HP EliteBook 2570p Notebook PC

Maintenance and Service Guide

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Safety warning notice

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

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Table of contents

1 Product description 1

2 External component identification 9

Display 9
Buttons and fingerprint reader (select models only) 10
Keys 12
Lights 13
TouchPad 14
Front 15
Left side 16
Rear 17
Right side 18
Bottom 19

3 Illustrated parts catalog 21

Service tag 22
Computer major components 23
Display assembly subcomponents 29
Cable Kit 31
Mass storage device 32
Plastics Kit 33
Miscellaneous parts 34
Sequential part number listing 35

4 Removal and replacement procedures 43

Preliminary replacement requirements 43
Tools required 43
Service considerations 43
Plastic parts 43
Cables and connectors 43
Drive handling 44

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Grounding guidelines 44
Electrostatic discharge damage 44
Packaging and transporting guidelines 46
Component replacement procedures 48
Service tag 48
Computer feet 49
Battery 50
SIM 51
Service cover 52
Memory module 53
Bluetooth module 54
Speaker assembly 56
Optical drive 57
Hard drive 58
Fan 60
WWAN module 61
WLAN module 65
Modem module 68
Keyboard 69
RTC battery 72
Base enclosure 74
System board 79
Heat sink 81
Processor 84
Fingerprint reader board 86
Top cover 87
Function button board 89
Power button board 91
Smart Card reader assembly 92
Display assembly subcomponents 95

5 Computer Setup (BIOS) and Advanced System Diagnostics 105

Windows 8 105
Using Computer Setup 105
Starting Computer Setup 105
Navigating and selecting in Computer Setup 106
Restoring factory settings in Computer Setup 107
Updating the BIOS 107
Determining the BIOS version 107
Downloading a BIOS update 108
Using Advanced System Diagnostics 109

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Windows 7 110
Starting Computer Setup 110
Using Computer Setup 110
Navigating and selecting in Computer Setup 110
Restoring factory settings in Computer Setup 111
Updating the BIOS 112
Determining the BIOS version 112
Downloading a BIOS update 112
Using Advanced System Diagnostics 113
SuSE Linux (SLED) 114
Starting Computer Setup 114
Using Computer Setup 114
Navigating and selecting in Computer Setup 114
Restoring factory settings in Computer Setup 115
Updating the BIOS 115
Determining the BIOS version 116
Downloading a BIOS update 116
Using Advanced System Diagnostics 117

6 Specifications 118

Computer specifications 118
12.5-inch SGA display specifications 119
Hard drive specifications 120

7 Backup and recovery 121

Windows 8 121
Backing up your information 121
Performing a system recovery 122
Using the Windows recovery tools 122
Using f11 recovery tools 123
Using Windows 8 operating system media (purchased separately) 124
Using Windows Refresh for quick and easy recovery 124
Remove everything and reinstall Windows 125
Using HP Software Setup 126
Windows 7 126
Creating recovery media with HP Recovery Disc Creator 127
Creating recovery media 127
Backing up your information 127
Performing a system recovery 128
Using the Windows recovery tools 128
Using f11 recovery tools 129

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Using a Windows 7 operating system DVD (purchased separately) 130
SuSE Linux (SLED) 131
Creating backups 131
Backing up your information 131
Performing a system recovery 132
USB Recovery option (select models only) 133
Remove everything and reinstall SLED 134

8 Power cord set requirements 135
Requirements for all countries 135
Requirements for specific countries and regions 136

9 Recycling 137

Index 138

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1 Product description

Category	Description
Product Name	HP EliteBook 2570p Notebook PC
Processors	• Intel® Dual Core® i7-3520M 2.90-GHz processor (SC turbo up to 3.60-GHz; 1600-MHz FSB, 4.0-MB L3 cache, 35 W) • Intel Dual Core i5-3360M 2.80-GHz processor (SC turbo up to 3.50-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W) • Intel Dual Core i5-3320M 2.60-GHz processor (SC turbo up to 3.30-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W) • Intel Dual Core i5-3210M 2.50-GHz processor (SC turbo up to 3.10-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W) • Intel Core i3-3110M 2.40-GHz processor (1600-MHz FSB, 3.0-MB L3 cache, 35 W)
Chipset	Mobile Intel QM77 chipset
Graphics	Intel HD Graphics 4000 integrated universal memory architecture (UMA) graphics
Panel	12.5-in light-emitting diode (LED), high-definition (HD), AntiGlare (AG), SVA (1368×768) display with and without webcam and microphone All display assemblies include two wireless local area network (WLAN) antenna cables and two wireless wide area network (WWAN) antenna cables Support for low voltage differential signalling (LVDS) Support for optional privacy filter
Memory	Two customer-accessible/upgradable memory module slots Support for DDR3-12800 (1600-MHz) dual channel Support for 16384-MB of system RAM in the following configurations: • 16384-MB (8192-MB×2, dual channel) • 12288-MB (8192-MB×1+4096-MB×1, dual channel) • 8192-MB (8192-MB×1 or 4096×2, dual channel) • 4096-MB (4096-MB×1 or 2048-MB×2, dual channel) • 2048-MB (2048×1)

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Category	Description
Hard drive	Support for 6.35-cm (2.5-in) hard drives in 9.5-mm (.37-in) and 7.0-mm (.28-in) thicknesses (all hard drives use the same bracket) Customer-accessible Serial ATA Support for 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 Support for the following SSDs: • 256-GB self-encrypted drive (SED) III • 240-GB III • 180-GB III • 160-GB II • 128-GB III
Optical drive	Fixed Customer-accessible Support for the following drive options: • DVD±RW Double-Layer with SuperMulti Drive • DVD-ROM Drive Support for no drive option
Audio and video	Two stereo speakers HD audio with SRS Premium Sound PRO Integrated 720p HD webcam Support for 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

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Category	Description
Ethernet	Intel 82579LM 10/100/1000 Ethernet network interface card (NIC) NIC Power Down technology S3/S4/S5 wake on LAN Ethernet cable not included
Wireless	Integrated wireless personal area network (WPAN) option by way of Bluetooth 4.0 enhanced data rate (EDR) module Support for no WPAN option
	Integrated wireless local area network (WLAN) options by way of wireless module Two WLAN antennas built into display assembly Support for the following WLAN formats: • Atheros WB225 1×1 802.11b/g/n Bluetooth Combo Adapter • Broadcom 43228 802.11abgn 2×2 Wi-Fi Adapter • Intel Centrino Advanced-N 6205 WLAN module Support for no WLAN option
	Integrated wireless wide area network (WWAN) options by way of wireless module Two world-wide/5-band WWAN antennas built into display assembly Secured by subscriber identity module (SIM, user-accessible behind battery) Support for the following WWAN formats: • HP hs2350 HSPA+ Mobile Broadband Module • HP lt2523 LTE/HSPA+ Mobile Broadband Module • HP lt2522 LTE/EV-DO Mobile Broadband Module • HP un2430 EV-DO/HSPA Mini Card • HP un2430 EV-DO/HSPA Mobile Broadband Module Support for no WWAN option Support for WWAN after market option

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Category	Description
External media cards	34-mm ExpressCard slot Integrated Smart Card reader Secure Digital (SD) Media reader slot with push-push technology, supporting the following digital card formats: • MultiMediaCard (MMC) • MMC+ • Secure Digital (SD) Memory Card • SDHC • SDXC
Ports	• Audio-in (mono microphone)/audio-out (stereo headphone) combo jack • Battery connector • DisplayPort 1.1 • Docking connector • eSATA/USB 3.0 combo port • HP Smart AC adapter • RJ-45 (Ethernet) • RJ-11 (modem) • USB 3.0 port • USB 2.0 charging port • VGA (Dsub 15-pin) supporting: 1920×1200 external resolution @ 75 Hz, hot plug and unplug and auto-detection for correct output to wide-aspect vs. standard aspect video
Keyboard/pointing devices	Chiclet-style keyboard with numeric keypad (upper-left justified), dual-point, spill-resistant with drain, durakeys, backlit (optional) Gesture support: MultiTouch gestures enabled, two-finger scrolling, and pinch-zoom as default Taps enabled by default Support for TouchPad with image sensor Support for 2-way scroll
Power requirements	Support for the following AC adapters: • 65-W HP Smart AC adapter (PFC, RC/V, EM, 3-wire) • 65-W HP Smart AC adapter (non-PFC, RC/V, 3-wire) • 65-W HP Travel AC adapter (non-PFC, 3-wire)

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Category	Description
Power requirements *(Continued)*	Support for the following batteries: • 9-cell, 100-Wh, 3.00-Ah • 6-cell, 62-Wh, 2.80-Ah • 6-cell, 55-Wh, 2.80-Ah • 3-cell, 31-Wh, 2.80-Ah
Security	Support for security cable lock Support for fingerprint reader and no fingerprint reader option Support for Trusted Platform Module (TPM) 1.2 (Infineon, soldered down) and TPM Enhanced Drive Lock (not supported in Asia and the People's Republic of China) Integrated Smart Card reader (active) Full volume encryption Preboot authentication (password, Smart Card)
Operating system	**Preinstalled:** • Windows® 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 if China only)

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Category	Description
Operating system *(Continued)*	**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) • 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) • 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) *(Continued)*

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Category	Description
Operating system *(Continued)*	**Preinstalled with Microsoft Office:** *(Continued)* • 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—OS-DVD: • 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)
	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

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Category	Description
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 • Solid-state drive • WLAN module • WWAN module

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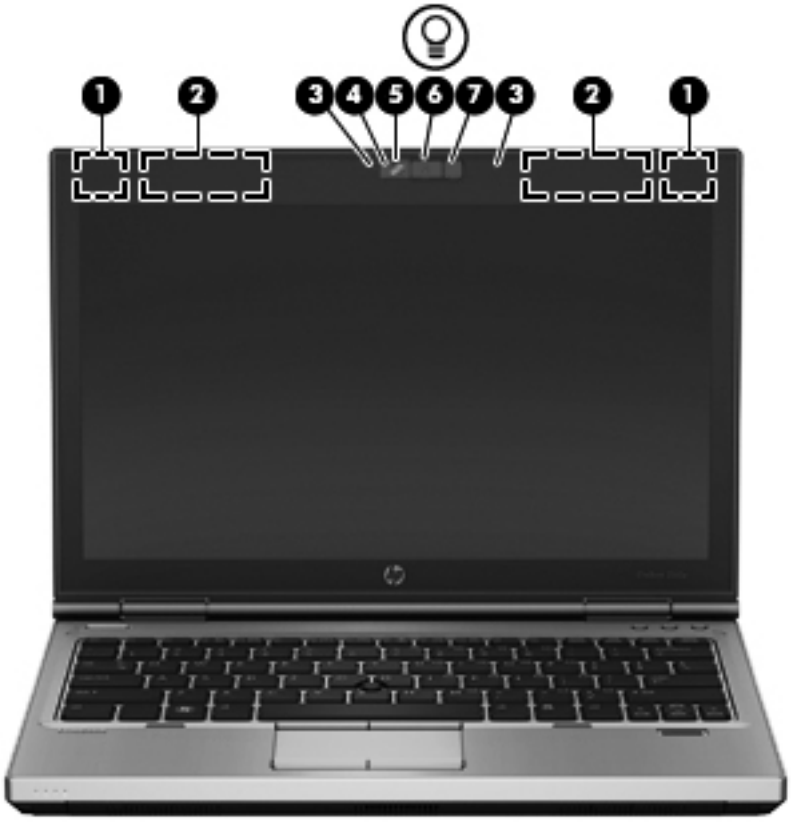
2 External component identification

Display



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

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Item	Component	Description
(5)	Webcam (select models only)	Records video and captures still photographs. For information on using the webcam: • Windows 8 — Access Help and Support. From the Start screen, type h, and then select **Help and Support**. • Windows 7 — Select **Start > All Programs > Communication and Chat > HP Webcam**.
(6)	Keyboard light	Provides light for the keyboard.
(7)	Keyboard light button and ambient light sensor	Turns on the keyboard light and automatically adjusts the display brightness based on the lighting conditions in your environment.

*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)

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Item	Component	Description
(1)	Power button	• When the computer is off, press the power button to turn on the computer. • When the computer is on, press the power button briefly to initiate Sleep. • When the computer is in the Sleep state, press the power button briefly to exit Sleep. • When the computer is in Hibernation, press the power button briefly to exit Hibernation. **CAUTION:** Pressing and holding the power button for emergency shutdown will result in loss of unsaved information. If the computer has stopped responding and Windows 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 8 — Select **Windows 7 > Start > Control Panel > System and Security > Power Options**, or refer to the *HP Notebook Reference Guide*.
(2)	Wireless button	Turns the wireless feature on or off, but does not establish a wireless connection.
(3)	Web browser button	Opens the default Web browser.
(4)	Volume mute button	Mutes and restores speaker sound.
(5)	Fingerprint reader (select models only)	Allows a fingerprint logon instead of a password logon.

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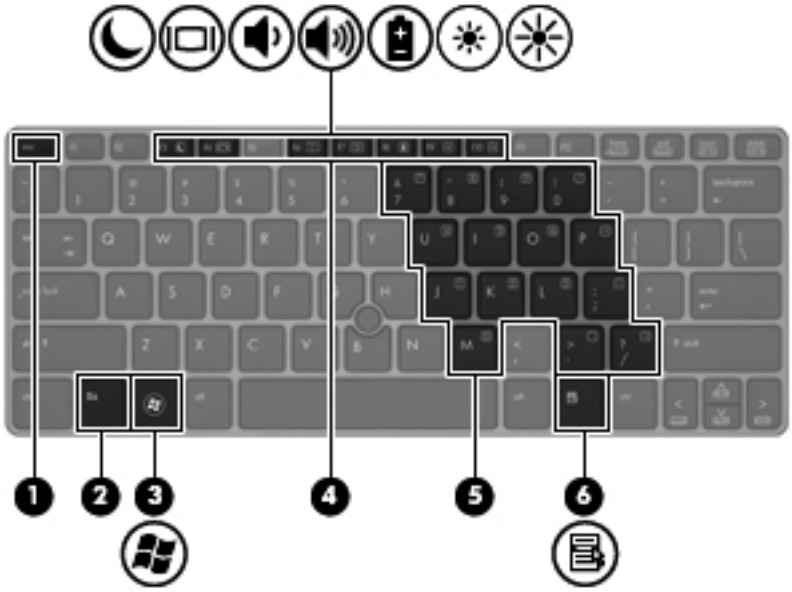
Keys

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



Item	Component	Description
(1)	esc key	Displays system information when pressed in combination with the fn key.
(2)	fn key	Executes frequently used system functions when pressed in combination with a function key, the num lk key, the esc key, or other keys.
(3)	Windows logo key	Displays the Windows Start menu.
(4)	Function keys	Execute frequently used system functions when pressed in combination with the fn key.
(5)	Embedded numeric keypad	When the keypad is turned on, it can be used like an external numeric keypad. **NOTE:** The embedded numeric keypad will not function while an external keyboard or numeric keypad is connected to the computer
(6)	Windows applications key	Displays a shortcut menu for items beneath the cursor.

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Lights

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

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TouchPad

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

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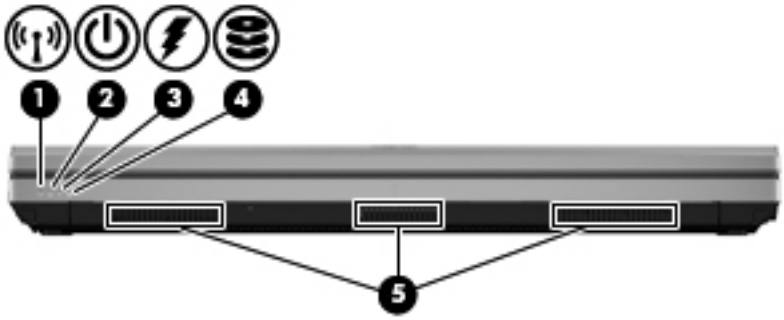
Front



Item	Component	Description
(1)	Wireless light	• White: An integrated wireless device, such as a WLAN device, a WWAN device, and/or a Bluetooth device, is on. • Amber: All wireless devices are off.
(2)	Power light	• White: Power is on. • Blinking white: The computer is in the Sleep state. • Off: The computer is off or in Hibernation.
(3)	Battery light	• White: A battery is close to full charge capacity. • 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: If the computer is plugged into an external power source, the light turns off when all batteries in the computer are fully charged. If the computer is not plugged into an external power source, the light stays off until the battery reaches a low battery level.
(4)	Drive light	• White: The hard drive or optical drive is being accessed. • Amber: HP 3D DriveGuard has temporarily parked the hard drive.
(5)	Vents (3)	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.

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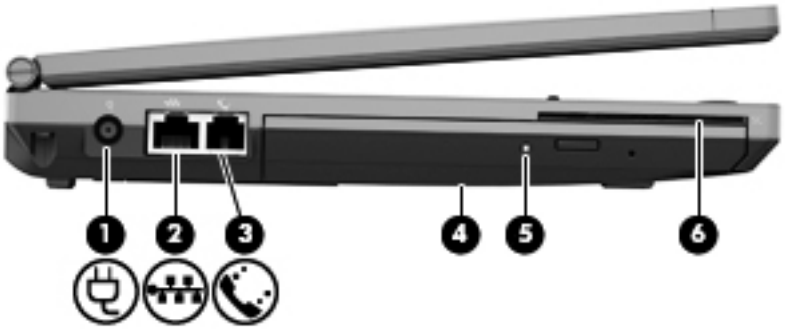
Left side



Item	Component	Description
(1)	Power connector	Connects an AC adapter.
(2)	RJ-45 (network) jack	Connects a network cable. The RJ-45 jack has two activity indicator lights. • Amber: Activity is occurring on the network. • Green: The network is connected.
(3)	RJ-11 (modem) jack (select models only)	Connects a modem cable.
(4)	Optical drive	Reads and writes (select models only) to an optical disc.
(5)	Optical drive light	• On: The optical drive is being accessed. • Off: The optical drive is idle.
(6)	Smart Card reader	Supports optional smart cards.

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Rear

Item	Component	Description
(1)	External monitor port	Connects an external VGA monitor or projector.
(2)	USB port	Connects an optional USB device.
(3)	USB 3.0 port	Connects an optional USB 1.0, USB 2.0, or USB 3.0 device and provides enhanced USB power performance for USB 3.0 devices.

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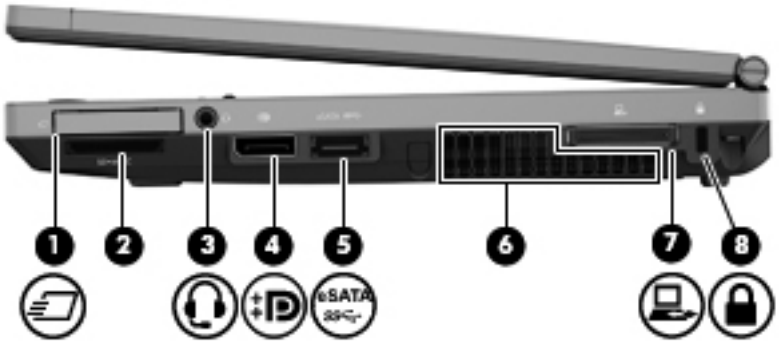
Right side



Item	Component	Description
(1)	ExpressCard slot	Supports optional 34-mm ExpressCards.
(2)	Media Card Reader	Supports MultiMediaCard and Secure Digital (SD) Card digital card formats.
(3)	Audio-out (headphone) jack/Audio-in (microphone) jack	Connects optional powered stereo speakers, headphones, earbuds, a headset, or television audio. Also connects an optional headset microphone. **WARNING!** To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, refer to the *Regulatory, Safety, and Environmental Notices*.. **NOTE:** When a device is connected to the jack, the computer speakers are disabled. **NOTE:** A 4-conductor audio jack plug headphone with microphone is needed in order to use the microphone function.
(4)	DisplayPort	Connects an optional digital display device, such as a high-performance monitor or projector.
(5)	eSATA/USB 2.0 combo port	Connects a high-performance eSATA component, such as an eSATA external hard drive, or connects an optional USB device.
(6)	Vents (2)	Enable airflow to cool internal components. **NOTE:** The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(7)	Docking connector	Connects an optional docking device.
(8)	Security cable slot	Attaches an optional security cable to the computer. **NOTE:** The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.

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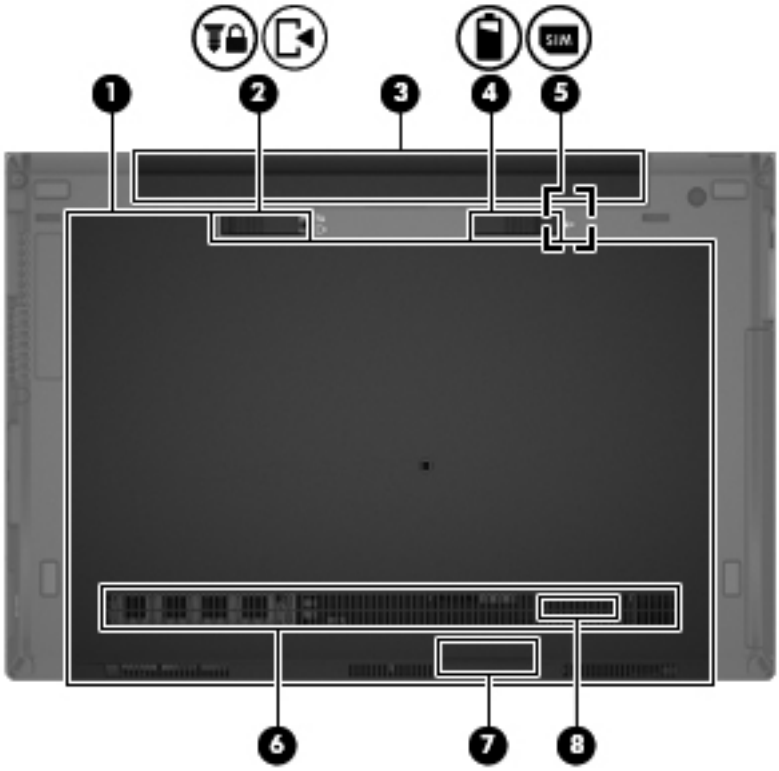
Bottom



Item	Component	Description
(1)	Service cover	Contains the hard drive, the WLAN module slot, the WWAN module slot, and the memory module slots. **CAUTION:** To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module to restore computer functionality, and then contact support through Help and Support.
(2)	Service cover release latch	Releases the cover for the hard drive bay and memory module slots. **NOTE:** A service cover screw is under the release latch.
(3)	Battery bay	Holds the battery.
(4)	Battery release latch	Releases the battery.
(5)	SIM slot	Supports a wireless subscriber identity module (SIM). The SIM slot is located inside the battery bay.

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Item	Component	Description
(6)	Vents	Enable airflow to cool internal components. **NOTE:** The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(7)	Bluetooth module compartment	Holds the Bluetooth device.
(8)	Speaker	Produces sound.

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3 Illustrated parts catalog

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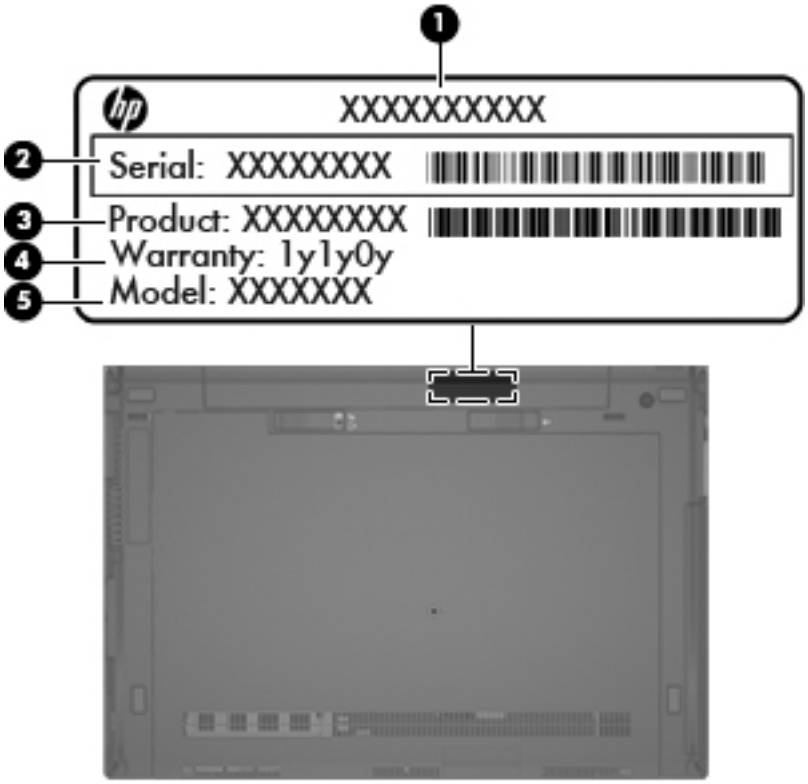
Service tag

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 50 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.

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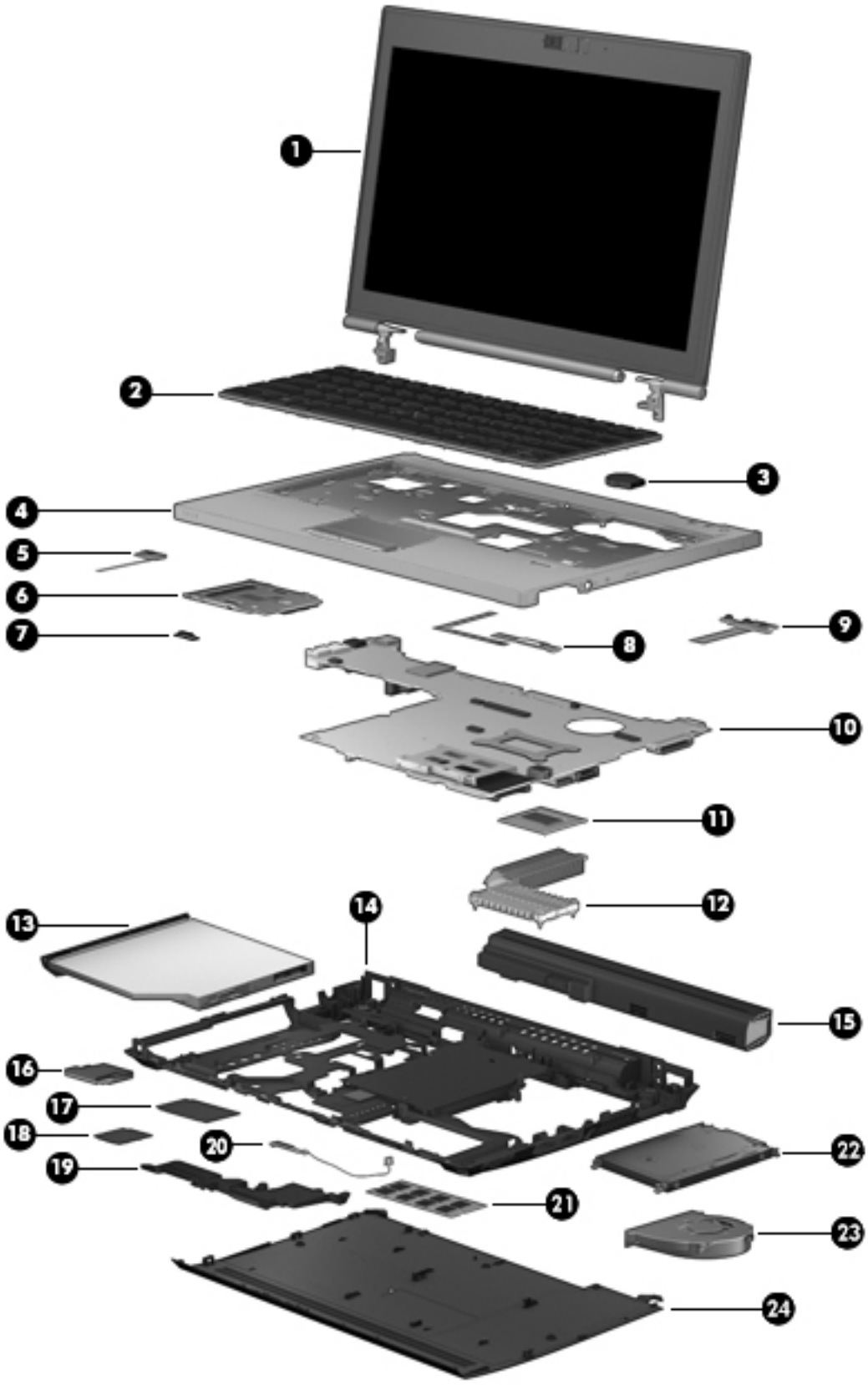
Computer major components



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Item	Component	Spare part number
(1)	**Display assembly**: The display assembly is spared at the subcomponent level only. For more display assembly spare part information, see Display assembly subcomponents on page 29.	
(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	701979-A41
	For use in Brazil	701979-201
	For use in Bulgaria	701979-261
	For use in Canada	701979-DB1
	For use in the Czech Republic and Slovakia	701979-FL1
	For use in Denmark	701979-081
	For use in France	701979-051
	For use in Germany	701979-041
	For use in Greece	701979-151
	For use in Hungary	701979-211
	For use in Iceland	701979-DD1
	For use in India	701979-D61
	For use in Israel	701979-BB1
	For use in Italy	701979-061
	For use in Japan	701979-291
	For use in Latin America	701979-161
	For use in the Netherlands	701979-B31
	For use in Norway	701979-091
	For use in Northwest Africa	701979-FP1
	For use in Portugal	701979-131
	For use in Romania	701979-271
	For use in Russia	701979-251
	For use in Saudi Arabia	701979-171
	For use in Slovenia	701979-BA1
	For use in South Korea	701979-AD1
	For use in Spain	701979-071
	For use in Sweden and Finland	701979-B71
	For use in Switzerland	701979-BG1
	For use in Taiwan	701979-AB1

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Item	Component	Spare part number
	For use in Thailand	701979-281
	For use in Turkey	701979-141
	For use in the United Kingdom and Singapore	701979-031
	For use in the United States	701979-001
	For use only on computer models equipped with the Windows 7 operating system:	
	For use in Belgium	696693-A41
	For use in Brazil	696693-201
	For use in Bulgaria	696693-261
	For use in Canada	696693-DB1
	For use in the Czech Republic and Slovakia	696693-FL1
	For use in Denmark	696693-081
	For use in France	696693-051
	For use in Germany	696693-041
	For use in Greece	696693-151
	For use in Hungary	696693-211
	For use in Iceland	696693-DD1
	For use in India	696693-D61
	For use in Israel	696693-BB1
	For use in Italy	696693-061
	For use in Japan	696693-291
	For use in Latin America	696693-161
	For use in the Netherlands	696693-B31
	For use in Norway	696693-091
	For use in Northwest Africa	696693-FP1
	For use in Portugal	696693-131
	For use in Romania	696693-271
	For use in Russia	696693-251
	For use in Saudi Arabia	696693-171
	For use in Slovenia	696693-BA1
	For use in South Korea	696693-AD1
	For use in Spain	696693-071
	For use in Sweden and Finland	696693-B71

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Item	Component	Spare part number
	For use in Switzerland	696693-BG1
	For use in Taiwan	696693-AB1
	For use in Thailand	696693-281
	For use in Turkey	696693-141
	For use in the United Kingdom and Singapore	696693-031
	For use in the United States	696693-001
(3)	**RTC battery** (includes cable and double-sided adhesive)	665733-001
(4)	**Top cover** (includes TouchPad and TouchPad cable): **NOTE:** The TouchPad cable is also available in the Cable Kit, spare part number 651384-001.	
	For use on computer models equipped with a fingerprint reader	685407-001
	For use on computer models not equipped with a fingerprint reader	685406-001
	Bracket Kit (not illustrated includes top cover left and right brackets)	651381-001
(5)	**Power button board** (includes cable)	685408-001
(6)	**Smart Card reader assembly** (includes Smart Card reader cable and function LED board cable)	685503-001
(7)	**Function LED board**	685509-001
(8)	**Fingerprint reader board** (includes bracket and cable)	685410-001
(9)	**Function button board** (includes cable)	685409-001
(10)	**System board** (includes replacement thermal material):	
	For use only on computer models equipped with the Windows 8 Professional operating system in all countries and regions except the People's Republic of China and the Ukraine	685404-601
	For use only on computer models equipped with the Windows 8 Standard operating system in all countries and regions except the People's Republic of China and the Ukraine	685404-501
	For use only on computer models equipped with the Windows 7 operating system in all countries and regions except the People's Republic of China and the Ukraine	685404-001
	For use only on computer models equipped with the Windows 7 operating system in the People's Republic of China and the Ukraine	692857-001
(11)	**Processor** (includes replacement thermal material)	
	Intel Dual Core i7-3520M 2.90-GHz processor (SC turbo up to 3.60-GHz; 1600-MHz FSB, 4.0-MB L3 cache, 35 W)	681954-001
	Intel Dual Core i5-3360M 2.80-GHz processor (SC turbo up to 3.50-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W)	681953-001
	Intel Dual Core i5-3320M 2.60-GHz processor (SC turbo up to 3.30-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W)	681952-001

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Item	Component	Spare part number
	Intel Dual Core i5-3210M 2.50-GHz processor (SC turbo up to 3.10-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W)	680645-001
	Intel Core i3-3110M 2.40-GHz processor (1600-MHz FSB, 3.0-MB L3 cache, 35 W)	682417-001
(12)	**Heat sink** (includes replacement thermal material)	685508-001
(13)	**Optical drive** (includes bezel and bracket):	
	DVD±RW Double-Layer with SuperMulti Drive	685502-001
	DVD-ROM Drive	685419-001
(14)	**Base enclosure** (includes 4 rubber feet, battery release latch assembly, service cover release latch assembly, and replacement thermal material)	685403-001
	Latch Kit (not illustrated, includes battery release latch assembly components and service cover release latch assembly components)	685505-001
	Rubber Kit (not illustrated, includes base enclosure and display bezel screw covers)	651382-001
(15)	**Battery** (Li-ion):	
	9-cell, 100-Wh, 3.00-Ah	632423-001
	6-cell, 62-Wh, 2.80-Ah	632421-001
	6-cell, 55-Wh, 2.80-Ah	632419-001
	3-cell, 31-Wh, 2.80-Ah	632417-001
(16)	**Modem module** (56k v.92 MDC data/fax, does not include cable) **NOTE:** The modem module does not include a cable. The modem module cable is included in the Cable Kit, spare part number 651384-001. See Cable Kit on page 31 for more Cable Kit information.	628824-001
(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	634400-001
(18)	**WLAN module:**	
	Atheros WB225 1×1 802.11b/g/n Bluetooth Combo Adapter	675794-001
	Broadcom 43228 802.11abgn 2×2 Wi-Fi Adapter	669832-001
	Intel Centrino Advanced-N 6205 WLAN module	631954-001
(19)	**Speaker assembly** (includes cable)	651377-001

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Item	Component	Spare part number
(20)	**Bluetooth module** (4.0 EDR) **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 693306-001.	655792-001
(21)	**Memory modules** (2, PC3-12800, 1666-MHz, DDR3):	
	8-GB	670034-001
	4-GB	641369-001
	2-GB	652972-001
(22)	**Hard drive** (does not include hard drive bracket, hard drive connector adapter, or screws):	
	750-GB, 7200-rpm, 9.5-mm	633252-001
	500-GB, 7200-rpm, 9.5-mm self-encrypting drive	683801-001
	500-GB, 7200-rpm, 9.5-mm	634925-001
	320-GB, 7200-rpm, 9.5-mm	634862-001
	Hard Drive Hardware Kit (not illustrated, includes hard drive bracket, hard drive connector adapter, and screws)	651380-001
	Solid-state drive (not illustrated, does not include bracket, connector, or screws):	
	256-GB SATA III self-encrypting solid-state drive	697058-001
	240-GB SATA III solid-state drive	701657-001
	180-GB SATA III solid-state drive	700995-001
	160-GB SATA II solid-state drive	697060-001
	128-GB SATA III solid-state drive	697057-001
(23)	**Fan** (includes cable)	651378-001
(24)	**Service cover:**	
	Includes label indicating “Made in China”	685400-001
	Includes label indicating country of origin	703148-001

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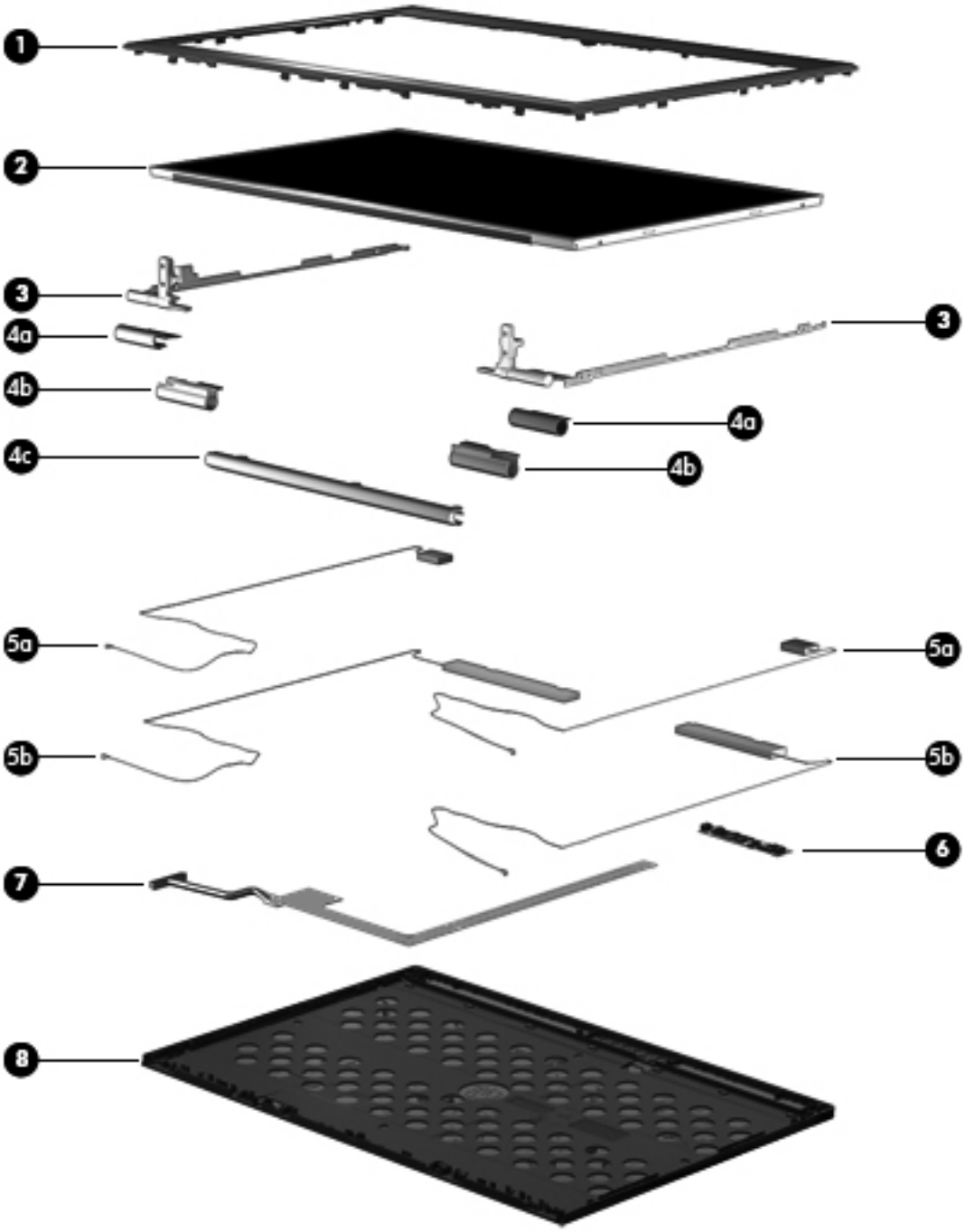
Display assembly subcomponents



Item	Component	Spare part number
(1)	**Display bezel:**	
	For use on computer models equipped with a webcam	685411-001
	For use on computer models not equipped with a webcam	685412-001

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Item	Component	Spare part number
(2)	**12.5 in, HD, LED, AG, SVA display panel**	685504-001
	Display Hinge Kit, includes:	685414-001
(3)	Left and right display hinges	
	Display Hinge Cover Kit, includes:	685405-001
(4a)	Left and right display hinge caps	
(4b)	Left and right display hinge covers	
(4c)	Display clutch cover	
	Antenna Kit, includes:	685506-001
(5a)	WLAN antenna cables and transceivers	
(5b)	WWAN antenna cables and transceivers	
(6)	**Webcam/microphone module**	685413-001
	Microphone module	694675-001
	Display Cable Kit, includes:	685417-001
(7)	Display panel cable and webcam/microphone module cable	
(8)	**Display enclosure**	685415-001
	Display Panel Support Kit (not illustrated, includes display enclosure, WLAN antenna cables and transceivers, and WWAN antenna cables and transceivers)	685507-001
	Display Screw Kit (not illustrated)	685418-001

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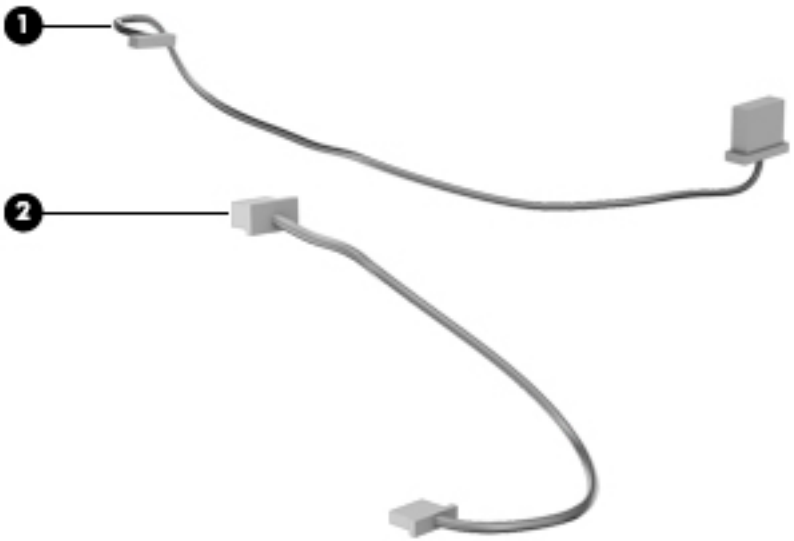
Cable Kit



Item	Component	Spare part number
	Cable Kit, includes:	651384-001
(1)	Bluetooth module cable	
(2)	Modem module cable	

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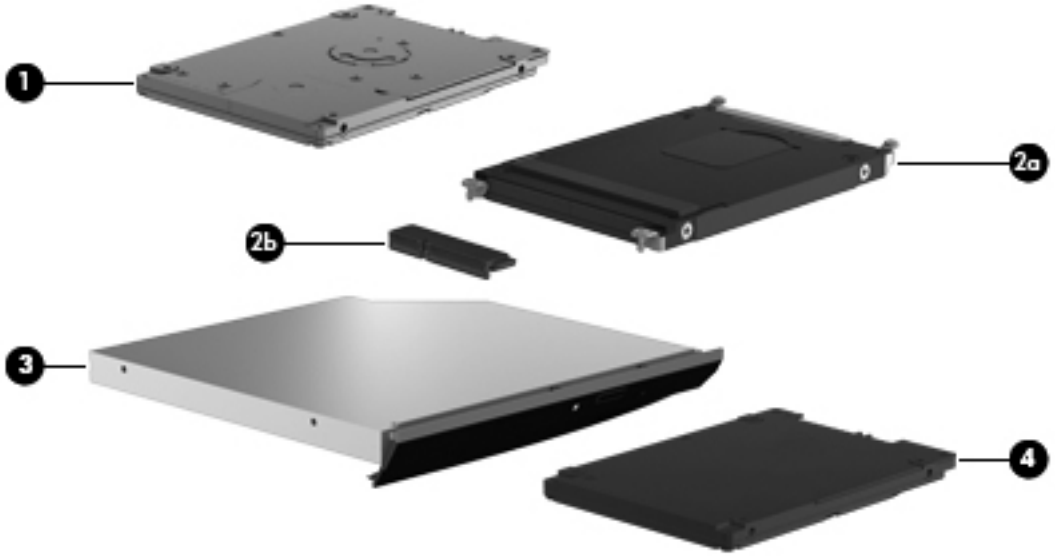
Mass storage device



Item	Description	Spare part number
(1)	**Hard drive** (does not include hard drive bracket, hard drive connector adapter, or screws):	
	750-GB, 7200-rpm, 9.5-mm	633252-001
	500-GB, 7200-rpm, 9.5-mm SED	683801-001
	500-GB, 7200-rpm, 9.5-mm	634925-001
	320-GB, 7200-rpm, 9.5-mm	634862-001
	Hard Drive Hardware Kit, includes:	651380-001
(2a)	Hard drive bracket	
(2b)	Hard drive connector adapter	
	Hard drive bracket screws (not illustrated)	
(3)	**Optical drive** (includes bezel and bracket):	
	DVD±RW Double-Layer with SuperMulti Drive	685502-001
	DVD-ROM Drive	685419-001
(4)	**Solid-state drive** (does not include bracket, connector adapter, or screws):	
	256-GB SATA III self-encrypting solid-state drive	697058-001
	240-GB SATA III solid-state drive	701657-001
	180-GB SATA III solid-state drive	700995-001
	160-GB SATA II solid-state drive	697060-001
	128-GB SATA III solid-state drive	697057-001

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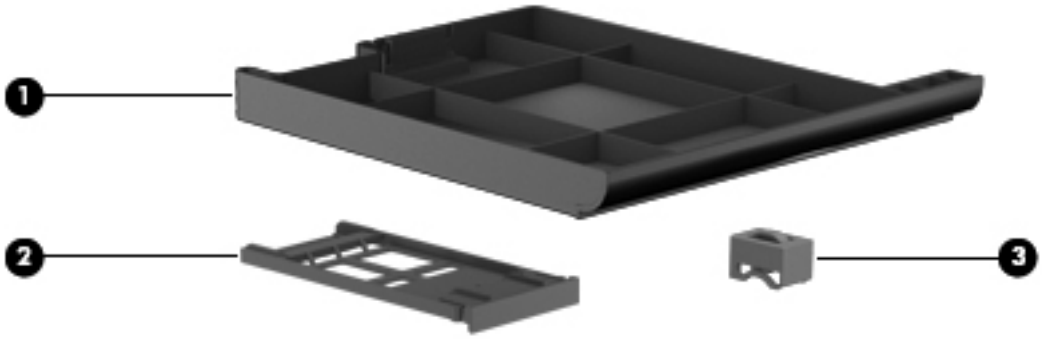
Plastics Kit



Item	Component	Spare part number
	Plastics Kit, includes:	651376-001
(1)	Optical drive bay space saver	
(2)	ExpressCard slot space saver	
(3)	RJ-11 jack plug	

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Miscellaneous parts

Component	Spare part number
AC adapter:	
65-W HP Smart AC adapter (PFC, RC/V, EM, 3-wire)	693710-001
65-W HP Smart AC adapter (non-PFC, RC/V, 3-wire)	693711-001
65-W HP Travel AC adapter (non-PFC, 3-wire)	693716-001
Computer carrying case:	
HP basic carrying case	455084-001
HP essential nylon carrying case	612757-001
HP professional slim top-load carrying case	592923-001
Computer lock:	
HP keyed cable lock	626729-002
HP notebook combination lock	591699-001
Computer mouse:	
HP optical/USB travel mouse	434594-001
HP optical/USB/PS2 2-button mouse	390632-001
HP 2570 Docking Station	685401-001
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

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Component	Spare part number
For use in Thailand	490371-201
For use in the United Kingdom and Singapore	490371-031
Screw Kit	685416-001

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)
591699-001	HP notebook combination lock
592923-001	HP professional slim top-load carrying case
612757-001	HP essential nylon carrying case
626729-002	HP notebook keyed cable lock

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Spare part number	Description
628824-001	Modem module (56k v.92 MDC data/fax, does not include cable) **NOTE:** The modem module does not include a cable. The modem module cable is included in the Cable Kit, spare part number 651384-001. See Cable Kit on page 31 for more Cable Kit information.
631954-001	Intel Centrino Advanced-N 6205 WLAN module
632417-001	3-cell, 31-Wh, 2.80-Ah, Li-ion battery
632419-001	6-cell, 55-Wh, 2.80-Ah, Li-ion battery
632421-001	6-cell, 62-Wh, 2.80-Ah, Li-ion battery
632423-001	9-cell, 100-Wh, 3.00-Ah, Li-ion battery
633252-001	750-GB, 7200-rpm, 9.5-mm hard drive (does not include hard drive bracket, hard drive connector adapter, or screws) **NOTE:** The hard drive bracket, hard drive connector adapter, and screws are included in the Hard Drive Hardware Kit, spare part number 651380-001.
634400-001	HP un2430 EV-DO/HSPA Mobile Broadband Module
634925-001	500-GB, 7200-rpm, 9.5-mm hard drive (does not include hard drive bracket, hard drive connector adapter, or screws) **NOTE:** The hard drive bracket, hard drive connector adapter, and screws are included in the Hard Drive Hardware Kit, spare part number 651380-001.
641369-001	4-GB memory module (PC3, 12800, 1600-MHz)
651376-001	Plastics Kit (includes ExpressCard slot space saver, optical drive bay space saver, RJ-11 jack plug) **NOTE:** See Plastics Kit on page 33 for more Plastics Kit information.
651377-001	Speaker assembly (includes cable)
651378-001	Fan (includes cable)
651380-001	Hard Drive Hardware Kit (includes hard drive bracket, hard drive connector adapter, and screws)
651381-001	Bracket Kit (includes top cover left and right brackets)
651382-001	Rubber Kit (includes base enclosure rubber bumpers)
651384-001	Cable Kit (includes Bluetooth module cable and modem module cable) **NOTE:** See Cable Kit on page 31 for more Cable Kit information.
652972-001	2-GB memory module (PC3, 12800, 1600-MHz)
655792-001	Bluetooth module 4.0 EDR **NOTE:** The Bluetooth module does not include a cable. The Bluetooth module cable is included in the Cable Kit, spare part number 651384-001. See Cable Kit on page 31 for more Cable Kit information.
665733-001	RTC battery (includes cable and double-sided adhesive)
669832-001	Broadcom 43228 802.11abgn 2×2 Wi-Fi Adapter
670034-001	8-GB memory module (PC3, 12800, 1600-MHz)

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Spare part number	Description
675794-001	Atheros WB225 1×1 802.11b/g/n Bluetooth Combo Adapter
680645-001	Intel Dual Core i5-3210M 2.50-GHz processor (SC turbo up to 3.10-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W; includes replacement thermal material)
681952-001	Intel Dual Core i5-3320M 2.60-GHz processor (SC turbo up to 3.30-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W; includes replacement thermal material)
681953-001	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; includes replacement thermal material)
681954-001	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; includes replacement thermal material)
682417-001	Intel Core i3-3110M 2.40-GHz processor (1600-MHz FSB, 3.0-MB L3 cache, 35 W; includes replacement thermal material)
683801-001	500-GB, 7200-rpm, 9.5-mm SED hard drive (does not include hard drive bracket, hard drive connector adapter, or screws) **NOTE:** The hard drive bracket, hard drive connector adapter, and screws are included in the Hard Drive Hardware Kit, spare part number 651380-001.
685400-001	Service cover (includes label indicating “Made in China”)
685401-001	HP 2570 Docking Station
685403-001	Base enclosure (includes 4 rubber feet, battery release latch assembly, service cover release latch assembly, and replacement thermal material)
685404-001	System board for use only on computer models equipped with the Windows 7 operating system in all countries and regions except the People's Republic of China and the Ukraine (includes replacement thermal material)
685404-501 [a]	System board for use only on computer models equipped with 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)
685404-601 [a]	System board for use only on computer models equipped with 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)
685405-001	Display Hinge Cover Kit (includes left and right display hinge caps, left and right display hinge covers, and clutch cover)
685406-001	Top cover for use on computer models not equipped with a fingerprint reader (includes TouchPad and TouchPad cable)
685407-001	Top cover for use on computer models not equipped with fingerprint reader (includes TouchPad and TouchPad cable)
685408-001	Power button board (includes cable)
685409-001	Function button board (includes cable
685410-001	Fingerprint reader board (includes bracket and cable)
685411-001	Display bezel for use on computer models equipped with a webcam
685412-001	Display bezel for use on computer models not equipped with a webcam
685413-001	Webcam/microphone module

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Spare part number	Description
685414-001	Display Hinge Kit (includes left and right display hinges)
685415-001	Display enclosure
685416-001	Screw Kit
685417-001	Display Cable Kit (includes display panel cable and webcam/microphone cable)
685418-001	Display Screw Kit
685419-001	DVD-ROM Drive
685502-001	DVD±RW Double-Layer with SuperMulti Drive
685503-001	Smart Card reader assembly (includes Smart Card reader cable and function LED board cable)
685504-001	12.5 in, HD, LED, AG, SVA display panel
685505-001	Latch Kit (includes battery release latch assembly components and service cover release latch assembly components)
685506-001	Antenna Kit (includes WLAN antenna cables and transceivers and WWAN antenna cables and transceivers)
685507-001	Display Panel Support Kit (includes display enclosure with pre-installed WLAN antenna cables and transceivers and WWAN antenna cables and transceivers)
685508-001	Heat sink (includes replacement thermal material)
685509-001	Function LED board
692857-001	System board for use only on computer models equipped with the Windows 7 operating system in the People's Republic of China and the Ukraine (includes replacement thermal material)
693710-001	65-W HP Smart AC adapter (PFC, RC/V, EM, 3-wire)
693711-001	65-W HP Smart AC adapter (non-PFC, RC/V, 3-wire)
693716-001	65-W HP Travel AC adapter (non-PFC, 3-wire)
694675-001	Microphone module
696693-001	Keyboard with pointing stick for use in the United States (includes keyboard cable and pointing stick cable)
696693-031	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)
696693-041	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)
696693-051	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)
696693-061	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)
696693-071	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)

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Spare part number	Description
696693-081	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)
696693-091	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)
696693-131	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)
696693-141	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)
696693-151	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)
696693-161	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)
696693-171	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)
696693-201	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)
696693-211	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)
696693-251	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)
696693-261	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)
696693-271	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)
696693-281	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)
696693-291	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)
696693-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)
696693-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)
696693-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)
696693-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)
696693-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)
696693-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)

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Spare part number	Description
696693-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)
696693-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)
696693-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)
696693-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)
696693-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)
696693-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)
696693-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)
697057-001	128-GB SATA III solid-state drive
697058-001	256-GB SATA III self-encrypting solid-state drive
697060-001	160-GB SATA II solid-state drive
700995-001 [a]	180-GB SATA III solid-state drive
701657-001 [a]	240-GB SATA III solid-state drive
701979-001 [a]	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)
701979-031 [a]	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)
701979-041 [a]	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)
701979-051 [a]	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)
701979-061 [a]	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)
701979-071 [a]	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)
701979-081 [a]	Keyboard with pointing stick for use only on computer models equipped with the Windows 8 operating system in Denmark (includes keyboard cable and pointing stick cable)
701979-091 [a]	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)
701979-131 [a]	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)
701979-141 [a]	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)

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Spare part number	Description
701979-151 [a]	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)
701979-161 [a]	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)
701979-171 [a]	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)
701979-201 [a]	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)
701979-211 [a]	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)
701979-251 [a]	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)
701979-261 [a]	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)
701979-271 [a]	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)
701979-281 [a]	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)
701979-291 [a]	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)
701979-A41 [a]	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)
701979-AB1 [a]	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)
701979-AD1 [a]	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)
701979-B31 [a]	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)
701979-B71 [a]	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)
701979-BA1 [a]	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)
701979-BB1 [a]	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)
701979-BG1 [a]	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)
701979-D61 [a]	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)
701979-DB1 [a]	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)

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Spare part number	Description
701979-DD1 [a]	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)
701979-FL1 [a]	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)
701979-FP1 [a]	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)
702080-001 [a]	HP un2430 EV-DO/HSPA Mini Card
703148-001 [a]	Service cover (includes label indicating country of origin)
710788-001 [a]	HP hs2350 HSPA+ Mobile Broadband Module
710789-001 [a]	HP lt2522 LTE/EV-DO Mobile Broadband Module
710790-001 [a]	HP lt2523 LTE/HSPA+ Mobile Broadband Module

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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.

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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.

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⚠ **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

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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.

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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

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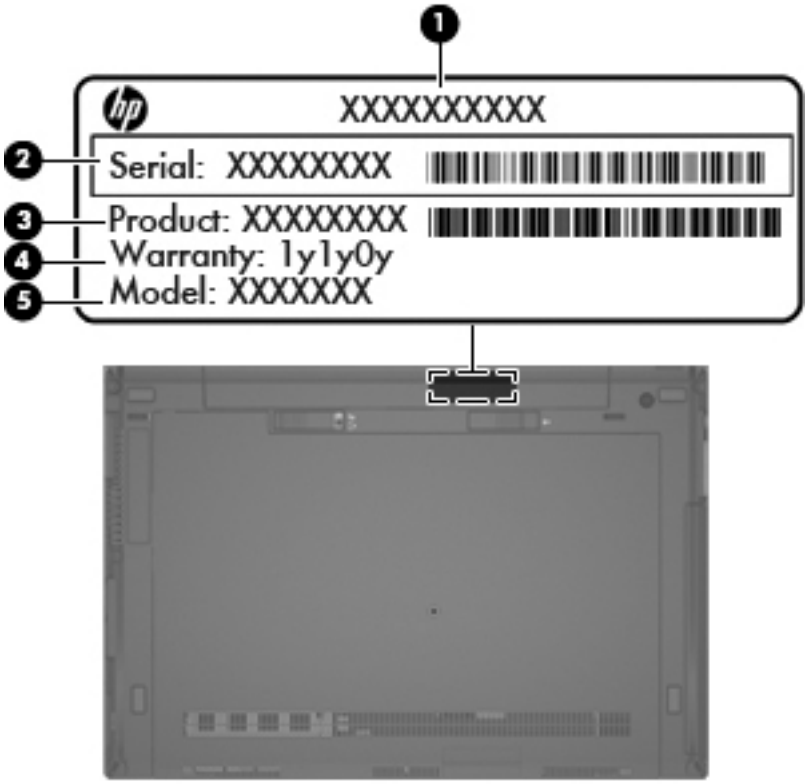
Component replacement procedures

This chapter provides removal and replacement procedures.

There are as many as 67 screws that must be removed, replaced, and/or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

Service tag

When ordering parts or requesting information, provide the computer serial number and model number provided on the service tag. It is necessary to remove the battery to obtain these numbers. See Battery on page 50 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.

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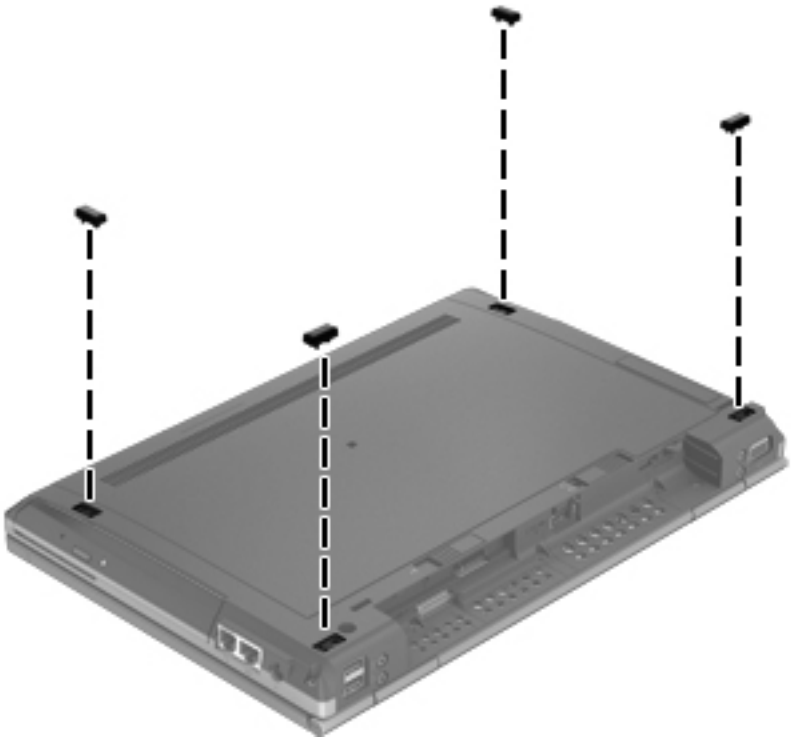
Item	Component	Description
(4)	Warranty period	This number describes the duration of the warranty period for the computer.
(5)	Model description	This is the alphanumeric identifier used to locate documents, drivers, and support for the computer.

Computer feet

The computer feet are rubber pads that are heat-staked to the base enclosure in the locations illustrated below.



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Battery

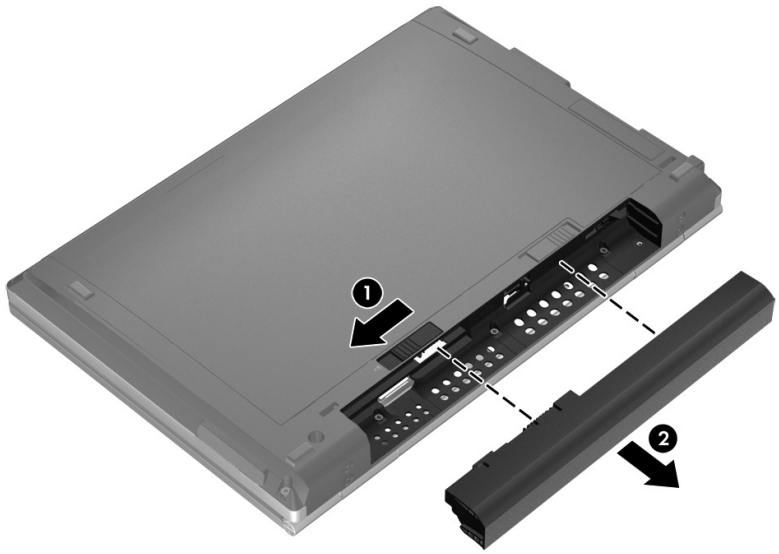
Description	Spare part number
9-cell, 100-Wh, 3.00-Ah	632423-001
6-cell, 62-Wh, 2.80-Ah	632421-001
6-cell, 55-Wh, 2.80-Ah	632419-001
3-cell, 31-Wh, 2.80-Ah	632417-001

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. The battery release latch automatically resets when the battery is installed.

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SIM

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

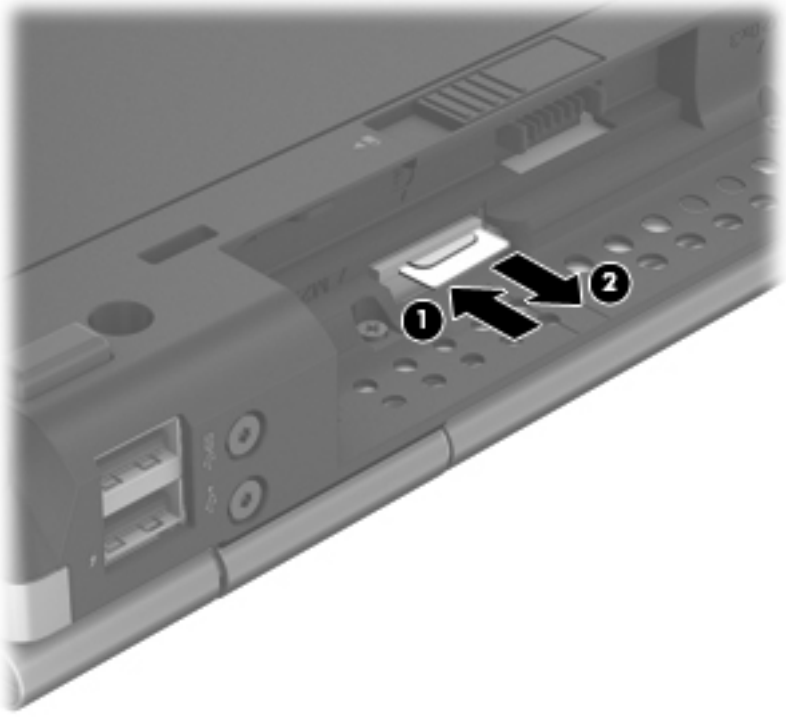
NOTE: If there is a SIM inserted in the SIM slot, it must be removed before disassembling the computer. Be sure that the SIM is reinserted in the SIM slot after reassembling the computer.

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 50).

Remove the SIM:

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



Reverse this procedure to install the SIM.

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Service cover

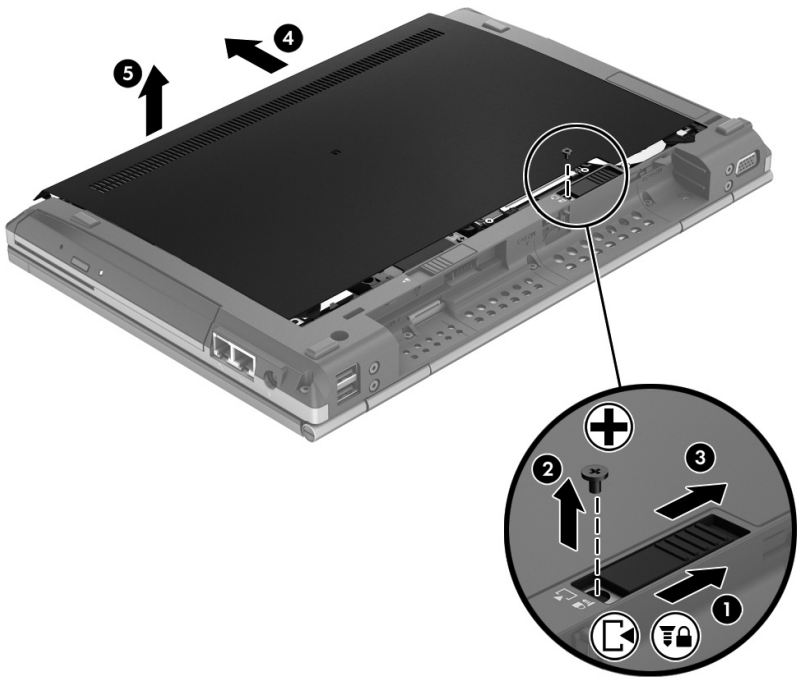
Description	Spare part number
Includes label indicating “Made in China”	685400-001
Includes label indicating country of origin	703148-001

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 50).

Remove the service cover:

1. Position the computer with the battery bay toward you.
2. Slide the release latch **(1)** and remove the locking screw (if installed) **(2)**.
3. Slide the release latch **(3)** to disengage the door from the computer.
4. Remove the service cover **(4)** by lifting it straight up and away from the computer.



Reverse the removal procedures to install the service cover.

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Memory module

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

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

Update BIOS before adding memory modules

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

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

To update BIOS:

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

Before removing a memory module, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 50).
5. Remove the service cover (see Service cover on page 52).

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.)

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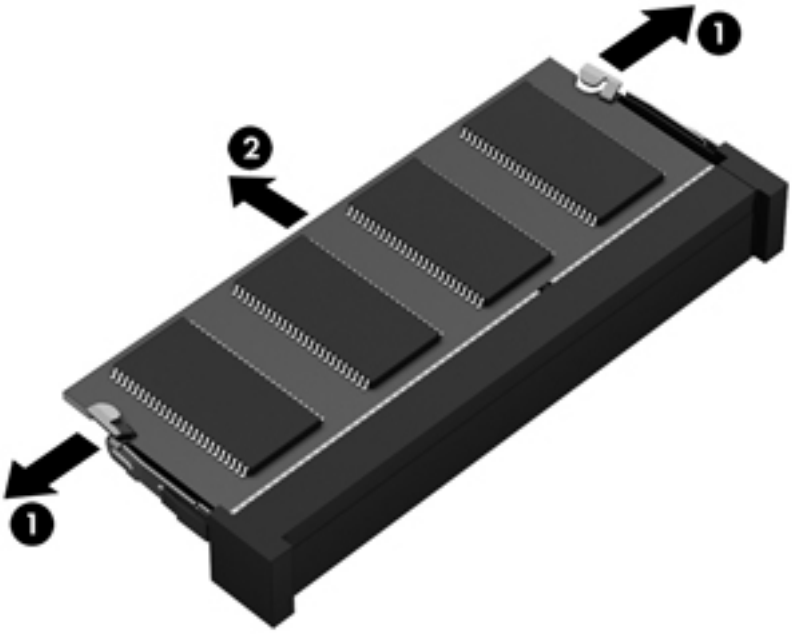
2. Remove the memory module **(2)** by pulling the module away from the slot at an angle.

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



Reverse this procedure to install a memory module.

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 693306-001.

Description	Spare part number
Bluetooth module	655792-001

Before removing a 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 50).
5. Remove the service cover (see Service cover on page 52).

Remove the Bluetooth module:

1. Disconnect the Bluetooth module cable **(1)** from the system board.

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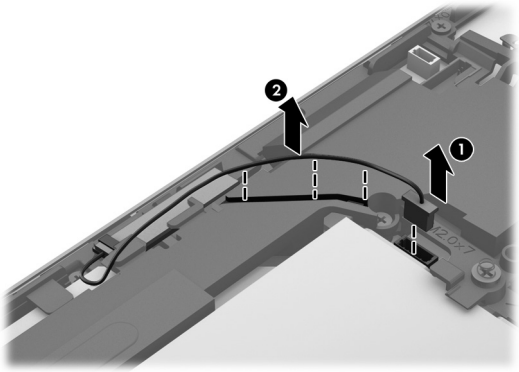
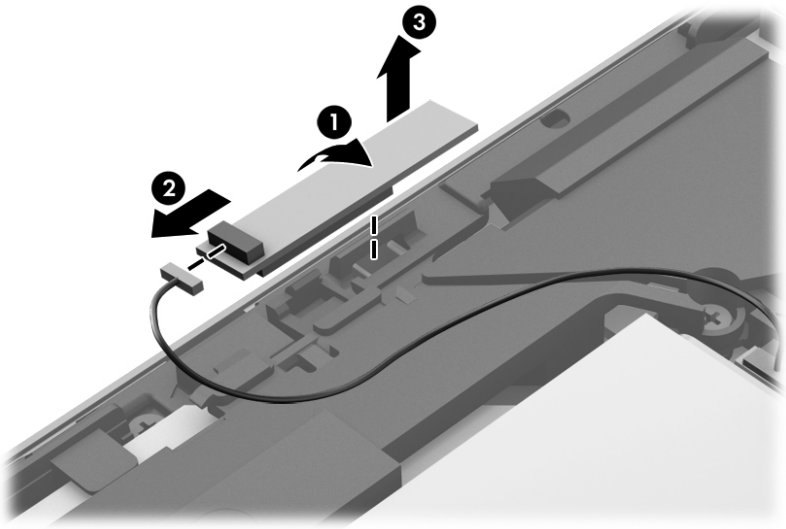
2. Release the Bluetooth module cable **(2)** from the clip and routing channel built into the speaker assembly.



3. Lift and rotate the front edge of the Bluetooth module **(1)** until it disengages from the clip built into the speaker assembly.
4. Disconnect the Bluetooth module cable **(2)** from the Bluetooth module.
5. Remove the Bluetooth module **(3)**.



Reverse this procedure to install a memory module.

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Speaker assembly

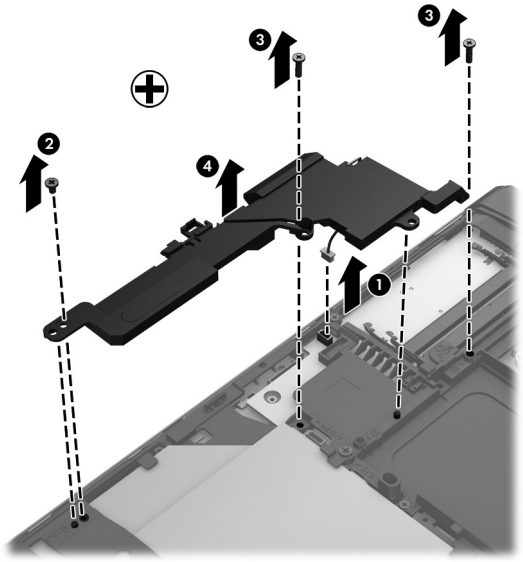
Description	Spare part number
Speaker assembly (includes cable)	651377-001

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 50), and then remove the following components:
5. Remove the service cover (see Service cover on page 52).
6. Remove the Bluetooth module (see Bluetooth module on page 54)

Remove the speaker assembly:

1. Disconnect the speaker assembly cable **(1)** from the system board.
2. Remove the Phillips PM2.0×3.6 screw **(2)** and the two Phillips PM2.0×7.7 screws **(3)** that secure the speaker assembly to the base enclosure.
3. Remove the speaker assembly **(4)**.



Reverse this procedure to install the speaker assembly.

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Optical drive

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

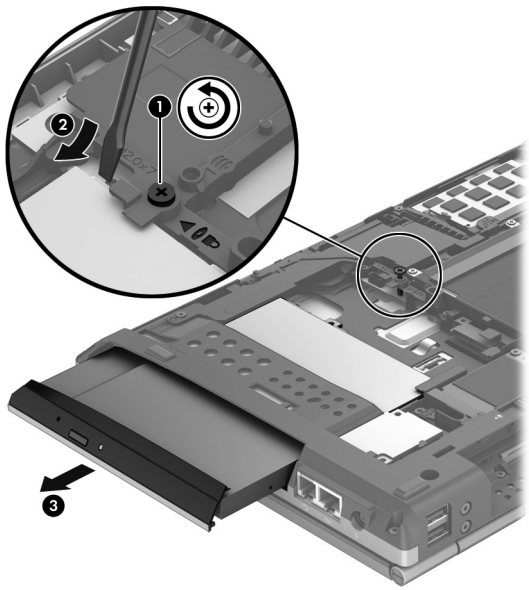
Description	Spare part number
DVD±RW Double-Layer with SuperMulti Drive	685502-001
DVD-ROM Drive	685419-001

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 50), and then remove the following components:
5. Remove the service cover (see Service cover on page 52).

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.



Reverse this procedure to install the optical drive.

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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, hard drive connector adapter, and screws)	651380-001

Before removing the hard drive, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 50).
5. Remove the service cover (see Service cover on page 52).

Remove the hard drive:

1. Loosen the four captive Phillips screws **(1)** that secure the hard drive to the computer.
2. Use the hard drive tab **(2)** to slide the hard drive toward the front of the computer and disconnect it from the system board.

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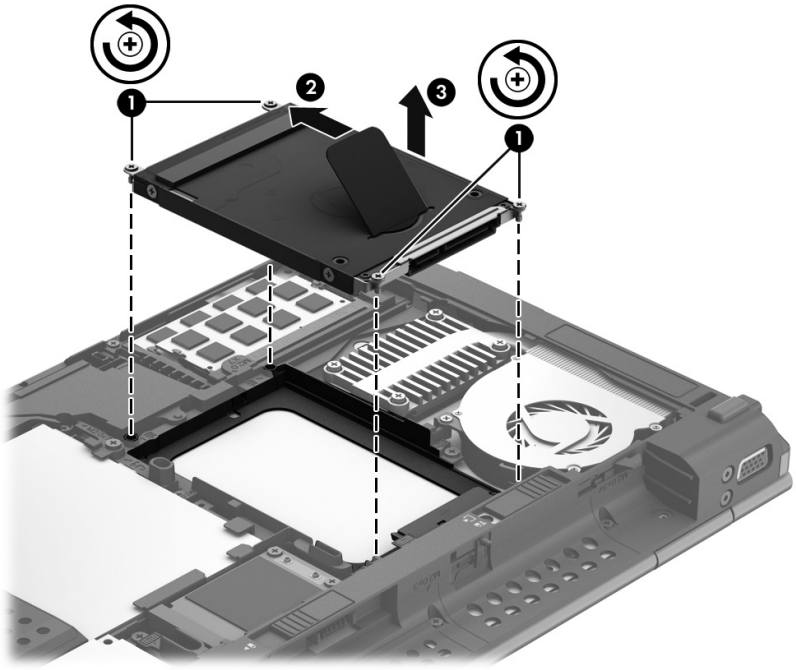
3. Remove the hard drive **(3)** by lifting it straight up and away from the computer.



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

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

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

   c. Remove the four Phillips PM3.0×3.3 screws **(2)** that secure the hard drive bracket to the hard drive.

   d. Remove the hard drive bracket **(3)** from the hard drive.

   The hard drive bracket, hard drive connector adapter, and screws are available in the Hard Drive Hardware Kit, spare part number 651380-001.

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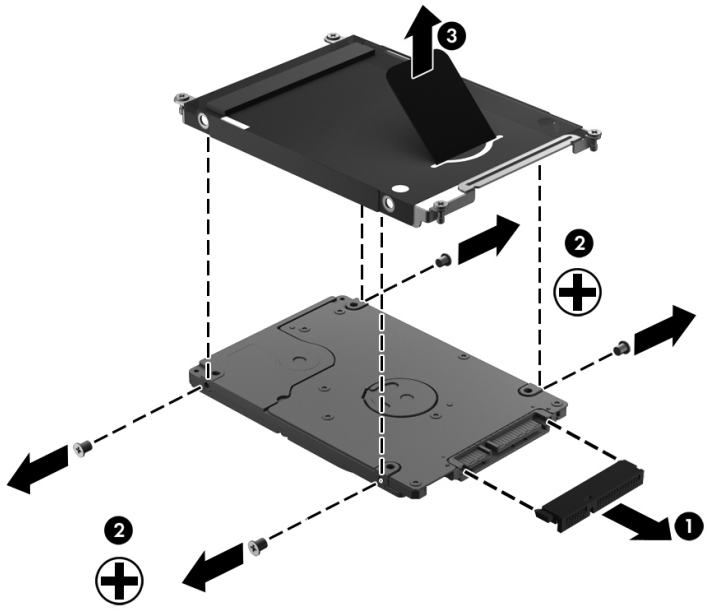

Reverse this procedure to reassemble and install the hard drive.

Fan

Description	Spare part number
Fan (includes cable)	651378-001

Before removing the fan, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 50).
5. Remove the service cover (see Service cover on page 52).

Remove the fan:

1. Disconnect the fan cable **(1)** from the system board.
2. Loosen the two captive screws **(2)** that secure the fan to the top cover.

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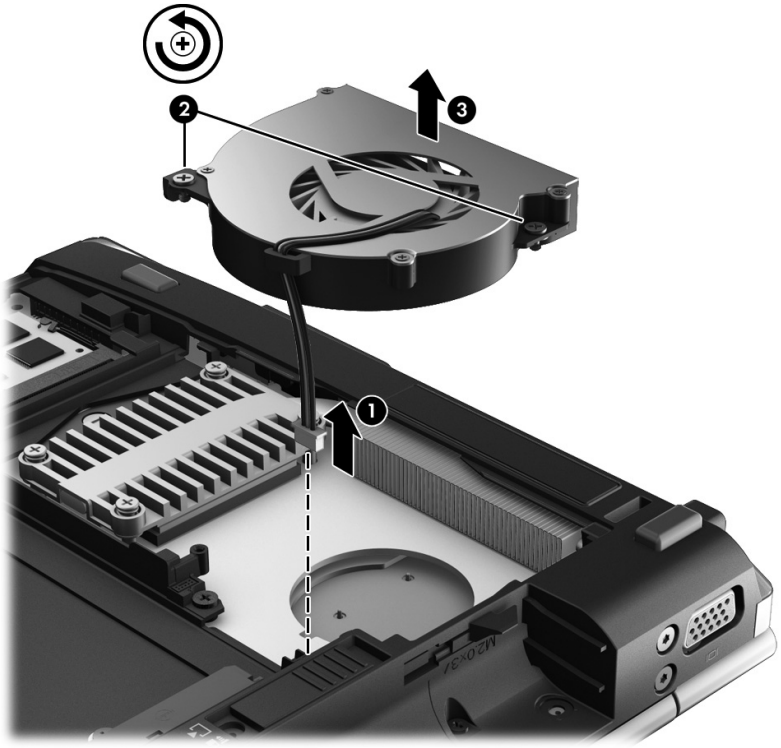
3. Remove the fan **(3)**.



Reverse this procedure to install the fan.

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	634400-001

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.

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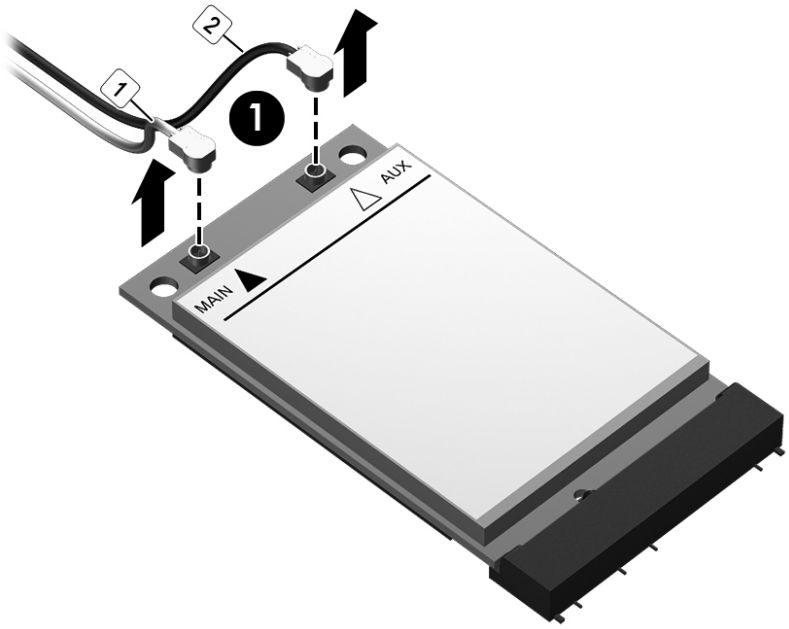
4. Remove the battery (see Battery on page 50).
5. Remove the service cover (see Service cover on page 52).

Remove the WWAN module:

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

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



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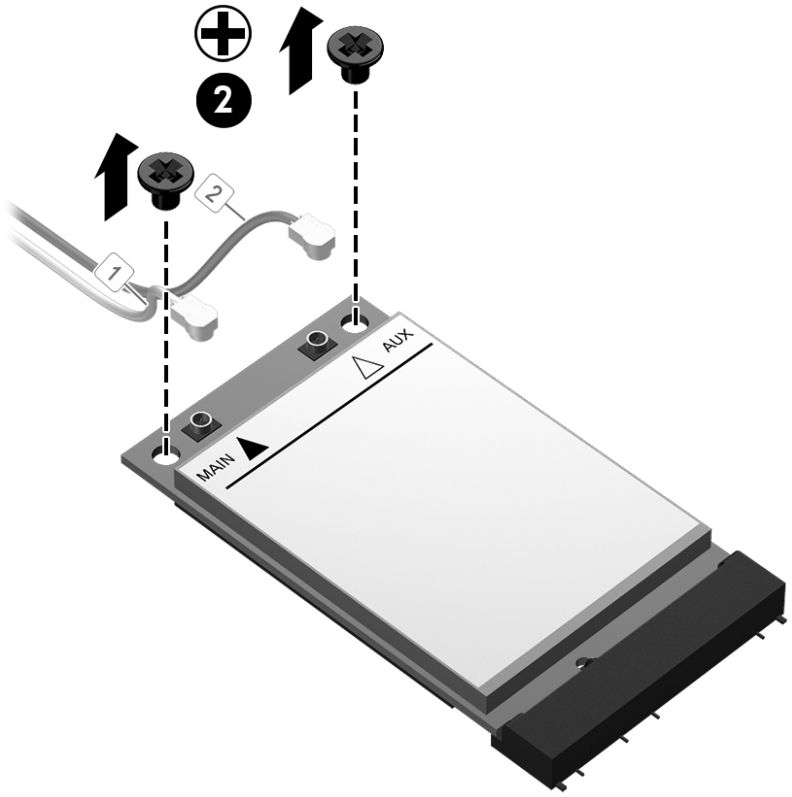
2. Remove the two Phillips PM2.0×3.0 screw **(2)** that secures the WWAN module to the base enclosure. (The WWAN module tilts up.)



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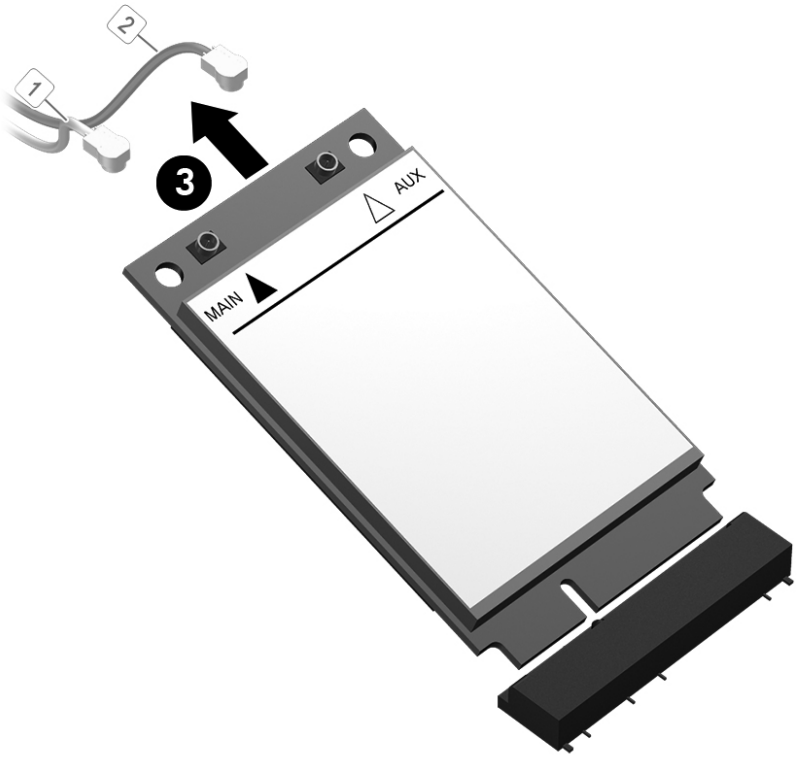
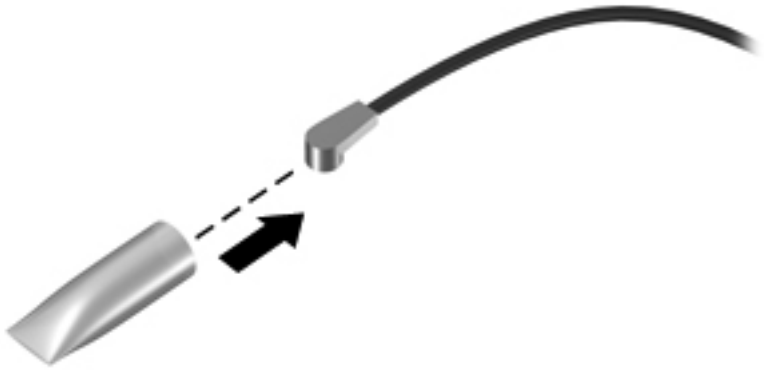
3. Remove the WWAN module **(3)** by pulling the module away from the slot at an angle.



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



Reverse this procedure to install the WWAN module.

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WLAN module

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

⚠ **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 50).
5. Remove the service cover (see Service cover on page 52).
6. Remove the WWAN module (see WWAN module on page 61).

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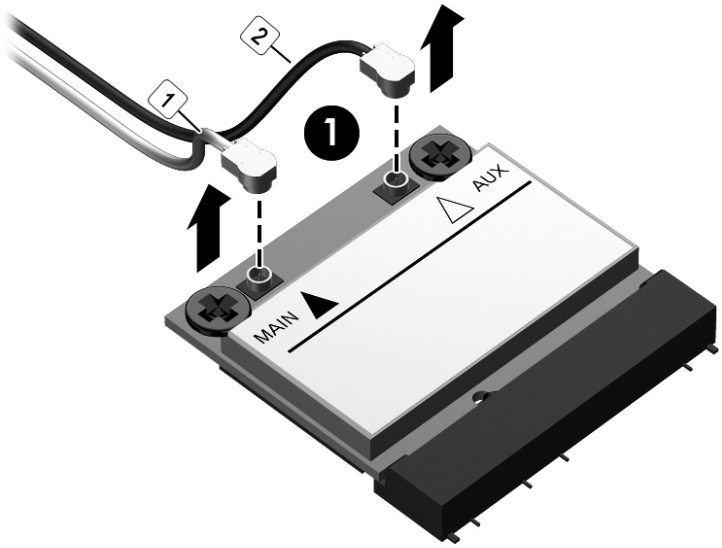
Remove the WLAN module:

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.



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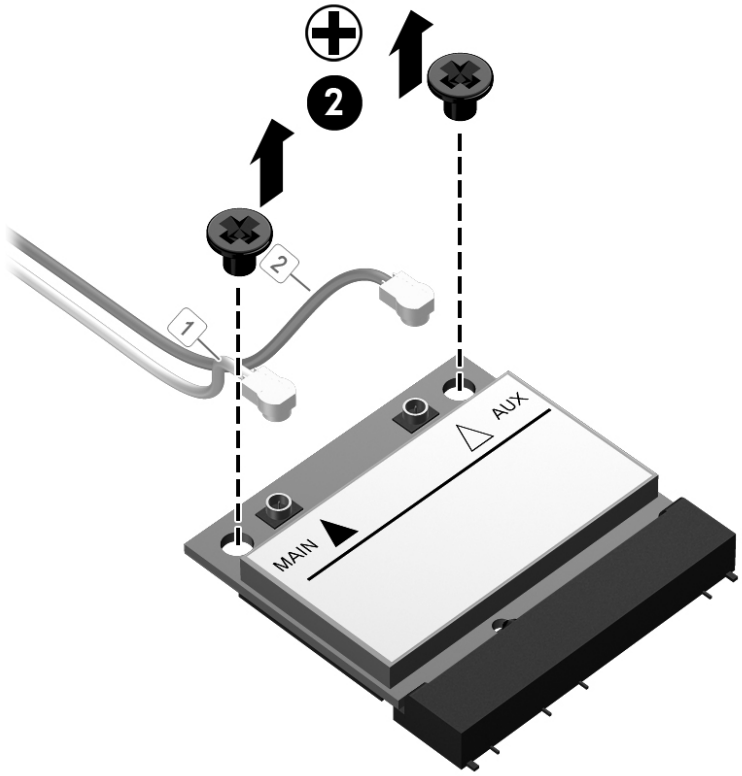
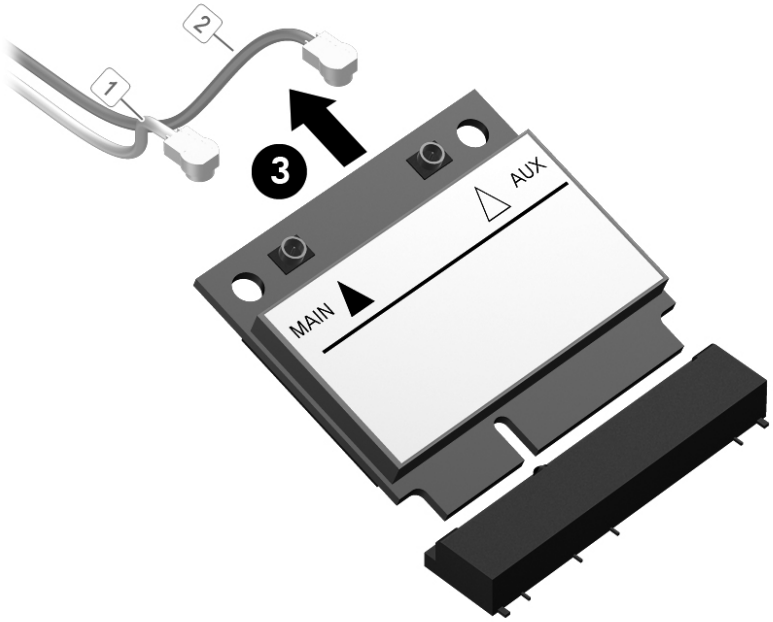
2. Remove the two Phillips PM2.0×3.0 screws **(2)** that secure the WLAN module to the base enclosure. (The WLAN module tilts up.)



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



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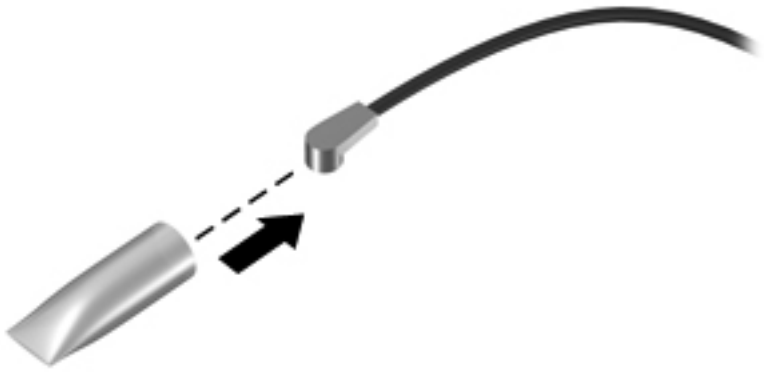
NOTE: If the WLAN antenna cables are not connected to the terminals on the WLAN module, the protective sleeves must be installed on the antenna connectors, as shown in the following illustration.



Reverse this procedure to install the WLAN module.

Modem module

NOTE: The modem module does not include a modem module cable. The modem module cable is included in the Cable Kit, spare part number 651384-001.

Description	Spare part number
Modem module (56k v.92 MDC data/fax)	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 50).
5. Remove the service cover (see Service cover on page 52).

Remove the modem module:

1. Remove the Phillips PM2.0×3.6 screw **(1)** that secures the modem module to the system board.
2. Lift the modem module **(2)** straight up to disconnect it from the system board.

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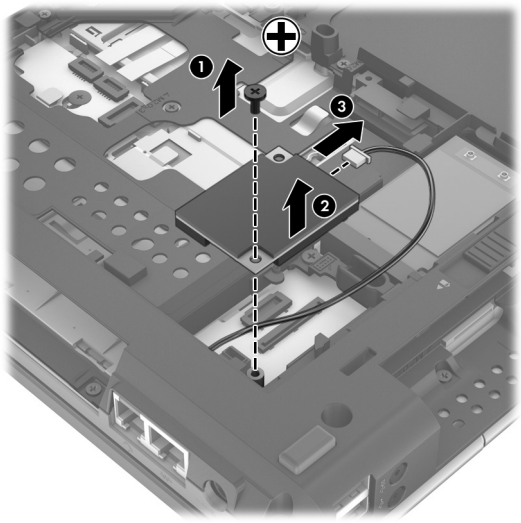
3. Disconnect the RJ-11 cable **(3)** from the modem module.



4. Remove the modem module.

Reverse this procedure to install the modem module.

Keyboard

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

For use in country/region	Spare part number	For use in country/region	Spare part number
For use only on computer models equipped with the Windows 8 Standard and Professional operating system:		For use in the Netherlands	701979-B31
For use in Belgium	701979-A41	For use in Norway	701979-091
For use in Brazil	701979-201	For use in Northwest Africa	701979-FP1
For use in Bulgaria	701979-261	For use in Portugal	701979-131
For use in Canada	701979-DB1	For use in Romania	701979-271
For use in the Czech Republic and Slovakia	701979-FL1	For use in Russia	701979-251
For use in Denmark	701979-081	For use in Saudi Arabia	701979-171
For use in France	701979-051	For use in Slovenia	701979-BA1
For use in Germany	701979-041	For use in South Korea	701979-AD1
For use in Greece	701979-151	For use in Spain	701979-071
For use in Hungary	701979-211	For use in Sweden and Finland	701979-B71
For use in Iceland	701979-DD1	For use in Switzerland	701979-BG1
For use in India	701979-D61	For use in Taiwan	701979-AB1

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For use in country/region	Spare part number	For use in country/region	Spare part number
For use in Israel	701979-BB1	For use in Thailand	701979-281
For use in Italy	701979-061	For use in Turkey	701979-141
For use in Japan	701979-291	For use in the United Kingdom and Singapore	701979-031
For use in Latin America	701979-161	For use in the United States	701979-001
For use only on computer models equipped with the Windows 7 operating system:		For use in the Netherlands	696693-B31
For use in Belgium	696693-A41	For use in Norway	696693-091
For use in Brazil	693362-201	For use in Northwest Africa	696693-FP1
For use in Bulgaria	696693-261	For use in Portugal	696693-131
For use in Canada	696693-DB1	For use in Romania	696693-271
For use in the Czech Republic and Slovakia	696693-FL1	For use in Russia	696693-251
For use in Denmark	696693-081	For use in Saudi Arabia	696693-171
For use in France	696693-051	For use in Slovenia	696693-BA1
For use in Germany	696693-041	For use in South Korea	696693-AD1
For use in Greece	696693-151	For use in Spain	696693-071
For use in Hungary	696693-211	For use in Sweden and Finland	696693-B71
For use in Iceland	696693-DD1	For use in Switzerland	696693-BG1
For use in India	696693-D61	For use in Taiwan	696693-AB1
For use in Israel	696693-BB1	For use in Thailand	696693-281
For use in Italy	696693-061	For use in Turkey	696693-141
For use in Japan	696693-291	For use in the United Kingdom and Singapore	696693-031
For use in Latin America	696693-161	For use in the United States	696693-001

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 50).

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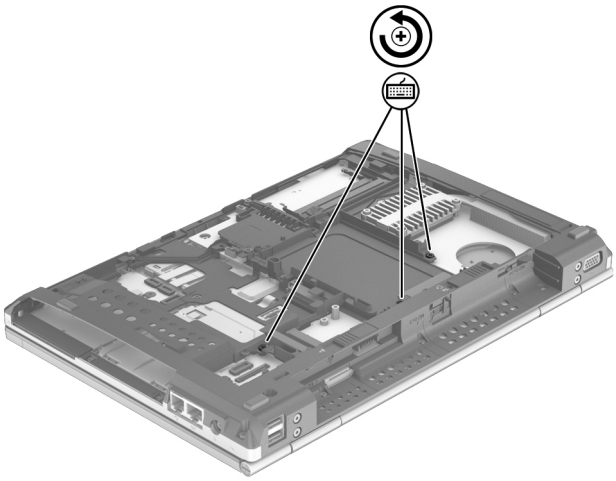
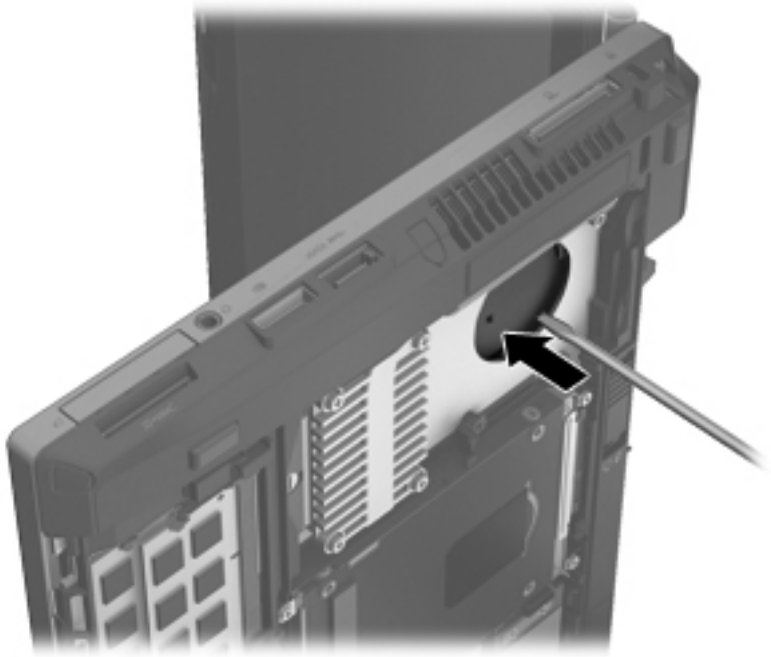
5. Remove the service cover (see Service cover on page 52).
6. Remove the fan (see Fan on page 60).

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 left side.
3. Partially open the computer.
4. Insert a screw driver or similar thin tool into the keyboard release opening in the fan opening, 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.

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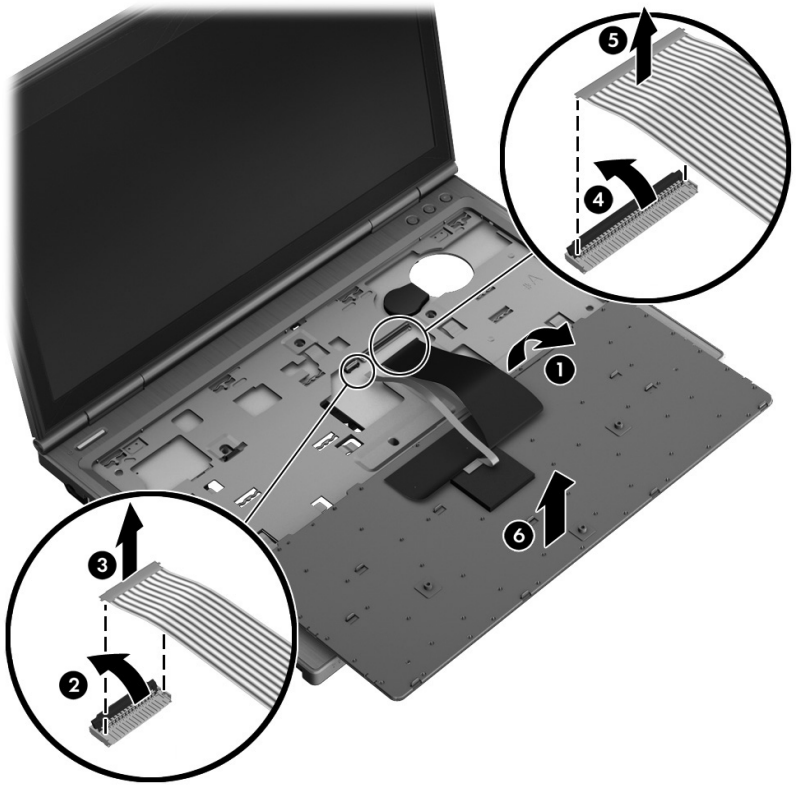
6. Open the computer.
7. Lift the rear edge of the keyboard until the keyboard rests at an angle, and then swing the top edge of the keyboard up and forward **(1)** until it rests upside down on the palm rest.
8. Release the zero insertion force (ZIF) connector **(2)** to which the pointing stick cable is attached, and then disconnect the pointing stick cable **(3)** from the system board.
9. Release the ZIF connector **(4)** to which the keyboard cable is attached, and then disconnect the keyboard cable **(5)** from the system board.
10. Remove the keyboard **(6)**.



Reverse this procedure to install the keyboard.

RTC battery

Description	Spare part number
RTC battery (includes cable and double-sided adhesive)	665733-001

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.

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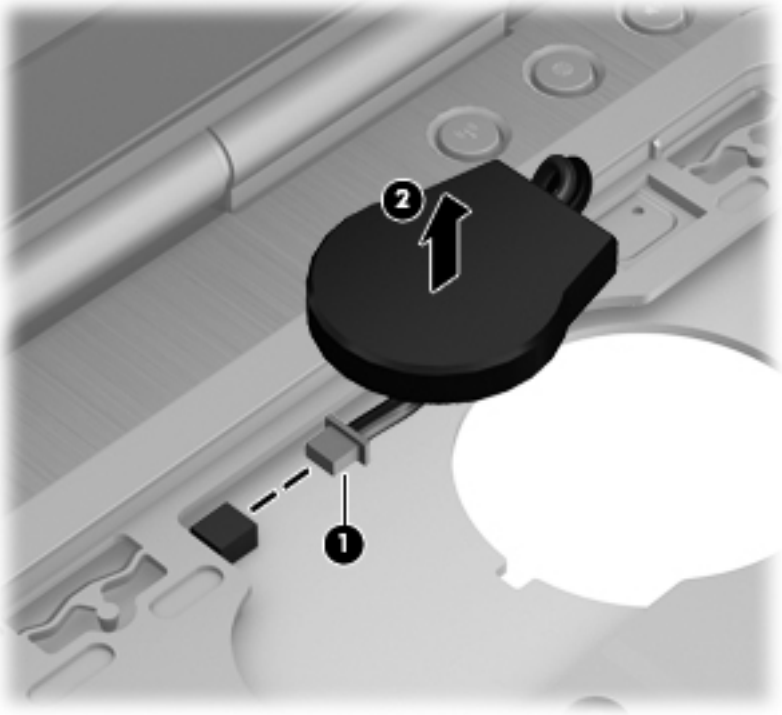
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 50), and then remove the following components:
   a. Service cover (see Service cover on page 52)
   b. Fan (see Fan on page 60)
   c. Keyboard (see Keyboard on page 69)

Remove the RTC battery:

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



3. Remove the RTC battery.

Reverse this procedure to install the RTC battery.

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Base enclosure

Description	Spare part number
Base enclosure (includes 4 rubber feet, battery release latch assembly, service cover release latch assembly, and replacement thermal material)	685403-001

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 50), and then remove the following components:
   a. Service cover (see Service cover on page 52)
   b. Bluetooth module (see Bluetooth module on page 54)
   c. Speaker assembly (see Speaker assembly on page 56)
   d. Optical drive (see Optical drive on page 57)
   e. Hard drive (see Hard drive on page 58)
   f. Fan (see Fan on page 60)
   g. WWAN module (see WWAN module on page 61)
   h. Modem module (see Modem module on page 68)
   i. Keyboard (see Keyboard on page 69)

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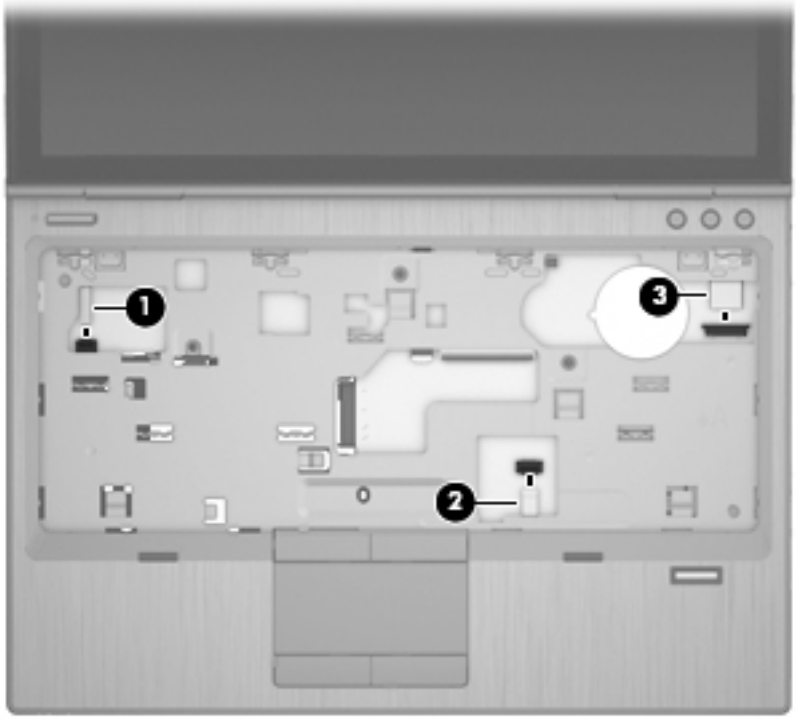
Remove the base enclosure:

1. Release the ZIF connectors to which the following cables are attached, and then disconnect the corresponding cables from the system board:

   (1) Power button board cable

   (2) Fingerprint reader board cable

   (3) Function board cable



2. Close the computer.
3. Turn the computer upside down, with the battery bay toward you.

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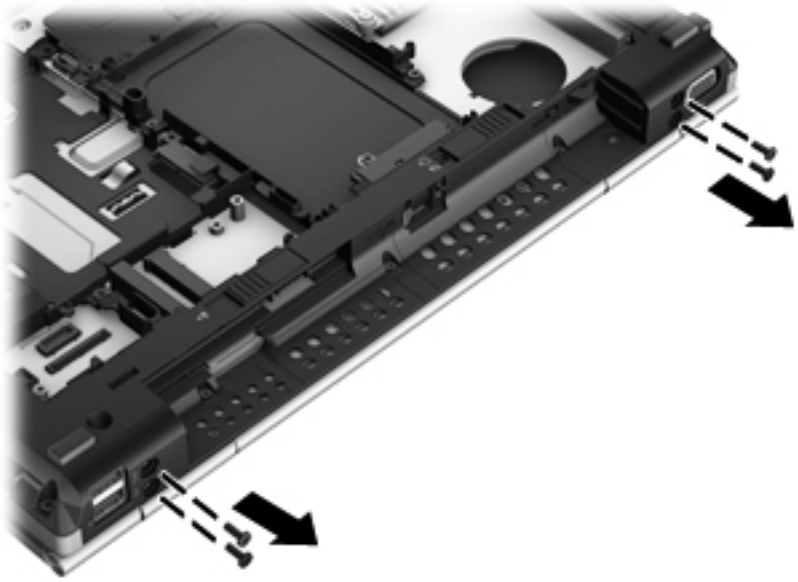
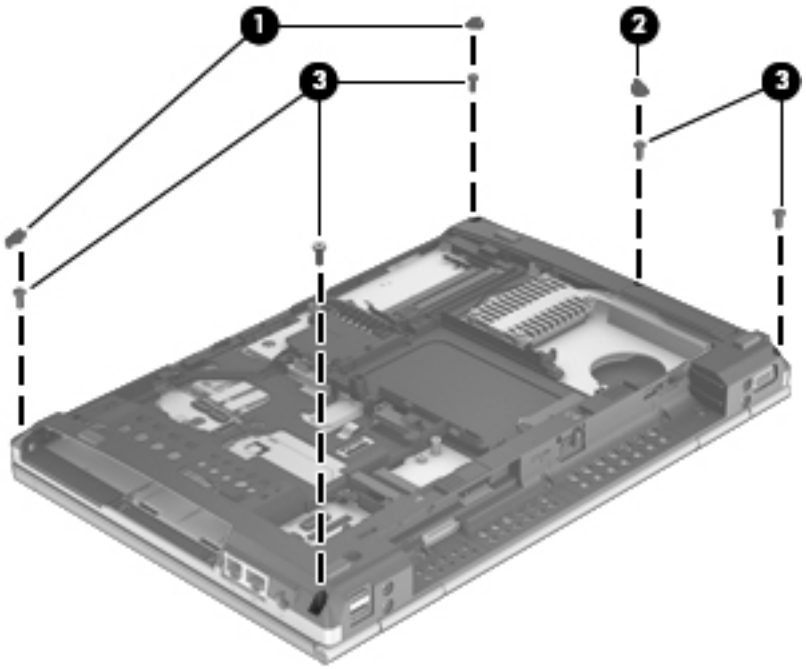
4. Remove the four Torx TM2.5×8.0 screws that secure the base enclosure to the computer.



5. Remove the three rubber screw covers in the front corners **(1)** and the right side **(2)** of the base enclosure. The rubber screw covers are included in the Rubber Kit, spare part number 651382-001.

6. Remove the five Torx TM2.5×8.0 screws **(3)** that secure the base enclosure to the computer.



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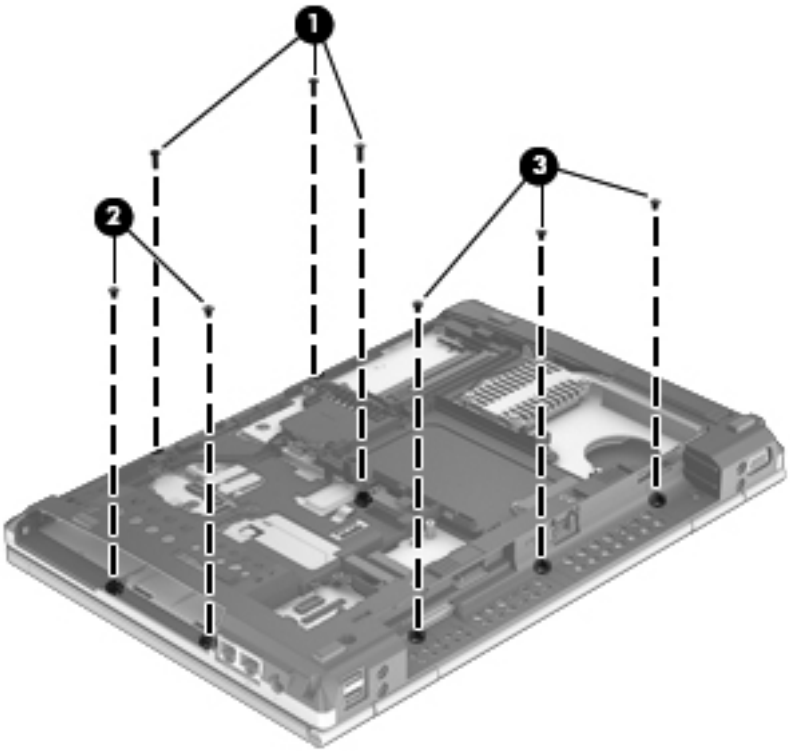
7. Remove the following screws that secure the base enclosure to the computer:

   (1) Three Phillips PM2.0×7.6 screws (two on the front edge of the computer and one in the middle of the computer)

   (2) Two Phillips PM2.0×3.6 screws in the optical drive bay

   (3) Three Phillips PM2.0×3.6 screws in the battery bay



8. Lift the rear edge of the base enclosure **(1)**, and then swing the base enclosure up and forward until the base enclosure detaches from the computer.

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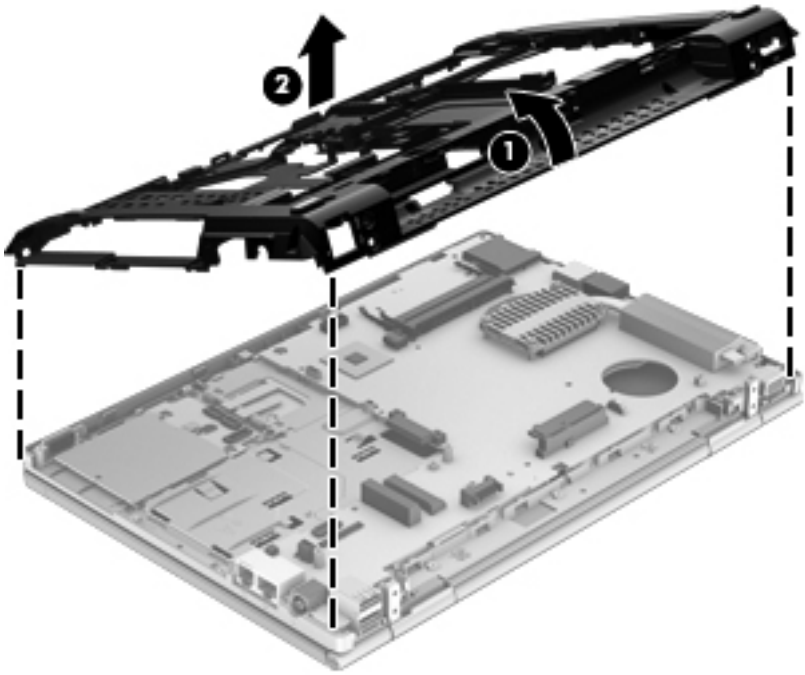
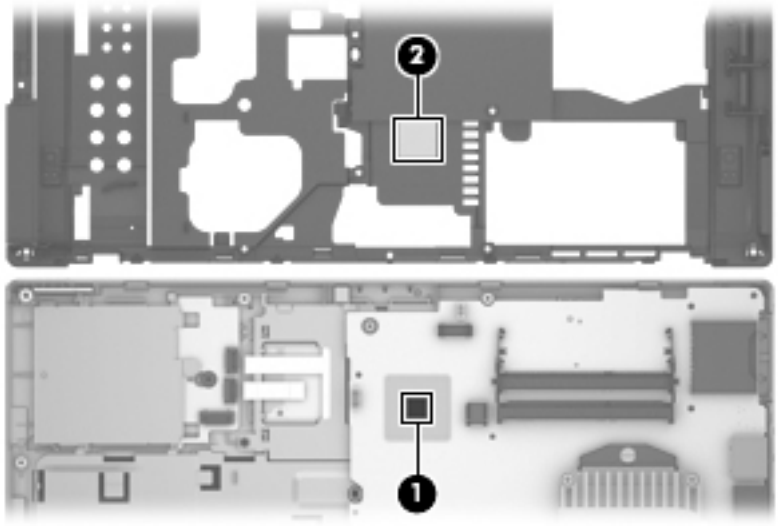
9. Remove the base enclosure **(2)** from the computer.



10. Remove the base enclosure.

NOTE: When replacing the base enclosure, thoroughly clean the thermal pad material from the surfaces of the PCH chip **(1)** and the base enclosure **(2)**. All base enclosure and system board spare part kits include replacement thermal pad material.



Reverse this procedure to install the base enclosure.

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System board

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

Description	Spare part number
For use only on computer models equipped with the Windows 8 Professional operating system in all countries and regions except the People's Republic of China and the Ukraine	685404-601
For use only on computer models equipped with the Windows 8 Standard operating system in all countries and regions except the People's Republic of China and the Ukraine	685404-501
For use only on computer models equipped with the Windows 7 operating system in all countries and regions except the People's Republic of China and the Ukraine	685404-001
For use only on computer models equipped with the Windows 7 operating system in the People's Republic of China and the Ukraine	692857-001

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 50), and then remove the following components:
   a. Service cover (see Service cover on page 52)
   b. Bluetooth module (see Bluetooth module on page 54)
   c. Speaker assembly (see Speaker assembly on page 56)
   d. Optical drive (see Optical drive on page 57)
   e. Hard drive (see Hard drive on page 58)
   f. Fan (see Fan on page 60)
   g. WWAN module (see WWAN module on page 61)
   h. Modem module (see Modem module on page 68)
   i. Keyboard (see Keyboard on page 69)
   j. Base enclosure (see Base enclosure on page 74)

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 51)
- Memory module (see Memory module on page 53)

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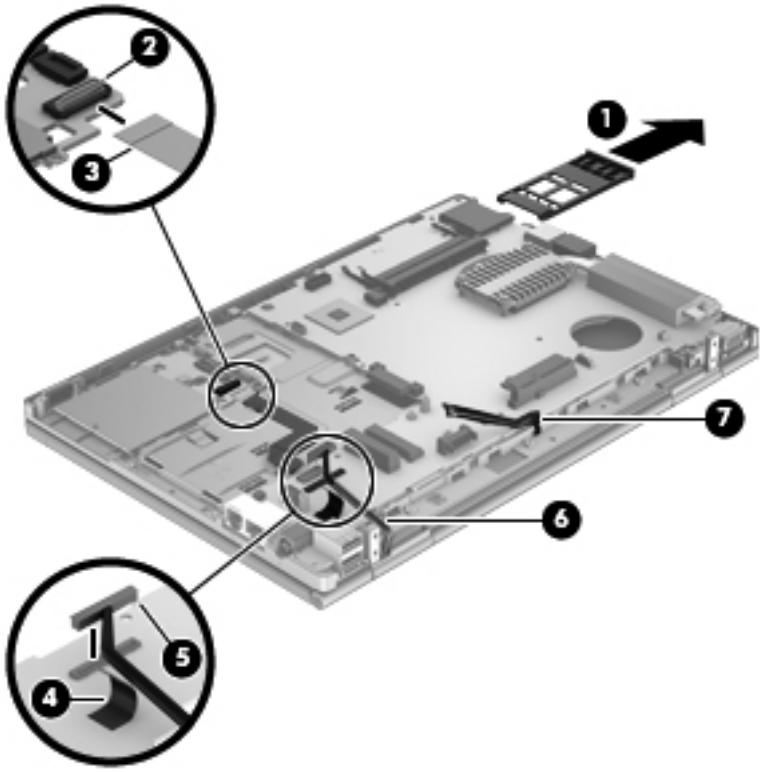
- WLAN module (see WLAN module on page 65)
- RTC battery (see RTC battery on page 72)
- Heat sink (see Heat sink on page 81)
- Processor (see Processor on page 84)

Remove the system board:

1. Remove the ExpressCard slot space saver **(1)**.
2. Release the ZIF connector **(2)** to which the Smart Card reader assembly cable is connected, and then disconnect the Smart Card reader assembly cable **(3)** from the system board.
3. Release the tape **(4)** that secures the display panel cable to the system board, and then disconnect the display panel cable **(5)** from the system board.
4. Release the display panel cable from the clip **(6)** built into the right display hinge.
5. Release the wireless antenna cables from the retention clip **(7)** attached to the system board.



6. Remove the Phillips PM2.0×3.6 screw **(1)** that secures the system board to the top cover.
7. Lift the left side of the system board **(2)** until it rests at an angle.

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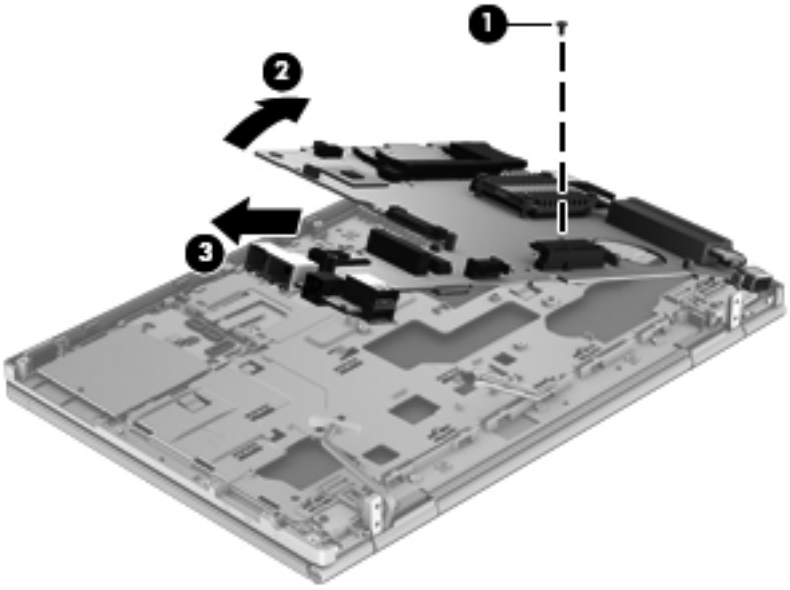
8. Remove the system board **(3)** by sliding it up and to the left at an angle.



9. Remove the system board.

Reverse this procedure to install the system board.

Heat sink

Description	Spare part number
Heat sink (includes replacement thermal material)	685508-001

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 50), and then remove the following components:
   a. Service cover (see Service cover on page 52)
   b. Bluetooth module (see Bluetooth module on page 54)
   c. Speaker assembly (see Speaker assembly on page 56)
   d. Optical drive (see Optical drive on page 57)
   e. Hard drive (see Hard drive on page 58)
   f. Fan (see Fan on page 60)

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g. WWAN module (see WWAN module on page 61)

h. Modem module (see Modem module on page 68)

i. Keyboard (see Keyboard on page 69)

j. Base enclosure (see Base enclosure on page 74)

k. System board (see System board on page 79)

Remove the heat sink:

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

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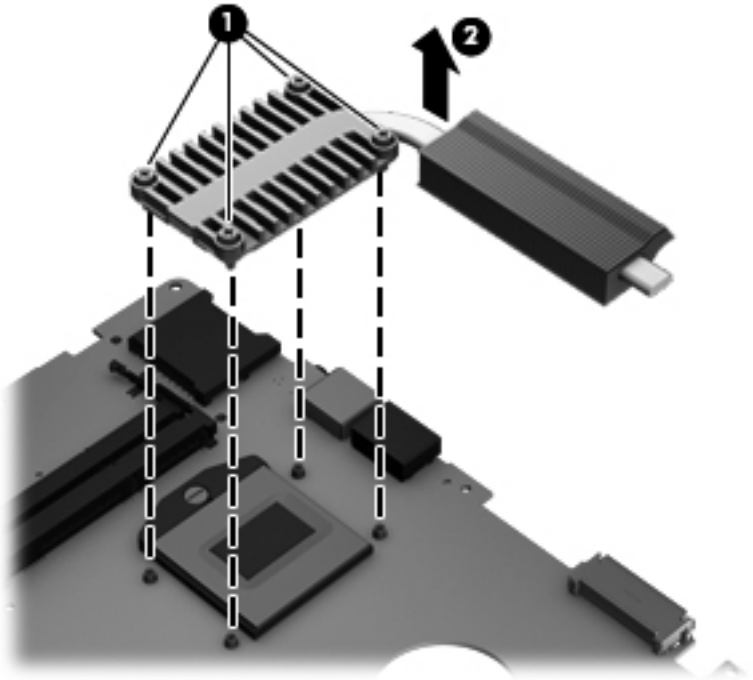
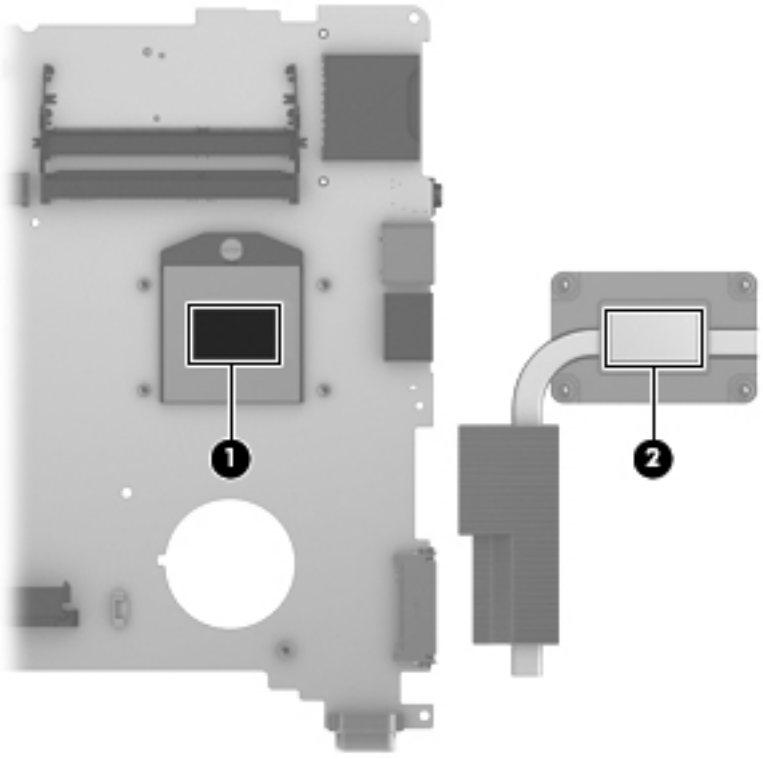
2. Remove the heat sink **(2)**.

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



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



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Reverse this procedure to install the heat sink.

Processor

Description	Spare part number
Intel Dual Core i7-3520M 2.90-GHz processor (SC turbo up to 3.60-GHz; 1600-MHz FSB, 4.0-MB L3 cache, 35 W)	681954-001
Intel Dual Core i5-3360M 2.80-GHz processor (SC turbo up to 3.50-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W)	681953-001
Intel Dual Core i5-3320M 2.60-GHz processor (SC turbo up to 3.30-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W)	681952-001
Intel Dual Core i5-3210M 2.50-GHz processor (SC turbo up to 3.10-GHz; 1600-MHz FSB, 3.0-MB L3 cache, 35 W)	680645-001
Intel Core i3-3110M 2.40-GHz processor (1600-MHz FSB, 3.0-MB L3 cache, 35 W)	682417-001

Before removing the processor, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 50), and then remove the following components:
   a. Service cover (see Service cover on page 52)
   b. Bluetooth module (see Bluetooth module on page 54)
   c. Speaker assembly (see Speaker assembly on page 56)
   d. Optical drive (see Optical drive on page 57)
   e. Hard drive (see Hard drive on page 58)
   f. Fan (see Fan on page 60)
   g. WWAN module (see WWAN module on page 61)
   h. Modem module (see Modem module on page 68)
   i. Keyboard (see Keyboard on page 69)
   j. Base enclosure (see Base enclosure on page 74)
   k. System board (see System board on page 79)
   l. Heat sink (see Heat sink on page 81)

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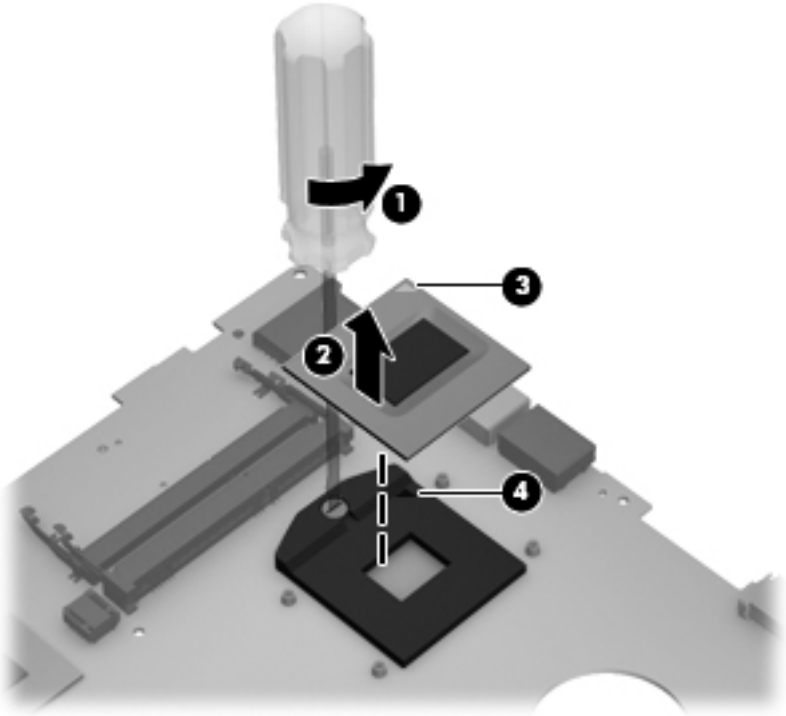
Remove the processor:

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.

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Fingerprint reader board

Description	Spare part number
Fingerprint reader board (includes bracket and cable)	685410-001

Before removing the fingerprint reader board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 50), and then remove the following components:
   a. Service cover (see Service cover on page 52)
   b. Bluetooth module (see Bluetooth module on page 54)
   c. Speaker assembly (see Speaker assembly on page 56)
   d. Optical drive (see Optical drive on page 57)
   e. Hard drive (see Hard drive on page 58)
   f. Fan (see Fan on page 60)
   g. WWAN module (see WWAN module on page 61)
   h. Modem module (see Modem module on page 68)
   i. Keyboard (see Keyboard on page 69)
   j. Base enclosure (see Base enclosure on page 74)

Remove the fingerprint reader board:

1. Remove the Phillips PM2.0×3.6 screw **(1)** that secures the fingerprint reader board bracket to the top cover.
2. Remove the fingerprint reader board bracket **(2)**.

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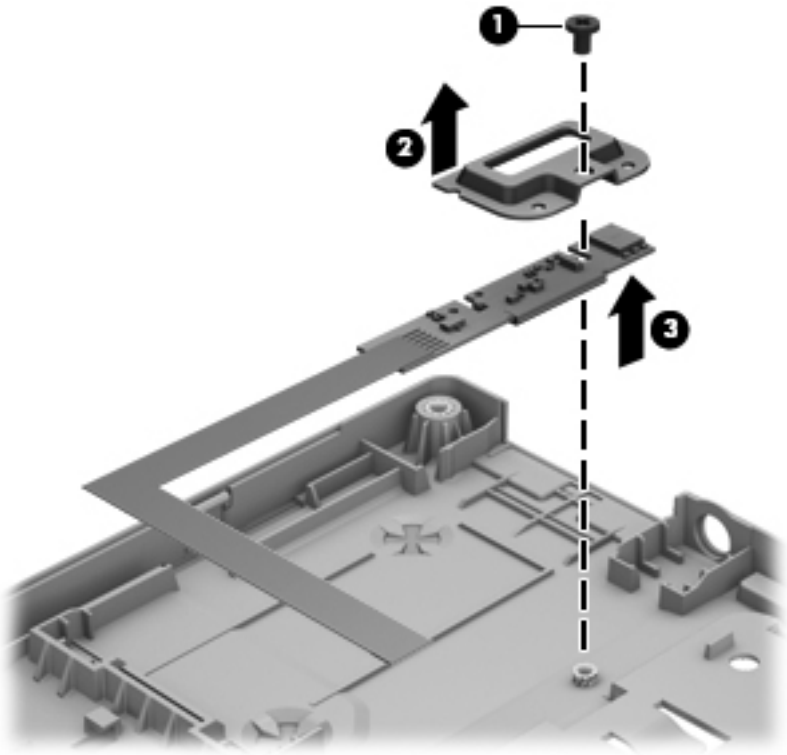
3. Remove the fingerprint reader board and cable **(3)**.



Reverse this procedure to install the fingerprint reader board.

Top cover

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

Description	Spare part number
For use on computer models equipped with a fingerprint reader	685407-001
For use on computer models not equipped with a fingerprint reader	685406-001

Before removing the top cover, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 50), and then remove the following components:
   a. Service cover (see Service cover on page 52)
   b. Bluetooth module (see Bluetooth module on page 54)

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c. Speaker assembly (see Speaker assembly on page 56)

d. Optical drive (see Optical drive on page 57)

e. Hard drive (see Hard drive on page 58)

f. Fan (see Fan on page 60)

g. WWAN module (see WWAN module on page 61)

h. Modem module (see Modem module on page 68)

i. Keyboard (see Keyboard on page 69)

j. Base enclosure (see Base enclosure on page 74)

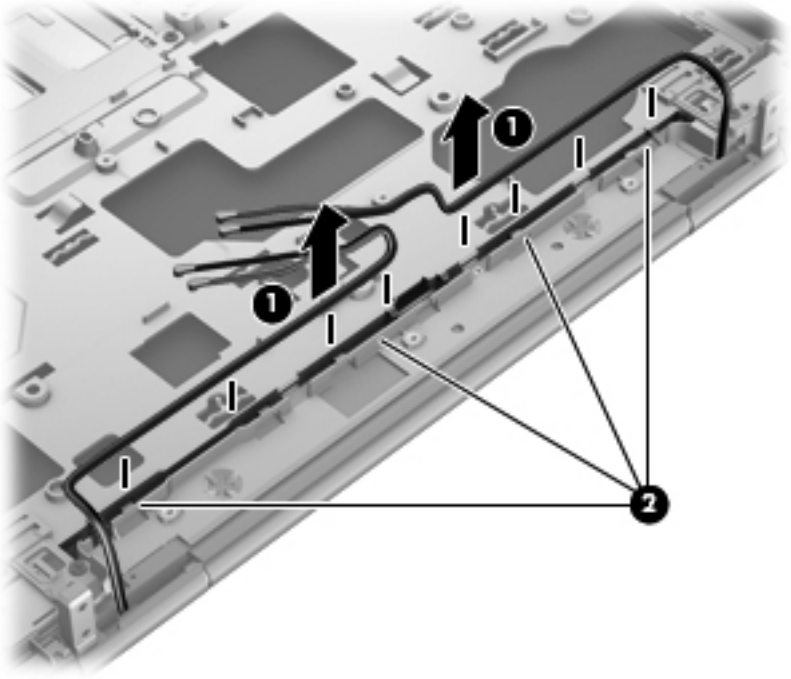
k. System board (see System board on page 79)

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

- Fingerprint reader board (see Fingerprint reader board on page 86)
- Function button board (see Function button board on page 89)
- Power button board (see Power button board on page 91)
- Smart Card reader assembly (see Smart Card reader assembly on page 92)

Remove the top cover:

1. Release the wireless antenna cables **(1)** from the routing channels **(2)** built into the top cover.



2. Remove the two Phillips PM2.0×7.6 screws **(1)** that secure the display assembly to the top cover.

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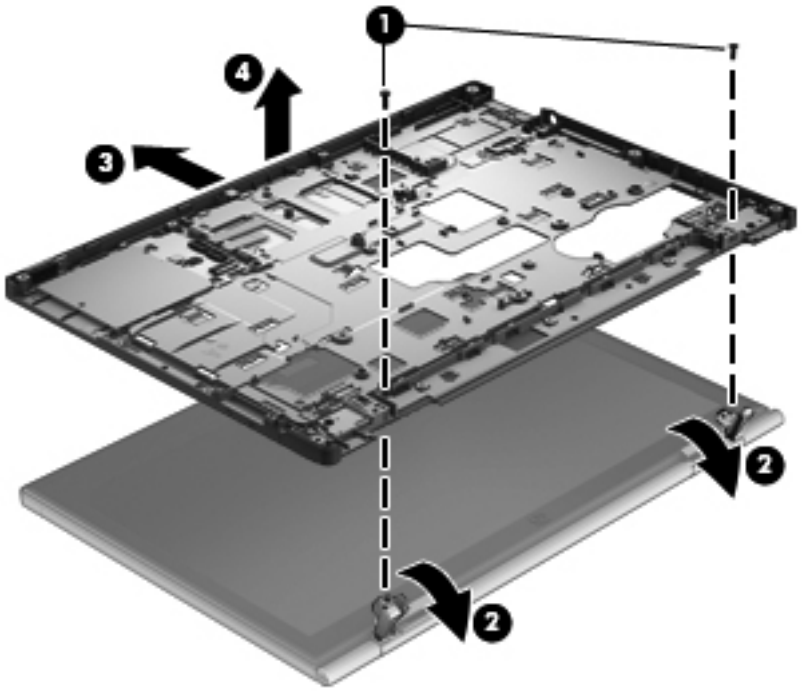
3. Swing the display hinges **(2)** up and back until the top cover is free for removal.
4. Slide the top cover forward **(3)**.
5. Remove the top cover **(4)**.



Reverse this procedure to install the top cover.

Function button board

Description	Spare part number
Function button board (includes cable)	685409-001

Before removing the function button board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 50), and then remove the following components:
   a. Service cover (see Service cover on page 52)
   b. Bluetooth module (see Bluetooth module on page 54)
   c. Speaker assembly (see Speaker assembly on page 56)

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d. Optical drive (see Optical drive on page 57)

e. Hard drive (see Hard drive on page 58)

f. Fan (see Fan on page 60)

g. WWAN module (see WWAN module on page 61)

h. Modem module (see Modem module on page 68)

i. Keyboard (see Keyboard on page 69)

j. Base enclosure (see Base enclosure on page 74)

k. System board (see System board on page 79)

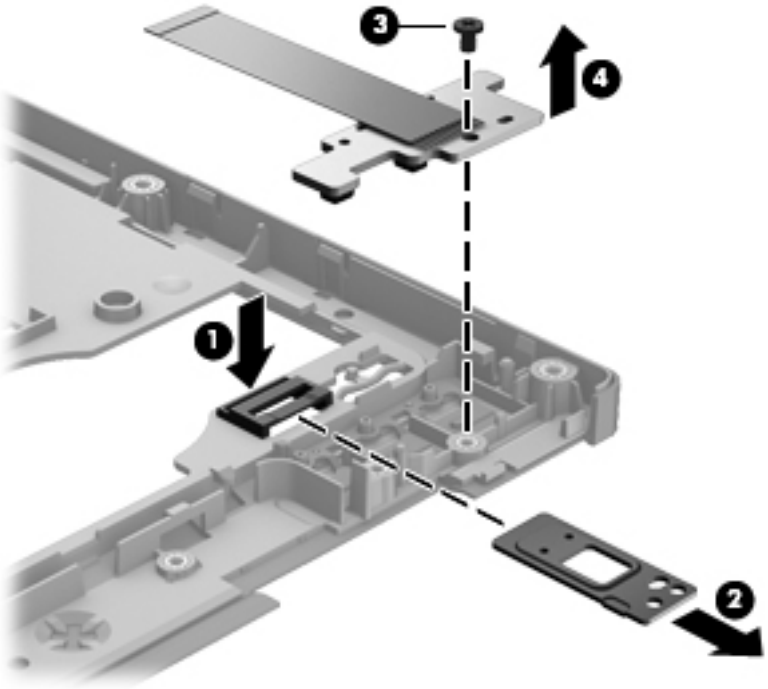
l. Top cover (see Top cover on page 87)

Remove the function button board:

1. Position the top cover with the top edge toward you.
2. Press down on the bottom edge **(1)** of the retention bracket, and then slide the top edge of the bracket **(2)** out of the top cover.

NOTE: The retention bracket is included in the Bracket Kit, spare part number 651381-001.

3. Remove the Phillips PM2.0×3.6 screw **(3)** that secures the function button board to the top cover.
4. Remove the function button board **(4)** and cable.



Reverse this procedure to install the function button board.

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Power button board

Description	Spare part number
Power button board (includes cable)	685408-001

Before removing the power button board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 50), and then remove the following components:
   a. Service cover (see Service cover on page 52)
   b. Bluetooth module (see Bluetooth module on page 54)
   c. Speaker assembly (see Speaker assembly on page 56)
   d. Optical drive (see Optical drive on page 57)
   e. Hard drive (see Hard drive on page 58)
   f. Fan (see Fan on page 60)
   g. WWAN module (see WWAN module on page 61)
   h. Modem module (see Modem module on page 68)
   i. Keyboard (see Keyboard on page 69)
   j. Base enclosure (see Base enclosure on page 74)
   k. System board (see System board on page 79)
   l. Top cover (see Top cover on page 87)

Remove the power button board:

1. Position the top cover with the top edge toward you.
2. Release the tape **(1)** the secures the power button board cable to the top cover.
3. Remove the Phillips PM2.0×3.6 screw **(2)** that secures the power button board to the top cover.
4. Lift the left side of the power button board **(3)** until it rests at an angle.

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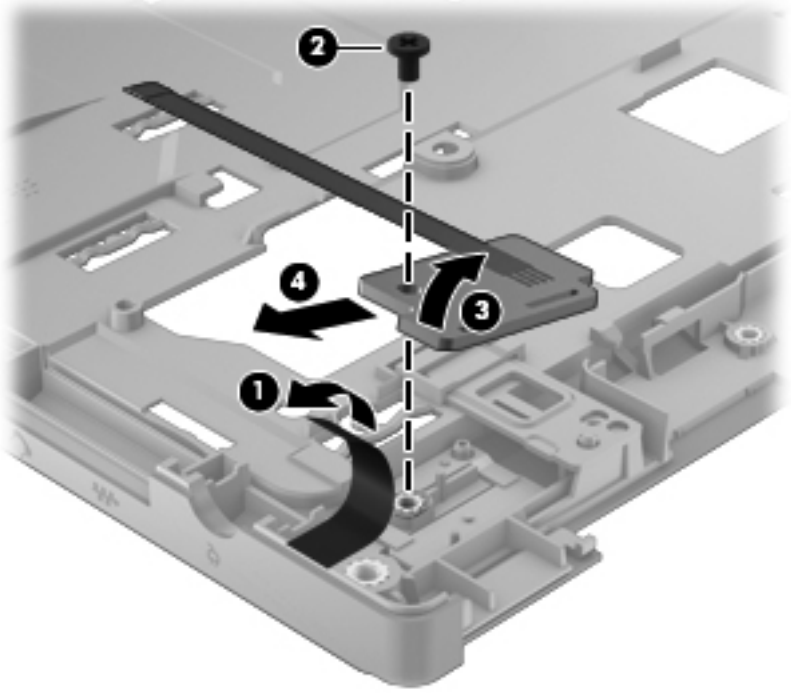
5. Remove the power button board **(4)** and cable by sliding it up and to the left at an angle.



Reverse this procedure to install the power button board.

Smart Card reader assembly

Description	Spare part number
Smart Card reader assembly (includes Smart Card reader cable and function LED board cable)	685503-001

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

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 50), and then remove the following components:
   a. Service cover (see Service cover on page 52)
   b. Bluetooth module (see Bluetooth module on page 54)
   c. Speaker assembly (see Speaker assembly on page 56)
   d. Optical drive (see Optical drive on page 57)
   e. Hard drive (see Hard drive on page 58)

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f. Fan (see Fan on page 60)

g. WWAN module (see WWAN module on page 61)

h. Modem module (see Modem module on page 68)

i. Keyboard (see Keyboard on page 69)

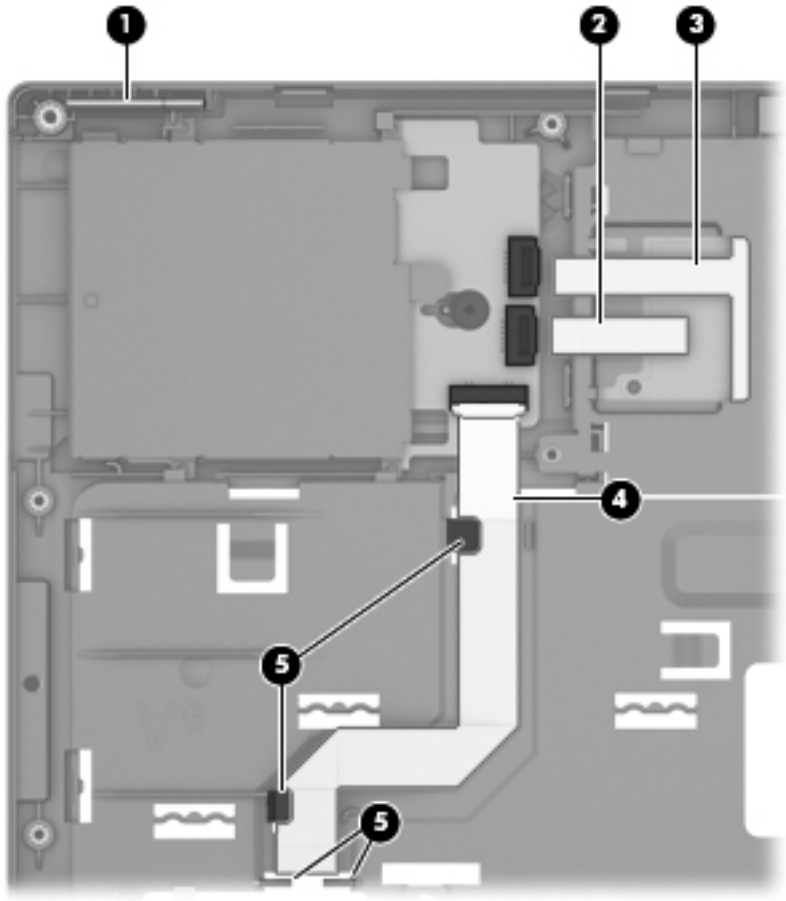
j. Base enclosure (see Base enclosure on page 74)

k. System board (see System board on page 79)

l. Top cover (see Top cover on page 87)

Remove the Smart Card reader assembly:

1. Release the function LED board **(1)** from the clips built into the top cover.
2. Release the ZIF connectors to which the TouchPad board cables are connected, and then disconnect the TouchPad cables **(2)** and **(3)** from the Smart Card reader assembly.
3. Release the Smart Card reader assembly cable **(4)** from the clips **(5)** built into the top cover.



4. Remove the Phillips PM2.0×2.5 broad head screw **(1)** that secures the Smart Card reader assembly to the top cover.

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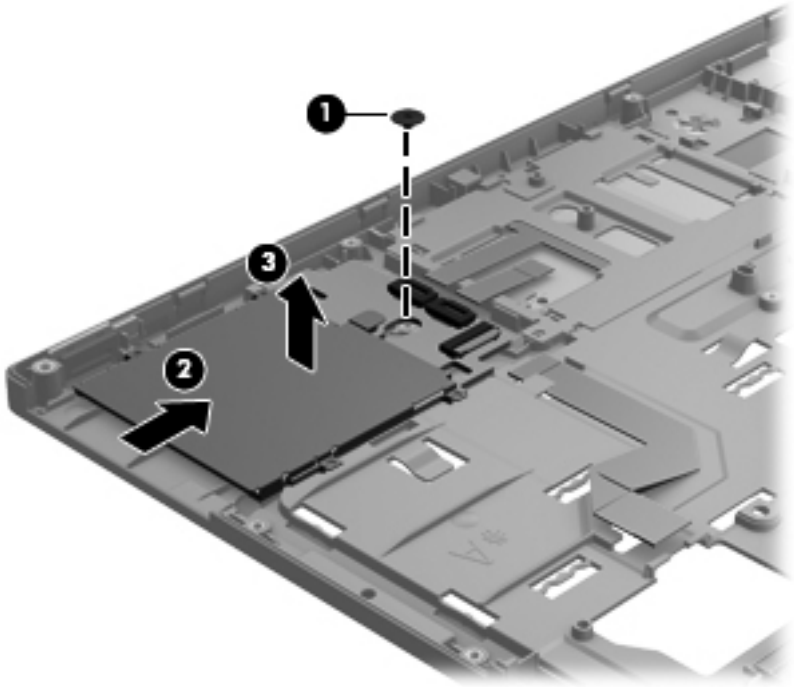
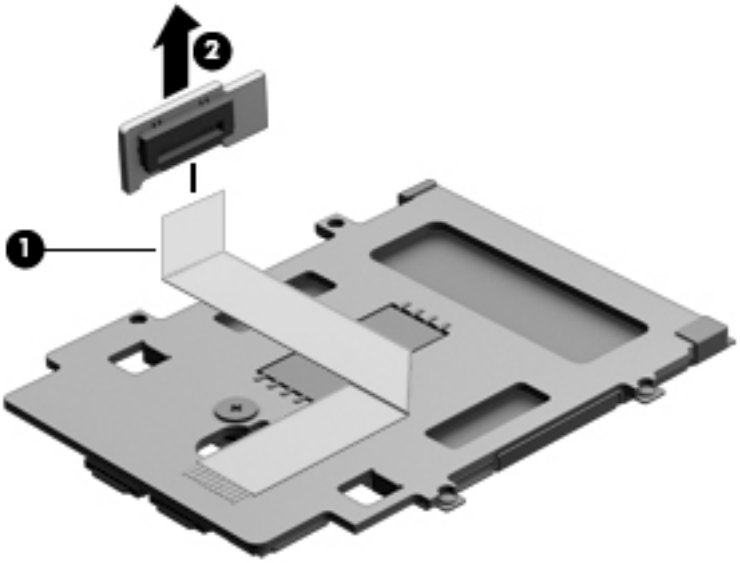
5. Slide the Smart Card reader assembly **(2)** to the right to release it from the clips built into the top cover, and then remove the Smart Card reader assembly **(3)**.



6. If it is necessary to replace the function LED board, release the ZIF connector to which the function LED board cable is connected, and then disconnect the function LED board cable **(1)** from the function LED board.

7. Remove the function LED board **(2)**.

   The function LED board is available using spare part number 685509-001.



Reverse this procedure to install the Smart Card reader assembly and function LED board.

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Display assembly subcomponents

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

To access the display assembly subcomponents, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 50), and then remove the following components:
   a. Service cover (see Service cover on page 52)
   b. Bluetooth module (see Bluetooth module on page 54)
   c. Speaker assembly (see Speaker assembly on page 56)
   d. Optical drive (see Optical drive on page 57)
   e. Hard drive (see Hard drive on page 58)
   f. Fan (see Fan on page 60)
   g. WWAN module (see WWAN module on page 61)
   h. Modem module (see Modem module on page 68)
   i. Keyboard (see Keyboard on page 69)
   j. Base enclosure (see Base enclosure on page 74)
   k. System board (see System board on page 79)
   l. Top cover (see Top cover on page 87)
1. If it is necessary to replace the display bezel or any of the display assembly subcomponents:
   a. Flex the inside edges of the bottom edge **(1)**, the left and right sides **(2)**, and the top edge **(3)** of the display bezel until the bezel disengages from the display enclosure.

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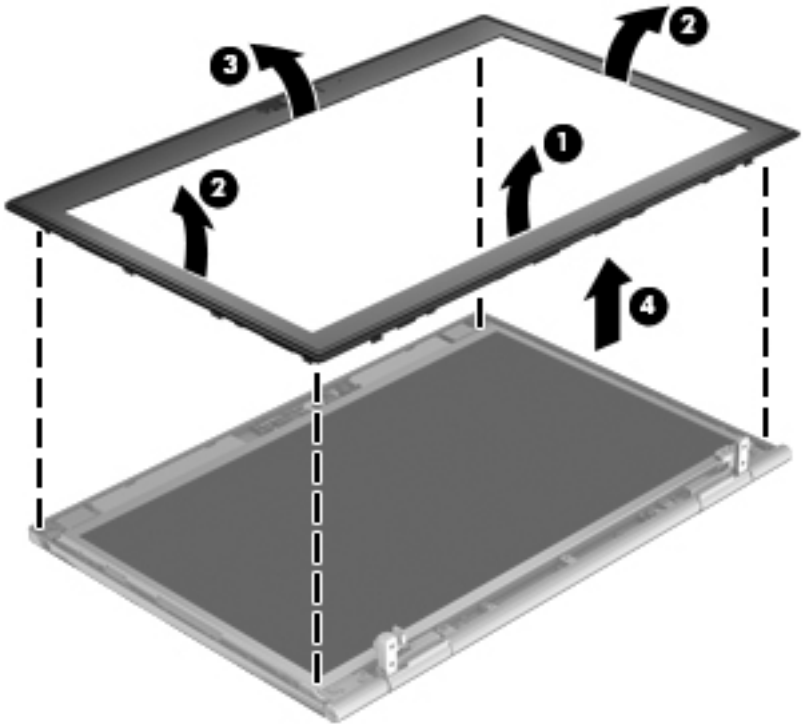
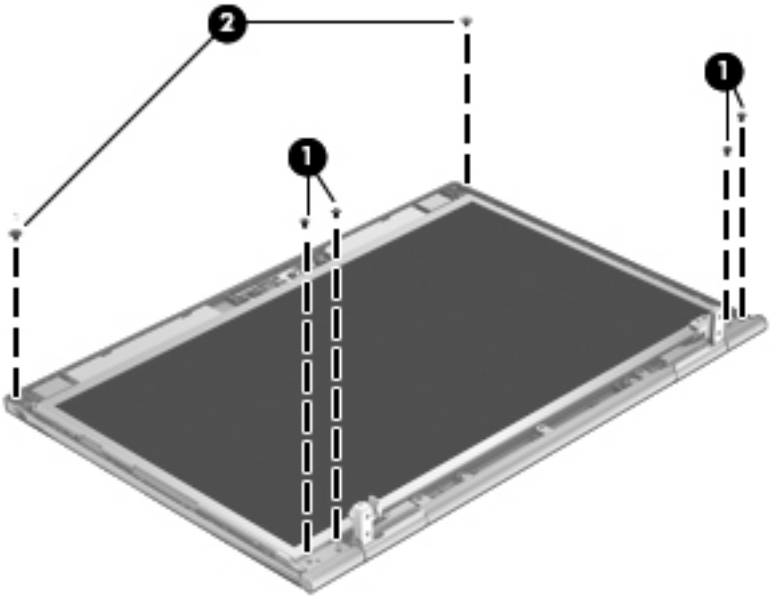
b. Remove the display bezel **(4)**.

The display bezel is available using spare part numbers 685411-001 (for use on computer models equipped with a webcam) and 685412-001 (for use on computer models not equipped with a webcam).



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

a. Remove the four Phillips PM2.5×5.0 screws **(1)** and the two Phillips PM2.0×2.5 screws **(2)** that secure the display panel to the display enclosure.



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

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

d. Detach the display panel cable **(2)** from the surface of display panel. (The display panel cable is attached to the display panel with double-side adhesive.)

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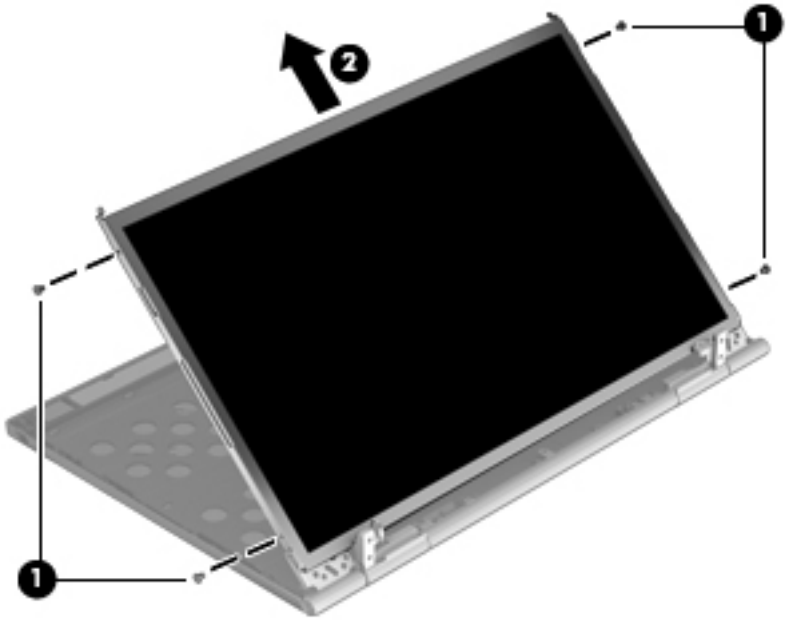
e. Disconnect the display panel cable **(3)** from the display panel.

f. Remove the four Phillips PM2.0×3.6 screws **(1)** that secure the display panel to the display hinge brackets.

g. Remove the display panel **(2)**.

The display panel is available using spare part number 685504-001.



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

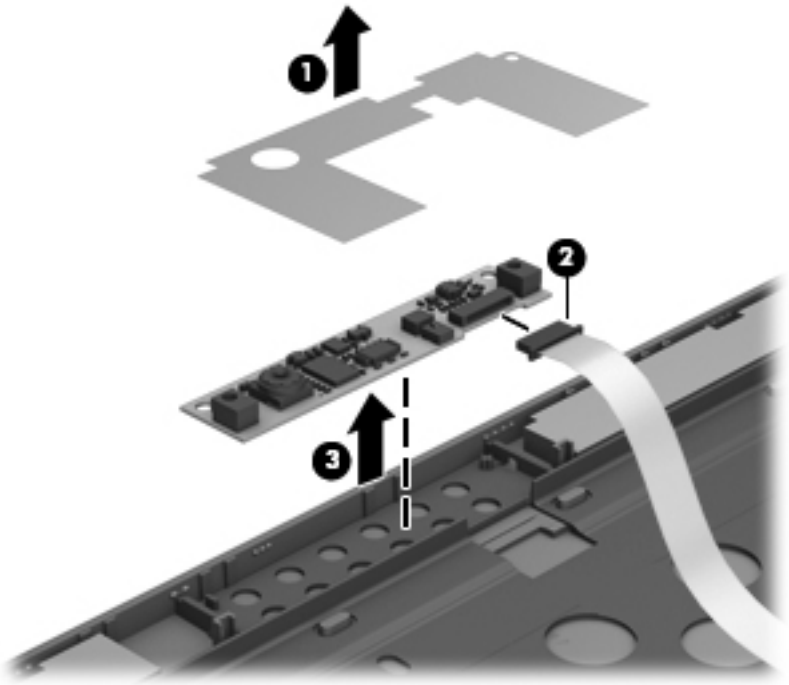
CAUTION: Handle the webcam/microphone module and microphone module with caution. These modules have a thin profile and are susceptible to damage when not handled carefully.

   a. Remove the webcam/microphone module shield **(1)** from the webcam/microphone module and display enclosure. (The webcam/microphone module shield is attached to the webcam/microphone module and 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 685413-001. The microphone module is available using spare part number 694675-001.



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

   a. Remove the display hinge caps **(1)** from the display hinges.

   b. Remove the two Phillips PM2.0×3.6 screws **(2)** that secure the display hinge covers to the display hinges.

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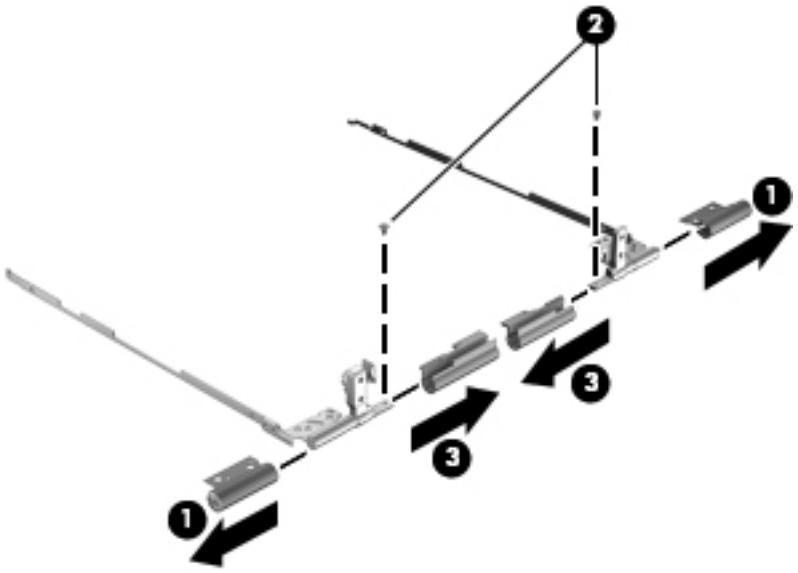
c. Remove the display hinge covers **(3)** from the display hinges.

The display hinges are included in the Display Hinge Kit, spare part number 685414-001.

The display hinge covers and display hinge caps are included in the Display Hinge Cover Kit, spare part number 685405-001.



5. If it is necessary to replace the display clutch cover:

a. Remove the three Phillips PM2.0×3.6 screws **(1)** that secure the display clutch cover to the display enclosure.

b. Release the display clutch cover **(2)** from the display enclosure.

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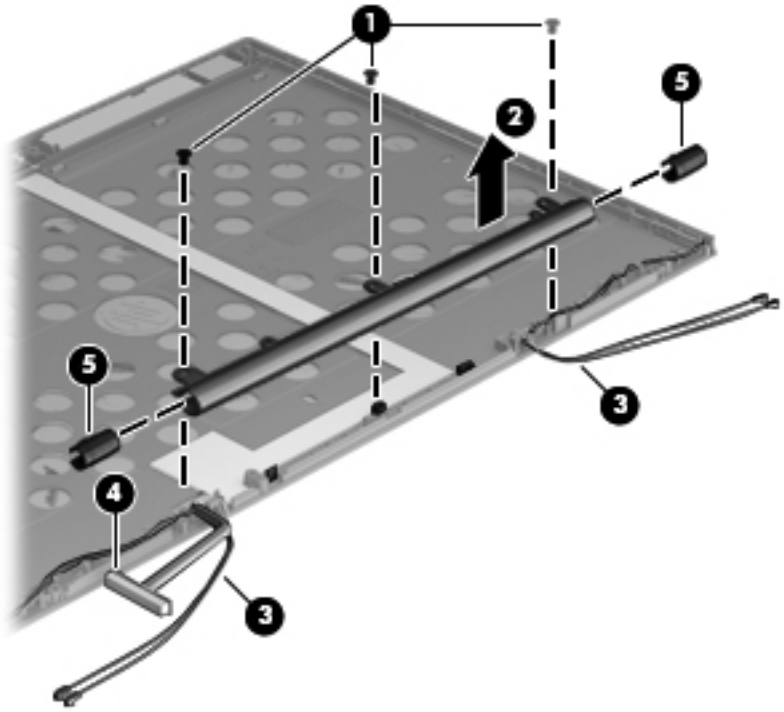
c. Release the wireless antenna cables **(3)** and display panel cable **(4)** from the display clutch cover, making note of the locations of the display cable guides **(5)** at the left and right ends of the display clutch cover.



d. Remove the display clutch cover.

The display clutch cover is included in the Display Hinge Cover Kit, spare part number 685405-001.

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

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

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

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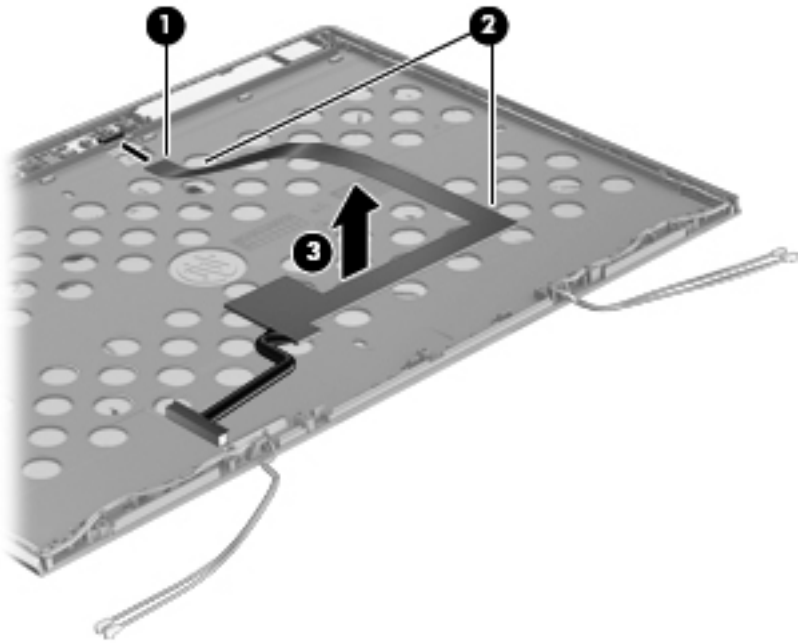
c. Remove the display panel cable **(3)**.

The display panel cable is included in the Display Cable Kit, spare part number 685417-001.



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

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

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

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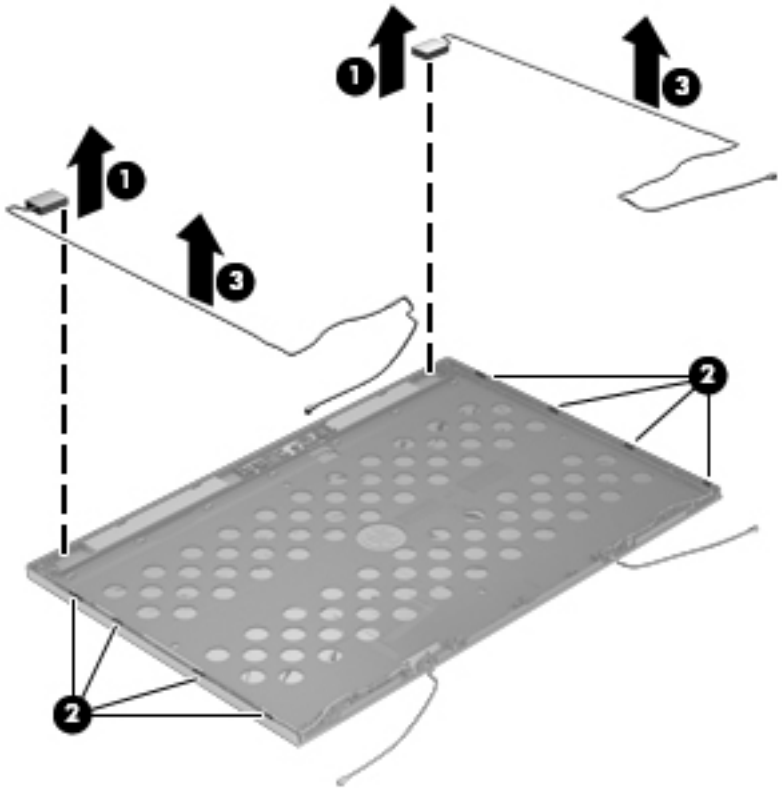
c. Remove the WLAN antenna cables and transceivers **(3)**. The WLAN antenna cables and transceivers are included in the Antenna Kit, spare part number 685506-001.



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

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

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

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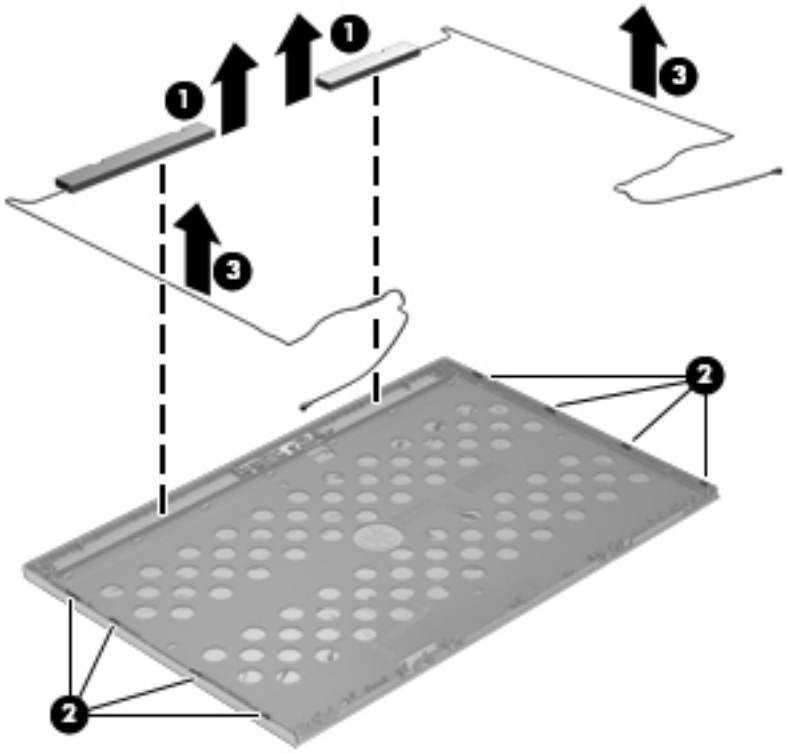
c. Remove the WWAN antenna cables and transceivers **(3)**. The WWAN antenna cables and transceivers are included in the Antenna Kit, spare part number 685506-001.



Reverse this procedure to reassemble and install the display assembly.

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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.

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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.

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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.

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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.

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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.

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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.

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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.

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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.

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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.

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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 –

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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

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

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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.

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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.
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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.

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6 Specifications

Computer specifications

	Metric	U.S.
Dimensions		
Width	**30.52 cm**	12.02 in
Depth	**20.90 cm**	8.23 in
Height (front to rear)	**2.74 to 3.28 cm**	1.08 to 1.29 in
Weight (equipped with lightest display assembly, one memory module, solid-state drive, webcam, 3-cell battery, and WLAN module)	**1.63 kg**	3.59 lbs
Input power		
Operating voltage and current	18.5 V dc @ 3.5A or 19.5 V dc @ 3.33A – 65W 19 V dc @ 4.74A or 19.5 V dc @ 4.62A – 90W	
Temperature		
Operating	**5°C to 35°C**	41°F to 95°F
Nonoperating	**-20°C to 60°C**	-4°F to 140°F
Relative humidity (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	**-15 m to 3,048 m**	-50 ft to 10,000 ft
Nonoperating	**-15 m to 12,192 m**	-50 ft to 40,000 ft

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

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12.5-inch SGA display specifications

	Metric	U.S.
Dimensions		
Height	**15.70 cm**	6.18 in
Width	**27.80 cm**	10.95 in
Diagonal	**31.80 cm**	12.52 in
Number of colors	up to 16.8 million	
Contrast ratio	200:1 (typical)	
Brightness	200 nits (typical)	
Pixel resolution		
Pitch	**0.197 × 0.197 mm**	
Format	1366 × 768	
Configuration	RGB vertical stripe	
Backlight	LED	
Character display	80 × 25	
Total power consumption	2.0 W	
Viewing angle	±65° horizontal, ±50° vertical (typical)	

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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.			

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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.

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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:

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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.

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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**.

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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.

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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.

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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.

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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**.

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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.

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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.

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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.

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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.

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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.

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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.

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8 Power cord set requirements

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

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

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

Requirements for all countries

The following requirements are applicable to all countries and regions:

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

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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.

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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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Index

A

AC adapter, spare part numbers 34, 38
ambient light sensor 10
antenna
  locations 9
  removal 102, 103
  spare part number 30, 38, 103, 104
Antenna Kit, spare part number 30, 38, 104
audio, product description 2
audio-in jack 18
audio-out jack 18

B

base enclosure
  removal 74
  spare part number 27, 37, 74
battery
  removal 50
  spare part numbers 27, 36, 50
battery bay 19
battery light 15
battery release latch 19
Bluetooth module
  removal 54
  spare part number 28, 36, 54
Bluetooth module cable, illustrated 31
Bluetooth module compartment, location 20
bottom components 19
Bracket Kit, spare part number 26, 36
button components 10
buttons
  keyboard light 10
  pointing stick 14
  power 11
  TouchPad 14
  TouchPad on/off 14
  volume mute 11
  web browswer 11
  wireless 11

C

Cable Kit
  components 31
  spare part number 31, 36
cables, service considerations 43
caps lock light 13
carrying case, spare part numbers 34, 35
chipset, product description 1
components
  bottom 19
  buttons 10
  display 9
  fingerprint reader 10
  front 15
  keys 12
  left-side 16
  lights 13
  rear 17
  right-side 18
  TouchPad 14
computer feet
  location 49
  spare part number 49
computer major components 23
computer part number 48
computer specifications 118
connectors, service considerations 43

D

display
  components 9
  specifications 119
  subcomponents 29
display bezel
  removal 95
  spare part numbers 29, 37, 96
Display Cable Kit, spare part number 30, 38, 102
display clutch cover
  removal 100
  spare part number 37, 101
display enclosure, spare part number 30, 38
display hinge
  removal 99
  spare part number 30, 38, 100
display hinge cap
  removal 99
  spare part number 37, 100
display hinge cover
  removal 99
  spare part number 37, 100
Display Hinge Cover Kit, spare part number 30, 37, 100
Display Hinge Kit, spare part number 30, 38, 100
display panel
  product description 1
  removal 96
  spare part number 30, 38, 98
display panel cable
  removal 101
  spare part number 30, 38, 102

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Display Panel Support Kit, spare part number 30, 38
Display Screw Kit, spare part number 30, 38
DisplayPort 18
docking connector 18
docking station, spare part number 34, 37
drive light 15
drives, preventing damage 44
DVD-ROM Drive
precautions 44
removal 57
spare part number 27, 32, 38, 57
DVD±RW Double-Layer with SuperMulti Drive
precautions 44
removal 57
spare part number 27, 32, 38, 57

E
electrostatic discharge 44
equipment guidelines 47
eSATA/USB 2.0 combo port 18
esc key 12
Ethernet, product description 3
ExpressCard slot space saver, illustrated 33
ExpressCard slot, location 18
external monitor port 17

F
fan
removal 60
spare part number 28, 36, 60
feet
location 49
spare part number 49
fingerprint reader 11
fingerprint reader board
removal 86
spare part number 26, 37, 86
fingerprint reader component 10
fn key 12
front component 15
function button board
removal 89
spare part number 26, 37, 89
function keys 12
function LED board
removal 94
spare part number 26, 38, 94

G
graphics, product description 1
grounding guidelines 44
guidelines
equipment 47
grounding 44
packaging 46
transporting 46
workstation 46

H
hard drive
precautions 44
product description 2
removal 58
spare part numbers 28, 32, 36, 37, 58
specifications 120
hard drive bracket
illustrated 32
removal 59
hard drive connector adapter
illustrated 32
removal 59
Hard Drive Hardware Kit
contents 32
spare part number 28, 32, 36, 58
headphone jack 18
heat sink
removal 81
spare part number 27, 38, 81

J
jacks
audio-in 18
audio-out 18
headphone 18
microphone 18
modem 16
network 16
RJ-11 16
RJ-45 16

K
key components 12
keyboard
product description 4
remval 69
spare part numbers 24, 38, 39, 40, 41, 42, 69
keyboard light 10
keyboard light button 10
keys
esc 12
fn 12
function 12
Windows applications key 12
Windows logo key 12

L
Latch Kit, spare part number 27, 38
left-side components 16
light components 13
lights
battery 15
caps lock 13
drive 15
keyboard 10
mute 13
num lock 13
optical drive 16
power 13, 15
TouchPad 13
web browser 13
webcam 9
wireless 13, 15
lock, spare part numbers 34, 35

M
mass storage device
illustrated 32
precautions 44
spare part numbers 32
Media Card Reader, location 18
memory module
product description 1
removal 53
spare part numbers 36, 53
microphone
location 9
product description 2
microphone jack 18

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microphone module
removal 99
spare part number 30, 38, 99
model description 49
model name 1
modem jack 16
modem module
removal 68
spare part number 27, 36, 68
modem module cable, illustrated 31
monitor port 17
mouse, spare part numbers 34, 35
mute light 13

N
network jack 16
num lock light, location 13
numeric keypad 12

O
operating system, product description 5
optical drive
location 16
product description 2
removal 57
spare part numbers 27, 32, 38, 57
optical drive bay space saver, illustrated 33
optical drive light 16

P
packaging guidelines 46
plastic parts, service considerations 43
Plastics Kit
components 33
spare part number 33, 36
pointing device, product description 4
pointing stick 14
pointing stick button 14
ports
DisplayPort 18
eSATA/USB 2.0 combo 18
external monitor 17
monitor 17
product description 4
USB 17
USB 3.0 17
power button 11
power button board
removal 91
spare part number 26, 37, 91
power connector 16
power cord
set requirements 135
spare part numbers 34, 35
power light 13, 15
power requirements, product description 4
processor
product description 1
removal 84
spare part numbers 26, 37, 84
product description
audio 2
chipset 1
display panel 1
Ethernet 3
external media cards 4
graphics 1
hard drive 2
keyboard 4
memory module 1
microphone 2
operating system 5
optical drive 2
pointing device 4
ports 4
power requirements 4
processors 1
product name 1
security 5
serviceability 8
solid-state drive 2
video 2
wireless 3
product name 1, 48
product number 48

R
rear components 17
removal/replacement
preliminaries 43
procedures 48
right-side components 18
RJ-11 jack 16
RJ-11 jack plug, illustrated 33
RJ-45 jack 16
RTC battery
removal 72
spare part number 26, 36, 72
Rubber Kit, spare part number 27, 36

S
Screw Kit, spare part number 35, 38
security cable slot 18
security, product description 5
serial number 48
service considerations
cables 43
connectors 43
plastic parts 43
service cover
location 19
removal 52
spare part numbers 28, 37, 42, 52
service cover release latch 19
service tag 22, 48
serviceability, product description 8
SIM slot, location 19
SIM, removal 51
Smart Card reader assembly
removal 92
spare part number 26, 38, 92
Smart Card reader, location 16
solid-state drive
precautions 44
product description 2
spare part numbers 28, 32, 40
speaker assembly
removal 56
spare part number 27, 36, 56
speaker, location 20
specifications
computer 118
display 119
hard drive 120

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system board
removal 79
spare part numbers 26, 37, 38, 79

T

tools required 43
top cover
removal 87
spare part numbers 26, 37, 87
TouchPad button 14
TouchPad components 14
TouchPad light 13
TouchPad on/off button 14
TouchPad zone 14
transporting guidelines 46

U

USB 3.0 port 17
USB port 17

V

vents 15, 18, 20
video, product description 2
volume mute button 11

W

warranty period 49
web browser button 11
web browser light 13
webcam 10
webcam light 9
webcam/microphone module
removal 99
spare part number 30, 37, 99
Windows applications key 12
Windows logo key 12
wireless antenna
locations 9
removal 102, 103
spare part number 30, 38, 103, 104
Wireless Antenna Kit, spare part number 103
wireless button 11
wireless light 13, 15
wireless, product description 3
WLAN module
removal 65
spare part numbers 27, 36, 37, 65
workstation guidelines 46
WWAN module
removal 61
spare part numbers 27, 36, 42, 61

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