



Maintenance and Service Guide

HP Chromebook x360 G2 Education Edition
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Product notice

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

Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. Go to <http://www.microsoft.com> for details.

To access the latest user guides, go to <http://www.hp.com/support>, and follow the instructions to find your product. Then select **User Guides**.

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For any further information or to request a full refund of the price of the computer, please contact your seller.

Safety warning notice

⚠ CAUTION: 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

Table 1-1 Product components and descriptions

Category	Description
Product Name	HP Chromebook x360 G2 Education Edition
Processors	Intel® Celeron™ N4100 1.1-GHz (turbo up to 2.4-GHz) processor (2400-MHz front-side bus (FSB), 4.0-MB L2 cache, quad core, 6 W) Intel Celeron N4000 1.1-GHz (turbo up to 2.6-GHz) processor (2400-MHz FSB, 4.0-MB L2 cache, dual core, 6 W)
Panel	11.6-inch, high-definition (HD) (1366×768), BrightView, white light-emitting diode (WLED), UWVA, 220 nits, slim TouchScreen display assembly with digitizer 11.6-inch, HD (1366×768), BrightView, WLED, UWVA, 50, 220 nits, eDP 1.2 without PSR, slim TouchScreen display assembly without digitizer
Memory	Support for LPDDR4-3733, 1.1 V system memory Support for 16-GB or 8-GB of onboard system memory
Storage	Support for 64-GB or 32-GB embedded MultiMediaCard (eMMC) v 5.0 onboard storage
Audio and video	Camera: Integrated one-piece fixed HD 720p, 5-megapixel display webcam Integrated one-piece fixed HD 720p, 5-megapixel keyboard webcam Microphone: Single-array microphone
Wireless	Wireless local area network (WLAN) option: Intel 9560 ac 2×2 + Bluetooth® 5.0 MU-MIMO M.2 2230 non-vPro MIPI+BRI WW with two antennas
External media cards	HP MultiFormat microSD® media card reader
Internal card expansion	One M.2 slot for WLAN module
Ports	<ul style="list-style-type: none">• Audio-out (headphone)/audio-in (microphone) combo jack• USB SuperSpeed port• USB Type-C power connector and port
Security	Nano security lock
Power requirements	<ul style="list-style-type: none">• Support for a 2-cell, 47-Wh, 6.18-Ah, Li-ion, battery• Support for a 45-W USB Type-C AC adapter (non-PFC, 1.8-m, 3-pin)• Support for a 1.00-m, power cord with a C5 connector
Operating system	Chrome® 64-bit

2 External component identification

The computer features top-rated components. This chapter provides details about the computer components, where they are located, and how they work.

Right side

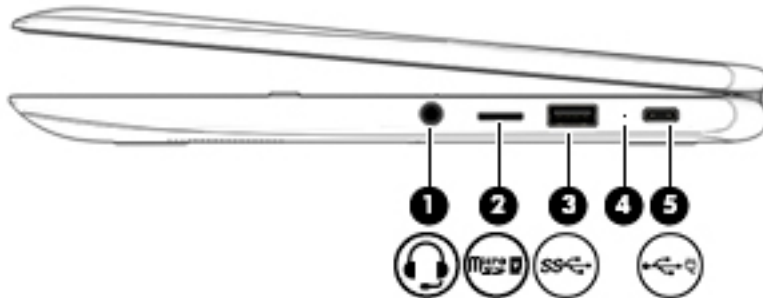


Table 2-1 Right-side components and descriptions





Component	Description
(1)  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 standalone microphones.</p> <p>WARNING! To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, see the <i>Regulatory, Safety, and Environmental Notices</i>.</p> <p>To access this guide:</p> <ul style="list-style-type: none">▲ Select the Start button, select HP Help and Support, and then select HP Documentation. <p>NOTE: When a device is connected to the jack, the computer speakers are disabled.</p>
(2)  MicroSD memory card reader	<p>Reads optional memory cards that enable you to store, manage, share, or access information.</p> <p>To insert a card:</p> <ol style="list-style-type: none">1. Hold the card label-side up, with connectors facing the computer.2. Insert the card into the memory card reader, and then press in on the card until it is firmly seated. <p>To remove a card:</p> <ul style="list-style-type: none">▲ Press in on the card, and then remove it from the memory card reader.
(3)  USB SuperSpeed port	<p>Connects a USB device, such as a cell phone, camera, activity tracker, or smartwatch, and provides high-speed data transfer.</p>

Table 2-1 Right-side components and descriptions (continued)

Component	Description
(4) AC adapter and battery light	<ul style="list-style-type: none">• White: The AC adapter is connected and the battery is fully charged.• Amber: The AC adapter is connected and the battery is charging.• Blinking amber: The battery has an error.• Off: The battery is not charging.
(5)  USB Type-C power connector and port	<p>Connects an AC adapter that has a USB Type-C connector, supplying power to the computer and, if needed, charging the computer battery.</p> <p>– and –</p> <p>Connects a USB device that has a Type-C connector, such as a cell phone, camera, activity tracker, or smartwatch, and provides data transfer.</p> <p>– and –</p> <p>Connects a display device that has a USB Type-C connector, providing DisplayPort output.</p> <p>NOTE: Cables and/or adapters (purchased separately) may be required.</p>

Left side

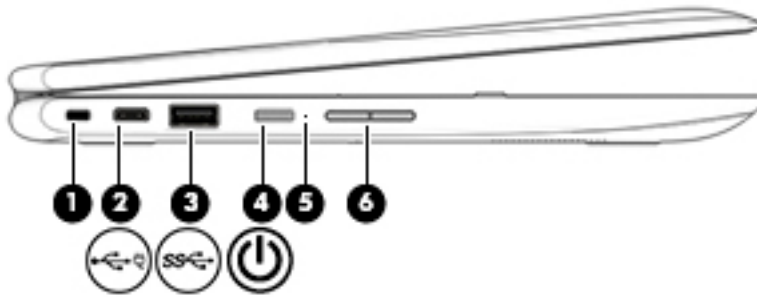


Table 2-2 Left-side components and descriptions




Component	Description
(1) Nano security cable slot	Attaches an optional security cable to the computer. NOTE: The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.
(2)  USB Type-C power connector and port	Connects an AC adapter that has a USB Type-C connector, supplying power to the computer and, if needed, charging the computer battery. – and – Connects a USB device that has a Type-C connector, such as a cell phone, camera, activity tracker, or smartwatch, and provides data transfer. – and – Connects a display device that has a USB Type-C connector, providing DisplayPort output. NOTE: Cables and/or adapters (purchased separately) may be required.
(3)  USB SuperSpeed port	Connects a USB device, such as a cell phone, camera, activity tracker, or smartwatch, and provides high-speed data transfer.
(4)  Power button	<ul style="list-style-type: none"> • When the computer is off, press the button to turn on the computer. • When the computer is in the Sleep state, press the button briefly to exit Sleep (select products only). • 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 turns off. <p>CAUTION: Pressing and holding down the power button results in the loss of unsaved information.</p> <p>If the computer has stopped responding and shutdown procedures are ineffective, press and hold the power button for at least 5 seconds to turn off the computer.</p>
(5) Power light	<ul style="list-style-type: none"> • On: The computer is on. • Blinking: The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other unneeded components.
(6) MicroSD card slot	

Table 2-2 Left-side components and descriptions (continued)

Component	Description
(5) Power light <i>(continued)</i>	<ul style="list-style-type: none">• Off: The computer is off or in Hibernation. Hibernation is a power-saving state that uses the least amount of power.
(6) Volume button	Controls speaker volume on the computer.

Display



Table 2-3 Display components and descriptions

Component	Description
(1) WLAN antennas*	Send and receive wireless signals to communicate with WLANs.
(2) Camera light	On: The camera is in use.
(3) Camera	Allows you to video chat, record video, and record still images.
(4) Internal microphones (2)	Record sound.
(5) Camera light (select products only)	On: The camera is in use.
(6) Camera (select products only)	Allows you to video chat, record video, and record still images.
(7) Internal microphone (select products only)	Records sound.

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

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

To access this guide, go to <http://www.hp.com/support>, and follow the instructions to find your product. Then select **User Guides**.

Keyboard area

TouchPad

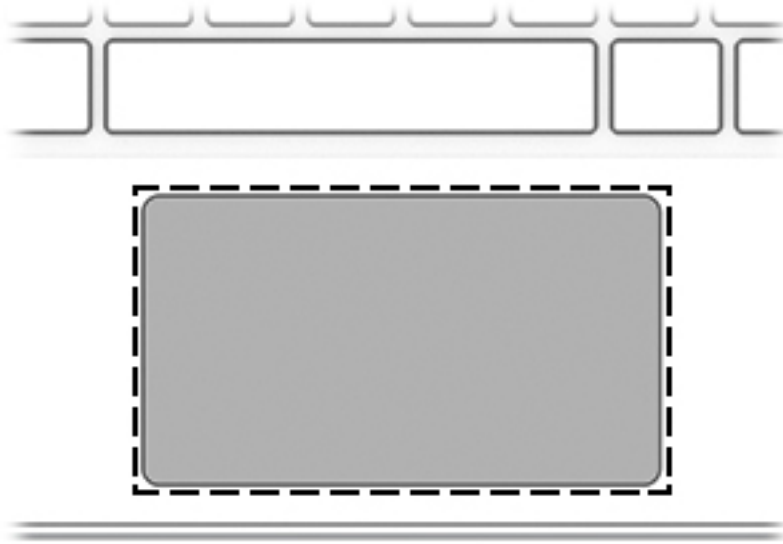


Table 2-4 TouchPad components and descriptions

Component	Description
TouchPad zone	Reads finger gestures to move the pointer or activate items on the screen.

Special keys

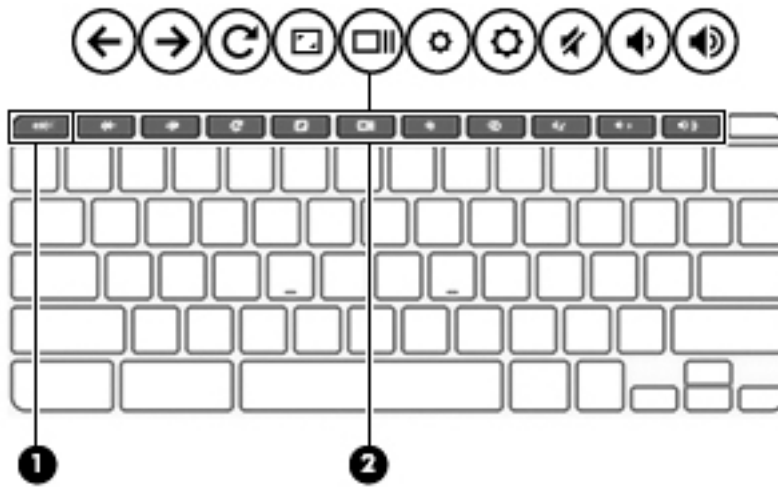


Table 2-5 Special key components and descriptions

Component	Description
(1) esc key	Activates certain computer functions when pressed in combination with other keys, such as Tab or Shift .
(2) Action keys	Execute frequently used system functions.

Bottom



Table 2-6 Bottom component and description

Component	Description
Speakers	Produce sound.

Labels

The labels affixed to the computer provide information that may be needed when troubleshooting system problems or traveling internationally with the computer. Labels may be in paper form or imprinted on the product.

- Service label—Provides important information to identify the computer. When contacting support, the serial number, the product number, or the model number may be requested. Locate this information before contacting support.

The service label will resemble the example shown below:

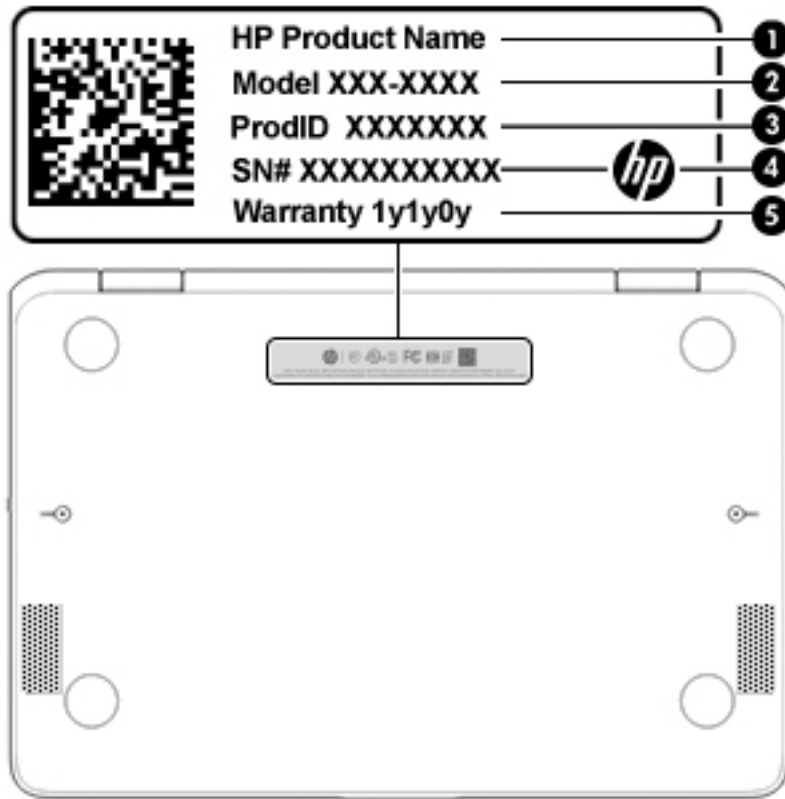



Table 2-7 Service label components and descriptions

Item	Component
(1)	Product name
(2)	Model number
(3)	Product identification
(4)	Serial number
(5)	Warranty period

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.

Computer components

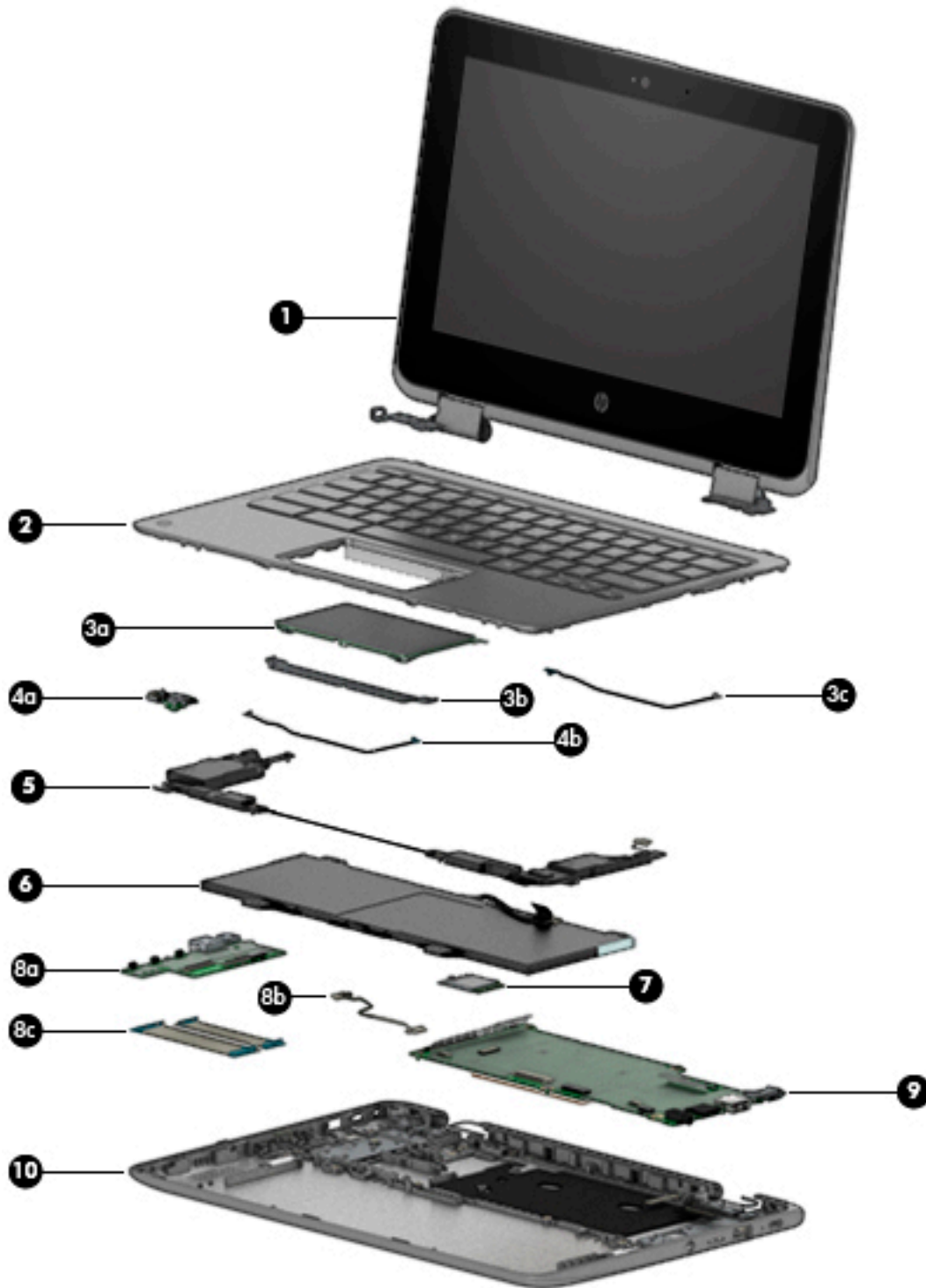


Table 3-1 Computer components and spare part information

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

Table 3-1 Computer components and spare part information (continued)

Item	Component	Spare part number
(2)	Keyboard/top cover (includes keyboard cable):	
	For use only on computer models equipped with a digitizer:	
	For use in Belgium	L55801-A41
	For use in Brazil	L55801-201
	For use in Canada	L55801-DB1
	For use in the Czech Republic and Slovakia	L55801-FL1
	For use in Denmark, Finland, and Norway	L55801-DH1
	For use in France	L55801-051
	For use in Germany	L55801-041
	For use in Israel	L55801-BB1
	For use in Italy	L55801-061
	For use in Latin America	L55801-161
	For use in the Netherlands	L55801-B31
	For use in Portugal	L55801-131
	For use in Romania	L55801-271
	For use in Russia	L55801-251
	For use in Turkey	L55801-141
	For use in Saudi Arabia	L55801-171
	For use in Spain	L55801-071
	For use in Switzerland	L55801-BG1
	For use in Taiwan	L55801-AB1
	For use in Thailand	L55801-281
	For use in Turkey	L55801-141
	For use in the United Kingdom	L55801-031
	For use in the United States	L55801-001
	For use only on computer models not equipped with a digitizer:	
	For use in Belgium	L55802-A41
	For use in Brazil	L55802-201
	For use in Canada	L55802-DB1
	For use in the Czech Republic and Slovakia	L55802-FL1
	For use in Denmark, Finland, and Norway	L55802-DH1
	For use in France	L55802-051
	For use in Germany	L55802-041

Table 3-1 Computer components and spare part information (continued)

Item	Component	Spare part number
	For use in Israel	L55802-BB1
	For use in Italy	L55802-061
	For use in Latin America	L55802-161
	For use in the Netherlands	L55802-B31
	For use in Portugal	L55802-131
	For use in Romania	L55802-271
	For use in Russia	L55802-251
	For use in Turkey	L55802-141
	For use in Saudi Arabia	L55802-171
	For use in Spain	L55802-071
	For use in Switzerland	L55802-BG1
	For use in Taiwan	L55802-AB1
	For use in Thailand	L55802-281
	For use in Turkey	L55802-141
	For use in the United Kingdom	L55802-031
	For use in the United States	L55802-001
(3a)	TouchPad (does not include TouchPad bracket or TouchPad cable)	L53196-001
(3b)	TouchPad bracket (included in the Bracket Kit, spare part number L53213-001)	
(3c)	TouchPad cable (included in the Cable Kit, spare part number L53204-001)	
(4a)	Keyboard webcam module	L53218-001
	Keyboard webcam module bracket (not illustrated, included in the Bracket Kit, spare part number L53213-001)	
(4b)	Keyboard webcam module cable (included in the Cable Kit, spare part number L53204-001)	
(5)	Speakers (include cables and 4 rubber isolators)	L53198-001
(6)	Battery (2-cell, 47-WHr, 6.15-AHr, Li-ion)	L42583-002
(7)	Intel 9560 ac 2×2 + Bluetooth 5.0 MU-MIMO M.2 2230 non-vPro MIPI+BRI WW WLAN module with 2 antennas	L41693-005
(8a)	Power board (does not include power board cable)	L53195-001
	Power board bracket (not illustrated, included in the Bracket Kit, spare part number L53213-001)	
(8b)	Power cable (included in the Cable Kit, spare part number L53204-001)	
(8c)	Power board cables (2, included in the Cable Kit, spare part number L53204-001)	
(9)	System board (includes a graphics subsystem with UMA memory, the heat sink, and replacement thermal material):	
	Equipped with an Intel Celeron N4100 1.1-GHz (turbo up to 2.4-GHz) processor (2400-MHz FSB, 4.0-MB L2 cache, quad core, 6 W), 8.0-GB of system memory, 64-GB of eMMC storage, and the Chrome 64-bit operating system	L53194-001

Table 3-1 Computer components and spare part information (continued)

Item	Component	Spare part number
	Equipped with an Intel Celeron N4100 1.1-GHz (turbo up to 2.4-GHz) processor (2400-MHz FSB, 4.0-MB L2 cache, quad core, 6 W), 4.0-GB of system memory, 32-GB of eMMC storage, and the Chrome 64-bit operating system	L53193-001
	Equipped with an Intel Celeron N4000 1.1-GHz (turbo up to 2.6-GHz) processor (2400-MHz FSB, 4.0-MB L2 cache, dual core, 6 W), 8.0-GB of system memory, 64-GB of eMMC storage, and the Chrome 64-bit operating system	L53192-001
	Equipped with an Intel Celeron N4000 1.1-GHz (turbo up to 2.6-GHz) processor (2400-MHz FSB, 4.0-MB L2 cache, dual core, 6 W), 8.0-GB of system memory, 32-GB of eMMC storage, and the Chrome 64-bit operating system	L53191-001
	Equipped with an Intel Celeron N4000 1.1-GHz (turbo up to 2.6-GHz) processor (2400-MHz FSB, 4.0-MB L2 cache, dual core, 6 W), 4.0-GB of system memory, 32-GB of eMMC storage, and the Chrome 64-bit operating system	L53190-001
(10)	Bottom cover:	
	For use only on computer models equipped with a digitizer:	
	In blue finish	L53202-001
	In grey finish	L53201-001
	For use only on computer models not equipped with a digitizer:	
	In blue finish	L53200-001
	In grey finish	L53199-001

Display assembly components

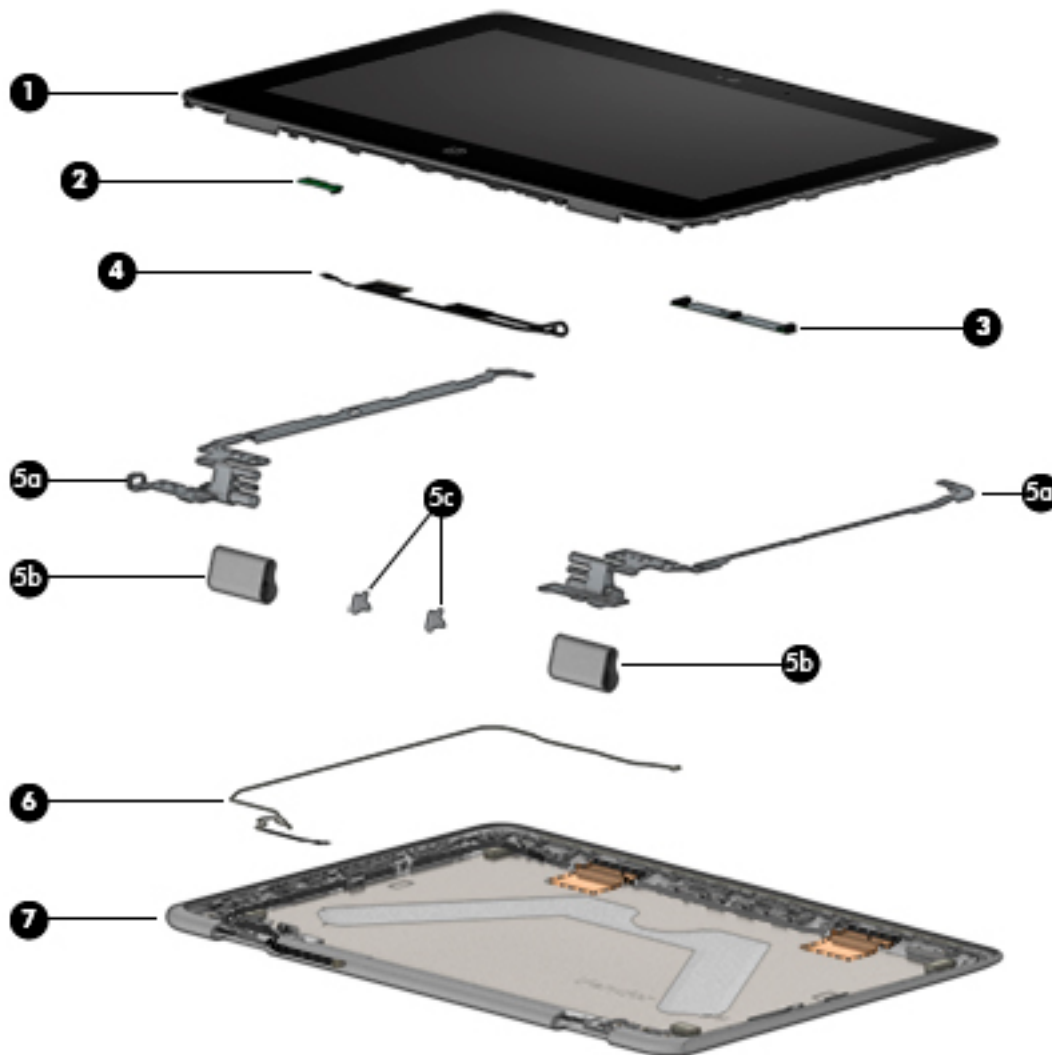


Table 3-2 Display components and spare part information

Item	Component	Spare part number
(1)	Display panel assembly: 11.6-in., HD (1366×768), BrightView, LED, UWVA, 220 nits, eDP, TouchScreen display panel (includes display bezel)	
	For use only on computer models equipped with a digitizer	L53206-001
	For use only on computer models not equipped with a digitizer	L53205-001
(2)	G-sensor module (includes adhesive)	L53215-001
(3)	Webcam/microphone module	L53220-001
(4)	Display panel cable (included in the Cable Kit, spare part number L53204-001)	
(5a)	Hinges (2, include left and right display hinges, left and right hinge covers, and hinge cover spacers)	L53214-001
(5b)	Hinge covers (2, includes left and right hinge covers; included in the display hinge spare part kit, spare part number L53214-001)	

Table 3-2 Display components and spare part information (continued)

Item	Component	Spare part number
(5c)	Hinge cover spacers (2; included in the display hinge spare part kit, spare part number L53214-001)	
(6)	Webcam/microphone module cable (included in the Cable Kit, spare part number L53204-001)	
(7)	Display back cover (includes rubber padding, shielding, and wireless antenna cables and transceivers)	
	For use only on computer models equipped with a digitizer:	
	In blue finish	L53208-001
	In grey finish	L53207-001
	For use only on computer models not equipped with a digitizer:	
	In blue finish	L53210-001
	In grey finish	L53209-001

Miscellaneous parts

Table 3-3 Miscellaneous components and spare part information

Component	Spare part number
AC adapter:	
90-W AC adapter (S-3P, PFC, 4.5-mm)	710413-001
45-W USB Type-C AC adapter (non-PFC, 1.8-m, 3-pin)	L43407-001
Adapter:	
HP USB Type-C-to-DisplayPort adapter	831753-001
HP USB Type-C-to-HDMI 2.0 adapter	935325-001
HP USB Type-C-to-RJ45 adapter	855560-001
HP USB Type-C-to-USB 3.0 adapter	814618-001
HP Essential Backpack	679923-001
Bracket Kit (includes battery bracket, display bracket, I/O bracket, power board bracket, and TouchPad bracket)	L53213-001
Cable Kit (includes display panel cables (2), keyboard webcam module cable, power board cable, power cable, TouchPad cable, and webcam/microphone module cable)	L53204-001
HP USB Type-C dock	L16133-001
HP Nano security lock	918431-001
Mouse:	
HP comfort grip wireless mouse	691922-001
HP USB laser mouse	674318-001
HP USB travel mouse	757770-001
Pen (Wacom, includes tip and tweezer)	L04640-001
Pen (AES)	L53216-001
Pen loop	L08489-001
Power cord (1.0-m, STK CONV, with C5 connector):	
For use in Argentina	L19357-001
For use in Australia	L19358-001
For use in Brazil	L19359-001
For use in Europe	L19361-001
For use in India	L19363-001
For use in Israel	L19362-001
For use in Italy	L19364-001
For use in North America	L19367-001
For use in the People's Republic of China	L19368-001
For use in South Africa	L19369-001

Table 3-3 Miscellaneous components and spare part information (continued)

Component	Spare part number
For use in South Korea	L19366-001
For use in Switzerland	L19370-001
For use in Taiwan	L19372-001
For use in Thailand	L19371-001
For use in the United Kingdom	L19373-001
Rubber Kit	L52565-001
Screw Kit	L53203-001

4 Removal and replacement procedures preliminary requirements


Tools required

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

- Keyboard release tool
- Magnetic Phillips P1 screwdriver
- Non-conductive, non-marking pry tool
- Tweezer

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

 **IMPORTANT:** Using excessive force during disassembly and reassembly can damage plastic parts.

Cables and connectors

 **IMPORTANT:** 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 an optical drive, be sure that a 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 or an optical 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."
-

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.

Electrostatic discharge information

A sudden discharge of static electricity from your finger or other conductor can destroy static-sensitive devices or microcircuitry. Often the spark is neither felt nor heard, but damage occurs. An electronic device exposed to electrostatic discharge (ESD) may not appear to be affected at all and can work perfectly throughout a normal cycle. The device may function normally for a while, but it has been degraded in the internal layers, reducing its life expectancy.

Networks built into many integrated circuits provide some protection, but in many cases, the discharge contains enough power to alter device parameters or melt silicon junctions.



IMPORTANT: To prevent damage to the device 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.

Generating static electricity

Note the following:

- Different activities generate different amounts of static electricity.
- Static electricity increases as humidity decreases.

Table 4-1 Static electricity occurrence based on activity and humidity

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

Electronic components are multi-packaged inside plastic tubes, trays, or Styrofoam.



NOTE: As little as 700 volts can degrade a product.

Preventing electrostatic damage to equipment

Many electronic components are sensitive to ESD. Circuitry design and structure determine the degree of sensitivity. The following packaging and grounding precautions are necessary to prevent static electricity damage to electronic components.

- To avoid hand contact, transport products in static-safe containers such as tubes, bags, or boxes.
- Protect all electrostatic parts and assemblies with conductive or approved containers or packaging.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free stations.
- Place items on a grounded surface before removing them from their container.
- Always be properly grounded when touching a sensitive component or assembly.
- Avoid contact with pins, leads, or circuitry.
- Place reusable electrostatic-sensitive parts from assemblies in protective packaging or conductive foam.

Personal grounding methods and equipment

Use the following equipment to prevent static electricity damage to electronic components:

- **Wrist straps** are flexible straps with a maximum of one-megohm \pm 10% resistance in the ground cords. To provide proper ground, a strap must be worn snug against bare skin. The ground cord must be connected and fit snugly into the banana plug connector on the grounding mat or workstation.
- **Heel straps/Toe straps/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 them on both feet with a maximum of one-megohm \pm 10% resistance between the operator and ground.

Table 4-2 Static shielding protection levels

Static shielding protection levels	
Method	Voltage
Antistatic plastic	1,500
Carbon-loaded plastic	7,500
Metallized laminate	15,000

Grounding the work area

To prevent static damage at the work area, use the following precautions:

- Cover the work surface with approved static-dissipative material. Provide a wrist strap connected to the work surface and properly grounded tools and equipment.
- Use static-dissipative mats, foot straps, or air ionizers to give added protection.
- Handle electrostatic sensitive components, parts, and assemblies by the case or PCB laminate. Handle them only at static-free work areas.
- Turn off power and input signals before inserting and removing connectors or test equipment.
- Use fixtures made of static-safe materials when fixtures must directly contact dissipative surfaces.
- Keep work area free of nonconductive materials such as ordinary plastic assembly aids and Styrofoam.
- Use field service tools, such as cutters, screwdrivers, and vacuums, that are conductive.

Recommended materials and equipment

Materials and equipment that are recommended for use in preventing static electricity include:

- Antistatic tape
- Antistatic smocks, aprons, or sleeve protectors
- Conductive bins and other assembly or soldering aids
- Conductive foam
- Conductive tabletop workstations with ground cord of one-megohm +/- 10% resistance
- Static-dissipative table or floor mats with hard tie to ground
- Field service kits
- Static awareness labels
- Wrist straps and footwear straps providing one-megohm +/- 10% resistance
- Material handling packages
- Conductive plastic bags
- Conductive plastic tubes
- Conductive tote boxes
- Opaque shielding bags
- Transparent metallized shielding bags
- Transparent shielding tubes

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.

5 Removal and replacement procedures for Approved Service Provider Parts

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

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

CAUTION: 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.

Component replacement procedures

NOTE: Details about the computer, including model, serial number, product key, and length of warranty, are on the service tag at the bottom of the computer. See [Labels on page 10](#) for details.

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

There are as many as 43 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.

Keyboard/top cover

NOTE: The keyboard/top cover spare part kit includes the keyboard cable.

Table 5-1 Keyboard/top cover description and spare part information

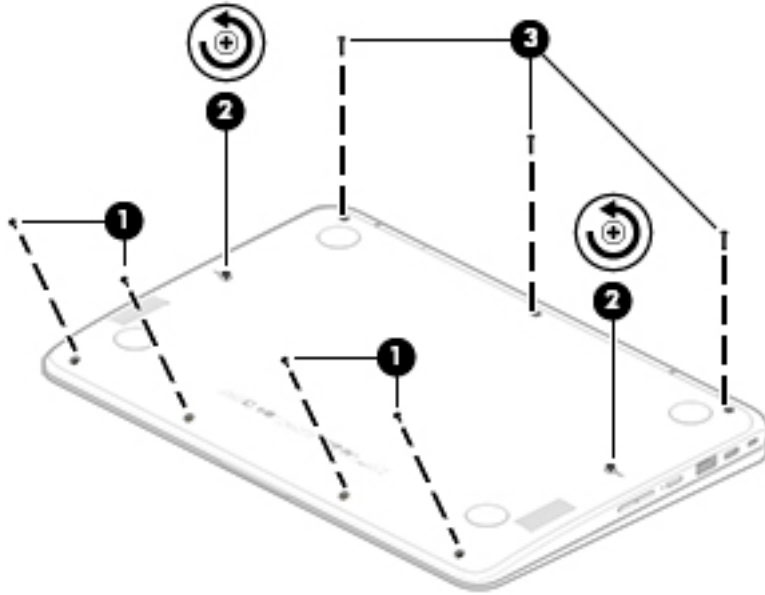
Country/region	Spare part number	Country/region	Spare part number
For use in France	L55801-051	For use in Portugal	L55801-131
For use in Germany	L55801-041	For use in Spain	L55801-071
For use in Iceland	L55801-DD1	For use in Turkey	L55801-141
For use in Italy	L55801-061	For use in the United Kingdom	L55801-031
For use in Latin America	L55801-161	For use in the United States	L55801-001

Before removing the disassembling the computer, follow these steps:

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

Remove the keyboard/top cover:

1. Remove the four Phillips M2.5×5.7 screws (1) that secure the keyboard/top cover to the base enclosure.
2. Loosen the two Phillips M2.0 captive screws (2) that secure the keyboard/top cover to the base enclosure.
3. Remove the three Phillips M2.5×10.0 screws (3) that secure the keyboard/top cover to the base enclosure.



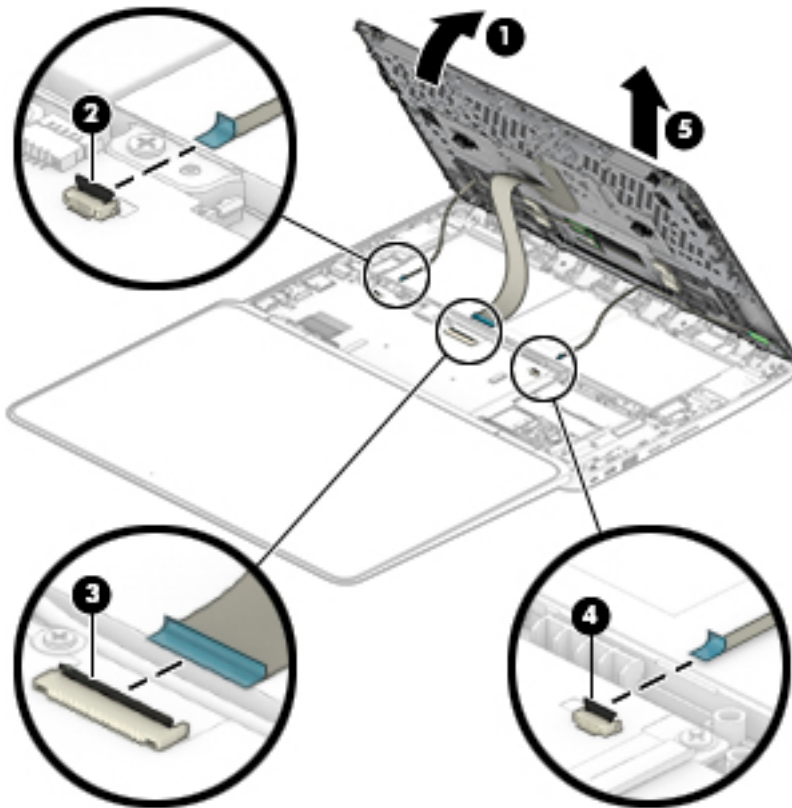
4. Open the computer.
5. Rest the open computer on its left side.

6. Insert a keyboard release tool or similar non-conductive tool into the rear corner screw holes **(1)** and **(2)**, and then release the keyboard/top cover.



7. Turn the computer right side up with the rear toward you.
8. Open the computer as far as it will open.
9. Swing the keyboard/top cover **(1)** up and back as far as the keyboard and TouchPad cables allow.
10. Release the zero insertion force (ZIF) connector **(2)** to which the TouchPad cable is connected, and then disconnect the TouchPad cable from the system board.
11. Release the ZIF connector **(3)** to which the keyboard cable is connected, and then disconnect the keyboard cable from the system board.
12. Release the ZIF connector **(4)** to which the keyboard webcam module cable is connected, and then disconnect the keyboard webcam module cable from the system board.

13. Remove the keyboard/top cover (5).



Reverse this procedure to install the keyboard/top cover.

TouchPad cable



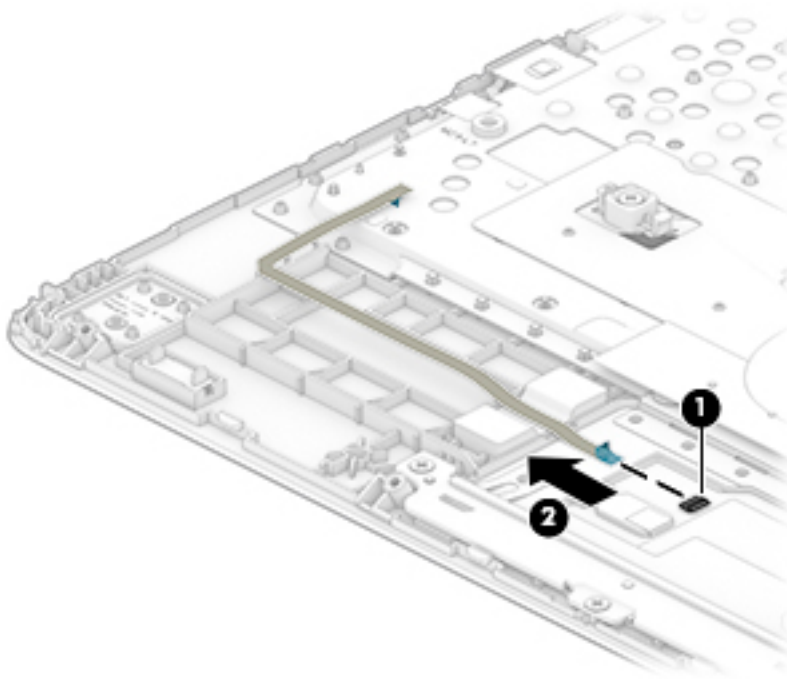
NOTE: The TouchPad spare part kit does not include the TouchPad cable. The TouchPad cable is included in the Cable Kit, spare part number L53204-001.

Before removing the TouchPad cable, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 25](#)).

Remove the TouchPad cable:

1. Turn the keyboard/top cover upside with the front toward you.
2. Release the ZIF connector (1) to which the TouchPad cable is connected.
3. Disconnect the TouchPad cable (2) from the TouchPad.



Reverse this procedure to install the TouchPad cable.

TouchPad

Table 5-2 TouchPad description and spare part number information

Description	Spare part number
TouchPad	L53196-001

NOTE: The TouchPad spare part kit does not include the TouchPad bracket or the TouchPad cable. The TouchPad bracket is included in the Bracket Kit, spare part number L53213-001. The TouchPad cable is included in the Cable Kit, spare part number L52549-001.

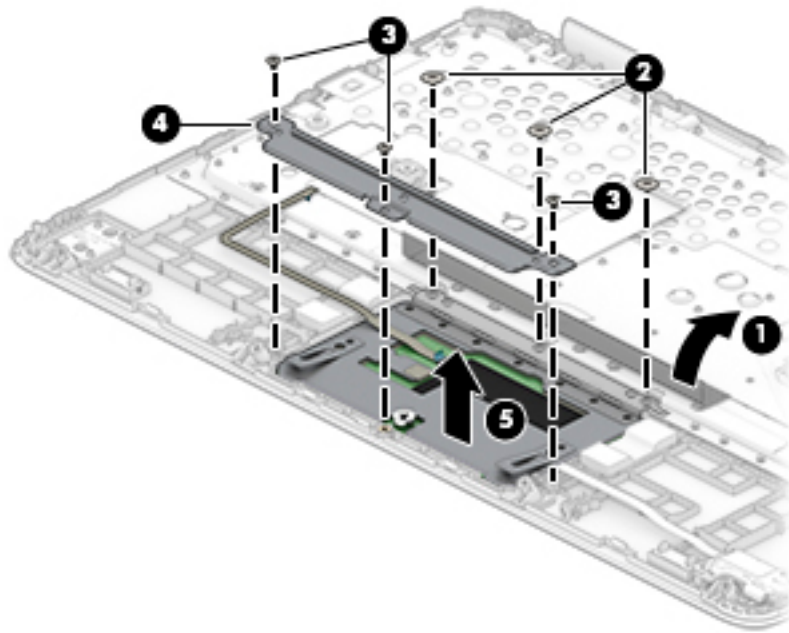
Before removing the TouchPad, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 25](#)).

Remove the TouchPad:

1. Turn the keyboard/top cover upside with the front toward you.
2. Fold back the shielding material **(1)** that covers the TouchPad screws.
3. Remove the three Phillips M2.0×2.3 broad head screws **(2)** that secure the TouchPad to the keyboard/top cover.
4. Remove the three Phillips M2.0×2.8 screws **(3)** that secure the TouchPad and bracket to the keyboard/top cover.
5. Remove the TouchPad bracket **(4)**.

6. Remove the TouchPad (5).



Reverse this procedure to install the TouchPad.

Keyboard webcam module

Table 5-3 Keyboard webcam module description and spare part number information

Description	Spare part number
Keyboard webcam module	L53218-001

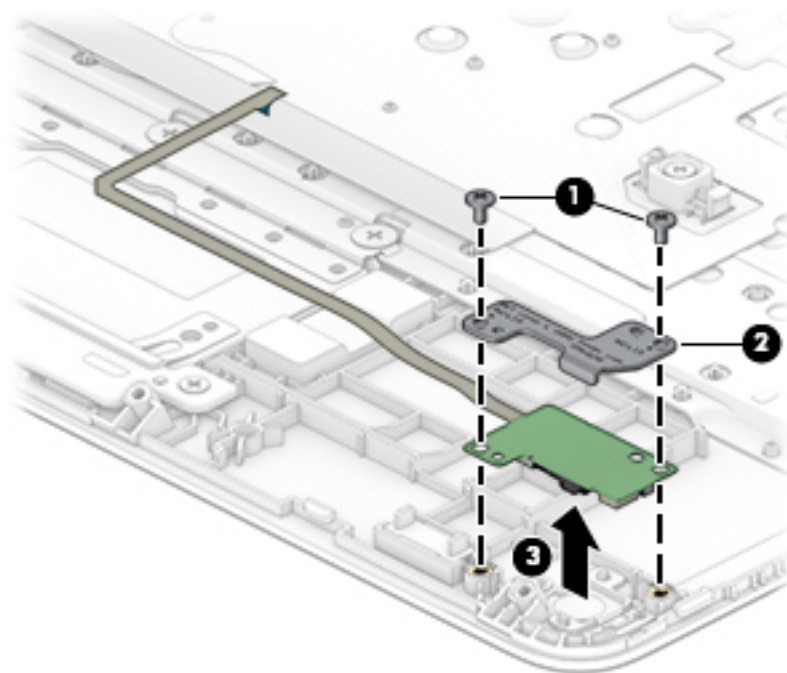
NOTE: The keyboard webcam module spare part kit does not include the keyboard webcam module bracket or the keyboard webcam module cable. The keyboard webcam module bracket is included in the Bracket Kit, spare part number L53213-001. The keyboard webcam module cable is included in the Cable Kit, spare part number L53204-001.

Before removing the keyboard webcam module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 25](#)).

Remove the keyboard webcam module:

1. Turn the keyboard/top cover upside with the front toward you.
2. Remove the two Phillips M2.0×4.1 screws (1) that secure the keyboard webcam module to the keyboard/top cover.
3. Remove the keyboard webcam module bracket (2).
4. Remove the keyboard webcam module (3).



Reverse this procedure to install the keyboard webcam module.

Keyboard webcam module cable

 **NOTE:** The keyboard webcam module spare part kit does not include the keyboard webcam module cable. The keyboard webcam module cable is included in the Cable Kit, spare part number L53204-001.

Before removing the keyboard webcam module cable, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 25](#)).
5. Remove the keyboard webcam module (see [Keyboard webcam module on page 32](#)).

Remove the keyboard webcam module cable:

1. Turn the keyboard webcam module upside with the front toward you.
2. Release the ZIF connector (1) to which the keyboard webcam module cable is connected.
3. Disconnect the keyboard webcam module cable (2) from the keyboard webcam module.



Reverse this procedure to install the keyboard webcam module cable.

Battery

Table 5-4 Battery description and spare part number information

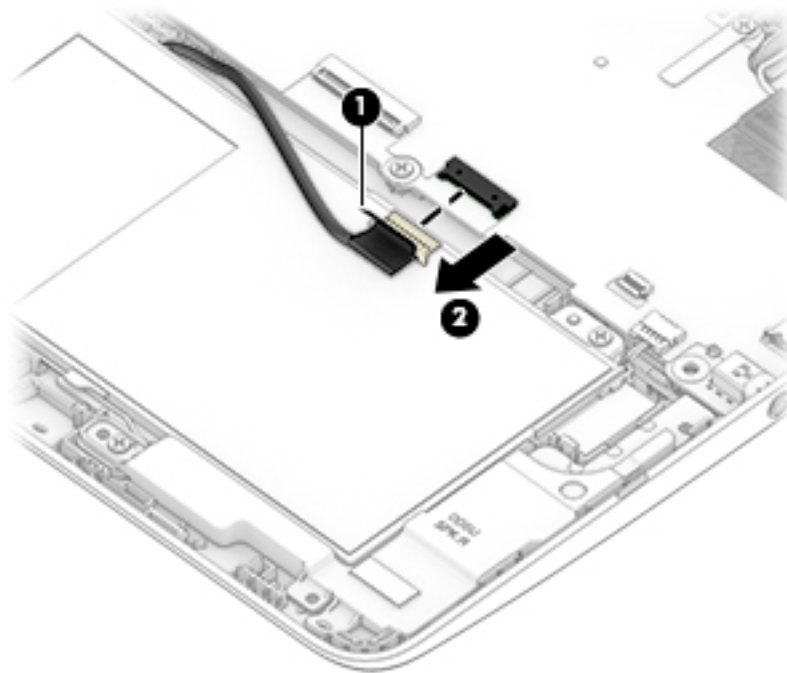
Description	Spare part number
2-cell, 47-WHr, 6.15-AHr, Li-ion battery	L42583-002

Before removing the battery, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 25](#)).

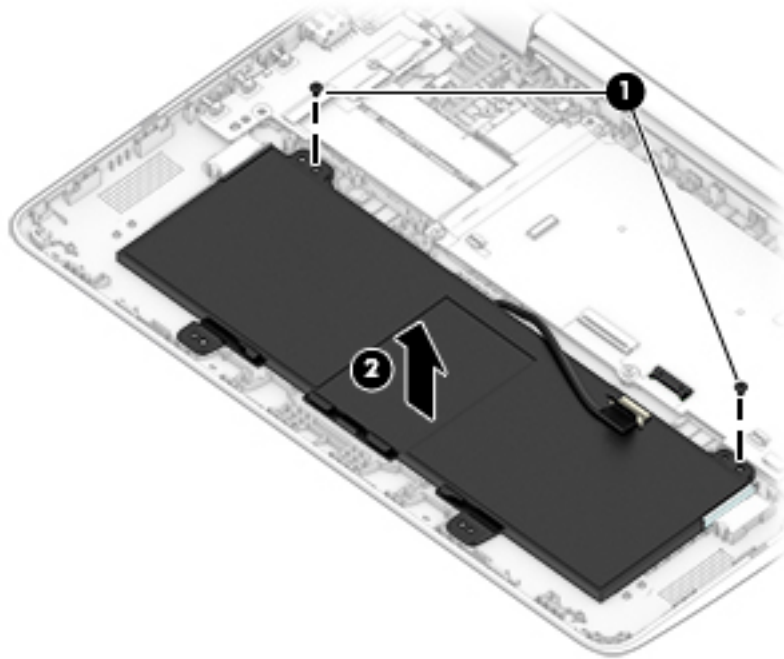
Remove the battery:

1. Release the battery tape (1) that secures the battery cable to the battery connector.
The battery tape is available using spare part number L14905-001.
2. Disconnect the battery cable (2) from the system board.



3. Remove the two Phillips M2.0×4.1 screws (1) that secure the battery to the base enclosure.

4. Remove the battery (2).



Reverse this procedure to install the battery.

Speakers

Table 5-5 Speakers description and spare part number information

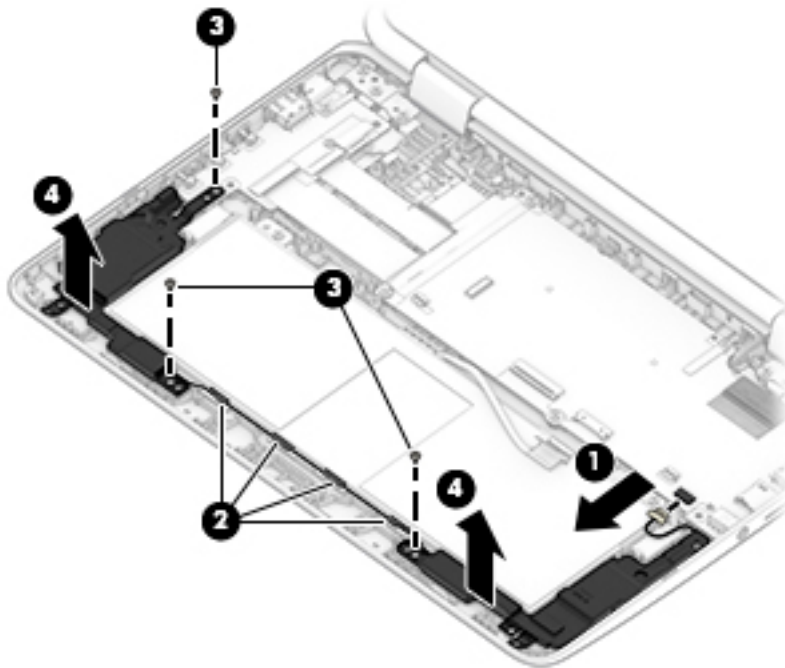
Description	Spare part number
Speakers (include cables)	L53198-001

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 first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the keyboard/top cover (see [Keyboard/top cover on page 25](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 34](#)).

Remove the speakers:

1. Disconnect the speaker cable (1) from the system board.
2. Release the speaker cables from the retention clips/routing channels (2) built into the front edge of the battery.
3. Remove the two Phillips M2.0×4.1 screws (3) that secure the speakers to the base enclosure.
4. Remove the speakers (4).




Reverse this procedure to install the speakers.

WLAN module

Table 5-6 WLAN drive description and spare part number information

Description	Spare part number
Intel 9560 ac 2x2 + Bluetooth 5.0 MU-MIMO M.2 2230 non-vPro MIPI+BRI WW WLAN module with 2 antennas	L41693-005

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

Before removing the WLAN module, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Keyboard/top cover on page 25](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 34](#)).

Remove the WLAN module:

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

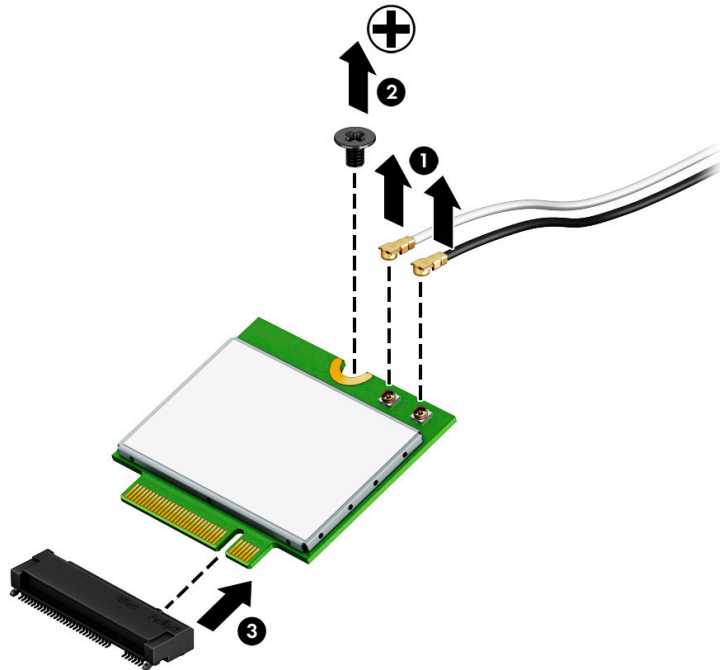


NOTE: The #1/white WLAN antenna cable connects to the WLAN module "#1/Main" terminal. The #2/black WLAN antenna cable connects to the WLAN module "#2/Aux" terminal.

2. Remove the Phillips M2.0x2.2 broad head screw **(2)** that secures the WLAN module to the system board. (The WLAN module tilts up.)


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

 **NOTE:** The WLAN module is designed with a notch to prevent incorrect insertion.



Reverse this procedure to install the WLAN module.

Power board cables

 **NOTE:** The power board spare part kit does not include the power board cables. The power board cables are included in the Cable Kit, spare part number L53204-001.

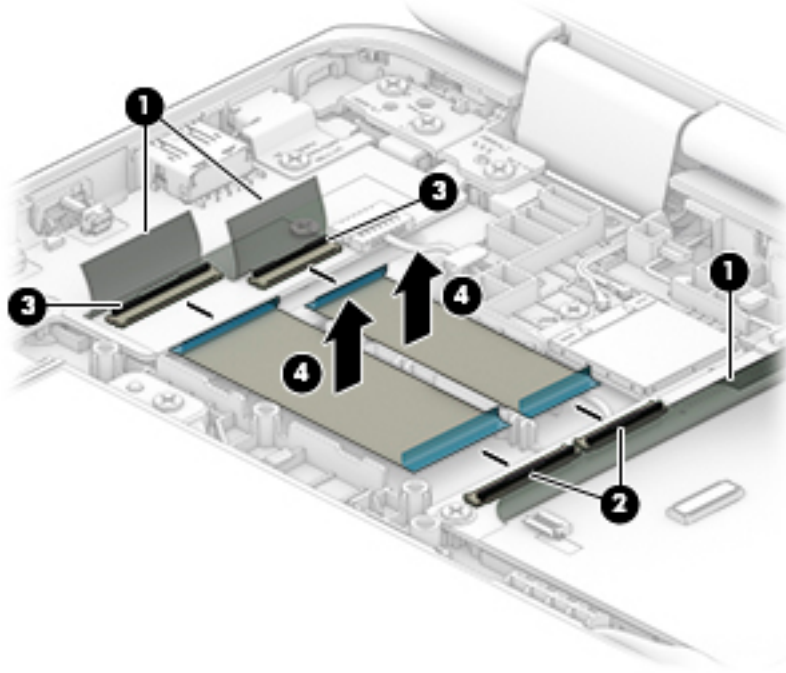
Before removing the power board cables, follow these steps:

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 first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Keyboard/top cover on page 25](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 34](#)).

Remove the power board:

1. Release the shielding (1) that covers the power board cable connectors.
2. Release the ZIF connectors (2) to which the power board cables are connected, and then disconnect the power board cables from the system board.
3. Release the ZIF connectors (3) to which the power board cables are connected, and then disconnect the power board cables from the power board.

4. Remove the power board cables (4).



Reverse this procedure to install the power board cables.

Power board

Table 5-7 Power board description and spare part number information

Description	Spare part number
Power board	L52571-001

NOTE: The power board spare part kit does not include the power board cables or the power cable. The power board cables and power cable are included in the Cable Kit, spare part number L53204-001.

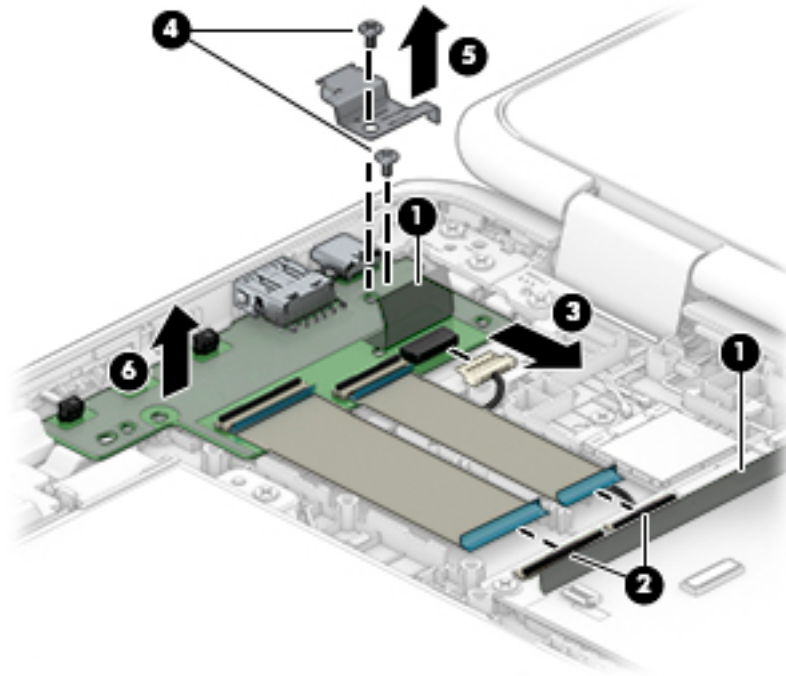
Before removing the power board, follow these steps:

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 first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
3. Disconnect all external devices from the computer.
4. Remove the bottom cover (see [Keyboard/top cover on page 25](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 34](#)).

Remove the power board:

1. Release the shielding (1) that covers the power board cable and power cable connectors.
2. Release the ZIF connectors (2) to which the power board cables are connected, and then disconnect the power board cables from the system board.
3. Disconnect the power cable (3) from the power board.

4. Remove the two Phillips M2.0×4.1 screws (4) that secure the power board to the keyboard/top cover.
5. Remove the power board bracket (5).
The power board bracket is included in the Bracket Kit, spare part number L53213-001.
6. Remove the power board (6) and cables.



Reverse this procedure to install the power board.

System board

NOTE: The system board spare part kit includes a graphics subsystem with UMA memory, the heat sink, and replacement thermal material).

Table 5-8 System board description and spare part number information

Description	Spare part number
Equipped with an Intel Celeron N4100 1.1-GHz (turbo up to 2.4-GHz) processor (2400-MHz FSB, 4.0-MB L2 cache, quad core, 6 W), 8.0-GB of system memory, 64-GB of eMMC storage, and the Chrome 64-bit operating system	L53194-001
Equipped with an Intel Celeron N4100 1.1-GHz (turbo up to 2.4-GHz) processor (2400-MHz FSB, 4.0-MB L2 cache, quad core, 6 W), 4.0-GB of system memory, 32-GB of eMMC storage, and the Chrome 64-bit operating system	L53193-001
Equipped with an Intel Celeron N4000 1.1-GHz (turbo up to 2.6-GHz) processor (2400-MHz FSB, 4.0-MB L2 cache, dual core, 6 W), 8.0-GB of system memory, 64-GB of eMMC storage, and the Chrome 64-bit operating system	L53192-001
Equipped with an Intel Celeron N4000 1.1-GHz (turbo up to 2.6-GHz) processor (2400-MHz FSB, 4.0-MB L2 cache, dual core, 6 W), 8.0-GB of system memory, 32-GB of eMMC storage, and the Chrome 64-bit operating system	L53191-001
Equipped with an Intel Celeron N4000 1.1-GHz (turbo up to 2.6-GHz) processor (2400-MHz FSB, 4.0-MB L2 cache, dual core, 6 W), 4.0-GB of system memory, 32-GB of eMMC storage, and the Chrome 64-bit operating system	L53190-001

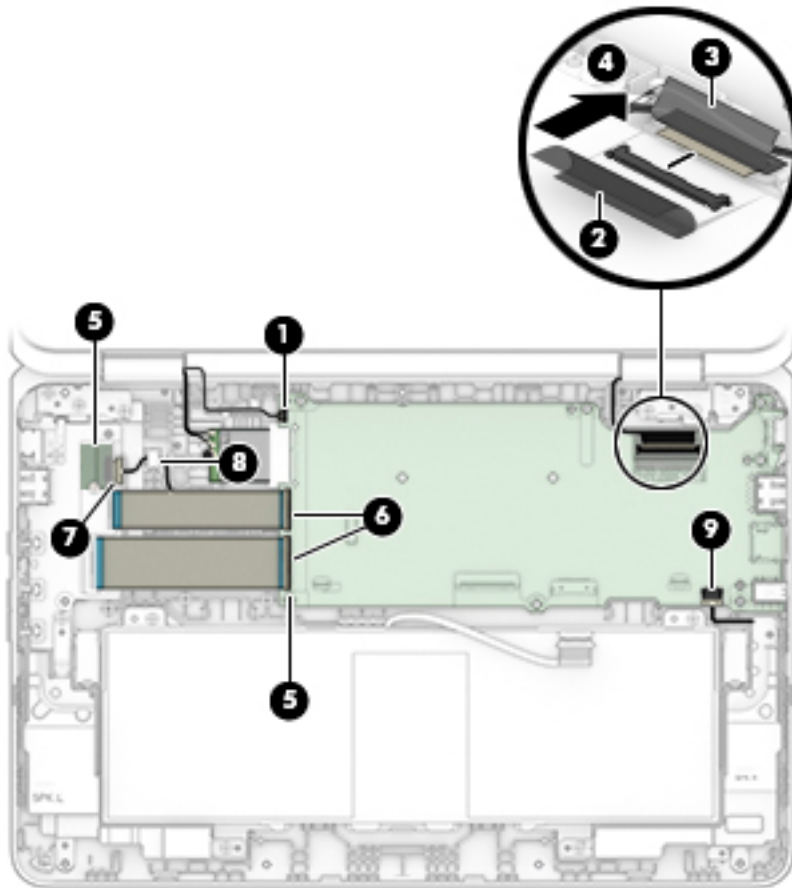
Before removing the system board, follow these steps:

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 bottom cover (see [Keyboard/top cover on page 25](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 34](#)).

Remove the system board:

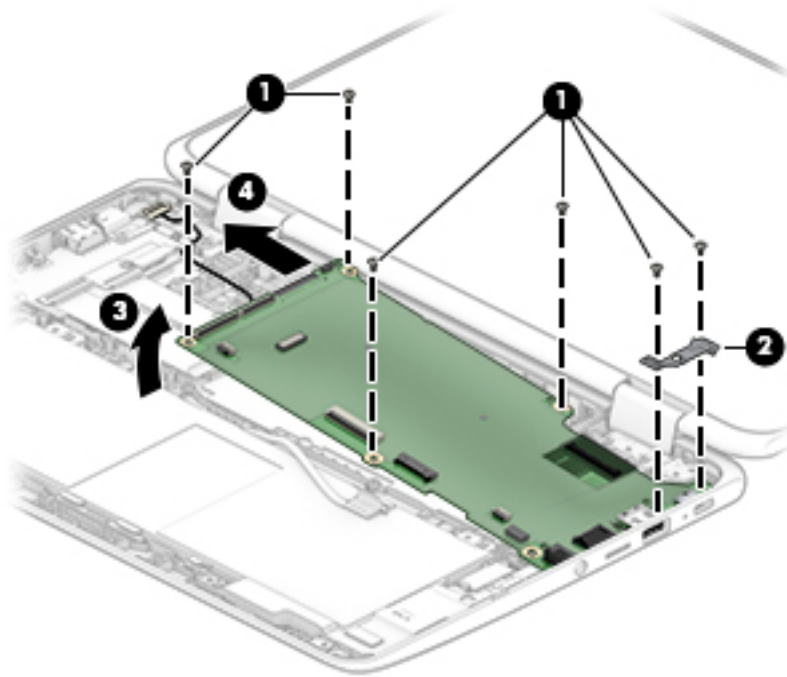
1. Disconnect the webcam/microphone module cable **(1)** from the system board.
2. Release the shielding **(2)** that covers the display panel cable connector.
3. Release the adhesive support strip **(3)** that secures the display panel cable to the system board.
4. Disconnect the display panel cable **(4)** from the system board.
5. Release the shielding **(5)** that covers the power board cables connector and the power cable.
6. Release the ZIF connectors **(6)** to which the power board cables are connected, and then disconnect the power board cables from the system board.
7. Disconnect the power cable **(7)** from the power board.
8. Release the power cable from the retention clips/routing channel **(8)** built into the base enclosure.

9. Disconnect the speaker cable (9) from the system board.




10. Remove the six Phillips M2.0×4.1 screws (1) that secure the system board to the base enclosure.
11. Remove the I/O bracket (2).
The I/O bracket is included in the Bracket Kit, spare part number L53213-001.
12. Lift the left side of the system board (3) until it rests at an angle.

13. Remove the system board (4) by sliding it up and to the left at an angle.



Reverse this procedure to install the system board.

Power cable

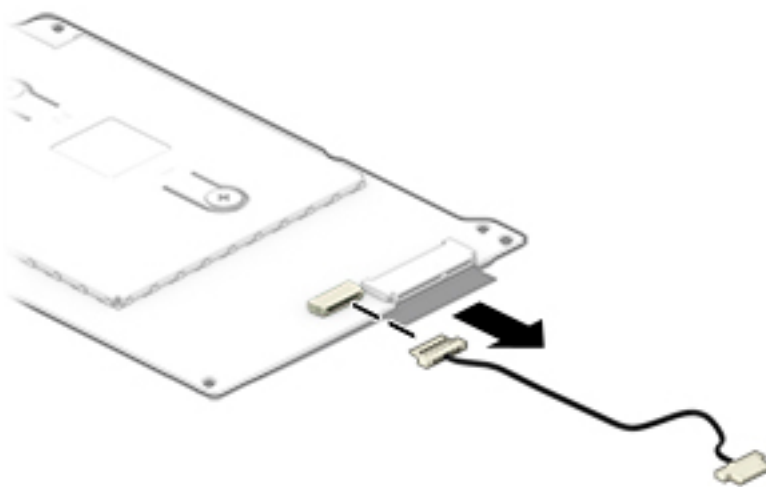
 **NOTE:** The power board spare part kit does not include the power cable. The power cable is included in the Cable Kit, spare part number L53204-001.

Before removing the power cable, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Keyboard/top cover on page 25](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 34](#)).
6. Remove the system board (see [System board on page 40](#)).


Remove the power cable:

1. Turn the system board upside down with the rear toward you.
2. Disconnect the power cable from the system board.



Reverse this procedure to install the power cable.

Display assembly

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

Before removing the display assembly, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the bottom cover (see [Keyboard/top cover on page 25](#)).
5. Disconnect the battery cable from the system board (see [Battery on page 34](#)).

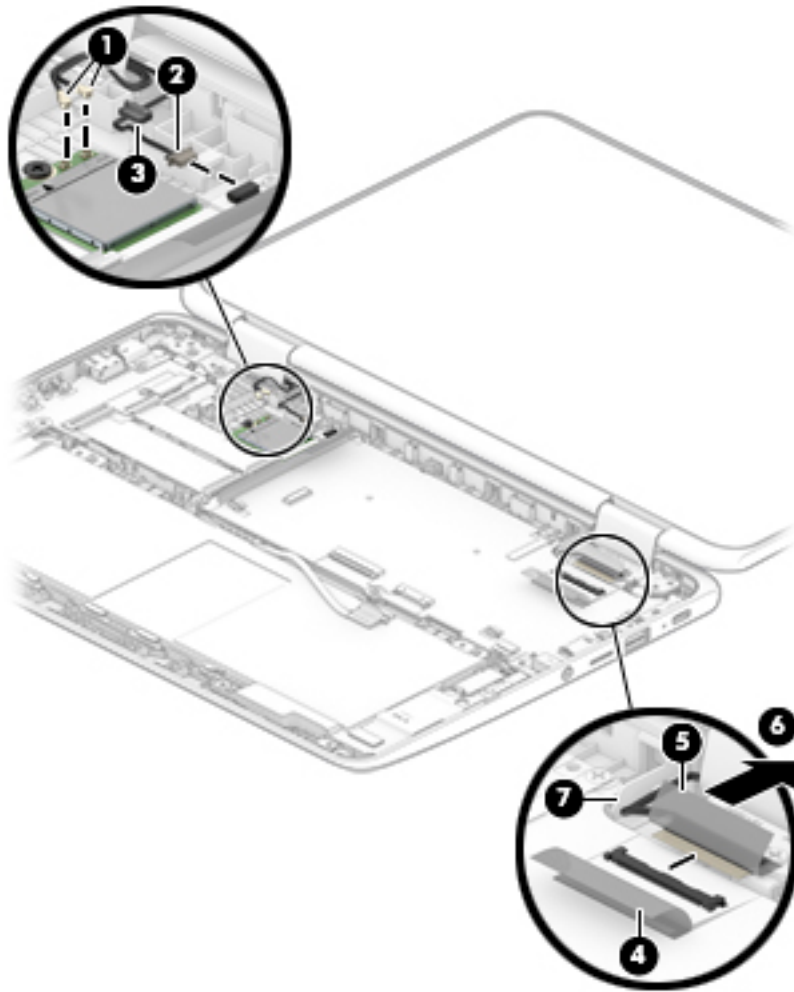
Remove the display assembly:

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

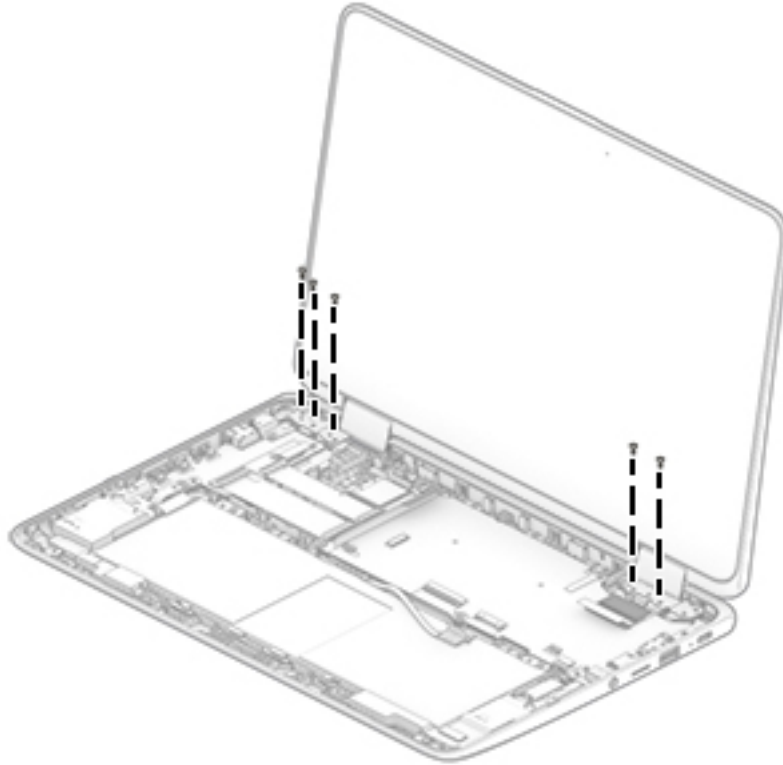
 **NOTE:** The #1/white WLAN antenna cable connects to the WLAN module "#1/Main" terminal. The #2/black WLAN antenna cable connects to the WLAN module "#2/Aux" terminal.

2. Disconnect the webcam/microphone module cable **(2)** from the system board.
3. Release the webcam/microphone module cable and the WLAN antenna cables from the retention clips **(3)** and routing channel built into the base enclosure.
4. Release the shielding **(4)** that covers the display panel cable connector.
5. Release the adhesive support strip **(5)** that secures the display panel cable to the system board.
6. Disconnect the display panel cable **(6)** from the system board.

7. Release the display panel cable from the retention clips (7) and routing channel built into the base enclosure.

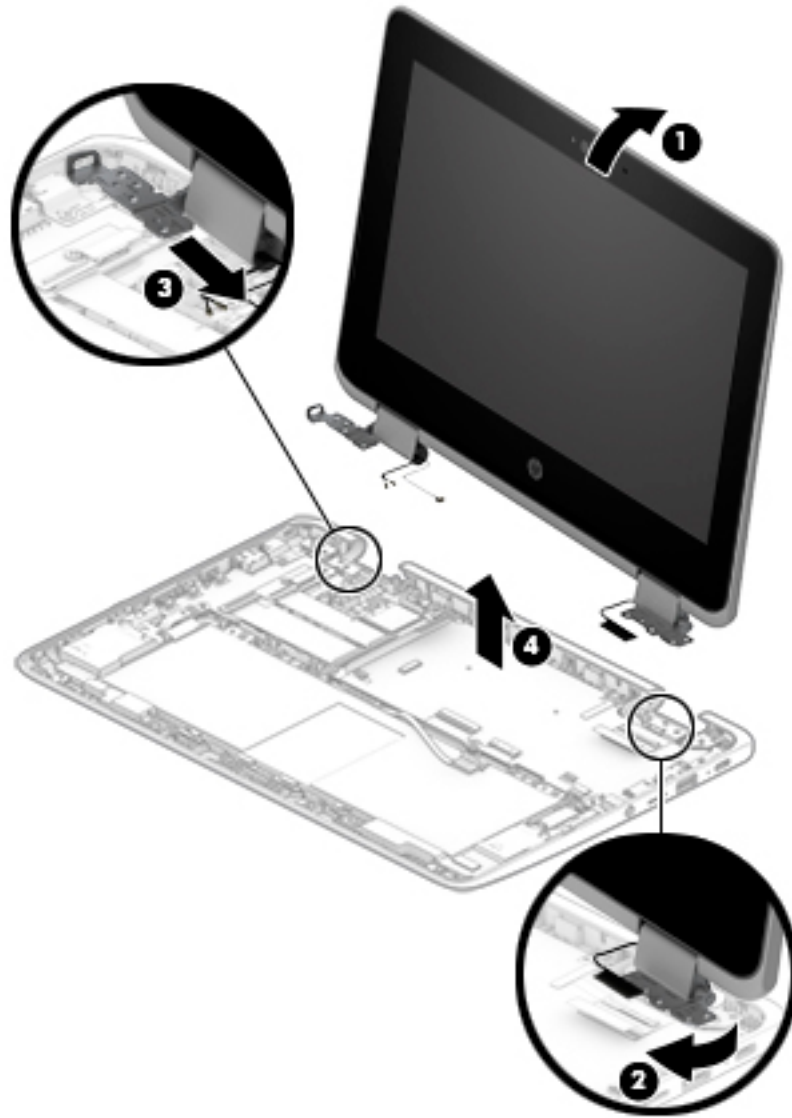


8. Remove the five Phillips M2.5×5.1 screws that secure the display assembly to the base enclosure.



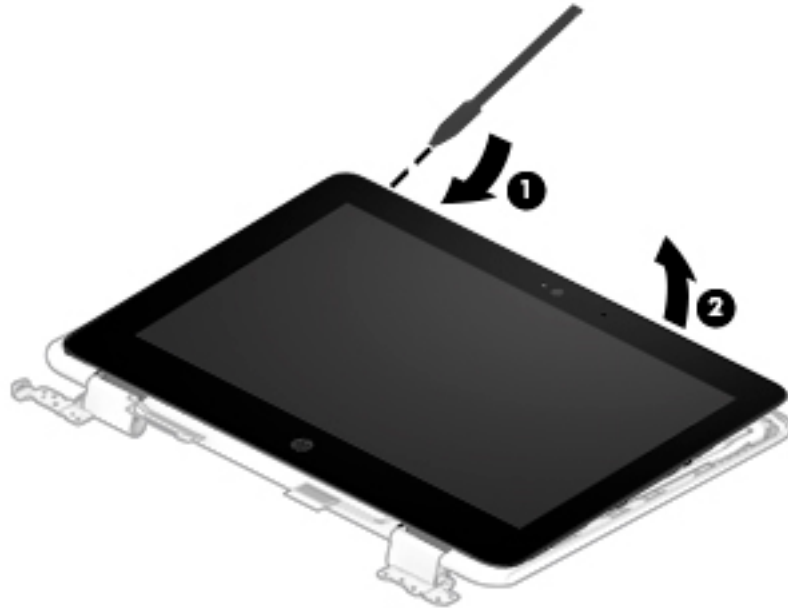
9. Swing the display assembly **(1)** up and back until the display assembly is in an upright position.
10. Rotate the right display hinge **(2)** clockwise until the hinge releases from the base enclosure.
11. Slide the left display hinge **(3)** away from the base enclosure at an angle until the hinge release from the base enclosure.

12. Remove the display assembly (4).



13. If it is necessary to replace the display panel assembly or any of the display assembly subcomponents:
- Insert a case utility tool (1) or similar thin, plastic tool into the top edge of the display panel assembly.

- b. Lift the display panel assembly top edge (2) and swing it up and forward until it rests upside down in front of the display back cover.

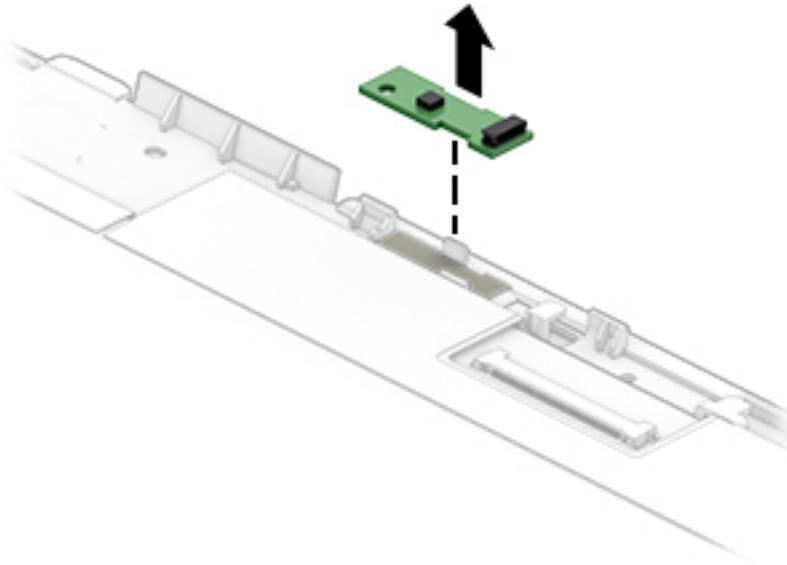


- c. Release the adhesive support strip (1) that secures the display panel cable to the display panel assembly.
- d. Disconnect the display panel cable (2) from the display panel assembly.
- e. Disconnect the display panel cable (3) from the G-sensor module.
- f. Remove the display panel assembly (4).

The display panel assembly is available using spare part numbers L53206-001 (for use only on computer models equipped with a digitizer) and L53205-001 (for use only on computer models not equipped with a digitizer).

14. If it is necessary to replace the G-sensor module:
 - a. Remove the display assembly.
 - b. Remove the display panel assembly.

- c. Detach the G-sensor module from the display back cover. (The G-sensor module is attached to the display back cover with double-sided adhesive.)

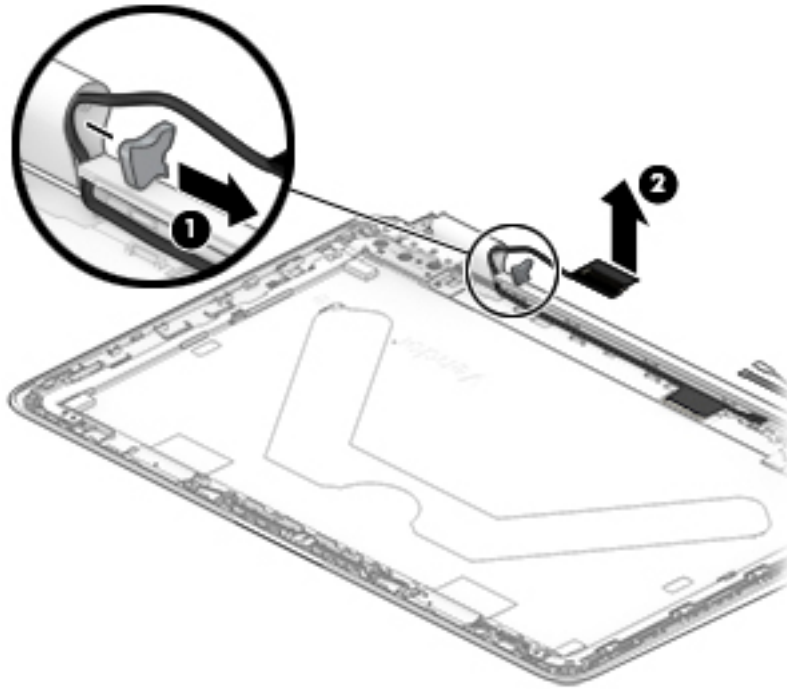


- d. Remove the G-sensor module.
The G-sensor module is available using spare part number L53215-001.

15. If it is necessary to replace the display panel cable:
 - a. Remove the display assembly.
 - b. Remove the display panel assembly.
 - c. Remove the spacer **(1)** from the display right hinge cover.

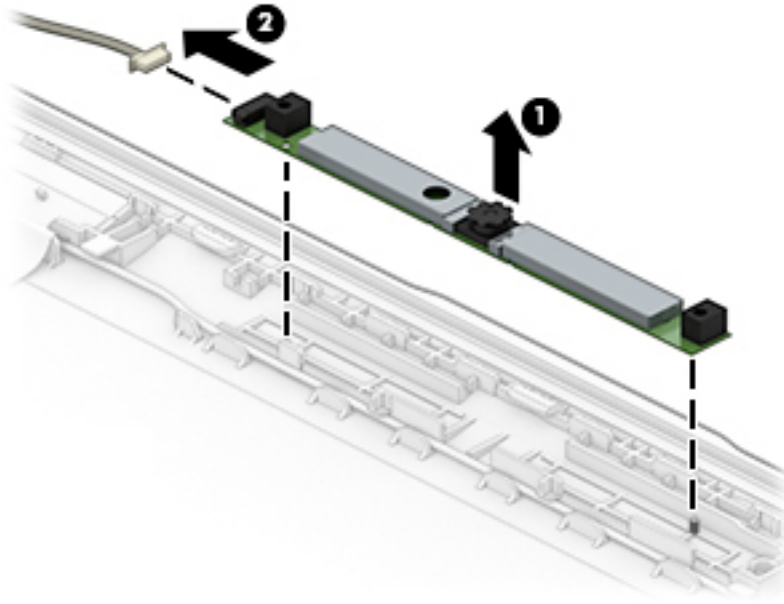
- d. Remove the display panel cable (2).

The display panel cable is included in the Cable Kit, spare part number L53204-001.



16. If it is necessary to replace the webcam/microphone module:
 - a. Remove the display assembly.
 - b. Remove the display panel assembly.
 - c. Detach the webcam/microphone module (1) from the display back cover. (The webcam/microphone module is attached to the display back cover with double-sided adhesive.)

- d. Disconnect the webcam/microphone module cable **(2)** from the webcam/microphone module.



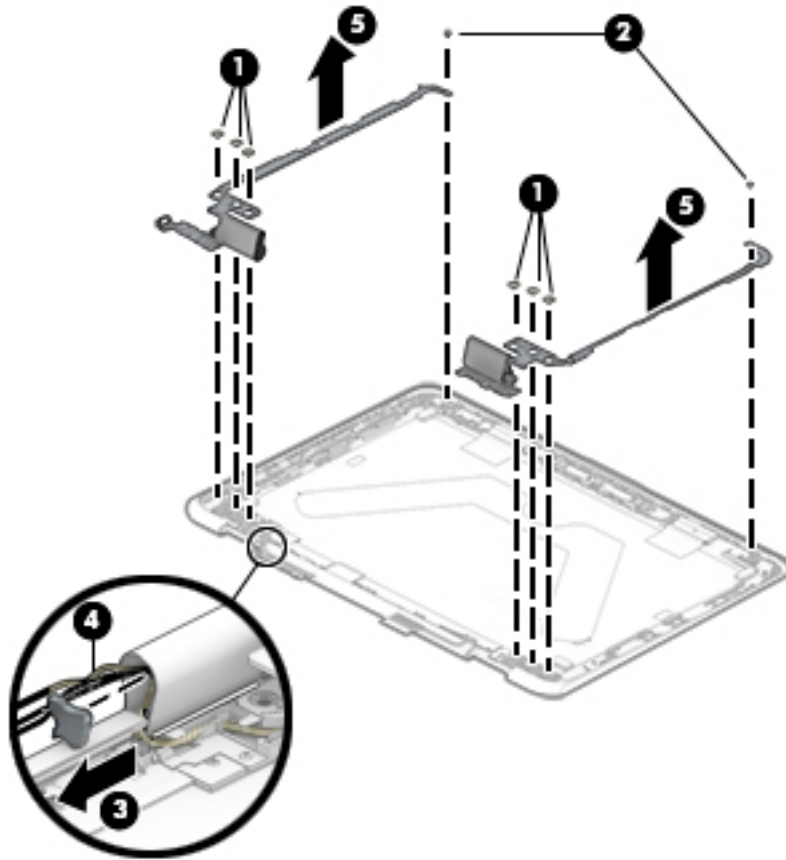
- e. Remove the webcam/microphone module.

The webcam/microphone module is available using spare part number L53220-001.

17. If it is necessary to replace the display hinges:
 - a. Remove the display assembly.
 - b. Remove the display panel assembly.
 - c. Remove the six Phillips M2.0×2.9 broad head screws **(1)** that secure the hinges to the display back cover.
 - d. Remove the two Phillips M2.0×2.8 screws **(2)** that secure the hinges to the display back cover.
 - e. Remove the spacer **(3)** from the display left hinge cover.
 - f. Release the webcam/microphone module cable **(4)** and the wireless antenna cables from the display left hinge cover.

- g. Remove the display hinges (5).

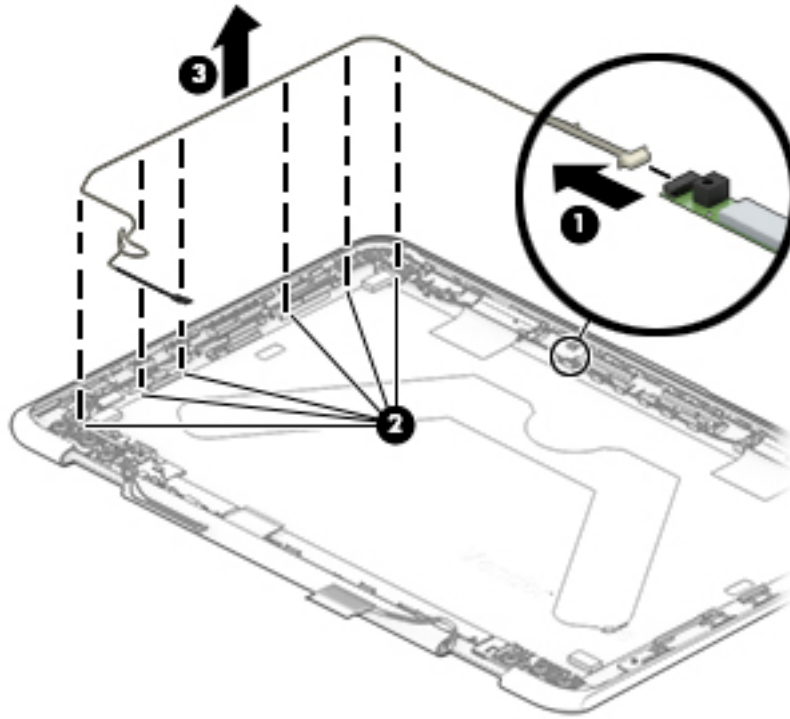
The display hinges are available using spare part number L53214-001 and include the display hinge covers and the hinge cover spacers.



18. If it is necessary to replace the webcam/microphone module cable:
- Remove the display assembly.
 - Remove the display panel assembly.
 - Remove the display left hinge.
 - Disconnect the webcam/microphone module cable (1) from the webcam/microphone module.
 - Release the webcam/microphone module cable from the retention clips (2) and routing channel built into the left side of the display back cover.

- f. Remove the webcam/microphone module cable (3).

The webcam/microphone module cable is included in the Cable Kit, spare part number L53204-001.




Reverse this procedure to reassemble and install the display assembly.

6 Backing up, restoring, and recovering

This chapter provides information about the following processes, which are standard procedure for most products:


- **Backing up your personal information**—You can use Windows tools to back up your personal information (see [Using Windows tools on page 55](#)).
- **Creating a restore point**—You can use Windows tools to create a restore point (see [Using Windows tools on page 55](#)).
- **Creating recovery media** (select products only)—You can use the HP Cloud Recovery Download Tool (select products only) to create recovery media (see [Using the HP Cloud Recovery Download Tool to create recovery media \(select products only\) on page 55](#)).
- **Restoring and recovery**—Windows offers several options for restoring from backup, refreshing the computer, and resetting the computer to its original state (see [Using Windows tools on page 55](#)).

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

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

Backing up information and creating recovery media

Using Windows tools


 **IMPORTANT:** Windows is the only option that allows you to back up your personal information. Schedule regular backups to avoid information loss.

You can use Windows tools to back up personal information and create system restore points and recovery media.

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

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

1. Select the **Start** button, and then select the **Get Help** app.
2. Enter the task you want to perform.

 **NOTE:** You must be connected to the Internet to access the Get Help app.

Using the HP Cloud Recovery Download Tool to create recovery media (select products only)

You can use the HP Cloud Recovery Download Tool to create HP Recovery media on a bootable USB flash drive.

To download the tool:

- ▲ Go to the Microsoft Store and search for HP Cloud Recovery.

For details, go to <http://www.hp.com/support>, search for HP Cloud Recovery, and then select "HP PCs – Using the Cloud Recovery Tool (Windows 10, 7)."



NOTE: If you cannot create recovery media yourself, contact support to obtain recovery discs. Go to <http://www.hp.com/support>, select your country or region, and then follow the on-screen instructions.

Restoring and recovery

Restoring, resetting, and refreshing using Windows tools

Windows offers several options for restoring, resetting, and refreshing the computer. For details, see [Using Windows tools on page 55](#).

Recovering using HP Recovery media

HP Recovery media is used to recover the original operating system and software programs that were installed at the factory. On select products, it can be created on a bootable USB flash drive using the HP Cloud Recovery Download Tool. For details, see [Using the HP Cloud Recovery Download Tool to create recovery media \(select products only\) on page 55](#).



NOTE: If you cannot create recovery media yourself, contact support to obtain recovery discs. Go to <http://www.hp.com/support>, select your country or region, and then follow the on-screen instructions.

To recover your system:

- ▲ Insert the HP Recovery media, and then restart the computer.

Changing the computer boot order

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

To change the boot order:



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

1. Insert the HP Recovery media.
2. Access the system **Startup** menu.

For computers or tablets with keyboards attached:

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

For tablets without keyboards:

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

– or –

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

3. Select the optical drive or USB flash drive from which you want to boot, and then follow the on-screen instructions.

7 Using HP PC Hardware Diagnostics

Using HP PC Hardware Diagnostics Windows (select products only)

HP PC Hardware Diagnostics Windows is a Windows-based utility that allows you to run diagnostic tests to determine whether the computer hardware is functioning properly. The tool runs within the Windows operating system in order to diagnose hardware failures.

If HP PC Hardware Diagnostics Windows is not installed on your computer, first you must download and install it. To download HP PC Hardware Diagnostics Windows, see [Downloading HP PC Hardware Diagnostics Windows on page 57](#).

After HP PC Hardware Diagnostics Windows is installed, follow these steps to access it from HP Help and Support or HP Support Assistant.

1. To access HP PC Hardware Diagnostics Windows from HP Help and Support:
 - a. Select the **Start** button, and then select **HP Help and Support**.
 - b. Right-click **HP PC Hardware Diagnostics Windows**, select **More**, and then select **Run as administrator**.

– or –

To access HP PC Hardware Diagnostics Windows from HP Support Assistant:

- a. Type `support` in the taskbar search box, and then select the **HP Support Assistant** app.
- or –
- a. Select the question mark icon in the taskbar.
 - b. Select **Troubleshooting and fixes**.
 - c. Select **Diagnostics**, and then select **HP PC Hardware Diagnostics Windows**.
2. When the tool opens, select the type of diagnostic test you want to run, and then follow the on-screen instructions.



NOTE: If you need to stop a diagnostic test at any time, select **Cancel**.

When HP PC Hardware Diagnostics Windows detects a failure that requires hardware replacement, a 24-digit Failure ID code is generated. The screen displays one of the following options:

- A Failure ID link is displayed. Select the link and follow the on-screen instructions.
- A Quick Response (QR) code is displayed. With a mobile device, scan the code and then follow the on-screen instructions.
- Instructions for calling support are displayed. Follow those instructions.

Downloading HP PC Hardware Diagnostics Windows

- The HP PC Hardware Diagnostics Windows download instructions are provided in English only.
- You must use a Windows computer to download this tool because only .exe files are provided.

Downloading the latest HP PC Hardware Diagnostics Windows version

To download HP PC Hardware Diagnostics Windows, follow these steps:

1. Go to <http://www.hp.com/go/techcenter/pcdiags>. The HP PC Diagnostics home page is displayed.
2. Select **Download HP Diagnostics Windows**, and then select a location on your computer or a USB flash drive.

The tool is downloaded to the selected location.

Downloading HP Hardware Diagnostics Windows by product name or number (select products only)



NOTE: For some products, it may be necessary to download the software to a USB flash drive by using the product name or number.

To download HP PC Hardware Diagnostics Windows by product name or number, follow these steps:

1. Go to <http://www.hp.com/support>.
2. Select **Get software and drivers**, select your type of product, and then enter the product name or number in the search box that is displayed.
3. In the **Diagnostics** section, select **Download**, and then follow the on-screen instructions to select the specific Windows diagnostics version to be downloaded to your computer or USB flash drive.

The tool is downloaded to the selected location.

Installing HP PC Hardware Diagnostics Windows

To install HP PC Hardware Diagnostics Windows, follow these steps:

- ▲ Navigate to the folder on your computer or the USB flash drive where the .exe file was downloaded, double-click the .exe file, and then follow the on-screen instructions.

Using HP PC Hardware Diagnostics UEFI



NOTE: For Windows 10 S computers, you must use a Windows computer and a USB flash drive to download and create the HP UEFI support environment because only .exe files are provided. For more information, see [Downloading HP PC Hardware Diagnostics UEFI to a USB flash drive on page 59](#).

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


If your PC will not boot into Windows, you can use HP PC Hardware Diagnostics UEFI to diagnose hardware issues.

When HP PC Hardware Diagnostics Windows detects a failure that requires hardware replacement, a 24-digit Failure ID code is generated. For assistance in solving the problem:

- ▲ Select **Get Support**, and then use a mobile device to scan the QR code that displays on the next screen. The HP Customer Support - Service Center page displays, with your Failure ID and product number automatically filled in. Follow the on-screen instructions.

– or –

Contact support, and provide the Failure ID code.

 **NOTE:** To start diagnostics on a convertible computer, your computer must be in notebook mode, and you must use the attached keyboard.

 **NOTE:** If you need to stop a diagnostic test, press [esc](#).

Starting HP PC Hardware Diagnostics UEFI

To start HP PC Hardware Diagnostics UEFI, follow these steps:

1. Turn on or restart the computer, and quickly press [esc](#).
2. Press [f2](#).

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

- a. Connected USB flash drive

 **NOTE:** To download the HP PC Hardware Diagnostics UEFI tool to a USB flash drive, see [Downloading the latest HP PC Hardware Diagnostics UEFI version on page 59](#).

- b. Hard drive


- c. BIOS

3. When the diagnostic tool opens, select a language, select the type of diagnostic test you want to run, and then follow the on-screen instructions.

Downloading HP PC Hardware Diagnostics UEFI to a USB flash drive

Downloading HP PC Hardware Diagnostics UEFI to a USB flash drive can be useful in the following situations:

- HP PC Hardware Diagnostics UEFI is not included in the preinstall image.
- HP PC Hardware Diagnostics UEFI is not included in the HP Tool partition.
- The hard drive is damaged.


 **NOTE:** The HP PC Hardware Diagnostics UEFI download instructions are provided in English only, and you must use a Windows computer to download and create the HP UEFI support environment because only .exe files are provided.

Downloading the latest HP PC Hardware Diagnostics UEFI version

To download the latest HP PC Hardware Diagnostics UEFI version to a USB flash drive:

1. Go to <http://www.hp.com/go/techcenter/pcdiags>. The HP PC Diagnostics home page is displayed.
2. Select **Download HP Diagnostics UEFI**, and then select **Run**.

Downloading HP PC Hardware Diagnostics UEFI by product name or number (select products only)

 **NOTE:** For some products, it may be necessary to download the software to a USB flash drive by using the product name or number.


To download HP PC Hardware Diagnostics UEFI by product name or number (select products only) to a USB flash drive:

1. Go to <http://www.hp.com/support>.
2. Enter the product name or number, select your computer, and then select your operating system.
3. In the **Diagnostics** section, follow the on-screen instructions to select and download the specific UEFI Diagnostics version for your computer.

Using Remote HP PC Hardware Diagnostics UEFI settings (select products only)

Remote HP PC Hardware Diagnostics UEFI is a firmware (BIOS) feature that downloads HP PC Hardware Diagnostics UEFI to your computer. It can then execute the diagnostics on your computer, and it may upload results to a preconfigured server. For more information about Remote HP PC Hardware Diagnostics UEFI, go to <http://www.hp.com/go/techcenter/pcdiags>, and then select **Find out more**.

Downloading Remote HP PC Hardware Diagnostics UEFI


 **NOTE:** HP Remote PC Hardware Diagnostics UEFI is also available as a Softpaq that can be downloaded to a server.

Downloading the latest Remote HP PC Hardware Diagnostics UEFI version

To download the latest Remote HP PC Hardware Diagnostics UEFI version, follow these steps:

1. Go to <http://www.hp.com/go/techcenter/pcdiags>. The HP PC Diagnostics home page is displayed.
2. Select **Download Remote Diagnostics**, and then select **Run**.

Downloading Remote HP PC Hardware Diagnostics UEFI by product name or number

 **NOTE:** For some products, it may be necessary to download the software by using the product name or number.

To download HP Remote PC Hardware Diagnostics UEFI by product name or number, follow these steps:

1. Go to <http://www.hp.com/support>.
2. Select **Get software and drivers**, select your type of product, enter the product name or number in the search box that is displayed, select your computer, and then select your operating system.
3. In the **Diagnostics** section, follow the on-screen instructions to select and download the **Remote UEFI** version for the product.

Customizing Remote HP PC Hardware Diagnostics UEFI settings

Using the Remote HP PC Hardware Diagnostics setting in Computer Setup (BIOS), you can perform the following customizations:

- Set a schedule for running diagnostics unattended. You can also start diagnostics immediately in interactive mode by selecting **Execute Remote HP PC Hardware Diagnostics**.
- Set the location for downloading the diagnostic tools. This feature provides access to the tools from the HP website or from a server that has been preconfigured for use. Your computer does not require the traditional local storage (such as a disk drive or USB flash drive) to run remote diagnostics.

- Set a location for storing the test results. You can also set the user name and password settings used for uploads.
- Display status information about the diagnostics run previously.

To customize Remote HP PC Hardware Diagnostics UEFI settings, follow these steps:

1. Turn on or restart the computer, and when the HP logo appears, press **f10** to enter Computer Setup.
2. Select **Advanced**, and then select **Settings**.
3. Make your customization selections.
4. Select **Main**, and then **Save Changes and Exit** to save your settings.

Your changes take effect when the computer restarts.

8 Specifications

Computer specifications

Table 8-1 Computer specifications

	Metric	U.S.
Dimensions		
Width	30.6 cm	12.0 in
Depth	20.7 cm	8.1 in
Height (front to back)	1.1 cm	0.43 in
Weight		
	2.1 or 2.3 kg (depending on configuration)	4.6 or 5.1 lbs (depending on configuration)
Input power		
Operating voltage and current	19.5 V dc @ 3.33 A – 65 W	
	19 V dc @ 4.62 A – 90 W	
	19.5 V dc @ 2.31 – 45 W (select models only)	
Temperature		
Operating	5°C to 35°C	41°F to 95°F
Nonoperating	-20°C to 60°C	-4°F to 140°F
Relative humidity (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	-15 m to 3,048 m	-50 ft to 10,000 ft
Nonoperating	-15 m to 12,192 m	-50 ft to 40,000 ft
NOTE: Applicable product safety standards specify thermal limits for plastic surfaces. The device operates well within this range of temperatures.		

9 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

Table 9-1 Power cord 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	BIS	1
Israel	SII	1
Italy	IMQ	1
Japan	JIS	3
The Netherlands	KEMA	1
New Zealand	SANZ	1
Norway	NEMKO	1
The People's Republic of China	CCC	4
Saudi Arabia	SASO	7
Singapore	PSB	1
South Africa	SABS	1
South Korea	KTL	5
Sweden	SEMKO	1
Switzerland	SEV	1
Taiwan	BSMI	6
Thailand	TISI	1
The United Kingdom	ASTA	1
The United States	UL	2

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

Table 9-1 Power cord requirements for specific countries and regions (continued)

Country/region	Accredited agency	Applicable note number
		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.
		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 mm ² or 1.25 mm ² 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 mm ² 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 ² 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 ² 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 ² or 1.00 mm ² conductor size, with plug BS 1363/A with BSI or ASTA marks.

10 Recycling

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

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

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