HP Pavilion 15 Notebook PC
HP Pavilion TouchSmart 15 Notebook PC

Maintenance and Service Guide

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Product notice

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

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

The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

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Important Notice about Customer Self-Repair Parts

⚠ **CAUTION:** Your computer includes Customer Self-Repair parts and parts that should only be accessed by an authorized service provider. See Chapter 5, "Removal and replacement procedures for Customer Self-Repair parts," for details. Accessing parts described in Chapter 6, "Removal and replacement procedures for Authorized Service Provider only parts," can damage the computer or void your warranty.

Safety warning notice

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

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1 Product description

Category	Description	AMD	Intel
Product Name	HP Pavilion 15 Notebook PC HP Pavilion TouchSmart 15 Notebook PC	√	√
Processors	Processors are attached to the system board.		
Intel®	**4th generation processors:** • Intel Core® i7-4500U 1.8 GHz processor (2.0 GB L3 cache, 15 W) • Intel Core i5-4200U 1.6 GHz processor (2.0 GB L3 cache, 15 W) **3rd generation processors:** • Intel Core i3-3217U DC (1.8 GHz, 3 MB L3 Cache, 1600MHz DDR3, 17 W) • Intel Pentium 2117U DC (1.8 GHz, 2 MB L3 Cache, 1600MHz DDR3, 17 W) • Intel Celeron 1007U DC (1.5 GHz, 2 MB L3 Cache, 1600MHz DDR3, 17 W)		√
AMD™	• AMD A10-5745M 2.9 GHz/2.1 GHz processor (4 MB L2, 1333MHz DDR3L) quad core, 25 W • AMD A8-5545M 2.7 GHz/1.7 GHz (4 MB L2, 1333MHz DDR3L) quad core, 19 W • AMD A10-4655M 2.8 GHz/2.0 GHz (4 MB L2, 1333MHz DDR3L) quad core, 25 W • AMD A8-4555M (2.4 GHz/1.6 GHz, 4 MB L2, 1333MHz DDR3L) quad core, 19 W • AMD A6-5200 2.0 GHz (2 MB L2, 1600MHz DDR3L), quad core 25 W • AMD A4-5000 1.5 GHz (2 MB L2, 1600MHz DDR3L), quad core, 15 W • AMD E1-2500 1.4 GHz (1 MB L2, 1600MHz DDR3L), dual core, 15 W • AMD UMA A76M A10-5745M • 8670M 2 GB dedicated video memory and A10-5745M processor (2.9 GHz/2.1 GHz, 4 MB L2, 1333 MHz DDR3L quad core, 25 W) • AMD Radeon 8670M 1 GB dedicated video memory A6-5200 processor (2.6 GHz/ 2.1 GHz, 2 MB L2, 1600 MHz DDR3L, dual core, 17 W)	√	
HP	HP A4-5050 (1.55 GHz, 2MB L2 1600 MHz DDR3L) quad core, 13.5 W	√	
Chipset	Intel Lynx Point-LP PCH (Integrated in MCP), (ULT one chip solution) Intel Panther Point PCH, Intel HM76 Express Chipset, (ULV two chip solution)		√
	AMD A76M FCH AMD Integrated SoC FCH	√	
Graphics	**Internal graphics:** **Intel graphics:** Intel HD Graphics 4400 (Intel Haswell) Intel HD Graphics 4000 (Intel Ivy Bridge), (on computer models equipped with an Intel Core i7/i5/i3 3000-series processor) Intel HD Graphics (for use with Intel Pentium and Celeron processors		√

Category	Description	AMD	Intel
	Support HD decode, DX11/11.1, HDMI, and Optimus. Supports Px5.5 AMD Start Now (AMD IOIC) 1.0 and AMD Start Now (AMD IOIC) 2.0		
	AMD graphics: • AMD Radeon HD 8610G • AMD Radeon HD 8510G • AMD Radeon HD 8400G • AMD Radeon HD 8330 • AMD Radeon HD 8280 • AMD Radeon HD 8240 • AMD Radeon HD 7600G • AMD Radeon HD 7500G	√	
	Switchable discrete graphics: • NVIDIA N14P-GV2 GeForce GT R 740M with 2 GB of dedicated video memory (258 MB×16 DDR3 900-MHz×4 PCs)		√
	• AMD Sun XT Radeon HD with 1024 MB of dedicated video memory (128 MB×16 DDR3 1GHz x 4 pcs) • AMD Sun XT Radeon HD 8670M with 1 GB of dedicated video memory (256Mx16 DDR3 1 GHz x 4 pcs) • AMD Sun XT Radeon HD 8670M with 2 GB of dedicated video memory (256Mx16 DDR3 1 GHz x 4 pcs)	√	√
	Dual Graphics: • AMD Radeon HD 8610G + HD 8670M • AMD Radeon HD 8510G + HD 8670M • AMD Radeon HD 7620G + HD 8670M • AMD Radeon HD 7600G + HD 8670M	√	
Panel	15.6 in, light-emitting diode (LED), SVA, high-definition (HD), BrightView (1366×768) display, 3.6-mm; typical brightness: 200 nits 15.6 in, SVA, high-definition (HD), BrightView (1366×768) display, 3.0-mm; typical brightness: 200 nits SVA + eTP touch + Mutto G1F/GIS OGS (Multitouch) All display assemblies include 2 wireless local area network (WLAN) antenna cables 16:9 Ultra Wide Aspect Ratio	√	√
Memory	Two SODIMM customer-accessible/upgradable memory module slots DDR3L-1600-MHz dual channel support DDR3L-1600-MHz single channel support Supports up to 12 GB max system memory (DDR3L-1600MHz module), (select models only) Supports the following system RAM configurations: • 12288 MB (8192 MB×1+ 4096 MB×1) • 8192 MB (8192 MB×1 or 4096 MB×2); not supported on computer models equipped with a 32-bit operating system	√	√

Category	Description	AMD	Intel
	• 6144 MB (4096 MB×1 + 2048 MB×1); not supported on computer models equipped with a 32-bit operating system • 4096 MB (4096 MB×1 or 2048 MB×2) • 2048 MB (2048 MB×1)		
Hard drive	Supports **6.35-cm** (2.5-in) hard drives in **9.5-mm** (.37-in) and **7.0-mm** (.28-in) thicknesses (all hard drives use the same bracket) Customer-accessible Serial ATA Accelerometer protection support Supports the following hard drives: • 1 TB, 5400 rpm, 9.5 mm • 750 GB, 5400 rpm, 9.5 mm • 500 GB, 5400 rpm, 9.5 mm and 7.0 mm Supports 24 GB mSATA solid-state drive with system memory up to 8 GB (for use with select computer models with Intel processors and switchable discrete graphics)	√	√
	Supports the following hybrid drives: • 1 TB, 5400 rpm, + 8 GB NAND Hybrid HDD; 9.5 mm • 750 GB, 5400 rpm, + 8 GB NAND Hybrid HDD; 9.5 mm • 500 GB, 5400 rpm, + 8 GB NAND Hybrid HDD; 7 mm		√
Optical drive	Fixed Serial ATA 9.5 mm tray load • DVD±RW Double-Layer SuperMulti Drive • BD combo for computer models with Intel processors, no support for Ubuntu Linux Zero power Optical drive.	√	√
Audio and video	HD audio Dual speakers Supports Nuance Voice Recognition HP TrueVision HD webcam (fixed, no tilt with activity LED; 1280×720 by 30 frames per second) Two dual array, digital microphones with appropriate beam-forming, echo-cancellation, noise-reduction software	√	√
Ethernet	Integrated 10/100 NIC	√	√
Wireless	Integrated wireless local area network (WLAN) options by way of wireless module One half-size mini card/PCI Express (HMC/PCIe) slot Two WLAN antennas built into display assembly	√	√
	Support for the following WLAN formats: • Qualcomm Atheros AR9485 802.11bgn 1x1 Wi-Fi adapter (with single antenna) • Realtek RTL8188EE 802.11bgn 1x1 Wi-Fi adapter (with single antenna)	√	√

Category	Description	AMD	Intel
	• Qualcomm Atheros QCA9565 802.11 bgn 1x1 Wi-Fi + Bluetooth 4.0 combo adapter (with single antenna), no support for Ubuntu Linux • AQualcomm Atheros AR9485 802.11 bgn Wi-Fi adapter • Ralink RT3290LE 802.11bgn 1x1 Wi-Fi + BT 4.0 Combo Adapter		
	Intel Smart Connect Technology 4.1		√
	Compatible with Miracast-certified devices Wireless display support (WiFi direct)	√	
External media cards	HP Multi-Format Memory Card Reader slot with push-push technology, supporting the following digital card formats: • Secure Digital (SD) Memory Card • Secure Digital High Capacity (SDHC) Memory Card • Secure Digital eXtended Capacity (SDXC) Memory Card	√	√
Ports	• AC Smart Pin adapter plug (4.5 mm barrel) • Combination audio-out (stereo headphone)/audio-in (mono microphone) • RJ-45 (Ethernet) • USB 3.0 (2 ports), USB 2.0 (1 port)	√	√
	• HDMI 1.4 output supporting 1920x1200 @ 60Hz Hot Plug / Unplug and auto detect for correct output to wide-aspect vs. standard aspect video	√	
	• HDMI version 1.4 output supporting 1920 x 1080 @ 60 Hz Hot Plug / Unplug and auto detect for correct output to wide-aspect versus standard aspect video		√
Keyboard/ pointing devices	Full-size (15.0-in), black textured Island-style, with numeric keypad with black keyboard frame. Full-size (15.0-in.), white painted Island-style, with numeric keypad with white keyboard frame. Multitouch gestures enabled. Supports Windows® 8 Modern TrackPad Gestures Support PS/2 interface	√	√
Power requirements	Supports the following AC adapters: 1M length power cord 65 W HP Smart AC adapter (nPFC, 3-wire, 4.5 mm) 45 W HP Smart AC adapter (nPFC, 3-wire, 4.5 mm, nslim)	√	√
	90 W Smart AC adapter (PFC, 3-wire, 4.5 mm)	√	
	Supports the following batteries (battery is user-removable) Supports battery fast charge • 4 Cell battery - 41 Whr (2.8 AH)	√	√
Security	Security cable lock	√	√
	Intel IPT support Intel AT-p Ready support	√	√

Category	Description	AMD	Intel
Operating system	**Preinstalled:** • Windows 8.1 Standard 64-bit • Windows 8.1 Professional 64-bit FreeDOS 2.0 Ubuntu Linux	√	√
Serviceability	**End user replaceable parts:** • AC adapter • Battery • Keyboard (select model replacement only) • Memory module • Optical drive • WLAN module	√	√

2 External component identification

Finding your hardware and software information

Locating hardware

To find out what hardware is installed on your computer:

1. From the Start screen, type c, and then select **Control Panel**.
2. Select **System and Security**, and then in the **System** area, click **Device Manager**.

   A list reveals all the devices installed on your computer.

Locating software

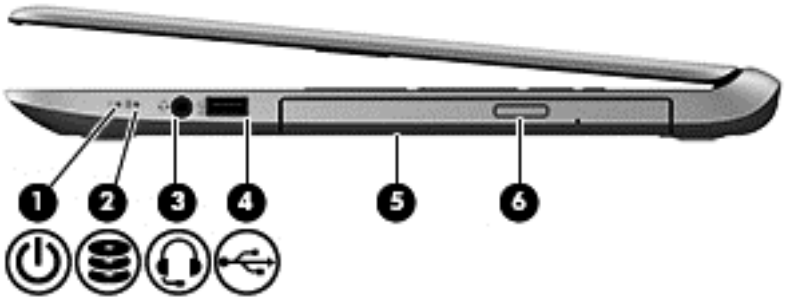
To find out what software is installed on your computer:

1. From the Start screen, right-click using the mouse.

   – or –

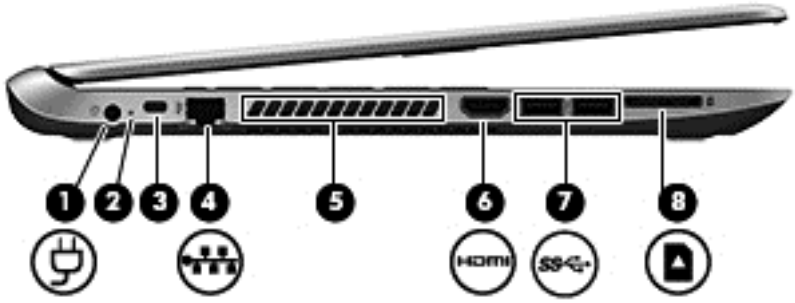
   Swipe from the top of the TouchPad to reveal all apps.
2. Select the **All apps** icon.

Right side



Component			Description
(1)		Power light	• On: The computer is on. • Blinking: The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other unneeded components. • Off: The computer is off or in Hibernation. Hibernation is a power-saving state that uses the least amount of power. **NOTE:** For select models, the Intel® Rapid Start Technology feature is enabled at the factory. Rapid Start Technology allows your computer to resume quickly from inactivity.
(2)		Hard drive light	• Blinking white: The hard drive is being accessed.
(3)		Audio-out (headphone)/Audio-in (microphone) jack	Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. **WARNING!** To reduce the risk of personal injury, adjust the volume before using headphones, earbuds, or a headset. For additional safety information, see the *Regulatory, Safety and Environmental Notices*. To access this guide, from the Start screen, type `support`, select the **HP Support Assistant** app, select **My computer**, and then select **User guides**. **NOTE:** When a device is connected to a headphone jack, the computer speakers are disabled.
(4)		USB 2.0 port	Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub.
(5)		Optical drive	Reads and writes (select models only) to an optical disc.
(6)		Optical drive eject button	Opens the optical drive.

Left side



Component			Description
(1)		Power connector	Connects an AC adapter.
(2)		AC adapter light	• White: The AC adapter is connected and the battery is charged. • Amber: The AC adapter is connected and the battery is charging. • Off: The computer is using battery power.
(3)		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.
(4)		RJ-45 (network) jack RJ-45 (network) status lights (2)	Connects a network cable. RJ-45 status lights White: The network is connected. Amber: Activity is occurring on the network.
(5)		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.
(6)	HDMI	HDMI port	Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component, or a high-speed HDMI device.
(7)	SS	USB 3.0 ports (2)	Connect optional USB devices.
(8)		Memory card reader	Reads data from and writes data to memory cards such as Secure Digital (SD).

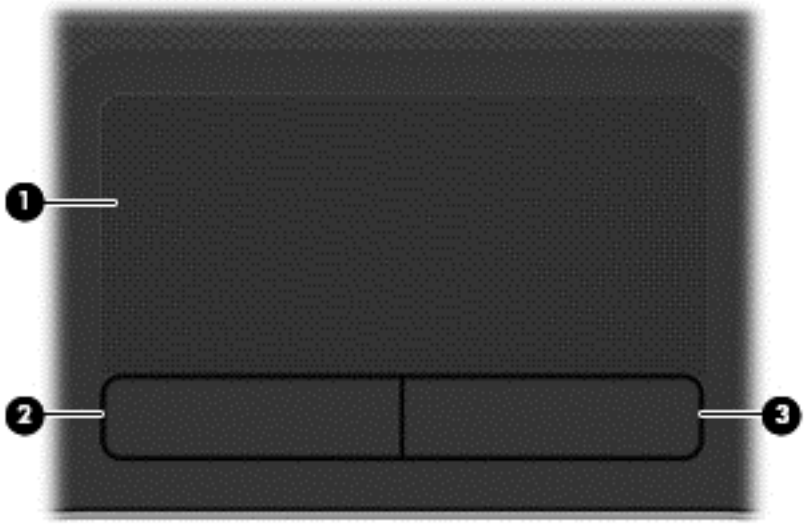
Display

Component		Description
(1)	WLAN antennas (2)*	Send and receive wireless signals to communicate with wireless local area networks (WLANs).
(2)	Internal microphones (2)	Records sound.
(3)	Webcam light	On: The webcam is in use.
(4)	Webcam	Records video, captures still photographs, and provides access to video conferences and online chat by means of streaming video. To use the webcam, from the Start screen, type c, and then select **CyberLink YouCam** from the list of applications.

*The antennas are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennas free from obstructions. For wireless regulatory notices, see the section of the *Regulatory, Safety, and Environmental Notices* that applies to your country or region.

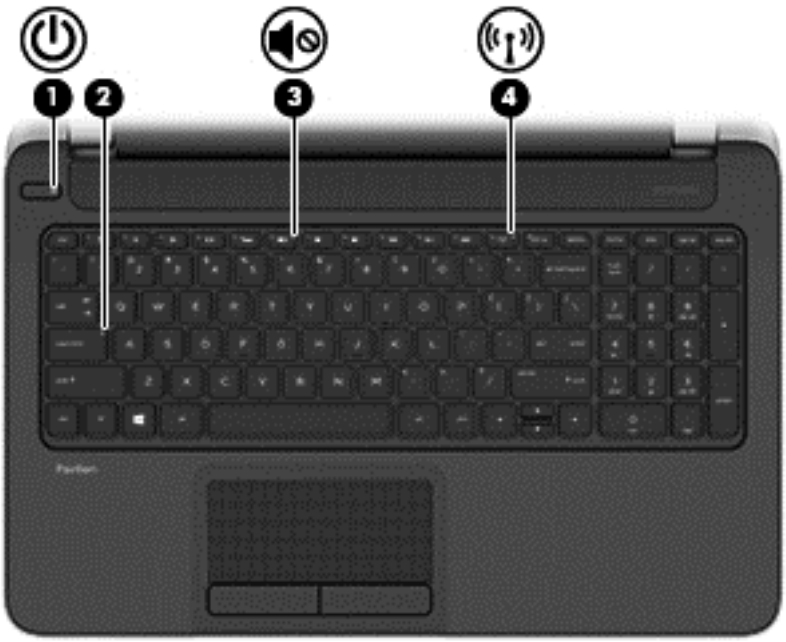
Top

TouchPad



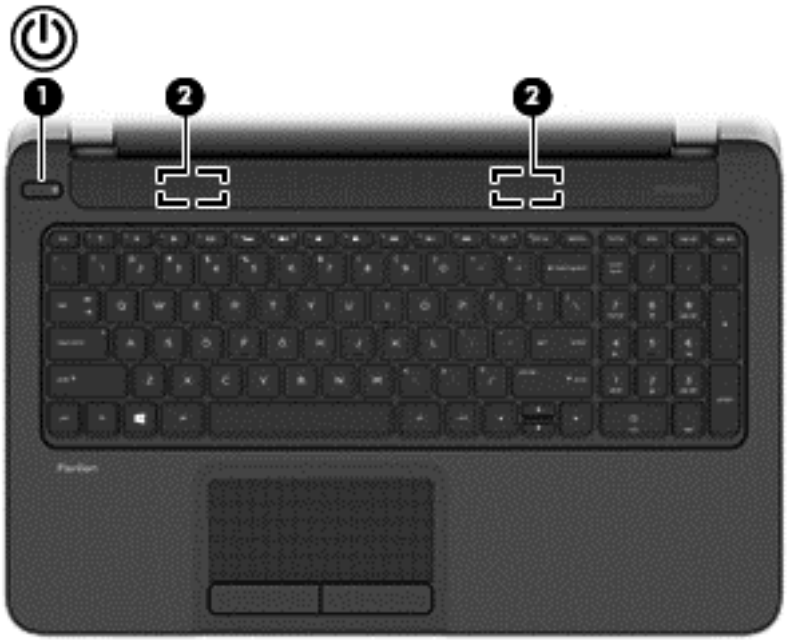
Component		Description
(1)	TouchPad zone	Moves the on-screen pointer and selects or activates items on the screen. **NOTE:** The TouchPad also supports edge-swipe gestures.
(2)	Left TouchPad button	Functions like the left button on an external mouse.
(3)	Right TouchPad button	Functions like the right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

Lights



Component		Description
(1)	Power light	• On: The computer is on. • Blinking: The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other unneeded components. • Off: The computer is off or in Hibernation. Hibernation is a power-saving state that uses the least amount of power. **NOTE:** For select models, the Intel® Rapid Start Technology feature is enabled at the factory. Rapid Start Technology allows your computer to resume quickly from inactivity.
(2)	Caps lock light	On: Caps lock is on, which switches the keys to all capital letters.
(3)	Mute light	• 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 is on. **NOTE:** On some models, the wireless light is amber when all wireless devices are off.

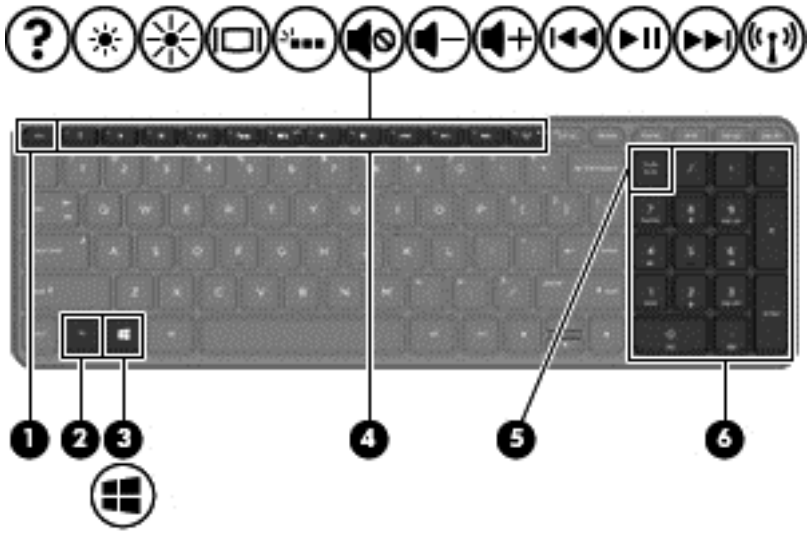
Buttons and speakers



Component		Description
(1)	Power button	• When the computer is off, press the button to turn on the computer. • When the computer is on, press the button briefly to initiate Sleep.

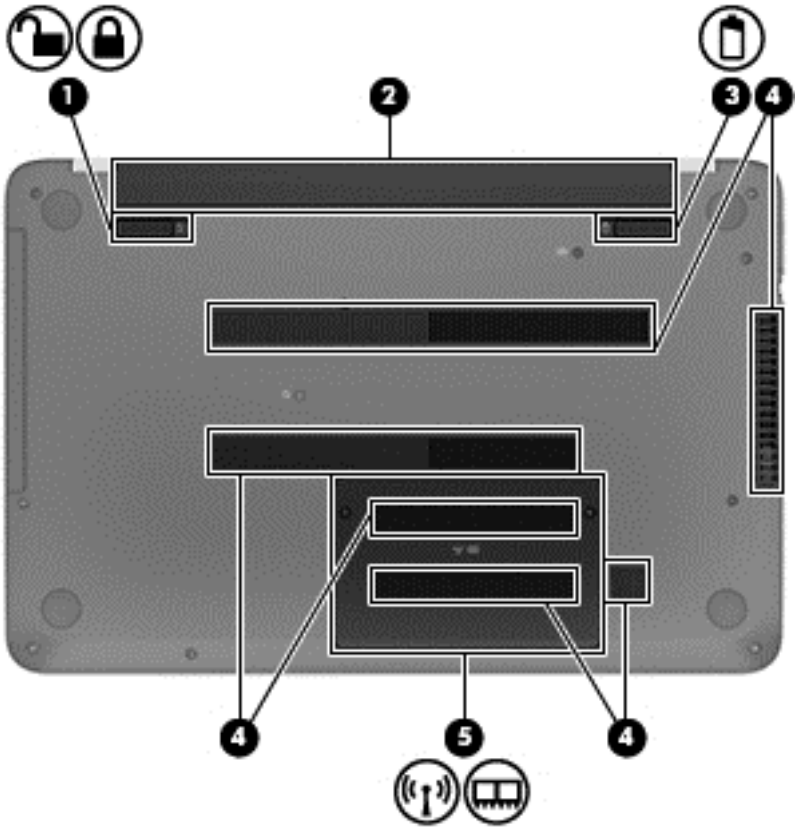
Component		Description
		• When the computer is in the Sleep state, press the button briefly to exit Sleep. • When the computer is in Hibernation, press the button briefly to exit Hibernation. **CAUTION:** Pressing and holding down the power button will result in the loss of unsaved information. If the computer has stopped responding and Microsoft® Windows® shutdown procedures are ineffective, press and hold the power button down for at least 5 seconds to turn off the computer. **NOTE:** For select models, the Intel® Rapid Start Technology feature is enabled at the factory. Rapid Start Technology allows your computer to resume quickly from inactivity. To learn more about your power settings, see your power options. From the Start screen, type `power`, select **Settings**, and then select **Power Options** from the list of applications.
(2)	Speakers (2)	Produce sound.

Keys



Component		Description
(1)	esc key	Reveals system information when pressed in combination with the fn key.
(2)	fn key	Executes frequently used system functions when pressed in combination with the esc key.
(3)	Windows key	Returns you to the Start screen from an open app or the Windows desktop. **NOTE:** Pressing the Windows key again will return you to the previous screen.
(4)	Action keys	Execute frequently used system functions. **NOTE:** On select models, the f5 action key turns the radiance backlight keyboard feature off or on.
(5)	num lock key	Controls the function of the integrated numeric keypad. Press the key to alternate between the standard numeric function of an external keypad (selected the factory) and the navigational function (indicated by the directional arrows on the keys). **NOTE:** The keypad function that is active when the computer is turned off is reinstated when the computer is turned back on.
(6)	Integrated numeric keypad	Set at the factory to function 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 lock key.

Bottom



Component		Description
(1)	Battery lock latch	Unlocks the battery.
(2)	Battery bay	Holds the battery.
(3)	Battery release latch	Releases the battery from the battery bay, after the battery lock latch has been released.
(4)	Vents (6)	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.
(5)	Service door	Provides access to the wireless LAN (WLAN) module slot and the memory module slots. **CAUTION:** To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module to restore computer functionality, and then contact support through Help and Support. From the Start screen, type h, and then select **Help and Support**.

Labels

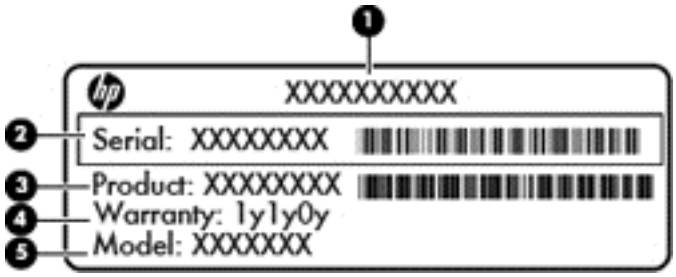
The labels affixed to the computer provide information you may need when you troubleshoot system problems or travel internationally with the computer.

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

For help finding these locations, refer to Bottom on page 14.

- 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 the example shown below.



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

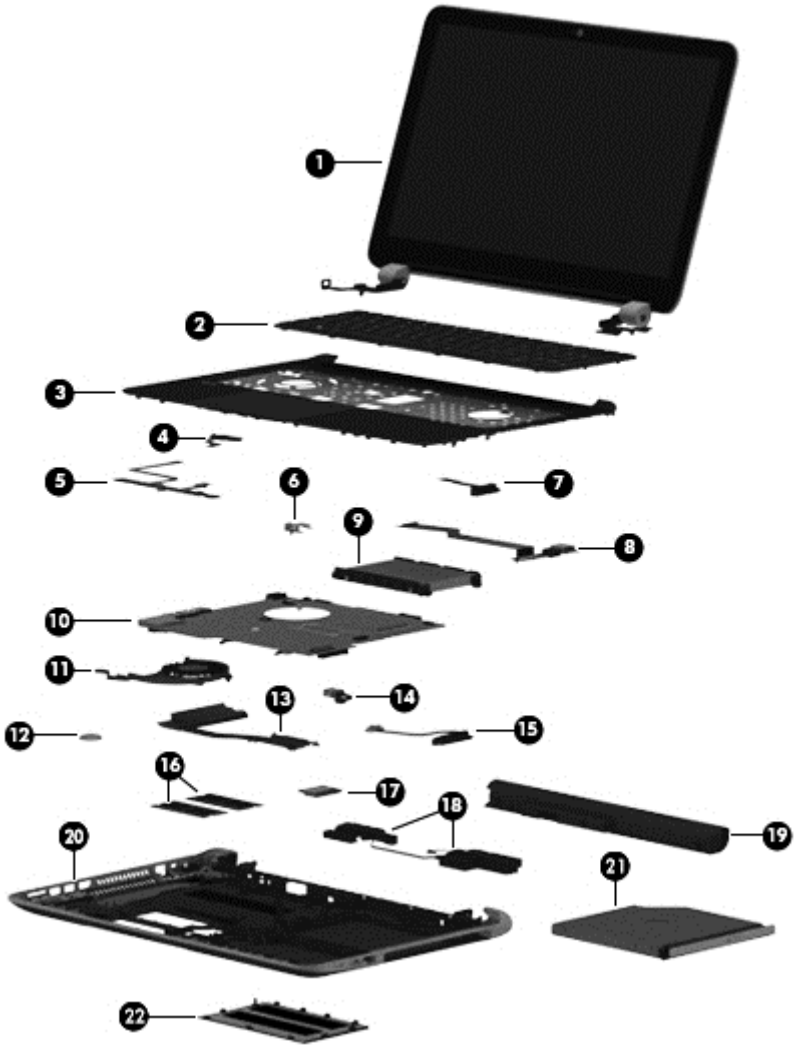
- Regulatory label(s)—Provide(s) regulatory information about the computer.
- Wireless certification label(s)—Provide(s) information about optional wireless devices and the approval markings for the countries or regions in which the devices have been approved for use.

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.

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.



Item	Component	Spare part number
(1)	**Display assembly**: The display assembly is spared at the subcomponent level only. For more display assembly spare part information, see Display assembly subcomponents on page 23.	

Item	Component	Spare part number
	Aluminum with midnight black	732073-001
	Sparkling black	732074-001
	Pearl white	737170-001
	Flyer red	737171-001
	Revolutionary blue	737172-001
	Regal purple	737173-001
	Mineral black	737174-001
	Goji berry	737175-001
	Hazel berry	737176-001
	Raspberry	737177-001
(2)	**Keyboard** (includes keyboard cable):	
	Textured island style black finish for use in Canada	719853-DB1
	Textured island style black finish for use in the United States	719853-001
	Textured island style black finish for use in Japan	719853-291
	Textured island style black finish for use in United Kingdom	719853-031
	Textured island style black finish for use in South Korea	719853-AD1
	Textured island style black finish for use in Taiwan	719853-AB1
	Textured island style black finish for use in Thailand	719853-281
	Textured island style black finish for use in Germany	719853-041
	Textured island style black finish for use in France	719853-051
	Textured island style black finish for use in Italy	719853-061
	Textured island style black finish for use in Spain	719853-071
	Textured island style black finish for use in Portugal	719853-131
	Textured island style black finish for use in Turkey	719853-141
	Textured island style black finish for use in Greece	719853-151
	Textured island style black finish for use in Latin America	719853-161
	Textured island style black finish for use in Saudi Arabia	719853-171
	Textured island style black finish for use in Hungary	719853-211
	Textured island style black finish for use in Russian	719853-251
	Textured island style black finish for use in Bulgaria	719853-261
	Textured island style black finish for use in Romania	719853-271
	Textured island style black finish for use in Belgium	719853-A41
	Textured island style black finish for International use	719853-B31
	Textured island style black finish for use in Slovenia	719853-BA1

Item	Component	Spare part number
	Textured island style black finish for use in Israel	719853-BB1
	Textured island style black finish for use in Switzerland	719853-BG1
	Textured island style black finish for use in Nordic regions	719853-DH1
	Textured island style black finish for use in Czech Republic and Slovakia	719853-FL1
	Textured island style black finish for use in Northwest Africa	719853-FP1
	Painted island style white finish for use in the United States	720597-001
	Painted island style white finish for use in the United Kingdom	720597-031
	Painted island style white finish for use in Greece	720597-041
	Painted island style white finish for use in France	720597-051
	Painted island style white finish for use in Italy	720597-061
	Painted island style white finish for use in Spain	720597-071
	Painted island style white finish for use in Portugal	720597-131
	Painted island style white finish for use in Turkey	720597-141
	Painted island style white finish for use in Greece	720597-151
	Painted island style white finish for use in Latin America	720597-161
	Painted island style white finish for use in Saudi Arabia	720597-171
	Painted island style white finish for use in Hungary	720597-211
	Painted island style white finish for use in Russia	720597-251
	Painted island style white finish for use in Bulgaria	720597-261
	Painted island style white finish for use in Romania	720597-271
	Painted island style white finish for use in Thailand	720597-281
	Painted island style white finish for use in Japan	720597-291
	Painted island style white finish for use in Belgium	720597-A41
	Painted island style white finish for use in Taiwan	720597-AB1
	Painted island style white finish for use in South Korea	720597-AD1
	Painted island style white finish for International use	720597-B31
	Painted island style white finish for use in Slovenia	720597-BA1
	Painted island style white finish for use in Israel	720597-BB1
	Painted island style white finish for use in Switzerland	720597-BG1
	Painted island style white finish for use in Canada	720597-DB1
	Painted island style white finish for use in Nordic regions	720597-DH1
	Painted island style white finish for use in the Czech Republic and Slovakia	720597-FL1
	Painted island style white finish for use in Northwest Africa	720597-FP1
(3)	**Top cover** (includes TouchPad board and cable):	

Item	Component	Spare part number
	In pearl white finish	732091-001
	In flyer red finish	732092-001
	In revolutionary blue finish	732093-001
	In regal purple finish	732094-001
	In sparkling black finish	732095-001
	In aluminium metal finish	732096-001
	In mineral black finish	737178-001
	In Goji berry finish	737179-001
	In hazel berry finish	737180-001
	In raspberry finish	737181-001
(4)	**Power button board** (includes cable)	732076-001
(5)	**TouchPad button board** (includes cable)	732078-001
(6)	Power connector bracket is available with the power connector, (spare part number 732067-001)	
(7)	Optical drive connector cable is available with the optical drive, (spare part number 732075-001)	
(8)	**Audio/USB port**	732077-001
(9)	**Hard drive** (does not include hard drive connector cable or hard drive rubber bracket):	
	1 TB, 5400 rpm, 7.0 mm/9.5 mm	676521-005
	750 GB, 5400 rpm, 7.0 mm/9.5 mm	634250-005
	500 GB, 5400 rpm, 7.0 mm	683802-005
	500 GB, 5400 rpm, 9.5 mm	669299-005
	1 TB, 5400 rpm + 8 GB NAND hybrid, 9.5 mm, for use with computer models with Intel processors	731999-005
	750 GB 5400 rpm + 8 GB NAND hybrid, 9.5 mm, for use with computer models with Intel processors	732001-005
	500 GB 5400 rpm + 8 GB NAND hybrid, 7 mm, for use with computer models with Intel processors	732000-005
	Hard Drive Hardware Kit (not illustrated, includes hard drive rubber bracket, 2 hard drive retention brackets, and hard drive connector cable).	732071-001
(10)	**System board** (includes replacement thermal material):	
	For computer models equipped with Intel processors and discrete graphics 4th generation	
	Intel Core i7-4500U 1.8 GHz processor (4.0 MB L3 cache, 15 W) for use with FreeDOS and Ubuntu	751493-001
	Intel Core i7-4500U 1.8 GHz processor (4.0 MB L3 cache, 15 W for use with Windows Standard	751493-501
	Intel Core i7-4500U 1.8 GHz processor (4.0 MB L3 cache, 15 W for use with Windows Pro	751493-601
	Intel Core i5-4200U 740M 1.6-GHz (2 GB DC BGA 15 W) for use with FreeDOS and Ubuntu	736377-001

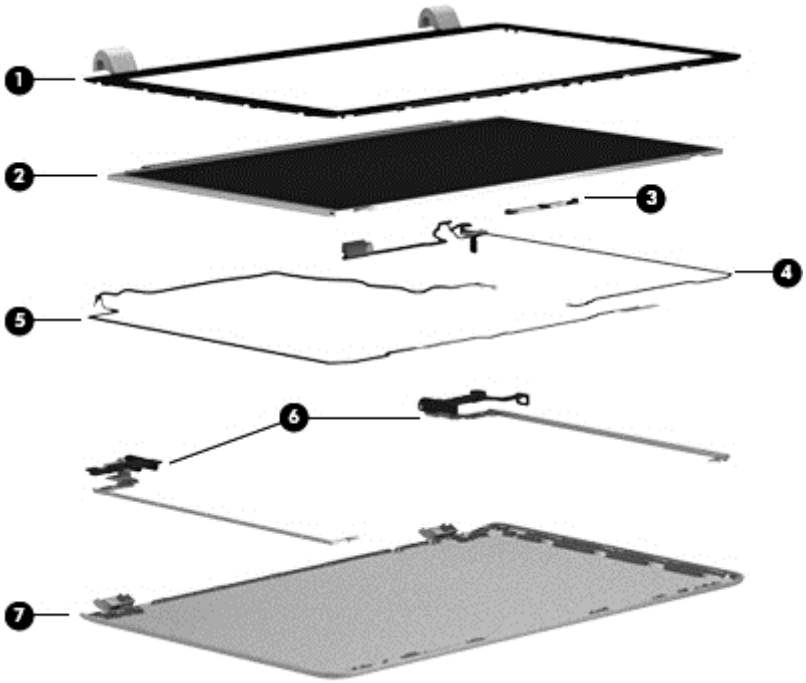
Item	Component	Spare part number
	Intel Core i5-4200U 740M 1.6-GHz (2 GB DC BGA 15 W) for use with Windows Standard	736377-501
	Intel Core i5-4200U 740M 1.6-GHz (2 GB DC BGA 15 W) for use with Windows Professional	736377-601
	Intel Core i5-4200U 840M 1.6-GHz (2 GB DC BGA 15 W) for use with FreeDOS and Ubuntu	751494-001
	Intel Core i5-4200U 840M 1.6-GHz (2 GB DC BGA 15 W) for use with Windows Standard	751494-501
	Intel Core i5-4200U 840M 1.6-GHz (2 GB DC BGA 15 W) for use with Windows Professional	751494-601
	Intel Core i5-4200M 840M 1.6-GHz (2 GB DC BGA 15 W) for use with FreeDOS and Ubuntu	754312-001
	Intel Core i5-4200M 840M 1.6-GHz (2 GB DC BGA 15 W) for use with Windows Standard	754312-501
	Intel Core i5-4200U 8670M 1.6-GHz (2 GB DC BGA 15 W) for use with Windows Professional	754312-601
	For computer models equipped with Intel 3rd generation processors	
	Intel Celeron 1007U DC (1.5 GHz, 2 MB L3 Cache, 1600MHz DDR3, 17 W) for use with FreeDOS and Ubuntu	737981-001
	Intel Celeron 1007U DC (1.5 GHz, 2 MB L3 Cache, 1600MHz DDR3, 17 W) for use with Windows Standard	737981-501
	Intel Celeron 1007U DC (1.5 GHz, 2 MB L3 Cache, 1600MHz DDR3, 17 W) for use with Windows Professiona	737981-601
	Intel Core i3-3217U DC (1.8 GHz, 3 MB L3 Cache, 1600MHz DDR3, 17 W) for use with FreeDOS and Ubuntu	737982-001
	Intel Core i3-3217U DC (1.8 GHz, 3 MB L3 Cache, 1600MHz DDR3, 17 W) for use with Windows Standard	737982-501
	Intel Core i3-3217U DC (1.8 GHz, 3 MB L3 Cache, 1600MHz DDR3, 17 W) for use with Windows Professional	737982-601
	Intel Pentium 2117U DC (1.8 GHz, 2 MB L3 Cache, 1600MHz DDR3, 17 W) for use with FreeDOS and Ubuntu	737983-001
	Intel Pentium 2117U DC (1.8 GHz, 2 MB L3 Cache, 1600MHz DDR3, 17 W) for use with Windows Standard	737983-501
	Intel Pentium 2117U DC (1.8 GHz, 2 MB L3 Cache, 1600MHz DDR3, 17 W) for use with Windows Professional	737983-601
	For computer models equipped with AMD UMA processors	
	AMD A4-5000 1.5 GHz (2 MB, L2, 1600MHz DDR3L, Quad 15 W) for use with FreeDOS and Ubuntu	734826-001
	AMD A4-5000 1.5 GHz (2 MB, L2, 1600MHz DDR3L, Quad 15 W) for use with Windows Standard	734826-501
	AMD A4-5000 1.5 GHz (2 MB, L2, 1600MHz DDR3L, Quad 15 W) for use with Windows Professional	734826-601
	AMD A6-5000 1.5 GHz (2 MB, L2, 1600MHz DDR3L, Quad 15 W) for use with FreeDOS and Ubuntu	734827-001
	AMD A6-50001.5 GHz (2 MB, L2, 1600MHz DDR3L, Quad 15 W) for use with Windows Standard	734827-501
	AMD A6-5000 1.5 GHz (2 MB, L2, 1600MHz DDR3L, Quad 15 W) for use with Windows Professional	734827-601

Item	Component	Spare part number
	AMD A8-5545M A76M 2.7-GHz/1.7-GHz (4-MB L2, 1333MHz DDR3L Quad 19 W) for use with FreeDOS and Ubuntu.	734829-001
	AMD A8-5545M A76M 2.7-GHz/1.7-GHz (4-MB L2, 1333MHz DDR3L Quad 19 W) for use with Windows Standard	734829-501
	AMD A8-5545M A76M 2.7-GHz/1.7-GHz (4-MB L2, 1333MHz DDR3L Quad 19 W) for use with Windows Professional.	734829-601
	AMD A8- 4555M 2.4 GHz/1.6 GHz (4 MB, L2, 1333MHz DDR3L Quad 19 W) for use with FreeDOS and Ubuntu	737140-001
	AMD A8- 4555M 2.4 GHz/1.6 GHz (4 MB, L2, 1333MHz DDR3L Quad 19 W) for use with Windows Standard	737140-501
	AMD A8- 4555M 2.4 GHz/1.6 GHz (4 MB, L2, 1333MHz DDR3L Quad 19 W) for use with Windows Professional	737140-601
	AMD E1-2500 1.4 GHz (1 MB, L2, 1600MHz DDR3L, Dual 15 W) for use with FreeDOS and Ubuntu	737141-001
	AMD E1-2500 1.4 GHz (1 MB, L2, 1600MHz DDR3L, Dual 15 W) for use with Windows Standard	737141-501
	AMD E1-2500 1.4 GHz (1 MB, L2, 1600MHz DDR3L, Dual 15 W) for use with Windows Professional	737141-601
	AMD A10-5745M A76M 2.9 GHz/2.1 GHz (4 MB, L2, 1333MHz DDR3L Quad 25 W) for use with FreeDOS and Ubuntu	738124-001
	AMD A10-5745M A76M 2.9 GHz/2.1 GHz (4 MB, L2, 1333MHz DDR3L Quad 25 W) for use with Windows Standard	738124-501
	AMD A10-5745M A76M 2.9 GHz/2.1 GHz (4 MB, L2, 1333MHz DDR3L Quad 25 W) for use with Windows Professional	738124-601
	For computer models equipped with AMD Discrete processors	
	AMD A4-5000 8670M 1.5 GHz (1 GB, L2, 1600MHz DDR3L Quad 15 W) for use with FreeDOS and Ubuntu	734820-001
	AMD A4-5000 8670M 1.5 GHz (1 GB, L2, 1600MHz DDR3L Quad 15 W) for use with Windows Standard	734820-501
	AMD A4-5000 8670M 1.5 GHz (1 GB, L2, 1600MHz DDR3L Quad 15 W) for use with Windows Professional	734820-601
	AMD A6-5200 8670M 2.0 GHz (1 GB, L2, 1600MHz DDR3L, Quad 25 W) for use with FreeDOS and Ubuntu	734821-001
	AMD A6-5200 8670M 2.0 GHz (1 GB, L2, 1600MHz DDR3L, Quad 25 W) for use with Windows Standard	734821-501
	AMD A6-5200 8670M 2.0 GHz, L2 (1 GB, 1600MHz DDR3L, Quad 25 W) for use with Windows Professional	734821-601
	AMD A10-5745M 8670M 2 GB (2.9-GHz/2.1-GHz, L2, 1333MHz DDR3L Quad 25 W) for use with FreeDOS and Ubuntu.	734824-001
	AMD A10-5745M 8670M 2.9 GHz/2.1 GHz (2 GB L2, 1333MHz DDR3L Quad 25 W) for use with Windows Standard.	734824-501
	AMD A10-5745M 8670M 2.9 GHz/2.1 GHz (2 GB L2, 1333MHz DDR3L Quad 25 W) for use with Windows Professional.	734824-601

Item	Component	Spare part number
	AMD A10-4655M 8670M (2.8-GHz/2.0-GHz, 2-GB L2, 1333MHz DDR3L Quad 25 W) for use with FreeDOS and Ubuntu.	737138-001
	AMD A10- 4655M 8670M 2.8 GHz/2.0 GHz (2 GB L2, 1333MHz DDR3L Quad 25 W) for use with Windows Standard.	737138-501
	AMD A10- 4655M 8670M 2.8 GHz/2.0 GHz (2 GB L2, 1333MHz DDR3L Quad 25 W) for use with Windows Professional.	737138-601
	For computer models equipped with HP UMA processors	
	HP A4-5050 (1.55 GHz, 2MB L2 1600 MHz DDR3L) quad core, 13.5 W	755270-001
	HP A4-5050 (1.55 GHz, 2MB L2 1600 MHz DDR3L) quad core, 13.5 W	755270-501
	HP A4-5050 (1.55 GHz, 2MB L2 1600 MHz DDR3L) quad core, 13.5 W	755270-601
(11)	**Fan**	732068-001
(12)	**RTC battery**	697917-001
(13)	**Heat sink assembly** (includes replacement thermal material):	
	Heat sink for use only on computer models equipped with a graphics subsystem with AMD UMA memory 19 W	734448-001
	Heat sink for use only on computer models equipped with a graphics subsystem with AMD UMA memory 25 W	734449-001
	Heat sink for use only on computer models equipped with a graphics subsystem with AMD discrete memory 19 W	734450-001
	Heat sink for use only on computer models equipped with a graphics subsystem with AMD discrete memory 25 W	734451-001
	For use only on computer models equipped with Intel HM76 chipset and UMA graphics	742330-001
	For use only on computer models equipped with Intel HM76 chipset and switchable discrete graphics	742331-001
	For use only on computer models equipped with Intel processors and UMA graphics	742581-001
	For use only on computer models equipped with Intel processors and switchable discrete graphics	742582-001
(14)	**Power connector** (includes bracket):	732067-001
(15)	**Hard drive connector cable** is available in the hardware kit, part number 732071-001	
(16)	**Memory modules** (2, PC3L, 12800, 1600-MHz):	
	2 GB memory module	691739-001
	4 GB memory module	691740-001
	8 GB memory module PC3L 12800 1600Mhz SHARED	693374-001
	8 GB memory module PC3 12800 1600Mhz SHARED	670034-001
(17)	**WLAN module:**	
	Ralink RT3290LE 802.11 bgn 1×1 Wi-Fi and Bluetooth 4.0 combo adapter	690020-001
	Qualcomm Atheros AR9485 802.11 bgn Wi-Fi adapter	675794-001
	Realtek RTL8188EE 802.11bgn Wi-Fi Adapter for use on all computer models	709848-001

Item	Component	Spare part number
	Intel Wireless-N 7260BN 802.11 bgn 2x2 Wi-Fi + Bluetooth 4.0 combo adaptor for use with computer models with Intel processors, not supported on Ubuntu Linux	717384-001
	Qualcomm Atheros QCA9565 802.11 bgn 1x1 Wi-Fi + Bluetooth 4.0 combo	733476-001
(18)	**Speakers** (include, speaker cables, and 4 rubber isolators)	732084-001
(19)	**4 cell, 41-Wh, 2.8-Ah, Li-ion battery**	728460-001
(20)	**Base enclosure** (includes battery release latch mechanism and RJ45 cover)	742580-001
(21)	**Optical Drive** SuperMulti DVD±R/RW Double-Layer Drive (includes bezel and bracket)	732075-001
	BD combo for computer models with Intel processors, no support for Ubuntu Linux	749173-001
(22)	**Service door** (part of the plastics kit 732079-001)	

Display assembly subcomponents



Item	Component	Spare part number
(1)	**Display bezel** (includes 2 rubber screws)	725617-001
(2)	**15.6-in, BrightView, HD, LED, SVA display panel** (screws included in the screw kit, spare part number 732082-001)	732080-001
	15.6-in, BrightView, HD, LED, SVA Touchscreen display panel (For Touchscreens, the screws spare part number is 732083-001)	
	In aluminum metal finish	732073-001
	In sparkling black finish	732074-001
	In pearl white finish	737170-001

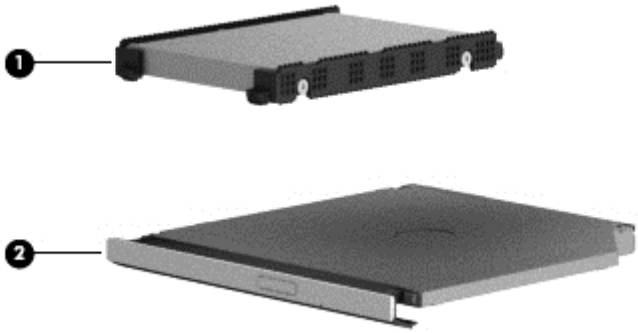
Item	Component	Spare part number
	In flyer red finish	737171-001
	In revolutionary blue finish	737172-001
	In regal purple finish	737173-001
	In mineral black finish	737174-001
	In Goji berry finish	737175-001
	In hazel berry finish	737176-001
	In raspberry finish	737177-001
(3)	**Webcam/microphone module** (includes adhesive)	738664-001
(4)	**Display panel cable** (includes webcamera/microphone module cable and two rubber screws)	732066-001
(5)	**Antenna Kit** (includes left and right wireless antenna cables and transceivers and 2 rubber screws)	732063-001
(6)	**Display Hinge Kit** (includes left and right hinges and 2 rubber screws):	732072-001
(7)	**Display back enclosure** (includes 2 rubber screw covers):	
	In pearl white finish	725611-001
	In sparkling black finish	725612-001
	In flyer red finish	725613-001
	In revolutionary blue finish	725614-001
	In regal purple finish	725615-001
	In aluminum metal finish	732064-001
	In mineral black finish	737166-001
	In Goji berry finish	737167-001
	In hazel berry finish	737168-001
	In raspberry finish	737169-001

Miscellaneous parts

Component	Spare part number
AC adapter:	
45 W HP Smart AC adapter (nPFC, RC, 3-wire, 4.5 mm)	741727-001
65 W HP Smart AC adapter (nPFC, RC, 3-wire, 4.5 mm), select models only	714657-001
65 W HP Smart AC adapter (nPFC, RC, 3-wire, 4.5 mm)	710412-001
90 W HP Smart AC adapter (PFC, RC, 3-wire, 4.5 mm), for use with computer models with AMD processors	710413-001
90 W HP Smart AC adapter (PFC, RC, 3-wire, 4.5 mm), for use with computer models with AMD processors, select models only	710414-001

Component	Spare part number
Power cord (3-pin, black, 1.83-m):	
For use in the United States	490371-001
For use in Australia	490371-011
For use in Europe	490371-021
For use in Denmark	490371-081
For use in Switzerland	490371-111
For use in Japan	490371-291
For use in Taiwan	490371-AB1
For use in the People's Republic of China	490371-AA1
For use in South Korea	490371-AD1
For use in Thailand	490371-201
For use in the United Kingdom and Singapore	490371-031
For use in South Africa	490371-AR1
For use in Israel	490371-BB1
For use in India	490371-D61
Screw Kit for non Touchscreens	732082-001
Screw Kit for Touchscreens	732083-001
HDMI to VGA Adapter	701943-001

Mass storage devices



Item	Component	Spare part number
(1)	**Hard drive** (does not include the hard drive rubber bracket, hard drive connector cable, or screws)	
	1 TB, 5400 rpm, 9.5 mm	676521-001
	750 GB, 5400 rpm, 9.5 mm	634250-001
	500 GB 5400 rpm, 9.5 mm	669299-005
	500 GB 5400 rpm 7 mm	683802-005
	1 TB, 5400 rpm + 8 GB NAND hybrid, 9.5 mm, for use with computer models with Intel processors	731999-005
	750 GB 5400 rpm + 8 GB NAND hybrid, 9.5 mm, for use with computer models with Intel processors	732001-005
	500 GB 5400 rpm + 8 GB NAND hybrid, 7 mm, for use with computer models with Intel processors	732000-005
	Hard Drive Hardware Kit, includes:	732071-001
	Hard drive rubber bracket	
	Hard drive connector cable	
	Hard drive screws (2, not illustrated)	
(2)	**Optical drive:** Supports Zero power ODD (includes optical drive hardware kit with optical drive bezel, bracket and connector cable).	
	DVD+/-RW DL SuperMulti --	732075-001
	BD combo for computer models with Intel processors, no support for Ubuntu Linux	749173-001

Sequential part number listing

Spare part number	Description
490371-001	Power cord for use in North America (3-pin, black, 1.83-m)
490371-011	Power cord for use in Australia (3-pin, black, 1.83-m)
490371-021	Power cord for use in Europe (3-pin, black, 1.83-m)
490371-031	Power cord for use in the United Kingdom and Singapore (3-pin, black, 1.83-m)

Spare part number	Description
490371-081	Power cord for use in Denmark (3-pin, black, 1.83-m)
490371-111	Power cord for use in Switzerland (3-pin, black, 1.83-m)
490371-201	Power cord for use in Thailand (3-pin, black, 1.83-m)
490371-291	Power cord for use in Japan (3-pin, black, 1.83-m)
490371-AA1	Power cord for use in the People's Republic of China (3-pin, black, 1.83-m)
490371-AB1	Power cord for use in Taiwan (3-pin, black, 1.83-m)
490371-AD1	Power cord for use in South Korea (3-pin, black, 1.83-m)
490371-AR1	Power cord for use in South Africa (3-pin, black, 1.83-m)
490371-BB1	Power cord for use in Israel (3-pin, black, 1.83-m)
490371-D61	Power cord for use in India (3-pin, black, 1.83-m)
634250-005	750-GB, 5400-rpm hard drive (SATA, 9.5-mm, does not include hard drive rubber bracket, 2 hard drive retention brackets, or hard drive connector cable)
669299-005	500-GB, 5400-rpm hard drive (SATA, 9.5-mm, does not include hard drive rubber bracket, 2 hard drive retention brackets, hard drive connector cable, or screws)
670034-001	Memory 8 GB PC3 12800 1600Mhz SHARED
675794-001	WLAN Qualcomm Atheros AR9485 802.11 bgn Wi-Fi adapter
676521-001	1-TB, 5400-rpm hard drive (SATA, 12.7-mm, does not include hard drive rubber bracket, 2 hard drive retention brackets, hard drive connector cable, or screws)
683802-005	500-GB, 5400-rpm hard drive (SATA, 7.0-mm, does not include hard drive rubber bracket, 2 hard drive retention brackets, hard drive connector cable, or screws)
690020-001	WLAN Ralink RT3290LE 802.11 bgn 1×1 Wi-Fi and Bluetooth 4.0 combo adapter
691739-001	2-GB memory module (PC3, 12800, 1600-MHz)
691740-001	4-GB memory module (PC3, 12800, 1600-MHz)
693374-001	8-GB memory module (PC3, 12800, 1600-MHz)
697917-001	RTC battery
701943-001	HDMI to VGA adapter
709848-001	WLAN Realtek RTL8188EE 802.11bgn Wi-Fi Adapter for use on all computer models
710412-001	65 W HP Smart AC adapter (nPFC, RC, 3-wire, 4.5 mm)
710413-001	90 W HP Smart AC adapter (PFC, RC, 3-wire, 4.5 mm), for use with computer models with AMD processors
710414-001	90 W HP Smart AC adapter (PFC, RC, 3-wire, 4.5 mm), for use with computer models with AMD processors, select models only
714657-001	65 W HP Smart AC adapter (nPFC, RC, 3-wire, 4.5 mm)
717384-001	Intel Wireless-N 7260BN 802.11 bgn 2x2 Wi-Fi + Bluetooth 4.0 combo adaptor for use with computer models with Intel processors, not supported on Ubuntu Linux
719853-001	Keyboard in black finish for use in the United States (includes keyboard cable)
719853-031	Keyboard in black finish for use in the United Kingdom (includes keyboard cable)
719853-041	Keyboard in black finish for use in Germany (includes keyboard cable)

Spare part number	Description
719853-051	Keyboard in black finish for use in France (includes keyboard cable)
719853-061	Keyboard in black finish for use in Italy (includes keyboard cable)
719853-071	Keyboard in black finish for use in Spain (includes keyboard cable)
719853-131	Keyboard in black finish for use in Portugal (includes keyboard cable)
719853-141	Keyboard in black finish for use in Turkey (includes keyboard cable)
719853-151	Keyboard in black finish for use in Greece (includes keyboard cable)
719853-161	Keyboard in black finish for use in Latin America (includes keyboard cable)
719853-171	Keyboard in black finish for use in Saudi Arabia (includes keyboard cable)
719853-211	Keyboard in black finish for use in Hungary (includes keyboard cable)
719853-251	Keyboard in black finish for use in Russia (includes keyboard cable)
719853-261	Keyboard in black finish for use in Bulgaria (includes keyboard cable)
719853-271	Keyboard in black finish for use in Romania (includes keyboard cable)
719853-281	Keyboard in black finish for use in Thailand (includes keyboard cable)
719853-291	Keyboard in black finish for use in Japan (includes keyboard cable)
719853-A41	Keyboard in black finish for use in Belgium (includes keyboard cable)
719853-AB1	Keyboard in black finish for use in Taiwan (includes keyboard cable)
719853-AD1	Keyboard in black finish for us in South Korea (includes keyboard cable)
719853-B31	Keyboard in black finish for International use (includes keyboard cable)
719853-BA1	Keyboard in black finish for use in Slovenia (includes keyboard cable)
719853-BB1	Keyboard in black finish for use in Israel (includes keyboard cable)
719853-BG1	Keyboard in black finish for use in Switzerland (includes keyboard cable)
719853-DB1	Keyboard in black finish for use in Canada (includes keyboard cable)
719853-DH1	Keyboard in black finish for use in Nordic regions (includes keyboard cable)
719853-FL1	Keyboard in black finish for use in Czech regions (includes keyboard cable)
719853-FP1	Keyboard in black finish for use in Northwest Africa (includes keyboard cable)
720597-001	Keyboard in black finish for use in the United States (includes keyboard cable)
720597-031	Keyboard in black finish for use in United Kingdom (includes keyboard cable)
720597-041	Keyboard in painted island style pearl white finish for use in Germany (includes keyboard cable)
720597-051	Keyboard in painted island style pearl white finish for use in France (includes keyboard cable)
720597-061	Keyboard in painted island style pearl white finish for use in Italy (includes keyboard cable)
720597-071	Keyboard in painted island style pearl white finish for use in Spain (includes keyboard cable)
720597-131	Keyboard in painted island style pearl white finish for use in Portugal (includes keyboard cable)
720597-141	Keyboard in painted island style pearl white finish for use in Turkey (includes keyboard cable)
720597-151	Keyboard in painted island style pearl white finish for use in Greece (includes keyboard cable)

Spare part number	Description
720597-161	Keyboard in painted island style pearl white finish for use in Latin America (includes keyboard cable)
720597-171	Keyboard in painted island style pearl white finish for use in Saudi Arabia (includes keyboard cable)
720597-211	Keyboard in painted island style pearl white finish for use in Hungarian (includes keyboard cable)
720597-251	Keyboard in painted island style pearl white finish for use in Russian (includes keyboard cable)
720597-261	Keyboard in linen white finish for use in Bulgaria (includes keyboard cable)
720597-271	Keyboard in painted island style pearl white finish for use in Romania (includes keyboard cable)
720597-281	Keyboard in painted island style pearl white finish for use in (includes keyboard cable)
720597-291	Keyboard in painted island style pearl white finish for use in Japan (includes keyboard cable)
720597-A41	Keyboard in painted island style pearl white finish for use in Belgium (includes keyboard cable)
720597-AB1	Keyboard in painted island style pearl white finish for use in Taiwan (includes keyboard cable)
720597-AD1	Keyboard in painted island style pearl white finish for use in Korea (includes keyboard cable)
720597-B31	Keyboard in painted island style pearl white finish for International use (includes keyboard cable)
720597-BA1	Keyboard in painted island style pearl white finish for use in Slovenia (includes keyboard cable)
720597-BB1	Keyboard in painted island style pearl white finish for use in Israel (includes keyboard cable)
720597-BG1	Keyboard in painted island style pearl white finish for use in Switzerland (includes keyboard cable)
720597-DB1	Keyboard in painted island style pearl white finish for use in (includes keyboard cable)
720597-DH1	Keyboard in painted island style pearl white finish for use in Nordic regions (includes keyboard cable)
720597-FL1	Keyboard in painted island style pearl white finish for use in the Czech Republic (includes keyboard cable)
720597-FP1	Keyboard in painted island style pearl white finish for use in the (includes keyboard cable)
725611-001	Display enclosure in pearl white
725612-001	Display enclosure in sparkling black
725613-001	Display enclosure in flyer red
725614-001	Display enclosure in revolutionary blue
725615-001	Display enclosure in regal purple
725617-001	Display bezel (includes 2 rubber screw covers and rubber bumpers)
728460-001	4 cell, 41 Wh, 2.8-Ah, Li-ion battery
731999-005	1 TB, 5400 rpm + 8 GB NAND hybrid, hard drive 9.5 mm, for use with computer models with Intel processors
732000-005	500 GB 5400 rpm + 8 GB NAND hybrid, hard drive 7 mm, for use with computer models with Intel processors
732001-005	750 GB 5400 rpm + 8 GB NAND hybrid, hard drive 9.5 mm, for use with computer models with Intel processors
732063-001	Antenna Kit (includes left and right wireless antenna cables and transceivers and 2 rubber screw covers)
732064-001	Display enclosure in aluminum metal finish (includes 2 rubber screw covers)
732065-001	Base enclosure (includes battery release latch mechanism and RJ45 cover)

Spare part number	Description
732066-001	Display panel cable (includes (includes webcam/microphone module cable and 2 rubber screw covers)
732067-001	Power connector cable (includes bracket)
732068-001	Fan
732071-001	Hard Drive Hardware Kit (includes hard drive rubber bracket, 2 hard drive retention brackets, 2 hard drive retention screws, and hard drive connector cable)
732072-001	Display Hinge Kit (includes left and right hinges and 2 rubber screw covers)
732073-001	15.6-in, LED, HD, BrightView display panel in aluminum metal (includes 2 rubber screw covers)
732074-001	15.6-in, LED, HD, BrightView display panel in sparkling black (includes 2 rubber screw covers)
732075-001	DVD±RW Double-Layer SuperMulti Drive (includes bezel and bracket)
732076-001	Power button board (includes cable)
732077-001	Audio/USB port
732078-001	TouchPad button board (includes cable)
732079-001	Cover Kit (includes service door and wireless module compartment cover)
732080-001	15.6-in, LED. HD, BrightView raw display panel (includes 2 rubber screw covers)
732082-001	Screw Kit
732084-001	Speakers (include subwoofer, speaker cables, and 4 rubber isolators)
732091-001	Top cover in pearl white finish (includes TouchPad and cable)
732092-001	Top cover in flyer red finish (includes TouchPad and cable)
732093-001	Top cover in revolutionary blue finish (includes TouchPad and cable)
732094-001	Top cover in regal purple finish (includes TouchPad and cable)
732095-001	Top cover in sparkling black finish (includes TouchPad and cable)
732096-001	Top cover in mineral black finish (includes TouchPad and cable)
733476-001	WLAN Qualcomm Atheros QCA9565 802.11 bgn 1x1 Wi-Fi + Bluetooth 4.0 combo
734448-001	Heat sink for use only on computer models equipped with a graphics subsystem with AMD UMA memory 19 W
734449-001	Heat sink for use only on computer models equipped with a graphics subsystem with AMD UMA memory 25 W
734450-001	Heat sink for use only on computer models equipped with a graphics subsystem with AMD discrete memory 19 W
734451-001	Heat sink for use only on computer models equipped with a graphics subsystem with AMD discrete memory 25 W
734820-001	System board AMD A4-5000 8670M 1.5 GHz (1 GB, L2, 1600MHz DDR3L quad core, 15 W) for use with FreeDOS and Ubuntu
734820-501	System board AMD A4-5000 8670M 1.5 GHz (1 GB, L2, 1600MHz DDR3L quad core, 15 W) for use with Windows Standard.
734820-601	System board AMD A4-5000 8670M 1.5 GHz (1 GB, L2, 1600MHz DDR3L quad core, 15 W) for use with Windows Professional.

Spare part number	Description
734821-001	System board AMD AMD A6-5200 8670M 2.0 GHz (1 GB, L2, 1600MHz DDR3L, quad core, 25 W) for use with FreeDOS and Ubuntuu.
734821-501	System board AMD AMD A6-5200 8670M 2.0 GHz (1 GB, L2, 1600MHz DDR3L, quad core, 25 W) for use with Windows Standard.
734821-601	System board AMD AMD A6-5200 8670M 2.0 GHz (1 GB, L2, 1600MHz DDR3L, quad core, 25 W) for use with Windows Professional.
734824-001	System board AMD A10-5745M 8670M 2 GB (2.9-GHz/2.1-GHz, L2, 1333MHz DDR3L quad core, 25 W) for use with FreeDOS and Ubuntu
734824-501	System board AMD A10-5745M 8670M 2 GB (2.9-GHz/2.1-GHz, L2, 1333MHz DDR3L quad core, 25 W) for use with Windows Standard.
734824-601	System board AMD A10-5745M 8670M 2 GB (2.9-GHz/2.1-GHz, L2, 1333MHz DDR3L quad core, 25 W) for use with Windows Professional.
734826-001	System board AMD A4-5000 1.5 GHz (2 MB, L2, 1600MHz DDR3L, quad core, 15 W) for use with FreeDOS and Ubuntu for use with FreeDOS and Ubuntu.
734826-501	System board AMD A4-5000 1.5 GHz (2 MB, L2, 1600MHz DDR3L, quad core, 15 W) for use with Windows Standard.
734826-601	System board AMD A4-5000 1.5 GHz (2 MB, L2, 1600MHz DDR3L, quad core, 15 W) for use with Windows Professional.
734827-001	System board AMD A6-5000 (1.5 GHz, 2 MB L2, 1600MHz DDR3L, quad core, 15 W) for use with FreeDOS and Ubuntu.
734827-501	System board AMD A6-5000 (1.5 GHz, 2 MB L2, 1600MHz DDR3L, quad core, 15 W) for use with Windows Standard.
734827-601	System board AMD A6-5000 (1.5 GHz, 2 MB L2, 1600MHz DDR3L, quad core, 15 W) for use with Windows Professional.
734829-001	System board AMD A8-5545M A76M (2.7 GHz/1.7 GHz, 4 MB L2, 1333MHz DDR3Lquad core, 19 W) for use with FreeDOS and Ubuntu.
734829-501	System board AMD A8-5545M A76M (2.7 GHz/1.7G Hz, 4 MB L2, 1333MHz DDR3L quad core, 19 W) for use with Windows Standard.
734829-601	System board AMD A8-5545M A76M (2.7 GHz/1.7 GHz, 4 MB L2, 1333MHz DDR3L quad core, 19 W) for use with Windows Professional.
737138-001	System board AMD A10- 4655M 8670M (2.8 GHz/2.0 GHz, 2 GB L2, 1333MHz DDR3L quad core, 25 W) for use with FreeDOS and Ubuntu.
737138-501	System board AMD A10- 4655M 8670M (2.8 GHz/2.0 GHz, 2 GB L2, 1333MHz DDR3L quad core, 25 W) for use with Windows Standard.
737138-601	System board AMD A10- 4655M 8670M (2.8 GHz/2.0 GHz, 2 GB L2, 1333MHz DDR3L quad core, 25 W) for use with Windows Professional.
737140-001	System board AMD A8- 4555M (2.4 GHz/1.6 GHz, 4 MB L2, 1333MHz DDR3L quad core, 19 W) for use with FreeDOS and Ubuntu.
737140-501	System board AMD A8- 4555M (2.4 GHz/1.6 GHz, 4 MB L2, 1333MHz DDR3L quad core, 19 W) for use with Windows Standard.
737140-601	System board AMD A8- 4555M (2.4 GHz/1.6 GHz, 4 MB L2, 1333MHz DDR3L quad core, 19 W) for use with Windows Professional.
737141-001	System board AMD E1-2500 (1.4 GHz, 1 MB L2, 1600MHz DDR3L, dual core, 15 W) for use with FreeDOS and Ubuntu.

Spare part number	Description
737141-501	System board AMD E1-2500 (1.4 GHz, 1 MB L2, 1600MHz DDR3L, dual core, 15 W) for use with Windows Standard.
737141-601	System board AMD E1-2500 (1.4 GHz, 1 MB L2, 1600MHz DDR3L, dual core, 15 W) for use with Windows Professional.
737166-001	Display enclosure in mineral black finish
737167-001	Display enclosure in Goji berry finish
737168-001	Display enclosure in hazel berry finish
737169-001	Display enclosure in raspberry finish
737170-001	Touchscreen display 15.6 BV HD PRW in pearl white finish
737171-001	Touchscreen display 15.6 BV HD PRW in flyer red finish
737172-001	Touchscreen display 15.6 BV HD PRW in revolutionary blue finish
737173-001	Touchscreen display 15.6 BV HD PRW in regal purple finish
737174-001	Touchscreen display 15.6 BV HD PRW in mineral black finish
737175-001	Touchscreen display 15.6 BV HD PRW in Goji berry finish
737176-001	Touchscreen display 15.6 BV HD PRW in hazel berry finish
737177-001	Touchscreen display 15.6 BV HD PRW in raspberry finish
737178-001	Top cover in mineral black finish
737179-001	Top cover in Goji berry finish
737180-001	Top cover in hazel berry finish
737181-001	Top cover in raspberry finish
738124-001	System board AMD A10-5745M A76M (2.9 GHz/2.1 GHz, 4 MB L2, 1333MHz DDR3L quad core, 25 W) for use with FreeDOS and Ubuntu
738124-501	System board AMD A10-5745M A76M (2.9 GHz/2.1 GHz, 4 MB L2, 1333MHz DDR3L quad core, 25 W) for use with Windows Standard.
738124-601	System board AMD A10-5745M A76M (2.9 GHz/2.1 GHz, 4 MB L2, 1333MHz DDR3L quad core, 25 W) for use with Windows Professional.
737981-001	System board with Intel Celeron 1007U DC (1.5 GHz, 2 MB L3 Cache, 1600MHz DDR3) for use with FreeDOS and Ubuntu
737981-501	System board with Intel Celeron 1007U DC (1.5 GHz, 2 MB L3 Cache, 1600MHz DDR3) for use with Windows Standard
737981-601	System board with Intel Celeron 1007U DC (1.5 GHz, 2 MB L3 Cache, 1600MHz DDR3) for use with Windows Professional
737982-001	System board with Intel Core i3-3217U DC (1.8 GHz, 3 MB L3 Cache, 1600MHz DDR3, 17 W) for use with FreeDOS and Ubuntu
737982-501	System board with Intel Core i3-3217U DC (1.8 GHz, 3 MB L3 Cache, 1600MHz DDR3, 17 W) for use with Windows Standard
737982-601	System board with Intel Core i3-3217U DC (1.8 GHz, 3 MB L3 Cache, 1600MHz DDR3, 17 W) for use with Windows Professional
737983-001	System board with Intel Pentium 2117U DC (1.8 GHz, 2 MB L3 Cache, 1600MHz DDR3, 17 W) for use with FreeDOS and Ubuntu

Spare part number	Description
737983-501	System board with Intel Pentium 2117U DC (1.8 GHz, 2 MB L3 Cache, 1600MHz DDR3, 17 W) for use with Windows Standard
737983-601	System board with Intel Pentium 2117U DC (1.8 GHz, 2 MB L3 Cache, 1600MHz DDR3, 17 W) for use with Windows Professional
738664-001	Webcamera/microphone module
741727-001	45 W HP Smart AC adapter (nPFC, RC, 3-wire, 4.5 mm), nslim
742330-001	Heat sink for use only on computer models equipped with Intel HM76 chipset and UMA graphics
742331-001	Heat sink for use only on computer models equipped with Intel HM76 chipset and switchable discrete graphics
742580-001	Base enclosure
742581-001	Heat sink for use only on computer models equipped with Intel processors and UMA graphics
742582-001	Heat sink for use only on computer models equipped with Intel processors and switchable discrete graphics
749173-001	Optical Drive BD combo for computer models with Intel processors, no support for Ubuntu Linux
751493-001	System board with Intel Core i7-4500U 1.8 GHz processor (4.0 MB L3 cache, 15 W) for use with FreeDOS and Ubuntu
751493-501	System board with Intel Core i7-4500U 1.8 GHz processor (4.0 MB L3 cache, 15 W for use with Windows Standard
751493-601	System board with Intel Core i7-4500U 1.8 GHz processor (4.0 MB L3 cache, 15 W for use with Windows Pro vb
751494-001	System board with Intel Core i5-4200U 840M 1.6-GHz (2 GB DC BGA 15 W) for use with FreeDOS and Ubuntu
751494-501	System board with Intel Core i5-4200U 840M 1.6-GHz (2 GB DC BGA 15 W) for use with Windows Standard
751494-601	System board with Intel Core i5-4200U 840M 1.6-GHz (2 GB DC BGA 15 W) for use with Windows Professional
754312-001	System board with Intel Core i5-4200U 1.6 GHz DC BGA 15 W) for use with FreeDOS and Ubuntu
754312-501	System board with Intel Core i5-4200U 1.6 GHz DC BGA 15 W) for use with Windows Standard
754312-601	System board with Intel Core i5-4200U 1.6 GHz DC BGA 15 W) for use with Windows Professional
755270-001	System board HP A4-5050 (1.55 GHz) quad core, 13 W
755270-501	System board HP A4-5050 (1.55 GHz) quad core, 13 W
755270-601	System board HP A4-5050 (1.55 GHz) quad core, 13 W

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

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.

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

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

Avoid exposing a drive to temperature extremes or liquids.

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

Grounding guidelines

Electrostatic discharge damage

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

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

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

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

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

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

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

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

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

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

Typical electrostatic voltage levels

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

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

Workstation guidelines

Follow these grounding workstation guidelines:

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

Equipment guidelines

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

- When seated, wear a wrist strap connected to a grounded system. Wrist straps are flexible straps with a minimum of one megohm ±10% resistance in the ground cords. To provide proper ground, wear a strap snugly against the skin at all times. On grounded mats with banana-plug connectors, use alligator clips to connect a wrist strap.
- When standing, use foot straps and a grounded floor mat. Foot straps (heel, toe, or boot straps) can be used at standing workstations and are compatible with most types of shoes or boots. On conductive floors or dissipative floor mats, use foot straps on both feet with a minimum of one megohm resistance between the operator and ground. To be effective, the conductive must be worn in contact with the skin.

The following grounding equipment is recommended to prevent electrostatic damage:

- Antistatic tape
- Antistatic smocks, aprons, and sleeve protectors
- Conductive bins and other assembly or soldering aids
- Nonconductive foam
- Conductive tabletop workstations with ground cords of one megohm resistance
- Static-dissipative tables or floor mats with hard ties to the ground
- Field service kits
- Static awareness labels
- Material-handling packages
- Nonconductive plastic bags, tubes, or boxes
- Metal tote boxes
- Electrostatic voltage levels and protective materials

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

Material	Use	Voltage protection level
Antistatic 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

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.

NOTE: 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.

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 12 screws that must be removed, replaced, and/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-Wh, 2.8-Ah, Li-ion battery	728460-001

Before disassembling the computer, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.

Remove the battery:

1. Turn the computer upside down on a flat surface.
2. Firmly slide the release latch **(1)** to unlock the battery and slide the battery release latch **(2)** to release the battery.
3. Slide the battery **(3)** from the middle to remove it from the computer.

To insert the battery:

CAUTION: Do not slant the battery as you insert it. Slide the battery in straight.

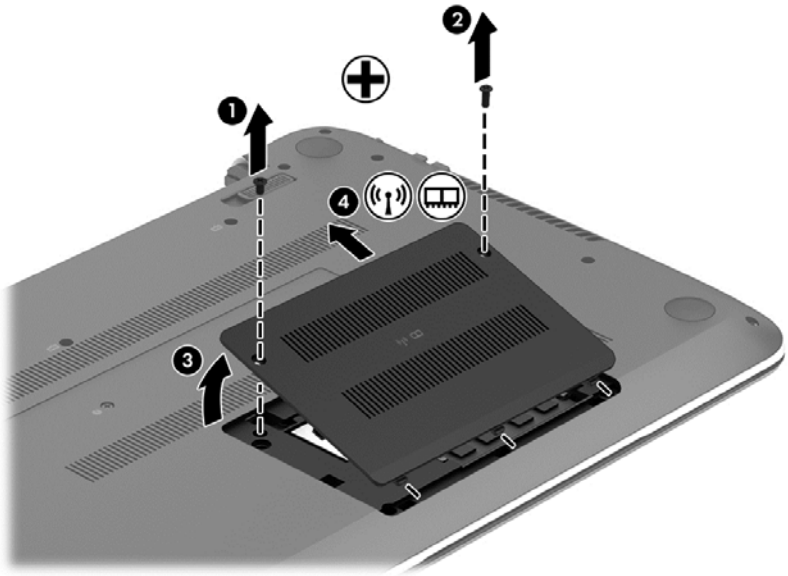
1. Holding the battery in the middle, slide the battery **(1)** straight into the computer until the battery release latch locks into place.

2. Reset the battery lock **(1)** to the locked position.

Service door

Description	Spare part number
Service door is available with the plastics kit.	732079-001

1. Using a small Phillips screwdriver, loosen the service door screws **(1)** and **(2)**.
2. Lift the door **(3)**.
3. Slide the service door **(4)** forward to remove.



Memory module

Description	Spare part number
4 GB memory module (PC3, 12800, 1600-MHz)	691740-001
2 GB memory module (PC3, 12800, 1600-MHz)	691739-001
8 GB memory module PC3L 12800 1600Mhz Shared	693374-001
8 GB memory module PC3L 12800 1600Mhz Shared	670034-001

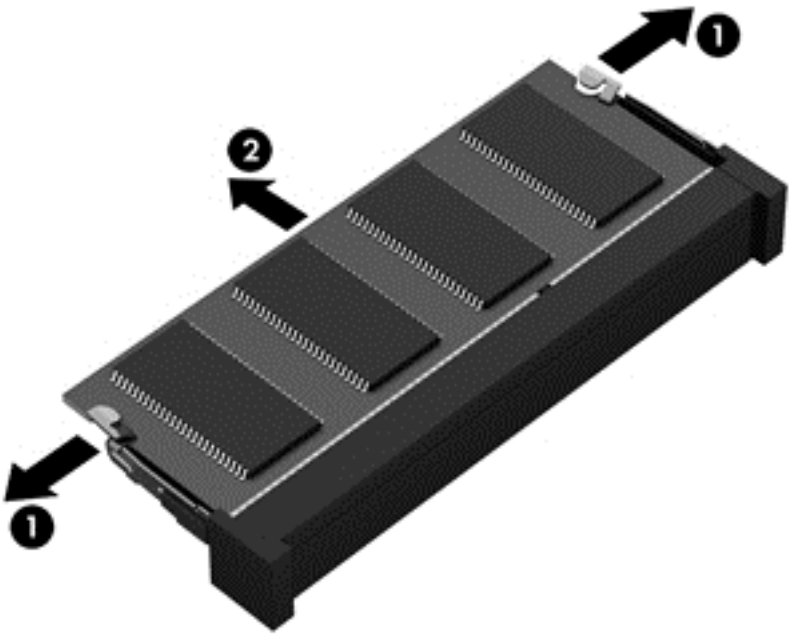
Before removing a memory module, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 40).
5. Remove the service door (see Service door on page 42).

Remove the memory module:

NOTE: Note the location of the memory module. If you are replacing it, install the new memory module in the same slot.

1. Spread the two 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 a 45 degree angle.



Reverse this procedure to install the memory module.

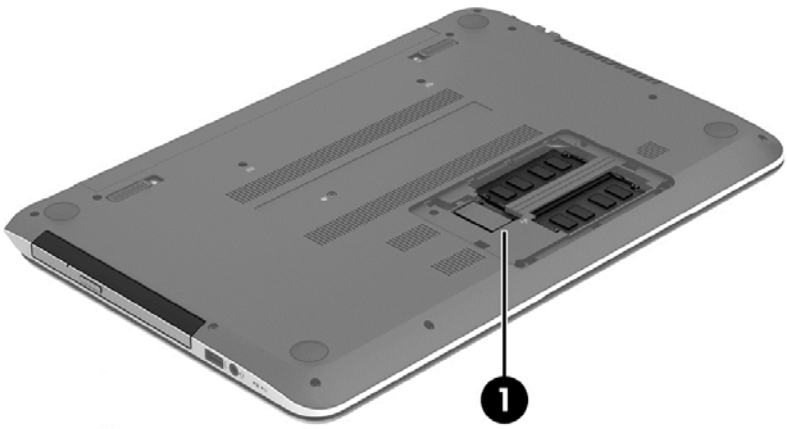
WLAN module

Description	Spare part number
Qualcomm Atheros AR9485 802.11 bgn Wi-Fi adapter	675794-001
Ralink RT3290LE 802.11 bgn 1×1 Wi-Fi and Bluetooth 4.0 combo adapter	690020-001
Realtek RTL8188EE 802.11 bgn Wi-Fi adapter	709848-001
Intel Wireless-N 7260BN 802.11 bgn 2x2 Wi-Fi + Bluetooth 4.0 combo adaptor for use with computer models with Intel processors, not supported on Ubuntu Linux	717384-001
Realtek RTL8188EE 802.11 bgn Wi-Fi adapter	733476-001

CAUTION: To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module to restore device functionality, and then contact technical support.

Before removing the WLAN module, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 40).
5. Remove the service door (see Service door on page 42).
6. Locate the WLAN module **(1)**.



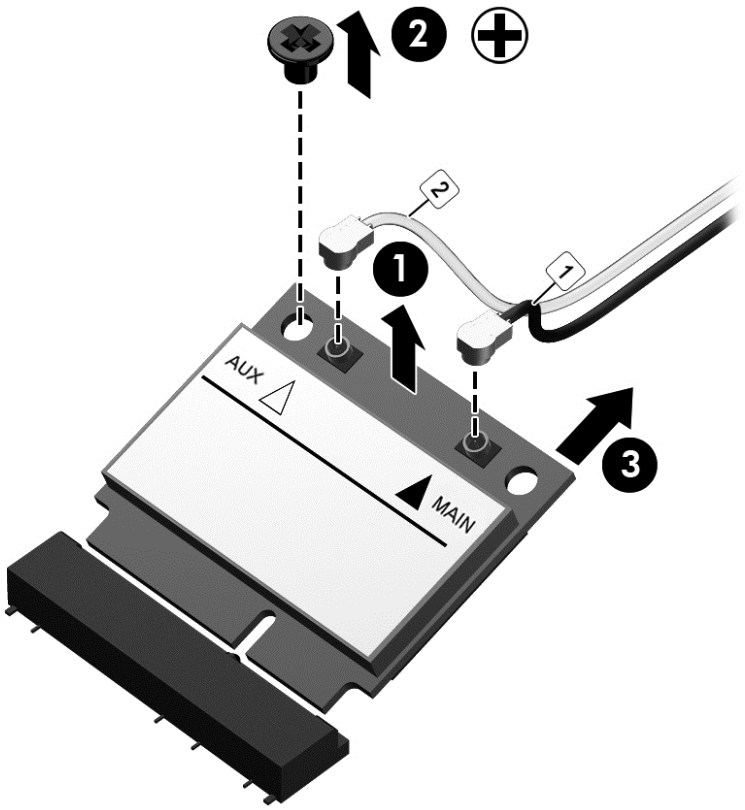
Remove the WLAN module:

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

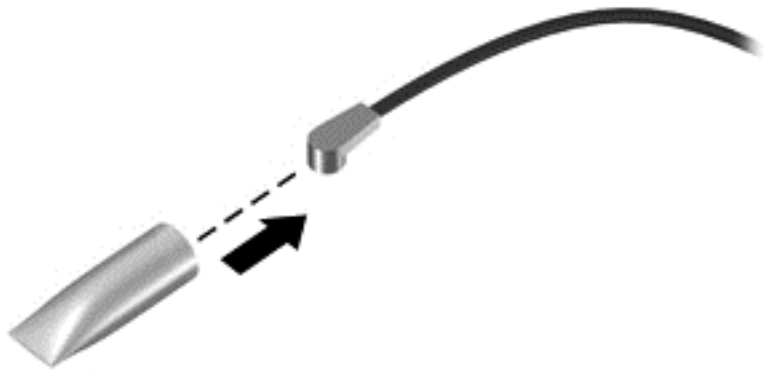
NOTE: The #1 WLAN antenna cable is connected to the WLAN module “Main” terminal. The #2 WLAN antenna cable is connected to the WLAN module “Aux” terminal.

2. Remove the Phillips M2.0×2.5 screw **(2)** that secures the WLAN module to the system board. (The WLAN module tilts up.)

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



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



Reverse this procedure to install the WLAN module.

Optical drive

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

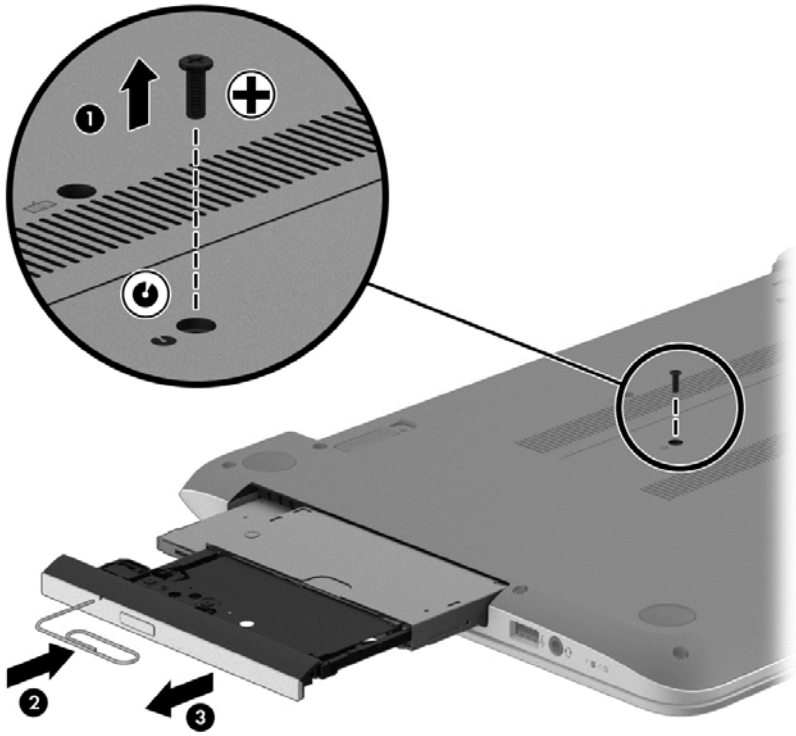
Description	Spare part number
Disc ROM with SuperMulti DVD±R/RW Double-Layer Drive (includes bezel, bracket, and screws)	732075-001
BD combo for computer models with Intel processors, no support for Ubuntu Linux	749173-001

Before removing the optical drive, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 40).

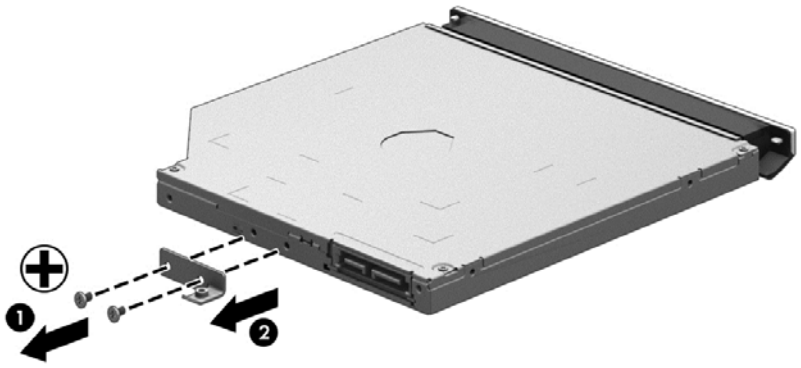
Remove the optical drive:

1. Using a small Phillips screwdriver, remove the Phillips M2.5×6.5 screw that secures the optical drive to the computer **(1)**.
2. Using the screwdriver, push on the rear of the CD/DVD drive to disconnect it from the computer
3. If necessary, use an unbent paperclip and press in gently on the paper clip **(2)** until the disc tray releases. Pull the tray **(3)** out from the front until the optical drive is completely removed from the computer.

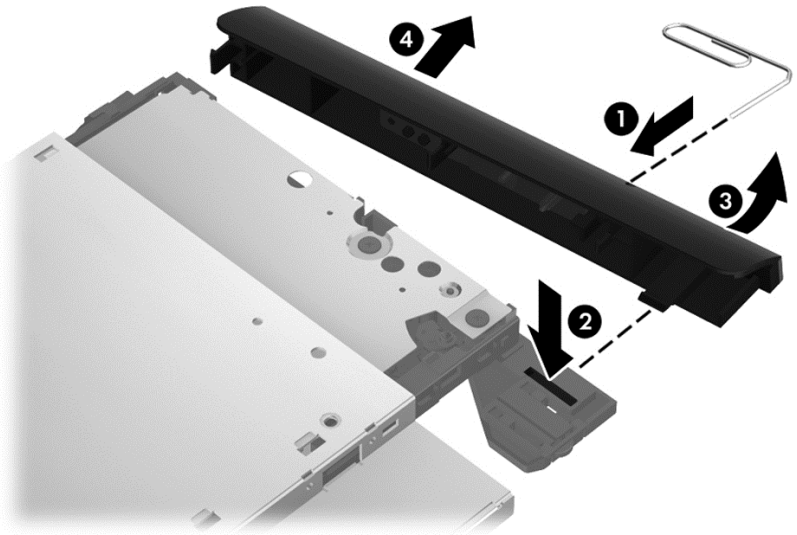


If it is necessary to replace the optical drive bracket and bezel, position the optical drive with the rear panel toward you.

1. Remove the two Phillips screws from the optical drive **(1)** and remove the bracket **(2)**.



2. Use an unbent paperclip and press in gently on the paper clip **(1)** and release from the tab **(2)** until the disc tray releases. Tilt the tray **(3)** and pull the bezel **(4)** to remove it.



Reverse this procedure to reassemble and install the optical drive.

6 Removal and replacement procedures for Authorized Service Provider parts

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.

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.

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

Display panel

NOTE: These procedures are for replacing the display panel for HP Pavilion Notebook. For procedures to replace the HP Pavilion Notebook display assembly subcomponents, see Display assembly on page 84.

Description	Spare part number
Display bezel	725617-001
Display panel 15.6 in HD WLED BrightView flat panel	732080-001

IMPORTANT: Make special note of each screw and screw lock size and location during removal and replacement

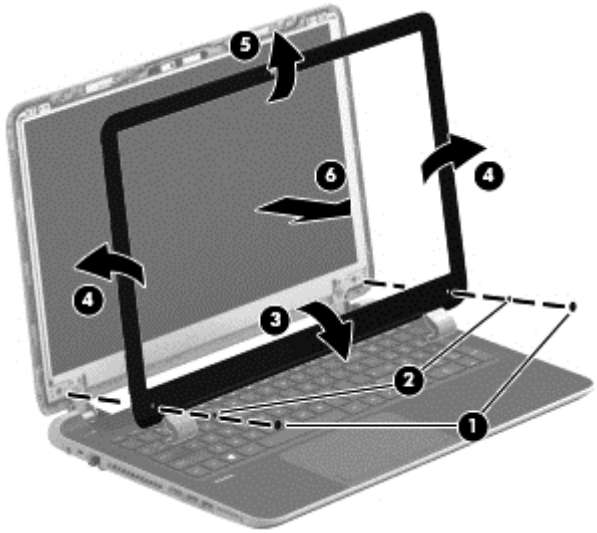
Before removing the display panel, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 40).

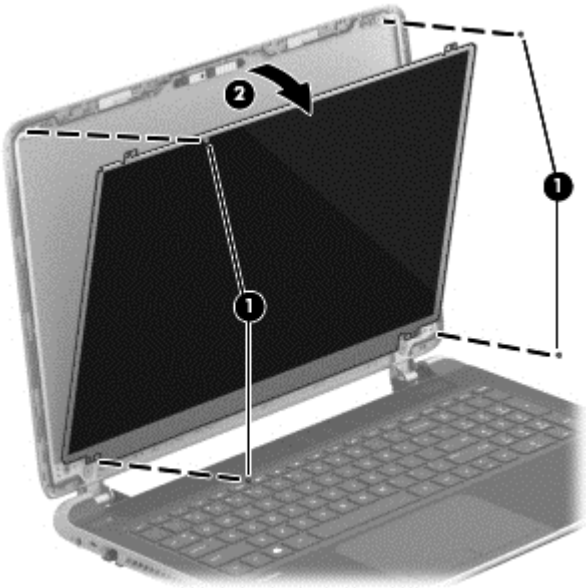
Remove the panel:

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

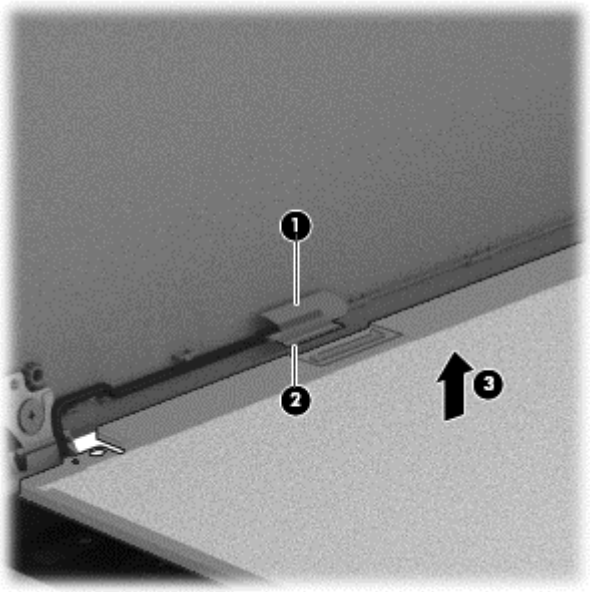
1. Remove the plastic screw covers **(1)** and the two Phillips M2.5×3.0 screws **(2)** that secure the display bezel to the display assembly.
2. If it is necessary to replace the display bezel or any of the display assembly subcomponents:
   a. Flex the inside edges of the bottom edge **(3)**, the left and right sides **(4)**, and the top edge **(5)** of the display bezel until the bezel disengages from the display enclosure.
   b. Remove the display bezel **(6)**.



c. Remove the four Phillips M2.0×2.5 screws **(1)** and carefully move the display panel **(2)** to the keyboard .



d. Release the tab **(1)** and disconnect the connector **(2)**. Lift the panel **(3)** to remove it.



Reverse this procedure to replace the panel.

Keyboard

NOTE: The keyboard spare part kit includes a keyboard cable.

Description	Spare part number
Textured island style black finish for use in the United States	719853-001
Textured island style black finish for use in United Kingdom	719853-031
Textured island style black finish for use in Germany	719853-041
Textured island style black finish for use in France	719853-051
Textured island style black finish for use in Italy	719853-061
Textured island style black finish for use in Spain	719853-071
Textured island style black finish for use in Portugal	719853-131
Textured island style black finish for use in Turkey	719853-141
Textured island style black finish for use in Greece	719853-151
Textured island style black finish for use in Latin America	719853-161
Textured island style black finish for use in Saudi Arabia	719853-171
Textured island style black finish for use in Hungary	719853-211
Textured island style black finish for use in Russia	719853-251
Textured island style black finish for use in Bulgaria	719853-261
Textured island style black finish for use in Romania	719853-271
Textured island style black finish for use in Thailand	719853-281
Textured island style black finish for use in Japan	719853-291
Textured island style black finish for use in Belgium	719853-A41
Textured island style black finish for use in Taiwan	719853-AB1
Textured island style black finish for use in South Korea	719853-AD1
Textured island style black finish for International use	719853-B31
Textured island style black finish for use in Slovenia	719853-BA1
Textured island style black finish for use in Israel	719853-BB1
Textured island style black finish for use in Switzerland	719853-BG1
Textured island style black finish for use in Canada	719853-DB1
Textured island style black finish for use in Nordic regions	719853-DH1
Textured island style black finish for use in Czech/Slovakia regions	719853-FL1
Textured island style black finish for use in Northwest Africa	719853-FP1
Textured island style black finish for use in Canada	719853-DB1
Painted island style white finish for use in the United States	720597-001
Painted island style white finish for use in the United Kingdom	720597-031

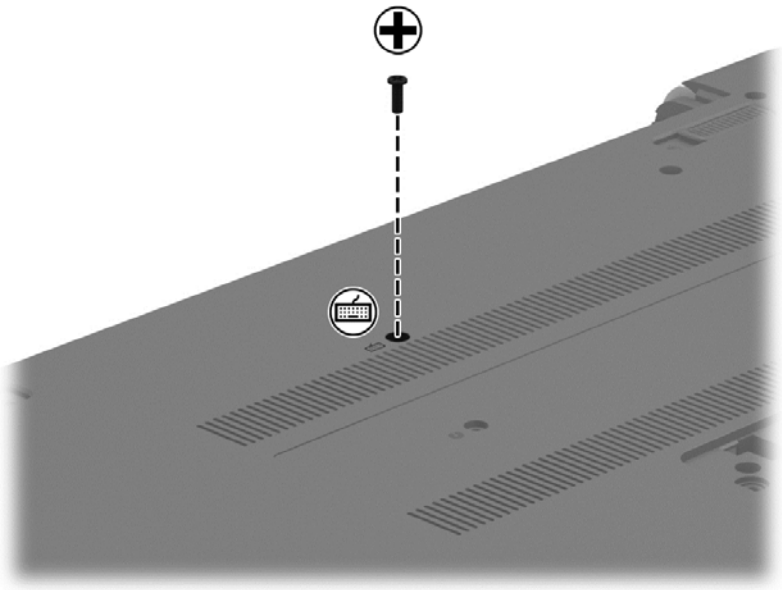
Description	Spare part number
Painted island style white finish for use in Greece	720597-041
Painted island style white finish for use in France	720597-051
Painted island style white finish for use in Italy	720597-061
Painted island style white finish for use in Spain	720597-071
Painted island style white finish for use in Portugal	720597-131
Painted island style white finish for use in Turkey	720597-141
Painted island style white finish for use in Greece	720597-151
Painted island style white finish for use in Latin America	720597-151
Painted island style white finish for use in Saudi Arabia	720597-171
Painted island style white finish for use in Hungary	720597-211
Painted island style white finish for use in Russia	720597-251
Painted island style white finish for use in Bulgaria	720597-261
Painted island style white finish for use in Romania	720597-271
Painted island style white finish for use in Thailand	720597-281
Painted island style white finish for use in Japan	720597-291
Painted island style white finish for use in Belgium	720597-A41
Painted island style white finish for use in Taiwan	720597-AB1
Painted island style white finish for use in South Korea	720597-AD1
Painted island style white finish for International use	720597-B31
Painted island style white finish for use in Slovenia	720597-BA1
Painted island style white finish for use in Israel	720597-BB1
Painted island style white finish for use in Switzerland	720597-BG1
Painted island style white finish for use in Israel	720597-DB1
Painted island style white finish for use in Nordic regions	720597-DH1
Painted island style white finish for use in the Czech Republic and Slovakia	720597-FL1
Painted island style white finish for use in Northwest Africa	720597-FP1

Before removing the keyboard, follow these steps:

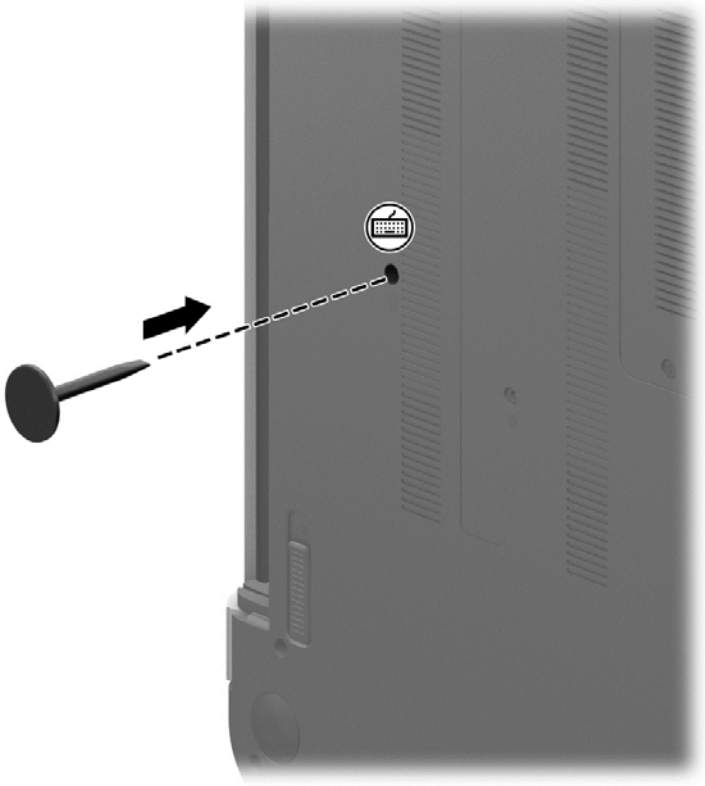
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 40).

Remove the keyboard:

1. Remove the Phillips M2.5×6.5 screw that secures the keyboard to the computer.



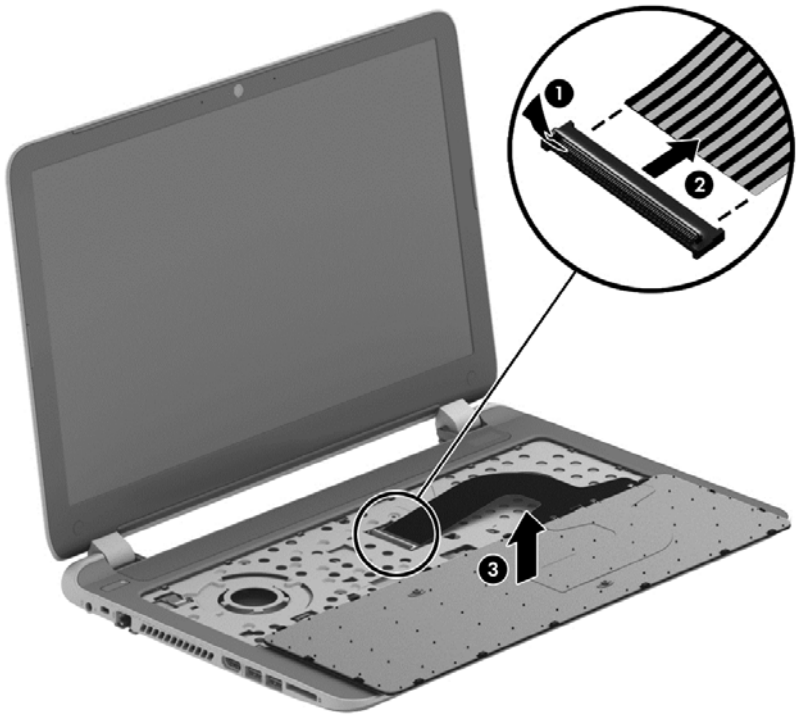
2. Rest the computer on its left side.
3. Open the computer.
4. Insert a thin tool or a keyboard push tool into the keyboard screw hole, and then press on the back of the keyboard until the keyboard disengages from the computer.



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

6. Gently slide your finger along the top edge of the keyboard to release the keyboard clips **(1)**. Lift the rear edge of the keyboard **(2)**, and then swing the keyboard up and forward until it rests upside down on the palm rest.

7. Release the ZIF connector **(1)** by lifting the connector tab to which the keyboard cable is connected, and then disconnect the keyboard cable **(2)** from the system board.
8. Remove the keyboard **(3)**.



Reverse this procedure to install the keyboard.

Top cover

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

Description	Spare part number
In pearl white finish	732091-001
In flyer red finish	732092-001
In revolutionary blue finish	732093-001
In regal purple finish	732094-001
In sparkling black finish	732095-001
In aluminum metal finish	732096-001
In mineral black finish	737178-001
In Goji berry finish	737179-001
In hazel berry finish	737180-001
In raspberry finish	737181-001

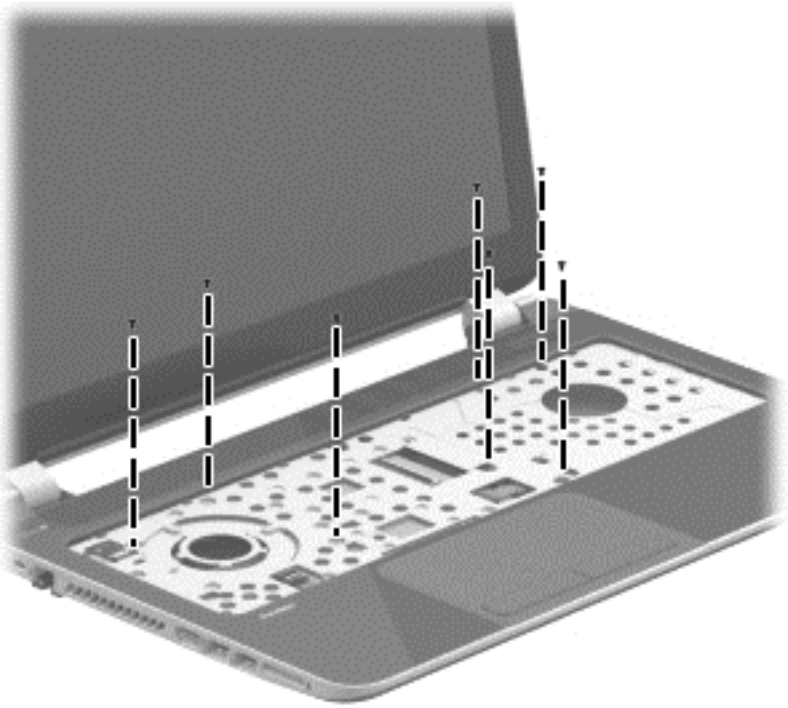
IMPORTANT: Make special note of each screw and screw lock size and location during removal and replacement

Before removing the top cover, follow these steps:

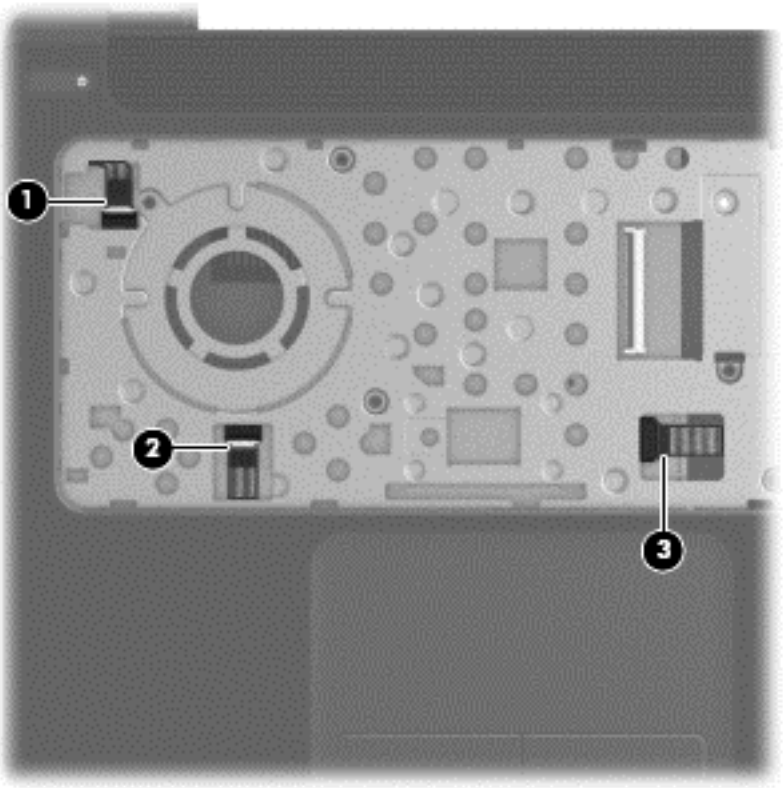
1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 40), and then remove the following components:
   a. Optical drive (see Optical drive on page 45).
   b. Remove the service door (see Service door on page 42).
   c. Remove the WLAN module (see WLAN module on page 44).
   d. Remove the memory module (see Memory module on page 42).
   e. Keyboard (see Keyboard on page 51).

Remove the top cover:

1. Remove the seven Phillips M2.5×3.0 screws that secure the top cover to the base enclosure.

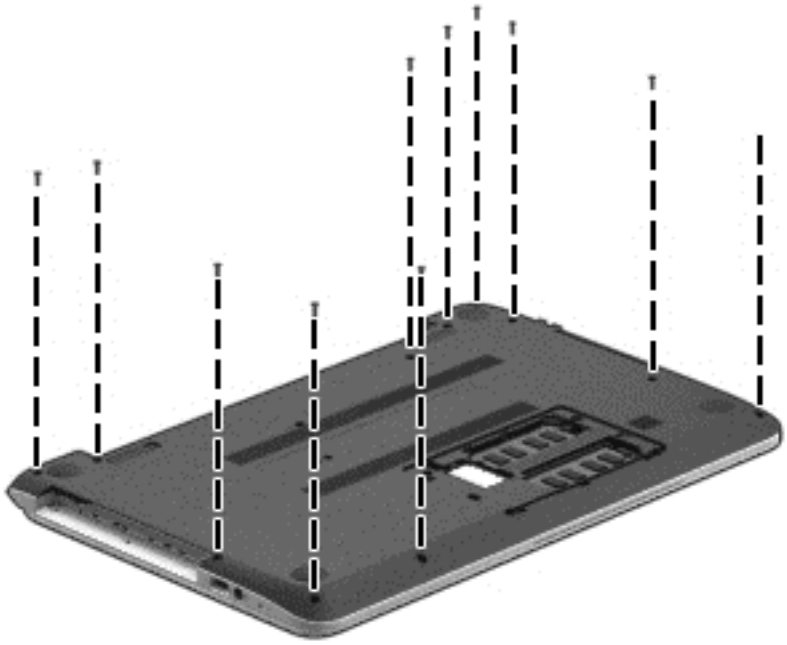


2. Disconnect the power button cable **(1)**, the TouchPad cable **(2)**, and the optical drive cable **(3)**.

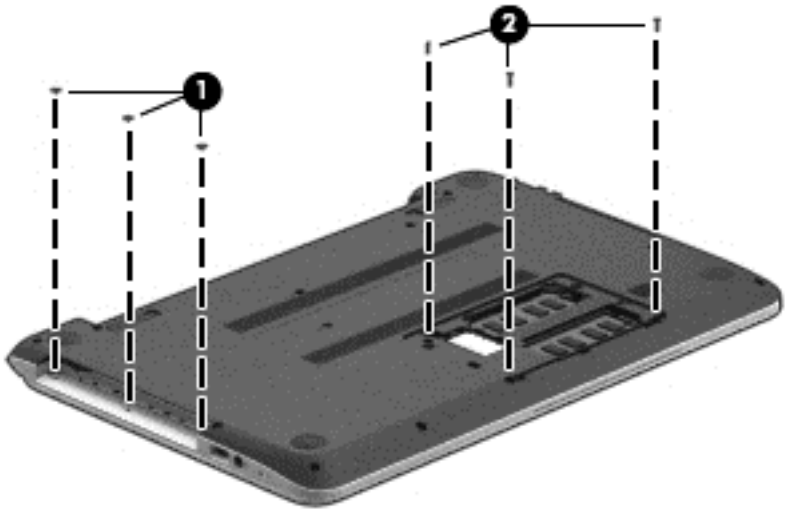


3. Close the display and turn the computer upside down.

4. Remove the eleven Phillips M2.5×6.5 screws from the bottom of the computer.

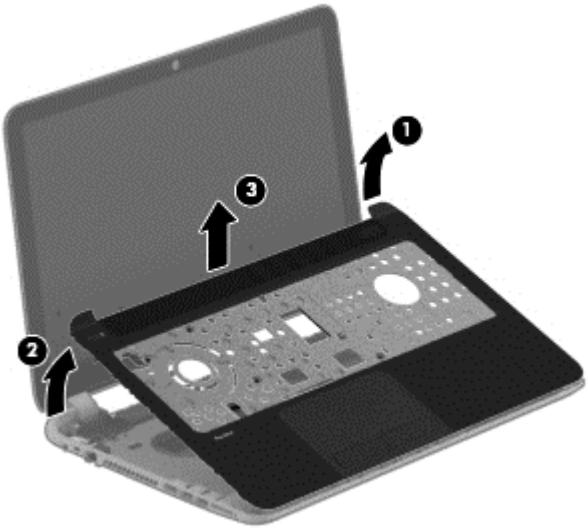


5. Remove the additional three Phillips M2.0×1.5 screws from the optical drive bay **(1)** and the three Phillips M2.5×6.5 screws from under the service door **(2)**.



6. Turn the computer over and open the display.

7. Gently press on the right upper corner **(1)** where the display hinge and top cover meet. Lift around the edges of the top cover **(2)**. Lift to remove the top cover **(3)**.



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

- Power button board and cable (see Power button board on page 62).
- Optical drive cable, (see Optical drive on page 45).
- USB/audio board, (see Hard drive on page 59).

Reverse this procedure to install the top cover.

Hard drive

NOTE: The hard drive spare part kit includes the hard drive rubber bracket and screws. These components are included in the Hard Drive Hardware Kit, spare part number 732071-001.

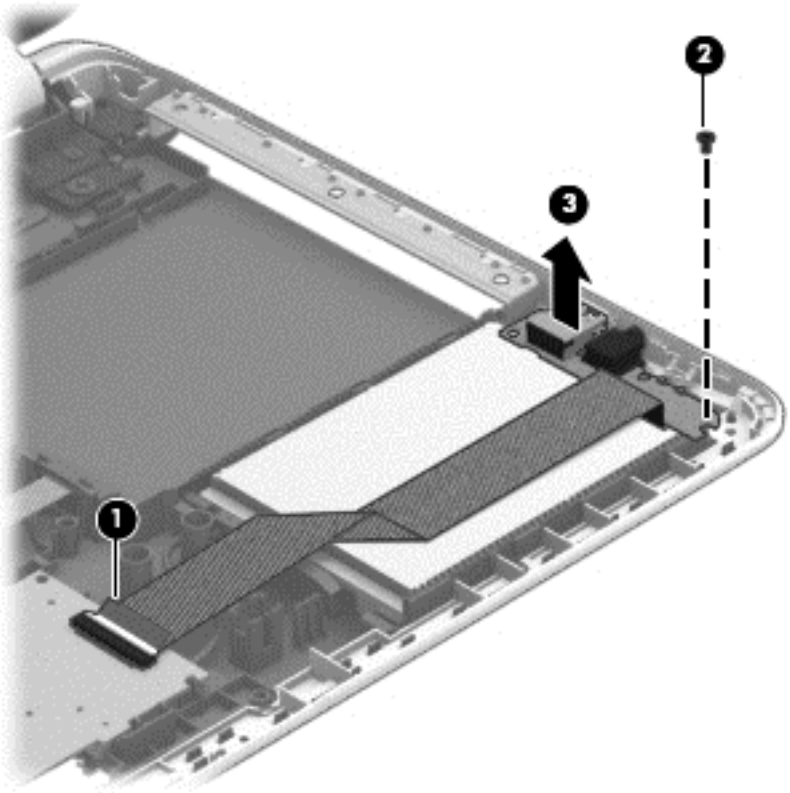
Description	Spare part number
1 TB, 5400 rpm, 7.0 mm/9.5 mm	676521-005
750 GB, 5400 rpm, 9.5 mm	634250-005
500 GB, 5400 rpm, 9.5 mm	669299-005
500 GB, 5400 rpm, 7.0 mm	683802-005
1 TB, 5400 rpm + 8 GB NAND hybrid, 9.5 mm, for use with computer models with Intel processors	731999-005
750 GB 5400 rpm + 8 GB NAND hybrid, 9.5 mm, for use with computer models with Intel processors	732001-005
500 GB 5400 rpm + 8 GB NAND hybrid, 7 mm, for use with computer models with Intel processors	732000-005
Hard Drive Hardware Kit (not illustrated, includes hard drive rubber bracket, 2 hard drive retention brackets, and hard drive connector cable).	732071-001

Before removing the hard drive, follow these steps:

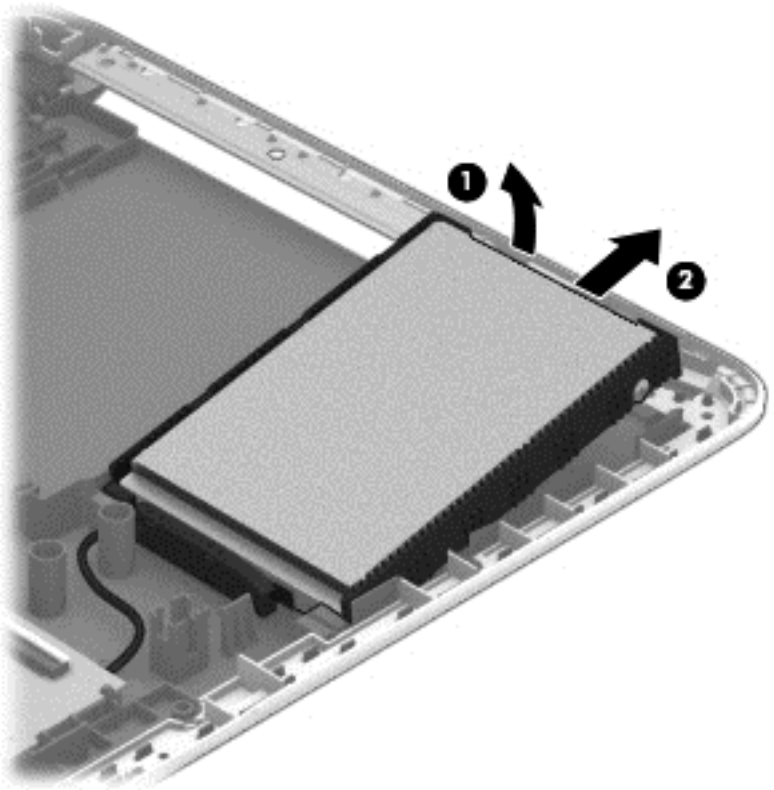
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 40), and then remove the following components:
   a. Optical drive (see Optical drive on page 45).
   b. Service door (see Service door on page 42).
   c. WLAN module (see WLAN module on page 44).
   d. Memory module (see Memory module on page 42).
   e. Keyboard (see Keyboard on page 51).
   f. Top cover (see Top cover on page 55).

Remove the hard drive:

1. Disconnect the USB/audio cable **(1)** by flipping open the ZIF connector and lifting the cable. Remove the USB/audio cable Phillips M 2.5×3.0 screw **(2)** and then lift the USB/audio board **(3)**.

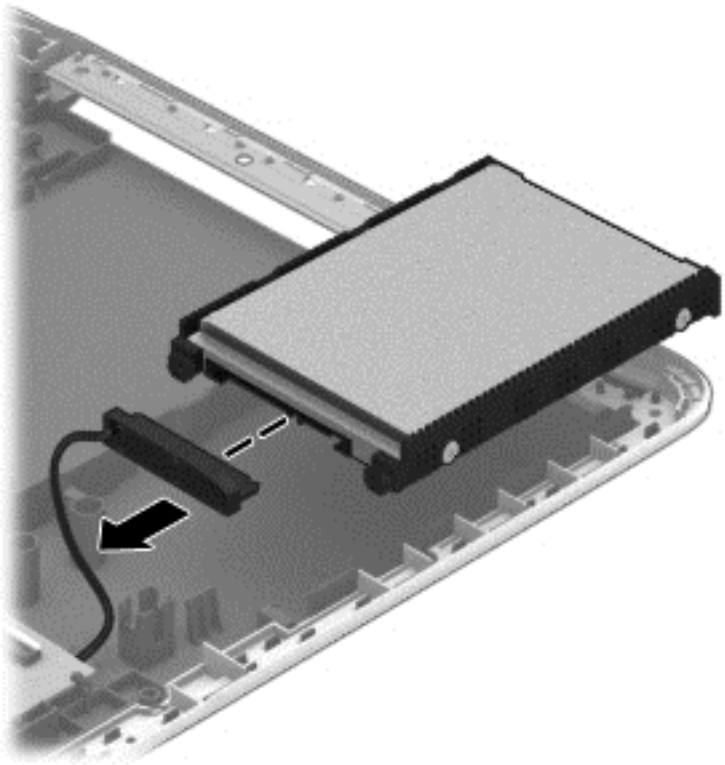


2. Lift the front of the hard drive **(1)** and slide the hard drive **(2)** forward .



3. Release the hard drive connector cable from the clips.

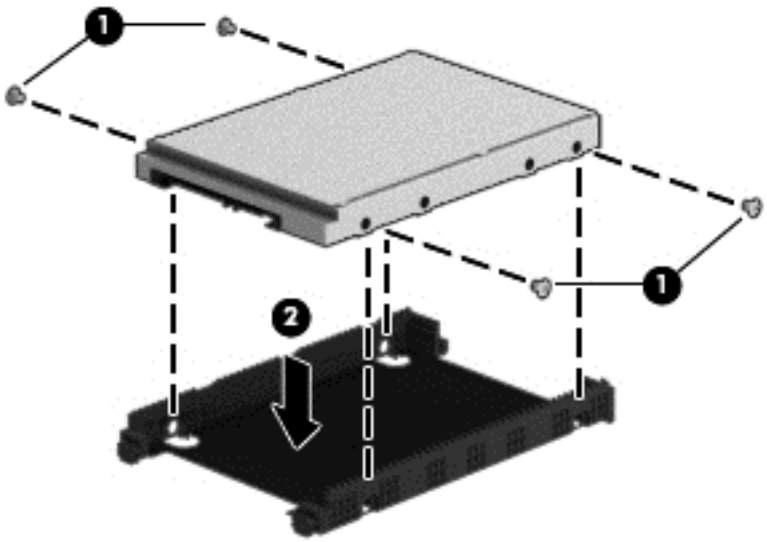
NOTE: You will disconnect the hard drive connector cable from the system board when you remove the system board.



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

   a. Remove the four Phillips M3.0×3.5 screws **(1)** from the bracket and separate the front edges of the hard drive rubber bracket from the hard drive

   b. Disassemblying the hard drive



Reverse this procedure to reassemble and install the hard drive.

Power button board

Description	Spare part number
Power button board (includes cable)	732076-001

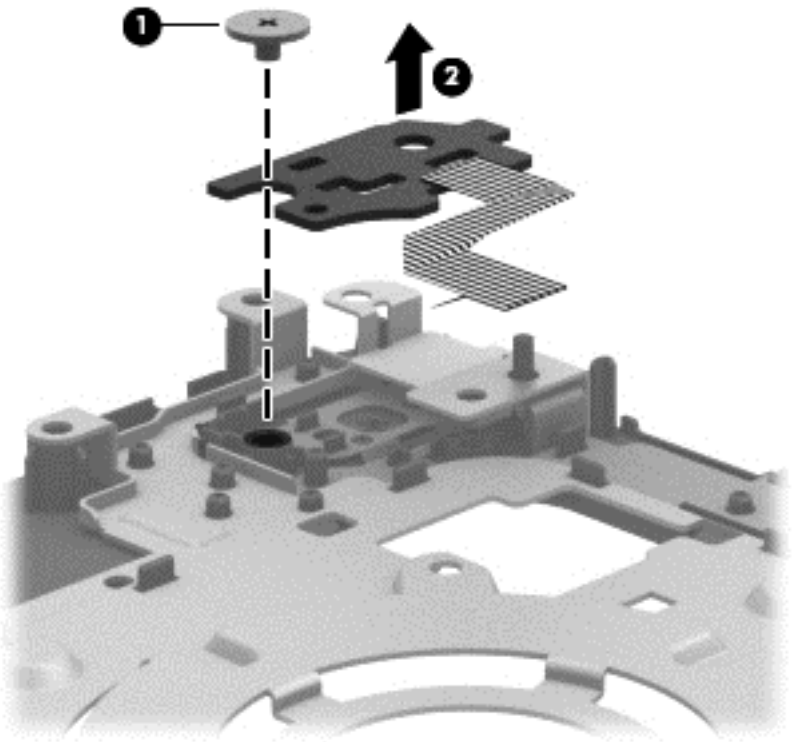
Before removing the power button board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 40), and then remove the following components:
   a. Optical drive (see Optical drive on page 45).
   b. Service door (see Service door on page 42).
   c. WLAN module (see WLAN module on page 44).
   d. Memory module (see Memory module on page 42).
   e. Keyboard (see Keyboard on page 51).
   f. Top cover (see Top cover on page 55).

Remove the power button board:

1. Turn the top cover upside down, with the front toward you.
2. Remove the Phillips M2.5×2.5 screw **(1)** that secures the power button board to the top cover.

3. Remove the power button board **(2)** with cable (the cable was disconnected from the top cover when removing the top cover).



Reverse this procedure to install the power button board.

TouchPad button board

Description	Spare part number
TouchPad button board (includes cable)	732078-001

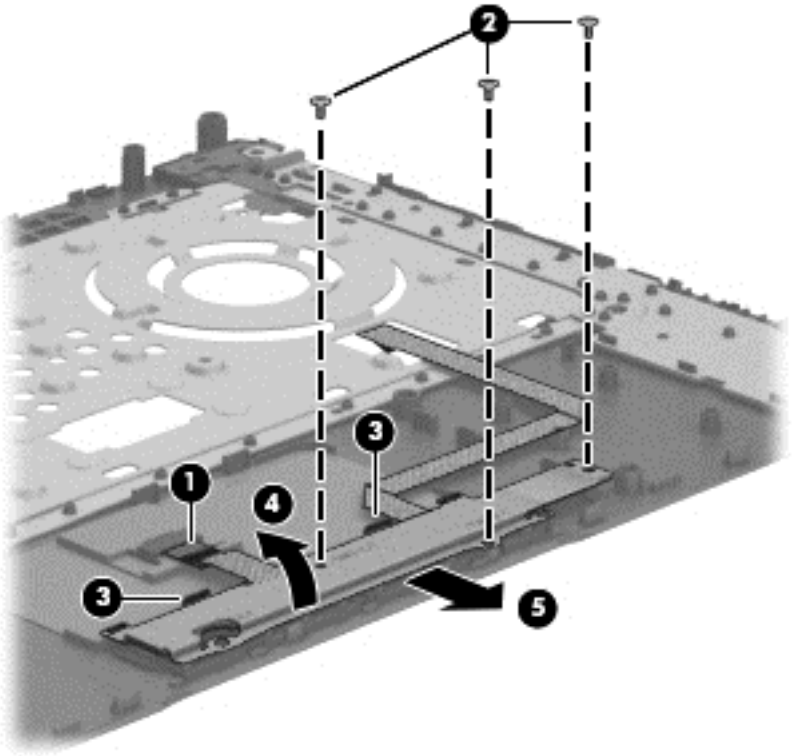
Before removing the TouchPad button board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 40), and then remove the following components:
   a. Optical drive (see Optical drive on page 45).
   b. Service door (see Service door on page 42).
   c. WLAN module (see WLAN module on page 44).
   d. Memory module (see Memory module on page 42).
   e. Keyboard (see Keyboard on page 51).
   f. Top cover (see Top cover on page 55).

Remove the TouchPad button board:

1. Turn the top cover upside down, with the front toward you.
2. Release the TouchPad ZIF connector, and then disconnect the TouchPad button board cable **(1)** from the TouchPad board.
3. Remove the Phillips M2.0×3.5 screw **(2)** that secures the TouchPad button board bracket to the top cover.
4. Remove the TouchPad button board **(3)** carefully lifting the cable from the guides (the cable attached to the top cover was disconnected when removing the top cover).
5. Lift up the TouchPad button board **(4)**.

6. Remove the TouchPad button board **(5)**.



Reverse this procedure to install the TouchPad button board.

Optical drive connector cable

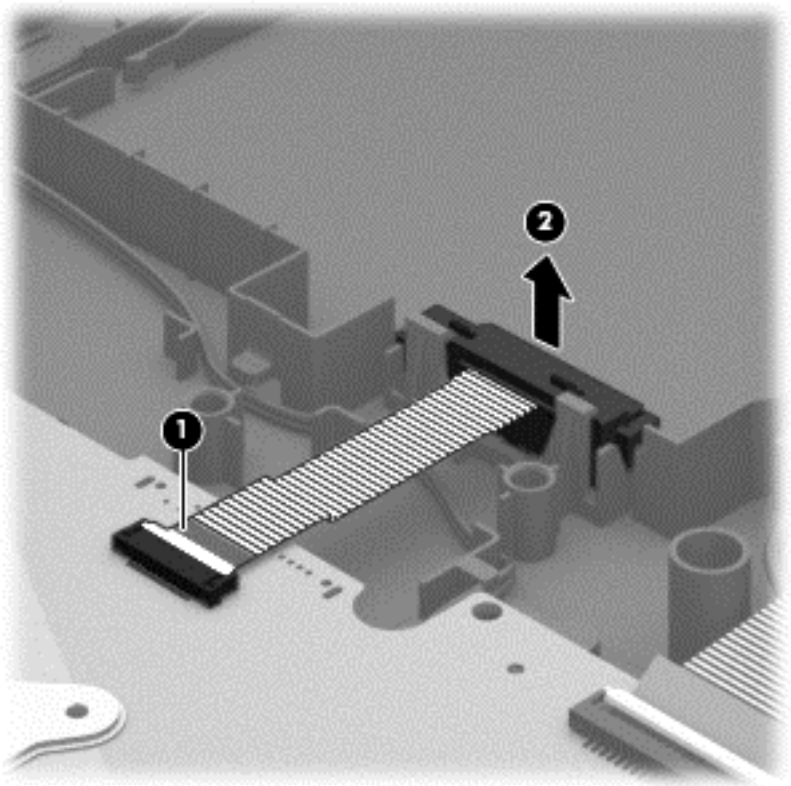
NOTE: The optical drive connector cable is included with the Optical Drive, spare part number 732075-001.

Before removing the optical drive connector cable, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 40), and then remove the following components:
   a. Optical drive (see Optical drive on page 45).
   b. Service door (see Service door on page 42).
   c. WLAN module (see WLAN module on page 44).
   d. Memory module (see Memory module on page 42).
   e. Keyboard (see Keyboard on page 51).
   f. Top cover (see Top cover on page 55).

Remove the optical drive connector cable:

1. Disconnect the optical drive connector cable **(1)** from the system board.
2. Release the optical drive connector cable from the clip **(2)** built into the base enclosure.
3. Remove the optical drive connector cable.



Reverse this procedure to install the optical drive connector cable.

System board

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

Description	Spare part number
For computer models equipped with Intel Discrete processors..	
4th generation	
Intel Core i7-4500U 1.8 GHz processor (4.0 MB L3 cache, 15 W) for use with FreeDOS and Ubuntu	751493-001
Intel Core i7-4500U 1.8 GHz processor (4.0 MB L3 cache, 15 W for use with Windows Standard	751493-501
Intel Core i7-4500U 1.8 GHz processor (4.0 MB L3 cache, 15 W for use with Windows Pro	751493-601
Intel Core i5-4200U 840M 1.6-GHz (2 GB DC BGA 15 W) for use with FreeDOS and Ubuntu	751494-001
Intel Core i5-4200U 840M 1.6-GHz (2 GB DC BGA 15 W) for use with Windows Standard	751494-501
Intel Core i5-4200U 840M 1.6-GHz (2 GB DC BGA 15 W) for use with Windows Professional	751494-601
For computer models equipped with Intel processors 3rd Generation	
Intel Core i5-4200M 840M 1.6-GHz (2 GB DC BGA 15 W) for use with FreeDOS and Ubuntu	754312-001
Intel Core i5-4200M 840M 1.6-GHz (2 GB DC BGA 15 W) for use with Windows Standard	754312-501
Intel Core i5-4200U 8670M 1.6-GHz (2 GB DC BGA 15 W) for use with Windows Professional	754312-601
Intel Celeron 1007U DC (1.5 GHz, 2 MB L3 Cache, 1600MHz DDR3, 17 W) for use with FreeDOS and Ubuntu	737981-001
Intel Celeron 1007U DC (1.5 GHz, 2 MB L3 Cache, 1600MHz DDR3, 17 W) for use with Windows Standard	737981-501
Intel Celeron 1007U DC (1.5 GHz, 2 MB L3 Cache, 1600MHz DDR3, 17 W) for use with Windows Professiona	737981-601
Intel Core i3-3217U DC (1.8 GHz, 3 MB L3 Cache, 1600MHz DDR3, 17 W) for use with FreeDOS and Ubuntu	737982-001
Intel Core i3-3217U DC (1.8 GHz, 3 MB L3 Cache, 1600MHz DDR3, 17 W) for use with Windows Standard	737982-501
Intel Core i3-3217U DC (1.8 GHz, 3 MB L3 Cache, 1600MHz DDR3, 17 W) for use with Windows Professional	737982-601
Intel Pentium 2117U DC (1.8 GHz, 2 MB L3 Cache, 1600MHz DDR3, 17 W) for use with FreeDOS and Ubuntu	737983-001
Intel Pentium 2117U DC (1.8 GHz, 2 MB L3 Cache, 1600MHz DDR3, 17 W) for use with Windows Standard	737983-501
Intel Pentium 2117U DC (1.8 GHz, 2 MB L3 Cache, 1600MHz DDR3, 17 W) for use with Windows Professional	737983-601
For computer models equipped with AMD UMA processors.	
AMD A4-5000 (1.5 GHz, 2 MB L2, 1600MHz DDR3L, Quad 15W) for use with FreeDOS and Ubuntu.	734826-001
AMD A4-5000 (1.5 GHz, 2 MB L2, 1600MHz DDR3L, Quad 15W) for use with Windows Standard.	734826-501
AMD A4-5000 (1.5 GHz, 2 MB L2, 1600MHz DDR3L, Quad 15W) for use with Windows Professional.	734826-601
AMD A6-5000 (1.5 GHz, 2 MB L2, 1600MHz DDR3L, Quad 15W) for use with FreeDOS and Ubuntu.	734827-001
AMD A6-5000 (1.5 GHz, 2 MB L2, 1600MHz DDR3L, Quad 15W) for use with Windows Standard.	734827-501
AMD A6-5000 (1.5 GHz, 2 MB L2, 1600MHz DDR3L, Quad 15W) for use with Windows Professional.	734827-601

Description	Spare part number
AMD A8-5545M A76M (2.7 GHz/1.7 GHz, 4 MB L2, 1333MHz DDR3L Quad 19W) for use with FreeDOS and Ubuntu.	734829-001
AMD A8-5545M A76M (2.7 GHz/1.7G Hz, 4 MB L2, 1333MHz DDR3L Quad 19W) for use with Windows Standard.	734829-501
AMD A8-5545M A76M (2.7 GHz/1.7 GHz, 4 MB L2, 1333MHz DDR3L Quad 19W) for use with Windows Professional.	734829-601
AMD A8- 4555M (2.4 GHz/1.6 GHz, 4 MB L2, 1333MHz DDR3L Quad 19W) for use with FreeDOS and Ubuntu.	737140-001
AMD A8- 4555M (2.4 GHz/1.6 GHz, 4 MB L2, 1333MHz DDR3L Quad 19W) for use with Windows Standard.	737140-501
AMD A8- 4555M (2.4 GHz/1.6 GHz, 4 MB L2, 1333MHz DDR3L Quad 19W) for use with Windows Professional.	737140-601
AMD E1-2500 (1.4 GHz, 1 MB L2, 1600MHz DDR3L, Dual 15 W) for use with FreeDOS and Ubuntu.	737141-001
AMD E1-2500 (1.4 GHz, 1 MB L2, 1600MHz DDR3L, Dual 15 W) for use with Windows Standard.	737141-501
AMD E1-2500 (1.4 GHz, 1 MB L2, 1600MHz DDR3L, Dual 15 W) for use with Windows Professional.	737141-601
AMD A10-5745M A76M (2.9 GHz/2.1 GHz, 4 MB L2, 1333MHz DDR3L Quad 25W) for use with FreeDOS and Ubuntu.	738124-001
AMD A10-5745M A76M (2.9 GHz/2.1 GHz, 4 MB L2, 1333MHz DDR3L Quad 25W) for use with Windows Standard.	738124-501
AMD A10-5745M A76M (2.9 GHz/2.1 GHz, 4 MB L2, 1333MHz DDR3L Quad 25W) for use with Windows Professional.	738124-601
For computer models equipped with AMD Discrete processors.	
AMD A4-5000 8670M (1.5 GHz, 1 GB L2, 1600MHz DDR3L Quad 15W) for use with FreeDOS and Ubuntu.	734820-001
AMD A4-5000 8670M (1.5 GHz, 1 GB L2, 1600MHz DDR3L Quad 15W) for use with Windows Standard.	734820-501
AMD A4-5000 8670M (1.5 GHz, 1 GB L2, 1600MHz DDR3L Quad 15W) for use with Windows Professional.	734820-601
AMD A6-5200 8670M (2.0 GHz, 1 GB L2, 1600MHz DDR3L, Quad 25W) for use with FreeDOS and Ubuntu.	734821-001
AMD A6-5200 8670M (2.0 GHz, 1 GB L2, 1600MHz DDR3L, Quad 25W) for use with Windows Standard.	734821-501
AMD A6-5200 8670M (2.0 GHz, 1 GB L2, 1600MHz DDR3L, Quad 25W) for use with Windows Professional.	734821-601
AMD A10-5745M 8670M (2.9GHz/2.1GHz, 2 GB L2, 1333MHz DDR3L Quad 25W) for use with FreeDOS and Ubuntu.	734824-001
AMD A10-5745M 8670M (2.9 GHz/2.1 GHz, 2 GB L2, 1333MHz DDR3L Quad 25W) for use with Windows Standard.	734824-501
AMD A10-5745M 8670M (2.9 GHz/2.1 GHz, 2 GB L2, 1333MHz DDR3L Quad 25W) for use with Windows Professional.	734824-601
AMD A10- 4655M 8670M (2.8 GHz/2.0 GHz, 2 GB L2, 1333MHz DDR3L Quad 25W) for use with FreeDOS and Ubuntu.	737138-001
AMD A10- 4655M 8670M (2.8 GHz/2.0 GHz, 2 GB L2, 1333MHz DDR3L Quad 25W) for use with Windows Standard.	737138-501
AMD A10- 4655M 8670M (2.8 GHz/2.0 GHz, 2 GB L2, 1333MHz DDR3L Quad 25W) for use with Windows Professional.	737138-601
For computer models equipped with HP UMA processors	

Description	Spare part number
HP A4-5050 (1.55 GHz, 2MB L2 1600 MHz DDR3L) quad core, 13.5 W	755270-001
HP A4-5050 (1.55 GHz, 2MB L2 1600 MHz DDR3L) quad core, 13.5 W	755270-501
HP A4-5050 (1.55 GHz, 2MB L2 1600 MHz DDR3L) quad core, 13.5 W	755270-601

Before removing the system board, follow these steps:

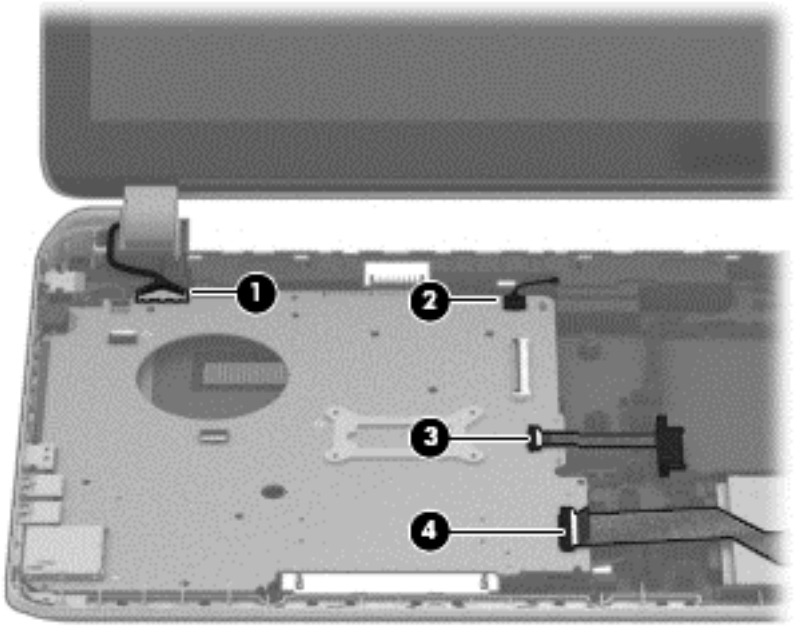
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 40), and then remove the following components:
   a. Optical drive (see Optical drive on page 45).
   b. Service door (see Service door on page 42).
   c. WLAN module (see WLAN module on page 44).
   d. Memory module (see Memory module on page 42).
   e. Keyboard (see Keyboard on page 51).
   f. Top cover (see Top cover on page 55).
   g. Hard drive (see Hard drive on page 59).

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:

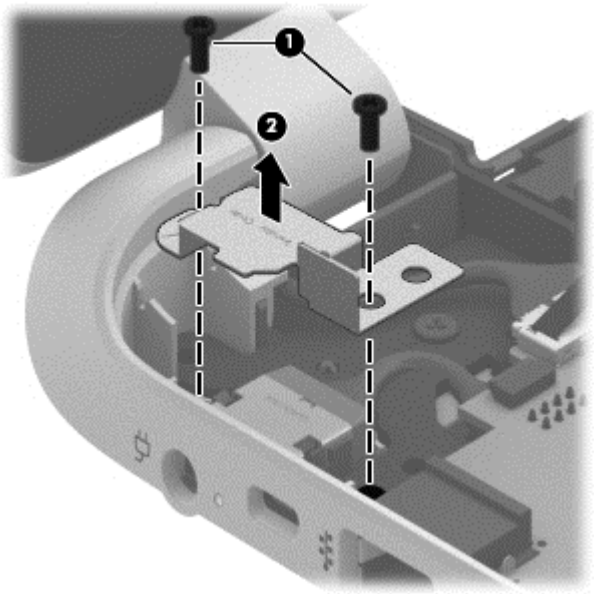
- Hard drive cable
- Power connector cable
- RTC battery (see RTC battery on page 74)
- Fan (see Heat sink assembly on page 78)
- Heat sink assembly (see Heat sink assembly on page 78)

Remove the system board:

1. Disconnect the following cables from the system board:
   (1) Display panel cable
   (2) Speaker cable
   (3) Optical drive connector cable
   (4) Power connector cable

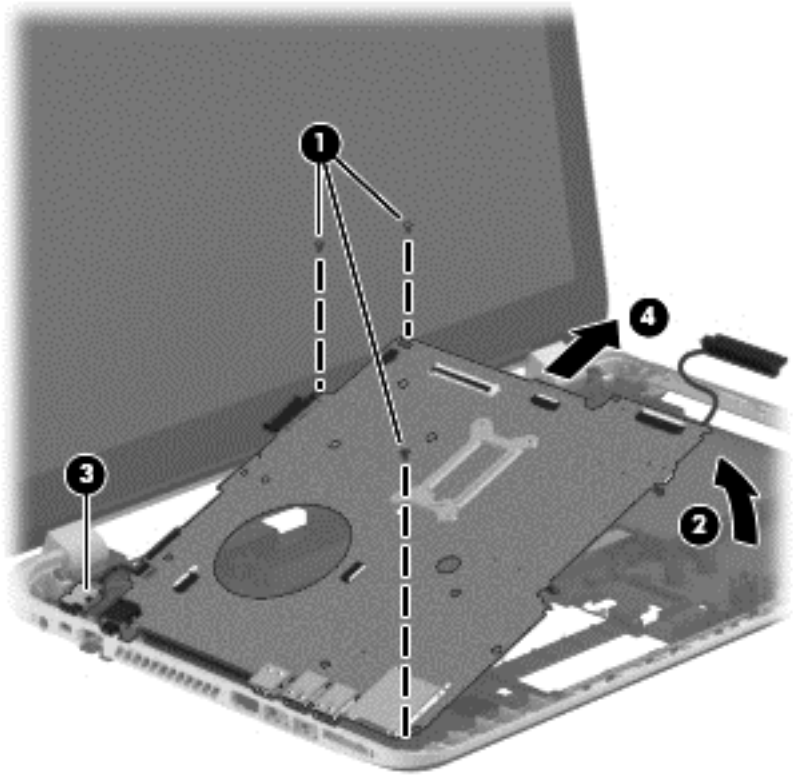


2. Remove the two Phillips M2.5×6.5 and M2.0×5.0 screws **(1)**. Remove the bracket **(2)** that secures the power connector bracket to the base enclosure.



3. Remove the three Phillips M2.5×5.0 screws **(1)** that secure the system board to the base enclosure.
4. Lift the right side of the system board **(2)** until it rests at an angle.

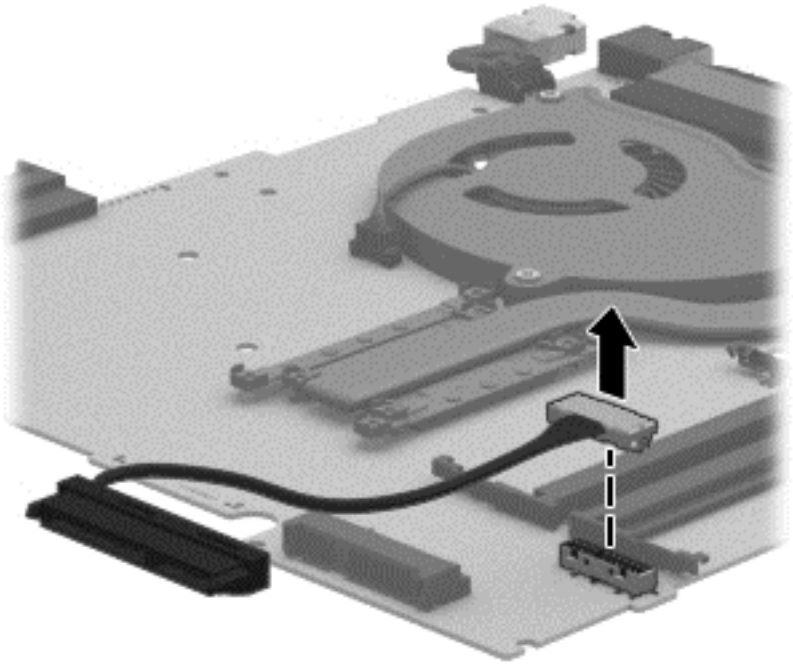
5. Carefully remove from the power connector **(3)**. Remove the system board by sliding it up and to the right at an angle and pull the system board **(4)** carefully to the right.



6. Remove the hard drive connector cable:

   a. Turn the system board upside down, with the front toward you.

b. Disconnect the hard drive connector cable from the system board. The hard drive cable is part of the Hard Drive Hardware Kit, part number 732071-001.



Reverse this procedure to install the system board.

RTC battery

Description	Spare part number
RTC battery	697917-001

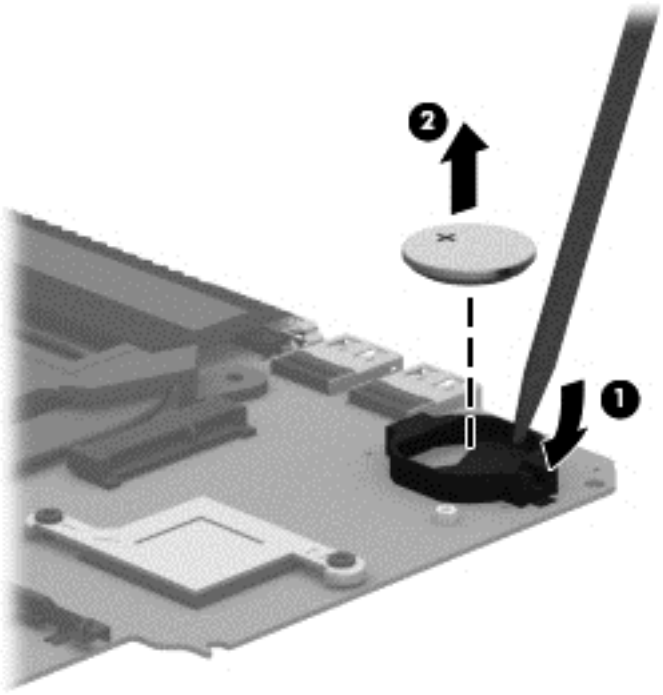
Before removing the RTC battery, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 40), and then remove the following components:
   a. Optical drive (see Optical drive on page 45).
   b. Service door (see Service door on page 42).
   c. WLAN module (see WLAN module on page 44).
   d. Memory module (see Memory module on page 42).
   e. Keyboard (see Keyboard on page 51).
   f. Top cover (see Top cover on page 55).
   g. Hard drive (see Hard drive on page 59).
   h. System board (see System board on page 68).

Remove the RTC battery:

1. Use a flat-bladed, non-metallic tool **(1)** to release the RTC battery from the socket on the system board.

2. Remove the RTC battery **(2)**.



Reverse this procedure to install the RTC battery. When installing the RTC battery, make sure the “+” sign faces up.

Fan

Description	Spare part number
Fan	732068-001

NOTE: To properly ventilate the computer, allow at least 7.6 cm (3 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.

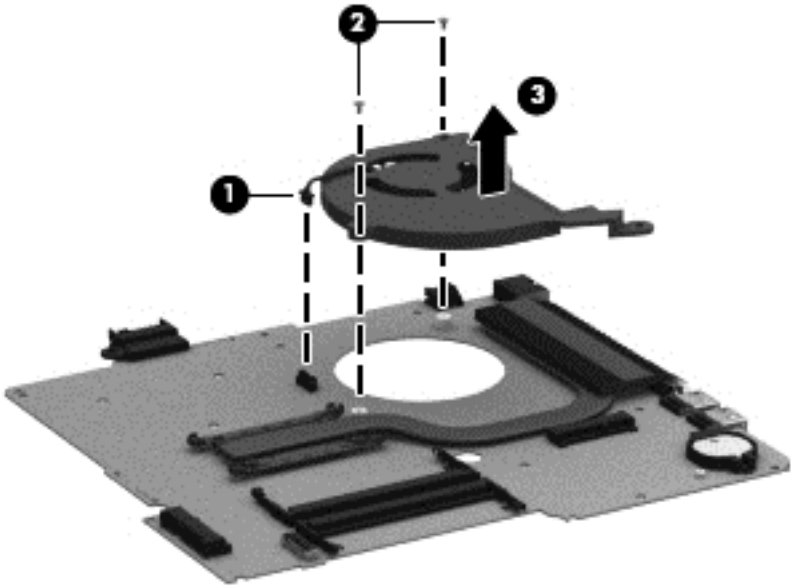
Before removing the fan, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 40), and then remove the following components:
   a. Optical drive (see Optical drive on page 45).
   b. Service door (see Service door on page 42).
   c. WLAN module (see WLAN module on page 44).
   d. Memory module (see Memory module on page 42).
   e. Keyboard (see Keyboard on page 51).
   f. Top cover (see Top cover on page 55).
   g. Hard drive (see Hard drive on page 59).
   h. System board (see System board on page 68).

Remove the fan:

1. Turn the system board upside down, with the front toward you.
2. Disconnect the fan cable **(1)** from the system board.
3. Remove the 2 screws **(2)** that secure the fan to the system board.

4. Remove the fan **(3)** from the system board.



Reverse this procedure to install the fan.

Heat sink assembly

Description	Spare part number
Heat sink for use only on computer models equipped with a graphics subsystem with AMD UMA memory 19 W	734448-001
Heat sink for use only on computer models equipped with a graphics subsystem with AMD UMA memory 25 W	734449-001
Heat sink for use only on computer models equipped with a graphics subsystem with AMD discrete memory 19 W	734450-001
Heat sink for use only on computer models equipped with a graphics subsystem with AMD discrete memory 25 W	734451-001
For use only on computer models equipped with Intel HM76 chipset and UMA graphics	742330-001
For use only on computer models equipped with Intel HM76 chipset and switchable discrete graphics	742331-001
For use only on computer models equipped with Intel processors and UMA graphics	742581-001
For use only on computer models equipped with Intel processors and switchable discrete graphics	742582-001

NOTE: To properly ventilate the computer, allow at least 7.6 cm (3 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. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 40), and then remove the following components:
   a. Optical drive (see Optical drive on page 45).
   b. Service door (see Service door on page 42).
   c. WLAN module (see WLAN module on page 44).
   d. Memory module (see Memory module on page 42).
   e. Keyboard (see Keyboard on page 51).
   f. Top cover (see Top cover on page 55).
   g. Hard drive (see Hard drive on page 59).
   h. System board (see System board on page 68).

Remove the heat sink assembly:

1. Turn the system board upside down, with the front toward you.

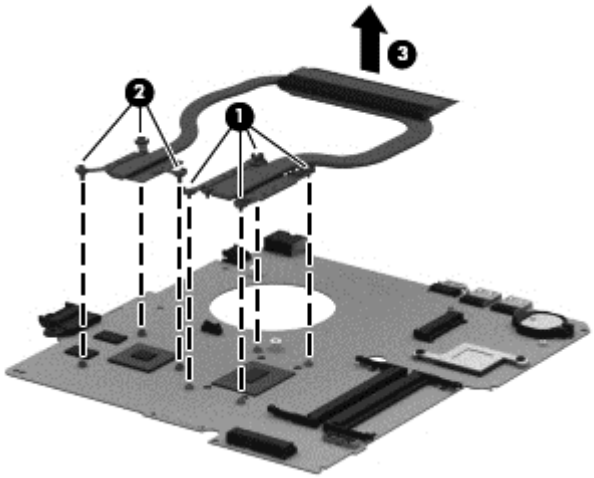
NOTE: Steps 3 through 5 apply to computer models equipped with a graphics subsystem with discrete memory. See steps 6 and 8 for fan/heat sink assembly removal information for computer models equipped with a graphics subsystem with UMA memory.

2. Disconnect the fan cable from the system board.

NOTE: Steps 3 through 5 apply to computer models equipped with a graphics subsystem with discrete memory. See steps 6 and 8 for fan/heat sink assembly removal information for computer models equipped with a graphics subsystem with UMA memory.

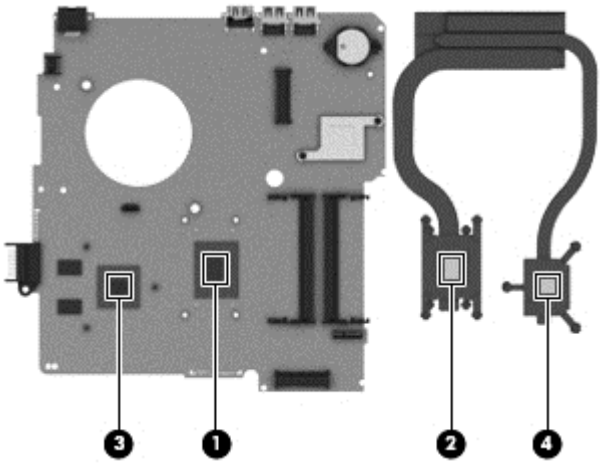
3. Following the 1, 2, 3, 4, 5, 6, 7 sequence stamped into the fan/heat sink assembly, loosen the four Phillips M2.0×10.0 captive screws **(1)** and the three Phillips M2.0×3.5 captive screws **(2)** that secure the fan/heat sink assembly to the system board.

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



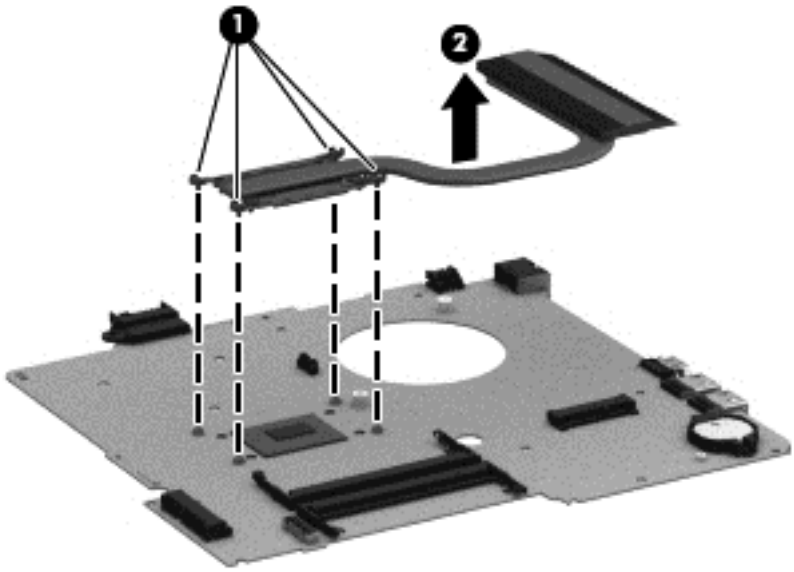
5. Thoroughly clean the thermal connections **(1)** and **(3)** on the system board and the heat sink **(2)** and **(4)** before replacing a heat sink onto a system board. Continue to step 8.

NOTE: The following illustration shows the replacement thermal material locations on a computer model equipped with a graphics subsystem with discrete memory.



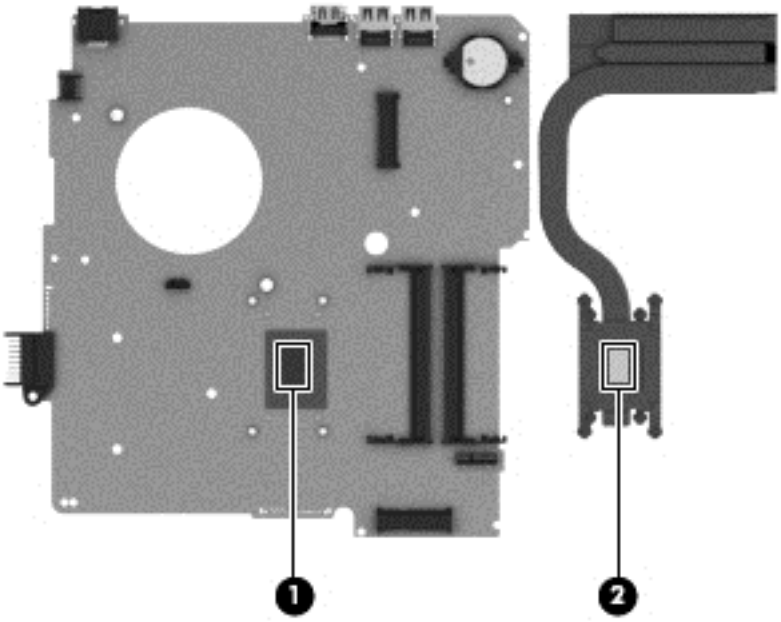
6. Following the 1, 2, 3, 4 sequence stamped into the fan/heat sink assembly, loosen the four Phillips M2.0×10.0 captive screws **(1)** that secure the fan/heat sink assembly to the system board.

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



Thoroughly clean the thermal connections **(1)** on the system board and the heat sink **(2)** before replacing a heat sink onto a system board.

NOTE: The following illustration shows the replacement thermal material locations on a computer model equipped with a graphics subsystem with UMA memory. Thermal paste is used on the processor **(1)** and the fan/heat sink assembly section **(2)** that services it.



8. Reverse this procedure to install the fan/heat sink assembly. Replace the thermal material that ships with the replacement heat sink.

Power connector cable

Description	Spare part number
Power connector cable (includes bracket)	732067-001

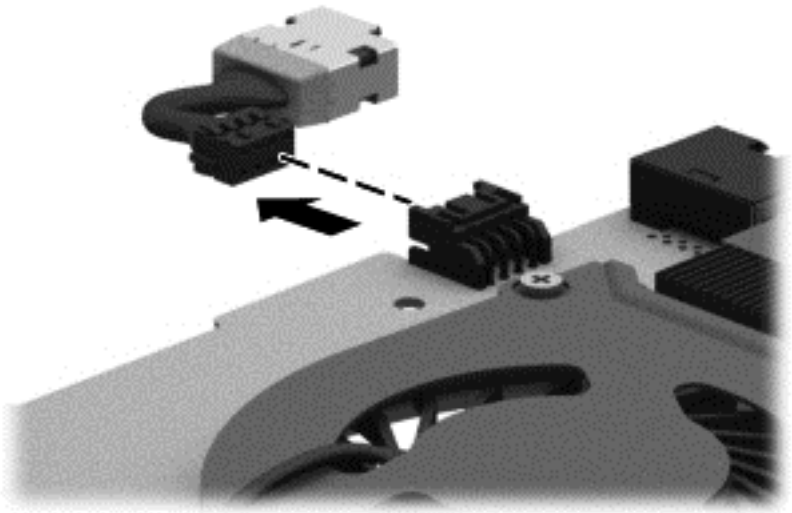
Before removing the power connector cable, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 40), and then remove the following components:
   a. Optical drive (see Optical drive on page 45).
   b. Service door (see Service door on page 42).
   c. WLAN module (see WLAN module on page 44).
   d. Memory module (see Memory module on page 42).
   e. Keyboard (see Keyboard on page 51).
   f. Top cover (see Top cover on page 55).
   g. Hard drive (see Hard drive on page 59).
   h. System board (see System board on page 68).

Remove the power connector board:

NOTE: The power connector bracket was removed when removing the system board.

1. Turn the system board upside down, with the front toward you.
2. Release the power connector from the clip built into the system board.



Reverse this procedure to install the power connector cable.

Speakers

Description	Spare part number
Speakers (include, speaker cable, and 4 rubber isolators)	732084-001

Before removing the speakers, follow these steps:

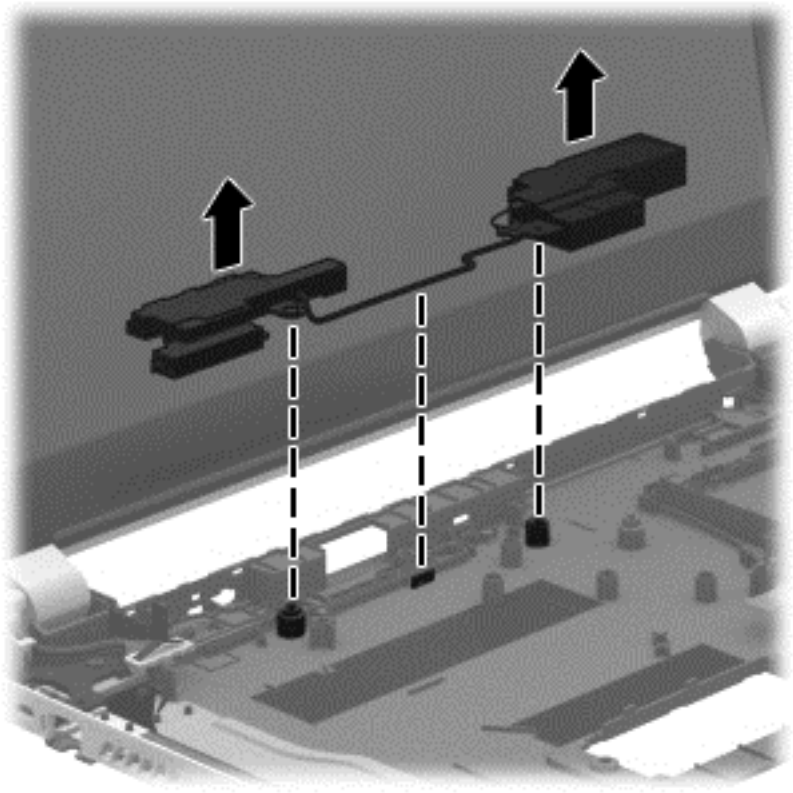
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 40), and then remove the following components:
   a. Optical drive (see Optical drive on page 45).
   b. Service door (see Service door on page 42).
   c. WLAN module (see WLAN module on page 44).
   d. Memory module (see Memory module on page 42).
   e. Keyboard (see Keyboard on page 51).
   f. Top cover (see Top cover on page 55).
   g. Hard drive (see Hard drive on page 59).
   h. System board (see System board on page 68).

Remove the speakers:

▲ Remove the speakers by lifting up on the clip on the right side speaker and lifting the speakers. Carefully and gently lift the speaker wire connecting the left and right speakers.

NOTE: The speaker connection cable was removed when removing the system board.

NOTE: The speakers include rubber isolators that are installed in the screw holes. These isolators are crucial to the performance of the speakers.



Reverse this procedure to install the speaker.

Display assembly

Description	Spare part number
Display bezel (includes 2 rubber screws)	725617-001
15.6-in, BrightView, HD, LED, SVA display panel (screws included in the screw kit, spare part number 732082-001)	732080-001
15.6-in, BrightView, HD, LED, SVA Touchscreen display panel (For Touchscreens, the screws spare part number is 732083-001)	
In aluminum metal finish	732073-001
In sparkling black finish	732074-001
In pearl white finish	737170-001
In flyer red finish	737171-001
In revolutionary blue finish	737172-001
In regal purple finish	737173-001
In mineral black finish	737174-001
In Goji berry finish	737175-001
In hazel berry finish	737176-001
In raspberry finish	737177-001
Webcamera/microphone module (includes adhesive)	738664-001

Description	Spare part number
Display panel cable (includes webcamera/microphone module cable and two rubber screws)	732066-001
Antenna Kit (includes left and right wireless antenna cables and transceivers and 2 rubber screws)	732063-001
Display Hinge Kit (includes 2 rubber screws):	732072-001
Display enclosure (includes 2 rubber screw covers):	
In pearl white finish	725611-001
In sparkling black finish	725612-001
In flyer red finish	725613-001
In revolutionary blue finish	725614-001
In regal purple finish	725615-001
In aluminum metal finish	732064-001
In mineral black finish	737166-001
In Goji berry finish	737167-001
In hazel berry finish	737168-001
In raspberry finish	737169-001

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

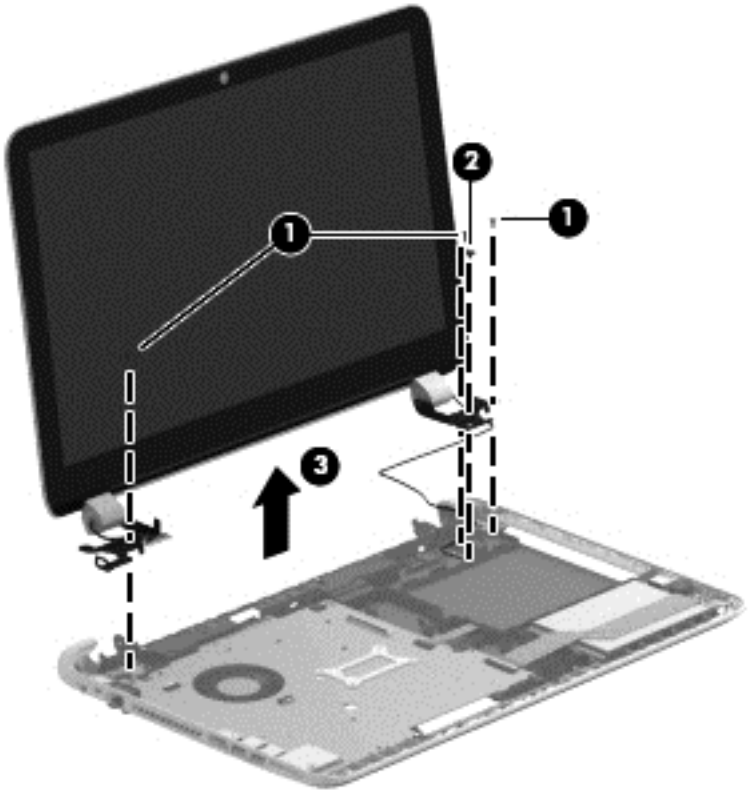
Before removing the display assembly, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the battery (see Battery on page 40), and then remove the following components:
   a. Optical drive (see Optical drive on page 45).
   b. Service door (see Service door on page 42).
   c. WLAN module (see WLAN module on page 44).
   d. Memory module (see Memory module on page 42).
   e. Keyboard (see Keyboard on page 51).
   f. Top cover (see Top cover on page 55).
   g. Hard drive (see Hard drive on page 59).
   h. System board (see System board on page 68).

Remove the display assembly:

1. Remove the three Phillips M2.5×6.5 screws **(1)** and **(2)** that secure the display assembly to the base enclosure.

2. Remove the display assembly **(3)**.

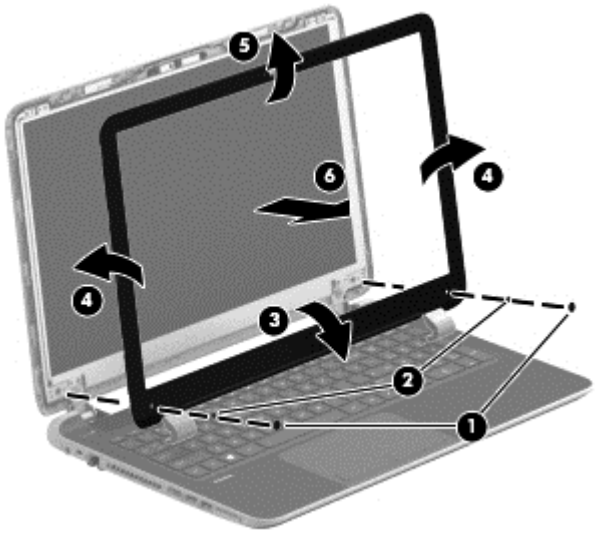


3. If it is necessary to replace the display bezel or any of the display assembly subcomponents:

   a. Remove the two display bezel screw covers **(1)** and the two Phillips M2.5×5.0 screws **(2)** that secure the display bezel to the display assembly. The display bezel screw covers are included in the display bezel spare part kit, spare part number 676644-001, and in all display assembly subcomponent spare part kits.

   b. Flex the inside edges of the bottom edge **(3)**, the left and right sides **(4)**, and the top edge **(5)** of the display bezel until the bezel disengages from the display enclosure.

c. Remove the display bezel **(6)**. The display bezel is available using spare part number 725617-001.

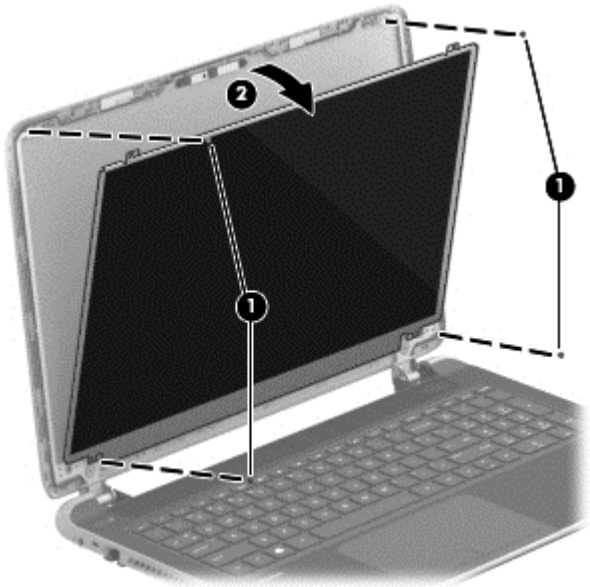


⚠ **CAUTION:** Be sure the work surface is clear of all tools, screws, and computer components before turning the display panel upside down on the work surface.

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

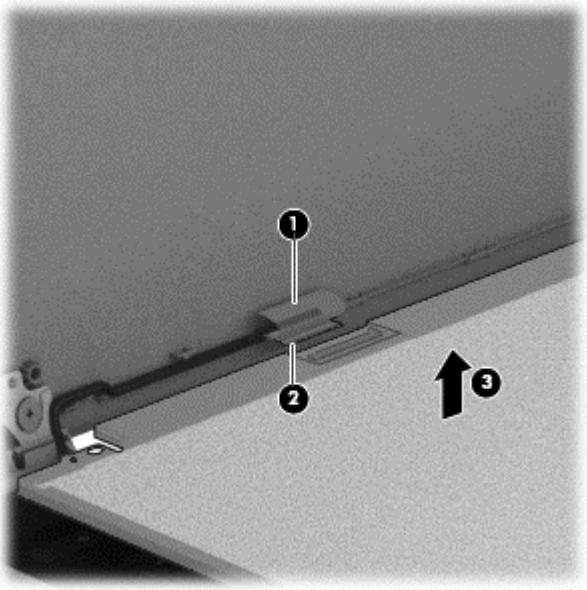
   a. Remove the four Phillips M2.0×3.5 screws **(1)** that secure the display panel to the display enclosure.

   b. Lift the top edge of the display panel **(2)** and turn the display panel upside down.



   c. Release the connector **(1)** that secures the display panel cable connector to the display panel.

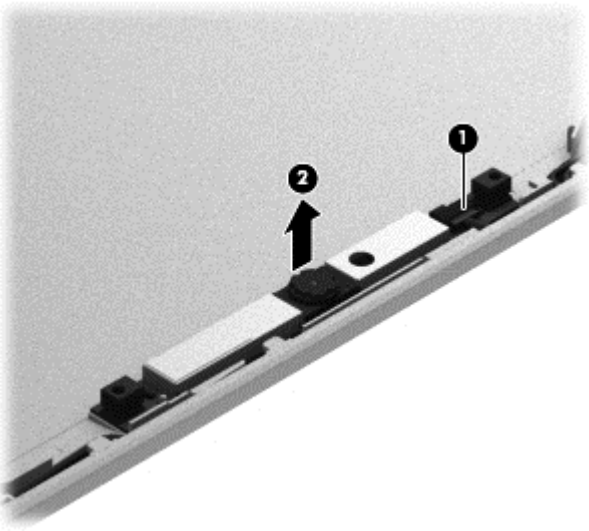
d. Disconnect the display panel cable **(2)** from the display panel and remove the panel **(3)**.



5. If it is necessary to replace the webcamera/microphone module:

   a. Disconnect the webcamera/microphone module cable **(1)** from the webcamera/microphone module. (The webcamera/microphone module cable is part of the display panel cable.)

   b. Detach the webcamera/microphone module **(2)** from the display enclosure.

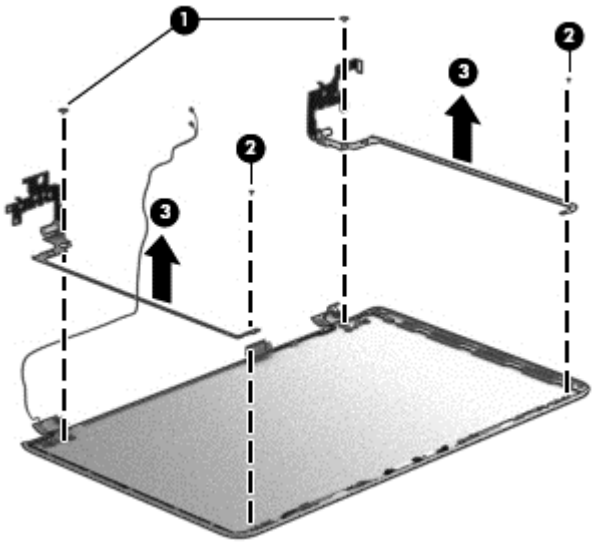


6. If it is necessary to replace the hinges:

   a. Remove the four Phillips M2.5×4.0 screws **(1)** and **(2)** that secure the hinges to the display enclosure.

   b. Remove the display hinge covers **(2)**.

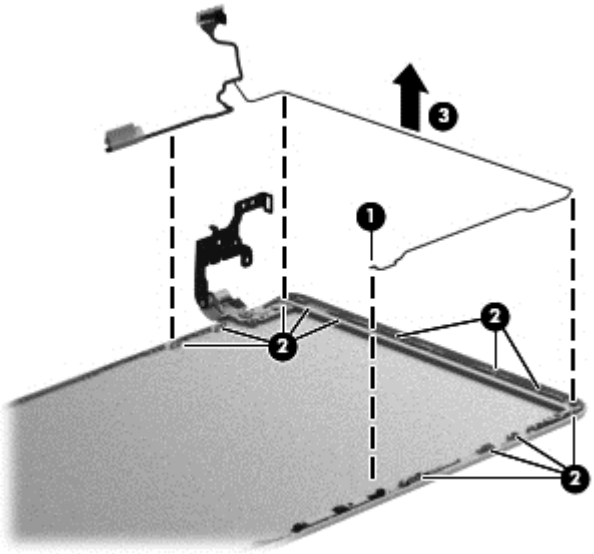
c. Remove the hinges and brackets **(3)** from the display enclosure.



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

   a. Release the display panel cable from the clips **(1)** and routing channel built into the display enclosure.

   b. Carefully release the cable from the channel guides **(2)** and remove the display panel cable **(3)**.

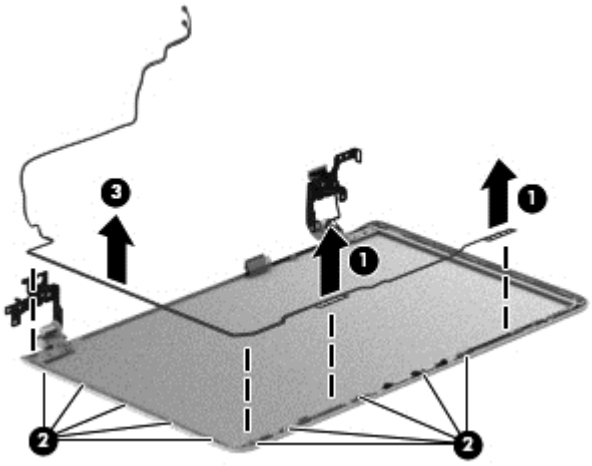


8. If it is necessary to replace the wireless antenna cables and transceivers:

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

   b. Release the wireless antenna cables from the clips **(2)** built into the display enclosure.

c. Remove the wireless antenna cables and transceivers **(3)**. The wireless antenna cables and transceivers are available in the Antenna Kit, spare part number 732063-001.



Reverse this procedure to install the display assembly.

7 Windows – Using Setup Utility (BIOS) and HP PC Hardware Diagnostics (UEFI)

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 91).
2. Use the arrow keys to select **Main**.
3. To exit Setup Utility (BIOS) without saving your changes, use the arrow keys to select **Exit**, select **Exit Discarding Changes**, and then press **enter**.
4. Select **Yes**.

Downloading a BIOS update

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

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

Do not shut down the computer or initiate Sleep.

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

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

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

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

Using HP PC Hardware Diagnostics (UEFI)

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

To start HP PC Hardware Diagnostics UEFI:

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

   The BIOS searches three places for the HP PC Hardware Diagnostics (UEFI) 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 93.

   b. Hard drive

   c. 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: The HP PC Hardware Diagnostics (UEFI) download instructions are provided in English only.

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

   – or –

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

8 Ubuntu Linux – Using Setup Utility (BIOS) and System Diagnostics

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 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 Setup Utility. Errors can prevent the computer from operating properly.

Starting Setup Utility

- Turn on or restart the computer. While the computer is booting press esc. When the Startup menu is displayed, press f10.

Using Setup Utility

Changing the language of Setup Utility

1. Start Setup Utility.
2. Use the arrow keys to select **System Configuration > Language**, and then press enter.
3. Use the arrow keys to select a language, and then press enter.
4. When a confirmation prompt with your language selected is displayed, press enter.
5. To save your change and exit Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**, and then press enter.

Your change takes effect immediately.

Navigating and selecting in Setup Utility

Setup Utility does not support the TouchPad. Navigation and selection are by keystroke.

- To choose a menu or a menu item, use the arrow keys.
- To choose an item in a list or to toggle a field—for example an Enable/Disable field—use either the arrow keys or f5 and f6.
- To select an item, press enter.
- To close a text box or return to the menu display, press esc.
- To display additional navigation and selection information while Setup Utility is open, press f1.

Displaying system information

1. Start Setup Utility.
2. Select the **Main** menu. System information such as the system time and date, and identification information about the computer is displayed.
3. To exit Setup Utility without changing any settings, use the arrow keys to select **Exit > Exit Discarding Changes**, and then press enter.

Restoring factory default settings in Setup Utility

1. Start Setup Utility.
2. Use the arrow keys to select **Exit > Load Setup Defaults**, and then press enter.
3. When the Setup Confirmation is displayed, press enter.
4. To save your change and exit Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**, and then press enter.

The Setup Utility factory settings take effect when the computer restarts.

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

Exiting Setup Utility

- To exit Setup Utility and save your changes from the current session:

  If the Setup Utility menus are not visible, press esc to return to the menu display. Then use the arrow keys to select **Exit > Exit Saving Changes**, and then press enter.

- To exit Setup Utility without saving your changes from the current session:

  If the Setup Utility menus are not visible, press esc to return to the menu display. Then use the arrow keys to select **Exit > Exit Discarding Changes**, and then press enter.

Updating the BIOS

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

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

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

Determining the BIOS version

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

BIOS version information (also known as *ROM date* and *System BIOS*) can be displayed by using Setup Utility.

1. Start Setup Utility.
2. If the system information is not displayed, use the arrow keys to select the **Main** menu.

   BIOS and other system information is displayed.
3. To exit Setup Utility, use the arrow keys to select **Exit > Exit Discarding Changes**, and then press enter.

Downloading a BIOS update

CAUTION: To reduce the risk of damage to the computer or an unsuccessful installation, download and install a BIOS update only when the computer is connected to reliable external power using the AC adapter. Do not download or install a BIOS update while the computer is running on battery power, 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. Access the page on the HP website that provides software for your computer.
2. Follow the on-screen instructions to identify your computer and access the BIOS update you want to download.
3. At the download area, follow these steps:
   a. Identify the BIOS update that is later than the BIOS version currently installed on your computer. Make a note of the date, name, or other identifier. You may need this information to locate the update later, after it has been downloaded to your hard drive.
   b. Follow the on-screen instructions to download your selection to the hard drive.

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

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

BIOS installation procedures vary. Follow any instructions that are displayed on the screen after the download is complete.

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

Using Advanced System Diagnostics

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

- Start-up test—This test analyzes the main computer components that are required to start the computer.
- Run-in test—This test repeats the start-up test and checks for intermittent problems that the start-up test does not detect.
- Hard disk test—This test analyzes the physical condition of the hard drive, and then checks all data in every sector of the hard drive. If the test detects a damaged sector, it attempts to move the data to a good sector.
- Memory test—This test analyzes the physical condition of the memory modules. If it reports an error, replace the memory modules immediately.
- Battery test—This test analyzes the condition of the battery and calibrates the battery if necessary. If the battery fails the test, contact support to report the issue and purchase a replacement battery.
- System Tune-Up—This group of additional tests checks your computer to make sure that the main components are functioning correctly. System Tune-Up runs longer and more comprehensive tests on memory modules, hard drive SMART attributes, the hard drive surface, the battery (and battery calibration), video memory, and the WLAN module status.

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

To start Advanced System Diagnostics:

1. Turn on or restart the computer. While the computer is booting press esc. When the Startup menu is displayed, press f2.
2. Click the diagnostic test you want to run, and then follow the on-screen instructions.

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

9 Specifications

Computer specifications

	Metric	U.S.
Dimensions		
Width	**38.56 cm**	15.18 in
Depth	**25.8 cm**	10.15 in
Height (front to back)	**2.47 cm**	.97 in
Weight	**2.33 or 2.56 kg** (depending on configuration)	5.14 lb or 5.67 (depending on configuration)
Input power		
Operating voltage and current	19.5 V dc @ 3.33 A – 65 W 19 V dc @ 4.62 A – 90 W 19.5 V dc @ 2.31 – 45 W (select models only)	
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.

15.0-inch display specifications

	Metric	U.S.
Dimensions		
Height	**17.6 cm**	6.93 in
Width	**31.2 cm**	12.28 in
Diagonal	**35.7 cm**	14.06 in

	Metric	U.S.
Number of colors	Up to 16.8 million	
Contrast ratio	200:1 (typical)	
Brightness	200 nits (typical)	
Pixel resolution		
Pitch	**0.197 × 0.197 mm**	
Format	1366×768)	
Configuration	RGB vertical stripe	
Backlight	LED	
Character display	80 × 25	
Total power consumption	2.0 W	
Viewing angle	±65° horizontal, ±50° vertical (typical)	

Hard drive specifications

	1 TB*	750 GB*	640 GB*	500 GB*	320 GB*
Dimensions					
Height	9.5 mm	9.5 mm	9.5 mm	9.5 mm	7.0 mm
Width	70 mm	70 mm	70 mm	70 mm	70 mm
Weight	107 g max	107 g max	107 g max	107 g max	107 g max
Interface type	SATA	SATA	SATA	SATA	SATA
Transfer rate	300 MB/sec	300 MB/sec	300 MB/sec	300 MB/sec	300 MB/sec
Security	ATA security	ATA security	ATA security	ATA security	ATA security
Seek times (typical read, including setting)					
Single track	1.5 ms	1.0 ms	1.0 ms	1.5 ms	2.0 ms
Average	11.0 ms	14.0 ms	14.0 ms	12.0 ms	12.0 ms
Maximum	22.0 ms	24.0 ms	22.0 ms	22.0 ms	22.0 ms
Logical blocks	1,953,525,168	1,465,128,359	1,250,242,867	976,752,240	625,121,433
Disk rotational speed	5400 rpm	7200 and 5400 rpm	5400 rpm	7200 and 5400 rpm	5400 rpm
Operating temperature	**5°C to 55°C** (41°F to 131°F)				

*Size refers to hard drive storage capacity. Actual accessible capacity is less. Actual drive specifications may differ slightly.

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

10 Windows – Backing up, restoring, and recovering

This chapter provides information about the following processes:

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

NOTE: This chapter describes an overview of backing up, restoring and recovering options. For more details about the tools provided, see the HP Support Assistant. To access the HP Support Assistant, from the Start screen, select the **HP Support Assistant app**. Use the search field to access information about backup, restore, refresh, and other recovery topics, and then follow the information provided.

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 the state 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 recovery media and backups on page 100.

2. Use the Windows tools to create system restore points and create backups of personal information. For more information and steps, see the HP Support Assistant. To access the HP Support Assistant, from the Start screen, select the **HP Support Assistant** app. Use the search field to access information about backup, restore, refresh, and other recovery topics, and then follow the information provided.

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, 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. 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. 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:

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

If you ever need to recover the system, see Recovering using HP Recovery Manager on page 102.

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**, and then select **Drivers and Applications Reinstall**, and 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 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 102.
- If you want to recover the computer's original factory partitioning and content, you can choose the System Recovery option from the HP Recovery media. For more information, see Recovering using HP Recovery Manager on page 102.

- 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 102.
- 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 Using the HP Recovery partition (select models only) on page 102.

Recovering using HP Recovery Manager

HP Recovery Manager software allows you to recover the computer to its original factory state. Using the HP Recovery media you created, 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—Reinstalls the operating system and all hardware-related drivers and software, but not other software applications.
- Factory Reset—Restores the computer to the state 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.
- To use the Factory Reset, you must use HP Recovery media.
- If the HP Recovery media do not work, you can obtain recovery media for your system by contacting support. See the *Worldwide Telephone Numbers* booklet included with the computer. You can also find contact information from the HP website. For U.S. support, go to http://www.hp.com/go/contactHP. For worldwide support, go to http://welcome.hp.com/country/us/en/wwcontact_us.html.

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 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:

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 **HP Recovery Manager**, and 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 first HP Recovery disc you created into the optical drive on your computer or into an optional external optical drive, and then restart the computer.

   – or –

   Insert the HP Recovery USB flash drive you created into a USB port on your computer, and then restart the computer.

NOTE: If the computer does not automatically restart in HP Recovery Manager, change the computer boot order. See Changing the computer boot order on page 103.

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.
3. Press and hold esc while the computer is restarting, and then press f9 for boot options.
4. Select the optical drive or USB flash drive you want to boot from.
5. Follow the on-screen instructions.

Removing the HP Recovery partition

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

IMPORTANT: Removing the HP Recovery partition means you can no longer use Windows Refresh, the Windows Remove everything and reinstall Windows option, or the HP Recovery Manager option for minimized image recovery. Create HP Recovery media before removing the Recovery partition to ensure you have recovery options; see Creating HP Recovery media on page 100.

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 follow the on-screen instructions to continue.

11 Ubuntu Linux Backing up, restoring, and recovering

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.

Performing a system recovery

The Deja Dup Restore Tool allows you to repair or restore the computer to its original factory state. You can create an image restore DVD using a DVD±RW optical drive. You can also create a restore image on a USB storage device.

CAUTION: Using Restore 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 programs and drivers that were installed at the factory. Software, drivers, and updates not installed at the factory must be manually reinstalled. Personal files must be restored from a backup.

NOTE: HP recommends that you create the image restore in the event of a system failure.

Creating the restore DVDs

The restore creation software creates a set of system restore discs using blank, writable DVDs (DVD-R or DVD +R). HP recommends using blank DVD+R discs from a manufacturer you trust, because these recovery DVDs are so important. You need approximately 3 blank DVD+R discs. The program states how many discs are needed at the beginning of the process.

To create restore DVDs:

1. Click the **System menu** icon at the far right of the top panel, and then click **System Settings > Backup**.
2. Select **Storage** from the panel on the left side of the window, click the down-arrow next to **Backup Location**, and select the DVD from the drop-down list.
3. Select **Overview** from the panel on the left side of the window, and then click **Back Up Now**.
4. Follow the on-screen instructions.

Creating a restore image on a USB device

NOTE: Be sure AC power is connected to the computer you begin.

Verify the exact amount of free space on your storage device before you begin the creation process. For most models, you will need at least 8 GB of free space on the storage device. However, depending on the drivers and software installed on your computer, you may need slightly more than 8 GB of space. **HP recommends that you use a 16 GB device or above for best results.**

IMPORTANT: Remember to insert your USB device into the USB port on the computer before starting this procedure.

To create the restore image:

1. Click the **System menu** icon at the far right of the top panel, and then click **System Settings > Backup**.
2. Select **Storage** from the panel on the left side of the window, click the down-arrow next to **Backup location**, and select the USB device from the drop-down list.

NOTE: If the USB device is not listed in the drop-down list for Backup Location, select **Local Folder**, and then click the **Choose Folder** button. Select the USB device from the panel on the left side of the Choose Folder window, and click **OK**.

3. Select **Overview** from the panel on the left side of the window, and then click **Backup Now**.
4. Follow the on-screen instructions.

Performing recovery using the restore DVD

NOTE: The following procedure uses the F11 BIOS Recovery feature to perform the recovery.

1. If possible, back up all personal files.
2. Shut down the computer.
3. Be sure the restore DVD or USB device is connected to the computer.
4. Restart the computer.
5. Using the arrow keys, select **Recovery**, and then press enter.
6. Follow the on-screen instructions.

NOTE: If you are unable to boot (start up) your computer, and you did not create a system recovery disc, you must purchase an *Ubuntu Operating System* DVD to reinstall the operating system. For additional information, refer to the *Worldwide Telephone Numbers* booklet.

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, discs, or the Ubuntu One website. 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 to the Ubuntu One website using the Deja Dup Backup Tool:

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

1. Click the **System menu** icon at the far right of the top panel, and then click **System Settings > Backup** icon.
2. Select **Folders** from the panel on the left side of the window, and beneath **Folders to back up**, select the folders to back up.

3. Select **Storage** from the panel on the left side of the window, click the down-arrow next to **Backup Location**, and select **Ubuntu One** from the drop-down list.
4. Select **Overview** from the panel on the left side of the window, and then click **Back Up Now**.

NOTE: The first time you back up your files to Ubuntu One, you will need to create an account to sign into Ubuntu One. Enter your email address and password into the account sign-in boxes and follow the on-screen instructions to complete the sign-in process.

To restore backup files:

1. Click the **System menu** icon at the far right of the top panel, and then click **System Settings > Backup** icon.
2. Click **Restore**, select the location of the backup files and the folder name, and then click **Forward**.
3. Under **Restore from When?**, select the date of the files to be restored, and then click **Forward**.
4. Select the location and folder where the files are to be restored, and then click **Forward**.
5. Follow the instructions on the screen.
6. Click **Restore** to start restoring the files, or click **Cancel** to cancel the operation.

NOTE: You may also back up to cloud storage services provided by various companies. For a small fee, they will keep your backup for you. A cloud service is recommended, since it is an easy way to keep your backups off-site and safe.

12 Power cord set requirements

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

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

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

Requirements for all countries

The following requirements are applicable to all countries and regions:

- The length of the power cord set must be at least **1.5 m** (5.0 ft) and no more than **2.0 m** (6.5 ft).
- All power cord sets must be approved by an acceptable accredited agency responsible for evaluation in the country or region where the power cord set will be used.
- The power cord sets must have a minimum current capacity of 10 amps and a nominal voltage rating of 125 or 250 V AC, as required by the power system of each country or region.
- The appliance coupler must meet the mechanical configuration of an EN 60 320/IEC 320 Standard Sheet C13 connector for mating with the appliance inlet on the back of the computer.

Requirements for specific countries and regions

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

Country/region	Accredited agency	Applicable note number
Sweden	SEMKO	1
Switzerland	SEV	1
Taiwan	BSMI	4
The United Kingdom	BSI	1
The United States	UL	2

1. The flexible cord must be Type HO5VV-F, 3-conductor, 1.0-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.
2. The flexible cord must be Type SPT-3 or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V) or NEMA 6-15P (15 A, 250 V) configuration.
3. The appliance coupler, flexible cord, and wall plug must bear a “T” mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCT or VCTF, 3-conductor, 1.00-mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V) configuration.
4. The flexible cord must be Type RVV, 3-conductor, 0.75-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.
5. The flexible cord must be Type VCTF, 3-conductor, 0.75-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.

13 Recycling

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

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

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