



HP ENVY m6 Notebook 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 of Windows. This computer may require upgraded and/or separately purchased hardware, drivers, and/or software to take full advantage of Windows functionality. See <http://www.microsoft.com> for details.

Software terms

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

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

Safety warning notice


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

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1 Product description

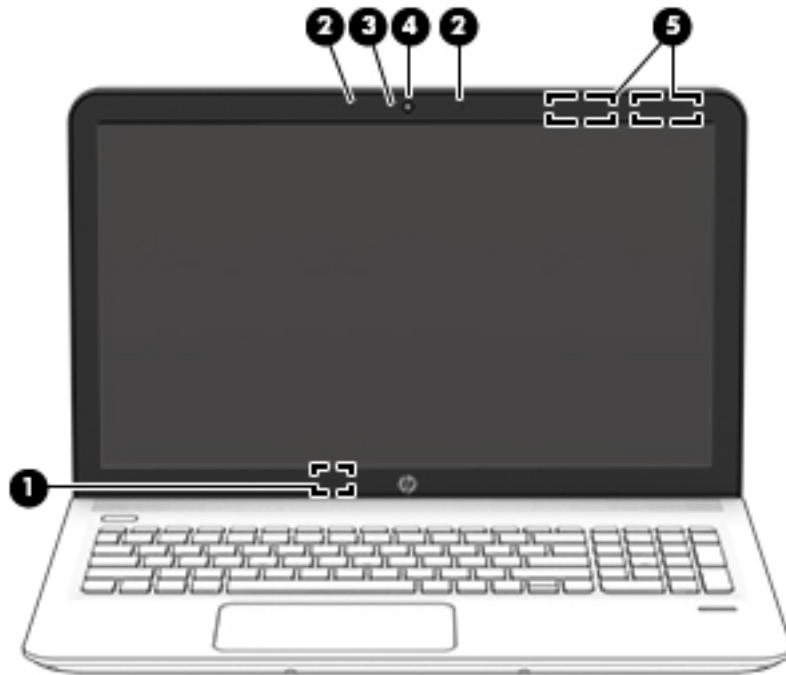
Category	Description
Product Name	HP ENVY m6 Notebook PC
Processors	AMD™ FX-8800P 2.1-GHz processor (turbo up to 3.4-GHz; 2133-MHz/2.0-MB L2 cache, quad core, 15 W) AMD A10-8700P (1.8-GHz processor (turbo up to 3.2-GHz; 2133-MHz/2.0-MB L2 cache, quad core, 15 W)
Chipset	AMD Integrated SOC FCH (Fusion Controller Hub)
Graphics	Internal graphics: AMD Radeon™ R7 Graphics AMD Radeon R6 Graphics Support for HD decode, DX12, and HDMI
Panel	Flush glass panel cover support - antiglare panel Touch solution with flush glass, multitouch enabled Support LVDS (co-layout with eDP1.2) <ul style="list-style-type: none">• 15.6-in, high-definition (HD), white light-emitting diode (WLED), AntiGlare (1366×768), flat (3.8-mm), SVA; typical brightness 220 nits, 16:9 aspect ratio (touch display)• 15.6-in, high-definition (HD), white light-emitting diode (WLED), BrightView (1366×768), flat (3.8-mm), SVA; typical brightness 220 nits, 16:9 aspect ratio (non-touch display)• 15.6-in, high-definition (FHD), white light-emitting diode (WLED), AntiGlare (1920×1068), slim (3.2-mm), UWVA; typical brightness 220 nits, 16:9 aspect ratio (non-touch display with A10 processor)
Memory	Two non-accessible/upgradable memory module slots DDR3L-1600 dual channel support Support for 16-GB of system RAM in the following configurations: <ul style="list-style-type: none">• 8192-MB (8192-MB×1, 4096-MB×2)• 6144-MB (4096-MB+2048-MB)
Hard drive	Support for 6.35-cm (2.5-in) hard drives in 7.0-mm (.28-in) and 9.5-mm (.37-in) thickness Support for Accelerometer hard drive protection Support for the following single hard drive configurations: <ul style="list-style-type: none">• 2.0-TB, 5400-rpm, 9.5-mm (for use on models with A10 processors, 8GB memory, WLAN, HD panel)• 1.0-TB, 5400-rpm, 9.5-mm• 750-GB, 5400-rpm, 9.5-mm
Webcam and microphone	HP TrueVision HD: HD camera - fixed (no tilt) + activity LED, USB 2.0, M-JPEG (1280x720 by 30 frames per second) Dual array digital microphones with appropriate software - beam forming, echo cancellation, noise suppression

Category	Description
	HP Noise Cancellation Supports Voice Recognition
Audio	Bang & Olufsen Dual speakers Subwoofer
Ethernet	Integrated 10/100/1000 network interface card (NIC)
Sensor	Accelerometer (for hard drive protection support)
Wireless networking	Integrated Wireless options with dual antennas (M.2/PCIe) Support for the following WLAN module: <ul style="list-style-type: none"> • Broadcom BCM43142 802.11 b/g/n 1x1 Wi-Fi + BT4.0 M.2 Combo Adapter • Intel Dual Band Wireless-AC 3165 802.11 ac 1x1 WiFi + BT 4.0 Combo Adapter Compatible with Miracast-certified devices (Windows 8.1)
External media cards	HP Multi-Format Digital Media Card Reader Supports SD/SDHC/SDXC Push-Push Insertion/Removal
Internal card expansion	One M.2 slot for WLAN
Ports	AC Smart Pin adapter plug Headphone/microphone combo jack HDMI v1.4 supporting up to 4096×2160 @ 24Hz/1920×1080 @ 60Hz RJ-45 (Ethernet) USB 3.0 ports (three on left side) USB 2.0 ports (one on right side)
Keyboard/pointing devices	Full size, backlit, 3 coat paint, island-style keyboard with numeric keypad Touchpad requirements: <ul style="list-style-type: none"> • Clickpad with image sensor • Multitouch gestures enabled (default on: 2-finger scroll, pinch, rotate, 2-finger click, 3-finger flick) • Support Win8 Modern Trackpad Gestures • Taps enabled as default
Power requirements	Support for the following AC adapter: <ul style="list-style-type: none"> • 45-W HP Smart AC adapter (non-PFC, RC, 4.5-mm) 1 meter power cord Support for the following battery: <ul style="list-style-type: none"> • 3-cell, 48-Wh, 4.21-Ah, Li-ion battery
Security	Support for the following: <ul style="list-style-type: none"> • Kensington Security Lock

Category	Description
	<ul style="list-style-type: none">• TPM 2.0
Operating system	Preinstalled: Windows 8.1 Windows 10
Serviceability	End user replaceable parts: <ul style="list-style-type: none">• AC adapter

2 External component identification

Display



Component	Description
(1) Internal display switch	Turns off the display and initiates Sleep if the display is closed while the power is on. NOTE: The internal display switch is not visible from the outside of the computer.
(2) Internal microphones (2)	Record sound.
(3) Webcam light	On: The webcam is in use.
(4) Webcam	Records video and captures photographs. Some models allow you to video conference and chat online using streaming video. To use the webcam: Windows 8.1: <ul style="list-style-type: none">▲ From the Start screen, type <code>camera</code>, and then select Camera from the list of applications. Windows 10: <ul style="list-style-type: none">▲ Type <code>camera</code> in the taskbar search box, and then select Camera.

Component	Description
(5) WLAN antennas (2)*	Send and receive wireless signals to communicate with wireless local area networks (WLANs).

*The antennas are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennas free from obstructions. For wireless regulatory notices, see the section of the *Regulatory, Safety, and Environmental Notices* that applies to your country or region.

To access this document in **Windows 8.1**:

From the Start screen, type `support`, and then select the **HP Support Assistant** app.

– or –

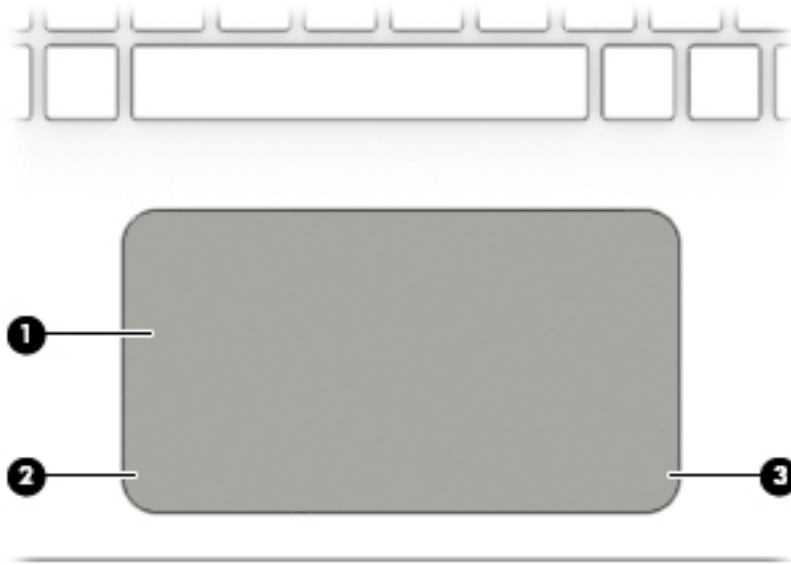
From the Windows desktop, click the question mark icon in the notification area, at the far right of the taskbar.

To access this document in **Windows 10**:

Select **Start**, select **All apps**, select **HP Help and Support**, and then select **HP Documentation**.

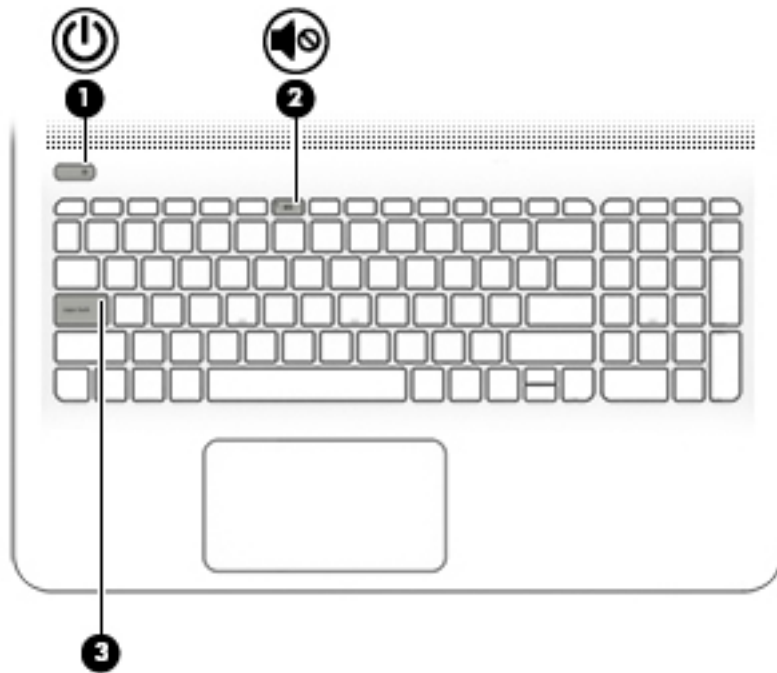
Top



TouchPad



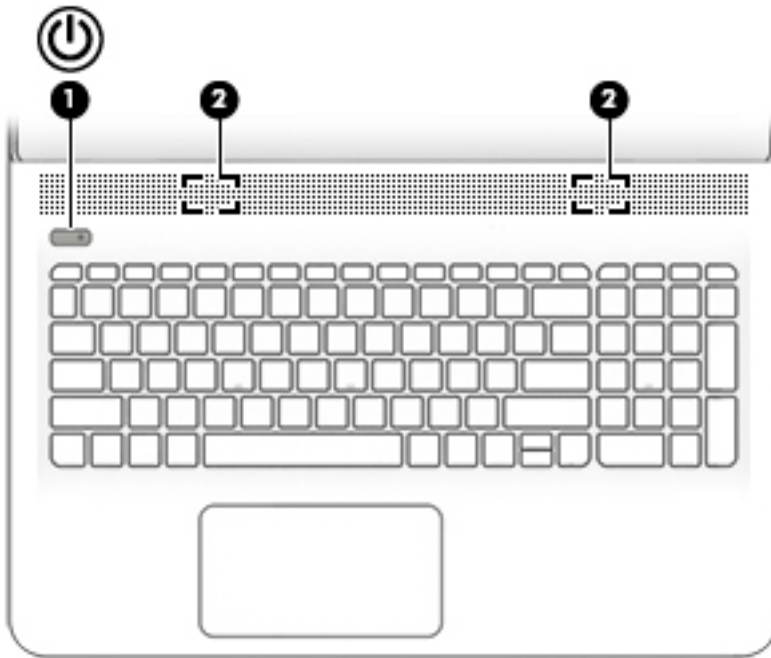
Component	Description
(1)	TouchPad zone Reads your finger gestures to move the pointer or activate items on the screen.
(2)	Left TouchPad button Functions like the left button on an external mouse.
(3)	Right TouchPad button Functions like the right button on an external mouse.


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)  Mute light	<ul style="list-style-type: none">• Amber: Computer sound is off.• Off: Computer sound is on.
(3) Caps lock light	On: Caps lock is on, which switches the keys to all capital letters.

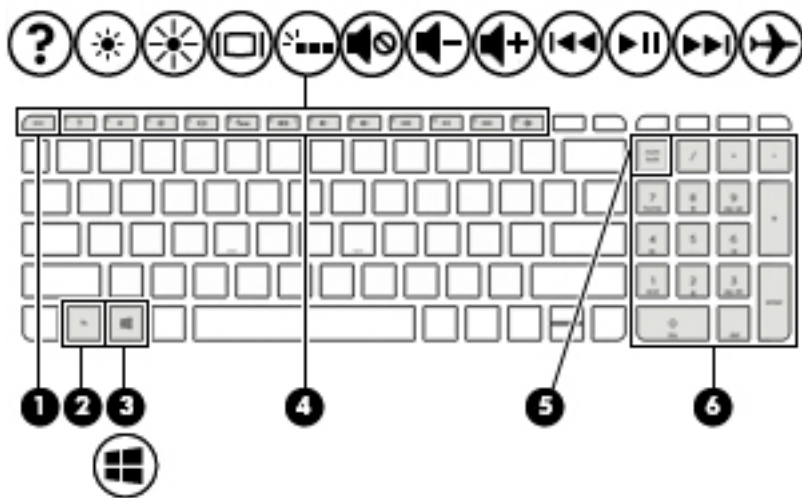
Buttons and speakers




Component	Description
<p>(1)  Power button</p>	<ul style="list-style-type: none">• When the computer is off, press the button to turn on the computer.• When the computer is on, press the button briefly to initiate Sleep.• When the computer is in the Sleep state, press the button briefly to exit Sleep.• When the computer is in Hibernation, press the button briefly to exit Hibernation. <p>CAUTION: Pressing and holding down the power button results in the loss of unsaved information.</p> <p>If the computer has stopped responding and Windows 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> <p>Windows 8.1::</p> <ul style="list-style-type: none">▲ From the Start screen, type <code>power</code>, select Power and sleep settings, and then select Power and sleep from the list of applications. <p>– or –</p> <p>From the Windows desktop, right-click the Start button, and then select Power Options.</p> <p>Windows 10:</p>

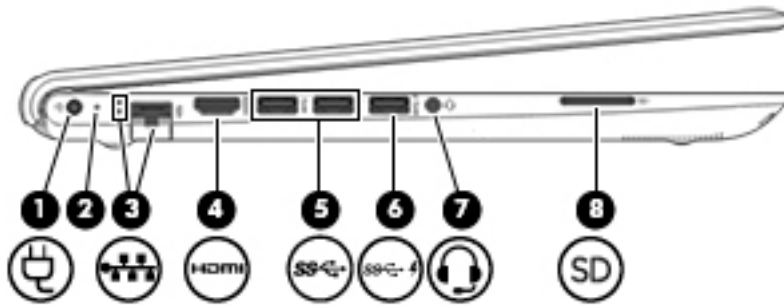
Component		Description
		<ul style="list-style-type: none"> ▲ Type <code>power</code> in the taskbar search box, and then select Power and sleep settings. – or – Right-click the Start button, and then select Power Options.
(2)	Speakers (2) (select models only)	Produce sound.








Keys




Component		Description
(1)	<code>esc</code> key	Displays system information when pressed in combination with the <code>fn</code> key.
(2)	<code>fn</code> key	Executes frequently used system functions when pressed in combination with the <code>esc</code> key, action keys, or the <code>spacebar</code> .
(3)	 Windows key	<p>Windows 8.1: Returns you to the Start screen from an open app or the Windows desktop.</p> <p>NOTE: Pressing the Windows key again will return you to the previous screen.</p> <p>Windows 10: Opens the Start menu.</p> <p>NOTE: Pressing the Windows key again will close the Start menu.</p>
(4)	Action keys	Execute frequently used system functions. NOTE: On select models, the <code>f5</code> action key turns the radiance backlight keyboard feature off or on.
(5)	<code>num lock</code> key	Alternates between the navigational and numeric functions on the integrated numeric keypad.
(6)	Integrated numeric keypad	When <code>num lock</code> is on, the keypad can be used like an external numeric keypad.

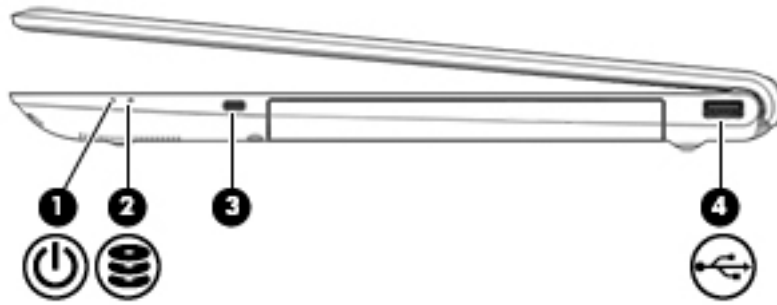
Left side






Component	Description
(1) 	Power connector Connects an AC adapter.
(2)	AC adapter/battery light <ul style="list-style-type: none"> White: The AC adapter is connected and the battery is fully charged. Blinking white: The AC adapter is disconnected and the battery has reached a low battery level. Amber: The AC adapter is connected and the battery is charging. Off: The battery is not charging.
(3) 	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.
(4) 	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 High-Definition Multimedia Interface (HDMI) device.
(5) 	USB 3.0 ports (2) Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub.
(6) 	USB 3.0 charging (powered) port Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub. Standard USB ports will not charge all USB devices or will charge using a low current. Some USB devices require power and require you to use a powered port. NOTE: USB charging ports can also charge select models of cell phones and MP3 players, even when the computer is off.
(7) 	Audio-out (headphone)/Audio-in (microphone) jack Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. This jack does not support optional microphone-only devices.
(8) 	

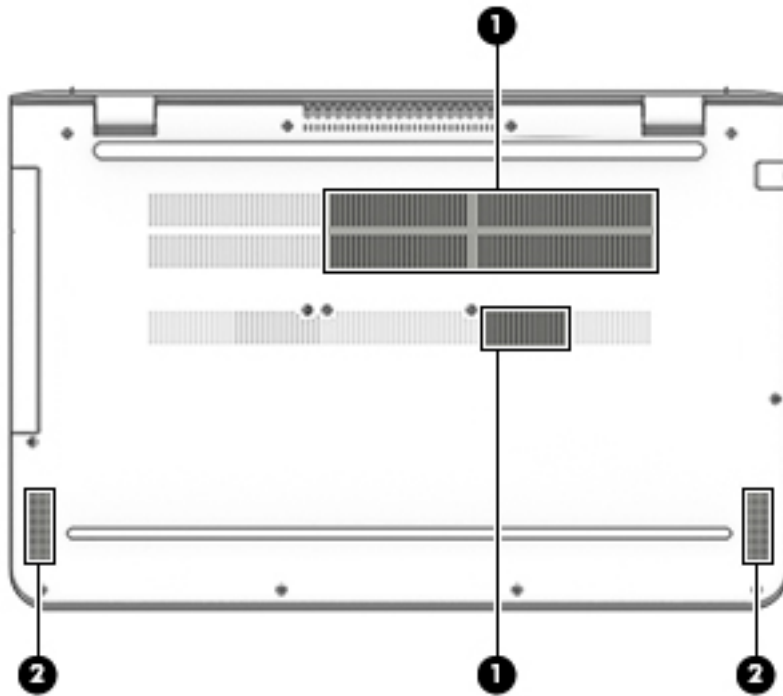
Component	Description
(8)  Memory card reader	<p>WARNING! To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, refer to the <i>Regulatory, Safety, and Environmental Notices</i>.</p> <p>To access this document:</p> <p>Windows 8.1:</p> <p>From the Start screen, type <code>support</code>, and then select the HP Support Assistant app.</p> <p>– or –</p> <p>From the Windows desktop, click the question mark icon in the notification area, at the far right of the taskbar.</p> <p>Windows 10:</p> <p>Select Start, select All apps, select HP Help and Support, and then select HP Documentation.</p> <p>NOTE: When a device is connected to the jack, the computer speakers are disabled.</p> <p>NOTE: Be sure that the device cable has a 4-conductor connector that supports both audio-out (headphone) and audio-in (microphone).</p> <hr/> <p>Reads optional memory cards that enable you to store, manage, share or access information.</p> <p>To insert a card:</p> <ol style="list-style-type: none"> 1. Hold the card label-side up, with connectors facing the computer. 2. Insert the card into the memory card reader, and then press in on the card until it is firmly seated. <p>To remove a card:</p> <ul style="list-style-type: none"> ▲ Press in on the card, and then remove it from the memory card reader.

Right side



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 components. Off: The computer is off or in Hibernation. Hibernation is a power-saving state that uses the least amount of power.
(2)  Hard drive light	<ul style="list-style-type: none"> Blinking white: The hard drive is being accessed. Amber: HP 3D DriveGuard (select models only) has temporarily parked the hard drive.
(3) Security cable slot	Attaches an optional security cable to the computer. NOTE: The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.
(4) Optical drive (select models only)	Depending on your computer model, reads an optical disc or reads and writes to an optical disc. NOTE: For disc compatibility information, go to the Help and Support web page. Follow the web page instructions to select your computer model. Select Drivers & Downloads , and then follow the on-screen instructions.
(5) Optical drive eject button (select models only)	Releases the disc tray.
(6)  USB 2.0 port	Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub.

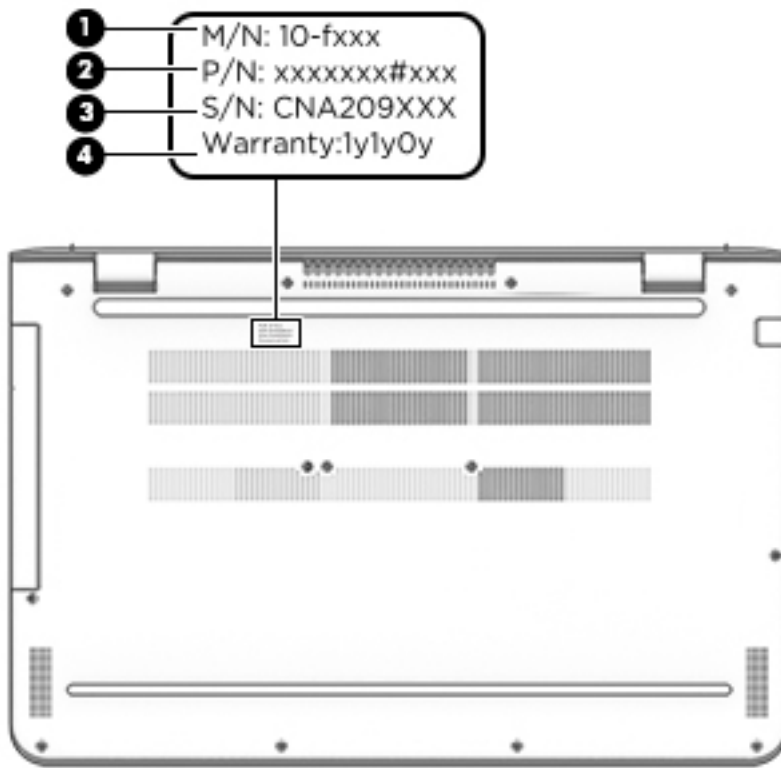
Bottom



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) Speakers (2)	Produce sound.


Service tag

When ordering parts or requesting information, provide the computer serial number and model number provided on the service tag.

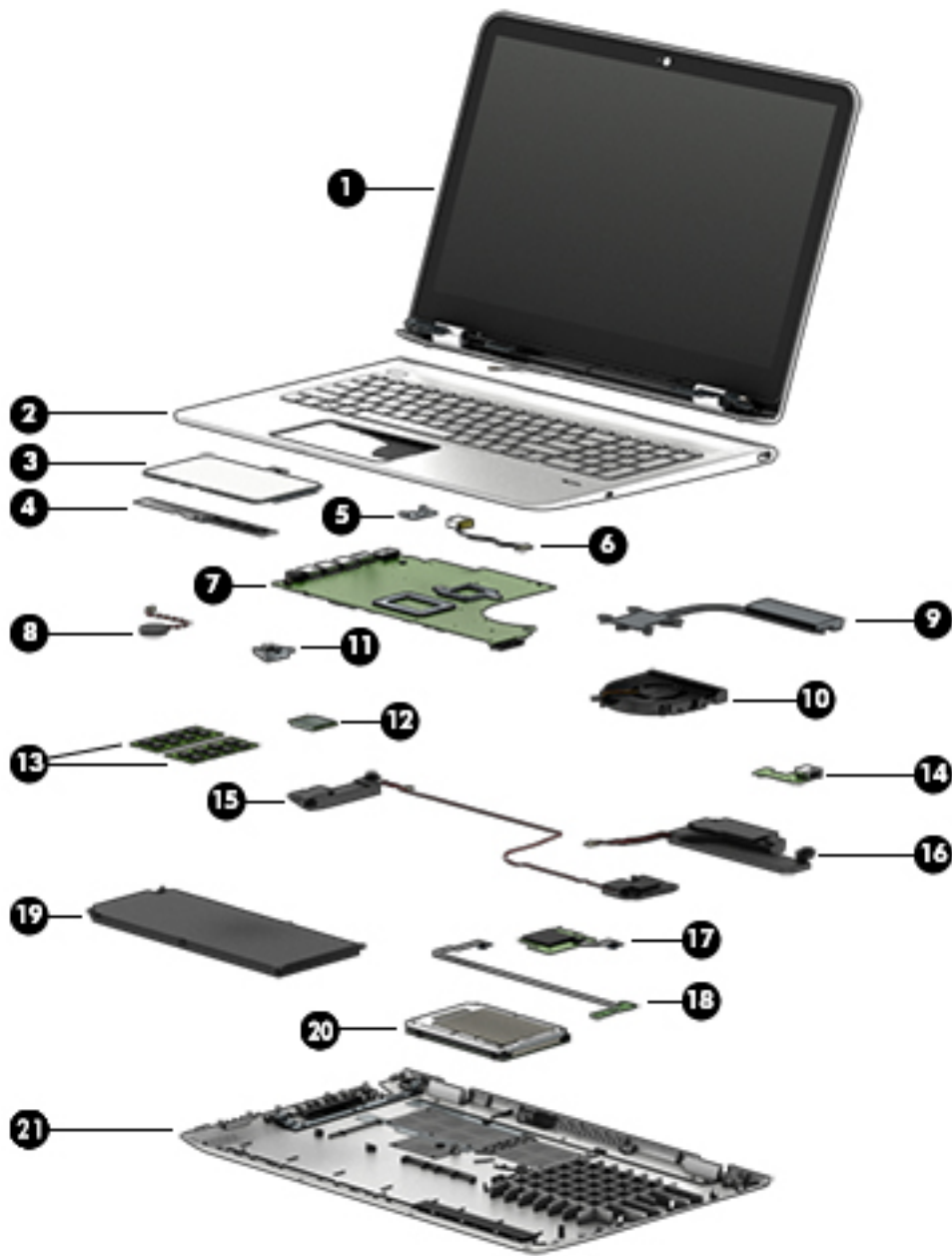


Item	Description	Function
(1)	Model description	This is the alphanumeric identifier used to locate documents, drivers, and support for the computer.
(2)	Part number/Product number (p/n)	This number provides specific information about the product's hardware components. The part number helps a service technician to determine what components and parts are needed.
(3)	Serial number (s/n)	This is an alphanumeric identifier that is unique to each product.
(4)	Warranty period	This number describes the duration of the warranty period for the computer for each of the following categories: <ul style="list-style-type: none">• Defective part replacement• HP authorized technician labor• Repairs performed at customer site for those parts not eligible for Customer Self Repair (CSR)

3 Illustrated parts catalog

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

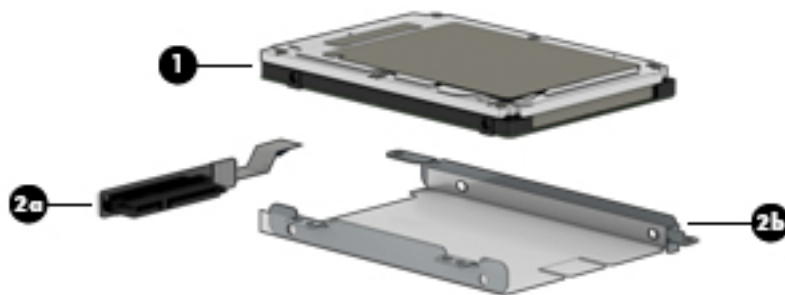
Computer major components



Item	Component	Spare part number
(1)	Display assembly (includes webcam/microphone module and wireless antenna cables):	
(2)	Top cover with keyboard	
	For use in the United States	813017-001
	For use in French Canada	813017-DB1
	For use in Denmark, Finland, and Norway	813017-DH1
	For use in the United Kingdom	813017-031
(3)	TouchPad assembly	818040-001
(4)	Touchpad support bracket	818042-001
	Power connector cable kit	812681-001
(5)	Power connector bracket	
(6)	Power connector cable	
(7)	System board (includes replacement thermal material)	
	All system boards use the following part numbers:	
	xxxxxx-001: Non-Windows operating systems	
	xxxxxx-601: Windows 8.1 or Windows 10 operating system	
	Includes AMD FX-8800P processor for use in touch screen models	813021-xxx
	Includes AMD FX-8800P processor for use in non-touch screen models	835049-xxx
	Includes AMD A10-8700P processor for use in touch screen models	824209-xxx
(8)	RTC battery	819504-001
(9)	Heat sink (includes replacement thermal material):	813015-001
(10)	Fan (includes cable)	812682-001
(11)	RJ-45 door	812701-001
(12)	WLAN module	
	Broadcom BCM43142 802.11 b/g/n 1x1 Wi-Fi + BT4.0 M.2 Combo Adapter	792608-005
	Intel Dual Band Wireless-AC 7265 802.11 ac 2x2 WiFi + BT 4.0 Combo Adapter (non vPRO)	784644-005
	Intel Dual Band Wireless-AC 3165 802.11 ac 1x1 WiFi + BT 4.0 Combo Adapter	806723-005
(13)	Memory module (PC3L-1600)	
	8-GB	693374-005
	4-GB	691740-005
	2-GB	691739-005
(14)	USB board	813018-001
(15)	Speaker Kit	812705-001
(16)	Subwoofer	813020-001
(17)	Card reader board	813019-001

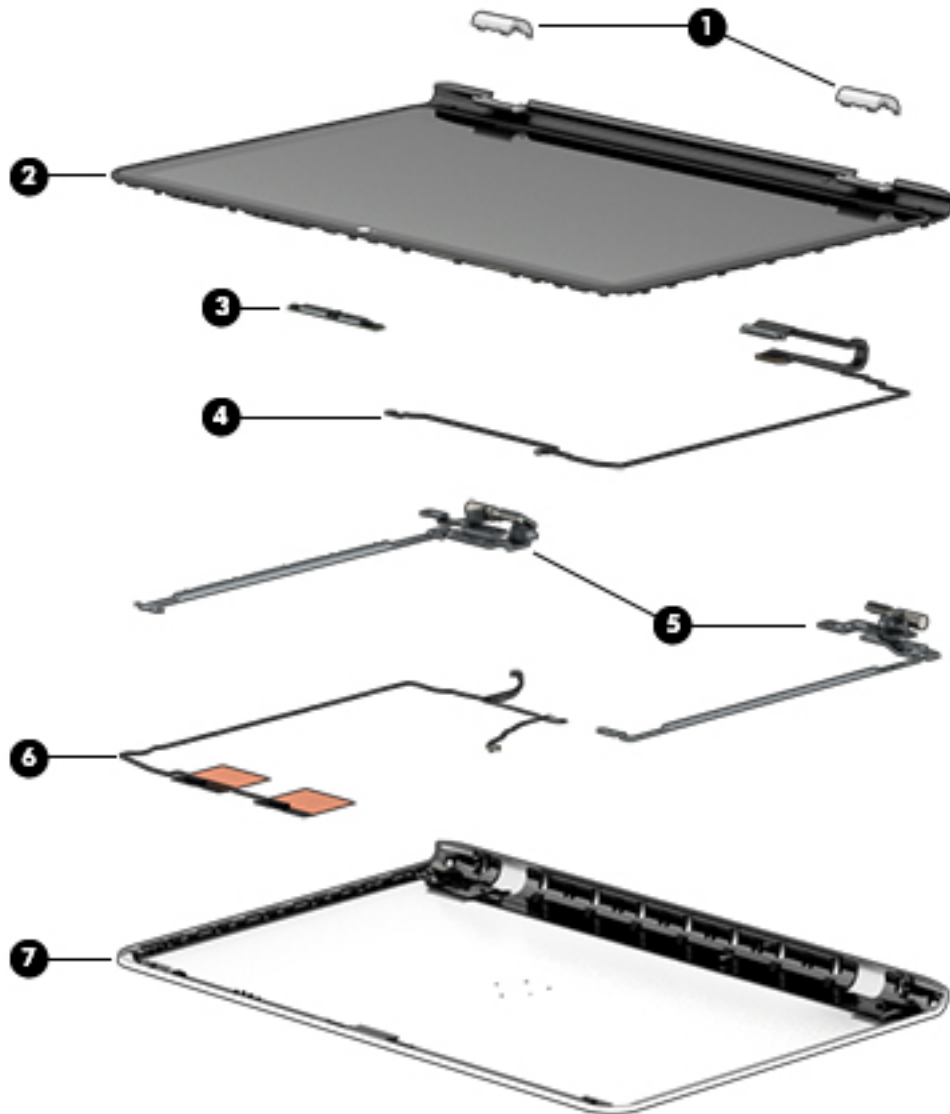
Item	Component	Spare part number
(18)	LED board (includes cable)	812696-001
(19)	Battery (3-cell, 48-Wh, 4.21-Ah, Li-ion)	807417-005
(20)	Hard drive (does not include hard drive bracket or hard drive connector cable):	
	Hard drive, 2.0-TB, 5400-rpm, 9.5-mm	801808-001
	1.0-TB, 5400-rpm, 9.5-mm	833907-005
	750-GB, 5400-rpm, 9.5-mm	778190-005
	Hard Drive Hardware Kit (not illustrated, includes hard drive bracket and screws)	812686-001
	The hard drive connector cable is available using spare part number 812697-001.	
(21)	Base enclosure	812672-001

Mass storage devices



Item	Component	Spare part number
(1)	Hard drive (does not include hard drive bracket or hard drive connector cable):	
	Hard drive, 2.0-TB, 5400-rpm, 9.5-mm	801808-001
	1.0-TB, 5400-rpm, 9.5-mm	833907-005
	750-GB, 5400-rpm, 9.5-mm	778190-005
(2a)	Hard drive connector cable	812697-001
	Hard Drive Hardware Kit , includes:	812686-001
(2b)	Hard drive bracket	
	Screws (not illustrated)	
	External USB DVD±RW Double-Layer with SuperMulti Drive (not illustrated)	747080-001

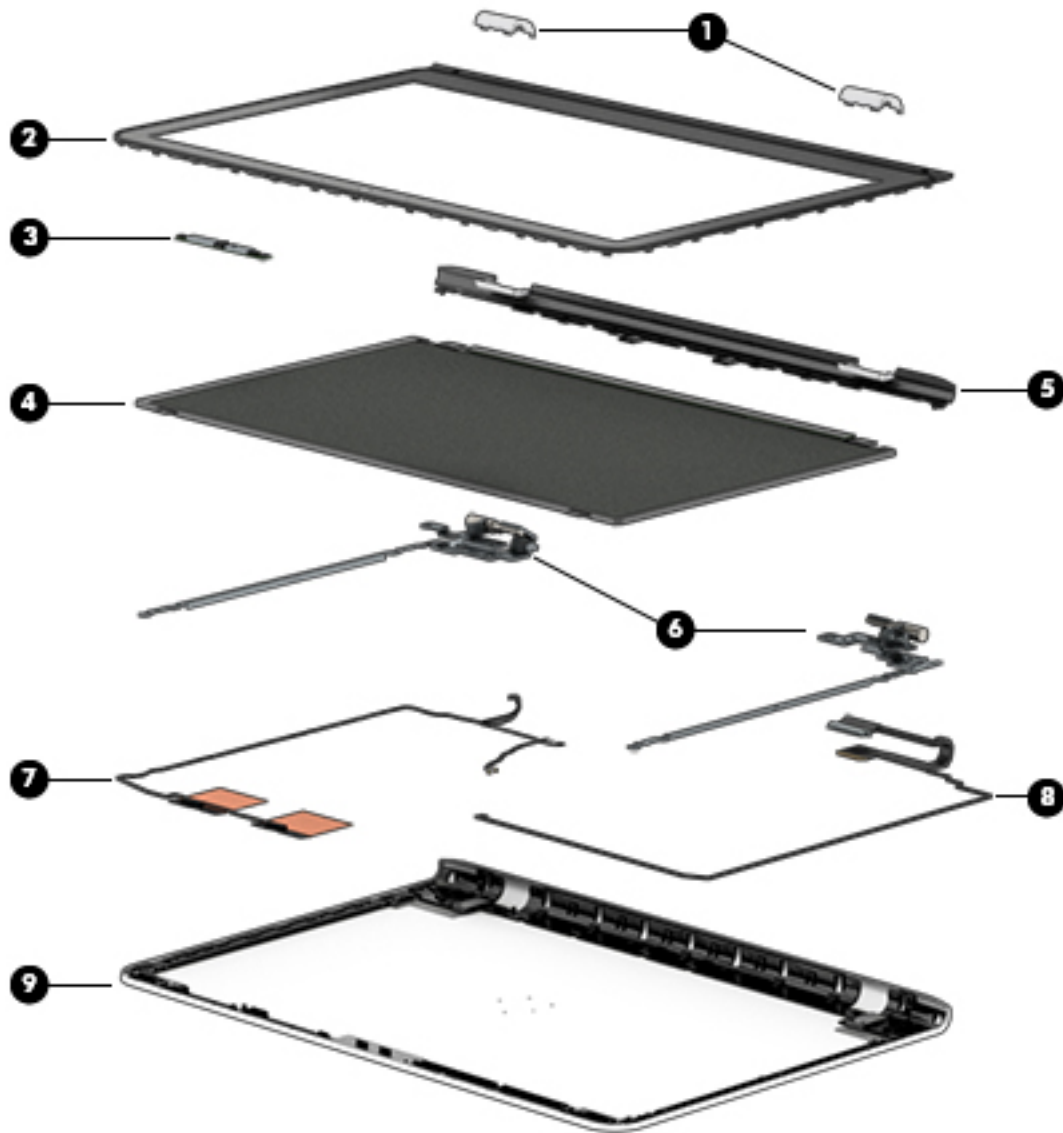
Display assembly subcomponents – touch screen



Item	Component	Spare part number
(1)	Hinge covers (left and right)	812699-001
(2)	Raw display panel (39.6-cm [15.6-in]; includes touch panel, touch board, bezel, rubber supports, display cable, webcam, and screws)	
	Touch screen, antiglare, HD	813016-001
	Non-touch, BrightView, HD	812702-001
	Non-touch, antiglare, HD	828730-001
(3)	Webcam module	812715-001
(4)	Display/webcam cable	812676-001
(5)	Hinges (left and right, includes Mylar screw covers)	812688-001

Item	Component	Spare part number
(6)	Antennas (includes wireless antenna cables and transceivers)	812669-001
(7)	Display enclosure	812671-001

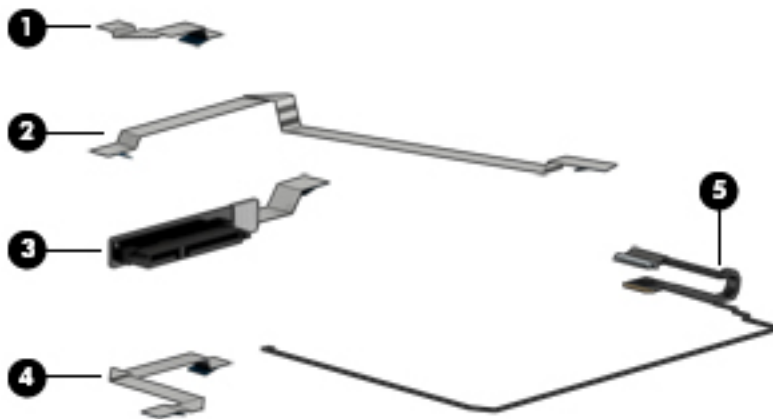
Display assembly subcomponents – non-touch screen



Item	Component	Spare part number
(1)	Hinge covers (left and right)	812698-001
(2)	Bezel	812674-001
(3)	Webcam module	812714-001
(4)	Raw display panel (39.6-cm [15.6-in]; includes touch panel, touch board, bezel, rubber supports, display cable, webcam, and screws)	812702-001

Item	Component	Spare part number
(5)	Bezel trim	818043-001
(6)	Hinges (left and right, includes Mylar screw covers)	812687-001
(7)	Antennas (includes wireless antenna cables and transceivers)	812668-001
(8)	Display/webcam cable	812675-001
(9)	Display enclosure	812670-001

Cables



Item	Component	Spare part number
(1)	Card reader board cable	812680-001
(2)	USB board cable	813014-001
(3)	Hard drive cable	812697-001
(4)	Touchpad cable	818041-001
(5)	Display cable	812676-001

Miscellaneous parts

Component	Spare part number
AC adapter:	
45-W HP Smart AC adapter for use only on computer models equipped with an AMD processor (non-PFC, RC, 4.5-mm)	741727-001
HDMI-to-VGA adapter	701943-001
Power cord (3-pin, black, 1.00-m):	
For use in Denmark	755530-081
For use in Europe, the Middle East, and Africa	755530-021
For use in North America	755530-001
For use in the United Kingdom	755530-031
Screw Kit	818086-001

4 Removal and replacement procedures preliminary requirements

Tools required

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

- Flat-bladed screw driver
- Magnetic screw driver
- Phillips P0 and P1 screw drivers

Service considerations

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



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

Plastic parts



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

Cables and connectors

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

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

Drive handling

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

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

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

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

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

Avoid dropping drives from any height onto any surface.

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

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

Avoid exposing a drive to temperature extremes or liquids.

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

Grounding guidelines

Electrostatic discharge damage

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

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

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

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

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

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

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

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

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

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

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

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

Workstation guidelines

Follow these grounding workstation guidelines:

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

Equipment guidelines

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

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


The following grounding equipment is recommended to prevent electrostatic damage:

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

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

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

5 Removal and replacement procedures for Authorized Service Provider parts

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

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

Component replacement procedures

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

There are as many as 75 screws that must be removed, replaced, and/or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

Bottom cover

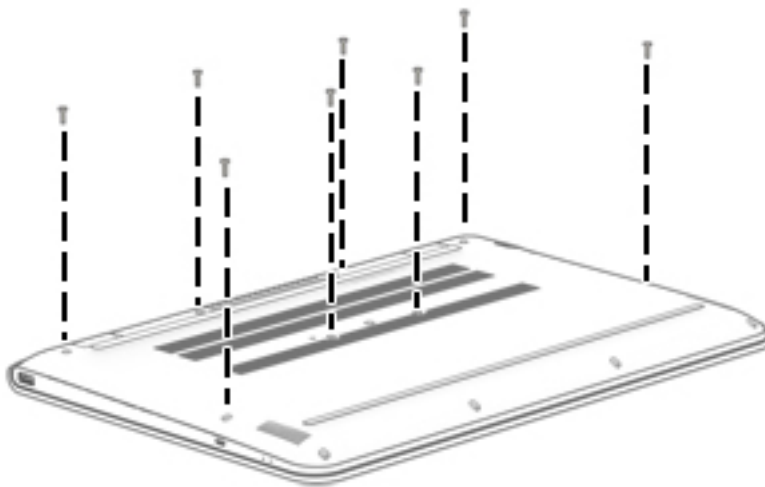
Description	Spare part number
Bottom cover	812672-001
Top cover with keyboard for use in the United States	813017-001
Top cover with keyboard for use in French Canada	813017-DB1
Top cover with keyboard for use in Denmark, Finland, and Norway	813017-DH1
Top cover with keyboard for use in the United Kingdom	813017-031

Before removing the bottom cover, follow these steps:

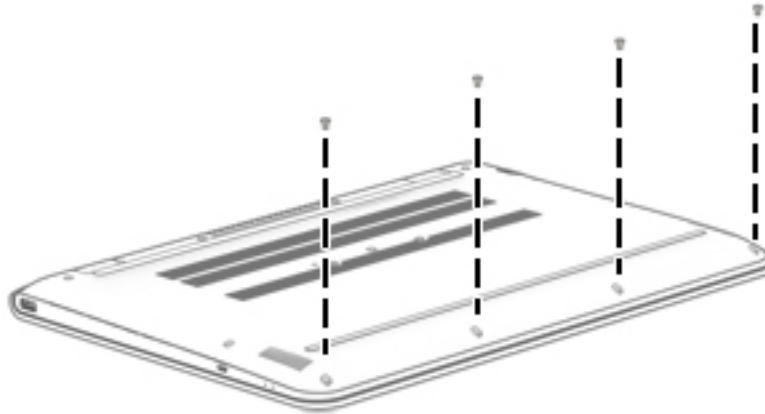
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.

Remove the bottom cover:

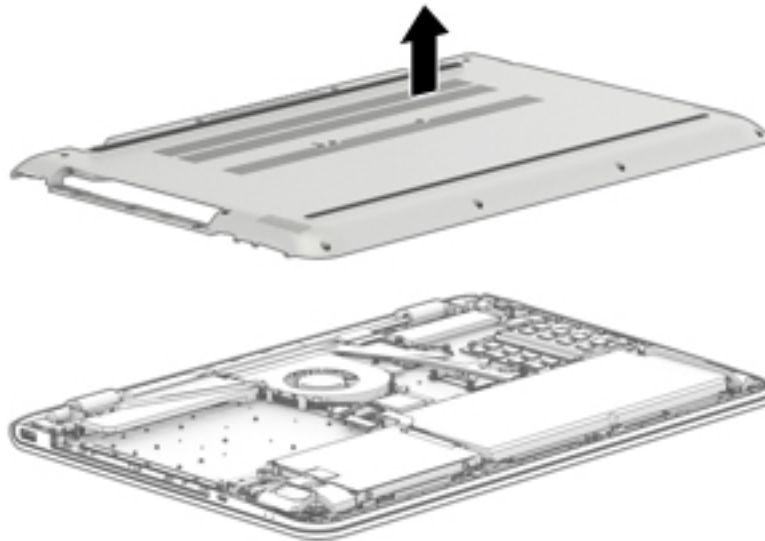
1. Remove the eight Phillips PM2.5×8.0 screws that secure the bottom cover to the computer.



2. Remove the four Phillips PM2.5×4.0 screws that secure the bottom cover to the computer.



3. Remove the bottom cover by working your way around and prying to disengage bottom cover from computer.



Reverse this procedure to install the bottom cover.

WLAN module

Description	Spare part number
Broadcom BCM43142 802.11 b/g/n 1x1 Wi-Fi + BT4.0 M.2 Combo Adapter	792608-005
Intel Dual Band Wireless-AC 7265 802.11 ac 2x2 WiFi + BT 4.0 Combo Adapter (non vPRO)	784644-005
Intel Dual Band Wireless-AC 3165 802.11 ac 1x1 WiFi + BT 4.0 Combo Adapter	806723-005

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


Before removing the WLAN module, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 28](#)).
5. Disconnect the battery.

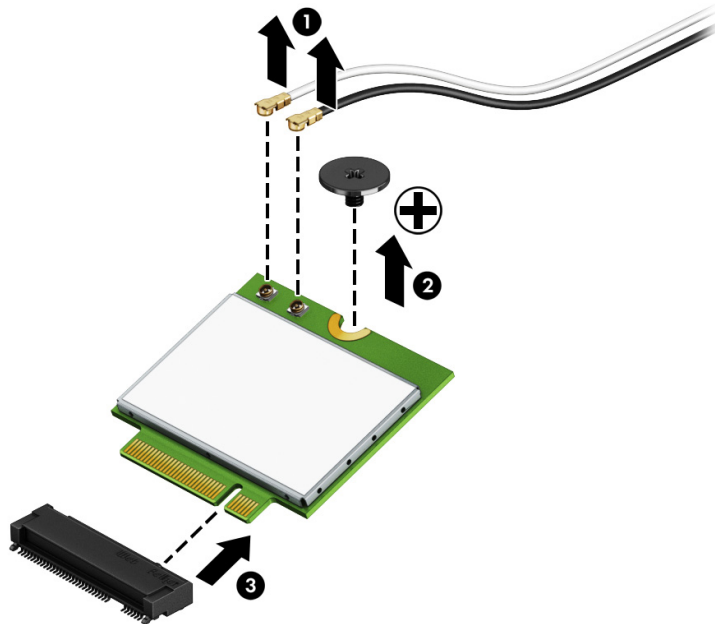



Remove the WLAN module:

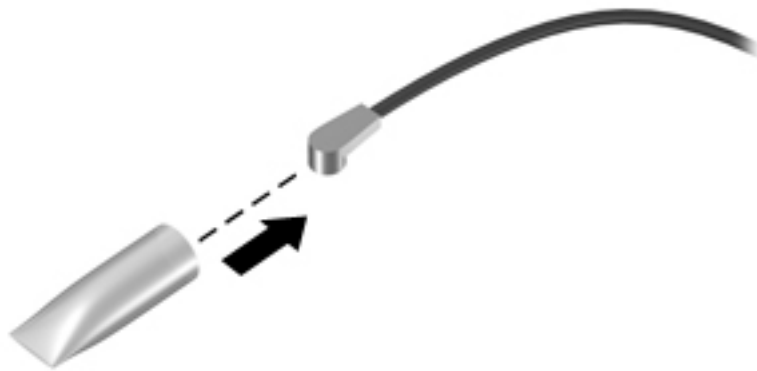
1. Disconnect the WLAN antenna cables **(1)** from the terminals on the WLAN module.

 **NOTE:** The WLAN antenna cable labeled “1” connects to the WLAN module “Main” terminal labeled “1”. The WLAN antenna cable labeled “2” connects to the WLAN module “Aux” terminal labeled “2”.

2. Remove the Phillips PM2.0×2.5 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:** If the WLAN antenna cables are not connected to the terminals on the WLAN module, the protective sleeves must be installed on the antenna connectors, as shown in the following illustration.




Reverse this procedure to install the WLAN module.

Memory module

Description	Spare part number
8-GB (PC3L-1600)	693374-005
4-GB (PC3L-1600)	691740-005
2-GB (PC3L-1600)	691739-005

Update BIOS before adding memory modules

Before adding new memory, make sure you update the computer to the latest BIOS.

 **CAUTION:** Failure to update the computer to the latest BIOS prior to installing new memory may result in various system problems.

To update BIOS:

1. Navigate to www.hp.com.
2. Click **Support & Drivers** > click **Drivers & Software**.
3. In the **Enter a product name/number box**, type the computer model information, and then click **Search**.
4. Click the link for the computer model.
5. Select the operating system, and then click **Next**.
6. Under **Step 2: Select a Download**, click the **BIOS** link.
7. Click the link for the most recent BIOS.
8. Click the **Download** button, and then follow the on-screen instructions.

Before removing a memory module, follow these steps:

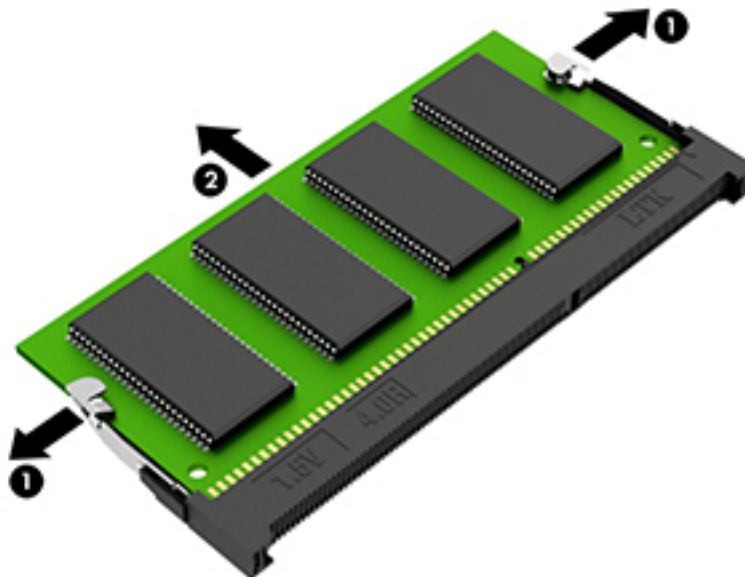
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 28](#)).

5. Disconnect the battery.



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.

RJ-45 door

Description	Spare part number
RJ-45 door	812701-001

Before removing the RJ-45 door, follow these steps:

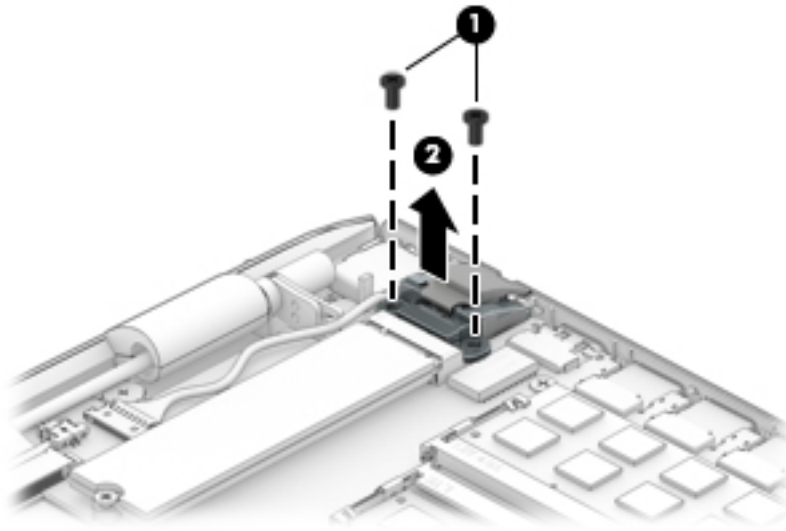
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 28](#)).
5. Disconnect the battery.



Remove the RJ-45 door:

1. Remove the two Phillips PM2.0×5.0 screws **(1)** that secure the RJ-45 door to the computer.

2. Remove the RJ-45 door (2).



Reverse this procedure to install the RJ-45 door.

Fan

Description	Spare part number
Fan (includes cable)	812682-001

Before removing the fan, follow these steps:

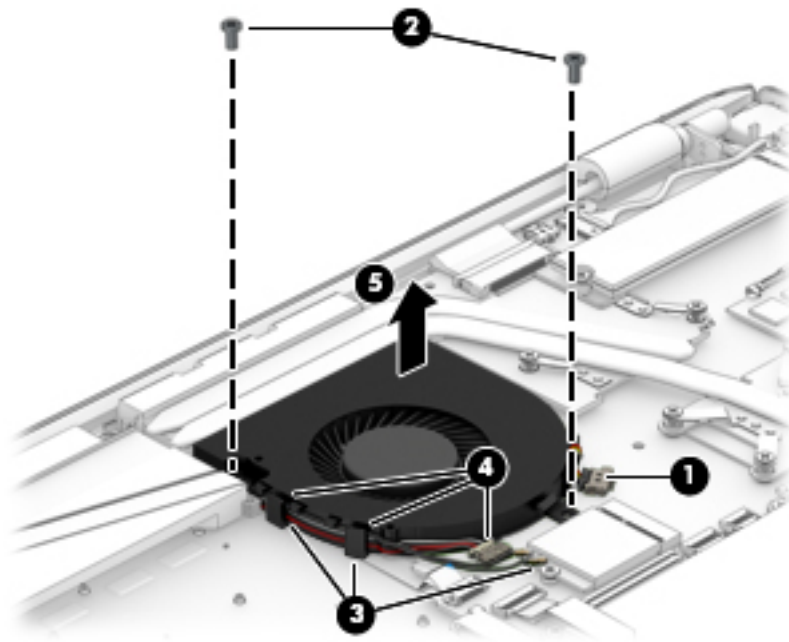
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 28](#)).
5. Disconnect the battery.



Remove the fan:

1. Disconnect the fan cable **(1)** from the system board.
2. Remove the two Phillips PM2.5×4.0 screws **(2)** that secure the fan to the computer.
3. Disconnect and then remove the antenna cables from the clips on side of the fan **(3)**.
4. Disconnect and then remove the subwoofer cable from the clips on side of the fan **(4)**.

5. Remove the fan (5).



Reverse this procedure to install the fan.

USB board

Description	Spare part number
USB board	813018-001
USB board cable	813014-001

Before removing the USB board, follow these steps:

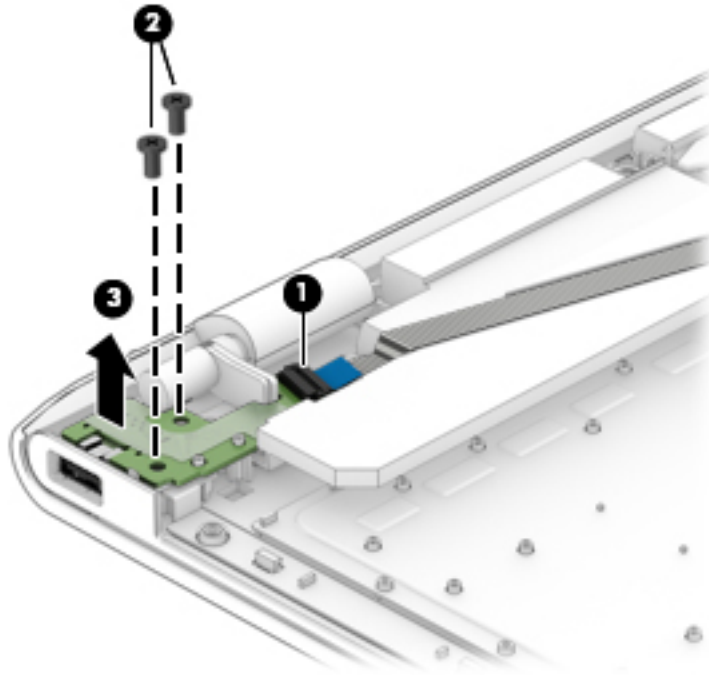
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 28](#)).
5. Disconnect the battery.



Remove the USB board:

1. Disconnect the cable **(1)** from the USB board.
2. Remove the Phillips PM2.5×5.0 screws **(2)** that secure the USB board to the computer.

3. Remove the USB board (3).



Reverse this procedure to install the USB board.

Subwoofer

Description	Spare part number
Subwoofer	813020-001

Before removing the subwoofer, 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 unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover ([Bottom cover on page 28](#)).
5. Disconnect the battery.

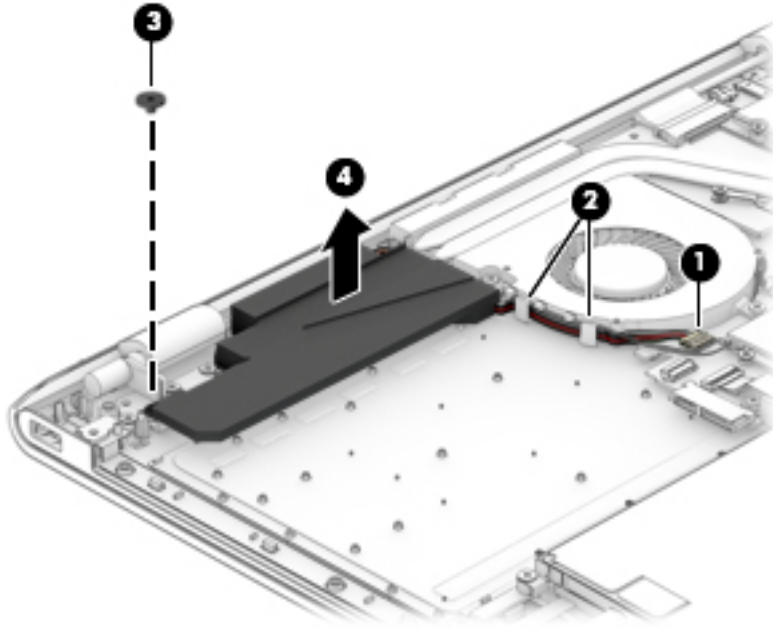


6. Remove the USB board (see [USB board on page 38](#)).

Remove the subwoofer:


1. Disconnect the subwoofer cable **(1)** from the system board.
2. Remove the cable from the clips built into the fan **(2)**.
3. Remove the Phillips PM2.5×5.0 screw **(3)** that secures the subwoofer to the computer.

4. Remove the subwoofer (4).



Reverse this procedure to install the subwoofer.

Heat sink

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

Description	Spare part number
Heat sink	813015-001

Before removing the heat sink, follow these steps:

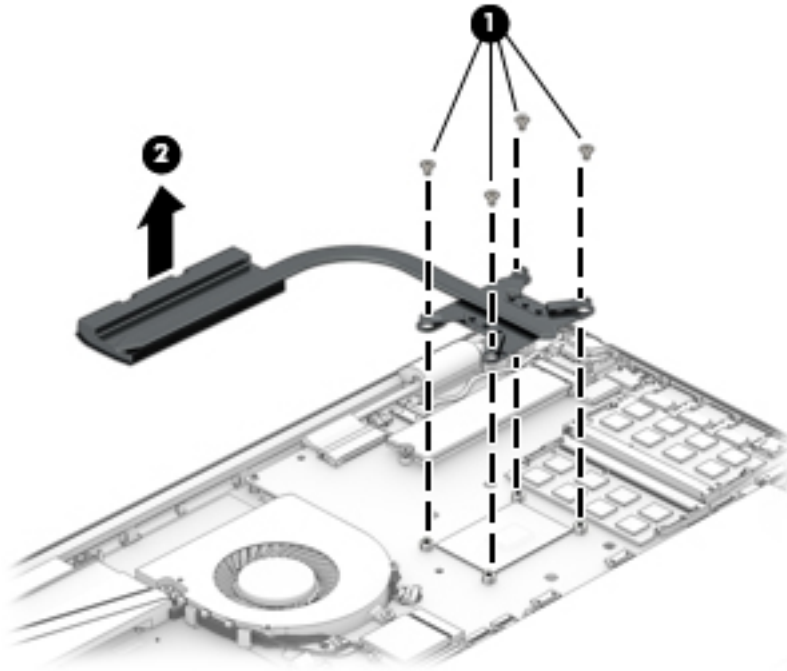
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 28](#)).
5. Disconnect the battery.




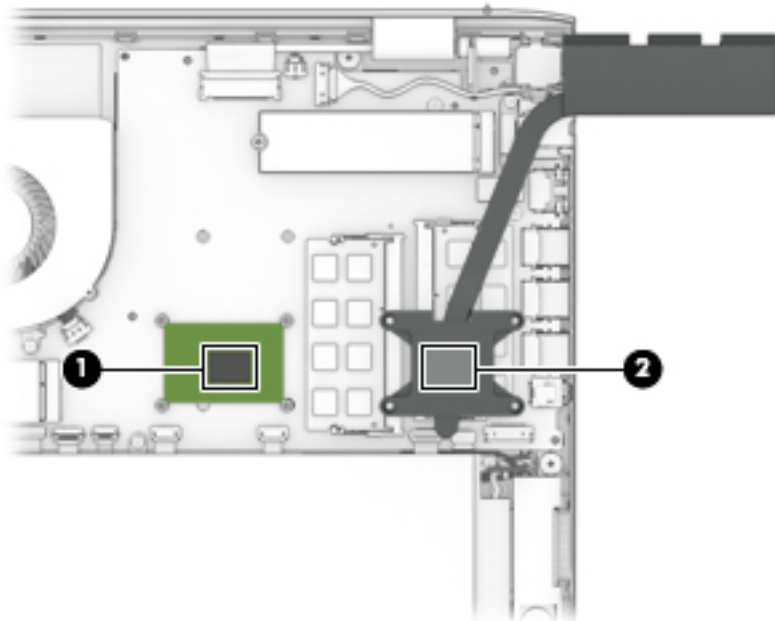
Remove the heat sink:

1. Following the 1 through 4 sequence stamped into the heat sink, remove the four Phillips PM2.0×3.0 screws (**1**) that secure the heat sink to the system board.

2. Remove the heat sink (2).



 **NOTE:** The thermal material must be thoroughly cleaned from the surfaces of the heat sink and the system board components each time the heat sink is removed. Replacement thermal material is included with the heat sink, processor, and system board spare part kits. Thermal paste is used on the processor (1) and the heat sink section (2) that services it.



Reverse this procedure to install the heat sink.

Battery

Description	Spare part number
3-cell, 48-Wh, 4.21-Ah, Li-ion battery	807417-005

Before removing the battery, follow these steps:

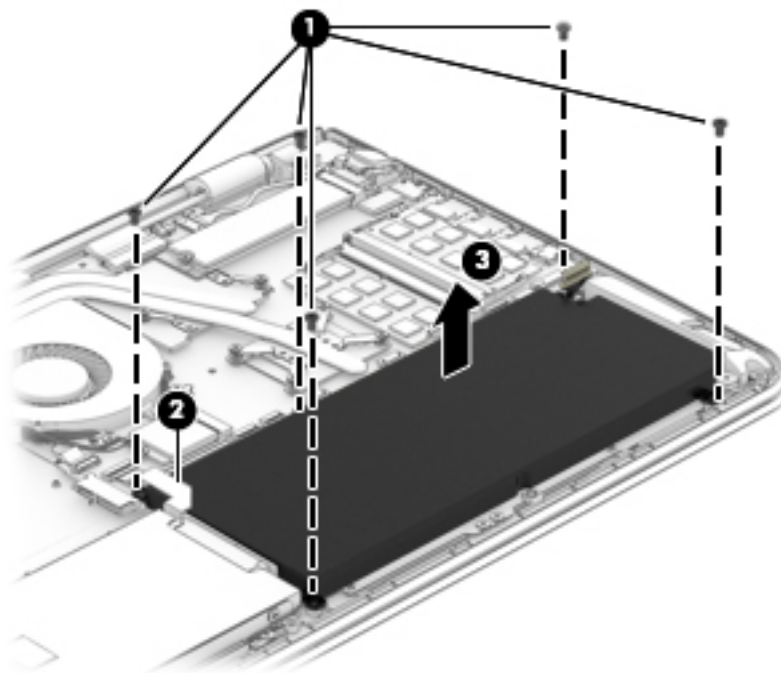
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 28](#)).

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. Remove the five Phillips PM2.5×4.0 screws **(1)** that secure the battery to the computer.
2. Disconnect the battery cable from the system board **(2)**.
3. Remove the battery **(3)** from the computer.



Reverse this procedure to install the battery.

RTC battery

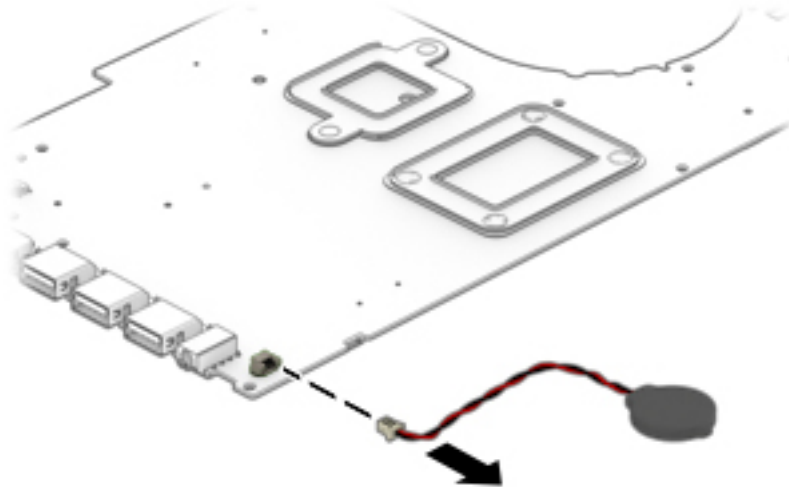
Description	Spare part number
RTC battery	819504-001

Before removing the RTC 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 unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 28](#)).
5. Remove the battery (see [Battery on page 44](#)).

Remove the RTC battery:

- ▲ Disconnect the disc cell RTC battery cable from the system board, and then remove the battery.



Reverse this procedure to install the RTC battery.

Hard drive



NOTE: The hard drive spare part kit does not include the hard drive bracket or hard drive connector cable. The hard drive bracket and screws are included in the Hard Drive Hardware Kit, spare part number 812686-001. The hard drive cable is available using spare part number 812697-001.

Description	Spare part number
Hard drive, 2.0-TB, 5400-rpm, 9.5-mm	801808-001
Hard drive, 1.0-TB, 5400-rpm, 9.5-mm	833907-005
Hard drive, 750-GB, 5400-rpm, 9.5-mm	778190-005
Hard Drive Hardware Kit (includes bracket and screws)	812686-001
Hard drive cable	812697-001

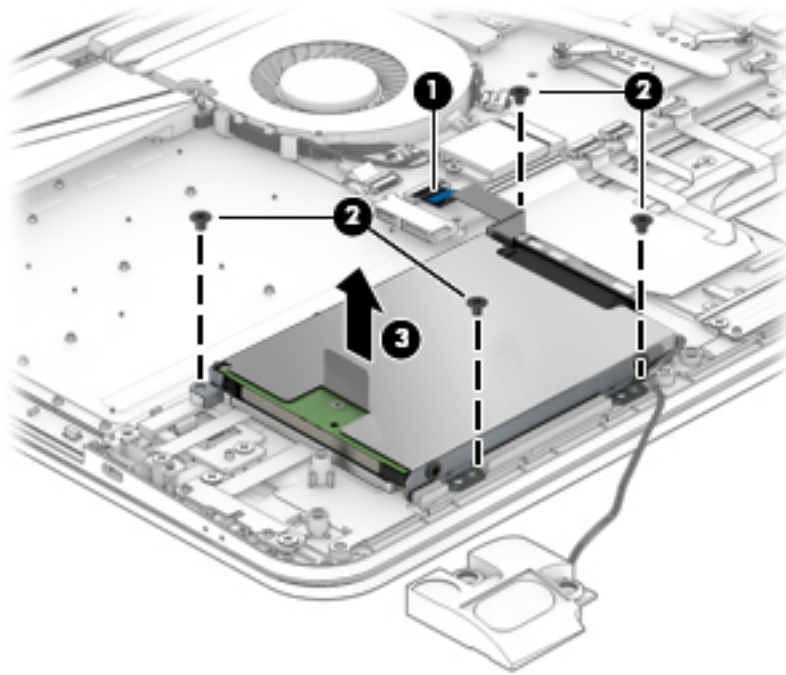
Before removing the hard drive, follow these steps:

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 unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 28](#)).
5. Remove the battery (see [Battery on page 44](#)).

Remove the hard drive:

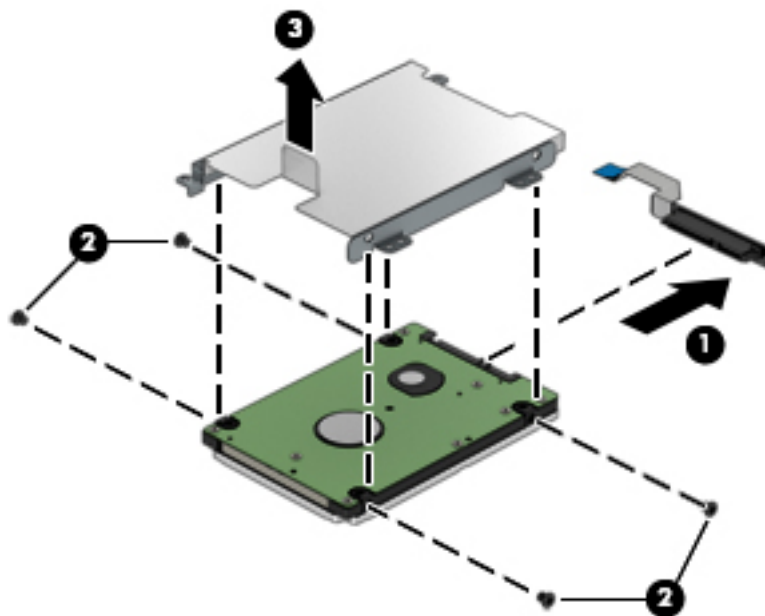
1. Disconnect the hard drive cable from the system board **(1)**.
2. Remove the four Phillips PM2.5×3.0 screws **(2)** that secure the hard drive assembly to the computer.

3. Lift up on the hard drive tab **(3)** to remove the hard drive assembly from the hard drive bay.



4. If it is necessary to disassemble the hard drive, perform the following steps:
 - a. Disconnect the hard drive connector cable **(1)** from the hard drive.
 - b. Remove the four Phillips PM2.5×3.0 screws **(2)** that secure the hard drive cover to the hard drive.
 - c. Remove the hard drive bracket **(3)** from the hard drive.

The hard drive bracket and screws are available in the Hard Drive Hardware Kit, spare part number 812686-001. The hard drive connector cable is available using spare part number 812697-001.



Reverse this procedure to install the RTC battery.

Speakers (front)


Description	Spare part number
Speaker Kit	812705-001

Before removing the speakers, follow these steps:

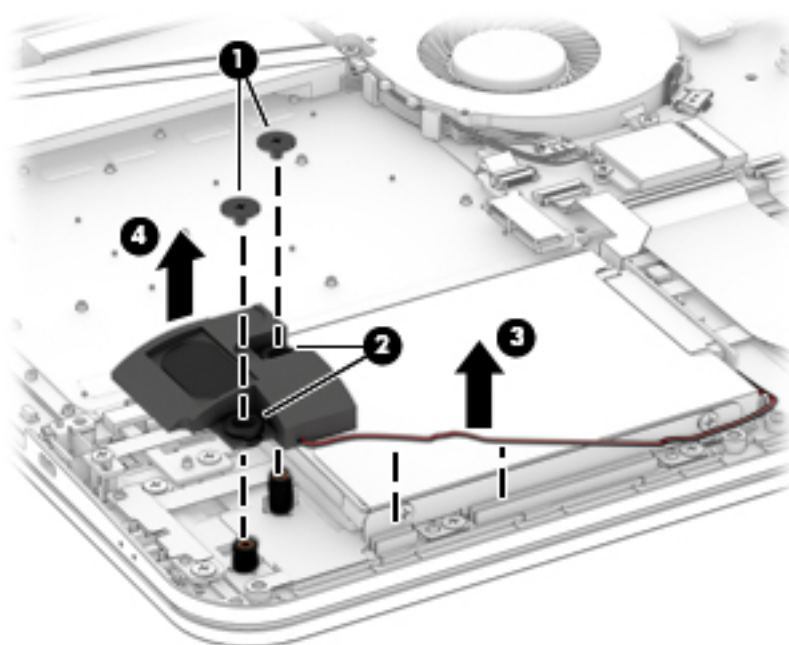
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 28](#)).
5. Remove the battery (see [Battery on page 44](#)).
6. Remove the hard drive (see [Hard drive on page 46](#)).

Remove the speakers:

1. Remove the two broadhead Phillips PM2.0×2.0 screws **(1)** that secure the speaker to the computer.

 **NOTE:** The speaker includes rubber isolators **(2)** around the screws. These isolators are crucial to the performance of the speakers.

2. Remove the speaker cable from its routing path **(3)**.
3. Remove the speaker **(4)**.





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

5. Disconnect the six cables from the connectors that the speaker cable is routed under **(2)**.

For proper cable routing, see [Cable routing on page 50](#).

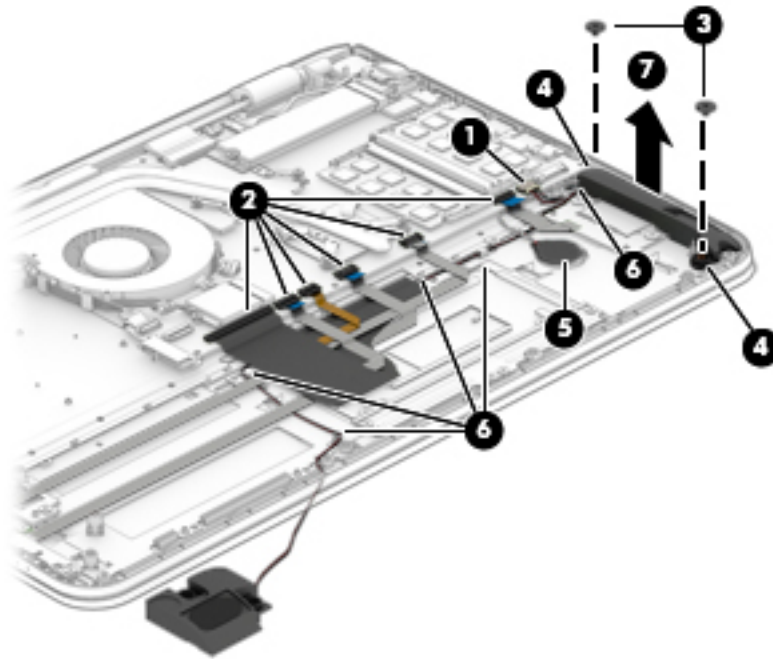
6. Remove the two broadhead Phillips PM2.0×2.0 screws **(3)** that secure the speaker to the computer.

 **NOTE:** The speaker includes rubber isolators **(4)** around the screws. These isolators are crucial to the performance of the speakers.

 **NOTE:** Note the way the speaker cable is routed near the RTC battery **(5)**.

7. Remove the speaker cable from its routing path **(6)**.

8. Remove the speaker **(7)**.



Reverse this procedure to install the speakers.

Cable routing

There are six ribbon cables that connect to the system board that route under the battery with specific routing around and through each other. Use the image below to determine correct cabling.

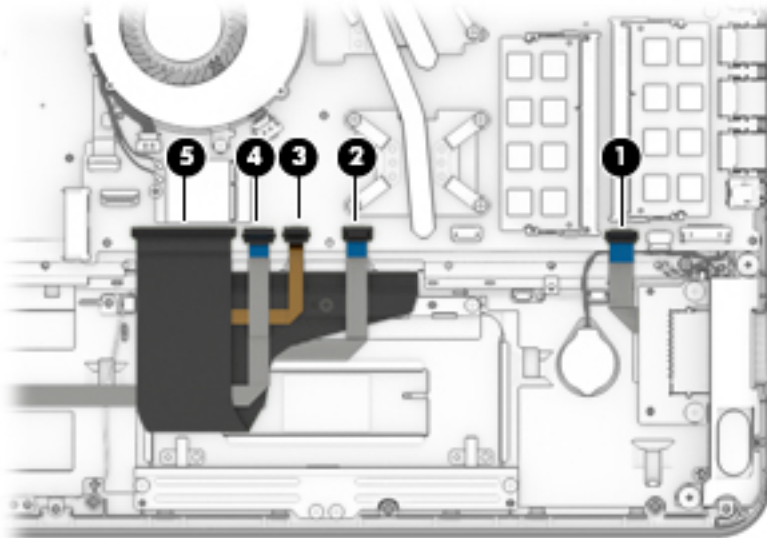
(1): Card reader cable

(2): Touchpad cable

(3): Keyboard backlight cable

(4): LED board cable

(5): Keyboard cable



LED board

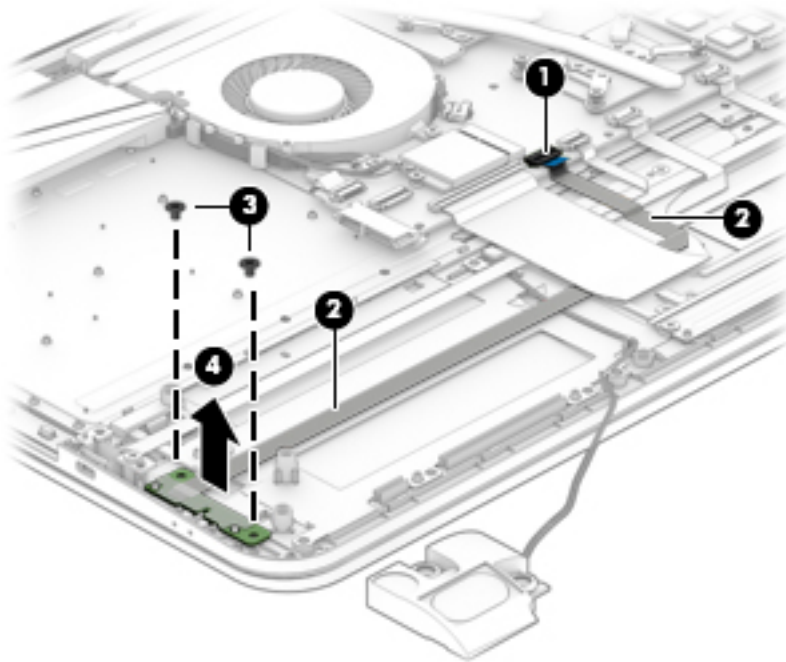
Description	Spare part number
LED board (includes cable)	812696-001

Before removing the LED 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 unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 28](#)).
5. Remove the battery (see [Battery on page 44](#)).
6. Remove the hard drive (see [Hard drive on page 46](#)).
7. Remove the right speaker ([Speakers \(front\) on page 48](#)).

Remove the LED board:

1. Disconnect the LED board cable **(1)** from the system board.
2. Pull the ribbon cable up to disengage the adhesive securing it to the computer **(2)**.
3. Remove the two Phillips PM2.5×3.0 screws **(3)** that secure the LED board to the computer.
4. Remove the LED board **(4)** from the computer while routing the LED board cable under the keyboard cable.



Reverse this procedure to install the LED board.

Card reader board

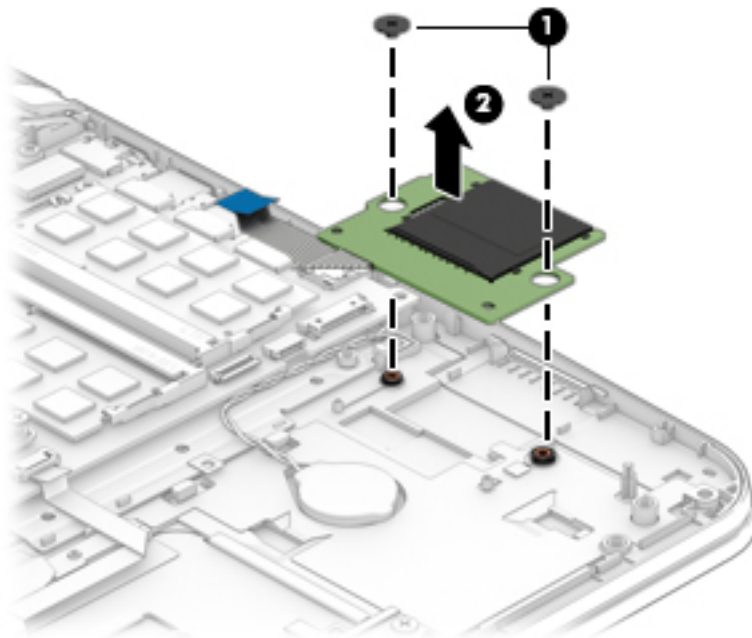
Description	Spare part number
Card reader board	813019-001
Card reader board cable	812680-001

Before removing the card reader 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 unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 28](#)).
5. Remove the battery (see [Battery on page 44](#)).
6. Remove the hard drive (see [Hard drive on page 46](#)).
7. Remove the speakers (see [Speakers \(front\) on page 48](#)).

Remove the card reader board:

1. Remove the two broadhead Phillips PM2.0×3.0 screws **(1)** that secure the card reader board to the computer.
2. Remove the card reader board **(2)**.



Reverse this procedure to install the card reader board.

TouchPad assembly

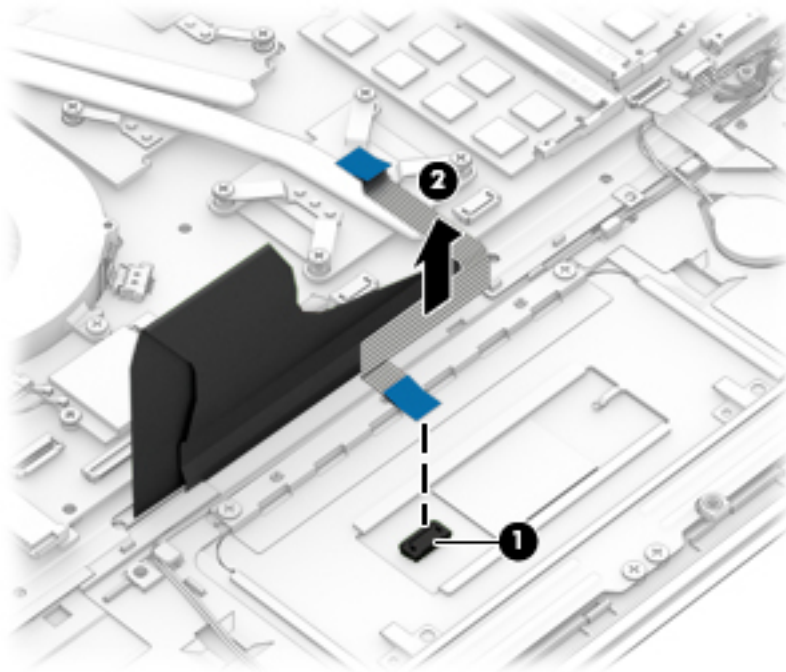
Description	Spare part number
TouchPad assembly	818040-001
Touchpad support bracket	818042-001
Touchpad cable	818041-001

Before removing the TouchPad, 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 unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 28](#)).
5. Remove the battery (see [Battery on page 44](#)).
6. Remove the hard drive (see [Hard drive on page 46](#)).
7. Remove the speakers (see [Speakers \(front\) on page 48](#)).

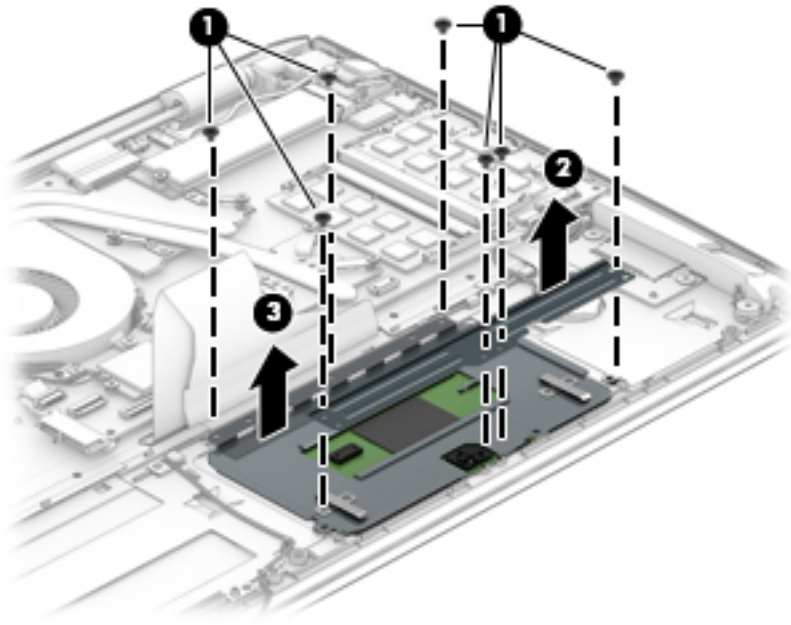
Remove the TouchPad:

1. Disconnect the TouchPad cable from the TouchPad **(1)**.
2. Remove the TouchPad **(2)** cable from the computer.



3. Remove the seven Phillips PM2.0×3.0 screws **(1)** that secure the TouchPad bracket to the computer.

4. Remove the TouchPad bracket **(2)**, and the remove the TouchPad **(3)**.



Reverse this procedure to install the TouchPad.

System board

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

All system boards use the following part numbers:


xxxxxx-001: Non-Windows operating systems

xxxxxx-601: Windows 8.1 or Windows 10 operating system

Description	Spare part number
Includes AMD FX-8800P processor for use in touch screen models	813021-xxx
Includes AMD FX-8800P processor for use in non-touch screen models	835049-xxx
Includes AMD A10-8700P processor for use in touch screen models	824209-xxx

Before removing the system 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 unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 28](#)).
5. Remove the battery (see [Battery on page 44](#)).
6. Remove the hard drive (see [Hard drive on page 46](#)).
7. Remove the front speakers (see [Speakers \(front\) on page 48](#)).
8. Remove the fan (see [Fan on page 36](#)).

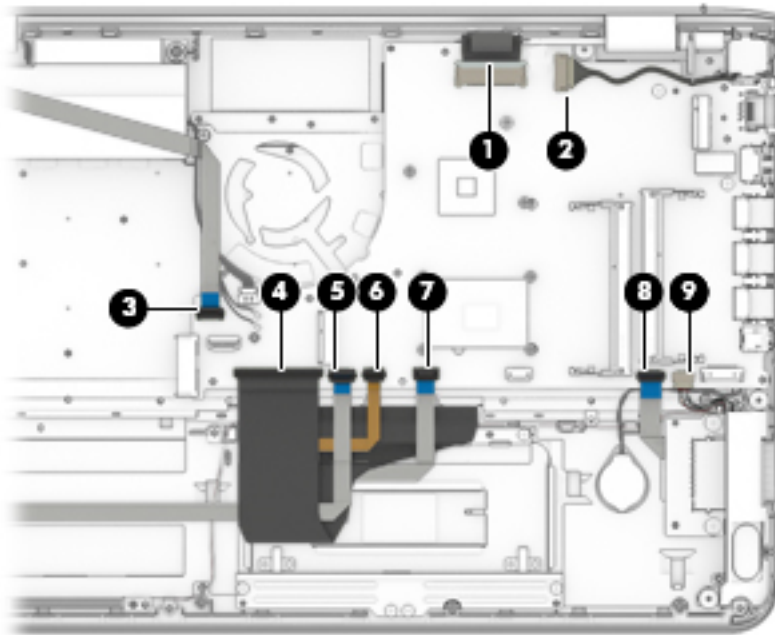
 **NOTE:** When replacing the system board, be sure that the following components are removed from the defective system board and installed on the replacement system board:

- Memory module (see [Memory module on page 32](#))
- Heat sink (see [Heat sink on page 42](#))
- Fan (see [Fan on page 36](#))
- WLAN module (see [WLAN module on page 30](#))

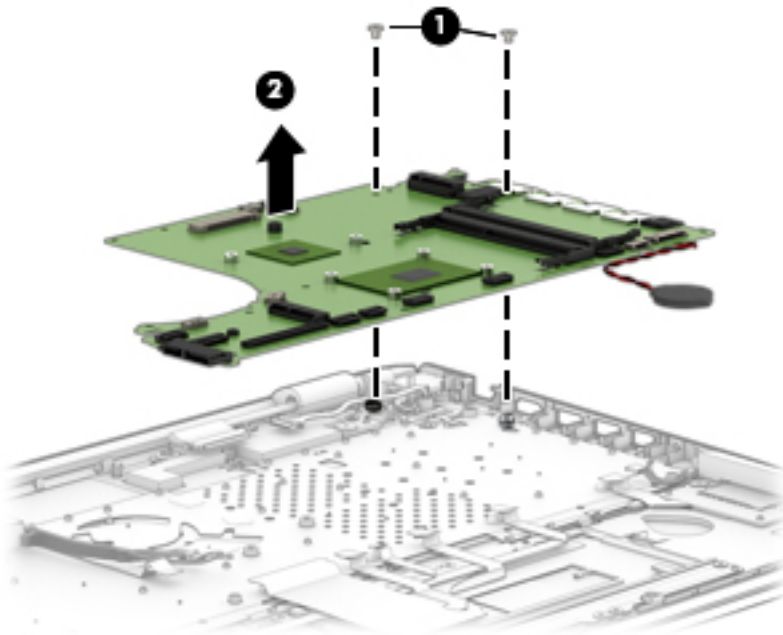
Remove the system board:

1. Disconnect the following cables from the system board:
 - (1) Display cable
 - (2) Power connector cable
 - (3) Subwoofer cable
 - (4) Keyboard cable
 - (5) LED board cable
 - (6) Keyboard backlight cable

- (7) Touchpad cable
- (8) Card reader cable
- (9) Speaker cable



- 2. Remove the two Phillips PM2.5×3.0 screws that secure the system board to the computer (1).
- 3. Remove the system board (2) from the computer.



Reverse this procedure to install the system board.

Display assembly – touch screen

To remove the display assembly and access the display assembly subcomponents, follow these steps:

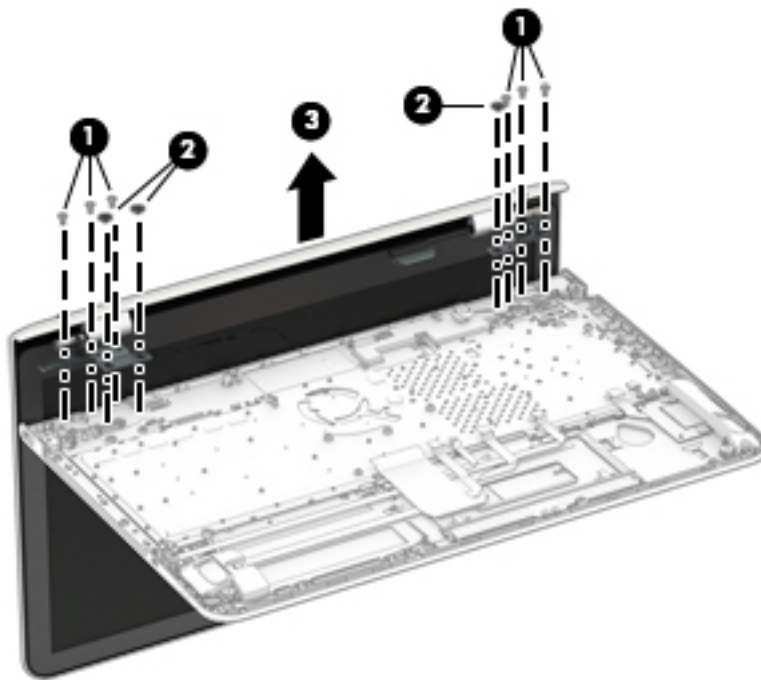
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 28](#)).
5. Remove the battery (see [Battery on page 44](#)).
6. Remove the hard drive (see [Hard drive on page 46](#)).
7. Remove the speakers (see [Speakers \(front\) on page 48](#)).
8. Remove the system board (see [System board on page 55](#)).

Remove the display assembly:

1. Open the computer and position the computer with the display hanging over the edge of a tablet.

CAUTION: Be sure to support the display as you remove the screws to avoid the display falling and sustaining damage.

2. Remove the six Phillips PM2.5×4.0 screws **(1)** (three on each hinge) that secure the display assembly to the computer.
3. Remove the three broadhead Phillips PM2.5×2.5 screws **(2)** (two on the right hinge, one of the left hinge) that secure the display assembly to the computer.
4. Separate the display from the computer **(3)**.



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

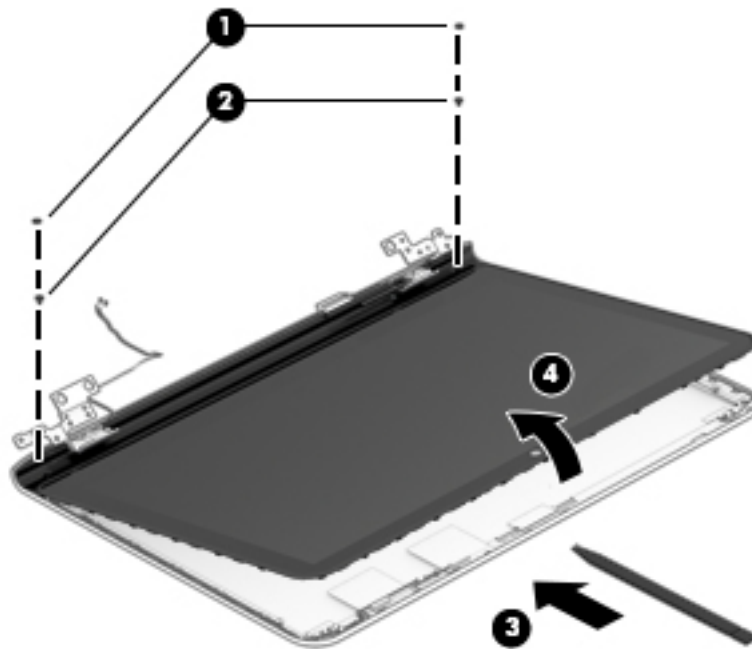
1. To remove the display rear cover:

The display hinge covers are available using spare part number 812699-001.

The display rear cover is available using spare part number 812671-001.

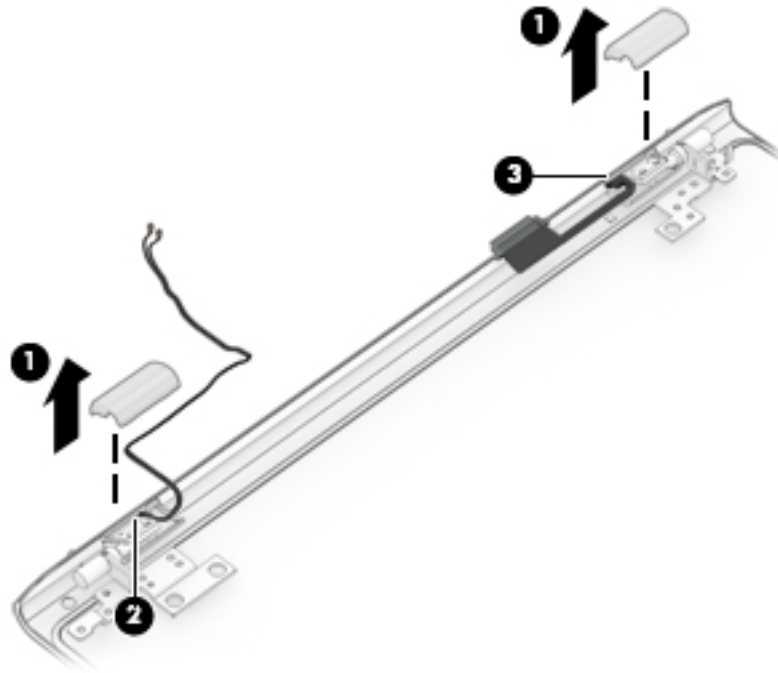
The display raw panel is available using spare part number 813016-001 for antiglare, touch panels, 828730-001 for antiglare, non-touch panels, and 812702-001 for BrightView, non-touch panels. The raw panel kit includes touch panel, touch board, bezel, rubber supports, display cable, webcam, and screws.

- a. Remove the two screw covers **(1)** and two Phillips PM2.5×3.5 screws **(2)** that secure the display rear cover to the display.
- b. Work a plastic tool around the seam to separate the display rear cover from the display **(3)**.
- c. Remove the display rear cover **(4)**.



- d. Rotate the hinges open as far as possible.
- e. Lift the display hinge covers off the display **(1)**.

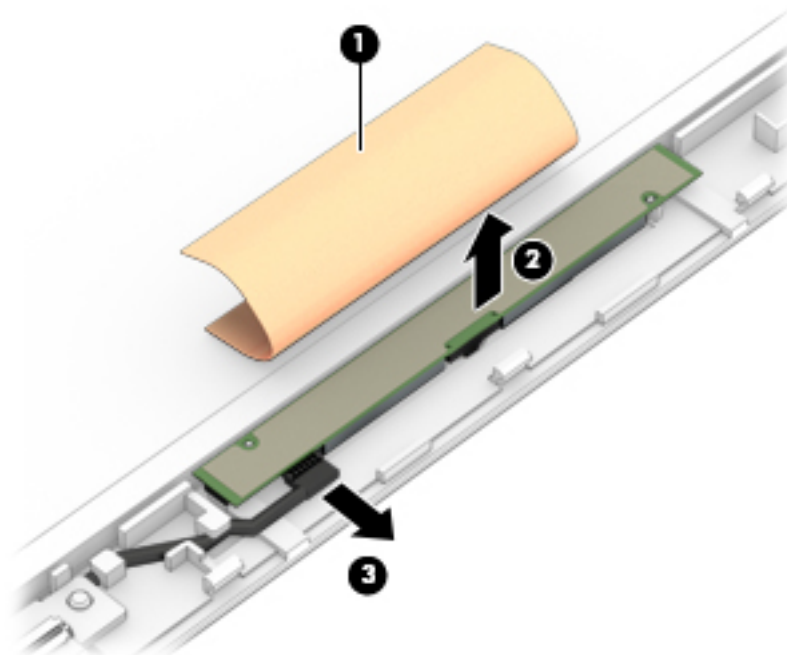
- f. Note the routing of the antenna cables (2) and display cable (3) for reassembly.



2. To remove the webcam/microphone module:

The webcam is available using spare part number 812715-001.

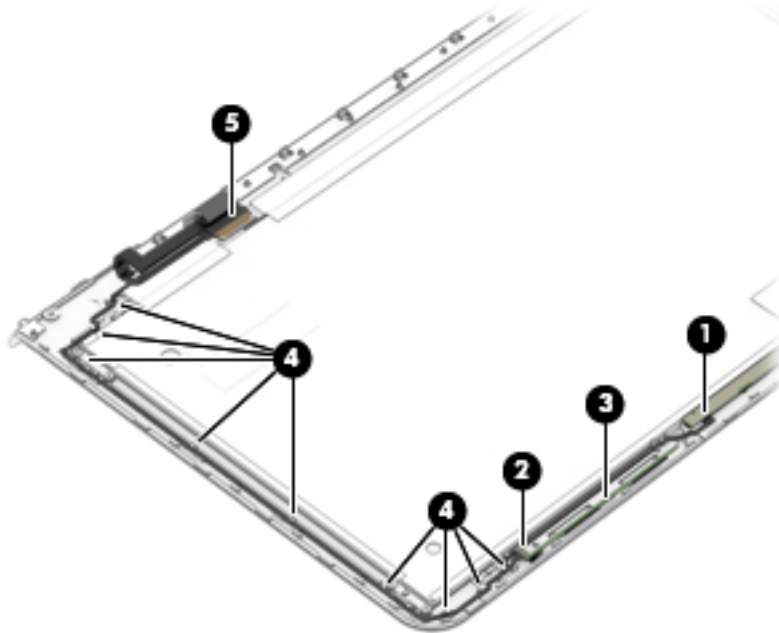
- a. Position the display assembly with the top edge toward you.
- b. Lift the tape from atop the webcam (1).
- c. Lift the webcam enough to access the connector (2).
- d. Disconnect the cable (3) from the webcam module.



3. To remove the display/webcam cable:

The display cable is available using spare part number 812676-001.

- a.** Disconnect the cable from the webcam module **(1)**.
- b.** Disconnect the cable **(2)** from the touch control board **(3)**.
- c.** Remove the cable from the clips **(4)** built into the side of the display.
- d.** Disconnect the cable from the bottom of the display panel **(5)**.

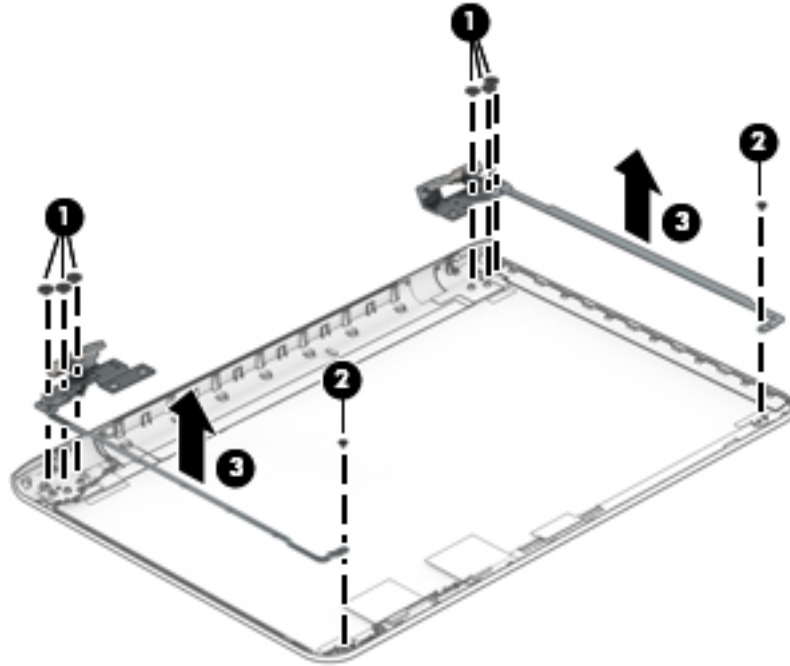


4. To remove the display hinges:

The display hinges are available using spare part number 812688-001.

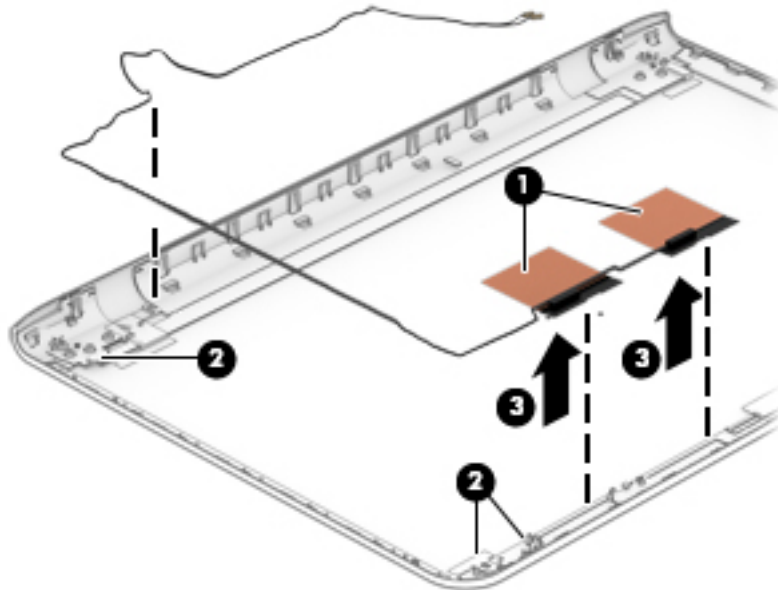
- a.** Remove the six Phillips PM2.5×2.0 screws **(1)** from the bottom of the hinges, and the two Phillips PM2.0×2.5 screws **(2)** from the top of the hinges that secure the display hinges to the display enclosure.

- b. Remove the display hinges (3).



5. To remove the wireless antenna cables and transceivers, peel the transceivers from the enclosure (1), release the wireless antenna cables from the clips or tape (2) that secure the cables to the display enclosure, and then remove the antenna cables and transceivers (3).

The antennas are available using spare part number 812669-001.



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

Reverse this procedure to install the display assembly.

Display assembly – touch screen

To remove the display assembly and access the display assembly subcomponents, follow these steps:

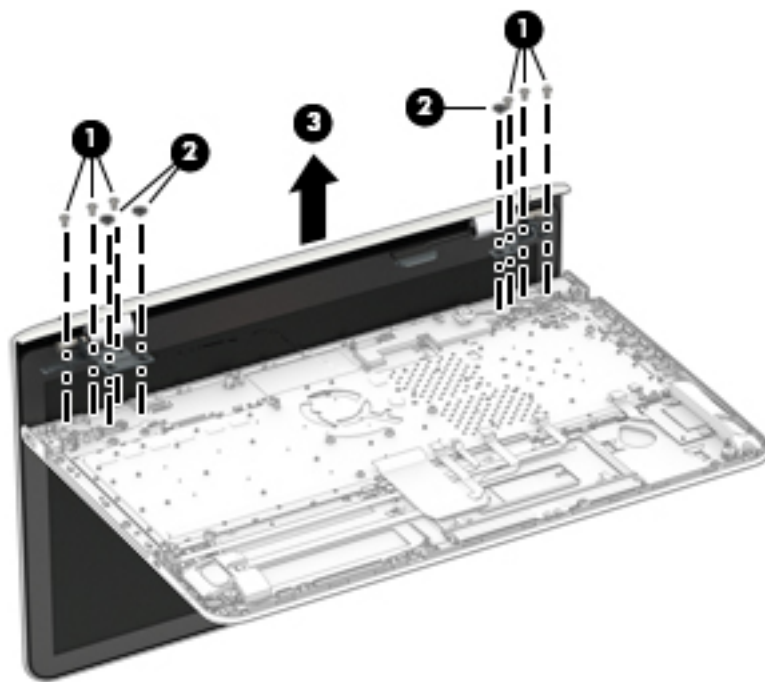
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 28](#)).
5. Remove the battery (see [Battery on page 44](#)).
6. Remove the hard drive (see [Hard drive on page 46](#)).
7. Remove the speakers (see [Speakers \(front\) on page 48](#)).
8. Remove the system board (see [System board on page 55](#)).

Remove the display assembly:

1. Open the computer and position the computer with the display hanging over the edge of a tablet.

⚠ CAUTION: Be sure to support the display as you remove the screws to avoid the display falling and sustaining damage.

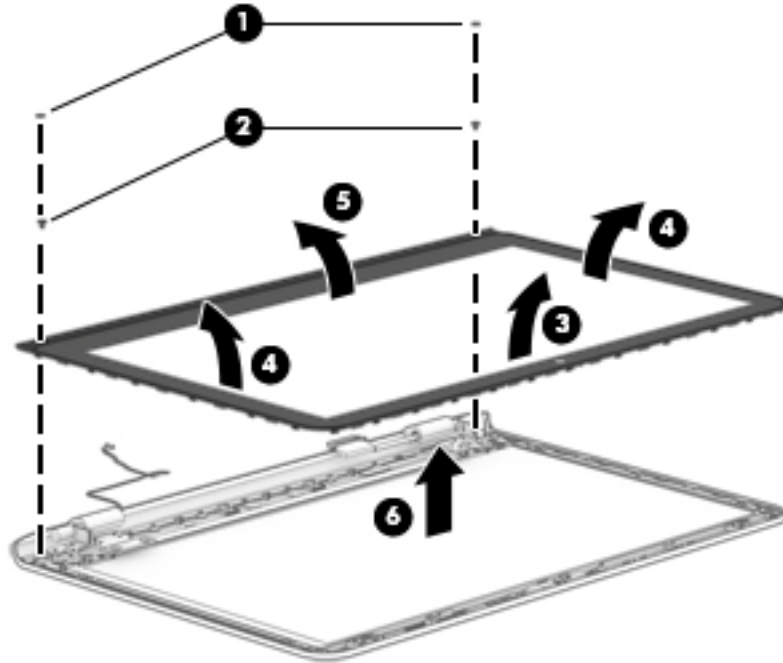
2. Remove the six Phillips PM2.5×4.0 screws **(1)** (three on each hinge) that secure the display assembly to the computer.
3. Remove the three broadhead Phillips PM2.5×2.5 screws **(2)** (two on the right hinge, one of the left hinge) that secure the display assembly to the computer.
4. Separate the display from the computer **(3)**.



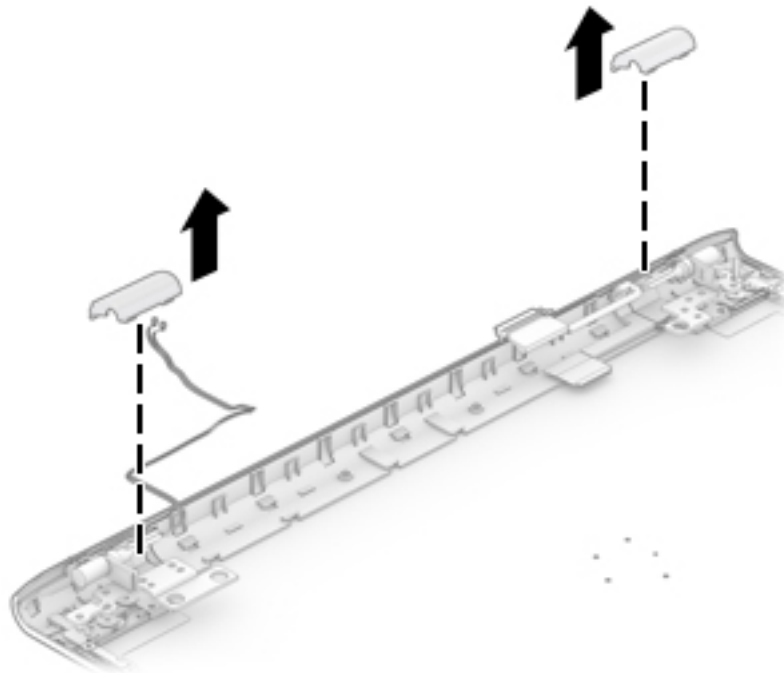
If it is necessary to replace any of the display assembly subcomponents:

1. To remove the display bezel:

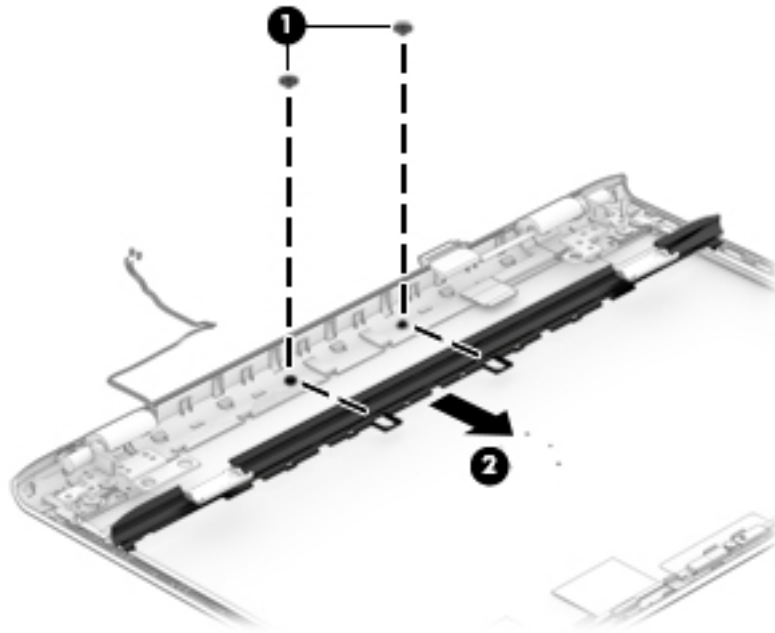
- a. Remove the two screw covers (1) and two Phillips PM2.0×3.0 screws (2) that secure the bezel to the display.
- b. Flex the inside of the top edge (3), the left and right edges (4), and the bottom edge (5) of the display bezel until the bezel disengages from the display enclosure.
- c. Remove the display bezel (6).



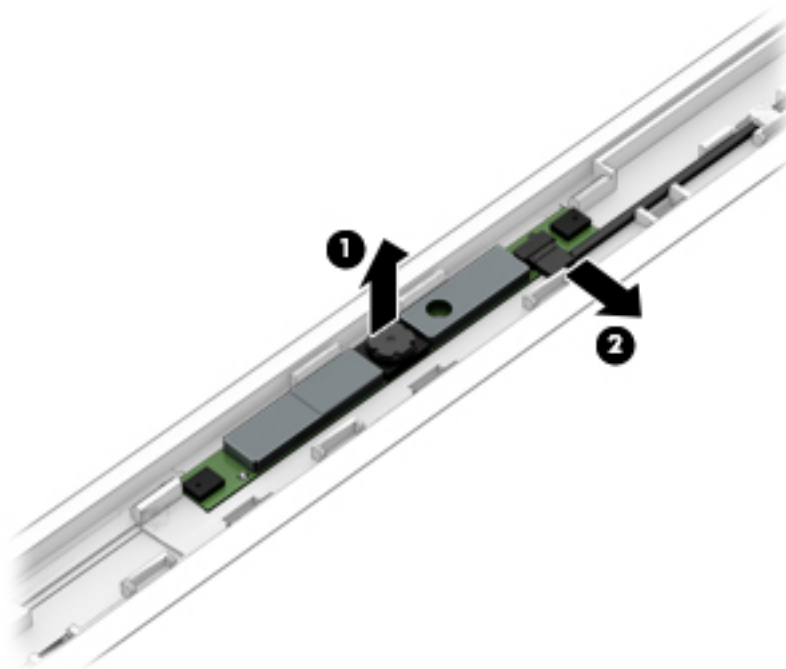
- d. Lift the hinge covers from the display.



- e. Remove the bezel trim by removing the two broadhead Phillips PM2.0×2.4 screws **(1)**, and then sliding the trim away from the bezel **(2)**.

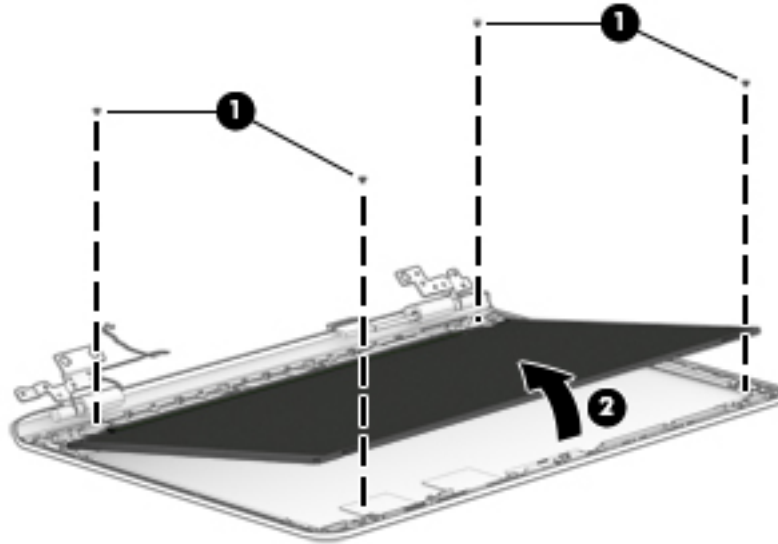


2. To remove the webcam/microphone module:
 - a. Position the display assembly with access to the top edge.
 - b. Lift the webcam/microphone module enough to gain access to the connector **(1)**. (The module is attached to the display enclosure with double-sided tape.)
 - c. Disconnect the cable **(2)** from the module.

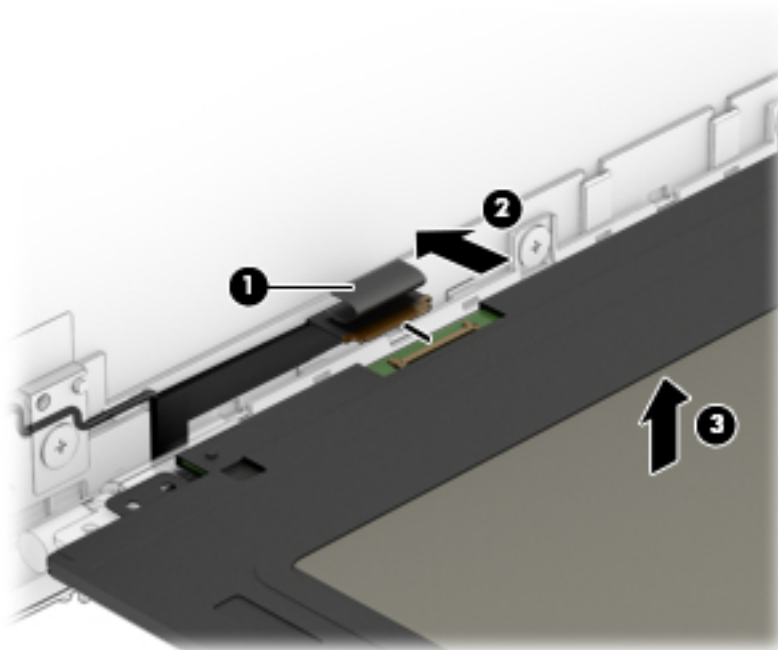


3. To remove the display panel:

- a.** Remove the four Phillips PM2.0×3.0 screws **(1)** that secure the display panel to the enclosure.
- b.** Rotate the display panel out of the enclosure **(2)** to gain access to the display cable connection on the back of the panel.

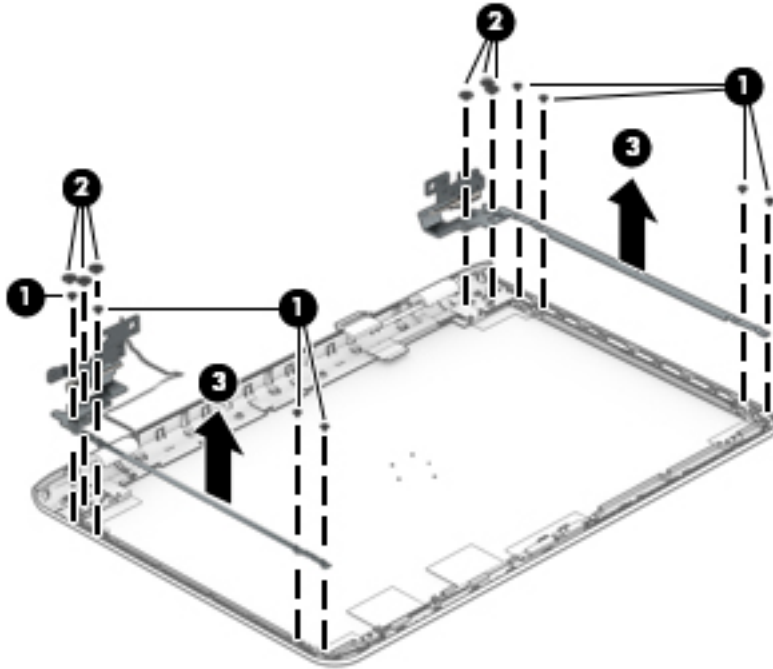


- c.** On the back of the display panel, release the adhesive strip **(1)** that secures the display panel cable to the display panel, and then disconnect the cable **(2)**.
- d.** Remove the display panel from the computer **(3)**.

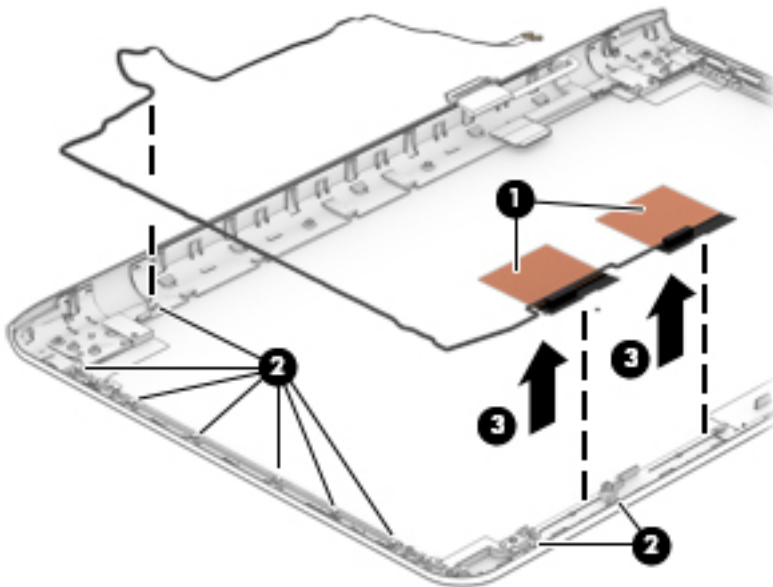


4. To remove the display hinges:

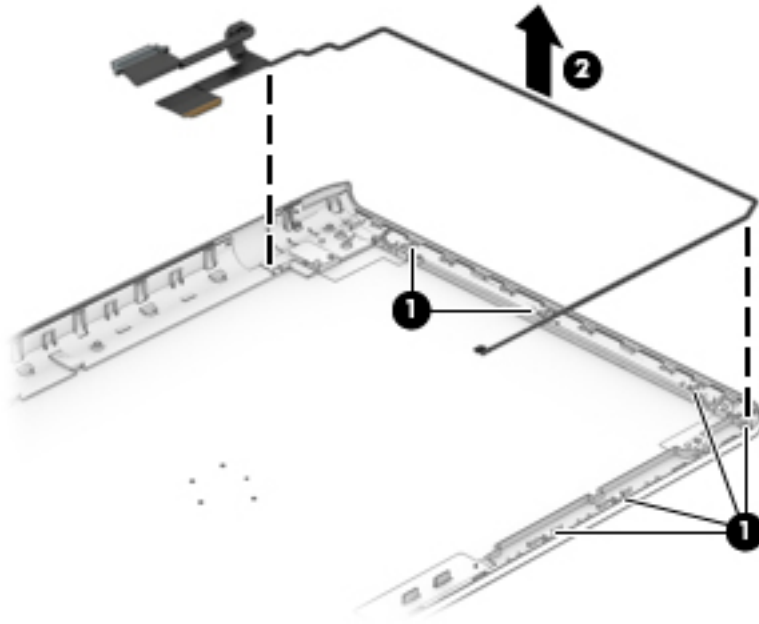
- a. Remove the eight Phillips PM2.5×3.5 screws **(1)** (four per hinge) that secure the hinges to the sides of the display enclosure.
- b. Remove the six broadhead Phillips PM2.0×3.0 screws **(2)** (three per hinge) that secure the hinges to the bottom of the display enclosure.
- c. Remove the display hinges **(3)**.



5. To remove the wireless antenna cables and transceivers, peel the transceivers from the top of the enclosure **(1)**, release the wireless antenna cables from the clips built into the display enclosure **(2)**, and then remove the cables and transceivers **(3)**.



6. To remove the display/webcam cable, remove the cable from the clips built into the display enclosure (1), and then remove the cable from the display enclosure (2).



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

Reverse this procedure to install the display assembly.

Power connector cable

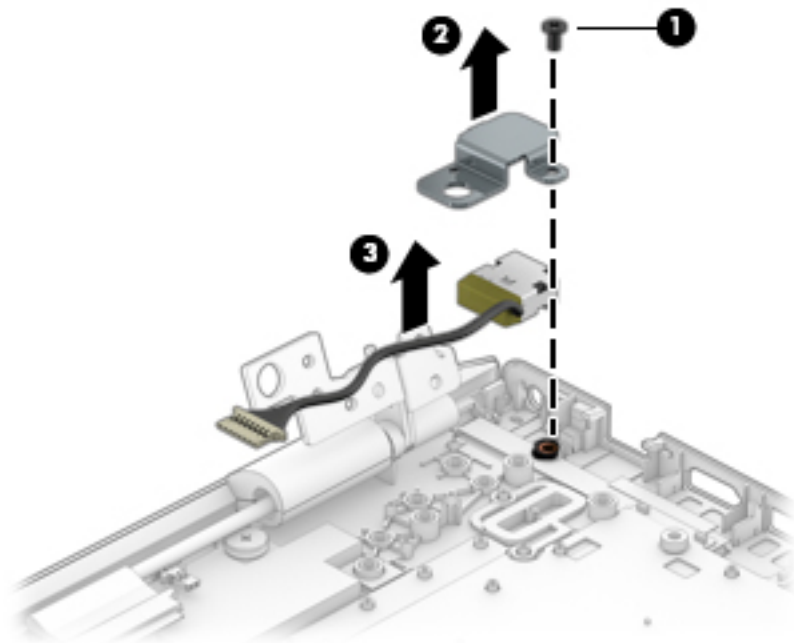
Description	Spare part number
Power connector cable (includes bracket)	812681-001

Before removing the power connector cable, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 28](#)).
5. Remove the battery (see [Battery on page 44](#)).
6. Remove the hard drive (see [Hard drive on page 46](#)).
7. Remove the speakers (see [Speakers \(front\) on page 48](#)).
8. Remove the system board (see [System board on page 55](#)).
9. Remove the display (see [Display assembly – touch screen on page 57](#)).

Remove the power connector cable:

1. Remove the Phillips PM2.5×4.0 screw **(1)** that secures the power connector bracket to the computer.
2. Lift the bracket from atop the power connector **(2)**.
3. Remove the power connector **(3)** from the computer.




Reverse this procedure to install the power connector cable.

6 Using Setup Utility (BIOS) in Windows 8.1

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.

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 the BIOS

Updated versions of the 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 determine whether available BIOS updates contain later BIOS versions than the one currently installed on the computer, you need to know the version of the system BIOS that is installed.


BIOS version information (also known as *ROM date* and *System BIOS*) can be revealed from the Start screen by typing [support](#), selecting the **HP Support Assistant** app, selecting **My computer**, and then selecting **System Information**, or by using Setup Utility (BIOS).

1. Start Setup Utility (BIOS) (see [Starting Setup Utility \(BIOS\) on page 69](#)).
2. Select **Main**, and then make note of your BIOS version.
3. Select **Exit**, select **Exit Discarding Changes**, and then follow the on-screen instructions.

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. From the Start screen, type `support`, and then select the **HP Support Assistant** app.

– or –

From the Windows desktop, click the question mark icon in the notification area, at the far right of the taskbar.

2. Click **Updates and tune-ups**, and then click **Check for HP updates now**.
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, 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.

If the update is more recent than your BIOS, 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. From the Start screen, type `file`, and then select **File Explorer**.

– or –

From the Windows desktop, right-click the **Start** button, 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 on your hard drive that contains the update.
4. Double-click the file that has an `.exe` extension (for example, `filename.exe`).

The BIOS installation begins.


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




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


7 Using Setup Utility (BIOS) in Windows 10

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. The on-screen keyboard, which displays in tablet mode, cannot access Setup Utility.

Starting Setup Utility (BIOS)

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

 **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. The on-screen keyboard, which displays in tablet mode, cannot access Setup Utility.

- Computers or tablets with keyboards:
 - ▲ Turn on or restart the computer, quickly press **esc**, and then press **f10**.
- Tablets without keyboards:
 1. Turn on or restart the tablet, and then quickly hold down the volume down button.
- or -
Turn on or restart the tablet, and then quickly hold down the Windows button.
 2. Tap **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*):

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**.

– or –


- ▲ Use Setup Utility (BIOS).

To use Setup Utility (BIOS):


1. Start Setup Utility (BIOS) (see [Starting Setup Utility \(BIOS\) on page 71](#)).
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 72](#).

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.

Synchronizing a tablet and keyboard (select products only)

For a tablet with a detachable keyboard, when you attach the tablet to the keyboard and restart the computer, Setup Utility (BIOS) checks to see if the Embedded Controller firmware on the keyboard needs to be synchronized. If so, synchronization begins. If the synchronization is interrupted, a notification screen displays for 10 seconds before the tablet restarts and attempts to synchronize again.



NOTE: The Embedded Controller firmware will synchronize **ONLY** if the tablet or keyboard battery is more than 50% charged, or if your tablet is connected to AC power.

8 Backing up, restoring, and recovering in Windows 8.1

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

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

For additional information, refer to the HP Support Assistant.

- ▲ From the Start screen, type `support`, and then select the **HP Support Assistant** app.

- or -


From the Windows desktop, click the question mark icon in the notification area, at the far right of the taskbar.

Creating recovery media and backups


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

- Use HP Recovery Manager after you successfully set up the computer to create HP Recovery media. 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 \(select models only\) on page 74](#). For information on the recovery options that are available using the recovery media, see [Recovering using HP Recovery Manager on page 76](#).
- Use Windows tools to create system restore points and create backups of personal information.

For more information, see [Using Windows tools on page 75](#).

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

Creating HP Recovery media (select models only)

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

HP Recovery Manager is a software program that allows you 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 the software programs 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, or you can obtain recovery discs for your computer from support. See the *Worldwide Telephone Numbers* booklet included with the computer. You can also find contact information from the HP website. Go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions. 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.
- 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, and the remaining discs will be burned.

To create HP Recovery media:

1. From the Start screen, type `recovery`, and then select **HP Recovery Manager**.
2. Select **Recovery Media Creation**, and then follow the on-screen instructions.

If you ever need to recover the system, see [Recovering using HP Recovery Manager on page 76](#).

Using Windows tools

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



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

- ▲ From the Start screen, type `help`, and then select **Help and Support**.

– or –

From the Windows desktop, click the question mark icon in the notification area, at the far right of the taskbar.

For more information and steps, see Help and Support.

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 models.

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

- ▲ From the Start screen, type `support`, and then select the **HP Support Assistant** app.

- or -

From the Windows desktop, click the question mark icon in the notification area, at the far right of the taskbar.

- If you need to correct a problem with a preinstalled application or driver, use the Drivers and Applications Reinstall option of HP Recovery Manager to reinstall the individual application or driver.
 - ▲ From the Start screen, type `recovery`, select **HP Recovery Manager**, select **Drivers and Applications Reinstall**, and then follow the on-screen instructions.
- On select models, if you want to reset your computer using a minimized image, you can choose the HP Minimized Image Recovery option from the HP Recovery partition or HP Recovery media. Minimized Image Recovery installs only drivers and hardware-enabling applications. Other applications included in the image continue to be available for installation through the Drivers and Applications Reinstall option in HP Recovery Manager.

For more information, see [Recovering using HP Recovery Manager on page 76](#).

- 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 models only) or use the HP Recovery media. For more information, see [Recovering using HP Recovery Manager on page 76](#). If you have not already created recovery media, see [Creating HP Recovery media \(select models only\) on page 74](#).
- On select models, 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 76](#).
- On select models, 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 \(select models only\) on page 78](#).

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 support, or by using the HP Recovery partition (select models only). If you have not already created recovery media, see [Creating HP Recovery media \(select models only\) on page 74](#).

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 \(select models only\) on page 74](#).
- To use the Factory Reset option (select models only), you must use HP Recovery media. If you have not already created recovery media, see [Creating HP Recovery media \(select models only\) on page 74](#).
- If your computer does not allow the creation of HP Recovery media or if the HP Recovery media does not work, you can obtain recovery media for your system from support. See the *Worldwide Telephone Numbers* booklet included with the computer. You can also find contact information from the HP

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

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

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

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

- System Recovery—Reinstalls the original operating system, and then configures the settings for the programs that were installed at the factory.
- Minimized Image Recovery (select models only)—Reinstalls the operating system and all hardware-related drivers and software, but not other software applications.
- 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 models only) allows System Recovery and Minimized Image Recovery (select models only).

Using the HP Recovery partition (select models only)

The HP Recovery partition allows you to perform a system recovery or minimized image recovery (select models only) 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:

1. From the Start screen, type `recovery`, select **HP Recovery Manager**, and then select **HP Recovery Environment**.
- or -
Press **f11** while the computer boots, or press and hold **f11** as you press the power button.
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 77](#).

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 for an optical drive or a USB flash drive.

To change the boot order:

1. Insert the HP Recovery media.
2. Start Computer Setup:
 - ▲ Turn on or restart the computer, quickly press `esc`, and then press `f9` for boot options.
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 models 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 can no longer use the Windows Refresh option or the Windows option to remove everything and reinstall Windows. In addition, you will not be able to perform System Recovery or Minimized Image Recovery from the HP Recovery partition. So before you remove the Recovery partition, create HP Recovery media; see [Creating HP Recovery media \(select models only\) on page 74](#).

Follow these steps to remove the HP Recovery partition:

1. From the Start screen, type `recovery`, and then select **HP Recovery Manager**.
2. Select **Remove Recovery Partition**, and then follow the on-screen instructions.

9 Backing up, restoring, and recovering in Windows 10

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 –

Click 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 keyboard to the keyboard dock 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 79](#). For information on the recovery options that are available using the recovery media, see [Using Windows tools on page 80](#).

- 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 81](#).

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

Creating HP Recovery media (select products only)

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

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

You can use Windows tools to create system restore points and create backups of personal information, see [Using Windows tools on page 80](#).

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

To create HP Recovery media:



IMPORTANT: For a tablet with a detachable keyboard, connect the keyboard to the keyboard dock 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 81](#).

Using Windows tools

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




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

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

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

Restore and recovery

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

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

- Windows offers several options for restoring from backup, refreshing the computer, and resetting the computer to its original state. For more information see the Get started app.
 - ▲ Select the **Start** button, and then select the **Get started** app.
- If you need to correct a problem with a preinstalled application or driver, use the Reinstall drivers and/or applications option (select products only) of HP Recovery Manager to reinstall the individual application or driver.
 - ▲ Type `recovery` in the taskbar search box, select **HP Recovery Manager**, select **Reinstall drivers and/or applications**, and then follow the on-screen instructions.
- If you want to recover the Windows partition to original factory content, you can choose the System Recovery option from the HP Recovery partition (select products only) or use the HP Recovery media. For more information, see [Recovering using HP Recovery Manager on page 81](#). If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 79](#).
- 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 81](#).
- 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 83](#).

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 79](#).


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 79](#).
- 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 79](#).
- If your computer does not allow the creation of HP Recovery media or if the HP Recovery media does not work, you can obtain recovery media for your system from support. See the *Worldwide Telephone Numbers* booklet included with the computer. You can also find contact information from the HP

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

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

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

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


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

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

Using the HP Recovery partition (select products only)

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

To start HP Recovery Manager from the HP Recovery partition:

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

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

- or -

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

For tablets without keyboards:

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

- or -


Turn on or restart the tablet, and then quickly hold down the Windows 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 83](#).

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 keyboard to the keyboard dock before beginning these steps.

1. Insert the HP Recovery media.
2. Access BIOS:

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 down button; then select **f9**.


- or -


Turn on or restart the tablet, and then quickly hold down the Windows 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 79](#).


 **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 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.

 **NOTE:** To start BIOS on a convertible computer, your computer must be in notebook mode and you must use the keyboard attached to your tablet. The on-screen keyboard, which displays in tablet mode, cannot access BIOS.


To start HP PC Hardware Diagnostics UEFI:

1. Start BIOS:
 - Computers or tablets with keyboards:
 - ▲ Turn on or restart the computer, quickly press **esc**.
 - Tablets without keyboards:
 - ▲ Turn on or restart the tablet, and then quickly hold down the volume down button.
 - or -
 - Turn on or restart the tablet, and then quickly hold down the Windows button.

2. Press or tap **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 85](#).

- 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. On a tablet, press the volume down button to stop a diagnostic test.

 **NOTE:** If you need to stop a diagnostic test on computers or tablets with a keyboard, press **esc**.

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

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, click the **Download** link, and then select **Run**.

Download any version of UEFI for a specific product:

1. Go to <http://www.hp.com/support>, and then select your country. The HP Support page is displayed.
2. Click **Drivers & Downloads**.
3. In the text box, enter the product name, and then click **Go**.

– or –

Click **Find Now** to let HP automatically detect your product.

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

11 Specifications

Computer specifications

	Metric	U.S.
Dimensions		
Width	384 mm	15.12 in
Depth	255 mm	10.04 in
Height (front)	21.6	0.85 in
Height (rear)	23.7 mm	0.93 in
Weight	2370 g	5.22 lbs
Input power		
Operating voltage and current	19.5 V dc @ 2.31 A – 45 W	
Temperature		
Operating	5°C to 35°C	41°F to 95°F
Nonoperating	-20°C to 60°C	-4°F to 140°F
Relative humidity (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	-15 m to 3,048 m	-50 ft to 10,000 ft
Nonoperating	-15 m to 12,192 m	-50 ft to 40,000 ft
NOTE: Applicable product safety standards specify thermal limits for plastic surfaces. The device operates well within this range of temperatures.		

39.6-cm (15.6-in) display specifications

	Metric	U.S.
Active diagonal size	39.6-cm	15.6-in
Resolution	1366x768 (HD)	
Surface treatment	AntiGlare	
Brightness	220 nits	
Viewing angle	SVA	
Backlight	WLED	
Graphics adapter	eDP	
Thickness	3.8 mm	

Hard drive specifications

	1-TB*	750-GB*
Dimensions		
Height	9.5 mm	9.5 mm
Length	100.4 mm	100.4 mm
Width	69.9 mm	69.9 mm
Weight	107.0 g	115.0 g
Interface type	SATA	SATA
Transfer rate		
Synchronous (maximum)	300 MB/sec	300 MB/sec
Security	ATA security	ATA security
Seek times (typical read, including setting)		
Single track	2.0 ms	1.5 ms
Average (read/write)	12 ms	11 ms
Maximum	22 ms	14 ms
Logical blocks	1,953,525,168	1,465,149,168
Disk rotational speed	5400 rpm	5400 rpm
Operating temperature		
*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less.		
NOTE: Certain restrictions and exclusions apply. Contact technical support for details.		

12 Power cord set requirements

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

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

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

Requirements for all countries

The following requirements are applicable to all countries and regions:

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

Requirements for specific countries and regions

Country/region	Accredited agency	Applicable note number
Australia	EANSW	1
Austria	OVE	1
Belgium	CEBC	1
Canada	CSA	2
Denmark	DEMKO	1
Finland	FIMKO	1
France	UTE	1
Germany	VDE	1
Italy	IMQ	1
Japan	METI	3
The Netherlands	KEMA	1
Norway	NEMKO	1
The People's Republic of China	COC	5
South Korea	EK	4

Country/region	Accredited agency	Applicable note number
Sweden	SEMKO	1
Switzerland	SEV	1
Taiwan	BSMI	4
The United Kingdom	BSI	1
The United States	UL	2

1. The flexible cord must be Type H05VV-F, 3-conductor, 1.0-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.
2. The flexible cord must be Type SPT-3 or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V) or NEMA 6-15P (15 A, 250 V) configuration.
3. The appliance coupler, flexible cord, and wall plug must bear a “T” mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCT or VCTF, 3-conductor, 1.00-mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V) configuration.
4. The flexible cord must be Type RVV, 3-conductor, 0.75-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.
5. The flexible cord must be Type VCTF, 3-conductor, 0.75-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.

13 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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