



OMEN X by HP 17 Laptop PC

Maintenance and Service Guide

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Product notice

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


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

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.

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Important Notice about Customer Self-Repair Parts

 **CAUTION:** Your computer includes Customer Self-Repair parts and parts that should only be accessed by an authorized service provider. See Chapter 5, "Removal and replacement procedures for Customer Self-Repair parts," for details. Accessing parts described in Chapter 6, "Removal and replacement procedures for authorized service provider parts," can damage the computer or void your warranty.

Processor information



IMPORTANT: This version of Windows running with the processor or chipsets used in this system has limited support from Microsoft. For more information about Microsoft's support, please see Microsoft's Support Lifecycle FAQ at <https://support.microsoft.com/lifecycle>.

Safety warning notice


 **WARNING!** To reduce the possibility of heat-related injuries or of overheating the computer, do not place the computer directly on your lap or obstruct the computer air vents. Use the computer 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 come into contact with the skin or a soft surface, such as pillows or rugs or clothing, during operation. The computer 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).

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1 Product description

OMEN X by HP 17 Laptop PC, Model numbers 17-ap000 through 17-ap099

OMEN X by HP 17 Laptop PC		Intel 7th generation processors	
Category	Description	N17E-G3	N17E-G2
Product Name	OMEN X by HP 17 Laptop PC	√	√
Processors	Intel® Core™ i7-7820HK (2.9 GHz, turbo up to 3.9 GHz), 2400 MHz/8 MB L3, Quad TDP 45 W Intel Core i7-7700HQ (2.8 GHz, turbo up to 3.8 GHz), 2400 MHz/6 MB L3, Quad TDP 45 W	√	√
Chipset	Intel CM 238	√	√
Graphics	Switchable Discrete Graphics:		
	NVIDIA® 17E-G3 (GeForce® GTX 1080) with up to 8192 MB of dedicated video memory (256 M x 32 GDDR5X x 8 PCs)	√	
	NVIDIA 17E-G2 (GeForce GTX 1070) with up to 8192 MB of dedicated video memory (256 M x 32 GDDR5 x 8 PCs)		√
	Supports HD Decode, DX12, and HDMI; 2.0a with HDCP 2.2, GPU performance scaling (GPS). G-Sync (internal and external), and VR. Supports GPU over-clocking.	√	√
Panel	43.94 cm (17.3") 16:9 Ultra Wide (UW) Aspect Ratio panel:		
	Full High Definition (FHD), WLED AntiGlare (1920 x 1080) flat-flat (4.0 mm) UWVA, support NVIDIA G-Sync, 120 Hz, eDP 1.3 + NVSR, typical brightness 300 nits (cd/m²), non-touch	√	√
	Ultra High Definition (UHD) WLED AntiGlare (3840 x 2160) flat-flat (4.0mm) UWVA, eDP +PSR, typical brightness 300 nits (cd/m²), non-touch	√	√
Memory	Two SODIMM slots, customer accessible/upgradeable: Supports up to 32 GB max system memory DDR4-2400 dual channel support <ul style="list-style-type: none"> 12288 MB (8192 MB x 1 + 4096 MB x 1) 16384 MB (8192 MB x 2), XMP 24576 MB (8192 MB + 16384 MB) 32768 MB (16384 MB x 2), XMP DDR4-2800 XMP dual channel support	√	√

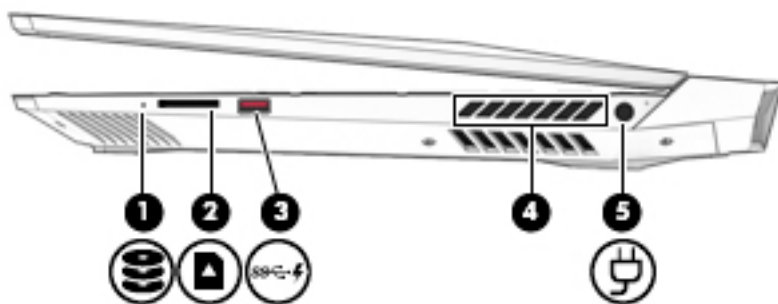
OMEN X by HP 17 Laptop PC		Intel 7th generation processors	
Category	Description	N17E-G3	N17E-G2
	<ul style="list-style-type: none"> 16384 MB (16384 x 1), XMP 32768 (16384 x 2), XMP 		
Hard drive	<p>Single HDD or SSD configurations:</p> <ul style="list-style-type: none"> 1 TB (7200) 9.5 mm 2 TB (5400) 7/9.5 mm 1 TB PCIe NVMe TLC M.2 SSD <p>Dual Storage Configurations:</p> <ul style="list-style-type: none"> 128 GB PCIe NVMe TLC M.2 solid-state drive (SSD) + 1 TB (7200) HDD 256 GB PCIe NVMe TLC M.2 SSD + 1 TB (7200) HDD 512 GB PCIe NVMe TLC M.2 SSD + 1 TB (7200) HDD 1 TB + PCIe NVMe TLC M.2 SSD + 1 TB (7200) HDD <p>Multiple Storage Configurations</p> <ul style="list-style-type: none"> Support RAID 0 for dual SSD configuration 256 GB PCIe NVMe TLC M.2 SSD + 256 GB PCIe NVMe TLC M.2 SSD + 1 TB (7200) HDD 512 GB PCIe NVMe TLC M.2 SSD + 512 GB PCIe NVMe TLC M.2 SSD + 1 TB (7200) HDD 1 TB PCIe NVMe TLC M.2 SSD + 1 TB PCIe NVMe TLC M.2 SSD + 1 TB (7200) HDD <p>Supports all 7 mm/7.2 mm/9.5 mm, SATA 2.5" HDDs</p> <p>Supports Accelerometer/HDD protection</p> <p>7 mm and 9.5 mm share the same bracket</p>	√	√
Audio and video	<p>Dual speakers</p> <p>Bang & Olufsen</p> <p>Supports HP Audio Boost</p> <p>Supports HP Noise Cancellation</p> <p>Camera:</p> <p>HP Wide Vision FHD: HD camera - indicator LED, USB 2.0, BSI sensor, f2.2, 88° WFOV, 1080p by 30 frames per second</p>	√	√
Ethernet	<p>Integrated 10/100/1000 NIC</p> <p>Supports auto-disable while cable is unattached</p>	√	√





OMEN X by HP 17 Laptop PC		Intel 7th generation processors	
Category	Description	N17E-G3	N17E-G2
	Supports RealTek® Dragon® and Cross-Fire® software		
Wireless	Integrated Wireless options with dual antennas (M.2/PCIe) Realtek\RTL 8822BE 802.11 ac 2 x 2 + Bluetooth® 4.2 Combo Adapter (MU-MIMO supported) Compatible with Miracast-certified devices Supports Realtek Dragon software for Windows 10	√	√
External media cards	HP Multi-Format Digital Media Card Reader Supports SD/SDHC/SDXC Push-Push insertion/removal	√	√
Ports	Hot Plug or Unplug, and auto detect for correct output to wide-aspect vs. standard aspect video (auto adjust panel resolution to fit embedded panel and external monitor connected) HDMI v2.0 supporting: up to 4096 x 2160 @ 60 Hz with HDCP 2.2 Mini display port Headphone-out and Mic-in (combo) Microphone input USB Type-C ports (2), USB 3.1, supports HP Sleep & Charge USB 3.0 ports (3), supports HP Sleep & Charge RJ-45/Ethernet port AC Smart Pin adapter plug	√	√
Keyboard and pointing devices	Full-size backlit 3-coat paint with numeric keypad in Shadow Black TouchPad with image sensor Multitouch gestures enabled Supports Modern Trackpad Gestures Taps enabled as default Supports all-keys NKRO Anti-Ghosting keys	√	√
Power requirements	6-cell cylindrical battery – 99 Whr Support battery fast charge (30 minutes to 50% charged)	√	√
	230 W AC adapter (barrel type) with 1 M length power cord (for products equipped with i7-7700HQ, NVIDIA N17E-G2 processors)		√

OMEN X by HP 17 Laptop PC		Intel 7th generation processors	
Category	Description	N17E-G3	N17E-G2
	330 W AC adapter (barrel type) with 1 M length power cord (for products equipped with i7-7820HK, NVIDIA N17E-G2, and N17E-G3 processors)	✓	✓
Security	TPM 2.0	✓	✓
	Security lock slot		
Operating system	Pre-installed	✓	✓
	Windows 10 Professional		
	Windows 10		
	For Developed Market (ML)		
	Windows 10 Home Plus ML		
	For Emerging Market (EM/SL)		
	Windows 10 Home Plus EM/SL		
	For China Market		
	CPPP Windows 10 Home high-end China language edition		
	For APJ SEAP Market (EM/SL)		
	SEAP Windows 10 Home Plus		
Serviceability	End user replaceable parts:	✓	✓
	Memory module		
	Battery		
	Hard drive		
	SSD		
	AC adapter		

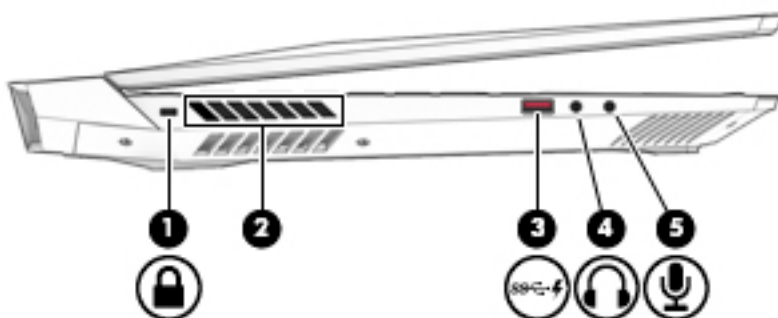
2 External component identification




Right side



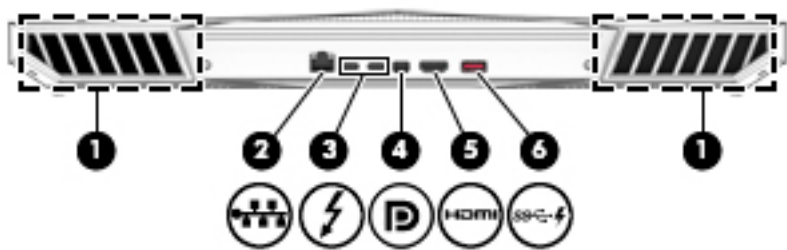
Component	Description	
(1) 	Drive light (select products only)	<ul style="list-style-type: none">Blinking white: The hard drive is being accessed.Amber: Accelerometer (safe).
(2) 	Memory card reader	Reads optional memory cards that enable you to store, manage, share, or access information.
(3) 	USB 3.x SuperSpeed port with HP Sleep and Charge	Connects a USB device, provides high-speed data transfer, and even when the computer is off, charges most products such as a cell phone, camera, activity tracker, or smartwatch.
(4)	Vents	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.
(5) 	Power connector	Connects an AC adapter.





Left side




Component		Description
(1)	Security cable slot	<p>Attaches an optional security cable to the computer.</p> <p>NOTE: The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.</p>
(2)	Vents	<p>Enables airflow to cool internal components.</p> <p>NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.</p>
(3)	 USB 3.x SuperSpeed port with HP Sleep and Charge	<p>Connects a USB device, provides high-speed data transfer, and even when the computer is off, charges most products such as a cell phone, camera, activity tracker, or smartwatch.</p>
(4)	 Audio-out (headphone)/Audio-in (microphone) combo jack	<p>Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. This jack does not support optional standalone microphones.</p> <p>WARNING! To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, refer to the <i>Regulatory, Safety, and Environmental Notices</i>.</p> <p>To access this guide:</p> <ul style="list-style-type: none"> ▲ Select the Start button, select HP Help and Support, and then select HP Documentation. <p>NOTE: When a device is connected to the jack, the computer speakers are disabled.</p>
(5)	 Audio-in (microphone) jack	<p>Connects an optional computer headset microphone, stereo array microphone, or monaural microphone.</p>


Rear



Component	Description	
(1)	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.
(2)	 RJ-45 (network) jack/status lights	Connects a network cable. <ul style="list-style-type: none">• White: The network is connected.• Amber: Activity is occurring on the network.
(3)	 USB Type-C power connector and Thunderbolt port with HP Sleep and Charge (2)	Connects an AC adapter that has a USB Type-C connector, supplying power to the computer and, if needed, charging the computer battery. – and – Connects and charges most USB devices that have a Type-C connector such as a cell phone, camera, activity tracker, or smartwatch, and provides high-speed data transfer. NOTE: Cables and/or adapters (purchased separately) may be required. – and – Connects a display device that has a USB Type-C connector, providing DisplayPort output. NOTE: Your computer may also support a Thunderbolt docking station.
(4)	 Dual-display port	Connects an optional digital display device such as a high-performance monitor or projector.
(5)	 HDMI port	Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component, or a high-speed

Component	Description
	High-Definition Multimedia Interface (HDMI) device.
(6) 	Connects a USB device, provides high-speed data transfer and, even when the computer is off, charges most products such as a cell phone, camera, activity tracker, or smartwatch.

Display

 **NOTE:** Refer to the illustration that most closely matches your computer.



Component		Description
(1)	Internal microphones	Record sound.
(2)	Camera light	On: The camera is in use.
(3)	Camera	Allows you to video chat, record video, or record still images. – or – Allows a facial recognition logon to Windows, instead of a password logon. NOTE: Camera functions vary depending on the camera hardware and software installed.
(4)	WLAN antennas*	Send and receive wireless signals to communicate with wireless local area networks (WLANs).

*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.

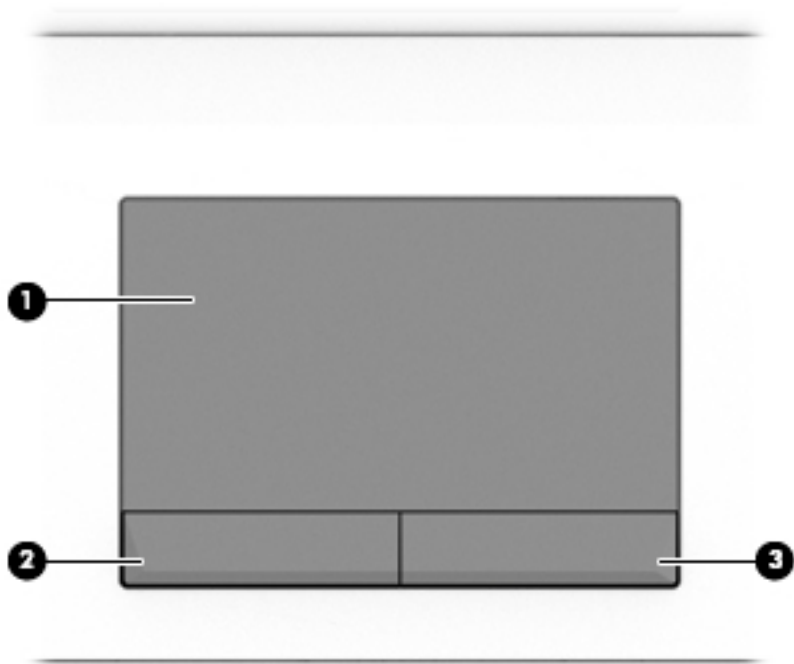
For wireless regulatory notices, see the section of the *Regulatory, Safety, and Environmental Notices* that applies to your country or region.

To access this guide:

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

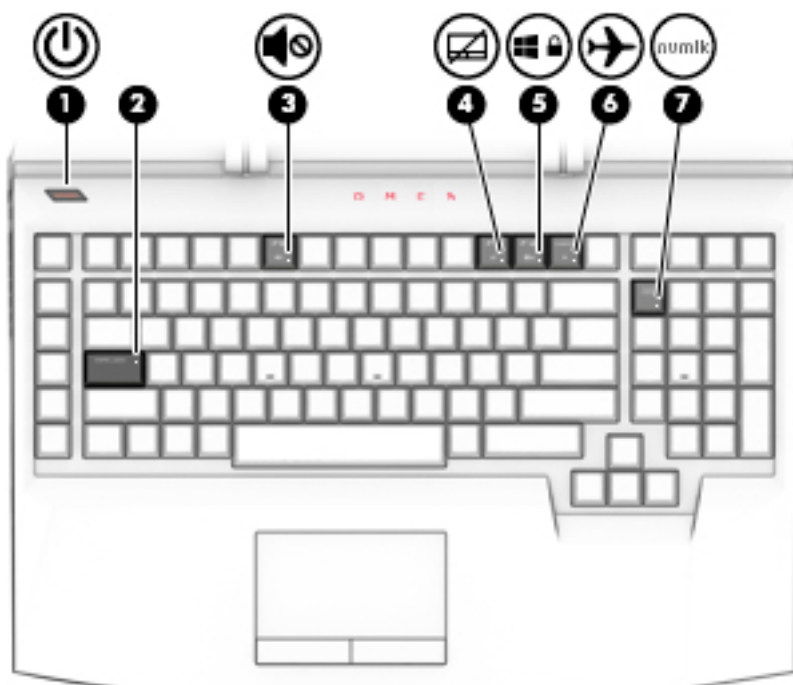
Top






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"> Amber: Computer sound is off. Off: Computer sound is on.
(4) TouchPad light	<ul style="list-style-type: none"> On: The TouchPad is off. Off: The TouchPad is on.
(5) Windows lock light	<ul style="list-style-type: none"> On: The Windows key  is locked. Off: The Windows key is  unlocked.
(6)  Wireless light	<ul style="list-style-type: none"> On: An integrated wireless device such as a wireless local area network (WLAN) device and/or a Bluetooth device, is on. Off: All integrated wireless devices are off.

Component	Description
	NOTE: On some products, the wireless light is amber when all wireless devices are off.
(7) num lock light	When num lock is on, the keypad can be used like an external numeric keypad.

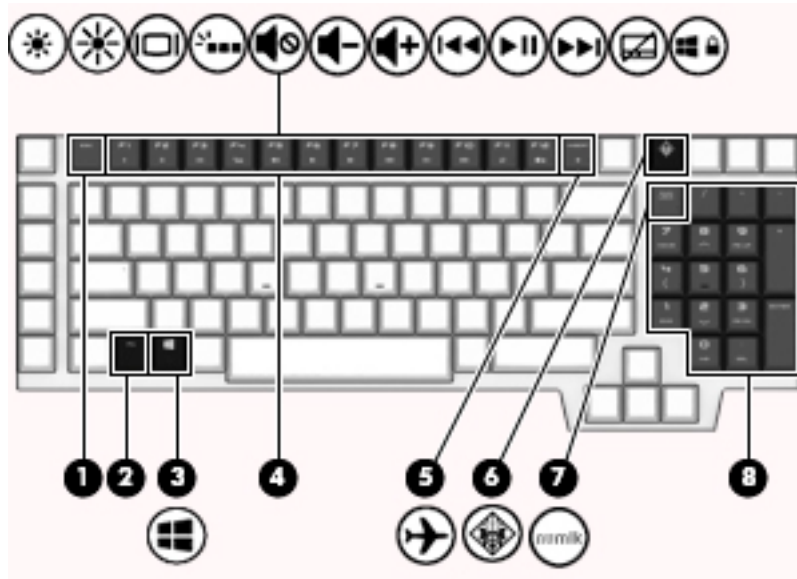
Button






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

Component	Description
	<p>▲ Right-click the Power icon , and then select Power Options.</p>

Keys















Component		Description
(1)	esc key	Displays system information when pressed in combination with the fn key.
(2)	fn key	Executes specific system functions when pressed in combination with the esc key or the spacebar .
(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 f4 action key turns the keyboard backlight feature off or on.
(5)	 INSERT/Airplane mode key (also referred to as the wireless button).	Turns the insert mode on or off – or – Turns the airplane mode on or off. <ul style="list-style-type: none"> Press and hold the key in combination with the fn key NOTE: The airline mode key is also referred to as the wireless button. NOTE: A wireless network must be set up before a wireless connection is possible.
(6)	 OMEN key	Opens the OMEN Command Center software.
(7)	num lock key	Alternates between the navigational and numeric functions on the integrated numeric keypad.
(8)	Integrated numeric keypad	A separate keypad to the right of the alphabet keyboard. When num lock is pressed, the keypad can be used like an external numeric keypad.

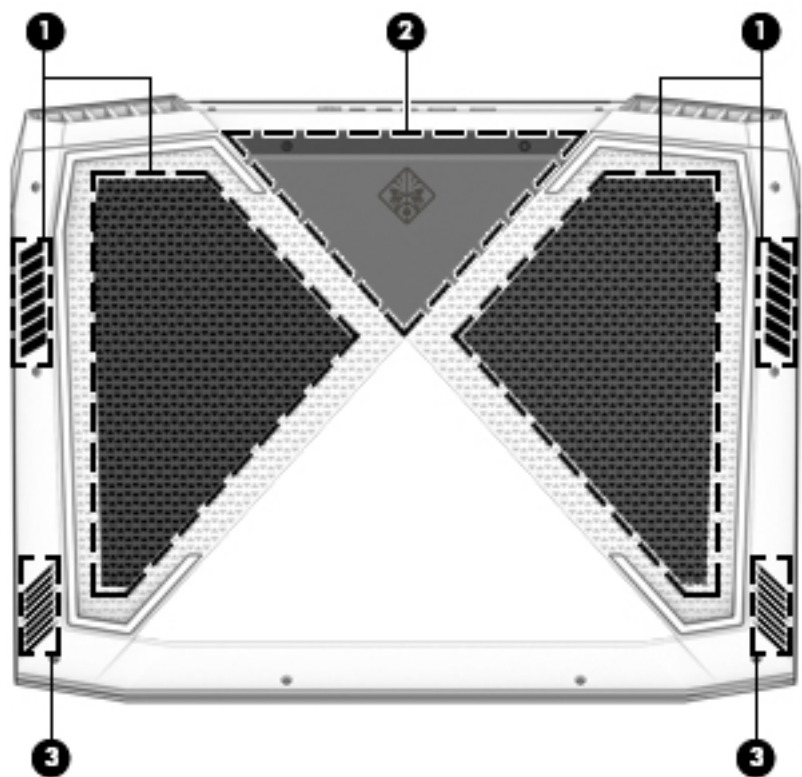
Component	Description
	NOTE: If the keypad is active when the computer is turned off, that function is reinstated when the computer is turned back on.

Using the action keys

- An action key performs an assigned function.
- The icon on each action key illustrates the function for that key.

Icon	Description
	Opens the HP Support Assistant.
	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
(1)	Vents (2)	Enable airflow to cool internal components. NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(2)	Service door	Provides access to the hard drive bay, the WLAN module slot, the wireless wide area network (WWAN) module slot, and the memory module slots. 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 computer functionality, and then contact support. ▲ Type support — or — Click the question mark icon in the taskbar.
(3)	Speakers	Produce sound.

Labels

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

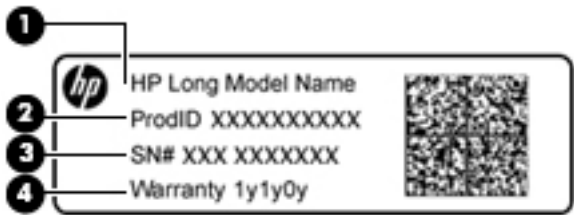
 **IMPORTANT:** Check the following locations for the labels described in this section: the bottom of the computer, inside the battery bay, under the service door, or on the back of the display.

- 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)	Serial number
(2)	Product number
(3)	Warranty period
(4)	Model number (select products only)





Component	
(1)	Model name (select products only)
(2)	Product number
(3)	Serial number
(4)	Warranty period

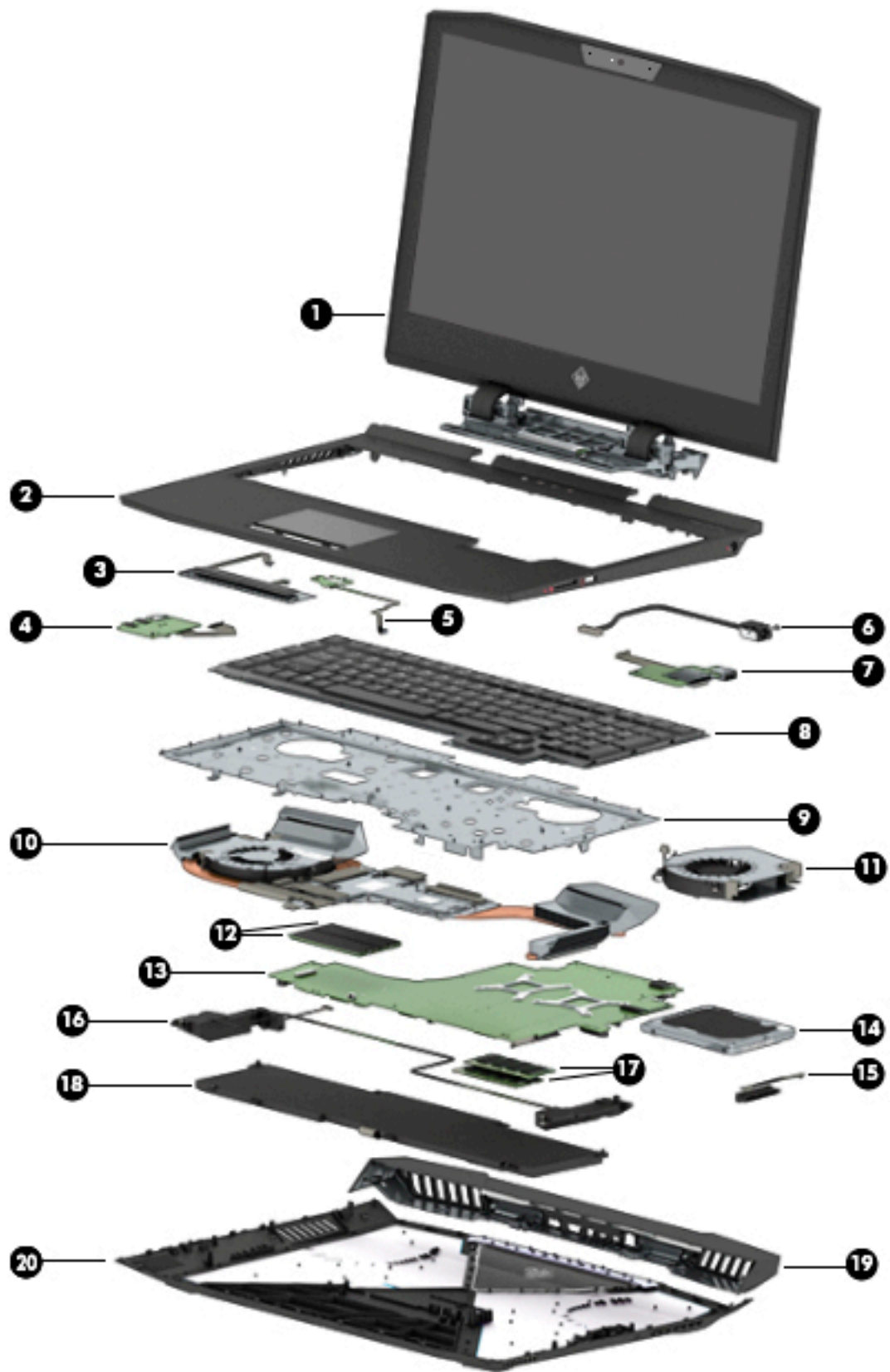
- Regulatory label(s)—Provide(s) regulatory information about the computer.
- Wireless certification label(s)—Provide(s) information about optional wireless devices and the approval markings for the countries or regions in which the devices have been approved for use.

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.

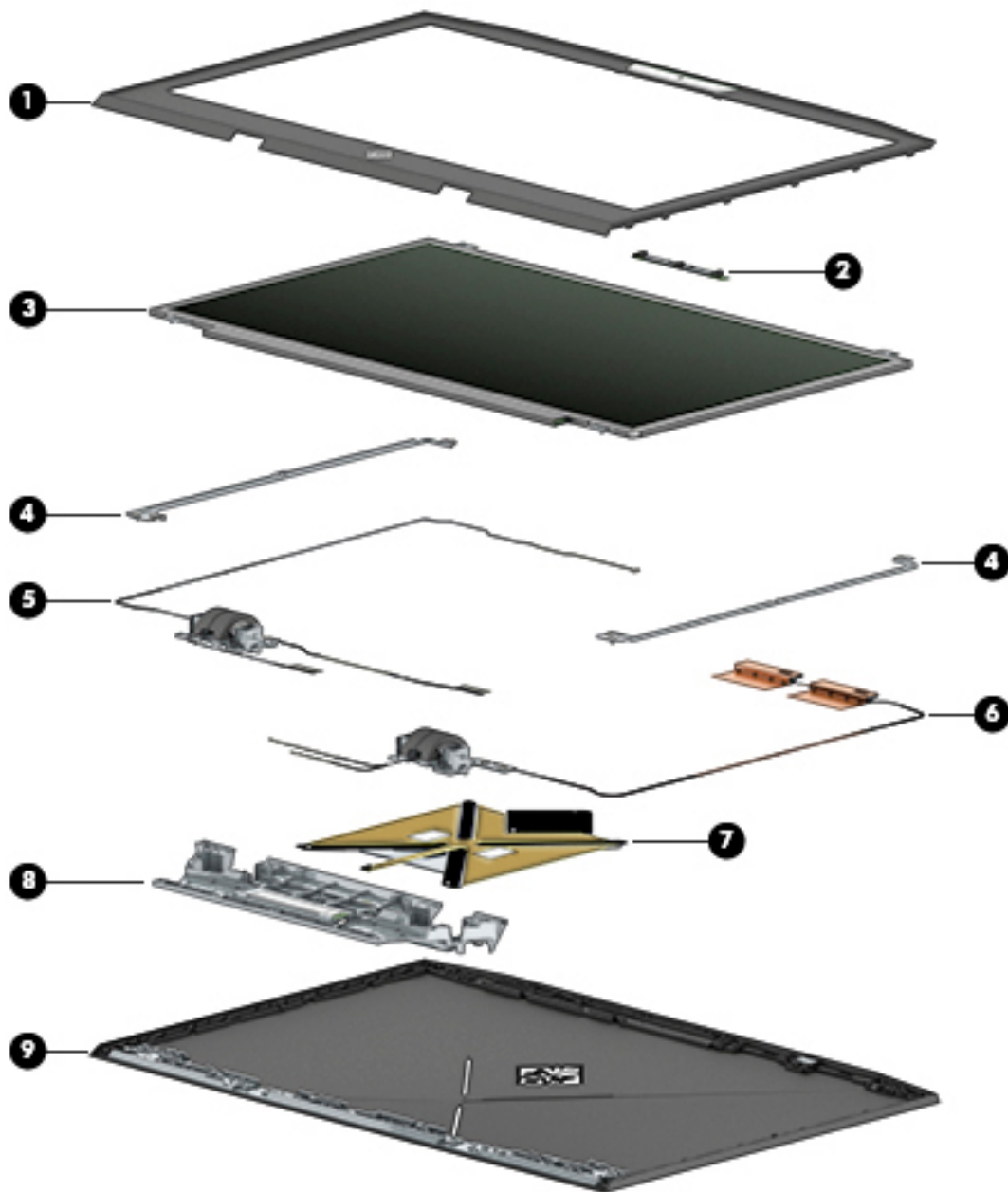
 **NOTE:** Details about your computer, including model, serial number, product key, and length of warranty, are on the service tag at the bottom of your computer. See [Labels on page 17](#) for details.



Item	Component	Spare part number
(1)	Display (spared at the component level; see Display assembly subcomponents on page 22)	
(2)	Top cover with TouchPad	
	For use in the United States	940625-001
	For use in Japan	L00260-001
(3)	TouchPad button board	L00259-001
(4)	Audio board (the audio board cable is spared separately as 940588-001)	940606-001
(5)	Power button board , (the power board cable is spared separately as 940589-001)	940608-001
(6)	DC-in power connector DC-in support bracket is spared separately as 940602-01	940596-001
(7)	Memory card reader with foil, (cable is spared separately as 940587-001)	940607-001
(8)	Keyboard (in Shadow Black, with Carbon Fiber pattern. Full-size 3-coat paint island-style backlit with numeric keypad) The keyboard support bracket is spared separately as 940601-001 The keyboard cable is spared separately as 940590-001	
	For use in the United States	940605-001
	For use in the United Kingdom	940605-031
	For use in Germany	940605-041
	For use in France	940605-051
	For use in Italy	940605-061
	For use in Spain	940605-071
	For use in Portugal	940605-131
	For use in Turkey	940605-141
	For use in England/Saudi Arabia	940605-171
	For use in Russia	940605-251
	For use in Thailand	940605-281
	For use in Japan2	940605-291
	For use in Belgium	940605-A41
	For International use	940605-B31
	For use in Israel	940605-BB1
	For use in Switzerland	940605-BG1
	For use in Canada (English and French)	940605-DB1
	For use in the Nordic region	940605-DH1
	For use in Czech/Slovakia	940605-FL1
(9)	Keyboard bottom plate	Spared with the keyboard
(10)	Heatsink (with thermal pad and fan)	
	For use in models equipped with GTX 1080	940598-001

Item	Component	Spare part number
	For use in models equipped with GTX 1070 i7-7700 HQ	L00257-001
	For use in models equipped with GTX 1070 i7-7820 HK	L00258-001
(11)	Fan	940597-001
(12)	PCIe NVMe TLC M.2 SSD	
	128 GB	940617-001
	1 TB	940618-001
	256 GB	940619-001
	512 GB	940620-001
(13)	System board (includes processor and replacement thermal material): All system boards use the following part numbers: xxxxxx-001 Non-Windows operating systems xxxxxx-601 Windows 10 operating systems	
	DSC GTX 1070 8 GB i7-7700	940621-xxx
	GTX 1070 8 GB i7-7820	940622-xxx
	1080 8 GB i7-7700	940623-xxx
	GTX 1080 8 GB i7-7820	940624xxx
(14)	Hard drive (bracket is spared separately as 940599-001)	
	1 TB 7200 RPM SATA RAW 9.5 mm	766644-001
	2 TB 5400 RPM SATA RAW 7.0 mm	912487-850
(15)	Hard drive cable	940595-001
(16)	Speakers	940616-001
(17)	Memory (SODIMM)	
	4 GB 2400 MHz 1.2v DDR4	862397-850
	8 GB 2400 MHz 1.2v DDR4	862398-850
	16 GB 2400 MHz 1.2v DDR4	865396-850
	16 GB 2800 MHz XMP 1.35v DDR4	L07040-850
(18)	Battery	925149-855
(19)	Trunk	940611-001
(20)	Base enclosure	940585-001

Display assembly subcomponents



Item	Component	Spare part number
(1)	Display bezel	940586-001
(2)	Camera	940626-001
(3)	Panels (16:9 Ultra Wide Aspect Ratio), (the LCD support bracket is spared separately as 940600-001)	
	17.3" FHD WLED AntiGlare (1920 x 1080) flat-flat (4.0 mm) UWVA	940614-001
	17.3" UHD WLED AntiGlare (3840 x 2160) flat-flat (4.0 mm) UWVA	940615-001
	17.3" UHD LED AntiGlare (1920 x 1080) flat-flat (4.0 mm) UWVA	L12056-001

Item	Component	Spare part number
(4)	Hinge brackets	L03427-001
(5)	Display cable	
	For products with a FHD screen and HD camera	940593-001
	For products with a UHD screen and HD camera	940594-001
(6)	Antenna	940583-001
(7)	Backlight (BL) module (the front BL module is spared separately as 940609-001, and the keyboard BL cable is spared separately as 940591-001)	940610-001
(8)	Hinge (includes left and right hinges), (the hinge support bracket is spared separately as 940604-001)	940603-001
(9)	Back cover (with logo)	940584-001

Miscellaneous parts

Component	Spare part number
AC adapter:	
230W PFC SMART Slim 7.4 mm	925141-850
330 W PFC SMART nSLIM 7.4mm	925142-850
USB-C to VGA adapter	831751-001
Dongle (USB-C to USB-A)	833960-001
Power cord (black, 1 m), (for 230 W and 330 W adapters):	
For use in North America	121565-023
For use in South Africa	187487-012
For use in Denmark	130627-014
For use in Europe	100614-016
For use in Israel	398062-011
For use in Switzerland	150304-015
For use in Australia	100661-021
For use in Thailand	285052-013
For use in Japan	653326-005
For use in the United Kingdom and Singapore	100613-021
For use in the Peoples Republic of China	286496-024
For use in Japan	653326-005
Keyboard hook	940613-001
Screw kit	L03426-001
HP logo	L01638-001

Component	Spare part number
Hinge cap	940612-001
LED cable	940592-001

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

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.

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

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

Avoid dropping drives from any height onto any surface.

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

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

Avoid exposing a drive to temperature extremes or liquids.

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

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 plastic foam	14,500 V	5,000 V	3,500 V
Removing bubble pack from PCB	26,500 V	20,000 V	7,000 V
Packing PCBs in foam-lined box	21,000 V	11,000 V	5,000 V

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

Workstation guidelines

Follow these grounding workstation guidelines:

- Cover the workstation with approved static-shielding material.
- Use a wrist strap connected to a properly grounded work surface and use properly grounded tools and equipment.
- Use conductive field service tools, such as cutters, 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 plastic foam.
- Handle ESD-sensitive components, parts, and assemblies by the case or PCM laminate. Handle these items only at static-free workstations.
- Avoid contact with pins, leads, or circuitry.
- Turn off power and input signals before inserting or removing connectors or test equipment.

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 equipment 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 Customer Self-Repair parts

This chapter provides removal and replacement procedures for Customer Self-Repair parts.

 **NOTE:** The Customer Self-Repair program is not available in all locations. Installing a part not supported by the Customer Self-Repair program may void your warranty. Check your warranty to determine if Customer Self-Repair is supported in your location.

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 17](#) for details.

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

There are two screws that must be removed, replaced, and/or loosened when servicing Customer Self-Repair parts. Make special note of the screw sizes and locations during removal and replacement.

Battery

Description	Spare part number
Battery 6 cell 99 Whr 4.55 Ah LI DG06099XL-PL	925149-855

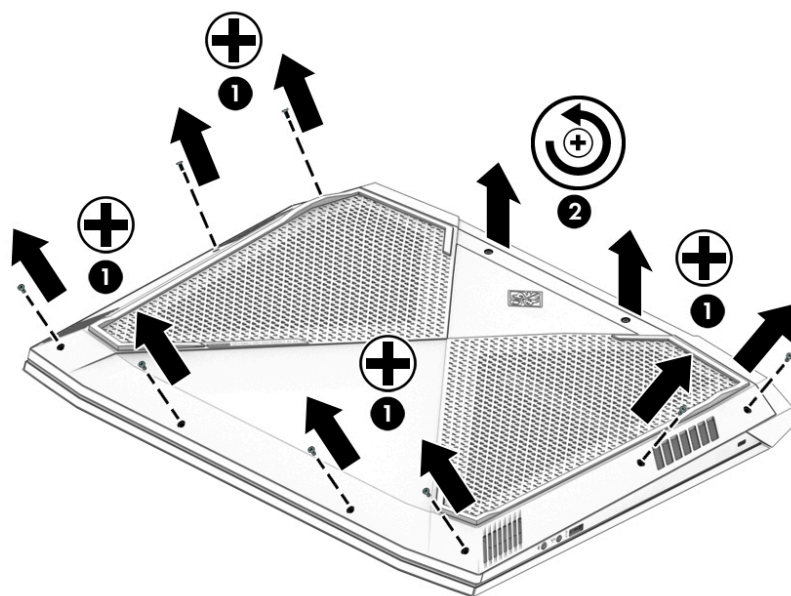
Before removing the battery, follow these steps:

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

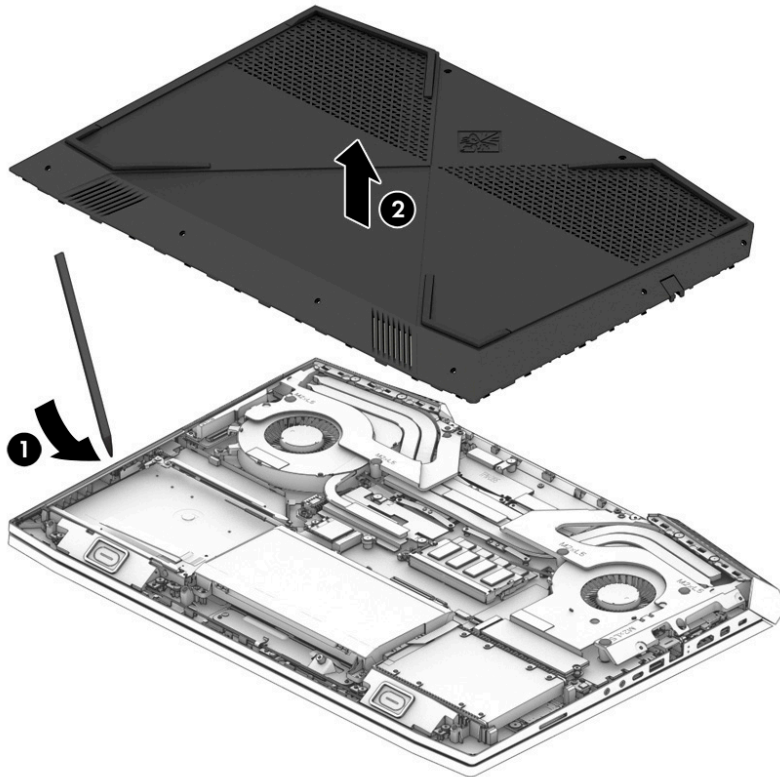
Remove the battery:

- ⚠ WARNING!** To reduce potential safety issues, use only the user-replaceable battery provided with the computer, a replacement battery provided by HP, or a compatible battery purchased from HP.
- ⚠ CAUTION:** Removing a user-replaceable battery that is the sole power source for the computer can cause loss of information. To prevent loss of information, save your work or shut down the computer through Windows before removing the battery.

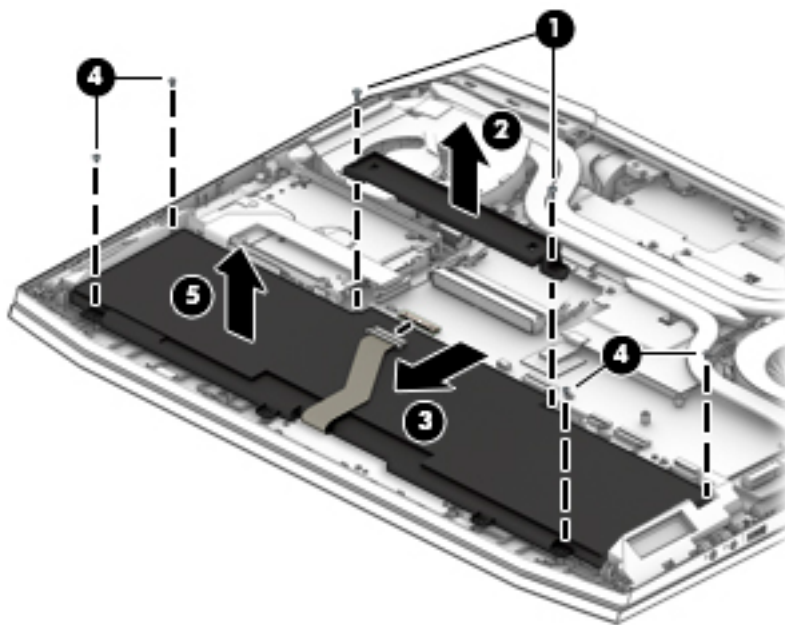
1. Position the computer upside down on a flat surface.
2. Remove the eight Phillips screws (1) from the bottom cover. Loosen but do not remove two screws from the bottom cover (2).



3. Using a case utility tool, gently separate the bottom cover from the enclosure (1). Remove the bottom cover (2).



4. Remove the two Phillips screws holding the bottom cover spacer (1). Remove the bottom cover spacer allowing access to the battery cable (2) and disconnect the battery (3). Remove the four Phillips screws (4) that secure the battery to the keyboard/top cover. Lift the battery out of the enclosure (5).



To insert the battery, reverse the removal procedures.

Hard drive

Description	Spare part number
Hard drive (hard drive cable is spared as 940595-001 and the hard drive bracket is spared as 940599-001)	
1 TB 7200 RPM SATA RAW 9.5 mm	766644-001

Before removing the hard drive, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the following components:
 - a. Base enclosure (see [Base enclosure on page 38](#))
 - b. Battery (see [Battery on page 31](#))

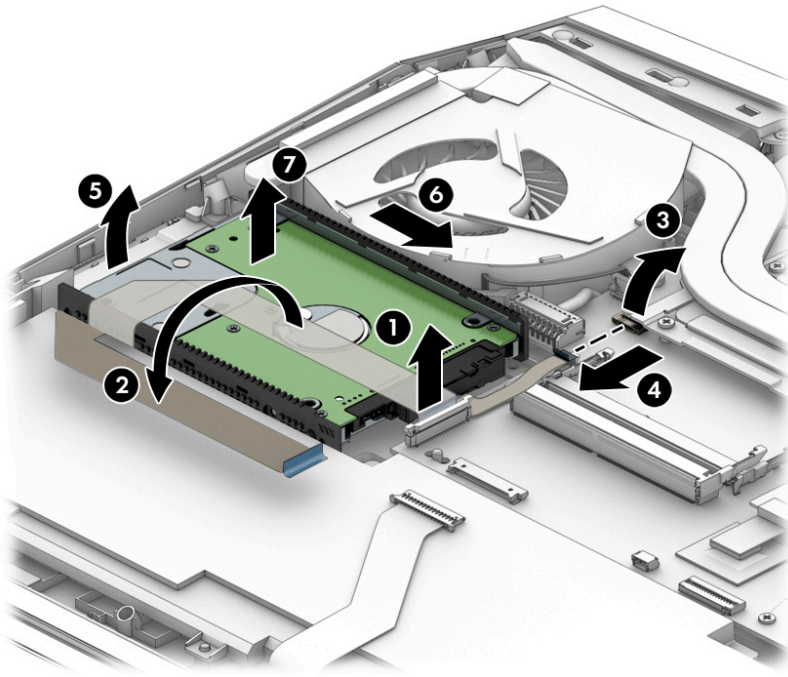
Remove the hard drive:



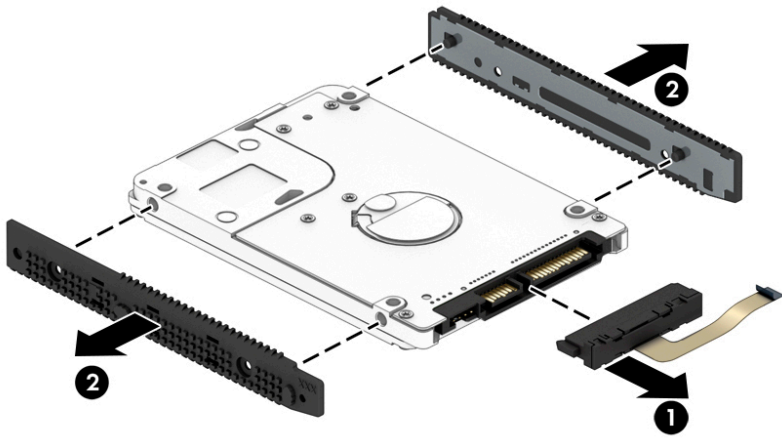
NOTE: Use minimal force when lifting the locking bar up on the ZIF connector and disconnecting the cable.

1. Open the zero insertion force (ZIF) connector to release the hard drive cable **(1)** from the system board.
2. Remove the hard drive connector cable from the ZIF connector **(2)**.
3. Lift up on the tab connected to the system board cable **(3)**. Pull the tab **(4)** to disconnect the hard drive cable from the system board.
4. Lift the top edge of the hard drive upward **(5)**.

5. Slide the hard drive toward the top of the computer (6), then remove it from the computer (7).



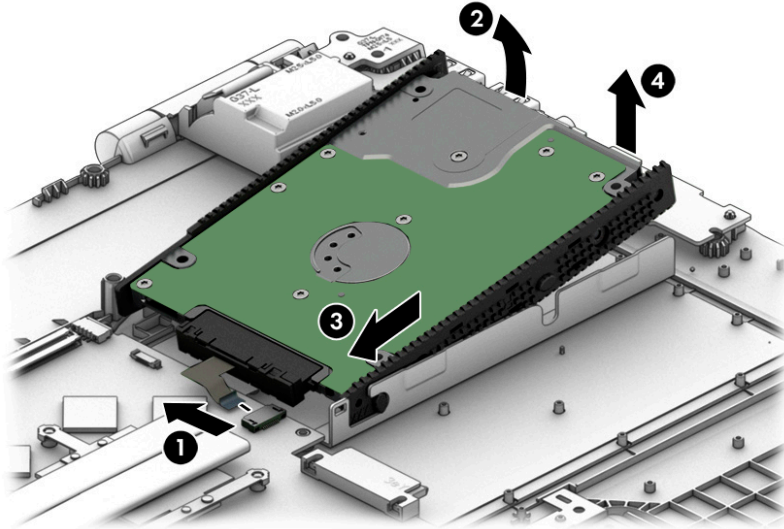
6. If it is necessary to disassemble the hard drive, perform the following steps:
 - a. Remove the hard drive cable connector (1) from the hard drive.
 - b. Slide the two hard drive brackets (2) off the hard drive.



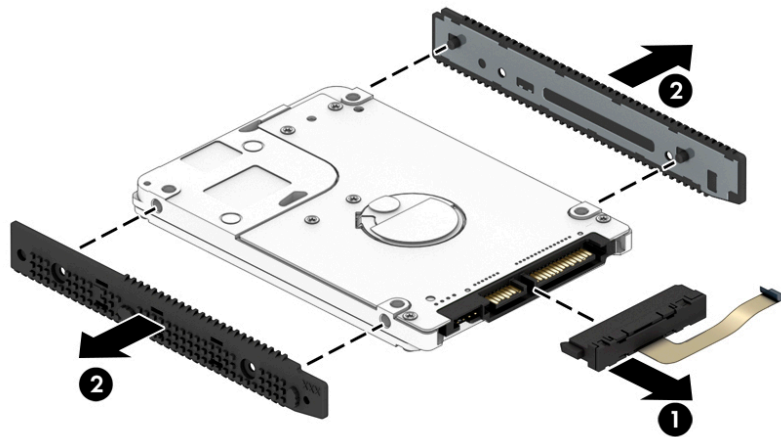
To remove the second hard drive, follow these steps:

1. Open the zero insertion force (ZIF) connector to release the hard drive cable (1) from the system board.
2. Lift the hard drive (2) up.

3. Release the hard drive from the notch (3), and then slide the drive (4) forward to remove it from the computer.



4. If it is necessary to disassemble the hard drive, perform the following steps:
 - a. Remove the hard drive cable connector (1) from the hard drive.
 - b. Slide the two hard drive brackets (2) off the hard drive.



Reverse this procedure to reassemble and install the hard drive.

Memory module

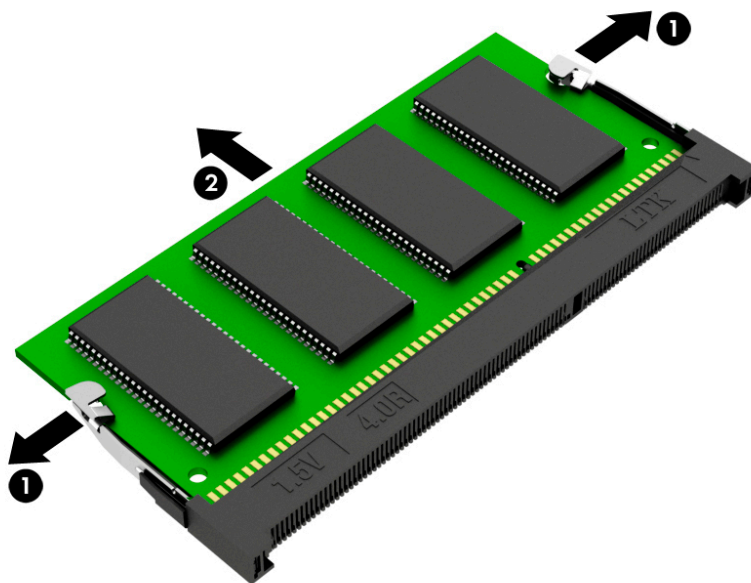
Description	Spare part number
Memory	
4 GB 2400 MHz 1.2 v DDR4 shared	862397-850
8 GB 2400 MHz 1.2 v DDR4 shared	862398-850
16 GB 2400 MHz 1.2 v DDR4 shared	865396-850
16 GB 2800 MHz XMP 1.35 v DDR4 shared	L07040-850

Before removing a memory module, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the following components:
 - a. Base enclosure (see [Base enclosure on page 38](#))
 - b. Battery (see [Battery on page 31](#))

Remove the 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 the module away from the slot at an angle.



Reverse this procedure to install a memory module.

SSD (M.2)

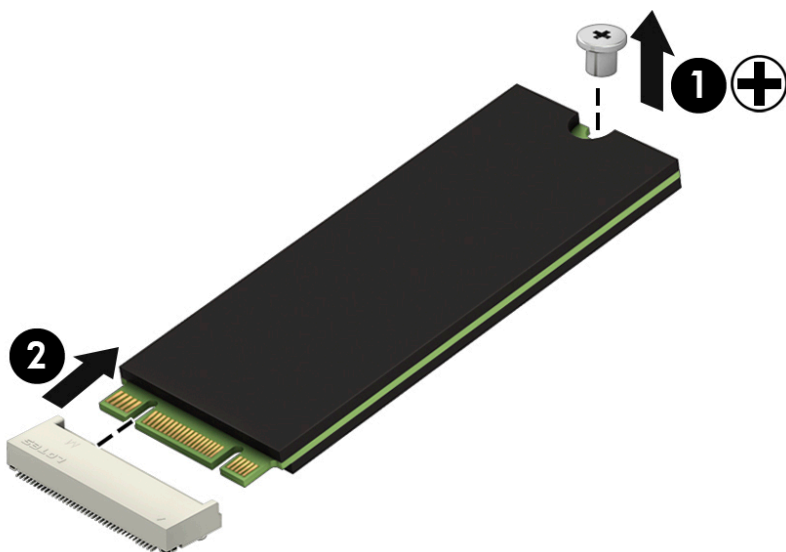
Description	Spare part number
M.2 SATA SSD, PCIe NVMe TLC	
• 128 GB 2280 M2 3 x 4 SS Value PA	940617-001
• 1 TB 2280 M2 PCIe 3 x 4 SS NVMe TLC PA	940618-001
• 256 GB 2280 M2 PCIe 3 x 4 SS NVMe TLC PA	940619-001
• 512 GB 2280 M2 PCIe 3 x 4 SS NVMe TLC PA	940620-001

Before removing the SSD, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the following components:
 - a. Base enclosure (see [Base enclosure on page 38](#))
 - b. Battery (see [Battery on page 31](#))


Remove the SSD:

1. Remove the Phillips screw (1) that secures the SSD to the system board.
2. Remove the SSD (2) by pulling the drive away from the slot at an angle.





Reverse this procedure to install the SSD.

6 Removal and replacement procedures for authorized service provider parts

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

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 17](#) for details.

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

There may be as many as 85 screws that must be removed, replaced, and/or loosened when servicing the parts described in this chapter. Make special note of each screw size and location during removal and replacement.

Base enclosure

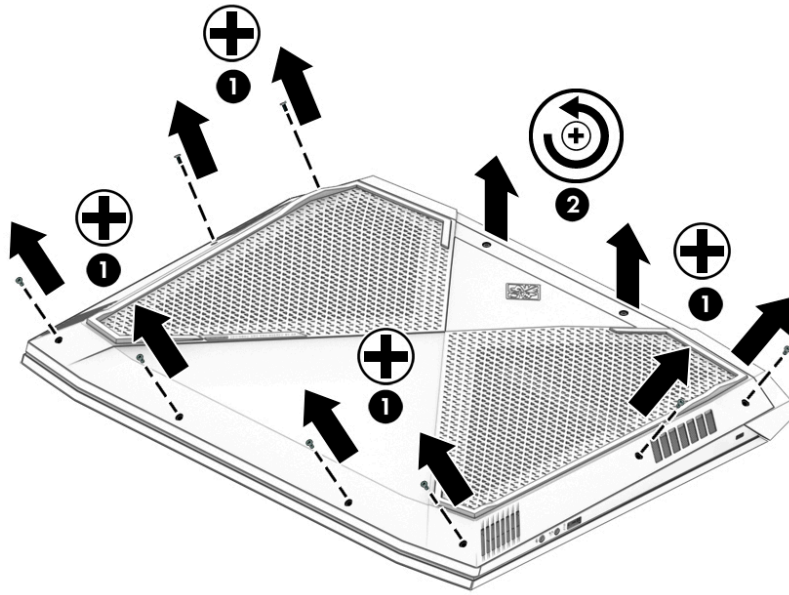
Description	Spare part number
Base enclosure	940585-001

Before removing the base enclosure, follow these steps:

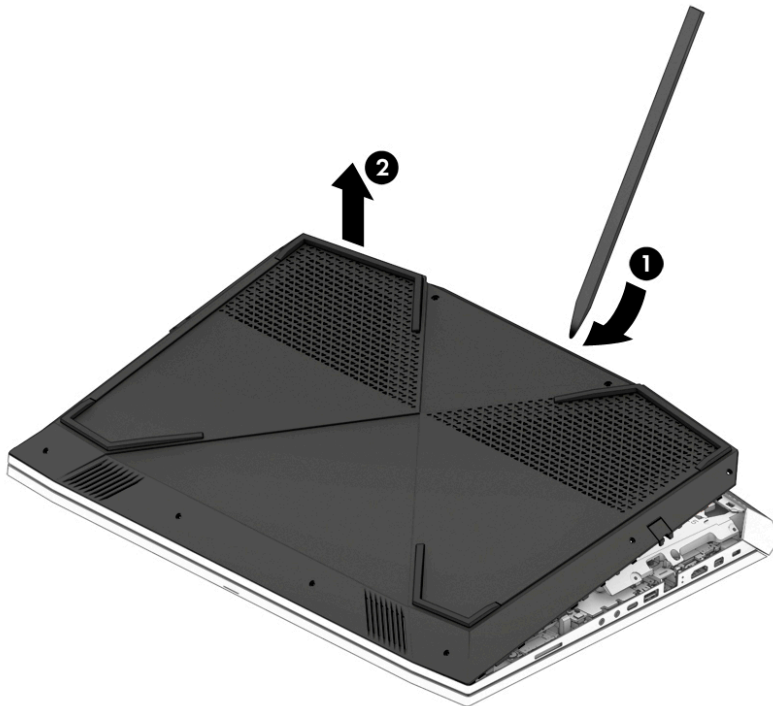
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from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

Remove the base enclosure:

1. Loosen but do not remove the two screws from the bottom cover **(1)**. Remove the remaining eight Phillips screws **(2)** from the bottom cover.



2. Using a case utility tool, gently separate the bottom cover from the enclosure (1). Remove the bottom cover (2).



Reverse the removal procedures to install the base enclosure.

Trunk

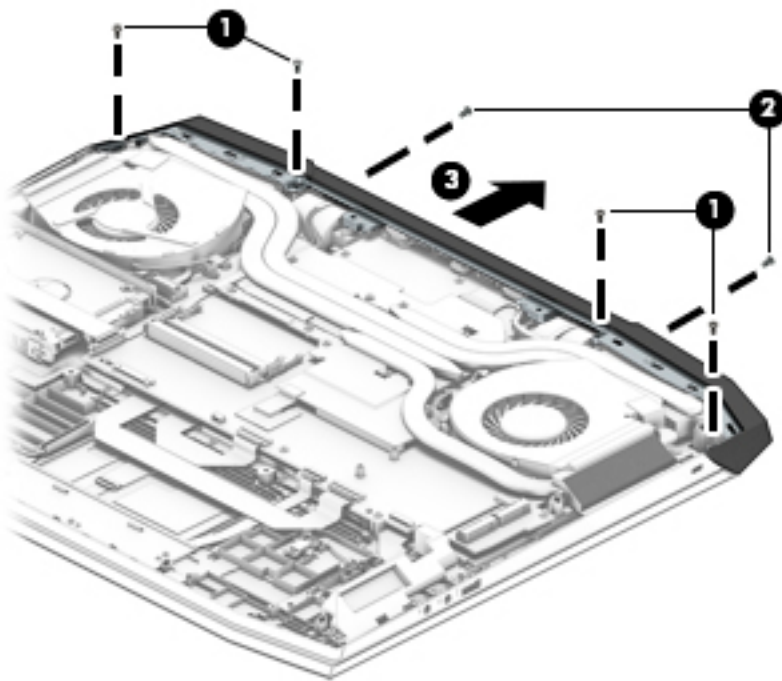
Description	Spare part number
Trunk	940611-001

Before removing the trunk, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the following components:
 - a. Base enclosure (see [Base enclosure on page 38](#))
 - b. Battery (see [Battery on page 31](#))
 - c. Speakers (see [Speakers on page 45](#))

Remove the trunks:

1. Remove four Phillips screws (1) securing the left and right trunk.
2. Remove the two Phillips screws securing the trunk bottom (2).
3. Remove the trunk (3).



Reverse this procedure to install the trunk.

Fan



NOTE: This is a standalone fan. The other fan is attached to the heat sink.

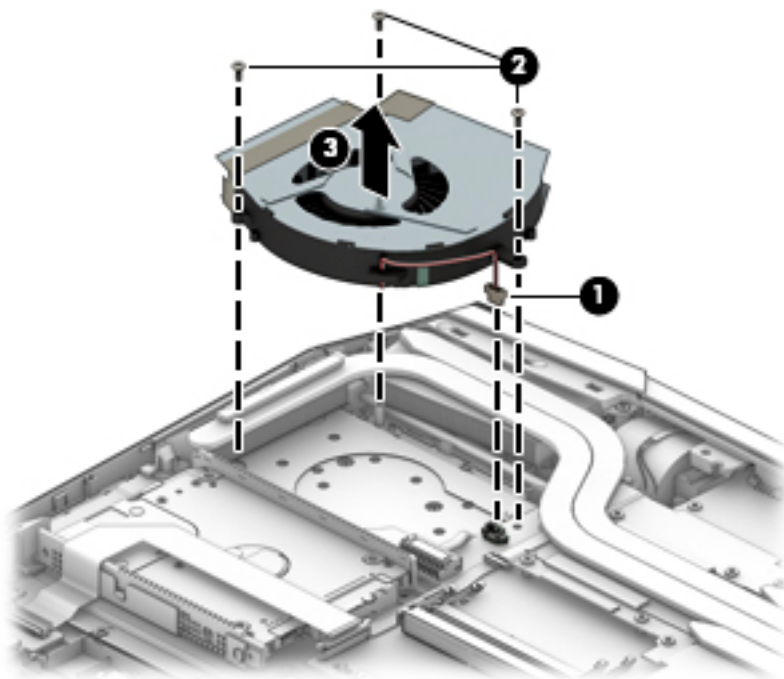
Description	Spare part number
Standalone fan	940579-001

Before removing the fan, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the following components:
 - a. Base enclosure (see [Base enclosure on page 38](#))
 - b. Battery (see [Battery on page 31](#))

Remove the fans:

1. Disconnect the fan cable (1) from the system board.
2. Remove the three Phillips screws (2) securing the fan to the computer.
3. Remove the fan (3).



Reverse this procedure to install the fan.

Heat sink with fan



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

Description	Spare part number
Heat sink with fan (for use only on products equipped with a GTX-1080 processor)	940598-001
Heat sink with fan (for use only on products equipped with a GTX 1070 i7-7700 HQ processor)	L00257-001
Heat sink with fan (for use only on products equipped with a GTX 1070 i7-7820 HK processor)	L00258-001



IMPORTANT: Make special note of each screw and screw lock size and location during removal and replacement.

Before removing the heat sink, follow these steps:

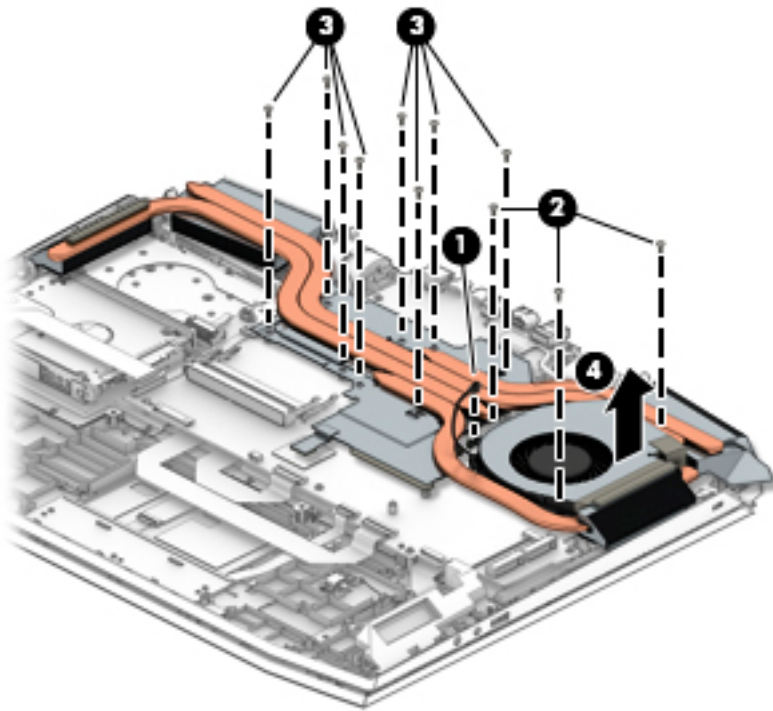
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the following components:
 - a. Base enclosure (see [Base enclosure on page 38](#))
 - b. Battery (see [Battery on page 31](#))
 - c. Remove the fan (see [Fan on page 41](#)).


Remove the heat sink:

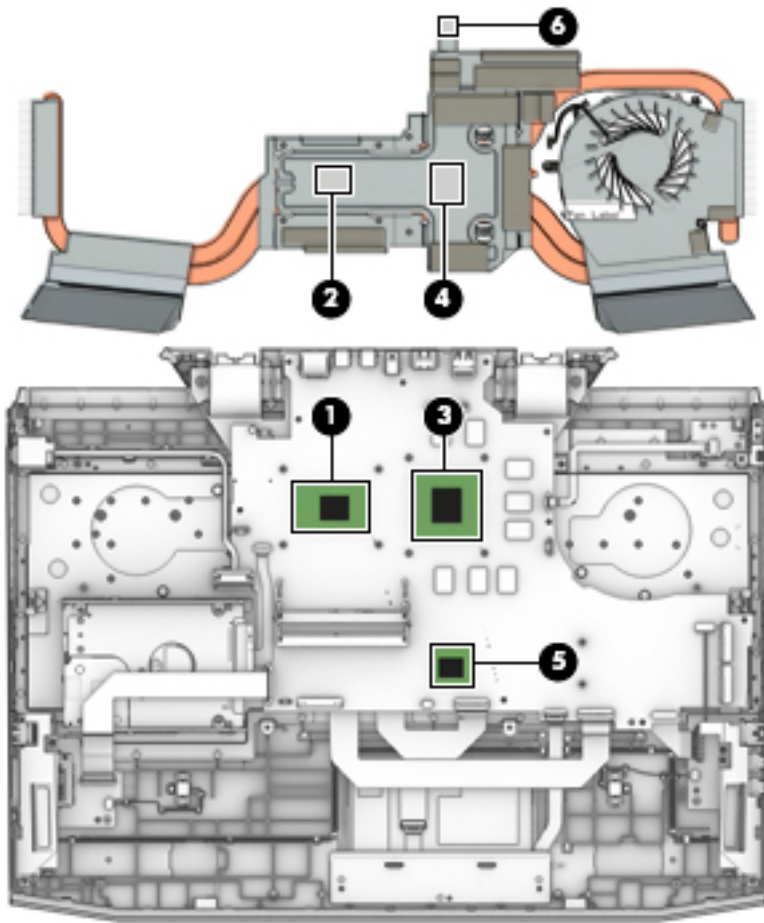
1. Remove one Phillips screw **(1)** on the top left corner of the fan.
2. Remove the three other small screws **(2)** around the fan.
3. Loosen the eight screws securing the heat sink to the system board **(3)**.
4. Remove the heat sink and fan **(4)**.



NOTE: Due to the adhesive quality of the thermal material located between the heat sink and the system board components, it may be necessary to move the heat sink from side to side to detach it.



 **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. Thermal paste is used on the processor (**1 and 2**), the graphics processor (**3**), the heat sink sections (**2 and 4**), and the system board (**5 and 6**).




Reverse this procedure to install the heat sink with fan.

Speakers

 **NOTE:** The speaker spare part kit includes the cable.

Description	Spare part number
Speaker Kit (includes right and left speakers)	940616-001

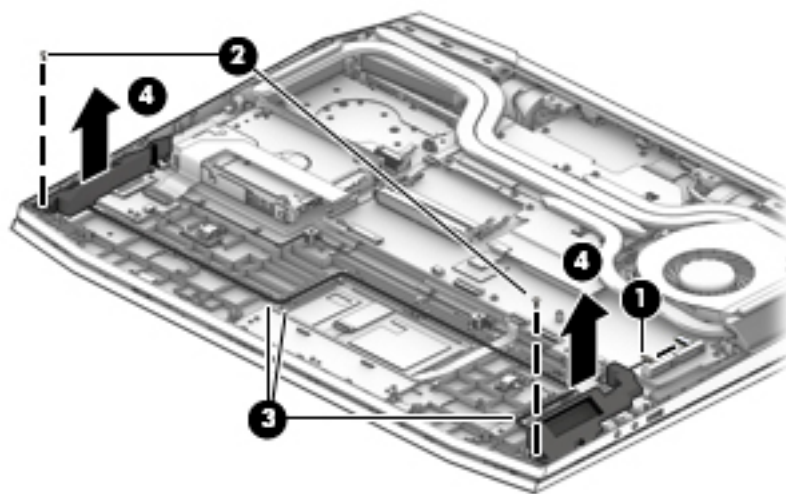
 **IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

Before removing the speakers, follow these steps:

1. Shut down the computer.
2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
3. Disconnect all external devices connected to the computer.
4. Remove the following components:
 - a. Base enclosure (see [Base enclosure on page 38](#))
 - b. Battery (see [Battery on page 31](#))

Remove the speakers:

1. Carefully disconnect the speaker connector (1) from the system board.
2. Remove the two Phillips screws (2).
3. Release the display cable from the routing channels (3).
4. Lift the left and right speakers (4) to remove them.



Reverse this procedure to install the speakers.

Audio board

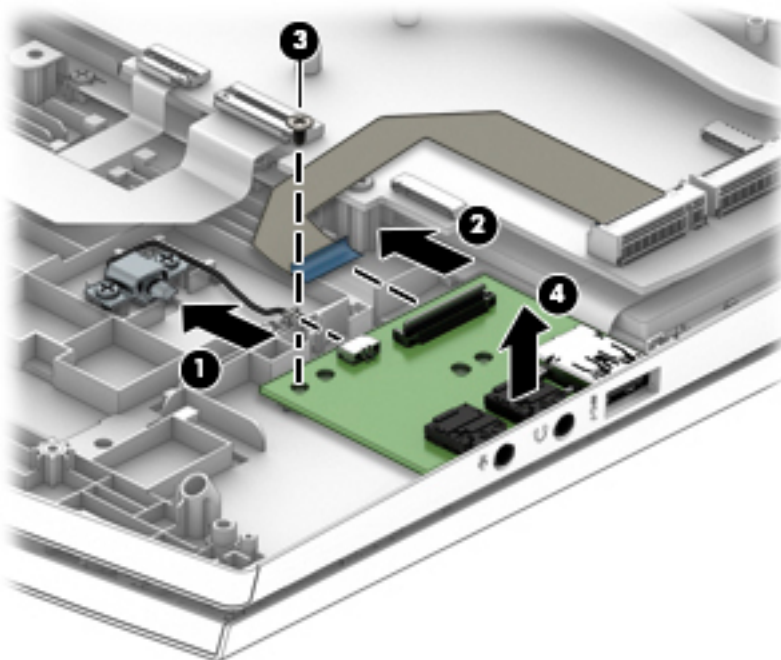
Description	Spare part number
Audio board	940588-001

Before removing the audio board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the following components:
 - a. Base enclosure (see [Base enclosure on page 38](#))
 - b. Battery (see [Battery on page 31](#))
 - c. Speakers (see [Speakers on page 45](#))

Remove the audio board:


1. Disconnect the audio board cables from the computer (1) and the system board (2).
2. Remove the Phillips screw (3) that secures the audio board to the computer.
3. Remove the audio board (4).



Reverse this procedure to install the audio board.


System board

Description	Spare part number
System board	
All system boards use the following part numbers:	
xxxxxx-001 Non-Windows operating systems	
xxxxxx-601 Windows 10 operating systems	
• DSC GTX 1070 8 GB i7-7700	940621-xxx
• GTX 1070 8 GB i7-7820	940622-xxx
• GTX 1080 8 GB i7-7700	940623-xxx
• GTX 1080 8 GB i7-7820	940624-xxx

 **IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

Before removing the system board, follow these steps:


1. Shut down the computer.
2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
3. Disconnect all external devices connected to the computer.
4. Remove the following components:
 - a. Base enclosure (see [Base enclosure on page 38](#))
 - b. Battery (see [Battery on page 31](#))
 - c. Speakers (see [Speakers on page 45](#))
 - d. Remove the fans (see [Fan on page 41](#))
 - e. Remove the heatsink (see [Heat sink with fan on page 42](#))

 **NOTE:** When replacing the system board, be sure that the following components are removed from the defective system board and installed on the replacement system board:

- WLAN module (see [WLAN module on page 50](#))
- Memory module (see [Memory module on page 36](#))

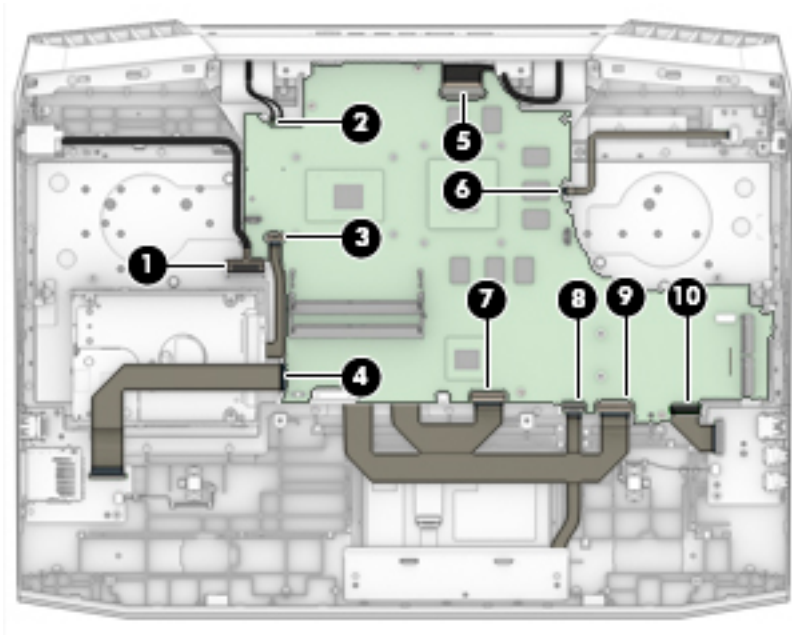
Remove the system board:

1. If they are not already disconnected, disconnect the following cables from the system board (note the routing location of the cables when removing them):

 **NOTE:** Use minimal force when lifting the locking bar up on a ZIF connector and disconnecting the cable.

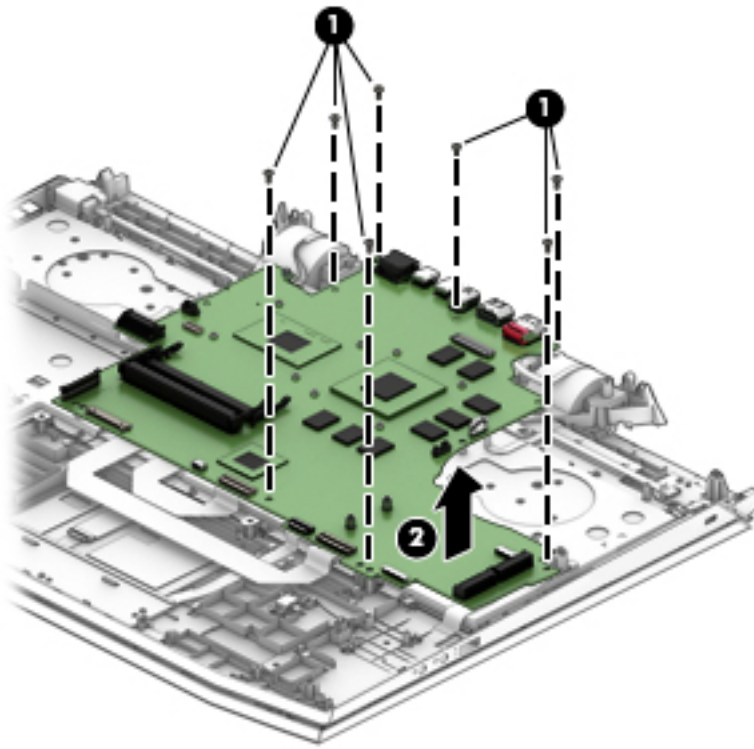
- (1) Power board cable
- (2) WLAN antenna cables
- (3) HDD cable

- (4) USB board cable
- (5) Display panel
- (6) Power button board cable
- (7) Backlight cable
- (8) TouchPad board cable
- (9) Keyboard cable
- (10) Audio board cable



2. Remove the seven Phillips screws (1) and the screw bracket securing the system board to the computer.

3. Lift the system board (2), and then remove it.



Reverse this procedure to install the system board.

 **IMPORTANT:** After system board replacement, be sure to complete post-installation tasks as required that may include:

- Verifying functionality of the computer
- Updating the BIOS; see [Using Setup Utility \(BIOS\) on page 62](#)


WLAN module

Description	Spare part number
WLAN RT Cartier AC 2 x 2	924813-855

Before removing the WLAN module, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the following components:
 - a. Base enclosure (see [Base enclosure on page 38](#))
 - b. Battery (see [Battery on page 31](#))
 - c. Heat sink (see [Heat sink with fan on page 42](#))
 - d. System board (see [System board on page 47](#))

Remove the WLAN module:

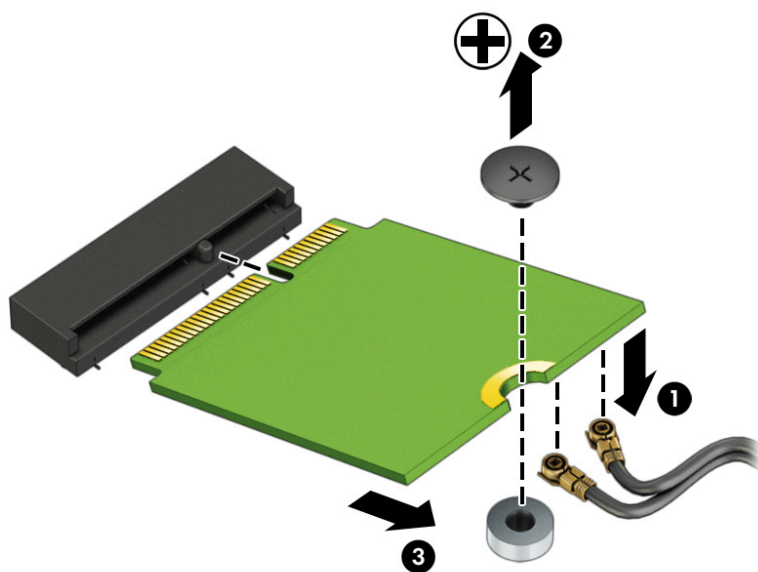
 **NOTE:** The WLAN module is located under the system board. The system board must be removed to remove the WLAN module.


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

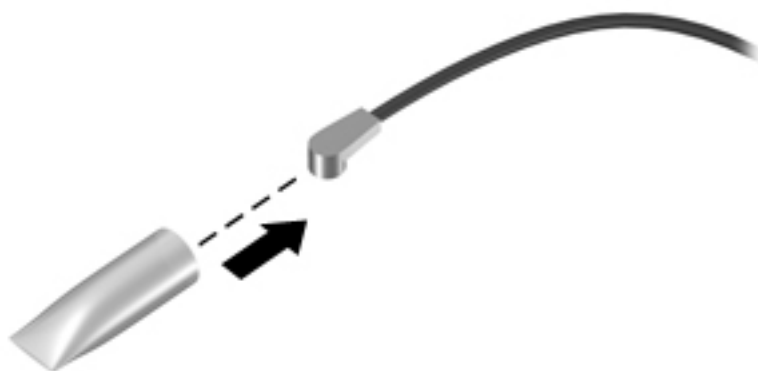
 **NOTE:** The cables should already be disconnected before removing the system board.

2. Remove the Phillips screw **(2)** that secures the WLAN module to the system board. (The WLAN module tilts up.)
3. Remove the WLAN module **(3)** by pulling the module away from the slot at an angle.

 **NOTE:** WLAN modules are notched to prevent incorrect installation.



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



Reverse this procedure to install the WLAN module.

Power board

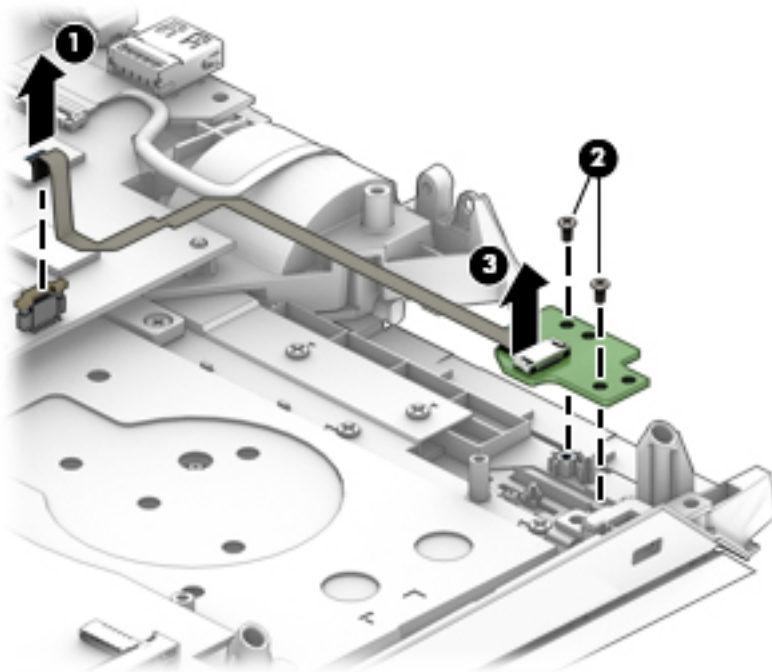
Description	Spare part number
Power board	940608-001

Before removing the power board connector, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the following components:
 - a. Base enclosure (see [Base enclosure on page 38](#))
 - b. Battery (see [Battery on page 31](#))
 - c. Speakers (see [Speakers on page 45](#))
 - d. Remove the fans (see [Fan on page 41](#))
 - e. Remove the heat sink (see [Heat sink with fan on page 42](#))
 - f. Remove the system board (see [System board on page 47](#))

Remove the power board:

1. Remove the power board connector cable (1).
2. Remove the two Phillips screws securing the connector and bracket to the computer (2).
3. Lift the power board from the holder (3), and then remove the power board.



Reverse this procedure to install the power board.

Display assembly

Description	Spare part number
Antenna, dual	940583-001
Back cover	940584-001
Camera	940626-001
Display bezel	940586-001
Display cable	
• For products with non-touch FHD screen with HD camera, 120 Hz	940593-001
• For products with non-touch UHD screen with HD camera, 120 Hz	940594-001
Hinge	940603-001
Hinge support bracket	940604-001
Raw panel 43.94 cm (17.3") (non-touch screen)	
• FHD WLED AntiGlare (1920 x 1080) flat-flat (4.0 mm) UWVA, eDP1.3 + NVSR, Support NVIDIA G-Sync 120Hz	940614-001
• UHD WLED AntiGlare (3840 x 2160) flat-flat (4.0 mm) UWVA, eDP + PSR, Support NVIDIA G-Sync	940615-001
• FHD LED AntiGlare (1920 x 1080) flat-flat (4.0 mm) UWVA, eDP + PSR, Support NVIDIA G-Sync	L12056-001



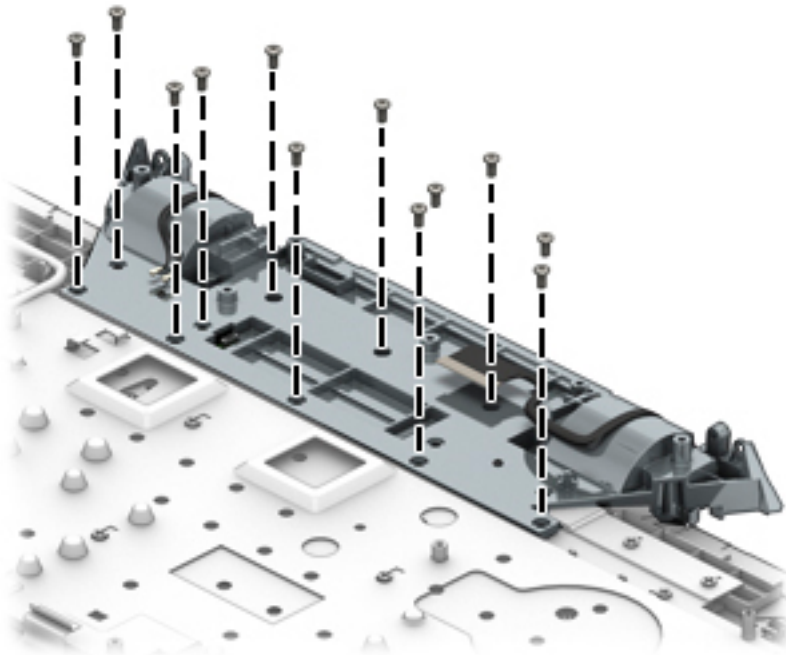
IMPORTANT: Make special note of each screw and screw lock size and location during removal and replacement.

Before removing the display assembly, follow these steps:

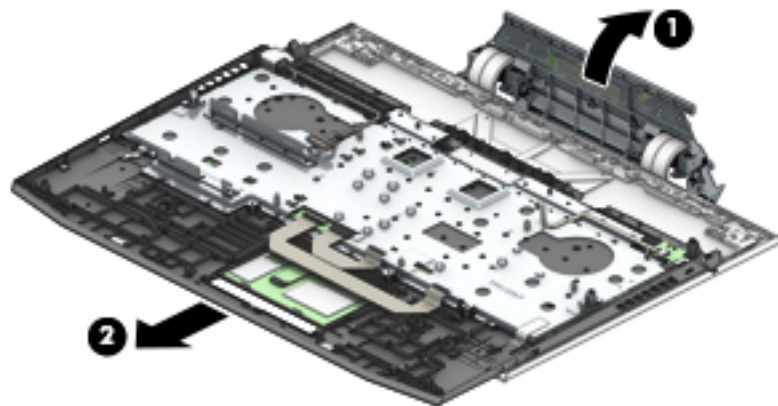
1. Shut down the computer.
2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
3. Disconnect all external devices connected to the computer.
4. Remove the following components:
 - a. Base enclosure (see [Base enclosure on page 38](#))
 - b. Battery (see [Battery on page 31](#))
 - c. Speakers (see [Speakers on page 45](#)).
 - d. Remove the fans (see [Fan on page 41](#))
 - e. Remove the heat sink (see [Heat sink with fan on page 42](#))
 - f. Remove the system board (see [System board on page 47](#))

Remove the display assembly:

1. Remove the 12 Phillips screws from the hinge.

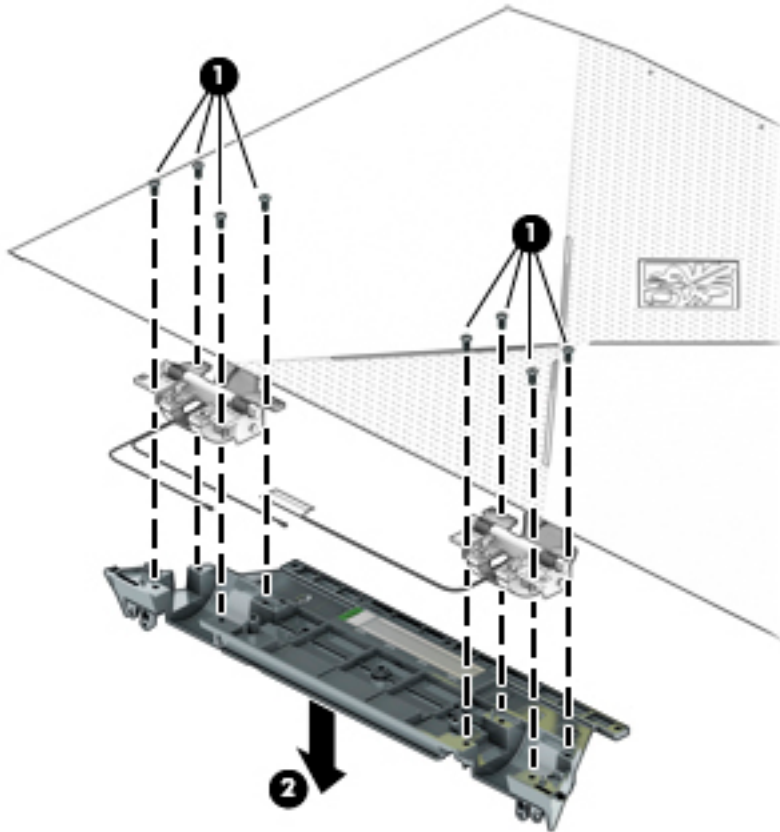


2. Pull the hinge up and away from the top cover (1).
3. Pull the top cover away from the hinge to remove (2)



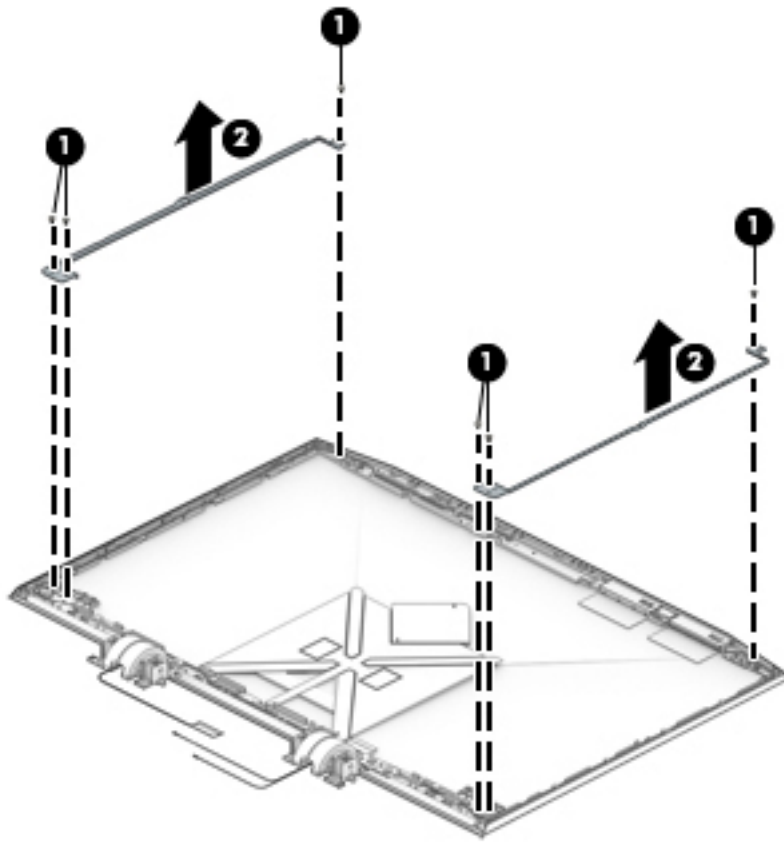
4. Remove the eight Phillips screws securing the hinge support bracket to the display assembly (1).

5. Remove the hinge support bracket from the display assembly (2).

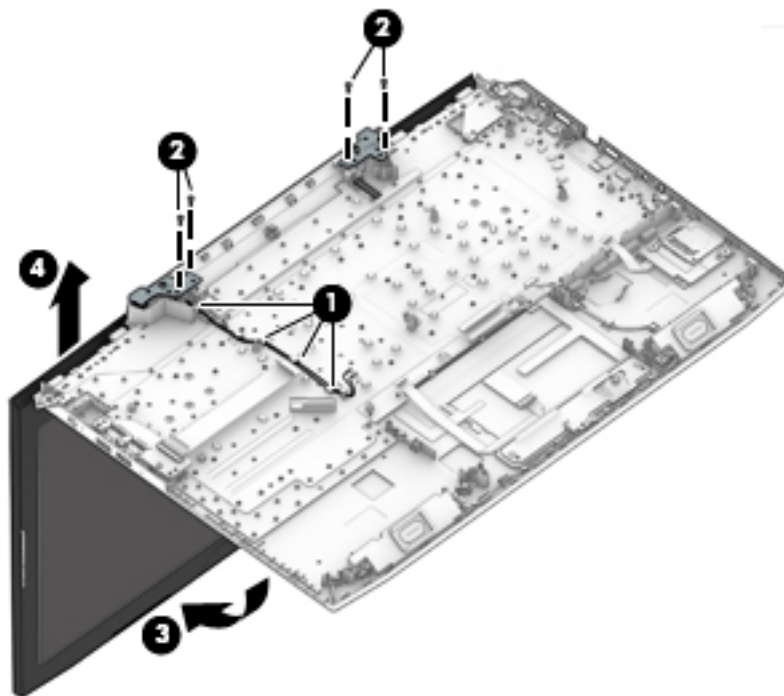


6. Remove the six Phillips screws securing the left and right hinge brackets (1).

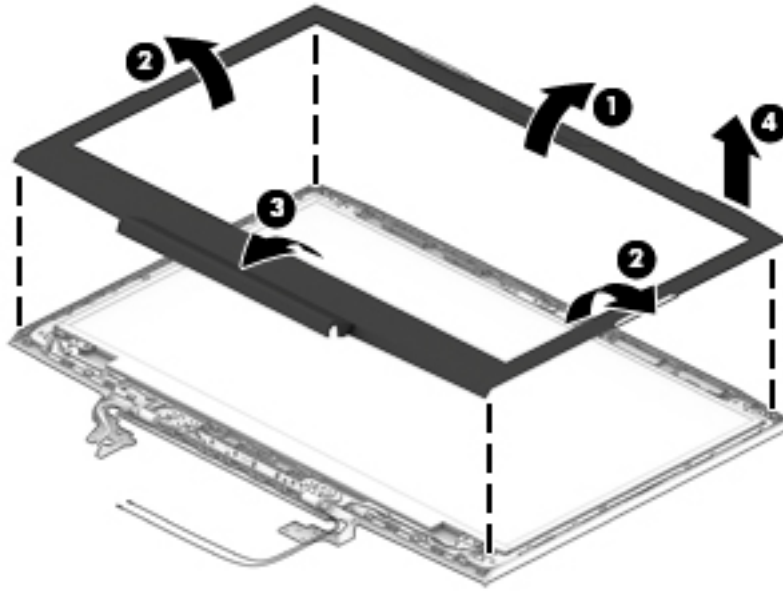
7. Remove the hinge brackets (2).



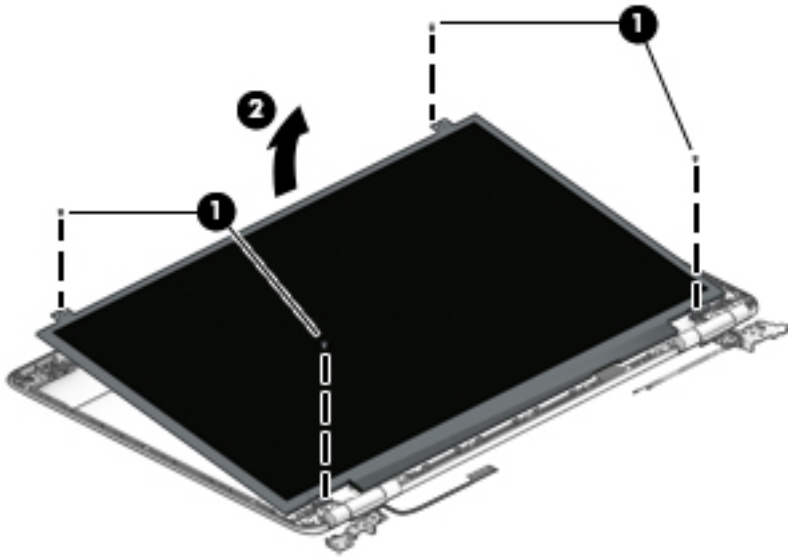
8. Disconnect the display panel cable from the computer (1), remove the four Phillips screws from the hinges (2). Open the display as wide as possible (3), and then remove the display (4).



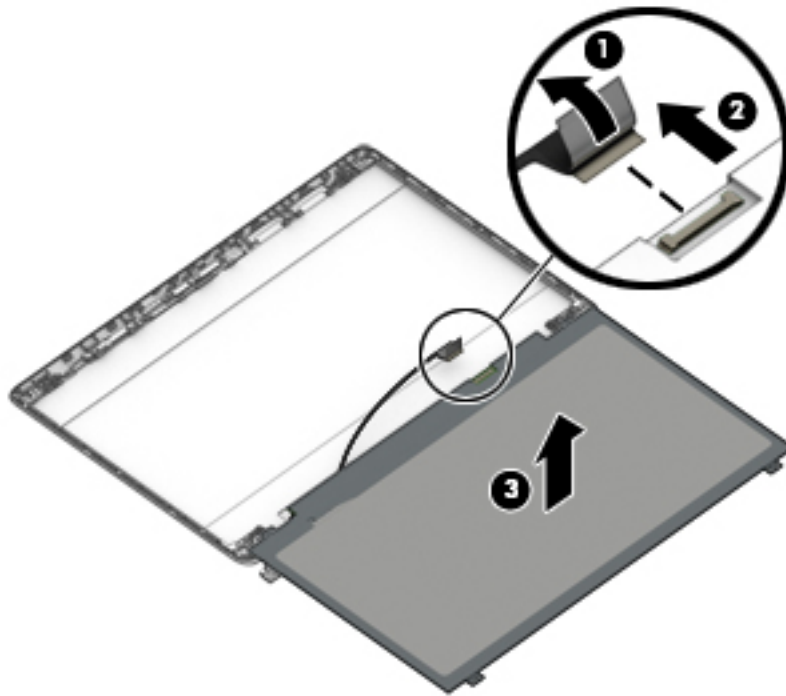
9. If it is necessary to replace the display bezel or any of the LED display assembly subcomponents:
- Disengage the bezel starting at the top (1), left and right sides (2), and bottom (3).
 - Remove the display bezel (4).



10. If it is necessary to replace the raw display panel, remove the four Phillips screws (1) that secure the display panel to the display enclosure, and then lift the panel (2) to remove it.



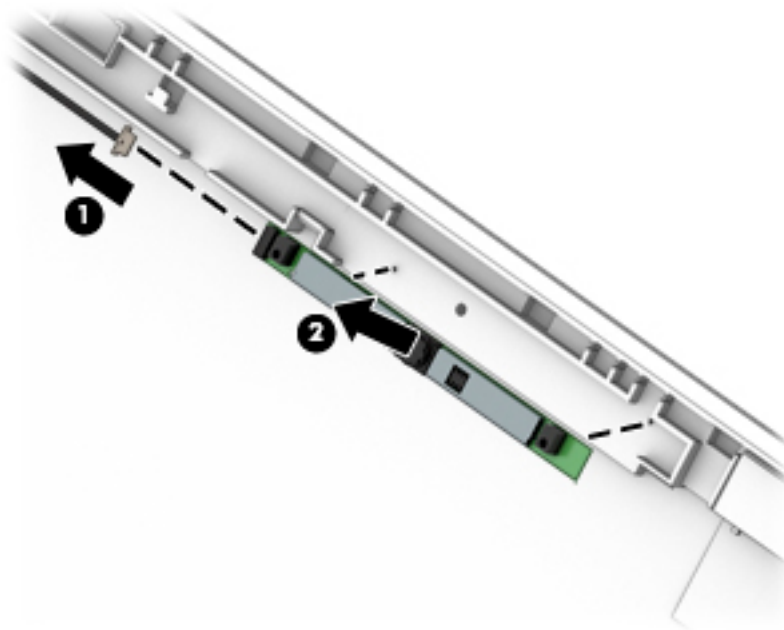
11. Remove the tape (1) covering the display panel connector, disconnect the connector (2) from the display panel, and then remove the panel (3).



12. If it is necessary to replace the camera module:

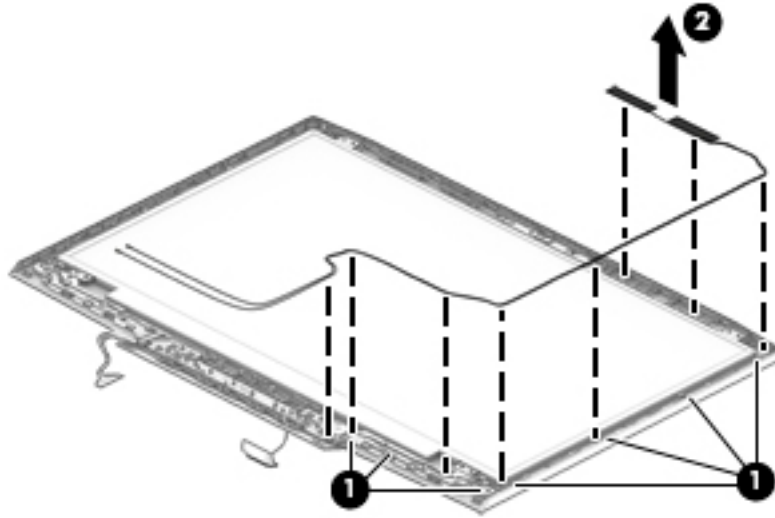
⚠ CAUTION: Handle the module with caution. This module has a thin profile and is susceptible to damage when not handled carefully.

- Lift up the camera module and cable (1).
- Disconnect the cable (2) and remove the camera module.



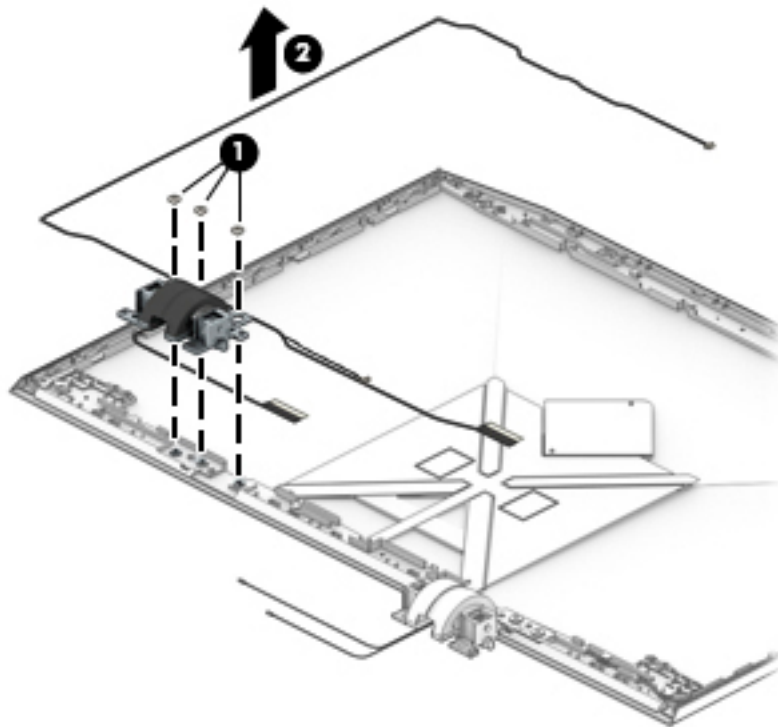
13. If it is necessary to replace the WLAN antennas:

- a. Release the WLAN antenna cable from the routing path (1) of the display enclosure.
- b. Carefully peel back the metallic tape (2) to release the wireless antenna transceivers from the display enclosure.
- c. Remove the WLAN antenna cable from the display enclosure.



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

- a. Release the cable from the routing path (1) along the display enclosure.
- b. Remove the cable (2).






IMPORTANT: Use care when handling and installing the new antennas. Accidental bending of the antenna elements will detune the antenna and degrade the computer's performance.

Reverse this procedure to install the display assembly.

7 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 62](#)).
 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 63](#).

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.

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 65](#).

- b. Hard drive
- c. BIOS

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

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

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



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

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

Download the latest UEFI version

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

Download any version of UEFI for a specific product

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

9 Backing up, restoring, and recovering

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


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

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

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

– or –

Select the question mark icon in the taskbar.

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

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

Creating recovery media and backups

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

- Use HP Recovery Manager to create HP Recovery media after you successfully set up the computer. This step creates a backup of the HP Recovery partition on the computer. The backup can be used to reinstall the original operating system in cases where the hard drive is corrupted or has been replaced. For information on creating recovery media, see [Creating HP Recovery media \(select products only\) on page 66](#). For information on the recovery options that are available using the recovery media, see [Using Windows tools on page 67](#).

- 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 68](#).

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

- On select products, use the HP Cloud Recovery Download Tool to create a bootable USB drive for your HP recovery media. Go to <https://support.hp.com/us-en/document/c05115630?openCLC=true>, select your country or region, and follow the on-screen instructions.

Creating HP Recovery media (select products only)

If possible, check for the presence of the Recovery partition and the Windows partition. Right-click 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. You can find contact information on the HP website. Go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions.

You can use Windows tools to create system restore points and create backups of personal information, see [Using Windows tools on page 67](#).

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

To create HP Recovery media:



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 68](#).

Using Windows tools


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



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

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

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

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


Restore and recovery

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

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

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

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

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

- If you need to correct a problem with a preinstalled application or driver, use the Reinstall drivers and/or applications option (select products only) of HP Recovery Manager to reinstall the individual application or driver.
 - ▲ Type `recovery` in the taskbar search box, select **HP Recovery Manager**, select **Reinstall drivers and/or applications**, and then follow the on-screen instructions.
- If you want to recover the Windows partition to original factory content, you can choose the System Recovery option from the HP Recovery partition (select products only) or use the HP Recovery media. For more information, see [Recovering using HP Recovery Manager on page 68](#). If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 66](#).
- 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 68](#).
- 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 70](#).

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 66](#).


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 66](#).

- 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 66](#).
- If your computer does not allow the creation of HP Recovery media or if the HP Recovery media does not work, you can obtain recovery media for your system from support. You can find contact information from the HP website. Go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions.

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

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

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


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

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

Using the HP Recovery partition (select products only)

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

To start HP Recovery Manager from the HP Recovery partition:

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

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

– or –

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

For tablets without keyboards:

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

– or –

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

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

Using HP Recovery media to recover

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

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


 **NOTE:** If the computer does not automatically restart in HP Recovery Manager, change the computer boot order. See [Changing the computer boot order on page 70](#).

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 66](#).

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

Follow these steps to remove the HP Recovery partition:

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

10 Specifications

Computer specifications

	Metric	U.S.
Dimensions		
Width	425 mm	16.74 in
Depth	327.2 mm	12.89 in
Height (front to back)	36.4 mm	1.45 in
Weight		
For models equipped with N17E-G3 processors	4855 g (depending on configuration)	10.74 lbs (depending on configuration)
For models equipped with N17E-G2 processors	4873 g (depending on configuration)	10.75 lbs (depending on configuration)
Input power		
Operating voltage and current	19.5 V dc @ 7.70 A – 150 W	
	19 V dc @ 6.15 A – 120 W	
Temperature		
Operating	5° C to 35° C	41° F to 95° F
Non-operating	-20° C to 60° C	-4° F to 140° F
Relative humidity (non-condensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	-15 m to 3,048 m	-50 ft to 10,000 ft
Non-operating	-15 m to 12,192 m	-50 ft to 40,000 ft
NOTE: Applicable product safety standards specify thermal limits for plastic surfaces. The device operates well within this range of temperatures.		

43.94 cm (17.3 in) display specifications

	Metric	U.S.
Dimensions		
Diagonal size	43.94 cm	17.3 in
Thickness	4.2 mm	0.165 in
Brightness	300 nits (cd/m²)	
Resolution		
• Non-touch FHD	1920 x 1080	
• Non-touch UHD	3840 x 2160	
Backlight	WLED	
Surface treatment	AntiGlare	
Companion standard		
• Non-touch FHD	eDP 1.3+NVSR	
• Non-touch UHD	eDP+PSR	
Viewing angle	SVA	

Hard drive specifications

	1 TB*	2 TB*
Dimensions		
Height	9.5 mm	9.5 mm
Width	70 mm	70 mm
Weight	115 g	115 g
Interface type	SATA	SATA
Transfer rate	Synchronous (maximum) 300 MB/s (Drive Capability)	
Security	ATA security	ATA security
Seek times (typical read, including setting)		
Single track	1.4 ms	1.4 ms
Average	10 ms	10 ms
Maximum	12 ms	12 ms
Logical blocks	1,938,921,461	3,877,842,922
Disk rotational speed	7200 rpm	5400 rpm
Operating temperature	0°C to 60°C (0°F to 140°F)	0°C to 60°C (0°F to 140°F)
*Size refers to hard drive storage capacity. Actual accessible capacity is less. Actual drive specifications may differ slightly.		
NOTE: Certain restrictions and exclusions apply. Contact support for details.		

11 Power cord set requirements

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

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

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

Requirements for all countries

The following requirements are applicable to all countries and regions:

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

Requirements for specific countries and regions

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, 0.75 mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.
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, 0.75 mm² or 1.25 mm² 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, 0.75 mm² 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 3-conductor, 0.75 mm² 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 3-conductor, 1.25 mm² 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-conductor, 18 AWG, with plug NEMA 5-15P (15 A, 125 V ac), with UL and CSA or C-UL marks. For 240 V ac, the flexible cord must be Type H05VV-F 3-conductor, 0.75 mm² or 1.00 mm² conductor size, with plug BS 1363/A with BSI or ASTA marks.</p>

12 Recycling

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

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

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