



HP Pavilion x360 Convertible 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 10. This computer may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows 10 functionality. See for <http://www.microsoft.com> details.

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

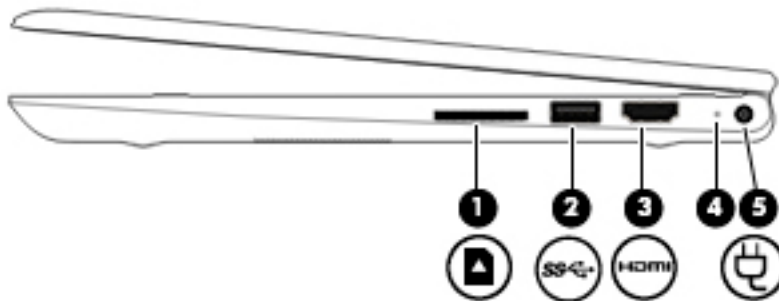
Category	Description				
Product Name	HP Pavilion x360 11 Convertible PC (model number: 11-ad1xx) HP Pavilion x360 11m Convertible PC (model number 11m-ad1xx)				
Processors	<ul style="list-style-type: none">• CPU Intel® Core™ i3-7100U 2.40 GHz dual core (3.0 GB L3 cache, 2133 MHz front side bus (FSB), 15 W)• CPU Intel Pentium™ 4200U 1.10 GHz (SC turbo up to 2.50 GHz) quad core (2.0 GB L2 cache, 1866 MHz FSB, 6 W)• CPU Intel Celeron™ N3350 1.10 GHz (SC turbo up to 2.40 GHz) dual core (2.0 GB L2 cache, 1866 MHz FSB, 6 W) <p>CPU Intel Pentium Silver N5000 quad core 1.1/2.7G BGA 4 MB L2 2400 MHz 6 W</p> <p>CPU Intel Core i3-8130U dual core 2.2/3.4 G BGA 4 MB L3 2400 MHz 15 W</p>				
Chipset	Integrated with soldered-on-circuit (SoC)				
Graphics	Internal graphics <ul style="list-style-type: none">• Intel HD Graphics 620 on computer models equipped with an Intel Core processor• Intel UHD Graphics 620 on computer models equipped with an Intel Core processor• Intel UHD Graphics 605 on computer models equipped with an Intel Core processor• Intel HD Graphics 505 on computer models equipped with an Intel Pentium processor• Intel HD Graphics 500 on computer models equipped with an Intel Celeron processor <p>Support for HD decode, DX12, and high-definition multimedia interface (HDMI)</p>				
Panel	11.6-in, high-definition (HD), white light-emitting (WLED), Antiglare (1366 x 7680), slim/flat (3.0 mm), UWVA, eDP, 220 nits, 16:9 ultra-wide aspect ratio TouchScreen display assembly	Multi-Touch enabled	Support for active stylus		
Memory	One SODIMM memory module slot, non-customer-accessible/non-upgradable	Support for up to 8 GB of system memory	DDR4-2400 single channel support (DDR4-2666 downgrade to DDR4-2400)	DDR3L-1600 single channel support	Supports the following configurations: 8192 MB (8192 MB × 1) or 4096 MB (4096 MB × 1)
Storage	Hard drives: <p>Support for 6.35 cm (2.5 in) hard drives in 7.2 mm and 7.0 mm (.28 in) thicknesses</p> <p>Support for Accelerometer hard drive protection</p> <ul style="list-style-type: none">• 1 TB, 5400 rpm, 7.2 mm and 500 GB, 5400 rpm, 7.0 mm• 1 TB, 5400 rpm, 7.2 mm with 8 GB NAND and 500 GB, 5400 rpm, 7.0 mm with 8 GB NAND solid-state hard drives M.2 SATA-3 solid-state drives: <ul style="list-style-type: none">• 128 GB 2280 M2 SATA-3 Triple-Level Cell (TLC)				




Category	Description
	<ul style="list-style-type: none"> • 128 GB 2280 M2 SATA-3 TLC SS
Optical drive	HP external DVD ± RW DL Super Multi-Drive
Audio and video	<p>Support for the following cameras:</p> <ul style="list-style-type: none"> • HP Wide Vision HD camera with indicator light, USB 2.0, HD BSI sensor, f2.0, WDR, 88° wide field of vision, 720p by 30 frames per second • Support for the following: <ul style="list-style-type: none"> – Dual-array, digital microphones with appropriate beam-forming, echo-cancelling, noise-suppressing software – B & O Play – Dual speakers – HP Audio Boost – Windows Hello (select products only)
Sensors	<ul style="list-style-type: none"> • Accelerometer • Gyroscope/E-compass/Accelerometer • Sensor hub
Wireless	<p>WLAN:</p> <p>Integrated wireless local area network (WLAN) options by way of wireless module</p> <p>Two M.2/PCIe WLAN antennas built into display assembly</p> <p>Integrated wireless personal area network (PAN) supported by Bluetooth® 4.2 combo card</p> <p>Support for the following:</p> <ul style="list-style-type: none"> • Intel Dual Band Wireless-AC 7265 802.11 AC 2 x 2 WiFi + Bluetooth 4.2 Combo Adapter (non-vPro) • Intel Dual Band Wireless-AC 3168 802.11 AC 1 x 1 + Bluetooth 4.2 Combo Adapter (non-vPro) • Intel Jefferson Peak1 9461 AC 1 x 1 MU-MIMO + Bluetooth 5 M.2 non-vPro MIPI+BRI WW, with 1 Antenna • Realtek Cartier RTL8822BE AC 2 x 2 MU-MIMO + Bluetooth 4.2 M.2 PCI-e WW, with 2 Antennas • Realtek Chopard RTL8821CE AC 1 x 1 MU-MIMO + Bluetooth 4.2 M.2 PCI-e WW, with 1 Antenna
External media cards	Micro-Secure Digital (SD®) media reader slot
Ports	<ul style="list-style-type: none"> • AC Smart Pin adapter plug • Audio-out (headphone)/audio-in (microphone) combo jack • HDMI v1.4 supporting up to 1920 x 1080 @ 60 Hz • USB 3.x ports (3) • Hot Plug / Unplug and auto-detect for correct output to wide-aspect vs standard aspect video (auto adjust panel resolution to fit embedded panel and external monitor connected)
Keyboard/pointing devices	<p>Full-sized, island-style keyboard</p> <p>TouchPad requirements:</p> <ul style="list-style-type: none"> • ClickPad with image sensor • Multi-Touch gestures enabled • Support for Modern TrackPad gestures

Category	Description
	<ul style="list-style-type: none"> Taps enabled as default
Power requirements	<p>Support for the following batteries:</p> <ul style="list-style-type: none"> Three cell, 37 WHr, 4.8 Ahr, Li-ion Two Cell WHr 37 Long Life -PR Fast Charge <p>Support for the following AC adapters:</p> <ul style="list-style-type: none"> 65 W HP Smart AC adapter (non-PFC, EM, RC, 4.5 mm) for use in all countries and regions 45 W HP Smart AC adapter (non-PFC, RC, 4.5 mm) for use in all countries and regions 45 W AC adapter (non-PFC, SB, 4.5 mm) for use only in Argentina
Power requirements <i>(continued)</i>	Support for a 1.00-m power cord with a C5 connector in 14 countries/regions.
Security	<p>Kensington mini-security slot</p> <p>Support for Trusted Platform Module (TPM) 2.0</p>
Operating system	<p>Preinstalled:</p> <p>Windows 10</p> <p>Windows 10 Professional</p> <p>For developed market (ML): Windows 10 Home ML</p> <p>For emerging market (EM/SL):</p> <ul style="list-style-type: none"> Windows 10 Home EM/SL CPPP Windows 10 Home High-End China Language Edition CPPP Windows 10 Home China Language Edition SEAP Windows 10 Home Single Language Edition
Serviceability	End user replaceable part: AC adapter

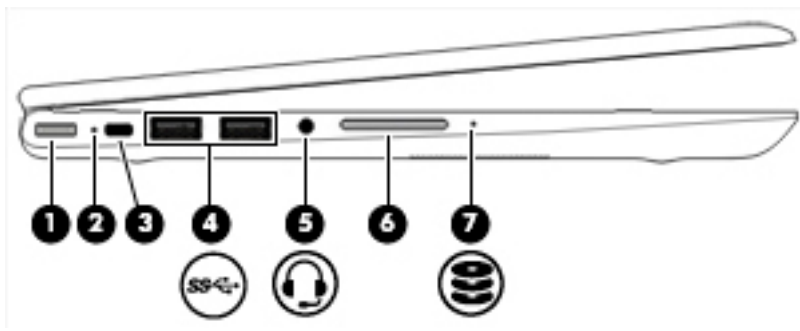
2 External component identification





Right side





Component	Description
(1)  MicroSD memory card reader	<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.
(2)  USB SuperSpeed port	Connects a USB device, such as a cell phone, camera, activity tracker, or smartwatch, and provides high-speed data transfer.
(3)  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.
(4) 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.
(5) Power connector	Connects an AC adapter.

Left side



Component	Description
(1) Power button	<ul style="list-style-type: none"> When the computer is off, press the button to turn on the computer. When the computer is on, press the button briefly to initiate Sleep. When the computer is in the Sleep state, press the button briefly to exit Sleep. When the computer is in Hibernation, press the button briefly to exit Hibernation.
(2) Power light	<p>CAUTION: Pressing and holding down the power button results in the loss of unsaved information.</p> <p>If the computer has stopped responding and shutdown procedures are ineffective, press and hold the power button down for at least 5 seconds to turn off the computer.</p> <p>To learn more about your power settings, see your power options:</p> <ul style="list-style-type: none"> ▲ Right-click the Power icon , and then select Power Options.
(3)  Security cable slot	<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. <p>Attaches an optional security cable to the computer.</p> <p>NOTE: The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.</p>
(4)  USB SuperSpeed ports	<p>Connects a USB device, such as a cell phone, camera, activity tracker, or smartwatch, and provides high-speed data transfer.</p>
(5)  Audio-out (headphone)/Audio-in (microphone) combo jack	<p>Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio</p>

Component	Description
	<p>cable. Also connects an optional headset microphone. This jack does not support optional standalone microphones.</p> <p>WARNING! To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, refer to the <i>Regulatory, Safety, and Environmental Notices</i>.</p> <p>To access this guide:</p> <ul style="list-style-type: none"> ▲ Select the Start button, select HP Help and Support, and then select HP Documentation. <p>NOTE: When a device is connected to the jack, the computer speakers are disabled.</p>
<p>(6) </p>	<p>Volume button</p> <p>Controls speaker volume on the computer.</p>
<p>(7) </p>	<p>Drive light</p> <ul style="list-style-type: none"> • Blinking white: The hard drive is being accessed. • Amber: HP 3D DriveGuard (if equipped) has temporarily parked the hard drive.

Display



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

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

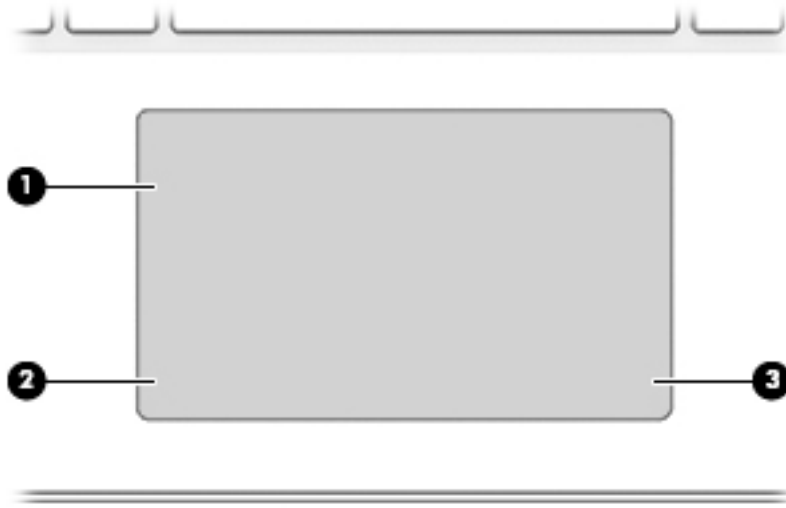
For wireless regulatory notices, see the section of the *Regulatory, Safety, and Environmental Notices* that applies to your country or region.

To access this guide:

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**, select the **Specifications** tab, and then select **User Guides**.

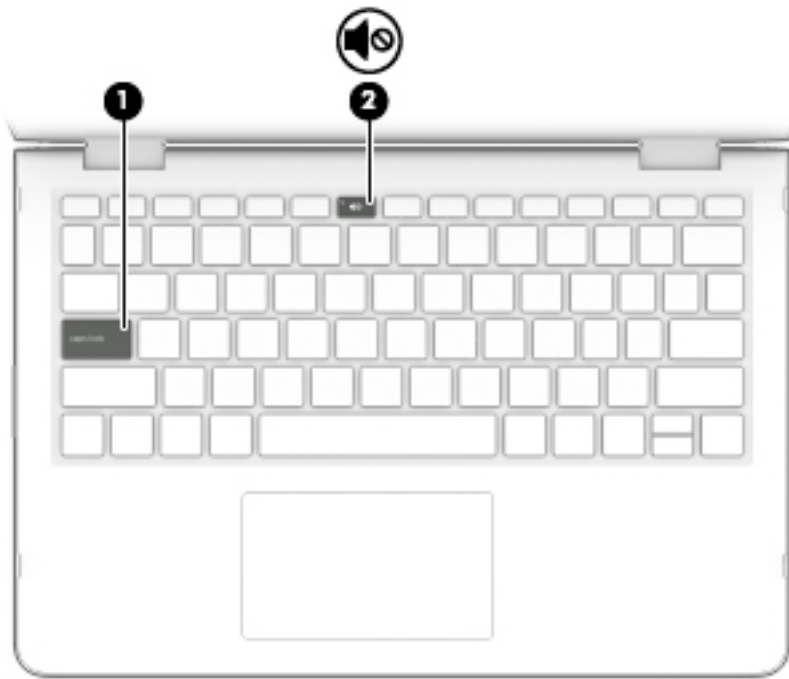
Keyboard area


TouchPad



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

Lights



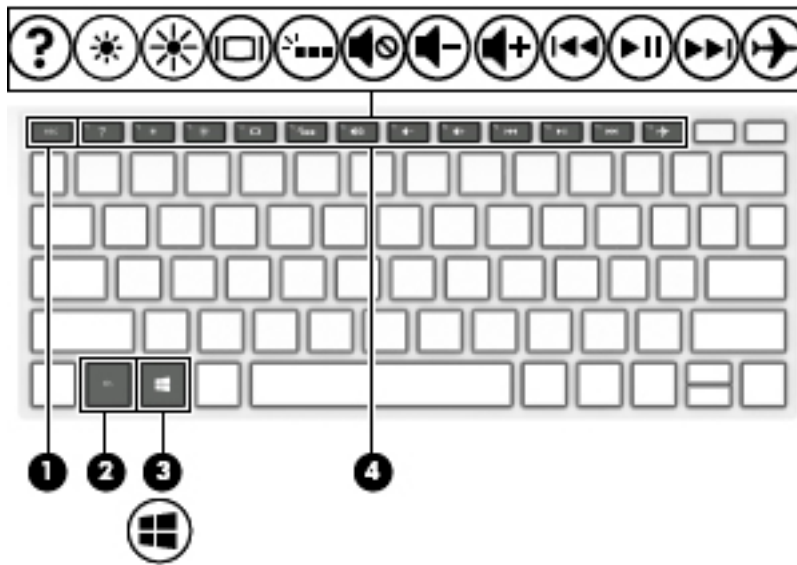
Component	Description
(1) Caps lock light	On: Caps lock is on, which switches the key input to all capital letters.
(2)  Mute light	<ul style="list-style-type: none">• On: Computer sound is off.• Off: Computer sound is on.


Speakers



Component	Description
Speakers	Produce sound.

Special keys


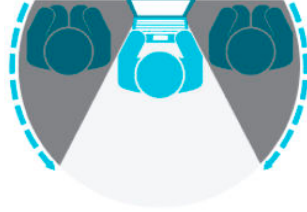















Component	Description
(1) esc key	Displays system information when pressed in combination with the fn key.
(2) fn key	Executes specific functions when pressed in combination with another key.
(3)  Windows key	Opens the Start menu. NOTE: Pressing the Windows key again will close the Start menu.
(4) Action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

Action keys

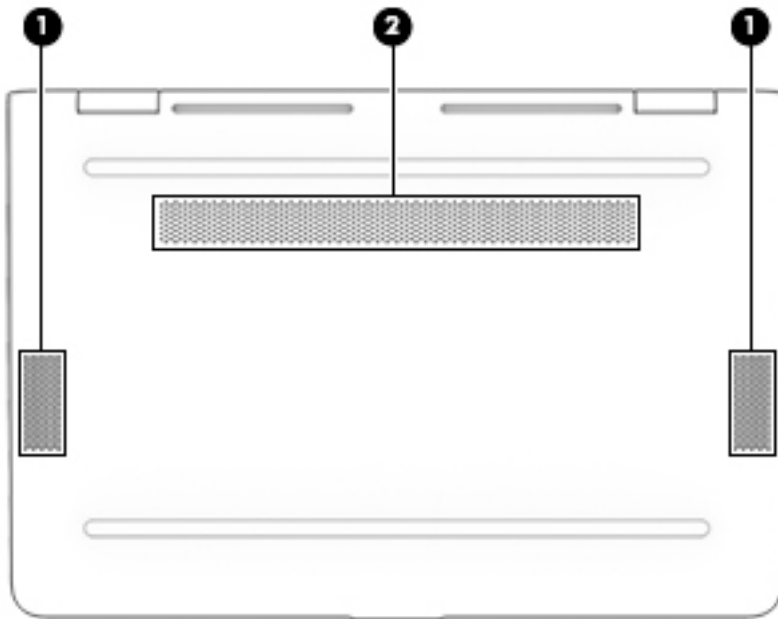
An action key performs the function indicated by the icon on the key. To determine which keys are on your product, see [Special keys on page 11](#).

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

Icon	Description
	Helps prevent side-angle viewing from onlookers. If needed, decrease or increase brightness for well-lit or darker environments. Press the key again to turn off the privacy screen. 
	Decreases the screen brightness incrementally as long as you hold down the key.
	Increases the screen brightness incrementally as long as you hold down the key.
	Opens the "How to get help in Windows 10" webpage.
	Switches the screen image between display devices connected to the system. For example, if a monitor is connected to the computer, repeatedly pressing this key alternates the screen image from the computer display to the monitor display to a simultaneous display on both the computer and the monitor.
	Turns the keyboard backlight off or on. NOTE: To conserve battery power, turn off this feature.
	Plays the previous track of an audio CD or the previous section of a DVD or a Blu-ray Disc (BD).
	Starts, pauses, or resumes playback of an audio CD, a DVD, or a BD.
	Plays the next track of an audio CD or the next section of a DVD or a BD.
	Stops audio or video playback of a CD, a DVD, or a BD.
	Decreases speaker volume incrementally while you hold down the key.
	Increases speaker volume incrementally while you hold down the key.

Icon	Description
	Mutes or restores speaker sound.
	Turns the airplane mode and wireless feature on or off. NOTE: The airplane mode key is also referred to as the wireless button. NOTE: A wireless network must be set up before a wireless connection is possible.

Bottom

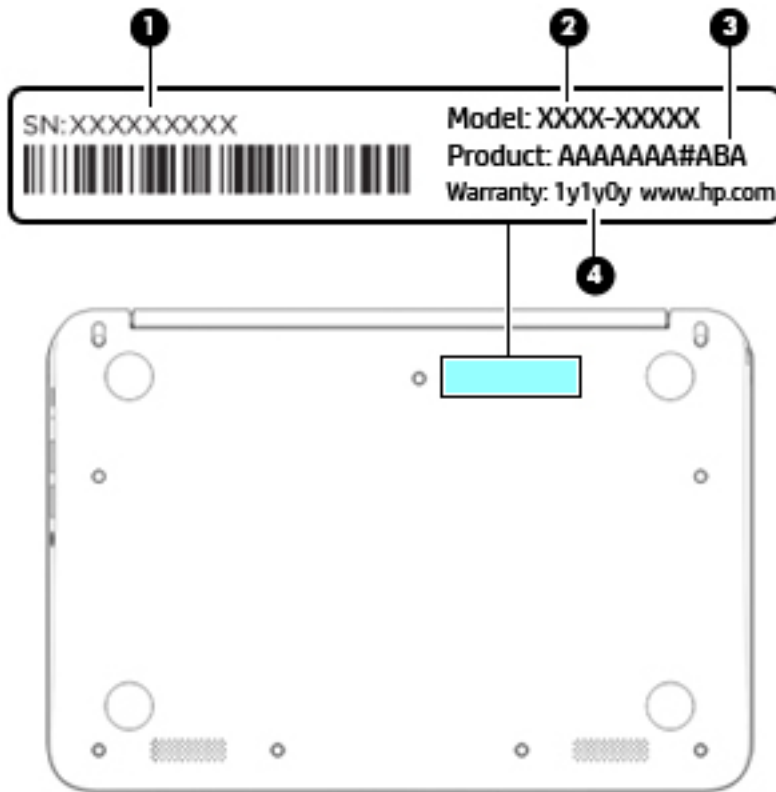


Component	Description
(1)	Speakers Produce sound.
(2)	Vent Enable airflow to cool internal components. NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.

Labels


Important system information is located on the bottom edge of the tablet or on the keyboard base. You may need the information when travelling internationally or when you contact support:

- (1): Serial number
- (2): Product number
- (3): Model number
- (4): Warranty period

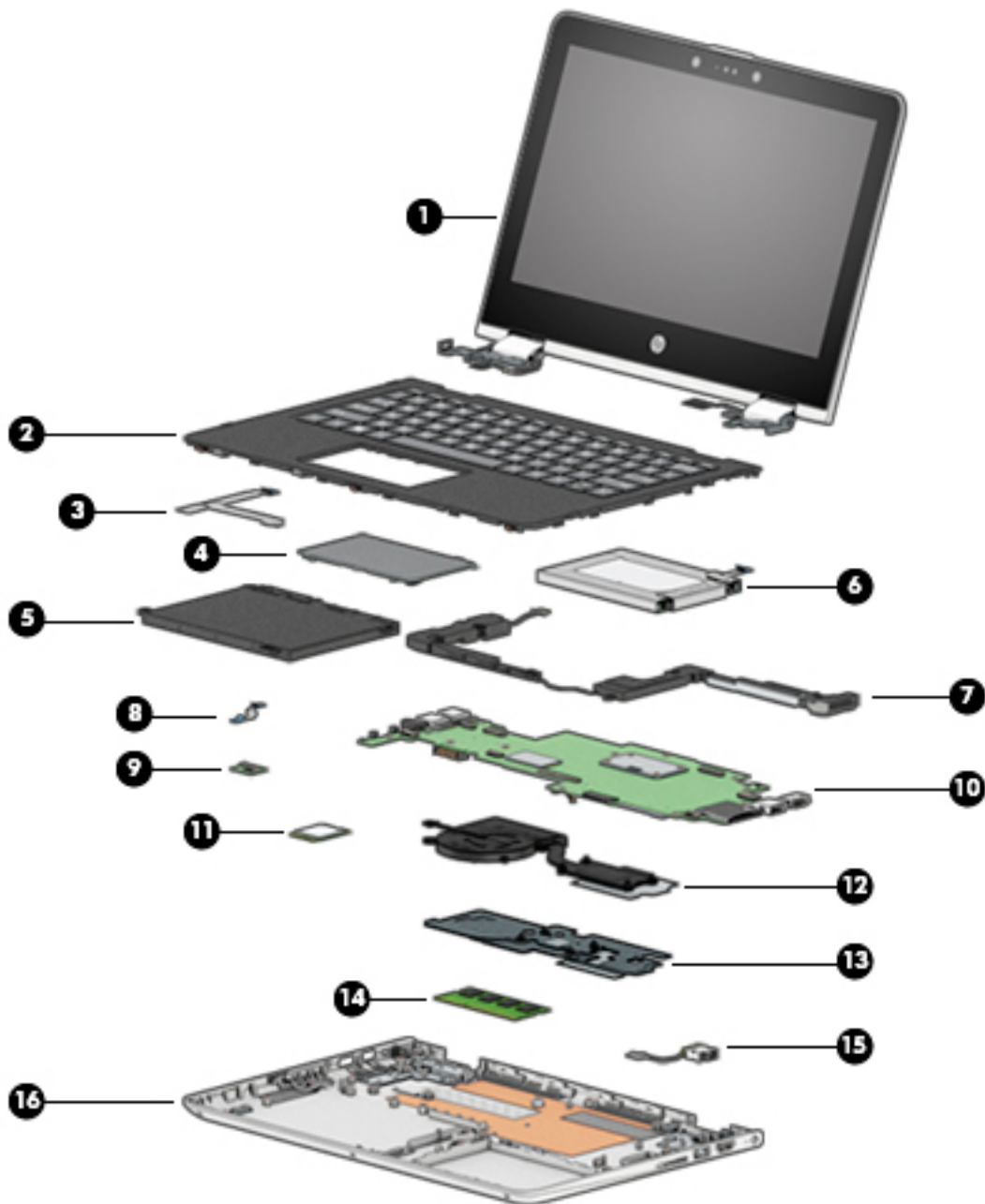


Using Windows, briefly press the [fn+esc](#) key combination to display the System Information screen, which provides the product name and serial number of your computer, as well as information about the memory, processor, BIOS, and keyboard.

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

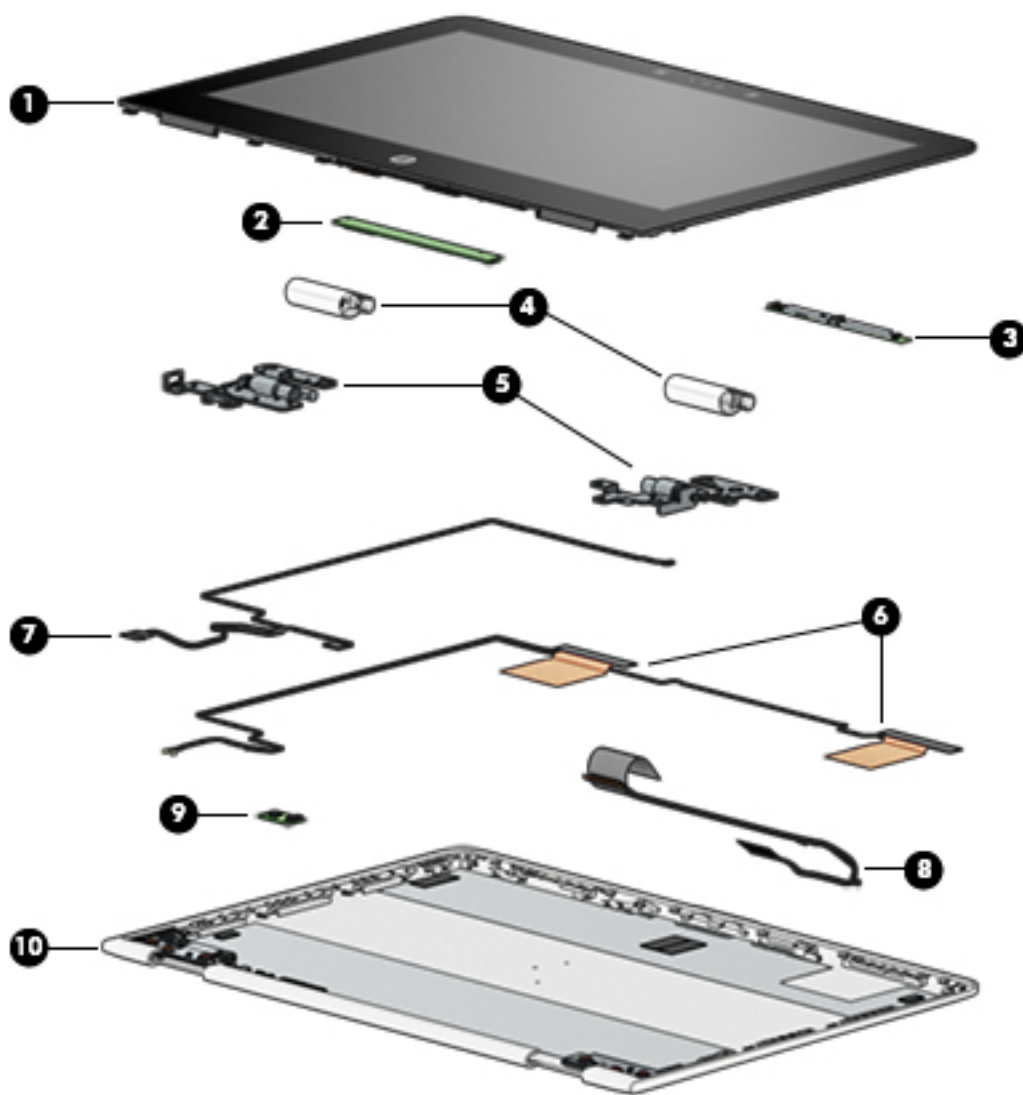


Item	Component	Spare part number
(1)	Display assembly: The display assembly is spared at the subcomponent level only. For more display assembly spare part information, see Display assembly subcomponents on page 19	
(2)	Keyboard/top cover (includes keyboard cable):	
	For use in Belgium	924428-A41
	For use in Bulgaria	924428-261
	For use in Canada	924428-DB1
	For use in the Czech Republic and Slovakia	924428-FL1
	For use in Denmark, Finland, and Norway	924428-DH1
	For use in France	924428-051
	For use in Germany	924428-041
	For use in Greece	924428-151
	For use in Hungary	924428-211
	For use in Israel	924428-BB1
	For use in Italy	924428-061
	For use in Latin America	924428-161
	For use in the Netherlands	924428-B31
	For use in Portugal	924428-131
	For use in Romania	924428-271
	For use in Russia	924428-251
	For use in Saudi Arabia	924428-171
	For use in Slovenia	924428-BA1
	For use in Spain	924428-071
	For use in Switzerland	924428-BG1
	For use in Taiwan	924428-AB1
	For use in Thailand	924428-281
	For use in Turkey	924428-141
	For use in the United Kingdom	924428-031
	For use in the United States	924428-001
(3)	TouchPad bracket	924420-001
(4)	TouchPad	924430-001
	TouchPad cable (not illustrated) (includes double-sided adhesive):	
	For use only on computer models equipped with an Intel Pentium or Intel Celeron processor	924415-001
	For use only on computer models equipped with an Intel Core processor	924412-001
(5)	Battery (3-cell, 37 WHr, 4.8-AHr, Li-ion)	916809-855

Item	Component	Spare part number
(6)	Hard drive (does not include the hard drive rubber sleeve or the hard drive gasket):	
	1 TB, 5400 rpm, SATA, with 8 GB hybrid solid-state hard drive	924036-857
	1 TB, 5400 rpm, SATA hard drive	762888-857
	500 GB, 5400 rpm, SATA, with 8 GB hybrid solid-state hard drive	731863-856
	500 GB, 5400 rpm, SATA hard drive	683839-857
	NOTE: The hard drive spare part kit does not include the hard drive rubber sleeve or the hard drive gasket. The hard drive rubber sleeve is available using spare part number 924419-001. The hard drive gasket is available using spare part number 928898-001.	
	128 GB solid-state drive (M.2 SATA) (not illustrated)	923683-001
	NOTE: The solid-state drive spare part kit does not include the solid-state drive bracket, solid-state drive rubber sleeve, or solid-state drive sponge. These components are available using the following spare part numbers:	
	<ul style="list-style-type: none"> 924422-001 – Solid-state drive bracket 924423-001 – Solid-state drive rubber sleeve 928902-001 – Solid-state drive sponge 	
(7)	Speakers (include cables and 4 rubber isolators)	924437-001
(8)	Power button board cable (includes double-sided adhesive)	924411-001
(9)	Power button board (does not include power button board cable)	924431-001
(10)	System board (includes processor, graphics subsystem with UMA memory, and replacement thermal material):	
	Equipped with an Intel Core i3-7100U 2.40 GHz dual core processor (2133 MHz FSB, 3.0 GB L3 cache, 15 W) and the Windows 10 operating system	923810-601
	Equipped with an Intel Core i3-7100U 2.40 GHz dual core processor (2133 MHz FSB, 3.0 GB L3 cache, 15 W) and a non-Windows operating system	923810-001
	Equipped with an Intel Pentium 4200U 1.10 GHz (SC turbo up to 2.50 GHz) quad core processor (2.0 GB L2 cache, 1866 MHz FSB, 6 W) and the Windows 10 operating system	923811-601
	Equipped with an Intel Pentium 4200U 1.10 GHz (SC turbo up to 2.50 GHz) quad core processor (2.0 GB L2 cache, 1866 MHz FSB, 6 W) and a non-Windows operating system	923811-001
	Equipped with an Intel Celeron N3350 1.10 GHz (SC turbo up to 2.40 GHz) dual core processor (2.0 GB L2 cache, 1866 MHz FSB, 6 W) and the Windows 10 operating system	923809-601
	Equipped with an Intel Celeron N3350 1.10 GHz (SC turbo up to 2.40 GHz) dual core processor (2.0 GB L2 cache, 1866 MHz FSB, 6 W) and a non-Windows operating system	923809-001
(11)	WLAN module:	
	Intel Dual Band Wireless-AC 7265 802.11 AC 2×2 WiFi + Bluetooth 4.2 Combo Adapter (non-vPro)	901229-855
	Intel Dual Band Wireless-AC 3168 802.11 AC 1×1 WiFi + Bluetooth 4.2 Combo Adapter (non-vPro)	863934-855
	Heat sink (includes replacement thermal material):	
(12)	Heat sink for use only on computer models equipped with an Intel Core processor	924417-001
(13)	Heat sink for use only on computer models equipped with an Intel Pentium or Intel Celeron processor	924418-001

Item	Component	Spare part number
	Mylar Kit for use only on heat sinks designed for computer models equipped with an Intel Pentium or Intel Celeron processor	928901-001
(14)	Memory modules (2, does not include memory module shield):	
	8 MB (DDR4-2400, 1.2-v)	862398-855
	4 MB (DDR4-2400, 1.2-v)	862397-855
	8 MB (PC3L-1200, 1600)	693374-005
	4 MB (PC3L-1200, 1600)	691740-005
	Memory module shield: (not illustrated)	
	For use only on computer models equipped with an Intel Pentium or Intel Celeron processor	929557-001
	For use only on computer models equipped with an Intel Core processor	925196-001
(15)	Power connector cable (does not include power connector cable bracket)	808155-018
	Power connector cable bracket (not illustrated)	924421-001
(16)	Base enclosure:	
	In pike silver finish	924409-001
	In shimmer mint finish	924410-001
	Rubber Foot Kit (not illustrated, includes rear rubber feet):	
	In pike silver finish	925200-001
	In shimmer mint finish	925377-001

Display assembly subcomponents



Item	Component	Spare part number
(1)	Display panel assembly: 11.6-in, HD, WLED, AntiGlare (1366×768), slim/flat (3.0 mm), UWVA, eDP, 220 nits, 16:9 ultra wide aspect ratio TouchScreen equipped with an HD non-infrared camera	925388-001
(2)	TouchScreen board (includes double-sided adhesive)	928537-001
(3)	Webcam/microphone module (includes Mylar and double-sided adhesive): HD non-infrared webcam/microphone module	923693-001
(4)	Hinge covers (2): Left hinge cover	924427-001
	Right hinge cover	924426-001
(5)	Hinges (two, include left and right display hinges):	925201-001

Item	Component	Spare part number
(6)	WLAN antenna (includes left and right WLAN cables and transceivers)	924363-001
(7)	Webcam/microphone module cable (includes TouchScreen board cable and double-sided adhesive):	
	For use only on computer models equipped with an Intel Pentium or Intel Celeron processor	924416-001
	For use only on computer models equipped with an Intel Core processor	924413-001
(8)	Display panel cable (includes G-sensor board cable and double-sided adhesive):	
	For use only on computer models equipped with an Intel Pentium or Intel Celeron processor	928899-001
	For use only on computer models equipped with an Intel Core processor	924414-001
(9)	G-sensor board (includes double-sided adhesive)	924432-001
(10)	Display back cover (includes rubber padding and shielding):	
	In pike silver finish	924407-001
	In shimmer mint finish	924408-001

Miscellaneous parts

Component	Spare part number
AC adapter:	
65 W HP Smart AC adapter (non-PFC, EM, RC, 4.5 mm) for use in all countries and regions	913691-850
45 W HP Smart AC adapter (non-PFC, RC, 4.5 mm) for use in all countries and regions	741553-850
45 W AC adapter (non-PFC, SB, 4.5 mm) for use only in Argentina	741553-852
HP HDMI-to-VGA adapter	701943-001
HP external DVD±RW DL SuperMulti Drive	747080-001
HP USB-to-Gigabit RJ45 adapter	829941-001
Power cord (C5 connector, 1.00 mm):	
For use in Argentina	920688-003
For use in Australia	920688-011
For use in Denmark	920688-007
For use in Europe	920688-005
For use in India	920688-016
For use in Israel	920688-008
For use in Italy	920688-002
For use in North America	920688-001
For use in the People's Republic of China	920688-014
For use in South Africa	920688-010
For use in Switzerland	920688-009
For use in Taiwan	920688-015
For use in Thailand	920688-012
For use in the United Kingdom and Singapore	920688-006
Rubber Foot Kit (includes bottom cover rear feet):	
In pike silver finish	925200-001
In shimmer mint finish	925377-001
Screw Kit	924436-001
Stylus (active pen in Pike silver finish)	910942-001

4 Removal and replacement 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 screw driver

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 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 drive, place it in a static-proof bag.

Avoid exposing a 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 computerop 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


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

CAUTION: This computer does not have user-replaceable parts. Only HP authorized service providers should perform the removal and replacement procedures described here. Accessing the internal part could damage the computer or void the warranty.

Component replacement procedures

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

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

There are as many as 85 screws that must be removed, replaced, and/or loosened when servicing Authorized Service Provider only parts. Make special note of each screw size and location during removal and replacement.

Keyboard/top cover

For use in country/region	Spare part number	For use in country/region	Spare part number
Keyboard/top cover (includes keyboard cable):		For use in the Netherlands	924428-B31
For use in Belgium	924428-A41	For use in Portugal	924428-131
For use in Bulgaria	924428-261	For use in Romania	924428-271
For use in Canada	924428-DB1	For use in Russia	924428-251
For use in the Czech Republic and Slovakia	924428-FL1	For use in Saudi Arabia	924428-171
For use in Denmark, Finland, and Norway	924428-DH1	For use in Slovenia	924428-BA1
For use in France	924428-051	For use in Spain	924428-071
For use in Germany	924428-041	For use in Switzerland	924428-BG1
For use in Greece	924428-151	For use in Taiwan	924428-AB1
For use in Hungary	924428-211	For use in Thailand	924428-281
For use in Israel	924428-BB1	For use in Turkey	924428-141
For use in Italy	924428-061	For use in the United Kingdom	924428-031
For use in Latin America	924428-161	For use in the United States	924428-001

Before disassembling the computer, follow these steps:

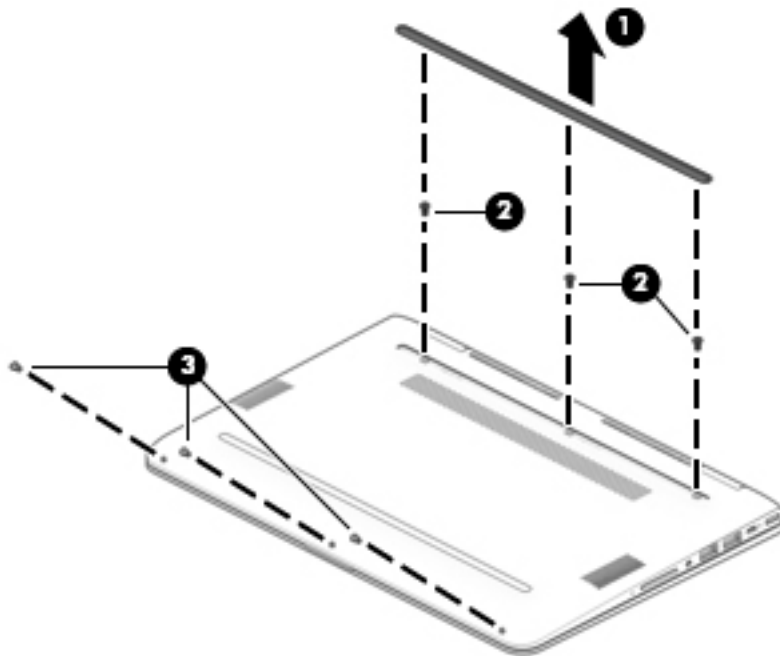
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord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

Remove the keyboard/top cover:

1. Turn the computer upside down on a flat surface.
2. Position the computer with the front toward you.
3. Remove the rear rubber foot strip (1).

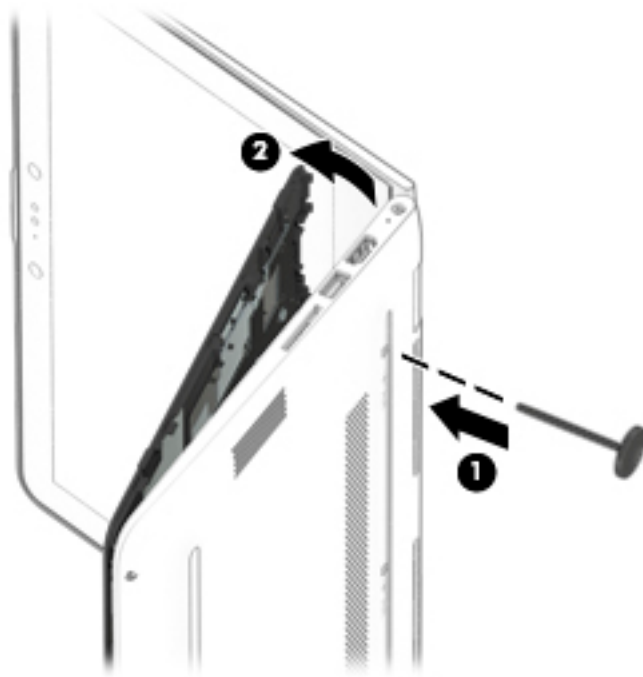
The rubber foot strip is available using spare part numbers 925200-001 (in pike silver finish) and 925377-001 (in shimmer mint finish).

4. Remove the three Phillips PM2.5×5.7 screws (2) and the three Phillips PM2.0×4.9 screws (3) that secure the keyboard/top cover to the base enclosure.



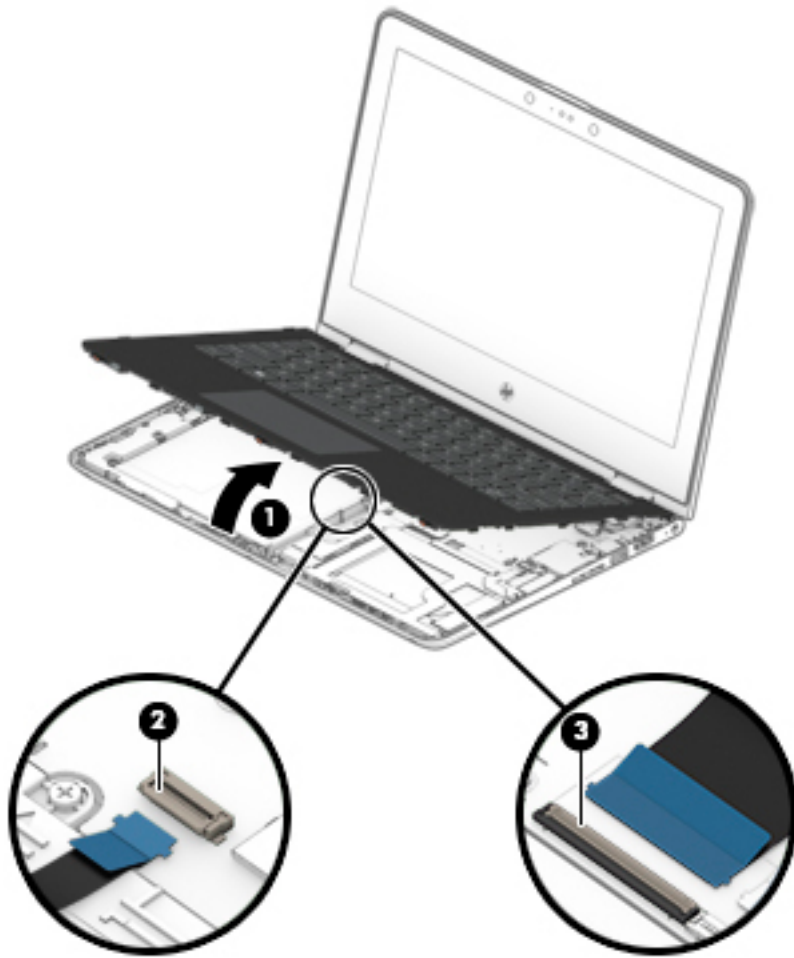
5. Turn the computer right side up.
6. Open the computer and position it on its' left side with the bottom toward you.
7. Insert a keyboard release tool (1) into the empty screw holes under the rubber foot strip.

8. Press on the keyboard release tool until the keyboard/top cover **(2)** releases from the computer.




9. Lift the front edge of the keyboard/top cover **(1)** until the keyboard cable and TouchPad cable connectors are accessible.
10. Release the zero insertion force (ZIF) connector **(2)** to which TouchPad cable is connected, and then disconnect the TouchPad cable from the system board.

11. Release the ZIF connector (3) to which keyboard cable is connected, and then disconnect the keyboard cable from the system board.



12. Remove the keyboard/top cover.
Reverse this procedure to install the keyboard/top cover.

TouchPad cable

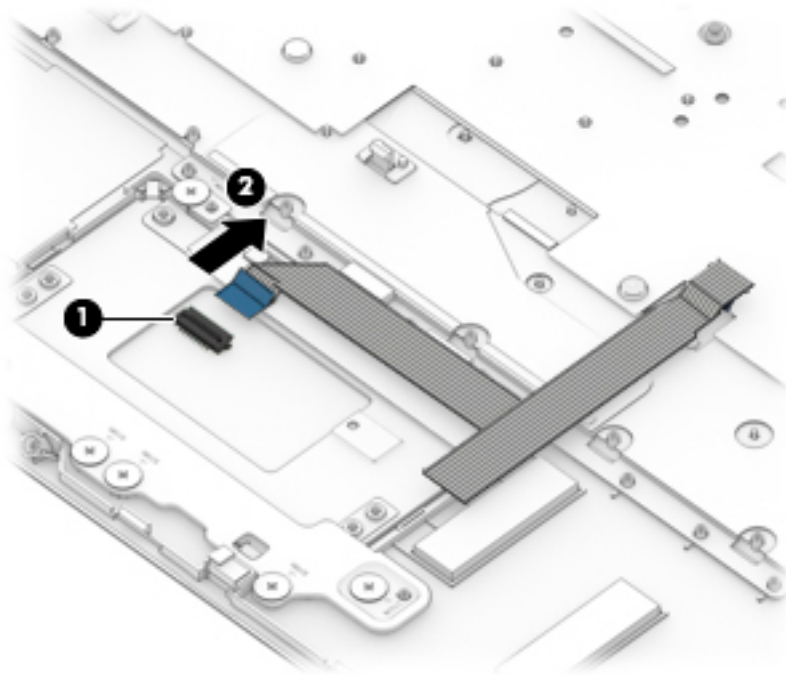
 **NOTE:** The TouchPad spare part kit does not include the TouchPad cable. The TouchPad cable is available using spare part numbers 924415-001 (for use only on computer models equipped with an Intel Pentium or Intel Celeron processor) and 924412-001 (for use only on computer models equipped with an Intel Core processor).

Before removing the TouchPad cable, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 27](#)).

Remove the TouchPad cable:

1. Turn the keyboard/top cover upside down with the front toward you.
2. Release the ZIF connector (1) to which TouchPad cable is connected, and then disconnect the TouchPad cable (2) from the TouchPad.



3. Remove the TouchPad cable.

Reverse this procedure to install the TouchPad cable.

TouchPad

Description	Spare part number
TouchPad (does not include TouchPad bracket or TouchPad cable)	924430-001

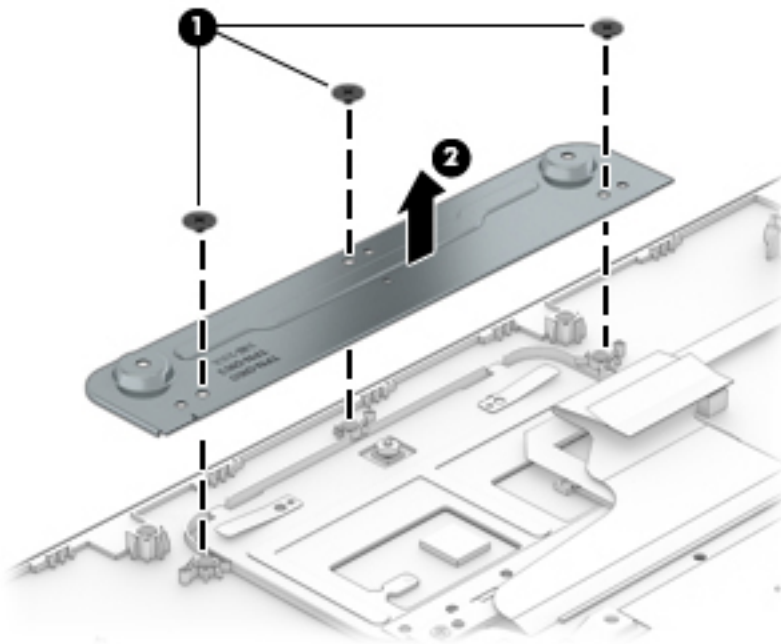
NOTE: The TouchPad bracket is available using spare part number 924420-001. The TouchPad cable is available using spare part numbers 924415-001 (for use only on computer models equipped with an Intel Pentium or Intel Celeron processor) and 924412-001 (for use only on computer models equipped with an Intel Core processor).

Before removing the TouchPad, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 27](#)).

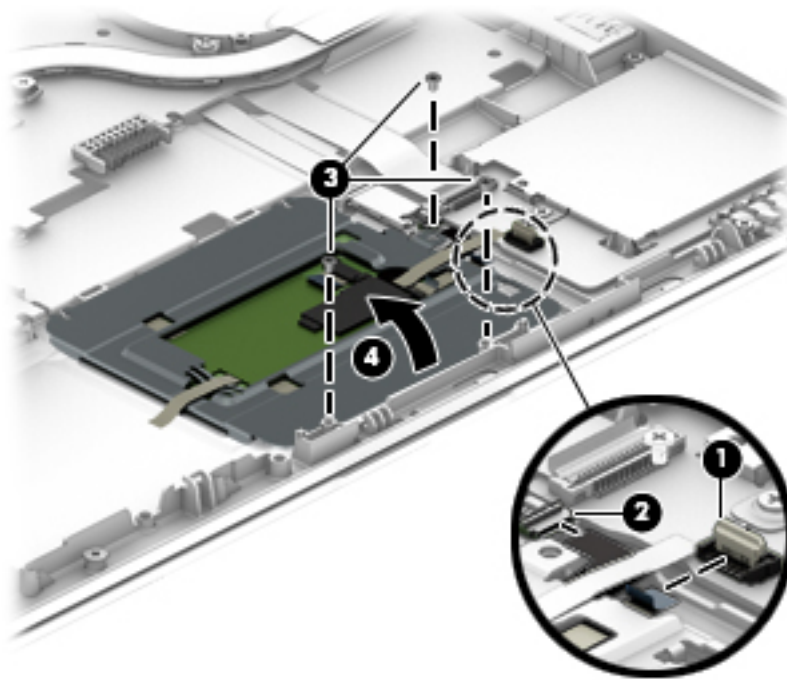
Remove the TouchPad:

1. Turn the keyboard/top cover upside down with the front toward you.
2. Remove the five Phillips PM2.0×2.2 broad head screws (1) that secure the TouchPad bracket to the keyboard/top cover.
3. Lift the right side of the TouchPad bracket (2) until it rests at an angle.
4. Remove the TouchPad bracket (3) by sliding it up and to the right at an angle.



5. Remove the three Phillips PM2.0×2.2 broad head screws (1) that secure the TouchPad to the keyboard/top cover.

6. Remove the TouchPad (2).



Reverse this procedure to install the TouchPad.

Battery

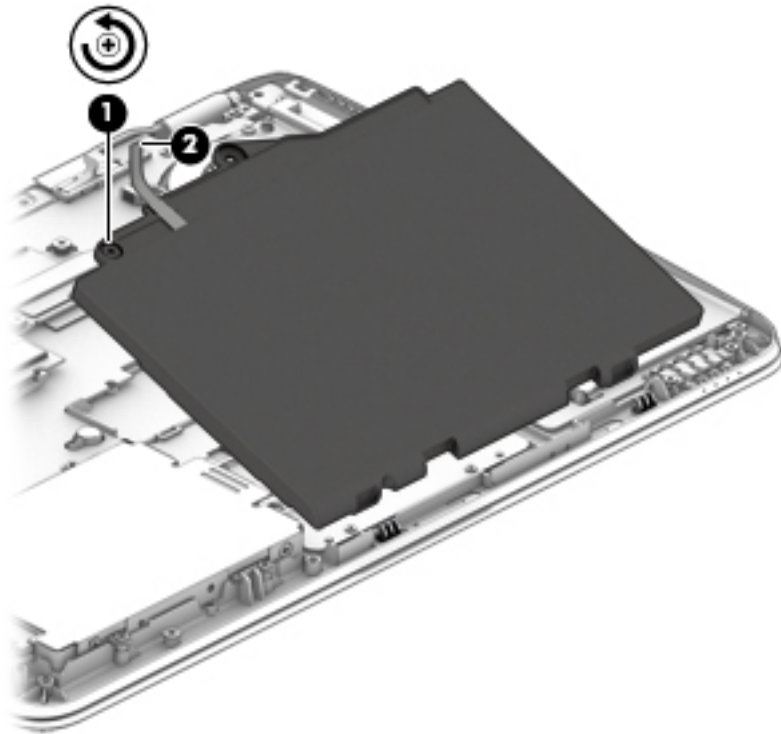
Description	Spare part number
3-cell, 37 WHr, 4.8 AHr, Li-ion battery	916809-855

Before removing the battery, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 27](#)).

Remove the battery:

1. Remove the five Phillips PM2.0×4.6 screws (1) that secure the battery to the computer.
2. Remove the battery (2).



Reverse this procedure to install the battery.

Hard drive



NOTE: The hard drive spare part kit does not include the hard drive rubber sleeve or the hard drive gasket. The hard drive rubber sleeve is available using spare part number 924419-001. The hard drive gasket is available using spare part number 928898-001.

Description	Spare part number
1 TB, 5400 rpm, SATA, with 8 GB hybrid solid-state hard drive	924036-857
1 TB, 5400 rpm, SATA hard drive	762888-857
500 GB, 5400 rpm, SATA, with 8 GB hybrid solid-state hard drive	731863-856
500 GB, 5400 rpm, SATA hard drive	683839-857

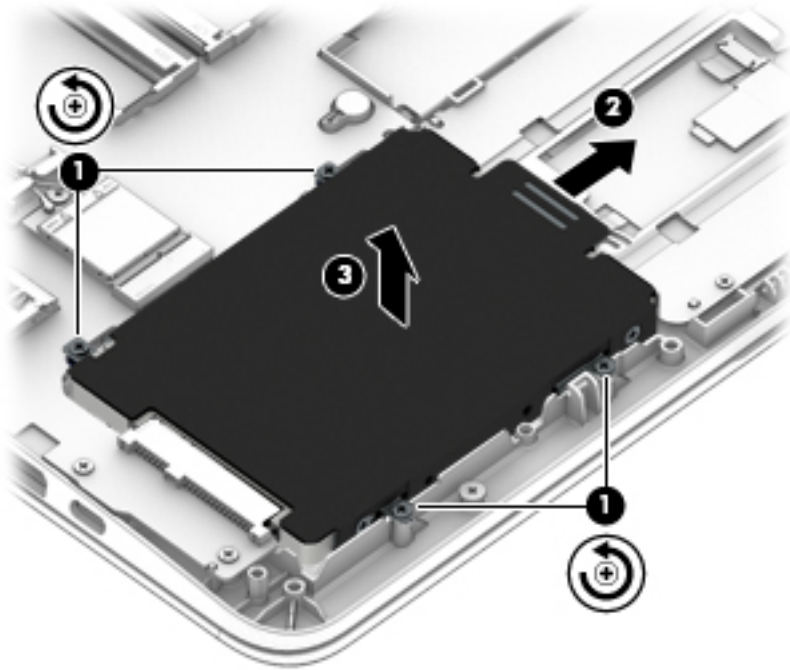
Before removing the hard drive, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 27](#)).
5. Remove the battery (see [Battery on page 34](#)).

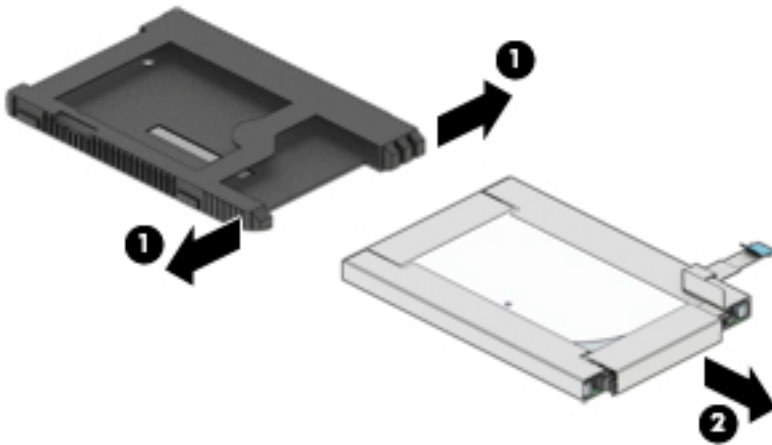
Remove the hard drive:

1. Release the ZIF connector **(1)** to which the hard drive cable is connected, and then disconnect the hard drive cable from the system board.
2. Detach the hard drive cable **(2)** from the system board. (The hard drive cable is attached to the system board with double-sided adhesive.)

3. Use the tab (3) on the hard drive rubber sleeve to remove the hard drive.



4. If it is necessary to remove the hard drive from the rubber sleeve, spread the open end of the rubber sleeve (1), and then remove the hard drive (2).



Reverse this procedure to reassemble and install the hard drive.

Solid-state drive

Description	Spare part number
128 GB, M.2 SATA, solid-state drive	923683-001

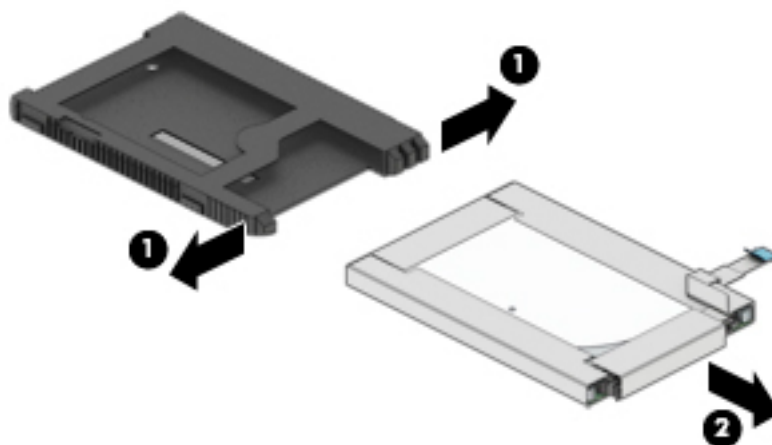
Before removing the solid-state, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 27](#)).
5. Remove the battery (see [Battery on page 34](#)).

Remove the solid-state drive:

1. Remove the Phillips PM2.0×3.0 screw (1) that secures the drive to the system board.
2. Remove the drive (2) by pulling it away from the connector.

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



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

Speakers

Description	Spare part number
Speakers (includes cables and 4 rubber isolators)	924437-001


Before removing the speakers, follow these steps:

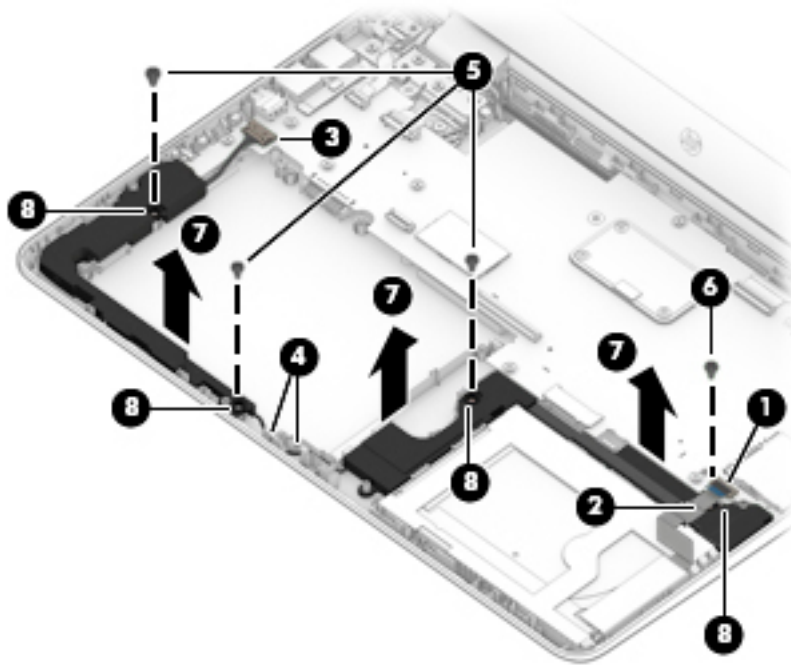
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 27](#)).
5. Remove the battery (see [Battery on page 34](#)).

Remove the speakers:

1. Release the ZIF connector **(1)** to which the hard drive cable is connected, and then disconnect the hard drive cable from the system board.
2. Detach the hard drive cable **(2)** from the system board. (The hard drive cable is attached to the system board with double-sided adhesive.)
3. Disconnect the speaker cable **(3)** from the system board.
4. Release the speaker cables **(4)** from the retention clips and routing channel built into the base enclosure.
5. Remove the three Phillips PM2.0×5.5 broad head shoulder screws **(5)** and Phillips PM2.0×6.2 broad head shoulder screw **(6)** that secure the speakers to the base enclosure.


- Remove the speakers (7).

 **IMPORTANT:** When removing the speakers, make note of the location of the four rubber isolators (8). Failure to properly install or damage to these isolators can result in degraded speaker performance.



Reverse this procedure to install the speakers.

Power button board cable

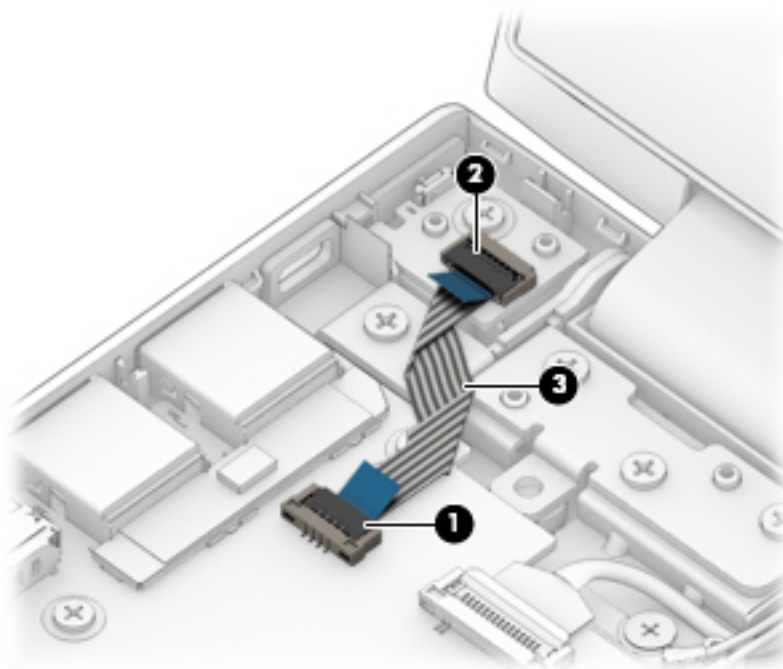
 **NOTE:** The power button board spare part kit does not include the power button board cable. The power button board cable is available using spare part number 924411-001.

Before removing the audio jack board cable, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 27](#)).
5. Remove the battery (see [Battery on page 34](#)).

Remove the power button board cable:

1. Release the ZIF connector **(1)** to which power button board cable is connected, and then disconnect the power button board cable from the system board.
2. Release the ZIF connector **(2)** to which power button board cable is connected, and then disconnect the power button board cable from the power button board.
3. Detach the button board cable **(3)** from the display hinge. (The button board cable is attached to the display hinge with double-sided adhesive.)



4. Remove the power button board cable.

Reverse this procedure to install the power button board cable.

Power button board

Description	Spare part number
Power button board (does not include cable)	924431-001

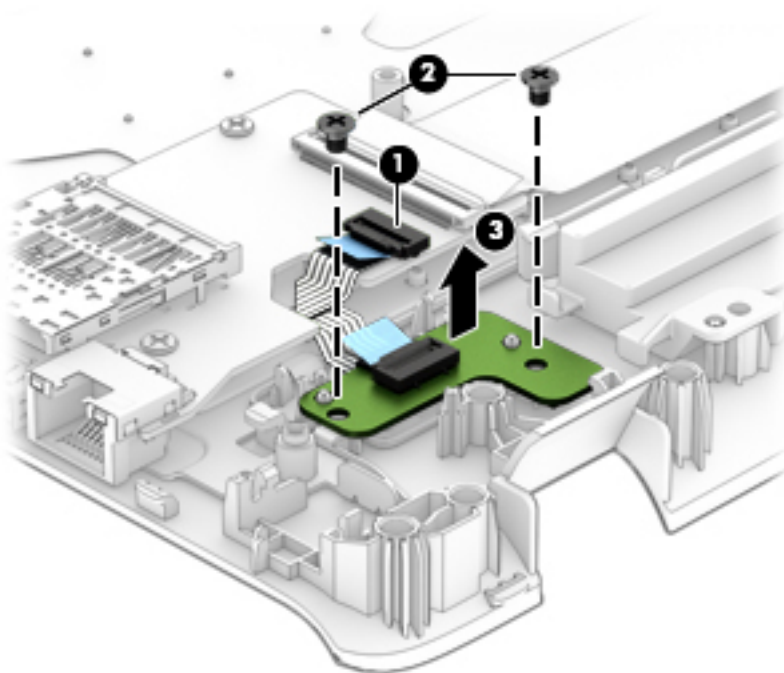
NOTE: The power button board cable is available using spare part number 924411-001.

Before removing the power button board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 27](#)).
5. Remove the battery (see [Battery on page 34](#)).

Remove the power button board:

1. Release the ZIF connector (1) to which power button board cable is connected, and then disconnect the power button board cable from the system board.
2. Remove the Phillips PM2.0×4.6 screw (2) that secures the power button board to the base enclosure.
3. Remove the power button board (3).



Reverse this procedure to install the power button board.

System board



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

Description	Spare part number
Equipped with an Intel Core i3-7100U 2.40 GHz dual core processor (2133 MHz FSB, 3.0 GB L3 cache, 15 W) and the Windows 10 operating system	923810-601
Equipped with an Intel Core i3-7100U 2.40 GHz dual core processor (2133 MHz FSB, 3.0 GB L3 cache, 15 W) and a non-Windows operating system	923810-001
Equipped with an Intel Pentium 4200U 1.10 GHz (SC turbo up to 2.50 GHz) quad core processor (2.0 GB L2 cache, 1866 MHz FSB, 6 W) and the Windows 10 operating system	923811-601
Equipped with an Intel Pentium 4200U 1.10 GHz (SC turbo up to 2.50 GHz) quad core processor (2.0 GB L2 cache, 1866 MHz FSB, 6 W) and a non-Windows operating system	923811-001
Equipped with an Intel Celeron N3350 1.10 GHz (SC turbo up to 2.40 GHz) dual core processor (2.0 GB L2 cache, 1866 MHz FSB, 6 W) and the Windows 10 operating system	923809-601
Equipped with an Intel Celeron N3350 1.10 GHz (SC turbo up to 2.40 GHz) dual core processor (2.0 GB L2 cache, 1866 MHz FSB, 6 W) and a non-Windows operating system	923809-001

Before removing the system board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 27](#)).
5. Remove the battery (see [Battery on page 34](#)).
6. Remove the speakers (see [Speakers on page 38](#)).

When replacing the system board, be sure to remove the following components from the defective system board and install them on the replacement system board:

- WLAN module (see [WLAN module on page 45](#))
- Heat sink (see [Heat sink on page 46](#))
- Memory modules (see [Memory module on page 50](#))

Remove the system board:

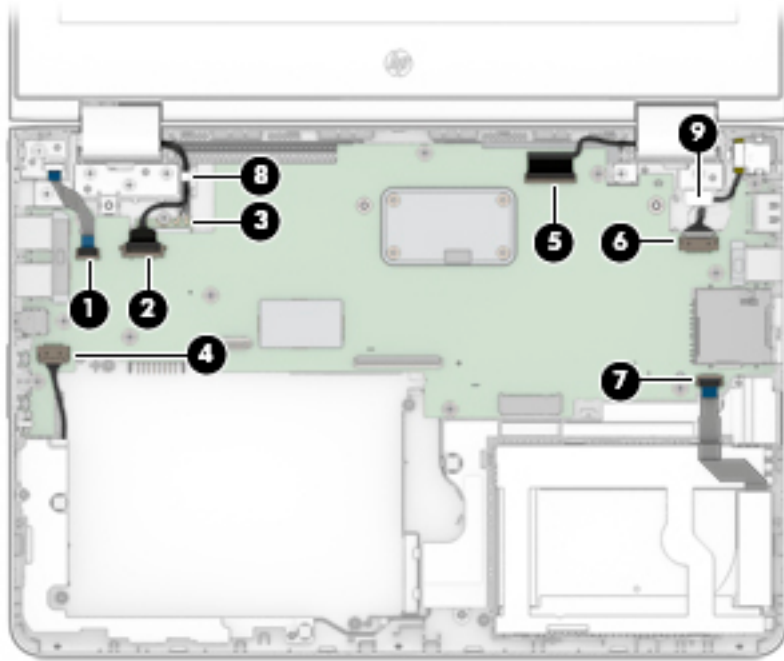
1. Disconnect the following cables from the system board:
 - (1) Power button board ZIF connector cable
 - (2) Display panel ZIF connector cable
 - (3) WLAN antenna cables



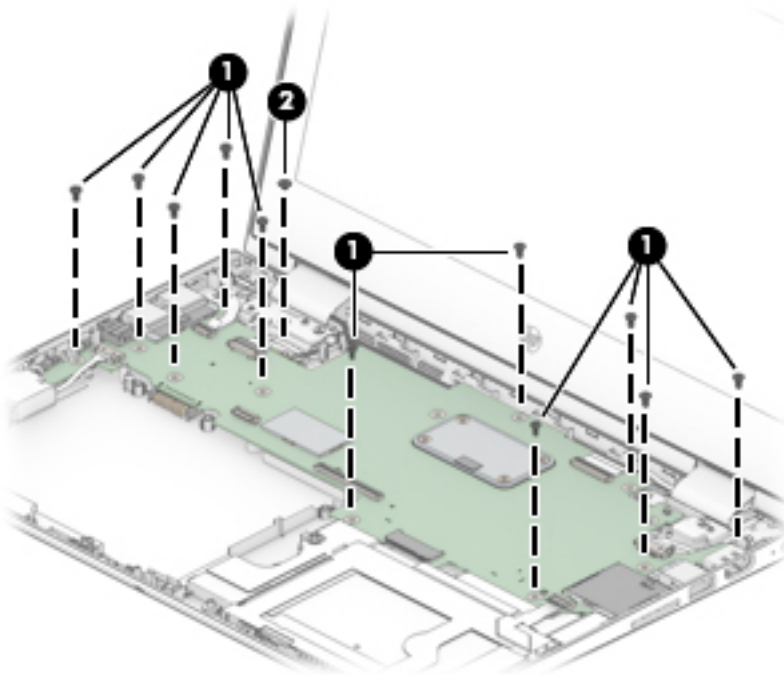
NOTE: The #1/white WLAN antenna cable connects to the WLAN module "#1/Main" terminal. The #2/black WLAN antenna cable connects to the WLAN module "#2/Aux" terminal.

- (4) Speaker cable

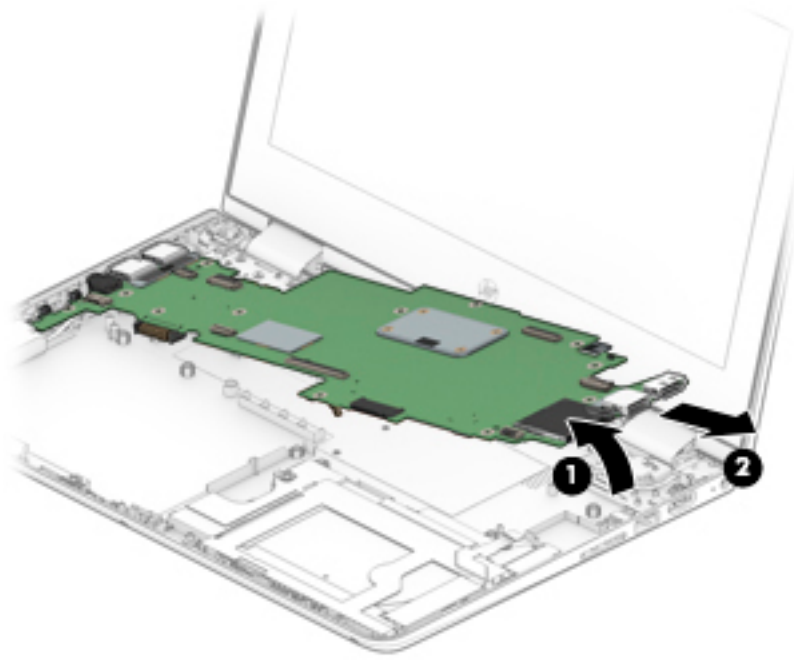
- (5) Display TouchScreen ZIF connector cable
 - (6) Power connector cable
 - (7) Hard drive ZIF connector cable
2. Release the display panel cable from the retention clip (8) built into the base enclosure.
 3. Release the power connector cable from the retention clip (9) built into the base enclosure.



4. Remove the eleven Phillips PM2.0×4.6 screws (1) that secure the system board to the base enclosure.
5. Remove the Phillips PM2.0×2.2 broad head screw (2) that secures the WLAN module to the base enclosure.



6. Lift the right side of the system board (1) until it rests at an angle.
7. Remove the system board (2) by sliding it up and to the right at an angle.



Reverse this procedure to install the system board.

WLAN module

Description	Spare part number
Intel Dual Band Wireless-AC 7265 802.11 AC 2×2 WiFi + Bluetooth 4.2 Combo Adapter (non-vPro)	901229-855
Intel Dual Band Wireless-AC 3168 802.11 AC 1×1 WiFi + Bluetooth 4.2 Combo Adapter (non-vPro)	863934-855

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

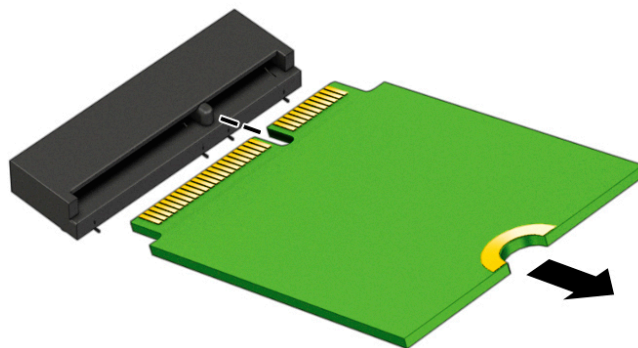
Before removing the WLAN module, follow these steps:

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 first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 27](#)), and then remove the following components:
 - a. Battery (see [Battery on page 34](#))
 - b. Speakers (see [Speakers on page 38](#))
 - c. System board (see [System board on page 42](#))

Remove the WLAN module:

1. Turn the system board upside down with the front toward you.
2. Remove the WLAN module by pulling the module away from the slot at an angle.

📝 NOTE: WLAN modules are designed with a notch to prevent incorrect insertion.



Reverse this procedure to install the WLAN module.

Heat sink



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

Description	Spare part number
Heat sink for use only on computer models equipped with an Intel Pentium or Intel Celeron processor	924418-001
Mylar Kit for use only on heat sinks designed for computer models equipped with an Intel Pentium or Intel Celeron processor	928901-001
Heat sink for use only on computer models equipped with an Intel Core processor	924417-001

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 first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 27](#)), and then remove the following components:
 - a. Battery (see [Battery on page 34](#))
 - b. Speakers (see [Speakers on page 38](#))
 - c. System board (see [System board on page 42](#))



NOTE: The removal steps for the heat sink vary depending on the computer model. Refer to the steps that match the computer.

Remove the heat sink:


1. Turn the system board upside down with the front toward you.

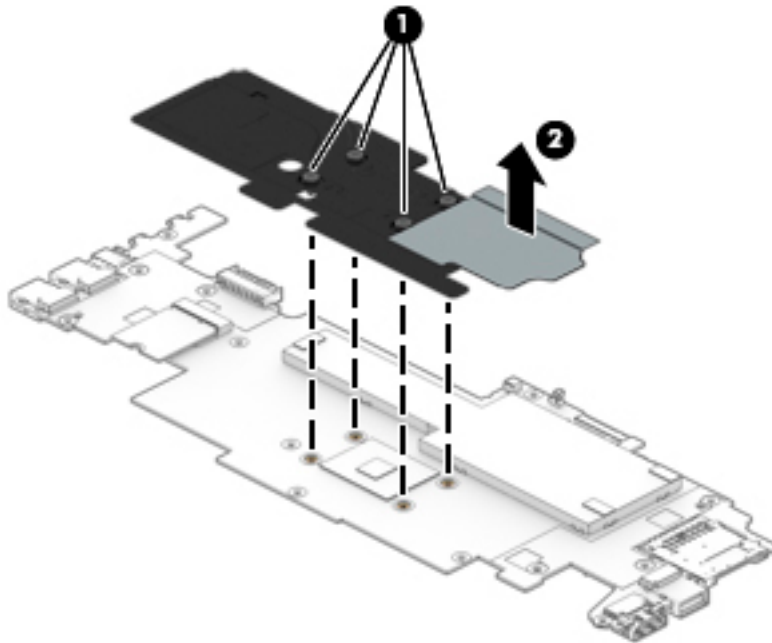



NOTE: Steps 2 and 3 apply to computer models equipped with an Intel Pentium or Intel Celeron processor. See steps 4 through 6 for heat sink removal information for computers equipped with an Intel Core processor.

2. Loosen the four Phillips PM2.0×6.2 captive screws **(1)** that secure the heat sink to the system board.

3. Remove the heat sink (2).


 **NOTE:** The following image shows the removal of the heat sink on a computer model equipped with an Intel Pentium or Intel Celeron processor.

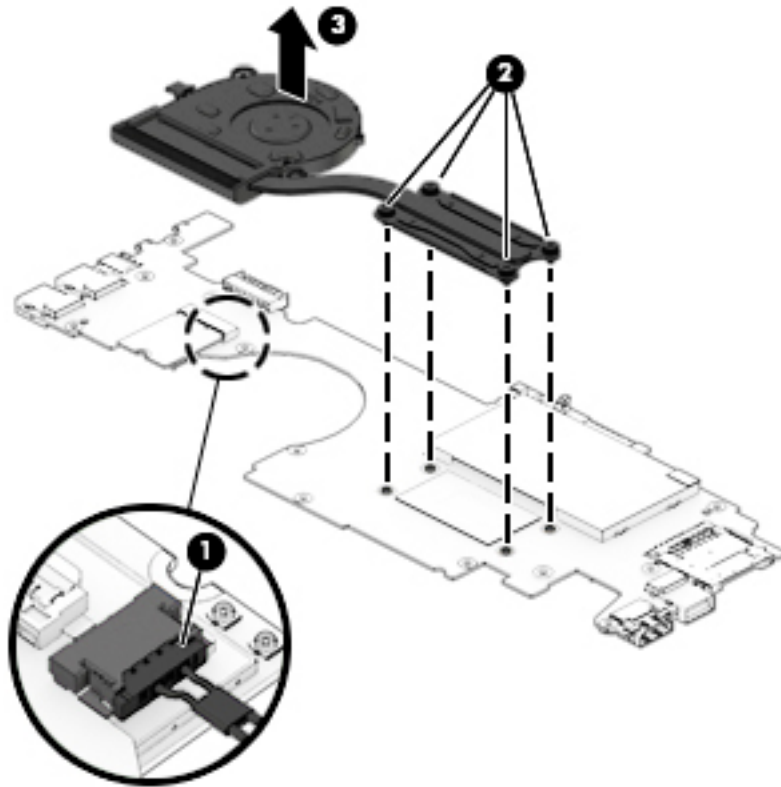



 **NOTE:** Steps 4 through 6 apply to computer models equipped with an Intel Core processor. See steps 2 and 3 for heat sink removal information for computers equipped with an Intel Pentium or Intel Celeron processor.

4. Disconnect the fan cable (1) from the system board.
5. Loosen the four Phillips PM2.0×6.2 captive screws (2) that secure the heat sink to the system board.

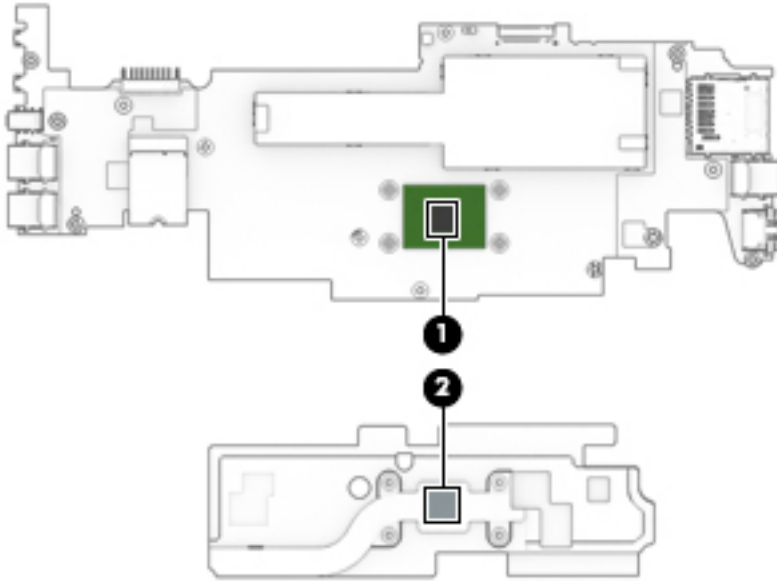
6. Remove the heat sink (3).


 **NOTE:** The following image shows the removal of the heat sink on a computer model equipped with an Intel Core processor.



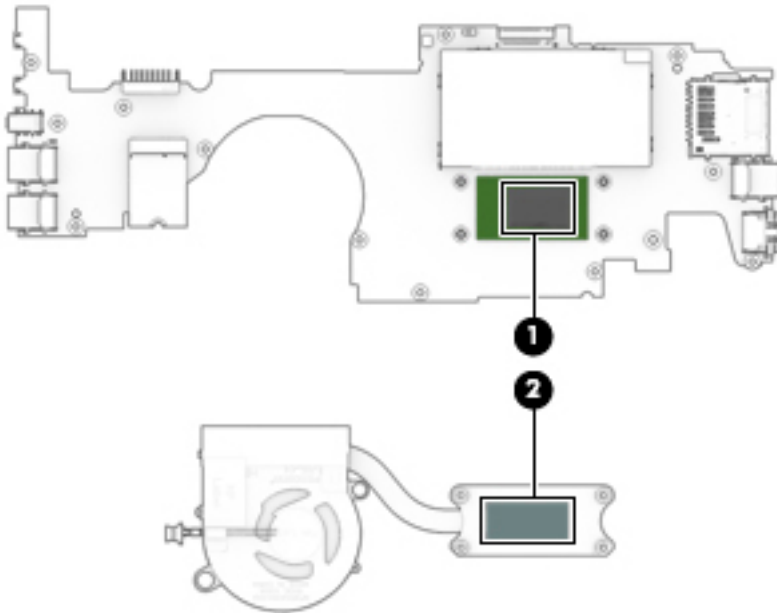
 **NOTE:** The thermal material must be thoroughly cleaned from the surfaces of the heat sink and the system board components each time the heat sink is removed. Replacement thermal material is included with the heat sink and system board spare part kits.

Thermal paste is used on the processor (1) and the heat sink section (2) that services it.




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

Memory module

 **NOTE:** The memory module spare part kit does not include the memory module shield. The memory module shield is available using spare part numbers 929557-001 (for use only on computer models equipped with an Intel Pentium or Intel Celeron processor) and 925196-001 (for use only on computer models equipped with an Intel Core processor).

 **NOTE:** Primary and expansion memory is installed in a side-by-side configuration in the bottom of the computer. If only one memory module is installed, it must be installed in the socket labeled 1.

Description	Spare part number
8 MB (DDR4-2400, 1.2-v)	862398-855
4 MB (DDR4-2400, 1.2-v)	862397-855
8 MB (PC3L-1200, 1600)	693374-005
4 MB (PC3L-1200, 1600)	691740-005

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:

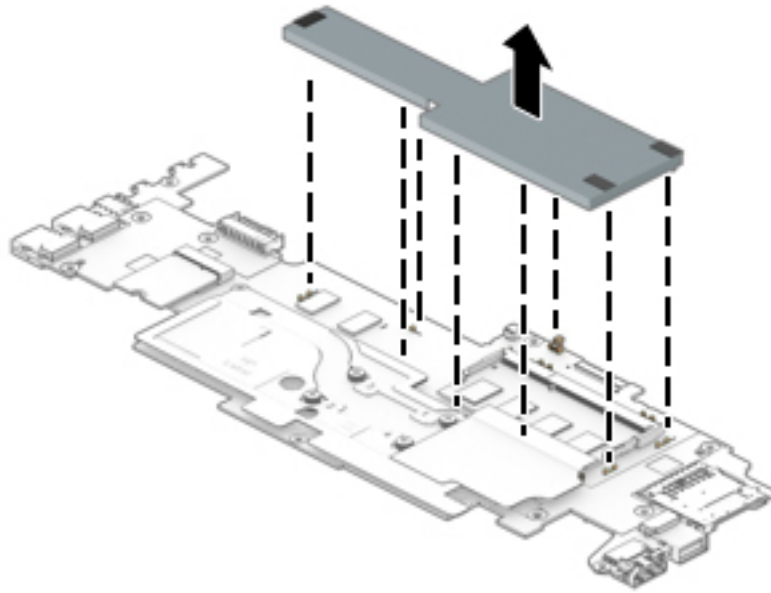
1. Navigate to www.hp.com.
2. Click **Support & Drivers**, and then click **Drivers & Software**.
3. In the **Enter a product name/number** box, type the computer model information, and then click **Search**.
4. Click the link for the computer model.
5. Select the operating system, and then click **Next**.
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 the memory module, follow these steps:


1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 27](#)), and then remove the following components:
 - a. Battery (see [Battery on page 34](#))
 - b. Speakers (see [Speakers on page 38](#))
 - c. System board (see [System board on page 42](#))

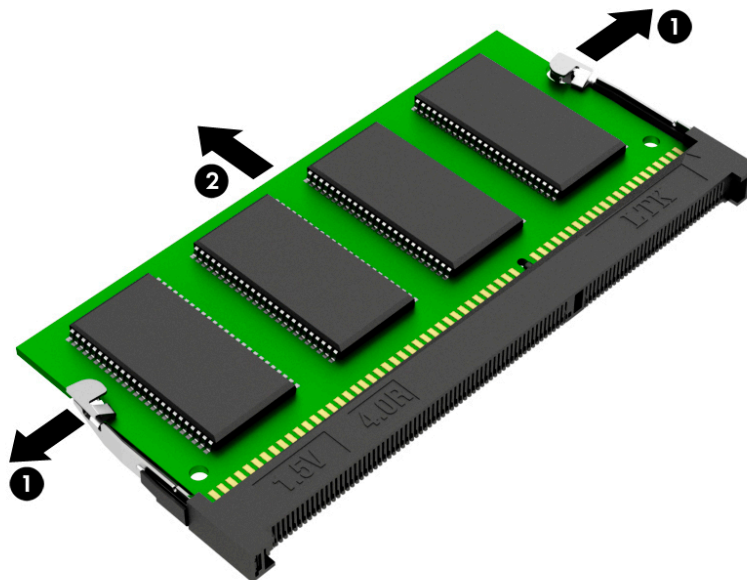
Remove the memory module:

1. Turn the system board upside down with the front toward you.
2. Remove the memory module shield.




3. Spread the retaining tabs (1) on each side of the memory module slot to release the memory module. (The edge of the module opposite the slot rises away from the computer.)
4. Remove the memory module (2) by pulling the module away from the slot at an angle.

 **NOTE:** Memory modules are designed with a notch to prevent incorrect insertion.



Reverse this procedure to install a memory module.

Power connector cable

 **NOTE:** The power connector cable spare part kit does not include the power connector cable bracket. The power connector cable bracket is available using spare part number 924421-001.

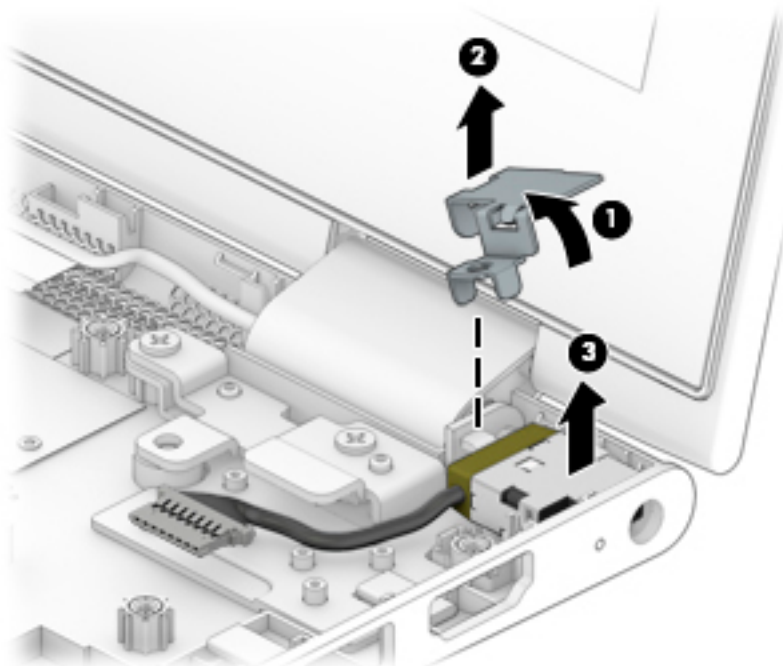
Description	Spare part number
Power connector cable (does not include bracket)	808155-018

Before removing the power connector cable, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 27](#)), and then remove the following components:
 - a. Battery (see [Battery on page 34](#))
 - b. Speakers (see [Speakers on page 38](#))
 - c. System board (see [System board on page 42](#))


Remove the power connector cable:

1. Lift the right side of the power connector cable bracket **(1)** to release the bracket from the power connector.
2. Remove the power connector cable bracket **(2)**.
3. Remove the power connector cable **(3)**.



Reverse this procedure to install the power connector cable.

Display assembly

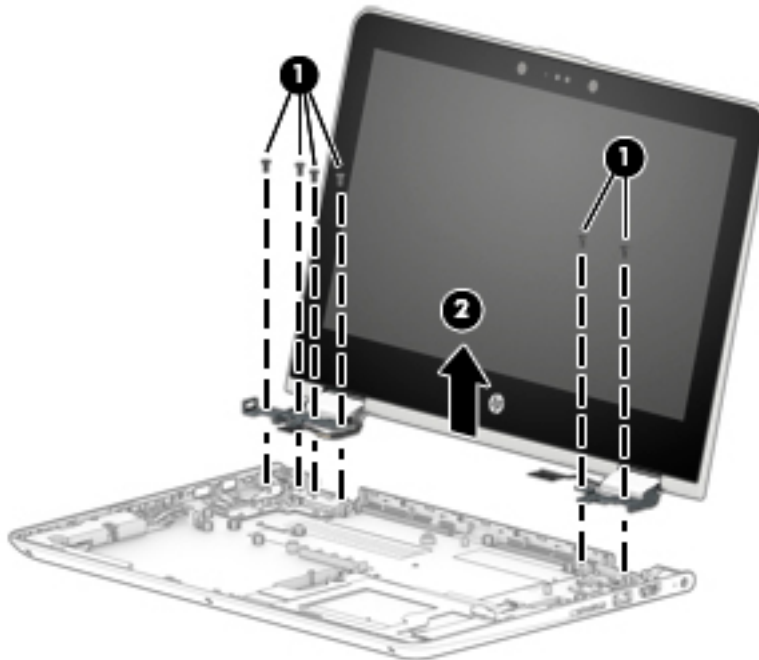
 **NOTE:** The display assembly is spared at the subcomponent level. For display assembly spare part information, see the individual removal subsections.

Before removing the display assembly, follow these steps:


1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 27](#)), and then remove the following components:
 - a. Battery (see [Battery on page 34](#))
 - b. Speakers (see [Speakers on page 38](#))
 - c. System board (see [System board on page 42](#))

Remove the display assembly:

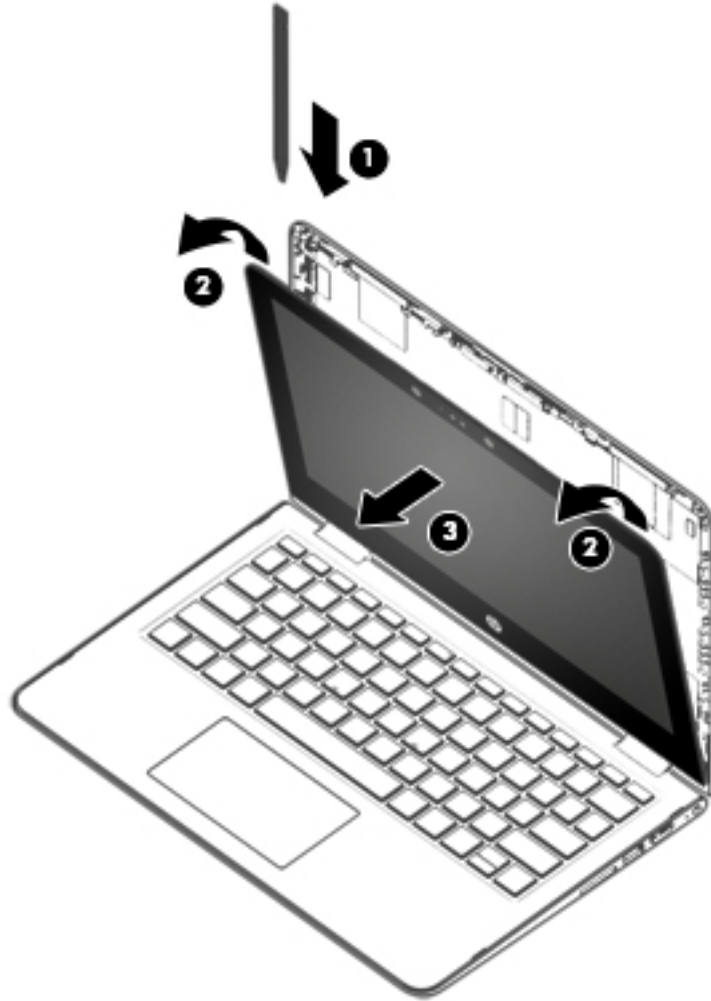
1. Remove the six Phillips PM2.5×5.7 screws (1) that secure the display assembly to the base enclosure.
2. Remove the display assembly (2).



3. If it is necessary to replace the display panel assembly or any of the display assembly subcomponents:

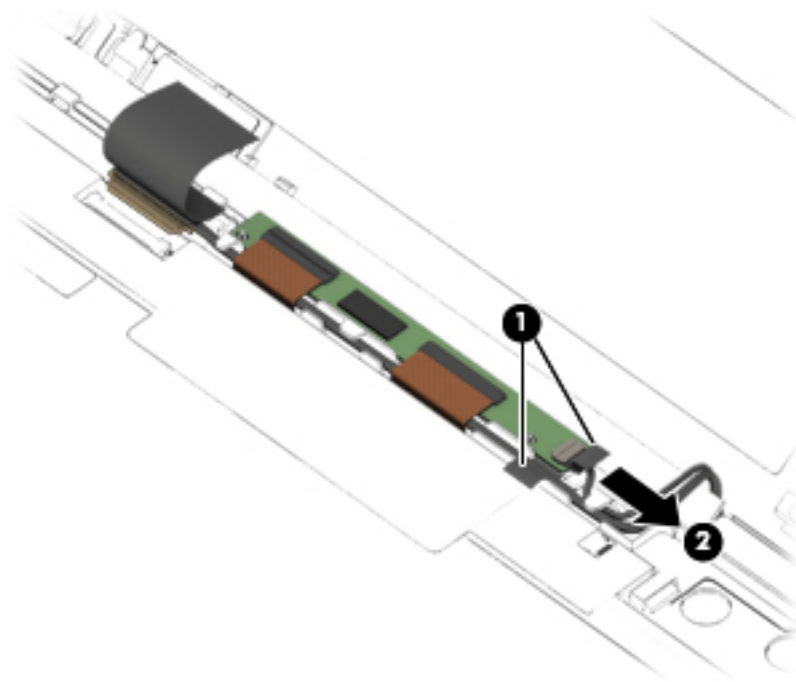
 **NOTE:** The display panel assembly can be removed and replaced without removing the display assembly from the base enclosure.

- a. Insert a case utility tool (1) or similar thin, plastic tool between the top edges of the display panel assembly and the display back cover.
- b. Release the top edge of the display panel assembly (2) from the display back cover.
- c. Swing the display panel assembly (3) forward until it rests on the keyboard.



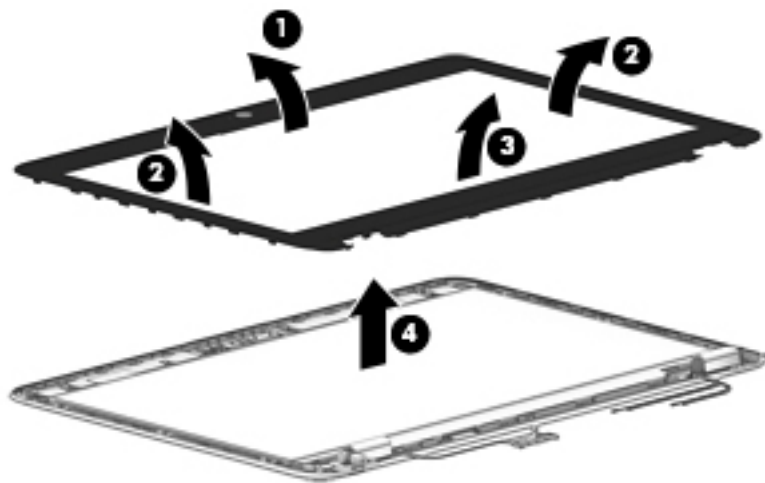
- d. Detach the two pieces of tape (1) that secure the TouchScreen board cable to the TouchScreen board.

- e. Disconnect the TouchScreen board cable from the TouchScreen board.




- f. Release the adhesive strip (1) that secures the display panel cable connector to the display panel.
- g. Disconnect the display panel cable (2) from the display panel.
- h. Remove the display panel assembly (3).

The display panel assembly is available using spare part number 925388-001 (11.6-in, HD, WLED, AntiGlare (1366 × 768), slim/flat (3.0 mm), UWVA, eDP, 220 nits, 16:9 ultra wide aspect ratio TouchScreen equipped with an HD non-infrared camera).



- 4. If it is necessary to replace the TouchScreen board:

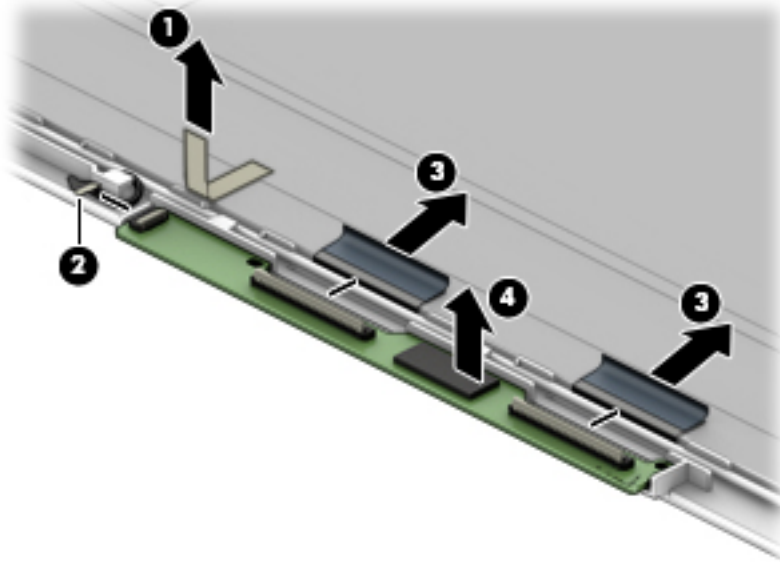
 **NOTE:** The TouchScreen board can be removed and replaced without removing the display assembly from the base enclosure.

- a. Remove the display panel assembly.

⚠ CAUTION: Before turning the display panel assembly upside down, make sure the work surface is clear of tools, screws, and any other foreign objects. Failure to follow this caution can result in damage to the display panel.

- b. Turn the display panel assembly upside down with the bottom edge toward you.
- c. Release the two ZIF connectors (1) to which the display panel cables are connected, and then disconnect the display panel cables from the TouchScreen board.
- d. Remove the TouchScreen board (2).

The TouchScreen board is available using spare part number 928537-001.

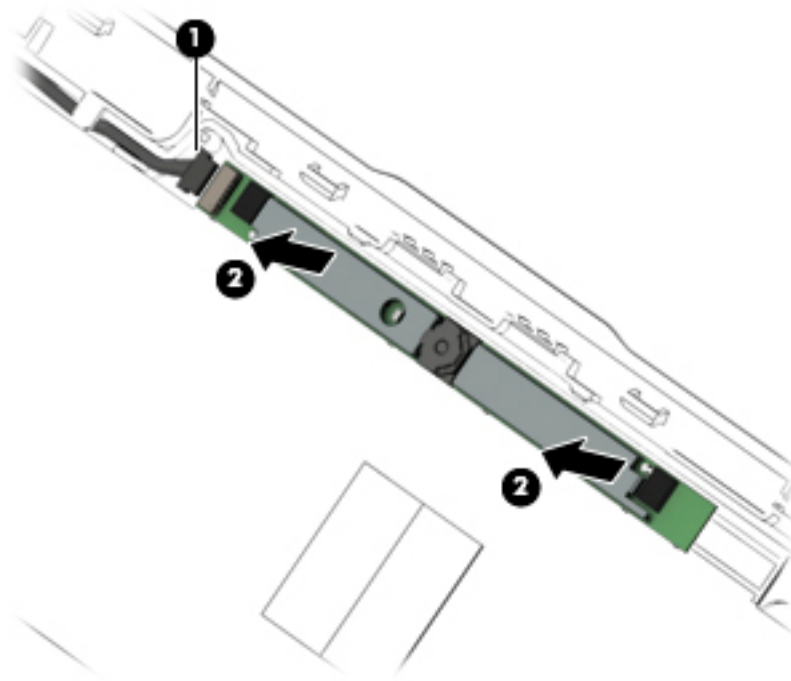


5. If it is necessary to replace the webcam/microphone module:

📝 NOTE: The webcam/microphone module can be removed and replaced without removing the display assembly from the base enclosure.


- a. Remove the display panel assembly.
- b. Disconnect the webcam/microphone module cable (1) from the webcam/microphone module.

- c. Detach the webcam/microphone module **(2)** from the display back cover. (The webcam/microphone module is attached to the display back cover with double-sided adhesive.)



- d. Remove the webcam/microphone module.
The webcam/microphone module is available using spare part number 923693-001 (HD non-infrared webcam/microphone module).

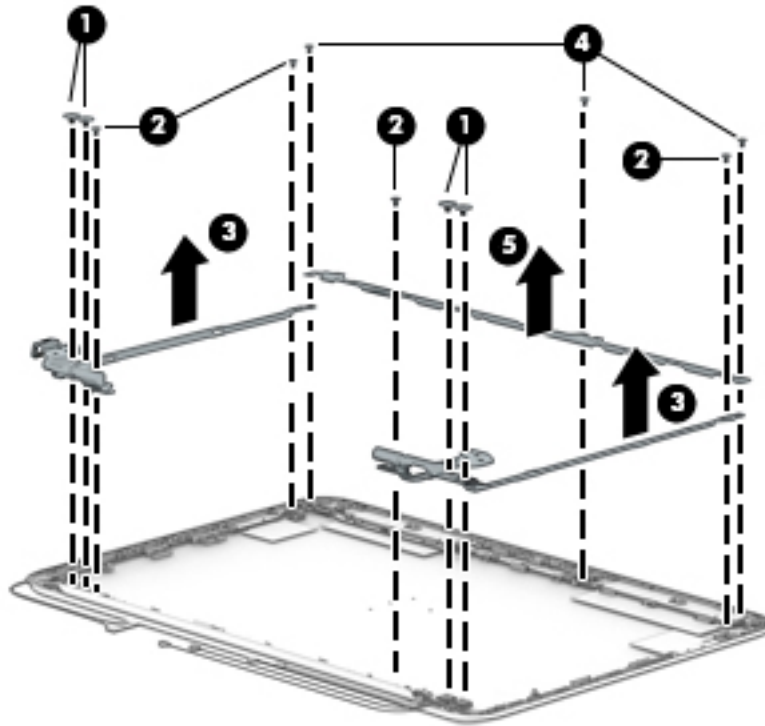
6. If it is necessary to replace the display hinges:

 **NOTE:** It is necessary to remove the display assembly to remove and replace the display hinge.


- a. Remove the display panel assembly.
- b. Remove the six Phillips PM2.5×2.9 broad head screws **(1)** that secure the hinges to the display back cover.
- c. Rotate the hinges **(2)** toward the inside of the display back cover to release them from the display back cover.

- d. Remove the display hinges (3).

The display hinges are available using spare part number 925201-001.

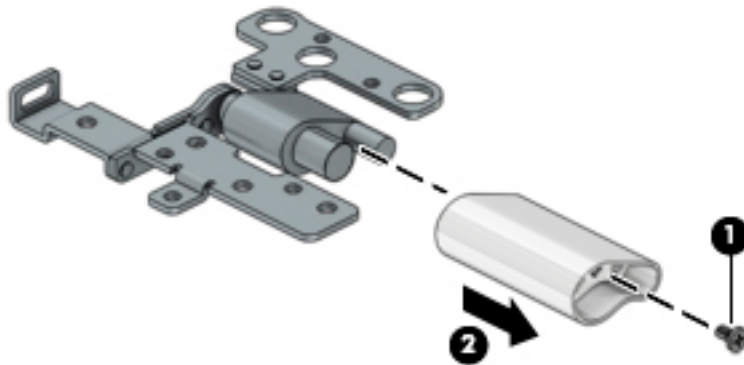


7. If it is necessary to replace the display hinge covers:


 **NOTE:** It is necessary to remove the display assembly to remove and replace the display hinge covers.

- Remove the display panel assembly.
- Remove the display hinge.
- Remove the Phillips PM2.0×4.0 screw (1) that secures the hinge cover to the hinge.
- Remove the display hinge cover (2).

The display hinge covers are available using spare part numbers 924427-001 (left hinge cover) and 924426-001 (right hinge cover).

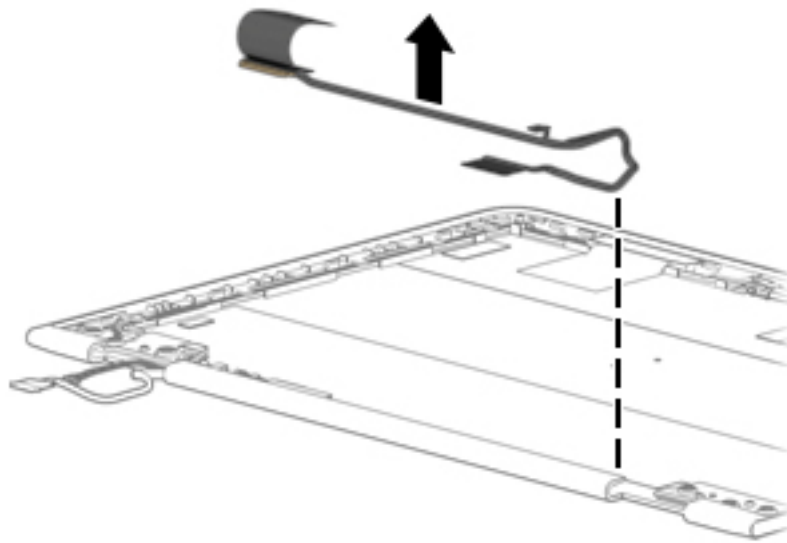


8. If it is necessary to replace the display panel cable:

 **NOTE:** It is necessary to remove the display assembly to remove and replace the display panel cable.

- a. Remove the display panel assembly.
- b. Remove the display panel cable from the retention channel built into the bottom edge of the display cover.

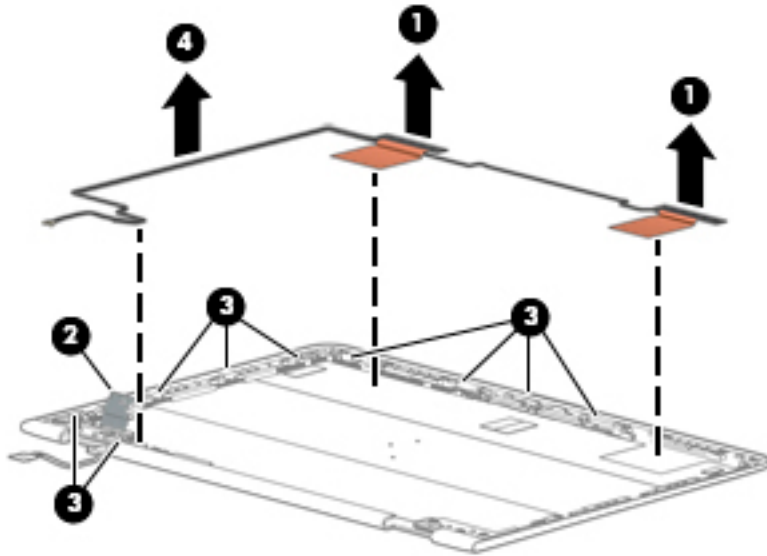
The display panel cable is available using spare part numbers 928899-001 (for use only on computer models equipped with an Intel Pentium or Intel Celeron processor) and 924414-001 (for use only on computer models equipped with an Intel Core processor) and includes the G-sensor board cable.



9. If it is necessary to replace the wireless antenna cables and transceivers:
 - a. Remove the display panel assembly.
 - b. Detach the wireless antenna transceivers **(1)** from the display back cover. (The wireless antenna transceivers are attached to the display back cover with double-sided adhesive.)
 - c. Release the shielding material **(2)** that secures the wireless antenna cables to the display back cover.
 - d. Release the wireless antenna cables from the retention clips **(3)** and routing channel built into the top, left, and bottom edges of the display back cover.

- e. Remove the wireless antenna cables and transceivers (4).

The wireless antenna cables and transceivers are available using spare part number 924363-001.




Reverse this procedure to reassemble and install the display assembly.


6 Computer Setup (BIOS), TPM, and HP Sure Start

Using Computer Setup

Computer Setup, 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). Computer Setup includes settings for the types of devices installed, the startup sequence of the computer, and the amount of system and extended memory.

 **NOTE:** Use extreme care when making changes in Computer Setup. Errors can prevent the computer from operating properly.

Starting Computer Setup


 **NOTE:** An external keyboard or mouse connected to a USB port can be used with Computer Setup only if USB legacy support is enabled.

To start Computer Setup, follow these steps:

- ▲ Start Computer Setup.
 - Computers or tablets with keyboards:
 - ▲ Turn on or restart the computer, and when the HP logo appears, press **f10** to enter Computer Setup.
 - Tablets without keyboards:
 - ▲ Turn off the tablet. Press the power button in combination with the volume down button until the Startup menu is displayed, and then tap **F10** to enter Computer Setup.

Navigating and selecting in Computer Setup

- To select a menu or a menu item, use the **tab** key and the keyboard arrow keys and then press **enter**, or use a pointing device to select the item.

 **NOTE:** On tablets without keyboards, you can use your finger to make selections.

- To scroll up and down, select the up arrow or the down arrow in the upper-right corner of the screen, or use the up arrow key or the down arrow key on the keyboard.
- To close open dialog boxes and return to the main Computer Setup screen, press **esc**, and then follow the on-screen instructions.

To exit Computer Setup menus, choose one of the following methods:

- To exit Computer Setup menus without saving your changes:
Select the **Exit** icon in the lower-right corner of the screen, and then follow the on-screen instructions.
– or –
Select **Main**, select **Ignore Changes and Exit**, and then press [enter](#).
- To save your changes and exit Computer Setup menus:
Select the **Save** icon in the lower-right corner of the screen, and then follow the on-screen instructions.
– or –
Select **Main**, select **Save Changes and Exit**, and then press [enter](#).


Your changes go into effect when the computer restarts.

Restoring factory settings in Computer Setup

 **NOTE:** Restoring defaults will not change the hard drive mode.

To return all settings in Computer Setup to the values that were set at the factory, follow these steps:

1. Start Computer Setup. See [Starting Computer Setup on page 61](#).
2. Select **Main**, and then select **Apply Factory Defaults and Exit**.

 **NOTE:** On select products, the selections may display **Restore Defaults** instead of **Apply Factory Defaults and Exit**.

3. Follow the on-screen instructions.
4. To save your changes and exit, select the **Save** icon in the lower-right corner of the screen, and then follow the on-screen instructions.
– or –
Select **Main**, select **Save Changes and Exit**, and then press [enter](#).

Your changes go into effect when the computer restarts.

 **NOTE:** Your password settings and security settings are not changed when you restore the factory settings.

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

BIOS version information (also known as *ROM date* and *System BIOS*) can be accessed by pressing **fn+esc** (if you are already in Windows) or by using Computer Setup.


1. Start Computer Setup. See [Starting Computer Setup on page 61](#).
2. Select **Main**, and then select **System Information**.
3. To exit Computer Setup without saving your changes, select the **Exit** icon in the lower-right corner of the screen, and then follow the on-screen instructions.

– or –

Select **Main**, select **Ignore Changes and Exit**, and then press **enter**.

To check for later BIOS versions, see [Downloading a BIOS update on page 63](#).

Downloading a BIOS update

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


Do not disconnect power on 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.

1. Type `support` in the taskbar search box, and then select the HP Support Assistant app.
– or –
Select the question mark icon in the taskbar.
2. Select **Updates**, and then select **Check for updates and messages**.
3. Follow the on-screen instructions.
4. At the download area, follow these steps:
 - a. Identify the most recent BIOS update and compare it to the BIOS version currently installed on your computer. 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.

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

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

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


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

Changing the boot order using the f9 prompt

To dynamically choose a boot device for the current startup sequence, follow these steps:

1. Access the Boot Device Options menu:
 - Computers or tablets with keyboards:
 - ▲ Turn on or restart the computer, and when the HP logo appears, press **f9** to enter the Boot Device Options menu.
 - Tablets without keyboards:
 - ▲ Turn off the tablet. Press the power button in combination with the volume down button until the Startup menu is displayed, and then tap **F9** to enter the Boot Device Options menu.
2. Select a boot device, then press `enter`.

TPM BIOS settings (select products only)

 **IMPORTANT:** Before enabling Trusted Platform Module (TPM) functionality on this system, you must ensure that your intended use of TPM complies with relevant local laws, regulations and policies, and approvals or licenses must be obtained if applicable. For any compliance issues arising from your operation/usage of TPM which violates the above mentioned requirement, you shall bear all the liabilities wholly and solely. HP will not be responsible for any related liabilities.

TPM provides additional security for your computer. You can modify the TPM settings in Computer Setup (BIOS).

 **NOTE:** If you change the TPM setting to Hidden, TPM is not visible in the operating system.

To access TPM settings in Computer Setup:

1. Start Computer Setup. See [Starting Computer Setup on page 61](#).
2. Select **Security**, select **TPM Embedded Security**, and then follow the on-screen instructions.

Using HP Sure Start (select products only)

Select computer models are configured with HP Sure Start, a technology that continuously monitors the computer's BIOS for attacks or corruption. If the BIOS becomes corrupted or is attacked, HP Sure Start automatically restores the BIOS to its previously safe state, without user intervention.


HP Sure Start is configured and already enabled so that most users can use the HP Sure Start default configuration. The default configuration can be customized by advanced users.

To access the latest documentation on HP Sure Start, go to <http://www.hp.com/support>, and select your country. Select **Drivers & Downloads**, and then follow the on-screen instructions.

7 Using HP PC Hardware Diagnostics (UEFI)

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

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

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

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

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

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

- a. Connected USB drive


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

- b. Hard drive
- c. BIOS

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

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

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

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

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

Download the latest UEFI version

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

Download any version of UEFI for a specific product

1. Go to <http://www.hp.com/support>.
2. Select **Get software and drivers**.
3. Enter the product name or number.
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.

Using Remote HP PC Hardware Diagnostics (UEFI) settings (select products only)

Your computer supports Remote HP PC Hardware Diagnostics (UEFI). This is a firmware (BIOS) feature that downloads HP PC Hardware Diagnostics UEFI to your computer.

It executes the diagnostics on your computer, and then may upload results to a preconfigured server.

Using the Remote HP PC Hardware Diagnostics setting in Computer Setup (BIOS), you can perform the following customizations:

- Set a schedule for running diagnostics unattended. You can also start diagnostics immediately in interactive mode by selecting **Execute Remote HP PC Hardware Diagnostics**.
- Set the location for downloading the diagnostic tools. This feature provides access to the tools from the HP website or from a server that has been preconfigured for use. Your computer does not require the traditional local storage (such as a disk drive or USB flash drive) to run remote diagnostics.
- Set a location for storing the test results. You can also set the user name and password settings used for uploads.
- Display status information about the diagnostics run previously.

Customizing Remote HP PC Hardware Diagnostics (UEFI) settings

1. Turn on or restart the computer, and when the HP logo appears, press **F10** to enter Computer Setup.
2. Select **Advanced**, and then select **Settings**.
3. Make your customization selections.
4. Select **Main**, and then **Save Changes and Exit** to save your settings.

Your changes take effect when the computer restarts.

To access documentation on using Remote HP PC Hardware Diagnostics (UEFI) to configure a server for remote diagnostics or to customize which diagnostic tests are run, go to <http://www.hp.com/support>. Select **Find your product**, and then follow the on-screen instructions.

8 Specifications

	Metric	U.S.
Computer dimensions		
Width	29.5 cm	11.61 in
Depth	20.2 cm	7.93 in
Height	1.93 cm	0.76 in
Weight	One spindle, (HDD)	
	1.3 kg	2.86 lbs
	Zero spindle, (SSD)	
	1.2 kg	2.82 lbs
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.		

9 Backing up and recovering

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


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

For additional information, refer to the HP support assistant app.

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

– or –

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 71](#). For information on the recovery options that are available using the recovery media, see [Using Windows tools on page 72](#).
- 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 73](#).

 **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 72](#).

- 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 73](#).

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 73](#). If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 71](#).
- 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 73](#).
- 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 75](#).

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 71](#).

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 71](#).
- 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 71](#).
- 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 75](#).

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 71](#).

 **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 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 all countries 113

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

Country/region	Accredited agency	Applicable note number
South Korea	EK	4
Sweden	CEMKO	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.

11 Recycling

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

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

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