



HP Pavilion 13 Notebook PC

Maintenance and Service Guide

IMPORTANT! This document is intended for
HP authorized service providers only.

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

Bluetooth is a trademark owned by its proprietor and used by Hewlett-Packard Company under license. Intel and Core are U.S. registered trademarks of Intel Corporation. Microsoft and Windows are U.S. registered trademarks of Microsoft Corporation. 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.

Second Edition: November 2014

First Edition:

First Edition: October 2014

Document Part Number: 781535-002

Product notice

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


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

Software terms

By installing, copying, downloading, or otherwise using any software product preinstalled on this computer, you agree to be bound by the terms of the HP End User License Agreement (EULA). If you do not accept these license terms, your sole remedy is to return the entire unused product (hardware and software) within 14 days for a refund subject to the refund policy of your place of purchase.

For any further information or to request a full refund of the computer, please contact your local point of sale (the seller).

Important Notice about Customer Self-Repair Parts

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

Safety warning notice


 **WARNING!** To reduce the possibility of heat-related injuries or of overheating the computer, do not place the computer directly on your lap or obstruct the computer air vents. Use the computer only on a hard, flat surface. Do not allow another hard surface, such as an adjoining optional printer, or a soft surface, such as pillows or rugs or clothing, to block airflow. Also, do not allow the AC adapter to come into contact with the skin or a soft surface, such as pillows or rugs or clothing, during operation. The computer and the AC adapter comply with the user-accessible surface temperature limits defined by the International Standard for Safety of Information Technology Equipment (IEC 60950-1).

Table of contents

1 Product description	1
2 External component identification	4
Display	4
Buttons and speakers	5
Keys	6
Lights	7
TouchPad	8
Left side	9
Right side	10
Bottom	11
3 Illustrated parts catalog	12
Locating the serial number, product number, and model number	12
Computer major components	13
Display assembly components	16
Miscellaneous parts	17
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
Grounding guidelines	24
Electrostatic discharge damage	24
Packaging and transporting guidelines	25
Workstation guidelines	25
5 Removal and replacement procedures	27
Component replacement procedures	27
Computer feet	27
Keyboard/top cover	28
TouchPad	31
Power button board	32
Battery	33

Hard drive	34
WLAN module	36
Audio/USB board	37
Fan	38
Speakers	39
Display assembly	40
System board	48
Heat sink	50
Memory module	52
Power connector cable	53

6 Using Setup Utility (BIOS) and HP PC Hardware Diagnostics (UEFI) 54

Starting Setup Utility (BIOS)	54
Updating the BIOS	54
Determining the BIOS version	54
Downloading a BIOS update	55
Using HP PC Hardware Diagnostics (UEFI)	56
Downloading HP PC Hardware Diagnostics (UEFI) to a USB device	56

7 Ubuntu Linux – Using Setup Utility (BIOS) and System Diagnostics 57

Starting Setup Utility	57
Using Setup Utility	57
Changing the language of Setup Utility	57
Navigating and selecting in Setup Utility	57
Displaying system information	58
Restoring factory default settings in Setup Utility	58
Exiting Setup Utility	58
Updating the BIOS	59
Determining the BIOS version	59
Downloading a BIOS update	59
Using Advanced System Diagnostics	60

8 Specifications 61

9 Backing up, restoring, and recovering 62

Creating recovery media and backups	62
Creating HP Recovery media	63
Restore and recovery	64
Recovering using HP Recovery Manager	65
What you need to know	65

Using the HP Recovery partition (select models only)	66
Using HP Recovery media to recover	66
Changing the computer boot order	66
Removing the HP Recovery partition (select models only)	67
10 Ubuntu Linux – Backing up, restoring, and recovering	68
Performing a system recovery	68
Creating the restore DVDs	68
Creating a restore image on a USB device	68
Performing recovery using the restore media	69
Backing up your information	69
11 Power cord set requirements	71
Requirements for all countries	71
Requirements for specific countries and regions	72
12 Recycling	74
Index	75

1 Product description

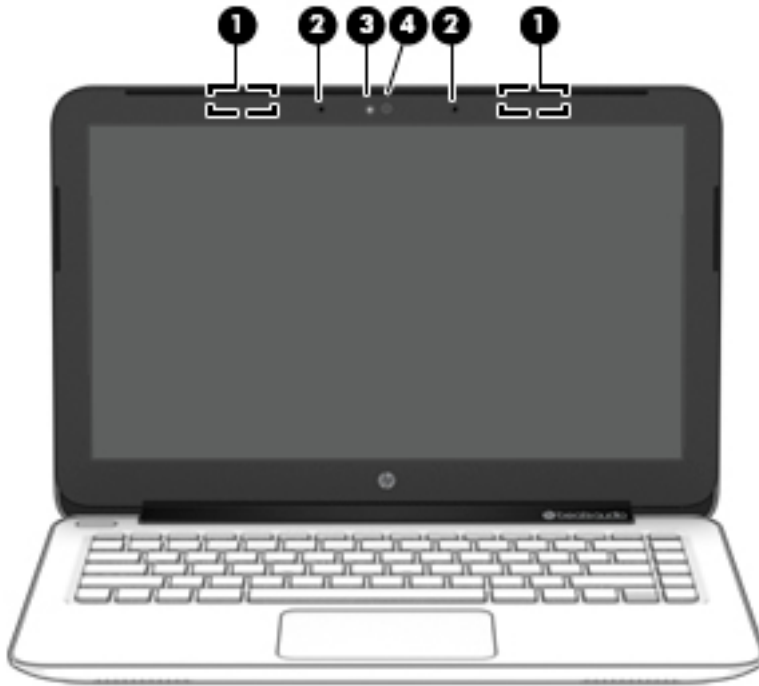
Category	Description
Product Name	HP Pavilion 13 Notebook PC
Processor	<ul style="list-style-type: none">• Intel® Core® i5-5200U (2.2 GHz, SC turbo up to 2.7 GHz), 1600 MHz FSB/3 MB L3 cache, dual core 15 W• Intel Core i3-5005U (2.0 GHz), 1600 MHz FSB/3 MB L3 cache, dual core, 15 W• Intel Core i3-5010U (2.1 GHz), 1600 MHz/3 MB L3, dual core 15 W
Chipset	Intel BDW Wildcat Point-LP
Graphics	Internal Graphics: Intel HD Graphics 5500 Support for DX11, HD decode, and HDMI
Panel	13.3-in (1366×768),high-definition (HD), light-emitting diode (LED), low-voltage differential-signalling (LVDS), co-layout with eDP1.2. TouchScreen with flush glass and MultiTouch enabled; 16:9 ultra-wide aspect ratio; typical brightness: 200 nits
Memory	2 SODIMM slots DDR3L-1600MHz Support for DDR3L-1600MHz Support for dual channel Supports up to 8 GB maximum on-board system memory <ul style="list-style-type: none">• 4096 MB (2048 MB x 2)• 4096 MB (4096 MB x 1)• 6144 MB (2048 MB x 1 + 4096 MB x 1)• 8192 MB (4096 MB x 2)• 8192 MB (8192 MB x 1)
Hard drive	Support for 6.35-cm (2.5-in) hard drives in 7.2-mm (.28-in) and 7.0-mm (.28-in) thicknesses Support for Accelerometer hard drive protection Support for the following single hard drive configurations: <ul style="list-style-type: none">• 1-TB, 5400-rpm, 7.2-mm• 750-GB, 5400-rpm, 7.2-mm• 500-GB, 5400-rpm, 7.0-mm Support for 500-GB, 5400-rpm, 7.0-mm + 8-GB NAND Hybrid hard drive Support for M2 SATA-3 next generation form factor (NGFF) solid-state drives in the following configurations: <ul style="list-style-type: none">• 256-MB multi-level cell (MLC)• 256-MB triple-level cell (TLC)• 128-MB (MLC)• 128-MB (TLC)
Optical drive (external)	9.5-mm tray load, SATA, external, USB, DVD±RW DL SuperMulti Drive

Category	Description
Audio and video	Webcam: HP TrueVision HD, fixed (no tilt), with activity light, 1280×720 by 30 frames per second
Audio and video <i>(continued)</i>	Dual digital microphones with appropriate echo-cancellation and noise-suppression software Beats audio Two speakers
Sensors	Accelerometer eCompass Gyroscope
Ethernet	Integrated 10/100 network interface card (NIC)
Wireless	Integrated wireless local area network (WLAN) options by way of wireless module Built-in WLAN antenna(s) (in display assembly) Support for the following WLAN modules: <ul style="list-style-type: none"> • Broadcom BCM43142HM 802.11 bgn 1×1 Wi-Fi + Bluetooth® 4.0 HMC Combo Adapter • Intel Dual Band Wireless-AC 3160 802.11ac 1×1 Wi-Fi + Bluetooth 4.0 Combo Adapter Compatible with Miracast-certified devices
External media cards	HP multiformat Micro Digital Media Reader Slot with push-push technology. Reads data from and writes data to digital memory cards such as Secure Digital (SD).
Ports	<ul style="list-style-type: none"> • AC adapter HP Smart plug (4.5mm barrel) • Audio: one combo audio-out (headphone)/audio-in (microphone) jack, supports jack auto-detection • High-definition multimedia interface (HDMI) v.1.4, supporting up to 1080p, 1920×1080 at 60 Hz • RJ45/Ethernet • USB 3.0 (2) • USB 2.0
Keyboard/pointing devices	Full-size, textured, chiclet-style keyboard, Touchpad requirements: <ul style="list-style-type: none"> • Clickpad with image sensor • Taps enabled as default • Multi-touch gestures enabled • Ability to turn on and off • Support for Microsoft® Windows® 8.1 modern TouchPad gestures • Support for PS/2, SMBus • Default on for 2-finger scroll and pinch
Power requirements	Support for 65-W HP Smart adapter (non-PFC, EM, 3-wire, 4.5-mm) and 45-W HP Smart adapter (non-PFC, RC, 3-wire, 4.5-mm) AC adapters Support for a 3-cell, 43-WHr, 2.83-AHr, Li-ion battery (includes cable)
Security	Support for security cable lock Support for Trust Platfom Module (TPM)

Category	Description
Operating system	Microsoft Windows 8.1 Standard Ubuntu Linux FreeDOS 2.0
Serviceability	End user replaceable parts: AC adapter

2 External component identification

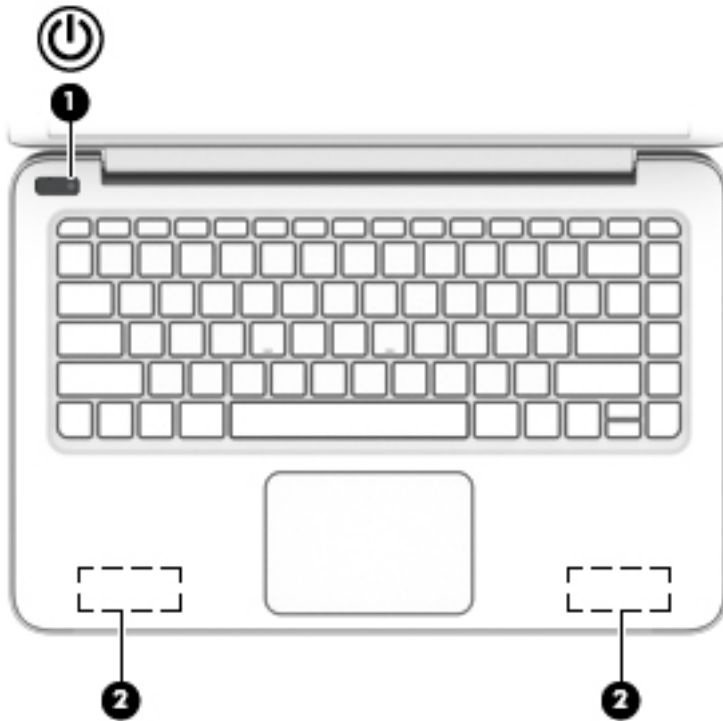
Display



Item	Component	Description
(1)	WLAN antennas (2)*	Send and receive wireless signals to communicate with WLANs. NOTE: To set up a WLAN and connect to the Internet, you need a broadband modem (either DSL or cable) (purchased separately) high-speed Internet service purchased from an Internet service provider, and a wireless router (purchased separately).
(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 <code>camera</code> , and then select Camera from the list of applications.

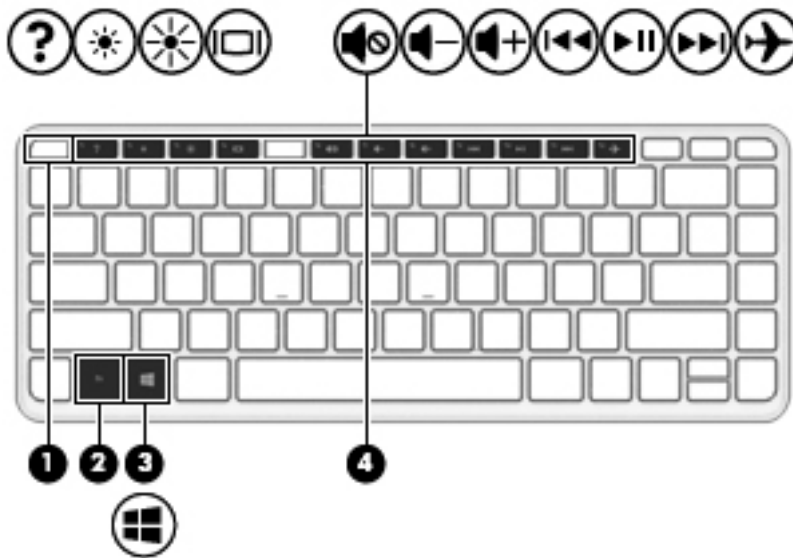
*The antennas are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennas free from obstructions. For wireless regulatory notices, see the section of the *Regulatory, Safety, and Environmental Notices* that applies to your country or region.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

Buttons and speakers



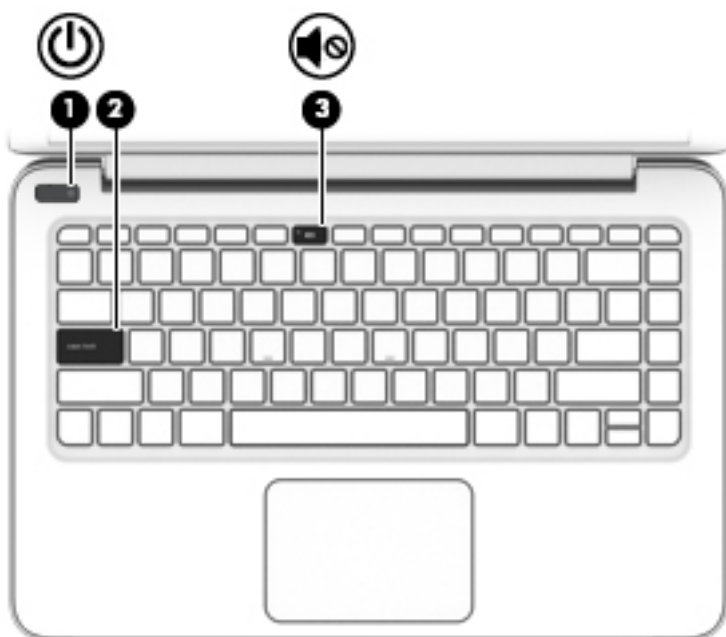
Item	Component	Description
(1)	Power button	<ul style="list-style-type: none">• When the computer is off, press the button to turn on the computer.• When the computer is on, press the button briefly to initiate Sleep.• When the computer is in the Sleep state, press the button briefly to exit Sleep.• When the computer is in Hibernation, press the button briefly to exit Hibernation. <p>CAUTION: Pressing and holding down the power button will result in the loss of unsaved information.</p> <p>If the computer has stopped responding and Windows shutdown procedures are ineffective, press and hold the power button down for at least 5 seconds to turn off the computer.</p> <p>To learn more about your power settings, see your power options. From the Start screen, type <code>power</code>, select Power and sleep settings, and then select Power and sleep from the list of applications.</p>
(2)	Speakers (2)	Produce sound.

Keys



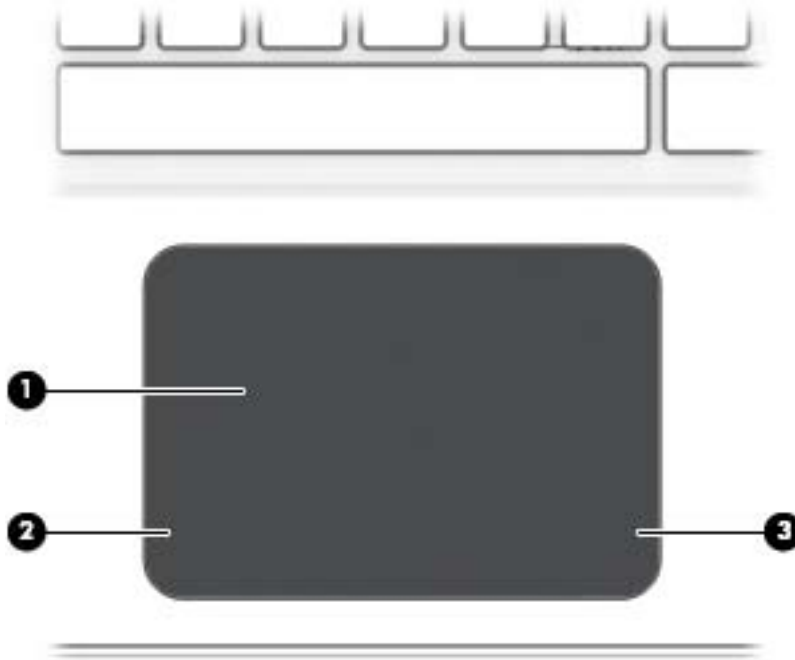
Item	Component	Description
(1)	esc key	Displays system information when pressed in combination with the fn key.
(2)	fn key	Executes frequently used system functions when pressed in combination with the b key or the esc key.
(3)	Windows key	Returns you to the Start screen from an open app or the Windows desktop. NOTE: Pressing the Windows key again will return you to the previous screen.
(4)	Action keys	Execute frequently used system functions.

Lights



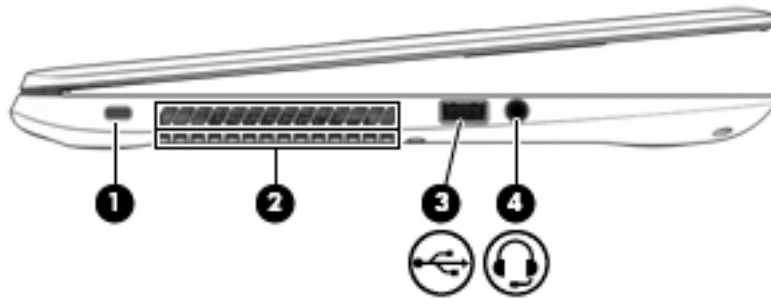
Item	Component	Description
(1)	Power light	<ul style="list-style-type: none">• On: The computer is on.• Blinking: The computer is in the Sleep state, a powersaving state. The computer shuts off power to the display and other unneeded components.• Off: The computer is off or in Hibernation. Hibernation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

TouchPad



Item	Component	Description
(1)	TouchPad zone	Reads your finger gestures to move the pointer or activate items on the screen. NOTE: The TouchPad also supports edge-swipe gestures.
(2)	Left TouchPad button	Functions like the left button on an external mouse.
(3)	Right TouchPad button	Functions like the right button on an external mouse.

Left side



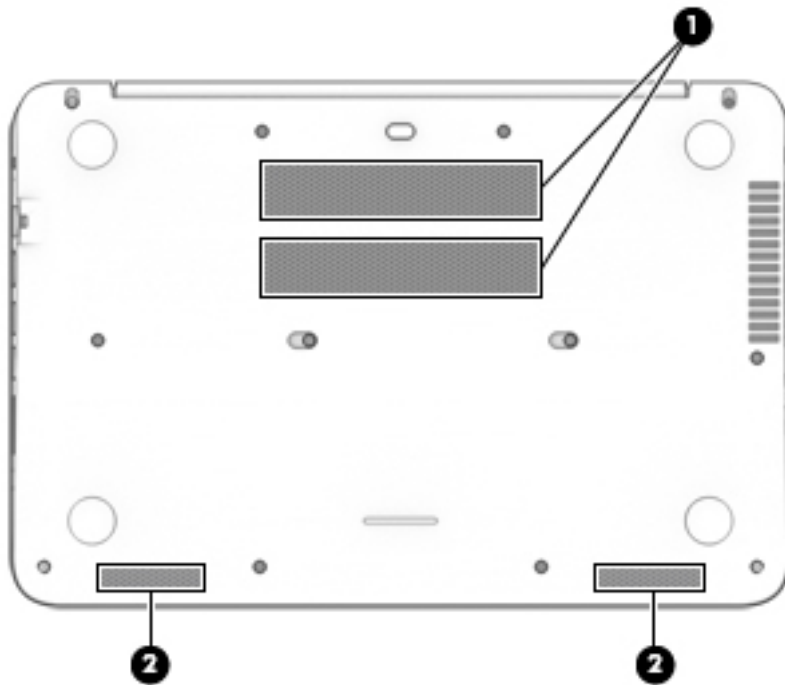
Item	Component	Description
(1)	Security cable slot	Attaches an optional security cable to the computer. The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.
(2)	Vents (2)	Enable airflow to cool internal components. NOTE: The computer 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.
(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 <i>Regulatory, Safety, and Environmental Notices</i> . To access this guide, from the Start screen, type <code>support</code> , 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).

Right side




Item	Component	Description
(1)	Power light	<ul style="list-style-type: none"> On: The computer is on. Blinking: The computer is in the Sleep state, a powersaving 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)	Hard drive light	<ul style="list-style-type: none"> Blinking white: The hard drive is being accessed. Amber: HP 3D DriveGuard has temporarily parked the hard drive.
(3)	Memory card reader	<p>Reads optional memory cards that store, manage, share, or access information.</p> <p>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.</p> <p>To remove a card: Press in on the card it until it pops out.</p>
(4)	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.
(5)	HDMI port	Connects an optional video or audio device, such as a highdefinition television, any compatible digital or audio component, or a high-speed HDMI device.
(6)	RJ-45 (network) jack/status lights	<p>Connects a network cable.</p> <ul style="list-style-type: none"> White: The network is connected. Amber: Activity is occurring on the network.
(7)	AC adapter light	<ul style="list-style-type: none"> On: The AC adapter is connected and the battery is charged. Off: The computer is using battery power.
(8)	Power connector	Connects an AC adapter.

Bottom



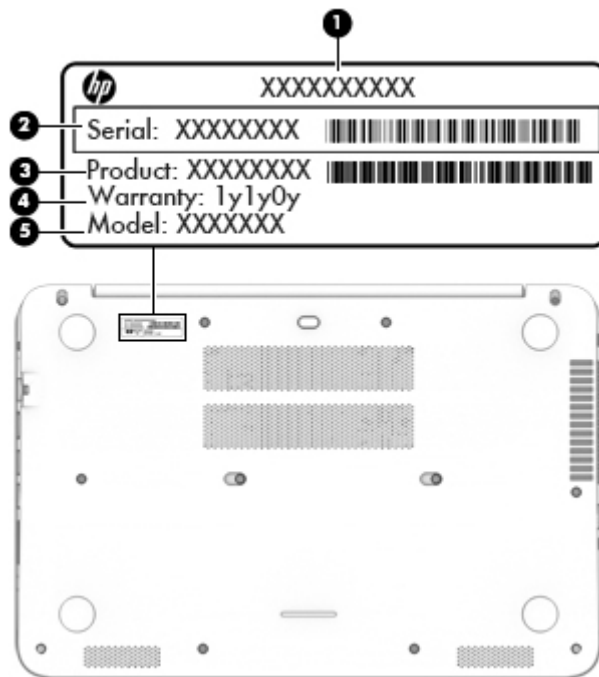
Item	Component	Description
(1)	Vents (2)	Enable airflow to cool internal components. NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(2)	Speakers (2)	Produce sound.

3 Illustrated parts catalog

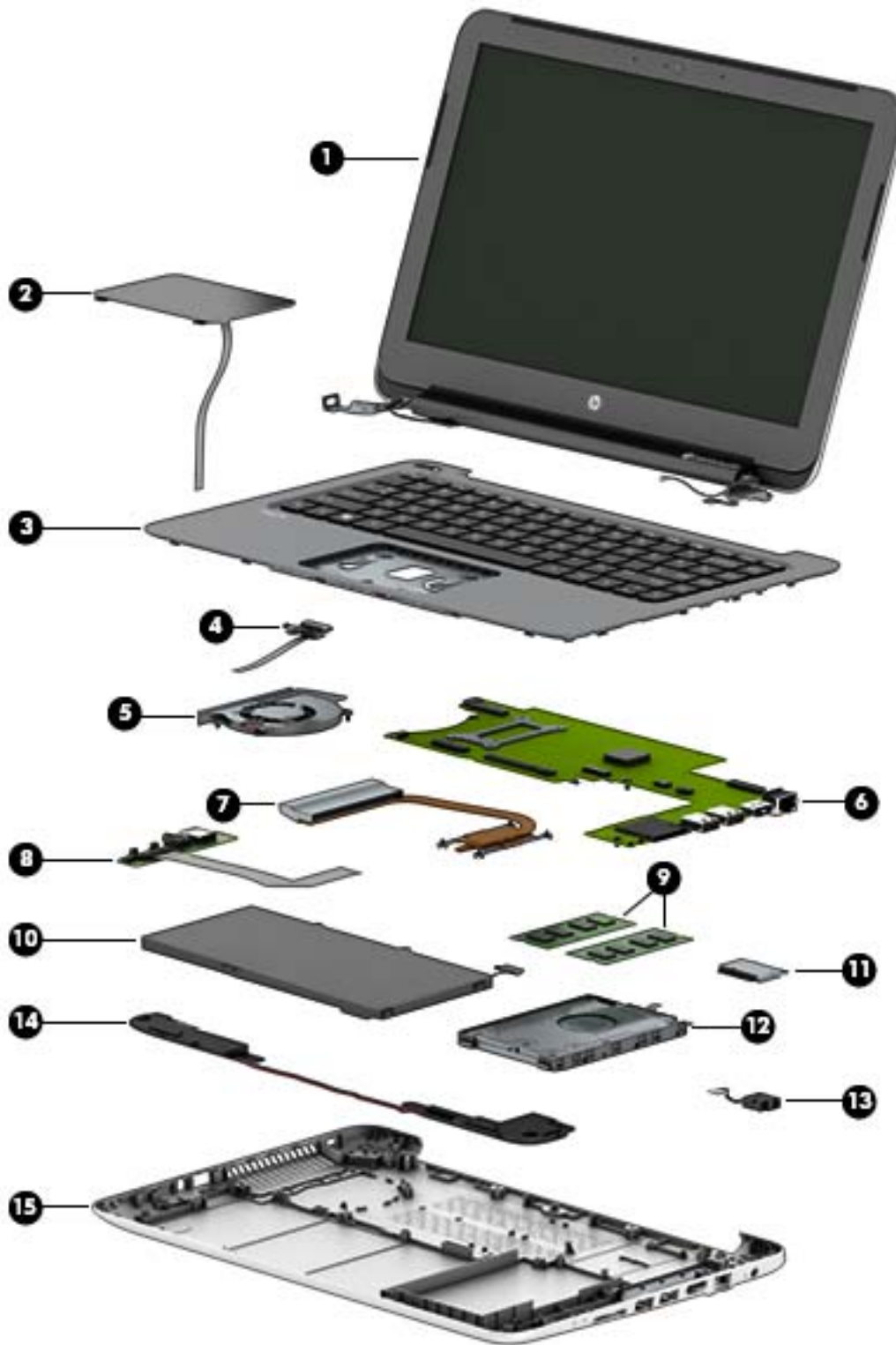
 **NOTE:** HP continually improves and changes product parts. For complete and current information on supported parts for your computer, go to <http://partsurfer.hp.com>, select your country or region, and then follow the on-screen instructions.

Locating the serial number, product number, and model number

The product name **(1)**, serial number **(2)**, product number **(3)**, warranty information **(4)**, and model name **(5)** are located on the bottom of the computer. You may need this information when you travel internationally or when you contact support.



Computer major components



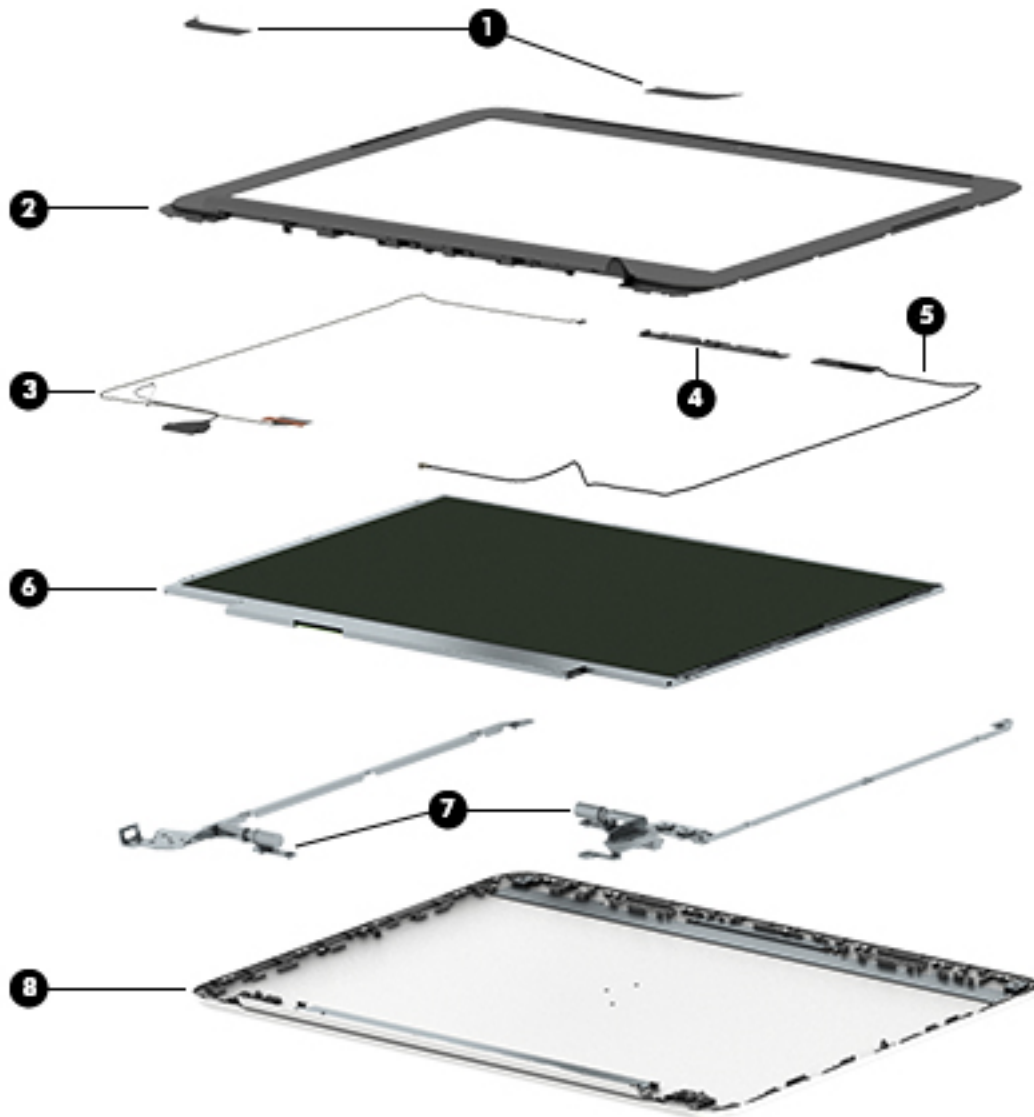
Item	Component	Spare part number
(1)	Display assembly: The display assembly is spared at the subcomponent level only. For more display assembly spare part information, see Display assembly components on page 16 .	

Item	Component	Spare part number
(2)	TouchPad (includes cable)	768008-001
(3)	Keyboard/top cover (includes keyboard cable):	
	For use in Belgium	769232-A41
	For use in Bulgaria	769232-261
	For use in the Czech Republic and Slovakia	769232-FL1
	For use in Denmark, Finland, and Norway	769232-DH1
	For use in France	769232-051
	For use in Germany	769232-041
	For use in Greece	769232-151
	For use in Hungary	769232-211
	For use in Israel	769232-BB1
	For use in Italy	769232-061
	For use in the Netherlands	769232-B31
	For use in Portugal	769232-131
	For use in Romania	769232-271
	For use in Russia	769232-251
	For use in Saudi Arabia	769232-171
	For use in Slovenia	769232-BA1
	For use in South Korea	769232-AD1
	For use in Spain	769232-071
	For use in Switzerland	769232-BG1
	For use in Taiwan	769232-AB1
	For use in Thailand	769232-281
	For use in Turkey	769232-141
	For use in the United Kingdom and Singapore	769232-031
	For use in the United States	769232-001
(4)	Power button board (includes cable)	768010-001
(5)	Fan (includes cable)	768021-001
(6)	System board (includes a graphics subsystem with UMA memory and replacement thermal material):	
	Equipped with an Intel Core i5-5200U (2.2 GHz, SC turbo up to 2.7 GHz), 1600 MHz FSB/3MB L3 cache, dual core 15 W processor and the Windows 8.1 Standard operating system	781944-501
	Equipped with an Intel Core i5-5200U (2.2 GHz, SC turbo up to 2.7 GHz), 1600 MHz FSB/3MB L3 cache, dual core 15 W processor and a non-Windows 8.1 operating system	781944-001
	Equipped with an Intel Core i5-5200U (2.2 GHz, SC turbo up to 2.7 GHz), 1600 MHz FSB/3MB L3 cache, dual core 15 W processor and the Windows 8.1 Standard operating system for 360 computer models	781945-501

Item	Component	Spare part number
	Equipped with an Intel Core i5-5200U (2.2 GHz, SC turbo up to 2.7 GHz), 1600 MHz FSB/3MB L3 cache, dual core 15 W processor and a non-Windows 8.1 operating system for 360 computer models	781945-001
	Equipped with an Intel Core i3-5005U (2.0 GHz), 1600 MHz FSB/3 MB L3 cache, dual core, 15 W processor and the Windows 8.1 Standard operating system for 360 computer models	781946-501
	Equipped with an Intel Core i3-5005U (2.0 GHz), 1600 MHz FSB/3 MB L3 cache, dual core, 15 W processor and a non-Windows 8 operating system for 360 computer models	781946-001
	Equipped with an Intel Core i3-5005U (2.0 GHz), 1600 MHz FSB/3 MB L3 cache, dual core, 15 W processor and the Windows 8.1 Standard operating system	781947-501
	Equipped with an Intel Core i3-5005U (2.0 GHz), 1600 MHz FSB/3 MB L3 cache, dual core, 15 W processor and a non-Windows 8 operating system	781947-001
	Equipped with an Intel Core i3-5010U (2.1 GHz), 1600 MHz FSB/3 MB L3 cache, dual core, 15 W processor and the Windows 8.1 Standard operating system	802677-501
	Equipped with an Intel Core i3-5010U (2.1 GHz), 1600 MHz FSB/3 MB L3 cache, dual core, 15 W processor and a non-Windows 8.1 Standard operating system	802677-001
	Equipped with an Intel Core i3-5010U (2.1 GHz), 1600 MHz FSB/3 MB L3 cache, dual core, 15 W processor and a non-Windows 8.1 Standard operating system for 360 computer models	802679-501
	Equipped with an Intel Core i3-5010U (2.1 GHz), 1600 MHz FSB/3 MB L3 cache, dual core, 15 W processor and the Windows 8.1 Standard operating system for 360 computer models	802679-001
(7)	Heat sink (includes replacement thermal material and 4 captive screws, secured by C-clips)	768022-001
(8)	Audio/USB board (includes audio jack, cable, and USB port)	768045-001
(9)	Memory module (PCL3, 12800, 1600-MHz):	
	8 GB	693374-005
	4 GB	691740-005
	2 GB	691739-005
(10)	Battery , 3-cell, 43-WHr, 2.83-AHr, Li-ion (includes cable)	761230-005
(11)	WLAN module:	
	Broadcom BCM943142HM 802.11 bgn 1×1 Wi-Fi + Bluetooth 4.0 Combo Adapter	753076-005
	Intel Dual Band Wireless-AC 3160 802.11 ac 1×1 WiFi + Bluetooth 4.0 Combo Adapter	784638-005
(12)	Hard drive (SATA, 7.2- and 7.0-mm, does not include hard drive bracket or hard drive connector adapter): NOTE: The hard drive bracket and hard drive connector adapter are included in the Hard Drive Hardware Kit, spare part number 783027-001.	
	1-TB, 5400-rpm, 7.2-mm	762990-005
	750-GB, 5400-rpm, 7.2-mm	752099-005
	500-GB, 5400-rpm, 7.0-mm	683802-006
	500-GB, 5400-rpm, Hybrid 8-GB, 7.0-mm	732000-005
(13)	Power connector cable	768027-001
(14)	Speakers (include left and right speakers and cables)	768023-001

Item	Component	Spare part number
(15)	Bottom cover	793070-001
	Rubber Kit (not illustrated, includes bottom cover screw covers, computer feet, and display bezel screw covers)	768044-001

Display assembly components



Item	Description	Spare part number
(1)	Display bezel screw covers: The display bezel screw covers are included in the Rubber Kit, spare part number 768044-001.	
(2)	Display bezel	768026-001
(3)	Display panel cable	768027-001

Item	Description	Spare part number
(4)	Webcam/microphone module (includes the webcam/microphone module cable and double-sided adhesive)	768039-001
(5)	Antenna Kit (includes wireless antenna cable and transceiver)	768034-001
(6)	Display panel 13.3-in, AG, HD, WLED	767818-001
(7)	Display Hinge Kit (includes left and right display hinges)	768035-001
(8)	Display back cover	768025-001

Miscellaneous parts

Component	Spare part number
AC adapter:	
65-W HP Smart adapter (non-PFC, EM, 3-wire, 4.5-mm)	714657-001
45-W HP Smart adapter (non-PFC, RC, 3-wire, 4.5-mm)	741727-001
HP HDMI-to-VGA adapter	701943-001
Power cord (3-pin, black, 1.00-m):	
For use in Argentina	755530-D01
For use in Australia	755530-011
For use in Denmark	755530-081
For use in Europe	755530-021
For use in India	755530-D61
For use in Israel	755530-BB1
For use in Italy	755530-061
For use in North America	755530-001
For use in the People's Republic of China	755530-AA1
For use in South Africa	755530-AR1
For use in Switzerland	755530-111
For use in Taiwan	755530-AB1
For use in Thailand	755530-201
For use in the United Kingdom and Singapore	755530-031
Rubber Feet Kit (includes bottom cover screw covers, computer feet, and display bezel screw covers)	768044-001
Screw Kit	768041-001
HP HDMI-to-VGA adapter	701943-001
HP USB external DVD-RW Drive	747080-001
Hard drive hardware kit	783027-001
Solid State drive hardware kit	774545-001

Component	Spare part number
Solid State drives	
128-GB, SATA-3, multi-level cell, solid-state drive	767763-001
128-GB, SATA-3, triple-level cell, solid-state drive	767764-001
256-GB, SATA-3, multi-level cell, solid-state drive	781942-001
256-GB, SATA-3, triple-level cell, solid-state drive	781943-001

Sequential part number listing

Spare part number	Description
683802-006	500-GB, 5400-rpm, SATA, 7.0-mm hard drive (does not include hard drive bracket or hard drive connector adapter) NOTE: The hard drive bracket and hard drive connector adapter are included in the Hard Drive Hardware Kit, spare part number 783027-001.
691739-005	2-GB memory module (PCL3, 12800, 1600-MHz)
691740-005	4-GB memory module (PCL3, 12800, 1600-MHz)
693374-005	8-GB memory module (PCL3, 12800, 1600-MHz)
701943-001	HP HDMI-to-VGA adapter
714657-001	65-W HP Smart adapter (non-PFC, EM, 3-wire, 4.5-mm)
732000-005	500-GB, 5400-rpm, SATA, Hybrid 8-GB, 7.0-mm hard drive (does not include hard drive bracket or hard drive connector adapter) NOTE: The hard drive bracket and hard drive connector adapter are included in the Hard Drive Hardware Kit, spare part number 783027-001.
741727-001	45-W HP Smart adapter (non-PFC, RC, 3-wire, 4.5-mm)
747080-001	HP USB external DVD±RW DL SuperMulti Drive
752099-005	750-GB, 5400-rpm, SATA, 7.2-mm hard drive (does not include hard drive bracket or hard drive connector adapter) NOTE: The hard drive bracket and hard drive connector adapter are included in the Hard Drive Hardware Kit, spare part number 783027-001.
753076-005	Broadcom BCM943142HM 802.11 bgn 1×1 Wi-Fi + Bluetooth 4.0 Combo Adapter
755530-001	Power cord for use in North America (3-pin, black, 1.00-m)
755530-011	Power cord for use in Australia (3-pin, black, 1.00-m)
755530-021	Power cord for use in Europe (3-pin, black, 1.00-m)
755530-031	Power cord for use in the United Kingdom and Singapore (3-pin, black, 1.00-m)
755530-061	Power cord for use in Italy (3-pin, black, 1.00-m)
755530-081	Power cord for use in Denmark (3-pin, black, 1.00-m)
755530-111	Power cord for use in Switzerland (3-pin, black, 1.00-m)
755530-201	Power cord for use in Thailand (3-pin, black, 1.00-m)
755530-AA1	Power cord for use in the People's Republic of China (3-pin, black, 1.00-m)
755530-AB1	Power cord for use in Taiwan (3-pin, black, 1.00-m)
755530-AR1	Power cord for use in South Africa (3-pin, black, 1.00-m)
755530-BB1	Power cord for use in Israel (3-pin, black, 1.00-m)
755530-D01	Power cord for use in Argentina (3-pin, black, 1.00-m)
755530-D61	Power cord for use in India (3-pin, black, 1.00-m)
761230-005	3-cell, 43-WHr, 2.83-AHr, Li-ion battery (includes cable)

Spare part number	Description
762990-005	1-TB, 5400-rpm, SATA, 7.2-mm hard drive (does not include hard drive bracket or hard drive connector adapter) NOTE: The hard drive bracket and hard drive connector adapter are included in the Hard Drive Hardware Kit, spare part number 783027-001.
767763-001	128-GB, SATA-3, multi-level cell, solid-state drive
767764-001	128-GB, SATA-3, triple-level cell, solid-state drive
767818-001	13.3-in, AG, HD, WLED, display panel
768008-001	TouchPad (includes cable)
768010-001	Power button board (includes cable)
768012-001	Power connector cable
768020-001	Hard Drive Hardware Kit (includes hard drive bracket and hard drive connector adapter)
768021-001	Fan (includes cable)
768022-001	Heat sink (includes replacement thermal material and 4 captive screws, secured by C-clips)
768023-001	Speakers (include left and right speakers and cables)
768025-001	Display back cover
768026-001	Display bezel
768027-001	Display panel cable
768034-001	Antenna Kit (includes wireless antenna cable and transceiver)
768035-001	Display Hinge Kit (includes left and right display hinges)
768039-001	Webcam/microphone module (includes the webcam/microphone module cable and double-sided adhesive)
768041-001	Screw Kit
768044-001	Rubber Kit (includes bottom cover screw covers, computer feet, and display bezel screw covers)
768045-001	Audio/USB board (includes audio jack, cable, and USB port)
769232-001	Keyboard/top cover for use in the United States (includes keyboard cable)
769232-031	Keyboard/top cover for use in the United Kingdom and Singapore (includes keyboard cable)
769232-041	Keyboard/top cover for use in Germany (includes keyboard cable)
769232-051	Keyboard/top cover for use in France (includes keyboard cable)
769232-061	Keyboard/top cover for use in Italy (includes keyboard cable)
769232-071	Keyboard/top cover for use in Spain (includes keyboard cable)
769232-131	Keyboard/top cover for use in Portugal (includes keyboard cable)
769232-141	Keyboard/top cover for use in Turkey (includes keyboard cable)
769232-151	Keyboard/top cover for use in Greece (includes keyboard cable)
769232-171	Keyboard/top cover for use in Latin America (includes keyboard cable)
769232-211	Keyboard/top cover for use in Saudi Arabia (includes keyboard cable)
769232-251	Keyboard/top cover for use in Hungary (includes keyboard cable)

Spare part number	Description
769232-261	Keyboard/top cover for use in Russia (includes keyboard cable)
769232-271	Keyboard/top cover for use in Bulgaria (includes keyboard cable)
769232-281	Keyboard/top cover for use in Thailand (includes keyboard cable)
769232-A41	Keyboard/top cover for use in Romania (includes keyboard cable)
769232-AB1	Keyboard/top cover for use in Belgium (includes keyboard cable)
769232-AD1	Keyboard/top cover for use in the Netherlands (includes keyboard cable)
769232-B31	Keyboard/top cover for use in Slovenia (includes keyboard cable)
769232-BA1	Keyboard/top cover for use in Israel (includes keyboard cable)
769232-BB1	Keyboard/top cover for use in Switzerland (includes keyboard cable)
769232-BG1	Keyboard/top cover for use in Canada (includes keyboard cable)
769232-DH1	Keyboard/top cover for use in Denmark, Finland, and Norway (includes keyboard cable)
769232-FL1	Keyboard/top cover for use in the Czech Republic and Slovakia (includes keyboard cable)
774545-001	Solid-state Drive Hardware Kit
781942-001	256-GB, SATA-3, multi-level cell, solid-state drive
781943-001	256-GB, SATA-3, triple-level cell, solid-state drive
781944-001	Equipped with an Intel Core i5-5200U (2.2 GHz, SC turbo up to 2.7 GHz), 1600 MHz FSB/3MB L3 cache, dual core 15 W processor and a non-Windows 8.1 operating system
781944-501	Equipped with an Intel Core i5-5200U (2.2 GHz, SC turbo up to 2.7 GHz), 1600 MHz FSB/3MB L3 cache, dual core 15 W processor and the Windows 8.1 Standard operating system
781945-501	Equipped with an Intel Core i5-5200U (2.2 GHz, SC turbo up to 2.7 GHz), 1600 MHz FSB/3MB L3 cache, dual core 15 W processor and the Windows 8.1 Standard operating system for 360 computer models
781945-001	Equipped with an Intel Core i5-5200U (2.2 GHz, SC turbo up to 2.7 GHz), 1600 MHz FSB/3MB L3 cache, dual core 15 W processor and a non-Windows 8.1 operating system for 360 computer models
781946-501	Equipped with an Intel Core i3-5005U (2.0 GHz), 1600 MHz FSB/3 MB L3 cache, dual core, 15 W processor and the Windows 8.1 Standard operating system for 360 computer models
781946-001	Equipped with an Intel Core i3-5005U (2.0 GHz), 1600 MHz FSB/3 MB L3 cache, dual core, 15 W processor and a non-Windows 8 operating system for 360 computer models
781947-001	Equipped with an Intel Core i3-5005U (2.0 GHz), 1600 MHz FSB/3 MB L3 cache, dual core, 15 W processor and a non-Windows 8 operating system
781947-501	Equipped with an Intel Core i3-5005U (2.0 GHz), 1600 MHz FSB/3 MB L3 cache, dual core, 15 W processor and the Windows 8.1 Standard operating system
783027-001	Hard drive hardware kit
784638-005	Intel Dual Band Wireless-AC 3160 802.11 ac 1×1 WiFi + Bluetooth 4.0 Combo Adapter
793070-001	Bottom cover
802677-001	Equipped with an Intel Core i3-5010U (2.1 GHz), 1600 MHz FSB/3 MB L3 cache, dual core, 15 W processor and a non-Windows 8.1 Standard operating system
802677-501	Equipped with an Intel Core i3-5010U (2.1 GHz), 1600 MHz FSB/3 MB L3 cache, dual core, 15 W processor and the Windows 8.1 Standard operating system

Spare part number	Description
802679-001	Equipped with an Intel Core i3-5010U (2.1 GHz), 1600 MHz FSB/3 MB L3 cache, dual core, 15 W processor and the Windows 8.1 Standard operating system for 360 computer models
802679-501	Equipped with an Intel Core i3-5010U (2.1 GHz), 1600 MHz FSB/3 MB L3 cache, dual core, 15 W processor and a non-Windows 8.1 Standard operating system for 360 computer models

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 screw driver

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 tablet, 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 tablet, be sure that cables are placed in their proper locations during the reassembly process. Improper cable placement can damage the tablet.

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.

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 tablet when you are removing or installing internal components, observe these precautions:

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

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

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

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

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

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

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

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

- To avoid hand contact, transport products in static-safe tubes, bags, or boxes.
- Protect ESD-sensitive parts and assemblies with conductive or approved containers or packaging.
- Keep ESD-sensitive parts in their containers until the parts arrive at static-free workstations.
- Place items on a grounded surface before removing items from their containers.
- Always be properly grounded when touching a component or assembly.
- Store reusable ESD-sensitive parts from assemblies in protective packaging or 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 $\pm 10\%$ resistance in the ground cords. To provide proper ground, wear a strap snugly against the skin at all times. On grounded mats with banana-plug connectors, use alligator clips to connect a wrist strap.
- When standing, use foot straps and a grounded floor mat. Foot straps (heel, toe, or boot straps) can be used at standing workstations and are compatible with most types of shoes or boots. On conductive floors or dissipative floor mats, use foot straps on both feet with a minimum of one megohm resistance between the operator and ground. To be effective, the conductive must be worn in contact with the skin.


The following grounding equipment is recommended to prevent electrostatic damage:


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

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

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

5 Removal and replacement procedures

 **NOTE:** 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.

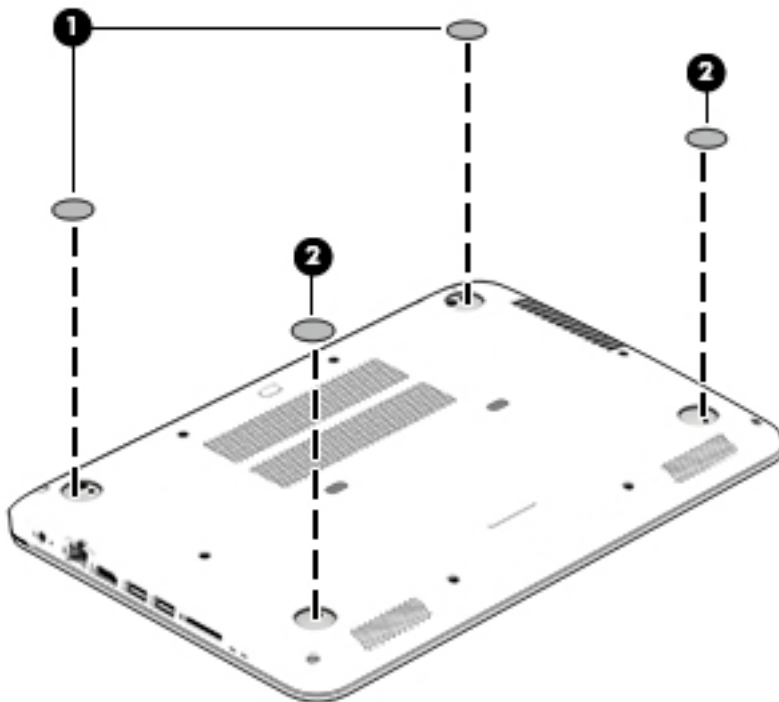
Component replacement procedures

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

There are as many as 54 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.

Computer feet

The computer feet are adhesive-backed rubber pads. The feet are included in the Rubber Kit, spare part number 768044-001. There are 4 rubber feet that attach to the bottom cover in the locations illustrated below. The rear feet (**1**) are shaped differently than the front feet (**2**), and must be removed and replaced to disassemble the computer.



Keyboard/top cover

For use in country or region	Spare part number	For use in country or region	Spare part number
For use in Belgium	769232-A41	For use in Romania	769232-271
For use in Bulgaria	769232-261	For use in Russia	769232-251
For use in the Czech Republic and Slovakia	769232-FL1	For use in Saudi Arabia	769232-171
For use in Denmark, Finland, and Norway	769232-DH1	For use in Slovenia	769232-BA1
For use in France	769232-051	For use in South Korea	769232-AD1
For use in Germany	769232-041	For use in Spain	769232-071
For use in Greece	769232-151	For use in Switzerland	769232-BG1
For use in Hungary	769232-211	For use in Taiwan	769232-AD1
For use in Israel	769232-BB1	For use in Thailand	769232-281
For use in Italy	769232-061	For use in Turkey	769232-141
For use in the Netherlands	769232-B31	For use in the United Kingdom and Singapore	769232-031
For use in Portugal	769232-131	For use in the United States	769232-001

Before removing the disassembling, 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.



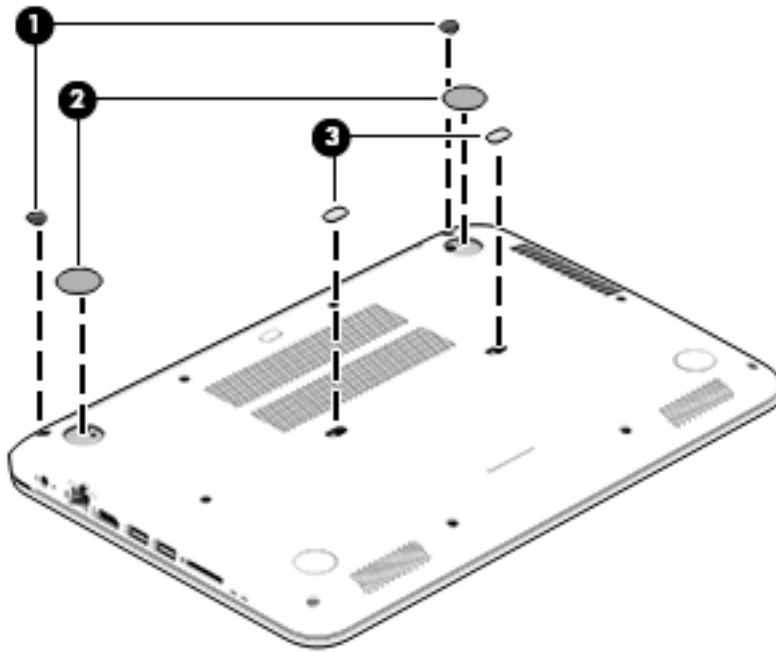
NOTE: When replacing the keyboard/top cover, be sure that the TouchPad assembly (see [TouchPad on page 31](#)) and power button board (see [Power button board on page 32](#)) are removed from the defective keyboard/top cover and installed on the replacement keyboard/top cover:

Remove the keyboard/top cover:

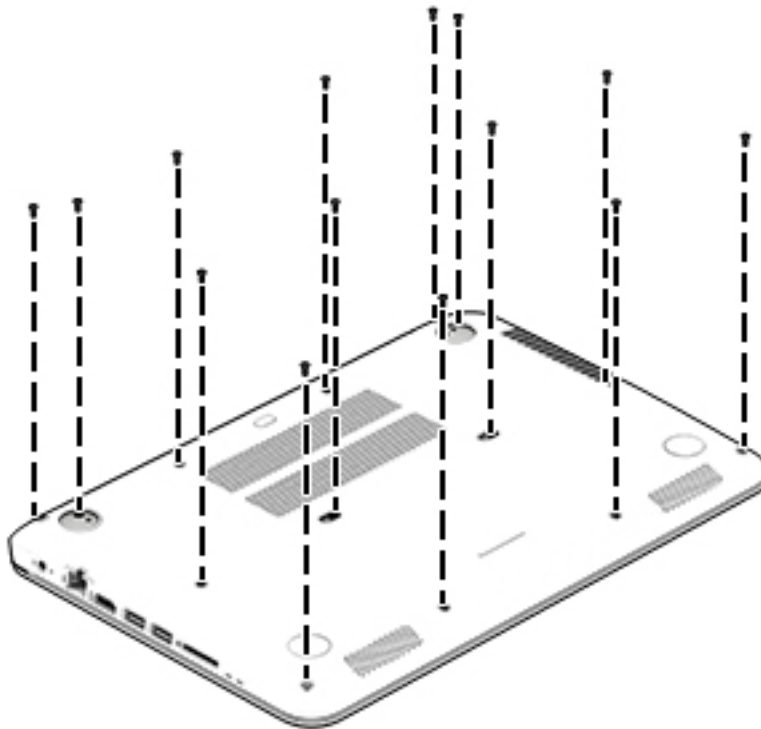
1. Close the computer.
2. Turn the computer upside down with the front toward you.
3. Remove the two screw covers **(1)** from the rear edge of the computer.
4. Remove the two computer rear feet **(2)**.

5. Remove the two screw covers **(3)** from the middle of the computer.

The screw covers and the computer rear feet are included in the Rubber Kit, spare part number 768044-001.



6. Remove the 14 Phillips PM2.4×5.7 screws that secure the keyboard/top cover to the bottom cover.



7. Turn the computer right side up, with the front toward you.

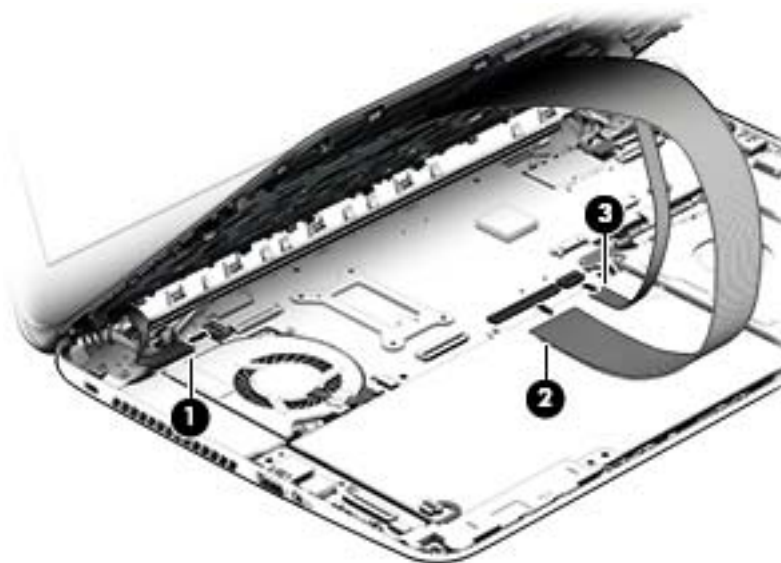
8. Open the computer.

CAUTION: Do not completely separate the keyboard/top cover from the bottom cover in the next step. There are 3 ribbon cables connecting the keyboard/top cover to the system board that can be damaged if too much separation is achieved.

9. Lift the front edge **(1)** of the keyboard/top cover until it **(2)** separates from the bottom cover.



10. Release the zero insertion force (ZIF) connector **(1)** to which the power button board cable is attached, and then disconnect the power button board cable from the system board.
11. Release the ZIF connector **(2)** to which the keyboard cable is attached, and then disconnect the keyboard cable from the system board.
12. Release the ZIF connector **(3)** to which the TouchPad assembly cable is attached, and then disconnect the TouchPad assembly cable from the system board.



13. Remove the keyboard/top cover.

Reverse this procedure to install the keyboard/top cover.

TouchPad

Description	Spare part number
TouchPad (includes cable)	768008-001

Before removing the TouchPad, 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 keyboard/top cover (see [Keyboard/top cover on page 28](#)).

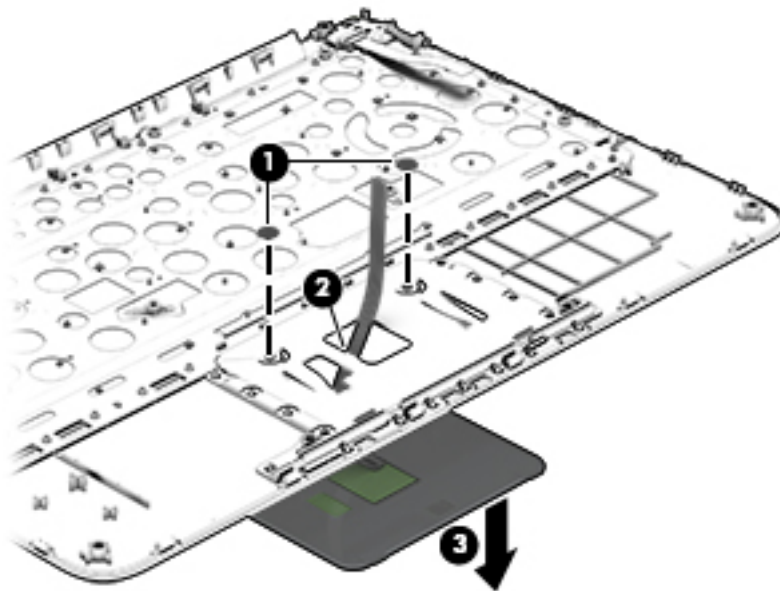
Remove the TouchPad:

1. Turn the keyboard/top cover upside down with the front toward you.
2. Remove the two Phillips PM1.9×2.4 broad head screws **(1)** that secure the TouchPad to the keyboard/top cover.



NOTE: When removing the TouchPad, make sure the cable is released through the opening **(2)** in the keyboard/top cover.

3. Remove the TouchPad and cable **(3)** by releasing them from the top surface of the keyboard/top cover.



Reverse this procedure to install the TouchPad.

Power button board

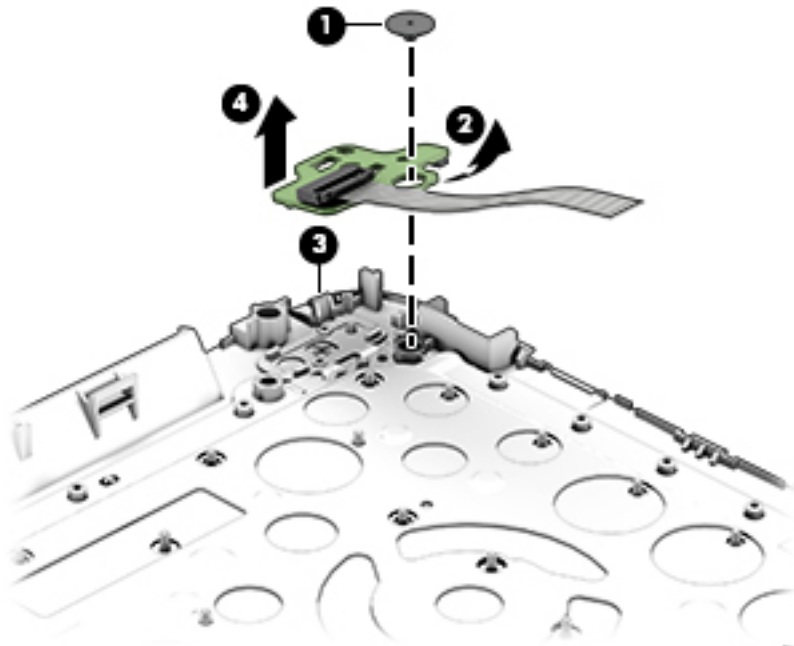
Description	Spare part number
Power button board (includes cable)	768010-001

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 keyboard/top cover (see [Keyboard/top cover on page 28](#)).

Remove the power button board:

1. Remove the PM1.9×2.4 broad head screw **(1)** that secures the power button board to the keyboard/top cover.
2. Lift the front edge of the power button board **(2)** and swing it up until it disengages from the tab **(3)** on the keyboard/top cover.
3. Remove the power button board **(4)** and cable.



Reverse this procedure to install the power button board.

Battery

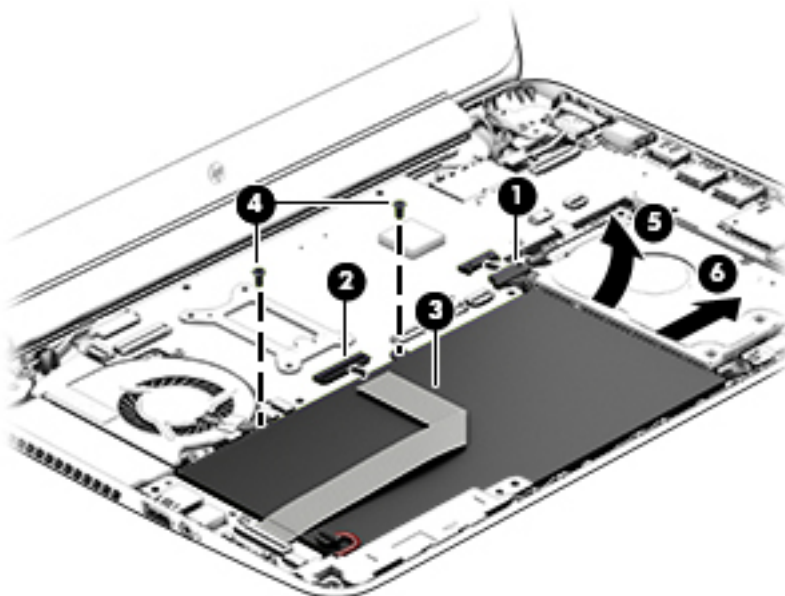
Description	Spare part number
Battery, 3-cell, 43-WHr, 2.83-AHr, Li-ion (includes cable)	761230-005

Before removing the battery, follow these steps:

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

Remove the battery:

1. Disconnect the battery cable **(1)** from the system board.
2. Release the ZIF connector **(2)** to which the audio/USB board cable is attached, and then disconnect the audio/USB board cable from the system board.
3. Detach the audio/USB board cable **(3)** from the battery. (The audio/USB board cable is attached to the battery with double-sided adhesive.)
4. Remove the two PM2.4×5.7 screws **(4)** that secure the battery to the bottom cover.
5. Lift the right side of the battery **(5)** until it rests at an angle.
6. Remove the battery **(6)** by sliding it up and to the right.



Reverse this procedure to install the battery.

Hard drive



NOTE: The hard drive spare kit does not include the hard drive bracket or hard drive connector adapter. The hard drive bracket and hard drive connector adapter are included in the Hard Drive Hardware Kit, spare part number 783027-001.

Description	Spare part number
1-TB, 5400-rpm, 7.2-mm	762990-005
750-GB, 5400-rpm, 7.2-mm	752099-005
500-GB, 5400-rpm, 7.0-mm	683802-006
500-GB, 5400-rpm, Hybrid 8-GB, 7.0-mm	732000-005
Solid State drives	
128-GB, SATA-3, multi-level cell, solid-state drive (MLC)	767763-001
128-GB, SATA-3, triple-level cell, solid-state drive (TLC)	767764-001
256-GB, SATA-3, multi-level cell, solid-state drive (MLC)	781942-001
256-GB, SATA-3, triple-level cell, solid-state drive (TLC)	781943-001

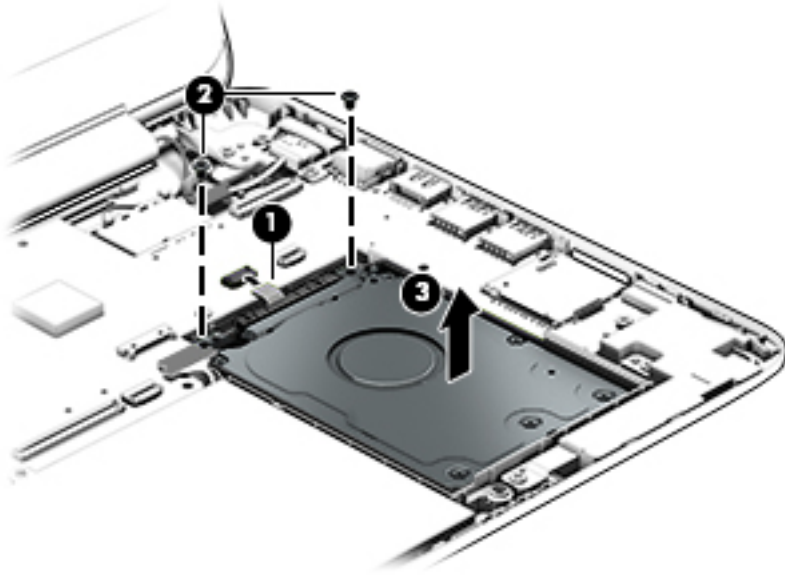
Before removing the hard drive, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 28](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 33](#)).

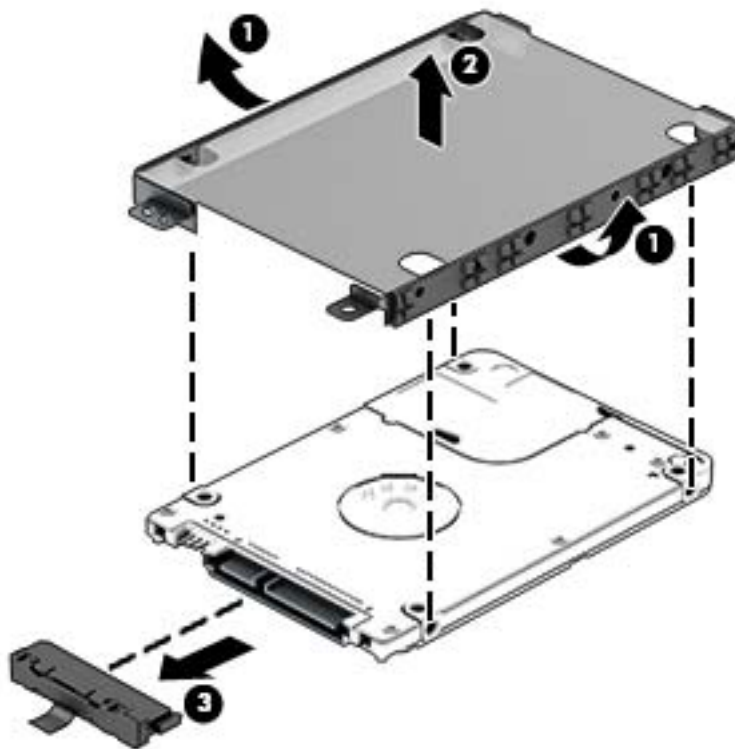
Remove the hard drive:

1. Release the ZIF connector **(1)** to which the hard drive cable is attached, and then disconnect the hard drive cable from the system board.
2. Remove the two PM2.4×3.8 screws **(2)** that secure the hard drive to the bottom cover.

3. Remove the hard drive (3).




4. If it is necessary to replace the hard drive bracket, release the sides (1) of the bracket from the hard drive, and then lift the bracket straight up (2) and remove the bracket from the hard drive.
5. If it is necessary to replace the hard drive connector adapter, slide the adapter (3) off of the front end of the hard drive.



Reverse this procedure to reassemble and install the hard drive.

WLAN module

Description	Spare part number
Broadcom BCM943142HM 802.11 bgn 1×1 Wi-Fi + Bluetooth 4.0 Combo Adapter	753076-005
Intel Dual Band Wireless-AC 3160 802.11 ac 1×1 Wi-Fi + Bluetooth 4.0 Combo Adapter	784638-005

 **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. 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 keyboard/top cover (see [Keyboard/top cover on page 28](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 33](#)).

Remove the WLAN module:

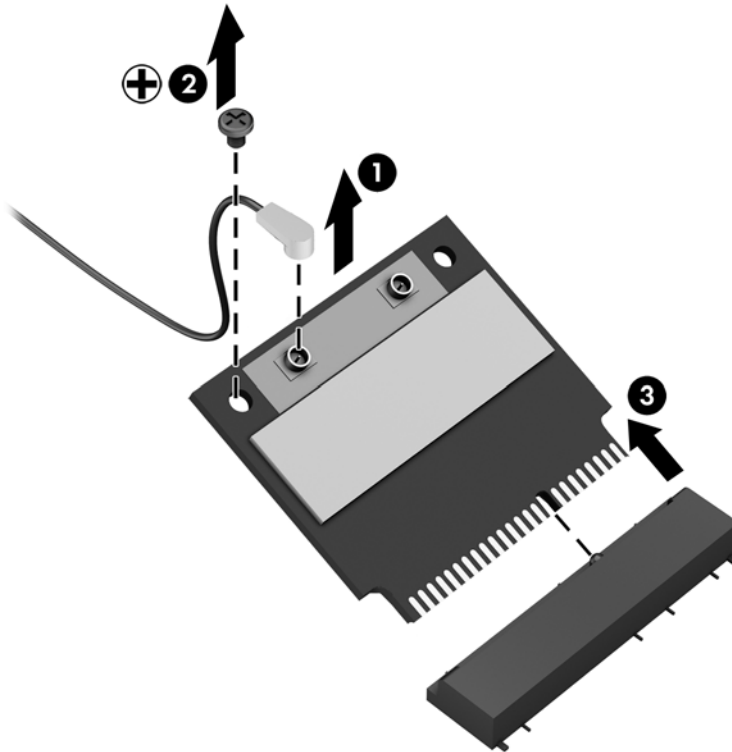
1. Disconnect the WLAN antenna cable **(1)** from the terminal on the WLAN module.




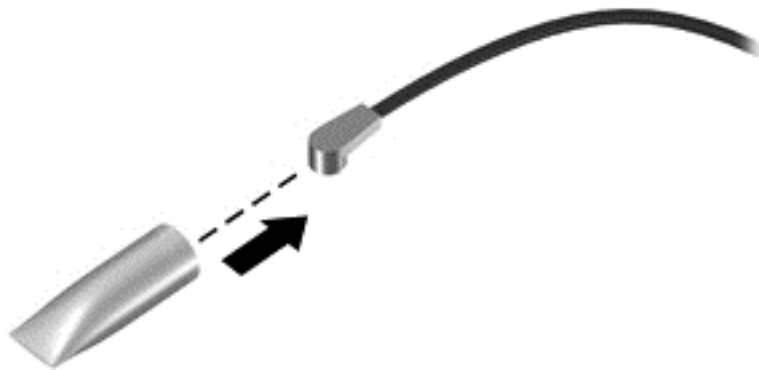
NOTE: The 1/black WLAN antenna cable is connected to the WLAN module 1/Main terminal.

2. Remove the Phillips PM2.4×3.8 screw **(2)** that secures the WLAN module to the bottom cover. (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 is not connected to the terminal on the WLAN module, a protective sleeve must be installed on the antenna connector, as shown in the following illustration.



Reverse this procedure to install the WLAN module.

Audio/USB board

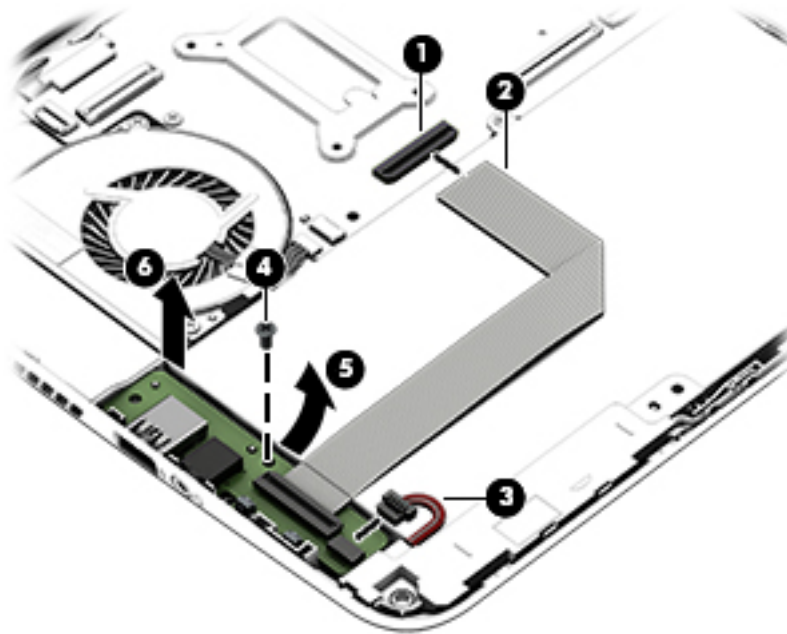
Description	Spare part number
Audio/USB board (includes audio jack, cable, and USB port)	768045-001

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

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 28](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 33](#)).

Remove the audio/USB board:

1. Release the ZIF connector **(1)** to which the audio/USB board cable is attached, and then disconnect the audio/USB board cable from the system board.
2. Detach the audio/USB board cable **(2)** from the battery. (The audio/USB board cable is attached to the battery with double-sided adhesive.)
3. Disconnect the speaker cable **(3)** from the audio/USB board.
4. Remove the Phillips PM2.4×5.7 screw **(4)** that secures the audio/USB board to the bottom cover.
5. Lift the right edge of the audio/USB board **(5)** and swing it up until it rests at an angle.
6. Remove the audio/USB board **(6)** by sliding it up and to the right at an angle.



Reverse this procedure to install the audio/USB board.

Fan

Description	Spare part number
Fan (includes cable)	768021-001



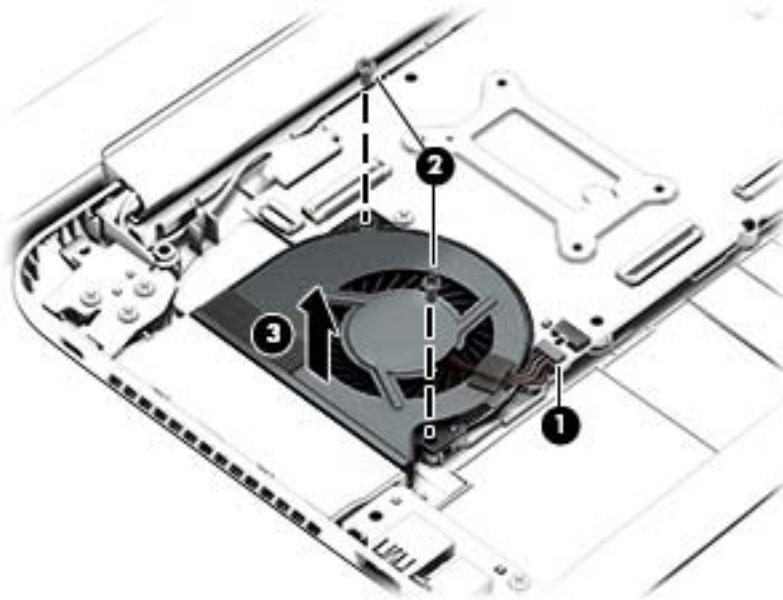
NOTE: To properly ventilate the computer, allow at least 7.6 cm (3 in) of clearance on the left side of the computer. The computer uses an electric fan for ventilation. The fan is controlled by a temperature sensor and is designed to turn on automatically when high temperature conditions exist. These conditions are affected by high external temperatures, system power consumption, power management/battery conservation configurations, battery fast charging, and software requirements. Exhaust air is displaced through the ventilation grill located on the left side of the computer.

Before removing the fan, follow these steps:

1. 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 keyboard/top cover (see [Keyboard/top cover on page 28](#)).
5. Remove the battery (see [Battery on page 33](#)).

Remove the fan:

1. Disconnect the fan cable **(1)** from the system board.
2. Remove the two Phillips PM2.4×5.7 screws **(2)** that secure the fan to the bottom cover.
3. Remove the fan **(3)**.



Reverse this procedure to install the fan.

Speakers

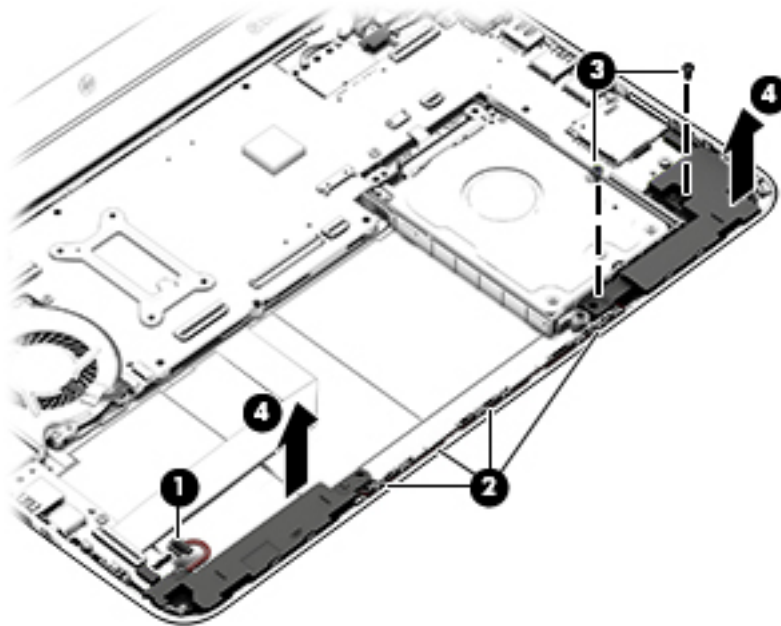
Description	Spare part number
Speakers (include left and right speakers and cables)	768023-001

Before removing the speakers, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 28](#)).
5. Remove the battery (see [Battery on page 33](#)).


Remove the speakers:

1. Disconnect the speaker cable **(1)** from the audio/USB board.
2. Release the speakers cables from the retention clips **(2)** built into the bottom cover.
3. Remove the two Phillips PM2.4×5.7 screws **(3)** that secure the right speaker to the bottom cover.
4. Remove the speakers **(4)**.



Reverse this procedure to install the speakers.

Display assembly

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

Before removing the display assembly, follow these steps:

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

4. Remove the keyboard/top cover (see [Keyboard/top cover on page 28](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 33](#)).

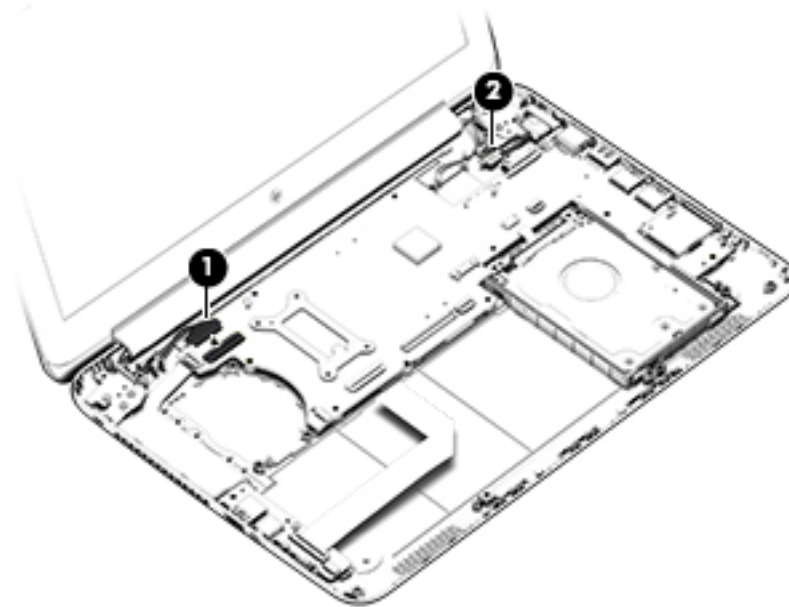
Remove the display assembly:

1. Release the ZIF connector **(1)** to which the display panel cable is attached, and then disconnect the display panel cable from the system board.
2. Release the display panel cable from the routing channel **(2)** built into the bottom cover.
3. Disconnect the WLAN antenna cable **(3)** from the terminal on the WLAN module.



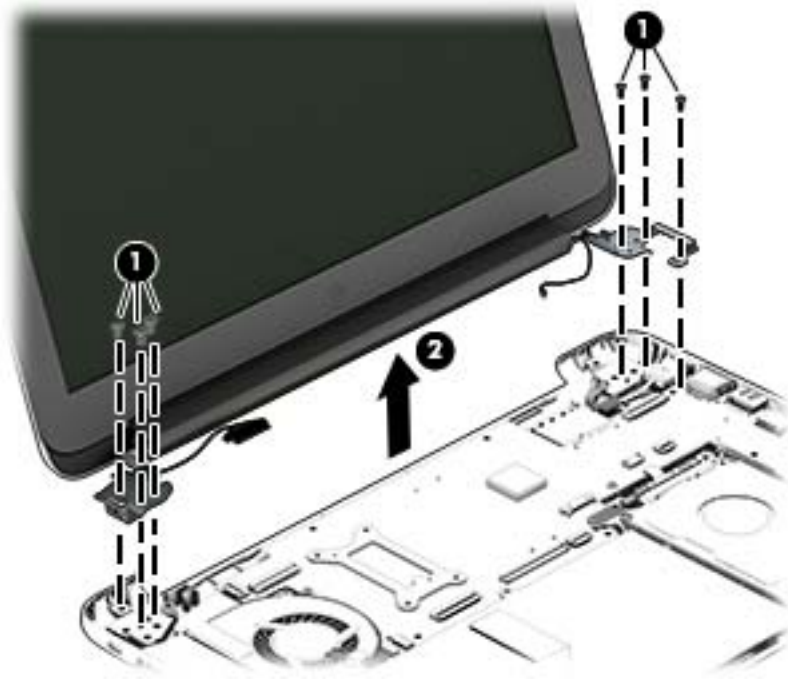
NOTE: The 1/black WLAN antenna cable is connected to the WLAN module 1/Main terminal.

4. Release the wireless antenna cable from the routing clip **(4)** built into the bottom cover.

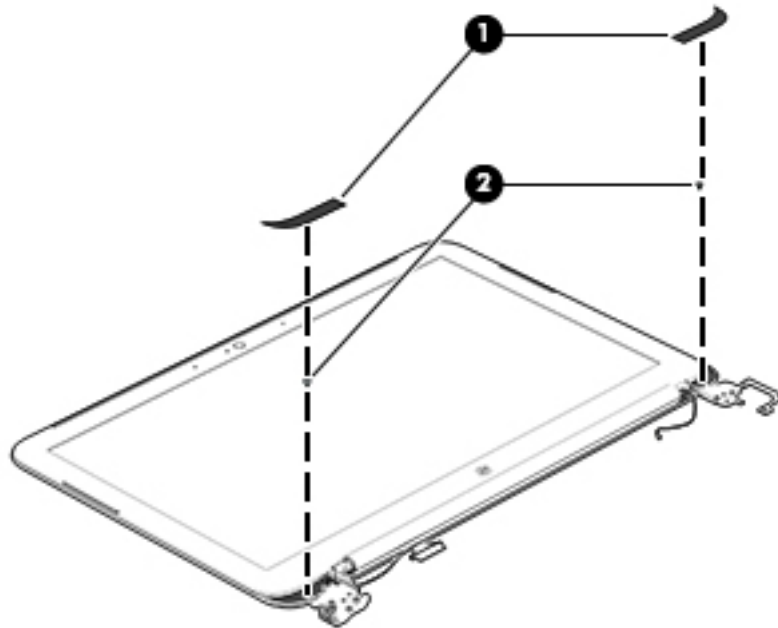


5. Remove the six Phillips PM2.5×5.7 screws **(1)** that secure the display assembly to the bottom cover.

6. Remove the display assembly (2).

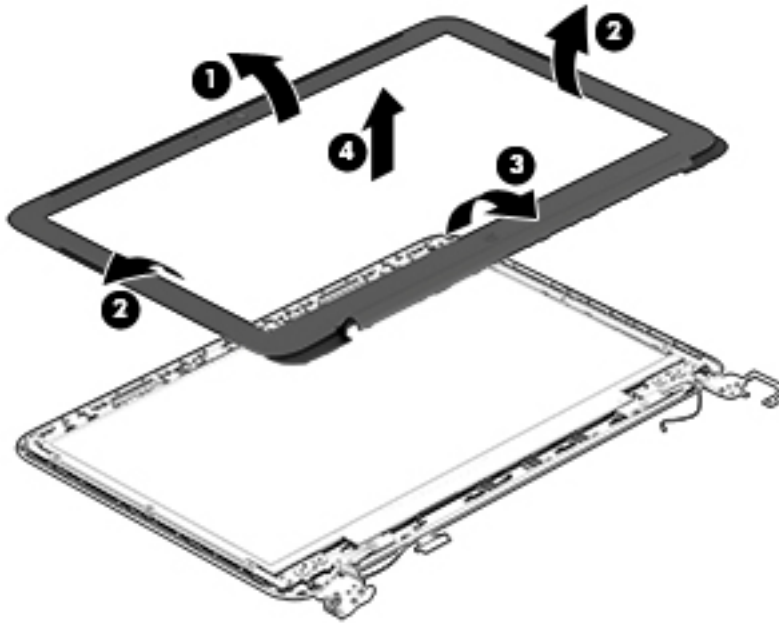


7. If it is necessary to replace the display back cover or any of the display assembly internal components:
 - a. Remove the display bezel screw covers (1).
The screw covers are included in the Rubber Kit, spare part number 768044-001.
 - b. Remove the two Phillips PM1.9×3.0 screws (2) that secure the display back cover to the display assembly.



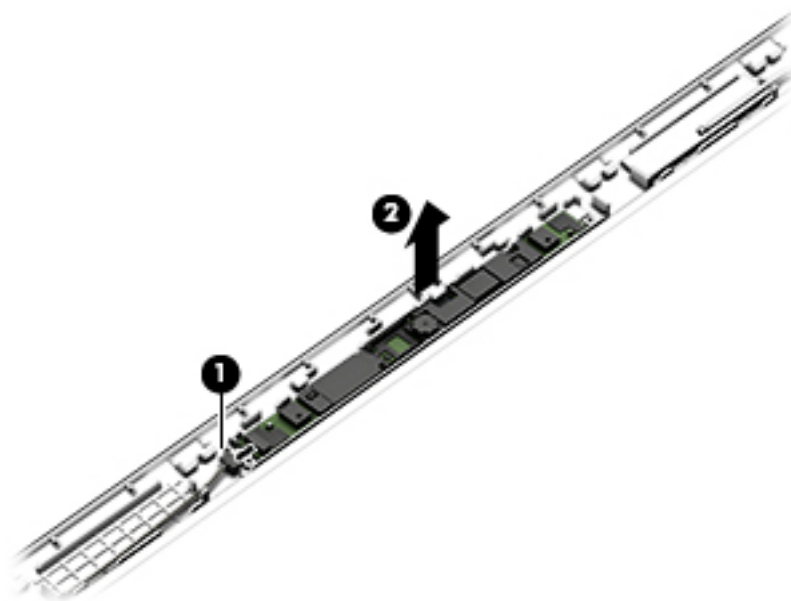
- c. Flex the inside edges of the top edge **(1)**, the left and right sides **(2)**, and the bottom edge **(3)** of the display bezel until the bezel disengages from the display back cover.
- d. Remove the display bezel **(4)**.

The display bezel is available using spare part number 768026-001.



8. If it is necessary to replace the webcam/microphone module:

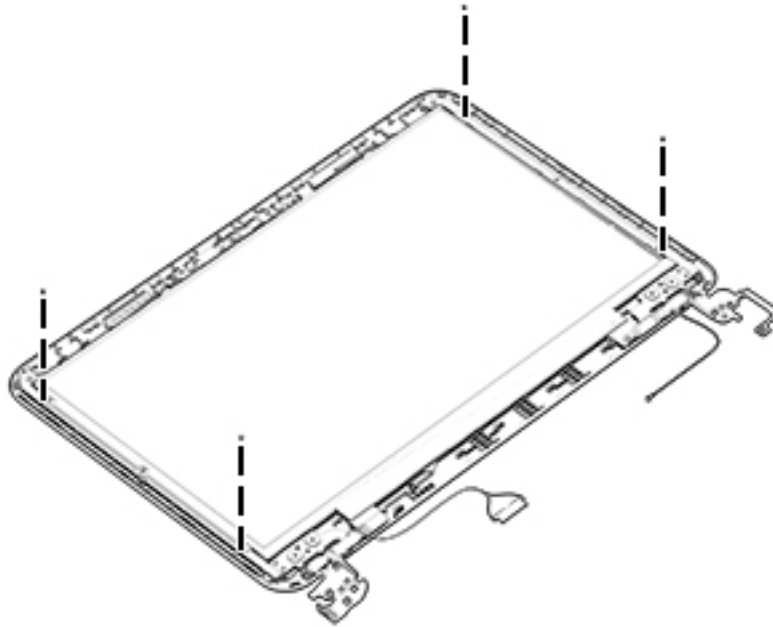
- a. Detach the webcam/microphone module **(1)** from the display back cover. (The webcam/microphone module is attached to the display back cover with double-sided adhesive.)
- b. Disconnect the webcam/microphone module cable **(2)** from the webcam/ microphone module.



- c. Remove the webcam/microphone module.

The webcam/microphone module is available using spare part number 768039-001.

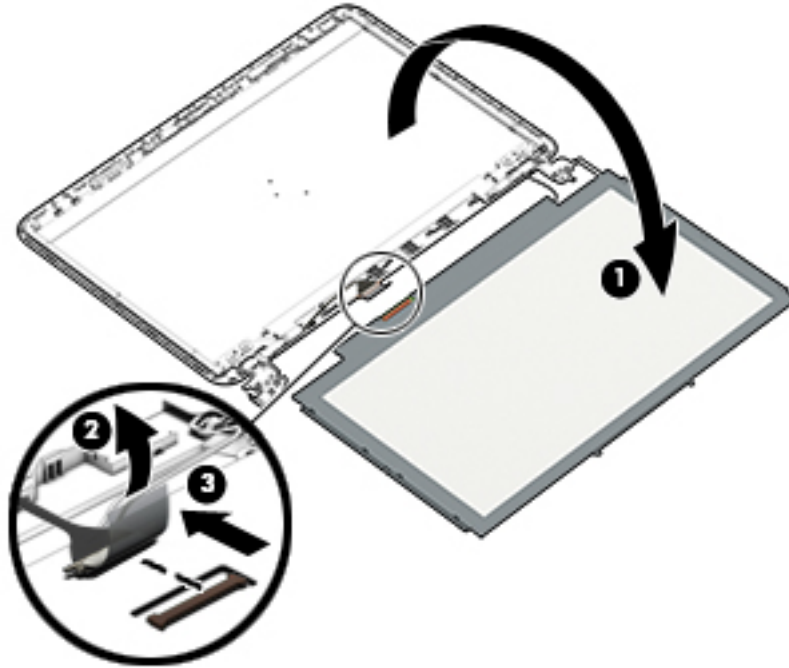
9. If it is necessary to replace the display panel:
 - a. Remove the four Phillips PM1.5×2.9 screws that secure the display panel to the display back cover.



⚠ CAUTION: Before turning the display panel upside down, make sure the work surface is clear of tools, screws, and any other foreign objects. Failure to follow this caution can result in damage to the display panel.

- b. Lift the top edge of the display panel **(1)** and swing it up and forward until it rests upside down in front of the display back cover.
- c. Release the adhesive strip **(2)** that secures the display panel cable connector to the display panel.

- d. Disconnect the display panel cable **(3)** from the display panel.



- e. Remove the display panel.

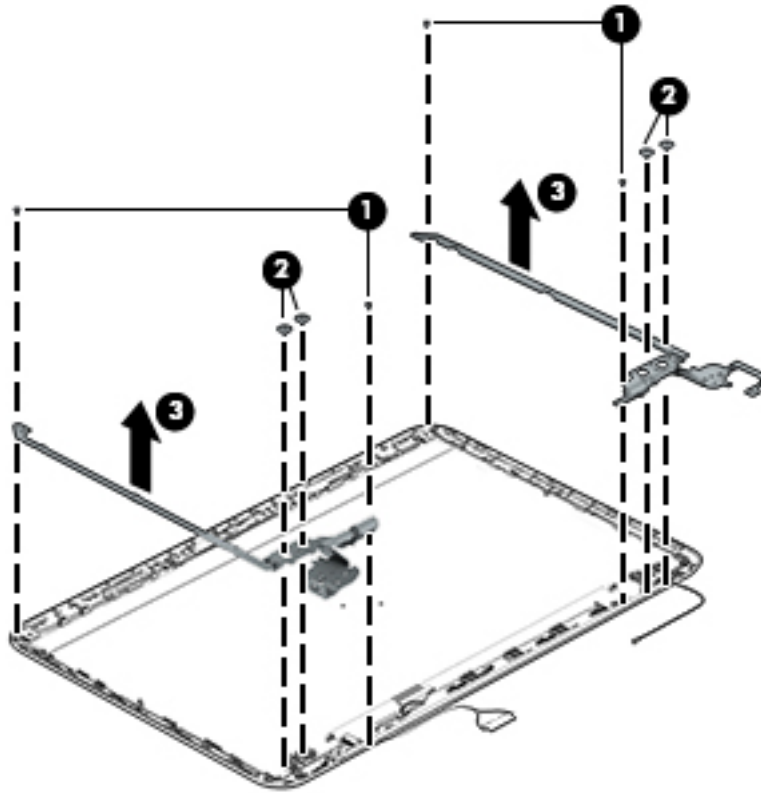
The display panel is available using spare part number 767818-001.

10. If it is necessary to replace the display hinges:

- a. Remove the four Phillips PM1.9×2.9 screws **(1)** that secure the display hinges to the display back cover.
- b. Remove the four Phillips PM2.4×3.6 broad head screws **(2)** that secure the display hinges to the display back cover.

- c. Remove the display hinges (3).

The display hinges are included in the Display Hinge Kit, spare part number 768035-001.

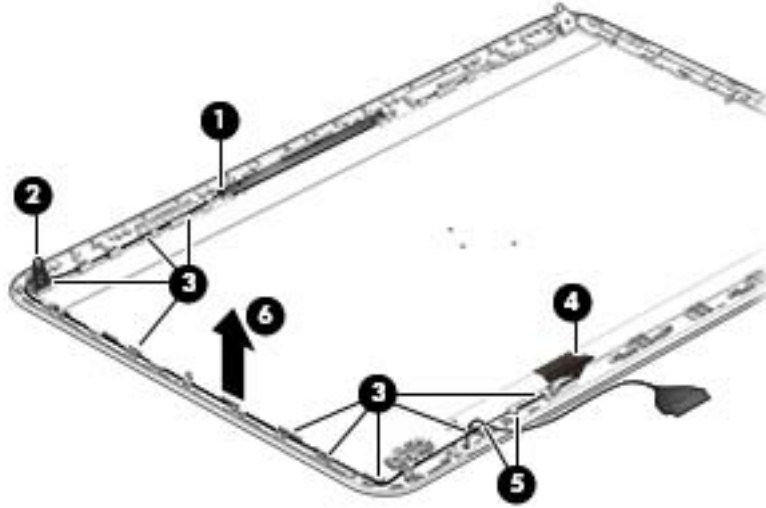


11. If it is necessary to replace the display panel cable:

- a. Disconnect the display panel cable (1) from the webcam/microphone module.
- b. Release the shielding tape (2) that secures the display panel cable to the display back cover.
- c. Release the display panel cable from the retention clips (3) and channel built into the display back cover.
- d. Detach the display panel cable (4) from the display back cover. (The display panel cable is attached to the display back cover with double-sided adhesive.)
- e. Release the display panel cable from the two retention clips (5) built into the display back cover.

- f. Remove the display panel cable (6).

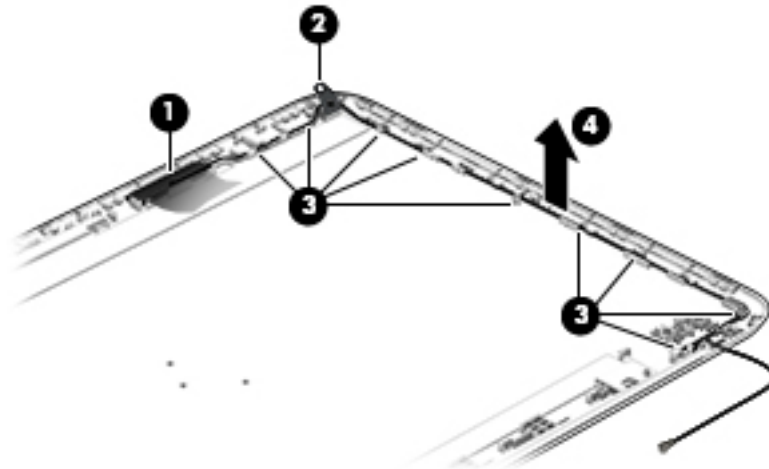
The display panel cable is available using spare part number 768027-001, and includes the webcam/microphone module cable.



12. If it is necessary to replace the WLAN antenna cable and transceiver:

- a. Detach the WLAN antenna transceiver (1) from the display back cover. (The WLAN antenna transceiver are attached to the display back cover with double-sided adhesive.)
- b. Release the shielding tape (2) that secures the WLAN antenna cable to the display back cover.
- c. Release the WLAN antenna cable from the retention clips (3) and channel built into the top edge and right side of the display back cover.
- d. Remove the WLAN antenna cable and transceiver (4).

The WLAN antenna cable and transceiver are included in the Antenna Kit, spare part number 768034-001.



Reverse this procedure to reassemble and install the display assembly.

System board

Description	Spare part number
Equipped with an Intel Core i5-5200U (2.2 GHz, SC turbo up to 2.7 GHz), 1600 MHz FSB/3MB L3 cache, dual core 15 W processor and a non-Windows 8.1 operating system	781944-001
Equipped with an Intel Core i5-5200U (2.2 GHz, SC turbo up to 2.7 GHz), 1600 MHz FSB/3MB L3 cache, dual core 15 W processor and the Windows 8.1 Standard operating system	781944-501
Equipped with an Intel Core i5-5200U (2.2 GHz, SC turbo up to 2.7 GHz), 1600 MHz FSB/3MB L3 cache, dual core 15 W processor and the Windows 8.1 Standard operating system for 360 computer models	781945-501
Equipped with an Intel Core i5-5200U (2.2 GHz, SC turbo up to 2.7 GHz), 1600 MHz FSB/3MB L3 cache, dual core 15 W processor and a non-Windows 8.1 operating system for 360 computer models	781945-001
Equipped with an Intel Core i3-5005U (2.0 GHz), 1600 MHz FSB/3 MB L3 cache, dual core, 15 W processor and the Windows 8.1 Standard operating system for 360 computer models	781946-501
Equipped with an Intel Core i3-5005U (2.0 GHz), 1600 MHz FSB/3 MB L3 cache, dual core, 15 W processor and a non-Windows 8 operating system for 360 computer models	781946-001
Equipped with an Intel Core i3-5005U (2.0 GHz), 1600 MHz FSB/3 MB L3 cache, dual core, 15 W processor and a non-Windows 8 operating system	781947-001
Equipped with an Intel Core i3-5010U (2.1 GHz), 1600 MHz FSB/3 MB L3 cache, dual core, 15 W processor and the Windows 8.1 Standard operating system	781947-501
Equipped with an Intel Core i3-5010U (2.1 GHz), 1600 MHz FSB/3 MB L3 cache, dual core, 15 W processor and a non-Windows 8.1 Standard operating system	802677-001
Equipped with an Intel Core i3-5010U (2.1 GHz), 1600 MHz FSB/3 MB L3 cache, dual core, 15 W processor and the Windows 8.1 Standard operating system	802677-501
Equipped with an Intel Core i3-5010U (2.1 GHz), 1600 MHz FSB/3 MB L3 cache, dual core, 15 W processor and the Windows 8.1 Standard operating system for 360 computer models	802679-001
Equipped with an Intel Core i3-5010U (2.1 GHz), 1600 MHz FSB/3 MB L3 cache, dual core, 15 W processor and a non-Windows 8.1 Standard operating system for 360 computer models	802679-501

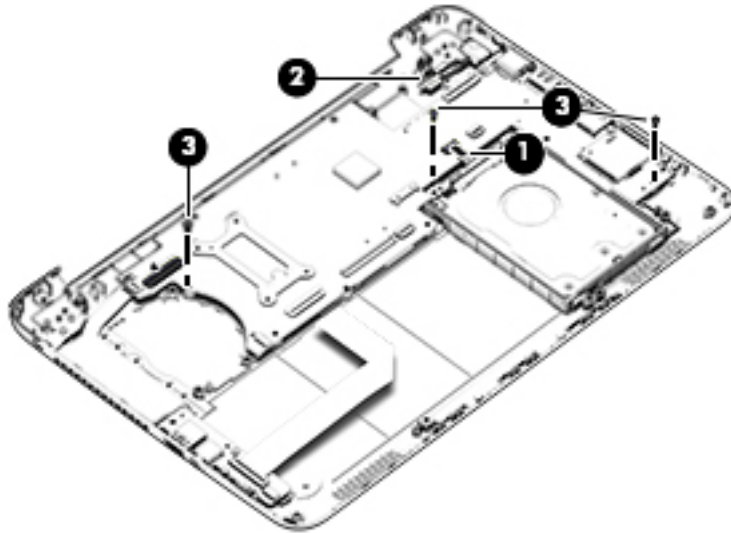
Before removing the system board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 28](#)), and then remove the following components:
 - a. Battery (see [Battery on page 33](#))
 - b. WLAN module (see [WLAN module on page 36](#))
 - c. Fan (see [Fan on page 38](#))
 - d. Speakers (see [Speakers on page 39](#))
 - e. Display assembly (see [Display assembly on page 40](#))

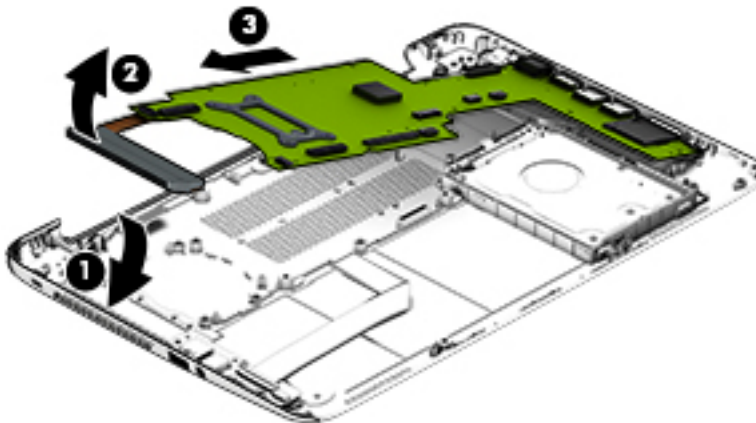
When replacing the system board, be sure that the heat sink (see [Heat sink on page 50](#)) and the memory modules (see [Memory module on page 52](#)) are removed from the defective system board and installed on the replacement system board.

Remove the system board:

1. Release the ZIF connector **(1)** to which the hard drive cable is attached, and then disconnect the hard drive cable from the system board.
2. Disconnect the power connector cable **(2)** from the system board.
3. Remove the three Phillips PM2.4×5.7 screws **(3)** that secure the system board to the bottom cover.



4. Flex the left side of the bottom cover **(1)** until the heat sink has clearance for release.
5. Lift the left side of the heat sink **(2)** and system board until it rests at an angle.
6. Remove the heat sink **(3)** and system board by sliding them up and to the left at an angle.



Reverse this procedure to install the system board.

Heat sink

Description	Spare part number
Heat sink (includes replacement thermal material and 4 captive screws, secured by C-clips)	768022-001

Before removing the heat sink, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 28](#)), and then remove the following components:
 - a. Battery (see [Battery on page 33](#))
 - b. WLAN module (see [WLAN module on page 36](#))
 - c. Fan (see [Fan on page 38](#))
 - d. Speakers (see [Speakers on page 39](#))
 - e. System board (see [System board on page 48](#))

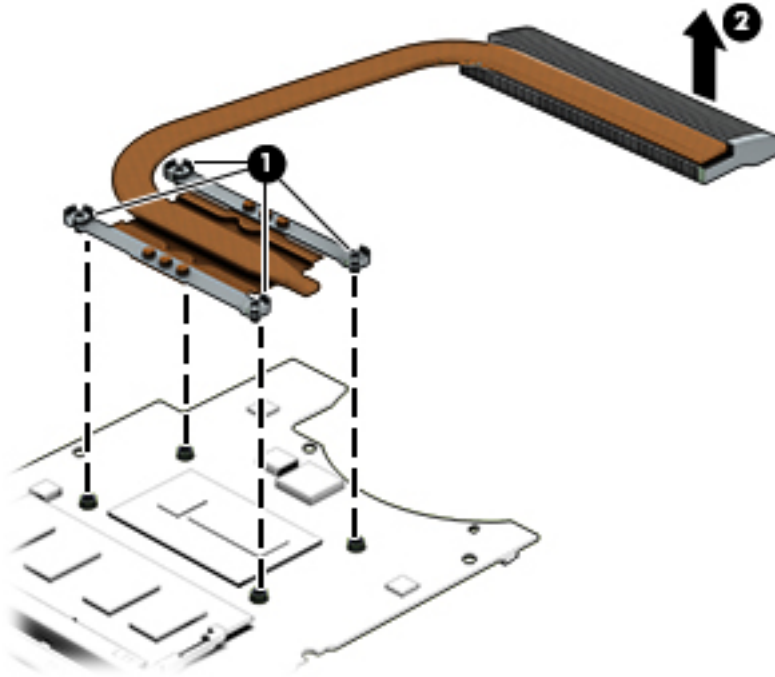
Remove the heat sink:


1. Turn the system board upside down with the front toward you.
2. Loosen the four captive screws **(1)** that secure the heat sink to the system board.

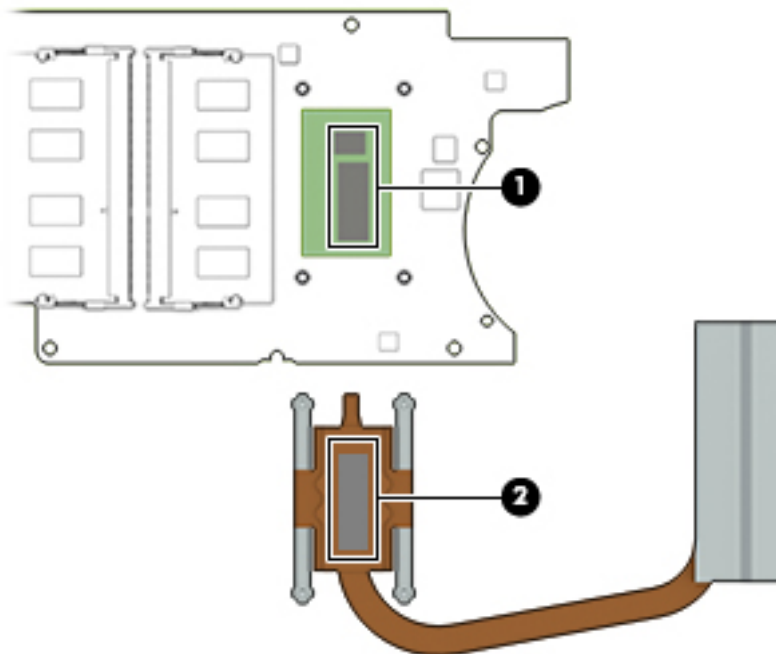


NOTE: Due to the adhesive quality of the thermal material located between the heat sink and system board components, it may be necessary to move the heat sink from side to side to detach it.

3. Remove the heat sink (2).



 **NOTE:** The thermal material must be thoroughly cleaned from the surfaces of the heat sink and the system board 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.

Memory module

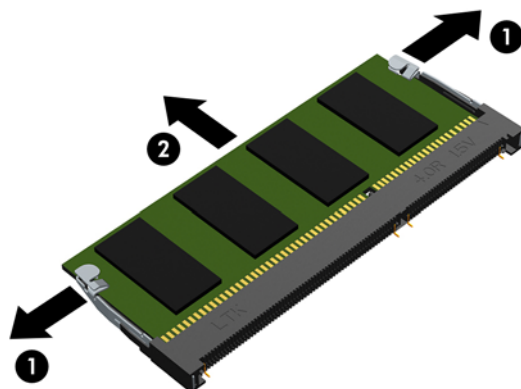
Description	Spare part number
8-GB (PCL3, 12800, 1600-MHz)	693374-005
4-GB (PCL3, 12800, 1600-MHz)	691740-005
2-GB (PCL3, 12800, 1600-MHz)	691739-005

Before removing the memory module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 28](#)), and then remove the following components:
 - a. Battery (see [Battery on page 33](#))
 - b. WLAN module (see [WLAN module on page 36](#))
 - c. Fan (see [Fan on page 38](#))
 - d. Speakers (see [Speakers on page 39](#))
 - e. System board (see [System board on page 48](#))

Remove the memory module:

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



Reverse this procedure to install a memory module.

Power connector cable

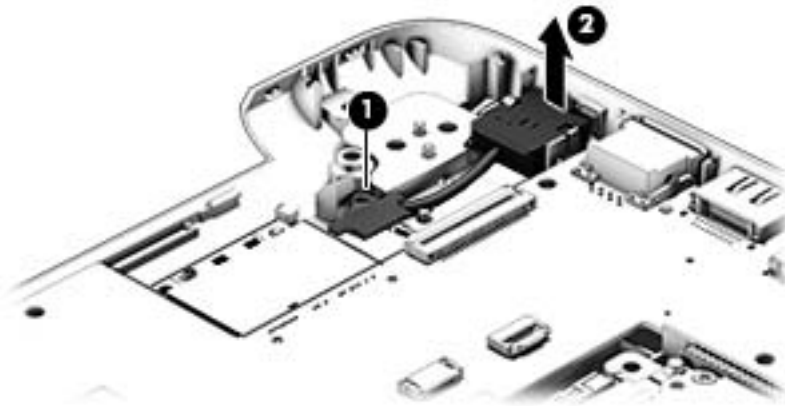
Description	Spare part number
Power connector cable	768012-001

Before removing the power connector cable, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 28](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 33](#)).
6. Remove the display assembly (see [Display assembly on page 40](#)).

Remove the power connector cable:

1. Disconnect the power connector cable **(1)** from the system board.
2. Release the power connector **(2)** from the retention clips built into the bottom cover.



3. Remove the power connector cable.

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 54](#)).
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 56](#).

- 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.

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**.

– or –

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

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

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



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

Starting Setup Utility

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

Using Setup Utility

Changing the language of Setup Utility

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

Your change takes effect immediately.

Navigating and selecting in Setup Utility

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

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

Displaying system information

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

Restoring factory default settings in Setup Utility

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

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



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

Exiting Setup Utility

- To exit Setup Utility and save your changes from the current session:
If the Setup Utility menus are not visible, press [esc](#) to return to the menu display. Then use the arrow keys to select **Exit > Exit Saving Changes**, and then press [enter](#).
- To exit Setup Utility without saving your changes from the current session:
If the Setup Utility menus are not visible, press [esc](#) to return to the menu display. Then use the arrow keys to select **Exit > Exit Discarding Changes**, and then press [enter](#).

Updating the BIOS

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

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

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


Determining the BIOS version

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

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

1. Start Setup Utility.
2. If the system information is not displayed, use the arrow keys to select the **Main** menu.
BIOS and other system information is displayed.
3. To exit Setup Utility, use the arrow keys to select **Exit > Exit Discarding Changes**, and then press **enter**.

Downloading a BIOS update


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

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


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

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

1. Access the page on the HP website that provides software for your computer.
2. Follow the on-screen instructions to identify your computer and access the BIOS update you want to download.
3. At the download area, follow these steps:
 - a. Identify the BIOS update that is later than the BIOS version currently installed on your computer. Make a note of the date, name, or other identifier. You may need this information to locate the update later, after it has been downloaded to your hard drive.
 - b. Follow the on-screen instructions to download your selection to the hard drive.
Make a note of the path to the location on your hard drive where the BIOS update is downloaded. You will need to access this path when you are ready to install the update.

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

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

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

Using Advanced System Diagnostics

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

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

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

To start Advanced System Diagnostics:

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



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

8 Specifications

	Metric	U.S.
Tablet dimensions		
Width	33.32 cm	13.11 in
Depth	22.44 cm	8.84 in
Height (front to rear)	0.69 to 2.14 cm	0.27 to 0.84 in
Weight (equipped with hard drive)	1.70 kg	3.75 lbs
Weight (equipped with solid-state drive)	1.55 kg	3.42 lbs
Input power		
Operating voltage and current	19.5 V dc @ 2.31 A – 45 W 19.5 V dc @ 3.33 A – 65 W (select models only)	
Temperature		
Operating	5°C to 35°C	41°F to 95°F
Nonoperating	-20°C to 60°C	-4°F to 140°F
Relative humidity (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	-15 m to 3,048 m	-50 ft to 10,000 ft
Nonoperating	-15 m to 12,192 m	-50 ft to 40,000 ft
NOTE: Applicable product safety standards specify thermal limits for plastic surfaces. The device operates well within this range of temperatures.		

9 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 63](#).

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:

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 65](#).

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 65](#).

- 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 65](#). If you have not already created recovery media, see [Creating HP Recovery media on page 63](#).
- 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 65](#).
- 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 67](#).

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 63](#).

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 63](#).
- 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 63](#).
- 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:

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 66](#).

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 63](#).

Follow these steps to remove the HP Recovery partition:


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


10 Ubuntu Linux – Backing up, restoring, and recovering

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

Performing a system recovery

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

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

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


Creating the restore DVDs

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


To create restore DVDs:

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

Creating a restore image on a USB device

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

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

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

To create the restore image:

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



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

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

Performing recovery using the restore media



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

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



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

Backing up your information

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

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

To back up your home directory files to the Ubuntu website using the Deja Dup Backup Tool:



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

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

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



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

To restore backup files:

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



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

11 Power cord set requirements

The wide-range input feature of the computer permits it to operate from any line voltage from 100 to 120 V ac, or from 220 to 240 V 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 or regions must meet the requirements of the country and 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 A and a nominal voltage rating of 125 or 250 V ac, as required by the power system of each country or region.
- The appliance coupler must meet the mechanical configuration of an EN 60 320/IEC 320 Standard Sheet C13 connector for mating with the appliance inlet on the back of the computer.

Requirements for specific countries and regions

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

1. The flexible cord must be Type H05VV-F, 3-conductor, 0.75 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.

Country/region	Accredited agency	Applicable note number
		<p>2. The flexible cord must be Type SVT/SJT or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V ac) or NEMA 6-15P (15 A, 250 V ac) configuration. CSA or C-UL mark. UL file number must be on each element.</p>
		<p>3. The appliance coupler, flexible cord, and wall plug must bear a “T” mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCTF, 3-conductor, 0.75 mm² or 1.25 mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V ac) configuration.</p>
		<p>4. The flexible cord must be Type RVV, 3-conductor, 0.75 mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the CCC certification mark.</p>
		<p>5. The flexible cord must be Type H05VV-F 3-conductor, 0.75 mm² conductor size. KTL logo and individual approval number must be on each element. Corset approval number and logo must be printed on a flag label.</p>
		<p>6. The flexible cord must be Type HVCTF 3-conductor, 1.25 mm² conductor size. Power cord set fittings (appliance coupler, cable, and wall plug) must bear the BSMI certification mark.</p>
		<p>7. For 127 V ac, the flexible cord must be Type SVT or SJT 3-conductor, 18 AWG, with plug NEMA 5-15P (15 A, 125 V ac), with UL and CSA or C-UL marks. For 240 V ac, the flexible cord must be Type H05VV-F 3-conductor, 0.75 mm² or 1.00 mm² conductor size, with plug BS 1363/A with BSI or ASTA marks.</p>

12 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 light 10
- AC adapter, spare part numbers 17, 19
- action keys 6
- Advanced System Diagnostics
 - using for Ubuntu Linux computer models 60
- antenna
 - location 4
 - removal 47
 - spare part number 17, 20, 47
- Antenna Kit, spare part number 17, 20, 47
- audio, product description 2
- audio-in jack 9
- audio-out jack 9
- audio/USB board
 - removal 37
 - spare part number 15, 20, 37

B

- backups
 - for Ubuntu Linux computer models 68
 - personal information for Ubuntu Linux computer models 69
- battery
 - removal 33
 - spare part number 15, 19, 33
- BIOS
 - determining version for Ubuntu Linux computer models 59
 - downloading an update for Ubuntu Linux computer models 59
 - updating for Ubuntu Linux computer models 59
- bottom components 11
- bottom cover, spare part number 16, 21
- buttons
 - components 5
 - power 5
 - TouchPad 8

C

- cables, service considerations 23
- caps lock light 7
- chipset, product description 1
- components
 - bottom 11
 - buttons 5
 - display 4
 - keys 6
 - left side 9
 - lights 7
 - right side 10
 - speakers 5
 - TouchPad 8
- computer
 - major components 13
 - specifications 61
- connectors, service considerations 23

D

- default settings, restoring for Ubuntu Linux computer models 58
- display assembly
 - removal 40
 - spare part numbers 16
- display back cover, spare part number 17, 20
- display bezel
 - removal 42
 - spare part number 16, 20, 43
- Display Hinge Kit, spare part number 17, 20, 46
- display panel
 - product description 1
 - removal 44
 - spare part number 17, 20, 45
- display panel cable
 - removal 46
 - spare part number 16, 20, 47
- display, exterior components 4
- DVD-RW Drive, spare part number 17
- DVD±RW DL SuperMulti Drive, spare part number 19

E

- electrostatic discharge 24
- equipment guidelines 26
- esc key 6
- Ethernet, product description 2
- external media cards, product description 2

F

- factory settings, restoring for Ubuntu Linux computer models 58
- fan
 - removal 38
 - spare part number 14, 20, 38
- feet
 - locations 27
 - removal 28
 - spare part number 27
- fn key 6

G

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

H

- hard drive
 - product description 1
 - removal 34
 - spare part numbers 15, 19, 20, 34
- Hard Drive Hardware Kit, spare part number 20
- hard drive light 10
- HDMI port 10
- HDMI-to-VGA adapter, spare part number 17, 19
- headphone jack 9

heat sink
removal 50
spare part number 15, 20, 50

hinge
removal 45
spare part number 17, 20, 46

J

jacks
audio-in 9
audio-out 9
headphone 9
microphone 9

K

keyboard/top cover
removal 28
spare part numbers 14, 20, 21,
28

keys
action 6
components 6
esc 6
fn 6
Windows 6

L

left-side components 9
lights
AC adapter 10
caps lock 7
components 7
hard drive 10
mute 7
network jack/status 10
power 7, 10
RJ-45 jack/status 10
webcam 4

M

memory card reader 10
memory module
removal 52
spare part numbers 15, 19, 52
memory, product description 1
microphone
location 4
product description 2
microphone jack 9
model name 1
mute light 7

N

network jack/status lights 10

O

operating system, product
description 3
optical drive
product description 1
spare part number 17, 19

P

packaging guidelines 25
plastic parts, service
considerations 23
ports
HDMI 10
product description 2
USB 2.0 9
USB 3.0 10
power button 5
power button board
removal 32
spare part number 14, 20, 32
power connector 10
power connector cable
removal 53
spare part number 15, 20, 53
power cord
requirements for all countries
71
requirements for specific
countries and regions 72
set requirements 71
spare part numbers 19
power light 7, 10
power requirements, product
description 2
processor, product description 1
product description
audio 2
chipset 1
display panel 1
Ethernet 2
external media cards 2
graphics 1
hard drive 1
memory 1
microphone 2
operating system 3
optical drive 1

ports 2
power requirements 2
processors 1
product name 1
security 2
sensors 2
serviceability 3
video 2
wireless 2
product name 1

R

removal/replacement
procedures 27
restore
recovery for Ubuntu Linux
computer models 69
restore DVDs
for Ubuntu Linux computer
models 68
restore USB device
for Ubuntu Linux computer
models 68
right-side components 10
RJ-45 jack/status lights 10
Rubber Feet Kit, spare part number
17
Rubber Kit, spare part number 16,
20

S

Screw Kit, spare part number 17, 20
security cable slot 9
security, product description 2
sensors, product description 2
service considerations
cables 23
connectors 23
plastic parts 23
serviceability, product description 3
Setup Utility
changing the language for Ubuntu
Linux computer models 57
displaying system information for
Ubuntu Linux computer
models 58
exiting for Ubuntu Linux computer
models 58
navigating for Ubuntu Linux
computer models 57

- restoring default settings for
 - Ubuntu Linux computer models 58
- selecting for Ubuntu Linux computer models 57
- starting for Ubuntu Linux computer models 57
- Solid-state Drive Hardware Kit, spare part number 21
- solid-state drive, spare part numbers 18, 20, 21, 34
- speakers
 - components 5
 - location 5, 11
 - removal 39
 - spare part number 15, 20, 39
- system board
 - removal 48
 - spare part numbers 48
- system information, displaying for Ubuntu Linux computer models 58
- system recovery
 - for Ubuntu Linux computer models 68

- wireless antenna
 - location 4
 - removal 47
 - spare part number 17, 20, 47
- wireless, product description 2
- WLAN module
 - removal 36
 - spare part numbers 15, 19, 21, 36
- workstation guidelines 25

T

- tools required 23
- TouchPad
 - removal 31
 - spare part number 14, 20, 31
- TouchPad button 8
- TouchPad components 8
- TouchPad zone 8
- transporting guidelines 25

U

- USB 2.0 port 9
- USB 3.0 port 10

V

- vents 9, 11
- video, product description 2

W

- webcam light 4
- webcam, location 4
- webcam/microphone module
 - removal 43
 - spare part number 17, 20, 43
- Windows key 6