



## HP Chromebook 13 G1

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

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## Safety warning notice

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

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# 1 Product description

Category	Description
<b>Product Name</b>	HP Chromebook 13 G1
<b>Processor</b>	Intel® Pentium® 4405Y 1.5-GHz/1866/4 MB, Dual Core (DC)  Intel Core® M3-6Y30 0.9-GHz (SC turbo up to 2.2-GHz/1866/4 MB) DC  Intel Core M5-6Y57 Vpro 1.1-GHz (turbo up to 2.80-GHz/1866/4 MB) DC  Intel Core M7-6Y75 Vpro 1.2-GHz (turbo up to 3.10-GHz/1866/4 MB) DC
<b>Chipset</b>	Integrated soldered-on-circuit (SoC) platform controller hub (PCH)
<b>Graphics</b>	<b>Internal Graphics:</b> Intel HD Graphics  Supports HD decode, DX11, and HDMI
<b>Panel</b>	13.3-inch, full high-definition (FHD), AntiGlare, (1920×1080), UWVA, light-emitting diode (LED), ultraslim-flat (2.6-mm); 16:9 aspect ratio; typical brightness: 300 nits, eDP, non-touch only.  13.3-inch, quarter high-definition (QHD+), AntiGlare, (3200×1800), SVA, white light-emitting diode (WLED), ultraslim-flat (2.6-mm); 16:9 aspect ratio; typical brightness: 300 nits, eDP, non-touch only.  Supports low-voltage differential signaling (LVDS)
<b>Memory</b>	Supports Single/Dual Channel, LPDDR3-1866-MHZ on-board system memory  Supports up to 16-GB maximum on-board system memory: <ul style="list-style-type: none"><li>• 4096MB (128MBx32x2 x4pcs)</li><li>• 8192MB (256MBx16x4 x4pcs)</li><li>• 16384MB (128MBx32x4 x4pcs)</li></ul>
<b>Storage</b>	Supports 32-GB embedded Multimedia Controller (eMMC)
<b>Audio and video</b>	Fixed (no tilt) integrated HP TrueVision HD camera  1280×720 by 30 frames per second with LED  Dual microphones with appropriate echo-cancellation, noise-suppression software  Dual speakers  Audio by B&O Play
<b>Sensors</b>	Trusted platform module (TPM) 1.2
<b>Wireless</b>	Integrated wireless local area network (WLAN) options by way of wireless module  Two built-in WLAN antennas

Category	Description
	Supports the Intel Dual Band Wireless-AC 7265 802.11 ac 2X2 WiFi + Bluetooth® 4.2 WLAN module
<b>Ports</b>	<ul style="list-style-type: none"> <li>• Two USB 3.1 Type-C ports (both enable power delivery)</li> <li>• Headphone/microphone combo jack</li> <li>• USB 3.0 port (1 on left side)</li> <li>• USB 2.0/3.0 allocation; 3 for unit/ports, 1 for Camera</li> </ul>
<b>Keyboard/pointing devices</b>	<p>Full-sized, textured, island-style, Google® backlit keyboard</p> <p><b>TouchPad:</b></p> <p>Multitouch gestures enabled</p> <p>Taps enabled as default</p>
<b>Power requirements</b>	<p>Supports a 3-cell, 45-WHr, 3.25-WHr, polymer battery</p> <p>Supports a 45 W nPFC Type-C Straight Type AC adapter</p>
<b>Operating system</b>	<b>Preinstalled:</b> Google Chrome OS® operating system
<b>Serviceability</b>	<b>End user replaceable parts:</b> AC adapter



## 2 External component identification

### Display



Item	Component	Description
(1)	WLAN antennas*	Send and receive wireless signals to communicate with WLANs.
(2)	Internal microphones	Record sound.
(3)	Camera light	On: The camera is in use.
(4)	Camera	Records video, captures still photographs, and provides HD (high-definition) capability.

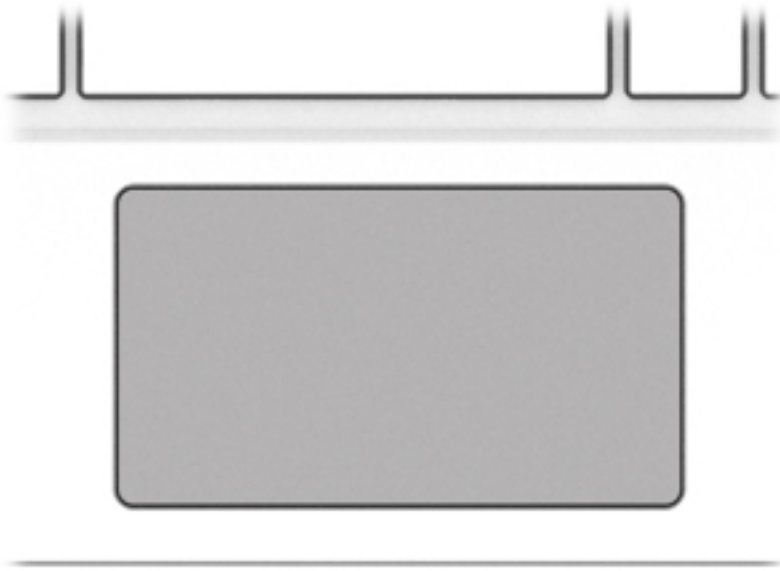
\*The antennas are not visible from the outside of the computer, and antenna locations vary. For optimal transmission, keep the areas immediately around the antennas and sensors free from obstructions. For wireless regulatory notices, see the section of the *Regulatory, Safety, and Environmental Notices*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

# Button



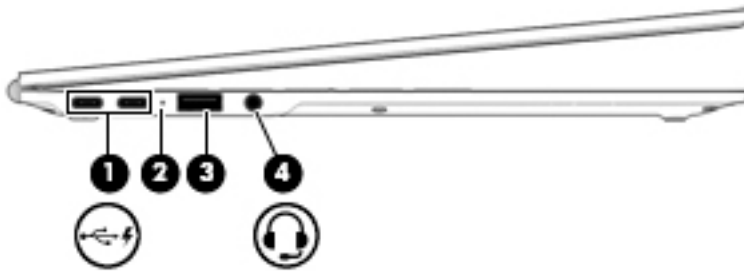
Item	Component	Description
	Power button	<ul style="list-style-type: none"><li>• When the computer is off, press the button to turn on the computer.</li><li>• When the computer is in the Sleep state, press the button briefly to exit Sleep.</li><li>• When the computer is on and you want to lock the screen, press the power button until you see the sign-in screen appear. Pressing the power button during screen-lock mode turns off the computer.</li><li>• When the computer is on and you want to turn it off, press and hold the button to lock the screen, and then continue to press the button until the computer powers off.</li></ul>

## TouchPad



Item	Component	Description
	TouchPad	Moves the on-screen pointer and selects or activates items on the screen.

## Left side



Item	Component	Description
(1)	USB Type C power charging ports (2)	<p>Connect a USB Type-C AC adapter to provide power to the computer, connect a USB device with a Type-C connector, and can charge products such as cell phones, laptops, tablets, and MP3 players, even when the computer is off.</p> <p><b>NOTE:</b> Adapters (purchased separately) may be required.</p>
(2)	AC adapter and battery light	<ul style="list-style-type: none"><li>• White: The AC adapter is connected and the battery is charged.</li><li>• Amber: The AC adapter is connected and the battery is charging.</li><li>• Off: The computer is using battery power.</li></ul>
(3)	USB 3.0 port	<p>Connects an optional USB device, such as a keyboard, mouse, external drive, or USB hub.</p>
(4)	Audio-out (headphone)/Audio-in (microphone) combo jack	<p>Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. This jack does not support optional microphone-only devices.</p> <p><b>WARNING!</b> To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset.</p> <p><b>NOTE:</b> When a device is connected to the jack, the computer speakers are disabled.</p> <p><b>NOTE:</b> Be sure that the device cable has a 4-conductor connector that supports both audio-out (headphone) and audio-in (microphone).</p>

## Right side



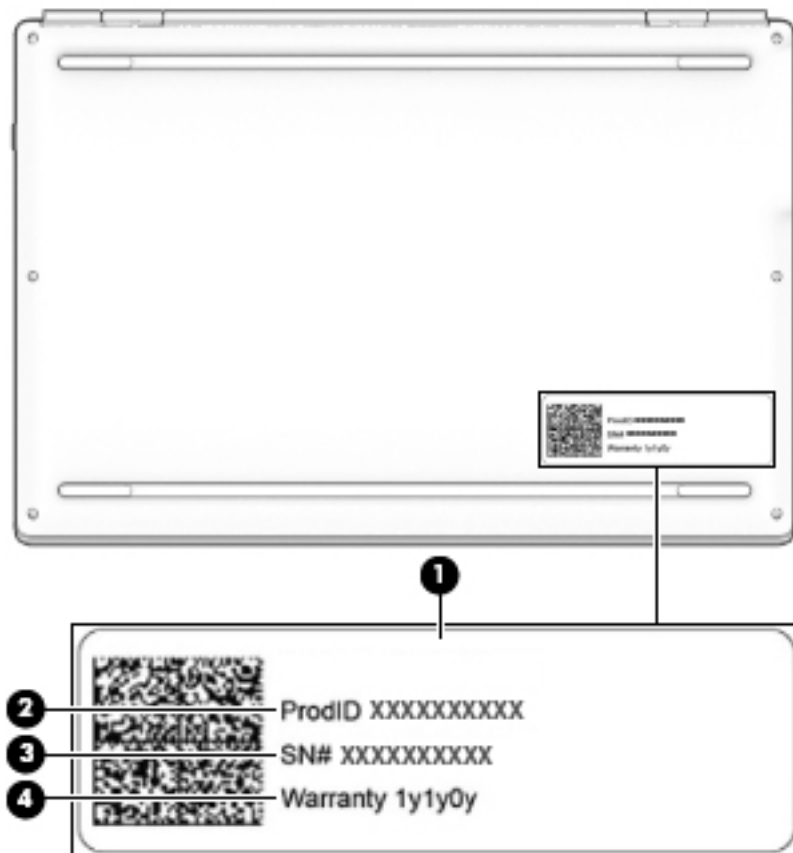
Item	Component	Description
	MicroSD card reader	<p>Reads optional memory cards that store, manage, share, or access information.</p> <p>To insert a card:</p> <ol style="list-style-type: none"><li>1. Hold the card label-side up, with connectors facing the computer.</li><li>2. Insert the card into the memory card reader, and then press in on the card until it is firmly seated.</li></ol> <p>To remove a card:</p> <p>Press in on the card, and then remove it from the memory card reader.</p>

# 3 Illustrated parts catalog

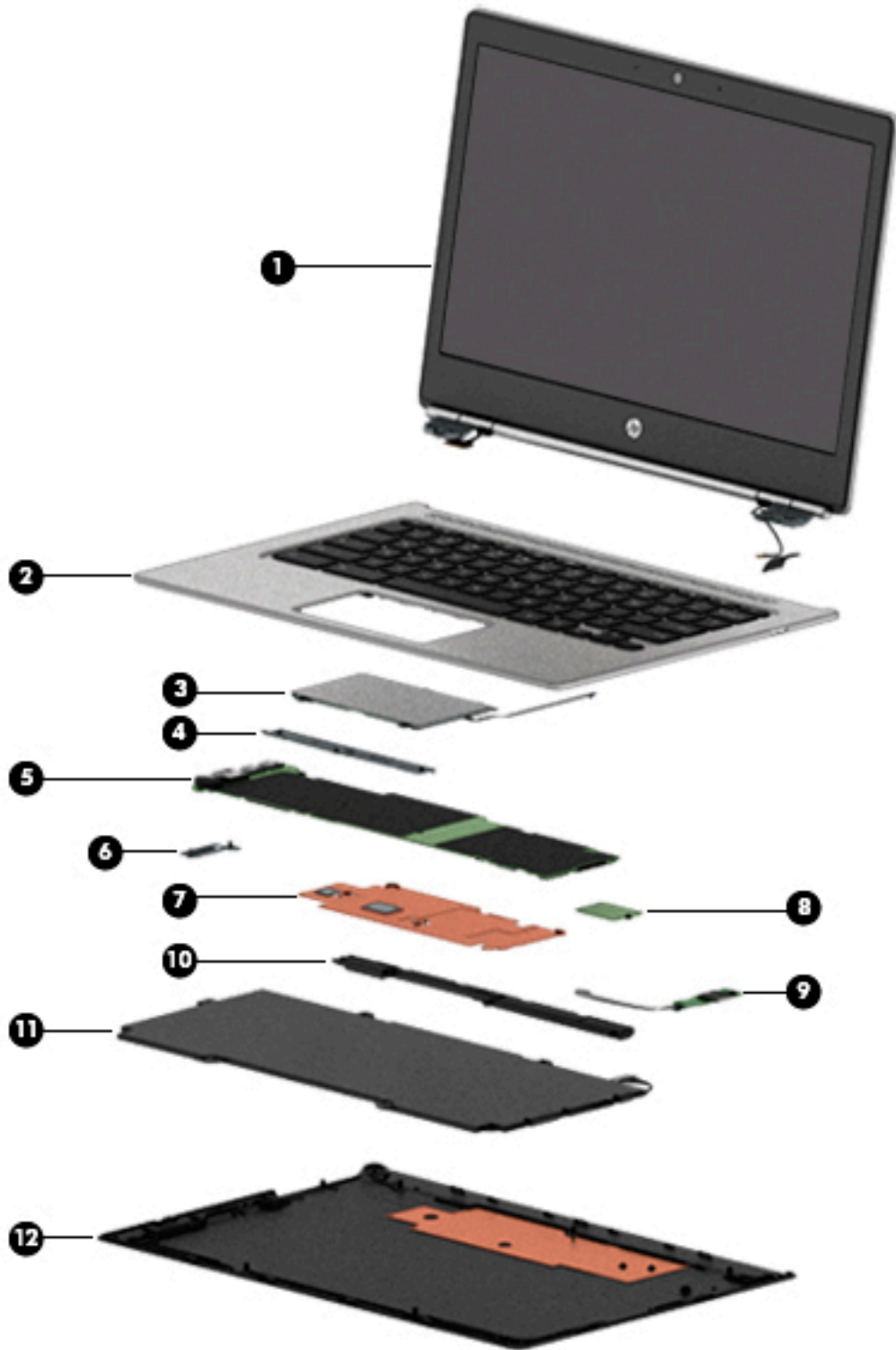
 **NOTE:** HP continually improves and changes product parts. For complete and current information on supported parts for your computer, go to <http://partsurfer.hp.com>, select your country or region, and then follow the on-screen instructions.

## Locating the product ID, serial number, and warranty information

The label **(1)** with product ID **(2)**, serial number **(3)**, and warranty information **(4)** is located on the bottom of the computer. This information may be needed when travelling internationally or when contacting support.



# Computer major components



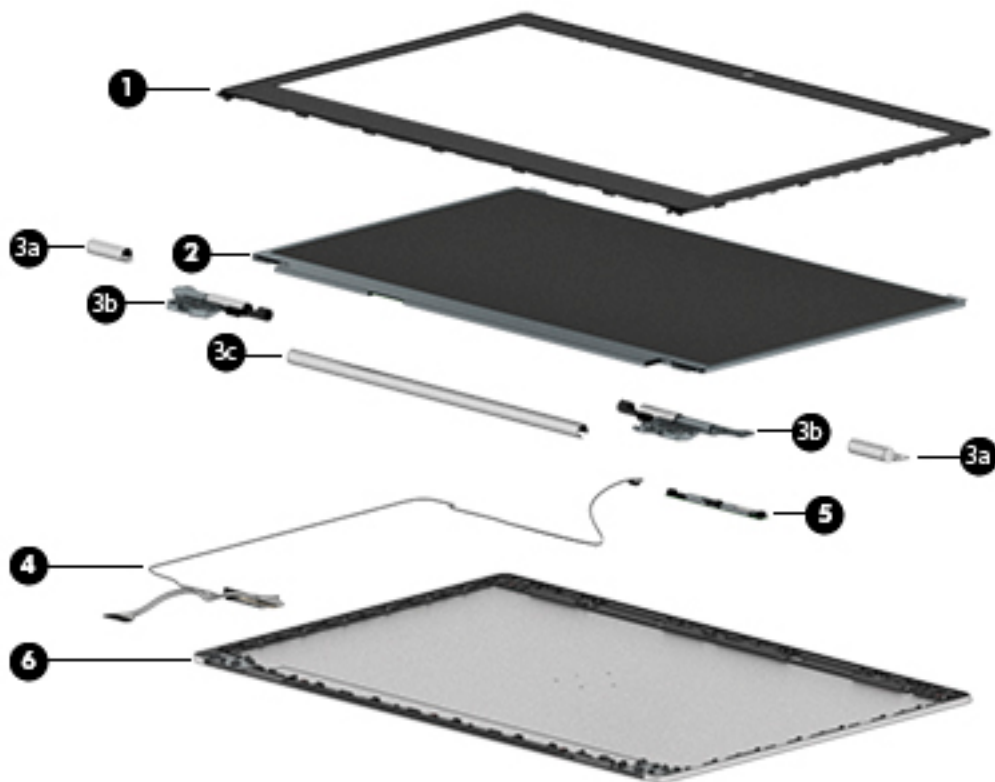
Item	Component	Spare part number
(1)	<b>Display assembly:</b> The display assembly is spared at the subcomponent level only. For more display assembly spare part information, see <a href="#">Display assembly subcomponents on page 11</a> .	

<b>Item</b>	<b>Component</b>	<b>Spare part number</b>
<b>(2)</b>	<b>Keyboard/top cover</b> (includes keyboard cable):	
	In anodized silver finish:	
	For use in Belgium	859535-A41
	For use in Canada	859535-DB1
	For use in Denmark, Finland, and Norway	859535-DH1
	For use in France	859535-051
	For use in Germany	859535-041
	For use in Italy	859535-061
	For use in Latin America	859535-161
	For use in the Netherlands	859535-B31
	For use in Russia	859535-251
	For use in Spain	859535-071
	For use in Switzerland	859535-BG1
	For use in the United Kingdom	859535-031
	For use in the United States	859535-001
<b>(3)</b>	<b>TouchPad board</b> (includes cable and double-sided adhesive)	
<b>(4)</b>	<b>TouchPad bracket</b> (part of TouchPad spare kit)	861674-001
<b>(5)</b>	<b>System board</b> (includes replacement thermal material):	
	Equipped with an Intel Pentium 4405Y 1.5-GHz/1822/2-MB dual core processor (1.0-GB L2 cache, 1333-MHz FSB, 4.5 W), 4.0-GB of system memory, and 32-GB of eMMC system storage	859523-001
	Equipped with an Intel Celeron® M3-6Y30 0.9-GHz (SC turbo up to 2.2-GHz) dual core processor (2.0-GB L2 cache, 1333-MHz FSB, 4.5 W), 4.0-GB of system memory, and 16-GB of eMMC system storage	859518-001
	Equipped with an Intel Celeron M5-6Y57 1.1-GHz (SC turbo up to 2.2-GHz) dual core processor (4.0-GB L2 cache, 1333-MHz FSB, 4.5 W), 4-GB of system memory, and 16-GB of eMMC system storage	859519-001
	Equipped with an Intel Celeron M5-6Y57 1.1-GHz (SC turbo up to 2.2-GHz) dual core processor (4.0-GB L2 cache, 1333-MHz FSB, 4.5 W), 8-GB of system memory, and 16-GB of eMMC system storage	859520-001
	Equipped with an Intel Celeron M7-6Y75 1.2-GHz (SC turbo up to 2.58-GHz) dual core processor (4.0-GB L2 cache, 1333-MHz FSB, 4.5 W), 8-GB of system memory, and 32-GB of eMMC system storage	859522-001
	Equipped with an Intel Celeron M7-6Y75 1.2-GHz (SC turbo up to 2.58-GHz) dual core processor (4.0-GB L2 cache, 1333-MHz FSB, 4.5 W), 16-GB of system memory, and 32-GB of eMMC system storage	859521-001
<b>(6)</b>	<b>USB bracket</b> (includes replacement thermal material)	862693-001
<b>(7)</b>	<b>Heat sink</b> (includes replacement thermal material)	859527-001
<b>(8)</b>	<b>WLAN module:</b>	



Item	Component	Spare part number
	Intel Dual Band Wireless-AC 7265 802.11 ac 2x2 WiFi + Bluetooth 4.2 Combo Adapter (dual antennas)	793840-005
(9)	<b>SD card reader board (includes SD card reader slot and cable)</b>	859524-001
(10)	<b>Speaker Kit</b> (includes cables)	859528-001
(11)	<b>Battery</b> (3-cell, 36-WHr, 3.25-AHr, Li-ion; includes cable)	848212-850
(12)	<b>Base enclosure:</b>	
	Black matte finish	859526-001
	<b>Rubber Kit</b> (not illustrated, two reusable rubber feet strips):	
	For use on all HP Chromebook 13 G1 computer models	861673-001

## Display assembly subcomponents



Item	Component	Spare part number
(1)	<b>Display bezel</b>	859529-001
(2)	<b>Display panel:</b>	
	13.3-inch, full high-definition (FHD), AntiGlare, (1920x1080), UWVA, light-emitting diode (LED), ultraslim-flat (2.6-mm); 16:9 aspect ratio; typical brightness: 300 nits, eDP, non-touch only	859533-001

<b>Item</b>	<b>Component</b>	<b>Spare part number</b>
	13.3-inch, quarter high-definition (QHD+), AntiGlare, (3200×1800), SVA, white light-emitting diode (WLED), ultraslim-flat (2.6-mm); 16:9 aspect ratio; typical brightness: 300 nits, eDP, non-touch	859534-001
<b>(3)</b>	<b>Display Hinge Kit</b> [includes outer left and right caps (3a), left and right caps (3b), and inner hinge (3c)]	859530-001
<b>(4)</b>	<b>Display panel cable</b> (includes HD camera/microphone module cable):	
	Low voltage differential signaling (LVDS) FHD	859531-001
	LVDA QHD+	861672-001
<b>(5)</b>	<b>HD camera/microphone module</b> (includes double-sided adhesive)	862692-001
<b>(6)</b>	<b>Display enclosure</b> (includes antennas, rubber padding, and shielding)	859532-001

## Miscellaneous parts

<b>Component</b>	<b>Spare part number</b>
<b>AC adapter:</b>	
GNRC 45-W HP Smart AC adapter (non-PFC, SMART, straight USB Type-C)	844205-850
<b>Power cord:</b>	
For use in Australia	213356-001
For use in Europe	213350-001
For use in Israel	398063-001
For use in The Dominican Republic	213349-001
For use in India	404827-001
For use in Italy	213352-001
For use in Japan	349756-001
For use in North America	213349-001
For use in Switzerland	213354-001
For use in the United Kingdom and Singapore	213351-001
For use in Thailand	285096-001
For use in Taiwan	393313-001
<b>Rubber Kit</b> (includes two rubber feet strips)	861673-001
<b>Screw Kit</b>	859525-001

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# 4 Removal and replacement preliminary requirements

## Tools required


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


- Flat-bladed screw driver
- Magnetic screw driver
- Phillips P0 screw driver

## Service considerations

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

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

 **NOTE:** Before attempting to insert a USB recovery image, make sure to power on the unit completely until it reaches the Google login screen. The TouchPad firmware updates when unit is turned on for the first time. If interrupted, the TouchPad could stop working. If the TouchPad stops working, follow the steps to image the unit using the RMA shim process. This will reactivate the TouchPad firmware. If this does not fix the issue, replace the TouchPad through warranty service.

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## Plastic parts


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 **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.

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## Cables and connectors

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 **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.

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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

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 **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 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 drive, place it in a static-proof bag.

Avoid exposing a 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."

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# 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, screw drivers, and vacuums.
- When fixtures must directly contact dissipative surfaces, use fixtures made only of static-safe materials.
- Keep the work area free of nonconductive materials, such as ordinary plastic assembly aids and Styrofoam.
- Handle ESD-sensitive components, parts, and assemblies by the case or PCM laminate. Handle these items only at static-free workstations.
- Avoid contact with pins, leads, or circuitry.
- Turn off power and input signals before inserting or removing connectors or test equipment.

## Equipment guidelines

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

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

The following grounding equipment is recommended to prevent electrostatic damage:


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

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

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



# 5 Removal and replacement procedures

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

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

## Component replacement procedures

There are as many as 54 screws that must be removed, replaced, and/or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

### Computer feet and base enclosure

Description	Spare part number
Computer feet (included in the rubber kit)	861673-001
Base enclosure	859526-001

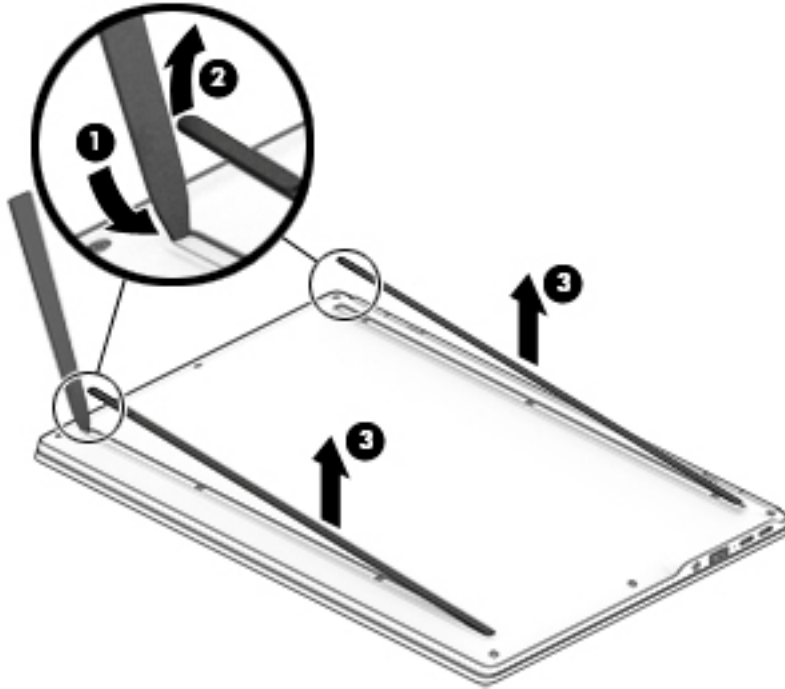
Before replacing the computer feet and base enclosure, follow these steps:

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

Remove the computer feet:

1. Close the computer and position it upside down, with the front toward you.
2. Insert a tool **(1)** with no sharp edges between the base enclosure and one end of the rubber feet.
3. Pull up the rubber feet **(2)** lightly and quickly.

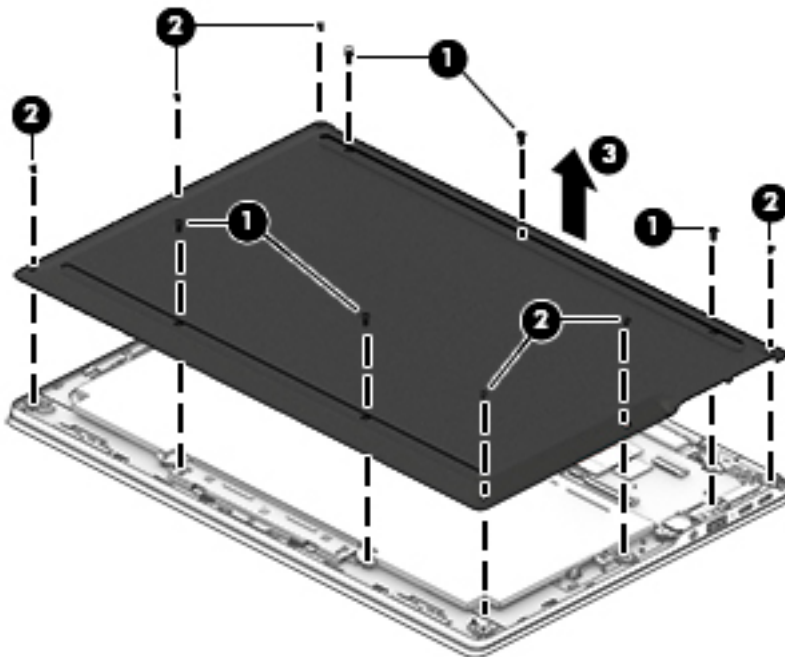
- Carefully remove the rubber feet **(3)**.



To install the rubber feet, refit them on the adhesive backing.

Remove the base enclosure:

- Remove the two computer feet (see [Computer feet and base enclosure on page 19](#)).
- Remove the five screws **(1)**.
- Remove the remaining six screws **(2)** that secure the keyboard/top cover to the base enclosure.
- Lift the edges and remove the base enclosure **(3)**.



Reverse the procedure to install the base enclosure.

## Battery

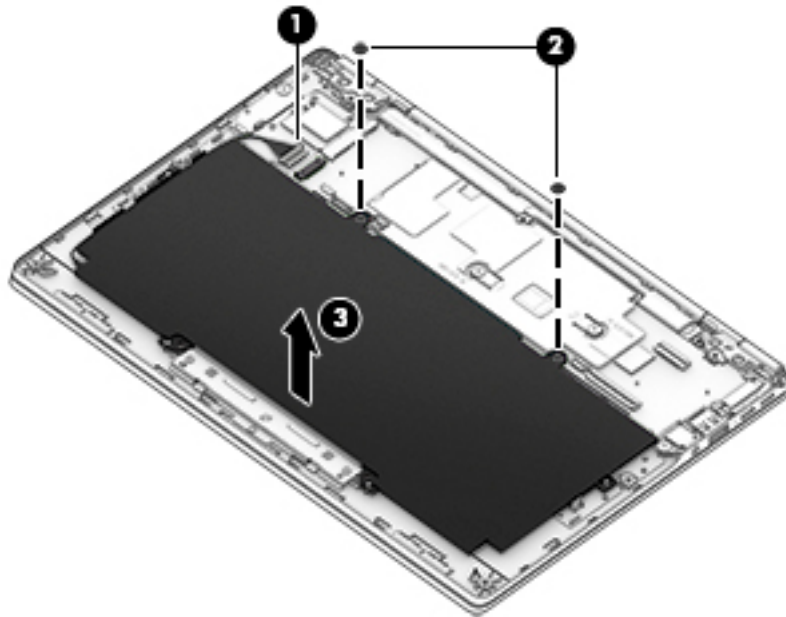
Description	Spare part number
Battery (3-cell, 45-WHr, 3.95-AH, Li-ion; includes cable)	848212-850

Before removing the battery, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the two computer feet and base enclosure (see [Computer feet and base enclosure on page 19](#)).

Remove the battery:

1. Disconnect the battery cable **(1)** from the computer.
2. Remove the two screws **(2)** that secure the battery to the system board.
3. Remove the battery **(3)**.



Reverse this procedure to install the battery.

## Heat sink

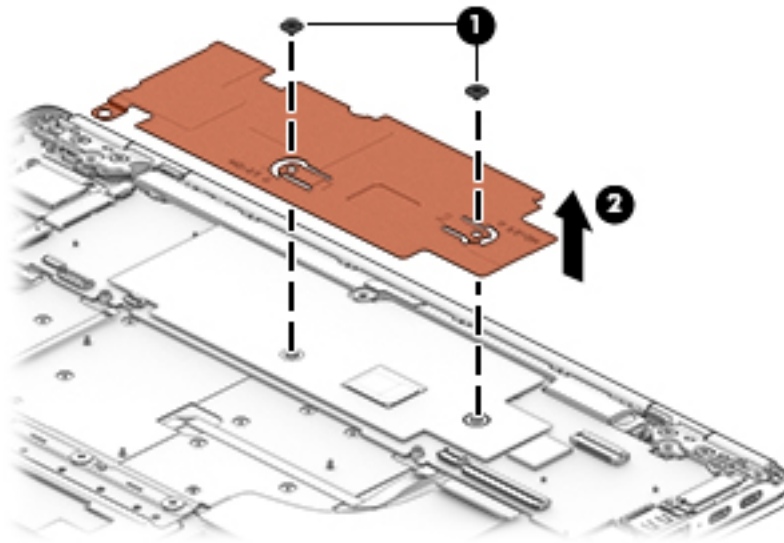
Description	Spare part number
Heat sink (includes replacement thermal material)	859527-001

Before removing the heat sink, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the computer feet and base enclosure (see [Computer feet and base enclosure on page 19](#)).
5. Remove the battery (see [Battery on page 21](#)).

Remove the heat sink:


1. Remove the two screws **(1)** that secure the heat sink to the system board.
2. Remove the heat sink **(2)**.



Reverse this procedure to install the heat sink.

## WLAN module

Description	Spare part number
Intel Dual Band Wireless-AC 7265NV 802.11 ac 2×2 WiFi + Bluetooth 4.0 Combo Adapter	793840-005

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

Before removing the WLAN module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the two computer feet and base enclosure (see [Computer feet and base enclosure on page 19](#)).
5. Remove the battery (see [Battery on page 21](#)).
6. Remove the heat sink (see [Heat sink on page 21](#)).

Remove the WLAN module:

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

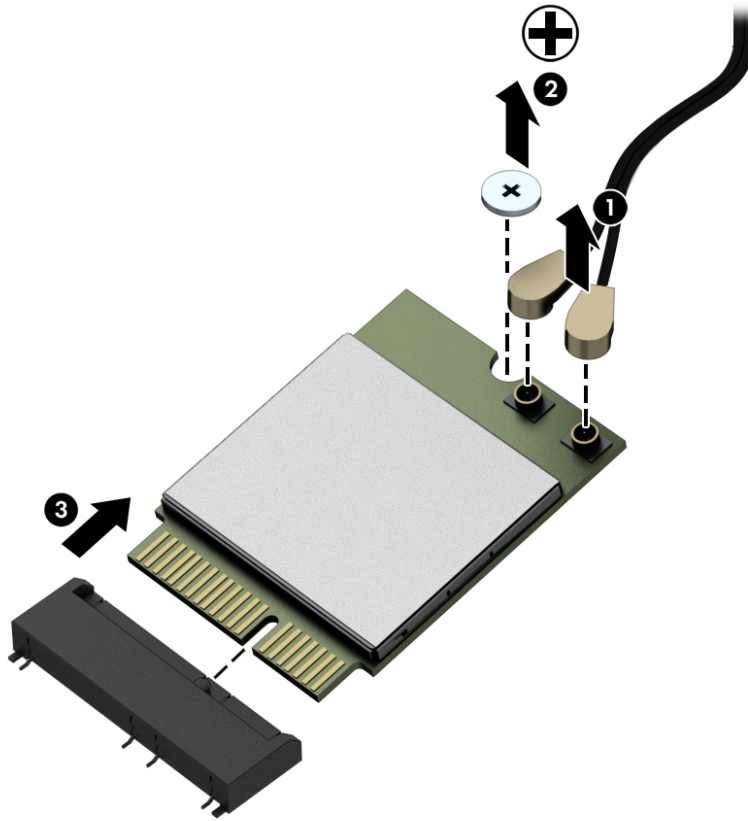



**NOTE:** The WLAN antenna cable labeled "1" connects to the WLAN module "Main" terminal labeled "1." The WLAN antenna cable labeled "2" connects to the WLAN module "Aux" terminal labeled "2."

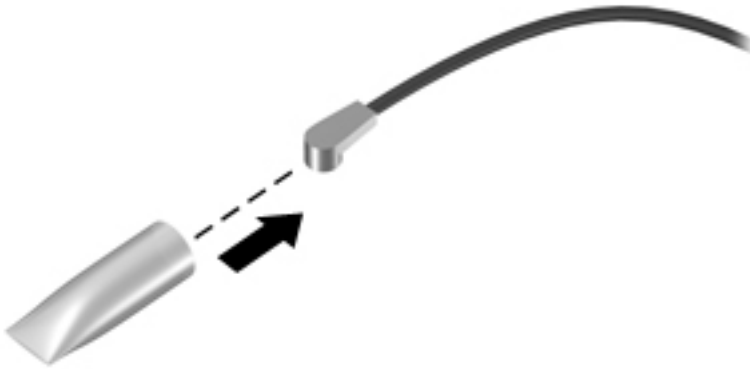
2. Remove the Phillips screw **(2)** that secures the WLAN module to the base enclosure. (The WLAN module tilts up.)

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

 **NOTE:** WLAN modules are notched to prevent incorrect installation.



 **NOTE:** If the WLAN antenna is not connected to the terminal on the WLAN module, a protective sleeve must be installed on each antenna connector, as shown in the following illustration.



Reverse this procedure to install the WLAN module.

## System board



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

Description	Spare part number
For use on all computer models:	
6th Generation Intel Pentium 4405Y (1.5 GHz/1866/2 MB 15W TDP DC, BGA)	859523-001
6th Generation Intel Core (M3-6Y30 (0.9 GHz/Turbo up to 2.2 GHz/1866/4 MB 4.5W TDP DC, BGA)	859518-001
6th Generation Intel Core M5-6Y57 Vpro (1.1 GHz/Turbo up to 2.80 GHz/1866/4 MB 4.5W TDP DC, BGA)	859519-001
6th Generation Intel Core M5-6Y57 Vpro (1.1 GHz/Turbo up to 2.80 GHz/1866/8 MB 4.5W TDP DC, BGA)	859520-001
6th Generation Intel Core M7-6Y75 Vpro (1.2 GHz/Turbo up to 3.10 GHz/1866/16 MB 4.5W TDP DC, BGA)	859521-001
6th Generation Intel Core M7-6Y75 Vpro (1.2 GHz/Turbo up to 3.10 GHz/1866/8 MB 4.5W TDP DC, BGA)	859522-001

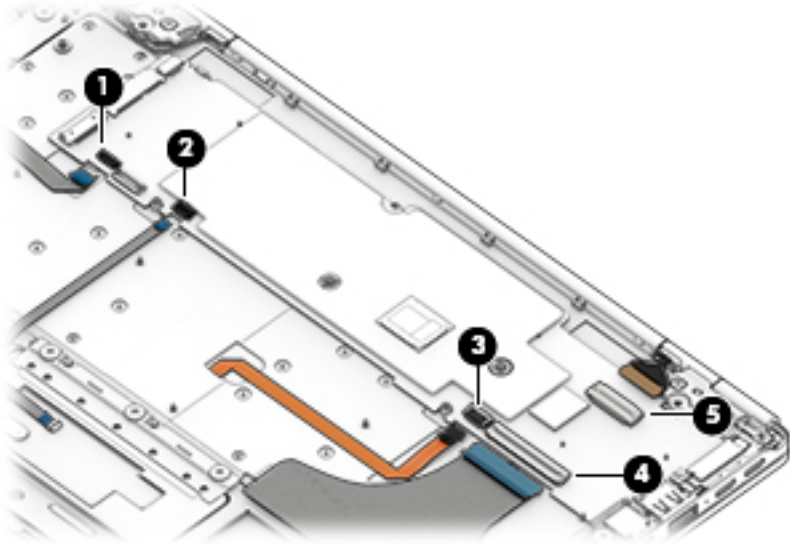
Before removing the system board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the two computer feet and base enclosure (see [Computer feet and base enclosure on page 19](#)).
5. Remove the battery (see [Battery on page 21](#)).
6. Remove the heat sink (see [Heat sink on page 21](#)).
7. Remove the WLAN module (see [WLAN module on page 23](#)).

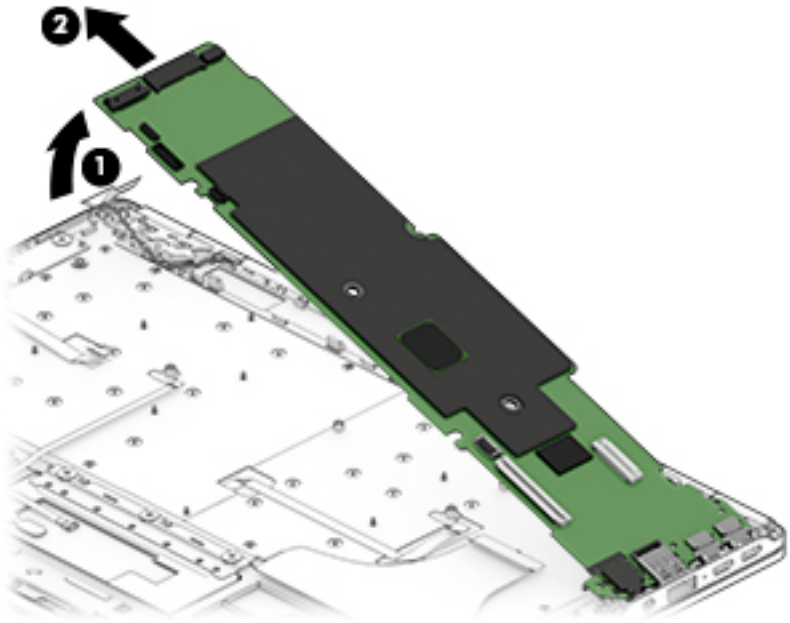
Remove the system board:

1. Release the connector **(1)** to which the SD card reader board cable is attached, and then disconnect the SD card reader board cable from the system board.
2. Disconnect the TouchPad connector cable **(2)** from the system board.
3. Release the connector **(3)** to which the display panel cable is attached, and then disconnect the display panel cable from the system board.

4. Disconnect the speakers from the system board (5).



5. Gently lift the system board (1).
6. Remove the system board (2).



Reverse this procedure to install the system board.



## Speakers

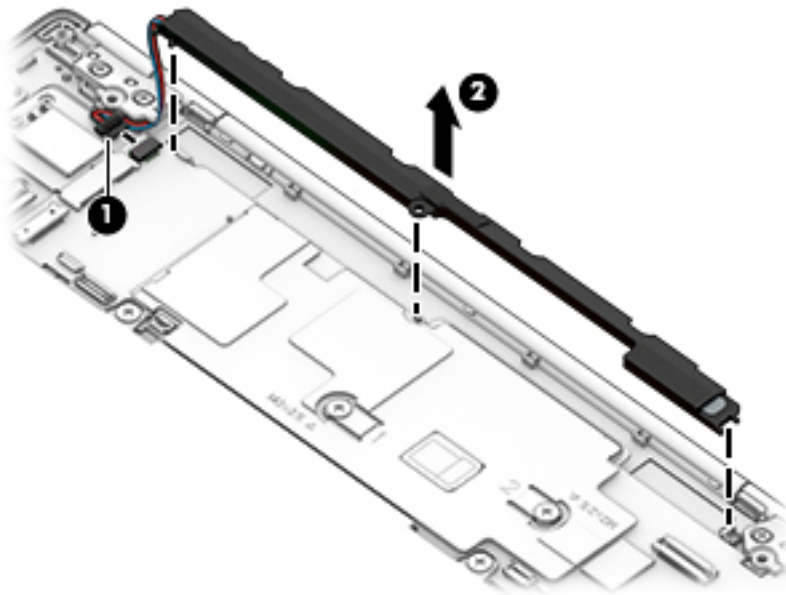
Description	Spare part number
Speaker Kit (includes cables)	859528-001

Before removing the speakers, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the two computer feet and base enclosure (see [Computer feet and base enclosure on page 19](#)).
5. Remove the battery (see [Battery on page 21](#)).
6. Remove the heat sink (see [Heat sink on page 21](#)).
7. Remove the WLAN module (see [WLAN module on page 23](#)).
8. Remove the system board (see [System board on page 25](#)).

Remove the speakers:

1. Disconnect the speaker cables **(1)**.
2. Remove the speakers **(2)**.



Reverse this procedure to install the speakers.

## SD card reader board

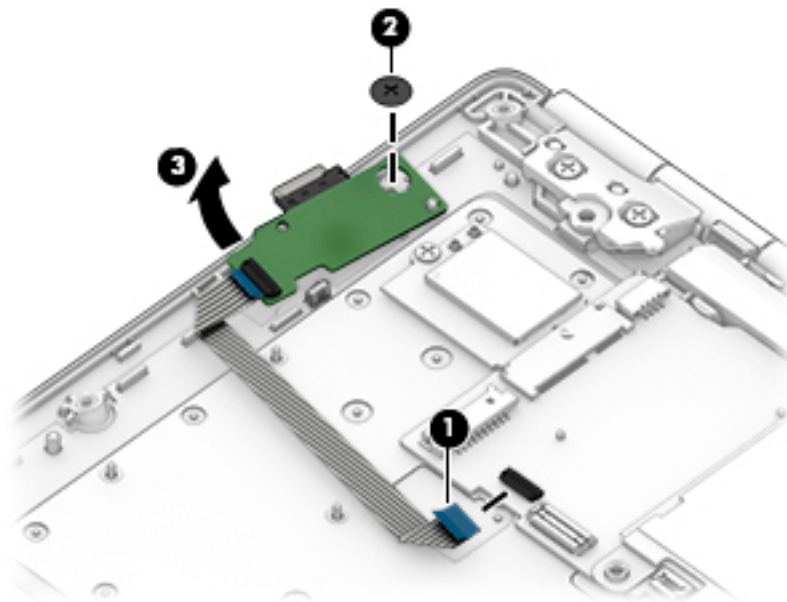
Description	Spare part number
SD card reader board	859524-001

Before removing the SD card reader 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 two computer feet and base enclosure (see [Computer feet and base enclosure on page 19](#)).
5. Remove the battery (see [Battery on page 21](#)).
6. Remove the heat sink (see [Heat sink on page 21](#)).
7. Remove the WLAN module (see [WLAN module on page 23](#)).

Remove the SD card reader board:

1. Release the connector **(1)** to which the SD card reader board cable is attached, and then disconnect the SD card reader board cable from the system board.
2. Remove the Phillips screw **(2)** that secures the SD card reader board to the base enclosure.
3. Remove the SD card reader board **(3)**.



Reverse this procedure to install the SD card reader board.

## TouchPad board

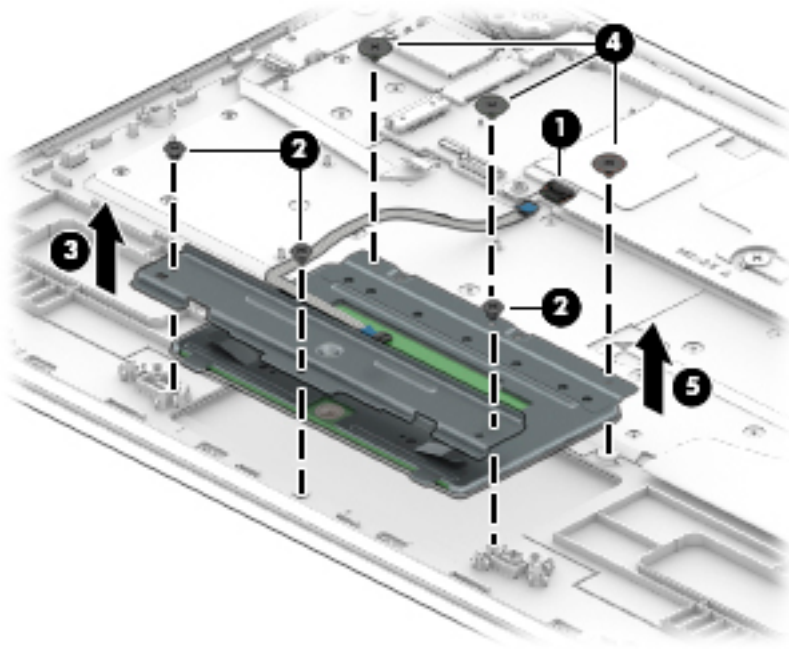
Description	Spare part number
TouchPad board (includes brackets)	861674-001

Before removing the TouchPad board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the two computer feet and base enclosure (see [Computer feet and base enclosure on page 19](#)).
5. Remove the battery (see [Battery on page 21](#)).
6. Remove the heat sink (see [Heat sink on page 21](#)).

Remove the TouchPad board:

1. Disconnect the TouchPad board cable (1).
2. Remove the three Phillips screws (2) that secure the TouchPad bracket to the TouchPad and remove the TouchPad bracket (3).
3. Remove the three Phillips screws (4) that secure the TouchPad to the keyboard/top cover.
4. Remove the TouchPad board (5).



Reverse this procedure to install the TouchPad board.

## Keyboard/top cover



**NOTE:** The keyboard/top cover spare part kit does not include the TouchPad or the TouchPad cable. The TouchPad spare part number 861674-001.

Description	Spare part number	Description	Spare part number
For use in Belgium	859535-A41	For use in the Netherlands	859535-B31
For use in Canada	859535-DB1	For use in Russia	859535-251
For use in the Czech Republic and Slovenia	859535-FL1	For use in Saudi Arabia	859535-171
For use in Denmark, Finland, and Norway	859535-DH1	For use in Spain	859535-071
For use in France	859535-051	For use in Switzerland	859535-BG1
For use in Germany	859535-041	For use in Taiwan	859535-AB1
For use in Israel	859535-BB1	For use in Thailand	859535-281
For use in Italy	859535-061	For use in the United Kingdom	859535-031
For use in Japan	859535-291	For use in the United States	859535-001

Before removing the keyboard/top cover, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the two computer feet and base enclosure (see [Computer feet and base enclosure on page 19](#)).
5. Remove the battery (see [Battery on page 21](#)).
6. Remove the heat sink (see [Heat sink on page 21](#)).
7. Remove the WLAN module (see [WLAN module on page 23](#)).
8. Remove the system board (see [System board on page 25](#)).
9. Remove the speakers (see [Speakers on page 27](#)).
10. Remove the SD card reader board [SD card reader board on page 28](#).
11. Remove the TouchPad board (see [TouchPad board on page 29](#)).
12. Remove the display assembly (see [Display assembly on page 31](#)).

Remove the keyboard/top cover.

Reverse these procedures to install the keyboard/top cover.

## Display assembly

Description	Spare part number
Bezel	859529-001
Panel (FHD)	859533-001
Panel (QHD+)	859534-001
Hinge kit (includes left and right hinges and caps)	859530-001
Cable (LVDS QHD+)	861672-001
HD camera/microphone module	861692-001
Display enclosure (includes antennas, rubber padding, and shielding)	859532-001



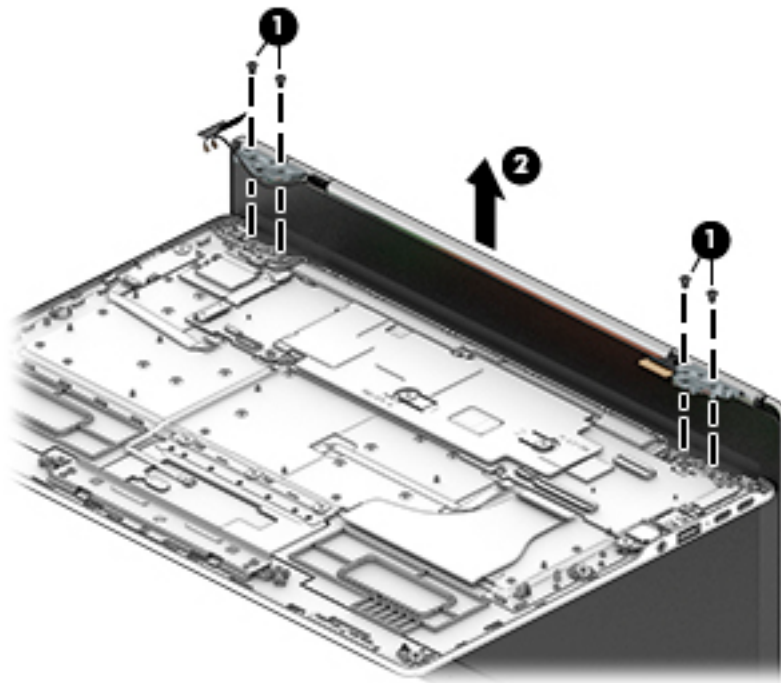
**IMPORTANT:** Make special note of each screw and screw lock size and location during removal and replacement.

Before removing the display assembly, follow these steps:

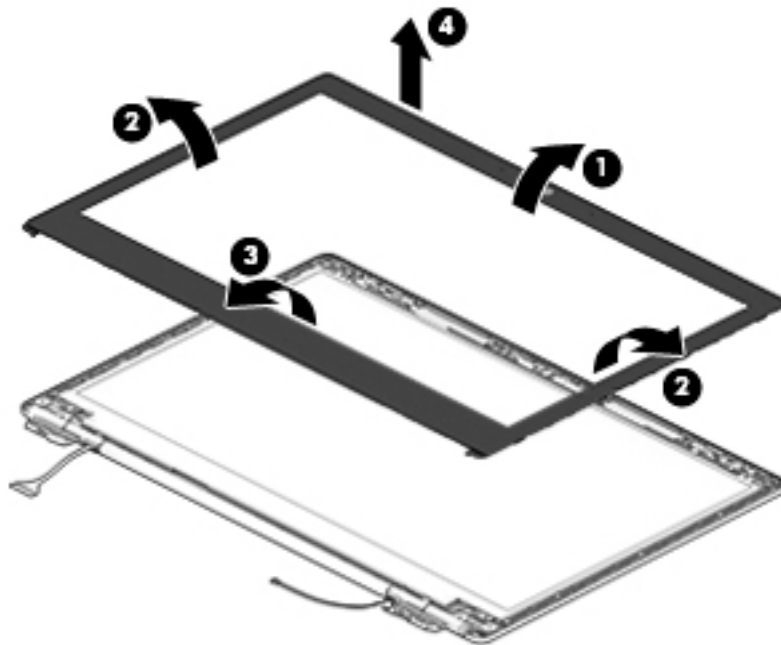
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the two computer feet and base enclosure (see [Computer feet and base enclosure on page 19](#)).
5. Remove the battery (see [Battery on page 21](#)).
6. Remove the heat sink (see [Heat sink on page 21](#)).
7. Remove the WLAN module (see [WLAN module on page 23](#)).
8. Remove the system board (see [System board on page 25](#)).
9. Remove the speakers (see [Speakers on page 27](#)).
10. Remove the SD card reader board (see [SD card reader board on page 28](#)).

Remove the display assembly:

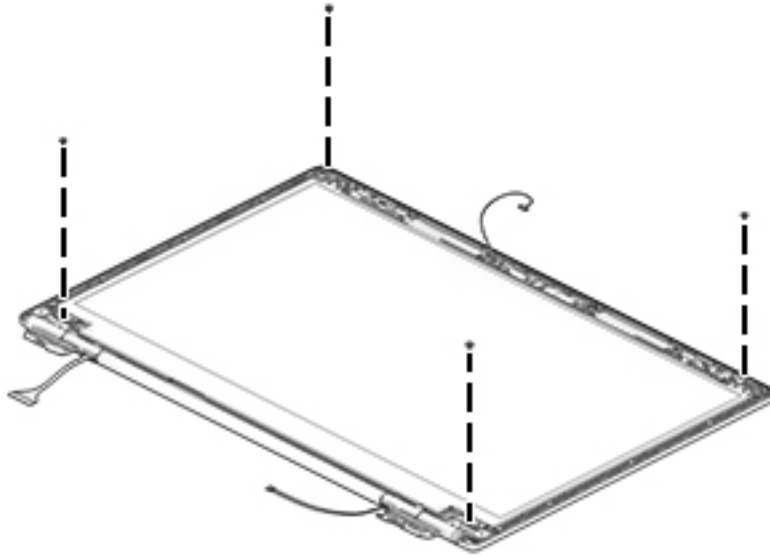
1. Remove the two screws from the right hinge and the two screws from the left hinge **(1)**, and then remove the display assembly **(2)**.



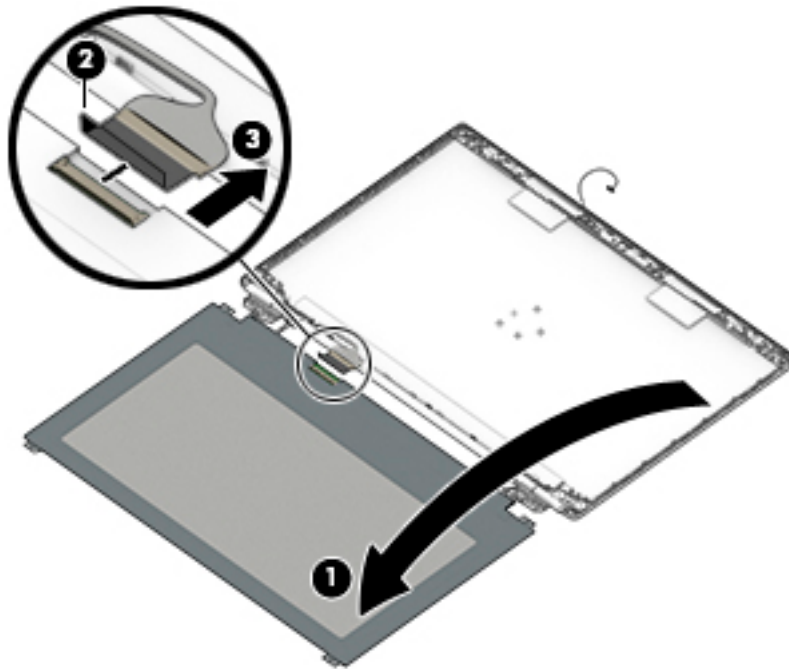
2. If it is necessary to replace the display bezel or any of the LED display assembly subcomponents:
  - a. Use a plastic tool to disengage the bezel starting at the top **(1)**, left and right sides **(2)**, and bottom **(3)**.
  - b. Remove the display bezel **(4)**.



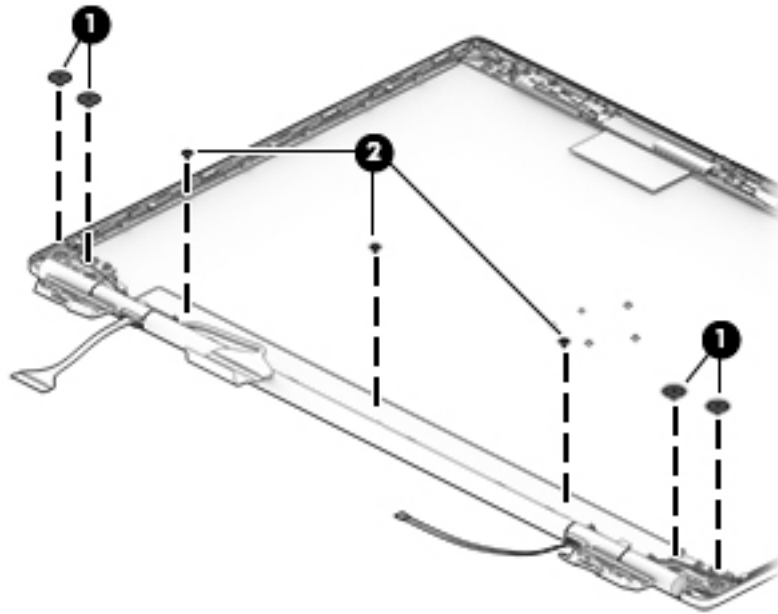
3. If it is necessary to replace the raw display panel, remove the four Phillips screws that secure the display panel to the display enclosure.



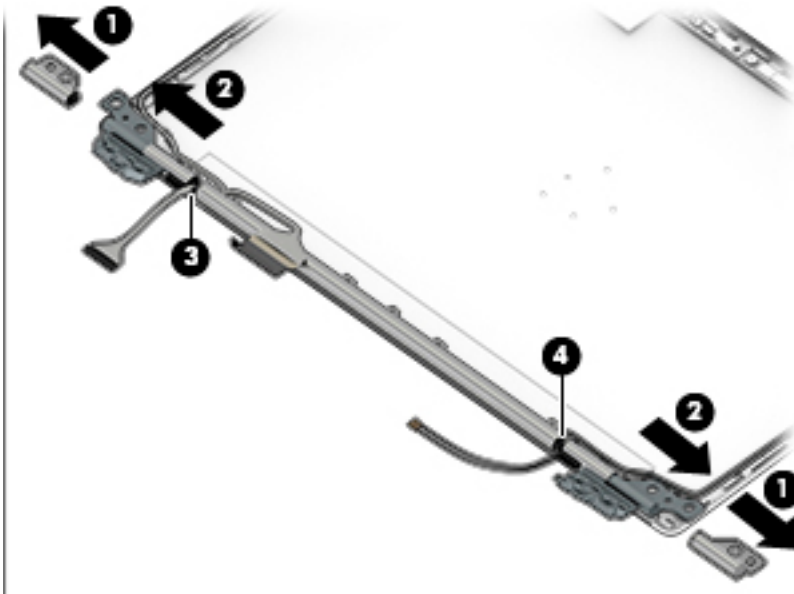
4. Lift the top edge of the display panel (1) and swing it up and forward until it rests upside down in front of the display enclosure. Remove the tape covering the display panel connector (2), disconnect it from the display panel (3), and then remove the panel.



5. If it is necessary to replace the hinge brackets:
  - a. Remove the two Phillips screws from the left and right outer caps (1) and the three Phillips screws from the hinge (2).



- b. Remove the two screws from each end cap **(1)**, and then the left and right caps **(2)**. Disconnect the display cable **(3)**, and the antenna cable **(4)**, and then remove the hinge.



- 6. If it is necessary to replace the camera module:

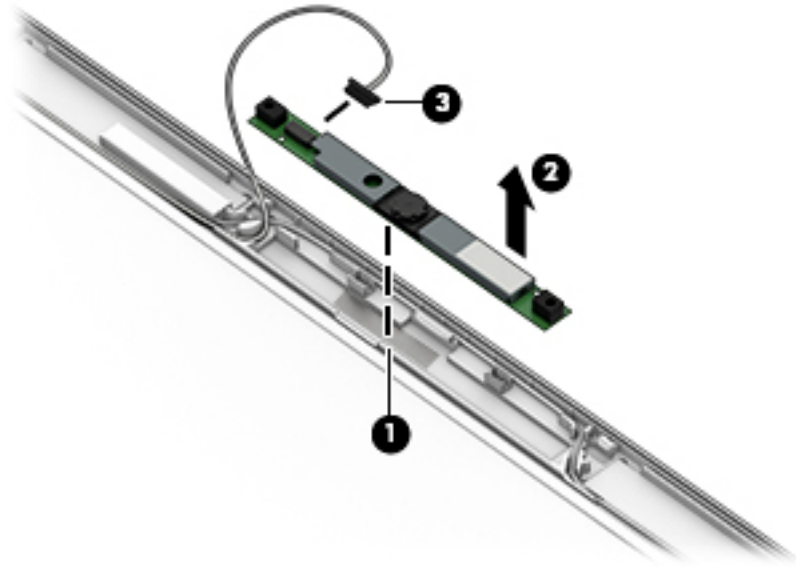
**CAUTION:** Handle the module with caution. This module has a thin profile and is susceptible to damage when not handled carefully.

- a. Detach the camera **(1)** from the display enclosure. (The module is attached to the display enclosure with double-sided adhesive.)
- b. Lift the module **(2)**.



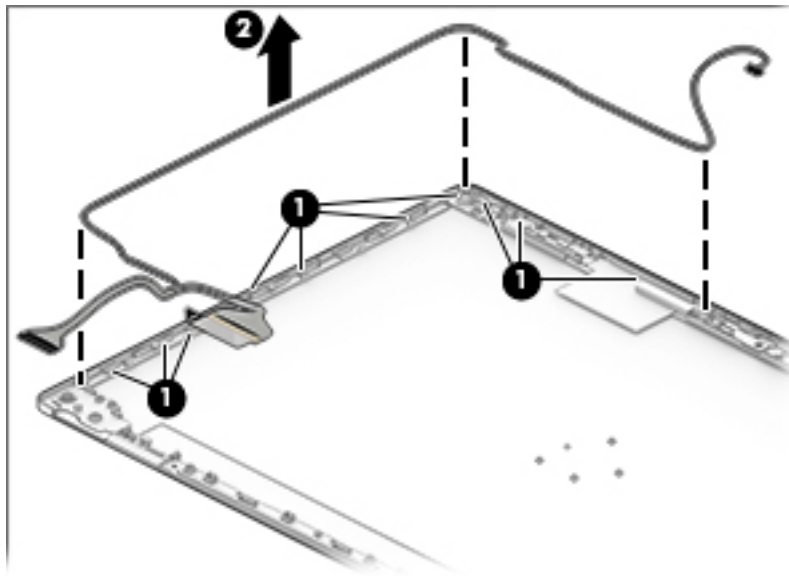
- c. Disconnect the module cable (3) from the module.

The camera module is available using spare part number 862692-001.



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

- a. Release the cable from the routing path (1) along the display enclosure.
- b. Remove the cable (2).



Reverse this procedure to reassemble/install the display assembly.

## 6 Specifications

	Metric	U.S.
<b>Dimensions</b>		
Width	<b>31.9 cm</b>	12.59 in
Depth	<b>21.9 cm</b>	8.64 in
Height	<b>1.29 cm</b>	0.50 in
<b>Weight</b>	<b>1.38 kg</b>	3.05 lb
<b>Temperature</b>		
Operating	<b>5°C to 35°C</b>	41°F to 95°F
Nonoperating	<b>-20°C to 60°C</b>	-4°F to 140°F
<b>Relative humidity</b> (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
<b>Maximum altitude</b> (unpressurized)		
Operating	<b>-15 m to 3,048 m</b>	-50 ft to 10,000 ft
Nonoperating	<b>-15 m to 12,192 m</b>	-50 ft to 40,000 ft
<b>NOTE:</b> Applicable product safety standards specify thermal limits for plastic surfaces. The device operates well within this range of temperatures.		

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# 7 Power cord set requirements

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

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

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

## Requirements for all countries

The following requirements are applicable to all countries and regions:

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

## Requirements for specific countries and regions

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

1. The flexible cord must be Type H05VV-F, 3-conductor, 0.75 mm<sup>2</sup> 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 ac) or NEMA 6-15P (15 A, 250 V ac) configuration. CSA or C-UL mark. UL file number must be on each element.

Country/region	Accredited agency	Applicable note number
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 VCR, 3-conductor, 0.75 mm <sup>2</sup> or 1.25 mm <sup>2</sup> conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard c/o (7 A, 125 V ac) configuration.	
4.	The flexible cord must be Type REV, 3-conductor, 0.75 mm <sup>2</sup> 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 3-conductor, 0.75 mm <sup>2</sup> 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 3-conductor, 1.25 mm <sup>2</sup> 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-conductor, 18 AWG, with plug NEMA 5-15P (15 A, 125 V ac), with UL and CSA or C-UL marks. For 240 V ac, the flexible cord must be Type H05VV-F 3-conductor, 0.75 mm <sup>2</sup> or 1.00 mm <sup>2</sup> conductor size, with plug BS 1363/A with BSI or ASTA marks.	

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## 8 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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