



Maintenance and Service Guide

HP Chromebook 14 inch

Model number: 14a-ne1xxx

SUMMARY

This guide provides maintenance information about such topics as spare parts, removal and replacement of parts, security, and backing up.

Legal information

© Copyright 2025 HP Development Company, L.P.

Bluetooth is a trademark owned by its proprietor and used by HP Inc. under license. Intel and Celeron are trademarks of Intel Corporation or its subsidiaries in the U.S. and/or other countries. Chrome, ChromeOS, Chromebook, Google, and Google Drive are trademarks of Google LLC. Microsoft and Windows are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. USB Type-C and USB-C are registered trademarks of USB Implementers Forum. DisplayPort and the DisplayPort logo are trademarks owned by the Video Electronics Standards Association (VESA) in the United States and other countries. Wi-Fi is a registered trademark of Wi-Fi Alliance.

The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

First Edition: February 2025

Document Part Number: P29790-001

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 **Manuals**.

Software terms

By installing, copying, downloading, or otherwise using any software product preinstalled on this computer, you agree to be bound by the terms of the HP End User License Agreement (EULA). If you do not accept these license terms, your sole remedy is to return the entire unused product (hardware and software) within 14 days for a full refund subject to the refund policy of your seller.

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

Safety warning notice

Reduce the possibility of heat-related injuries or of overheating the computer by following the practices described.

-
- ⚠ WARNING!** To reduce the possibility of heat-related injuries or of overheating the computer, do not place the computer directly on your lap or obstruct the computer air vents. Use the computer 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 come into contact with the skin or a soft surface, such as pillows or rugs or clothing, during operation. The computer and the AC adapter provided by HP comply with the user-accessible surface temperature limits defined by applicable safety standards.
-

Important notice about Customer Self-Repair parts

Your computer includes Customer Self-Repair parts and parts that should be accessed only by an authorized service provider.



IMPORTANT: See [Removal and replacement procedures for Customer Self-Repair parts on page 24](#) for details.

Accessing parts described in [Removal and replacement procedures for authorized service provider parts on page 32](#) can damage the computer or void your warranty.

Table of contents

1 Product description.....	1
2 Components.....	3
Right.....	3
Left.....	4
Display.....	5
Keyboard area.....	6
Touchpad.....	6
Speakers.....	7
Special keys.....	8
Labels.....	9
3 Illustrated parts catalog.....	11
Computer major components.....	11
Display assembly subcomponents.....	12
Miscellaneous parts.....	13
4 Removal and replacement procedures preliminary requirements.....	15
Tools required.....	15
Service considerations.....	15
Plastic parts.....	15
Cables and connectors.....	15
Drive handling.....	15
Electrostatic discharge information.....	16
Generating static electricity.....	16
Preventing electrostatic damage to equipment.....	17
Personal grounding methods and equipment.....	17
Grounding the work area.....	18
Recommended materials and equipment.....	18
Cleaning your computer.....	19
Enabling HP Easy Clean (select products only).....	19
Removing dirt and debris from your computer.....	19
Cleaning your computer with a disinfectant.....	20
Caring for wood veneer (select products only).....	21
Packaging and transporting guidelines.....	21
Accessing support information.....	21
5 Removal and replacement procedures for Customer Self-Repair parts.....	24
Component replacement procedures.....	24
Preparation for disassembly.....	24

Battery.....	24
Removing and reinstalling the same battery	25
Installing a new battery	26
6 Removal and replacement procedures for authorized service provider parts.....	32
Component replacement procedures	32
Preparation for disassembly.....	32
Top cover with keyboard.....	32
Touchpad cable.....	35
Touchpad	36
WLAN module.....	37
HDMI connector board cables.....	39
HDMI connector board	40
Sensor board cable	41
Speakers.....	41
Sensor board	42
System board	43
Display assembly.....	46
7 Backing up, resetting, and recovering.....	56
Backing up	56
Resetting.....	56
Recovering.....	56
Option 1: Recovering using an internet connection	57
Option 2: Installing the Chromebook Recovery Utility.....	57
Creating recovery media	58
Recovering the Chrome operating system with recovery media.....	58
Setting up your computer after a reset or recovery.....	58
Erasing and reformatting the recovery media	59
8 Specifications.....	60
Computer specifications	60
35.6 cm (14.0 in) display specifications	61
9 Power cord set requirements	62
Requirements for all countries	62
Requirements for specific countries and regions.....	62
10 Swelling or deformation of notebook battery.....	65
Swollen notebook batteries	65
Swollen battery is not a safety issue	65
Discontinue using a swollen battery	65
Replace a swollen battery	65
Minimize battery swelling.....	65
HP Adaptive Battery Optimizer (consumer notebooks).....	66
HP Battery Health Manager (commercial notebooks).....	66
11 Recycling.....	67

1 Product description

This table provides detailed product information.

Table 1-1 Product components and their descriptions

Category	Description
Product Name	HP Chromebook™ 14 Model number: 14a-ne1xxx CTO model number: 14at-ne100
Processors	Intel® Celeron® N4500 processor
Graphics	Internal graphics Intel UHD Graphics Supports HD decode, DX12, and HDMI
Display	14.0 in (35.6 cm), white light-emitting diode (WLED), antiglare, standard viewing angle (SVA), 45% NTSC, eDP, 250 nits High definition (HD) (1366 × 768)
Memory	Integrated, not customer accessible or upgradeable 4 GB LPDDR4X-2933
Primary storage	embedded MultiMedia Controller (eMMC) 5.0 64 GB Onboard
Audio and video	Dual speakers HD camera, indicator LED, USB 2.0, f2.0 720p by 30 frames per second Dual-array digital microphone with appropriate software, beam forming, echo cancellation, and noise suppression
Wireless	Wireless Local Area Network (WLAN) Realtek 8852BE M.2 2230 Wi-Fi® 6 + Bluetooth® 5.4 WW WLAN
Ports	HDMI 1.4b (left side), supports up to 3840 × 2160 @ 30 Hz USB Type-C® (USB 3.2, Gen 2) (right side), supports: <ul style="list-style-type: none">• power delivery• data transfer• DisplayPort™ 1.4 (4 K output, 4096 × 2160 @ 60 Hz with USB-C® adapter) USB Type-A (USB 3.2 Gen 1) (left and right sides) Audio-out (headphone)/audio-in (microphone) combo jack

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

Category	Description
Keyboard/pointing devices	Google Keyboard (full size, textured, not backlit) Clickpad with image sensor: <ul style="list-style-type: none">• Multitouch gestures enabled• Taps enabled as default
Power requirements	Battery 2 cell, 47 Whr, polymer, HP Long Life HP Fast Charge Technology Smart AC adapter (USB Type-C, non power factor correction, (nPFC), straight, 1.8 m [6 ft]) (select products only) 45 W Power cord (select products only) C5, conventional, 1 m (3.3 ft)
Security	H1 Secure Microcontroller
Operating system	Chrome™
Serviceability	End user replaceable parts AC adapter Battery

2 Components

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

Right

Use the illustration and table to identify the components on the right side of the computer.

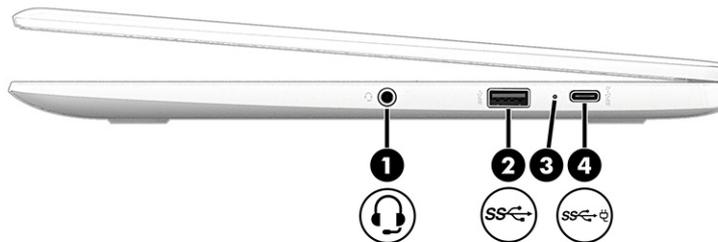


Table 2-1 Right-side components and their descriptions

	Component	Description
(1)	 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 standalone microphones. 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> . NOTE: When a device is connected to the jack, the computer speakers are disabled.
(2)	 USB 5 Gbps port	Connects a USB device, provides high-speed data transfer, and (for select products) charges small devices (such as a smartphone) when the computer is on or in Sleep mode. NOTE: Use a standard USB Type-A charging cable or cable adapter (purchased separately) when charging a small external device.

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

	Component	Description
(3)	Battery light	<p>When AC power is connected:</p> <ul style="list-style-type: none"> • White: The battery charge is greater than 90 percent. • Amber: The battery charge is from 0 to 90 percent. • Off: The battery is not charging. <p>When AC power is disconnected (battery not charging):</p> <ul style="list-style-type: none"> • Blinking amber: The battery has reached a low battery level. When the battery has reached a critical battery level, the battery light begins blinking rapidly. • Off: The battery is not charging.
(4)	 USB Type-C® power connector and 10 Gbps 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, provides high-speed data transfer, and (for select products) charges small devices (such as a smartphone) when the computer is on or in Sleep mode.</p> <p>NOTE: Use a standard USB Type-C charging cable or cable adapter (purchased separately) when charging a small external device.</p>

Left

Use the illustration and table to identify the components on the left side of the computer.

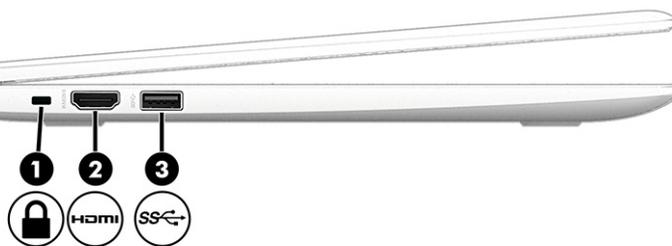


Table 2-2 Left-side components and their descriptions

	Component	Description
(1)	 Security cable slot	<p>Attaches an optional security cable to the computer.</p> <p>NOTE: The security cable is designed to act as a deterrent, but it might not prevent the computer from being mishandled or stolen.</p>

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

	Component	Description
(2)	 HDMI port	Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component, or a high-speed High Definition Multimedia Interface (HDMI) device.
(3)	 USB 5 Gbps port	Connects a USB device, provides high-speed data transfer, and (for select products) charges small devices (such as a smartphone) when the computer is on or in Sleep mode. NOTE: Use a standard USB Type-A charging cable or cable adapter (purchased separately) when charging a small external device.

Display

Use the illustration and table to identify the components on the display.

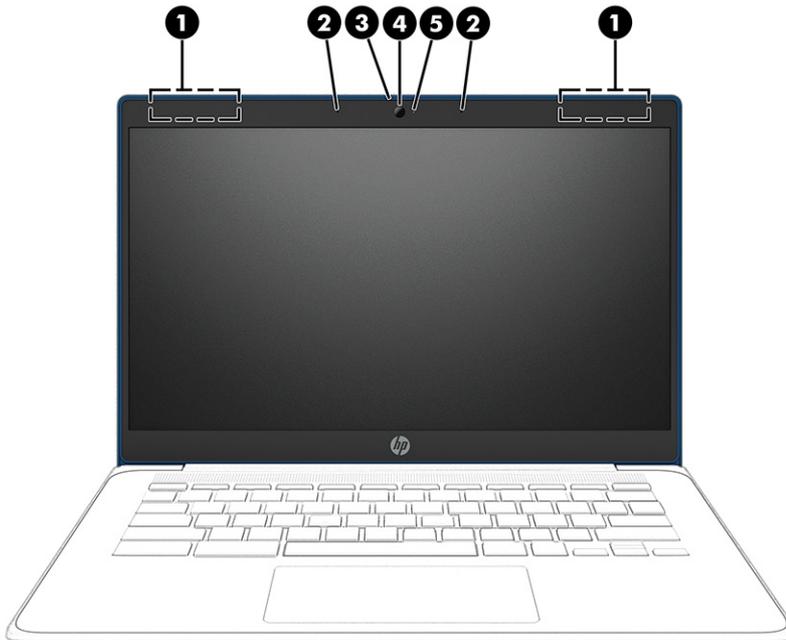


Table 2-3 Display components and their descriptions

	Component	Description
(1)	WLAN antennas (2)*	Send and receive wireless signals to communicate with wireless local area networks (WLANs).
(2)	Internal microphones (2)	Record sound.

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

	Component	Description
(3)	Camera privacy cover	<p>By default, the camera lens is uncovered, but you can slide the camera privacy cover to block the camera's view. To use the camera, slide the camera privacy cover in the opposite direction to reveal the lens.</p> <p>NOTE: If you have both front-facing and rear-facing cameras, when one camera lens is revealed and ready to use, the other is concealed.</p>
(4)	Camera	<p>Allows you to video chat, record video, and record still images.</p> <p>NOTE: Camera functions vary depending on the camera hardware and software installed on your product.</p>
(5)	Camera light	<p>On (white): The camera is in use.</p> <p>On (amber): The camera is turned off by the switch.</p> <p>Off: The camera is turned off by the software.</p>

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

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

Keyboard area

Keyboards can vary by language.

Touchpad

Use the illustration and table to identify the touchpad settings and components.

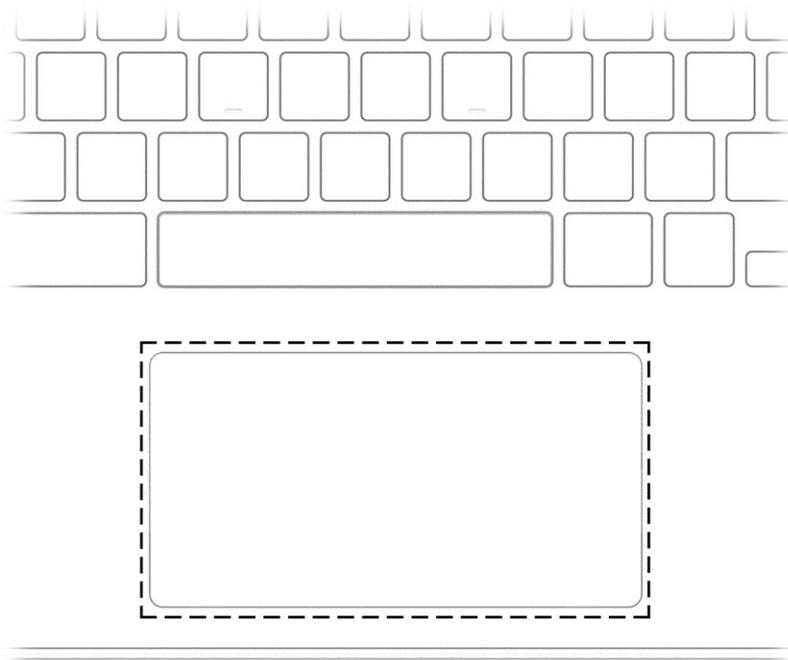


Table 2-4 Touchpad component and description

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

Speakers

Use the illustration and table to identify the speakers.

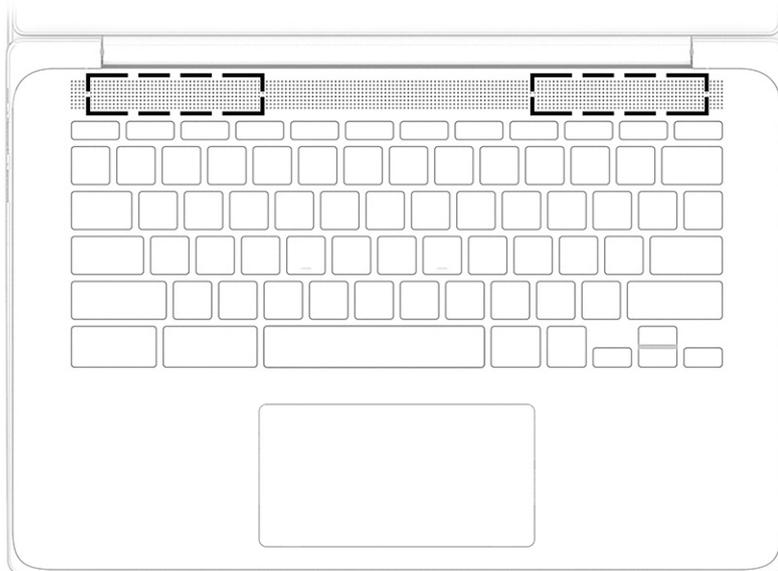


Table 2-5 Speakers and their description

Component	Description
Speakers (2)	Produce sound.

Special keys

Use the illustration and table to locate the special keys.

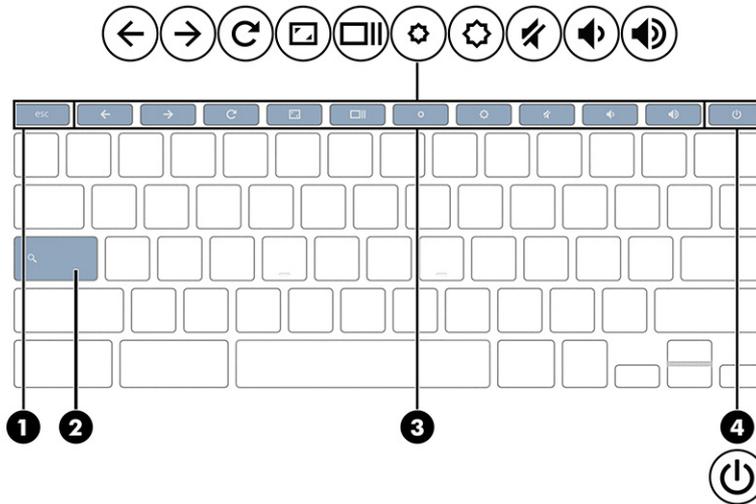


Table 2-6 Special keys and their descriptions

	Component	Description
(1)	esc key	Activates certain computer functions when pressed in combination with other keys, such as tab or shift .
(2)	Search key	Opens a search box.
(3)	Action keys	Execute frequently used system functions.
(4)	 Power key	<ul style="list-style-type: none"> When the computer is off, press the key briefly to turn on the computer. When the computer is on, press the key briefly to initiate Sleep. When the computer is in the Sleep state, press the key briefly to exit Sleep (select products only). When the computer is in Hibernation, press the key briefly to exit Hibernation. <p>IMPORTANT: Pressing and holding down the power key 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 key for at least 10 seconds to turn off the computer.</p>

Labels

The labels affixed to the computer provide information you might need when you troubleshoot system problems or travel internationally with the computer. Labels might 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 might be asked for the serial number, the product number, or the model number. Locate this information before you contact support.

Your service label will resemble one of the following examples. Refer to the illustration that most closely matches the service label on your computer.

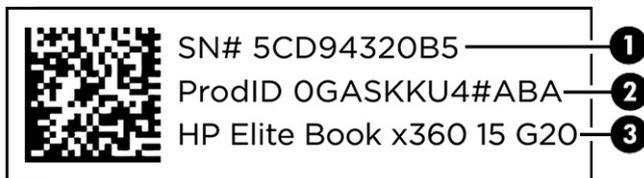


Table 2-7 Service label components

Component	
(1)	Serial number
(2)	Product ID
(3)	HP product name

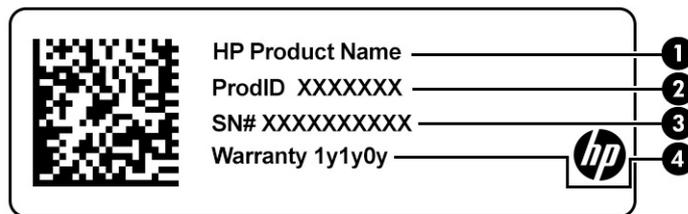


Table 2-8 Service label components

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

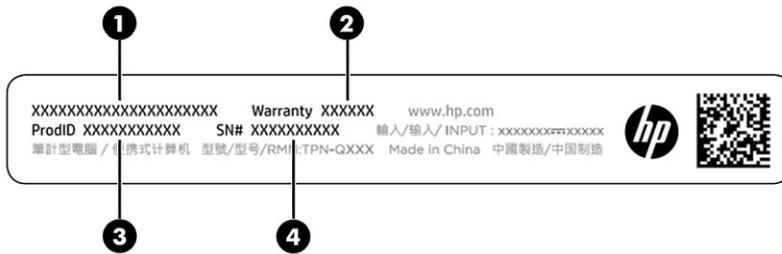


Table 2-9 Service label components

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

- Regulatory labels—Provide regulatory information about the computer.
- Wireless certification labels—Provide information about optional wireless devices and the approval markings for the countries or regions where the devices have been approved for use.

3 Illustrated parts catalog

Use this chapter to determine the spare parts that are available for the computer.

Computer major components

To identify the computer major components, use this illustration and table.

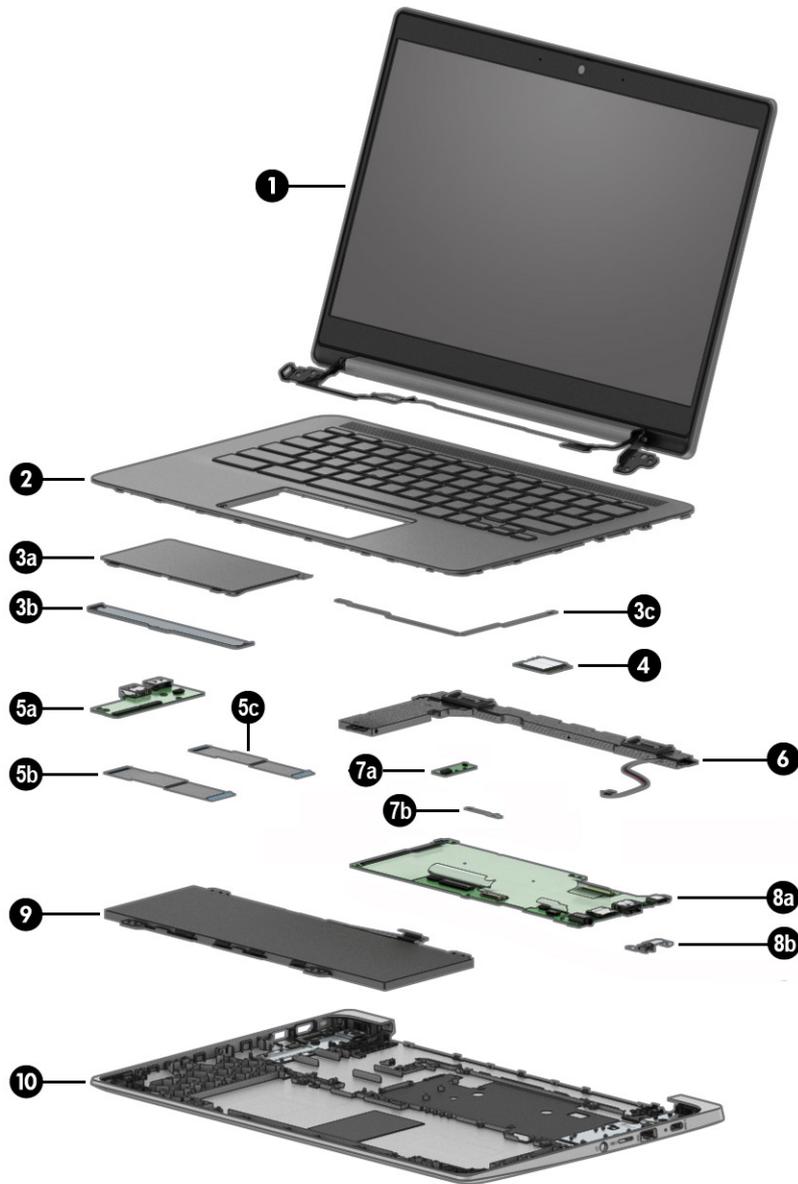


Table 3-1 Computer major component descriptions and part numbers

Item	Component	Spare part number
(1)	Display assembly NOTE: Display assemblies are offered as spare parts only at a subcomponent level. For more information, see Display assembly subcomponents on page 12 .	not available as a spare part
(2)	Top cover with keyboard For a detailed list of country codes, see Top cover with keyboard on page 32 .	P39021-001
(3a)	Touchpad	P37761-001
(3b)	Touchpad bracket	L90436-001
(3c)	Touchpad cable (included in the Cable Kit)	L90412-001
(4)	WLAN module NOTE: The WLAN module bracket is available as spare part number M00451-001.	
	Realtek 8852BE-VT Wi-Fi 6 + Bluetooth 5.3 WW WLAN	P06350-005
	Realtek 8852BE Wi-Fi 6 + Bluetooth 5.3 WW WLAN	M91238-005
(5a)	HDMI connector board	M47195-001
(5b)	Connector board high-speed cable (included in the Cable Kit)	L90412-001
(5c)	Connector board low-speed cable (included in the Cable Kit)	L90412-001
(6)	Speakers (left and right)	L90434-001
(7a)	Sensor board	M47194-001
(7b)	Sensor board cable (included in the Cable Kit)	L90412-001
(8a)	System board (includes integrated Intel Celeron N4500 processor and heat sink)	P29349-001
(8b)	I/O bracket	L90438-001
(9)	Battery (2 cell, 47 Whr) NOTE: The battery protection bracket is available as spare part number M00450-001.	L75783-001
(10)	Bottom cover	P40956-001
	Heat sink (not illustrated)	M47196-001

Display assembly subcomponents

To identify the display assembly subcomponents, use this illustration and table.

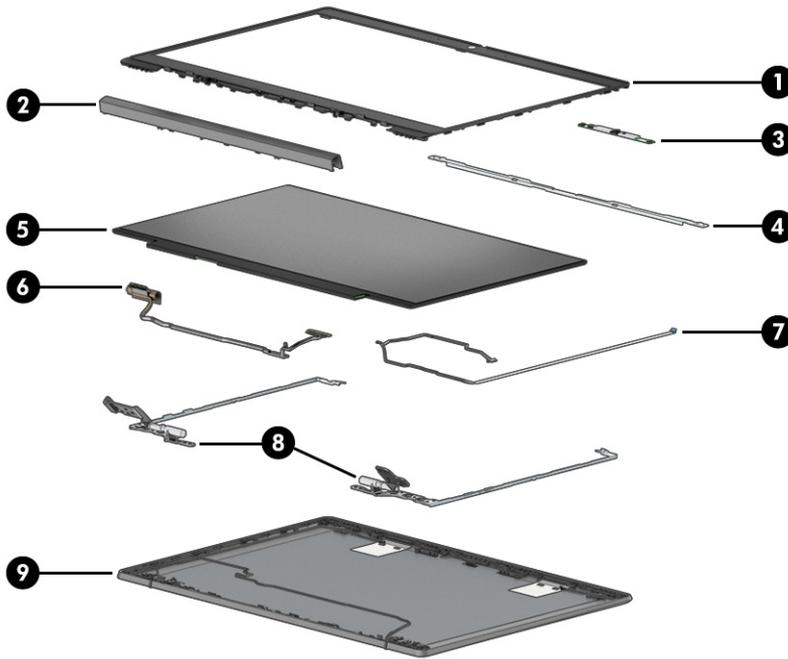


Table 3-2 Display component descriptions and part numbers

Item	Component	Spare part number
(1)	Display bezel with latch	M01026-001
(2)	Hinge cover	N18217-001
(3)	Camera module (includes double-sided adhesive)	L90439-001
(4)	Display bracket	L90417-001
(5)	Display panel	N18668-001
(6)	Display panel cable (included in the Display Cable with Hinge Kit)	M76003-001
(7)	Camera cable (included in the Cable Kit)	L90412-001
(8)	Hinges, left and right (included in the Display Cable with Hinge Kit)	M76003-001
(9)	Display back cover (includes the wireless antennas and cables)	N18211-001
	Tape Kit (includes bezel and display back cover adhesive) (not illustrated)	M47411-001

Miscellaneous parts

To identify the miscellaneous parts, use this table.

Table 3-3 Miscellaneous part descriptions and part numbers

Component	Spare part number
AC adapters (USB Type-C AC adapter (nPFC, 3 pin, 1.8 m [6 ft]))	L43407-001
Cable Kit (includes sensor board cable, touchpad cable, connector board high-speed cable, connector board low-speed cable, and webcam module cable)	L90412-001
Screw Kit	L90432-001

Table 3-3 Miscellaneous part descriptions and part numbers (continued)

Component	Spare part number
Tape Kit (includes bezel and display cover adhesive)	M47411-001
Power cord (C5, conventional, 1.0 m [3.3 ft])	
Europe	L19361-001
North America	L19367-001
United Kingdom	L19373-001

4 Removal and replacement procedures preliminary requirements

Use this information to properly prepare to disassemble and reassemble the computer.

Tools required

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

- Tweezers
- Nonconductive, nonmarking 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

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

Cables and connectors

Handle cables with extreme care to avoid damage.

 **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.

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 so that they cannot be caught or snagged as you remove or replace parts. Handle flex cables with extreme care; these cables tear easily.

Drive handling

Note the following guidelines when handling drives.

 **IMPORTANT:** Drives are fragile components. Handle them 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 or Sleep mode, 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 2.54 cm (1 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."
-

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) might not appear to be affected at all and can work perfectly throughout a normal cycle. The device might 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 remove or install 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 [Personal grounding methods and equipment on page 17](#).
 - 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

Follow these static electricity guidelines:

- 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	55% relative humidity	40% relative humidity	10% relative humidity
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 dual in-line packages (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 polystyrene foam	3,500 V	5,000 V	14,500 V
Removing bubble pack from PCB (printed circuit board)	7,000 V	20,000 V	26,500 V
Packing PCBs in foam-lined box	5,000 V	11,000 V	21,000 V

 **NOTE:** Multiple electric components can be packaged together in plastic tubes, trays, or polystyrene foam.

As little as 700 V of static electricity 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

Using certain equipment can prevent static electricity damage to electronic components.

- **Wrist straps** are flexible straps with a maximum of $1\text{ M}\Omega \pm 10\%$ resistance in the ground cords. To provide proper ground, wear a strap snug against bare skin. Verify that the ground cord is connected and fits snugly into the banana plug connector on the grounding mat or workstation.
- You can use **heel straps, toe straps, and boot straps** at standing workstations. These straps 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 $1\text{ M}\Omega \pm 10\%$ resistance between the operator and ground.

Table 4-2 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, follow these precautions:

- Cover the work surface with approved static-dissipative material.
- Use a wrist strap connected to a properly grounded work surface and use 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 the work area free of nonconductive materials, such as ordinary plastic assembly aids and polystyrene foam.
- Use conductive field service tools, such as cutters, screwdrivers, and vacuums.
- Avoid contact with pins, leads, or circuitry.

Recommended materials and equipment

HP recommends certain materials and equipment to prevent static electricity:

- 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 $1\text{ M}\Omega \pm 10\%$ resistance
- Static-dissipative table or floor mats with hard tie to ground
- Field service kits
- Static awareness labels
- Wrist straps and footwear straps providing $1\text{ M}\Omega \pm 10\%$ resistance
- Material handling packages
- Conductive plastic bags

- Conductive plastic tubes
- Conductive tote boxes
- Opaque shielding bags
- Transparent metallized shielding bags
- Transparent shielding tubes

Cleaning your computer

Cleaning your computer regularly removes dirt and debris so that your device continues to operate at its best. Use the following information to safely clean the external surfaces of your computer.

Enabling HP Easy Clean (select products only)

HP Easy Clean helps you to avoid accidental input while you clean the computer surfaces. This software disables devices such as the keyboard, touch screen, and touchpad for a preset amount of time so that you can clean all computer surfaces.

1. Start HP Easy Clean in one of the following ways:
 - Select the **Start** menu, and then select **HP Easy Clean**.
 - Select the **HP Easy Clean** icon in the taskbar.
 - Select **Start**, and then select the **HP Easy Clean** tile.
2. Now that your device is disabled for a short period, see [Removing dirt and debris from your computer on page 19](#) for the recommended steps to clean the high-touch, external surfaces on your computer. After you remove the dirt and debris, you can also clean the surfaces with a disinfectant. See [Cleaning your computer with a disinfectant on page 20](#) for guidelines to help prevent the spread of harmful bacteria and viruses.

Removing dirt and debris from your computer

Here are the recommended steps to clean dirt and debris from your computer.

For computers with wood veneer, see [Caring for wood veneer \(select products only\) on page 21](#).

1. Wear disposable gloves made of latex (or nitrile gloves, if you are latex-sensitive) when cleaning the surfaces.
2. Turn off your device and unplug the power cord and other connected external devices. Remove any installed batteries from items such as wireless keyboards.

 **CAUTION:** To prevent electric shock or damage to components, never clean a product while it is turned on or plugged in.

3. Moisten a microfiber cloth with water. The cloth should be moist, but not dripping wet.

 **IMPORTANT:** To avoid damaging the surface, avoid abrasive cloths, towels, and paper towels.

4. Wipe the exterior of the product gently with the moistened cloth.

 **IMPORTANT:** Keep liquids away from the product. Avoid getting moisture in any openings. If liquid makes its way inside your HP product, it can cause damage to the product. Do not spray liquids directly on the product. Do not use aerosol sprays, solvents, abrasives, or cleaners containing hydrogen peroxide or bleach that might damage the finish.

5. Start with the display (if applicable). Wipe carefully in one direction, and move from the top of the display to the bottom. Finish with any flexible cables, like power cord, keyboard cable, and USB cables.
6. Be sure that surfaces have completely air-dried before turning the device on after cleaning.
7. Discard the gloves after each cleaning. Clean your hands immediately after you remove the gloves.

See [Cleaning your computer with a disinfectant on page 20](#) for recommended steps to clean the high-touch, external surfaces on your computer to help prevent the spread of harmful bacteria and viruses.

Cleaning your computer with a disinfectant

The World Health Organization (WHO) recommends cleaning surfaces, followed by disinfection, as a best practice for preventing the spread of viral respiratory illnesses and harmful bacteria.

After cleaning the external surfaces of your computer using the steps in [Removing dirt and debris from your computer on page 19](#), [Caring for wood veneer \(select products only\) on page 21](#), or both, you might also choose to clean the surfaces with a disinfectant. A disinfectant that is within HP's cleaning guidelines is an alcohol solution consisting of 70% isopropyl alcohol and 30% water. This solution is also known as rubbing alcohol and is sold in most stores.

Follow these steps when disinfecting high-touch, external surfaces on your computer:

1. Wear disposable gloves made of latex (or nitrile gloves, if you are latex-sensitive) when cleaning the surfaces.
2. Turn off your device and unplug the power cord and other connected external devices. Remove any installed batteries from items such as wireless keyboards.

 **CAUTION:** To prevent electric shock or damage to components, never clean a product while it is turned on or plugged in.

3. Moisten a microfiber cloth with a mixture of 70% isopropyl alcohol and 30% water. The cloth should be moist, but not dripping wet.

 **CAUTION:** Do not use any of the following chemicals or any solutions that contain them, including spray-based surface cleaners: bleach, peroxides (including hydrogen peroxide), acetone, ammonia, ethyl alcohol, methylene chloride, or any petroleum-based materials, such as gasoline, paint thinner, benzene, or toluene.

 **IMPORTANT:** To avoid damaging the surface, avoid abrasive cloths, towels, and paper towels.

4. Wipe the exterior of the product gently with the moistened cloth.

 **IMPORTANT:** Keep liquids away from the product. Avoid getting moisture in any openings. If liquid makes its way inside your HP product, it can cause damage to the product. Do not spray liquids directly on the product. Do not use aerosol sprays, solvents, abrasives, or cleaners containing hydrogen peroxide or bleach that might damage the finish.

5. Start with the display (if applicable). Wipe carefully in one direction, and move from the top of the display to the bottom. Finish with any flexible cables, like power cord, keyboard cable, and USB cables.
6. Be sure that surfaces have completely air-dried before turning the device on after cleaning.
7. Discard the gloves after each cleaning. Clean your hands immediately after you remove the gloves.

Caring for wood veneer (select products only)

Your product might feature high-quality wood veneer. As with all natural wood products, proper care is important for best results over the life of the product. Because of the nature of natural wood, you might see unique variations in the grain pattern or subtle variations in color, which are normal.

- Clean the wood with a dry, static-free microfiber cloth or chamois.
- Avoid cleaning products containing substances such as ammonia, methylene chloride, acetone, turpentine, or other petroleum-based solvents.
- Do not expose the wood to sun or moisture for long periods of time.
- If the wood becomes wet, dry it by dabbing with an absorbent, lint-free cloth.
- Avoid contact with any substance that might dye or discolor the wood.
- Avoid contact with sharp objects or rough surfaces that might scratch the wood.

See [Removing dirt and debris from your computer on page 19](#) for the recommended steps to clean the high-touch, external surfaces on your computer. After you remove the dirt and debris, you can also clean the surfaces with a disinfectant. See [Cleaning your computer with a disinfectant on page 20](#) for sanitizing guidelines to help prevent the spread of harmful bacteria and viruses.

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.

Accessing support information

To find the HP support that you need, use this information.

Table 4-3 Support information locations

Service consideration	Path to access information
<p>Records of reported failure incidents stored on the computer</p>	<p>Windows®:</p> <p>Preoperating system failures are logged in the BIOS Event Log. To view the BIOS Event Log:</p> <ol style="list-style-type: none"> 1. Press the power button. 2. Immediately and repeatedly press esc when the power button light turns white. <p>NOTE: If you do not press esc at the appropriate time, you must restart the computer and again repeatedly press esc when the power button light turns white to access the utility.</p> <ol style="list-style-type: none"> 3. Press f10 to enter the BIOS setup. 4. Complete one of these tasks: <ul style="list-style-type: none"> • (On commercial products) Under the Main tab, select BIOS event log, and then select View BIOS Event Log. • (On consumer products) Under the Main tab, select System Log. <p>Post-operating system failures are logged in the Event Viewer.</p> <ol style="list-style-type: none"> 1. Turn on the computer and allow the operating system to open. 2. Select the search icon  in the taskbar. 3. Type <code>Event Viewer</code>, and then press enter. 4. Select the log from the left panel. Details display in the right panel. <p>Chrome™:</p> <ol style="list-style-type: none"> 1. Go to support.google.com/chrome. 2. Search <code>collect Chrome device logs</code>.
<p>Technical bulletins</p>	<p>To locate technical bulletins:</p> <ol style="list-style-type: none"> 1. Go to www.hp.com. 2. Place the cursor over Problem solving to display more options. 3. Select Support & Troubleshooting. 4. Type the serial number, product number, or product name to go to the product support page. 5. Select Advisories to view technical bulletins.
<p>Repair professionals</p>	<p>To locate repair professionals:</p> <ol style="list-style-type: none"> 1. Go to www.hp.com. 2. Place the cursor over Support resources to display more options. 3. Select Authorized service providers.

Table 4-3 Support information locations (continued)

Service consideration	Path to access information
Component and diagnosis information, failure detection, and required action	To locate diagnosis information and actions: <ol style="list-style-type: none"><li data-bbox="703 310 1203 331">1. Go to http://www.hp.com/go/techcenter/pcdiags.<li data-bbox="703 359 938 380">2. Select Get Support.<li data-bbox="703 407 1445 457">3. Near the bottom of the window, select Notebook PCs, and then select your location.

5 Removal and replacement procedures for Customer Self-Repair parts

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

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

 **NOTE:** The [HP Support YouTube Channel](#) (in English) has videos that provide step-by-step removal and replacement instructions for many common parts and models.

Component replacement procedures

To remove and replace computer components, use these 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.

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

Make special note of each screw size and location during removal and replacement.

Preparation for disassembly

To remove and replace computer components, use these procedures:

For initial safety procedures, see [Removal and replacement procedures preliminary requirements on page 15](#).

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation or Sleep mode, 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.

Battery

The battery removal procedure differs depending on whether you are removing and replacing the existing battery or installing a new battery. To install a new battery, you must use a revive kit.

- To remove and replace the existing battery, see [Removing and reinstalling the same battery on page 25](#).
- To install a new battery, see [Installing a new battery on page 26](#).

Removing and reinstalling the same battery

To remove the battery and reinstall it, use this procedure and illustration.

 **WARNING!** To avoid personal injury and damage to the product:

- Do *not* puncture, twist, or crack the battery.
- Do *not* cause an external puncture or rupture to the battery, which can cause a short inside the battery that can result in battery thermal runaway.
- Do *not* handle or touch the battery enclosure with sharp objects such as tweezers or pliers, which might puncture the battery.
- Do *not* compress or squeeze the battery case with tools or heavy objects stacked on top of the case. These actions can apply undue force on the battery.
- Do *not* touch the connectors with any metallic surface or object, such as metal tools, screws, or coins, which can cause shorting across the connectors.

For additional battery information, see the *Regulatory, Safety, and Environmental Notices*. To access this guide, select the **Search** icon in the taskbar, type `HP Documentation` in the search box, and then select **HP Documentation**.

Before removing the battery, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 24](#)).
2. Remove the top cover with keyboard (see [Top cover with keyboard on page 32](#)).

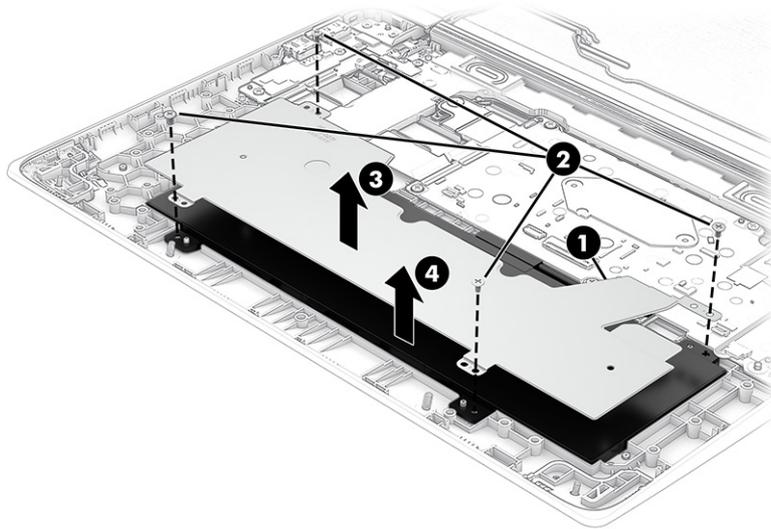
 **WARNING!** To reduce potential safety issues, use only the user-replaceable battery provided with the computer, a replacement battery provided by HP, or a compatible battery purchased from HP.

 **IMPORTANT:** Removing a battery that is the sole power source for the computer can cause loss of information. To prevent loss of information, save your work or shut down the computer through Windows before you remove the battery.

Remove the battery:

1. Disconnect the battery cable **(1)** from the system board.
2. Remove the four Phillips M2.0 × 4.2 screws **(2)** that secure the battery to the computer.
3. Remove the battery bracket **(3)**.

4. Remove the battery (4) from the computer.



To reinstall the battery, reverse the removal procedures.



NOTE: When reinstalling the battery, be sure to completely reassemble the computer and plug in the AC adapter before turning the computer on.

Installing a new battery

To install a battery, use these procedures and illustrations. You must use a revive kit to remove the old battery and install a new one. The revive kit includes an empty containment tray and a containment tray with a battery preinstalled.

Table 5-1 Battery descriptions and part numbers

Description	Spare part number
Battery (2 cell, 47 Whr)	L75783-001
Battery protection bracket (be sure to order a new bracket if damaged)	M00450-001

Before starting this replacement procedure:

- Ensure other individuals are sufficiently clear of your workspace.
- Ensure your workspace is clear of any flammable material such as paper or oils.
- Locate the nearest ABC dry chemical fire-extinguisher for use in an emergency.



WARNING! This procedure requires removing the battery or disconnecting the battery cable. Use care to avoid bending, twisting, or puncturing the battery regardless of its condition. Failure to follow this replacement guide or to use HP recommended tools might damage the system and/or cause a safety hazard.

- Do *not* remove the battery from the containment tray.
- Do *not* handle or touch the battery enclosure with sharp objects such as tweezers or pliers, which might puncture the battery.

- Do *not* touch the connectors with any metallic surface or object, such as metal tools, screws, or coins, which can cause shorting across the connectors.

Should a part become stuck or difficult to remove when opening a unit where a swollen battery is suspected, or if the battery becomes stuck in the unit, stop, and contact HP Support for assistance. Do not try to remove a battery by force.

 **NOTE:** Screw locations, latch locations, and internal components might vary.

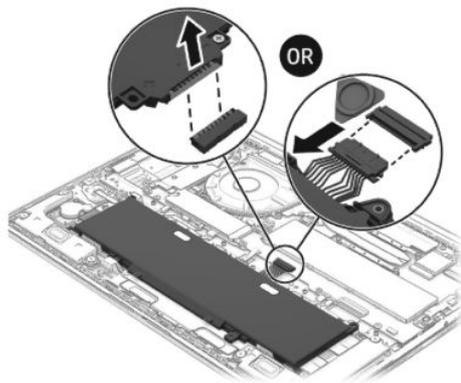
Before removing the battery, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 24](#)).
2. Remove the bottom cover (see [Top cover with keyboard on page 32](#)).

 **WARNING!** To reduce potential safety issues, use only the user-replaceable battery provided with the computer, a replacement battery provided by HP, or a compatible battery purchased from HP.

 **IMPORTANT:** Removing a battery that is the sole power source for the computer can cause loss of information. To prevent loss of information, save your work or shut down the computer through Windows before you remove the battery.

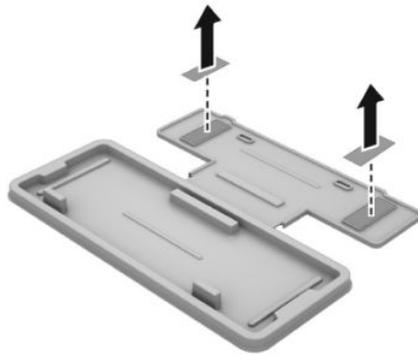
1. Remove the battery using the revive kit:
 - a. Remove the bracket that covers the battery. For more information, see [Removing and reinstalling the same battery on page 25](#).
 - b. Disconnect the battery cable from the system board. The connector location might vary.



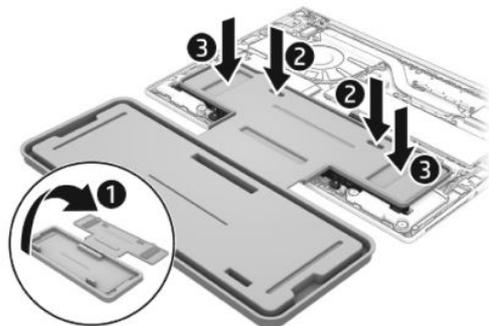
- c. Open the empty battery containment tray.



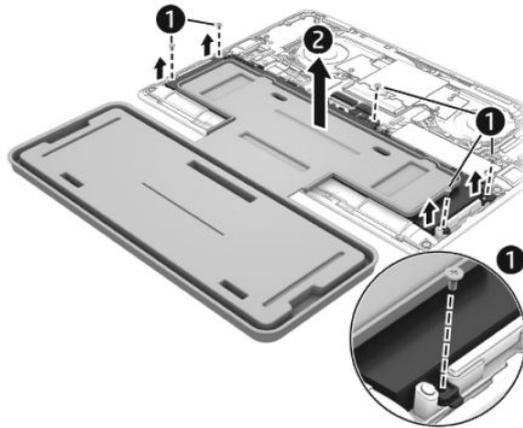
- d. Remove the paper backing layer from the adhesive on the tray.



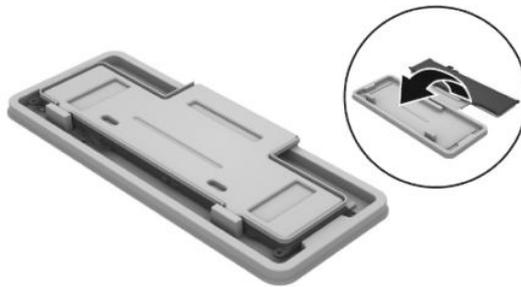
- e. Turn the tray (1) over so that the adhesive is facing down.
f. Place the tray (2) centered on the battery.
g. Press down on the indentations on the tray (3) to adhere it to the battery.



- h. Remove the Phillips screws (1) that secure the battery to the computer. Number of screws and screw locations might vary.
- i. Lift the top of the tray (2) to remove the battery from the computer.



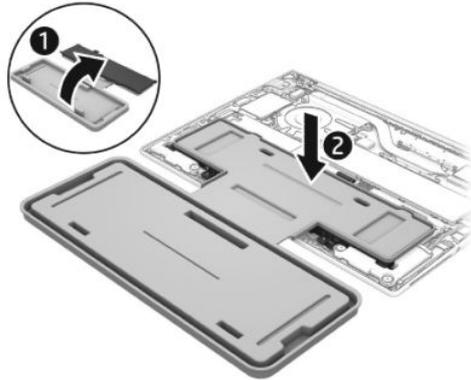
- j. Rotate the battery up and over into the cavity of the containment tray.



 **NOTE:** Please recycle responsibly. For more information about recycling programs, see the HP website at <http://www.hp.com/recycle>.

- 2. Install the battery using the revive kit:
 - a. Open the containment tray that includes the new battery.

- b. Turn the tray (1) over so the battery is facing downward, and then insert the battery (2) into the computer. Adhesive secures the battery to the tray.

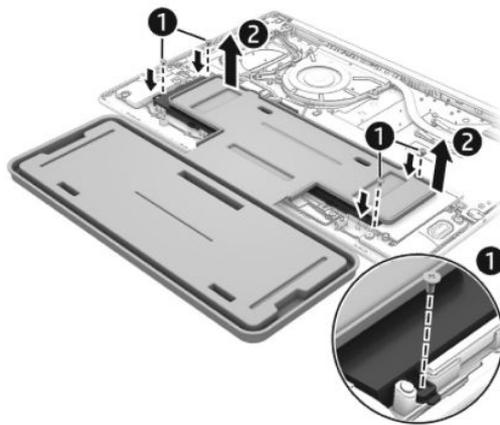


- c. Install the Phillips screws (1) to secure the battery. Number of screws and screw locations might vary.

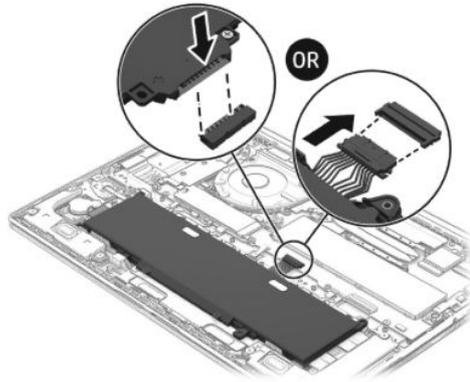


NOTE: Be sure to install the battery bracket on top of the battery.

- d. Lift the containment tray (2) off the battery.



- e. Connect the battery cable to the system board. The connector location might vary.



 **NOTE:** When replacing the battery, be sure to completely reassemble the computer and plug in the AC adapter before turning the computer on.

6 Removal and replacement procedures for authorized service provider parts

This chapter provides removal and replacement procedures for authorized service provider parts.

 **IMPORTANT:** Only an authorized service provider should access the components described in this chapter. Accessing these parts can damage the computer or void the warranty.

 **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.

 **NOTE:** The [HP Support YouTube Channel](#) (in English) has videos that provide step-by-step removal and replacement instructions for many common parts and models.

Component replacement procedures

To remove and replace computer components, use the procedures described in this section.

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

Make special note of each screw size and location during removal and replacement.

Preparation for disassembly

To remove and replace computer components, use these procedures:

For initial safety procedures, see [Removal and replacement procedures preliminary requirements on page 15](#).

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation or Sleep mode, 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.

Top cover with keyboard

To remove the top cover with keyboard, use this procedure and illustration.

Table 6-1 Top cover with keyboard descriptions and part numbers

Description	Spare part number
Top cover with keyboard for use in French Canada	P39021-DB1
Top cover with keyboard for use in France	P39021-051
Top cover with keyboard for use in Germany	P39021-041

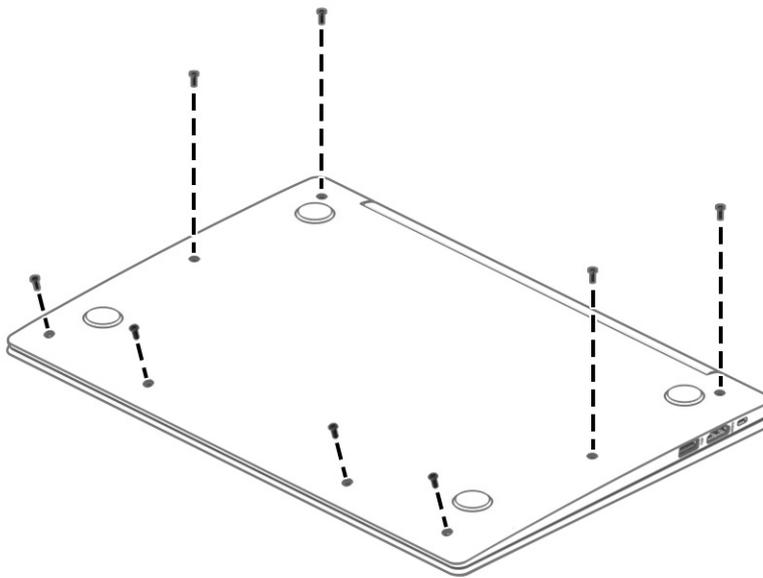
Table 6-1 Top cover with keyboard descriptions and part numbers (continued)

Description	Spare part number
Top cover with keyboard for use in Italy	P39021-061
Top cover with keyboard for use in the United Kingdom	P39021-031
Top cover with keyboard for use in the United States	P39021-001
Bottom cover	P40956-001

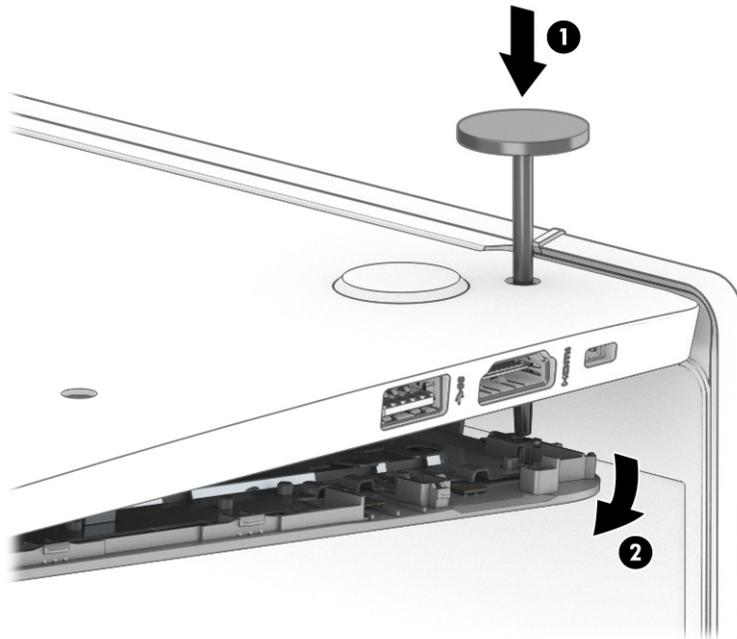
Before removing the top cover with keyboard, prepare the computer for disassembly (see [Preparation for disassembly on page 24](#)).

Remove the top cover with keyboard:

1. Close the computer and position it upside down.
2. Remove the eight Phillips M2.5 × 7.2 screws that secure the top cover to the bottom cover.

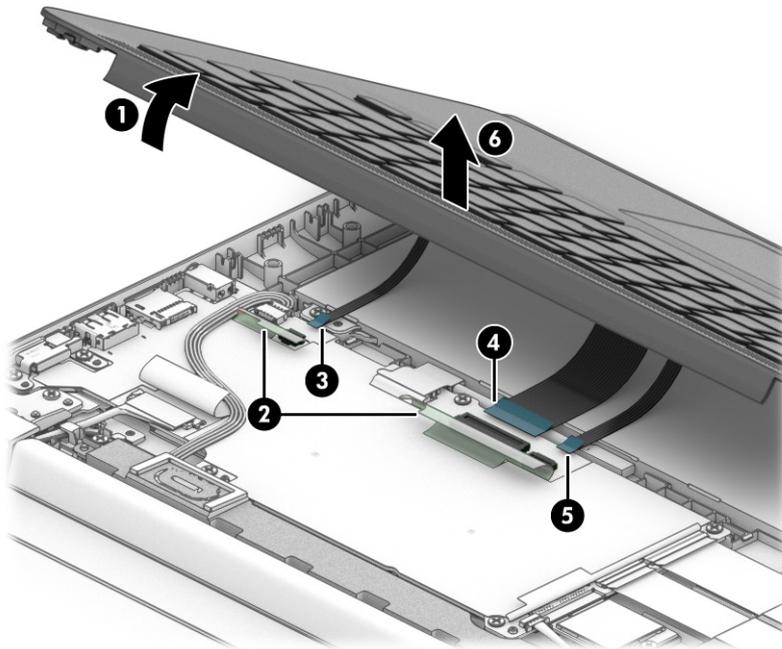


3. Use a thin plastic tool **(1)** to separate the rear edge of the top cover **(2)** from the bottom cover.



4. Position the computer right side up with the rear toward you.
5. Open the computer as far as it will open.
6. Lift the rear edge of the top cover **(1)** as far as the cables allow.
7. Release the shielding **(2)** that covers the touchpad cable zero insertion force (ZIF) connector, the keyboard cable ZIF connector, and the backlight cable ZIF connector.
8. Disconnect the touchpad cable **(3)** from the ZIF connector.
9. Disconnect the keyboard cable **(4)** from the ZIF connector.
10. Disconnect the backlight cable **(5)** from the ZIF connector.

11. Remove the top cover (6).



To replace the top cover with keyboard, reverse the removal procedures.

Touchpad cable

To remove the touchpad cable, use this procedure and illustration.

Table 6-2 Touchpad cable description and part number

Description	Spare part number
Touchpad cable (included in Cable Kit)	L90412-001

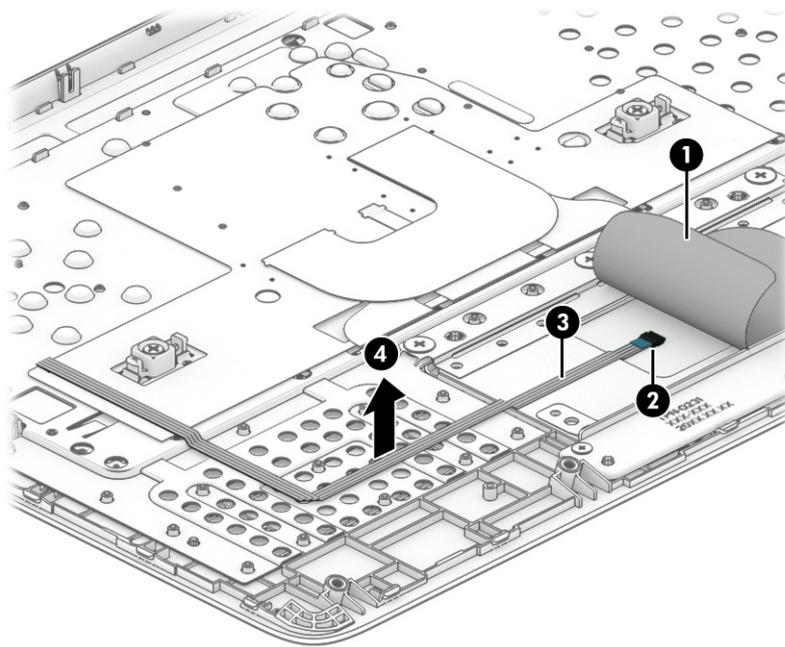
Before removing the touchpad cable, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 24](#)).
2. Remove the top cover with keyboard (see [Top cover with keyboard on page 32](#)).
3. Disconnect the battery cable from the system board (see [Removing and reinstalling the same battery on page 25](#)).

Remove the touchpad cable:

1. Turn the top cover upside down with the front toward you.
2. Release the shielding (1) that covers the touchpad cable ZIF connector.
3. Disconnect the touchpad cable from the ZIF connector (2) on the touchpad.
4. Detach the touchpad cable (3) from the top cover. The touchpad cable is attached to the top cover with double-sided adhesive.

5. Remove the touchpad cable (4).



To install the touchpad cable, reverse this procedure.

Touchpad

To remove the touchpad, use this procedure and illustration.

Table 6-3 Touchpad descriptions and part numbers

Description	Spare part number
Touchpad	P37761-001
Touchpad bracket	L90436-001

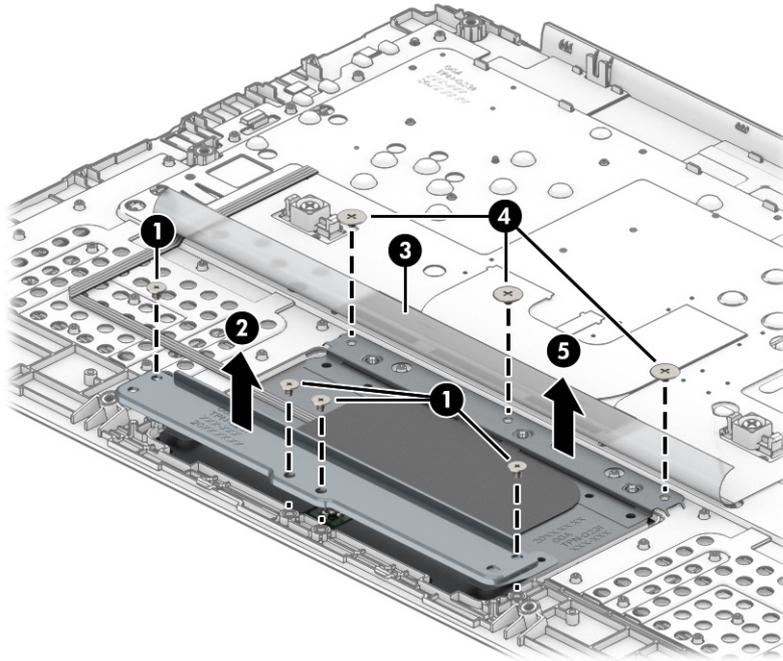
Before removing the touchpad, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 24](#)).
2. Remove the top cover with keyboard (see [Top cover with keyboard on page 32](#)).
3. Disconnect the battery cable from the system board (see [Removing and reinstalling the same battery on page 25](#)).
4. Remove the touchpad cable (see [Touchpad cable on page 35](#)).

Remove the touchpad:

1. Turn the top cover upside down with the front toward you.
2. Remove the four Phillips M2.0 × 2.9 screws (1) from the touchpad and touchpad bracket.
3. Remove the touchpad bracket (2).

4. Release the shielding **(3)** that covers the touchpad screws.
5. Remove the three Phillips M2.0 × 2.2 broad head screws **(4)** from the touchpad.
6. Remove the touchpad **(5)**.



To install the touchpad, reverse this procedure.

WLAN module

To remove the WLAN module, use this procedure and illustration.

Table 6-4 WLAN module descriptions and part numbers

Description	Spare part number
Realtek 8852BE-VT Wi-Fi 6 + Bluetooth 5.3 WW WLAN	P06350-005
Realtek 8852BE Wi-Fi 6 + Bluetooth 5.3 WW WLAN	M91238-005
WLAN module bracket	M00451-001

IMPORTANT: 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:

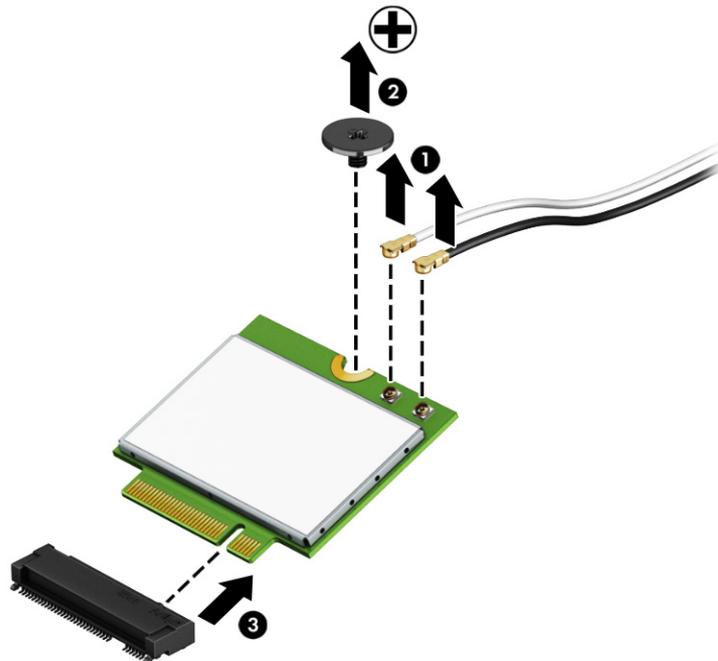
1. Prepare the computer for disassembly (see [Preparation for disassembly on page 24](#)).
2. Remove the top cover with keyboard (see [Top cover with keyboard on page 32](#)).

3. Disconnect the battery cable from the system board (see [Removing and reinstalling the same battery on page 25](#)).

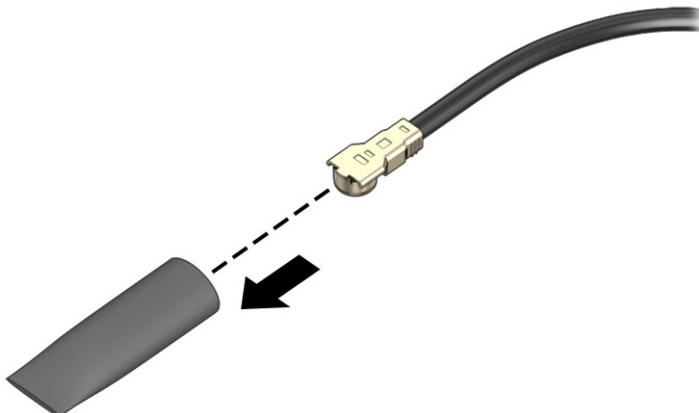
Remove the WLAN module:

1. Carefully disconnect the antenna cables (1) from the module.
2. Remove the Phillips M2.0 × 2.5 screw (2) that secures the WLAN module to the system board. The WLAN module tilts up.
3. Pull the module (3) out of the socket to remove it.

 **NOTE:** When connecting the antenna cables, be sure to match the number or letter on the cable with the appropriate connector on the module.



4. If the WLAN antenna is not connected to the terminal on the WLAN module, you must install a protective sleeve on the antenna connector, as shown in the following illustration.



To install the WLAN module, reverse this procedure.

HDMI connector board cables

To remove the HDMI connector board cables, use this procedure and illustration.

Table 6-5 HDMI connector board cables description and part number

Description	Spare part number
HDMI connector board cables (available in the Cable Kit)	L90412-001

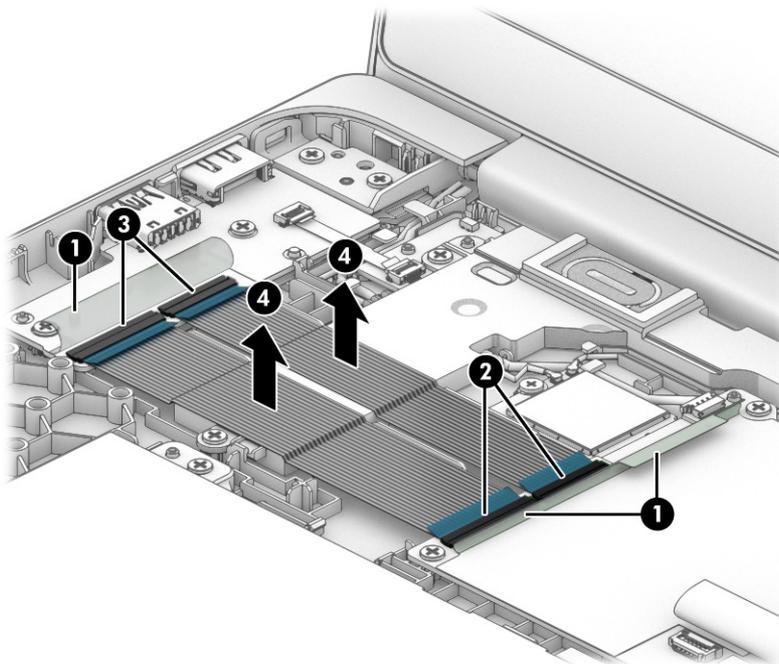
Before removing the connector board cables, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 24](#)).
2. Remove the top cover with keyboard (see [Top cover with keyboard on page 32](#)).
3. Disconnect the battery cable from the system board (see [Removing and reinstalling the same battery on page 25](#)).

Remove the HDMI connector board cables:

1. Release the shielding (1) that covers the connector board cable ZIF connectors.
2. Disconnect the connector board cables from the ZIF connectors (2) on the system board.
3. Disconnect the connector board cables from the ZIF connectors (3) on the connector board.
4. Remove the connector board cables (4).

 **NOTE:** HDMI connector board appearance might vary.



To install the HDMI connector board cables, reverse this procedure.

HDMI connector board

To remove the connector board, use these procedures and illustrations.

Table 6-6 HDMI connector board description and part number

Description	Spare part number
HDMI connector board	M47195-001

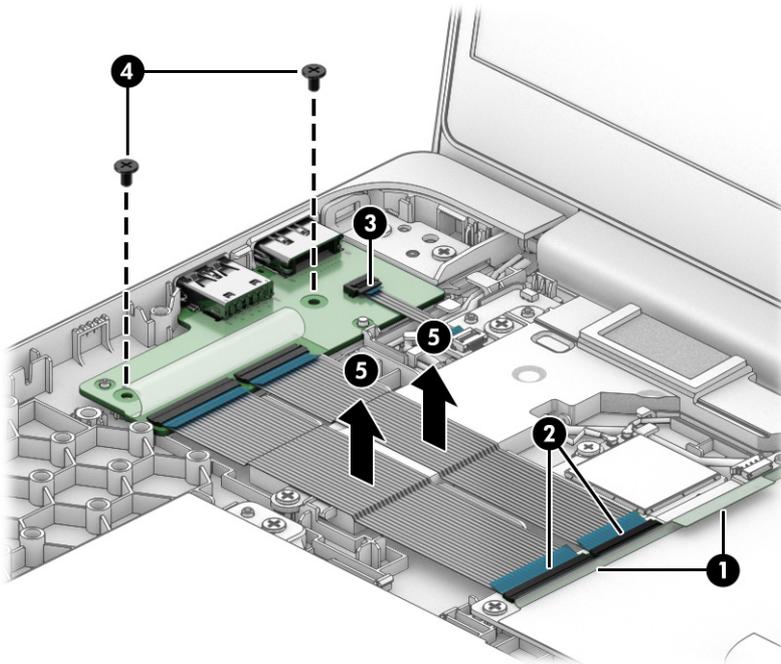
Before removing the HDMI connector board, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 24](#)).
2. Remove the top cover with keyboard (see [Top cover with keyboard on page 32](#)).
3. Disconnect the battery cable from the system board (see [Removing and reinstalling the same battery on page 25](#)).

Remove the HDMI connector board:

1. Release the shielding (1) that covers the connector board cable ZIF connectors.
2. Disconnect the connector board cables from the ZIF connectors (2) on the system board.
3. Disconnect the sensor board cable from the ZIF connector (3) on the connector board.
4. Remove the two Phillips M2.0×4.2 screws (4) that secure the connector board to the bottom cover.
5. Remove the connector board (5) and cables.

 **NOTE:** HDMI connector board appearance might vary.



To install the HDMI connector board, reverse this procedure.

Sensor board cable

To remove the sensor board cable, use this procedure and illustration.

Table 6-7 Sensor board cable description and part number

Description	Spare part number
Sensor board cable (available in the Cable Kit)	L90412-001

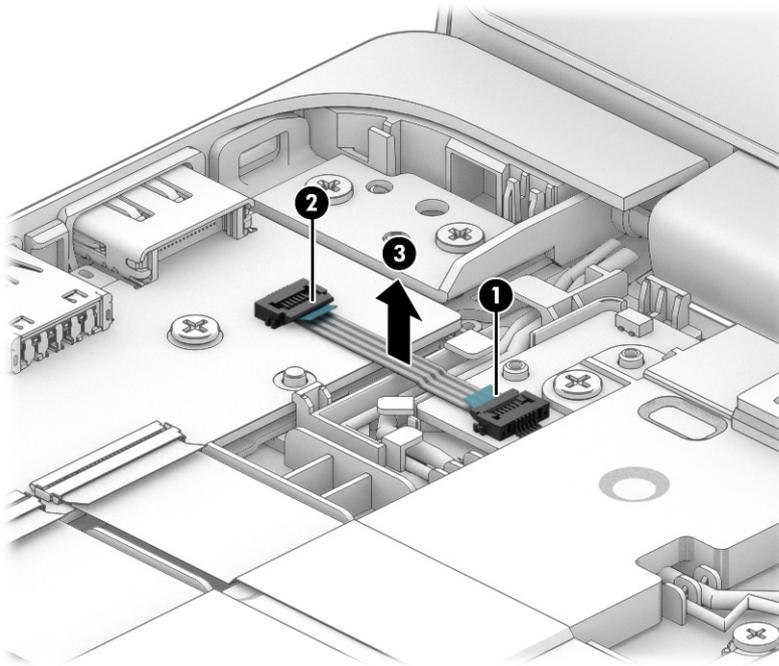
Before removing the sensor board cable, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 24](#)).
2. Remove the top cover with keyboard (see [Top cover with keyboard on page 32](#)).
3. Disconnect the battery cable from the system board (see [Removing and reinstalling the same battery on page 25](#)).

Remove the sensor board cable:

1. Disconnect the sensor board cable from the ZIF connector **(1)** on the sensor board.
2. Disconnect the sensor board cable from the ZIF connector **(2)** on the HDMI connector board.
3. Remove the sensor board cable **(3)**.

 **NOTE:** HDMI connector board appearance might vary.



To install the sensor board cable, reverse this procedure.

Speakers

To remove the speakers, use this procedure and illustration.

Table 6-8 Speakers description and part number

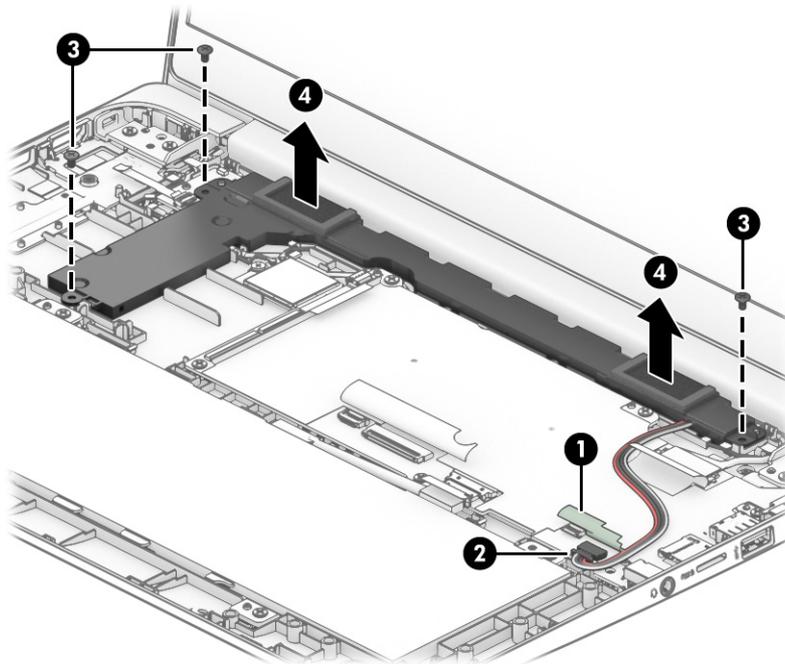
Description	Spare part number
Speakers (include left and right speakers and cables)	L90434-001

Before removing the speakers, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 24](#)).
2. Remove the top cover with keyboard (see [Top cover with keyboard on page 32](#)).
3. Disconnect the battery cable from the system board (see [Removing and reinstalling the same battery on page 25](#)).

Remove the speakers:

1. Release the shielding (1) that secures the speaker cable to the system board and covers the speaker cable connector.
2. Disconnect the speaker cable (2) from the system board.
3. Remove the three Phillips M2.0 × 4.2 screws (3) that secure the speakers to the bottom cover.
4. Remove the speakers (4).



To install the speakers, reverse this procedure.

Sensor board

To remove the sensor board, use these procedures and illustrations.

Table 6-9 Sensor board description and part number

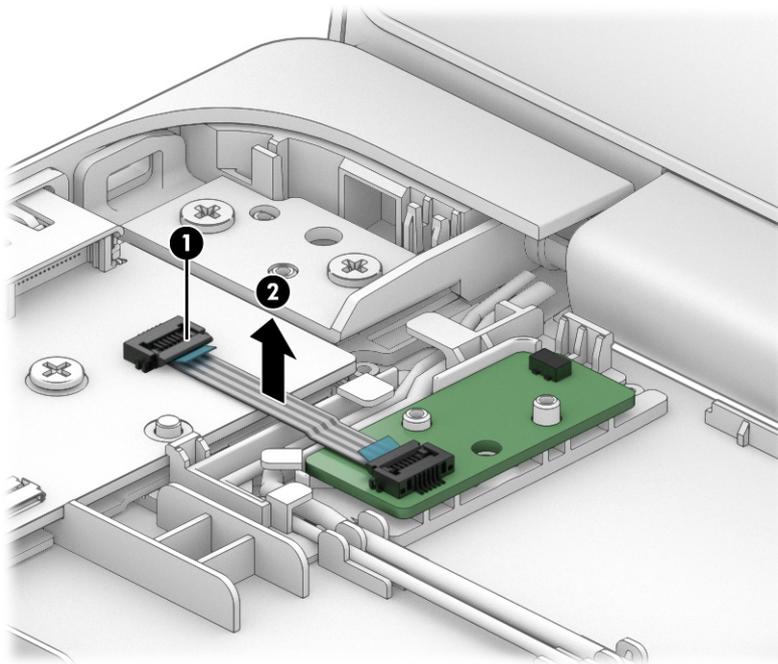
Description	Spare part number
Sensor board	M47194-001

Before removing the sensor board, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 24](#)).
2. Remove the top cover with keyboard (see [Top cover with keyboard on page 32](#)).
3. Disconnect the battery cable from the system board (see [Removing and reinstalling the same battery on page 25](#)).
4. Remove the speakers (see [Speakers on page 41](#)).

Remove the sensor board:

1. Disconnect the sensor board cable from the ZIF connector **(1)** on the HDMI connector board.
2. Remove the sensor board and cable **(2)**.



To install the sensor board, reverse this procedure.

System board

To remove the system board, use these procedures and illustrations.

Table 6-10 System board descriptions and part numbers

Description	Spare part number
System board with integrated Intel Celeron N4500 processor (includes heat sink)	P29349-001

Table 6-10 System board descriptions and part numbers (continued)

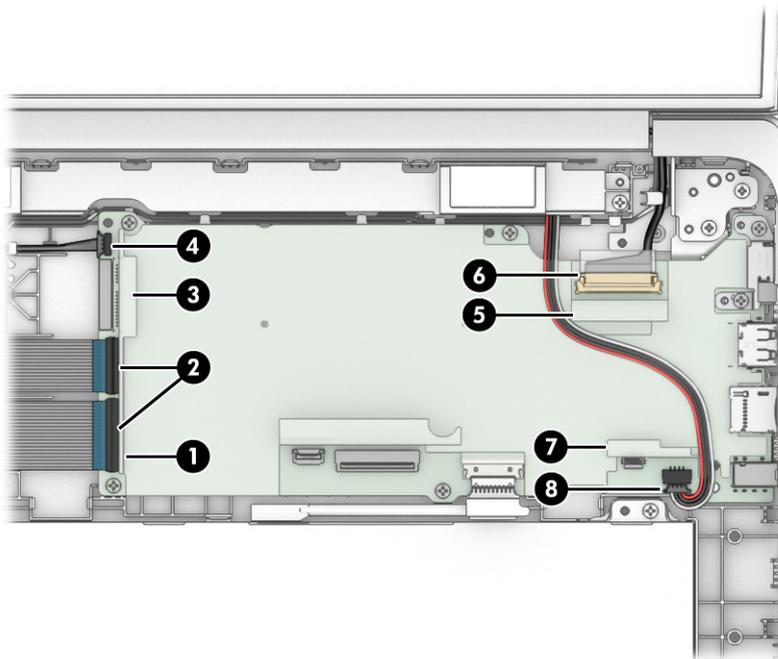
Description	Spare part number
I/O bracket	L90438-001

Before removing the system board, follow these steps:

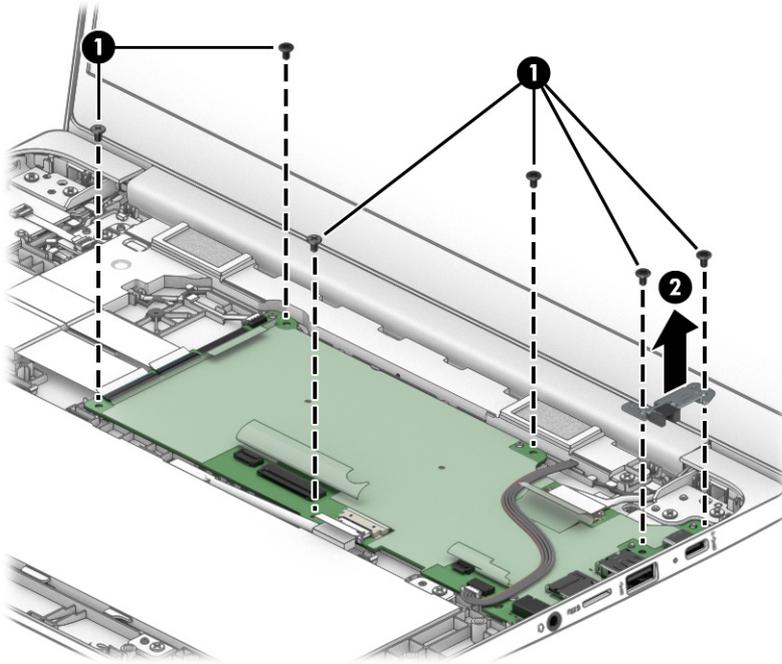
1. Prepare the computer for disassembly (see [Preparation for disassembly on page 24](#)).
2. Remove the top cover with keyboard (see [Top cover with keyboard on page 32](#)).
3. Disconnect the battery cable from the system board (see [Removing and reinstalling the same battery on page 25](#)).
4. Remove the WLAN module (see [WLAN module on page 37](#)).

Remove the system board:

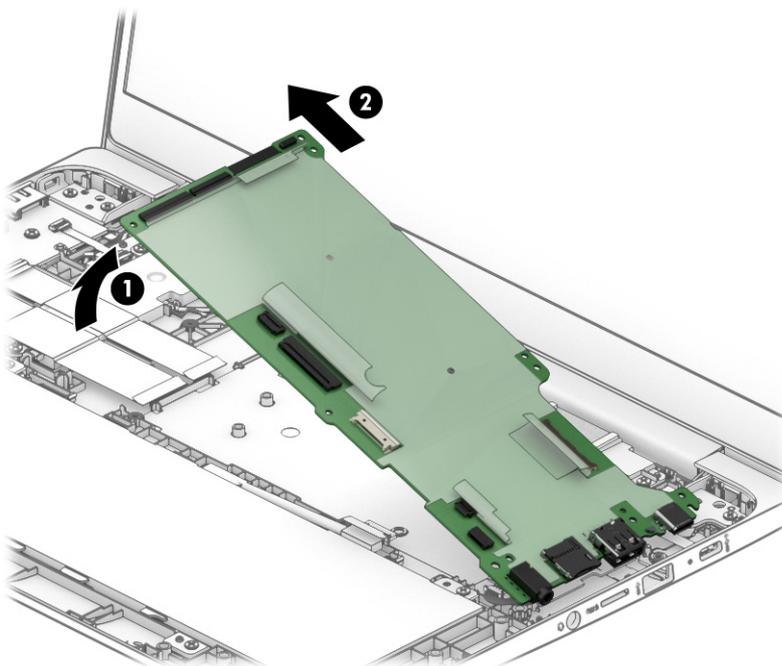
1. Release the shielding **(1)** that covers the connector board cable ZIF connectors.
2. Disconnect the connector board cables from the ZIF connectors **(2)** on the system board.
3. Release the shielding **(3)** that covers the camera cable connector.
4. Disconnect the camera cable **(4)** from the system board.
5. Release the shielding **(5)** that covers the display panel cable connector.
6. Disconnect the display panel cable **(6)** from the system board.
7. Release the shielding **(7)** that covers the speaker cable connector.
8. Disconnect the speaker cable **(8)** from the system board.



9. Remove the six Phillips M2.0 × 4.2 screws (1) that secure the system board to the bottom cover.
10. Remove the I/O bracket (2).



11. Lift the left side the system board (1) until it rests at an angle.
12. Remove the system board (2) by lifting it up and to the left at an angle.



To install the system board, reverse this procedure.

Display assembly

To remove and disassemble the display assembly, use these procedures and illustrations.

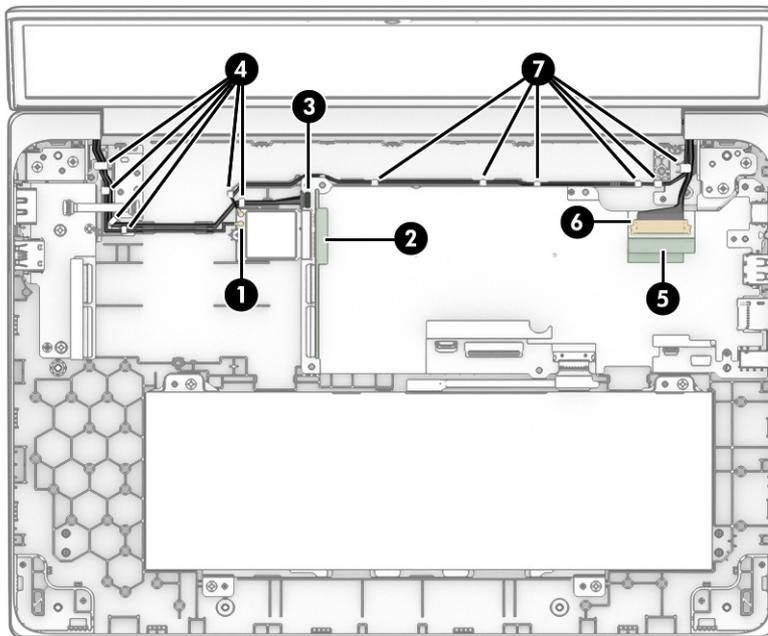
 **NOTE:** The display assembly is spared at the subcomponent level only.

Before removing the display assembly, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 24](#)).
2. Remove the top cover with keyboard (see [Top cover with keyboard on page 32](#)).
3. Disconnect the battery cable from the system board (see [Removing and reinstalling the same battery on page 25](#)).

Remove the display assembly:

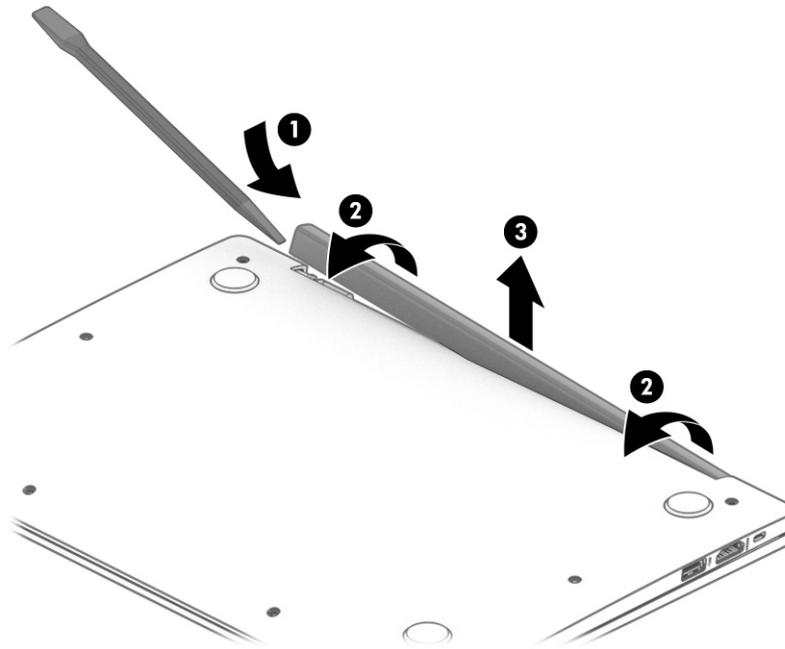
1. Disconnect the WLAN antenna cables **(1)** from the terminals on the WLAN module.
2. Release the shielding **(2)** that covers the camera cable connector.
3. Disconnect the camera cable **(3)** from the system board.
4. Release the wireless antenna cable and the camera cable from the retention clips **(4)** built into the bottom cover.
5. Release the shielding **(5)** that covers the display panel cable connector.
6. Disconnect the display panel cable **(6)** from the system board.
7. Release the wireless antenna cable and the display panel cable from the retention clips **(7)** and routing channel built into the bottom cover.



8. To remove the hinge cover:

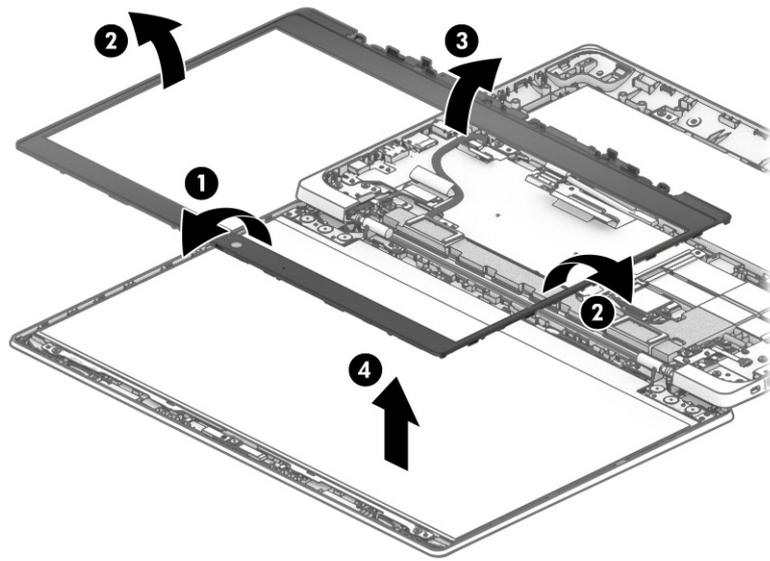
- a. Close the computer.
- b. Turn the computer upside down with the front toward you.
- c. Use a case utility tool **(1)** or similar thin, plastic tool to separate the left and right edges **(2)** of the hinge cover from the display assembly.
- d. Remove the hinge cover **(3)**.

The hinge cover is available using spare part number N18217-001.



9. To remove the display bezel:
 - a. Turn the computer right-side up with the rear toward you.
 - b. Open the computer as far as it will open.
 - c. Release the top edge of the display bezel **(1)** from the display assembly.
 - d. Release the left and right edges of the display bezel **(2)** from the display assembly.
 - e. Release the bottom edge of the display bezel **(3)** from the display assembly.
 - f. Remove the display bezel **(4)**.

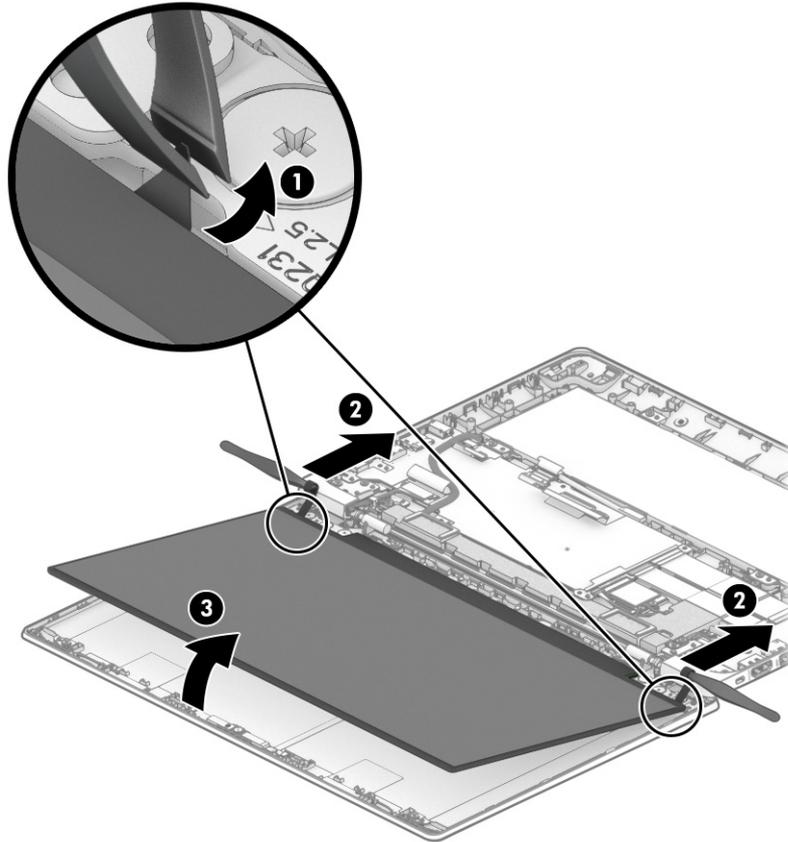
The display bezel is available using spare part number M01026-001. Display bezel adhesive is available as spare part number M47411-001.



10. To remove the display panel:

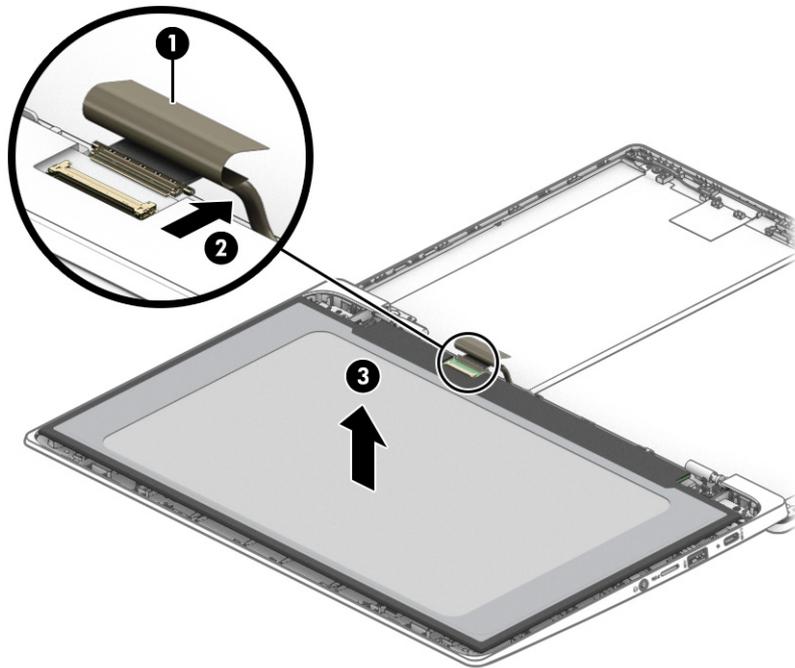
- a. The display panel is secured to the display enclosure with tape that is installed under the left and right sides of the panel. To remove the panel, use tweezers to grasp the end of the tape (1). While turning the tweezers, wrap the tape around the tweezers as you continue to pull the tape out from behind the display panel (2). You must pull the tape multiple times before it is completely removed.

- b. Swing the top edge **(3)** of the display panel up and forward until the display panel cable is accessible.



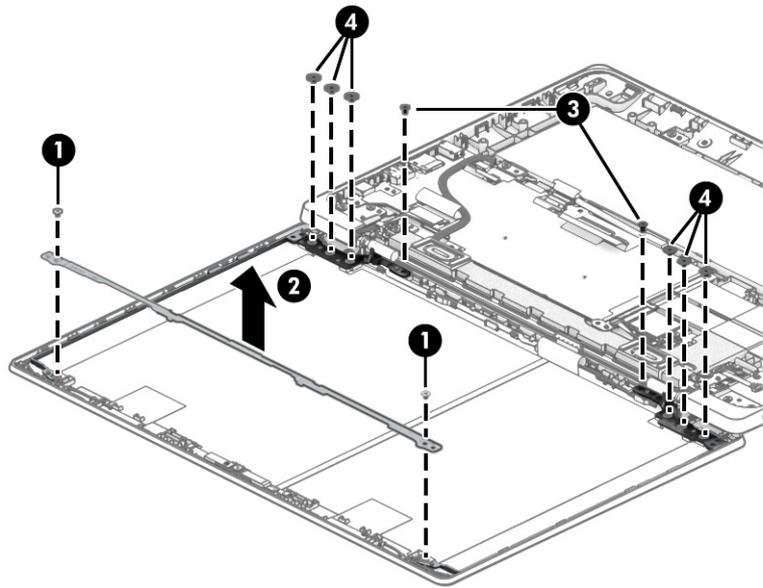
- c. Release the adhesive support strip **(1)** that secures the display panel cable connector to the display panel.
- d. Disconnect the display panel cable **(2)** from the display panel.
- e. Remove the display panel **(3)**.

The display panel is available using spare part number N18668-001. Display back cover adhesive is available as spare part number M47411-001.



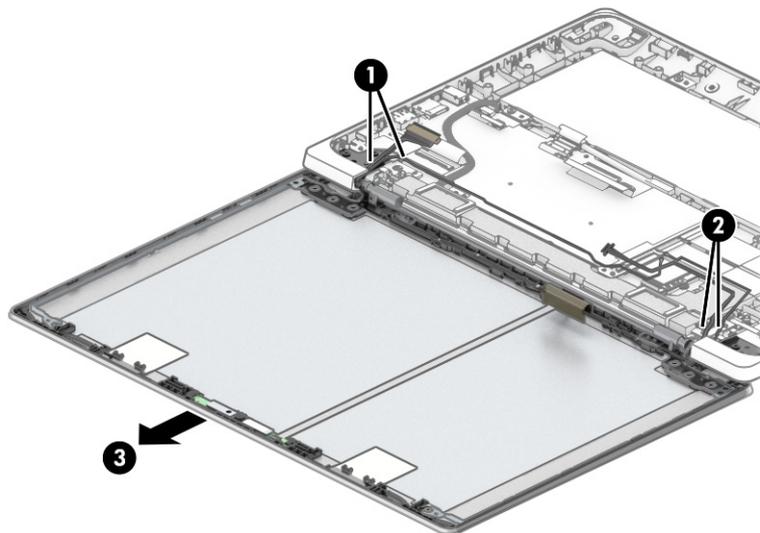
11. To remove the display back cover:
 - a. Remove the two Phillips M2.0 × 2.5 screws **(1)** that secure the display bracket to the display back cover.
 - b. Remove the display bracket **(2)** from the display back cover. The display bracket is available using spare part number L90417-001.
 - c. Remove the two Phillips M2.0 × 3.8 screws **(3)** that secure the display back cover to the display hinges.

- d. Remove the six Phillips M2.5 × 3.0 broad head screws (4) that secure the display back cover to the display hinges.



- e. Release the display panel cable and the wireless antenna cable (1) from the routing channel in the right display hinge area.
- f. Release the camera cable and the wireless antenna cable (2) from the routing channel in the left display hinge area.
- g. Remove the display back cover (3) by sliding it away from the bottom cover.

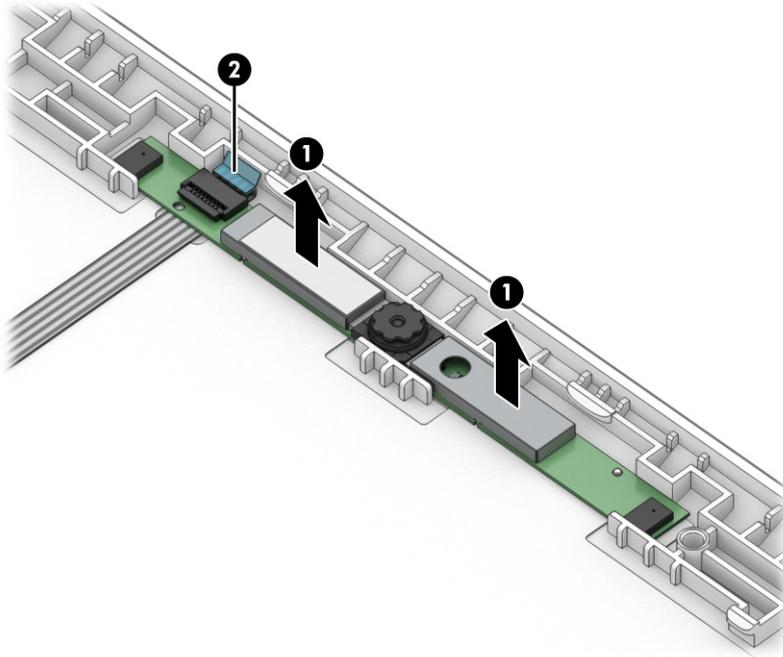
The display back cover is available using spare part number N18211-001.



- 12. To remove the camera:

- a. Detach the camera **(1)** from the display back cover. The camera is attached with double-sided adhesive.
- b. Disconnect the camera cable from the ZIF connector **(2)** on the camera.

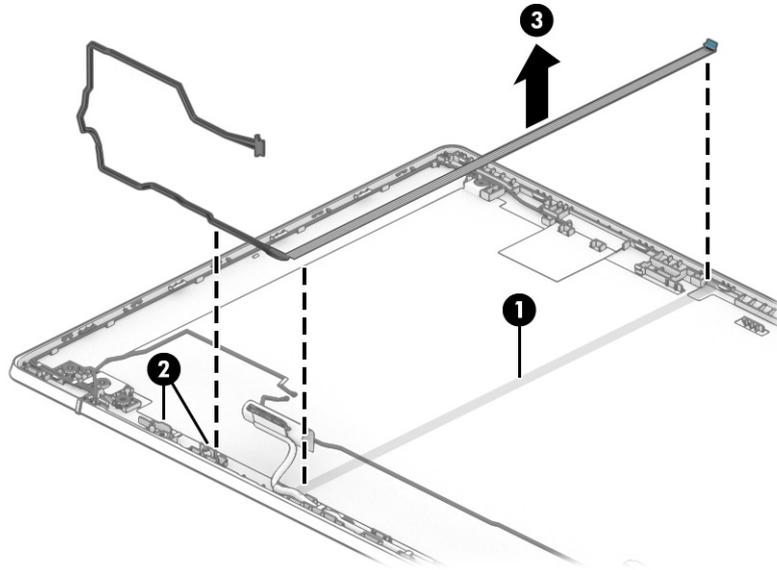
The camera is available as spare part number L90439-001.



13. To remove the camera cable:

- a. Peel the camera cable from its routing location **(1)** on the inside of the display back cover. The camera cable is attached with double-sided adhesive.
- b. Release the camera cable from the retaining clips **(2)** built into the left hinge area of the display back cover.
- c. Remove the camera cable **(3)**.

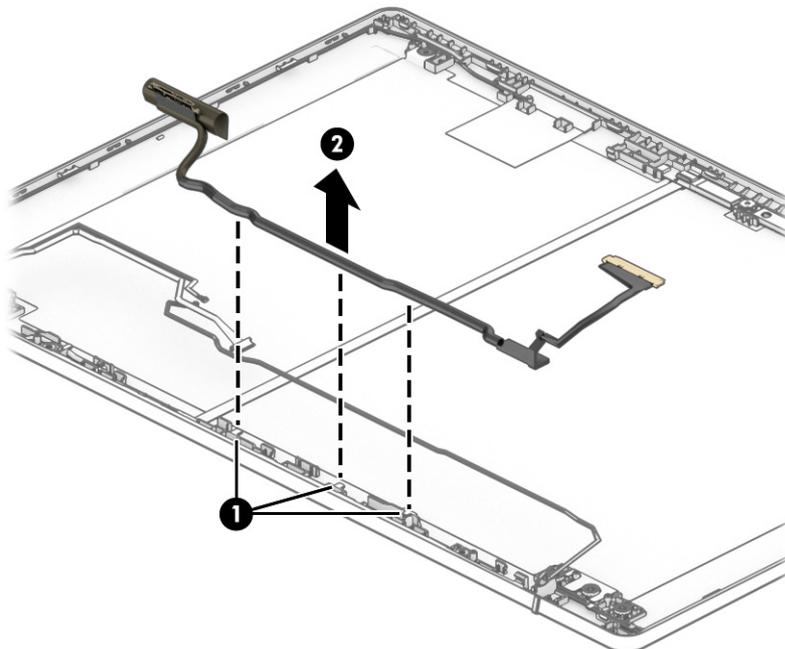
The camera cable is included in the Cable Kit, spare part number L90412-001.



14. To remove the display cable:

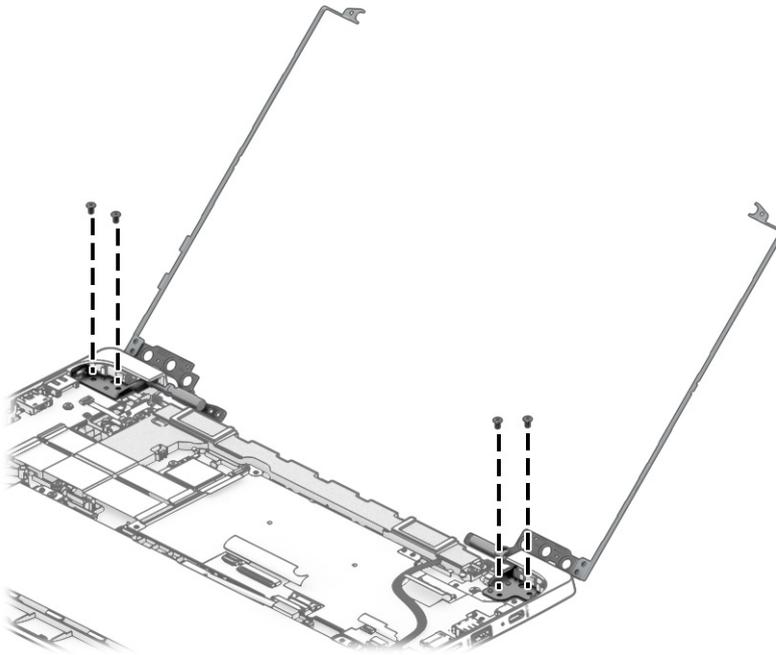
- a. Release the display panel cable from the retaining clips (1) built into the bottom edge of the display back cover.
- b. Remove the display panel cable (2).

The display panel cable is available using spare part number M76003-001.

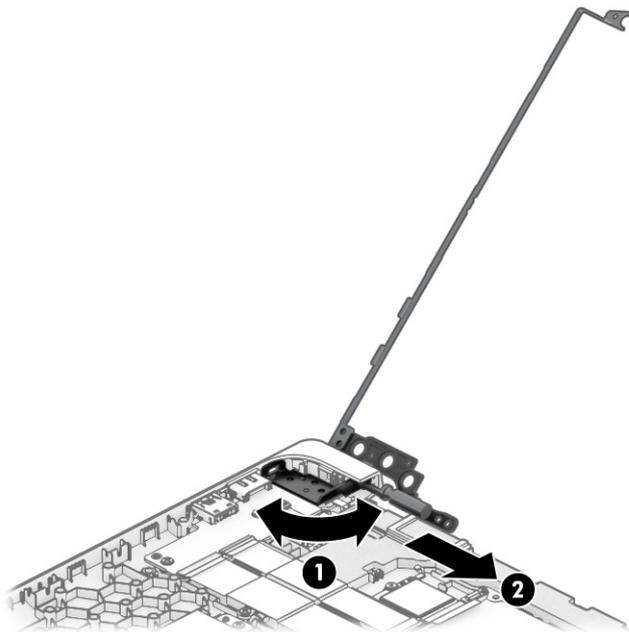


15. To remove the hinges from the display rear cover:

- a. Remove the four Phillips M2.5 × 4.7 screws that secure the display hinges to the bottom cover.

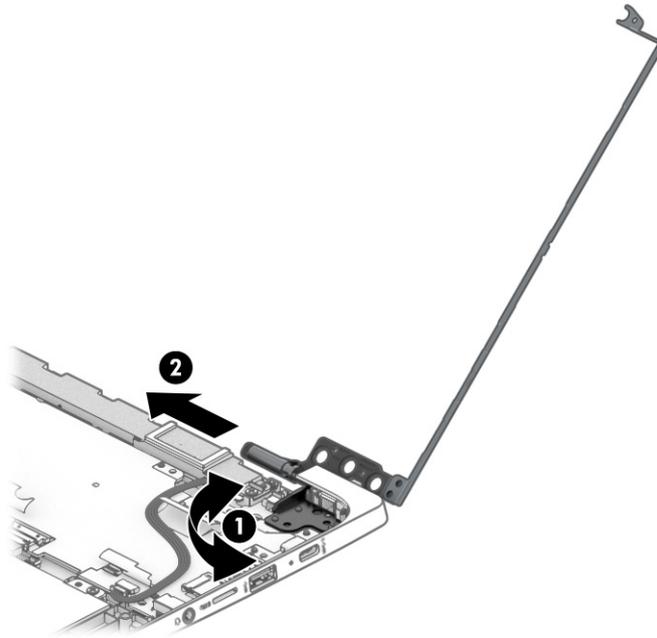


- b. Rock the left hinge (1) back and forth until it releases from the bottom cover.
c. Remove the left hinge (2).



- d. Rock the right hinge (1) back and forth until it releases from the bottom cover.

- e. Remove the right hinge (2).



The hinges are available using spare part number M76003-001.

To reassemble and replace the display assembly, reverse this procedure.

7 Backing up, resetting, and recovering

This chapter provides information about the standard procedures of backing up your personal data, resetting your computer to original factory conditions, and recovering your operating system.

Backing up

You can back up your data to an optional USB flash drive or SD memory card or through Google Drive™.

For detailed information about creating a backup, go to <http://www.support.google.com>.

Resetting

A factory reset erases the information on your computer hard drive, including files in the Downloads folder. Before you reset, back up your files to an optional USB flash drive, to an SD memory card, or through Google Drive. The factory reset will not delete your files at these locations.

You might want to reset your computer in the following circumstances:

- You see the message "Reset this Chrome device."
- You are having problems with your user profile or settings.
- You restarted your computer, and it still doesn't work properly.
- You want to change the owner of your computer.

To reset your computer:

1. Under the **Settings** menu, select **Advanced**.
2. In the **Powerwash** section, select **Powerwash**.
3. Select **Restart**.
4. In the window that opens, select **Powerwash**, and then select **Continue**.
5. Follow the on-screen instructions to reset your computer, and sign in with your Google Account.



NOTE: The account you sign in with after you reset your computer is recognized as the owner account.

6. After you complete the reset, you can set up your computer and check to see whether the problem is fixed.

Recovering

When your ChromeOS™ doesn't work properly, you can perform a recovery. A recovery reinstalls the operating system, software programs, and original factory settings. It deletes locally saved files and

saved networks for all accounts. A system recovery does not affect Google Accounts and data synced to Google Drive.

 **IMPORTANT:** Recovery permanently erases everything on your computer hard drive, including your downloaded files. If possible, back up your files before you recover your computer.

 **NOTE:** For more information about performing a system recovery on your computer, go to <http://www.support.google.com>.

Before you begin the recovery process, you need the following prerequisites:

- A USB flash drive or SD memory card with a capacity of 4 GB or greater. All data is erased from this storage device when the recovery media is created, so back up all files from the device before you begin.
- A computer with internet access. You must also have administrative rights to the computer.
- A computer AC adapter. The computer must be plugged into AC power during recovery.
- The “ChromeOS is missing or damaged” screen displaying on your computer. If this message is not already displayed:
 - Turn on the computer, press and hold the **esc+f3** keys, and then press the power button. The computer restarts, and the screen shows the “ChromeOS is missing or damaged” screen.

Option 1: Recovering using an internet connection

Use these instructions to recover the Chrome operating system on your computer without recovery media:

1. Disconnect any external devices connected to your computer, plug in the power cord, and then turn on the computer.
2. To enter recovery mode, press and hold the **esc+f3** keys, and then press the power button. When the “ChromeOS is missing or damaged” screen appears, select **Recover using internet connection** and follow the on-screen instructions.

 **NOTE:** The computer must have internet access.

3. When the “System Recovery is complete” message appears, reboot your computer.

The computer restarts with ChromeOS reinstalled.

Option 2: Installing the Chromebook Recovery Utility

The Chromebook™ Recovery Utility recovers the original operating system and software programs that were installed at the factory. You can install this utility from the Chrome Web Store on any computer.

 **NOTE:** Use this option if you do not have Internet access on your computer.

To install the Chromebook Recovery Utility:

- Open the Chrome Web Store, search for `chrome recovery`, select **Chromebook Recovery Utility** from the Apps list, and follow the on-screen instructions.

Creating recovery media

You can use recovery media to recover the original operating system and software programs that were installed at the factory.

To create recovery media:

1. Turn on a computer that has internet access.

 **NOTE:** You must have administrative rights to the computer.

2. Select the **Launcher** icon, and then select **All Apps**.
3. In the Apps window, select **Recovery**, and then select **Get started**.
4. Follow the on-screen instructions to create the recovery media.

 **NOTE:** All data and partitions on your recovery media will be deleted. Do not remove the USB flash drive or SD memory card until the process is complete.

Recovering the Chrome operating system with recovery media

Use these instructions to recover the Chrome operating system on your computer using the recovery media that you created.

1. Disconnect any external devices connected to your computer, plug in the power cord, and then turn on the computer.
2. To enter recovery mode, press and hold **esc+f3**, and then press the power button. When the “ChromeOS is missing or damaged” screen appears, insert the recovery media into your computer. The recovery process begins immediately.
3. Wait while Chrome verifies the integrity of the recovery media.

 **NOTE:** If you need to cancel the recovery during the verification process, press and hold the power button until the computer turns off. Do not disrupt the system recovery process after the verification step is complete.

 **NOTE:** If an error message is displayed, you might need to run the Chrome Recovery Utility again or use a different USB flash drive or SD memory card.

4. When the “System Recovery is complete” message appears, remove the recovery media.

The computer restarts with ChromeOS reinstalled.

Setting up your computer after a reset or recovery

After a reset or recovery is complete, perform the initial setup process.

For details about setting up the computer, go to <http://www.support.google.com>.

Erasing and reformatting the recovery media

When you create recovery media, the USB flash drive or SD memory card is formatted as a recovery tool. After recovery, you must erase the recovery media to reuse your storage device. Follow these steps to use the Chromebook Recovery Utility to erase the recovery media.

1. Select the **Launcher** icon, and then select **All Apps**.
2. In the apps window, select **Recovery**.
3. Select the **Settings** icon, and then select **Erase recovery media**.
4. Select the USB flash drive or SD memory card that you inserted, select **Continue**, and then select **Erase now**.
5. After the recovery media is erased, select **Done** to close the Chromebook Recovery Utility, and then remove the USB flash drive or SD memory card.

The media is ready to be formatted using a formatting tool provided by your operating system.

8 Specifications

This chapter provides specifications for your computer system.

Computer specifications

This section provides specifications for your computer. When traveling with your computer, the computer dimensions and weights, input power ratings, and operating specifications provide helpful information.

Table 8-1 Computer specifications

	Metric	U.S.
Dimensions		
Width	327.0 mm	12.9 in
Depth	227.0 mm	8.9 in
Height	18.4 mm	0.7 in
Weight		
	1520 g	3.4 lb
Input power		
Operating voltage and current	45 W USB-C	
	5 V DC @ 3 A	
	9 V DC @ 3 A	
	10 V DC @ 3.75 A	
	12 V DC @ 3.75 A	
	15 V DC @ 3 A	
	20 V DC @ 2.25 A	
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.

35.6 cm (14.0 in) display specifications

This section provides specifications for your display.

Table 8-2 Display specifications

	Metric	U.S.
Active diagonal size	35.6 cm	14.0 in
Resolution	1366 × 768 (HD)	
Surface treatment	Antiglare	
Brightness	250 nits	
Viewing angle	SVA	
Backlight	WLED	
Display panel interface	eDP	

9 Power cord set requirements

This chapter provides power cord requirements for countries and regions.

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

The three-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

These power cord 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 V AC 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

To determine power cord requirements for specific countries and regions, use this table.

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

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

Country/region	Accredited agency	Applicable note number
Germany	VDE	1
India	BIS	1
Israel	SII	1
Italy	IMQ	1
Japan	JIS	3
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
United Kingdom	ASTA	1
United States	UL	2

1. The flexible cord must be Type HO5VV-F, three-conductor, 0.75 mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.
2. The flexible cord must be Type SVT/SJT or equivalent, No. 18 AWG, three-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, three-conductor, 0.75 mm² or 1.25 mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V AC) configuration.
4. The flexible cord must be Type RVV, three-conductor, 0.75 mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the CCC certification mark.
5. The flexible cord must be Type H05VV-F three-conductor, 0.75 mm² conductor size. KTL logo and individual approval number must be on each element. Approval number and logo must be printed on a flag label.
6. The flexible cord must be Type HVCTF three-conductor, 1.25 mm² conductor size. Power cord set fittings (appliance coupler, cable, and wall plug) must bear the BSMI certification mark.

7. For 127 V AC, the flexible cord must be Type SVT or SJT 3-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 three-conductor, 0.75 mm² or 1.00 mm² conductor size, with plug BS 1363/A with BSI or ASTA marks.

10 Swelling or deformation of notebook battery

To protect your hardware from potential damage, HP recommends that if you are experiencing battery swelling, stop using the notebook until you can replace the battery.

You can contact HP to understand what battery replacement options are available. To learn more about Lithium-ion batteries and the factors that can accelerate battery swelling, see https://support.hp.com/us-en/document/ish_6824662-6824706-16.

Swollen notebook batteries

You might notice that your notebook battery has become somewhat deformed or swollen over time. In some cases, the battery swelling might be significant enough to impact other components of the system including the touchpad, keyboard, and chassis.

Swollen battery is not a safety issue

A swollen battery does not present a safety issue. It is the result of the generation of gases per the normal degradation of the battery cell over time.

HP has worked closely with our battery cell suppliers and third-party industry experts to help minimize the potential for HP batteries to swell over time and to identify that swollen batteries are not a safety issue.

Discontinue using a swollen battery

To protect your hardware from potential damage, HP recommends that, if you are experiencing battery swelling, you stop using the notebook until the battery can be replaced.

You can contact <https://www.hp.com/go/contacthp> to understand what battery replacement options are available.

Replace a swollen battery

If a battery is under warranty, HP will replace the battery per the terms and conditions of the HP Worldwide Limited Warranty or applicable HP Care Packs.

For batteries no longer under warranty, contact HP to purchase a genuine HP replacement battery.

Minimize battery swelling

Multiple factors can accelerate battery swelling.

To help mitigate battery swelling over time, you can use either HP Adaptive Battery Optimizer (consumer notebooks) or HP Battery Health Manager (commercial notebooks) settings to improve battery longevity and performance for various use scenarios.

HP Adaptive Battery Optimizer (consumer notebooks)

HP Adaptive Battery Optimizer technology can help mitigate the factors that cause the battery to swell. It is available on select HP OMEN, HP Spectre, HP Pavilion, and HP ENVY notebook computers.

HP Adaptive Battery Optimizer has been available on select gaming notebooks since 2019 and select consumer notebooks since 2020. To learn more about enabling HP Adaptive Battery Optimizer on your HP notebook, see <https://support.hp.com/us-en/document/c06310986>.

HP Battery Health Manager (commercial notebooks)

HP Battery Health Manager provides an easy-to-manage solution to help mitigate factors that cause the battery to swell. It is available on select HP ProBook and HP EliteBook notebook computers.

HP Battery Health Manager is available on select commercial notebooks manufactured since 2016. To learn more about HP Battery Health Manager, see https://support.hp.com/us-en/document/ish_4449597-3519507-16.

11 Recycling

When a nonrechargeable 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 website at <http://www.hp.com/recycle>.

Index

- A**
 - AC adapters, spare part numbers 13
 - action keys
 - identifying 8
 - audio-in (microphone) jack, identifying 3
 - audio-out (headphone) jack, identifying 3
 - audio, product description 1
- B**
 - backing up 56
 - battery
 - illustrated 12
 - spare part number 12
 - battery light 4
 - battery swelling 65
 - Bluetooth label 9
 - bottom cover
 - illustrated 12
 - spare part number 12
- C**
 - camera 6
 - identifying 6
 - illustrated 13
 - spare part number 13
 - camera light, identifying 6
 - camera privacy cover, identifying 6
 - caring for your computer 19
 - cautions
 - electrostatic discharge 15, 16
 - Chromebook Recovery Utility, installing 57
 - cleaning your computer 19
 - caring for wood veneer 21
 - disinfecting 20
 - HP Easy Clean 19
 - removing dirt and debris 19
 - components
 - display 5
 - keyboard area 6
 - left side 4
 - right side 3
 - computer major components 11
 - computer specifications 60
 - connector, power 4
- D**
 - display
 - specifications 60, 61
 - display assembly
 - subcomponents 12
 - display back cover
 - illustrated 13
 - spare part number 13
 - display bezel
 - illustrated 13
 - spare part number 13
 - display cable
 - illustrated 13
 - spare part number 13
 - display panel
 - illustrated 13
 - product description 1
 - spare part number 13
- E**
 - electrostatic discharge (ESD) 15, 16
 - preventing damage 15-17
 - esc key, identifying 8
- G**
 - graphics, product description 1
 - grounding methods 15-17
 - guidelines
 - packaging 15, 21
 - transporting 15, 21
 - workstation 15
- H**
 - hard drive
 - product description 1
 - specifications 60
 - HDMI connector board
 - removal 40
 - spare part numbers 40
 - HDMI connector board cables
 - removal 39
 - spare part numbers 39
 - HDMI port, identifying 5
 - headphone (audio-out) jack 3
 - hinge
 - illustrated 13
 - spare part number 13
 - hinge cover
 - illustrated 13
 - spare part number 13
- I**
 - I/O bracket
 - illustrated 12
 - spare part number 12
 - illustrated parts catalog 11
 - internal microphones, identifying 5
- J**
 - jacks
 - audio-in (microphone) 3
 - audio-out (headphone) 3
- K**
 - keyboard
 - product description 2
 - keys
 - esc 8
 - power 8
- L**
 - labels
 - Bluetooth 9
 - regulatory 9
 - serial number 9
 - service 9
 - wireless certification 9
 - WLAN 9
 - lights
 - AC adapter and battery 4
 - battery 4
 - camera 6
- M**
 - memory module
 - product description 1
 - microphone
 - product description 1

- microphone (audio-in) jack, identifying 3
- model name 1
- O**
- operating system, product description 2
- P**
- packaging guidelines 15, 21
- pointing device, product description 2
- ports
 - HDMI 5
 - product description 1
 - USB 5 Gbps 3, 5
 - USB Type-C power connector and 10 Gbps port 4
- power connector
 - identifying USB Type-C 4
- power cord
 - requirements for all countries 62
 - requirements for specific countries and regions 62
 - set requirements 62
- power cords, spare part numbers 13
- power key, identifying 8
- power requirements, product description 2
- primary storage
 - product description 1
- processor
 - product description 1
- product description
 - audio 1
 - display panel 1
 - graphics 1
 - hard drive 1
 - keyboard 2
 - memory module 1
 - microphone 1
 - operating system 2
 - pointing device 2
 - ports 1
 - power requirements 2
 - primary storage 1
 - processors 1
 - product name 1
 - security 2
 - serviceability 2
 - solid-state drive 1
 - video 1
 - wireless 1
- product name 1
- product name and number, computer 9
- R**
- recovery media
 - creating 58
 - erase 59
- recovery, performing 56
- regulatory information
 - regulatory label 9
 - wireless certification labels 9
- removal and replacement
 - procedures 24, 32
- resetting 56
- S**
- Screw Kit, spare part number 13
- security cable slot, identifying 4
- security, product description 2
- sensor board
 - removal 42
 - spare part numbers 42
- sensor board cable
 - removal 41
 - spare part numbers 41
- serial number, computer 9
- service labels, locating 9
- serviceability, product description 2
- slots
 - security cable 4
- solid-state drive
 - product description 1
- speaker
 - illustrated 12
 - removal 41
 - spare part number 12
 - spare part numbers 41
- speakers, identifying 7
- specifications
 - computer 60
 - display 60, 61
 - hard drive 60
- static electricity 15, 16
- support information 21
- swelling or deformation of notebook battery 65
- system board
 - illustrated 12
 - removal 43
 - spare part number 12
 - spare part numbers 43
- system recovery
 - Chrome operating system 58
 - Chromebook Recovery Utility 57
 - internet connection 57
 - recovery media 58
- T**
- top cover with keyboard
 - illustrated 12
 - removal 32
 - spare part number 12, 32
- touchpad
 - illustrated 12
 - removal 36
 - spare part number 12
 - spare part numbers 36
- touchpad cable
 - removal 35
 - spare part numbers 35
- touchpad zone, identifying 6
- transporting guidelines 15, 21
- traveling with the computer 9
- U**
- USB 5 Gbps port, identifying 3, 5
- USB Type-C power connector and 10 Gbps port, identifying 4
- V**
- video, product description 1
- W**
- wireless certification label 9
- wireless, product description 1
- WLAN antennas, identifying 5
- WLAN device 9
- WLAN label 9
- WLAN module
 - removal 37
 - spare part numbers 37
- workstation guidelines 15