HP EliteBook 2560p Notebook PC

Maintenance and Service Guide

Second Edition: August 2011

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Safety warning notice

⚠ **WARNING!**   To reduce the possibility of heat-related injuries or of overheating the computer, do not place the computer directly on your lap or obstruct the computer air vents. Use the computer 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 computer and the AC adapter comply with the user-accessible surface temperature limits defined by the International Standard for Safety of Information Technology Equipment (IEC 60950).

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1 Product description

Category	Description
Product Name	HP EliteBook 2560p Notebook PC
Processors	Intel® Core™ i7 processor (supports Intel Turbo Boost Technology):
	● Intel Core i7-2620M 2.70 GHz processor, (turbo up to 3.40 GHz), 4 MB L3 cache, 4 threads, standard-voltage (35-W)
	Intel® Core™ i5 processors (support Intel Turbo Boost Technology):
	● Intel Core i5-2540M 2.60 GHz processor, (turbo up to 3.30 GHz), 3 MB L3 cache, 4 threads, standard-voltage (35-W)
	● Intel Core i5-2520M 2.50 GHz processor, (turbo up to 3.20 GHz), 3 MB L3 cache, 4 threads, standard-voltage (35-W)
	● Intel Core i5-2430M, 2.40GHz, (turbo up to 2.90GHz) 3MB L3 Cache, 4 threads 35W
	● Intel Core i5-2410M 2.30 GHz processor, (turbo up to 2.90 GHz), 3 MB L3 cache, 4 threads, standard-voltage (35-W)
Chipset	Mobile Intel QM67 chipset
Graphics	Intel® HD Graphics 3000
	Supports two simultaneous displays
Panel	**31.75 cm** (12.50 in) high definition (HD), light-emitting diode (LED), AntiGlare (AG) SVA
	Supports privacy filter
	Supports 16:9 resolution
	Supports 1366x768 resolution
Memory	2 customer-accessible/upgradable memory module slots—DDR3 PC3-10600 (1333MHz) SODIMM
	Supports up to 16 GB of system RAM in the following configurations:
	● 2048 MB total system memory (2048×1)
	● 3072 MB total system memory (2048+1024)
	● 4096 MB total system memory (4096×1)
	● 4096-MB total system memory (2048 × 2)
	● 6144 MB total system memory (4096+2048)
	● 8192 MB total system memory (8192×1)
	● 8192 MB total system memory (4096×2)
	● 12288MB total system memory (8192MB + 4096MB)
	● 16384MB total system memory (8192MB x 2)

Category	Description
Internal storage	Supports the following **6.35 cm** (2.5 in) storage devices:
	● 750 GB hard drive (7200-rpm, SATA)
	● 500 GB hard drive (7200-rpm, SATA)
	● 320 GB hard drive (7200-rpm, SATA)
	● 320 GB Self-Encrypting Drive (SED) hard drive (7200-rpm, SATA)
	● 250 GB hard drive (7200-rpm, SATA)
	– or –
	● 160 GB solid-state drive
	● 128 GB solid-state drive
Optical drives	Customer-accessible
	Serial ATA 9.5 mm tray load
	Supports the following drives:
	● DVD±RW and CD-RW SuperMulti Double-Layer Drive
	● DVD-ROM Drive
Audio and video	Integrated dual-array microphones
	2 stereo speakers
	Integrated 720p HD webcam
	Supports "no webcam" option
Modem	56k v.92 MDC data/fax modem
	Supports "no modem" option
	Modem cable not included
Ethernet	Intel 82579-LM 10/100/1000 GB network interface card (NIC) with iAMT 7.0 support
	S3/S4/S5 wake on LAN
	NIC power-down technology
	Ethernet cable not included
Wireless	**Integrated wireless local area network (WLAN) options by way of wireless module**
	Three WLAN antennas
	Support for "no WLAN" option
	Support for the following WLAN formats:
	● Broadcom 43224AGN 802.11a/b/g/n WLAN module
	● Broadcom 4313AGN 802.11a/b/g/n WLAN module
	● Intel Centrino Advanced N 6205, 2x2 a/b/g/n WiFi Adapter
	● Intel Centrino Ultimate-N 6300, 3x3 a/g/n WiFi Adapter
	Integrated wireless wide area network (WWAN) options by way of wireless module
	Two WWAN antennas built into display assembly (world-wide, 5-band)

Category	Description
	Support for "no WWAN" option
	Security provided by subscriber identify module (SIM) located inside battery bay
	Support for the following WWAN formats:
	● HP un2430 EV-DO/HSPA Mobile Broadband Module
	● HP hs2340 HSPA+ Mobile Broadband Module
	Integrated personal area network (PAN) options by way of Bluetooth® module:
	HP Integrated Module with Bluetooth 2.1 Wireless Technology
	Support for "no WPAN" option
External media card	One ExpressCard/34 slot, supporting USB and PCIe ExpressCard modules
	One Digital Media Reader, supporting MultiMediaCard (MMC) and Secure Digital (SD) Memory Card
Ports	● eSATA/USB 2.0 Combo Port
	● USB 2.0 Port
	● USB 2.0 charging port
	● 3-pin AC power
	● Headphone/microphone combo audio
	● DisplayPort
	● Docking connector
	● RJ-11 (modem)
	● RJ-45 (Ethernet, includes link and activity lights)
	● VGA (Dsub 15-pin) supporting 1920 × 1200 external resolution at 75-Hz (hot plug/unplug with auto-detect)
Docking	HP 2560 Docking Station
Keyboard/pointing devices	Full-size keyboard with Dura-Keys
	Dual point (pointing stick and TouchPad with scroll zone)
	Spill-resistant keyboard with HP drainage system
	TouchPad covered by glass, with a chemically etched surface
Power requirements	65-W HP Smart AC adapter with localized cable plug support (3-wire plug with ground pin, supports 3-pin DC connector)
	Supports HP Fast charge technology (select batteries only)
	Supports the following batteries:
	● 9 cell, 3.00 Ah (100 Wh) Li-ion battery (does not support Fast Charge)
	● 6 cell, 2.80 Ah (62 Wh) Li-ion battery
	● 6 cell, 2.80 Ah (55 Wh) Li-ion long-life battery
	● 3 cell, 2.80 Ah (31 Wh) Li-ion battery

Category	Description
Security	Integrated fingerprint reader (select models only)
	Supports "No Fingerprint Reader" option
	Integrated smart card reader (active)
	Preboot Authentication (password, smart card)
	Full-volume encryption
	Security cable slot
	Trusted Platform Module (TPM) v.1.2
Operating system	**Preinstalled operating systems:** ● Microsoft® Windows® 7 Home Premium 32/64 ● Windows 7 Professional 32/64 ● FreeDOS
	Preinstalled operating systems, plus Microsoft® Office: ● Windows 7 Home Basic 32 with Office 2010 Starter ● Windows 7 Home Premium 32/64 with Office 2010 Starter ● Windows 7 Home Premium 32/64 with Office 2010 Personal ● Windows 7 Home Premium 32/64 with Office 2010 Home & Business ● Windows 7 Home Premium 32/64 with Office 2010 Professional ● Windows 7 Professional 32/64 with Office 2010 Starter ● Windows 7 Professional 32/64 Office 2010 Personal ● Windows 7 Professional 32/64 Office 2010 Home & Business ● Windows 7 Professional 32/64 Office 2010 Professional
	Restore media (OSDVD): ● Windows 7 Home Basic 32 ● Windows 7 Home Premium 32/64 ● Windows 7 Professional 32/64
	Certified: ● Microsoft WHQL ● SUSE Linux ● Novell
	DRDVD (Device driver and Application DVD) for Windows 7

Category	Description
	Web-only support:
	● Windows 7 Enterprise 32/64
	● Windows 7 Ultimate 32/64
	● Windows Vista Business 32/64
	● Windows Vista Enterprise 32/64
	● Windows XP Professional 32
Serviceability	End-user replaceable parts:
	● AC adapter
	● Battery
	● Memory module
	● Hard drive
	● Optical drive
	● WLAN module
	● WWAN module

2 External component identification

Top

TouchPad

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 and 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.

Lights

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 wireless local area network (WLAN) device and/or a Bluetooth® device, is on.
		● Amber: All wireless devices are off.
(4)	HP QuickWeb light	● White: The computer is on.
		● Off: The computer is off or in Hibernation mode.
		NOTE: For more information, refer to "HP QuickWeb" in this guide and to the HP QuickWeb software Help.
(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.

Buttons and fingerprint reader (select models only)

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.
		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 7**—Select **Start > Control Panel > System and Security > Power Options**.
		● **Windows Vista®**—Select **Start > Control Panel > System and Maintenance > Power Options**
		● Or refer to the *HP Notebook Reference Guide*.
(2) ((ᵢ))	Wireless button	Turns the wireless feature on or off, but does not establish a wireless connection.

Component			Description
(3)		QuickWeb button	• When the computer is off or in Hibernation mode, press the button to open HP QuickWeb.
			• When the computer is in Microsoft Windows, press the button to open the default Web browser.
			• When the computer is in HP QuickWeb, press the button to open the default Web browser.
			NOTE: For more information, refer to "HP QuickWeb" in this guide and to the HP QuickWeb software Help. If your computer does not have HP QuickWeb software, the button does not perform any action or function.
(4)		Volume mute button	Mutes and restores speaker sound.
(5)		Fingerprint reader (select models only)	Allows a fingerprint logon to Windows, instead of a password logon.

Keys
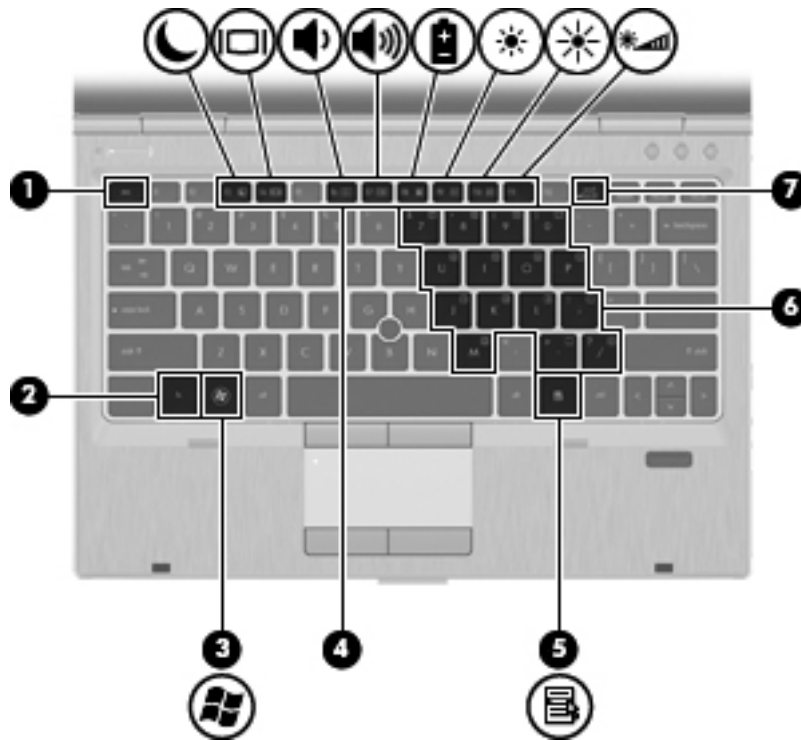
Component		Description
(1)	esc key	Displays system information when pressed in combination with the fn key.
(2)	fn key	Executes frequently used system functions when pressed in combination with a function key, the num lk key, or the esc key.
(3)	Windows logo key	Displays the Windows Start menu.
(4)	Function keys (f3 through f11)	Execute frequently used system functions when pressed in combination with the fn key.
(5)	Windows applications key	Displays a shortcut menu for items beneath the pointer.
(6)	Embedded numeric keypad keys	Can be used like the keys on an external numeric keypad when pressed in combination with the fn and num lk keys.
(7)	num lk key	Enables/disables the embedded numeric keypad when pressed in combination with the fn key.

Front

Component		Description
(1)	Wireless light	• White: An integrated wireless device, such as a wireless local area network (WLAN) 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)	Display release button	Opens the computer.
(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)	Speaker	Produces sound.

Right

Component		Description
(1)	Docking connector	Connects an optional docking device.
(2)	ExpressCard slot	Supports optional 34mm ExpressCards.
(3)	Media Card Reader	Supports the following digital card formats: ● MultiMediaCard ● Secure Digital (SD) Card
(4)	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.
(5)	DisplayPort	Connects an optional digital display device, such as a high-performance monitor or projector.
(6)	eSATA/USB port	Connects a high-performance eSATA component, such as an eSATA external hard drive, or connects an optional USB device.
(7)	Vent	Enables airflow to cool internal components. **NOTE:** The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(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.

Left
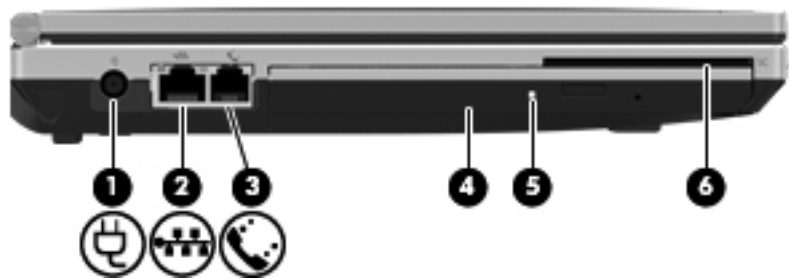
Component			Description
(1)		Power connector	Connects an AC adapter
(2)		RJ-45 (network) jack	Connects a network cable. The RJ-45 jack has two activity indicator lights.
			● Amber: The RJ-45 jack is active.
			● Green: The RJ-45 jack is on.
(3)		RJ-11 (modem) jack (select models only)	Connects a modem 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.

Display

Component		Description
(1)	WLAN antennas (3)*	Send and receive wireless signals to communicate with wireless local-area networks (WLAN).
(2)	WWAN antennas (2)*	Send and receive wireless signals to communicate with wireless wide-area networks (WWAN).
(3)	Internal microphone (2)	Records sound.
(4)	Webcam light (select models only)	White: The webcam is in use.
(5)	Webcam (select models only)	Records video and captures still photographs. To use the webcam, select **Start > All Programs > HP > HP Webcam**.
(6)	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.
(7)	Keyboard light	Provides light for the keyboard.

*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, refer to the section of the *Regulatory, Safety, and Environmental Notices* that applies to your country or region. These notices are located in Help and Support.

Rear

Component			Description
(1)		External monitor port	Connects an external VGA monitor or projector.
(2)		USB port	Connects an optional USB device.
(3)		USB 2.0 charging port	Connects an optional USB device.

Bottom
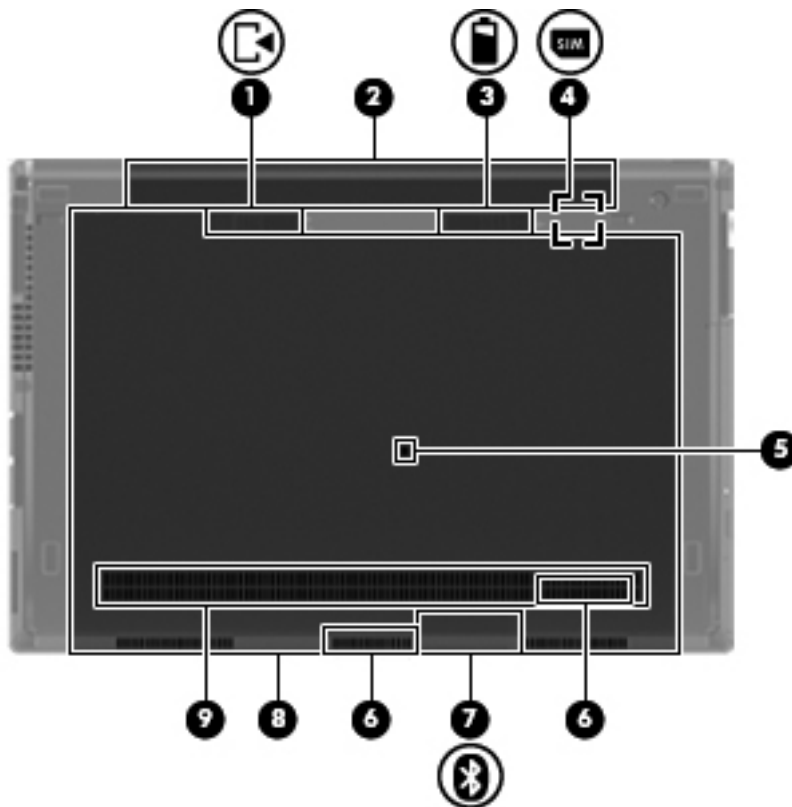
Component		Description
(1)	Service access cover latch	Releases the service access cover so that it can be removed.
(2)	Battery bay	Holds the battery.
(3)	Battery release latch	Releases the battery from the battery bay.
(4)	SIM slot	Supports a wireless subscriber identity module (SIM) card. The SIM card slot is located inside the battery bay.
(5)	Drain hole	A bottom case drain helps prevent damage caused by minor accidental spills on the keyboard.
(6)	Speakers (2)	Produce sound.
(7)	Bluetooth compartment	Holds the Bluetooth device.

Component		Description
(8)	Hard drive bay and wireless and memory module compartments	Contains the hard drive, the wireless LAN 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 technical support through Help and Support.
(9)	Vents (4)	Enable airflow to cool internal components.
		NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.

3 Illustrated parts catalog

Serial number location

The service tag, affixed to the bottom of the computer, provides information that may be needed when troubleshooting system problems.
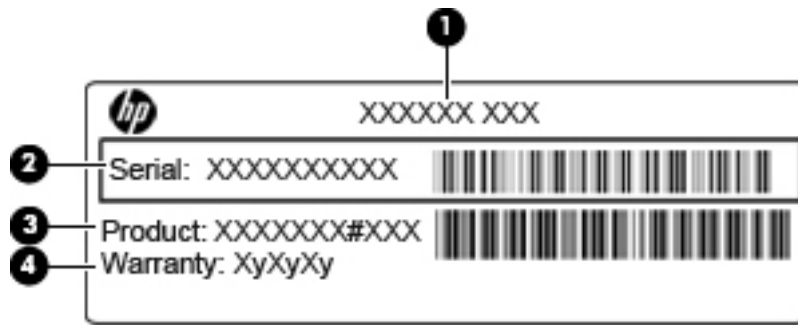
(1) Product name: This is the product name affixed to the front of the computer.

(2) Serial number: This alphanumeric identifier is unique to each product.

(3) Product part number: This identifier 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: This number describes the duration (in years) of the warranty period for the computer.

When ordering parts or requesting information, provide the computer serial number and model description provided on the service tag.

Computer major components
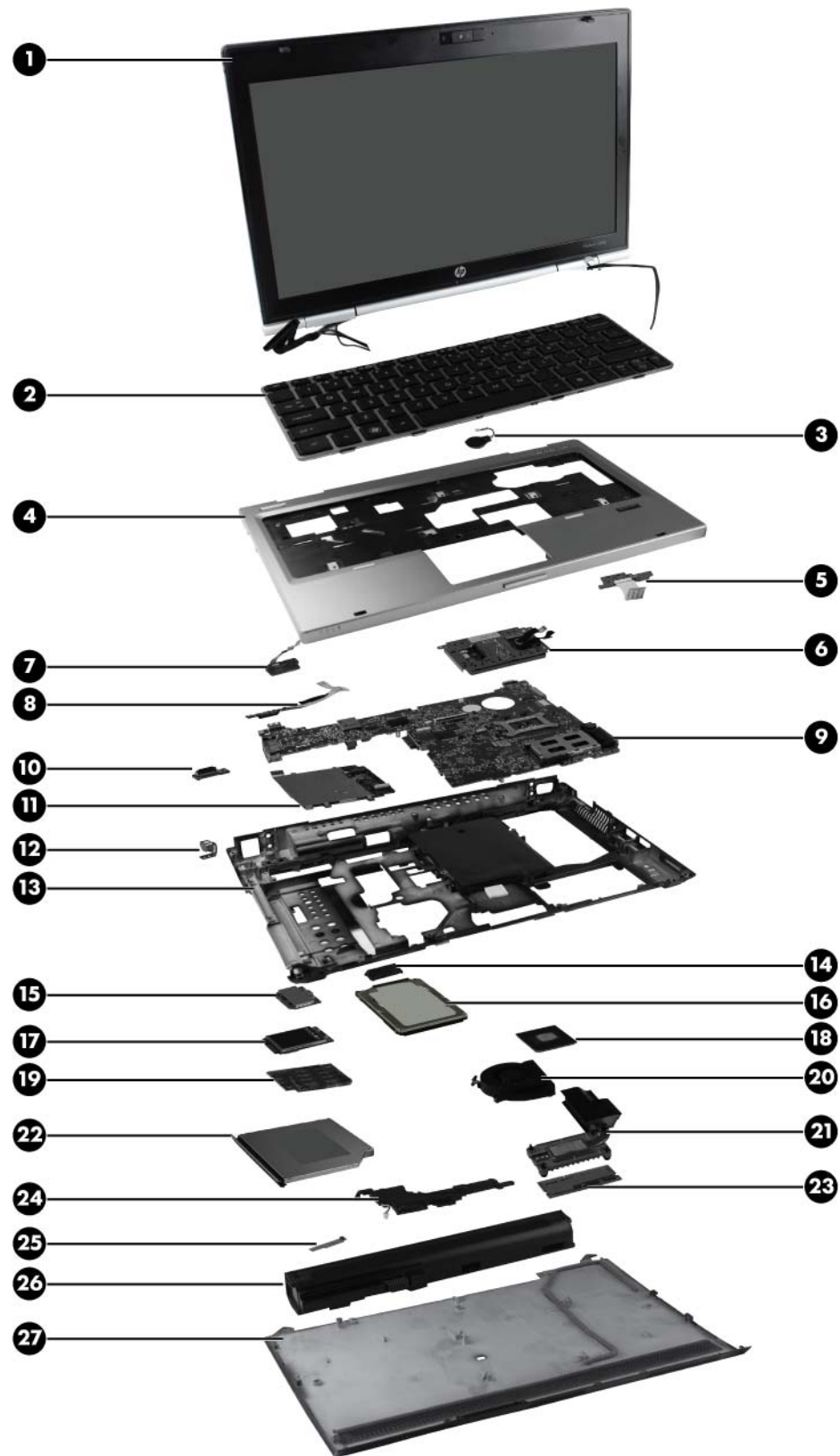
Item	Description	Spare part number
(1)	**31.75 cm (12.50 in) high definition (HD), light-emitting diode (LED), AntiGlare (AG) SVA display panel**	638553-001
(2)	**Keyboard with pointing stick** (includes keyboard cable and pointing stick cable):	
	● For use in Belgium	651390-A41
	● For use in Brazil	651390-201
	● For use in Bulgaria	651390-261
	● For use in the Czech Republic and Slovakia	651390-A81
	● For use in Denmark	651390-081
	● For use in Finland and Sweden	651390-B71
	● For use in France	651390-051
	● For use in French Canada	651390-121
	● For use in Germany	651390-041
	● For use in Greece	651390-DJ1
	● For use in Hungary	651390-211
	● For use in Iceland	651390-DD1
	● For use in Israel	651390-BB1
	● For use in Italy	651390-061
	● For use in Japan	651390-291
	● For use in Latin America	651390-161
	● For international use	651390-B31
	● For use in Africa—French/Arabic	651390-DW1
	● For use in Norway	651390-091
	● For use in Portugal	651390-131
	● For use in Russia	651390-251
	● For use in Saudi Arabia	651390-171
	● For use in Slovenia	651390-BA1
	● For use in South Korea	651390-AD1
	● For use in Spain	651390-071
	● For use in Switzerland	651390-BG1
	● For use in Taiwan	651390-AB1
	● For use in Thailand	651390-281
	● For use in Turkey	651390-141
	● For use in the United Kingdom	651390-031
	● For use in the United States	651390-001

Item	Description	Spare part number
(3)	**RTC battery**	651948–001
(4)	**Top cover**	
	With TouchPad and fingerprint reader	651375-001
	With TouchPad only	651374-001
(5)	**Function button board**	651361-001
(6)	**TouchPad button board** (included with top cover, spare part number 651374-001 and 651375-001)	
(7)	**Power button board**	651360-001
(8)	**Fingerprint reader board**	651364-001
(9)	**System board** (includes processor, replacement thermal material, and replacement thermal material cleaning kit):	
	For use in all countries and regions except the People's Republic of China and Russia	651358-001
	For use only in the People's Republic of China and Russia	651359-001
(10)	**Function LED board**	651362–001
(11)	**Smart card reader board and cable**	651363-001
(12)	Security cable slot (included with base enclosure)	
(13)	**Base enclosure**	651372-001
(14)	Hard drive connector (included with the hard drive spare part kit)	
(15)	**WLAN module**	
	Broadcom 43224AGN 802.11a/b/g/n WLAN module for use in Antigua and Barbuda, Barbados, Belize, Canada, Guam, and the United States	582564-001
	Broadcom 43224AGN 802.11a/b/g/n WLAN module for use in Albania, Algeria, Angola, Argentina, Aruba, Australia, Austria, the Bahamas, Bahrain, Bangladesh, Belgium, Benin, Bolivia, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Cayman Islands, the Central African Republic, Chad, Chile, Colombia, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic and Slovakia, Denmark, Djibouti, the Dominican Republic, Ecuador, Egypt, El Salvador, Equitorial Guinea, Estonia, Finland, France, French Guiana, Gabon, Gambia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea- Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Japan, Jordan, Kazakhstan, Kenya, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Madagascar, Malaysia, the Maldives, Mali, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Morocco, Mozambique, Namibia, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Panama, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Puerto Rico, Qatar, Romania, Russia, Rwanda, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia and Montenegro, Sierra Leone, Slovenia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Vincent and the Grenadines, Suriname, Sweden, Switzerland, Taiwan, Tanzania, Thailand, Togo, Tunisia, Turkey, Ukraine, the United Arab Emirates, the United Kingdom, the United States Virgin Islands, Uruguay, Uzbekistan, Venezuela, Vietnam, Yemen, Zimbabwe	582564-002
	Broadcom 4313AGN 802.11a/b/g/n WLAN module	593836-001
	Intel Centrino Advanced N 6205, 2x2 a/b/g/n WiFi Adapter	631954-001
	Intel Centrino Ultimate-N 6300, 3x3 a/g/n WiFi Adapter	572511-001

Item	Description	Spare part number
(16)	**Hard drive or solid-state drive** (bracket included)	
	6.35 cm (2.50 in) hard drive:	
	● 750 GB, 7200-rpm hard drive	633252–001
	● 500 GB, 7200-rpm hard drive	634925-001
	● 320 GB, 7200-rpm hard drive	641672-001
	● 320 GB, 7200-rpm Self-Encrypting Drive (SED) hard drive	626978-001
	● 250 GB, 7200-rpm hard drive	635225-001
	6.35 cm (2.50 in) solid-state drive:	
	● 160 GB, solid-state drive	651389-001
	● 128 GB, solid-state drive	651388-001
(17)	**WWAN module**	
	HP un2430 EV-DO/HSPA Mobile Broadband Module (all countries and regions except the People's Republic of China)	634400-001
	HP hs2340 HSPA+ Mobile Broadband Module	632155-001
(18)	**Processor**	
	Intel® Core™ i7 processor (supports Intel Turbo Boost Technology):	
	● Intel Core i7-2620M 2.70 GHz processor, (turbo up to 3.40 GHz), 4 MB L3 cache, 4 threads, standard-voltage (35-W)	631252-001
	Intel® Core™ i5 processors (support Intel Turbo Boost Technology):	
	● Intel Core i5-2540M 2.60 GHz processor, (turbo up to 3.30 GHz), 3 MB L3 cache, 4 threads, standard-voltage (35-W)	631255-001
	● Intel Core i5-2520M 2.50 GHz processor, (turbo up to 3.20 GHz), 3 MB L3 cache, 4 threads, standard-voltage (35-W)	631253-001
	● Intel Core i5-2430M 2.30 GHz processor, (turbo up to 2.90 GHz), 3 MB L3 cache, 4 threads, standard-voltage (35-W)	653341-001
	● Intel Core i5-2410M 2.30 GHz processor, (turbo up to 2.90 GHz), 3 MB L3 cache, 4 threads, standard-voltage (35-W)	638039-001
(19)	Modem module (56k v.92 MDC data/fax modem)	628824-001
(20)	**Fan**	651378–001
(21)	**Heat sink**	651379-001
(22)	**Optical drive** (includes bezel and bracket):	
	DVD±RW and CD-RW SuperMulti Double-Layer Drive	651387-001
	DVD-ROM Drive	651386-001
(23)	**Memory modules** (PC3-10600, 1333 MHz, DDR3):	
	8 GB	634091-001
	4 GB	621569-001
	2 GB	621565-001

Item	Description	Spare part number
(24)	**Speakers**	651377-001
(25)	**HP Integrated Module with Bluetooth 2.1 Wireless Technology**	593836-001
	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 651384-001.	
(26)	**Battery**	
	9 cell, 100 Wh, 3.0 Ah, Li-ion battery	632423-001
	6 cell, 62 Wh, 2.8 Ah, Li-ion battery	632421-001
	6 cell, 55 Wh, 2.8 Ah, Li-ion long life battery	632419-001
	3 cell, 31 Wh, 2.8 Ah, Li-ion battery	632417-001
(27)	**Service access cover**	651373–001
	Rubber Kit (not shown)—includes bumpers for the outside of the base enclosure	651382-001

Display components
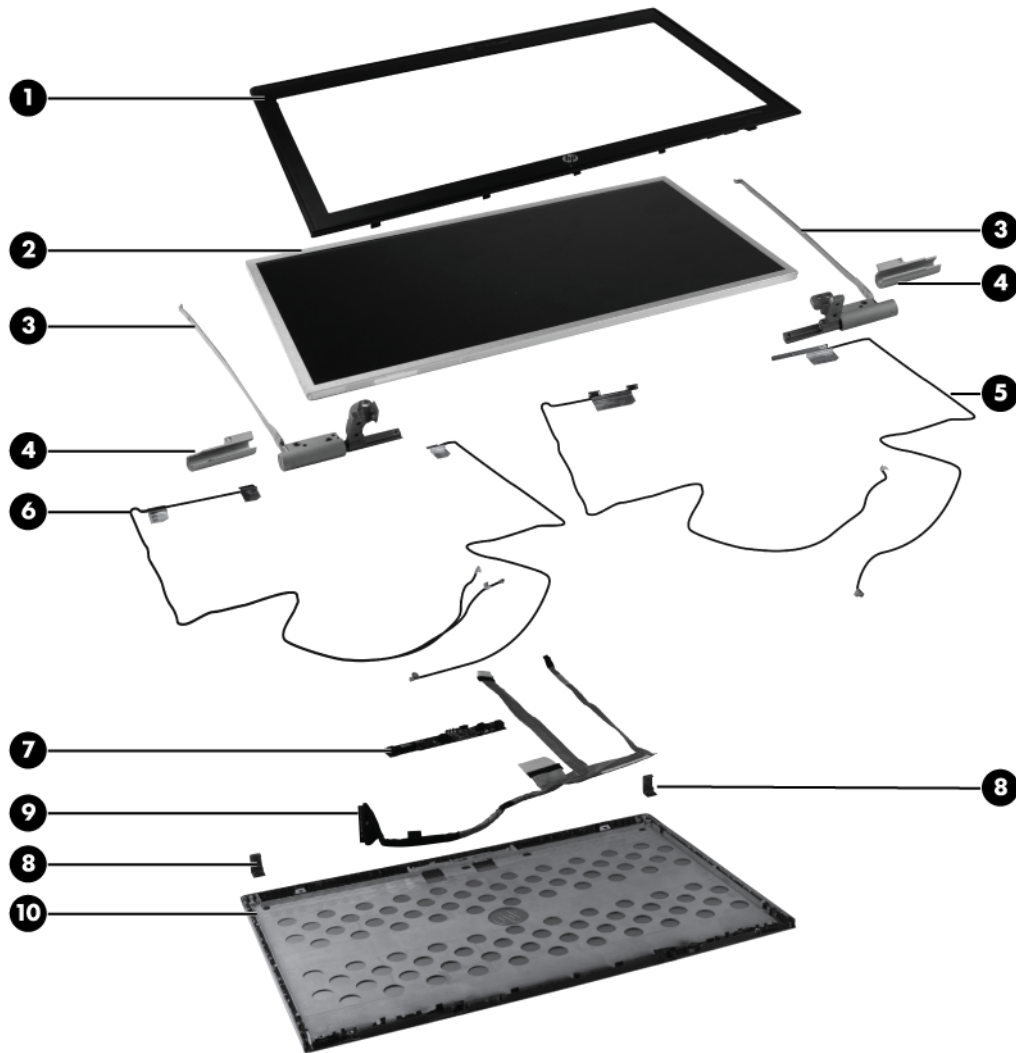
Item	Description	Spare part number
(1)	**Display bezel**	
	For use with computer models equipped with a webcam	651366-001
	For use with computer models not equipped with a webcam	651365-001
(2)	**31.75 cm (12.50 in) high definition (HD), light-emitting diode (LED), AntiGlare (AG) SVA display panel**	638553-001
(3)	**Display Hinge Kit** (includes left hinge and bracket, and right hinge and bracket)	651369-001
(4)	**Hinge covers**	651370–001
(5)	WWAN cable (included in Antenna Kit, spare part number 651371-001)	
(6	WLAN cable (included in Antenna Kit, spare part number 651371-001)	
(7)	**Webcam module** (select models only), includes microphone and keyboard light	642796-001
(8)	Top cover brackets	651381-001

Item	Description	Spare part number
(9)	**Diplay cable (includes webcam cable and light sensor cable)**	651368-001
(10)	**Display enclosure**	651367–001
	Ambient light sensor board (not shown)	656622–001
	Internal microphone module (not shown)	642798–001
	Display Screw Kit (not shown)	655022–001
	Display Miscellaneous Kit includes foil shield for camera	656623-001
	Display Panel Support Kit (not shown)—includes display enclosure and antenna	658267-001

Mass storage

Item	Description	Spare part number
(1)	**6.35-cm (2.50-in) hard drive** (includes bracket):	
	● 750-GB, 7200-rpm hard drive	633252–001
	● 500-GB, 7200-rpm hard drive	634925-001
	● 320-GB, 7200-rpm hard drive	641672-001
	● 320-GB, 7200-rpm Self-Encrypting Drive (SED) hard drive	626978-001
	● 250-GB, 7200-rpm hard drive	635225-001
(2)	**6.35-cm (2.50-in) solid-state drive** (includes bracket):	
	● 160-GB, solid-state drive	651389-001
	● 128-GB, solid-state drive	651388-001
(3)	**Optical drive** (includes bezel and bracket):	
	● DVD-ROM Drive	651386-001
	● DVD±RW and CD-RW SuperMulti Double-Layer Drive	651387-001
(4)	**Optical drive bracket** (included with optical drive)	
(5)	**Brackets for hard drive and solid-state drive** (included with hard drive and solid-state drive)	
	Hard Drive Hardware Kit (not shown)—includes hard drive connector, hard drive, hard drive bracket, screws, and spacers	651380-001

Plastics Kit
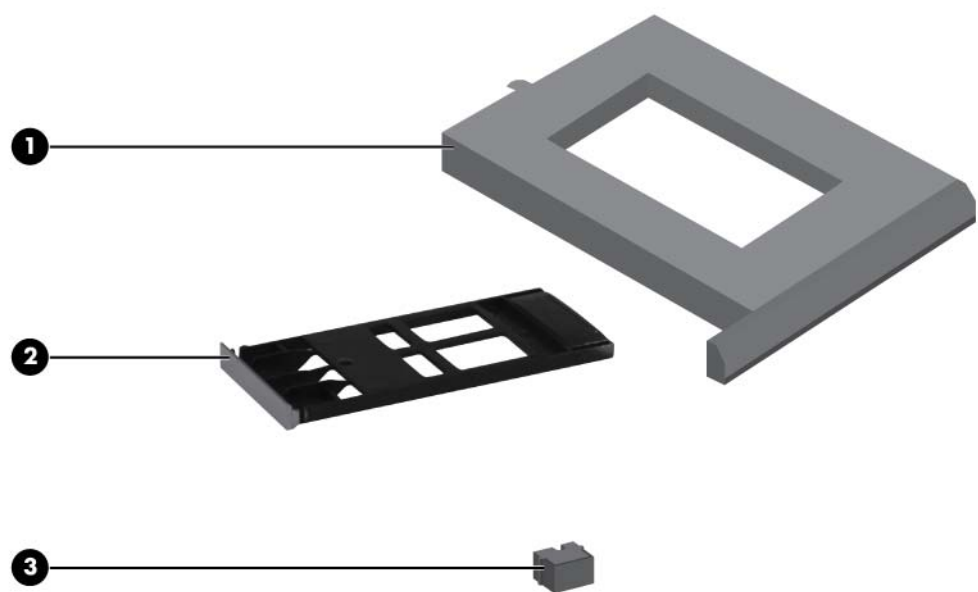
Item	Description	Spare part number
	Plastics Kit:	651376-001
(1)	Optical drive weight saver	
(2)	ExpressCard blank	
(3)	RJ-11 jack cover	

Miscellaneous parts

Description	Spare part number
AC adapter	
65-W Smart AC adapter with localized cable plug support (3-wire plug with ground pin, supports 3-pin DC connector)	609939-001
65-W Smart AC adapter with localized cable plug support (3-wire plug with ground pin, supports 3-pin DC connector) for use in Australia, Bangladesh, Brunei, Cambodia, China, Hong Kong, India, Indonesia, Japan, South Korea, Laos, Malaysia, Nepal, New Zealand, Pakistan, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, Vietnam	609948-001
Ambient light sensor board	656622–001
Bracket Kit	651381-001
Cable Kit (includes Bluetooth module cable and cable)	651384-001
Fingerprint reader board	651364–001
HP 2560 Series Docking Station	651385-001
Internal microphone module	642798–001
Power button board	651360–001
Power cords	
For use in Argentina	490371-D01
For use in Australia and New Zealand	490371-011
For use in Brazil	490371-202
For use in Canada and the United States	490371-001
For use in Denmark	490371-081
For use in Europe, the Middle East, and Africa	490371-021
For use in India	490371-D61
For use in Israel	490371-BB1
For use in Italy	490371-061
For use in Japan	490371-291
For use in the People's Republic of China	490371-AA1
For use in South Africa	490371-AR1
For use in South Korea	490371-AD1
For use in Switzerland	490371-111
For use in Taiwan	490371-AB1
For use in Thailand	490371-201
For use in Singapore and the United Kingdom	490371-031
Screw Kit	651383-001

Sequential part number listing

Spare part number	Description
490371-001	Power cord for use in Canada and the United States
490371-011	Power cord for use in Australia and New Zealand
490371-021	Power cord for use in Europe, the Middle East, and Africa
490371-031	Power cord for use in Singapore and the United Kingdom
490371-061	Power cord for use in Italy
490371-081	Power cord for use in Denmark
490371-111	Power cord for use in Switzerland
490371-201	Power cord for use in Thailand
490371-202	Power cord for use in Brazil
490371-291	Power cord for use in Japan
490371-AA1	Power cord for use in the People's Republic of China
490371-AB1	Power cord for use in Taiwan
490371-AD1	Power cord for use in South Korea
490371-AR1	Power cord for use in South Africa
490371-BB1	Power cord for use in Israel
490371-D01	Power cord for use in Argentina
490371-D61	Power cord for use in India
537921-001	HP Integrated Module with Bluetooth 2.1 Wireless Technology **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 651384-001.
572511-001	Intel Centrino Ultimate-N 6300, 3x3 a/g/n WiFi Adapter
582564-001	Broadcom 43224AGN 802.11a/b/g/n WLAN module for use in Antigua and Barbuda, Barbados, Belize, Canada, Guam, and the United States
582564-002	Broadcom 43224AGN 802.11a/b/g/n WLAN module for use in Albania, Algeria, Angola, Argentina, Aruba, Australia, Austria, the Bahamas, Bahrain, Bangladesh, Belgium, Benin, Bolivia, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Cayman Islands, the Central African Republic, Chad, Chile, Colombia, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic and Slovakia, Denmark, Djibouti, the Dominican Republic, Ecuador, Egypt, El Salvador, Equitorial Guinea, Estonia, Finland, France, French Guiana, Gabon, Gambia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea- Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Japan, Jordan, Kazakhstan, Kenya, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Madagascar, Malaysia, the Maldives, Mali, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Morocco, Mozambique, Namibia, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Panama, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Puerto Rico, Qatar, Romania, Russia, Rwanda, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia and Montenegro, Sierra Leone, Slovenia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Vincent and the Grenadines, Suriname, Sweden, Switzerland, Taiwan, Tanzania, Thailand, Togo, Tunisia, Turkey, Ukraine, the United Arab Emirates, the United Kingdom, the United States Virgin Islands, Uruguay, Uzbekistan, Venezuela, Vietnam, Yemen, Zimbabwe

Spare part number	Description
593836-001	Broadcom 4313AGN 802.11a/b/g/n WLAN module
609939-001	AC adapter, 65-W Smart AC adapter with localized cable plug support (3-wire plug with ground pin, supports 3-pin DC connector)
609948-001	65-W Smart AC adapter with localized cable plug support (3-wire plug with ground pin, supports 3- pin DC connector) for use in Australia, Bangladesh, Brunei, Cambodia, China, Hong Kong, India, Indonesia, Japan, South Korea, Laos, Malaysia, Nepal, New Zealand, Pakistan, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, Vietnam
621565-001	Memory module, 2 GB (PC3-10600, 1333 MHz, DDR3)
621569-001	Memory module, 4 GB (PC3-10600, 1333 MHz, DDR3)
626978-001	Hard drive, 2.50 in, 320 GB, 7200-rpm Self-Encrypting Drive (SED) hard drive (includes bracket)
628824-001	Modem module (56k v.92 MDC data/fax modem)
631252-001	Processor, Intel Dual Core i7-2620M 2.70 GHz processor, (turbo up to 3.40 GHz), 4 MB L3 cache, 4 threads, standard-voltage (35-W)
631253-001	Processor, Intel Dual Core i5-2520M 2.50 GHz processor, (turbo up to 3.20 GHz), 3 MB L3 cache, 4 threads, standard-voltage (35-W)
631255-001	Processor, Intel Dual Core i5-2540M 2.60 GHz processor, (turbo up to 3.30 GHz), 3 MB L3 cache, 4 threads, standard-voltage (35-W)
631954-001	Intel Centrino Advanced N 6205, 2x2 a/b/g/n WiFi Adapter
632155-001	HP hs2340 HSPA+ Mobile Broadband Module
632417-001	Battery, 3 cell, 31 Wh, 2.8 Ah, Li-ion battery
632419-001	Battery, 6 cell, 55 Wh, 2.8 Ah, Li-ion battery
632421-001	Battery, 6 cell, 62 Wh, 2.8 Ah, Li-ion battery
632423-001	Battery, 9 cell, 100 Wh, 3.0 Ah, Li-ion battery
633252-001	750 GB, 7200-rpm 9.50 mm, **6.35 cm** (2.50 in) SATA hard drive (includes bracket)
634091-001	8 GB memory module (PC3-10600, 1333 mHz, DDR3)
634400-001	HP un2430 EV-DO/HSPA Mobile Broadband Module
634925-001	500 GB, 7200-rpm 9.50 mm, **6.35 cm** (2.50 in) SATA hard drive (includes bracket)
635225-001	250 GB, 7200-rpm 9.50 mm, **6.35 cm** (2.50 in) SATA hard drive (includes bracket)
638039-001	Intel Dual Core i5-2410M 2.30 GHz processor, (turbo up to 2.90 GHz), 3 MB L3 cache, 4 threads, standard-voltage (35-W)
638553-001	**31.75 cm** (12.50 in) high definition (HD), light-emitting diode (LED), AntiGlare (AG) SVA display panel
641672-001	Hard drive, 320 GB, 7200-rpm 9.50 mm, **6.35 cm** (2.50 in) SATA hard drive (includes bracket)
642796-001	Webcam module (select models only), includes microphone and keyboard light
642798-001	Internal microphone module
651358-001	System board for use in all countries and regions except the People's Republic of China and Russia
651359-001	System board for use in only the People's Republic of China and Russia
651360–001	Power button board

Spare part number	Description
651361–001	Function button board
651362–001	Function LED board
651363–001	Smart card reader board and cable
651364–001	Fingerprint reader board and cable
651365-001	Display bezel for use only with computer models not equipped with a webcam
651366-001	Display bezel for use only with computer models equipped with a webcam
651367-001	Display enclosure
651368-001	Display panel cable (includes webcam module cable and ambient light sensor board cable)
651369-001	Display Hinge Kit (includes left and right display hinges and left and right hinge covers)
651370-001	Display hinge covers
651371-001	Antenna Kit (includes WWAN cables, WLAN cables, and MIMO cable)
651372-001	Base enclosure
651373-001	Service access cover
651374-001	Top cover for use only with computer models not equipped with a fingerprint reader (includes fingerprint reader board and cable, TouchPad board and cable, TouchPad button board and cable, and TouchPad bracket)
651375-001	Top cover for use only with computer models equipped with a fingerprint reader (includes fingerprint reader board and cable, TouchPad board and cable, TouchPad button board and cable, and TouchPad bracket)
651376-001	Plastics Kit NOTE: See Plastics Kit on page 27 for more Plastics Kit spare part information.
651377-001	Speakers
651378-001	Fan
651379-001	Heat sink (includes replacement thermal material and replacement thermal material cleaning kit)
651380-001	Hard Drive Hardware Kit (includes hard drive connector, hard drive, hard drive bracket, screws, and spacers)
651381–001	Bracket Kit
651382-001	Rubber Kit (includes bumpers for the outside of the base enclosure)
651383-001	Screw Kit
651384-001	Cable Kit (includes Bluetooth module cable and cable)
651385-001	HP 2560 Series Docking Station
651386-001	DVD-ROM Drive (includes bezel and bracket)
651387-001	DVD±RW and CD-RW Super Multi Double-Layer Drive (includes bezel and bracket)
651388-001	**6.35 cm** (2.50 in) 128 GB solid-state drive (includes bracket)
651389-001	**6.35 cm** (2.50 in) 160 GB solid-state drive (includes bracket)
651390-001	Keyboard for use in the United States (includes cable)

Spare part number	Description
651390-031	Keyboard for use in the United Kingdom (includes cable)
651390-041	Keyboard for use in Germany (includes cable)
651390-051	Keyboard for use in France (includes cable)
651390-061	Keyboard for use in Italy (includes cable)
651390-071	Keyboard for use in Spain (includes cable)
651390-081	Keyboard for use in Denmark (includes cable)
651390-091	Keyboard for use in Norway (includes cable)
651390-121	Keyboard for use in French Canada (includes cable)
651390-131	Keyboard for use in Portugal (includes cable)
651390-141	Keyboard for use in Turkey (includes cable)
651390-161	Keyboard for use in Latin America (includes cable)
651390-171	Keyboard for use in Saudi Arabia (includes cable)
651390-201	Keyboard for use in Brazil (includes cable)
651390-211	Keyboard for use in Hungary (includes cable)
651390-251	Keyboard for use in Russia (includes cable)
651390-261	Keyboard for use in Bulgaria (includes cable)
651390-281	Keyboard for use in Thailand (includes cable)
651390-291	Keyboard for use in Japan (includes cable)
651390-A41	Keyboard for use in Belgium (includes cable)
651390-A81	Keyboard for use in the Czech Republic and Slovakia (includes cable)
651390-AB1	Keyboard for use in Taiwan (includes cable)
651390-AD1	Keyboard for use in South Korea (includes cable)
651390-B31	Keyboard for international use (includes cable)
651390-B71	Keyboard for use in Finland and Sweden (includes cable)
651390-BA1	Keyboard for use in Slovenia (includes cable)
651390-BB1	Keyboard for use in Israel (includes cable)
651390-BG1	Keyboard for use in Switzerland (includes cable)
651390-DD1	Keyboard for use in Iceland (includes cable)
651390-DJ1	Keyboard for use in Greece (includes cable)
651390-DW1	Keyboard for use in Africa—French/Arabic (includes cable)
651948-001	RTC battery
655022-001	Display Screw Kit
656622-001	Ambient light sensor board

Spare part number	Description
656623-001	Display Miscellaneous Kit
658267-001	Display Panel Support Kit (includes display enclosure and antenna)

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 screwdriver
- Magnetic screwdriver
- Phillips P0 and P1 screwdrivers
- Torx 8 screwdriver

Service considerations

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

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

Plastic parts

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

Cables and connectors

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

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

Drive handling

⚠ **CAUTION:** Drives are fragile components that must be handled with care. To prevent damage to the computer, damage to a drive, or loss of information, observe these precautions:

Before removing or inserting a hard drive, shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

Before handling a drive, be sure that you are discharged of static electricity. While handling a drive, avoid touching the connector.

Before removing a diskette drive or optical drive, be sure that a diskette or disc is not in the drive and be sure that the optical drive tray is closed.

Handle drives on surfaces covered with at least one inch of shock-proof foam.

Avoid dropping drives from any height onto any surface.

After removing a hard drive, an optical drive, or a diskette drive, place it in a static-proof bag.

Avoid exposing an internal hard drive to products that have magnetic fields, such as monitors or speakers.

Avoid exposing a drive to temperature extremes or liquids.

If a drive must be mailed, place the drive in a bubble pack mailer or other suitable form of protective packaging and label the package "FRAGILE."

Grounding guidelines

Electrostatic discharge damage

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

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

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

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

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

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

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

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

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

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

Typical electrostatic voltage levels			
	Relative humidity		
Event	10%	40%	55%
Walking across carpet	35,000 V	15,000 V	7,500 V
Walking across vinyl floor	12,000 V	5,000 V	3,000 V
Motions of bench worker	6,000 V	800 V	400 V
Removing DIPS from plastic tube	2,000 V	700 V	400 V
Removing DIPS from vinyl tray	11,500 V	4,000 V	2,000 V
Removing DIPS from Styrofoam	14,500 V	5,000 V	3,500 V
Removing bubble pack from PCB	26,500 V	20,000 V	7,000 V
Packing PCBs in foam-lined box	21,000 V	11,000 V	5,000 V

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

- To avoid hand contact, transport products in static-safe tubes, bags, or boxes.
- Protect ESD-sensitive parts and assemblies with conductive or approved containers or packaging.
- Keep ESD-sensitive parts in their containers until the parts arrive at static-free workstations.
- Place items on a grounded surface before removing items from their containers.
- Always be properly grounded when touching a component or assembly.
- Store reusable ESD-sensitive parts from assemblies in protective packaging or nonconductive foam.
- Use transporters and conveyors made of antistatic belts and roller bushings. Be sure that mechanized equipment used for moving materials is wired to ground and that proper materials are selected to avoid static charging. When grounding is not possible, use an ionizer to dissipate electric charges.

Workstation guidelines

Follow these grounding workstation guidelines:

- Cover the workstation with approved static-shielding material.
- Use a wrist strap connected to a properly grounded work surface and use properly grounded tools and equipment.
- Use conductive field service tools, such as cutters, screwdrivers, and vacuums.
- When fixtures must directly contact dissipative surfaces, use fixtures made only of static-safe materials.
- Keep the work area free of nonconductive materials, such as ordinary plastic assembly aids and Styrofoam.
- Handle ESD-sensitive components, parts, and assemblies by the case or PCM laminate. Handle these items only at static-free workstations.
- Avoid contact with pins, leads, or circuitry.
- Turn off power and input signals before inserting or removing connectors or test equipment.

Equipment guidelines

Grounding equipment must include either a wrist strap or a foot strap at a grounded workstation.

- When seated, wear a wrist strap connected to a grounded system. Wrist straps are flexible straps with a minimum of one megohm ±10% resistance in the ground cords. To provide proper ground, wear a strap snugly against the skin at all times. On grounded mats with banana-plug connectors, use alligator clips to connect a wrist strap.

- When standing, use foot straps and a grounded floor mat. Foot straps (heel, toe, or boot straps) can be used at standing workstations and are compatible with most types of shoes or boots. On conductive floors or dissipative floor mats, use foot straps on both feet with a minimum of one megohm resistance between the operator and ground. To be effective, the conductive must be worn in contact with the skin.

The following grounding equipment is recommended to prevent electrostatic damage:

- Antistatic tape

- Antistatic smocks, aprons, and sleeve protectors

- Conductive bins and other assembly or soldering aids

- Nonconductive foam

- Conductive tabletop workstations with ground cords of one megohm resistance

- Static-dissipative tables or floor mats with hard ties to the ground

- Field service kits

- Static awareness labels

- Material-handling packages

- Nonconductive plastic bags, tubes, or boxes

- Metal tote boxes

- Electrostatic voltage levels and protective materials

The following table lists the shielding protection provided by antistatic bags and floor mats.

Material	Use	Voltage protection level
Antistatic plastic	Bags	1,500 V
Carbon-loaded plastic	Floor mats	7,500 V
Metallized laminate	Floor mats	5,000 V

Component replacement procedures

This chapter provides removal and replacement procedures.

There are as many as 72 screws that must be removed, replaced, or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

Service tag

When you order parts or request information, provide the computer serial number and model number provided on the service tag, located inside the battery bay.
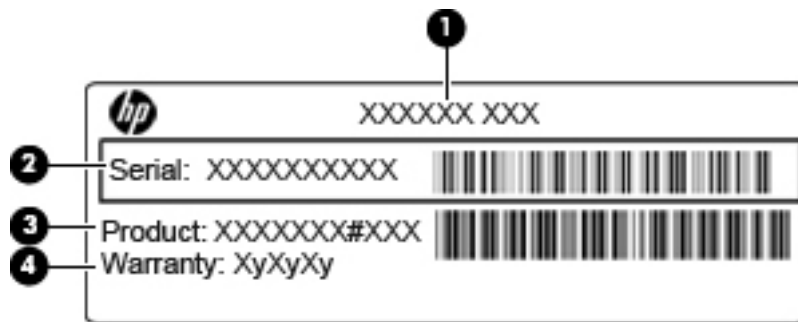
	Component	Description
(1)	Product name	The product name affixed to the front of the computer.
(2)	Serial number	An alphanumeric identifier that is unique to each product.
(3)	Product part number	The identifier that provides specific information about the product's hardware components. The part number helps a service technician to determine what components and parts are needed.
(4)	Warranty	The duration of the warranty period for this computer.

Computer feet

The computer feet are hot-melted to the base enclosure in the locations illustrated below.
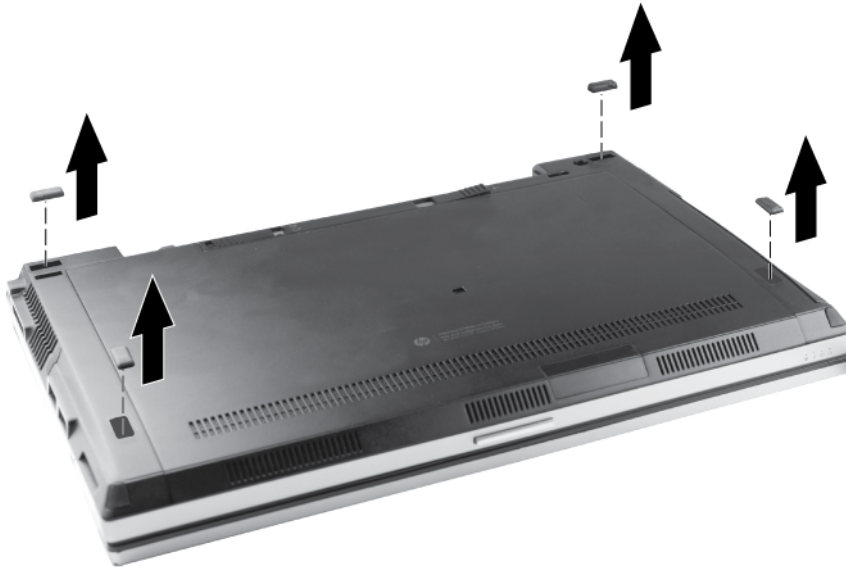
Battery

Description	Spare part number
9 cell, 100 Wh, 3.0 Ah Li-ion battery	632423-001
6 cell, 62 Wh, 2.8 Ah Li-ion battery	632421-001
6 cell, 55 Wh, 2.8 Ah Li-ion long life battery	632419-001
3 cell, 31 Wh, 2.8 Ah Li-ion battery	632417-001

Before disassembling the computer, follow these steps:

1. 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.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

Remove the battery:

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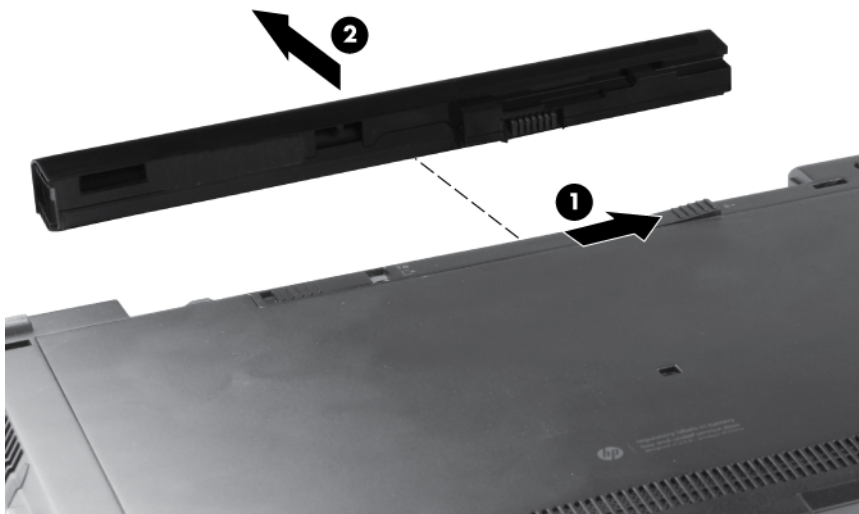
Install the battery by inserting it into the battery bay until you hear a click.

Service access cover

Description	Spare part number
Service access cover	651373-001

Before disassembling the computer, follow these steps:

1. 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.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

4. Remove the battery (see Battery on page 41).

Remove the service access cover:

1. Position the computer with the battery bay toward you.

2. Slide the release latch **(1)**, and then slide the cover toward the front of the computer **(2)**.

3. Remove the cover **(3)**.
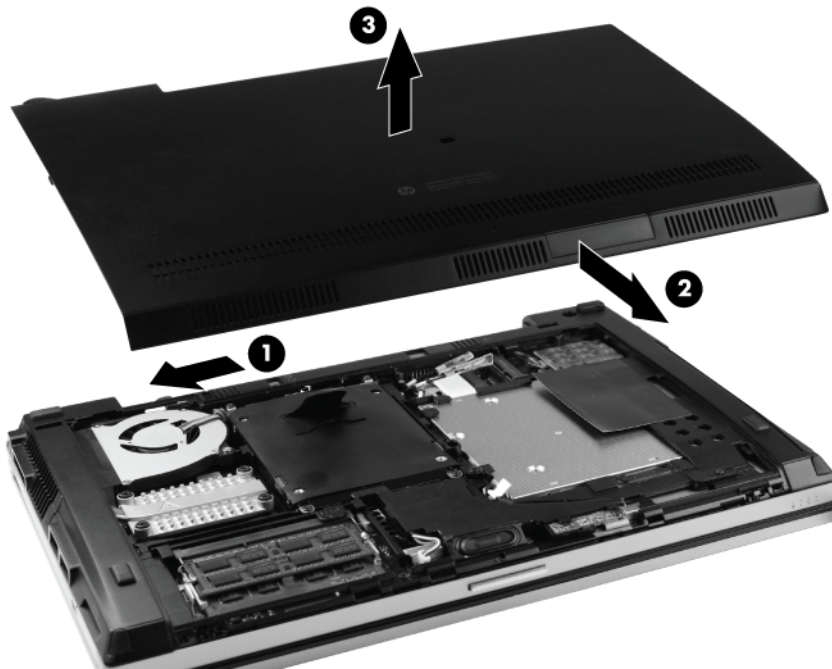
SIM

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. 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.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

4. Remove the battery (see Battery on page 41).

Remove the SIM:

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

2. Remove the SIM **(2)** from the slot.
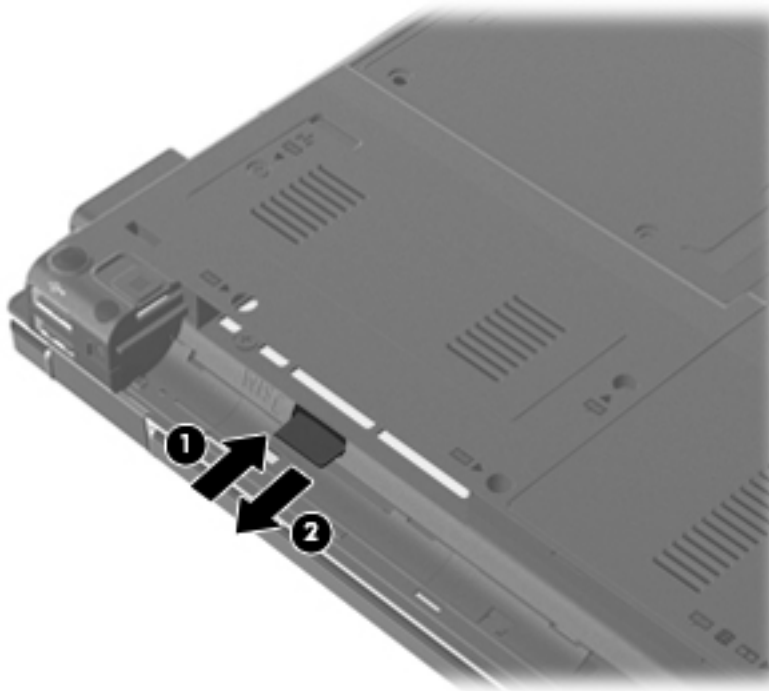
Reverse this procedure to insert the SIM.

Fan and heat sink

Description	Spare part number
Fan	651378-001
Heat sink	651379-001

Before removing the fan and heat sink, follow these steps:

1. 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.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

4. Remove the battery (see Battery on page 41).

5. Remove the service access cover (see Service access cover on page 42).

Remove the fan and heat sink:

1. Position the computer upside down, with the battery bay toward you.

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

3. Loosen the two Phillips M2.0x4.0 captive screws **(2)** that secure the fan to the system board.

4. Remove the fan **(3)**.
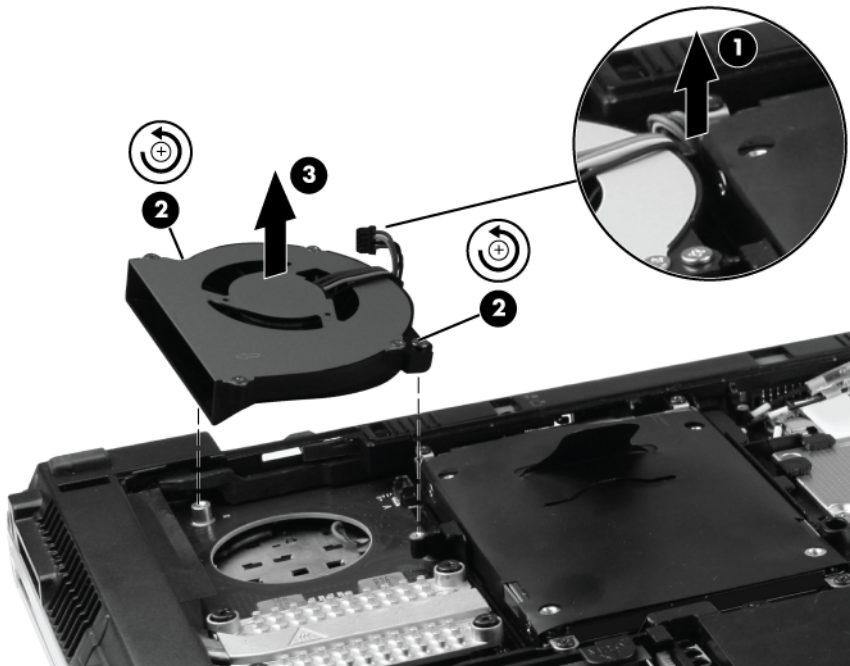
NOTE: When you replace the fan, be sure to route the cable correctly so that it is not pinched by the hard drive.

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

6. Slide the heat sink to the left until it clears the base enclosure **(2)**.

7. Remove the heat sink **(3)**.
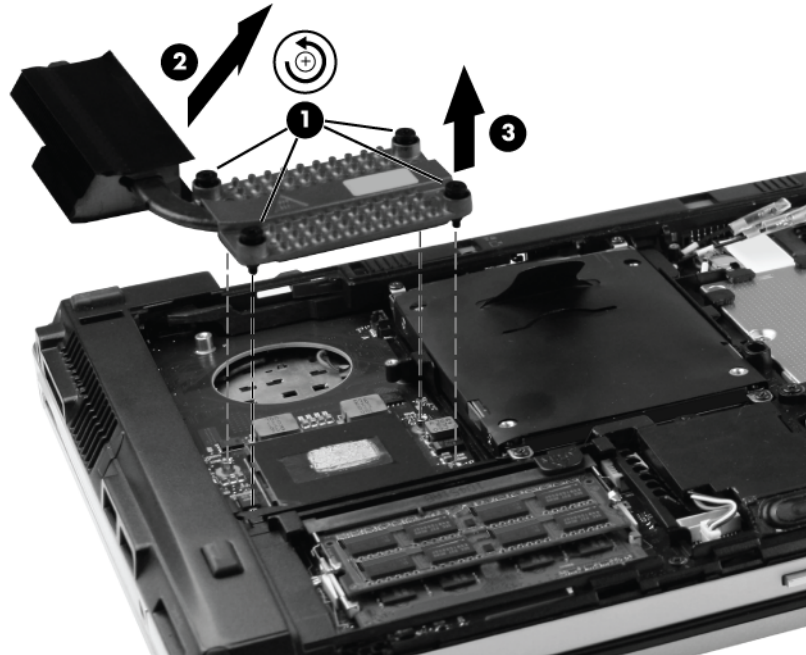
NOTE: The thermal material must be thoroughly cleaned from the surfaces of the heat sink and processor each time the heat sink is removed. Replacement thermal material is included with heat sink, processor, and system board spare part kits.
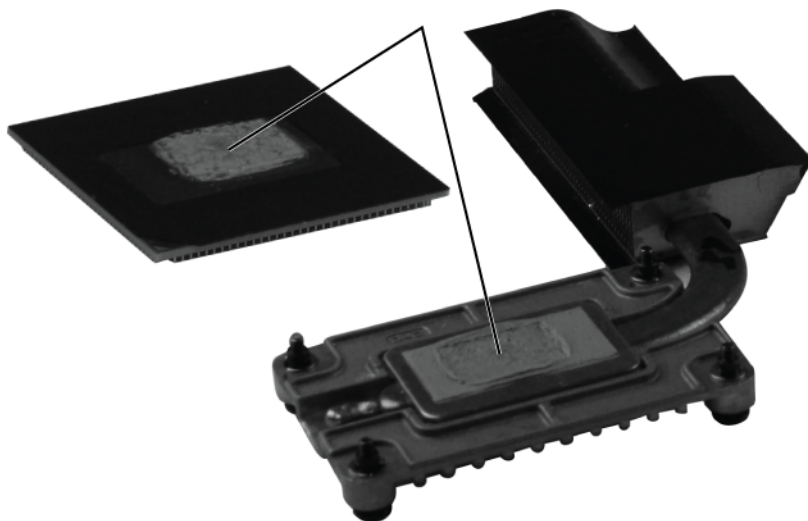
Reverse this procedure to install the fan and heat sink.

Processor

Description	Spare part number
Intel Core i7-2620M 2.70 GHz processor, (turbo up to 3.40 GHz), 4 MB L3 cache, 4 threads, standard-voltage (35-W)	631252-001
Intel Core i5-2540M 2.60 GHz processor, (turbo up to 3.30 GHz), 3 MB L3 cache, 4 threads, standard-voltage (35-W)	631255-001
Intel Core i5-2520M 2.50 GHz processor, (turbo up to 3.20 GHz), 3 MB L3 cache, 4 threads, standard-voltage (35-W)	631253-001
Intel Core i5-2430M 2.30 GHz processor, (turbo up to 2.90 GHz), 3 MB L3 cache, 4 threads, standard-voltage (35-W)	653341-001
Intel Core i5-2410M 2.30 GHz processor, (turbo up to 2.90 GHz), 3 MB L3 cache, 4 threads, standard-voltage (35-W)	638039-001

Before removing the processor, follow these steps:

1. 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.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

4. Remove the battery (see Battery on page 41).

5. Remove the service access cover (see Service access cover on page 42).

6. Remove the fan and heat sink (see Fan and heat sink on page 44).

Remove the processor:

1. Loosen the captive screw one-half turn **(1)**.

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

> **NOTE:** The gold triangle **(3)** on the processor must be aligned with the triangle embossed on the processor slot when you install the processor.
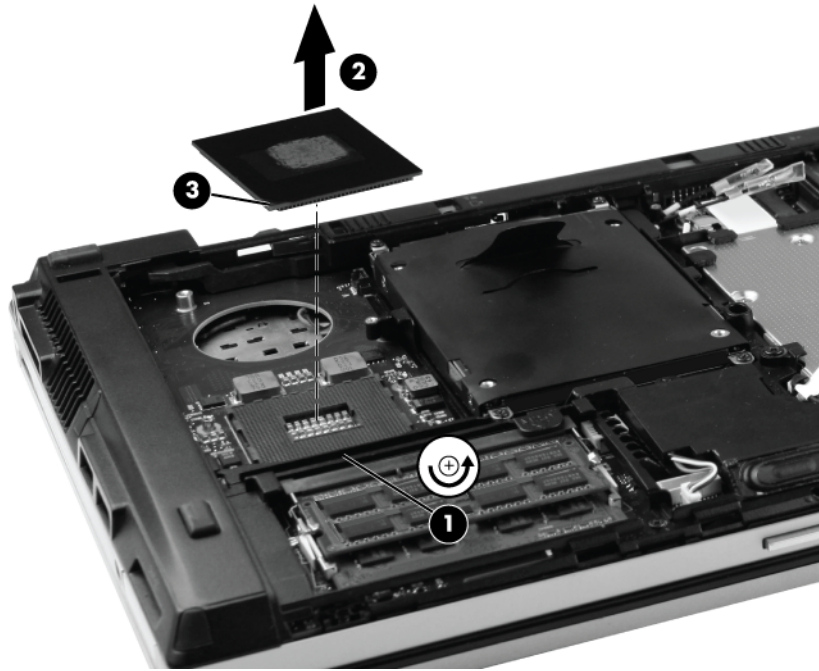
Reverse this procedure to install the processor.

Memory module

NOTE: There are two memory module slots, one above the other. Use the same removal procedure for both slots.

Description	Spare part number
8 GB memory module (PC3-10600, 1333 mHz, DDR3)	634091–001
4 GB memory module (PC3-10600, 1333 mHz, DDR3)	621569-001
2 GB memory module (PC3-10600, 1333 mHz, DDR3)	621565-001

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. 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.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

4. Remove the battery (see Battery on page 41).

5. Remove the service access cover (see Service access cover on page 42).

Remove the memory module:

1. Position the computer with the front toward you.

2. Spread the retaining tabs **(1)** on each side of the memory module slot to release the memory module. The edge **(2)** of the module opposite the slot rises away from the computer.

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

NOTE: The memory module is designed with a notch **(4)** to prevent incorrect insertion into the memory module slot.
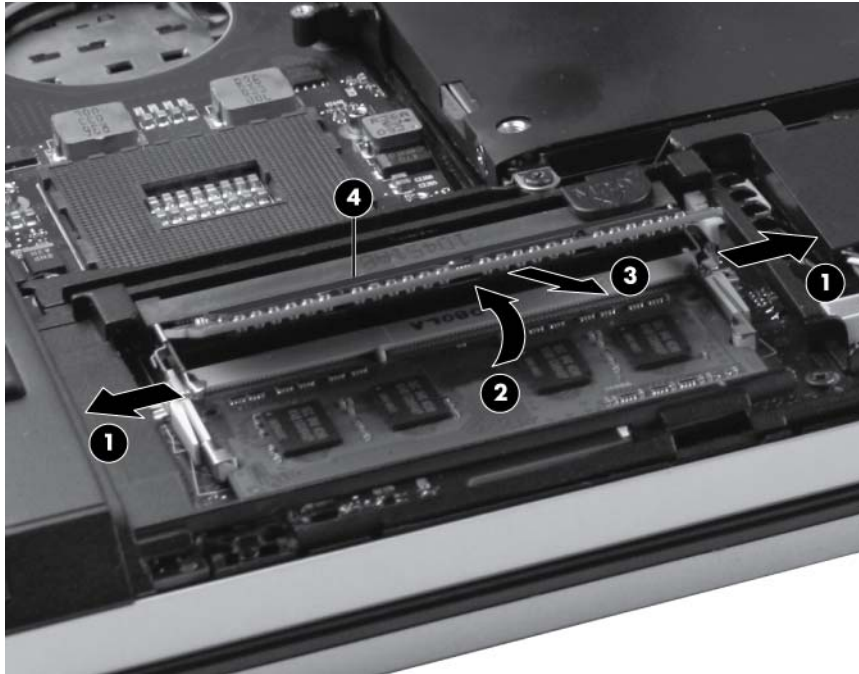
Reverse this procedure to install the memory module.

Bluetooth module

Description	Spare part number
HP Integrated Module with Bluetooth 2.1 Wireless Technology	537921-001

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 651384-001.

Before removing the Bluetooth module, follow these steps:

1. 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.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

4. Remove the battery (see).

5. Remove the service access cover (see).

Remove the Bluetooth module:

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

2. Slide the cable **(2)** out of the clip and away from the routing channel.
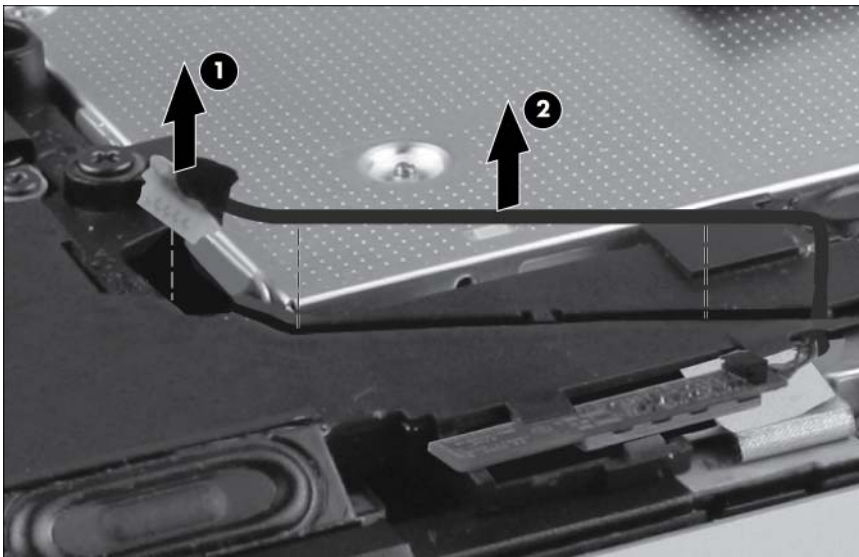
3. Using a thin tool, gently pry the outer edge **(1)** of the module away from the base enclosure.

4. Rotate the module **(2)** away from the base enclosure.

5. Remove the module **(3)**.
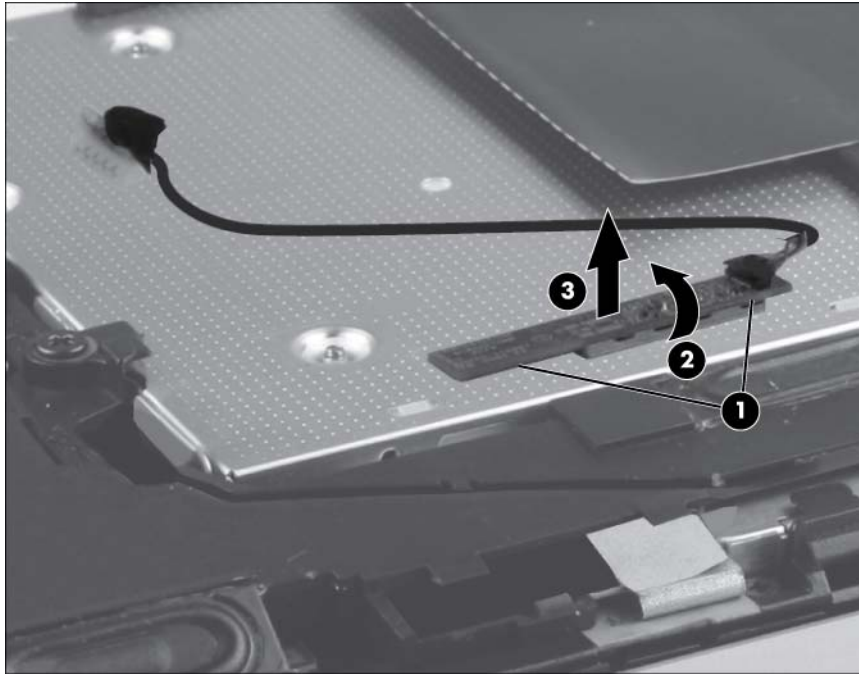
6. If the Bluetooth module cable must be replaced, disconnect the cable from the Bluetooth module.
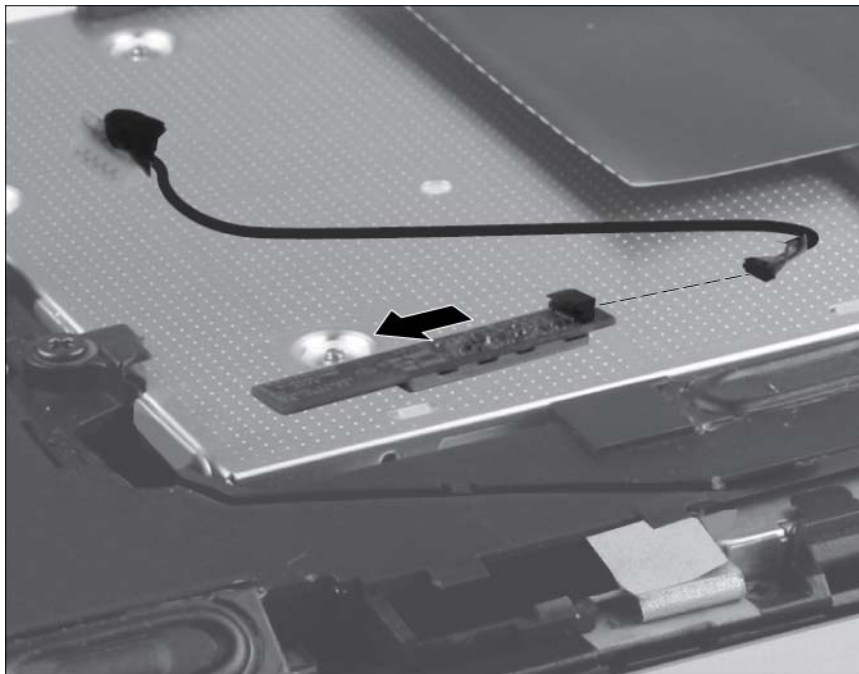
Reverse the above procedure to install the Bluetooth module.

Speaker

Description	Spare part number
Speaker	651377-001

Before removing the speaker, follow these steps:

1. 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.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

4. Remove the battery (see Battery on page 41).

5. Remove the service access cover (see Service access cover on page 42).

6. Remove the Bluetooth module (see Bluetooth module on page 50).

Remove the speaker:

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

2. Remove the Phillips M2.0×3.0 screw **(2)** and the two Phillips M2.0×7.0 screws **(3)** that secure the speaker to the base enclosure.

3. Remove the speaker **(4)** from the base enclosure.
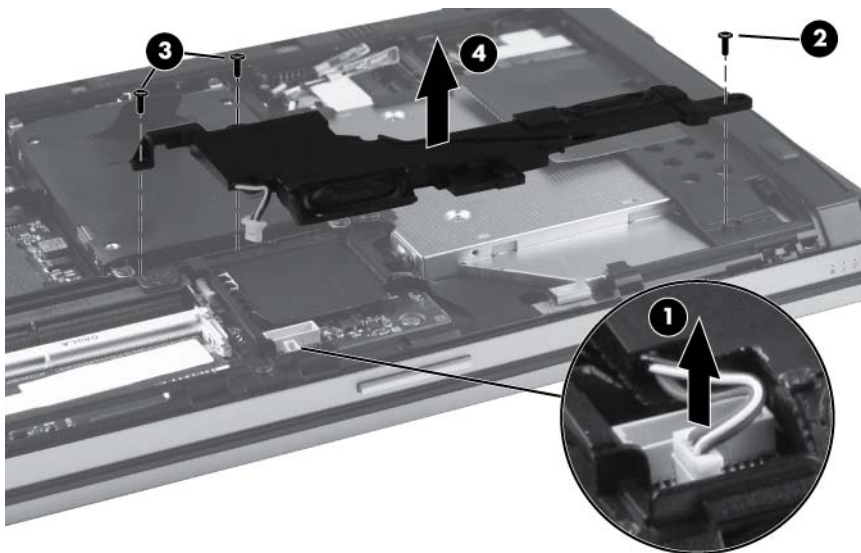
Reverse this procedure to install the speaker.

Optical drive

Description	Spare part number
DVD±RW and CD-RW SuperMulti Double-Layer Drive	651387-001
DVD-ROM Drive	651386-001

Before removing the optical drive, follow these steps:

1. 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.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

4. Remove the battery (see Battery on page 41).

5. Remove the service access cover (see Service access cover on page 42).

Remove the optical drive:

1. Position the computer with the right side toward you.

2. Loosen the Phillips M2.5x8.0 captive screw **(1)** that secures the optical drive to the computer.

3. Apply outward pressure to the back of the optical drive, and then slide the drive **(2)** out of the computer.

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

5. Remove the two Phillips M2.0×3.0 screws **(1)** that secure the optical drive bracket to the optical drive.

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

Reverse this procedure to reassemble and install the optical drive.

Modem module

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

Description	Spare part number
Modem module (56k v.92 MDC data/fax modem)	628824-001

Before removing the modem module, follow these steps:

1. 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.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

4. Remove the battery (see Battery on page 41).

5. Remove the service access cover (see Service access cover on page 42).

Remove the modem module :

1. Remove the Phillips M2.0×3.0 screw **(1)** that secures the modem module to the system board.

2. Lift the modem module **(2)** straight up to remove it from the system board.

3. Disconnect the modem module cable **(3)** from the modem module.
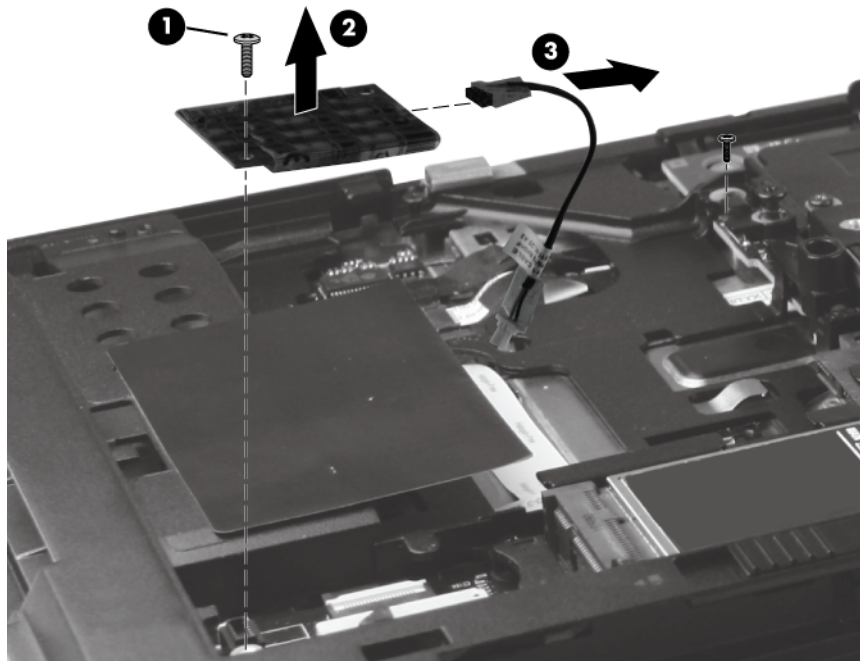
Reverse this procedure to install the modem module.

WWAN module

Description	Spare part number
HP hs2340 HSPA+ Mobile Broadband Module	632155-001
HP un2430 EV-DO/HSPA Mobile Broadband Module (all countries and regions except the People's Republic of China)	634400-001

⚠ **CAUTION:** The WWAN module and the WLAN module are not interchangeable.

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 technical support through Help and Support.

Before removing the WWAN module, follow these steps:

1. 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.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

4. Remove the battery (see).

5. Remove service access cover (see).

Remove the WWAN module:

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

📝 **NOTE:** The black WWAN antenna cable is connected to the WWAN module "Main" terminal. The white WWAN antenna cable is connected to the WWAN module "Aux" terminal.

2. Remove the two Phillips M2.0×3.0 screws **(2)** that secure the WWAN module to the computer.

3. Pull the module **(3)** away from the slot at an angle.

NOTE: WWAN modules are designed with a notch **(4)** to prevent incorrect insertion.
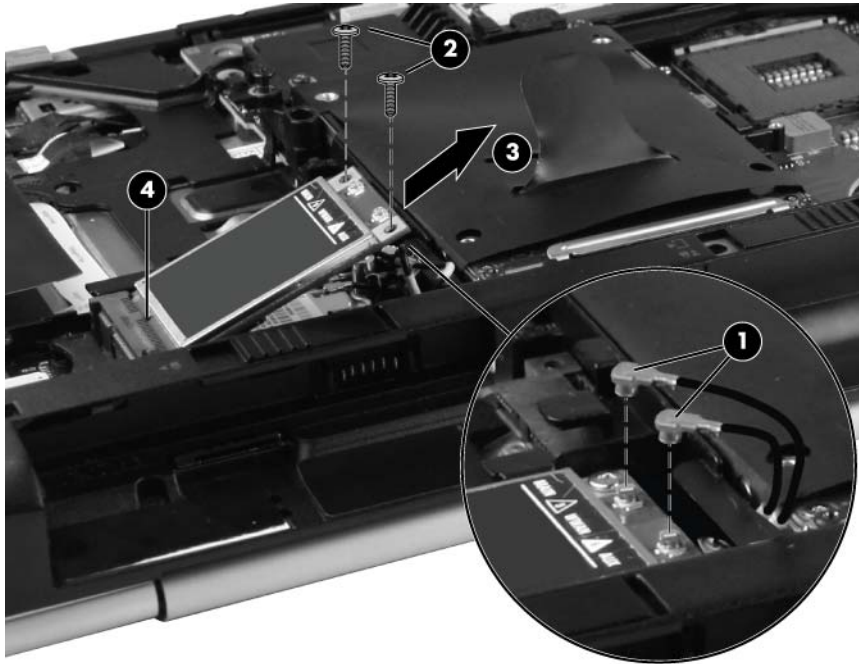
Reverse this procedure to install the WWAN module.

WLAN module

Description	Spare part number
Broadcom 43224AGN 802.11a/b/g/n WLAN module for use in Antigua and Barbuda, Barbados, Belize, Canada, Guam, and the United States	582564-001
Broadcom 43224AGN 802.11a/b/g/n WLAN module for use in Albania, Algeria, Angola, Argentina, Aruba, Australia, Austria, the Bahamas, Bahrain, Bangladesh, Belgium, Benin, Bolivia, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Cayman Islands, the Central African Republic, Chad, Chile, Colombia, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic and Slovakia, Denmark, Djibouti, the Dominican Republic, Ecuador, Egypt, El Salvador, Equitorial Guinea, Estonia, Finland, France, French Guiana, Gabon, Gambia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea- Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Japan, Jordan, Kazakhstan, Kenya, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Madagascar, Malaysia, the Maldives, Mali, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Morocco, Mozambique, Namibia, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Panama, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Puerto Rico, Qatar, Romania, Russia, Rwanda, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia and Montenegro, Sierra Leone, Slovenia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Vincent and the Grenadines, Suriname, Sweden, Switzerland, Taiwan, Tanzania, Thailand, Togo, Tunisia, Turkey, Ukraine, the United Arab Emirates, the United Kingdom, the United States Virgin Islands, Uruguay, Uzbekistan, Venezuela, Vietnam, Yemen, Zimbabwe	582564-002
Broadcom 4313AGN 802.11a/b/g/n WLAN module	593836–001
Intel Centrino Ultimate-N 6300, 3x3 a/g/n WiFi Adapter	572511-001
Intel Centrino Advanced N 6205, 2x2 a/b/g/n WiFi Adapter	631954–001

⚠ **CAUTION:** The WWAN module and the WLAN module are not interchangeable.

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 technical support through Help and Support.

Before removing the WLAN module, follow these steps:

1. 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.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

4. Remove the battery (see Battery on page 41) and the following components:

    a. Service access cover (see Service access cover on page 42.)

    b. WWAN module (see WWAN module on page 56.)

Remove the WLAN module:

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

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

2. Remove the two Phillips M2.5×6.0 screws that secure the WLAN module to the computer **(2)**. (The edge of the module opposite the socket rises.)

3. Pull the module **(3)** away from the slot at an angle.

   NOTE: WLAN modules are designed with a notch **(4)** to prevent incorrect insertion.
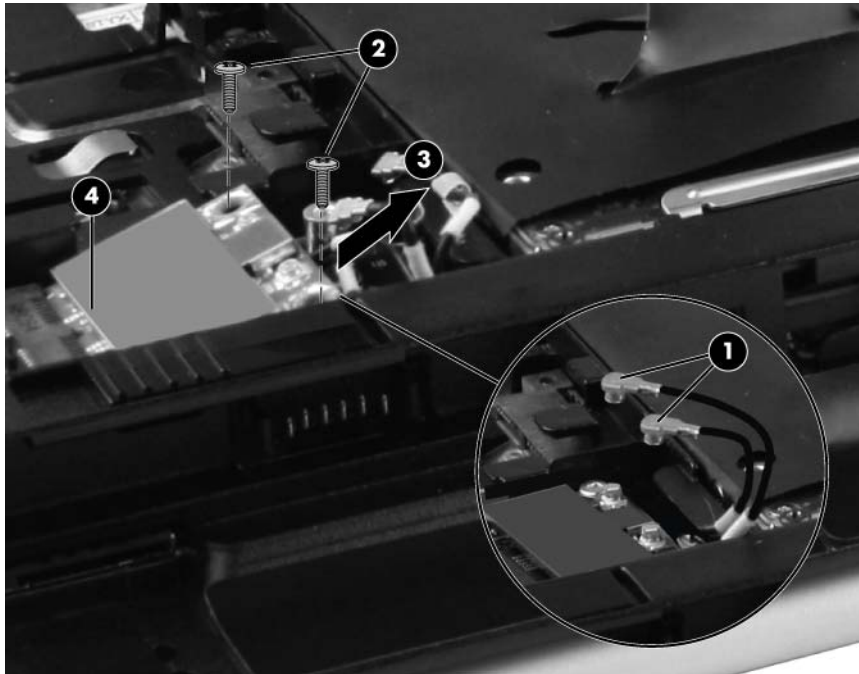
Reverse this procedure to install the WLAN module.

Hard drive or solid-state drive

Description	Spare part number
Supports the following 9.50 mm, 6.35 cm (2.50 in) SATA hard drives and solid-state drives:	
750 GB, 7200-rpm hard drive	633252-001
500 GB, 7200-rpm hard drive	634925-001
320 GB, 7200-rpm hard drive	641672-001
320 GB, 7200-rpm Self-Encrypting Drive (SED) hard drive	626978-001
250 GB, 7200-rpm hard drive	635225–001
160 GB, solid-state drive	651389-001
128 GB, solid-state drive	651388-001

Before removing the hard drive or solid-state drive, follow these steps:

1. 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.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

4. Remove the battery (see Battery on page 41).

5. Remove the service access cover (see Service access cover on page 42).

Remove the hard drive or solid-state drive:

1. Position the computer with the front toward you.

2. Loosen the 4 Phillips M2.0x5.0 captive screws **(1)** that secure the drive to the computer.

3. Pull up on the tab **(2)** to remove the drive.

4. If it is necessary to replace the drive connector, remove the connector **(3)** from the drive.
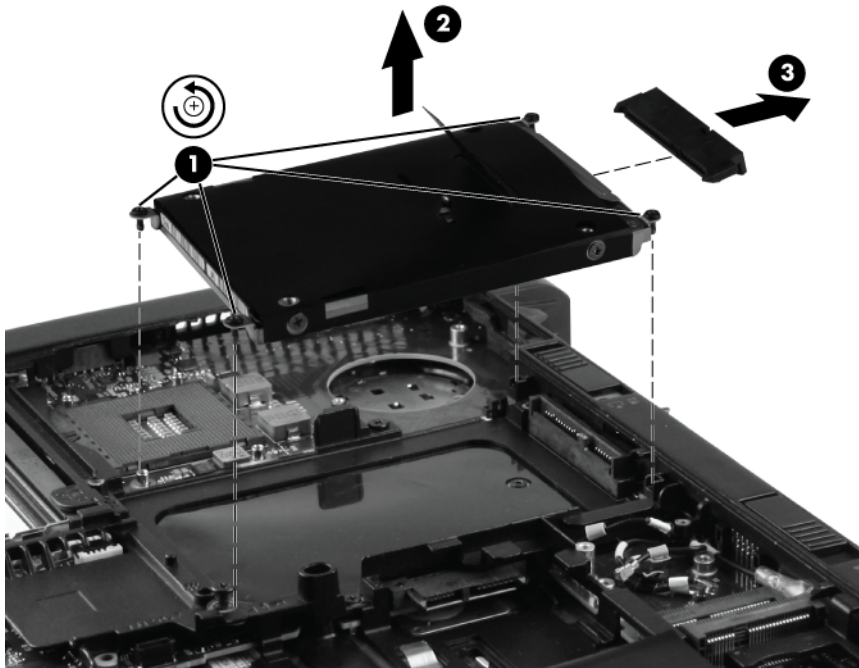
5. If it is necessary to replace the drive bracket, remove the two Phillips M3.0x3.0 screws **(1)** on each side of the drive, and then lift the bracket **(2)** away from the drive.
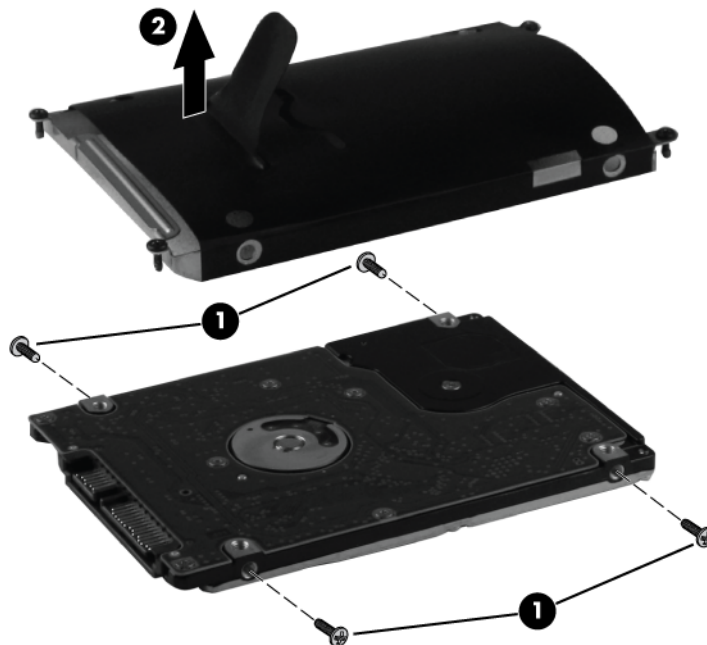
Reverse this procedure to reassemble and install the drive.

Keyboard

Country/region	Spare part number	Country/region	Spare part number
Belgium	651380-A41	Northwest Africa	651390–001
Brazil	651380-201	Norway	651380-091
Bulgaria	651380-261	Portugal	651380-131
The Czech Republic	651380-A81	Russia	651380-251
Denmark	651380-081	Saudi Arabia	651380-171
France	651380-051	Slovakia	651380-A81
French Canada	651380-121	Slovenia	651380-BA1
Germany	651380-041	South Korea	651380-AD
Greece	651380-DJ	Spain	651380-071
Hungary	651380-211	Sweden and Finland	651380-B71
Iceland	651380-DD1	Switzerland	651380-BG1
Israel	651380-BB1	Taiwan	651380-AB1
Italy	651380-061	Thailand	651380-281
Japan	651380-291	Turkey	651380-141
Latin America	651380-161	The United Kingdom and Singapore	651380-031
The Netherlands	651380-B31	The United States	651380-001

Before removing the keyboard, follow these steps:

1. 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.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

4. Remove the battery (see Battery on page 41) and the following components:

   a. Service access cover (see Service access cover on page 42.)

   b. Fan (see Fan and heat sink on page 44.)

Remove the keyboard:

1. Loosen the three Phillips M2.0x8.0 captive screws that secure the keyboard to the computer.
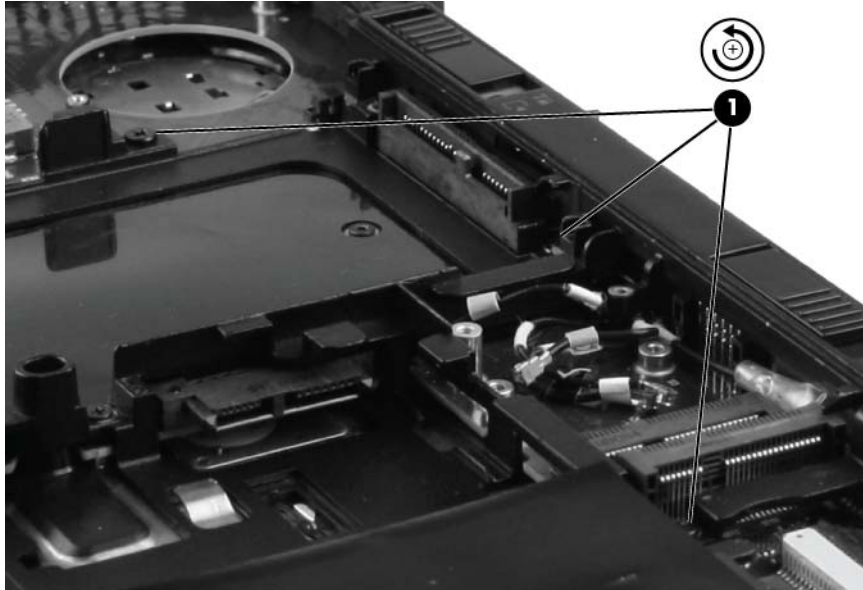
2. Turn the computer right-side up, and then open the display.

3. Carefully position the open computer on its left side, and then press on the keyboard through the opening where the fan was removed.

4. Carefully turn the computer right-side up, with the front toward you.

5. Rotate the keyboard forward until it rests upside down on the palm rest **(1)**.

6. Disconnect the mouse cable **(2)** from the system board.

7. Open the ZIF connector **(3)** for the keyboard cable, and then remove the cable **(4)**.

8. Remove the keyboard **(5)**.
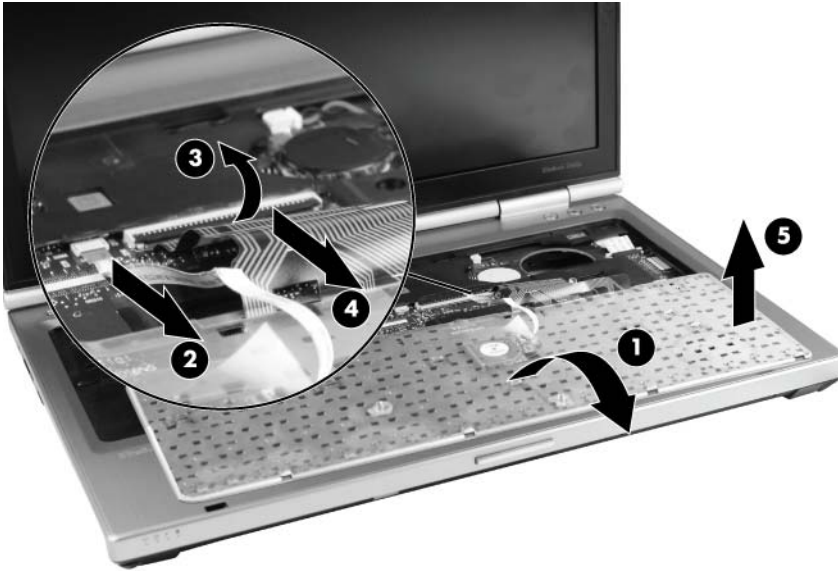
Reverse this procedure to install the keyboard.

RTC battery

Description	Spare part number
RTC battery	481089-001

Before removing the RTC battery, follow these steps:

1. 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.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

4. Remove the battery (see Battery on page 41) and the following components:

   a. Service access cover (see Service access cover on page 42.)

   b. Keyboard (see Keyboard on page 62.)

Remove the RTC battery:

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

2. Remove the RTC battery **(2)** from the socket.
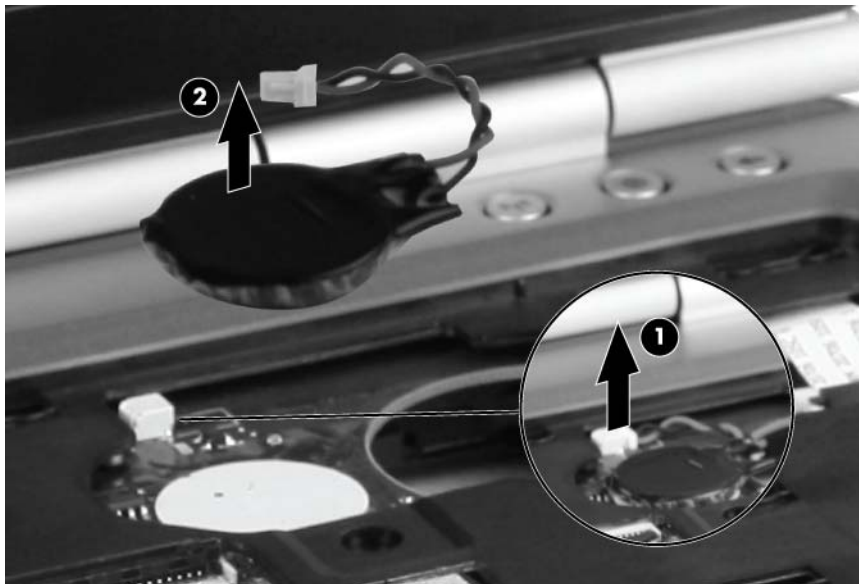
Reverse this procedure to install the RTC battery.

Base enclosure

| Description	Spare part number
Base enclosure	651372-001

Before removing the base enclosure, follow these steps:

1. 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.

2. Disconnect all external devices connected to the computer, and remove any media cards from the ExpressCard slot and the Media Card Reader.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

4. Remove the following components:

    a. Battery (see Battery on page 41.)

    b. Service access cover (see Service access cover on page 42.)

    c. SIM (see SIM on page 43.)

    d. Fan and heat sink (see Fan and heat sink on page 44.)

    e. Bluetooth module (see Bluetooth module on page 50.)

    f. Speaker (see Speaker on page 52.)

    g. Optical drive (see Optical drive on page 53.)

    h. Hard drive or solid-state drive (see Hard drive or solid-state drive on page 60.)

    i. WWAN (see WWAN module on page 56.)

    j. WLAN (see WLAN module on page 58.)

    k. Modem module (see Modem module on page 55.)

    l. Keyboard (see Keyboard on page 62.)

Remove the base enclosure:

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

2. Open the ZIF connector for the power button cable **(1)**, and remove the cable **(2)**.

3. Open the ZIF connector for the fingerprint reader cable **(3)**, and remove the cable **(4)**.

4. Open the ZIF connector for the function board cable **(5)**, and remove the cable **(6)**.
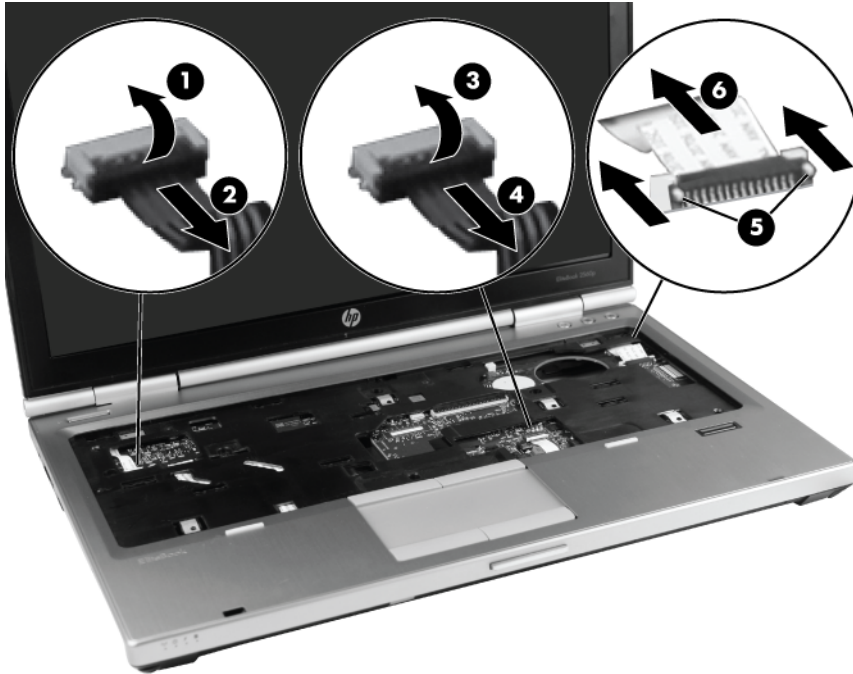
5. Close the display, and position the computer upside down, with the rear toward you.

6. Remove the four Torx 8 2.5x7.0 screws from the hinges.

7. Position the computer with the front toward you. Remove the three Phillips M2.0x7.0 screws **(1)** at the front of the computer and the three Phillips M2.0x3.0 screws **(2)** in the optical drive bay.

8. Remove the three screw covers **(3)** and the five Torx 8 2.5x7.0 screws **(4)** along the outside edges.

9. Remove the three Phillips M2.0x3.0 screws **(5)** and the two Phillips M1.6 pan-head screws **(6)** from the battery bay.

> **NOTE:** Remove the two pan-head screws with a Phillips #0 screwdriver, using a torque of 1.5 kg/cm.

10. Remove the base enclosure **(7)**.
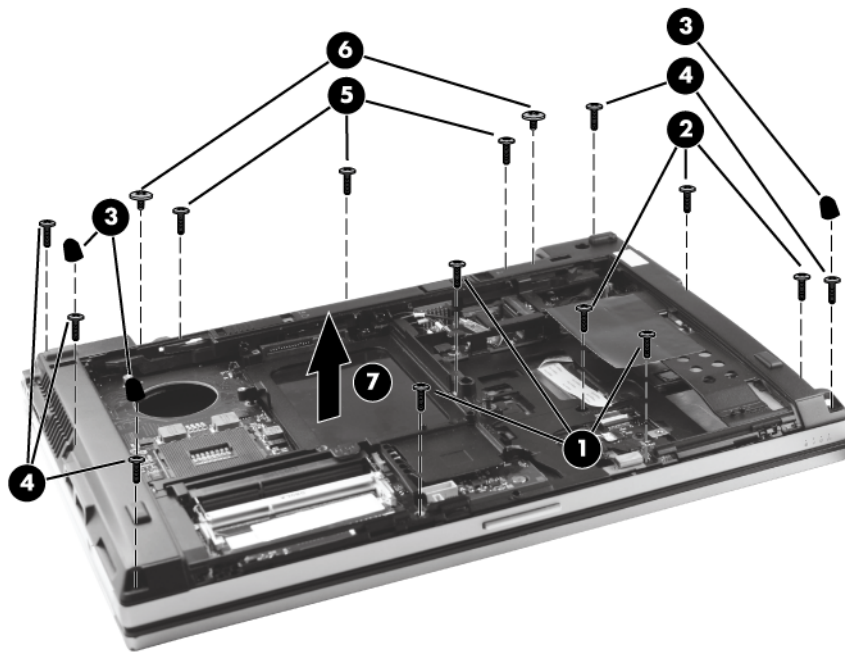
System board

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

Description	Spare part number
For use in all countries and regions except the People's Republic of China and Russia	651358-001
For use only in the People's Republic of China and Russia	651359-001

Before removing the system board, follow these steps:

1. 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.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

4. Remove the battery (see Battery on page 41) and the following components:

   a. Service access cover (see Service access cover on page 42.)

   b. Keyboard (see Keyboard on page 62.)

   c. Base enclosure (see Base enclosure on page 66.)

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

- Memory modules (see Memory module on page 48.)

- WWAN module (see WWAN module on page 56.)

- WLAN module (see WLAN module on page 58.)

- Modem module (see Modem module on page 55.)

- Fan/heat sink assembly (see Fan and heat sink on page 44.)

- Processor (see Processor on page 46.)

Remove the system board:

1. Position the computer upside down, with the battery bay toward you.

2. Remove the ExpressCard blank **(1)** from the card reader, if you have not already done so .

3. Open the ZIF connector for the smart card reader cable **(2)**, and then remove the cable **(3)**.

4. Remove the tape **(4)** from the display cable, and then disconnect the cable **(5)**.

5. Pull the wireless cables **(6)** away from system board.
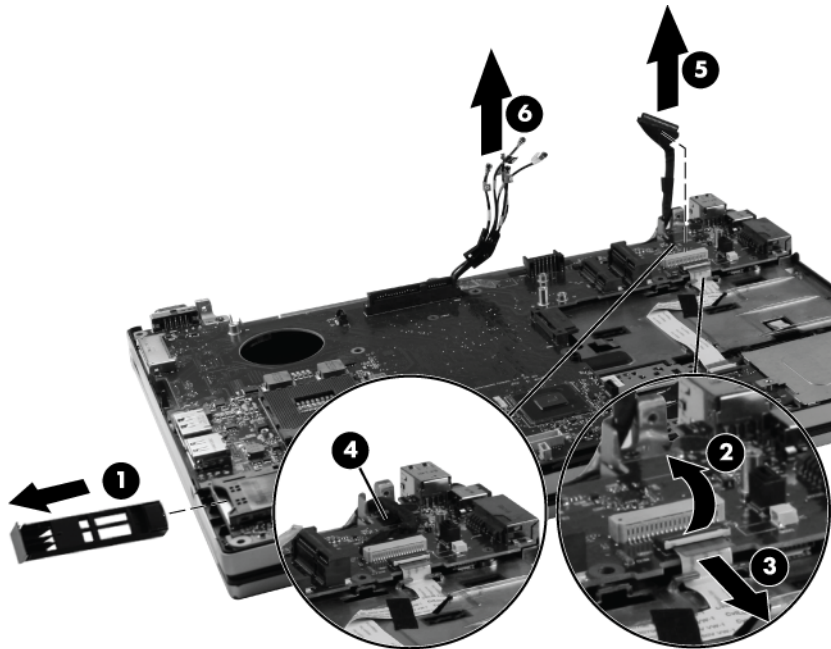
6. Remove the Phillips M2.0x4.0 screw **(1)** that secures the system board to the top cover. Use the optical drive connector **(2)** to lift the left side of the system board until it rests at an angle, and then remove the system board **(3)**.
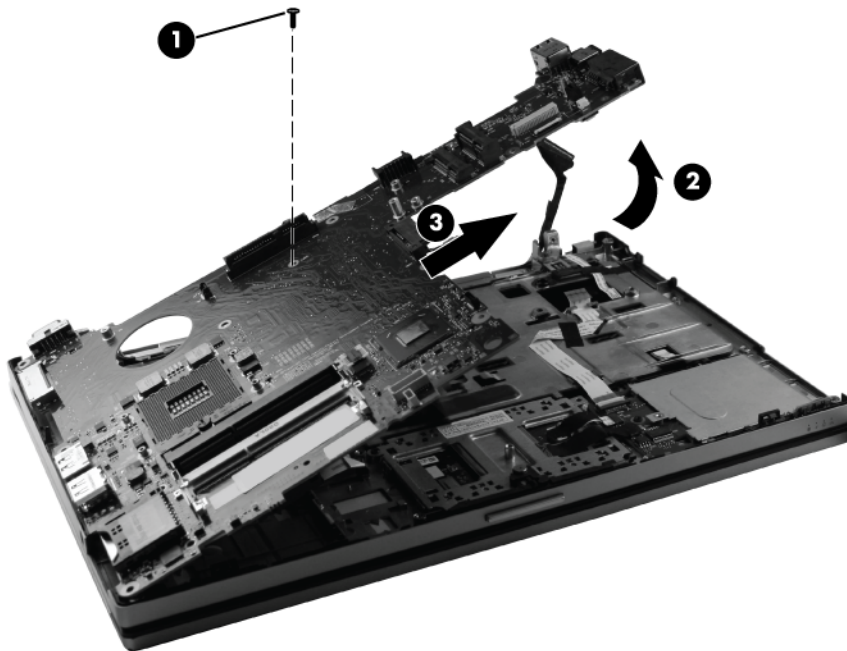
Reverse this procedure to install the system board.

Top cover

NOTE: The top cover spare part kit includes the TouchPad board and cable, TouchPad button board and cable, and TouchPad bracket.

Description	Spare part number
For use only on computer models equipped with a fingerprint reader (includes fingerprint reader and cable)	651375-001
For use only on computer models not equipped with a fingerprint reader	651374-001

Before removing the top cover, follow these steps:

1. 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.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

4. Remove the battery (see Battery on page 41), and then remove the following components:

    a. Service access cover (see Service access cover on page 42.)

    b. Base enclosure (see Base enclosure on page 66.)

    c. System board (see System board on page 69.)

Remove the top cover:

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

2. Remove the wireless cables from the routing channels **(1)**. Remove WLAN 1 and WWAN 5 from the left channel **(2). Remove** WLAN 2 and WWAN 3 and 6 from the right channel **(3)**.

3. Remove the two Phillips M2.0x7.0 screws **(4)** from the hinges.

4. Slide the top cover toward you and then lift the cover **(5)** up to remove it.
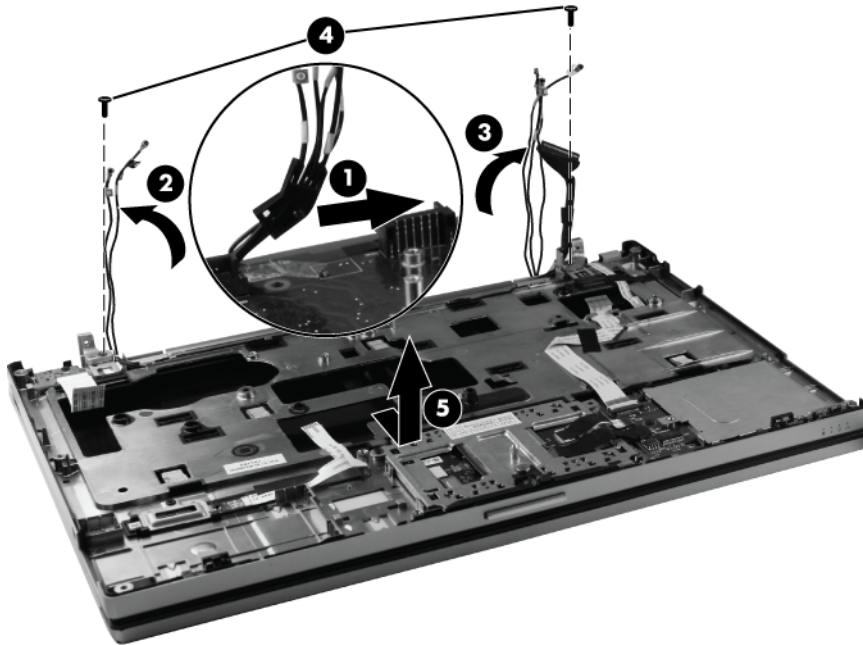
5. If it is necessary to replace the TouchPad, remove the two Phillips M2.0x3.0 screws **(1)** that secure the TouchPad to the top cover.

6. Slide the TouchPad away from you until the front edge **(2)** clears the lip of the top cover. Then lift the TouchPad **(3)** up.

7. Release the TouchPad cable **(4)** from the ZIF connector **(5)**, and then remove the cable **(6)**.
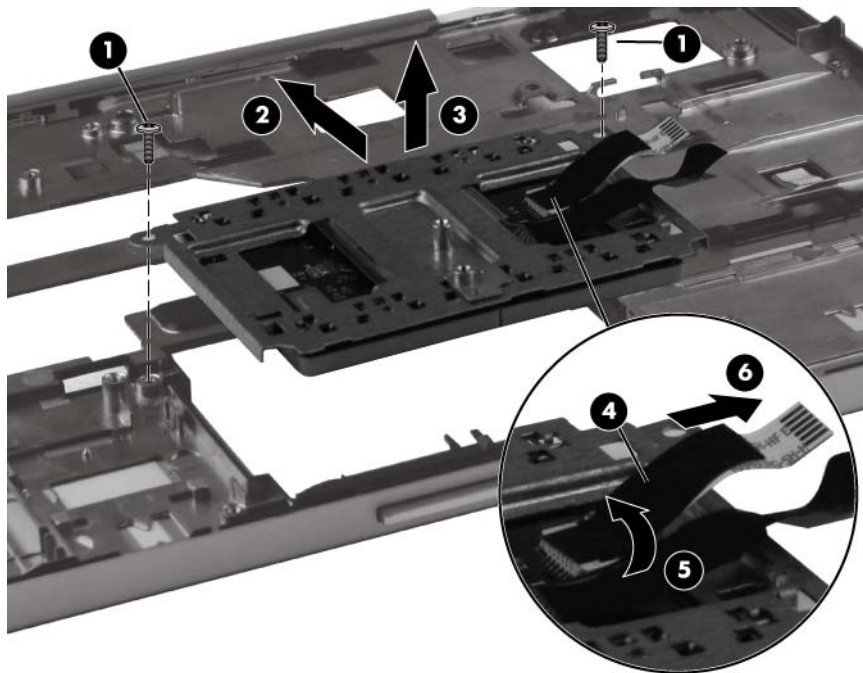
Reverse this procedure to install the TouchPad and the top cover.

Power button board

| Description	Spare part number
Power button board	651360-001

Before removing the power button board, follow these steps:

1. 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.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

4. Remove the battery (see Battery on page 41), and then remove the following components:

   a. Service access cover (see Service access cover on page 42.)

   b. Keyboard (see Keyboard on page 62.)

   c. Base enclosure (see Base enclosure on page 66.)

   d. Top cover (see Top cover on page 71.)

Remove the power button board:

1. Remove the tape **(1)** from the power button cable.

2. Remove the Phillips M2.0x3.0 screw **(2)** that secures the power button board to the top cover.

3. Slide the board and cable **(3)** out of the plastic clips.
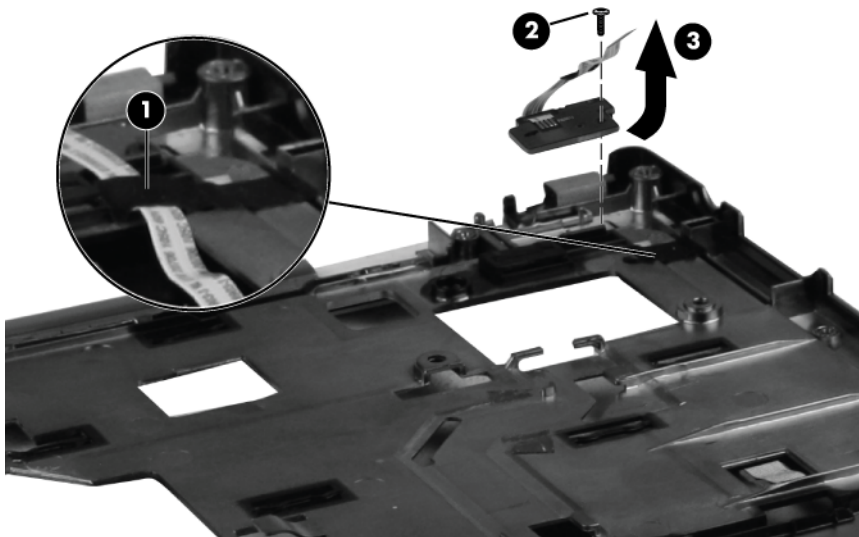
Function button board

Description	Spare part number
Function button board	651361-001

Before removing the function button board, follow these steps:

1. 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.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

4. Remove the battery (see Battery on page 41), and then remove the following components:

    a. Service access cover (see Service access cover on page 42.)

    b. Keyboard (see Keyboard on page 62.)

    c. Base enclosure (see Base enclosure on page 66.)

    d. Top cover (see Top cover on page 71.)

Remove the function button board:

1. Press down on the plastic clip **(1)** to release the metal bracket. Remove the bracket **(2).**

2. Remove the Phillips M2.0x3.0 screw **(3)** that secures the function button board to the top cover.

3. Remove the function button board **(4)**.
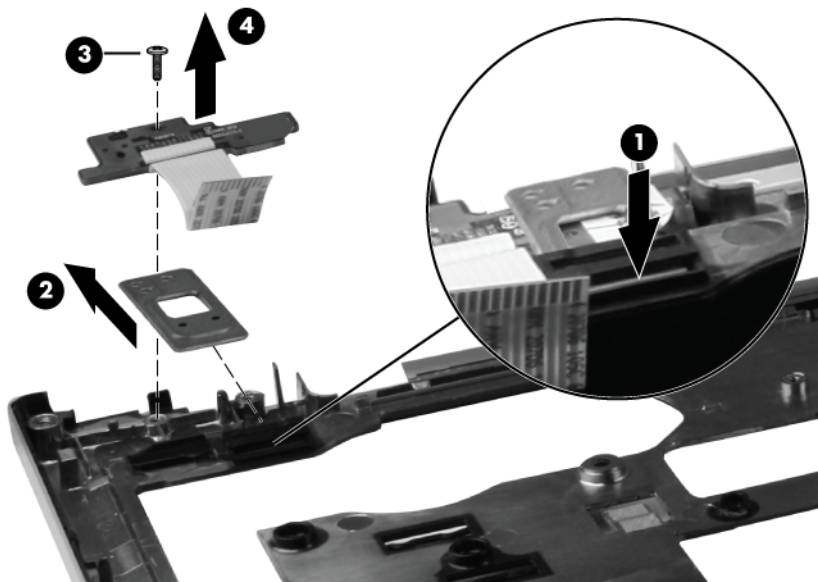
Reverse this procedure to install the function button board.

Fingerprint reader board

| Description	Spare part number
Fingerprint reader board	651364-001

Before removing the fingerprint reader board, follow these steps:

1. 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.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

4. Remove the battery (see), and then remove the following components:

   a. Service access cover (see .)

   b. Keyboard (see .)

   c. Base enclosure (see .)

   d. Top cover (see .)

Remove the fingerprint board:

1. Remove the Phillips M2.0x3.0 screw **(1)** from fingerprint reader frame, and then remove the frame **(2)**.

2. Remove the tape **(3)** from fingerprint reader cable, and then remove the board and cable **(4)** from the top cover.
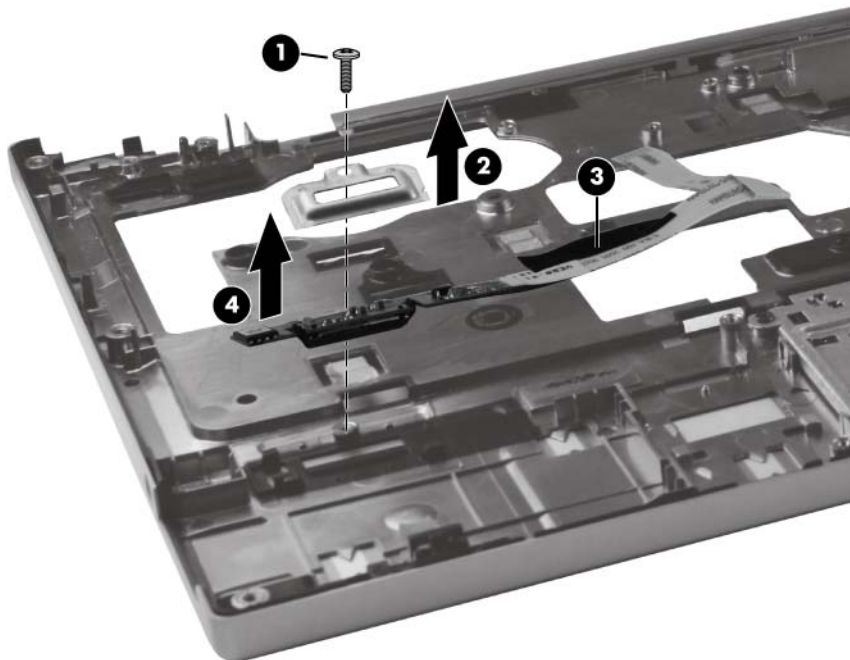
Reverse this procedure to install the fingerprint reader board.

Smart card reader

Description	Spare part number
Smart card reader (includes cable)	651363-001
Smart card reader bracket	598767-001

Before removing the card reader board and bracket, follow these steps:

1. 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.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

4. Remove the battery (see Battery on page 41), and then remove the following components:

    a. Service access cover (see Service access cover on page 42.)

    b. Keyboard (see Keyboard on page 62.)

    c. Base enclosure (see Base enclosure on page 66.)

    d. Top cover (see Top cover on page 71.)

Remove the smart card reader board and bracket:

1. Open the ZIF connector **(1)** for the smart card cable, and remove the cable **(2).**

2. Disconnect the cables **(3)** and **(4)** from the TouchPad.

3. Remove the Philips M2.0x3.0 screw **(5)** that secures the smart card reader board to the top cover, and then remove the smart card reader board **(6)**.
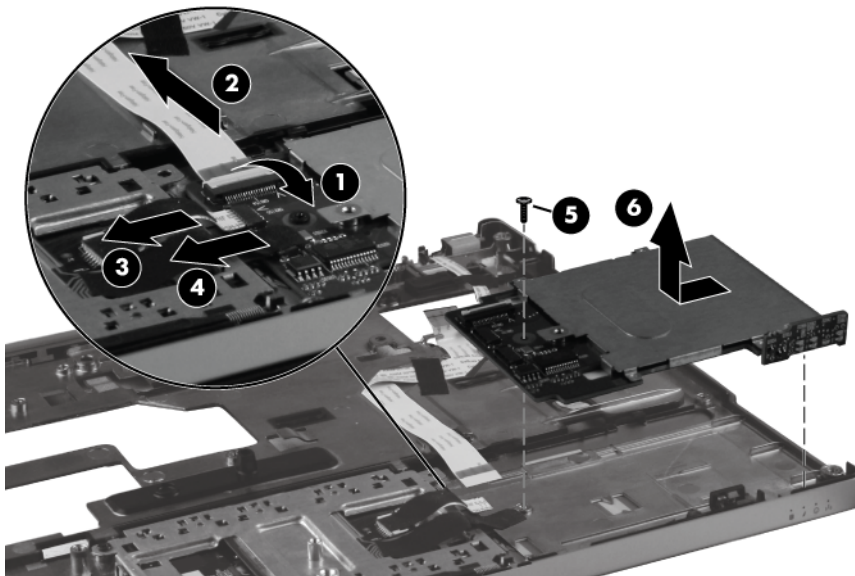
Reverse this procedure to install the smart card reader board, cable, and bracket.

Display panel

NOTE: If it is necessary to replace only the display panel, follow the procedure in this section. To replace internal display components, follow the procedures in this section and then see Display components on page 80).

Description	Spare part number
Display bezel for use with computer models equipped with a webcam	651366-001
Display bezel for use with computer models not equipped with a webcam	651365-001
31.75 cm (12.50 in) high definition (HD), light-emitting diode (LED), AntiGlare (AG) SVA display panel	638553–001

Before removing the display assembly, follow these steps:

1. 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.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

4. Remove the battery (see Battery on page 41).

Remove the display panel:

1. Turn the computer right-side up, with the front away from you.

2. Open the display as far as possible.

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

4. Remove the display bezel **(4)**. The display bezel is available using spare part number 651366-001 (for use only with computer models equipped with a webcam) and 651365-001 (for use only with computer models not equipped with a webcam).
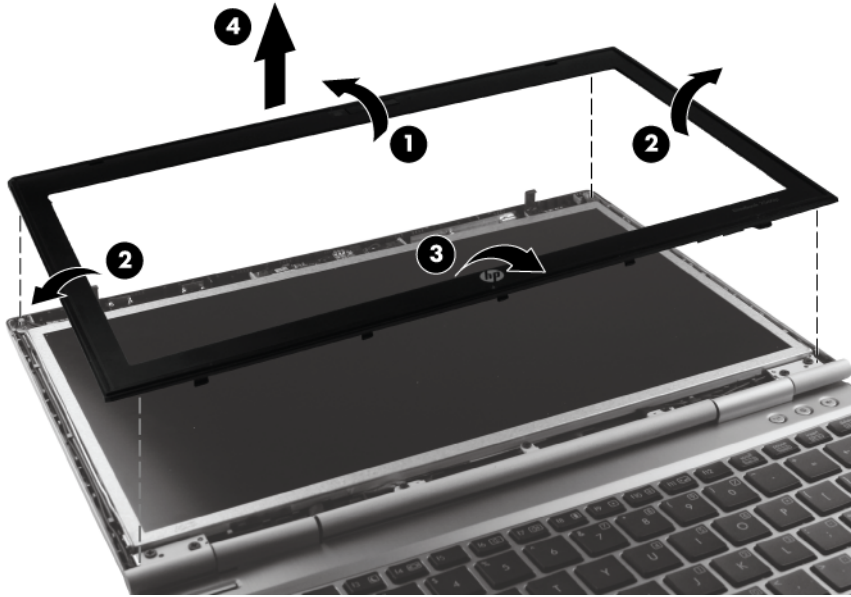
⚠ **CAUTION:** The display enclosure will be unsupported when the screws are removed. To prevent damage to the display enclosure, support it before removing the screws in the next step.

5. Remove the four Phillips M2.5x4.0 screws **(1)** that secure the display hinge covers and the bottom bracket to the computer.

6. Remove the two Phillips M2.0x2.0screws **(2)** at the top corners of the display enclosure.

7. Carefully close the display **(1)**.

8. Gently lift the display enclosure **(2)** away from display panel, which rests on the keyboard.

9. Lift the tape **(3)** that secures the display cable to the back of the display panel.

10. Remove the cable from the display panel **(4)**.
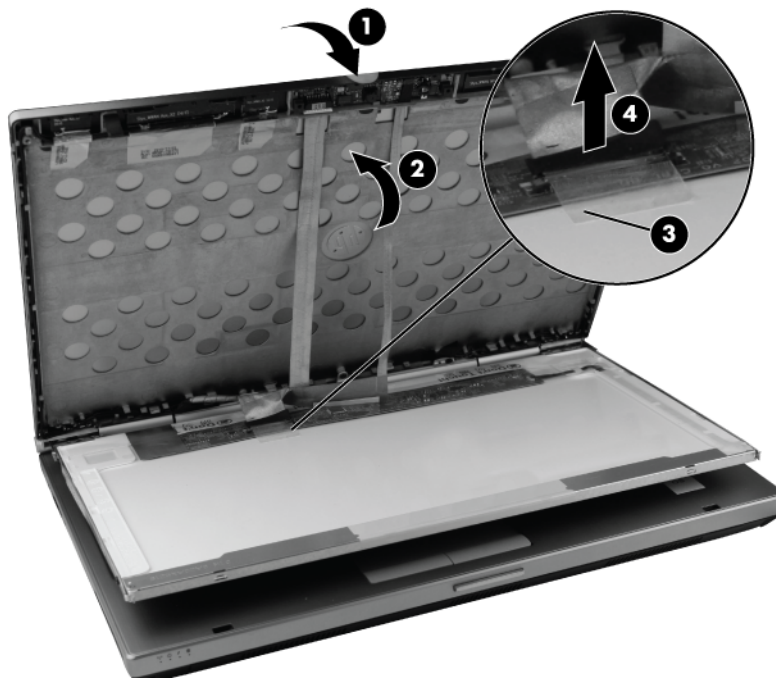
11. Remove the two Phillips M3.0x2.0 screws **(1)** from each display bracket.

12. Lift the display panel **(2)** away from the brackets.

Display components

NOTE: For removal of the display panel alone, see). To remove internal display components, remove the display panel, and then continue with the procedures in this section.

Description	Spare part number
Webcam module (select models only), includes microphone and keyboard light	642796-001
Hinge covers	651370–001
Display Hinge Kit (includes left hinge and bracket, and right hinge and bracket)	651369-001

Before removing the internal display components, follow these steps:

1. 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.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

4. Remove the battery (see), and then remove the following components:

   a. Display panel (see .)

   b. Service access cover (see .)

   c. Keyboard (see .)

   d. Base enclosure (see .)

To replace the webcam module, follow these steps:

1. Disconnect the webcam module cable **(1)** from the webcam module.

2. Gently pry the outside edge **(2)** of the module away from the display enclosure.

3. Remove the webcam module **(3)**.
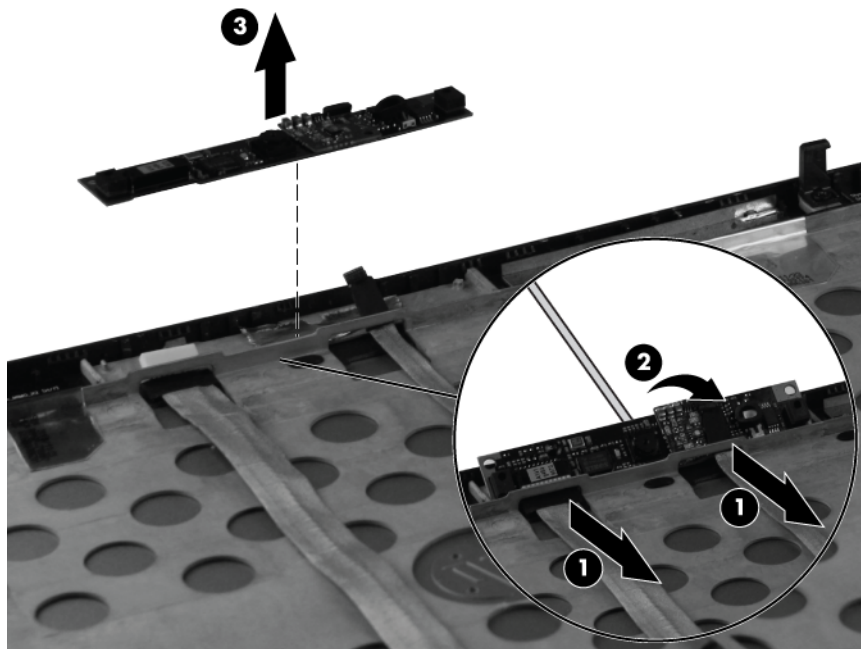
To replace the outer hinge covers, the inner hinge covers, or the hinges and brackets, follow these steps:

1. Pull the display brackets **(1)** toward the outside edges of the display enclosure, and remove the brackets **(2)**.

2. Slide the inside hinge covers **(3)** toward the inside of the brackets. Slide the outside hinge covers **(4)** toward the outside of the brackets.
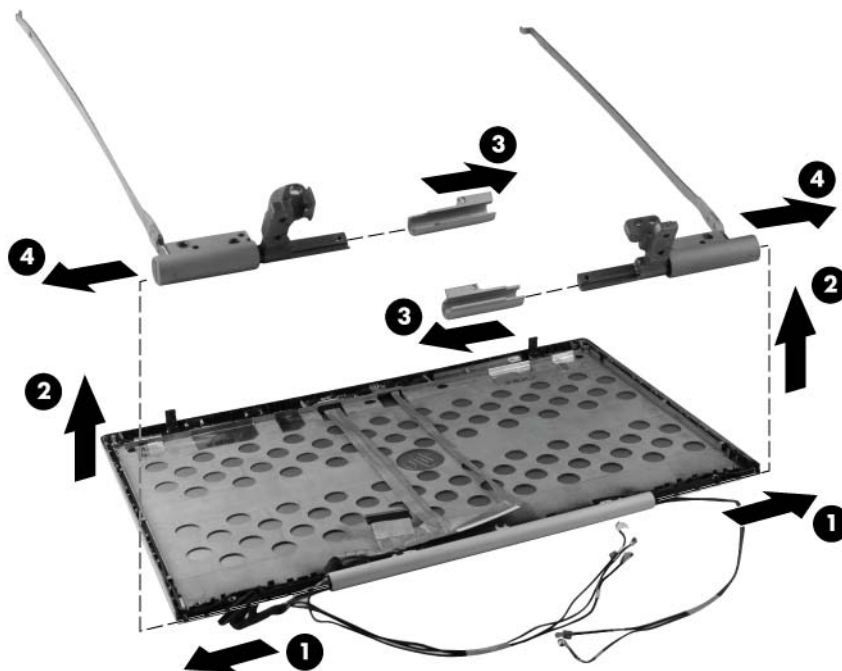
Reverse this procedure to reassemble the display components.

5   Computer Setup

Starting Computer Setup

Computer Setup is a preinstalled, ROM-based utility that can be used even when the operating system is not working or will not load.

NOTE: Some of the Computer Setup menu items listed in this guide may not be supported by your computer.

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 BIOS Setup.

Using Computer Setup

Navigating and selecting in Computer Setup

The information and settings in Computer Setup are accessed from the File, Security, Diagnostics, and System Configuration menus.

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 BIOS Setup.

3.   Select the **File**, **Security**, or **System Configuration** menu.

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 BIOS 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-right 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.

Computer Setup menus

The menu tables in this section provide an overview of Computer Setup options.

NOTE: Some of the Computer Setup menu items listed in this chapter may not be supported by your computer.

File menu

Select	To do this
System Information	- View identification information for the computer and the batteries in the system. - View specification information for the processor, cache and memory size, system ROM, video revision, and keyboard controller version.
Set System Date and Time	Set or change the date and time on the computer.
System Diagnostics	Displays the following information: - System Information - Identification information for the computer and the batteries in the system. - Specification information for the processor, cache and memory size, system ROM, video revision, and keyboard controller version. - Start-up Test–Verifies the system components needed for starting the computer. - Run in Test–Runs a comprehensive check on system memory. - Hard Disk Test–Runs a comprehensive self-test on any hard drive in the system. - Memory Test–Runs a comprehensive test on any memory installed in the computer. - Battery Test–Runs a comprehensive test on any batteries installed in the computer. - Error Log–Displays a log file if any errors have occurred.
Restore defaults	Replace the configuration settings in Computer Setup with the original factory settings. (Hard drive mode, password settings, and security settings are not changed when you restore the factory settings.)
Reset BIOS security to factory default	Restore the BIOS security settings to the factory default.
Ignore changes and exit	Cancel any changes entered during the current session. Then exit and restart the computer.
Save changes and exit	Save any changes entered during the current session. Then exit and restart the computer. Your changes go into effect when the computer restarts.

Security menu

📝 **NOTE:** Some of the menu items listed in this section may not be supported by your computer.

Select	To do this
Administrator Tools	
Setup BIOS Administrator Password	Set up a BIOS administrator password
User Management (requires a BIOS administrator password)	
Create New BIOS User Account	- Select from a list of BIOS users. - Select from a list of ProtectTools users.
Password Policy (requires a BIOS administrator password)	Revise password policy criteria.
HP SpareKey	Enable/disable HP SpareKey (enabled by default).
Always Prompt for HP SpareKey Enrollment	Enable/disable HP SpareKey enrollment (enabled by default).
Fingerprint Reset on Reboot (If Present)	Reset/clear the fingerprint reader ownership (select models only; disabled by default).
User Tools	
Change Password	Enter, change, or delete a BIOS administrator password.
HP SpareKey Enrollment	Enroll or reset HP SpareKey, which is a set of security questions and answers used if you forget your password.
Anti Theft	
AT-P	Enable/disable Anti-Theft Protection.
DriveLock Passwords	- Enable/disable DriveLock on any computer hard drive (enabled by default). - Change a DriveLock user password or master password. **NOTE:** DriveLock settings are accessible only when you enter Computer Setup by turning on (not restarting) the computer.
Automatic DriveLock	Enable/disable Automatic DriveLock support.
TPM Embedded Security	Enable/disable support for Trusted Platform Module (TPM) Embedded Security, which protects the computer from unauthorized access to owner functions available in Embedded Security for ProtectTools. For more information, refer to the ProtectTools software. **NOTE:** You must have a setup password to change this setting.
Disk Sanitizer	Run Disk Sanitizer to destroy all existing data on the hard drive or the standard-voltage hard drive in the Upgrade bay. **CAUTION:** If you run Disk Sanitizer, the data on the selected drive is destroyed permanently.
System IDs	Enter a user-defined computer asset tracking number and ownership tag.

System Configuration menu

NOTE: Some of the menu items listed in this section may not be supported by your computer.

Select	To do this
Language	Change the Computer Setup language.
Boot Options	- Set a Startup Menu delay (in seconds). - Set the MultiBoot Express Boot Popup delay in seconds. - Enable/disable Custom Logo (disabled by default). - Enable/disable Display Diagnostic URL (enabled by default). - Enable/disable CD-ROM boot (disabled by default). - Enable/disable SD Card boot (enabled by default). - Enable/disable floppy boot (enabled by default). - Enable/disable PXE Internal NIC boot (enabled by default). - Enable/disable Unified Extensible Firmware Interface (UEFI) Boot Mode (disabled by default). - Set the Legacy Boot Order.
Device Configurations	- Enable/disable USB legacy support (enabled by default). When enabled, USB legacy support allows the following: - Use of a USB keyboard in Computer Setup even when a Windows operating system is not running - Startup from bootable USB devices, including a hard drive, diskette drive, or optical drive connected by a USB port to the computer - Select a parallel port mode: ECP (Enhanced Capabilities Port), standard, bidirectional, or EPP (Enhanced Parallel Port). - Enable/disable fan always on while connected to an AC outlet (enabled by default). - Enable/disable Data Execution Prevention (select models only). When enabled, the processor can disable some virus code execution, which helps to improve computer security (disabled by default). - SATA (Serial Advanced Technology Attachment) device mode. The following options are available: - AHCI (Advanced Host Controller Interface) - IDE (Integrated Drive Electronics) - RAID (select models only)

Select	To do this
Device Configurations *(continued)*	**NOTE:** Availability of these options varies by computer model.
	● Enable/disable secondary battery fast charge (enabled by default).
	● Enable/disable HP QuickLook (enabled by default).
	● Enable/disable Preboot Authentication on HP QuickLook Boot (enabled by default).
	● Enable/disable HP QuickWeb (enabled by default).
	● Enable/disable HP QuickWeb Write Protect (disabled by default).
	● Enable/disable Virtualization Technology (select models only; disabled by default).
	● Enable/disable TXT (Intel Trusted Execution Technology) (select models only; disabled by default).
	● Multi Core CPU (enabled by default).
	● Intel HT Technology (enabled by default).
	● Enable/disable Wake on USB (enabled by default).
	● Enable/disable Num lock state at boot (disabled by default).

Select	To do this
Built in Device Options	• Enable/disable the wireless button state (enabled by default).
	• Enable/disable embedded WLAN device radio (select models only; enabled by default).
	• Enable/disable the embedded Bluetooth device radio (enabled by default).
	• Enable/disable the Network Interface Controller (LAN) (enabled by default).
	• Enable/disable LAN/WLAN switching (disabled by default).
	• Set the wake on LAN state. Options include the following:
	◦ Disabled
	◦ Boot to Network
	◦ Follow Boot Order
	• Enable/disable the Ambient Light Sensor.
	• Enable/disable the Notebook Upgrade bay device (enabled by default).
	• Enable/disable the fingerprint device (enabled by default).
	• Enable/disable the integrated camera (enabled by default).
	• Enable/disable the Power Monitor Circuit (enabled by default).
	• Enable/disable the audio device (enabled by default).
	• Enable/disable a modem device (enabled by default).
	• Enable/disable the microphone (enabled by default).
	• Enable/disable the internal speakers (enabled by default).
Port Options	NOTE: NOTE: All port options are enabled by default.
	• Enable/disable the serial port.
	• Enable/disable the parallel port.
	• Enable/disable the flash media reader.
	• Enable/disable the USB port.
	CAUTION: Disabling the USB port also disables MultiBay devices and ExpressCard devices on the advanced port replicator.
	• Enable/disable the 1394 port.
	• Enable/disable the ExpressCard slot.
	• Enable/disable the Smart Card slot.
	• Enable/disable the eSATA/USB port.

Select	To do this
AMT Options	● Enable/disable Firmware Verbosity. ● Enable/disable AMT Setup Prompt (Ctrl-P). ● Enable/disable USB Key Provisioning Support. ● Enable/disable Unconfigure AMT on next boot. ● Select Terminal Emulation Mode. 　◦ ANSI 　◦ VT100 ● Enable/disable Firmware Progress Event Support. ● Enable/disable Initiate Intel CIRA.
Set Security Level	Change, view, or hide security levels for all BIOS menu items.
Restore Security Defaults	Restore the default security settings.

6 Specifications

Computer specifications

	Metric	U.S.
Dimensions		
Depth	**20.90 cm**	8.23 in
Width	**30.52 cm**	12.02 in
Height (front to back)	**2.74 cm to 3.28 cm**	1.08 in to 1.30 in
Weight	**1.67 kg**	3.68 lbs
Input power		
Operating voltage	19.0 V dc @ 3.5 A – 65 W	
Operating current	3.5 A	
Temperature		
Operating	**5°C to 35°C**	41°F to 95°F
Relative humidity		
Operating	10% to 90%	
Nonoperating	5% to 90%	
Maximum altitude (unpressurized)		
Shock		
Operating	125 g, 2 ms, half-sine	
Nonoperating	200 g, 2 ms, half-sine	
Random vibration		
Operating	0.75 g zero-to-peak, 10 Hz to 500 Hz, 0.25 oct/min sweep rate	
Nonoperating	1.50 g zero-to-peak, 10 Hz to 500 Hz, 0.5 oct/min sweep rate	

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

31.75 cm (12.50 in) display specifications

	Metric	U.S.
Dimensions		
Width	**16.9 cm**	6.7 in
Depth	**26.2 cm**	10.3 in
Diagonal	**30.8 cm**	12.1 in
Number of colors	Up to 16.8 million	
Contrast ratio	250:1 (typical)	
Brightness	180 nits (typical)	
Backlight	LED	
Character display	80 × 25	
Total power consumption	4.0 W	
Viewing angle	+/-40° horizontal, +20°/-40° vertical (typical)	

Hard drive specifications

	750 GB*	500 GB*	320 GB*	250 GB*
Dimensions				
Height	9.5 mm	9.5 mm	9.5 mm	9.5 mm
Width	70 mm	70 mm	70 mm	70 mm
Weight	115 g	101 g	101 g	101 g
Interface type	SATA	SATA	SATA	SATA
Transfer rate	300 MB/sec	100 MB/sec	100 MB/sec	100 MB/sec
Security	ATA security	ATA security	ATA security	ATA security
Seek times (typical read, including setting)				
Single track	1.5 ms	3 ms	3 ms	3 ms
Average	11 ms	13 ms	13 ms	13 ms
Maximum	22 ms	24 ms	24 ms	24 ms
Logical blocks	1,465,149,168	976,752,240	625,121,433	488,376,120
Disk rotational speed	7200 rpm	7200 rpm	7200 rpm	7200 rpm
Operating temperature	**5°C to 55°C** (41°F to 131°F)			

*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less. Actual drive specifications may differ slightly.

NOTE: Certain restrictions and exclusions apply. Contact technical support for details.

DVD±RW and CD-RW SuperMulti Double-Layer Drive specifications

Applicable disc	Read:	Write:
	CD-DA, CD+(E)G, CD mIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo cD, Video CD), Multisession CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	CD-R and CD-RW DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM

Access time	CD	DVD
Random	< 175 ms	< 230 ms

Cache buffer	2.5 MB	
Data transfer rate		
24X CD-ROM	3,600 KB/sec	
8X DVD	10,800 KB/sec	
24X CD-R	3,600 KB/sec	
16X CD-RW	2,400 KB/sec	
8X DVD+R	10,800 KB/sec	
4X DVD+RW	5,400 KB/sec	
8X DVD-R	10,800 KB/sec	
4X DVD-RW	5,400 KB/sec	
2.4X DVD+R(9)	2,700 KB/sec	
5X DVD-RAM	6,750 KB/sec	
Transfer mode	Multiword DMA Mode	

DVD-ROM Drive specifications

Applicable disc	Read:	Write:
	CD-DA, CD+(E)G, CD mIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo cD, Video CD), Multisession CD (Photo cD, CDEXTRA, Portfolio, CD-R, CD-RW), CDR, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	CD-R and CD-RW
Access time	**CD**	**DVD**
Random	< 110 ms	< 130 ms
Cache buffer	2 MB	
Data transfer rate		
24X CD-ROM	3,600 KB/sec	
8X DVD	10,800 KB/sec	
24X CD-R	3,600 KB/sec	
16X CD-RW	3,600 KB/sec	

7 Backup and recovery

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), 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)
- Backing up individual files and folders
- 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.

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

Backing up your information

Recovery after a system failure is as complete as your most current backup. You should create system repair discs (select models only) and your initial backup immediately after software 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. 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.

To create a screen shot:

1. Display the screen you want to save.

2. Copy the screen image:

    To copy only the active window, press alt+fn+prt sc.

    To copy the entire screen, press fn+prt sc.

3. Open a word-processing document, and then select **Edit > Paste**.

    The screen image is added to the document.

4. Save the document.

- 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 installed in your computer.

  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 optical drive of the computer.

To create a backup using Backup and Restore, follow these steps:

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).

    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.

Performing a 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, refer to the "Using a Windows 7 operating system DVD (purchased separately)" section in this guide.

Using the Windows recovery tools

To recover information you previously backed up, follow these steps:

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.

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.

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

CAUTION: Using Startup Repair 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 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 or the HP Recovery partition.

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

   To check for the HP Recovery partition, click **Start**, right click **Computer**, click **Manage**, and then click **Disk Management**.

   NOTE: If the Windows partition or the HP Recovery partition is not listed, you must recover your operating system and programs using the Windows 7 operating system DVD and the *Driver Recovery* disc (both purchased separately). For additional information, refer to the "Using a Windows 7 operating system DVD (purchased separately)" section.

3. If the Windows partition and the HP Recovery partition are 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 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. Personal files must be restored from a backup.

To recover the original hard drive image using f11, follow these steps:

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 is not listed, you must recover your operating system and programs using the Windows 7 operating system DVD and the *Driver Recovery* disc (both purchased separately). For additional information, refer to the "Using a Windows 7 operating system DVD (purchased separately)" section.

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

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

5. Follow the on-screen instructions.

Using a Windows 7 operating system DVD (purchased separately)

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. Be sure that your most recent backup (stored on discs or on an external drive) is easily accessible. To order a Windows 7 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 technical support. For contact information, refer to 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, follow these steps:

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.

Windows Vista

To protect your information, use the Backup and Restore Center to back up individual files and folders, back up your entire hard drive (select models only), or create system restore points. In case of system failure, you can use the backup files to restore the contents of your computer.

The Backup and Restore Center provides the following options:

● Backing up individual files and folders

● Backing up the entire hard drive (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.

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

Backing up your information

Recovery after a system failure is as complete as your most current backup. You should create your initial backup immediately after software 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.

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 folder, 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 screen shot:

1. Display the screen you want to save.
2. Copy the screen image:

   To copy only the active window, press alt+fn+prt sc.

   To copy the entire screen, press fn+prt sc.

3. Open a word-processing document, and then select **Edit > Paste**.

   The screen image is added to the document.

4. Save the document.
- 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 installed in your computer.

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 optical drive of the computer.

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 Center**.
2. Follow the on-screen instructions to back up your entire computer (select models only) or your files.

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.

Performing a recovery

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

- Windows recovery tools: You can use the Backup and Restore Center 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, you must purchase a Windows Vista operating system DVD to reboot the computer and repair the operating system. For additional information, refer to the "Using a Windows Vista operating system DVD (purchased separately)" section in this guide.

Using the Windows recovery tools

To recover information you previously backed up, follow these steps:

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

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

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.

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

CAUTION: Using Startup Repair 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 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 or the HP Recovery partition. To find the partitions, select **Start > Computer**.

   NOTE: If the Windows partition and the HP Recovery partition have been deleted, you must recover your operating system and programs using the Windows Vista operating system DVD and the *Driver Recovery* disc (both purchased separately). For additional information, refer to the "Using a Windows Vista operating system DVD (purchased separately)" section.

3. Restart the computer, and then press f8 before the Windows operating system loads.

4. Select **Repair your computer**.

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 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. Personal files must be restored from a backup.

📝 **NOTE:** If your computer includes a solid-state drive (SSD), you may not have a recovery partition. Recovery discs have been included for computers that do not have a partition. Use these discs to recover your operating system and software. To check for the presence of a recovery partition, select Start > Computer. If the partition is present, an HP Recovery drive is listed in the Hard Disk Drives section of the window.

To recover the original hard drive image using f11, follow these steps:

1. If possible, back up all personal files.

2. If possible, check for the presence of the HP Recovery partition. To find the partition, select **Start > Computer**.

   📝 **NOTE:** If the HP Recovery partition has been deleted, you must recover your operating system and programs using the Windows Vista operating system DVD and the *Driver Recovery* disc (both purchased separately). For additional information, refer to the "Using a Windows Vista operating system DVD (purchased separately)" section.

3. 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.

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

5. Follow the on-screen instructions.

Using a Windows Vista operating system DVD (purchased separately)

If you are unable to boot (start up) your computer, you must purchase a Windows Vista operating system DVD to reboot the computer and repair the operating system. Be sure that your most recent backup (stored on discs or on an external drive) is easily accessible. To order a Windows Vista 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 technical support. For contact information, refer to the Worldwide Telephone Numbers booklet included with the computer.

⚠️ **CAUTION:** Using a Windows Vista 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 Vista operating system DVD, follow these steps:

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

1. If possible, back up all personal files.

2. Restart the computer, and then insert the Windows Vista 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.

8 Power cord set requirements

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

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

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

Requirements for all countries

The following requirements are applicable to all countries and regions:

- The length of the power cord set must be at least **1.5 m** (5.0 ft) and no more than **2.0 m** (6.5 ft).

- All power cord sets must be approved by an acceptable accredited agency responsible for evaluation in the country or region where the power cord set will be used.

- The power cord sets must have a minimum current capacity of 10 amps and a nominal voltage rating of 125 or 250 V AC, as required by the power system of each country or region.

- The appliance coupler must meet the mechanical configuration of an EN 60 320/IEC 320 Standard Sheet C13 connector for mating with the appliance inlet on the back of the computer.

Requirements for specific countries and regions

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

1. The flexible cord must be Type HO5VV-F, 3 conductor, 1.0 mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.

2. The flexible cord must be Type SPT-3 or equivalent, No. 18 AWG, 3 conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V) or NEMA 6-15P (15 A, 250 V) configuration.

3. The appliance coupler, flexible cord, and wall plug must bear a "T" mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCT or VCTF, 3 conductor, 1.00 mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V) configuration.

4. The flexible cord must be Type RVV, 3 conductor, 0.75 mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.

5. The flexible cord must be Type VCTF, 3 conductor, 0.75 mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.

9   Recycling

Battery

When a 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 computer battery disposal.

Display

⚠ **WARNING!**   The backlight contains mercury. Caution must be exercised when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

⚠ **CAUTION:**   The procedures in this chapter can result in damage to display components. The only components intended for recycling purposes are the liquid crystal display (LCD) panel and the backlight. When you remove these components, handle them carefully.

📝 **NOTE:**   Materials Disposal. This HP product contains mercury in the backlight in the display assembly that might require special handling at end-of-life. Disposal of mercury may be regulated because of environmental considerations. For disposal or recycling information, contact your local authorities, or see the Electronic Industries Alliance (EIA) Web site at http://www.eiai.org.

This section provides disassembly instructions for the display assembly. The display assembly must be disassembled to gain access to the backlight **(1)** and the liquid crystal display (LCD) panel **(2)**.

📝 **NOTE:**   The procedures provided in this chapter are general disassembly instructions. Specific details, such as screw sizes, quantities, and locations, and component shapes and sizes, can vary from one computer model to another.

Perform the following steps:

1. Remove all screw covers **(1)** and screws **(2)** that secure the display bezel to the display assembly.
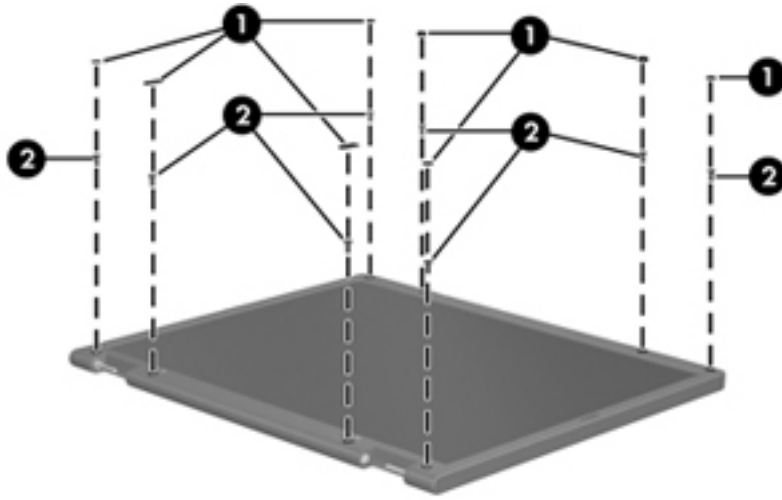
2. Lift up and out on the left and right inside edges **(1)** and the top and bottom inside edges **(2)** of the display bezel until the bezel disengages from the display assembly.

3. Remove the display bezel 3.
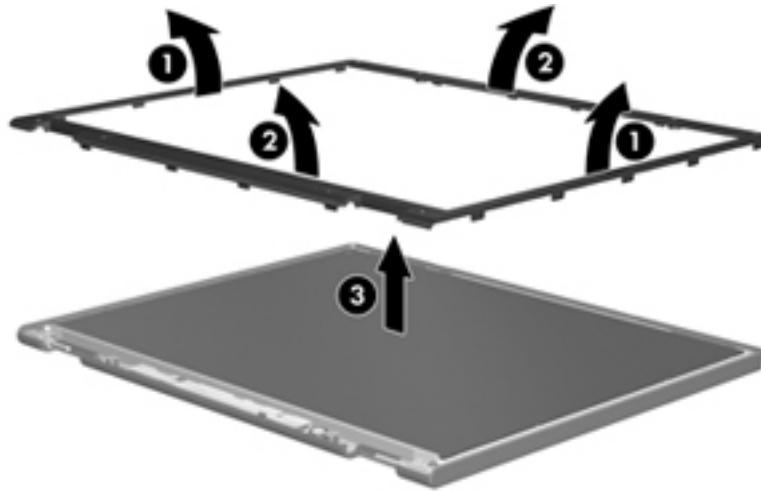
4. Disconnect all display panel cables **(1)** from the display inverter and remove the inverter 2.
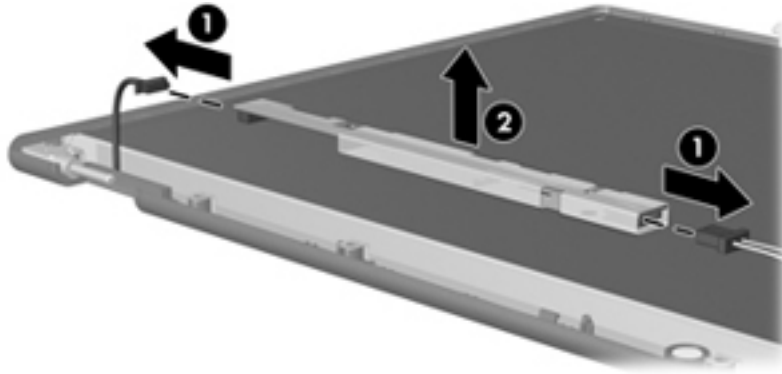
5. Remove all screws **(1)** that secure the display panel assembly to the display enclosure.

6. Remove the display panel assembly **(2)** from the display enclosure.
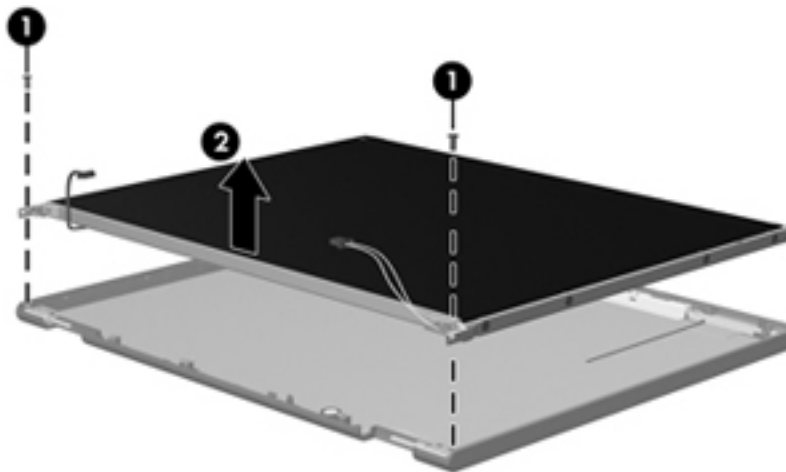
7. Turn the display panel assembly upside down.

8. Remove all screws that secure the display panel frame to the display panel.
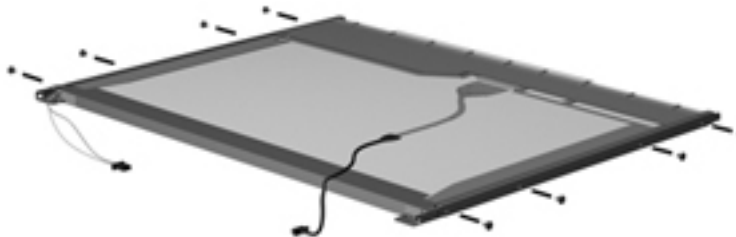
9. Use a sharp-edged tool to cut the tape **(1)** that secures the sides of the display panel to the display panel frame.

10. Remove the display panel frame **(2)** from the display panel.
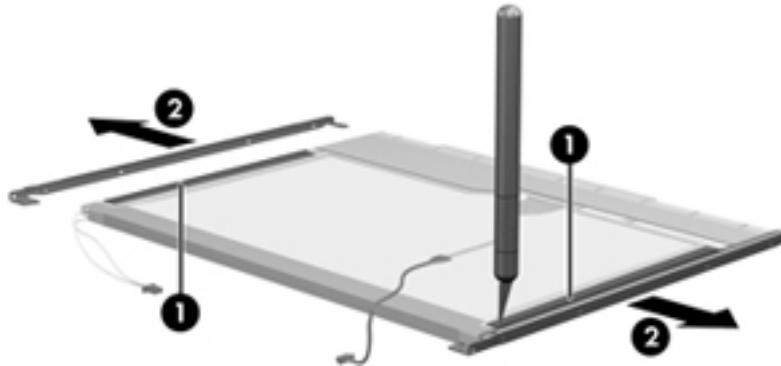
11. Remove the screws **(1)** that secure the backlight cover to the display panel.

12. Lift the top edge of the backlight cover **(2)** and swing it outward.
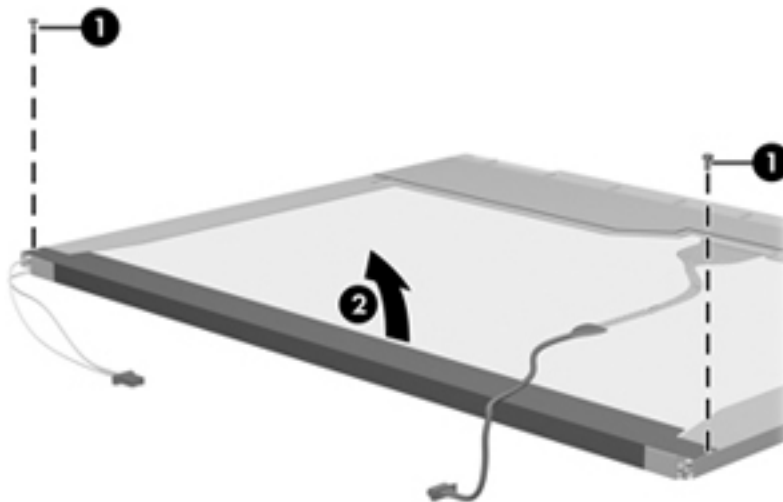
13. Remove the backlight cover.

14. Turn the display panel right-side up.

15. Remove the backlight cables **(1)** from the clip **(2)** in the display panel.
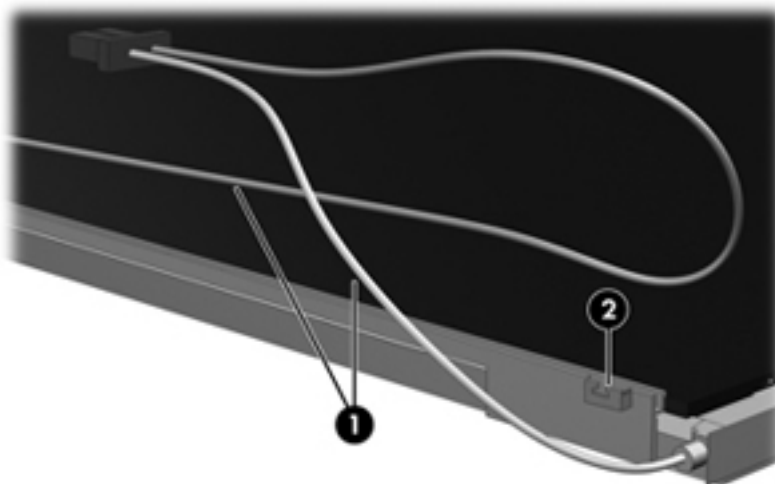
16. Turn the display panel upside down.

17. Remove the backlight frame from the display panel.
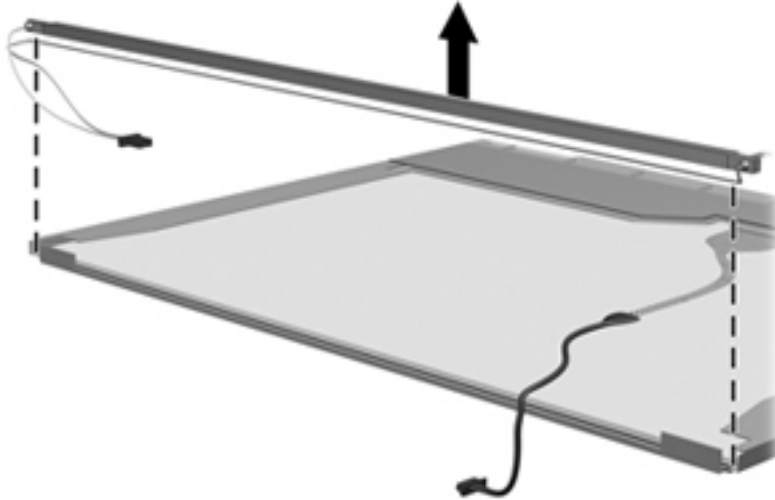
⚠️ **WARNING!** The backlight contains mercury. Exercise caution when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

18. Remove the backlight from the backlight frame.
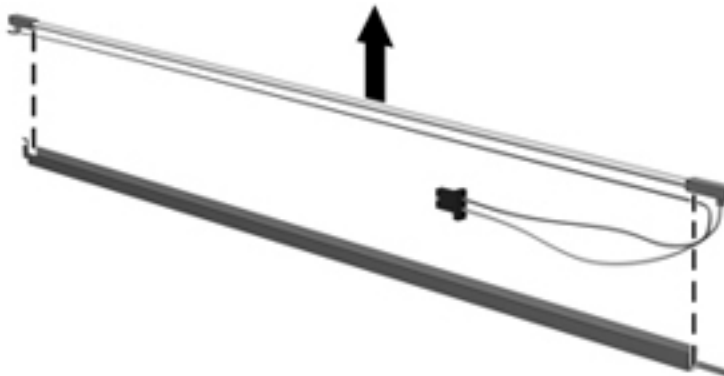
19. Disconnect the display cable **(1)** from the LCD panel.

20. Remove the screws **(2)** that secure the LCD panel to the display rear panel.

21. Release the LCD panel **(3)** from the display rear panel.

22. Release the tape **(4)** that secures the LCD panel to the display rear panel.
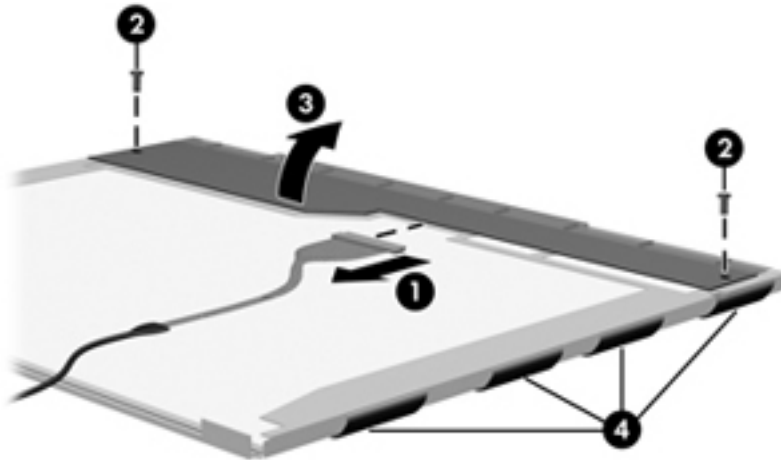
23. Remove the LCD panel.
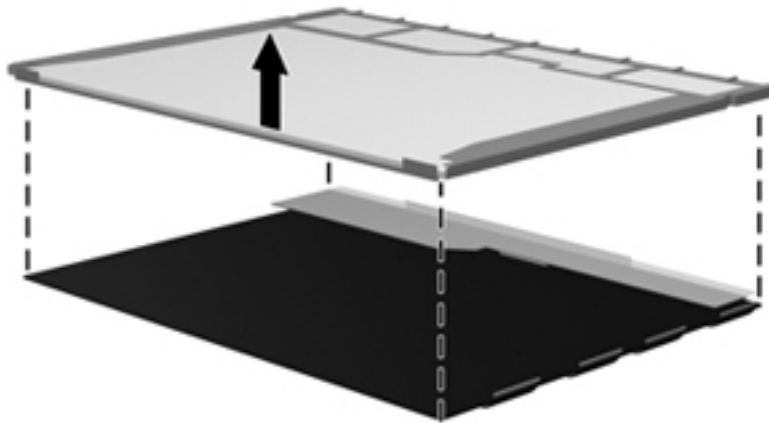
24. Recycle the LCD panel and backlight.

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