



HP Envy x2

Maintenance and Service Guide

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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. 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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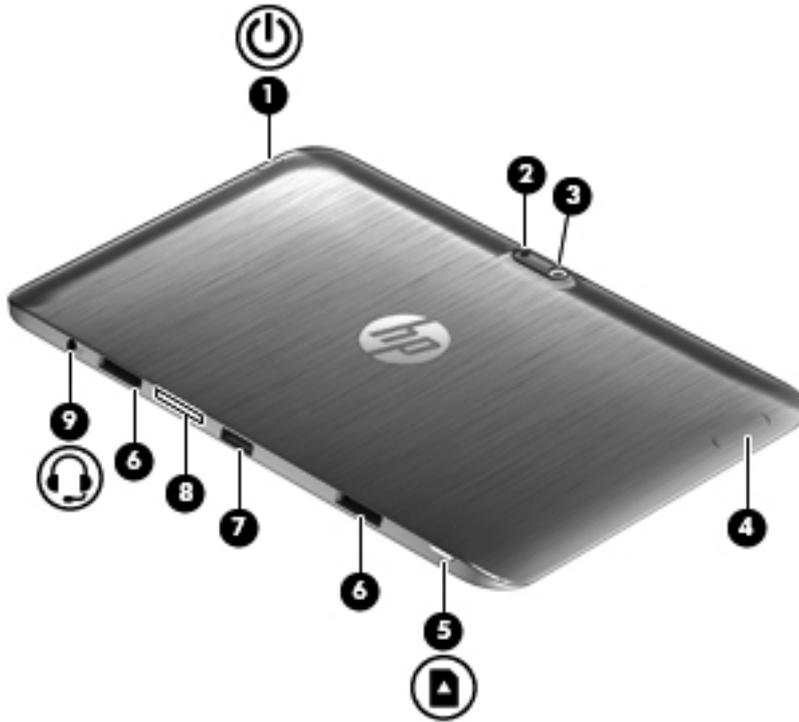
1 Product description

Category	Description
Product Name	HP ENVY x2 PC
Processors	Intel® Dual-Core™ Z2760 (1.8GHz, 592KB, L2)
Graphics	Intel® HD Graphics Media Accelerator. Supports HD playback streaming and recording at 1080p, 30 fps. Supports DX11 0.1 and HDMI.
Panel	11.6" HD Anti-Glare WLED UWVA 50%cg 400 nits LVDS Ultraslim 2.5mm Supports 16:9 wide aspect ratio Support for non-flush glass panel cover (non-PMMA)
Memory	Supports up to 2-GB max system memory (on-board) DDR2-500MHz dual channel support Supports up to 2048 (128MB x 32 x 4PCs) - 500 MHz
Drives	eMMC NAND flash SSD configurations: <ul style="list-style-type: none">• 64-GB• 128-GB
Audio and video	Dual array digital microphones Two integrated stereo speakers Front 2.0 MP high-definition webcam (fixed, no tilt) and rear 8.0 MP high-definition webcam (fixed no tilt) with LED flash and auto focus.
Wireless	Integrated WLAN options by way of wireless module Two WLAN antennas built into display assembly Supports the following WLAN formats: <ul style="list-style-type: none">• Broadcom 4330 802.11 a/b/g/n+ Bluetooth 4.0 combo w/* 2 Antennas
External media card	Push-push insertion/removal HP Multi-Format Digital Media Reader supports the following digital card formats on the keyboard dock: <ul style="list-style-type: none">• MultiMediaCard• Secure Digital (SD) Card• Secure Digital High-Capacity (SDHC) Card• Secure Digital Extended Capacity (SDxC) Card• Micro Secure Digital Media Reader (SD) Card (supported on the tablet only).

Category	Description
Ports	<p>Tablet</p> <ul style="list-style-type: none"> • Docking connector (Power/USB). Supports charging, audio-out, and video out. • Mic-in (combo) • Audio-out (stereo headphone). Beats supported <p>NOTE: Stand-alone microphones and headphones with separate microphone jacks are not supported.</p> <hr/> <p>Keyboard dock</p> <ul style="list-style-type: none"> • Mic-in (combo) • Audio-out (stereo headphone). Beats supported • HDMI version 1.4a supporting 1080p at 60Hz • USB 2.0 (2)
Keyboard	<p>Full size , island-style keyboard</p> <hr/> <p>TouchPad with multi-touch gestures</p> <hr/> <p>Taps enabled as default</p> <hr/> <p>Multi-touch capacitive panel (with digitizer)</p> <hr/> <p>Support for Atmel stylus/pen (select models only)</p>
Power requirements	<p>Supports the following HP AC adapters:</p> <ul style="list-style-type: none"> • 20-W (non-smart) with localized cable plug support. Integrated AC adapter, power cord, and removable duck head plug. Connects through docking connector. <hr/> <p>Supports the following batteries:</p> <ul style="list-style-type: none"> • 2-cell, 25WHr 3.38 AH Li-ion battery (tablet) <p>NOTE: For more information, see Display panel assembly and Battery on page 40.</p> <ul style="list-style-type: none"> • 2-cell, 21WHr 2.86 AH Li-ion battery (keyboard dock) <p>NOTE: For more information, see Battery on page 29.</p>
Operating system	<p>Preinstalled:</p> <ul style="list-style-type: none"> • Windows 8 (32-bit)
Serviceability	<p>End-user replaceable parts:</p> <ul style="list-style-type: none"> • AC adapter

2 External component identification

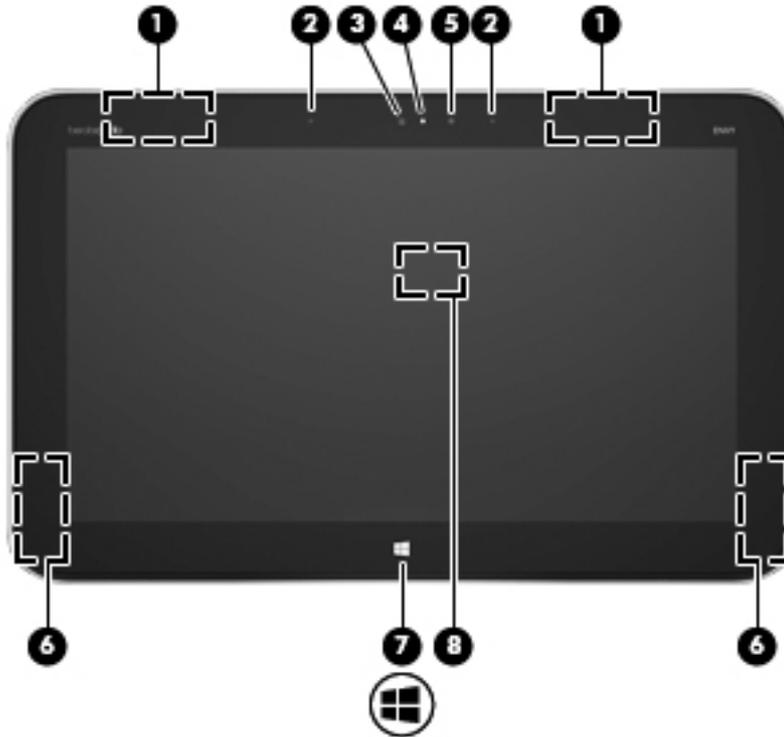
Tablet edge components



Components		Description
(1)	 Power button	<ul style="list-style-type: none"> When the computer is off, press the button to turn on the tablet. 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. <p>CAUTION: Pressing and holding down the power button will result in the loss of unsaved information.</p> <ul style="list-style-type: none"> If the computer has stopped responding and Microsoft® Windows® shutdown procedures are ineffective, press and hold the power button down for at least 5 seconds to turn off the tablet. <p>  Swipe from the right edge of the TouchPad or touch screen to display the charms, tap Search, and then tap the search box. In the search box, type <code>power</code>, select Settings, and then select Power options, or see the <i>User Guide</i>. </p> <p>– or –</p> <p>  To learn more about your power settings, on the Start screen, type <code>p</code>. In the search box, type <code>power</code>, select Settings, and then select Power options, or see the <i>User Guide</i>. </p>
(2)	Camera light (rear)	Provides flash lighting for the camera.
(3)	Webcam (rear)	<p>Records video, captures still photographs, and allows video conferences and online chat by means of streaming video.</p> <p>To use the webcam, type <code>c</code>, and then select Camera.</p>
(4)	Volume button	<p>Controls speaker volume on the tablet.</p> <ul style="list-style-type: none"> To increase speaker volume, press the + edge of the button. To decrease speaker volume, press the – edge of the button.
(5)	Micro SD Card Reader	Supports micro SD cards.
(6)	Alignment post connectors (2)	Align and attach the tablet to the keyboard dock.
(7)	Docking port/power connector	Connects the tablet to the keyboard dock and connects an AC adapter.

Components		Description
(8)	System information	Displays serial number, product number, warranty, and regulatory and wireless certification information.
(9)	 Audio-out (headphone) jack/Audio-in (microphone) jack	<p>Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable.</p> <p>WARNING! To reduce the risk of personal injury, adjust the volume before using headphones, earbuds, or a headset. For additional safety information, see 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> <p>NOTE: Be sure that the device cable has a 4-conductor connector that supports both audio-out (headphone) and audio-in (microphone).</p> <p>NOTE: Stand-alone microphones and headphones with separate microphone jacks are not supported.</p>

Display



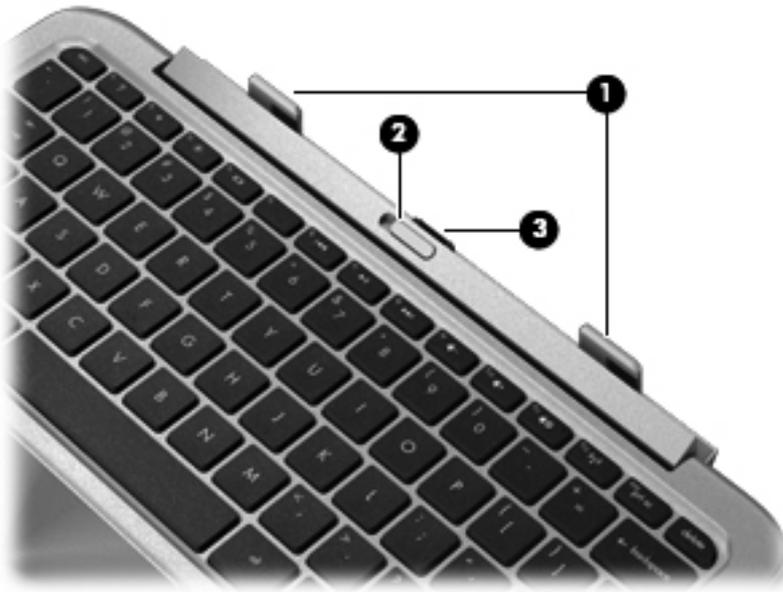
Component	Description
(1) WLAN antennas (2)*	Send and receive wireless signals.
(2) Internal microphones (2)	Record audio, automatically filtering out the noise around you and cancelling echoes.
(3) Webcam (front)	Records video and takes still photographs.
	 Swipe from the right edge of the TouchPad or touch screen to display the charms, tap Search , and then tap the search box. Type c , and then select Camera from the list of applications. – or –  From the Start screen, type c , and then select Camera from the list of applications.
(4) Webcam light (front)	On: The webcams are on.
(5) Ambient light sensor	The ambient light sensor automatically adjusts the display brightness based on the lighting conditions in your environment.
(6) Speakers (2)	Produce sound.
(7) Windows® logo button	Minimizes all open applications and displays the Start screen.

Component	Description
(8) Near Field Communication (NFC) antenna	With HP TouchZone, you can wirelessly connect, communicate and transfer data/info to and from your Near Field Communication (NFC)-compatible devices.

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

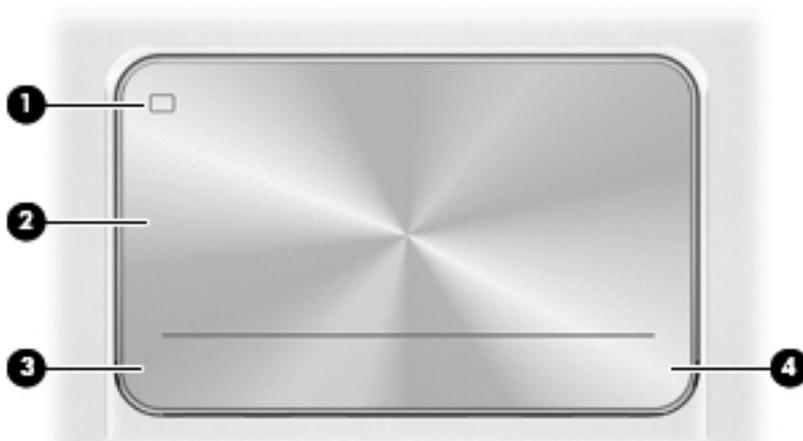
Keyboard dock

Top



Component		Description
(1)	Alignment posts	Align and attach the tablet to the keyboard dock.
(2)	Release latch	Releases the tablet. To release the tablet, slide the release latch to the left.
(3)	Docking connector	Connects the tablet to the keyboard dock.

TouchPad



Component		Description
(1)	TouchPad on/off button	Turns the TouchPad off or on when you double-tap the button.

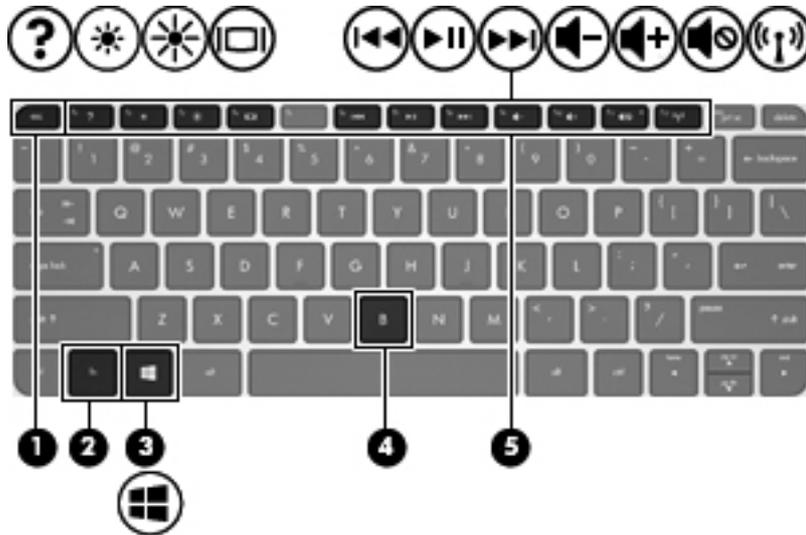
Component	Description
(2) TouchPad zone	Reads your finger gesture to move the pointer or activate items on the screen.
(3) Left TouchPad button	Functions like the left button of an external mouse.
(4) Right TouchPad button	Functions like the right button on an external mouse.

Lights



Component	Description
(1) Caps lock light	<ul style="list-style-type: none"> • White: Caps lock is on. • Off: Caps lock is off.
(2)  Mute light	<ul style="list-style-type: none"> • Amber: Computer sound is off. • Off: Computer sound is on.

Keys



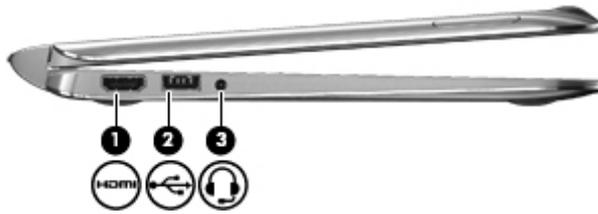
Component	Description
(1) <code>esc</code> key	Displays system information when pressed in combination with the <code>fn</code> key.
(2) <code>fn</code>	Displays system information when pressed in combination with the <code>esc</code> key.
(3)  Windows button	Returns you to the Start screen from an open app or the Windows desktop. NOTE: Pressing the Windows button again will return you to the previous screen.
(4) <code>b</code> key	Enables or disables Beats Audio when pressed in combination with the <code>fn</code> key.
(5) Action keys	Perform common tasks. NOTE: Action keys do not display or function on the on-screen keyboard of the tablet.

Right side



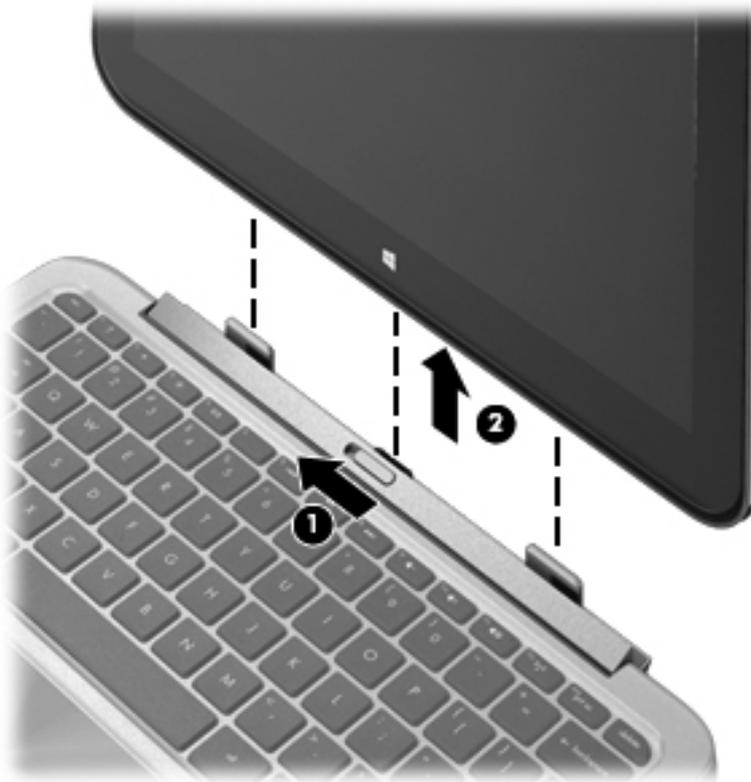
Component		Description
(1)	Digital Media Slot	Supports the following digital card formats: <ul style="list-style-type: none">• Secure Digital (SD) Memory Card• Secure Digital Extended Capacity (SDxC) Memory Card• Secure Digital High Capacity (SDHC) Memory Card• Ultra High Speed MultiMediaCard (UHS/MMC)
(2)	 USB 2.0 port	Connects an optional USB device.
(3)	 Power connector	Connects an AC adapter.

Left side



Component	Description
(1)  HDMI port	Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component, or a high-speed HDMI device.
(2)  USB 2.0 port	Connects an optional USB device.
(3)  Audio-out (headphone) jack/Audio-in (microphone) jack	Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. WARNING! To reduce the risk of personal injury, adjust the volume before using headphones, earbuds, or a headset. For additional safety information, see the <i>Regulatory, Safety and Environmental Notices</i> . NOTE: When a device is connected to the jack, the computer speakers are disabled. NOTE: Be sure that the device cable has a 4-conductor connector that supports both audio-out (headphone) and audio-in (microphone). NOTE: Stand-alone microphones and headphones with separate microphone jacks are not supported.

Releasing the tablet from the keyboard dock



To release the tablet from the keyboard dock, follow these steps:

1. Slide the release latch on the keyboard dock to the left **(1)**.
2. Lift and remove the tablet **(2)**.

3 Illustrated parts catalog

Locating system information

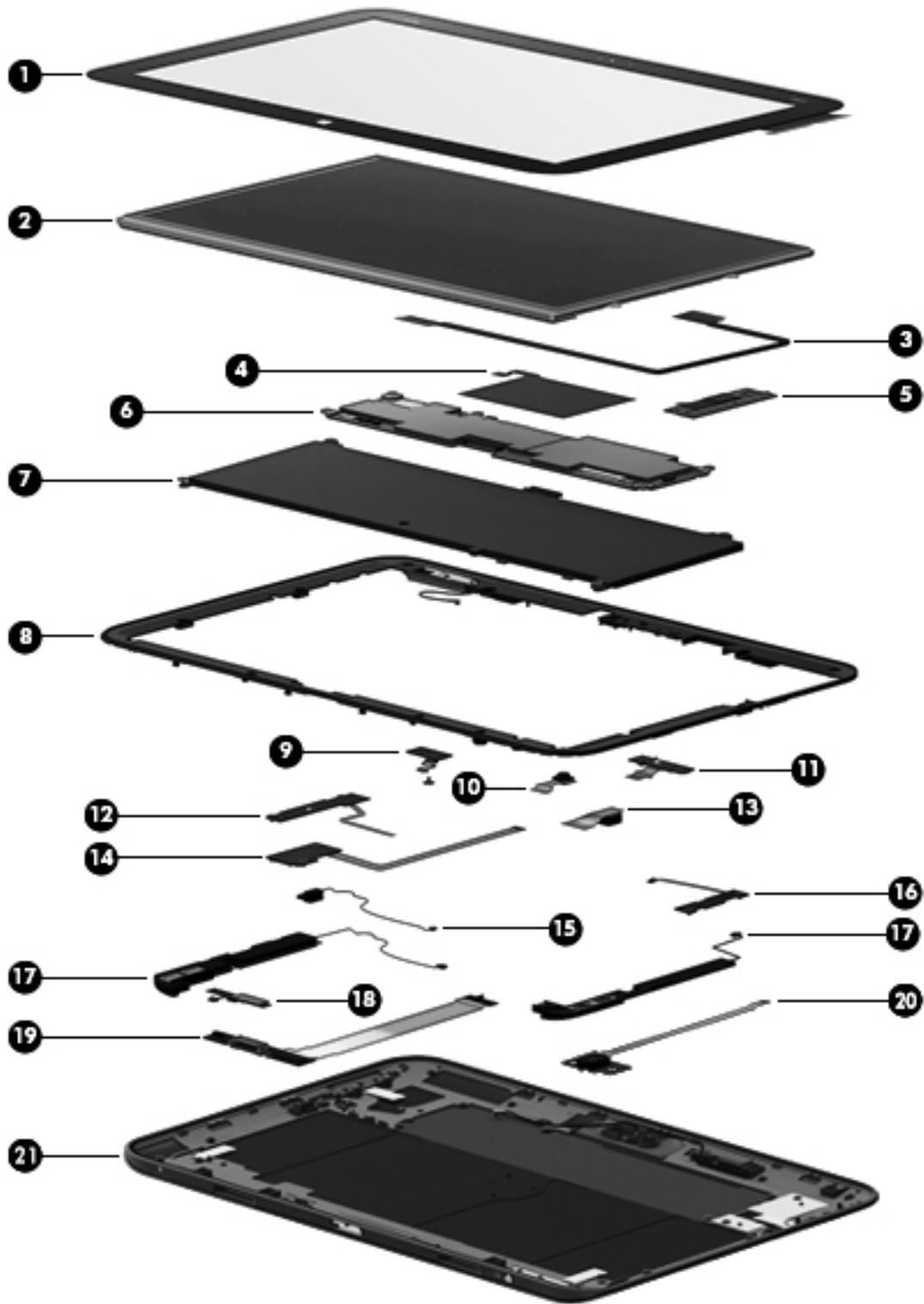
Important system information is located on the bottom edge of the tablet. You may need the information when traveling internationally or when you contact support:



Item	Description
(1)	<ul style="list-style-type: none">• Serial number• Product number• Warranty period• Regulatory and wireless certification information

Using Windows, briefly press the **fn+esc** key combination to display the System Information screen, which provides the product name and serial number of your computer, as well as information about the memory, processor, BIOS, and keyboard.

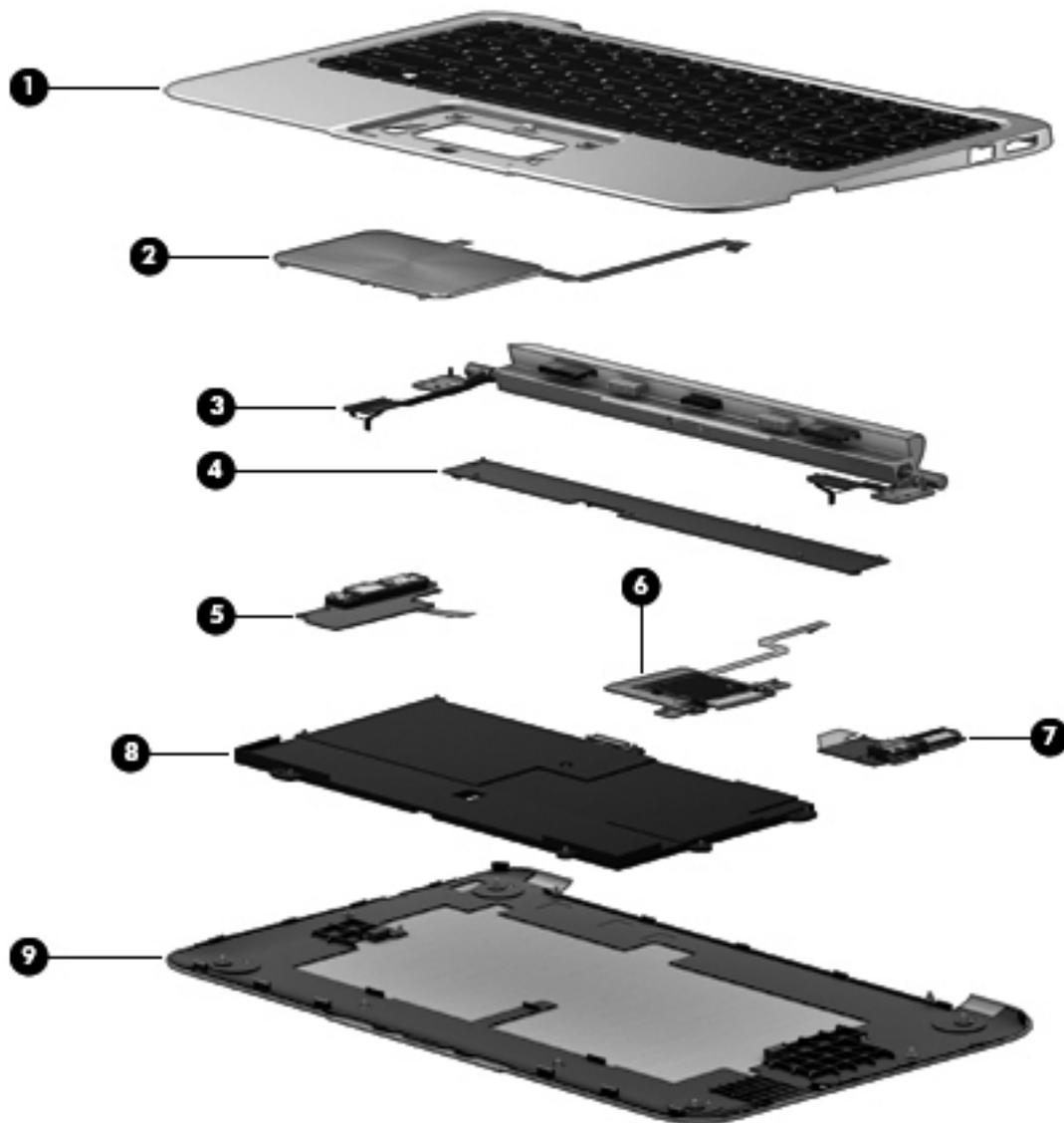
Computer major components



Item	Component	Spare part number
(1)	Touch screen (with cables)	702353-001

Item	Component	Spare part number
(2)	Display panel	702362-001
(3)	Display panel cable	702351-001
(4)	NFC antenna	702347-001
(5)	System board (includes keyboard cable):	
	64 (GB)	702366-001
	64 (GB) W8 Standard	702366-501
	64 (GB) W8 Pro	702366-601
	128 (GB)	708759-001
	128 (GB) W8 Standard	708759-501
	128 (GB) W8 Pro	708759-601
(6)	TouchScreen connector board (with cable)	702351-001
(7)	Battery (with cable)	
	2-cell 25W Hr 3.38AH battery (Tablet)	694501-001
	2-cell 21W Hr 2.86AH battery (Keyboard dock)	694502-001
(8)	Display bezel (with left antenna transceiver)	702350-001
(9)	Microphone board (with cable)	702358-001
(10)	Webcam (front) with cable	702358-001
(11)	Camera LED board	702358-001
(12)	Volume control button board (with cable) in back cover 64G kit	702356-001
(13)	Rear camera (with cable)	702358-001
(14)	Power button board	702360-001
(15)	Vibration module (with cable)	702356-001
(16)	Speakers (with cables)	702365-001
(17)	Micro SD digital media card board	702359-001
(18)	Windows button board (with cable)	702356-001
(19)	Audio/micro SD digital media card reader/touch screen board with cable	702357-001
(20)	Multimedia board (keyboard dock)	702361-001
(21)	Base enclosure (with right antenna transceiver)	702349-001

Keyboard dock parts



Item	Component	Spare part number
(1)	Top cover/keyboard	
	Top cover with keyboard for use in the United States	702369-001
	Top cover with keyboard for use in the United Kingdom and Singapore	702369-031
	Top cover with keyboard for use in Germany	702369-041
	Top cover with keyboard for use in France	702369-051
	Top cover with keyboard for use in Italy	702369-061
	Top cover with keyboard for use in Spain	702369-071
	Top cover with keyboard for use in Portugal	702369-131

Item	Component	Spare part number
	Top cover with keyboard for use in Turkey	702369-141
	Top cover with keyboard for use in Greece	702369-151
	Top cover with keyboard for use in Latin America	702369-161
	Top cover with keyboard for use in Saudi Arabia	702369-171
	Top cover with keyboard for use in Russia	702369-251
	Top cover with keyboard for use in Thailand	702369-281
	Top cover with keyboard for use in Japan	702369-291
	Top cover with keyboard for use in Belgium	702369-A41
	Top cover with keyboard for use in Taiwan	702369-AB1
	Top cover with keyboard for use in South Korea	702369-AD1
	Top cover with keyboard for use in Switzerland	702369-BG1
	Top cover with keyboard for use in Canada	702369-DB1
	Top cover with keyboard for use in Denmark, Finland and Norway	702369-DH1
	Top cover with keyboard for use internationally	702369-B31
(2)	TouchPad (in Top Cover kit)	702368-001
(3)	Hinge assembly	702354-001
(4)	System board	
	System board for KB dock	702367-001
(5)	Multimedia board	702361-001
(6)	Digital Media Card board	702357-001
(7)	Power/USB board	702360-001
(8)	Battery	
	2-cell, 25WHr 3.38AH Li-ion battery (Tablet)	694501-001
	2-cell, 21WHr 2.86AH Li-ion battery (Keyboard dock)	694502-001
(9)	Display back cover	
	64-GB 1/1/0	702348-001
	128-GB 1/1/0	708757-001
	64-GB 2/2/0	709997-001
	128-GB 2/2/0	709998-001
	128-GB 1/1/0 APJ	710885-001
	64-GB 1/1/0 APJ	710884-001

Sequential part number listing

Spare part number	Description
490371-001	Power Cord for use in North America
490371-011	Power Cord for use in Australia
490371-021	Power Cord for use in Europe, the Middle East and Africa
490371-031	Power Cord for use in the United Kingdom and Singapore
490371-061	Power Cord for use in Italy
490371-081	Power Cord for use in Denmark
490371-111	Power Cord for use in Switzerland
490371-201	Power Cord for use in Thailand
490371-291	Power Cord for use in Japan
490371-AA1	Power Cord for use in the People's Republic of China
490371-AB1	Power Cord for use in Taiwan
490371-AD1	Power Cord for use in South Korea
490371-D61	Power Cord for use in India
539614-001	RJ45/USB Adaptor
694501-001	2-cell, 25WHr 3.38AH Li-ion battery
694502-001	2-cell, 21WHr 2.86AH Li-ion battery
701943-001	
702347-001	Antenna
702348-001	Display cover
702349-001	Base enclosure
702350-001	Bezel (with antenna)
702351-001	Display cable
702352-001	Keyboard dock for use in the United States
702352-031	Keyboard dock for use in the United Kingdom and Singapore
702352-041	Keyboard dock for use in Germany
702352-051	Keyboard dock for use in France
702352-061	Keyboard dock for use in Italy
702352-071	Keyboard dock for use in Spain
702352-131	Keyboard dock for use in Portugal
702352-141	Keyboard for use in Turkey
702352-151	Keyboard dock for use in Greece
702352-161	Keyboard dock for use in Latin America

Spare part number	Description
702352-171	Keyboard dock for use in Saudi Arabia
702352-251	Keyboard dock for use in Russia
702352-A41	Keyboard dock for use in Belgium
702352-B31	Keyboard dock for use in The Netherlands
702352-BG1	Keyboard dock for use in Switzerland
702352-DB1	Keyboard dock for use in Canada
702352-DH1	Keyboard dock for use in Denmark, Finland, Norway
702353-001	Touch screen
702354-001	Display hinge assembly
702355-001	11.6-in, HD, Anti-Glare WLED display panel for use with 64-GB units in Europe, the Middle East and Africa
702355-011	11.6-in, HD, Anti-Glare WLED display panel for use with 64-GB units in New Zealand
702355-161	11.6-in, HD, Anti-Glare WLED display panel for use with 64-GB units in Latin America
702355-281	11.6-in, HD, Anti-Glare WLED display panel for use with 64-GB units in Thailand
702355-371	11.6-in, HD, Anti-Glare WLED display panel for use with 64-GB units in Asia Pacific
702355-AA1	11.6-in, HD, Anti-Glare WLED display panel for use with 64-GB units in People's Republic of China
702355-AB1	11.6-in, HD, Anti-Glare WLED display panel for use with 64-GB units in Taiwan
702355-AC1	11.6-in, HD, Anti-Glare WLED display panel for use with 64-GB units in Hong Kong
702355-D11	11.6-in, HD, Anti-Glare WLED display panel for use with 64-GB units in Chile
702355-D61	11.6-in, HD, Anti-Glare WLED display panel for use with 64-GB units in India
702356-001	Button board (includes vibration module kit)
702357-001	Audio/micro SD digital media card reader/touch screen board kit
702358-001	Webcam
702359-001	Digital media card reader board (for keyboard dock)
702360-001	USB/Power board (for keyboard dock)
702361-001	Multimedia board (for keyboard dock)
702362-001	11.6-in, HD, Anti-Glare WLED display panel for use in all regions
702363-001	Rubber feet kit
702364-001	Screw kit
702365-001	Speakers
702366-001	System board for use only with 64-GB models equipped with an Intel Z2760 1.8GHz processor (includes processor and replacement thermal material)
702366-501	System board for use only with 64-GB W8 Standard models equipped with an Intel Z2760 1.8GHz processor (includes processor and replacement thermal material)

Spare part number	Description
702366-601	System board for use only with 64-GB W8 Pro models equipped with an Intel Z2760 1.8GHz processor (includes processor and replacement thermal material)
702367-001	System board keyboard dock
702368-001	TouchPad LED board with cable
702369-001	Top cover with keyboard for use in the United States
702369-031	Top cover with keyboard for use in the United Kingdom
702369-041	Top cover with keyboard for use in Germany
702369-051	Top cover with keyboard for use in France
702369-061	Top cover with keyboard for use in Italy
702369-071	Top cover with keyboard for use in Spain
702369-131	Top cover with keyboard for use in Portugal
702369-141	Top cover with keyboard for use in Turkey
702369-151	Top cover with keyboard for use in Greece
702369-161	Top cover with keyboard for use in Latin America
702369-171	Top cover with keyboard for use in Saudi Arabia
702369-251	Top cover with keyboard for use in Russia
702369-281	Top cover with keyboard for use in Thailand
702369-291	Top cover with keyboard for use in Japan
702369-A41	Top cover with keyboard for use in Belgium
702369-AB1	Top cover with keyboard for use in Taiwan
702369-AD1	Top cover with keyboard for use in South Korea
702369-B31	Top cover with keyboard for use internationally
702369-BG1	Top cover with keyboard for use in Switzerland
702369-DB1	Top cover for use in Canada
702369-DH1	Top cover with keyboard for use in Denmark, Finland, Norway
704926-001	HP active pen
708757-001	128-GB 11.6 High definition display back cover (128-GB unit)
708758-001	11.6-in, HD, Anti-Glare WLED display panel for use with 128-GB units in Europe, the Middle East and Africa
708758-011	11.6-in, HD, Anti-Glare WLED display panel for use with 128-GB units in New Zealand
708758-161	11.6-in, HD, Anti-Glare WLED display panel for use with 128-GB units in Latin America
708758-281	11.6-in, HD, Anti-Glare WLED display panel for use with 128-GB units in Thailand
708758-371	11.6-in, HD, Anti-Glare WLED display panel for use with 128-GB units in Asia Pacific

Spare part number	Description
708758-AA1	11.6-in, HD, Anti-Glare WLED display panel for use with 128-GB units in People's Republic of China
708758-AB1	11.6-in, HD, Anti-Glare WLED display panel for use with 128-GB units in Taiwan
708758-AC1	11.6-in, HD, Anti-Glare WLED display panel for use with 128-GB units in Hong Kong
708758-D11	11.6-in, HD, Anti-Glare WLED display panel for use with 128-GB units in Chile
708758-D61	11.6-in, HD, Anti-Glare WLED display panel for use with 128-GB units in India
708759-001	System board (Z2760 for 128-GB tablet)
708759-501	System board (Z2760 for 128-GB tablet) W8 Standard
708759-601	System board (Z2760 for 128-GB tablet) W8 Pro
709997-001	64-GB High definition display back cover
709998-001	128-GB High definition display back cover
710884-001	64-GB High definition display back cover
710885-001	128-GB High definition display back cover
714656-001	AD Adapter (non-smart) 20W for use in all countries and regions
716825-011	11.6-in, HD, Anti-Glare WLED display panel for use with 64-GB Pro in New Zealand
716825-D61	11.6-in, HD, Anti-Glare WLED display panel for use with 64-GB Pro in India
716826-011	11.6-in, HD, Anti-Glare WLED display panel 128-GB Pro in New Zealand
716826-D61	11.6-in, HD, Anti-Glare WLED display panel 128-GB Pro in India

4 Removal and replacement procedures

 **CAUTION:** This computer does not have user-replaceable parts. Only HP authorized service providers should perform the removal and replacement procedures described here. Accessing the internal part could damage the computer or void the warranty.

Preliminary replacement 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 nonconductive foam.
- Use transporters and conveyors made of antistatic belts and roller bushings. Be sure that mechanized equipment used for moving materials is wired to ground and that proper materials are selected to avoid static charging. When grounding is not possible, use an ionizer to dissipate electric charges.

Workstation guidelines

Follow these grounding workstation guidelines:

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

Equipment guidelines

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

- When seated, wear a wrist strap connected to a grounded system. Wrist straps are flexible straps with a minimum of one megohm $\pm 10\%$ 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

Component replacement procedures

This chapter provides removal and replacement procedures.

There are as many as 77 screws that must be removed, replaced, or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

Dock components

The following sections describe the removal and replacement procedure of the dock components

Base enclosure

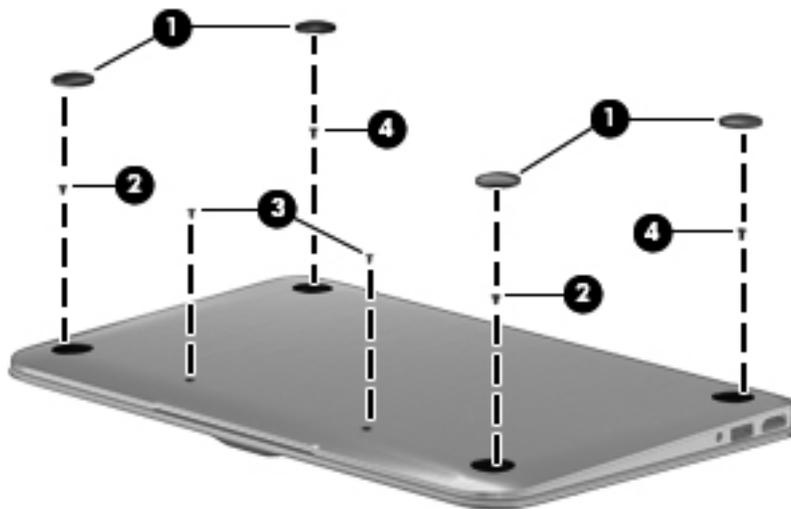
Description	Spare part number
Base enclosure (Black)	702349-001
Rubber feet	702363-001

Before disassembling the keyboard dock, follow these steps:

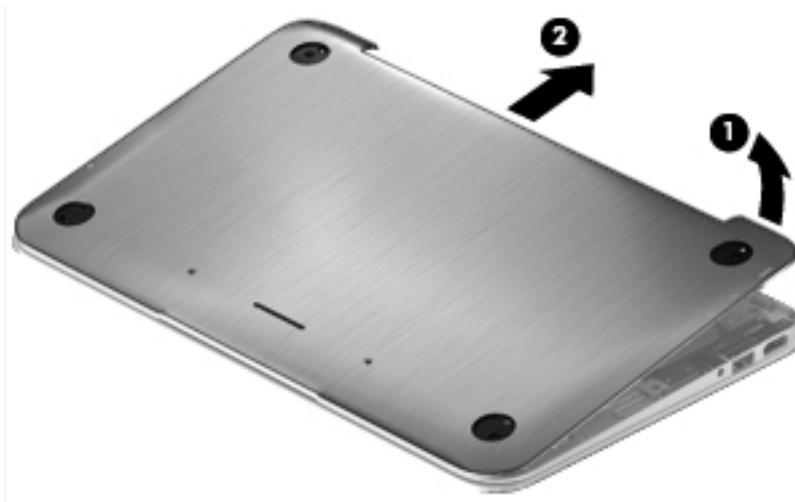
1. Shut down the keyboard dock. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

Remove the base enclosure:

1. Turn the computer face down, and then remove the rubber feet (1). The rubber feet are attached with adhesive, and have alignment pins that fit into the screw holes.
2. Remove the 2 3.0-mm screws located under the front rubber feet (2), and then remove the 2 polished 4.5-mm screws on the front row (3).
3. Remove the 2 remaining 4.5-mm screws under rear rubber feet (4).



4. Separate and release the bottom enclosure (1), and then remove the bottom enclosure (2).



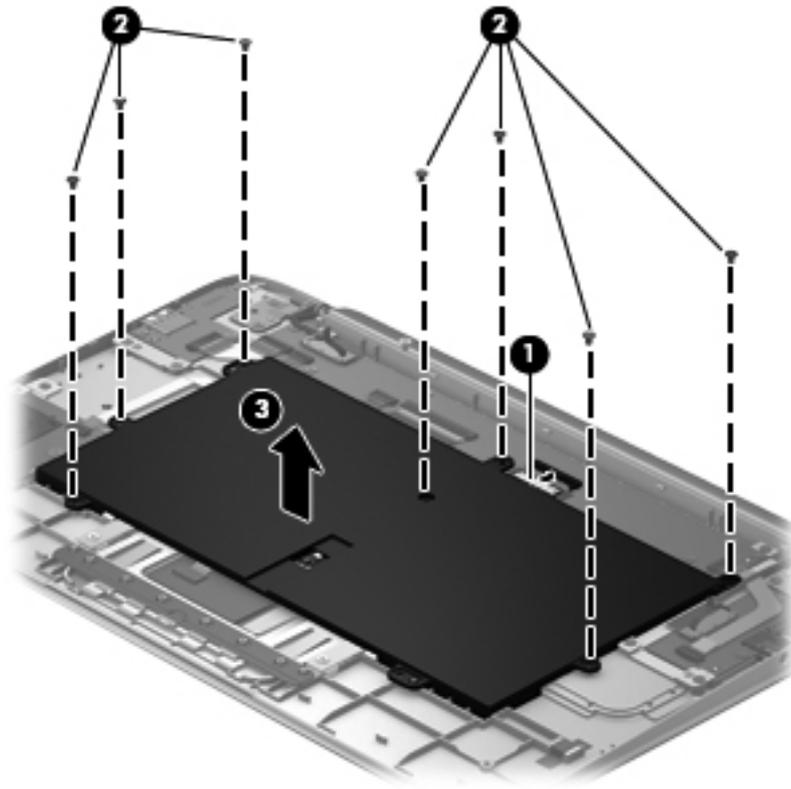
Battery

Description	Spare part number
2-cell, 25WHr 3.38AH Li-ion battery (Tablet)	694501-001
2-cell, 21WHr 2.86AH Li-ion battery (Keyboard dock)	694502-001

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.
4. Remove the base enclosure (see [Base enclosure on page 28](#)).
1. Turn the computer right-side up, with the front toward you.
2. Disconnect the battery cable (1) from the system board, and then remove the 7 screws securing the battery (2).

3. Remove the battery (3).



Digital media card reader board

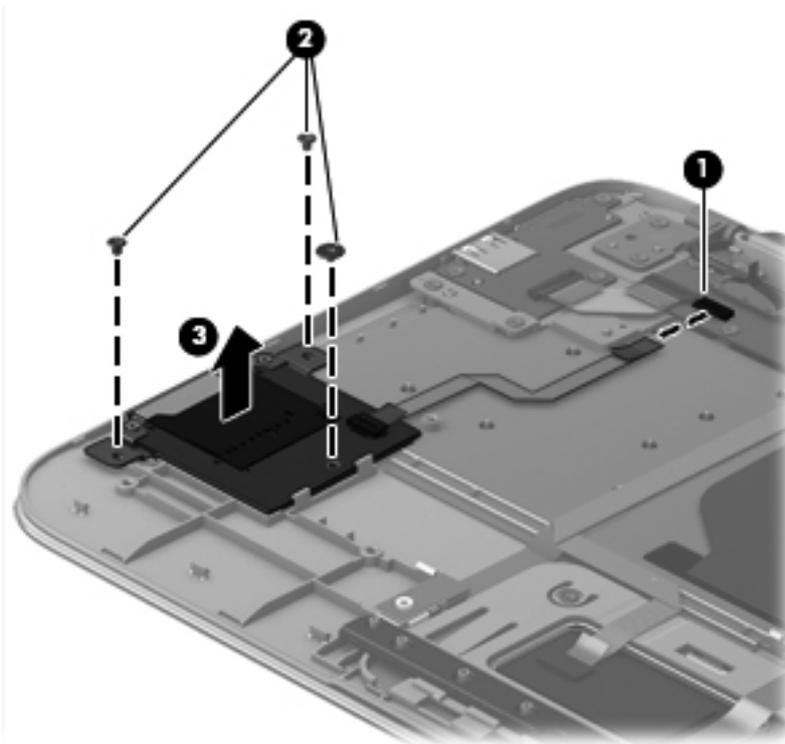
Description	Spare part number
Digital media card reader	702359-001

Before removing the digital media card reader, 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 base enclosure (see [Base enclosure on page 28](#)).
5. Disconnect the battery cable (see [Battery on page 29](#)).

Remove the digital media card reader board and bracket:

1. Disconnect the digital media card reader cable **(1)**.
2. Remove the 2x2–mm broadhead screw on the rear edge of the board and then remove the 2 2x5–mm screws securing the digital media card reader board to the system board **(2)**. The drive tilts upwards.
3. Remove the digital media card reader board and bracket **(3)**.



Reverse these procedures to reassemble and install the digital media card reader board.

USB/Power Connector board

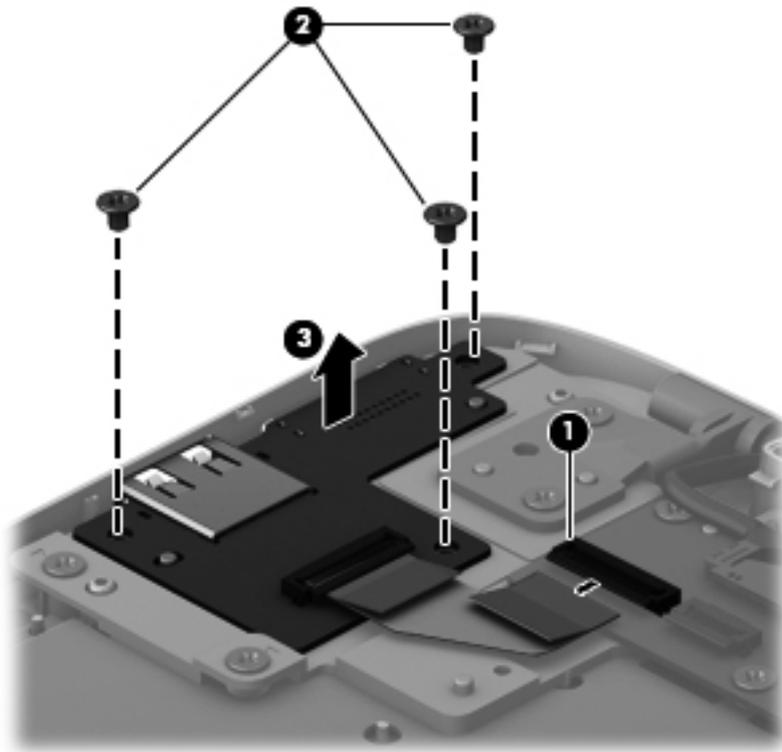
Description	Spare part number
USB/Power Connector board	702360-001

Before removing the USB/Power 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 base enclosure (see [Base enclosure on page 28](#)).
5. Disconnect the battery cable (see [Battery on page 29](#)).

Remove the USB/Power connector board:

1. Disconnect the USB/Power connector board cable (1).
2. Remove the 3 screws securing the USB/Power connector (2).
3. Remove the USB/Power connector board (3).



Reverse this procedure to install the USB/Power connector board and cable.

Multimedia board

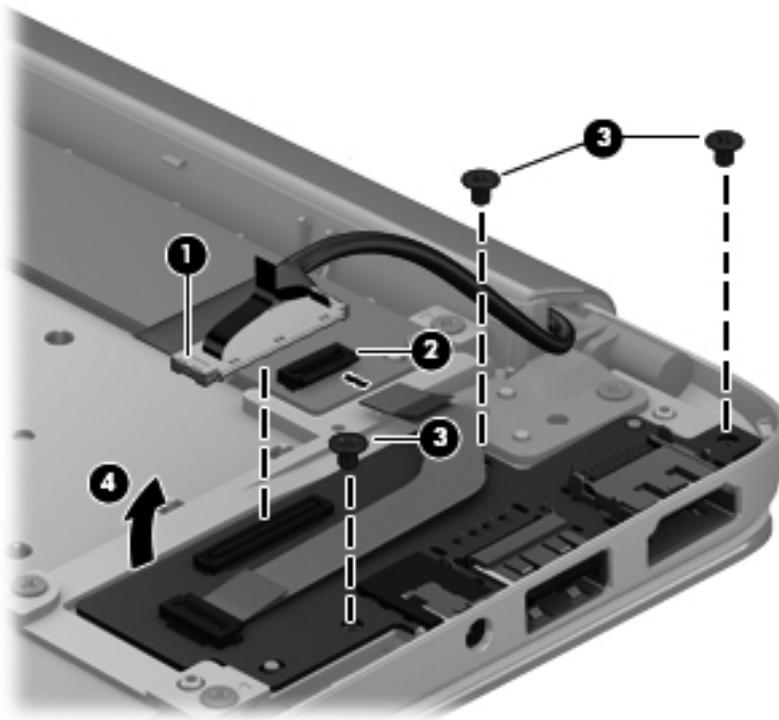
Description	Spare part number
Multimedia board	702361-001

Before removing the multimedia board (which includes USB, Audio, and HDMI connectors), 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 base enclosure (see [Base enclosure on page 28](#)).
5. Disconnect the battery cable (see [Battery on page 29](#).)

Remove the multimedia board:

1. Turn the computer, with the right side toward you, and then disconnect the right assembly hinge (1).
2. Disconnect the multimedia board cable (2).
3. Remove the three screws (3), and then remove the board (4).



Reverse this procedure to install the multimedia board and cable.

Hinge assembly removal

Description	Spare part number
Hinge assembly	702354-001

Before removing the hinge, follow these steps:

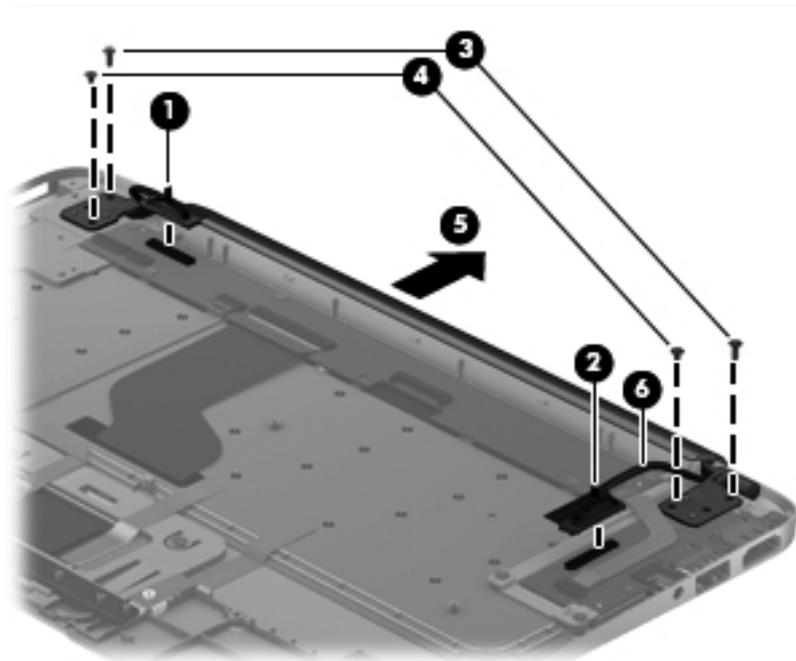
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the base enclosure (see [Base enclosure on page 28](#)).
5. Disconnect the battery cable (see [Battery on page 29](#)).

Remove the hinge assembly:

1. Disconnect the hinge assembly left cable (1), and then disconnect the hinge assembly right cable (2).

 **NOTE:** The right hinge assembly cable may already be disconnected if the multimedia board has been removed.

2. Remove the two 5.0-mm screws (3) on the outside screw hole, and then remove the 2 3.0-mm screws (4) on the inside screw hole.
3. Remove the hinge assembly (5). When removing the hinge assembly, make sure you account for the hinge assembly right cable (6).



Reverse this procedure to install the hinge assembly.

Top cover with keyboard (includes) TouchPad module

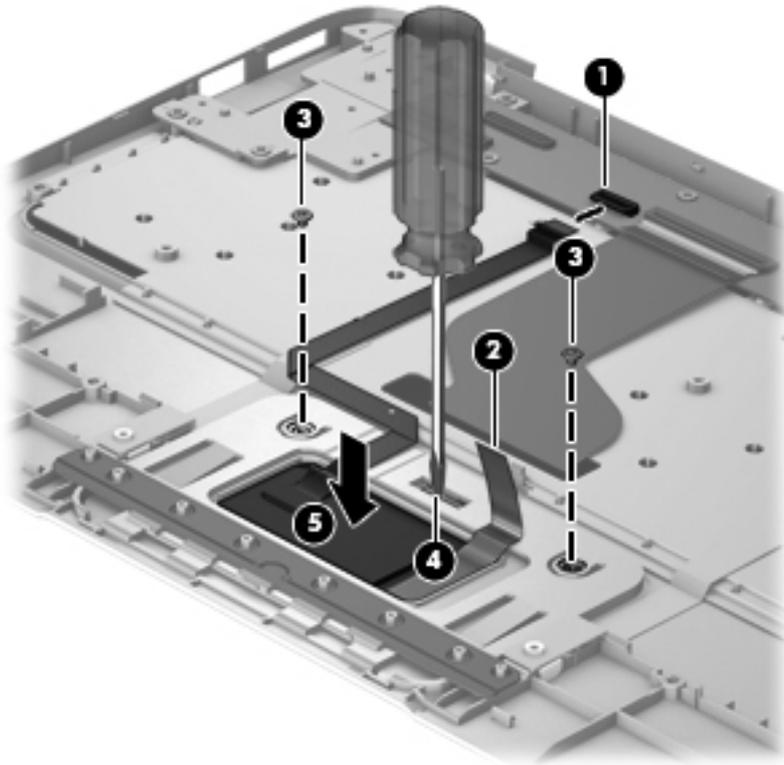
Description	Spare part number
TouchPad board (includes cable)	702368-001
Top cover with keyboard for use in the United States	702369-001
Top cover with keyboard for use in the United Kingdom and Singapore	702369-031
Top cover with keyboard for use in Germany	702369-041
Top cover with keyboard for use in France	702369-051
Top cover with keyboard for use in Italy	702369-061
Top cover with keyboard for use in Spain	702369-061
Top cover with keyboard for use in Spain	702369-071
Top cover with keyboard for use in Portugal	702369-131
Top cover with keyboard for use in Turkey	702369-141
Top cover with keyboard for use in Greece	702369-151
Top cover with keyboard for use in Latin America	702369-161
Top cover with keyboard for use in Saudi Arabia	702369-171
Top cover with keyboard for use in Russia	702369-251
Top cover with keyboard for use in Thailand	702369-281
Top cover with keyboard for use in Japan	702369-291
Top cover with keyboard for use in Belgium	702369-A41
Top cover with keyboard for use in Taiwan	702369-AB1
Top cover with keyboard for use in South Korea	702369-AD1
Top cover with keyboard for use in Internationally	702369-B31
Top cover with keyboard for use in Switzerland	702369-BG1
Top cover with keyboard for use in Canada	702369-DB1
Top cover with keyboard for use in Denmark, Finland and Norway	702369-DH1

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 display panel (see [Display panel assembly and Battery on page 40](#)).
5. Remove the base enclosure (see [Base enclosure on page 28](#)).

Remove the TouchPad button board and cable:

1. Turn the top cover upside down, with the back edge toward you.
2. Disconnect the TouchPad cable (1) and release the metal tape (2).
3. Remove the two Phillips PM screws, and then remove the TouchPad tab.
4. Remove the TouchPad.



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

System board



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

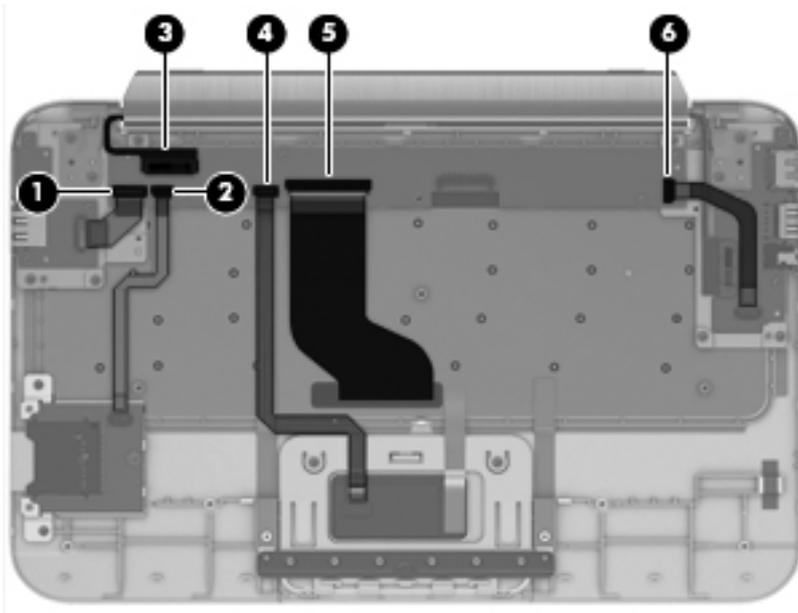
Description	Spare part number
For use only with computer models equipped with 64-GB devices	702366-001
For use only with W8 Standard computer models equipped with 64-GB devices	702366-501
For use only with W8 Pro computer models equipped with 64-GB devices	702366-601
System board for keyboard dock	702367-001
System board for use only with 64-GB models equipped with an Intel Z2760 1.8GHz processor (includes processor and replacement thermal material)	702366-001
System board for use only with 64-GB W8 Standard models equipped with an Intel Z2760 1.8GHz processor (includes processor and replacement thermal material)	702366-501
System board for use only with 64-GB W8 Pro models equipped with an Intel Z2760 1.8GHz processor (includes processor and replacement thermal material)	702366-601

Before removing the system board, follow these steps:

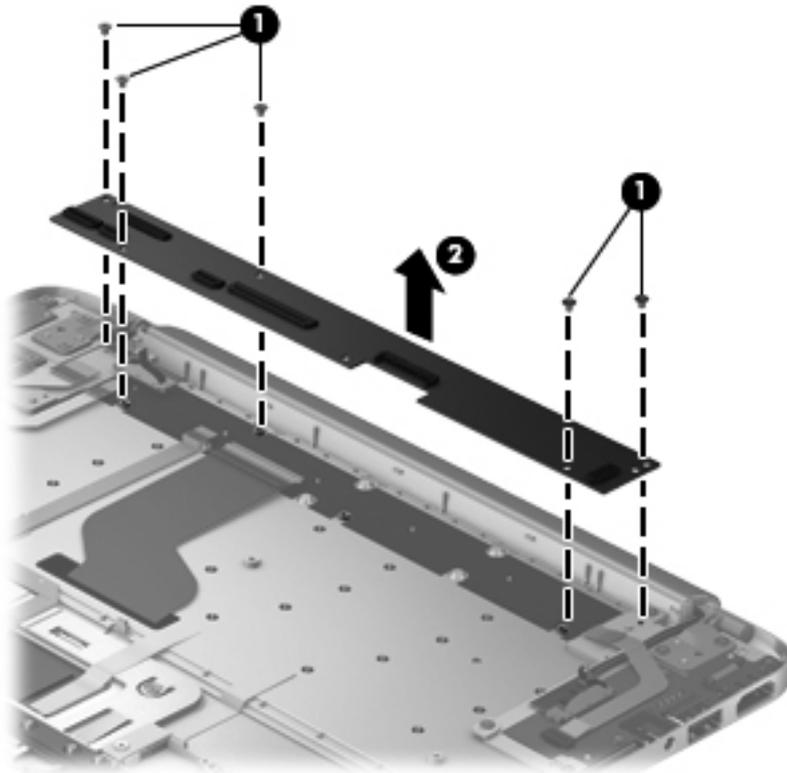
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the base enclosure (see [Base enclosure on page 28](#)).
5. Remove the battery (see [Battery on page 29](#)).

Remove the system board:

1. Remove the following cables:
 - Power connector/USB/Audio board cable **(1)**
 - Digital card media reader cable **(2)**
 - Hinge assembly left cable**(3)**
 - TouchPad cable **(4)**
 - Keyboard cable **(5)**
 - Multimedia board cable **(6)**



2. Remove the 5 Phillips PM 2.0x3.0 screws (1).
3. Remove the system board (2).



Reverse this procedure to install the system board.

Tablet parts

The following sections show the removal and replacement procedures for the tablet parts.



NOTE: Any time the internal tablet components are repaired, the display bezel should be replaced.

Display panel assembly and Battery



NOTE: When disassembling or assembling the display panel, it is necessary to operate in a clean environment such as a clean room or clean work table.

Description	Spare part number
2-cell 25Whr 3.38 AH Li-ion battery	694501-001
11.6-in, HD, Anti-Glare WLED display panel for use in all regions	702362-001
11.6-in, HD, Anti-Glare WLED display panel for use with 64-GB units in Europe, the Middle East and Africa	702355-001
11.6-in, HD, Anti-Glare WLED display panel for use with 64-GB units in New Zealand	702355-011
11.6-in, HD, Anti-Glare WLED display panel for use with 64-GB units in Latin America	702355-161
11.6-in, HD, Anti-Glare WLED display panel for use with 64-GB units in Thailand	702355-281
11.6-in, HD, Anti-Glare WLED display panel for use with 64-GB units in Asia Pacific	702355-371
11.6-in, HD, Anti-Glare WLED display panel for use with 64-GB units in People's Republic of China	702355-AA1
11.6-in, HD, Anti-Glare WLED display panel for use with 64-GB units in Taiwan	702355-AB1
11.6-in, HD, Anti-Glare WLED display panel for use with 64-GB units in Hong Kong	702355-AC1
11.6-in, HD, Anti-Glare WLED display panel for use with 64-GB units in Chile	702355-D11
11.6-in, HD, Anti-Glare WLED display panel for use with 64-GB units in India	702355-D61
11.6-in, HD, Anti-Glare WLED display panel for use with 128-GB units in Europe, the Middle East and Africa	708758-001
11.6-in, HD, Anti-Glare WLED display panel for use with 128-GB units in New Zealand	708758-011
11.6-in, HD, Anti-Glare WLED display panel for use with 128-GB units in Latin America	708758-161
11.6-in, HD, Anti-Glare WLED display panel for use with 128-GB units in Asia Pacific	708758-371
11.6-in, HD, Anti-Glare WLED display panel for use with 128-GB units in People's Republic of China	708758-AA1
11.6-in, HD, Anti-Glare WLED display panel for use with 128-GB units in Taiwan	708758-AB1
11.6-in, HD, Anti-Glare WLED display panel for use with 128-GB units in Hong Kong	708758-AC1
11.6-in, HD, Anti-Glare WLED display panel for use with 128-GB units in Chile	708758-D11
11.6-in, HD, Anti-Glare WLED display panel for use with 128-GB units in India	708758-D61
11.6-in, HD, Anti-Glare WLED display panel for use with 64-GB Pro units in New Zealand	716825-011
11.6-in, HD, Anti-Glare WLED display panel for use with 64-GB Pro units in India	716825-D61
11.6-in, HD, Anti-Glare WLED display panel for use with 128-GB Pro units in New Zealand	716826-011
11.6-in, HD, Anti-Glare WLED display panel for use with 128-GB Pro units in India	716826-D61

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.

Remove the display panel:

1. Turn the computer right-side up, with the rear toward you.
2. Open the computer.
3. Disconnect the tablet from the keyboard dock (see [Releasing the tablet from the keyboard dock on page 13](#)).
4. Apply the heat gun to locations on the surface of the touch screen.



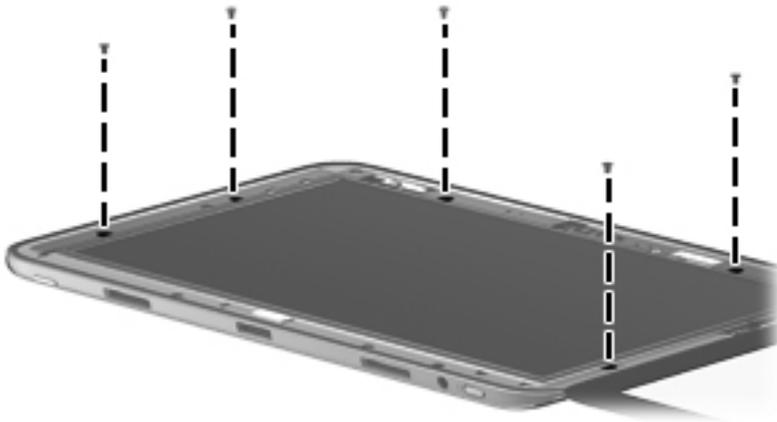
 **NOTE:** Ensure that the temperature is kept at an appropriate level to avoid damaging internal components. Glue melts at 80 degrees Celsius.

5. Release the touch screen.

 **NOTE:** Be careful not to scratch the screen.



6. Remove the 5 2x3-mm screws securing the panel to the display assembly (2 on the top edge, 1 on the right side, and 2 on the left side).

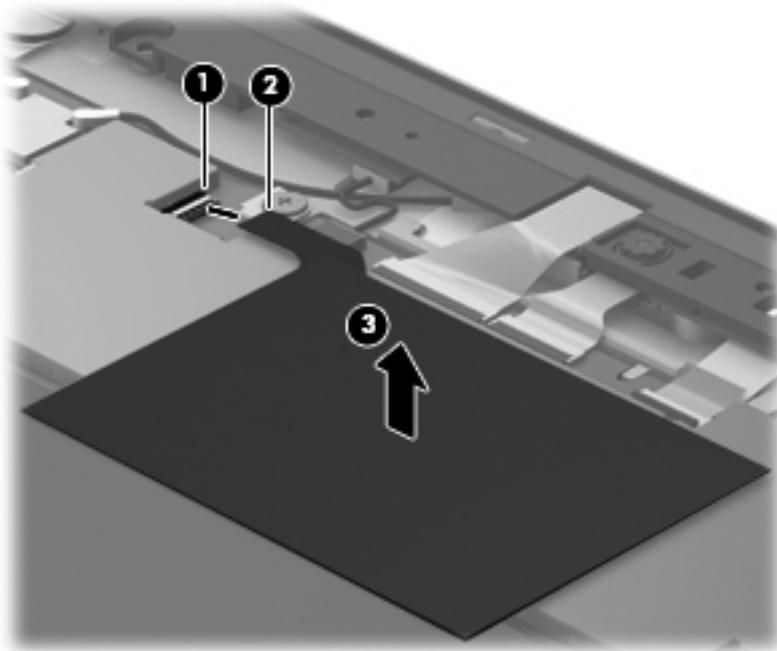


7. Lift up on the top edge of the display.

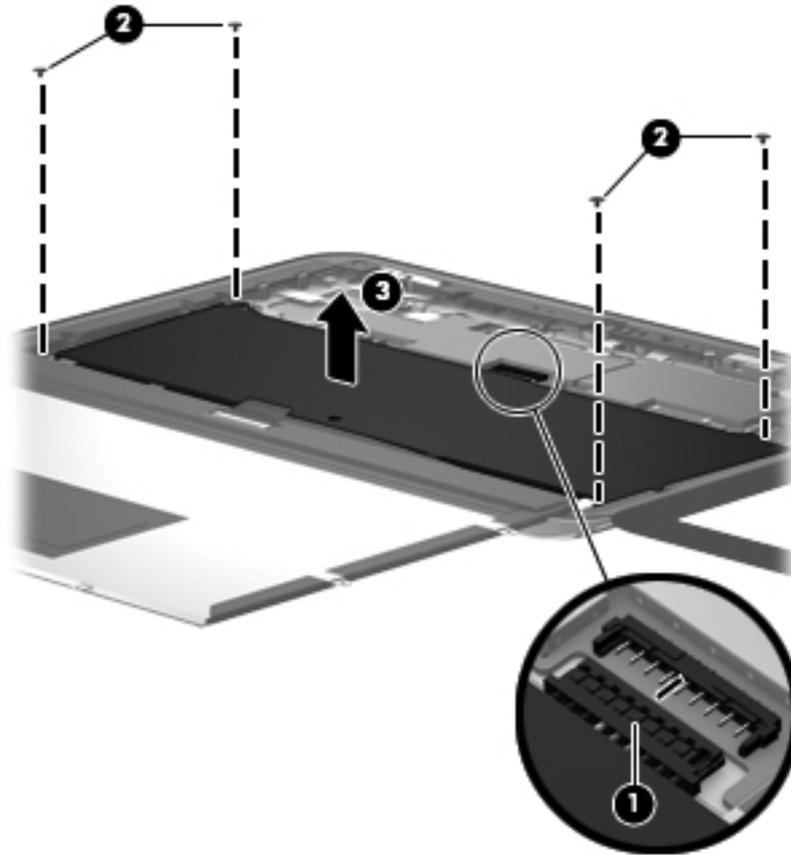
 **NOTE:** Support the display panel as you are removing the screws.



8. Locate the NFC antenna connector (1), disconnect the NFC antenna cable (2), and then remove the NFC antenna (3).

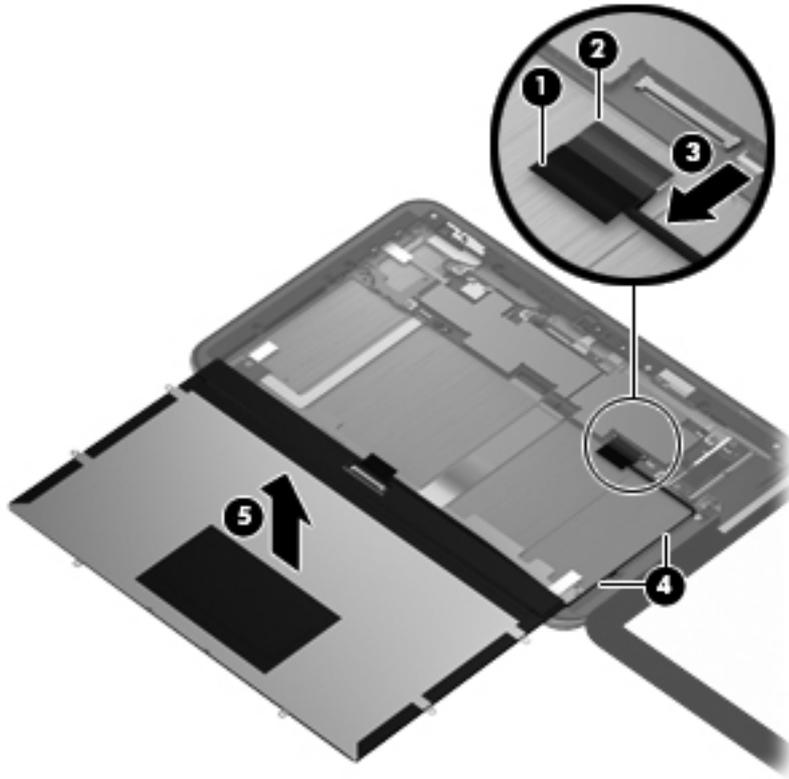


9. Disconnect the tablet battery cable (1), remove the 4 screws that secure the battery (2), and then remove the tablet battery (3).

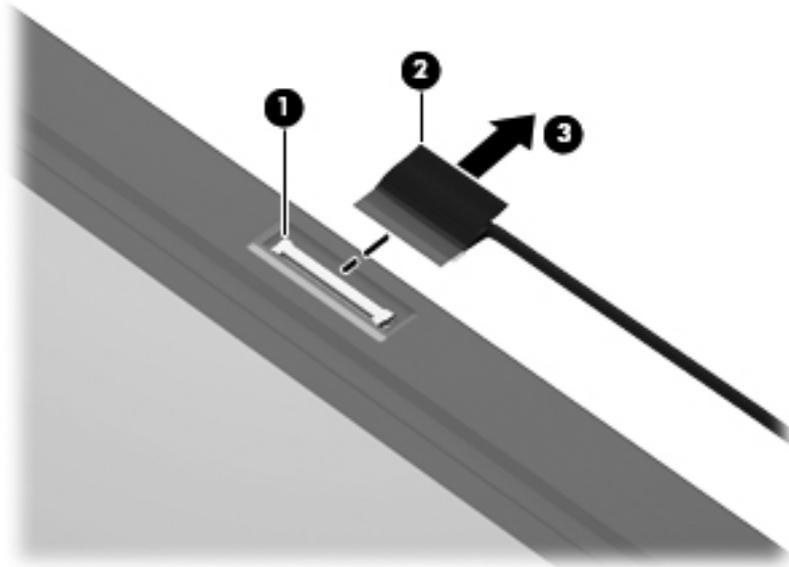


10. Release the display panel cable support strip (1), release the display panel cable tape (2), and then disconnect the display panel cable (3).

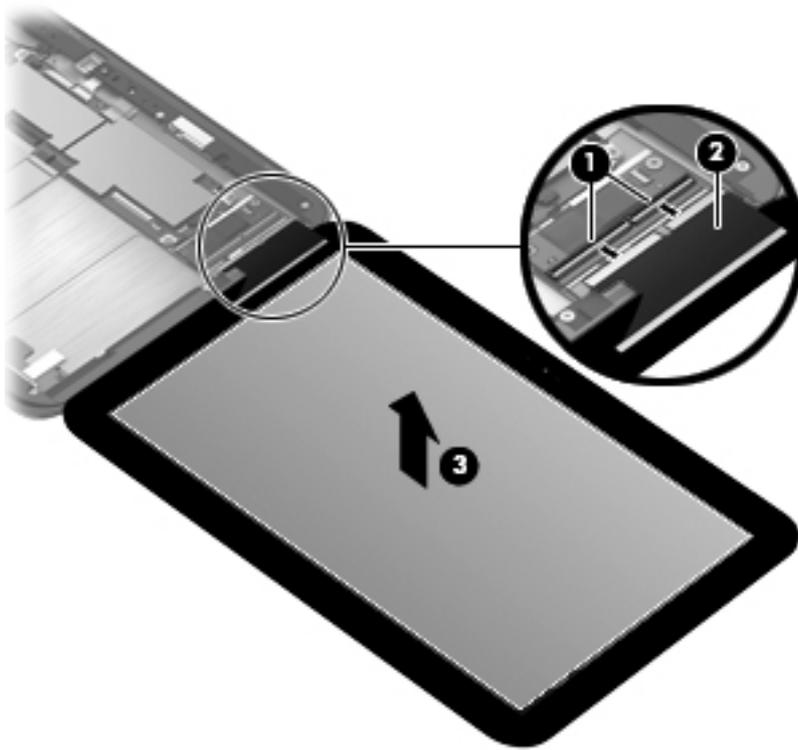
11. Clear the routing channel and clips (4), and then remove the display panel (5).



12. Locate the display panel cable support strip (1), release the display panel cable tape (2), and then disconnect the display panel cable (3).



13. Lift up on the right side of the screen. From the left side, locate the 2 connectors (1), and then release the connectors (2). Remove the touch screen (3)



Reverse this procedure to install the display panel.

System board

Component	Spare part number
System board for use only with 128-GB tablet equipped with an Intel Z2760 1.8GHz processor (includes processor and replacement thermal material)	708759-001
System board (Windows 8 Standard) for use only with 128-GB tablet equipped with an Intel Z2760 1.8GHz processor (includes processor and replacement thermal material)	708759-501
System board (Windows 8 Professional) for use only with 128-GB tablet equipped with an Intel Z2760 1.8GHz processor (includes processor and replacement thermal material)	708759-601

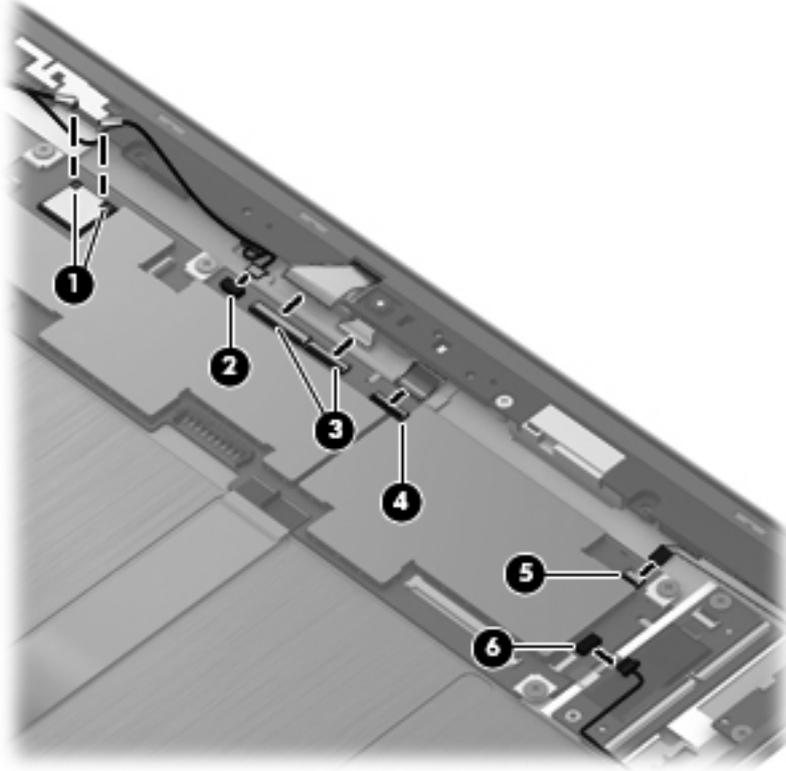
Before removing the system board, follow these steps:

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.

Remove the system board:

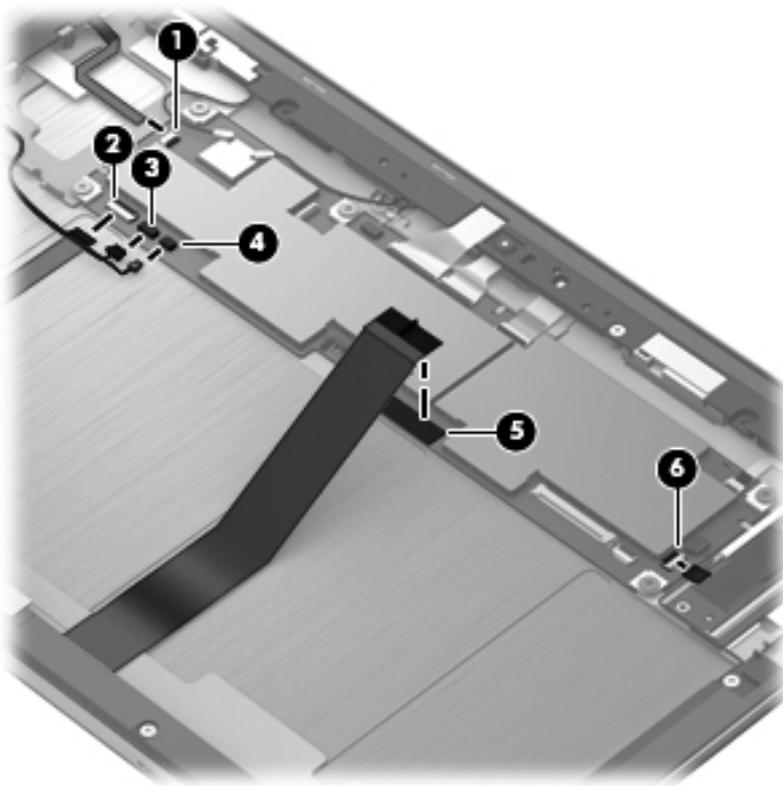
1. Disconnect the wireless antenna cable (1), the microphone board cable (2), and then disconnect the webcam cables (3).

2. Disconnect the webcam light board cable (4), the power button board cable (5), and then disconnect the right speaker cable (6).

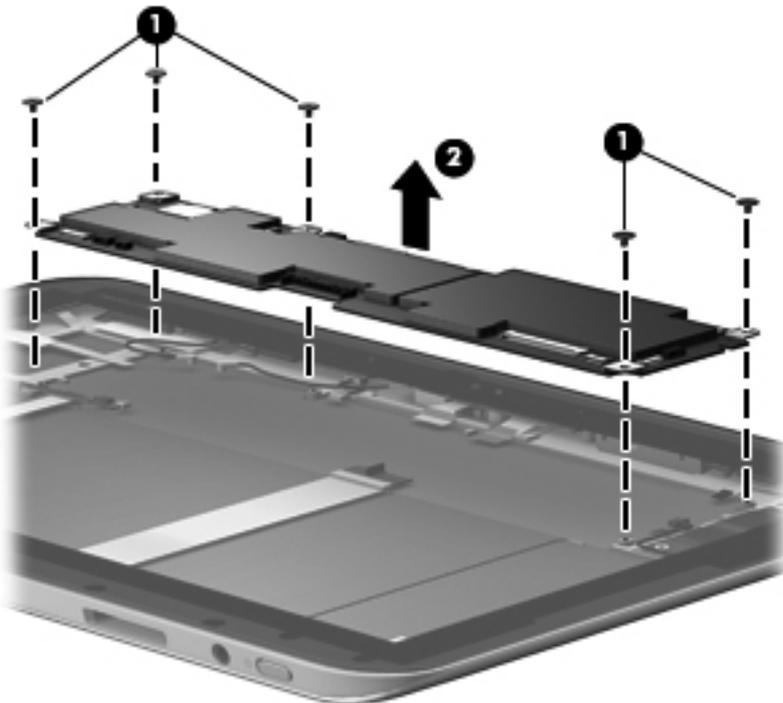


3. Disconnect the volume control button board cable (1), the micro Digital Media Card Reader board cable (2), and then disconnect the left speaker cable (3).

4. Disconnect the stabilizer module cable (4), disconnect the docking connector board cable (5), and then disconnect the touch screen connector board cable (6).



5. Remove the five screws securing the system board (1), and then remove the system board (2).



Reverse this procedure to install the system board.

Touch screen connector board

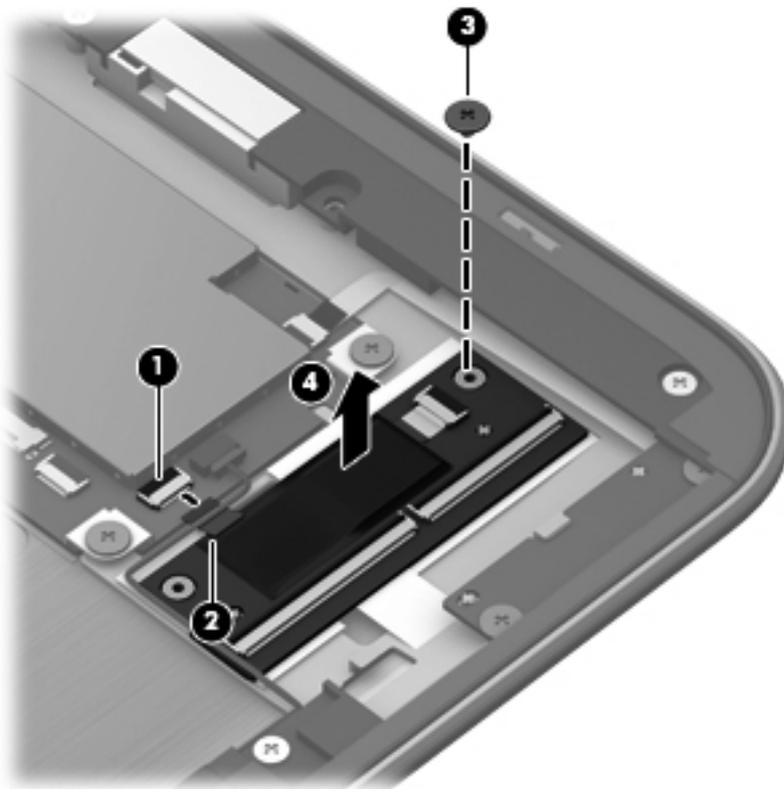
Description	Spare part number
Touch screen connector board	702351-001

Before removing the touch screen 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.

Remove the Touch screen:

1. Locate the Touch Screen connector board (1) on the system board, and then disconnect the touch screen connector board cable (2) from the system board.
2. Remove the screw securing the touch screen connector board (3), and then remove the touch screen connector board (4).



Display bezel

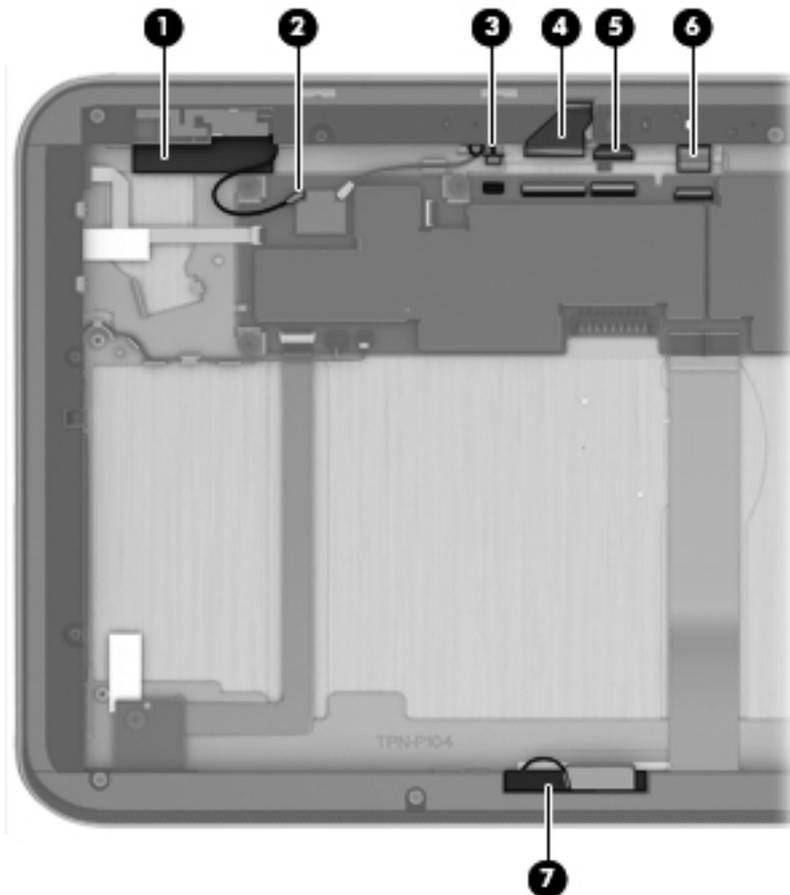
Description	Spare part number
Display bezel (with antenna)	702350-001

Before removing the display bezel, follow these steps:

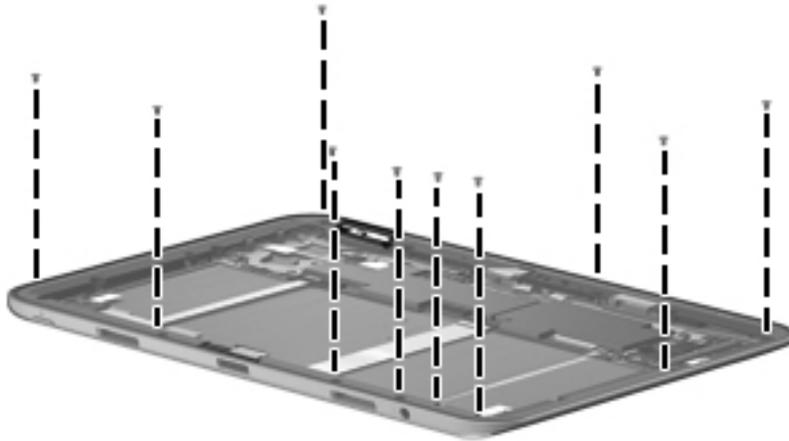
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the base enclosure (see [Base enclosure on page 28](#)).
5. Remove the display panel, and display panel cable (see [Display panel assembly and Battery on page 40](#)).
6. Remove the NFC antenna (see [Display panel assembly and Battery on page 40](#)).
7. Remove the touch screen (see [Touch screen connector board on page 49](#)).

Remove the display bezel:

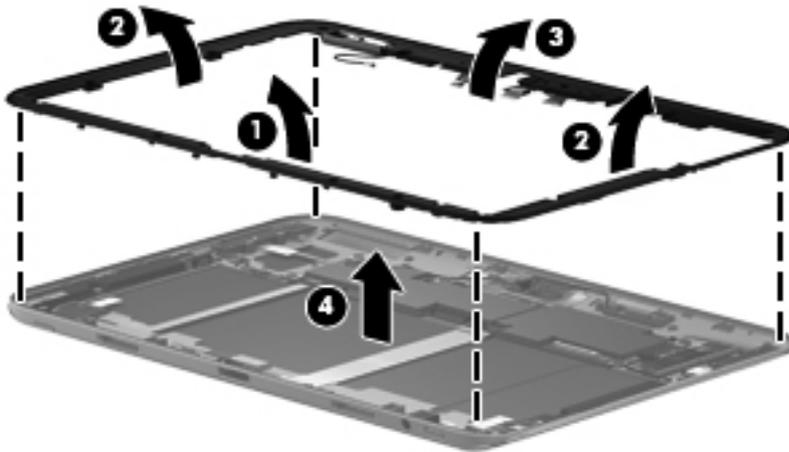
1. Turn the tablet so that it faces forward.
2. Disconnect the left wireless antenna cable (1), and then disconnect the microphone board cable (2).
3. Disconnect the right webcam cable (3), and then disconnect the webcam LED board cable (4)
4. Disconnect the front webcam cable (5), the front webcam light cable (6), and then disconnect the Windows button' cable (7).



5. Remove the ten screws securing the display bezel.



6. Release the bezel's bottom edge (1), release the left and right edges (2), release the top edge (3), and remove the display bezel (4).



Reverse this procedure to install the display bezel.

Webcam assembly (front)

Description	Spare part numbers
Webcam assembly	702358-001

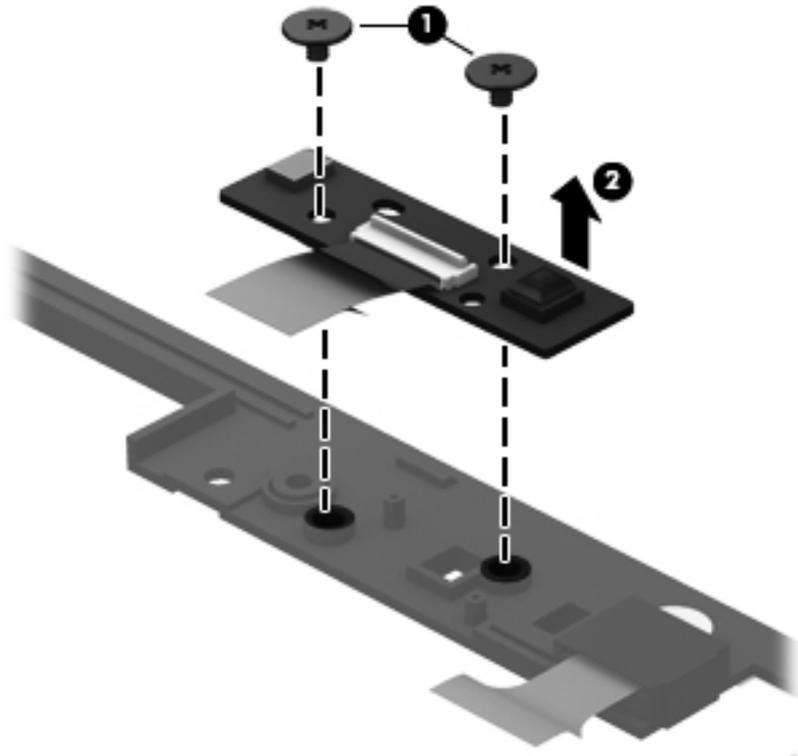
Before removing the webcam assembly:

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 display panel (see [Display panel assembly and Battery on page 40](#)).

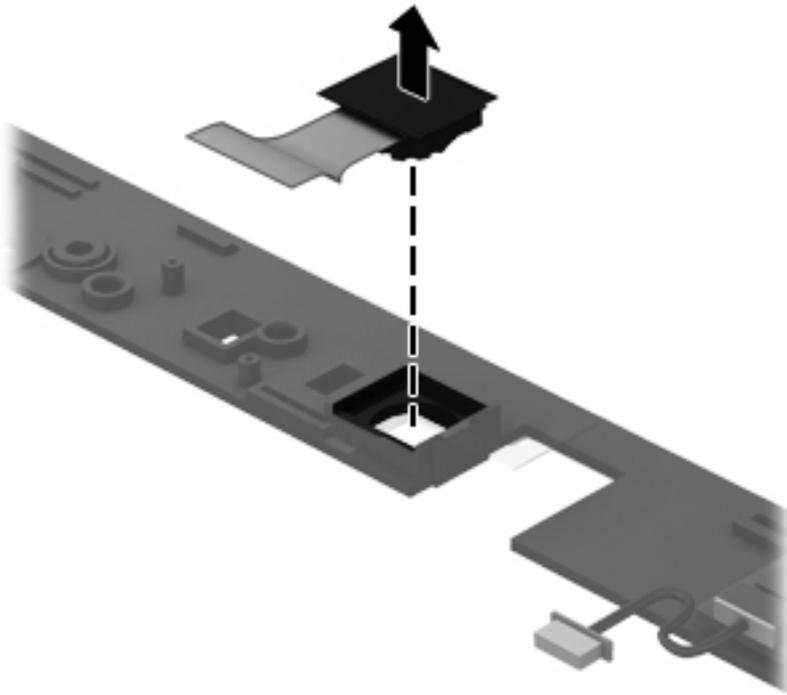
5. Remove the base enclosure (see [Base enclosure on page 28](#)).
6. Remove the display bezel (see [Display bezel on page 49](#)).

Remove the front webcam assembly:

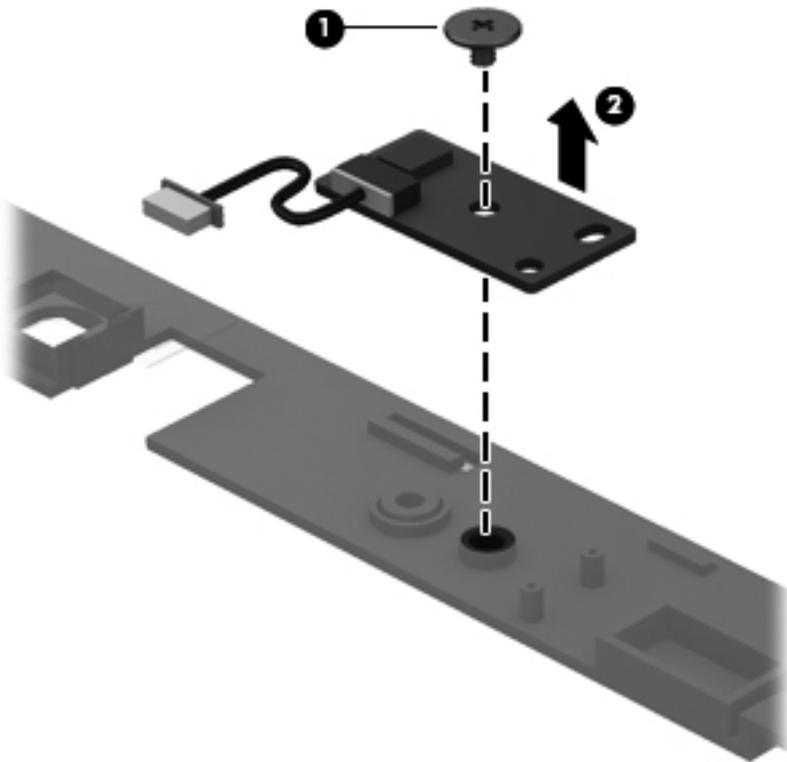
1. Remove the 2 screws securing the webcam LED board (1) to the display bezel, and then remove the webcam LED board (2).



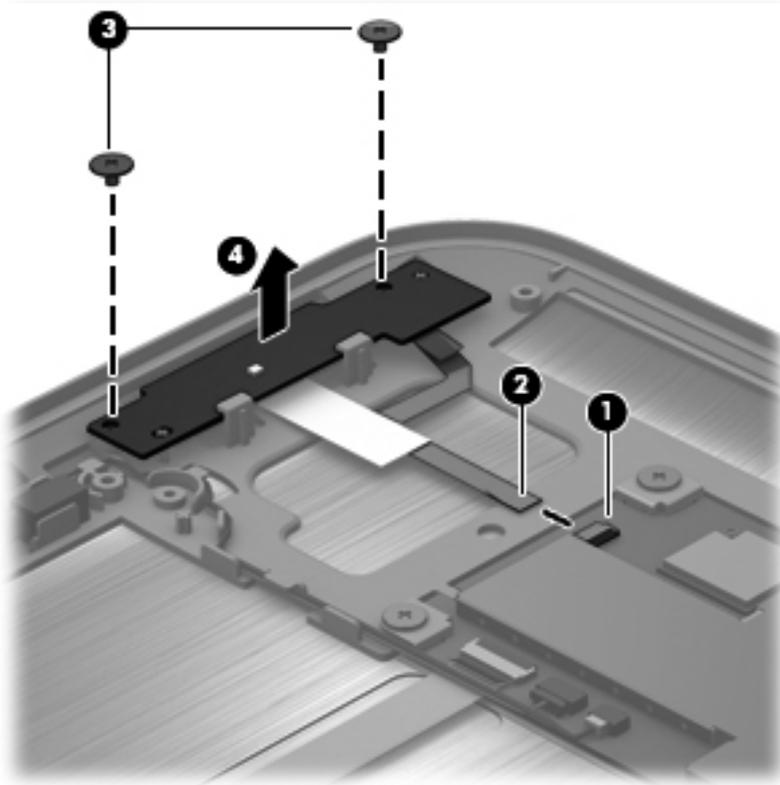
2. Remove the from webcam.



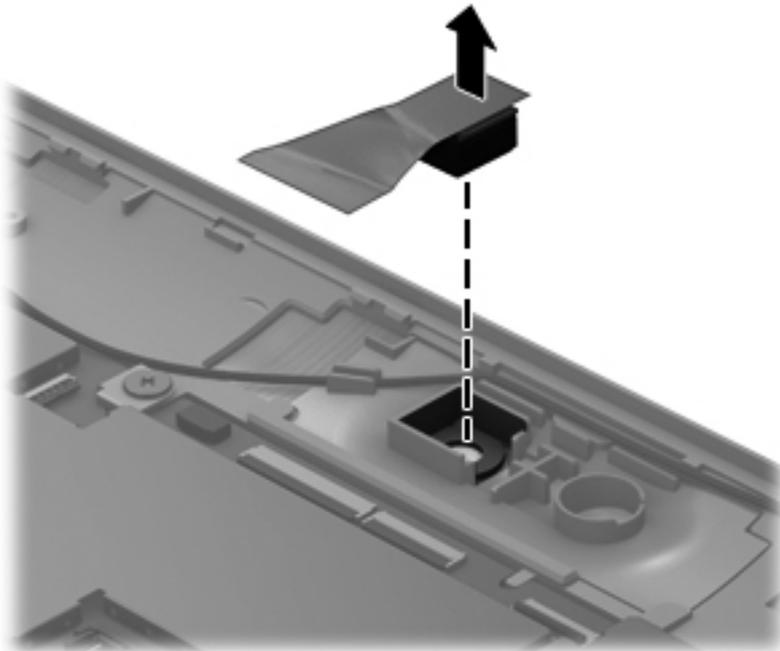
3. Remove the screw securing the microphone board (1), and then remove the board (2).



4. Locate the volume control button board connector (1), and then disconnect the volume control button board cable (2). Remove the two screws securing the volume control button board (3), and then remove the volume control button board (4).



5. Remove the rear cam.



Audio/micro SD digital media card reader/touch screen board

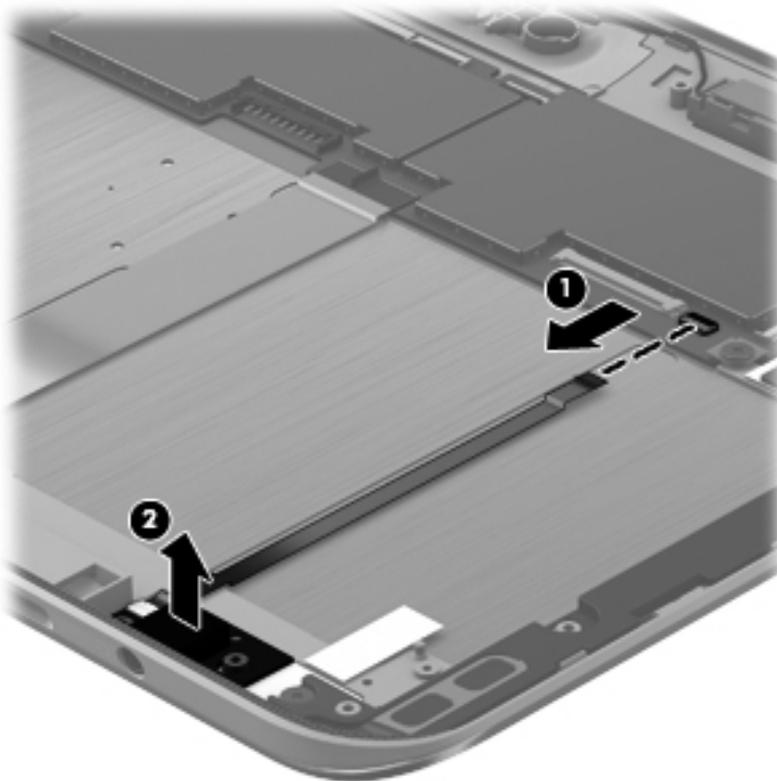
Description	Spare part number
Audio/micro SD digital media card reader/touch screen board	702357-001

Before removing the Audio/micro SD digital media card reader/touch screen 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 display panel (see [Display panel assembly and Battery on page 40](#)).
5. Remove the base enclosure (see [Base enclosure on page 28](#)).
6. Disconnect the battery cable (see [Battery on page 29](#)).

To remove the Audio/micro SD digital media card reader/touch screen board:

1. Turn the top cover upside down, with the back edge toward you.
2. Disconnect the Audio cable (1), and remove the Audio board (2).



USB/Power button board

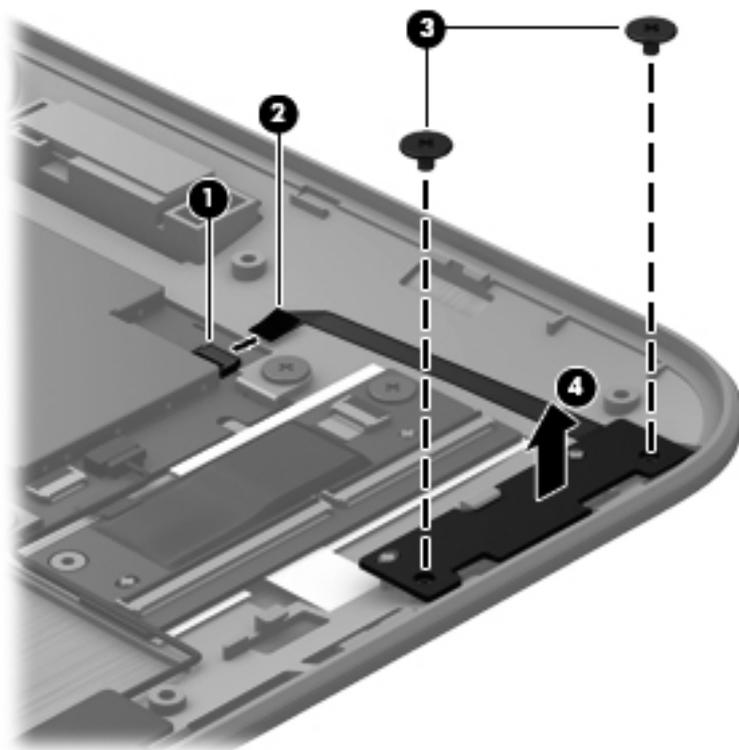
Description	Spare part number
USB/Power button board	689944-001

Before removing the USB/Power button board, follow these steps:

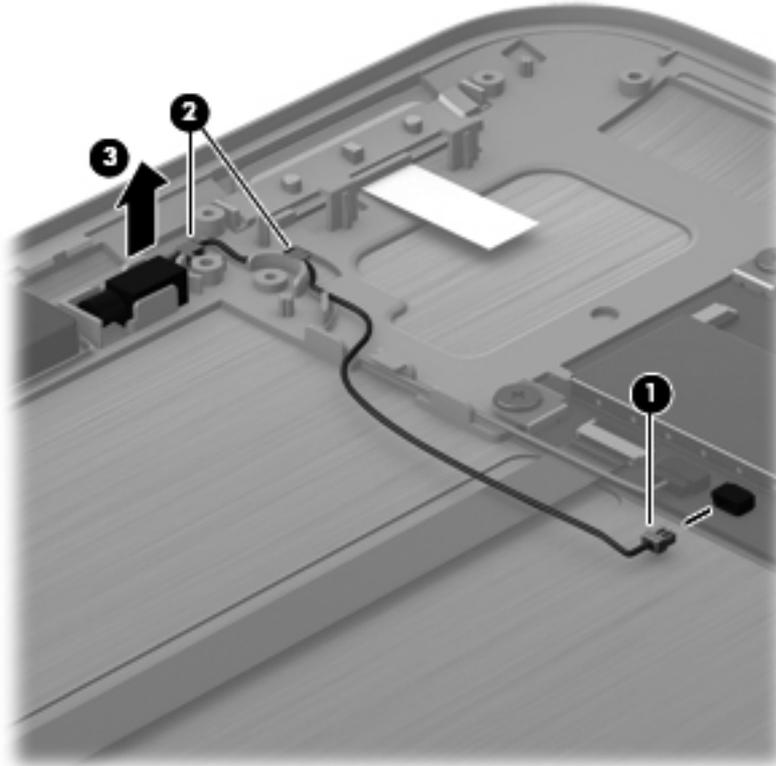
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the display panel (see [Display panel assembly and Battery on page 40](#)).
5. Remove the base enclosure (see [Base enclosure on page 28](#)).
6. Disconnect the battery cable (see [Battery on page 29](#)).

Remove the Power button board and cable:

1. Turn the top cover upside down, with the back edge toward you.
2. Locate the USB/Power button board cable (1), and then disconnect the USB/Power button board cable (2).
3. Remove the 2 Phillips PM screws securing the USB/Power button board to the top cover (3).
4. Remove the USB/Power button board (4).



5. Disconnect the vibration module cable from the system board (1), release the vibration module cable from the routing clips (2), and then remove the vibration module and cable (3).



Speakers

Description	Spare part number
Speakers	702365-001

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 display panel (see [Display panel assembly and Battery on page 40](#)).

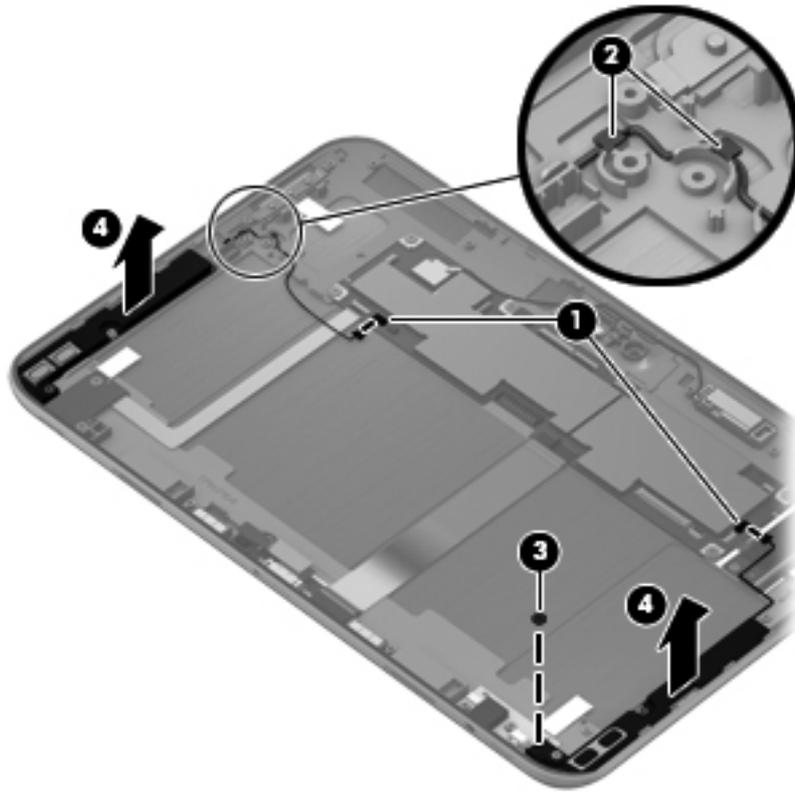
Before removing the speakers, follow these steps:

1. Remove the base enclosure (see [Base enclosure on page 28](#)).
2. Disconnect the battery cable (see [Battery on page 29](#)).

Remove the speakers:

1. Turn the top cover upside down, with the back edge toward you.
2. Disconnect the speaker cable from the system board (1), and then release the left speaker cable from the clips (2).

3. Remove the Phillips PM screw securing the speaker to the system board (3), and then remove the speakers (4).



Micro SD digital media board

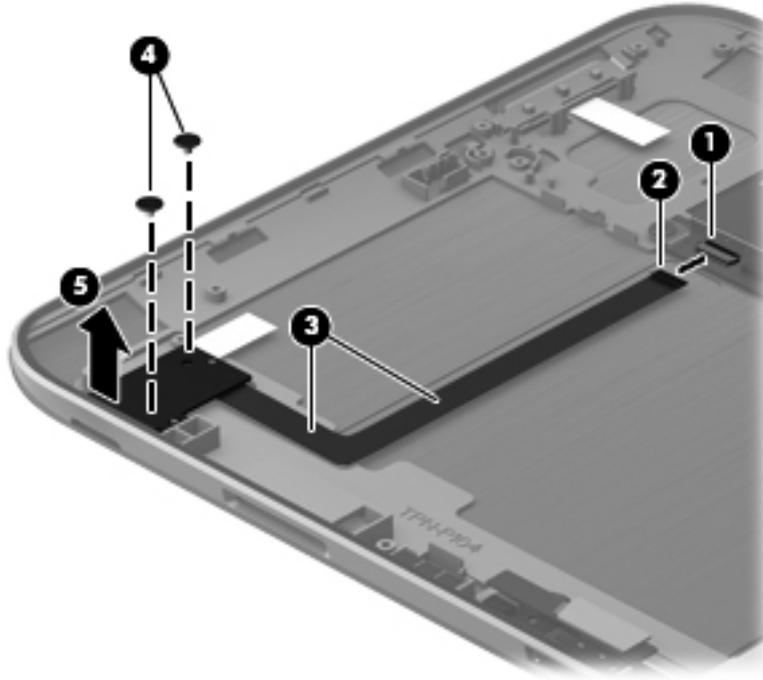
Description	Spare part number
Micro SD digital media board	702357-001

Before removing the micro SD digital media reader card, 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 top cover from the display:

1. To remove the micro SD digital media card, locate the micro SD digital media board cable (1), and then disconnect the cable (2).



2. Locate the micro SD digital media board release points (3), remove the 2 screws (4), and then remove the board (5).

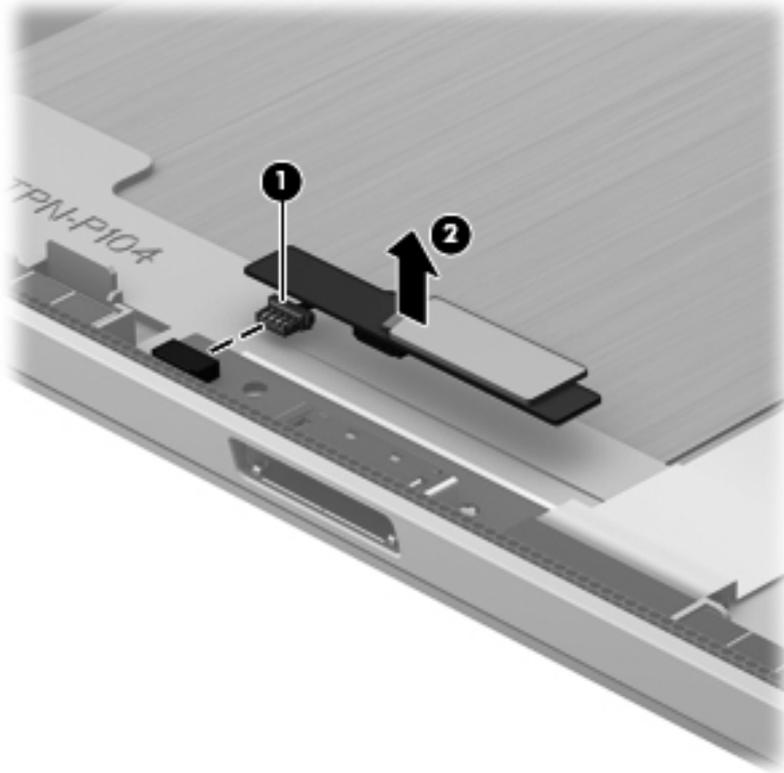
Power button board

Description	Spare part number
Power button board	702360-001

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. To remove power button board , disconnect the power button board cable (1), and then remove the cable (2).



5 Setup Utility (BIOS) and System Diagnostics

Using Setup Utility

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

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

Starting Setup Utility

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

To start Setup Utility, follow these steps:

1. Turn on or restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.
2. Press **f10** to enter Setup Utility.

Changing the language of Setup Utility

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

Your change takes effect immediately.

Navigating and selecting in Setup Utility

To navigate and select in Setup Utility, follow these steps:

1. Turn on or restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.
 - To select a menu or a menu item, use the tab key and the keyboard arrow keys and then press **enter**, or use a pointing device to click the item.
 - To scroll up and down, click the up arrow or the down arrow in the upper-right corner of the screen, or use the up arrow key or the down arrow key.
 - To close open dialog boxes and return to the main Setup Utility screen, press **esc**, and then follow the on-screen instructions.
2. Press **f10** to enter Setup Utility.

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

- To exit Setup Utility menus without saving your changes, press the **esc** key, and then follow the on-screen instructions.

– or –

Use the arrow keys to select **Exit > Exit Discarding Changes**, and then press **enter**.

- To save your changes and exit Setup Utility menus, press **f10**, and then follow the on-screen instructions.

– or –

Use the tab key and the arrow keys to select **Exit > Exit Saving Changes**, and then press **enter**.

Your changes go into effect when the computer restarts.

Displaying system information

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

Restoring factory settings in Setup Utility

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

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

1. Turn on or restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.
2. Press **f10** to enter Setup Utility.
3. Use the arrow keys to select **Exit > Load Setup Defaults**.
4. Follow the on-screen instructions.
5. To save your changes and exit, press **f10**, and then follow the on-screen instructions.

– or –

Use the arrow keys to select **Exit > Exit Saving Changes**, 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.

Exiting Setup Utility

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

Updating the BIOS

Updated versions of the BIOS may be available on the HP Web site.

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

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

Determining the BIOS version

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

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

1. Start Setup Utility (BIOS).
2. Use the arrow keys to select **Main**.
3. To exit Setup Utility (BIOS) without saving your changes, use the tab key and the arrow keys to select **Exit > Exit Discarding Changes**, and then press **enter**.

Downloading a BIOS update

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

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

1. **Windows 7**—Select **Start > Help and Support > Maintain**.

Windows XP—Select **Start > Help and Support**, and then select the software and drivers update.

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



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

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

1. **Windows 7**—Open Windows Explorer by selecting **Start > Computer**.

Windows XP—Open Windows Explorer by selecting **Start > My Computer**.

2. Double-click your hard drive designation. The hard drive designation is typically Local Disk (C:).
3. Using the hard drive path you recorded earlier, open the folder on your hard drive that contains the update.

4. Double-click the file that has an .exe extension (for example, *filename.exe*). The BIOS installation begins.
5. Complete the installation by following the on-screen instructions.

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

Using System Diagnostics

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

- Start-up test—This test analyzes the main computer components that are required to start the computer.
- Run-in test—This test repeats the start-up test and checks for intermittent problems that the start-up test does not detect.
- Hard disk test—This test analyzes the physical condition of the hard drive, and then checks all data in every sector of the hard drive. If the test detects a damaged sector, it attempts to move the data to a good sector.
- Memory test—This test analyzes the physical condition of the memory modules. If it reports an error, replace the memory modules immediately.
- Battery test—This test analyzes the condition of the battery. If the battery fails the test, contact HP support to report the issue and purchase a replacement battery.

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

To start System Diagnostics:

1. Turn on or restart the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press **esc**. When the Startup Menu is displayed, press **f2**.
2. Click the diagnostic test you want to run, and then follow the on-screen instructions.

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

6 Specifications

Computer specifications

	Metric	U.S.
Dimensions		
Width	29.16 cm	11.48 in
Depth	2.15 cm	8.46 in
Height (front to back)	2.11 to 3.19 cm	0.83 to 1.26 in
Weight		
With 6-cell battery	1.60 kg	3.53 lb
With 3-cell battery	1.46 kg	3.22 lb
Input power		
Operating voltage and current	18.5 V dc @ 3.5 A - 65 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.		

11.6-inch display specifications

	Metric	U.S.
Dimensions		
Height	16.50 cm	6.50 in
Width	25.34 cm	11.60 in
Diagonal	33.66 cm	11.6 in
Number of colors	262,144	

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

7 Backing up, restoring, and recovering

Your computer includes tools provided by HP and the operating system to help you safeguard your information and retrieve it if you ever need to. These tools will help you return your computer to a proper working state or even back to the original factory state, all with simple steps.

This chapter provides information about the following processes:

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

 **NOTE:** This guide describes an overview of backing up, restoring and recovering options. For more details about the tools provided, access HP Support Assistant. To access HP Support Assistant, on the Start screen, select the **HP Support Assistant** app.

Creating recovery media and backups

Recovery after a system failure is only as good as your most recent backup.

1. As you add hardware and software programs, create system restore points. A system restore point is a snapshot of certain hard drive contents saved by Windows System Restore at a specific time. A system restore point contains information that Windows uses, such as registry settings. Windows creates a system restore point for you automatically during a Windows update and during other system maintenance (such as a software update, security scanning, or system diagnostics). You can also manually create a system restore point at any time. For more information and steps for creating specific system restore points, access HP Support Assistant. To access HP Support Assistant, on the Start screen, select the **HP Support Assistant** app.
2. As you add photos, video, music, and other personal files, create a backup of your personal information. Windows File History can be set to regularly and automatically back up files from libraries, desktop, contacts, and favorites. If files are accidentally deleted from the hard drive and they can no longer be restored from the Recycle Bin, or if files become corrupted, you can restore the files that you backed up using File History. Restoring files is also useful if you ever choose to reset the computer by reinstalling Windows or choose to recover using HP Recovery Manager.

 **NOTE:** File History is not enabled by default, so you must turn it on.

For more information and steps for enabling Windows File History, access HP Support Assistant. To access HP Support Assistant, on the Start screen, select the **HP Support Assistant** app.

Restore and recovery

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

If you need to restore your personal files and data, you can use Windows File History to restore your information from the backups you created. For more information and steps for using File History, access HP Support Assistant. To access HP Support Assistant, on the Start screen, select the **HP Support Assistant** app.

If you need to correct a problem with a preinstalled application or driver, use the Drivers and Applications Reinstall option of HP Recovery Manager to reinstall the individual application or driver.

- From the Start screen on the keyboard dock, type `recovery`, select **HP Recovery Manager**, and then select **Drivers and Applications Reinstall**, and follow the on-screen instructions.
- If you want to restore the system to a previous state without losing any personal information, Windows System Restore is an option. System Restore allows you to restore without the requirements of Windows Refresh or a reinstallation. Windows creates system restore points automatically during a Windows update and other system maintenance events. Even if you did not manually create a restore point, you can choose to restore to a previous point, automatically created. For more information and steps for using Windows System Restore, access HP Support Assistant. To access HP Support Assistant, on the Start screen, select the **HP Support Assistant** app.
- If you want a quick and easy way to recover the system without losing your personal information, settings, or apps that came preinstalled on your computer or were purchased from the Windows Store, consider using Windows Refresh. This option does not require backing up data to another drive. See [Using Windows Refresh for quick and easy recovery on page 70](#).
- If you want to reset your computer to its original state, Windows provides an easy way to remove all personal data, apps, and settings, and reinstall Windows.

For more information, see [Remove everything and reinstall Windows on page 70](#).

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

For more information, see [Recovering using HP Recovery Manager on page 71](#).

- If you want to recover the computer's original factory partitioning and content, you can choose the System Recovery option from the HP Recovery media. For more information, see [Recovering using HP Recovery Manager on page 71](#).
- If you wish to remove the recovery partition to reclaim hard drive space, HP Recovery Manager offers the Remove Recovery Partition option.

For more information, see [Removing the HP Recovery partition on page 72](#).

Using Windows Refresh for quick and easy recovery

When your computer is not working properly and you need to regain system stability, the Windows Refresh option allows you to start fresh and keep what is important to you.

 **IMPORTANT:** Refresh removes any traditional applications that were not originally installed on the system at the factory.

 **NOTE:** During Refresh, a list of removed traditional applications will be saved so that you have a quick way to see what you might need to reinstall. See HP Support Assistant for instructions on reinstalling traditional applications. To access HP Support Assistant, on the Start screen, select the **HP Support Assistant** app.

 **NOTE:** You may be prompted for your permission or password when using Refresh. See HP Support Assistant for more information.

To start Refresh:

1. From the Start screen, point to the far-right upper or lower corner of the screen to display the charms.
2. Click **Settings**.
3. Click **Change PC settings** in the bottom-right corner of the screen, and then select **General** from the PC settings screen.
4. Under **Refresh your PC without affecting your files**, select **Get started**, and follow the on-screen instructions.

Remove everything and reinstall Windows

Sometimes you want to perform detailed reformatting of your computer, or you want to remove personal information before you give away or recycle your computer. The process described in this section provides a speedy, simple way to return the computer to its original state. This option removes all personal data, apps, and settings from your computer, and reinstalls Windows.

 **IMPORTANT:** This option does not provide backups of your information. Before using this option, back up any personal information you wish to retain.

You can initiate this option by using the **f11** key.

To use the **f11** key:

1. Press **f11** while the computer boots.
– or –
Press and hold **f11** as you press the power button.
2. Select **Troubleshoot** from the boot options menu.
3. Select **Reset your PC**, and follow the on-screen instructions.

To use the Start screen:

1. From the Start screen, point to the far-right upper or lower corner of the screen to display the charms.
2. Click **Settings**.

3. Click **Change PC settings** in the bottom-right corner of the screen, and then select **General** from the PC settings screen.
4. Under **Remove everything and reinstall Windows**, select **Get started**, and follow the on-screen instructions.

Recovering using HP Recovery Manager

HP Recovery Manager software allows you to recover the computer to its original factory state. Using the HP Recovery media you created, you can choose from one of the following recovery options:

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

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

What you need to know

- HP Recovery Manager recovers only software that was installed at the factory. For software not provided with this computer, you must either download the software from the manufacturer's website or reinstall the software from the media provided by the manufacturer.
- Recovery through HP Recovery Manager should be used as a final attempt to correct computer issues.
- HP Recovery media must be used if the computer hard drive fails.
- To use the Factory Reset or System Recovery options, you must use HP Recovery media.
- If the HP Recovery media do not work, you can obtain recovery media for your system from the HP website. For U.S. support, go to <http://www.hp.com/go/contactHP>. For worldwide support, go to http://welcome.hp.com/country/us/en/wwcontact_us.html.



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

Using the HP Recovery partition to recover a minimized image (select models only)

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

To start HP Recovery Manager from the HP Recovery partition:

1. Press **f11** while the computer boots.
– or –
Press and hold **f11** as you press the power button.
2. Select **Troubleshoot** from the boot options menu.
3. Select **HP Recovery Manager**, and follow the on-screen instructions.

Changing the boot order

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

To change the boot order:

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

Removing the HP Recovery partition

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



IMPORTANT: Removing the HP Recovery partition means you can no longer use Windows Refresh, the Windows Remove everything and reinstall Windows option, or the HP Recovery Manager option for minimized image recovery.

Follow these steps to remove the HP Recovery partition:

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

8 Power cord set requirements

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

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

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

Requirements for all countries

The following requirements are applicable to all countries and regions:

- The length of the power cord set must be at least **1.0 m** (3.3 ft) and no more than **2.0 m** (6.5 ft).
- All power cord sets must be approved by an acceptable accredited agency responsible for evaluation in the country or region where the power cord set will be used.
- The power cord sets must have a minimum current capacity of 10 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

Country/region	Accredited agency	Applicable note number
Japan	JIS	3
The Netherlands	KEMA	1
New Zealand	SANZ	1
Norway	NEMKO	1
The People's Republic of China	CCC	4
Saudi Arabia	SASO	7
Singapore	PSB	1
South Africa	SABS	1
South Korea	KTL	5
Sweden	SEMKO	1
Switzerland	SEV	1
Taiwan	BSMI	6
Thailand	TISI	1
The United Kingdom	ASTA	1
The United States	UL	2

1. The flexible cord must be Type H05VV-F, 3-conductor, 0.75-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.
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) or NEMA 6-15P (15 A, 250 V ac) configuration. CSA or C-UL mark. UL file number must be on each element.
3. The appliance coupler, flexible cord, and wall plug must bear a "T" mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCTF, 3-conductor, 0.75-mm² or 1.25-mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V ac) configuration.
4. The flexible cord must be Type RVV, 3-conductor, 0.75-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the CCC certification mark.
5. The flexible cord must be Type H05VV-F 3X0.75-mm² conductor size. KTL logo and individual approval number must be on each element. Corset approval number and logo must be printed on a flag label.
6. The flexible cord must be Type HVCTF 3x1.25-mm² conductor size. Power cord set fittings (appliance coupler, cable, and wall plug) must bear the BSMI certification mark.
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-/1.00-mm² conductor size, with plug BS 1363/A with BSI or ASTA marks.

9 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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