HP EliteBook 2170p Notebook PC

Maintenance and Service Guide

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First Edition: June 2012

Document Part Number: 677134-001

Safety warning notice

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

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1 Product description

Category	Description
Product Name	HP EliteBook 2170p Notebook PC
Processors	• Intel® Dual Core® i7-3667U 1.80-GHz processor (SC turbo up to 2.90-GHz; 4.0-MB L3 cache, 17 W) • Intel Dual Core i5-3427U 1.70-GHz processor (SC turbo up to 2.70-GHz; 3.0-MB L3 cache, 17 W) • Intel Dual Core i5-3317U 1.70-GHz processor (SC turbo up to 2.60-GHz; 3.0-MB L3 cache, 17 W) • Intel Dual Core i3-3217U 1.80-GHz processor (3.0-MB L3 cache, 17 W)
Chipset	Mobile Intel QM77 chipset
Graphics	Intel HD Graphics 4000 integrated universal memory architecture (UMA) graphics
Panel	11.6-in light-emitting diode (LED), high-definition (HD), AntiGlare (AG), SVA (1368×768) display with and without webcam and microphone All display assemblies include two wireless local area network (WLAN) antenna cables and two wireless wide area network (WWAN) antenna cables Supports low voltage differential signalling (LVDS) Supports optional privacy filter
Memory	Two customer-accessible/upgradable memory module slots DDR3-12800 (1600-MHz) dual channel support Supports 16384-MB of system RAM in the following configurations: • 16384-MB (8192-MB×2, dual channel) • 12288-MB (8192-MB×1+4096-MB×1, dual channel) • 8192-MB (8192-MB×1 or 4096×2, dual channel) • 4096-MB (4096-MB×1 or 2048-MB×2, dual channel) • 2048-MB (2048×1)

Category	Description
Hard drive	Supports 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 Supports the following hard drives: • 750-GB, 7200-rpm, 9.5-mm • 500-GB, 7200-rpm, 7.0-mm self-encrypting drive (SED) • 500-GB, 7200-rpm, 7.0-mm • 320-GB, 7200-rpm, 7.0-mm
Solid-state drive	Solid-state drive (SSD) mounts in the same bracket as the hard drive Customer-accessible Serial ATA type II and III Supports the following SSDs: • 256-GB SED III • 180-GB III • 160-GB II • 128-GB III
Audio and video	Two stereo speakers HD audio with SRS Premium Sound PRO Integrated 720p HD webcam (supports no camera option) Integrated dual-array microphone on computer models equipped with a webcam Integrated mono microphone on computer models not equipped with a webcam
Ethernet	Intel 82579LM 10/100/1000 Ethernet network interface card (NIC) NIC Power Down technology S3/S4/S5 wake on LAN Ethernet cable not included

Category	Description
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 AR9462 802.11a/b/g/n 2×2 Bluetooth 4.0 Combo Adapter • Broadcom 4313GN 802.11b/g/n 1×1 WiFi and 20702 Bluetooth 4.0 Combo Adapter • Intel Centrino Advanced-N 6235 WLAN module • Intel Centrino Advanced-N 6205 WLAN module Support for no WLAN option
	Integrated wireless wide area network (WWAN) options by way of wireless module Two world-wide/5-band WWAN antennas built into display assembly Secured by subscriber identity module (SIM, user-accessible inside battery bay) Support for the following WWAN formats: • HP lt2523 LTE/HSPA+ Mobile Broadband Module • HP lt2522 LTE/EV-DO Mobile Broadband Module • HP un2430 EV-DO/HSPA Mobile Broadband Module • HP hs2350 HSPA+ Mobile Broadband Module Support for no WWAN option Support for WWAN after market option
External media cards	Integrated Smart Card reader Secure Digital (SD) Media reader slot with push-push technology, supporting the following digital card formats: • MultiMediaCard (MMC) • MMC+ • Secure Digital (SD) Memory Card • SDHC • SDXC

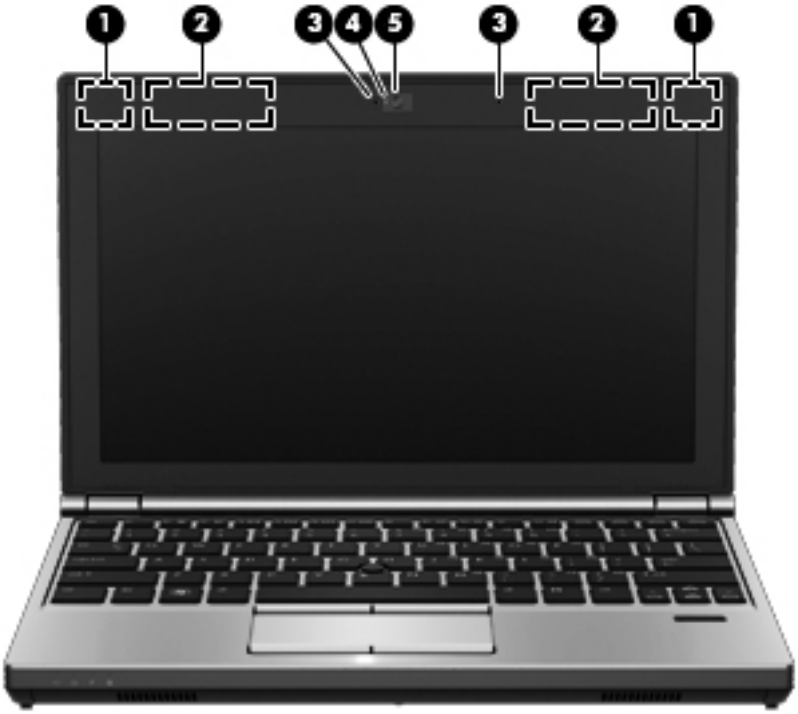
Category	Description
Ports	• Audio-in (mono microphone)/audio-out (stereo headphone) combo jack • Battery connector • DisplayPort 1.1a • Docking connector • HP Smart AC adapter • RJ-45 (Ethernet) • USB 3.0 ports (2: 1 USB 3.0 charging port, 1 USB 3.0 port) • VGA (Dsub 15-pin) supporting: 1920×1200 external resolution @ 75 Hz, hot plug and unplug and autodetection for correct output to wide-aspect vs. standard aspect video
Keyboard/pointing devices	Chiclet-style keyboard with numeric keypad (upper-left justified), dual-point, spill-resistant with drain, durakeys, backlit (optional) 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 2-way scroll
Power requirements	Supports the following AC adapters: • 65-W HP Smart AC adapter (PFC, RC/V, EM, 3-wire) • 65-W HP Smart AC adapter (non-PFC, 3-wire) • 65-W HP travel AC adapter (non-PFC, 3-wire)
	Support for 6-cell, 48-Wh, 2.20-Ah and 4-cell, 30-Wh, 2.00-Ah Li ion batteries
Security	Support for security cable lock Support for fingerprint reader and no fingerprint reader option Support for Trusted Platform Module (TPM) 1.2 (Infineon, soldered down) and TPM Enhanced Drive Lock (not supported in Asia and the People's Republic of China) Integrated Smart Card reader (active) Full volume encryption Preboot authentication (password, Smart Card)
Operating system	**Preinstalled:** • Windows® 7 Home Premium 64- and 32-bit with Microsoft Basics • Windows 7 Professional 64- and 32-bit with Microsoft Basics • FreeDOS

Category	Description
	Preinstalled with Microsoft Office: • Windows 7 Home Basic 32-bit with Office Starter (emerging markets only) • Windows 7 Home Premium 64- and 32-bit with Office Starter (not available in Japan) • Windows 7 Home Premium 64-bit with Office 2010 Personal (only in Japan) • Windows 7 Home Premium 64-bit with Office 2010 Home & Business (only in Japan) • Windows 7 Home Premium 64-bit with Office 2010 Personal (only in Japan) • Windows 7 Home Premium 64-bit with Office 2010 Professional (only in Japan) • Windows 7 Professional 64- and 32-bit with Office 2010 Starter (not available in Japan) • Windows 7 Professional 64- and 32-bit with Office 2010 Business & Home (only in Japan) • Windows 7 Professional 64- and 32-bit with Office 2010 Personal (only in Japan) • Windows 7 Professional 64- and 32-bit with Office 2010 Professional (only in Japan)
	Restore media—DR-DVD: • Windows 7 • Windows 7 with Windows DVD
	Restore media—OS-DVD: • Windows 7 Home Basic 32-bit • Windows 7 Home Premium 64- and 32-bit • Windows 7 Professional 64- and 32-bit
	Certified: • Microsoft WHQL • SuSE Linux Enterprise 64-bit Service Pack 2

Category	Description
	Web-only support: • Windows XP Pro 32-bit • Windows 7 Enterprise 64- and 32-bit • Windows 7 Ultimate 64- and 32-bit
Serviceability	End user replaceable parts: • AC adapter • Battery • Hard drive • Keyboard • Memory module • Solid-state drive • WLAN module • WWAN module

2 External component identification

Display



Item	Component	Description
(1)	WLAN antennas (2)*	Send and receive wireless signals to communicate with WLANs (select models only).
(2)	WWAN antennas (2)*	Send and receive wireless signals to communicate with WWANs (select models only).
(3)	Internal microphones (2)	Record sound.
(4)	Webcam light (select models only)	On: The webcam is in use.

Item	Component	Description
(5)	Webcam (select models only)	Records video and captures still photographs. To use the webcam, select **Start > All Programs > Communication and Chat > HP Webcam**.

*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.

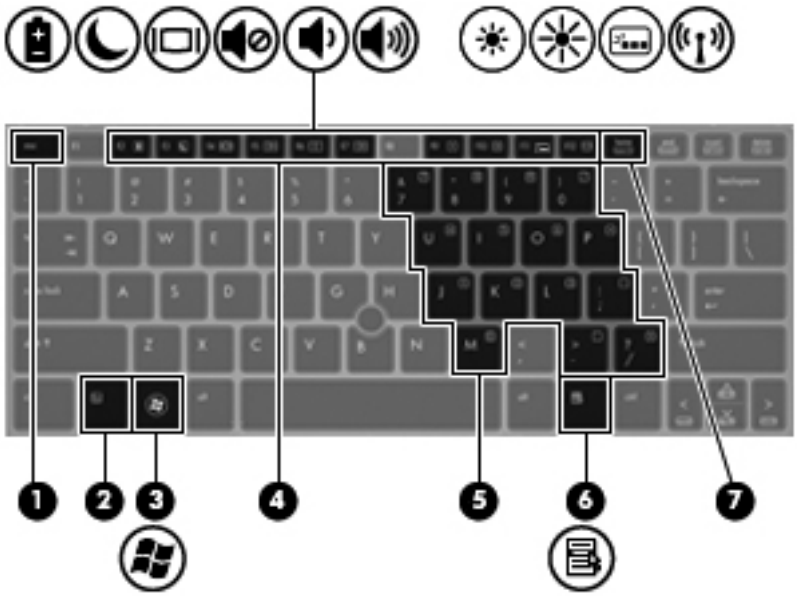
Buttons and fingerprint reader (select models only)

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

Item	Component	Description
(1)	TouchPad on/off button	Turns the TouchPad on and off.
(2)	Fingerprint reader (select models only)	Allows a fingerprint logon instead of a password logon.

Keys

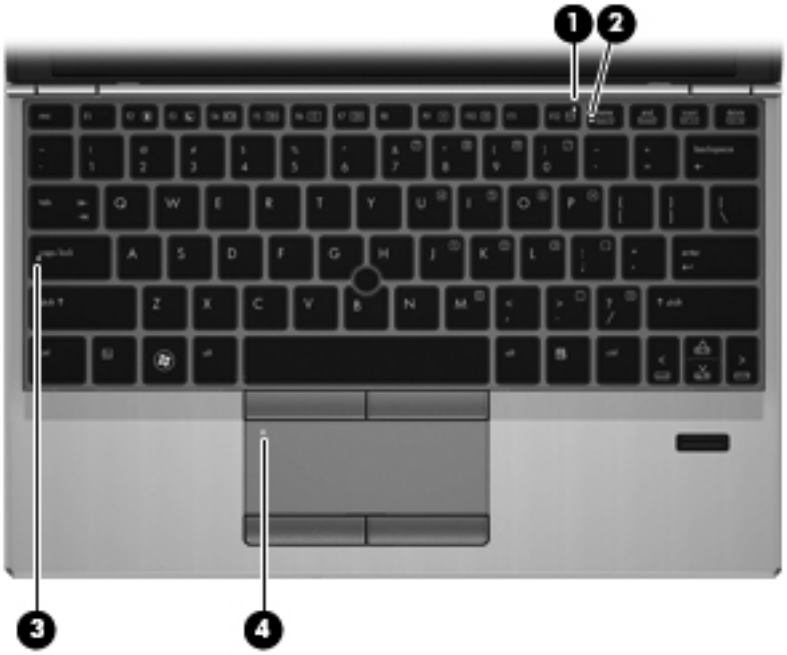
NOTE: Your computer may look slightly different from the illustration in this section.



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 a function key, the num lk key, the esc key, or other keys.
(3)	Windows logo key	Displays the Windows Start menu.
(4)	Function keys	Execute frequently used system functions when pressed in combination with the fn key.
(5)	Embedded numeric keypad	When the keypad is turned on, it can be used like an external numeric keypad. Each key on the keypad performs the function indicated by the icon in the upper-right corner of the key.
(6)	Windows applications key	Displays a shortcut menu for items beneath the cursor.
(7)	num lk key	Turns the embedded numeric keypad on and off when pressed in combination with the fn key.

Lights

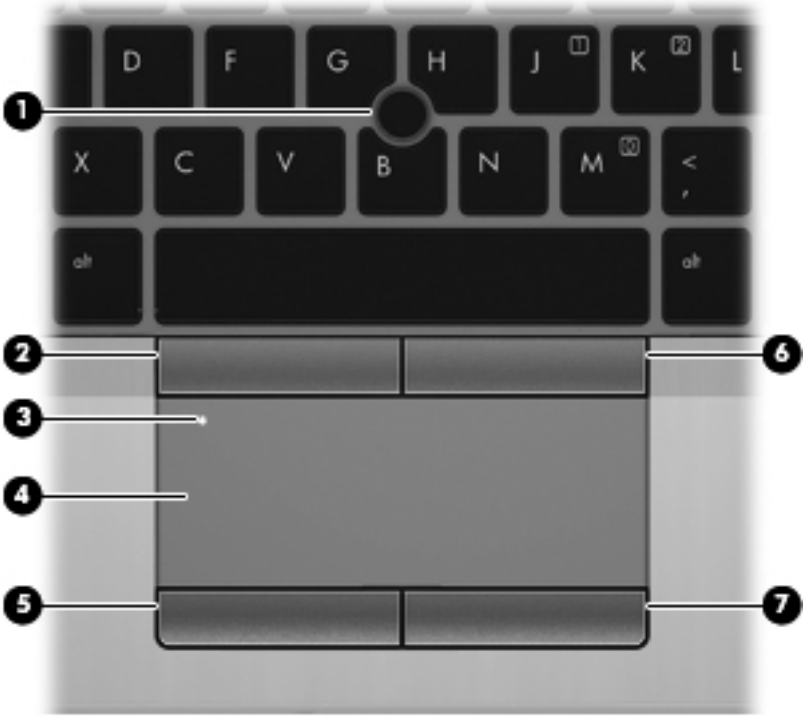
NOTE: Your computer may look slightly different from the illustration in this section.



Item	Component	Description
(1)	Wireless light	• Off: An integrated wireless device, such as a WLAN device, a WWAN device, and/or a Bluetooth device, is on (select models only). • Amber: All wireless devices are off (select models only).
(2)	Num lock light	On: Num lock is on.
(3)	Caps lock light	On: Caps lock is on.
(4)	TouchPad light	• Amber: The TouchPad is off. • Off: The TouchPad is on.

TouchPad

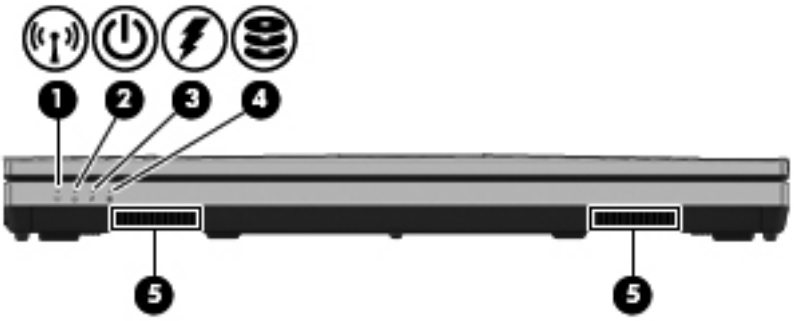
NOTE: Your computer may look slightly different from the illustration in this section.



Item	Component	Description
(1)	Pointing stick	Moves the pointer and selects or activates items on the screen.
(2)	Left pointing stick button	Functions like the left button on an external mouse.
(3)	TouchPad on/off button	Turns the TouchPad on or off.
(4)	TouchPad zone	Moves the pointer and selects or activates items on the screen.
(5)	Left TouchPad button	Functions like the left button on an external mouse.
(6)	Right pointing stick button	Functions like the right button on an external mouse.
(7)	Right TouchPad button	Functions like the right button on an external mouse.

Front

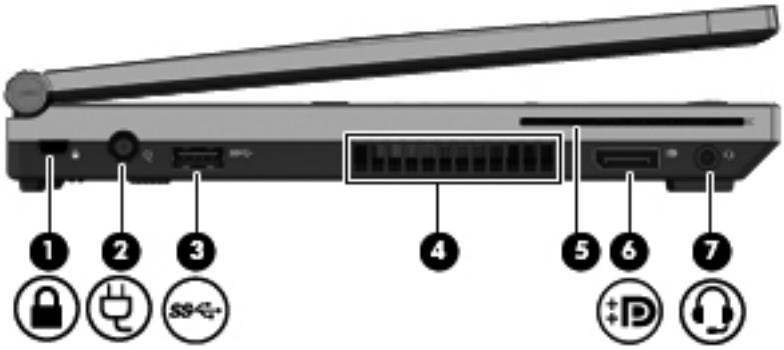
NOTE: Your computer may look slightly different from the illustration in this section.



Item	Component	Description
(1)	Wireless light	• White: An integrated wireless device, such as a WLAN device and/or a WWAN device, is on. • Amber: All wireless devices are off.
(2)	Power light	• On: The computer is on. • Blinking: The computer is in the Sleep state. • Off: The computer is off or in Hibernation.
(3)	AC adapter/Battery light	• Amber: The computer is connected to external power and the battery is charged from 0 to 90 percent. • White: The computer is connected to external power and the battery is charged from 90 to 99 percent. • Blinking amber: A battery that is the only available power source has reached a low battery level. When the battery reaches a critical battery level, the battery light begins blinking rapidly. • Off: The battery is fully charged.
(4)	Hard drive light	• Blinking white: The hard drive is being accessed. • Amber: HP 3D DriveGuard has temporarily parked the hard drive.
(5)	Speakers (2)	Produce SRS Premium Sound. **NOTE:** To use the SRS Premium Sound PRO software, select **Start > All Programs > SRS Premium Sound**.

Left side

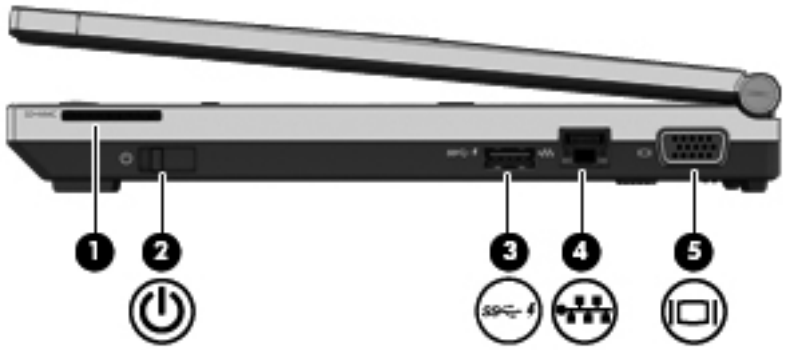
NOTE: Your computer may look slightly different from the illustration in this section.



Item	Component	Description
(1)	Security cable slot	Attaches an optional security cable to the computer. **NOTE:** The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.
(2)	Power connector	Connects an AC adapter.
(3)	USB 3.0 port	Connects optional USB 3.0 devices and provide enhanced USB power performance.
(4)	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.
(5)	Smart Card reader (select models only)	Supports optional smart cards.
(6)	DisplayPort	Connects an optional digital display device, such as a high-performance monitor or projector.
(7)	Audio-out (headphone) jack/Audio-in (microphone) jack	Produces sound when connected to optional powered stereo speakers, headphones, earbuds, a headset, or television audio. Also connects an optional headset microphone. **WARNING!** To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, see 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

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

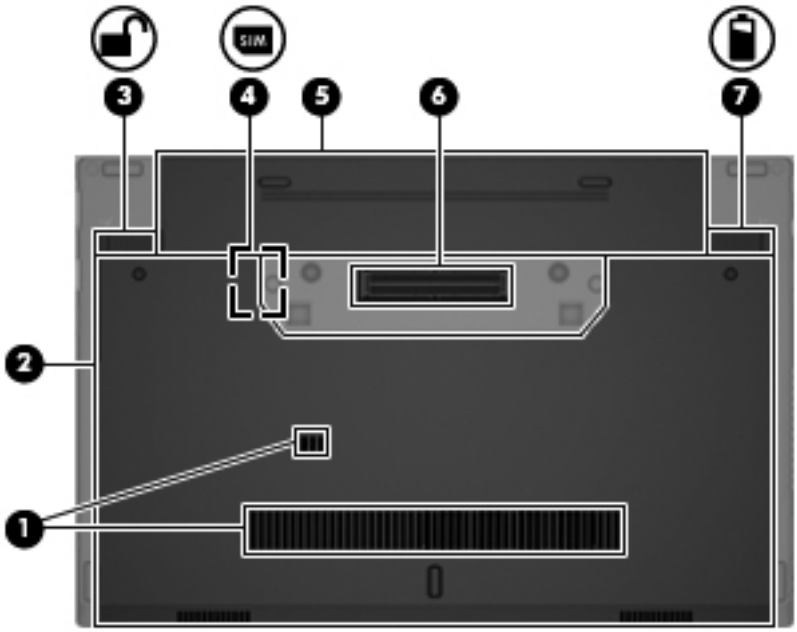


Item	Component	Description
(1)	Media Card reader	Supports the following digital card formats: • MultiMediaCard (MMC) • MMC+ • Secure Digital (SD) Memory Card • SDHC • SDXC
(2)	Power switch	• When the computer is off, slide the switch to turn on the computer. • When the computer is on, slide the switch briefly to initiate Sleep. • When the computer is in the Suspend state, slide the switch briefly to exit Sleep. • When the computer is in Hibernation, slide the switch briefly to exit Hibernation. **CAUTION:** Sliding and holding the power switch will result in the loss of unsaved information. If the computer has stopped responding and operating system shutdown procedures are ineffective, press and hold the power button for at least 5 seconds to turn off the computer. To learn more about your power settings: • Select **Start > Control Panel > System and Security > Power Options**. • For more information, see the *HP Notebook Reference Guide*.

Item	Component	Description
(3)	USB 3.0 charging port	Connects an optional USB 3.0 device and provides enhanced USB power performance. The USB 3.0 charging port can also charge select models of cell phones and MP3 players, even when the computer is off. **NOTE:** A charging USB port (also referred to as a powered USB port) allows you to charge connected USB devices. Standard USB ports will not charge all USB devices or will charge using a low current. Some USB devices require power and require you to use a powered port.
(4)	RJ-45 (network) jack	Connects a network cable.
(5)	External monitor port	Connects an external VGA monitor or projector.

Bottom

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



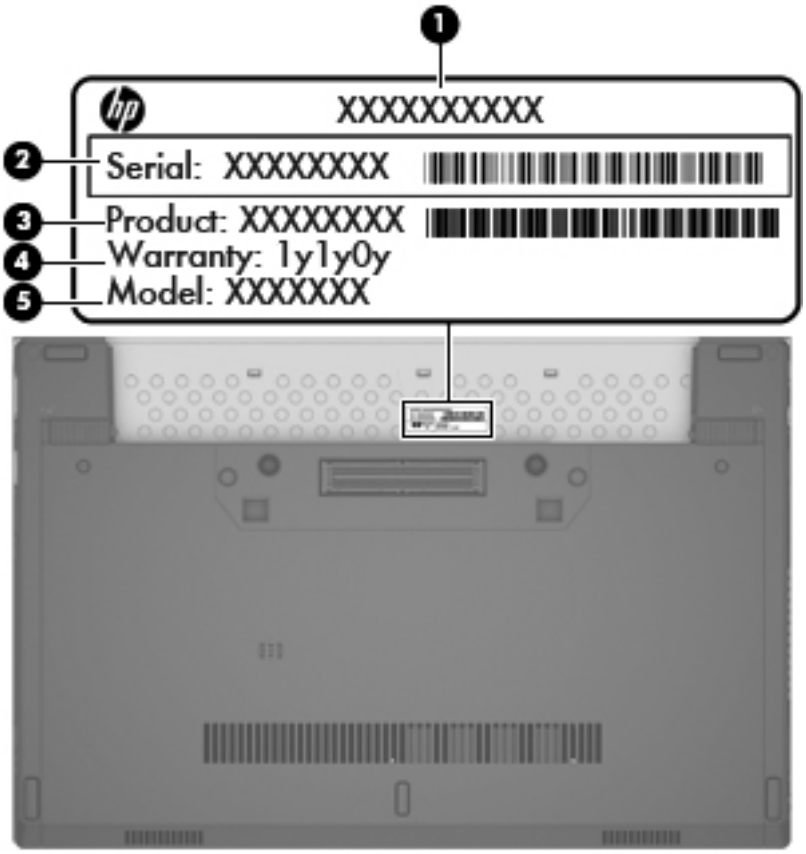
Item	Component	Description
(1)	Vents (2)	Enables airflow to cool internal components. **NOTE:** The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(2)	Service cover	Provides access to the hard drive bay, the WLAN module slot, the WWAN module slot, and the memory module slots. **CAUTION:** To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module to restore computer functionality, and then contact support through Help and Support.
(3)	Battery lock latch	Releases the battery from the computer.
(4)	SIM slot	Supports a wireless subscriber identity module (SIM) (select models only). The SIM slot is located inside the battery bay.
(5)	Battery bay	Holds the battery.

Item	Component	Description
(6)	Docking connector	Connects an optional docking device.
(7)	Battery release latch	Releases the battery.

3 Illustrated parts catalog

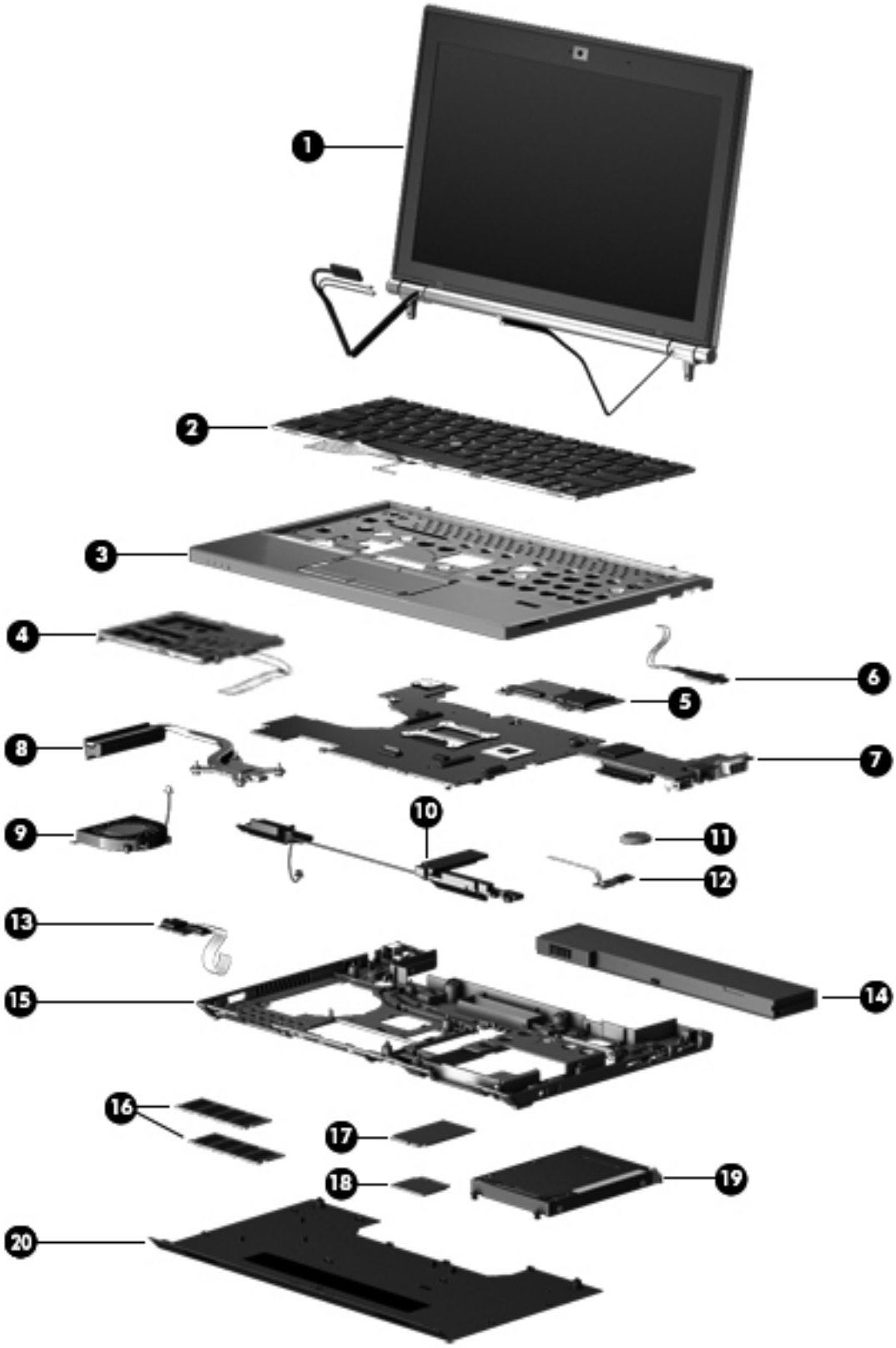
Service tag

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 on page 45 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.
(4)	Warranty period	This number describes the duration of the warranty period for the computer.
(5)	Model description	This is the alphanumeric identifier used to locate documents, drivers, and support for the computer.

Computer major components



Item	Component	Spare part number
(1)	**Display assembly**: The display assembly is spared at the subcomponent level only. For more display assembly spare part information, see Display assembly subcomponents on page 26.	
(2)	**Keyboard** with backlight and pointing stick (includes keyboard cable, backlight cable, and pointing stick cable):	
	For use in Belgium	693363-A41
	For use in Brazil	693363-201
	For use in Bulgaria	693363-261
	For use in Canada	693363-DB1
	For use in the Czech Republic and Slovakia	693363-FL1
	For use in Denmark	693363-081
	For use in France	693363-051
	For use in Germany	693363-041
	For use in Greece	693363-151
	For use in Hungary	693363-211
	For use in Iceland	693363-DD1
	For use in India	693363-D61
	For use in Israel	693363-BB1
	For use in Italy	693363-061
	For use in Japan	693363-291
	For use in Latin America	693363-161
	For use in the Netherlands	693363-B31
	For use in Norway	693363-091
	For use in Northwest Africa	693363-FP1
	For use in Portugal	693363-131
	For use in Romania	693363-271
	For use in Russia	693363-251
	For use in Saudi Arabia	693363-171
	For use in Slovenia	693363-BA1
	For use in South Korea	693363-AD1
	For use in Spain	693363-071
	For use in Sweden and Finland	693363-B71
	For use in Switzerland	693363-BG1
	For use in Taiwan	693363-AB1
	For use in Thailand	693363-281

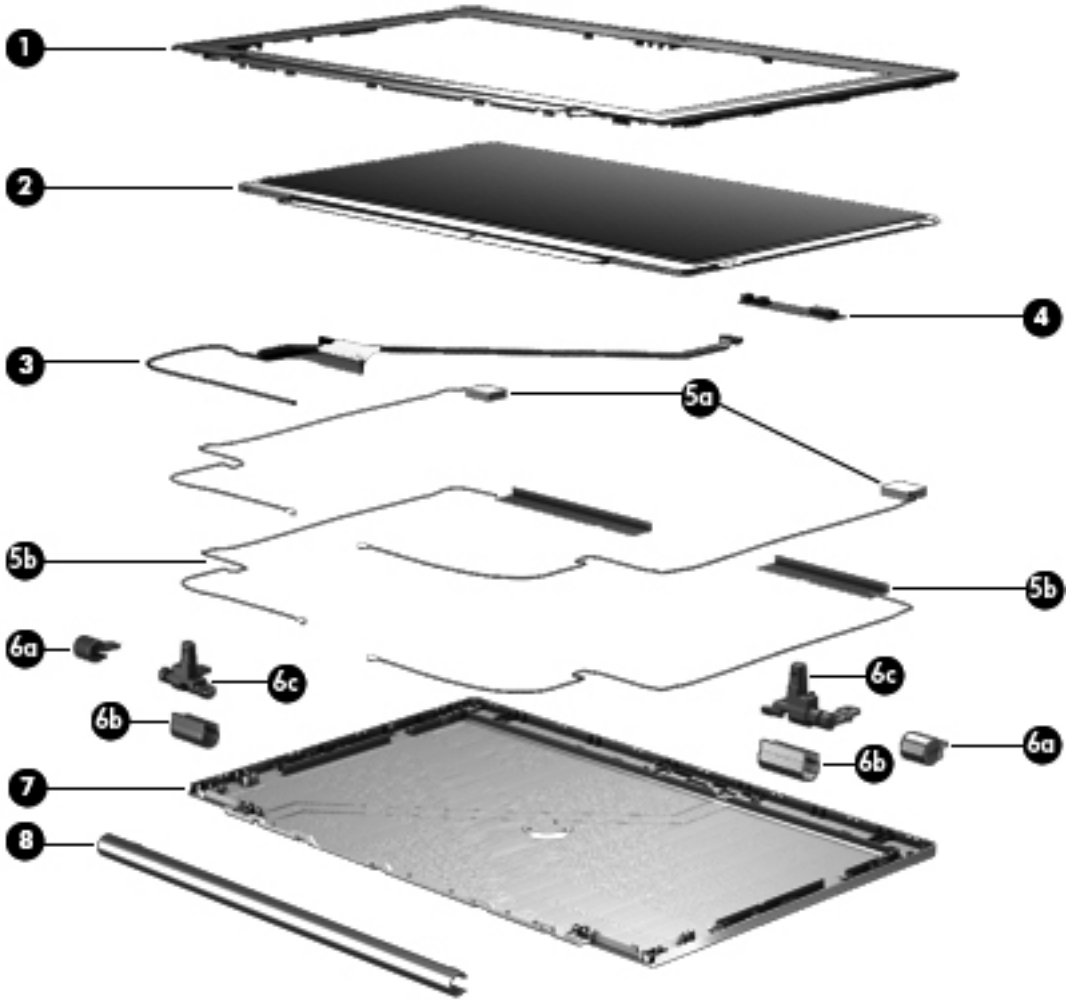
Item	Component	Spare part number
	For use in Turkey	693363-141
	For use in the United Kingdom and Singapore	693363-031
	For use in the United States	693363-001
	Keyboard with pointing stick (includes keyboard cable and pointing stick cable):	
	For use in Belgium	693362-A41
	For use in Brazil	693362-201
	For use in Bulgaria	693362-261
	For use in Canada	693362-DB1
	For use in the Czech Republic and Slovakia	693362-FL1
	For use in Denmark	693362-081
	For use in France	693362-051
	For use in Germany	693362-041
	For use in Greece	693362-151
	For use in Hungary	693362-211
	For use in Iceland	693362-DD1
	For use in India	693362-D61
	For use in Israel	693362-BB1
	For use in Italy	693362-061
	For use in Japan	693362-291
	For use in Latin America	693362-161
	For use in the Netherlands	693362-B31
	For use in Norway	693362-091
	For use in Northwest Africa	693362-FP1
	For use in Portugal	693362-131
	For use in Romania	693362-271
	For use in Russia	693362-251
	For use in Saudi Arabia	693362-171
	For use in Slovenia	693362-BA1
	For use in South Korea	693362-AD1
	For use in Spain	693362-071
	For use in Sweden and Finland	693362-B71
	For use in Switzerland	693362-BG1

Item	Component	Spare part number
	For use in Taiwan	693362-AB1
	For use in Thailand	693362-281
	For use in Turkey	693362-141
	For use in the United Kingdom and Singapore	693362-031
	For use in the United States	693362-001
(3)	**Top cover** (includes TouchPad): **NOTE:** The top cover spare part kit includes the TouchPad but does not include a TouchPad cable. The TouchPad cable is included in the Cable Kit, spare part number 693306-001.	
	For use on computer models equipped with a fingerprint reader	693317-001
	For use on computer models not equipped with a fingerprint reader	694507-001
(4)	**Smart Card reader assembly** (includes cable)	693312-001
(5)	**Media Card reader assembly** **NOTE:** The Media Card reader assembly spare part kit does not include a Media Card reader assembly cable. The Media Card reader assembly cable is included in the Cable Kit, spare part number 693306-001.	693353-001
(6)	**Fingerprint reader board** (includes bracket and cable)	693349-001
(7)	**System board** (includes replacement thermal material):	
	For use in all countries and regions except the People's Republic of China:	
	Equipped with Intel Dual Core i7-3667U 1.80-GHz processor (SC turbo up to 2.90-GHz), 4.0-MB L3 cache, 17 W	693360-001
	Equipped with Intel Dual Core i5-3427U 1.70-GHz processor (SC turbo up to 2.70-GHz), 3.0-MB L3 cache, 17 W	693358-001
	Equipped with Intel Dual Core i5-3317U 1.70-GHz processor (SC turbo up to 2.60-GHz), 3.0-MB L3 cache, 17 W	693357-001
	Equipped with Intel Dual Core i3-3217U 1.80-GHz processor, 3.0-MB L3 cache, 17 W	693356-001
	For use only in the People's Republic of China:	
	Equipped with Intel Dual Core i7-3667U 1.80-GHz processor (SC turbo up to 2.90-GHz), 4.0-MB L3 cache, 17 W	694511-001
	Equipped with Intel Dual Core i5-3427U 1.70-GHz processor (SC turbo up to 2.70-GHz), 3.0-MB L3 cache, 17 W	694510-001
	Equipped with Intel Dual Core i5-3317U 1.70-GHz processor (SC turbo up to 2.60-GHz), 3.0-MB L3 cache, 17 W	694509-001
	Equipped with Intel Dual Core i3-3217U 1.80-GHz processor, 3.0-MB L3 cache, 17 W	694508-001
(8)	**Heat sink** (includes replacement thermal material)	693307-001
(9)	**Fan** (includes cable)	693308-001

Item	Component	Spare part number
(10)	**Speakers** (include cables and 4 rubber isolators)	693354-001
(11)	**RTC battery**	651038-001
(12)	**Power switch board** (includes cable)	693352-001
(13)	**Audio board** **NOTE:** The audio board spare part kit does not include an audio board cable. The audio board cable is included in the Cable Kit, spare part number 693306-001.	693351-001
(14)	**Battery** (Li-ion):	
	6-cell, 48-Wh, 2.2-Ah	685988-001
	4-cell, 30-Wh, 2.0-Ah	671604-001
(15)	**Base enclosure** (includes battery release latch assembly, rubber feet, and service cover release latch assembly)	693301-001
	Rubber Kit (not illustrated, includes base enclosure and display bezel screw covers)	693355-001
(16)	**Memory modules** (PC3-12800, 1666-MHz, DDR3):	
	8-GB	693313-001
	4-GB	641369-001
	2-GB	652972-001
(17)	**WWAN module:**	
	HP lt2523 LTE/HSPA+ Mobile Broadband Module	675793-001
	HP lt2522 LTE/EV-DO Mobile Broadband Module	675791-001
	HP un2430 EV-DO/HSPA Mobile Broadband Module	634400-001
	HP hs2350 HSPA+ Mobile Broadband Module	668969-001
(18)	**WLAN module:**	
	Atheros AR9462 802.11a/b/g/n 2×2 Bluetooth 4.0 Combo Adapter	676786-001
	Broadcom 4313GN 802.11b/g/n 1×1 WiFi and 20702 Bluetooth 4.0 Combo Adapter	657325-001
	Intel Centrino Advanced-N 6235 WLAN module	670292-001
	Intel Centrino Advanced-N 6205 WLAN module	631954-001
(19)	**Hard drive** (does not include hard drive bracket, hard drive connector adapter, or screws):	
	750-GB, 7200-rpm, 9.5-mm	633252-001
	500-GB, 7200-rpm, 9.5-mm self-encrypting drive	683801-001
	500-GB, 7200-rpm, 9.5-mm	634925-001
	320-GB, 7200-rpm, 9.5-mm	641672-001
	Hard Drive Hardware Kit (not illustrated, includes hard drive bracket, hard drive connector adapter, and screws)	693350-001

Item	Component	Spare part number
	Solid-state drive (not illustrated, does not include bracket, connector, or screws):	
	256-GB SATA III self-encrypting solid-state drive	693545-001
	180-GB SATA III solid-state drive	693544-001
	160-GB SATA II solid-state drive	694673-001
	128-GB SATA III solid-state drive	693543-001
(20)	**Service cover**	693315-001

Display assembly subcomponents



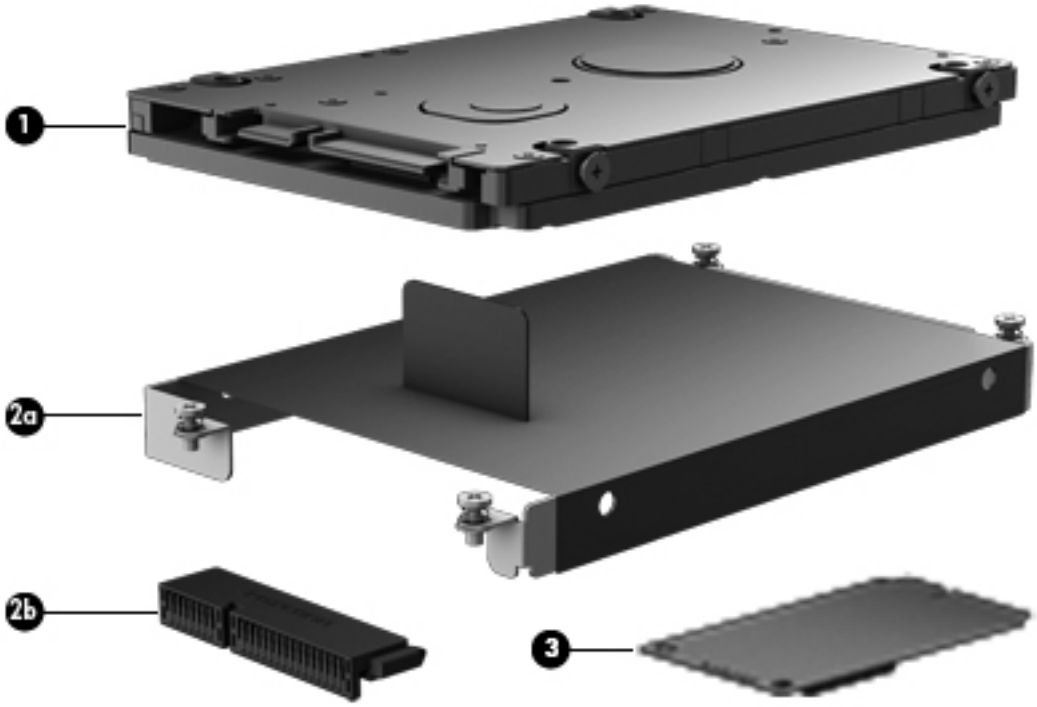
Item	Component	Spare part number
(1)	**Display bezel:**	
	For use on computer models equipped with a webcam	693302-001
	For use on computer models not equipped with a webcam	693303-001
(2)	**11.6 in, HD, LED, AG, SVA display panel**	693361-001
	Display Cable Kit, includes:	693305-001
(3)	Display panel cable and webcam/microphone module cable	
(4)	**Webcam/microphone module**	693318-001
	Microphone module	693313-001
	Antenna Kit, includes:	693299-001
(5a)	WLAN antenna cables and transceivers	
(5b)	WWAN antenna cables and transceivers	

Item	Component	Spare part number
	Display Hinge Cover Kit, includes:	693310-001
(6a)	Left and right display hinge caps	
(6b)	Left and right display hinge covers	
(6c)	Left and right display hinges	
(7)	**Display enclosure**	693300-001
(8)	**Display clutch cover**	693311-001
	Display Panel Support Kit (not illustrated, includes display enclosure with pre-installed WLAN antenna cables and transceivers and WWAN antenna cables and transceivers)	693309-001

Cable Kit

Item	Component	Spare part number
	Cable Kit, includes:	693306-001
(1)	Audio board cable	
(2)	Media Card reader assembly cable	
(3)	TouchPad cable	

Mass storage devices



Item	Description	Spare part number
(1)	**Hard drive** (does not include hard drive bracket, hard drive connector adapter, or screws):	
	750-GB, 7200-rpm, 9.5-mm	633252-001
	500-GB, 7200-rpm, 9.5-mm SED	683801-001
	500-GB, 7200-rpm, 9.5-mm	634925-001
	320-GB, 7200-rpm, 9.5-mm	634862-001
	Hard Drive Hardware Kit, includes:	693350-001
(2a)	Hard drive bracket	
(2b)	Hard drive connector adapter	
	Hard drive bracket screws (not illustrated)	
(3)	**Solid-state drive** (does not include solid-state drive bracket, solid-state drive connector adapter, or screws):	
	256-GB SATA III self-encrypting solid-state drive	693545-001
	180-GB SATA III solid-state drive	693544-001
	160-GB SATA II solid-state drive	694673-001
	128-GB SATA III solid-state drive	693543-001

Miscellaneous parts

Component	Spare part number
AC adapter:	
65-W HP Smart AC adapter (PFC, RC/V, EM, 3-wire)	693710-001
65-W HP Smart AC adapter (non-PFC, 3-wire)	693711-001
65-W HP travel AC adapter (non-PFC, 3-wire)	693716-001
Power cord (3-pin, black, 1.83-m):	
For use in Argentina	490371-D01
For use in Australia	490371-011
For use in Brazil	490371-202
For use in Denmark	490371-081
For use in Europe	490371-021
For use in India	490371-D61
For use in Israel	490371-BB1
For use in Japan	490371-291
For use in North America	490371-001
For use in the People's Republic of China	490371-AA1
For use in South Africa	490371-AR1
For use in South Korea	490371-AD1
For use in Switzerland	490371-111
For use in Taiwan	490371-AB1
For use in Thailand	490371-201
For use in the United Kingdom and Singapore	490371-031
Screw Kit	693316-001

Sequential part number listing

Spare part number	Description
490371-001	Power cord for use in North America (3-pin, black, 1.83-m)
490371-011	Power cord for use in Australia (3-pin, black, 1.83-m)
490371-021	Power cord for use in Europe (3-pin, black, 1.83-m)
490371-031	Power cord for use in the United Kingdom and Singapore (3-pin, black, 1.83-m)
490371-081	Power cord for use in Denmark (3-pin, black, 1.83-m)
490371-111	Power cord for use in Switzerland (3-pin, black, 1.83-m)
490371-201	Power cord for use in Thailand (3-pin, black, 1.83-m)
490371-202	Power cord for use in Brazil (3-pin, black, 1.83-m)
490371-291	Power cord for use in Japan (3-pin, black, 1.83-m)
490371-AA1	Power cord for use in the People's Republic of China (3-pin, black, 1.83-m)
490371-AB1	Power cord for use in Taiwan (3-pin, black, 1.83-m)
490371-AD1	Power cord for use in South Korea (3-pin, black, 1.83-m)
490371-AR1	Power cord for use in South Africa (3-pin, black, 1.83-m)
490371-BB1	Power cord for use in Israel (3-pin, black, 1.83-m)
490371-D01	Power cord for use in Argentina (3-pin, black, 1.83-m)
490371-D61	Power cord for use in India (3-pin, black, 1.83-m)
631954-001	Intel Centrino Advanced-N 6205 WLAN module
633252-001	750-GB, 7200-rpm, 9.5-mm hard drive (does not include hard drive bracket, hard drive connector adapter, or screws) **NOTE:** The hard drive bracket, hard drive connector adapter, and screws are included in the Hard Drive Hardware Kit, spare part number 693350-001.
634400-001	HP un2430 EV-DO/HSPA Mobile Broadband Module
634925-001	500-GB, 7200-rpm, 9.5-mm hard drive (does not include hard drive bracket, hard drive connector adapter, or screws) **NOTE:** The hard drive bracket, hard drive connector adapter, and screws are included in the Hard Drive Hardware Kit, spare part number 693350-001.
641369-001	4-GB memory module (PC3, 12800, 1600-MHz)
641672-001	320-GB, 7200-rpm, 9.5-mm hard drive (does not include hard drive bracket, hard drive connector adapter, or screws) **NOTE:** The hard drive bracket, hard drive connector adapter, and screws are included in the Hard Drive Hardware Kit, spare part number 693350-001.
651038-001	RTC battery
652972-001	2-GB memory module (PC3, 12800, 1600-MHz)

Spare part number	Description
657325-001	Broadcom 4313GN 802.11b/g/n 1×1 WiFi and 20702 Bluetooth 4.0 Combo Adapter
668969-001	HP hs2350 HSPA+ Mobile Broadband Module
670034-001	8-GB memory module (PC3, 12800, 1600-MHz)
670292-001	Intel Centrino Advanced-N 6235 WLAN module
671604-001	4-cell, 30-Wh, 2.00-Ah, Li-ion battery
675791-001	HP lt2522 LTE/EV-DO Mobile Broadband Module
675793-001	HP lt2523 LTE/HSPA+ Mobile Broadband Module
676786-001	Atheros AR9462 802.11a/b/g/n 2×2 Bluetooth 4.0 Combo Adapter
683801-001	500-GB, 7200-rpm, 9.5-mm SED hard drive (does not include hard drive bracket, hard drive connector adapter, or screws) **NOTE:** The hard drive bracket, hard drive connector adapter, and screws are included in the Hard Drive Hardware Kit, spare part number 693350-001.
685988-001	6-cell, 48-Wh, 2.20-Ah, Li-ion battery
693299-001	Antenna Kit (includes WLAN antenna cables and transceivers and WWAN antenna cables and transceivers)
693300-001	Base enclosure (includes rubber feet, service cover release latch assembly, and battery release latch assembly)
693301-001	Display enclosure
693302-001	Display bezel for use on computer models equipped with webcam
693303-001	Display bezel for use on computer models not equipped with webcam
693305-001	Display Cable Kit
693306-001	Cable Kit (includes audio board cable, SD Card reader board cable, and TouchPad cable)
693307-001	Heat sink (includes replacement thermal material)
693308-001	Fan (includes cable)
693309-001	Display Panel Support Kit (includes display enclosure with pre-installed WLAN antenna cables and transceivers and WWAN antenna cables and transceivers)
693310-001	Display Hinge Cover Kit (includes left and right display hinges, left and right display hinge caps, and left and right display hinge covers)
693311-001	Display clutch cover
693312-001	Smart Card reader assembly (includes cable)
693313-001	Microphone module
693315-001	Service cover
693316-001	Screw Kit

Spare part number	Description
693317-001	Top cover for use on computer models equipped with a fingerprint reader (includes TouchPad) **NOTE:** The top cover spare part kit includes the TouchPad but does not include a TouchPad cable. The TouchPad cable is included in the Cable Kit, spare part number 693306-001.
693318-001	Webcam/microphone module
693349-001	Fingerprint reader board (includes bracket and cable)
693350-001	Hard Drive Hardware Kit (includes hard drive bracket, hard drive connector adapter, and screws)
693351-001	Audio board
693352-001	Power switch board (includes cable)
693353-001	Media Card reader assembly **NOTE:** The Media Card reader assembly spare part kit does not include a Media Card reader assembly cable. The Media Card reader assembly cable is included in the Cable Kit, spare part number 693306-001.
693354-001	Speakers (include cables and 4 rubber isolators)
693355-001	Rubber Kit (includes base enclosure and display bezel screw covers)
693356-001	System board equipped with Intel Dual Core i3-3217U 1.80-GHz processor for use in all countries and regions except the People's Republic of China and the Ukraine (3.0-MB L3 cache, 17 W; includes replacement thermal material)
693357-001	System board equipped with Intel Dual Core i5-3317U 1.70-GHz processor (SC turbo up to 2.60-GHz) for use in all countries and regions except the People's Republic of China and the Ukraine (3.0-MB L3 cache, 17 W; includes replacement thermal material)
693358-001	System board equipped with Intel Dual Core i5-3427U 1.70-GHz processor (SC turbo up to 2.70-GHz) for use in all countries and regions except the People's Republic of China and the Ukraine (3.0-MB L3 cache, 17 W; includes replacement thermal material)
693360-001	System board equipped with Intel Dual Core i7-3667U 1.80-GHz processor (SC turbo up to 2.90-GHz) for use in all countries and regions except the People's Republic of China and the Ukraine (4.0-MB L3 cache, 17 W; includes replacement thermal material)
693361-001	11.6 in, HD, LED, AG, SVA display panel
693362-001	Keyboard with pointing stick for use in the United States (includes keyboard cable and pointing stick cable)
693362-031	Keyboard with pointing stick for use in the United Kingdom and Singapore (includes keyboard cable and pointing stick cable)
693362-041	Keyboard with pointing stick for use in Germany (includes keyboard cable and pointing stick cable)
693362-051	Keyboard with pointing stick for use in France (includes keyboard cable and pointing stick cable)
693362-061	Keyboard with pointing stick for use in Italy (includes keyboard cable and pointing stick cable)
693362-071	Keyboard with pointing stick for use in Spain (includes keyboard cable and pointing stick cable)
693362-081	Keyboard with pointing stick for use in Denmark (includes keyboard cable and pointing stick cable)
693362-091	Keyboard with pointing stick for use in Norway (includes keyboard cable and pointing stick cable)
693362-131	Keyboard with pointing stick for use in Portugal (includes keyboard cable and pointing stick cable)

Spare part number	Description
693362-141	Keyboard with pointing stick for use in Turkey (includes keyboard cable and pointing stick cable)
693362-151	Keyboard with pointing stick for use in Greece (includes keyboard cable and pointing stick cable)
693362-161	Keyboard with pointing stick for use in Latin America (includes keyboard cable and pointing stick cable)
693362-171	Keyboard with pointing stick for use in Saudi Arabia (includes keyboard cable and pointing stick cable)
693362-201	Keyboard with pointing stick for use in Brazil (includes keyboard cable and pointing stick cable)
693362-211	Keyboard with pointing stick for use in Hungary (includes keyboard cable and pointing stick cable)
693362-251	Keyboard with pointing stick for use in Russia (includes keyboard cable and pointing stick cable)
693362-261	Keyboard with pointing stick for use in Bulgaria (includes keyboard cable and pointing stick cable)
693362-271	Keyboard with pointing stick for use in Romania (includes keyboard cable and pointing stick cable)
693362-281	Keyboard with pointing stick for use in Thailand (includes keyboard cable and pointing stick cable)
693362-291	Keyboard with pointing stick for use in Japan (includes keyboard cable and pointing stick cable)
693362-A41	Keyboard with pointing stick for use in Belgium (includes keyboard cable and pointing stick cable)
693362-AB1	Keyboard with pointing stick for use in Taiwan (includes keyboard cable and pointing stick cable)
693362-AD1	Keyboard with pointing stick for use in South Korea (includes keyboard cable and pointing stick cable)
693362-B31	Keyboard with pointing stick for use in the Netherlands (includes keyboard cable and pointing stick cable)
693362-B71	Keyboard with pointing stick for use in Sweden and Finland (includes keyboard cable and pointing stick cable)
693362-BA1	Keyboard with pointing stick for use in Slovenia (includes keyboard cable and pointing stick cable)
693362-BB1	Keyboard with pointing stick for use in Israel (includes keyboard cable and pointing stick cable)
693362-BG1	Keyboard with pointing stick for use in Switzerland (includes keyboard cable and pointing stick cable)
693362-D61	Keyboard with pointing stick for use in India (includes keyboard cable and pointing stick cable)
693362-DB1	Keyboard with pointing stick for use in Canada (includes keyboard cable and pointing stick cable)
693362-DD1	Keyboard with pointing stick for use in Iceland (includes keyboard cable and pointing stick cable)
693362-FL1	Keyboard with pointing stick for use in the Czech Republic and Slovakia (includes keyboard cable and pointing stick cable)
693362-FP1	Keyboard with pointing stick for use in Northwest Africa (includes keyboard cable and pointing stick cable)
693363-001	Keyboard with backlight and pointing stick for use in the United States (includes keyboard cable and pointing stick cable)
693363-031	Keyboard with backlight and pointing stick for use in the United Kingdom and Singapore (includes keyboard cable and pointing stick cable)

Spare part number	Description
693363-041	Keyboard with backlight and pointing stick for use in Germany (includes keyboard cable, backlight cable, and pointing stick cable)
693363-051	Keyboard with backlight and pointing stick for use in France (includes keyboard cable, backlight cable, and pointing stick cable)
693363-061	Keyboard with backlight and pointing stick for use in Italy (includes keyboard cable, backlight cable, and pointing stick cable)
693363-071	Keyboard with backlight and pointing stick for use in Spain (includes keyboard cable, backlight cable, and pointing stick cable)
693363-081	Keyboard with backlight and pointing stick for use in Denmark (includes keyboard cable, backlight cable, and pointing stick cable)
693363-091	Keyboard with backlight and pointing stick for use in Norway (includes keyboard cable, backlight cable, and pointing stick cable)
693363-131	Keyboard with backlight and pointing stick for use in Portugal (includes keyboard cable, backlight cable, and pointing stick cable)
693363-141	Keyboard with backlight and pointing stick for use in Turkey (includes keyboard cable, backlight cable, and pointing stick cable)
693363-151	Keyboard with backlight and pointing stick for use in Greece (includes keyboard cable, backlight cable, and pointing stick cable)
693363-161	Keyboard with backlight and pointing stick for use in Latin America (includes keyboard cable, backlight cable, and pointing stick cable)
693363-171	Keyboard with backlight and pointing stick for use in Saudi Arabia (includes keyboard cable, backlight cable, and pointing stick cable)
693363-201	Keyboard with backlight and pointing stick for use in Brazil (includes keyboard cable, backlight cable, and pointing stick cable)
693363-211	Keyboard with backlight and pointing stick for use in Hungary (includes keyboard cable, backlight cable, and pointing stick cable)
693363-251	Keyboard with backlight and pointing stick for use in Russia (includes keyboard cable, backlight cable, and pointing stick cable)
693363-261	Keyboard with backlight and pointing stick for use in Bulgaria (includes keyboard cable, backlight cable, and pointing stick cable)
693363-271	Keyboard with backlight and pointing stick for use in Romania (includes keyboard cable, backlight cable, and pointing stick cable)
693363-281	Keyboard with backlight and pointing stick for use in Thailand (includes keyboard cable, backlight cable, and pointing stick cable)
693363-291	Keyboard with backlight and pointing stick for use in Japan (includes keyboard cable, backlight cable, and pointing stick cable)
693363-A41	Keyboard with backlight and pointing stick for use in Belgium (includes keyboard cable, backlight cable, and pointing stick cable)
693363-AB1	Keyboard with backlight and pointing stick for use in Taiwan (includes keyboard cable, backlight cable, and pointing stick cable)

Spare part number	Description
693363-AD1	Keyboard with backlight and pointing stick for use in South Korea (includes keyboard cable, backlight cable, and pointing stick cable)
693363-B31	Keyboard with backlight and pointing stick for use in the Netherlands (includes keyboard cable, backlight cable, and pointing stick cable)
693363-B71	Keyboard with backlight and pointing stick for use in Sweden and Finland (includes keyboard cable, backlight cable, and pointing stick cable)
693363-BA1	Keyboard with backlight and pointing stick for use in Slovenia (includes keyboard cable, backlight cable, and pointing stick cable)
693363-BB1	Keyboard with backlight and pointing stick for use in Israel (includes keyboard cable, backlight cable, and pointing stick cable)
693363-BG1	Keyboard with backlight and pointing stick for use in Switzerland (includes keyboard cable, backlight cable, and pointing stick cable)
693363-D61	Keyboard with backlight and pointing stick for use in India (includes keyboard cable, backlight cable, and pointing stick cable)
693363-DB1	Keyboard with backlight and pointing stick for use in Canada (includes keyboard cable, backlight cable, and pointing stick cable)
693363-DD1	Keyboard with backlight and pointing stick for use in Iceland (includes keyboard cable, backlight cable, and pointing stick cable)
693363-FL1	Keyboard with backlight and pointing stick for use in the Czech Republic and Slovakia (includes keyboard cable, backlight cable, and pointing stick cable)
693363-FP1	Keyboard with backlight and pointing stick for use in Northwest Africa (includes keyboard cable, backlight cable, and pointing stick cable)
693543-001	128-GB SATA III solid-state drive
693544-001	180-GB SATA III solid-state drive
693545-001	256-GB SATA III self-encrypting solid-state drive
693710-001	65-W HP Smart AC adapter (RC/V, EM, 3-wire)
693711-001	65-W HP Smart AC adapter (non-PFC, 3-wire)
693716-001	65-W HP travel AC adapter (non-PFC, 3-wire)
694507-001	Top cover for use on computer models not equipped with a fingerprint reader (includes TouchPad) **NOTE:** The top cover spare part kit includes the TouchPad but does not include a TouchPad cable. The TouchPad cable is included in the Cable Kit, spare part number 693306-001.
694508-001	System board equipped with Intel Dual Core i3-3217U 1.80-GHz processor for use only in the People's Republic of China (3.0-MB L3 cache, 17 W; includes replacement thermal material)
694509-001	System board equipped with Intel Dual Core i5-3317U 1.70-GHz processor (SC turbo up to 2.60-GHz) for use only in the People's Republic of China (3.0-MB L3 cache, 17 W; includes replacement thermal material)
694510-001	System board equipped with Intel Dual Core i5-3427U 1.70-GHz processor (SC turbo up to 2.70-GHz) for use only in the People's Republic of China (3.0-MB L3 cache, 17 W; includes replacement thermal material)

Spare part number	Description
694511-001	System board equipped with Intel Dual Core i7-3667U 1.80-GHz processor (SC turbo up to 2.90-GHz) for use only in the People's Republic of China (4.0-MB L3 cache, 17 W; includes replacement thermal material)
694512-001	Processor bracket
694673-001	160-GB SATA II solid-state drive

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

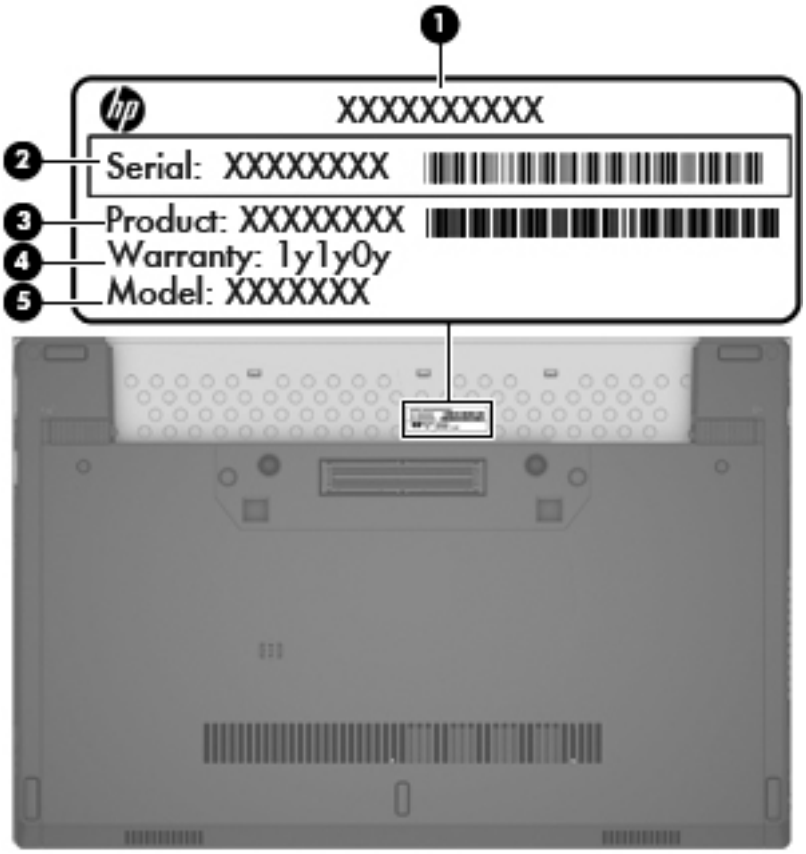
Component replacement procedures

This chapter provides removal and replacement procedures.

There are as many as 61 screws that must be removed, replaced, and/or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

Service tag

When ordering parts or requesting information, provide the computer serial number and model number provided on the service tag. It is necessary to remove the battery to obtain these numbers. See Battery on page 45 for battery removal instructions.



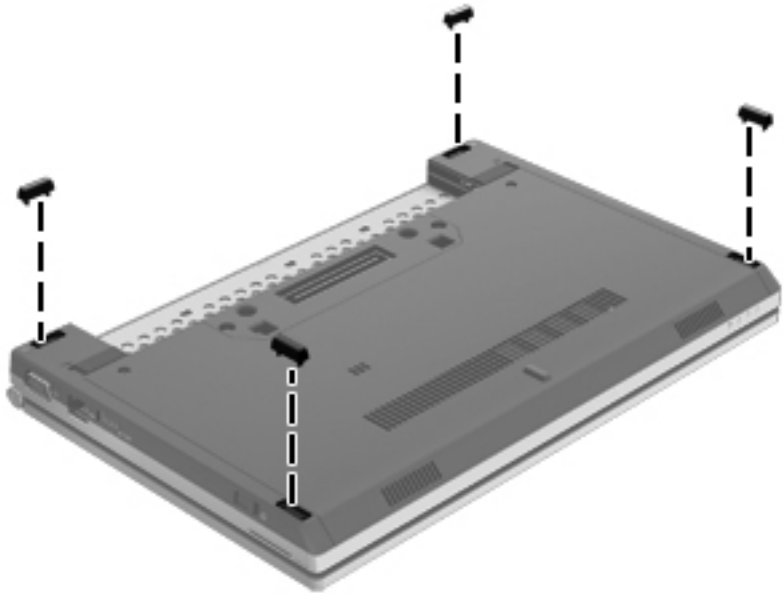
Item	Component	Description
(1)	Product name	This is the product name affixed to the front of the computer.
(2)	Serial number (s/n)	This is an alphanumeric identifier that is unique to each product.
(3)	Part number/Product number (p/n)	This number provides specific information about the product's hardware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

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

Computer feet

The computer feet are adhesive-backed rubber pads. There are four rectangular rubber feet that attach to the base enclosure in the locations illustrated below.

The feet are included in the Rubber Kit, spare part number 693355-001.



Battery

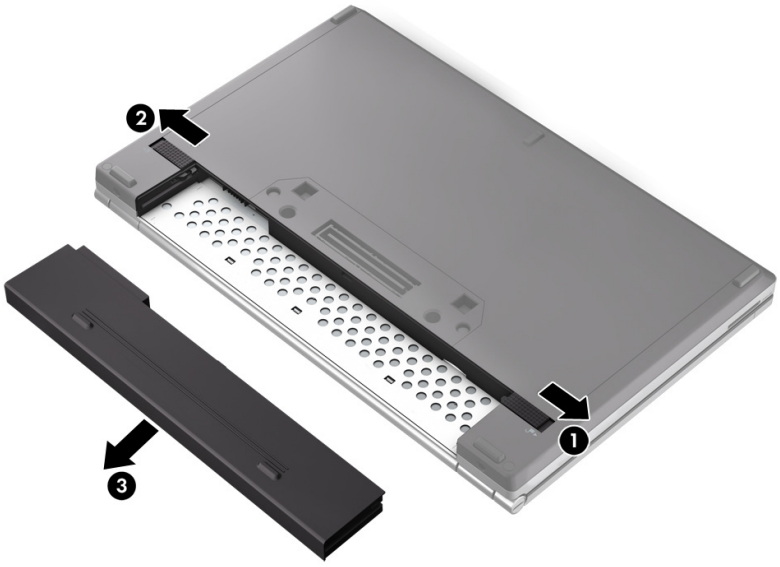
Description	Spare part number
6-cell, 48-Wh, 2.2-Ah	685988-001
4-cell, 30-Wh, 2.0-Ah	671604-001

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. Position the computer upside-down on a flat surface, with the battery bay toward you.
2. Slide the battery lock latch **(1)**, and then slide the battery release latch **(2)** to release the battery.
3. Remove the battery **(3)** from the computer.



Install the battery by inserting it into the battery bay until you hear a click. The battery lock latch and the battery release latch automatically reset when the battery is installed.

SIM

NOTE: This section applies only to computer models with WWAN capability.

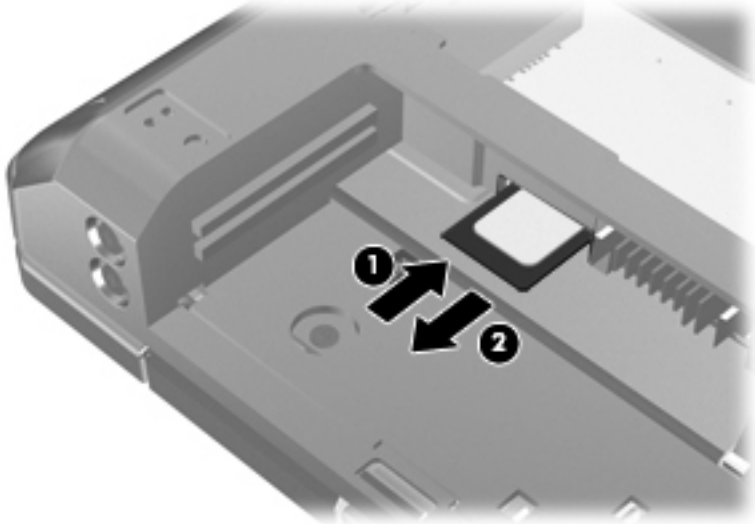
NOTE: If there is a SIM inserted in the SIM slot, it must be removed before disassembling the computer. Be sure that the SIM is reinserted in the SIM slot after reassembling the computer.

Before removing the SIM, 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 on page 45).

Remove the SIM:

1. Press in on the SIM **(1)**. (The SIM partially ejects from the SIM slot.)
2. Remove the SIM **(2)** from the SIM slot.



Reverse this procedure to install the SIM.

Service cover

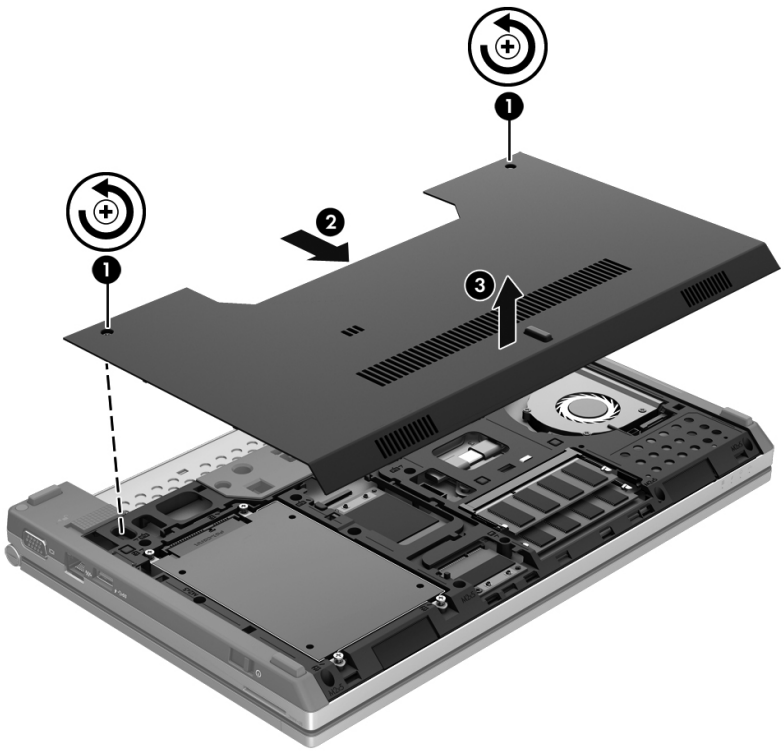
Description	Spare part number
Service cover	693315-001

Before removing the service 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 on page 45).

Remove the service cover:

1. Loosen the two Phillips PM2.0×5.5 screws **(1)** that secure the service cover to the computer.
2. Slide the service cover **(2)** forward to disengage the cover from the computer.
3. Remove the service cover **(3)** by lifting it straight up and away from the computer.



Reverse the removal procedures to install the service cover.

Hard drive

NOTE: The hard drive spare part kit does not include the hard drive bracket, hard drive connector adapter, or screws.

Description	Spare part number
750-GB, 7200-rpm, 9.5-mm	633252-001
500-GB, 7200-rpm, 9.5-mm SED	683801-001
500-GB, 7200-rpm, 9.5-mm	634925-001
320-GB, 7200-rpm, 9.5-mm	641672-001
Hard Drive Hardware Kit (includes the hard drive bracket, hard drive connector adapter, and screws)	693350-001

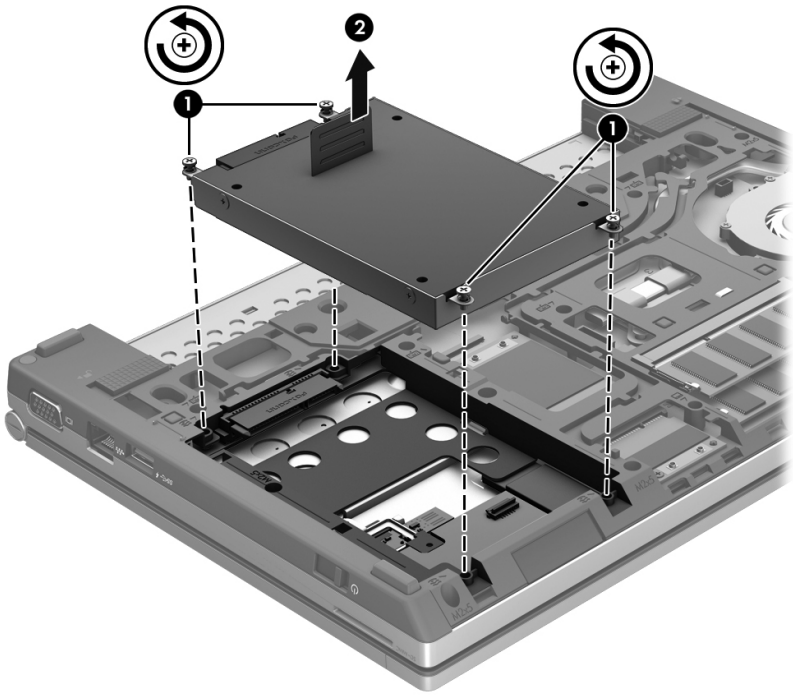
Before removing the hard drive, follow these steps:

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 on page 45).
5. Remove the service cover (see Service cover on page 47).

Remove the hard drive:

1. Loosen the four Phillips PM2.0×5.5 screws **(1)** that secure the hard drive to the computer.

2. Use the hard drive tab **(2)** to disconnect the hard drive from the system board and remove the hard drive from the computer.



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

   a. Position the hard drive with the connector toward you.

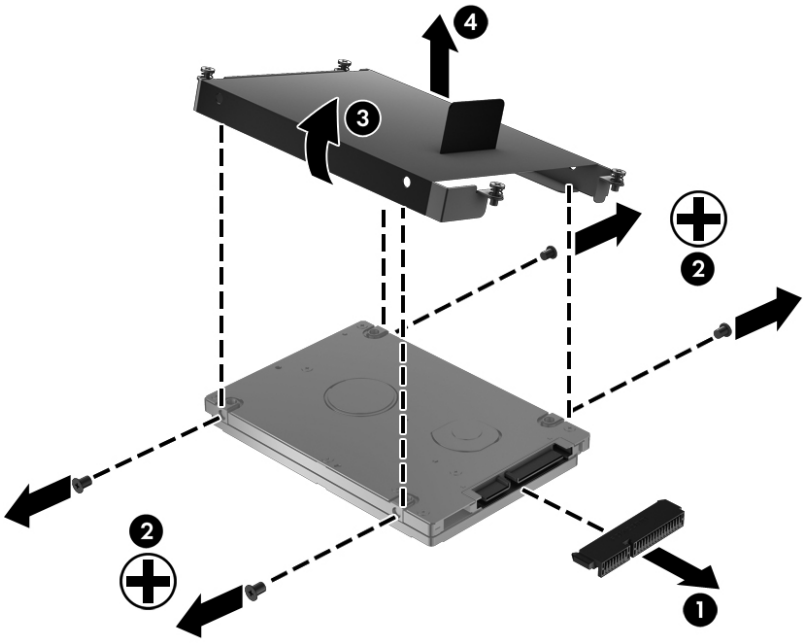
   b. Disconnect the hard drive connector adapter **(1)** from the hard drive.

   c. Remove the four Phillips PM2.9×4.1 screws **(2)** that secure the hard drive bracket to the hard drive.

   d. Lift the left side of the hard drive bracket **(3)** until it rests at an angle.

   e. Remove the hard drive bracket **(4)** from the hard drive.

   The hard drive bracket, hard drive connector adapter, and screws are available in the Hard Drive Hardware Kit, spare part number 693350-001.



Reverse this procedure to reassemble and install the hard drive.

Fingerprint reader board

Description	Spare part number
Fingerprint reader board (includes bracket and cable)	693349-001

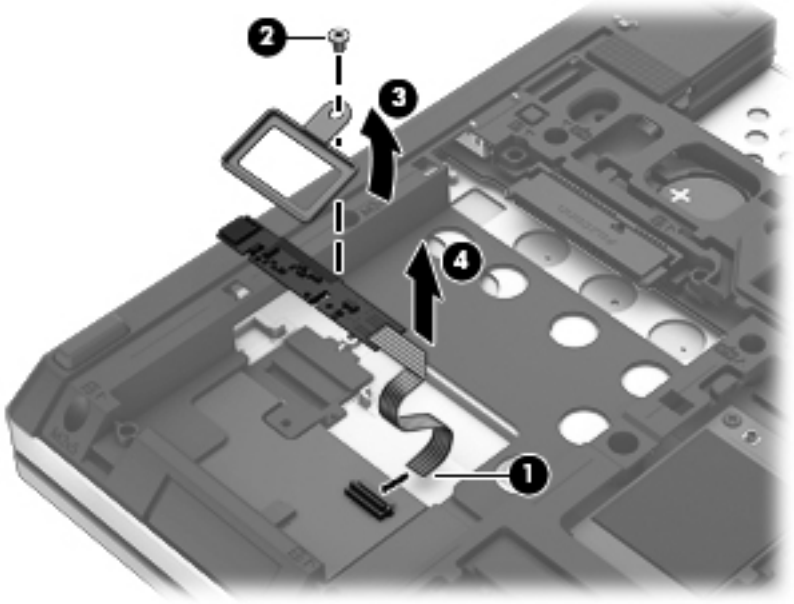
Before removing the fingerprint reader board, follow these steps:

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 on page 45).
5. Remove the service cover (see Service cover on page 47).
6. Remove the hard drive (see Hard drive on page 48).

Remove the fingerprint reader board:

1. Release the zero insertion force (ZIF) connector to which the fingerprint reader board cable is attached, and then disconnect the fingerprint reader board cable **(1)** from the SD Card reader board.
2. Remove the Phillips PM2.0×2.0 screw **(2)** that secures the fingerprint reader board bracket to the top cover.

3. Lift the rear edge of the fingerprint reader board bracket **(3)**, and then remove the bracket.
4. Remove the fingerprint reader board and cable **(4)**.



Reverse this procedure to install the fingerprint reader board.

WLAN module

Description	Spare part number
Atheros AR9462 802.11a/b/g/n 2×2 Bluetooth 4.0 Combo Adapter	676786-001
Broadcom 4313GN 802.11b/g/n 1×1 WiFi and 20702 Bluetooth 4.0 Combo Adapter	657325-001
Intel Centrino Advanced-N 6235 WLAN module	670292-001
Intel Centrino Advanced-N 6205 WLAN module	631954-001

⚠ **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.

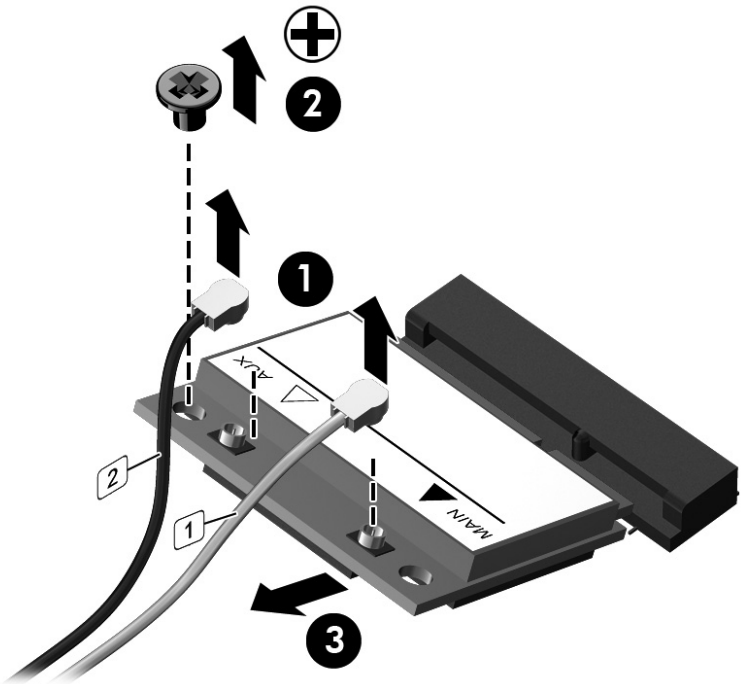
4. Remove the battery (see Battery on page 45).
5. Remove the service cover (see Service cover on page 47).

Remove the WLAN module:

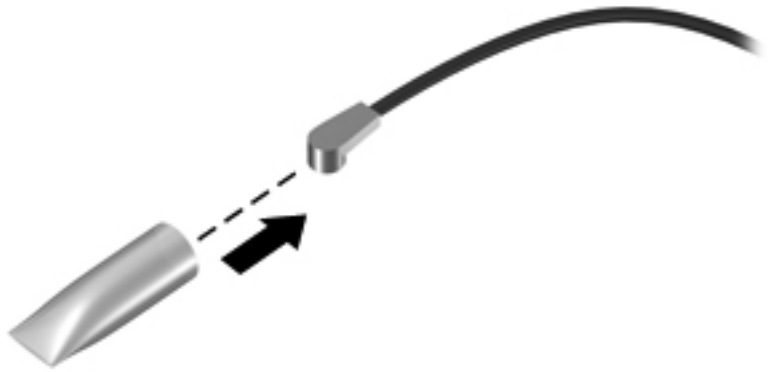
1. Disconnect the WLAN antenna cables **(1)** from the terminals on the WLAN module.

NOTE: The WLAN antenna cable labeled "1" connects to the WLAN module "Main" terminal labeled "1". The WLAN antenna cable labeled "2" connects to the WLAN module "Aux" terminal labeled "2". If the computer is equipped with an 802.11a/b/g/n WLAN module, the yellow WLAN antenna cable connects to the middle terminal on the WLAN module.

2. Remove the Phillips PM2.0×3.0 screw **(2)** that secures the WLAN module to the base enclosure. (The WLAN module tilts up.)
3. Remove the WLAN module **(3)** by pulling the module away from the slot at an angle.



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



Reverse this procedure to install the WLAN module.

WWAN module

NOTE: The WWAN module and the WLAN module are not interchangeable.

Description	Spare part number
HP lt2523 LTE/HSPA+ Mobile Broadband Module	675793-001
HP lt2522 LTE/EV-DO Mobile Broadband Module	675791-001
HP un2430 EV-DO/HSPA Mobile Broadband Module	634400-001
HP hs2350 HSPA+ Mobile Broadband Module	668969-001

Before removing the WWAN 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 on page 45).
5. Remove the service cover (see Service cover on page 47).

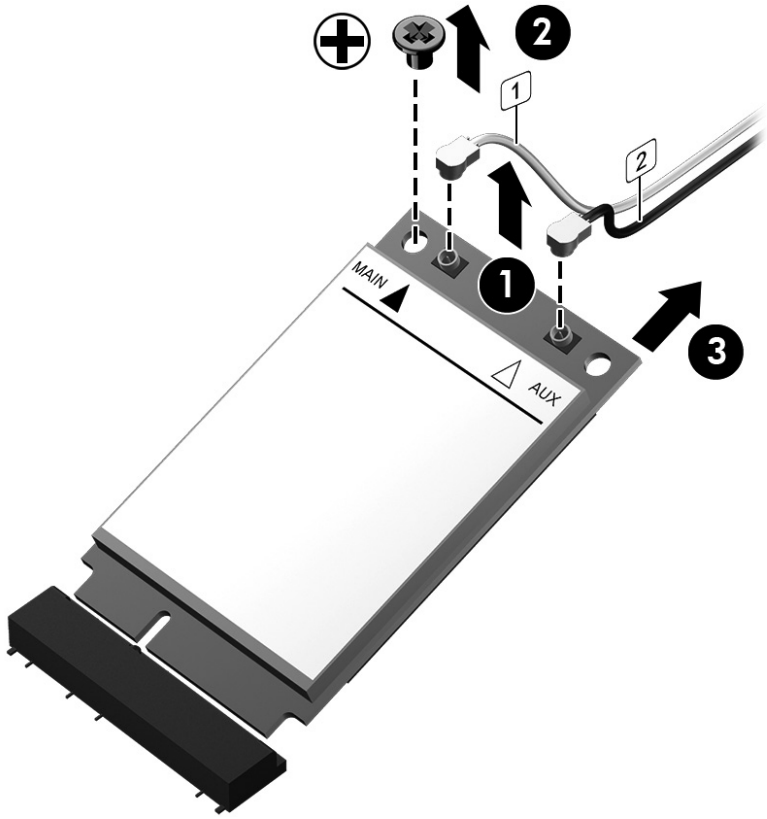
Remove the WWAN module:

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

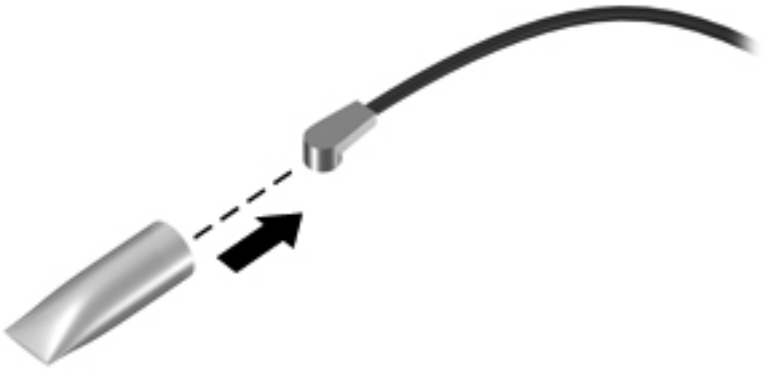
NOTE: The red WWAN antenna cable is connected to the WWAN module “Main” terminal. The blue WWAN antenna cable is connected to the WWAN module “Aux” terminal.

2. Remove the Phillips PM2.0×3.0 screw **(2)** that secures the WWAN module to the base enclosure. (The WWAN module tilts up.)

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



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



Reverse this procedure to install the WWAN module.

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:

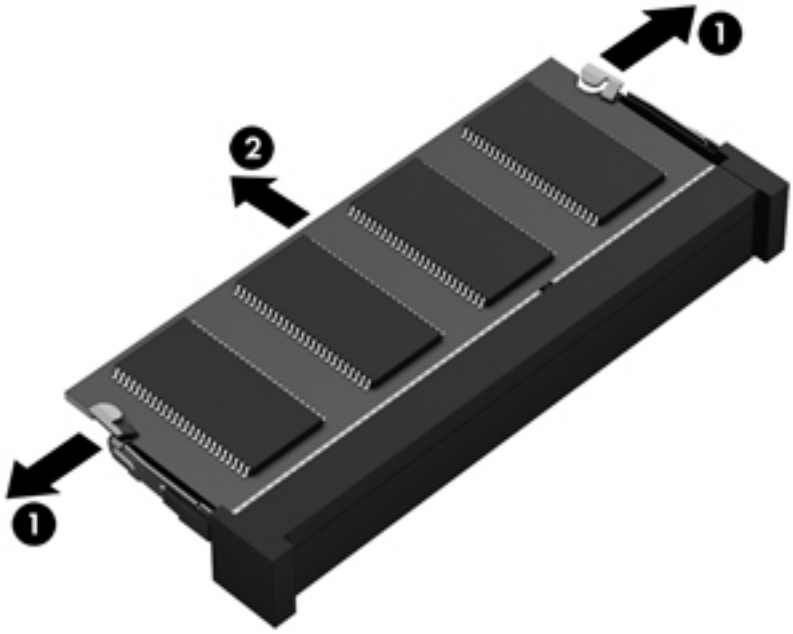
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 45).
5. Remove the service cover (see Service cover on page 47).

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.

Fan

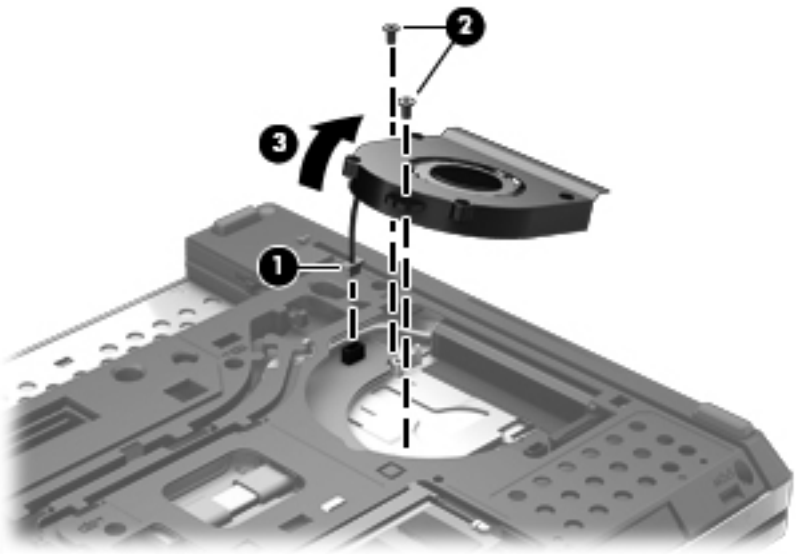
Description	Spare part number
Fan (includes cable)	693308-001

Before removing the fan, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 45).
5. Remove the service cover (see Service cover on page 47).

Remove the fan:

1. Disconnect the fan cable **(1)** from the system board.
2. Remove the two Phillips PM2.0×3.4 screws **(2)** that secure the fan to the top cover.
3. Lift the left side of the fan **(3)** until it rests at an angle, and then remove the fan.



Reverse this procedure to install the fan.

Keyboard

For use in country/region	Spare part number	For use in country/region	Spare part number
Keyboard with backlight and pointing stick (includes keyboard cable, backlight cable, and pointing stick cable):		For use in the Netherlands	693363-B31
For use in Belgium	693363-A41	For use in Norway	693363-091
For use in Brazil	693363-201	For use in Northwest Africa	693363-FP1
For use in Bulgaria	693363-261	For use in Portugal	693363-131
For use in Canada	693363-DB1	For use in Romania	693363-271
For use in the Czech Republic and Slovakia	693363-FL1	For use in Russia	693363-251
For use in Denmark	693363-081	For use in Saudi Arabia	693363-171
For use in France	693363-051	For use in Slovenia	693363-BA1
For use in Germany	693363-041	For use in South Korea	693363-AD1
For use in Greece	693363-151	For use in Spain	693363-071
For use in Hungary	693363-211	For use in Sweden and Finland	693363-B71
For use in Iceland	693363-DD1	For use in Switzerland	693363-BG1
For use in India	693363-D61	For use in Taiwan	693363-AB1
For use in Israel	693363-BB1	For use in Thailand	693363-281
For use in Italy	693363-061	For use in Turkey	693363-141
For use in Japan	693363-291	For use in the United Kingdom and Singapore	693363-031
For use in Latin America	693363-161	For use in the United States	693363-001
Keyboard with pointing stick (includes keyboard cable and pointing stick cable):		For use in the Netherlands	693362-B31
For use in Belgium	693362-A41	For use in Norway	693362-091
For use in Brazil	693362-201	For use in Northwest Africa	693362-FP1
For use in Bulgaria	693362-261	For use in Portugal	693362-131
For use in Canada	693362-DB1	For use in Romania	693362-271
For use in the Czech Republic and Slovakia	693362-FL1	For use in Russia	693362-251
For use in Denmark	693362-081	For use in Saudi Arabia	693362-171
For use in France	693362-051	For use in Slovenia	693362-BA1
For use in Germany	693362-041	For use in South Korea	693362-AD1
For use in Greece	693362-151	For use in Spain	693362-071

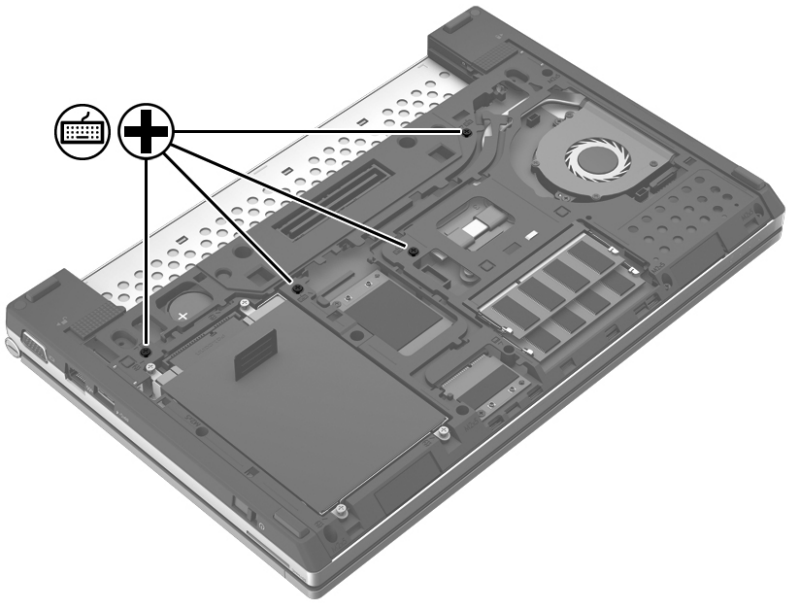
For use in country/region	Spare part number	For use in country/region	Spare part number
For use in Hungary	693362-211	For use in Sweden and Finland	693362-B71
For use in Iceland	693362-DD1	For use in Switzerland	693362-BG1
For use in India	693362-D61	For use in Taiwan	693362-AB1
For use in Israel	693362-BB1	For use in Thailand	693362-281
For use in Italy	693362-061	For use in Turkey	693362-141
For use in Japan	693362-291	For use in the United Kingdom and Singapore	693362-031
For use in Latin America	693362-161	For use in the United States	693362-001

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 on page 45).
5. Remove the service cover (see Service cover on page 47).

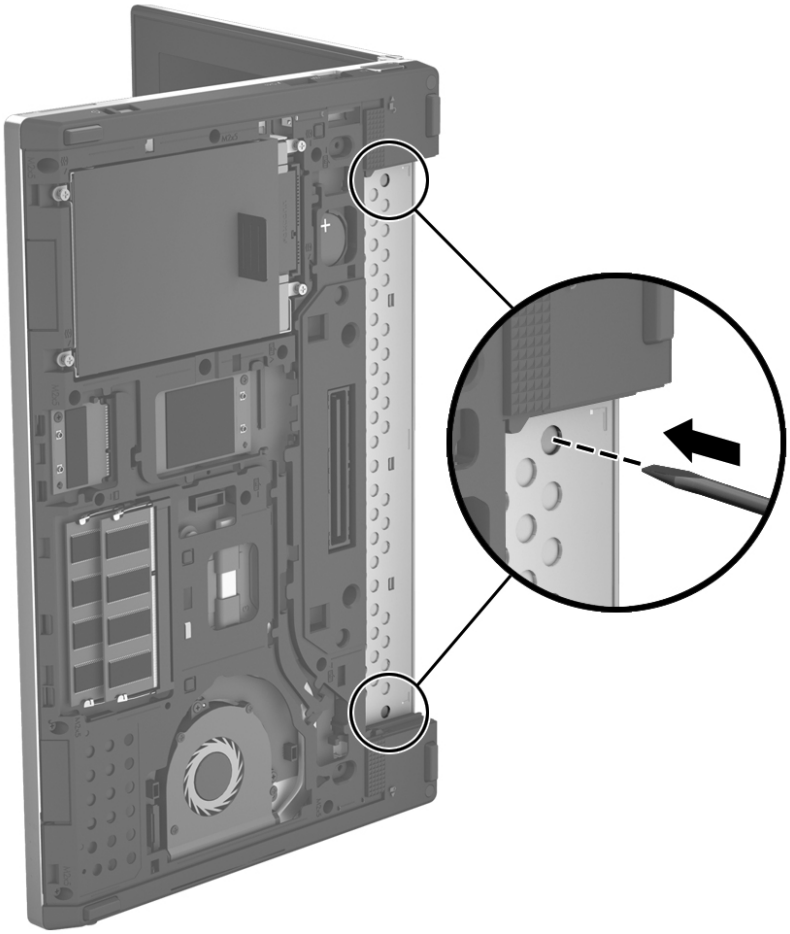
Remove the keyboard:

1. Loosen the four Phillips captive screws that secure the keyboard to the computer.



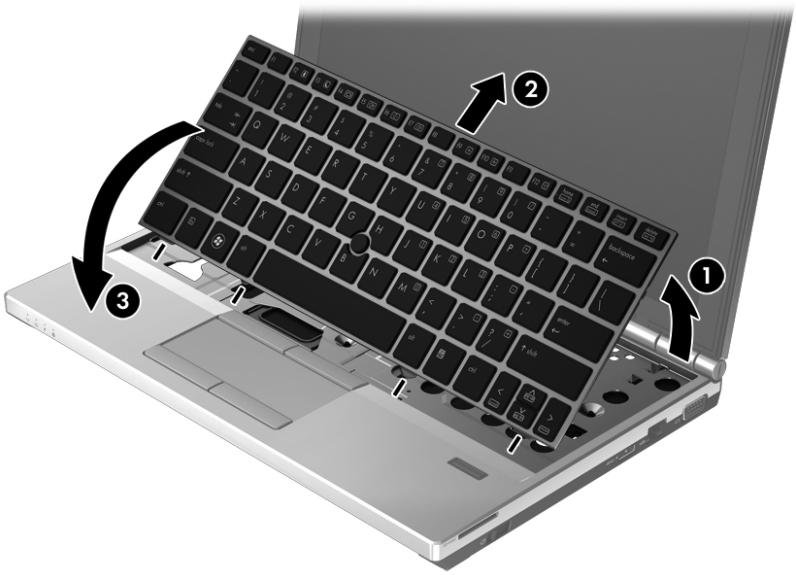
2. Rest and secure the computer on its left side.

3. Partially open the computer.
4. Insert a screw driver or similar thin tool into the keyboard release opening in the battery bay, 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.
8. Slide the keyboard **(2)** toward the display until the tabs on the front edge of the keyboard disengage from the slots in the top cover.

9. Swing the top edge of the keyboard up and forward **(3)** until it rests upside down on the palm rest.

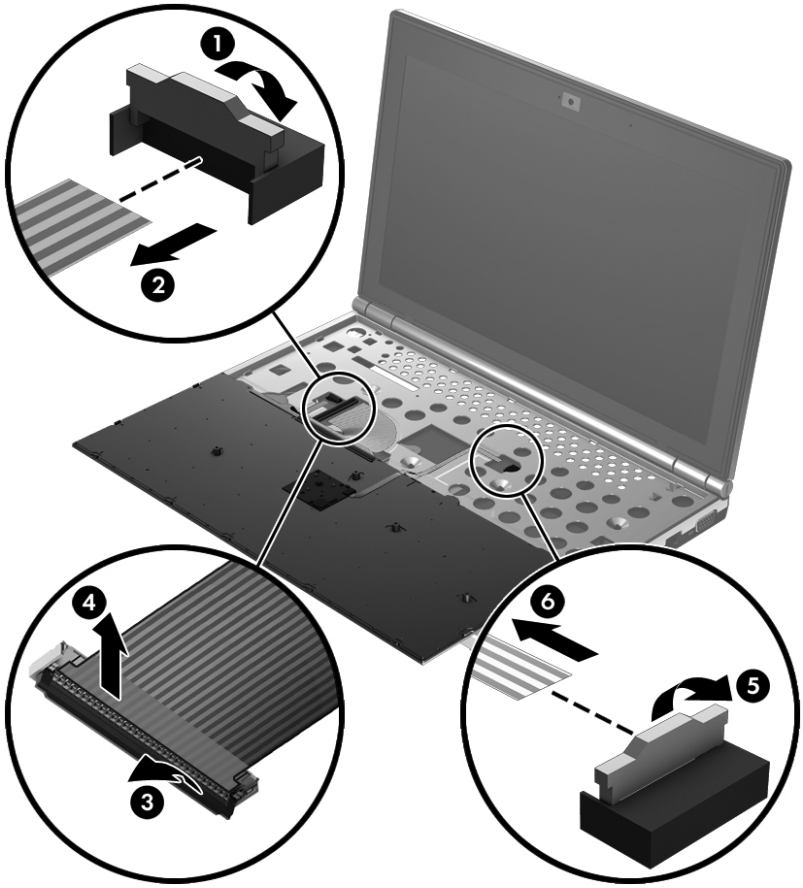


NOTE: The keyboard backlight cable is present on select models only.

10. Release the ZIF connector **(1)** to which the keyboard backlight cable is attached, and then disconnect the keyboard backlight cable **(2)** from the system board.

11. Release the ZIF connector **(3)** to which the keyboard cable is attached, and then disconnect the keyboard cable **(4)** from the system board.

12. Release the ZIF connector **(5)** to which the pointing stick cable is attached, and then disconnect the pointing stick cable **(6)** from the system board.



13. Remove the keyboard.

Reverse this procedure to install the keyboard.

Base enclosure

Description	Spare part number
Base enclosure (includes battery release latch assembly, rubber feet, and service cover release latch assembly)	693301-001

Before removing the base enclosure, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 45), and then remove the following components:
   a. Service cover (see Service cover on page 47)
   b. Hard drive (see Hard drive on page 48)
   c. WLAN module (see WLAN module on page 51)
   d. WWAN module (see WWAN module on page 53)
   e. Keyboard (see Keyboard on page 58)

NOTE: When replacing the base enclosure, be sure to remove the following components from the defective base enclosure and install them on the replacement base enclosure:

- Audio board (see Audio board on page 67)
- Speakers (see Speakers on page 68)
- Power switch board (see Power switch board on page 70)

Remove the base enclosure:

1. Close the computer.
2. Turn the computer upside down, with the front toward you.

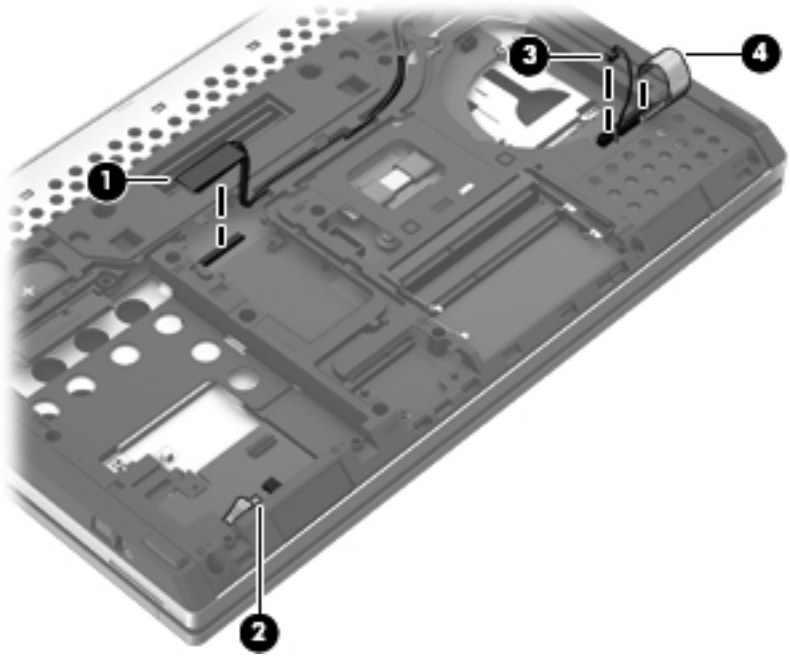
3. Disconnect the following cables from the system board:

   (1) Display panel cable

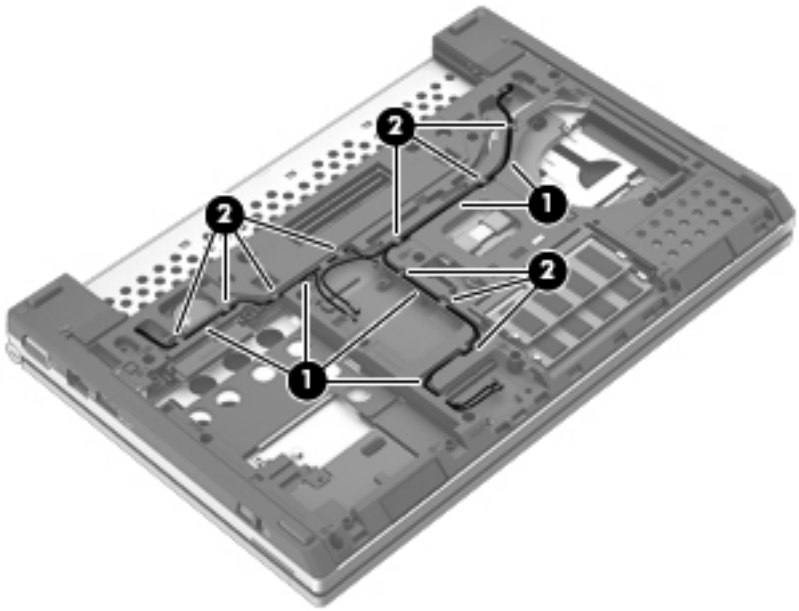
   (2) Power switch board cable

   (3) Speaker cable

   (4) Audio board cable



4. Release the display panel cable and wireless antenna cables **(1)** from the clips **(2)** and routing channels built into the base enclosure.

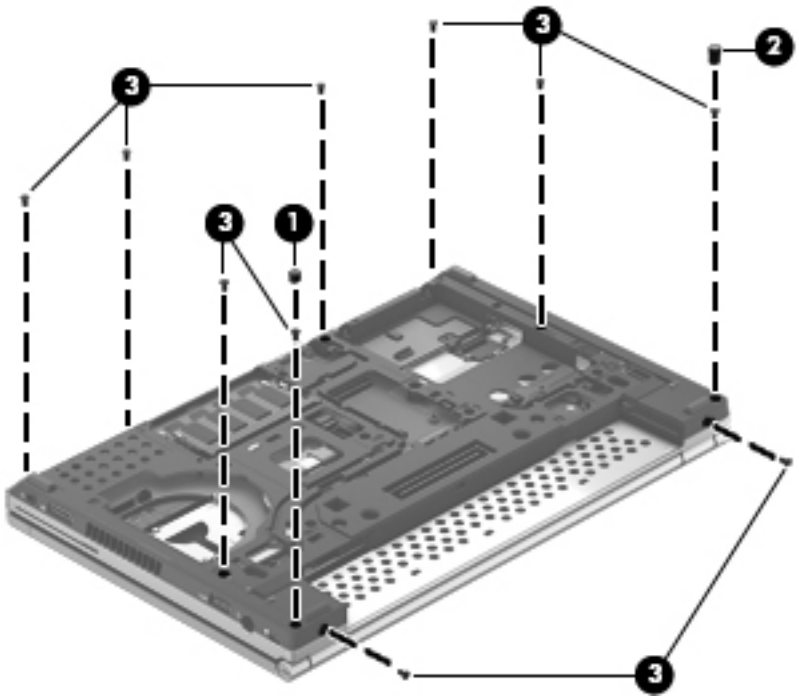


5. Remove the two rubber screw covers **(1)** and **(2)** in the rear corners of the base enclosure.

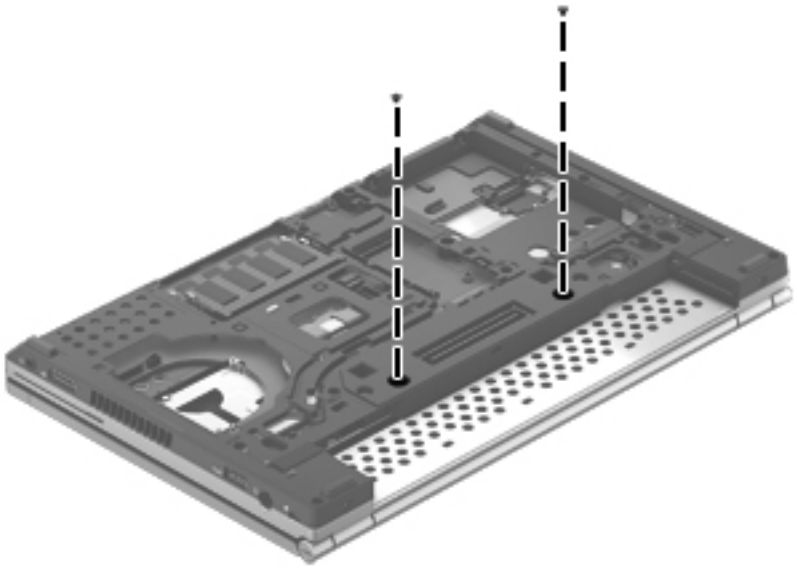
   The rubber screw covers are included in the Rubber Kit, spare part number 693355-001.

NOTE: The rubber screw covers are different sizes. The longer rubber screw cover **(2)** should be installed in the rear/right corner.

6. Remove the ten Torx TM2.0×5.6 screws **(3)** that secure the base enclosure to the computer.

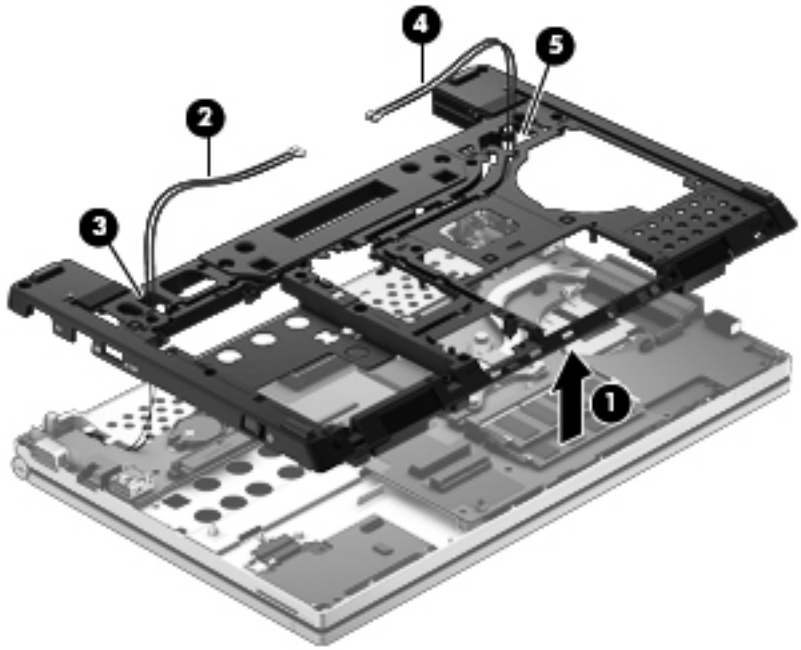


7. Remove the two Torx TM2.0×3.7 screws from the docking station alignment guide holes that secure the base enclosure to the computer.



8. Position the computer with the front toward you.

9. Disengage the base enclosure **(1)** from the top cover, making sure to guide the left-side wireless antenna cables **(2)** through the base enclosure left-side opening **(3)** and the right-side wireless antenna cables **(4)** through the base enclosure right-side opening **(5)**.



10. Remove the base enclosure

Reverse this procedure to install the base enclosure.

Audio board

NOTE: The audio board spare part kit does not include an audio board cable. The audio board cable is included in the Cable Kit, spare part number 693306-001.

Description	Spare part number
Audio board	693351-001

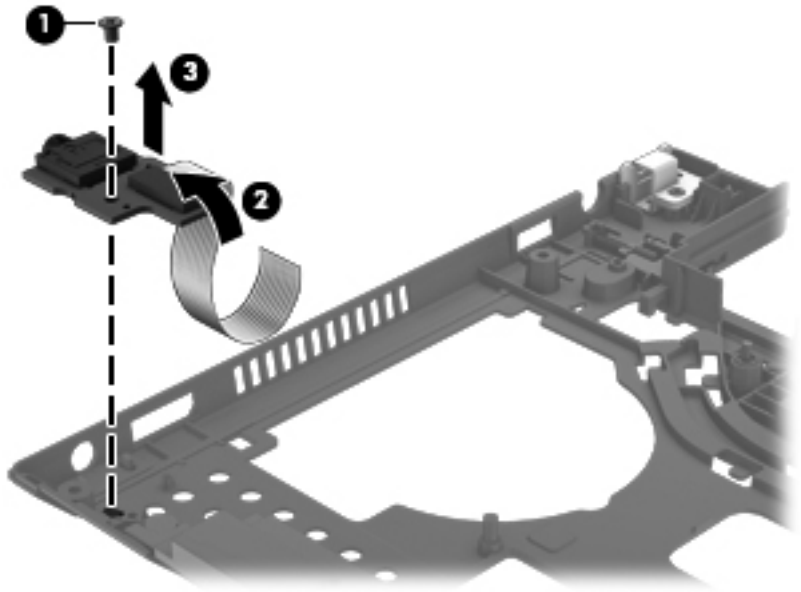
Before removing the audio board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 45), and then remove the following components:
   a. Service cover (see Service cover on page 47)
   b. Hard drive (see Hard drive on page 48)
   c. WLAN module (see WLAN module on page 51)
   d. WWAN module (see WWAN module on page 53)
   e. Keyboard (see Keyboard on page 58)
   f. Base enclosure (see Base enclosure on page 63)

Remove the audio board:

1. Turn the base enclosure right side up, with the front toward you.
2. Remove the Phillips PM2.0×3.7 screw **(1)** that secures the audio board to the base enclosure.
3. Lift the right side of the audio board **(2)** until it rests at an angle.

4. Remove the audio board **(3)** and cable.



Reverse this procedure to install the audio board.

Speakers

Description	Spare part number
Speakers (include cables and 4 rubber isolators)	655792-001

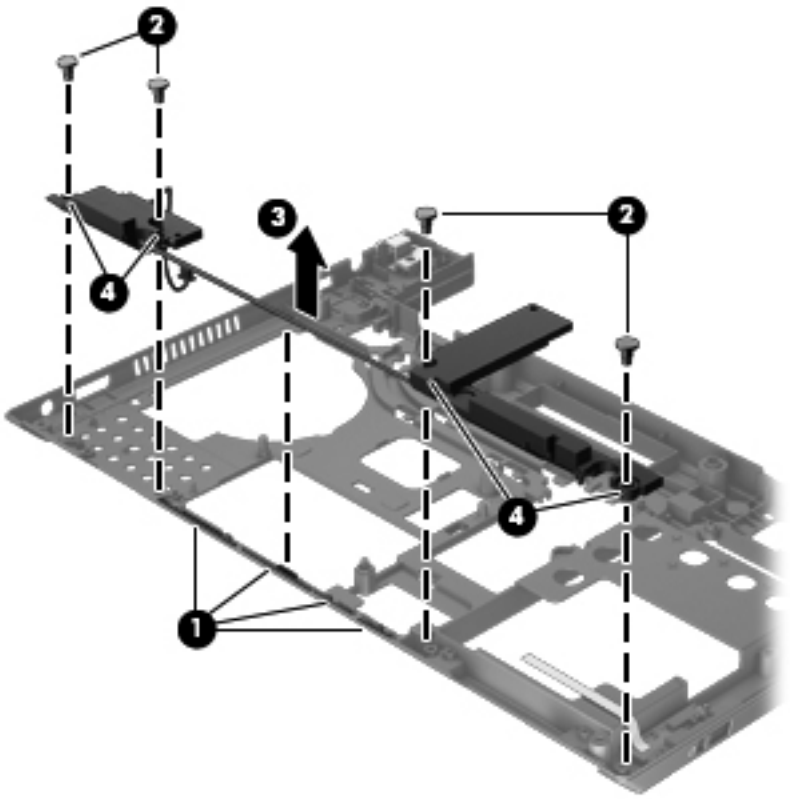
Before removing the speakers, follow these steps:

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 on page 45), and then remove the following components:
   a. Service cover (see Service cover on page 47)
   b. Hard drive (see Hard drive on page 48)
   c. WLAN module (see WLAN module on page 51)
   d. WWAN module (see WWAN module on page 53)
   e. Keyboard (see Keyboard on page 58)
   f. Base enclosure (see Base enclosure on page 63)

Remove the speakers:

1. Turn the base enclosure right side up, with the front toward you.
2. Release the speaker cable **(1)** from the clips built into the base enclosure.
3. Remove the four Phillips PM2.5×5.9 screws **(2)** that secure the speakers to the base enclosure.
4. Remove the speakers **(3)**.

NOTE: The speakers include four rubber isolators that are installed in the screw holes **(4)**. These isolators are crucial to the performance of the speakers.



Reverse this procedure to install the speakers.

Power switch board

Description	Spare part number
Power switch board (includes cable)	693352-001

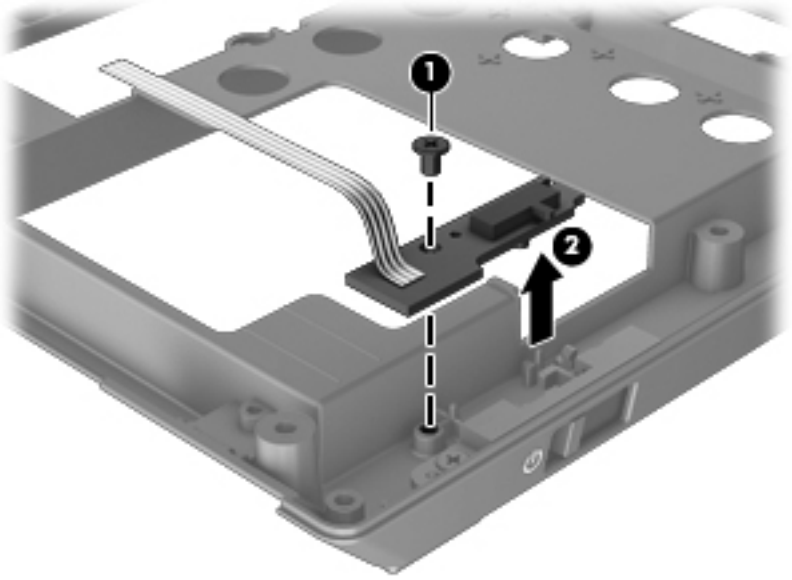
Before removing the power switch board, follow these steps:

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 on page 45), and then remove the following components:
   a. Service cover (see Service cover on page 47)
   b. Hard drive (see Hard drive on page 48)
   c. WLAN module (see WLAN module on page 51)
   d. WWAN module (see WWAN module on page 53)
   e. Keyboard (see Keyboard on page 58)
   f. Base enclosure (see Base enclosure on page 63)

Remove the power switch board:

1. Turn the base enclosure right side up, with the front toward you.
2. Remove the Phillips PM2.0×3.4 screw **(1)** that secures the power switch board to the base enclosure.

3. Remove the power switch board **(2)**.



Reverse this procedure to install the power switch board.

Media Card reader assembly

NOTE: The Media Card reader assembly spare part kit does not include a Media Card reader assembly cable. The Media Card reader assembly cable is included in the Cable Kit, spare part number 693306-001.

Description	Spare part number
Media Card reader assembly	693353-001

Before removing the Media Card reader assembly, follow these steps:

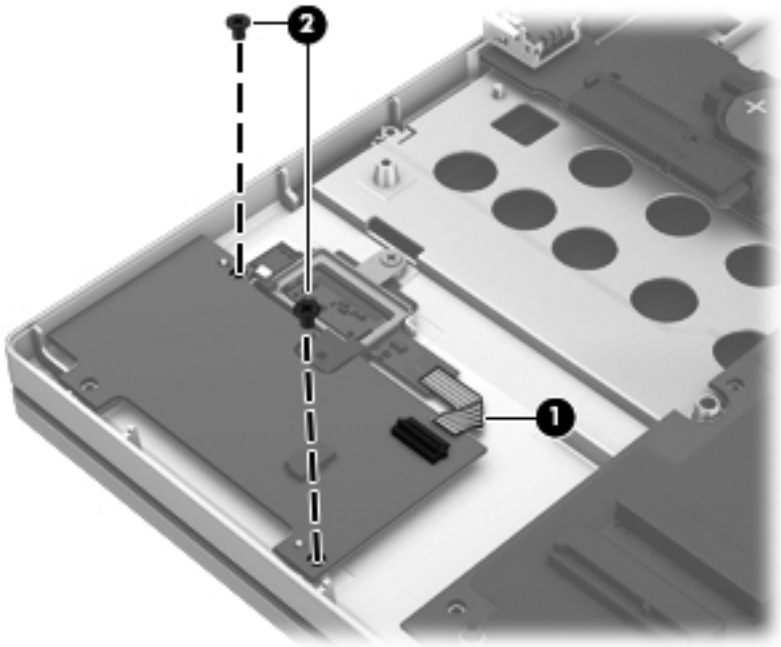
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 45), and then remove the following components:
   a. Service cover (see Service cover on page 47)
   b. Hard drive (see Hard drive on page 48)
   c. WLAN module (see WLAN module on page 51)
   d. WWAN module (see WWAN module on page 53)

e. Keyboard (see Keyboard on page 58)

f. Base enclosure (see Base enclosure on page 63)

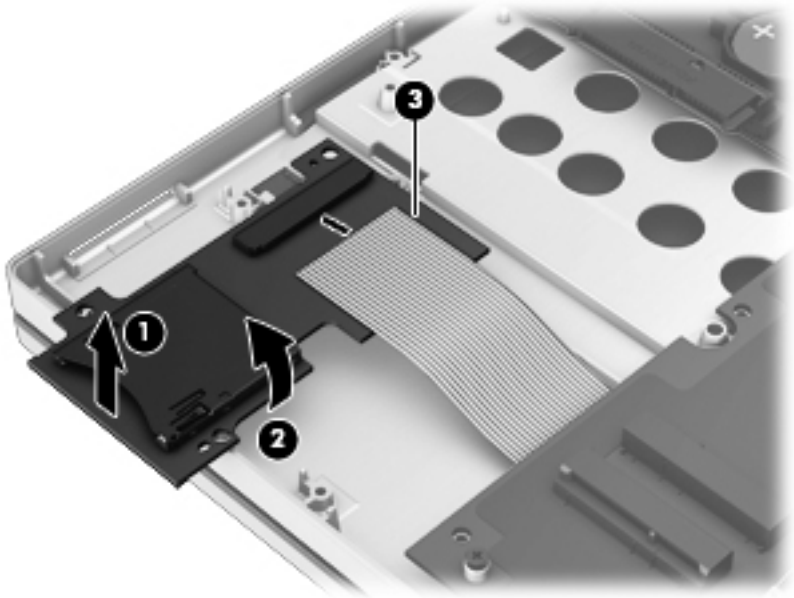
Remove the Media Card reader assembly:

1. Release the ZIF connector to which the fingerprint reader board cable is attached, and then disconnect the fingerprint reader board cable **(1)** from the Media Card reader assembly.
2. Remove the two Phillips PM2.0×3.4 screws **(1)** that secure the Media Card reader assembly to the top cover.



3. Lift the front edge of the Media Card reader assembly **(1)**, and then swing the assembly **(2)** up and to the left.

4. Release the ZIF connector to which the Media Card reader assembly cable is attached, and then disconnect the Media Card reader assembly cable **(3)** from the Media Card reader assembly.



5. Remove the Media Card reader assembly.

Reverse this procedure to install the Media Card reader assembly.

RTC battery

Description	Spare part number
RTC battery	651038-001

Before removing the RTC battery, follow these steps:

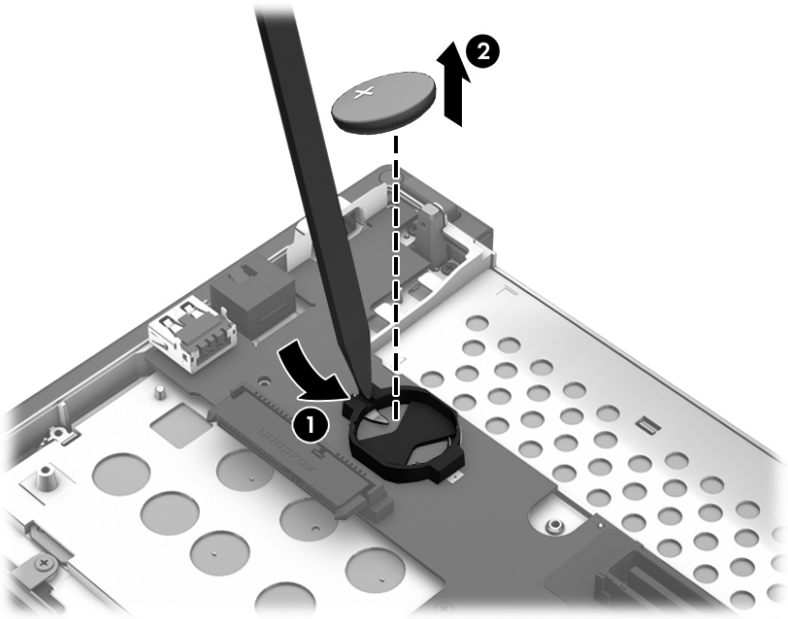
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 45), and then remove the following components:
   a. Service cover (see Service cover on page 47)
   b. Hard drive (see Hard drive on page 48)
   c. WLAN module (see WLAN module on page 51)
   d. WWAN module (see WWAN module on page 53)

e. Keyboard (see Keyboard on page 58)

f. Base enclosure (see Base enclosure on page 63)

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.

System board

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

Description	Spare part number
For use in all countries and regions except the People's Republic of China:	
Equipped with Intel Dual Core i7-3667U 1.80-GHz processor (SC turbo up to 2.90-GHz), 4.0-MB L3 cache, 17 W	693360-001
Equipped with Intel Dual Core i5-3427U 1.70-GHz processor (SC turbo up to 2.70-GHz), 3.0-MB L3 cache, 17 W	693358-001
Equipped with Intel Dual Core i5-3317U 1.70-GHz processor (SC turbo up to 2.60-GHz), 3.0-MB L3 cache, 17 W	693357-001
Equipped with Intel Dual Core i3-3217U 1.80-GHz processor, 3.0-MB L3 cache, 17 W	693356-001
For use only in the People's Republic of China:	
Equipped with Intel Dual Core i7-3667U 1.80-GHz processor (SC turbo up to 2.90-GHz), 4.0-MB L3 cache, 17 W	694511-001
Equipped with Intel Dual Core i5-3427U 1.70-GHz processor (SC turbo up to 2.70-GHz), 3.0-MB L3 cache, 17 W	694510-001
Equipped with Intel Dual Core i5-3317U 1.70-GHz processor (SC turbo up to 2.60-GHz), 3.0-MB L3 cache, 17 W	694509-001
Equipped with Intel Dual Core i3-3217U 1.80-GHz processor, 3.0-MB L3 cache, 17 W	694508-001

Before removing the system board, follow these steps:

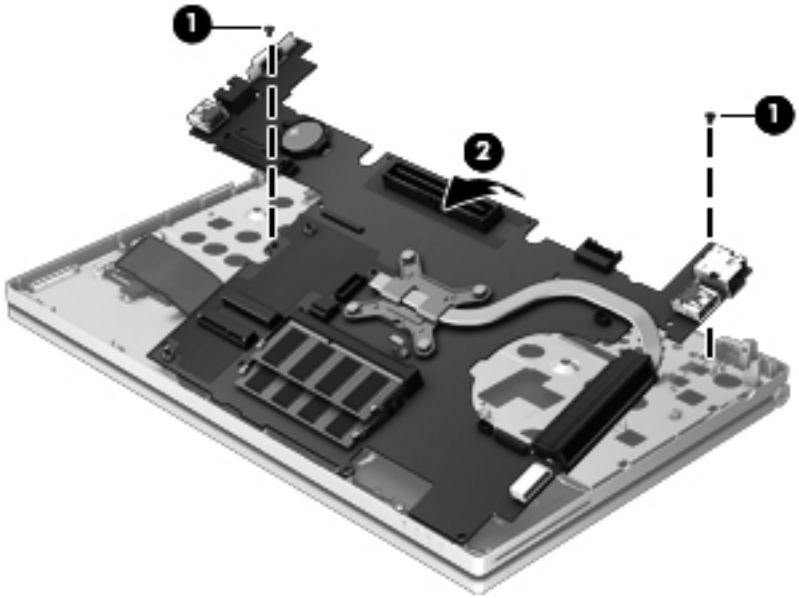
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 45), and then remove the following components:
   a. Service cover (see Service cover on page 47)
   b. Hard drive (see Hard drive on page 48)
   c. WLAN module (see WLAN module on page 51)
   d. WWAN module (see WWAN module on page 53)
   e. Fan (see Fan on page 57)
   f. Keyboard (see Keyboard on page 58)
   g. Base enclosure (see Base enclosure on page 63)

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:

- SIM (see SIM on page 46)
- Memory module (see Memory module on page 55)
- RTC battery (see RTC battery on page 73)
- Heat sink (see Heat sink on page 77)

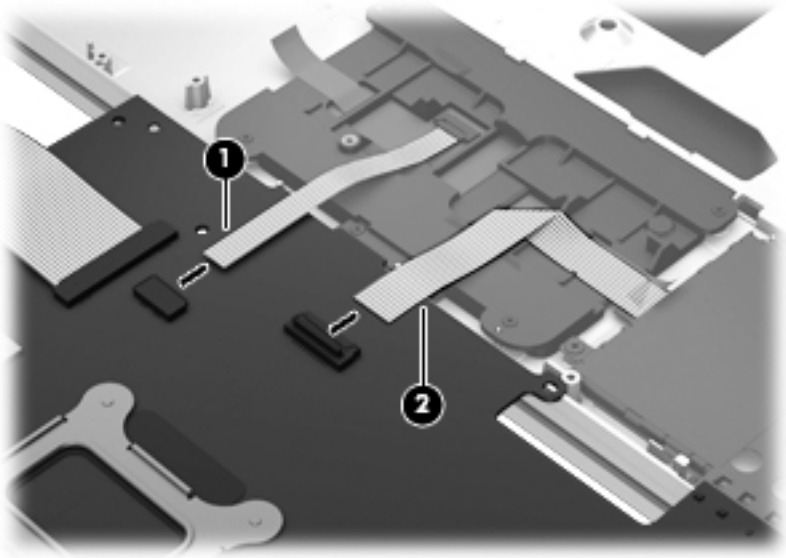
Remove the system board:

1. Remove the two Phillips PM2.0×3.4 screws **(1)** that secure the system board to the top cover.
2. Lift the rear edge of the system board **(2)** and swing it up and forward until it rests upside down in front of the computer.



3. Release the ZIF connector to which the TouchPad cable is connected, and then disconnect the TouchPad cable **(1)** from the system board.

4. Release the ZIF connector to which the Smart Card reader board cable is connected, and then disconnect the Smart Card reader board cable **(2)** from the system board.



5. Remove the system board.

Reverse this procedure to install the system board.

Heat sink

Description	Spare part number
Heat sink (includes replacement thermal material)	693307-001

Before removing the heat sink, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 45), and then remove the following components:
   a. Service cover (see Service cover on page 47)
   b. Hard drive (see Hard drive on page 48)
   c. WLAN module (see WLAN module on page 51)
   d. WWAN module (see WWAN module on page 53)
   e. Fan (see Fan on page 57)
   f. Keyboard (see Keyboard on page 58)

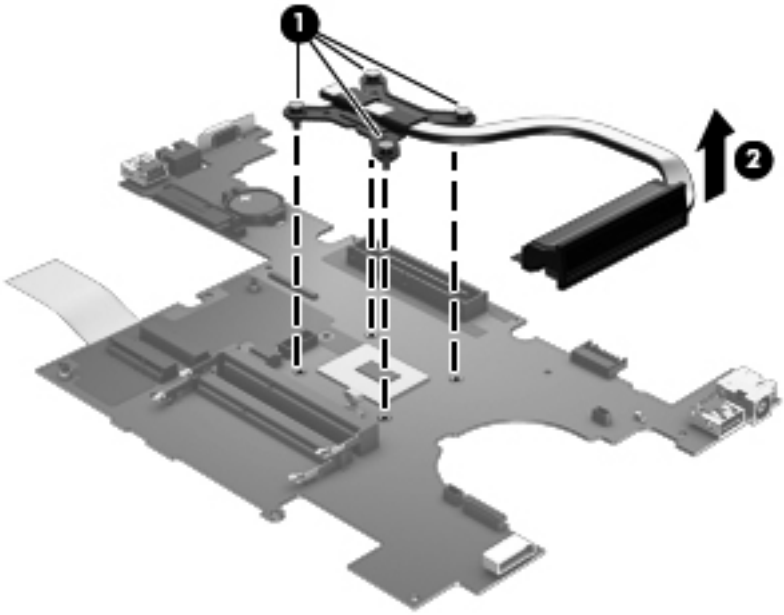
g. Base enclosure (see Base enclosure on page 63)

h. System board (see System board on page 75)

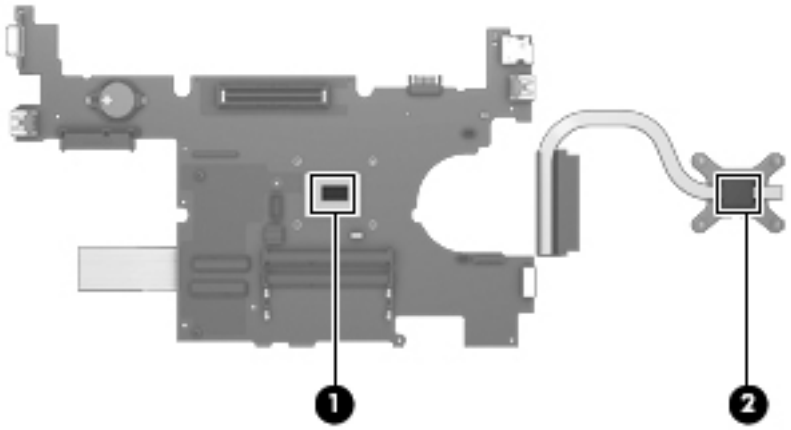
Remove the heat sink:

1. Following the 1, 2, 3, 4 sequence stamped into the heat sink, loosen the four captive Phillips screws **(1)** that secure the heat sink to the system board.
2. Remove the heat sink **(2)**.

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



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



Reverse this procedure to install the heat sink.

Smart Card reader assembly

Description	Spare part number
Smart Card reader assembly (includes cable)	693312-001

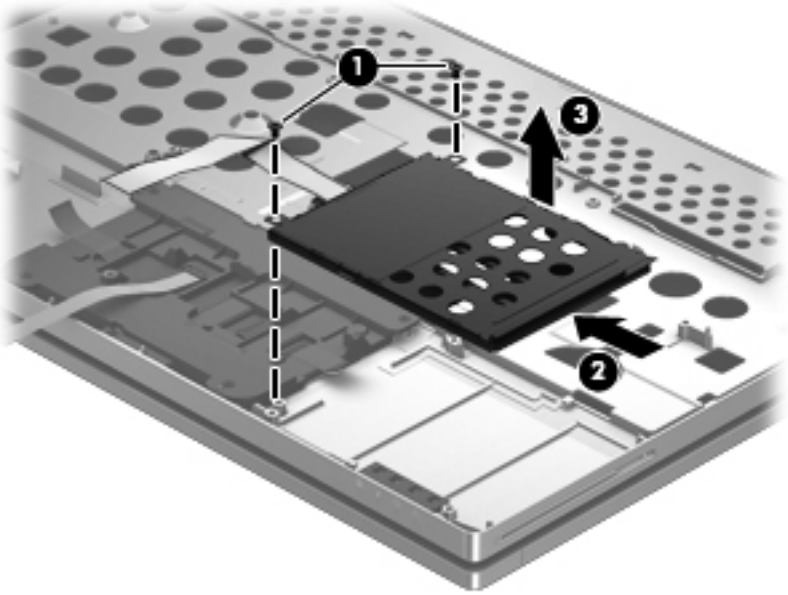
Before removing the Smart Card reader assembly, follow these steps:

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 on page 45), and then remove the following components:
   a. Service cover (see Service cover on page 47)
   b. Hard drive (see Hard drive on page 48)
   c. WLAN module (see WLAN module on page 51)
   d. WWAN module (see WWAN module on page 53)
   e. Fan (see Fan on page 57)
   f. Keyboard (see Keyboard on page 58)
   g. Base enclosure (see Base enclosure on page 63)
   h. System board (see System board on page 75)

Remove the Smart Card reader assembly:

1. Remove the two Phillips PM2.0×3.4 screws **(1)** that secure the Smart Card reader assembly to the top cover.
2. Slide the Smart Card reader assembly **(2)** to the left to release it from the clips built into the top cover.

3. Remove the Smart Card reader assembly **(3)**.



Reverse this procedure to install the Smart Card reader assembly.

Top cover

NOTE: The top cover spare part kit includes the TouchPad. The TouchPad cable is included in the Cable Kit, spare part number 693306-001.

Description	Spare part number
For use on computer models equipped with a fingerprint reader	693317-001
For use on computer models not equipped with a fingerprint reader	694507-001

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

Before removing the display 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 on page 45), and then remove the following components:
   a. Service cover (see Service cover on page 47)
   b. Hard drive (see Hard drive on page 48)
   c. WLAN module (see WLAN module on page 51)

d. WWAN module (see WWAN module on page 53)

e. Fan (see Fan on page 57)

f. Keyboard (see Keyboard on page 58)

g. Base enclosure (see Base enclosure on page 63)

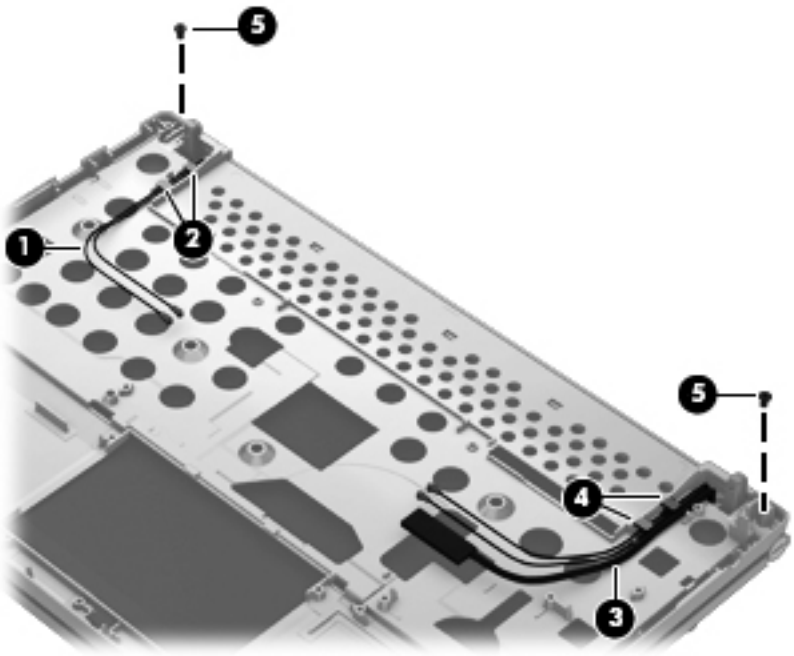
h. System board (see System board on page 75)

NOTE: When replacing the top cover, be sure to remove the following components from the defective top cover and install them on the replacement top cover:

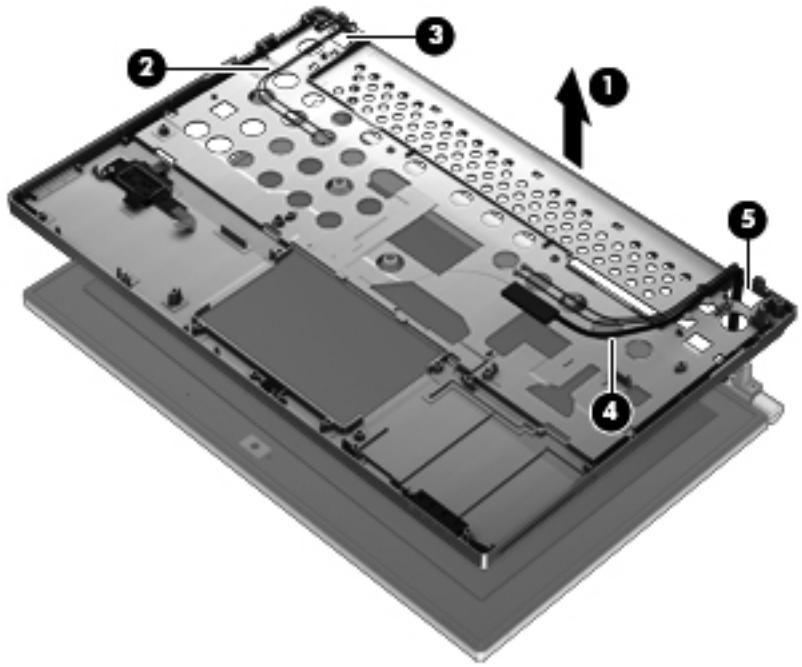
- Fingerprint reader board (see Fingerprint reader board on page 50)
- Media Card reader assembly (see Media Card reader assembly on page 71)
- Smart Card reader assembly (see Smart Card reader assembly on page 79)

Remove the top cover:

1. Release the left-side wireless antenna cables **(1)** from the clips **(2)** and routing channel built into the top cover.
2. Release the display panel cable **(3)** and right-side wireless antenna cables from the clips **(4)** and routing channel built into the top cover.
3. Remove the two Phillips PM2.0×5.0 screws **(5)** that secure the top cover to the display assembly.



4. Disengage the top cover **(1)** from the display assembly, making sure to guide the left-side wireless antenna cables **(2)** through the top cover left-side opening **(3)** and the display panel cable **(4)** and the right-side wireless antenna cables through the top cover right-side opening **(5)**.



Reverse this procedure to install the top cover.

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 access the display assembly subcomponents, follow these steps:

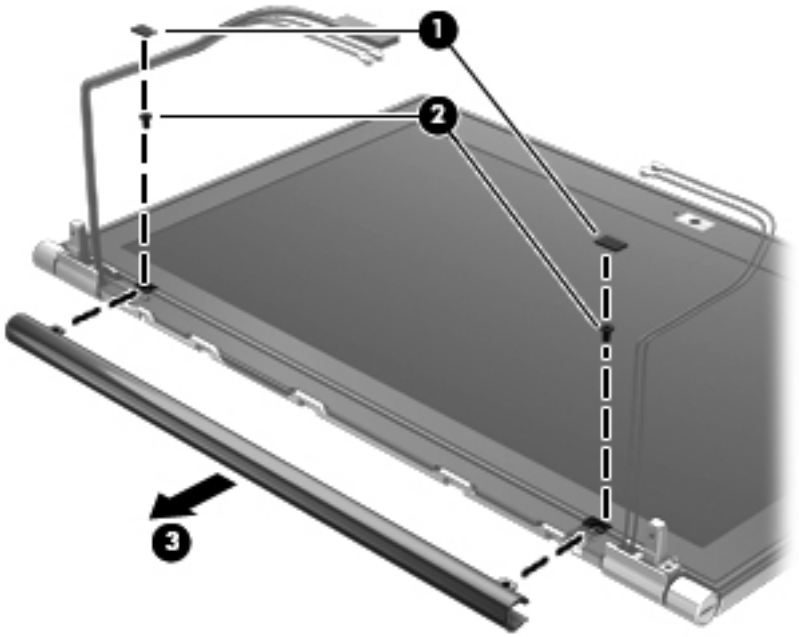
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 45), and then remove the following components:
   a. Service cover (see Service cover on page 47)
   b. Hard drive (see Hard drive on page 48)
   c. Optical drive (see Hard drive on page 48)
   d. WLAN module (see WLAN module on page 51)
   e. WWAN module (see WWAN module on page 53)
   f. Fan (see Fan on page 57)
   g. Keyboard (see Keyboard on page 58)
   h. Base enclosure (see Base enclosure on page 63)
   i. System board (see System board on page 75)
1. If it is necessary to replace the display bezel or any of the display assembly subcomponents:
   a. Remove the display bezel screw covers **(1)**.

      The display bezel screw covers are available in the Rubber Kit, spare part number 693355-001.

   b. Remove the two Phillips PM2.0×4.2 screws **(2)** that secure the display bezel and the display clutch cover to the display assembly.

c. Remove the display clutch cover **(3)**.

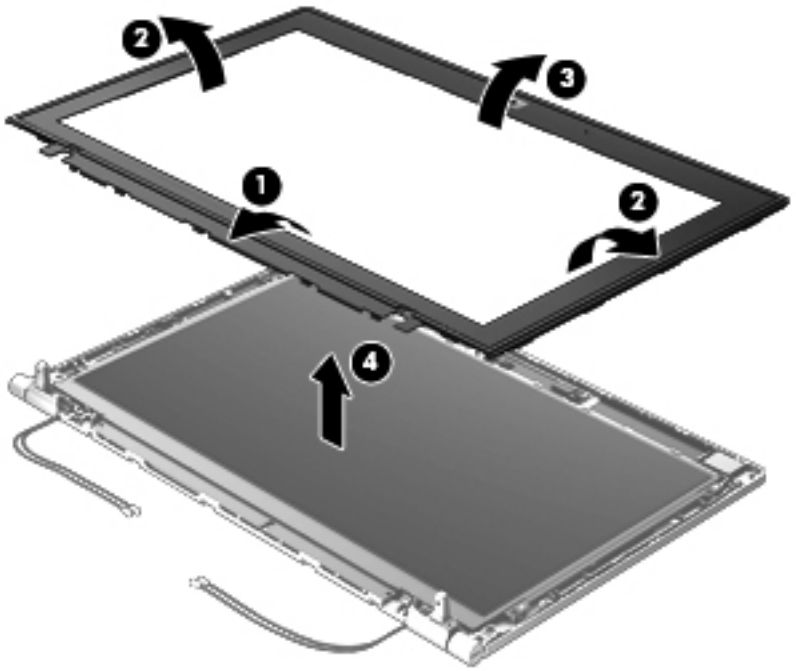
The display clutch cover is available using spare part number 693311-001.



d. 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.

e. Remove the display bezel **(4)**.

The display bezel is available using spare part numbers 693302-001 (for use on computer models equipped with a webcam) and 693303-001 (for use on computer models not equipped with a webcam).



2. If it is necessary to replace the display hinges, display hinge covers, and/or display hinge caps:

   a. Remove the two Phillips PM2.0×4.2 screws **(1)** that secure the display hinge to the display enclosure.

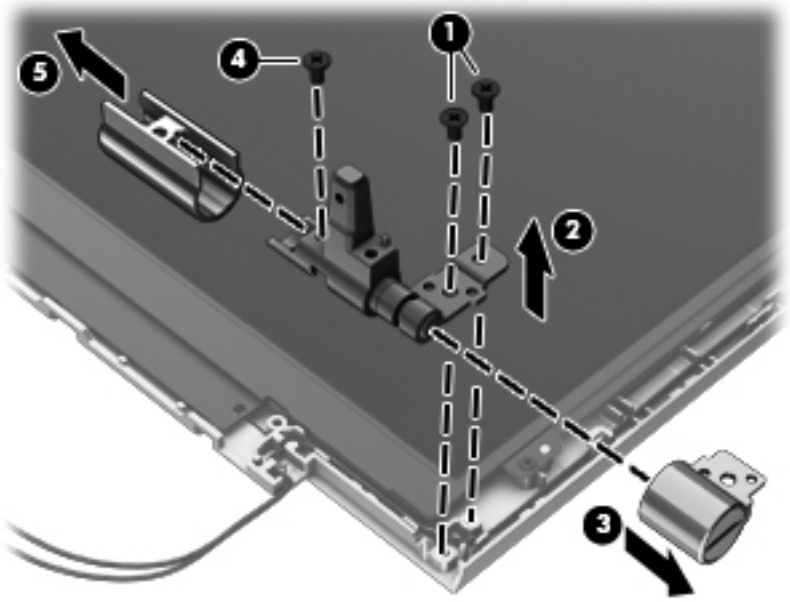
   b. Remove the display hinge **(2)** from the display enclosure.

   c. Remove the display hinge cap **(3)** from the display hinge.

   d. Remove the Phillips PM2.0×4.2 screw **(4)** that secures the display hinge cover to the display hinge.

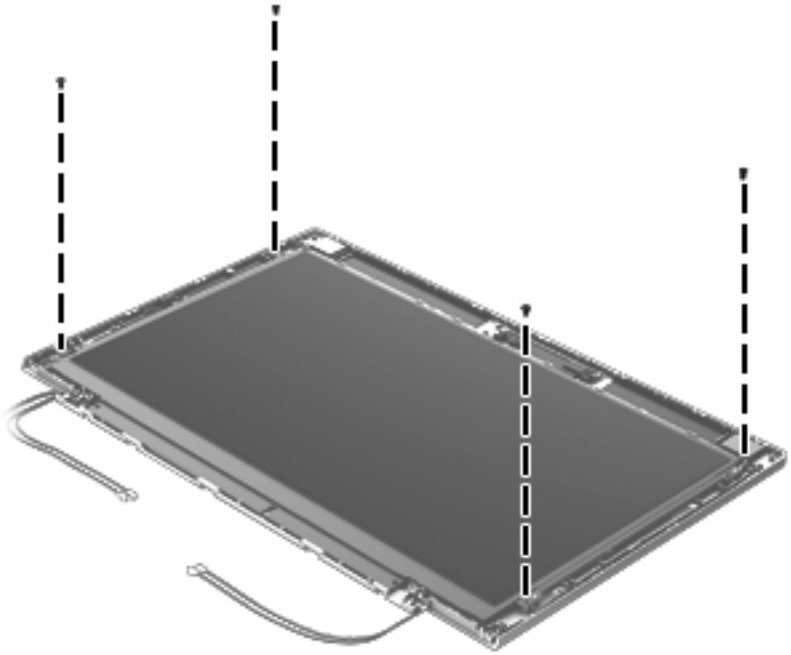
   e. Remove the display hinge cover **(5)** from the display hinge.

      The display hinges, display hinge caps, and display hinge covers are included in the Display Hinge Cover Kit, spare part number 693310-001.



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

   a. Remove the four Phillips PM2.0×4.2 screws **(1)** that secure the display panel to the display enclosure.



   b. Release the display panel cable **(1)** from the clips **(2)** and routing channel built into the bottom edge of the display enclosure.

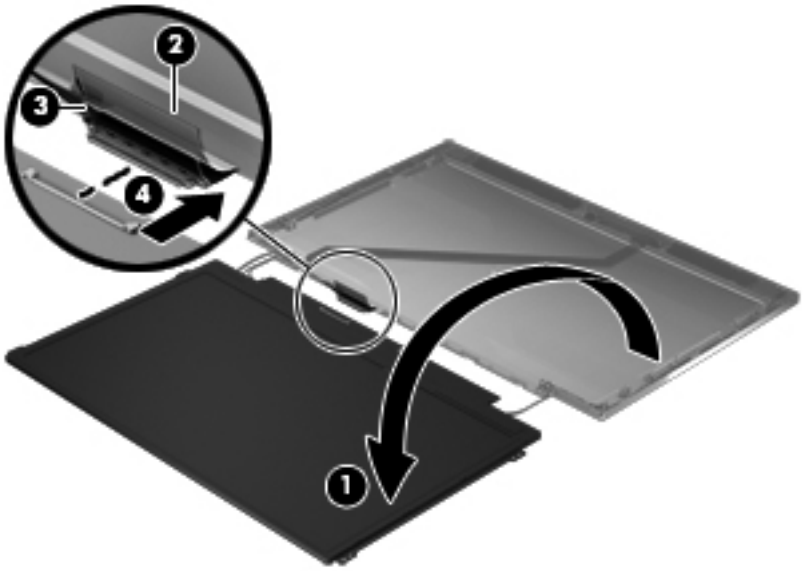
> ⚠ **CAUTION:** Before turning the display panel upside down, make sure the work surface is clear of tools, screws, and any other foreign objects. Failure to follow this caution can result in damage to the display panel.

   c. Lift the top edge of the display panel **(3)** and swing it up and forward until it rests upside down in front of the display enclosure.

   d. Release the adhesive support strip **(4)** that secures the display panel cable to the display panel.

   e. Release the support bar **(5)** that secures the display panel cable to the display panel.

f. Disconnect the display panel cable **(6)** from the display panel.



g. Remove the display panel.

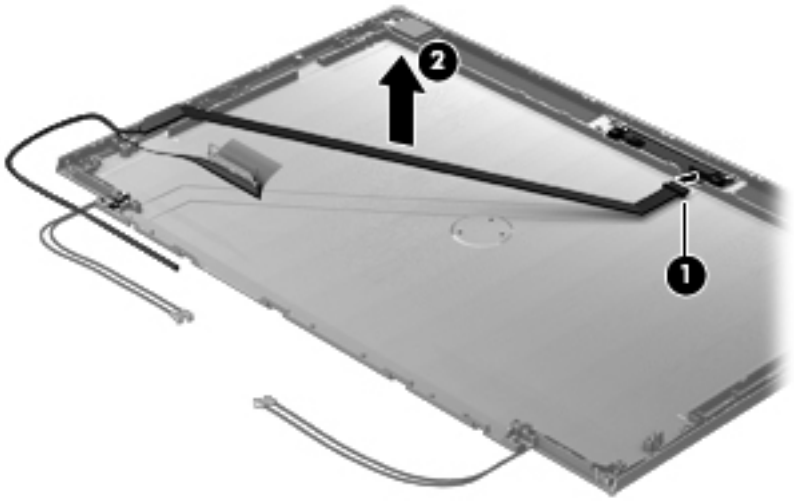
The display panel is available using spare part number 693361-001.

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

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

b. Remove the display panel cable **(2)**.

The display panel cable is included in the Display Cable Kit, spare part number 693305-001.



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

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

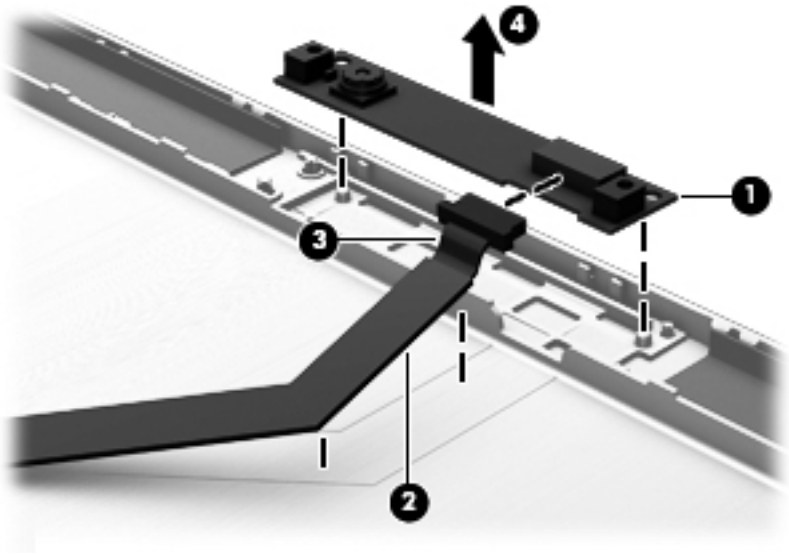
   a. Detach the webcam/microphone module **(1)** from the display enclosure. (The webcam/microphone module is attached to the display enclosure with double-sided tape.)

   b. Detach the webcam/microphone module cable **(2)** from the display enclosure. (The webcam/microphone module cable is attached to the display enclosure with double-sided tape.)

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

   d. Remove the webcam/microphone module **(4)**.

      The webcam/microphone module is available using spare part number 693318-001. The microphone module is available using spare part number 693313-001.

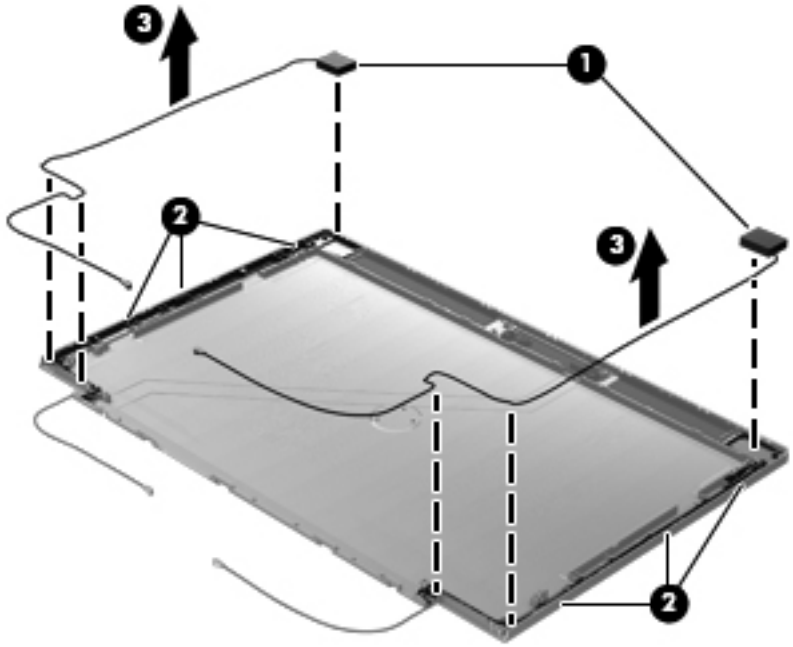


6. If it is necessary to replace the WLAN antenna cables and transceivers:

   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 channel 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 693299-001.

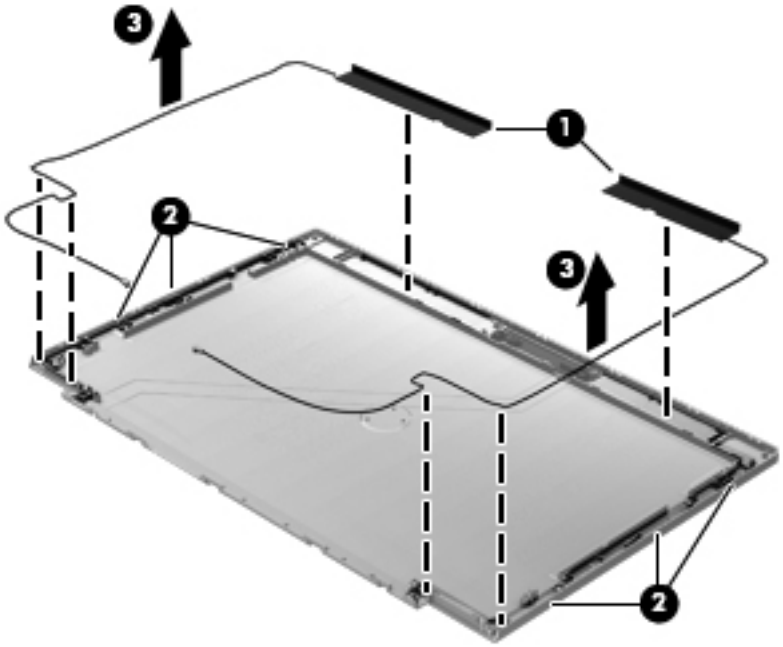


7. If it is necessary to replace the WWAN antenna cables and transceivers:

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

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

c. Remove the WWAN antenna cables and transceivers **(3)**. The WWAN antenna cables and transceivers are included in the Antenna Kit, spare part number 693299-001.



Reverse this procedure to reassemble and install the display assembly.

5 Computer Setup (BIOS) and Advanced System Diagnostics

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

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

Starting Computer Setup

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

To start Computer Setup, follow these steps:

1. Turn on or restart the computer, and then press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.
2. Press f10 to enter Computer Setup.

Using Computer Setup

Navigating and selecting in Computer Setup

To navigate and select in Computer Setup, follow these steps:

1. Turn on or restart the computer, and then press esc while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.

   - To select a menu or a menu item, use the tab key and the keyboard arrow keys and then press enter, or use a pointing device to click the item.
   - To scroll up and down, click the up arrow or the down arrow in the upper-right corner of the screen, or use the up arrow key or the down arrow key.
   - To close open dialog boxes and return to the main Computer Setup screen, press esc, and then follow the on-screen instructions.

   NOTE: You can use either a pointing device (TouchPad, pointing stick, or USB mouse) or the keyboard to navigate and make selections in Computer Setup.

2. Press f10 to enter Computer Setup.

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

- To exit Computer Setup menus without saving your changes, click the **Exit** icon in the lower-left corner of the screen, and then follow the on-screen instructions.

  – or –

  Use the tab key and the arrow keys to select **File > Ignore Changes and Exit**, and then press enter.

  – or –

- To save your changes and exit Computer Setup menus, click the **Save** icon in the lower-left corner of the screen, and then follow the on-screen instructions.

  – or –

  Use the tab key and the arrow keys to select **File > Save Changes and Exit**, and then press enter.

Your changes go into effect when the computer restarts.

Restoring factory settings in Computer Setup

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

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

1. Turn on or restart the computer, and then press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.
2. Press f10 to enter Computer Setup.
3. Use a pointing device or the arrow keys to select **File > Restore Defaults**.
4. Follow the on-screen instructions.
5. To save your changes and exit, click the **Save** icon in the lower-left corner of the screen, and then follow the on-screen instructions.

   – or –

   Use the arrow keys to select **File > Save Changes and Exit**, and then press enter.

Your changes go into effect when the computer restarts.

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

Updating the BIOS

Updated versions of the BIOS may be available on the HP Web site.

Most BIOS updates on the HP Web site 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 as follows:

1. Start Computer Setup.
2. Use a pointing device or the arrow keys to select **File > System Information**.
3. To exit Computer Setup without saving your changes, click the **Exit** icon in the lower-left corner of the screen, and then follow the on-screen instructions.

   – or –

   Use the tab key and the arrow keys to select **File > Ignore Changes and Exit**, and then press enter.

NOTE: You can also determine the BIOS version by turning on or restarting the computer, pressing the esc key while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen, and then pressing the f1 key. Follow the on-screen instructions to exit this screen.

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 Suspend or Hibernation.

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

1. Open your Web browser. 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.
2. Follow the on-screen instructions to identify your computer and access the BIOS update you want to download.
3. Click the option for software and driver downloads, type your computer model number in the product box, and then press enter. Follow the on-screen instructions to identify your computer and access the BIOS update you want to download.
4. Click your specific product from the models listed.
5. Click the appropriate operating system.
6. Go to the BIOS section and download the BIOS software package.
7. Follow the installation instructions as provided with the downloaded BIOS software package.

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

Using Advanced System Diagnostics

Advanced System Diagnostics allows you to run diagnostic tests to determine if the computer hardware is functioning properly. The following diagnostic tests are available in Advanced System Diagnostics:

- Start-up test—This test analyzes the main computer components that are required to start the computer.
- Run-in test—This test repeats the start-up test and checks for intermittent problems that the start-up test does not detect.
- Hard disk test—This test analyzes the physical condition of the hard drive, and then checks all data in every sector of the hard drive. If the test detects a damaged sector, it attempts to move the data to a good sector.
- Memory test—This test analyzes the physical condition of the memory modules. If it reports an error, replace the memory modules immediately.
- Battery test—This test analyzes the condition of the battery and calibrates the battery if necessary. If the battery fails the test, contact support to report the issue and purchase a replacement battery.
- System Tune-Up—This group of additional tests checks your computer to make sure that the main components are functioning correctly. System Tune-Up runs longer and more comprehensive tests on memory modules, hard drive SMART attributes, the hard drive surface, the battery (and battery calibration), video memory, and the WLAN module status.

You can view system information and error logs in the Advanced System Diagnostics window.

To start Advanced System Diagnostics:

1. 1. Turn on or restart the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press esc. When the Startup Menu is displayed, 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 diagnostics test while it is running, press esc.

6 Specifications

Computer specifications

	Metric	U.S.
Dimensions		
Width	**29.20 cm**	11.50 in
Depth	**19.20 cm**	7.56 in
Height	**2.65 cm**	1.04 in
Weight (equipped with 4-cell battery, hard drive, 1 memory module, and WLAN module)	**1.33 kg**	2.93 lbs
Input power		
Operating voltage and current	18.5 V dc @ 3.5 A - 65 W 18.5 V dc @ 3.5 A - 65 W, Slim Adapter 19.5 V dc @ 3.33 A - 65 W	
Temperature		
Operating	**5°C to 35°C**	41°F to 95°F
Nonoperating	**-20°C to 60°C**	-4°F to 140°F
Relative humidity (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	**-15 m to 3,048 m**	-50 ft to 10,000 ft
Nonoperating	**-15 m to 12,192 m**	-50 ft to 40,000 ft

NOTE: Applicable product safety standards specify thermal limits for plastic surfaces. The device operates well within this range of temperatures.

11.6-inch SGA display specifications

	Metric	U.S.
Dimensions		
Height	**14.70 cm**	5.79 in
Width	**25.90 cm**	10.20 in
Diagonal	**29.50 cm**	11.61 in
Number of colors	Up to 16.8 million	
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	2.0 W	
Viewing angle	±65° horizontal, ±50° vertical (typical)	

Hard drive specifications

	750-GB*	500-GB*	320-GB*
Dimensions			
Height	9.5 mm	9.5 mm	9.5 mm
Length	100.2 mm	100.4 mm	100.4 mm
Width	69.9 mm	69.9 mm	69.9 mm
Weight	110 g	110 g	110 g
Interface type	SATA	SATA	SATA
Transfer rate			
Synchronous (maximum)	1.1 GB/sec	1.1 GB/sec	1.1 GB/sec
Security	ATA security	ATA security	ATA security
Seek times (typical read, including setting)			
Single track	2.0 ms	1.5 ms	1.5 ms
Average (read/write)	12/16 ms	11/13 ms	11/13 ms
Maximum	22 ms	22 ms	22 ms
Logical blocks	1,465,149,168	976,773,168	628,142,448
Disk rotational speed	7200 rpm	7200 rpm	7200 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 Backup and recovery

To protect your information, use Windows Backup and Restore to back up individual files and folders, back up your entire hard drive (select models only), create system repair discs (select models only) with the installed optical drive (select models only) or an optional external optical drive, or create system restore points. In case of system failure, you can use the backup files to restore the contents of your computer.

Windows Backup and Restore provides the following options:

- Creating a system repair disc (select models only) by using the installed optical drive (select models only) or an optional external optical drive
- Backing up your information
- Creating a system image (select models only)
- Scheduling automatic backups (select models only)
- Creating system restore points
- Recovering individual files
- Restoring the computer to a previous state
- Recovering information using recovery tools

NOTE: For detailed instructions, perform a search for these topics in Help and Support.

In case of system instability, HP recommends that you print the recovery procedures and save them for later use.

NOTE: Windows includes the User Account Control feature to improve the security of your computer. You may be prompted for your permission or password for tasks such as installing software, running utilities, or changing Windows settings. See Help and Support for more information.

Creating recovery media with HP Recovery Disc Creator

HP Recovery Disc Creator is a software program that offers an alternative way to create recovery media. After you successfully set up the computer, you can create recovery media using HP Recovery Disc Creator. This recovery media allows you to reinstall your original operating system as well as select drivers and applications if the hard drive becomes corrupted.

HP Recovery Disc Creator can create two kinds of recovery DVDs as follows:

- Windows DVD—Installs the operating system without additional drivers or applications.
- Driver DVD—Installs specific drivers and applications only, in the same way that the HP Software Setup utility installs drivers and applications.

Creating recovery media

NOTE: The Windows DVD can be created only once. Thereafter, the option to create that media will not be available.

1. Select **Start > All Programs > Productivity and Tools > HP Recovery Disc Creator**.
2. Select **Driver DVD** or **Windows DVD**.
3. From the drop-down menu, select the drive for burning the recovery media.
4. Click the **Burn** button to start the burning process.

Backing up your information

Recovery after a system failure is as good as your most recent backup. Immediately after setting up the computer, you should create system repair discs (select models only) using the installed optical drive (select models only) or an optional external optical drive and back up your system. As you add new software and data files, you should continue to back up your system on a regular basis to maintain a reasonably current backup. The system repair discs (select models only) are used to start up (boot) the computer and repair the operating system in case of system instability or failure. Your initial and subsequent backups allow you to restore your data and settings if a failure occurs.

You can back up your information to an optional external hard drive, a network drive, or discs.

Note the following when backing up:

- Store personal files in the Documents library, and back it up regularly.
- Back up templates that are stored in their associated programs.
- Save customized settings that appear in a window, toolbar, or menu bar by taking a screen shot of your settings. The screen shot can be a time-saver if you have to reset your preferences.

- When backing up to discs, use any of the following types of discs (purchased separately): CD-R, CD-RW, DVD+R, DVD+R DL, DVD-R, DVD-R DL, or DVD±RW. The discs you use will depend on the type of optical drive you are using.

NOTE: DVDs and DVDs with double-layer (DL) support store more information than CDs, so using them for backup reduces the number of recovery discs required.

- When backing up to discs, number each disc before inserting it into the external drive.

To create a backup using Backup and Restore:

NOTE: Be sure that the computer is connected to AC power before you start the backup process.

NOTE: The backup process may take over an hour, depending on file size and the speed of the computer.

1. Select **Start > All Programs > Maintenance > Backup and Restore**.
2. Follow the on-screen instructions to set up your backup, create a system image (select models only), or create a system repair disc (select models only).

Performing a system recovery

In case of system failure or instability, the computer provides the following tools to recover your files:

- Windows recovery tools: You can use Windows Backup and Restore to recover information you have previously backed up. You can also use Windows Startup Repair to fix problems that might prevent Windows from starting correctly.
- f11 recovery tools: You can use the f11 recovery tools to recover your original hard drive image. The image includes the Windows operating system and software programs installed at the factory.

NOTE: If you are unable to boot (start up) your computer and you cannot use the system repair discs you previously created (select models only), you must purchase a Windows 7 operating system DVD to reboot the computer and repair the operating system. For additional information, see the Using a Windows 7 operating system DVD (purchased separately) section.

Using the Windows recovery tools

To recover information you previously backed up:

1. Select **Start > All Programs > Maintenance > Backup and Restore**.
2. Follow the on-screen instructions to recover your system settings, your computer (select models only), or your files.

To recover your information using Startup Repair, follow these steps:

CAUTION: Some Startup Repair options completely erase hard drive contents and reformat the hard drive. All files you have created and any software installed on the computer are permanently removed. When reformatting is complete, the recovery process restores the operating system, as well as the drivers, software, and utilities from the backup used for recovery.

1. If possible, back up all personal files.
2. If possible, check for the presence of the Windows partition.

   To check for the Windows partition, select **Start > Computer**.
3. If the Windows partition is listed, restart the computer, and then press f8 before the Windows operating system loads.
4. Select **Startup Repair**.
5. Follow the on-screen instructions.

NOTE: For additional information on recovering information using the Windows tools, perform a search for these topics in Help and Support.

Using f11 recovery tools

CAUTION: Using f11 recovery tools completely erases hard drive contents and reformats the hard drive. All files you have created and any software installed on the computer are permanently removed. The f11 recovery tool reinstalls the operating system and HP programs and drivers that were installed at the factory. Software not installed at the factory must be reinstalled.

To recover the original hard drive image using f11:

1. If possible, back up all personal files.
2. If possible, check for the presence of the HP Recovery partition: click **Start**, right-click **Computer**, click **Manage**, and then click **Disk Management**.

   NOTE: If the HP Recovery partition has been deleted, the f11 restore option will not function. You must recover your operating system and programs using the Windows 7 operating system DVD and the Driver Recovery disc (both purchased separately) if the Windows partition and the HP Recovery partition are not listed. For additional information, see the Using a Windows 7 operating system DVD (purchased separately) section.
3. If the HP Recovery partition is listed, restart the computer, and then press esc while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.
4. Press f11 while the “Press <F11>” for recovery” message is displayed on the screen.
5. Follow the on-screen instructions.

Using a Windows 7 operating system DVD (purchased separately)

To order a Windows 7 operating system DVD, go to 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. You can also order the DVD by calling support. For contact information, see the *Worldwide Telephone Numbers* booklet included with the computer.

CAUTION: Using a Windows 7 operating system DVD completely erases hard drive contents and reformats the hard drive. All files you have created and any software installed on the computer are permanently removed. When reformatting is complete, the recovery process helps you restore the operating system, as well as drivers, software, and utilities.

To initiate recovery using a Windows 7 operating system DVD:

NOTE: This process takes several minutes.

1. If possible, back up all personal files.
2. Restart the computer, and then insert the Windows 7 operating system DVD into the optical drive before the Windows operating system loads.
3. When prompted, press any keyboard key.
4. Follow the on-screen instructions.
5. Click **Next**.
6. Select **Repair your computer**.
7. Follow the on-screen instructions.

After the repair is completed:

1. Eject the Windows 7 operating system DVD, and then insert the Driver Recovery disc.
2. Install the Hardware Enabling Drivers first, and then install Recommended Applications.

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
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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