HP ENVY x360 Convertible PC

Maintenance and Service Guide
IMPORTANT! This document is intended for HP authorized service providers only.

© Copyright 2014 Hewlett-Packard Development Company, L.P.

Intel and Pentium are trademarks of Intel Corporation in the U.S. and other countries. Bluetooth is a trademark owned by its proprietor and used by Hewlett-Packard Company under license. Microsoft, Windows, WIndows 7, and Windows 8 are U.S. registered trademarks of the Microsoft group of companies. SD Logo is a trademark of its proprietor.

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.

First Edition: June 2014

Document Part Number: 767037-001

Product notice

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

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

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

Safety warning notice

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

Table of contents

1 Product description 1

2 External component identification 3

Right side 3

Left side 4

Display 5

Display modes 5

Top 7

TouchPad 7

Lights 8

Buttons and speakers 9

Keys 10

Bottom 11

Service tag and PCID label 12

Service tag 12

PCID label 13

3 Illustrated parts catalog 14

Computer major components 14

Display assembly subcomponents 17

Mass storage devices 18

Miscellaneous parts 19

Sequential part number listing 19

4 Removal and replacement procedures preliminary requirements 23

Tools required 23

Service considerations 23

Plastic parts 23

Cables and connectors 23

Drive handling 24

Grounding guidelines 24

Electrostatic discharge damage 24

Packaging and transporting guidelines 25

Workstation guidelines 25

5 Removal and replacement procedures for Authorized Service Provider parts 27
Component replacement procedures 27
Top cover 28
Battery 31
TouchPad board 33
Hard drive 34
Solid-state drive (SSD) 36
WLAN module 38
Speakers 40
USB/audio board 42
Fan 43
Power button board 45
System board 47
Memory module 49
Heat sink 51
Display assembly 53
Power connector cable 59

6 Using Setup Utility (BIOS) and HP PC Hardware Diagnostics (UEFI) 61
Starting Setup Utility (BIOS) 61
Updating the BIOS 61
Determining the BIOS version 61
Downloading a BIOS update 62
Using HP PC Hardware Diagnostics (UEFI) 62
Downloading HP PC Hardware Diagnostics (UEFI) to a USB device 63

7 Specifications 64
Computer specifications 64
Hard drive specifications 65
Solid-state drive specifications 65

8 Backing up, restoring, and recovering 66
Creating recovery media and backups 66
Creating HP Recovery media 66
Restore and recovery 67
Recovering using HP Recovery Manager 68
What you need to know 68
Using the HP Recovery partition (select models only) 68
Using HP Recovery media to recover 69
Changing the computer boot order 69

Removing the HP Recovery partition (select models only) 69

9 Power cord set requirements 70

Requirements for all countries 70

Requirements for specific countries and regions 70

10 Recycling 72

Index 73

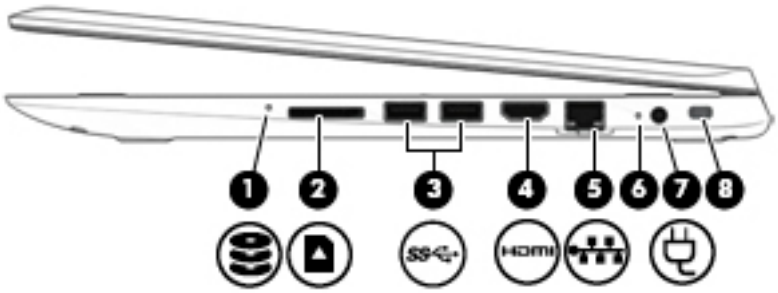
1 Product description

Category	Description
Product Name	HP ENVY x360 Convertible PC
Processor	**4th Generation Intel processors** Intel® Core i7-4510U processor (2.00 GHz, SC turbo up to 3.10 GHz, 1600 MHz, 4 MB L3 cache) Intel Core i5-4210U processor (1.70 GHz, SC turbo up to 2.70 GHz, 1600 MHz, 3 MB L3 cache) Intel Core i3-4030U processor (1.90 GHz, 1600 MHz, 3 MB L3 cache)
Chipset	Integrated SoC FCH
Graphics	**Internal graphics:** Intel HD Graphics 4400 Support for DX11, HD Decode, and HDMI
Panel	15.6-in [39.6-cm] (1920×1080), high-definition (FHD), light emitting diode (LED), AntiGlare, 16:9 ultra-wide aspect ratio; typical brightness: 300 nits; slim (3.2-mm), stand viewing angle 15.6-in [39.6-cm] (1366×768), high-definition (HD), white light emitting diode (WLED), AntiGlare; 16:9 ultra-wide aspect ratio; typical brightness: 200 nits; flat (3.8-mm), stand viewing angle Touch solution with flush glass, multitouch enabled, touch panel supports Home Key with LED Supports low-voltage differential signaling (LVDS) (co-layout with eDP1.2)
Memory	Support for 8192-MB of DDR3L-1600-MHz system ram in the following configurations: • 8192 GB (8192 MB × 1 or 4096 MB × 2) • 6144 GB (4096 MB × 1 + 2048 MB × 1) • 4096 GB (4096 MB × 1 or 2048 MB × 2)
Hard drive	Support for 1P 7mm/2P 7.2mm SATA 2.5-inch hard drive Support for Accelerometer hard drive protection Support for the following single hard drive configurations: • 1-TB, 5400-rpm, 7.2-mm • 750-GB, 5400-rpm, 7.2-mm • 500-GB, 5400-rpm, 7.0-mm Support for M2 SATA-3 (NGFF), TLC and MLC: • 256 GB Solid-state drive (SSD) Support for hybrid hard drive configurations: • 500 GB, 5400-rpm + 8 GB NAND Hybrid hard drive, 7.0 mm
Optical drive	Support for external 9.5 mm tray load, SATA, DVD+/-RW DL SuperMulti drive
Audio and video	Integrated HP TrueVision camera: HD (1280×720 by 30 frames/sec), fixed (no tilt), with activity light Dual digital microphones with appropriate software - echo cancellation, noise suppression Dual speakers

Category	Description
	Beats Audio
Ethernet	Gigabit LAN
Sensor	Sensor Hub (Accelerometer + Gyroscope + e-Compass)
Wireless	Integrated wireless options with dual antenna (Half Mini Card): Compatible with Miracast-certified devices • Qualcomm QCA9565 802.11bgn 1x1 Wi-Fi + BT4.0 Combo Adapter • Intel Dual Band Wireless-AC 7260 802.11 ac 2×2 WiFi + BT 4.0 Combo Adapter • Intel Dual Band Wireless-AC 3160 802.11ac 1×1 WiFi + BT 4.0 Combo Adapter
Internal expansion	One half-size mini card slot - support for WLAN One 2280 M.2 daughter board - optional support for SSD
External media cards	HP Multi-Format Digital Media Card Reader with push-push technology. Supports SD/SDHC/SDXC.
Ports	AC adapter: HP Smart pin plug (4.5-mm barrel) Audio: one combo audio-out (headphone)/audio-in (microphone) jack HDMI: v. 1.4, supporting up to 1080p, 1920×1080 at 60 Hz RJ-45/Ethernet (2) USB 3.0 (right side) (1) USB 2.0 (left side)
Keyboard/pointing devices	Full size dura coat backlit keyboard with numeric keypad **Touchpad requirements:** HP Control Zone Trackpad Taps enabled as default Multitouch gestures enabled – ability to turn on and off Support for PS/2 and SMBus Support for Windows 8.1 Modern TouchPad Gestures
Power requirements	Support for 45-W Smart AC adapter (using 4.5 mm plug) with localized cable plug support 1 meter power cord Prismatic 3-cell, 43.5-Wh, Li-ion battery
Security	Kensington Lock slot
Operating system	**Preinstalled**: Windows 8.1 Update
Serviceability	**End user replaceable parts:** • AC adapter

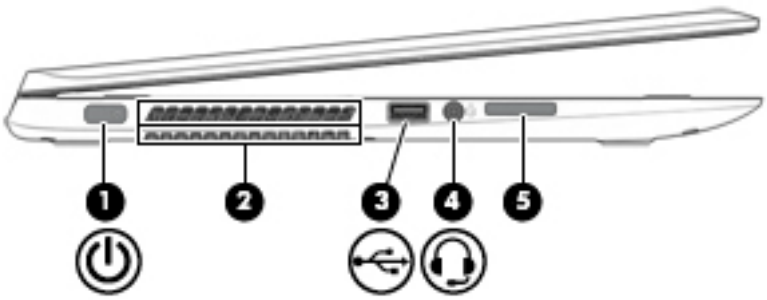
2 External component identification

Right side



Component			Description
(1)		Hard drive light	• Blinking white: The hard drive is being accessed. • Amber: HP 3D DriveGuard has temporarily parked the hard drive.
(2)		Memory card reader	Reads optional memory cards that store, manage, share, or access information. To insert a card: Hold the card label-side up, with connectors facing the slot, insert the card into the slot, and then push in on the card until it is firmly seated. To remove a card: Press in on the card it until it pops out.
(3)		USB 3.0 ports (2)	Each USB 3.0 port connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub.
(4)		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.
(5)		RJ-45 (network) jack/status lights	Connects a network cable. • White: The network is connected. • Amber: Activity is occurring on the network.
(6)		AC adapter light	• On: The AC adapter is connected and the battery is charged. • Off: The computer is using battery power.
(7)		Power connector	Connects an AC adapter.
(8)		Security cable slot	Attaches an optional security cable to the computer. **NOTE:** The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.

Left side



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. • When the computer is in the Sleep state, press the button briefly to exit Sleep. • When the computer is in Hibernation, press the button briefly to exit Hibernation. **CAUTION:** Pressing and holding down the power button will result in the loss of unsaved information. If the computer has stopped responding and Windows shutdown procedures are ineffective, press and hold the power button down for at least 5 seconds to turn off the computer. To learn more about your power settings, see your power options. From the Start screen, type `power`, select **Power and sleep settings**, and then select **Power and sleep** from the list of applications.
(2)		Vent	Enables airflow to cool internal components. **NOTE:** The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(3)		USB 2.0 port	Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub.
(4)		Audio-out (headphone)/Audio-in (microphone) jack	Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. This jack does not support optional microphone-only devices. **WARNING!** To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, refer to the *Regulatory, Safety, and Environmental Notices*. To access this guide, from the Start screen, type `support`, and then select the **HP Support Assistant** app. **NOTE:** When a device is connected to the jack, the computer speakers are disabled. **NOTE:** Be sure that the device cable has a 4-conductor connector that supports both audio-out (headphone) and audio-in (microphone).
(5)		Volume button	Controls speaker volume on the tablet.

Component	Description
	• To increase speaker volume, press the **+** edge of the button. • To decrease speaker volume, press the **–** edge of the button.

Display

Component		Description
(1)	WLAN antennas (2)*	Send and receive wireless signals to communicate with wireless local area networks (WLANs).
(2)	Internal microphones (2)	Record sound.
(3)	Webcam light	On: The webcam is in use.
(4)	Webcam	Records video and captures photographs. Some models allow you to video conference and chat online using streaming video. To use the webcam, from the Start screen, type `camera`, and then select **Camera** 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. To access this guide, from the Start screen, type `support`, and then select the **HP Support Assistant** app.

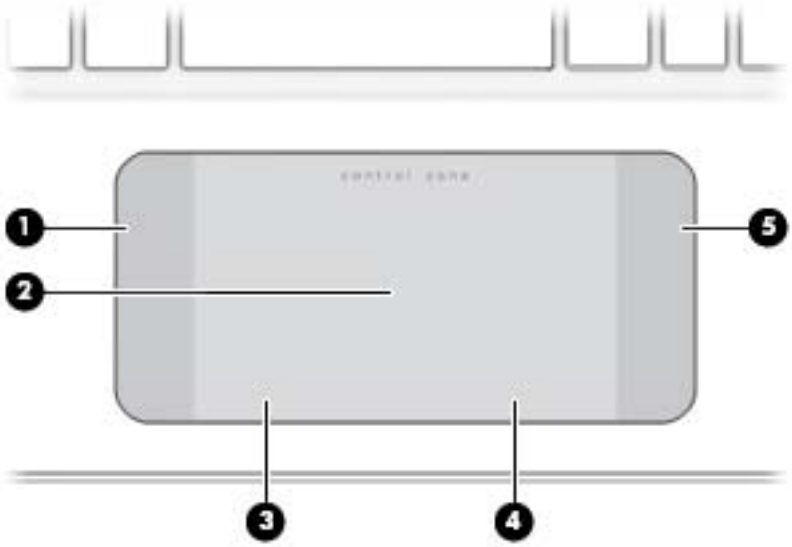
Display modes

Your computer has a hinge that allows you to rotate the display 360 degrees. This allows you to use your computer in three modes: productivity mode, entertainment mode, or tablet mode.

Mode	Description
Productivity mode	To use the notebook in productivity mode, raise the display until you can view the display (about 90 to 100 degrees).
Entertainment mode	To use your notebook in entertainment mode, raise the display, and then rotate it backward to a stand position (about 315 degrees). You can rest the notebook on the computer bottom or stand it on the front edges. **NOTE:** The Touchpad and keyboard functions are locked during this mode.
Tablet mode	To use your notebook as a tablet, raise the display, and then rotate it backward until it is flush with the computer bottom (360 degrees). **NOTE:** The Touchpad and keyboard functions are locked during this mode.

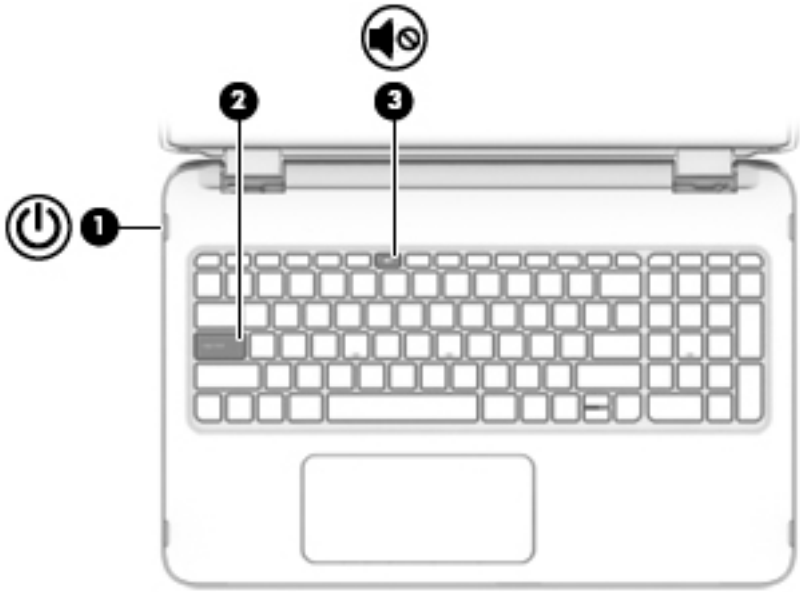
Top

TouchPad



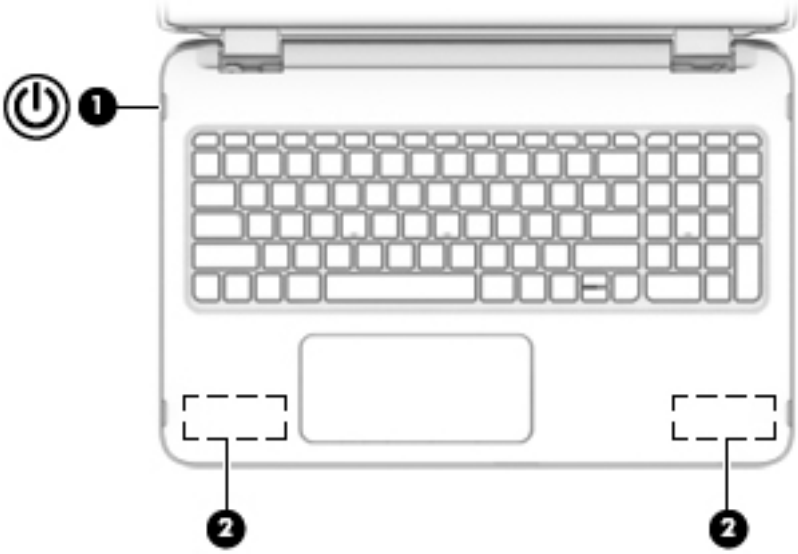
Component		Description
(1)	Left control zone	Textured area that allows you to perform additional gestures.
(2)	TouchPad zone	Reads your finger gestures to move the pointer or activate items on the screen. **NOTE:** The TouchPad also supports edge-swipe gestures.
(3)	Left TouchPad button	Functions like the left button on an external mouse.
(4)	Right TouchPad button	Functions like the right button on an external mouse.
(5)	Right control zone	Textured area that allows you to perform additional gestures.

Lights



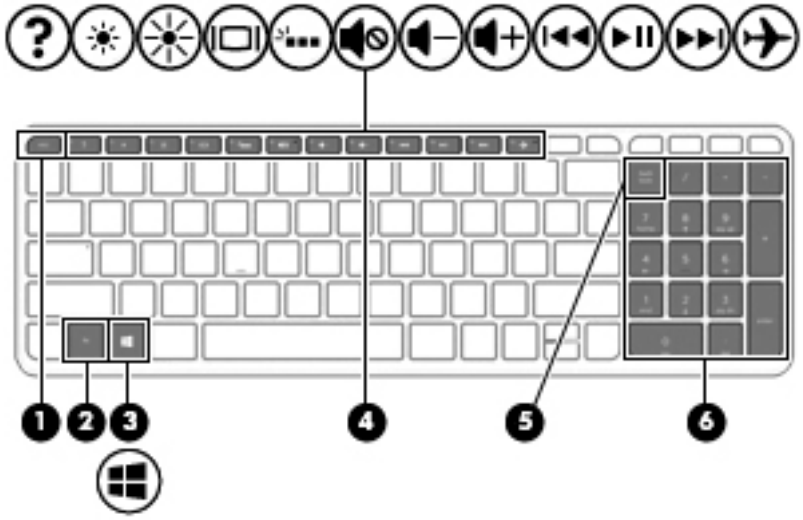
Component		Description
(1)	Power light	• On: The computer is on. • Blinking: The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other unneeded components. • Off: The computer is off or in Hibernation. Hibernation is a power-saving state that uses the least amount of power.
(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.

Buttons and speakers



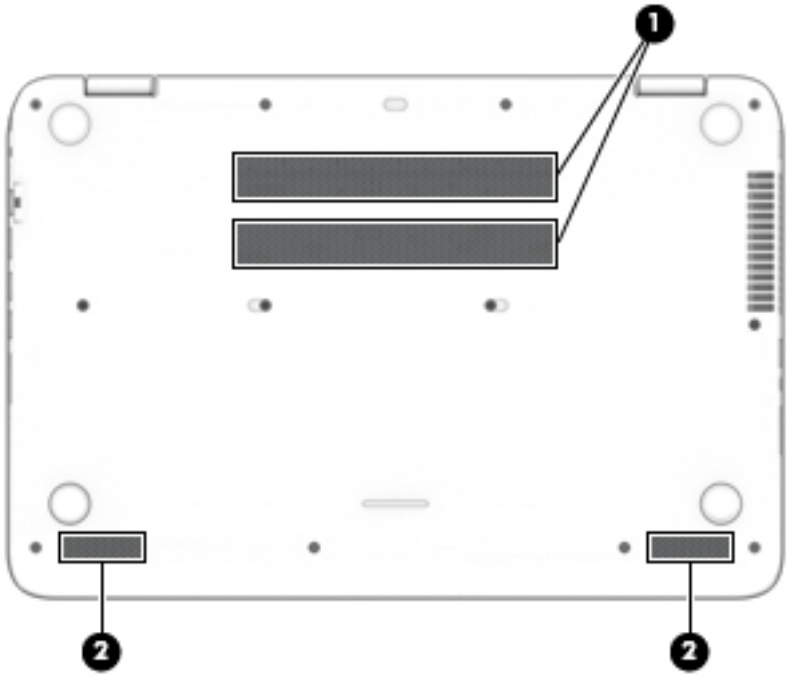
Component		Description
(1)	Power button	• When the computer is off, press the button to turn on the computer. • When the computer is on, press the button briefly to initiate Sleep. • When the computer is in the Sleep state, press the button briefly to exit Sleep. • When the computer is in Hibernation, press the button briefly to exit Hibernation. **CAUTION:** Pressing and holding down the power button will result in the loss of unsaved information. If the computer has stopped responding and Windows shutdown procedures are ineffective, press and hold the power button down for at least 5 seconds to turn off the computer. To learn more about your power settings, see your power options. From the Start screen, type `power`, select **Power and sleep settings**, and then select **Power and sleep** from the list of applications.
(2)	Speakers (2)	Produce sound.

Keys



Component		Description
(1)	esc key	Displays system information when pressed in combination with the fn key.
(2)	fn key	Executes frequently used system functions when pressed in combination with the b or 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 lk key	Turns the embedded numeric keypad on and off when pressed in combination with the fn key. Alternates between the navigational and numeric functions on the integrated numeric keypad.
(6)	Integrated numeric keypad	When num lk has been enabled, it can be used like an external numeric keypad.

Bottom



Component		Description
(1)	Vents (2)	Enable airflow to cool internal components. **NOTE:** The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(2)	Speakers (2)	Produce sound.

Service tag and PCID label

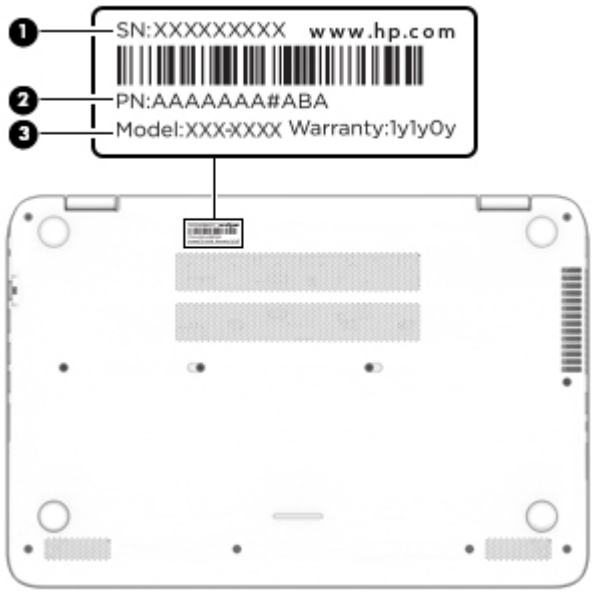
Service tag

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

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

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

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



Component	
(1)	Serial number
(2)	Product number
(3)	Model number and warranty period

- Microsoft® Certificate of Authenticity label (select models only prior to Windows 8)—Contains the Windows Product Key. You may need the Product Key to update or troubleshoot the operating system. HP platforms preinstalled with Windows 8 or Windows 8.1 do not have the physical label, but have a Digital Product Key electronically installed.

NOTE: This Digital Product Key is automatically recognized and activated by Microsoft Operating Systems on a reinstall of the Windows 8 or Windows 8.1 operating system with HP approved recovery methods.

- 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.

PCID label

The PCID label provides the information required to properly reset the notebook firmware (BIOS) back to factory shipped specifications when replacing the system board. The label may have a different number of characters depending on the operating system on the computer.

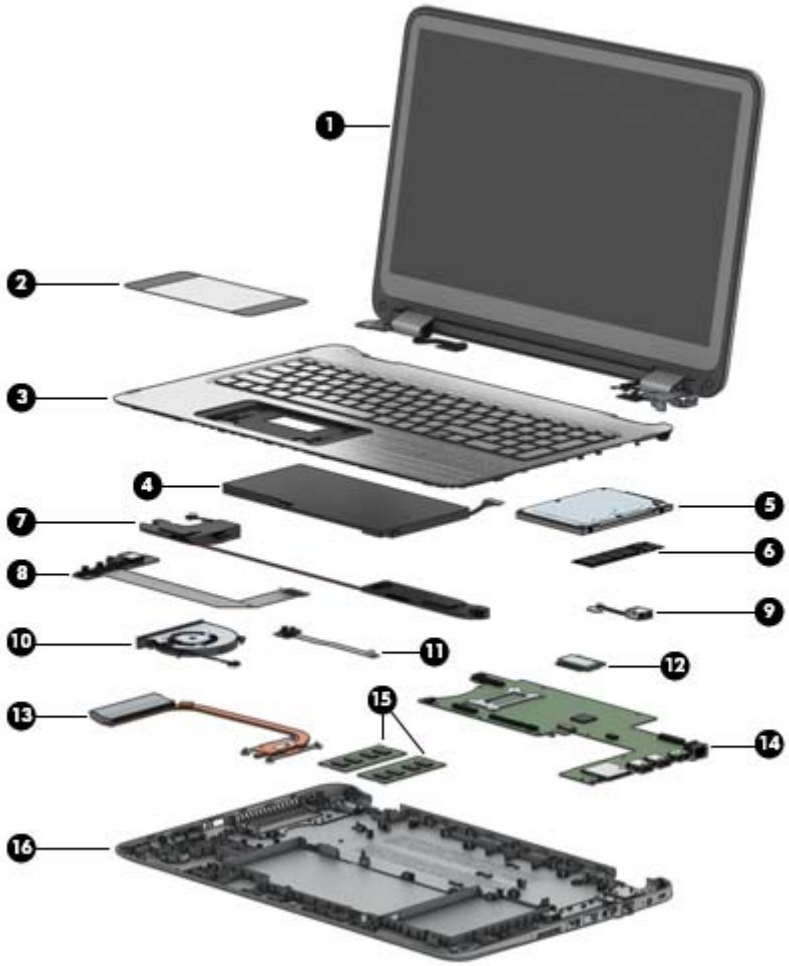
Windows 8 models

Non-Windows 8 models

3 Illustrated parts catalog

Computer major components

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

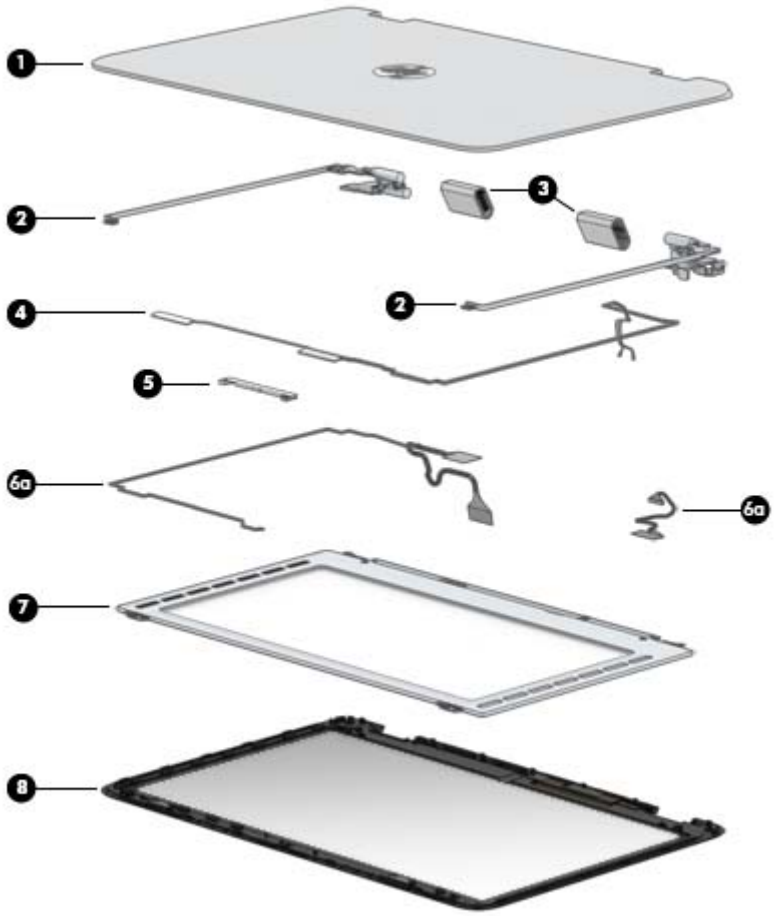


Item	Component	Spare part number
(1)	**Display assembly**	not spared
(2)	**TouchPad board** (includes cable)	774598-001
(3)	**Top cover** (includes keyboard)	
	For use in Belgium	774608-A41
	For use in Bulgaria	774608-261
	For use in Canada (English)	774608-DB1

Item	Component	Spare part number
	For use in the Czech Republic and Slovakia	774608-FL1
	For use in France	774608-051
	For use in Germany	774608-041
	For use in Greece	774608-151
	For use in Hungary	774608-211
	For use in Israel	774608-BB1
	For use in Italy	774608-061
	For use in the Netherlands	774608-DH1
	For use in the Netherlands and Europe	774608-B31
	For use in Romania	774608-271
	For use in Russia	774608-251
	For use in Saudi Arabia	774608-171
	For use in Slovenia	774608-BA1
	For use in Spain	774608-071
	For use in Switzerland	774608-BG1
	For use in Turkey	774608-141
	For use in the United Kingdom	774608-031
	For use in the United States	774608-001
(4)	**Battery** , 3-cell, 43-Wh, 2.83-Ah, Li-ion	761230-005
(5)	**Hard drive** (does not include hard drive bracket or hard drive connector cable):	
	1-TB, 5400-rpm, 7.0-mm	762990-005
	750-GB, 5400-rpm, 7.0-mm	752099-005
	500-GB, 5400-rpm, 7.0-mm	778186-005
	500-GB, 5400-rpm, 8 GB hybrid SSD, 7.0-mm	732000-005
	Hard Drive Hardware Kit (not illustrated, includes hard drive bracket and hard drive connector cable)	768020-001
(6)	**Solid-state drive**	
	256-GB, TLC	777651-001
	256-GB, MLC	777652-001
	Solid-state Drive Hardware Kit (not illustrated; includes cable, bracket, and screws)	777653-001
(7)	**Speaker Kit** (includes left and right speakers and cable)	774605-001
(8)	**USB/audio board** (includes cable)	774600-001
(9)	**Power connector cable**	768012-001
(10)	**Fan**	778793-001

Item	Component	Spare part number
(11)	**Power button board** (includes cable)	774599-001
(12)	**WLAN module:**	
	Intel Dual Band Wireless-AC 7260 802.11 ac 2x2 WiFi + BT 4.0 Combo Adapter	756753-005
	Qualcomm QCA9565 802.11bgn 1x1 Wi-Fi + BT4.0 Combo Adapter	733476-005
	Intel Dual Band Wireless-AC 3160 802.11 ac 1x1 WiFi + BT 4.0 combo adapter	710662-005
(13)	**Heat sink** (includes replacement thermal material)	774595-001
(14)	**System board** (includes replacement thermal material):	
	Equipped with an Intel Core i7-4510U processor and the Windows 8.1 Standard operating system	780958-501
	Equipped with an Intel Core i7-4510U processor and a non-Windows 8 operating system	780958-001
	Equipped with an Intel Core i5-4210U processor and the Windows 8.1 Standard operating system	774606-501
	Equipped with an Intel Core i5-4210U processor and a non-Windows 8 operating system	774606-001
	Equipped with an Intel Core i3-4030U processor and the Windows 8.1 Standard operating system	774607-501
	Equipped with an Intel Core i3-4030U processor and a non-Windows 8 operating system	774607-001
(15)	**Memory module** (PC3L, 12800, 1600-MHz):	
	8-GB	693374-005
	4-GB	691740-005
	2-GB	691739-005
(16)	**Base enclosure**	
	For use in models in North America with the following WLAN module: Qualcomm QCA9565 802.11bgn 1x1 Wi-Fi + BT4.0 Combo Adapter in North America	774592-001
	For use in models in EMEA with the following WLAN module: Qualcomm QCA9565 802.11bgn 1x1 Wi-Fi + BT4.0 Combo Adapter in North America	784133-001
	For use in models in North America with the following WLAN module: Intel Dual Band Wireless-AC 7260 802.11 ac 2x2 WiFi + BT 4.0 Combo Adapter	784134-001
	For use in models in EMEA with the following WLAN module: Intel Dual Band Wireless-AC 7260 802.11 ac 2x2 WiFi + BT 4.0 Combo Adapter	784135-001
	For use in models in EMEA with the following WLAN module: Intel Dual Band Wireless-AC 3160 802.11 ac 1x1 WiFi + BT 4.0 Combo Adapter	785744-001
	For use in models in EMEA with the following WLAN module: Intel Dual Band Wireless-AC 3160 802.11 ac 1x1 WiFi + BT 4.0 Combo Adapter	785745-001

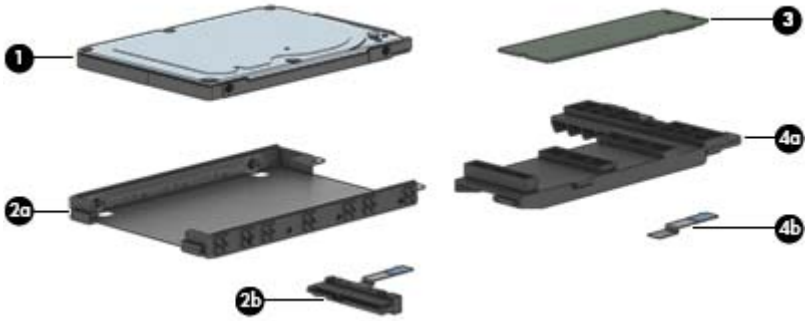
Display assembly subcomponents



Item	Component	Spare part number
(1)	**Display enclosure**	774591-001
(2)	**Display hinges** (includes left and right hinges)	774596-001
(3)	**Display hinge covers**	774597-001
(4)	**Antenna**	774590-001
(5)	**Webcam**	768040-001
	Display cable kit, includes:	
(6a)	Display/webcam cable	
(6b)	Touch cable	
	• HD models	774593-001
	• FHD models	774594-001
	Display panel kit, includes:	
(7)	Bezel/glass	
(8)	Raw display panel	

Item	Component	Spare part number
	Fix bracket, touch control board, and backlight cable (not illustrated)	
	• HD models	774602-001
	• FHD models	774603-001

Mass storage devices



	Component	Spare part number
(1)	**Hard drive** (does not include hard drive bracket, hard drive connector cable, or screws):	
	1-TB, 5400-rpm, 7.0-mm	762990-005
	750-GB, 5400-rpm, 7.0-mm	752099-005
	500-GB, 5400-rpm, 7.0-mm	778186-005
	500-GB, 5400-rpm, 8 GB hybrid SSD, 7.0-mm	732000-005
	Hard Drive Hardware Kit, includes:	768020-001
(2a)	Hard drive bracket	
(2b)	Hard drive connector cable	
(3)	**Solid-state drive**	
	256-GB, TLC	777651-001
	256-GB, MLC	777652-001
	Solid-state Drive Hardware Kit, includes:	777653-001
(4a)	Cable	
(4b)	Bracket	
	External DVD±RW Double-Layer with SuperMulti Drive (not illustrated)	747080-001

Miscellaneous parts

Component	Spare part number
HP Smart AC adapter, 45-W, non-PFC, 4.5-mm, non-slim	741727-001
Power cord (3-pin, black, 1.0-m):	
For use in Europe	755530-021
For use in Israel	755530-BB1
For use in Denmark	755530-081
For use in North America	755530-001
For use in Switzerland	755530-111
For use in the United Kingdom and Singapore	755530-031
Rubber Feet Kit	768019-001
Screw Kit	774604-001
HDMI to VGA adapter	701943-001
Pen	773175-001

Sequential part number listing

Spare part number	Description
691739-005	2-GB memory module (PC3L, 12800, 1600-MHz)
691740-005	4-GB memory module (PC3L, 12800, 1600-MHz)
693374-005	8-GB memory module (PC3L, 12800, 1600-MHz)
701943-001	HDMI to VGA adapter
710662-005	Intel Dual Band Wireless-AC 3160 802.11 ac 1x1 WiFi + BT 4.0 combo adapter
732000-005	500-GB hard drive, 5400-rpm, 8 GB hybrid SSD, 7.0-mm **NOTE:** The hard drive bracket and hard drive connector cable are included in the Hard Drive Hardware Kit, spare part number 768020-001.
733476-005	Qualcomm QCA9565 802.11bgn 1x1 Wi-Fi + BT4.0 Combo Adapter
741727-001	45-W HP Smart AC adapter (non-PFC, 4.5-mm, non-slim)
747080-001	External DVD±RW Double-Layer with SuperMulti Drive
748599-001	HP hs3110 HSPA+ Mobile Broadband Module
752099-005	750-GB hard drive, 5400-rpm, 7.0-mm **NOTE:** The hard drive bracket and hard drive connector cable are included in the Hard Drive Hardware Kit, spare part number 768020-001.
755530-001	Power cord for use in North America (3-pin, black, 1.0-m)
755530-021	Power cord for use in Europe (3-pin, black, 1.0-m)

Spare part number	Description
755530-031	Power cord for use in the United Kingdom and Singapore (3-pin, black, 1.0-m)
755530-081	Power cord for use in Denmark (3-pin, black, 1.0-m)
755530-111	Power cord for use in Switzerland (3-pin, black, 1.0-m)
755530-BB1	Power cord for use in Israel (3-pin, black, 1.83-m)
756753-005	Intel Dual Band Wireless-AC 7260 802.11 ac 2x2 WiFi + BT 4.0 Combo Adapter
761230-005	3-cell, 43-Wh, 2.83-Ah, Li-ion battery
762990-005	1-TB hard drive, 5400-rpm, 7.0-mm **NOTE:** The hard drive bracket and hard drive connector cable are included in the Hard Drive Hardware Kit, spare part number 768020-001.
768012-001	Power connector cable
768019-001	Rubber Feet Kit
768020-001	Hard Drive Hardware Kit (includes hard drive bracket and hard drive connector cable)
768040-001	Webcam
773175-001	Pen
774590-001	Antenna
774591-001	Display enclosure
774592-001	Base enclosure for use in models in North America with the following WLAN module: Qualcomm QCA9565 802.11bgn 1x1 Wi-Fi + BT4.0 Combo Adapter in North America
774593-001	Display cable for use in HD models
774594-001	Display cable for use in FHD models
774595-001	Heat sink (includes replacement thermal material)
774596-001	Display hinges (includes left and right hinges)
774597-001	Display hinge cover kit
774598-001	Touchpad board
774599-001	Power button board (includes cable)
774600-001	USB/audio board (includes cable)
774602-001	Raw display panel kit for use in HD models (includes bezel, fix bracket, touch control board, and backlight cable)
774603-001	Raw display panel for use in FHD models (includes bezel, fix bracket, touch control board, and backlight cable)
774604-001	Screw Kit
774605-001	Speaker Kit (includes left and right speakers and cable)
774606-001	System board equipped with an Intel Core i5-4210U processor and a non-Windows 8 operating system (includes replacement thermal material)
774606-501	System board equipped with an Intel Core i5-4210U processor and the Windows 8.1 Standard operating system (includes replacement thermal material)

Spare part number	Description
774607-001	System board equipped with an Intel Core i3-4030U processor and a non-Windows 8 operating system (includes replacement thermal material)
774607-501	System board equipped with an Intel Core i3-4030U processor and the Windows 8.1 Standard operating system (includes replacement thermal material)
774608-001	Top cover with keyboard for use in the United States
774608-031	Top cover with keyboard for use in the United Kingdom
774608-041	Top cover with keyboard for use in Germany
774608-051	Top cover with keyboard for use in France
774608-061	Top cover with keyboard for use in Italy
774608-071	Top cover with keyboard for use in Spain
774608-141	Top cover with keyboard for use in Turkey
774608-151	Top cover with keyboard for use in Greece
774608-171	Top cover with keyboard for use in Saudi Arabia
774608-211	Top cover with keyboard for use in Hungary
774608-251	Top cover with keyboard for use in Russia
774608-261	Top cover with keyboard for use in Bulgaria
774608-271	Top cover with keyboard for use in Romania
774608-A41	Top cover with keyboard for use in Belgium
774608-B31	Top cover with keyboard for use in the Netherlands and Europe
774608-BA1	Top cover with keyboard for use in Slovenia
774608-BB1	Top cover with keyboard for use in Israel
774608-BG1	Top cover with keyboard for use in Switzerland
774608-DB1	Top cover with keyboard for use in Canada
774608-DH1	Top cover with keyboard for use in the Netherlands
774608-FL1	Top cover with keyboard for use in the Czech Republic and Slovakia
777651-001	256-GB solid-state drive, TLC
777652-001	256-GB solid-state drive, MLC
777653-001	Solid-state Drive Hardware Kit (includes cable, bracket, and screws)
778186-005	500-GB hard drive, 5400-rpm, SATA, 7.0-mm hard drive **NOTE:** The hard drive bracket and hard drive connector cable are included in the Hard Drive Hardware Kit, spare part number 768020-001.
778793-001	Fan
780958-001	System board equipped with an Intel Core i7-4510U processor and a non-Windows 8 operating system (includes replacement thermal material)

Spare part number	Description
780958-501	System board equipped with an Intel Core i7-4510U processor and the Windows 8.1 Standard operating system (includes replacement thermal material)
784133-001	Base enclosure for use in models in EMEA with the following WLAN module: Qualcomm QCA9565 802.11bgn 1x1 Wi-Fi + BT4.0 Combo Adapter in North America
784134-001	Base enclosure for use in models in North America with the following WLAN module: Intel Dual Band Wireless-AC 7260 802.11 ac 2x2 WiFi + BT 4.0 Combo Adapter
784135-001	Base enclosure for use in models in EMEA with the following WLAN module: Intel Dual Band Wireless-AC 7260 802.11 ac 2x2 WiFi + BT 4.0 Combo Adapter
785744-001	Base enclosure for use in models in North America with the following WLAN module: Intel Dual Band Wireless-AC 3160 802.11 ac 1x1 WiFi + BT 4.0 Combo Adapter
785745-001	Base enclosure for use in models in EMEA with the following WLAN module: Intel Dual Band Wireless-AC 3160 802.11 ac 1x1 WiFi + BT 4.0 Combo Adapter

4 Removal and replacement procedures preliminary requirements

Tools required

You will need the following tools to complete the removal and replacement procedures:

- Flat-bladed screw driver
- Magnetic screw driver
- Phillips P0 and P1 screw drivers

Service considerations

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

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

Plastic parts

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

Cables and connectors

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

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

Drive handling

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

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

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

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

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

Avoid dropping drives from any height onto any surface.

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

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

Avoid exposing a drive to temperature extremes or liquids.

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

Grounding guidelines

Electrostatic discharge damage

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

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

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

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

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

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

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

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

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

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

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

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

Workstation guidelines

Follow these grounding workstation guidelines:

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

- Avoid contact with pins, leads, or circuitry.
- Turn off power and input signals before inserting or removing connectors or test equipment.

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 Authorized Service Provider parts

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

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

Component replacement procedures

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

There are as many as 76 screws that must be removed, replaced, and/or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

Top cover

Description	Spare part number
Top cover with keyboard for use in Belgium	774608-A41
Top cover with keyboard for use in Bulgaria	774608-261
Top cover with keyboard for use in Canada (English)	774608-DB1
Top cover with keyboard for use in the Czech Republic and Slovakia	774608-FL1
Top cover with keyboard for use in France	774608-051
Top cover with keyboard for use in Germany	774608-041
Top cover with keyboard for use in Greece	774608-151
Top cover with keyboard for use in Hungary	774608-211
Top cover with keyboard for use in Israel	774608-BB1
Top cover with keyboard for use in Italy	774608-061
Top cover with keyboard for use in the Netherlands	774608-DH1
Top cover with keyboard for use in the Netherlands and Europe	774608-B31
Top cover with keyboard for use in Romania	774608-271
Top cover with keyboard for use in Russia	774608-251
Top cover with keyboard for use in Saudi Arabia	774608-171
Top cover with keyboard for use in Slovenia	774608-BA1
Top cover with keyboard for use in Spain	774608-071
Top cover with keyboard for use in Switzerland	774608-BG1
Top cover with keyboard for use in Turkey	774608-141
Top cover with keyboard for use in the United Kingdom	774608-031
Top cover with keyboard for use in the United States	774608-001

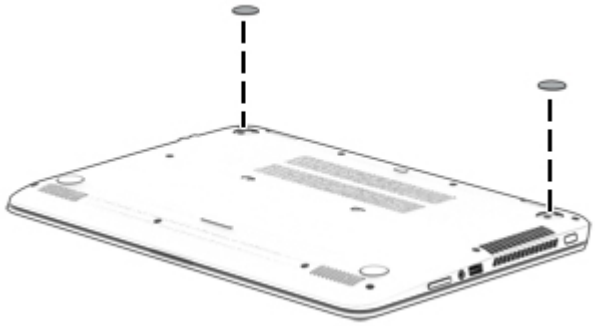
Before removing the top cover, follow these steps:

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

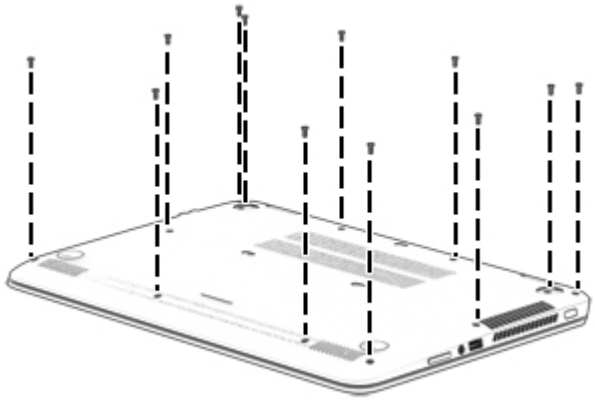
Remove the top cover:

1. Position the computer upside-down.

2. Pry the two rear rubber feet off the top cover.

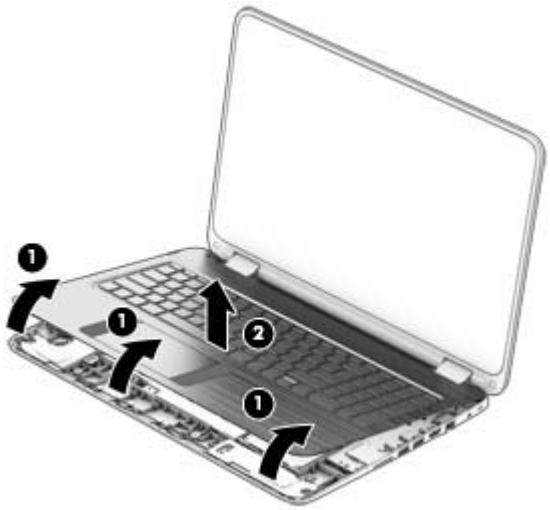


3. Remove the 12 Phillips PM2.5×6.0 screws **(1)** that secure the top cover to the computer.

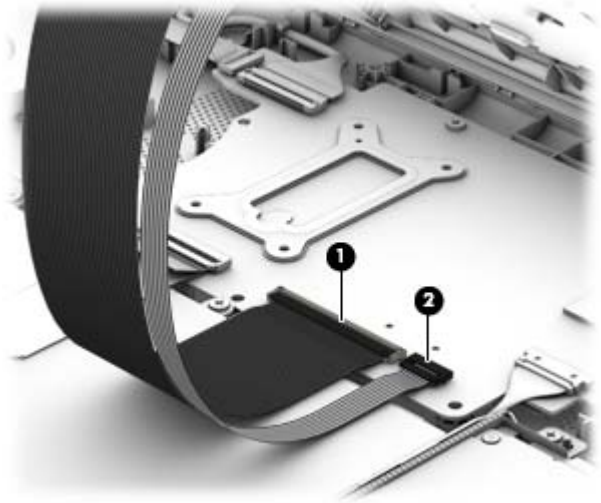


4. Separate the top cover from the computer by lifting up on the front of the top cover (starting near the touchpad) **(1)**, and then lifting the cover up and off the computer **(2)** far enough to access the keyboard and touchpad cables on the system board.

NOTE: When you lift the top cover, cables are connected from the keyboard and touchpad (installed on the inside of the top cover) to the system board. Be sure not to pull the cables loose when lifting the top cover.



5. Disconnect the keyboard cable **(1)** and the touchpad cable **(2)** from the system board.



6. Remove the top cover from the computer.

Reverse this procedure to install the top cover.

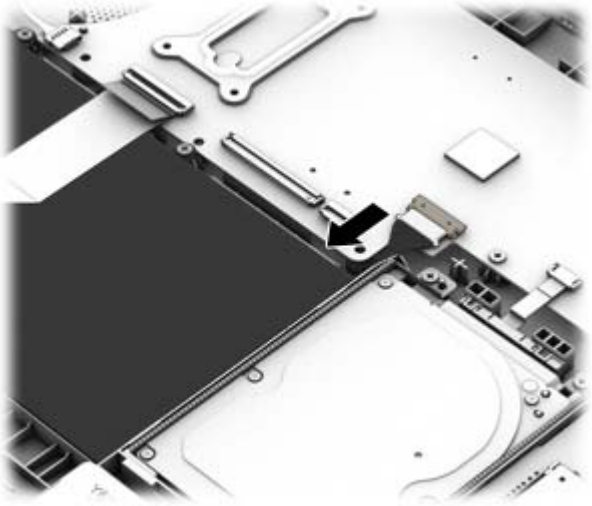
Battery

NOTE: You do not have to remove the battery to remove most computer components. Be sure to disconnect the battery cable from the system board before removing any components.

Description	Spare part number
3-cell, 43-Wh, 2.83-Ah, Li-ion battery	761230-005

Before removing the 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 top cover (see Top cover on page 28).
5. Disconnect the battery.

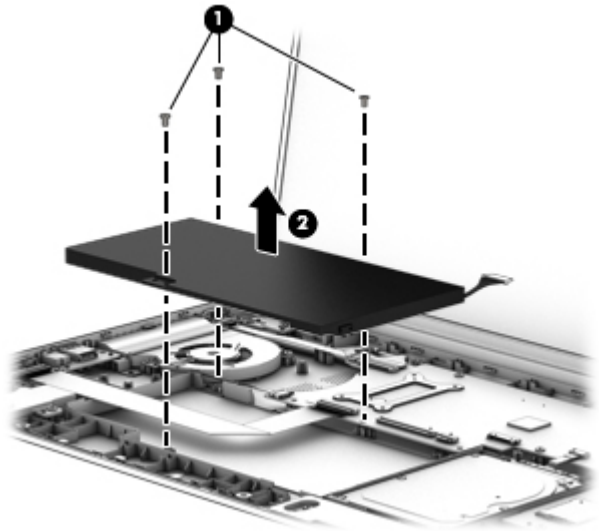


Remove the battery:

WARNING! To reduce potential safety issues, use only the battery provided with the computer, a replacement battery provided by HP, or a compatible battery purchased from HP.

1. Remove the three Phillips PM2.5×4.0 screws **(1)** that secure the battery to the computer.

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



Reverse this procedure to install the battery.

TouchPad board

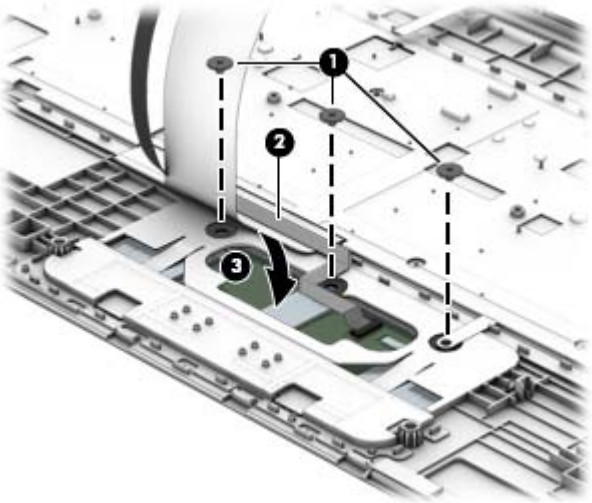
Description	Spare part number
Touchpad board (includes cable)	774598-001

Before removing the touchpad 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 top cover (see Top cover on page 28).

Remove the touchpad board:

1. Position the top cover upside-down.
2. Remove the three Phillips PM2.0×2.0 broadhead screws **(1)** that secure the TouchPad board to the computer.
3. Lift to disengage the cable from the adhesive securing it to the computer **(2)**.
4. Separate the touchpad board from the top cover by pulling it downward away from the top cover **(3)**.



Reverse this procedure to install the touchpad board.

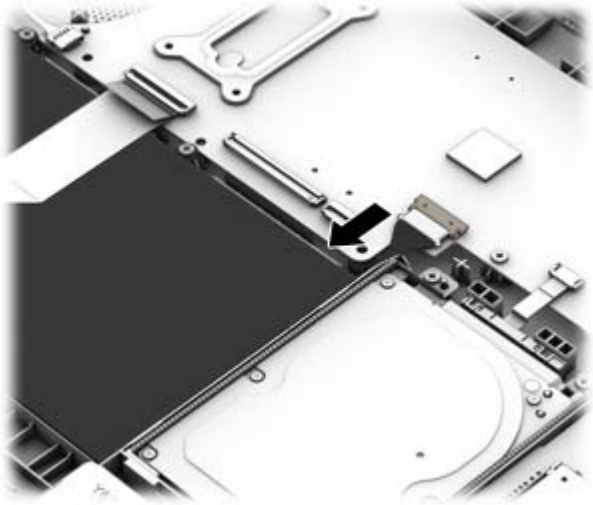
Hard drive

NOTE: The hard drive spare part kit does not include the hard drive bracket and hard drive connector cable. These components are included in the Hard Drive Hardware Kit, spare part number 768020-001.

Description	Spare part number
500-GB, 5400-rpm, 7.0-mm hard drive	778186-005
500-GB, 5400-rpm, 8 GB hybrid SSD, 7.0-mm hard drive	732000-005
Hard Drive Hardware Kit (includes cable, bracket, and screws)	768020-001

Before removing the hard drive, follow these steps:

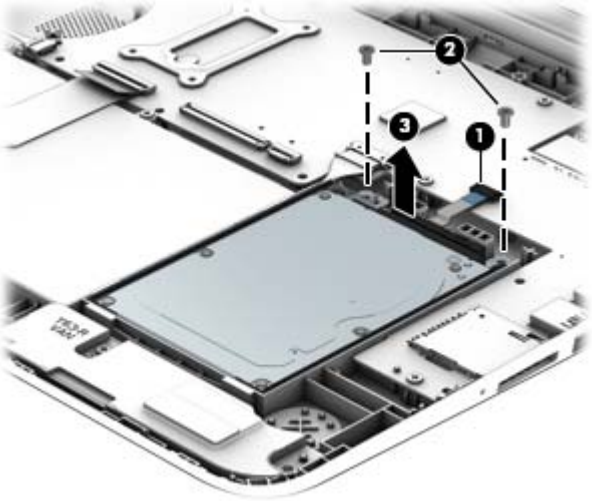
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the top cover (see Top cover on page 28).
5. Disconnect the battery.



Remove the hard drive:

1. Disconnect the cable **(1)** from the system board.
2. Remove the two Phillips PM2.5×4.0 screws **(2)** that secure the hard drive to the computer.

3. Lift the hard drive out of the computer **(3)**.



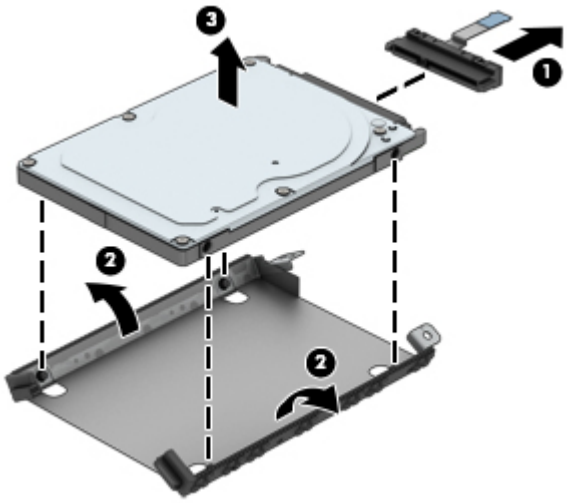
4. If it is necessary to disassemble the hard drive, perform the following steps:

   a. Disconnect the hard drive connector cable **(1)** from the hard drive.

   b. Flex the sides of the bracket to remove the pegs from the holes in the hard drive **(2)**.

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

      The hard drive bracket and hard drive connector cable are available in the Hard Drive Hardware Kit, spare part number 768020-001.



Reverse this procedure to install the hard drive.

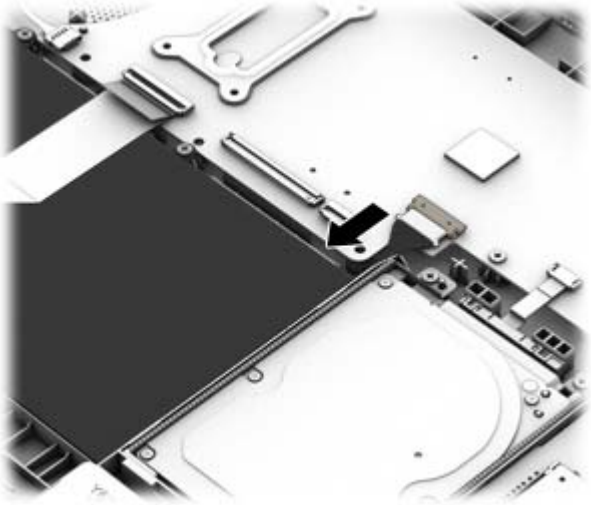
Solid-state drive (SSD)

NOTE: The solid-state drive spare part kit does not include the cable, bracket, or screws. These components are included in the Solid-state Drive Hardware Kit, spare part number 777653-001.

Description	Spare part number
256-GB solid-state drive, TLC	777651-001
256-GB solid-state drive, MLC	777652-001
Solid-state Drive Hardware Kit (includes cable, bracket, and screws)	777653-001

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

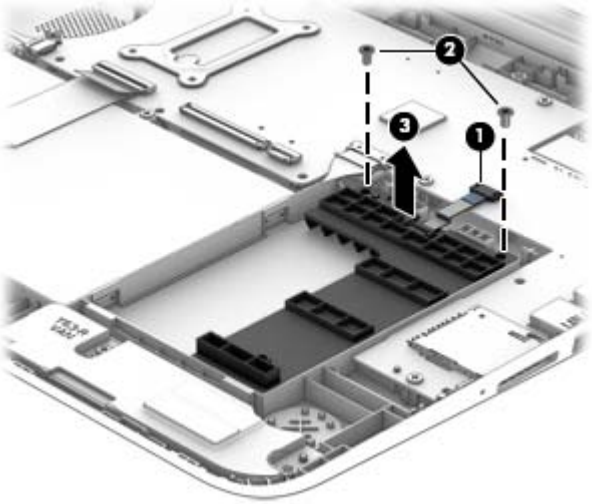
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the top cover (see Top cover on page 28).
5. Disconnect the battery.



Remove the solid-state drive:

1. Disconnect the cable **(1)** from the system board.
2. Remove the two Phillips PM2.5×4.0 screws **(2)** that secure the solid-state drive bracket to the computer.

3. Lift the solid-state drive assembly out of the computer **(3)**.



4. If it is necessary to disassemble the solid-state drive, perform the following steps:

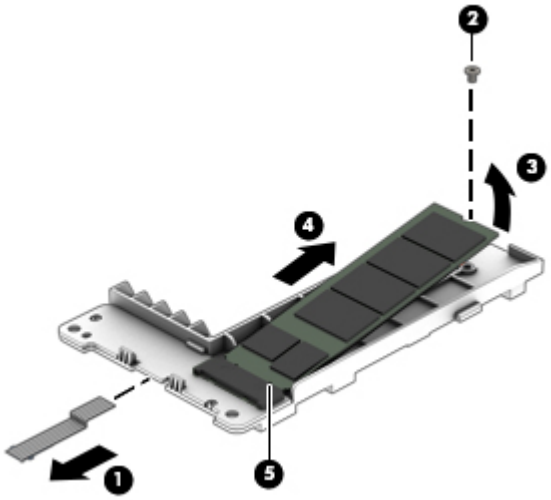
   a. Disconnect the cable **(1)** from the drive.

   b. Remove the Phillips PM2.5×4.0 screw **(2)** that secures the solid-state drive to the bracket.

   c. Lift the top of the drive upward enough to remove it from the bracket **(3)**.

   d. Pull the drive up and away from the bracket **(4)** to disconnect it from the connector in the bracket **(5)**.

      The solid-state drive bracket and connector cable are available in the Solid-state Drive Hardware Kit, spare part number 777653-001.



Reverse this procedure to install the solid-state drive.

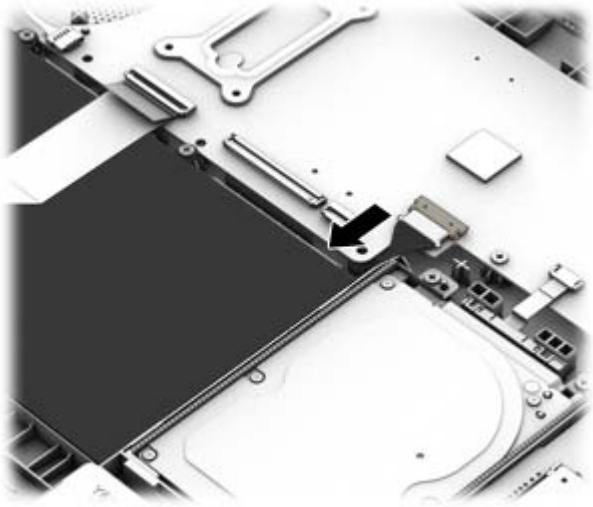
WLAN module

Description	Spare part number
Intel Dual Band Wireless-AC 7260 802.11 ac 2x2 WiFi + BT 4.0 Combo Adapter	756753-005
Qualcomm QCA9565 802.11bgn 1x1 Wi-Fi + BT4.0 Combo Adapter	733476-005
Intel Dual Band Wireless-AC 3160 802.11 ac 1x1 WiFi + BT 4.0 combo adapter	710662-005

CAUTION: To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module to restore device functionality, and then contact 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 top cover (see Top cover on page 28).
5. Disconnect the battery.



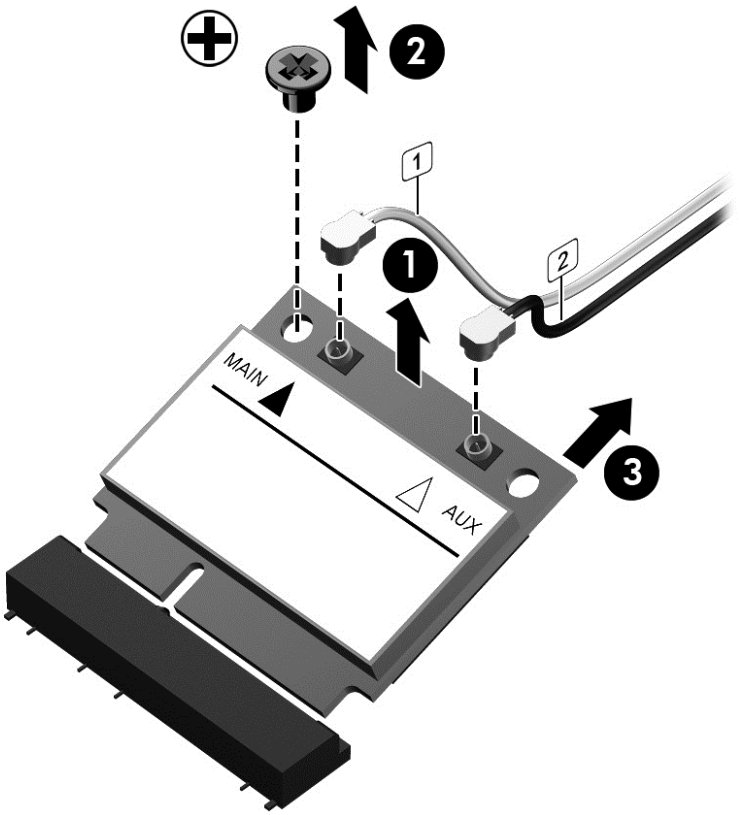
Remove the WLAN module:

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

NOTE: The WLAN antenna cable labeled “1” connects to the WLAN module “Main” terminal labeled “1”. The WLAN antenna cable labeled “2” connects to the WLAN module “Aux” terminal labeled “2”. If the computer is equipped with an 802.11a/b/g/n WLAN module, the yellow WLAN antenna cable connects to the middle terminal on the WLAN module.

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

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



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

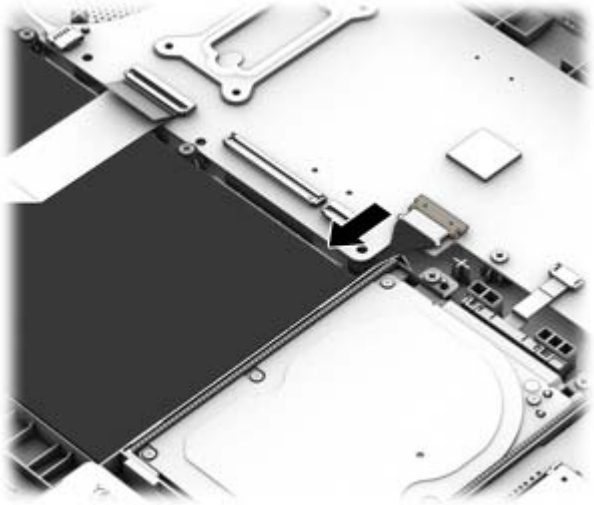
Reverse this procedure to install the WLAN module.

Speakers

Description	Spare part number
Speaker Kit (includes left and right speakers and cable)	774605-001

Before removing the speakers, follow these steps:

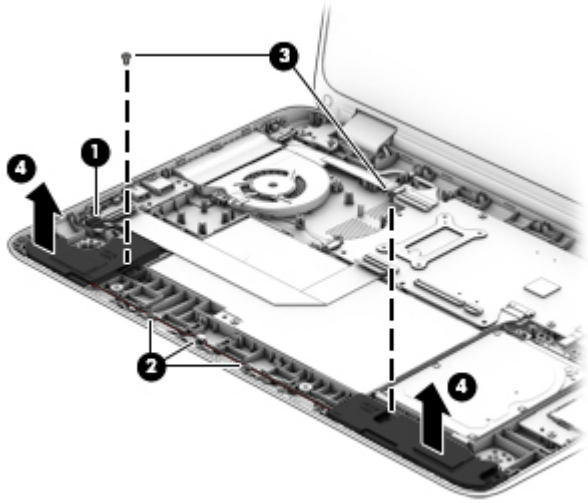
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the top cover (see Top cover on page 28).
5. Disconnect the battery.



Remove the speakers:

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

4. Remove the speakers **(4)** from the computer.



Reverse this procedure to install the speakers.

USB/audio board

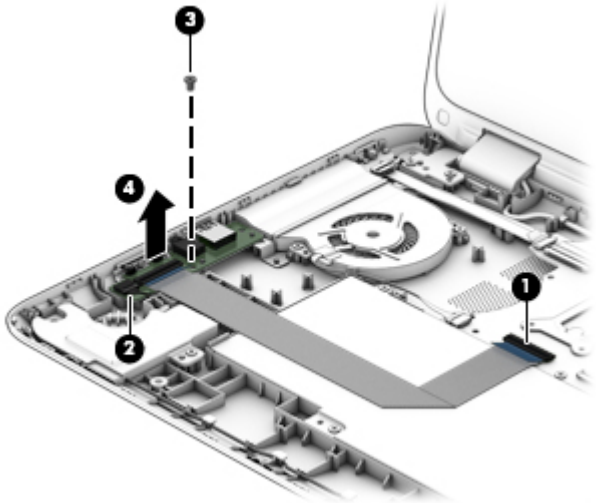
Description	Spare part number
USB/audio board (includes cable)	774600-001

Before removing the USB/audio board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the top cover (see Top cover on page 28).

To remove the USB/audio board:

1. Disconnect the USB/audio cable from the system board **(1)**.
2. Disconnect the speaker cable from the USB/audio board **(2)**.
3. Remove the Phillips PM2.5×4.0 screw **(3)**.
4. Lift the USB/audio board and cable from the computer **(4)**.



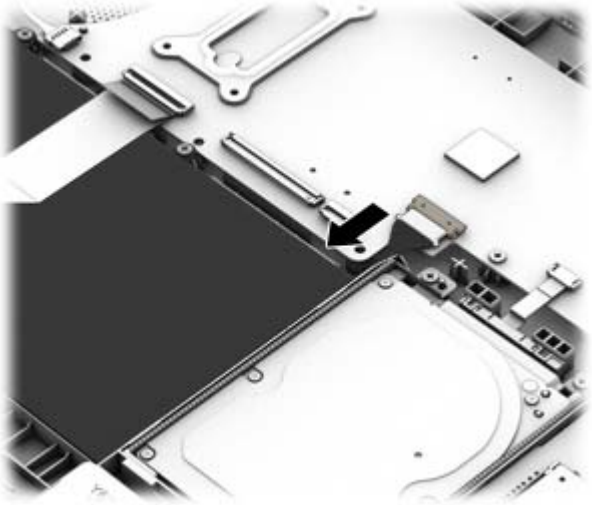
Reverse this procedure to install the USB/audio board.

Fan

Description	Spare part number
Fan	778793-001

Before removing the fan, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the top cover (see Top cover on page 28).
5. Disconnect the battery.

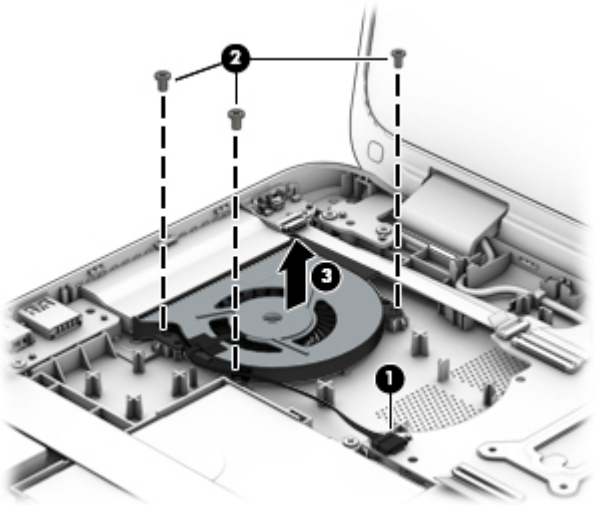


Remove the fan:

NOTE: You do not have to remove the heat sink to remove the fan.

1. Disconnect the fan cable **(1)** from the system board.
2. Remove the three Phillips PM2.5×4.0 screws **(2)** that secure the fan to the computer.

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



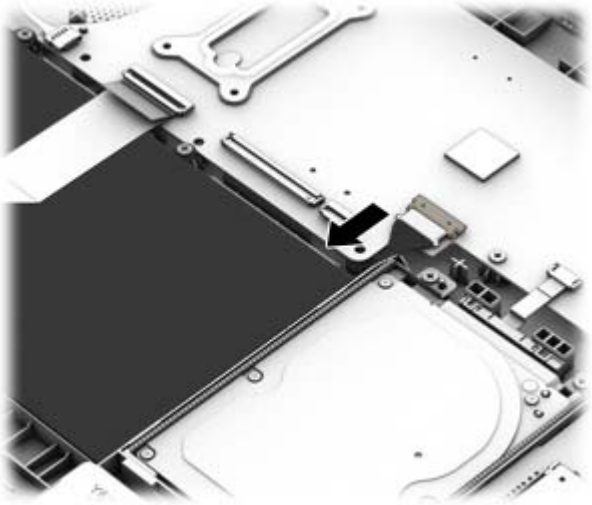
Reverse this procedure to install the fan.

Power button board

Description	Spare part number
Power button board (includes cable)	774599-001

Before removing the power button board, follow these steps:

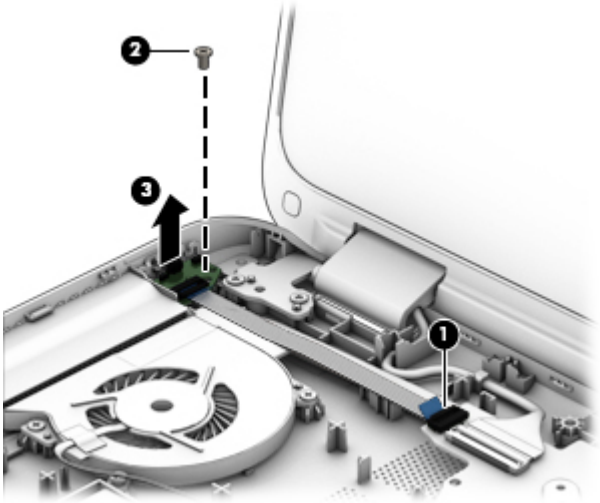
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the top cover (see Top cover on page 28).
5. Disconnect the battery.



Remove the power button board:

1. Disconnect the power button board cable **(1)** from the system board.
2. Remove the Phillips PM2.5×4.0 screw **(2)** that secures the power button board to the computer.

3. Remove the power button board and cable **(3)**.



Reverse this procedure to install the power button board.

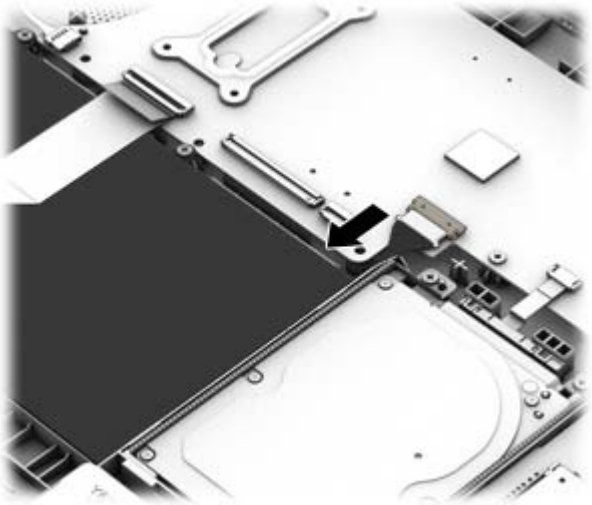
System board

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

Description	Spare part number
Intel Core i7-4510U processor and the Windows 8.1 Standard operating system	780958-501
Intel Core i7-4510U processor and a non-Windows 8 operating system	780958-001
Intel Core i5-4210U processor and the Windows 8.1 Standard operating system	774606-501
Intel Core i5-4210U processor and a non-Windows 8 operating system	774606-001
Intel Core i3-4030U processor and the Windows 8.1 Standard operating system	774607-501
Intel Core i3-4030U processor and a non-Windows 8 operating system	774607-001

Before removing the system board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the top cover (see Top cover on page 28).
5. Disconnect the battery.



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

- WLAN module (see WLAN module on page 38)
- Memory module (see Memory module on page 49)
- Heat sink (see Heat sink on page 51)

Remove the system board:

1. Disconnect the following cables from the system board:

   (1): Power button board cable

   (2): Left display cable

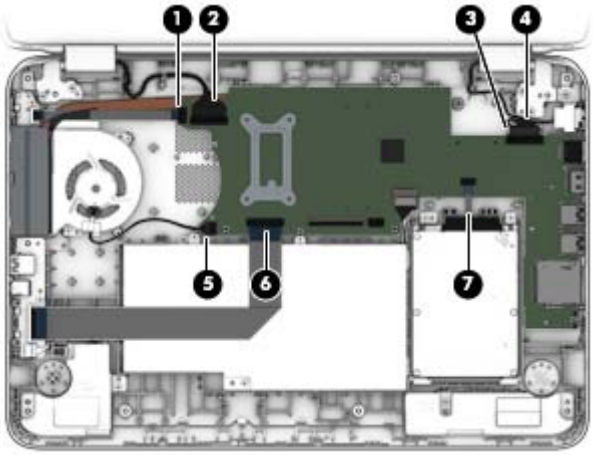
   (3): Power connector cable

   (4): Right display cable

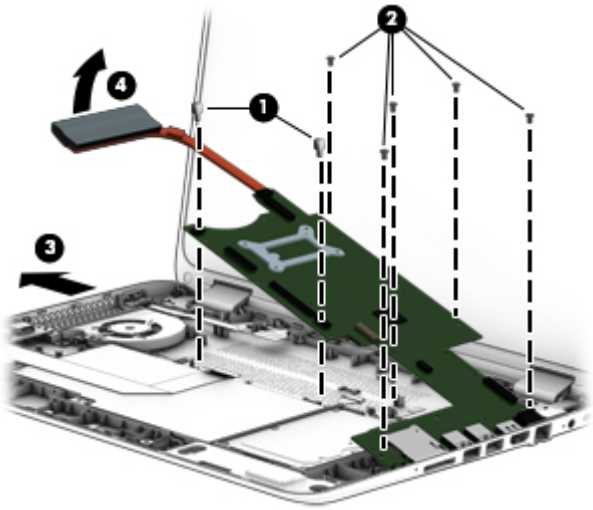
   (5): Fan cable

   (6): USB/audio cable

   (7): Hard drive cable



2. Remove the two nuts **(1)** that secure the system board to the computer.
3. Remove the five Phillips PM2.5×4.0 screws **(2)** that secure the system board to the computer.
4. Flex the side of the computer so you can lift the heat sink out **(3)**, and then lift the left side of the system board **(4)**, and then pull it away from the side connectors and remove it from the computer.



5.

Reverse this procedure to install the system board.

Memory module

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

Update BIOS before adding memory modules

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

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

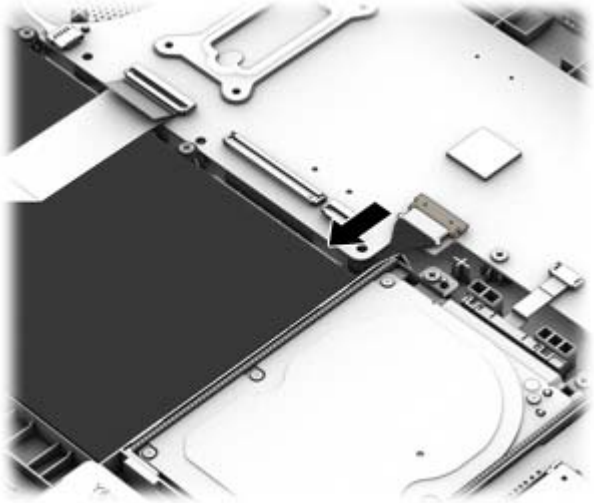
To update BIOS:

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

Before removing a memory module, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the top cover (see Top cover on page 28).

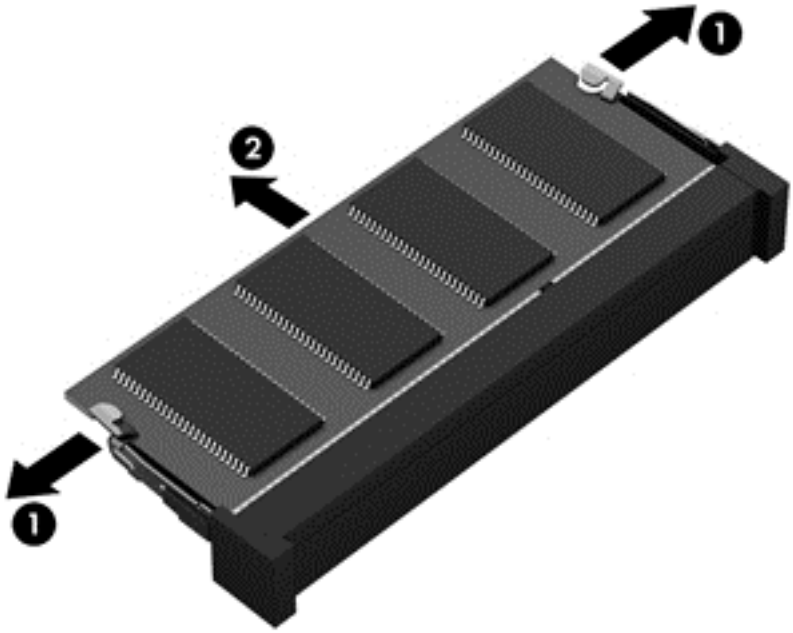
5. Disconnect the battery.



6. Remove the WLAN module (see WLAN module on page 38).
7. Remove the system board (see System board on page 47).

Remove the memory module:

1. Position the system board upside-down.
2. Spread the retaining tabs **(1)** on each side of the memory module slot to release the memory module. (The memory module tilts up.)
3. Remove the memory module **(2)** by pulling the module away from the slot at an angle.



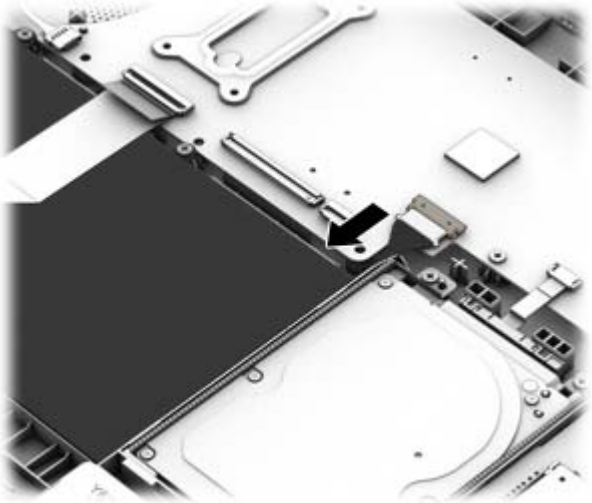
Reverse this procedure to install a memory module.

Heat sink

Description	Spare part number
Heat sink (includes replacement thermal material)	774595-001

Before removing the heat sink, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the top cover (see Top cover on page 28).
5. Disconnect the battery.



6. Remove the WLAN module (see WLAN module on page 38).
7. Remove the system board (see System board on page 47).

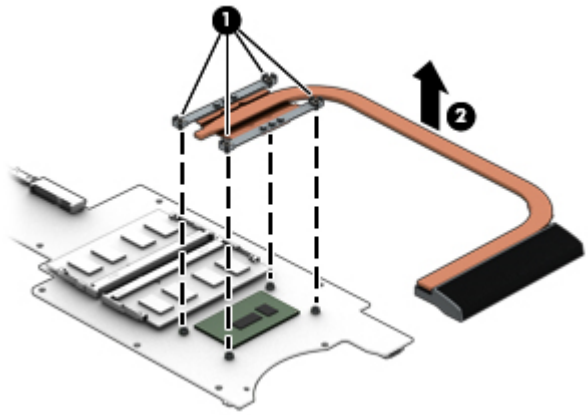
Remove the heat sink:

NOTE: You do not have to remove the fan to remove the heat sink. You must disengage the tape that secures the heat sink to the fan.

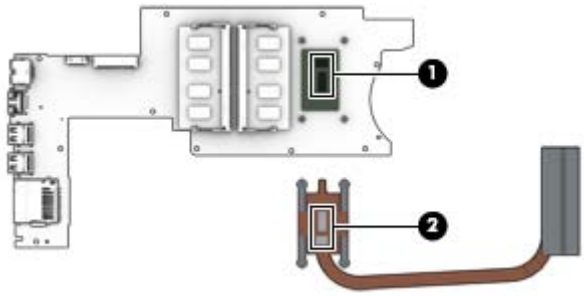
1. Position the system board upside-down.
2. Following the 1 through 4 sequence stamped into the heat sink, loosen the four captive Phillips screws **(1)** that secure the heat sink to the system board.

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

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



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

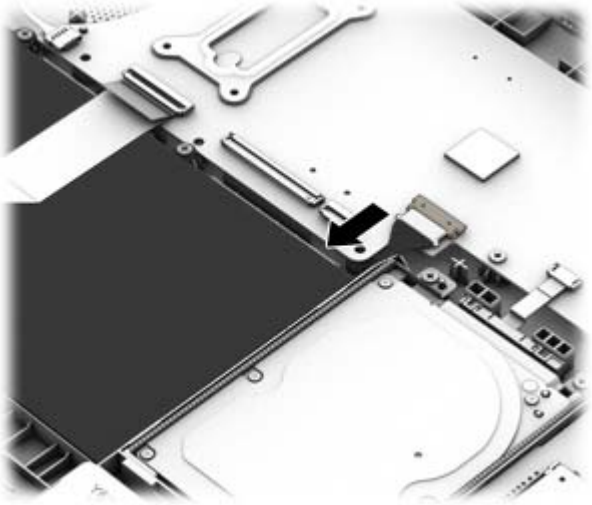


Reverse this procedure to install the heat sink.

Display assembly

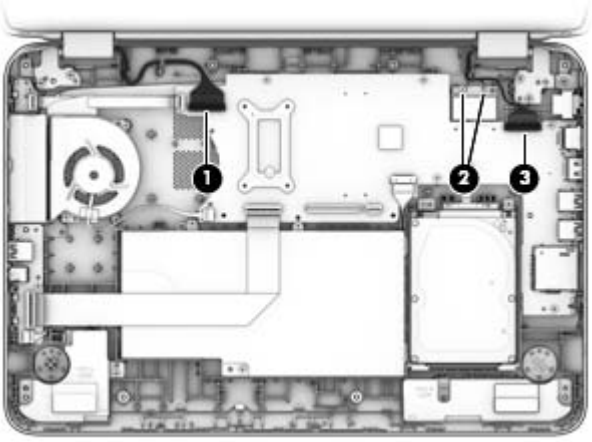
Before removing the display assembly, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the top cover (see Top cover on page 28).
5. Disconnect the battery.



To remove the display assembly:

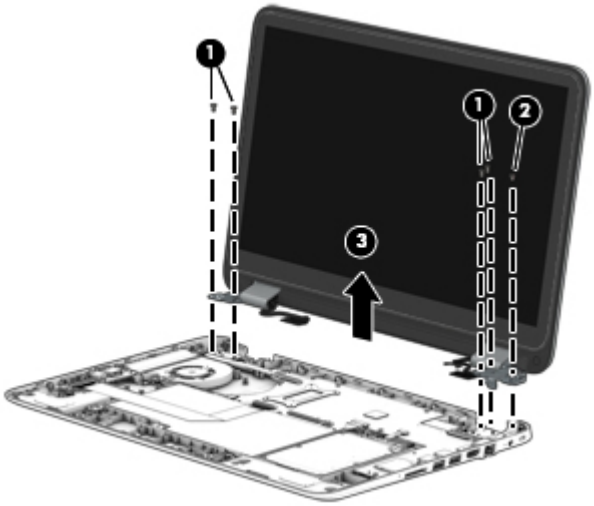
1. Disconnect the left display panel cable **(1)** from the system board.
2. Disconnect the antenna cables **(2)** from the WLAN module.
3. Disconnect the right display panel cable **(3)** from the system board.



4. Remove two Phillips PM2.5×5.5 screws from each hinge **(1)** and the smaller Phillips PM2.5×3.6 screw from the right hinge **(2)** that secures the display assembly to the computer.

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

5. Remove the display assembly from the computer **(3)**.



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

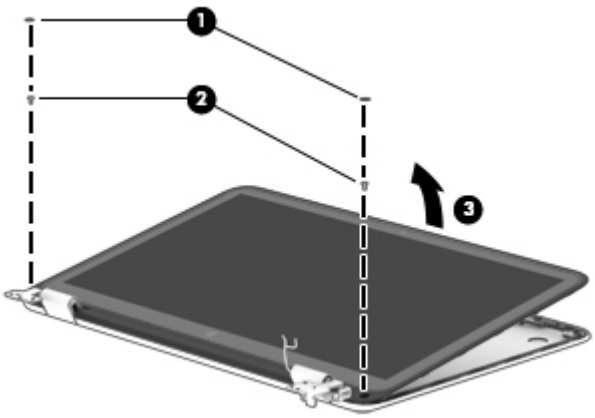
1. To remove the display panel and bezel from the display enclosure:

NOTE: The display enclosure is available using spare part number 774591-001.

   a. Remove the two screw covers **(1)**.

   b. Remove the two Phillips PM2.5×4.0 screws **(2)** that secure the enclosure to the display panel.

   c. Pry to separate the enclosure from the display **(3)**.



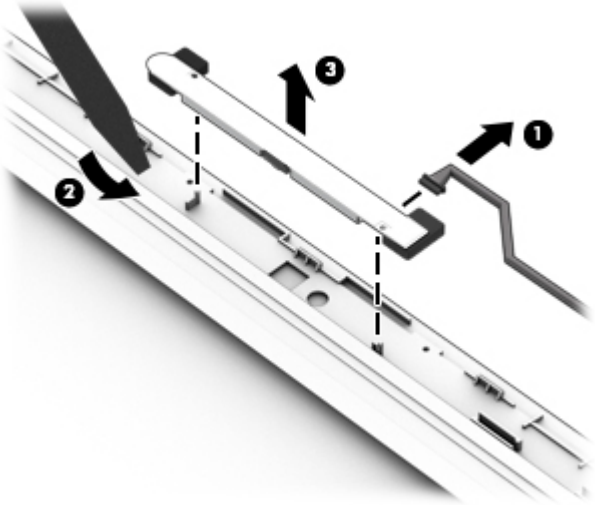
2. The webcam module is mounted on the inside of the bezel. To remove the webcam module:

NOTE: The webcam is available using spare part number 768040-001.

   a. Position the display bezel/display panel assembly upside-down.

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

c. Use a thin tool to lift the webcam module to disengage the adhesive that secures it to the display **(2)**, and then remove the webcam module **(3)**.



3. The touch screen display cable connects to the board at the bottom of the bezel. To disconnect the touch screen display cable from the display bezel, pull the cable upward to disconnect.

NOTE: The touch screen display cable is available in the cable kit using spare part number 774593-001 for HD panels and 774594-001 for FHD panels.

4. The display/webcam cable connects to the bottom of the display panel. To remove the display/webcam cable:

NOTE: The display/webcam cable is available in the cable kit using spare part number 774593-001 for HD models and 774594-001 for FHD models.

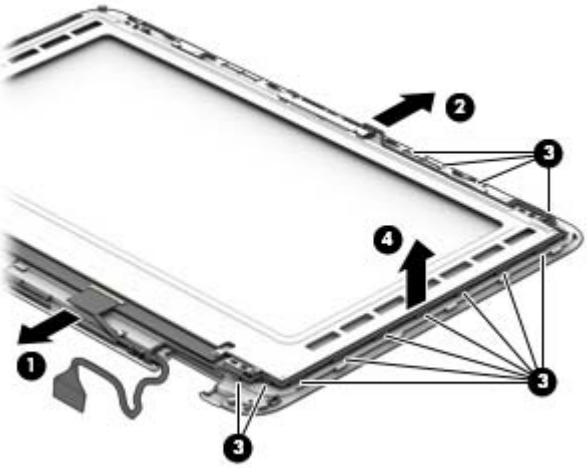
a. Position the display bezel/display panel assembly upside-down.

b. Disconnect the display cable from the connector at the bottom of the display panel **(1)**.

c. Disconnect the webcam cable from the webcam **(2)**.

d. Remove the cable from the routing path and clips along the right side of the display bezel **(3)**.

e. Remove the display/webcam cable **(4)**.



5. To remove the display panel from the bezel:

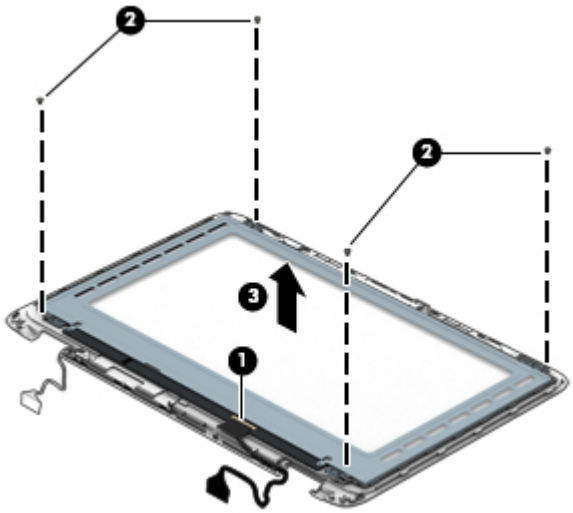
NOTE: The display panel and bezel are available using spare part number 774602-001 for HD panels and 774603-001 for FHD panels.

a. Position the display bezel/display panel assembly upside-down.

b. If necessary, disconnect the display/webcam cable from the connector at the bottom of the display panel **(1)**.

c. Remove the four Phillips PM2.0×3.0 screws **(2)** that secure the display panel to the display enclosure.

d. Remove the display panel from the bezel **(3)**.



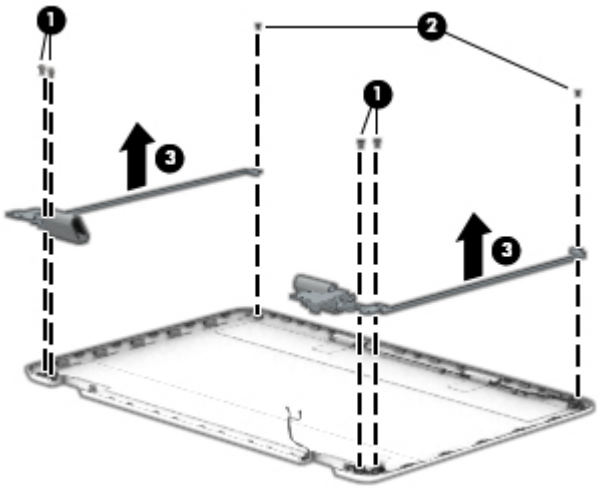
6. The display hinges are located in the display enclosure. To remove the display hinges:

NOTE: The display hinges are available using spare part number 774596-001.

a. Position the display enclosure so you can access the internal parts.

b. Remove the four Phillips PM2.5×4.0 screws from the bottom of the hinges**(1)** and the two Phillips PM2.0×3.0 screws **(2)** from the top of the hinges that secure the hinges to the display enclosure.

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

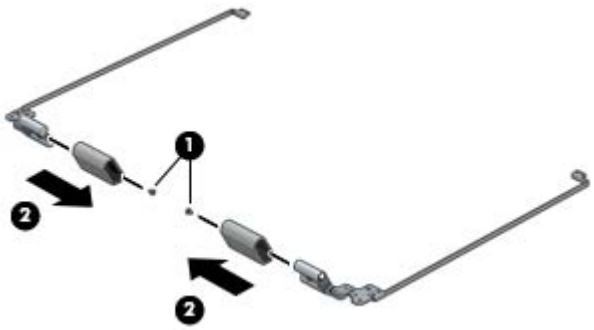


7. The hinge covers are installed on the display hinges. To remove the display hinge covers:

NOTE: The display hinge covers are available using spare part number 774597-001.

a. From the inside of the hinge covers, remove the two Phillips PM2.0×3.0 screws (one per hinge) **(1)** that secure the hinge covers to the hinges.

b. Pull the hinge covers off the hinges **(2)**.



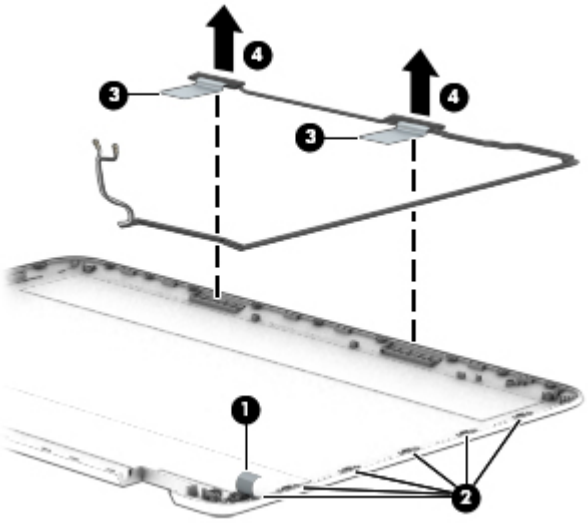
8. The antenna cables are installed in the display enclosure. To remove the antenna cables:

NOTE: The antenna cables are available using spare part number 774590-001.

a. Lift the tape that secures the antenna cables to the bottom of the display enclosure **(1)**.

b. Remove the cables from the clips built into the enclosure **(2)**.

c. Lift the tape that secures the transceivers at the top of the display **(3)**, and then remove the antenna cables from the display enclosure **(4)**.



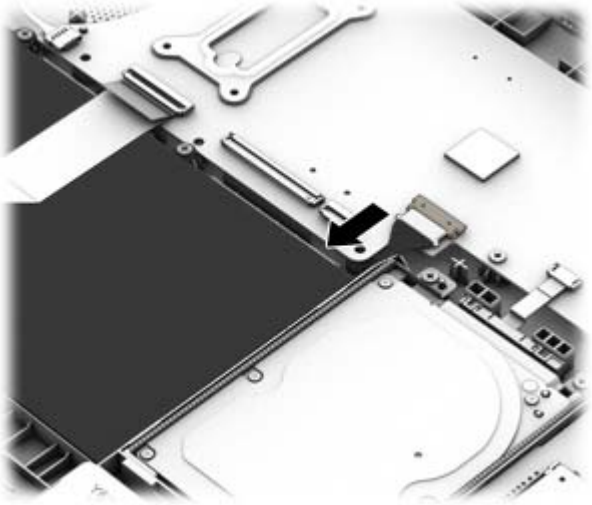
Reverse this procedure to reassemble and install the display assembly.

Power connector cable

Description	Spare part number
Power connector cable	768012-001

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 top cover (see Top cover on page 28).
5. Disconnect the battery.



6. Remove the display (see Display assembly on page 53).

Remove the power connector cable:

1. Disconnect the power connector cable **(1)** from the system board.

2. Remove the power connector **(2)** from the computer.

Reverse this procedure to install the power connector cable.

6 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 61).
2. Use the arrow keys to select **Main**.
3. To exit Setup Utility (BIOS) without saving your changes, use the arrow keys to select **Exit**, select **Exit Discarding Changes**, and then press **enter**.
4. Select **Yes**.

Downloading a BIOS update

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

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

Do not shut down the computer or initiate Sleep.

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

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

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

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

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

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

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

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

Using HP PC Hardware Diagnostics (UEFI)

HP PC Hardware Diagnostics is a Unified Extensible Firmware Interface (UEFI) that allows you to run diagnostic tests to determine whether the computer hardware is functioning properly. The tool runs outside

the operating system so that it can isolate hardware failures from issues that are caused by the operating system or other software components.

To start HP PC Hardware Diagnostics UEFI:

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

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

   a. Connected USB drive

   NOTE: To download the HP PC Hardware Diagnostics (UEFI) tool to a USB drive, see Downloading HP PC Hardware Diagnostics (UEFI) to a USB device on page 63.

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

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

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

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

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

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

   – or –

   Click **Find Now** to let HP automatically detect your product.
4. Select your computer model, and then select your operating system.
5. In the **Diagnostic** section, click **HP UEFI Support Environment**.
6. Click **Download**, and then select **Run**.

7 Specifications

Computer specifications

	Metric	U.S.
Dimensions		
Width	**383.7 mm**	15.11 in
Depth	**258.5 mm**	10.18 in
Height – Front	**7.55 mm**	0.30 in
Height – Rear	**23.60 mm**	0.93 in
Weight – with HDD	**2.4 kg**	5.29 lbs
Weight – with SDD	**2.3 kg**	5.07 lbs
Input power		
Operating voltage and current	19.5 V dc @ 3.33 A – 65 W 19.5 V dc @ 2.31 A – 45 W	
Temperature		
Operating	**5°C to 35°C**	41°F to 95°F
Nonoperating	**-20°C to 60°C**	-4°F to 140°F
Relative humidity (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	**-15 m to 3,048 m**	-50 ft to 10,000 ft
Nonoperating	**-15 m to 12,192 m**	-50 ft to 40,000 ft

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

Hard drive specifications

	500-GB*	500-GB* hybrid
Dimensions		
Height	7.0 mm	7.0 mm
Width	69.9 mm	70 mm
Weight	110 g	95 g
Interface type	SATA	SATA
Transfer rate (synchronous, maximum)	1.1 GB/sec	100 MB/sec
Security	ATA security	ATA security
Seek times (typical read, including setting)		
Single track	1.5 ms	2 ms
Average (read/write)	11/13 ms	12 ms
Maximum	22 ms	22 ms
Logical blocks	976,773,168	976,773,168
Disk rotational speed	5400 rpm	5400 rpm
Operating temperature	0°C to 60°C (32°F to 140°F)	0°C to 60°C (32°F to 140°F)
*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less.		
NOTE: Certain restrictions and exclusions apply. Contact technical support for details.		

Solid-state drive specifications

	256-GB* MLC	256-GB* TLC
Height	1.5 mm	1.5 mm
Weight	< 10 g	< 50 g
Form factor	M.2 2280-S3-B-M	M.2 2280-S3-B-M
Transfer rate	up to 520 MB/sec	up to 500 MB/sec
Interface type	SATA-3	SATA-3
Ready time, maximum (to not busy)	1.0 ms	< 1.0 ms
Access times, logical	0.1 ms	0.1 ms
Total logical sectors	500,118,192	500,118,192
Operating temperature	0°C to 70°C (32°F to 158°F)	0°C to 70°C (32°F to 158°F)
*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less. Actual drive specifications may differ slightly.		
NOTE: Certain restrictions and exclusions apply. Contact technical support for details.		

8 Backing up, restoring, and recovering

This chapter provides information about the following processes:

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

Creating recovery media and backups

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

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

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

   See Creating HP Recovery media on page 66.

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

Creating HP Recovery media

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

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

Worldwide Telephone Numbers booklet included with the computer. You can also find contact information from the HP website. Go to http://www.hp.com/support, select your country or region, and follow the on-screen instructions. If you use an external optical drive, it must be connected directly to a USB port on the computer; the drive cannot be connected to a USB port on an external device, such as a USB hub.

- Be sure that the computer is connected to AC power before you begin creating the recovery media.
- The creation process can take up to an hour or more. Do not interrupt the creation process.
- If necessary, you can exit the program before you have finished creating all of the recovery DVDs. HP Recovery Manager will finish burning the current DVD. The next time you start HP Recovery Manager, you will be prompted to continue, and the remaining discs will be burned.

To create HP Recovery media:

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

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

If you ever need to recover the system, see Recovering using HP Recovery Manager on page 68.

Restore and recovery

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

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

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

  For more information, see Recovering using HP Recovery Manager on page 68.
- If you want to recover the computer's original factory partitioning and content, you can choose the System Recovery option from the HP Recovery partition (select models only) or use the HP Recovery media that you have created. For more information, see Recovering using HP Recovery Manager on page 68. If you have not already created recovery media, see Creating HP Recovery media on page 66.
- 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 68.
- If you wish to remove the recovery partition to reclaim hard drive space, HP Recovery Manager offers the Remove Recovery Partition option.

  For more information, see Removing the HP Recovery partition (select models only) on page 69.

Recovering using HP Recovery Manager

HP Recovery Manager software allows you to recover the computer to its original factory state by using the HP Recovery media that you created or by using the HP Recovery partition (select models only). If you have not already created recovery media, see Creating HP Recovery media on page 66.

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

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

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

What you need to know

- HP Recovery Manager recovers only software that was installed at the factory. For software not provided with this computer, you must either download the software from the manufacturer's website or reinstall the software from the media provided by the manufacturer.
- Recovery through HP Recovery Manager should be used as a final attempt to correct computer issues.
- HP Recovery media must be used if the computer hard drive fails. If you have not already created recovery media, see Creating HP Recovery media on page 66.
- To use the Factory Reset option, you must use HP Recovery media. If you have not already created recovery media, see Creating HP Recovery media on page 66.
- If the HP Recovery media does not work, you can obtain recovery media for your system from support. See the *Worldwide Telephone Numbers* booklet included with the computer. You can also find contact information from the HP website. Go to http://www.hp.com/support, select your country or region, and follow the on-screen instructions.

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

Using the HP Recovery partition (select models only)

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

To start HP Recovery Manager from the HP Recovery partition:

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

1. Press f11 while the computer boots.

   – or –

   Press and hold f11 as you press the power button.
2. Select **Troubleshoot** from the boot options menu.
3. Select **Recovery Manager**, and then follow the on-screen instructions.

Using HP Recovery media to recover

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

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

NOTE: If the computer does not automatically restart in HP Recovery Manager, change the computer boot order. See Changing the computer boot order on page 69.

3. Follow the on-screen instructions.

Changing the computer boot order

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

To change the boot order:

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

Removing the HP Recovery partition (select models only)

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

IMPORTANT: After you remove the HP Recovery partition, you can no longer use the Windows Refresh option or the Windows option to remove everything and reinstall Windows. In addition, you will not be able to perform System Recovery or Minimized Image Recovery from the HP Recovery partition. So before you remove the Recovery partition, create HP Recovery media; see Creating HP Recovery media on page 66.

Follow these steps to remove the HP Recovery partition:

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

9 Power cord set requirements

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

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

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

Requirements for all countries

The following requirements are applicable to all countries and regions:

- The length of the power cord set must be at least 1.0 m (3.3 ft) and no more than 2.0 m (6.5 ft).
- All power cord sets must be approved by an acceptable accredited agency responsible for evaluation in the country or region where the power cord set will be used.
- The power cord sets must have a minimum current capacity of 10 amps and a nominal voltage rating of 125 or 250 V AC, as required by the power system of each country or region.
- The appliance coupler must meet the mechanical configuration of an EN 60 320/IEC 320 Standard Sheet C13 connector for mating with the appliance inlet on the back of the computer. Requirements for all countries 113

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

Country/region	Accredited agency	Applicable note number
South Korea	EK	4
Sweden	CEMKO	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.

10 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.

Index

A

AC adapter 3
AC adapter, spare part numbers 19
action keys
  identifying 10
antenna
  spare part number 17, 20
antenna, spare part number 17, 20
audio, product description 1
audio-out (headphone)/audio-in (microphone) jack 4

B

backups 66
base enclosure
  spare part number 16, 20, 22
battery
  removal 31
  spare part number 15, 20, 31
bezel
  spare part number 17
BIOS
  determining version 61
  downloading an update 62
  updating 61
Bluetooth label 12
boot order
  changing HP Recovery Manager 69
bottom 12
buttons
  left TouchPad 7
  power 4, 9
  right TouchPad 7
  volume 4

C

cables, service considerations 23
caps lock light, identifying 8
chipset, product description 1
components
  bottom 11
  display 5
  left side 4
  right side 3
  top 7
computer
  major components 14
  specifications 64
connector, power 3
connectors, service considerations 23
control zone
  left TouchPad 7
  right TouchPad 7

D

deleted files
  restoring 67
display assembly
  removing 53
  spare part number 14
  subcomponents 17
display assembly subcomponents
  removing 53
display bezel
  removing 54
display cable
  removing 55, 56, 57
display cable, spare part number 17, 20
display enclosure, spare part number 17, 20
display hinge
  spare part number 17
display hinge cover kit, spare part number 20
display hinge covers
  removing 56, 57
display hinge covers, spare part number 17
display hinges, spare part number 17, 20
display panel (raw)
  spare part number 17, 20
display panel (raw), spare part number 17, 20
display panel, product description 1
drives, preventing damage 24
DVD±RW Double-Layer with SuperMulti Drive
  precautions 24
  spare part number 18, 19

E

electrostatic discharge 24
equipment guidelines 26
esc key, identifying 10
Ethernet, product description 2
external media cards, product description 2

F

fan
  removal 43
  spare part number 15, 21, 43
fn key, identifying 10

G

graphics, product description 1
grounding guidelines 24
guidelines
  equipment 26
  grounding 24
  packaging 25
  transporting 25
  workstation 25

H

hard drive
  precautions 24
  product description 1
  removal 34
  spare part numbers 15, 18, 19, 20, 21, 34
  specifications 65
hard drive bracket
  removal 35, 37
hard drive bracket, illustrated 18
hard drive connector cable
  removal 35, 37
hard drive connector cable, illustrated 18

Hard Drive Hardware Kit
contents 18
spare part number 15, 20, 34
Hard Drive Hardware Kit, spare part number 18
hard drive light 3
HDMI port
identifying 3
HDMI to VGA adapter, spare part number 19
heat sink
removal 51
spare part number 16, 20, 51
hinge covers
removing 56, 57
HP PC Hardware Diagnostics (UEFI)
downloading 63
using 63
HP Recovery Manager
correcting boot problems 69
starting 68
HP Recovery media
creating 66
recovery 69
HP Recovery partition
recovery 68
removing 69

I
integrated numeric keypad, identifying 10
internal expansion, product description 2
internal microphones, identifying 5

J
jacks
audio-out (headphone)/audio-in (microphone) 4
network 3
RJ-45 (network) 3

K
keys
action 10
esc 10
fn 10
Windows 10

L
labels
Bluetooth 12
Microsoft Certificate of Authenticity 12
regulatory 12
serial number 12
wireless certification 12
WLAN 12
lights
AC adapter 3
caps lock 8
hard drive 3
mute 8
power 8
RJ-45 (network) status 3

M
mass storage device
illustrated 18
precautions 24
spare part numbers 18
memory card reader, identifying 3
memory card, identifying 3
memory module
product description 1
removal 49
spare part numbers 16, 19, 49
microphone
product description 1
minimized image
creating 68
minimized image recovery 68
model name 1
mute light, identifying 8

N
network jack, identifying 3

O
operating system, product description 2
optical drive
precautions 24
product description 1
spare part number 18, 19
original system recovery 68

P
packaging guidelines 25
PCID label 13
pen, spare part number 19, 20
plastic parts, service considerations 23
ports
HDMI 3
product description 2
USB 2.0 4
USB 3.0 3
power button board
removal 45
spare part number 16, 20, 45
power button, identifying 4, 9
power connector cable
removal 59
spare part number 15, 20, 59
power connector, identifying 3
power cord
set requirements 70
spare part numbers 19, 20
power lights, identifying 8
power requirements, product description 2
processor, product description 1
product description
audio 1
chipset 1
display panel 1
Ethernet 2
external media cards 2
graphics 1
hard drive 1
internal expansion 2
memory module 1
microphone 1
operating system 2
optical drive 1
ports 2
power requirements 2
processors 1
product name 1
security 2
serviceability 2
video 1
wireless 2
product name 1
product name and number, computer 12

R

recovery
  discs 66, 69
  HP Recovery Manager 68
  media 69
  options 67
  starting 68
  supported discs 66
  system 68
  USB flash drive 69
  using HP Recovery media 67
recovery media
  creating 66
  creating using HP Recovery Manager 67
recovery partition
  removing 69
regulatory information
  regulatory label 12
  wireless certification labels 12
removal/replacement
  procedures 27
restore
  Windows File History 67
RJ-45 (network) jack, identifying 3
RJ-45 (network) status lights, identifying 3
Rubber Feet Kit, spare part number 19, 20

S

Screw Kit, spare part number 19, 20
security cable slot, identifying 3
security, product description 2
serial number 12
serial number, computer 12
service considerations
  cables 23
  connectors 23
  plastic parts 23
service tag 12
serviceability, product description 2
slots
  memory card reader 3
  security cable 3
solid-state drive
  removal 36
  spare part numbers 15, 18, 36
  specifications 65
Solid-state Drive Hardware Kit
  spare part number 15, 21, 36
Solid-state Drive Hardware Kit, spare part number 18
Speaker Kit, spare part number 15, 20, 40
speakers
  identifying 9
  removal 40
  spare part number 15, 20, 40
specifications
  computer 64
  hard drive 65
  solid-state drive 65
supported discs
  recovery 66
system board
  removal 47
  spare part numbers 16, 21, 22, 47
system recovery 68
system restore point
  creating 66

T

tools required 23
top cover
  removal 28
  spare part number 21, 28
touch cable, spare part number 17
TouchPad
  buttons 7
  control zone 7
touchpad board
  removal 33
  spare part number 20, 33
TouchPad zone, identifying 7
transporting guidelines 25
traveling with the computer 12

U

USB 2.0 port, identifying 4
USB 3.0 ports, identifying 3
USB/audio board
  removing 42
  spare part number 15, 20, 42

V

vents, identifying 4, 11
video, product description 1
volume button, identifying 4

W

webcam
  identifying 5
  spare part number 20
webcam light, identifying 5
webcam, spare part number 17
webcam/microphone module
  removing 54
Windows
  File History 67
  restoring files 67
  system restore point 66
Windows key, identifying 10
wireless certification label 12
wireless, product description 2
WLAN antennas, identifying 5
WLAN device 12
WLAN label 12
WLAN module
  removal 38
  spare part numbers 16, 19, 20, 38
workstation guidelines 25