HP ProBook 6475b Notebook PC and HP ProBook 6470b Notebook PC

Maintenance and Service Guide
IMPORTANT! This document is intended for
HP authorized service providers only.

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 ProBook 6475b Notebook PC	HP ProBook 6470b Notebook PC
Product Name	HP ProBook 6475b Notebook PC	√	
	HP ProBook 6470b Notebook PC		√
Processors	• AMD® A10-4600M 3.20-GHz/2.30-GHz processor (4.0-MB L2 cache, 1600-MHz DDR3, quad core, 35 W)	√	
	• AMD A8-4500M 2.80-GHz/1.90-GHz processor (4.0-MB L2 cache, 1600-MHz DDR3, quad core, 35 W)		
	• AMD A6-4400M 3.20-GHz/2.70-GHz processor (1.0-MB L2 cache, 1600-MHz DDR3, dual core, 35 W)		
	• AMD A4-4300M 3.00-GHz/2.50-GHz processor (1.0-MB L2 cache, 1600-MHz DDR3, dual core, 35 W)		

Category	Description	HP ProBook 6475b Notebook PC	HP ProBook 6470b Notebook PC
Processors *(continued)*	• Intel® Quad Core® i7-3540M 3.00-GHz processor (SC turbo up to 3.70-GHz; 1600- MHz FSB, 4.0-MB L3 cache, 35 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 i5-3380M 2.90-GHz processor (SC turbo up to 3.60-GHz; 1600-MHz FSB, 3.0-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 i5-3340M 2.70-GHz processor (SC turbo up to 3.40-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)		
	• 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 i3-3130M 2.60-GHz processor (1600-MHz FSB, 3.0-MB L3 cache, 35 W)		
	• Intel Core i3-3120M 2.50-GHz processor (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)		
	• Intel Core i3-2370M 2.40-GHz processor (1333-MHz FSB, 3.0-MB L3 cache, 35 W)		
	• Intel Celeron® B840 1.90-GHz processor (1333-MHz FSB, 2.0-MB L3 cache, 35 W)		
Chipset	AMD A70M fusion controller hub (FCH)	√	

Category	Description	HP ProBook 6475b Notebook PC	HP ProBook 6470b Notebook PC
Chipset *(continued)*	Mobile Intel QM77 chipset		√
	Mobile Intel HM76 chipset		
Graphics	AMD integrated universal memory architecture (UMA) graphics	√	
	Support for DisplayPort 1.2		
	Support for dual-display ports through the dock		
	• Radeon® HD 7660G graphics on computer models equipped with an AMD A10-4600M 3.20-GHz/2.30-GHz processor	√	
	• Radeon HD 7640G graphics on computer models equipped with an AMD A8-4500M 2.80-GHz/1.90-GHz processor		
	• Radeon HD 7520G graphics on computer models equipped with an AMD A6-4400M 3.20-GHz/2.70-GHz processor		
	• Radeon HD 7420G graphics on computer models equipped with an AMD A4-4300M 3.00-GHz/2.50-GHz processor		
	Switchable discrete graphics: AMD Radeon™ HD 7570M (64-bit), with 1024-MB GDDR5 (64-MB × 32,1.5V, 5-GBPS, quantity 4)		√
	Internal graphics: UMA with shared video memory		
	• Intel HD Graphics 4000 on computer models equipped with an Intel Quad Core i7, Intel Dual Core i5, and Intel Dual Core i3 processor		
	• Intel HD Graphics 3000 on computer models equipped with an Intel Dual Core i3-2370M processor		
	• Intel HD Graphics on computer models equipped with an Intel Celeron B840 processor		

Category	Description	HP ProBook 6475b Notebook PC	HP ProBook 6470b Notebook PC
Graphics *(continued)*	• 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)		
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	√	√
	DDR3-12800 (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)		
	• 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 ProBook 6475b Notebook PC	HP ProBook 6470b Notebook PC
Hard drive	Supports 6.35-cm (2.5-in) hard drives in 9.5-mm (.37-in) and 7.0-mm (.28-in) thicknesses (all hard drives use the same bracket)	√	√
	Customer-accessible		
	Serial ATA		
	Supports the following hard drives:		
	• 750-GB, 7200-rpm, 9.5-mm		
	• 500-GB, 7200-rpm, 7.0-mm self-encrypting drive (SED)		
	• 500-GB, 7200-rpm, 7.0-mm		
	• 320-GB, 7200-rpm, 7.0-mm		
Solid-state drive	Solid-state drive (SSD) mounts in the same bracket as the hard drive		√
	Customer-accessible		
	Serial ATA type II and III		
	Supports the following SSDs:		
	• 256-GB SED III		
	• 240-GB III		
	• 180-GB III		
	• 160-GB II		
	• 128-GB III		
	• 128-GB SATA III	√	
Upgrade drive	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		

Category	Description	HP ProBook 6475b Notebook PC	HP ProBook 6470b Notebook PC
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	√	√
	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	Realtek RTL8151FH-CG 10/100/1000 Ethernet network interface card (NIC)	√	√
	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		

Category	Description	HP ProBook 6475b Notebook PC	HP ProBook 6470b Notebook PC
Wireless *(continued)*	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 Combo 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		
	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 hs2350 HSPA+ Mobile Broadband Module		
	• HP lt2523 LTE/HSPA+ Mobile Broadband Module		
	• HP un2430 EV-DO/HSPA Mini Card		
	• HP lt2522 LTE/EV-DO Mobile Broadband Module		
	• HP un2430 EV-DO/HSPA Mini Card		
	• HP un2430 EV-DO/HSPA Mobile Broadband Module		
	Supports no WWAN option		
	Supports WWAN after market option		

Category	Description	HP ProBook 6475b Notebook PC	HP ProBook 6470b Notebook PC
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		
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		

Category	Description	HP ProBook 6475b Notebook PC	HP ProBook 6470b Notebook PC
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:		
	• 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)	√	√

Category	Description	HP ProBook 6475b Notebook PC	HP ProBook 6470b Notebook PC
Operating system	**Preinstalled:**	√	√
	• Windows® 8 ML 64 with Microsoft Basics (Japan only)		
	• Windows 8 Professional 64 with Microsoft Basics (Japan only)		
	• Windows 8 Professional 64 DPK with Windows 7 Professional 64 and 32 (Japan only)		
	• Windows 7 Home Premium 64 and 32 with Microsoft Basics		
	• Windows 7 Professional 64 and 32 with Microsoft Basics		
	• Windows 7 Service Pack 1		
	• FreeDOS		
	• SUSE Linux (SLED; People's Republic of China only)		
	Preinstalled with Microsoft Office:	√	√
	• Windows 8 CH 64-bit with Office 2010 Transition OPK (People's Republic of China only)		
	• Windows 8 EM 64-bit with Office 2010 Transition OPK (not available in Japan)		
	• Windows 8 ML 64-bit with Office 2010 Business and Home (Japan only; requires configuration with Office Personal Japan 2010 app AV)		
	• Windows 8 ML 64-bit with Office 2010 Personal (Japan only; requires configuration with Office Personal Japan 2010 app AV)		
	• Windows 8 ML 64-bit with Office 2010 Professional (Japan only; requires configuration with Office Personal Japan 2010 app AV)		
	• Windows 8 ML 64-bit with Office 2010 Transition OPK (not available in Japan)		
	(Continued)		

Category	Description	HP ProBook 6475b Notebook PC	HP ProBook 6470b Notebook PC
Operating system *(continued)*	**Preinstalled with Microsoft Office:** *(continued)*	√	√
	• Windows 8 Professional 64-bit DPK with Windows 7 Professional 64- and 32-bit with Office 2010 Business and Home (Japan only; requires configuration with Office Personal Japan 2010 app AV)		
	• Windows 8 Professional 64-bit DPK with Windows 7 Professional 64- and 32-bit with Office 2010 Personal (Japan only; requires configuration with Office Personal Japan 2010 app AV)		
	• Windows 8 Professional 64-bit DPK with Windows 7 Professional 64- and 32-bit with Office 2010 Professional (Japan only; requires configuration with Office Personal Japan 2010 app AV)		
	• Windows 8 Professional 64-bit DPK with Windows 7 Professional 64- and 32-bit with Office 2010 Starter (not available in Asia-Pacific countries and regions, Japan, or the People's Republic of China)		
	• Windows 8 Professional 64-bit with Office 2010 Business and Home (Japan only; requires configuration with Office Personal Japan 2010 app AV)		
	• Windows 8 Professional 64-bit with Office 2010 Personal (Japan only; requires configuration with Office Personal Japan 2010 app AV)		
	• Windows 8 Professional 64-bit with Office 2010 Professional (Japan only; requires configuration with Office Personal Japan 2010 app AV)		
	• Windows 8 Professional 64-bit with Office 2010 Transition OPK (not available in Japan)		
	• Windows 7 Home Basic 32-bit with Office Starter (emerging markets only)		
	(Continued)		

Category	Description	HP ProBook 6475b Notebook PC	HP ProBook 6470b Notebook PC
Operating system *(continued)*	**Preinstalled with Microsoft Office:** *(Continued)*	√	√
	• Windows 7 Home Premium 64- and 32-bit with Office Starter (not available in Japan)		
	• Windows 7 Home Premium 64-bit with Office 2010 Personal (only in Japan)		
	• Windows 7 Home Premium 64-bit with Office 2010 Home & Business (only in Japan)		
	• Windows 7 Home Premium 64-bit with Office 2010 Personal (only in Japan)		
	• Windows 7 Home Premium 64-bit with Office 2010 Professional (only in Japan)		
	• Windows 7 Professional 64- and 32-bit with Office 2010 Starter (not available in Japan)		
	• Windows 7 Professional 64- and 32-bit with Office 2010 Business & Home (only in Japan)		
	• Windows 7 Professional 64- and 32-bit with Office 2010 Personal (only in Japan)		
	• Windows 7 Professional 64- and 32-bit with Office 2010 Professional (only in Japan)		
	Restore media—DR-DVD:	√	√
	• Windows 8 (available with any Windows 8 operating system and required with Windows 8 Professional 64-bit DPK with Windows 7 image)		
	• Windows 7 (available with any Windows 7 HP, Windows 7 Professional loc, Windows 7 HB, or Windows 8 Professional 64-bit DPK with Windows 7 image)		

Category	Description	HP ProBook 6475b Notebook PC	HP ProBook 6470b Notebook PC
Operating system *(continued)*	**Restore media—OS-DVD:**	√	√
	• Windows 8 Professional 64-bit (required with Windows 8 Professional 64-bit DPK with Windows image)		
	• Windows 7 Home Basic 32-bit (available with any Windows 7 Home Basic location except Asia-Pacific countries and regions and the People's Republic of China)		
	• Windows 7 Home Premium 64- and 32-bit (available with any Windows 7 Premium location except Asia-Pacific countries and regions and the People's Republic of China)		
	• Windows 7 Professional 64- and 32-bit (available with any Windows 7 Professional or Windows 8 Professional 64-bit DPK with Windows image location except Asia-Pacific countries and regions and the People's Republic of China)		
	Certified:	√	√
	• Microsoft WHQL		
	• SuSE Linux Enterprise (SLED) 64-bit Service Pack 2		

Category	Description	HP ProBook 6475b Notebook PC	HP ProBook 6470b Notebook PC
Operating system *(continued)*	**Web-only support:**	√	√
	• Windows XP Pro 32-bit		
	• Windows 7 Enterprise 64- and 32-bit		
	• Windows 7 Ultimate 64- and 32-bit		
Serviceability	End user replaceable parts:	√	√
	• AC adapter		
	• Battery		
	• Hard drive		
	• Keyboard		
	• Memory module		
	• mSATA drive		
	• Optical drive		
	• Solid-state drive		
	• WLAN module		
	• WWAN module		

2 External component identification

Display
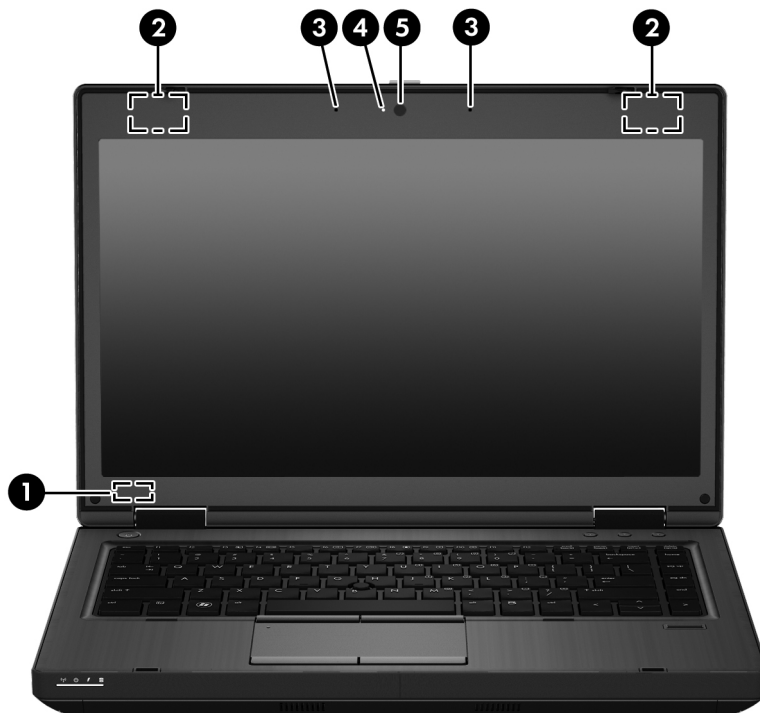
Item	Component	Description
(1)	Internal display switch	Turns off the display or initiates Suspend if the display is closed while the power is on. **NOTE:** The display switch is not visible from the outside of the computer.
(2)	WLAN antennas (2)*	Send and receive wireless signals to communicate with WLANs.
(3)	Internal microphones (2, select models only)	Record sound. **NOTE:** Only models equipped with a webcam have 2 internal microphones. Models without a webcam have only 1 internal microphone.
(4)	Webcam light (select models only)	On: The webcam is in use.

Item	Component	Description
(5)	Webcam (select models only)	Records video and captures still photographs.

*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: • Windows 8—From the Start screen, type `power`, select **Settings**, and then select **Power Options**. • Windows 7: **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.
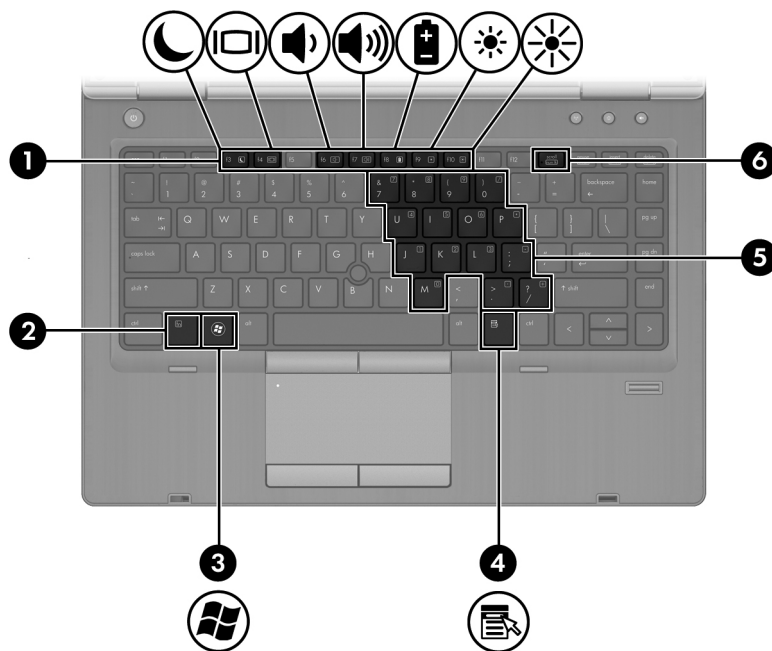
Item	Component	Description
(1)	Function keys	Execute frequently used system functions when pressed in combination with the fn key.
(2)	fn key	Executes frequently used system functions when pressed in combination with a function key.
(3)	Operating system logo key	Displays the operating system menu.
(4)	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

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

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.

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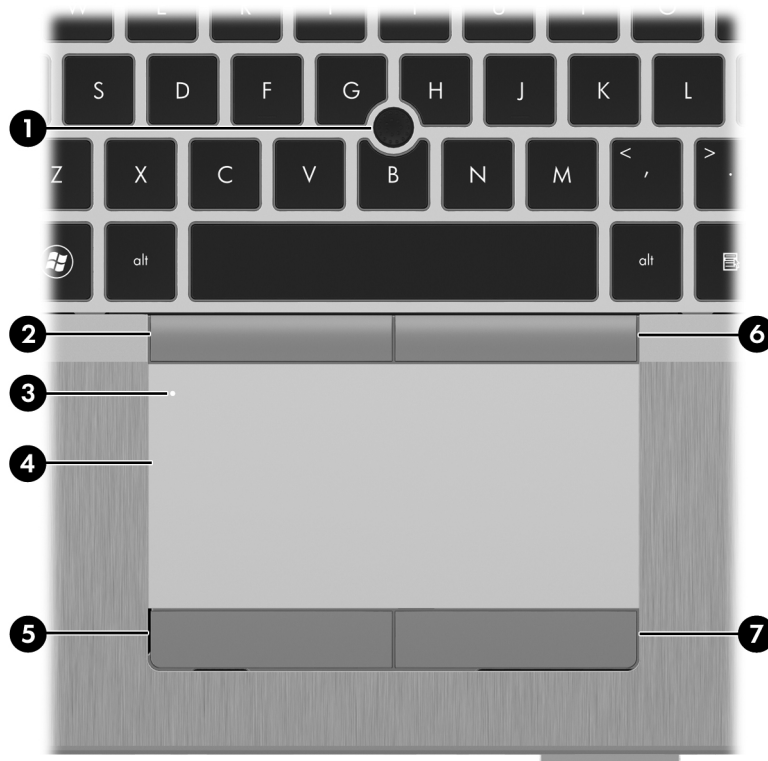
Item	Component	Description
(1)	Pointing stick (select models only)	Moves the pointer and selects or activates items on the screen.
(2)	Left pointing stick button (select models only)	Functions like the left button on an external mouse.
(3)	TouchPad on/off button	Turns the TouchPad on or off.
(4)	TouchPad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

Item	Component	Description
(5)	Left TouchPad button	Functions like the left button on an external mouse.
(6)	Right pointing stick button (select models only)	Functions like the right button on an external mouse.
(7)	Right TouchPad button	Functions like the right button on an external mouse.

Front

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

Item	Component	Description
(1)	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.

Item	Component	Description
(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

NOTE: Your computer may look slightly different from the illustration in this section.
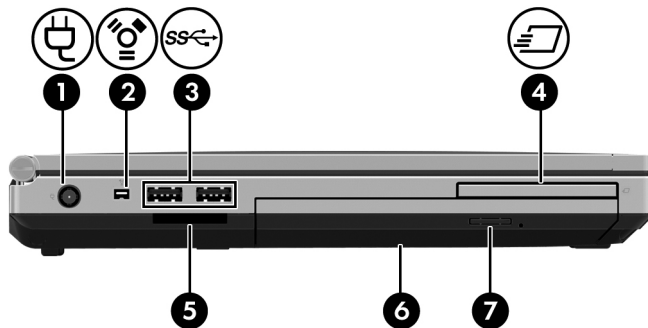
Item	Component	Description
(1)	Power connector	Connects an AC adapter.
(2)	1394 port	Connects an optional IEEE 1394 or 1394a device, such as a camcorder.
(3)	USB 3.0 ports (2)	Connect optional USB 3.0 devices and provide enhanced USB power performance.
(4)	HP ExpressCard slot or Smart Card reader (depending 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

Item	Component	Description
(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

Item	Component	Description
(1)	Audio-out (headphone) jack	Produces sound when connected to optional powered stereo speakers, headphones, earbuds, a headset, or television audio. **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)	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.
(4)	USB 2.0 port	Connects an optional USB device.
(5)	DisplayPort	Connects an optional digital display device, such as a high-performance monitor or projector.

Item	Component	Description
(6)	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. |
| **(7)** | 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
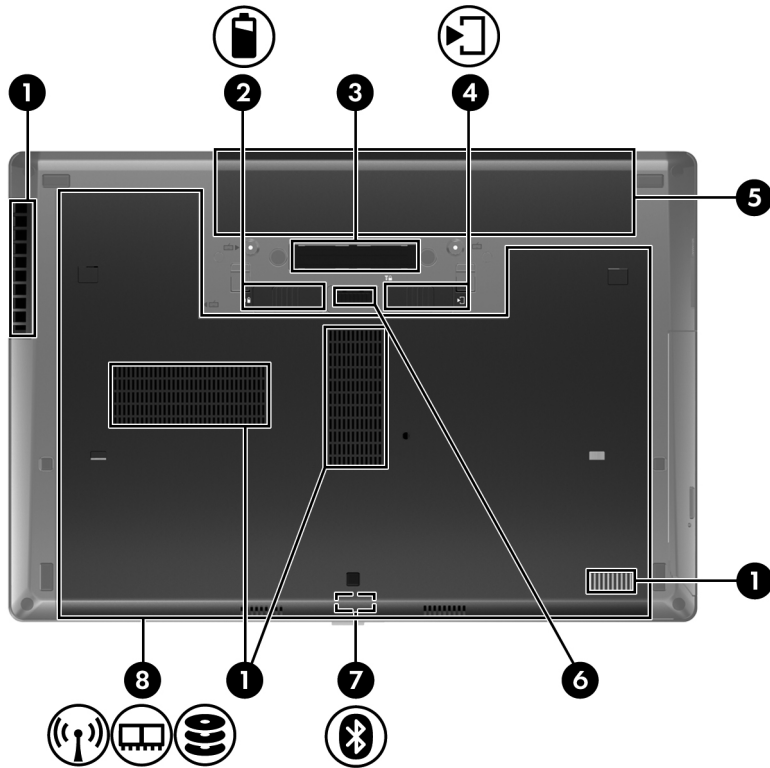
Item	Component	Description
(1)	Vents (4)	Enables airflow to cool internal components.
		NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(2)	Battery release latch	Releases 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.

Item	Component	Description
(7)	Bluetooth compartment	Contains a Bluetooth device.
(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 on page 34 for battery removal instructions.
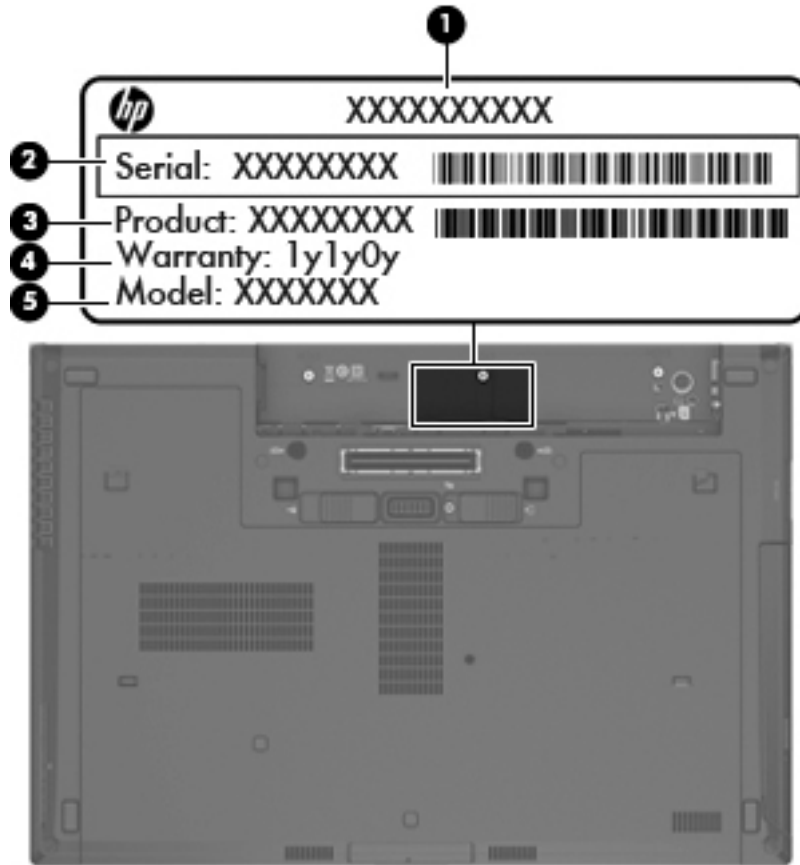
Item	Description	Function
(1)	Product name	This is the product name affixed to the front of the computer.
(2)	Serial number (s/n)	This is an alphanumeric identifier that is unique to each product.
(3)	Part number/Product number (p/n)	This number provides specific information about the product's hardware components. The part number helps a service technician to determine what components and parts are needed.
(4)	Warranty period	This number describes the duration of the warranty period for the computer.
(5)	Model description	This is the alphanumeric identifier used to locate documents, drivers, and support for the computer.

Computer major components
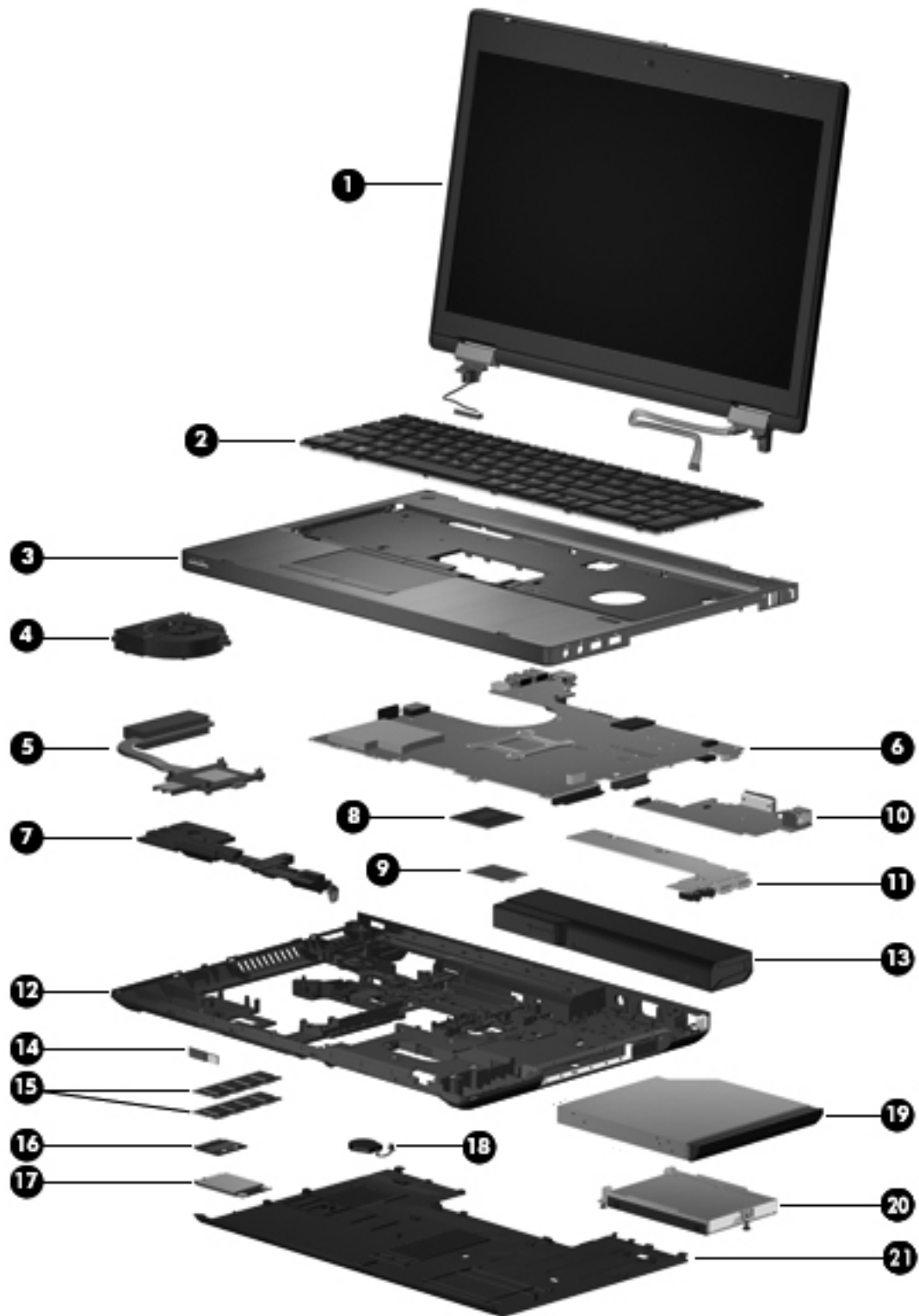
Item	Component	Spare part number
(1)	**Display assembly**: The display assembly is spared at the subcomponent level only. For more display assembly spare part information, see .	
(2)	**Keyboard** with pointing stick (includes keyboard cable and pointing stick cable):	
	For use only on computer models equipped with the Windows 8 operating system:	
	For use in Belgium	701975-A41
	For use in Brazil	701975-201
	For use in Bulgaria	701975-261
	For use in Canada	701975-DB1
	For use in the Czech Republic and Slovakia	701975-FL1
	For use in Denmark	701975-081
	For use in France	701975-051
	For use in Germany	701975-041
	For use in Greece	701975-151
	For use in Hungary	701975-211
	For use in Iceland	701975-DD1
	For use in India	701975-D61
	For use in Israel	701975-BB1
	For use in Italy	701975-061
	For use in Japan	701975-291
	For use in Latin America	701975-161
	For use in the Netherlands	701975-B31
	For use in Norway	701975-091
	For use in Northwest Africa	701975-FP1
	For use in Portugal	701975-131
	For use in Romania	701975-271
	For use in Russia	701975-251
	For use in Saudi Arabia	701975-171
	For use in Slovenia	701975-BA1
	For use in South Korea	701975-AD1
	For use in Spain	701975-071
	For use in Sweden and Finland	701975-B71
	For use in Switzerland	701975-BG1
	For use in Taiwan	701975-AB1

Item	Component	Spare part number
	For use in Thailand	701975-281
	For use in Turkey	701975-141
	For use in the United Kingdom and Singapore	701975-031
	For use in the United States	701975-001
	For use only on computer models equipped with the Windows 7 operating system:	
	For use in Belgium	684332-A41
	For use in Brazil	684332-201
	For use in Bulgaria	684332-261
	For use in Canada	684332-DB1
	For use in the Czech Republic and Slovakia	684332-A81
	For use in Denmark	684332-081
	For use in France	684332-051
	For use in Germany	684332-041
	For use in Greece	684332-DJ1
	For use in Hungary	684332-211
	For use in Iceland	684332-DD1
	For use in India	684332-D61
	For use in Israel	684332-BB1
	For use in Italy	684332-061
	For use in Japan	684332-291
	For use in Latin America	684332-161
	For use in the Netherlands	684332-B31
	For use in Norway	684332-091
	For use in Northwest Africa	684332-FP1
	For use in Portugal	684332-131
	For use in Romania	684332-271
	For use in Russia	684332-251
	For use in Saudi Arabia	684332-171
	For use in Slovenia	684332-BA1
	For use in South Korea	684332-AD1
	For use in Spain	684332-071
	For use in Sweden and Finland	684332-B71

Item	Component	Spare part number
	For use in Switzerland	684332-BG1
	For use in Taiwan	684332-AB1
	For use in Thailand	684332-281
	For use in Turkey	684332-141
	For use in the United Kingdom and Singapore	684332-031
	For use in the United States	684332-001
(2)	**Keyboard** without pointing stick (includes keyboard cable):	
	For use only on computer models equipped with the Windows 8 operating system:	
	For use in Belgium	701976-A41
	For use in Brazil	701976-201
	For use in Bulgaria	701976-261
	For use in Canada	701976-DB1
	For use in the Czech Republic and Slovakia	701976-FL1
	For use in Denmark	701976-081
	For use in France	701976-051
	For use in Germany	701976-041
	For use in Greece	701976-151
	For use in Hungary	701976-211
	For use in Iceland	701976-DD1
	For use in India	701976-D61
	For use in Israel	701976-BB1
	For use in Italy	701976-061
	For use in Japan	701976-291
	For use in Latin America	701976-161
	For use in the Netherlands	701976-B31
	For use in Norway	701976-091
	For use in Northwest Africa	701976-FP1
	For use in Portugal	701976-131
	For use in Romania	701976-271
	For use in Russia	701976-251
	For use in Saudi Arabia	701976-171
	For use in Slovenia	701976-BA1

Item	Component	Spare part number
	For use in South Korea	701976-AD1
	For use in Spain	701976-071
	For use in Sweden and Finland	701976-B71
	For use in Switzerland	701976-BG1
	For use in Taiwan	701976-AB1
	For use in Thailand	701976-281
	For use in Turkey	701976-141
	For use in the United Kingdom and Singapore	701976-031
	For use in the United States	701976-001
	For use only on computer models equipped with the Windows 7 operating system:	
	For use in Belgium	684333-A41
	For use in Brazil	684333-201
	For use in Bulgaria	684333-261
	For use in Canada	684333-DB1
	For use in the Czech Republic and Slovakia	684333-A81
	For use in Denmark	684333-081
	For use in France	684333-051
	For use in Germany	684333-041
	For use in Greece	684333-DJ1
	For use in Hungary	684333-211
	For use in Iceland	684333-DD1
	For use in India	684333-D61
	For use in Israel	684333-BB1
	For use in Italy	684333-061
	For use in Japan	684333-291
	For use in Latin America	684333-161
	For use in the Netherlands	684333-B31
	For use in Norway	684333-091
	For use in Northwest Africa	684333-FP1
	For use in Portugal	684333-131
	For use in Romania	684333-271
	For use in Russia	684333-251

Item	Component	Spare part number
	For use in Saudi Arabia	684333-171
	For use in Slovenia	684333-BA1
	For use in South Korea	684333-AD1
	For use in Spain	684333-071
	For use in Sweden and Finland	684333-B71
	For use in Switzerland	684333-BG1
	For use in Taiwan	684333-AB1
	For use in Thailand	684333-281
	For use in Turkey	684333-141
	For use in the United Kingdom and Singapore	684333-031
	For use in the United States	684333-001
(3)	**Top cover** (includes TouchPad):	
	Equipped with 2 pointing stick buttons, 2 TouchPad buttons, and a fingerprint reader	684336-001
	Equipped with 2 pointing stick buttons and a fingerprint reader	684338-001
(4)	**Fan** (includes cable)	641839-001
(5)	**Heat sink** (includes replacement thermal material):	
	Heat sink for use only on HP ProBook 6475p Notebook PC computer models	658543-001
	Heat sink for use only on HP ProBook 6470b Notebook PC computer models equipped with a graphics subsystem with discrete memory	686021-001
	Heat sink for use only on HP ProBook 6470b Notebook PC computer models equipped with a graphics subsystem with UMA memory	693371-001
(6)	**System board** (includes replacement thermal material):	
	For use only on HP ProBook 6475b Notebook PC computer models:	
	For use on computer models equipped with the Windows 8 Professional operating system and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	684341-601
	For use on computer models equipped with the Windows 8 Standard operating system and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	684341-501
	For use on computer models equipped with the Windows 7 operating system and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	684341-001
	For use on computer models equipped with the Windows 8 Professional operating system but without WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	684342-601

Item	Component	Spare part number
	For use on computer models equipped with the Windows 8 Standard operating system but without WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	684342-501
	For use on computer models equipped with the Windows 7 operating system but without WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	684342-001
	For use on computer models equipped with the Windows 7 operating system and WWAN capability only in the People's Republic of China and the Ukraine	690036-001
	For use on computer models equipped with the Windows 7 operating system but not WWAN capability only in the People's Republic of China and the Ukraine	690037-001
	For use only on HP ProBook 6470b Notebook PC computer models:	
	For use on computer models equipped with the Intel QM77 chipset, a graphics subsystem with discrete memory, the Windows 8 Professional operating system, and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686039-601
	For use on computer models equipped with the Intel QM77 chipset, a graphics subsystem with discrete memory, the Windows 8 Standard operating system, and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686039-501
	For use on computer models equipped with the Intel QM77 chipset, a graphics subsystem with discrete memory, the Windows 7 operating system, and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686039-001
	For use on computer models equipped with the Intel QM77 chipset, a graphics subsystem with UMA memory, the Windows 8 Professional operating system, and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686037-601
	For use on computer models equipped with the Intel QM77 chipset, a graphics subsystem with UMA memory, the Windows 8 Standard operating system, and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686037-501
	For use on computer models equipped with the Intel QM77 chipset, a graphics subsystem with UMA memory, the Windows 7 operating system, and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686037-001
	For use on computer models equipped with the Intel HM76 chipset, a graphics subsystem with discrete memory, the Windows 8 Professional operating system, and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686038-601
	For use on computer models equipped with the Intel HM76 chipset, a graphics subsystem with discrete memory, the Windows 8 Standard operating system, and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686038-501
	For use on computer models equipped with the Intel HM76 chipset, a graphics subsystem with discrete memory, the Windows 7 operating system, and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686038-001

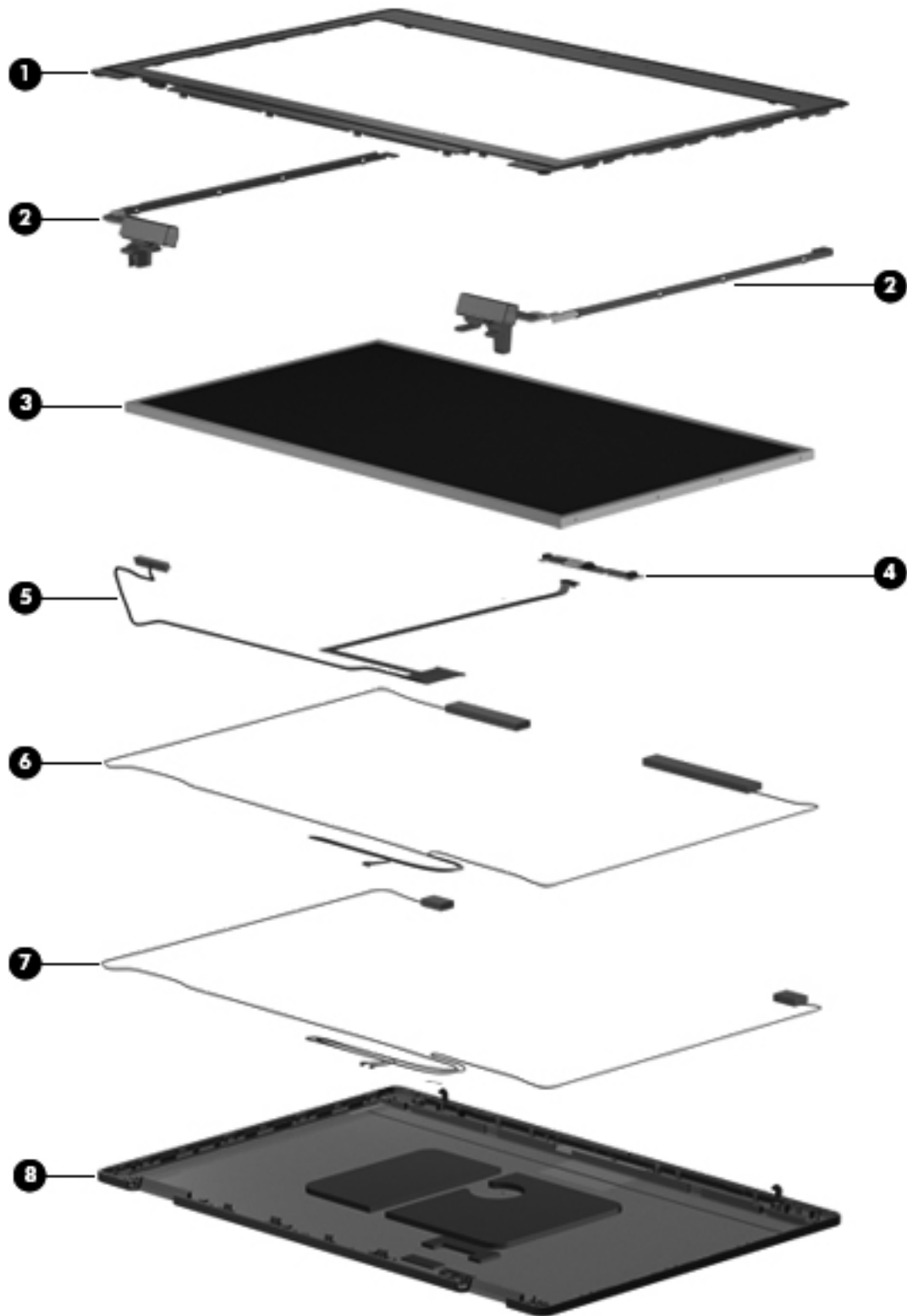| Item	Component	Spare part number
	For use on computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, the Windows 8 Professional operating system, and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686036-601
	For use on computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, the Windows 8 Standard operating system, and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686036-501
	For use on computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, the Windows 7 operating system, and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686036-001
	For use on computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, and the Windows 8 Professional operating system, but without WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686035-601
	For use on computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, and the Windows 8 Standard operating system, but without WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686035-501
	For use on computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, and the Windows 7 operating system, but without WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686035-001
	For use on computer models equipped with the Intel QM77 chipset, a graphics subsystem with discrete memory, the Windows 7 operating system, and WWAN capability only in the People's Republic of China and the Ukraine	691715-001
	For use on computer models equipped with the Intel QM77 chipset, a graphics subsystem with UMA memory, the Windows 7 operating system, and WWAN capability only in the People's Republic of China and the Ukraine	691713-001
	For use on computer models equipped with the Intel HM76 chipset, a graphics subsystem with discrete memory, the Windows 7 operating system, and WWAN capability only in the People's Republic of China and the Ukraine	691714-001
	For use on computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, the Windows 7 operating system, and WWAN capability only in the People's Republic of China and the Ukraine	691712-001
	For use on computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, the Windows 7 operating system, but without WWAN capability only in the People's Republic of China and the Ukraine	691711-001
(7)	**Speaker assembly** (includes cable)	641840-001
(8)	**Processor** (includes replacement thermal material):	
	For use only on HP ProBook 6475b Notebook PC computer models:	
	AMD A10-4600M 3.20-GHz/2.30-GHz processor with Radeon HD 7660G graphics (4.0-MB L2 cache, 1600-MHz DDR3, quad core, 35 W)	683046-001

Item	Component	Spare part number
	AMD A8-4500M 2.80-GHz/1.90-GHz processor with Radeon HD 7640G graphics (4.0-MB L2 cache, 1600-MHz DDR3, quad core, 35 W)	683048-001
	AMD A6-4400M 3.20-GHz/2.70-GHz processor with Radeon HD 7520G graphics (1.0-MB L2 cache, 1600-MHz DDR3, dual core, 35 W)	683047-001
	AMD A4-4300M 3.00-GHz/2.50-GHz processor with Radeon HD 7420G graphics (1.0-MB L2 cache, 1600-MHz DDR3, dual core, 35 W)	685990-001
	For use only on HP ProBook 6470b Notebook PC computer models:	
	Intel Quad Core i7-3540M 3.00-GHz processor (SC turbo up to 3.70-GHz; 1600-MHz FSB, 4.0- MB L3 cache, 35 W)	710787-001
	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 i5-3380M 2.90-GHz processor (SC turbo up to 3.60-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W)	708762-001
	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 i5-3340M 2.70-GHz processor (SC turbo up to 3.40-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W)	708761-001
	Intel Dual Core i5-3320M 2.60-GHz processor (SC turbo up to 3.20-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W)	711903-001
	Intel Dual Core i5-3210M 2.50-GHz processor (SC turbo up to 3.10-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W)	680645-001
	Intel Core i3-3130M 2.60-GHz processor (1600-MHz FSB, 3.0-MB L3 cache, 35 W)	713163-001
	Intel Core i3-3120M 2.50-GHz processor (1600-MHz FSB, 3.0-MB L3 cache, 35 W)	700627-001
	Intel Core i3-3110M 2.40-GHz processor (1600-MHz FSB, 3.0-MB L3 cache, 35 W)	682417-001
	Intel Core i3-2370M 2.40-GHz processor (1333-MHz FSB, 3.0-MB L3 cache, 35 W)	677152-001
	Intel Celeron B840 1.90-GHz processor (1333-MHz FSB, 2.0-MB L3 cache, 35 W)	664663-001
(9)	**Modem module**	628824-001
	NOTE: The modem module cable is included in the Cable Kit, spare part number 641830-001.	
(10)	**Function board**	658142-001
(11)	**USB board**	658141-001
(12)	**Base enclosure** (includes rubber feet, service cover release latch assembly, and battery release latch assembly)	
	For use only on computer models equipped with WWAN capability	684334-001
	For use only on computer models not equipped with WWAN capability	687224-001
	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)	641831-001
	Latch Kit (not illustrated, includes service cover release latch assembly components and battery release latch assembly components)	684339-001

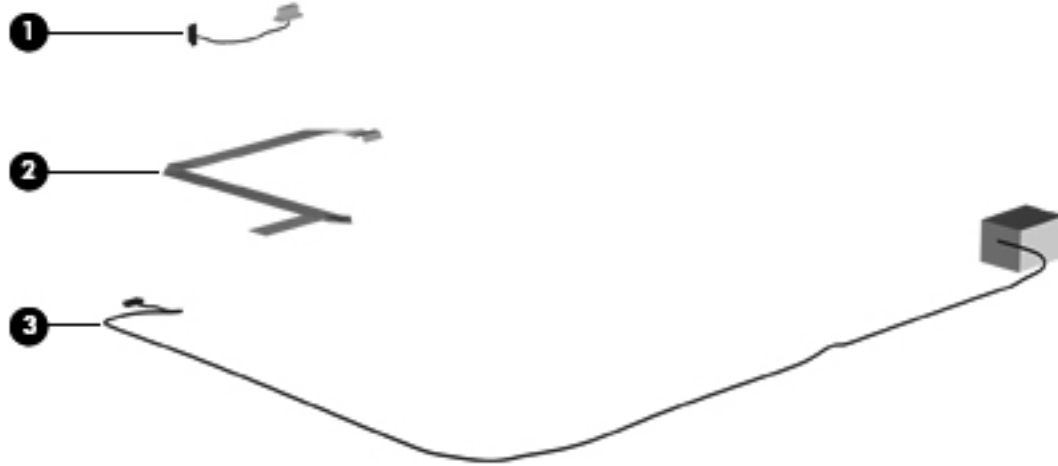| Item	Component	Spare part number
(13)	**Battery** (Li ion):	
	9-cell, 100-Wh, 3.00-Ah	631243-001
	9-cell, 100-Wh, 3.00-Ah	634087-001
	9-cell, 73-Wh, 2.20-Ah	634089-001
	6-cell, 62-Wh, 2.80-Ah	628668-001
	6-cell, 55-Wh, 2.80-Ah	628670-001
	6-cell, 51-Wh, 2.55-Ah	659083-001
	3-cell, 31-Wh, 2.80-Ah	628664-001
(14)	**Bluetooth module 4.0 EDR**	655792-001
	NOTE: The Bluetooth module cable is included in the Cable Kit, spare part number 641830-001.	
(15)	**Memory modules** (PC3-12800, 1666-MHz, DDR3):	
	8-GB	670034-001
	4-GB locked	707248-001
	4-GB	641369-001
	2-GB	652972-001
(16)	**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	695915-001
	Intel Centrino Ultimate-N 6300 WLAN module	572511-001
	Intel Centrino Wireless-N 2200 802.11b/g/n 2×2 WiFi Adaptor	670288-001
(17)	**WWAN module:**	
	HP hs2350 HSPA+ Mobile Broadband Module	710788-001
	HP lt2523 LTE/HSPA+ Mobile Broadband Module	710790-001
	HP lt2522 LTE/EV-DO Mobile Broadband Module	710789-001
	HP un2430 EV-DO/HSPA Mini Card	702080-001
	HP un2430 EV-DO/HSPA Mobile Broadband Module	668969-001
(18)	**RTC battery**	651948-001
(19)	**Optical drive** (includes optical drive bezel and optical drive bracket):	
	Blu-ray ROM DVD±RW SuperMulti DL Drive	684330-001
	DVD±RW Double-Layer with SuperMulti Drive	684329-001
	DVD-ROM Drive	684328-001

Item	Component	Spare part number
(20)	**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
(21)	**Service cover**	
	Includes label indicating "Made in China"	684326-001
	Includes label indicating country of origin	699324-001

Display assembly subcomponents

Item	Component	Spare part number
(1)	**Display bezel:**	
	For use only on HP ProBook 6475b Notebook PC computer models	683781-001
	For use only on HP ProBook 6470b Notebook PC computer models	685999-001
	Display Hinge Cover Kit, includes:	642783-001
(2)	Display hinge covers	
(3)	**Display Hinge Kit** (includes left and right display hinges and left and right hinge brackets)	641836-001
(4)	**Display panel:**	
	For use on all computer models:	
	14.0-in, LED, SVA, HD+, AntiGlare display panel	684348-001
	14.0-in, LED, SVA, HD, AntiGlare display panel	684347-001
	For use only on HP ProBook 6470b Notebook PC computer models:	
	14.0-in, LED, FLT, HD+, AntiGlare display panel	686047-001
	14.0-in, LED, FLT, HD, AntiGlare display panel	686046-001
(5)	**Webcam/microphone module**	684346-001
	Microphone module	642797-001
	Display Cable Kit, includes:	
(6)	Display panel cable:	
	For use only on computer models equipped with an HD+ display assembly	693064-001
	For use only on computer models equipped with an HD display assembly	693063-001
(7)	**WWAN Antenna Kit** (includes left and right WWAN antenna cables and transceivers)	642801-001
(8)	**WLAN Antenna Kit** (includes left and right WLAN antenna cables and transceivers)	642799-001
(9)	**Display enclosure**	642778-001
	Display Panel Support Kit (not illustrated, includes WLAN antenna cables and transceivers, WWAN antenna cables and transceivers, and display enclosure)	657836-001
	Display Rubber Kit (not illustrated, includes display bezel rubber screw covers and display bezel rubber bumpers)	642785-001
	Display Miscellaneous Kit	697439-001

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	

Plastics Kit
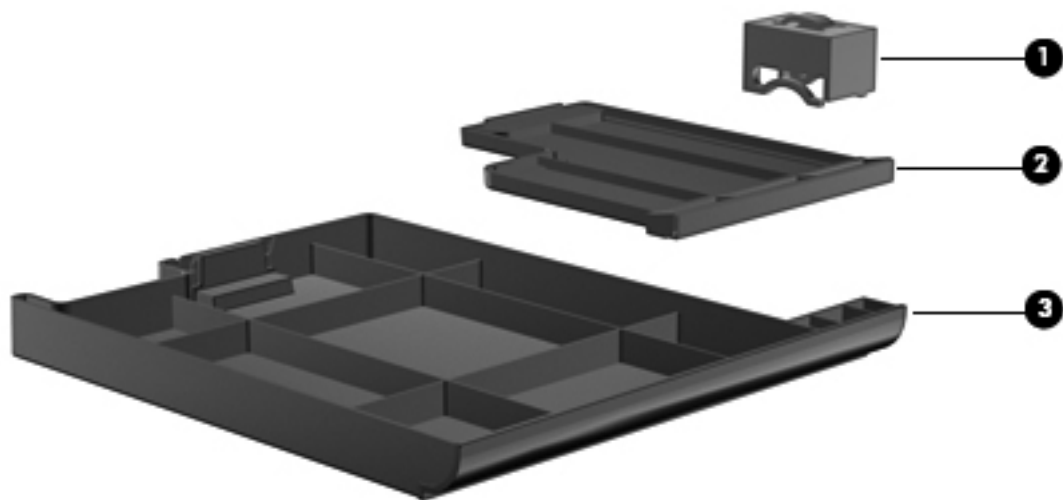
Item	Description	Spare part number
	Plastics Kit, includes:	684351-001
(1)	RJ-11 jack plug	
(2)	ExpressCard slot space saver	
(3)	Optical drive bay space saver	

Mass storage devices
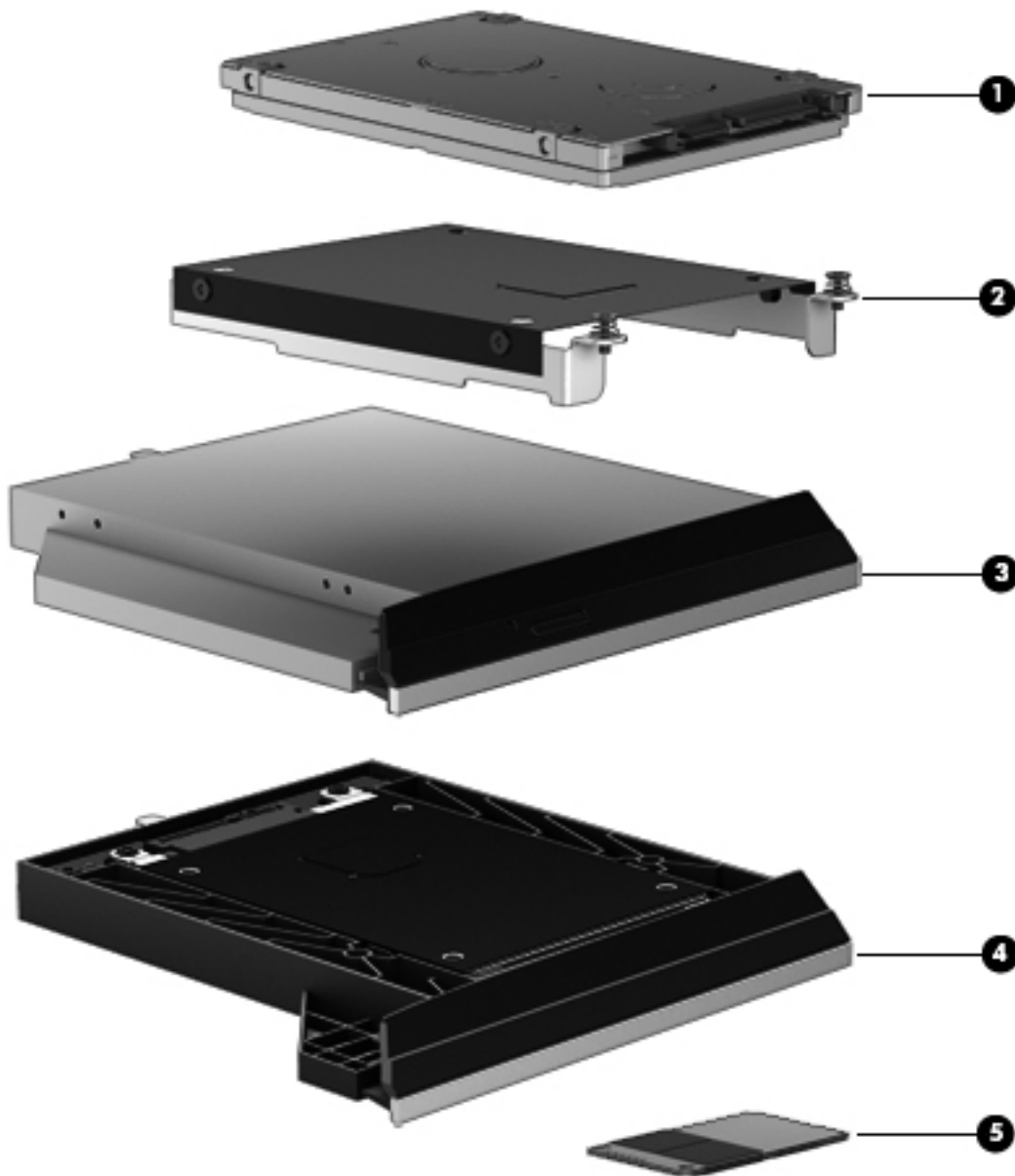
Item	Description	Spare part number
(1)	**Hard drive** (does not include hard drive bracket or screws):	
	750-GB, 7200-rpm, 9.5-mm	633252-001
	500-GB, 7200-rpm, 9.5-mm SED	683801-001
	500-GB, 7200-rpm, 9.5-mm	634925-001
	320-GB, 7200-rpm, 9.5-mm	634862-001
	Hard Drive Hardware Kit, includes:	642774-001
(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):	
	Blu-ray ROM DVD±RW SuperMulti DL Drive	684330-001
	DVD±RW Double-Layer with SuperMulti Drive	684329-001
	DVD-ROM Drive	684328-001
(4)	**Upgrade bay** (includes bezel and bracket)	643926-001
(5)	**Solid-state drive** (does not include solid-state drive bracket or screws):	
	128-GB SATA III solid-state drive for use only on HP ProBook 6475b Notebook PC computer models	692425-001
	For use only on HP ProBook 6470b Notebook PC computer models:	
	256-GB SATA III self-encrypting solid-state drive	691466-001
	256-GB SATA III solid-state drive	709167-001
	240-GB SATA III solid-state drive	702242-001
	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	700626-001
	24-GB flash cache module (not illustrated, for use only on HP ProBook 6470b Notebook PC computer models)	689954-001

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
628670-001	6-cell, 55-Wh, 2.80-Ah, Li-ion battery
628824-001	Modem module (does not include the modem module cable)
	NOTE: The modem module cable is included in the Cable Kit, spare part number 641830-001.
631243-001	9-cell, 100-Wh, 3.0-Ah, Li-ion battery
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
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)
641831-001	Rubber Kit (includes display bezel left and right rubber screw covers, base enclosure front and rear rubber screw covers, top cover rubber bumper)
641836-001	Display Hinge Kit (includes left and right display hinges and left and right hinge brackets)
641839-001	Fan (includes cable)
641840-001	Speaker assembly (includes cable)
642774-001	Hard Drive Hardware Kit (includes hard drive bracket and screws)
642778-001	Display enclosure
642783-001	Display Hinge Cover Kit (includes left and right display hinge covers)
642785-001	Display Rubber Kit (includes display bezel rubber screw covers and display bezel rubber bumpers)
642797-001	Microphone module
642799-001	WLAN Antenna Kit (includes left and right WLAN antenna cables and transceivers)
642801-001	WWAN Antenna Kit (includes left and right WWAN antenna cables and transceivers)
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.

Spare part number	Description
657836-001	Display Panel Support Kit (includes display enclosure, WLAN antenna cables and transceivers, and WWAN antenna cables and transceivers)
658543-001	Heat sink for use only on HP ProBook 6475p Notebook PC computer models (includes replacement thermal material)
659083-001	6-cell, 51-Wh, 2.55-Ah, Li-ion battery
664663-001	Intel Celeron B840 1.90-GHz processor for use only on HP ProBook 6470b Notebook PC computer models (1333-MHz, 2.0-MB L3 cache, 35 W; includes replacement thermal material)
668969-001	HP hs2350 HSPA+ Mobile Broadband Module
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 Adaptor
675794-001	Atheros WB225 1×1 802.11b/g/n Bluetooth Combo Adapter
677152-001	Intel Core i3-2370M 2.40-GHz processor for use only on HP ProBook 6470b Notebook PC computer models (1333-MHz FSB, 3.0-MB L3 cache, 35 W; includes replacement thermal material)
680645-001	Intel Dual Core i5-3210M 2.50-GHz processor for use only on HP ProBook 6470b 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)
681953-001	Intel Dual Core i5-3360M 2.80-GHz processor for use only on HP ProBook 6470b Notebook PC 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 only on HP ProBook 6470b Notebook PC 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 ProBook 6470b Notebook PC computer models (1600-MHz FSB, 3.0-MB L3 cache, 35 W; includes replacement thermal material)
683046-001	AMD A10-4600M 3.20-GHz/2.30-GHz processor with Radeon HD 7660G graphics (4.0-MB L2 cache, 1600-MHz DDR3, quad core, 35 W; includes replacement thermal material)
683047-001	AMD A6-4400M 3.20-GHz/2.70-GHz processor with Radeon HD 7520G graphics (1.0-MB L2 cache, 1600-MHz DDR3, dual core, 35 W; includes replacement thermal material)
683048-001	AMD A8-4500M 2.80-GHz/1.90-GHz processor with Radeon HD 7640G graphics (4.0-MB L2 cache, 1600-MHz DDR3, quad core, 35 W; includes replacement thermal material)
683781-001	Display bezel for use only on HP ProBook 6470p Notebook PC computer models
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.
684326-001	Service cover (includes label indicating "Made in China")
684328-001	DVD-ROM Drive
684329-001	DVD±RW Double-Layer with SuperMulti Drive
684330-001	Blu-ray ROM DVD±RW SuperMulti DL Drive

Spare part number	Description
684332-001	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in the United States (includes keyboard cable and pointing stick cable)
684332-031	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in the United Kingdom and Singapore (includes keyboard cable and pointing stick cable)
684332-041	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in Germany (includes keyboard cable and pointing stick cable)
684332-051	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in France (includes keyboard cable and pointing stick cable)
684332-061	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in Italy (includes keyboard cable and pointing stick cable)
684332-071	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in Spain (includes keyboard cable and pointing stick cable)
684332-081	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in Denmark (includes keyboard cable and pointing stick cable)
684332-091	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in Norway (includes keyboard cable and pointing stick cable)
684332-131	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in Portugal (includes keyboard cable and pointing stick cable)
684332-141	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in Turkey (includes keyboard cable and pointing stick cable)
684332-161	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in Latin America (includes keyboard cable and pointing stick cable)
684332-171	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in Saudi Arabia (includes keyboard cable and pointing stick cable)
684332-201	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in Brazil (includes keyboard cable and pointing stick cable)
684332-211	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in Hungary (includes keyboard cable and pointing stick cable)
684332-251	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in Russia (includes keyboard cable and pointing stick cable)
684332-261	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in Bulgaria (includes keyboard cable and pointing stick cable)
684332-271	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in Romania (includes keyboard cable and pointing stick cable)
684332-281	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in Thailand (includes keyboard cable and pointing stick cable)
684332-291	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in Japan (includes keyboard cable and pointing stick cable)
684332-A41	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in Belgium (includes keyboard cable and pointing stick cable)

Spare part number	Description
684332-AB1	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in Taiwan (includes keyboard cable and pointing stick cable)
684332-AD1	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in South Korea (includes keyboard cable and pointing stick cable)
684332-B31	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in the Netherlands (includes keyboard cable and pointing stick cable)
684332-B71	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in Sweden and Finland (includes keyboard cable and pointing stick cable)
684332-BA1	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in Slovenia (includes keyboard cable and pointing stick cable)
684332-BB1	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in Israel (includes keyboard cable and pointing stick cable)
684332-BG1	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in Switzerland (includes keyboard cable and pointing stick cable)
684332-D61	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in India (includes keyboard cable and pointing stick cable)
684332-DB1	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in Canada (includes keyboard cable and pointing stick cable)
684332-DD1	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in Iceland (includes keyboard cable and pointing stick cable)
684332-DJ1	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in Greece (includes keyboard cable and pointing stick cable)
684332-FL1	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in the Czech Republic and Slovakia (includes keyboard cable and pointing stick cable)
684332-FP1	Keyboard with pointing stick for use only on computer models equipped with the Windows 7 operating system in Northwest Africa (includes keyboard cable and pointing stick cable)
684333-001	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in the United States (includes keyboard cable)
684333-031	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in the United Kingdom and Singapore (includes keyboard cable)
684333-041	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in Germany (includes keyboard cable)
684333-051	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in France (includes keyboard cable)
684333-061	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in Italy (includes keyboard cable)
684333-071	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in Spain (includes keyboard cable)
684333-081	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in Denmark (includes keyboard cable)

Spare part number	Description
684333-091	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in Norway (includes keyboard cable)
684333-131	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in Portugal (includes keyboard cable)
684333-141	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in Turkey (includes keyboard cable)
684333-161	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in Latin America (includes keyboard cable)
684333-171	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in Saudi Arabia (includes keyboard cable)
684333-201	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in Brazil (includes keyboard cable)
684333-211	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in Hungary (includes keyboard cable)
684333-251	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in Russia (includes keyboard cable)
684333-261	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in Bulgaria (includes keyboard cable)
684333-271	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in Romania (includes keyboard cable)
684333-281	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in Thailand (includes keyboard cable)
684333-291	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in Japan (includes keyboard cable)
684333-A41	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in Belgium (includes keyboard cable)
684333-AB1	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in Taiwan (includes keyboard cable)
684333-AD1	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in South Korea (includes keyboard cable)
684333-B31	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in the Netherlands (includes keyboard cable)
684333-B71	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in Sweden and Finland (includes keyboard cable)
684333-BA1	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in Slovenia (includes keyboard cable)
684333-BB1	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in Israel (includes keyboard cable)
684333-BG1	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in Switzerland (includes keyboard cable)

Spare part number	Description
684333-D61	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in India (includes keyboard cable)
684333-DB1	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in Canada (includes keyboard cable)
684333-DD1	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in Iceland (includes keyboard cable)
684333-DJ1	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in Greece (includes keyboard cable)
684333-FL1	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in the Czech Republic and Slovakia (includes keyboard cable)
684333-FP1	Keyboard without pointing stick for use only on computer models equipped with the Windows 7 operating system in Northwest Africa (includes keyboard cable)
684334-001	Base enclosure for use only on computer models equipped with WWAN capability (includes rubber feet, service cover release latch assembly, and battery release latch assembly)
684336-001	Top cover equipped with pointing stick buttons and a fingerprint reader for use only on (includes TouchPad)
684338-001	Top cover not equipped with pointing stick buttons and a fingerprint reader for use only on (includes TouchPad)
684339-001	Latch Kit (includes service cover release latch assembly components and battery release latch assembly components)
684341-001	System board for use only on HP ProBook 6475p Notebook PC computer models equipped with WWAN capability and the Windows 7 operating system in all countries and regions except the People's Republic of China and the Ukraine (includes replacement thermal material)
684341-501	System board for use only on HP ProBook 6475p Notebook PC computer models equipped with WWAN capability and the Windows 8 Standard operating system in all countries and regions except the People's Republic of China and the Ukraine (includes replacement thermal material)
684341-601	System board for use only on HP ProBook 6475p Notebook PC computer models equipped with WWAN capability and the Windows 8 Professional operating system in all countries and regions except the People's Republic of China and the Ukraine (includes replacement thermal material)
684342-001	System board for use only on HP ProBook 6475p Notebook PC computer models equipped the Windows 7 operating system but not with WWAN capability in all countries and regions except the People's Republic of China and the Ukraine (includes replacement thermal material)
684342-501	System board for use only on HP ProBook 6475p Notebook PC computer models equipped the Windows 8 Standard operating system but not with WWAN capability in all countries and regions except the People's Republic of China and the Ukraine (includes replacement thermal material)
684342-601	System board for use only on HP ProBook 6475p Notebook PC computer models equipped the Windows 8 Professional operating system but not with WWAN capability in all countries and regions except the People's Republic of China and the Ukraine (includes replacement thermal material)
684346-001	Webcam/microphone module
684347-001	14.0-in, LED, SVA, HD, AntiGlare display panel for use on all computer models
684348-001	14.0-in, LED, SVA, HD+, AntiGlare display panel for use on all computer models

Spare part number	Description
684351-001	Plastics Kit (includes ExpressCard slot space saver, optical drive bay space saver, RJ-11 jack plug, and wireless antenna clips)
684353-001	Smart Card reader
685990-001	AMD A4-4300M 3.00-GHz/2.50-GHz processor with Radeon HD 7420G graphics (1.0-MB L2 cache, 1600-MHz DDR3, dual core, 35 W; includes replacement thermal material)
685999-001	Display bezel for use only on HP ProBook 6470b Notebook PC computer models
686021-001	Heat sink for use only on HP ProBook 6470b Notebook PC computer models equipped with a graphics subsystem with discrete memory (includes replacement thermal material)
686032-001	Screw Kit
686035-001	System board for use only on HP ProBook 6470b Notebook PC computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, the Windows 7 operating system, but not WWAN capability in all countries and regions except the People's Republic of China and the Ukraine (includes replacement thermal material)
686035-501	System board for use only on HP ProBook 6470b Notebook PC computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, the Windows 8 Standard operating system, but not WWAN capability in all countries and regions except the People's Republic of China and the Ukraine (includes replacement thermal material)
686035-601	System board for use only on HP ProBook 6470b Notebook PC computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, the Windows 8 Professional operating system, but not WWAN capability in all countries and regions except the People's Republic of China and the Ukraine (includes replacement thermal material)
686036-001	System board for use only on HP ProBook 6470b Notebook PC computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, the Windows 7 operating system, and with WWAN capability in all countries and regions except the People's Republic of China and the Ukraine (includes replacement thermal material)
686036-501	System board for use only on HP ProBook 6470b Notebook PC computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, the Windows 8 Standard operating system, and with WWAN capability in all countries and regions except the People's Republic of China and the Ukraine (includes replacement thermal material)
686036-601	System board for use only on HP ProBook 6470b Notebook PC computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, the Windows 8 Professional operating system, and with WWAN capability in all countries and regions except the People's Republic of China and the Ukraine (includes replacement thermal material)
686037-001	System board for use only on HP ProBook 6470b Notebook PC computer models equipped with the Intel QM77 chipset, a graphics subsystem with UMA memory, the Windows 7 operating system, and with WWAN capability in all countries and regions except the People's Republic of China and the Ukraine (includes replacement thermal material)
686037-501	System board for use only on HP ProBook 6470b Notebook PC computer models equipped with the Intel QM77 chipset, a graphics subsystem with UMA memory, the Windows 8 Standard operating system, and with WWAN capability in all countries and regions except the People's Republic of China and the Ukraine (includes replacement thermal material
686037-601	System board for use only on HP ProBook 6470b Notebook PC computer models equipped with the Intel QM77 chipset, a graphics subsystem with UMA memory, the Windows 8 Professional operating system, and with WWAN capability in all countries and regions except the People's Republic of China and the Ukraine (includes replacement thermal material

Spare part number	Description
686038-001	System board for use only on HP ProBook 6470b Notebook PC computer models equipped with the Intel HM76 chipset, a graphics subsystem with discrete memory, the Windows 7 operating system, and with WWAN capability in all countries and regions except the People's Republic of China and the Ukraine (includes replacement thermal material)
686038-501	System board for use only on HP ProBook 6470b Notebook PC computer models equipped with the Intel HM76 chipset, a graphics subsystem with discrete memory, the Windows 8 Standard operating system, and with WWAN capability in all countries and regions except the People's Republic of China and the Ukraine (includes replacement thermal material)
686038-601	System board for use only on HP ProBook 6470b Notebook PC computer models equipped with the Intel HM76 chipset, a graphics subsystem with discrete memory, the Windows 8 Professional operating system, and with WWAN capability in all countries and regions except the People's Republic of China and the Ukraine (includes replacement thermal material)
686039-001	System board for use only on HP ProBook 6470b Notebook PC computer models equipped with the Intel QM77 chipset, a graphics subsystem with discrete memory, the Windows 7 operating system, and with WWAN capability in all countries and regions except the People's Republic of China and the Ukraine (includes replacement thermal material)
686039-501	System board for use only on HP ProBook 6470b Notebook PC computer models equipped with the Intel QM77 chipset, a graphics subsystem with discrete memory, the Windows 8 Standard operating system, and with WWAN capability in all countries and regions except the People's Republic of China and the Ukraine (includes replacement thermal material)
686039-601	System board for use only on HP ProBook 6470b Notebook PC computer models equipped with the Intel QM77 chipset, a graphics subsystem with discrete memory, the Windows 8 Professional operating system, and with WWAN capability in all countries and regions except the People's Republic of China and the Ukraine (includes replacement thermal material)
686046-001	14.0-in, LED, FLT, HD, AntiGlare display panel for use only on HP ProBook 6470b Notebook PC computer models
686047-001	14.0-in, LED, FLT, HD+, AntiGlare display panel for use only on HP ProBook 6470b Notebook PC computer models
687224-001	Base enclosure for use only on computer models not equipped with WWAN capability (includes rubber feet, service cover release latch assembly, and battery release latch assembly)
689954-001	24-GB flash cache module for use only on HP ProBook 6470b Notebook PC computer models
690036-001	System board for use only on HP ProBook 6475b Notebook PC computer models equipped with the Windows 7 operating system and WWAN capability in the People's Republic of China and the Ukraine (includes replacement thermal material)
690037-001	System board for use only on HP ProBook 6475b Notebook PC computer models equipped with the Windows 7 operating system but not WWAN capability in the People's Republic of China and the Ukraine (includes replacement thermal material)
691466-001	256-GB SATA III self-encrypting solid-state drive for use only on HP ProBook 6470b Notebook PC computer models
691711-001	System board for use only on HP ProBook 6470b Notebook PC computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, the Windows 7 operating system, but without WWAN capability only in the People's Republic of China and the Ukraine (includes replacement thermal material)

Spare part number	Description
691712-001	System board for use only on HP ProBook 6470b Notebook PC computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, the Windows 7 operating system, and with WWAN capability only in the People's Republic of China and the Ukraine (includes replacement thermal material)
691713-001	System board for use only on HP ProBook 6470b Notebook PC computer models equipped with the Intel QM77 chipset, a graphics subsystem with UMA memory, the Windows 7 operating system, and with WWAN capability only in the People's Republic of China and the Ukraine (includes replacement thermal material)
691714-001	System board for use only on HP ProBook 6470b Notebook PC computer models equipped with the Intel HM76 chipset, a graphics subsystem with discrete memory, the Windows 7 operating system, and with WWAN capability only in the People's Republic of China and the Ukraine (includes replacement thermal material)
691715-001	System board for use only on HP ProBook 6470b Notebook PC computer models equipped with the Intel QM77 chipset, a graphics subsystem with discrete memory, the Windows 7 operating system, and with WWAN capability only in the People's Republic of China and the Ukraine (includes replacement thermal material)
692097-001	180-GB SATA III solid-state drive for use only on HP ProBook 6470b Notebook PC computer models
692425-001	128-GB SATA III solid-state drive for use only on HP ProBook 6475b Notebook PC computer models
693063-001	Display Cable Kit for use only on computer models equipped with an HD+ display assembly
693064-001	Display Cable Kit for use only on computer models equipped with an HD display assembly
693371-001	Heat sink for use only on HP ProBook 6470b Notebook PC 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 for use only on HP ProBook 6470b Notebook PC computer models
695915-001	Intel Centrino Advanced-N 6205 Combo Adapter
697439-001	Display Miscellaneous Kit
699324-001	Service cover (includes label indicating country of origin)
700626-001	128-GB SATA III solid-state drive
700627-001	Intel Core i3-3120M 2.50-GHz processor (1600-MHz FSB, 3.0-MB L3 cache, 35 W; includes replacement thermal material)
701975-001	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in the United States (includes keyboard cable and pointing stick cable)
701975-031	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in the United Kingdom and Singapore (includes keyboard cable and pointing stick cable)

Spare part number	Description
701975-041	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in Germany (includes keyboard cable and pointing stick cable)
701975-051	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in France (includes keyboard cable and pointing stick cable)
701975-061	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in Italy (includes keyboard cable and pointing stick cable)
701975-071	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in Spain (includes keyboard cable and pointing stick cable)
701975-081	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in Norway (includes keyboard cable and pointing stick cable)
701975-091	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in Norway (includes keyboard cable and pointing stick cable)
701975-131	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in Portugal (includes keyboard cable and pointing stick cable)
701975-141	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in Turkey (includes keyboard cable and pointing stick cable)
701975-151	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in Greece (includes keyboard cable and pointing stick cable)
701975-161	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in Latin America (includes keyboard cable and pointing stick cable)
701975-171	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in Saudi Arabia (includes keyboard cable and pointing stick cable)
701975-201	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in Brazil (includes keyboard cable and pointing stick cable)
701975-211	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in Hungary (includes keyboard cable and pointing stick cable)
701975-251	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in Russia (includes keyboard cable and pointing stick cable)
701975-261	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in Bulgaria (includes keyboard cable and pointing stick cable)
701975-271	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in Romania (includes keyboard cable and pointing stick cable)
701975-281	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in Thailand (includes keyboard cable and pointing stick cable)
701975-291	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in Japan (includes keyboard cable and pointing stick cable)
701975-A41	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in Belgium (includes keyboard cable and pointing stick cable)
701975-AB1	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in Taiwan (includes keyboard cable and pointing stick cable)

Spare part number	Description
701975-AD1	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in South Korea (includes keyboard cable and pointing stick cable)
701975-B31	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in the Netherlands (includes keyboard cable and pointing stick cable)
701975-B71	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in Sweden and Finland (includes keyboard cable and pointing stick cable)
701975-BA1	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in Slovenia (includes keyboard cable and pointing stick cable)
701975-BB1	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in Israel (includes keyboard cable and pointing stick cable)
701975-BG1	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in Switzerland (includes keyboard cable and pointing stick cable)
701975-D61	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in India (includes keyboard cable and pointing stick cable)
701975-DB1	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in Canada (includes keyboard cable and pointing stick cable)
701975-DD1	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in Iceland (includes keyboard cable and pointing stick cable)
701975-FL1	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in the Czech Republic and Slovakia (includes keyboard cable and pointing stick cable)
701975-FP1	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in Northwest Africa (includes keyboard cable and pointing stick cable)
701976-001	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in the United States (includes keyboard cable and pointing stick cable)
701976-031	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in the United Kingdom and Singapore (includes keyboard cable)
701976-041	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in Germany (includes keyboard cable)
701976-051	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in France (includes keyboard cable)
701976-061	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in Italy (includes keyboard cable)
701976-071	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in Spain (includes keyboard cable)
701976-081	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in Norway (includes keyboard cable)
701976-091	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in Norway (includes keyboard cable)
701976-131	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in Portugal (includes keyboard cable)

Spare part number	Description
701976-141	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in Turkey (includes keyboard cable)
701976-151	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in Greece (includes keyboard cable)
701976-161	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in Latin America (includes keyboard cable)
701976-171	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in Saudi Arabia (includes keyboard cable)
701976-201	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in Brazil (includes keyboard cable)
701976-211	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in Hungary (includes keyboard cable)
701976-251	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in Russia (includes keyboard cable)
701976-261	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in Bulgaria (includes keyboard cable)
701976-271	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in Romania (includes keyboard cable)
701976-281	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in Thailand (includes keyboard cable)
701976-291	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in Japan (includes keyboard cable)
701976-A41	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in Belgium (includes keyboard cable)
701976-AB1	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in Taiwan (includes keyboard cable)
701976-AD1	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in South Korea (includes keyboard cable)
701976-B31	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in the Netherlands (includes keyboard cable)
701976-B71	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in Sweden and Finland (includes keyboard cable)
701976-BA1	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in Slovenia (includes keyboard cable)
701976-BB1	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in Israel (includes keyboard cable)
701976-BG1	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in Switzerland (includes keyboard cable)
701976-D61	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in India (includes keyboard cable)

Spare part number	Description
701976-DB1	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in Canada (includes keyboard cable)
701976-DD1	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in Iceland (includes keyboard cable)
701976-FL1	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in the Czech Republic and Slovakia (includes keyboard cable)
701976-FP1	Keyboard without pointing stick for use only on computer models equipped with the Windows 8 operating system in Northwest Africa (includes keyboard cable)
702080-001	HP un2430 EV-DO/HSPA Mini Card
702242-001	240-GB SATA III solid-state drive
707248-001	4-GB locked memory module (PC3, 12800, 1600-MHz)
708761-001	Intel Dual Core i5-3340M 2.70-GHz processor (SC turbo up to 3.40-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W; includes replacement thermal material)
708762-001	Intel Dual Core i5-3380M 2.90-GHz processor (SC turbo up to 3.60-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W; includes replacement thermal material)
709167-001	256-GB SATA III Samsung solid-state drive
710787-001	Intel Quad Core i7-3540M 3.00-GHz processor (SC turbo up to 3.70-GHz; 1600-MHz FSB, 4.0-MB L3 cache, 35 W; includes replacement thermal material)
710788-001	HP hs2350 HSPA+ Mobile Broadband Module
710789-001	HP lt2522 LTE/EV-DO Mobile Broadband Module
710790-001	HP lt2523 LTE/HSPA+ Mobile Broadband Module
711903-001	Intel Dual Core i5-3320M 2.60-GHz processor (SC turbo up to 3.20-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W; includes replacement thermal material)
713163-001	Intel Core i3-3130M 2.60-GHz processor (1600-MHz FSB, 3.0-MB L3 cache, 35 W; includes replacement thermal material)

4 Removal and replacement procedures

Preliminary replacement requirements

Tools required

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

- Flat-bladed screw driver

- Magnetic screw driver

- Phillips P0 and P1 screw drivers

Service considerations

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

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

Plastic parts

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

Cables and connectors

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

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

Drive handling

> **CAUTION:** Drives are fragile components that must be handled with care. To prevent damage to the computer, damage to a drive, or loss of information, observe these precautions:
>
> Before removing or inserting a hard drive, shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
>
> Before handling a drive, be sure that you are discharged of static electricity. While handling a drive, avoid touching the connector.
>
> Before removing a diskette drive or optical drive, be sure that a diskette or disc is not in the drive and be sure that the optical drive tray is closed.
>
> Handle drives on surfaces covered with at least one inch of shock-proof foam.
>
> Avoid dropping drives from any height onto any surface.
>
> After removing a hard drive, an optical drive, or a diskette drive, place it in a static-proof bag.
>
> Avoid exposing an internal hard drive to products that have magnetic fields, such as monitors or speakers.
>
> Avoid exposing a drive to temperature extremes or liquids.
>
> If a drive must be mailed, place the drive in a bubble pack mailer or other suitable form of protective packaging and label the package "FRAGILE."

Grounding guidelines

Electrostatic discharge damage

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

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

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

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

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

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

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

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

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

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

Typical electrostatic voltage levels			
	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 84 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 for battery removal instructions.
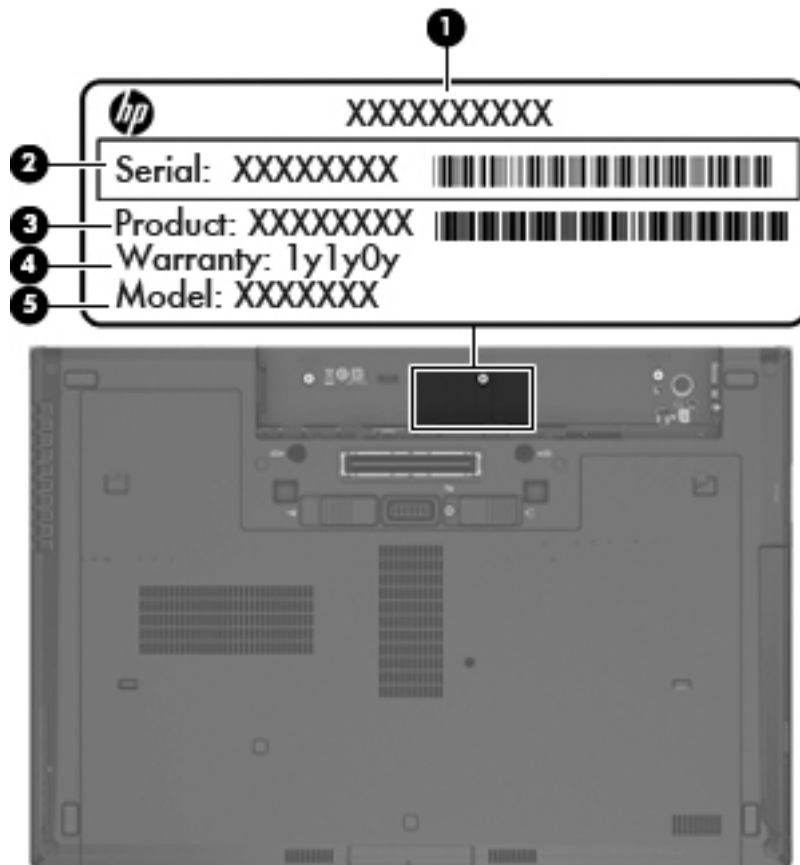
Item	Component	Description
(1)	Product name	This is the product name affixed to the front of the computer.
(2)	Serial number (s/n)	This is an alphanumeric identifier that is unique to each product.
(3)	Part number/Product number (p/n)	This number provides specific information about the product's hardware 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 641831-001. There are four rectangular rubber feet **(1)** and three square rubber feet **(2)** that attach to the base enclosure and service cover in the locations illustrated below.
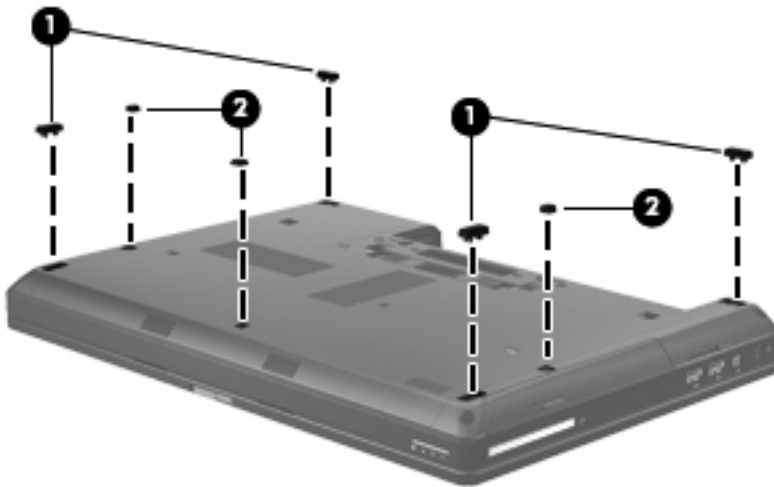
Battery

Description	Spare part number
9-cell, 100-Wh, 3.00-Ah	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, 55-Wh, 2.80-Ah	628670-001
6-cell, 51-Wh, 2.55-Ah	659083-001
3-cell, 31-Wh, 2.80-Ah	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.
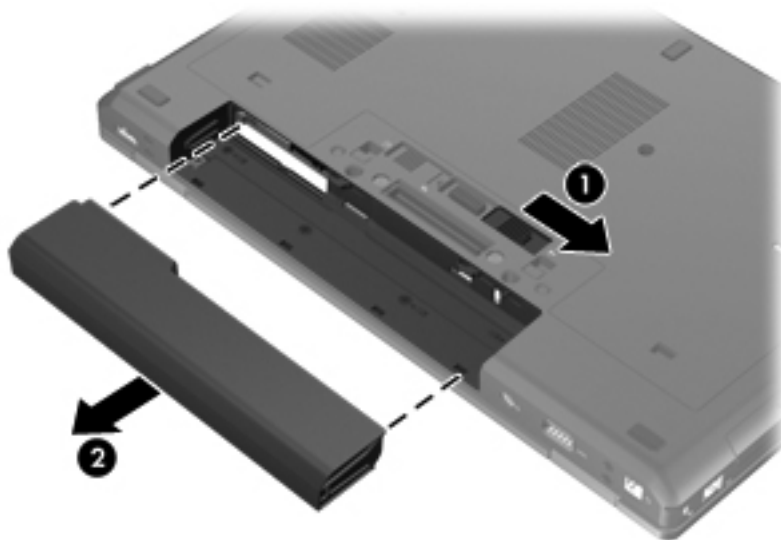
Install the battery by inserting it into the battery bay until you hear a click.

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 68).

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.
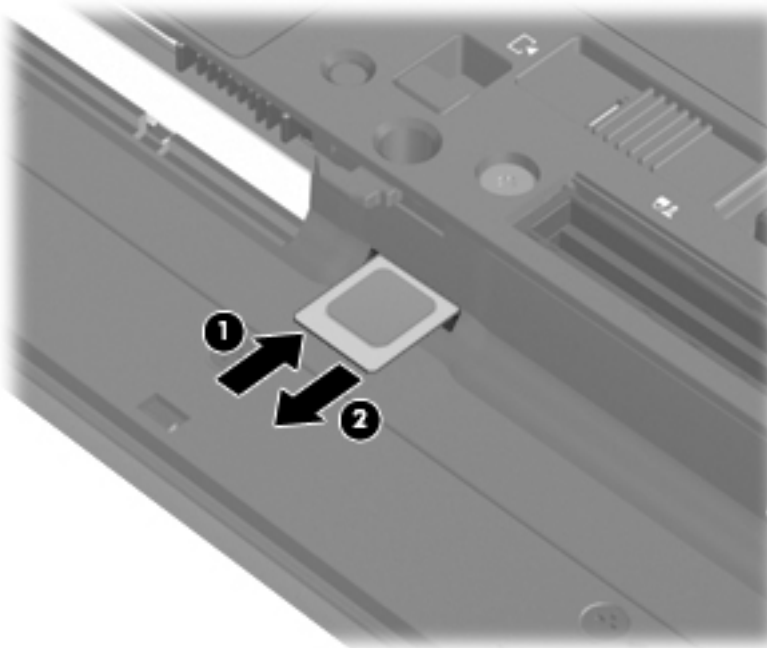
Reverse this procedure to install the SIM.

Service cover

Description	Spare part number
Includes label indicating "Made in China"	684326-001
Includes label indicating country of origin	699324-001

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 68).

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)**.
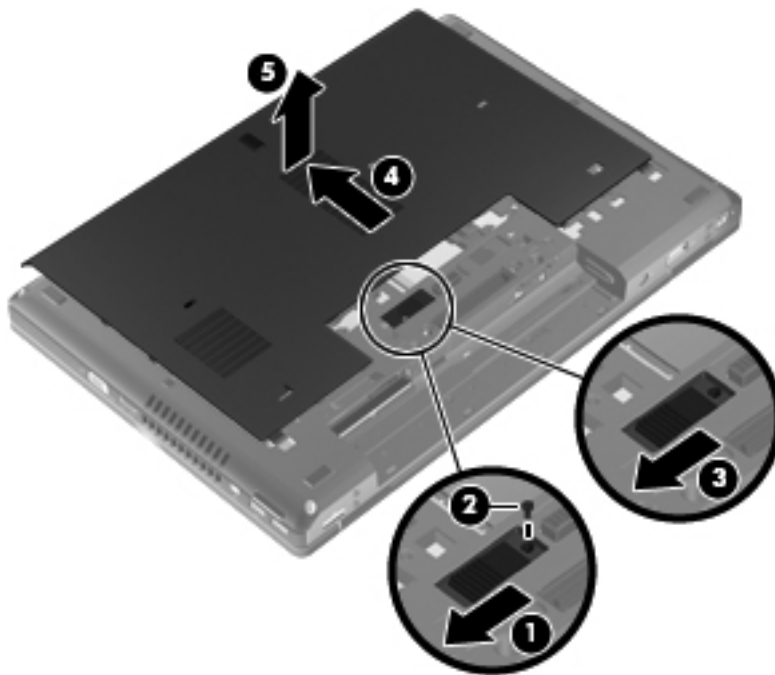
Reverse the removal procedures to install the service cover.

Optical drive

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

Description	Spare part number
Blu-ray ROM DVD±RW SuperMulti DL Drive	684330-001
DVD±RW Double-Layer with SuperMulti Drive	684329-001
DVD-ROM Drive	684328-001

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 68).

5. Remove the service cover (see Service cover on page 70).

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.
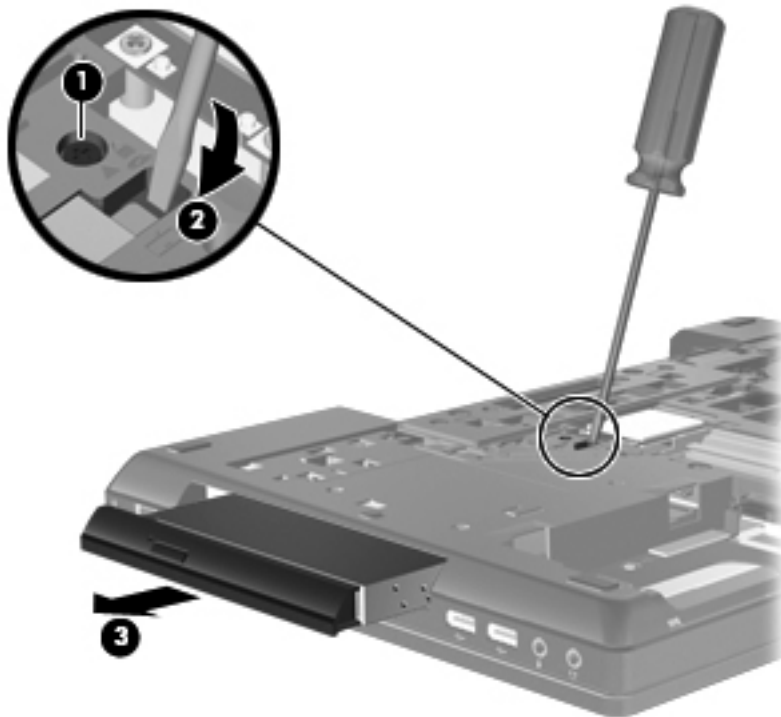
5. If it is necessary to replace the optical drive bracket, position the optical drive with the rear panel toward you.

6. Remove the two Phillips PM2.0×3.0 screws **(1)** that secure the optical drive bracket to the optical drive.

7. Remove the optical drive bracket **(2)**.
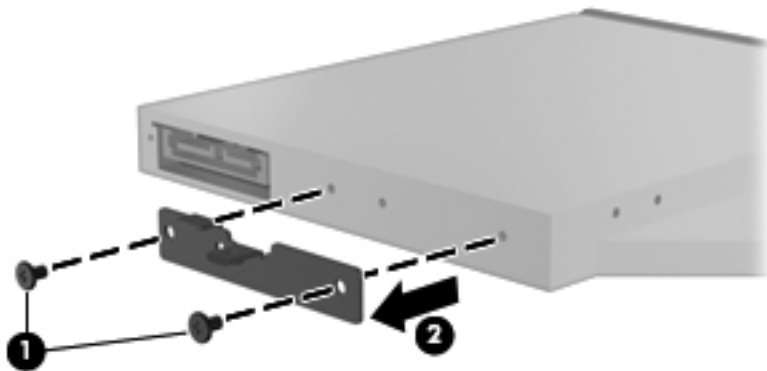
Reverse this procedure to reassemble and install the optical drive.

Upgrade bay

Description	Spare part number
Upgrade bay (includes bezel and bracket)	643926-001

Before removing the upgrade bay, 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 68).

5. Remove the service cover (see Service cover on page 70).

Remove the upgrade bay:

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 assembly to the computer.
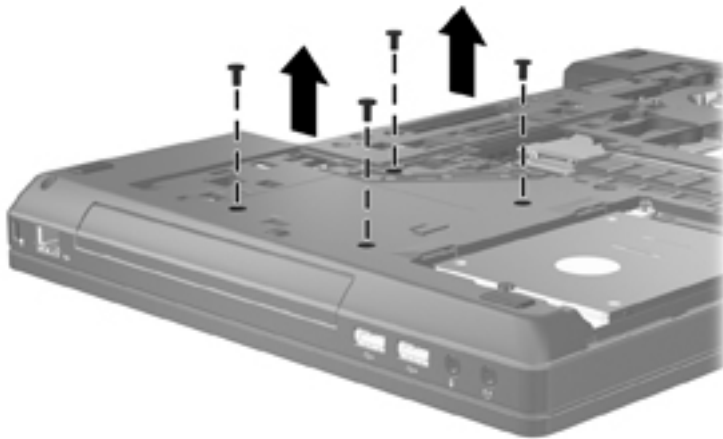
3. Loosen the captive Phillips screw that secures the upgrade bay drive in the upgrade bay **(1)**.

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 <u>Battery on page 68</u>).

5. Remove the service cover (see <u>Service cover on page 70</u>).

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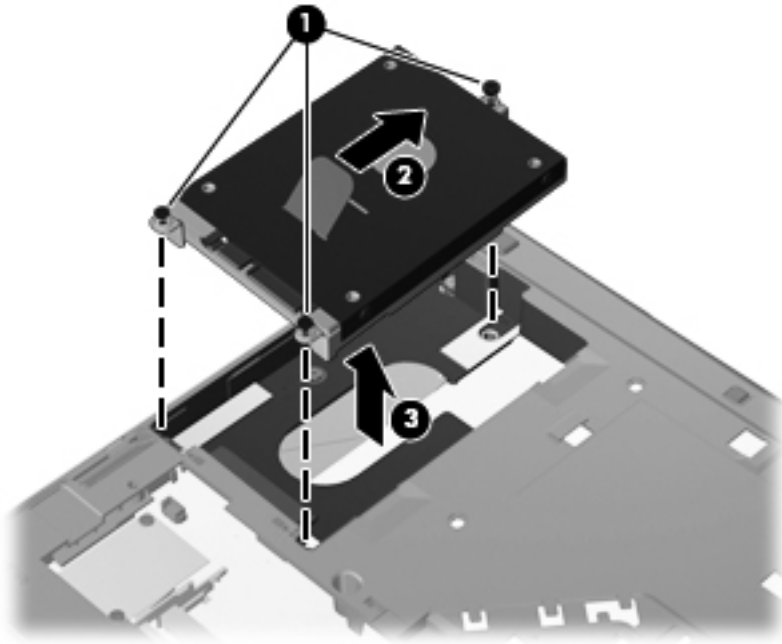
4. If it is necessary to disassemble the hard drive, perform the following steps:

    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.
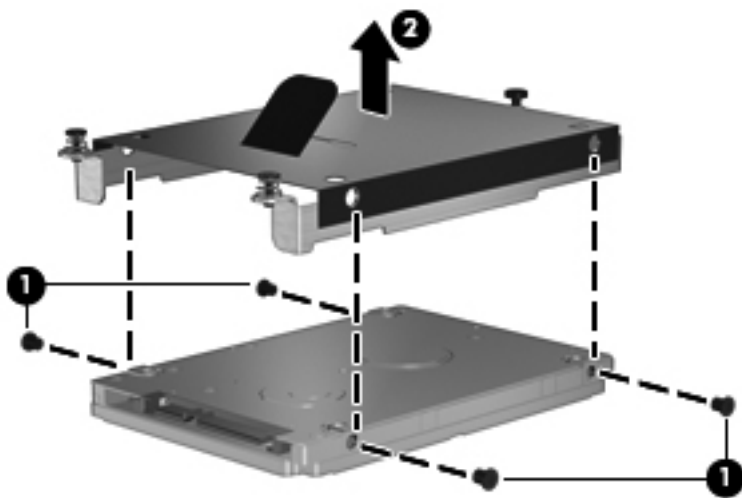
Reverse this procedure to reassemble and install the hard drive.

RTC battery

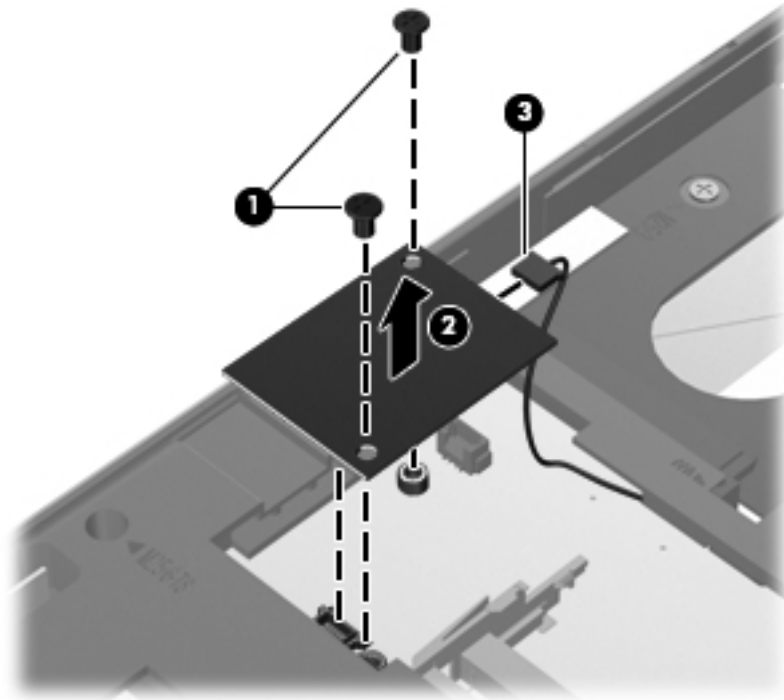| Description	Spare part number
RTC battery (includes cable and double-sided tape)	651948-001

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 68), and then remove the following components:

    a. Service cover (see Service cover on page 70)

    b. Optical drive (see Optical drive on page 71)

    c. Hard drive (see Hard drive on page 74)

    d. Modem module (see Modem module on page 85)

    e. Keyboard (see Keyboard on page 88)

    f. Base enclosure (see Base enclosure on page 93)

Remove the RTC battery:

1. Disconnect the RTC battery cable **(1)** from the system board.

2. Detach the RTC battery **(2)** from the base enclosure. (The RTC battery is attached to the base enclosure with double-sided tape.)
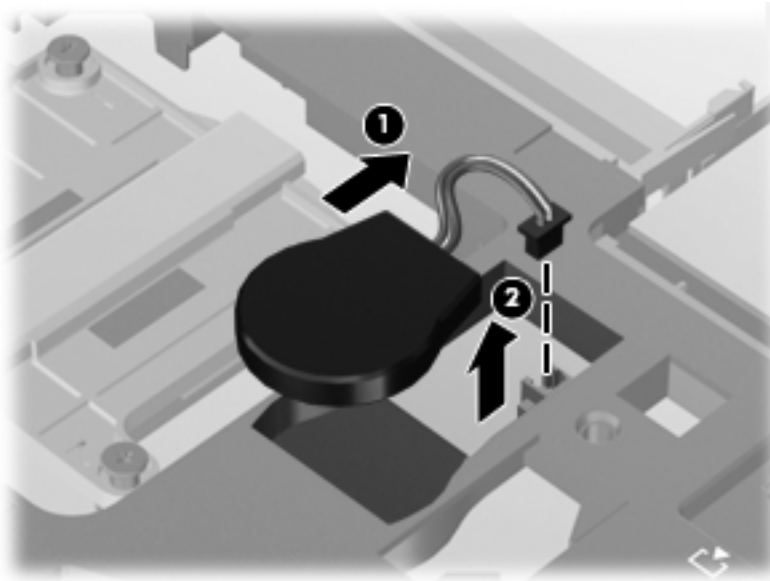
3. Remove the RTC battery.

Reverse this procedure to install the RTC battery.

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 locked memory module (PC3, 12800, 1600-MHz)	707248-001
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 68).

5. Remove the service cover (see Service cover on page 70).

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.
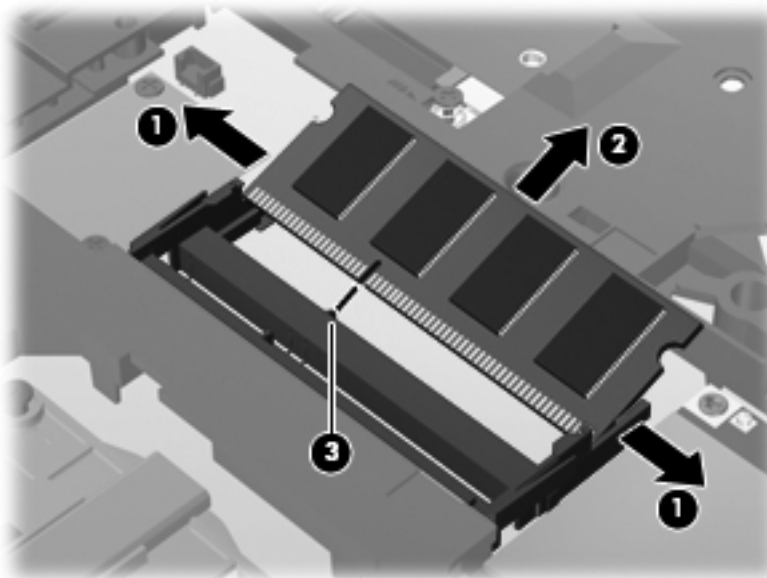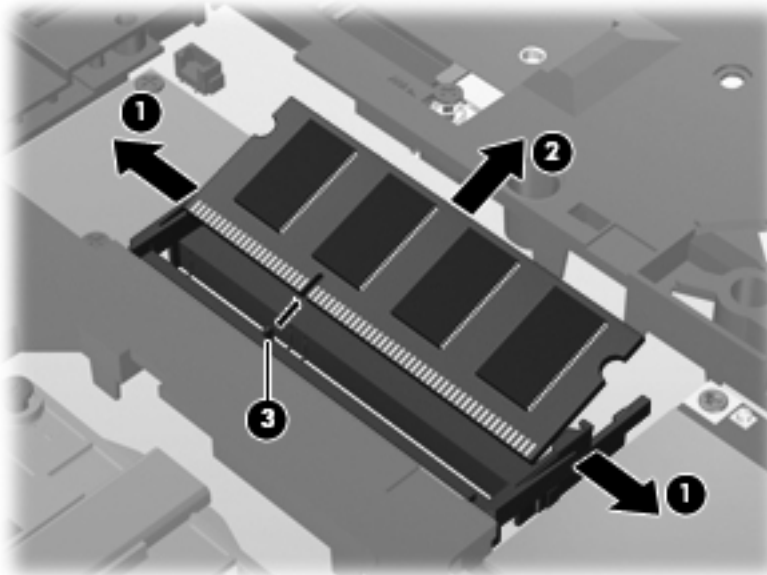
Reverse this procedure to install a memory module.

WWAN module

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

Description	Spare part number
HP hs2350 HSPA+ Mobile Broadband Module	710788-001
HP lt2523 LTE/HSPA+ Mobile Broadband Module	710790-001
HP lt2522 LTE/EV-DO Mobile Broadband Module	710789-001
HP un2430 EV-DO/HSPA Mini Card	702080-001
HP un2430 EV-DO/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 68).

5. Remove the service cover (see Service cover on page 70).

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 base enclosure. (The WLAN module tilts up.)

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

NOTE: WWAN modules are designed with a notch **(4)** to prevent incorrect insertion.
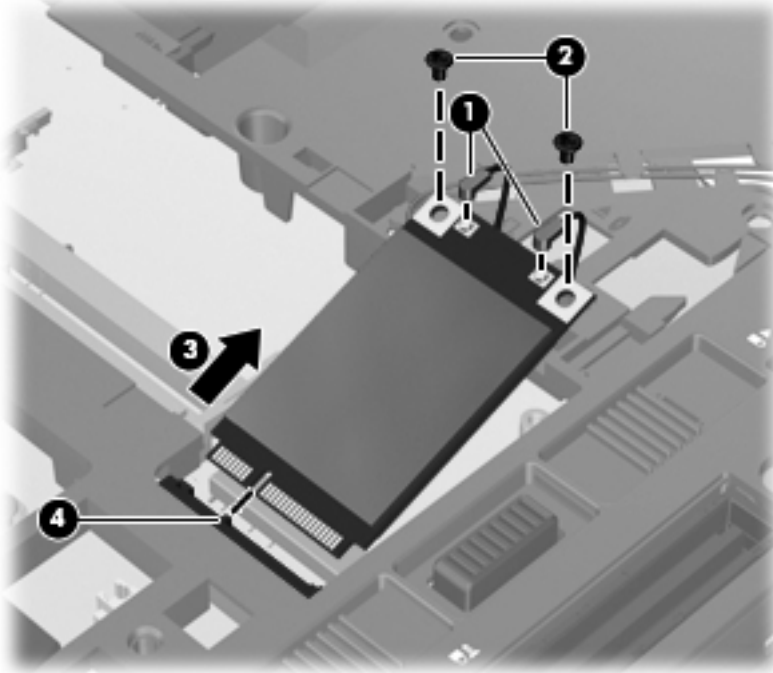
NOTE: If the WWAN antennas are not connected to the terminals on the WWAN module, the protective sleeves must be installed on the antenna connectors, as shown in the following illustration.
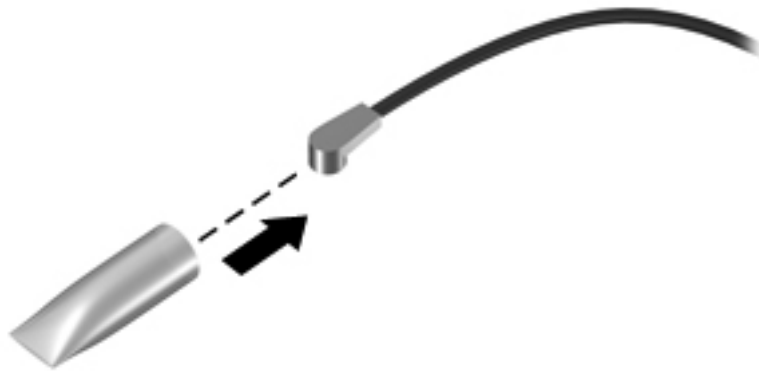
Reverse this procedure to install the WWAN module.

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	695915-001
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 68).

5. Remove the service cover (see Service cover on page 70).

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 base enclosure. (The WLAN module tilts up.)

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

NOTE: WLAN modules are designed with a notch **(4)** to prevent incorrect insertion.
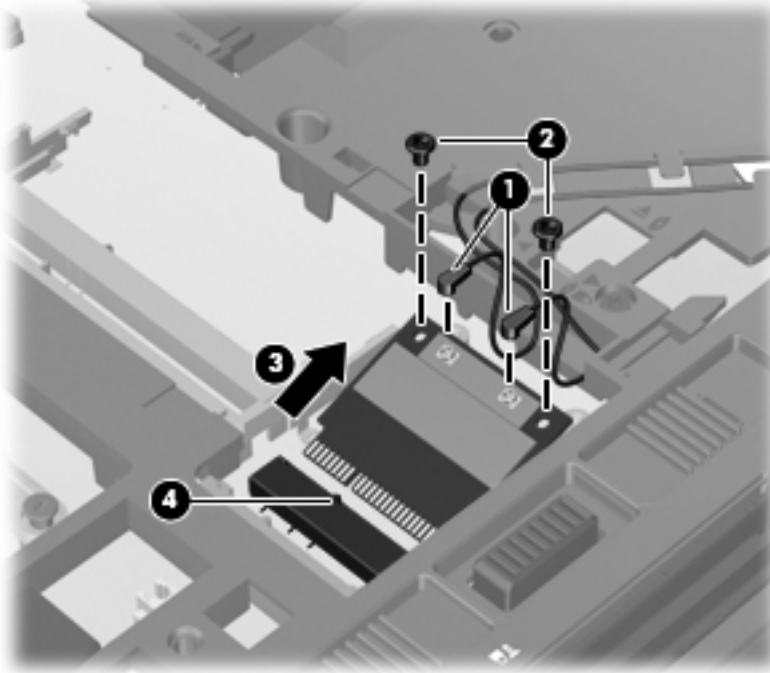
NOTE: If the WLAN antennas are not connected to the terminals on the WLAN module, the protective sleeves must be installed on the antenna connectors, as shown in the following illustration.
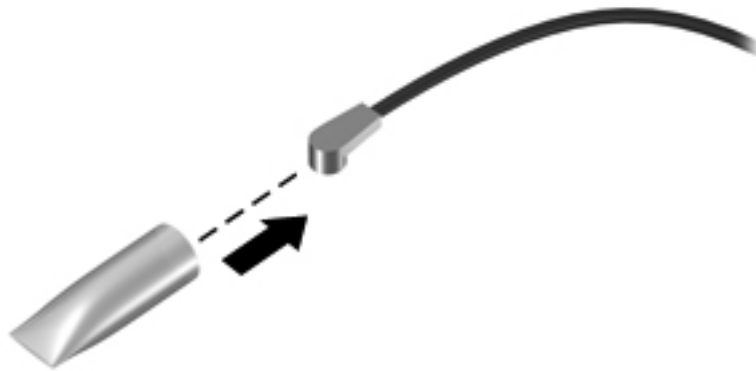
Reverse this procedure to install the WLAN module.

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 68).

5. Remove the service cover (see Service cover on page 70).

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.
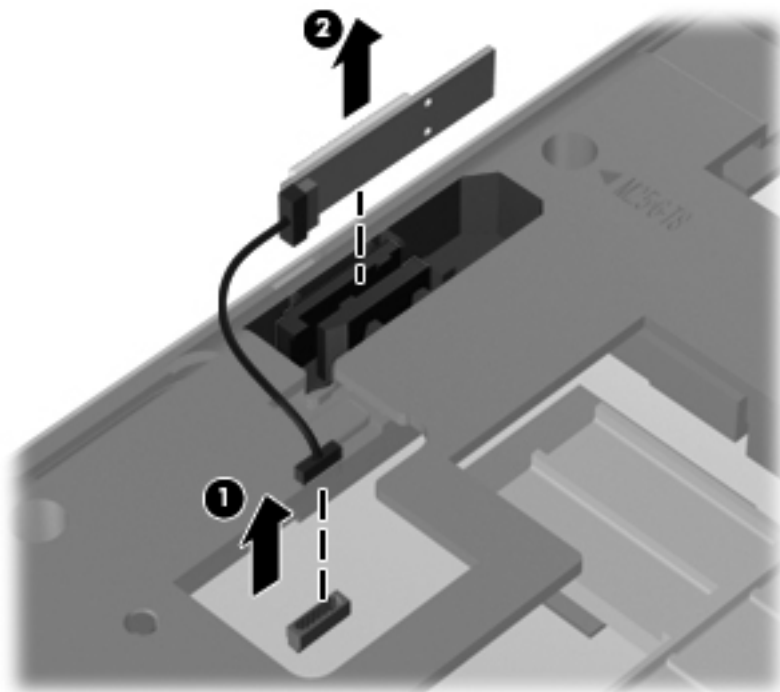
3. Remove the Bluetooth module.

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 68).

5. Remove the service cover (see Service cover on page 70).

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 modem module 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).

5. Remove the service cover (see).

Remove the fan:

1. Disconnect the fan cable **(1)** from the system board.

2. Loosen the three captive Phillips screws **(2)** that secure the fan to the top cover.

3. Remove the fan **(3)**.
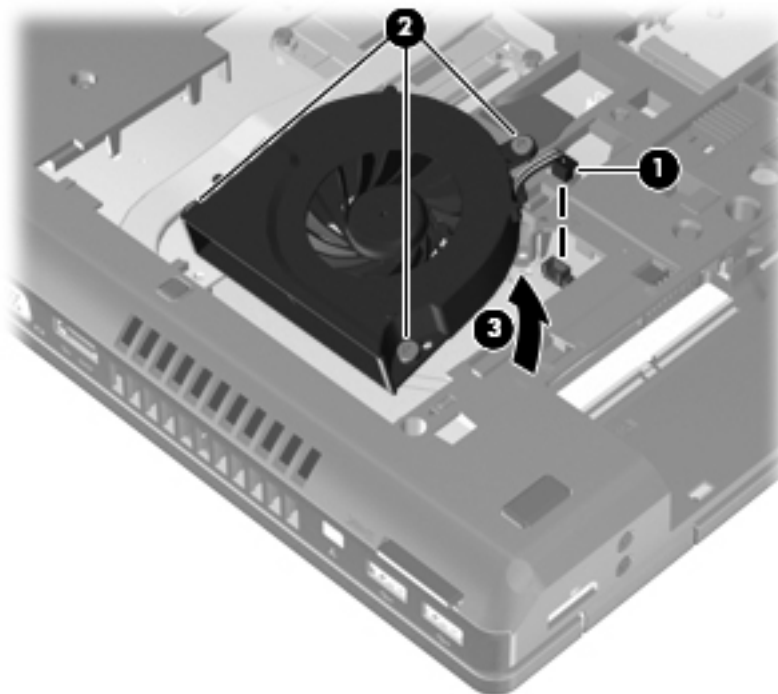
Reverse this procedure to install the fan.

Keyboard

For use in country/region	Spare part number	For use in country/region	Spare part number
Keyboard with pointing stick (includes keyboard cable and pointing stick cable):			
For use only on computer models equipped with the Windows 8 operating system:		For use in the Netherlands	701975-B31
For use in Belgium	701975-A41	For use in Norway	701975-091
For use in Brazil	701975-201	For use in Northwest Africa	701975-FP1
For use in Bulgaria	701975-261	For use in Portugal	701975-131
For use in Canada	701975-DB1	For use in Romania	701975-271
For use in the Czech Republic and Slovakia	701975-FL1	For use in Russia	701975-251
For use in Denmark	701975-081	For use in Saudi Arabia	701975-171
For use in France	701975-051	For use in Slovenia	701975-BA1
For use in Germany	701975-041	For use in South Korea	701975-AD1
For use in Greece	701975-151	For use in Spain	701975-071
For use in Hungary	701975-211	For use in Sweden and Finland	701975-B71
For use in Iceland	701975-DD1	For use in Switzerland	701975-BG1
For use in India	701975-D61	For use in Taiwan	701975-AB1
For use in Israel	701975-BB1	For use in Thailand	701975-281
For use in Italy	701975-061	For use in Turkey	701975-141
For use in Japan	701975-291	For use in the United Kingdom and Singapore	701975-031
For use in Latin America	701975-161	For use in the United States	701975-001
For use only on computer models equipped with the Windows 7 operating system:		For use in the Netherlands	684332-B31
For use in Belgium	684332-A41	For use in Norway	684332-091
For use in Brazil	684332-201	For use in Northwest Africa	684332-FP1
For use in Bulgaria	684332-261	For use in Portugal	684332-131
For use in Canada	684332-DB1	For use in Romania	684332-271
For use in the Czech Republic and Slovakia	684332-A81	For use in Russia	684332-251
For use in Denmark	684332-081	For use in Saudi Arabia	684332-171
For use in France	684332-051	For use in Slovenia	684332-BA1
For use in Germany	684332-041	For use in South Korea	684332-AD1

For use in country/region	Spare part number	For use in country/region	Spare part number
For use in Greece	684332-DJ1	For use in Spain	684332-071
For use in Hungary	684332-211	For use in Sweden and Finland	684332-B71
For use in Iceland	684332-DD1	For use in Switzerland	684332-BG1
For use in India	684332-D61	For use in Taiwan	684332-AB1
For use in Israel	684332-BB1	For use in Thailand	684332-281
For use in Italy	684332-061	For use in Turkey	684332-141
For use in Japan	684332-291	For use in the United Kingdom and Singapore	684332-031
For use in Latin America	684332-161	For use in the United States	684332-001
Keyboard without pointing stick (includes keyboard cable):			
For use only on computer models equipped with the Windows 8 operating system:		For use in the Netherlands	701976-B31
For use in Belgium	701976-A41	For use in Norway	701976-091
For use in Brazil	701976-201	For use in Northwest Africa	701976-FP1
For use in Bulgaria	701976-261	For use in Portugal	701976-131
For use in Canada	701976-DB1	For use in Romania	701976-271
For use in the Czech Republic and Slovakia	701976-FL1	For use in Russia	701976-251
For use in Denmark	701976-081	For use in Saudi Arabia	701976-171
For use in France	701976-051	For use in Slovenia	701976-BA1
For use in Germany	701976-041	For use in South Korea	701976-AD1
For use in Greece	701976-151	For use in Spain	701976-071
For use in Hungary	701976-211	For use in Sweden and Finland	701976-B71
For use in Iceland	701976-DD1	For use in Switzerland	701976-BG1
For use in India	701976-D61	For use in Taiwan	701976-AB1
For use in Israel	701976-BB1	For use in Thailand	701976-281
For use in Italy	701976-061	For use in Turkey	701976-141
For use in Japan	701976-291	For use in the United Kingdom and Singapore	701976-031
For use in Latin America	701976-161	For use in the United States	701976-001
For use only on computer models equipped with the Windows 7 operating system:		For use in the Netherlands	684333-B31
For use in Belgium	684333-A41	For use in Norway	684333-091
For use in Brazil	684333-201	For use in Northwest Africa	684333-FP1

For use in country/region	Spare part number	For use in country/region	Spare part number
For use in Bulgaria	684333-261	For use in Portugal	684333-131
For use in Canada	684333-DB1	For use in Romania	684333-271
For use in the Czech Republic and Slovakia	684333-A81	For use in Russia	684333-251
For use in Denmark	684333-081	For use in Saudi Arabia	684333-171
For use in France	684333-051	For use in Slovenia	684333-BA1
For use in Germany	684333-041	For use in South Korea	684333-AD1
For use in Greece	684333-DJ1	For use in Spain	684333-071
For use in Hungary	684333-211	For use in Sweden and Finland	684333-B71
For use in Iceland	684333-DD1	For use in Switzerland	684333-BG1
For use in India	684333-D61	For use in Taiwan	684333-AB1
For use in Israel	684333-BB1	For use in Thailand	684333-281
For use in Italy	684333-061	For use in Turkey	684333-141
For use in Japan	684333-291	For use in the United Kingdom and Singapore	684333-031
For use in Latin America	684333-161	For use in the United States	684333-001

Before removing the keyboard, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

2. Disconnect the power from the computer by unplugging the power cord from the computer.

3. Disconnect all external devices from the computer.

4. Remove the battery (see Battery on page 68).

5. Remove the service cover (see Service cover on page 70).

Remove the keyboard:

1. Loosen the three Phillips captive screws that secure the keyboard to the computer.
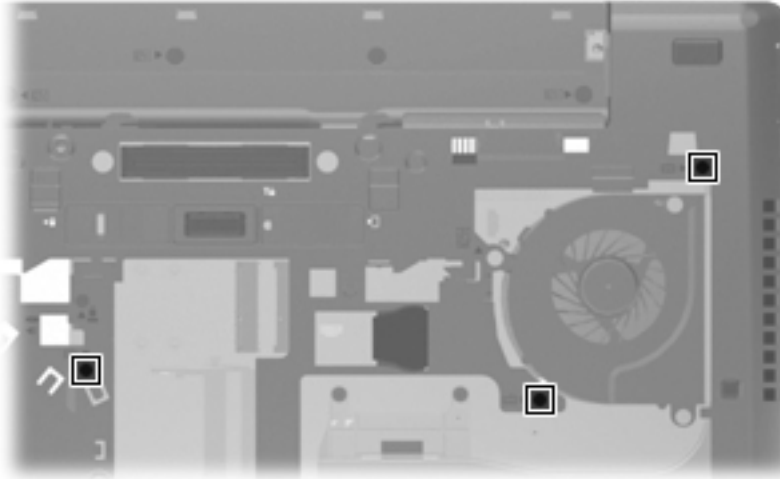
2. Rest and secure the computer on its right side.

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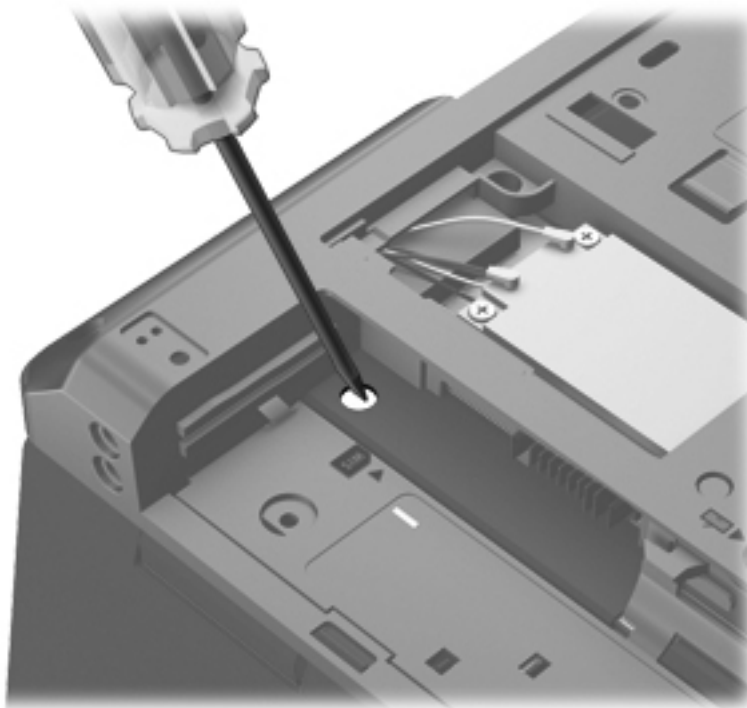
5. Turn the computer right-side up with the front toward you.

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 **(1)** to which the keyboard cable is attached, and then disconnect the keyboard cable **(2)** from the keyboard.

📝 **NOTE:** The pointing stick cable is present on select models only.

8. Release the ZIF connector **(3)** to which the pointing stick cable is attached, and then disconnect the pointing stick cable **(4)** from the system board.
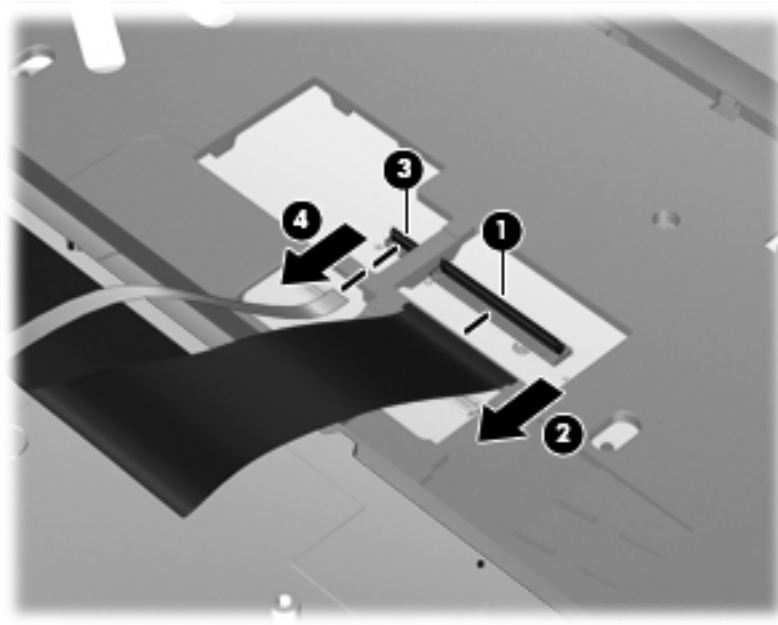
9. Remove the keyboard.

Reverse this procedure to install the keyboard.

Base enclosure

> **NOTE:** The base enclosure spare part kit includes seven rubber feet, the service cover release latch assembly, and the battery release latch assembly.

Description	Spare part number
For use only on computer models equipped with WWAN capability	684334-001
For use only on computer models not equipped with WWAN capability	687224-001

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 68), and then remove the following components:

   a. Service cover (see Service cover on page 70)

   b. Optical drive (see Optical drive on page 71)

   c. Hard drive (see Hard drive on page 74)

   d. Modem module (see Modem module on page 85)

   e. Keyboard (see Keyboard on page 88)

> **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 84)

- Speaker assembly (see Speaker assembly on page 97)

- RJ-11 jack assembly (see RJ-11 jack cable on page 98)

Remove the base enclosure:

1. Close the computer.

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

3. Remove the three rubber screw covers **(1)** and **(2)**. The rubber screw covers are included in the Rubber Kit, spare part number 641831-001.

> **NOTE:** The rubber screw covers in the front/right and rear/left corners **(1)** are smaller than the screw cover in the rear/right corner.

4. Remove the seven Torx PM2.5×6.0 screws **(3)** that secure the base enclosure to the computer.

5. Remove the four Phillips PM2.5×3.0 screws from the battery bay **(4)** that secure the base enclosure to the computer.
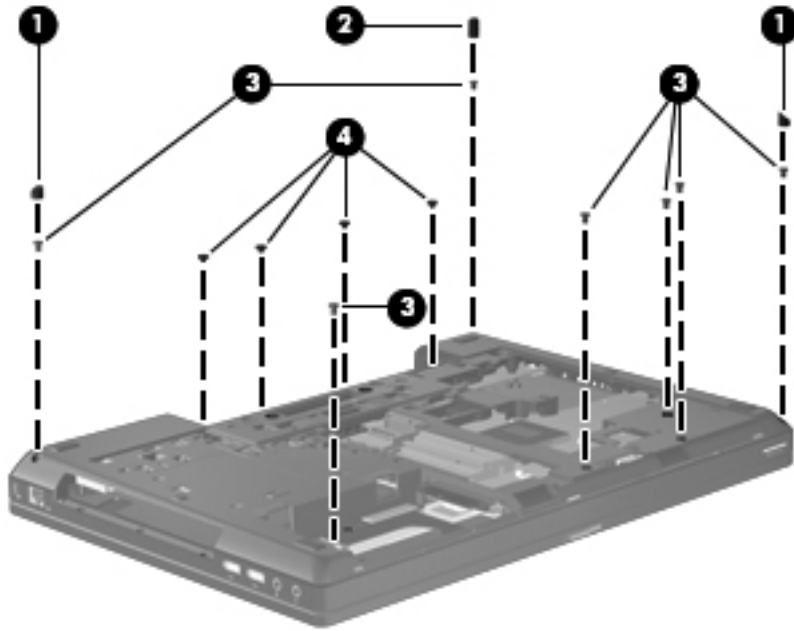
6. Remove the two Phillips PM2.5×3.0 screws **(1)** from the hard drive bay that secure the base enclosure to the computer.

7. Remove the three Phillips PM2.0×3.0 screws **(2)** from the optical drive bay that secure the base enclosure to the computer.
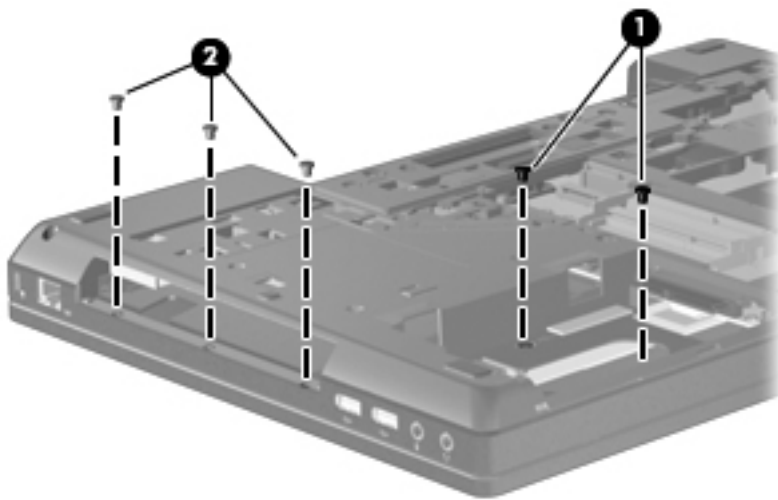
8. Position the computer with the battery bay toward you.

9. Remove the four Torx TM2.5×8.0 screws from the rear panel of the computer.
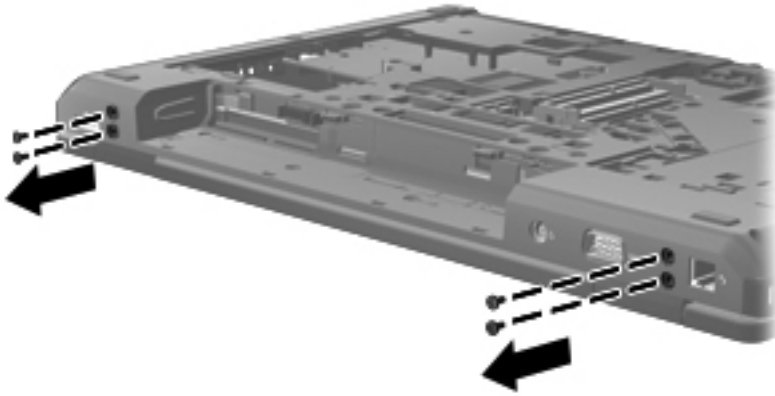
10. Remove the wireless cables from the clips **(1)** and routing channel built into the base enclosure.

11. Disconnect the speaker cable **(2)** from the system board.
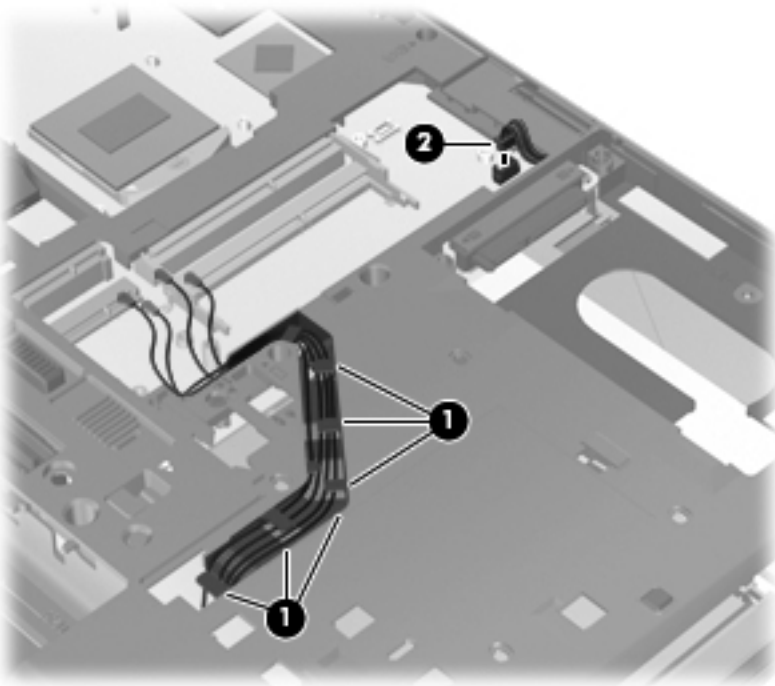
12. Remove the base enclosure by lifting it straight up from the computer.
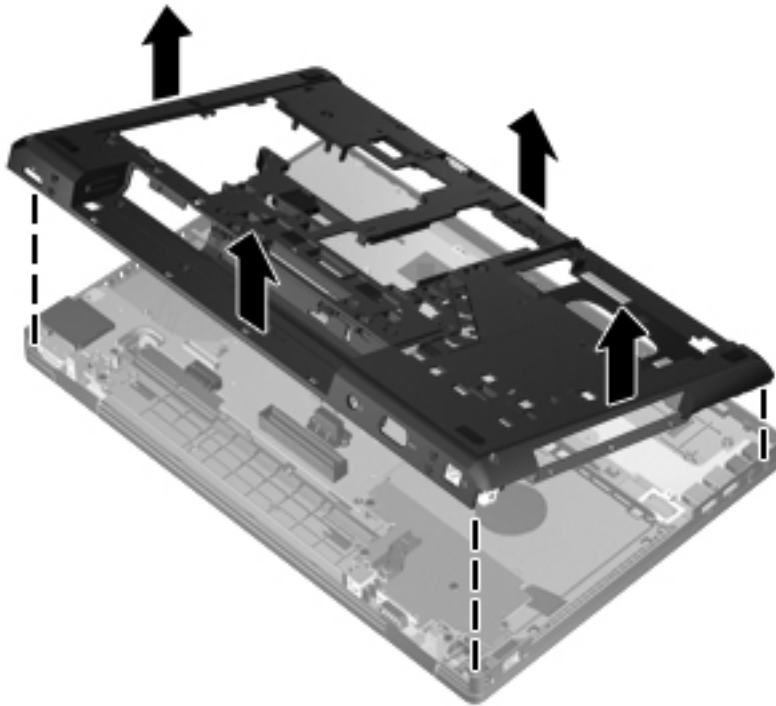
NOTE: When replacing the bottom cover, make sure to remove the RJ-11 jack cover from the slot in the base enclosure if the repaired unit includes a modem.

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.
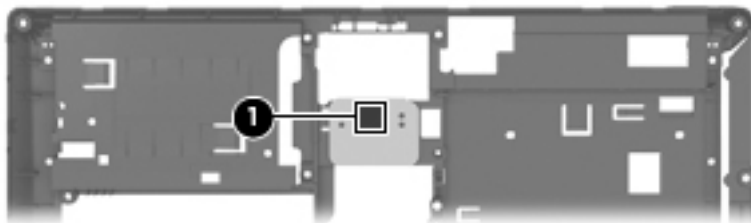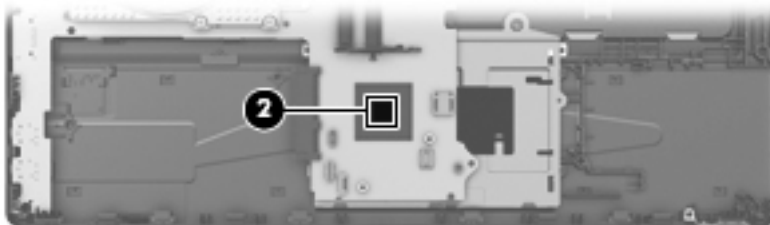
Reverse this procedure to install the base enclosure.

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 68), and then remove the following components:

    a. Service cover (see Service cover on page 70)

    b. Optical drive (see Optical drive on page 71)

    c. Hard drive (see Hard drive on page 74)

    d. Modem module (see Modem module on page 85)

    e. Keyboard (see Keyboard on page 88)

    f. Base enclosure (see Base enclosure on page 93)

Remove the speaker assembly:

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

2. Remove the two Phillips PM2.0×3.0 screws **(1)** that secure the speaker assembly to the base enclosure.

3. Remove the speaker assembly **(2)** from the base enclosure.
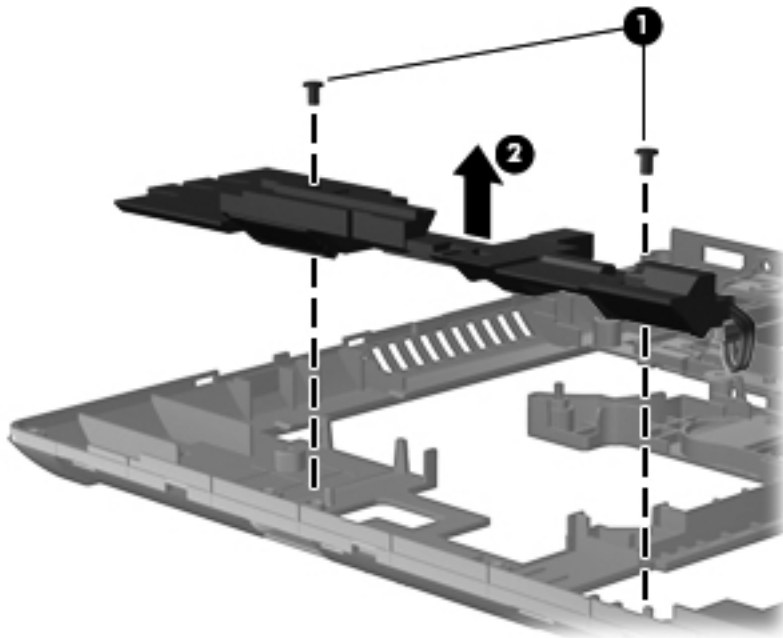
Reverse this procedure to install the speaker assembly.

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 68), and then remove the following components:

    a. Service cover (see Service cover on page 70)

    b. Optical drive (see Optical drive on page 71)

    c. Hard drive (see Hard drive on page 74)

    d. Modem module (see Modem module on page 85)

    e. Keyboard (see Keyboard on page 88)

    f. Base enclosure (see Base enclosure on page 93)

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.
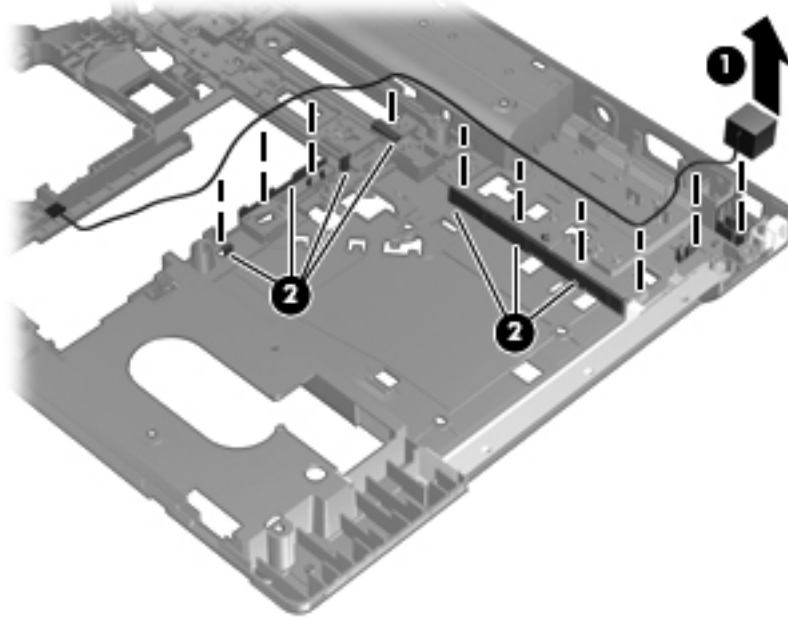
4. Remove the RJ-11 jack cable.

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 68), and then remove the following components:

   a. Service cover (see Service cover on page 70)

   b. Optical drive (see Optical drive on page 71)

   c. Hard drive (see Hard drive on page 74)

   d. Modem module (see Modem module on page 85)

e. Keyboard (see <u>Keyboard on page 88</u>)

f. Base enclosure (see <u>Base enclosure on page 93</u>)

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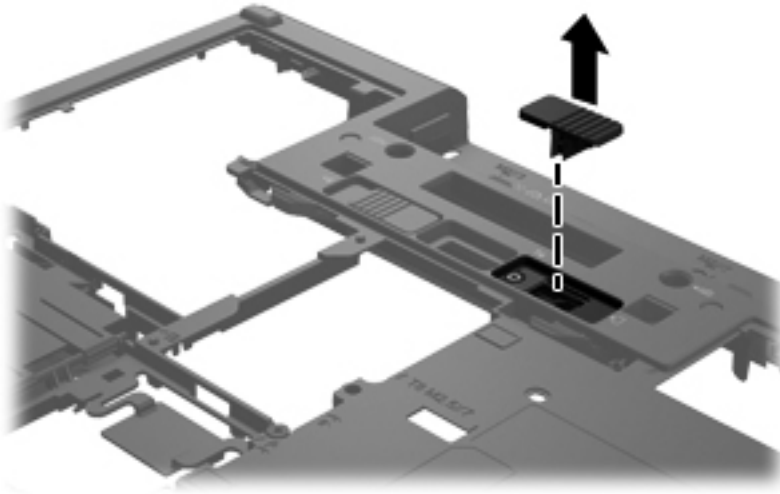
3. Turn the base enclosure right side up, with the front toward you.

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)**.
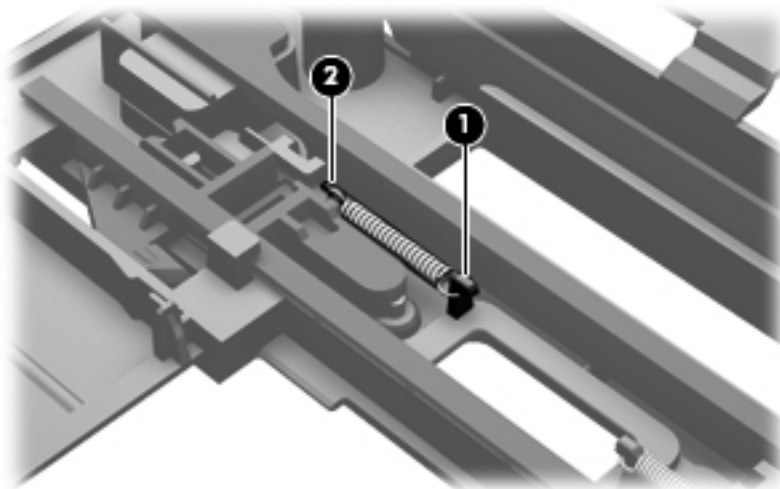
5. Slide the service cover release latch arm **(1)** as far to the left as it will go.

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.
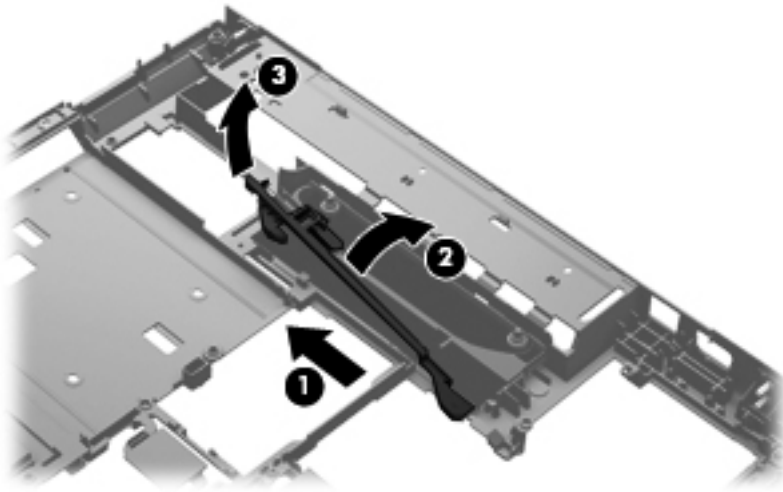
8. Swing the left end of the service cover release latch arm **(1)** toward the back of the computer.

9. Release the right end of the service cover release latch arm **(2)** from the openings in the base enclosure.
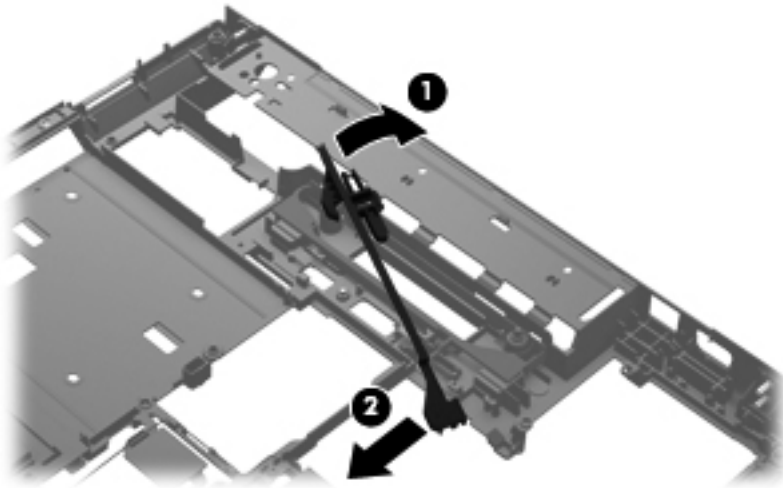
10. Remove the service cover release latch arm.

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 68), and then remove the following components:

    a. Service cover (see Service cover on page 70)

    b. Optical drive (see Optical drive on page 71)

    c. Hard drive (see Hard drive on page 74)

    d. Modem module (see Modem module on page 85)

    e. Keyboard (see Keyboard on page 88)

    f. Base enclosure (see Base enclosure on page 93)

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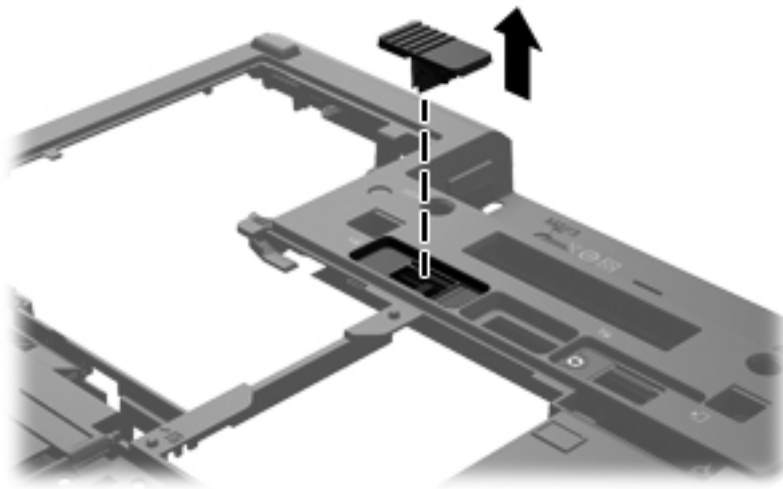
3. Turn the base enclosure right side up, with the front toward you.

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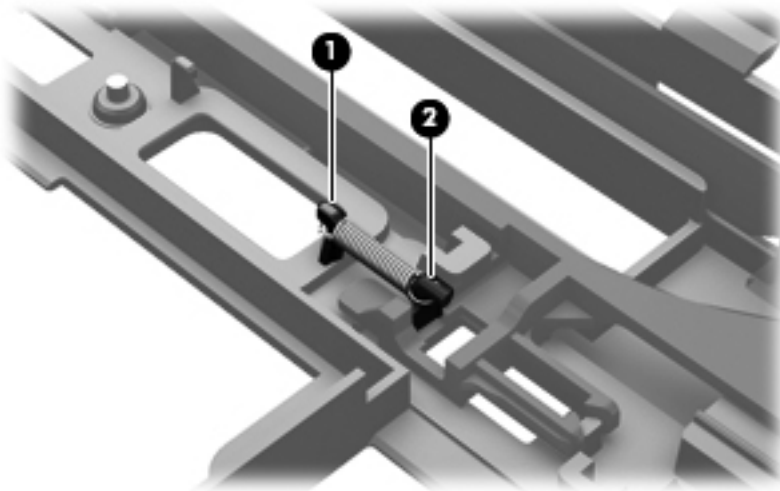
5. Slide the battery release latch arm **(1)** as far to the right as it will go.

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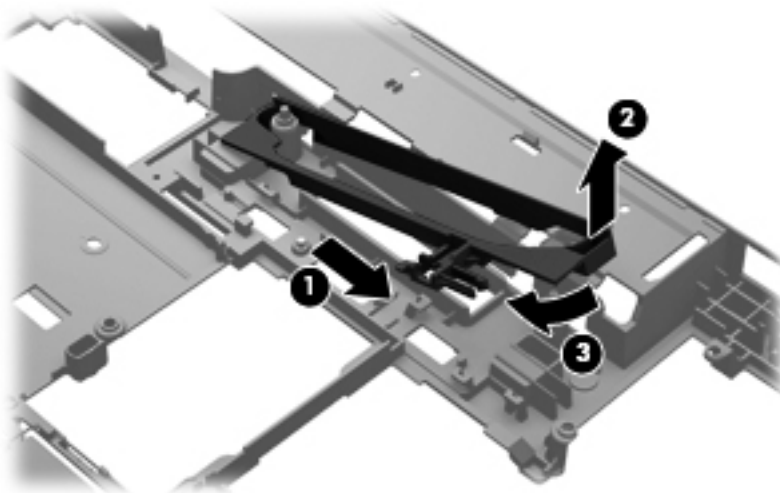
8. Slide the battery release latch arm **(1)** as far to the left as it will go.

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.
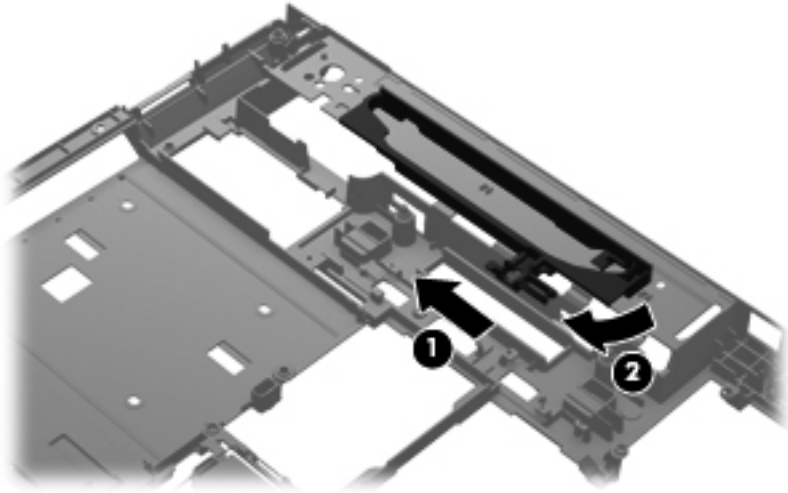
10. Remove the battery release latch arm.

Reverse this procedure to install the battery release latch assembly.

Function board

Description	Spare part number
Function board	658142-001

Before removing the function 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 68), and then remove the following components:

   a. Service cover (see Service cover on page 70)

   b. Optical drive (see Optical drive on page 71)

   c. Hard drive (see Hard drive on page 74)

   d. Modem module (see Modem module on page 85)

   e. Keyboard (see Keyboard on page 88)

   f. Base enclosure (see Base enclosure on page 93)

Remove the function board:

1. Remove the wireless antenna cables **(1)** from the retention clip attached to the system board.

2. Remove the three Phillips PM2.5×7.0 screws **(2)** that secure the function board to the computer.

3. Slide the function board **(3)** to the left, and then remove the function board.
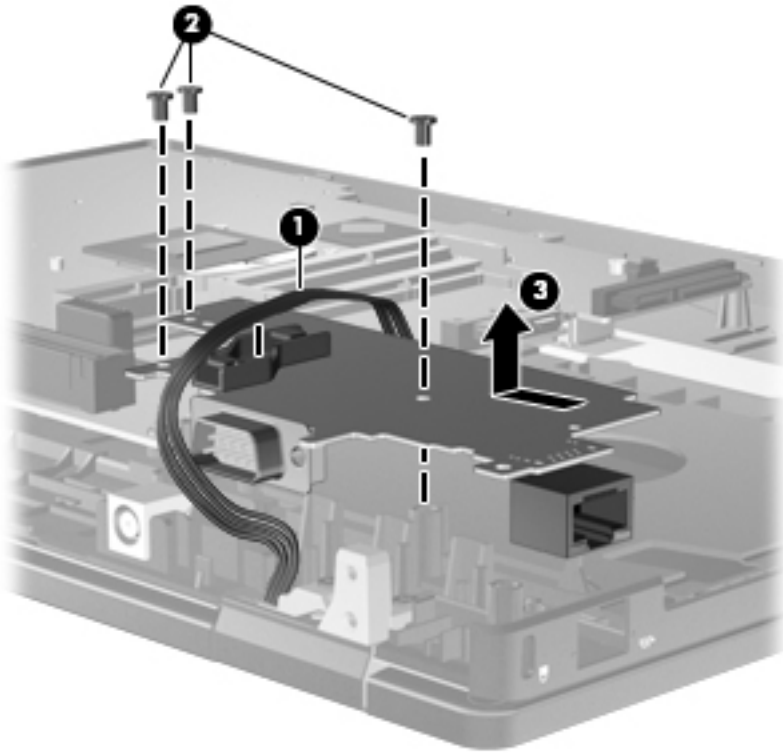
Reverse this procedure to install the function board.

System board

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

Description	Spare part number
For use only on HP ProBook 6475b Notebook PC computer models:	
For use on computer models equipped with the Windows 8 Professional operating system and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	684341-601
For use on computer models equipped with the Windows 8 Standard operating system and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	684341-501
For use on computer models equipped with the Windows 7 operating system and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	684341-001
For use on computer models equipped with the Windows 8 Professional operating system but without WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	684342-601
For use on computer models equipped with the Windows 8 Standard operating system but without WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	684342-501
For use on computer models equipped with the Windows 7 operating system but without WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	684342-001
For use on computer models equipped with the Windows 7 operating system and WWAN capability only in the People's Republic of China and the Ukraine	690036-001
For use on computer models equipped with the Windows 7 operating system but not WWAN capability only in the People's Republic of China and the Ukraine	690037-001
For use only on HP ProBook 6470b Notebook PC computer models:	
For use on computer models equipped with the Intel QM77 chipset, a graphics subsystem with discrete memory, the Windows 8 Professional operating system, and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686039-601
For use on computer models equipped with the Intel QM77 chipset, a graphics subsystem with discrete memory, the Windows 8 Standard operating system, and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686039-501
For use on computer models equipped with the Intel QM77 chipset, a graphics subsystem with discrete memory, the Windows 7 operating system, and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686039-001
For use on computer models equipped with the Intel QM77 chipset, a graphics subsystem with UMA memory, the Windows 8 Professional operating system, and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686037-601
For use on computer models equipped with the Intel QM77 chipset, a graphics subsystem with UMA memory, the Windows 8 Standard operating system, and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686037-501
For use on computer models equipped with the Intel QM77 chipset, a graphics subsystem with UMA memory, the Windows 7 operating system, and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686037-001

Description	Spare part number
For use on computer models equipped with the Intel HM76 chipset, a graphics subsystem with discrete memory, the Windows 8 Professional operating system, and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686038-601
For use on computer models equipped with the Intel HM76 chipset, a graphics subsystem with discrete memory, the Windows 8 Standard operating system, and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686038-501
For use on computer models equipped with the Intel HM76 chipset, a graphics subsystem with discrete memory, the Windows 7 operating system, and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686038-001
For use on computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, the Windows 8 Professional operating system, and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686036-601
For use on computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, the Windows 8 Standard operating system, and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686036-501
For use on computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, the Windows 7 operating system, and WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686036-001
For use on computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, and the Windows 8 Professional operating system, but without WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686035-601
For use on computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, and the Windows 8 Standard operating system, but without WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686035-501
For use on computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, and the Windows 7 operating system, but without WWAN capability in all countries and regions except in the People's Republic of China and the Ukraine	686035-001
For use on computer models equipped with the Intel QM77 chipset, a graphics subsystem with discrete memory, the Windows 7 operating system, and WWAN capability only in the People's Republic of China and the Ukraine	691715-001
For use on computer models equipped with the Intel QM77 chipset, a graphics subsystem with UMA memory, the Windows 7 operating system, and WWAN capability only in the People's Republic of China and the Ukraine	691713-001
For use on computer models equipped with the Intel HM76 chipset, a graphics subsystem with discrete memory, the Windows 7 operating system, and WWAN capability only in the People's Republic of China and the Ukraine	691714-001
For use on computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, the Windows 7 operating system, and WWAN capability only in the People's Republic of China and the Ukraine	691712-001
For use on computer models equipped with the Intel HM76 chipset, a graphics subsystem with UMA memory, the Windows 7 operating system, but without WWAN capability only in the People's Republic of China and the Ukraine	691711-001

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 68), and then remove the following components:

   a. Service cover (see Service cover on page 70)

   b. Optical drive (see Optical drive on page 71)

   c. Hard drive (see Hard drive on page 74)

   d. Fan (see Fan on page 87)

   e. Modem module (see Modem module on page 85)

   f. Fan (see Fan on page 87)

   g. Keyboard (see Keyboard on page 88)

   h. Base enclosure (see Base enclosure on page 93)

**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 69, if applicable)

- Memory module (see Memory module on page 77)

- WWAN module (see WWAN module on page 80)

- WLAN module (see WLAN module on page 82)

- Heat sink (see Heat sink on page 111)

- Processor (see Processor on page 114)

Remove the system board:

1. Position the computer right-side up, with the front toward you.

2. Open the computer.

3. Release the ZIF connector **(1)** to which the TouchPad cable is connected, and then disconnect the TouchPad cable **(2)** from the system board.

4. Release the ZIF connector **(3)** to which the fingerprint reader board cable is connected, and then disconnect the fingerprint reader board cable **(4)** from the system board.

5. Disconnect the power connector cable **(5)** from the system board.
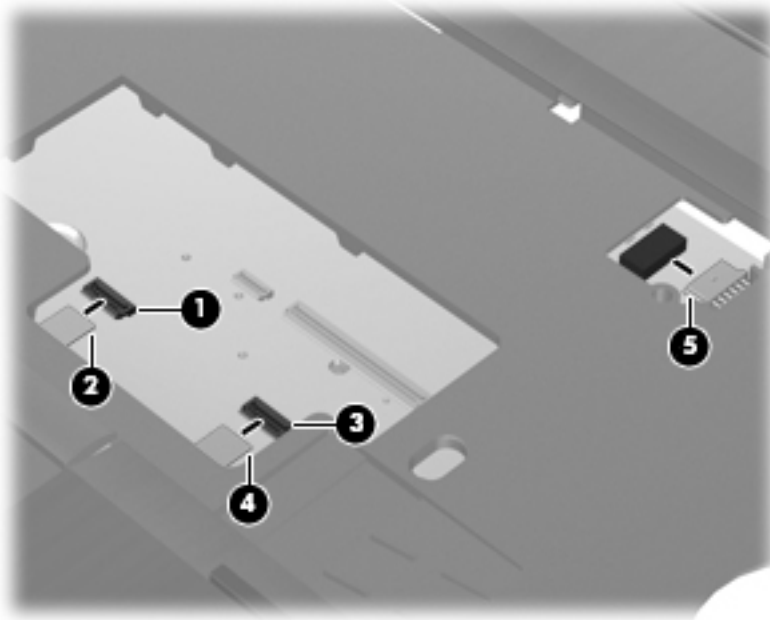
6. Close the computer.

7. Turn the computer upside down, with the battery bay toward you.

8. Remove the Phillips PM2.5×5.0 screw **(1)** that secures the display panel cable ground loop **(2)** to the computer.

9. Release the display panel cable **(3)** from the retention clip **(4)** attached to the system board.

10. Disconnect the display panel cable **(5)** from the system board.
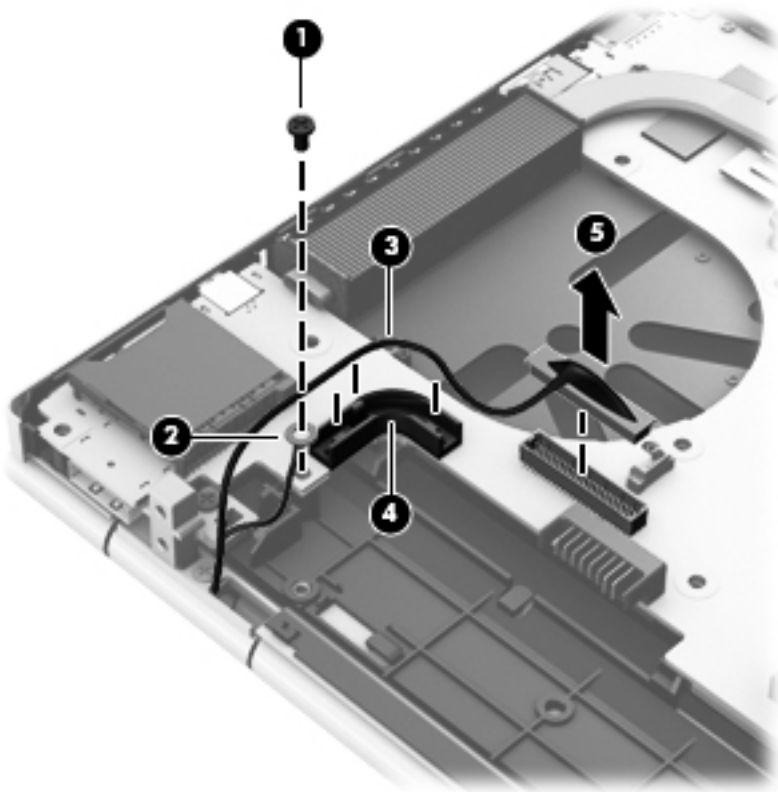
11. Remove the four Phillips PM2.5×5.0 screws that secure the system board to the top cover.
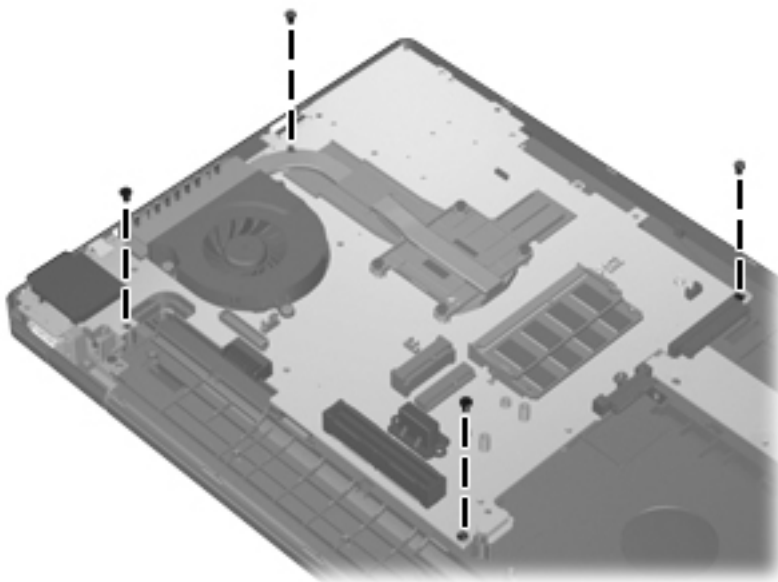
12. Lift the right side of the system board **(1)** until it rests at an angle.

13. Remove the system board **(2)** by sliding it up and to the right at an angle.
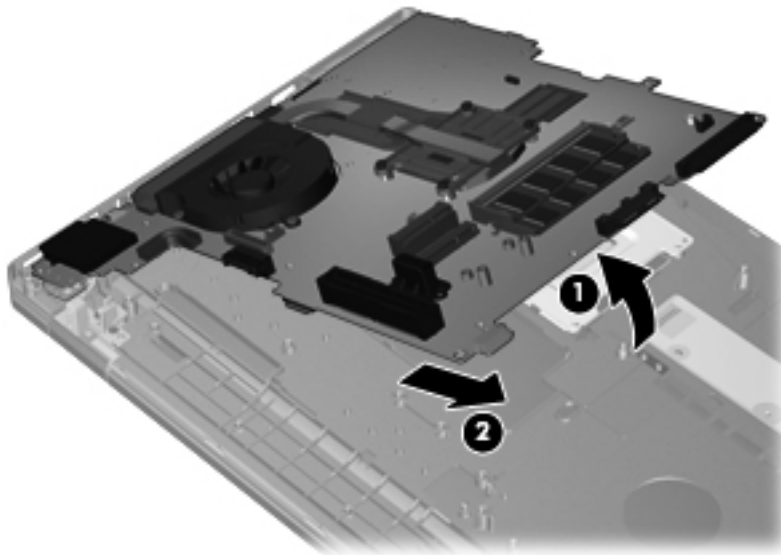
Reverse this procedure to install the system board.

Heat sink

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

| Description	Spare part number
Heat sink for use only on HP ProBook 6475p Notebook PC computer models	658543-001
Heat sink for use only on HP ProBook 6470b Notebook PC computer models equipped with a graphics subsystem with discrete memory	686021-001
Heat sink for use only on HP ProBook 6470b Notebook PC 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 68), and then remove the following components:

    a. Service cover (see Service cover on page 70)

    b. Hard drive (see Hard drive on page 74)

    c. Optical drive (see Hard drive on page 74)

d. WLAN module (see WLAN module on page 82)

e. WWAN module (see WWAN module on page 80)

f. Fan (see Fan on page 87)

g. Keyboard (see Keyboard on page 88)

h. Base enclosure (see Base enclosure on page 93)

i. System board (see System board on page 106)

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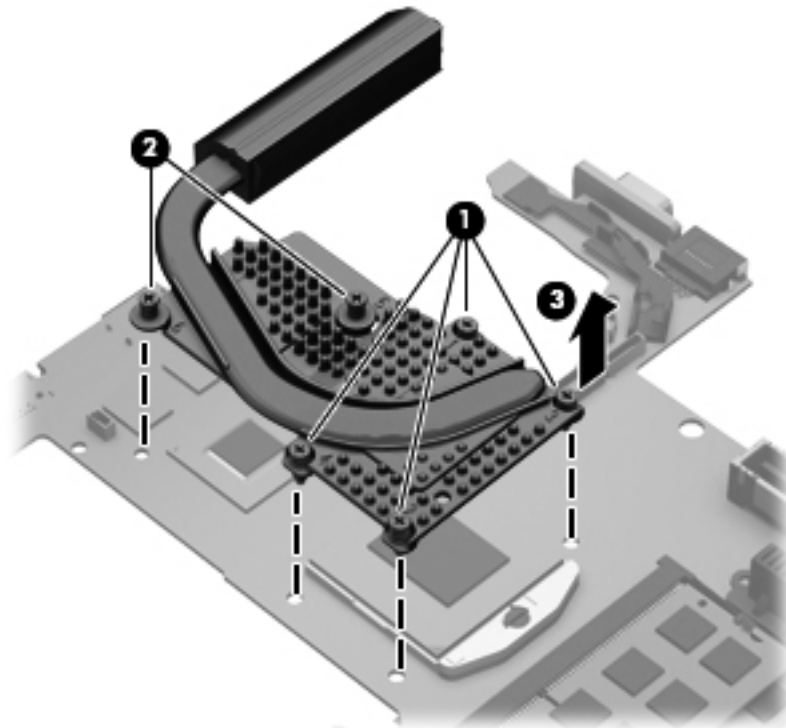
NOTE: Steps 3 and 4 apply to computer models equipped with a graphics subsystem with UMA memory. See steps 1 and 2 for heat sink removal information for computer models equipped with a graphics subsystem with discrete memory.

3. Following the 1, 2, 3, 4 sequence stamped into the heat sink, loosen the four captive Philllips 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.
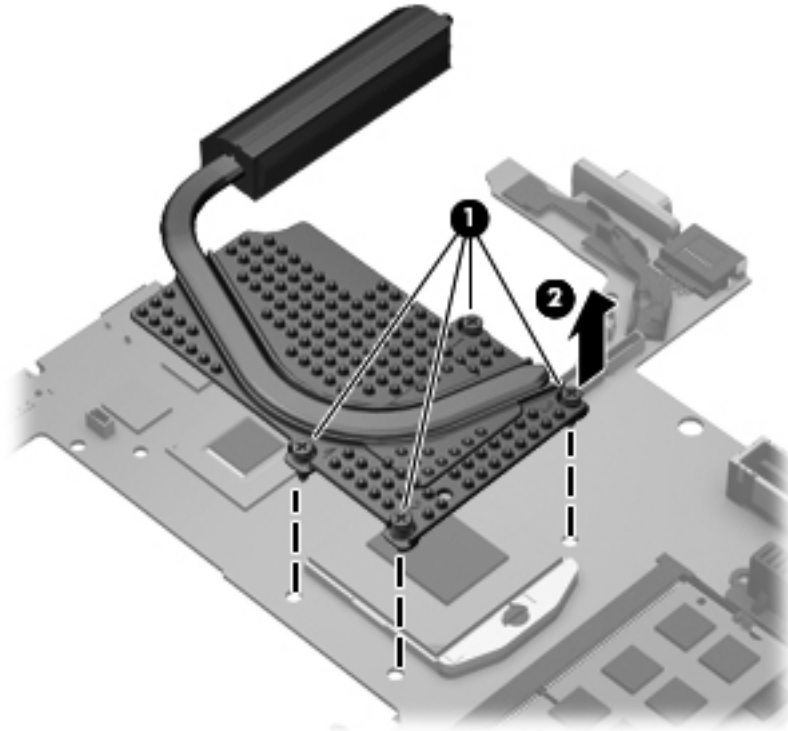
📝 **NOTE:** The thermal material must be thoroughly cleaned from the surfaces of the heat sink and the system board components each time the heat sink is removed. Replacement thermal material is included with the heat sink, processor, and system board spare part kits.

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
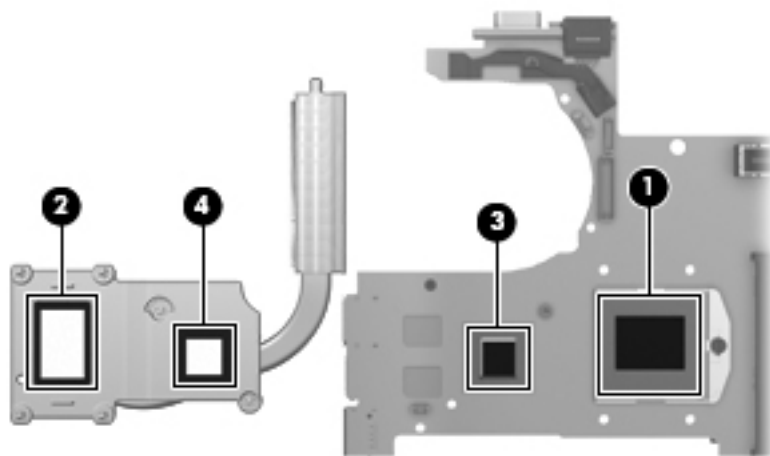
The following illustration shows the replacement thermal material locations on a computer model equipped with a graphics subsystem with UMA memory. Thermal paste is used on the processor **(1)** and the heat sink section **(2)** that services it.
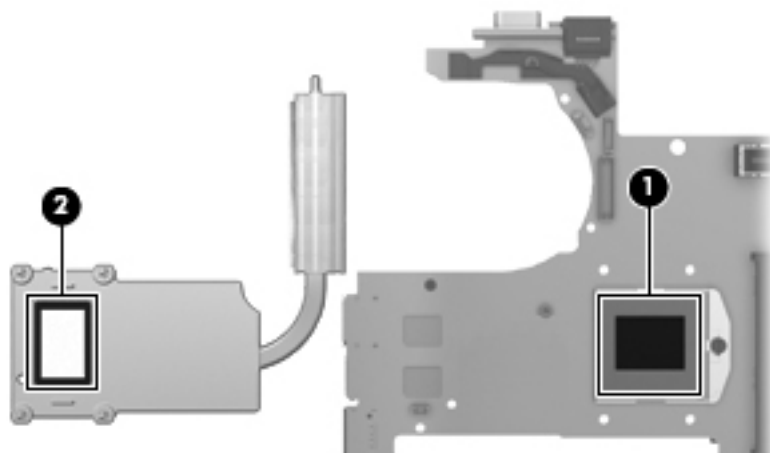
Reverse this procedure to install the heat sink.

Processor

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

Description	Spare part number
For use only on HP ProBook 6475b Notebook PC computer models:	
AMD A10-4600M 3.20-GHz/2.30-GHz processor with Radeon HD 7660G graphics (4.0-MB L2 cache, 1600-MHz DDR3, quad core, 35 W)	683046-001
AMD A8-4500M 2.80-GHz/1.90-GHz processor with Radeon HD 7640G graphics (4.0-MB L2 cache, 1600-MHz DDR3, quad core, 35 W)	683048-001
AMD A6-4400M 3.20-GHz/2.70-GHz processor with Radeon HD 7520G graphics (1.0-MB L2 cache, 1600-MHz DDR3, dual core, 35 W)	683047-001

Description	Spare part number
AMD A4-4300M 3.00-GHz/2.50-GHz processor with Radeon HD 7420G graphics (1.0-MB L2 cache, 1600-MHz DDR3, dual core, 35 W)	685990-001
For use only on HP ProBook 6470b Notebook PC computer models:	
Intel Quad Core i7-3540M 3.00-GHz processor (SC turbo up to 3.70-GHz; 1600-MHz FSB, 4.0-MB L3 cache, 35 W)	710787-001
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 i5-3380M 2.90-GHz processor (SC turbo up to 3.60-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W)	708762-001
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 i5-3340M 2.70-GHz processor (SC turbo up to 3.40-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W)	708761-001
Intel Dual Core i5-3320M 2.60-GHz processor (SC turbo up to 3.20-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W)	711903-001
Intel Dual Core i5-3210M 2.50-GHz processor (SC turbo up to 3.10-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W)	680645-001
Intel Core i3-3130M 2.60-GHz processor (1600-MHz FSB, 3.0-MB L3 cache, 35 W)	713163-001
Intel Core i3-3120M 2.50-GHz processor (1600-MHz FSB, 3.0-MB L3 cache, 35 W)	700627-001
Intel Core i3-3110M 2.40-GHz processor (1600-MHz FSB, 3.0-MB L3 cache, 35 W)	682417-001
Intel Core i3-2370M 2.40-GHz processor (1333-MHz FSB, 3.0-MB L3 cache, 35 W)	677152-001
Intel Celeron B840 1.90-GHz processor (1333-MHz FSB, 2.0-MB L3 cache, 35 W)	664663-001

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 68), and then remove the following components:

   a. Service cover (see Service cover on page 70)

   b. Hard drive (see Hard drive on page 74)

   c. Optical drive (see Hard drive on page 74)

   d. WLAN module (see WLAN module on page 82)

   e. WWAN module (see WWAN module on page 80)

   f. Fan (see Fan on page 87)

g. Keyboard (see Keyboard on page 88)

h. Base enclosure (see Base enclosure on page 93)

i. System board (see System board on page 106)

j. Heat sink (see Heat sink on page 111)

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.
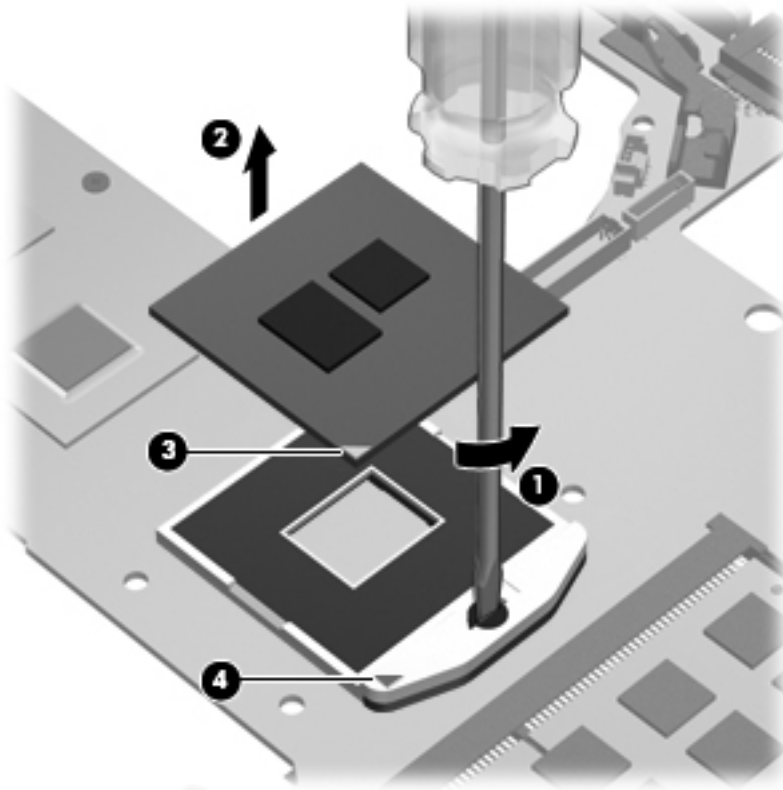
Reverse this procedure to install the processor.

USB board

Description	Spare part number
USB board	658141-001

Before removing the USB 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 68), and then remove the following components:

   a. Service cover (see Service cover on page 70)

   b. Optical drive (see Optical drive on page 71)

   c. Hard drive (see Hard drive on page 74)

   d. Modem module (see Modem module on page 85)

   e. Keyboard (see Keyboard on page 88)

   f. Base enclosure (see Base enclosure on page 93)

   g. System board (see System board on page 106)

Remove the USB board:

1. Release the clip **(1)** built into the top cover that secures the left side of the USB board.

2. Lift the left side of the USB board **(2)** to disconnect the USB board from the system board.

3. Remove the USB board **(3)**.
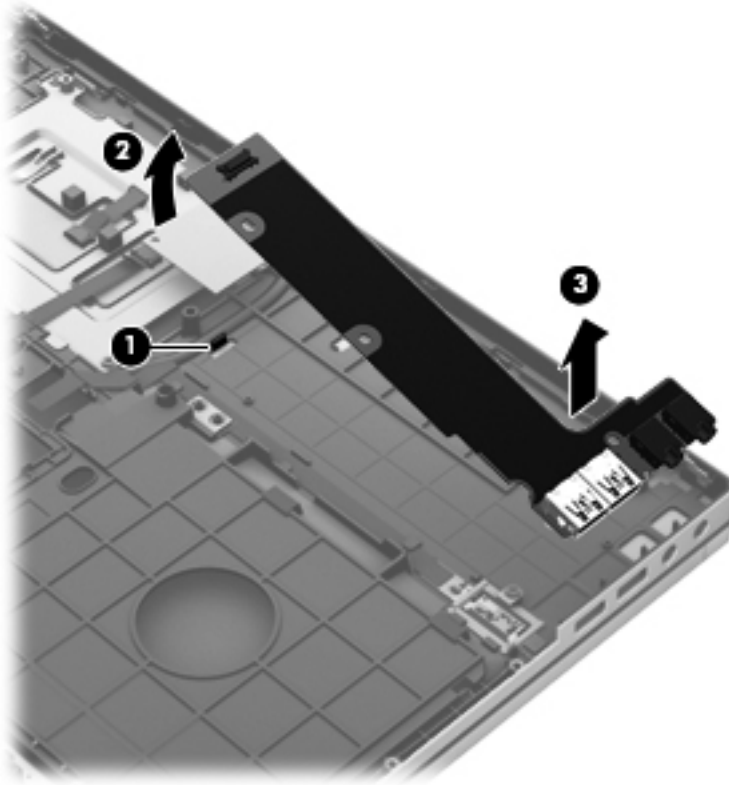
Reverse this procedure to install the USB board.

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 68), and then remove the following components:

    a. Service cover (see Service cover on page 70)

    b. Hard drive (see Hard drive on page 74)

    c. Optical drive (see Hard drive on page 74)

    d. WLAN module (see WLAN module on page 82)

    e. WWAN module (see WWAN module on page 80)

    f. Fan (see Fan on page 87)

    g. Keyboard (see Keyboard on page 88)

    h. Base enclosure (see Base enclosure on page 93)

    i. Function board (see Function board on page 104)

    j. System board (see System board on page 106)

Remove the display assembly:

1. Position the computer with the front toward you.

2. Remove the four Phillips PM2.5×7.0 screws **(1)** that secure the display assembly to the computer.

3. Swing the display hinges **(2)** up and back until the top cover is free for removal.

4. Remove the top cover **(3)** from the display assembly.
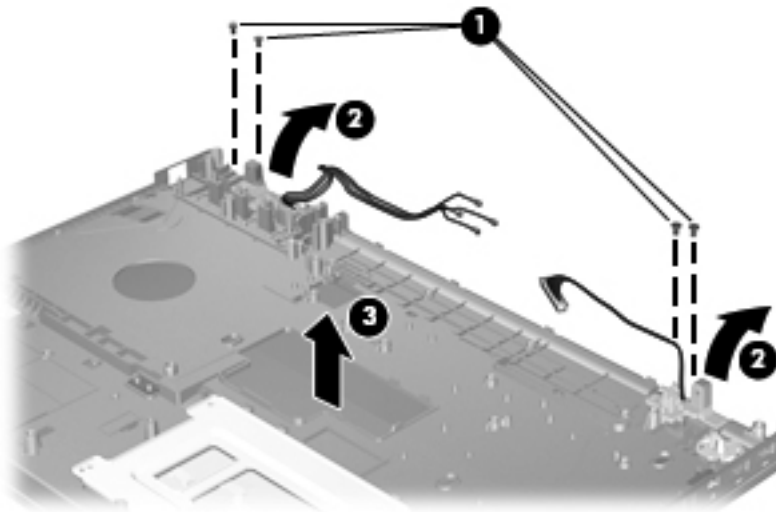
5. If it is necessary to replace the display bezel or any of the display assembly subcomponents:

    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.
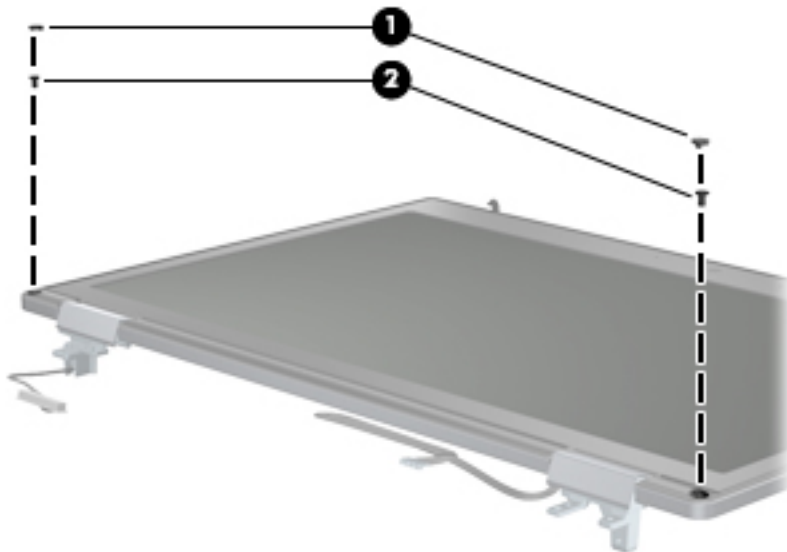
    c. Flex the inside edges of the bottom edge **(1)**, the left and right sides **(2)**, and the top edge **(3)** of the display bezel until the bezel disengages from the display enclosure.

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

The display bezel is available using spare part numbers 683781-001 (for use only on HP ProBook 6475b Notebook PC computer models computer models) and 685999-001 (for use only on HP ProBook 6470b Notebook PC computer models computer models).
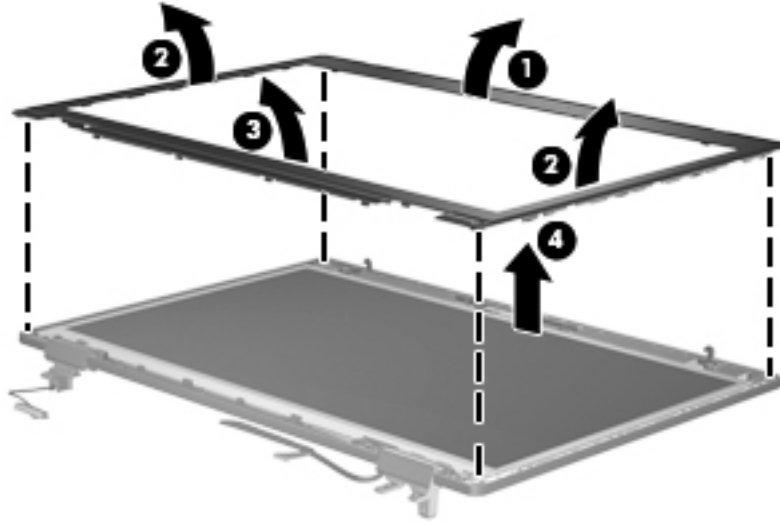
6. If it is necessary to replace the webcam/microphone module:

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

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

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

c. Remove the webcam/microphone module **(3)**.

The webcam/microphone module is available using spare part number 684346-001. The microphone module is available using spare part number 684346-001.
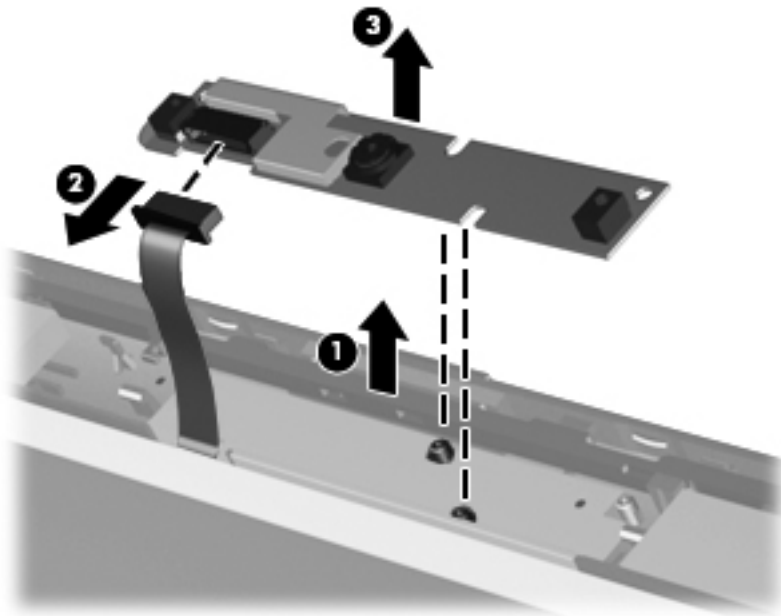
7. If it is necessary to replace the display panel:

a. Remove the eight Phillips PM2.5×4.0 screws **(1)** that secure the display panel to the display enclosure.

b. Lift the top edge of the display panel **(2)** until the display panel rests at an angle.

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

The display panel is available using the following spare part numbers.

- 686047-001 — 14.0-in, LED, FLT, HD+, AntiGlare display panel for use on all computer models

- 686046-001 — 14.0-in, LED, FLT, HD, AntiGlare display panel for use on all computer models

- 684348-001 — 14.0-in, LED, SVA, HD+, AntiGlare display panel for use only on HP ProBook 6470b Notebook PC computer models

- 684347-001 — 14.0-in, LED, SVA, HD, AntiGlare display panel for use only on HP ProBook 6470b Notebook PC computer models
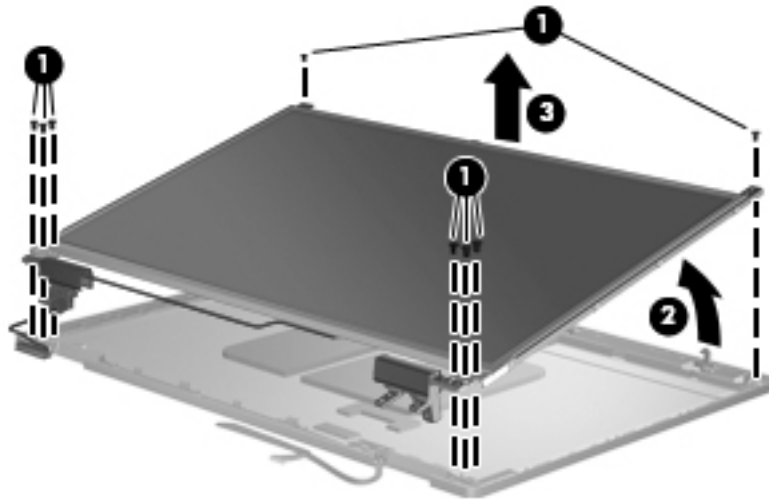
8. If it is necessary to replace the display hinge covers:

   a. Remove the two Phillips PM2.5×3.0 screws **(1)** that secure the display hinge covers to the display hinges.

   b. Slide the display hinge covers **(2)** toward each other to remove them from the display hinges.

   The display hinge covers are available using spare part number 642783-001.
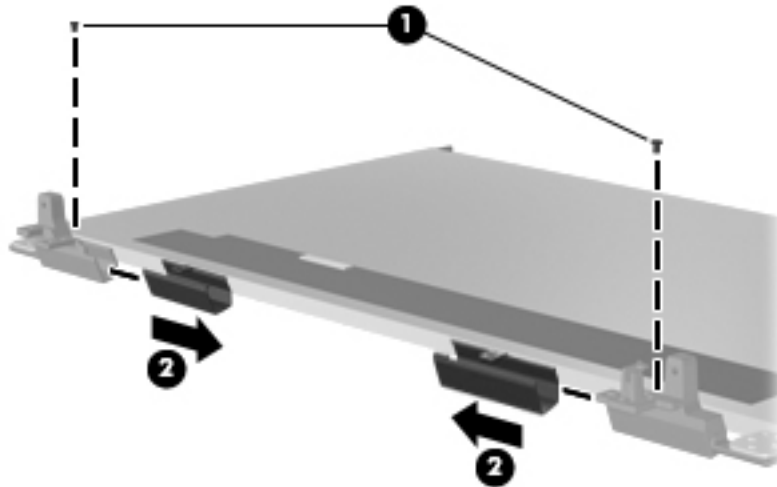
9. If it is necessary to replace the display hinges:

   a. Remove the four Phillips PM2.5×3.0 screws **(1)** that secure the display hinges to the display enclosure.

b. Remove the display hinges **(2)** from the display panel.

The display hinges are available using spare part number 641836-001.
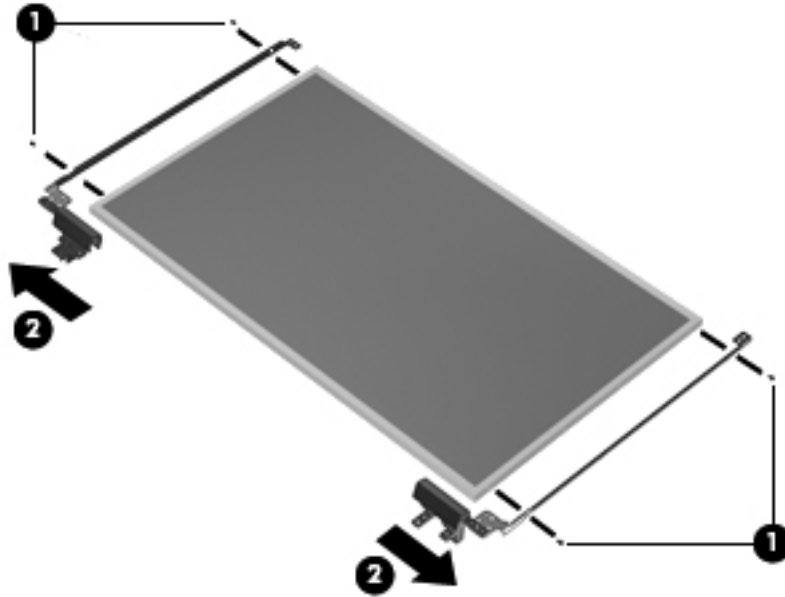
10. If it is necessary to replace the display panel cable:

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

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

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

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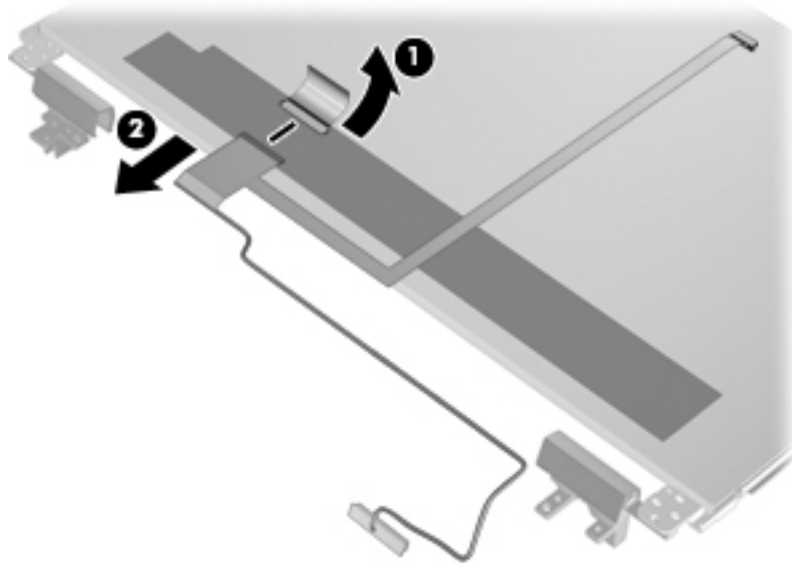
d. Remove the display panel cable.

The display panel cable is available using spare part numbers 693064-001 (for use only on computer models equipped with an HD+ display assembly) and 693063-001 (for use only on computer models equipped with an HD display assembly).

11. 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 642799-001.
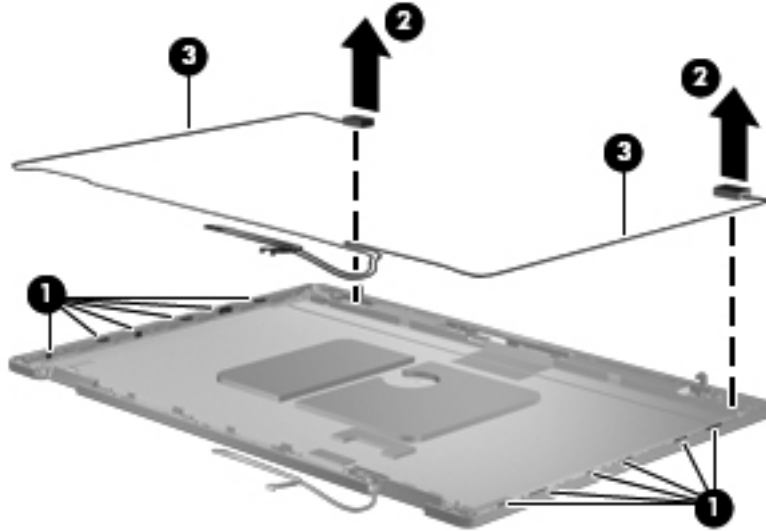
12. If it is necessary to replace the WWAN antenna cables and transceivers:

    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 642801-001.
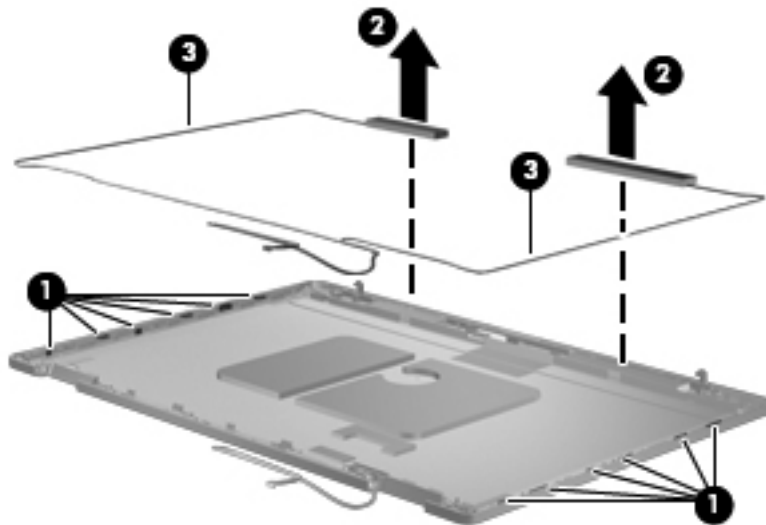
Reverse this procedure to reassemble and install the display assembly.

5 Computer Setup (BIOS) and Advanced System Diagnostics

Windows 8

Using Computer Setup

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

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

Starting Computer Setup

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

To start Computer Setup, follow these steps:

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.

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.

- 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 website.

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

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

Determining the BIOS version

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

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

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.

Downloading a BIOS update

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

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

Do not shut down the computer or initiate Sleep.

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

1. From the Start screen, type h, and then select **Help and Support**.

2. In the **Help and Support** search box, type maintain, and then follow the on-screen instructions to identify your computer and access the BIOS update you want to download.

3. At the download area, follow these steps:

    a. Identify the BIOS update that is later than the BIOS version currently installed on your computer. Make a note of the date, name, or other identifier. You may need this information to locate the update later, after it has been downloaded to your hard drive.

    b. Follow the on-screen instructions to download your selection to the hard drive.

    Make a note of the path to the location on your hard drive where the BIOS update is downloaded. You will need to access this path when you are ready to install the update.

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

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

1. From the Start screen, type e, and then click **File Explorer**.

2. Double-click your hard drive designation. The hard drive designation is typically Local Disk (C:).

3. Using the hard drive path you recorded earlier, open the folder on your hard drive that contains the update.

4. Double-click the file that has an .exe extension (for example, *filename.exe*).

    The BIOS installation begins.

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

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

Using 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:

- 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.

- 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 HP support to report the issue and purchase a replacement battery.

- BIOS Management—You can update or rollback the version of the BIOS on the system. Do not shut down or remove external power during the process. You will be given a confirmation screen before your BIOS is modified. Select **BIOS update**, **BIOS Rollback**, or **Back to main menu**.

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

To start Advanced System Diagnostics:

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

Windows 7

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.

SuSE Linux (SLED)

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 > Ignore 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

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   – 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

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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.

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:

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- 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. 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)	**3.40 to 3.60 cm**	1.34 to 1.42 in
Weight		
Equipped with 9-cell battery, optical drive, graphics subsystem with UMA memory, one memory module, WLAN module, solid-state drive, and TouchPad	**2.47 kg**	5.45 lbs
Equipped with 9-cell battery, graphics subsystem with UMA memory, one memory module, WLAN module, solid-state drive, and TouchPad	**2.33 kg**	5.14 lbs
Equipped with 6-cell battery, optical drive, graphics subsystem with UMA memory, one memory module, WLAN module, solid-state drive, and TouchPad	**2.31 kg**	5.09 lbs
Equipped with 6-cell battery, graphics subsystem with UMA memory, one memory module, WLAN module, solid-state drive, and TouchPad	**2.17 kg**	4.78 lbs
Equipped with 6-cell battery, optical drive, graphics subsystem with UMA memory, one memory module, WLAN module, solid-state drive, and TouchPad	**2.17 kg**	4.78 lbs
Equipped with 6-cell battery, graphics subsystem with UMA memory, one memory module, WLAN module, solid-state drive, and TouchPad	**2.03 kg**	4.48 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		

	Metric	U.S.
Operating	**5°C to 35°C**	41°F to 95°F
Nonoperating	**-20°C to 60°C**	-4°F to 140°F
Relative humidity (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	**-15 m to 3,048 m**	-50 ft to 10,000 ft
Nonoperating	**-15 m to 12,192 m**	-50 ft to 40,000 ft

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

14.0-inch SGA display specifications

	Metric	U.S.
Dimensions		
Height	**17.6 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+, SVA (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

Windows 8

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

From the Start screen, type `restore`, click **Settings**, and then select from the list of displayed options.

NOTE: For detailed instructions on various backup and restore options, perform a search for these topics in Help and Support. From the Start screen, type `h`, and then select **Help and Support**.

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

NOTE: Windows includes the User Account Control feature to improve the security of your computer. You may be prompted for your permission or password for tasks such as installing software, running utilities, or changing Windows settings. Refer to Help and Support for more information. From the Start screen, type `h`, and then select **Help and Support**.

Backing up your information

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

From the Start screen, type `backup`, click **Settings**, and then select **Save backup copies of your files with File History**.

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

Note the following when backing up:

- Store personal files in the Documents library, and back it up regularly.

- Back up templates that are stored in their associated programs.

- Save customized settings that appear in a window, toolbar, or menu bar by taking a screen shot of your settings. The screen shot can be a time-saver if you have to reset your preferences.

To create a backup using Backup and Restore:

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

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

1. From the Start screen, type `backup`, click **Settings**, and then select from the list of displayed options.

2. Follow the on-screen instructions to set up your backup, create a system image (select models only), or create system repair media (select models only).

Performing a system recovery

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

- Windows recovery tools: You can use Windows Backup and Restore to recover information you have previously backed up. You can also use Windows Startup Repair to fix problems that might prevent Windows from starting correctly.

- f11 recovery tools: You can use the f11 recovery tools to recover your original hard drive image. The image includes the Windows operating system and software programs installed at the factory.

NOTE: If you are unable to boot (start up) your computer and you cannot use the system repair media you previously created (select models only), you must purchase Windows 8 operating system media to reboot the computer and repair the operating system. For additional information, see the "Using Windows 8 operating system media (purchased separately)" section.

Using the Windows recovery tools

To recover information you previously backed up:

▲ From the Start screen, type `h`, and then select **Help and Support**.

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

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

1. If possible, back up all personal files.

2. If possible, check for the presence of the HP Recovery partition and the Windows partition.

   From the Start screen, type `e`, and then click **File Explorer**.

   – or –

   From the Start screen, type `c`, and then select **Computer**.

   NOTE: If the Windows partition and the HP Recovery partition are not listed, you must recover your operating system and programs using the Windows 8 operating system DVD and the Driver Recovery media (both purchased separately). For additional information, see the "Using Windows 8 operating system media (purchased separately)" section.

3. If the Windows partition and the HP Recovery partition are listed, restart the computer. After Windows has loaded, press and hold the shift key while clicking **Restart**.

4. Select **Startup Repair**.

5. Follow the on-screen instructions.

NOTE: For additional information on recovering information using the Windows tools, perform a search for these topics in Help and Support. From the Start screen, type `h`, and then select **Help and Support**.

Using f11 recovery tools

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

To recover the original hard drive image using f11:

1. If possible, back up all personal files.

2. If possible, check for the presence of the HP Recovery partition: From the Start screen, type `c`, and then select **Computer**.

   NOTE: If the HP Recovery partition is not listed, you must recover your operating system and programs using the Windows 8 operating system media and the Driver Recovery media (both purchased separately). For additional information, see the "Using Windows 8 operating system media (purchased separately)" section.

3. If the HP Recovery partition is listed, restart the computer, and then press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.

4. Press f11 while the "Press <F11> for recovery" message is displayed on the screen.

5. Follow the on-screen instructions.

Using Windows 8 operating system media (purchased separately)

To order a Windows 8 operating system DVD, go to http://www.hp.com/support, select your country or region, and follow the on-screen instructions. You can also order the DVD by calling support. For contact information, see the Worldwide Telephone Numbers booklet included with the computer.

⚠ **CAUTION:** Using a Windows 8 operating system media completely erases hard drive contents and reformats the hard drive. All files that you have created and any software that you have installed on the computer are permanently removed. When reformatting is complete, the recovery process helps you restore the operating system, as well as drivers, software, and utilities.

To initiate recovery using a Windows 8 operating system DVD:

📝 **NOTE:** This process takes several minutes.

1. If possible, back up all personal files.

2. Restart the computer, and then insert the Windows 8 operating system DVD into the optical drive before the Windows operating system loads.

3. When prompted, press any keyboard key.

4. Follow the on-screen instructions.

After the repair is completed:

1. Eject the Windows 8 operating system media and then insert the *Driver Recovery* media.

2. Install the Hardware Enabling Drivers first, and then install Recommended Applications.

Using Windows Refresh for quick and easy recovery

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

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

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

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

To start Refresh:

1. On the Start screen, point to the far-right upper or lower corner of the screen to display the charms.

2. Click **Settings**.

3. Click **Change PC settings** in the bottom-right corner of the screen, and then select **General** from the PC settings screen.

4. Under **Refresh your PC without affecting your files**, select **Get started**, and follow the on-screen instructions.

Remove everything and reinstall Windows

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

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

You can initiate this option by using the f11 key or from the Start screen.

To use the f11 key:

1. Press f11 while the computer boots.

   – or –

   Press and hold f11 as you press the power button.

2. Select **Troubleshoot** from the boot options menu.

3. Select **Reset your PC**, and follow the on-screen instructions.

To use the Start screen:

1. On the Start screen, point to the far-right upper or lower corner of the screen to display the charms.

2. Click **Settings**.

3. Click **Change PC settings** in the bottom-right corner of the screen, and then select **General** from the PC settings screen.

4. Under **Remove everything and reinstall Windows**, select **Get started**, and follow the on-screen instructions.

Using HP Software Setup

HP Software Setup can be used to reinstall drivers or select software that has been corrupted or deleted from the system.

1. From the Start screen, type `HP Software Setup`, and select **Apps**.

2. Open HP Software Setup.

3. Follow the on-screen directions to reinstall drivers or select software.

Windows 7

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

Windows Backup and Restore provides the following options:

- Creating a system repair disc (select models only) by using the installed optical drive (select models only) or an optional external optical drive

- Backing up your information

- Creating a system image (select models only)

- Scheduling automatic backups (select models only)

- Creating system restore points

- Recovering individual files

- Restoring the computer to a previous state

- Recovering information using recovery tools

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

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

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

Creating recovery media with HP Recovery Disc Creator

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

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

- Windows DVD—Installs the operating system without additional drivers or applications.

- Driver DVD—Installs specific drivers and applications only, in the same way that the HP Software Setup utility installs drivers and applications.

Creating recovery media

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

1. Select **Start > All Programs > Productivity and Tools > HP Recovery Disc Creator**.

2. Select **Driver DVD** or **Windows DVD**.

3. From the drop-down menu, select the drive for burning the recovery media.

4. Click the **Burn** button to start the burning process.

Backing up your information

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

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

Note the following when backing up:

- Store personal files in the Documents library, and back it up regularly.

- Back up templates that are stored in their associated programs.

- Save customized settings that appear in a window, toolbar, or menu bar by taking a screen shot of your settings. The screen shot can be a time-saver if you have to reset your preferences.

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

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

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

To create a backup using Backup and Restore:

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

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

1. Select **Start > All Programs > Maintenance > Backup and Restore**.

2. Follow the on-screen instructions to set up your backup, create a system image (select models only), or create a system repair disc (select models only).

Performing a system recovery

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

- Windows recovery tools: You can use Windows Backup and Restore to recover information you have previously backed up. You can also use Windows Startup Repair to fix problems that might prevent Windows from starting correctly.

- f11 recovery tools: You can use the f11 recovery tools to recover your original hard drive image. The image includes the Windows operating system and software programs installed at the factory.

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

Using the Windows recovery tools

To recover information you previously backed up:

1. Select **Start > All Programs > Maintenance > Backup and Restore**.

2. Follow the on-screen instructions to recover your system settings, your computer (select models only), or your files.

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

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

1. If possible, back up all personal files.

2. If possible, check for the presence of the Windows partition.

   To check for the Windows partition, select **Start > Computer**.

3. If the Windows partition is listed, restart the computer, and then press f8 before the Windows operating system loads.

4. Select **Startup Repair**.

5. Follow the on-screen instructions.

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

Using f11 recovery tools

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

To recover the original hard drive image using f11:

1. If possible, back up all personal files.

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

NOTE: If the HP Recovery partition has been deleted, the f11 restore option will not function. You must recover your operating system and programs using the Windows 7 operating system DVD and the Driver Recovery disc (both purchased separately) if the Windows partition and the HP Recovery partition are not listed. For additional information, see the Using a Windows 7 operating system DVD (purchased separately) section.

3. If the HP Recovery partition is listed, restart the computer, and then press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.

4. Press f11 while the "Press <F11>" for recovery" message is displayed on the screen.

5. Follow the on-screen instructions.

Using a Windows 7 operating system DVD (purchased separately)

To order a Windows 7 operating system DVD, go to the HP website. For U.S. support, go to http:// www.hp.com/go/contactHP. For worldwide support, go to http://welcome.hp.com/country/ us/en/ wwcontact_us.html. You can also order the DVD by calling support. For contact information, see the *Worldwide Telephone Numbers* booklet included with the computer.

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

To initiate recovery using a Windows 7 operating system DVD:

NOTE: This process takes several minutes.

1. If possible, back up all personal files.

2. Restart the computer, and then insert the Windows 7 operating system DVD into the optical drive before the Windows operating system loads.

3. When prompted, press any keyboard key.

4. Follow the on-screen instructions.

5. Click **Next**.

6. Select **Repair your computer**.

7. Follow the on-screen instructions.

After the repair is completed:

1. Eject the Windows 7 operating system DVD, and then insert the Driver Recovery disc.

2. Install the Hardware Enabling Drivers first, and then install Recommended Applications.

SuSE Linux (SLED)

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.

Your computer includes tools provided by HP to help you safeguard your information and retrieve it if ever needed.

Creating backups

1. Create restore media immediately after you set up the computer. For more information, see the "Performing a system recovery" section.

2. As you add files, routinely create a backup of your system and personal information.

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 click **Backup my home directory**.

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 **Save and Backup** 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 **Restore all files**. To restore select files only, click **Restore selected files**, click **Select Files** and then 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 **Use the latest version** to restore the latest version.

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

Performing a system 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.

CAUTION: 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 recovery disc, follow these steps:

1. If possible, back up all personal files.

2. Insert the HP Factory Image Restore DVD into the optical drive and restart the computer.

3. As the computer is restarting, press f9 to open the Computer Setup boot option menu.

4. Press the down arrow to select **Restore SLED HP-BNB preload image** from the **Linux boot** menu, and then press enter.

5. Using the arrow keys, select **Yes** when prompted: **Do you want to start the System-Restore?**

6. Follow the on-screen instructions.

USB Recovery option (select models only)

The USB Recovery Disk On Key (flash drive) option allows you to create a backup image of the SLED operating system installed on select HP Business Notebooks. This Disk On Key may be used to restore the system to the original factory state when the F11 recovery option is not available. This process should be done on first obtaining the computer.

△ CAUTION: The USB recovery option does not preserve data present on the computer's hard drive or on the Disk On Key used for the recovery process. Back up any data on the Disk on Key or the notebook that will be recovered before starting.

📝 NOTE: HP recommends that you create the USB Recovery Disk in the event of a system failure. The Disk On Key used for this process should be 4 GB or larger.

Creating a USB Recovery Disk On Key

1. Connect the USB Disk On Key to a USB port on the computer.

2. Select **Computer > More applications > Tools > Create Recovery USB**.

3. Enter the root password when prompted.

4. Select **USB Disk On Key** from the list.

5. Click **OK**.

6. A question dialog will remind you that the data on the USB key will be destroyed. To continue, click **OK**. Otherwise, click **Cancel** and back up the contents of the Disk On Key on another computer.

7. The backup process will display a status dialog box while the backup is in progress.

   📝 NOTE: A file browser window with the Disk On Key Contents displayed will pop up when the key is mounted. You may close the file browser window if desired. Once the USB Recovery Key has been created, the status dialog will close. The USB Recovery Key is ready for use.

Recovering from a USB Recovery Disk On Key

△ CAUTION: Before starting the Recovery process, make sure any data on the system to be recovered has been backed up. The recovery process destroys all data on the system to be recovered.

1. Turn off the computer.

2. Connect the USB Disk On Key to a USB port on the computer.

3. Turn on the computer while holding down the f9 key.

4. Once the system has booted, the **Boot Options** menu should appear.

5. Using the arrow keys, select **USB Disk On Key** and press enter.

   📝 NOTE: The description may vary from one USB key to another. Any entry other than Optical Disk Drive, Notebook Hard Drive or Notebook Ethernet should be the USB Recovery Disk On Key.

6. Once the USB Recovery Disk On Key has been selected, press enter. The USB Recovery Disk On Key will boot.

7. Once the USB Recovery Disk On Key has booted, a dialog box will prompt, "Do you want to start the System-Restore?" If data on the computer has not been backed up, use the tab key and select No. The system will reboot. Back up the system data and repeat the previous steps. If no data should be saved from the computer, use the tab key to select **Yes**. Press enter to begin the recovery process.

8. After the files are copied to the system, follow the on-screen instructions.

Remove everything and reinstall SLED

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

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

You can initiate this option by using the f11 key.

To use the f11 key:

Press f11 while the computer boots.

– or –

Press and hold f11 as you press the power button.

The following options are available:

- Cancel/Reboot—Reboots the system. No recovery or restore activity is performed.

- Recover/Repair System—This option repairs a system that is not working properly and preserves user data.

- Restore Factory System—This option restores the system back to the original factory state. User data is not preserved.

Select an option and follow the on-screen instructions.

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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