Maintenance and Service Guide

SUMMARY

This guide provides information about spare parts, removal and replacement of parts, security, backing up, and more.

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Product notice

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

To access the latest user guides, go to http://www.hp.com/support, and follow the instructions to find your product. Then select **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 comply with the user-accessible surface temperature limits defined by applicable safety standards.

Table of contents

1 Product description

This table provides detailed product information.

Table 1-1 Product components and their descriptions

Category	Description
Product Name	HP Chromebook x360 14a
	Model number: 14a-ca0xxx
	CTO model number: 14at-ca000
Processors	Intel® Pentium™ Silver N5030 (1.1 GHz [turbo up to 3.1 GHz] processor (quad core, 2400 MHz front side bus (FSB), 4 MB L2 cache, 6 W)
	Intel Pentium N5000 1.1 GHz (turbo up to 2.7 GHz) processor (quad core, 2400 MHz FSB, 4 MB L2 cache, 6 W)
	Intel Celeron™ N4020 1.1 GHz (turbo up to 2.8 GHz) processor (dual core, 2400 MHz FSB, 4 MB L2 cache, 6 W)
	Intel Celeron N4000 1.1 GHz (turbo up to 2.6 GHz) processor (dual core, 2400 MHz FSB, 4 MB L2 cache, 6 W)
Chipset	Intel integrated soldered on circuit (SoC)
Graphics	**Internal graphics:**
	Intel UHD Graphics 605 on computer models equipped with an Intel Pentium processor
	Intel UHD Graphics 600 on computer models equipped with an Intel Celeron processor
Display	35.6 cm (14.0 in), liquid crystal display (LCD), full high-defintion (FHD) (1920×1080) antiglare, white light-emitting diode (WLED), UWVA, 45% NTSC, eDP, slim, touchscreen display with narrow bezel; typical brightness: 250 nits
	35.6 cm (14.0 in), LCD, high-defintion (HD) (1366×768) BrightView, WLED, SVA, 45% NTSC, slim, touchscreen display with narrow bezel; typical brightness: 220 nits
Memory	LPDDR4-2400, 1.1 V dual-channel support
	Support for 8 GB (512 MB × 32 MB × 4 pieces) and 4 GB (256 MB × 32 MB × 4 pieces) configurations
Primary storage	Embedded multimedia controller (eMMC) 128 GB and 64 GB MMC v5.0
	eMMC 32 GB MO-276 MMC v5.0
Audio and video	Dual speakers
	HP HD camera: 1-piece, fixed, integrated into display assembly
	720p by 30 frames per second
	Dual digital microphones with appropriate echo-cancellation, noise-suppression software
	Google Assistant support

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

Category	Description
Wireless	**Wireless Local Area Network (WLAN)**
	Intel 9560 ac 2×2 MU-MIMO + Bluetooth® 5 M.2 non-vPro® CNVi WW with 2 antennas
	Realtek RTL8822CE ac 2×2 + Bluetooth 5.0 M.2 2230 WW
Media card reader	Supports HP MultiFormat microSD™ media card reader
	Push-push insertion/removal
Ports	Audio-out (headphone)/audio-in (microphone) combo jack
	USB 3.2 Generation 1 Type–A
	USB 3.2 Generation 1 Type–C® (2)
Keyboard/pointing devices	Standard, island-style, notebook, backlit keyboard in ceramic white finish (3-coat paint) with Clickpad
	Island-style keyboard in darker light teal finish with Clickpad
	Island-style, backlit keyboard in jet black finish (3-coat paint) with Clickpad with Image Sensor
	Island-style keyboard in jet black finish with Clickpad
	Standard, island-style, notebook, keyboard in snow white finish with Clickpad
Power requirements	**2 cell, 47 Whr, HP Long Life battery**
	45 watt, non-PFC, standard USB Type–C® straight AC adapter
	Power cord:
	C5, 1.0 m
	Conventional with sticker
Sensors	Accelerometer
	Gyroscope
Security	H1 Secure Microcontroller
Operating system	Google® Chrome™ 64
Serviceability	**End user replaceable part:** AC adapter

2 Components

Right

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

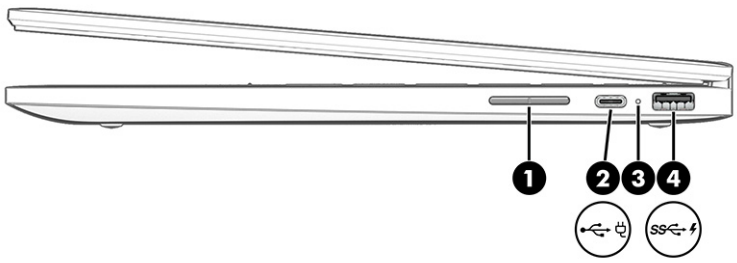


Table 2-1 Right-side components and their descriptions

Component		Description
(1)	Volume button	Controls speaker volume on the computer.
(2)	USB Type-C® port	Connects a USB device, provides data transfer, and (for select products) charges small devices when the computer is on or in Sleep mode. NOTE: Cables, adapters, or both (purchased separately) might be required.
(3)	AC adapter and battery light	• White: The AC adapter is connected and the battery is fully charged. • Amber: The AC adapter is connected and the battery is charging. • Blinking amber: The battery has an error. • Off: The battery is not charging.
(4)	USB SuperSpeed charging port	Connects a USB device, provides data transfer, and (for select products) charges small devices when the computer is on or in Sleep mode.

Left

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

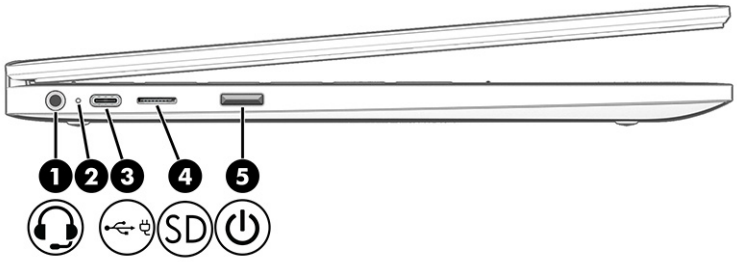


Table 2-2 Left-side components and their descriptions

Component		Description
(1)	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 *Regulatory, Safety, and Environmental Notices*. NOTE: When a device is connected to the jack, the computer speakers are disabled.
(2)	AC adapter and battery light	• White: The AC adapter is connected and the battery is fully charged. • Amber: The AC adapter is connected and the battery is charging. • Blinking amber: The battery has an error. • Off: The battery is not charging.
(3)	USB Type-C port	Connects a USB device, provides data transfer, and (for select products) charges small devices when the computer is on or in Sleep mode. NOTE: Cables, adapters, or both (purchased separately) might be required.

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

Component		Description
(4)	microSD™ memory card reader	Reads optional memory cards that store, manage, share, or access information. To insert a card: 1. Hold the card label-side up, with the connectors facing the computer. 2. Insert the card into the memory card reader, and then press in on the card until it is firmly seated. To remove a card: ▲ Press in on the card, and then remove it from the memory card reader.
(5)	Power button	• When the computer is off, press the button briefly to turn on the computer. • When the computer is on, press the button briefly to initiate Sleep. • When the computer is in the Sleep state, press the button briefly to exit Sleep (select products only). • When the computer is in Hibernation, press the button briefly to exit Hibernation. IMPORTANT: Pressing and holding down the power button results in the loss of unsaved information. If the computer has stopped responding and shutdown procedures are ineffective, press and hold the power button for at least 10 seconds to turn off the computer.

Display

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

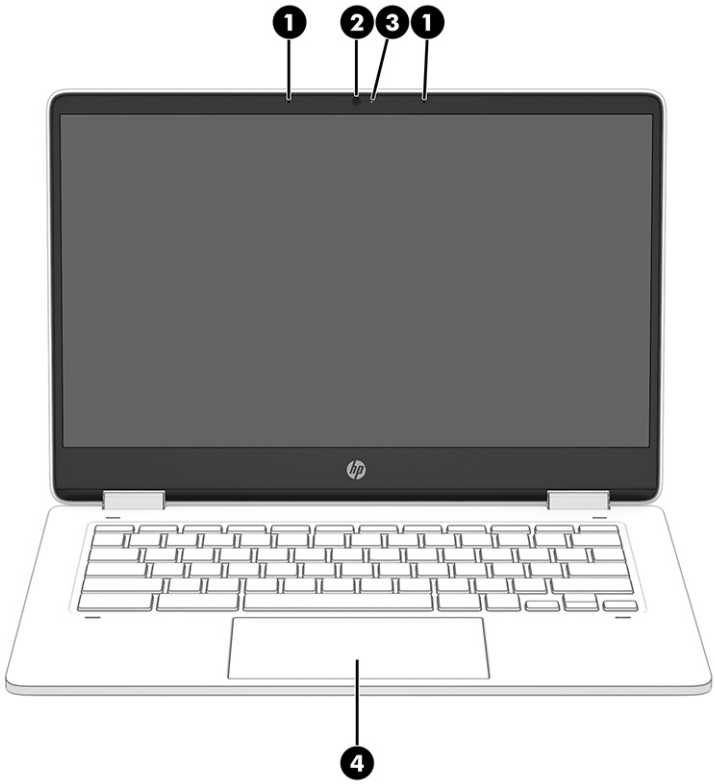


Table 2-3 Display components and their descriptions

Component		Description
(1)	Internal microphones (2)	Record sound.
(2)	Camera	Allows you to video chat, record video, and record still images. NOTE: Camera functions vary depending on the camera hardware and software installed on your product.
(3)	Camera light	On: The camera is in use. Off: The camera is turned off by the software.
(4)	Touchpad	Touchpad

*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

Touchpad

The touchpad settings and components are described here..

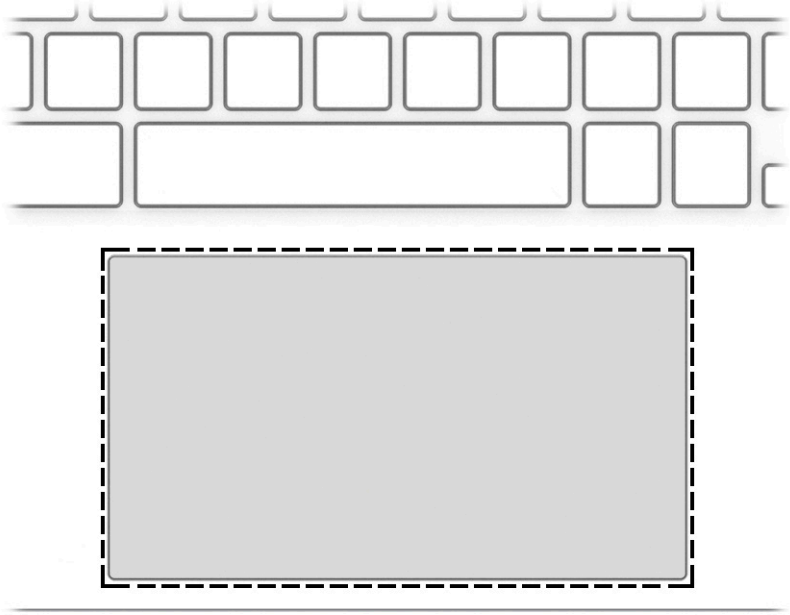


Table 2-4 Touchpad component and description

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

Labels

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

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

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

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

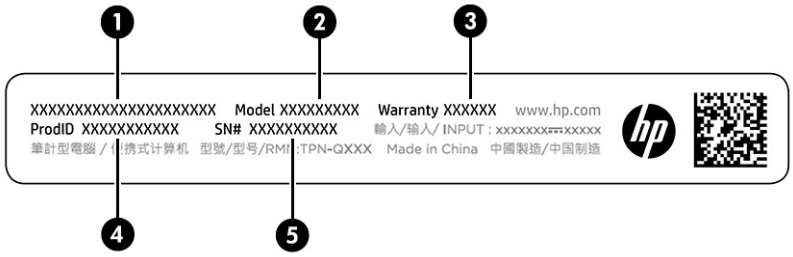


Table 2-5 Service label components and their descriptions

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

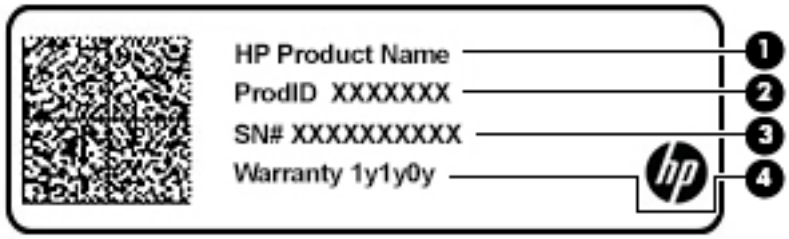


Table 2-6 Service label components and their descriptions

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

- 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 in which the devices have been approved for use.

3 Illustrated parts catalog

Use this table 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.

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

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.

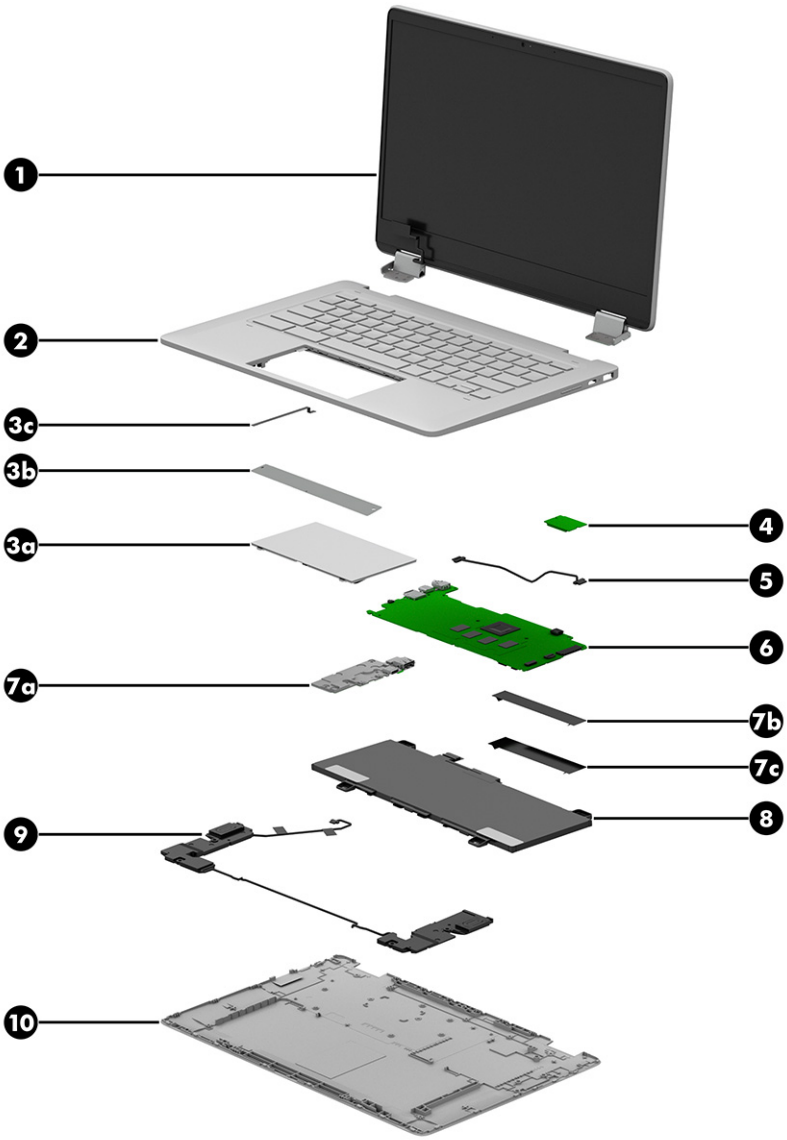


Table 3-1 Computer major component descriptions and part numbers

Item	Component	Spare part number
(1)	**Display assembly** NOTE: Display spare parts are available as subcomponents, not as whole units. Display subcomponent spare parts are available. For spare part information, see Display assembly subcomponents on page 14.	
(2)	**Top cover (in silver finish)/keyboard with backlight (in ceramic white finish)** (includes backlight cable and keyboard cable):	
	For use in Belgium	M15337-A41
	For use in Canada	M15337-DB1
	For use in Denmark, Finland, and Norway	M15337-DH1
	For use in France	M15337-051
	For use in Germany	M15337-041

Table 3-1 Computer major component descriptions and part numbers (continued)

Item	Component	Spare part number
	For use in Italy	M15337-061
	For use in Japan	M15337-291
	For use in the Netherlands	M15337-B31
	For use in Russia	M15337-251
	For use in Spain	M15337-071
	For use in Switzerland	M15337-BG1
	For use in the United Kingdom	M15337-031
	For use in the United States	M15337-001
	Top cover (in silver finish)/keyboard with backlight (in jet black finish) (includes backlight cable and keyboard cable):	
	For use in Belgium	M15333-A41
	For use in Canada	M15333-DB1
	For use in Denmark, Finland, and Norway	M15333-DH1
	For use in France	M15333-051
	For use in Germany	M15333-041
	For use in Italy	M15333-061
	For use in Japan	M15333-291
	For use in the Netherlands	M15333-B31
	For use in Russia	M15333-251
	For use in Spain	M15333-071
	For use in Switzerland	M15333-BG1
	For use in the United Kingdom	M15333-031
	For use in the United States	M15333-001
	Top cover (in silver finish)/keyboard (in jet black finish) (includes keyboard cable):	
	For use in Belgium	M15331-A41
	For use in Canada	M15331-DB1
	For use in Denmark, Finland, and Norway	M15331-DH1
	For use in France	M15331-051
	For use in Germany	M15331-041
	For use in Italy	M15331-061
	For use in Japan	M15331-291
	For use in the Netherlands	M15331-B31
	For use in Russia	M15331-251
	For use in Spain	M15331-071

Table 3-1 Computer major component descriptions and part numbers (continued)

Item	Component	Spare part number
	For use in Switzerland	M15331-BG1
	For use in the United Kingdom	M15331-031
	For use in the United States	M15331-001
	Top cover (in silver finish)/keyboard (in snow white finish) (includes keyboard cable):	
	For use in Belgium	M15335-A41
	For use in Canada	M15335-DB1
	For use in Denmark, Finland, and Norway	M15335-DH1
	For use in France	M15335-051
	For use in Germany	M15335-041
	For use in Italy	M15335-061
	For use in Japan	M15335-291
	For use in the Netherlands	M15335-B31
	For use in Russia	M15335-251
	For use in Spain	M15335-071
	For use in Switzerland	M15335-BG1
	For use in the United Kingdom	M15335-031
	For use in the United States	M15335-001
	Top cover (in light teal)/keyboard (in dark light teal finish) for use in the United States (includes keyboard cable)	M20852-001
(3a)	**Touchpad:** NOTE: The touchpad cable is not included with the touchpad spare part kit. The touchpad cable is available using spare part number M15296-001.	
	In natural silver finish for use with computer models in ceramic white, forest teal, and mineral silver finish	M15295-001
	In light teal finish for use with computer models in light teal finish	M20850-001
(3b)	**Touchpad bracket** (not illustrated: The touchpad bracket is not available as a spare part component.)	
(3c)	**Touchpad cable**	M15296-001
(4)	**Intel 9560 ac 2×2 MU-MIMO + Bluetooth 5 M.2 non-vPro CNVi WW WLAN module with two antennas**	L41693-001
(5)	**Power cable**	M15300-001
(6)	**System board** (includes integrated processor and graphics subsystem with UMA memory): NOTE: All system board spare part kits include replacement thermal material. Replacement thermal material is also available in the Thermal Pad Kit, spare part number M15302-001.	
	Equipped with an Intel Pentium Silver N5030 processor, 4 GB of system memory, and 128 GB of eMMC system storage	M15316-001
	Equipped with an Intel Pentium Silver N5030 processor, 8 GB of system memory, 64 GB of eMMC system storage, and fBLAR	M24577-001

Table 3-1 Computer major component descriptions and part numbers (continued)

Item	Component	Spare part number
	Equipped with an Intel Pentium Silver N5030 processor, 8 GB of system memory, and 64 GB of eMMC system storage	M15317-001
	Equipped with an Intel Pentium Silver N5030 processor, 4 GB of system memory, and 32 GB of eMMC system storage	M15315-001
	Equipped with an Intel Pentium N5000 processor, 4 GB of system memory, and 128 GB of eMMC system storage	M15323-001
	Equipped with an Intel Pentium N5000 processor, 8 GB of system memory, 64 GB and of eMMC system storage	M15324-001
	Equipped with an Intel Pentium N5000 processor, 4 GB of system memory, and 64 GB of eMMC system storage	M15322-001
	Equipped with an Intel Pentium N5000 proessor, 4 GB of system memory, and 32 GB of eMMC system storage	M15321-001
	Equipped with an Intel Celeron N4020 processor, 4 GB of system memory, and 128 GB of eMMC system storage	M24576-001
	Equipped with an Intel Celeron N4020 processor, 4 GB of system memory, 64 GB and of eMMC system storage	M24575-001
	Equipped with an Intel Celeron N4020 processor, 4 GB of system memory, and 32 GB of eMMC system storage	M24574-001
	Equipped with an Intel Celeron N4000 processor, 4 GB of system memory, and 128 GB of eMMC system storage	M15320-001
	Equipped with an Intel Celeron N4000 processor, 4 GB of system memory, 64 GB and of eMMC system storage	M15319-001
	Equipped with an Intel Celeron N4000 processor, 4 GB of system memory, and 32 GB of eMMC system storage	M15318-001
(7a)	**Connector board** NOTE: The connector board high-speed cable and connector board low -speed cable are not included with the connector board spare part kit. The connector board high-speed cable is available using spare part number M15294-001. The connector board low-speed cable is available using spare part number M15293-001.	M15292-001
(7b)	**Connector board high-speed cable**	M15294-001
(7c)	**Connector board low-speed cable**	M15293-001
(8)	**Battery** (2 cell, 47 Whr)	L75783-006
(9)	**Speakers** (include cables and four rubber isolators)	M15298-001
(10)	**Bottom cover**:	
	In natural silver finish for use with computer models in ceramic white, forest teal, and mineral silver finish	M15299-001
	In ash silver finish for use with computer models in light teal finish	M20489-001
	Rubber Feet Kit (not illustrated):	
	In natural silver finish for use with computer models in ceramic white, forest teal, and mineral silver finish	M15301-001
	In ash silver finish for use with computer models in light teal finish	M20851-001

Display assembly subcomponents

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

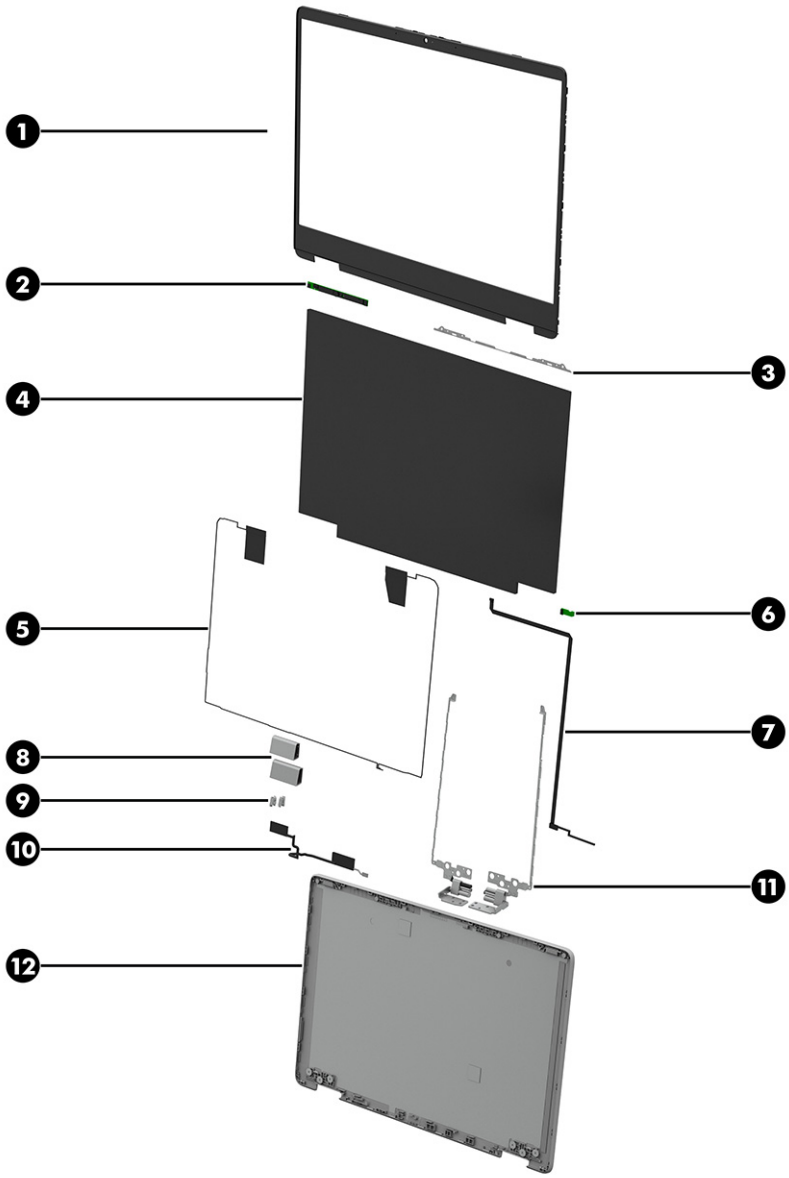


Table 3-2 Display component descriptions and part numbers

Item	Component	Spare part number
(1)	**Display bezel**	M15307-001
	Adhesive Kit (not illustrated, for use on display bezel)	M27496-001
(2)	**Webcam/microphone module** (includes double-sided adhesive)	M26773-001
(3)	**Display panel bracket** (not included as a spare part component)	
(4)	**35.6 cm (14.0 in) display panel:**	
	FHD (1920×1080) LCD, antiglare, WLED, UWVA 45, eDP, slim, touchscreen display panel with narrow bezel; typical brightness: 250 nits	M15330-001

Table 3-2 Display component descriptions and part numbers (continued)

Item	Component	Spare part number
	HD (1366×768), LCD, BrightView, WLED, SVA 45, slim, touchscreen display panel with narrow bezel; typical brightness: 220 nits	M15329-001
(5)	**Wireless antenna** (includes left and right antenna cables and transcievers)	M15306-001
(6)	**G-sensor module** (includes double-sided adhesive)	M15308-001
(7)	**Webcam/microphone module cable** (includes double-sided adhesive)	M15309-001
(8)	**Display hinge covers** (2, includes left and right hinge covers)	M15312-001
(9)	**Display hinge rubber caps** (2, includes left and right rubber caps)	M15313-001
(10)	**Display panel cable** (includes the G-sensor board cable)	M15310-001
(11)	**Display hinges** (2, includes left and right hinges)	M15311-001
(12)	**Display back cover** (includes wireless antenas):	
	For use with computer models in ceramic white finish	M15304-001
	For use with computer models in forest teal finish and light teal finish	M15305-001
	For use with computer models in mineral silver finish	M15303-001

Cables

To identify the cables, use this illustration and table.

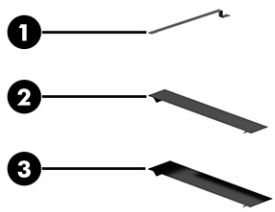


Table 3-3 Cable descriptions and part numbers

Item	Component	Spare part number
(1)	**Touchpad cable**	M15296-001
(2)	**Connector board low-speed cable**	M15293-001
(3)	**Connector board high-speed cable**	M15294-001

Miscellaneous parts

To identify the miscellaneous parts, use this table.

Table 3-4 Miscellaneous part descriptions and part numbers

Component	Spare part number
45 W USB Type-C AC adapter (non-PFC, 1.8 m, 3 pin)	L43407-001
HP 220 wireless mouse	L13996-001
Screw Kit	M15314-001
Power cords (C5, 1.0 m, conventional with sticker)	
For use in Australia	L19358-001
For use in Denmark	L19360-001
For use in Europe	L19361-001
For use in India	L19363-001
For use in Japan	L19365-001
For use in North America	L19367-001
For use in Switzerland	L19370-001
For use in the 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, 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.”

Workstation guidelines

Follow these grounding workstation guidelines:

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

Electrostatic discharge information

A sudden discharge of static electricity from your finger or other conductor can destroy static-sensitive devices or microcircuitry. Often the spark is neither felt nor heard, but damage occurs. An electronic device exposed to electrostatic discharge (ESD) 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 Personal grounding methods and equipment on page 21.

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

	Relative humidity		
Event	**55%**	**40%**	**10%**
Walking across carpet	7,500 V	15,000 V	35,000 V
Walking across vinyl floor	3,000 V	5,000 V	12,000 V
Motions of bench worker	400 V	800 V	6,000 V
Removing DIPs (dual in-line packages) 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
Multiple electric components can be packaged together in plastic tubes, trays, or polystyrene foam.			

NOTE: As little as 700 V 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 MΩ ±10% resistance in the ground cords. To provide proper ground, a strap must be worn snug against bare skin. The ground cord must be connected and fit snugly into the banana plug connector on the grounding mat or workstation.
- **Heel straps/Toe straps/Boot straps** can be used at standing workstations and are compatible with most types of shoes or boots. On conductive floors or dissipative floor mats, use them on both feet with a maximum of 1 MΩ ±10% resistance between the operator and ground.

Table 4-2 Static shielding protection levels

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

Grounding the work area

To prevent static damage at the work area, follow these precautions.

- Cover the work surface with approved static-dissipative material. Provide a wrist strap connected to the work surface and properly grounded tools and equipment.
- Use static-dissipative mats, foot straps, or air ionizers to give added protection.
- Handle electrostatic sensitive components, parts, and assemblies by the case or PCB laminate. Handle them only at static-free work areas.
- Turn off power and input signals before inserting and removing connectors or test equipment.
- Use fixtures made of static-safe materials when fixtures must directly contact dissipative surfaces.

- Keep work area free of nonconductive materials such as ordinary plastic assembly aids and polystyrene foam.
- Use field service tools, such as cutters, screwdrivers, and vacuums, that are conductive.

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 MΩ ±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 MΩ ±10% resistance
- Material handling packages
- Conductive plastic bags
- Conductive plastic tubes
- Conductive tote boxes
- Opaque shielding bags
- Transparent metallized shielding bags
- Transparent shielding tubes

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment.

- To avoid hand contact, transport products in static-safe tubes, bags, or boxes.
- Protect ESD-sensitive parts and assemblies with conductive or approved containers or packaging.
- Keep ESD-sensitive parts in their containers until the parts arrive at static-free workstations.
- Place items on a grounded surface before removing items from their containers.
- Always be properly grounded when touching a component or assembly.

- Store reusable ESD-sensitive parts from assemblies in protective packaging or nonconductive foam.
- Use transporters and conveyors made of antistatic belts and roller bushings. Be sure that mechanized equipment used for moving materials is wired to ground and that proper materials are selected to avoid static charging. When grounding is not possible, use an ionizer to dissipate electric charges.

5 Removal and replacement procedures for authorized service provider parts

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

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

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.

Component replacement procedures

To remove and replace computer components, use these procedures.

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

You must remove, replace, or loosen as many as 52 screws when you service the parts described in this chapter. 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.

See Removal and replacement procedures preliminary requirements on page 17 for initial safety procedures.

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

Bottom cover

To remove the bottom cover, use this procedure and illustration.

Table 5-1 Bottom cover description and part number

Description	Spare part number
In natural silver finish for use with computer models in ceramic white, forest teal, and mineral silver finish	M15299-001
In ash silver finish for use with computer models in light teal finish	M20489-001

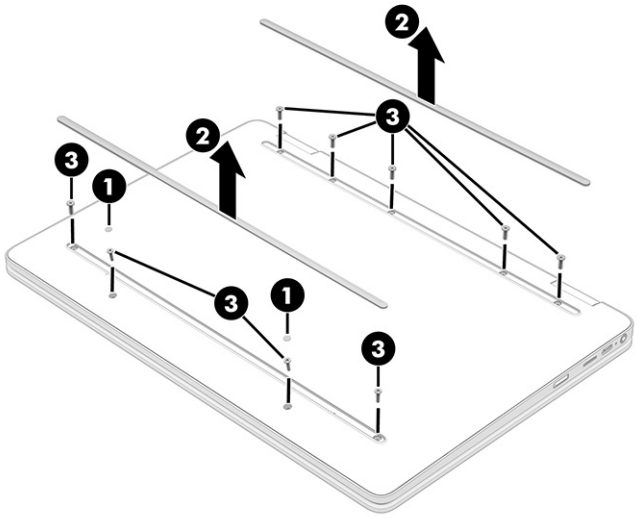
Before removing the bottom cover, prepare the computer for disassembly (Preparation for disassembly on page 26).

Remove the bottom cover:

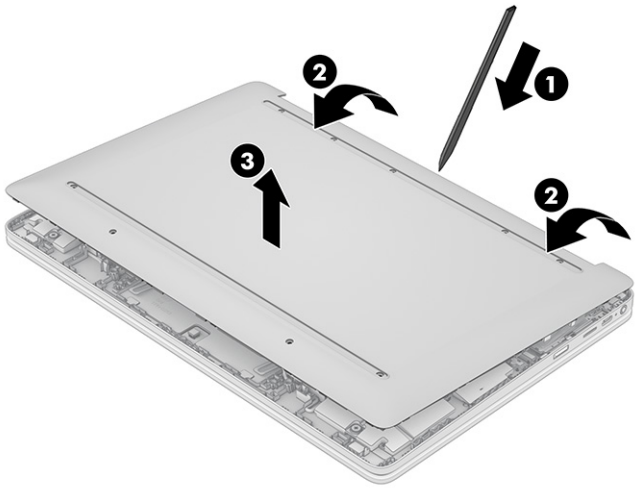
1. Remove the Mylar screw covers **(1)**.
2. Remove the front and rear rubber foot strips **(2)**.

   The Mylar screw covers and the rubber foot strips are included in the Rubber Feet Kit, spare part numbers M15301-001 (in natural silver finish for use with computer models in ceramic white, forest teal, and mineral silver finish) and M20851-001 (in ash silver finish for use with computer models in light teal finish)

3. Remove the nine Phillips M2.0 × 7.6 screws **(3)** that secure the bottom cover to the computer.



4. Use a nonmarking, nonconductive tool **(1)** to release the rear edge of the bottom cover from the computer **(2)**.
5. Remove the bottom cover **(3)** from the computer.



To replace the bottom cover, reverse the removal procedures.

Battery

To remove the battery, use this procedure and illustration.

Table 5-2 Battery description and part number

Description	Spare part number
Battery (2 cell, 47 Whr)	L75783-006

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. They can cause a short inside the battery, which 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.

Before removing the battery, follow these steps:

1. Prepare the computer for disassembly (Preparation for disassembly on page 26).
2. Remove the bottom cover (Bottom cover on page 26).

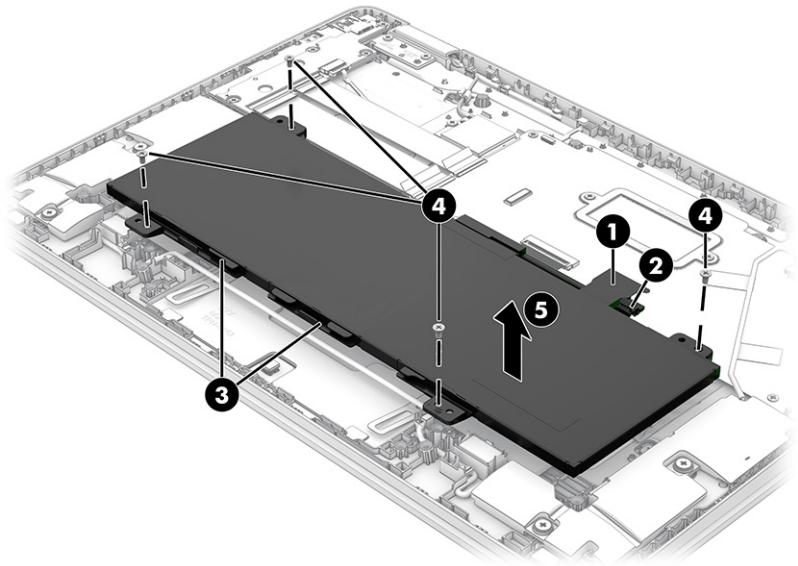
WARNING! To reduce potential safety issues, use only the user-replaceable battery provided with the computer, a replacement battery provided by HP, or a compatible battery purchased from HP.

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 the operating system before you remove the battery.

Remove the battery:

1. Release the Mylar tape **(1)** that secures the battery cable to the computer.
2. Disconnect the battery cable **(2)** from the system board.
3. Release the speaker cable from the retention clips **(3)** built into the front edge of the battery.
4. Remove the four Phillips M2.0 × 4.2 screws **(4)** that secure the battery to the computer.

5. Remove the battery **(5)** from the computer.



To replace the battery, reverse the removal procedures.

WLAN module

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

Table 5-3 **WLAN module descriptions and part number**

Description	Spare part number
Intel 9560 ac 2×2 MU-MIMO + Bluetooth 5 M.2 non-vPro CNVi WW WLAN module with two antennas	L41693-001

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:

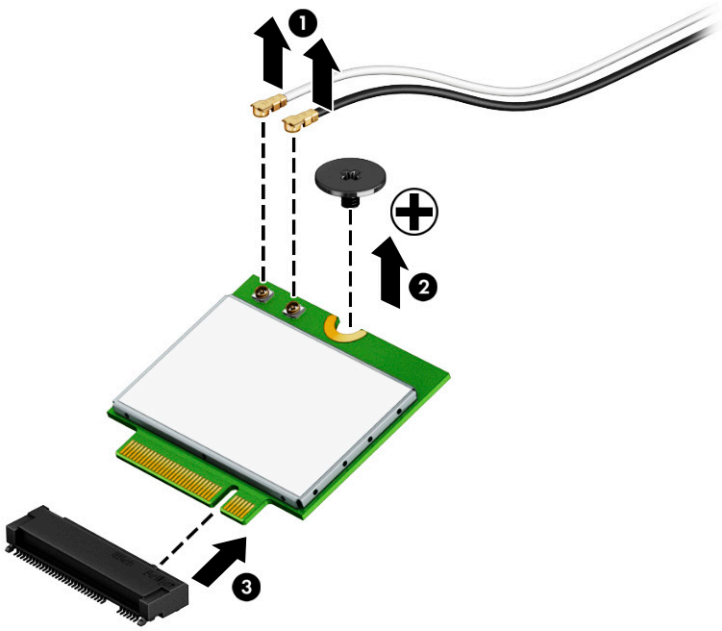
1. Prepare the computer for disassembly (Preparation for disassembly on page 26).
2. Remove the bottom cover (Bottom cover on page 26).
3. Disconnect the battery cable from the system board (see Battery on page 27).

Remove the WLAN module:

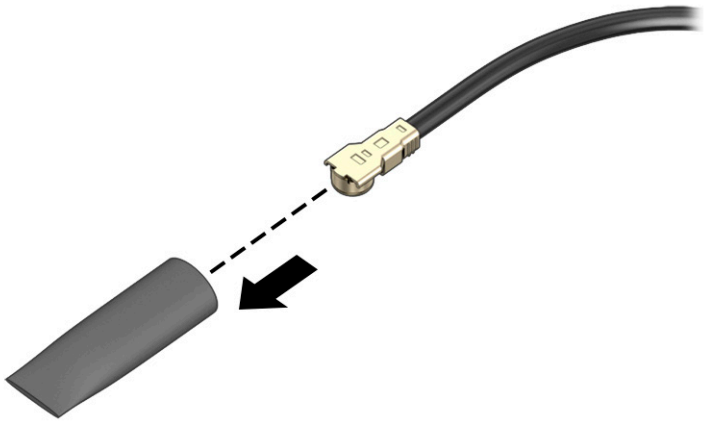
1. Remove the shield that secures the wireless antenna cables to the WLAN module.
2. Carefully disconnect the two antenna cables from the module **(1)**.

3. Remove the Phillips M2.0 × 2.9 screw **(2)**, and then remove the WLAN module **(3)**.

NOTE: Models have either one or two WLAN antennas. On models with two antennas, the #1 white WLAN antenna cable connects to the WLAN module #1 Main terminal. The #2 black WLAN antenna cable connects to the WLAN module #1 Aux terminal.



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



To replace the WLAN module, reverse the removal procedures.

Speakers

To remove the speakers, use this procedure and illustration.

Table 5-4 Speaker description and part number

Description	Spare part number
Speakers (include cables and four rubber isolators)	M15298-001

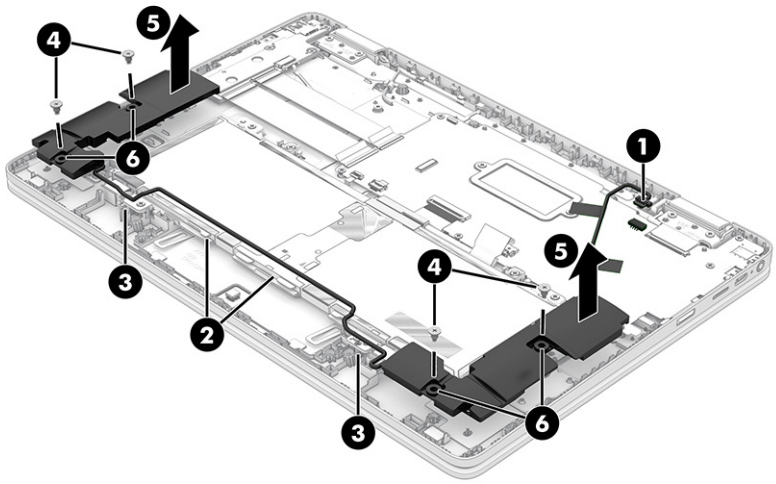
Before removing the speakers, follow these steps:

1. Prepare the computer for disassembly (Preparation for disassembly on page 26).
2. Remove the bottom cover (Bottom cover on page 26).
3. Disconnect the battery cable from the system board (see Battery on page 27).

Remove the speakers:

1. Disconnect the speaker cable **(1)** from the system board.
2. Release the speaker cable from the retention clips **(2)** built into the front edge of the battery.
3. Release the speaker cable from the retention clips **(3)** built into the top cover.
4. Remove the four Phillips M2.0 × 5.4 broad head shoulder screws **(4)** that secure the speakers to the computer.
5. Remove the speakers **(5)** from the computer.

NOTE: When removing the speakers, make note of the location of the four rubber isolators **(6)**. The absence of or damage to these isolators can result in degraded speaker performance.



To replace the speakers, reverse the removal procedures.

Connector board cables

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

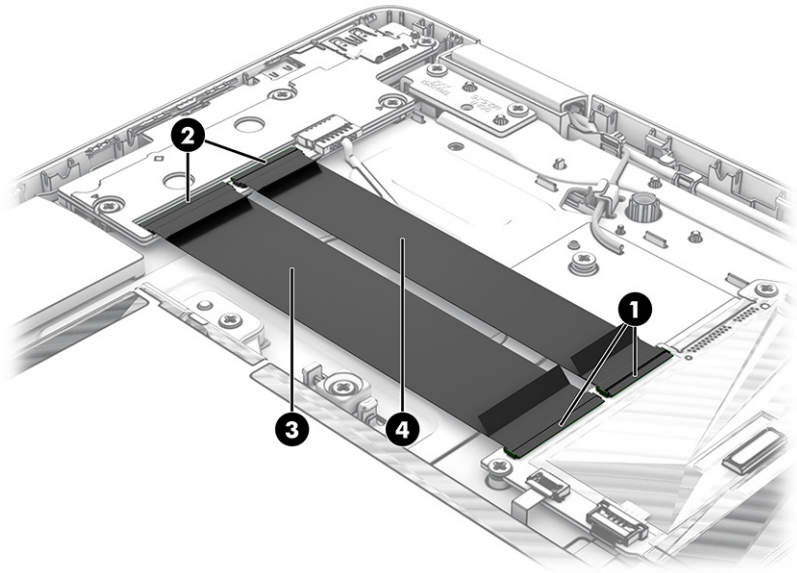
NOTE: The connector board high-speed cable is available as spare part number M15294-001. The connector board low-speed cable is available as spare part number M15293-001.

Before removing the connector board cables, follow these steps:

1. Prepare the computer for disassembly (Preparation for disassembly on page 26).
2. Remove the bottom cover (Bottom cover on page 26).
3. Disconnect the battery cable from the system board (see Battery on page 27).

Remove the connector board cables:

1. Release the zero insertion force (ZIF) connectors **(1)** to which the connector board cables are connected, and then disconnect the cables from the system board.
2. Release the ZIF connectors **(2)** to which the connector board cables are connected, and then disconnect the cables from the connector board.
3. Remove the connector board high-power cable **(3)** and the connector board low-power cable **(4)**.



To replace the connector board cables, reverse the removal procedures.

Connector board

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

Table 5-5 **Connector board description and part number**

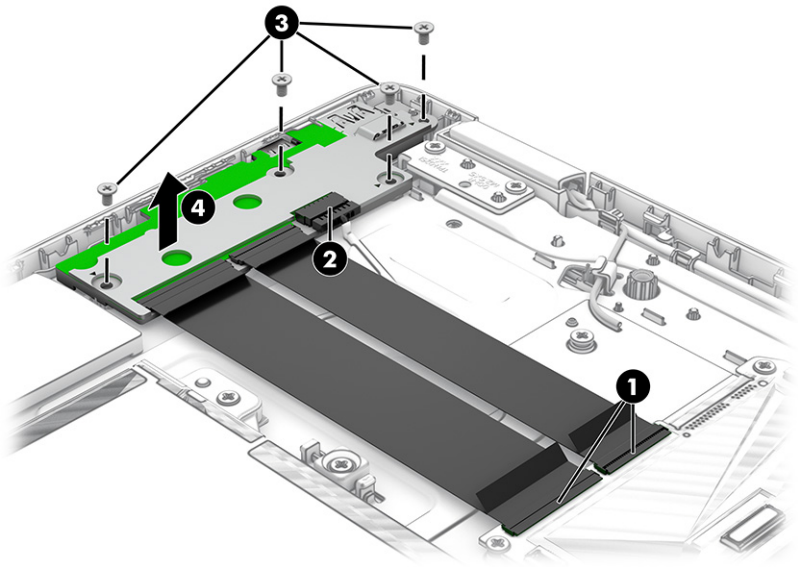
Description	Spare part number
Connector board	M15292-001
NOTE: The connector board high-speed cable is available using spare part number M15294-001. The connector board low-speed cable is available using spare part number M15293-001.	

Before removing the connector board, follow these steps:

1. Prepare the computer for disassembly (Preparation for disassembly on page 26).
2. Remove the bottom cover (Bottom cover on page 26).
3. Disconnect the battery cable from the system board (see Battery on page 27).

Remove the connector board:

1. Release the ZIF connectors **(1)** to which the connector board cables are connected, and then disconnect the cables from the system board.
2. Disconnect the power cable **(2)** from the connector board.
3. Remove the four Phillips M2.0 × 4.2 screws **(3)** that secure the connector board to the computer.
4. Remove the connector board **(4)** from the computer.



To replace the connector board, reverse the removal procedures.

System board

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

Table 5-6 System board descriptions and part numbers

Description	Spare part number
NOTE: All system board spare part kits include an integrated processor, a graphics subsystem with UMA memory, and replacement thermal material. Replacement thermal material is also available in the Thermal Pad Kit, spare part number M15302-001.	
Equipped with an Intel Pentium Silver N5030 processor, 4 GB of system memory, and 128 GB of eMMC system storage	M15316-001
Equipped with an Intel Pentium Silver N5030 processor, 8 GB of system memory, 64 GB of eMMC system storage, and fBLAR	M24577-001
Equipped with an Intel Pentium Silver N5030 processor, 8 GB of system memory, and 64 GB of eMMC system storage	M15317-001
Equipped with an Intel Pentium Silver N5030 processor, 4 GB of system memory, and 32 GB of eMMC system storage	M15315-001

Table 5-6 System board descriptions and part numbers (continued)

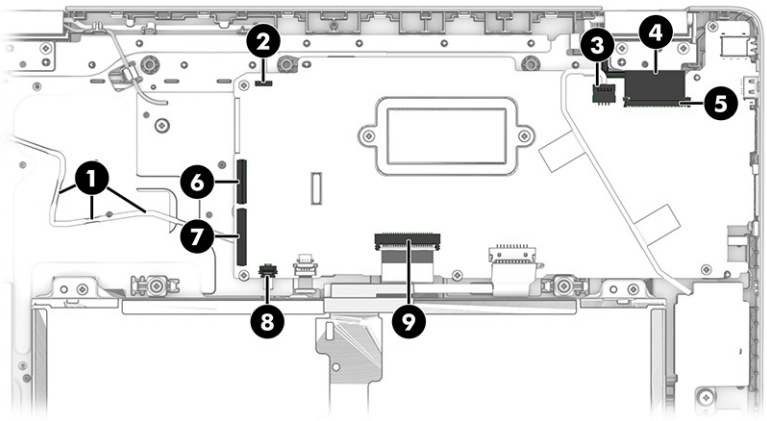
Description	Spare part number
Equipped with an Intel Pentium N5000 processor, 4 GB of system memory, and 128 GB of eMMC system storage	M15323-001
Equipped with an Intel Pentium N5000 processor, 8 GB of system memory, and 64 GB of eMMC system storage	M15324-001
Equipped with an Intel Pentium N5000 processor, 4 GB of system memory, and 64 GB of eMMC system storage	M15322-001
Equipped with an Intel Pentium N5000 proessor, 4 GB of system memory, and 32 GB of eMMC system storage	M15321-001
Equipped with an Intel Celeron N4020 processor, 4 GB of system memory, and 128 GB of eMMC system storage	M24576-001
Equipped with an Intel Celeron N4020 processor, 4 GB of system memory, and 64 GB of eMMC system storage	M24575-001
Equipped with an Intel Celeron N4020 processor, 4 GB of system memory, and 32 GB of eMMC system storage	M24574-001
Equipped with an Intel Celeron N4000 processor, 4 GB of system memory, and 128 GB of eMMC system storage	M15320-001
Equipped with an Intel Celeron N4000 processor, 4 GB of system memory, and 64 GB of eMMC system storage	M15319-001
Equipped with an Intel Celeron N4000 processor, 4 GB of system memory, and 32 GB of eMMC system storage	M15318-001

Before removing the system board, follow these steps:

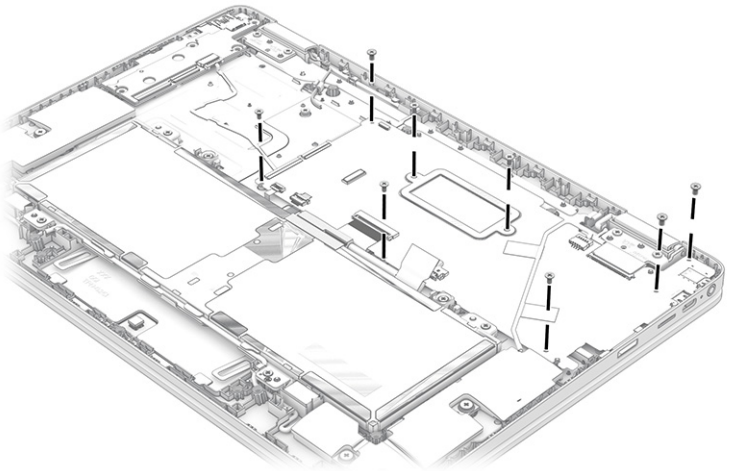
1. Prepare the computer for disassembly (Preparation for disassembly on page 26).
2. Remove the bottom cover (Bottom cover on page 26).
3. Disconnect the battery cable from the system board (see Battery on page 27).
4. Remove the WLAN module (WLAN module on page 29).

Remove the system board:

1. Release the power cable from the retention clips **(1)** built into the top cover.
2. Disconnect the webcam cable **(2)** from the system board.
3. Disconnect the speaker cable **(3)** from the system board.
4. Release the adhesive support strip **(4)** that secures the display panel cable to the system board.
5. Disconnect the display panel cable **(5)** from the system board.
6. Disconnect the following cables from the system board:
   - Connector board low-power cable (ZIF) **(6)**
   - Connector board high-power cable (ZIF) **(7)**
   - Touchpad cable (ZIF) **(8)**
   - Keyboard cable (ZIF) **(9)**

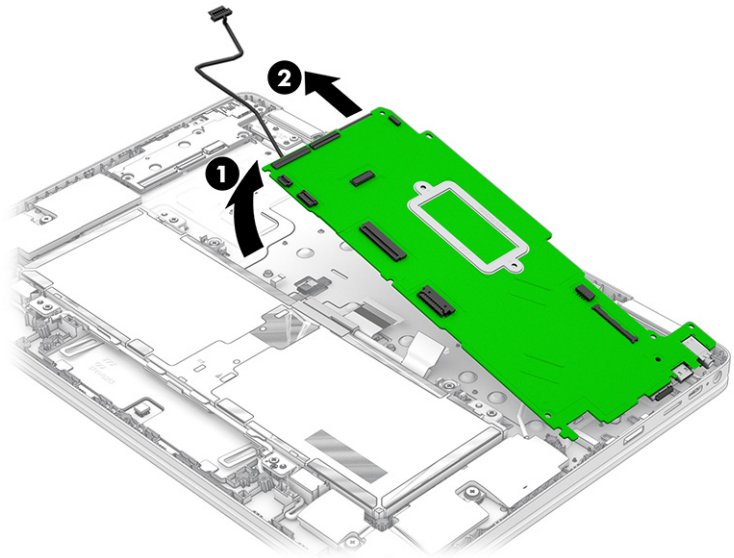


7. Remove the eight Phillips M2.0 × 4.2 screws **(1)** that secure the system board to the computer.



8. Lift the left side of the system board **(1)** until it rests at an angle.

9. Remove the system board **(2)** by sliding it up and to the left at an angle.



To replace the system board, reverse the removal procedures.

Power cable

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

Table 5-7 **Power cable description and part number**

Description	Spare part number
Power cable	M15300-001

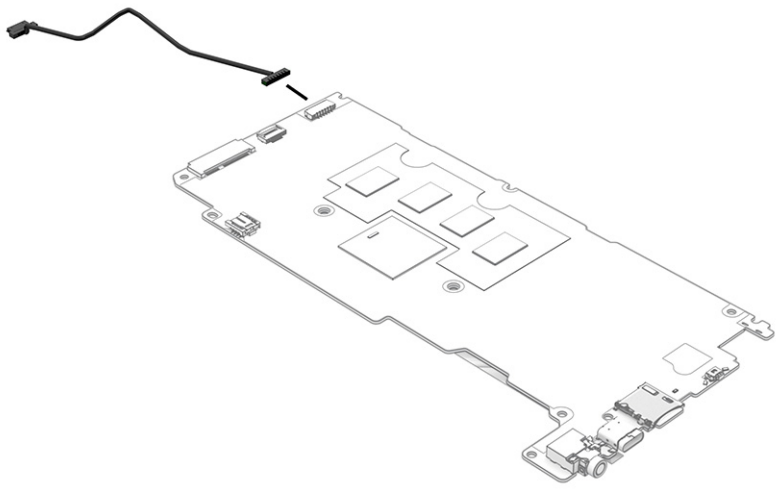
Before removing the power cable, follow these steps:

1. Prepare the computer for disassembly (Preparation for disassembly on page 26).
2. Remove the bottom cover (Bottom cover on page 26).
3. Disconnect the battery cable from the system board (see Battery on page 27).
4. Remove the WLAN module (WLAN module on page 29).
5. Remove the system board (System board on page 33).

Remove the power cable:

1. Turn the removed system board upside down with the rear toward you.

2. Disconnect the power cable from the system board.



To replace the power cable, reverse the removal procedures.

Display assembly

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

A full hinge-up display assembly is not available as a spare part component. Spare parts for displays are available only at the subcomponent level.

Before removing the display assembly, follow these steps:

1. Prepare the computer for disassembly (Preparation for disassembly on page 26).
2. Remove the bottom cover (Bottom cover on page 26).
3. Disconnect the battery cable from the system board (see Battery on page 27).

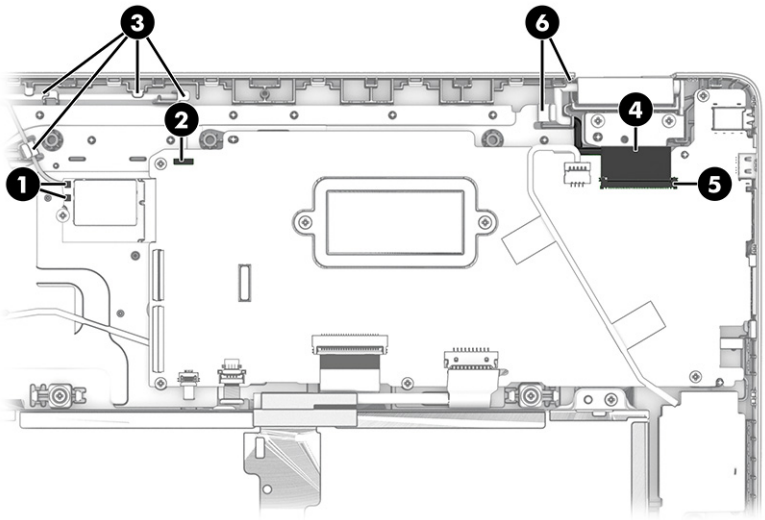
Remove the display assembly:

1. Carefully disconnect the two wireless antenna cables from the WLAN module **(1)**.

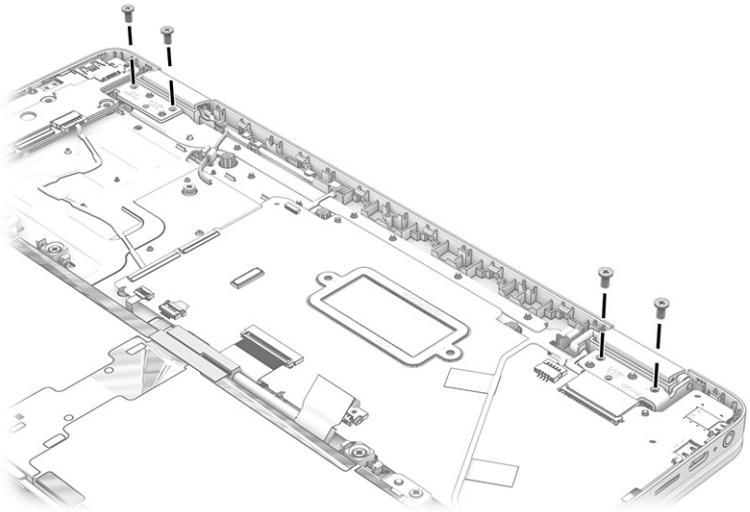
NOTE: Models have either one or two WLAN antennas. On models with two antennas, the #1 white WLAN antenna cable connects to the WLAN module #1 Main terminal. The #2 black WLAN antenna cable connects to the WLAN module #1 Aux terminal.

2. Disconnect the webcam cable **(2)** from the system board.
3. Release the wireless antenna cables and the webcam cable from the retention clips **(3)** built into the top cover.
4. Release the adhesive support strip **(4)** that secures the display panel cable to the system board.
5. Disconnect the display panel cable **(5)** from the system board.

6. Release the display panel cable from the retention clips **(6)** built into the top cover.

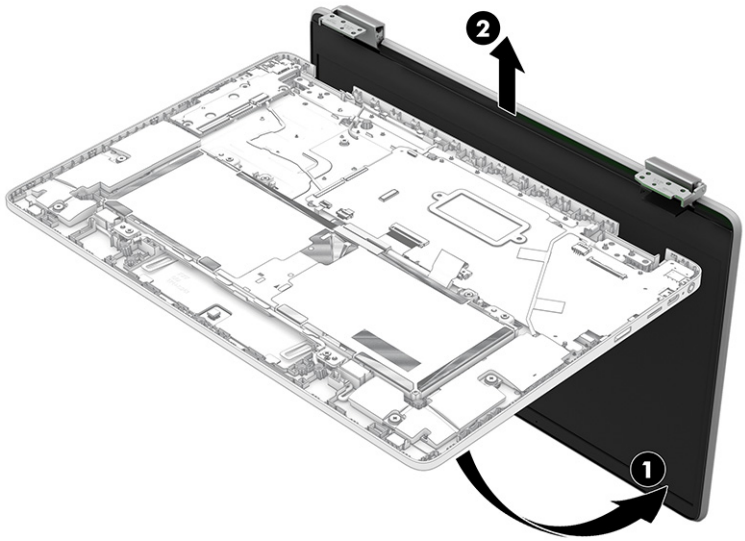


7. Remove the four Phillips M2.5 × 5.7 screws that secure the display assembly to the computer.



8. Rotate the display upward to open the hinges **(1)**.

9. Separate and remove the display assembly from the computer (2).

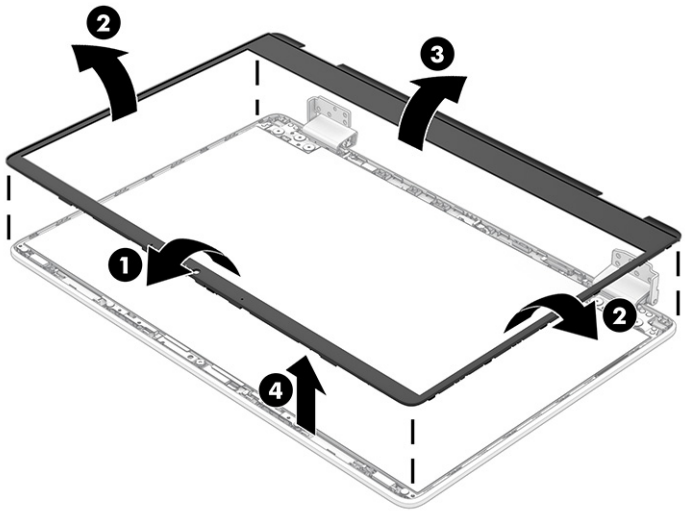


10. If you need to replace display assembly subcomponents:

    a. Flex the the inside edges of the top edge (1), the inside edges of the left (2) and right sides, and the inside edge of the bottom edge (3) of the bezel to release it.

    b. Remove the bezel (4) from the display.

    The bezel is available using spare part number M15307-001.



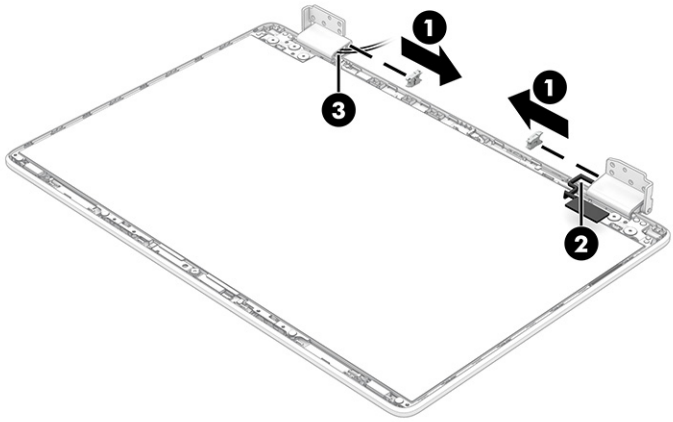
11. If you need to replace the display panel:

    a. Remove the display bezel.

    b. Remove the rubber hinge caps (1) from inside the hinges.

c. Remove the display panel cable from the display left hinge (2).

d. Remove the webcam cable and wireless antenna cables from the display right hinge (3).



e. Firmly grasp the pull-to-release tape located in the bottom corners (1) of the display back cover with a pair of forceps (2).

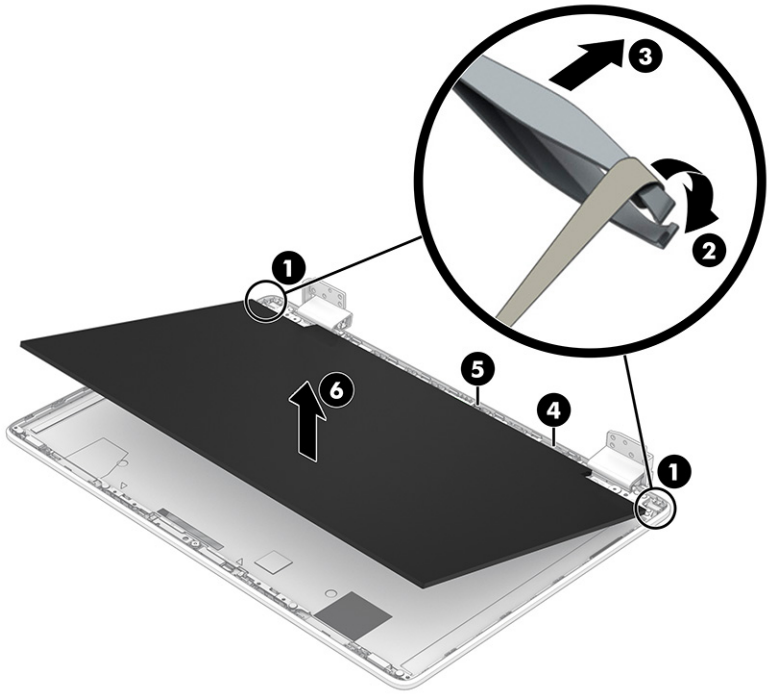
f. Slowly and firmly pull the tape (3) away from the display back cover until it is fully released.

g. Release the display panel cable from the retention clips (4) built into the display back cover.

h. Disconnect the display panel cable (5) from the G-sensor board.

i. Remove the the display panel **(6)**.

The display panel is available using spare part numbers M15330-001 (35.6 cm (14.0 in), FHD (1920×1080) LCD, antiglare, WLED, UWVA 45, eDP, slim, touchscreen display panel with narrow bezel; typical brightness: 250 nits) and M15329-001 (35.6 cm (14.0 in), HD (1366×768), LCD, BrightView, WLED, SVA 45, slim, touchscreen display panel with narrow bezel; typical brightness: 220 nits).



12. If you need to replace the display panel cable:

a. Remove the display bezel.

b. Remove the display panel.

IMPORTANT: Before resting the display panel upside down, make sure the work surface is clear of any tools or debris that could scratch the display panel surface.

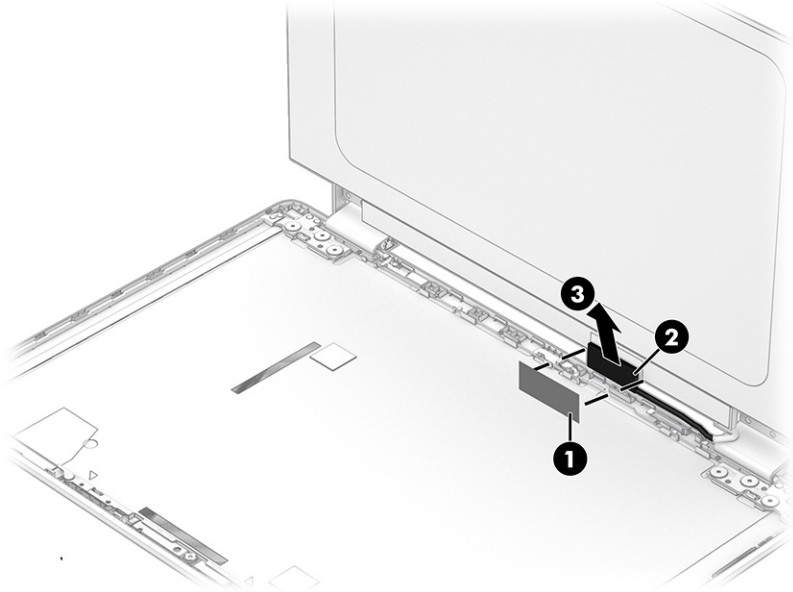
c. Turn the display panel upside down with the bottom edge toward you.

d. Detach the grounding tape **(1)** that covers the display panel cable connector.

e. Release the support bar **(2)** that secures the display panel cable to the display panel.

f. Disconnect the display panel cable (3) from the display panel.

The display panel cable is available using spare part number M15310-001 and includes the G-sensor cable.



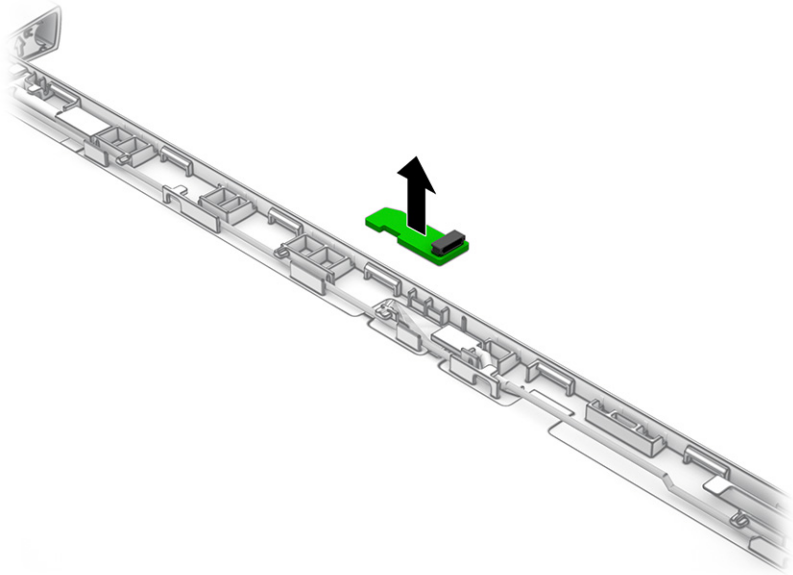
13. If you need to replace the G-sensor module:

a. Remove the display bezel.

b. Remove the display panel.

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

The G-sensor module is available using spare part number M15308-001.



14. If you need to replace the display hinges:

a. Remove the display bezel.

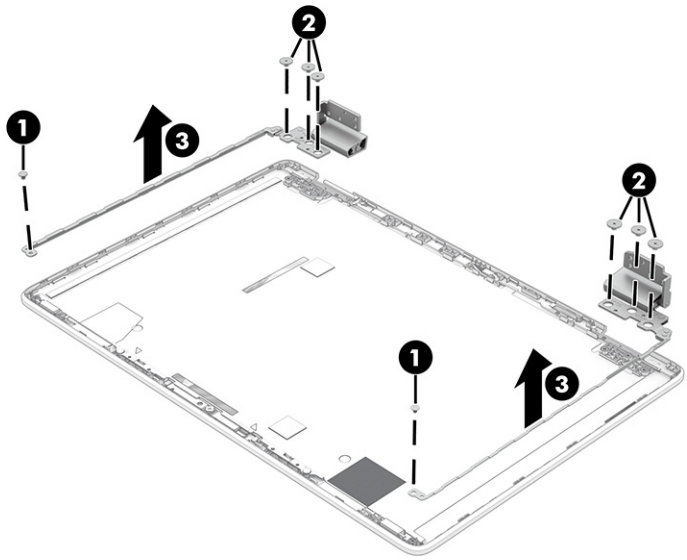
b. Remove the display panel.

c. Remove the two Phillips M2.0 × 2.8 screws **(1)** that secure the hinge brackets to the display back cover.

d. Remove the six Phillips M2.5 × 2.9 broad head screws **(2)** that secure the hinges to the display back cover.

e. Remove the display hinges **(3)**.

The display hinges are available using spare part number M15311-001.



15. If you need to replace the display hinge covers:

a. Remove the display bezel.

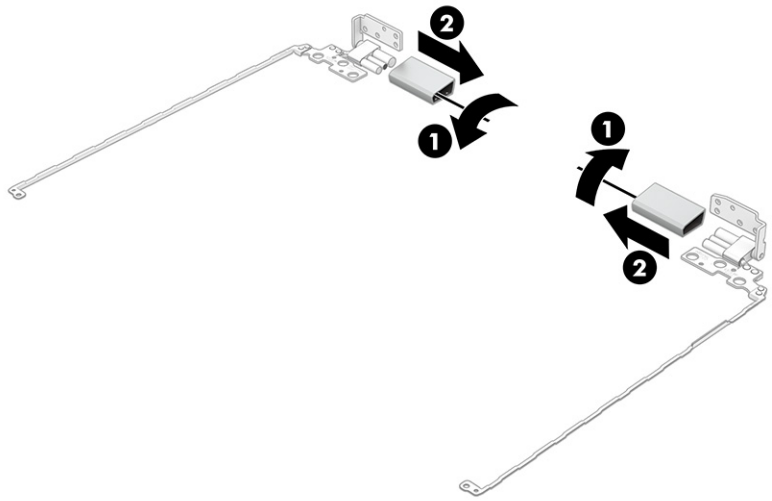
b. Remove the display panel.

c. Remove the display hinges.

d. Loosen the two captive Phillips screws **(1)** that secure the hinge covers to the display hinges.

e. Remove the display hinge covers (2).

The display hinge covers are available using spare part number M15312-001.



16. If you need to replace the webcam/microphone module:

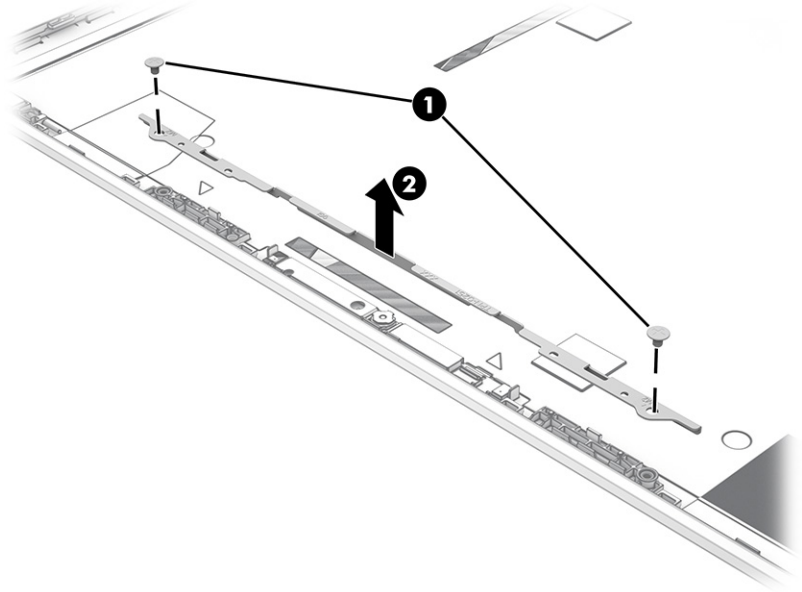
a. Remove the display bezel.

b. Remove the display panel.

c. Remove the display hinges.

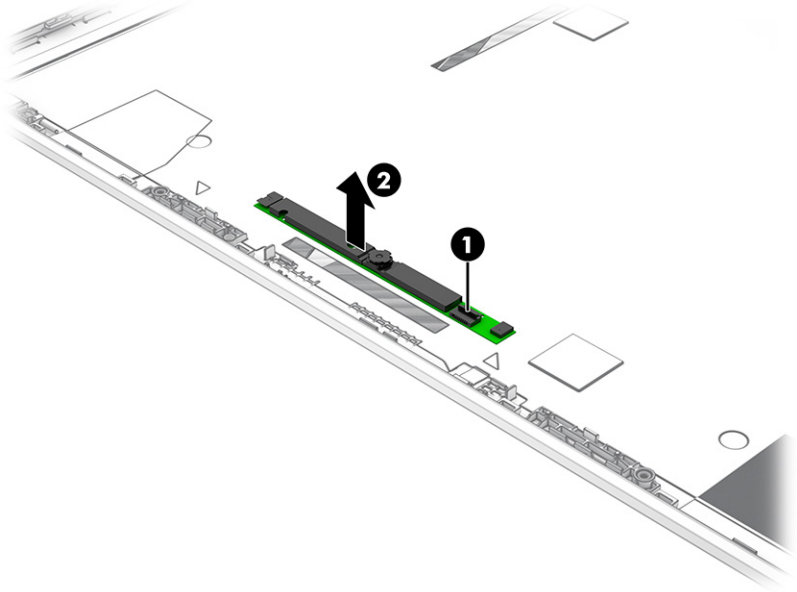
d. Remove the two Phillips M2.0 × 2.8 screws (1) that secure the webcam/microphone module bracket to the display back cover.

e. Remove the webcam/microphone module bracket (2).



f. Release the ZIF connector **(1)** to which the webcam/microphone module cable is connected, and then disconnect the webcam/microphone module cable from the webcam/microphone module.

g. Lift up evenly across the webcam/microphone module and detach the module away from the display back cover **(2)**. (The webcam/microphone module is attached to the display back cover with double-sided adhesive.)



17. If you need to replace the webcam/microphone module cable:

a. Remove the display bezel.

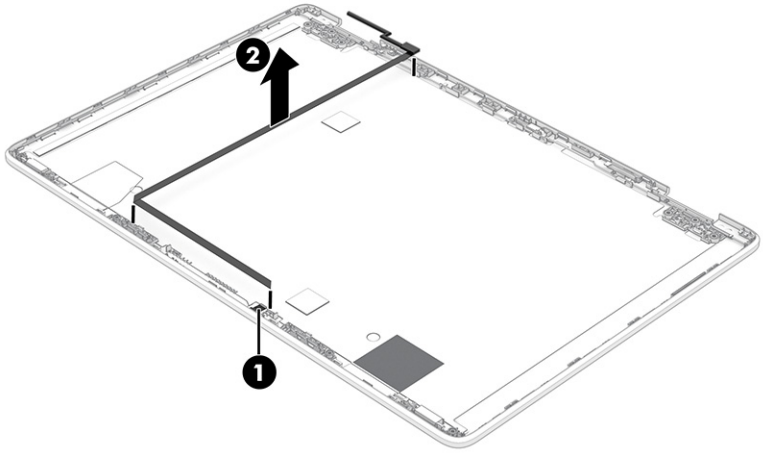
b. Remove the display panel.

c. Remove the display hinges.

d. Remove the webcam/microphone module.

e. Detach the webcam/microphone module cable **(1)** from the display back cover. (The webcam/microphone module cable is attached to the display back cover with double-sided adhesive.)

f. Remove the webcam/microphone module cable (2).



18. If you need to replace the wireless antennas:

    a. Remove the display bezel.

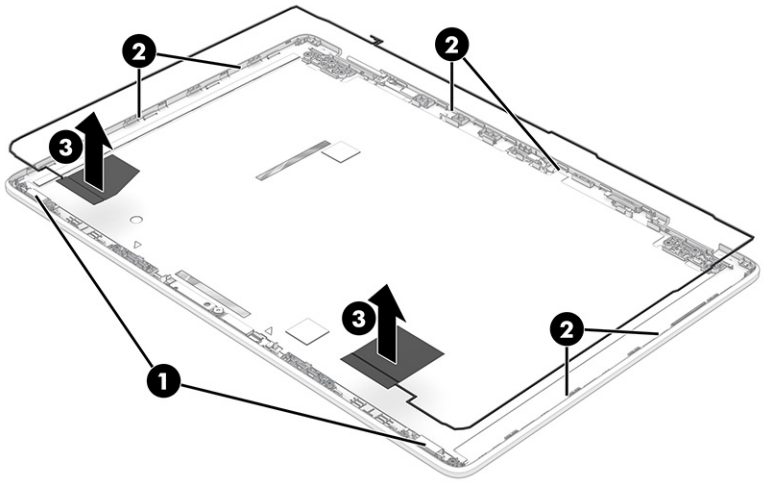
    b. Remove the display panel.

    c. Remove the display hinges.

    d. Detach the wireless antenna transceivers (1) from the display back cover. (The wireless antenna transceivers are attached to the display back cover with double-sided adhesive.)

    e. Release the wireless antenna cables from the retention clips (2) and routing channels built into the left and right sides and the bottom edge of the display enclosure.

    f. Remove the wireless antennas (3).



To reassemble and replace the display assembly, reverse the removal procedures.

Touchpad cable

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

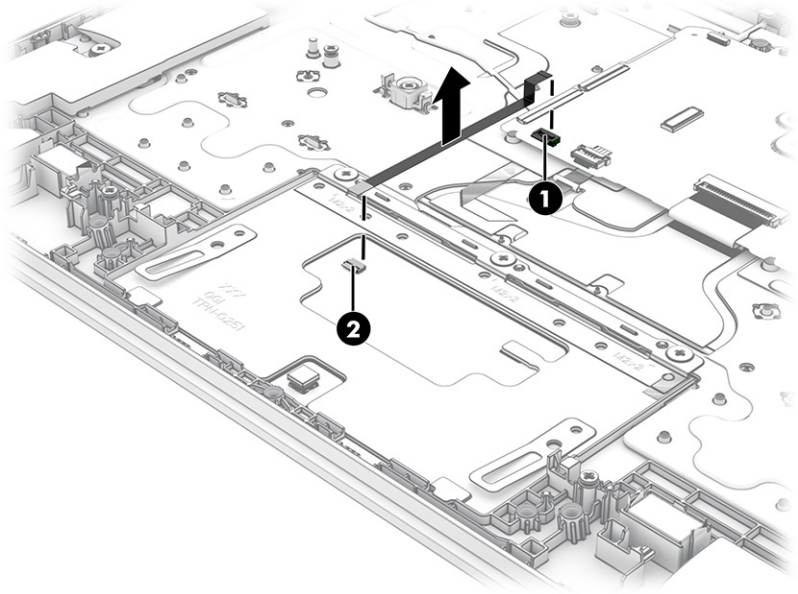
NOTE: The touchpad cable is available as spare part number M15293-001.

Before removing the touchpad cable, follow these steps:

1. Prepare the computer for disassembly (Preparation for disassembly on page 26).
2. Remove the bottom cover (Bottom cover on page 26).
3. Remove the battery (see Battery on page 27).

Remove the touchpad cable:

1. Release the ZIF connector **(1)** to which the touchpad cable is connected, and then disconnect the touchpad cable from the system board.
2. Release the ZIF connector **(1)** to which the touchpad cable is connected, and then disconnect the touchpad cable from the touchpad.
3. Remove the touchpad cable **(3)**.



To replace the touchpad cable, reverse the removal procedures.

Touchpad

To remove the touchpad, use this procedure and illustration.

Table 5-8 Touchpad description and part number

Description	Spare part number
In natural silver finish for use with computer models in ceramic white, forest teal, and mineral silver finish	M15295-001

Table 5-8 Touchpad description and part number (continued)

Description	Spare part number
In light teal finish for use with computer models in light teal finish	M20850-001

NOTE: The touchpad cable is not included with the touchpad spare part kit. The touchpad cable is available using spare part number M15296-001.

Before removing the touchpad, follow these steps:

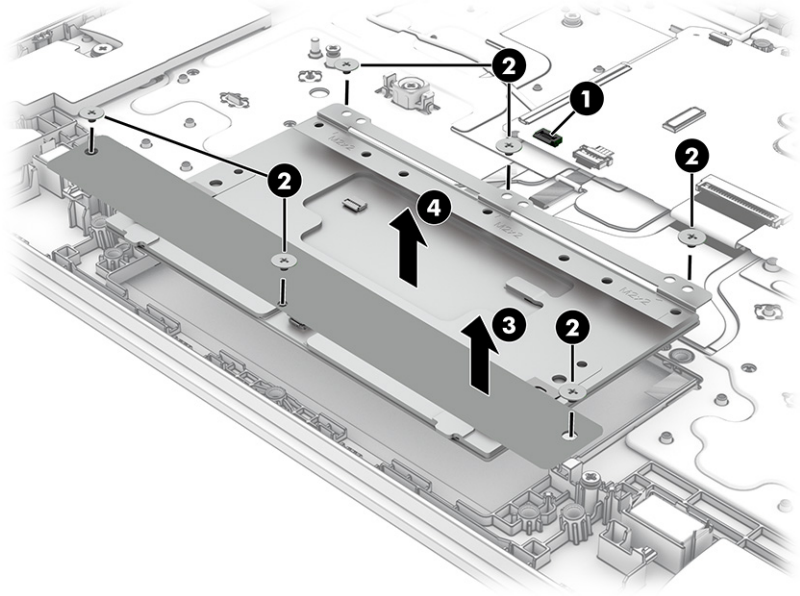
1. Prepare the computer for disassembly (Preparation for disassembly on page 26).
2. Remove the bottom cover (Bottom cover on page 26).

   Remove the battery (see Battery on page 27).

Remove the touchpad:

1. Release the ZIF connector **(1)** to which the touchpad cable is connected, and then disconnect the touchpad cable from the system board.
2. Remove the six Phillips M2.0 × 2.3 broad head screws **(2)** that secure the touchpad and touchpad bracket to the computer.
3. Remove the touchpad bracket **(3)**.

   The touchpad bracket is not available as a spare part component.
4. Remove the touchpad **(4)**.



To replace the touchpad, reverse the removal procedures.

6 Backing up, resetting, and recovering

This chapter provides information about processes that are standard procedure for most products.

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 all the information on your computer hard drive, including all the files in the Downloads folder. Before you reset, make sure to back up your files to an optional USB flash drive, SD memory card, or through Google Drive. The factory reset will not delete any of your files on Google Drive or an external storage device.

Recovering

When your Chrome OS™ operating system is not working properly, you can perform a recovery. A recovery reinstalls the operating system and software programs and restores the original factory settings. Locally saved files and saved networks are deleted for all accounts. Your Google Accounts and any data synced to your Google Drive™ storage are not affected by a system recovery.

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

Before beginning the recovery process, you need the following:

- 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 any files from the device before you begin.
- A computer with internet access. You must also have administrative rights to the computer.
- Computer AC adapter. The computer must be plugged into AC power during recovery.
- The “Chrome OS 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 “Chrome OS is missing or damaged” screen.

Installing the Chromebook Recovery Utility

The Chromebook™ Recovery Utility is an app used to recover the original operating system and software programs that were installed at the factory. This utility can be installed from the Chrome Web Store on any computer.

Creating recovery media

Recovery media is used to recover the original operating system and software programs that were installed at the factory.

Recovering the Chrome operating system

To recover the Chrome operating system on your computer using the recovery media you created:

Setting up your computer after a reset or recovery

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

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

Erase and reformat the recovery media

During the process of creating recovery media, the USB flash drive or SD memory card is formatted for use as a recovery tool. After you recover your computer, you will need to erase the recovery media if you want to reuse your USB flash drive or SD memory card to store other files. Use the steps in this section to erase the recovery media using the Chromebook Recovery Utility.

7 Specifications

This chapter provides specifications for your computer.

Computer specifications

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

Table 7-1 Computer specifications

	Metric	U.S.
Dimensions		
Width	**326 mm**	12.84 in
Depth	**220 mm**	8.66 in
Height (front to back)	**18 mm**	0.71 in
Weight	**1.5 kg**	3.30 lb
Input power		

Table 7-1 Computer specifications (continued)

	Metric	U.S.
Operating voltage and current	5 V dc @ 2 A / 12 V dc @ 3 A /15 V dc @ 3 A – 45 W USB-C	
	5 V dc @ 3 A / 9 V dc @ 3 A / 12 V dc @ 3.75 A /15 V dc @ 3 A – 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 – 45 W USB-C	
	5 V dc @ 3 A / 9 V dc @ 3 A / 12 V dc @ 5 A / 15 V dc @ 4.33 A / 20 V dc @ 3.25 A – 65 W USB-C	
	5 V dc @ 3 A / 9 V dc @ 3 A / 10 V dc @ 5 A / 12 V dc @ 5 A / 15 V dc @ 4.33 A / 20 V dc @ 3.25 A – 65 W USB-C	
	5 V dc @ 3 A / 9 V dc @ 3 A / 10 V dc @ 5 A / 12 V dc @ 5 A / 15 V dc @ 5 A / 20 V dc @ 4.5 A – 90 W USB-C	
	19.5 V dc @ 2.31 A – 45 W	
	19.5 V dc @ 3.33 A – 65 W	
	19.5 V dc @ 4.62 A – 90 W	
	19.5 V dc @ 6.15 A – 120 W	
	19.5 V dc @ 6.9 A – 135 W	
	19.5 V dc @ 7.70 A – 150 W	
	19.5 V dc @ 10.3 A – 200 W	
	19.5 V dc @ 11.8 A – 230 W	
	19.5 V dc @ 16.92 A – 330 W	
Temperature		
Operating	**5°C to 35°C**	41°F to 95°F
Nonoperating	**–20°C to 60°C**	–4°F to 140°F
Relative humidity (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	**–15 m to 3,048 m**	–50 ft to 10,000 ft
Nonoperating	**–15 m to 12,192 m**	–50 ft to 40,000 ft

NOTE: Applicable product safety standards specify thermal limits for plastic surfaces. The device operates well within this range of temperatures.

35.6 cm (14.0 in) display specifications

This section provides specifications for your display.

Table 7-2 Display specifications

	Metric	U.S.
Active diagonal size	35.6 cm	14.0 in
Resolution	1920 × 1080 (FHD)	
	3840 × 2160 (UHD)	
Surface treatment	Antiglare (FHD, UHD panels)	
	Brightview (OLED panel)	
Brightness	250 nits (FHD, 45% NTSC panel)	
	300 nits (FHD, 72% NTSC/100% sRGB panels)	
	400 nits (UHD panel)	
Viewing angle	UWVA	
Backlight	WLED	
	AMOLED	
Display panel interface	eDP	

8 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 3-conductor power cord set included with the computer meets the requirements for use in the country or region where the equipment is purchased.

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

Requirements for all countries

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 8-1 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

Table 8-1 Power cord requirements for specific countries and regions (continued)

Country/region	Accredited agency	Applicable note number
Chile	IMQ	1
Denmark	DEMKO	1
Finland	FIMKO	1
France	UTE	1
Germany	VDE	1
India	BIS	1
Israel	SII	1
Italy	IMQ	1
Japan	JIS	3
The Netherlands	KEMA	1
New Zealand	SANZ	1
Norway	NEMKO	1
The People's Republic of China	CCC	4
Saudi Arabia	SASO	7
Singapore	PSB	1
South Africa	SABS	1
South Korea	KTL	5
Sweden	SEMKO	1
Switzerland	SEV	1
Taiwan	BSMI	6
Thailand	TISI	1
The United Kingdom	ASTA	1

Table 8-1 Power cord requirements for specific countries and regions (continued)

Country/region	Accredited agency	Applicable note number
The United States	UL	2

1. The flexible cord must be Type H05VV-F, 3-conductor, 0.75 mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.
2. The flexible cord must be Type SVT/SJT or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V ac) or NEMA 6-15P (15 A, 250 V ac) configuration. CSA or C-UL mark. UL file number must be on each element.
3. The appliance coupler, flexible cord, and wall plug must bear a T mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCTF, 3-conductor, 0.75 mm² or 1.25 mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V ac) configuration.
4. The flexible cord must be Type RVV, 3-conductor, 0.75 mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the CCC certification mark.
5. The flexible cord must be Type H05VV-F 3-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 3-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 3-conductor, 0.75 mm² or 1.00 mm² conductor size, with plug BS 1363/A with BSI or ASTA marks.

9 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.

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