



HP 15 TouchSmart Notebook PC
HP 15 Notebook PC
Compaq 15 TouchSmart Notebook PC
Compaq 15 Notebook PC

Maintenance and Service Guide

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Product notice

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

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

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For any further information or to request a full refund of the price of the computer, please contact your seller.

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 60950-1).

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1 Product description

Category	Description
Product name	HP 15 Notebook PC HP 15 TouchSmart Notebook PC Compaq 15 Notebook PC Compaq 15 TouchSmart Notebook PC
Processors	AMD A8-6410 processor (2.0-GHz, 2-MB L2 cache, 1600-MHz DDR3L) AMD A6-6310 processor (1.8-GHz, 2-MB L2 cache, 1600-MHz DDR3L) AMD A4-6210 processor (1.8-GHz, 2-MB L2 cache, 1600-MHz DDR3L) AMD E2-6110 processor (1.5-GHz, 2-MB L2 cache, 1600-MHz DDR3L) AMD E1-6010 processor (1.35-GHz, 1-MB L2 cache, 1600-MHz DDR3L) AMD A6-5200 processor (2.0-GHz, 2-MB L2 cache, 1600-MHz DDR3L) AMD A4-5000 processor (1.5-GHz, 2-MB L2 cache, 1600-MHz DDR3L) AMD E2-3800 processor (1.3-GHz, 2-MB L2 cache, 1600-MHz DDR3L) AMD E1-2100 processor (1.0-GHz, 2-MB L2 cache, 1333-MHz DDR3L)
Chipset	AMD Integrated SOC FCH
Graphics	Internal graphics: AMD Radeon HD 8400 Graphics (A6-5200) AMD RadeonT HD 8330 Graphics (A4-5000) AMD Radeon HD 8280 Graphics (E2-3800) AMD RadeonT HD 8280 Graphics (E2-3800) AMD Radeon HD 8210 Graphics (E1-2100) AMD Radeon R5 Graphics AMD Radeon R4 Graphics AMD Radeon R3 Graphics AMD Radeon R2 Graphics Switchable discrete graphics: AMD Sun LE (18W) Radeon HD 8570M with up to 1024 MB or 2048 MB of dedicated video memory
Panel	39.6-cm (15.6-in), high-definition (HD), light-emitting diode (LED), SVA BrightView (1366×768) display, flat 3.8 mm; typical brightness: 200 nits 39.6-cm (15.6-in), high-definition (HD), light-emitting diode (LED), SVA BrightView (1366×768) display, slim 3.2 mm; typical brightness: 200 nits (for eTP2 touch solution only) Touch screen, multi-touch enabled Supports LVDS
Memory	1 customer-accessible/upgradable memory module slot

Category	Description
	<p>Supports single-channel memory</p> <p>DDR3L-1600-MHz Single Channel Support</p> <p>DDR3L-1333-MHz Single Channel Support (DDR3-1600 downgrade to DDR3-1333)</p> <p>Supports up to 8 GB of system RAM in the following configurations:</p> <ul style="list-style-type: none"> • 8192-MB total system memory (8192×1) or (4096×2) • 6144-MB total system memory (4096×1) + (2048×1) • 4096-MB total system memory (4096×1) or (2048×2) • 2048-MB total system memory (2048×1)
Hard drives	<p>Supports 6.35-cm (2.5-in) hard drives in 9.5-mm (.37-in) and 7.0-mm (.28-in) thicknesses</p> <p>Serial ATA</p> <p>Supports the following hard drives:</p> <ul style="list-style-type: none"> • 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	<p>Fixed, serial ATA, 9.5-mm tray load</p> <p>DVD+/-RW Double-Layer SuperMulti</p> <p>Supports zero power optical drive</p> <p>Supports M-disc</p> <p>Supports weight saver option</p>
Audio/video	<p>Single digital microphone</p> <p>HD audio, dual speakers</p> <p>HP TrueVision HD: HD camera (fixed, no tilt with activity LED, 1280×720 by 30 frames per second)</p> <p>HP Webcam: VGA camera (fixed, no tilt with activity LED, 640×480 by 24 frames per second)</p>
Ethernet	<p>Integrated 10/100 network interface card (NIC)</p>
Wireless	<p>Integrated wireless local area network (WLAN) options by way of wireless module</p> <p>One or two WLAN antennas built into display assembly</p> <p>Compatible with Miracast-certified devices</p> <p>Single antenna support</p> <p>Support for the following WLAN formats:</p> <ul style="list-style-type: none"> • Realtek RTL8188EE 802.11bgn 1x1 Wi-Fi Adapter • Qualcomm Atheros AR9485 802.11bgn 1x1 Wi-Fi Adapter • Realtek RT8723BE 802.11bgn 1x1 Wi-Fi + BT4.0 Combo Adapter • Broadcom BCM43142 802.11 bgn 1x1 Wi-Fi + BT4.0 HMC Combo Adapter
External media card	<p>HP Multi-Format Digital Media Reader</p> <p>Support SD/SDHC/SDXC</p> <p>Push-Pull Insertion/Removal</p>

Category	Description
Ports	<p>HDMI version 1.4 supporting 1920 ×1200 @ 60Hz</p> <p>Hot Plug/unplug and auto detect for correct output to wide-aspect vs. standard aspect video</p> <p>RJ-45 (Ethernet, includes link and activity lights)</p> <p>USB 3.0 (1 port)</p> <p>USB 2.0 (2 ports)</p> <p>AC Smart Pin adapter plug</p> <p>Headphone/microphone in combo jack</p>
Keyboard/pointing devices	<p>Full-size "island style" keyboard with numeric keypad</p> <p>TouchPad with multi-touch gestures, 2-finger scrolling, and pinch-zoom enabled</p> <p>Taps enabled by default</p> <p>Support Win8.1+D212 Modern Trackpad Gestures</p> <p>Support PS/2, profile sensor (reserve for SMBus)</p>
Power requirements	<p>AC adapters:</p> <p>AC Adapter 65-W Smart nPFC, 3 pin, RC 4.5mm connector - non slim for use in discrete models</p> <p>AC Adapter 45-W Smart nPFC, 3 pin, RC 4.5mm connector - non slim for use in UMA models</p> <p>AC Adapter 65-W EM Smart nPFC, 3 pin, RC 4.5mm connector, 90 degree plug design for use in India/China</p> <p>1 meter power cord</p> <p>4-cell, 41-Whr Li-ion battery</p> <p>3-cell, 31-Whr Li-ion battery</p>
Security	Kensington Security Lock
Operating system	<p>Preinstalled:</p> <ul style="list-style-type: none"> • Windows 10 • Windows 8.1 • Windows 8.1 CPPP - China only • Ubuntu • FreeDOS 2.0
Serviceability	<p>End-user replaceable parts:</p> <ul style="list-style-type: none"> • AC adapter • Battery • Optical drive • Keyboard

2 External component identification

Display



Component	Description
(1) WLAN antennas (1 or 2)* (select models only)	Send and receive wireless signals to communicate with wireless local area networks (WLANs).
(2) WWAN antennas (1 or 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 8.1, from the Start screen, type <code>camera</code> , and then select Camera from the list of applications. To use the webcam in Windows 10, type <code>camera</code> in the taskbar search box, and then select Camera .
(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*

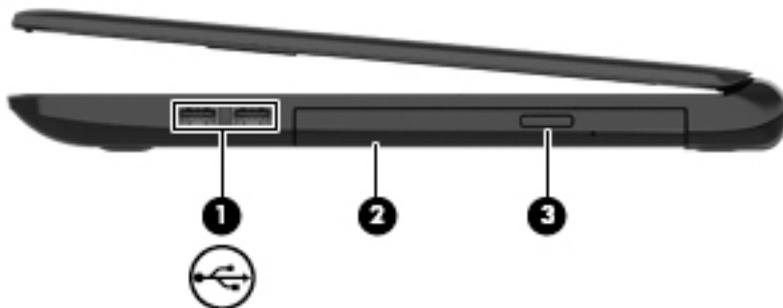
Component	Description
	that applies to your country or region. To access this guide in Windows 8.1, from the Start screen, type <code>support</code> , and then select the HP Support Assistant app.
	To access this guide in Windows 10, select the Start button, select All apps , select HP Help and Support , and then select HP Documentation .

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: Pull the card out of the slot.

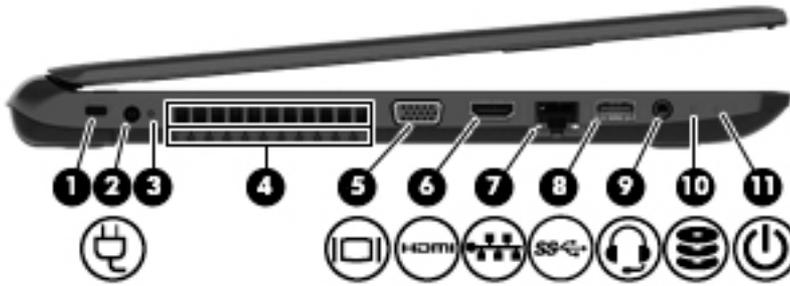
Right side



Component	Description
(1)  USB 2.0 ports (2)	Connect an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub.
(2) Optical drive (select models only)	Depending on your computer model, reads an optical disc or reads and writes to an optical disc.

Component	Description
(3)	<p data-bbox="585 506 943 558">Optical drive eject button (select models only)</p> <p data-bbox="967 506 1161 529">Releases the disc tray.</p>

Left side

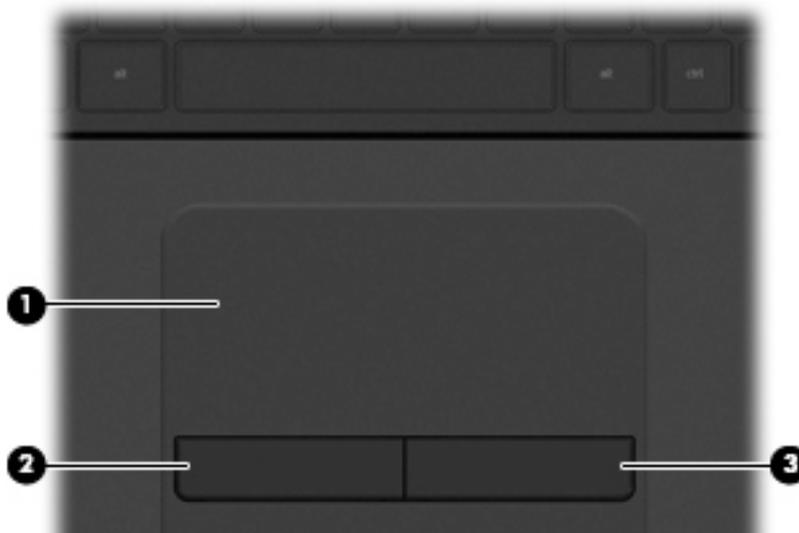


Component	Description
(1)	Security cable slot Attaches an optional security cable to the computer. NOTE: The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.
(2) 	Power connector Connects an AC adapter.
(3)	AC adapter light <ul style="list-style-type: none"> On: The AC adapter is connected and the battery is charged. 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 (select models only) Connects an external VGA monitor or projector.
(6) 	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.
(7) 	RJ-45 (network) jack/status lights Connects a network cable. <ul style="list-style-type: none"> White: The network is connected. Amber: Activity is occurring on the network.
(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.

Component	Description
	<p>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 <i>Regulatory, Safety, and Environmental Notices</i>.</p> <p>To access this guide in Windows 8.1, from the Start screen, type support, and then select the HP Support Assistant app.</p> <p>To access this guide in Windows 10, select the Start button, select All apps, select HP Help and Support, and then select HP Documentation.</p> <p>NOTE: When a device is connected to the jack, the computer speakers are disabled.</p> <p>NOTE: Be sure that the device cable has a 4-conductor connector that supports both audio-out (headphone) and audio-in (microphone).</p>
(10)  Hard drive light	Blinking white: The hard drive is being accessed.
(11)  Power light	<ul style="list-style-type: none"> 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.

Top

TouchPad



Component	Description
(1) TouchPad zone	Moves the on-screen pointer and selects or activates items on the screen.

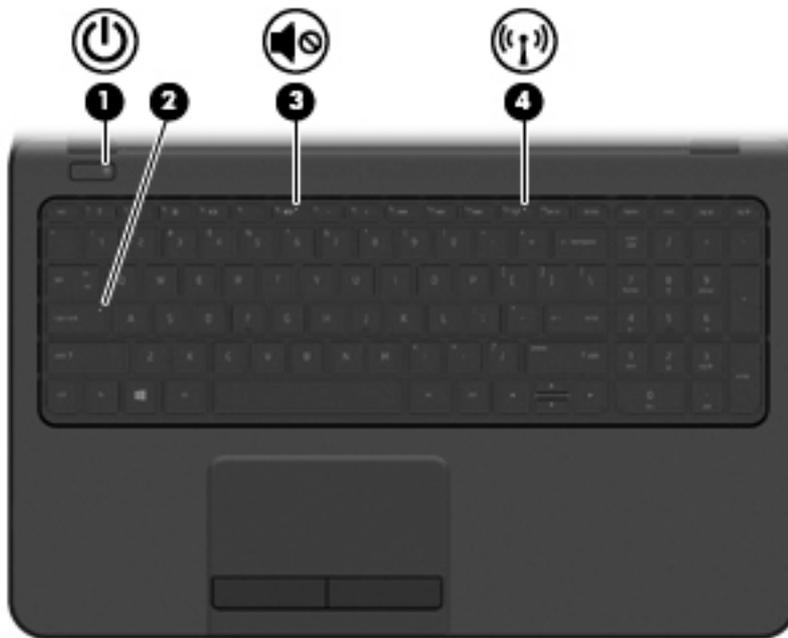
Component	Description
(2)	Left TouchPad button
(3)	Right TouchPad button

NOTE: The TouchPad also supports edge-swipe gestures.

Functions like the left button on an external mouse.

Functions like the right button on an external mouse.

Lights



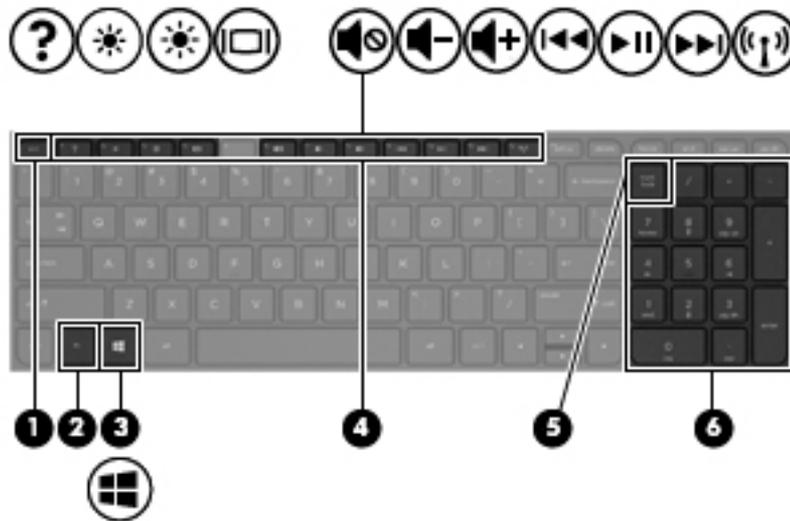
Component	Description
(1)  Power light	<ul style="list-style-type: none">• On: The computer is on.• Blinking: The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other unneeded components.• Off: The computer is off or in Hibernation. Hibernation is a power-saving state that uses the least amount of power.
(2) Caps lock light	On: Caps lock is on, which switches the keys to all capital letters.
(3)  Mute light	<ul style="list-style-type: none">• Amber: Computer sound is off.• Off: Computer sound is on.
(4)  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



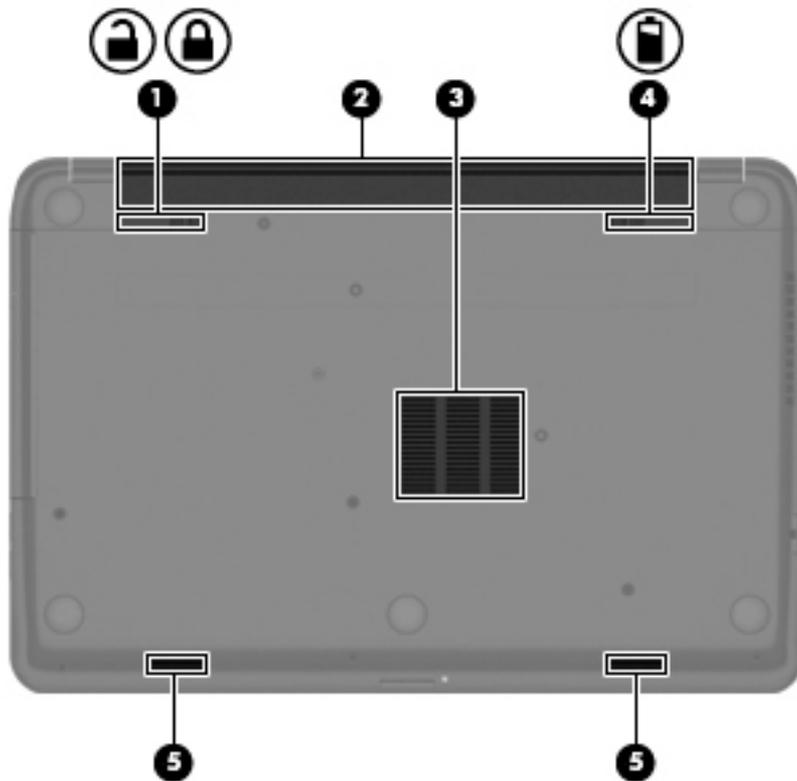
Component	Description
 Power button	<ul style="list-style-type: none">• When the computer is off, press the button to turn on the computer.• When the computer is on, press the button briefly to initiate Sleep.• When the computer is in the Sleep state, press the button briefly to exit Sleep.• When the computer is in Hibernation, press the button briefly to exit Hibernation. <p>CAUTION: Pressing and holding down the power button will result in the loss of unsaved information.</p> <p>If the computer has stopped responding and shutdown procedures are ineffective, press and hold the power button down for at least 5 seconds to turn off the computer.</p> <p>To learn more about your power settings, see your power options.</p> <p>In Windows 8.1:</p> <p>From the Start screen, type <code>power</code>, select Power and sleep settings, and then select Power and sleep from the list of applications.</p> <p>In Windows 10:</p> <ul style="list-style-type: none">▲ Type <code>power</code> in the taskbar search box, and then select Power and sleep settings.- or -Right-click the Start button, and then select 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 spacebar or the esc key.
(3)  Windows key	<p>(Windows 8.1) Returns you to the Start screen from an open app or the Windows desktop.</p> <p>NOTE: Pressing the Windows key again will return you to the previous screen.</p> <p>(Windows 10) Opens the Start menu.</p> <p>NOTE: Pressing the Windows key again will close the Start menu.</p>
(4) Action keys	Execute frequently used system functions.
(5) num lk key	<p>Alternates between the navigational and numeric functions on the integrated numeric keypad.</p> <p>NOTE: The keypad function that is active when the computer is turned off is reinstated when the computer is turned back on.</p>
(6) Integrated numeric keypad	When num lk has been enabled, it can be used like an external numeric keypad. To alternate between this numeric function and the navigational function (indicated by the directional arrows on the keys), press the num lk key.

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)	Vent 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.

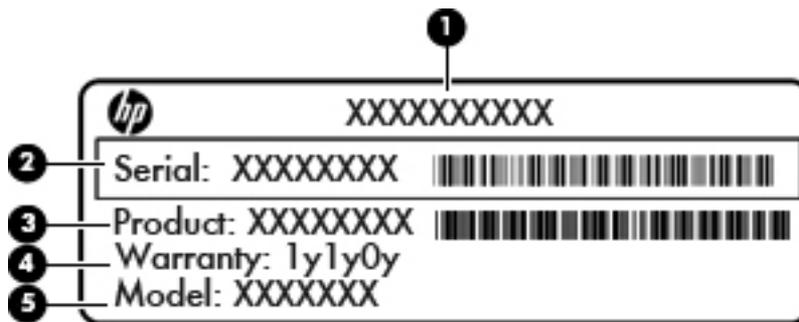
Labels

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 2 places depending on your computer model: Affixed to the bottom of the computer, or located in the battery bay.

- 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

Component

(4) Model number (select models only)

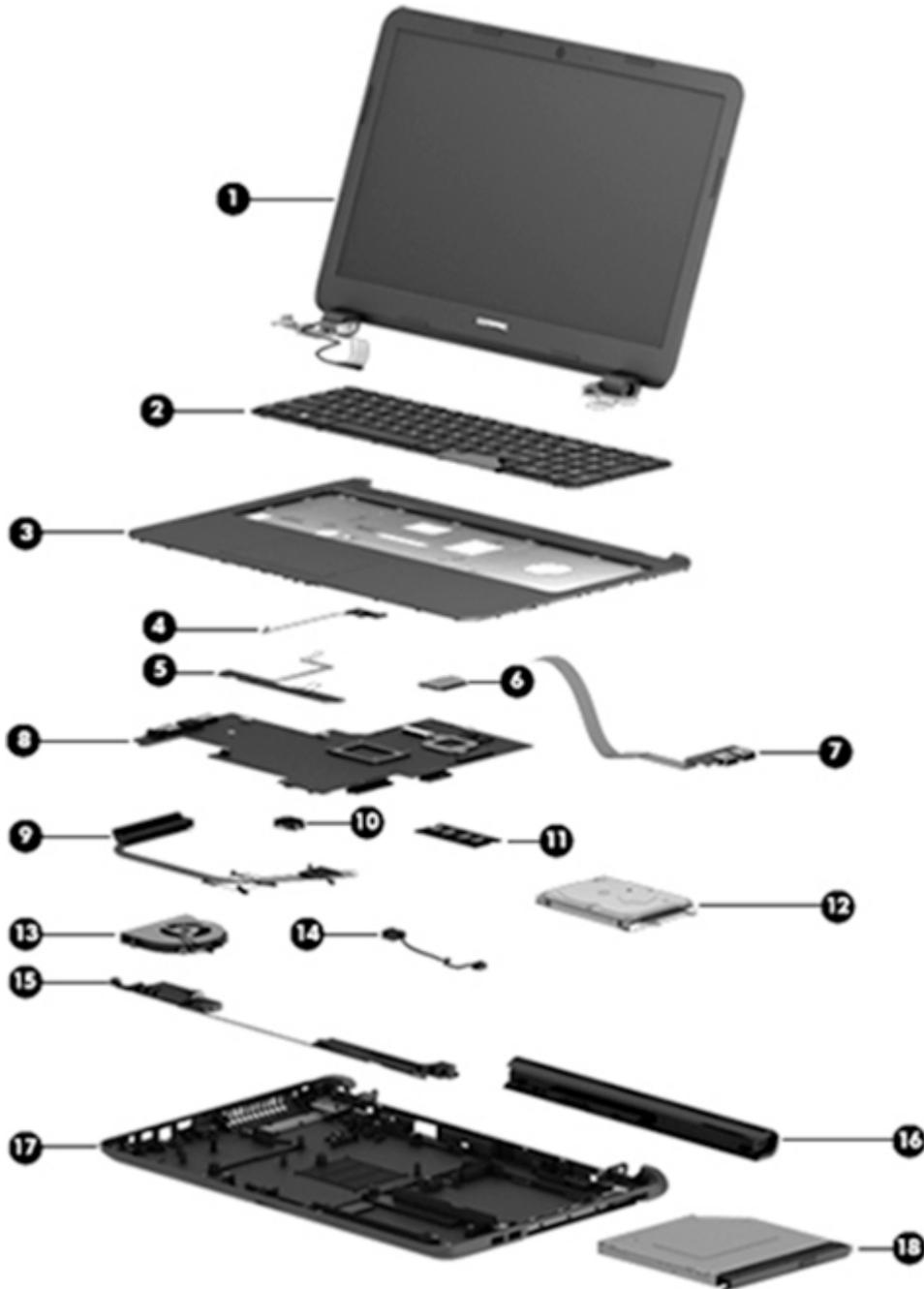
(5) Revision number

- 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

 **NOTE:** HP continually improves and changes product parts. For complete and current information on supported parts for your computer, go to <http://partsurfer.hp.com>, select your country or region, and then follow the on-screen instructions.



Item	Component	Spare part number
(1)	Display assembly (39.6-cm [15.6-in] HD, anti-glare, touchscreen) NOTE: For display assembly spare part information, see Display assembly subcomponents on page 22 .	
(2)	Keyboard	
	For use in the United States	749658-001
	For use in India	749658-002
	For use in the United Kingdom	749658-031
	For use in Germany	749658-041
	For use in France	749658-051
	For use in Italy	749658-061
	For use in Spain	749658-071
	For use in Portugal	749658-131
	For use in Turkey	749658-141
	For use in Greece	749658-151
	For use in Latin America	749658-161
	For use in Saudi Arabia	749658-171
	For use in Hungary	749658-211
	For use in Russia	749658-251
	For use in Bulgaria	749658-261
	For use in Romania	749658-271
	For use in Thailand	749658-281
	For use in Japan	749658-291
	For use in Belgium	749658-A41
	For use in Taiwan	749658-AB1
	For use in South Korea	749658-AD1
	For use in the Netherlands	749658-B31
	For use in Slovenia	749658-BA1
	For use in Israel	749658-BB1
	For use in Switzerland	749658-BG1
	For use in French Canada	749658-DB1
	For use in Denmark, Finland, and Norway	749658-DH1
	For use in the Czech Republic and Slovakia	749658-FL1
(3)	Top cover (includes touchpad)	
	Black licorice/textured HP 15 models	749639-001
	Purple HP 15 models	775088-001

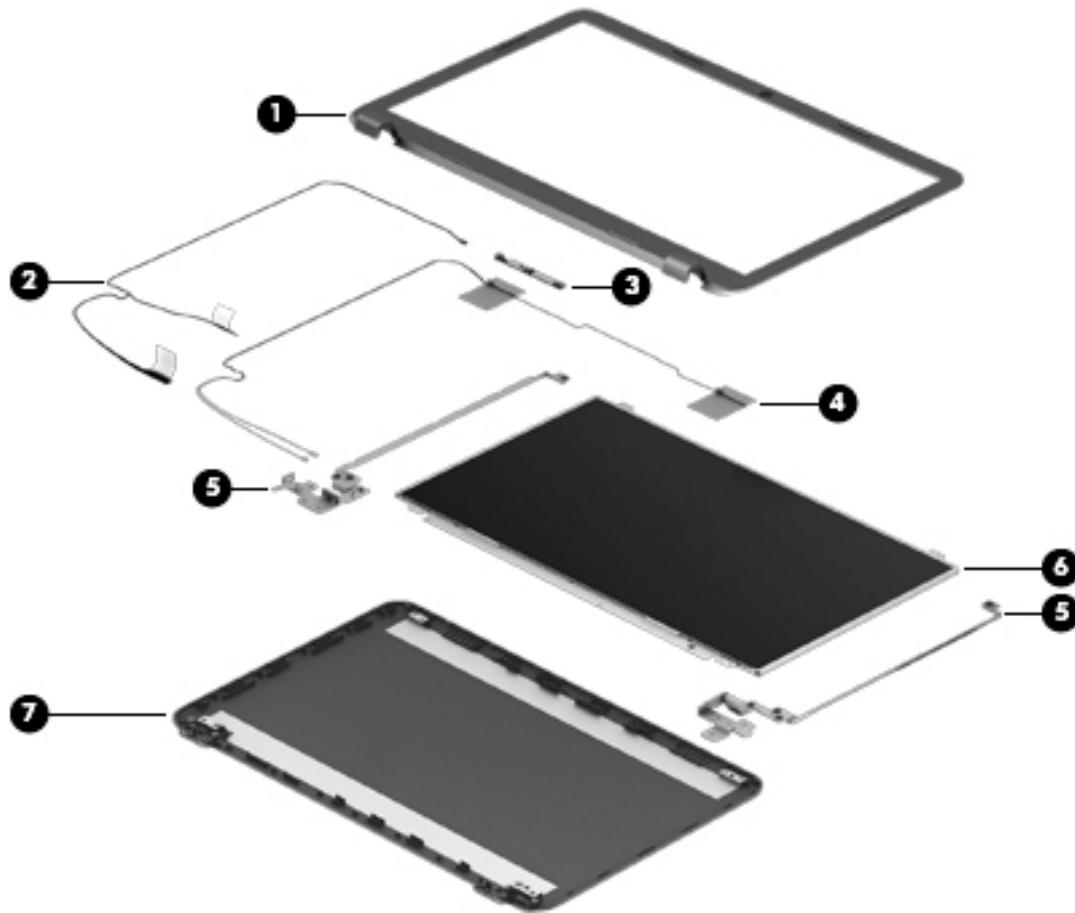
Item	Component	Spare part number
	Sparkling black HP 15 models	768276-001
	Red HP 15 models	760958-001
	White HP 15 models	760959-001
	Blue HP 15 models	760960-001
	Silver HP 15 models	760961-001
	Gray Compaq 15 models	749640-001
(4)	Power button board (includes cable)	749650-001
(5)	Touchpad button board (includes bracket)	749651-001
(6)	WLAN module:	
	Atheros AR9485 802.11b/g/n 1x1 WiFi Adapter	675794-005
	Realtek RT8723BE 802.11bgn 1x1 Wi-Fi and Bluetooth 4.0 combination adapter	753077-005
	Atheros AR9565 802.11bgn 1x1 WiFi + BT4.0 combo Adapter	733476-005
	Realtek RTL8188EE 802.11bgn Wi-Fi Adapter	709848-005
	Broadcom BCM43142 802.11 bgn 1x1 Wi-Fi + BT4.0 HMC Combo Adapter	753076-005
(7)	USB board (includes cable)	749649-001
(8)	System board (includes replacement thermal materials):	
	All system boards use the following part numbers:	
	xxxxxx-001: Windows 7 or non-Windows operating systems	
	xxxxxx-501: Windows 8.1 Standard	
	xxxxxx-601: Windows 8.1 Professional or Windows 10	
	For use in HP 15 and Compaq 15 models with a touch screen:	
	<ul style="list-style-type: none"> • AMD A8-6410 processor, UMA graphics, and 2 memory slots 	782949-xxx
	<ul style="list-style-type: none"> • AMD A8-6410 processor and UMA graphics 	764261-xxx
	<ul style="list-style-type: none"> • AMD A6-6310 processor and UMA graphics 	764263-xxx
	<ul style="list-style-type: none"> • AMD A4-6210 processor and UMA graphics 	764265-xxx
	<ul style="list-style-type: none"> • AMD A6-5200 processor and UMA graphics 	762735-xxx
	<ul style="list-style-type: none"> • AMD A4-5000 processor and UMA graphics 	762734-xxx
	For use in HP 15 and Compaq 15 models without a touch screen:	
	<ul style="list-style-type: none"> • AMD A8-6410 processor and UMA graphics 	764260-xxx
	<ul style="list-style-type: none"> • AMD A8-6410 processor, UMA graphics, and 2 memory slots 	782948-xxx
	<ul style="list-style-type: none"> • AMD A8-6410 processor and 2 GB of discrete graphics 	764269-xxx
	<ul style="list-style-type: none"> • AMD A6-6310 processor and UMA graphics 	764262-xxx
	<ul style="list-style-type: none"> • AMD A4-6210 processor and 2 GB of discrete graphics 	764268-xxx
	<ul style="list-style-type: none"> • AMD A4-6210 processor and UMA graphics 	764264-xxx

Item	Component	Spare part number
	• AMD E2-6110 processor and UMA graphics	764266-xxx
	• AMD E1-6010 processor and UMA graphics	764267-xxx
	• AMD A6-5200 processor and UMA graphics	760149-xxx
	• AMD A4-5000 processor in models with 2 GB of discrete graphics	760155-xxx
	• AMD A4-5000 processor and UMA graphics	750634-xxx
	• AMD E2-3800 processor and UMA graphics	749659-xxx
	• AMD E1-2100 processor and UMA graphics	750633-xxx
(9)	Heat sink assembly (includes replacement thermal materials):	
	For use in models with an AMD processor, UMA graphics, and 1 memory slot	753895-001
	For use in models with an AMD processor, discrete graphics, and 1 memory slot	762728-001
	For use in models with an AMD processor, discrete graphics, and 2 memory slots	788561-001
	For use in models with an AMD processor, UMA graphics, and 2 memory slots	788562-001
(10)	RTC battery	759981-001
(11)	Memory module (PC3L, 12800, 1600-MHz):	
	8-GB	693374-005
	4 GB	691740-005
	2 GB	691739-005
(12)	Hard drive (SATA; does not include bracket):	
	NOTE: The hard drive bracket is available using spare part number 749648-001.	
	1-TB, 5400-rpm, 2.5-inch for use in HP 15 and Compaq 15 models	778192-005
	750 GB, 5400 rpm hard drive, 2.5 inch for use in HP 15 and Compaq 15 models	778190-005
	500-GB, 5400-rpm, 7-mm for use in HP 15 and Compaq 15 models	778186-005
(13)	Fan	753894-001
(14)	Power connector cable	749647-001
(15)	Speakers (includes left and right speakers and cable)	749653-001
(16)	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
(17)	Base enclosure	
	For use in defeatured HP 15 and Compaq 15 models	749643-001
	For use in full-featured HP 15 and Compaq 15 models	775087-001
(18)	Optical drive (DVD+/-RW Double-Layer SuperMulti)	750636-001

Miscellaneous parts

Component	Spare part number
HP Smart AC adapter:	
65-W non-PFC EM HP Smart AC adapter (for use in the People's Republic of China and India only)	714657-001
AC adapter, 65-W, non-PFC, 4.5 mm	710412-001
45-W non-PFC, non-slim HP Smart AC adapter (for use in all countries and regions except for the People's Republic of China and India)	741727-001
Power cord (3-pin, black, 1.83-m):	
• For use in Australia	490371-011
• 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 Africa	490371-AR1
• 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
Power cord (3-pin, black, 1.00-m):	
• For use in Israel	755530-BB1
Rubber Kit (includes front and rear feet)	749652-001
Screw Kit	749657-001
HP X3000 Red Wireless Mouse	793601-001
USB flash drive, 8 GB	811799-001
Case, sleeve, for use in HP 15 and Compaq 15 models	776506-001

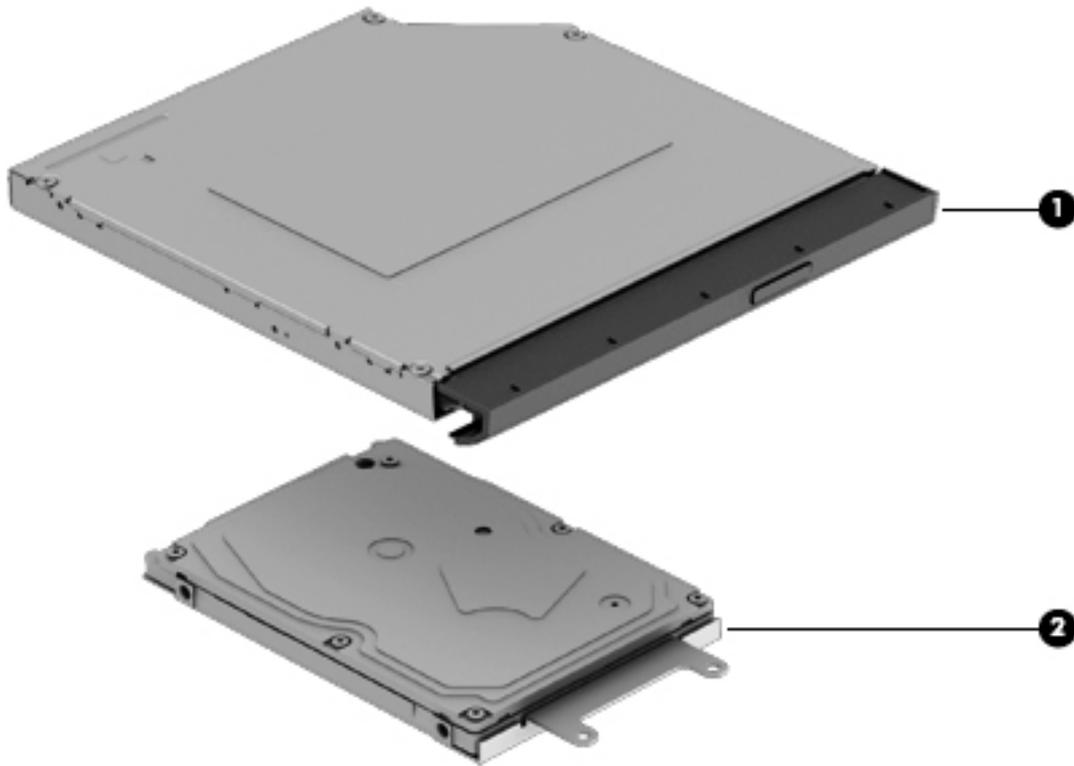
Display assembly subcomponents



Item	Component	Spare part number
(1)	Display bezel (includes Mylar screw covers):	
	For use with HP models	749644-001
	For use with Compaq models	749645-001
(2)	Display cable (includes display panel cable and webcam/microphone cable)	
	Non-touch screen	749646-001
	Touch screen	764888-001
(3)	Webcam/microphone module	
	HD	749654-001
	VGA	781623-001
(4)	Antennas (includes wireless antenna cables and transceivers)	
	For use in models without a touch screen	749638-001
	For use in models with a touch screen	774163-001
(5)	Hinges (left and right)	749655-001
	For use in models without a touch screen	749655-001

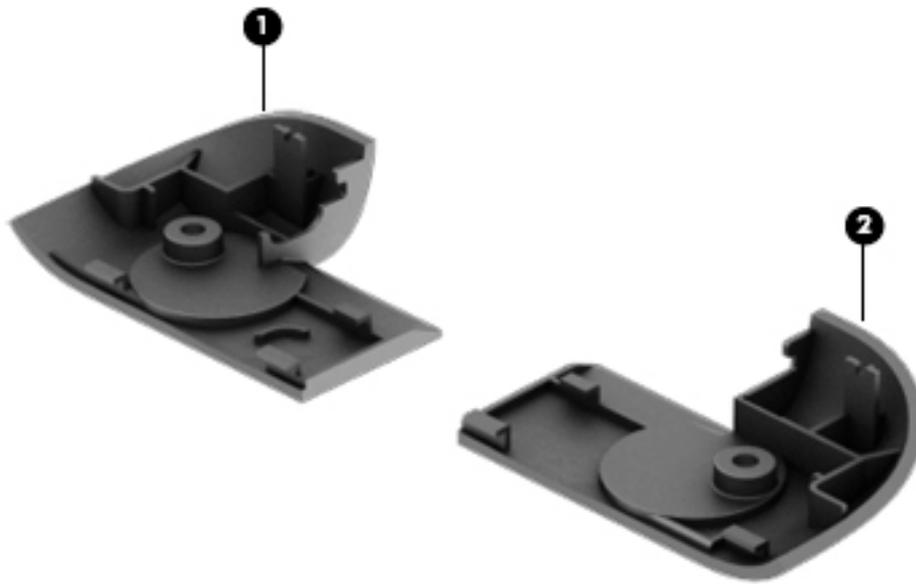
Item	Component	Spare part number
	For use in models with a touch screen	774166-001
(6)	Raw display panel (39.6-cm [15.6-in], HD, WLED, BrightView)	
	For use in HP 15 and Compaq 15 models without a touch screen	750635-001
	For use in HP 15 models with a touch screen	764877-001
	For use in Compaq 15 models with a touch screen	764876-001
(7)	Display enclosure:	
	For use models with a touch screen:	
	• Black licorice/textured HP 15 models	774164-001
	• Black HP 15 models	775086-001
	• Red HP 15 models	775082-001
	• White HP 15 models	775083-001
	• Silver HP 15 models	775085-001
	• Blue HP 15 models	775084-001
	• Purple HP 15 models	779336-001
	• Gray HP 15 models	775081-001
	• Black Compaq 15 models	775080-001
	• Gray Compaq 15 models	775079-001
	For use models without a touch screen:	
	• Black licorice/textured HP 15 models	749641-001
	• Sparkling black HP 15 models	761695-001
	• Gray HP 15 models	760963-001
	• Red HP 15 models	760964-001
	• White HP 15 models	760965-001
	• Blue HP 15 models	760966-001
	• Silver HP 15 models	760967-001
	• Purple HP 15 models	775089-001
	• Black Compaq 15 models	760962-001
	• Gray Compaq 15 models	749642-001

Mass storage devices



Item	Component	Spare part number
(1)	Optical drive (DVD+/-RW Double-Layer SuperMulti)	750636-001
(2)	Hard drive, SATA; does not include bracket):	
	1-TB, 5400-rpm, 2.5-in	778192-005
	750-GB, 5400-rpm, 2.5-in	778190-005
	500-GB, 5400-rpm, 7-mm	778186-005
	Hard drive bracket	749648-001

Plastics Kit



Item	Component	Spare part number
	Plastics Kit , includes:	749656-001
(1)	Left cover	
(2)	Right cover	

Rubber Kit

Component	Spare part number
Rubber Kit , includes:	749652-001
Front feet	
Rear feet	

4 Removal and replacement procedures preliminary 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			
Event	Relative humidity		
	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 $\pm 10\%$ 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

5 Removal and replacement procedures for Customer Self-Repair parts

 **CAUTION:** The Customer Self-Repair program is not available in all locations. Installing a part not supported by the Customer Self-Repair program may void your warranty. Check your warranty to determine if Customer Self-Repair is supported in your location.

 **NOTE:** HP continually improves and changes product parts. For complete and current information on supported parts for your computer, go to <http://partsurfer.hp.com>, select your country or region, and then follow the on-screen instructions.

Component replacement procedures

 **NOTE:** Please read and follow the procedures described here to access and replace Customer Self-Repair parts successfully.

 **NOTE:** Details about your computer, including model, serial number, product key, and length of warranty, are on the service tag at the bottom of your computer. See [Labels on page 15](#) for details.

This chapter provides removal and replacement procedures for Customer Self-Repair parts.

There are as many as 5 screws that must be removed, replaced, or loosened when servicing Customer Self-Repair parts. Make special note of each screw 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

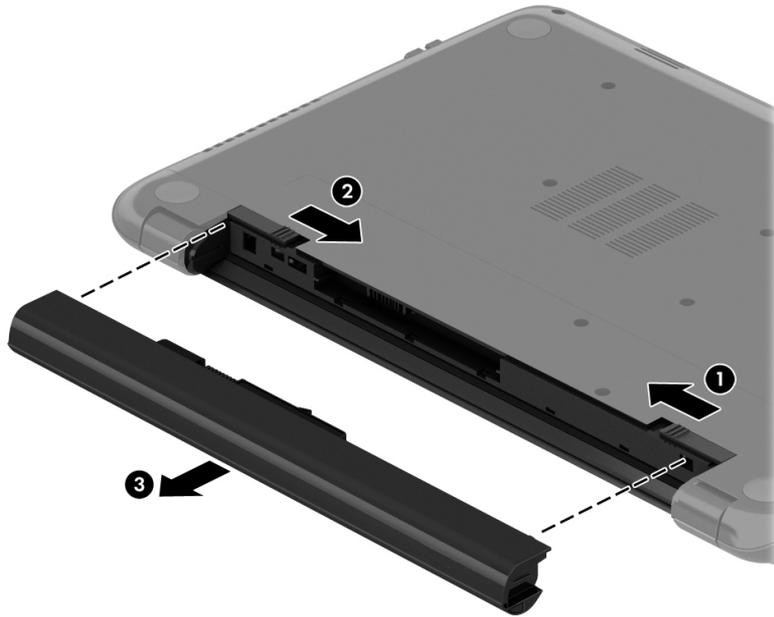
Before disassembling the computer, follow these steps:

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. Position 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)**.



Optical drive

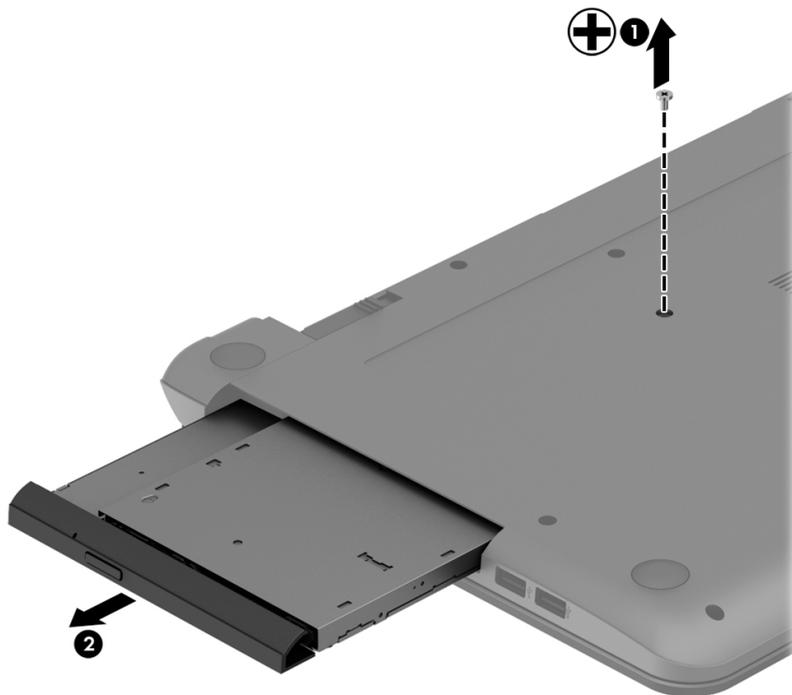
Description	Spare part number
DVD+/-RW Double-Layer SuperMulti Drive	750636-001

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 31](#)).

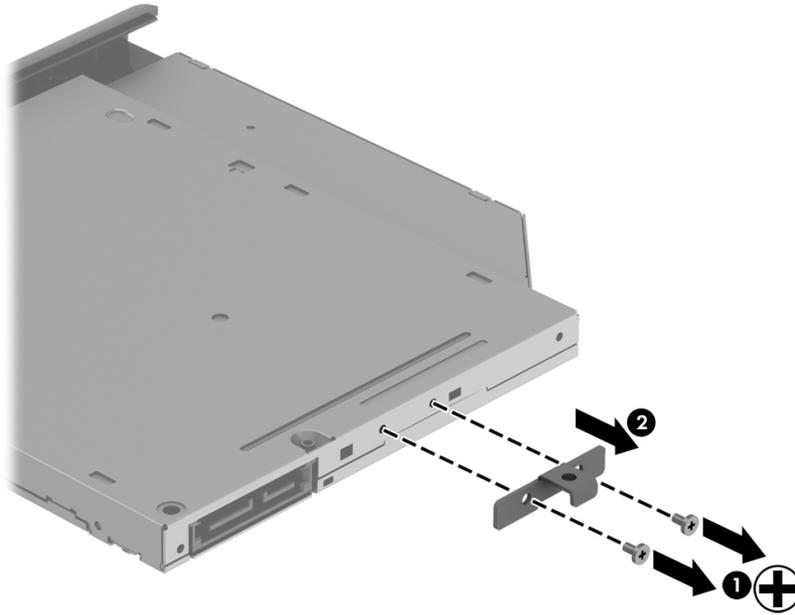
To remove the optical drive:

1. Remove the Phillips PM2.5×5.0 screw **(1)** that secures the optical drive to the computer.
2. Remove the optical drive **(2)** by sliding it out of the optical drive bay.



3. 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.
4. Remove the two Phillips PM2.0×3.0 screws **(1)** that secure the bracket to the optical drive.

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



Reverse this procedure to reassemble and install the optical drive.

Keyboard

Description	Spare part number
Keyboard for use in the United States	749658-001
Keyboard for use in India	749658-002
Keyboard for use in the United Kingdom	749658-031
Keyboard for use in Germany	749658-041
Keyboard for use in France	749658-051
Keyboard for use in Italy	749658-061
Keyboard for use in Spain	749658-071
Keyboard for use in Portugal	749658-131
Keyboard for use in Turkey	749658-141
Keyboard for use in Greece	749658-151
Keyboard for use in Latin America	749658-161
Keyboard for use in Saudi Arabia	749658-171
Keyboard for use in Hungary	749658-211
Keyboard for use in Russia	749658-251
Keyboard for use in Bulgaria	749658-261
Keyboard for use in Romania	749658-271
Keyboard for use in Thailand	749658-281
Keyboard for use in Japan	749658-291
Keyboard for use in Belgium	749658-A41
Keyboard for use in Taiwan	749658-AB1
Keyboard for use in South Korea	749658-AD1
Keyboard for use in the Netherlands	749658-B31
Keyboard for use in Slovenia	749658-BA1
Keyboard for use in Israel	749658-BB1
Keyboard for use in Switzerland	749658-BG1
Keyboard for use in French Canada	749658-DB1
Keyboard for use in Denmark, Finland, and Norway	749658-DH1
Keyboard for use in the Czech Republic and Slovakia	749658-FL1

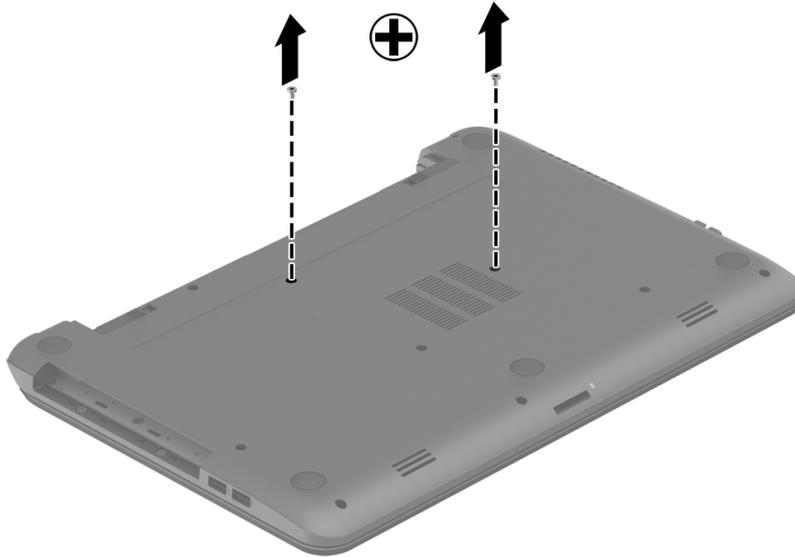
Before removing the keyboard, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 31](#)).

To remove the keyboard:

1. Position the computer upside down with the front toward you.
2. Remove the two Phillips PM2.5×5.0 screws that secure the keyboard to the computer.



3. Position the computer upright with the front toward you.
4. Lift to rotate up the top of the keyboard **(1)**, and then lift the keyboard **(2)** to disengage it from the computer.



5. Rotate the keyboard over onto the palm rest **(1)**, and then lift the ZIF connector **(2)** and disconnect the keyboard cable from the system board **(3)**.



Reverse this procedure to install the keyboard.

6 Removal and replacement procedures for Authorized Service Provider parts

 **CAUTION:** Components described in this chapter should only be accessed by an authorized service provider. Accessing these parts can damage the computer or void the warranty.

 **NOTE:** HP continually improves and changes product parts. For complete and current information on supported parts for your computer, go to <http://partsurfer.hp.com>, select your country or region, and then follow the on-screen instructions.

Component replacement procedures

 **NOTE:** Details about your computer, including model, serial number, product key, and length of warranty, are on the service tag at the bottom of your computer. See [Labels on page 15](#) for details.

This chapter provides removal and replacement procedures for Authorized Service Provider only parts.

There are as many as 56 screws that must be removed, replaced, or loosened when servicing Authorized Service Provider only parts. Make special note of each screw size and location during removal and replacement.

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 66](#) for more information about removing the display assembly in its entirety.

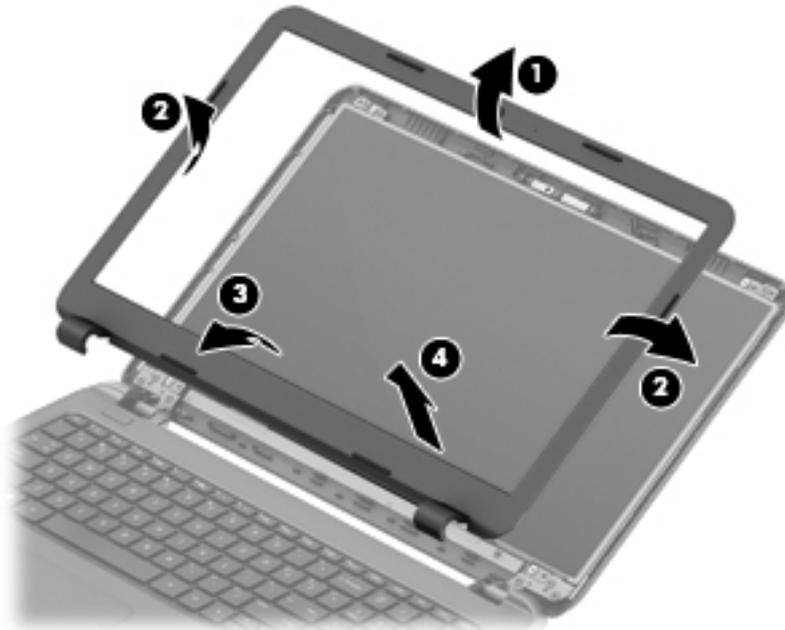
Description	Spare part number
Raw display panel	
For use in HP 15 and Compaq 15 models without a touch screen	750635-001
For use in Compaq 15 models with a touch screen; includes bezel	764876-001
For use in HP 15 models with a touch screen; includes bezel	764877-001
Display bezel (non-touch models)	
For use with HP models	749644-001
For use with Compaq models	749645-001
Webcam/microphone module	
HD	749654-001
VGA	781623-001

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 31](#)).

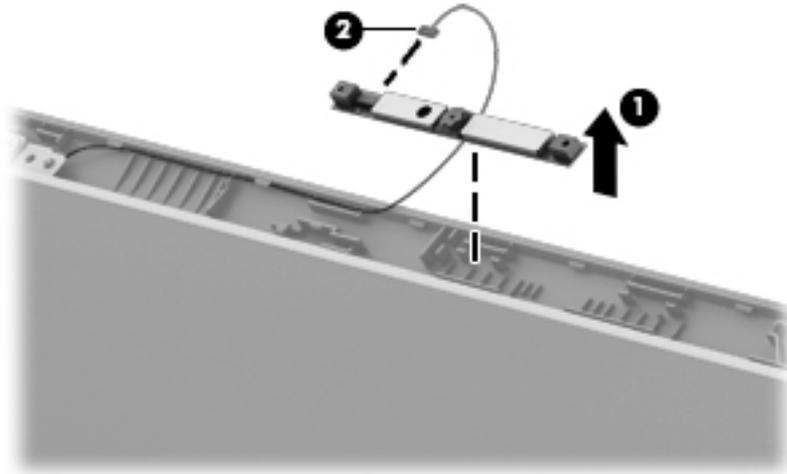
To remove the display bezel, webcam/microphone module, and raw display panel:

1. Position the computer upright with the front toward you, and then open it.
2. 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.
3. Remove the display bezel **(4)**.



4. To remove the webcam/microphone module:
 - a. Position the display assembly with the top edge toward you.
 - b. Lift to disengage the adhesive that secures the webcam/microphone module to the display, and then remove the module enough to access the cable connection on the module **(1)**.

- c. Disconnect the cable **(2)** from the module.



- 5. To remove the display panel:

- a. Remove the four Phillips PM2.5×3.5 screws that secure the display panel to the enclosure.



- b. Rotate the display panel onto the keyboard to gain access to the display cable connection on the back of the panel **(1)**.

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



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

Top cover



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

Description	Spare part number
Top cover for use in black licorice/textured HP 15 models (includes touchpad)	749639-001
Top cover for use in purple HP 15 models (includes touchpad)	775088-001
Top cover for use in sparkling black HP 15 models (includes touchpad)	768276-001
Top cover for use in red HP 15 models (includes touchpad)	760958-001
Top cover for use in white HP 15 models (includes touchpad)	760959-001
Top cover for use in blue HP 15 models (includes touchpad)	760960-001
Top cover for use in silver HP 15 models (includes touchpad)	760961-001
Top cover for use in gray Compaq 15 models (includes touchpad)	749640-001

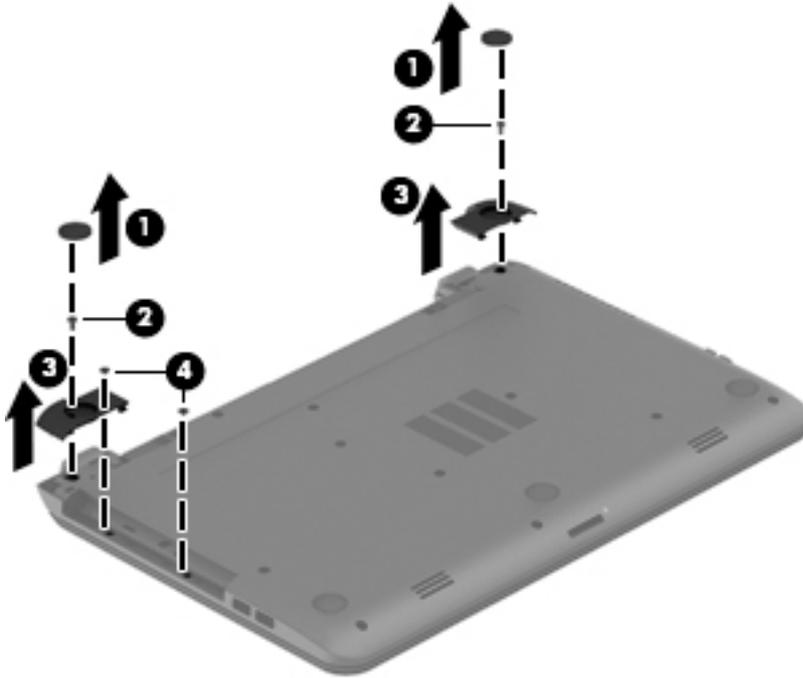
Before removing the top cover, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 31](#)).
5. Remove the keyboard (see [Keyboard on page 35](#)).

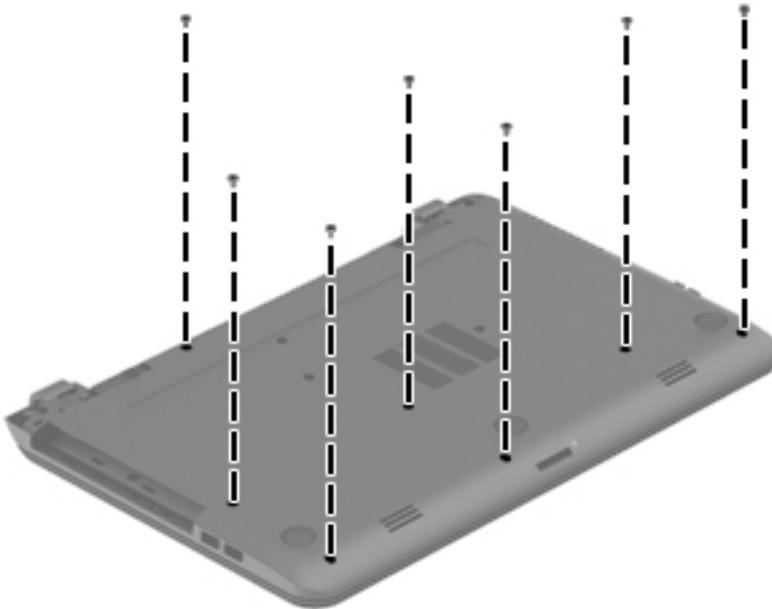
To remove the top cover:

1. Position the computer upside down with the front toward you.
2. Remove the rear covers by prying off the two rubber feet **(1)**, removing the two Phillips PM2.5×8.0 screws **(2)** that secure the rear covers to the computer, and then lifting the rear covers off the computer **(3)**.

3. Remove the two Phillips broadhead PM2.5×2.0 screws from the optical drive bay **(4)**.

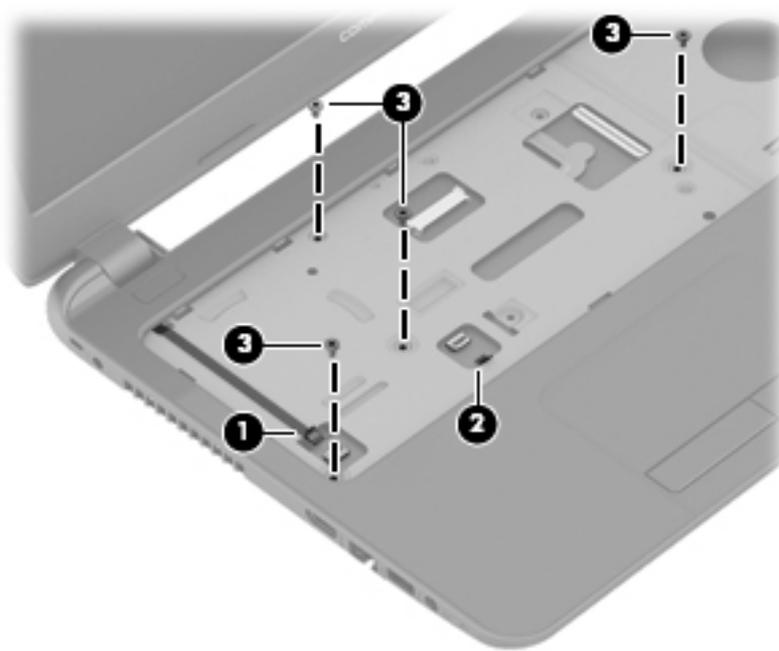


4. Remove the seven Phillips PM2.5×5.0 screws that secure the top cover to the computer.

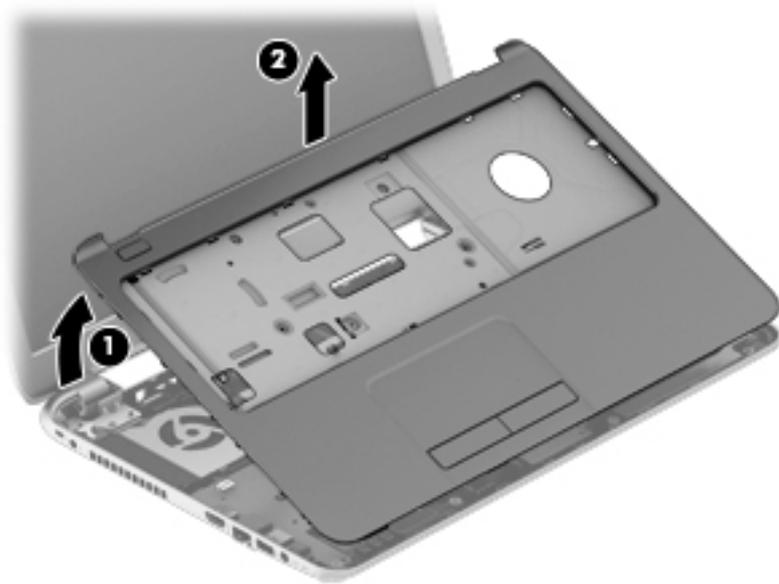


5. Position the computer upright with the front toward you.
6. Disconnect the power button board cable **(1)** and the touchpad button board cable **(2)**.

7. Remove the four Phillips PM2.5×5.0 screws **(3)** that secure the top cover to the computer.



8. Lift the rear edge of the top cover **(1)** until it disengage from the base enclosure.
9. Remove the top cover **(2)**.



Reverse this procedure to install the top cover.

Power button board

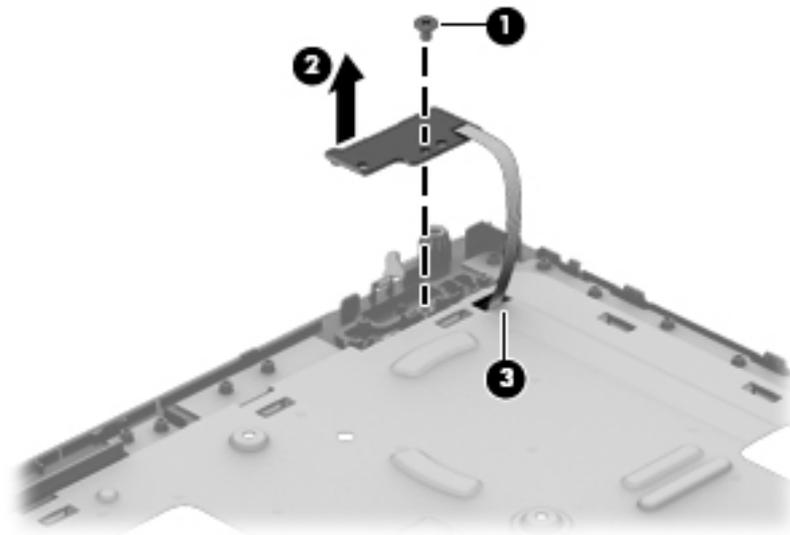
Description	Spare part number
Power button board (includes cable)	749650-001

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 31](#)).
5. Remove the keyboard (see [Keyboard on page 35](#)).
6. Remove the top cover (see [Top cover on page 43](#)).

To remove the power button board:

1. Position the top cover upside down.
2. Remove the Phillips PM2.0×3.0 screw **(1)** that secures the power button board to the top cover.
3. Lift the board and cable up and remove from the top cover **(2)** while pulling cable through the hole in top cover **(3)**.



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

TouchPad button board

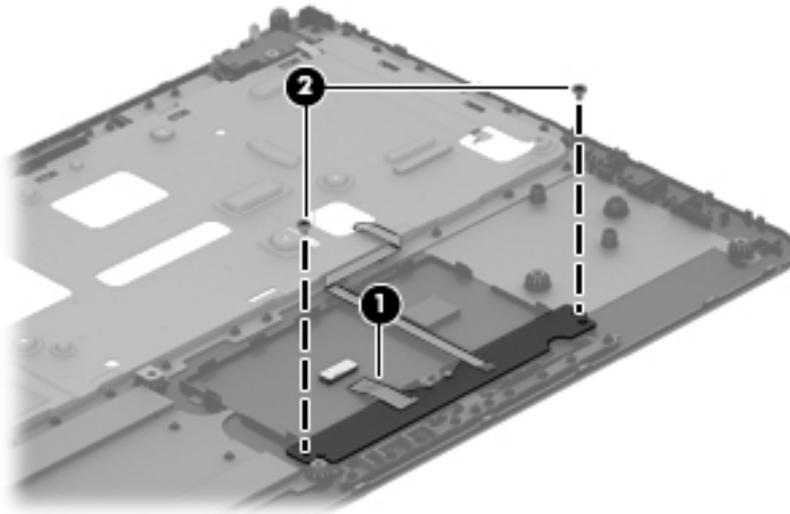
Description	Spare part number
TouchPad button board (includes bracket)	749651-001

Before removing the TouchPad button board, follow these steps:

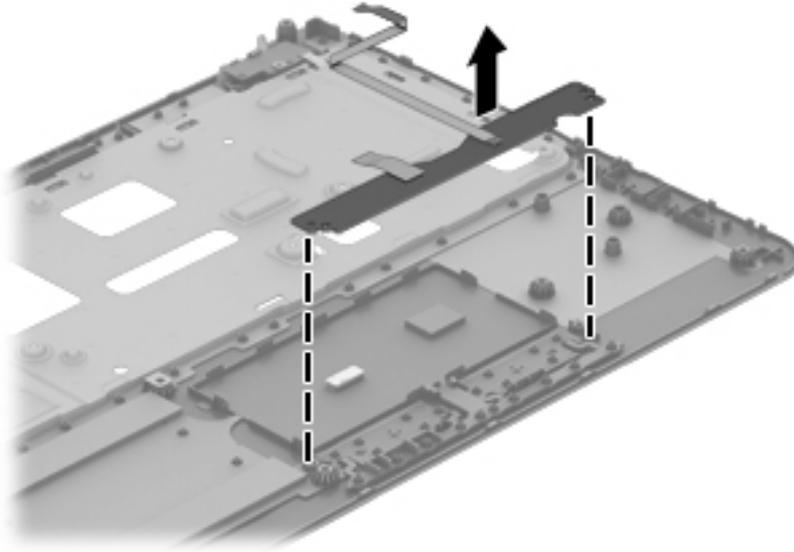
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 31](#)).
5. Remove the keyboard (see [Keyboard on page 35](#)).
6. Remove the top cover (see [Top cover on page 43](#)).

To remove the TouchPad button board:

1. Position the top cover upside down with the front toward you.
2. Disconnect the touchpad board cable from the touchpad **(1)**.
3. Remove the two Phillips PM2.0×3.5 screws **(2)** that secure the TouchPad button board to the top cover.



4. Remove the TouchPad button board and cable.



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

Hard drive



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

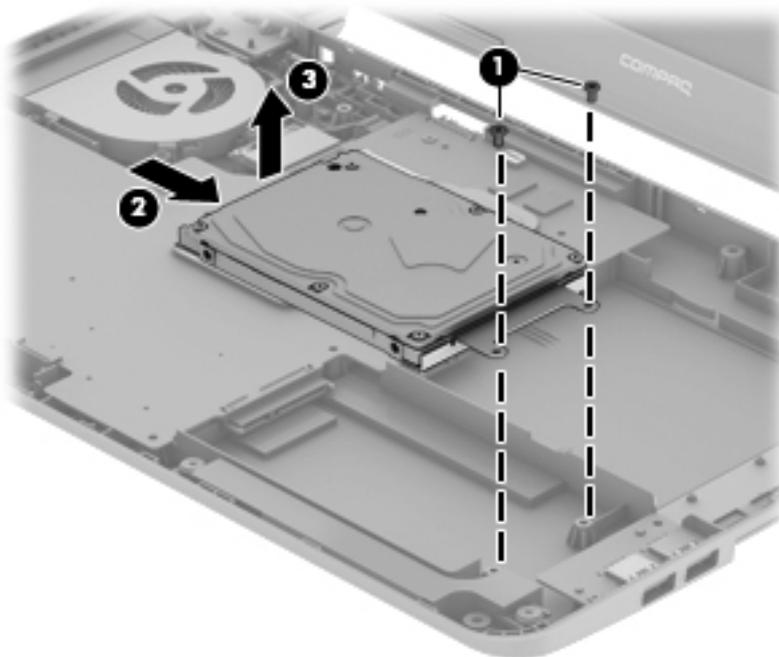
Description	Spare part number
1-TB, 5400-rpm, 2.5-in	778192-005
750 GB, 5400 rpm, 2.5 in	778190-005
500-GB, 5400-rpm, 7-mm	778186-005
Hard drive bracket	749648-001

Before removing the hard drive, follow these steps:

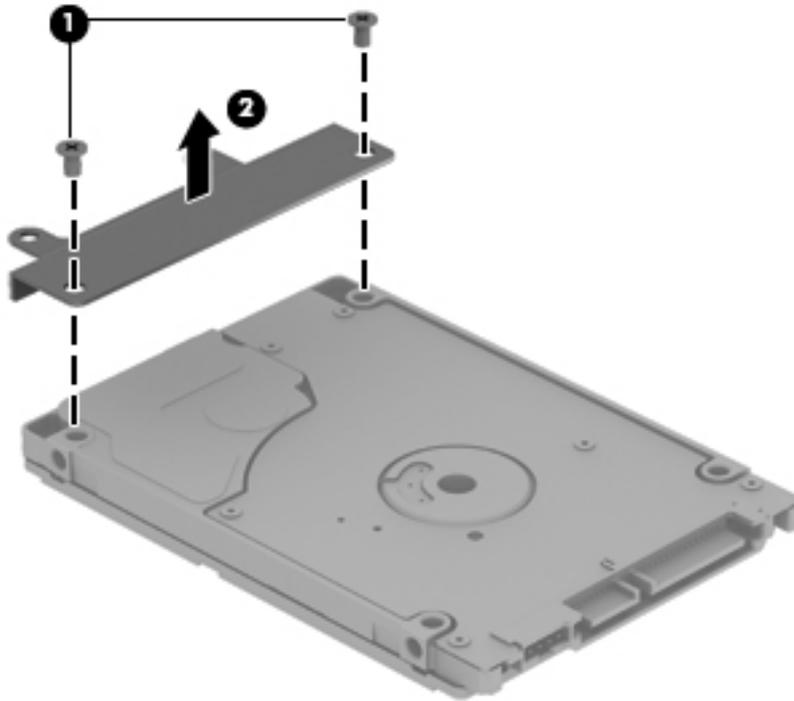
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 31](#)).
5. Remove the keyboard (see [Keyboard on page 35](#)).
6. Remove the top cover (see [Top cover on page 43](#)).

To remove the hard drive:

1. Remove the two Phillips PM2.5×5.0 screws **(1)** that secure the hard drive to the computer.
2. Slide the hard drive to disengage it from the connector **(2)**.
3. Lift the hard drive from the computer **(3)**.



4. To remove the hard drive bracket, remove the two Phillips PM3.0×4.0 screws **(1)** that secure the bracket to the hard drive.
5. Remove the hard drive bracket from the hard drive **(2)**.



Reverse this procedure to reassemble and install the hard drive.

WLAN module

Description	Spare part number
Atheros AR9485 802.11b/g/n 1x1 WiFi Adapter	675794-005
Realtek RT8723BE 802.11bgn 1x1 Wi-Fi and Bluetooth 4.0 combination adapter	753077-005
Atheros AR9565 802.11bgn 1x1 WiFi + BT4.0 combo Adapter	733476-005
Realtek RTL8188EE 802.11bgn Wi-Fi Adapter	709848-005
Broadcom BCM43142 802.11 bgn 1x1 Wi-Fi + BT4.0 HMC Combo Adapter	753076-005

 **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 31](#)).
5. Remove the keyboard (see [Keyboard on page 35](#)).
6. Remove the top cover (see [Top cover on page 43](#)).

To remove the WLAN module:

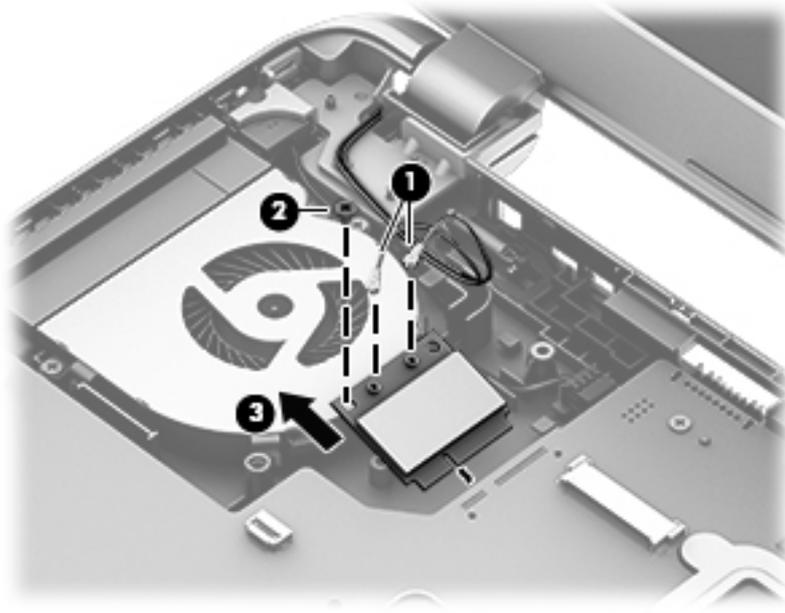
1. Disconnect the WLAN antenna cables **(1)** from the terminals on the WLAN module.



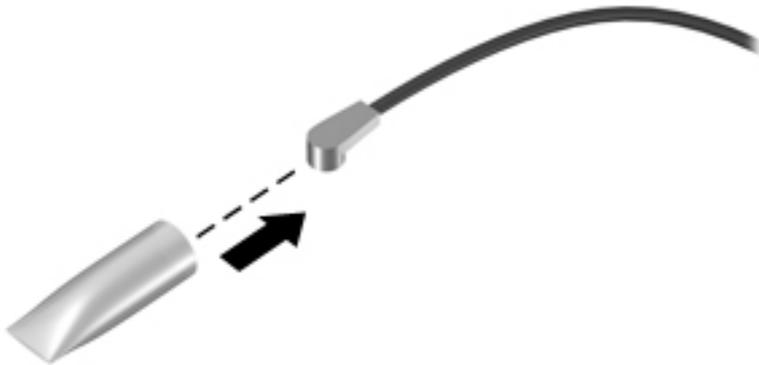
NOTE: The #1 WLAN antenna cable is connected to the WLAN module Main terminal. The #2 WLAN antenna cable is connected to the WLAN module Aux terminal.

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.

Fan



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

Description	Spare part number
Fan	753894-001



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.

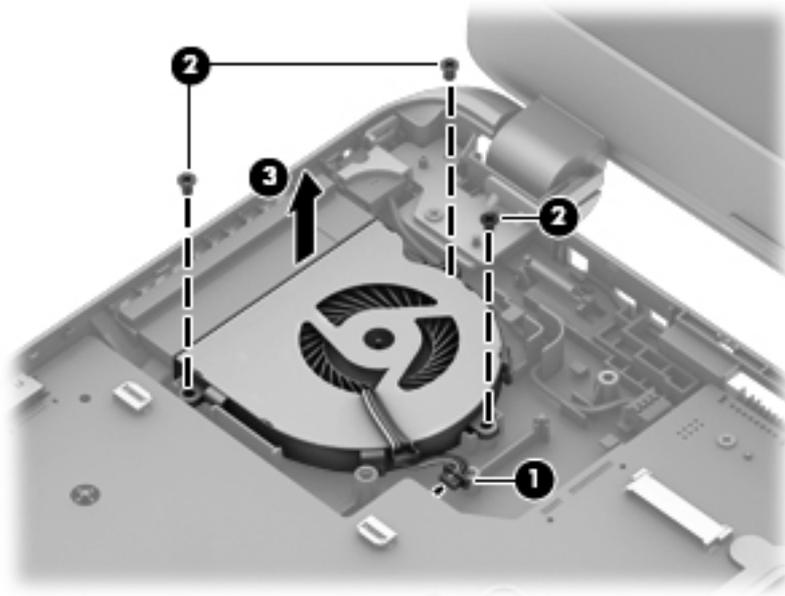
Before removing the fan/heat sink assembly, follow these steps:

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 31](#)).
5. Remove the keyboard (see [Keyboard on page 35](#)).
6. Remove the top cover (see [Top cover on page 43](#)).

To remove the fan:

1. Position the computer upright and open it.
2. Disconnect the fan cable **(1)** from the system board.
3. Remove the three Phillips PM2.5×5.0 screws **(2)** that secure the fan to the computer.

4. Remove the fan from the computer (3).



Reverse this procedure to install the fan.

Power connector cable

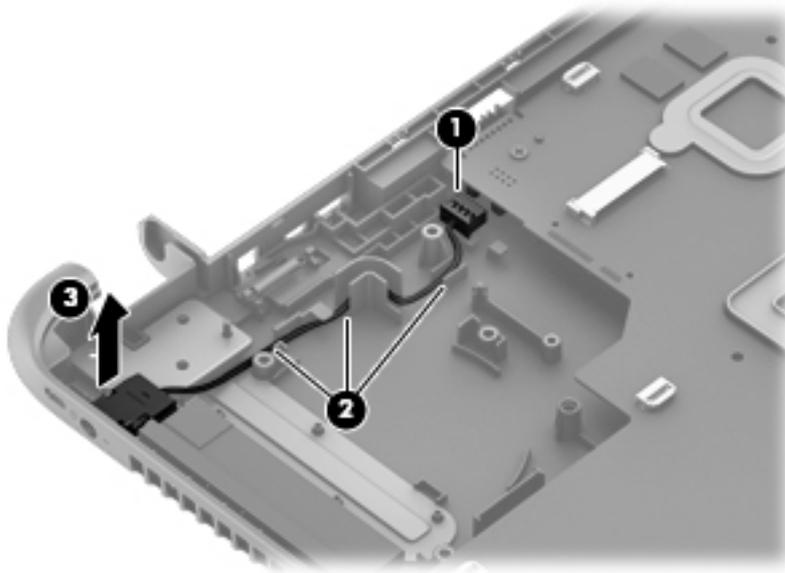
Description	Spare part number
Power connector cable	749647-001

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 31](#)), and then remove the following components:
 - Keyboard (see [Keyboard on page 35](#))
 - Top cover (see [Top cover on page 43](#))
 - Display (see [Display assembly on page 66](#))

To remove the power connector cable:

1. Position the computer upright.
2. Disconnect the power connector cable **(1)** from the system board.
3. Release the power connector cable from the clips **(2)** built into the chassis.
4. Remove the power connector cable **(3)**.



Reverse this procedure to install the power connector cable.

System board



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

Description	Spare part number
System board (includes replacement thermal materials):	
All system boards use the following part numbers:	
xxxxxx-001: Windows 7 or non-Windows operating systems	
xxxxxx-501: Windows 8.1 Standard	
xxxxxx-601: Windows 8.1 Professional or Windows 10	
For use in touch screen models:	
• AMD A8-6410 processor and UMA graphics	764261-xxx
• AMD A8-6410 processor, UMA graphics, and 2 DIMM slots	782949-xxx
• AMD A6-6310 processor and UMA graphics	764263-xxx
• AMD A6-6210 processor and UMA graphics	764265-xxx
• AMD A6-5200 processor and UMA graphics in models without Windows 8.1	762735-xxx
• AMD A4-5000 processor and UMA graphics	762734-xxx
For use in non-touch screen models:	
• AMD A8-6410 processor and UMA graphics	764260-xxx
• AMD A8-6410 processor, UMA graphics, and 2 DIMM slots	782948-xxx
• AMD A8-6410 processor and 2 GB of discrete graphics	764269-xxx
• AMD A6-6310 processor and UMA graphics	764262-xxx
• AMD A6-6210 processor and UMA graphics	764264-xxx
• AMD A4-6210 processor and 1 GB of discrete graphics	764268-xxx
• AMD E2-6110 processor and UMA graphics	764266-xxx
• AMD E1-6010 processor and UMA graphics	764267-xxx
• AMD A6-5200 processor and UMA graphics	760149-xxx
• AMD A4-5000 processor in models with 2 GB of discrete graphics	760155-xxx
• AMD A4-5000 processor and UMA graphics	750634-xxx
• AMD E1-2100 processor and UMA graphics	750633-xxx
• AMD E2-3800 processor and UMA graphics	749659-xxx

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 31](#)).
5. Remove the following components:
 - Keyboard (see [Keyboard on page 35](#))
 - Top cover (see [Top cover on page 43](#))
 - WLAN module (see [WLAN module on page 51](#))
 - Hard drive (see [Hard drive on page 49](#))

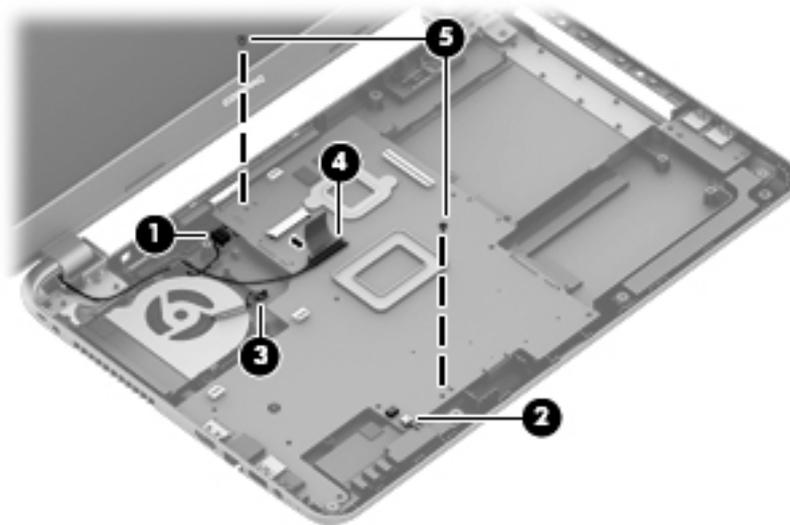


NOTE: When replacing the system board, be sure that the following components are removed from the defective system board and installed on the replacement system board:

- Memory module (see [Memory module on page 65](#))
- Heat sink assembly (see [Heat sink assembly on page 61](#))

To remove the system board:

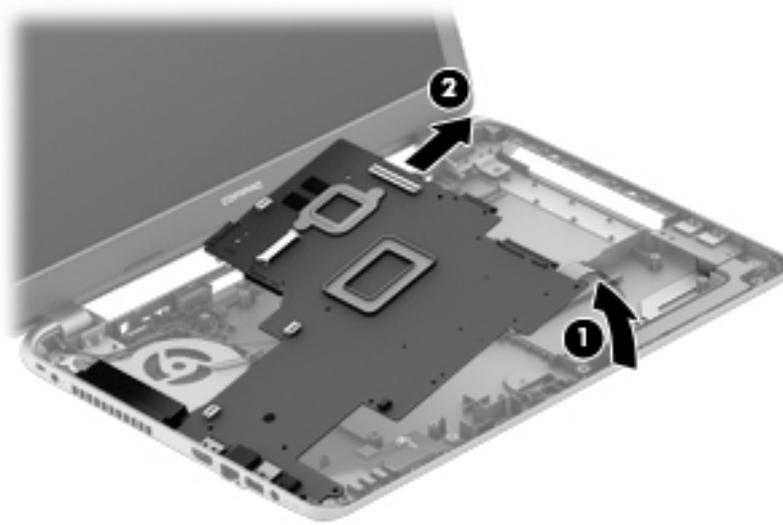
1. Position the computer upright, and then disconnect the following cables from the system board:
 - (1): Power connector cable
 - (2): Speaker cable
 - (3): Fan cable
 - (4): Display cable
2. Remove the two Phillips PM2.5×5.0 screws (5) that secure the system board to the computer.



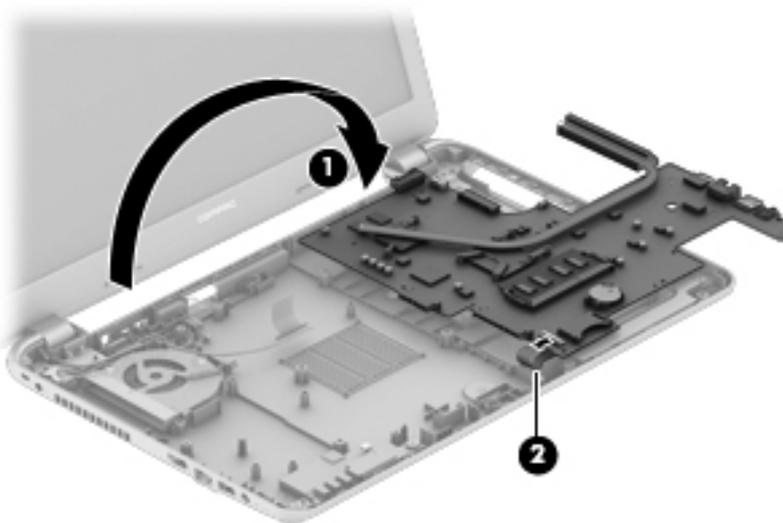
3. Lift the right side of the system board **(1)**, and then pull the board away from the computer enough to disengage the connectors from the side of the base enclosure **(2)**.



NOTE: Be careful not to inadvertently disconnect the speaker cable when lifting the system board.



4. Flip the system board upside down to gain access to the speaker connector **(1)**.
5. Disconnect the USB board cable from the system board **(2)**.



Reverse this procedure to install the system board.

USB board

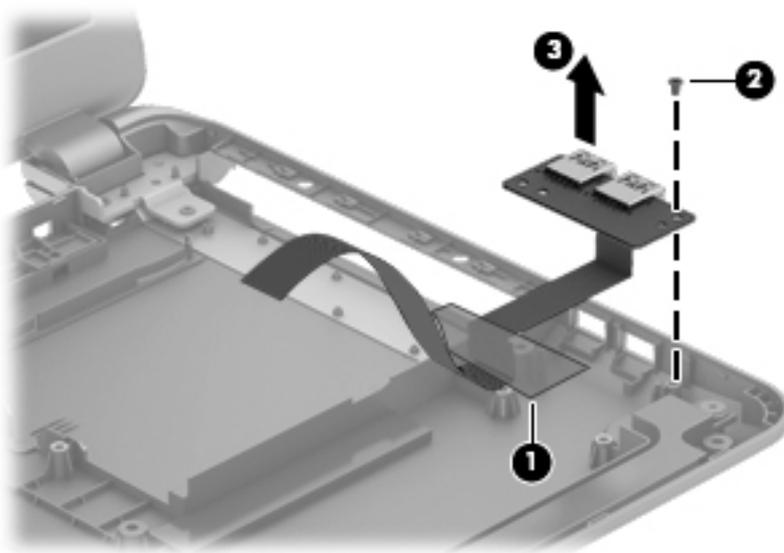
Description	Spare part number
USB board (includes cable)	749649-001

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 31](#)), and then remove the following components:
 - Keyboard (see [Keyboard on page 35](#))
 - Top cover (see [Top cover on page 43](#))
 - WLAN module (see [WLAN module on page 51](#))
 - System board (see [System board on page 56](#))
 - Hard drive (see [Hard drive on page 49](#))

To remove the USB board:

1. Position the computer upright.
2. Remove the tape that secures it to the cable to the base enclosure **(1)**.
3. Remove the Phillips PM2.5×5.0 screw **(2)** that secures the USB board to the base enclosure.
4. Remove the USB board **(3)**.



Reverse this procedure to install the USB board.

Speakers

Description	Spare part number
Speakers (includes left and right speakers and cable)	749653-001

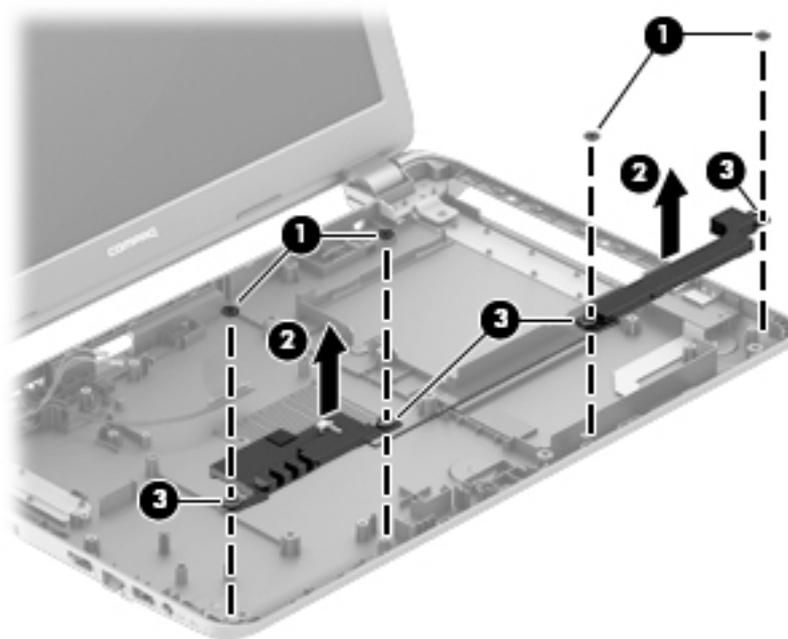
Before removing the speakers, follow these steps:

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 31](#)), and then remove the following components:
 - Keyboard (see [Keyboard on page 35](#))
 - Top cover (see [Top cover on page 43](#))
 - WLAN module (see [WLAN module on page 51](#))
 - Hard drive (see [Hard drive on page 49](#))
 - System board (see [System board on page 56](#))

To remove the speakers:

1. Remove the four Phillips broadhead PM2.0×2.0 screws (1) that secure the speakers to the computer.
2. Lift the speakers from the base enclosure (2).

 **NOTE:** Note the rubber gaskets (3) around each screw. When installing the speakers, make sure the gaskets are installed correctly.



Reverse this procedure to install the speakers.

Heat sink assembly



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

Description	Spare part number
Heat sink for use in models with an AMD processor, UMA graphics, and 1 memory slot	753895-001
Heat sink for use in models with an AMD processor, discrete graphics, and 1 memory slot	762728-001
Heat sink for use in models with an AMD processor, discrete graphics, and 2 memory slots	788561-001
Heat sink for use in models with an AMD processor, UMA graphics, and 2 memory slots	788562-001



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 heat sink assembly, follow these steps:

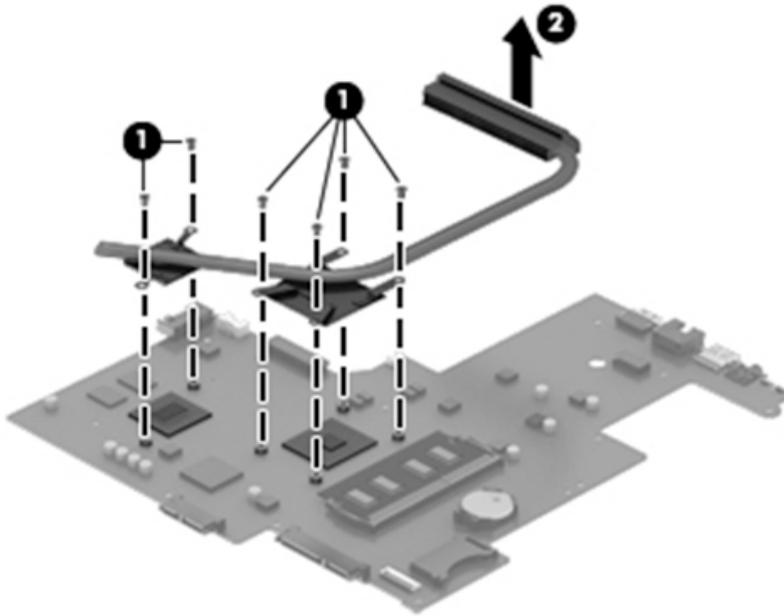
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 31](#)), and then remove the following components:
 - Keyboard (see [Keyboard on page 35](#))
 - Top cover (see [Top cover on page 43](#))
 - WLAN module (see [WLAN module on page 51](#))
 - System board (see [System board on page 56](#))

To remove the heat sink assembly:

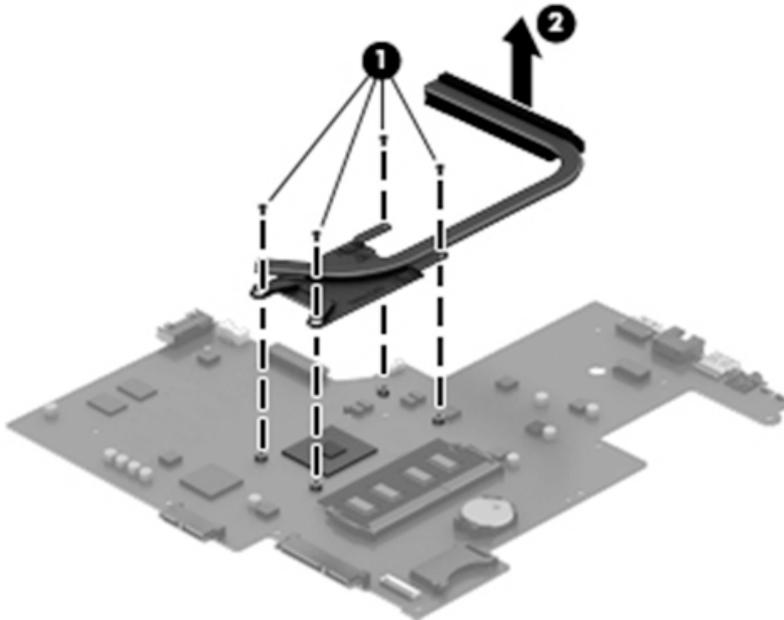
1. Position the system board upside down.
2. Loosen the screws on the heat sink **(1)** that secure the heat sink assembly to the system board.

3. Remove the heat sink assembly (2) from the system board.

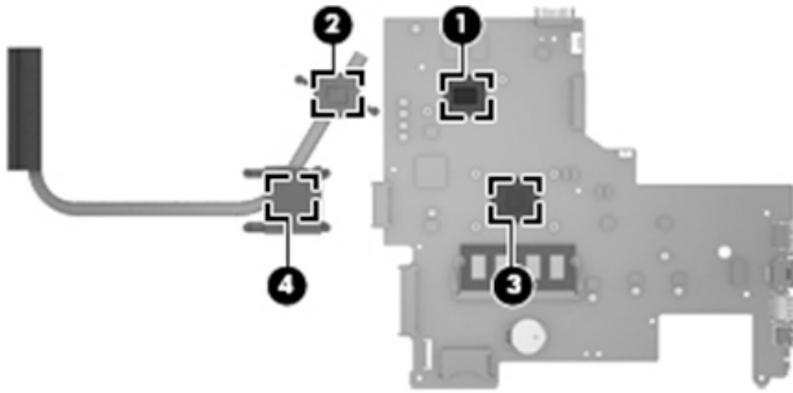
Discrete graphics:



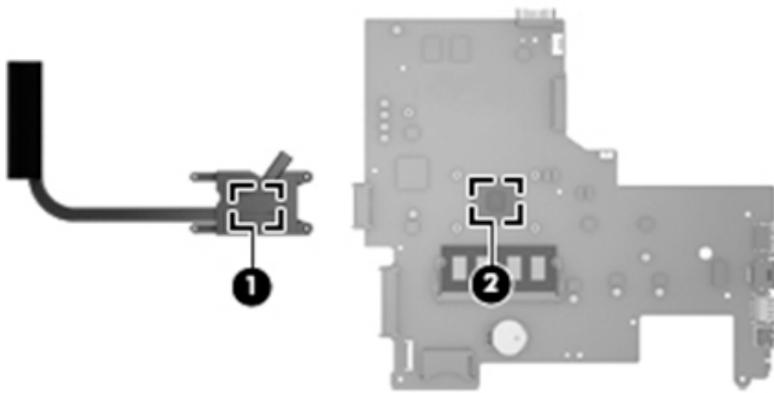
UMA graphics:



- **Discrete graphics:** Thermal paste is used on the processor and associated heat sink area (1)(2), as well as the graphics chip and associated heat sink area (3)(4).



- **UMA graphics:** Thermal paste is used on the heat sink **(1)** and the processor **(2)**.



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

RTC battery

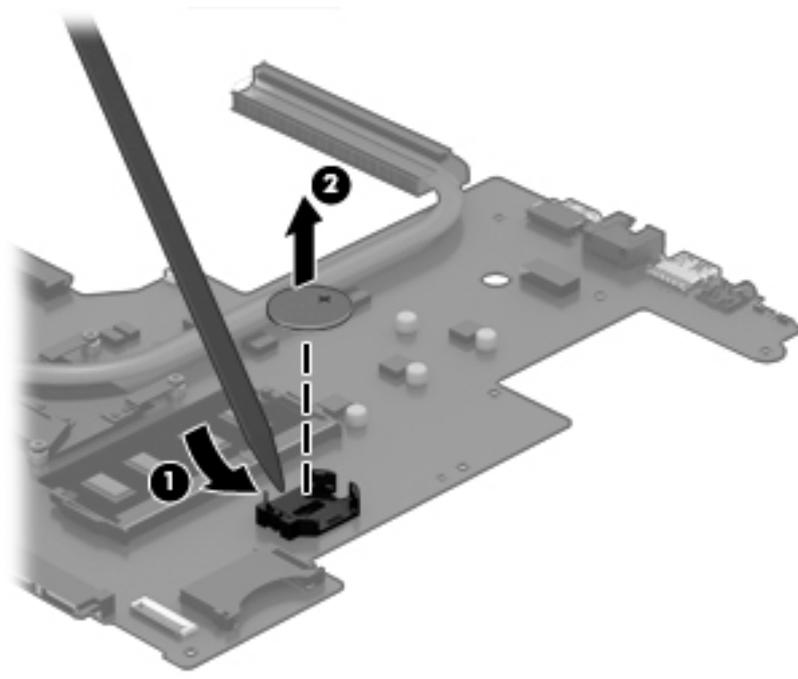
Description	Spare part number
RTC battery	759981-001

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 31](#)), and then remove the following components:
 - Keyboard (see [Keyboard on page 35](#))
 - Top cover (see [Top cover on page 43](#))
 - WLAN module (see [WLAN module on page 51](#))
 - System board (see [System board on page 56](#))

To remove the RTC battery:

1. Position the system board upside down.
2. Using a thin tool or screwdriver, disengage the battery from the socket **(1)**, and then remove the battery **(2)**.



Reverse this procedure to install the RTC battery.

Memory module

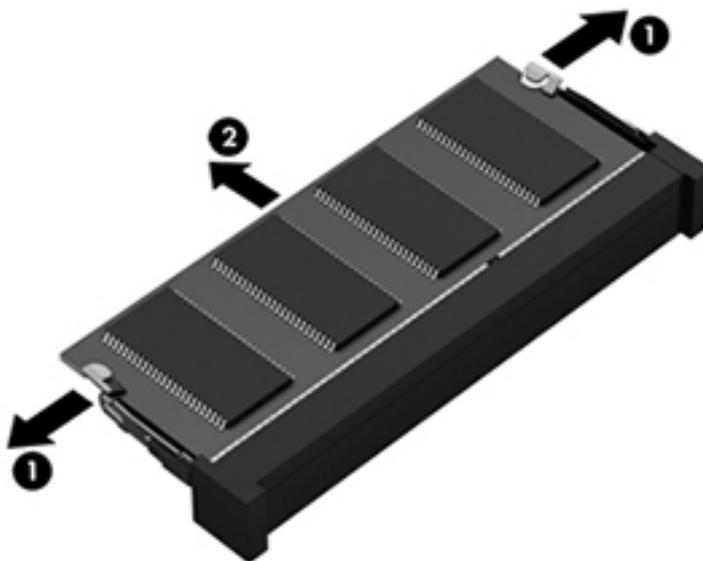
Description	Spare part number
8-GB (PC3L, 12800, 1600-MHz)	693374-005
4-GB (PC3L, 12800, 1600-MHz)	691740-005
2-GB (PC3L, 12800, 1600-MHz)	691739-005

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 31](#)), and then remove the following components:
 - Keyboard (see [Keyboard on page 35](#))
 - Top cover (see [Top cover on page 43](#))
 - WLAN module (see [WLAN module on page 51](#))
 - System board (see [System board on page 56](#))

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.

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 39](#) 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
Raw display panel (39.6-cm [15.6-in], HD, WLED, BrightView)	
For use in HP 15 and Compaq 15 models without a touch screen	750635-001
For use in HP 15 models with a touch screen	764877-001
For use in Compaq 15 models with a touch screen	764876-001
Antennas	
For use in models without a touch screen (includes wireless antenna cables and transceivers)	749638-001
For use in models with a touch screen (includes wireless antenna cables and transceivers)	774163-001
Display bezel	
For use in HP 15 models	749644-001
For use in Compaq 15 models	749645-001
Display cable	
For use in non-touch screen models (includes display panel cable and webcam/microphone cable)	749646-001
For use in touch screen models (includes display panel cable and webcam/microphone cable)	764888-001
Display enclosure, touch screen models	
Black licorice/textured HP 15 models	774164-001
Black HP 15 models	775086-001
Red HP 15 models	775082-001
White HP 15 models	775083-001
Blue HP 15 models	775084-001
Silver HP 15 models	775085-001
Purple HP 15 models	779336-001
Gray HP 15 models	775081-001
Black Compaq 15 models	775080-001
Gray Compaq 15 models	775079-001
Display enclosure, non-touch screen models	
Black licorice/textured HP 15 models	749641-001
Sparkling black HP 15 models	761695-001
Purple HP 15 models	775089-001

Description	Spare part number
Gray Compaq 15 models	749642-001
Black Compaq 15 models	760962-001
Gray HP 15 models	760963-001
Red HP 15 models	760964-001
White HP 15 models	760965-001
Blue HP 15 models	760966-001
Silver HP 15 models	760967-001
Hinges (left and right)	
Non-touch screen models	749655-001
Touch screen models	774166-001
Webcam/microphone module	
HD	749654-001
VGA	781623-001

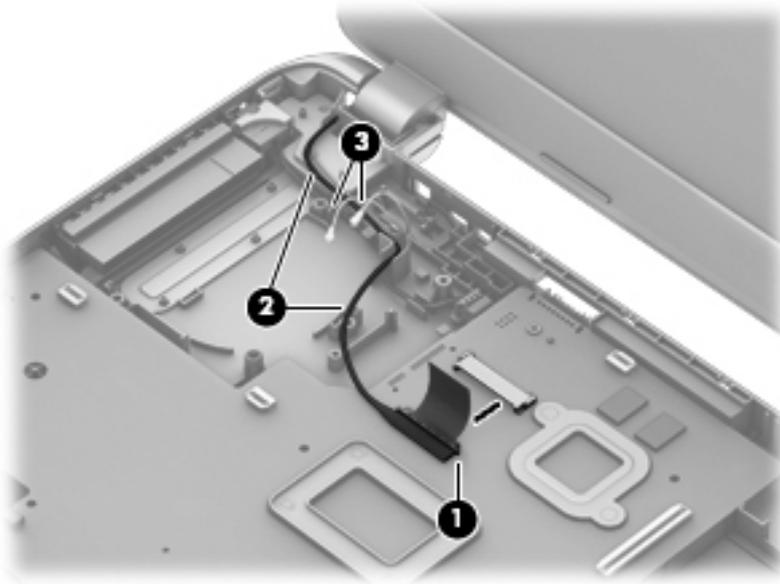
Before removing the display assembly, follow these steps:

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 31](#)).
5. Remove the following components:
 - Keyboard (see [Keyboard on page 35](#))
 - Top cover (see [Top cover on page 43](#))

To remove the display assembly:

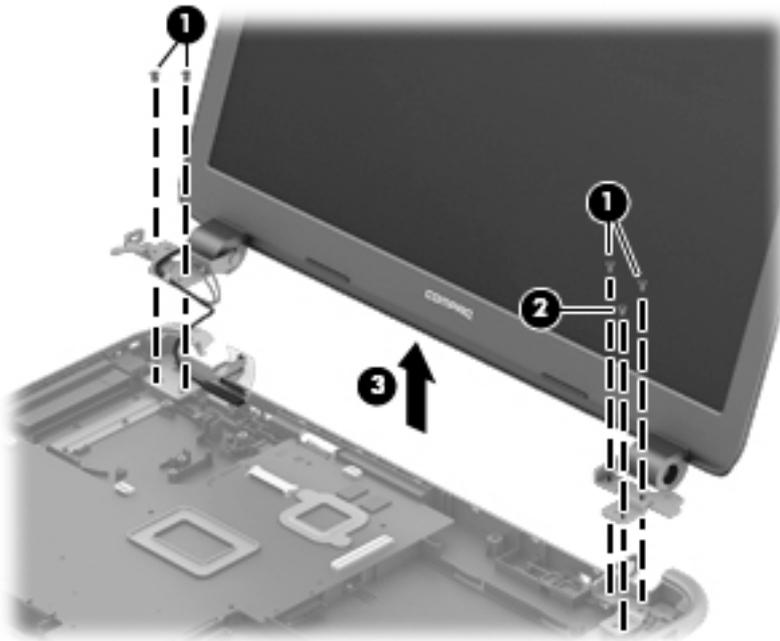
1. Disengage the adhesive and disconnect the display panel cable **(1)** from the system board.
2. Remove the display panel cable from its routing path **(2)**.

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 four Phillips PM2.5×5.0 screws **(1)** (two from each hinge) and one Phillips PM2.5×3.5 screw **(2)** (on the right hinge) that secures the display assembly to the computer.
5. Remove the display assembly **(3)**.



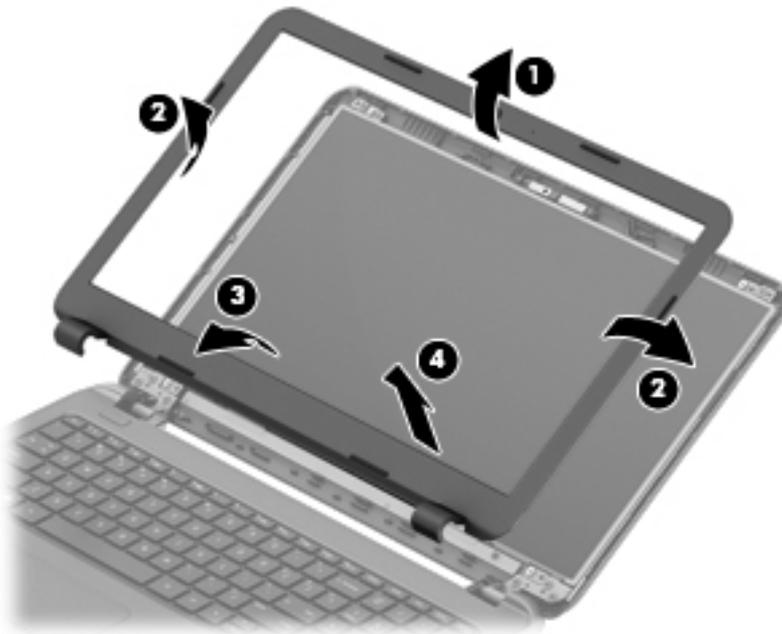
If it is necessary to replace any of the display assembly subcomponents:

1. To remove the display bezel:
 - a. 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.

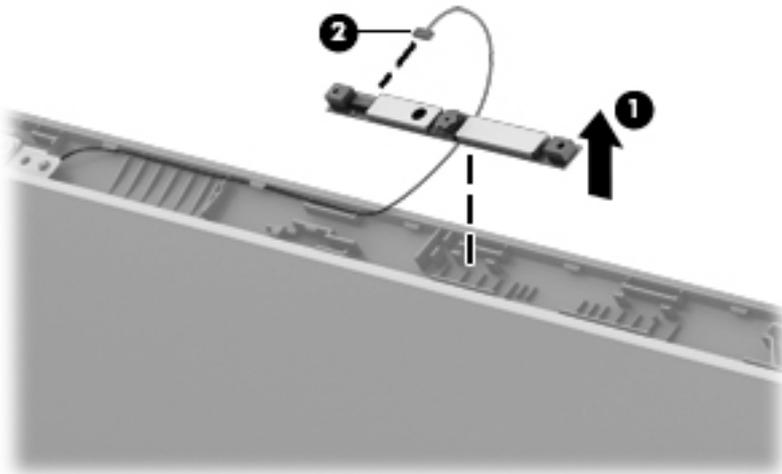
- b. Remove the display bezel (4).



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 four Phillips PM2.5×3.5 screws that secure the display panel to the enclosure.

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



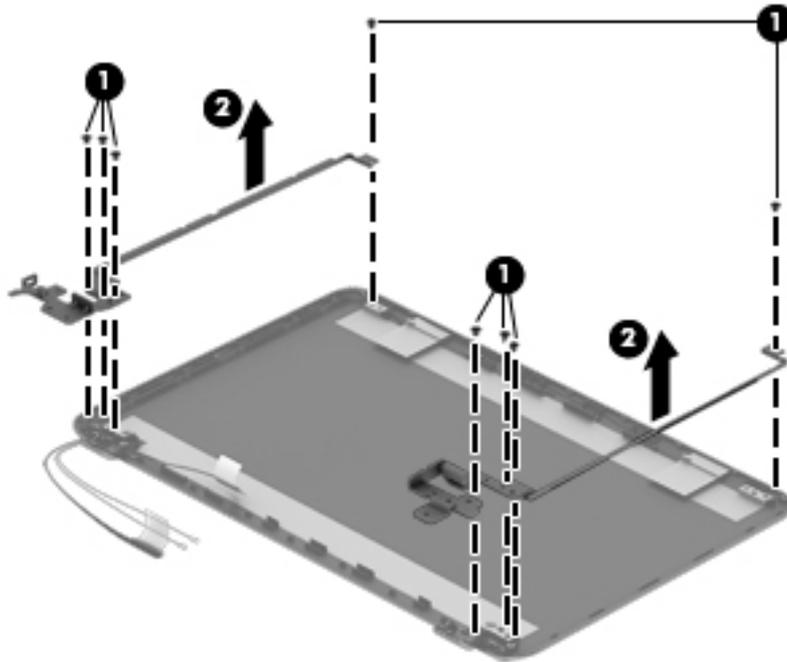
- b. Rotate the display panel onto the keyboard to gain access to the display cable connection on the back of the panel **(1)**.
- c. On the back of the display panel, release the adhesive strip **(2)** that secures the display panel cable to the display panel, and then disconnect the cable **(3)**.

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

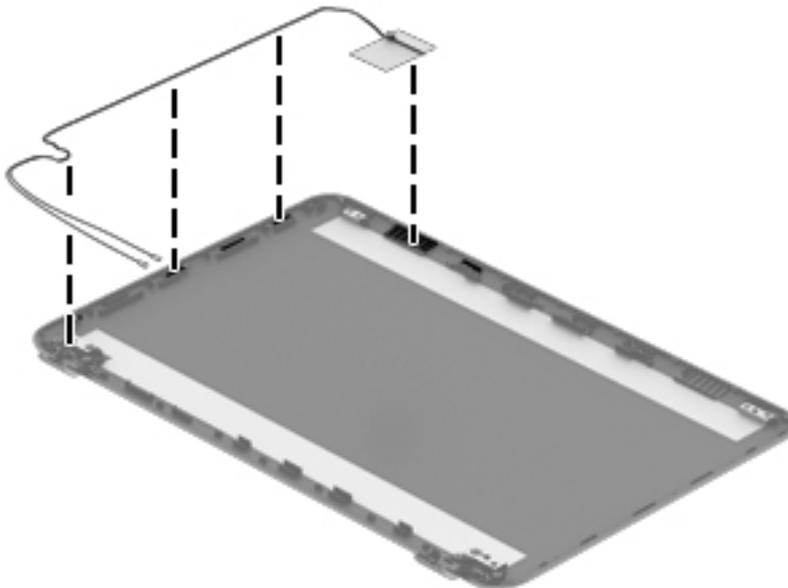


- 4. To remove the display hinges:

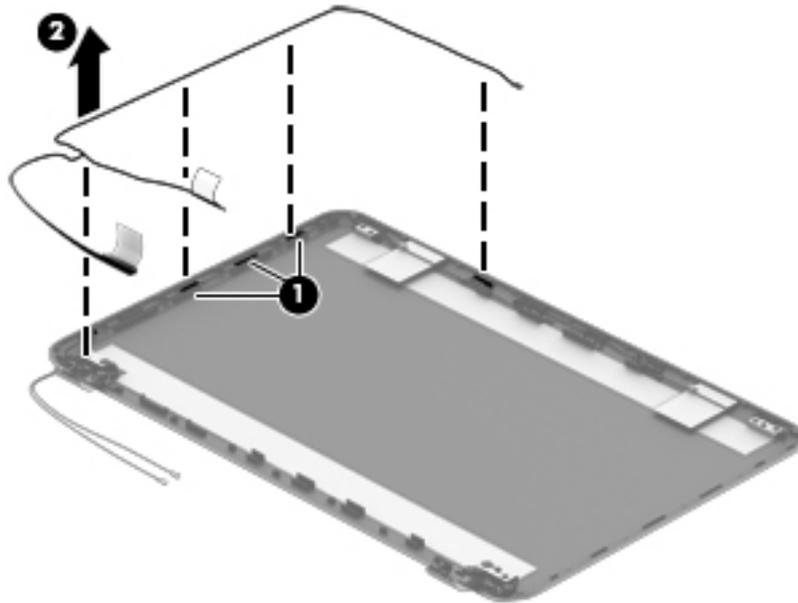
- a. Remove the eight Phillips PM2.5×3.5 screws (1) that secure the display hinges to the display panel.
- b. Remove the display hinges (2).



5. To remove the wireless antenna cables and transceivers, release the wireless antenna cables from the clips built into the display enclosure.



6. To remove the display/webcam cable, remove the cable from the clips built into the display enclosure (1), and then remove the cable from the display enclosure (2).



7. If replacing the display enclosure, be sure that the 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.

7 Using Setup Utility (BIOS) in Windows 10

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.

 **NOTE:** To start Setup Utility on convertible computers, your computer must be in notebook mode and you must use the keyboard attached to your notebook. The on-screen keyboard, which displays in tablet mode, cannot access Setup Utility.

Starting Setup Utility (BIOS)

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

 **NOTE:** To start Setup Utility on convertible computers, your computer must be in notebook mode and you must use the keyboard attached to your notebook. The on-screen keyboard, which displays in tablet mode, cannot access Setup Utility.

- Computers or tablets with keyboards:
 - ▲ Turn on or restart the computer, quickly press **esc**, and then press **f10**.
- Tablets without keyboards:
 1. Turn on or restart the tablet, and then quickly hold down the volume down button.
- or -
Turn on or restart the tablet, and then quickly hold down the Windows button.
 2. Tap **f10**.

Updating Setup Utility (BIOS)

Updated versions of Setup Utility (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 decide whether you need to update Setup Utility (BIOS), first determine the BIOS version on your computer.

To reveal the BIOS version information (also known as *ROM date* and *System BIOS*):

1. Type `support` in the taskbar search box, and then select the **HP Support Assistant** app.
- or -

Click the question mark icon in the taskbar.

2. Select **My PC**, and then select **Specifications**.

– or –

- ▲ Use Setup Utility (BIOS).

To use Setup Utility (BIOS):

1. Start Setup Utility (BIOS) (see [Starting Setup Utility \(BIOS\) on page 73](#)).
2. Select **Main**, select System Information, and then make note of the BIOS version.
3. Select **Exit**, select **No**, and then follow the on-screen instructions.

To check for later BIOS versions, see [Downloading a BIOS update on page 74](#).

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.

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

1. Type `support` in the taskbar search box, and then select the **HP Support Assistant** app.

– or –

Click the question mark icon in the taskbar.

2. Click **Updates**, and then click **Check for updates and messages**.
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 version, 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.

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

1. Type `file` in the taskbar search box, 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 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.

Synchronizing a tablet and keyboard (select products only)

For a tablet with a detachable keyboard, when you attach the tablet to the keyboard and restart the computer, Setup Utility (BIOS) checks to see if the Embedded Controller firmware on the keyboard needs to be synchronized. If so, synchronization begins. If the synchronization is interrupted, a notification screen displays for 10 seconds before the tablet restarts and attempts to synchronize again.



NOTE: The Embedded Controller firmware will synchronize **ONLY** if the tablet or keyboard battery is more than 50% charged, or if your tablet is connected to AC power.

8 Using Setup Utility (BIOS) in Windows 8.1

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 77](#)).
2. Use the arrow keys to select **Main**, and then make note of your current BIOS version.
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 `support`, 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.

9 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 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 two 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 82](#).

b. BIOS

2. When the diagnostic tool opens, use the keyboard arrow keys to select 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.

There are two options to download HP PC Hardware Diagnostics to USB device.

Option 1: HP PC Diagnostics homepage—Provides access to the latest UEFI version

1. Go to <http://www.hp.com/go/techcenter/pcdiags>.
2. Click the **UEFI Download** link, and then select **Run**.

Option 2: Support and Drivers pages—Provides downloads for a specific product for earlier and later versions.

1. Go to <http://www.hp.com>.
2. Point to Support, located at the top of the page, and then click **Download Drivers**.
3. In the text box, enter the product name, and then click **Go**.

– or –

Click **Find Now** to let HP automatically detect your product.

4. Select your computer model, and then select your operating system.
5. In the **Diagnostic** section, click **HP UEFI Support Environment**.
6. Click **Download**, and then select **Run**.

10 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.

 **NOTE:** To start BIOS on a convertible computer, your computer must be in notebook mode and you must use the keyboard attached to your tablet. The on-screen keyboard, which displays in tablet mode, cannot access BIOS.

To start HP PC Hardware Diagnostics UEFI:

1. Start BIOS:
 - Computers or tablets with keyboards:
 - ▲ Turn on or restart the computer, quickly press **esc**.
 - Tablets without keyboards:
 - ▲ Turn on or restart the tablet, and then quickly hold down the volume down button.
 - or -
 - Turn on or restart the tablet, and then quickly hold down the Windows button.

2. Press or tap **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 84](#).

- b. Hard drive
- c. BIOS

3. When the diagnostic tool opens, select the type of diagnostic test you want to run, and then follow the on-screen instructions. On a tablet, press the volume down button to stop a diagnostic test.

 **NOTE:** If you need to stop a diagnostic test on computers or tablets with a keyboard, press **esc**.

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

There are two options to download HP PC Hardware Diagnostics to a USB device:

Download the latest UEFI version:

1. Go to <http://www.hp.com/go/techcenter/pcdiags>. The HP PC Diagnostics home page is displayed.
2. In the HP PC Hardware Diagnostics section, click the **Download** link, and then select **Run**.

Download any version of UEFI for a specific product:

1. Go to <http://www.hp.com/support>, and then select your country. The HP Support page is displayed.
2. Click **Drivers & Downloads**.
3. In the text box, enter the product name, and then click **Go**.

– or –

Click **Find Now** to let HP automatically detect your product.

4. Select your computer, and then select your operating system.
5. In the **Diagnostic** section, follow the on-screen instructions to select and download the UEFI version you want.

11 Backing up, restoring, and recovering in Windows 10

This chapter provides information about the following processes. The information in the chapter is standard procedure for most products.

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

For additional information, refer to the HP support assistant app.

- ▲ Type `support` in the taskbar search box, and then select the **HP Support Assistant** app.

– or –

Click the question mark icon in the taskbar.

 **IMPORTANT:** If you will be performing recovery procedures on a tablet, the tablet battery must be at least 70% charged before you start the recovery process.

IMPORTANT: For a tablet with a detachable keyboard, connect the keyboard to the keyboard dock before beginning any recovery process.

Creating recovery media and backups

The following methods of creating recovery media and backups are available on select products only. Choose the available method according to your computer model.

- Use HP Recovery Manager to create HP Recovery media after you successfully set up the computer. 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. For information on creating recovery media, see [Creating HP Recovery media \(select products only\) on page 85](#). For information on the recovery options that are available using the recovery media, see [Using Windows tools on page 86](#).

- Use Windows tools to create system restore points and create backups of personal information.

For more information, see [Recovering using HP Recovery Manager on page 87](#).

 **NOTE:** If storage is 32 GB or less, Microsoft System Restore is disabled by default.

Creating HP Recovery media (select products only)

If possible, check for the presence of the Recovery partition and the Windows partition. From the **Start** menu, select **File Explorer**, and then select **This PC**.

- If your computer does not list the Windows partition and the Recovery partition, 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 on the HP website. Go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions.

You can use Windows tools to create system restore points and create backups of personal information, see [Using Windows tools on page 86](#).

- If your computer does list the Recovery partition and the Windows partition, you can use HP Recovery Manager 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 software programs that were 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 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 media 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. 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. If you cannot create DVD media yourself, you can obtain recovery discs for your computer from HP. See the *Worldwide Telephone Numbers* booklet included with the computer. You can also find contact information on the HP website. Go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions.
 - Be sure that the computer is connected to AC power before you begin creating the recovery media.
 - The creation process can take 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.

To create HP Recovery media:



IMPORTANT: For a tablet with a detachable keyboard, connect the keyboard to the keyboard dock before beginning these steps.

1. Type `recovery` in the taskbar search box, and then select **HP Recovery Manager**.
2. Select **Create recovery media**, and then follow the on-screen instructions.

If you ever need to recover the system, see [Recovering using HP Recovery Manager on page 87](#).

Using Windows tools

You can create recovery media, system restore points, and backups of personal information using Windows tools.



NOTE: If storage is 32 GB or less, Microsoft System Restore is disabled by default.

For more information and steps, see the Get started app.

- ▲ Select the **Start** button, and then select the **Get started** app.

Restore and recovery

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

 **IMPORTANT:** Not all methods are available on all products.

- Windows offers several options for restoring from backup, refreshing the computer, and resetting the computer to its original state. For more information see the Get started app.
 - ▲ Select the **Start** button, and then select the **Get started** app.
- If you need to correct a problem with a preinstalled application or driver, use the Reinstall drivers and/or applications option (select products only) of HP Recovery Manager to reinstall the individual application or driver.
 - ▲ Type `recovery` in the taskbar search box, select **HP Recovery Manager**, select **Reinstall drivers and/or applications**, and then follow the on-screen instructions.
- If you want to recover the Windows partition to original factory content, you can choose the System Recovery option from the HP Recovery partition (select products only) or use the HP Recovery media. For more information, see [Recovering using HP Recovery Manager on page 87](#). If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 85](#).
- On select products, if you want to recover the computer's original factory partition and content, or if you have replaced the hard drive, you can use the Factory Reset option of HP Recovery media. For more information, see [Recovering using HP Recovery Manager on page 87](#).
- On select products, if you want 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 \(select products only\) on page 89](#).

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 either created or that you obtained from HP, or by using the HP Recovery partition (select products only). If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 85](#).

What you need to know before you get started

- 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.

 **IMPORTANT:** 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 \(select products only\) on page 85](#).
- To use the Factory Reset option (select products only), you must use HP Recovery media. If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 85](#).
- If your computer does not allow the creation of HP Recovery media or 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 want to retain.

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

 **NOTE:** Only the options available for your computer display when you start the recovery process.

- System Recovery—Reinstalls the original operating system, and then configures the settings for the programs that were installed at the factory.
- 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 products only) allows System Recovery only.

Using the HP Recovery partition (select products only)

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

To start HP Recovery Manager from the HP Recovery partition:

 **IMPORTANT:** For a tablet with a detachable keyboard, connect the keyboard to the keyboard dock before beginning these steps (select products only).

1. Type `recovery` in the taskbar search box, select **Recovery Manager**, and then select **HP Recovery Environment**.

- or -

For computers or tablets with keyboards attached, press **f11** while the computer boots, or press and hold **f11** as you press the power button.

For tablets without keyboards:

Turn on or restart the tablet, and then quickly hold down the volume down button; then select **f11**.

- or -

Turn on or restart the tablet, and then quickly hold down the Windows button; then select **f11**.

2. Select **Troubleshoot** from the boot options menu.
3. 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, 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 89](#).

3. Follow the on-screen instructions.

Changing the computer boot order

If your 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 to an optical drive or a USB flash drive.

To change the boot order:

 **IMPORTANT:** For a tablet with a detachable keyboard, connect the keyboard to the keyboard dock before beginning these steps.

1. Insert the HP Recovery media.
2. Access BIOS:

For computers or tablets with keyboards attached:

- ▲ Turn on or restart the computer or tablet, quickly press **esc**, and then press **f9** for boot options.

For tablets without keyboards:

- ▲ Turn on or restart the tablet, and then quickly hold down the volume down button; then select **f9**.

- or -

Turn on or restart the tablet, and then quickly hold down the Windows button; then select **f9**.

3. Select the optical drive or USB flash drive from which you want to boot.
4. Follow the on-screen instructions.

Removing the HP Recovery partition (select products only)

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 will not be able to perform System Recovery or create HP recovery media from the HP Recovery partition. So before you remove the Recovery partition, create HP Recovery media; see [Creating HP Recovery media \(select products only\) on page 85](#).

 **NOTE:** The Remove Recovery Partition option is only available on products that support this function.

Follow these steps to remove the HP Recovery partition:

1. Type `recovery` in the taskbar search box, and then select **HP Recovery Manager**.
2. Select **Remove Recovery Partition**, and then follow the on-screen instructions.

12 Backing up, restoring, and recovering in Windows 8.1

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 91](#).

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 93](#).

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 93](#).

- 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 93](#). If you have not already created recovery media, see [Creating HP Recovery media on page 91](#).

- 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 93](#).
- 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 \(select models only\) on page 94](#).

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 91](#).

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 91](#).
- 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 91](#).
- 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. Select **Troubleshoot** from the boot options menu.
3. 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 94](#).

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 (select models only)

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 or the Windows option to remove everything and reinstall Windows. In addition, you will not be able to perform System Recovery or Minimized Image Recovery from the HP Recovery partition. So before you remove the Recovery partition, create HP Recovery media; see [Creating HP Recovery media on page 91](#).

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.

13 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.

14 Specifications

Computer specifications

	Metric	U.S.
Dimensions (touch models)		
Depth	25.9 cm	10.2 in
Width	37.8 cm	14.88 in
Height	2.53 cm	1.00 in
Weight		
3 cell battery	2190 g	4.83 lb
4 cell battery	2230 g	4.92 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.		

39.6-cm (15.6-in) display specifications

	Metric	U.S.
Active diagonal size	39.6-cm	15.6-in
Resolution	1600x900 (HD+)	
Active area	309.399x173.952	
PPI	112	
Surface treatment	Anti-glare	
Contrast ratio	300:1 (typical)	
Response time	8 ms	
Brightness	200 nits (typical)	
Viewing angle	SVA	
Backlight	LED	
Luminance uniformity @ 13 points	1.4 (typ), 1.6 (max)	
Lifetime (1/2 luminance)	12,000 hours	
Color coordinate (white)	(0.313, 0.329)	
Color tolerance (White)	+/- 0.02	
Color tolerance (W, R, G, B)	+/- 0.03	
Color gamut	45% typical	

Hard drive specifications

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

DVD±RW SuperMulti DL Drive specifications

Applicable disc	Read: CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	Write: CD-R and CD-RW DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM
Center hole diameter	1.5 cm (0.59 in)	
Disc diameter		
Standard disc	12 cm (4.72 in)	
Mini disc	8 cm (3.15 in)	
Disc thickness	1.2 mm (0.047 in)	
Track pitch	0.74 µm	
Access time	CD	DVD
Random	< 175 ms	< 230 ms
Full stroke	< 285 ms	< 335 ms
Audio output level	Line-out, 0.7 Vrms	
Cache buffer	2 MB	
Data transfer rate		
24X CD-ROM	3,600 KB/sec	
8X DVD-ROM	10,800 KB/sec	
24X CD-R	3,600 KB/sec	
16X CD-RW	2,400 KB/sec	
8X DVD+R	10,800 KB/sec	
4X DVD+RW	5,400 KB/sec	
8X DVD-R	10,800 KB/sec	
4X DVD-RW	5,400 KB/sec	
2.4X DVD+R(9)	2,700 KB/sec	
5X DVD-RAM	6,750 KB/sec	
Transfer mode	Multiword DMA Mode	
Startup time	< 15 seconds	
Stop time	< 6 seconds	

15 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 H05VV-F, 3-conductor, 0.75mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.
2. The flexible cord must be Type 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.

Country/region	Accredited agency	Applicable note number
		<p>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, 0.75mm² or 1.25mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V ac) configuration.</p>
		<p>4. The flexible cord must be Type RVV, 3-conductor, 0.75mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the CCC certification mark.</p>
		<p>5. The flexible cord must be Type H05VV-F 3X0.75mm² 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.</p>
		<p>6. The flexible cord must be Type HVCTF 3X1.25mm² conductor size. Power cord set fittings (appliance coupler, cable, and wall plug) must bear the BSMI certification mark.</p>
		<p>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 3X0.75/1.00mm² conductor size, with plug BS 1363/A with BSI or ASTA marks.</p>

16 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.eia.org>.
-

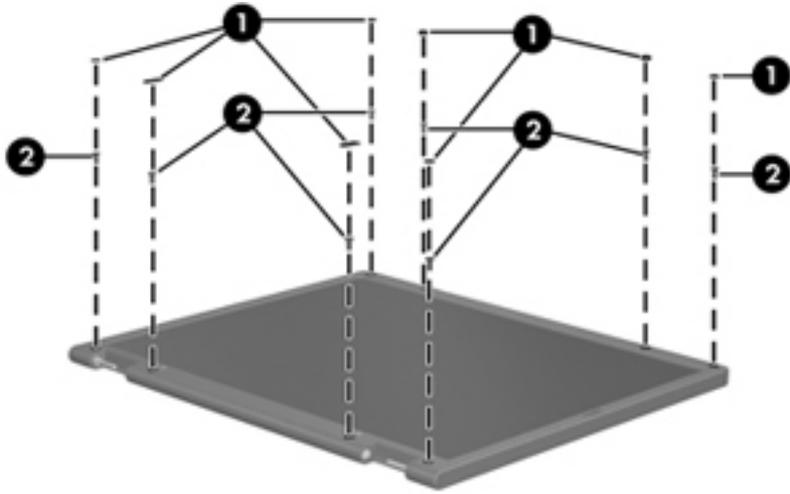
This section provides disassembly instructions for the display assembly. The display assembly must be disassembled to gain access to the backlight **(1)** and the liquid crystal display (LCD) panel **(2)**.



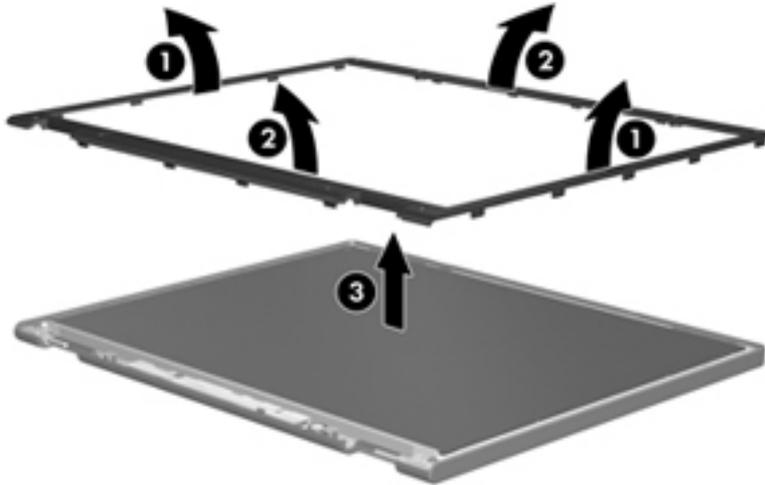
-
-  **NOTE:** The procedures provided in this chapter are general disassembly instructions. Specific details, such as screw sizes, quantities, and locations, and component shapes and sizes, can vary from one computer model to another.
-

Perform the following steps:

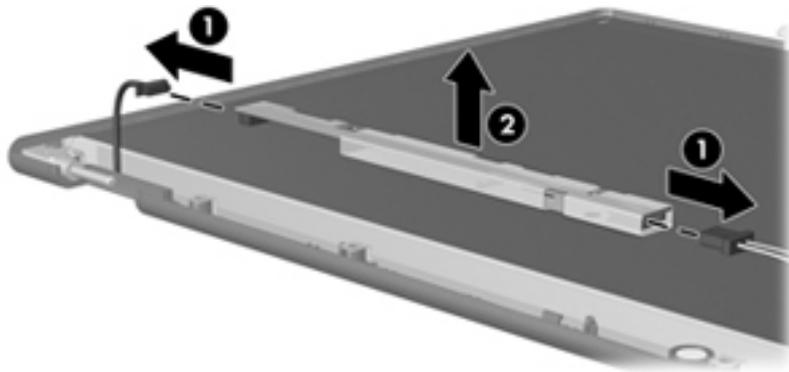
1. Remove all screw covers **(1)** and screws **(2)** that secure the display bezel to the display assembly.



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)**.

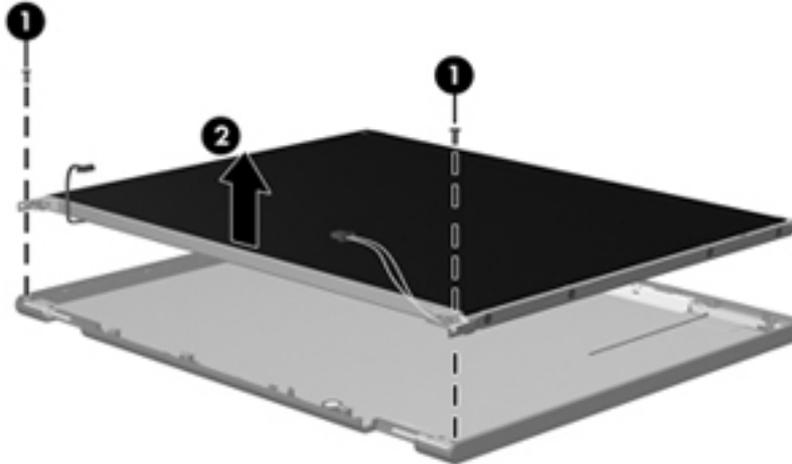


4. Disconnect all display panel cables **(1)** from the display inverter and remove the inverter **(2)**.

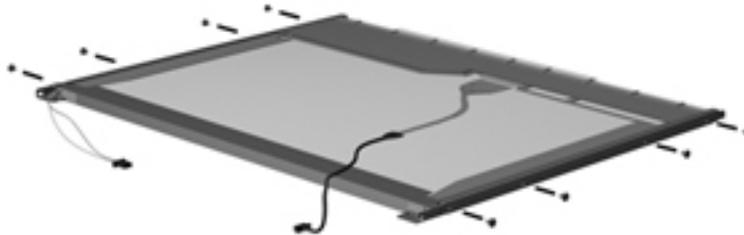


5. Remove all screws **(1)** that secure the display panel assembly to the display enclosure.

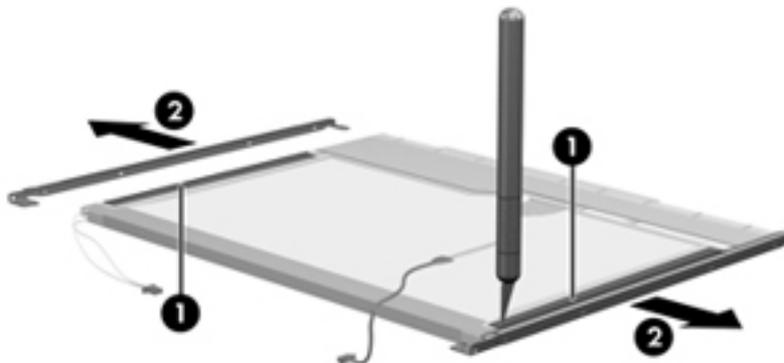
6. Remove the display panel assembly (2) from the display enclosure.



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

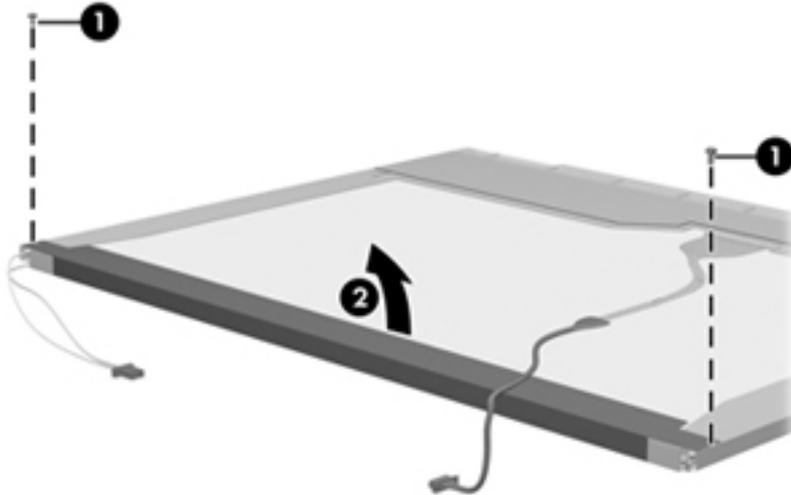


9. Use a sharp-edged tool to cut the tape (1) that secures the sides of the display panel to the display panel frame.
10. Remove the display panel frame (2) from the display panel.

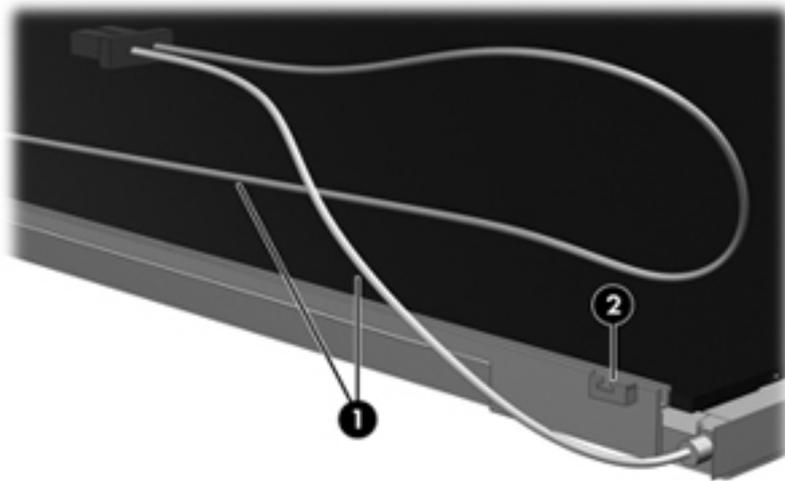


11. Remove the screws (1) that secure the backlight cover to the display panel.

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

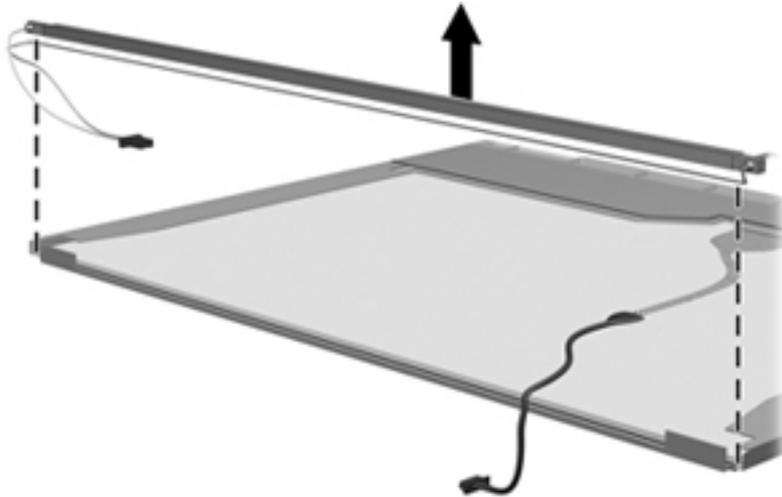


13. Remove the backlight cover.
14. Turn the display panel upright.
15. Remove the backlight cables (1) from the clip (2) in the display panel.



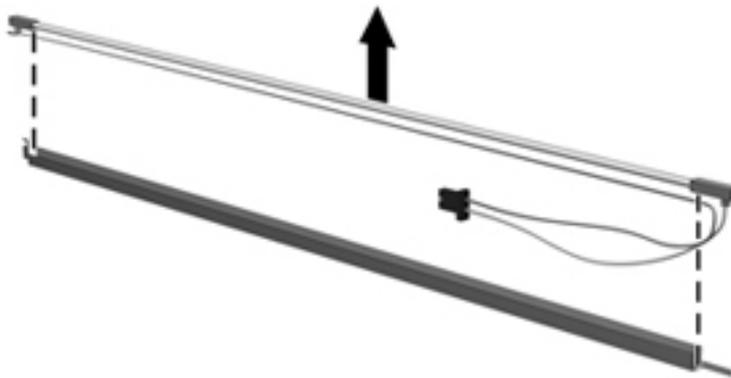
16. Turn the display panel upside down.

17. Remove the backlight frame from the display panel.



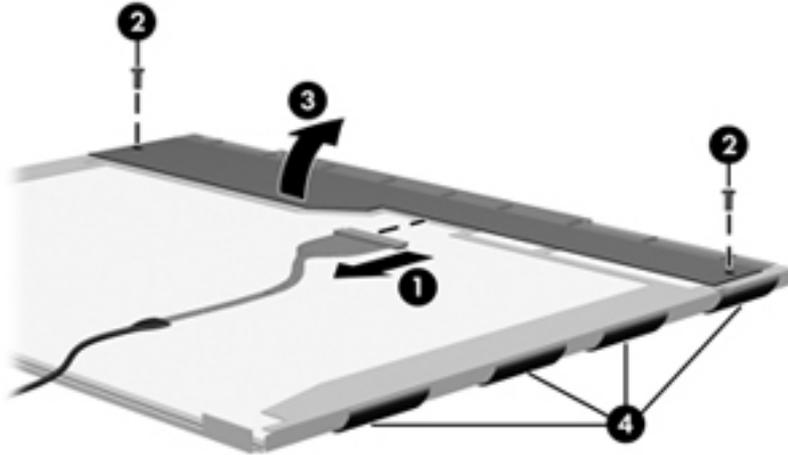
⚠ WARNING! The backlight contains mercury. Exercise caution when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

18. Remove the backlight from the backlight frame.

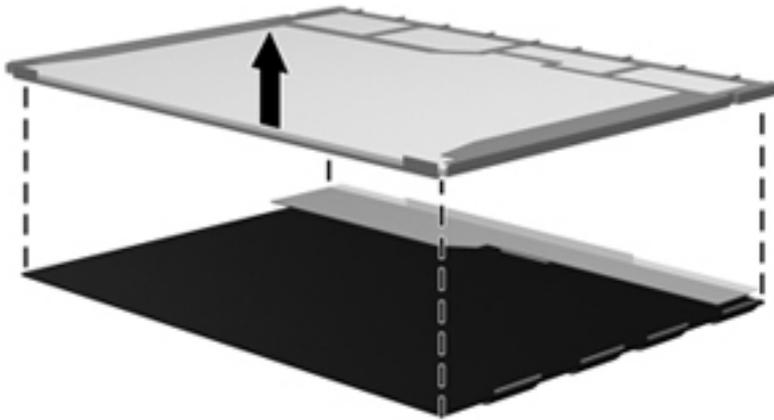


19. Disconnect the display cable **(1)** from the LCD panel.
20. Remove the screws **(2)** that secure the LCD panel to the display rear panel.
21. Release the LCD panel **(3)** from the display rear panel.

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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