



**HP 17 Notebook
AMD models 17-p000 –17-p199**

Maintenance and Service Guide

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Product notice

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

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

Safety warning notice


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

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1 Product description

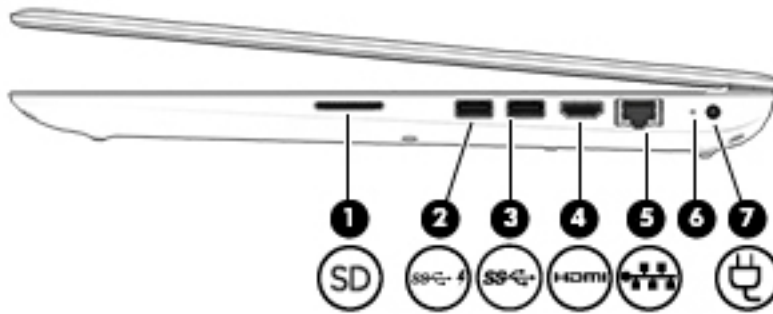
Category	Description
Product name	HP Notebook Models 17-p000–17-p099
Processors	<ul style="list-style-type: none">• AMD A10-7300 (1.9 GHz, up to 3.2, GHz, 2 MB L2), quad core 20 W, Max DDR3L-1600• AMD A8-7050 (2.2 GHz up to 3.0 GHz, 2 MB L2), dual core 15 W, Max DDR3L-1600• AMD A6-6310 (1.8 GHz up to 2.4 GHz, 2 MB L2), quad core 15 W, 1600 MHz DDR3L• AMD E1-6010 (1.35 GHz up to 1 MB L2), dual core 10 W, Max DDR3L-1333
Chipset	AMD A76M FCH AMD Integrated SOC FCH
Graphics	Internal graphics: AMD Radeon™ R6 Graphic AMD Radeon™ R5 Graphics AMD Radeon™ R4 Graphics AMD Radeon™ R2 Graphics Support HD Decode, DX11, and HDMI
Panel	16:9 Ultra Wide Aspect Ratio (17.3 in 43.9 cm), HD+WLED, SVA, BrightView, 1366×768 display, 6.0 mm; typical brightness: 220 nits Supports LVDS (co-layout with eDP1.2 PRS)
Memory	Two SODIMM slots - NON customer accessible / upgradeable DDR3L-1600 Dual Channel Support DDR3L-16009 Single Channel Support DDR3L-1333 Single Channel Support (DDR3L-1600 downgrade to DDR3L-1333) Supports up to 8 GB of system RAM in the following configurations: <ul style="list-style-type: none">• 2048-MB total system memory (2048×1)• 4096-MB total system memory (4096×1)• 6144-MB total system memory (4096×1) + (2048×1)• 8192-MB total system memory (8192×1)
Hard drives	Supports 2.5 in (6.35 cm) SATA hard drives in 9.5 mm (.37 in) and 7.0 mm (.28 in) thicknesses Single HDD configurations: <ul style="list-style-type: none">• 500-GB, 5400-rpm, 9.5-mm or 7.0-mm• 750-GB, 5400-rpm, 9.5-mm• 1-TB, 5400-rpm, 9.5-mm
Optical drive	Fixed, serial SATA, 9.5-mm tray load





Category	Description
	DVD+/-RW Double-Layer SuperMulti Supports zero power optical drive Supports M-disc
Audio/video	HP Webcam VGA camera (USB 2.0 fixed, no tilt, with activity LED, 640 x 480 by 24 frames per second) Dual speakers Enable HP Noise Cancellation DTS™ Sound
Ethernet	Integrated 10/100 network interface card (NIC)
Wireless	Compatible with Miracast-certified devices Integrated Wireless options with single antenna (HMC/PCIe): <ul style="list-style-type: none"> • Realtek RTL8723BE 802.11b/g/n 1x1 Wi-Fi + BT4.0 Combo Adapter • Broadcom BCM43142 802.11 b/g/n 1x1 Wi-Fi + BT4.0 M.2 Combo Adapter • Realtek RTL8188EE 802.11b/g/n 1x1 Wi-Fi Adapter • Qualcomm Atheros AR9485 802.11 bgn 1x1 Wi-Fi Adapter
Internal card expansion	One half-size mini-card slot for WLAN
External media card	HP Multi-Format Digital Media Card Reader Support SD/SDHC/SDXC Push-Push Insertion/Removal
Ports	HDMI version 1.4 supporting up to 1920 × 1080 @ 60Hz Hot Plug/unplug and auto detect for correct output to wide-aspect vs. standard aspect video RJ-45 USB 3.0 (1 on left side) USB 2.0 (1 on left side, one on right side) AC Smart Pin adapter plug (4.5 mm barrel) Headphone/Microphone combo jack
Keyboard/pointing devices	Full size standard textured island-style keyboard with numeric keypad ClickPad with multi-touch gestures, with image sensor Taps enabled by default Support Modern Trackpad Gestures
Power requirements	Battery: 4-cell, 41-Whr, 2.8Ah, li-ion battery Battery life enhancement 4 hr AMD for use with ULV APU (BGA, A10/A8) 5.75 hr AMD for use with APU (BGA, A8 A6/E1) Supports fast charge AC adapters:

Category	Description
	AC Adapter 45-W Smart nPFC, 3 pin, RC 4.5mm connector (models with UMA graphics only) 1 meter power cord
Security	Security Lock
Operating system	Preinstalled: <ul style="list-style-type: none">• Windows 10• Windows 8.1• FreeDos 2.0
Serviceability	End-user replaceable parts: <ul style="list-style-type: none">• AC adapter• Battery• Optical drive

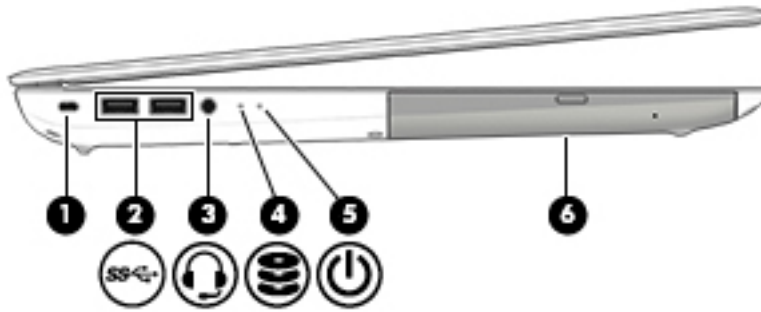
2 External component identification










Right side



Component	Description
(1)  Power light	<ul style="list-style-type: none"> On: The computer is on. Blinking: The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other unneeded components. Off: The computer is off or in Hibernation. Hibernation is a power-saving state that uses the least amount of power.
(2)  Hard drive light	<ul style="list-style-type: none"> Blinking white: The hard drive is being accessed.
(3)  Audio-out (headphone)/Audio-in (microphone) jack	<p>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.</p> <p>WARNING! To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, refer to the <i>Regulatory, Safety, and Environmental Notices</i>.</p> <p>NOTE: When a device is connected to the jack, the computer speakers are disabled.</p>
(4)  USB 2.0 port	<p>Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub.</p>
(5) Optical drive (select products only)	<p>Depending on your computer model, reads an optical disc or reads and writes to an optical disc.</p>
(6) Optical drive eject button (select products only)	<p>Releases the optical drive disc tray.</p>

Left side



Component	Description
(1) 	Power connector Connects an AC adapter.
(2) 	AC adapter/battery light <ul style="list-style-type: none"> White: The AC adapter is connected and the battery is fully charged. Amber: The AC adapter is connected and the battery is charging. Off: The battery is not charging.
(3) 	Security cable slot Attaches an optional security cable to the computer. NOTE: The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.
(4) 	RJ-45 (network) jack/status lights Connects a network cable. <ul style="list-style-type: none"> White: The network is connected. Amber: Activity is occurring on the network.
(5) 	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.
(6) 	HDMI port Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component, or a high-speed High-Definition Multimedia Interface (HDMI) device.
(7) 	USB 3.0 port Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub.
(8) 	USB 2.0 port Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub.
(9) 	Memory card reader Reads optional memory cards that enable you to store, manage, share, or access information. To insert a card: <ol style="list-style-type: none"> Hold the card label-side up, with connectors facing the computer.

Component	Description
	<p>2. Insert the card into the memory card reader, and then press in on the card until it is firmly seated.</p> <p>To remove a card:</p> <p>▲ Press in on the card, and then remove it from the memory card reader.</p>

Display



Component	Description
(1) Internal display switch	<p>Turns off the display and initiates Sleep if the display is closed while the power is on.</p> <p>NOTE: The internal display switch is not visible from the outside of the computer.</p>
(2) WLAN antennas*	Send and receive wireless signals to communicate with wireless local area networks (WLANs).
(3) Webcam light	On: The webcam is in use.
(4) Webcam	Records video and captures photographs. Some products allow you to video conference and chat online using streaming video.
(5) Internal microphone	Records sound.

*The antennas are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennas free from obstructions.

For wireless regulatory notices, see the section of the *Regulatory, Safety, and Environmental Notices* that applies to your country or region.

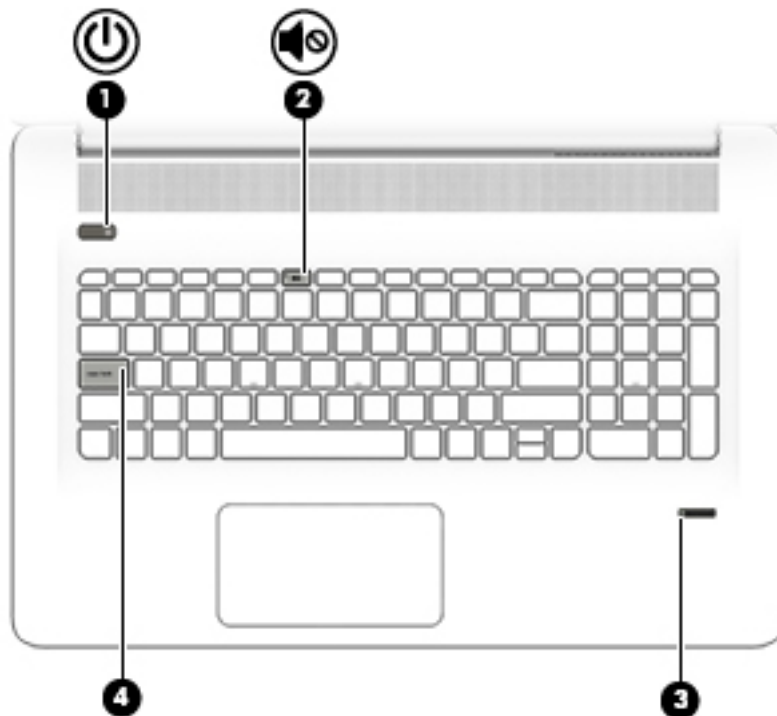
Top


TouchPad



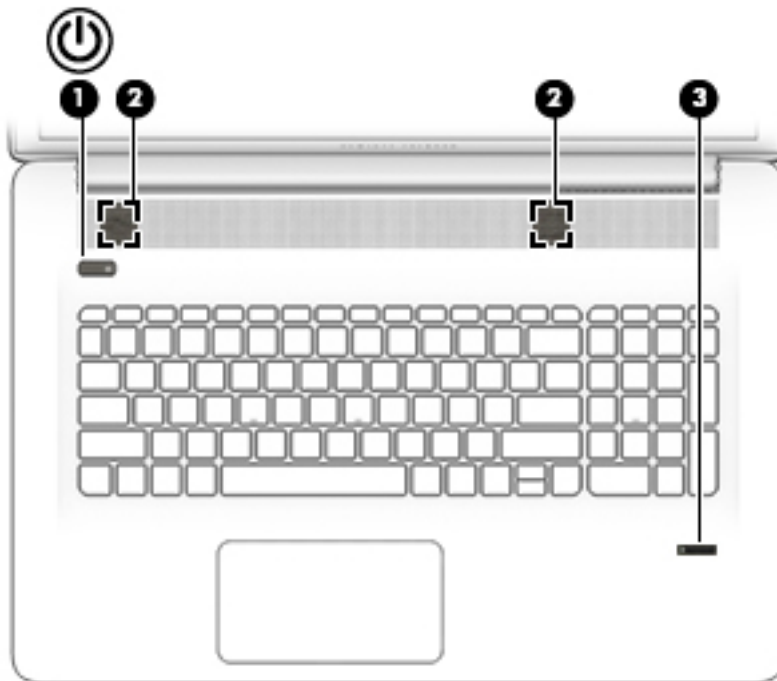
Component	Description
(1)	TouchPad zone Reads your finger gestures to move the pointer or activate items on the screen.
(2)	Left TouchPad button Functions like the left button on an external mouse.
(3)	Right TouchPad button Functions like the right button on an external mouse.


Lights



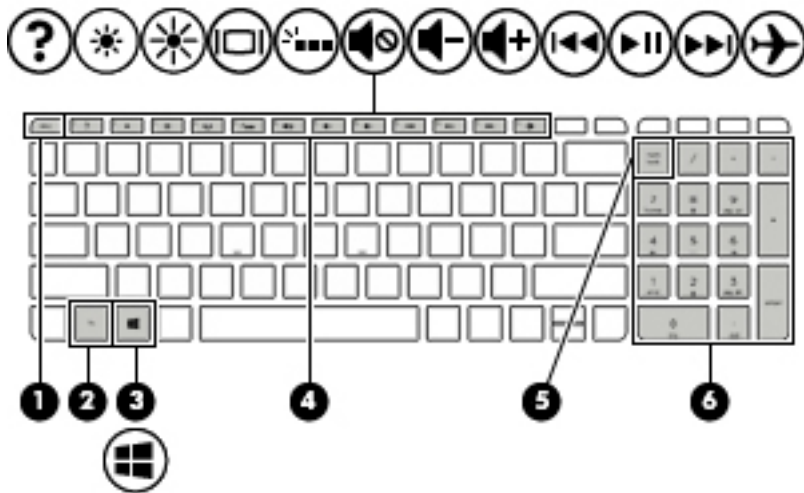
Component	Description
(1) Caps lock light	On: Caps lock is on, which switches the key input to all capital letters.
(2)  Mute light	<ul style="list-style-type: none"> • Amber: Computer sound is off. • Off: Computer sound is on.


Buttons and speakers (select products only)



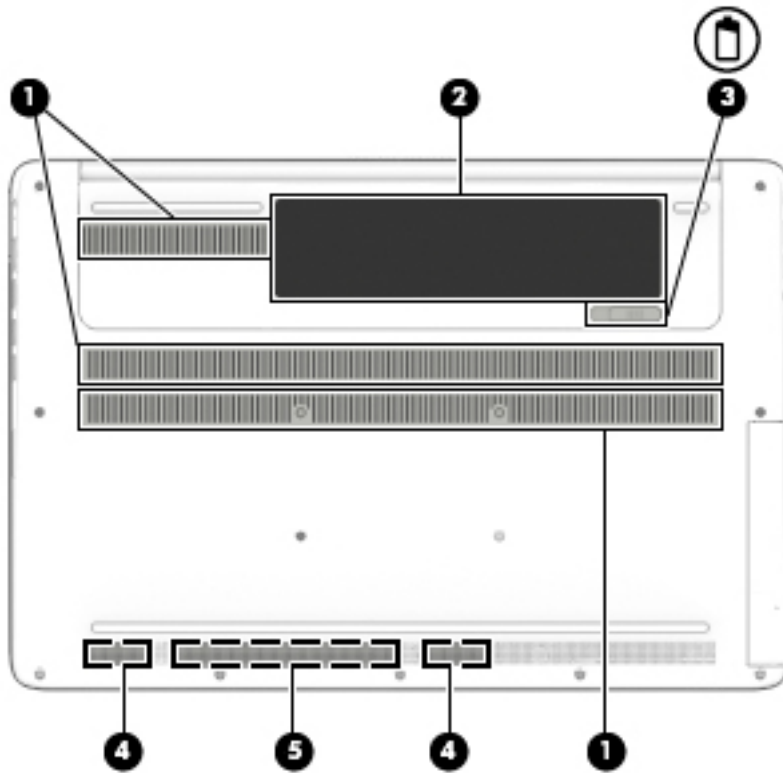
Component	Description
(1)  Power button	<ul style="list-style-type: none"> • When the computer is off, press the button to turn on the computer. • When the computer is on, press the button briefly to initiate Sleep. • When the computer is in the Sleep state, press the button briefly to exit Sleep. • When the computer is in Hibernation, press the button briefly to exit Hibernation. <p>CAUTION: Pressing and holding down the power button results 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>
(2) Speakers	Produce sound.




Keys



Component	Description
(1) esc key	Displays system information when pressed in combination with the fn key.
(2) fn key	Executes frequently used system functions when pressed in combination with the esc key, action keys, or the spacebar .
(3)  Windows key	Opens the Start menu. NOTE: Pressing the Windows key again will close the Start menu.
(4) Action keys	Execute frequently used system functions. NOTE: On select products, the f5 action key turns the backlight keyboard feature off or on.
(5) num lock key	Alternates between the navigational and numeric functions on the integrated numeric keypad.
(6) Integrated numeric keypad	When num lock is on, the keypad can be used like an external numeric keypad.


Bottom

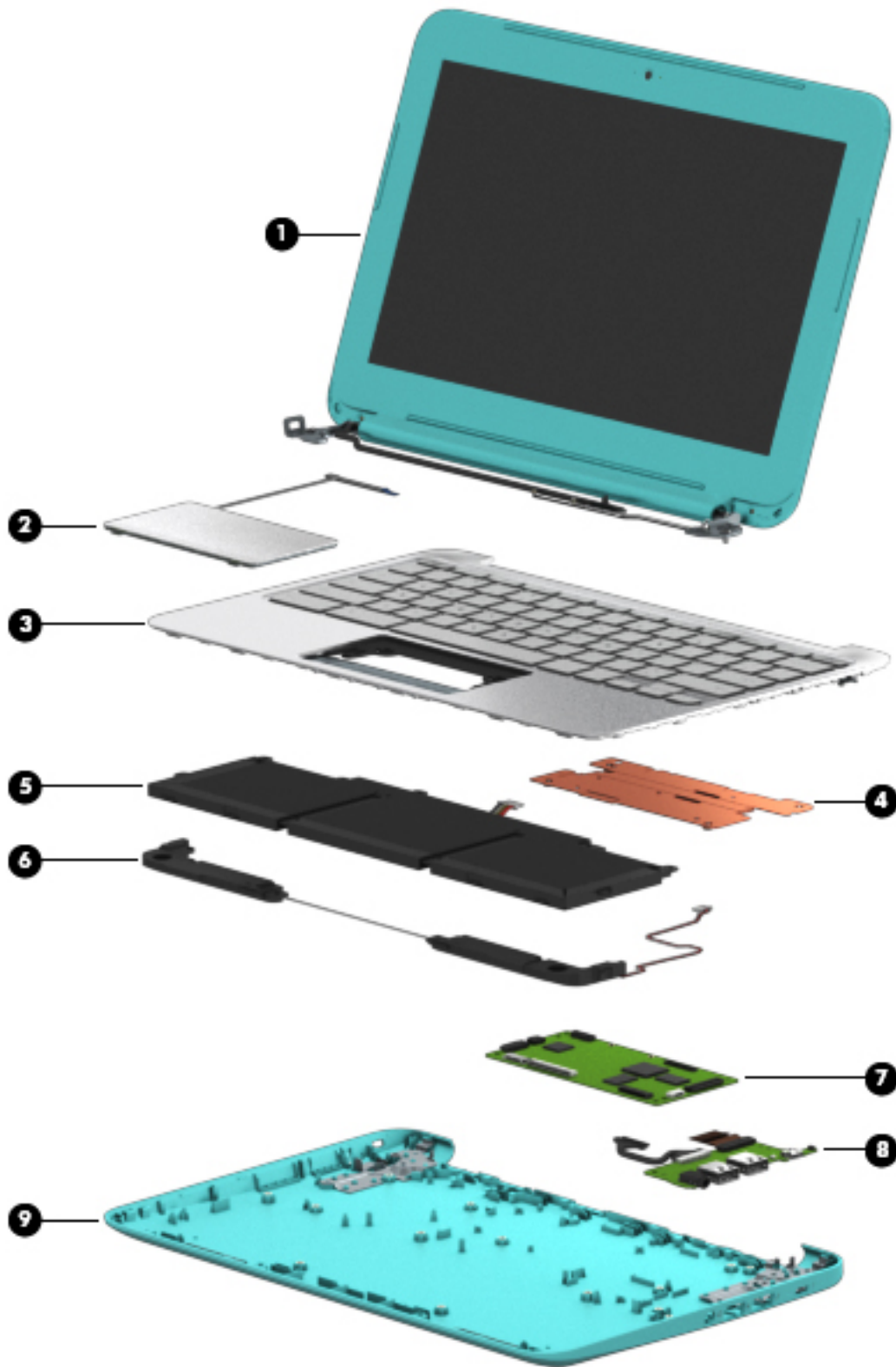


Component	Description
(1)  	Battery lock Locks the battery in the battery bay.
(2)	Battery bay Holds the battery.
(3)	Vents (6) Enable airflow to cool internal components. NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(4) 	Battery release latch Releases the battery.

3 Illustrated parts catalog

Computer major components

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

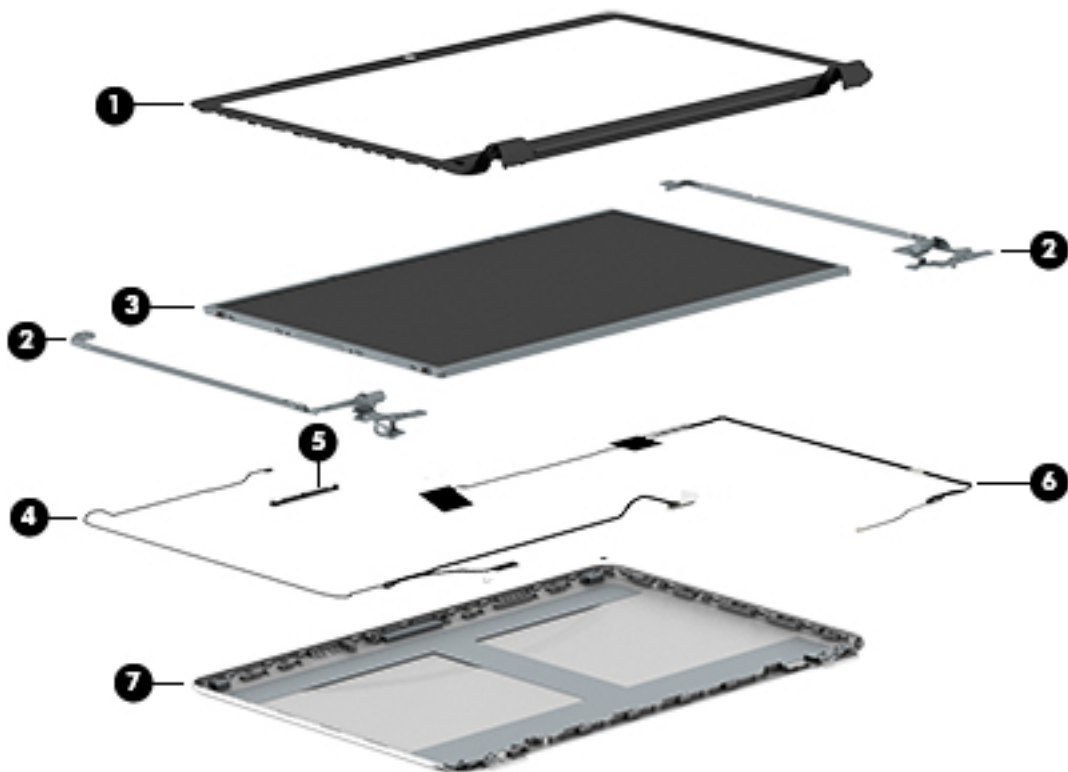


Item	Component	Spare part number
(1)	Display assembly [17.3 in 43.9 cm] HD+ non-touch screen	

Item	Component	Spare part number
	NOTE: For display assembly spare part information, see Display assembly subcomponents on page 17 .	
(2)	Top cover/keyboard (the keyboard and top cover are spared together)	
	For use in Belgium	809983-A41
	For use in the Czech Republic and Slovakia	809983-FL1
	For use in Denmark, Finland, and Norway	809983-DH1
	For use in French Canada	809983-DB1
	For use in France	809983-051
	For use in Germany	809983-041
	For use in Greece	809983-151
	For use in Hungary	809983-211
	For use in the Netherlands	809983-B31
	For use in Portugal	809983-131
	For use in Russia	809983-251
	For use in Saudi Arabia	809983-171
	For use in Spain	809983-071
	For use in Slovenia	809983-BA1
	For use in Switzerland	809983-BG1
	For use in the United Kingdom	809983-031
	For use in the United States	809983-001
(3)	Power button board (includes cable)	812177-001
(4)	Touchpad (includes bracket)	810602-001
(5)	WLAN module:	
	Realtek RTL8188EE 802.11b/g/n 1x1 Wi-Fi Adapter	709848-005
	Realtek RTL8723BE 802.11b/g/n 1x1 Wi-Fi + BT4.0 Combo Adapter	753077-005
(6)	Battery board	763710-001
(7)	USB board (includes cable)	767120-001
(8)	System board (includes replacement thermal materials):	
	All system boards use the following part numbers:	
	xxxxxx-001: Without the Windows operating system	
	xxxxxx-501: Windows 8.1 Standard	
	xxxxxx-601: Windows 10	
	AMD A10-7300 A76M (1.9 GHz, up to 3.2 GHz, 2 MB L2), quad core 20 W, Max DDR3L-1600	809985-xx1
	AMD A8-7050 (2.2 GHz up to 3.0 GHz, 2 MB L2), dual core 15 W, Max DDR3L-1600	809986-xx1
	AMD A6-6310 (1.8 GHz up to 2.4 GHz, 2 MB L2), quad core 15 W, 1600 MHz DDR3L	809987-xx1

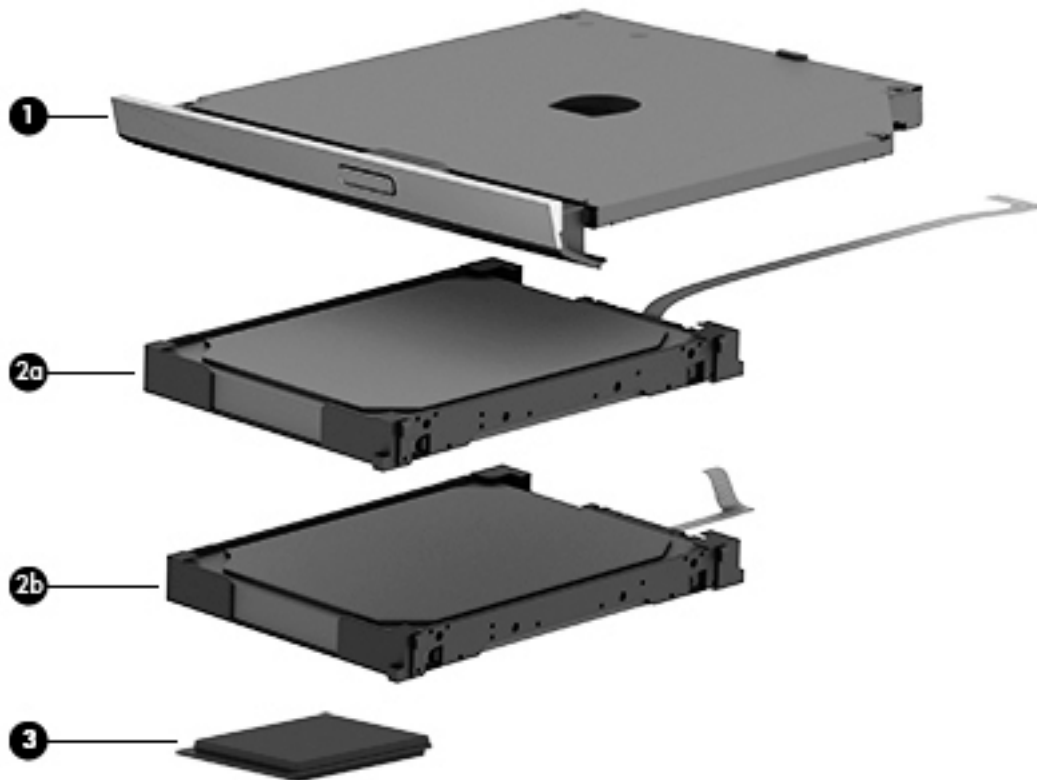
Item	Component	Spare part number
	AMD E1-6010 (1.35 GHz up to 1 MB L2), dual core 10 W, Max DDR3L-1333	809988-xx1
(9)	Power connector (includes cable)	763699-001
(10)	Memory module (PC3L, 12800, DDR3L-160):	
	8 GB	693374-005
	4 GB	691740-005
	2 GB	691739-005
(11)	Fan	765788-001
(12)	RTC battery	697917-001
(13)	Heat sink assembly (includes replacement thermal materials):	
	For use only on computer models equipped with AMD processors and UMA graphics	764080-001
(14)	Display Cable	765785-001
(15)	Speaker kit (includes left and right speakers and cable)	763717-001
(16)	Hard drive (does not include bracket):	
	For hard drive spare part details, see Mass storage devices on page 18 .	
(17)	Battery (4-cell, 41-Whr, 2.8-Ah Li-ion)	756743-001
(18)	Optical drive, SATA DVD+/-RW DL SuperMulti (includes optical drive hardware kit with optical drive bezel and bracket):	
	For optical drive spare part details, see Mass storage devices on page 18 .	
(19)	Bottom cover	809981-001
(20)	Base enclosure hinge caps (left and right)	765789-001

Display assembly subcomponents



Item	Component	Spare part number
(1)	Display bezel (includes screw covers)	809982-001
(2)	Hinges (left and right, includes screw covers)	763706-001
(3)	Raw display panel (16:9 Ultra Wide Aspect Ratio [17.3 in, 43.9 cm]; includes screw covers)	810319-001
(4)	Display cable HD+ (includes screw covers)	765785-001
(5)	Webcam/microphone module (with cables)	809989-001
(6)	Antennas (includes wireless antenna cables and transceivers; includes screw covers)	763691-001
(7)	Display enclosure:	809980-001

Mass storage devices



Item	Component	Spare part number
(1)	Hard drive (does not include the hard drive rubber bracket, hard drive connector cable, or screws)	
	500 GB 5400 rpm 7 mm/ 9.5 mm SATA 2.5 in	778186-005
	750 GB, 5400 rpm, 9.5 mm SATA 2.5 in	778190-005
	1 TB, 5400 rpm 9.5 mm SATA 2.5 in	778192-005
	Hard Drive Hardware Kit	773501-001
(2)	Optical drive, SATA DVD+/-RW DL SuperMulti (includes optical drive hardware kit with optical drive bezel and bracket):	809984-001
	Optical drive, External DVDRW Drive (includes optical drive hardware kit with optical drive bezel and bracket):	747080-001

Miscellaneous parts

Component	Spare part number
HP Smart AC adapter:	
45-W non-PFC, non-slim HP Smart AC adapter (for use in all countries and regions except for the People's Republic of China and India)	741727-001
Power cord (3-pin, black, 1.0-m):	
For use in Denmark	755530-081

Component	Spare part number
For use in Europe, the Middle East, and Africa	755530-021
For use in North America	755530-001
For use in Switzerland	755530-111
For use in the United Kingdom and Singapore	755530-031
Rubber Kit (includes front and rear feet)	763714-001
Screw Kit	765790-001
HDMI to VGA adapter	701943-001

4 Removal and replacement procedures preliminary requirements


Tools required

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


- Flat-bladed screwdriver
- Magnetic screwdriver
- Phillips P0 and P1 screwdrivers

Service considerations


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

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

Plastic parts

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

Cables and connectors

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

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

Drive handling

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

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

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

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

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

Avoid dropping drives from any height onto any surface.

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

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

Avoid exposing a drive to temperature extremes or liquids.

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

Grounding guidelines

Electrostatic discharge damage

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

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

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

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

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

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

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

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

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

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

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

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

Workstation guidelines

Follow these grounding workstation guidelines:

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

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

Equipment guidelines

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

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


The following grounding equipment is recommended to prevent electrostatic damage:

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


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


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


5 Removal and replacement procedures for Customer Self-Repair parts

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

Component replacement procedures

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

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

 **NOTE:** Details about your computer, including model, serial number, product key, and length of warranty, are on the service tag at the bottom of your computer. See [Bottom on page 12](#) for details.

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

There may be as many as five screws that must be removed, replaced, and/or loosened when servicing Customer Self-Repair parts. Make special note of each screw size and location during removal and replacement.

Battery

Description	Spare part number
4-cell, 41 WHr 2.8 AH Li-ion battery	756743-001

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.

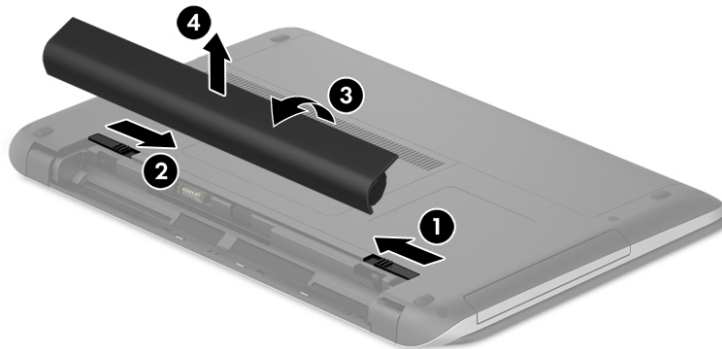
Remove the battery:

1. Turn the computer upside down on a flat surface.
2. With the battery bay toward you, slide the battery lock latch **(1)** to unlock the battery and then slide the battery release latch **(2)** to release the battery.



NOTE: The battery release latch automatically returns to its original position.

3. Pivot the battery **(3)** upward and then remove it from the computer **(4)**.



Reverse this procedure to install the battery.

Optical drive



NOTE: The optical drive spare part kit includes the optical drive connector board and cable. The optical drive connector board and cable are removed when removing the system board and not part of the customer replacement procedure of the optical drive.

Description	Spare part number
Optical drive, DVD+/-RW DL SuperMulti (includes optical drive hardware kit with optical drive bezel and bracket):	809984-001
Optical drive, External DVDRW Drive (includes optical drive hardware kit with optical drive bezel and bracket):	747080-001

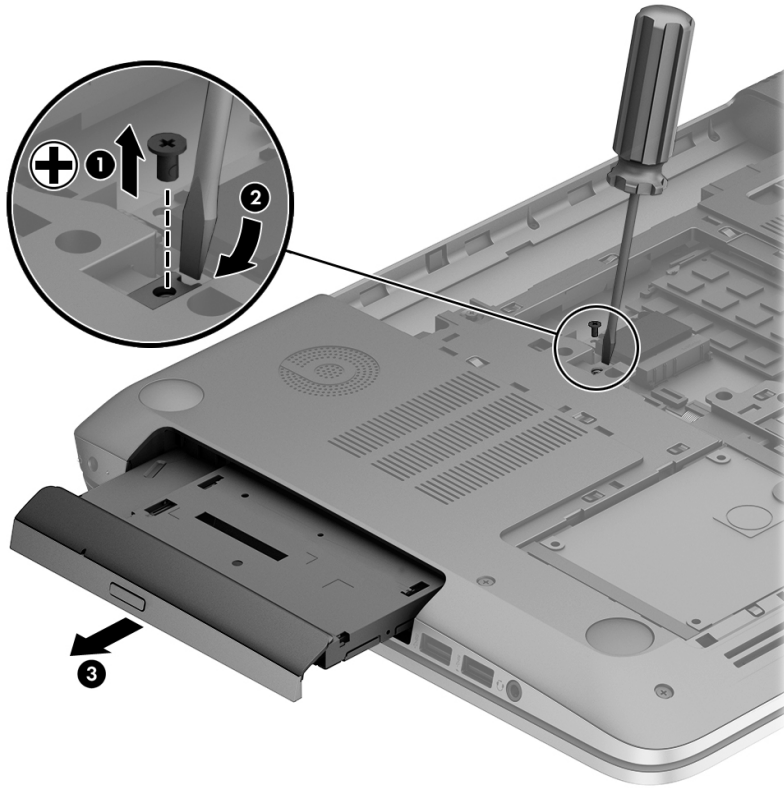
Before removing the optical drive, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 26](#)).


Remove the optical drive:

1. Remove the screw **(1)** that secures the optical drive to the computer.

2. Use a flat tool to press on the optical drive bracket tab **(2)** to release the optical drive.





3. Remove the optical drive from the computer.

 **NOTE:** The optical drive bracket is included with the optical drive.


Reverse this procedure to reassemble and install the optical drive.

6 Removal and replacement procedures for Authorized Service Provider parts

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

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

Component replacement procedures

 **NOTE:** Details about your computer, including model, serial number, product key, and length of warranty, are on the service tag at the bottom of your computer. See [Bottom on page 12](#) for details.

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

There are as many as 83 screws that must be removed, replaced, and/or loosened when servicing Authorized Service Provider only parts. Make special note of each screw size and location during removal and replacement.

Base enclosure

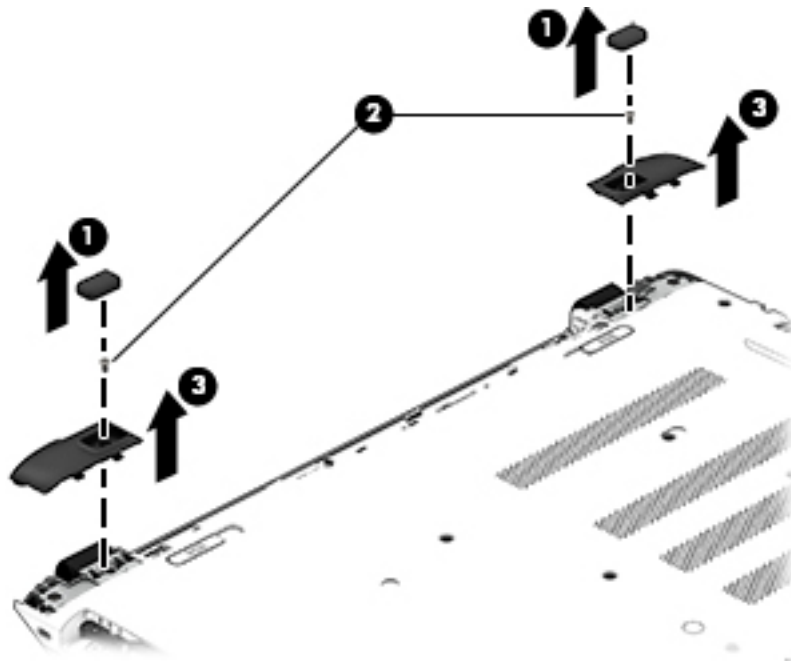
Description	Spare part number
Top cover with keyboard:	
With full size textured island-style Keyboard. TouchPad and numeric keypad black for use in the United States	809983-001
With full size textured island-style Keyboard and numeric keypad black for use in the United Kingdom	809983-031
With full size textured island-style Keyboard and numeric keypad black for use in Germany	809983-041
With full size textured island-style Keyboard and numeric keypad black for use in France	809983-051
With full size textured island-style Keyboard and numeric keypad black for use in Spain	809983-071
With full size textured island-style Keyboard and numeric keypad black for use in Portugal	809983-131
With full size textured island-style Keyboard and numeric keypad black for use in Greece	809983-151
With full size textured island-style Keyboard and numeric keypad black for use in Saudi Arabia	809983-171
With full size textured island-style Keyboard and numeric keypad black for use in Hungary	809983-211
With full size textured island-style Keyboard and numeric keypad black for use in Russia	809983-251
With full size textured island-style Keyboard and numeric keypad black for use in Europe	809983-A41
With full size textured island-style Keyboard and numeric keypad black for use in the Netherlands	809983-B31
With full size textured island-style Keyboard and numeric keypad black for use in the Adriatics	809983-BA1
With full size textured island-style Keyboard and numeric keypad black for use in Switzerland	809983-BG1
With full size textured island-style Keyboard and numeric keypad black Canada	809983-DB1
With full size textured island-style Keyboard and numeric keypad black for use in Denmark, Finland, and Norway	809983-DH1
With full size textured island-style Keyboard and numeric keypad black for use in the Czech Republic and Slovakia	809983-FL1
Base enclosure	809981-001
Base enclosure caps	765789-001

Before disassembling the computer, follow these steps:

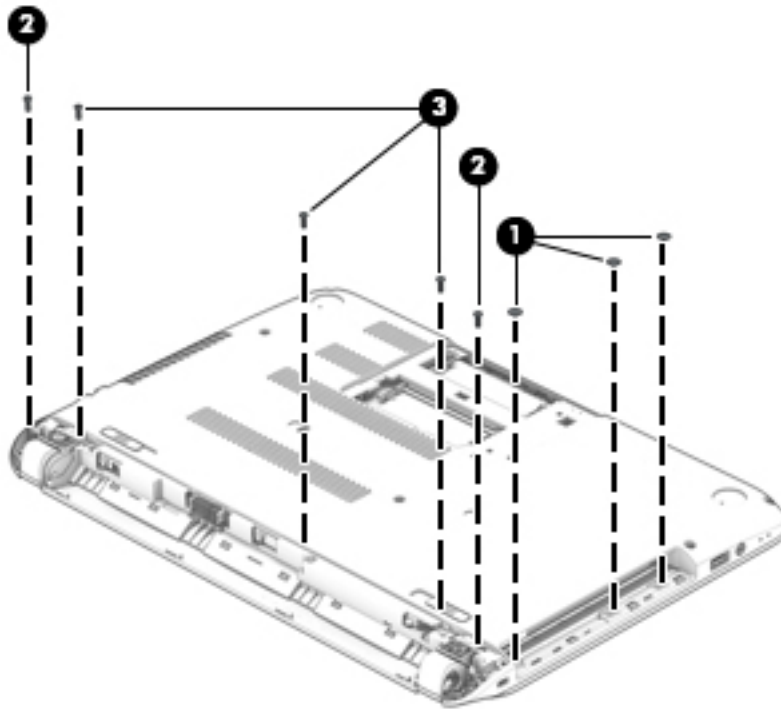
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 26](#)).
5. Remove the optical drive (see [Optical drive on page 27](#)).

Remove the base enclosure:


1. Turn the computer face down, and remove the rubber feet **(1)**, the two screws **(2)** and lift the end caps **(3)**.

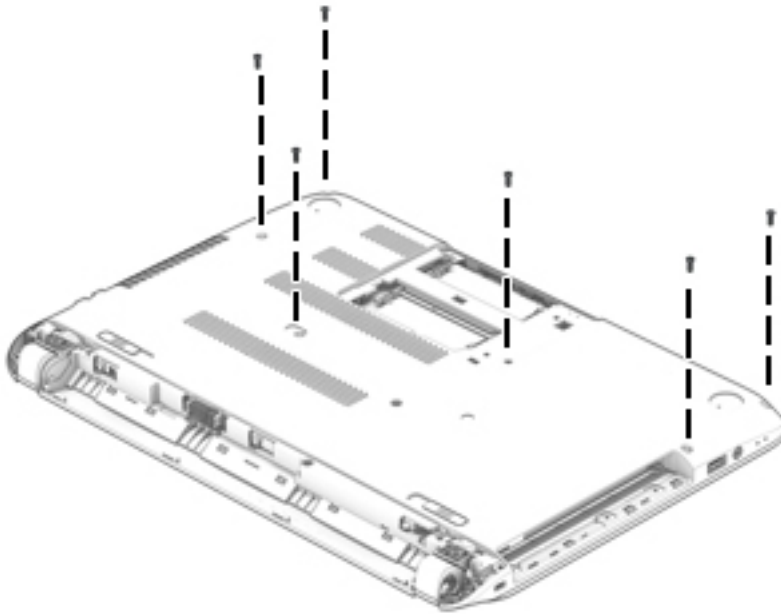


2. Remove the ten Phillips screws.

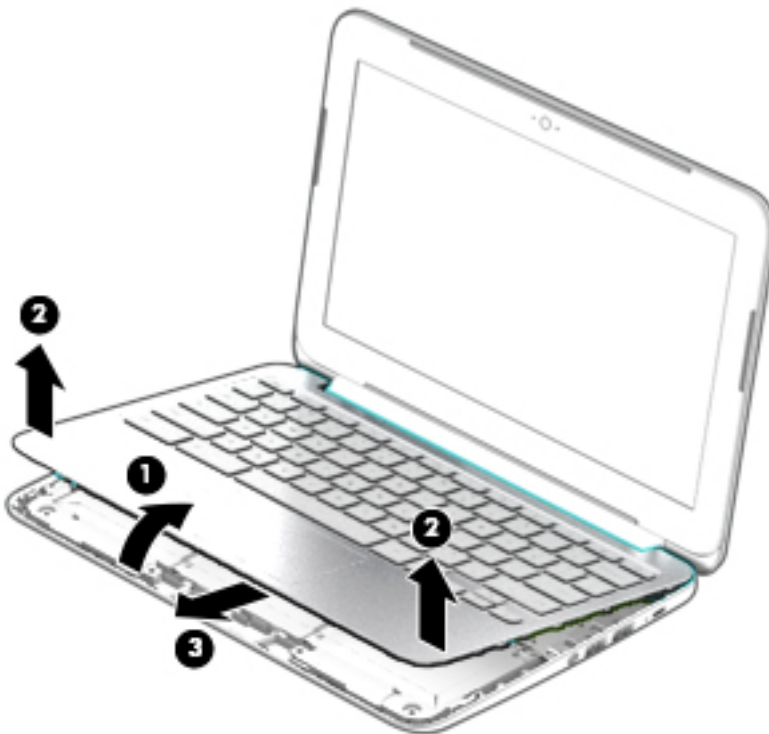



3. Remove five screws **(1)** around the battery area, three broadhead screws **(2)** in the optical drive bay and one screw **(3)** near the display hinge.

 **NOTE:** Some models may have two screws in the optical drive bay **(2)**.



4. Turn the computer right side up and carefully remove the top cover.

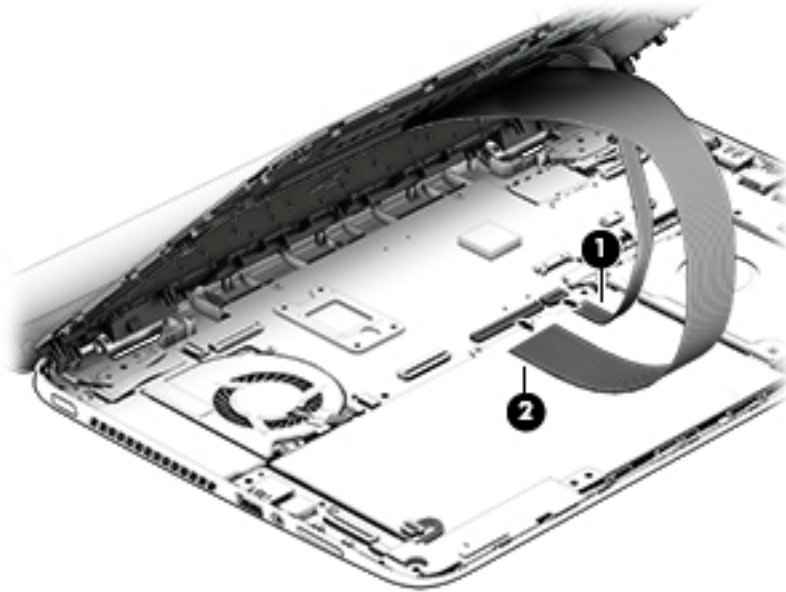


 **NOTE:** Use a thin, non-conductive tool to lift the top cover.

5. Carefully disconnect the following cables:

- Power button cable **(1)**
- Keyboard cable **(2)**
- TouchPad cable **(3)**

Lift the top cover **(4)** to remove it from the computer.



Reverse this procedure to install the top cover and base enclosure.

Display panel

Component	Spare part number
Display bezel (includes screw covers)	809982-001
Hinges (left and right, includes screw covers)	763706-001
Raw display panel (16:9 Ultra Wide Aspect Ratio [43.9-cm 17.3-in]; includes screw covers)	810319-001
Antennas (includes wireless antenna cables and transceivers; includes screw covers)	763691-001
Webcam/microphone module	809989-001
Display cable SXGA (includes screw covers)	765785-001
Display enclosure:	809980-001

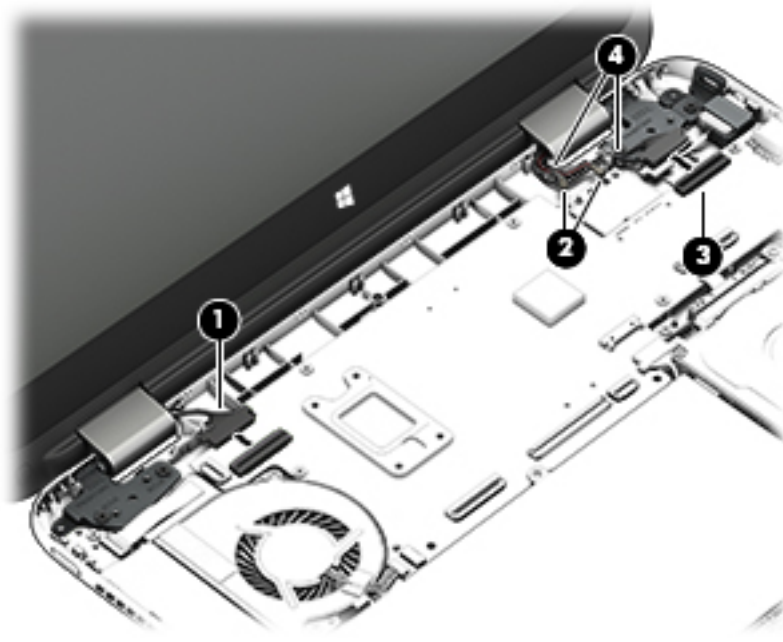
Before removing the display panel, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 26](#)).
5. Remove the optical drive (see [Optical drive on page 27](#)).
6. Remove the top cover from the base enclosure (see [Base enclosure on page 30](#)).


Remove the display panel:


1. Open the computer.
2. Disengage the display cable **(1)** and disconnect the display connector **(2)** on the left side base of the display panel.

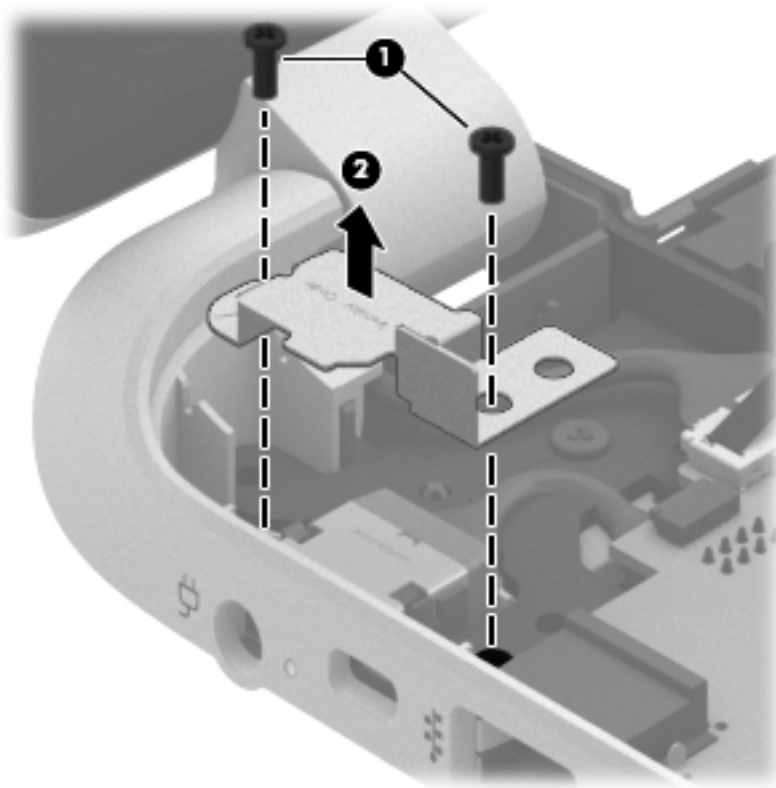
3. On the right side, disconnect the WLAN cable (3) and carefully remove the cable from the retaining tabs (4).




4. Remove the power connector cover by removing the two Phillips screws (1) and lifting the cover (2).

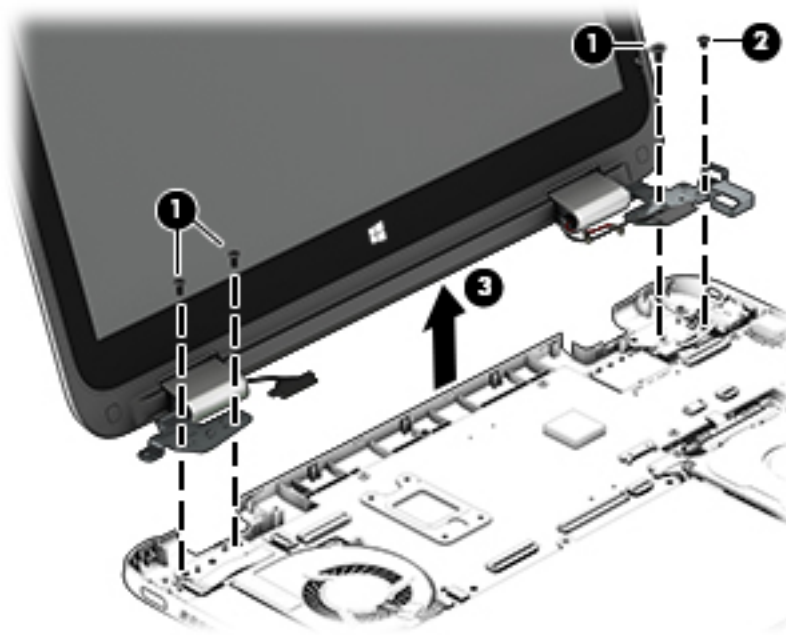
 **NOTE:** The power connector cover has two screws, however, the screw on the left is removed during the base enclosure and top cover removal process. Removing the cover is required for the display panel removal.

 **NOTE:** You will remove the power connector after you have removed the system board. This procedure is to remove the power connector cover.

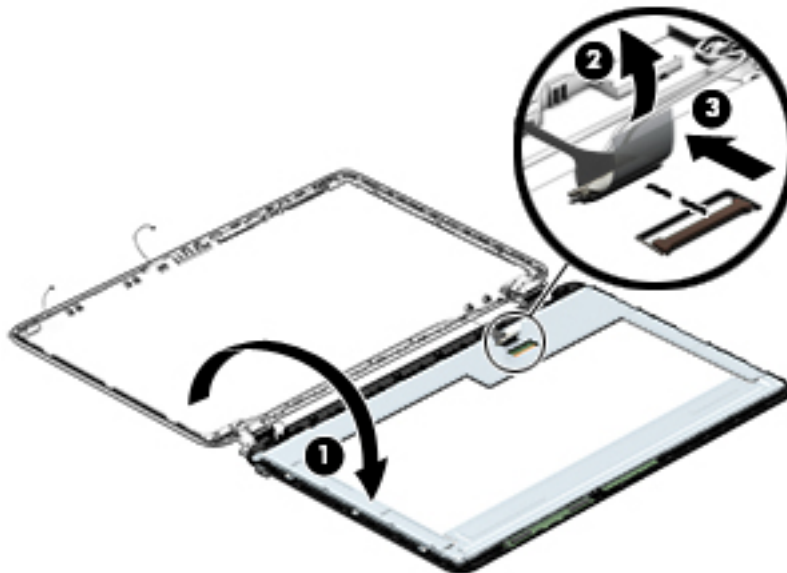


5. Remove the six Phillips screws **(1)** on the left and one broadhead screw **(2)** on the right side base of the display panel. Lift the panel up **(3)**.


 **NOTE:** Support the display panel as you are removing the screws.

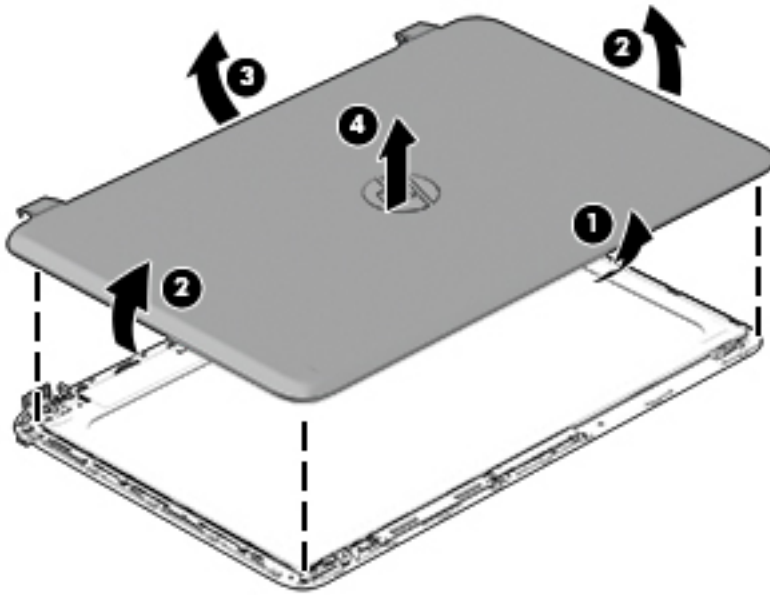


6. Open the panel cover **(1)**, swivel the display panel hinges **(2)** on both sides and then tilt up the display panel hinge **(3)** to release it.

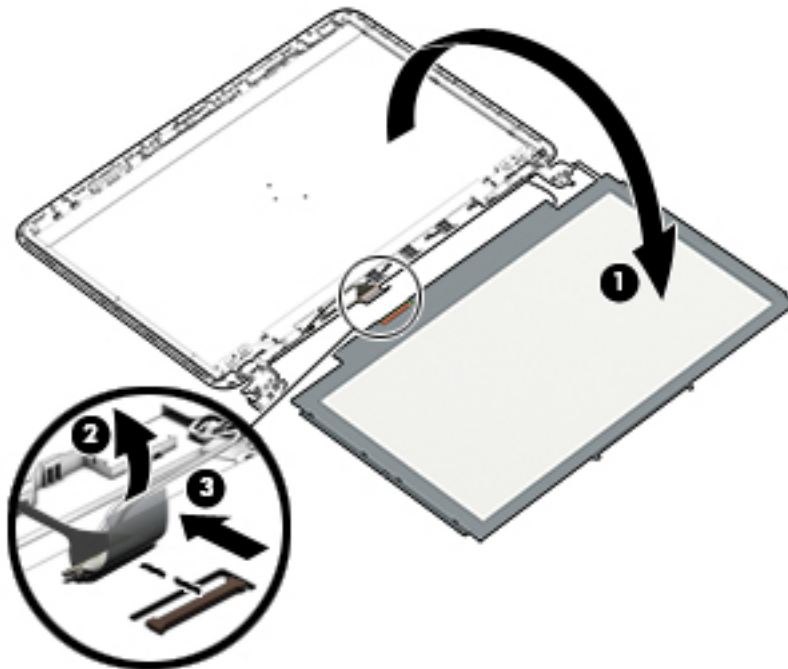


7. Loosen the edges of the back cover **(1)**, **(2)**, and **(3)** from all four sides of the display bezel and lift the display panel **(4)**.

 **NOTE:** Use a sharp probe to pop the covers out to avoid scratching the bezel.

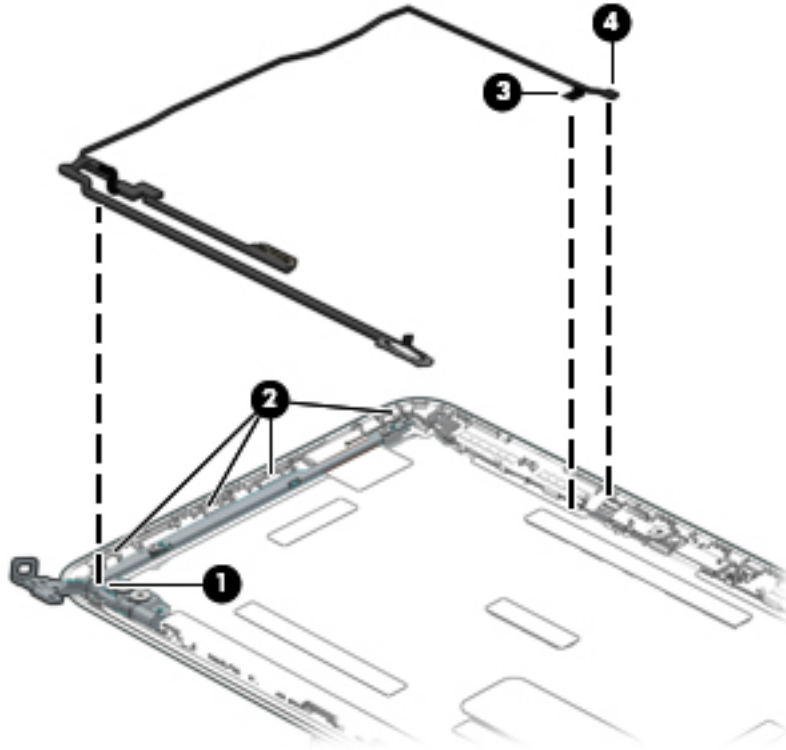


8. To remove the panel, remove the four Phillips screws **(1)** and any adhesive that secures the display panel to the back cover and lift the display panel **(2)** carefully.

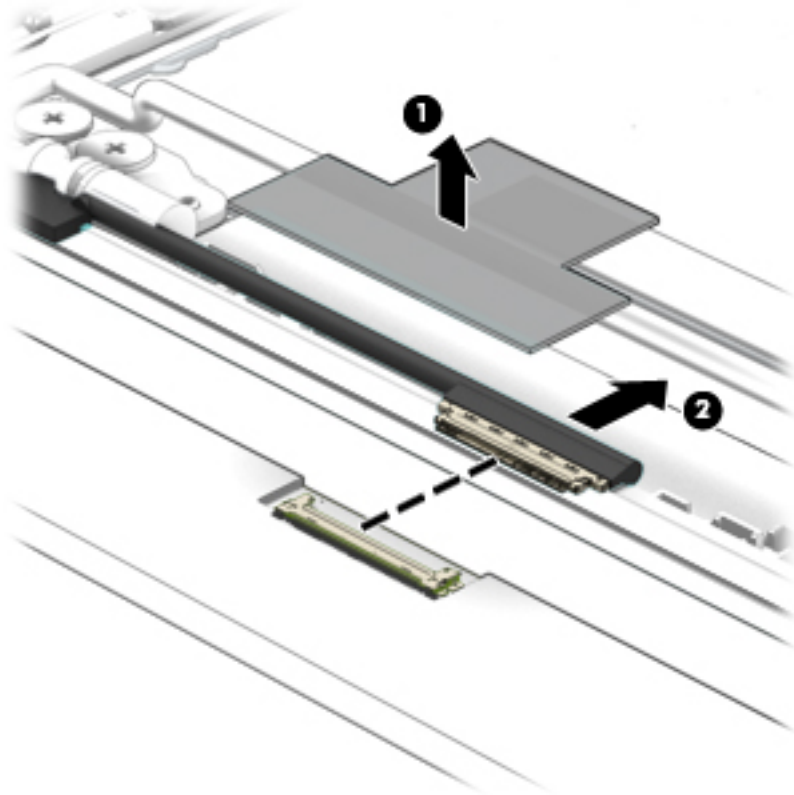


9. If it is necessary to remove the display panel cable or access the webcam and microphone, follow these steps. With the display bezel upside down, disconnect the webcam/microphone connectors **(1)** and from the routing channel built into the back cover.

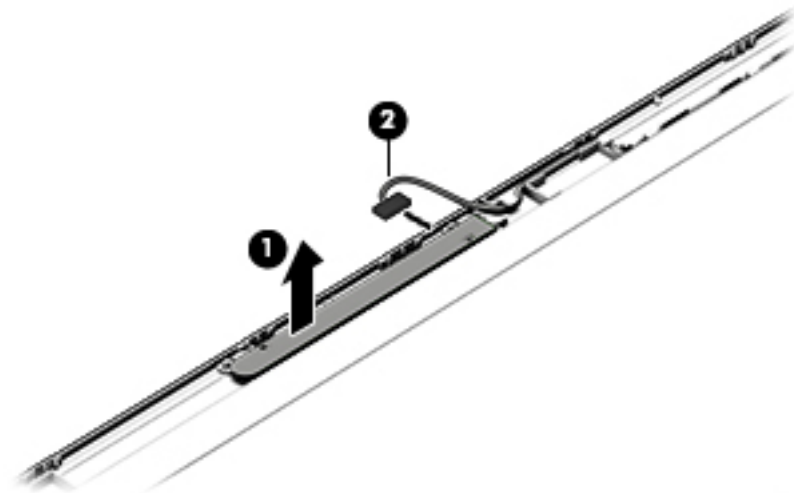
Carefully release the cable from the channel guides, the guides in the display hinge, and remove the display panel cable **(2)**. Lift the cable to remove it.



10. On select models, removing the panel also requires disengaging the panel from the back cover latch. To disconnect the display panel, carefully rotate the display panel **(1)** to open it. Push upward on the connection latch **(2)** panel and then disengage the panel from the back cover **(3)**.

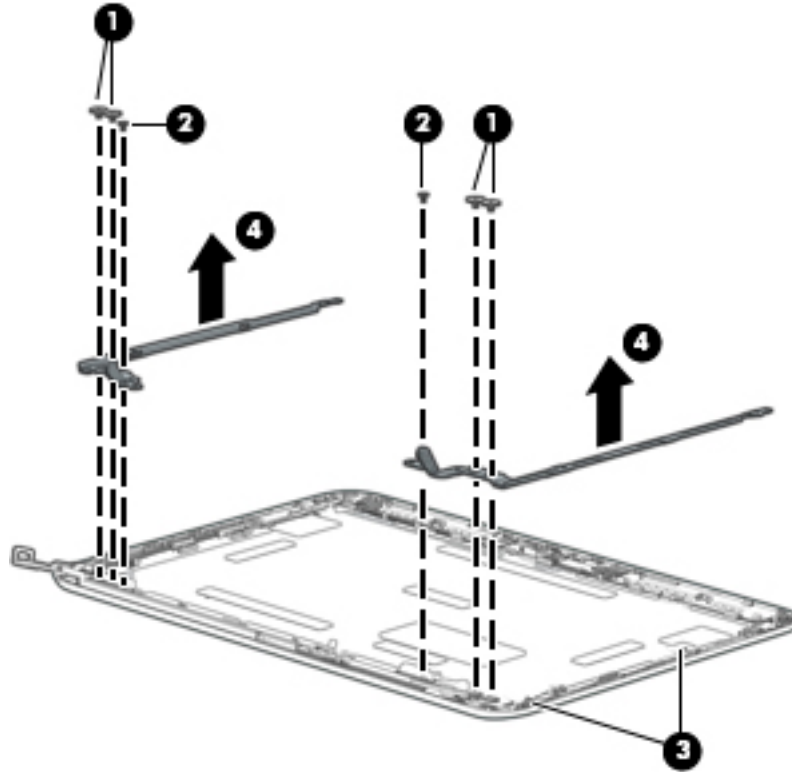


11. If it is necessary to replace the webcam/microphone perform the following: Lift the module **(1)** from the adhesive holding it in place on the display bezel and disconnect the module connector **(2)** if you have not already done so when removing the display cable.

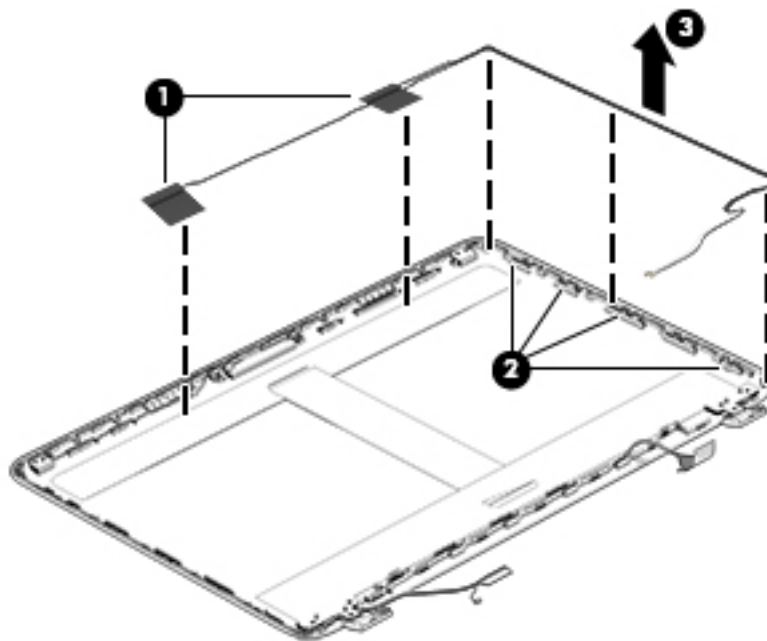


12. If it is necessary to replace the WLAN antenna cable, follow these procedures:
 - a. Position the display back cover face up.

- b. Remove the display brackets by removing the eight Phillips and broadhead screws (1) securing the hinge brackets to the back cover, and then lift the brackets (2) to remove them.




- c. Release the wireless antenna transceivers (1) from the display bezel. (The wireless antenna transceivers are attached to the display bezel with double-sided tape.)
- d. Remove the wireless antenna from the retaining channels (2), and lift the antenna (3)



Reverse this procedure to install the display panel.

WLAN module

Description	Spare part number
Realtek RTL8188EE 802.11b/g/n 1x1 Wi-Fi Adapter	709848-005
Realtek RTL8723BE 802.11b/g/n 1x1 Wi-Fi + BT4.0 Combo Adapter	753077-005

 **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 battery (see [Battery on page 26](#)).
5. Remove the optical drive (see [Optical drive on page 27](#)).
6. Remove the base enclosure and top cover (see [Base enclosure on page 30](#)).

Remove the WLAN module:

1. Disconnect the #1 and #2 WLAN antenna cables from the WLAN module **(1)** if you have not already done so to remove the display panel.



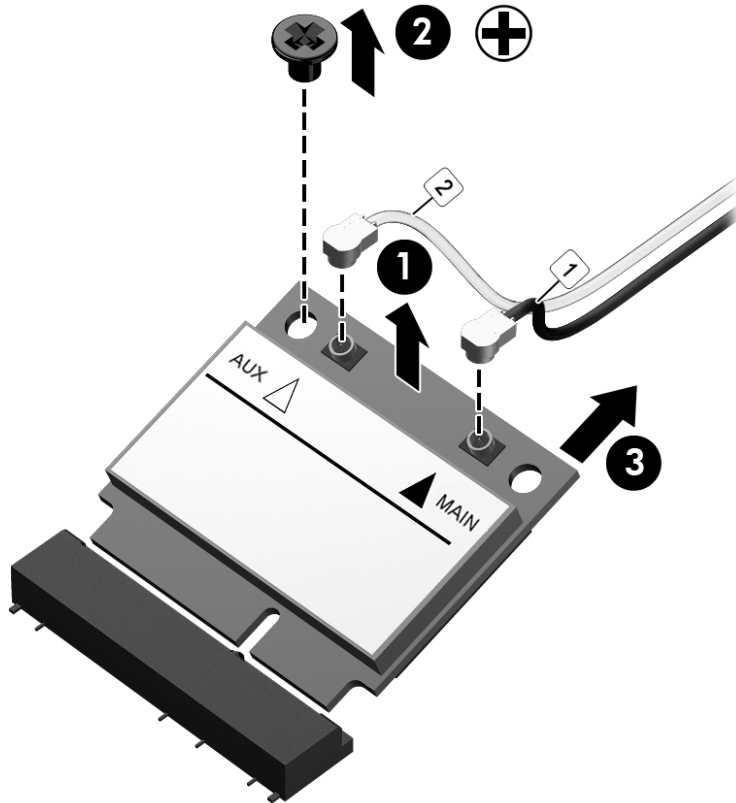
NOTE: The WLAN module may have two screws depending on the model.




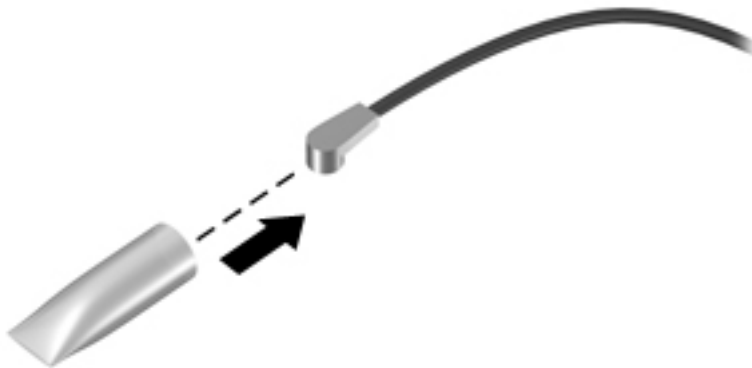
NOTE: The #1 WLAN antenna cable is connected to the WLAN module #1 main terminal. The #2 WLAN antenna cable is connected to the WLAN module #2 auxiliary terminal.

2. Remove the Phillips PM screw(s) **(2)** that secure the WLAN module to the system board. (The WLAN module tilts up.)

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



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



TouchPad button board

Description	Spare part number
TouchPad button board (includes cable)	810602-001

Before removing the TouchPad button board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 26](#)).
5. Remove the optical drive (see [Optical drive on page 27](#)).
6. Remove the top cover from the base enclosure (see [Base enclosure on page 30](#)).

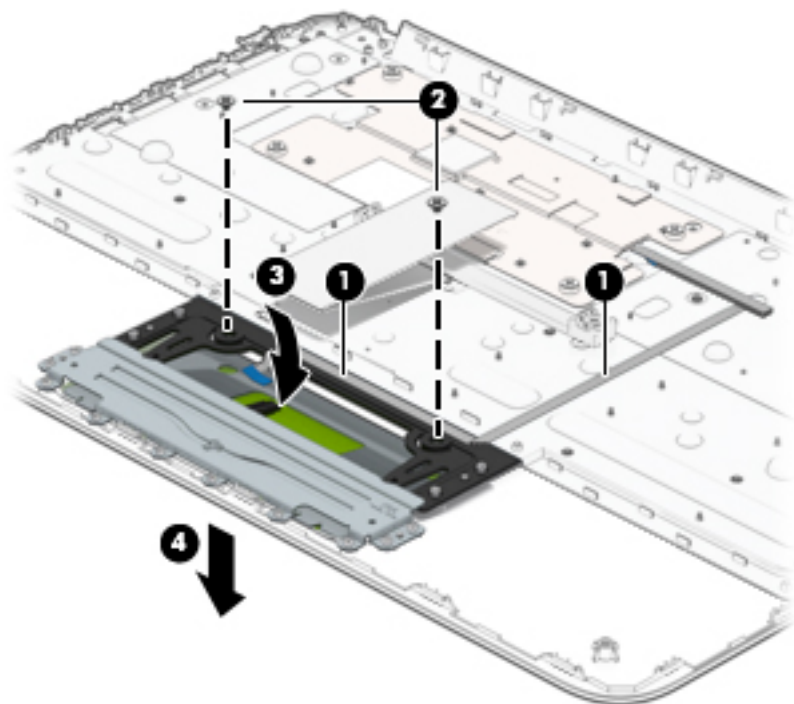
Remove the TouchPad button board:

1. Turn the top cover upside down, with the front toward you.
2. Remove the two broadhead screws **(1)** that secure the TouchPad button board bracket to the top cover.



NOTE: Some models may have three screws for the TouchPad button board **(1)**.

3. Remove the TouchPad board by carefully pushing the TouchPad down **(2)** and routing the cable through the opening **(3)** (the cable was disconnected earlier from the top cover).



Reverse this procedure to install the TouchPad button board.

Battery Board (select models only)

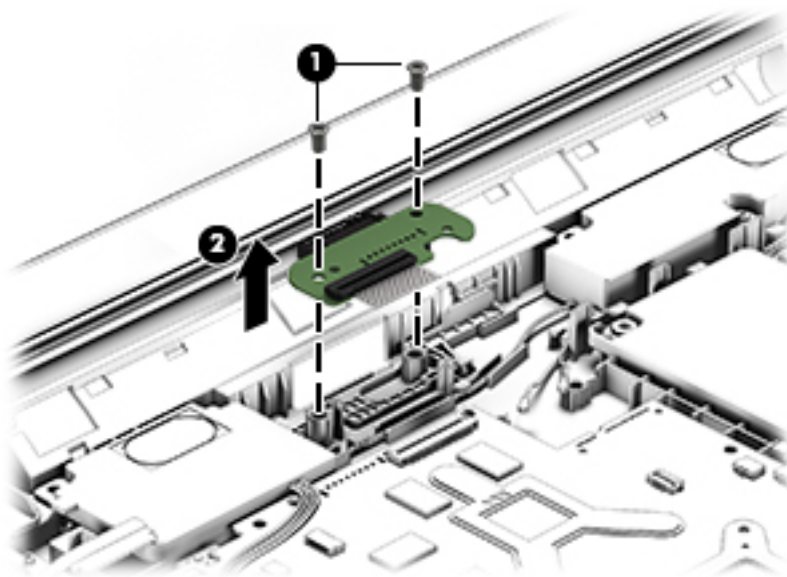
Description	Spare part number
Battery board (with cable)	763710-001

Before removing the battery board, follow these steps:

1. Disconnect all external devices connected to the computer.
2. 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.
3. Remove the battery (see [Battery on page 26](#)).
4. Remove the optical drive (see [Optical drive on page 27](#)).
5. Remove the base enclosure and top cover (see [Base enclosure on page 30](#)).

Remove the battery board:

1. Turn the computer, with the front edge toward you.
2. Remove the two screws **(1)**.
3. Lift the battery board **(2)** to remove it.



Reverse this procedure to install the battery board.

Optical drive connector



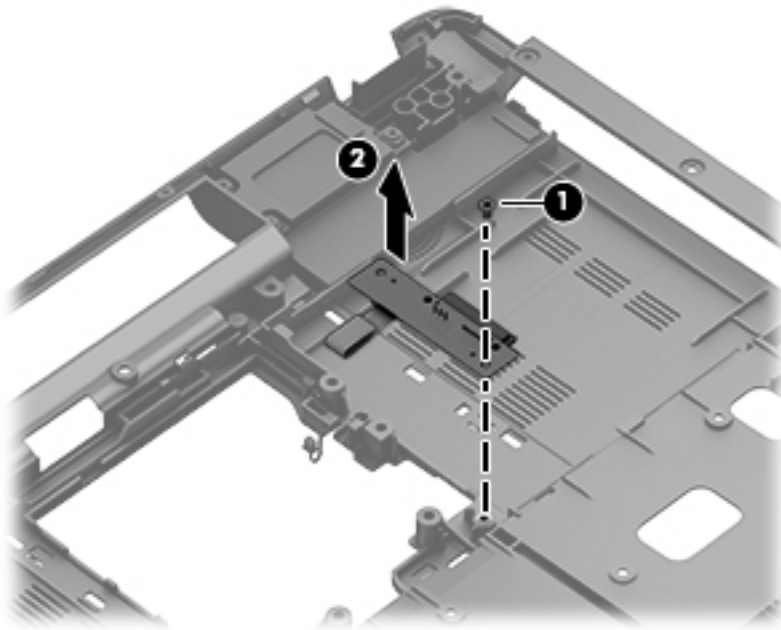
NOTE: The optical drive connector and cable are included in the optical drive spare part kit. (See the Optical drive removal for more information for the spare part kit information.)

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

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 26](#)).
5. Remove the optical drive (see [Optical drive on page 27](#)).
6. Remove the base enclosure and top cover (see [Base enclosure on page 30](#)).

Remove the optical drive connector board:

- ▲ Disconnect the cable from the ZIF connector **(1)**, and then disconnect the optical drive connector **(2)** from the tabs to remove it.



Reverse this procedure to install the optical drive connector board.

USB board

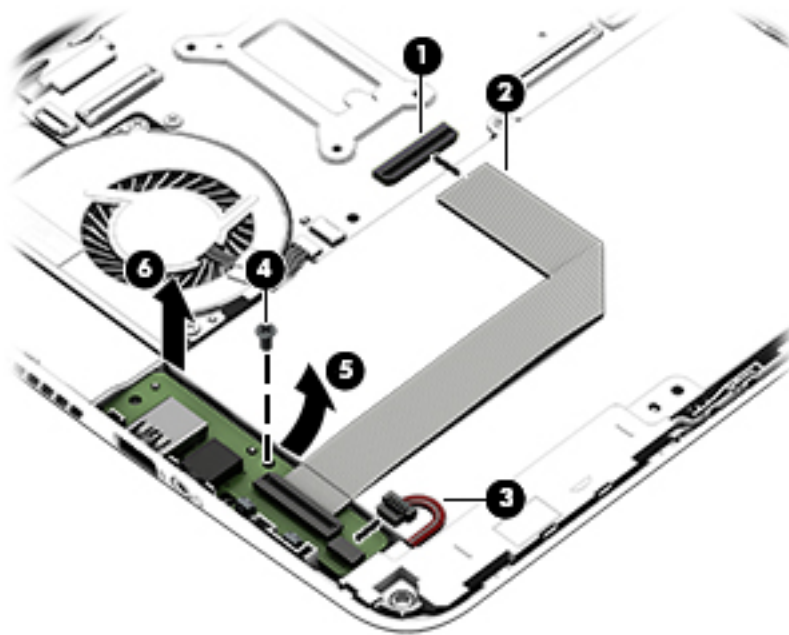
Description	Spare part number
USB board	767120-001

Before removing the USB board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 26](#)).
5. Remove the optical drive (see [Optical drive on page 27](#)).
6. Remove the base enclosure and top cover (see [Base enclosure on page 30](#)).

Remove the USB board and cables:

1. Disconnect the USB cable from the ZIF connector **(1)**.
2. Remove the Phillips screw securing the USB board **(2)**, and lift the USB board **(3)** to remove it.



Reverse this procedure to install the USB board and cables.

Hard drive

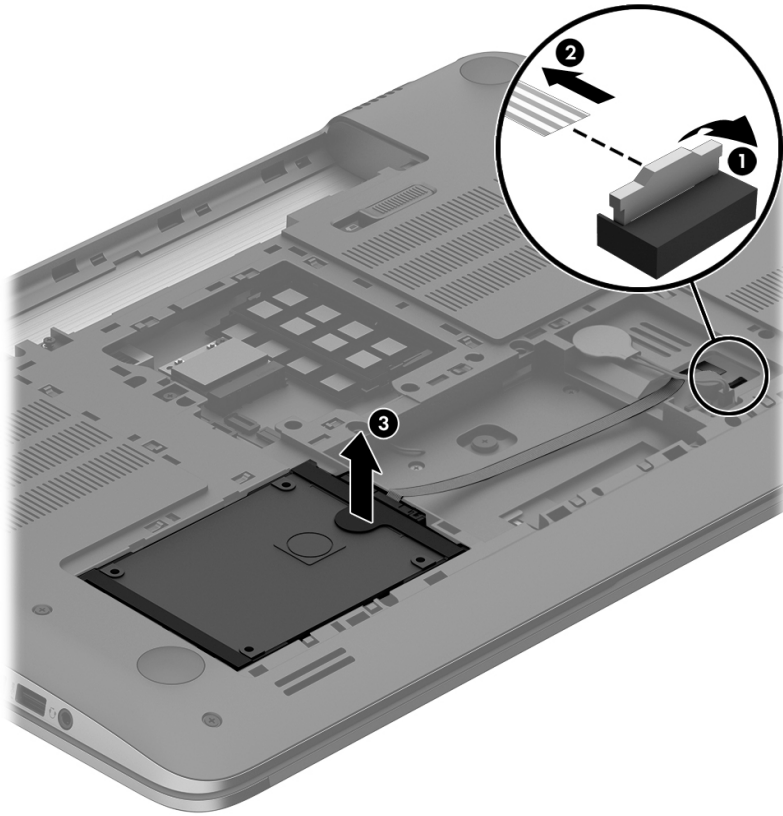
Description	Spare part number
500 GB 5400 rpm 7 mm/ 9.5 mm	778186-005
750 GB 5400 rpm, 9.5 mm	778190-005
1 TB, 5400 rpm, 9.5 mm	778192-005
Hard Drive Hardware Kit	773501-001

Before removing the hard drive, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 26](#)).
5. Remove the optical drive (see [Optical drive on page 27](#)).
6. Remove the base enclosure and top cover (see [Base enclosure on page 30](#)).
7. Remove the USB connector cable (see [USB board on page 47](#)).

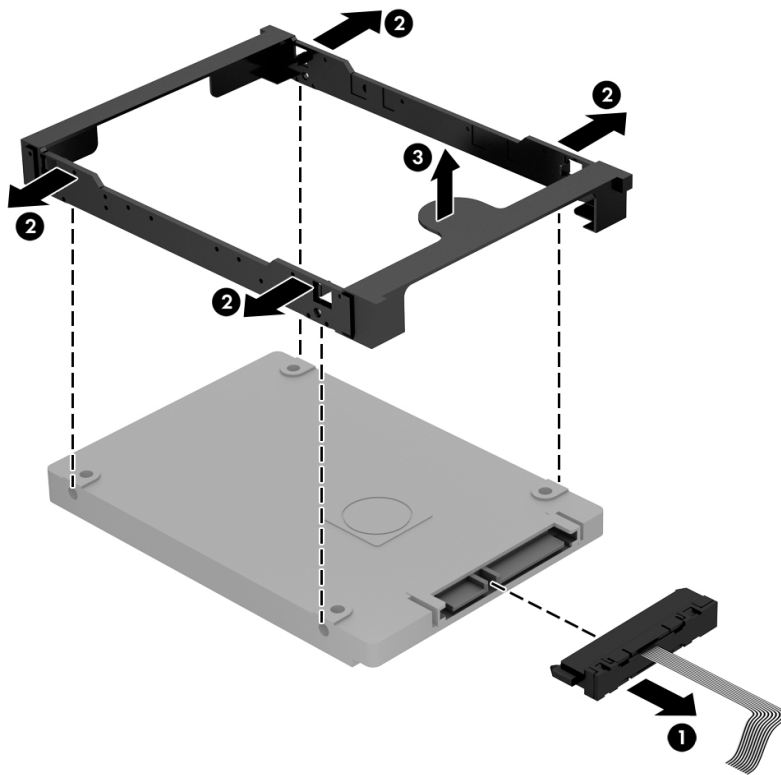
Remove the primary hard drive:

- ▲ Disconnect the hard drive cable from the system board **(1)**, and then tilt the hard drive **(2)** and lift to remove it **(3)**.



If it is necessary to disassemble the hard drive:

- ▲ Remove the hard drive cable **(1)**, and then remove the hard drive bracket **(2)**.



Reverse these procedures to reassemble and install the hard drive.

System board



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

Description	Spare part number
System board (includes replacement thermal materials):	
All system boards use the following part numbers:	
xxxxxx-001: Without the Windows operating system	
xxxxxx-501: Windows 8.1 Standard	
xxxxxx-601: Windows 10	
AMD A10-7300 (1.9 GHz, up to 3.2, GHz, 2 MB L2), quad core 20 W, Max DDR3L-1600	809985-xx1
AMD A8-7050 (2.2 GHz up to 3.0 GHz, 2 MB L2), dual core 15 W, Max DDR3L-1600	809986-xx1
AMD A6-6310 (1.8 GHz up to 2.4 GHz, 2 MB L2), quad core 15 W, 1600 MHz DDR3L	809987-xx1
AMD E1-6010 (1.35 GHz up to 1 MB L2), dual core 10 W, Max DDR3L-1333	809988-xx1

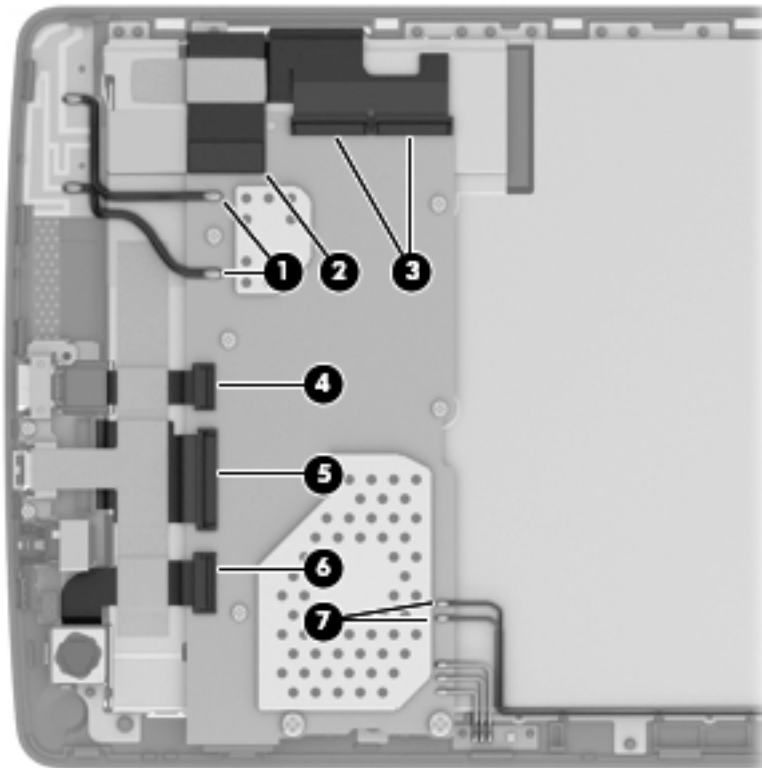
Before removing the system board, follow these steps:

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

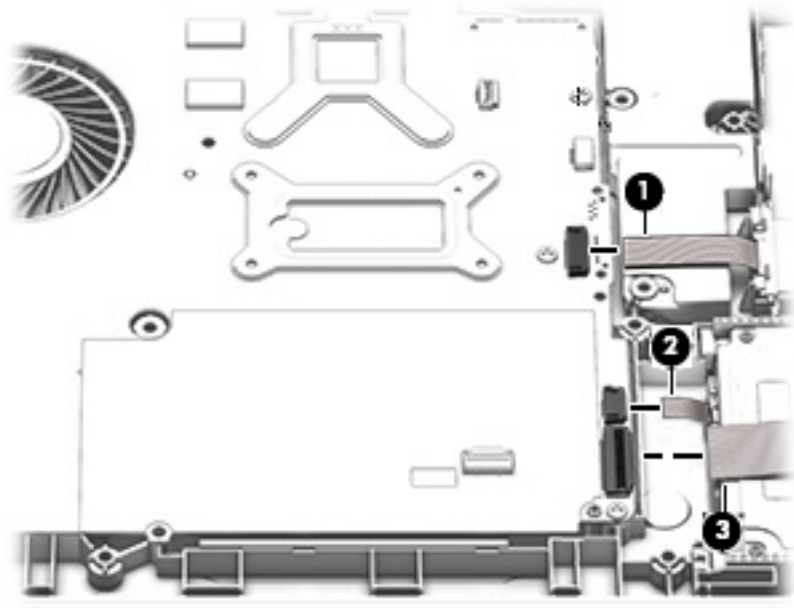
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 26](#)),
5. Remove the optical drive (see [Optical drive on page 27](#)).
6. Remove the top cover from the base enclosure (see [Base enclosure on page 30](#)).
7. Remove the WLAN module (see [WLAN module on page 42](#)).

Remove the system board:


1. Remove the following cables if you have not already done so:
 - Power connector board cable **(1)**
 - Display cables **(2), and (3)**
 - Speaker cable **(4)**




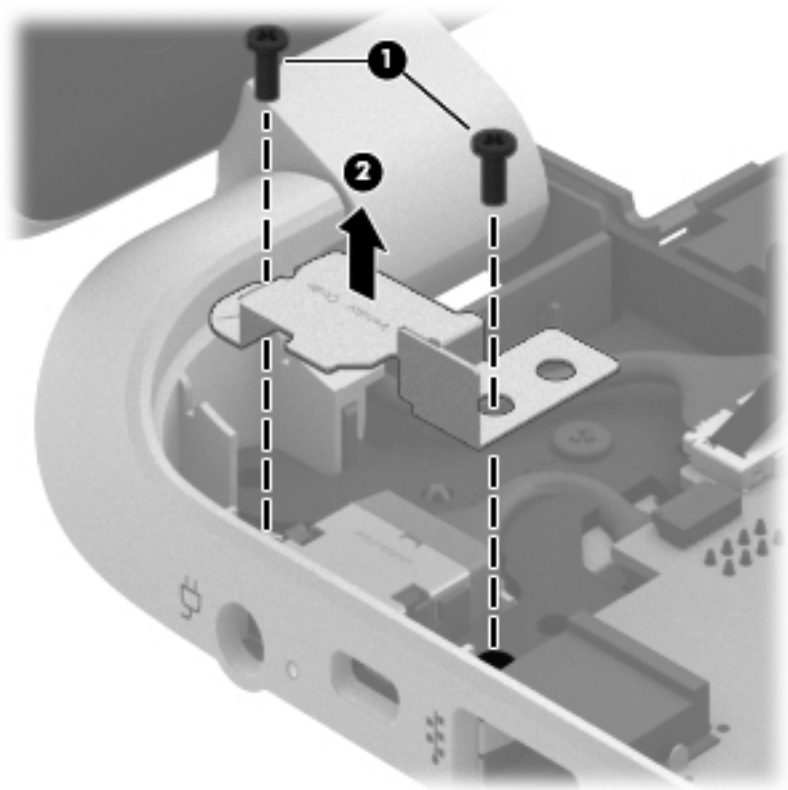
2. Disconnect the following cables if you have not already done so:
 - Optical drive cable **(1)**
 - Hard drive cable **(2)**
 - USB connector cable **(3)**



3. Remove the power connector cover by removing the screw(s) **(1)** and lifting the cover **(2)**.

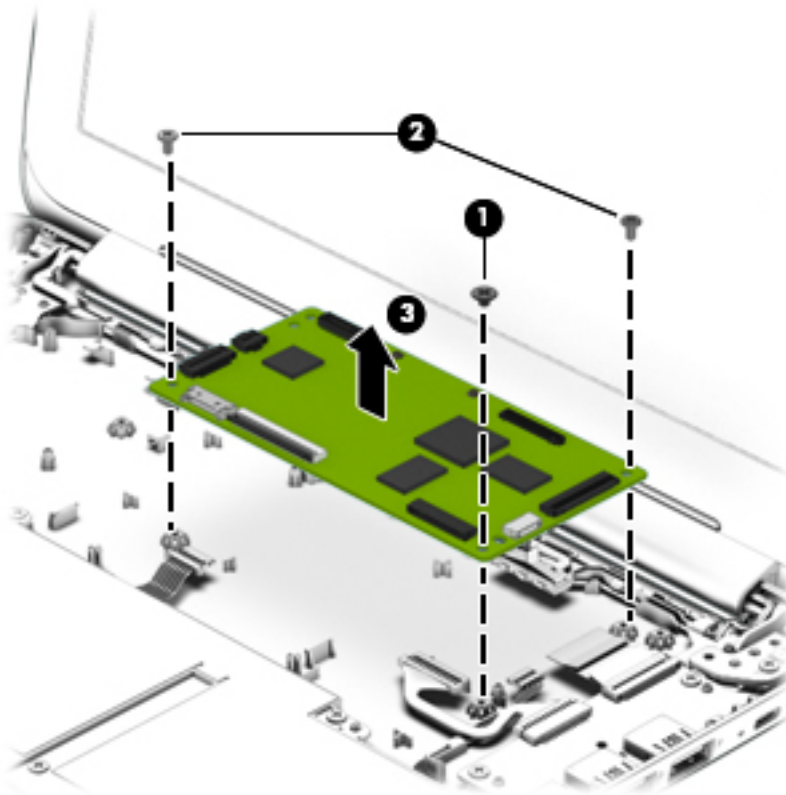
 **NOTE:** The power connector cover has two screws, however, the screw on the left is removed during the base enclosure and top cover removal process.

 **NOTE:** You will remove the power connector after you have removed the system board. This procedure is to remove the power connector cover if did not remove it when removing the display panel.



4. Remove the six Phillips screws **(1)**.

5. Lift the system board (2), and then remove the system board (3) by sliding it up and to the right at an angle.



Reverse this procedure to install the system board.

Speakers

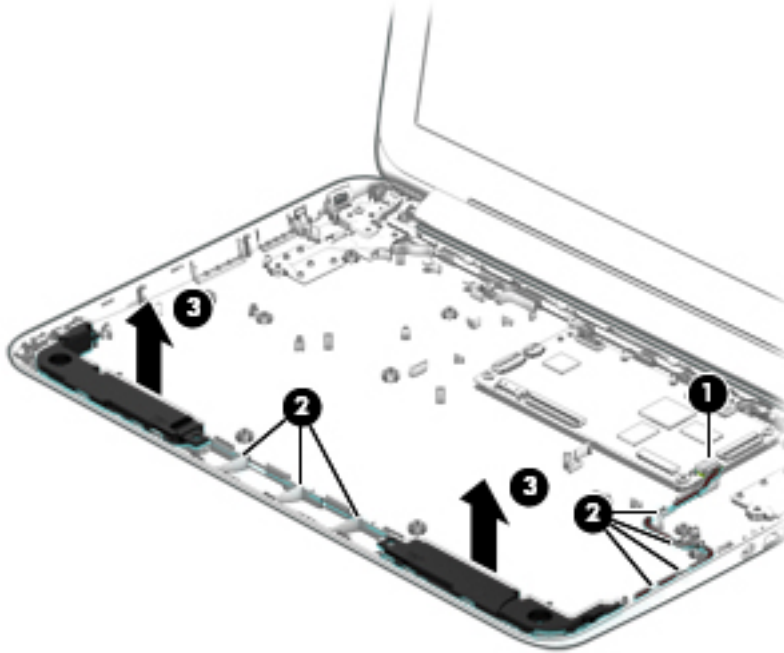
Description	Spare part number
Speaker Kit (includes left and right front speakers and cables)	763717-001

Before removing the speakers, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 26](#)),
5. Remove the optical drive (see [Optical drive on page 27](#)).
6. Remove the top cover from the base enclosure (see [Base enclosure on page 30](#)).
7. Remove the WLAN module (see [WLAN module on page 42](#)).
8. Remove the system board (see [System board on page 50](#)).

Remove the speakers:

1. Turn the computer, with the front edge toward you.
2. Remove two screws (1).
3. Disengage the cables, and then remove the front speakers (2).



Reverse this procedure to install the speakers.

Memory modules

Description	Spare part number
2 GB memory module	691739-005
4 GB memory module	691740-005
8 GB memory module	693374-005

Before removing a memory module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 26](#)),
5. Remove the optical drive (see [Optical drive on page 27](#)).
6. Remove the top cover from the base enclosure (see [Base enclosure on page 30](#)).

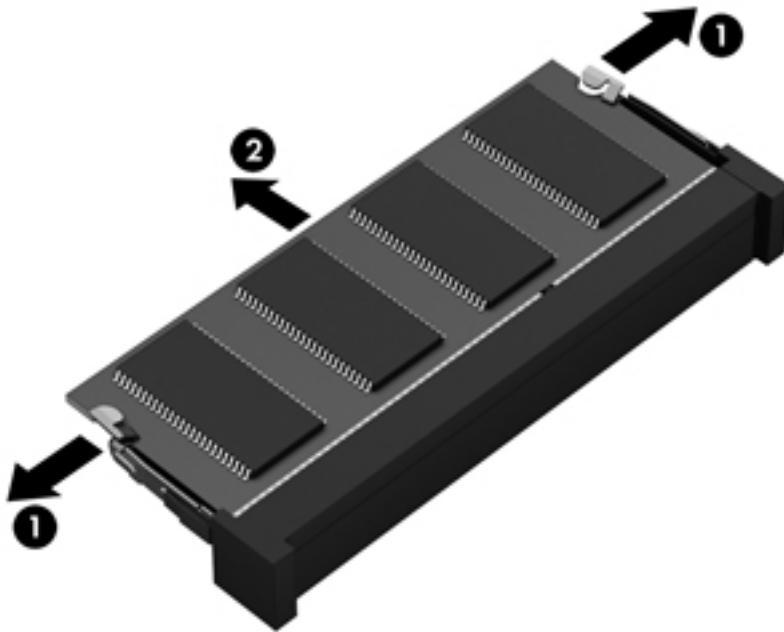
7. Remove the WLAN module (see [WLAN module on page 42](#)).
8. Remove the system board (see [System board on page 50](#)).

Remove the memory module:

1. Turn the system board over.
2. Spread the retaining tabs **(1)** on each side of the memory module slot to release the memory module. (The memory module tilts up.)

CAUTION: To prevent damage to the memory module, hold it by the edges only. Do not touch the components on the memory module.

3. Slide the memory module forward **(2)** to remove it.



Reverse this procedure to install a memory module.

RTC battery

Description	Spare part number
RTC battery	697917-001

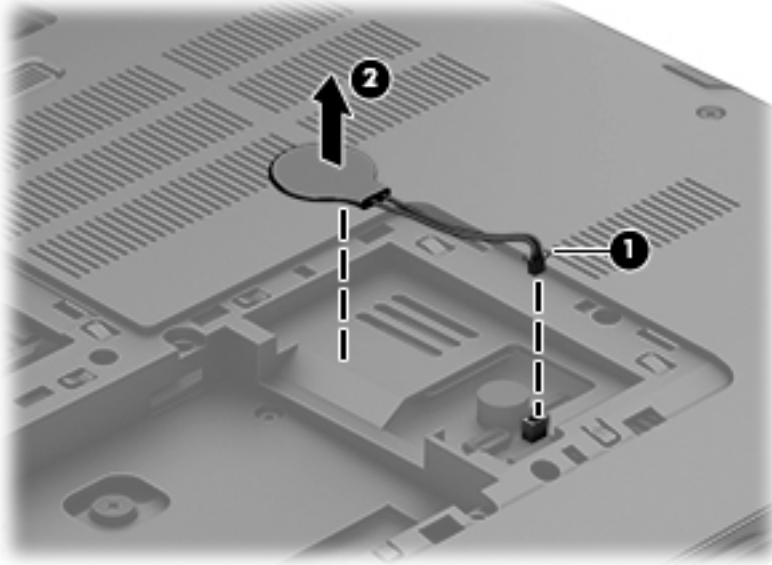
Before removing the RTC battery, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 26](#)),
5. Remove the optical drive (see [Optical drive on page 27](#)).

6. Remove the top cover from the base enclosure (see [Base enclosure on page 30](#)).
7. Remove the WLAN module (see [WLAN module on page 42](#)).
8. Remove the system board (see [System board on page 50](#)).

Remove the RTC battery:

1. Turn the system board upside down.
2. Use a thin, non-conductive tool to remove the RTC battery **(1)** from the socket on the system board.



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

Power connector

Description	Spare part number
Power connector	763699-001

Before removing the power connector cable, follow these steps:

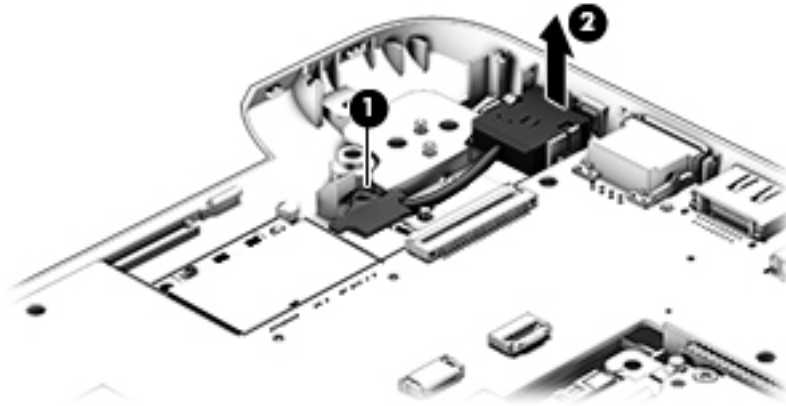
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 26](#)),
5. Remove the optical drive (see [Optical drive on page 27](#)).
6. Remove the top cover from the base enclosure (see [Base enclosure on page 30](#)).
7. Remove the WLAN module (see [WLAN module on page 42](#)).
8. Remove the system board (see [System board on page 50](#)).

Remove the power connector cable:



NOTE: The power connector cover was removed during the system board removal.

1. Release the metal clip to disconnect the power connector cable **(1)** from the system board.
2. Disengage the cable from the clips **(2)**.
3. Release the clips **(3)**, and then remove the power connector cable **(4)**.



Reverse this procedure to install the power connector cable and bracket.

Fan

Description	Spare part number
Fan	765788-001

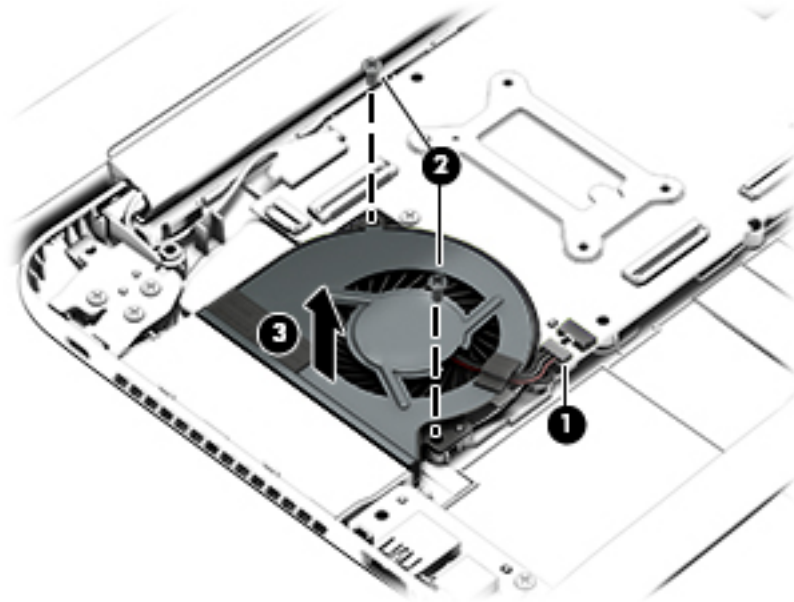
Before removing the Fan, follow these steps:

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 battery (see [Battery on page 26](#)),
5. Remove the optical drive (see [Optical drive on page 27](#)).
6. Remove the top cover from the base enclosure (see [Base enclosure on page 30](#)).
7. Remove the WLAN module (see [WLAN module on page 42](#)).
8. Remove the system board (see [System board on page 50](#)).

Remove the fan:

1. Turn the system board upside down.
2. Disconnect the fan cable from the system board, and then remove the piece of tape that secures the fan to the heat sink **(1)**.

3. Remove the 3 screws securing the fan to the unit **(2)** and lift the fan to remove it **(3)**.



Reverse this procedure to install the fan.

Heat sink

Description	Spare part number
For use only on computer models equipped with AMD processors and UMA graphics	764080-001




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.

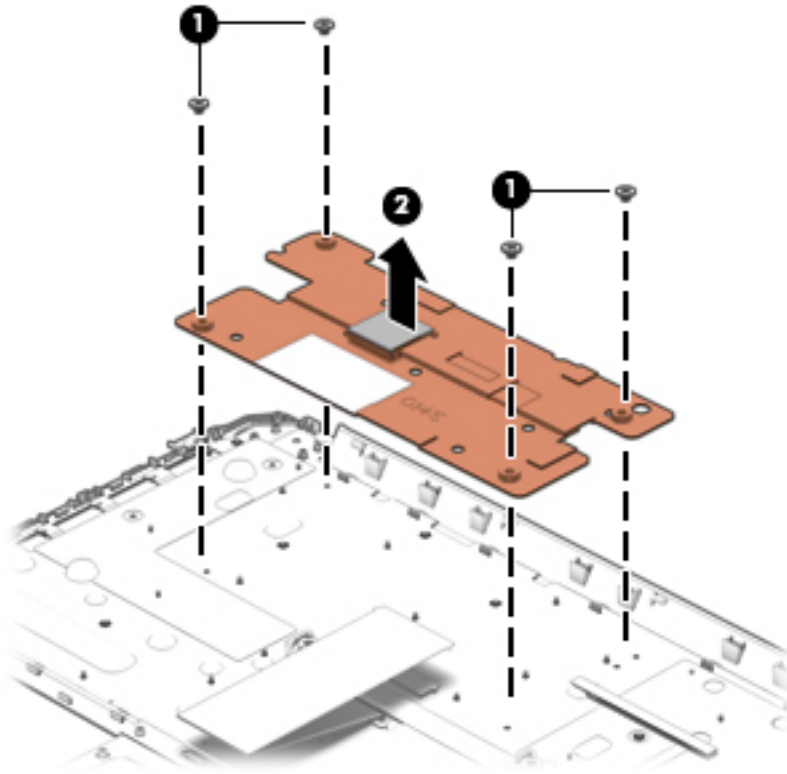
Before removing the heat sink, follow these steps:


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 battery (see [Battery on page 26](#)),
5. Remove the optical drive (see [Optical drive on page 27](#)).
6. Remove the top cover from the base enclosure (see [Base enclosure on page 30](#)).
7. Remove the WLAN module (see [WLAN module on page 42](#)).
8. Remove the system board (see [System board on page 50](#)).
9. Remove the fan (see [Fan on page 57](#)).

Remove the heat sink:

- ▲ Loosen the seven captive screws in the order listed on the heat sink **(1)**, and then remove the heat sink **(2)**.

 **NOTE:** The heat sink may vary by computer model and may have a different number of screws. The heat sink is marked with the order the screws should be removed in. Follow the order shown.



 **NOTE:** There is thermal paste between the heat sink and the processor.

Reverse this procedure to install the heat sink.

Power button board


Description	Spare part number
Power button board (includes cable)	812177-001

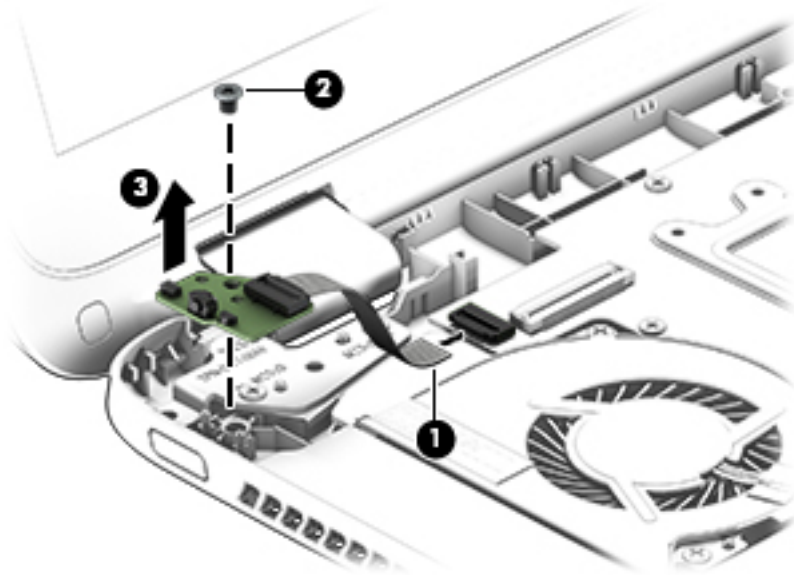
Before removing the Power button board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 26](#)),
5. Remove the optical drive (see [Optical drive on page 27](#)).
6. Remove the top cover from the base enclosure (see [Base enclosure on page 30](#)).
7. Remove the WLAN module (see [WLAN module on page 42](#)).
8. Remove the system board (see [System board on page 50](#)).

Remove the Power button board and cable:

1. Turn the top cover upside down, with the back edge toward you.
2. Remove the 2 Phillips screws securing the Power button board to the base enclosure **(1)**.
3. Remove the Power button board **(2)**.

 **NOTE:** The Power button board's cable is attached to the base enclosure.



Reverse this procedure to install the Power button board.


7 Computer Setup (BIOS), TPM, and HP Sure Start – Windows 10

Using Computer Setup

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

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

Starting Computer Setup

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

To start Computer Setup, follow these steps:

- ▲ Start Computer Setup.
 - Computers or tablets with keyboards:
 - ▲ Turn on or restart the computer, and when the HP logo appears, press **F10** to enter Computer Setup.
 - Tablets without keyboards:
 - ▲ Turn off the tablet. Press the power button in combination with the volume down button until the Startup menu is displayed, and then tap **F10** to enter Computer Setup.

Navigating and selecting in Computer Setup

- To select a menu or a menu item, use the **tab** key and the keyboard arrow keys and then press **enter**, or use a pointing device to select the item.



NOTE: On tablets without keyboards, you can use your finger to make selections.

- To scroll up and down, select the up arrow or the down arrow in the upper-right corner of the screen, or use the up arrow key or the down arrow key on the keyboard.
- To close open dialog boxes and return to the main Computer Setup screen, press **esc**, and then follow the on-screen instructions.

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

- To exit Computer Setup menus without saving your changes:

Select the **Exit** icon in the lower-right corner of the screen, and then follow the on-screen instructions.

– or –

Select **Main**, select **Ignore Changes and Exit**, and then press **enter**.

- To save your changes and exit Computer Setup menus:

Select the Save icon in the lower-right corner of the screen, and then follow the on-screen instructions.

– or –

Select **Main**, select **Save Changes and Exit**, and then press **enter**.

Your changes go into effect when the computer restarts.

Restoring factory settings in Computer Setup



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

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

1. Start Computer Setup. See [Starting Computer Setup on page 61](#).
2. Select **Main**, and then select **Apply Factory Defaults and Exit**.



NOTE: On select products, the selections may display **Restore Defaults** instead of **Apply Factory Defaults and Exit**.

3. Follow the on-screen instructions.
4. To save your changes and exit, select the **Save** icon in the lower-right corner of the screen, and then follow the on-screen instructions.

– or –

Select **Main**, select **Save Changes and Exit**, and then press **enter**.

Your changes go into effect when the computer restarts.



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

Updating the BIOS

Updated versions of the BIOS may be available on the HP 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

To decide whether you need to update Computer Setup (BIOS), first determine the BIOS version on your computer.

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


1. Start Computer Setup. See [Starting Computer Setup on page 61](#).
2. Select **Main**, and then select **System Information**.
3. To exit Computer Setup without saving your changes, select the Exit icon in the lower-right corner of the screen, and then follow the on-screen instructions.

– or –

Select **Main**, select **Ignore Changes and Exit**, and then press **enter**.

To check for later BIOS versions, see [Downloading a BIOS update on page 63](#).

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 on 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. Type `support` in the taskbar search box, and then select the **HP Support Assistant** app.
– or –
Select the question mark icon in the taskbar.
2. Select **Updates**, and then select **Check for updates and messages**.
3. Follow the on-screen instructions.
4. At the download area, follow these steps:
 - a. Identify the most recent BIOS update and compare it to the BIOS version currently installed on your computer. 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 revealed on the screen after the download is complete. If no instructions are revealed, follow these steps:

1. Type `file` in the taskbar search box, and then select **File Explorer**.
2. Select your hard drive designation. The hard drive designation is typically Local Disk (C:).
3. Using the hard drive path you recorded earlier, open the folder that contains the update.
4. Double-click the file that has an `.exe` extension (for example, `filename.exe`).
The BIOS installation begins.
5. Complete the installation by following the on-screen instructions.




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

Changing the boot order using the f9 prompt


To dynamically choose a boot device for the current startup sequence, follow these steps:

1. Access the Boot Device Options menu:
 - Computers or tablets with keyboards:
 - ▲ Turn on or restart the computer, and when the HP logo appears, press **f9** to enter the Boot Device Options menu.
 - Tablets without keyboards:
 - ▲ Turn off the tablet. Press the power button in combination with the volume down button until the Startup menu is displayed, and then tap **F9** to enter the Boot Device Options menu.
2. Select a boot device, then press **enter**.

TPM BIOS settings (select products only)

 **IMPORTANT:** Before enabling Trusted Platform Module (TPM) functionality on this system, you must ensure that your intended use of TPM complies with relevant local laws, regulations and policies, and approvals or licenses must be obtained if applicable. For any compliance issues arising from your operation/usage of TPM which violates the above mentioned requirement, you shall bear all the liabilities wholly and solely. HP will not be responsible for any related liabilities.

TPM provides additional security for your computer. You can modify the TPM settings in Computer Setup (BIOS).

 **NOTE:** If you change the TPM setting to Hidden, TPM is not visible in the operating system.

To access TPM settings in Computer Setup:

1. Start Computer Setup. See [Starting Computer Setup on page 61](#).
2. Select **Security**, select **TPM Embedded Security**, and then follow the on-screen instructions.

Using HP Sure Start (select products only)

Select computer models are configured with HP Sure Start, a technology that continuously monitors the computer's BIOS for attacks or corruption. If the BIOS becomes corrupted or is attacked, HP Sure Start automatically restores the BIOS to its previously safe state, without user intervention.


HP Sure Start is configured and already enabled so that most users can use the HP Sure Start default configuration. The default configuration can be customized by advanced users.

To access the latest documentation on HP Sure Start, go to <http://www.hp.com/support>, and select your country. Select **Drivers & Downloads**, and then follow the on-screen instructions.

8 Using Setup Utility (BIOS) in Windows 8.1

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

Starting Setup Utility (BIOS)

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

- ▲ Turn on or restart the computer, quickly press [esc](#), and then press [f10](#).

Updating Setup Utility (BIOS)

Updated versions of Setup Utility (BIOS) may be available on the HP website.

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

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

Determining the BIOS version

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


BIOS version information (also known as *ROM date* and *System BIOS*) can be accessed from the Start screen by typing `support`, selecting the **HP Support Assistant** app, selecting **My computer**, and then selecting **System Information**, or by using Setup Utility (BIOS).

To use Setup Utility (BIOS):


1. Start Setup Utility (BIOS) (see [Starting Setup Utility \(BIOS\) on page 67](#)).
2. Select **Main**, and then make note of the BIOS version.
3. Select **Exit**, select **Exit Discarding Changes**, and then follow the on-screen instructions.

To check for later BIOS versions, see [Downloading a BIOS update on page 68](#).

Downloading a BIOS update

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

- Do not disconnect power from the computer by unplugging the power cord from the AC outlet.
- Do not shut down the computer or initiate Sleep.
- Do not insert, remove, connect, or disconnect any device, cable, or cord.

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

1. From the Start screen, type `support`, and then select the **HP Support Assistant** app.

– or –

From the Windows desktop, click the question mark icon in the taskbar.

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 version, make a note of the date, name, or other identifier. You may need this information to locate the update later, after it has been downloaded to your hard drive.

- b. Follow the on-screen instructions to download your selection to the hard drive.

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

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

1. From the Start screen, type `file`, and then select **File Explorer**.


– or –

From the Windows desktop, right-click the **Start** button, and then select **File Explorer**.

2. Click your hard drive designation. The hard drive designation is typically Local Disk (C:).
3. Using the hard drive path you recorded earlier, open the folder that contains the update.
4. Double-click the file that has an `.exe` extension (for example, `filename.exe`).


The BIOS installation begins.

5. Complete the installation by following the on-screen instructions.

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

9 HP PC Hardware Diagnostics (UEFI) – Windows 10

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

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

To start HP PC Hardware Diagnostics UEFI:


1. Start BIOS:

- Computers or tablets with keyboards:
 - ▲ Turn on or restart the computer, quickly press [esc](#).
- Tablets without keyboards:
 - ▲ Turn on or restart the tablet, and then quickly hold down the volume down button.
 - or –
 - Turn on or restart the tablet, and then quickly hold down the Windows button.

2. Press or tap [f2](#).

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


a. Connected USB drive

 **NOTE:** To download the HP PC Hardware Diagnostics (UEFI) tool to a USB drive, see [Downloading HP PC Hardware Diagnostics \(UEFI\) to a USB device on page 70](#).

b. Hard drive

c. BIOS

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

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

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

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

Download the latest UEFI version:

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

Download any version of UEFI for a specific product:

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

– or –

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

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

10 Using HP PC Hardware Diagnostics (UEFI) in Windows 8.1

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. Start Setup Utility:

- ▲ Turn on or restart the computer, quickly press [esc](#).

2. Press or tap **f2**.

The BIOS searches 3 places for the diagnostic tools, in the following order:

- a. Connected USB drive
 - b. Hard drive
 - c. BIOS
3. 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 or tap [esc](#).

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



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

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

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

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

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

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

– or –

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

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

11 Specifications

Computer specifications

	Metric	U.S.
Dimensions		
Depth	279 mm	10.9 in
Width	419.5 mm	16.5 in
Height (rear)	27.75 mm	1.09 in
Weight		
	2.824 kg	6.23 lb
Input power		
Operating voltage and current	19.5 V dc @ 2.31 A – 45 W	
Temperature		
Operating	5°C to 35°C	41°F to 95°F
Nonoperating	-20°C to 60°C	-4°F to 140°F
Relative humidity (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	-15 m to 3,048 m	-50 ft to 10,000 ft
Nonoperating	-15 m to 12,192 m	-50 ft to 40,000 ft
NOTE: Applicable product safety standards specify thermal limits for plastic surfaces. The device operates well within this range of temperatures.		

43.9-cm (17.3-in) display specifications

	Metric	U.S.
Active diagonal size	43.9-cm	17.3-in
Thickness	6.0 mm	0.236 inch
Resolution	1600x900 (HD+WLED)	
Surface treatment	BrightView	
Contrast ratio	500:1 (min)	
Brightness	220 nits (typical)	
Viewing angle	SVA	
Backlight	WLED	
Companion standard	LVDS	

Hard drive specifications

	1-TB*	750-GB*	500-GB*
Dimensions			
Height	9.5 mm	9.5 mm	7.0 mm or 9.5 mm
Length	100.45 mm (max)	100.45 mm (max)	100.45 mm (max)
Width	69.9 mm	69.9 mm	70.1 mm
Weight	115.0 g	115.0 g	92.0 g
Interface type	SATA	SATA	SATA
Transfer rate			
Synchronous (maximum)	600 MB/sec (max)	600 MB/sec (max)	600 MB/sec (max)
Security	ATA security	ATA security	ATA security
Seek times (typical read, including setting)			
Single track	2 ms	2 ms	2 ms
Average (read/write)	12 ms	12 ms	12 ms
Maximum	22 ms	22 ms	22 ms
Logical blocks	1,938,921,461	1,465,149,168	1,048,576,000
Disk rotational speed	5400 rpm	5400 rpm	5400 rpm
Operating temperature	5–55°C		
*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less.			
NOTE: Certain restrictions and exclusions apply. Contact technical support for details.			

DVD±RW SuperMulti DL Drive specifications

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

12 Backup and recovery – Windows 10

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


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

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

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

– or –

Click the question mark icon in the taskbar.

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


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

Creating recovery media and backups

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

- Use HP Recovery Manager to create HP Recovery media after you successfully set up the computer. This step creates a backup of the HP Recovery partition on the computer. The backup can be used to reinstall the original operating system in cases where the hard drive is corrupted or has been replaced. For information on creating recovery media, see [Creating HP Recovery media \(select products only\) on page 78](#). For information on the recovery options that are available using the recovery media, see [Using Windows Tools on page 79](#).
- Use Windows tools to create system restore points and create backups of personal information.

For more information, see [Recovering using HP Recovery Manager on page 80](#).

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

Creating HP Recovery media (select products only)

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

- If your computer does not list the Windows partition and the Recovery partition, you can obtain recovery media for your system from support. See the *Worldwide Telephone Numbers* booklet included with the computer. You can also find contact information on the HP website. Go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions.

You can use Windows tools to create system restore points and create backups of personal information, see *Using Windows tools on page 61*.

- If your computer does list the Recovery partition and the Windows partition, you can use HP Recovery Manager to create recovery media after you successfully set up the computer. HP Recovery media can be used to perform system recovery if the hard drive becomes corrupted. System recovery reinstalls the original operating system and software programs that were installed at the factory and then configures the settings for the programs. HP Recovery media can also be used to customize the system or restore the factory image if you replace the hard drive.
 - Only one set of recovery media can be created. Handle these recovery tools carefully, and keep them in a safe place.
 - HP Recovery Manager examines the computer and determines the required storage capacity for the media that will be required.
 - To create recovery discs, your computer must have an optical drive with DVD writer capability, and you must use only high-quality blank DVD-R, DVD+R, DVD-R DL, or DVD+R DL discs. Do not use rewritable discs such as CD±RW, DVD±RW, double-layer DVD±RW, or BD-RE (rewritable Blu-ray) discs; they are not compatible with HP Recovery Manager software. Or, instead, you can use a high-quality blank USB flash drive.
 - If your computer does not include an integrated optical drive with DVD writer capability, but you would like to create DVD recovery media, you can use an external optical drive (purchased separately) to create recovery discs. If you use an external optical drive, it must be connected directly to a USB port on the computer; the drive cannot be connected to a USB port on an external device, such as a USB hub. If you cannot create DVD media yourself, you can obtain recovery discs for your computer from HP. See the *Worldwide Telephone Numbers* booklet included with the computer. You can also find contact information on the HP website. Go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions.
 - Be sure that the computer is connected to AC power before you begin creating the recovery media.
 - The creation process can take an hour or more. Do not interrupt the creation process.
 - If necessary, you can exit the program before you have finished creating all of the recovery DVDs. HP Recovery Manager will finish burning the current DVD. The next time you start HP Recovery Manager, you will be prompted to continue.

To create HP Recovery media:



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

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

If you ever need to recover the system, see [Recovering using HP Recovery Manager on page 80](#).

Using Windows Tools

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



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

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

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

Restore and recovery

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



IMPORTANT: Not all methods are available on all products.

- Windows offers several options for restoring from backup, refreshing the computer, and resetting the computer to its original state. For more information see the Get started app.
 - ▲ Select the **Start** button, and then select the **Get started** app.
- If you need to correct a problem with a preinstalled application or driver, use the Reinstall drivers and/or applications option (select products only) of HP Recovery Manager to reinstall the individual application or driver.
 - ▲ Type `recovery` in the taskbar search box, select **HP Recovery Manager**, select **Reinstall drivers and/or applications**, and then follow the on-screen instructions.
- If you want to recover the Windows partition to original factory content, you can choose the System Recovery option from the HP Recovery partition (select products only) or use the HP Recovery media. For more information, see [Recovering using HP Recovery Manager on page 80](#). If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 78](#).
- On select products, if you want to recover the computer's original factory partition and content, or if you have replaced the hard drive, you can use the Factory Reset option of HP Recovery media. For more information, see [Recovering using HP Recovery Manager on page 80](#).
- On select products, if you want to remove the recovery partition to reclaim hard drive space, HP Recovery Manager offers the Remove Recovery Partition option.


For more information, see Removing the [Removing the HP Recovery partition \(select products only\) on page 82](#).

Recovering using HP Recovery Manager


HP Recovery Manager software allows you to recover the computer to its original factory state by using the HP Recovery media that you either created or that you obtained from HP, or by using the HP Recovery partition (select products only). If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 78](#).

What you need to know before you get started

- HP Recovery Manager recovers only software that was installed at the factory. For software not provided with this computer, you must either download the software from the manufacturer's website or reinstall the software from the media provided by the manufacturer.

 **IMPORTANT:** Recovery through HP Recovery Manager should be used as a final attempt to correct computer issues.

- To use the Factory Reset option (select products only), you must use HP Recovery media. If you have not already created recovery media, see [Creating HP Recovery media \(select products only\) on page 78](#).
- If your computer does not allow the creation of HP Recovery media or if the HP Recovery media does not work, you can obtain recovery media for your system from support. See the *Worldwide Telephone Numbers* booklet included with the computer. You can also find contact information from the HP website. Go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions.

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

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

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

- **System Recovery**—Reinstalls the original operating system, and then configures the settings for the programs that were installed at the factory.
- **Factory Reset**—Restores the computer to its original factory state by deleting all information from the hard drive and re-creating the partitions. Then it reinstalls the operating system and the software that was installed at the factory.

The HP Recovery partition (select products only) allows System Recovery only.

Using the HP Recovery partition (select products only)

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

To start HP Recovery Manager from the HP Recovery partition:



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

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

– or –

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

For tablets without keyboards:

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

– or –

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

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

Using HP Recovery media to recover

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

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




NOTE: If the computer does not automatically restart in HP Recovery Manager, change the computer boot order. See [Changing the computer boot order on page 82](#).

3. Follow the on-screen instructions.

Changing the computer boot order

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

To change the boot order:

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

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

For computers or tablets with keyboards attached:

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

For tablets without keyboards:

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


– or –


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

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

Removing the HP Recovery partition (select products only)

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

 **IMPORTANT:** After you remove the HP Recovery partition, you will not be able to perform System Recovery or create HP recovery media from the HP Recovery partition. So before you remove the Recovery partition, create HP Recovery media; see [Creating HP Recovery media \(select products only\) on page 78](#).

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

Follow these steps to remove the HP Recovery partition:

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

13 Backing up, restoring, and recovering in Windows 8.1

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

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

For additional information, refer to Help and Support.

- ▲ From the Start screen, type `help`, and then select **Help and Support**.

Creating recovery media and backups

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

- Use HP Recovery Manager to create HP Recovery media after you successfully set up the computer. This step creates a backup of the HP Recovery partition on the computer. The backup can be used to reinstall the original operating system in cases where the hard drive is corrupted or has been replaced. For information on creating recovery media, see [Creating HP Recovery media \(select models only\) on page 83](#). For information on the recovery options that are available using the recovery media, see [Recovering using HP Recovery Manager on page 85](#).
- Use Windows tools to create system restore points and create backups of personal information.

For more information, see [Using Windows tools on page 84](#).



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

Creating HP Recovery media (select models only)



IMPORTANT: If your computer does not list a Create recovery media option, you can obtain recovery media for your system from HP. See the *Worldwide Telephone Numbers* booklet included with the computer. You can also find contact information on the HP website. Go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions.

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

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

- To create recovery discs, your computer must have an optical drive with DVD writer capability, and you must use only high-quality blank DVD-R, DVD+R, DVD-R DL, or DVD+R DL discs. Do not use rewritable discs such as CD±RW, DVD±RW, double-layer DVD±RW, or BD-RE (rewritable Blu-ray) discs; they are not compatible with HP Recovery Manager software. Or, instead, you can use a high-quality blank USB flash drive.
- If your computer does not include an integrated optical drive with DVD writer capability, but you would like to create DVD recovery media, you can use an external optical drive (purchased separately) to create recovery discs. If you use an external optical drive, it must be connected directly to a USB port on the computer; the drive cannot be connected to a USB port on an external device, such as a USB hub. If you cannot create DVD media yourself, you can obtain recovery discs for your computer from HP. See the *Worldwide Telephone Numbers* booklet included with the computer. You can also find contact information on the HP website. Go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions.
- Be sure that the computer is connected to AC power before you begin creating the recovery media.
- The creation process can take an hour or more. Do not interrupt the creation process.
- If necessary, you can exit the program before you have finished creating all of the recovery DVDs. HP Recovery Manager will finish burning the current DVD. The next time you start HP Recovery Manager, you will be prompted to continue.

To create HP Recovery media:

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

If you ever need to recover the system, see [Recovering using HP Recovery Manager on page 85](#).

Using Windows tools

You can use Windows tools to create system restore points and create backups of personal information.



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

For more information and steps, see Help and Support.

- ▲ From the Start screen, type `help`, and then select **Help and Support**.

Restore and recovery

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



IMPORTANT: Not all methods are available on all models.

- Windows offers several options for restoring from backup, refreshing the computer, and resetting the computer to its original state. For more information 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 Reinstall drivers and/or applications option of HP Recovery Manager to reinstall the individual application or driver.
 - ▲ From the Start screen, type `recovery`, select **HP Recovery Manager**, select **Reinstall drivers and/or applications**, and then follow the on-screen instructions.

- On select models, if you want to reset your computer using a minimized image, you can choose the HP Minimized Image Recovery option from the HP Recovery partition or HP Recovery media. Minimized Image Recovery installs only drivers and hardware-enabling applications. Other applications included in the image continue to be available for installation through the Reinstall drivers and/or applications option in HP Recovery Manager.

For more information, see [Recovering using HP Recovery Manager on page 85](#).

- If you want to recover the Windows partition to original factory content, you can choose the System Recovery option from the HP Recovery partition (select models only) or use the HP Recovery media. For more information, see [Recovering using HP Recovery Manager on page 85](#). If you have not already created recovery media, see [Creating HP Recovery media \(select models only\) on page 83](#).
- On select models, if you want to recover the computer's original factory partition and content, or if you have replaced the hard drive, you can use the Factory Reset option of HP Recovery media. For more information, see [Recovering using HP Recovery Manager on page 85](#).
- On select models, if you want to remove the recovery partition to reclaim hard drive space, HP Recovery Manager offers the Remove Recovery Partition option.

For more information, see [Removing the HP Recovery partition \(select models only\) on page 87](#).

Recovering using HP Recovery Manager

HP Recovery Manager software allows you to recover the computer to its original factory state by using the HP Recovery media that you either created or that you obtained from HP, or by using the HP Recovery partition (select models only). If you have not already created recovery media, see [Creating HP Recovery media \(select models only\) on page 83](#).

What you need to know before you get started

- HP Recovery Manager recovers only software that was installed at the factory. For software not provided with this computer, you must either download the software from the manufacturer's website or reinstall the software from the media provided by the manufacturer.



IMPORTANT: Recovery through HP Recovery Manager should be used as a final attempt to correct computer issues.

- HP Recovery media must be used if the computer hard drive fails. If you have not already created recovery media, see [Creating HP Recovery media \(select models only\) on page 83](#).
- To use the Factory Reset option (select models only), you must use HP Recovery media. If you have not already created recovery media, see [Creating HP Recovery media \(select models only\) on page 83](#).
- If your computer does not allow the creation of HP Recovery media or if the HP Recovery media does not work, you can obtain recovery media for your system from support. See the *Worldwide Telephone Numbers* booklet included with the computer. You can also find contact information from the HP website. Go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions.



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

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



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

- **System Recovery**—Reinstalls the original operating system, and then configures the settings for the programs that were installed at the factory.
- **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, on select models, Minimized Image Recovery.

Using the HP Recovery partition (select models only)

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

To start HP Recovery Manager from the HP Recovery partition:

1. From the Start screen, type `recovery`, select **HP Recovery Manager**, and then select **HP Recovery Environment**.
- or -
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, 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 86](#).

3. Follow the on-screen instructions.

Changing the computer boot order

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

To change the boot order:

1. Insert the HP Recovery media.
2. Start Computer Setup:
 - ▲ Turn on or restart the computer, quickly press `esc`, and then press `f9` for boot options.
3. Select the optical drive or USB flash drive from which you want to boot.
4. Follow the on-screen instructions.

Removing the HP Recovery partition (select 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 \(select models only\) on page 83](#).

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.

14 Power cord set requirements

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

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

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

Requirements for all countries

The following requirements are applicable to all countries and regions:

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

Requirements for specific countries and regions

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

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

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, 0.75mm² or 1.25mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V ac) configuration.</p>
		<p>4. The flexible cord must be Type RVV, 3-conductor, 0.75mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the CCC certification mark.</p>
		<p>5. The flexible cord must be Type H05VV-F 3X0.75mm² conductor size. KTL logo and individual approval number must be on each element. Corset approval number and logo must be printed on a flag label.</p>
		<p>6. The flexible cord must be Type HVCTF 3X1.25mm² conductor size. Power cord set fittings (appliance coupler, cable, and wall plug) must bear the BSMI certification mark.</p>
		<p>7. For 127 V ac, the flexible cord must be Type SVT or SJT 3 x 18 AWG, with plug NEMA 5-15P (15 A, 125 V ac), with UL and CSA or C-UL marks. For 240 V ac, the flexible cord must be Type H05VV-F 3X0.75/1.00mm² conductor size, with plug BS 1363/A with BSI or ASTA marks.</p>

15 Recycling

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

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

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