery (see [Battery on page 31](#)).

To remove the USB board:

1. Disconnect the cable **(1)** from the USB board.
2. Remove the Phillips PM2.0×2.5 screw **(2)** and the two Phillips PM2.0×5.0 screws **(3)** that secure the USB board to the computer.
3. Rotate the connector side of the board up, and then lift the board out of the computer.**(4)**.



Reverse this procedure to install the USB board.

System board



NOTE: The system board spare part kit includes replacement thermal materials.

Description	Spare part number
System board (includes replacement thermal materials):	
All system boards use the following part numbers:	
xxxxxx-001: Non-Windows operating systems	
xxxxxx-601: Windows 10 operating system	
For use in models with discrete graphics memory:	
• Intel Core i7-7500U processor and 4 GB of discrete graphics memory	927269-xx1
• Intel Core i7-7500U processor and 2 GB of discrete graphics memory	927268-xx1
• Intel Core i5-7200U processor and 4 GB of discrete graphics memory	927271-xx1
• Intel Core i5-7200U processor and 2 GB of discrete graphics memory	927270-xx1
For use in models with UMA graphics memory:	
• Intel Core i7-7500U processor	927264-xx1
• Intel Core i5-7200U processor	927265-xx1
• Intel Core i3-7100U processor	927266-xx1
• Intel Pentium 4415U processor	927267-xx1

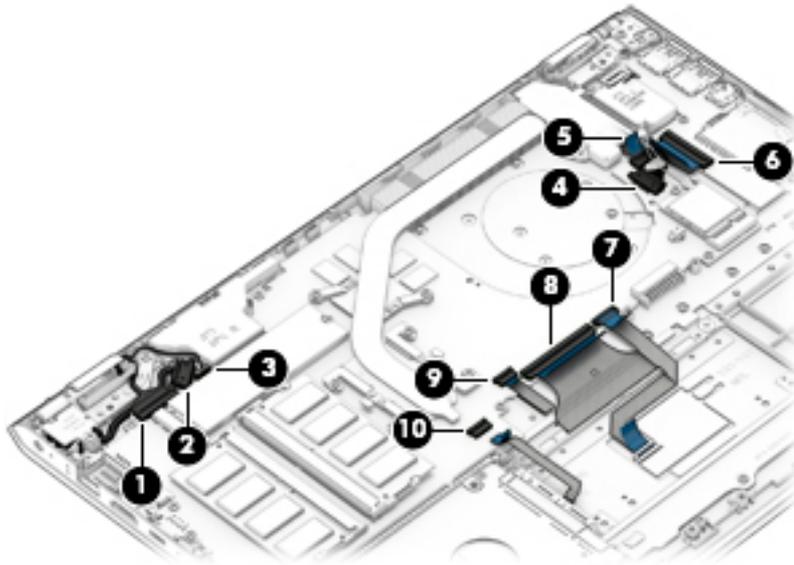
Before removing the system board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Bottom cover on page 29](#)).
5. Remove the battery (see [Battery on page 31](#)).
6. Remove the WLAN module (see [WLAN module on page 32](#)).
7. Remove the memory module (see [Memory module on page 34](#)).
8. Remove the hard drive (see [Hard drive on page 35](#)).
9. Remove the solid-state drive (see [Solid-state drive \(SSD\) on page 37](#)).
10. Remove the fan assembly (see [Fan on page 38](#)).

To remove the system board:

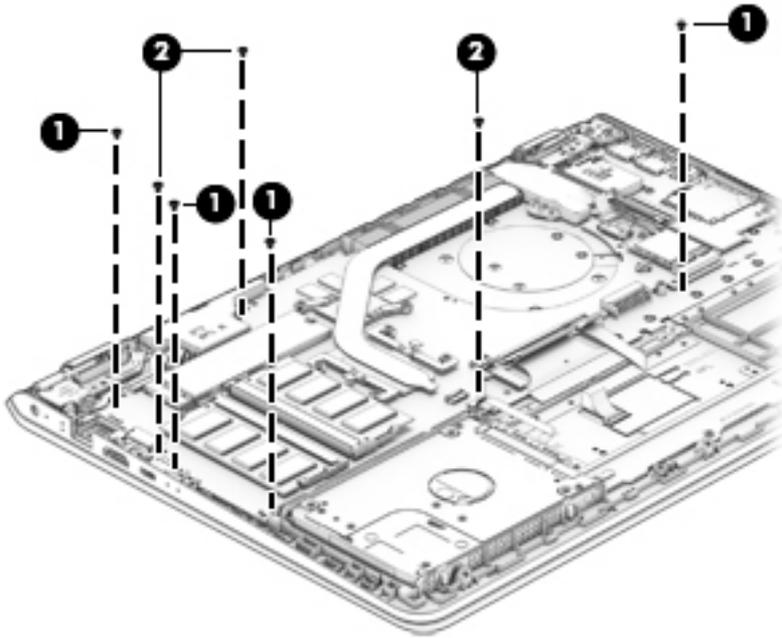
1. Position the computer upright, and then disconnect the following cables from the system board:
 - (1): Large display cable
 - (2): Power connector cable

- (3):** Small display cable
- (4):** Speaker cable
- (5):** Power button board cable
- (6):** USB board cable
- (7):** TouchPad cable
- (8):** Keyboard drive cable
- (9):** Keyboard backlight cable
- (10):** Hard drive cable

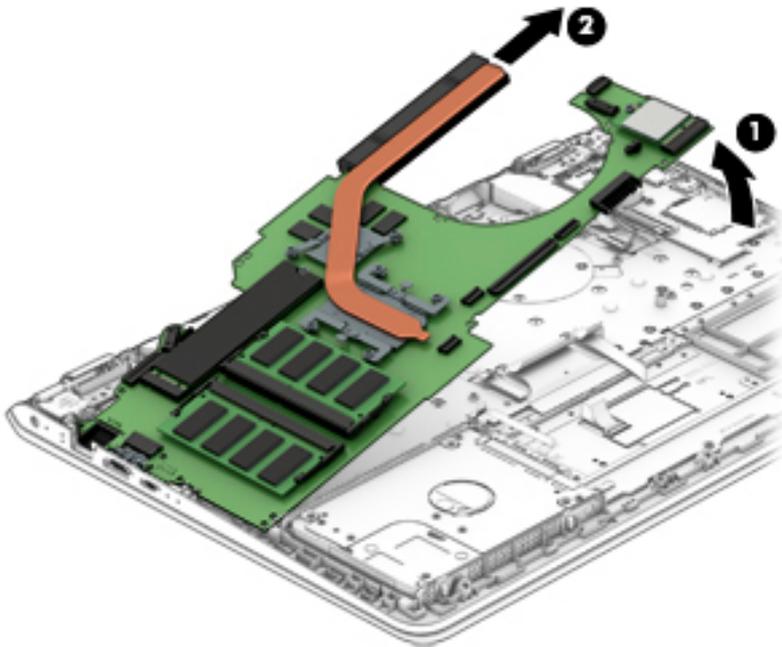


- 2.** Remove the four Phillips PM2.0×5.0 screws **(1)** that secure the system board to the computer.

3. Remove the three Phillips PM2.0×3.0 screws **(2)** that secure the system board to the computer.



4. Rotate the right side of the system board upward **(1)**
5. Pull the system board up and to the right to remove it from the computer **(2)**.



Reverse this procedure to install the system board.

Speakers

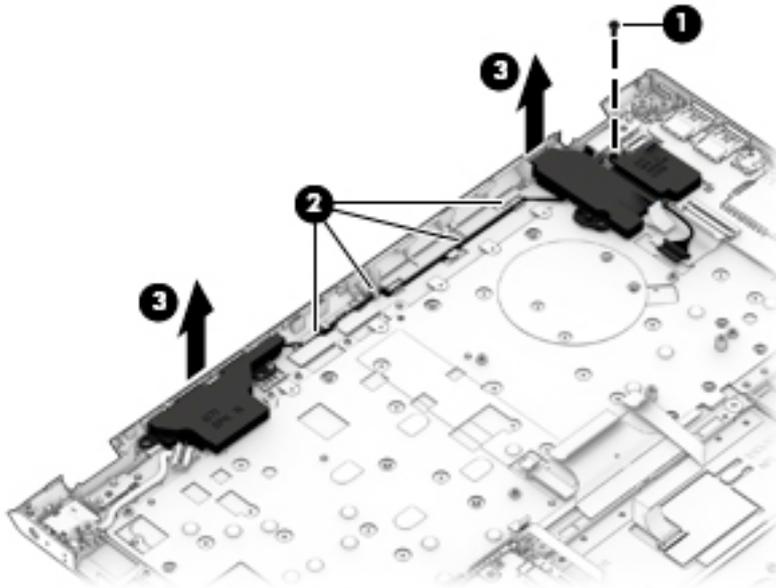
Description	Spare part number
Speakers (includes left and right speakers and cable)	927929-001

Before removing the speakers, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Bottom cover on page 29](#)).
5. Remove the battery (see [Battery on page 31](#)).
6. Remove the system board (see [System board on page 44](#)).

To remove the speakers:

1. Remove the Phillips PM2.0×5.0 screw **(1)** that secures the right speaker to the computer.
2. Remove the cable from its routing path along the bottom of the computer **(2)**, and then remove the speakers from the computer **(3)**.



Reverse this procedure to install the speakers.

Display assembly

Description	Spare part number
Display bezel	
For use in models with an HD camera	927912-001
For use in models with an FHD IR camera	928431-001
Display cable (includes display panel cable and camera/microphone cable)	
For use in models with an HD camera	927913-001
For use in models with an FHD IR camera	928432-001
Camera/microphone module	
HD camera	919573-002
FHD IR camera	934137-001
Antenna , dual (includes wireless antenna cable and transceiver)	927905-001
Raw display panel (35.6-cm [14.0-in])	
UWVA, Brightview	847660-007
UWVA, anti glare	821816-004
SVA, Brightview	847664-007
SVA, anti glare	916357-003
Hinge Kit (left and right)	927922-001
Lock bracket	927921-001
Display enclosure: (includes wireless antennas)	
Mineral silver	927906-001
Silk gold	927907-001

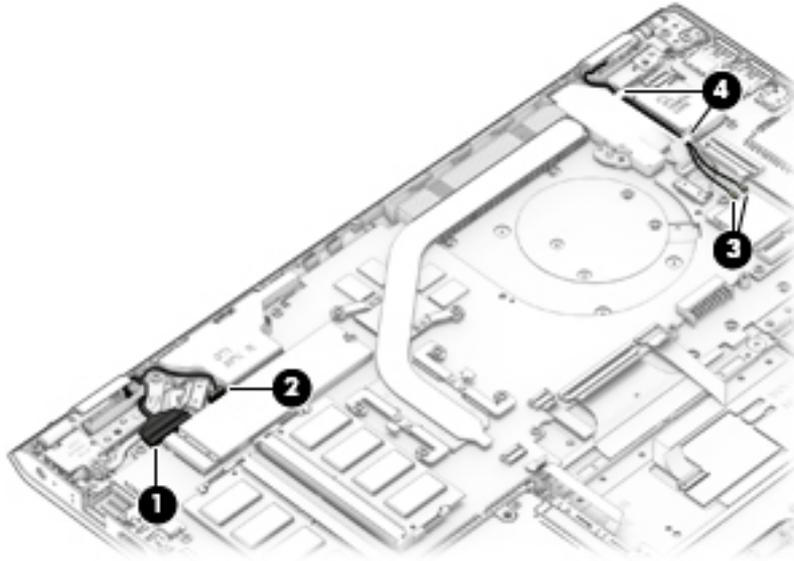
This section describes removing the display assembly and disassembling display subcomponents. You must remove the display from the computer to disassemble display subcomponents.

Before removing the display assembly, follow these steps:

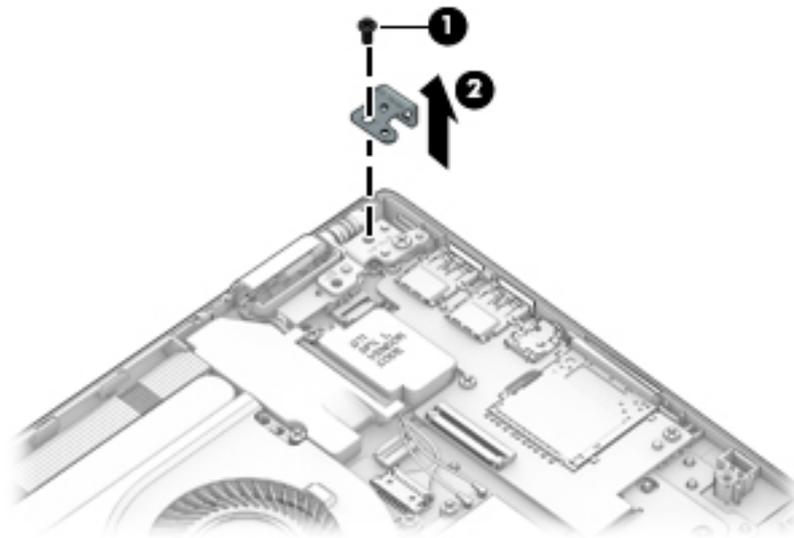
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Bottom cover on page 29](#)).
5. Remove the battery (see [Battery on page 31](#)).
6. Remove the fan assembly (see [Fan on page 38](#)).

To remove the display assembly:

1. Disconnect the large display panel cable from the system board **(1)**.
2. Disconnect the small display panel cable from the system board **(2)**.
3. Disconnect the wireless antennas from the WLAN module **(3)**.
4. Remove the antenna cables from their routing path in the computer **(4)**.

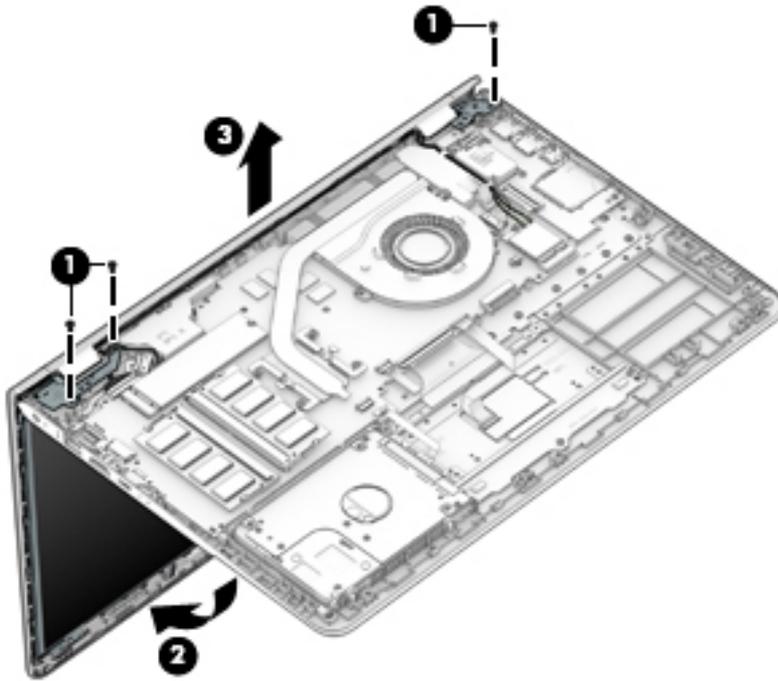


5. Remove the lock bracket from atop the right hinge by removing the Phillips PM2.5×6.0 screw **(1)** and then lifting the bracket off the hinge **(2)**.



6. Remove the three Phillips PM2.5×6.0 screws **(1)** that secure the display assembly to the computer.
7. Lift the display to bend the hinges upward **(2)**.

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



If it is necessary to replace any of the display assembly subcomponents:

1. To remove the display bezel, flex the inside of the top edge (1), the left edge (2), the bottom edge (3), and the right edge (4) of the display bezel until the bezel disengages from the display enclosure.

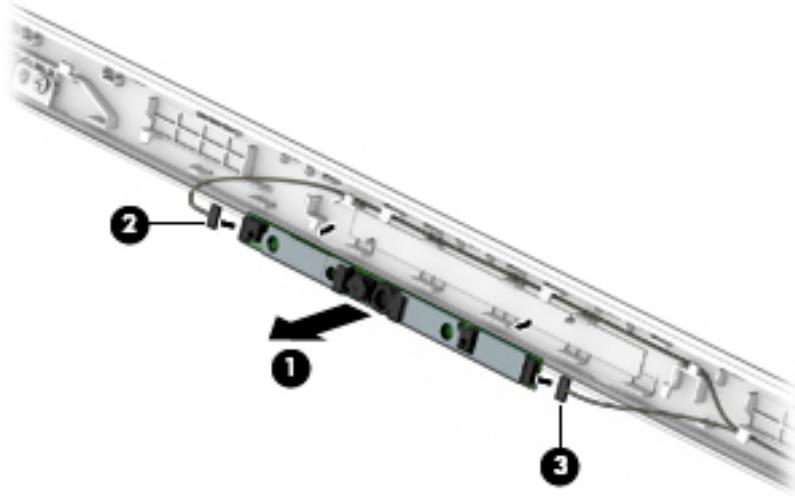
 **NOTE:** The display will not be connected to the computer as shown in the following image.



2. To remove the standard camera/microphone module:

Standard webcam

- a. Position the display assembly with the top edge toward you.
- b. Pry up to disengage the camera/microphone module from the adhesive that secures it to the display **(1)**.
- c. Disconnect the cable **(2)** from the module.
- d. Remove the tape from the enclosure **(3)**. Replacement cameras come with tape already installed.

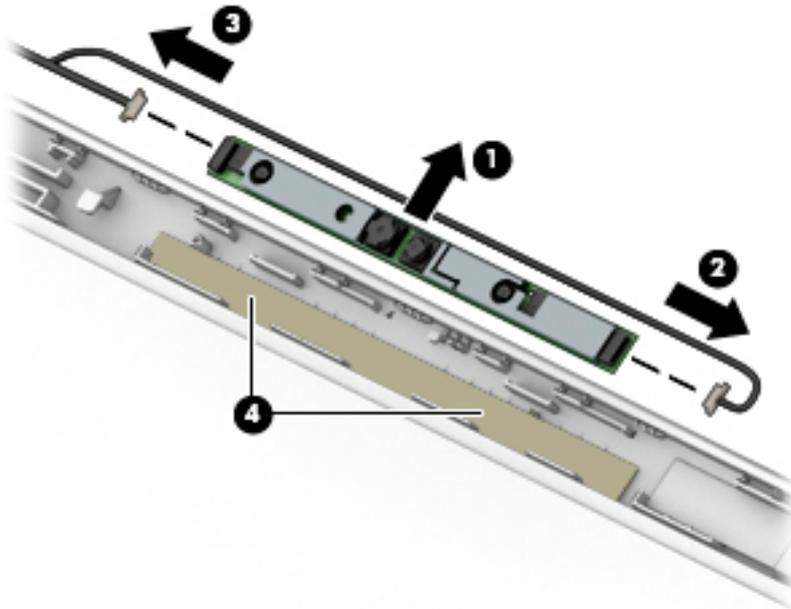


3. To remove the infrared (IR) camera/microphone module:

IR webcam

- a. Position the display assembly with the top edge toward you.
- b. Pry up to disengage the camera/microphone module from the adhesive that secures it to the display **(1)**.
- c. Disconnect the cables from the right side of the camera **(2)** and the left side of the camera **(3)**.

- d. Remove the tape from the enclosure **(4)**. Replacement cameras come with tape already installed.



4. To remove the display panel:

- a. Remove the four Phillips PM2.0×3.0 screws **(1)** that secure the display panel to the top of the enclosure.

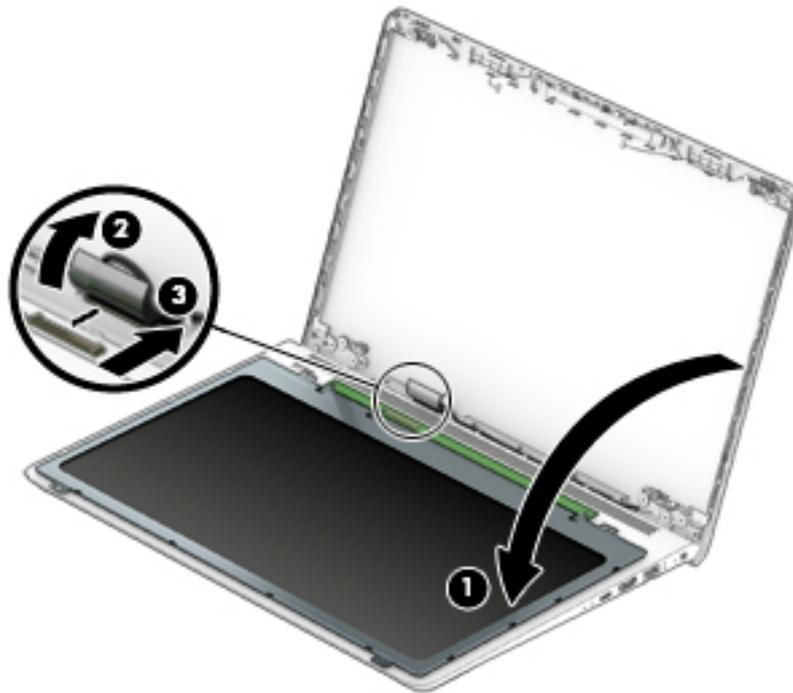


NOTE: The display will not be connected to the computer as shown in the following image.

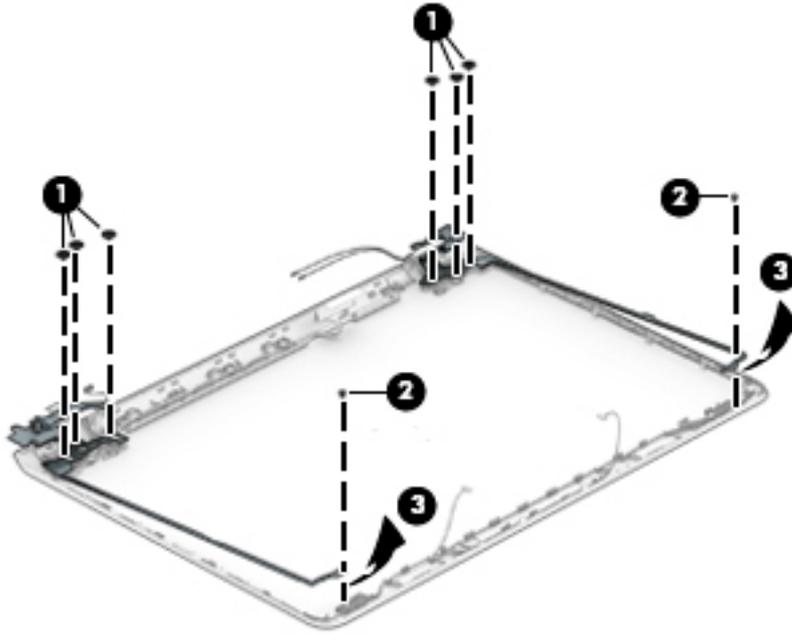


- b. Rotate the display panel onto the keyboard **(1)** to gain access to the display cable connection on the back of the panel.
- c. On the back of the display panel, release the adhesive strip **(2)** that secures the display panel cable to the display panel, and then disconnect the cable **(3)**.

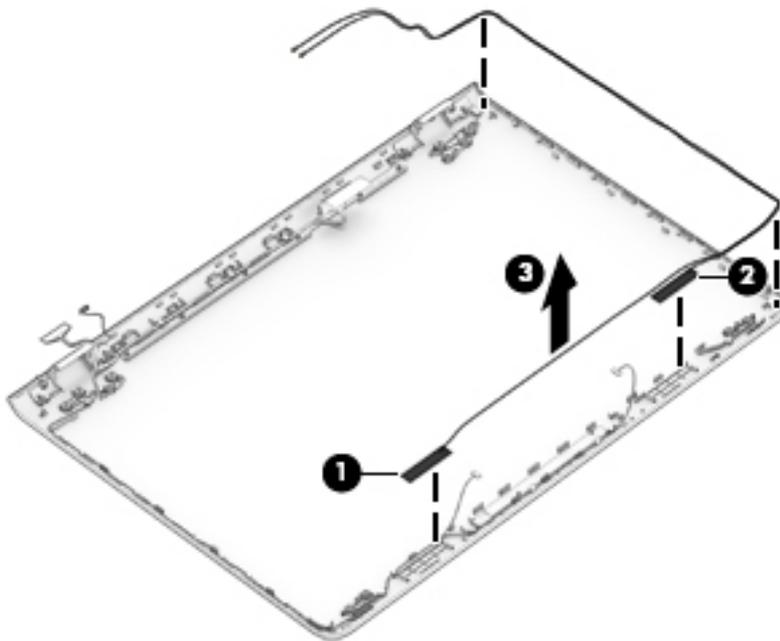
 **NOTE:** The display will not be connected to the computer as shown in the following image.



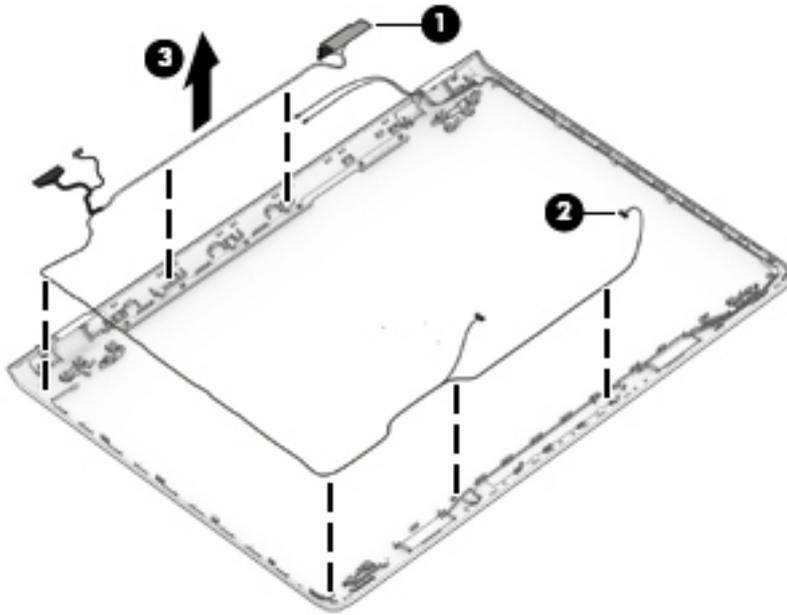
5. To remove the display hinges:
- a. Remove the three Phillips broad head PM2.5×3.0 screws (1) and the Phillips PM2.0×2.5 screw (2) that secures each hinge to the display enclosure.
 - b. Remove the display hinges (3).



6. To remove the wireless antennas and cables, peel the left (1) and right (2) antennas off the display enclosure, and then remove the antennas and cables from the display enclosure (3).

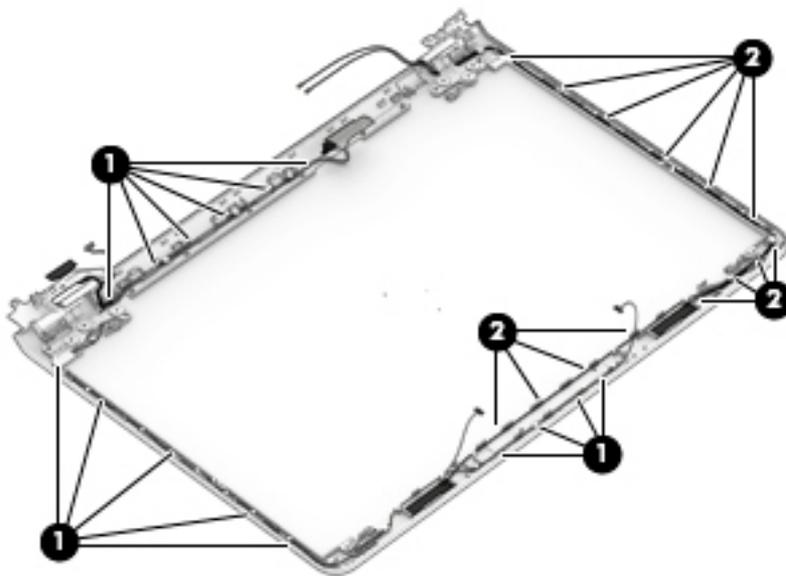


7. To remove the display/camera cable, disconnect the cable from the board at the bottom of the display **(1)** and the camera at the top of the display **(2)**, and then remove the cable from the clips built into the side of the display enclosure **(3)**.



8. If replacing the display enclosure, be sure that the subcomponents (including the camera/microphone module, the antenna receivers, and all associated cables and hardware) are transferred to the new enclosure.

Use the following image to determine proper display cable **(1)** and antenna cable **(2)** routing.



Reverse this procedure to reassemble and install the display assembly.

Power button board

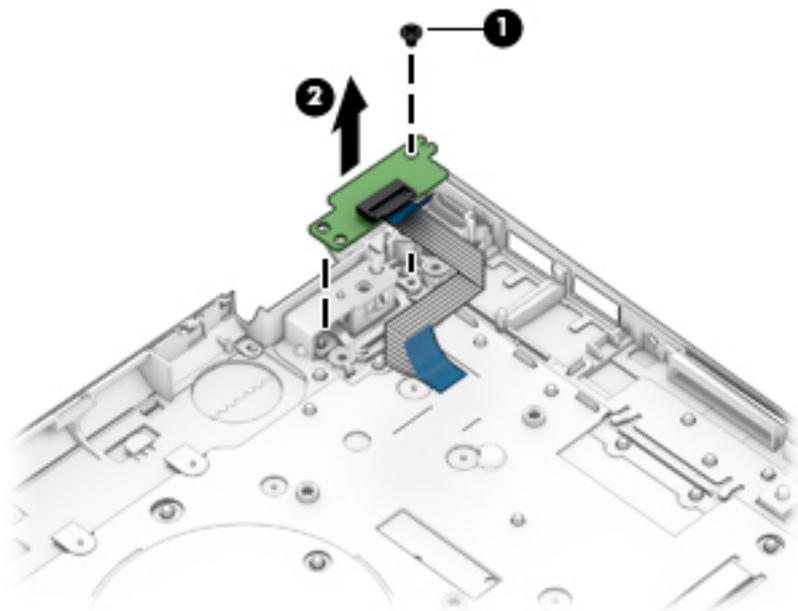
Description	Spare part number
Power button board for use in models with 4 GB of discrete graphics memory	927926-001
Power button board for use in models with UMA graphics memory or 2 GB of discrete graphics memory	927927-001
Power button board cable	927915-001

Before removing the power button board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Bottom cover on page 29](#)).
5. Remove the battery (see [Battery on page 31](#)).
6. Remove the system board (see [System board on page 44](#)).
7. Remove the speakers (see [Speakers on page 47](#)).
8. Remove the display (see [Display assembly on page 48](#)).

To remove the power button board:

1. Remove the Phillips PM2.0×3.0 screw (1) that secures the power button board to the computer
2. Remove the power button board from the computer (2).



Reverse this procedure to install the power button board and cable.

Power connector cable

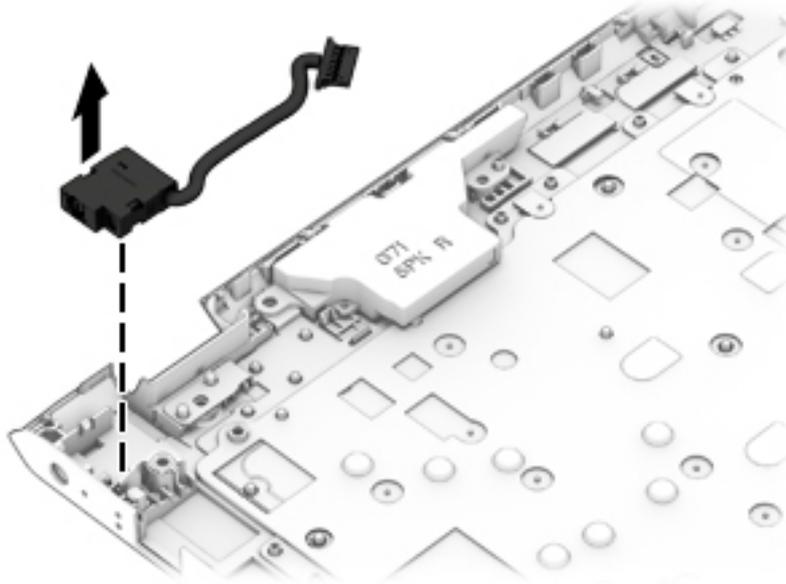
Description	Spare part number
Power connector cable	808155-021

Before removing the power connector cable, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Bottom cover on page 29](#)).
5. Remove the battery (see [Battery on page 31](#)).
6. Remove the display (see [Display assembly on page 48](#)).

To remove the power connector cable:

- ▲ Lift the power connector cable straight up and out of the computer.



Reverse this procedure to install the power connector cable.

Top cover/keyboard

The top cover/keyboard spare part remains after all other spare parts have been removed.

The top cover/keyboard spare part kit includes the keyboard, keyboard cable and the keyboard backlight cable.

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



NOTE: All top cover/keyboard spare part kits include TouchPad.

Description	Spare part number
Keyboard for use in models with backlit keyboard:	
Mineral silver	927904-xxx
Silk gold	930259-xxx
Keyboard for use in models without backlit keyboard:	
Mineral silver	927903-xx1
Silk gold	930255-xx1

For use in country or region	Spare part number	For use in country or region	Spare part number	For use in country or region	Spare part number
Belgium	-A41	Greece	-151	Russia	-251
Brazil	-201	Hungary	-211	Saudi Arabia	-171
Bulgaria	-261	Israel	-BB1	Slovenia	-BA1
Canada	-DB1	Italy	-061	Spain	-071
Czech Republic and Slovakia	-FL1	Latin America	-161	Switzerland	-BG1
Denmark, Finland, and Norway	-DH1	The Netherlands	-B31	Turkey	-141
France	-051	Portugal	-131	United Kingdom	-031
Germany	-041	Romania	-271	United States	-001

6 Using Setup Utility (BIOS)

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

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

Starting Setup Utility (BIOS)

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

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

Updating Setup Utility (BIOS)

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

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

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

Determining the BIOS version

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

To reveal the BIOS version information (also known as *ROM date* and *System BIOS*), use one of these options.

- HP Support Assistant
 1. Type `support` in the taskbar search box, and then select the **HP Support Assistant** app.
– or –
Click the question mark icon in the taskbar.
 2. Select **My PC**, and then select **Specifications**.
- Setup Utility (BIOS)
 1. Start Setup Utility (BIOS) (see [Starting Setup Utility \(BIOS\) on page 59](#)).
 2. Select **Main**, select **System Information**, and then make note of the BIOS version.
 3. Select **Exit**, select **No**, and then follow the on-screen instructions.

To check for later BIOS versions, see [Downloading a BIOS update on page 60](#).

Downloading a BIOS update

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

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

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

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

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

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

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

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

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

7 Backing up, restoring, and recovering

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

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

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

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

– or –

Select the question mark icon in the taskbar.

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

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

Creating recovery media and backups

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

- Use HP Recovery Manager to create HP Recovery media after you successfully set up the computer. This step creates a backup of the HP Recovery partition on the computer. The backup can be used to reinstall the original operating system in cases where the hard drive is corrupted or has been replaced. For information on creating recovery media, see [Creating HP Recovery media \(select products only\) on page 61](#). For information on the recovery options that are available using the recovery media, see [Using Windows tools on page 62](#).
- Use Windows tools to create system restore points and create backups of personal information.

For more information, see [Recovering using HP Recovery Manager on page 63](#).

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

Creating HP Recovery media (select products only)

If possible, check for the presence of the Recovery partition and the Windows partition. From the **Start** menu, select **File Explorer**, and then select **This PC**.

- If your computer does not list the Windows partition and the Recovery partition, you can obtain recovery media for your system from support. See the *Worldwide Telephone Numbers* booklet included with the computer. You can also find contact information on the HP website. Go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions.

You can use Windows tools to create system restore points and create backups of personal information, see [Using Windows tools on page 62](#).

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

To create HP Recovery media:



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

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

If you ever need to recover the system, see [Recovering using HP Recovery Manager on page 63](#).

Using Windows tools

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



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

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

- ▲ Select the **Start** button, and then select the **Get started** app.

Restore and recovery

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

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

- Windows offers several options for restoring from backup, refreshing the computer, and resetting the computer to its original state. For more information see the Get started app.
 - ▲ Select the **Start** button, and then select the **Get started** app.
- If you need to correct a problem with a preinstalled application or driver, use the Reinstall drivers and/or applications option (select products only) of HP Recovery Manager to reinstall the individual application or driver.
 - ▲ Type `recovery` in the taskbar search box, select **HP Recovery Manager**, select **Reinstall drivers and/or applications**, and then follow the on-screen instructions.
- If you want to recover the Windows partition to original factory content, you can choose the System Recovery option from the HP Recovery partition (select products only) or use the HP Recovery media. For more information, see [Recovering using HP Recovery Manager on page 63](#). If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 61](#).
- On select products, if you want to recover the computer's original factory partition and content, or if you have replaced the hard drive, you can use the Factory Reset option of HP Recovery media. For more information, see [Recovering using HP Recovery Manager on page 63](#).
- On select products, if you want to remove the Recovery partition to reclaim hard drive space, HP Recovery Manager offers the Remove Recovery Partition option.

For more information, see [Removing the HP Recovery partition \(select products only\) on page 66](#).

Recovering using HP Recovery Manager

HP Recovery Manager software allows you to recover the computer to its original factory state by using the HP Recovery media that you either created or that you obtained from HP, or by using the HP Recovery partition (select products only). If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 61](#).

What you need to know before you get started

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

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

- HP Recovery media must be used if the computer hard drive fails. If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 61](#).
- To use the Factory Reset option (select products only), you must use HP Recovery media. If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 61](#).
- If your computer does not allow the creation of HP Recovery media or if the HP Recovery media does not work, you can obtain recovery media for your system from support. See the *Worldwide Telephone Numbers* booklet included with the computer. You can also find contact information from the HP

website. Go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions.

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

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

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

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

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

Using the HP Recovery partition (select products only)

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

To start HP Recovery Manager from the HP Recovery partition:

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

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

– or –

For computers or tablets with keyboards attached, press **f11** while the computer boots, or press and hold **f11** as you press the power button.

For tablets without keyboards:

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

– or –

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

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

Using HP Recovery media to recover

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

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

 **NOTE:** If the computer does not automatically restart in HP Recovery Manager, change the computer boot order. See [Changing the computer boot order on page 65](#).

3. Follow the on-screen instructions.

Changing the computer boot order

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

To change the boot order:



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

1. Insert the HP Recovery media.

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

For computers or tablets with keyboards attached:

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

For tablets without keyboards:

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

– or –

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

3. Select the optical drive or USB flash drive from which you want to boot.

4. Follow the on-screen instructions.

Removing the HP Recovery partition (select products only)

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



IMPORTANT: After you remove the HP Recovery partition, you will not be able to perform System Recovery or create HP Recovery media from the HP Recovery partition. So before you remove the Recovery partition, create HP Recovery media; see [Creating HP Recovery media \(select products only\) on page 61](#).



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

Follow these steps to remove the HP Recovery partition:

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

8 Using HP PC Hardware Diagnostics (UEFI)

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

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

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

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

1. Turn on or restart the computer, and quickly press **esc**.
2. Press **f2**.

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

- a. Connected USB drive

 **NOTE:** To download the HP PC Hardware Diagnostics (UEFI) tool to a USB drive, see [Downloading HP PC Hardware Diagnostics \(UEFI\) to a USB device on page 67](#).

- b. Hard drive
 - c. BIOS
3. When the diagnostic tool opens, select the type of diagnostic test you want to run, and then follow the on-screen instructions.

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

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

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

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

Download the latest UEFI version

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

Download any version of UEFI for a specific product

1. Go to <http://www.hp.com/support>.
2. Select **Get software and drivers**.

3. Enter the product name or number.

– or –

Select **Identify now** to let HP automatically detect your product.

4. Select your computer, and then select your operating system.
5. In the **Diagnostic** section, follow the on-screen instructions to select and download the UEFI version you want.

Additional BIOS crisis recovery tool

HP provides a BIOS crisis recovery tool through the HP PC Hardware Diagnostics 3-in-1 USB key. This tool can be used by HP authorized service providers to recover systems that have failed due to a corrupted BIOS. For more information about using the 3-in-1 USB key for BIOS crisis recovery, go to <http://www.hp.com/go/techcenter/pcdiags>. Additional information is included in the web-based training offered by HP University. See the modules that cover HP PC Hardware Diagnostics (UEFI).

9 Specifications

Computer specifications

	Metric	U.S.
Dimensions		
Depth	234.8 mm	9.24 in
Width	335.8 mm	13.22 in
Height	19.9 mm	0.78 in
Weight		
UMA graphics models	1664 g	3.69 lb
Discrete graphics models	1715 g	3.78 lb
Input power		
Operating voltage and current	19.5 V dc @ 3.33 A – 65 W	
	19.5 V dc @ 2.31 A – 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	1366x768 (HD) 1920x1080 (FHD)	
Surface treatment	BrightView Anti glare	
Brightness	220 nits	
Viewing angle	SVA (HD displays) UWVA (FHD displays)	
Backlight	WLED	
Graphics adapter	eDP	

Hard drive specifications

	1-TB*	500-GB*
Dimensions		
Height	7.2 mm	7.0 mm
Length	100.4 mm	100.6 mm
Width	69.9 mm	70.1 mm
Weight	107.0 g	92.0 g
Interface type	SATA	SATA
Transfer rate		
Synchronous (maximum)	300 MB/sec	300 MB/sec
Security	ATA security	ATA security
Seek times (typical read, including setting)		
Single track	2.0 ms	3 ms
Average (read/write)	12 ms	13 ms
Maximum	22 ms	24 ms
Logical blocks	1,953,525,168	1,048,576,000
Disk rotational speed	5400 rpm	5400 rpm
Operating temperature		
*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.		

M.2 solid-state drive specifications

	128-GB*	256-GB*	512-GB*
Dimensions			
Height	1 mm	1 mm	1 mm
Length	50.8 mm	50.8 mm	50.8 mm
Width	28.9 mm	28.9 mm	28.9 mm
Weight	< 10 g	< 10 g	< 10 g
Interface type	SATA-3 (6 Gbps)	SATA-3 (6 Gbps)	SATA-3 (6 Gbps)
Transfer rate			
Sequential Read	Up to 520 MB/s	Up to 540 MB/s	Up to 530 MB/s
Random Read	Up to 60K IOPs	Up to 85K IOPs	Up to 97K IOPs
Sequential Write	Up to 160 MB/s	Up to 280 MB/s	Up to 515 MB/s
Random Write	Up to 34K IOPs	Up to 67K IOPs	Up to 88K IOPs
Ready time, Maximum (to not busy)	1.0 s	1.0 s	1.0 s
Access times			
Logical	0.1 ms	0.1	0.1
Total logical sectors	250,069,680	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)	0° to 70°C (32°F to 158°F)
Non-operating	-40° to 95°C (-40°F to 203°F)	-55° to 90°C (-67°F to 194°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 volts ac, or from 220 to 240 volts ac.

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

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

Requirements for all countries

The following requirements are applicable to all countries and regions:

- The length of the power cord set must be at least **1.5 m** (5.0 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

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

Country/region	Accredited agency	Applicable note number
		<p>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, 0.75mm² or 1.25mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V ac) configuration.</p>
		<p>4. The flexible cord must be Type RVV, 3-conductor, 0.75mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the CCC certification mark.</p>
		<p>5. The flexible cord must be Type H05VV-F 3X0.75mm² 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.</p>
		<p>6. The flexible cord must be Type HVCTF 3X1.25mm² conductor size. Power cord set fittings (appliance coupler, cable, and wall plug) must bear the BSMI certification mark.</p>
		<p>7. For 127 V ac, the flexible cord must be Type SVT or SJT 3 x 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 3X0.75/1.00mm² conductor size, with plug BS 1363/A with BSI or ASTA marks.</p>

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 5
- action keys
 - identifying 11
 - using 12
- airplane mode key 12
- antenna
 - illustrated 19, 48
- antennas
 - removing 54, 55
- audio, product description 2
- audio-out (headphone)/audio-in (microphone) combo jack, identifying 6

B

- backups 61
- battery
 - illustrated 17
 - removing 31
- BIOS
 - determining version 59
 - downloading an update 60
 - starting the Setup Utility 59
 - updating 59
- Bluetooth label 14
- boot order
 - changing 65
- bottom 14
- bottom cover
 - illustrated 17
 - removing 29
- buttons
 - left TouchPad 8
 - power 10
 - right TouchPad 8

C

- cables, service considerations 21
- camera
 - identifying 7
- camera light, identifying 7
- camera/microphone cable
 - illustrated 19, 48
 - removing 27, 52, 54

- camera/microphone module
 - illustrated 19, 48
 - removing 26, 27, 51
- caps lock light, identifying 9
- components
 - bottom 13
 - display 7
 - keyboard area 8
 - left side 6
 - right side 5
- computer major components, illustrated 15
- computer specifications 69
- connector, power 5
- connectors, service considerations 21

D

- display assembly
 - illustrated 16
 - removing 48
- display assembly subcomponents
 - illustrated 19
 - removing 48
- display bezel
 - illustrated 19, 48
 - removing 26, 50
- display cable
 - illustrated 19, 48
 - removing 54
- display enclosure
 - illustrated 20, 48
 - removing 55
- display panel
 - illustrated 19, 48
 - product description 1
 - removing 27, 52, 54
- display specifications 70
- display subcomponents
 - removal 25
 - spare part numbers 25
- drive light 5

E

- electrostatic discharge 22

- equipment guidelines 24
- esc key, identifying 11
- Ethernet, product description 3
- external media cards 3

F

- fan
 - illustrated 17
 - removing 38
- fn key, identifying 11

G

- graphics, product description 1
- grounding guidelines 22
- guidelines
 - equipment 24
 - grounding 22
 - packaging 23
 - transporting 23
 - workstation 23

H

- hard drive
 - illustrated 17, 18
 - precautions 22
 - product description 2
 - removing 35
 - specifications 70
- hard drive bracket
 - illustrated 17, 18
- hard drive brackets
 - removing 35
- hard drive cable
 - illustrated 18
- HDMI port 5
- heat sink
 - removing 39
- heat sink assembly
 - illustrated 17
 - removing 17
- hinges
 - illustrated 20, 48
 - removing 27, 52, 54
- HP PC Hardware Diagnostics (UEFI) using 67

- HP Recovery Manager
 - correcting boot problems 65
 - starting 64
- HP Recovery media
 - creating 61
 - recovery 64
- HP Recovery partition
 - recovery 64
 - removing 66
- I**
- infrared camera
 - identifying 7
- infrared camera lights, identifying 7
- internal card
 - product description 3
- internal microphones, identifying 7
- J**
- jacks
 - RJ-45 (network) 5
- K**
- keyboard
 - illustrated 16
 - product description 3
- keys
 - action 11
 - airplane mode 12
 - esc 11
 - fn 11
 - Windows 11
- L**
- labels
 - Bluetooth 14
 - regulatory 14
 - serial number 14
 - service 14
 - wireless certification 14
 - WLAN 14
- lights
 - AC adapter and battery 5
 - caps lock 9
 - drive 5
 - mute 9
 - power 5,9
- lock bracket
 - illustrated 48
- M**
- M.2 solid-state drive
 - specifications 71
- mass storage devices
 - illustrated 18
 - precautions 22
- memory card reader, identifying 6
- memory card, identifying 6
- memory module
 - illustrated 17
 - product description 1
 - removing 34
- microphone 2
- minimized image recovery 64
- minimized image, creating 63
- model name 1
- mute light, identifying 9
- O**
- operating system 4
- original system recovery 63
- P**
- packaging guidelines 23
- plastic parts, service
 - considerations 21
- pointing device 3
- ports
 - HDMI 5
 - product description 3
 - USB 3.x SuperSpeed 6
 - USB Type-C 3.x charging 5
- power button board
 - illustrated 16
 - removing 56
- power button, identifying 10
- power connector cable
 - illustrated 16
 - removing 57
- power connector, identifying 5
- power cord
 - requirements for all countries 73
 - requirements for specific countries and regions 74
 - set requirements 73
- power light 5
- power lights, identifying 9
- power requirements 3
- processor
 - product description 1
- product description
 - audio 2
 - display panel 1
 - Ethernet 3
 - external media cards 3
 - graphics 1
 - hard drive 2
 - internal card 3
 - keyboard 3
 - memory module 1
 - microphone 2
 - operating system 4
 - pointing device 3
 - ports 3
 - power requirements 3
 - processor 1
 - product name 1
 - security 4
 - sensors 2
 - serviceability 4
 - video 2
 - wireless 3
- product name 1
- product name and number,
 - computer 14
- R**
- recover
 - options 63
- recovery
 - discs 62,64
 - HP Recovery Manager 63
 - media 64
 - starting 64
 - supported discs 62
 - system 63
 - USB flash drive 64
 - using HP Recovery media 62
- recovery media
 - creating 61
 - creating using HP Recovery Manager 62
- recovery partition
 - removing 66
- regulatory information
 - regulatory label 14
 - wireless certification labels 14

- removal/replacement
 - preliminaries 21
 - procedures 25
- RJ-45 (network) jack/status lights, identifying 5

S

- security cable slot, identifying 6
- security, product description 4
- sensors, product description 2
- serial number 14
- serial number, computer 14
- service considerations
 - cables 21
 - connectors 21
 - plastic parts 21
- service labels, locating 14
- serviceability, product description 4
- slots
 - memory card reader 6
 - security cable 6
- solid-state drive
 - illustrated 18
 - removal 37
 - spare part number 17, 18, 37
- speakers
 - identifying 10
 - illustrated 16
 - removing 47
- specifications
 - computer 69
 - display 70
 - hard drive 70
 - M.2 solid-state drive 71
- supported discs, recovery 62
- system board
 - removing 44
 - spare part number 16, 44
- system recovery 63
- system restore point
 - creating 62
- system restore point, creating 61

T

- tools required 21
- top cover/keyboard
 - removing 58
- TouchPad
 - buttons 8

- TouchPad board
 - removing 42
 - spare part number 16, 42
- TouchPad zone, identifying 8
- transporting guidelines 23
- traveling with the computer 14

U

- USB 3.x SuperSpeed ports, identifying 6
- USB board
 - removing 43
 - spare part number 17
- USB Type-C 3.x charging port, identifying 5

V

- vents, identifying 13
- video, product description 2

W

- Windows
 - system restore point 61, 62
- Windows key, identifying 11
- Windows tools
 - using 62
- wireless antenna
 - illustrated 19, 48
- wireless antennas
 - removing 54, 55
- wireless certification label 14
- wireless, product description 3
- WLAN antennas, identifying 7
- WLAN device 14
- WLAN label 14
- WLAN module
 - illustrated 17
 - removing 32
- workstation guidelines 23

