



Maintenance and Service Guide

HP Chromebook 15

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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.

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 applicable safety standards.

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1 Product description

Table 1-1 Product components and their descriptions

Category	Description
Product Name	HP Chromebook 15
	Model number: 15-de0xxx
	CTO Model: 15t-de000
Processor	Intel® Core™ i5-8250U 1.60 GHz (turbo up to 3.40 GHz), quad core processor, 6 MB SmartCache, 15 W
	Intel Core i3-8130U 2.20 GHz (turbo up to 3.40 GHz), dual core processor, 4 MB SmartCache, 15 W
	Intel Pentium™ 4415U 2.30 GHz, dual core processor, 2 MB SmartCache, 15 W
Graphics	Integrated Intel UMA Graphics
	Intel UHD Graphics 620 (Intel Core processors)
	Intel HD Graphics 610 (Intel Pentium processor)
Panel	39.6 cm (15.6 in), FHD (1920 × 1080), WLED, UWVA, slim, narrow bezel
	Non-touch, 220 nits
	Touch-on Panel (TOP), 250 nits
Memory	Integrated memory, non-upgradeable, non-replaceable
	Supports DDR4-2133 system memory in the following configurations:
	<ul style="list-style-type: none">• 8 GB• 4 GB
Storage	Supports on-board embedded MultiMedia Controller (eMMC) storage in the following configurations:
	<ul style="list-style-type: none">• 128 GB• 64 GB• 32 GB
Audio and video	Fixed (no tilt) integrated, dual array, HD 720p webcam
	1280 × 720 by 30 frames per second
	Dual microphone with appropriate software, echo cancellation, noise suppression
	B&O Play
	Dual speakers
Wireless	Integrated wireless local area network (WLAN) options by way of on-board wireless module
	Two built-in WLAN antennas
	Intel Dual Band Wireless-AC 7265 802.11ac 2 × 2 Wi-Fi + Bluetooth® 4.2 WLAN module (non-vPro)
External ports	USB 3.1 Gen 1 Type-C ports (2); support charging, power delivery, video, data

Table 1-1 Product components and their descriptions (continued)

Category	Description
Media card reader	USB 3.1 Gen 1 Type-A port
	microSD™/SDHC™/SDXC™ up to UHS-104
	Push-push insertion/removal
Keyboard	Island style keyboard, textured, backlit, with touchpad and numeric keypad
Security	H1 Secure Microcontroller
	Nano security lock
Power requirements	Battery
	3-cell, 60 Whr, long-life battery
	AC adapter
	45 W AC adapter, non-PFC, USB Type-C, straight
	Power cord
	C5, 1.0 m, conventional
Operating system	Google Chrome (64-bit)
Serviceability	End user replaceable part: AC adapter

2 Getting to know your computer

Right side

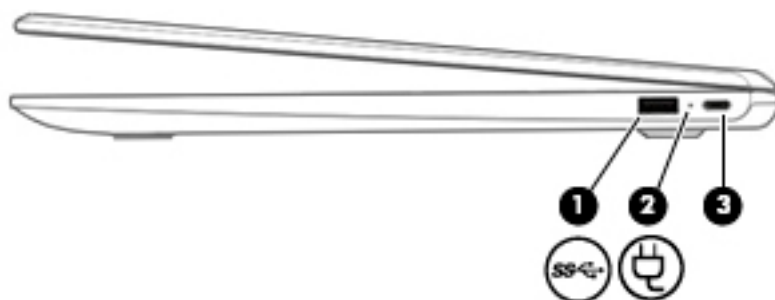




Table 2-1 Right-side components and their descriptions

Component	Description
(1) 	<p>USB SuperSpeed port</p> <p>Connects a USB device, such as a cell phone, camera, activity tracker, or smartwatch, and provides high-speed data transfer.</p>
(2) 	<ul style="list-style-type: none">White: The computer is on, the AC adapter is connected, and the battery is charged.Amber: The AC adapter is connected and the battery is charging.Off: The computer is using battery power or is turned off.
(3)	<p>USB Type-C power connector and port</p> <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

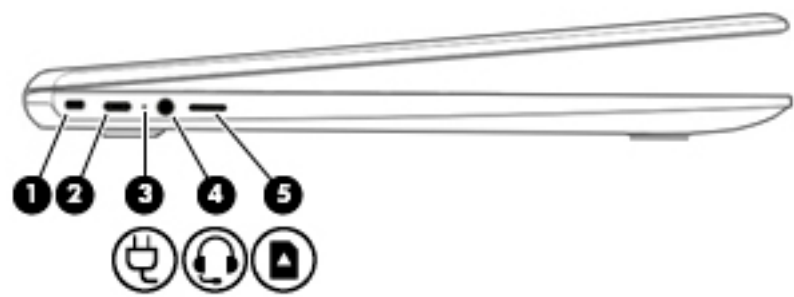


Table 2-2 Left-side components and their descriptions




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)	 AC adapter and battery light	<ul style="list-style-type: none">• White: The computer is on and the AC adapter is connected and the battery is charged.• Amber: The AC adapter is connected and the battery is charging.• Off: The computer is using battery power or is turned off.
(4)	 Audio-out (headphone)/Audio-in (microphone) combo jack	Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. This jack does not support optional microphone-only devices. WARNING! To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, see the <i>Regulatory, Safety, and Environmental Notices</i> . To access this guide: <ul style="list-style-type: none">• Go to http://www.hp.com/support, and follow the instructions to find your product. Then select User Guides.

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

Component		Description
		NOTE: When a device is connected to the jack, the computer speakers are disabled.
(5)	 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.

Display

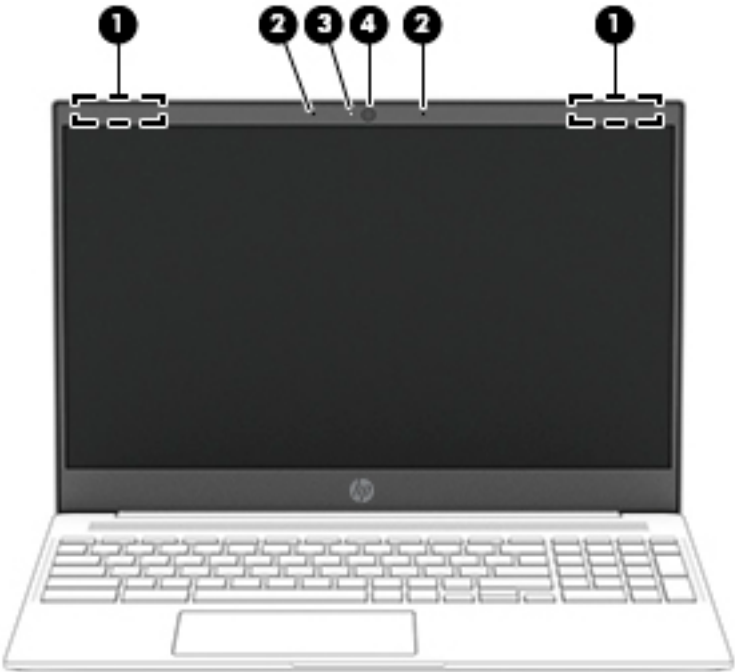


Table 2-3 Display components and their descriptions

Component		Description
(1)	WLAN antennas*	Send and receive wireless signals to communicate with wireless local area networks (WLANs). NOTE: The position of the WLAN antennas may differ, depending on the product.
(2)	Internal microphones (2)	Record sound.
(3)	Camera light	On: The camera is in use.
(4)	Camera	Allows you to video chat, record video, and record still images. NOTE: Camera functions vary depending on the camera hardware and software installed on your product.

*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**.

Touchpad

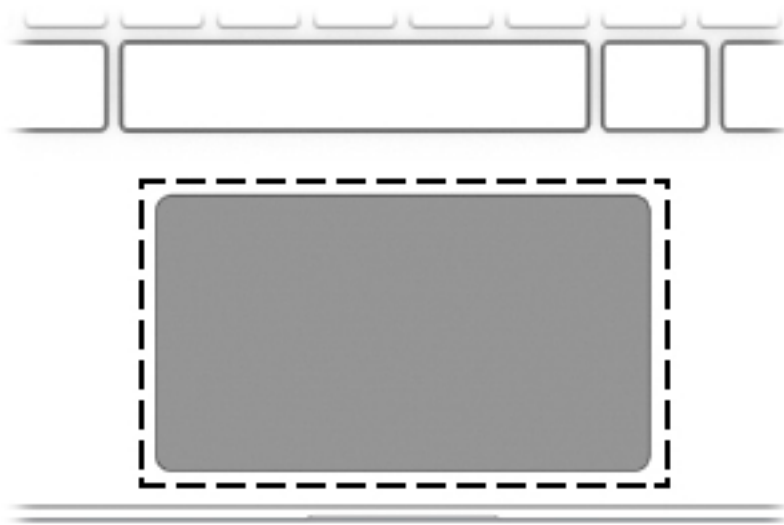


Table 2-4 Touchpad component and description

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

Button and speakers

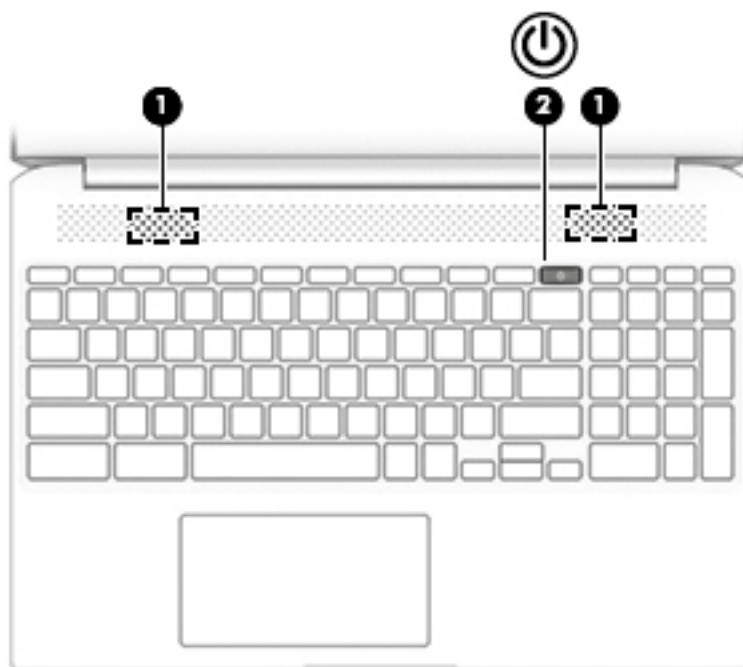



Table 2-5 Button and speakers and their descriptions

Component		Description
(1)	Speakers (2)	Produce sound.
(2)	 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.• When the computer is on and you want to lock the screen, press the button until you see the sign-in screen appear. Pressing the power button during screen-lock mode turns off the computer.• 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.

Bottom

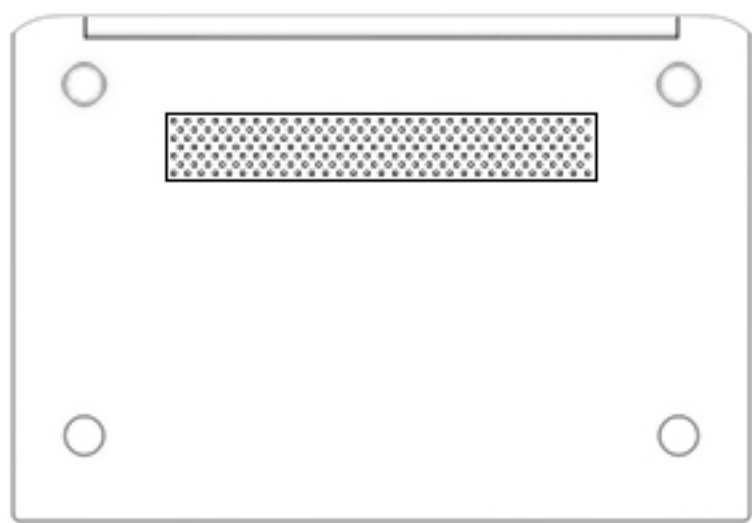


Table 2-6 Bottom components and their descriptions

Component	Description
Vent	Enables airflow to cool internal components. NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.

Special keys

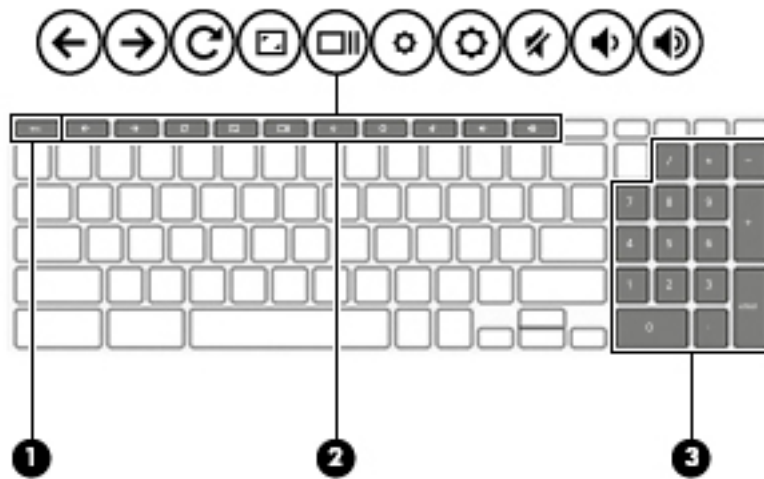



Table 2-7 Special keys and their descriptions

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.
(3)	Integrated numeric keypad	A separate keypad to the right of the alphabet keyboard. The keypad can be used like an external numeric keypad. NOTE: If the keypad function is active when the computer is turned off, that function is reinstated when the computer is turned back on.

Labels

The labels affixed to the computer provide information you may need when you troubleshoot system problems or travel internationally with the computer. Labels may be in paper form or imprinted on the product.

 **IMPORTANT:** Check the following locations for the labels described in this section: the bottom of the computer, inside the battery bay, under the service door, on the back of the display, or on the bottom of a tablet kickstand.

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

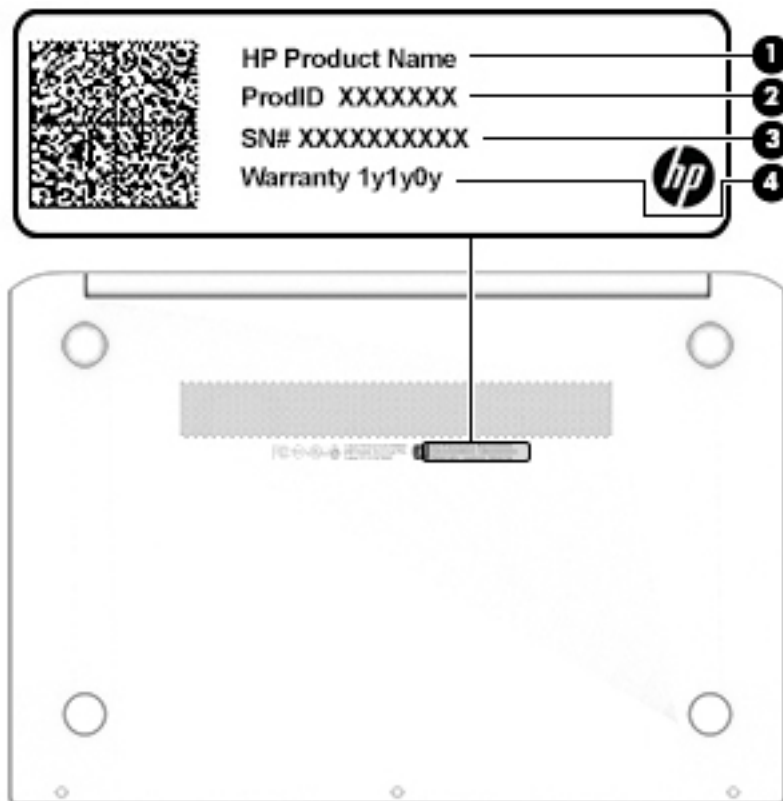


Table 2-8 Service label components

Component	
(1)	Product name
(2)	Product ID
(3)	Serial number
(4)	Warranty period

- Regulatory label(s)—Provide(s) regulatory information about the computer.
- Wireless certification label(s)—Provide(s) information about optional wireless devices and the approval markings for the countries or regions in which the devices have been approved for use.

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

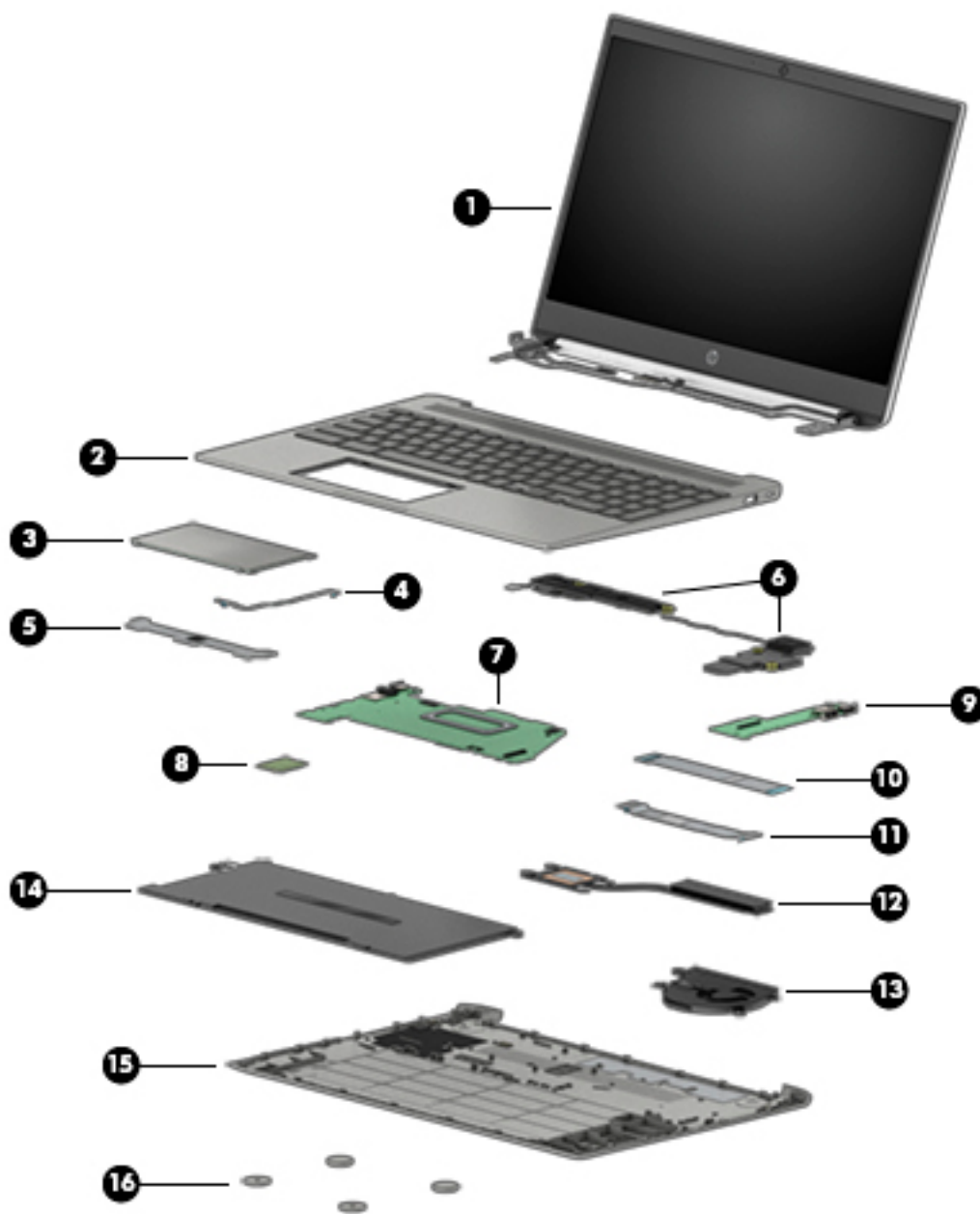


Table 3-1 Computer major components and their descriptions

Item	Component	Spare part number
(1)	15.6 inch display assembly The display assembly is spared at the subcomponent level only. For more display assembly spare part information, see Display assembly subcomponents on page 15 .	
(2)	Keyboard/top cover (includes keyboard cable): NOTE: For a detailed list of keyboard country codes, see Keyboard/top cover on page 48 .	
	For use in cloud blue models	L54815-xx1
	For use in mineral silver models	L54816-xx1
(3)	Touchpad (does not include cable):	
	For use in cloud blue models	L54818-001
	For use in mineral silver models	L56081-001
(4)	Touchpad cable	L54817-001
(5)	Touchpad bracket (included with touchpad)	not spared
(6)	Speakers (include cables)	L54820-001
(7)	System board (includes processor, system memory, eMMC storage, the Google Chrome operating system, and replacement thermal material):	
	Equipped with an Intel Core i5-8250U processor, 8 GB of system memory, and 128 GB of eMMC storage	L57307-001
	Equipped with an Intel Core i3-8130U processor, 8 GB of system memory, and 128 GB of eMMC storage	L57305-001
	Equipped with an Intel Core i3-8130U processor, 8 GB of system memory, and 64 GB of eMMC storage	L57306-001
	Equipped with an Intel Core i3-8130U processor, 4 GB of system memory, and 128 GB of eMMC storage	L57304-001
	Equipped with an Intel Core i3-8130U processor, 4 GB of system memory, and 64 GB of eMMC storage	L63717-001
	Equipped with an Intel Pentium 4415U processor, 4 GB of system memory, and 64 GB of eMMC storage	L54809-001
	Equipped with an Intel Pentium 4415U processor, 4 GB of system memory, and 32 GB of eMMC storage	L57308-001
(8)	WLAN module (Intel Dual Band Wireless-AC 7265 802.11ac 2 × 2 Wi-Fi + Bluetooth 4.2 WLAN module)	901229-855
(9)	USB board (does not include cable)	L54804-001
(10)	USB board cable (40 pin)	L54805-001
(11)	USB board cable (30 pin)	L54806-001
(12)	Heat sink (includes replacement thermal material)	L54808-001
(13)	Fan	L54807-001
(14)	Battery NOTE: Battery connector tape is available in the Miscellaneous Parts Kit, spare part number L54819-001.	L29959-005

Table 3-1 Computer major components and their descriptions (continued)

Item	Component	Spare part number
(15)	Bottom cover:	
	For use on cloud blue models	L54802-001
	For use on mineral silver models	L54803-001
(16)	Rubber Foot Kit (includes front and rear feet):	
	For use on cloud blue models	L54801-001
	For use on mineral silver models	L54833-001

Display assembly subcomponents

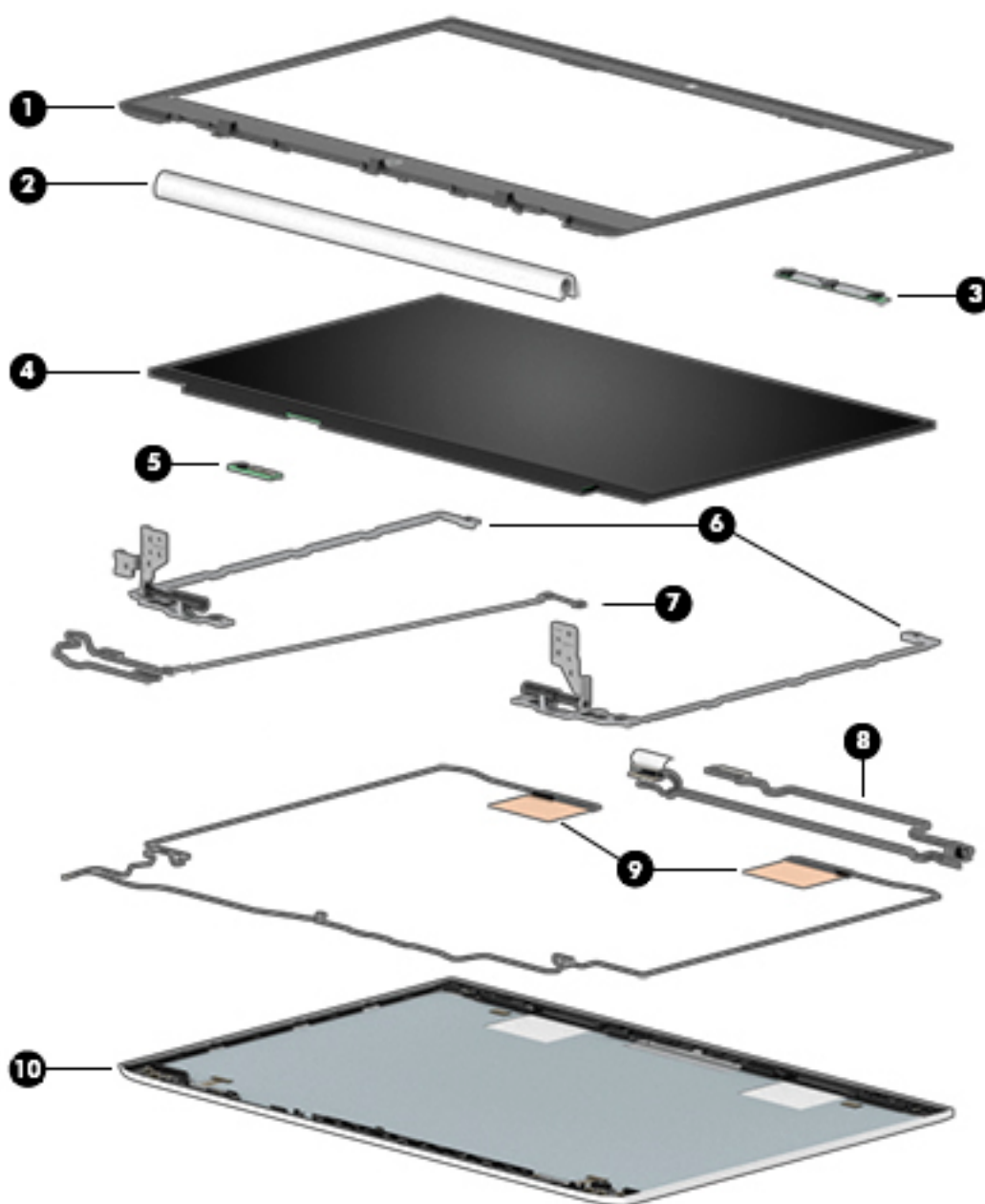


Table 3-2 Display components and their descriptions

Item	Component	Spare part number
(1)	Display bezel	L54824-001
(2)	Hinge cover	L54832-001
(3)	Webcam/microphone module (includes double-sided adhesive)	L54830-001
(4)	Display panel:	
	220 nit displays	L54852-001

Table 3-2 Display components and their descriptions (continued)

Item	Component	Spare part number
	250 nit displays	L54853-001
(5)	Webcam transfer board	L54828-001
(6)	Display hinges (includes left and right hinges)	L54823-001
(7)	Webcam transfer board cable	
	For use in touch models	L54827-001
	For use in non-touch models	L54829-001
(8)	Display panel cable	
	For use only on computer models equipped with a touch display assembly	L54825-001
	For use only on computer models equipped with a non-touch display assembly	L54826-001
(9)	Wireless antennas	L54831-001
(10)	Display back cover (includes the display panel tape)	L54822-001

Miscellaneous parts

Table 3-3 Miscellaneous parts and their descriptions

Component	Spare part number
AC adapter (45 W, non-PFC, USB-C, 1.8 m, 3 pin)	L43407-001
Miscellaneous Kit (includes cloud blue screw cover, mineral silver screw cover, battery protective tape, WLAN module protective tape, microphone rubber, left and right display tape, and display cable acetate)	L54819-001
Power cord (C5 connector, 1.0 m):	
For use in Denmark	L19360-001
For use in Europe	L19361-001
For use in North America	L19367-001
For use in the United Kingdom	L19373-001

4 Removal and replacement procedures preliminary requirements


Tools required

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

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

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



IMPORTANT: 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 then 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 \pm 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 authorized service provider parts



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

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

Component replacement procedures



NOTE: Details about your computer, including model, serial number, product key, and length of warranty, are on the service tag at the bottom of your computer. See [Labels on page 11](#) for details.



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.

There are as many as 45 screws that must be removed, replaced, and/or loosened when servicing the parts described in this chapter. Make special note of each screw size and location during removal and replacement.

Preparation for disassembly

See [Removal and replacement procedures preliminary requirements on page 17](#) for initial safety procedures.

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.

Bottom cover

Table 5-1 Bottom cover, Rubber Foot Kit, and Miscellaneous Kit descriptions and part numbers

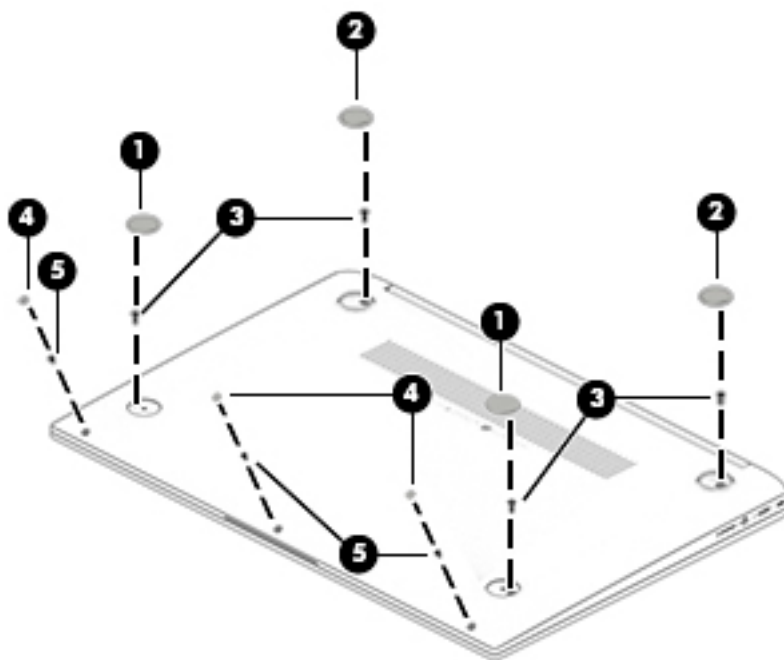
Description	Spare part number
Bottom cover for use in cloud blue models	L54802-001
Bottom cover for use in mineral silver models	L54803-001
Rubber Foot Kit for use on cloud blue models	L54801-001
Rubber Foot Kit for use on mineral silver models	L54833-001
Miscellaneous Kit (includes screw covers)	L54819-001

Before disassembling the computer, follow these steps:

- ▲ Prepare the computer for disassembly ([Preparation for disassembly on page 22](#)).

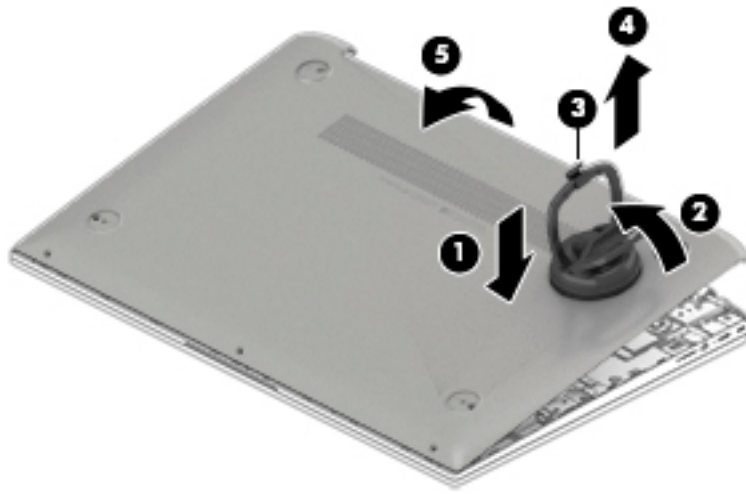
Remove the rubber feet and bottom cover:

1. Position the computer upside down.
2. Remove the two front rubber feet **(1)**.
3. Remove the two rear rubber feet **(2)**.
4. Remove the Phillips M2.5 × 6.0 screw **(3)** from under each foot.
5. Remove the three screw covers **(4)** and three Phillips M2.0 × 3.0 screws **(5)** from the bottom edge.



6. Place a suction cup on the bottom cover **(1)**, and then rotate the handle **(2)** to lock the suction cup in place.
7. Using the suction cup handle **(3)**, pull the bottom cover free from the computer **(4)**.

8. Rotate the cover off the computer (5).



Reverse this procedure to install the bottom cover and rubber feet.

Battery

Table 5-2 Battery description and part number

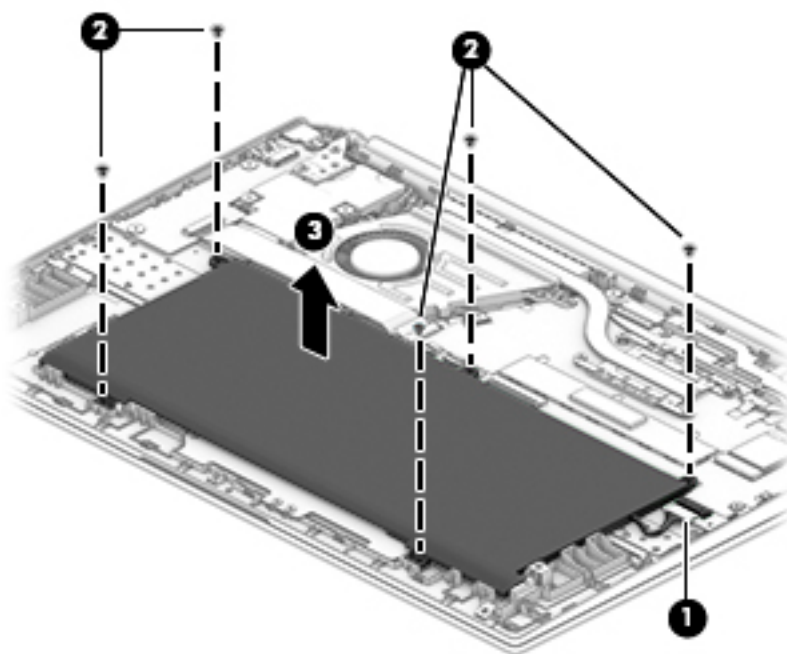
Description	Spare part number
Battery (3-cell, 60 Whr)	L29959-005

Before removing the battery, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 22](#)).
2. Remove the bottom cover (see [Bottom cover on page 23](#)).

Remove the battery:

1. Disconnect the battery cable from the system board **(1)**.
2. Remove the five Phillips M2.0 × 3.0 screws **(2)** that secure the battery to the computer.
3. Remove the battery from the computer **(3)**.



Reverse this procedure to install the battery.

WLAN module

Table 5-3 WLAN module description and part number

Description	Spare part number
Intel Dual Band Wireless-AC 7265 802.11ac 2 × 2 Wi-Fi + Bluetooth 4.2 WLAN module (non-vPro)	901229-855

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:

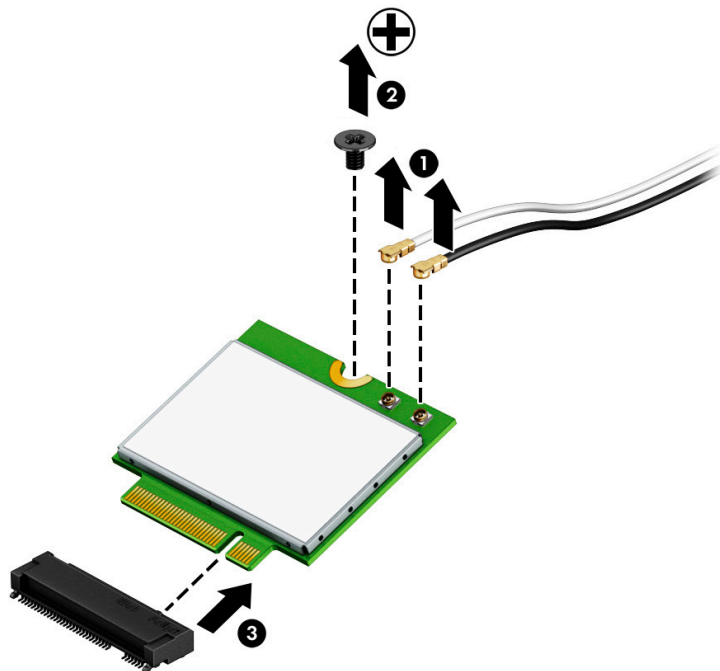
1. Prepare the computer for disassembly ([Preparation for disassembly on page 22](#)).
2. Remove the bottom cover (see [Bottom cover on page 23](#)).
3. Disconnect the battery cable from the system board (see [Battery on page 25](#)).


Remove the WLAN module:

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

NOTE: The wireless antenna cable labeled “1/MAIN” connects to the WLAN module “Main” terminal. The wireless antenna cable labeled “2/AUX” connects to the WLAN module “Aux” terminal.

2. Remove the Phillips M2.0 × 2.5 screw **(2)** that secures the WLAN module to the computer. (The WLAN module tilts up.)
3. Remove the WLAN module **(3)** by pulling the module away from the slot at an angle.



 **NOTE:** If the wireless antenna cables are not connected to the WLAN module terminal, the protective sleeves should be installed on the antenna connectors, as shown in the following illustration.



Reverse this procedure to install the WLAN module.

USB board

Table 5-4 USB board and cables descriptions and part numbers

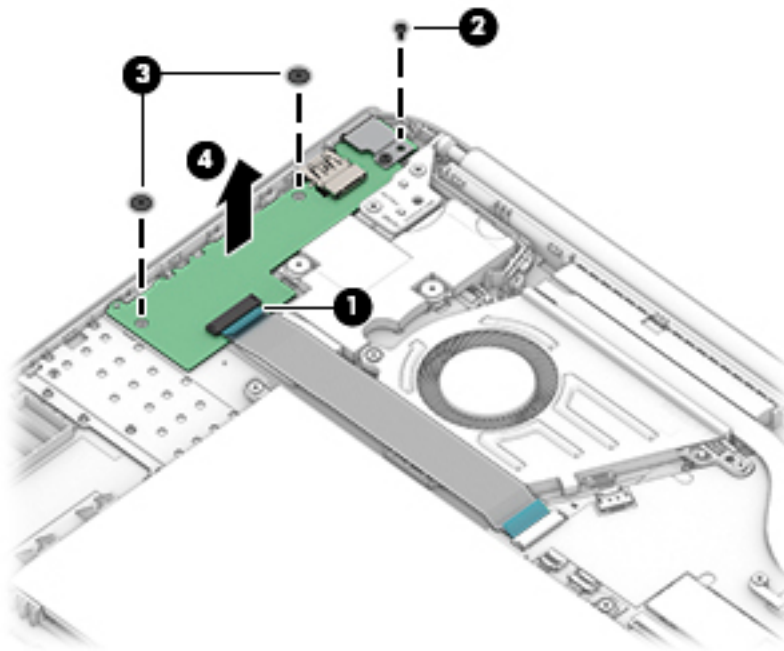
Description	Spare part number
USB board	L54804-001
USB board cable (30 pin)	L54805-001
USB board cable (40 pin)	L54806-001

Before removing the USB board, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 22](#)).
2. Remove the bottom cover (see [Bottom cover on page 23](#)).
3. Disconnect the battery cable from the system board (see [Battery on page 25](#)).

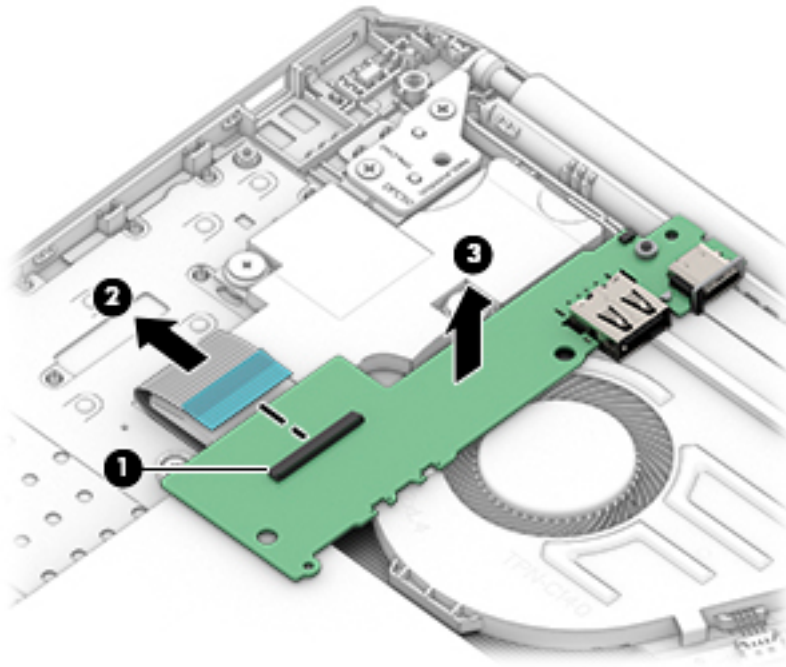
Remove the USB board:

1. Disconnect the 30-pin cable from the ZIF connector on the top of the USB board **(1)**.
2. Remove the Phillips M2.0 × 4.0 screw **(2)** that secures the USB board bracket to the computer.
3. Remove the two broadhead Phillips M2.0 × 2.0 screws **(3)** that secure the USB board to the computer.
4. Lift and turn the board upside down to access the connector underneath **(4)**.



5. Release the ZIF connector on the bottom of the USB board **(1)**, and then disconnect the 40-pin cable **(2)**.

6. Remove the USB board (3).



Reverse this procedure to install the USB board.

Fan

Table 5-5 Fan description and part number

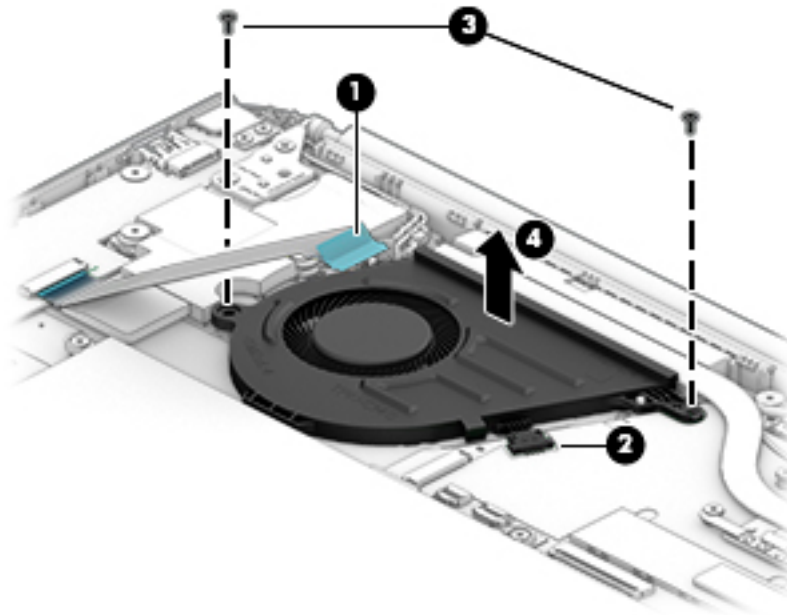
Description	Spare part number
Fan	L54807-001

Before removing the fan, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 22](#)).
2. Remove the bottom cover (see [Bottom cover on page 23](#)).
3. Disconnect the battery cable from the system board (see [Battery on page 25](#)).

Remove the fan:

1. Detach the USB board cable from the fan **(1)**. The cable is secured to the fan with adhesive.
2. Disconnect the fan cable from the system board **(2)**.
3. Remove the two Phillips M2.0 × 4.0 screws **(3)** that secure the fan to the computer.
4. Remove the fan **(4)**.



Reverse this procedure to install the fan.

Heat sink

Table 5-6 Heat sink description and part number

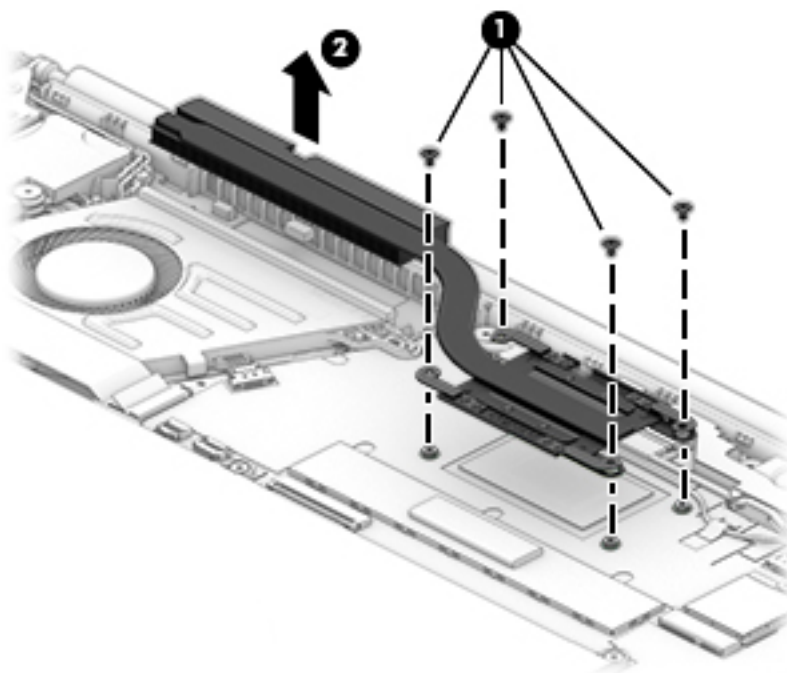
Description	Spare part number
Heat sink (includes replacement thermal material)	L54808-001


Before removing the heat sink, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 22](#)).
2. Remove the bottom cover (see [Bottom cover on page 23](#)).
3. Disconnect the battery cable from the system board (see [Battery on page 25](#)).

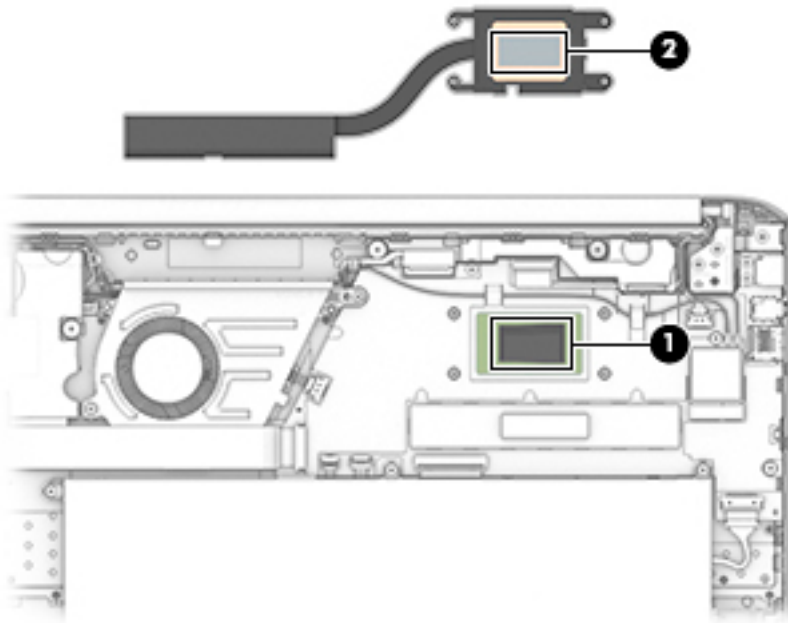
Remove the heat sink:

1. In the order stamped on the heat sink, remove the four Phillips M2.0 × 3.0 screws **(1)** that secure the heat sink to the system board.
2. Remove the heat sink from the system board **(2)**.



 **NOTE:** Thoroughly clean the thermal material from the surfaces of the heat sink and the system board components each time the heat sink is removed. Replacement thermal material is included with the heat sink and system board spare part kits.

Thermal paste is used on the processor **(1)** and the heat sink section **(2)** that services it.



Reverse this procedure to install the heat sink.

Touchpad



NOTE: The touchpad spare part kit does not include the touchpad cable. The touchpad cable is included in the Cable Kit, spare part number L14906-001, and includes double-sided adhesive.

Table 5-7 Touchpad and cable descriptions and part numbers

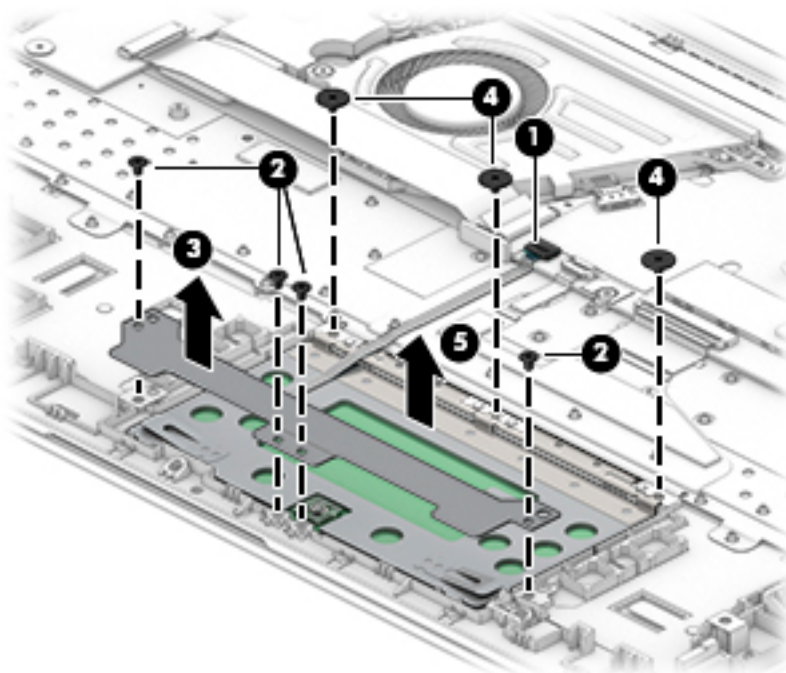
Description	Spare part number
Touchpad for use in cloud blue models	L54818-001
Touchpad for use in mineral silver models	L56081-001
Touchpad cable	L54817-001

Before removing the touchpad, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 22](#)).
2. Remove the bottom cover (see [Bottom cover on page 23](#)).
3. Remove the battery (see [Battery on page 25](#)).

Remove the touchpad:

1. Disconnect the cable from the ZIF connector on the system board **(1)**.
2. Remove the four Phillips M2.0 × 3.0 screws **(2)** that secure the touchpad bracket to the computer.
3. Remove the touchpad bracket from the computer **(3)**.
4. Remove the three Phillips M2.0 × 3.0 broadhead screws **(4)** that secure the touchpad to the computer.
5. Remove the touchpad from the computer **(5)**.



Reverse this procedure to install the touchpad.

System board



NOTE: All system board spare part kits include a processor, system memory, eMMC storage, the Google Chrome operating system, and replacement thermal material.

Table 5-8 System board descriptions and part numbers

Description	Spare part number
System board equipped with an Intel Core i5-8250U processor, 8 GB of system memory, and 128 GB of eMMC storage	L57307-001
System board equipped with an Intel Core i3-8130U processor, 8 GB of system memory, and 128 GB of eMMC storage	L57305-001
System board equipped with an Intel Core i3-8130U processor, 8 GB of system memory, and 64 GB of eMMC storage	L57306-001
System board equipped with an Intel Core i3-8130U processor, 4 GB of system memory, and 64 GB of eMMC storage	L63717-001
System board equipped with an Intel Core i3-8130U processor, 4 GB of system memory, and 128 GB of eMMC storage	L57304-001
System board equipped with an Intel Pentium 4415U processor, 4 GB of system memory, and 64 GB of eMMC storage	L54809-001
System board equipped with an Intel Pentium 4415U processor, 4 GB of system memory, and 32 GB of eMMC storage	L57308-001

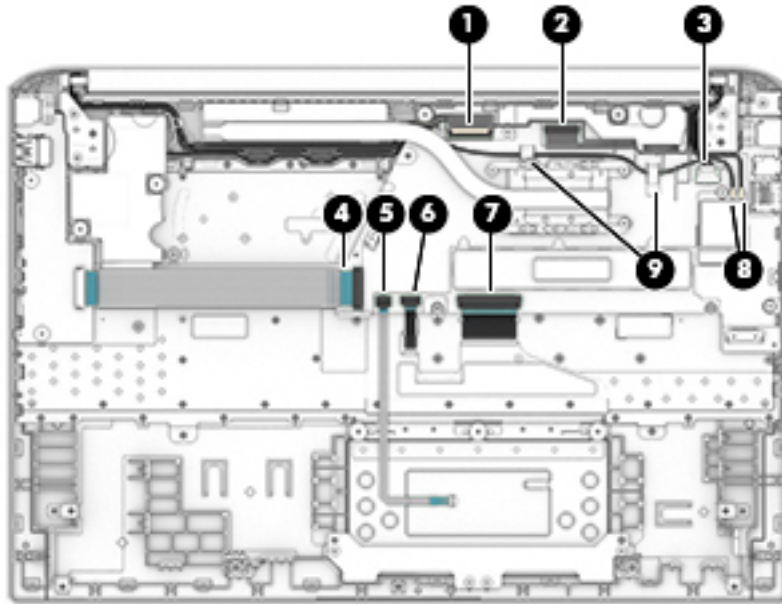
Before removing the system board, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 22](#)).
2. Remove the bottom cover (see [Bottom cover on page 23](#)).
3. Remove the battery (see [Battery on page 25](#)).
4. Remove the fan (see [Fan on page 30](#)).

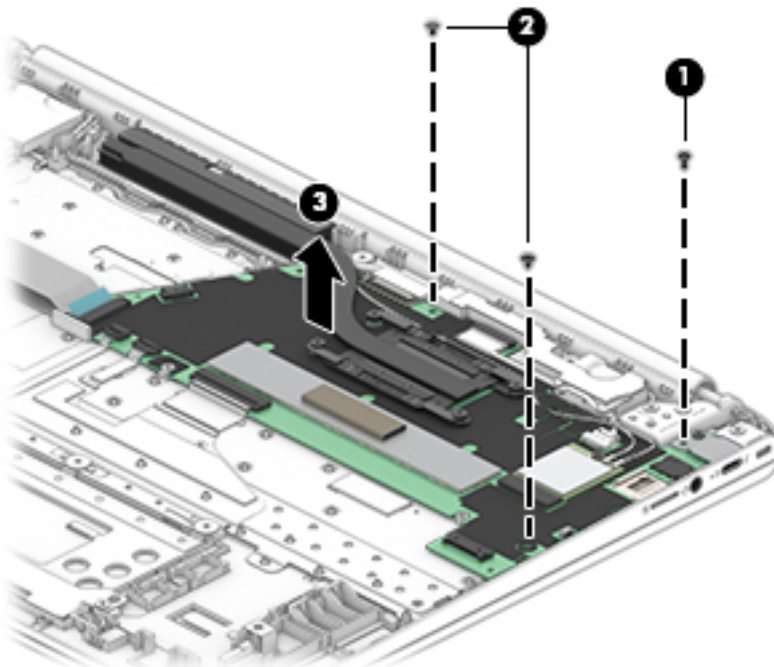
When replacing the system board, be sure to remove the heat sink (see [Heat sink on page 31](#)) from the defective system board and install it on the replacement system board.

Remove the system board:

1. Disconnect the following cables from the system board:
 - (1) Touch cable
 - (2) Display cable
 - (3) Speaker cable
 - (4) USB board cable (ZIF)
 - (5) Touchpad cable (ZIF)
 - (6) Keyboard backlight cable (ZIF)
 - (7) Keyboard cable (ZIF)
 - (8) WLAN antenna cables from the WLAN module
 - (9) WLAN antenna cables from routing along the top of the system board

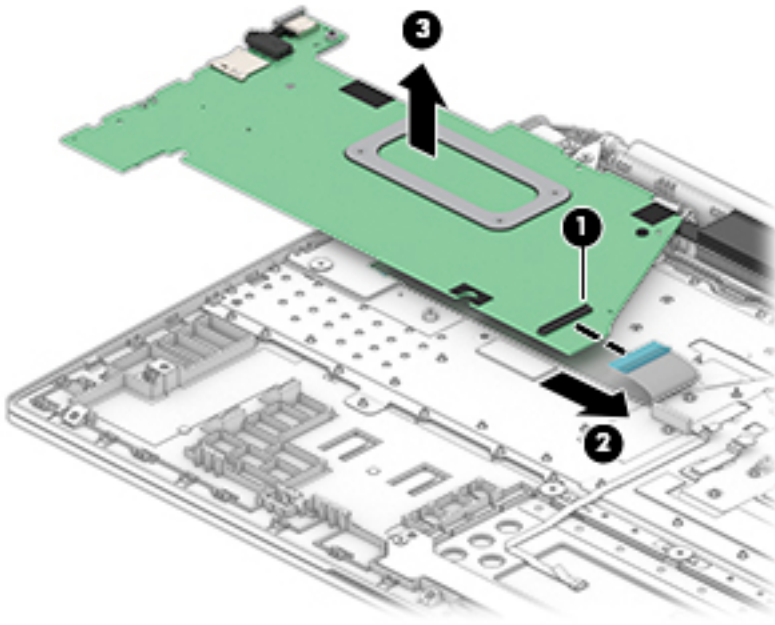


2. Remove the Phillips M2.0 × 4.0 screw **(1)** that secures the USB bracket to the system board.
3. Remove the two Phillips M2.0 × 3.0 screws **(2)** that secure the system board to the computer.
4. Lift and position the system board upside down to access the USB board cable connector underneath **(3)**.



5. Release the ZIF connector for the USB board cable on the bottom of the system board **(1)**, and then disconnect the cable **(2)**.

6. Remove the system board from the computer (3).



Reverse this procedure to install the system board.

Speakers

Table 5-9 Speaker description and part number

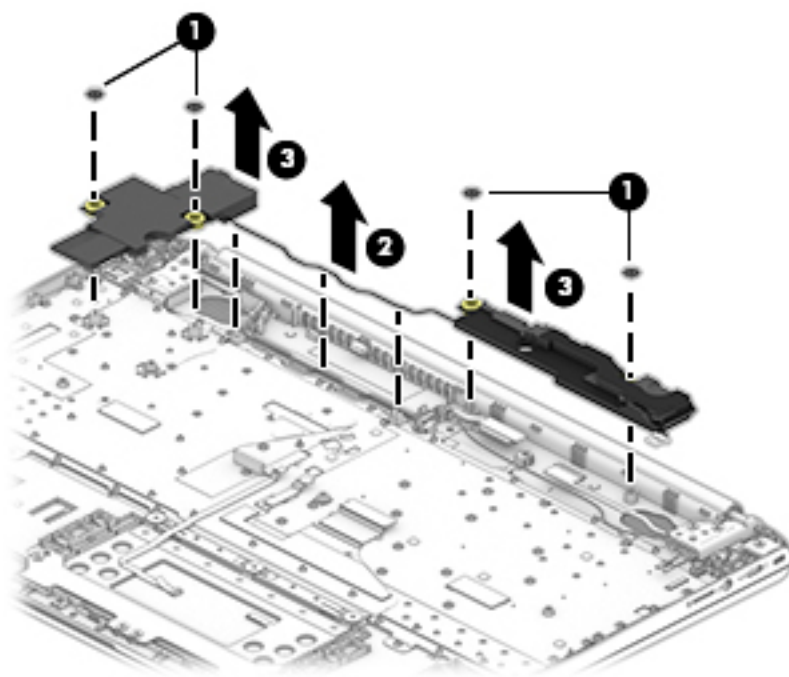
Description	Spare part number
Speakers	L54820-001

Before removing the speakers, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 22](#)).
2. Remove the bottom cover (see [Bottom cover on page 23](#)).
3. Remove the battery (see [Battery on page 25](#)).
4. Remove the fan (see [Fan on page 30](#)).
5. Remove the system board (see [System board on page 34](#)).


Remove the speakers:

1. Remove the four Phillips M2.0 × 2.0 screws **(1)** that secure the speakers to the computer.
2. Release the speaker cable **(2)** from the retention channel/retention clips built into the bottom cover.
3. Remove the speakers from the computer **(3)**.



Reverse this procedure to install the speakers.

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:

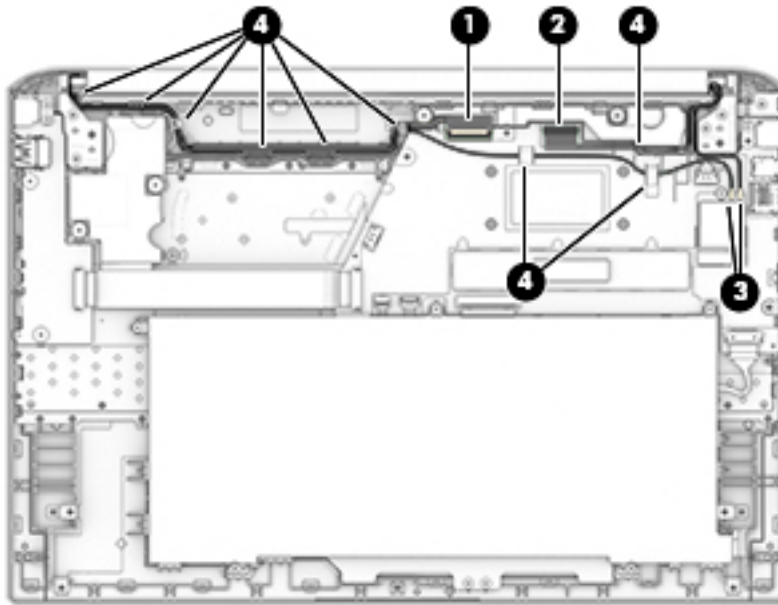
1. Prepare the computer for disassembly ([Preparation for disassembly on page 22](#)).
2. Remove the bottom cover (see [Bottom cover on page 23](#)).
3. Disconnect the battery cable from the system board (see [Battery on page 25](#)).

Remove the display assembly:

1. Disconnect the display cable **(1)** from the system board.
2. Disconnect the transfer board cable **(2)** from the system board.
3. Disconnect the WLAN antenna cables **(3)** from the terminals on the WLAN module.

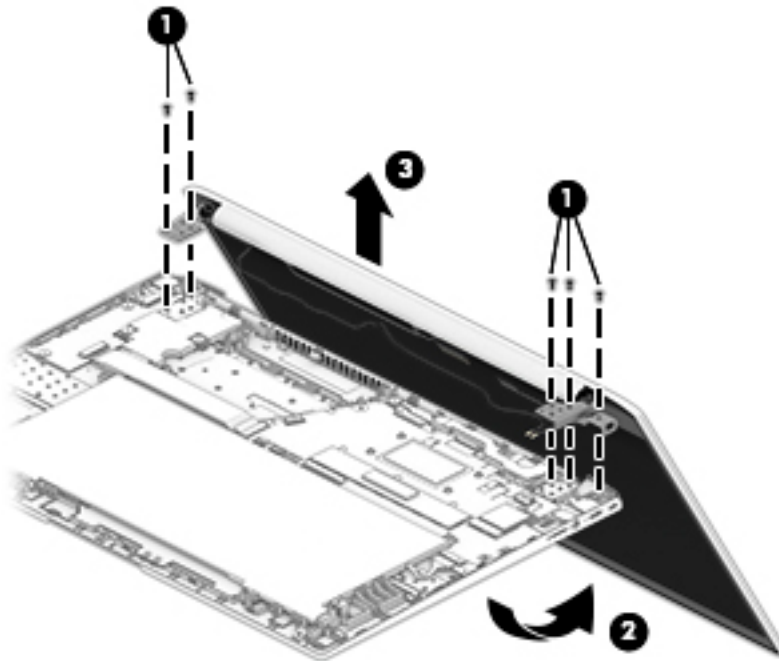
 **NOTE:** The WLAN antenna cable labeled "1/MAIN" connects to the WLAN module "Main" terminal. The WLAN antenna cable labeled "2/AUX" connects to the WLAN module "Aux" terminal.

4. Release the cables from the retention clips and routing channels **(4)** built into the computer.



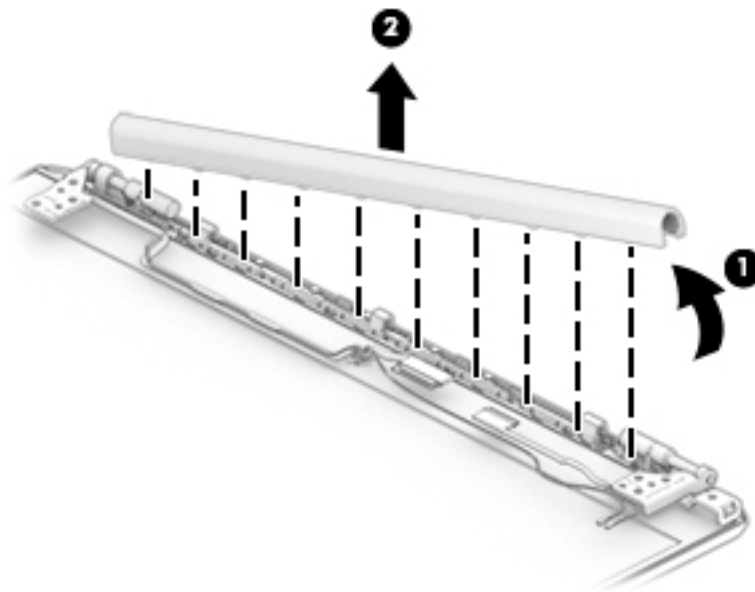
5. Remove the five Phillips M2.5 × 5.0 screws **(1)** from the hinges.
6. Open the computer as far as possible **(2)**.

7. Separate the display from the computer **(3)**.



8. If it is necessary to replace the display hinge cover and bezel or any of the display assembly subcomponents:

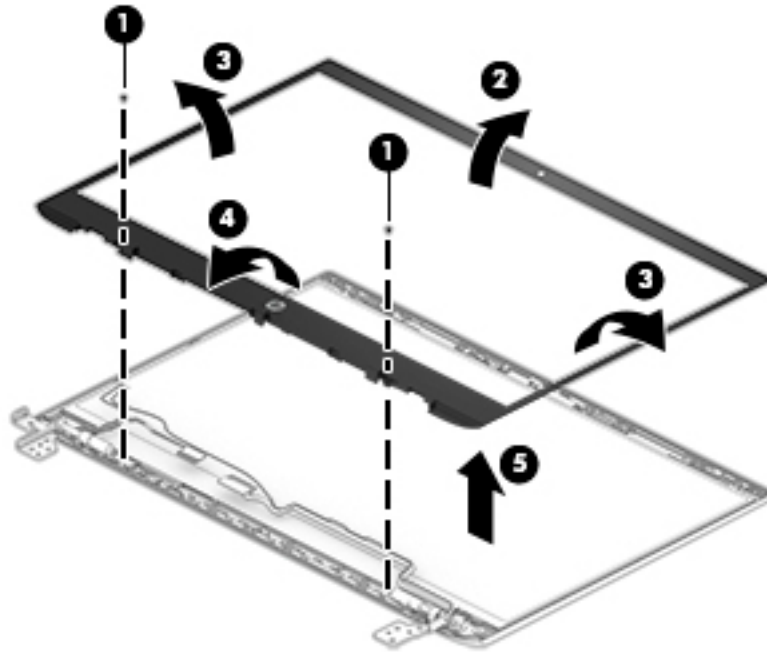
- a. While using both hands to squeeze the cover, and rotate the cover **(1)**, and then lift it away from the display **(2)**.



- b. Remove the two Phillips M2.0 × 2.0 screws **(1)** from the bottom of the bezel.
- c. Release the top edge of the display bezel **(2)** from the display assembly.
- d. Release the left and right edges of the display bezel **(3)** from the display assembly.
- e. Release the bottom edge of the display bezel **(4)** from the display assembly.

- f. Remove the display bezel **(5)**.

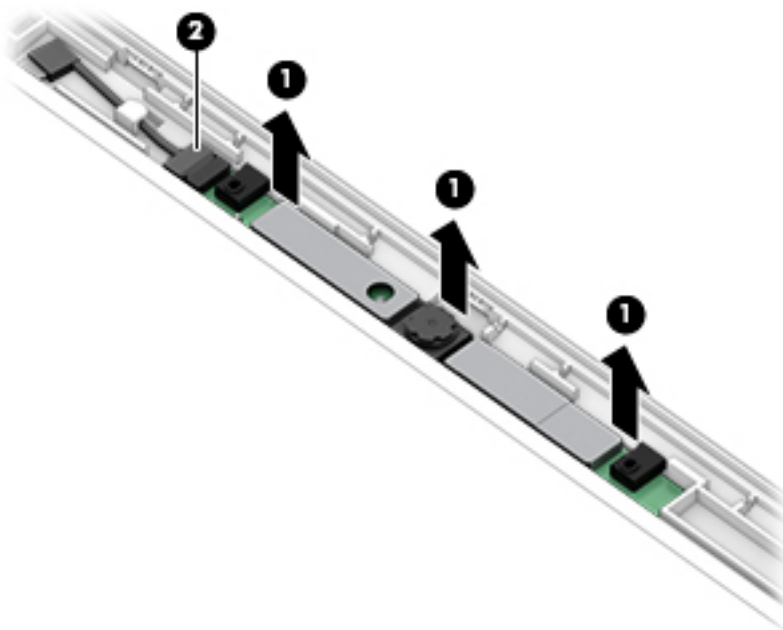
The display bezel is available using spare part number L54824-001.



9. If it is necessary to replace the webcam module:

- a. Lift evenly on both sides of the webcam to detach it from the display back cover **(1)**. (The webcam module is attached to the display back cover with double-sided adhesive.)
- b. Disconnect the cable **(2)** from the webcam module.

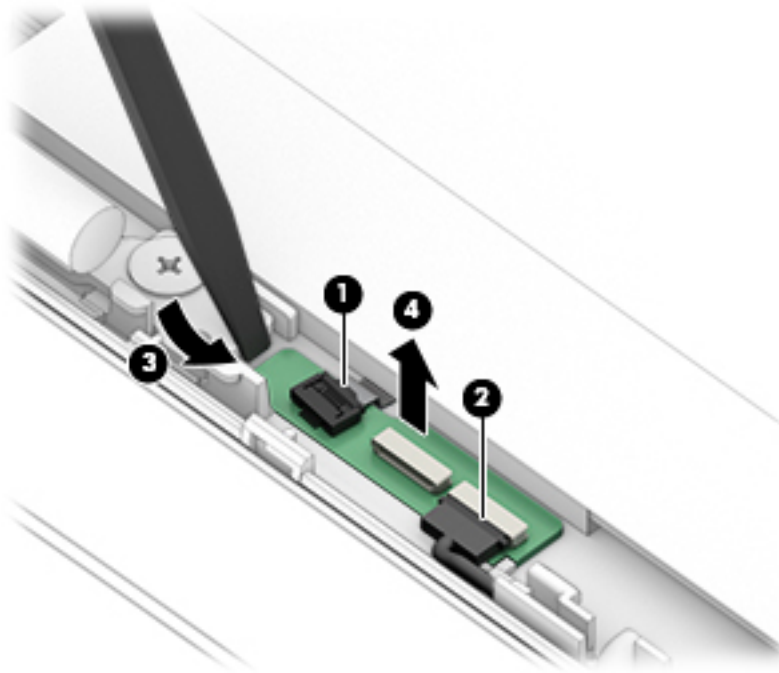
The webcam module is available using spare part number L54830-001.



10. If it is necessary to replace the webcam transfer board:

- a. Disconnect the cable (that routes to the webcam module) from the ZIF connector on the webcam transfer board **(1)**.
- b. Disconnect the cable (that routes to the system board module) from the connector on the webcam transfer board **(2)**.
- c. Use a plastic tool to loosen the board **(3)**, and then remove the board from the display **(4)**.

The webcam transfer board is available using spare part number L54828-001.

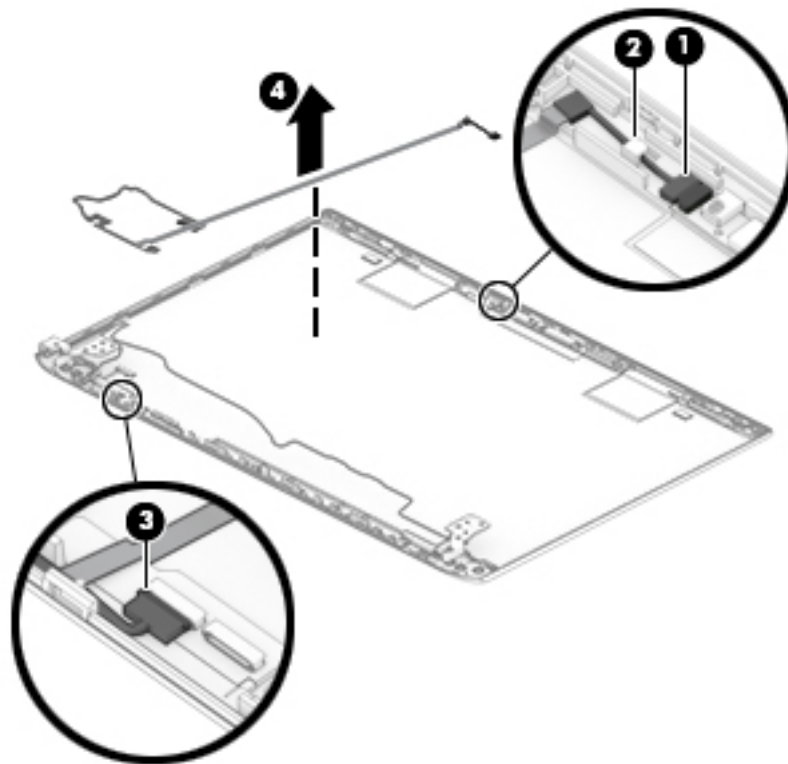


11. If it is necessary to replace the webcam transfer board cable:

- a. Disconnect the cable from the webcam module **(1)**, and then remove the cable from the clip **(2)** on the display back cover.
- b. On models with a touch display, disconnect the cable from the webcam transfer board **(3)**.
- c. Remove the cable from the display **(4)**.

The webcam transfer board cable is available using the following spare part numbers:

- L54827-001 – For use only on computer models equipped with a touch display assembly
- L54829-001 – For use only on computer models equipped with non-touch display assembly



12. If it is necessary to replace the display panel:

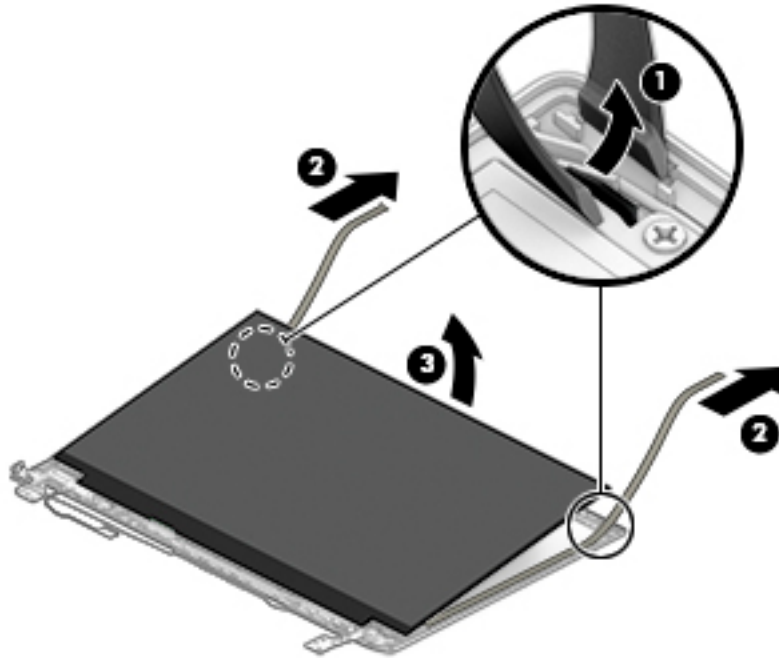
- a.** Use a tweezer to grasp the tape that routes behind both the left and right sides of the display panel **(1)**.
- b.** Pull the tape out from behind the left and right sides of the panel **(2)**.



NOTE: You have to pull on the tape multiple times before it is completely removed. To avoid tearing the tape, pull the tape evenly and carefully.

- c. Lift the edge of the display panel and swing it over until it rests upside down next to the display back cover **(3)**.

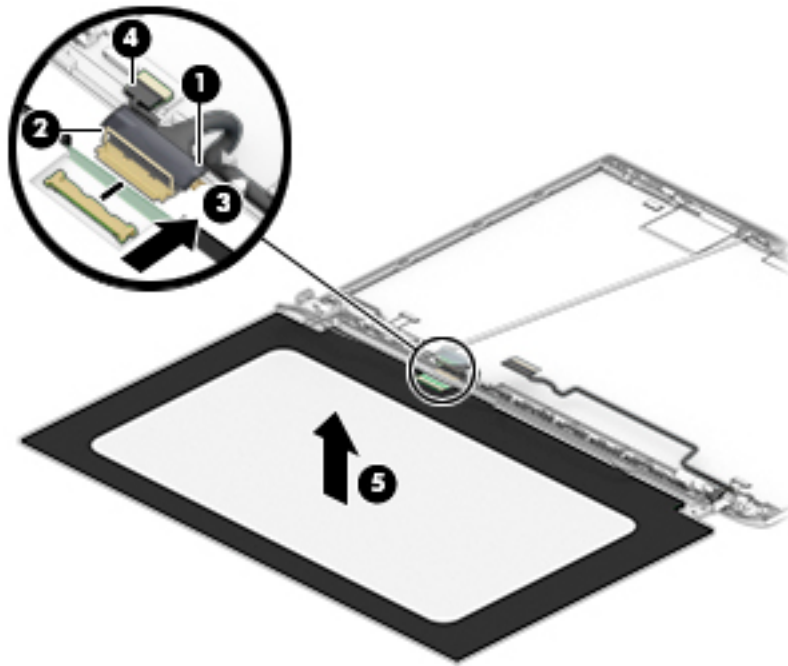
Display panel tape is available in the Miscellaneous Parts Kit using spare part number L54819-001.



- d. Release the adhesive support strip **(1)** and lift the connector release latch **(2)** that secures the display panel cable connector to the display panel.
- e. Disconnect the display panel cable **(3)** from the display panel.
- f. On models with a touch display, disconnect the cable from the webcam transfer board **(4)**.

- g.** Remove the display panel **(5)**.

The display panel is available using spare part number L54852-001 for 220 nit panels and L54853-001 for 250 nit panels.

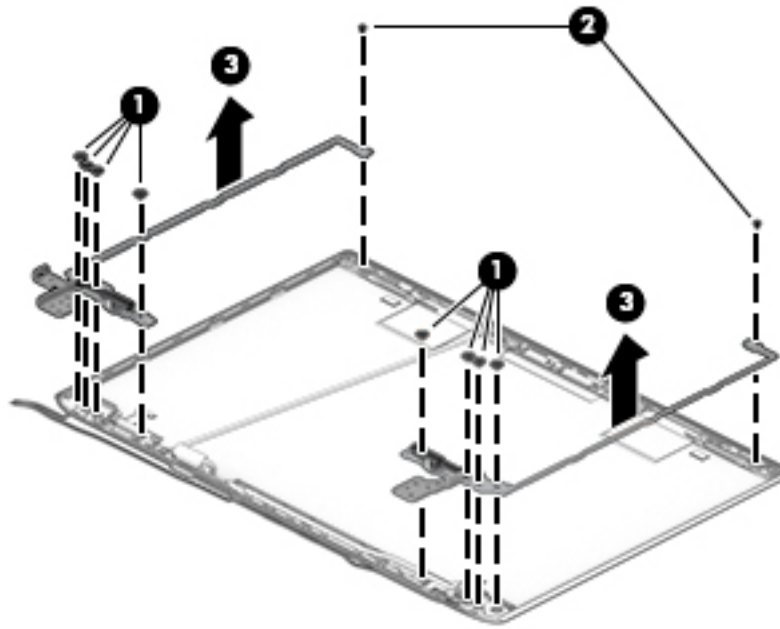


- 13.** If it is necessary to replace the display hinges:

- a.** Remove the four Phillips M2.5 × 2.5 screws **(1)** from the bottom of each hinge.
- b.** Remove the Phillips M2.0 × 2.5 screw **(2)** from the top of each hinge.

- c. Remove the display hinges from the display back cover **(3)**.

The display hinges are available using spare part number L54823-001.

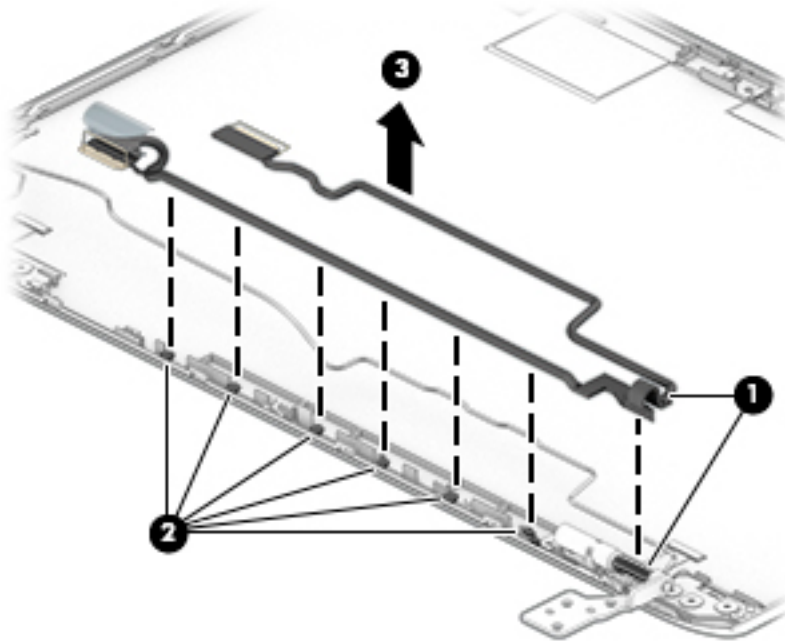


- 14. If it is necessary to replace the display panel cable:

- a. Remove the cable from the hinge **(1)**.

- b.** Remove the cable from the clips and routing path along the bottom of the back cover **(2)**, and then remove the cable from the back cover **(3)**.

The display cable is available using spare part number L54825-001 on models with a touch display and L54826-001 on models with a non-touch display.

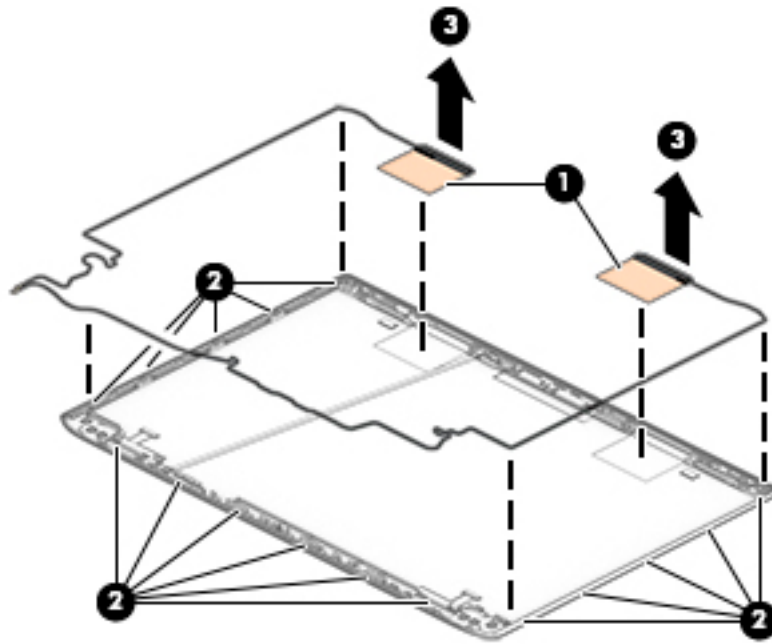


15. If it is necessary to replace the wireless antennas:

- a.** Peel the antennas off the top of the display back cover **(1)**.

- b. Remove the antenna cables from the clips on the sides and bottom of the display back cover **(2)**, and then remove the antennas and cables from the display back cover **(3)**.

The wireless antennas are available using spare part number L54831-001.



Reverse this procedure to reassemble and install the display assembly.

Keyboard/top cover

The top cover with keyboard remains after removing all other spared parts from the computer.

In this section, the first table provides the main spare part number for the keyboards. The second table provides the country codes.

Table 5-10 Keyboard/top cover description and part number

Description	Spare part number
Keyboard/top cover, no backlight	L54815-xx1
Keyboard/top cover, backlit	L54816-xx1

Table 5-11 Spare part country codes

For use in country or region	Spare part number	For use in country or region	Spare part number
Belgium	-A41	The Netherlands	-B31
Denmark, Finland, and Norway	-DH1	United Kingdom	-031
France	-051	United States	-001

6 Specifications

Table 6-1 Computer specifications

	Metric	U.S.
Dimensions		
Depth	246.0 mm	9.69 in
Width	358.4 mm	14.11 in
Height	17.9 mm	0.70 in
Weight	1810 g	3.99 lbs
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.

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 volts AC, or from 220 to 240 volts AC.

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

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

Requirements for all countries

The following requirements are applicable to all countries and regions:

- The length of the power cord set must be at least 1.0 m (3.3 ft) and no more than 2.0 m (6.5 ft).
- All power cord sets must be approved by an acceptable accredited agency responsible for evaluation in the country or region where the power cord set will be used.
- The power cord sets must have a minimum current capacity of 10 amps 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 all countries 113

Requirements for specific countries and regions

Table 7-1 Power cord requirements for specific countries and regions

Country/region	Accredited agency	Applicable note number
Australia	EANSW	1
Austria	OVE	1
Belgium	CEBC	1
Canada	CSA	2
Denmark	DEMKO	1
Finland	FIMKO	1
France	UTE	1
Germany	VDE	1
Italy	IMQ	1
Japan	METI	3
The Netherlands	KEMA	1
Norway	NEMKO	1
The People's Republic of China	COC	5

Table 7-1 Power cord requirements for specific countries and regions (continued)

Country/region	Accredited agency	Applicable note number
South Korea	EK	4
Sweden	CEMKO	1
Switzerland	SEV	1
Taiwan	BSMI	4
The United Kingdom	BSI	1
The United States	UL	2

1. The flexible cord must be Type H05VV-F, 3-conductor, 1.0-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.
2. The flexible cord must be Type SPT-3 or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V) or NEMA 6-15P (15 A, 250 V) configuration.
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 VCT or VCTF, 3-conductor, 1.00-mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V) configuration.
4. The flexible cord must be Type RVV, 3-conductor, 0.75-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.
5. The flexible cord must be Type VCTF, 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.

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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