HP ENVY m4 Notebook PC

Maintenance and Service Guide

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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 ENVY m4 Notebook PC
Processors	• Intel® Quad Core® i7-3632QM 2.20-GHz processor (SC turbo up to 3.20-GHz; 1600-MHz FSB, 6.0-MB L3 cache, 35 W) • Intel Dual Core i5-3230M 2.60-GHz processor (SC turbo up to 3.20-GHz, 1600-MHz front-side bus (FSB), 3.00-MB L3 cache, 35 W) • Intel Dual Core i5-3210M 2.50-GHz processor (SC turbo up to 3.10-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W) • Intel Dual Core i3-3130M 2.60-GHz processor (1600-MHz FSB, 3.00-MB L3 cache, 35 W) • Intel Dual Core i3-3120M 2.50-GHz processor (1600-MHz FSB, 3.0-MB L3 cache, 35 W) • Intel Dual Core i3-3110M 2.40-GHz processor (1600-MHz FSB, 3.0-MB L3 cache, 35 W)
Chipset	Mobile Intel QM77 chipset
Graphics	Intel HD Graphics 4000 integrated universal memory architecture (UMA) graphics Support for HD Decode, DX11, HDMI and Optimus
Panel	14.0-in high-definition (HD), light-emitting diode (LED), BrightView (BV), SVA (1368×768) display with webcam and microphone All display assemblies include two wireless local area network (WLAN) antenna cables antenna cables Support for low voltage differential signalling (LVDS) Typical brightness: 200 nits
Memory	Two customer-accessible/upgradable memory module slots Support for DDR3 (1600-MHz) dual channel Support for 16384-MB of system RAM in the following configurations: • 16384-MB (8192-MB×2 [dual channel]; not supported on computer models equipped with a 32-bit operating system) • 12288-MB (8192-MB×1+4096-MB×1; not supported on computer models equipped with a 32-bit operating system) • 8192-MB (8192-MB×1, or 4096×2 [dual channel]; not supported on computer models equipped with a 32-bit operating system) • 6144-MB (4096-MB×1+2048-MB×1; not supported on computer models equipped with a 32-bit operating system) • 4096-MB (4096-MB×1, or 2048-MB×2 [dual channel]) • 2048-MB (2048×1)

Category	Description
Hard drive	Support for 6.35-cm (2.5-in) hard drives in 9.5-mm (.37-in) and 7.0-mm (.28-in) thicknesses (all hard drives use the same bracket) Customer-accessible Serial ATA Support for Intel Smart Response Technology Support for Accelerometer hard drive protection Support for the following hard drives: • 1-TB, 5400-rpm, 9.5-mm • 750-GB, 7200- and 5400-rpm, 9.5-mm • 640-GB, 5400-rpm, 9.5-mm • 500-GB, 7200- and 5400-rpm, 9.5- and 7.0-mm
Optical drive	Fixed SATA Support for DVD±RW Double-Layer with SuperMulti Drive Support for no drive option
Audio and video	Two stereo speakers HD audio Beats Audio Subwoofer Supports Microsoft Premium requirements Integrated HP TrueVision HD slim webcam (fixed [no tilt], activity LED, 1280×720 by 30 frames per second) Dual array digital microphones with appropriate beam-forming, echo-cancellation, noise-suppression software
Ethernet	Integrated 10/100/1000 network interface card (NIC)
Wireless	Integrated wireless local area network (WLAN) options by way of wireless module Two WLAN antennas built into display assembly Support for the following WLAN formats: • Atheros WB225 1×1 802.11b/g/n Bluetooth Combo Adapter • Intel Centrino Advanced-N 6235 WLAN module • Intel Centrino Wireless-N 2230 WLAN module • Ralink RT3290LE 802.11b/g/n 1×1 WiFi and Bluetooth 4.0 Combo Adapter • Ralink RT5390R 802.11b/g/n 1×1 WiFi Adapter Support for no WLAN option

Category	Description
External media cards	Digital Media Slot with push-push technology, supporting the following digital card formats: • Secure Digital (SD) Memory Card • Secure Digital High Capacity (SDHC) Memory Card • Secure Digital Extended Capacity (SDxC) Memory Card • MultiMediaCard (MMC)
Ports	• Audio-in (mono microphone)/audio-out (stereo headphone) combo jack supporting audio-jack detection • Battery connector • HDMI v1.4 supporting up to 1920×1200 @ 60Hz • HP Smart AC adapter • RJ-45 (Ethernet) • USB 3.0 port (two ports on left side) • USB 2.0 port (one port on right side) • VGA (Dsub 15-pin) supporting: 2048×1536 external resolution @ 75 Hz, hot plug and unplug and auto-detection for correct output to wide-aspect vs. standard aspect video
Keyboard/pointing devices	Full-size, DuraCoat, backlit, island-style keyboard, with silver frame and black keys Numeric keypad (upper-left justified), dual-point, spill-resistant with drain, durakeys Gesture support: MultiTouch gestures enabled, two-finger scrolling, and pinch-zoom as default Taps enabled by default Support for TouchPad with image sensor Support for Windows 8 Modern Trackpad Support for 2-way scroll Multitouch gestures enabled
Power requirements	Support for 65-W HP Smart AC adapter (non-PFC, RC/V, 3-wire)
	Support for 6-cell, 62-Wh, 2.80-Ah battery (Li-ion)
Security	Support for security cable lock Support for fingerprint reader with Digital Persona software Support for HP SimplePass Support for Intel AT-p Ready (in BIOS)

Category	Description
Operating system	**Preinstalled:** Windows® 8 Professional
Serviceability	End user replaceable parts: • AC adapter • Battery • Hard drive • Keyboard • Memory module • Optical drive • RTC battery • Service cover • Wireless module compartment cover • WLAN module

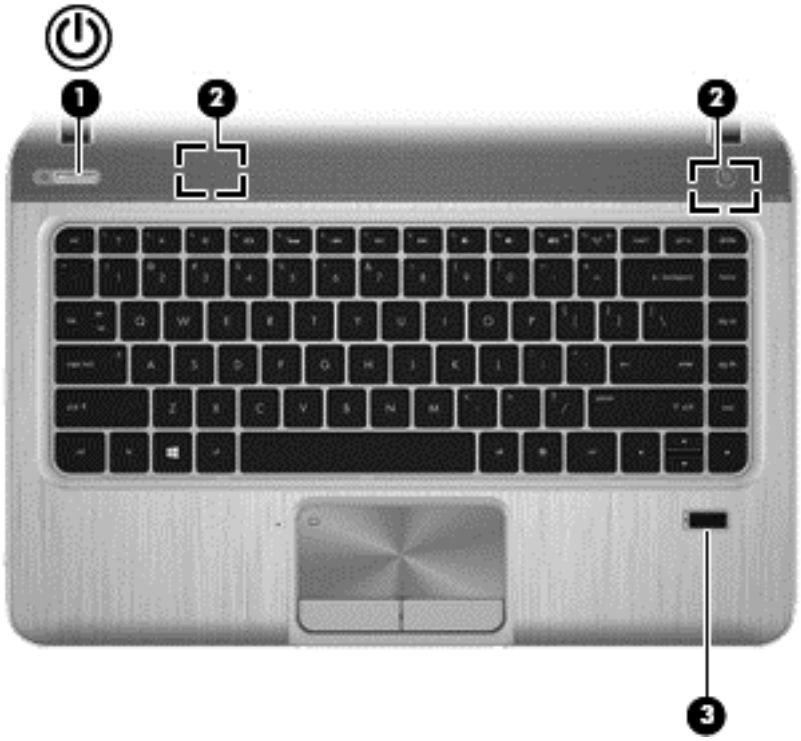
2 External component identification

Display

Item	Component	Description
(1)	WLAN antennas (2)*	Send and receive wireless signals to communicate with WLANs.
(2)	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.
(3)	Internal microphones (2)	Record sound.
(4)	Webcam light	On: The webcam is in use.
(5)	HP TrueVision HD Webcam	Records video, captures still photographs, and allows video conferences and online chat by means of streaming video. From the Start screen, type c, and then select **CyberLink YouCam**.

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

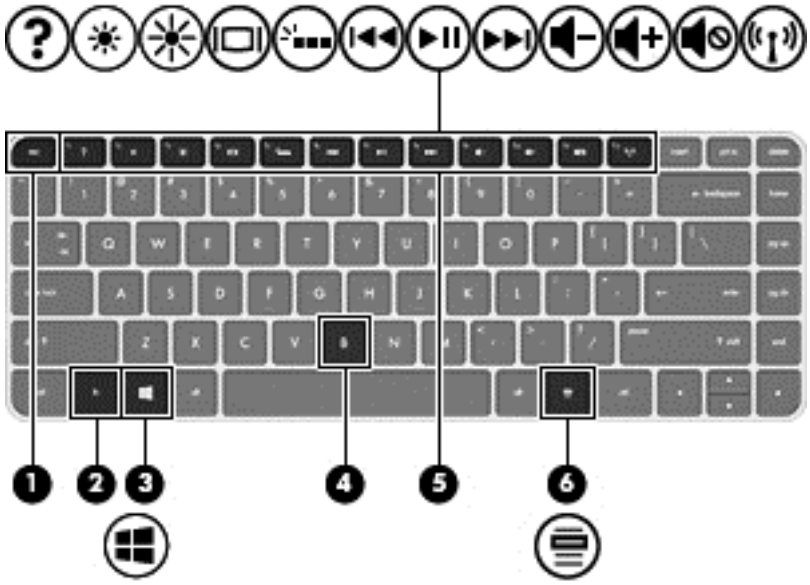
Buttons, speakers, and fingerprint reader



Item	Component	Description
(1)	Power button	• 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. **CAUTION:** Pressing and holding down the power button will result in the loss of unsaved information. 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. **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. To learn more about your power settings: 1. From the Start screen, type `p`. 2. In the search box, type `power`. 3. Select **Settings**, and then select **Power options**.
(2)	Speakers (2)	Produce sound.
(3)	Fingerprint reader	Allows a fingerprint logon to Windows, instead of a password logon.

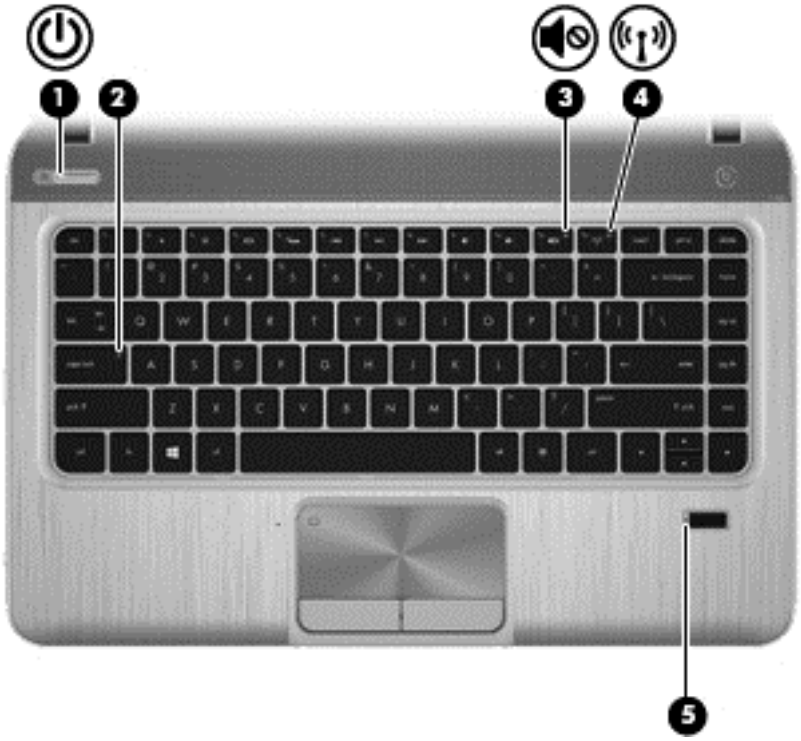
Keys

NOTE: Your computer may look slightly different from the illustration in this section.



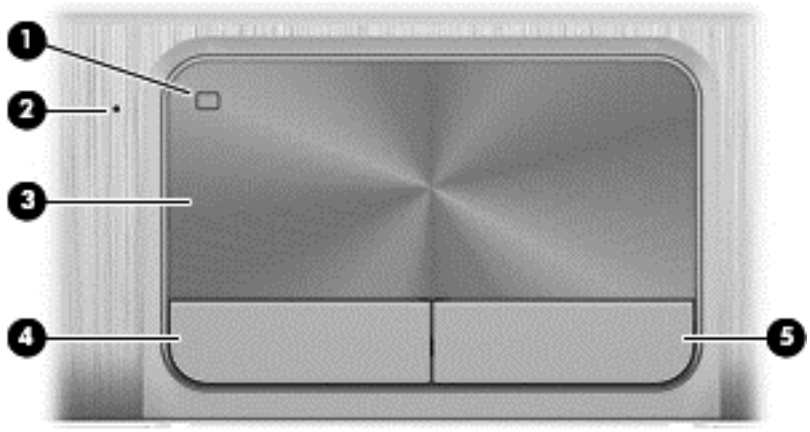
Item	Component	Description
(1)	esc key	Displays system information when pressed in combination with the fn key.
(2)	fn key	Executes frequently used system functions when pressed in combination with the b key or the esc key.
(3)	Windows logo key	Returns you to the Start screen from an open app or the desktop.
(4)	b key	Enables or disables Beats Audio when pressed in combination with the fn key. Beats Audio is an enhanced audio feature that provides a deep, controlled bass while maintaining a clear sound. Beats Audio is enabled by default. Opens Beats Audio Control Panel, which allows you to view and control all audio settings. **NOTE:** To open Beats Audio Control Panel, from the Start screen, type c, select **Control Panel**, select **Hardware and Sound**, and then select **Beats Audio Control Panel**.
(5)	Action keys	Execute frequently used system functions. **NOTE:** On select models, the f5 action key turns the radiance backlight keyboard feature off or on.
(6)	Windows apps key	Displays options for a selected object.

Lights



Item	Component	Description
(1)	Power light	• 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. **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.
(2)	Caps lock light	On: Caps lock is on, which switches the keys to all capital letters.
(3)	Mute light	• Amber: Computer sound is off. • Off: Computer sound is on.
(4)	Wireless light	• White: An integrated wireless device, such as a WLAN device and/or a Bluetooth device, is on. • Amber: All wireless devices are off.
(5)	Fingerprint reader light	• White: The fingerprint was read. • Amber: The fingerprint was not read.

TouchPad

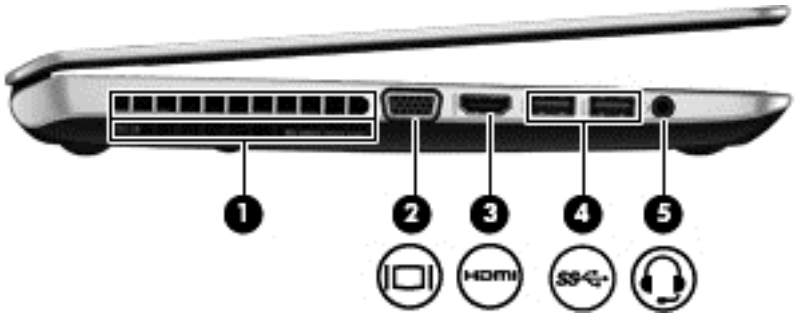


Item	Component	Description
(1)	TouchPad on/off button	Turns the TouchPad on or off.
(2)	TouchPad light	• On: The TouchPad is off. • Off: The TouchPad is on.
(3)	TouchPad zone	Moves the on-screen pointer and selects or activates items on the screen. **NOTE:** The TouchPad also supports edge-swipe gestures.
(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.

Front

Component	Description
Digital Media Slot	Supports the following digital card formats: • Secure Digital (SD) Memory Card • Secure Digital High Capacity (SDHC) Memory Card • Secure Digital Extended Capacity (SDxC) Memory Card • MultiMediaCard (MMC)

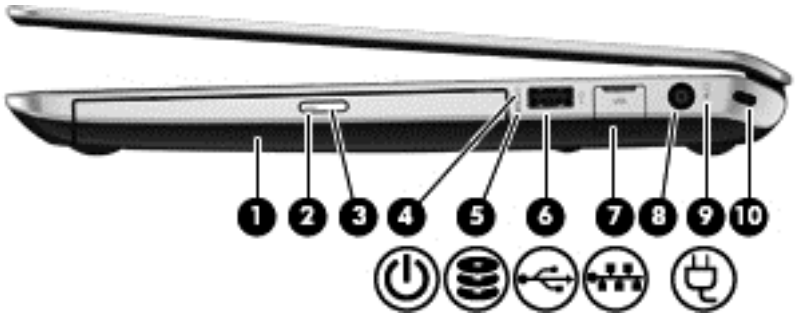
Left side



Item	Component	Description
(1)	Vent	Enables airflow to cool internal components. **NOTE:** The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(2)	External monitor port	Connects an external VGA monitor or projector.
(3)	HDMI port	Connects an optional video or audio device, such as a high-definition television, or any compatible digital or audio device.

Item	Component	Description
(4)	USB 3.0 ports	Connect optional USB 3.0 devices and provide enhanced USB power performance. **CAUTION:** While there are multiple USB ports on the same side, only one USB port will be able to support a high power device at a time.
(5)	Audio-out (headphone) jack/Audio-in (microphone) jack	Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional computer headset microphone, stereo array microphone, or monaural microphone. The jack does not support optional microphone-only devices. **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 *Regulatory, Safety, and Environmental Notices.*. **NOTE:** When a device is connected to the jack, the computer speakers are disabled. **NOTE:** Be sure that the device cable has a 4-conductor connector that supports both audio-out (headphone) and audio-in (microphone).

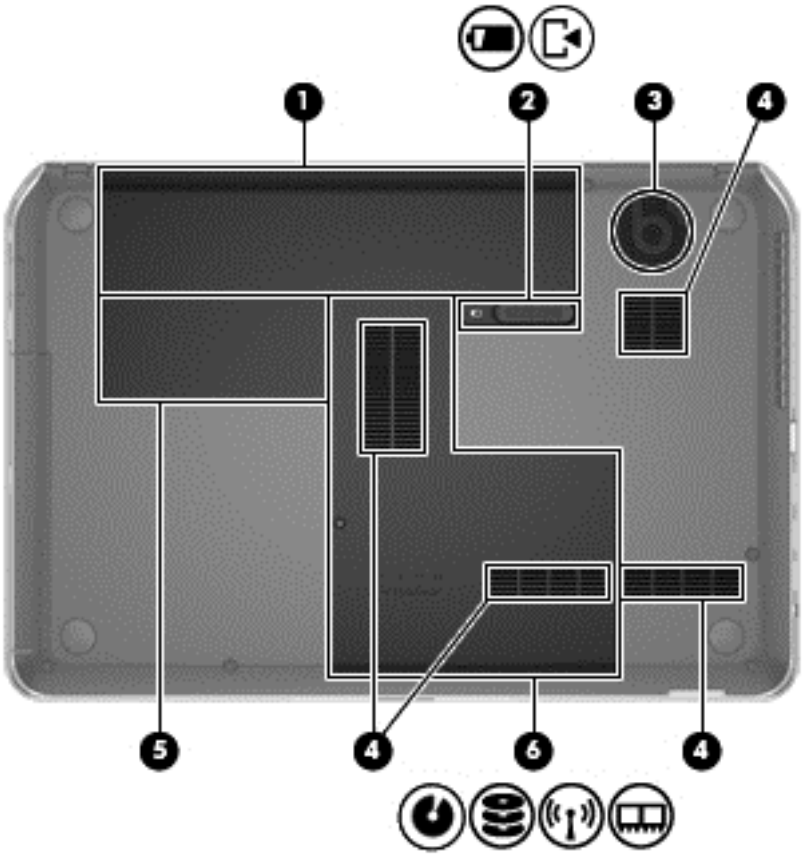
Right side



Item	Component	Description
(1)	Optical drive	Reads and writes (select models only) to an optical disc.
(2)	Optical drive light	• Green: The optical drive is being accessed. • Off: The optical drive is idle.
(3)	Optical drive eject button	Releases the disc tray.

Item	Component	Description
(4)	Power light	• 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. **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.
(5)	Hard drive light	• Blinking white: The hard drive is being accessed. • Amber: HP 3D DriveGuard has temporarily parked the hard drive.
(6)	USB 2.0 port	Connects an optional USB device.
(7)	RJ-45 (network) jack	Connects a network cable.
(8)	Power connector	Connects an AC adapter.

Bottom

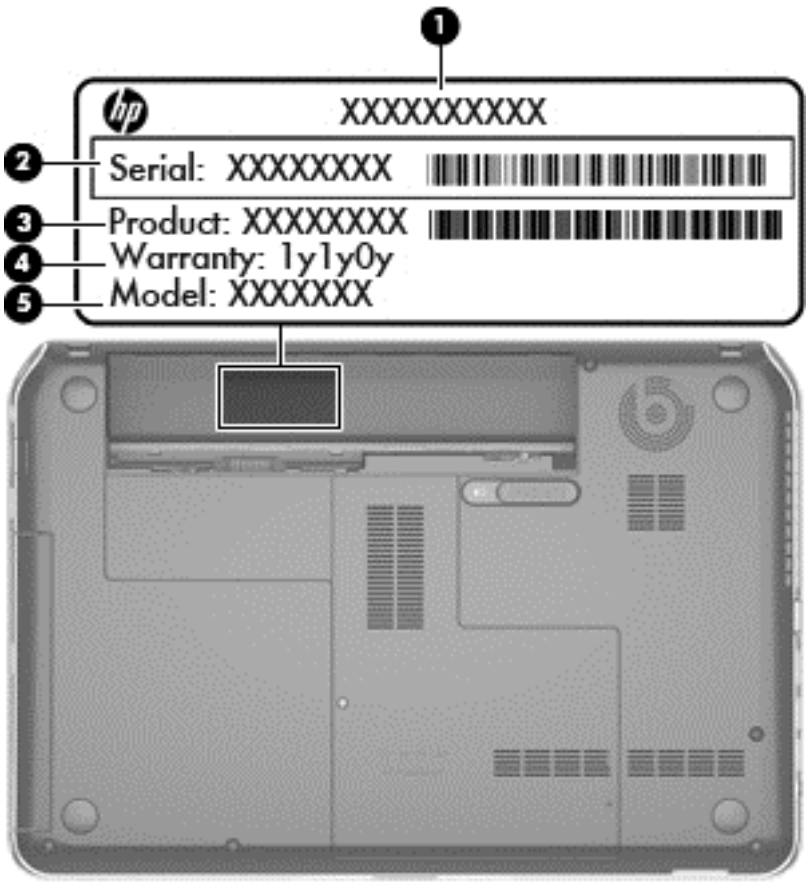


Item	Component	Description
(1)	Battery bay	Holds the battery.
(2)	Battery release latch	Releases the battery and the service cover.
(3)	HP Triple Bass Reflex Subwoofer	Provides superior bass sound.
(4)	Vents (4)	Enable airflow to cool internal components. **NOTE:** The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(5)	Wireless module compartment cover	The wireless module compartment cover provides access to the WLAN module and the RTC battery. **CAUTION:** To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module to restore computer functionality, and then contact support through Help and Support.
(6)	Service cover	The service cover provides access to the optical drive, hard drive bay, and memory module compartment.

3 Illustrated parts catalog

Service tag

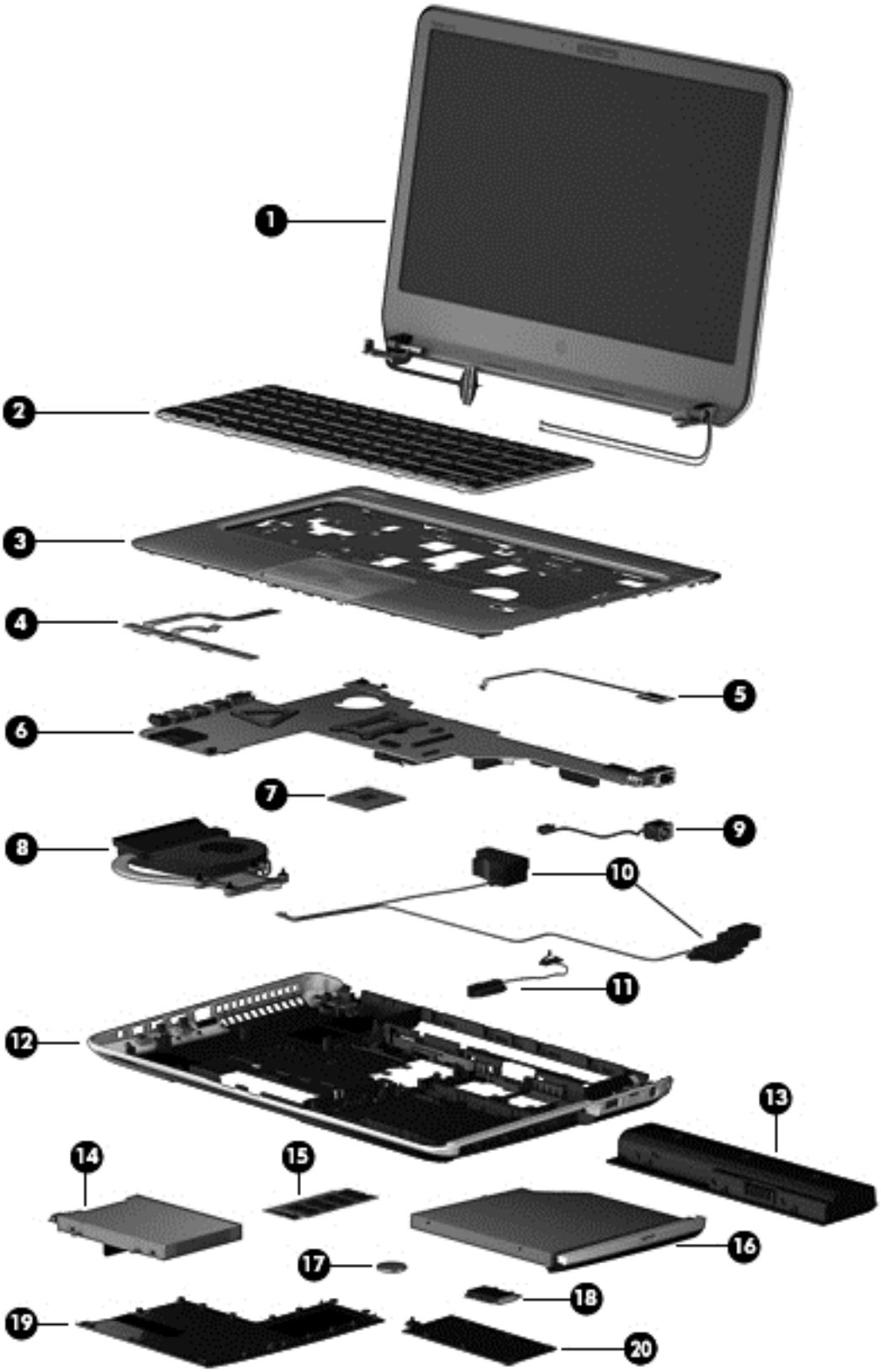
When ordering parts or requesting information, provide the computer serial number and model number provided on the service tag. It is necessary to remove the battery to obtain these numbers. See Battery for battery removal instructions.



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.

Item	Description	Function
(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.

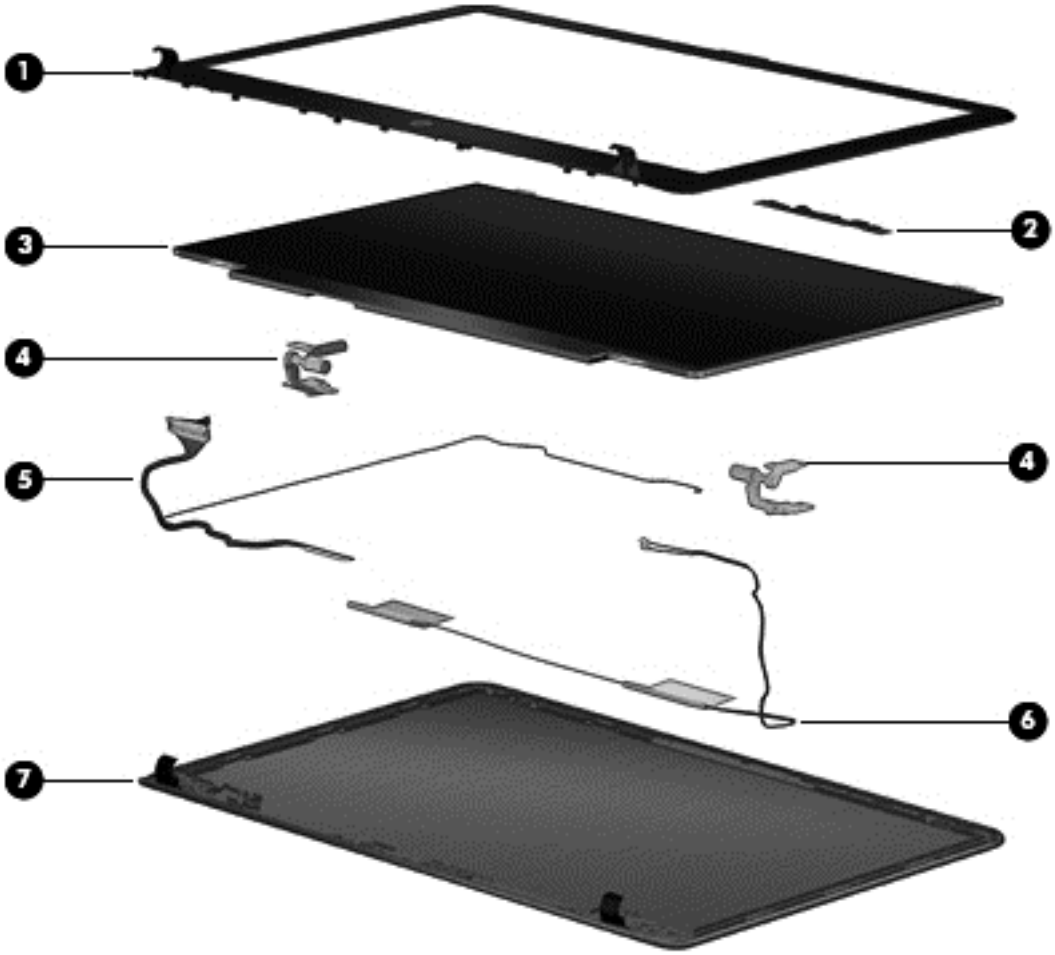
Computer major components



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.	
(2)	**Keyboard with backlight** (includes keyboard cable and keyboard backlight cable):	
	For use only in Canada	698084-DB1
	For use only in Latin America	698084-161
	For use only in the United States	698084-001
(3)	**Top cover** (includes TouchPad and TouchPad cable)	698095-001
(4)	**TouchPad button board** (includes cable)	700012-001
(5)	**Fingerprint reader board** (includes cable and bracket)	698080-001
(6)	**System board** (includes replacement thermal material)	698093-501
(7)	**Processor** (includes replacement thermal material):	
	Intel Quad Core i7-3632QM 2.20-GHz processor (SC turbo up to 3.20-GHz; 1600-MHz FSB, 6.0-MB L3 cache, 35 W)	701658-001
	Intel Dual Core i5-3230M 2.60-GHz processor (SC turbo up to 3.20-GHz, 1600-MHz front-side bus (FSB), 3.00-MB L3 cache, 35 W)	711903–001
	Intel Dual Core i5-3210M 2.50-GHz processor (SC turbo up to 3.10-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W)	680645-001
	Intel Dual Core i3-3130M 2.60-GHz processor (1600-MHz FSB, 3.00-MB L3 cache, 35 W)	713163–001
	Intel Dual Core i3-3120M 2.50-GHz processor (1600-MHz FSB, 3.0-MB L3 cache, 35 W)	700627-001
	Intel Dual Core i3-3110M 2.40-GHz processor (1600-MHz FSB, 3.0-MB L3 cache, 35 W)	682417-001
(8)	**Fan/heat sink assembly** (includes replacement thermal material)	698079-001
(9)	**Power connector cable** (includes bracket)	698078-001
(10)	**Speakers** (include left and right speakers, cables, and 4 rubber isolators)	698091-001
(11)	**Optical drive connector cable**	700011-001
(12)	**Base enclosure** (includes battery release latch assembly and 4 rubber feet)	698076-001
	Rubber Kit (not illustrated, includes 2 base enclosure rear rubber feet)	698089-001
(13)	**6-cell, 62-Wh, 2.80-Ah battery (Li-ion)**	671731-001
(14)	**Hard drive** (does not include hard drive bracket, hard drive connector cable, or screws):	
	1-TB, 5400-rpm, 9.5-mm	676521-001
	750-GB, 7200-rpm, 9.5-mm	633252-001
	750-GB, 5400-rpm, 9.5-mm	634250-001
	640-GB, 5400-rpm, 9.5-mm	669300-001
	500-GB, 7200-rpm, 9.5-mm	634925-001
	500-GB, 5400-rpm, 9.5-mm	669299-001

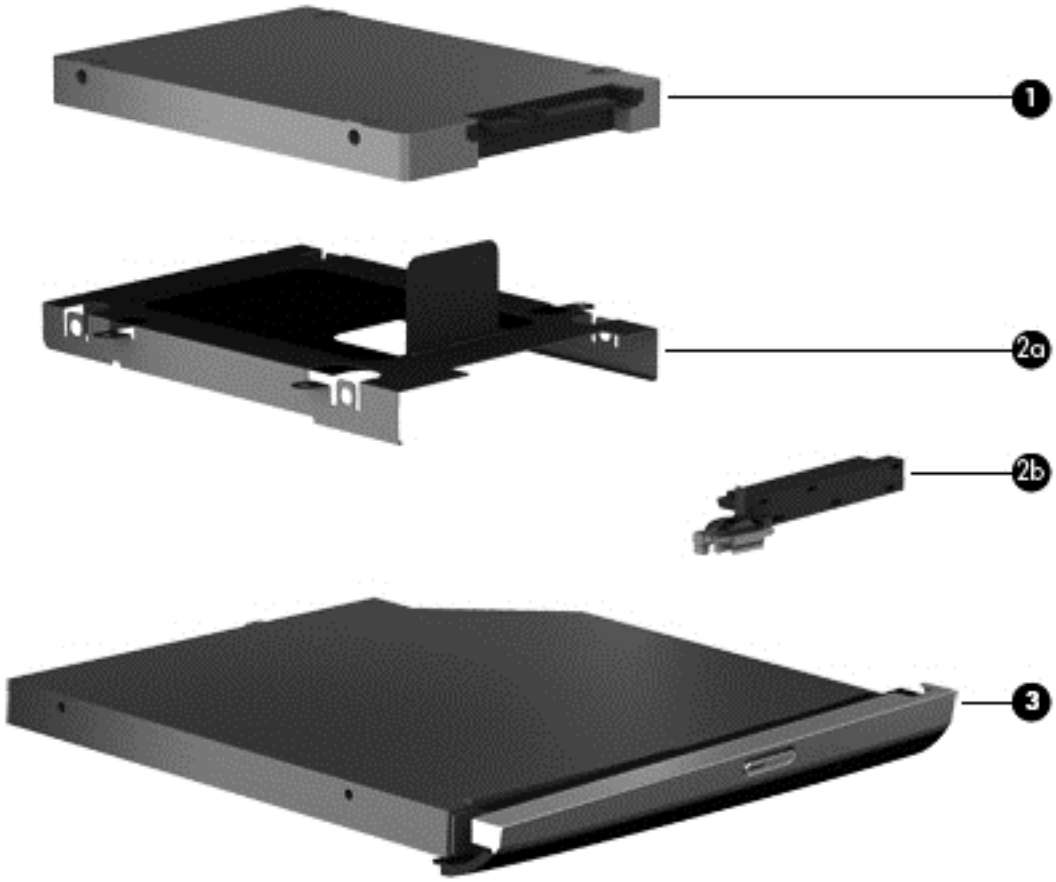
Item	Component	Spare part number
	500-GB, 5400-rpm, 9.5-mm	683802-001
	Hard Drive Hardware Kit (not illustrated, includes hard drive bracket, hard drive connector cable, and screws)	698081-001
(15)	**Memory modules** (2, PC3-12800, 1666-MHz, DDR3):	
	8-GB	670034-001
	4-GB	641369-001
	2-GB	652972-001
(16)	**DVD±RW Double-Layer with SuperMulti Drive** (includes bezel and bracket)	698085-001
(17)	**RTC battery**	676654-001
(18)	**WLAN module:**	
	Atheros WB225 1×1 802.11b/g/n Bluetooth Combo Adapter	675794-001
	Intel Centrino Advanced-N 6235 WLAN module	690019-001
	Intel Centrino Wireless-N 2230 WLAN module	670290-001
	Ralink RT3290LE 802.11b/g/n 1×1 WiFi and Bluetooth 4.0 Combo Adapter	690020-001
	Ralink RT5390R 802.11b/g/n 1×1 WiFi Adapter	691415-001
	Service Cover Kit, includes:	698086-001
(19)	Service Cover (includes one captive screw, secured by a C-clip)	
(20)	Wireless module compartment cover (includes one captive screw, secured by a C-clip)	

Display assembly subcomponents



Item	Component	Spare part number
(1)	**Display bezel**	698077-001
(2)	**Webcam/microphone module**	698096-001
(3)	**14.1 in, BrightView, HD, LED, display panel**	698087-001
(4)	**Display Hinge Kit** (includes left and right display hinges)	698082-001
(5)	**Display panel cable** (includes webcam/microphone module cable)	698094-001
(6)	**Antenna Kit** (includes WLAN antenna cables and transceivers)	698074-001
(7)	**Display enclosure**	698075-001

Mass storage device



Item	Description	Spare part number
(1)	**Hard drive** (does not include hard drive bracket, hard drive connector cable, or screws):	
	1-TB, 5400-rpm, 9.5-mm	676521-001
	750-GB, 7200-rpm, 9.5-mm	633252-001
	750-GB, 5400-rpm, 9.5-mm	634250-001
	640-GB, 5400-rpm, 9.5-mm	669300-001
	500-GB, 7200-rpm, 9.5-mm	634925-001
	500-GB, 5400-rpm, 9.5-mm	669299-001
	500-GB, 5400-rpm, 9.5-mm	683802-001
	Hard Drive Hardware Kit, includes:	698081-001
(2a)	Hard drive bracket	
(2b)	Hard drive connector cable	
	Hard drive bracket screws (not illustrated)	
(3)	**DVD±RW Double-Layer with SuperMulti Drive** (includes bezel and bracket):	698085-001

Miscellaneous parts

Component	Spare part number
65-W HP Smart AC adapter (non-PFC, RC/V, 3-wire)	693711-001
Power cord (3-pin, black, 1.83-m):	
For use in Argentina	490371-D01
For use in Italy	490371-061
For use in North America	490371-001
Screw Kit	698090-001

Sequential part number listing

Spare part number	Description
490371-001	Power cord for use in North America (3-pin, black, 1.83-m)
490371-061	Power cord for use in Italy (3-pin, black, 1.83-m)
490371-D01	Power cord for use in Argentina (3-pin, black, 1.83-m)
633252-001	750-GB, 7200-rpm, 9.5-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 698081-001.
634250-001	750-GB, 5400-rpm, 9.5-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 698081-001.
634925-001	500-GB, 7200-rpm, 9.5-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 698081-001.
641369-001	4-GB memory module (PC3, 12800, 1600-MHz)
652972-001	2-GB memory module (PC3, 12800, 1600-MHz)
669299-001	500-GB, 5400-rpm, 9.5-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 698081-001.
669300-001	640-GB, 5400-rpm, 9.5-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 698081-001.
670034-001	8-GB memory module (PC3, 12800, 1600-MHz)
670290-001	Intel Centrino Wireless-N 2230 WLAN module
671731-001	6-cell, 62-Wh, 2.80-Ah, Li-ion battery

Spare part number	Description
675794-001	Atheros WB225 1×1 802.11b/g/n Bluetooth Combo Adapter
676521-001	1-TB, 5400-rpm, 9.5-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 698081-001.
676654-001	RTC battery
680645-001	Intel Dual Core i5-3210M 2.50-GHz processor (SC turbo up to 3.10-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W; includes replacement thermal material)
682417-001	Intel Core i3-3110M 2.40-GHz processor (1600-MHz FSB, 3.0-MB L3 cache, 35 W; includes replacement thermal material)
683802-001	500-GB, 5400-rpm, 9.5-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 698081-001.
690019-001	Intel Centrino Advanced-N 6235 WLAN module
690020-001	Ralink RT3290LE 802.11b/g/n 1×1 WiFi and Bluetooth 4.0 Combo Adapter
691415-001	Ralink RT5390R 802.11b/g/n 1×1 WiFi Adapter
693711-001	65-W HP Smart AC adapter (non-PFC, 3-wire)
698074-001	Wireless Antenna Kit (includes left and right wireless antenna cables and transceivers)
698075-001	Display enclosure
698076-001	Base enclosure (includes battery release latch assembly and 4 rubber feet)
698077-001	Display bezel
698078-001	Power connector cable (includes bracket)
698079-001	Fan/heat seat assembly (includes replacement thermal material)
698080-001	Fingerprint reader board (includes cable and bracket)
698081-001	Hard Drive Hardware Kit (includes hard drive bracket, hard drive connector cable, and screws)
698082-001	Display Hinge Kit (includes left and right display hinges)
698084-001	Keyboard with backlight for use only in the United States (includes keyboard cable and keyboard backlight cable)
698084-161	Keyboard with backlight for use only in Latin America (includes keyboard cable and keyboard backlight cable)
698084-DB1	Keyboard with backlight for use only in Canada (includes keyboard cable and keyboard backlight cable)
698085-001	DVD±RW Double-Layer with SuperMulti Drive (includes bezel and bracket)
698086-001	Service Cover Kit (includes service cover and wireless module compartment cover)
698087-001	14.1-in, BrightView, HD, LED display panel
698089-001	Rubber Kit (includes 2 base enclosure rear rubber feet)
698090-001	Screw Kit

Spare part number	Description
698091-001	Speakers (include left and right speakers, cables, and 4 rubber isolators)
698093-501	System board (includes replacement thermal material)
698094-001	Display panel cable (includes webcam/microphone module cable)
698095-001	Top cover (includes TouchPad and TouchPad cable)
698096-001	Webcam/microphone module
700011-001	Optical drive connector cable
700012-001	TouchPad button board (includes cable)
700627-001	Intel Dual Core i3-3120M 2.50-GHz processor (1600-MHz FSB, 3.0-MB L3 cache, 35 W; includes replacement thermal material)
701658-001	Intel Quad Core i7-3632QM 2.20-GHz processor (SC turbo up to 3.20-GHz; 1600-MHz FSB, 6.0-MB L3 cache, 35 W; includes replacement thermal material)
711903–001	Intel Dual Core i5-3230M 2.60-GHz processor (SC turbo up to 3.20-GHz, 1600-MHz front-side bus (FSB), 3.00-MB L3 cache, 35 W)
713163–001	Intel Dual Core i3-3130M 2.60-GHz processor, (1600-MHz FSB, 3.00-MB L3 cache, 35 W)

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			
	Relative humidity		
Event	**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 ±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

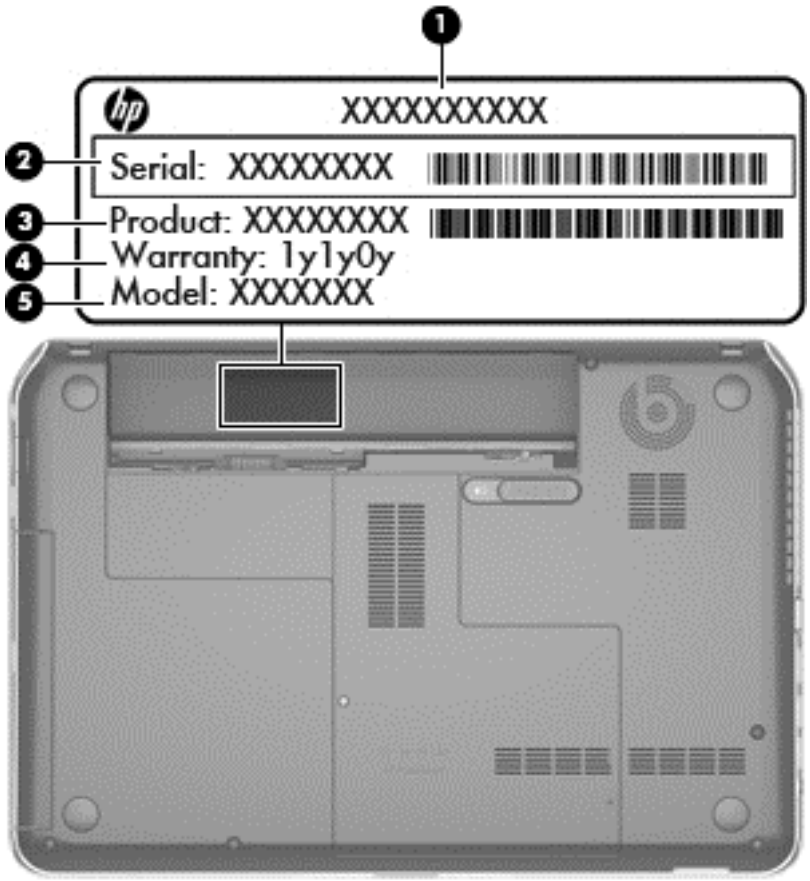
Component replacement procedures

This chapter provides removal and replacement procedures.

There are as many as [xx] 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 for battery removal instructions.

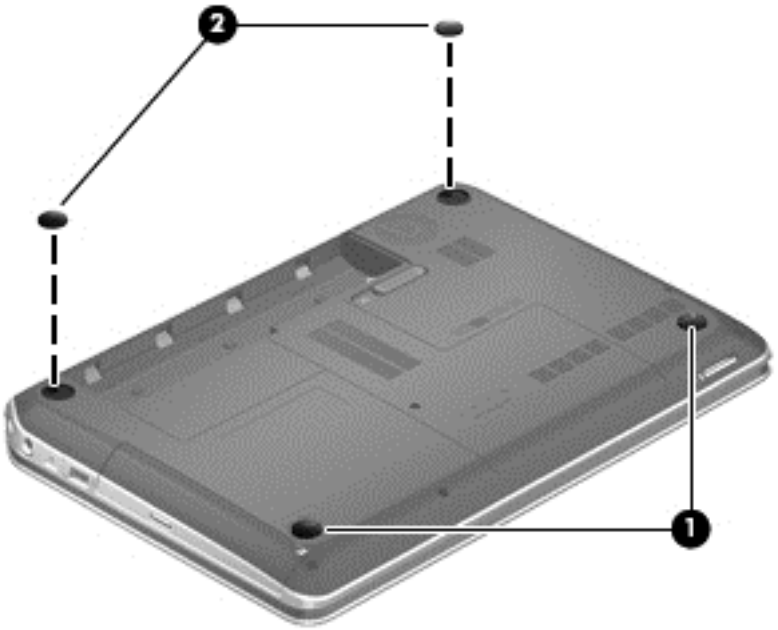


Item	Component	Description
(1)	Product name	This is the product name affixed to the front of the computer.
(2)	Serial number (s/n)	This is an alphanumeric identifier that is unique to each product.
(3)	Part number/Product number (p/n)	This number provides specific information about the product's hardware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

The computer includes 4 rubber feet that attach to the base enclosure in the locations illustrated below. The front rubber feet **(1)** are heat-staked to the base enclosure. The 2 rear rubber

feet **(2)** must be removed to access top cover screws (see Top cover), and are included in the Rubber Kit, spare part number 698089-001.



Battery

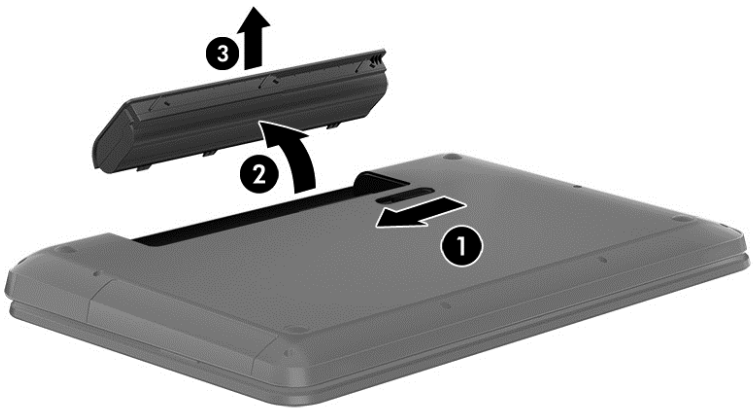
Description	Spare part number
6-cell, 62-Wh, 2.80-Ah battery	671731-001

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 battery:

1. Turn the computer upside down on a flat surface.
2. Slide the battery release latch **(1)** to release the battery.
3. Pivot the front edge of the battery **(2)** up and back.
4. Remove the battery **(3)** from the computer.



To insert the battery:

1. Align the tabs on the rear edge of the battery with the notches on the rear edge of the battery bay.
2. Pivot the front edge of the battery down into the battery bay until it is seated. (The battery release latch will automatically lock into place.)

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 698081-001.

Description	Spare part number
1-TB, 5400-rpm, 9.5-mm	676521-001
750-GB, 7200-rpm, 9.5-mm	633252-001
750-GB, 5400-rpm, 9.5-mm	634250-001
640-GB, 5400-rpm, 9.5-mm	669300-001
500-GB, 7200-rpm, 9.5-mm	634925-001
500-GB, 5400-rpm, 9.5-mm	669299-001
500-GB, 5400-rpm, 9.5-mm	683802-001

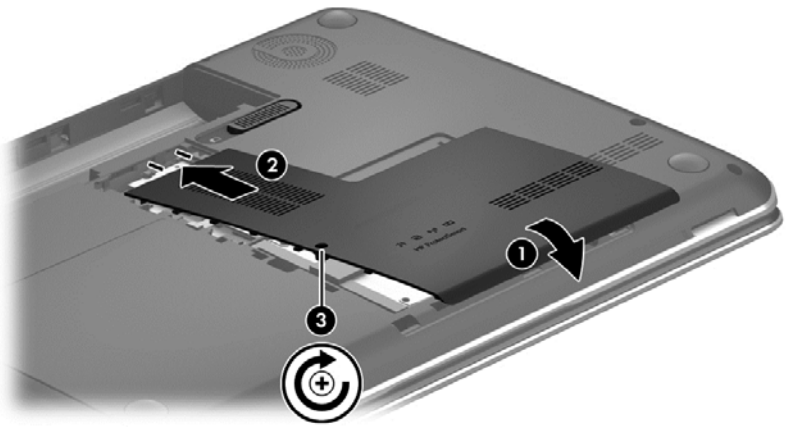
Before removing the hard drive, follow these steps:

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 battery (see Battery).

Remove the hard drive:

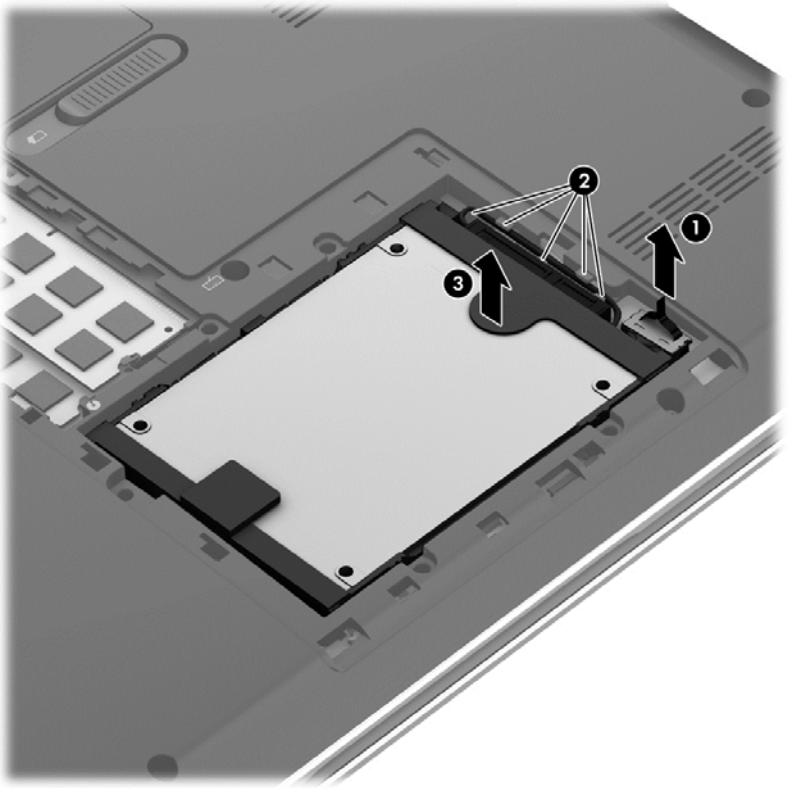
1. Loosen the Phillips PM2.5×4.5 captive screw **(1)** that secures the service cover to the computer.
2. Slide the battery release latch **(2)** to release the service cover.
3. Slide the service cover **(3)** toward the front of the computer.
4. Remove the service cover **(4)**.

   The service cover is included in the Service Cover Kit, spare part number 698086-001.



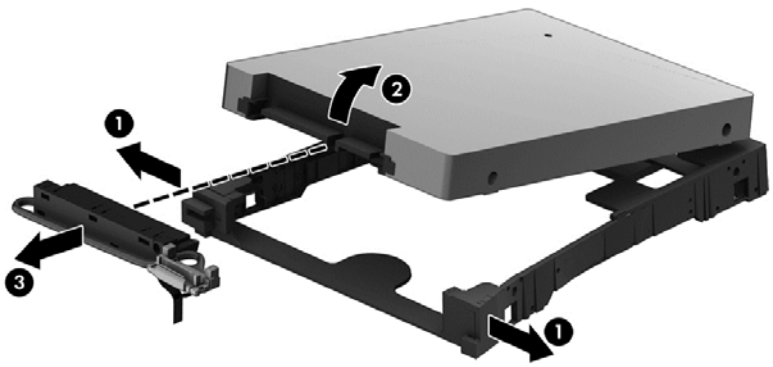
5. Disconnect the hard drive connector cable **(1)** from the system board.

6. Remove the four Phillips PM2.0×4.5 screws **(2)** that secure the hard drive to the computer.
7. Use the hard drive tab **(3)** to remove the hard drive by lifting it straight up and away from the computer.



8. 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 698081-001.



Reverse this procedure to reassemble and install the hard drive.

Optical drive

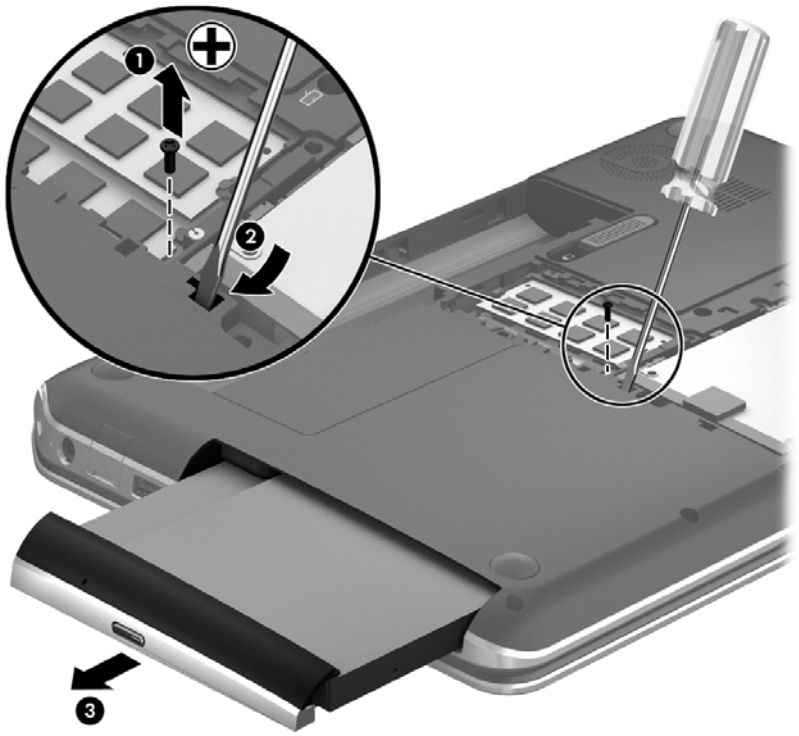
Description	Spare part number
DVD±RW Double-Layer with SuperMulti Drive (includes optical drive bezel and optical drive bracket)	698085-001

Before removing the optical 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 battery (see Battery).
5. Remove the service cover (see Hard drive).

Remove the optical drive:

1. Remove the Phillips PM2.0×5.5 screw **(1)** that secures the optical drive to the computer.
2. Use a flat-blade screw driver or similar tool to press on the optical drive bracket tab **(2)** to release the optical drive.
3. Remove the optical drive **(3)** from the computer.



Reverse this procedure to install the optical drive.

Memory module

NOTE: Primary and expansion memory is installed in a stacked configuration in the bottom of the computer.

Description	Spare part number
8-GB memory module (PC3, 12800, 1600-MHz)	670034-001
4-GB memory module (PC3, 12800, 1600-MHz)	641369-001
2-GB memory module (PC3, 12800, 1600-MHz)	652972-001

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:

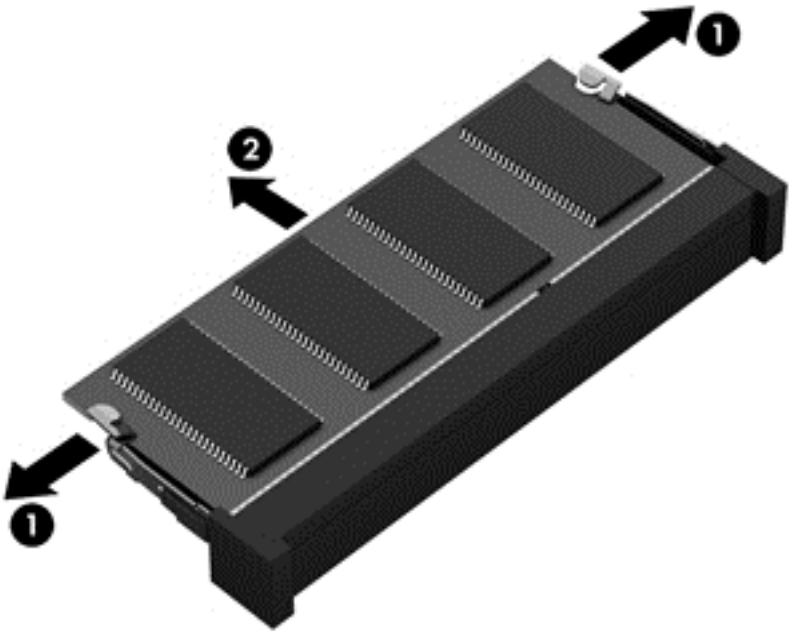
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.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

Remove the memory module:

1. Spread the retaining tabs **(1)** on each side of the memory module slot to release the memory module. (The edge of the module opposite the slot rises away from the computer.)

2. Remove the memory module **(2)** by pulling the module away from the slot at an angle.

NOTE: The computer uses two memory slots. The top slot houses the expansion memory module. The bottom slot houses the primary memory module.



Reverse this procedure to install a memory module.

WLAN module

Description	Spare part number
Atheros WB225 1×1 802.11b/g/n Bluetooth Combo Adapter	675794-001
Intel Centrino Advanced-N 6235 WLAN module	690019-001
Intel Centrino Wireless-N 2230 WLAN module	670290-001
Ralink RT3290LE 802.11b/g/n 1×1 WiFi and Bluetooth 4.0 Combo Adapter	690020-001
Ralink RT5390R 802.11b/g/n 1×1 WiFi Adapter	691415-001

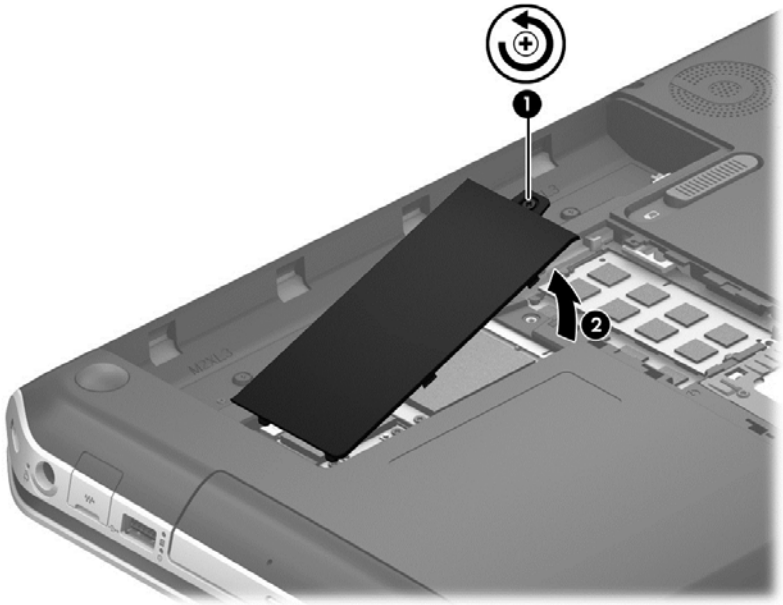
⚠ **CAUTION:** To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module 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 battery (see Battery).
5. Remove the service cover (see Hard drive).

Remove the WLAN module:

1. Loosen the Phillips PM2.5×4.5 captive screw **(1)** that secures the wireless module compartment cover to the computer.
2. Lift the right side of the wireless module compartment cover **(2)** until the cover detaches from the computer.



3. Remove the wireless module compartment cover.

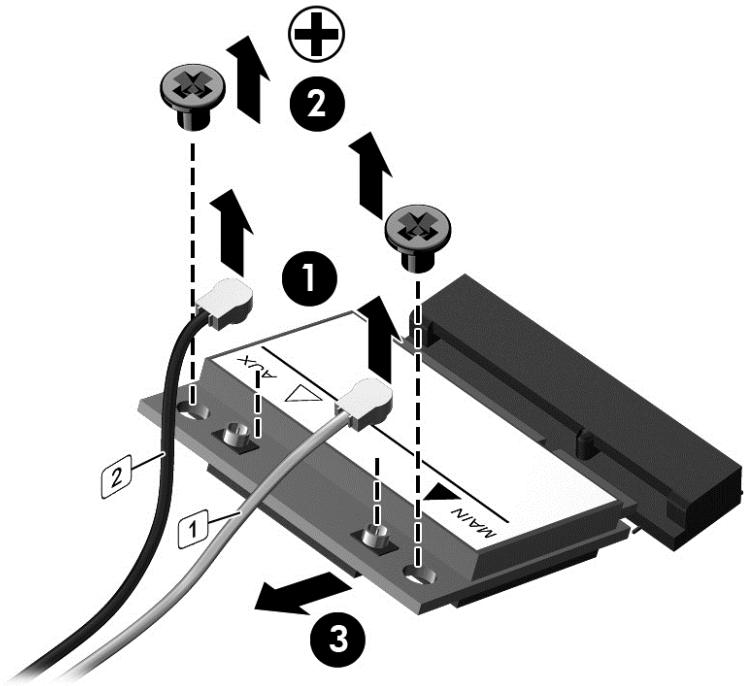
   The wireless module compartment cover is included in the Service Cover Kit, spare part number 698086-001.

4. 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”.

5. Remove the two Phillips PM2.0×3.5 screws **(2)** that secure the WLAN module to the base enclosure. (The WLAN module tilts up.)

6. 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.

RTC battery

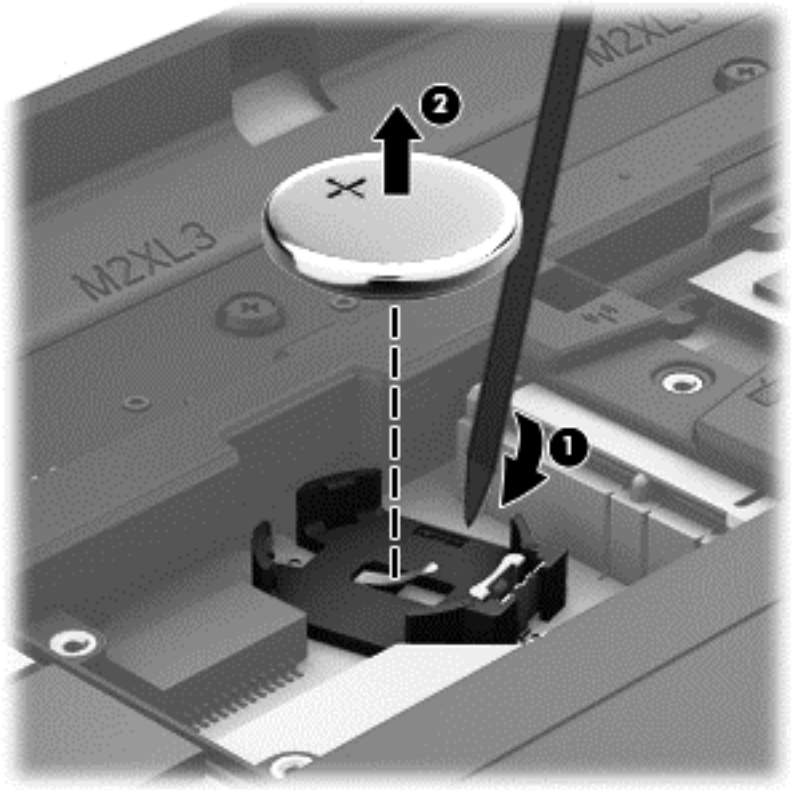
Description	Spare part number
RTC battery	676654-001

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 battery (see Battery), and then remove the following components:
5. Remove the service cover (see Hard drive).

Remove the RTC battery:

▲ Use a thin, non-conductive tool **(1)** to remove the RTC battery **(2)** from the socket on the system board.



Reverse this procedure to install the RTC battery. When installing the RTC battery, make sure the “+” sign faces up.

Keyboard

NOTE: All keyboard spare part kits include backlit keyboards, and include keyboard cables and keyboard backlight cables.

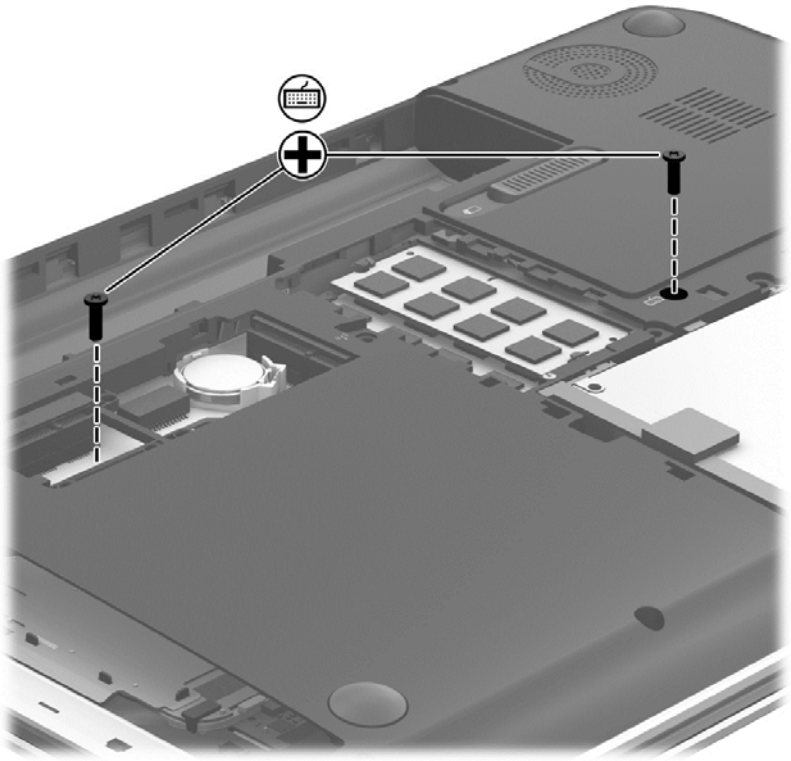
Description	Spare part number
For use only in Canada	698084-DB1
For use only in Latin America	698084-161
For use only in the United States	698084-001

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 battery (see Battery), and then remove the following components:
   a. Service cover (see Hard drive)
   b. Optical drive (see Optical drive)
   c. WLAN module (see WLAN module)

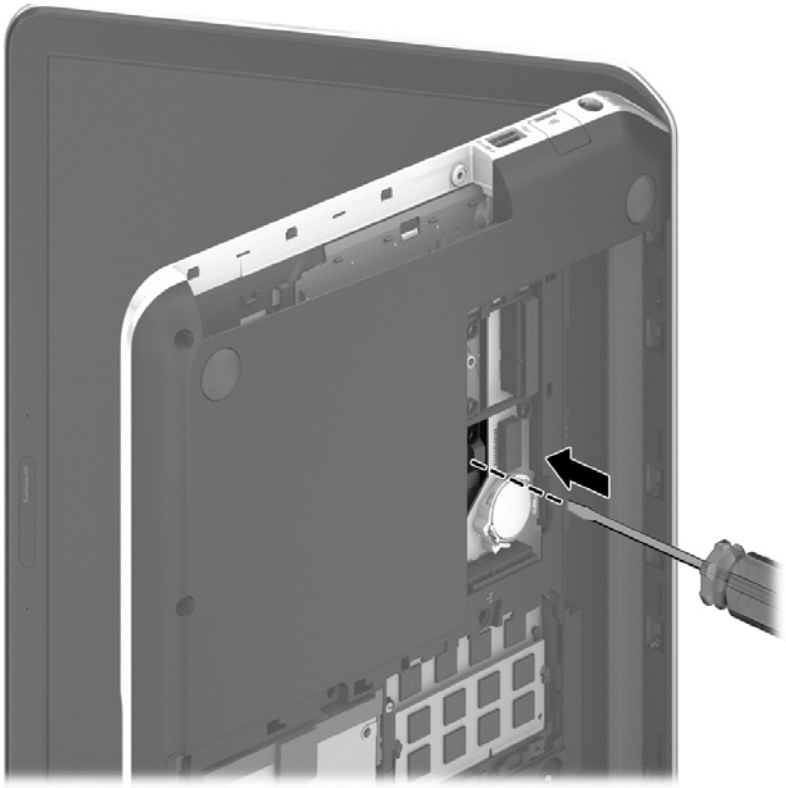
Remove the keyboard:

1. Remove the two Phillips PM2.5×6.5 screws that secure the keyboard to the computer.



2. Rest and secure the computer on its left side.
3. Partially open the computer.

4. Insert a screw driver or similar thin tool into the keyboard release opening in the wireless module compartment, and then press on the back of the keyboard until the keyboard disengages from the computer.



5. Turn the computer right-side up with the front toward you.
6. Open the computer.

7. Lift the rear edge of the keyboard **(1)** until the keyboard rests at an angle, and then swing the top edge of the keyboard **(2)** up and forward until it rests upside down on the palm rest.

8. Release the zero insertion force (ZIF) connector **(1)** to which the keyboard cable is attached, and then disconnect the keyboard cable **(2)** from the system board.
9. Release the ZIF connector to which the keyboard backlight cable **(4)** is attached, and then disconnect the keyboard backlight cable **(4)** from the system board.

10. Remove the keyboard **(5)**.

Reverse this procedure to install the keyboard.

Top cover

NOTE: The top cover spare part kit includes the TouchPad and TouchPad cable. The TouchPad cable is also available in the Cable Kit, spare part number 651384-001.

Description	Spare part number
Top cover (includes TouchPad and TouchPad cable)	698095-001

Before removing the top 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 battery (see Battery), and then remove the following components:
   a. Hard drive (see Hard drive)
   b. Optical drive (see Optical drive)
   c. WLAN module (see WLAN module)
   d. Keyboard (see Keyboard)

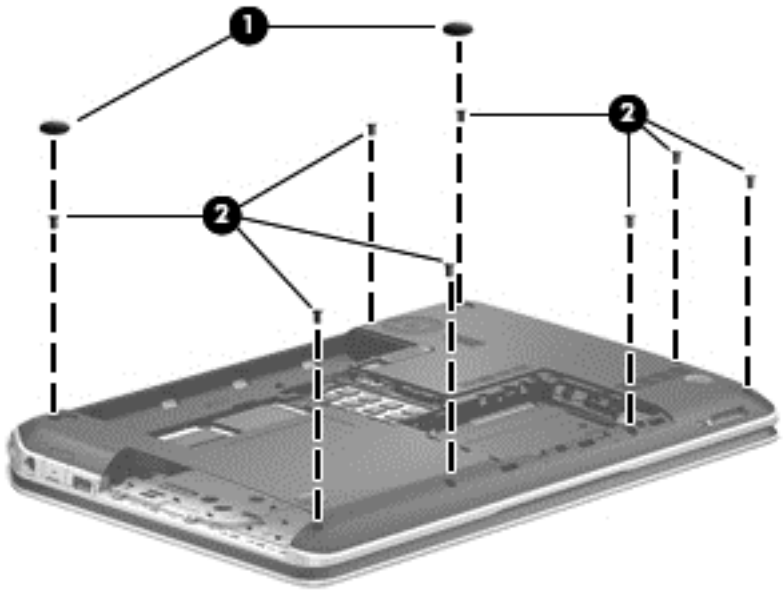
NOTE: When replacing the top cover, be sure that the fingerprint reader board (see Fingerprint reader board) and TouchPad button board (see TouchPad button board) are removed from the defective top cover and installed on the replacement top cover.

Remove the top cover:

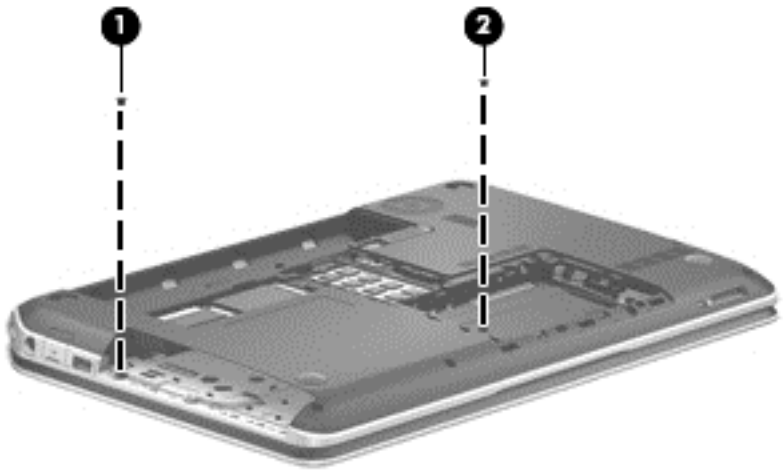
1. Remove the two rear rubber feet **(1)**.

   The two rear rubber feet are included in the Rubber Kit, spare part number 698089-001.

2. Remove the eight Phillips PM2.5×6.5 screws **(2)** that secure the display assembly to the top cover.

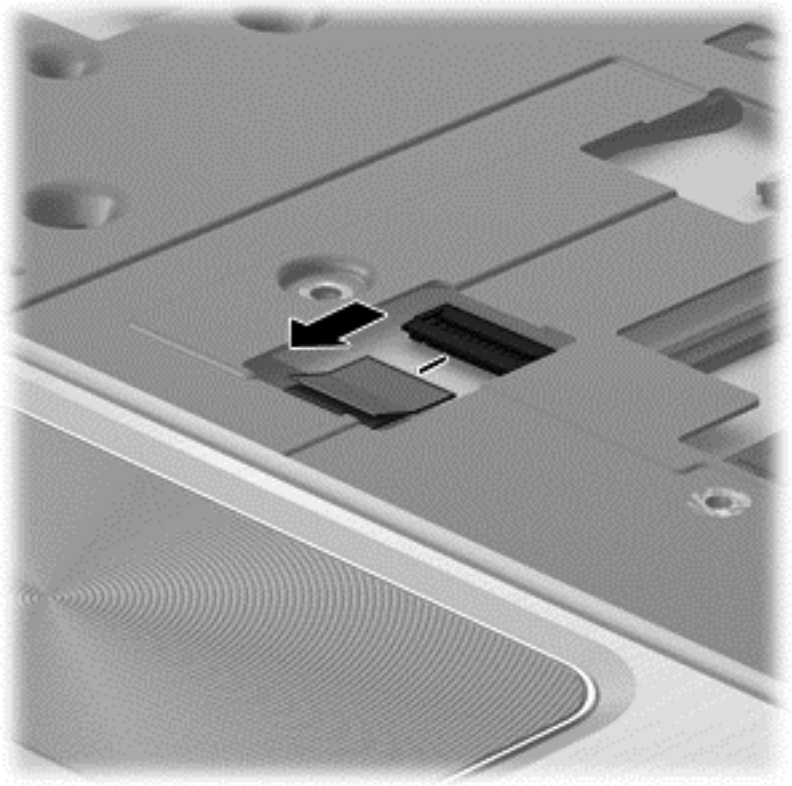


3. Remove the Phillips PM2.0×2.0 screws in the optical drive bay **(1)** and the hard drive bay **(2)**.

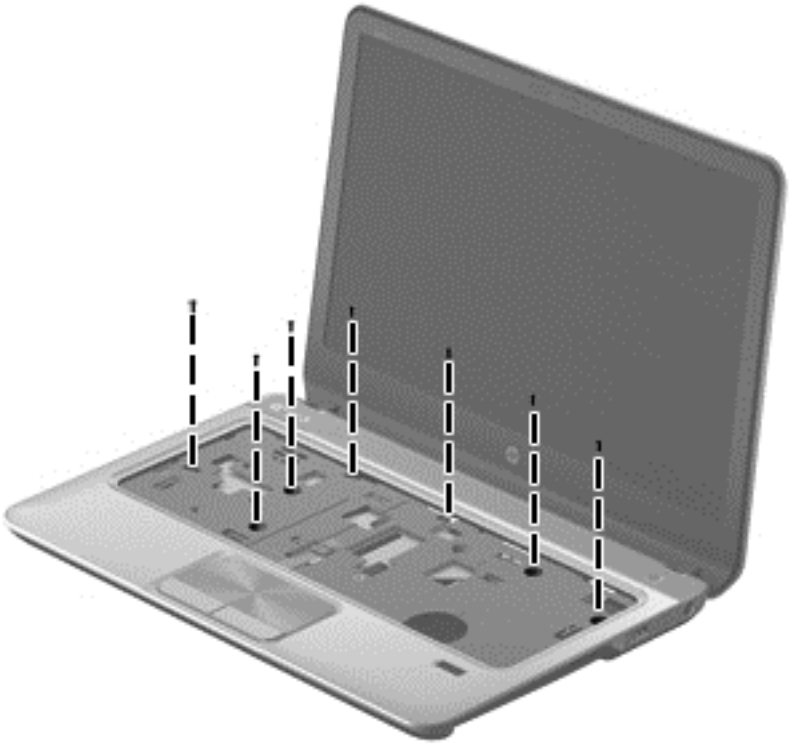


4. Turn the computer right side up, with the front toward you.
5. Open the computer.

6. Release the ZIF connector to which the TouchPad button board cable is attached, and then disconnect the TouchPad button board cable from the system board.



7. Remove the seven Phillips PM2.5×6.5 screws that secure the top cover to the base enclosure.



8. Lift the front edge of the top cover **(1)**, and then swing it up and back until the left and right sides detach from the base enclosure.
9. Remove the top cover **(2)**.

Reverse this procedure to install the top cover.

Fingerprint reader board

Description	Spare part number
Fingerprint reader board (includes bracket and cable)	698080-001

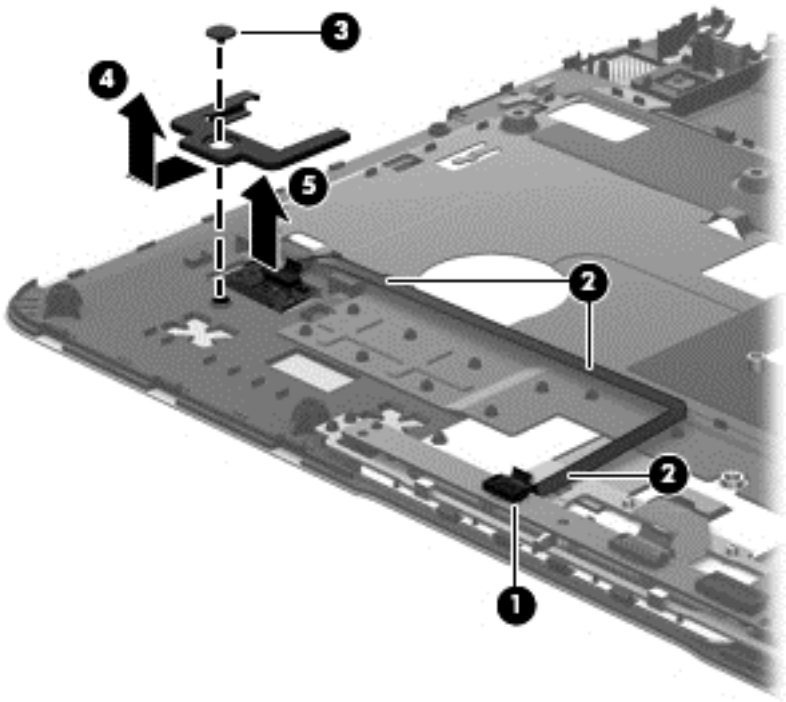
Before removing the fingerprint reader board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery), and then remove the following components:
   a. Hard drive (see Hard drive)
   b. Optical drive (see Optical drive)
   c. WLAN module (see WLAN module)
   d. Keyboard (see Keyboard)
   e. Top cover (see Top cover)

Remove the fingerprint reader board:

1. Turn the top cover upside down, with the front toward you.
2. Release the ZIF connector to which the fingerprint reader board cable is attached, and then disconnect the fingerprint reader board cable **(1)** from the TouchPad button board.
3. Detach the fingerprint reader board cable **(2)** from the top cover. (The TouchPad button board cable is attached to the top cover with double-sided tape.)
4. Remove the Phillips PM2.5×2.0 broad head screw **(3)** that secures the fingerprint reader board bracket to the top cover.
5. Slide the fingerprint reader board bracket **(4)** forward, and then remove the fingerprint reader board bracket.

6. Remove the fingerprint reader board and cable **(5)**.



Reverse this procedure to install the fingerprint reader board.

TouchPad button board

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

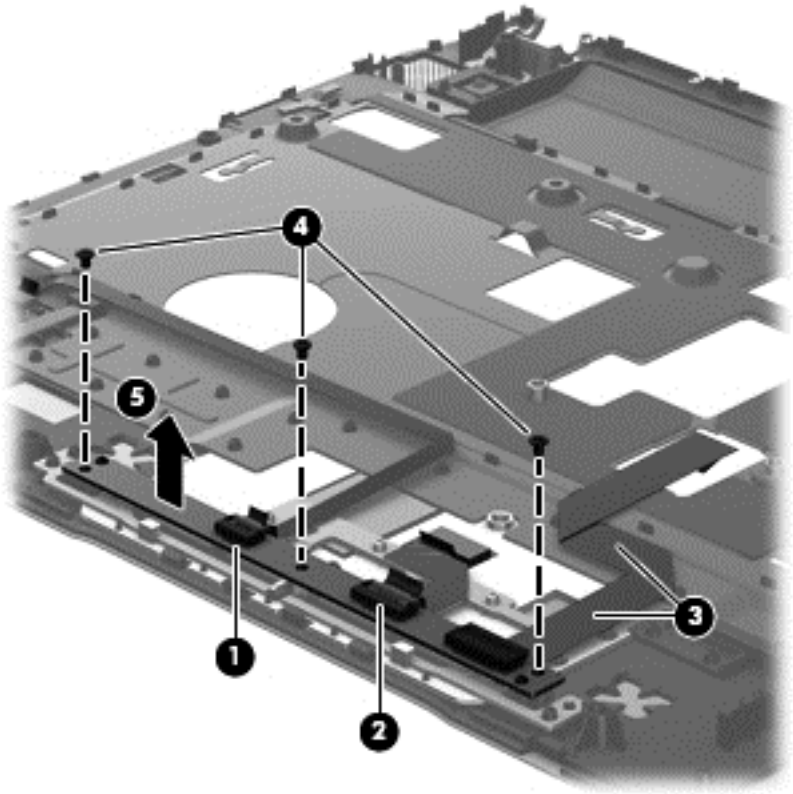
Before removing the TouchPad button board, follow these steps:

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 battery (see Battery), and then remove the following components:
   a. Hard drive (see Hard drive)
   b. Optical drive (see Optical drive)
   c. WLAN module (see WLAN module)
   d. Keyboard (see Keyboard)
   e. Top cover (see Top cover)

Remove the TouchPad button board:

1. Turn the top cover upside down, with the front toward you.
2. Release the ZIF connector to which the fingerprint reader board cable is attached, and then disconnect the fingerprint reader board cable **(1)** from the TouchPad button board.
3. Release the ZIF connector to which the TouchPad board cable is attached, and then disconnect the TouchPad board cable **(2)** from the TouchPad button board.
4. Detach the TouchPad button board cable **(3)** from the top cover. (The TouchPad button board cable is attached to the top cover with double-sided tape.)
5. Remove the three Phillips PM2.5×3.0 screws **(4)** that secure the TouchPad button board to the top cover.

6. Remove the TouchPad button board and cable **(5)**.



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

Optical drive connector cable

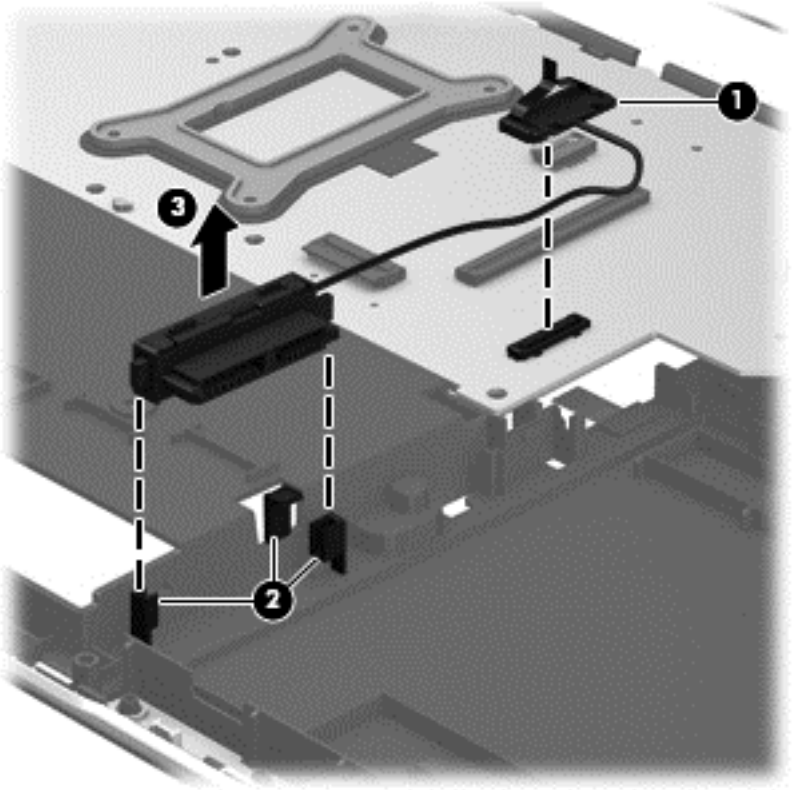
Description	Spare part number
Optical drive connector cable	700011-001

Before removing the optical drive 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 battery (see Battery), and then remove the following components:
   a. Hard drive (see Hard drive)
   b. Optical drive (see Optical drive)
   c. WLAN module (see WLAN module)
   d. Keyboard (see Keyboard)
   e. Top cover (see Top cover)

Remove the optical drive connector cable:

1. Disconnect the optical drive connector cable **(1)** from the system board.
2. Release the three clips **(2)** built into the base enclosure that secure the optical drive connector to the base enclosure.
3. Remove the optical drive connector cable **(3)**.



Reverse this procedure to install the optical drive connector cable.

System board

Description	Spare part number
System board (includes replacement thermal material)	698093-501

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 battery (see Battery), and then remove the following components:
   a. Hard drive (see Hard drive)
   b. Optical drive (see Optical drive)
   c. WLAN module (see WLAN module)
   d. Keyboard (see Keyboard)
   e. Top cover (see Top cover)

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

- Memory module (see Memory module)
- RTC battery (see RTC battery)
- Fan/heat sink assembly (see Fan/heat sink assembly)
- Processor (see Processor)

Remove the system board:

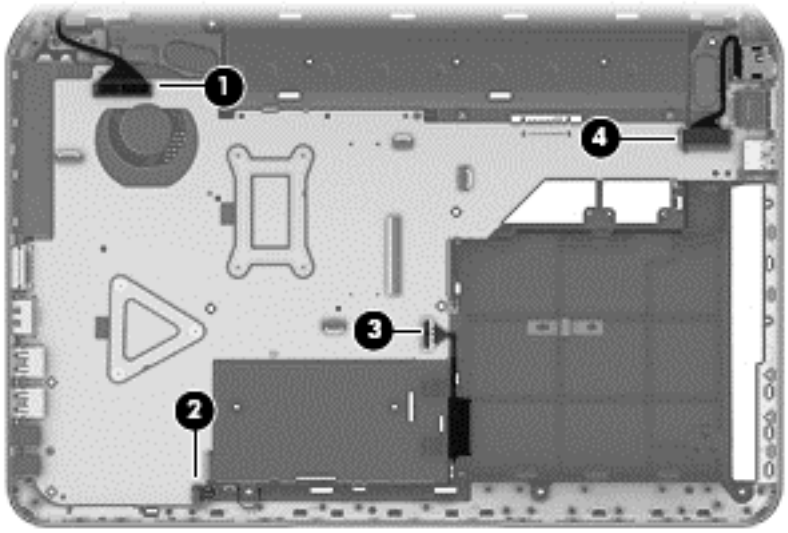
1. Disconnect the following cables from the system board:

   (1) Display panel cable

   (2) Speaker cable

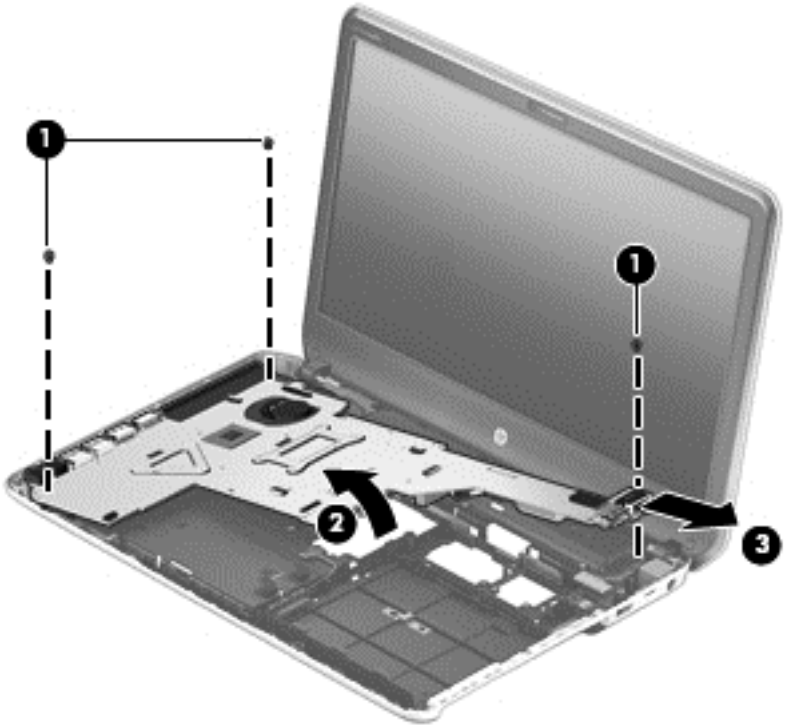
   (3) Optical drive connector cable

   (4) Power connector cable



2. Remove the three Phillips PM2.0×5.5 screws **(1)** that secure the system board to the base enclosure.
3. Lift the right side of the system board **(2)** until it rests at an angle.

4. Remove the system board **(3)** by sliding it up and to the right at an angle.



5. Remove the system board.

Reverse this procedure to install the system board.

Fan/heat sink assembly

Description	Spare part number
Fan/heat sink assembly (includes replacement thermal material)	698079-001

Before removing the fan/heat sink assembly, follow these steps:

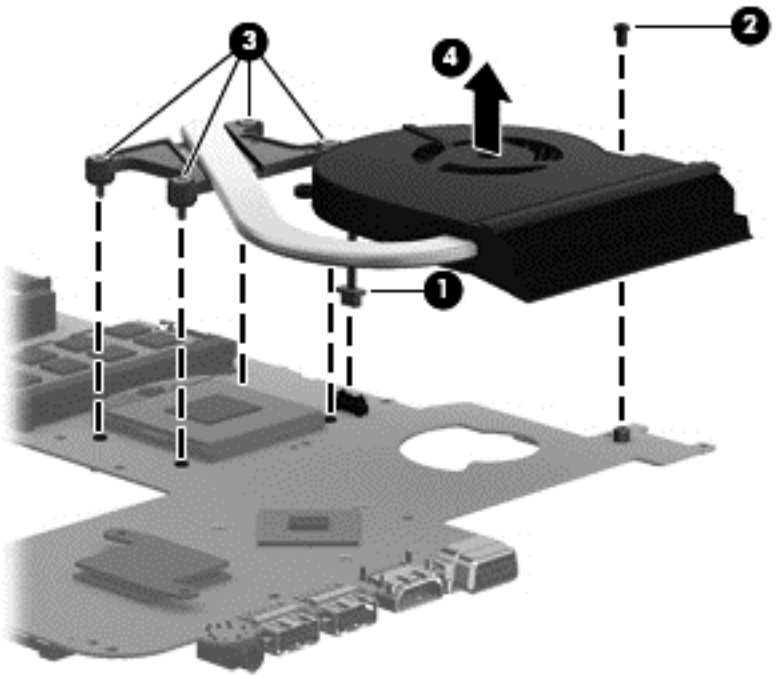
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery), and then remove the following components:
   a. Hard drive (see Hard drive)
   b. Optical drive (see Optical drive)
   c. WLAN module (see WLAN module)
   d. Keyboard (see Keyboard)
   e. Top cover (see Top cover)
   f. System board (see System board)

Remove the fan/heat sink assembly:

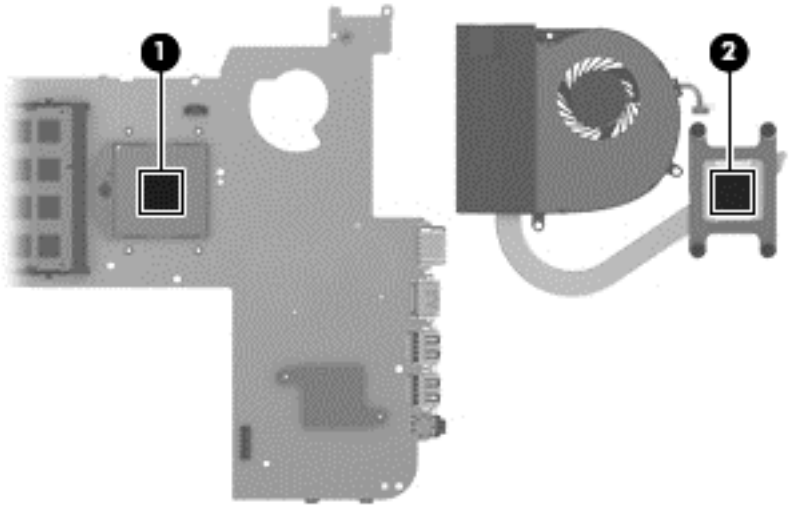
1. Turn the system board upside down, with the front toward you.
2. Disconnect the fan cable **(1)** from the system board.
3. Remove the Phillips PM2.0×3.5 screw **(2)** that secures the fan/heat sink assembly to the system board.
4. Following the 1, 2, 3, 4 sequence stamped into the fan/heat sink assembly, loosen the four captive Phillips screws **(3)** that secure the fan/heat sink assembly to the system board.

5. Remove the fan/heat sink assembly **(4)**.

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



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



Reverse this procedure to install the fan/heat sink assembly.

Processor

Description	Spare part number
Intel Quad Core i7-3632QM 2.20-GHz processor (SC turbo up to 3.20-GHz; 1600-MHz FSB, 6.0-MB L3 cache, 35 W)	701658-001
Intel Dual Core i5-3230M 2.60-GHz processor (SC turbo up to 3.20-GHz, 1600-MHz front-side bus (FSB), 3.00-MB L3 cache, 35 W)	711903–001
Intel Dual Core i5-3210M 2.50-GHz processor (SC turbo up to 3.10-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W)	680645-001
Intel Dual Core i3-3130M 2.60-GHz processor (1600-MHz FSB, 3.00-MB L3 cache, 35 W)	713163–001
Intel Dual Core i3-3120M 2.50-GHz processor (1600-MHz FSB, 3.0-MB L3 cache, 35 W)	700627-001
Intel Dual Core i3-3110M 2.40-GHz processor (1600-MHz FSB, 3.0-MB L3 cache, 35 W)	682417-001

Before removing the processor, follow these steps:

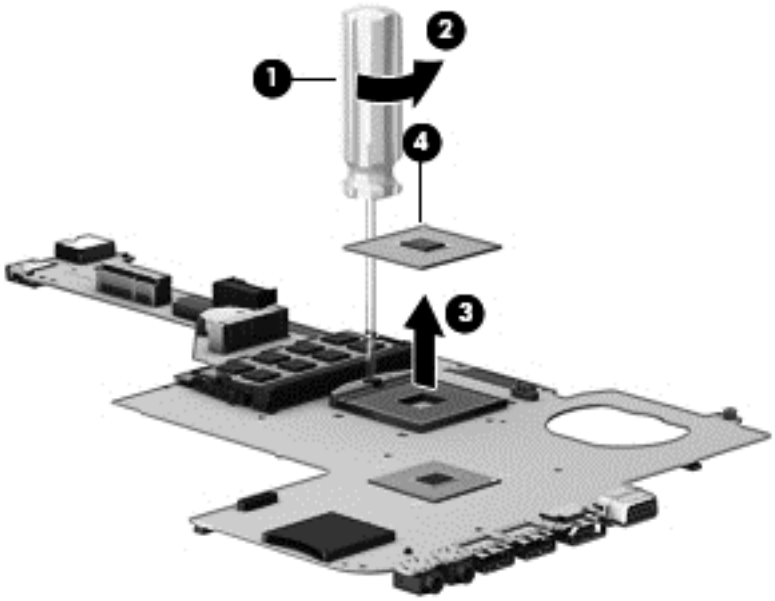
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery), and then remove the following components:
   a. Hard drive (see Hard drive)
   b. Optical drive (see Optical drive)
   c. WLAN module (see WLAN module)
   d. Keyboard (see Keyboard)
   e. Top cover (see Top cover)
   f. System board (see System board)
   g. Fan/heat sink assembly (see Fan/heat sink assembly)

Remove the processor:

1. Use a flat-bladed screw driver **(1)** to turn the processor locking screw one-half turn counterclockwise **(2)**, until you hear a click.

2. Lift the processor **(3)** straight up and remove it.

NOTE: The gold triangle **(4)** on the processor must be aligned with the triangle icon embossed on the processor socket when you install the processor.



Reverse this procedure to install the processor.

Power connector cable

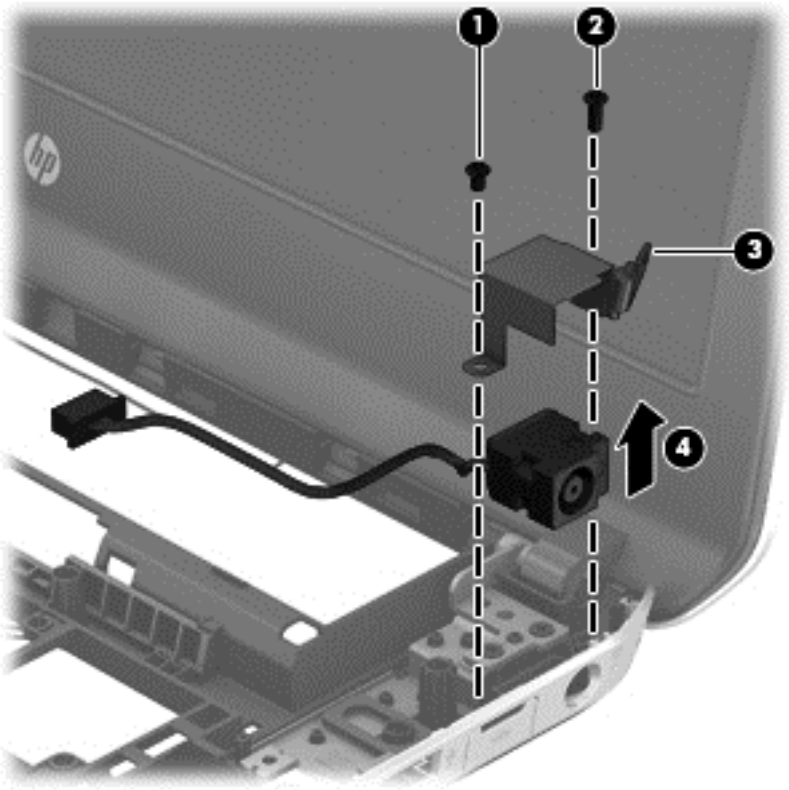
Description	Spare part number
Power connector cable (includes bracket)	698078-001

Before removing the optical drive 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 battery (see Battery), and then remove the following components:
   a. Hard drive (see Hard drive)
   b. Optical drive (see Optical drive)
   c. WLAN module (see WLAN module)
   d. Keyboard (see Keyboard)
   e. Top cover (see Top cover)
   f. System board (see System board)

Remove the power connector cable:

1. Remove the Phillips PM2.0×3.5 screw **(1)** and the Phillips PM2.0×5.5 screw **(2)** that secure the power connector and bracket to the base enclosure.
2. Remove the power connector bracket **(3)**.
3. Remove the power connector cable **(4)** from the clip built into the base enclosure.



Reverse this procedure to install the power connector cable.

Speakers

Description	Spare part number
Speakers (include left and right speakers, cables, and 4 rubber isolators)	698091-001

Before removing the speakers, follow these steps:

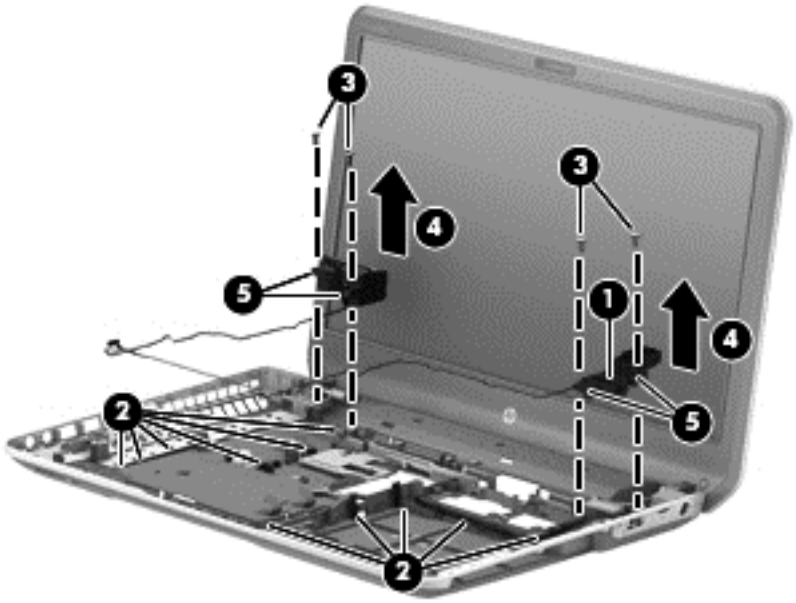
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery), and then remove the following components:
   a. Hard drive (see Hard drive)
   b. Optical drive (see Optical drive)
   c. WLAN module (see WLAN module)
   d. Keyboard (see Keyboard)
   e. Top cover (see Top cover)
   f. System board (see System board)
   g. Power connector cable (see Power connector cable)

Remove the speakers:

1. Release the wireless antenna cables from the clip **(1)** built into the right speaker.
2. Release the speaker cables from the clips **(2)** and routing channels built into the base enclosure.
3. Remove the four Phillips PM2.0×6.0 shoulder screws **(3)** that secure the speakers to the base enclosure.

4. Remove the speakers **(4)**.

NOTE: The speakers include four rubber isolators **(5)**. These isolators are crucial to the performance of the speakers.



Reverse this procedure to install the speakers.

Display assembly subcomponents

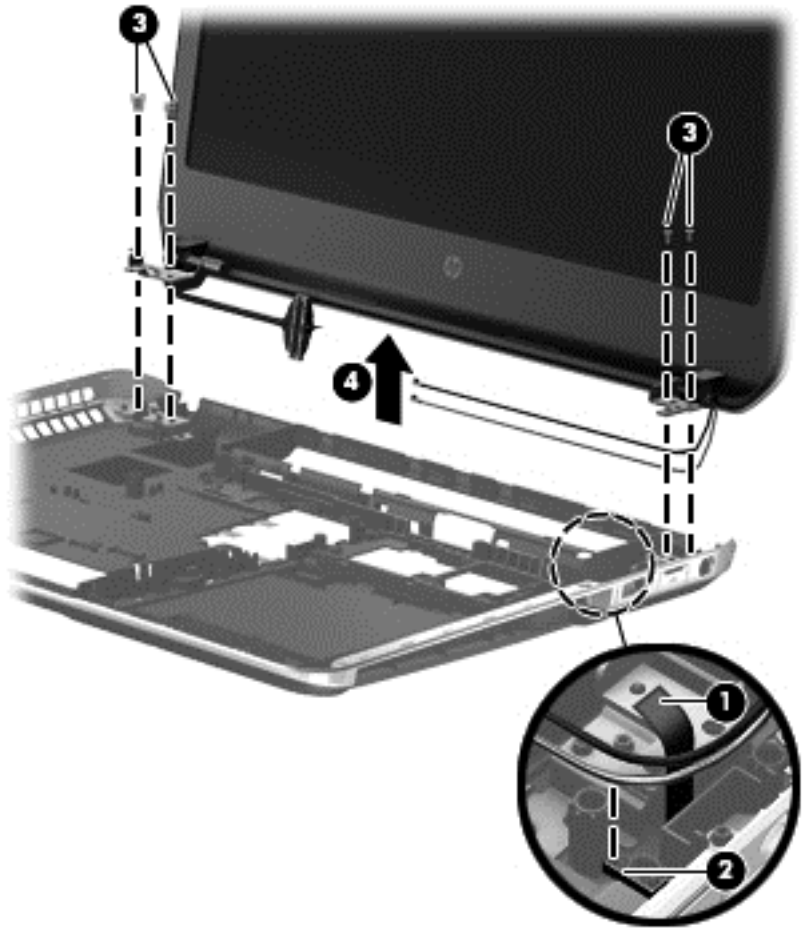
NOTE: The display assembly is spared at the subcomponent level only. For more display assembly spare part information, see the individual removal subsections.

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 battery (see Battery), and then remove the following components:
   a. Hard drive (see Hard drive)
   b. Optical drive (see Optical drive)
   c. WLAN module (see WLAN module)
   d. Keyboard (see Keyboard)
   e. Top cover (see Top cover)
   f. System board (see System board)
   g. Power connector cable (see Power connector cable)
   h. Speakers (see Speakers)

Remove the display assembly:

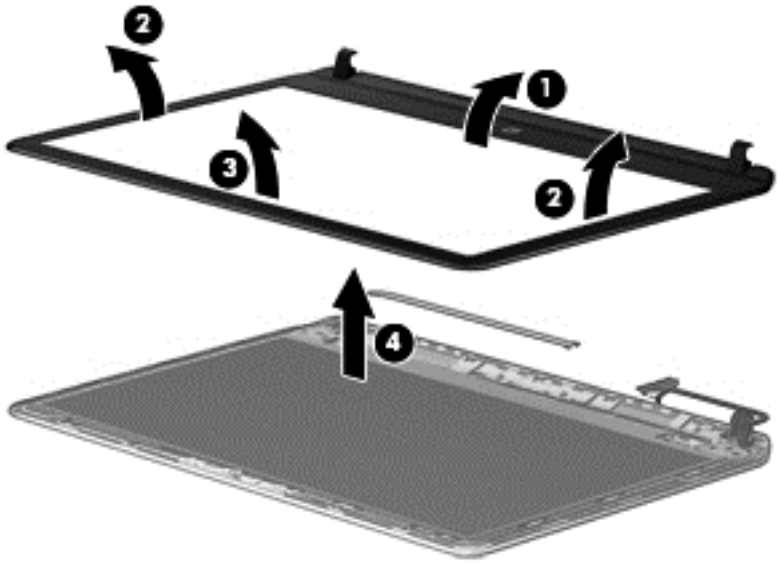
1. Release the grounding tape **(1)** that is attached to the right display hinge.
2. Release the wireless antenna cables from the retention clip **(2)** built into the base enclosure.
3. Remove the four Phillips PM2.5×6.5 screws **(3)** that secure the display assembly to the base enclosure.
4. Remove the display assembly **(4)**.



5. 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 698077-001.



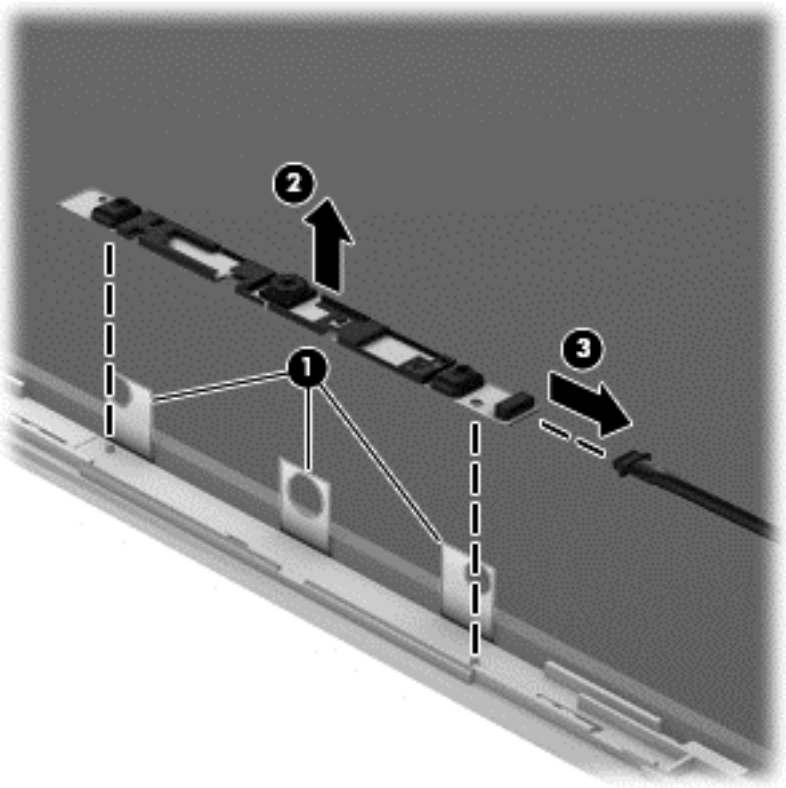
6. If it is necessary to replace the webcam/microphone module:

⚠ **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 three metallic shielding tabs **(1)** that secure the webcam/microphone module to the display enclosure.

b. Release the webcam/microphone module **(2)** as far as the webcam/microphone module allows.

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



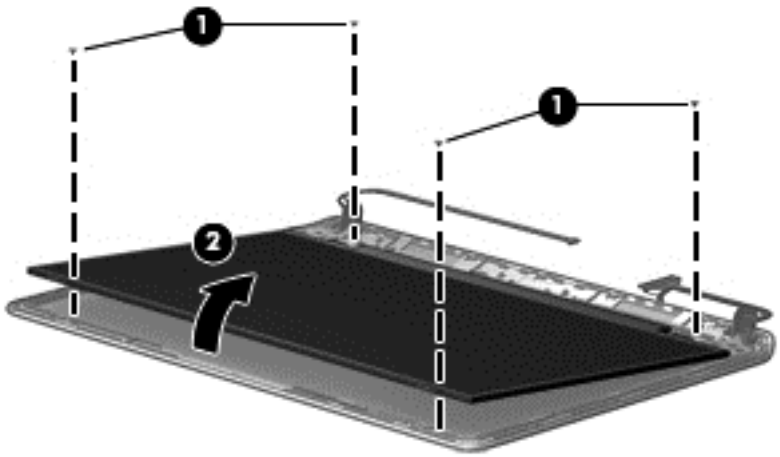
d. Remove the webcam/microphone module.

The webcam/microphone module is available using spare part number 698096-001.

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

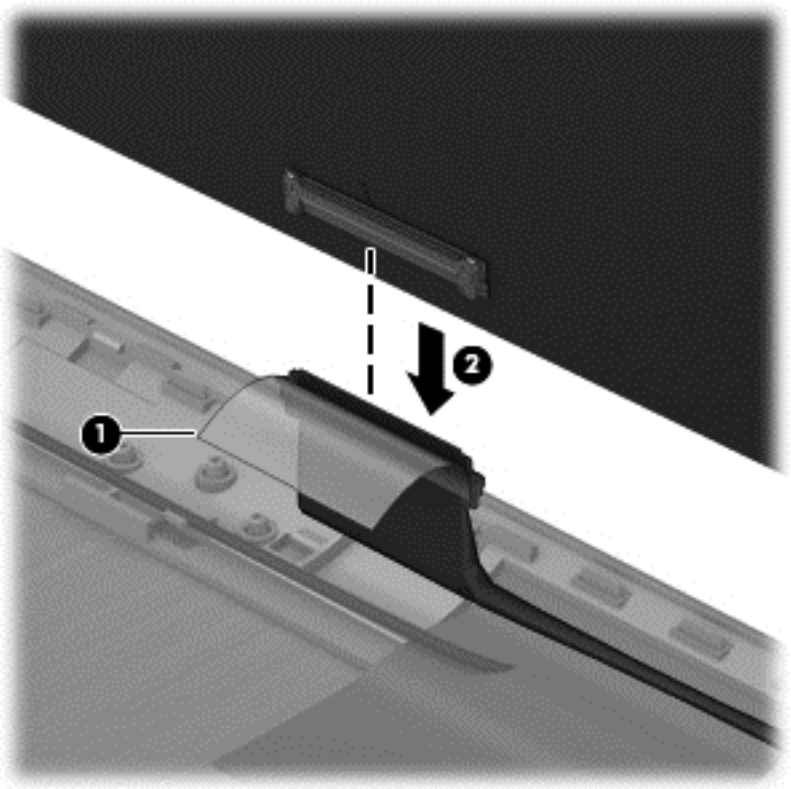
a. Remove the four Phillips PM2.0×2.5 screws **(1)** that secure the display panel to the display enclosure.

b. Lift the top edge of the display panel **(2)** and swing it up and forward until it rests at an angle.



c. Release the adhesive support strip **(1)** that secures the display panel cable to the display panel.

d. Disconnect the display panel cable **(2)** from the display panel.



e. Remove the display panel. The display panel is available using spare part number 698087-001.

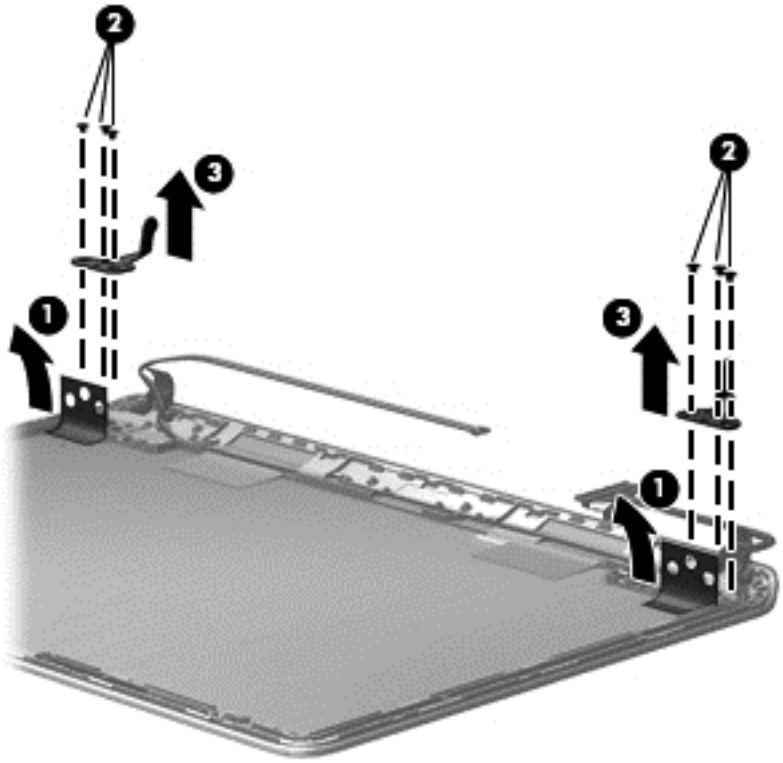
8. If it is necessary to replace the display hinges:

a. Release the metallic grounding tape **(1)** that covers the left and right display hinges.

b. Remove the six Phillips PM2.5×2.0 broad head screws **(1)** that secure the display hinges to the display enclosure.

c. Remove the display hinges **(3)**.

The display hinges are included in the Display Hinge Kit, spare part number 698082-001.

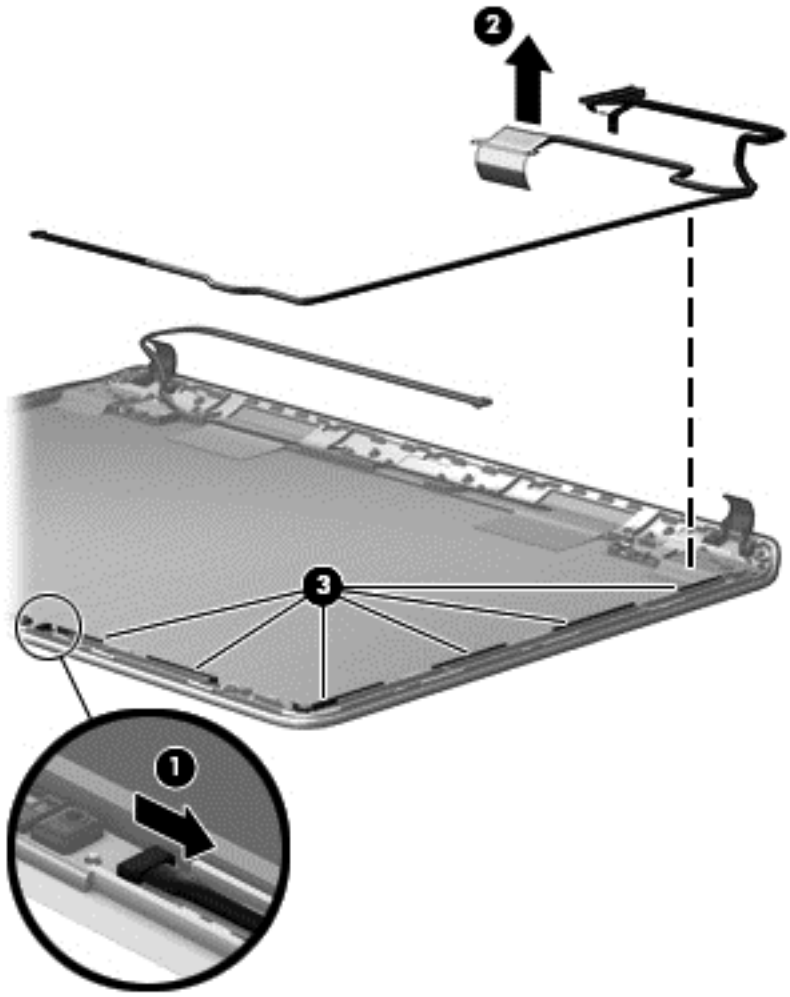


9. If it is necessary to replace the display panel cable:

   a. Disconnect the webcam/microphone module cable **(1)** from the webcam/microphone module.

   b. Detach the display panel cable **(2)** from the surface of the display enclosure. (The display panel cable is attached to the display enclosure with double-sided tape.)

c. Release the webcam/microphone module cable from the clips **(3)** and routing channel built into the display enclosure.



d. Remove the display panel cable.

   The display panel cable is available using spare part number 698094-001.

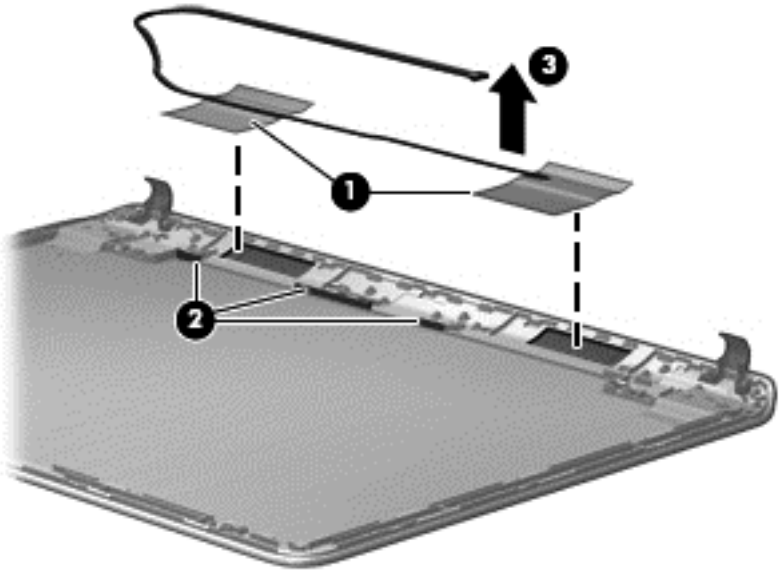
10. If it is necessary to replace the WLAN antenna cables and transceivers:

    a. Detach the WLAN antenna transceivers **(1)** from the display enclosure. (The WLAN antenna transceivers are attached to the display enclosure with double-sided tape.)

    b. Release the WLAN antenna cables from the clips **(2)** and routing channels built into the display enclosure.

c. Remove the WLAN antenna cables and transceivers **(3)**.

The WLAN antenna cables and transceivers are included in the Antenna Kit, spare part number 698074-001.



Reverse this procedure to reassemble and install the display assembly.

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.

      If the update is more recent than your BIOS, make a note of the path to the location on your hard drive where the BIOS update is downloaded. You will need to access this path when you are ready to install the update.

      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	**34.40 cm**	13.54 in
Depth	**23.40 cm**	9.21 in
Height (front to rear)	**2.24 to 2.71 cm**	0.88 to 1.07 in
Weight	**2.02 kg**	4.45 lbs
Input power		
Operating voltage and current	18.5 V @ 3.5 A or 19.5 V @ 3.33 A – 65 W 19 V @ 4.74 A or 19.5 V @ 4.62 A – 90 W 19.5 V @ 6.15 A – 120 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.

14.0-inch SGA display specifications

	Metric	U.S.
Dimensions		
Height	**17.60 cm**	6.93 in
Width	**31.20 cm**	12.28 in
Diagonal	**35.70 cm**	14.06 in
Number of colors	Up to 16.8 million	

	Metric	U.S.
Contrast ratio	200:1 (typical)	
Brightness	200 nits (typical)	
Pixel resolution		
Pitch	**0.197 × 0.197 mm**	
Format	1366 × 768	
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

	1-TB*	750-GB**	640-GB**
Dimensions			
Height	9.5 mm	9.5 mm	9.5 mm
Length	100.2 mm	100.2 mm	100.2 mm
Width	69.9 mm	69.9 mm	69.9 mm
Weight	98 g	98 g	98 g
Interface type	SATA	SATA	SATA
Transfer rate			
Synchronous (maximum)	97 MB/sec	97 MB/sec	106 MB/sec
Security	ATA security	ATA security	ATA security
Seek times (typical read, including setting)			
Single track	2.0 ms	2.0 ms	1.5 ms
Average (read/write)	12/16 ms	12/16 ms	11/13 ms
Maximum	21 ms	21 ms	24 ms
Logical blocks	1,953,525,168	1,465,149,168	1,250,263,728
Disk rotational speed	5400 rpm	7200 and 5400 rpm	7200 rpm
Operating temperature	0°C to 60°C (32°F to 140°F)		

*1 TB = 1 trillion bytes when referring to hard drive storage capacity. Actual accessible capacity is less.

**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.

Hard drive specifications (continued)

	500-GB*	320-GB*
Dimensions		
Height	9.5 and 7.0 mm	9.5 and 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	976,773,168	628,142,448
Disk rotational speed	7200 and 5400 rpm	7200 and 5400 rpm
Operating temperature	0°C to 60°C (32°F to 140°F)	
*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less.		
NOTE: Certain restrictions and exclusions apply. Contact technical support for details.		

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.

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/wwcontact_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.

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.
- 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.
- 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.
- 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.
- 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.
- 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.

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.
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.

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 **1.5 m** (5.0 ft) and no more than **2.0 m** (6.5 ft).
- All power cord sets must be approved by an acceptable accredited agency responsible for evaluation in the country or region where the power cord set will be used.
- The power cord sets must have a minimum current capacity of 10 amps and a nominal voltage rating of 125 or 250 V AC, as required by the power system of each country or region.
- The appliance coupler must meet the mechanical configuration of an EN 60 320/IEC 320 Standard Sheet C13 connector for mating with the appliance inlet on the back of the computer.

Requirements for specific countries and regions

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

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

1. The flexible cord must be Type 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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