HP EliteBook 8470w Mobile Workstation and HP EliteBook 8470p Notebook PC computer model

Maintenance and Service Guide

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First Edition: May 2012

Document Part Number: 677157-001

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	HP EliteBook 8470w Mobile Workstation computer model	HP EliteBook 8470p Notebook PC computer model
Product Name	HP EliteBook 8470w Mobile Workstation computer model	√	
	HP ProBook 8470p Notebook PC computer model		√
Processors	• Intel® Quad Core® i7-3820QM 2.70-GHz processor (SC turbo up to 3.70-GHz; 1600-MHz FSB, 8.0-MB L3 cache, 45 W)	√	
	• Intel Quad Core i7-3720QM 2.60-GHz processor (SC turbo up to 3.60-GHz; 1600- MHz FSB, 6.0-MB L3 cache, 45 W) • Intel Quad Core i7-3610QM 2.30-GHz processor (SC turbo up to 3.30-GHz; 1600- MHz FSB, 6.0-MB L3 cache, 45 W) • Intel Dual Core i7-3520M 2.90-GHz processor (SC turbo up to 3.60-GHz; 1600-MHz FSB, 4.0-MB L3 cache, 35 W) • Intel Dual Core i5-3360M 2.80-GHz processor (SC turbo up to 3.50-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W) • Intel Dual Core i5-3320M 2.60-GHz processor (SC turbo up to 3.30-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W)	√	√

Category	Description	HP EliteBook 8470w Mobile Workstation computer model	HP EliteBook 8470p Notebook PC computer model
	• Intel Dual Core i5-3210M 2.50-GHz processor (SC turbo up to 3.10-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W) • Intel Core i3-3110M 2.40-GHz processor (1600-MHz FSB, 3.0-MB L3 cache, 35 W)		√
Chipset	Mobile Intel QM77 chipset	√	√
Graphics	**Switchable discrete graphics**: AMD FirePro™ M2000 (64-bit), with 1024-MB GDDR5 (64-MB × 32,1.5V, 5-GBPS, quantity 4); supports open GL	√	
	Switchable discrete graphics: AMD Radeon™ HD 7570M (64-bit), with 1024-MB GDDR5 (64-MB × 32,1.5V, 5-GBPS, quantity 4) **Internal graphics:** • Universal memory architecture (UMA) with shared video memory • Intel HD Graphics 4000		√
	• Support for dual-display ports through docking station • Support for DisplayPort 1.2 (only on computer models equipped with a graphics subsystem with discrete memory) • Support for up to 4 displays through the APR (only on computer models equipped with a graphics subsystem with discrete memory)	√	√

Category	Description	HP EliteBook 8470w Mobile Workstation computer model	HP EliteBook 8470p Notebook PC computer model
Panel	• 14.0-in light-emitting diode (LED), high-definition+ (HD+), AntiGlare (AG), SVA (1600×900) display with and without webcam and microphone • 14.0-in LED, HD, AG, SVA (1366×768) 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 16:9 aspect ratio Supports privacy filter	√	√
Memory	Two customer-accessible/upgradable memory module slots DDR3-1600-MHz dual channel support Supports 16384-MB of system RAM in the following configurations: • 16384-MB (8192-MB×2) • 8192-MB (8192-MB×1 or 4096×2) • 8192-MB (8192-MB×1 or 4096×2; not supported on computer models equipped with a 32-bit operating system) • 6144-MB (4096-MB+2048-MB) • 4096-MB (4096-MB×1 or 2048-MB×2) • 2048-MB (2048×1)	√	√
Flash cache	Intel 24-GB mSATA module (Intel Smart Response Technology (SRT), not available on computer models equipped with WWAN or SSD)	√	√

Category	Description	HP EliteBook 8470w Mobile Workstation computer model	HP EliteBook 8470p Notebook PC computer model
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 III Supports the following SSDs: • 256-GB SED • 180-GB • 160-GB • 128-GB	√	
Upgrade drive	Customer-accessible Supports the following drive options: • Blu-ray R/RE DVD±RW SuperMulti DL Drive • Blu-ray ROM DVD±RW SuperMulti DL Drive • DVD±RW Double-Layer with SuperMulti Drive • DVD-ROM Drive • 500-GB, 7200-rpm, 9.5-mm Supports no drive option	√	

Category	Description	HP EliteBook 8470w Mobile Workstation computer model	HP EliteBook 8470p Notebook PC computer model
	Customer-accessible		√
	Supports the following drive options: • Blu-ray ROM DVD±RW SuperMulti DL Drive • DVD±RW Double-Layer with SuperMulti Drive • DVD-ROM Drive • 500-GB, 7200-rpm, 9.5-mm		
	Supports no drive option		
Optical drive	Fixed	√	
	Serial ATA		
	12.7-mm tray load		
	Supports the following optical drives: • Blu-ray R/RE DVD±RW SuperMulti DL Drive • Blu-ray ROM DVD±RW SuperMulti DL Drive • DVD±RW Double-Layer with SuperMulti Drive • DVD-ROM Drive		
	Supports zero power optical drive		
	Fixed		√
	Serial ATA		
	12.7-mm tray load		
	Supports the following optical drives: • Blu-ray ROM DVD±RW SuperMulti DL Drive • DVD±RW Double-Layer with SuperMulti Drive • DVD-ROM Drive		
	Supports zero power optical drive		
Audio and video	Two stereo speakers	√	√
	HD audio with SRS Premium Sound PRO	√	√

Category	Description	HP EliteBook 8470w Mobile Workstation computer model	HP EliteBook 8470p Notebook PC computer model
	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	√	√
Modem	56kbps v.92 MDC data/fax modem module Supports no modem option Modem module cable not included	√	√
Ethernet	Intel 82579LM 10/100/1000 Ethernet network interface card (NIC) with iAMT Intel 82579LM Gigabit Network Connection NIC Power Down technology S3/S4/S5 wake on LAN Ethernet cable not included	√	√
Wireless	Integrated wireless personal area network (WPAN) option by way of Bluetooth 4.0 enhanced data rate (EDR) module Supports no WPAN option	√	√
	Integrated wireless local area network (WLAN) options by way of wireless module Three WLAN antennas built into display assembly Support for the following WLAN formats: • Atheros WB225 1×1 802.11b/g/n Bluetooth Combo Adapter • Broadcom 43228 802.11abgn 2×2 Wi-Fi Adapter • Intel Centrino Advanced-N 6205 WLAN module • Intel Centrino Ultimate-N 6300 WLAN module • Intel Centrino Wireless-N 2200 802.11b/g/n 2×2 WiFi Adapter Supports no WLAN option	√	√

Category	Description	HP EliteBook 8470w Mobile Workstation computer model	HP EliteBook 8470p Notebook PC computer model
	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 behind battery) 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 Supports no WWAN option Supports WWAN after market option	√	√
External media cards	Integrated 54-mm ExpressCard Secure Digital (SD) flash media slot with push-push technology, supporting the following digital card formats: • MultiMediaCard (MMC) • MMC+ • Secure Digital (SD) Memory Card • SDHC • SDXC	√	√

Category	Description	HP EliteBook 8470w Mobile Workstation computer model	HP EliteBook 8470p Notebook PC computer model
Ports	• 1394a port • Audio-in (mono microphone) • Audio-out (stereo headphone) • Battery connector • DisplayPort 1.2 (on computer models equipped with a graphics subsystem with discrete memory) • DisplayPort 1.1a (on computer models equipped with a graphics subsystem with UMA memory) • Docking connector • eSATA/USB 2.0 combo port • HP Smart AC adapter • RJ-45 (Ethernet) • RJ-11 (modem) • Secondary battery connector • Serial port • USB 3.0 ports (2) • USB 2.0 port • USB 2.0 charging 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	Full-size keyboard with numeric keypad (upper-left justified), dual-point, spill-resistant, chiclet-style, with durakeys	√	√
	Gesture support: MultiTouch gestures enabled, two-finger scrolling, and pinch-zoom as default	√	√
	Taps enabled by default	√	√
	Support for TouchPad with image sensor	√	√
	Support for Windows 8 Indirect Touch	√	√
Power requirements	Supports the following HP Smart AC adapters:		

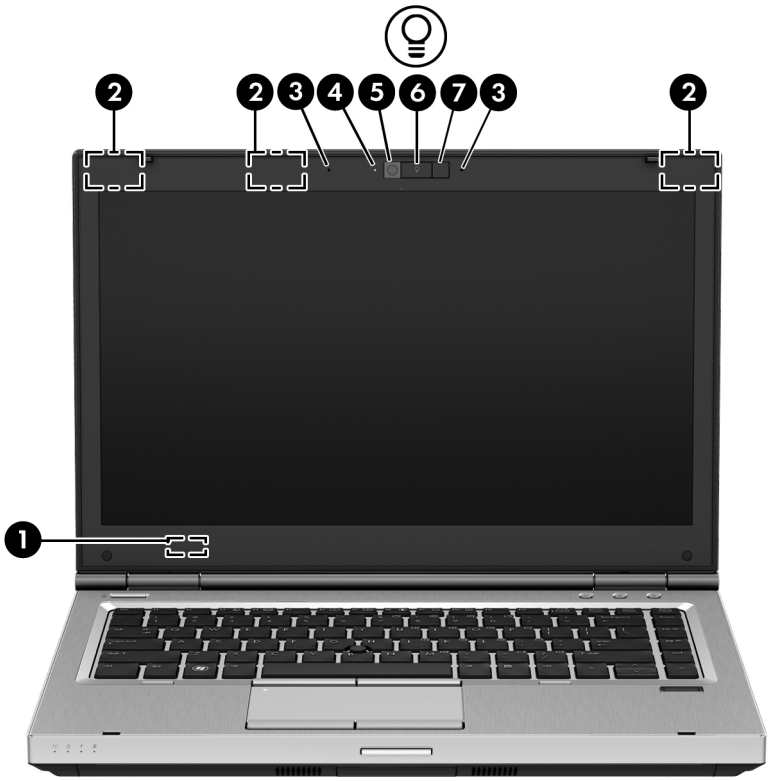
Category	Description	HP EliteBook 8470w Mobile Workstation computer model	HP EliteBook 8470p Notebook PC computer model
	• 90-W HP Smart AC adapter (PFC, EM, 3-wire)	√	√
	• 90-W HP Smart AC adapter (PFC, 3-wire)	√	√
	• 65-W HP Smart AC adapter (non-PFC, 3-wire)	√	√
	• 65-W HP Smart AC adapter (RC/V, EM, 3-wire)	√	√
	Supports the following batteries: • 9-cell, 100-Wh, 3.0-Ah battery • 9-cell, 73-Wh, 2.2-Ah battery • 6-cell, 62-Wh, 2.8-Ah battery • 6-cell, 55-Wh, 2.8-Ah battery • 3-cell, 31-Wh, 2.8-Ah battery	√	√
Security	Supports security cable lock	√	√
	Supports fingerprint reader and no fingerprint reader option	√	√
	Supports 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 (in Canada, Japan, and the United States) • Windows 7 Professional 64- and 32-bit with Microsoft Basics (in Canada, Japan, and the United States) • FreeDOS	√	√

Category	Description	HP EliteBook 8470w Mobile Workstation computer model	HP EliteBook 8470p Notebook PC computer model
	Preinstalled with Microsoft Office: • Windows 7 Home Basic 32-bit with Office Starter (emerging markets only, not available in Japan) • 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 and 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 and 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 64-bit Service Pack 2	√	√

Category	Description	HP EliteBook 8470w Mobile Workstation computer model	HP EliteBook 8470p Notebook PC computer model
	Web-only support: • Windows XP Pro 32-bit • Windows 7 Home Basic 64-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 • mSATA drive • Optical drive • Solid-state drive • WLAN module • WWAN module	√	√

2 External component identification

Display



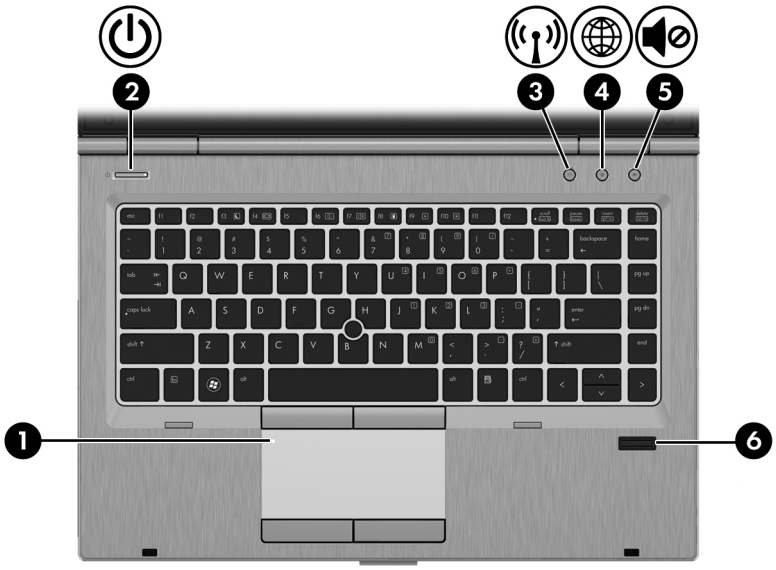
Item	Component	Description
(1)	Internal display switch	Turns off the display or initiates Suspend if the display is closed while the power is on. **NOTE:** The display switch is not visible from the outside of the computer.
(2)	WLAN antennas (3)*	Send and receive wireless signals to communicate with WLANs.
(3)	Internal microphones (2)	Record sound.
(4)	Webcam light (select models only)	On: The webcam is in use.
(5)	Webcam (select models only)	Records video and captures still photographs.

Item	Component	Description
(6)	Keyboard light button	Turns the keyboard light on or off.
(7)	Keyboard light	Illuminates the keyboard, especially in low-light conditions.

*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.

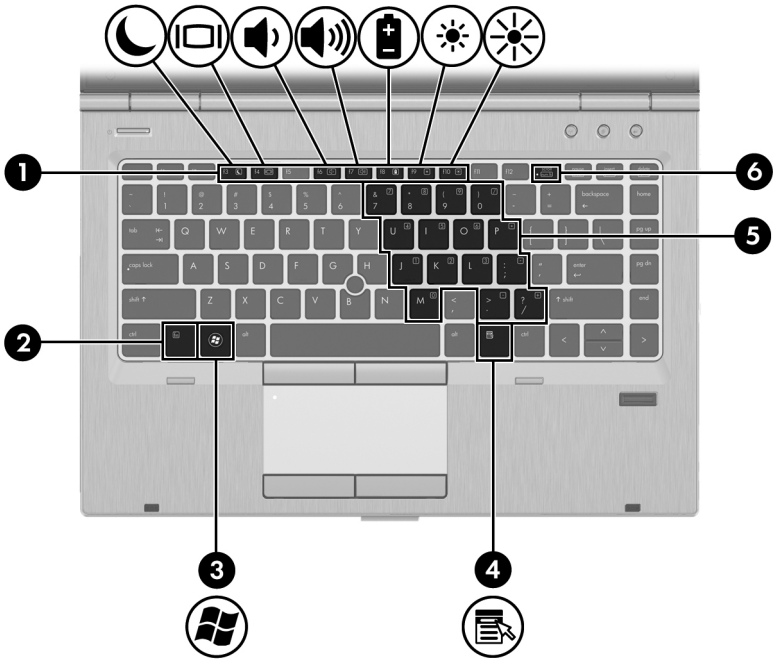


Item	Component	Description
(1)	TouchPad on/off button	Turns the TouchPad on and off.
(2)	Power button	• When the computer is off, press the button to turn on the computer. • When the computer is on, press the button briefly to initiate Suspend. • When the computer is in the Suspend state, press the button briefly to exit Suspend. • When the computer is in Hibernation, press the button briefly to exit Hibernation. 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: 1. Select **Computer > Control Center**. 2. In the left pane, click **System**, and then click **Power Management** in the right pane.
(3)	Wireless button	Turns the wireless feature on or off but does not establish a wireless connection.

Item	Component	Description
(4)	Web browser button	• When the computer is on, press the button to open the default Web browser. • When the computer is off, in the Suspend state, or in Hibernation, the button does not perform any action or function.
(5)	Volume mute button	Mutes and restores speaker sound.
(6)	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)	Function keys	Execute frequently used system functions when pressed in combination with the fn key.
(2)	fn key	Executes frequently used system functions when pressed in combination with a function key.
(3)	Operating system logo key	Displays the operating system menu.
(4)	Operating system applications key	Displays a shortcut menu for items beneath the cursor.

Item	Component	Description
(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)	num lk key	Turns the embedded numeric keypad on and off when pressed in combination with the fn key.

Lights

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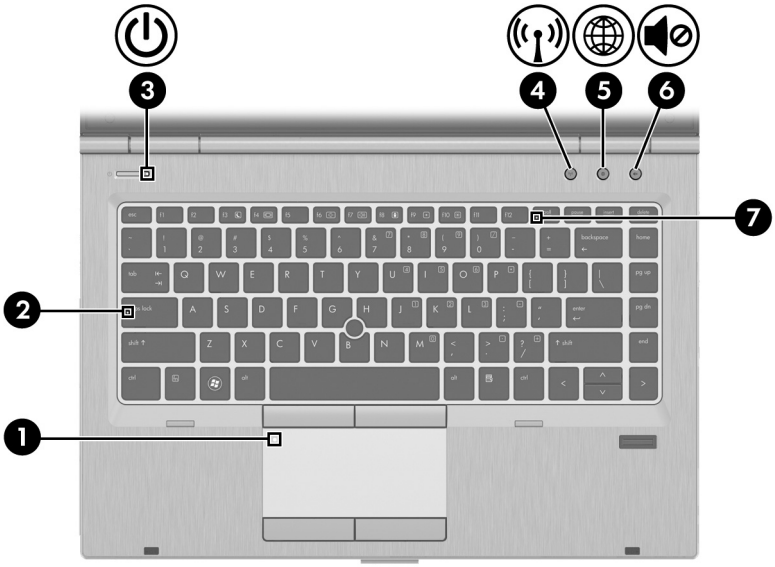
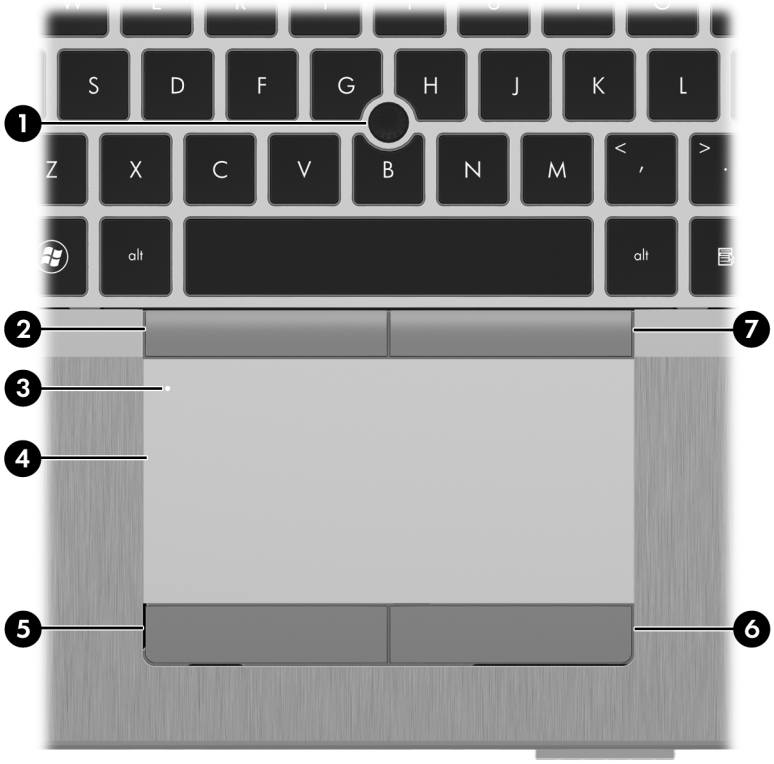


Item	Component	Description
(1)	TouchPad light	• Amber: The TouchPad is off. • Off: The TouchPad is on.
(2)	Caps lock light	• On: Caps lock is on. • Off: Caps lock is off.
(3)	Power light	• On: The computer is on. • Blinking: The computer is in the Suspend state. • Off: The computer is off or in Hibernation.
(4)	Wireless light	• White: An integrated wireless device, such as a WLAN device and/or a Bluetooth device, is on. • Amber: All wireless devices are off.
(5)	Web browser light	• On: The computer is on. • Off: The computer is off, in the Suspend state, or in Hibernation.
(6)	Mute light	• Amber: Computer sound is off. • Off: Computer sound is on.
(7)	Num lock light	On: Num lock is on.

TouchPad

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



Item	Component	Description
(1)	Pointing stick (select models only)	Moves the pointer and selects or activates items on the screen.
(2)	Left pointing stick button (select models only)	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 TouchPad button	Functions like the right button on an external mouse.
(7)	Right pointing stick button (select models only)	Functions like the right button on an external mouse.

Front

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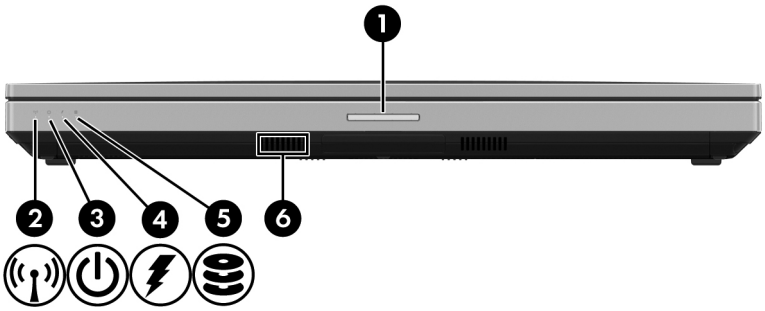

Item	Component	Description
(1)	Display release latch	Opens the computer.
(2)	Wireless light	• White: An integrated wireless device, such as a WLAN device and/or a Bluetooth device, is on. • Amber: All wireless devices are off.
(3)	Power light	• On: The computer is on. • Blinking: The computer is in the Suspend state. • Off: The computer is off or in Hibernation.
(4)	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.
(5)	Hard drive light	• Blinking white: The hard drive or optical drive is being accessed. • Amber: HP 3D DriveGuard has temporarily parked the hard drive.
(6)	Speakers (2)	Produce sound. One of the speakers is on the bottom of the computer, and it cannot be seen from the front of the computer.

Left side

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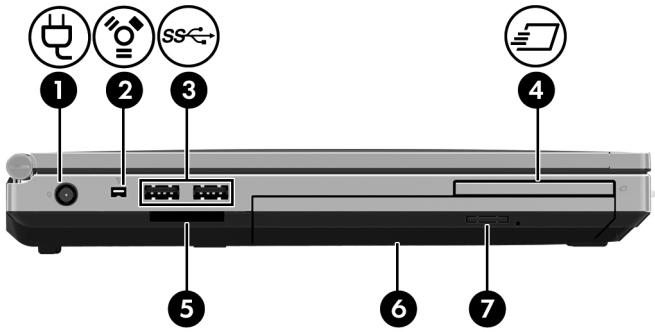
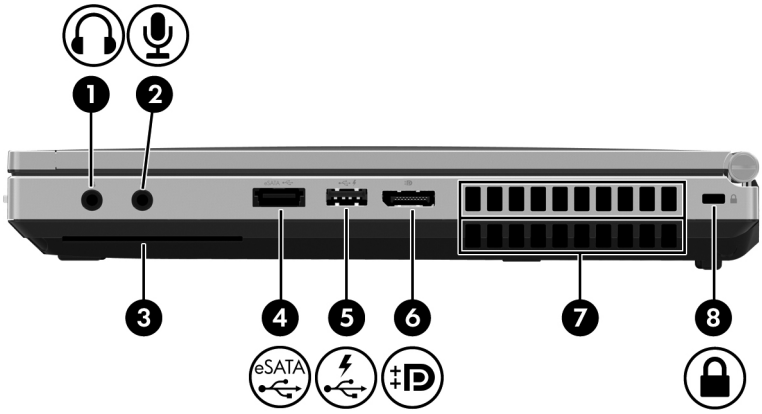


Item	Component	Description
(1)	Power connector	Connects an AC adapter.
(2)	1394 port	Connects an optional IEEE 1394 or 1394a device, such as a camcorder.
(3)	USB 3.0 ports (2)	Connect optional USB 3.0 devices and provide enhanced USB power performance.
(4)	HP ExpressCard slot or Smart Card reader (depending on configuration)	Supports optional ExpressCards or smart cards.
(5)	Media Card Reader	Supports the following digital card formats: • MultiMediaCard (MMC) • MMC+ • Secure Digital (SD) Memory Card • SDHC • SDXC
(6)	Upgrade bay (optical drive shown)	The upgrade bay can hold a weight-saver option, a hard drive, or an optical drive that reads an optical disc. **NOTE:** On select models, the optical drive also writes to an optical disc.
(7)	Optical drive eject button (select models only)	Releases the disc tray.

Right side

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

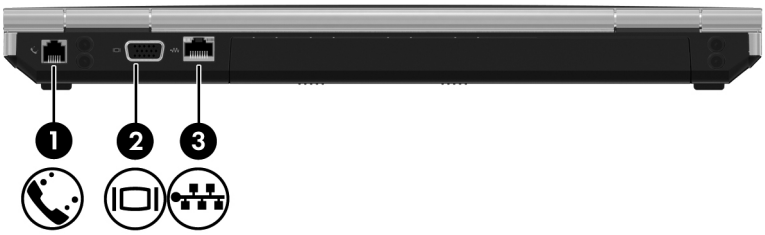


Item	Component	Description
(1)	Audio-out (headphone) jack	Produces sound when connected to optional powered stereo speakers, headphones, earbuds, a headset, or television audio. Also connects an optional headset microphone. **WARNING!** To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, refer to the *Regulatory, Safety, and Environmental Notices*. **NOTE:** When a device is connected to the jack, the computer speakers are disabled.
(2)	Audio-in (microphone) jack	Connects an optional computer headset microphone, stereo array microphone, or monaural microphone.
(3)	Smart Card reader	Supports optional smart cards.
(4)	eSATA/USB 2.0 port	Connects an optional high-performance eSATA component, such as an eSATA external hard drive, or connects an optional USB device.
(5)	USB charging port	Connects an optional USB device. The USB charging port can also charge select models of cell phones and MP3 players, even when the computer is off.
(6)	DisplayPort	Connects an optional digital display device, such as a high-performance monitor or projector.

Item	Component	Description
(7)	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.
(8)	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.

Rear

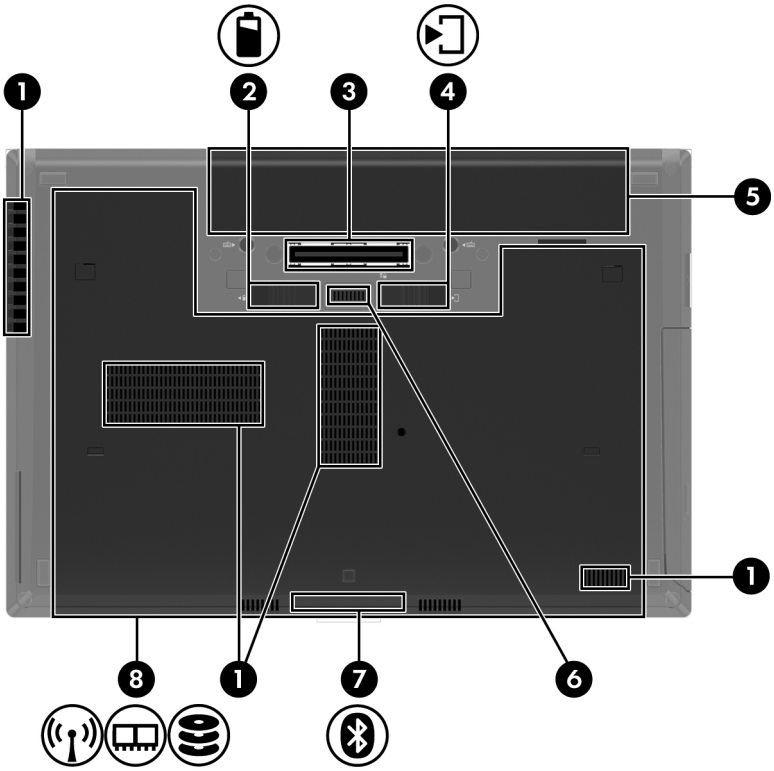
NOTE: Your computer may look slightly different from the illustration in this section.



Item	Component	Description
(1)	RJ-11 (modem) jack	Connects a modem cable.
(2)	External monitor port	Connects an external VGA monitor or projector.
(3)	RJ-45 (network) jack	Connects a network cable.

Bottom

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



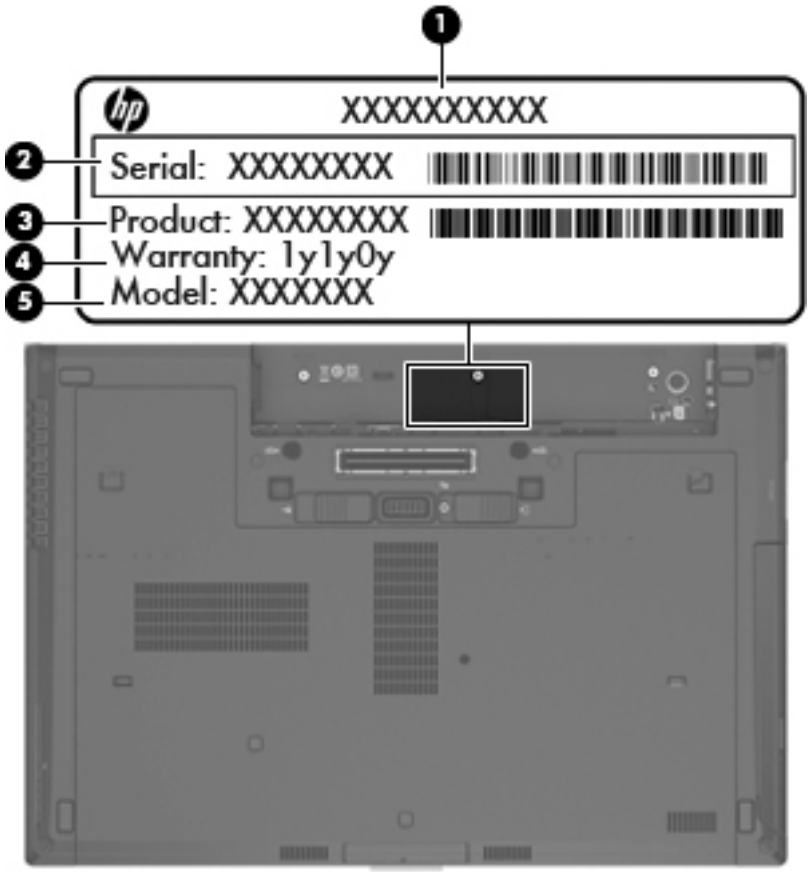
Item	Component	Description
(1)	Vents (4)	Enables airflow to cool internal components. **NOTE:** The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(2)	Battery release latch	Releases the battery.
(3)	Docking connector	Connects an optional docking device.
(4)	Service cover release latch	Releases the service cover from the computer.
(5)	Battery bay	Holds the battery.
(6)	Accessory battery connector	Connects an optional accessory battery.
(6)	Speakers (2)	Produce sound.

Item	Component	Description
(7)	Bluetooth compartment	Contains a Bluetooth device (select models only).
(8)	Service cover	Provides access to the hard drive, and also contains the WLAN 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.

3 Illustrated parts catalog

Service tag

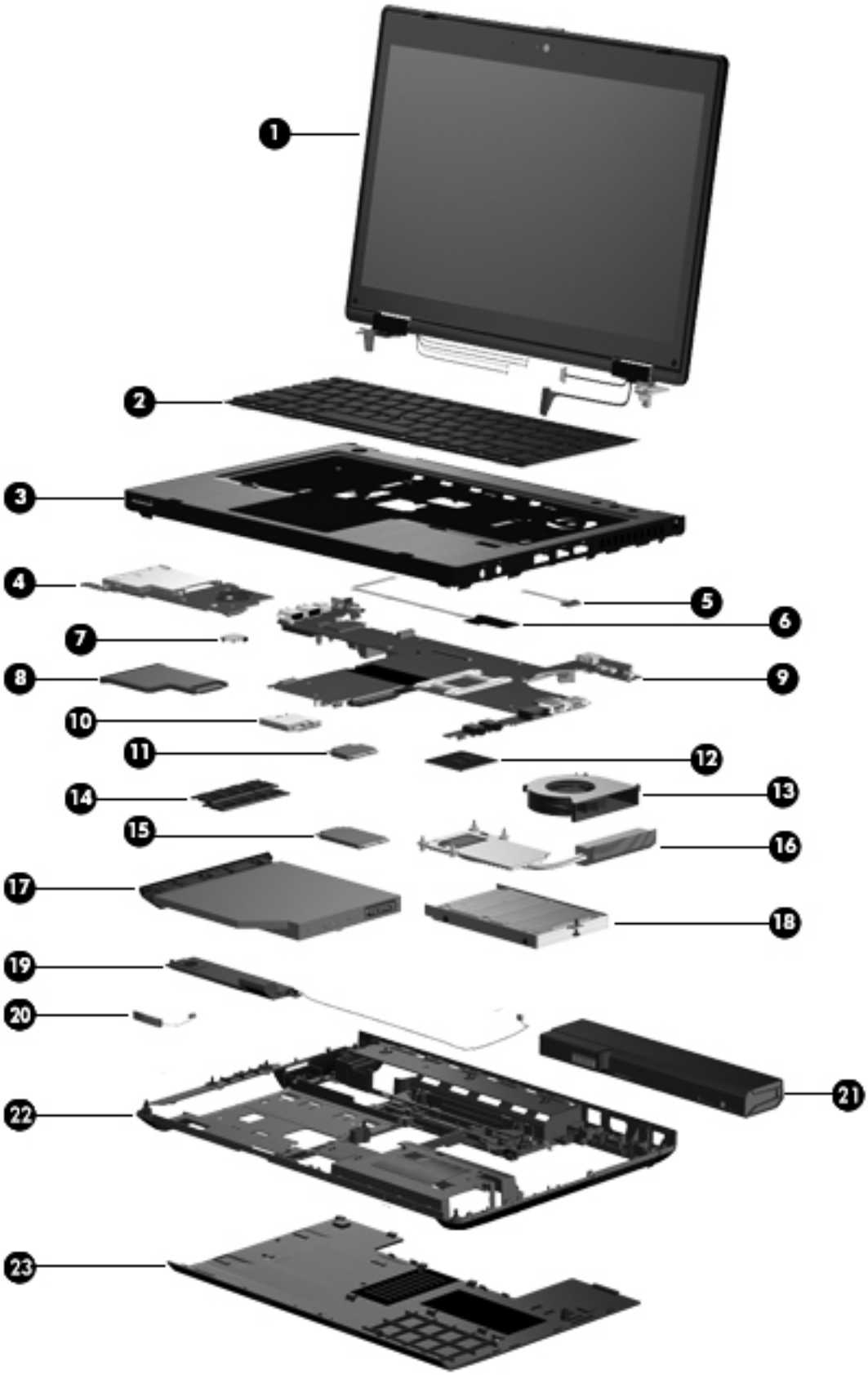
When ordering parts or requesting information, provide the computer serial number and model number provided on the service tag. It is necessary to remove the battery to obtain these numbers. See Battery Battery on page 57 for battery removal instructions.



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.

Item	Description	Function
(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 34.	
(2)	**Keyboard** with pointing stick for use only on HP EliteBook 8470w Mobile Workstation computer models (includes keyboard cable and pointing stick cable):	
	For use in Belgium	686300-A41
	For use in Brazil	686300-201
	For use in Bulgaria	686300-261
	For use in Canada	686300-DB1
	For use in the Czech Republic and Slovakia	686300-A81
	For use in Denmark	686300-081
	For use in France	686300-051
	For use in Germany	686300-041
	For use in Greece	686300-DJ1
	For use in Hungary	686300-211
	For use in Iceland	686300-DD1
	For use in India	686300-D61
	For use in Israel	686300-BB1
	For use in Italy	686300-061
	For use in Japan	686300-291
	For use in Latin America	686300-161
	For use in the Netherlands	686300-B31
	For use in Norway	686300-091
	For use in Northwest Africa	686300-FP1
	For use in Portugal	686300-131
	For use in Romania	686300-271
	For use in Russia	686300-251
	For use in Saudi Arabia	686300-171
	For use in Slovenia	686300-BA1
	For use in South Korea	686300-AD1
	For use in Spain	686300-071
	For use in Sweden and Finland	686300-B71
	For use in Switzerland	686300-BG1
	For use in Taiwan	686300-AB1

Item	Component	Spare part number
	For use in Thailand	686300-281
	For use in Turkey	686300-141
	For use in the United Kingdom and Singapore	686300-031
	For use in the United States	686300-001
(2)	**Keyboard** with pointing stick for use only on HP EliteBook 8470p Notebook PC computer models (includes keyboard cable and pointing stick cable):	
	For use in Belgium	686299-A41
	For use in Brazil	686299-201
	For use in Bulgaria	686299-261
	For use in Canada	686299-DB1
	For use in the Czech Republic and Slovakia	686299-FL1
	For use in Denmark	686299-081
	For use in France	686299-051
	For use in Germany	686299-041
	For use in Greece	686299-DJ1
	For use in Hungary	686299-211
	For use in Iceland	686299-DD1
	For use in India	686299-D61
	For use in Israel	686299-BB1
	For use in Italy	686299-061
	For use in Japan	686299-291
	For use in Latin America	686299-161
	For use in the Netherlands	686299-B31
	For use in Norway	686299-091
	For use in Northwest Africa	686299-FB1
	For use in Portugal	686299-131
	For use in Romania	686299-271
	For use in Russia	686299-251
	For use in Saudi Arabia	686299-171
	For use in Slovenia	686299-BA1
	For use in South Korea	686299-AD1
	For use in Spain	686299-071
	For use in Sweden and Finland	686299-B71

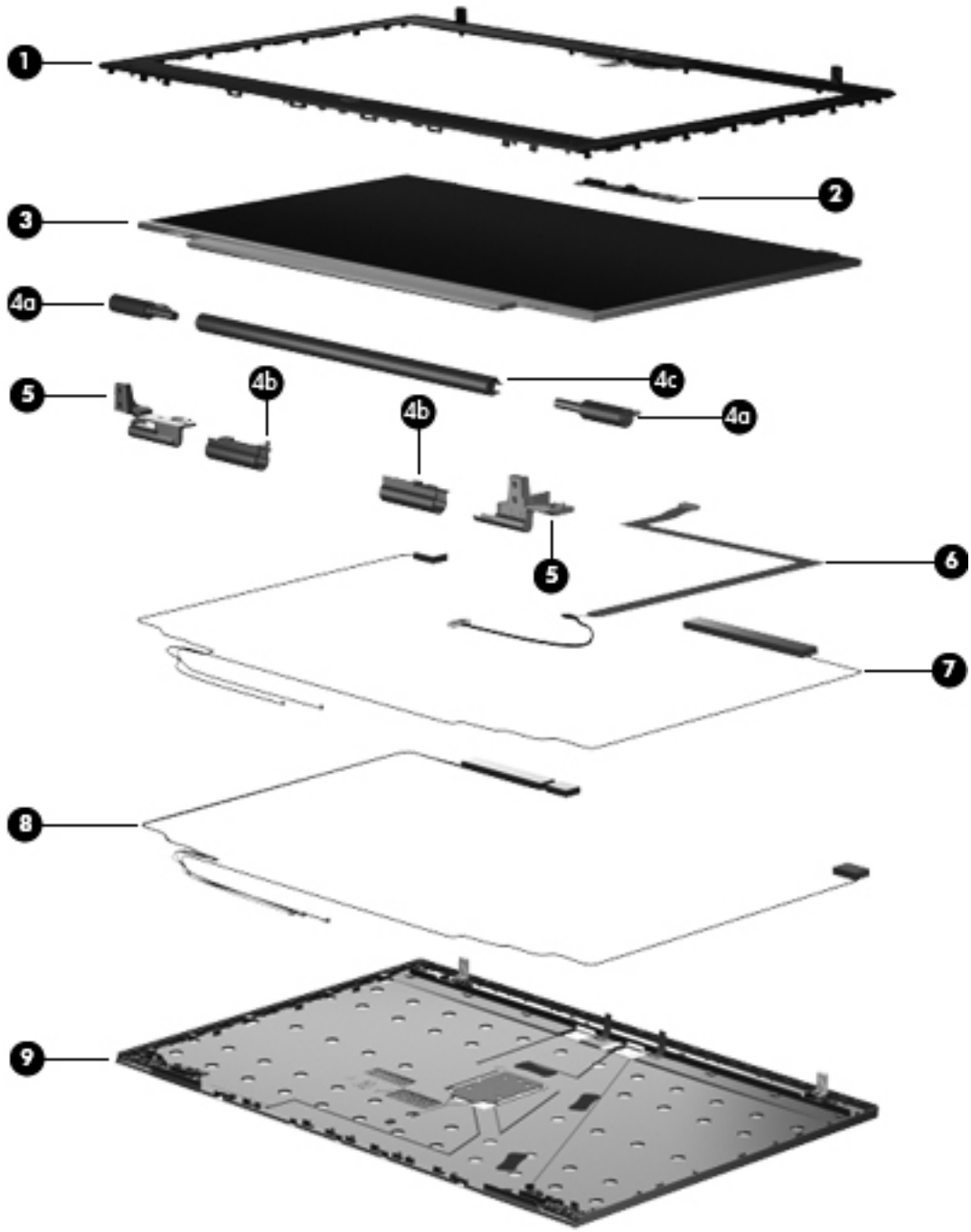
Item	Component	Spare part number
	For use in Switzerland	686299-BG1
	For use in Taiwan	686299-AB1
	For use in Thailand	686299-281
	For use in Turkey	686299-141
	For use in the United Kingdom and Singapore	686299-031
	For use in the United States	686299-001
(3)	**Top cover** (includes TouchPad):	
	Equipped with pointing stick buttons and a fingerprint reader for use only on HP EliteBook 8470w Mobile Workstation computer models	686043-001
	Equipped with pointing stick buttons and a fingerprint reader for use only on HP EliteBook 8470p Notebook PC computer models	686964-001
	Equipped with pointing stick buttons but not a fingerprint reader for use only on HP EliteBook 8470p Notebook PC computer models	686965-001
(4)	**Smart Card reader**	686025-001
(5)	**Display lid switch board** (includes cable)	684340-001
(6)	**Fingerprint reader board** (includes cable)	684343-001
(7)	**RTC battery**	651948-001
(8)	**ExpressCard assembly**	684345-001
(9)	**System board** (includes replacement thermal material):	
	For use only on HP EliteBook 8470w Mobile Workstation computer models:	
	For use only on computer models equipped with a graphics subsystem with discrete memory in all countries and regions except the People's Republic of China and the Ukraine	686042-001
	For use only on computer models equipped with a graphics subsystem with discrete memory in the People's Republic of China and the Ukraine	691718-001
	For use only on HP EliteBook 8470p Notebook PC computer models:	
	For use only on computer models equipped with a graphics subsystem with discrete memory in all countries and regions except the People's Republic of China and the Ukraine	686041-001
	For use only on computer models equipped with a graphics subsystem with discrete memory in the People's Republic of China and the Ukraine	691717-001
	For use only on computer models equipped with a graphics subsystem with UMA memory in all countries and regions except the People's Republic of China and the Ukraine	686040-001
	For use only on computer models equipped with a graphics subsystem with UMA memory in the People's Republic of China and the Ukraine	691716-001

Item	Component	Spare part number
(10)	**Modem module** **NOTE:** The RJ-11 jack cable is included in the Cable Kit, spare part number 641830-001.	628824-001
(11)	**WLAN module:**	
	Atheros WB225 1×1 802.11b/g/n Bluetooth Combo Adapter	675794-001
	Broadcom 43228 802.11abgn 2×2 Wi-Fi Adapter	669832-001
	Intel Centrino Advanced-N 6205 WLAN module	631954-001
	Intel Centrino Ultimate-N 6300 WLAN module	572511-001
	Intel Centrino Wireless-N 2200 802.11b/g/n 2×2 WiFi Adapter	670288-001
(12)	**Processor** (includes replacement thermal material):	
	For use only on HP EliteBook 8470w Mobile Workstation computer models:	
	Intel Quad Core i7-3820QM 2.70-GHz processor (SC turbo up to 3.70-GHz; 1600-MHz FSB, 8.0-MB L3 cache, 45 W)	681284-001
	For use on all computer models:	
	Intel Quad Core i7-3720QM 2.60-GHz processor (SC turbo up to 3.60-GHz; 1600-MHz FSB, 6.0-MB L3 cache, 45 W)	681283-001
	Intel Quad Core i7-3610QM 2.30-GHz processor (SC turbo up to 3.30-GHz; 1600-MHz FSB, 6.0-MB L3 cache, 45 W)	680646-001
	Intel Dual Core i7-3520M 2.90-GHz processor (SC turbo up to 3.60-GHz; 1600-MHz FSB, 4.0-MB L3 cache, 35 W)	681954-001
	Intel Dual Core i5-3360M 2.80-GHz processor (SC turbo up to 3.50-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W)	681953-001
	Intel Dual Core i5-3320M 2.60-GHz processor (SC turbo up to 3.30-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W)	681952-001
	For use only on HP EliteBook 8470p Notebook PC computer models:	
	Intel Dual Core i5-3210M 2.50-GHz processor (SC turbo up to 3.10-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W)	680645-001
	Intel Core i3-3110M 2.40-GHz processor (1600-MHz FSB, 3.0-MB L3 cache, 35 W)	682417-001
(13)	**Fan** (includes cable)	641839-001
(14)	**Memory modules** (PC3-12800, 1666-MHz, DDR3):	
	8-GB	670034-001
	4-GB	641369-001
	2-GB	652972-001
(15)	**WWAN module:**	
	HP lt2523 LTE/HSPA+ Mobile Broadband Module	675793-001
	HP lt2522 LTE/EV-DO Mobile Broadband Module	675791-001

Item	Component	Spare part number
	HP un2430 EV-DO/HSPA Mobile Broadband Module	634400-001
	HP hs2350 HSPA+ Mobile Broadband Module	668969-001
(16)	**Heat sink** (includes replacement thermal material):	
	For use only on computer models equipped with a graphics subsystem with discrete memory	686021-001
	For use only on computer models equipped with a graphics subsystem with UMA memory	693371-001
(17)	**Optical drive** (includes optical drive bezel and optical drive bracket):	
	For use only on HP EliteBook 8470w Mobile Workstation computer models:	
	Blu-ray R/RE DVD±RW SuperMulti DL Drive	686048-001
	Blu-ray ROM DVD±RW SuperMulti DL Drive	689090-001
	DVD±RW Double-Layer with SuperMulti Drive	689078-001
	DVD-ROM Drive	689076-001
	For use only on HP EliteBook 8470p Notebook PC computer models:	
	Blu-ray ROM DVD±RW SuperMulti DL Drive	689079-001
	DVD±RW Double-Layer with SuperMulti Drive	689077-001
	DVD-ROM Drive	689075-001
(18)	**Hard drive** (does not include hard drive bracket 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	634862-001
	Hard Drive Hardware Kit (not illustrated, includes hard drive bracket and screws)	642774-001
(19)	**Speaker assembly** (includes cable)	641840-001
(20)	**Bluetooth module 4.0 EDR** **NOTE:** The Bluetooth module cable is included in the Cable Kit, spare part number 641830-001.	655792-001
(21)	**Battery** (Li ion):	
	9-cell, 100-Wh, 3.00-Ah	631243-001
	9-cell, 100-Wh, 3.00-Ah	634087-001
	9-cell, 73-Wh, 2.20-Ah	634089-001
	6-cell, 62-Wh, 2.80-Ah	628668-001
	6-cell, 51-Wh, 2.55-Ah	659083-001
	3-cell, 31-Wh, 2.80-Ah	628664-001

Item	Component	Spare part number
(22)	**Base enclosure** (includes rubber feet, service cover release latch assembly, and battery release latch assembly)	685997-001
	Rubber Kit (not illustrated, includes display bezel left and right rubber screw covers, base enclosure front and rear rubber screw covers, top cover rubber bumper)	642768-001
	Latch Kit (not illustrated, includes service cover release latch assembly components and battery release latch assembly components)	684339-001
(23)	**Service cover**	686031-001

Display assembly subcomponents



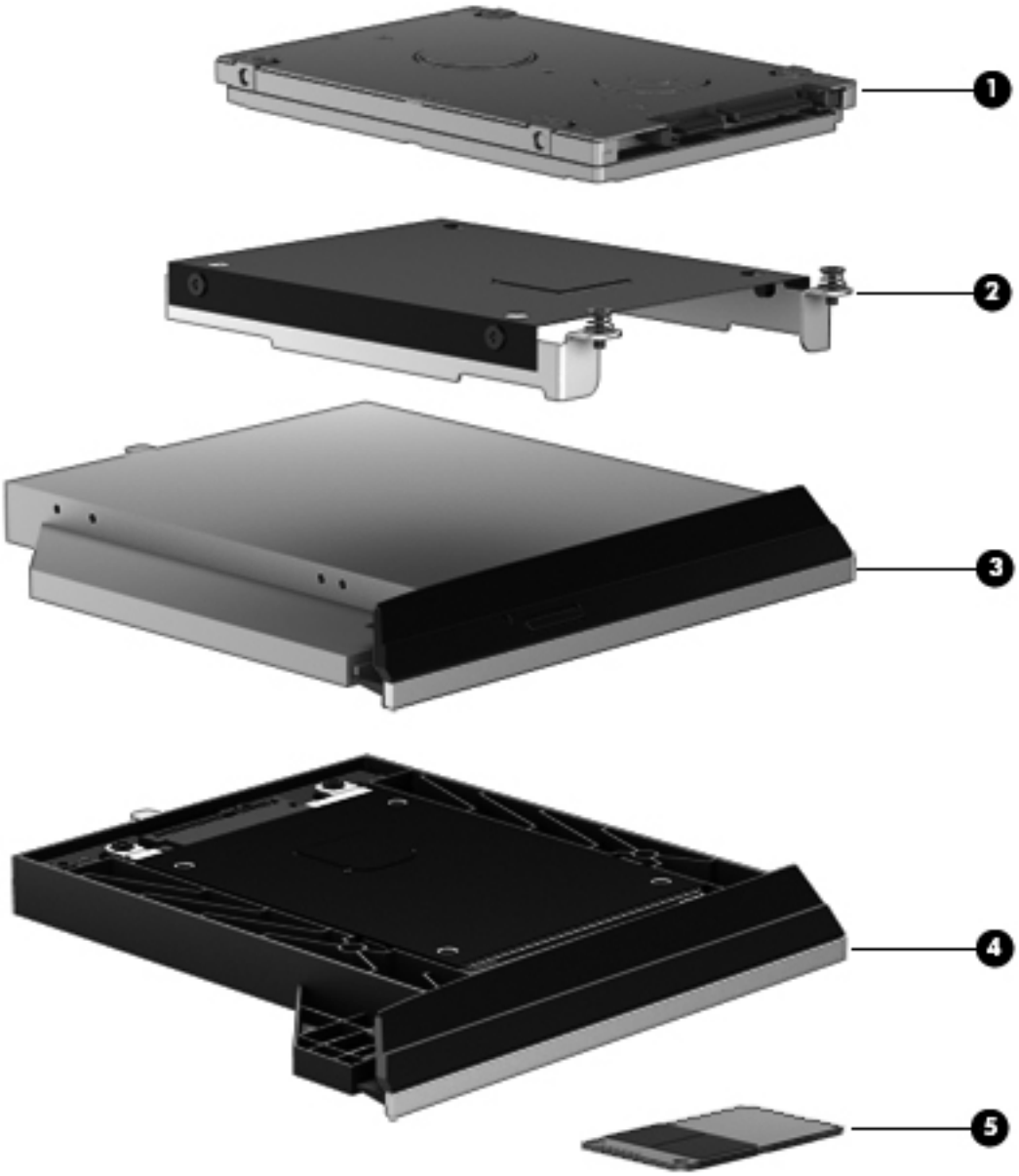
Item	Component	Spare part number
(1)	**Display bezel:**	
	For use only on HP EliteBook 8470w Mobile Workstation computer models	686014-001
	For use only on HP EliteBook 8470p Notebook PC computer models	686012-001
(2)	**Webcam/microphone module**	686045-001

Item	Component	Spare part number
	Microphone module	642798-001
(3)	**Display Hinge Kit** (includes left and right display hinges and left and right hinge brackets)	642782-001
	Display Hinge Cover Kit, includes:	686024-001
(4a)	Display hinge outer covers (2)	
(4b)	Display hinge inner covers (2)	
(4c)	Display hinge tube	
(5)	**15.6-in, LED, AntiGlare display panel:**	
	14.0-in, LED, FLT, HD+, AntiGlare display panel	686047-001
	14.0-in, LED, FLT, HD, AntiGlare display panel	686046-001
	14.0-in, LED, SVA, HD+, AntiGlare display panel	684348-001
	14.0-in, LED, SVA, HD, AntiGlare display panel	684347-001
	Display Cable Kit, includes:	
(6a)	Display panel cable:	
(6b)	Webcam/microphone module cable:	
	For use only on HP EliteBook 8470w Mobile Workstation computer models equipped with an HD+ display assembly	686019-001
	For use only on HP EliteBook 8470w Mobile Workstation computer models equipped with an HD display assembly	686017-001
	For use only on HP EliteBook 8470p Notebook PC computer models equipped with an HD+ display assembly	686018-001
	For use only on HP EliteBook 8470p Notebook PC computer models equipped with an HD display assembly	686016-001
	Antenna Kit, includes:	685993-001
(7)	WWAN antenna cables and transceivers	
(8)	WLAN antenna cables and transceivers	
(9)	**Display enclosure:**	
	For use only on HP EliteBook 8470w Mobile Workstation computer models	685996-001
	For use only on HP EliteBook 8470p Notebook PC computer models	685995-001
	Display Panel Support Kit (includes WLAN antenna cables and transceivers, WWAN antenna cables and transceivers, and display enclosure)	
	For use in HP EliteBook 8470w Mobile Workstation computer models	686023-001
	For use in HP EliteBook 8470p Notebook PC computer models	686022-001
	Display Rubber Kit (includes display bezel rubber screw covers and display bezel rubber bumpers)	642785-001

Cable Kit

Item	Component	Spare part number
	Cable Kit, includes:	641830-001
(1)	Bluetooth module cable	
(2)	TouchPad board cable	
(3)	RJ-11 jack cable	

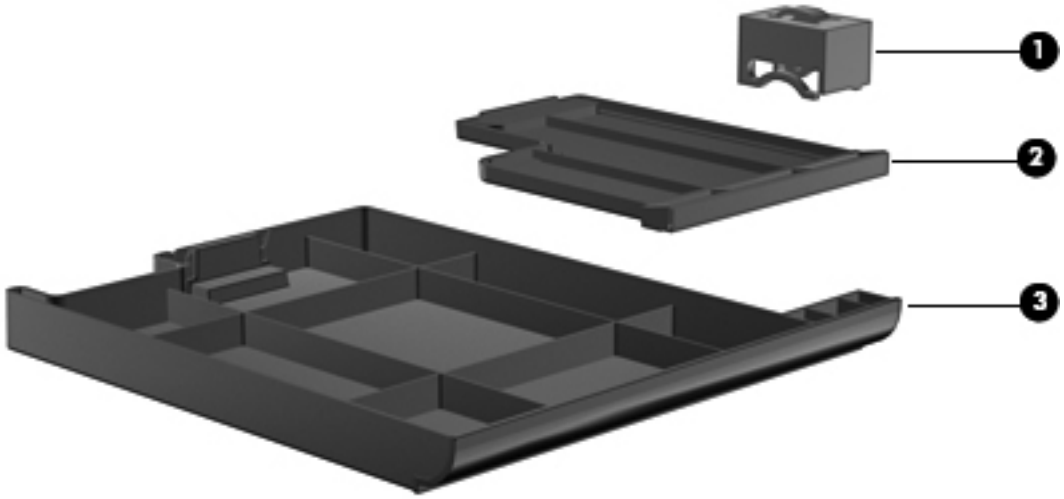
Mass storage devices



Item	Description	Spare part number
(1)	**Hard drive** (does not include hard drive bracket 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:	642774-001
(2)	Hard drive bracket	

Item	Description	Spare part number
	Hard drive bracket screws (not illustrated)	
(3)	**Optical drive** (includes optical drive bezel and optical drive bracket):	
	For use only on HP EliteBook 8470w Mobile Workstation computer models:	
	Blu-ray R/RE DVD±RW SuperMulti DL Drive	686048-001
	Blu-ray ROM DVD±RW SuperMulti DL Drive	689090-001
	DVD±RW Double-Layer with SuperMulti Drive	689078-001
	DVD-ROM Drive	689076-001
	For use only on HP EliteBook 8470p Notebook PC computer models:	
	Blu-ray ROM DVD±RW SuperMulti DL Drive	689079-001
	DVD±RW Double-Layer with SuperMulti Drive	689077-001
	DVD-ROM Drive	689075-001
(4)	**Upgrade bay cradle** (includes bezel and bracket)	643921-001
(5)	**Solid-state drive** (does not include solid-state drive bracket or screws):	
	256-GB SATA III self-encrypting solid-state drive	691466-001
	180-GB SATA III solid-state drive	692097-001
	160-GB SATA II solid-state drive	693863-001
	128-GB SATA III solid-state drive	690229-001

Plastics Kit



Item	Description	Spare part number
	Plastics Kit:	
	For use only on HP EliteBook 8470w Mobile Workstation computer models:	686963-001
	For use only on HP EliteBook 8470p Notebook PC computer models:	686027-001
	Includes:	
(1)	RJ-11 jack plug	
(2)	ExpressCard slot space saver	
(3)	Optical drive bay space saver	

Miscellaneous parts

Component	Spare part number
AC adapter:	
90-W HP Smart AC adapter (PFC, EM, 3-wire)	693713-001
90-W HP Smart AC adapter (PFC, 3-wire)	693712-001
65-W HP Smart AC adapter (non-PFC, 3-wire)	693711-001
65-W HP Smart AC adapter (RC/V, EM, 3-wire)	693710-001
Carrying case:	
HP basic carrying case	455084-001
HP essential nylon case	612757-001
HP professional top-load slim case	592923-001
Lock:	
HP notebook computer combination lock	591699-001
HP notebook computer keyed cable lock	626729-001
Optical mouse:	
HP USB optical travel mouse	434594-001
HP USB/PS2 2-button optical mouse	390632-001
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

Component	Spare part number
For use in Thailand	490371-201
For use in the United Kingdom and Singapore	490371-031
Screw Kit	686032-001

Sequential part number listing

Spare part number	Description
390632-001	HP USB/PS2 2-button optical mouse
434594-001	HP USB optical travel mouse
455084-001	HP basic carrying case
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)
572511-001	Intel Centrino Ultimate-N 6300 WLAN module
591699-001	HP notebook computer combination lock
592923-001	HP professional top load slim case
612757-001	HP essential nylon case
626729-001	HP notebook computer keyed cable lock
628664-001	3-cell, 31-Wh, 2.80-Ah, Li-ion battery

Spare part number	Description
628668-001	6-cell, 62-Wh, 2.80-Ah, Li-ion battery
628824-001	Modem module (does not include the RJ-11 jack cable) **NOTE:** The RJ-11 jack cable is included in the Cable Kit, spare part number 641830-001.
631243-001	9-cell, 100-Wh, 3.0-Ah, Li-ion battery
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 or screws) **NOTE:** The hard drive bracket and screws are included in the Hard Drive Hardware Kit, spare part number 642774-001.
634087-001	9-cell, 100-Wh, 3.00-Ah, Li-ion battery
634089-001	6-cell, 73-Wh, 2.20-Ah, Li-ion battery
634400-001	HP un2430 EV-DO/HSPA Mobile Broadband Module
634862-001	320-GB, 7200-rpm, 9.5-mm hard drive (does not include hard drive bracket or screws) **NOTE:** The hard drive bracket and screws are included in the Hard Drive Hardware Kit, spare part number 642774-001.
634925-001	500-GB, 7200-rpm, 9.5-mm hard drive (does not include hard drive bracket or screws) **NOTE:** The hard drive bracket and screws are included in the Hard Drive Hardware Kit, spare part number 642774-001.
641369-001	4-GB memory module (PC3, 12800, 1600-MHz)
641830-001	Cable Kit (includes Bluetooth module cable, RJ-11 jack cable, and TouchPad cable)
641839-001	Fan (includes cable)
641840-001	Speaker assembly (includes cable)
642768-001	Rubber Kit (includes rubber bumpers)
642774-001	Hard Drive Hardware Kit (includes hard drive bracket and screws)
642782-001	Display Hinge Kit (includes left and right hinges and left and right hinge brackets)
642785-001	Display Rubber Kit (includes display bezel rubber screw covers and display bezel rubber bumpers)
642798-001	Microphone module
643921-001	Upgrade bay cradle
651948-001	RTC battery (includes cable and double-sided tape)
652972-001	2-GB memory module (PC3, 12800, 1600-MHz)
655792-001	Bluetooth module 4.0 EDR (does not include the Bluetooth module cable) **NOTE:** The Bluetooth module cable is included in the Cable Kit, spare part number 641830-001.
659083-001	6-cell, 51-Wh, 2.55-Ah, Li-ion battery
668969-001	HP hs2350 HSPA+ Mobile Broadband Module

Spare part number	Description
669832-001	Broadcom 43228 802.11abgn 2×2 Wi-Fi Adapter
670034-001	8-GB memory module (PC3, 12800, 1600-MHz)
670288-001	Intel Centrino Wireless-N 2200 802.11b/g/n 2×2 WiFi Adapter
675791-001	HP lt2522 LTE/EV-DO Mobile Broadband Module
675793-001	HP lt2523 LTE/HSPA+ Mobile Broadband Module
675794-001	Atheros WB225 1×1 802.11b/g/n Bluetooth Combo Adapter
680645-001	Intel Dual Core i5-3210M 2.50-GHz processor for use only on HP EliteBook 8470p Notebook PC computer models (SC turbo up to 3.10-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W; includes replacement thermal material)
680646-001	Intel Quad Core i7-3610QM 2.30-GHz processor for use on all computer models (SC turbo up to 3.30-GHz; 1600-MHz FSB, 6.0-MB L3 cache, 45 W; includes replacement thermal material)
681283-001	Intel Quad Core i7-3720QM 2.60-GHz processor for use on all computer models (SC turbo up to 3.60-GHz; 1600-MHz FSB, 6.0-MB L3 cache, 45 W; includes replacement thermal material)
681284-001	Intel Quad Core i7-3820QM 2.70-GHz processor for use only on HP EliteBook 8470w Mobile Workstation computer models (SC turbo up to 3.70-GHz; 1600-MHz FSB, 8.0-MB L3 cache, 45 W; includes replacement thermal material)
681952-001	Intel Dual Core i5-3320M 2.60-GHz processor for use on all computer models (SC turbo up to 3.30-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W; includes replacement thermal material)
681953-001	Intel Dual Core i5-3360M 2.80-GHz processor for use on all computer models (SC turbo up to 3.50-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W; includes replacement thermal material)
681954-001	Intel Dual Core i7-3520M 2.90-GHz processor for use on all computer models (SC turbo up to 3.60-GHz; 1600-MHz FSB, 4.0-MB L3 cache, 35 W; includes replacement thermal material)
682417-001	Intel Core i3-3110M 2.40-GHz processor for use only on HP EliteBook 8470p Notebook PC computer models (1600-MHz FSB, 3.0-MB L3 cache, 35 W; includes replacement thermal material)
683801-001	500-GB, 7200-rpm, 9.5-mm SED hard drive (does not include hard drive bracket or screws) **NOTE:** The hard drive bracket and screws are included in the Hard Drive Hardware Kit, spare part number 642774-001.
684339-001	Latch Kit (includes service cover release latch assembly components and battery release latch assembly components)
684340-001	Display lid switch board
684343-001	Fingerprint reader board (includes cable)
684345-001	ExpressCard assembly
684347-001	14.0-in, LED, SVA, HD, AntiGlare display panel
684348-001	14.0-in, LED, SVA, HD+, AntiGlare display panel
685993-001	Antenna Kit (includes left and right WLAN antenna cables and transceivers and left and right WWAN antenna cables and transceivers)
685995-001	Display enclosure for use only on HP EliteBook 8470p Notebook PC computer models
685996-001	Display enclosure for use only on HP EliteBook 8470w Mobile Workstation computer models

Spare part number	Description
685997-001	Base enclosure (includes four rubber feet, service cover release latch assembly, and battery release latch assembly)
686012-001	Display bezel for use only on HP EliteBook 8470p Notebook PC computer models
686014-001	Display bezel for use only on HP EliteBook 8470w Mobile Workstation computer models
686016-001	Display panel cable for use only on HP EliteBook 8470p Notebook PC computer models equipped with an HD display assembly
686017-001	Display panel cable for use only on HP EliteBook 8470w Mobile Workstation computer models equipped with an HD display assembly
686018-001	Display panel cable for use only on HP EliteBook 8470p Notebook PC computer models equipped with an HD+ display assembly
686019-001	Display panel cable for use only on HP EliteBook 8470w Mobile Workstation computer models equipped with an HD+ display assembly
686021-001	Heat sink for use on computer models equipped with a graphics subsystem with discrete memory
686022-001	Display Panel Support Kit for use only on HP EliteBook 8470p Notebook PC computer models (includes display enclosure, WLAN antenna cables and transceivers, and WWAN antenna cables and transceivers)
686023-001	Display Panel Support Kit for use only on HP EliteBook 8470w Mobile Workstation computer models (includes display enclosure, WLAN antenna cables and transceivers, and WWAN antenna cables and transceivers)
686024-001	Display Hinge Cover Kit (includes hinge tube, left and right hinge covers, cable guides, left and right inner covers, and left and right outer covers)
686025-001	Smart Card reader
686027-001	Plastics Kit for use only on HP EliteBook 8470p Notebook PC computer models (includes ExpressCard slot space saver, optical drive bay space saver, RJ-11 jack cover, and wireless antenna clips)
686031-001	Service cover
686032-001	Screw Kit
686040-001	System board for use only on HP EliteBook 8470p Notebook PC computer models equipped with a graphics subsystem with UMA memory in all countries and regions except the People's Republic of China and the Ukraine (includes replacement thermal material)
686041-001	System board for use only on HP EliteBook 8470p Notebook PC computer models equipped with a graphics subsystem with discrete memory in all countries and regions except the People's Republic of China and the Ukraine (includes replacement thermal material)
686042-001	System board for use only on HP EliteBook 8470w Mobile Workstation computer models equipped with a graphics subsystem with discrete memory in all countries and regions except the People's Republic of China and the Ukraine (includes replacement thermal material)
686043-001	Top cover with pointing stick buttons and a fingerprint reader for use only on HP EliteBook 8470w Mobile Workstation computer models (includes TouchPad)
686045-001	Webcam/microphone module (includes double-sided tape)
686046-001	14.0-in, LED, FLT, HD, AntiGlare display panel
686047-001	14.0-in, LED, FLT, HD+, AntiGlare display panel

Spare part number	Description
686048-001	Blu-ray R/RE DVD±RW SuperMulti DL Drive (for use only on HP EliteBook 8470w Mobile Workstation computer models; includes bezel and bracket)
686299-001	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in the United States (includes keyboard cable and pointing stick cable)
686299-031	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in the United Kingdom and Singapore (includes keyboard cable and pointing stick cable)
686299-041	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in Germany (includes keyboard cable and pointing stick cable)
686299-051	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in France (includes keyboard cable and pointing stick cable)
686299-061	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in Italy (includes keyboard cable and pointing stick cable)
686299-071	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in Spain (includes keyboard cable and pointing stick cable)
686299-081	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in Denmark (includes keyboard cable and pointing stick cable)
686299-091	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in Norway (includes keyboard cable and pointing stick cable)
686299-131	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in Portugal (includes keyboard cable and pointing stick cable)
686299-141	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in Turkey (includes keyboard cable and pointing stick cable)
686299-161	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in Latin America (includes keyboard cable and pointing stick cable)
686299-171	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in Saudi Arabia (includes keyboard cable and pointing stick cable)
686299-201	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in Brazil (includes keyboard cable and pointing stick cable)
686299-211	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in Hungary (includes keyboard cable and pointing stick cable)
686299-251	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in Russia (includes keyboard cable and pointing stick cable)
686299-261	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in Bulgaria (includes keyboard cable and pointing stick cable)
686299-271	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in Romania (includes keyboard cable and pointing stick cable)
686299-281	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in Thailand (includes keyboard cable and pointing stick cable)
686299-291	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in Japan (includes keyboard cable and pointing stick cable)

Spare part number	Description
686299-A41	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in Belgium (includes keyboard cable and pointing stick cable)
686299-AB1	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in Taiwan (includes keyboard cable and pointing stick cable)
686299-AD1	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in South Korea (includes keyboard cable and pointing stick cable)
686299-B31	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in the Netherlands (includes keyboard cable and pointing stick cable)
686299-B71	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in Sweden and Finland (includes keyboard cable and pointing stick cable)
686299-BA1	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in Slovenia (includes keyboard cable and pointing stick cable)
686299-BB1	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in Israel (includes keyboard cable and pointing stick cable)
686299-BG1	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in Switzerland (includes keyboard cable and pointing stick cable)
686299-D61	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in India (includes keyboard cable and pointing stick cable)
686299-DB1	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in Canada (includes keyboard cable and pointing stick cable)
686299-DD1	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in Iceland (includes keyboard cable and pointing stick cable)
686299-DJ1	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in Greece (includes keyboard cable and pointing stick cable)
686299-FB1	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in Northwest Africa (includes keyboard cable and pointing stick cable)
686299-FL1	Keyboard with pointing stick for use on HP EliteBook 8470p Notebook PC computer models in the Czech Republic and Slovakia (includes keyboard cable and pointing stick cable)
686300-001	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in the United States (includes keyboard cable and pointing stick cable)
686300-031	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in the United Kingdom and Singapore (includes keyboard cable and pointing stick cable)
686300-041	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in Germany (includes keyboard cable and pointing stick cable)
686300-051	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in France (includes keyboard cable and pointing stick cable)
686300-061	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in Italy (includes keyboard cable and pointing stick cable)
686300-071	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in Spain (includes keyboard cable and pointing stick cable)

Spare part number	Description
686300-081	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in Denmark (includes keyboard cable and pointing stick cable)
686300-091	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in Norway (includes keyboard cable and pointing stick cable)
686300-131	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in Portugal (includes keyboard cable and pointing stick cable)
686300-141	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in Turkey (includes keyboard cable and pointing stick cable)
686300-161	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in Latin America (includes keyboard cable and pointing stick cable)
686300-171	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in Saudi Arabia (includes keyboard cable and pointing stick cable)
686300-201	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in Brazil (includes keyboard cable and pointing stick cable)
686300-211	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in Hungary (includes keyboard cable and pointing stick cable)
686300-251	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in Russia (includes keyboard cable and pointing stick cable)
686300-261	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in Bulgaria (includes keyboard cable and pointing stick cable)
686300-271	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in Romania (includes keyboard cable and pointing stick cable)
686300-281	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in Thailand (includes keyboard cable and pointing stick cable)
686300-291	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in Japan (includes keyboard cable and pointing stick cable)
686300-A41	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in Belgium (includes keyboard cable and pointing stick cable)
686300-A81	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in the Czech Republic and Slovakia (includes keyboard cable and pointing stick cable)
686300-AB1	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in Taiwan (includes keyboard cable and pointing stick cable)
686300-AD1	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in South Korea (includes keyboard cable and pointing stick cable)
686300-B31	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in the Netherlands (includes keyboard cable and pointing stick cable)
686300-B71	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in Sweden and Finland (includes keyboard cable and pointing stick cable)
686300-BA1	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in Slovenia (includes keyboard cable and pointing stick cable)

Spare part number	Description
686300-BB1	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in Israel (includes keyboard cable and pointing stick cable)
686300-BG1	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in Switzerland (includes keyboard cable and pointing stick cable)
686300-D61	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in India (includes keyboard cable and pointing stick cable)
686300-DB1	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in Canada (includes keyboard cable and pointing stick cable)
686300-DD1	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in Iceland (includes keyboard cable and pointing stick cable)
686300-DJ1	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in Greece (includes keyboard cable and pointing stick cable)
686300-FP1	Keyboard with pointing stick for use on HP EliteBook 8470w Mobile Workstation computer models in Northwest Africa (includes keyboard cable and pointing stick cable)
686963-001	Plastics Kit W (includes ExpressCard slot space saver, optical drive bay space saver, RJ-11 jack plug, and wireless antenna clips)
686964-001	Top cover with pointing stick buttons for use only on HP EliteBook 8470p Notebook PC computer models equipped with a fingerprint reader (includes TouchPad)
686965-001	Top cover with pointing stick buttons for use only on HP EliteBook 8470p Notebook PC computer models not equipped with a fingerprint reader (includes TouchPad)
689075-001	DVD-ROM Drive for use only on HP EliteBook 8470p Notebook PC computer models (includes bezel and bracket)
689076-001	DVD-ROM Drive for use only on HP EliteBook 8470w Mobile Workstation computer models (includes bezel and bracket)
689077-001	DVD±RW Double-Layer with SuperMulti Drive for use only on HP EliteBook 8470p Notebook PC computer models (includes bezel and bracket)
689078-001	DVD±RW Double-Layer with SuperMulti Drive for use only on HP EliteBook 8470w Mobile Workstation computer models (includes bezel and bracket)
689079-001	Blu-ray ROM DVD±RW SuperMulti DL Drive for use only on HP EliteBook 8470p Notebook PC computer models (includes bezel and bracket)
689080-001	Blu-ray ROM DVD±RW SuperMulti DL Drive for use only on HP EliteBook 8470w Mobile Workstation computer models (includes bezel and bracket)
689954-001	24-GB flash cache module
690229-001	128-GB SATA III solid-state drive
691466-001	256-GB SATA III self-encrypting solid-state drive
691716-001	System board for use only on HP EliteBook 8470p Notebook PC computer models equipped with a graphics subsystem with UMA memory in the People's Republic of China and the Ukraine (includes replacement thermal material)
691717-001	System board for use only on HP EliteBook 8470p Notebook PC computer models equipped with a graphics subsystem with discrete memory in the People's Republic of China and the Ukraine (includes replacement thermal material)

Spare part number	Description
691718-001	System board for use only on HP EliteBook 8470w Mobile Workstation computer models equipped with a graphics subsystem with discrete memory in the People's Republic of China and the Ukraine (includes replacement thermal material)
692097-001	180-GB SATA III solid-state drive
693371-001	Heat sink for use only on computer models equipped with a graphics subsystem with UMA memory (includes replacement thermal material)
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)
693712-001	90-W HP Smart AC adapter (PFC, 3-wire)
693713-001	90-W HP Smart AC adapter (PFC, EM, 3-wire)
693863-001	160-GB SATA II solid-state drive
697439-001	Display Miscellaneous Kit

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

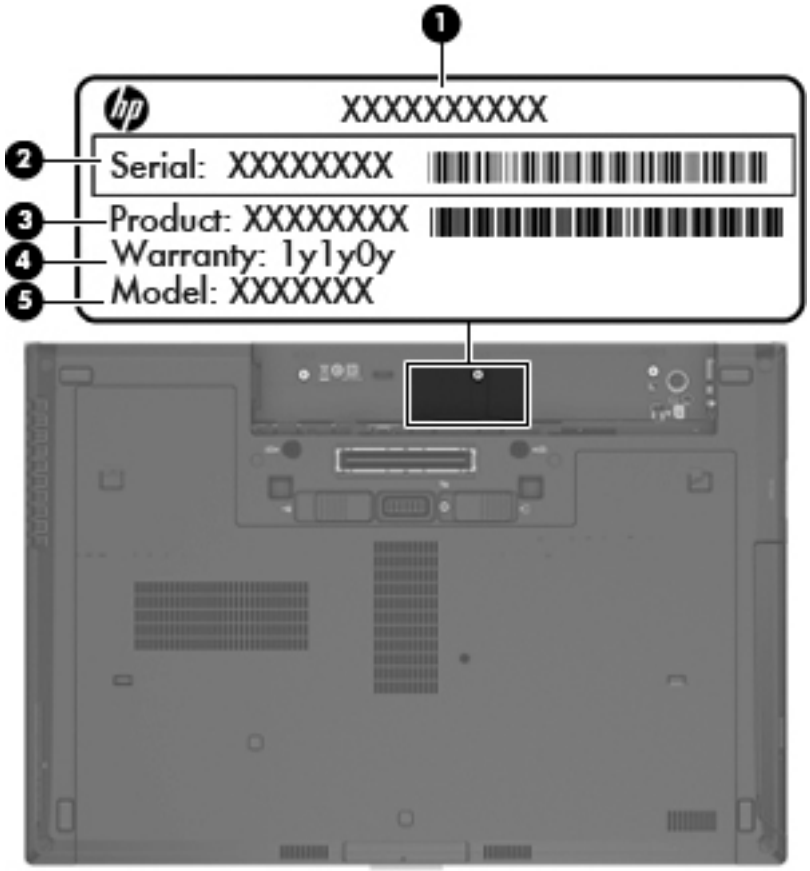
Component replacement procedures

This chapter provides removal and replacement procedures.

There are as many as 73 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 57 for battery removal instructions.

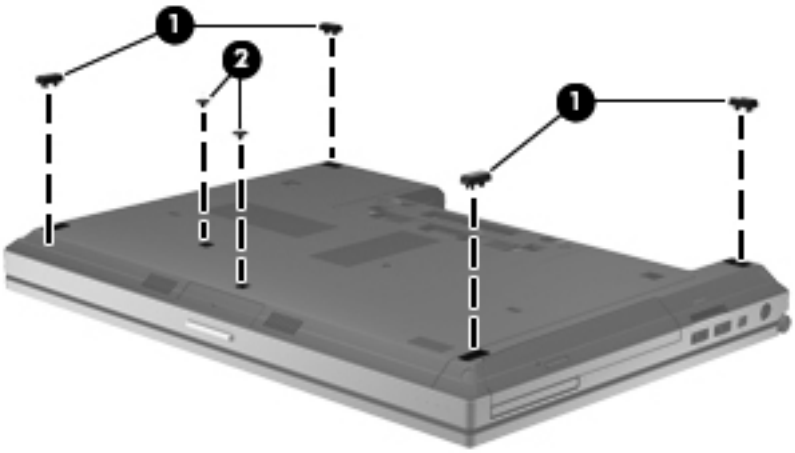


Item	Component	Description
(1)	Product name	This is the product name affixed to the front of the computer.
(2)	Serial number (s/n)	This is an alphanumeric identifier that is unique to each product.
(3)	Part number/Product number (p/n)	This number provides specific information about the product's hardware 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. The feet are included in the Rubber Kit, spare part number 642768-001. There are 4 rectangular rubber feet **(1)** and two square rubber feet **(2)** that attach to the base enclosure and service cover in the locations illustrated below.



Battery

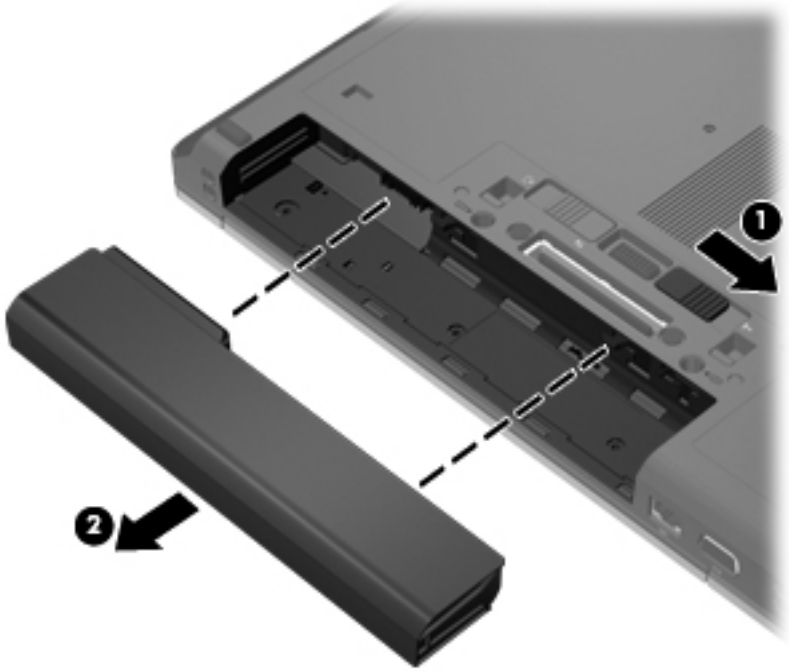
Description	Spare part number
9-cell, 100-Wh, 3.00-Ah, Li ion	631243-001
9-cell, 100-Wh, 3.00-Ah, Li ion	634087-001
9-cell, 73-Wh, 2.20-Ah, Li ion	634089-001
6-cell, 62-Wh, 2.80-Ah, Li ion	628668-001
6-cell, 51-Wh, 2.55-Ah, Li ion	659083-001
3-cell, 31-Wh, 2.80-Ah, Li ion	628664-001

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 release latch **(1)** to release the battery.
3. Remove the battery **(2)** from the computer.



Install the battery by inserting it into the battery bay until you hear a click.

SIM

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

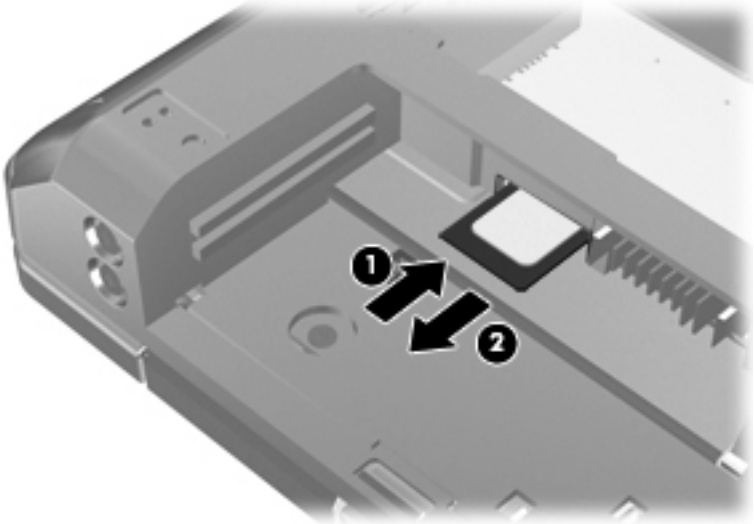
NOTE: If there is a SIM inserted in the SIM slot, it must be removed before disassembling the computer. Be sure that the SIM is reinserted in the SIM slot after reassembling the computer.

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 57).

Remove the SIM:

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



Reverse this procedure to install the SIM.

Service cover

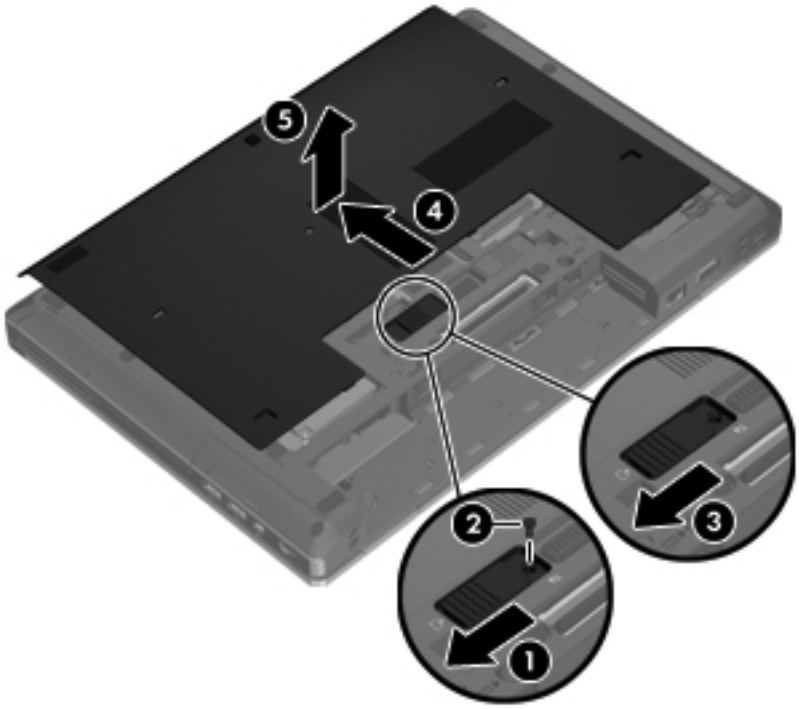
Description	Spare part number
Service cover	686031-001

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 57).

Remove the service cover:

1. Slide the release latch **(1)** and remove the locking screw (if installed) **(2)**.
2. Slide the release latch **(3)** to disengage the door from the computer.
3. Slide the door toward the front of the computer **(4)**, and then lift the door off the computer **(5)**.



Reverse the removal procedures to install the service cover.

Smart Card reader

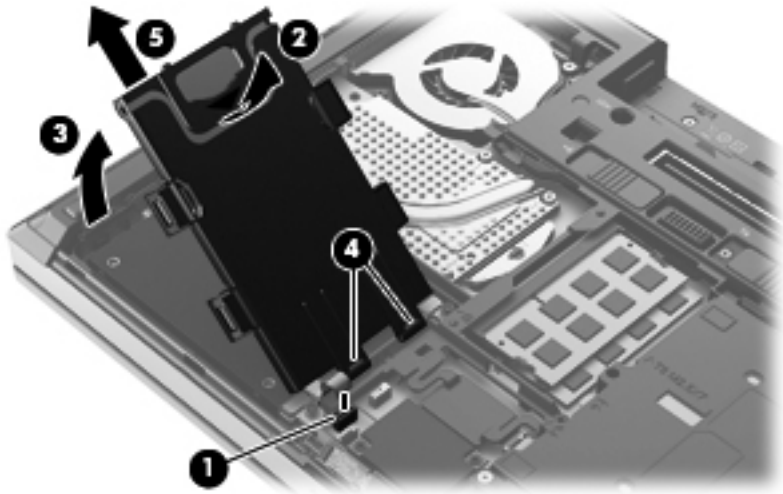
Description	Spare part number
Smart Card reader	686025-001

Before removing the Smart Card reader, 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 57).
5. Remove the service cover (see Service cover on page 59).

Remove the Smart Card reader:

1. Disconnect the Smart Card reader cable **(1)** from the low insertion force (LIF) connector on the system board.
2. Use the Smart Card reader tab **(2)** to lift the left side of the Smart Card reader **(3)** and swing it up and to the right.
3. Detach the clips **(4)** on the right side of the Smart Card reader from the base enclosure.
4. Remove the Smart Card reader by sliding it up and the left at an angle **(5)**.



Reverse the removal procedures to install the Smart Card reader.

Optical drive

NOTE: The optical drive spare part kit includes an optical drive bezel and optical drive bracket.

Description	Spare part number
For use only on HP EliteBook 8470w Mobile Workstation computer models:	
Blu-ray R/RE DVD±RW SuperMulti DL Drive	686048-001
Blu-ray ROM DVD±RW SuperMulti DL Drive	689090-001
DVD±RW Double-Layer with SuperMulti Drive	689078-001
DVD-ROM Drive	689076-001
For use only on HP EliteBook 8470p Notebook PC computer models:	
Blu-ray ROM DVD±RW SuperMulti DL Drive	689079-001
DVD±RW Double-Layer with SuperMulti Drive	689077-001
DVD-ROM Drive	689075-001

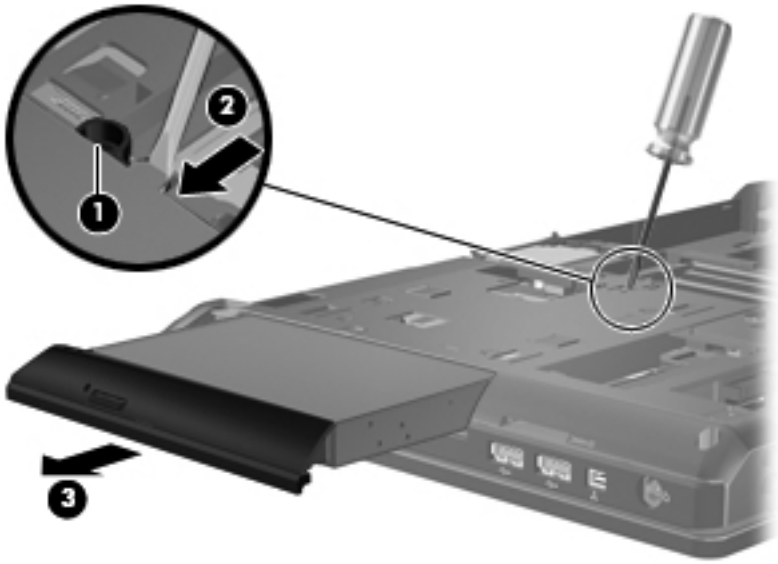
Before removing the optical drive, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 57).
5. Remove the service cover (see Service cover on page 59).

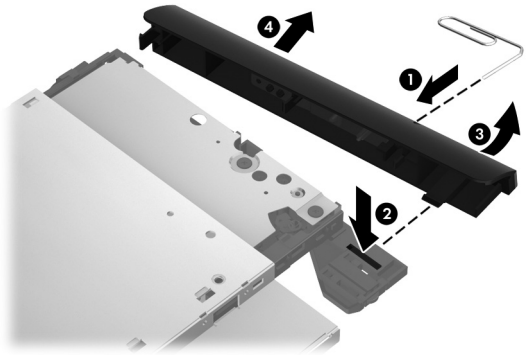
Remove the optical drive:

1. Position the computer upside-down with the right side toward you.
2. Loosen the captive Phillips screw **(1)** that secures the optical drive to the computer.
3. Use a flat-blade screw driver or similar tool to press on the optical drive bracket tab **(2)** to release the optical drive.

4. Remove the optical drive **(3)** from the computer.

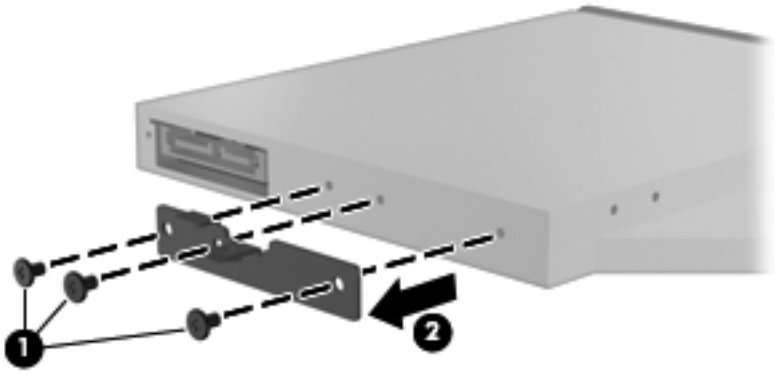


5. If it is necessary to replace the optical drive bezel, use a thin tool or an unbent paper clip **(1)** to release the optical drive tray.
6. Use a flat-blade screw driver or similar tool to press on the optical drive bezel tab **(2)**, and then release the left side of the optical drive bezel **(3)**.
7. Remove the optical drive bezel **(4)**.



8. If it is necessary to replace the optical drive bracket, position the optical drive with the rear panel toward you.
9. Remove the three Phillips PM2.0×3.0 screws **(1)** that secure the optical drive bracket to the optical drive.

10. Remove the optical drive bracket **(2)**.



Reverse this procedure to reassemble and install the optical drive.

Upgrade bay cradle

Description	Spare part number
Upgrade bay cradle (includes bezel and bracket)	643921-001

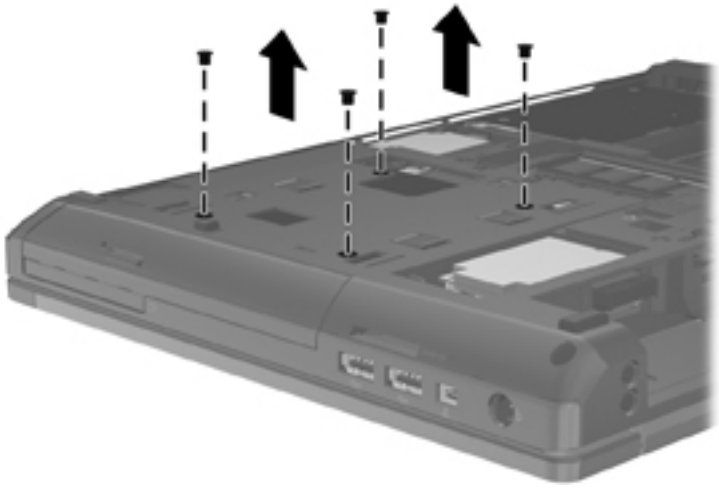
Before removing the upgrade bay cradle, follow these steps:

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 57).
5. Remove the service cover (see Service cover on page 59).

Remove the upgrade bay cradle:

1. Position the computer upside-down with the right side toward you.

2. Remove the four Phillips PM2.0×4.0 screws that secure the upgrade bay cradle to the computer.



3. Loosen the captive Phillips screw that secures the upgrade bay cradle in the upgrade bay **(1)**.
4. Use a flat-blade screw driver or similar tool to press on the upgrade bay bracket tab **(2)** to release the upgrade bay.
5. Remove the upgrade bay **(3)** from the computer.

Reverse this procedure to install the upgrade bay.

Hard drive

NOTE: The hard drive spare part kit does not include the hard drive bracket 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	634862-001
Hard Drive Hardware Kit (includes hard drive bracket and screws)	642774-001

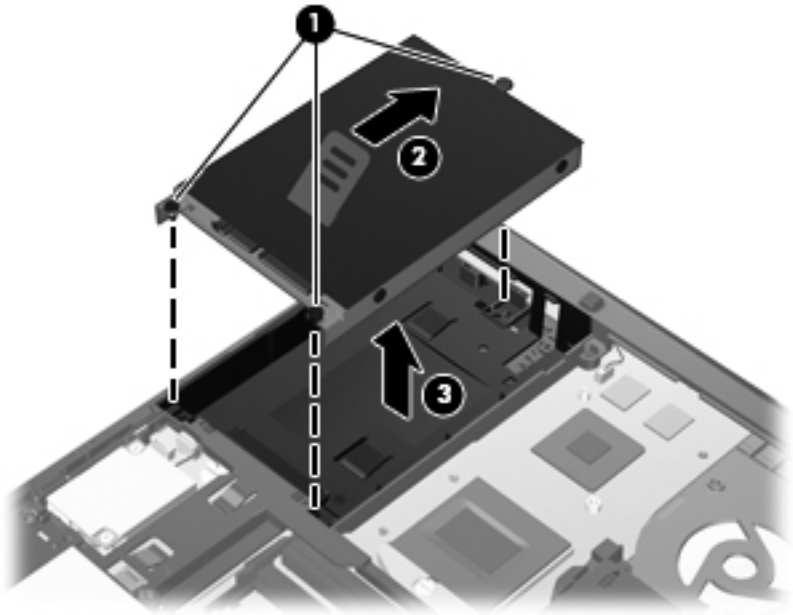
Before removing the hard drive, follow these steps:

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 57).
5. Remove the service cover (see Service cover on page 59).
6. Remove the Smart Card reader (see Smart Card reader on page 60).

Remove the hard drive:

1. Loosen the three Phillips screws **(1)** that secure the hard drive to the computer.
2. Use the hard drive tab **(2)** to slide the hard drive to the right to disconnect it from the system board.

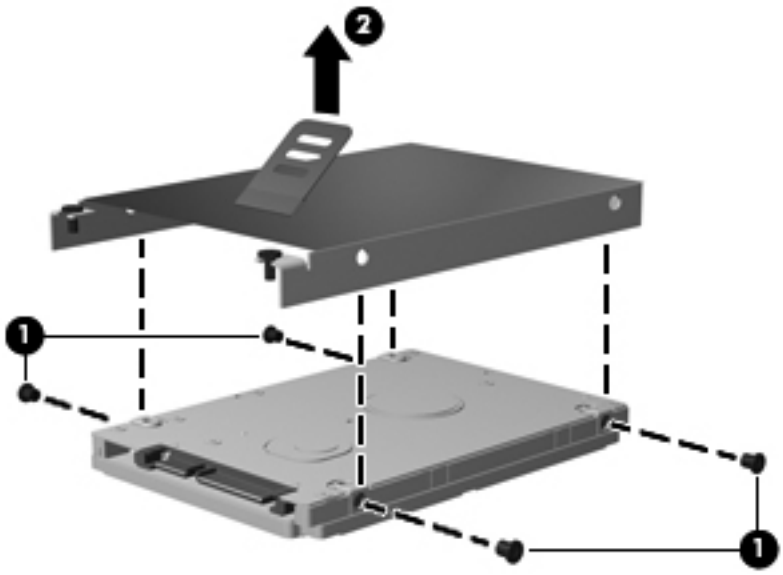
3. Remove the hard drive **(3)** from the hard drive bay.



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

   a. Remove the four Phillips PM3.0×3.0 screws **(1)** that secure the hard drive bracket to the hard drive.

   b. Remove the hard drive bracket **(2)** from the hard drive. The hard drive bracket and screws are available in the Hard Drive Hardware Kit, spare part number 642774-001.



Reverse this procedure to reassemble and install the hard drive.

Memory module

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

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

Update BIOS before adding memory modules

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

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

To update BIOS:

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

Before removing a memory module, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 57).
5. Remove the service cover (see Service cover on page 59).

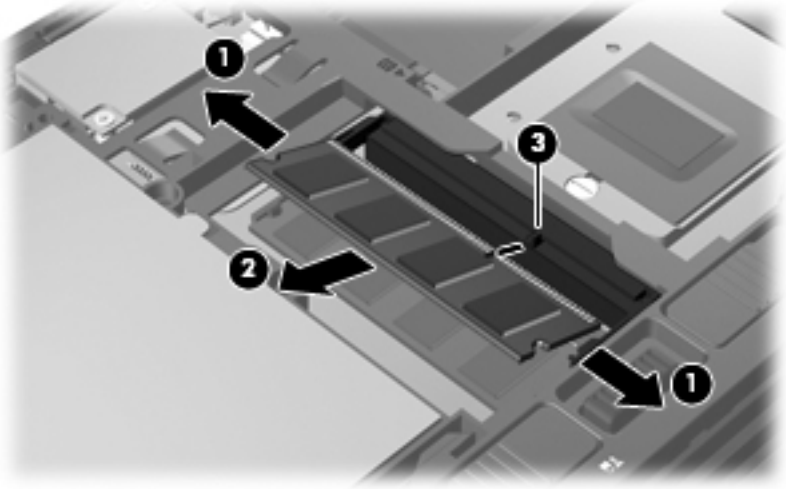
Remove the memory module:

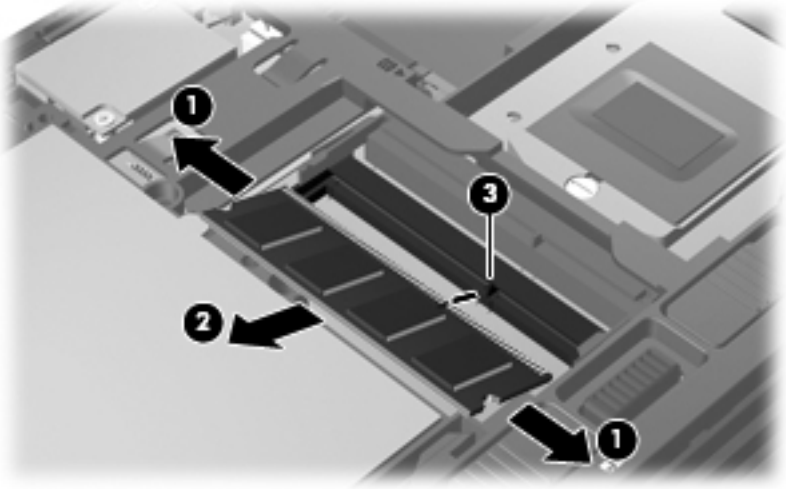
1. Spread the retaining tabs **(1)** on each side of the memory module slot to release the memory module. (The edge of the module opposite the slot rises away from the computer.)

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

NOTE: Memory modules are designed with a notch **(3)** to prevent incorrect insertion into the memory module slot.

NOTE: The computer uses two memory slots. The top slot houses the expansion memory module and is shown in the first image below. The bottom slot houses the primary memory module and is shown in the second image below.





Reverse this procedure to install a memory 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 57).
5. Remove the service cover (see Service cover on page 59).

Remove the WWAN module:

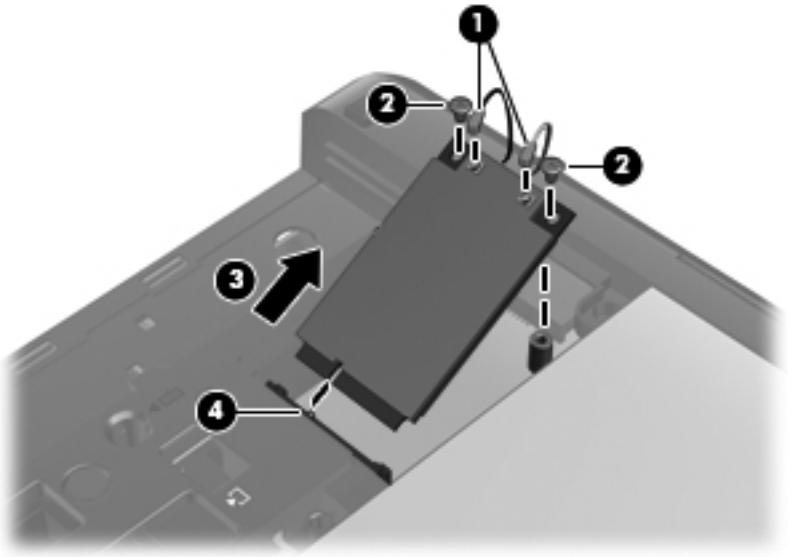
1. Disconnect the WLAN antenna cables **(1)** from the terminals on the WLAN module.

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.

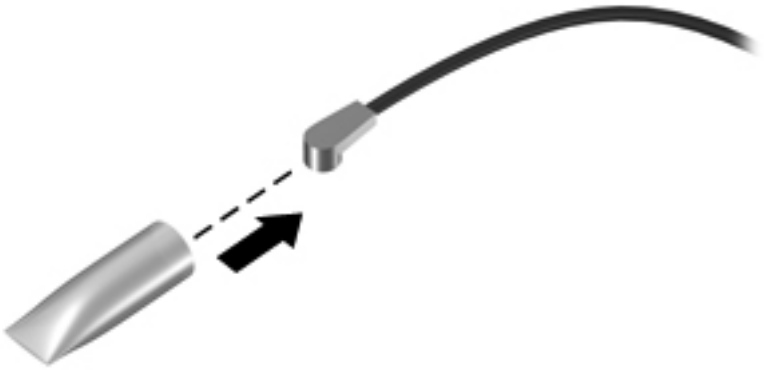
2. Remove the two Phillips PM2.0×3.0 screws **(2)** that secure the WLAN module to the system board. (The WLAN module tilts up.)

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

NOTE: WWAN modules are designed with a notch **(4)** to prevent incorrect insertion.



NOTE: If the WWAN antennas 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.

WLAN module

Description	Spare part number
Atheros WB225 1×1 802.11b/g/n Bluetooth Combo Adapter	675794-001
Broadcom 43228 802.11abgn 2×2 Wi-Fi Adapter	669832-001
Intel Centrino Advanced-N 6205 WLAN module	631954-001
Intel Centrino Ultimate-N 6300 WLAN module	572511-001
Intel Centrino Wireless-N 2200 802.11b/g/n 2×2 WiFi Adapter	670288-001

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 57).
5. Remove the service cover (see Service cover on page 59).

Remove the WLAN module:

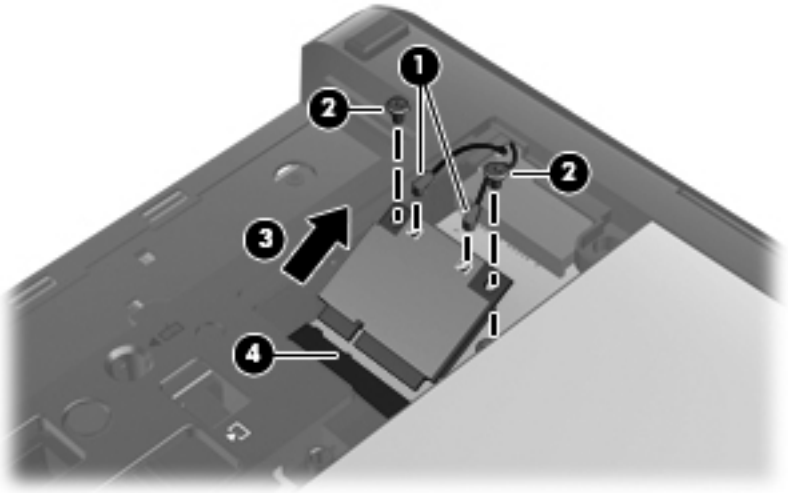
1. Disconnect the WLAN antenna cables **(1)** from the terminals on the WLAN module.

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.

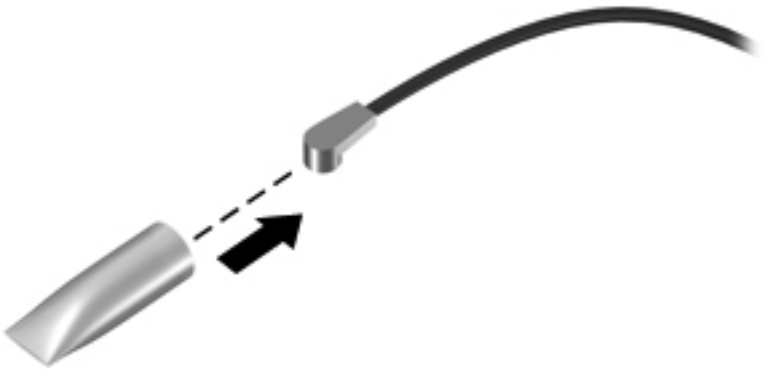
2. Remove the two Phillips PM2.0×3.0 screws **(2)** that secure the WLAN module to the system board. (The WLAN module tilts up.)

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

NOTE: WLAN modules are designed with a notch **(4)** to prevent incorrect insertion.



NOTE: If the WLAN antennas 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.

Bluetooth module

NOTE: The Bluetooth module spare part kit does not include a Bluetooth module cable. The Bluetooth module cable is included in the Cable Kit, spare part number 641830-001.

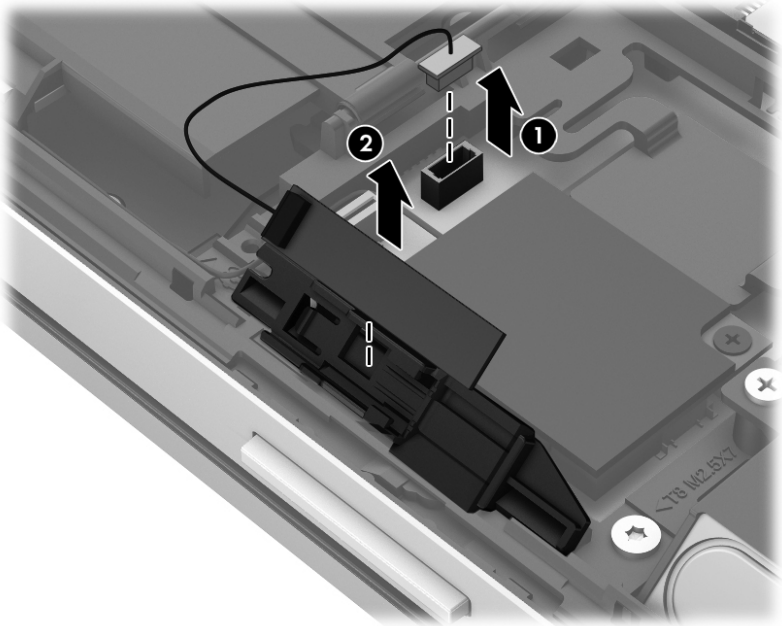
Description	Spare part number
Bluetooth module 4.0 EDR	655792-001

Before removing the Bluetooth 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 57).
5. Remove the service cover (see Service cover on page 59).

Remove the Bluetooth module:

1. Disconnect the Bluetooth module cable **(1)** from the system board.
2. Release the Bluetooth module **(2)** from the clip built into the base enclosure.



3. Remove the Bluetooth module.

Reverse this procedure to install the Bluetooth module.

Modem module

NOTE: The modem module spare part kit does not include an RJ-11 jack cable. The RJ-11 jack cable is included in the Cable Kit, spare part number 641830-001.

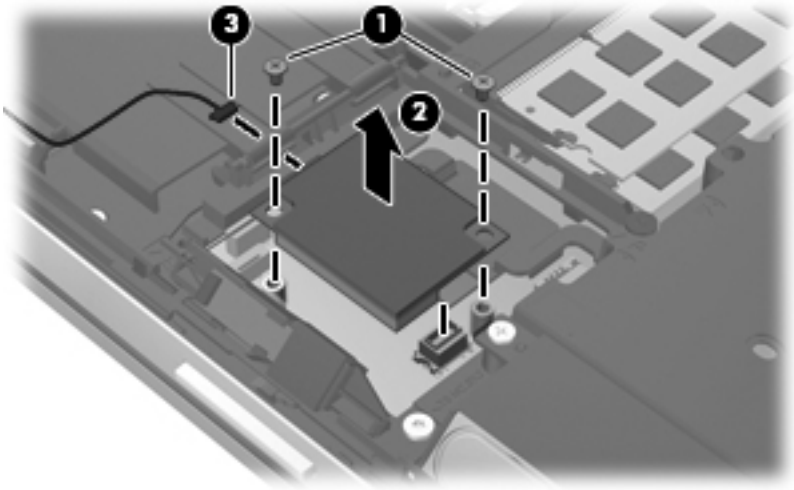
Description	Spare part number
Modem module	628824-001

Before removing the modem 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 57).
5. Remove the service cover (see Service cover on page 59).

Remove the modem module:

1. Remove the two Phillips PM2.0×3.0 screws **(1)** that secure the modem module to the system board.
2. Disconnect the modem module **(2)** from the system board by lifting it straight up.
3. Disconnect the RJ-11 jack cable **(3)** from the modem module.



4. Remove the modem module.

Reverse this procedure to install the modem module.

Fan

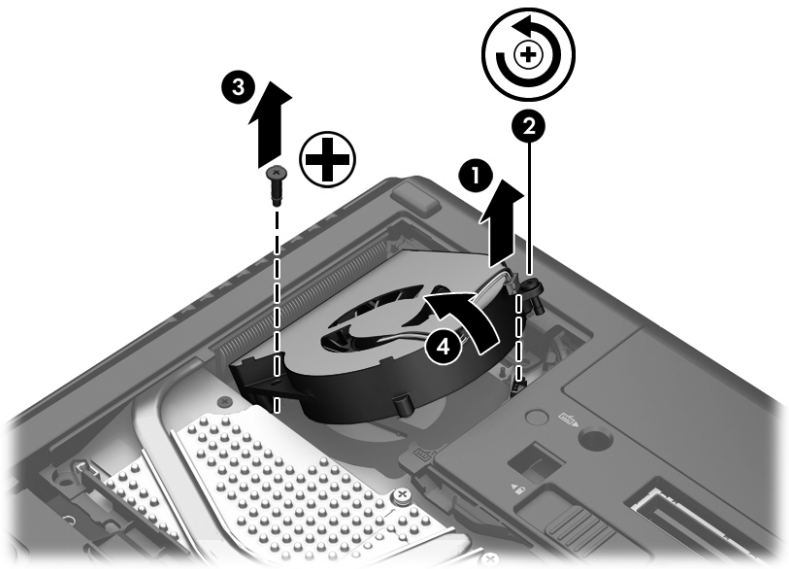
Description	Spare part number
Fan (includes cable)	641839-001

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 57).
5. Remove the service cover (see Service cover on page 59).

Remove the fan:

1. Disconnect the fan cable **(1)** from the system board.
2. Loosen the captive Phillips screw **(2)** that secures the fan to the top cover.
3. Remove the Phillips PM2.5×5.0 screw **(3)** that secures the fan to the top cover.
4. Remove the fan **(4)**.



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 pointing stick for use only on HP EliteBook 8470w Mobile Workstation computer models (includes keyboard cable and pointing stick cable):			
For use in Belgium	686300-A41	For use in Norway	686300-091
For use in Brazil	686300-201	For use in Northwest Africa	686300-FP1
For use in Bulgaria	686300-261	For use in Portugal	686300-131
For use in Canada	686300-DB1	For use in Romania	686300-271
For use in the Czech Republic and Slovakia	686300-A81	For use in Russia	686300-251
For use in Denmark	686300-081	For use in Saudi Arabia	686300-171
For use in France	686300-051	For use in Slovenia	686300-BA1
For use in Germany	686300-041	For use in South Korea	686300-AD1
For use in Greece	686300-DJ1	For use in Spain	686300-071
For use in Hungary	686300-211	For use in Sweden and Finland	686300-B71
For use in Iceland	686300-DD1	For use in Switzerland	686300-BG1
For use in India	686300-D61	For use in Taiwan	686300-AB1
For use in Israel	686300-BB1	For use in Thailand	686300-281
For use in Italy	686300-061	For use in Turkey	686300-141
For use in Japan	686300-291	For use in the United Kingdom and Singapore	686300-031
For use in Latin America	686300-161	For use in the United States	686300-001
For use in the Netherlands	686300-B31		
Keyboard with pointing stick for use only on HP EliteBook 8470p Notebook PC computer models (includes keyboard cable and pointing stick cable):			
For use in Belgium	686300-A41	For use in Norway	686300-091
For use in Brazil	686300-201	For use in Northwest Africa	686300-FB1
For use in Bulgaria	686300-261	For use in Portugal	686300-131
For use in Canada	686300-DB1	For use in Romania	686300-271
For use in the Czech Republic and Slovakia	686300-FL1	For use in Russia	686300-251
For use in Denmark	686300-081	For use in Saudi Arabia	686300-171
For use in France	686300-051	For use in Slovenia	686300-BA1
For use in Germany	686300-041	For use in South Korea	686300-AD1

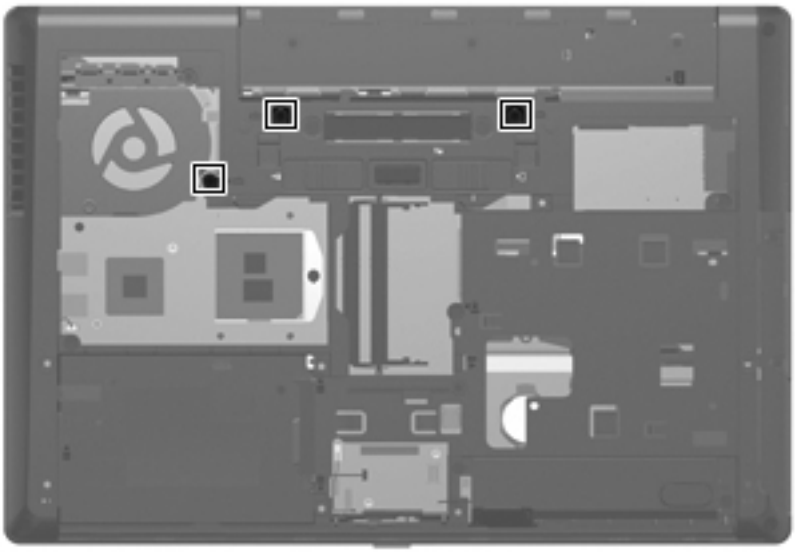
For use in country/region	Spare part number	For use in country/region	Spare part number
For use in Greece	686300-DJ1	For use in Spain	686300-071
For use in Hungary	686300-211	For use in Sweden and Finland	686300-B71
For use in Iceland	686300-DD1	For use in Switzerland	686300-BG1
For use in India	686300-D61	For use in Taiwan	686300-AB1
For use in Israel	686300-BB1	For use in Thailand	686300-281
For use in Italy	686300-061	For use in Turkey	686300-141
For use in Japan	686300-291	For use in the United Kingdom and Singapore	686300-031
For use in Latin America	686300-161	For use in the United States	686300-001
For use in the Netherlands	686300-B31		

Before removing the keyboard, follow these steps:

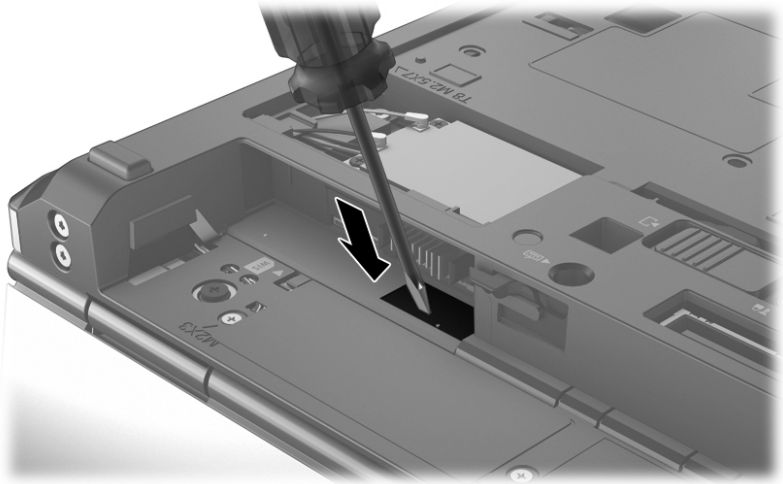
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 57).
5. Remove the service cover (see Service cover on page 59).

Remove the keyboard:

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



2. Rest and secure the computer on its right 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.

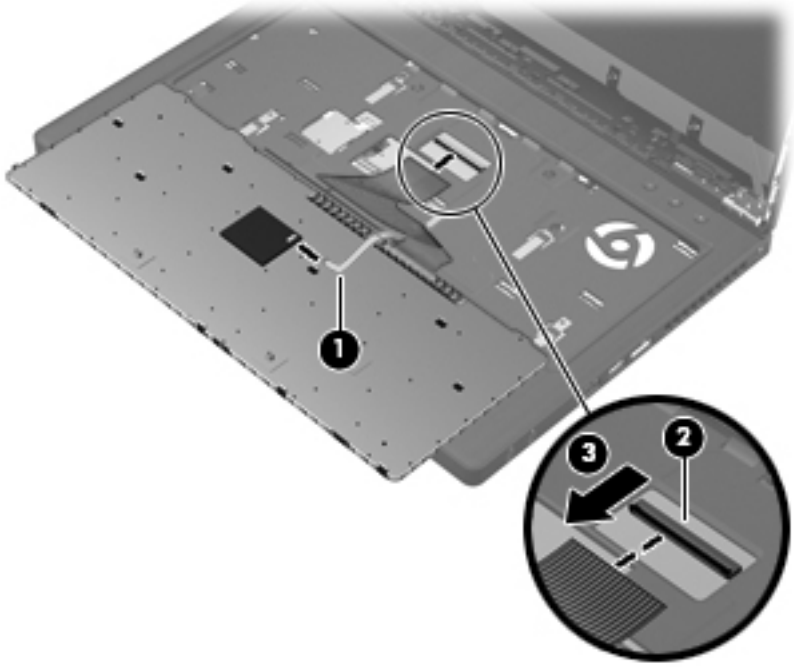


5. Turn the computer right-side up with the front toward you.

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

7. Release the zero insertion force (ZIF) connector to which the pointing stick cable is attached, and then disconnect the pointing stick cable **(1)** from the keyboard.

8. Release the ZIF connector **(2)** to which the keyboard cable is attached, and then disconnect the keyboard cable **(3)** from the system board.



9. Remove the keyboard.

Reverse this procedure to install the keyboard.

Base enclosure

Description	Spare part number
Base enclosure (includes four rubber feet, service cover release latch assembly, and battery release latch assembly)	685997-001

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 57), and then remove the following components:
   a. Service cover (see Service cover on page 59)
   b. Smart Card reader (see Smart Card reader on page 60)
   c. Optical drive (see Optical drive on page 61)
   d. Hard drive (see Hard drive on page 65)
   e. Modem module (see Modem module on page 74)
   f. Keyboard (see Keyboard on page 76)

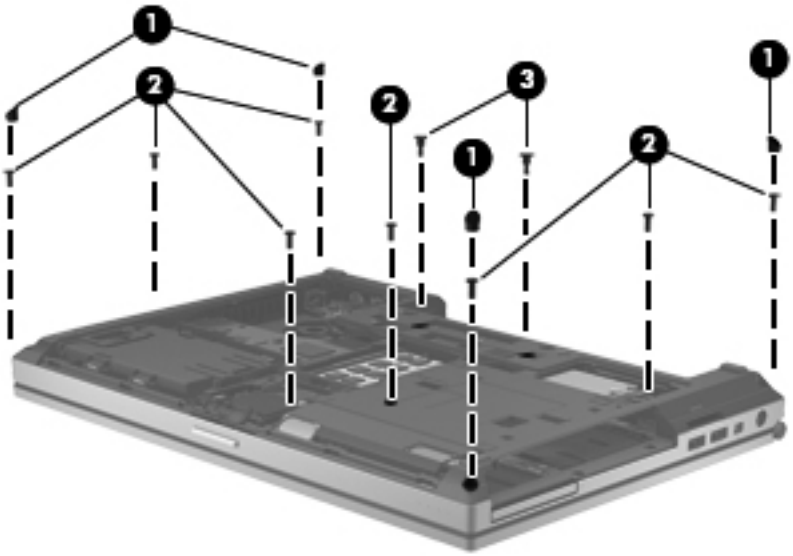
NOTE: When replacing the base enclosure, be sure to remove the following components from the defective base enclosure and install them on the replacement base enclosure:

- Bluetooth module and cable (see Bluetooth module on page 73)
- Speaker assembly (see Speaker assembly on page 83)
- RJ-11 jack assembly (see RJ-11 jack cable on page 85)

Remove the base enclosure:

1. Close the computer.
2. Turn the computer upside down, with the front toward you.
3. Remove the four rubber screw covers **(1)**. The rubber screw covers are included in the Rubber Kit, spare part number 642768-001.
4. Remove the eight Torx PM2.5×8.0 screws **(2)** that secure the base enclosure to the computer.

5. Remove the two Phillips PM2.5×11.0 screws from the docking connector alignment guides **(3)** that secure the base enclosure to the computer.



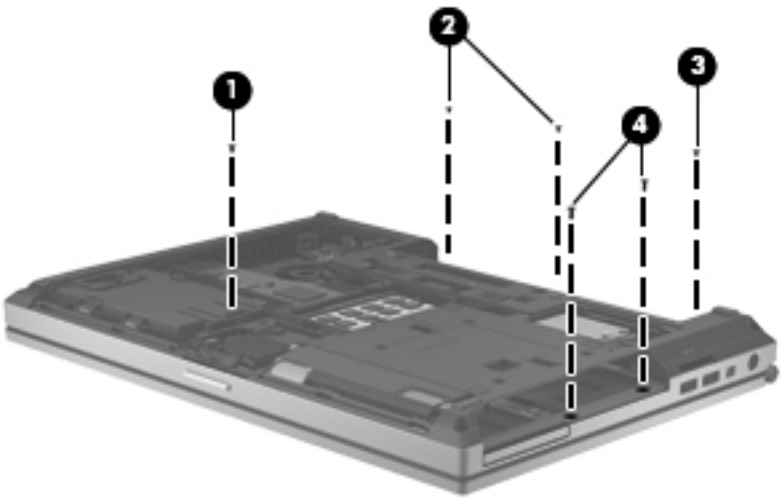
6. Remove the following screws that secure the base enclosure to the computer:

   (1) One Phillips PM2.0×3.0 screw from the hard drive bay

   (2) Two Phillips PM2.0×3.0 screws from the battery bay

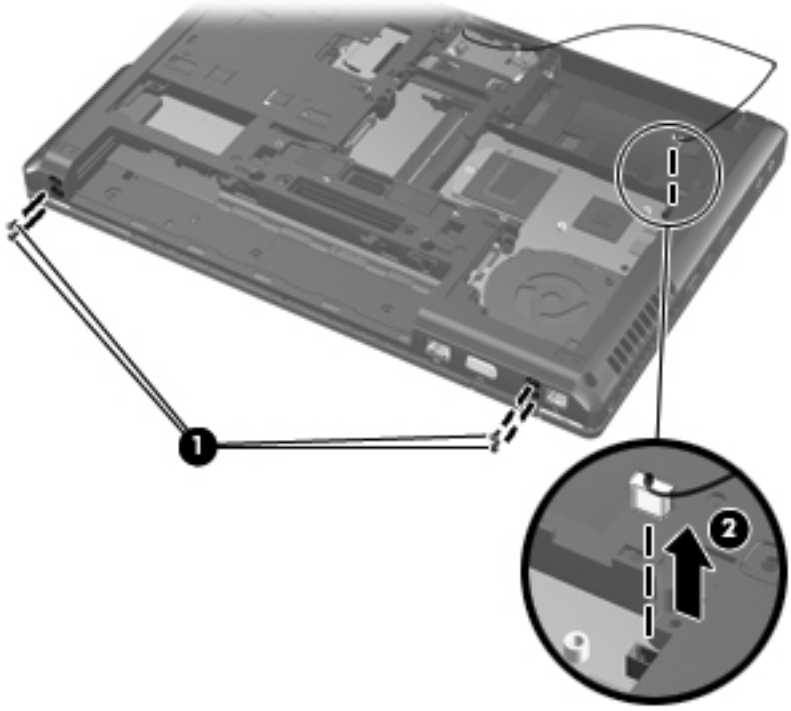
   (3) One Phillips PM2.0×4.0 broad head screw from the battery bay

   (4) Two Phillips PM2.5×4.5 screws from the optical drive bay

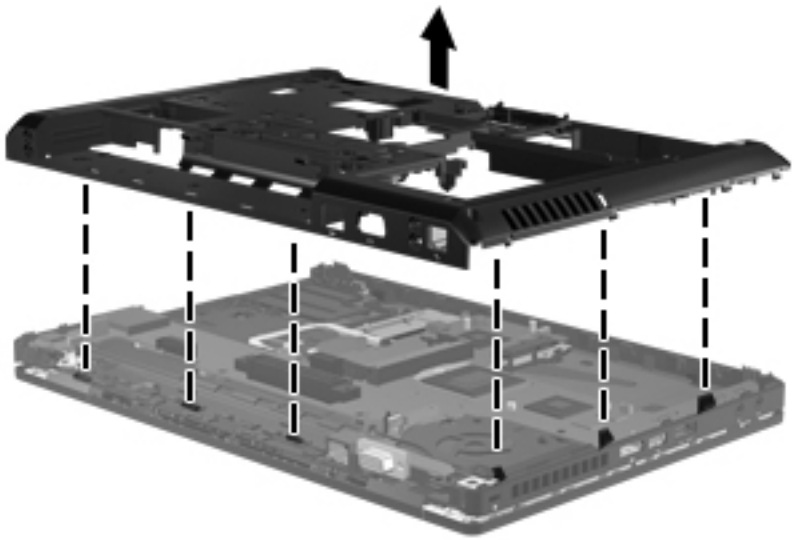


7. Position the computer with the battery bay toward you.
8. Remove the four Torx TM2.5×8.0 screws **(1)** from the rear panel of the computer.

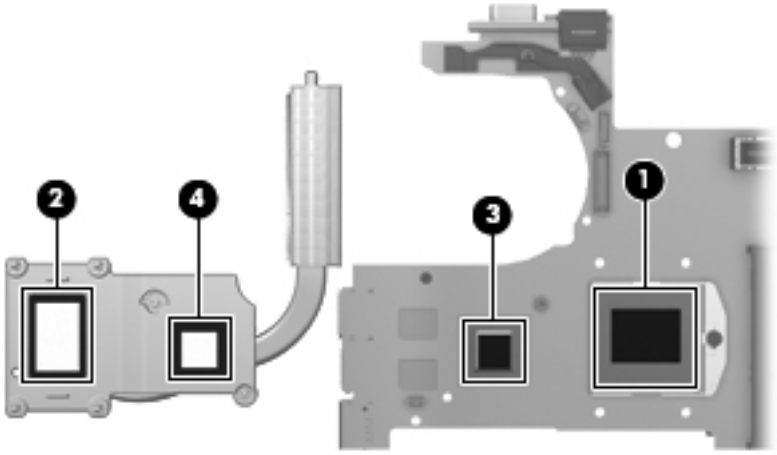
9. Disconnect the speaker cable from the system board connector **(2)**.



10. Remove the bottom cover from the computer.



NOTE: Thoroughly clean the thermal pad material from the surfaces of the base enclosure **(1)** and the PCH chip **(2)** each time you remove the base enclosure. All base enclosure and system board spare part kits include replacement thermal pad material.



Reverse this procedure to install the base enclosure.

Speaker assembly

Description	Spare part number
Speaker assembly (includes cable)	641840-001

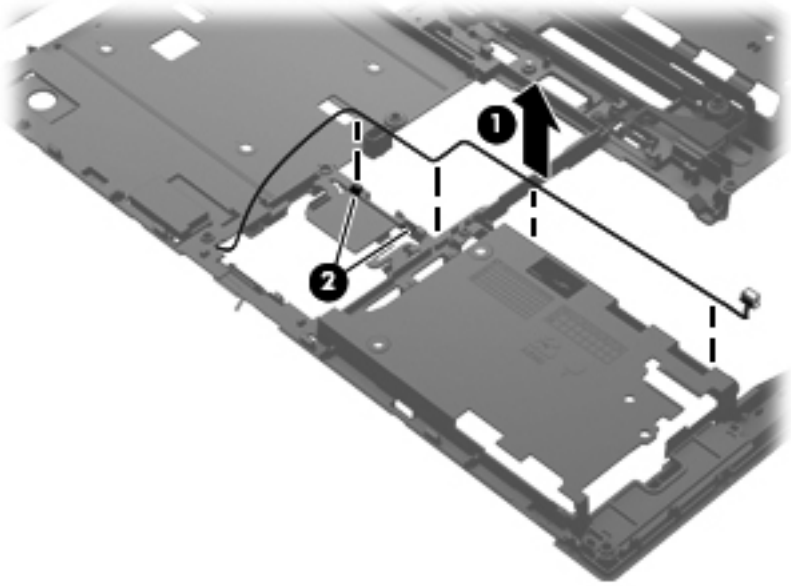
Before removing the speaker assembly, follow these steps:

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 57), and then remove the following components:
   a. Service cover (see Service cover on page 59)
   b. Smart Card reader (see Smart Card reader on page 60)
   c. Optical drive (see Optical drive on page 61)
   d. Hard drive (see Hard drive on page 65)
   e. Modem module (see Modem module on page 74)
   f. Keyboard (see Keyboard on page 76)
   g. Base enclosure (see Base enclosure on page 80)

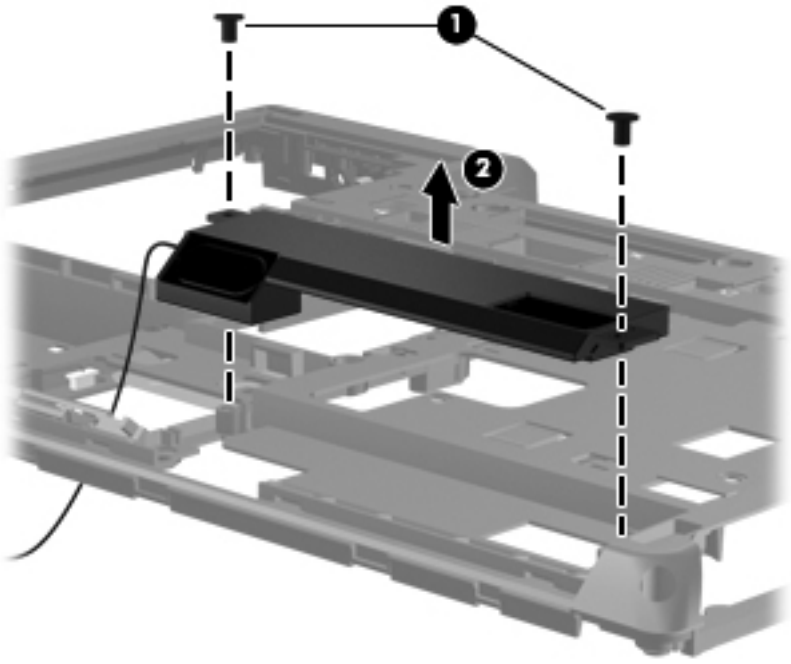
Remove the speaker assembly:

1. Turn the base enclosure right-side up, with the front toward you.

2. Release the speaker cable **(1)** from the clips **(2)** and routing channel built into the base enclosure. Note that the cable routes from inside the base enclosure to outside the base enclosure.



3. Turn the base enclosure upside down, with the front toward you.
4. Remove the two Phillips PM2.0×5.0 screws **(1)** that secure the speaker assembly to the base enclosure.
5. Remove the speaker assembly **(2)** from the base enclosure.



Reverse this procedure to install the speaker assembly.

RJ-11 jack cable

NOTE: The RJ-11 jack cable is included in the Cable Kit, spare part number 641830-001.

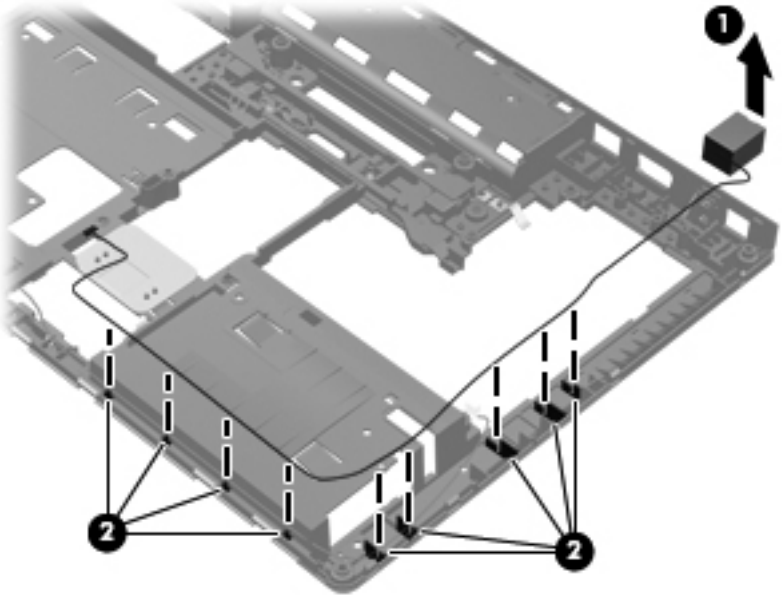
Before removing the RJ-11 jack cable, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 57), and then remove the following components:
   a. Service cover (see Service cover on page 59)
   b. Smart Card reader (see Smart Card reader on page 60)
   c. Optical drive (see Optical drive on page 61)
   d. Hard drive (see Hard drive on page 65)
   e. Modem module (see Modem module on page 74)
   f. Keyboard (see Keyboard on page 76)
   g. Base enclosure (see Base enclosure on page 80)

Remove the RJ-11 jack cable:

1. Turn the base enclosure right-side up, with the front toward you.
2. Release the RJ-11 jack from the clip **(1)** built into the base enclosure.

3. Release the RJ-11 jack cable from the clips **(2)** and routing channel built into the base enclosure.



4. Remove the RJ-11 jack cable.

Reverse this procedure to install the RJ-11 jack cable.

Service cover release latch assembly

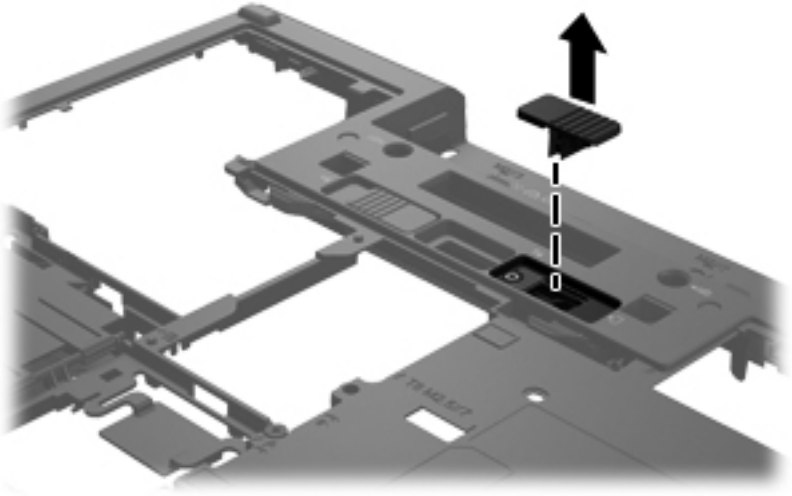
NOTE: The service cover release latch assembly components are included in the Latch Kit, spare part number 684339-001.

Before removing the service cover release latch assembly, follow these steps:

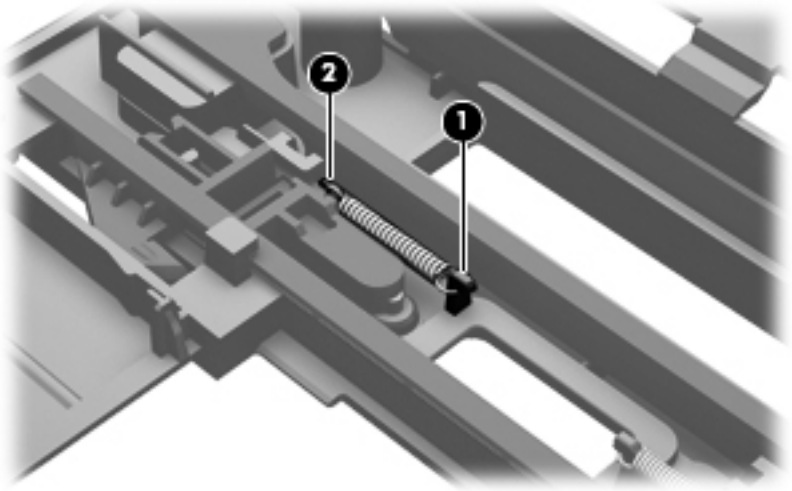
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 57), and then remove the following components:
   a. Service cover (see Service cover on page 59)
   b. Smart Card reader (see Smart Card reader on page 60)
   c. Optical drive (see Optical drive on page 61)
   d. Hard drive (see Hard drive on page 65)
   e. Modem module (see Modem module on page 74)
   f. Keyboard (see Keyboard on page 76)
   g. Base enclosure (see Base enclosure on page 80)

Remove the service cover release latch assembly:

1. Position the base enclosure with the front toward you.
2. Remove the service cover release latch actuator from the base enclosure.

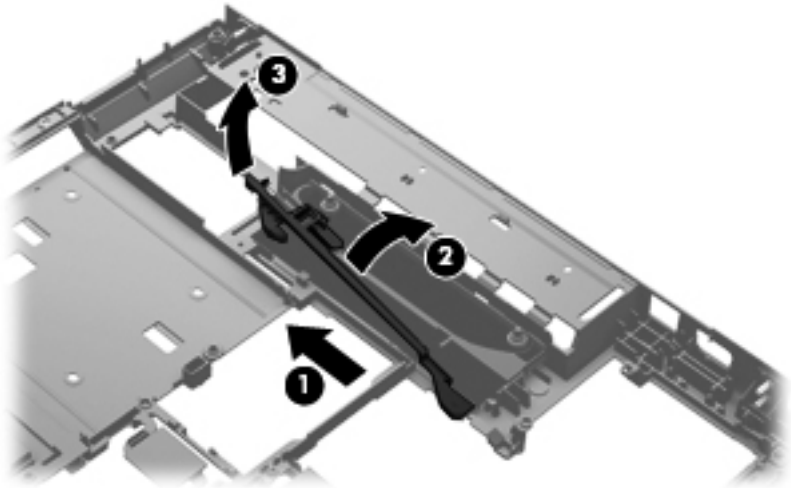


3. Turn the base enclosure upside down, with the front toward you.
4. Remove the service cover release latch arm spring from the spring retention hooks on the service cover release latch arm **(1)** and the base enclosure **(2)**.

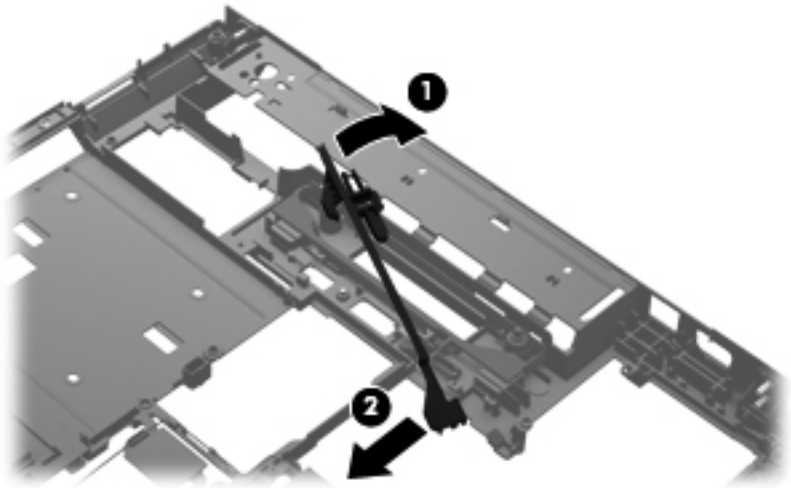


5. Slide the service cover release latch arm **(1)** as far to the left as it will go.
6. Flex the middle of the service cover release latch arm **(2)** up and back until it releases from the track built into the base enclosure.

7. Lift the left end of the service cover release latch arm **(3)** out of the openings in the base enclosure.



8. Swing the left end of the service cover release latch arm **(1)** toward the back of the computer.
9. Release the right end of the service cover release latch arm **(2)** from the openings in the base enclosure.



10. Remove the service cover release latch arm.

Reverse this procedure to install the service cover release latch assembly.

Battery release latch assembly

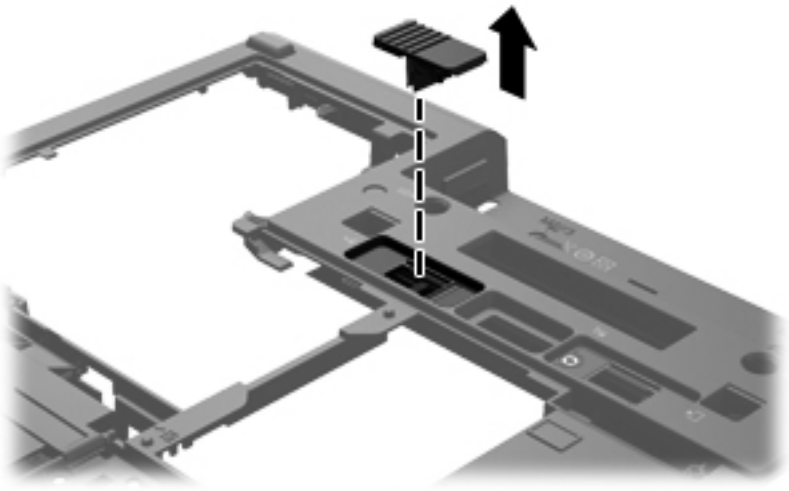
NOTE: The battery release latch assembly components are included in the Latch Kit, spare part number 684339-001.

Before removing the battery release latch 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 57), and then remove the following components:
   a. Service cover (see Service cover on page 59)
   b. Smart Card reader (see Smart Card reader on page 60)
   c. Optical drive (see Optical drive on page 61)
   d. Hard drive (see Hard drive on page 65)
   e. Modem module (see Modem module on page 74)
   f. Keyboard (see Keyboard on page 76)
   g. Base enclosure (see Base enclosure on page 80)

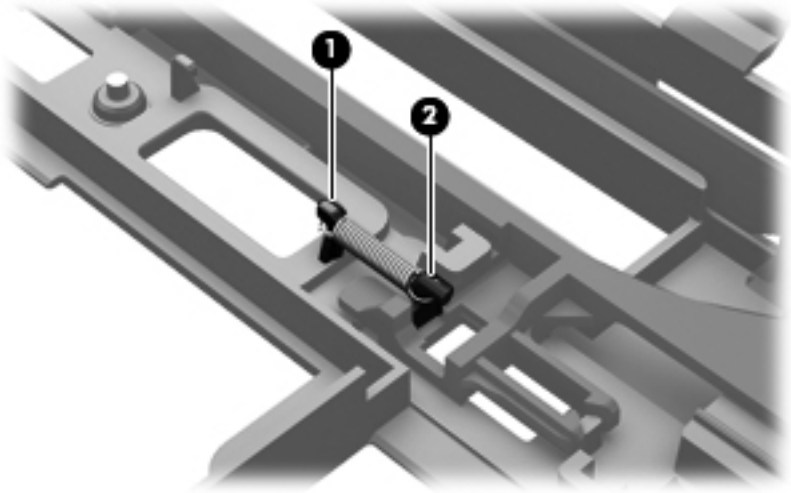
Remove the battery release latch assembly:

1. Position the base enclosure with the front toward you.
2. Remove the battery release latch actuator from the base enclosure.

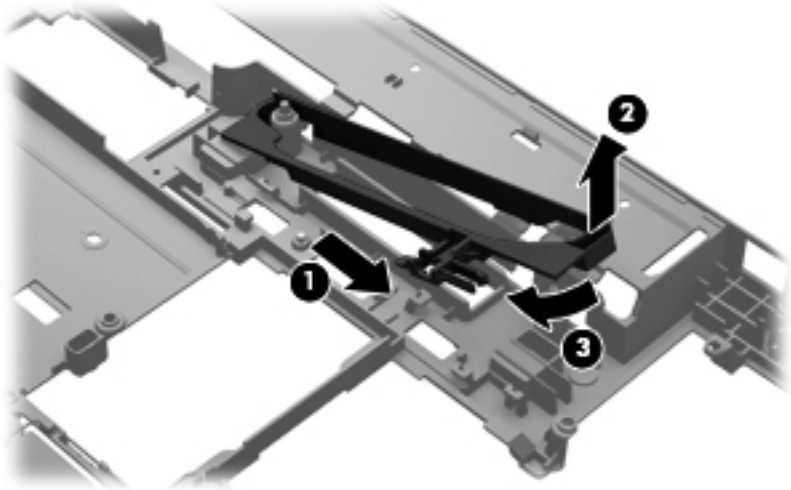


3. Turn the base enclosure upside down, with the front toward you.

4. Remove the battery release latch arm spring from the spring retention hooks on the base enclosure **(1)** and the battery release latch arm **(2)**.

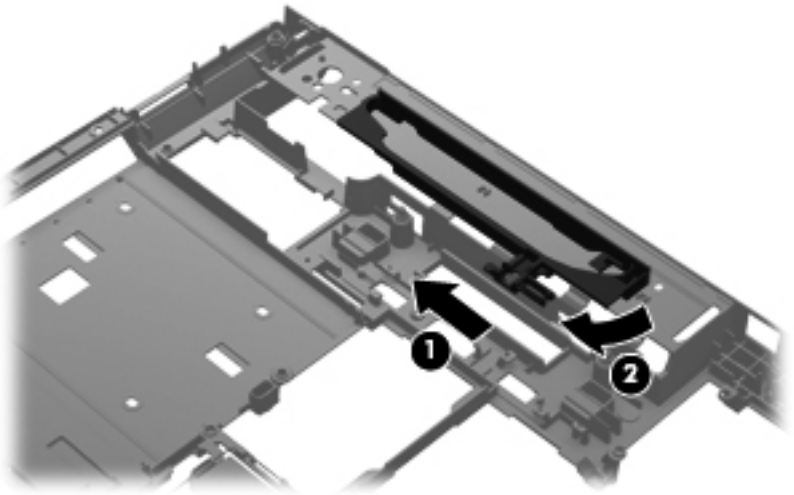


5. Slide the battery release latch arm **(1)** as far to the right as it will go.
6. Lift the right end of the battery release latch arm **(2)** until it is clear of the retention post built into the base enclosure.
7. Swing the right end of the battery release latch arm **(3)** clockwise until it is clear of the retention post built into the base enclosure.



8. Slide the battery release latch arm **(1)** as far to the left as it will go.

9. Swing the right end of the battery release latch arm **(2)** clockwise until the left end of the arm release from the openings in the base enclosure.



10. Remove the battery release latch arm.

Reverse this procedure to install the battery release latch assembly.

Fingerprint reader board

Description	Spare part number
Fingerprint reader board (includes cable)	684343-001

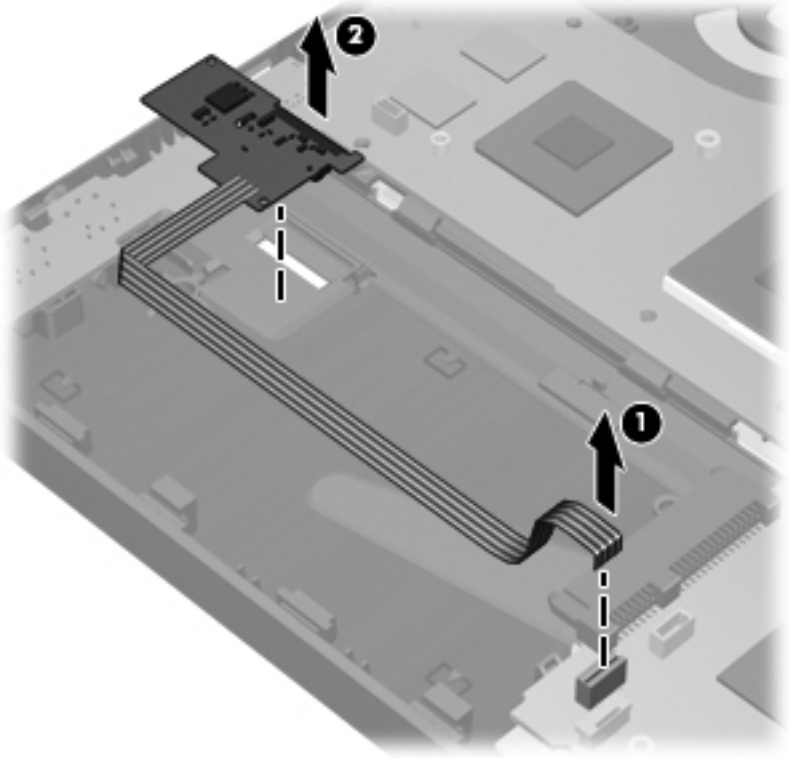
Before removing the fingerprint reader board, follow these steps:

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 57), and then remove the following components:
   a. Service cover (see Service cover on page 59)
   b. Smart Card reader (see Smart Card reader on page 60)
   c. Optical drive (see Optical drive on page 61)
   d. Hard drive (see Hard drive on page 65)
   e. Modem module (see Modem module on page 74)
   f. Keyboard (see Keyboard on page 76)
   g. Base enclosure (see Base enclosure on page 80)

Remove the fingerprint reader board:

1. Position the computer with the front toward you.
2. Disconnect the fingerprint reader board cable **(1)** from the LIF connector on the system board.

3. Detach the fingerprint reader board **(2)** from the clips built into the top cover.



4. Remove the fingerprint reader board and cable.

Reverse this procedure to install the fingerprint reader board.

RTC battery

Description	Spare part number
RTC battery (includes cable and double-sided tape)	652650-001

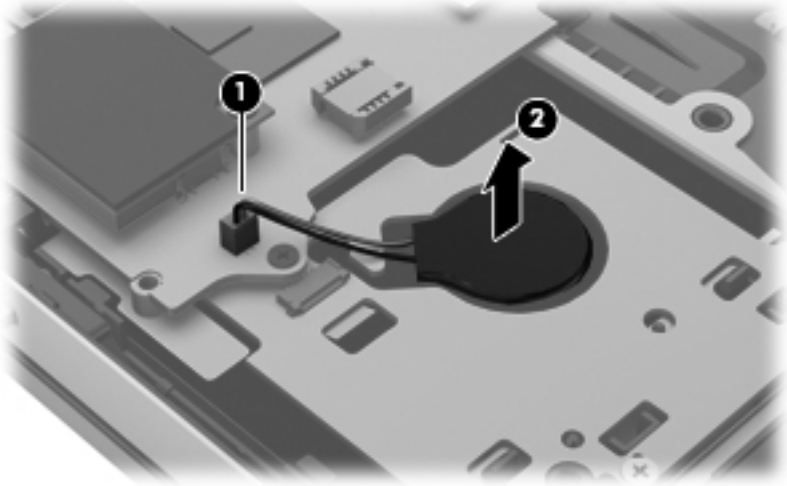
Before removing the RTC battery, follow these steps:

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 57), and then remove the following components:
   a. Service cover (see Service cover on page 59)
   b. Smart Card reader (see Smart Card reader on page 60)
   c. Optical drive (see Optical drive on page 61)
   d. Hard drive (see Hard drive on page 65)
   e. Modem module (see Modem module on page 74)
   f. Keyboard (see Keyboard on page 76)
   g. Base enclosure (see Base enclosure on page 80)

Remove the RTC battery:

1. Disconnect the RTC battery cable **(1)** from the TouchPad.

2. Detach the RTC battery **(2)** from the TouchPad. (The RTC battery is attached to the TouchPad with double-sided tape.)



3. Remove the RTC battery.

Reverse this procedure to install the RTC battery.

Display lid switch board

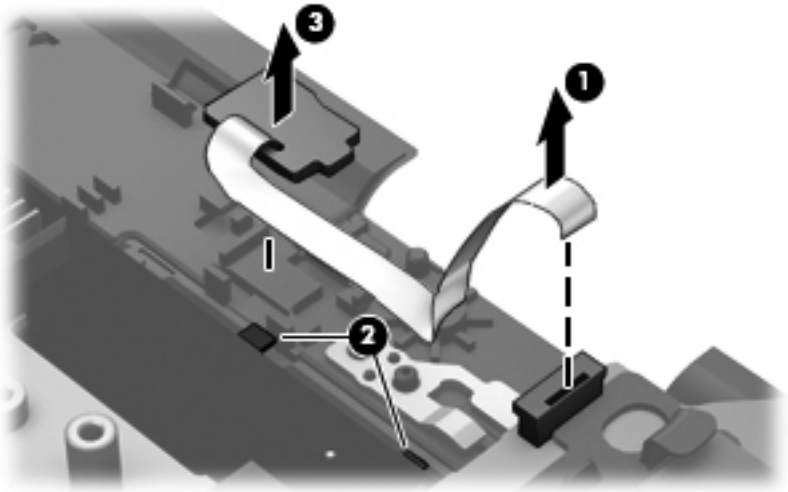
Description	Spare part number
Display lid switch board (includes cable)	684340-001

Before removing the display lid 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 57), and then remove the following components:
   a. Service cover (see Service cover on page 59)
   b. Smart Card reader (see Smart Card reader on page 60)
   c. Optical drive (see Optical drive on page 61)
   d. Hard drive (see Hard drive on page 65)
   e. Modem module (see Modem module on page 74)
   f. Keyboard (see Keyboard on page 76)
   g. Base enclosure (see Base enclosure on page 80)

Remove the display lid switch board:

1. Position the computer with the front toward you.
2. Disconnect the display lid switch board cable **(1)** from the LIF connector on the system board.
3. Detach the display lid switch board **(2)** from the clips built into the top cover.



4. Remove the display lid switch board and cable.

Reverse this procedure to install the display lid switch board and cable.

System board

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

Description	Spare part number
For use only on HP EliteBook 8470w Mobile Workstation computer models:	
For use only on computer models equipped with a graphics subsystem with discrete memory in all countries and regions except the People's Republic of China and the Ukraine	686042-001
For use only on computer models equipped with a graphics subsystem with discrete memory in the People's Republic of China and the Ukraine	691718-001
For use only on HP EliteBook 8470p Notebook PC computer models:	
For use only on computer models equipped with a graphics subsystem with discrete memory in all countries and regions except the People's Republic of China and the Ukraine	686041-001
For use only on computer models equipped with a graphics subsystem with discrete memory in the People's Republic of China and the Ukraine	691717-001
For use only on computer models equipped with a graphics subsystem with UMA memory in all countries and regions except the People's Republic of China and the Ukraine	686040-001
For use only on computer models equipped with a graphics subsystem with UMA memory in the People's Republic of China and the Ukraine	691716-001

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 57), and then remove the following components:
   a. Service cover (see Service cover on page 59)
   b. Smart Card reader (see Smart Card reader on page 60)
   c. Optical drive (see Optical drive on page 61)
   d. Hard drive (see Hard drive on page 65)
   e. Fan (see Fan on page 75)
   f. Modem module (see Modem module on page 74)
   g. Fan (see Fan on page 75)
   h. Keyboard (see Keyboard on page 76)
   i. Base enclosure (see Base enclosure on page 80)

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 58, if applicable)
- Memory module (see Memory module on page 67)
- WWAN module (see WWAN module on page 69)
- WLAN module (see WLAN module on page 71)
- Heat sink (see Heat sink on page 100)
- Processor (see Processor on page 104)

Remove the system board:

1. Release the wireless antenna cables **(1)** from the routing clips **(2)** attached to the system board.
2. Disconnect the following cables from the system board:

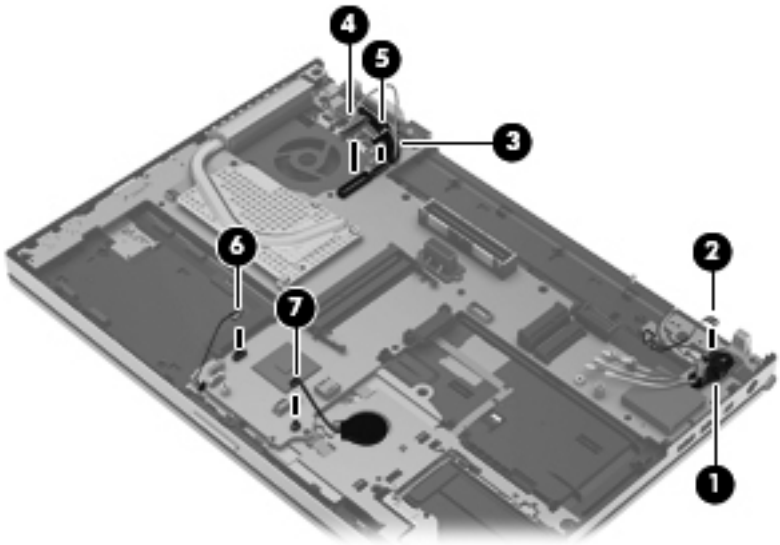
   (3) Display lid switch board cable

   (4) Display panel cable

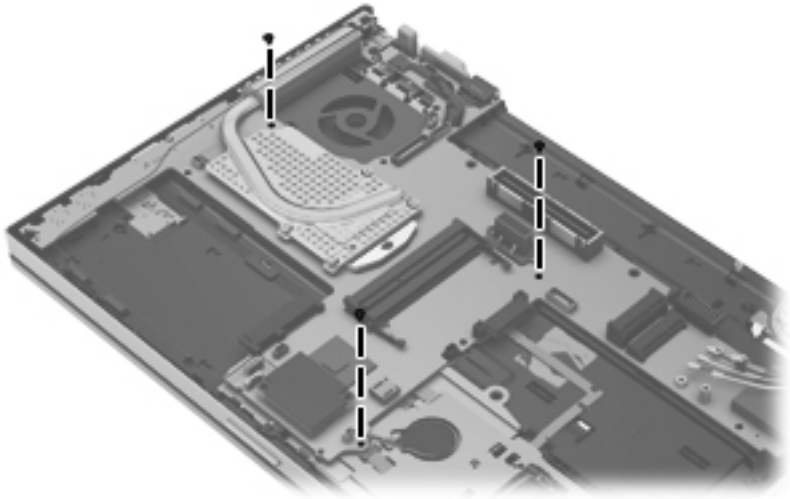
   (5) Webcam/microphone module cable

   (6) Fingerprint reader cable

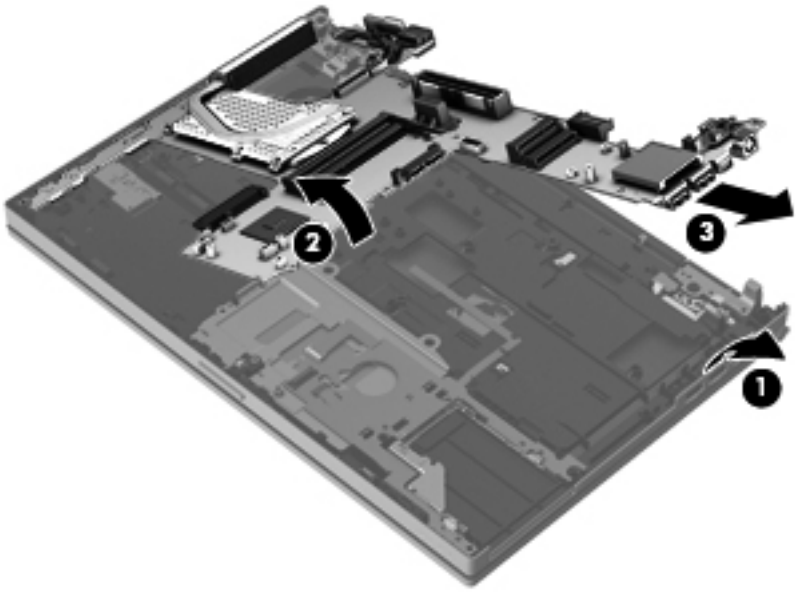
   (7) RTC battery cable



3. Remove the three Phillips PM2.5×4.0 screws that secure the system board to the top cover.



4. Flex the right side of the top cover **(1)** until the connectors on the right side of the system board are clear.
5. Lift the right side of the system board **(2)** until it rests at an angle.
6. Remove the system board **(3)** by sliding it up and to the right at an angle.



Reverse this procedure to install the system board.

Heat sink

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

Description	Spare part number
For use only on computer models equipped with a graphics subsystem with discrete memory	686021-001
For use only on computer models equipped with a graphics subsystem with UMA memory	693371-001

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 57), and then remove the following components:
   a. Service cover (see Service cover on page 59)
   b. Hard drive (see Hard drive on page 65)
   c. Optical drive (see Hard drive on page 65)
   d. WLAN module (see WLAN module on page 71)
   e. WWAN module (see WWAN module on page 69)
   f. Fan (see Fan on page 75)
   g. Keyboard (see Keyboard on page 76)
   h. Base enclosure (see Base enclosure on page 80)
   i. System board (see System board on page 97)

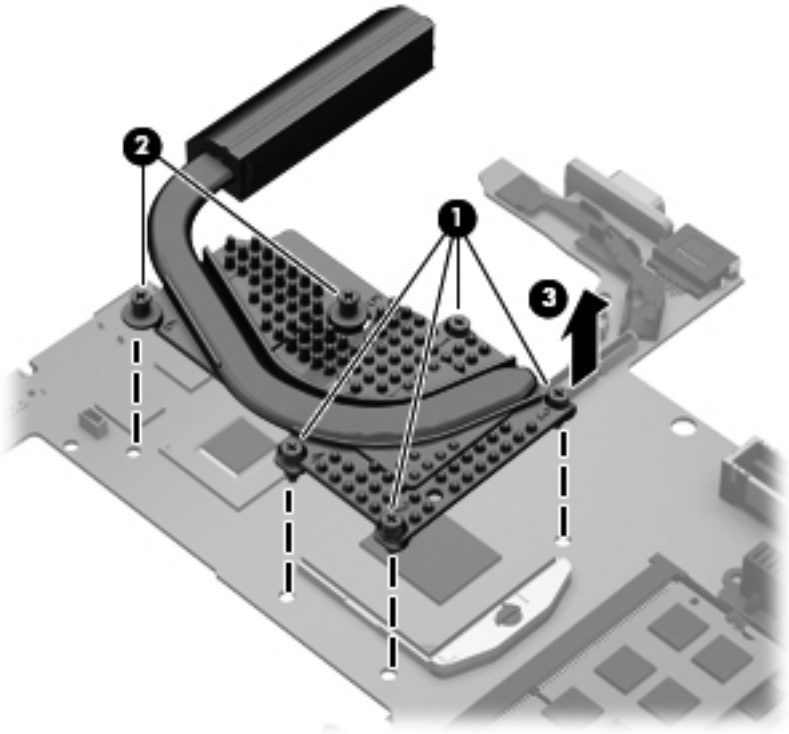
Remove the heat sink:

NOTE: Steps 1 and 2 apply to computer models equipped with a graphics subsystem with discrete memory. See steps 3 and 4 for heat sink removal information for computer models equipped with a graphics subsystem with UMA memory.

1. Following the 1, 2, 3, 4, 5, 6 sequence stamped into the heat sink, loosen the six captive Phillips screws **(1)** and **(2)** that secure the heat sink to the system board.

2. Remove the heat sink **(3)**.

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.

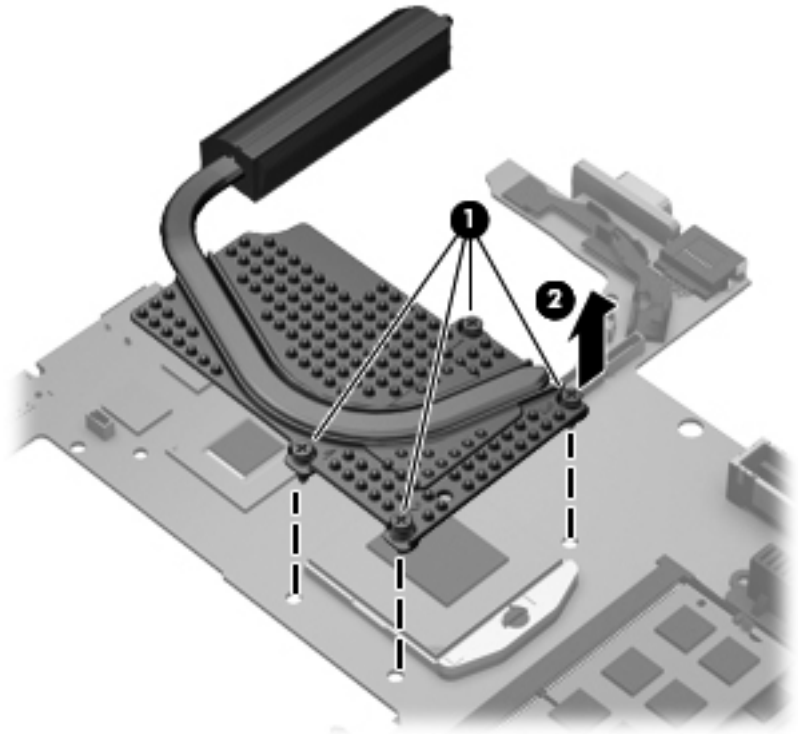


NOTE: Steps 3 and 4 apply to computer models equipped with a graphics subsystem with UMA memory. See steps 1 and 2 for heat sink removal information for computer models equipped with a graphics subsystem with discrete memory.

3. 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.

4. Remove the heat sink **(2)**.

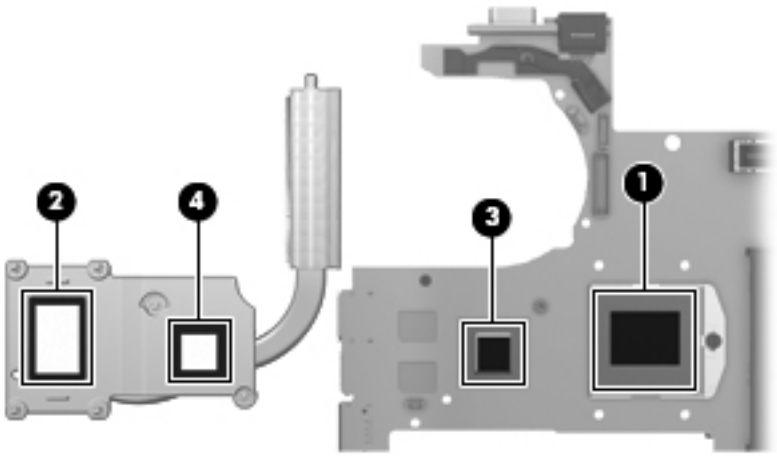
NOTE: Due to the adhesive quality of the thermal material located between the heat sink and the system board components, it may be necessary to move the heat sink from side to side to detach it.



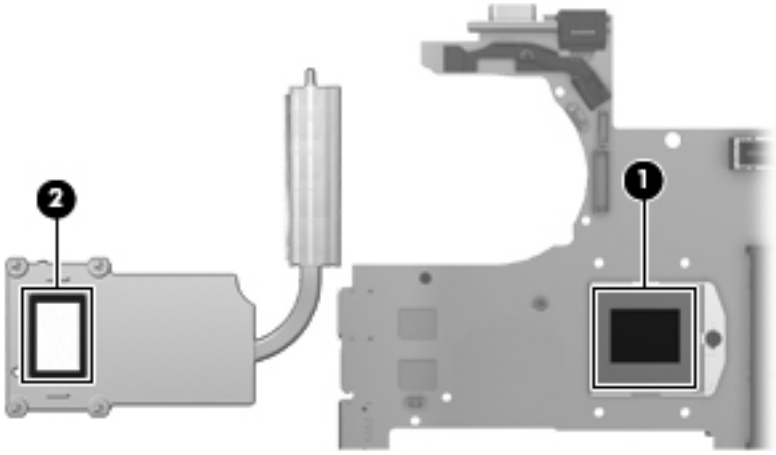
NOTE: The thermal material must be thoroughly cleaned from the surfaces of the heat sink and the system board components each time the heat sink is removed. Replacement thermal material is included with the heat sink, processor, and system board spare part kits.

The following illustration shows the replacement thermal material locations on a computer model equipped with a graphics subsystem with discrete memory.

- Thermal paste is used on the processor **(1)** and the heat sink section **(2)** that services it
- A thermal pad is used on the graphics subsystem chip **(3)** and the heat sink section **(4)** that services it



The following illustration shows the replacement thermal material locations on a computer model equipped with a graphics subsystem with UMA memory. 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.

Processor

NOTE: The processor spare part kit includes replacement thermal material.

Description	Spare part number
For use only on HP EliteBook 8470w Mobile Workstation computer models:	
Intel Quad Core i7-3820QM 2.70-GHz processor (SC turbo up to 3.70-GHz; 1600-MHz FSB, 8.0-MB L3 cache, 45 W)	681284-001
For use on all computer models:	
Intel Quad Core i7-3720QM 2.60-GHz processor (SC turbo up to 3.60-GHz; 1600-MHz FSB, 6.0-MB L3 cache, 45 W)	681283-001
Intel Quad Core i7-3610QM 2.30-GHz processor (SC turbo up to 3.30-GHz; 1600-MHz FSB, 6.0-MB L3 cache, 45 W)	680646-001
Intel Dual Core i7-3520M 2.90-GHz processor (SC turbo up to 3.60-GHz; 1600-MHz FSB, 4.0-MB L3 cache, 35 W)	681954-001
Intel Dual Core i5-3360M 2.80-GHz processor (SC turbo up to 3.50-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W)	681953-001
Intel Dual Core i5-3320M 2.60-GHz processor (SC turbo up to 3.30-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W)	681952-001
For use only on HP EliteBook 8470p Notebook PC computer models:	
Intel Dual Core i5-3210M 2.50-GHz processor (SC turbo up to 3.10-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W)	680645-001
Intel Core i3-3110M 2.40-GHz processor (1600-MHz FSB, 3.0-MB L3 cache, 35 W)	682417-001

Before removing the processor, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 57), and then remove the following components:
   a. Service cover (see Service cover on page 59)
   b. Hard drive (see Hard drive on page 65)
   c. Optical drive (see Hard drive on page 65)
   d. WLAN module (see WLAN module on page 71)
   e. WWAN module (see WWAN module on page 69)
   f. Fan (see Fan on page 75)

g. Keyboard (see Keyboard on page 76)

h. Base enclosure (see Base enclosure on page 80)

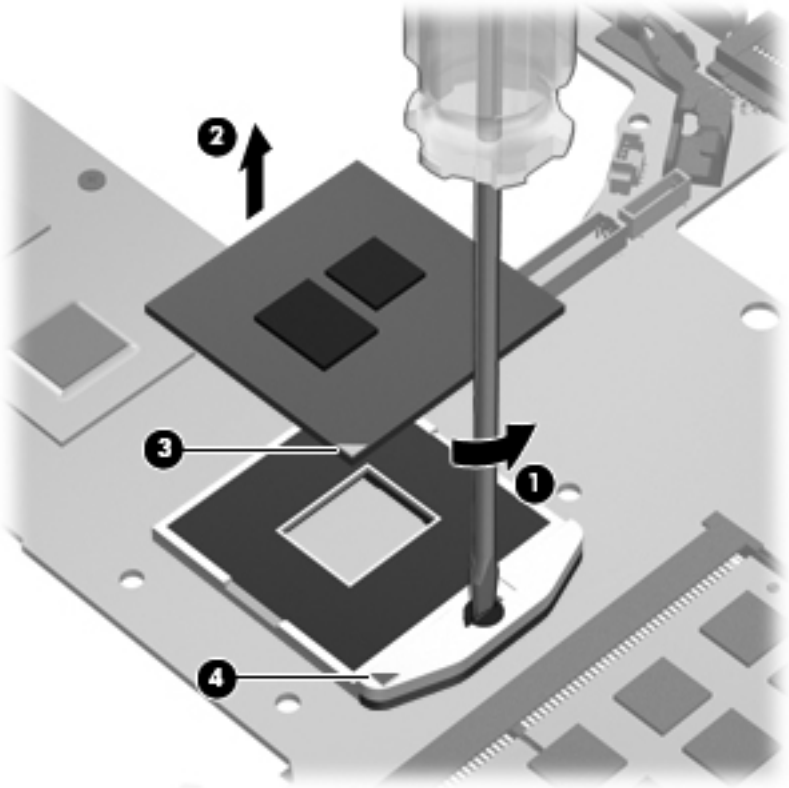
i. System board (see System board on page 97)

j. Heat sink (see System board on page 97)

Remove the processor:

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

NOTE: The gold triangle **(3)** on the processor must be aligned with the triangle icon **(4)** embossed on the processor socket when you install the processor.



Reverse this procedure to install the processor.

ExpressCard assembly

Description	Spare part number
ExpressCard assembly	684345-001

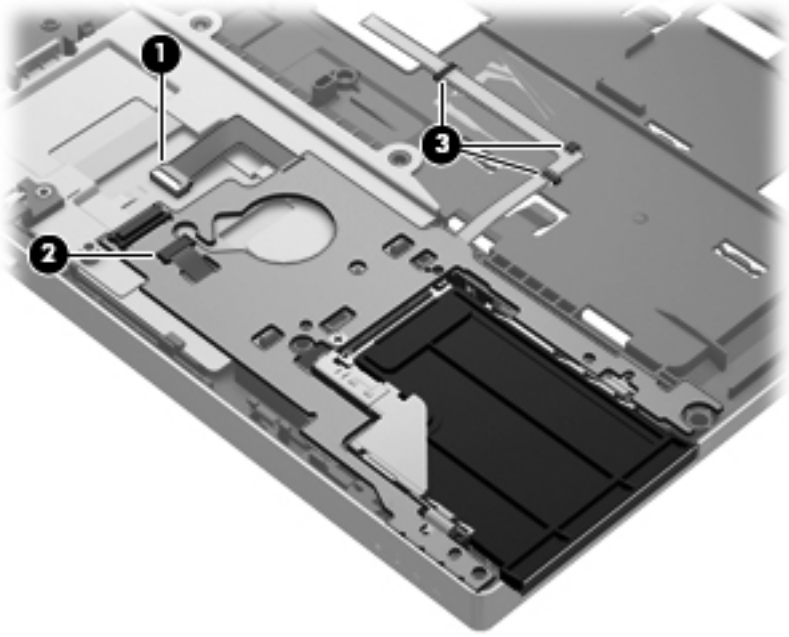
Before removing the ExpressCard assembly, follow these steps:

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 57), and then remove the following components:
   a. Service cover (see Service cover on page 59)
   b. Hard drive (see Hard drive on page 65)
   c. Optical drive (see Hard drive on page 65)
   d. WLAN module (see WLAN module on page 71)
   e. WWAN module (see WWAN module on page 69)
   f. Fan (see Fan on page 75)
   g. Keyboard (see Keyboard on page 76)
   h. Base enclosure (see Base enclosure on page 80)
   i. System board (see System board on page 97)

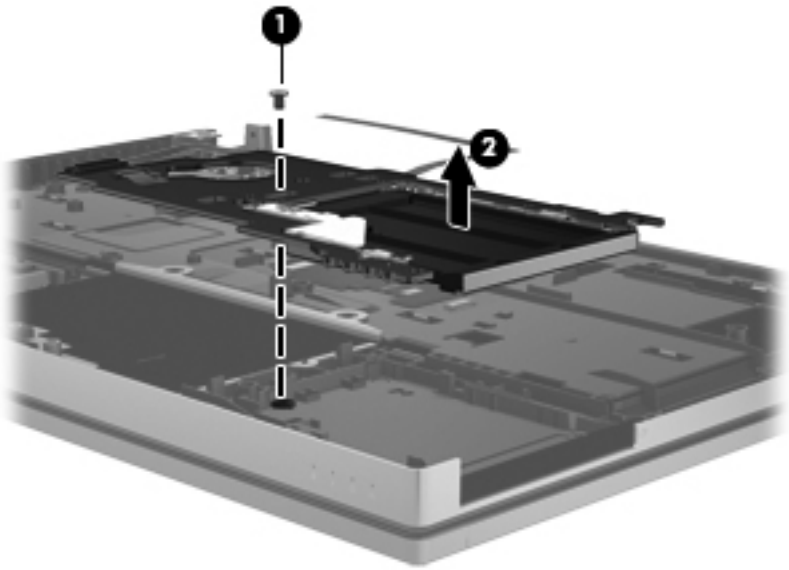
Remove the ExpressCard assembly:

1. Release the ZIF connector **(1)** to which the ExpressCard assembly cable is attached, and then disconnect the ExpressCard assembly cable from the TouchPad board.
2. Release the ZIF connector **(2)** to which the TouchPad cable is attached, and then disconnect the TouchPad cable from the ExpressCard assembly.

3. Release the ExpressCard assembly cable from the clips **(3)** built into the top cover.



4. Remove the Phillips PM2.0×4.0 screw **(1)** that secures the ExpressCard assembly to the top cover.
5. Remove the ExpressCard assembly **(2)**.



Reverse this procedure to install the ExpressCard assembly.

Display assembly

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

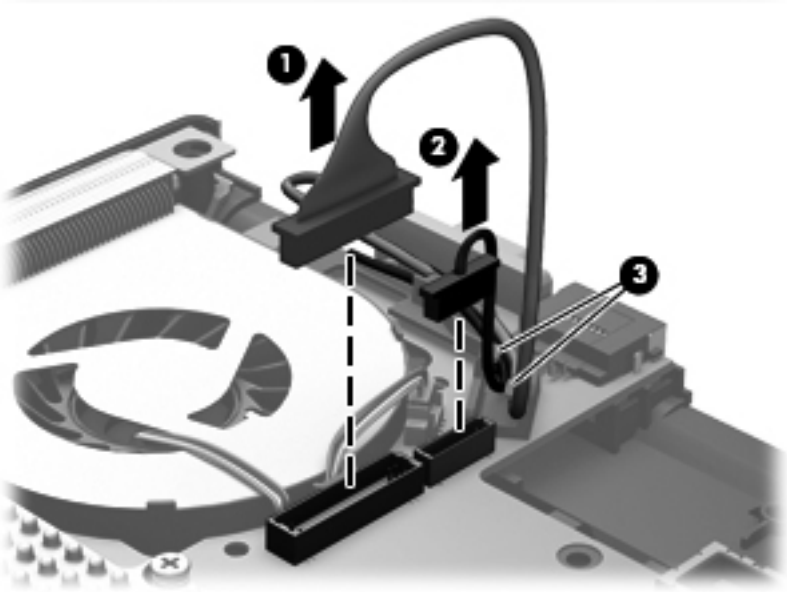
Before removing the display assembly, follow these steps:

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 57), and then remove the following components:
   a. Service cover (see Service cover on page 59)
   b. Hard drive (see Hard drive on page 65)
   c. Optical drive (see Hard drive on page 65)
   d. WLAN module (see WLAN module on page 71)
   e. WWAN module (see WWAN module on page 69)
   f. Fan (see Fan on page 75)
   g. Keyboard (see Keyboard on page 76)
   h. Base enclosure (see Base enclosure on page 80)

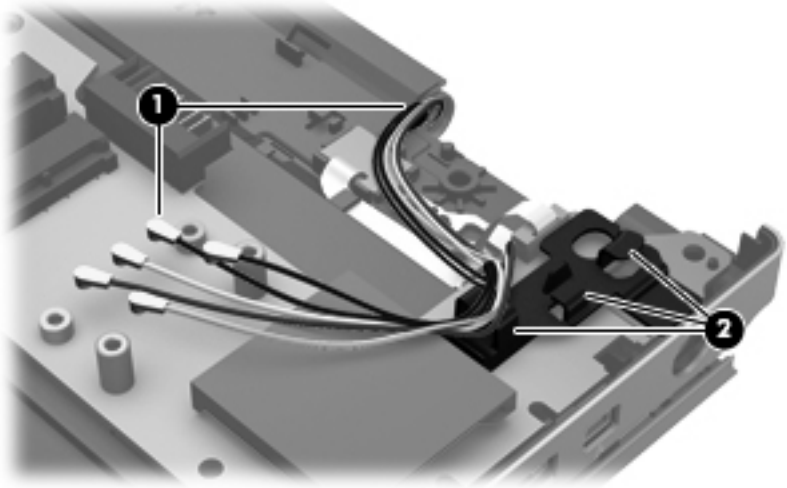
Remove the display assembly:

1. Disconnect the display panel cable **(1)** and the webcam/microphone module cable **(2)** from the system board.

2. Release the display panel cable and the webcam/microphone module cable from the routing channel **(3)** attached to the system board.

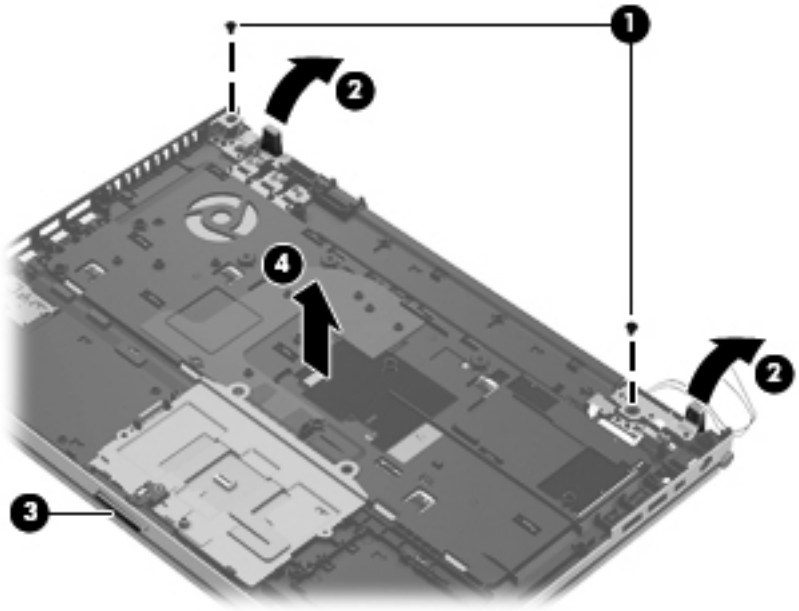


3. Release the wireless antenna cables **(1)** from the routing channel **(2)** attached to the system board.



4. Remove the two Phillips PM2.5×4.5 screws **(1)** that secure the display assembly to the top cover.
5. Swing the display hinges **(2)** back until the top cover is free for removal.
6. Press the display release latch **(3)** to release the display assembly from the top cover.

7. Remove the computer **(4)** from the display assembly.



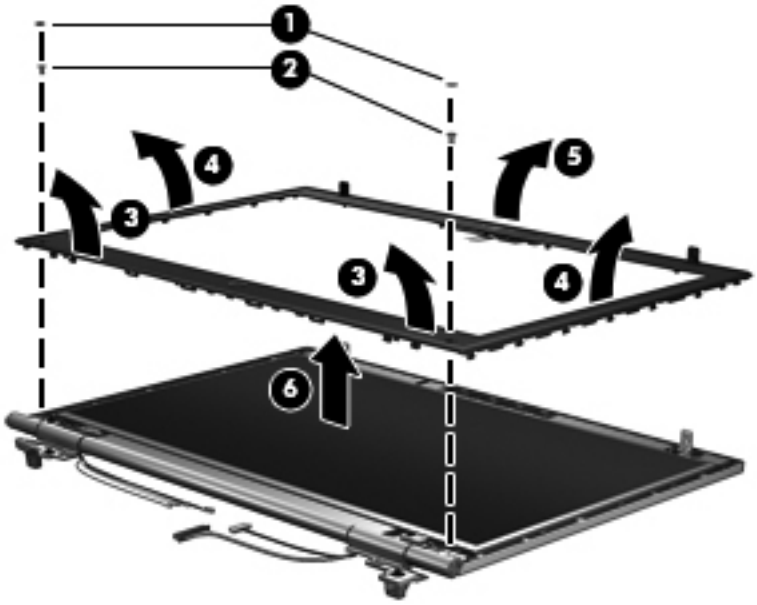
8. If it is necessary to replace the display bezel or any of the display assembly subcomponents:

   a. Remove the rubber screw covers **(1)**. The rubber screw covers are available in the Display Rubber Kit, spare part number 642785-001.

   b. Remove the two Phillips PM2.5×5.0 screws **(2)** that secure the display bezel to the display assembly.

   c. Flex the inside edges of the bottom edge **(3)**, the left and right sides **(4)**, and the top edge **(5)** of the display bezel until the bezel disengages from the display enclosure.

d. Remove the display bezel **(6)**. The display bezel is available using spare part numbers 686014-001 (for use only on HP EliteBook 8470w Mobile Workstation computer models) and 686012-001 (for use only on HP ProBook 8470p Notebook PC computer models).



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

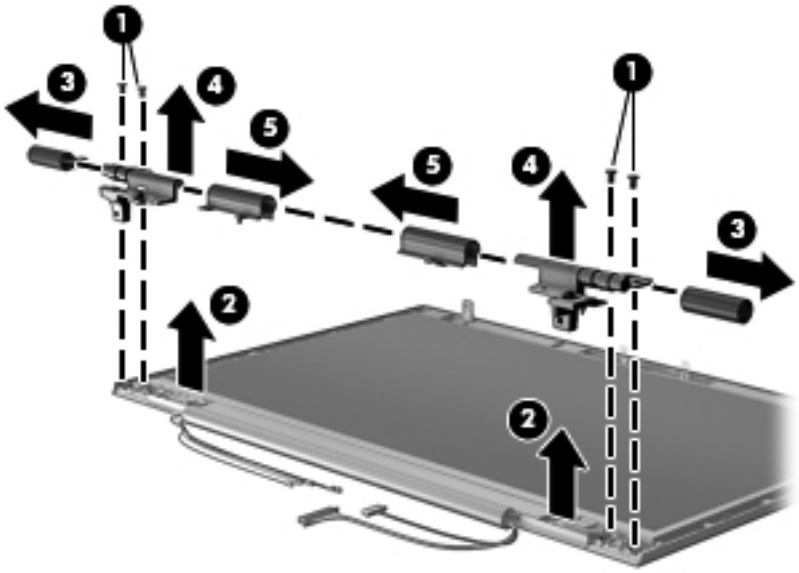
a. Remove the four Phillips PM2.0×3.0 screws **(1)** that secure the display hinge assemblies to the display enclosure.

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

c. Remove the display hinge outer cover **(3)**.

d. Remove the display hinge and inner cover **(4)** from the display enclosure.

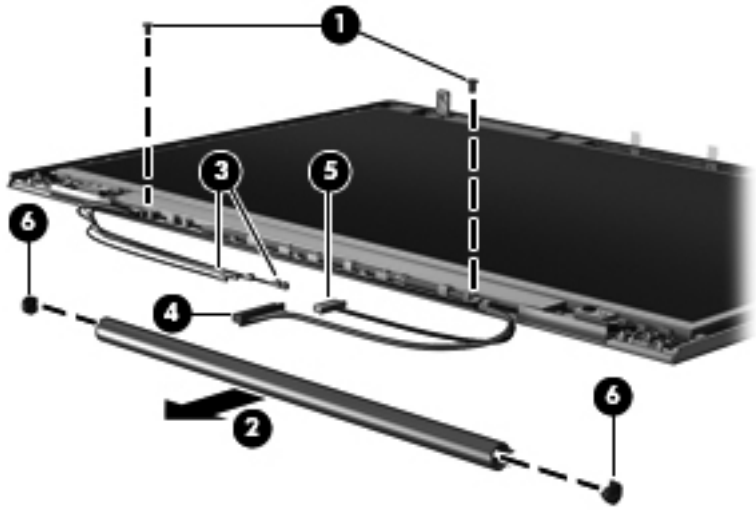
e. Remove the display hinge outer cover **(5)** from the hinge.



f. Remove the two Phillips PM2.0×3.0 screws **(1)** that secure the display hinge tube to the display enclosure.

g. Release the display hinge tube **(2)** by sliding it away from the display enclosure.

h. Release the wireless antenna cables **(3)**, display panel cable **(4)**, and webcam/microphone cable **(5)** from the display hinge tube, noting of the locations of the display cable guides **(6)** at the left and right ends of the display hinge tube.



i. Remove the display hinge tube. The display hinge tube, display hinge inner covers, display hinge outer covers, and display cable guides are available in the Display Hinge Cover Kit, spare part number 686024-001.

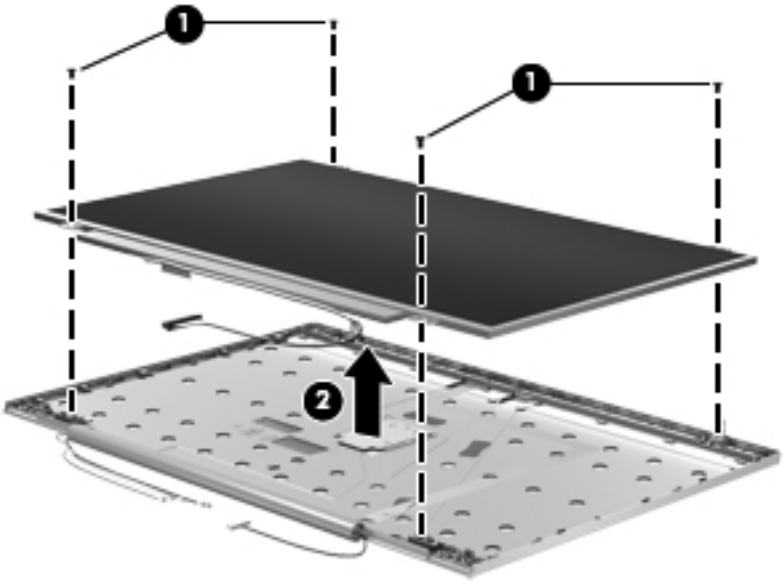
The display hinges are available using spare part number 642782-001.

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

a. Remove the four Phillips PM2.0×4.0 screws **(1)** that secure the display panel to the display enclosure.

b. Remove the display panel **(2)** from the display enclosure. The display panel is available using the following spare part numbers.

- 686047-001 — 14.0-in, LED, FLT, HD+, AntiGlare display panel
- 686046-001 — 14.0-in, LED, FLT, HD, AntiGlare display panel
- 684348-001 — 14.0-in, LED, SVA, HD+, AntiGlare display panel
- 684347-001 — 14.0-in, LED, SVA, HD, AntiGlare display panel



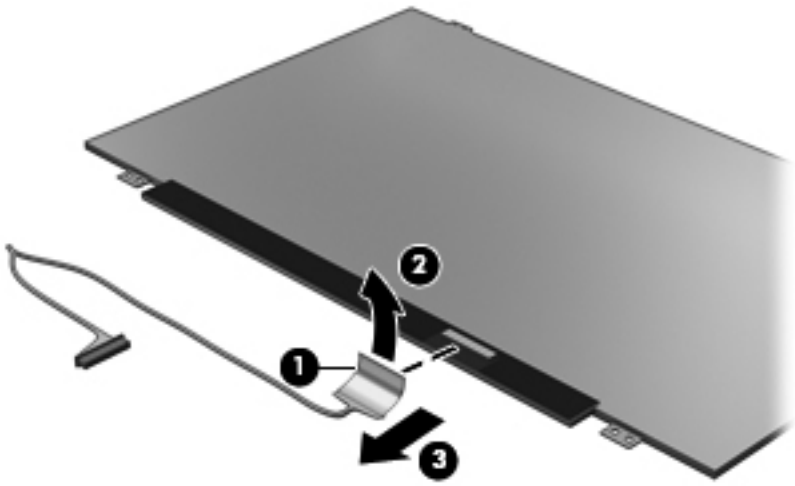
11. If it is necessary to replace the display panel cable:

    a. Turn the display panel upside down, with the display panel cable toward you.

    b. Detach the display panel cable **(1)** from the display panel rear surface.

    c. Release the adhesive support strip **(2)** that secures the display panel cable to the display panel.

    d. Disconnect the display panel cable **(3)** from the display panel.



    e. Remove the display panel cable. The display panel cable is included in the Display Panel Kit, spare part numbers:

    - 686019-001 — For use only on HP EliteBook 8470w Mobile Workstation computer models equipped with an HD+ display assembly
    - 686017-001 — For use only on HP EliteBook 8470w Mobile Workstation computer models equipped with an HD display assembly

- 686018-001 — For use only on HP EliteBook 8470p Notebook PC computer models equipped with an HD+ display assembly
- 686016-001 — For use only on HP EliteBook 8470p Notebook PC computer models equipped with an HD display assembly

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

    a. Release the shielding tabs **(1)** that secure the webcam/microphone module to the display enclosure.

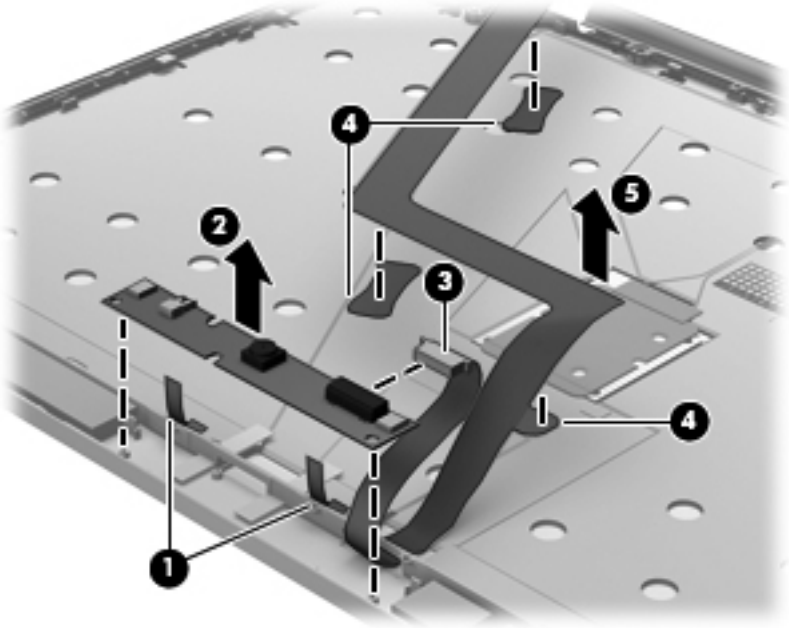
    b. Detach the webcam/microphone module **(2)** from the display enclosure. (The webcam/microphone module is attached to the display enclosure with double-sided tape.)

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

    d. Detach the webcam/microphone module cable from the contact points **(4)** on the display enclosure.

    e. Remove webcam/microphone module cable **(5)**. The webcam/microphone module is available using spare part number 686045-001. The microphone module is available using spare part number 642798-001.

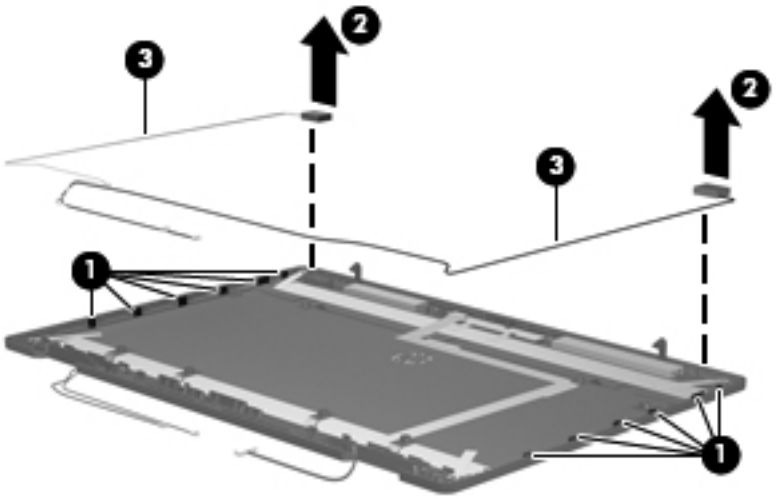


13. If it is necessary to replace the WLAN antenna cables and transceivers:

    a. Release the WLAN antenna cables from the clips **(1)** and routing channel built into the display enclosure.

    b. Detach the WLAN antenna transceivers **(2)** from the display enclosure. (The WLAN antenna transceivers are attached to the display enclosure with double-sided tape.)

c. Remove the WLAN antenna cables and transceivers **(3)**. The WLAN antenna cables and transceivers are included in the Antenna Kit, spare part number 685993-001.

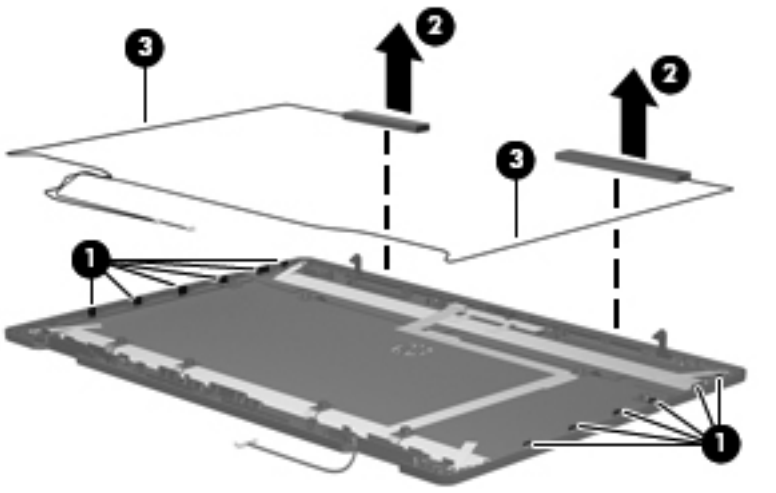


14. If it is necessary to replace the WWAN antenna cables and transceivers:

a. Release the WWAN antenna cables from the clips **(1)** and routing channel built into the display enclosure.

b. Detach the WWAN antenna transceivers **(2)** from the display enclosure. (The WWAN antenna transceivers are attached to the display enclosure with double-sided tape.)

c. Remove the WWAN antenna cables and transceivers **(3)**. The WWAN antenna cables and transceivers are included in the Antenna Kit, spare part number 685993-001.



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	**33.80 cm**	13.31 in
Depth	**23.13 cm**	9.11 in
Height (front to back)	**3.18 to 3.38 cm**	1.25 to 1.33 in
Weight		
HP EliteBook 8470w Mobile Workstation:		
Equipped with 9-cell battery, optical drive, one memory module, WLAN module, and solid-state drive	**2.25 kg**	4.96 lbs
Equipped with 9-cell battery, one memory module, WLAN module, and solid-state drive	**2.39 kg**	5.27 lbs
Equipped with 6-cell battery, optical drive, one memory module, WLAN module, and solid-state drive	**2.41 kg**	5.31 lbs
Equipped with 6-cell battery, one memory module, WLAN module, and solid-state drive	**2.55 kg**	5.62 lbs
HP EliteBook 8470w Mobile Workstation:		
Equipped with 9-cell battery, optical drive, graphics subsystem with UMA memory, one memory module, WLAN module, and solid-state drive	**2.51 kg**	5.53 lbs
Equipped with 9-cell battery, graphics subsystem with UMA memory, one memory module, WLAN module, and solid-state drive	**2.37 kg**	5.23 lbs
Equipped with 6-cell battery, optical drive, graphics subsystem with UMA memory, one memory module, WLAN module, and solid-state drive	**2.35 kg**	5.18 lbs
Equipped with 6-cell battery, graphics subsystem with UMA memory, one memory module, WLAN module, and solid-state drive	**2.21 kg**	4.87 lbs

	Metric	U.S.
Equipped with 3-cell battery, optical drive, graphics subsystem with UMA memory, one memory module, WLAN module, and solid-state drive	**2.21 kg**	4.87 lbs
Equipped with 3-cell battery, graphics subsystem with UMA memory, one memory module, WLAN module, and solid-state drive	**2.07 kg**	4.56 lbs
Input power		
Operating voltage and current	18.5 V dc @ 3.5 A - 65 W – or – 19.0 V dc @ 4.74 A - 90 W	
Temperature		
Operating	**5°C to 35°C**	41°F to 95°F
Nonoperating	**-20°C to 60°C**	-4°F to 140°F
Relative humidity (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	**-15 m to 3,048 m**	-50 ft to 10,000 ft
Nonoperating	**-15 m to 12,192 m**	-50 ft to 40,000 ft
NOTE: Applicable product safety standards specify thermal limits for plastic surfaces. The device operates well within this range of temperatures.		

14.0-inch WGA display specifications

	Metric	U.S.
Dimensions		
Height	**17.6 cm**	6.93 in
Width	**31.2 cm**	12.28 in
Diagonal	**35.7 cm**	14.06 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	HD+, WVA (1600 x 1900) HD, SVA (1366 x 768)	
Configuration	RGB vertical stripe	
Backlight	LED	
Character display	80 × 25	
Total power consumption	3.46 W	
Viewing angle	±65° horizontal, ±50° vertical (typical)	

Hard drive specifications

	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

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

Performing a recovery

Recovery allows you to repair or restore the computer to its original factory state. You can create an HP factory image restore DVD, using an installed or an external DVD±RW optical drive. You can also restore the computer to its factory condition from the HP dedicated recovery partition on the hard drive.

CAUTION: Using Recovery 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 recovery tool reinstalls the original operating system and HP programs and drivers that were installed at the factory. Software, drivers, and updates not installed by HP must be manually reinstalled. Personal files must be restored from a backup.

To restore the computer using the HP factory image restore DVD, you must first create the recovery disc. To create the recovery disc:

NOTE: HP recommends that you create the HP factory image restore DVD in the event of a system failure.

1. Select **Computer > More Applications**.
2. In the left pane, click **Tools**, and then click **Create HP Factory Image Restore DVD** in the right pane.
3. Follow the on-screen instructions to create an image file to burn a recovery disc.

To restore the computer from the partition, follow these steps:

1. If possible, back up all personal files.
2. Insert the HP Factory Image Restore DVD into the external optical drive and restart the computer.
3. As the computer is restarting, press f9 to open the Computer Setup boot option menu.
4. Select the **Notebook Upgrade Bay** option.
5. Press the down arrow to select **Restore SLED HP-BNB preload image** from the **Linux boot** menu, and then press enter.
6. Using the arrow keys, select **Yes** when prompted: Do you want to start the System-Restore?
7. Follow the on-screen instructions.

NOTE: You can also restore the computer from the partition by restarting the computer, and then pressing the f11 key.

NOTE: If you are unable to boot (start up) your computer from the hard drive partition with the primary operating system or from the recovery partition, and you did not create a system recovery disc, you must purchase a *SUSE Linux Enterprise Desktop Operating System* DVD to reinstall the operating system. For additional information, see the *Worldwide Telephone Numbers* booklet.

Backing up your information

You should back up your computer files on a regular schedule to maintain a current backup. You can manually back up your information to an optional external drive, a network drive, or discs. Back up your system at the following times:

- At regularly scheduled times
- Before the computer is repaired or restored
- Before you add or modify hardware or software

To back up your home directory files using **Backup Manager Settings**:

1. Select **Computer > More Applications > Tools > Backup Manager Settings**, and then click the **Backup my home directory** button.
2. Click **Storage Destination Location**, and then select a location to back up your information.
3. Click **Schedule**, and then select a time schedule to perform backups at a regularly scheduled time.

   To immediately back up your information, click the **Backup Now** check box.

NOTE: Before you back up your information, be sure you have designated a location to save the backup files.

4. Click the **Save and Backup** button to start the backup and to save the backup settings.

To restore backup files:

1. Select **Computer > More Applications > Tools > Backup Manager Restore**.
2. Click **Backup Source**, and then select the location of the backup files.
3. Click **Restore Destination**, and then select the destination to restore the files.
4. To restore all files from the selected location, click the **Restore all files** button. To restore selective files only, click the **Restore selected files** button, and then click the **Select Files** button and select the files to be restored.
5. Under **Restore Point**, click the time and date of the backup.

NOTE: If multiple backups have been performed, click the **Use the latest version** button to restore the latest version.

6. Click the **Restore** button to start restoring the files, or click the **Cancel** button to cancel the operation.

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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