



HP SpectreXT TouchSmart

Maintenance and Service Guide

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First Edition: November 2012

Document Part Number: 682637-001

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).

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1 Product description

Category	Description
Product Name	HP SpectreXT TouchSmart
Processors	<ul style="list-style-type: none">• Intel® Quad Core® i7-3537U 2.00-GHz processor (turbo up to 3.10-GHz), 1600-MHz FSB, 4.00-MB L3 cache, 17 W)• Intel Quad Core i7-3517U 1.900-GHz processor (turbo up to 3.00-GHz), 1600-MHz FSB, 4.00-MB L3 cache, 17 W)• Intel Dual Core i5-3337U 1.800-GHz processor (turbo up to 2.700-GHz), 1600-MHz FSB, 3.00-MB L3 cache, 17 W)• Intel Dual Core i5-3317U 1.700-GHz processor (turbo up to 2.600-GHz), 1600-MHz FSB, 3.00-MB L3 cache, 17 W)
Chipset	Mobile Intel HM77 PCH (platform controller hub) chipset
Graphics	Intel HD Graphics 4000 integrated universal memory architecture (UMA) graphics Support for BD playback with HD Decode and DX11
Panel	15.6-in full high-definition (FHD), wide light-emitting diode (WLED), BrightView (BV), UWVA (1920×1080), slim (3.2-mm) display with webcam and microphone Touchscreen and MultiTouch enabled Typical brightness: 300 nits
Memory	One customer-accessible/upgradable memory module slot + 4-GB on the system board Support for DDR3L (1600-MHz) dual channel Support for 8192-MB of system RAM in the following configurations: <ul style="list-style-type: none">• 8192-MB (4096-MB memory module + 4096-MB on system board)• 6144-MB (2048-MB memory module + 4096-MB on system board)• 4096-MB (4096-MB on system board)

Category	Description
Hard drive	<p>Support for 6.35-cm (2.5-in) hard drives in 7.0-mm (.28-in) thickness</p> <p>Serial ATA</p> <p>Support for hard drive configuration as cache 32-GB mSATA (installed with hard drive only)</p> <p>Support for Accelerometer hard drive protection</p> <p>Support for the following hard drives:</p> <ul style="list-style-type: none"> • 500-GB, 7200-rpm, 7.0-mm • 500-GB, 5400-rpm, 7.0-mm
Solid-state drive	<p>Support for mSATA solid-state drives</p> <p>Serial ATA III</p> <p>Support for the following single solid-state drive configurations:</p> <ul style="list-style-type: none"> • 256-GB mSATA • 128-GB mSATA <p>Support for Intel Smart Response Technology 32-GB solid-state drive</p>
Audio and video	<p>Two high-performance Premium-branded speakers mounted in bass reflex enclosures</p> <p>Dual-array microphones with appropriate beam-forming, echo-cancellation, noise-suppression software</p> <p>HD Audio (92HD99)</p> <p>Beats signature audio profile applied to both headphones and external speakers</p> <p>Separate discrete amplifiers for headphone and audio out jacks</p> <p>Supports Microsoft Premium requirements</p> <p>Integrated HP TrueVision HD slim webcam (fixed [no tilt], activity LED, 1280×720 by 24 frames per second)</p> <p>Dual array digital microphones with appropriate beam-forming, echo-cancellation, noise-suppression software</p>
Ethernet	<p>Integrated 10/100/1000 RTL8111F network interface card (NIC)</p>
Wireless	<p>Integrated wireless local area network (WLAN) options by way of wireless module</p> <p>Support for the Intel Centrino Advanced-N 6235 Combo Adapter</p> <p>Support for Intel Wireless Display (Wi-Di)</p>

Category	Description
External media cards	<p>2-in-1 Digital Media Reader Slot Digital Media Slot with push-push technology, supporting the following digital card formats:</p> <ul style="list-style-type: none"> • Secure Digital (SD) Memory Card • Secure Digital High Capacity (SDHC) Memory Card • Secure Digital Extended Capacity (SDxC) Memory Card • MultiMediaCard (MMC)
Ports	<ul style="list-style-type: none"> • Audio-in (mono microphone)/audio-out (stereo headphone) combo jack • HDMI v1.4a supporting up to 1920×1200 @ 60Hz with HDCP key • AC adapter • RJ-45 (Ethernet) • USB 3.0 port (two ports on left side) • USB 2.0 port (one port on right side), supports USB sleep and charge
Keyboard/pointing devices	<p>Full-size, backlit, island-style keyboard</p> <p>Gesture support: MultiTouch gestures enabled, two-finger scrolling, and pinch-zoom as default</p> <p>Taps enabled by default</p> <p>Support for ImagePad with gesture support image sensor, scroll, pinch, zoom, rotate, and 3-finger flick)</p>
Power requirements	<p>Support for 65-W AC adapter (non-PFC, 3-wire)</p> <p>Support for 4-cell, 48-Wh, 3.27-Ah battery (Li-ion)</p>
Security	<p>Support for security cable lock</p> <p>Support for Trusted Platform Module (TPM)</p> <p>Support for Intel AT-p Ready (in BIOS)</p>
Operating system	Preinstalled: Windows® 8 Professional 64-bit and Windows 8 Standard 64-bit
Serviceability	End user replaceable part: AC adapter

2 External component identification

Display



Item	Component	Description
(1)	Internal display switch	Turns off the display and initiates Sleep if the display is closed while the power is on. NOTE: The internal display switch is not visible from the outside of the computer.
(2)	Internal microphones (2)	Record sound.
(3)	Webcam light	On: The webcam is in use.
(4)	Webcam	Records video, captures still photographs, and provides access to video conferences and online chat by means of streaming video. From the Start screen, type c , and then select CyberLink YouCam .

Buttons, speakers, and antennas

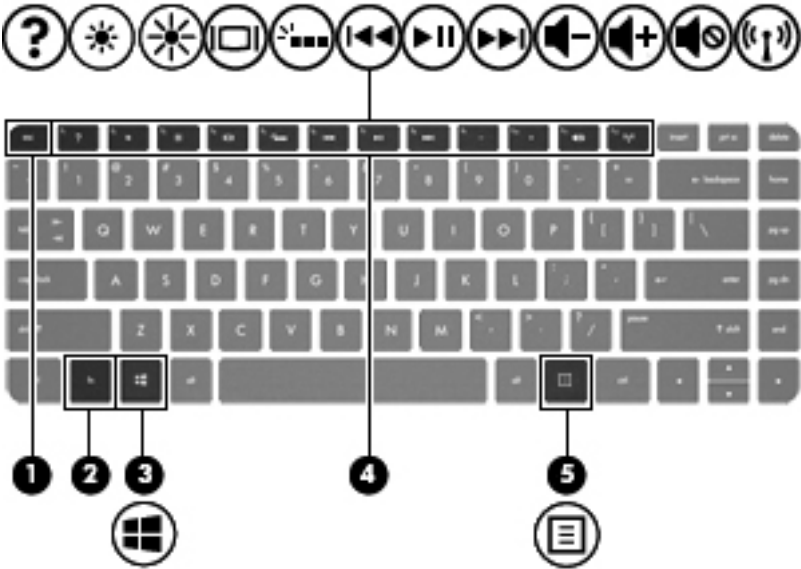


Item	Component	Description
(1)	Power button	<ul style="list-style-type: none">When the computer is off, press the button to turn on the computer.When the computer is in the Sleep state, press the button briefly to exit Sleep.When the computer is in Hibernation, press the button briefly to exit Hibernation. <p>CAUTION: Pressing and holding down the power button will result in the loss of unsaved information.</p> <p>If the computer has stopped responding and Microsoft Windows shutdown procedures are ineffective, press and hold the power button down for at least 5 seconds to turn off the computer.</p> <p>NOTE: For select models, the Intel Rapid Start Technology feature is enabled at the factory. Rapid Start Technology allows your computer to resume quickly from inactivity.</p> <p>To learn more about your power settings:</p> <ol style="list-style-type: none">From the Start screen, type <code>p</code>.In the search box, type <code>power</code>.Select Settings, and then select Power options.
(2)	WLAN antennas (2)*	Send and receive wireless signals to communicate with WLANs.

Item	Component	Description
(3)	Speakers (2)	Produce sound.

*The antennas are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennas free from obstructions. For wireless regulatory notices, see the section of the *Regulatory, Safety, and Environmental Notices* that applies to your country or region. To access this guide, select the **HP Support Assistant** app from the Start screen, select **My computer**, and then select **User guides**.

Keys



Item	Component	Description
(1)	esc key	Displays system information when pressed in combination with the fn key.
(2)	fn key	Executes frequently used system functions when pressed in combination with the b key or the esc key.
(3)	Windows logo key	Returns you to the Start screen from an open app or the Windows desktop. NOTE: Pressing the Windows logo key again will return you to the previous screen.
(4)	Action keys	Execute frequently used system functions.
(5)	Windows application key	Displays options for a selected object.

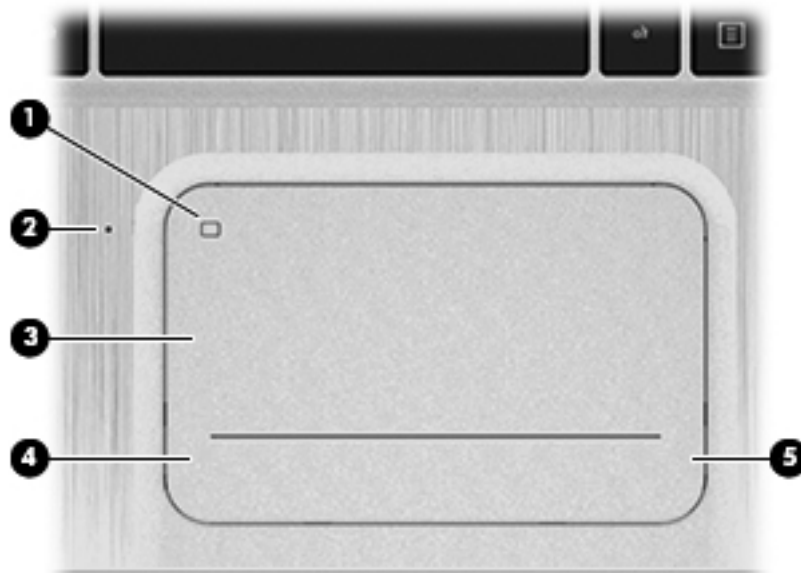
Lights



Item	Component	Description
(1)	Power light	<ul style="list-style-type: none"> White: The computer is on. Blinking white: The computer is in the Sleep state, which is an energy-saving mode. The computer shuts off power to the display and other unneeded components. Off: The computer is off or in Hibernation. Hibernation is an energy-saving mode that uses the least amount of power to preserve your work. <p>NOTE: For select models, the Intel Rapid Start Technology feature is enabled at the factory. Rapid Start Technology allows your computer to resume quickly from inactivity.</p>
(2)	Keyboard backlight light	Identifies the keyboard backlight action key.
(3)	Mute light	<ul style="list-style-type: none"> Amber: Computer sound is off. Off: Computer sound is on.
(4)	Wireless light	<ul style="list-style-type: none"> White: An integrated wireless device, such as a WLAN device and/or a Bluetooth device, is on. Amber: All wireless devices are off.

Item	Component	Description
(5)	Caps lock light	On: Caps lock is on, which switches the keys to all capital letters.
(6)	TouchPad light	<ul style="list-style-type: none"> On: The TouchPad is off. Off: The TouchPad is on.

TouchPad



Item	Component	Description
(1)	TouchPad on/off button	Turns the TouchPad on or off.
(2)	TouchPad light	<ul style="list-style-type: none"> On: The TouchPad is off. Off: The TouchPad is on.
(3)	TouchPad zone	<p>Moves the on-screen pointer and selects or activates items on the screen.</p> <p>NOTE: The TouchPad also supports gestures.</p>
(4)	Left TouchPad button	Functions like the left button on an external mouse.
(5)	Right TouchPad button	Functions like the right button on an external mouse.

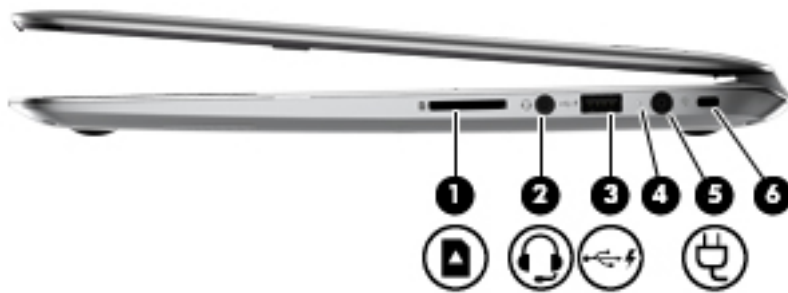
Left side



Item	Component	Description
(1)	RJ-45 (network) jack lights (2)	<ul style="list-style-type: none"> White: The computer is connected to a network. Amber: The computer is connected to a network and activity is occurring on the network.
(2)	RJ-45 (network) jack	Connects a network cable.
(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 HDMI device.
(4)	Thunderbolt DisplayPort	<p>Connects an optional high-resolution display device or a high-performance data device.</p> <p>NOTE: Thunderbolt is new technology. Install all the latest drivers for your Thunderbolt device before connecting the device to the Thunderbolt DisplayPort. Thunderbolt cable and Thunderbolt device (sold separately) must be compatible with Windows. To determine whether your device is Thunderbolt Certified for Windows, see https://thunderbolttechnology.net/products.</p>
(5)	USB 3.0 ports (2)	<p>Connect optional USB 3.0 devices and provide enhanced USB power performance.</p> <p>NOTE: The USB 3.0 port is also compatible with USB 1.0 and USB 2.0 devices.</p>

Item	Component	Description
(6)	Hard drive light	<ul style="list-style-type: none"> Blinking white: The hard drive is being accessed. Amber: HP 3D DriveGuard has temporarily parked the hard drive.
(7)	Power light	<ul style="list-style-type: none"> White: The computer is on. Blinking white: The computer is in the Sleep state, which is an energy-saving mode. The computer shuts off power to the display and other unneeded components. Off: The computer is off or in Hibernation. Hibernation is an energy-saving mode that uses the least amount of power to preserve your work. <p>NOTE: For select models, the Intel Rapid Start Technology feature is enabled at the factory. Rapid Start Technology allows your computer to resume quickly from inactivity.</p>

Right side



Item	Component	Description
(1)	Digital Media Card Reader	<p>Supports the following digital card formats:</p> <ul style="list-style-type: none"> Secure Digital (SD) Memory Card Secure Digital High Capacity (SDHC) Memory Card Secure Digital Extended Capacity (SDxC) Memory Card MultiMediaCard (MMC)

Item	Component	Description
(2)	Audio-out (headphone) jack/Audio-in (microphone) jack	<p>Connects an optional device such as a headset, power stereo speakers, headphones, earbuds, television audio, or a headset microphone.</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>. To access this guide, from the Start screen, select the HP Support Assistant app, select My computer, and then select User guides.</p> <p>NOTE: When a device is connected to the jack, the computer speakers are disabled.</p>
(3)	USB 2.0 charging port	<p>Connects an optional USB device. This port can also charge select models of cell phones and MP3 players, even when the computer is off.</p> <p>NOTE: A USB charging port (also referred to as a USB powered port) allows you to charge connected USB devices. Some USB devices require power and require you to use a powered port.</p>
(4)	AC adapter light	<ul style="list-style-type: none"> • White: The AC adapter is connected and the battery is charged. • Amber: The AC adapter is connected and the battery is charging. • Off: The computer is using battery power.
(5)	Power connector	Connects an AC adapter.
(6)	Security cable slot	<p>Attaches an optional security cable to the computer.</p> <p>NOTE: The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.</p>

Bottom



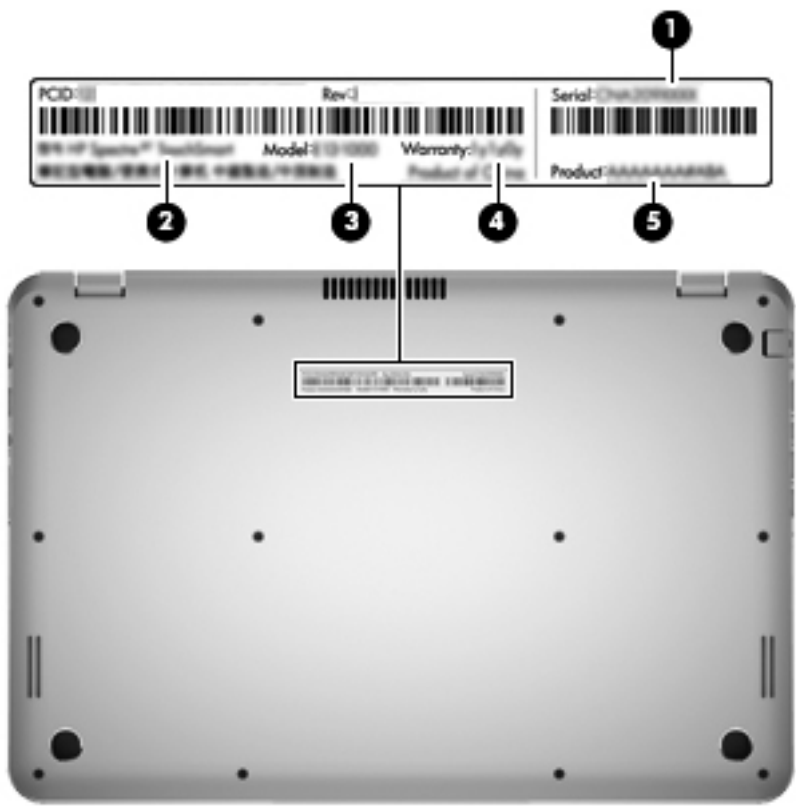
Item	Component	Description
(1)	Speakers (2)	Produce sound.
(2)	Vent	Enables airflow to cool internal components.

NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.

3 Illustrated parts catalog

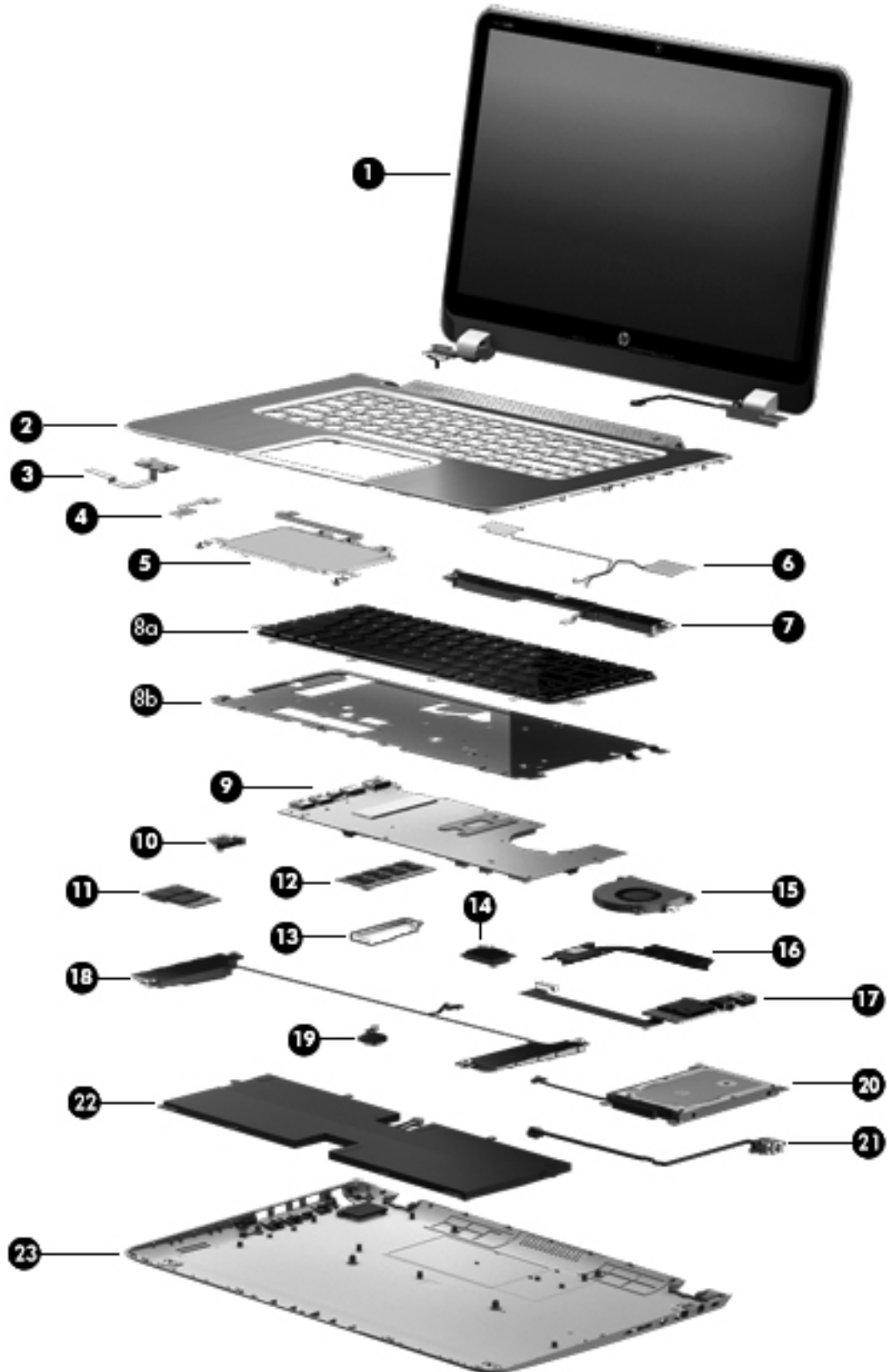
Service tag

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



Item	Description	Function
(1)	Product name	This is the product name affixed to the front of the computer.
(2)	Serial number (s/n)	This is an alphanumeric identifier that is unique to each product.
(3)	Part number/Product number (p/n)	This number provides specific information about the product's hardware components. The part number helps a service technician to determine what components and parts are needed.
(4)	Warranty period	This number describes the duration of the warranty period for the computer.
(5)	Model description	This is the alphanumeric identifier used to locate documents, drivers, and support for the computer.

Computer major components



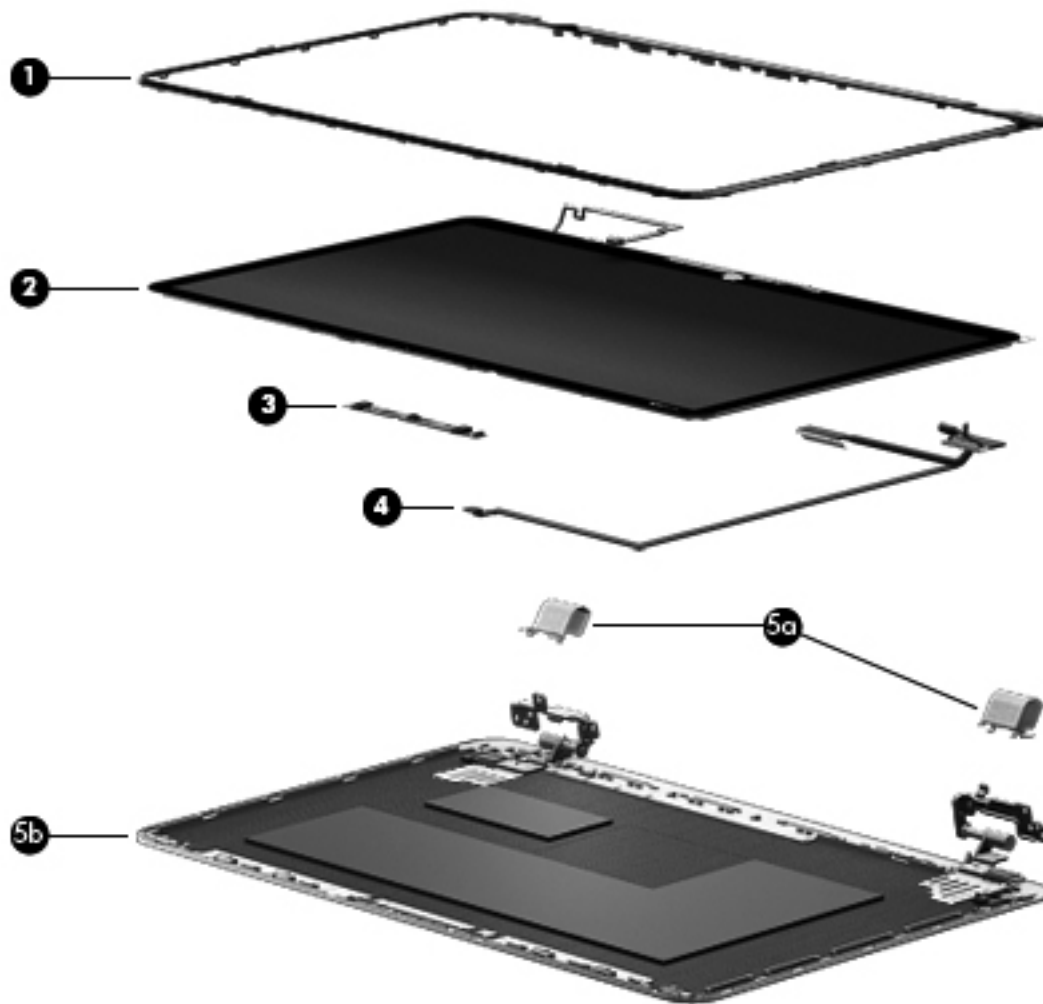
Item	Component	Spare part number
(1)	Display assembly: The display assembly is spared at the subcomponent level only. For more display assembly spare part information, see Display assembly subcomponents on page 19 .	
(2)	Top cover:	
	Top cover for use only with keyboard spare part kits 700807-031, 700807-041, 700807-051, 700807-061, 700807-071, 700807-131, 700807-141, 700807-161, 700807-A41, 700807-BB1, 700807-BG1, 700807-DB1, and 700807-DH1.	701824-001
	Top cover for use only with keyboard spare part kits 700807-001, 700807-151, 700807-171, 700807-251, and 700807-B31.	701823-001
(3)	Power button board (includes cable)	700891-001
(4)	TouchPad LED board (includes cable)	701819-001
(5)	TouchPad (includes cable)	701825-001
(6)	Antenna Kit (includes left and right WLAN antenna cables and transceivers)	700796-001
(7)	Rear speakers (includes left and right rear speakers, cables, and 2 rubber isolators)	701821-001
	Keyboard with backlight and pointing stick (includes keyboard cable, keyboard backlight cable, keyboard shield, and pointing stick cable):	
	Includes:	
(8a)	Keyboard for use in Belgium	700807-A41
	For use in Canada	700807-DB1
	For use in Denmark, Finland, and Norway	700807-DH1
	For use in France	700807-051
	For use in Germany	700807-041
	For use in Greece	700807-151
	For use in Israel	700807-BB1
	For use in Italy	700807-061
	For use in Latin America	700807-161
	For use in the Netherlands	700807-B31
	For use in Portugal	700807-131
	For use in Russia	700807-251
	For use in Saudi Arabia	700807-171
	For use in Spain	700807-071
	For use in Switzerland	700807-BG1
	For use in Turkey	700807-141
	For use in the United Kingdom and Singapore	700807-031
	For use in the United States	700807-001

Item	Component	Spare part number
(8b)	Keyboard shield	
(9)	System board (includes processor and replacement thermal material):	
	Equipped with an Intel Quad Core i7-3537U 2.00-GHz processor (turbo up to 3.10-GHz), 1600-MHz FSB, 4.00-MB L3 cache, 17 W, and the Windows 8 Professional operating system without trusted platform module security for use only in the People's Republic of China and Russia	715044-601
	Equipped with an Intel Quad Core i7-3537U 2.00-GHz processor (turbo up to 3.10-GHz), 1600-MHz FSB, 4.00-MB L3 cache, 17 W, and the Windows 8 Standard operating system without trusted platform module security for use only in the People's Republic of China and Russia	715044-501
	Equipped with an Intel Quad Core i7-3537U 2.00-GHz processor (turbo up to 3.10-GHz), 1600-MHz FSB, 4.00-MB L3 cache, 17 W, and the Windows 7 operating system without trusted platform module security for use only in the People's Republic of China and Russia	715044-001
	Equipped with an Intel Quad Core i7-3517U 1.90-GHz processor (turbo up to 3.00-GHz), 1600-MHz FSB, 4.00-MB L3 cache, 17 W, and the Windows 8 Standard operating system without trusted platform module security for use only in the People's Republic of China and Russia	704055-501
	Equipped with an Intel Quad Core i7-3517U 1.90-GHz processor (turbo up to 3.00-GHz), 1600-MHz FSB, 4.00-MB L3 cache, 17 W, and the Windows 7 operating system without trusted platform module security for use only in the People's Republic of China and Russia	704055-001
	Equipped with an Intel Quad Core i7-3517U 1.90-GHz processor (turbo up to 3.00-GHz), 1600-MHz FSB, 4.00-MB L3 cache, 17 W, and the Windows 8 Professional operating system with trusted platform module security for use in all countries and regions except the People's Republic of China and Russia	700814-601
	Equipped with an Intel Quad Core i7-3517U 1.90-GHz processor (turbo up to 3.00-GHz), 1600-MHz FSB, 4.00-MB L3 cache, 17 W, and the Windows 8 Standard operating system with trusted platform module security for use in all countries and regions except the People's Republic of China and Russia	700814-501
	Equipped with an Intel Quad Core i7-3517U 1.90-GHz processor (turbo up to 3.00-GHz), 1600-MHz FSB, 4.00-MB L3 cache, 17 W, and the Windows 7 operating system with trusted platform module security for use in all countries and regions except the People's Republic of China and Russia	700814-001
	Equipped with an Intel Dual Core i5-3337U 1.80-GHz processor (turbo up to 2.70-GHz), 1600-MHz FSB, 3.00-MB L3 cache, 17 W, and the Windows 8 Professional operating system without trusted platform module security for use only in the People's Republic of China and Russia	715045-601
	Equipped with an Intel Dual Core i5-3337U 1.80-GHz processor (turbo up to 2.70-GHz), 1600-MHz FSB, 3.00-MB L3 cache, 17 W, and the Windows 8 Standard operating system without trusted platform module security for use only in the People's Republic of China and Russia	715045-501
	Equipped with an Intel Dual Core i5-3337U 1.80-GHz processor (turbo up to 2.70-GHz), 1600-MHz FSB, 3.00-MB L3 cache, 17 W, and the Windows 7 operating system without trusted platform module security for use only in the People's Republic of China and Russia	715045-001

Item	Component	Spare part number
	Equipped with an Intel Dual Core i5-3317U 1.70-GHz processor (turbo up to 2.60-GHz), 1600-MHz FSB, 3.00-MB L3 cache, 17 W, and the Windows 8 Standard operating system without trusted platform module security for use only in the People's Republic of China and Russia	704056-501
	Equipped with an Intel Dual Core i5-3317U 1.70-GHz processor (turbo up to 2.60-GHz), 1600-MHz FSB, 3.00-MB L3 cache, 17 W, and the Windows 7 operating system without trusted platform module security for use only in the People's Republic of China and Russia	704056-001
	Equipped with an Intel Dual Core i5-3317U 1.70-GHz processor (turbo up to 2.60-GHz), 1600-MHz FSB, 3.00-MB L3 cache, 17 W, and the Windows 8 Professional operating system with trusted platform module security for use in all countries and regions except the People's Republic of China and Russia	700816-601
	Equipped with an Intel Dual Core i5-3317U 1.70-GHz processor (turbo up to 2.60-GHz), 1600-MHz FSB, 3.00-MB L3 cache, 17 W, and the Windows 8 Standard operating system with trusted platform module security for use in all countries and regions except the People's Republic of China and Russia	700816-501
	Equipped with an Intel Dual Core i5-3317U 1.70-GHz processor (turbo up to 2.60-GHz), 1600-MHz FSB, 3.00-MB L3 cache, 17 W, and the Windows 7 operating system with trusted platform module security for use in all countries and regions except the People's Republic of China and Russia	700816-001
(10)	RJ-45 jack cover	701816-001
(11)	Solid-state drive:	
	256-GB	700813-001
	128-GB	700812-001
	32-GB	700811-001
(12)	Memory module (PC3-12800, 1666-MHz, DDR3):	
	4-GB	691740-001
	2-GB	691739-001
(13)	Memory shield	701817-001
(14)	Intel Centrino Advanced-N 6235 Combo Adapter	670292-005
(15)	Fan (includes cable)	700803-001
(16)	Heat sink (includes replacement thermal material)	700804-001
(17)	Multimedia board (includes audio port, Card Reader, USB port, and cable)	701820-001
(18)	Front speakers (includes left and right front speakers, cables, and 4 rubber isolators)	700810-001
(19)	RTC battery (includes cable and double-sided tape)	686922-001
(20)	Hard drive (does not include hard drive bracket, hard drive connector cable, or screws):	
	500-GB, 7200-rpm, 7.0-mm hard drive	703267-001
	500-GB, 5400-rpm, 7.0-mm hard drive	683802-001

Item	Component	Spare part number
	Hard Drive Hardware Kit (not illustrated, includes hard drive bracket, hard drive connector cable, and screws)	700805-001
(21)	Power connector cable (includes bracket)	700802-001
(22)	4-cell, 48-Wh, 3.27-Ah battery (Li-ion)	697311-001
(23)	Bottom cover (includes 4 rubber feet)	700798-001

Display assembly subcomponents



Item	Component	Spare part number
(1)	Display bezel	700799-001
(2)	Display panel (15.6-in, HD, LED, BrightView [1920×1080], slim [3.2-mm], UWVA)	700808-001
(3)	Webcam/microphone module	700818-001
(4)	Display panel cable (includes webcam/microphone module cable)	700800-001

Item	Component	Spare part number
	Display panel touch cable (not illustrated)	712412-001
	Display enclosure , includes:	700797-001
(5)	Left and right display hinge covers	
(6)	Left and right display hinges	
(7)	Display enclosure	

Mass storage device



Item	Description	Spare part number
(1)	Hard drive (does not include hard drive bracket, hard drive connector cable, or screws):	
	500-GB, 7200-rpm, 7.0-mm hard drive	703267-001
	500-GB, 5400-rpm, 7.0-mm hard drive	683802-001
	Hard Drive Hardware Kit , includes:	700805-001
(2)	Hard drive bracket	
(3)	Hard drive connector cable	
	Hard drive bracket screws (not illustrated)	
(4)	Hard drive space cover	712413-001
(5)	mSATA solid-state drive:	
	256-GB	700813-001
	128-GB	700812-001
	32-GB	700811-001

Miscellaneous parts

Component	Spare part number
65-W AC adapter (non-PFC, 3-wire)	693715-001
HDMI-to-VGA adapter	701943-001
HP 15.6-in protective cover	700801-001
HP computer tote bag with zipper	675458-001
Power cord (3-pin, black, 1.83-m):	
For use in Denmark	490371-081

Component	Spare part number
For use in Europe	490371-021
For use in Israel	490371-BB1
For use in North America	490371-001
For use in Switzerland	490371-111
For use in the United Kingdom and Singapore	490371-031
Screw Kit	700809-001

Sequential part number listing

Spare part number	Description
490371-001	Power cord for use in North America (3-pin, black, 1.83-m)
490371-021	Power cord for use in Europe (3-pin, black, 1.83-m)
490371-031	Power cord for use in the United Kingdom and Singapore (3-pin, black, 1.83-m)
490371-081	Power cord for use in Denmark (3-pin, black, 1.83-m)
490371-111	Power cord for use in Switzerland (3-pin, black, 1.83-m)
490371-BB1	Power cord for use in Israel (3-pin, black, 1.83-m)
670292-005	Intel Centrino Advanced-N 6235 Combo Adapter
675458-001	HP computer tote bag with zipper
683802-001	500-GB, 5400-rpm, 7.0-mm hard drive (does not include hard drive bracket, hard drive connector cable, or screws) NOTE: The hard drive bracket, hard drive connector cable, and screws are included in the Hard Drive Hardware Kit, spare part number 700805-001.
686922-001	RTC battery (includes cable and double-sided tape)
691739-001	2-GB memory module (PC3, 12800, 1600-MHz)
691740-001	4-GB memory module (PC3, 12800, 1600-MHz)
693715-001	65-W AC adapter (non-PFC, 3-wire)
697311-001	4-cell, 48-Wh, 3.27-Ah, Li-ion battery
700796-001	Antenna Kit (includes left and right WLAN antenna cables and transceivers)
700797-001	Display enclosure (includes left and right display hinges, left and right display hinge covers, and screws)
700798-001	Bottom cover
700799-001	Display bezel
700800-001	Display panel cable

Spare part number	Description
700801-001	HP 15.6-in protective cover
700802-001	Power connector cable (includes bracket)
700803-001	Fan (includes cable)
700804-001	Heat sink (includes replacement thermal material)
700805-001	Hard Drive Hardware Kit (includes hard drive bracket, hard drive connector cable, and screws)
700807-001	Keyboard with backlight for use only in the United States (includes keyboard cable and keyboard backlight cable) NOTE: This keyboard spare part kit is for use only with top cover spare part kit 701823-001.
700807-031	Keyboard with backlight for use only in the United Kingdom and Singapore (includes keyboard cable, keyboard backlight cable, and keyboard shield) NOTE: This keyboard spare part kit is for use only with top cover spare part kit 701824-001.
700807-041	Keyboard with backlight for use only in Germany (includes keyboard cable, keyboard backlight cable, and keyboard shield) NOTE: This keyboard spare part kit is for use only with top cover spare part kit 701824-001.
700807-051	Keyboard with backlight for use only in France (includes keyboard cable and keyboard backlight cable) NOTE: This keyboard spare part kit is for use only with top cover spare part kit 701824-001.
700807-061	Keyboard with backlight for use only in Italy (includes keyboard cable, keyboard backlight cable, and keyboard shield) NOTE: This keyboard spare part kit is for use only with top cover spare part kit 701824-001.
700807-071	Keyboard with backlight for use only in Spain (includes keyboard cable, keyboard backlight cable, and keyboard shield) NOTE: This keyboard spare part kit is for use only with top cover spare part kit 701824-001.
700807-131	Keyboard with backlight for use only in Portugal (includes keyboard cable and keyboard backlight cable) NOTE: This keyboard spare part kit is for use only with top cover spare part kit 701824-001.
700807-141	Keyboard with backlight for use only in Turkey (includes keyboard cable, keyboard backlight cable, and keyboard shield) NOTE: This keyboard spare part kit is for use only with top cover spare part kit 701824-001.
700807-151	Keyboard with backlight for use only in Greece (includes keyboard cable, keyboard backlight cable, and keyboard shield) NOTE: This keyboard spare part kit is for use only with top cover spare part kit 701823-001.
700807-161	Keyboard with backlight for use only in Latin America (includes keyboard cable and keyboard backlight cable) NOTE: This keyboard spare part kit is for use only with top cover spare part kit 701824-001.

Spare part number	Description
700807-171	Keyboard with backlight for use only in Saudi Arabia (includes keyboard cable, keyboard backlight cable, and keyboard shield) NOTE: This keyboard spare part kit is for use only with top cover spare part kit 701823-001.
700807-251	Keyboard with backlight for use only in Russia (includes keyboard cable, keyboard backlight cable, and keyboard shield) NOTE: This keyboard spare part kit is for use only with top cover spare part kit 701823-001.
700807-A41	Keyboard with backlight for use only in Belgium (includes keyboard cable and keyboard backlight cable) NOTE: This keyboard spare part kit is for use only with top cover spare part kit 701824-001.
700807-B31	Keyboard with backlight for use only in the Netherlands (includes keyboard cable, keyboard backlight cable, and keyboard shield) NOTE: This keyboard spare part kit is for use only with top cover spare part kit 701823-001.
700807-BB1	Keyboard with backlight for use only in Israel (includes keyboard cable, keyboard backlight cable, and keyboard shield) NOTE: This keyboard spare part kit is for use only with top cover spare part kit 701823-001.
700807-BG1	Keyboard with backlight for use only in Switzerland (includes keyboard cable and keyboard backlight cable) NOTE: This keyboard spare part kit is for use only with top cover spare part kit 701824-001.
700807-DB1	Keyboard with backlight for use only in Canada (includes keyboard cable, keyboard backlight cable, and keyboard shield) NOTE: This keyboard spare part kit is for use only with top cover spare part kit 701824-001.
700807-DH1	Keyboard with backlight for use only in Denmark, Finland, and Norway (includes keyboard cable, keyboard backlight cable, and keyboard shield) NOTE: This keyboard spare part kit is for use only with top cover spare part kit 701824-001.
700808-001	15.6-in, BrightView (1920×1080), FHD, WLED, UWVA display panel
700809-001	Screw Kit
700810-001	Front speakers (includes cables and 2 rubber isolators)
700811-001	32-GB solid-state drive
700812-001	128-GB solid-state drive
700813-001	256-GB solid-state drive
700814-001	System board equipped with an Intel Quad Core i7-3517U 1.90-GHz processor (turbo up to 3.00-GHz), 1600-MHz FSB, 4.00-MB L3 cache, 17 W, and the Windows 7 operating system with trusted platform module security for use in all countries and regions except the People's Republic of China and Russia (includes replacement thermal material)
700814-501	System board equipped with an Intel Quad Core i7-3517U 1.90-GHz processor (turbo up to 3.00-GHz), 1600-MHz FSB, 4.00-MB L3 cache, 17 W, and the Windows 8 Standard operating system with trusted platform module security for use in all countries and regions except the People's Republic of China and Russia (includes replacement thermal material)

Spare part number	Description
700814-601	System board equipped with an Intel Quad Core i7-3517U 1.90-GHz processor (turbo up to 3.00-GHz), 1600-MHz FSB, 4.00-MB L3 cache, 17 W, and the Windows 8 Professional operating system with trusted platform module security for use in all countries and regions except the People's Republic of China and Russia (includes replacement thermal material)
700816-001	System board equipped with an Intel Dual Core i5-3317U 1.70-GHz processor (turbo up to 2.60-GHz), 1600-MHz FSB, 3.00-MB L3 cache, 17 W, and the Windows 7 operating system with trusted platform module security for use in all countries and regions except the People's Republic of China and Russia (includes replacement thermal material)
700816-501	System board equipped with an Intel Dual Core i5-3317U 1.70-GHz processor (turbo up to 2.60-GHz), 1600-MHz FSB, 3.00-MB L3 cache, 17 W, and the Windows 8 Standard operating system with trusted platform module security for use in all countries and regions except the People's Republic of China and Russia (includes replacement thermal material)
700816-601	System board equipped with an Intel Dual Core i5-3317U 1.70-GHz processor (turbo up to 2.60-GHz), 1600-MHz FSB, 3.00-MB L3 cache, 17 W, and the Windows 8 Professional operating system with trusted platform module security for use in all countries and regions except the People's Republic of China and Russia (includes replacement thermal material)
700818-001	Webcam/microphone module
700891-001	Power button board (includes cable)
701816-001	RJ-45 jack cover
701817-001	Memory shield
701819-001	TouchPad LED board (includes cable)
701820-001	Multimedia board (includes audio port, Card Reader, USB port, and cable)
701821-001	Rear speakers (includes cables and 2 rubber isolators)
701823-001	Top cover NOTE: This top cover spare part kit is for use only with keyboard spare part kits 700807-001, 700807-151, 700807-171, 700807-251, and 700807-B31.
701824-001	Top cover NOTE: This top cover spare part kit is for use only with keyboard spare part kits 700807-031, 700807-041, 700807-051, 700807-061, 700807-071, 700807-131, 700807-141, 700807-161, 700807-A41, 700807-BB1, 700807-BG1, 700807-DB1, and 700807-DH1.
701825-001	TouchPad (includes cable)
701943-001	HDMI-to-VGA adapter
703267-001	500-GB, 7200-rpm, 7.0-mm hard drive (does not include hard drive bracket, hard drive connector cable, or screws) NOTE: The hard drive bracket, hard drive connector cable, and screws are included in the Hard Drive Hardware Kit, spare part number 700805-001.
704055-001	System board equipped with an Intel Quad Core i7-3517U 1.90-GHz processor (turbo up to 3.00-GHz), 1600-MHz FSB, 4.00-MB L3 cache, 17 W, and the Windows 7 operating system without trusted platform module security for use only in the People's Republic of China and Russia (includes replacement thermal material)

Spare part number	Description
704055-501	System board equipped with an Intel Quad Core i7-3517U 1.90-GHz processor (turbo up to 3.00-GHz), 1600-MHz FSB, 4.00-MB L3 cache, 17 W, and the Windows 8 Standard operating system without trusted platform module security for use only in the People's Republic of China and Russia (includes replacement thermal material)
704056-001	System board equipped with an Intel Dual Core i5-3317U 1.70-GHz processor (turbo up to 2.60-GHz), 1600-MHz FSB, 3.00-MB L3 cache, 17 W, and the Windows 7 operating system without trusted platform module security for use only in the People's Republic of China and Russia (includes replacement thermal material)
704056-501	System board equipped with an Intel Dual Core i5-3317U 1.70-GHz processor (turbo up to 2.60-GHz), 1600-MHz FSB, 3.00-MB L3 cache, 17 W, and the Windows 8 Standard operating system without trusted platform module security for use only in the People's Republic of China and Russia (includes replacement thermal material)
712412-001	Display panel touch cable
712413-001	Hard drive space cover
715044-001	System board equipped with an Intel Quad Core i7-3537U 2.00-GHz processor (turbo up to 3.10-GHz), 1600-MHz FSB, 4.00-MB L3 cache, 17 W, and the Windows 7 operating system without trusted platform module security for use only in the People's Republic of China and Russia (includes replacement thermal material)
715044-501	System board equipped with an Intel Quad Core i7-3537U 2.00-GHz processor (turbo up to 3.10-GHz), 1600-MHz FSB, 4.00-MB L3 cache, 17 W, and the Windows 8 Standard operating system without trusted platform module security for use only in the People's Republic of China and Russia (includes replacement thermal material)
715044-601	System board equipped with an Intel Quad Core i7-3537U 2.00-GHz processor (turbo up to 3.10-GHz), 1600-MHz FSB, 4.00-MB L3 cache, 17 W, and the Windows 8 Professional operating system without trusted platform module security for use only in the People's Republic of China and Russia (includes replacement thermal material)
715045-001	System board equipped with an Intel Dual Core i5-3337U 1.80-GHz processor (turbo up to 2.70-GHz), 1600-MHz FSB, 3.00-MB L3 cache, 17 W, and the Windows 7 operating system without trusted platform module security for use only in the People's Republic of China and Russia (includes replacement thermal material)
715045-501	System board equipped with an Intel Dual Core i5-3337U 1.80-GHz processor (turbo up to 2.70-GHz), 1600-MHz FSB, 3.00-MB L3 cache, 17 W, and the Windows 8 Standard operating system without trusted platform module security for use only in the People's Republic of China and Russia (includes replacement thermal material)
715045-601	System board equipped with an Intel Dual Core i5-3337U 1.80-GHz processor (turbo up to 2.70-GHz), 1600-MHz FSB, 3.00-MB L3 cache, 17 W, and the Windows 8 Professional operating system without trusted platform module security for use only in the People's Republic of China and Russia (includes replacement thermal material)

4 Removal and replacement procedures

Preliminary replacement requirements


Tools required

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


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

Service considerations


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

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

Plastic parts

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

Cables and connectors

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

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

Drive handling

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

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

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

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

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

Avoid dropping drives from any height onto any surface.

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

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

Avoid exposing a drive to temperature extremes or liquids.

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

Grounding guidelines

Electrostatic discharge damage

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

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

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

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

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

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

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

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

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

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

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

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

Workstation guidelines

Follow these grounding workstation guidelines:

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

Equipment guidelines

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

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

The following grounding equipment is recommended to prevent electrostatic damage:

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

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

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

Component replacement procedures

This chapter provides removal and replacement procedures.

There are as many as 106 screws that must be removed, replaced, and/or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

Service tag

When ordering parts or requesting information, provide the computer serial number and model number provided on the service tag. It is necessary to remove the battery to obtain these numbers. See [Battery on page 35](#) for battery removal instructions.



Item	Component	Description
(1)	Product name	This is the product name affixed to the front of the computer.
(2)	Serial number (s/n)	This is an alphanumeric identifier that is unique to each product.
(3)	Part number/Product number (p/n)	This number provides specific information about the product's hardware components. The part number helps a service technician determine what components and parts are needed.

Item	Component	Description
(4)	Warranty period	This number describes the duration of the warranty period for the computer.
(5)	Model description	This is the alphanumeric identifier used to locate documents, drivers, and support for the computer.

Bottom cover

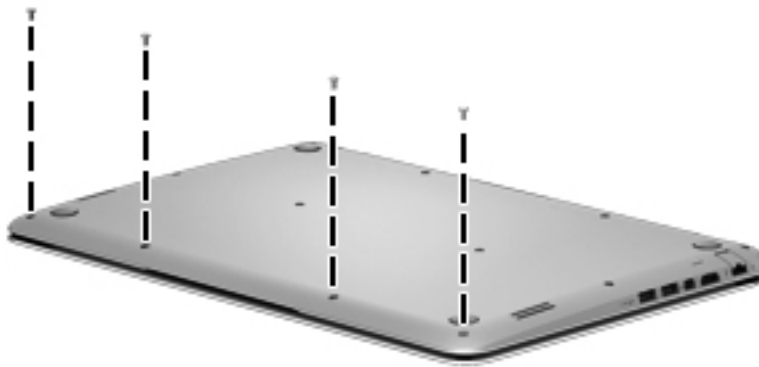
Description	Spare part number
Bottom cover	671731-001

Before disassembling the computer, follow these steps:

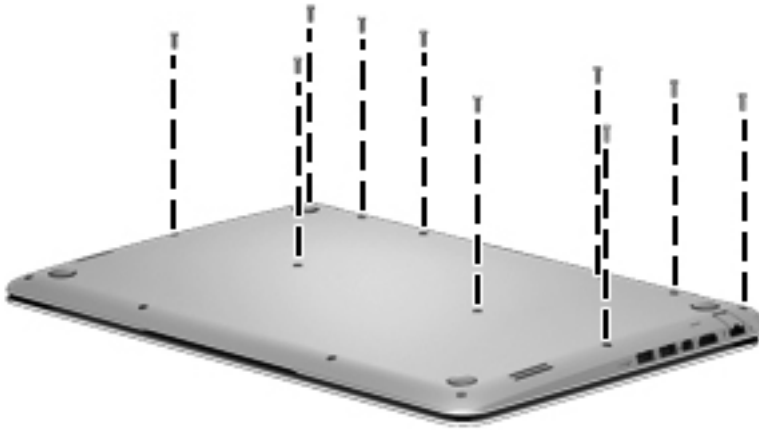
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.

Remove the bottom cover:

1. Turn the computer upside down, with the front toward you.
2. Remove the four Phillips PM2.5×5.5 screws that secure the bottom cover to the computer.



3. Remove the ten Phillips PM2.5×9.5 screws that secure the bottom cover to the computer.



4. Lift the rear right corner **(1)** of the bottom cover until the cover detaches from the computer, and then remove the bottom cover **(2)** from the computer.



Reverse this procedure to install the bottom cover.

Battery

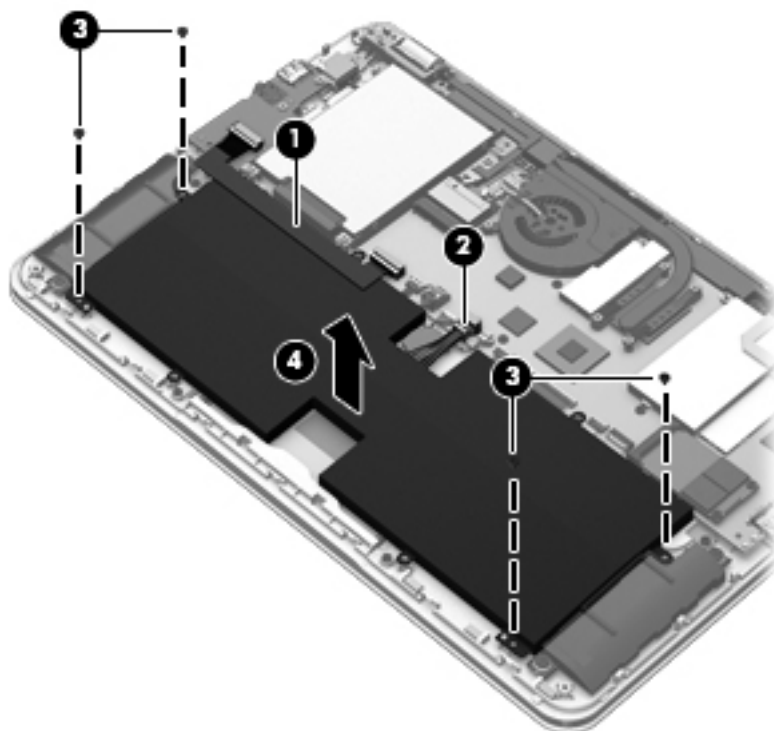
Description	Spare part number
4-cell, 48-Wh, 3.27-Ah battery (Li-ion)	697311-001

Before removing the battery, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 33](#)).

Remove the battery:

1. Detach the multimedia cable **(1)** from the battery. (The multimedia cable is attached to the battery with double-sided tape.)
2. Disconnect the battery cable **(2)** from the system board.
3. Remove the four Phillips PM2.0×3.0 screws **(3)** that secure the battery to the top cover.
4. Remove the battery **(4)** from the computer.



Reverse this procedure to install the battery.

RTC battery

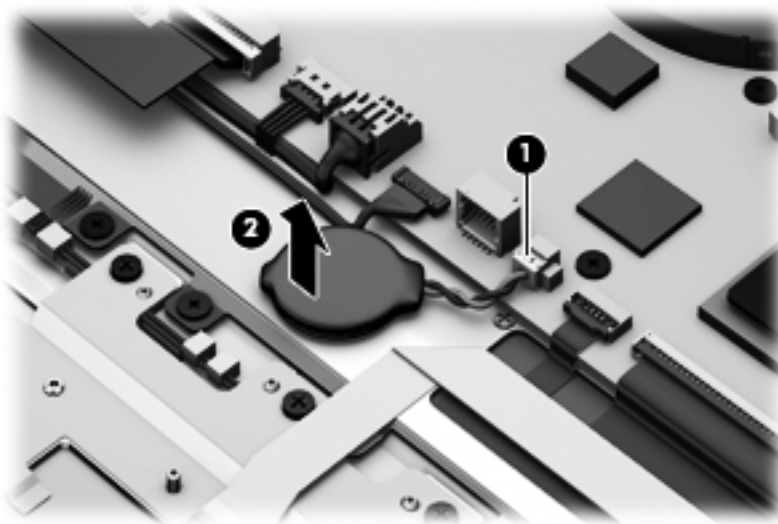
Description	Spare part number
RTC battery (includes cable and double-sided tape)	686922-001

Before removing the RTC battery, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 33](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 35](#)).

Remove the RTC battery:

1. Disconnect the RTC battery cable **(1)** from the system board.
2. Detach the RTC battery **(2)** from the top cover. (The RTC battery is attached to the top cover with double-sided tape.)




3. Remove the RTC battery.

Reverse this procedure to install the RTC battery.

WLAN module

Description	Spare part number
Intel Centrino Advanced-N 6235 Combo Adapter	670292-005

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

Before removing the WLAN module, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 33](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 35](#)).

Remove the WLAN module:

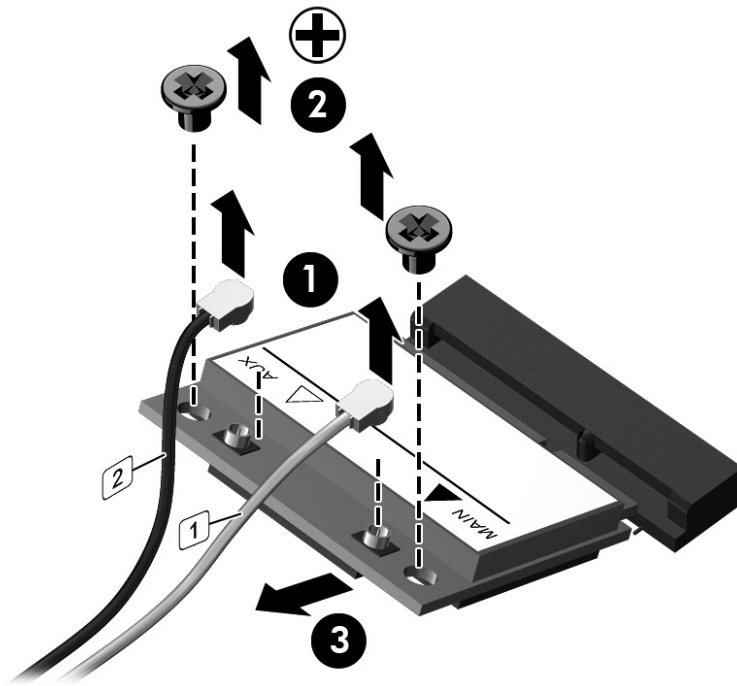
1. Disconnect the WLAN antenna cables **(1)** from the terminals on the WLAN module.



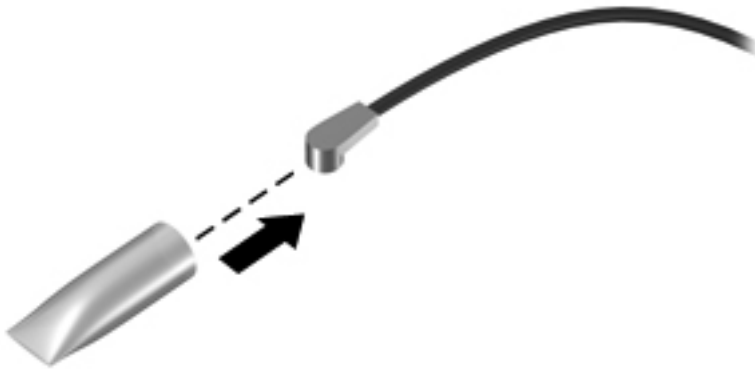
NOTE: The WLAN antenna cable labeled "1" connects to the WLAN module "Main" terminal labeled "1". The WLAN antenna cable labeled "2" connects to the WLAN module "Aux" terminal labeled "2".

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

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



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



Reverse this procedure to install the WLAN module.

Fan

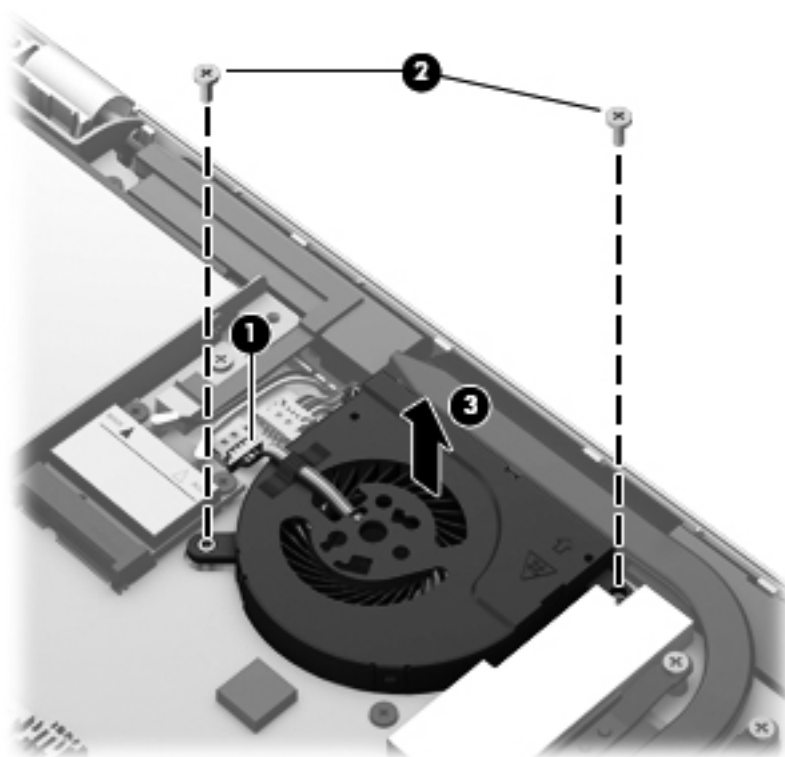
Description	Spare part number
Fan (includes cable)	700803-001

Before removing the fan, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 33](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 35](#)).

Remove the fan:

1. Disconnect the fan cable **(1)** from the system board.
2. Remove the two Phillips PM2.0×4.5 screws **(2)** that secure the fan to the top cover.
3. Remove the fan **(3)** from the top cover.



Reverse this procedure to install the fan.

Solid-state drive

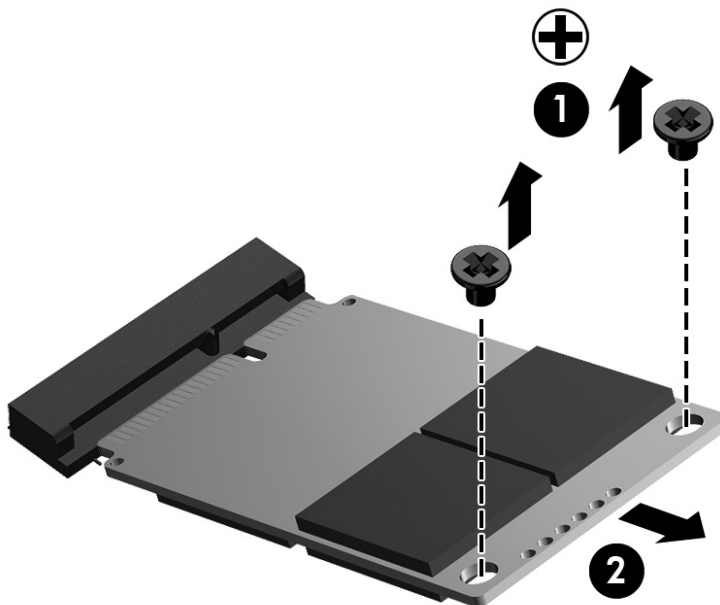
Description	Spare part number
256-GB	700813-001
128-GB	700812-001
32-GB	700811-001

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

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 33](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 35](#)).

Remove the solid-state drive:

1. Remove the two Phillips PM2.0×4.5 screws **(1)** that secure the solid-state drive to the top cover. (The solid-state drive tilts up.)
2. Remove the solid-state drive **(3)** by pulling the drive away from the slot at an angle.



Reverse this procedure to install the solid-state drive.

Power button board

Description	Spare part number
Power button board (includes cable)	700891-001

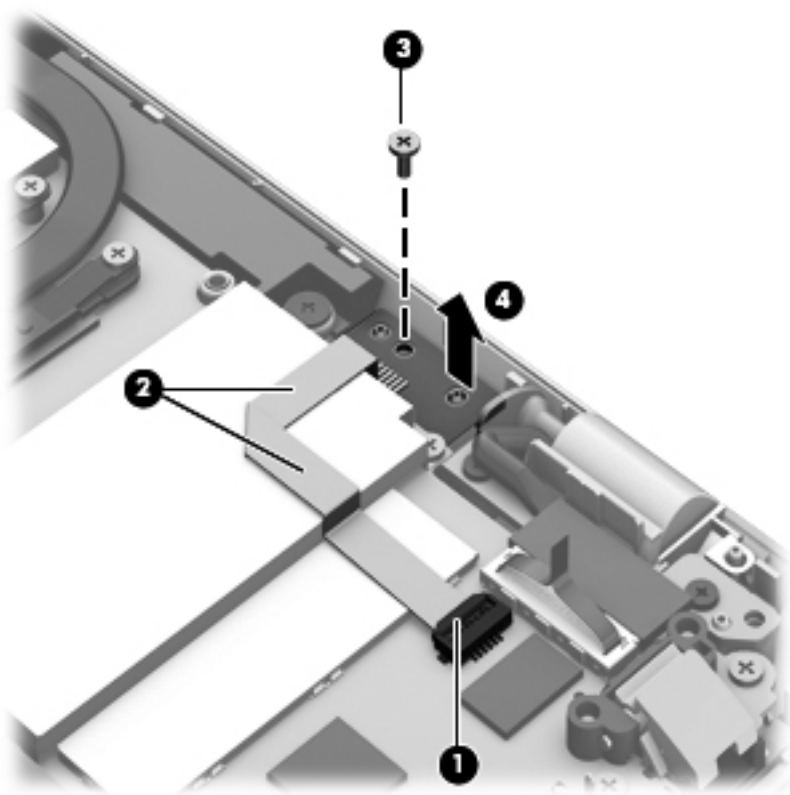
Before removing the power button board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 33](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 35](#)).

Remove the power button board:

1. Release the zero insertion force (ZIF) connector **(1)** to which the power button board cable is attached, and then disconnect the power button board cable from the system board.
2. Detach the power button board cable **(2)** from the memory shield. (The power button board cable is attached to the memory shield with double-sided tape at 2 locations.)
3. Remove the Phillips PM2.0×4.5 screw **(3)** that secures the power button board to the top cover.

4. Remove the power button board (4).



Reverse this procedure to install the power button board.

Hard drive



NOTE: The hard drive spare part kit does not include the hard drive bracket, hard drive connector cable, or screws. These components are included in the Hard Drive Hardware Kit, spare part number 700805-001.

Description	Spare part number
500-GB, 7200-rpm, 7.0-mm hard drive	703267-001
500-GB, 5400-rpm, 7.0-mm hard drive	683802-001


Before removing the hard drive, follow these steps:

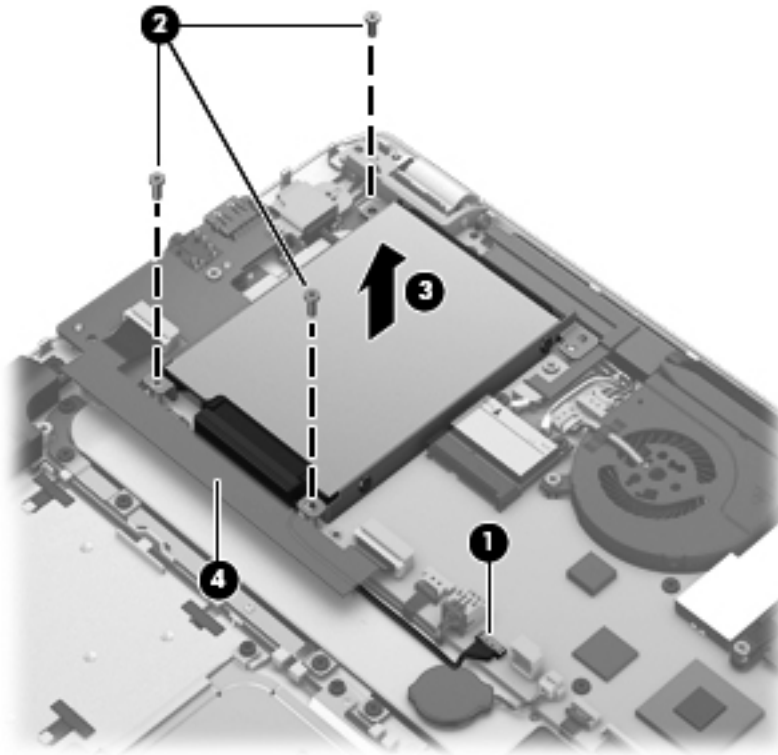
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 33](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 35](#)).

Remove the hard drive:

1. Disconnect the hard drive cable **(1)** from the system board.
2. Remove the three Phillips PM2.5×5.5 screws **(2)** that secure the hard drive to the top cover.

3. Remove the hard drive **(3)**.

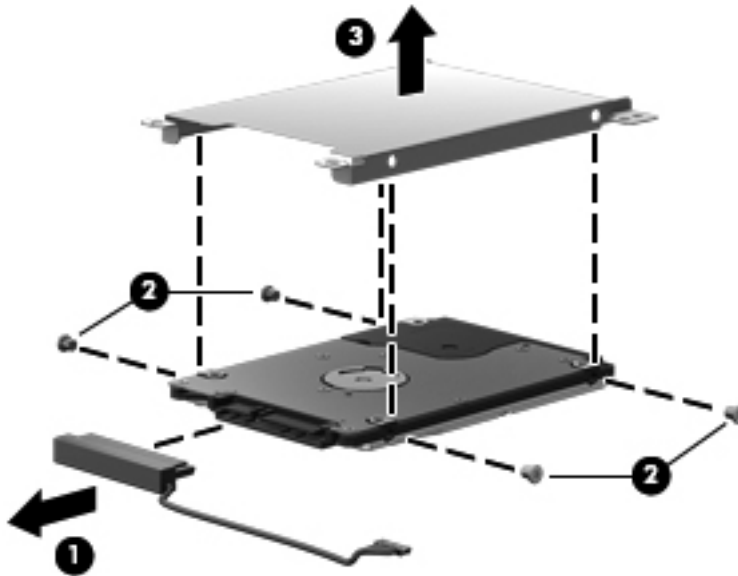
 **NOTE:** As the hard drive is being removed, make sure the hard drive cable is released from beneath the multimedia board cable **(4)**.



4. If it is necessary to disassemble the hard drive, perform the following steps:


- a.** Position the hard drive with the connector toward you.
- b.** Disconnect the hard drive connector cable **(1)** from the hard drive.
- c.** Remove the four Phillips PM3.0×3.3 screws **(2)** that secure the hard drive bracket to the hard drive.
- d.** Remove the hard drive bracket **(3)** from the hard drive.

The hard drive bracket, hard drive connector cable, and screws are available in the Hard Drive Hardware Kit, spare part number 700805-001.



Reverse this procedure to reassemble and install the hard drive.

Display assembly subcomponents

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

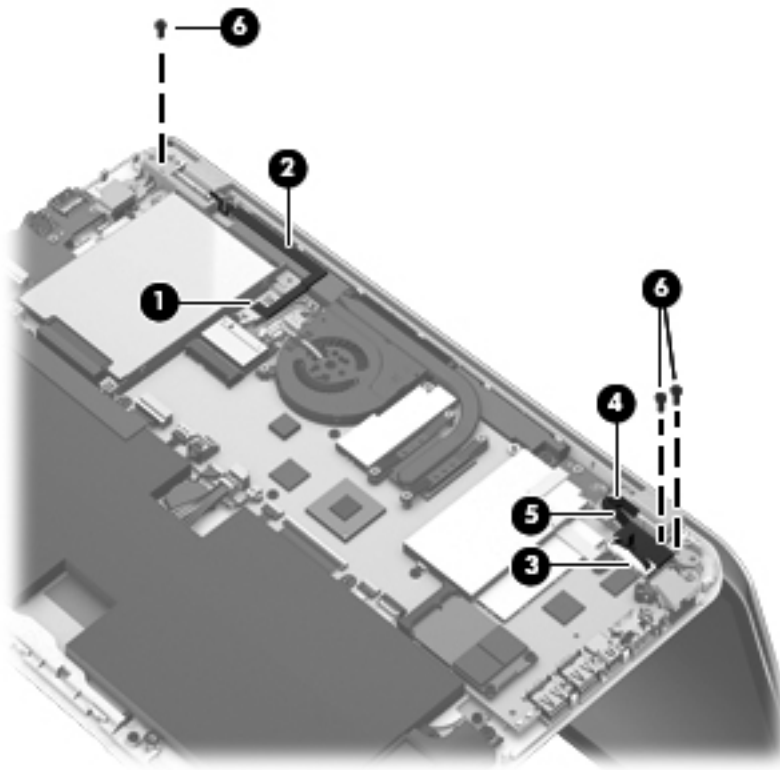
To remove the display assembly and access the display assembly subcomponents, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 33](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 35](#)).

Remove the display assembly:

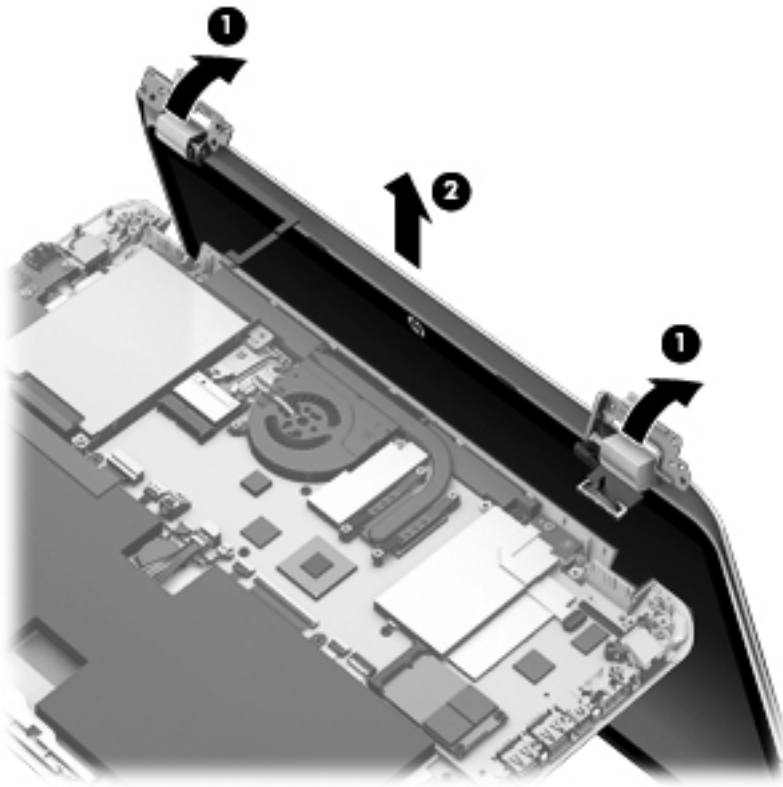
1. Open the computer and rest it on its keyboard.
2. Disconnect the display panel touch cable **(1)** from the system board.
3. Detach the display panel touch cable **(2)** from the system board. (The display panel touch cable is attached to the system board with double-sided tape.)
4. Disconnect the display panel cable **(3)** from the system board.
5. Release the display panel cable **(4)** from the retention clip **(5)** built into the right display hinge.

6. Remove the three Phillips PM2.5x5.5 screws **(6)** that secure the display assembly to the top cover.



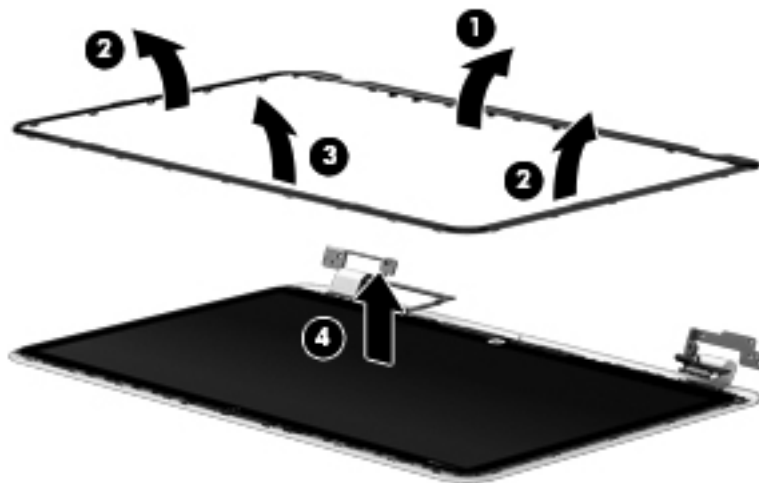
7. Open the display hinges as far as they will open **(1)**.

8. Remove the display assembly **(2)** from the computer.



9. If it is necessary to replace the display bezel or any of the display assembly subcomponents:
- a. Flex the inside edges of the bottom edge **(1)**, the left and right sides **(2)**, and the top edge **(3)** of the display bezel until the bezel disengages from the display enclosure.
 - b. Remove the display bezel **(4)**.

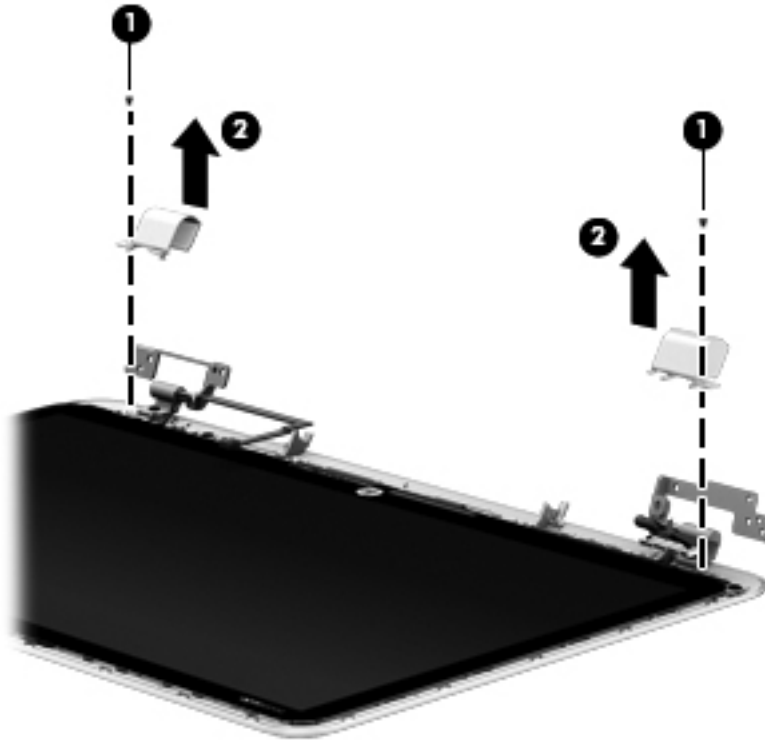
The display bezel is available using spare part number 700799-001.



10. If it is necessary to replace the display panel:

- a.** Remove the two Phillips PM1.5×2.0 screws **(1)** that secure the hinge covers to the display enclosure.
- b.** Remove the left and right hinge covers **(2)** from the display enclosure.

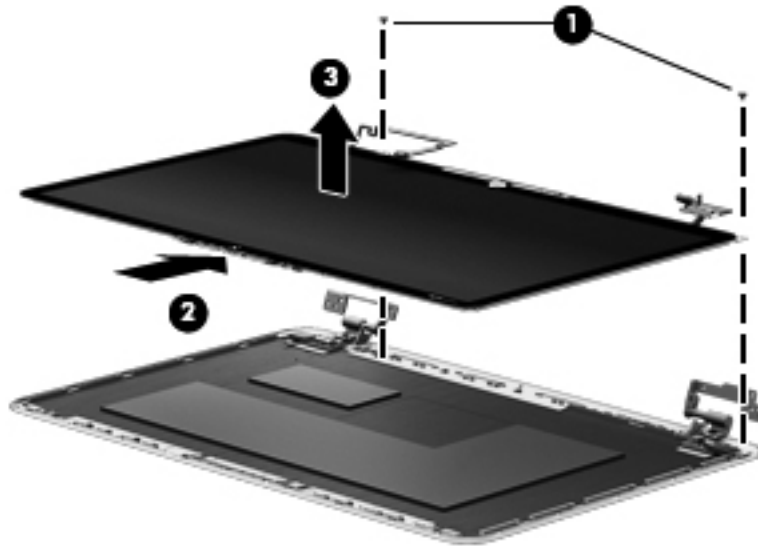
The hinge covers are included in the display enclosure spare part kit, spare part number 700797-001.



- c.** Remove the two Phillips PM2.0×2.5 screws **(1)** that secure the display panel to the display enclosure.
- d.** Slide the display panel **(2)** toward the bottom of the display enclosure until the tabs on the left and right sides of the panel disengage from the slots built into the display enclosure.

- e. Remove the display panel **(3)** from the display enclosure.

The display panel is available using spare part number 700808-001.

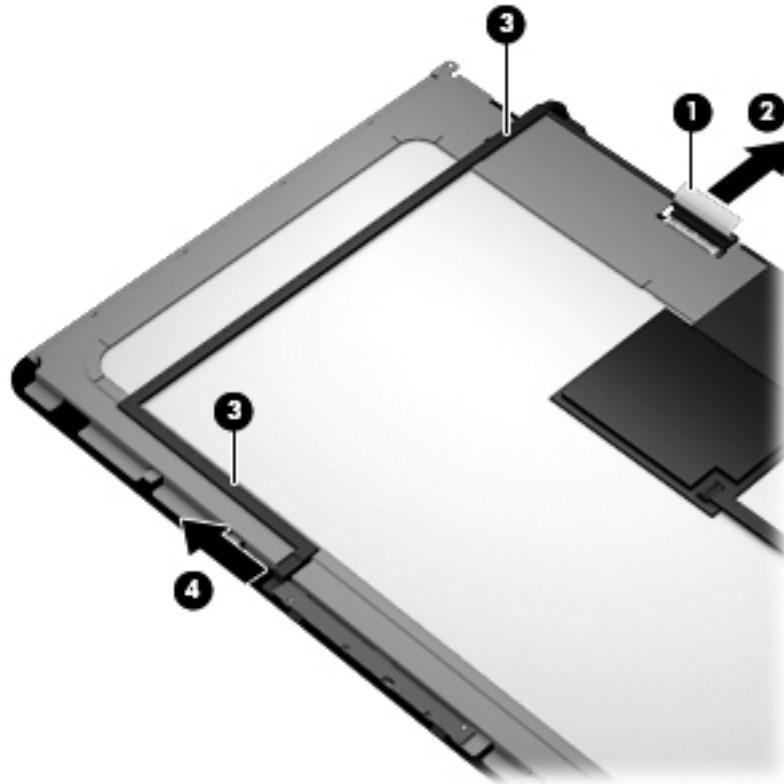


- 11.** If it is necessary to replace the display panel cable:

⚠ CAUTION: Before turning the display panel 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.

- a. Turn the display panel upside down with top edge toward you.
- b. Release the adhesive support strip **(1)** that secures the display panel cable connector to the display panel.
- c. Disconnect the display panel cable **(2)** from the display panel.
- d. Detach the display panel cable **(3)** from the display panel. (The display panel cable is attached to the display panel with double-sided tape in two locations.)

- e. Disconnect the webcam/microphone module cable **(3)** from the webcam/microphone module.



- f. Remove the display panel cable.

The display panel cable is available using spare part number 700800-001.

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

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

- a. Release the webcam/microphone module **(1)** as far as the webcam/microphone module allows.

- b.** Disconnect the webcam/microphone module cable **(2)** from the webcam/microphone module.



- c.** Remove the webcam/microphone module.

The webcam/microphone module is available using spare part number 700818-001.

Reverse this procedure to reassemble and install the display assembly.

TouchPad

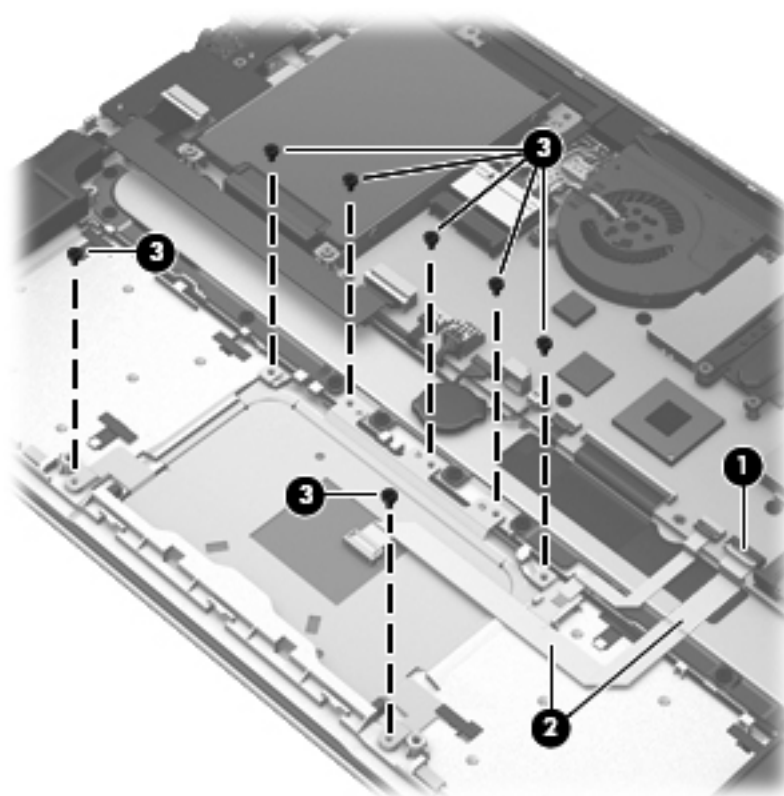
Description	Spare part number
TouchPad (includes cable)	701825-001

Before removing the TouchPad, follow these steps:

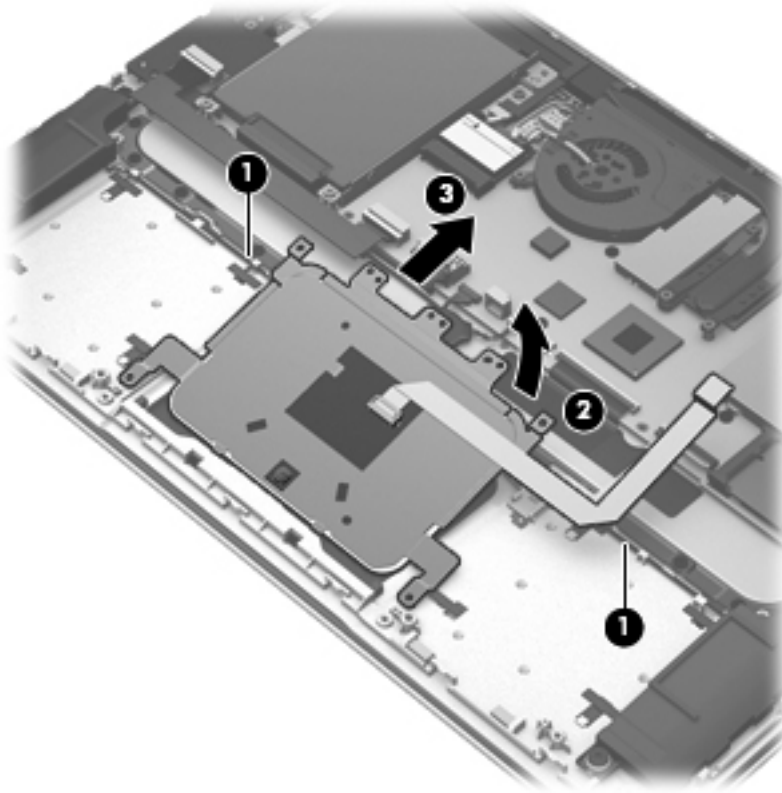
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 33](#)).
5. Remove the battery (see [Battery on page 35](#)).

Remove the TouchPad:

1. Release the ZIF connector to which the TouchPad cable is attached, and then disconnect the TouchPad cable **(1)** from the TouchPad system board.
2. Detach the TouchPad cable **(2)** from the top cover. (The TouchPad cable is attached to the top cover with double-sided tape at two locations.)
3. Remove the seven Phillips PM2.0×3.0 screws **(3)** that secure the TouchPad to the top cover.



4. Remove the front speaker cables **(1)** from the clips built into the top cover and the top edge of the TouchPad.
5. Lift the top edge of the TouchPad **(2)** until it rests at an angle.
6. Slide the TouchPad **(3)** forward, and then remove the TouchPad.



Reverse this procedure to install the TouchPad.

Front speakers

Description	Spare part number
Front speakers (includes left and right front speakers, cables, and 4 rubber isolators)	700810-001

Before removing the front speakers, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 33](#)).
5. Remove the battery (see [Battery on page 35](#)).
6. Remove the TouchPad (see [TouchPad on page 52](#)).

Remove the front speakers:


1. Release the ZIF connector to which the TouchPad cable is attached, and then disconnect the TouchPad cable **(1)** from the system board.
2. Disconnect the front speaker cable **(2)** from the system board.
3. Release the front speaker cables **(3)** from the clips built into the top cover.

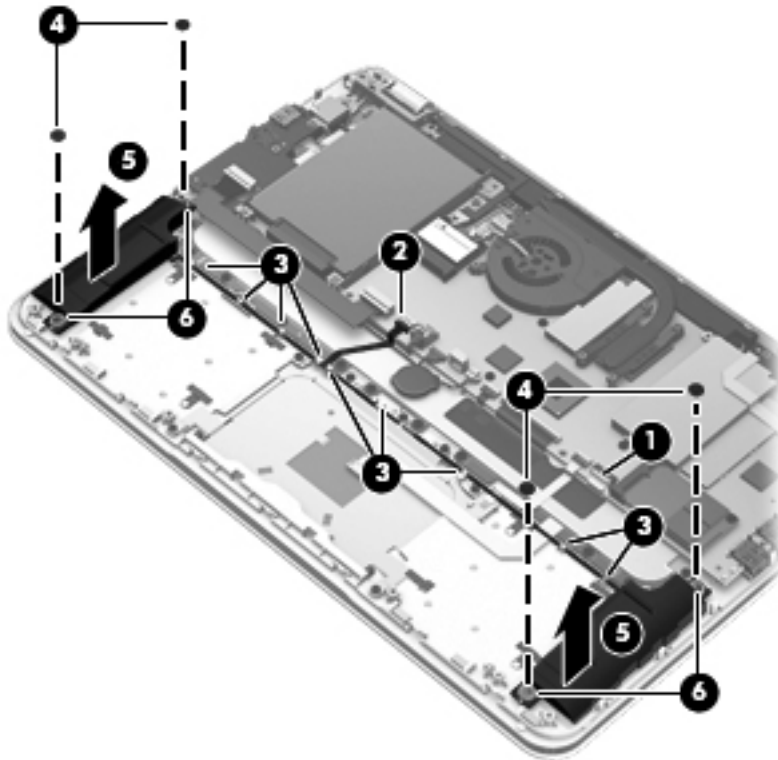


NOTE: Make sure the front speaker cables are released from underneath the TouchPad cable.

4. Remove the four Phillips PM2.0×3.0 broad head screws **(4)** that secure the front speakers to the top cover.

5. Remove the front speakers (5).

 **NOTE:** The front speakers include four rubber isolators (6). These isolators are crucial to the performance of the speakers.



Reverse this procedure to install the front speakers.

TouchPad LED board

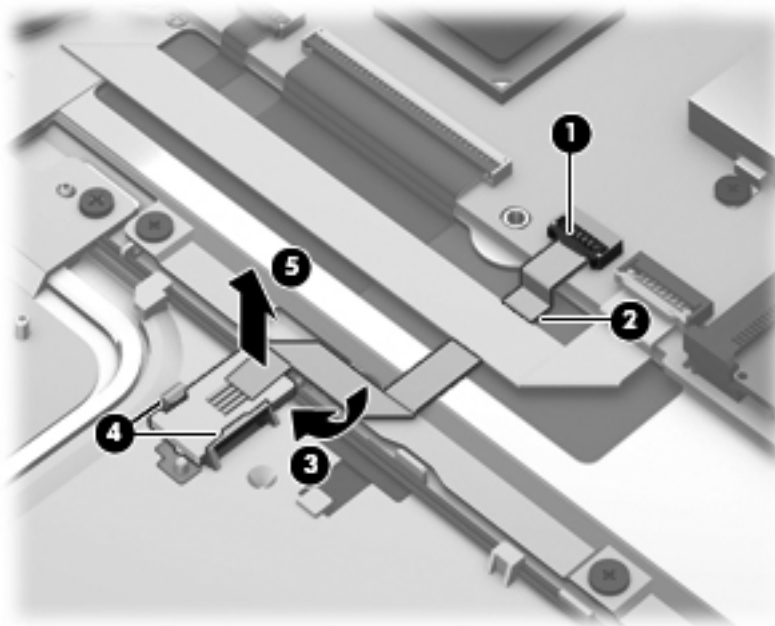
Description	Spare part number
TouchPad LED board (includes cable)	700012-001

Before removing the TouchPad LED board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 33](#)).
5. Remove the battery (see [Battery on page 35](#)).

Remove the TouchPad LED board:

1. Release the ZIF connector **(1)** to which the TouchPad LED board cable is attached, and then disconnect the TouchPad LED board cable from the system board.
2. Detach the TouchPad LED board cable **(2)** from the top cover. (The TouchPad LED board cable is attached to the top cover with double-sided tape.)
3. Release the TouchPad LED board **(3)** from the clips **(4)** built into the top cover.
4. Remove the TouchPad LED board and cable **(5)**, making sure to route the cable underneath the TouchPad cable.



Reverse this procedure to install the TouchPad LED board and cable.

Power connector cable

Description	Spare part number
Power connector cable (includes bracket)	700802-001

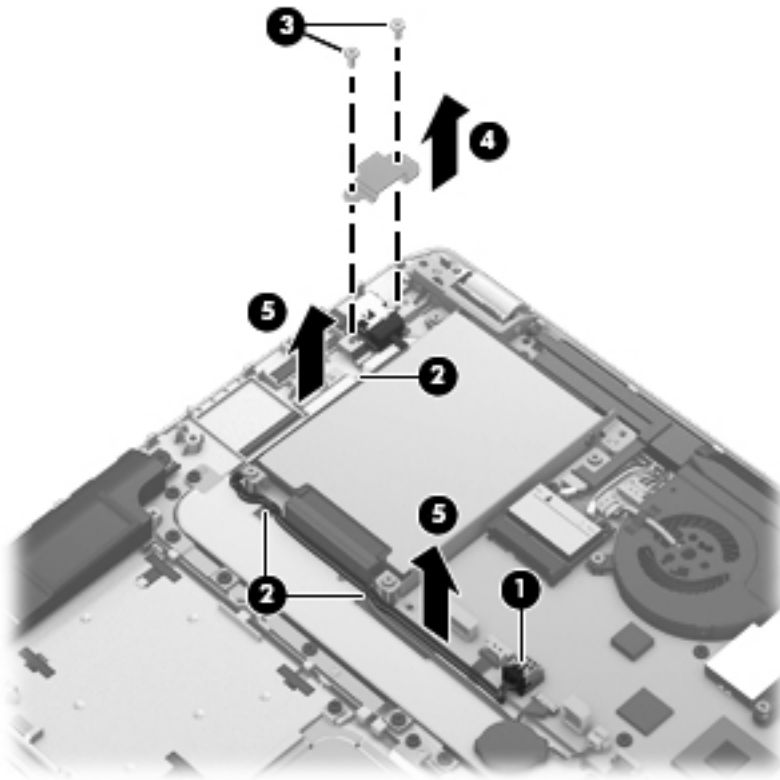
Before removing the power connector cable, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 33](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 35](#)).

Remove the power connector cable:

1. Disconnect the power cable **(1)** from the system board.
2. Release the power cable from the clips **(2)** and the routing channel built into the top cover.
3. Remove the two Phillips PM2.0×4.5 screws **(3)** that secure the power connector and bracket to the top cover.
4. Remove the power connector bracket **(4)**.

5. Remove the power connector **(5)** and cable.



Reverse this procedure to install the power connector cable and bracket.

Multimedia board

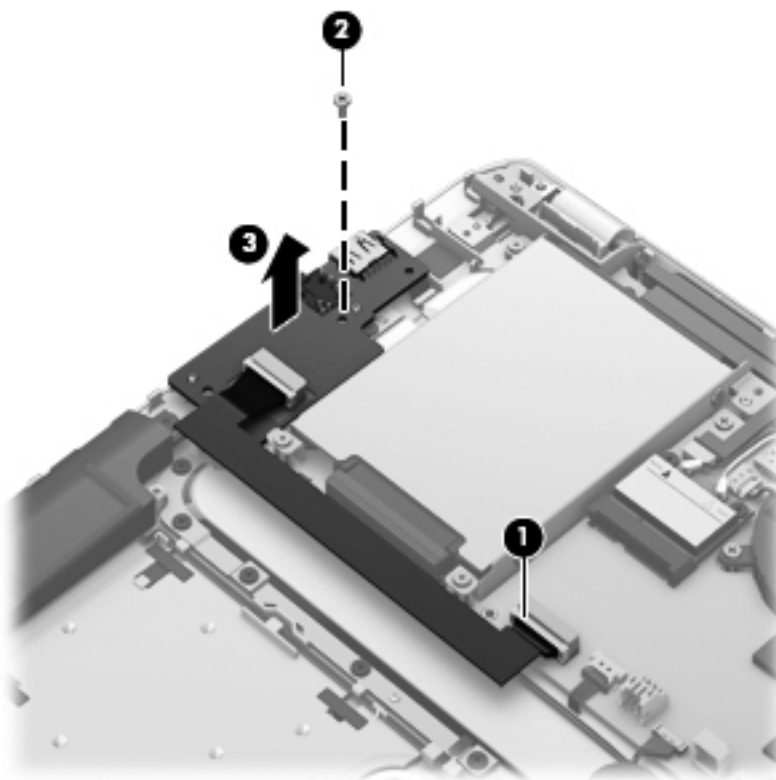
Description	Spare part number
Multimedia board (includes audio port, Card Reader, USB port, and cable)	701820-001

Before removing the multimedia board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 33](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 35](#)).
6. Remove the power connector cable (see [Power connector cable on page 57](#)).

Remove the multimedia board:

1. Disconnect the multimedia board cable **(1)** from the system board.
2. Remove the Phillips PM2.0×4.5 screw **(2)** that secures the multimedia board to the top cover.
3. Remove the multimedia board **(3)** and cable.



Reverse this procedure to install the multimedia board.

Memory module

Description	Spare part number
4-GB memory module (PC3, 12800, 1600-MHz)	691740-001
2-GB memory module (PC3, 12800, 1600-MHz)	691739-001
Memory shield	701817-001

Update BIOS before adding memory modules

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

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

To update BIOS:

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

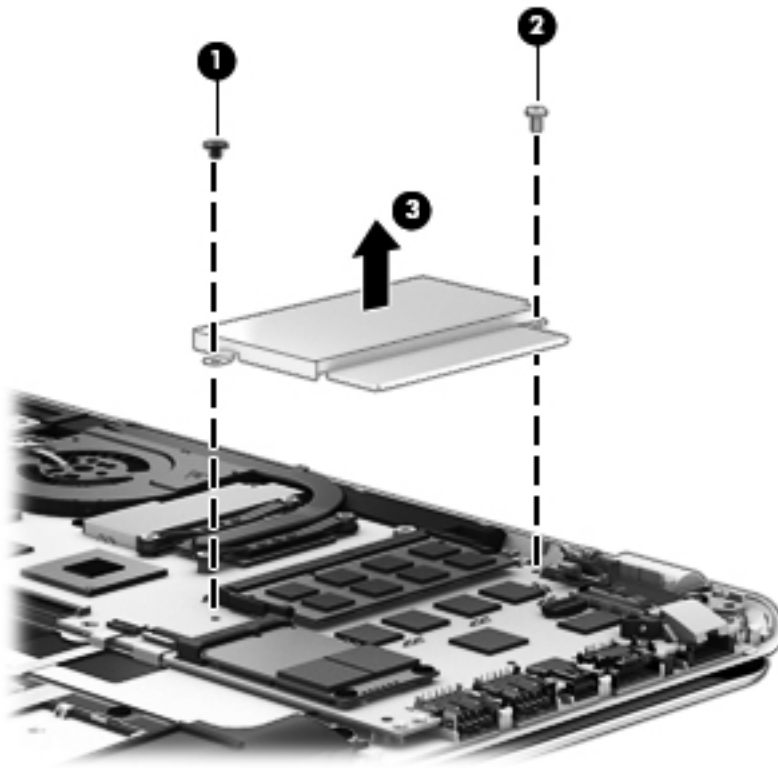
Before removing a memory module, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 33](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 35](#)).

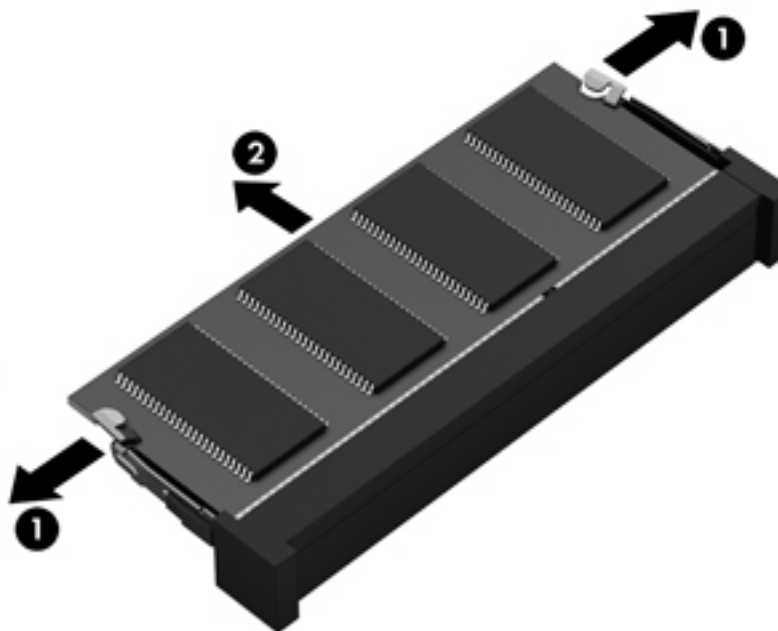
Remove the memory module:

1. Remove the Phillips PM2.0×3.0 screw **(1)** and the Phillips PM2.0×4.5 screw **(2)** that secure the memory shield to the top cover.

2. Remove the memory shield **(3)**.



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



Reverse this procedure to install a memory module.


System board

Description	Spare part number
Equipped with an Intel Quad Core i7-3537U 2.00-GHz processor (turbo up to 3.10-GHz), 1600-MHz FSB, 4.00-MB L3 cache, 17 W, and the Windows 8 Professional operating system without trusted platform module security for use only in the People's Republic of China and Russia	715044-601
Equipped with an Intel Quad Core i7-3537U 2.00-GHz processor (turbo up to 3.10-GHz), 1600-MHz FSB, 4.00-MB L3 cache, 17 W, and the Windows 8 Standard operating system without trusted platform module security for use only in the People's Republic of China and Russia	715044-501
Equipped with an Intel Quad Core i7-3537U 2.00-GHz processor (turbo up to 3.10-GHz), 1600-MHz FSB, 4.00-MB L3 cache, 17 W, and the Windows 7 operating system without trusted platform module security for use only in the People's Republic of China and Russia	715044-001
Equipped with an Intel Quad Core i7-3517U 1.90-GHz processor (turbo up to 3.00-GHz), 1600-MHz FSB, 4.00-MB L3 cache, 17 W, and the Windows 8 Standard operating system without trusted platform module security for use only in the People's Republic of China and Russia	704055-501
Equipped with an Intel Quad Core i7-3517U 1.90-GHz processor (turbo up to 3.00-GHz), 1600-MHz FSB, 4.00-MB L3 cache, 17 W, and the Windows 7 operating system without trusted platform module security for use only in the People's Republic of China and Russia	704055-001
Equipped with an Intel Quad Core i7-3517U 1.90-GHz processor (turbo up to 3.00-GHz), 1600-MHz FSB, 4.00-MB L3 cache, 17 W, and the Windows 8 Professional operating system with trusted platform module security for use in all countries and regions except the People's Republic of China and Russia	700814-601
Equipped with an Intel Quad Core i7-3517U 1.90-GHz processor (turbo up to 3.00-GHz), 1600-MHz FSB, 4.00-MB L3 cache, 17 W, and the Windows 8 Standard operating system with trusted platform module security for use in all countries and regions except the People's Republic of China and Russia	700814-501
Equipped with an Intel Quad Core i7-3517U 1.90-GHz processor (turbo up to 3.00-GHz), 1600-MHz FSB, 4.00-MB L3 cache, 17 W, and the Windows 7 operating system with trusted platform module security for use in all countries and regions except the People's Republic of China and Russia	700814-001
Equipped with an Intel Dual Core i5-3337U 1.80-GHz processor (turbo up to 2.70-GHz), 1600-MHz FSB, 3.00-MB L3 cache, 17 W, and the Windows 8 Professional operating system without trusted platform module security for use only in the People's Republic of China and Russia	715045-601
Equipped with an Intel Dual Core i5-3337U 1.80-GHz processor (turbo up to 2.70-GHz), 1600-MHz FSB, 3.00-MB L3 cache, 17 W, and the Windows 8 Standard operating system without trusted platform module security for use only in the People's Republic of China and Russia	715045-501
Equipped with an Intel Dual Core i5-3337U 1.80-GHz processor (turbo up to 2.70-GHz), 1600-MHz FSB, 3.00-MB L3 cache, 17 W, and the Windows 7 operating system without trusted platform module security for use only in the People's Republic of China and Russia	715045-001
Equipped with an Intel Dual Core i5-3317U 1.70-GHz processor (turbo up to 2.60-GHz), 1600-MHz FSB, 3.00-MB L3 cache, 17 W, and the Windows 8 Standard operating system without trusted platform module security for use only in the People's Republic of China and Russia	704056-501
Equipped with an Intel Dual Core i5-3317U 1.70-GHz processor (turbo up to 2.60-GHz), 1600-MHz FSB, 3.00-MB L3 cache, 17 W, and the Windows 7 operating system without trusted platform module security for use only in the People's Republic of China and Russia	704056-001

Description	Spare part number
Equipped with an Intel Dual Core i5-3317U 1.70-GHz processor (turbo up to 2.60-GHz), 1600-MHz FSB, 3.00-MB L3 cache, 17 W, and the Windows 8 Professional operating system with trusted platform module security for use in all countries and regions except the People's Republic of China and Russia	700816-601
Equipped with an Intel Dual Core i5-3317U 1.70-GHz processor (turbo up to 2.60-GHz), 1600-MHz FSB, 3.00-MB L3 cache, 17 W, and the Windows 8 Standard operating system with trusted platform module security for use in all countries and regions except the People's Republic of China and Russia	700816-501
Equipped with an Intel Dual Core i5-3317U 1.70-GHz processor (turbo up to 2.60-GHz), 1600-MHz FSB, 3.00-MB L3 cache, 17 W, and the Windows 7 operating system with trusted platform module security for use in all countries and regions except the People's Republic of China and Russia	700816-001

Before removing the system board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 33](#)).
5. Remove the battery (see [Battery on page 35](#)).
6. Remove the fan (see [Fan on page 39](#)).

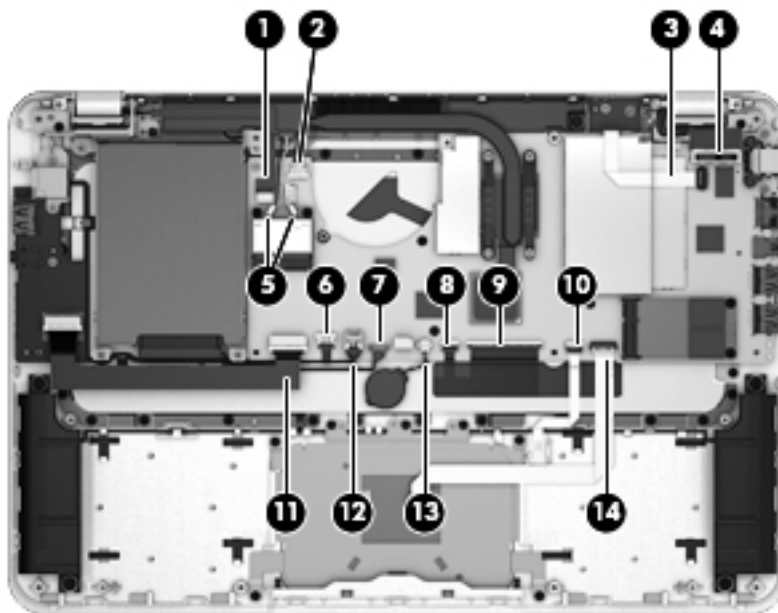
 **NOTE:** When replacing the system board, be sure that the following components are removed from the defective system board and installed on the replacement system board:

- WLAN module (see [WLAN module on page 37](#))
- Solid-state drive (see [Solid-state drive on page 40](#))
- Memory module and shield (see [Memory module on page 60](#))
- Heat sink (see [Heat sink on page 65](#))
- RJ-45 jack cover (see [RJ-45 jack cover on page 67](#))

Remove the system board:

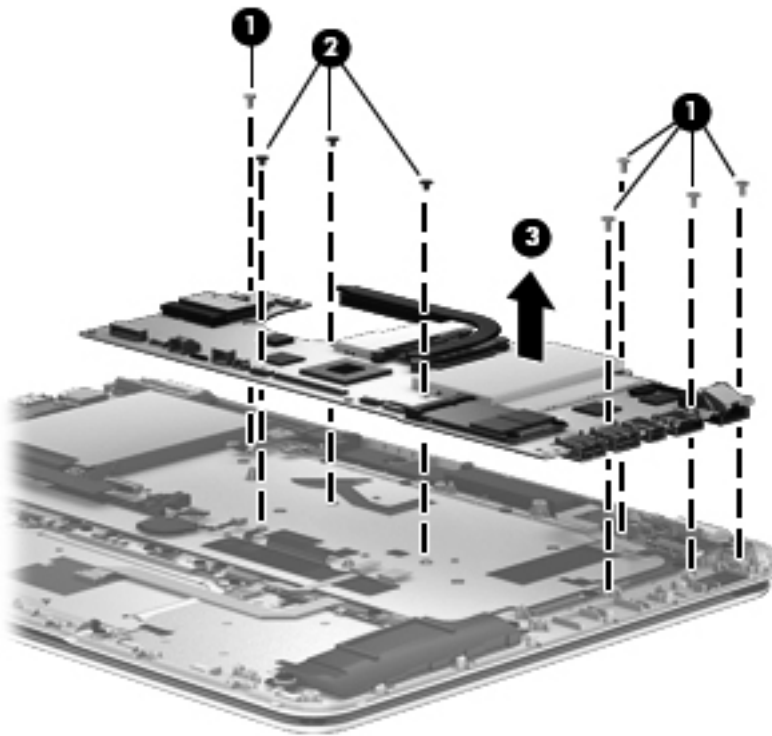
1. Disconnect the following cables from the system board:

- (1)** Display panel touch cable
- (2)** Rear speaker cable
- (3)** Power button board cable
- (4)** Display panel cable
- (5)** WLAN antenna cables
- (6)** Front speaker cable
- (7)** Hard drive connector cable
- (8)** Keyboard backlight cable
- (9)** Keyboard cable
- (10)** TouchPad LED board cable
- (11)** Multimedia board cable
- (12)** Power connector cable
- (13)** RTC battery cable
- (14)** TouchPad cable



2. Remove the five Phillips PM2.0×4.5 screws **(1)** and the three Phillips PM2.0×3.0 screws **(2)** that secure the system board to the top cover.

3. Remove the system board (3).



Reverse this procedure to install the system board.

Heat sink


Description	Spare part number
Heat sink (includes replacement thermal material)	700804-001

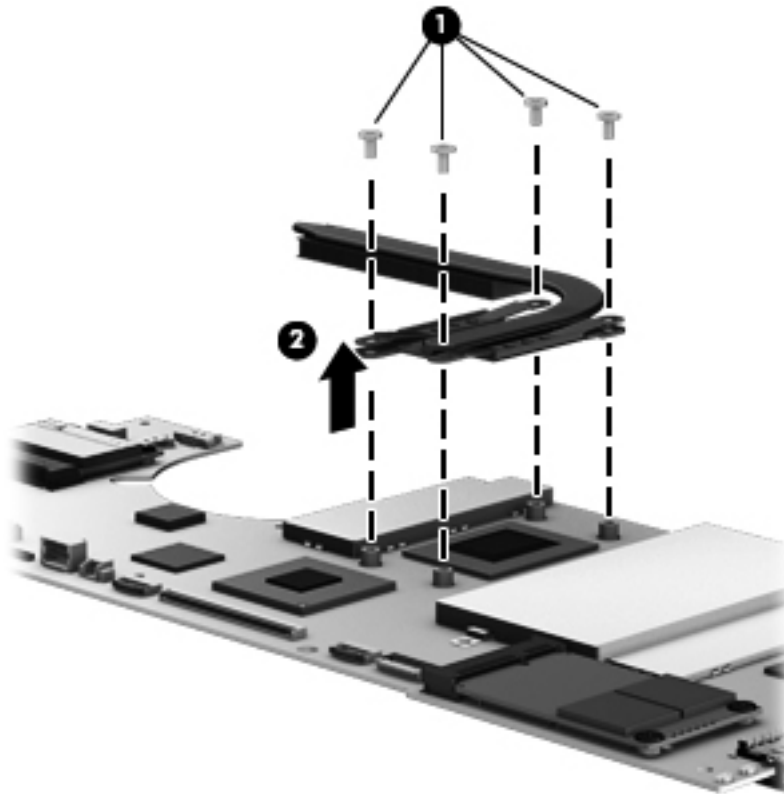
Before removing the heat sink, follow these steps:


1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 33](#)), and then remove the following components:
 - a. Battery (see [Battery on page 35](#))
 - b. Fan (see [Fan on page 39](#))
 - c. System board (see [System board on page 62](#))

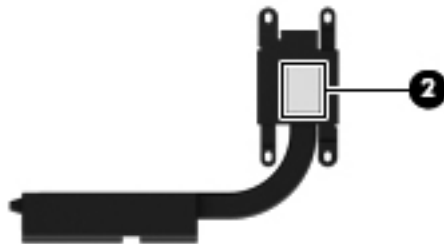
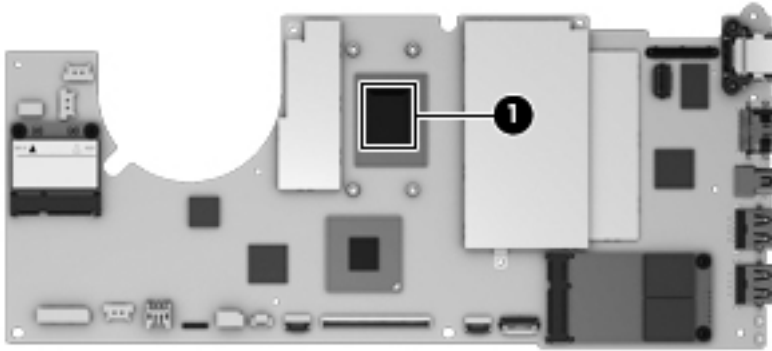
Remove the heat sink:

1. Following the 1, 2, 3, 4 sequence stamped into the heat sink, remove the four Phillips PM2.0×4.5 screws **(1)** that secure the heat sink to the system board.
2. Remove the heat sink **(2)**.

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



 **NOTE:** The thermal material must be thoroughly cleaned from the surfaces of the heat sink and the system board components each time the heat sink is removed. 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 section of the heat sink **(2)** that services it.



Reverse this procedure to install the heat sink.

RJ-45 jack cover

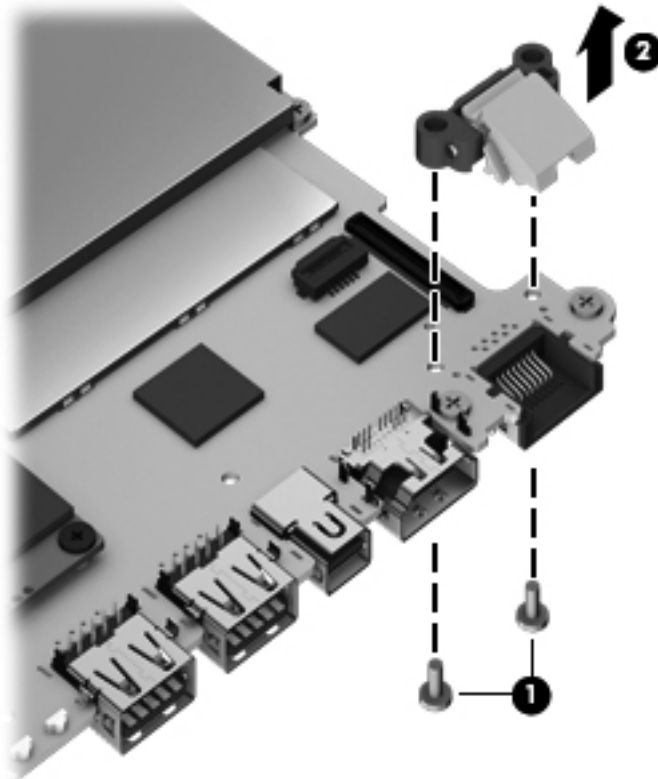
Description	Spare part number
RJ-45 jack cover	701816-001

Before removing the RJ-45 jack cover, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 33](#)), and then remove the following components:
 - a. Battery (see [Battery on page 35](#))
 - b. Fan (see [Fan on page 39](#))
 - c. System board (see [System board on page 62](#))

Remove the RJ-45 jack cover:

1. Turn the system board upside down, with the USB connectors toward you.
2. Remove the two Phillips PM2.0×4.5 screws **(1)** that secure the RJ-45 jack cover to the system board.
3. Turn the system board right side up, with the USB connectors toward you.
4. Remove the RJ-45 jack cover **(2)**.



Reverse this procedure to install the RJ-45 jack cover.

Keyboard



NOTE: The keyboard spare part kit includes a keyboard, keyboard cable, keyboard backlight cable, keyboard shield, and pointing stick cable.

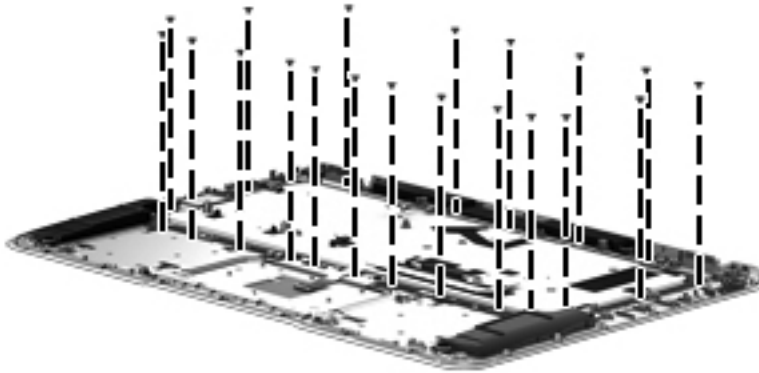
For use in country/region	Spare part number	For use in country/region	Spare part number
Keyboard with backlight and pointing stick:			
For use in Belgium	700807-A41	For use in the Netherlands	700807-B31
For use in Canada	700807-DB1	For use in Portugal	700807-131
For use in Denmark, Finland, and Norway	700807-DH1	For use in Russia	700807-251
For use in France	700807-051	For use in Saudi Arabia	700807-171
For use in Germany	700807-041	For use in Spain	700807-071
For use in Greece	700807-151	For use in Switzerland	700807-BG1
For use in Israel	700807-BB1	For use in Turkey	700807-141
For use in Italy	700807-061	For use in the United Kingdom and Singapore	700807-031
For use in Latin America	700807-161	For use in the United States	700807-001

Before removing the keyboard, follow these steps:

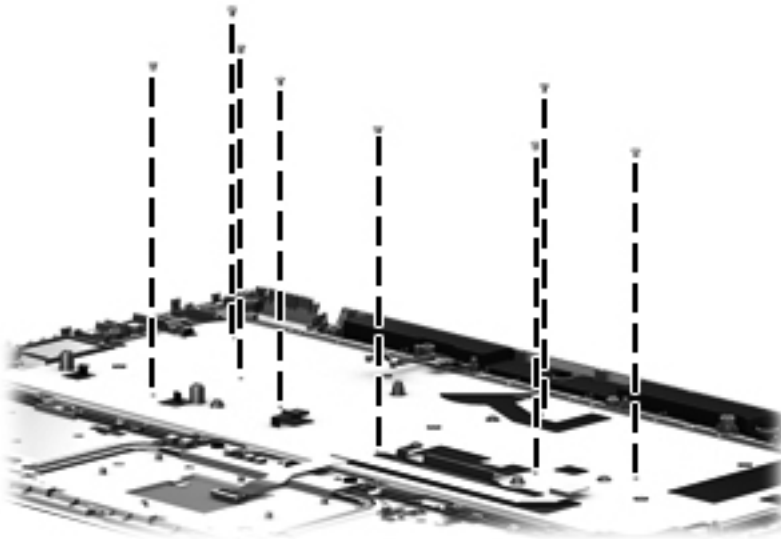
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 33](#)), and then remove the following components:
 - a. Battery (see [Battery on page 35](#))
 - b. Fan (see [Fan on page 39](#))
 - c. System board (see [System board on page 62](#))

Remove the keyboard:

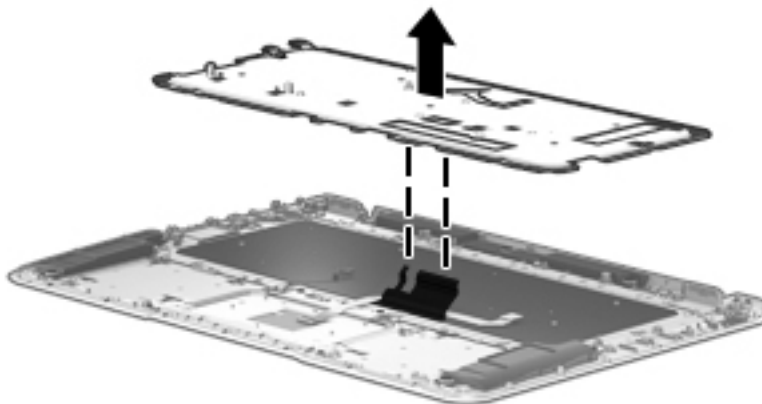
1. Remove the 20 Phillips PM2.0×3.0 screws that secure the keyboard shield to the top cover.



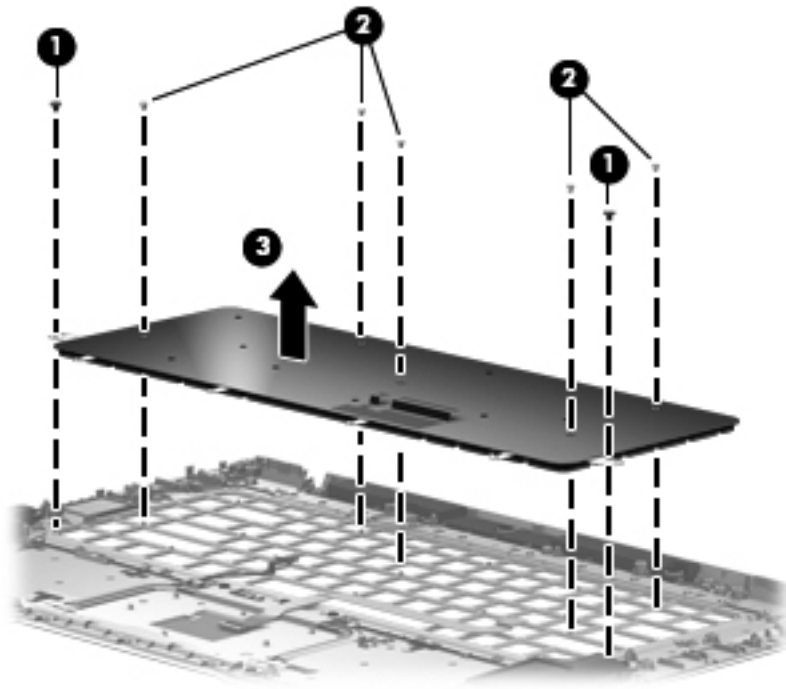
2. Remove the 8 Phillips PM1.5×2.0 screws that secure the keyboard shield to the top cover.



3. Remove the keyboard shield.



4. Remove the two Phillips PM2.0×3.0 screws **(1)** and the five Phillips PM1.5×2.0 screws **(2)** that secure the keyboard to the top cover.
5. Remove the keyboard **(3)**.



Reverse this procedure to install the keyboard.

Rear speakers


Description	Spare part number
Rear speakers (includes left and right rear speakers, cables, and 2 rubber isolators)	701821-001

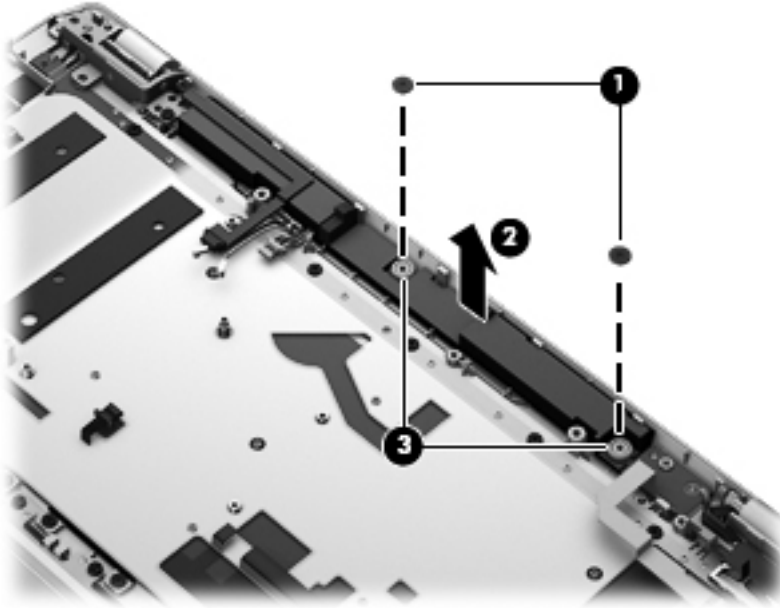
Before removing the rear speakers, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 33](#)), and then remove the following components:
 - a. Battery (see [Battery on page 35](#))
 - b. Fan (see [Fan on page 39](#))
 - c. System board (see [System board on page 62](#))

Remove the rear speakers:

1. Remove the two Phillips PM2.0×3.0 broad head screws **(1)** that secure the rear speakers to the top cover.
2. Remove the rear speakers **(2)** from the top cover.

 **NOTE:** The rear speakers include two rubber isolators **(6)**. These isolators are crucial to the performance of the speakers.



Reverse this procedure to install the rear speakers.

WLAN antenna

Description	Spare part number
Antenna Kit (includes left and right WLAN antenna cables and transceivers)	700796-001

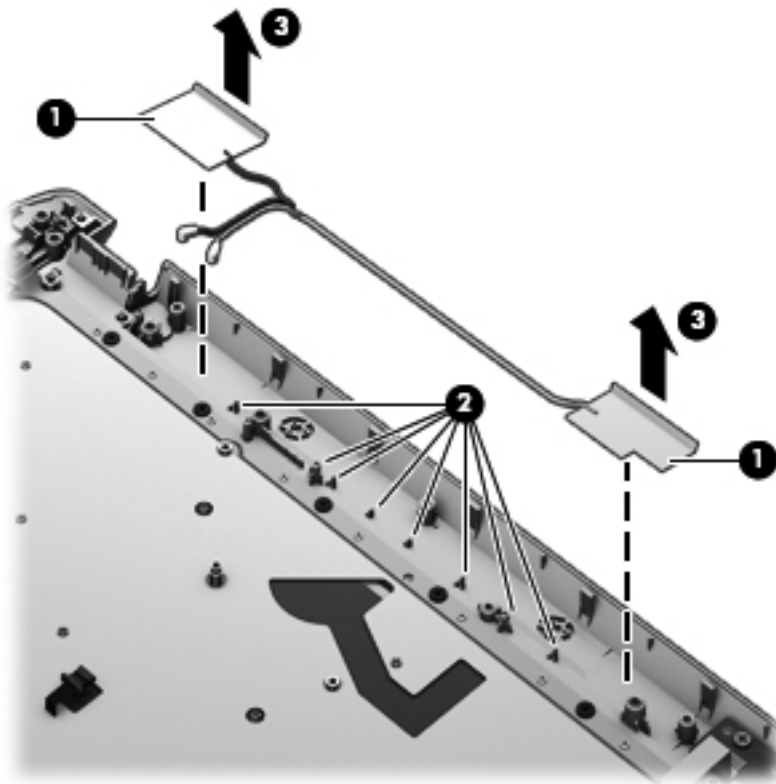
Before removing the WLAN antenna, follow these steps:

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

3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Bottom cover on page 33](#)), and then remove the following components:
 - a. Battery (see [Battery on page 35](#))
 - b. Fan (see [Fan on page 39](#))
 - c. System board (see [System board on page 62](#))

Remove the WLAN antenna:

1. Detach the WLAN antenna transceivers **(1)** from the top cover. (The WLAN antenna transceivers are attached to the top cover with double-sided tape.)
2. Release the WLAN antenna cables from the clips **(2)** and routing channel built into the top cover.
3. Remove the WLAN antenna cables and transceivers **(3)** from the top cover.



Reverse this procedure to install the WLAN antenna.

5 Using Setup Utility (BIOS) and System Diagnostics

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

Starting Setup Utility (BIOS)

To start Setup Utility (BIOS), turn on or restart the computer, quickly press **esc**, and then press **f10**.

Information about how to navigate in Setup Utility (BIOS) is located at the bottom of the screen.



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

Updating the BIOS

Updated versions of the BIOS may be available on the HP website.

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

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


Determining the BIOS version

To determine whether available BIOS updates contain later BIOS versions than those currently installed on the computer, you need to know the version of the system BIOS currently installed.

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

1. Start Setup Utility (BIOS).
2. Use the arrow keys to select **Main**.
3. To exit Setup Utility (BIOS) without saving your changes, use the arrow keys to select **Exit**, select **Exit Discarding Changes**, and then press **enter**.

Downloading a BIOS update

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


Do not disconnect power from the computer by unplugging the power cord from the AC outlet.

Do not shut down the computer or initiate Sleep.

Do not insert, remove, connect, or disconnect any device, cable, or cord.

1. From the Start screen, select the **HP Support Assistant** app.
2. Select **Updates and tune-ups**, and then select **Check for HP updates now**.
3. Follow the on-screen instructions.
4. At the download area, follow these steps:
 - a. Identify the most recent BIOS update and compare it to the BIOS version currently installed on your computer. 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 displayed on the screen after the download is complete. If no instructions are displayed, follow these steps:

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

The BIOS installation begins.

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

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

Using System Diagnostics

System Diagnostics allows you to run diagnostic tests to determine if the computer hardware is functioning properly.

To start System Diagnostics:

1. Turn on or restart the computer, quickly press **esc**, and then press **f2**.
2. Click the diagnostic test you want to run, and then follow the on-screen instructions.



NOTE: If you need to stop a diagnostic test while it is running, press **esc**.

6 Specifications

Computer specifications

	Metric	U.S.
Dimensions		
Width	37.79 cm	14.88 in
Depth	25.44 cm	10.02 in
Height (front to rear)	1.79 to 2.22 cm	0.72 to 0.87 in
Weight	2.25 kg	4.86 lbs
Input power		
Operating voltage and current	19.5 V dc @ 3.33 A – 65 W	
Temperature		
Operating	5°C to 35°C	41°F to 95°F
Nonoperating	-20°C to 60°C	-4°F to 140°F
Relative humidity (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	-15 m to 3,048 m	-50 ft to 10,000 ft
Nonoperating	-15 m to 12,192 m	-50 ft to 40,000 ft
NOTE: Applicable product safety standards specify thermal limits for plastic surfaces. The device operates well within this range of temperatures.		

15.6-inch SGA display specifications

	Metric	U.S.
Dimensions		
Height	19.60 cm	7.72 in
Width	34.70 cm	13.66 in
Diagonal	39.80 cm	15.67 in
Number of colors	Up to 16.8 million	
Contrast ratio	200:1 (typical)	
Brightness	300 nits (typical)	
Pixel resolution		
Pitch	0.197 × 0.197 mm	
Format	1920 × 1080	
Configuration	RGB vertical stripe	
Backlight	LED	
Character display	80 × 25	
Total power consumption	3.46 W	
Viewing angle	±65° horizontal, ±50° vertical (typical)	

Hard drive specifications

	500-GB, 7200-rpm*	500-GB, 5000-rpm*
Dimensions		
Height	7.0 mm	7.0 mm
Length	100.4 mm	100.4 mm
Width	69.9 mm	69.9 mm
Weight	110 g	110 g
Interface type	SATA	SATA
Transfer rate		
Synchronous (maximum)	1.1 GB/sec	1.1 GB/sec
Security	ATA security	ATA security
Seek times (typical read, including setting)		
Single track	1.5 ms	1.5 ms
Average (read/write)	11/13 ms	11/13 ms
Maximum	22 ms	22 ms
Logical blocks	500-GB*	500-GB*
Disk rotational speed	976,773,168	976,773,168
Operating temperature	7200 rpm	5400 rpm
*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less.		
NOTE: Certain restrictions and exclusions apply. Contact technical support for details.		

7 Backing up, restoring, and recovering

Your computer includes tools provided by HP and the operating system to help you safeguard your information and retrieve it if you ever need to. These tools will help you return your computer to a proper working state or even back to the original factory state, all with simple steps.

This chapter provides information about the following processes:

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



NOTE: This guide describes an overview of backing up, restoring and recovering options. For more details about the tools provided, see Help and Support. From the Start screen, type **h**, and then select **Help and Support**.

Creating recovery media and backups

Recovery after a system failure is only as good as your most recent backup.

1. After you successfully set up the computer, create HP Recovery media. This step creates a backup of the HP Recovery partition on the computer. The backup can be used to reinstall the original operating system in cases where the hard drive is corrupted or has been replaced.

HP Recovery media you create will provide the following recovery options:

- **System Recovery**—Reinstalls the original operating system and the programs that were installed at the factory.
- **Minimized Image Recovery**—Reinstalls the operating system and all hardware-related drivers and software, but not other software applications.
- **Factory Reset**—Restores the computer to the state 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.

See [Creating HP Recovery media on page 81](#).

2. As you add hardware and software programs, create system restore points. A system restore point is a snapshot of certain hard drive contents saved by Windows System Restore at a specific time. A system restore point contains information that Windows uses, such as registry settings. Windows creates a system restore point for you automatically during a Windows update and during other system maintenance (such as a software update, security scanning, or system diagnostics). You can also manually create a system restore point at any time. For more information and steps for creating specific system restore points, see Windows Help and Support. From the Start screen, type **h**, and then select **Help and Support**.
3. As you add photos, video, music, and other personal files, create a backup of your personal information. Windows File History can be set to regularly and automatically back up files from libraries, Desktop, contacts, and favorites. If files are accidentally deleted from the hard drive and they can no longer be restored from the Recycle Bin, or if files become corrupted, you can restore the files that you backed up using File History. Restoring files is also useful if you ever choose to reset the computer by reinstalling Windows or choose to recover using HP Recovery Manager.



NOTE: File History is not enabled by default, so you must turn it on.

For more information and steps for enabling Windows File History, see Windows Help and Support. From the Start screen, type **h**, and then select **Help and Support**.

Creating HP Recovery media

HP Recovery Manager is a software program that offers a way to create recovery media after you successfully set up the computer. HP Recovery media can be used to perform system recovery if the hard drive becomes corrupted. System recovery reinstalls the original operating system and the software programs installed at the factory, and then configures the settings for the programs. HP Recovery media can also be used to customize the system or aid in the replacement of a hard drive.

- Only one set of HP 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 blank USB flash drive or the number of blank DVD discs 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, DVD+R DL discs. Do not use rewritable discs such as CD±RW, DVD±RW, double-layer DVD±RW, or BD-RE (rewritable Blu-ray) discs; they are not compatible with HP Recovery Manager software. Or instead you can use a high-quality blank USB flash drive.
- If your computer does not include an integrated optical drive with DVD writer capability, but you would like to create DVD recovery media, you can use an external optical drive (purchased separately) to create recovery discs, or you can obtain recovery discs for your computer from the HP website. For U.S. support, go to <http://www.hp.com/go/contactHP>. For worldwide support, go to http://welcome.hp.com/country/us/en/wwwcontact_us.html. If you use an external optical drive, it must be connected directly to a USB port on the computer; the drive cannot be connected to a USB port on an external device, such as a USB hub.

- Be sure that the computer is connected to AC power before you begin creating the recovery media.
- The creation process can take up to an hour or more. Do not interrupt the creation process.
- If necessary, you can exit the program before you have finished creating all of the recovery DVDs. HP Recovery Manager will finish burning the current DVD. The next time you start HP Recovery Manager, you will be prompted to continue, and the remaining discs will be burned.

To create HP Recovery media:

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

If you ever need to recover the system, see [Recovering using HP Recovery Manager on page 84](#).

Restore and recovery

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

- If you need to restore your personal files and data, you can use Windows File History to restore your information from the backups you created. For more information and steps for using File History, see Windows Help and Support. From the Start screen, type `h`, and then select **Help and Support**.
- If you need to correct a problem with a preinstalled application or driver, use the Drivers and Applications Reinstall option of HP Recovery Manager to reinstall the individual application or driver.

From the Start screen, type `recovery`, select **HP Recovery Manager**, and then select **Drivers and Applications Reinstall**, and follow the on-screen instructions.

- If you want to restore the system to a previous state without losing any personal information, Windows System Restore is an option. System Restore allows you to restore without the requirements of Windows Refresh or a reinstallation. Windows creates system restore points automatically during a Windows update and other system maintenance events. Even if you did not manually create a restore point, you can choose to restore to a previous point, automatically created. For more information and steps for using Windows System Restore, see Windows Help and Support. From the Start screen, type `h`, and then select **Help and Support**.
- If you want a quick and easy way to recover the system without losing your personal information, settings, or apps that came preinstalled on your computer or were purchased from the Windows Store, consider using Windows Refresh. This option does not require backing up data to another drive. See [Using Windows Refresh for quick and easy recovery on page 83](#).
- If you want to reset your computer to its original state, Windows provides an easy way to remove all personal data, apps, and settings, and reinstall Windows.

For more information, see [Remove everything and reinstall Windows on page 84](#).

- If you want to reset your computer using a minimized image, you can choose the HP Minimized Image Recovery option from the HP Recovery partition (select models only) or HP Recovery media.

Minimized Image Recovery installs only drivers and hardware-enabling applications. Other applications included in the image continue to be available for installation through the Drivers and Applications Reinstall option in HP Recovery Manager.


For more information, see [Recovering using HP Recovery Manager on page 84](#).


- If you want to recover the computer's original factory partitioning and content, you can choose the System Recovery option from the HP Recovery media. For more information, see [Recovering using HP Recovery Manager on page 84](#).
- If you have replaced the hard drive, you can use the Factory Reset option of HP Recovery media to restore the factory image to the replacement drive. For more information, see [Recovering using HP Recovery Manager on page 84](#).
- If you wish 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 on page 86](#).

Using Windows Refresh for quick and easy recovery

When your computer is not working properly and you need to regain system stability, the Windows Refresh option allows you to start fresh and keep what is important to you.

 **IMPORTANT:** Refresh removes any traditional applications that were not originally installed on the system at the factory.

 **NOTE:** During Refresh, a list of removed traditional applications will be saved so that you have a quick way to see what you might need to reinstall. See Help and Support for instructions on reinstalling traditional applications. From the Start screen, type **h**, and then select **Help and Support**.

 **NOTE:** You may be prompted for your permission or password when using Refresh. See Windows Help and Support for more information. From the Start screen, type **h**, and then select **Help and Support**.

To start Refresh:

1. On the Start screen, point to the far-right upper or lower corner of the screen to display the charms.
2. Click **Settings**.
3. Click **Change PC settings** in the bottom-right corner of the screen, and then select **General** from the PC settings screen.
4. Under **Refresh your PC without affecting your files**, select **Get started**, and follow the on-screen instructions.

Remove everything and reinstall Windows

Sometimes you want to perform detailed reformatting of your computer, or you want to remove personal information before you give away or recycle your computer. The process described in this section provides a speedy, simple way to return the computer to its original state. This option removes all personal data, apps, and settings from your computer, and reinstalls Windows.



IMPORTANT: This option does not provide backups of your information. Before using this option, back up any personal information you wish to retain.

You can initiate this option by using the **F11** key or from the Start screen.

To use the **F11** key:

1. Press **F11** while the computer boots.
– or –
Press and hold **F11** as you press the power button.
2. Select **Troubleshoot** from the boot options menu.
3. Select **Reset your PC**, and follow the on-screen instructions.

To use the Start screen:

1. On the Start screen, point to the far-right upper or lower corner of the screen to display the charms.
2. Click **Settings**.
3. Click **Change PC settings** in the bottom-right corner of the screen, and then select **General** from the PC settings screen.
4. Under **Remove everything and reinstall Windows**, select **Get started**, and follow the on-screen instructions.

Recovering using HP Recovery Manager

HP Recovery Manager software allows you to recover the computer to its original factory state. Using the HP Recovery media you created, you can choose from one of the following recovery options:

- **System Recovery**—Reinstalls the original operating system, and then configures the settings for the programs that were installed at the factory.
- **Minimized Image Recovery**—Reinstalls the operating system and all hardware-related drivers and software, but not other software applications.
- **Factory Reset**—Restores the computer to the state its original factory state by deleting all information from the hard drive and re-creating the partitions. Then it reinstalls the operating system and the software that was installed at the factory.

The HP Recovery partition (select models only) allows Minimized Image Recovery.

What you need to know

- 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.
- 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.
- To use the Factory Reset or System Recovery options, you must use HP Recovery media.
- If the HP Recovery media do not work, you can obtain recovery media for your system from the HP website. For U.S. support, go to <http://www.hp.com/go/contactHP>. For worldwide support, go to http://welcome.hp.com/country/us/en/wwcontact_us.html.



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

Using the HP Recovery partition to recover a minimized image (select models only)

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

To start HP Recovery Manager from the HP Recovery partition:

1. Press **f11** while the computer boots.
– or –
Press and hold **f11** as you press the power button.
2. Select **Troubleshoot** from the boot options menu.
3. Select **HP Recovery Manager**, and 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 first HP Recovery disc you created into the optical drive on your computer or into an optional external optical drive, and then restart the computer.

– or –

Insert the HP Recovery USB flash drive you created into a USB port on your computer, 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 86](#).

3. Follow the on-screen instructions.

Changing the computer boot order


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

To change the boot order:

1. Insert the HP Recovery media you created.
2. Restart the computer.
3. Press and hold **esc** while the computer is restarting, and then press **f9** for boot options.
4. Select the optical drive or USB flash drive you want to boot from.
5. Follow the on-screen instructions.

Removing the HP Recovery partition

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

 **IMPORTANT:** Removing the HP Recovery partition means you can no longer use Windows Refresh, the Windows Remove everything and reinstall Windows option, or the HP Recovery Manager option for minimized image recovery. Create HP Recovery media before removing the Recovery partition to ensure you have recovery options; see [Creating HP Recovery media on page 81](#).

Follow these steps to remove the HP Recovery partition:

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

8 Power cord set requirements

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

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

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

Requirements for all countries

The following requirements are applicable to all countries and regions:

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

Requirements for specific countries and regions

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

1. The flexible cord must be Type HO5VV-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.

9 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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