HP 14 Notebook PC
HP 14 TouchSmart Notebook PC
Compaq 14 Notebook PC
Compaq 14 TouchSmart Notebook PC
HP 240 G2 Notebook PC
HP 245 G2 Notebook PC

Maintenance and Service Guide

First Edition: November 2013

Document Part Number: 754397-001

Product notice

This guide describes features that are common to most models. Some features may not be available on your computer.

Not all features are available on all editions of Windows 8. This computer may require upgraded and/or separately purchased hardware, drivers, and/or software to take full advantage of Windows 8 functionality. See http://www.microsoft.com for details.

This computer may require upgraded and/ or separately purchased hardware and/or a DVD drive to install the Windows 7 software and take full advantage of Windows 7 functionality. See http://windows.microsoft.com/en-us/windows7/get-know-windows-7 for details.

Safety warning notice

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

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1 Product description

Intel HM76 Express Chipset models

Category	Description	Non-touch ; UMA	Non-touch; discrete	Touch; UMA	Touch; discrete
Product name	HP 14 Notebook PC	√	√	√	√
	HP 14 TouchSmart Notebook PC	√	√	√	√
	Compaq 14 Notebook PC	√	√	√	√
	Compaq 14 TouchSmart Notebook PC	√	√	√	√
	HP 240 G2 Notebook PC	√	√	√	√
Processors	Intel i5-3230M processor (2.6-GHz, 3-MB cache, 35 W)	√	√	√	√
	Intel i3-3110M processor (2.4-GHz, 3-MB cache, 35 W)	√	√	√	√
	Intel Pentium 2020M processor (2.4-GHz, 2-MB cache, 35 W)	√	√	√	√
	Intel Celeron 1000M processor (1.8-GHz, 2-MB cache, 35 W)	√	√	√	√
Chipset	Intel HM76 Express	√	√	√	√
Graphics	**Switchable discrete graphics:**				
	Nvidia 820M N15V-GM 1 GB VRAM (128Mx16 DDR3 1GHz x 4 PCs) GPU power management enabled at launch Support DX11 Support dynamic switching Support HD Decode and HDMI		√		√
	UMA graphics:				
	Intel HD Graphics	√		√	
Panel	**35.6-cm** (14.0-in), high-definition (HD), light-emitting diode (LED), SVA BrightView (1366×768) display; typical brightness: 200 nits	√	√	√	√
	Touchscreen, **35.6-cm** (14.0-in), high-definition (HD), light-emitting diode (LED), SVA AntiGlare (1366×768) display; typical brightness: 200 nits Supports 16:9 ultra wide aspect ratio			√	√
	Supports LVDS	√	√	√	√
Memory	2 customer-accessible/upgradable memory module slots Supports dual-channel memory DDR3L-1600-MHz	√	√	√	√

Category	Description	Non-touch ; UMA	Non-touch; discrete	Touch; UMA	Touch; discrete
	Supports up to 16 GB of system RAM in the following configurations: • 16384-MB total system memory (8192×2; not supported on a 32-bit operating system) • 12288-MB total system memory (8192×1 + 4096×1; not supported on a 32-bit operating system) • 8192-MB total system memory (8192×1 or 4096×2) • 6144-MB total system memory (4096×1 + 2048×1; not supported on a 32-bit operating system) • 4096-MB total system memory (4096×1 or 2048×2) • 2048-MB total system memory (2048×1)	√	√	√	√
Hard drives	Supports **6.35-cm** (2.5-in) hard drives in **9.5-mm** (.37-in) and **7.0-mm** (.28-in) thicknesses Customer-accessible Serial ATA	√	√	√	√
	Supports the following hard drives: • 1-TB, 5400-rpm, 9.5-mm • 750-GB, 5400-rpm, 9.5-mm • 500-GB, 5400-rpm, 9.5-mm or 7.0-mm • 320-GB, 5400-rpm, 9.5-mm or 7.0-mm	√	√	√	√
Optical drive	Fixed Serial ATA 9.5-mm tray load	√	√	√	√
	DVD+/-RW Double-Layer SuperMulti	√	√	√	√
	Supports zero power optical drive	√	√	√	√
	Supports no optical drive option	√	√		
Audio/video	Single digital microphone	√	√	√	√
	HD audio	√	√	√	√
	Dual speakers	√	√	√	√
	HP TrueVision HD webcam (fixed, no tilt with activity LED, 1280×720 by 30 frames per second)	√	√	√	√
Ethernet	Integrated 10/100 network interface card (NIC) Integrated 10/100/1000 NIC (HP 240 models)	√	√	√	√
Wireless	Integrated wireless local area network (WLAN) options by way of wireless module One or two WLAN antennas built into display assembly Compatible with Miracast-certified devices (For Win8.1; except Intel Pentium and Celeron)	√	√	√	√
	Support for the following WLAN formats:	√	√	√	√

Category	Description	Non-touch ; UMA	Non-touch; discrete	Touch; UMA	Touch; discrete
	• Realtek RTL8188EE 802.11bgn 1x1 Wi-Fi Adapter • Qualcomm Atheros AR9485 802.11bgn 1x1 Wi-Fi Adapter • Ralink RT3290LE 802.11bgn 1x1 Wi-Fi + BT 4.0 Combo Adapter • QCA 9565 802.11bgn 1x1 Wi-Fi + BT4.0 Combo Adapter				
External media card	HP Multi-Format Digital Media Reader Support SD/SDHC/SDXC Push-Push Insertion/Removal	√	√	√	√
Ports	AC Smart Pin adapter plug	√	√	√	√
	Headphone/microphone in combo jack	√	√	√	√
	HDMI version 1.4 supporting 1920 ×1200 @ 60Hz	√	√	√	√
	RJ-45 (Ethernet, includes link and activity lights)	√	√	√	√
	USB 3.0 (1 port)	√	√	√	√
	USB 2.0 (2 ports)	√	√	√	√
	VGA (Dsub 15 pin) supporting 2048×1536 external resolution @ 75 Hz, hot plug and unplug and auto-detection for correct output to wide-aspect vs. standard aspect video Hot Plug/unplug and auto detect for correct output to wide-aspect vs. standard aspect video	√	√	√	√
Keyboard/ pointing devices	Full-size "island style" keyboard	√	√	√	√
	TouchPad with multi-touch gestures, 2-finger scrolling, and pinch-zoom enabled Taps enabled by default Support Win8.1+D212 Modern Trackpad Gestures Support PS/2, profile sensor(reserve for SMBus)	√	√	√	√
Power requirements	**For computer systems with discrete graphics:**				
	90-W Smart AC adapter; for use in all countries except China and India)		√		√
	90-W EM Smart AC adapter; for use in China and India only)		√		√
	For computer systems with UMA graphics:				
	65-W Smart AC adapter; for use in all countries except China and India)	√		√	
	65-W EM Smart AC adapter; for use in China and India only)	√		√	
	1 meter power cord	√	√	√	√
	4-cell, 41-Whr Li-ion battery	√	√	√	√
	3-cell, 31-Whr Li-ion battery	√	√	√	√

Category	Description	Non-touch ; UMA	Non-touch; discrete	Touch; UMA	Touch; discrete
Security	Kensington Security Lock	√	√	√	√
	Support Intel Anti-Theft				
	Support Intel IPT				
	OTP support				
Operating system	**Preinstalled:** • Windows 8.1 • Windows 8.1 downgrade to Windows 7 Professional (HP 240 models)	√	√	√	√
	• Ubuntu	√	√		
	• FreeDOS 2.0	√	√		
Serviceability	**End-user replaceable parts:**				
	• AC adapter				
	• Battery				
	• Memory modules (2)				
	• Optical drive				
	• WLAN module				

Intel Bay Trail chipset models

Category	Description	Non-touch; UMA	Touch; UMA
Product name	HP 14 Notebook PC	√	√
	HP 14 TouchSmart Notebook PC	√	√
	Compaq 14 Notebook PC	√	√
	Compaq 14 TouchSmart Notebook PC	√	√
	HP 240 G2 Notebook PC	√	√
Processors	Intel Pentium N3520 processor (2.4-GHz, 2-MB cache, 7.5 W)	√	√
	Intel Pentium N3510 processor (2.0-GHz, 2-MB cache, 7.5 W)	√	√
	Intel Celeron N2820 processor (2.13-GHz, 1-MB cache, 7.5 W)	√	√
	Intel Celeron N2815 processor (2.13-GHz, 1-MB cache, 7.5 W)	√	√
	Intel Celeron N2810 processor (2.0-GHz, 1-MB cache, 7.5 W)	√	√
Chipset	Bay Trail	√	√
Graphics	**UMA graphics:** Intel HD graphics	√	√
Panel	**35.6-cm** (14.0-in), high-definition (HD), light-emitting diode (LED), SVA BrightView (1366×768) display; typical brightness: 200 nits	√	√

Category	Description	Non-touch; UMA	Touch; UMA
	Touchscreen, **35.6-cm** (14.0-in), high-definition (HD), light-emitting diode (LED), SVA AntiGlare (1366×768) display; typical brightness: 200 nits Supports 16:9 ultra wide aspect ratio		√
	Supports LVDS	√	√
Memory	2 customer-accessible/upgradable memory module slots Supports dual-channel memory DDR3L-1600-MHz	√	√
	Supports up to 16 GB of system RAM in the following configurations: • 16384-MB total system memory (8192×2; not supported on a 32-bit operating system) • 12288-MB total system memory (8192×1 + 4096×1; not supported on a 32-bit operating system) • 8192-MB total system memory (4096×2) • 6144-MB total system memory (4096×1 + 2048×1; not supported on a 32-bit operating system) • 4096-MB total system memory (4096×1 or 2048×2) • 2048-MB total system memory (2048×1)	√	√
Hard drives	Supports **6.35-cm** (2.5-in) hard drives in **9.5-mm** (.37-in) and **7.0-mm** (.28-in) thicknesses Customer-accessible Serial ATA	√	√
	Supports the following hard drives: • 1-TB, 5400-rpm, 9.5-mm • 750-GB, 5400-rpm, 9.5-mm • 500-GB, 5400-rpm, 9.5-mm or 7.0-mm • 320-GB, 5400-rpm, 9.5-mm or 7.0-mm	√	√
Optical drive	Fixed Serial ATA 9.5-mm tray load	√	√
	DVD+/-RW Double-Layer SuperMulti	√	√
	Supports zero power optical drive	√	√
	Supports no optical drive option	√	
Audio/video	Single digital microphone	√	√
	HD audio	√	√
	Dual speakers	√	√
	HP TrueVision HD webcam (fixed, no tilt with activity LED, 1280×720 by 30 frames per second)	√	√
Ethernet	Integrated 10/100 network interface card (NIC)	√	√

Category	Description	Non-touch; UMA	Touch; UMA
Wireless	Integrated wireless local area network (WLAN) options by way of wireless module One or two WLAN antennas built into display assembly Compatible with Miracast-certified devices (For Win8.1; except Intel Pentium and Celeron)	√	√
	Support for the following WLAN formats: • Realtek RTL8188EE 802.11bgn 1x1 Wi-Fi Adapter • Qualcomm Atheros AR9485 802.11bgn 1x1 Wi-Fi Adapter • Ralink RT3290LE 802.11bgn 1x1 Wi-Fi + BT 4.0 Combo Adapter • QCA 9565 802.11bgn 1x1 Wi-Fi + BT4.0 Combo Adapter	√	√
External media card	HP Multi-Format Digital Media Reader Support SD/SDHC/SDXC Push-Push Insertion/Removal	√	√
Ports	AC Smart Pin adapter plug	√	√
	Headphone/microphone in combo jack	√	√
	HDMI version 1.4 supporting 1920 ×1200 @ 60Hz	√	√
	RJ-45 (Ethernet, includes link and activity lights)	√	√
	USB 3.0 (1 port)	√	√
	USB 2.0 (2 ports)	√	√
	VGA (Dsub 15 pin) supporting 2560×1600 external resolution @ 60 Hz, hot plug and unplug and auto-detection for correct output to wide-aspect vs. standard aspect video Hot Plug/unplug and auto detect for correct output to wide-aspect vs. standard aspect video	√	√
Keyboard/ pointing devices	Full-size "island style" keyboard	√	√
	TouchPad with multi-touch gestures, 2-finger scrolling, and pinch-zoom enabled Taps enabled by default Support Win8.1+D212 Modern Trackpad Gestures Support PS/2, profile sensor(reserve for SMBus)	√	√
Power requirements	45-W Smart AC adapter	√	√
	1 meter power cord	√	√
	4-cell, 41-Whr Li-ion battery 3-cell, 31-Whr Li-ion battery	√	√
Security	Kensington Security Lock Support Intel Anti-Theft Support Intel IPT	√	√

Category	Description	Non-touch; UMA	Touch; UMA
	OTP support		
Operating system	**Preinstalled:** • Windows 8.1	√	√
	• Ubuntu	√	
	• FreeDOS	√	
Serviceability	**End-user replaceable parts:** • AC adapter • Battery • Memory modules (2) • Optical drive • WLAN module		

AMD models

Category	Description	Non-touch; UMA	Non-touch; discrete	Touch; UMA	Touch; discrete
Product name	HP 14 Notebook PC	√	√	√	√
	HP 14 TouchSmart Notebook PC	√	√	√	√
	Compaq 14 Notebook PC	√	√	√	√
	Compaq 14 TouchSmart Notebook PC	√	√	√	√
	HP 245 G2 Notebook PC	√	√	√	√
Processors	AMD A6-5200 (2.0 GHz, 2 MB cache, 25W	√		√	
	AMD A4-5000 (1.5 GHz, 2 MB cache, 15W)	√	√	√	√
	AMD E2-3800 (1.3 GHz, 1 MB cache, 15W)	√		√	
	AMD E1-2100 (1.0 GHz, 1 MB cache, 9W)	√	√	√	√
	HP Quad-Core, (1.55GHz, 13W)	√	√	√	√
	Intel Quad-Core, (1.55GHz, 13W)	√	√	√	√
	Intel Celeron HP Dual-Core, (1.05GHz, 8W	√	√	√	√
	Dual-Core, (1.05GHz, 8W)	√	√	√	√
Chipset	Integrated SOC FCH	√	√	√	√
Graphics	**Switchable discrete graphics:**				
	AMD Sun LE (18W) Radeon™ HD 8570M with up to 1024 MB of dedicated video memory (128Mx16 DDR3 1GHz x 4 PCs) Support HD Decode, DX11, and HDMI Support HD Decode, DX11.1, and HDMI Support PX 7.0		√		√

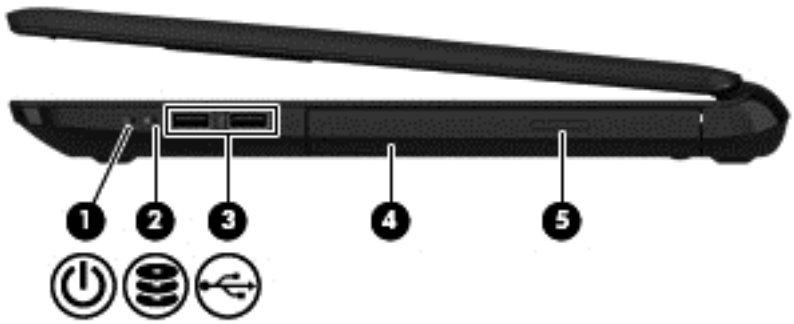
Category	Description	Non-touch; UMA	Non-touch; discrete	Touch; UMA	Touch; discrete
	UMA graphics:				
	AMD Radeon™ HD 8400 Graphics (A6-5200)	√		√	
	AMD Radeon HD 8330 Graphics (A4-5000)	√		√	
	AMD Radeon HD 8280 Graphics (E2-3800)	√		√	
	AMD Radeon HD 8210 Graphics (E1-2100)	√		√	
Panel	**35.6-cm** (14.0-in), high-definition (HD), light-emitting diode (LED), SVA BrightView (1366×768) display; typical brightness: 200 nits	√	√	√	√
	Touchscreen, **35.6-cm** (14.0-in), high-definition (HD), light-emitting diode (LED), SVA AntiGlare (1366×768) display; typical brightness: 200 nits Supports 16:9 ultra wide aspect ratio			√	√
	Supports LVDS	√	√	√	√
Memory	1 customer-accessible/upgradable memory module slots Supports dual-channel memory DDR3L-1600-MHz	√	√	√	√
	Supports up to 8 GB of system RAM in the following configurations: • 8192-MB total system memory (8192) • 4096-MB total system memory (4096×1) • 2048-MB total system memory (2048×1)	√	√	√	√
Hard drives	Supports **6.35-cm** (2.5-in) hard drives in **9.5-mm** (.37-in) and **7.0-mm** (.28-in) thicknesses Customer-accessible Serial ATA	√	√	√	√
	Supports the following hard drives: • 1-TB, 5400-rpm, 9.5-mm • 750-GB, 5400-rpm, 9.5-mm • 500-GB, 5400-rpm, 9.5-mm or 7.0-mm • 320-GB, 5400-rpm, 9.5-mm or 7.0-mm	√	√	√	√
Optical drive	Fixed Serial ATA 9.5-mm tray load	√	√	√	√
	DVD+/-RW Double-Layer SuperMulti	√	√	√	√
	Supports zero power optical drive	√	√	√	√
	Supports no optical drive option	√	√		
Audio/video	Single digital microphone	√	√	√	√

Category	Description	Non-touch; UMA	Non-touch; discrete	Touch; UMA	Touch; discrete
	HD audio	√	√	√	√
	Dual speakers	√	√	√	√
	HP TrueVision HD webcam (fixed, no tilt with activity LED, 1280×720 by 30 frames per second)	√	√	√	√
Ethernet	Integrated 10/100 network interface card (NIC) Integrated 10/100/1000 NIC (HP 245 models)	√	√	√	√
Wireless	Integrated wireless local area network (WLAN) options by way of wireless module One or two WLAN antennas built into display assembly Compatible with Miracast-certified devices (For Win8.1; except Intel Pentium and Celeron)	√	√	√	√
	Support for the following WLAN formats: • Realtek RTL8188EE 802.11bgn 1x1 Wi-Fi Adapter • Qualcomm Atheros AR9485 802.11bgn 1x1 Wi-Fi Adapter • Ralink RT3290LE 802.11bgn 1x1 Wi-Fi + BT 4.0 Combo Adapter • QCA 9565 802.11bgn 1x1 Wi-Fi + BT4.0 Combo Adapter	√	√	√	√
External media card	HP Multi-Format Digital Media Reader Support SD/SDHC/SDXC Push-Push Insertion/Removal	√	√	√	√
Ports	AC Smart Pin adapter plug	√	√	√	√
	Headphone/microphone in combo jack	√	√	√	√
	HDMI version 1.4 supporting 1920 ×1200 @ 60Hz	√	√	√	√
	RJ-45 (Ethernet, includes link and activity lights)	√	√	√	√
	USB 3.0 (1 port)	√	√	√	√
	USB 2.0 (2 ports)	√	√	√	√
	VGA (Dsub 15 pin) supporting 2048×1536 external resolution @ 75 Hz, hot plug and unplug and auto-detection for correct output to wide-aspect vs. standard aspect video Hot Plug/unplug and auto detect for correct output to wide-aspect vs. standard aspect video	√	√	√	√
Keyboard/ pointing devices	Full-size "island style" keyboard	√	√	√	√
	TouchPad with multi-touch gestures, 2-finger scrolling, and pinch-zoom enabled Taps enabled by default Support Win8.1+D212 Modern Trackpad Gestures Support PS/2, profile sensor(reserve for SMBus)	√	√	√	√

Category	Description	Non-touch; UMA	Non-touch; discrete	Touch; UMA	Touch; discrete
Power requirements	65-W Smart AC adapter; for use in all countries except China and India)		√		√
	65-W EM Smart AC adapter; for use in China and India only)	√	√	√	√
	45-W Smart AC adapter; for use in all countries except China and India)	√		√	
	1 meter power cord	√	√	√	√
	4-cell, 41-Whr Li-ion battery	√	√	√	√
	3-cell, 31-Whr Li-ion battery				
Security	Kensington Security Lock	√	√	√	√
	Support Intel Anti-Theft				
	Support Intel IPT				
	OTP support				
Operating system	**Preinstalled:** • Windows 8.1	√	√	√	√
	• Ubuntu	√	√		
	• FreeDOS	√	√		
Serviceability	**End-user replaceable parts:** • AC adapter • Battery • Memory modules (2) • Optical drive • WLAN module				

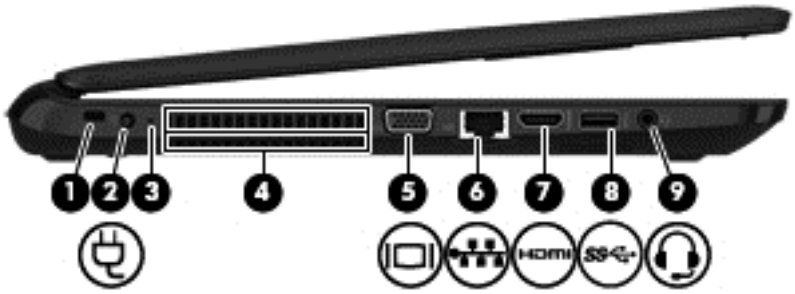
2 External component identification

Right side



Component			Description
(1)		Power light	• On: The computer is on. • Blinking: The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other unneeded components. • Off: The computer is off or in Hibernation. Hibernation is a power-saving state that uses the least amount of power. **NOTE:** For select models, the Intel® Rapid Start Technology feature is enabled at the factory. Rapid Start Technology allows your computer to resume quickly from inactivity.
(2)		Hard drive light	Blinking white: The hard drive is being accessed.
(3)		USB 2.0 ports (2)	Connect an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub.
(4)		Optical drive (select models only)	Depending on your computer model, reads an optical disc or reads and writes to an optical disc. **NOTE:** For disc compatibility information, go to the Help and Support web page. Follow the web page instructions to select your computer model. Select **Support & Drivers**, and then select **Product Information**.
(5)		Optical drive eject button (select models only)	Releases the disc tray.

Left side



Component			Description
(1)		Security cable slot	Attaches an optional security cable to the computer. **NOTE:** The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.
(2)		Power connector	Connects an AC adapter.
(3)		AC adapter light	• On: The AC adapter is connected and the battery is charged. • Amber: The AC adapter is connected and the battery is charging. • Off: The computer is using battery power.
(4)		Vent	Enables airflow to cool internal components. **NOTE:** The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(5)		External monitor port	Connects an external VGA monitor or projector.
(6)		RJ-45 (network) jack/status lights	Connects a network cable. • White: The network is connected. • Amber: Activity is occurring on the network.
(7)	HDMI	HDMI port	Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component, or a high-speed HDMI device.
(8)		USB 3.0 port	Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub.
(9)		Audio-out (headphone)/Audio-in (microphone) jack	Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. This jack does not support optional microphone-only devices. **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*. To access this guide in Windows 8, from the Start screen, type `support`, and then select the **HP Support Assistant** app.

Component	Description
	NOTE: When a device is connected to the jack, the computer speakers are disabled. **NOTE:** Be sure that the device cable has a 4-conductor connector that supports both audio-out (headphone) and audio-in (microphone).

Front

Component		Description
	Memory card reader	Reads optional memory cards that store, manage, share, or access information. To insert a card: Hold the card label-side up, with connectors facing the slot, insert the card into the slot, and then push in on the card until it is firmly seated. To remove a card: Press in on the card it until it pops out.

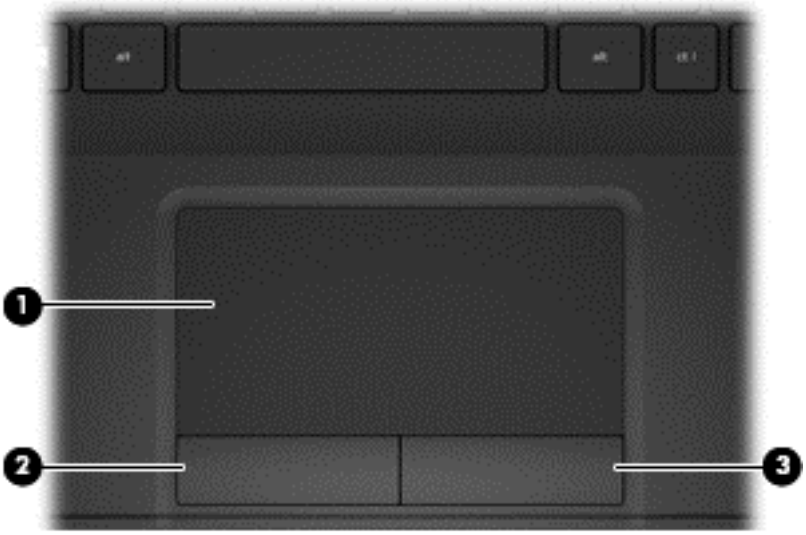
Display

Component		Description
(1)	WLAN antennas (2)*	Send and receive wireless signals to communicate with wireless local area networks (WLANs).
(2)	WWAN antennas (2)* (select models only)	Send and receive wireless signals to communicate with wireless wide area networks (WWAN).
(3)	Webcam light	On: The webcam is in use.
(4)	Webcam	Records video and captures photographs. Some models allow you to video conference and chat online using streaming video. To use the webcam in Windows 8, from the Start screen, type `camera`, and then select **Camera** from the list of applications. To use the webcam in Windows 7, select **Start > All Programs > Communication and Chat > CyberLink YouCam**.
(5)	Internal microphone	Records sound.
(6)	Internal display switch	Turns off the display and initiates Sleep if the display is closed while the power is on. **NOTE:** The internal display switch is not visible from the outside of the computer.

*The antennas are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennas free from obstructions. For wireless regulatory notices, see the section of the *Regulatory, Safety, and Environmental Notices* that applies to your country or region. To access this guide in Windows 8, from the Start screen, type `support`, and then select the **HP Support Assistant** app.

Top

TouchPad



Component		Description
(1)	TouchPad zone	Moves the on-screen pointer and selects or activates items on the screen. **NOTE:** The TouchPad also supports edge-swipe gestures.
(2)	Left TouchPad button	Functions like the left button on an external mouse.
(3)	Right TouchPad button	Functions like the right button on an external mouse.

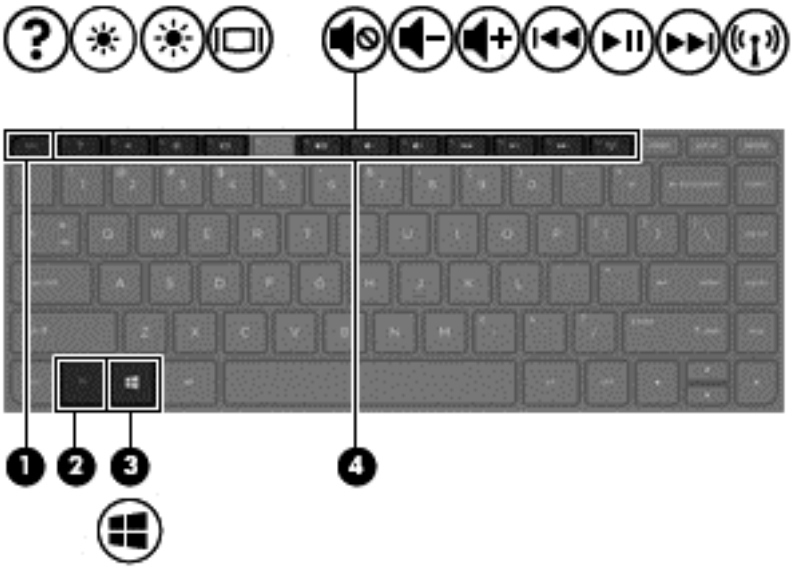
Lights

Component			Description
(1)		Caps lock light	On: Caps lock is on, which switches the keys to all capital letters.
(2)		Mute light	• Amber: Computer sound is off. • Off: Computer sound is on.
(3)		Wireless light	On: An integrated wireless device, such as a wireless local area network (WLAN) device and/or a Bluetooth® device, is on. **NOTE:** On some models, the wireless light is amber when all wireless devices are off.

Button

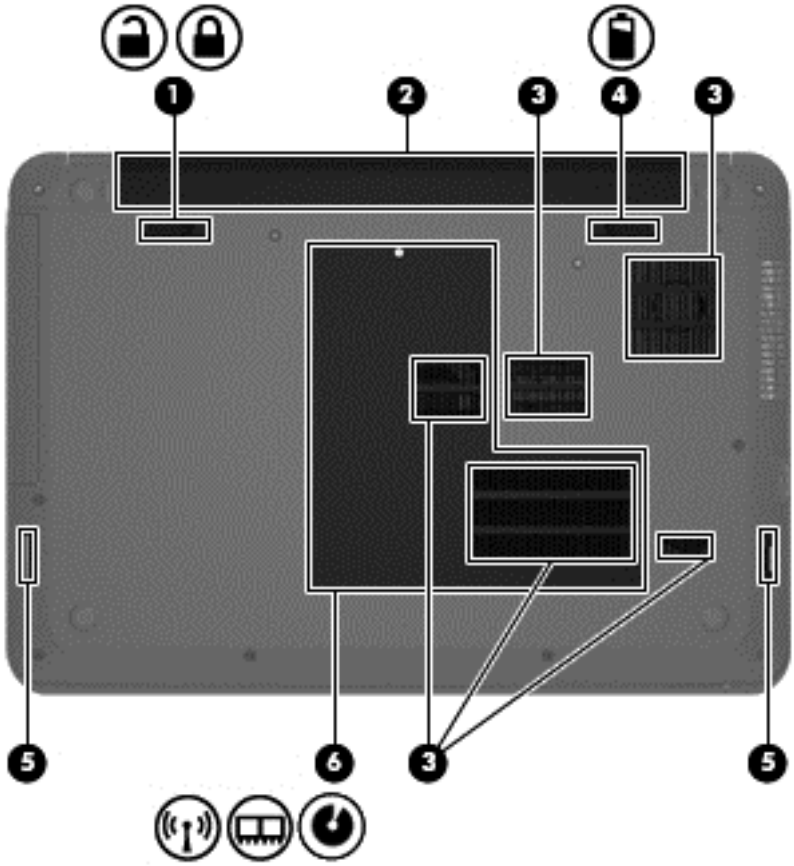
Component	Description
Power button	• When the computer is off, press the button to turn on the computer. • When the computer is on, press the button briefly to initiate Sleep. • When the computer is in the Sleep state, press the button briefly to exit Sleep. • When the computer is in Hibernation, press the button briefly to exit Hibernation. **CAUTION:** Pressing and holding down the power button will result in the loss of unsaved information. If the computer has stopped responding and Windows shutdown procedures are ineffective, press and hold the power button down for at least 5 seconds to turn off the computer. **NOTE:** For select models, the Intel® Rapid Start Technology feature is enabled at the factory. Rapid Start Technology allows your computer to resume quickly from inactivity. To learn more about your power settings, see your power options. In Windows 8, from the Start screen, type `power`, select **Power and sleep settings**, and then select **Power and sleep** from the list of applications. In Windows 7, select **Start > Control Panel > System and Security > Power Options**.

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 the spacebaror the esc key.
(3)	Windows key	Windows 8: Returns you to the Start screen from an open app or the Windows desktop. **NOTE:** Pressing the Windows key again will return you to the previous screen. Windows 7: Displays the Windows Start menu.
(4)	Action keys	Execute frequently used system functions.

Bottom



Component			Description
(1)		Battery lock and unlock latch	Locks and unlocks the battery in the battery bay.
(2)		Battery bay	Holds the battery.
(3)		Vents (5)	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.
(4)		Battery release latch	Releases the battery.
(5)		Speaker openings (2)	Produce sound.
(6)		Service door	Provides access to the wireless LAN (WLAN) module slot, the memory module slots, and the optical drive bay (select models only).

Component	Description
	CAUTION: To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module to restore computer functionality, and then contact support through Help and Support. In Windows 78, from the Start screen, type `help`, and then select **Help and Support**.

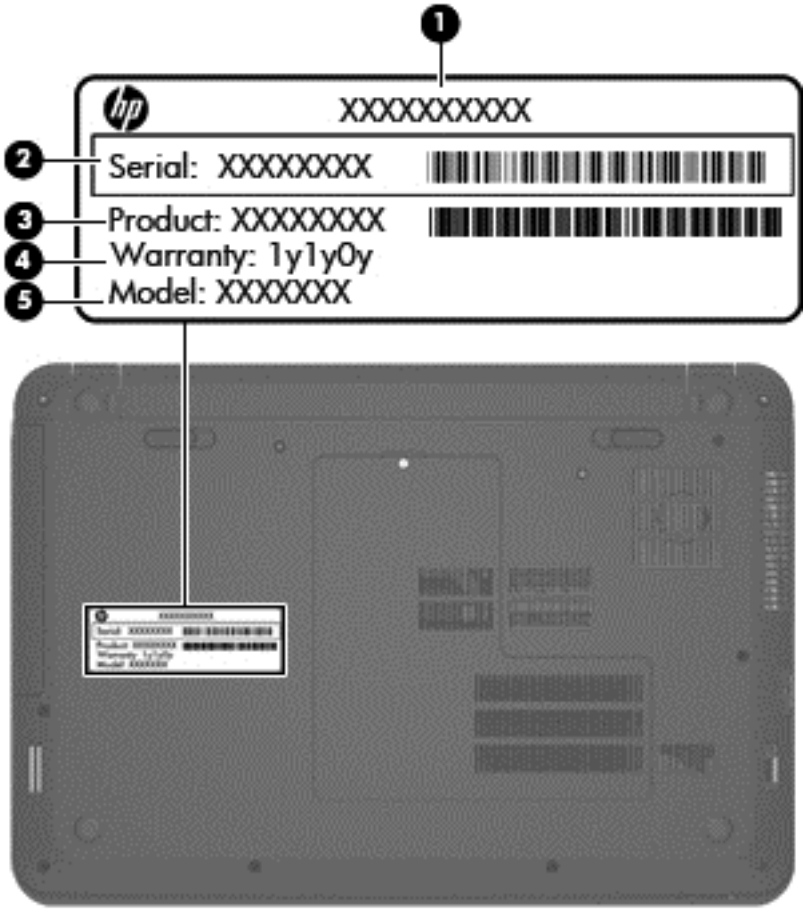
Labels

The labels affixed to the computer provide information you may need when you troubleshoot system problems or travel internationally with the computer.

IMPORTANT: All labels described in this section will be located in one of 3 places depending on your computer model: Affixed to the bottom of the computer, located in the battery bay, or under the service door.

- Service label—Provides important information to identify your computer. When contacting support, you will probably be asked for the serial number, and possibly for the product number or the model number. Locate these numbers before you contact support.

NOTE: Your service labels will resemble one of the examples shown below. Refer to the illustration that most closely matches the service label on your computer.



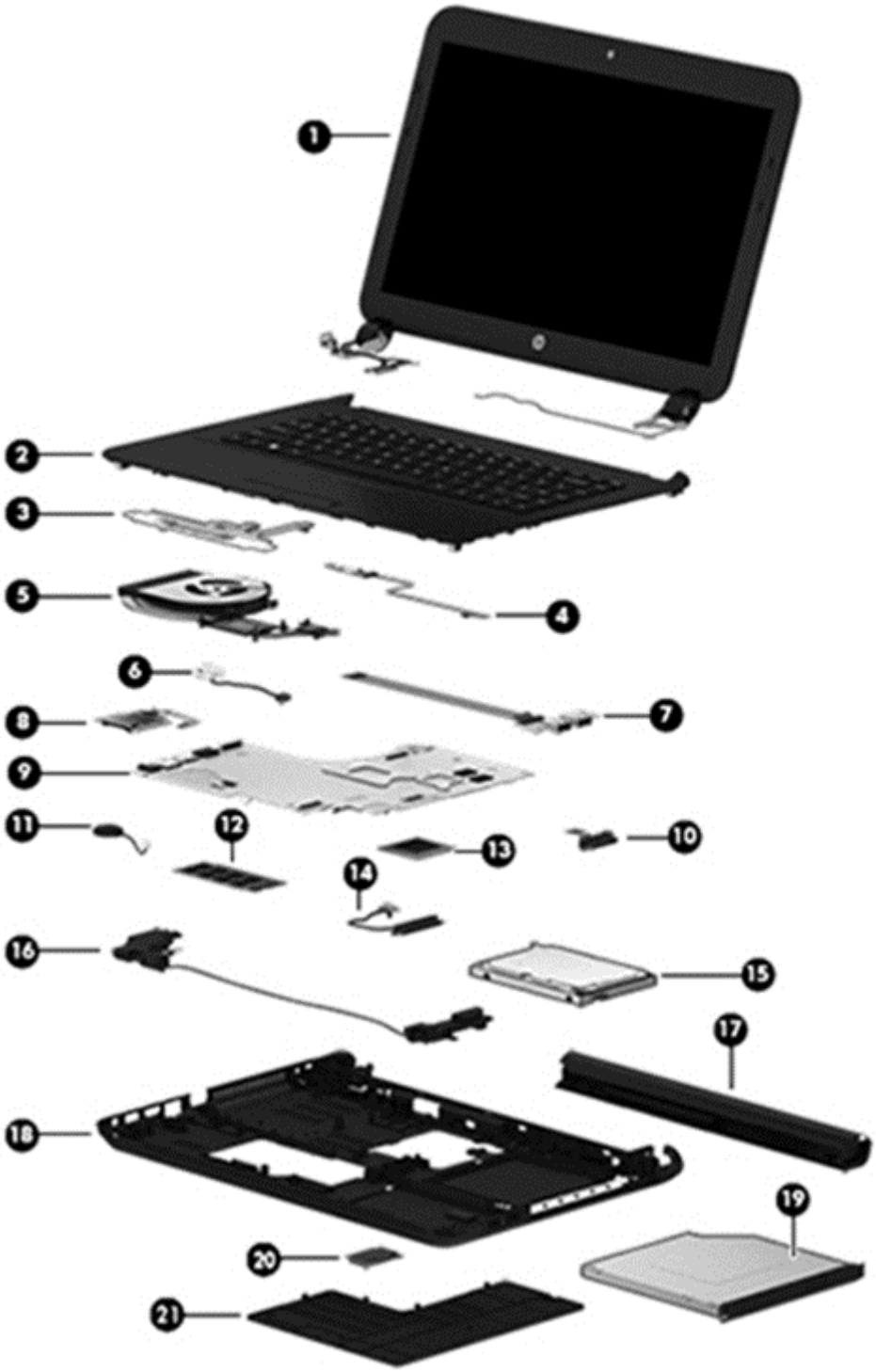
Component	
(1)	Product name
(2)	Serial number
(3)	Product number
(4)	Warranty period
(5)	Model number (select models only)

Component	
(1)	Serial number
(2)	Product number
(3)	Warranty period
(4)	Model number (select models only)
(5)	Revision number

- Regulatory label(s)—Provide(s) regulatory information about the computer.
- Wireless certification label(s)—Provide(s) information about optional wireless devices and the approval markings for the countries or regions in which the devices have been approved for use.

3 Illustrated parts catalog

Computer major components



Item	Component	Spare part number
(1)	**Display assembly** (35.6-cm [14.0-in] HD, anti-glare, touchscreen) **NOTE:** For display assembly spare part information, see Display assembly subcomponents on page 28.	
	For use in HP 14 models:	
	• Black	747246-001
	• White	747247-001
	• Red	747248-001
	• Blue	749779-001
	For use in Compaq 14 models:	
	• Gray	747249-001
	• Blue	749780-001
(2)	**Top cover** (includes keyboard):	
	For use in black HP 14 models:	
	• For use in the United States	747282-001
	• For use in Latin America	747282-161
	• For use in Brazil	747282-201
	• For use in Thailand	747282-281
	• For use in Japan	747282-291
	• For use in Taiwan	747282-AB1
	• For use in South Korea	747282-AD1
	For use in white HP 14 models:	
	• For use in the United States	747283-001
	• For use in Latin America	747283-161
	• For use in Thailand	747283-281
	• For use in Taiwan	747283-AB1
	• For use in South Korea	747283-AD1
	For use in red HP 14 models:	
	• For use in the United States	747284-001
	• For use in Latin America	747284-161
	• For use in Brazil	747284-201
	• For use in Thailand	747284-281
	• For use in Taiwan	747284-AB1
	• For use in South Korea	747284-AD1
	For use in gray Compaq 14 models:	
	• For use in the United States	747285-001

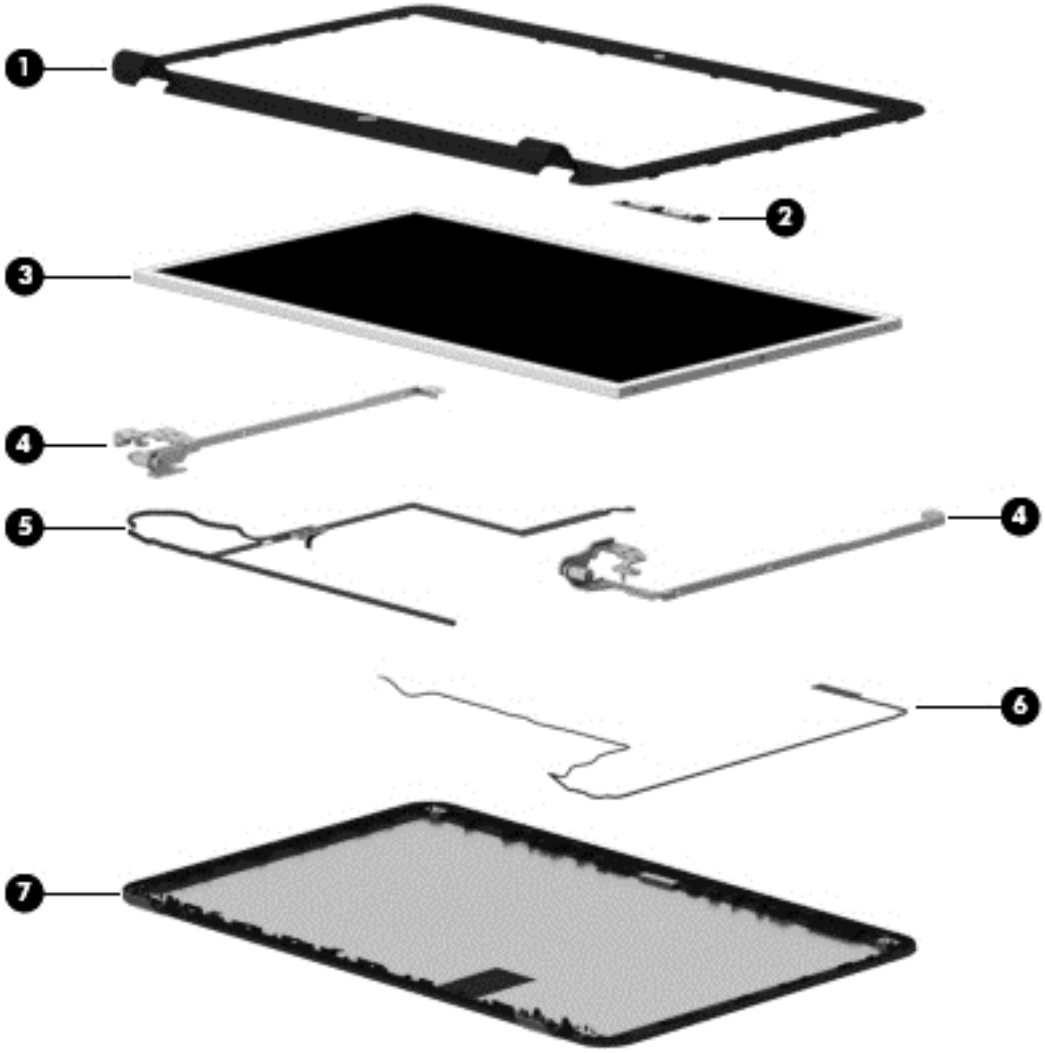
Item	Component	Spare part number
	• For use in Latin America	747285-161
	For use in gray HP 14 or Compaq 14 models:	
	• For use in the United States	749781-001
	• For use in Latin America	749781-161
	For use in gray HP 14 models:	
	• For use in Thailand	749781-281
	• For use in Taiwan	749781-AB1
	• For use in South Korea	749781-AD1
	For use in black HP 240 and HP 245 models:	
	• For use in South Korea	749036-AD1
	• For use in Taiwan	749036-AB1
	• For use in Thailand	749036-281
	• For use in the United States	749036-001
	For use in black HP 240 models:	
	• For use in Brazil	749036-201
	• For use in India	749036-D61
	• For use in Latin America	749036-161
(3)	**Touchpad button board** (includes cable)	747253-001
(4)	**Power button board** (includes cable)	747251-001
(5)	**Fan/heat sink assembly** (includes replacement thermal materials):	
	For use in models with Intel processors:	
	• UMA graphics and HM76 chipset	747241-001
	• UMA graphics and Bay Trail chipset	747243-001
	• Discrete graphics and HM76 chipset	747242-001
	For use in models with AMD processors:	
	• UMA graphics	747266-001
	• Discrete graphics	747267-001
(6)	**Power connector cable**	747116-001
(7)	**USB board** (includes cable)	747252-001
(8)	**Card reader board** (includes cable)	747254-001
(9)	**System board** (includes replacement thermal materials):	
	For use only in models with Intel processors:	
	• UMA graphics, Intel HM86 chipset, without Windows 8	747260-001
	• UMA graphics, Intel HM86 chipset, Windows 8 Standard	747260-501

Item	Component	Spare part number
	• UMA graphics, Intel HM86 chipset, Windows 8 Professional	747260-601
	• Discrete graphics, Intel HM86 chipset, without Windows 8	747261-001
	• Discrete graphics, Intel HM86 chipset, Windows 8 Standard	747261-501
	• Discrete graphics, Intel HM86 chipset, Windows 8 Professional	747261-601
	• UMA graphics, Intel HM76 chipset, without Windows 8	747262-001
	• UMA graphics, Intel HM76 chipset, Windows 8 Standard	747262-501
	• UMA graphics, Intel HM76 chipset, Windows 8 Professional	747262-601
	• Discrete graphics, Intel HM76 chipset, without Windows 8	747263-001
	• Discrete graphics, Intel HM76 chipset, Windows 8 Standard	747263-501
	• Discrete graphics, Intel HM76 chipset, Windows 8 Professional	747263-601
	• UMA graphics, Pentium N3520 processor, without Windows 8	752883-001
	• UMA graphics, Pentium N3520 processor, Windows 8 Standard	752883-501
	• UMA graphics, Pentium N3520 processor, Windows 8 Professional	752883-601
	• UMA graphics, Pentium N3510 processor, without Windows 8	747264-001
	• UMA graphics, Pentium N3510 processor, Windows 8 Standard	747264-501
	• UMA graphics, Pentium N3510 processor, Windows 8 Professional	747264-601
	• UMA graphics, Celeron N2820 processor, without Windows 8	752884-001
	• UMA graphics, Celeron N2820 processor, Windows 8 Standard	752884-501
	• UMA graphics, Celeron N2820 processor, Windows 8 Professional	752884-601
	• UMA graphics, Celeron N2810 processor, without Windows 8	747265-001
	• UMA graphics, Celeron N2810 processor, Windows 8 Standard	747265-501
	• UMA graphics, Celeron N2810 processor, Windows 8 Professional	747265-601
	For use in models with an AMD A6-5200 processor and UMA graphics:	
	• Without Windows 8	752897-001
	• Windows 8 Standard	752897-501
	For use in models with AMD A4-5000 processors and UMA graphics:	
	• Without Windows 8	747268-001
	• Windows 8 Standard	747268-501
	For use in models with AMD E1-2100 processors and UMA graphics:	
	• Without Windows 8	747269-001
	• Windows 8 Standard	747269-501
	For use in models with an AMD A4-5000 processor and discrete graphics:	
	• Without Windows 8	747271-001
	• Windows 8 Standard	747271-501

Item	Component	Spare part number
	For use only in models with an AMD E1-2100 processor and discrete graphics:	
	• Without Windows 8	747272-001
	• Windows 8 Standard	747272-501
(10)	**Optical drive connector**	747244-001
(11)	**RTC battery**	747132-001
(12)	**Memory module** (PC3L, 12800, 1600-MHz):	
	8-GB	693374-001
	4 GB	691740-001
	2 GB	691739-001
(13)	**Processor** (includes replacement thermal materials): Separate processors only available for models with Intel processors.	
	Intel Core i5 3230M processor (2.60-GHz, 3.0-MB L3 cache, dual core, 35 W)	711903-001
	Intel Core i3 4000M processor (2.40-GHz processor, 3.0-MB L3 cache, dual core, 37 W)	737327-001
	Intel Core i3 3110M processor (2.40-GHz, 3.0-MB L3 cache, dual core, 35 W)	682417-001
	Intel Pentium 2020M processor (2.40-GHz, 2.0-MB L3 cache)	700628-001
	Intel Celeron 1000M processor (1.8-GHz processor, 2.0-MB L3 cache, dual core, 35 W)	713162-001
(14)	**Hard drive connector**	747240-001
(15)	**Hard drive** (SATA; does not include bracket): **NOTE:** The hard drive bracket is available using spare part number 747117-001.	
	1-GB, 5400-rpm, 2.5-in	676521-005
	750-GB, 5400-rpm, 2.5-in	634250-005
	500-GB, 5400-rpm, 7.0-mm (for use only in HP 14 and Compaq 14 models)	683802-005
	500-GB, 5400-rpm, 2.5-in (for use only in HP 240 models)	669299-005
	320-GB, 5400-rpm, 2.5-in (for use only in HP 240 models)	622643-005
(16)	**Speakers** (includes left and right speakers and cable)	747259-001
(17)	**Battery:**	
	4-cell, 41-Whr, 2.8-Ah Li-ion battery	740715-001
	3-cell, 31-Whr, 2.8-Ah Li-ion battery	746641-001
(18)	**Base enclosure**	747236-001
(19)	**Optical drive** (DVD+/-RW Double-Layer SuperMulti)	747250-001
(20)	**WLAN module:**	
	Atheros AR9485 802.11b/g/n 1x1 WiFi Adapter	675794-001
	Ralink RT3290LE 802.11bgn 1x1 Wi-Fi and Bluetooth 4.0 Combo Adapter	690020-001
	Atheros AR9565 802.11bgn 1x1 WiFi + BT4.0 combo Adapter	733476-001

Item	Component	Spare part number
	Atheros AR9485 802.11b/g/n WiFi Adapter for use in Brazil	712639-201
	Realtek RTL8188EE 802.11bgn Wi-Fi Adapter	709848-001
	Plastics Kit, includes:	747255-001
(21)	**Service door** **NOTE:** Included in the Plastics Kit.	747255-001

Display assembly subcomponents



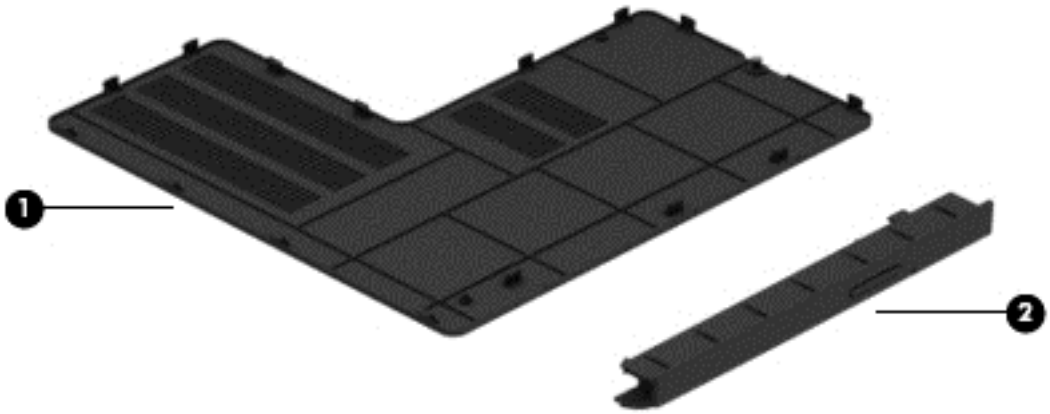
Item	Component	Spare part number
(1)	**Display bezel** (includes Mylar screw covers):	
	For use with HP 14 models	747237-001
	For use with Compaq 14 models	747238-001

Item	Component	Spare part number
	For use with HP 240 and HP 245 models	749551-001
(2)	**Webcam/microphone module**	747144-001
(3)	**Raw display panel** (35.6-cm [14.0-in], HD, WLED, BrightView)	
	For use in HP 14 and Compaq 14 models	747257-001
	For use in HP 240 and HP 245 models	749035-001
(4)	**Hinges** (left and right)	747245-001
(5)	**Display cable** (includes display panel cable and webcam/microphone cable)	747239-001
(6)	**Antennas** (includes wireless antenna cables and transceivers)	747231-001
(7)	**Display enclosure**:	
	For use in HP 14 models:	
	• Black	747232-001
	• White	747233-001
	• Red	747234-001
	• Blue	749777-001
	For use in HP 240 and HP 245 models	
	• Black	749034-001
	For use in Compaq 14 models:	
	• Gray	747235-001
	• Blue	749778-001

Mass storage devices

Component	Spare part number
Hard drive, SATA; does not include bracket):	
1-GB, 5400-rpm, 2.5-in	676521-005
750-GB, 5400-rpm, 2.5-in	634250-005
500-GB, 5400-rpm, 7.0-mm (for use only in HP 14 and Compaq 14 models)	683802-005
500-GB, 5400-rpm, 2.5-in (for use only in HP 240 models)	669299-005
320-GB, 5400-rpm, 2.5-in (for use only in HP 240 models)	622643-005
Hard drive bracket	747117-001
Optical drive (DVD+/-RW Double-Layer SuperMulti)	747250-001
Optical drive connector	747244-001

Plastics Kit

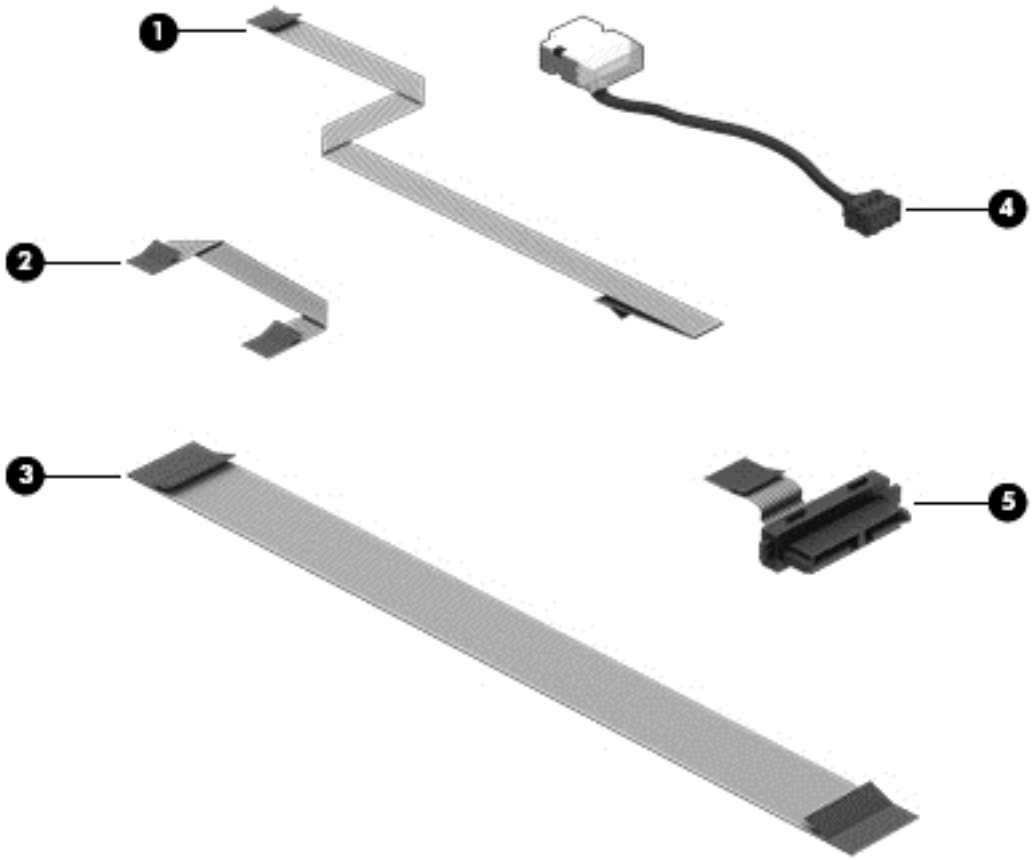


Item	Component	Spare part number
	Plastics Kit, includes:	747255-001
(1)	Service door	
(2)	Optical drive cover (for use in models without an optical drive)	

Rubber Kit

Component	Spare part number
Rubber Kit for use in HP 14 and Compaq 14 models	747256-001
Rubber Kit for use in HP 240 models	749021-001
Rubber Kit for use in HP 245 models	753184-001
Display rubber pieces for back, front, and side	
Mylar display screw covers	
Rubber feet	
Keyboard aluminum foil pieces (4)	
Tape, control board	

Cable Kit



Item	Component	Spare part number
	Cable Kit, includes:	750337-001
(1)	Power button board cable	
(2)	Card reader cable	
(3)	USB cable	
(4)	Power connector cable	
(5)	Optical drive cable	

Miscellaneous parts

Component	Spare part number
HP Smart AC adapter:	
For use with computer models equipped with discrete graphics:	
• 90-W PFC HP Smart AC adapter (for use in all countries except China and India)	710413-001
• 90-W PFC EM HP Smart AC adapter (for use in China and India only)	710414-001
For use with computer models equipped with UMA graphics:	
• 65-W non-PFC HP Smart AC adapter (for use in all countries except China and India)	710412-001
• 65-W non-PFC EM HP Smart AC adapter (for use in China and India only)	714657-001
• 45-W non-PFC, non-slim HP Smart AC adapter	741427-001
Power cord (3-pin, black, 1.83-m):	
For use in Argentina	490371-D01
For use in Australia	490371-011
For use in Brazil	490371-202
For use in Europe, the Middle East, and Africa	490371-021
For use in India	490371-D61
For use in Italy	490371-061
For use in Japan	490371-291
For use in North America	490371-001
For use in the People's Republic of China	490371-AA1
For use in South Korea	490371-AD1
For use in Taiwan	490371-AB1
For use in Thailand	490371-201
For use in the United Kingdom and Singapore	490371-031
Rubber Kit	
For use in HP 14 and Compaq 14 models	747256-001
For use in HP 240 models	749021-001
For use in HP 245 models	753184-001
Screw Kit	747134-001

Sequential part number listing

Spare part number	Description
490371-001	Power cord for use in North America (3-pin, black, 1.83-m)
490371-011	Power cord for use in Australia (3-pin, black, 1.83-m)
490371-021	Power cord for use in Europe, the Middle East, and Africa (3-pin, black, 1.83-m)
490371-031	Power cord for use in the United Kingdom and Singapore (3-pin, black, 1.83-m)
490371-061	Power cord for use in Italy (3-pin, black, 1.83-m)
490371-201	Power cord for use in Thailand (3-pin, black, 1.83-m)
490371-202	Power cord for use in Brazil (3-pin, black, 1.83-m)
490371-291	Power cord for use in Japan (3-pin, black, 1.83-m)
490371-AA1	Power cord for use in the People's Republic of China (3-pin, black, 1.83-m)
490371-AB1	Power cord for use in Taiwan (3-pin, black, 1.83-m)
490371-AD1	Power cord for use in South Korea (3-pin, black, 1.83-m)
490371-D01	Power cord for use in Argentina (3-pin, black, 1.83-m)
490371-D61	Power cord for use in India (3-pin, black, 1.83-m)
622643-005	320-GB, 5400-rpm, 2.5-in SATA hard drive for use only in HP 240 models (does not include cable or bracket)
634250-005	750-GB, 5400-rpm, 2.5-in SATA hard drive (does not include cable or bracket)
669299-005	500-GB, 5400-rpm, 2.5-in SATA hard drive for use only in HP 240 models (does not include cable or bracket)
675794-001	Atheros AR9485 802.11b/g/n 1x1 WiFi Adapter
682417-001	Intel Core i3-3110M 2.40-GHz processor (3.0-MB L3 cache, dual core, 35 W; includes replacement thermal materials)
683802-005	500-GB, 5400-rpm, 7.0-mm SATA hard drive (for use only in HP 14 and Compaq 14 models; does not include cable or bracket)
690020-001	Ralink RT3290LE 802.11bgn 1x1 Wi-Fi and Bluetooth 4.0 Combo Adapter
691739-001	2-GB memory module (PC3L, 12800, 1600-MHz)
691740-001	4-GB memory module (PC3L, 12800, 1600-MHz)
693374-001	8-GB memory module (PC3L, 12800, 1600-MHz)
700628-001	Intel Pentium 2020M, 2.40-GHz processor (2.0-MB L3 cache, dual core, 35 W)
709848-001	Realtek RTL8188EE 802.11bgn Wi-Fi Adapter
710412-001	65-W non-PFC HP Smart AC adapter for use with computer models equipped with UMA graphics (for use in all countries except China and India)
710413-001	90-W PFC HP Smart AC adapter for use with computer models equipped with discrete graphics (for use in all countries except China and India)
710414-001	90-W PFC EM HP Smart AC adapter for use with computer models equipped with discrete graphics (for use in China and India only)
711903-001	Intel Core i5, 3230M 2.60-GHz processor (3.0-MB L3 cache, dual core, 35 W)

Spare part number	Description
712639-201	Atheros AR9485 802.11b/g/n WiFi Adapter for use in Brazil
713162-001	Intel Celeron 1000M, 1.8-GHz processor (2.0-MB L3 cache, dual core, 35 W)
714657-001	65-W non-PFC EM HP Smart AC adapter (for use in China and India only)
733476-001	Atheros AR9565 802.11bgn 1x1 WiFi + BT4.0 combo Adapter
737327-001	Intel Core i3 4000M, 2.40-GHz processor (3.0-MB L3 cache, dual core, 37 W)
740715-001	4-cell, 41-Whr, 2.8-Ah Li-ion battery
741427-001	45-W non-PFC, non-slim HP Smart AC adapter
746641-001	3-cell, 31-Whr, 2.8-Ah Li-ion battery
747116-001	Power connector cable
747117-001	Hard drive bracket
747132-001	RTC battery
747134-001	Screw Kit
747144-001	Webcam/microphone module
747231-001	Antennas (includes wireless antenna cables and transceivers)
747232-001	Display enclosure for use on black HP 14 models
747233-001	Display enclosure for use on white HP 14 models
747234-001	Display enclosure for use on red HP 14 models
747235-001	Display enclosure for use on gray Compaq 14 models
747236-001	Base enclosure
747237-001	Display bezel for use with HP 14 models
747238-001	Display bezel for use with Compaq 14 models
747239-001	Display cable (includes display panel cable and webcam/microphone cable)
747240-001	Hard drive cable
747241-001	Fan/heat sink assembly for use in models with Intel processors, UMA graphics, and Intel HM76 chipset (includes replacement thermal materials)
747242-001	Fan/heat sink assembly for use in models with Intel processors, discrete graphics, and Intel HM76 chipset (includes replacement thermal materials)
747243-001	Fan/heat sink assembly for use in models with Intel processors, UMA graphics, and Intel Bay Trail chipset (includes replacement thermal materials)
747244-001	Optical drive connector
747245-001	Hinges (left and right)
747246-001	Display assembly (35.6-cm [14.0-in] HD, anti-glare, touchscreen, for use in for use in HP 14 black modelsBlack
747247-001	Display assembly (35.6-cm [14.0-in] HD, anti-glare, touchscreen, for use in HP 14 white models
747248-001	Display assembly (35.6-cm [14.0-in] HD, anti-glare, touchscreen, for use in HP branded red models
747249-001	Display assembly (35.6-cm [14.0-in] HD, anti-glare, touchscreen, for use in Compaq 14 gray models

Spare part number	Description
747250-001	DVD+/-RW Double-Layer SuperMulti Drive
747251-001	Power button board (includes cable)
747252-001	USB board (includes cable)
747253-001	TouchPad button board (includes cable)
747254-001	Card reader board (includes cable)
747255-001	Plastics Kit (includes service door and optical drive cover (for use in models without an optical drive)
747256-001	Rubber Kit for use in HP 14 and Compaq 14 models
747257-001	Raw display panel for use in HP 14 and Compaq 14 models
747259-001	Speakers (includes left and right speakers and cable)
747260-001	System board for use only in models with UMA graphics, Intel HM86 chipset, and without Windows 8 (includes replacement thermal materials)
747260-501	System board for use only in models with UMA graphics, Intel HM86 chipset, and Windows 8 Standard (includes replacement thermal materials)
747260-601	System board for use only in models with UMA graphics, Intel HM86 chipset, and Windows 8 Professional (includes replacement thermal materials)
747261-001	System board for use only in models with discrete graphics, Intel HM86 chipset, and without Windows 8 (includes replacement thermal materials)
747261-501	System board for use only in models with discrete graphics, Intel HM86 chipset, and Windows 8 Standard (includes replacement thermal materials)
747261-601	System board for use only in models with discrete graphics, Intel HM86 chipset, and Windows 8 Professional (includes replacement thermal materials)
747262-001	System board for use only in models with UMA graphics, Intel HM76 chipset, and without Windows 8 (includes replacement thermal materials)
747262-501	System board for use only in models with UMA graphics, Intel HM76 chipset, and Windows 8 Standard (includes replacement thermal materials)
747262-601	System board for use only in models with UMA graphics, Intel HM76 chipset, and Windows 8 Professional (includes replacement thermal materials)
747263-001	System board for use only in models with discrete graphics, Intel HM76 chipset, and without Windows 8 (includes replacement thermal materials)
747263-501	System board for use only in models with discrete graphics, Intel HM76 chipset, and Windows 8 Standard (includes replacement thermal materials)
747263-601	System board for use only in models with discrete graphics, Intel HM76 chipset, and Windows 8 Professional (includes replacement thermal materials)
747264-001	System board for use only in models with UMA graphics, Pentium N3510 processor, without Windows 8 (includes replacement thermal materials)
747264-501	System board for use only in models with UMA graphics, Pentium N3510 processor, and Windows 8 Standard (includes replacement thermal materials)
747264-601	System board for use only in models with UMA graphics, Pentium N3510 processor, and Windows 8 Professional (includes replacement thermal materials)
747265-001	System board for use only in models with UMA graphics, Celeron N2810 processor, without Windows 8 (includes replacement thermal materials)

Spare part number	Description
747265-501	System board for use only in models with UMA graphics, Celeron N2810 processor, and Windows 8 Standard (includes replacement thermal materials)
747265-601	System board for use only in models with UMA graphics, Celeron N2810 processor, and Windows 8 Professional (includes replacement thermal materials)
747266-001	Fan/heat sink assembly for use only with computer models equipped with an AMD processor and UMA graphics (includes replacement thermal materials)
747267-001	Fan/heat sink assembly for use only with computer models equipped with an AMD processor and discrete graphics (includes replacement thermal materials)
747268-001	System board for use only with computer models without Windows 8 and equipped with an AMD A4-5000 processor and UMA graphics (includes replacement thermal materials)
747268-501	System board for use only with computer models with Windows 8 Standard and equipped with an AMD A4-5000 processor and UMA graphics (includes replacement thermal materials)
747269-001	System board for use only with computer models without Windows 8 and equipped with an AMD E1-2100 processor and UMA graphics (includes replacement thermal materials)
747269-501	System board for use only with computer models with Windows 8 Standard and equipped with an AMD E1-2100 processor and UMA graphics (includes replacement thermal materials)
747271-001	System board for use only with computer models without Windows 8 and equipped with an AMD A4-5000 processor and discrete graphics (includes replacement thermal materials)
747271-501	System board for use only with computer models with Windows 8 Standard and equipped with an AMD A4-5000 processor and discrete graphics (includes replacement thermal materials)
747272-001	System board for use only with computer models without Windows 8 and equipped with an AMD E1-2100 processor and discrete graphics (includes replacement thermal materials)
747272-501	System board for use only with computer models with Windows 8 Standard and equipped with an AMD E1-2100 processor and discrete graphics (includes replacement thermal materials)
747282-001	Top cover with keyboard for use in black HP 14 models in the United States
747282-161	Top cover with keyboard for use in black HP 14 models in Latin America
747282-201	Top cover with keyboard for use in black HP 14 models in Brazil
747282-281	Top cover with keyboard for use in black HP 14 models in Thailand
747282-291	Top cover with keyboard for use in black HP 14 models in Japan
747282-AB1	Top cover with keyboard for use in black HP 14 models in Taiwan
747282-AD1	Top cover with keyboard for use in black HP 14 models in South Korea
747283-001	Top cover with keyboard for use in white HP 14 models in the United States
747283-161	Top cover with keyboard for use in white HP 14 models in Latin America
747283-281	Top cover with keyboard for use in white HP 14 models in Thailand
747283-AB1	Top cover with keyboard for use in white HP 14 models in Taiwan
747283-AD1	Top cover with keyboard for use in white HP 14 models in South Korea
747284-001	Top cover with keyboard for use in red HP 14 models in the United States
747284-161	Top cover with keyboard for use in red HP 14 models in Latin America
747284-201	Top cover with keyboard for use in red HP 14 models in Brazil

Spare part number	Description
747284-281	Top cover with keyboard for use in red HP 14 models in Thailand
747284-AB1	Top cover with keyboard for use in red HP 14 models in Taiwan
747284-AD1	Top cover with keyboard for use in red HP 14 models in South Korea
747285-001	Top cover with keyboard for use in gray Compaq 14 models in the United States
747285-161	Top cover with keyboard for use in gray Compaq 14 models in Latin America
749021-001	Rubber Kit for use in HP 240 models
749034-001	Display enclosure for use on black HP 240 and HP 245 models
749035-001	Raw display panel for use in HP 240 and HP 245 models
749036-001	Top cover with keyboard for use in black HP 240 and HP 245 models in the United States
749036-161	Top cover with keyboard for use in black HP 240 models in Latin America
749036-201	Top cover with keyboard for use in black HP 240 models in Brazil
749036-281	Top cover with keyboard for use in black HP 240 and HP 245 models in Thailand
749036-AB1	Top cover with keyboard for use in black HP 240 and HP 245 models in Taiwan
749036-AD1	Top cover with keyboard for use in black HP 240 and HP 245 models in South Korea
749036-D61	Top cover with keyboard for use in black HP 240 models in India
749551-001	Display bezel for use with HP 240 and HP 245 models
749781-001	Top cover with keyboard for use in gray HP 14 or Compaq 14 models in the United States
749781-161	Top cover with keyboard for use in gray HP 14 or Compaq 14 models in Latin America
749781-281	Top cover with keyboard for use in gray HP 14 models in Thailand
749781-AB1	Top cover with keyboard for use in gray HP 14 models in Taiwan
749781-AD1	Top cover with keyboard for use in gray HP 14 models in South Korea
749777-001	Display enclosure for use on blue HP 14 models
749778-001	Display enclosure for use on blue Compaq 14 models
749779-001	Display assembly (35.6-cm [14.0-in] HD, anti-glare, touchscreen, for use in HP 14 blue models
749780-001	Display assembly (35.6-cm [14.0-in] HD, anti-glare, touchscreen, for use in Compaq 14 blue models
750337-001	Cable Kit
752883-001	System board for use only in models with UMA graphics, Pentium N3510 processor, without Windows 8 (includes replacement thermal materials)
752883-501	System board for use only in models with UMA graphics, Pentium N3510 processor, and Windows 8 Standard (includes replacement thermal materials)
752883-601	System board for use only in models with UMA graphics, Pentium N3510 processor, and Windows 8 Professional (includes replacement thermal materials)
752884-001	System board for use only in models with UMA graphics, Celeron N2820 processor, without Windows 8 (includes replacement thermal materials)
752884-501	System board for use only in models with UMA graphics, Celeron N2820 processor, and Windows 8 Standard (includes replacement thermal materials)

Spare part number	Description
752884-601	System board for use only in models with UMA graphics, Celeron N2820 processor, and Windows 8 Professional (includes replacement thermal materials)
752897-001	System board for use only with computer models without Windows 8 and equipped with an AMD A6-5200 processor and UMA graphics (includes replacement thermal materials)
752897-501	System board for use only with computer models with Windows 8 Standard and equipped with an AMD A6-5200 processor and UMA graphics (includes replacement thermal materials)
753184-001	Rubber Kit for use in HP 245 models

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

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 non-conductive 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 plastics	Bags	1,500 V
Carbon-loaded plastic	Floor mats	7,500 V
Metallized laminate	Floor mats	5,000 V

Component replacement procedures

This chapter provides removal and replacement procedures.

Make special note of each screw's size and location during removal and replacement.

Battery

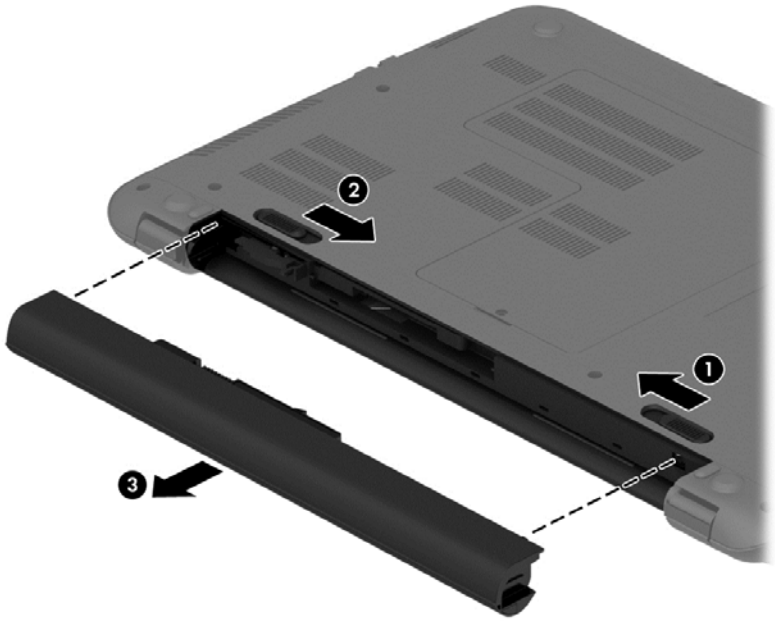
Description	Spare part number
4-cell, 41-Whr, 2.8-Ah Li-ion battery	740715-001
3-cell, 31-Whr, 2.8-Ah Li-ion battery	746641-001

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.

To remove the battery:

1. Turn the computer upside down on a flat surface.
2. Slide the battery lock latch **(1)**, and then slide the battery release latch **(2)** to release the battery.
3. Remove the battery from the computer **(3)**.



Display subcomponents (bezel, webcam, panel)

This section describes removing display subcomponents that do not require that you remove the entire display assembly from the computer. You can remove the display bezel, webcam/microphone module, and display panel while the display assembly is still attached to the computer.

To remove the remaining display subcomponents, you must remove the entire display assembly from the computer. See Display assembly on page 61 for more information about removing the display assembly in its entirety.

Description	Spare part number
Raw display panel for use in HP 14 and Compaq 14 models	747257-001
Raw display panel for use in HP 240 models and HP 245 models	749035-001
Display bezel for use with HP 14 models	747237-001
Display bezel for use with Compaq 14 models	747238-001
Display bezel for use with HP 240 and HP 245 models	749551-001
Webcam/microphone module	747144-001

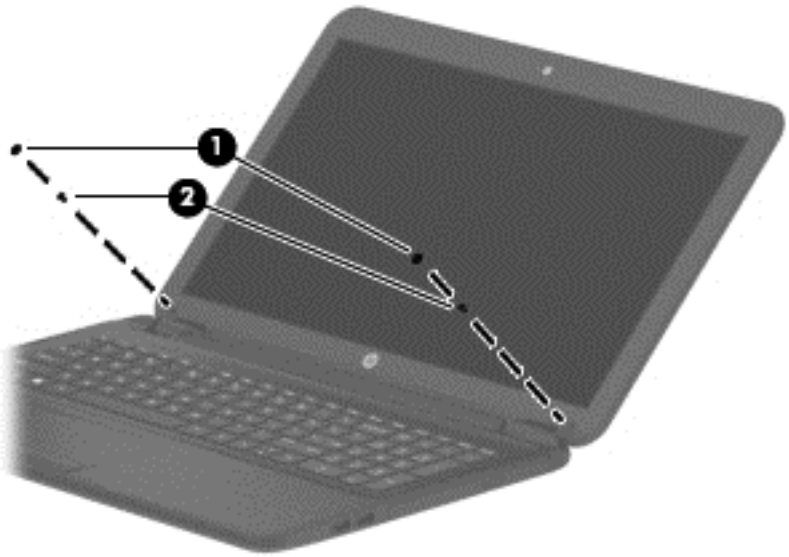
Before removing display subcomponents while the display assembly is still attached to the computer, follow these steps:

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 43).

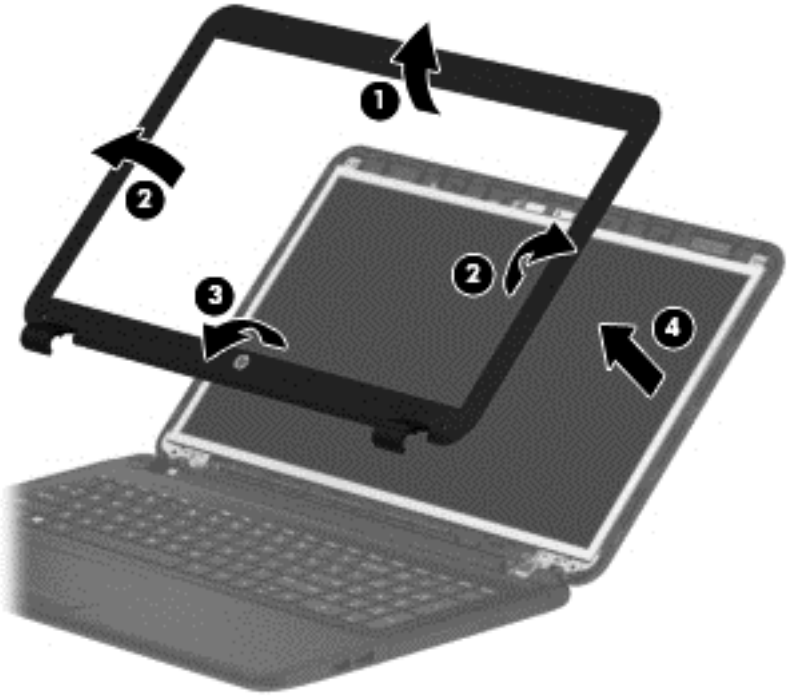
To remove the display bezel, webcam/microphone module, and raw display panel:

1. Position the computer upright with the front toward you, and then open it.

2. Remove the two Mylar screw covers **(1)** and the two Phillips PM2.5×4.5 screws **(2)** that secure the display bezel to the display assembly.

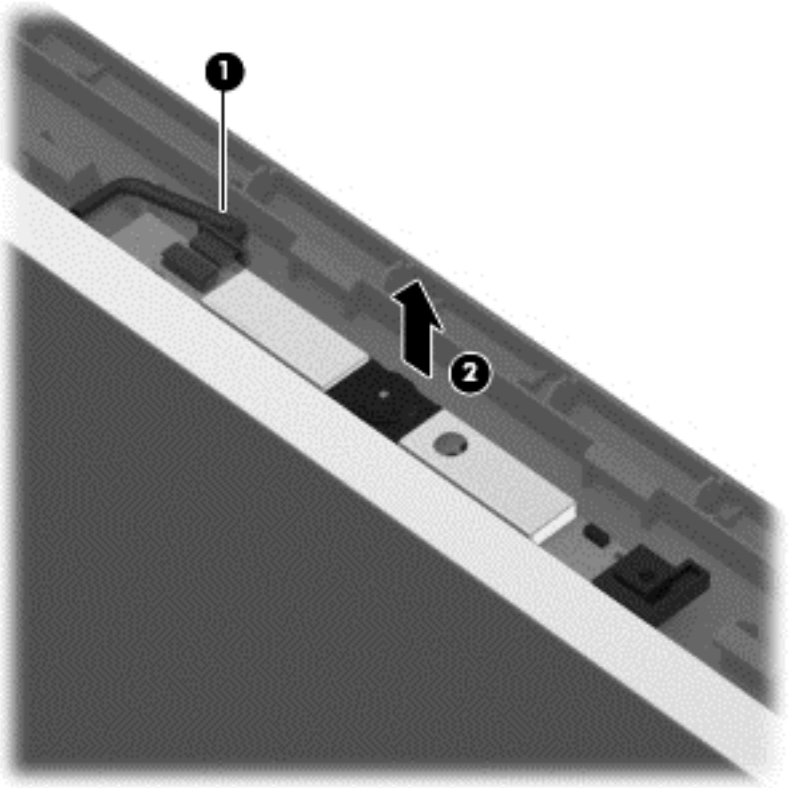


3. Flex the inside of the top edge **(1)**, the left and right sides **(2)**, and the bottom edge **(3)** of the display bezel until the bezel disengages from the display enclosure.
4. Remove the display bezel **(4)**.



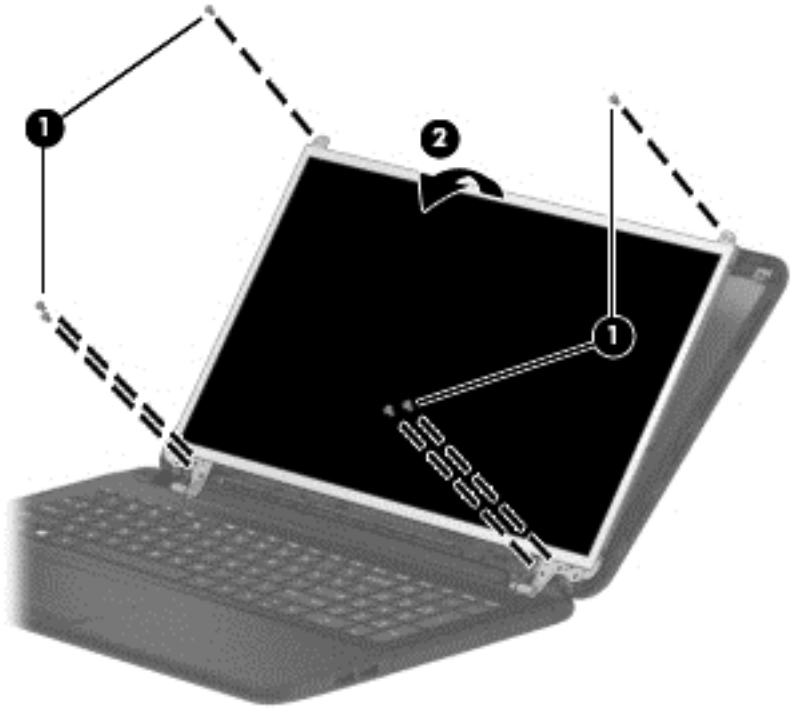
5. To remove the webcam/microphone module:
   a. Position the display assembly with the top edge toward you.
   b. Disconnect the cable **(1)** from the module.

c. Lift to disengage the adhesive that secures the webcam/microphone module to the display, and then remove the module **(2)**.

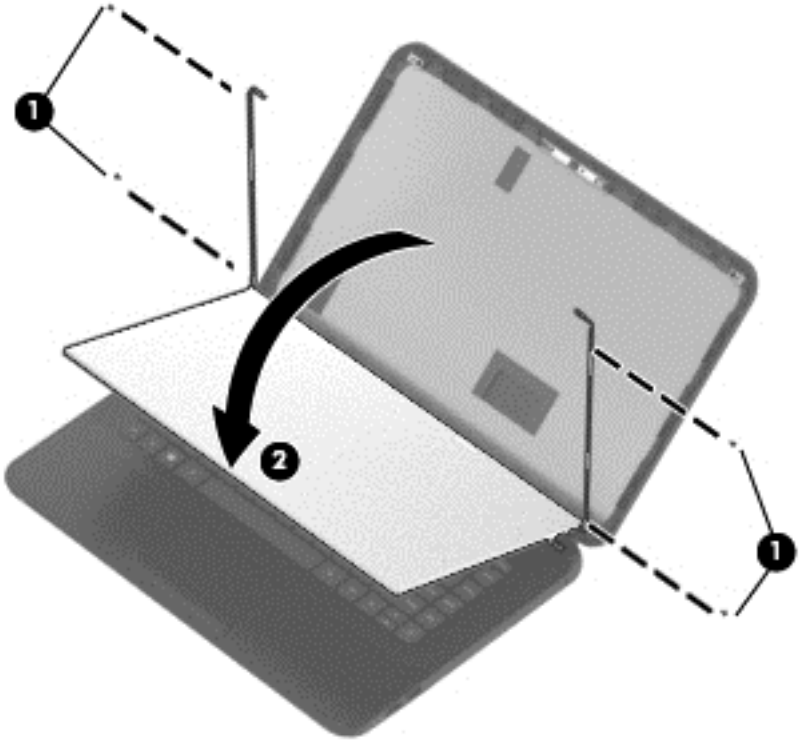


6. To remove the display panel:

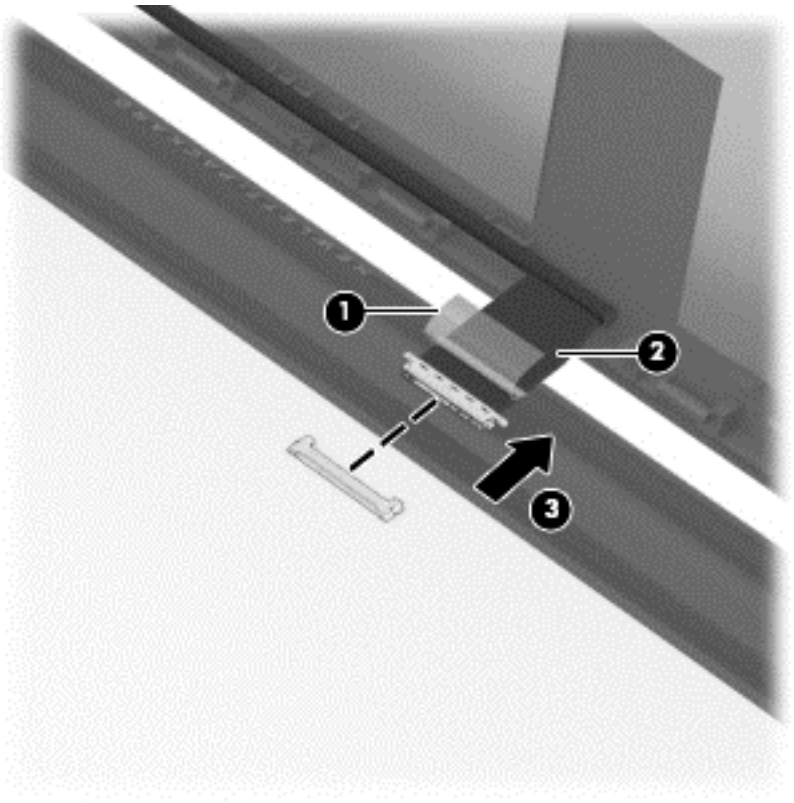
   a. Remove the six Phillips PM2.5×4.0 screws **(1)** that secure the display panel to the enclosure, and then rotate the display panel and hinges forward to gain access to the hinge screws **(2)**.



b. Remove the four Phillips PM2.0×3.0 screws **(1)** that secure the display panel to the hinges, and then rotate the display panel onto the keyboard **(2)**.



c. On the back of the display panel, release the adhesive strip **(1)** that secures the display panel cable to the display panel, and then disconnect **(2)** and remove **(3)** the cable.



Reverse this procedure to reassemble and install the display bezel, webcam/microphone module, and display panel.

Service door

NOTE: The service door is available in the Plastics Kit.

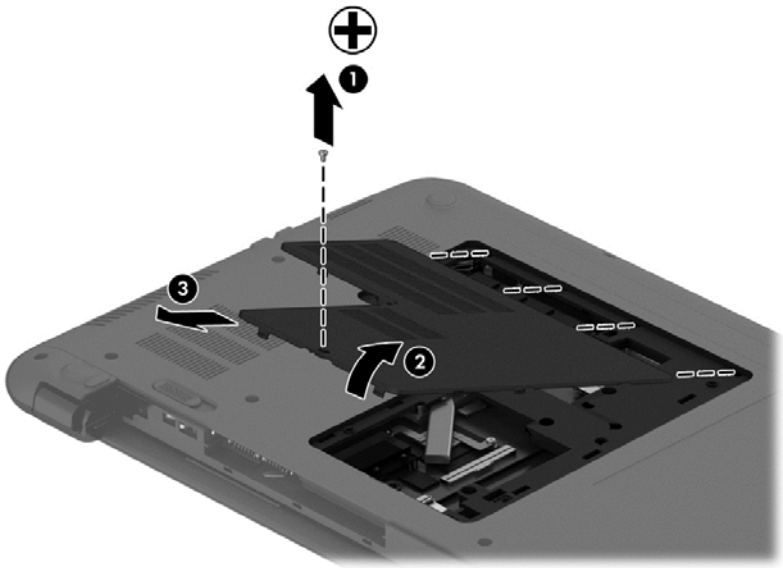
Description	Spare part number
Plastics Kit	747255-001

Before removing the service door, 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 43).

To remove the service door:

1. Remove the service door screw **(1)**.
2. Slide the service door toward the front of the computer **(2)**, and then lift up and remove the service door **(3)**.



Reverse this procedure to install the service door.

Optical drive

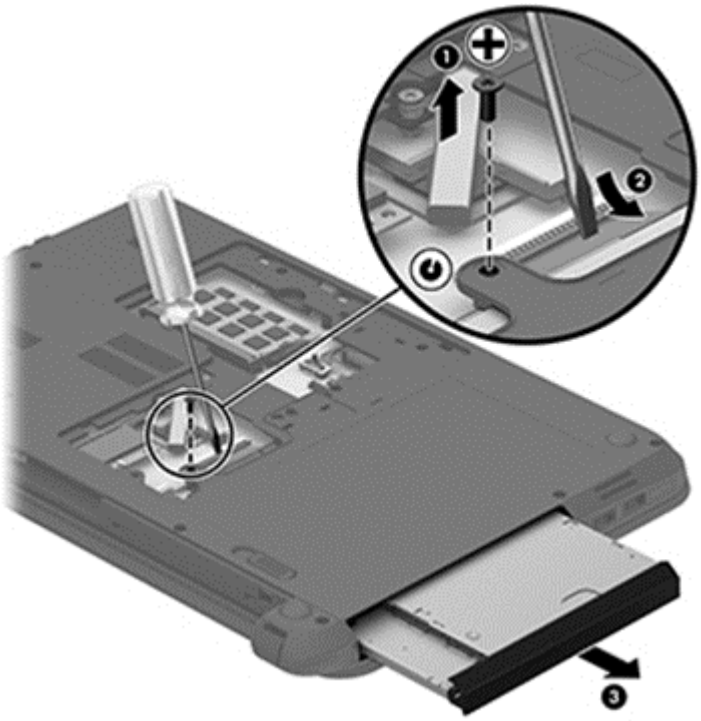
Description	Spare part number
DVD+/-RW Double-Layer SuperMulti Drive	747250-001

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 43).
5. Remove the service door (see Service door on page 49).

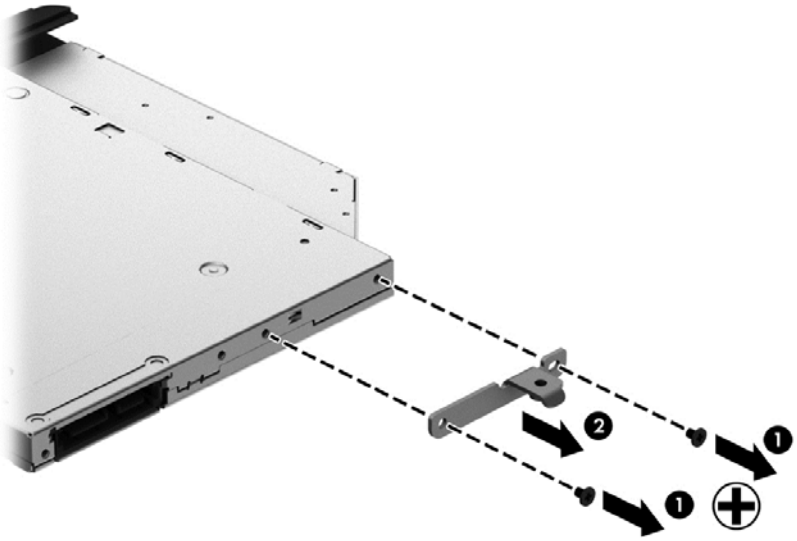
To remove the optical drive:

1. Remove the Phillips PM2.5×6.5 screw **(1)** that secures the optical drive to the computer.
2. Insert a screwdriver or similar small tool into the hole at the rear of the optical drive bay, and then push the optical drive **(2)** to release it from the bay.
3. Remove the optical drive **(3)** by sliding it out of the optical drive bay.



4. If it is necessary to replace the optical drive bracket on the rear of the optical drive, position the optical drive with the rear panel toward you.
5. Remove the two Phillips PM2.0×3.0 screws **(1)** that secure the bracket to the optical drive.

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



Reverse this procedure to reassemble and install the optical drive.

WLAN module

Description	Spare part number
Atheros AR9485 802.11b/g/n 1x1 WiFi Adapter	675794-001
Ralink RT3290LE 802.11bgn 1x1 Wi-Fi and Bluetooth 4.0 Combo Adapter	690020-001
Atheros AR9565 802.11bgn 1x1 WiFi + BT4.0 combo Adapter	733476-001
Atheros AR9485 802.11b/g/n WiFi Adapter for use in Brazil	712639-201
Realtek RTL8188EE 802.11bgn Wi-Fi Adapter	709848-001

CAUTION: To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module to restore device functionality, and then contact 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 43).
5. Remove the service door (see Service door on page 49).

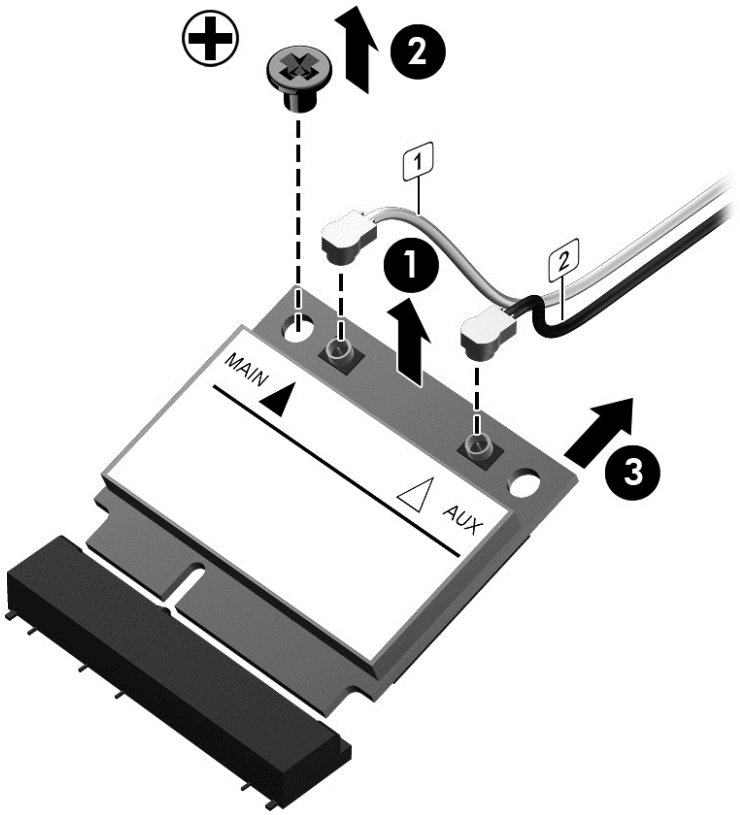
To remove the WLAN module:

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

NOTE: The #1 WLAN antenna cable is connected to the WLAN module Main terminal. The #2 WLAN antenna cable is connected to the WLAN module Aux terminal.

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

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



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

Reverse this procedure to install the WLAN module.

Memory module

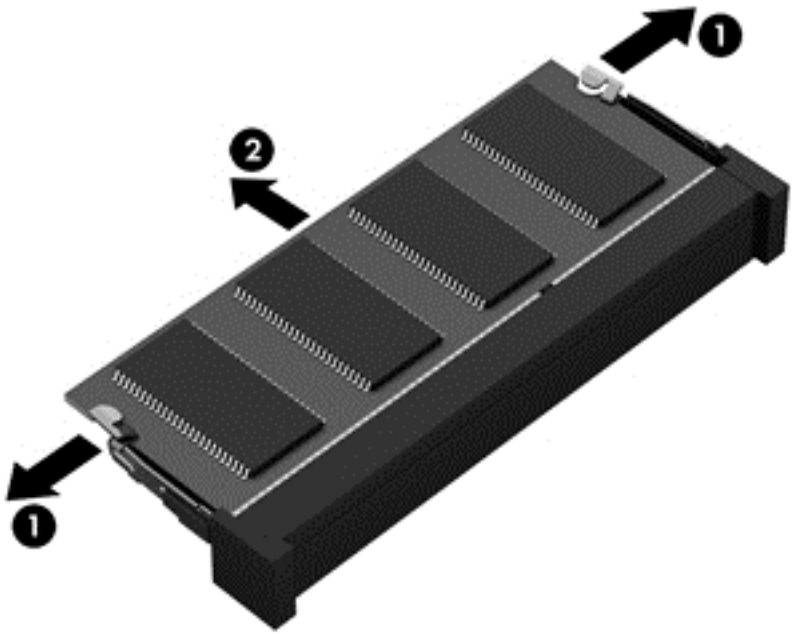
Description	Spare part number
8-GB (PC3L, 12800, 1600-MHz)	693374-001
4-GB (PC3L, 12800, 1600-MHz)	691740-001
2-GB (PC3L, 12800, 1600-MHz)	691739-001

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 43).
5. Remove the service door (see Service door on page 49).

To remove a memory module:

1. Spread the retaining tabs **(1)** on each side of the memory module slot to release the memory module. (The memory module tilts up.)
2. Remove the memory module **(2)** by pulling it away from the slot at an angle.



Reverse this procedure to install a memory module.

Top cover/keyboard

NOTE: The top cover spare part kit includes the TouchPad.

Description	Spare part number
Top cover with keyboard for use in black HP 14 models:	
• For use in the United States	747282-001
• For use in Latin America	747282-161
• For use in Brazil	747282-201
• For use in Thailand	747282-281
• For use in Japan	747282-291
• For use in Taiwan	747282-AB1
• For use in South Korea	747282-AD1
Top cover with keyboard for use in white HP 14 models:	
• For use in the United States	747283-001
• For use in Latin America	747283-161
• For use in Thailand	747283-281
• For use in Taiwan	747283-AB1
• For use in South Korea	747283-AD1
Top cover with keyboard for use in red HP 14 models:	
• For use in the United States	747284-001
• For use in Latin America	747284-161
• For use in Brazil	747284-201
• For use in Thailand	747284-281
• For use in Taiwan	747284-AB1
• For use in South Korea	747284-AD1
Top cover with keyboard for use in gray Compaq 14 models:	
• For use in the United States	747285-001
• For use in Latin America	747285-161
Top cover with keyboard for use in gray HP 14 or Compaq 14 models:	
• For use in the United States	749781-001
• For use in Latin America	749781-161
Top cover with keyboard for use in gray HP 14 models:	
• For use in Thailand	749781-281
• For use in Taiwan	749781-AB1
• For use in South Korea	749781-AD1

Description	Spare part number
Top cover with keyboard for use in black HP 240 and HP 245 models:	
• For use in the United States	749036-001
• For use in Thailand	749036-281
• For use in Taiwan	749036-AB1
• For use in South Korea	749036-AD1
Top cover with keyboard for use in black HP 240 models:	
• For use in Brazil	749036-201
• For use in India	749036-D61
• For use in Latin America	749036-161

Before removing the top cover/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 43), and then remove the following components:
5. Remove the service door (see Service door on page 49).

NOTE: When replacing the top cover, be sure that the power button board and cable (see Power button board on page 59) is removed from the defective top cover and installed on the replacement top cover:

To remove the top cover/keyboard:

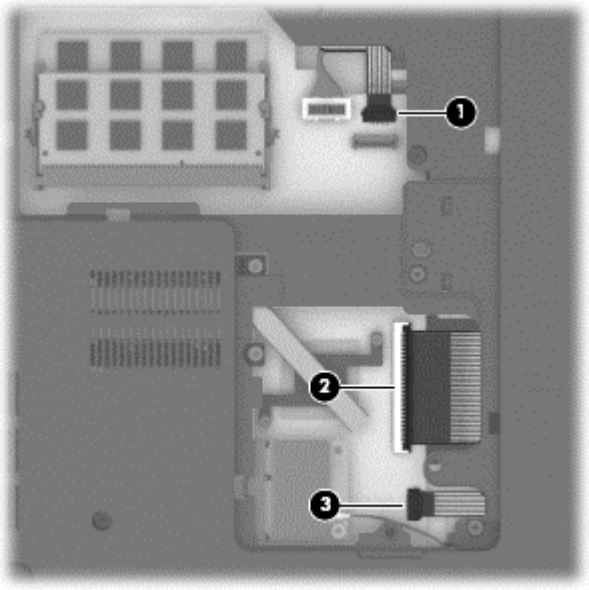
1. Close the computer, and then position the computer upside down with the front toward you.

2. Disconnect the following cables:

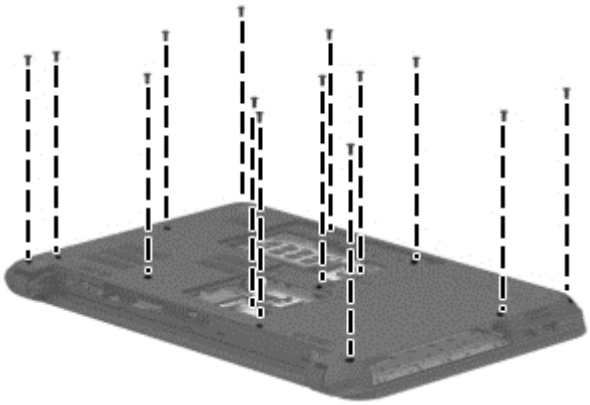
   (1): Power button board cable

   (2): Keyboard cable

   (3): Touchpad cable

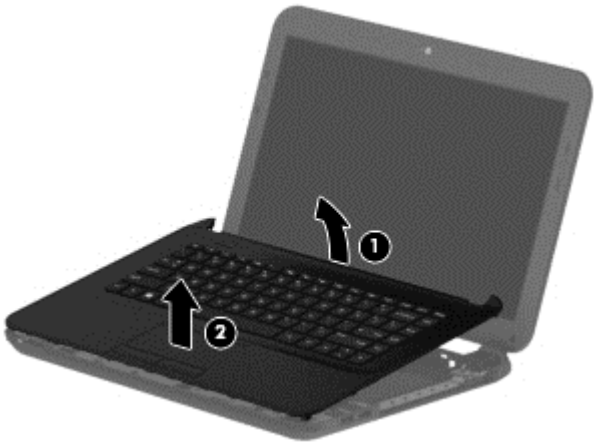


3. Remove the 14 Phillips PM2.5×6.0 screws that secure the top cover to the computer.



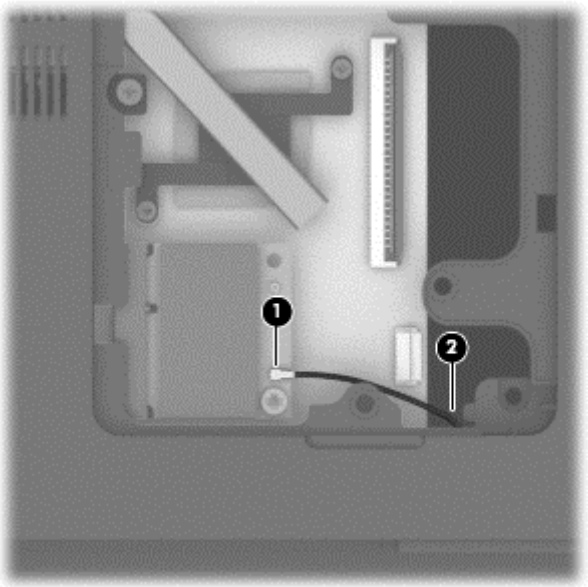
4. Position the computer upright with the front toward you, and then open the computer.
5. Lift the rear edge of the top cover **(1)** until the left and right sides disengage from the base enclosure.

6. Remove the top cover **(2)**.



Reverse this procedure to install the top cover/keyboard.

Note the antenna routing path on the bottom of the computer when reassembling the computer.



Power button board

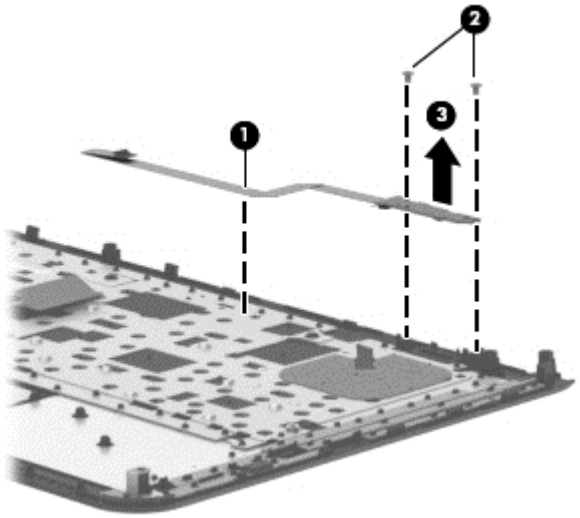
Description	Spare part number
Power button board (includes cable)	747251-001

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 43), and then remove the following components:
5. Remove the service door (see Service door on page 49).
6. Remove the top cover (see Top cover/keyboard on page 55).

To remove the power button board:

1. Position the top cover upside down with the front toward you.
2. Lift the cable to disengage it from the top cover **(1)**.
3. Remove the two Phillips PM2.0×3.0 screws **(2)** that secure the power button board to the top cover.
4. Remove the power button board and cable **(3)**.



Reverse this procedure to install the power button board and cable.

TouchPad button board

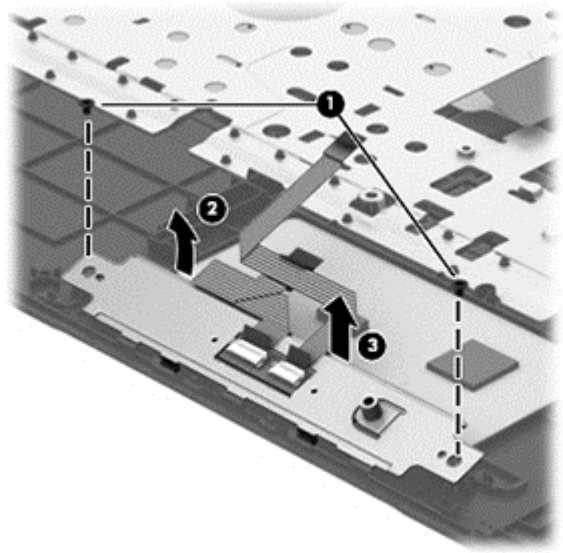
Description	Spare part number
TouchPad button board (includes cable)	747253-001

Before removing the TouchPad 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 43), and then remove the following components:
5. Remove the service door (see Service door on page 49).
6. Remove the top cover (see Top cover/keyboard on page 55).

To remove the TouchPad button board:

1. Position the top cover upside down with the front toward you.
2. Remove the two Phillips PM2.0×3.0 screws **(1)** that secure the TouchPad button board to the top cover.
3. Rotate the board upward **(2)**.
4. Remove the TouchPad button board and cable **(3)**.



Reverse this procedure to install the power button board and cable.

Display assembly

This section describes removing the display assembly in its entirety and disassembling all the display subcomponents.

If you only need to remove the display bezel, webcam/microphone module, or display panel, you do not need to remove the entire display assembly from the computer. See Display subcomponents (bezel, webcam, panel) on page 44 for more information about removing the display subcomponents that do not require that you remove the entire display assembly from the computer.

Description	Spare part number
Display assembly (35.6-cm [14.0-in] HD, anti-glare, touchscreen, for use in for use in HP 14 black models Black	747246-001
Display assembly (35.6-cm [14.0-in] HD, anti-glare, touchscreen, for use in HP 14 white models	747247-001
Display assembly (35.6-cm [14.0-in] HD, anti-glare, touchscreen, for use in HP branded red models	747248-001
Display assembly (35.6-cm [14.0-in] HD, anti-glare, touchscreen, for use in Compaq 14 gray models	747249-001
Display assembly (35.6-cm [14.0-in] HD, anti-glare, touchscreen, for use in HP 14 blue models	749779-001
Display assembly (35.6-cm [14.0-in] HD, anti-glare, touchscreen, for use in Compaq 14 blue models	749780-001
Raw display panel for use in HP 14 and Compaq 14 models	747257-001
Raw display panel for use in HP 240 models and HP 245 models	749035-001
Antennas (includes wireless antenna cables and transceivers)	747231-001
Display bezel for use with HP 14 models	747237-001
Display bezel for use with Compaq 14 models	747238-001
Display cable (includes display panel cable and webcam/microphone cable)	747239-001
Display enclosure for use on black HP 14 models	747232-001
Display enclosure for use on white HP 14 models	747233-001
Display enclosure for use on red HP 14 models	747234-001
Display enclosure for use on gray Compaq 14 models	747235-001
Display enclosure for use on blue HP 14 models	749777-001
Display enclosure for use on blue Compaq 14 models	749778-001
Display enclosure for use on black HP 240 and HP 245 models	749034-001
Hinges (left and right)	747245-001
Webcam/microphone module	747144-001

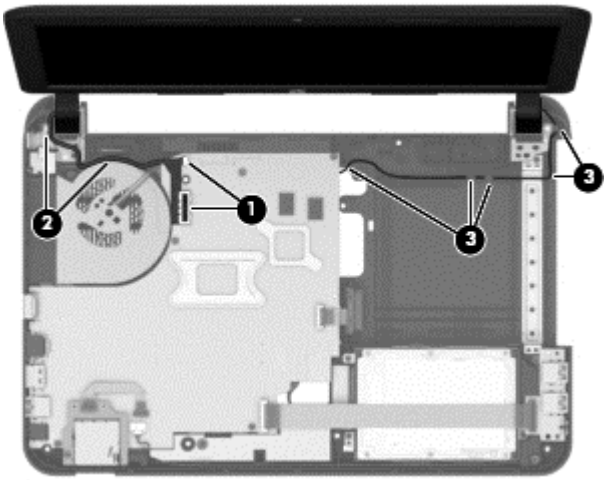
Before removing the display assembly, follow these steps:

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 43).
5. Disconnect the WLAN module antenna cables from the WLAN module (see WLAN module on page 52).
6. Remove the following components:
   - Service door (see Service door on page 49)
   - Top cover (see Top cover/keyboard on page 55)

To remove the display assembly:

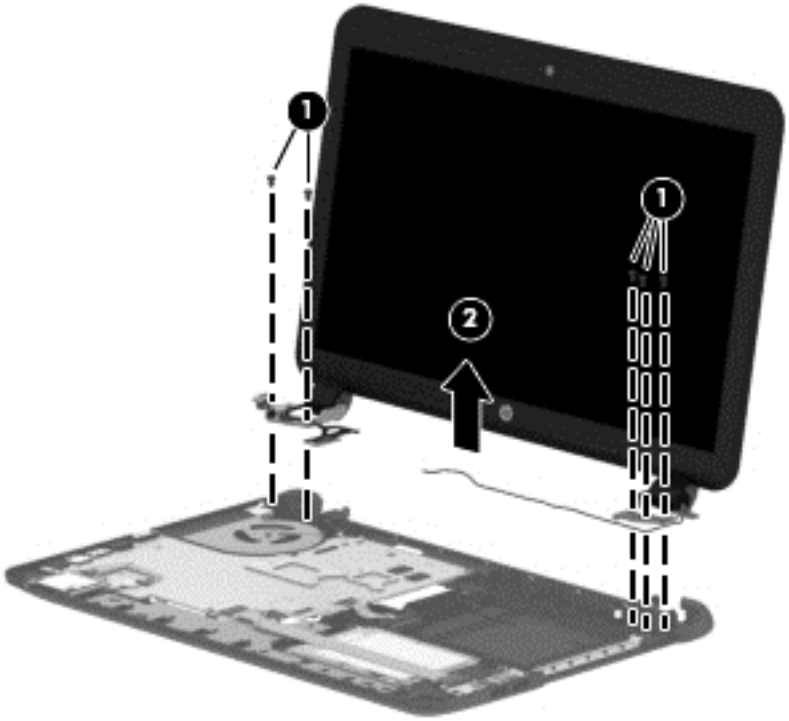
1. Disengage the adhesive and disconnect the display panel cable **(1)** from the system board.
2. Remove the display panel cable from its routing path **(2)**.
3. Release the wireless antenna cables from the clips **(3)** built into the base enclosure.



CAUTION: Support the display assembly when removing the following screws. Failure to support the display assembly can result in damage to the display assembly and other computer components.

4. Remove the five Phillips PM2.5×5.0 screws **(1)** that secure the display assembly to the computer.

5. Remove the display assembly **(2)**.

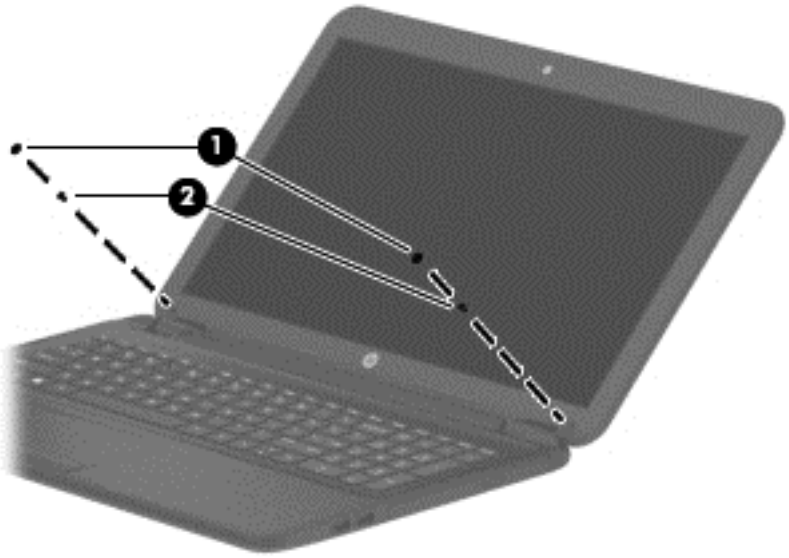


If it is necessary to replace any of the display assembly subcomponents:

1. To remove the display bezel:

   a. Remove the two Mylar screw covers **(1)** and the two Phillips PM2.5×4.5 screws **(2)** that secure the display bezel to the display assembly. The Mylar screw covers are included in the Rubber Kit, spare part number 747256-001 for HP 14 and Compaq 14 models, 749021-001 for HP 240 models, and 753184-001 for HP 245 models.

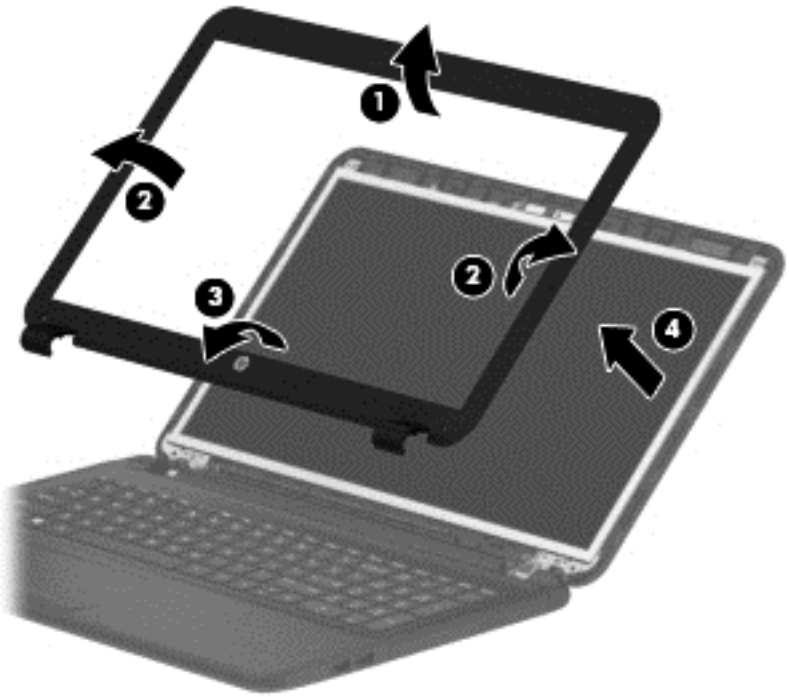
   NOTE: In this procedure, the display will NOT be connected to the computer, as shown in the following image.



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

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

NOTE: In this procedure, the display will NOT be connected to the computer, as shown in the following image.

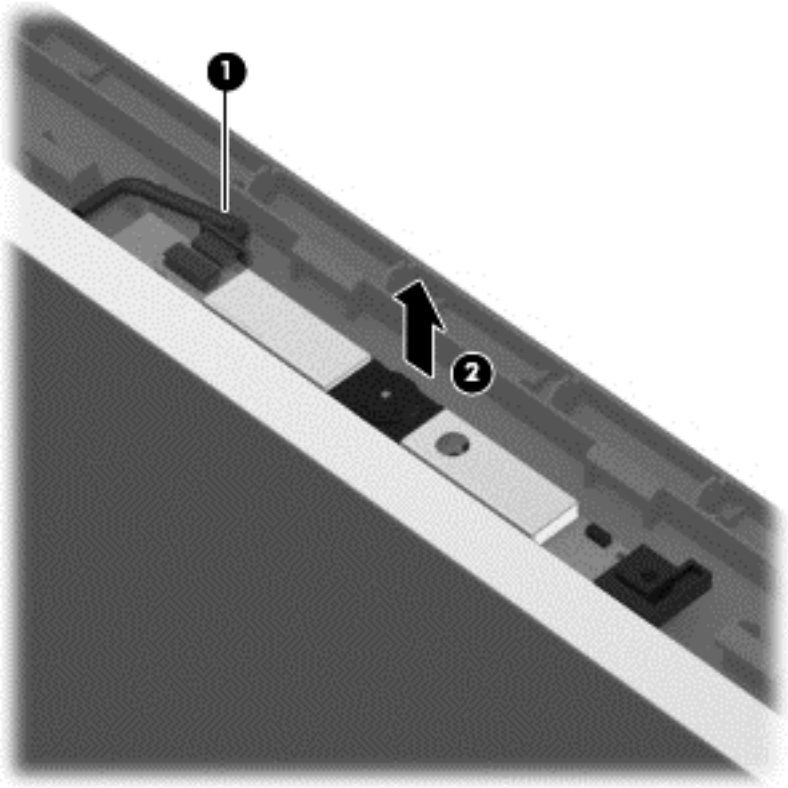


2. To remove the webcam/microphone module:

a. Position the display assembly with the top edge toward you.

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

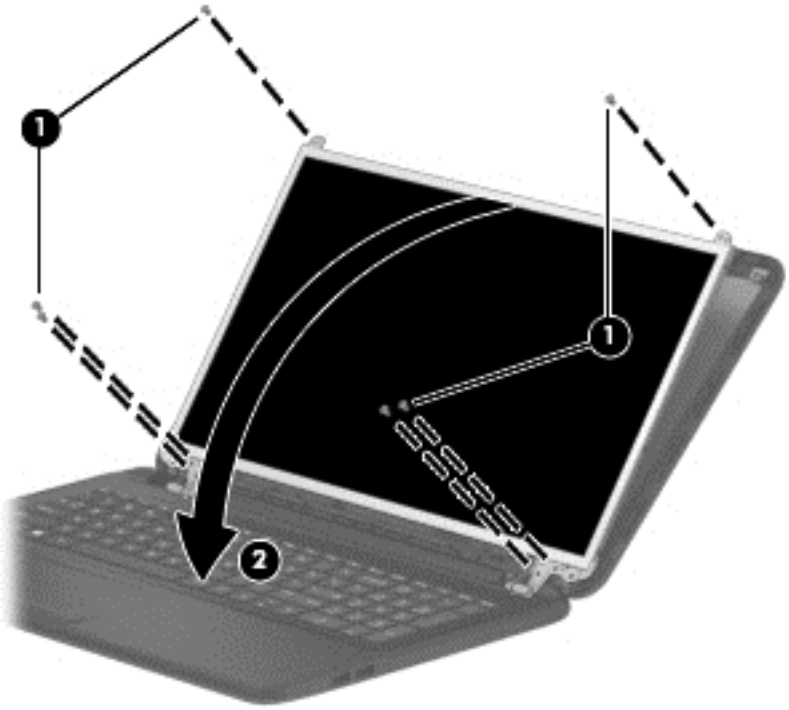
c. Remove the webcam/microphone module **(2)**. (The module is attached to the display enclosure with double-sided tape.)



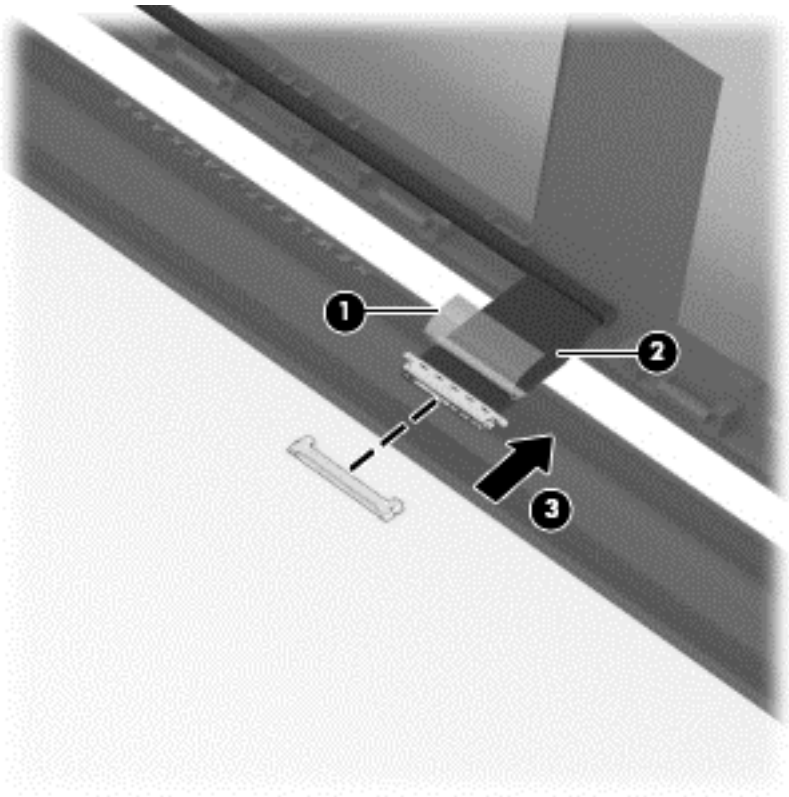
3. To remove the display panel:

   a. Remove the six Phillips PM2.5×4.0 screws **(1)** that secure the display panel to the enclosure, and then rotate the display panel **(2)** onto the computer.

   NOTE: In this procedure, the display will NOT be connected to the computer, as shown in the following image.



b. On the back of the display panel, release the adhesive strip **(1)** that secures the display panel cable to the display panel, and then disconnect **(2)** and remove **(3)** the cable.

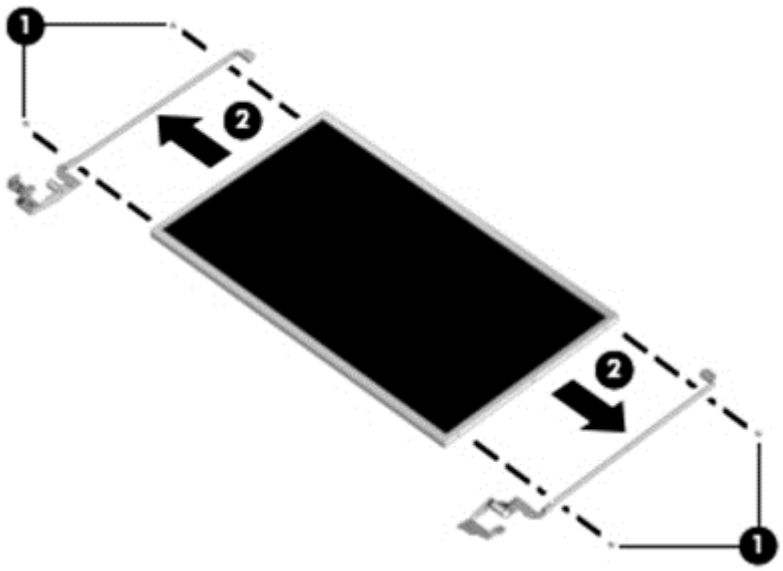


c. Remove the panel from the display enclosure.

4. To remove the display hinges:

a. Remove the four Phillips PM2.0×3.0 screws **(1)** that secure the display hinges to the display panel.

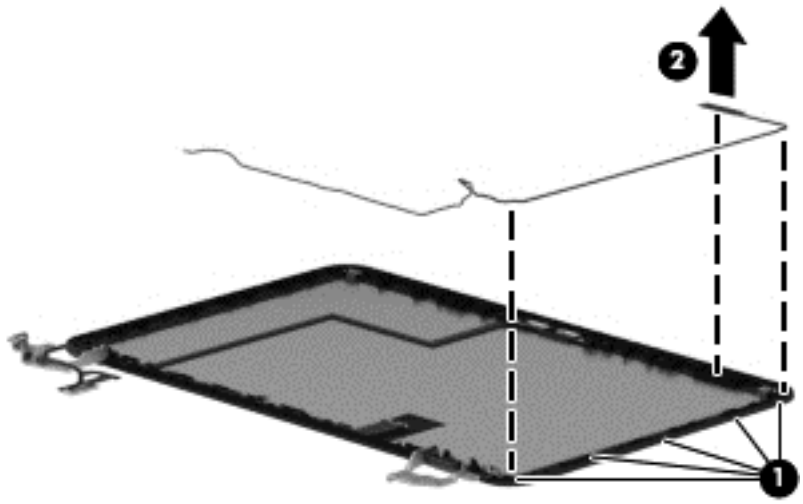
b. Remove the display hinges **(2)**.



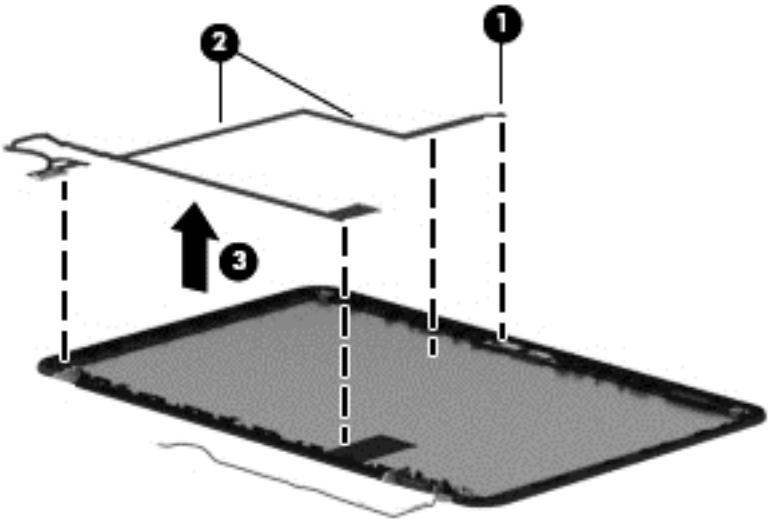
5. To remove the wireless antenna cables and transceivers:

a. Release the wireless antenna cables from the clips **(1)** built into the display enclosure.

b. Remove the wireless antenna cables and transceivers **(2)**.



6. To remove the display/webcam cable, release the webcam connector **(1)**, webcam cable **(2)**, and display cable **(3)** from the routing path built into the display enclosure.



7. If replacing the display enclosure, be sure that the other subcomponents (including the webcam/microphone module, the antenna receivers, and all associated cables and hardware) are transferred to the new enclosure.

Reverse this procedure to reassemble and install the display assembly.

USB board

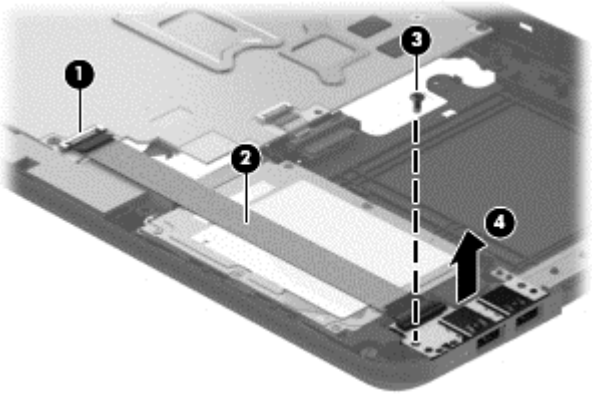
Description	Spare part number
USB board (includes cable)	747252-001

Before removing the USB 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 43), and then remove the following components:
   - Service door (see Service door on page 49)
   - Top cover (see Top cover/keyboard on page 55)

To remove the USB board:

1. Position the computer upright.
2. Release the ZIF connector **(1)** that secures the USB board cable to the system board.
3. Lift the cable to disengage the adhesive that secures it to the hard drive **(2)**.
4. Remove the Phillips PM2.5×5.0 screw **(3)** that secures the USB board to the base enclosure.
5. Remove the USB board **(4)**.



Reverse this procedure to install the USB board.

Hard drive

NOTE: The hard drive spare part kit does not include the hard drive cable or bracket.

Description	Spare part number
1-GB, 5400-rpm, 2.5-in	676521-005
750-GB, 5400-rpm, 2.5-in	634250-005
500-GB, 5400-rpm, 7.0-mm (for use only in HP 14 and Compaq 14 models)	683802-005
500-GB, 5400-rpm, 2.5-in (for use only in HP 240 models)	669299-005
320-GB, 5400-rpm, 2.5-in (for use only in HP 240 models)	622643-005
Hard drive bracket	747117-001

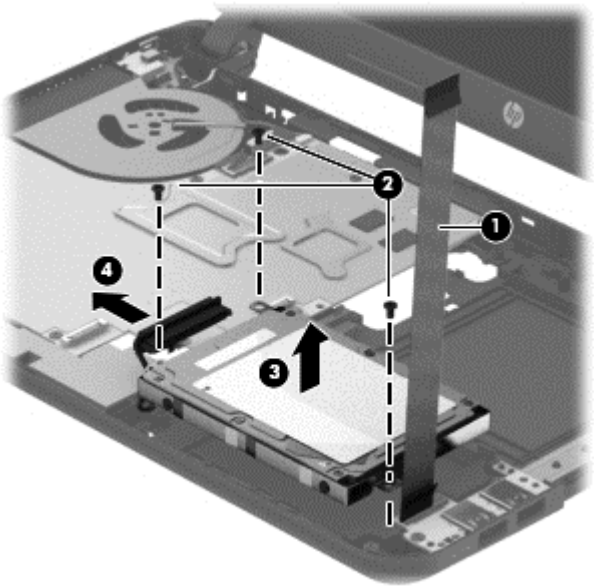
Before removing the hard drive, follow these steps:

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 43), and then remove the following components:
   - Service door (see Service door on page 49)
   - Top cover (see Top cover/keyboard on page 55)

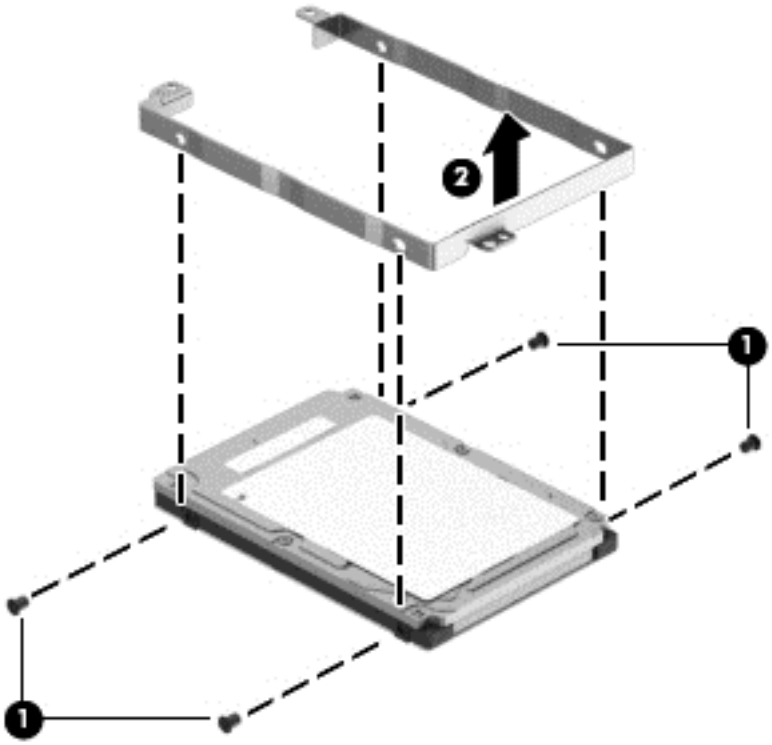
To remove the hard drive:

1. Lift the USB board cable to disengage the adhesive that secures it to the hard drive **(1)**
2. Remove the three Phillips PM2.5×4.5 screws **(2)** that secure the hard drive to the computer.
3. Lift the hard drive **(3)** to gain access to the connector.

4. Disconnect the connector from the hard drive **(4)**.



5. To remove the hard drive bracket, remove the four Phillips PM2.5×3.0 screws **(1)** that secure the bracket to the hard drive.
6. Remove the hard drive bracket from the hard drive **(2)**.



Reverse this procedure to reassemble and install the hard drive.

Optical drive connector

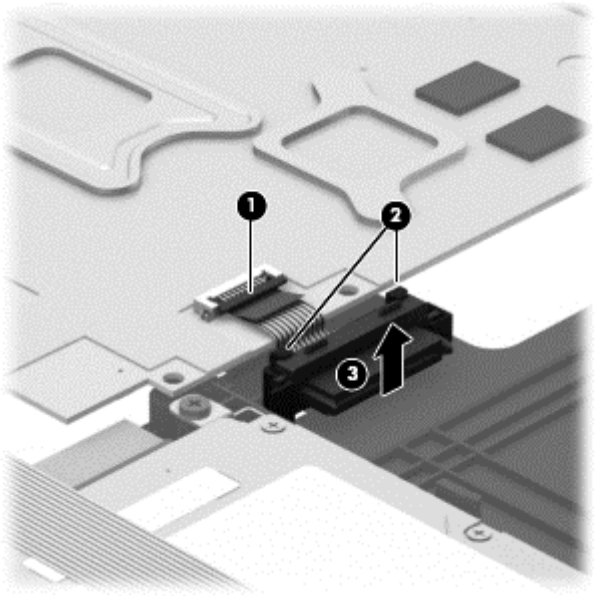
Description	Spare part number
Optical drive connector	747244-001

Before removing the optical drive connector, 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 43), and then remove the following components:
   - Service door (see Service door on page 49)
   - Top cover (see Top cover/keyboard on page 55)

Remove the optical drive connector:

1. Disconnect the cable from the system board **(1)**.
2. Insert a tool to pry up on each side of the connector **(2)** and push up to disengage it.
3. Remove the optical drive connector from the computer **(3)**.



Reverse this procedure to install the optical drive connector.

System board

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

NOTE: Intel models come with removable processors. AMD models come with processors soldered to the system board that cannot be removed or replaced.

Description	Spare part number
System boards for use in models with Intel processors:	
• UMA graphics, Intel HM86 chipset, without Windows 8	747260-001
• UMA graphics, Intel HM86 chipset, Windows 8 Standard	747260-501
• UMA graphics, Intel HM86 chipset, Windows 8 Professional	747260-601
• Discrete graphics, Intel HM86 chipset, without Windows 8	747261-001
• Discrete graphics, Intel HM86 chipset, Windows 8 Standard	747261-501
• Discrete graphics, Intel HM86 chipset, Windows 8 Professional	747261-601
• UMA graphics, Intel HM76 chipset, without Windows 8	747262-001
• UMA graphics, Intel HM76 chipset, Windows 8 Standard	747262-501
• UMA graphics, Intel HM76 chipset, Windows 8 Professional	747262-601
• Discrete graphics, Intel HM76 chipset, without Windows 8	747263-001
• Discrete graphics, Intel HM76 chipset, Windows 8 Standard	747263-501
• Discrete graphics, Intel HM76 chipset, Windows 8 Professional	747263-601
• UMA graphics, Pentium N3520 processor, without Windows 8	752883-001
• UMA graphics, Pentium N3520 processor, Windows 8 Standard	752883-501
• UMA graphics, Pentium N3520 processor, Windows 8 Professional	752883-601
• UMA graphics, Pentium N3510 processor, without Windows 8	747264-001
• UMA graphics, Pentium N3510 processor, Windows 8 Standard	747264-501
• UMA graphics, Pentium N3510 processor, Windows 8 Professional	747264-601
• UMA graphics, Celeron N2820 processor, without Windows 8	752884-001
• UMA graphics, Celeron N2820 processor, Windows 8 Standard	752884-501
• UMA graphics, Celeron N2820 processor, Windows 8 Professional	752884-601
• UMA graphics, Celeron N2810 processor, without Windows 8	747265-001
• UMA graphics, Celeron N2810 processor, Windows 8 Standard	747265-501
• UMA graphics, Celeron N2810 processor, Windows 8 Professional	747265-601
System board for use in models with AMD A6-5200 processors and UMA graphics:	
• Without Windows 8	752897-001
• Windows 8 Standard	752897-501
System board for use in models with AMD A4-5000 processors and UMA graphics:	
• Without Windows 8	747268-001

Description	Spare part number
• Windows 8 Standard	747268-501
System board for use only with models with an AMD E1-2100 processor and UMA graphics:	
• Without Windows 8	747269-001
• Windows 8 Standard	747269-501
System board for use only in models with an AMD A4-5000 processor and discrete graphics:	
• Without Windows 8	747271-001
• Windows 8 Standard	747271-501
System board for use only in models with an AMD E1-2100 processor and discrete graphics:	
• Without Windows 8	747272-001
• Windows 8 Standard	747272-501

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 43).
5. Remove the following components:
   - Service door (see Service door on page 49)
   - Top cover (see Top cover/keyboard on page 55)
6. Disconnect the display cable from the system board (see Display assembly on page 61).

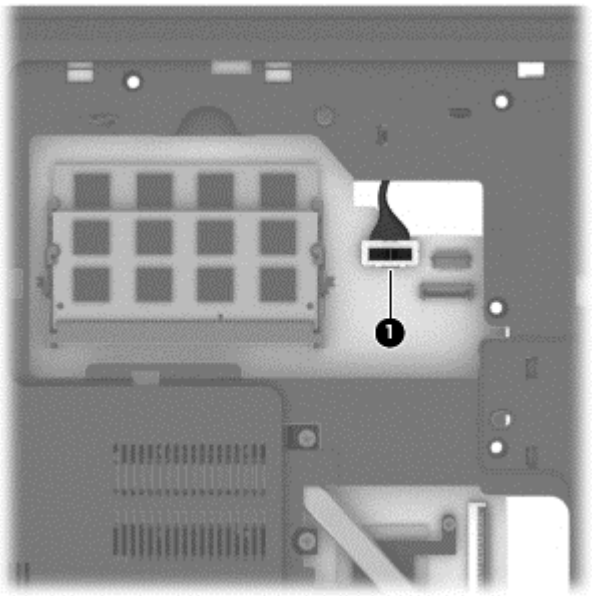
NOTE: When replacing the system board, be sure that the following components are removed from the defective system board and installed on the replacement system board:

- WLAN module (see WLAN module on page 52)
- Memory module (see Memory module on page 54)
- RTC battery (see RTC battery on page 90)
- Fan/heat sink assembly (see Fan/heat sink assembly on page 77)
- Processor (Intel only; see Processor on page 84)

NOTE: AMD processors come soldered to the system board and cannot be removed or replaced.

To remove the system board:

1. Position the computer upside down, and then disconnect the hard drive connector cable **(1)** from the system board.

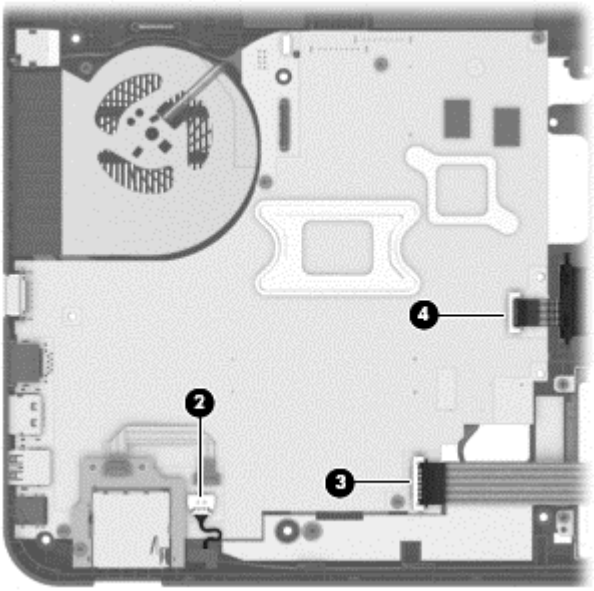


2. Position the computer upright, and then disconnect the following cables from the system board:

   (2): Speaker cable

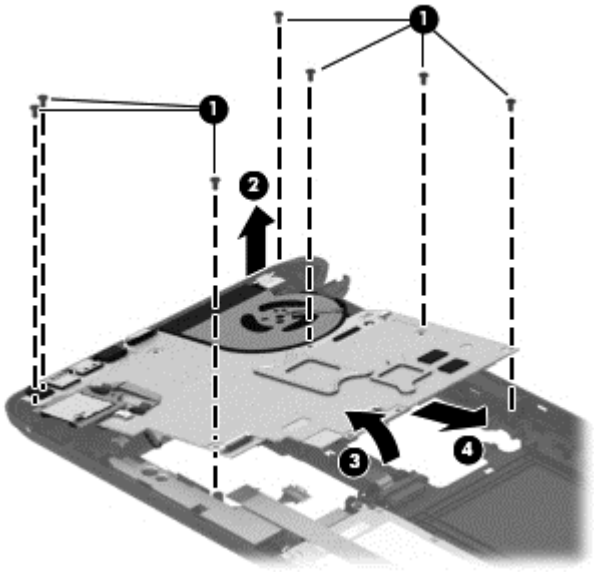
   (3): USB board cable

   (4): Optical drive connector cable



3. Remove the seven Phillips PM2.5×5.0 screws **(1)** that secure the system board to the base enclosure.
4. Lift the plastic tape from atop the fan **(2)**.

5. Lift the side opposite of the connectors of the system board **(3)**, and then pull the system board away from the connectors to remove it **(4)**.



Reverse this procedure to install the system board.

Fan/heat sink assembly

NOTE: The fan/heat sink assembly spare part kit includes replacement thermal materials.

Description	Spare part number
Models with Intel processors:	
• UMA graphics and Intel HM76 chipset	747241-001
• UMA graphics and an Intel Bay Trail chipset	747243-001
• Discrete graphics and Intel HM76 chipset	747242-001
Models with AMD processors:	
• UMA graphics	747266-001
• Discrete graphics	747267-001

NOTE: To properly ventilate the computer, allow at least **7.6 cm** (3.0 in) of clearance on the left side of the computer. The computer uses an electric fan for ventilation. The fan is controlled by a temperature sensor and is designed to turn on automatically when high temperature conditions exist. These conditions are affected by high external temperatures, system power consumption, power management/battery conservation configurations, battery fast charging, and software requirements. Exhaust air is displaced through the ventilation grill located on the left side of the computer.

Before removing the fan/heat sink 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 43), and then remove the following components:
   - Service door (see Service door on page 49)
   - WLAN module (see WLAN module on page 52)
   - Top cover (see Top cover/keyboard on page 55)
   - System board (see System board on page 73)

NOTE: The following procedure includes images for all available fan and heat sink options. Refer to the image that matches your computer.

To remove the fan/heat sink assembly:

1. Position the system board upside down.
2. Disconnect the fan cable **(1)** from the system board.
3. Loosen the screws on the heat sink **(2)** that secure the fan/heat sink assembly to the system board.
4. Remove the fan/heat sink assembly **(3)**.

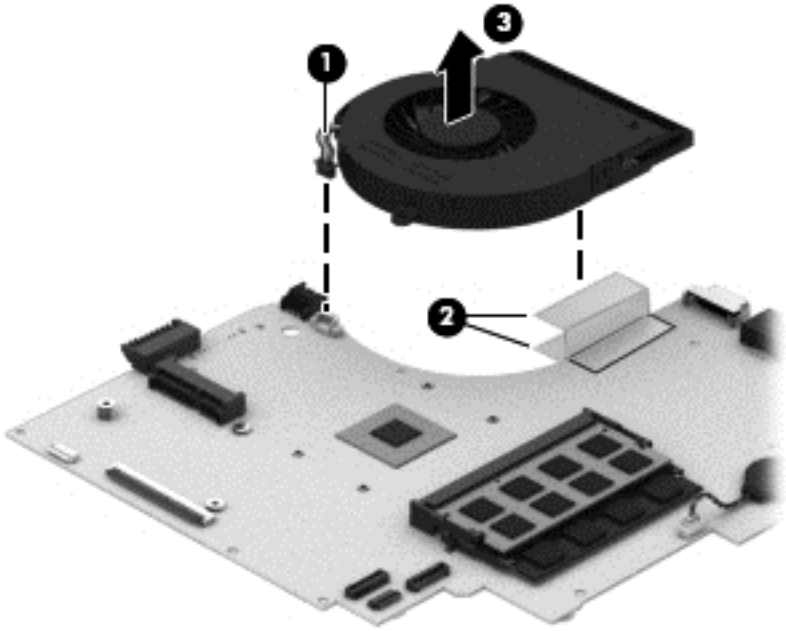
   Intel Bay Trail processor and UMA graphics

   Remove the fan:

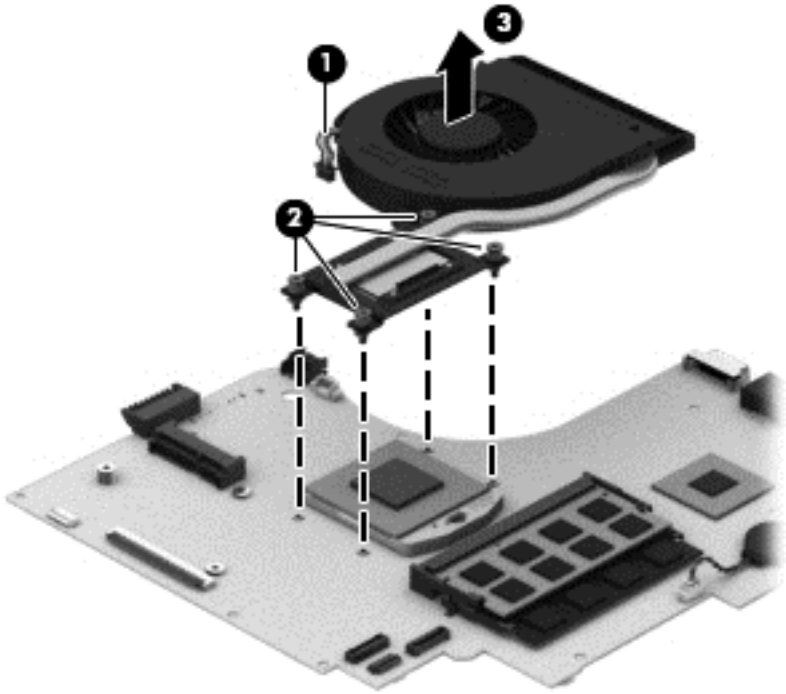
a. Disconnect the fan cable **(1)** from the system board.

b. Remove the fan from the clip on the system board **(2)**.

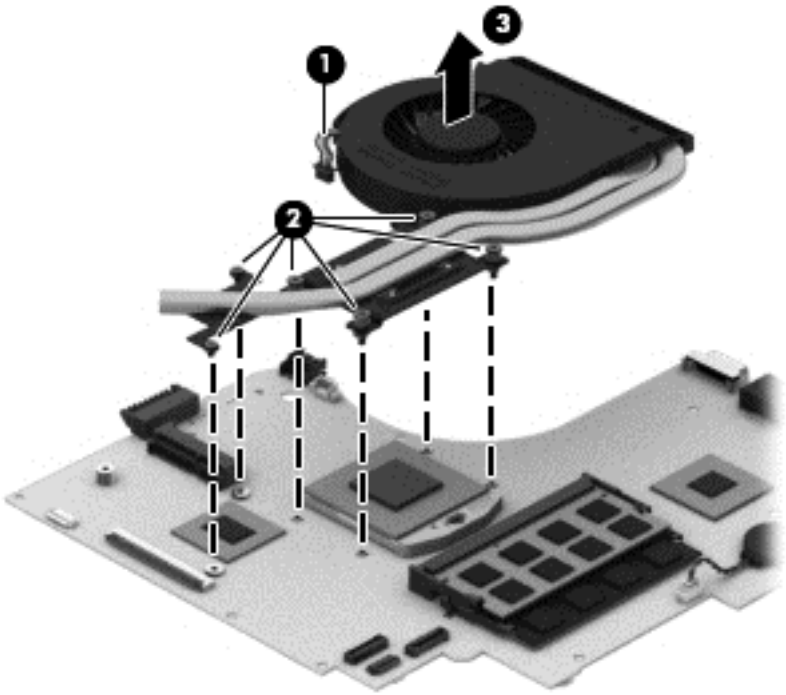
c. Remove the fan **(3)**.



Intel processor and UMA graphics (not Bay Trail)



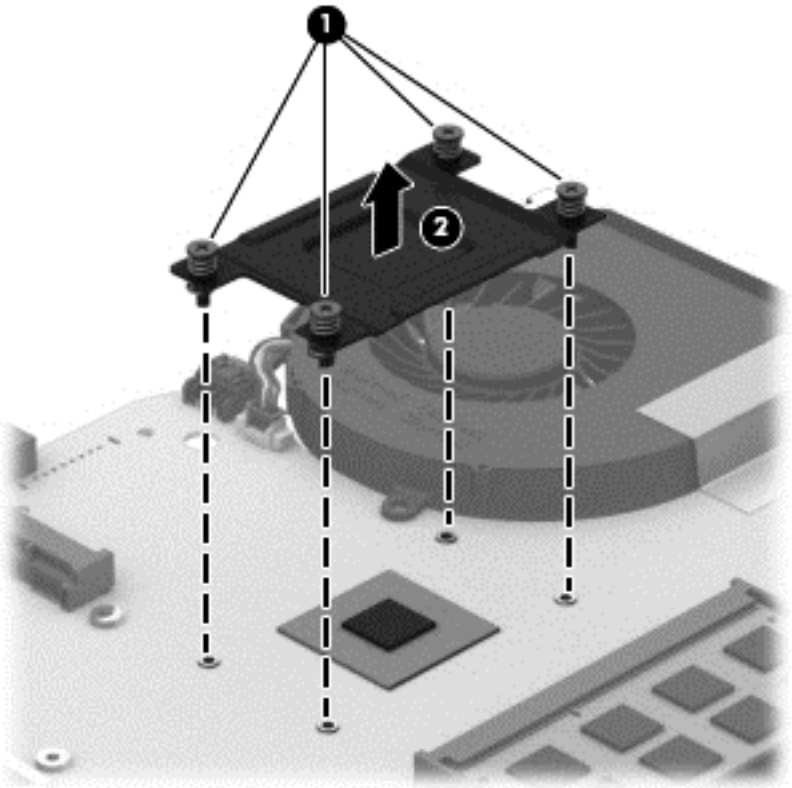
Intel processor and discrete graphics (not Bay Trail)



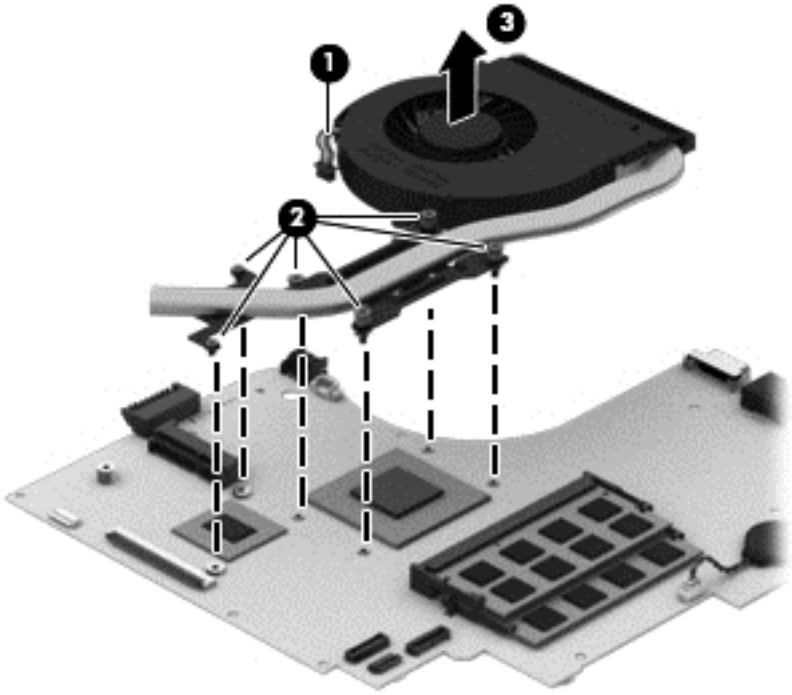
Remove the heat sink:

a. Loosen the four Phillips screws that secure the heat sink to the system board **(1)**.

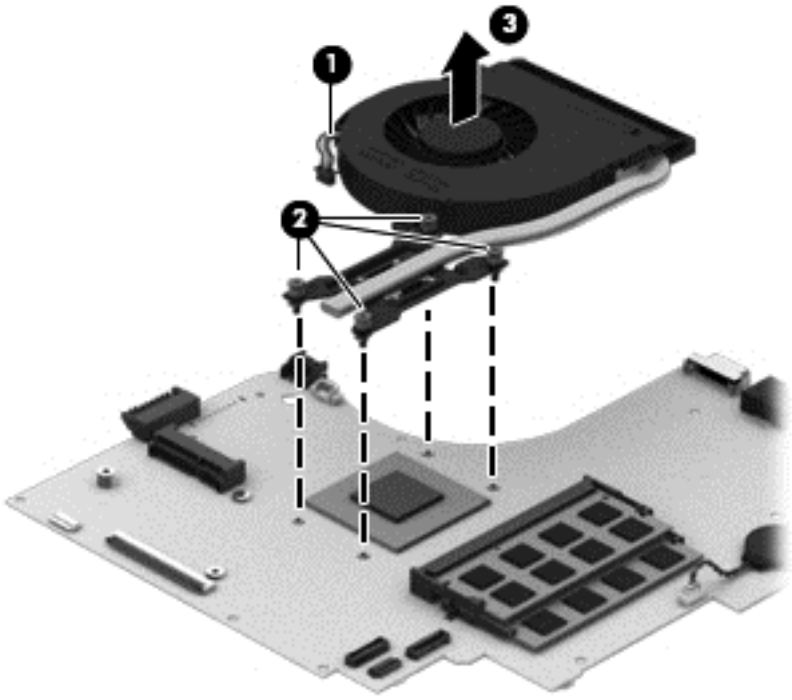
b. Remove the heat sink **(2)** from the system board.



AMD processor and discrete graphics

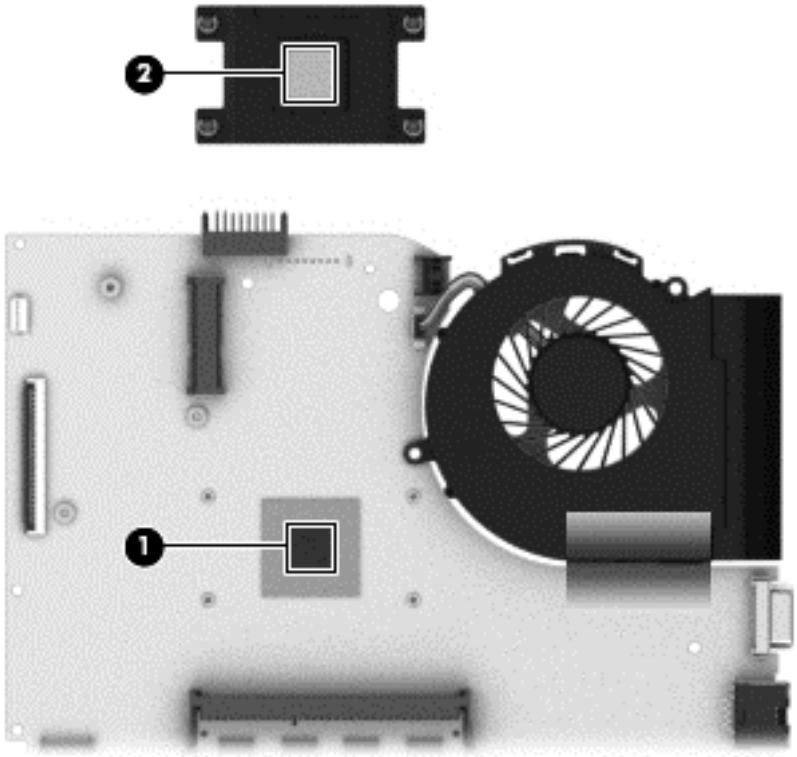


AMD processor and UMA graphics



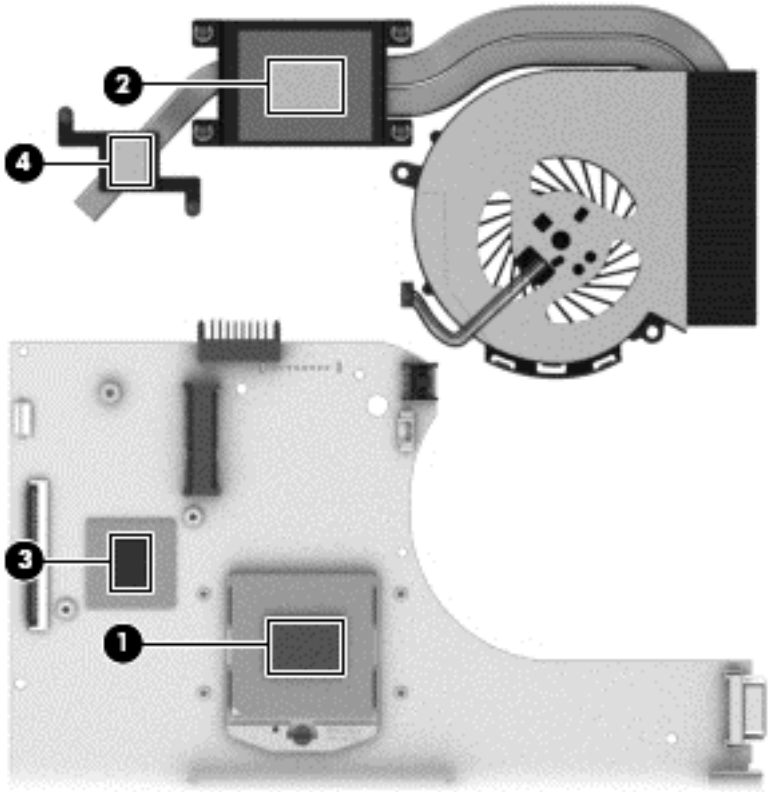
The thermal material must be thoroughly cleaned from the surfaces of the heat sink and the system board components each time the heat sink is removed. Replacement thermal materials are included with the fan/heat sink assembly, processor, and system board spare part kits.

Intel Bay Trail processor and UMA graphics



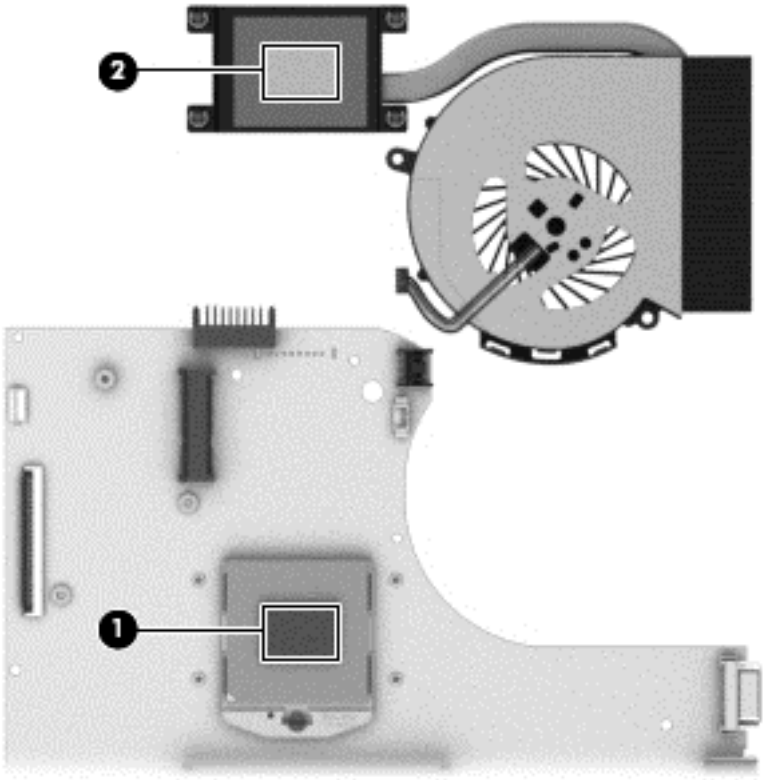
- Thermal paste is used on the processor **(1)** and the heat sink section **(2)** that services it

Intel processor and discrete graphics (not Bay Trail)



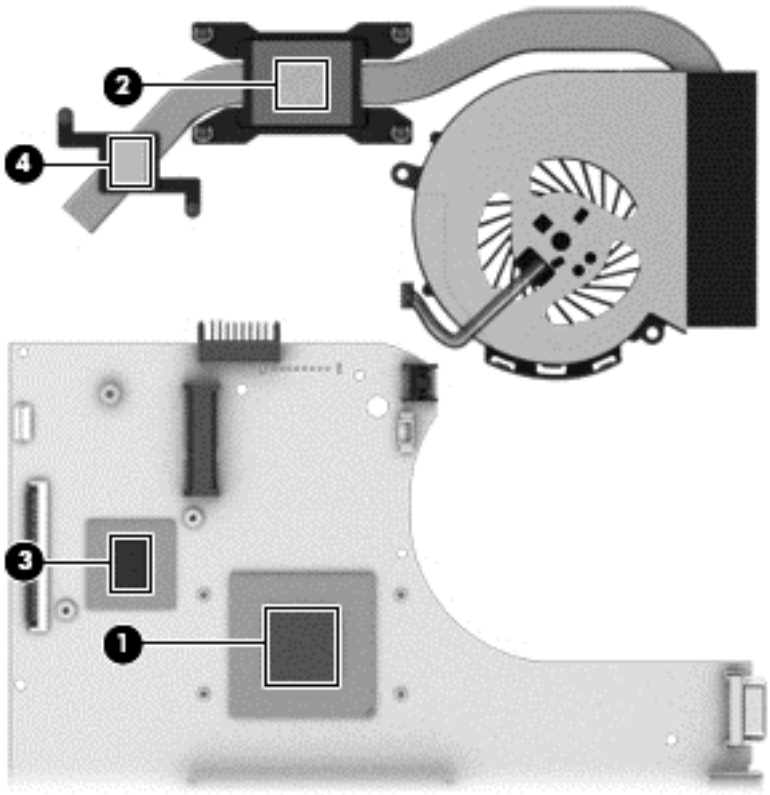
- Thermal paste is used on the processor **(1)** and the heat sink section **(2)** that services it
- Thermal paste is used on the graphics subsystem chip **(3)** and the heat sink section **(4)** that services it

Intel processor and UMA graphics (not Bay Trail)



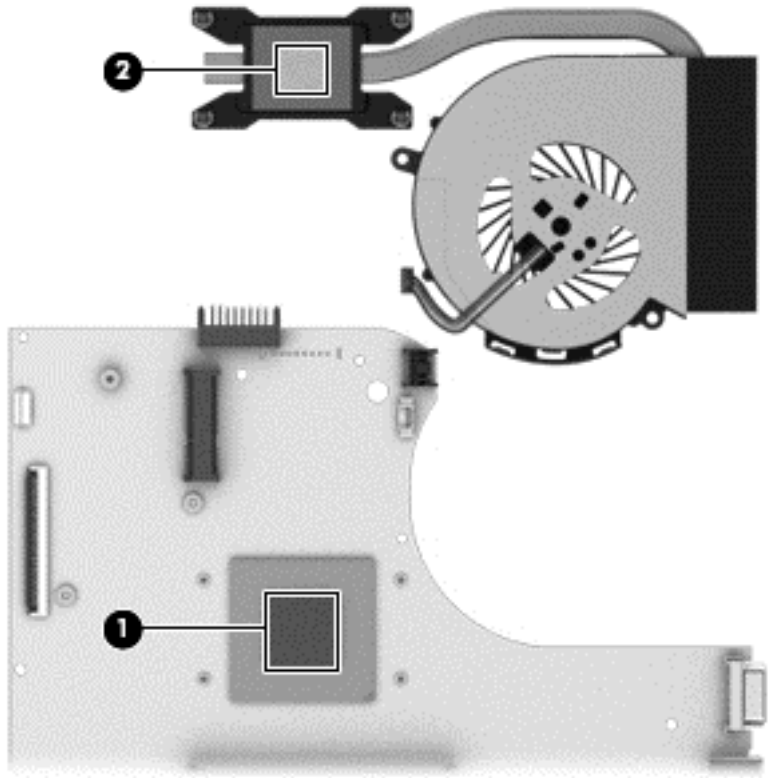
- Thermal paste is used on the processor **(1)** and the heat sink section **(2)** that services it

AMD processor with discrete graphics



- Thermal paste is used on the processor **(1)** and the heat sink section **(2)** that services it

AMD processor with UMA graphics



- Thermal paste is used on the processor **(1)** and the heat sink section **(2)** that services it

Reverse this procedure to reassemble and install the fan/heat sink assembly.

Processor

NOTE: This section applies only to computer models equipped with an Intel processor. AMD processors come soldered to the system board and cannot be removed or replaced.

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

Description	Spare part number
Intel Core i5 3230M processor (2.60-GHz 3.0-MB L3 cache, dual core, 35 W)	711903-001
Intel Core i3 4000M processor (2.40-GHz, 3.0-MB L3 cache, dual core)	737327-001
Intel Core i3 3110M processor (2.40-GHz, 3.0-MB L3 cache, dual core)	682417-001
Intel Pentium 2020M processor (2.40-GHz, 2.0-MB L3 cache, dual core, 35 W)	700628-001
Intel Celeron 1000M processor (1.8-GHz, 2.0-MB L3 cache, dual core, 35 W)	713162-001

Before removing the processor, follow these steps:

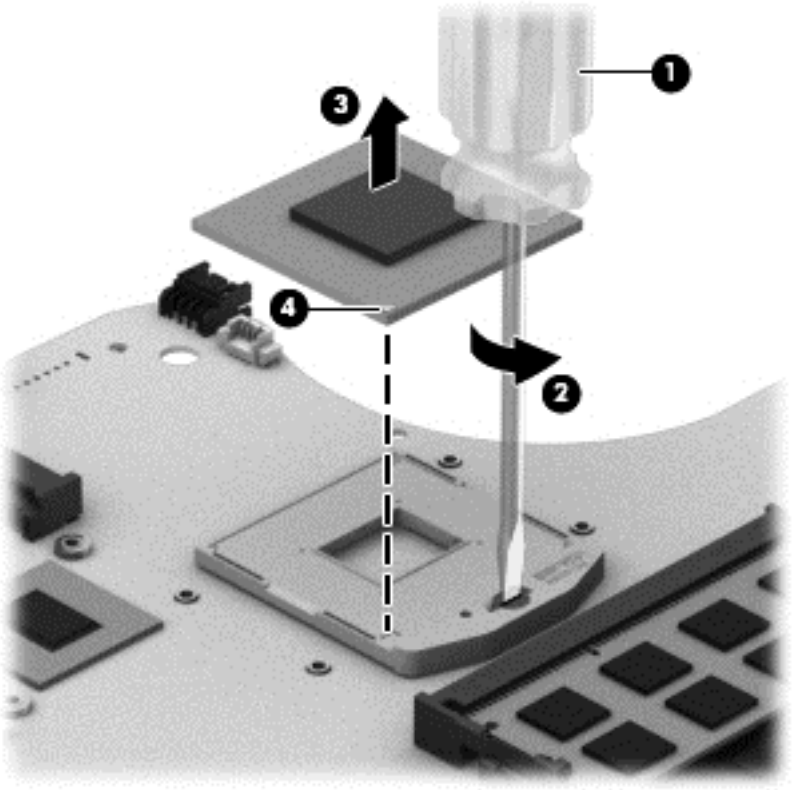
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 43), and then remove the following components:
   - Service door (see Service door on page 49)
   - WLAN module (see WLAN module on page 52)
   - Top cover (see Top cover/keyboard on page 55)
   - System board (see System board on page 73)
   - Fan/heat sink assembly (see Fan/heat sink assembly on page 77)

To remove the processor:

1. Position the system board upside down.
2. Use a flat-bladed screw driver **(1)** to turn the processor locking screw one-half turn counterclockwise **(2)** until you hear a click.

3. Lift the processor **(3)** straight up, and then remove it.

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



Reverse this procedure to install the processor.

Power connector cable

Description	Spare part number
Power connector cable	747116-001

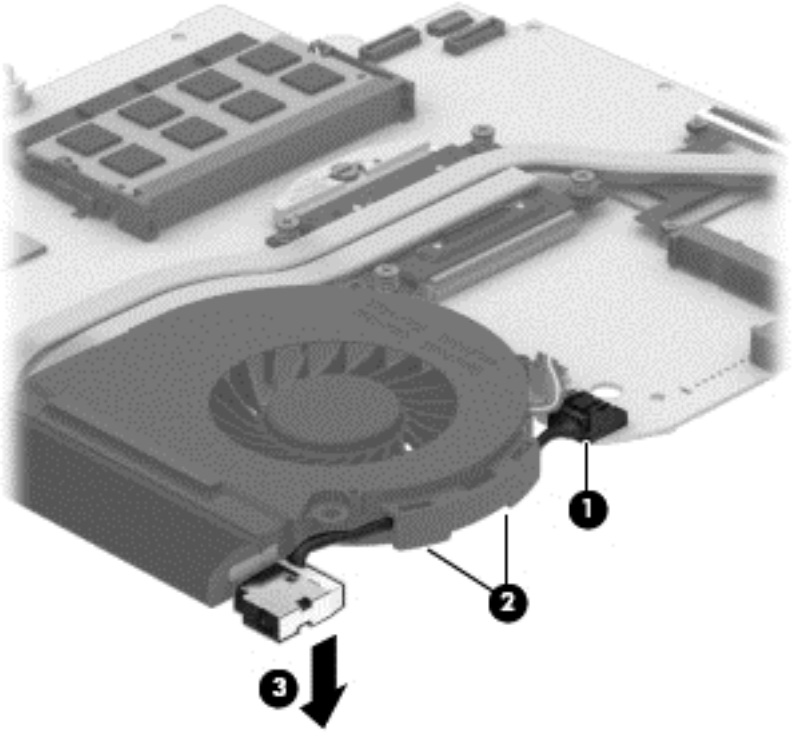
Before removing the power connector cable, follow these steps:

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 43), and then remove the following components:
   - Service door (see Service door on page 49)
   - WLAN module (see WLAN module on page 52)
   - Top cover (see Top cover/keyboard on page 55)
   - System board (see System board on page 73)

To remove the power connector cable:

1. Position the system board upside down.
2. Disconnect the power connector cable **(1)** from the system board.
3. Release the power connector cable from the clips **(2)** built into the fan.

4. Remove the power connector cable **(3)**.



Reverse this procedure to install the power connector cable.

Card reader board

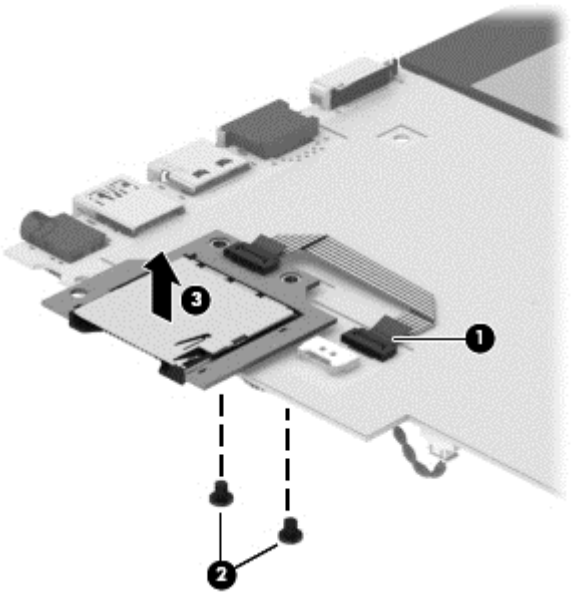
Description	Spare part number
Card reader board (includes cable)	747254-001

Before removing the card 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 Battery on page 43), and then remove the following components:
   - Service door (see Service door on page 49)
   - WLAN module (see WLAN module on page 52)
   - Top cover (see Top cover/keyboard on page 55)
   - System board (see System board on page 73)

Remove the card reader board:

1. Position the system board upside down.
2. Disconnect the cable from the system board **(1)**.
3. Remove the two Phillips PM2.5×4.0 screws **(2)** that secure the card reader board to the system board.
4. Remove the card reader board **(3)**.



Reverse this procedure to install the card reader board.

Speakers

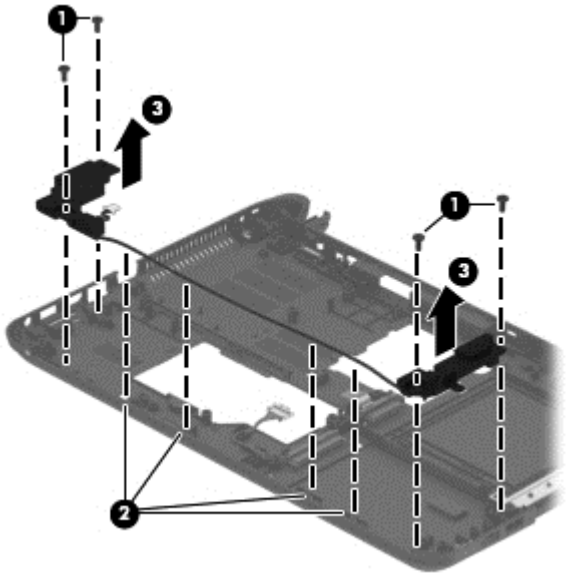
Description	Spare part number
Speakers (includes left and right speakers and cable)	747259-001

Before removing the speakers, 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 43), and then remove the following components:
   - Service door (see Service door on page 49)
   - WLAN module (see WLAN module on page 52)
   - Top cover (see Top cover/keyboard on page 55)
   - USB board (see USB board on page 69)
   - Display assembly (see Display assembly on page 61)
   - System board (see System board on page 73)

To remove the speakers:

1. Remove the four Phillips PM2.5×4.0 screws **(1)** that secure the speakers to the computer.
2. Remove the speaker cable from the clips built into the computer chassis **(2)**.
3. Remove the speakers **(3)**.



Reverse this procedure to install the speakers.

RTC battery

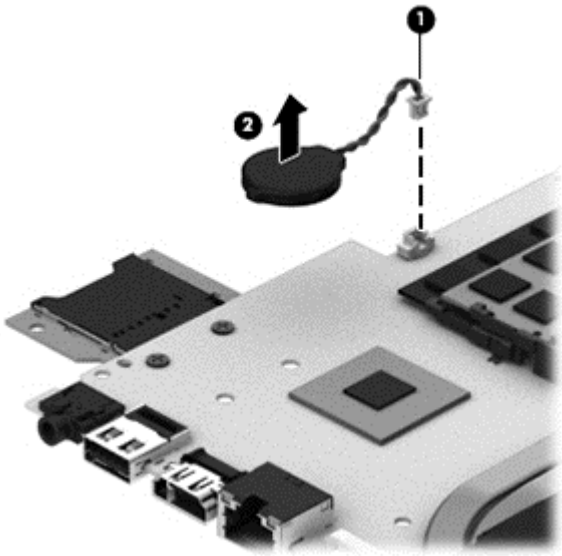
Description	Spare part number
RTC battery	747132-001

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 43), and then remove the following components:
   - Service door (see Service door on page 49)
   - WLAN module (see WLAN module on page 52)
   - Top cover (see Top cover/keyboard on page 55)
   - System board (see System board on page 73)

To remove the RTC battery:

1. Position the system board upside down.
2. Disconnect the battery cable from the system board **(1)**, and then lift the battery up and off the system board **(2)**.



Reverse this procedure to install the RTC battery.

Hard drive connector

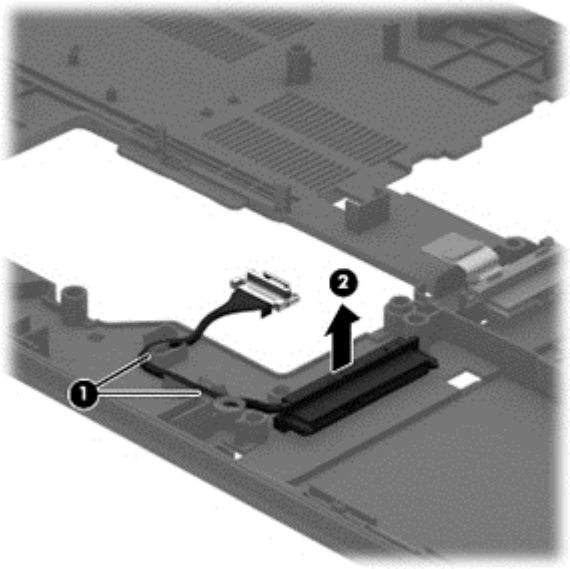
Description	Spare part number
Hard drive connector	747240-001

Before removing the hard drive connector, 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 43), and then remove the following components:
   - Service door (see Service door on page 49)
   - WLAN module (see WLAN module on page 52)
   - Hard drive (see Hard drive on page 70)
   - Top cover (see Top cover/keyboard on page 55)
   - System board (see System board on page 73)

Remove the hard drive connector:

1. Remove the cable from the clips built into the computer chassis **(1)**.
2. Remove the hard drive connector **(2)**.



Reverse this procedure to install the hard drive connector.

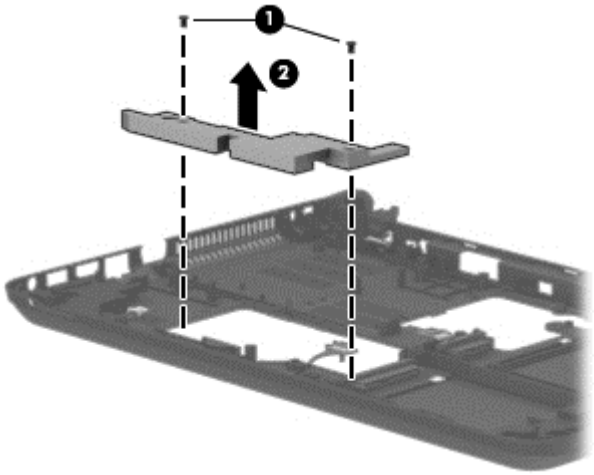
Weight

Before removing the weight, 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 43), and then remove the following components:
   - Service door (see Service door on page 49)
   - WLAN module (see WLAN module on page 52)
   - Hard drive (see Hard drive on page 70)
   - Top cover (see Top cover/keyboard on page 55)
   - USB board (see USB board on page 69)
   - Display assembly (see Display assembly on page 61)
   - System board (see System board on page 73)

Remove the weight:

1. Remove the Phillips PM2.5×6.5 screws **(1)** that secure the weight to the computer.
2. Remove the weight from the computer **(2)**.



Reverse this procedure to install the weight.

5 Using Setup Utility (BIOS) and HP PC Hardware Diagnostics (UEFI) in Windows 8

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

Starting Setup Utility (BIOS)

To start Setup Utility (BIOS), turn on or restart the computer, quickly press esc, and then press f10.

NOTE: Use extreme care when making changes in Setup Utility (BIOS). Errors can prevent the computer from operating properly.

Updating the BIOS

Updated versions of the BIOS may be available on the HP website.

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

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

Determining the BIOS version

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

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

1. Start Setup Utility (BIOS) (see Starting Setup Utility (BIOS) on page 93).
2. Use the arrow keys to select **Main**.
3. To exit Setup Utility (BIOS) without saving your changes, use the arrow keys to select **Exit**, select **Exit Discarding Changes**, and then press **enter**.
4. Select **Yes**.

Downloading a BIOS update

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

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

Do not shut down the computer or initiate Sleep.

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

1. From the Start screen, type `hp support assistant`, and then select the **HP Support Assistant** app.
2. Click **Updates and tune-ups**, and then click **Check for HP updates now**.
3. Follow the on-screen instructions.
4. At the download area, follow these steps:
   a. Identify the most recent BIOS update and compare it to the BIOS version currently installed on your computer. If the update is more recent than your BIOS, make a note of the date, name, or other identifier. You may need this information to locate the update later, after it has been downloaded to your hard drive.
   b. Follow the on-screen instructions to download your selection to the hard drive.

      If the update is more recent than your BIOS, make a note of the path to the location on your hard drive where the BIOS update is downloaded. You will need to access this path when you are ready to install the update.

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

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

1. From the Start screen, type `file`, and then select **File Explorer**.
2. Click your hard drive designation. The hard drive designation is typically Local Disk (C:).
3. Using the hard drive path you recorded earlier, open the folder on your hard drive that contains the update.
4. Double-click the file that has an .exe extension (for example, *filename*.exe).

   The BIOS installation begins.
5. Complete the installation by following the on-screen instructions.

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

Using HP PC Hardware Diagnostics (UEFI)

HP PC Hardware Diagnostics is a Unified Extensible Firmware Interface (UEFI) that allows you to run diagnostic tests to determine whether the computer hardware is functioning properly. The tool runs outside the operating system so that it can isolate hardware failures from issues that are caused by the operating system or other software components.

To start HP PC Hardware Diagnostics UEFI:

1. Turn on or restart the computer, quickly press esc, and then press f2.

   The BIOS searches three places for the diagnostic tools, in the following order:

   a. Connected USB drive

      NOTE: To download the HP PC Hardware Diagnostics (UEFI) tool to a USB drive, see Downloading HP PC Hardware Diagnostics (UEFI) to a USB device on page 95.

   b. Hard drive

   c. BIOS

2. When the diagnostic tool opens, click the type of diagnostic test you want to run, and then follow the on-screen instructions.

NOTE: If you need to stop a diagnostic test, press esc.

Downloading HP PC Hardware Diagnostics (UEFI) to a USB device

NOTE: Instructions for downloading HP PC Hardware Diagnostics (UEFI) are provided in English only.

1. Go to http://www.hp.com.
2. Click **Support & Drivers**, and then click the **Drivers & Downloads** tab.
3. Enter the product name in the text box, and then click **Go**.
4. Select your computer model, and then select your operating system.
5. In the **Diagnostic** section, click **HP UEFI Support Environment**.

   – or –

   Click **Download**, and then select **Run**.

6 Using Setup Utility (BIOS) and System Diagnostics in Windows 7

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

Starting Setup Utility (BIOS)

To start Setup Utility (BIOS), 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 Setup Utility (BIOS).

Information about how to navigate in Setup Utility (BIOS) is located at the bottom of the screen.

NOTE: Use extreme care when making changes in Setup Utility (BIOS). Errors can prevent the computer from operating properly.

Updating the BIOS

Updated versions of the BIOS may be available on the HP website.

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

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

Determining the BIOS version

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

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

1. Start Setup Utility (BIOS).
2. Use the arrow keys to select **Main**.
3. To exit Setup Utility (BIOS) without saving your changes, use the tab key and the arrow keys to select **Exit > Exit Discarding Changes**, and then press enter.

Downloading a BIOS update

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

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

Do not shut down the computer or initiate Sleep or Hibernation.

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

1. Select **Start > Help and Support > Maintain**.
2. Follow the on-screen instructions to identify your computer and access the BIOS update you want to download.
3. At the download area, follow these steps:
   a. Identify the BIOS update that is later than the BIOS version currently installed on your computer. Make a note of the date, name, or other identifier. You may need this information to locate the update later, after it has been downloaded to your hard drive.
   b. Follow the on-screen instructions to download your selection to the hard drive.

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

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

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

1. Open Windows Explorer by selecting **Start > Computer**.
2. Double-click your hard drive designation. The hard drive designation is typically Local Disk (C:).
3. Using the hard drive path you recorded earlier, open the folder on your hard drive that contains the update.
4. Double-click the file that has an .exe extension (for example, *filename*.exe).

   The BIOS installation begins.
5. Complete the installation by following the on-screen instructions.

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

Using System Diagnostics

System Diagnostics allows you to run diagnostic tests to determine if the computer hardware is functioning properly.

To start System Diagnostics:

1. Turn on or restart the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press esc. When the Startup Menu is displayed, press f2.
2. Click the diagnostic test you want to run, and then follow the on-screen instructions.

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

7 Computer Setup (BIOS) and Advanced System Diagnostics in SUSE Linux

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

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

Starting Computer Setup

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

To start Computer Setup, follow these steps:

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

Using Computer Setup

Navigating and selecting in Computer Setup

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

1. Turn on or restart the computer, and then press esc while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.
   - To select a menu or a menu item, use the tab key and the keyboard arrow keys and then press enter, or use a pointing device to click the item.
   - To scroll up and down, click the up arrow or the down arrow in the upper-right corner of the screen, or use the up arrow key or the down arrow key.
   - To close open dialog boxes and return to the main Computer Setup screen, press esc, and then follow the on-screen instructions.

   NOTE: You can use either a pointing device (TouchPad, pointing stick, or USB mouse) or the keyboard to navigate and make selections in Computer Setup.
2. Press f10 to enter Computer Setup.

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

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

  – or –

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

– or –

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

  – or –

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

Your changes go into effect when the computer restarts.

Restoring factory settings in Computer Setup

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

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

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

   – or –

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

Your changes go into effect when the computer restarts.

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

Updating the BIOS

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

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

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

Determining the BIOS version

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

BIOS version information (also known as *ROM date* and *System BIOS*) can be displayed as follows:

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

   – or –

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

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

Downloading a BIOS update

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

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

Do not shut down the computer or initiate Suspend or Hibernation.

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

1. Open your web browser. For U.S. support, go to http://www.hp.com/go/contactHP. For worldwide support, go to http://welcome.hp.com/country/us/en/wwcontact_us.html.
2. Follow the on-screen instructions to identify your computer and access the BIOS update you want to download.
3. Click the option for software and driver downloads, type your computer model number in the product box, and then press enter. Follow the on-screen instructions to identify your computer and access the BIOS update you want to download.
4. Click your specific product from the models listed.
5. Click the appropriate operating system.
6. Go to the BIOS section and download the BIOS software package.
7. Follow the installation instructions as provided with the downloaded BIOS software package.

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

Using Advanced System Diagnostics

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

- Start-up test—This test analyzes the main computer components that are required to start the computer.
- Run-in test—This test repeats the start-up test and checks for intermittent problems that the start-up test does not detect.

- Hard disk test—This test analyzes the physical condition of the hard drive, and then checks all data in every sector of the hard drive. If the test detects a damaged sector, it attempts to move the data to a good sector.
- Memory test—This test analyzes the physical condition of the memory modules. If it reports an error, replace the memory modules immediately.
- Battery test—This test analyzes the condition of the battery and calibrates the battery if necessary. If the battery fails the test, contact support to report the issue and purchase a replacement battery.
- System Tune-Up—This group of additional tests checks your computer to make sure that the main components are functioning correctly. System Tune-Up runs longer and more comprehensive tests on memory modules, hard drive SMART attributes, the hard drive surface, the battery (and battery calibration), video memory, and the WLAN module status.

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

To start Advanced System Diagnostics:

1. Turn on or restart the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press esc. When the Startup Menu is displayed, press f2.
2. Click the diagnostic test you want to run, and then follow the on-screen instructions.

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

8 Specifications

Computer specifications

	Metric	U.S.
Dimensions (touch models)		
Depth	**24.0 cm**	9.5 in
Width	**34.6 cm**	13.6 in
Height	**2.95 cm**	1.16 in
Weight	**2.4 kg**	5.29 lb
Input power		
Operating voltage and current	18.5 V dc @ 3.5 A or 19.5 V dc @ 3.33 A – 65 W 19 V dc @ 4.74 A or 19.5 V dc @ 4.62 A – 90 W	
Temperature		
Operating	**5°C to 35°C**	41°F to 95°F
Nonoperating	**-20°C to 60°C**	-4°F to 140°F
Relative humidity (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	**-15 m to 3,048 m**	-50 ft to 10,000 ft
Nonoperating	**-15 m to 12,192 m**	-50 ft to 40,000 ft

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

14.0-inch display specifications

	Metric	U.S.
Dimensions		
Height	**17.6 cm**	6.93 in
Width	**31.2 cm**	12.28 in
Diagonal	**35.7 cm**	14.06 in
Number of colors	Up to 16.8 million	
Contrast ratio	200:1 (typical)	

	Metric	U.S.
Brightness	200 nits (typical)	
Pixel resolution		
Pitch	**0.197 × 0.197 mm**	
Format	1366 × 768	
Configuration	RGB vertical stripe	
Backlight	LED	
Character display	80 × 25	
Total power consumption	2.0 W	
Viewing angle	±65° horizontal, ±50° vertical (typical)	

Hard drive specifications

	1-TB*	**750-GB* (9.5 mm)**	**500-GB* (7.0 mm)**	**320-GB* (9.5 mm)**
Dimensions				
Height	9.5 mm	9.5 mm	7.0 mm or 9.5 mm	7.0 mm or 9.5 mm
Length	100.4 mm	100.4 mm	100.6 mm	100.4 mm
Width	69.9 mm	69.9 mm	70.1 mm	69.9 mm
Weight	115.0 g	115.0 g	92.0 g	98.8 g
Interface type	SATA	SATA	SATA	SATA
Transfer rate				
Synchronous (maximum)	300 MB/sec	300 MB/sec	300 MB/sec	300 MB/sec
Security	ATA security	ATA security	ATA security	ATA security
Seek times (typical read, including setting)				
Single track	1.4 ms	1.5 ms	3 ms	3 ms
Average (read/write)	10 ms	11 ms	13 ms	13 ms
Maximum	12 ms	14 ms	24 ms	24 ms
Logical blocks	1,938,921,461	1,465,149,168	1,048,576,000	625,142,448
Disk rotational speed	5400 rpm	5400 rpm	5400 rpm	5400 rpm
Operating temperature	**0°C** to **60°C** (32°F to 140°F)			

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

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

9 Backing up, restoring, and recovering in Windows 8

This chapter provides information about the following processes:

- Creating recovery media and backups
- Restoring and recovering your system

Creating recovery media and backups

1. After you successfully set up the computer, create HP Recovery media. This step creates a backup of the HP Recovery partition on the computer. The backup can be used to reinstall the original operating system in cases where the hard drive is corrupted or has been replaced.

   HP Recovery media you create will provide the following recovery options:

   - System Recovery—Reinstalls the original operating system and the programs that were installed at the factory.
   - Minimized Image Recovery—Reinstalls the operating system and all hardware-related drivers and software, but not other software applications.
   - Factory Reset—Restores the computer to its original factory state by deleting all information from the hard drive and re-creating the partitions. Then it reinstalls the operating system and the software that was installed at the factory.

   See Creating HP Recovery media on page 107.

2. Use the Windows tools to create system restore points and create backups of personal information. For more information and steps, see Help and Support. From the Start screen, type `help`, and then select **Help and Support**.

Creating HP Recovery media

HP Recovery Manager is a software program that offers a way to create recovery media after you successfully set up the computer. HP Recovery media can be used to perform system recovery if the hard drive becomes corrupted. System recovery reinstalls the original operating system and the software programs installed at the factory, and then configures the settings for the programs. HP Recovery media can also be used to customize the system or restore the factory image if you replace the hard drive.

- Only one set of HP Recovery media can be created. Handle these recovery tools carefully, and keep them in a safe place.
- HP Recovery Manager examines the computer and determines the required storage capacity for the blank USB flash drive or the number of blank DVD discs that will be required.
- To create recovery discs, your computer must have an optical drive with DVD writer capability, and you must use only high-quality blank DVD-R, DVD+R, DVD-R DL, or DVD+R DL discs. Do not use rewritable discs such as CD±RW, DVD±RW, double-layer DVD±RW, or BD-RE (rewritable Blu-ray) discs; they are not compatible with HP Recovery Manager software. Or instead you can use a high-quality blank USB flash drive.

- If your computer does not include an integrated optical drive with DVD writer capability, but you would like to create DVD recovery media, you can use an external optical drive (purchased separately) to create recovery discs, or you can obtain recovery discs for your computer from support. See the *Worldwide Telephone Numbers* booklet included with the computer. You can also find contact information from the HP website. Go to http://www.hp.com/support, select your country or region, and follow the on-screen instructions. If you use an external optical drive, it must be connected directly to a USB port on the computer; the drive cannot be connected to a USB port on an external device, such as a USB hub.
- Be sure that the computer is connected to AC power before you begin creating the recovery media.
- The creation process can take up to an hour or more. Do not interrupt the creation process.
- If necessary, you can exit the program before you have finished creating all of the recovery DVDs. HP Recovery Manager will finish burning the current DVD. The next time you start HP Recovery Manager, you will be prompted to continue, and the remaining discs will be burned.

To create HP Recovery media:

IMPORTANT: For tablets, connect to the keyboard dock before beginning these steps (select models only).

1. From the Start screen, type `recovery`, and then select **HP Recovery Manager**.
2. Select **Recovery Media Creation**, and then follow the on-screen instructions.

If you ever need to recover the system, see Recovering using HP Recovery Manager on page 109.

Restore and recovery

There are several options for recovering your system. Choose the method that best matches your situation and level of expertise:

- Windows offers several options for restoring from backup, refreshing the computer, and resetting the computer to its original state. For more information and steps, see Help and Support. From the Start screen, type `help`, and then select **Help and Support**.
- If you need to correct a problem with a preinstalled application or driver, use the Drivers and Applications Reinstall option of HP Recovery Manager to reinstall the individual application or driver.

  From the Start screen, type `recovery`, select **HP Recovery Manager**, select **Drivers and Applications Reinstall**, and then follow the on-screen instructions.
- If you want to reset your computer using a minimized image, you can choose the HP Minimized Image Recovery option from the HP Recovery partition (select models only) or HP Recovery media. Minimized Image Recovery installs only drivers and hardware-enabling applications. Other applications included in the image continue to be available for installation through the Drivers and Applications Reinstall option in HP Recovery Manager.

  For more information, see Recovering using HP Recovery Manager on page 109.
- If you want to recover the computer's original factory partitioning and content, you can choose the System Recovery option from the HP Recovery partition (select models only) or use the HP Recovery media that you have created. For more information, see Recovering using HP Recovery Manager on page 109. If you have not already created recovery media, see Creating HP Recovery media on page 107.

- If you have replaced the hard drive, you can use the Factory Reset option of HP Recovery media to restore the factory image to the replacement drive. For more information, see Recovering using HP Recovery Manager on page 109.
- If you wish to remove the recovery partition to reclaim hard drive space, HP Recovery Manager offers the Remove Recovery Partition option.

  For more information, see Removing the HP Recovery partition on page 110.

Recovering using HP Recovery Manager

HP Recovery Manager software allows you to recover the computer to its original factory state by using the HP Recovery media that you created or by using the HP Recovery partition (select models only). If you have not already created recovery media, see Creating HP Recovery media on page 107.

Using HP Recovery media, you can choose from one of the following recovery options:

- System Recovery—Reinstalls the original operating system, and then configures the settings for the programs that were installed at the factory.
- Minimized Image Recovery (select models only)—Reinstalls the operating system and all hardware-related drivers and software, but not other software applications.
- Factory Reset—Restores the computer to its original factory state by deleting all information from the hard drive and re-creating the partitions. Then it reinstalls the operating system and the software that was installed at the factory.

The HP Recovery partition (select models only) allows System Recovery and Minimized Image Recovery.

What you need to know

- HP Recovery Manager recovers only software that was installed at the factory. For software not provided with this computer, you must either download the software from the manufacturer's website or reinstall the software from the media provided by the manufacturer.
- Recovery through HP Recovery Manager should be used as a final attempt to correct computer issues.
- HP Recovery media must be used if the computer hard drive fails. If you have not already created recovery media, see Creating HP Recovery media on page 107.
- To use the Factory Reset option, you must use HP Recovery media. If you have not already created recovery media, see Creating HP Recovery media on page 107.
- If the HP Recovery media does not work, you can obtain recovery media for your system from support. See the *Worldwide Telephone Numbers* booklet included with the computer. You can also find contact information from the HP website. Go to http://www.hp.com/support, select your country or region, and follow the on-screen instructions.

IMPORTANT: HP Recovery Manager does not automatically provide backups of your personal data. Before beginning recovery, back up any personal data you wish to retain.

Using the HP Recovery partition (select models only)

The HP Recovery partition (select models only) allows you to perform a system recovery or minimized image recovery without the need for recovery discs or a recovery USB flash drive. This type of recovery can only be used if the hard drive is still working.

To start HP Recovery Manager from the HP Recovery partition:

IMPORTANT: For tablets, connect to the keyboard dock before beginning these steps (select models only).

1. Press f11 while the computer boots.

   – or –

   Press and hold f11 as you press the power button.

2. Choose your keyboard layout.
3. Select **Troubleshoot** from the boot options menu.
4. Select **Recovery Manager**, and then follow the on-screen instructions.

Using HP Recovery media to recover

You can use HP Recovery media to recover the original system. This method can be used if your system does not have an HP Recovery partition or if the hard drive is not working properly.

1. If possible, back up all personal files.
2. Insert the HP Recovery media that you created, and then restart the computer.

   NOTE: If the computer does not automatically restart in HP Recovery Manager, change the computer boot order. See Changing the computer boot order on page 110.

3. Follow the on-screen instructions.

Changing the computer boot order

If computer does not restart in HP Recovery Manager, you can change the computer boot order, which is the order of devices listed in BIOS where the computer looks for startup information. You can change the selection for an optical drive or a USB flash drive.

To change the boot order:

1. Insert the HP Recovery media you created.
2. Restart the computer, quickly press esc, and then press f9 for boot options.
3. Select the optical drive or USB flash drive you want to boot from.
4. Follow the on-screen instructions.

Removing the HP Recovery partition

HP Recovery Manager software allows you to remove the HP Recovery partition to free up hard drive space.

IMPORTANT: After you remove the HP Recovery partition, you can no longer use the Windows Refresh option, the Windows option to remove everything and reinstall Windows, or the HP Recovery Manager option. So before you remove the Recovery partition, create HP Recovery media; see Creating HP Recovery media on page 107.

Follow these steps to remove the HP Recovery partition:

1. From the Start screen, type `recovery`, and then select **HP Recovery Manager**.
2. Select **Remove Recovery Partition**, and then follow the on-screen instructions.

10 Backing up, restoring, and recovering in Windows 7

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

Creating backups

1. Use HP Recovery Manager to create recovery media immediately after you set up the working computer.
2. As you add hardware and software programs, create system restore points.
3. As you add photos, video, music, and other personal files, create a backup of your system and personal information.

Creating recovery media to recover the original system

After you successfully set up the computer, you should create recovery discs or a recovery flash drive using HP Recovery Manager. You will need these recovery discs or recovery flash drive to perform a system recovery should the hard drive become corrupted. A system recovery reinstalls the original operating system, and then configures the settings for the default programs.

What you need to know

- Only one set of recovery media can be created. Handle these recovery tools carefully, and keep them in a safe place.
- HP Recovery Manager examines the computer and determines the required storage capacity for the flash drive or the number of blank DVD discs that will be required.

  Use DVD-R, DVD+R, DVD-R DL, DVD+R DL discs or a flash drive. Do not use rewriteable discs such as CD ±RW, DVD±RW, double-layer DVD±RW, and BD-RE (rewritable Blu-ray) discs; they are not compatible with HP Recovery Manager software.
- If your computer does not include an integrated optical drive, you can use an optional external optical drive (purchased separately) to create recovery discs, or you can obtain recovery discs for your computer from the HP website. If you use an external optical drive, it must be connected directly to a USB port on the computer, not to a USB port on an external device, such as a USB hub.
- Be sure that the computer is connected to AC power before you begin creating the recovery media.
- The creation process can take up to an hour or more. Do not interrupt the creation process.
- Store the recovery media in a safe location, separate from the computer.
- If necessary, you can exit the program before you have finished creating the recovery media. The next time you open HP Recovery Manager, you will be prompted to continue the process.

Creating the recovery media

1. Select **Start** and type `recovery` in the search field. Select **Recovery Manager** from the list. Allow the action to continue, if prompted.
2. Click **Recovery Media Creation**.
3. Follow the on-screen instructions to continue.

To recover, see Recovering the original system using HP Recovery Manager on page 114.

Creating system restore points

A system restore point is a snapshot of certain hard drive contents saved by Windows System Restore at a specific time. A restore point contains information such as registry settings that Windows uses. Restoring to a previous restore point allows you to reverse changes that have been made to the system since the restore point was created.

Restoring to an earlier system restore point does not affect data files saved or emails created since the last restore point, but it does affect software you may have installed.

For example, if you download a photo from a digital camera and then restore the computer to the state it was on the previous day, the photo remains on the computer.

However, if you install photo viewing software and then restore your computer to the state it was on the previous day, the software will be uninstalled, and you won't be able to use it.

What you need to know

- If you restore to a restore point and then change your mind, you can undo the restoration.
- You should create system restore points:
  - Before you add or change software or hardware
  - Periodically, whenever the computer is running normally
- System Restore also saves shadow copies of files that have been changed since the last restore point was created. For more information about using shadow copies to restore, see Help and Support.

Creating a system restore point

1. Select **Start > Control Panel > System and Security > System**.
2. In the left pane, click **System Protection**.
3. Click the **System Protection** tab.
4. Click **Create**, and follow the on-screen instructions.

To restore, see Restoring to a previous system restore point on page 114.

Backing up system and personal information

Your computer stores information that is important to you, such as files, emails, and photos, and you will want to keep that information even if you download a virus or the system stops working properly. How completely you are able to recover your files depends on how recent your backup is. As you add new software and data files, you should create backups on a regular basis.

Tips for a successful backup

- Number backup discs before inserting them into the optical drive.
- Store personal files in the Documents, Music, Pictures, and Videos libraries, and back up these folders periodically.
- Save customized settings 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 re-enter 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+prt sc.

   To copy the entire screen, press prt sc.
3. Open a word-processing document or graphics editing program, and then select **Edit > Paste**. The screen image is added to the document.
4. Save and print the document.

What you need to know

- You can back up your information to an optional external hard drive, a flash drive, a network drive, or discs.
- Connect the computer to AC power during backups.
- Allow enough time for the backup. Depending on files sizes, it may take more than an hour.
- Verify the amount of free space on your backup storage device before you back up.
- You should back up:
  - Before adding or changing software or hardware.
  - Before the computer is repaired or restored.
  - On a regular schedule to be sure you have recent copies of personal information.
  - After you add many files—for example, if you saved videos from a birthday party.
  - Before using antivirus software to remove a malicious program.
  - After adding information that is hard to replace, such as pictures, videos, music, project files, or data records.

Creating a backup using Windows Backup and Restore

Windows allows you to back up files using Windows Backup and Restore. You can select the level you want to back up, from individual folders to drives. The backups are compressed to save space. To back up:

1. Select **Start > Control Panel > System and Security > Backup and Restore**.
2. Follow the on-screen instructions to schedule and create a backup.

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

To restore, see Restoring specific files using Windows Backup and Restore on page 114.

Restore and recovery

Restoring to a previous system restore point

Sometimes installing a software program causes your computer or Windows to behave unpredictably. Usually uninstalling the software fixes the problems. If uninstalling does not fix the problems, you can restore the computer to a previous system restore point (created at an earlier date and time).

To restore to a previous system restore point, when the computer was running correctly:

1. Select **Start > Control Panel > System and Security > System**.
2. In the left pane, click **System Protection**.
3. Click the **System Protection** tab.
4. Click **System Restore**, and follow the on-screen instructions.

Restoring specific files

If files are accidentally deleted from the hard disk and they can no longer be restored from the Recycle Bin, or if files become corrupt, restoring specific files is useful. Restoring specific files is also useful if you ever choose to recover the original system using HP Recovery Manager. You can only restore specific files that you have backed up before.

Restoring specific files using Windows Backup and Restore

Windows allows you to restore files that were backed up using Windows Backup and Restore:

1. Select **Start > Control Panel > System and Security > Backup and Restore**.
2. Follow the on-screen instructions to restore your backup.

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

Recovering the original system using HP Recovery Manager

HP Recovery Manager software allows you to repair or recover the computer to its original factory state.

What you need to know

- HP Recovery Manager recovers only software that was installed at the factory. For software not provided with this computer, you must either download the software from the manufacturer's website or reinstall the software from the disc provided by the manufacturer.
- A system recovery should be used as a final attempt to correct computer issues. If you have not already tried restore points (see Restoring to a previous system restore point on page 114) and partial restores (see Restoring specific files on page 114), try them before using HP Recovery Manager to recover your system.
- A system recovery must be performed if the computer hard drive fails or if all attempts to correct any functional computer issues fail.

- If the recovery media do not work, you can obtain recovery discs for your system from the HP website.
- The Minimized Image Recovery option is recommended for advanced users only. All hardware-related drivers and software are re-installed, but other software applications are not. Do not interrupt the process until it is complete, otherwise the recovery will fail.

Recovering using HP Recovery partition (select models only)

The HP Recovery partition (select models only), allows you to restore your system without the need for recovery discs or a recovery flash drive. This type of recovery can only be used if the hard drive is still working.

To check for the presence of a recovery partition, select **Start**, right-click **Computer** then select **Manage > Disk Management**. If the recovery partition is present, a Recovery drive is listed in the window.

NOTE: Recovery discs have been included if your computer did not ship with a recovery partition.

1. Access HP Recovery Manager in either of the following ways:
   - Select **Start** and type `recovery` in the search field. Select **Recovery Manager** from the list.

     – or –

   - 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. Then press f11 while the “F11 (System Recovery)” message is displayed on the screen.
2. Click **System Recovery** in the **HP Recovery Manager** window.
3. Follow the on-screen instructions.

Recovering using the recovery media

1. If possible, back up all personal files.
2. Insert the first recovery disc into the optical drive on your computer or an optional external optical drive, and then restart the computer.

   – or –

   Insert the recovery flash drive into a USB port on your computer, and then restart the computer.

   NOTE: If the computer does not automatically restart in HP Recovery Manager, change the computer boot order. See Changing the computer boot order on page 115.
3. Press f9 at system bootup.
4. Select the optical drive or the flash drive.
5. Follow the on-screen instructions.

Changing the computer boot order

To change the boot order for recovery discs:

1. Restart the computer.
2. Press esc while the computer is restarting, and then press f9 for boot options.
3. Select **Internal CD/DVD ROM Drive** from the boot options window.

To change the boot order for a recovery flash drive:

1. Insert the flash drive into a USB port.
2. Restart the computer.
3. Press esc while the computer is restarting, and then press f9 for boot options.
4. Select the flash drive from the boot options window.

11 Backup and Recovery in SUSE Linux

Recovery after a system failure is as good as your most recent backup. As you add new software and data files, you should continue to back up your system on a regular basis to maintain a reasonably current backup.

Backing up your information

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

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

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

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

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

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

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

To restore backup files:

1. Select **Computer > More Applications > Tools > Backup Manager Restore**.
2. Click **Backup Source**, and then select the location of the backup files.
3. Click **Restore Destination**, and then select the destination to restore the files.
4. Select the **Optical Disk** option.
5. Under **Restore Point**, click the time and date of the backup.

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

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

Performing a system recovery

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

CAUTION: Using Recovery completely erases hard drive contents and reformats the hard drive. All files you have created and any software installed on the computer are permanently removed. The recovery tool reinstalls the original operating system and HP programs and drivers that were installed at the factory. Software, drivers, and updates not installed by HP must be manually reinstalled. Personal files must be restored from a backup.

To restore the computer using the HP Factory Image Restore DVD, you must first create the recovery disc. To create the recovery disc:

NOTE: HP recommends that you create the HP Factory Image Restore DVD in the event of a system failure.

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

To restore the computer from the recovery disc, follow these steps:

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

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

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

12 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 A 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
Argentina	IRAM	1
Australia	SAA	1
Austria	OVE	1
Belgium	CEBEC	1
Brazil	ABNT	1
Canada	CSA	2
Chile	IMQ	1
Denmark	DEMKO	1
Finland	FIMKO	1
France	UTE	1
Germany	VDE	1
India	ISI	1
Israel	SII	1
Italy	IMQ	1
Japan	JIS	3
The Netherlands	KEMA	1
New Zealand	SANZ	1
Norway	NEMKO	1
The People's Republic of China	CCC	4
Saudi Arabia	SASO	7
Singapore	PSB	1
South Africa	SABS	1
South Korea	KTL	5
Sweden	SEMKO	1
Switzerland	SEV	1
Taiwan	BSMI	6
Thailand	TISI	1
The United Kingdom	ASTA	1
The United States	UL	2

1. The flexible cord must be Type HO5VV-F, 3-conductor, 0.75mm^2 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.

Country/region	Accredited agency	Applicable note number

2. The flexible cord must be Type SVT/SJT 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 ac) or NEMA 6-15P (15 A, 250 V ac) configuration. CSA or C-UL mark. UL file number must be on each element.
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 VCTF, 3-conductor, 0.75mm^2 or 1.25mm^2 conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V ac) configuration.
4. The flexible cord must be Type RVV, 3-conductor, 0.75mm^2 conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the CCC certification mark.
5. The flexible cord must be Type H05VV-F 3X0.75mm^2 conductor size. KTL logo and individual approval number must be on each element. Corset approval number and logo must be printed on a flag label.
6. The flexible cord must be Type HVCTF 3X1.25mm^2 conductor size. Power cord set fittings (appliance coupler, cable, and wall plug) must bear the BSMI certification mark.
7. For 127 V ac, the flexible cord must be Type SVT or SJT 3 x 18 AWG, with plug NEMA 5-15P (15 A, 125 V ac), with UL and CSA or C-UL marks. For 240 V ac, the flexible cord must be Type H05VV-F 3X0.75/1.00mm^2 conductor size, with plug BS 1363/A with BSI or ASTA marks.

13 Statement of Volatility

The purpose of this document is to provide general information regarding non-volatile memory in industry-standards based HP Business Notebook PC systems and provide general instructions for restoring nonvolatile memory that can contain personal data after the system has been powered off and the hard drive has been removed.

HP Business Notebook PC products that use Intel®-based or AMD®-based system boards contain volatile DDR memory. The amount of nonvolatile memory present in the system depends upon the system configuration. Intel-based and AMD-based system boards contain nonvolatile memory subcomponents as originally shipped from HP assuming that no subsequent modifications have been made to the system and assuming that no applications, features, or functionality have been added to or installed on the system.

Following system shutdown and removal of all power sources from an HP Business Notebook PC system, personal data can remain on volatile system memory (DIMMs) for a finite period of time and will also remain in nonvolatile memory. The steps below will remove personal data from the notebook PC, including the nonvolatile memory found in Intel-based and AMD-based system boards. Some of these steps are disclosed in the Maintenance & Service Guides available for HP PC products available on the product support pages at www.hp.com.

1. Follow steps (a) through (l) below to restore the nonvolatile memory that can contain personal data. Restoring or re-programming nonvolatile memory that does not store personal data is neither necessary nor recommended.

   a. Enter BIOS (F10) Setup by powering on the system and pressing F10 when prompted near the bottom of the display, or press the ESC key to display the start up menu, then press F10 . If the system has a BIOS administrator password, enter the password at the prompt.

   b. Select the **File** menu, then **Restore Defaults**.

   c. Select the **System Configuration** menu, then **Restore Security Defaults**.

   d. If an asset or ownership tag is set, select the **Security** menu and scroll down to the **Utilities** menu. Select **System IDs**, and then select the tag that has been set. Press the spacebar once to clear the tag, then press Enter to return to the prior menu.

   e. If a DriveLock password is set, select the **Security** menu, scroll down to **DriveLock**, then select **DriveLock password**. Select the desired hard drive. Click **Disable protection**, enter the existing master DriveLock password, then press Enter to confirm and return to the prior menu. Repeat this procedure if more than one hard drive has a DriveLock password.

   f. If an Automatic DriveLock password is set, select the **Security** menu, scroll down to **Automatic DriveLock**, then select the desired hard drive and disable protection. Repeat this procedure if more than one hard drive has an Automatic DriveLock password.

   g. Select the **File** menu, then **Reset BIOS Security** to factory default. Click **yes** at the warning message.

   h. Select the **File** menu, then **Save Changes and Exit**.

   i. Reboot the system. If the system has a Trusted Platform Module (TPM) and/or fingerprint sensor, one or two prompts will appear. One to clear the TPM and the other to Reset Fingerprint Sensor; press F1 to accept or F2 to reject.

      If the HP notebook model number includes Intel® Centrino with VPro™, reboot the PC and enter BIOS Setup by pressing F10 when prompted. Select **System Configuration**, then **AMT Options**.

Then select **Un-configure AMT on next boot**. Select **Save** then **Yes**. Select the **File** menu, and then select **Save Changes and Exit**. Reboot the system and confirm that you want to un-configure AMT.

j. If the optional Intel® Anti-Theft Technology (AT) was activated, contact the provider to de-activate it.

k. If the optional Absolute® Software Computrace® management and tracking service was activated on the notebook PC, contact the provider to deactivate it.

l. Remove all power and system batteries for at least 24 hours.

2. Remove and retain the storage drive or clear the contents of the drive.

a. Hard Disk Drive (HDD)

Clear the HDD contents by using the HP Disk Sanitizer® utility or a third party application that, ideally, is U.S. Department of Defense (DOD) 5220.22-M approved.

To run HP Disk Sanitizer, enter BIOS Setup by powering on the system and pressing F10 when prompted near the bottom of the display, or press ESC to display the start up menu, then press F10. Select the **Security** menu and scroll down to the **Utilities** menu. Select **Disk Sanitizer** and select the desired drive. For a higher level of protection, select **Optimum**.

NOTE: This process will take a long time, and the amount of time varies based on the hard drive capacity.

b. Solid State Drive (SSD)

Clear the SSD contents by using the BIOS Setup Secure Erase command option, or by using a third party utility designed to erase data from an SSD. To run Secure Erase, enter BIOS Setup by powering on the system and pressing F10 when prompted near the bottom of the display. Select the **Security** menu and scroll down to the **Utilities** menu. Select **Secure Erase** and select the desired hard drive.

Non-volatile memory usage

Non Volatile Memory Type	Amount (Size)	Does this memory store customer data?	Does this memory retain data when power is removed?	What is the purpose of this memory?	How is data input into this memory?	How is this memory write protected?
HP Sure Start	2 MB	No	Yes	Only in platforms that support Sure Start to provide protected backup of critical System BIOS code, EC firmware, and critical PC configuration data.	Data cannot be written to this device via the host processor. The content is managed solely by the HP Sure Start Embedded Controller.	Protected by the HP Sure Start Embedded Controller.
Real Time Clock (RTC) battery backed-up CMOS configuration memory (CMOS)	256 Bytes	No	Yes	Stores system date and time and limited keyboard controller data.	Using the F10 Setup utility or changing the Microsoft® Windows® date & time.	This memory is not write-protected. HP recommends password protecting the F10 Setup utility.

Non Volatile Memory Type	Amount (Size)	Does this memory store customer data?	Does this memory retain data when power is removed?	What is the purpose of this memory?	How is data input into this memory?	How is this memory write protected?
Controller (NIC) EEPROM	64 Kbytes (not customer accessible)	No	Yes	Store NIC configuration and NIC firmware.	Using a utility from the NIC vendor that can be run from DOS.	A utility is required to write data to this memory and is available from NIC vendor. Writing data to this ROM in an inappropriate manner will render the NIC non-functional.
Keyboard ROM	64 Kbytes (not customer accessible)	No	Yes	Stores firmware code (keyboard, mouse, & battery management).	Programmed at the factory. Code is updated when the system BIOS is updated.	A utility is required for writing data to this memory and is available on the HP website. Writing data to this ROM in an inappropriate manner can render the PC non-functional.
DIMM Serial Presence Detect (SPD) configuration data	256 Bytes per memory module, 128 Bytes programmable (not customer accessible)	No	Yes	Stores memory module information.	Programmed by the memory vendor.	Data cannot be written to this memory when the module is installed in a PC. The specific write protection method varies by memory vendor.
System BIOS	4 to 5 MBytes	Yes	Yes	Store system BIOS code and PC configuration data.	System BIOS code is programmed at the factory. Code is updated when the system BIOS is updated. Configuration data and settings are input using the F10 setup utility or a custom utility.	A utility is required for writing data to this memory and is available on the HP website. Writing data to this ROM in an inappropriate manner can render the PC non-functional.
Intel Management Engine Firmware (present only in models ending in a 'p' or 'w' or with Intel Centrino Pro technology)	1.5 or 5MByte	Yes	Yes	Stores Management Engine Code, Settings, Provisioning Data and iAMT third party data store.	Management Engine Code is programmed at the factory. Code is updated via Intel secure firmware update utility. Unique Provisioning Data can be entered at the factory or by an administrator using the Management Engine (MEBx) setup utility. The third party data store contents can populated by a remote management console or local applications registered by an administrator to have access to the space.	The Intel chipset is configured to enforce HW protection to block all direct read/write access to this area. An Intel utility is required for updating the firmware. Only firmware updates digitally signed by Intel can be applied using this utility.
Bluetooth flash	2Mbit	No	Yes	Stores Bluetooth configuration and firmware.	Programmed at the factory. Tools for writing data to this memory are not publicly available but can be obtained from the silicon vendor.	A utility is required for writing data to this memory and is made available through newer versions of the driver if the flash requires an upgrade.

Non Volatile Memory Type	Amount (Size)	Does this memory store customer data?	Does this memory retain data when power is removed?	What is the purpose of this memory?	How is data input into this memory?	How is this memory write protected?
802.11 WLAN EEPROM	4kb to 8kb	No	Yes	Stores configuration and calibration data.	Programmed at the factory. Tools for writing data to this memory are not made public.	A utility is required for writing data to this memory and is typically not made available to the public unless a firmware upgrade is necessary to address a unique issue.
Web Camera	64K bit	No	Yes	Store Web Cam configuration and firmware.	Using a utility from the device manufacturer that can be run from Windows.	A utility is required for writing data to this memory and is typically not made available to the public unless a firmware upgrade is necessary to address a unique issue.
Fingerprint Reader	512kByte Flash	Yes	Yes	Stores fingerprint templates.	By enrolling in HP ProtectTools Security Manager.	Only a digitally signed application can make the call to write to the flash.

Questions and answers

1. **How can the BIOS settings be restored (returned to factory settings)?**

   a. Turn on or restart the computer and press F10 when prompted near the bottom of the display.

   b. Select **File**, then select **Restore defaults**.

   c. Follow the on-screen instructions.

   d. Select **File**, save changes and exit, then press Enter.

2. **What kind of configuration data is stored on the DIMM Serial Presence Detect (SPD) memory module? How would this data be written?**

   The DIMM SPD memory contains information about the memory module such as size, serial number, data width, speed/timing, voltage and thermal information. This information is written by the module manufacturer and stored on an EEPROM. This EEPROM cannot be written to when the memory module is installed in a PC. Third party tools do exist that can write to the EEPROM when the memory module is not installed in a PC. There are various third party tools available to read SPD memory.

3. **Does the “Firmware Hub for System BIOS” contain the BIOS program? Is this chip writable, and if so how?**

   The Firmware Hub does contain the BIOS program and is writable. A utility is required to perform the write function.

4. **In some PC systems, the Firmware Hub for System BIOS is a flash memory chip so that updates can be written by the customer. Is this true for these BIOS chips?**

   Yes, they are flash memory chips.

5. **What is meant by “Restore the nonvolatile memory found in Intel-based system boards”?**

This relates to clearing the Real Time Clock (RTC) CMOS memory that contains PC configuration data.

6. **Does resetting the CMOS configuration memory return the PC back to factory defaults?**

   The process of resetting the CMOS will return certain system settings to factory default but will not reset many of the system data and configuration defaults to their factory settings. To return these system data and configuration defaults to factory settings, refer to question and answer 1 and follow the instructions for returning the BIOS settings to factory defaults.

14 Recycling

Battery

When a non-rechargeable or rechargeable battery has reached the end of its useful life, do not dispose of the battery in general household waste. Follow the local laws and regulations in your area for battery disposal.

HP encourages customers to recycle used electronic hardware, HP original print cartridges, and rechargeable batteries. For more information about recycling programs, see the HP Web site at http://www.hp.com/recycle.

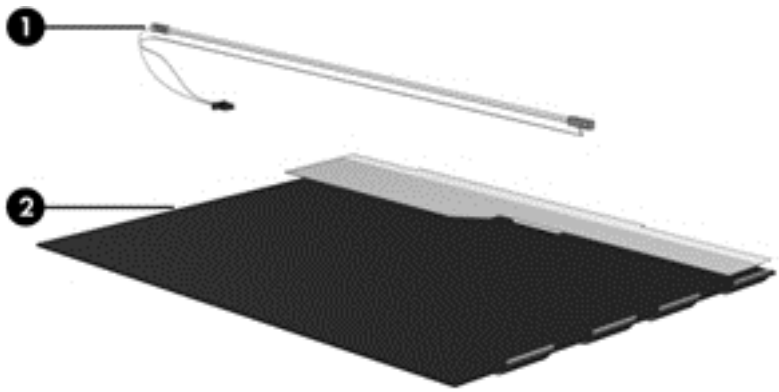
Display

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.

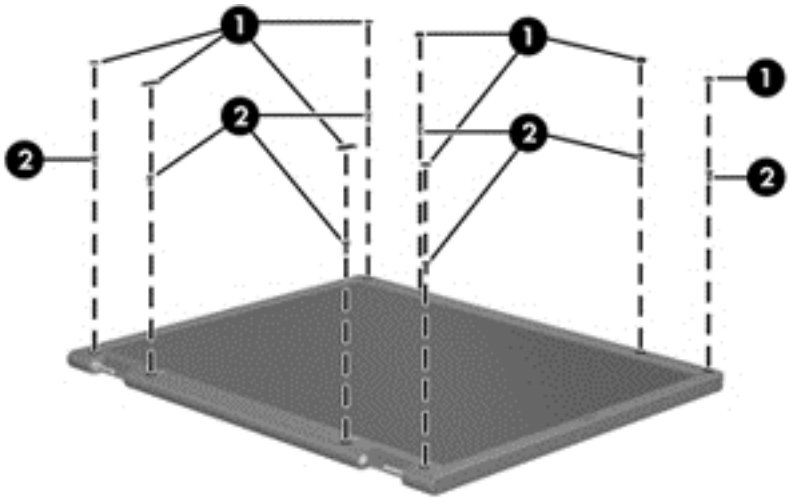
This section provides disassembly instructions for the display assembly. The display assembly must be disassembled to gain access to the backlight **(1)** and the liquid crystal display (LCD) panel **(2)**.



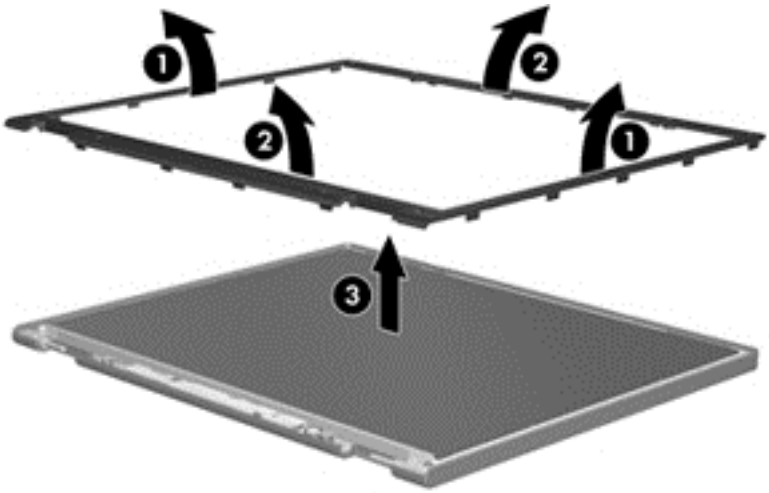
NOTE: The procedures provided in this chapter are general disassembly instructions. Specific details, such as screw sizes, quantities, and locations, and component shapes and sizes, can vary from one computer model to another.

Perform the following steps:

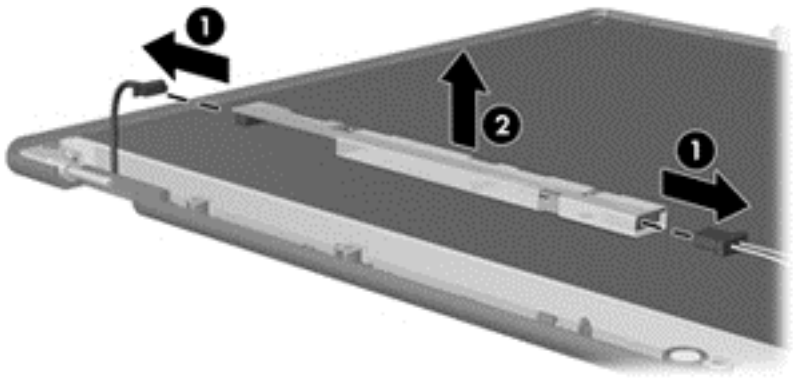
1. Remove all screw covers **(1)** and screws **(2)** that secure the display bezel to the display assembly.



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)**.

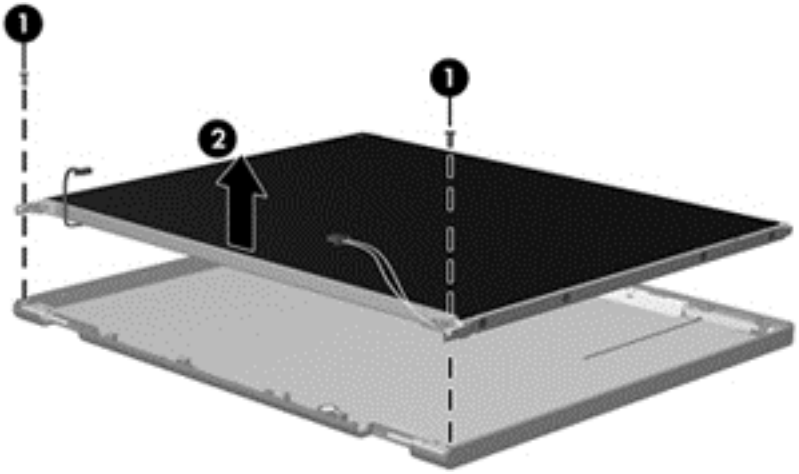


4. Disconnect all display panel cables **(1)** from the display inverter and remove the inverter **(2)**.

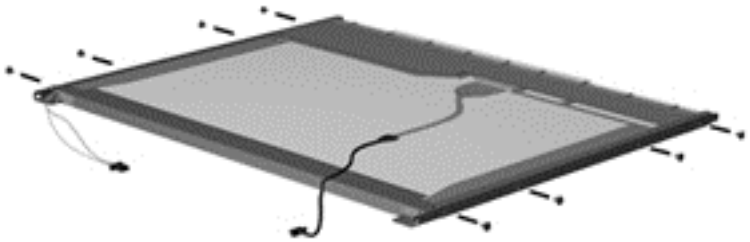


5. Remove all screws **(1)** that secure the display panel assembly to the display enclosure.

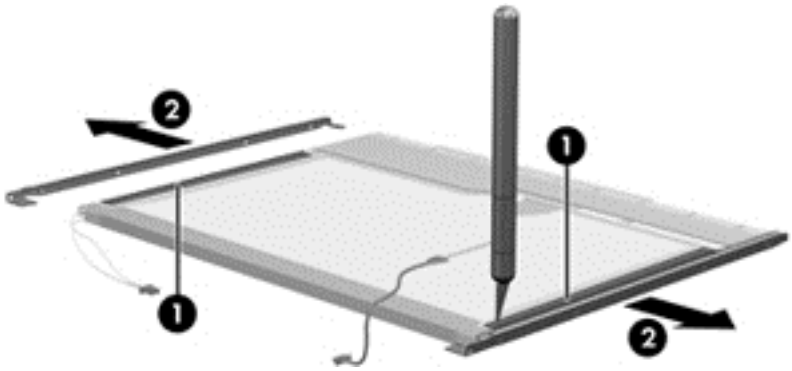
6. Remove the display panel assembly **(2)** from the display enclosure.



7. Turn the display panel assembly upside down.
8. Remove all screws that secure the display panel frame to the display panel.

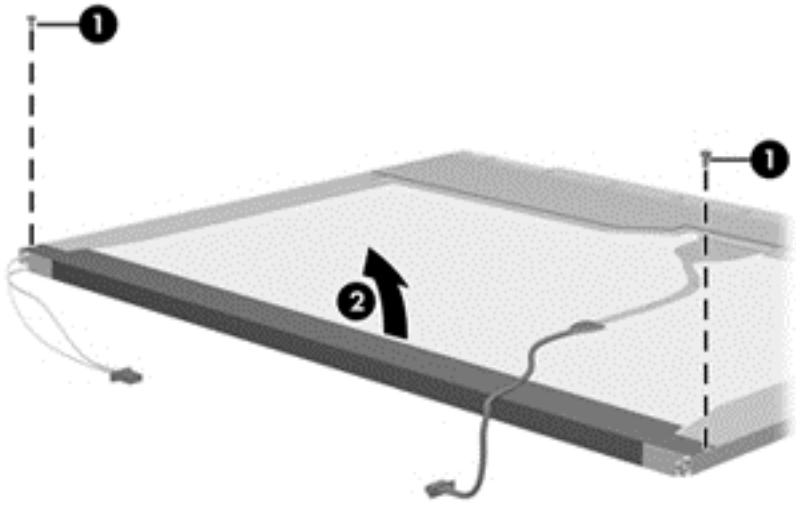


9. Use a sharp-edged tool to cut the tape **(1)** that secures the sides of the display panel to the display panel frame.
10. Remove the display panel frame **(2)** from the display panel.

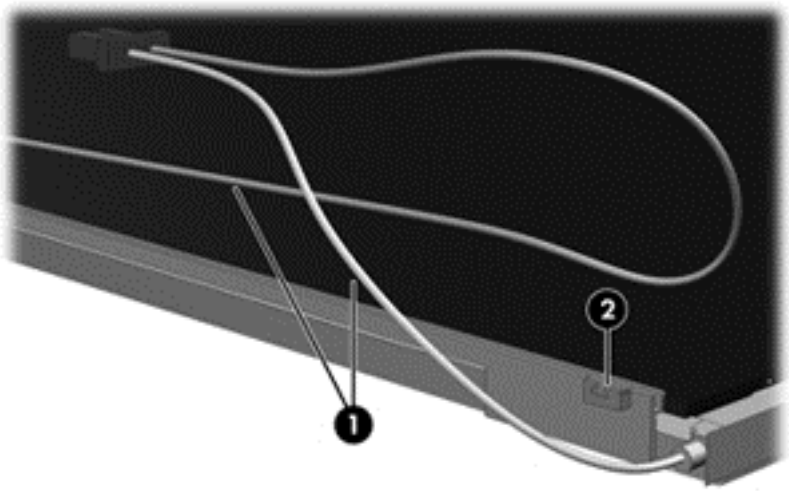


11. Remove the screws **(1)** that secure the backlight cover to the display panel.

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

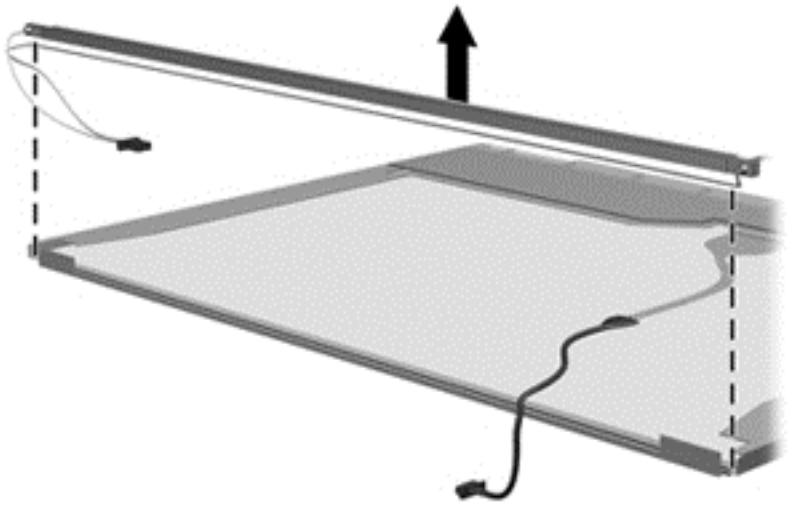


13. Remove the backlight cover.
14. Turn the display panel upright.
15. Remove the backlight cables **(1)** from the clip **(2)** in the display panel.



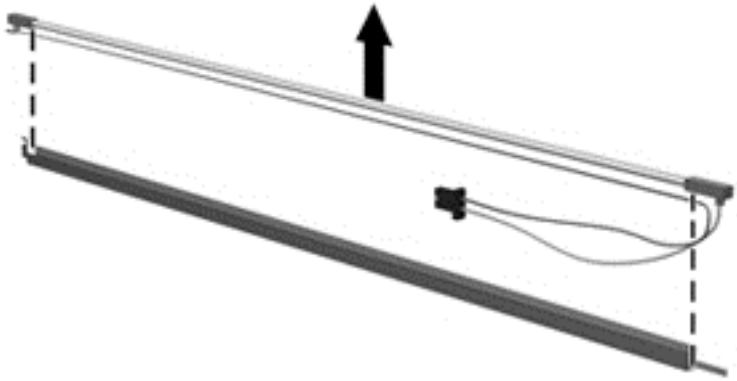
16. Turn the display panel upside down.

17. Remove the backlight frame from the display panel.



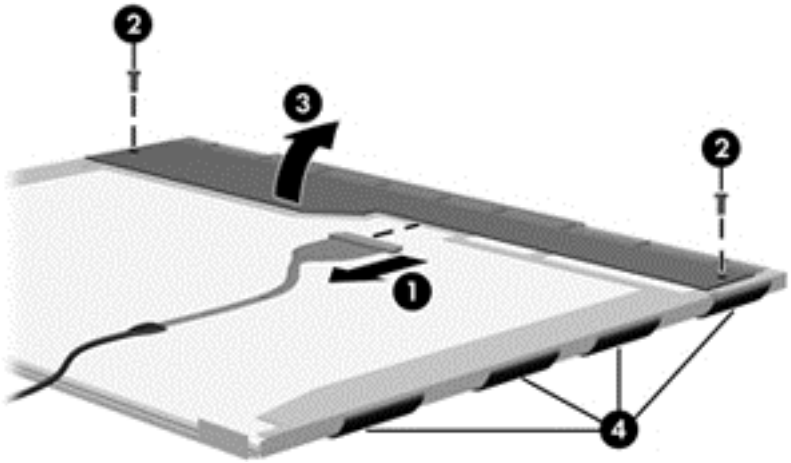
WARNING! The backlight contains mercury. Exercise caution when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

18. Remove the backlight from the backlight frame.

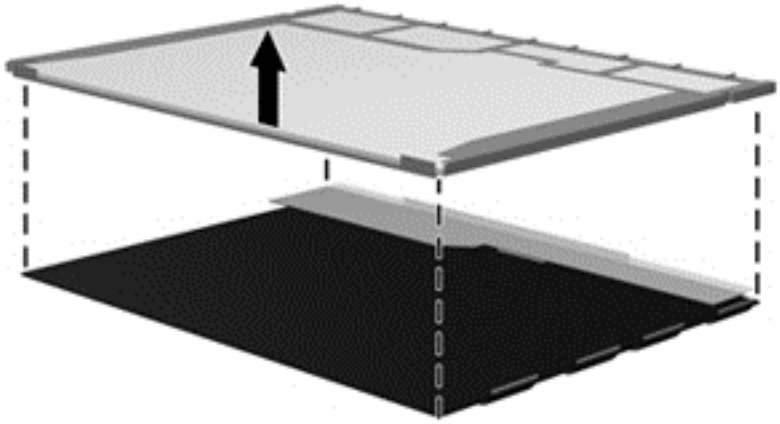


19. Disconnect the display cable **(1)** from the LCD panel.
20. Remove the screws **(2)** that secure the LCD panel to the display rear panel.
21. Release the LCD panel **(3)** from the display rear panel.

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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