



Maintenance and Service Guide

SUMMARY

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

Legal information

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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.
-

Important notice about Customer Self-Repair parts

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

 **IMPORTANT:** See "Removal and replacement procedures for Customer Self-Repair parts" for details.

Accessing parts described in "Removal and replacement procedures for authorized service provider parts" can damage the computer or void your warranty.

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1 Product description

This table provides detailed product information.

Table 1-1 Product components and their descriptions

Category	Description	
Product Name	HP Fortis 14 inch G10 Chromebook	
	Model number: TBD	
	CTO model number: TBD	
Processors	<ul style="list-style-type: none">• Intel® Pentium™ Silver N6000 (1.1 GHz) processor (4 cores, 2933 MHz front side bus [FSB], 4 MB level 3 cache, 6 W)• Intel Celeron™ N5100 (1.1 GHz) processor (4 cores, 2933 MHz FSB, 4 MB level 3 cache, 6 W)• Intel Celeron N4500 (1.1 GHz) processor (2 cores, 2933 MHz FSB, 4 MB level 3 cache, 6 W)	
Chipset	Intel integrated soldered-on-circuit (SoC)	
Display	<ul style="list-style-type: none">• 35.6 cm (14.0 in), liquid crystal display (LCD), full high-definition (FHD) (1920 × 1080), white light-emitting diode (WLED), antiglare, ultrawide viewing area (UWVA), 45% National Television Standards Committee (NTSC), embedded DisplayPort™ (eDP), slim touchscreen display panel with narrow bezel and privacy cover for camera; typical brightness: 250 nits• 35.6 cm (14.0 in), LCD, FHD (1920 × 1080), WLED, antiglare, UWVA, 45% NTSC, eDP, slim non-touchscreen display panel with narrow bezel and privacy cover for camera; typical brightness: 250 nits• 35.6 cm (14.0 in), LCD, high-definition (HD) (1366 × 768), light-emitting diode (LED), antiglare, super vertical alignment (SVA), 45% NTSC, eDP 1.2 without panel self-refresh (PSR), flat touchscreen display panel with narrow bezel and privacy cover for camera; typical brightness: 250 nits• 35.6 cm (14.0 in), LCD, HD (1366 × 768), LED, antiglare, SVA, 45% NTSC, eDP, ultra-slim non-touchscreen display panel with narrow bezel and privacy cover for camera; typical brightness: 250 nits	
	Memory	Nonaccessible memory supporting up to 8 GB of RAM
		4266 low-power double data rate (LPDDR4×) 0.6v IC FBGA200
	eMMC	On-board embedded MultiMedia Controller (eMMC v5.0) up to 128 GB (MO-276)
Audio and video	Support for dual speakers	
	Support for one piece, USB 2.0, normal field-of-view (NFOV)	
	Support for dual-array digital microphone	
Wireless	Wireless Local Area Network (WLAN):	

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

Category	Description
	<p>Wi-Fi® 6 AX201 ax 2 × 2 + Bluetooth® 5.0 MU-MIMO M.2 2230 non-vPro® 160 MHz MIPI+BRI worldwide (WW) with two antennas</p> <p>MU-MIMO supported</p> <p>HP Extended Range WLAN supported</p> <p>WLAN is 100% attached</p> <p>Wireless Wide Area Network (WWAN):</p> <p>Intel XMM® 7360 LTE-Advanced (Cat 9) WWAN module</p> <p>WWAN module secured by 4FF subscriber identity module (SIM)</p>
Media card reader	<p>Supports microSD™, SDHC™, SDXC™</p> <p>Push-push insertion/removal</p>
Ports	<p>Audio-out (headphone)/audio-in (microphone) combo jack</p> <p>HDMI v1.4 port</p> <p>USB SuperSpeed ports (2)</p> <p>USB Type-C® power connector and SuperSpeed port</p>
Keyboard/pointing devices	Island style, non-backlit, spill-resistant keyboard in jet black finish
Power requirements	<p>2 cell, 47 Whr battery (polymer, HP Long Life, with HP Fast Charge Technology)</p> <p>45 W AC adapter (non-Power Factor Correction (nPFC), standard USB Type-C, 1.8 m [6.0 ft], with straight connector)</p> <p>C5, 1.0 m (3.3 ft) power cord</p>
Security	<ul style="list-style-type: none"> • Camera privacy cover • H1 secure microcontroller • Nano security cable lock slot
Operating system	Google® Chrome™
Serviceability	End user replaceable part: AC adapter

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.

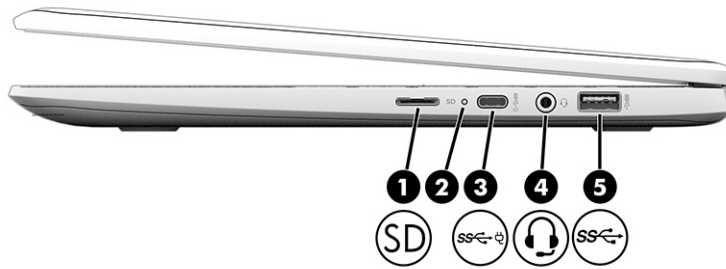


Table 2-1 Right-side components and their descriptions






Component	Description
(1)  microSD™ Memory card reader	<p>Reads optional memory cards that store, manage, share, or access information.</p> <p>To insert a card:</p> <ol style="list-style-type: none">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. <p>To remove a card:</p> <ul style="list-style-type: none">▲ Press in on the card, and then remove it from the memory card reader.
(2)  AC adapter and battery light	<ul style="list-style-type: none">• White: The AC adapter is connected and the battery is fully charged.• Amber: The AC adapter is connected and the battery is charging.• Blinking amber: The battery has an error.

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

Component	Description
	<ul style="list-style-type: none"> Off: The battery is not charging.
(3) 	<p>USB Type-C® power connector and SuperSpeed port</p> <p>Connects an AC adapter that has a USB Type-C connector, supplying power to the computer and, if needed, charging the computer battery.</p> <p>– and –</p> <p>Connects a USB device, provides high-speed data transfer, and (for select products) charges small devices when the computer is on or in Sleep mode.</p>
(4) 	<p>Audio-out (headphone)/Audio-in (microphone) combo jack</p> <p>Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. This jack does not support optional standalone microphones.</p> <p>WARNING! To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, see the <i>Regulatory, Safety, and Environmental Notices</i>.</p> <p>NOTE: When a device is connected to the jack, the computer speakers are disabled.</p>
(5) 	<p>USB SuperSpeed port</p> <p>Connects a USB device, such as a cell phone, camera, activity tracker, or smartwatch, and provides high-speed data transfer.</p>

Left

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

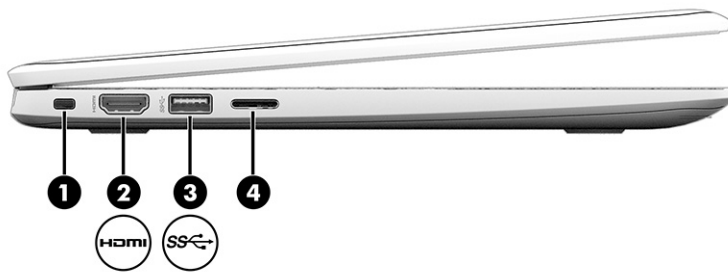


Table 2-2 Left-side components and their descriptions



Component	Description
(1)	<p>Security cable slot</p> <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>
(2) 	<p>HDMI port</p> <p>Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component, or a high-speed HDMI device.</p>

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

Component	Description
(3)  USB SuperSpeed port	Connects a USB device, such as a cell phone, camera, activity tracker, or smartwatch, and provides high-speed data transfer.
(4) SIM card slot	Supports a wireless SIM card.

Display

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

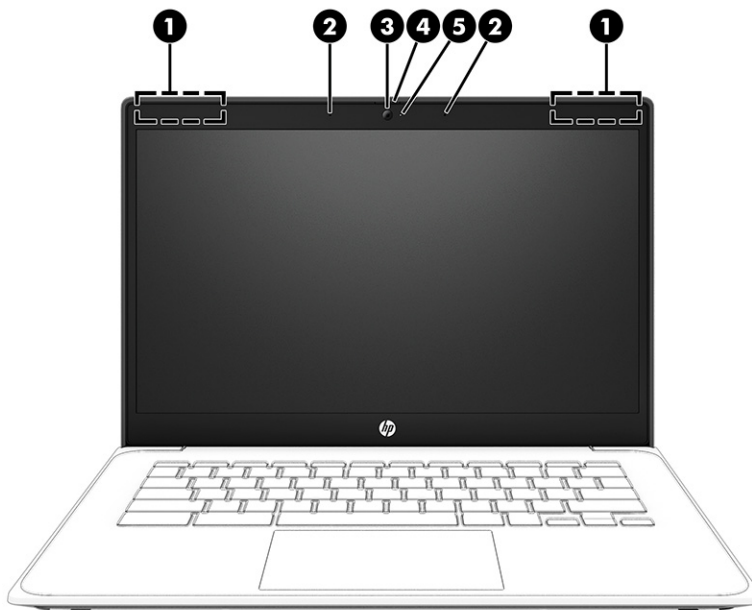


Table 2-3 Display components and their descriptions

Component	Description
(1) WLAN antennas*	Send and receive wireless signals to communicate with wireless local area networks (WLANs).
(2) Internal microphones	Record sound.
(3) 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.
(4) Camera privacy cover	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. 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.
(5) Camera light	On: The camera is in use.

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

Component	Description
	Off: The camera is turned off by the software.

*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

The touchpad settings and components are described here.

Touchpad components

Use the illustration and table to identify the touchpad components.

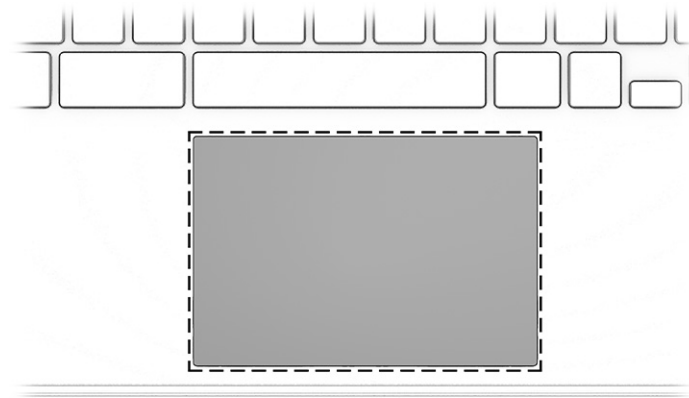


Table 2-4 Touchpad components and their descriptions

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

Speakers and power key

The speakers and the power key are located on the top of the keyboard.

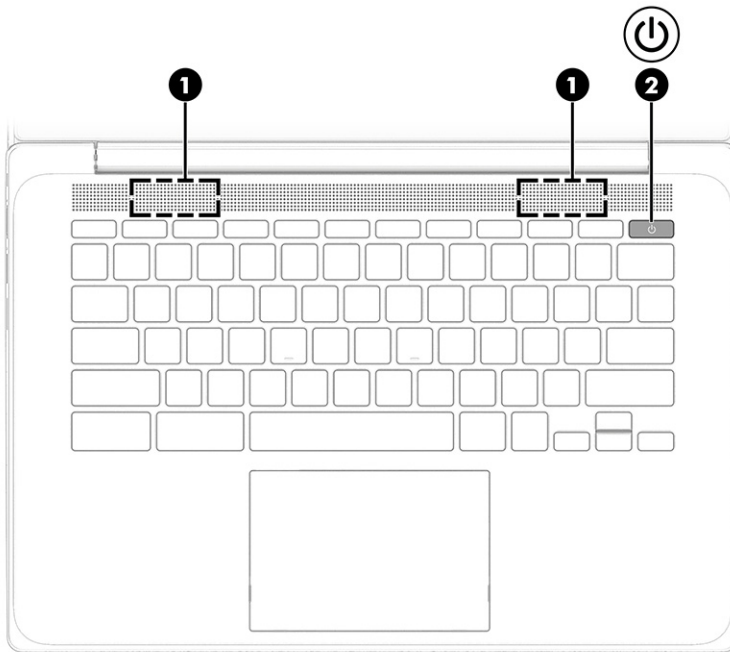


Table 2-5 Speakers and power key and their descriptions

Component	Description
(1) Speakers	Produce sound.
(2) 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 and hold the key for 10 seconds to turn off the computer. <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>

Special keys

Use the illustration and table to locate the special keys.[cad edit-request image from Jump2]

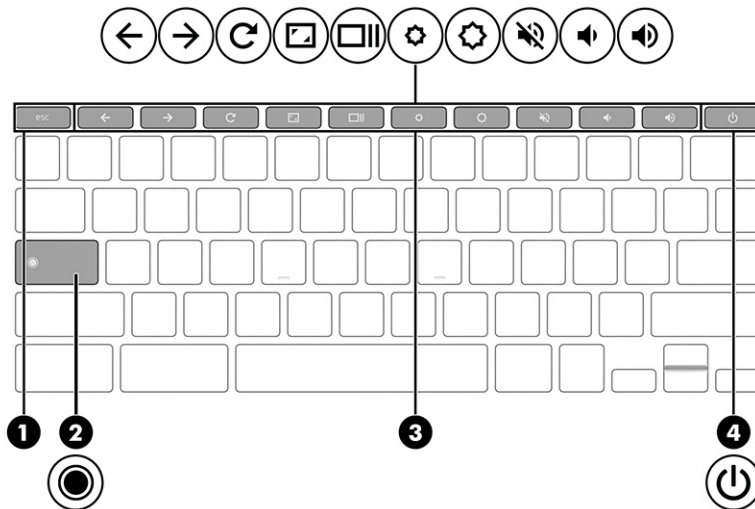


Table 2-6 Special keys and their descriptions

Component	Description
(1) <code>esc</code> key	Activates certain computer functions when pressed in combination with other keys, such as <code>tab</code> or <code>shift</code> .
(2) Search key	Press to search your apps and the web from your apps list.
(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 and hold the key for 10 seconds to turn off the computer. <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 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.

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

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

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

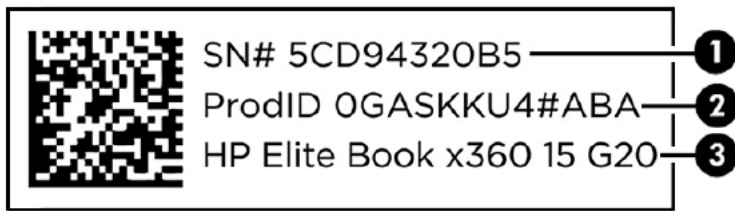


Table 2-7 Service label components and their descriptions

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

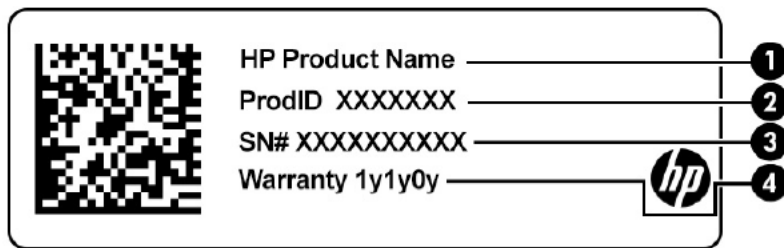


Table 2-8 Service label components and their descriptions

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

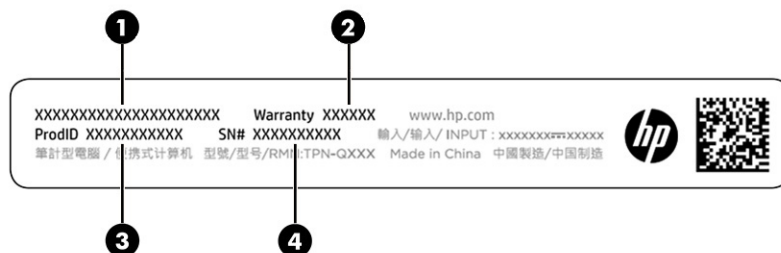


Table 2-9 Service label components and their descriptions

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

Table 2-9 Service label components and their descriptions (continued)

Component	
(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 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.

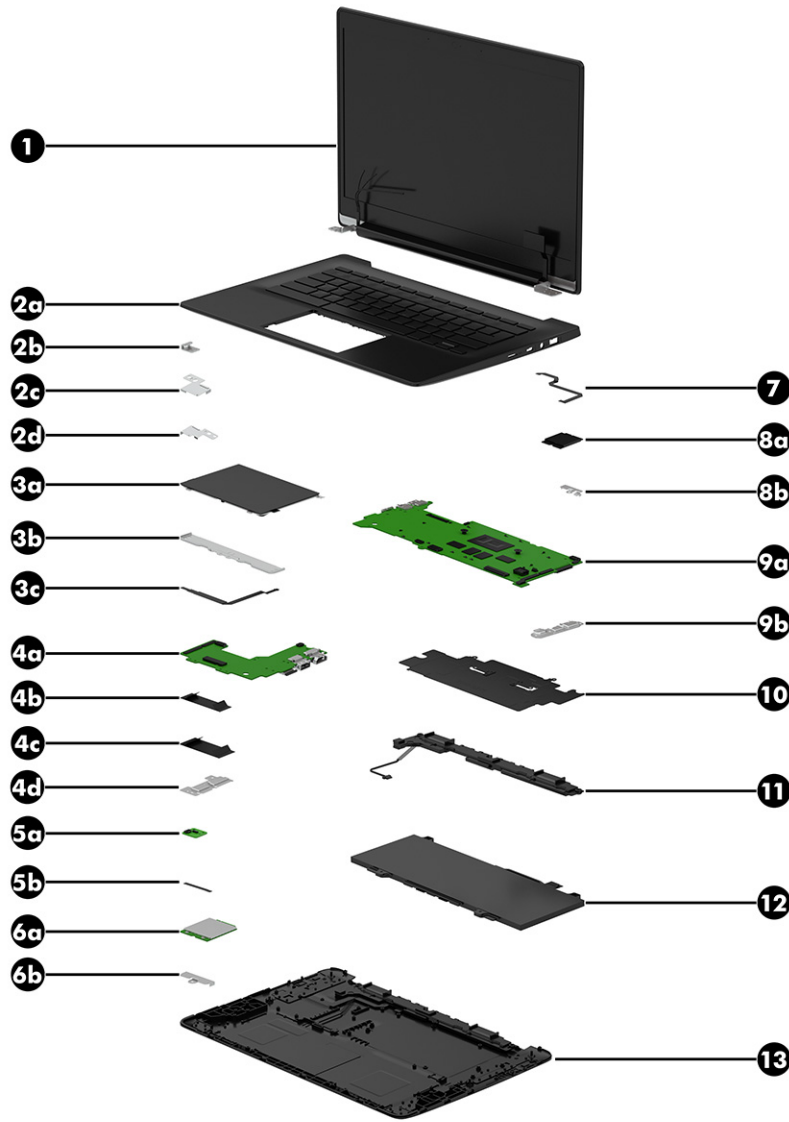


Table 3-1 Computer major component descriptions and part numbers

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 16 .	
(2a)	Top cover/keyboard in jet black finish for use on computer models equipped with WWAN capability:	
	For use in Belgium	N01976-A41
	For use in Brazil	N01976-201
	For use in Bulgaria	N01976-261
	For use in the Czech Republic and Slovakia	N01976-FL1
	For use in Denmark, Finland, Norway	N01976-DH1

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

Item	Component	Spare part number
	For use in France	N01976-051
	For use in French Canada	N01976-DB1
	For use in Germany	N01976-041
	For use in Greece	N01976-151
	For use in Iceland	N01976-DD1
	For use in India	N01976-D61
	For use in Israel	N01976-BB1
	For use in Italy	N01976-061
	For use in Japan	N01976-291
	For use in Latin America	N01976-161
	For use in the Netherlands	N01976-B31
	For use in Portugal	N01976-131
	For use in Romania	N01976-271
	For use in Russia	N01976-251
	For use in Saudi Arabia	N01976-171
	For use in Slovenia	N01976-BA1
	For use in South Korea	N01976-AD1
	For use in Spain	N01976-071
	For use in Switzerland	N01976-BG1
	For use in Taiwan	N01976-AB1
	For use in Thailand	N01976-281
	For use in Turkey	N01976-141
	For use in the United Kingdom	N01976-031
	For use in the United States	N01976-001
(2a)	Top cover/keyboard in jet black finish for use on computer models not equipped with WWAN capability:	
	For use in Belgium	N01977-A41
	For use in Brazil	N01977-201
	For use in Bulgaria	N01977-261
	For use in the Czech Republic and Slovakia	N01977-FL1
	For use in Denmark, Finland, Norway	N01977-DH1
	For use in France	N01977-051
	For use in French Canada	N01977-DB1
	For use in Germany	N01977-041
	For use in Greece	N01977-151

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

Item	Component	Spare part number
	For use in Iceland	N01977-DD1
	For use in India	N01977-D61
	For use in Israel	N01977-BB1
	For use in Italy	N01977-061
	For use in Japan	N01977-291
	For use in Latin America	N01977-161
	For use in the Netherlands	N01977-B31
	For use in Portugal	N01977-131
	For use in Romania	N01977-271
	For use in Russia	N01977-251
	For use in Saudi Arabia	N01977-171
	For use in Slovenia	N01977-BA1
	For use in South Korea	N01977-AD1
	For use in Spain	N01977-071
	For use in Switzerland	N01977-BG1
	For use in Taiwan	N01977-AB1
	For use in Thailand	N01977-281
	For use in Turkey	N01977-141
	For use in the United Kingdom	N01977-031
	For use in the United States	N01977-001
(2b)	Security cable lock bracket (included in the Bracket Kit, spare part number N01962-001)	
(2c)	Display hinge left bracket (included in the Bracket Kit, spare part number N01962-001)	
(2d)	Display hinge right bracket (included in the Bracket Kit, spare part number N01962-001)	
(3a)	Touchpad	N01961-001
	NOTE: The touchpad spare part kit does not include the touchpad bracket or the touchpad cable. The touchpad bracket is included in the Bracket Kit, spare part number N01962-001. The touchpad cable is included in the Cable Kit, spare part number N02955-001.	
(3b)	Touchpad bracket (included in the Bracket Kit, spare part number N01962-001)	
(3c)	Touchpad cable (included in the Cable Kit, spare part number N02955-001)	
(4a)	Connector board (includes audio jack and USB port):	
	NOTE: The connector board spare part kit does not include the connector board I/O bracket or the connector board cables. The connector board I/O bracket is included in the Bracket Kit, spare part number N01962-001. The connector board cables are included in the Cable Kit, spare part number N02955-001.	
	For use on computer models equipped with WWAN capability	N01957-001
	For use on computer models not equipped with WWAN capability	N01956-001
(4b)	Connector board low-speed cable (included in the Cable Kit, spare part number N02955-001)	

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

Item	Component	Spare part number
(4c)	Connector board high-speed cable (included in the Cable Kit, spare part number N02955-001)	
(4d)	Connector board I/O bracket (included in the Bracket Kit, spare part number N01962-001)	
(5a)	Sensor board	N01958-001
	NOTE: The sensor board spare part kit does not include the sensor board cable. The sensor board cable is included in the Cable Kit, spare part number N02955-001.	
(5b)	Sensor board cable (included in the Cable Kit, spare part number N02955-001)	
(6a)	Intel XMM 7360 LTE-Advanced (Cat 9) WWAN module	M49113-005
	NOTE: The WWAN module spare part kit does not include the WWAN module bracket. The WWAN module bracket is included in the Bracket Kit, spare part number N01962-001.	
(6b)	WWAN module bracket (included in the Bracket Kit, spare part number N01962-001)	
(7)	SIM cable (included in the Cable Kit, spare part number N02955-001)	
(8a)	Intel Wi-Fi 6 AX201 ax 2x2 + Bluetooth 5.0 MU-MIMO M.2 2230 non-vPro 160 MHz MIPI+BRI WW with 2 antennas WLAN module	L92724-005
	NOTE: The WLAN module spare part kit does not include the WLAN module bracket. The WLAN module bracket is included in the Bracket Kit, spare part number N01962-001.	
(8b)	WLAN module bracket (included in the Bracket Kit, spare part number N01962-001)	
(9a)	System board: The system board spare part kit includes an integrated processor, UMA graphics subsystem memory, system memory, system storage, the Google Chrome operating system, and replacement thermal material. Replacement thermal material is also available using spare part number N01960-001.	
	NOTE: The system board spare part kit does not include the system board I/O bracket. The system board I/O bracket is included in the Bracket Kit, spare part number N01962-001.	
	System boards for use on computer models equipped with WWAN capability:	
	Equipped with an Intel Pentium Silver N6000 (1.1 GHz) processor (2933 MHz FSB, 4 MB L3 cache, 6 W), 8 GB of system memory, and 128 GB of eMMC system storage	N01951-001
	Equipped with an Intel Pentium Silver N6000 (1.1 GHz) processor (2933 MHz FSB, 4 MB L3 cache, 6 W), 8 GB of system memory, and 64 GB of eMMC system storage	N01950-001
	Equipped with an Intel Celeron N5100 (1.1 GHz) processor (2933 MHz FSB, 4 MB L3 cache, 6 W), 8 GB of system memory, and 128 GB of eMMC system storage	N01947-001
	Equipped with an Intel Celeron N5100 (1.1 GHz) processor (2933 MHz FSB, 4 MB L3 cache, 6 W), 8 GB of system memory, and 64 GB of eMMC system storage	N01942-001
	Equipped with an Intel Celeron N4500 (1.1 GHz) processor (2933 MHz FSB, 4 MB L3 cache, 6 W), 8 GB of system memory, and 32 GB of eMMC system storage	N01946-001
	Equipped with an Intel Celeron N4500 (1.1 GHz) processor (2933 MHz FSB, 4 MB L3 cache, 6 W), 4 GB of system memory, and 32 GB of eMMC system storage	N01944-001
	System boards for use on computer models not equipped with WWAN capability:	
	Equipped with an Intel Pentium Silver N6000 (1.1 GHz) processor (2933 MHz FSB, 4 MB L3 cache, 6 W), 8 GB of system memory, and 128 GB of eMMC system storage	N01948-001
	Equipped with an Intel Pentium Silver N6000 (1.1 GHz) processor (2933 MHz FSB, 4 MB L3 cache, 6 W), 8 GB of system memory, and 64 GB of eMMC system storage	N01949-001
	Equipped with an Intel Celeron N5100 (1.1 GHz) processor (2933 MHz FSB, 4 MB L3 cache, 6 W), 8 GB of system memory, and 64 GB of eMMC system storage	N01941-001

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

Item	Component	Spare part number
	Equipped with an Intel Celeron N4500 (1.1 GHz) processor (2933 MHz FSB, 4 MB L3 cache, 6 W), 8 GB of system memory, and 64 GB of eMMC system storage	N01945-001
	Equipped with an Intel Celeron N4500 (1.1 GHz) processor (2933 MHz FSB, 4 MB L3 cache, 6 W), 4 GB of system memory, and 32 GB of eMMC system storage	N01943-001
(9b)	System board I/O bracket (included in the Bracket Kit, spare part number N01962-001)	
(10)	Heat sink (includes replacement thermal material)	N01959-001
	Replacement thermal material (not illustrated)	N01960-001
(11)	Speakers (include left and right speakers, cables, and two rubber isolators)	N01966-001
(12)	Battery (2 cell, 47 Whr, Li-ion, includes cable)	M25914-005
(13)	Bottom cover	N01965-001

Display assembly subcomponents

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

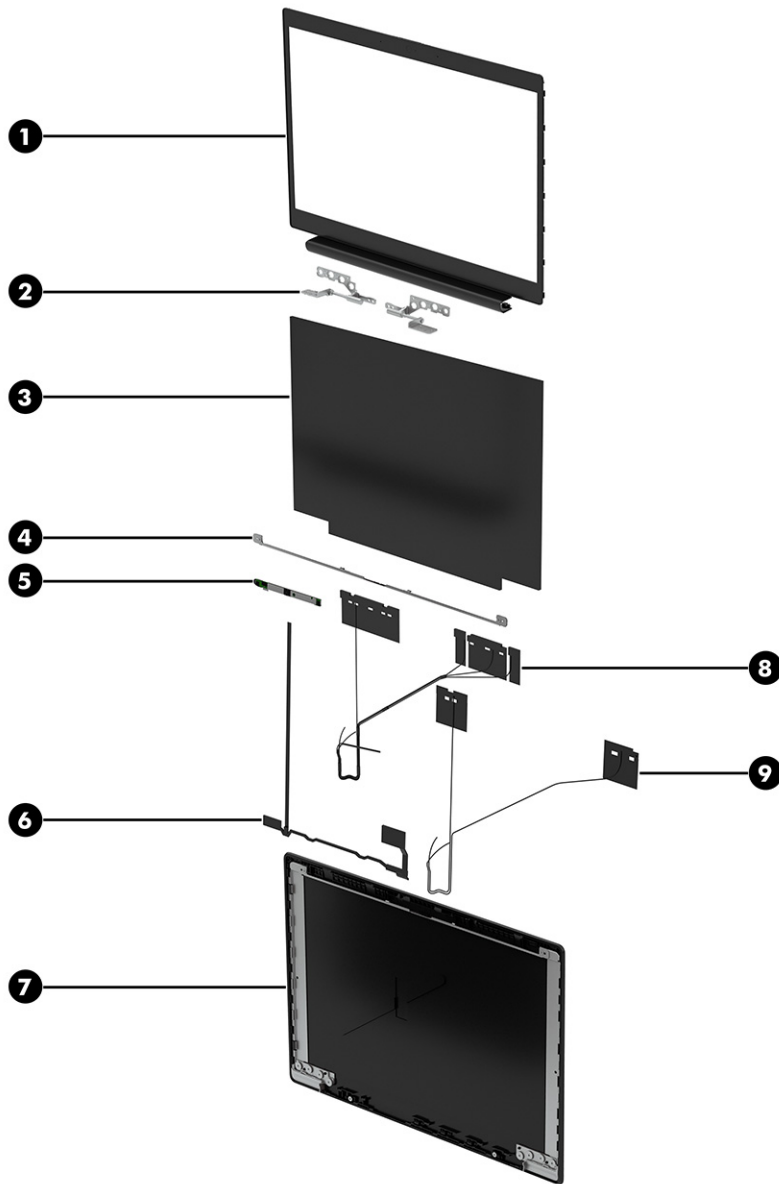


Table 3-2 Display component descriptions and part numbers

Item	Component	Spare part number
(1)	Display bezel	N01971-001
(2)	Display hinges (includes left and right hinges)	N01974-001
(3)	35.6 cm (14.0 in) display panel:	
	Display panel for use only on computer models equipped with WWAN capability:	
	LCD, FHD (1920 × 1080), WLED, antiglare, UWVA, 45 % CG, eDP, slim touchscreen display panel with narrow bezel and camera privacy cover; typical brightness: 250 nits	N11732-001
	Display panel for use only on computer models not equipped with WWAN capability:	
	LCD, FHD (1920 × 1080), WLED, antiglare, UWVA, 45 % CG, eDP, slim touchscreen display panel with narrow bezel and camera privacy cover; typical brightness: 250 nits	N01953-001

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

Item	Component	Spare part number
	LCD, HD (1366 × 768), LED, antiglare, SVA, 45 % CG, eDP 1.2 without PSR, flat touchscreen display panel with narrow bezel and camera privacy cover; typical brightness: 250 nits	N01955-001
	LCD, FHD (1920 × 1080), WLED, antiglare, UWVA, 45 % CG, eDP, slim non-touchscreen display panel with narrow bezel and camera privacy cover; typical brightness: 250 nits	N01952-001
	LCD, HD (1366 × 768), LED, antiglare, SVA, 45 % CG, eDP 1.2 without PSR, flat non-touchscreen display panel with narrow bezel and camera privacy cover; typical brightness: 250 nits	N01954-001
(4)	Display panel bracket: included in the Bracket Kit, spare part number N01962-001.	
(5)	Webcam/microphone module (includes double-sided adhesive)	N01972-001
(6)	Display panel cable (includes display panel cable and webcam/microphone module cable):	
	For use on computer models equipped with a touchscreen display assembly	N01973-001
	For use on computer models equipped with a non-touchscreen display assembly	N01963-001
(7)	Display back cover:	
	For use on computer models equipped with WWAN capability (includes left and right WLAN antenna cables and transceivers and left and right WWAN antenna cables and transceivers)	N01967-001
	For use on computer models not equipped with WWAN capability (includes left and right WLAN antenna cables)	N01968-001
	Wireless Antenna Kit:	
	For use on computer models equipped with WWAN capability (includes left and right WLAN antenna cables and transceivers and left and right WWAN antenna cables and transceivers)	N01969-001
	For use on computer models not equipped with WWAN capability (includes left and right WLAN antenna cables and transceivers)	N01970-001
(8)	WLAN antenna cables and transceivers	
(9)	WWAN antenna cables and transceivers	

Brackets

To identify the brackets, use this illustration and table.

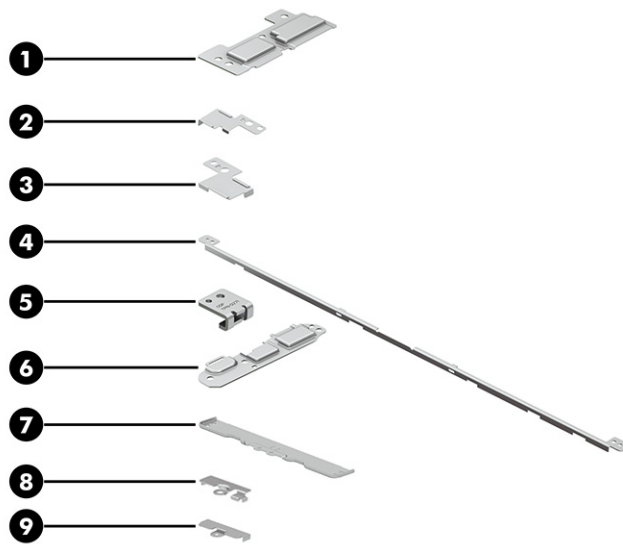


Table 3-3 Bracket descriptions and part numbers

Item	Component
The brackets listed below are included in the Bracket Kit, spare part number N01962-001.	
(1)	Connector board I/O bracket
(2)	Display hinge left bracket
(3)	Display hinge right bracket
(4)	Display panel bracket
(5)	Security cable lock bracket
(6)	System board I/O bracket
(7)	Touchpad bracket
(8)	WLAN module bracket
(9)	WWAN module bracket

Cables

To identify the cables, use this illustration and table.

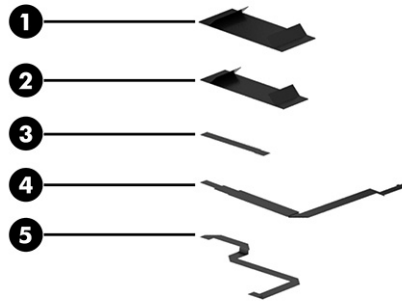


Table 3-4 Cable descriptions and part numbers

Item	Component
The cables listed below are included in the Cable Kit, spare part number N02955-001.	
(1)	Connector board high-speed cable
(2)	Connector board low-speed cable
(3)	Sensor board cable
(4)	Touchpad cable
(5)	SIM cable

Miscellaneous parts

To identify the miscellaneous parts, use this table.

Table 3-5 Miscellaneous part descriptions and part numbers

Component	Spare part number
45 W AC adapter (non-PFC, USB Type-C, 1.8 m [6.0 ft], 3 pin)	L43407-001
45 W AC adapter (non-PFC, USB Type-C, 1.8 m [6.0 ft], wall mount)	L32390-001
Bracket Kit (includes connector board I/O bracket, display hinge left and right brackets, display panel bracket, security cable lock bracket, system board I/O bracket, touchpad bracket, WLAN module bracket, and WWAN module bracket)	N01962-001
Cable Kit (includes connector board high-speed cable, connector board low-speed cable, sensor board cable, and touchpad cable)	N02955-001
Duckhead adapter (C5NS, premium with sticker, black, for use in North America)	L50818-002
Duckhead adapter (C5NS, premium with sticker, black, for use in South Korea)	L50818-001
Miscellaneous Kit (includes shields and gaskets)	N01964-001
Power cord (C5, 1.0 m [3.3 ft], conventional with sticker)	
For use in Argentina	L19357-001
For use in Australia	L19358-001
For use in Brazil	L19359-001
For use in Denmark	L19360-001

Table 3-5 Miscellaneous part descriptions and part numbers (continued)

Component	Spare part number
For use in Europe	L19361-001
For use in India	L19363-001
For use in Israel	L19362-001
For use in Italy	L19364-001
For use in Japan	L19365-001
For use in North America	L19367-001
For use in South Africa	L19369-001
For use in South Korea	L19366-001
For use in Switzerland	L19370-001
For use in Taiwan	L19372-001
For use in the United Kingdom	L19373-001
Power cord (C5, 1.0 m [3.3 ft], FDH, premium with sticker)	
For use in Argentina	L36815-001
For use in Australia	L36816-001
For use in Brazil	L44789-001
For use in Europe	L36818-001
For use in India	L36820-001
For use in Israel	L36819-001
For use in Italy	L44788-001
For use in North America	L36822-001
For use in South Africa	L36824-001
For use in Switzerland	L36825-001
For use in Taiwan	L36827-001
For use in the United Kingdom	L36828-001
Power cord for use in North America (C5, 1.8 m [6.0 ft], conventional with sticker)	L19367-002
Screw Kit	N01975-001

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."

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 24](#).

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	Relative humidity		
	55%	40%	10%
Walking across carpet	7,500 V	15,000 V	35,000 V
Walking across vinyl floor	3,000 V	5,000 V	12,000 V
Motions of bench worker	400 V	800 V	6,000 V
Removing DIPs (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 $1\text{ M}\Omega \pm 10\%$ resistance in the ground cords. To provide proper ground, a strap must be worn snug against bare skin. The ground cord must be connected and fit snugly into the banana plug connector on the grounding mat or workstation.
- **Heel straps/Toe straps/Boot straps** can be used at standing workstations and are compatible with most types of shoes or boots. On conductive floors or dissipative floor mats, use them on both feet with a maximum of $1\text{ M}\Omega \pm 10\%$ resistance between the operator and ground.

Table 4-2 Static shielding protection levels

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

Grounding the work area

To prevent static damage at the work area, 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**.
 - or –
 - Select the **HP Easy Clean** icon in the taskbar.
 - or –
 - 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 26](#) 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 27](#) 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 28](#).


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 27](#) 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 26](#), [Caring for wood veneer \(select products only\) on page 28](#), 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 26](#) 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 27](#) 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

Use this information to find the HP support that you need.

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>Pre-operating 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 key. 2. Immediately and repeatedly press esc when the power key 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 key light turns white to access the utility.</p> <ol style="list-style-type: none"> 3. Press f10 to enter the BIOS setup. 4. (On commercial products) Under the Main tab, select BIOS event log, and then select View BIOS Event Log. <p>- or -</p> <p>(On consumer products) Under the Main tab, select System Log.</p> <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. Click 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.
<p>Component and diagnosis information, failure detection, and required action</p>	<p>To locate diagnosis information and actions:</p> <ol style="list-style-type: none"> 1. Go to http://www.hp.com/go/techcenter/pcdiags. 2. Select Get Support.


Table 4-3 Support information locations (continued)

Service consideration	Path to access information
	<ol style="list-style-type: none"><li data-bbox="679 247 1439 304">3. Near the bottom of the window, select Notebook PCs, and then select your location.

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 59 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 22](#) 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.

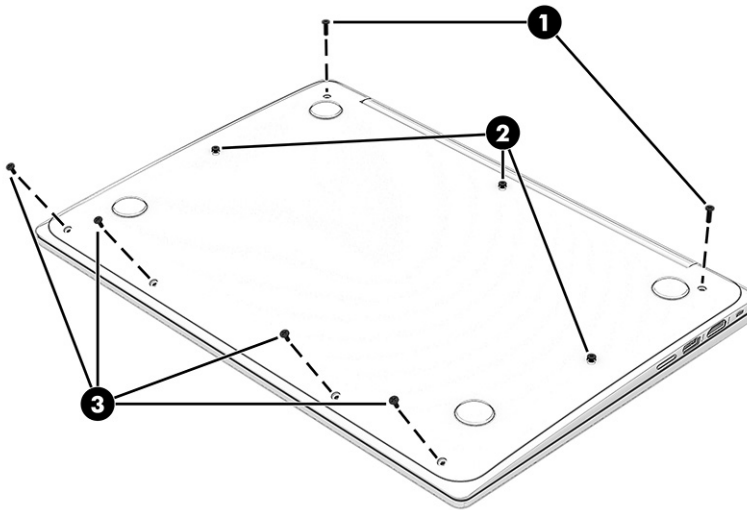
Table 5-1 Bottom cover description and part number

Description	Spare part number
Bottom cover	N01965-001

Before removing the bottom cover, prepare the computer for disassembly (see [Preparation for disassembly on page 31](#)).

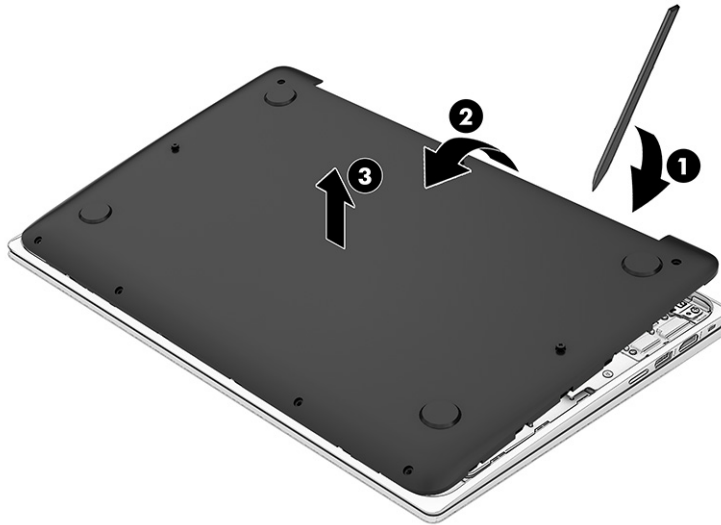
Remove the bottom cover:

1. Remove the two Phillips M2.5 × 8.6 screws **(1)** that secure the bottom cover to the computer.
2. Loosen the three captive Phillips M2.5 × 7.6 screws **(2)** that secure the bottom cover to the computer.
3. Remove the four Phillips M2.0 × 4.7 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 **(2)** from the computer.

5. Remove the bottom cover (3).



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, Li-ion, includes cable)	M25914-005

⚠ 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:

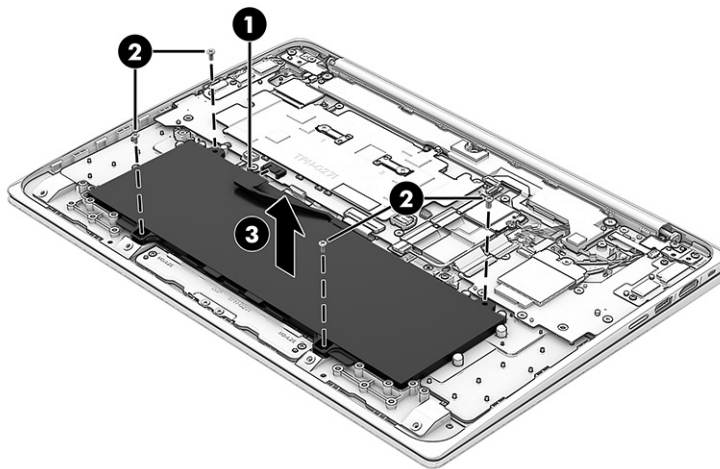
1. Prepare the computer for disassembly (see [Preparation for disassembly on page 31](#)).
2. Remove the bottom cover (see [Battery on page 33](#)).

⚠ 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 × 3.4 screws **(2)** that secure the battery to the computer.
3. Remove the battery **(3)**.



To insert the battery, reverse the removal procedures.

WWAN module

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

Table 5-3 WWAN module descriptions and part numbers

Description	Spare part number
Intel XMM 7360 LTE-Advanced (Cat 9) WWAN module	M49113-005

📄 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 WWAN module, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 31](#)).
2. Remove the bottom cover (see [Battery on page 33](#)).
3. Disconnect the battery cable from the system board (see [Battery on page 33](#)).


Remove the WWAN module:

1. Remove the Phillips M2.0 × 3.4 screw (1) that secures the WWAN module to the system board. (The WWAN module tilts up.)

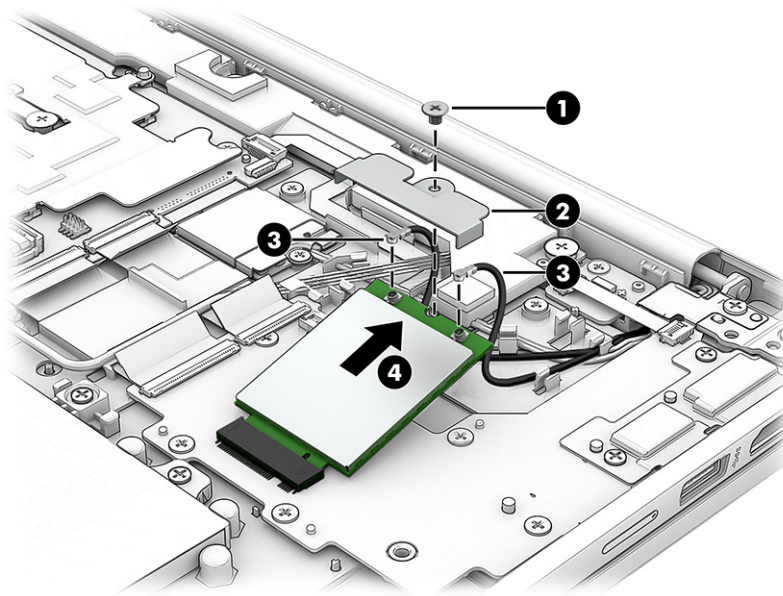
2. Remove the WWAN module bracket (2).

The WWAN module bracket is included in the Bracket Kit, spare part number N01962-001.

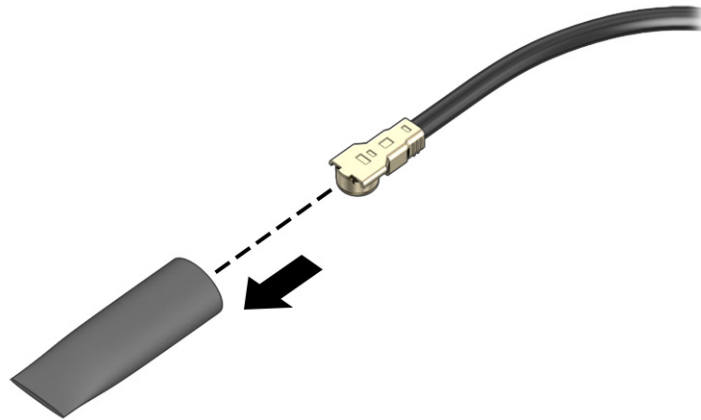
3. Disconnect the WWAN antenna cables (3) from the terminals on the WWAN module.

 **NOTE:** The #5 red WWAN antenna cable connects to the WWAN module #5 Main terminal. The #6 blue WWAN antenna cable connects to the WWAN module #6 Aux terminal.

4. Remove the WWAN module (4) by pulling the module away from the slot at an angle.



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




Reverse this procedure to install the WWAN module.

WLAN module

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

Table 5-4 WLAN module descriptions and part numbers

Description	Spare part number
Intel Wi-Fi 6 AX201 ax 2×2 + Bluetooth 5.0 MU-MIMO M.2 2230 non-vPro 160 MHz MIPI+BRI WW with 2 antennas WLAN module	L92724-005

 **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 31](#)).
2. Remove the bottom cover (see [Battery on page 33](#)).
3. Disconnect the battery cable from the system board (see [Battery on page 33](#)).

Remove the WLAN module:

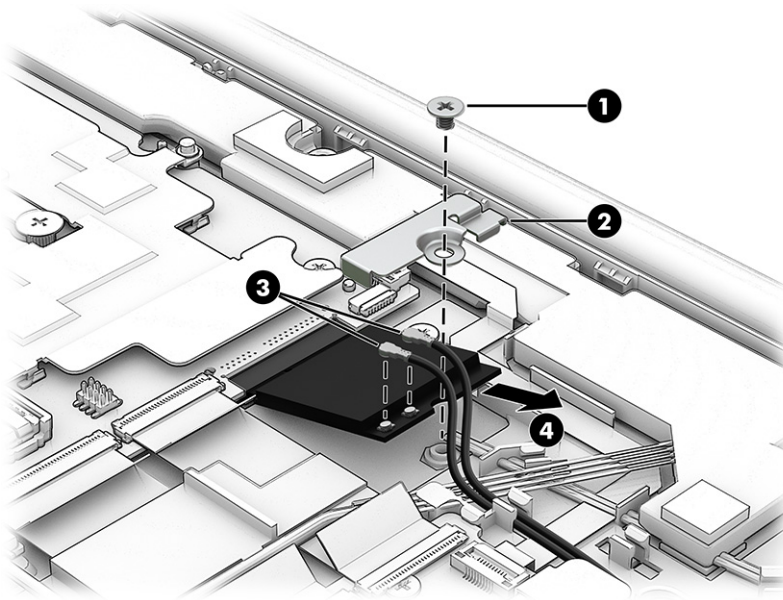
1. Remove the Phillips M2.0 × 3.4 screw **(1)** that secures the WLAN module to the system board. (The WLAN module tilts up.)
2. Remove the WLAN module bracket **(2)**.

The WLAN module bracket is included in the Bracket Kit, spare part number N01962-001.

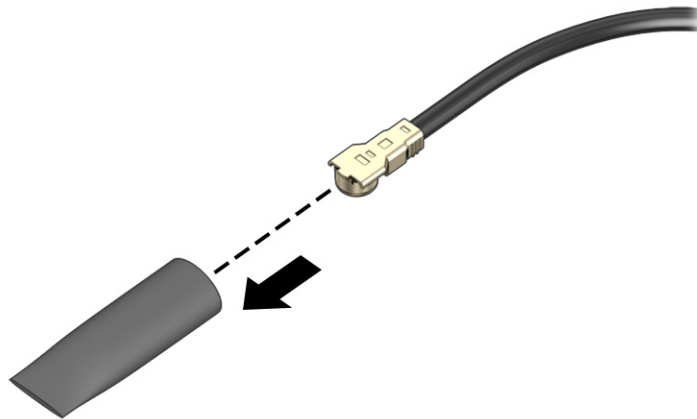
3. Disconnect the WLAN antenna cables (3) from the terminals on the WLAN module.

 **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 #2 Aux terminal.

4. Remove the WLAN module (4) by pulling the module away from the slot at an angle.



5. 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.



Reverse this procedure to install the WLAN module.

SIM cable (select products only)

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

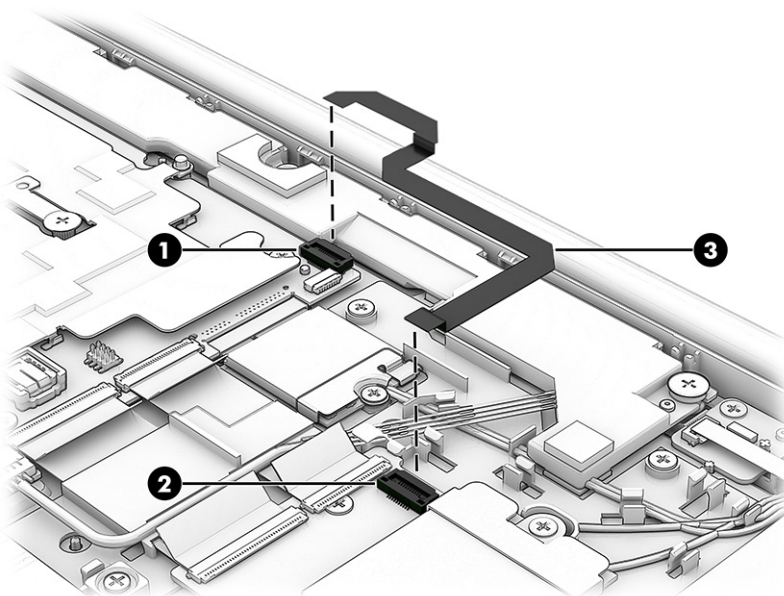
 **NOTE:** The SIM cable is included in the Cable Kit, spare part number N02955-001.

Before removing the SIM cable, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 31](#)).
2. Remove the bottom cover (see [Battery on page 33](#)).
3. Disconnect the battery cable from the system board (see [Battery on page 33](#)).

Remove the SIM cable:

1. Release the zero insertion force (ZIF) connector **(1)** to which the SIM cable is connected, and then disconnect the SIM cable from the system board.
2. Release the ZIF connector **(2)** to which the SIM cable is connected, and then disconnect the SIM cable from the connector board.
3. Detach the SIM cable **(3)** from the computer. (The SIM cable is attached to the computer with double-sided adhesive.)



4. Remove the SIM cable.

Reverse this procedure to install the SIM cable.

Sensor board cable

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

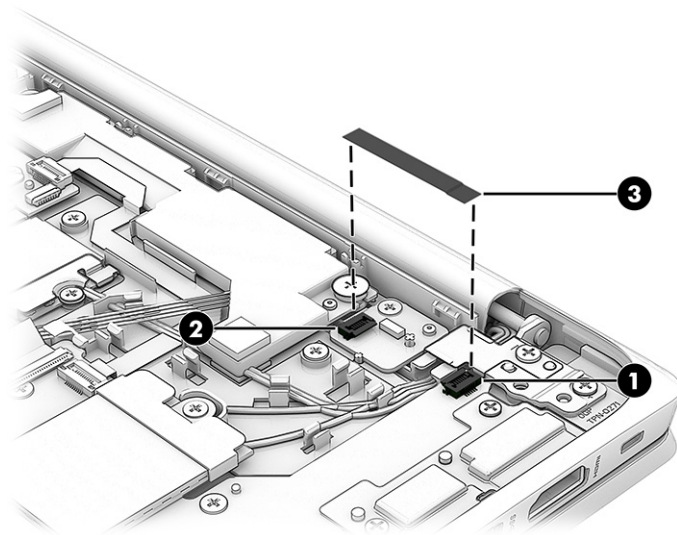
 **NOTE:** The sensor board cable is included in the Cable Kit, spare part number N02955-001.

Before removing the sensor board cable, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 31](#)).
2. Remove the bottom cover (see [Battery on page 33](#)).
3. Disconnect the battery cable from the system board (see [Battery on page 33](#)).

Remove the sensor board cable:

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



Reverse this procedure to install the sensor board cable.

Sensor board

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

Table 5-5 Sensor board description and part number

Description	Spare part number
Sensor board	N01958-001

NOTE: The sensor board spare part kit does not include the sensor board cable. The sensor board cable is included in the Cable Kit, spare part number N02955-001.

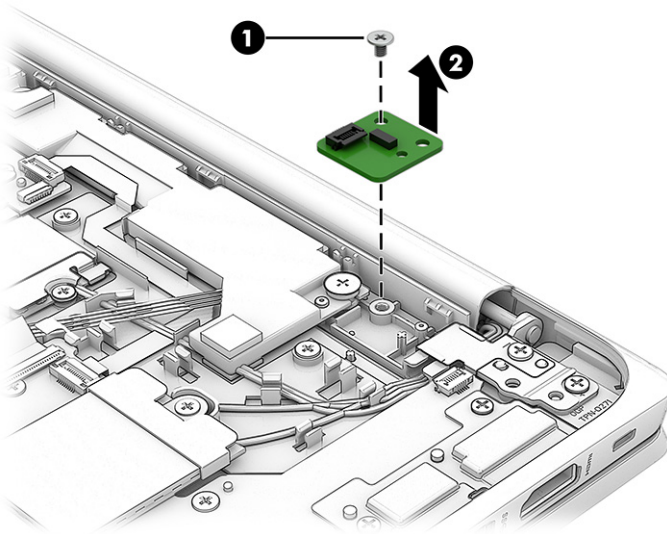
Before removing the sensor board, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 31](#)).
2. Remove the bottom cover (see [Battery on page 33](#)).
3. Disconnect the battery cable from the system board (see [Battery on page 33](#)).
4. Remove the sensor board cable (see [Sensor board cable on page 38](#)).

Remove the sensor board:

1. Remove the Phillips M2.0 × 3.4 screw (1) that secures the sensor board to the computer.

2. Remove the sensor board (2).



Reverse this procedure to install the sensor board.

Connector board cables

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

 **NOTE:** The connector board cables are included in the Cable Kit, spare part number N02955-001.

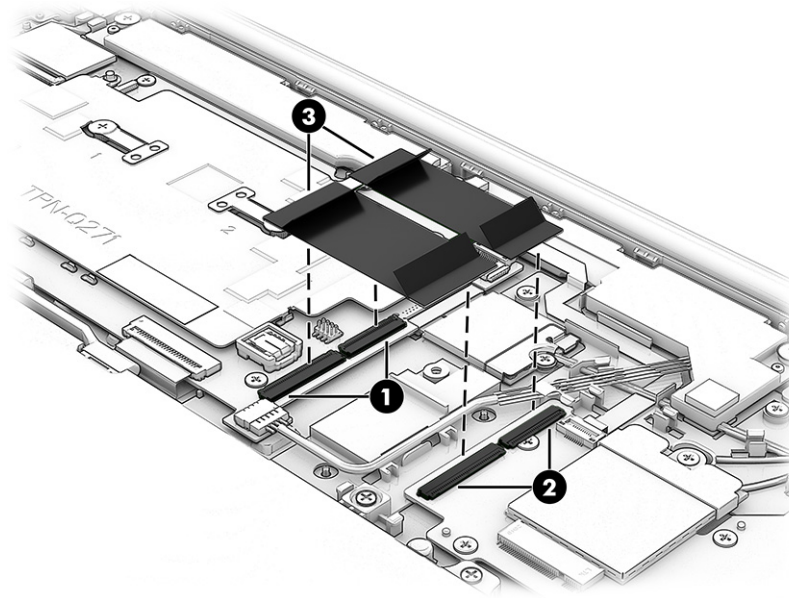
Before removing the connector board cables, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 31](#)).
2. Remove the bottom cover (see [Battery on page 33](#)).
3. Disconnect the battery cable from the system board (see [Battery on page 33](#)).

Remove the connector board cables:

1. Release the ZIF connectors (1) to which the connector board cables are connected, and then disconnect the connector board cables from the system board.
2. Release the ZIF connectors (2) to which the connector board cables are connected, and then disconnect the connector board cables from the connector board.

3. Remove the connector board cables (3).



Reverse this procedure to install the connector board cables.

Connector board

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

Table 5-6 Connector board description and part number

Description	Spare part number
For use on computer models equipped with WWAN capability	N01957-001
For use on computer models equipped without WWAN capability	N01956-001

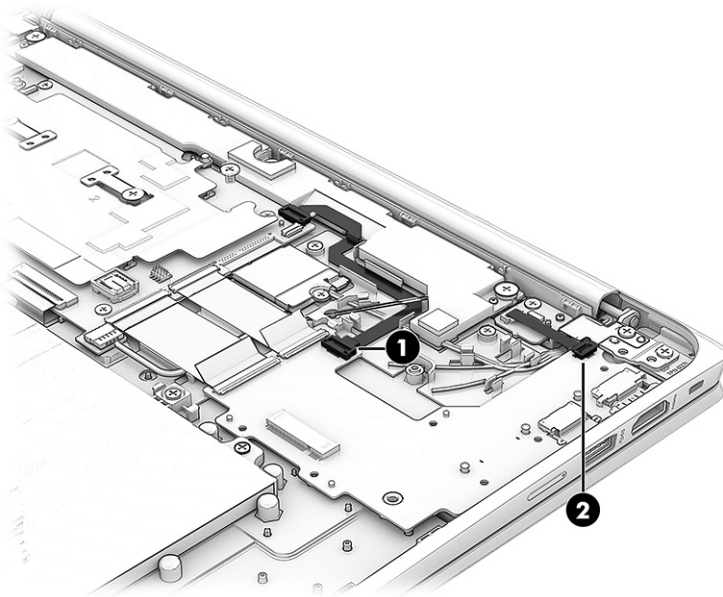
Before removing the connector board, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 31](#)).
2. Remove the bottom cover (see [Battery on page 33](#)).
3. Disconnect the battery cable from the system board (see [Battery on page 33](#)).
4. Remove the power cable (see [SIM cable \(select products only\) on page 37](#)).
5. Remove the connector board cables (see [Connector board cables on page 40](#)).

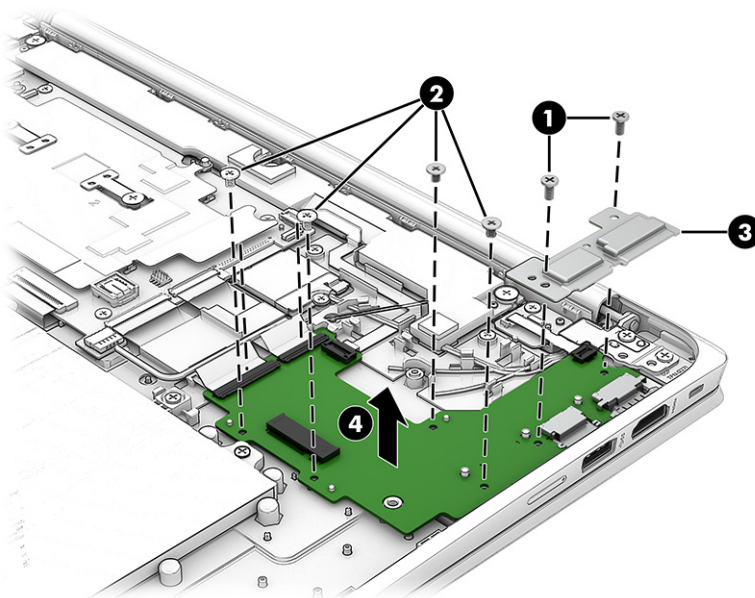
Remove the connector board:

1. Release the ZIF connector (1) to which the SIM cable is connected, and then disconnect the SIM cable from the connector board.

2. Release the ZIF connector (2) to which the sensor board cable is connected, and then disconnect the sensor board cable from the connector board.



3. Remove the two Phillips M2.0 × 5.2 screws (1) that secure the connector board and I/O bracket to the computer.
4. Remove the four Phillips M2.0 × 3.4 screws (2) that secure the connector board to the computer.
5. Remove the connector board I/O bracket (3).
The connector board I/O bracket is included in the Bracket Kit, spare part number N01962-001.
6. Remove the connector board (4).



Reverse this procedure to install the connector board.

Speakers

To remove the speakers, use this procedure and illustration.

Table 5-7 Speaker description and part number

Description	Spare part number
Speaker (includes left and right speakers, cables, and two rubber isolators)	N01966-001

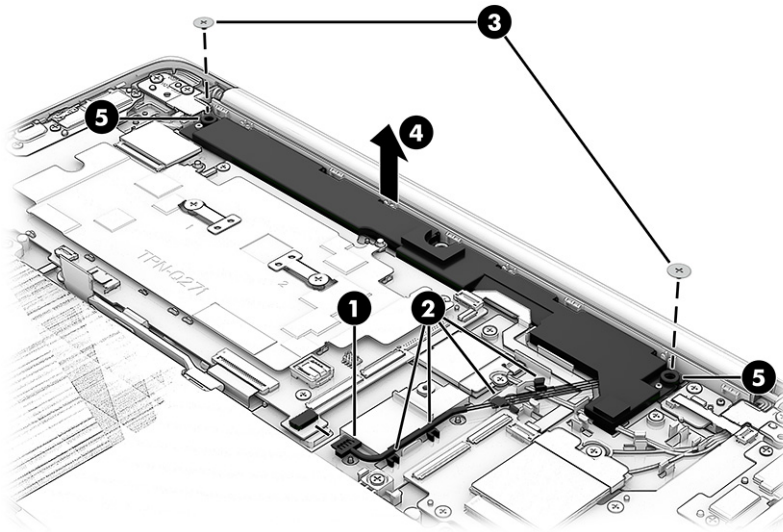
Before removing the speakers, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 31](#)).
2. Remove the bottom cover (see [Battery on page 33](#)).
3. Disconnect the battery cable from the system board (see [Battery on page 33](#)).

Remove the speakers:

1. Disconnect the speaker cable (1) from the system board.
2. Release the speaker cable from the retention clips (2) and the routing channel that are built into the top cover/keyboard.
3. Remove the Phillips M2.0 × 2.5 broadhead screws (3) that secure the speakers to the computer.
4. Remove the speakers from the computer (4).

When removing the speakers, make note of the location of the two rubber isolator locations (5). The absence of or damage to these isolators can result in degraded speaker performance.



Reverse this procedure to install the speakers.

System board

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

Table 5-8 System board descriptions and part numbers

Description	Spare part number
System board: The system board spare part kit includes an integrated processor, UMA graphics subsystem memory, system memory, system storage, the Google Chrome operating system, and replacement thermal material. Replacement thermal material is also available using spare part number N01960-001.	
NOTE: The system board spare part kit does not include the system board I/O bracket. The system board I/O bracket is included in the Bracket Kit, spare part number N01962-001.	
System boards for use on computer models equipped with WWAN capability:	
Equipped with an Intel Pentium Silver N6000 (1.1 GHz) processor (2933 MHz FSB, 4 MB L3 cache, 6 W), 8 GB of system memory, and 128 GB of eMMC system storage	N01951-001
Equipped with an Intel Pentium Silver N6000 (1.1 GHz) processor (2933 MHz FSB, 4 MB L3 cache, 6 W), 8 GB of system memory, and 64 GB of eMMC system storage	N01950-001
Equipped with an Intel Celeron N5100 (1.1 GHz) processor (2933 MHz FSB, 4 MB L3 cache, 6 W), 8 GB of system memory, and 128 GB of eMMC system storage	N01947-001
Equipped with an Intel Celeron N5100 (1.1 GHz) processor (2933 MHz FSB, 4 MB L3 cache, 6 W), 8 GB of system memory, and 64 GB of eMMC system storage	N01942-001
Equipped with an Intel Celeron N4500 (1.1 GHz) processor (2933 MHz FSB, 4 MB L3 cache, 6 W), 8 GB of system memory, and 32 GB of eMMC system storage	N01946-001
Equipped with an Intel Celeron N4500 (1.1 GHz) processor (2933 MHz FSB, 4 MB L3 cache, 6 W), 4 GB of system memory, and 32 GB of eMMC system storage	N01944-001
System boards for use on computer models not equipped with WWAN capability:	
Equipped with an Intel Pentium Silver N6000 (1.1 GHz) processor (2933 MHz FSB, 4 MB L3 cache, 6 W), 8 GB of system memory, and 128 GB of eMMC system storage	N01948-001
Equipped with an Intel Pentium Silver N6000 (1.1 GHz) processor (2933 MHz FSB, 4 MB L3 cache, 6 W), 8 GB of system memory, and 64 GB of eMMC system storage	N01949-001
Equipped with an Intel Celeron N5100 (1.1 GHz) processor (2933 MHz FSB, 4 MB L3 cache, 6 W), 8 GB of system memory, and 64 GB of eMMC system storage	N01941-001
Equipped with an Intel Celeron N4500 (1.1 GHz) processor (2933 MHz FSB, 4 MB L3 cache, 6 W), 8 GB of system memory, and 64 GB of eMMC system storage	N01945-001
Equipped with an Intel Celeron N4500 (1.1 GHz) processor (2933 MHz FSB, 4 MB L3 cache, 6 W), 4 GB of system memory, and 32 GB of eMMC system storage	N01943-001

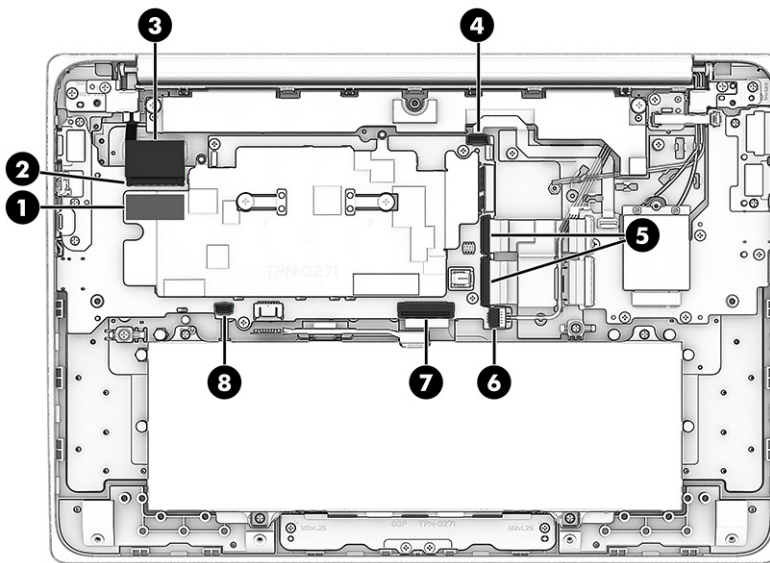
Before removing the system board, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 31](#)).
2. Remove the bottom cover (see [Battery on page 33](#)).
3. Disconnect the battery cable from the system board (see [Battery on page 33](#)).
4. Remove the WLAN module (see [WLAN module on page 36](#)).

When replacing the system board, be sure to remove the WWAN module (see [WWAN module on page 34](#)) and the heat sink (see [Heat sink on page 46](#)) from the defective system board and install them on the replacement system board.

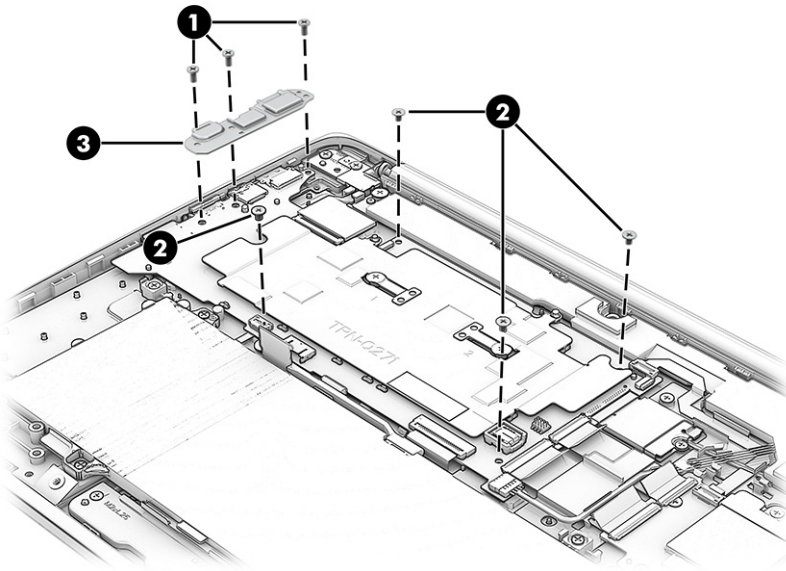
Remove the system board:

1. Release the adhesive support strip **(1)** that secures the display panel cable to the system board.
2. Release the connector bar **(2)** that secures the display panel cable to the system board.
3. Disconnect the display panel cable **(3)** from the system board.
4. Disconnect the following cables from the system board:
 - Power cable (ZIF) **(4)**
 - Connector board cables (ZIF) **(5)**
 - Speaker cable **(6)**
 - Keyboard cable (ZIF) **(7)**
 - Touchpad cable (ZIF) **(8)**

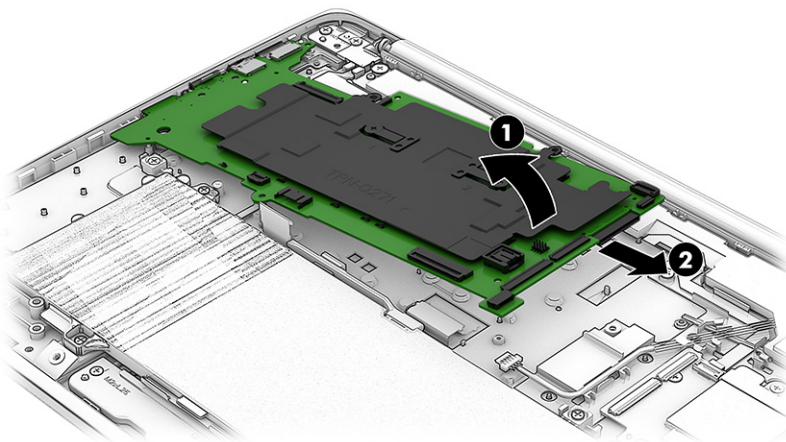


5. Remove the three Phillips M2.0 × 5.2 screws **(1)** that secure the system board and the system board I/O bracket to the computer.
6. Remove the four Phillips M2.0 × 3.4 screws **(2)** that secure the system board to the computer.
7. Remove the system board I/O bracket **(3)**.

The system board I/O bracket is included in the Bracket Kit, spare part number N01962-001.



8. Lift the right side of the system board (1) until it rests at an angle.
9. Slide the system board (2) up and to the right at an angle to remove it.



Reverse this procedure to install the system board.

Heat sink

To remove the heat sink, use these procedures and illustrations.

Table 5-9 Heat sink descriptions and part numbers

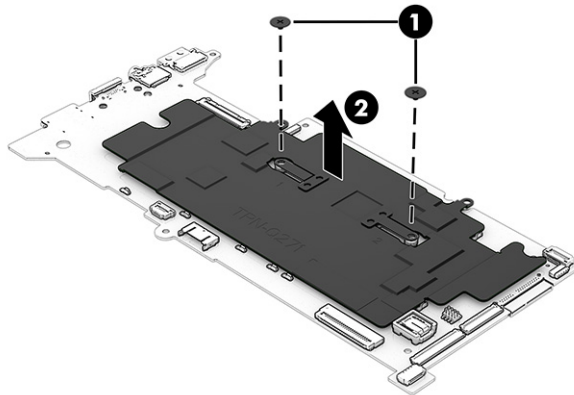
Description	Spare part number
Heat sink (includes replacement thermal material)	N01959-001
Replacement thermal material	N01960-001

Before removing the heat sink, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 31](#)).
2. Remove the bottom cover (see [Battery on page 33](#)).
3. Disconnect the battery cable from the system board (see [Battery on page 33](#)).
4. Remove the WLAN module (see [WLAN module on page 36](#)).
5. Remove the system board (see [System board on page 43](#)).

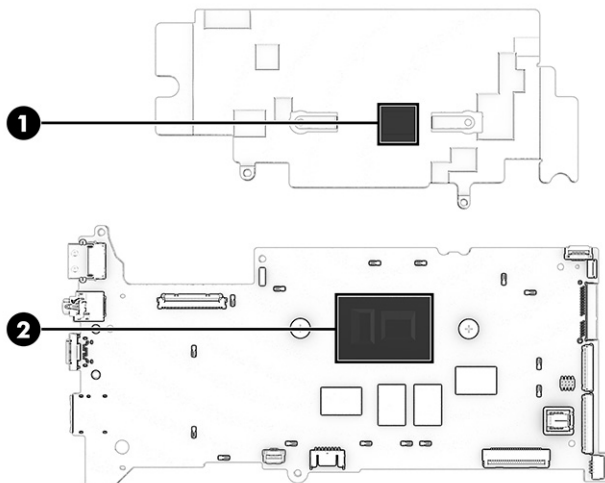
Remove the heat sink:

1. Remove the two Phillips M2.0 × 2.5 broadhead screws **(1)** that secure the heat sink to the system board.
2. Remove the heat sink **(2)**.



3. Thoroughly clean the thermal material from the surfaces of the heat sink and the system board components each time the heat sink is removed. Replacement thermal material is included with the heat sink and system board spare part kits. The following illustration shows the replacement thermal material locations.

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



Reverse this procedure to install the heat sink.

Display assembly

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

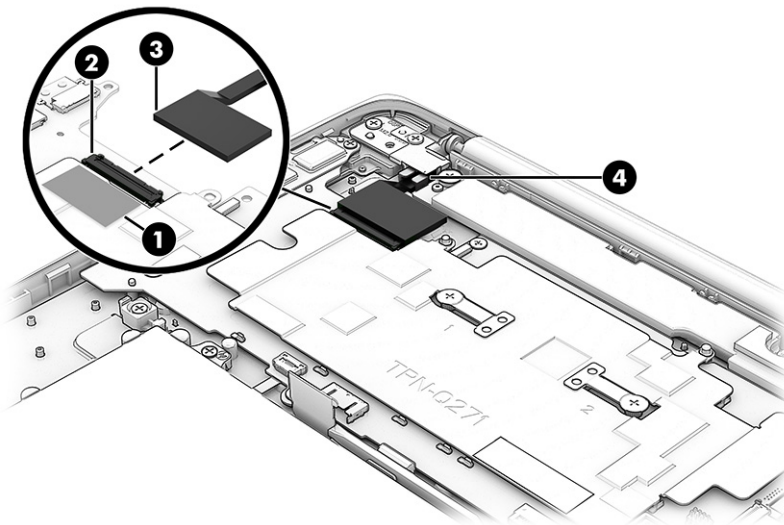
Full hinge-up displays are not available as spare parts. Spare parts for displays are available only at the subcomponent level.

Before removing the display panel, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 31](#)).
2. Remove the bottom cover (see [Battery on page 33](#)).
3. Disconnect the battery cable from the system board (see [Battery on page 33](#)).

Remove the display assembly:

1. Release the adhesive support strip **(1)** that secures the display panel cable to the system board.
2. Release the connector bar **(2)** that secures the display panel cable to the system board.
3. Disconnect the display panel cable **(3)** from the system board.
4. Release the display panel cable from the retention clip **(4)** that is built into the computer.



5. Remove the two Phillips M2.0 × 3.4 screws **(1)** that secure the WWAN module bracket and the WLAN module bracket to the system board.
6. Remove the WWAN module bracket **(2)** and the WLAN module bracket **(3)**.


The WLAN module bracket and WWAN module bracket are included in the Bracket Kit, spare part number N01962-001.

7. Disconnect the WWAN antenna cables **(4)** from the terminals on the WWAN module.

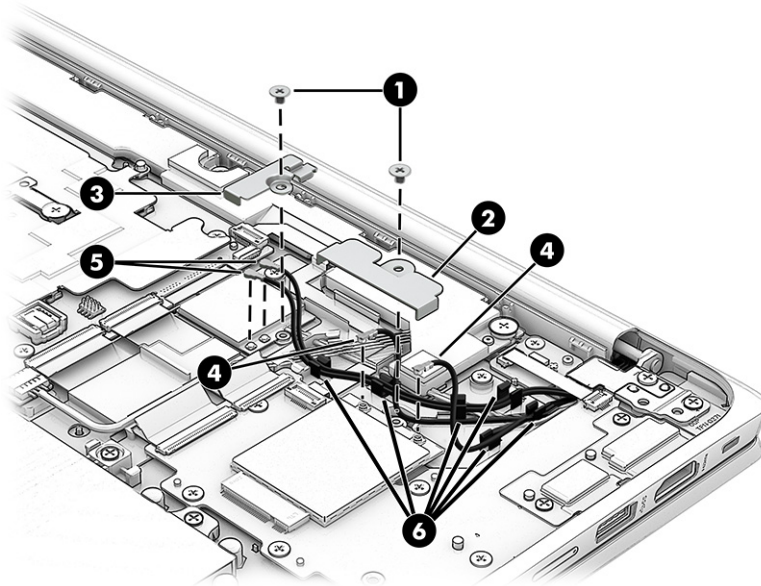


NOTE: The #5 red WWAN antenna cable connects to the WWAN module #5 Main terminal. The #6 blue WWAN antenna cable connects to the WWAN module #6 Aux terminal.

8. Disconnect the WLAN antenna cables (5) from the terminals on the WLAN module.

 **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 #2 Aux terminal.

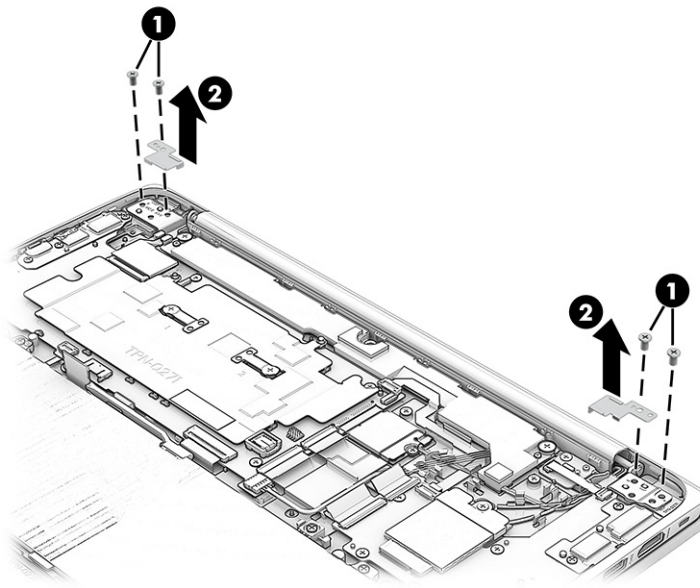
9. Release the wireless antenna cables from the retention clips (6) and routing channel that are built into the computer.



10. Remove the four Phillips M2.5 × 5.1 screws (1) that secure the display assembly to the computer.

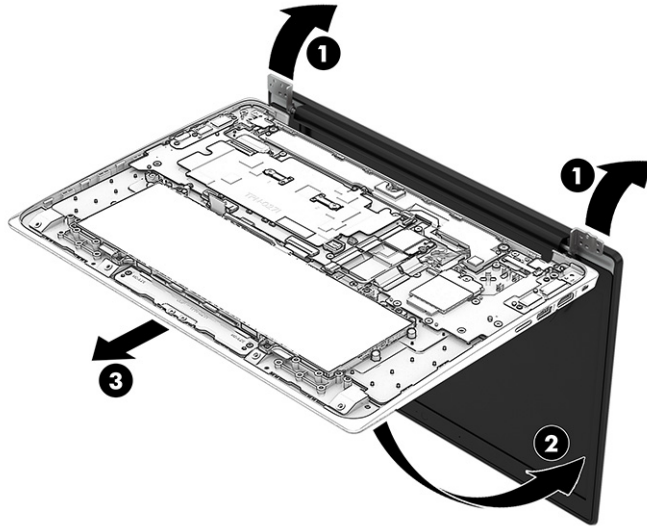
11. Remove the left and right hinge brackets (2).

The hinge brackets are included in the Bracket Kit, spare part number N01962-001.



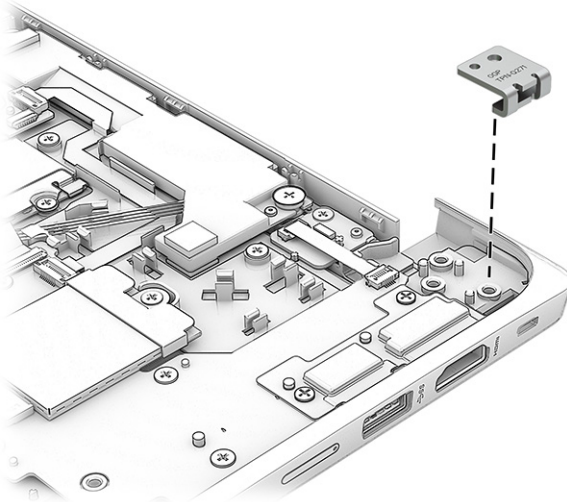
12. Swing the display hinges (1) up and back as far as they will go.

13. Open the display assembly (2) as far as it will open.
14. Separate the computer (3) from the display assembly.



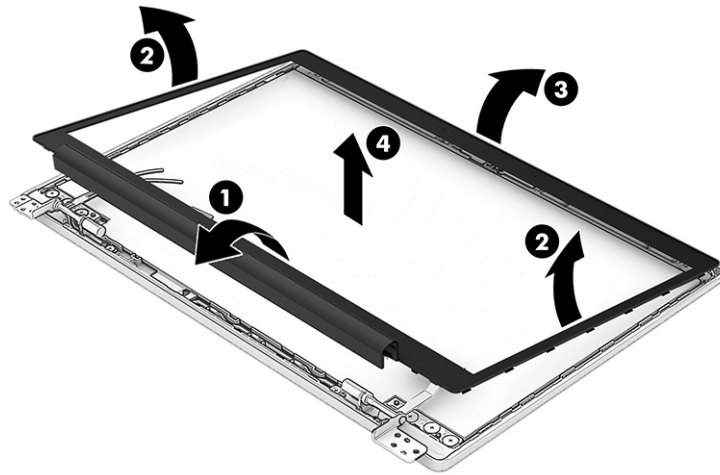
15. If the security cable lock bracket becomes dislodged from the top cover/keyboard during the display assembly removal process, install it in the top cover/keyboard as shown in the following illustration.

The security cable lock bracket is included in the Bracket Kit, spare part number N01962-001.



16. If you need to replace the display bezel and the display assembly subcomponents:
 - a. Flex the bottom (1) and the inside edges of the left and right sides of the bezel (2) to release the bezel from the display panel assembly.
 - b. Flex the top (3) to release the bezel from the display panel assembly.
 - c. Remove the bezel (4).

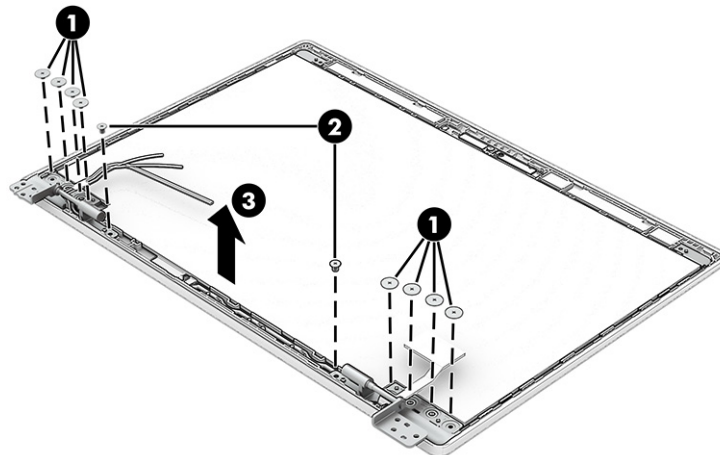
The bezel is available using spare part number N01971-001.



17. If you need to remove the hinges:

- a. Remove the display bezel.
- b. Remove the eight Phillips M2.5 × 2.5 broadhead screws (1) that secure the hinges to the display back cover.
- c. Remove the two Phillips M2.5 × 2.4 screws (2) that secure the hinges to the display back cover.
- d. Remove the display hinges (3).

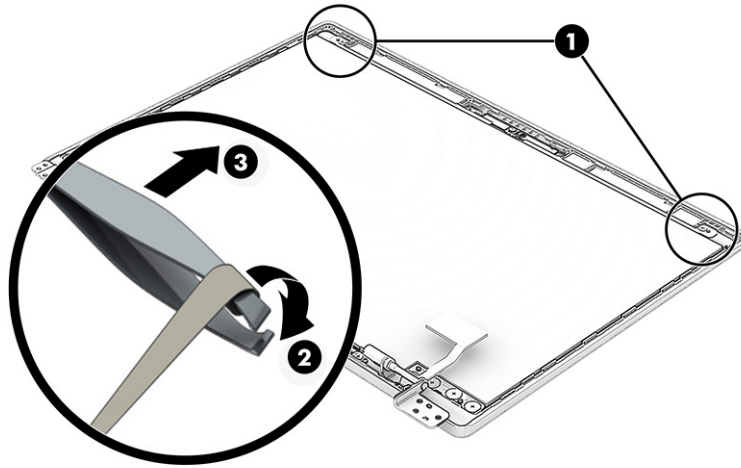
The display hinges are available using spare part number N01974-001.



18. If you need to remove the display panel:

- a. Remove the display bezel.
- b. Remove the display hinges.

- c. The display panel is secured to the display back cover with tape that is installed under the left (1) and right sides of the panel. To remove the panel, use tweezers to grasp the end of the tape (2). While turning the tweezers, wrap the tape around the tweezers as you continue to pull the tape out (3) from behind the display panel. You must pull the tape multiple times before it is completely removed.

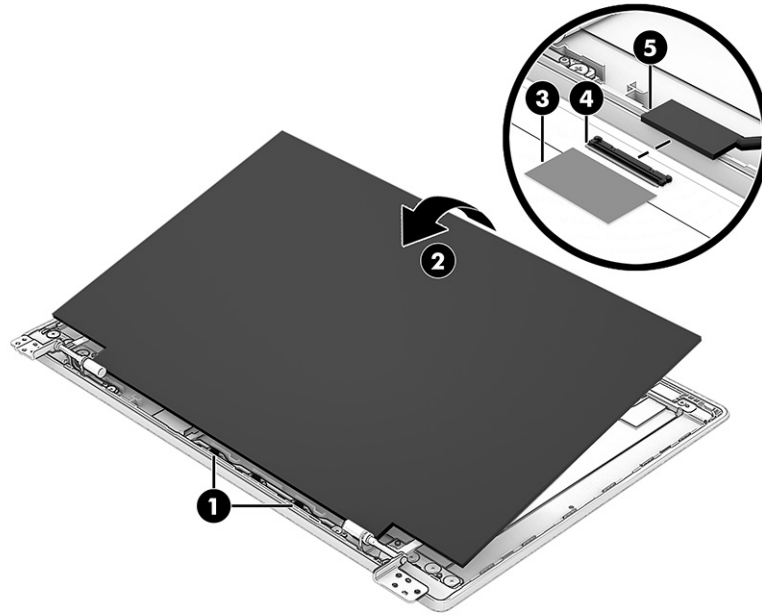


- d. Release the display panel cable from the retention clips (1) and routing channel that are built into the bottom edge of the display back cover.

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

- e. Lift the top edge of the display panel (2) and swing it up and forward until it rests upside down in front of the display back cover.
- f. Release the adhesive support strip (3) that secures the display panel cable to the back of the display panel.
- g. Release the retention bar (4) that secures the display panel cable to the back of the display panel.

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



- i. Remove the display panel.

The display panel is available using the following spare part numbers:

N01953-001: LCD, FHD (1920 × 1080), WLED, antiglare, UWVA, 45 % CG, eDP, slim touchscreen display panel with narrow bezel and camera privacy cover; typical brightness: 250 nits

N01952-001: LCD, FHD (1920 × 1080), WLED, antiglare, UWVA, 45 % CG, eDP, slim non-touchscreen display panel with narrow bezel and camera privacy cover; typical brightness: 250 nits

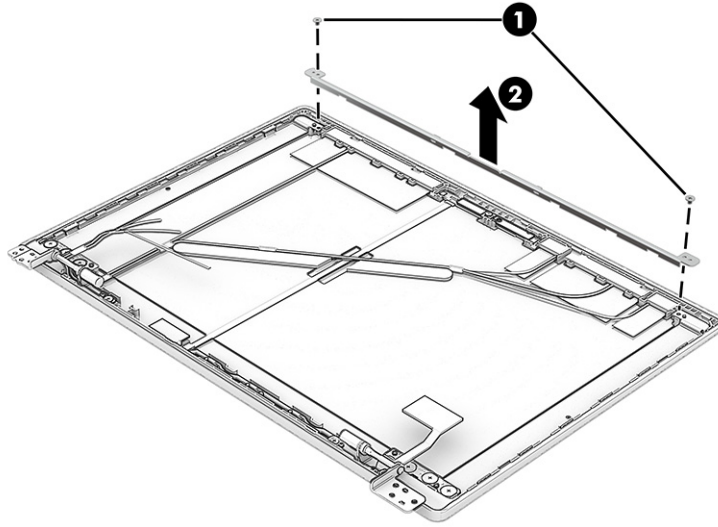
N01955-001: LCD, HD (1366 × 768), LED, antiglare, SVA, 45 % CG, eDP 1.2 without PSR, flat touchscreen display panel with narrow bezel and camera privacy cover; typical brightness: 250 nits

N01954-001: LCD, HD (1366 × 768), LED, antiglare, SVA, 45 % CG, eDP 1.2 without PSR, flat non-touchscreen display panel with narrow bezel and camera privacy cover; typical brightness: 250 nits

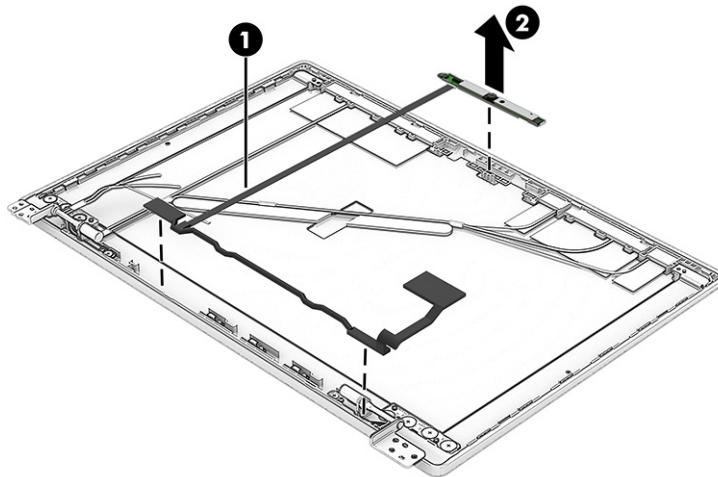
- 19. If you need to remove the webcam/microphone module and cable:

- a. Remove the display bezel.
- b. Remove the display hinges.
- c. Remove the display panel.
- d. Remove the two Phillips M2.0 × 3.4 screws (1) that secure the display bracket to the display back cover.
- e. Remove the display bracket (2).

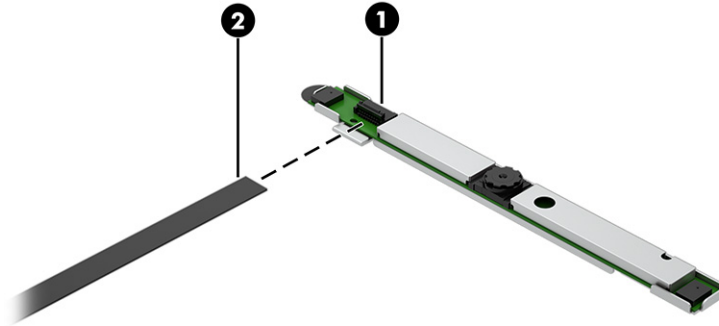
The display bracket is included in the Bracket Kit, spare part number N01962-001.



- f. 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 tape.)
- g. Detach the webcam/microphone module (2) from the display back cover. (The webcam/microphone module is attached to the display back cover with double-sided tape.)



- h. Release the ZIF connector (1) to which the webcam/microphone module cable is connected, and then disconnect the webcam/microphone module cable (2) from the webcam/microphone module.

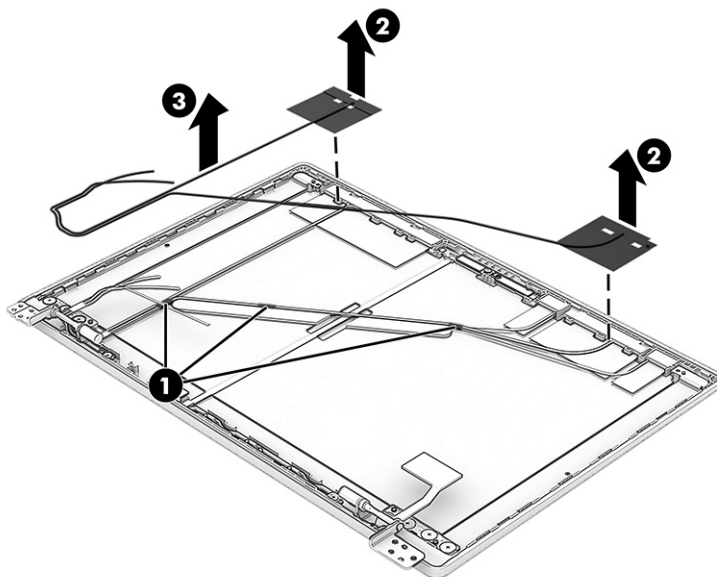


The webcam/microphone module is available using spare part number N01972-001. The webcam/microphone module cable is a component of the display panel cable.

20. If you need to remove the WLAN antenna and transceivers:

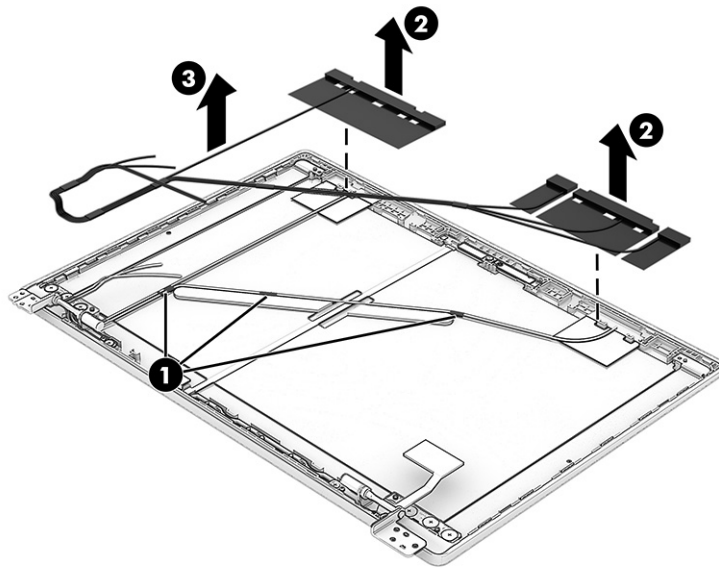
- a. Remove the display bezel.
- b. Remove the display hinges.
- c. Remove the display panel.
- d. Remove the webcam/microphone module.
- e. Release the retention tabs (1) that secure the WLAN antenna cables to the display back cover.
- f. Detach the WLAN antenna transceivers (2) from the display back cover.
- g. Remove the WLAN antennas (3).

The WLAN antennas are available using spare part number N01970-001.



21. If you need to remove the WWAN antenna and transceivers:
 - a. Remove the display bezel.
 - b. Remove the display hinges.
 - c. Remove the display panel.
 - d. Remove the webcam/microphone module.
 - e. Release the retention tabs (1) that secure the WWAN antenna cables to the display back cover.
 - f. Detach the WWAN antenna transceivers (2) from the display back cover.
 - g. Remove the WWAN antennas (3).

The WWAN antennas are available using spare part number N01969-001.



Reverse this procedure to reassemble and replace the display assembly.

Touchpad cable

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



NOTE: The touchpad cable is included in the Cable Kit, spare part number N02955-001.

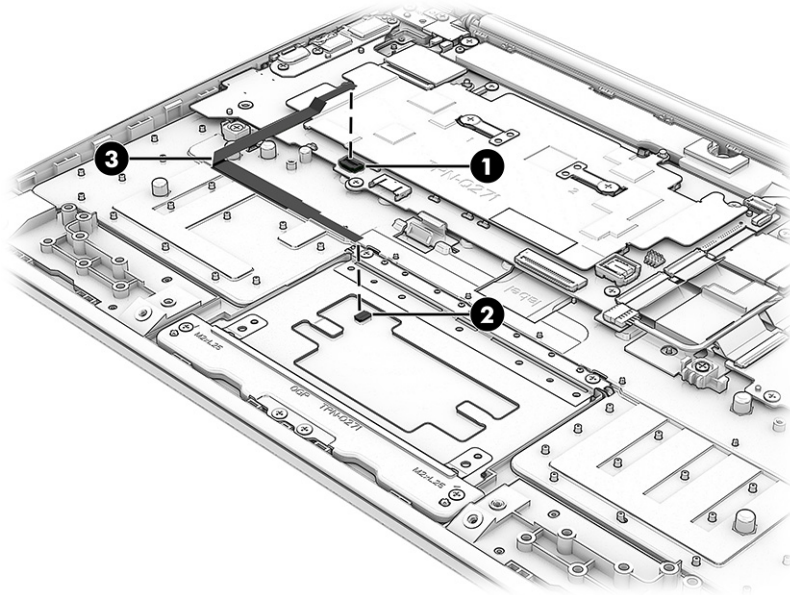
Before removing the touchpad cable, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 31](#)).
2. Remove the bottom cover (see [Battery on page 33](#)).
3. Remove the battery (see [Battery on page 33](#)).

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 **(2)** to which the touchpad cable is connected, and then disconnect the power cable from the touchpad.
3. Detach the touchpad cable **(3)** from the computer. (The touchpad cable is attached to the computer with double-sided adhesive.)



4. Remove the touchpad cable.

Reverse this procedure to install the touchpad cable.

Touchpad

To remove the touchpad, use this procedure and illustration.

Table 5-10 Touchpad description and part number

Description	Spare part number
Touchpad	xxxxxx-001

Before removing the touchpad, follow these steps:

1. Prepare the computer for disassembly (see [Preparation for disassembly on page 31](#)).
2. Remove the bottom cover (see [Battery on page 33](#)).
3. Remove the battery (see [Battery on page 33](#)).
4. Remove the touchpad cable (see [Touchpad cable on page 56](#)).

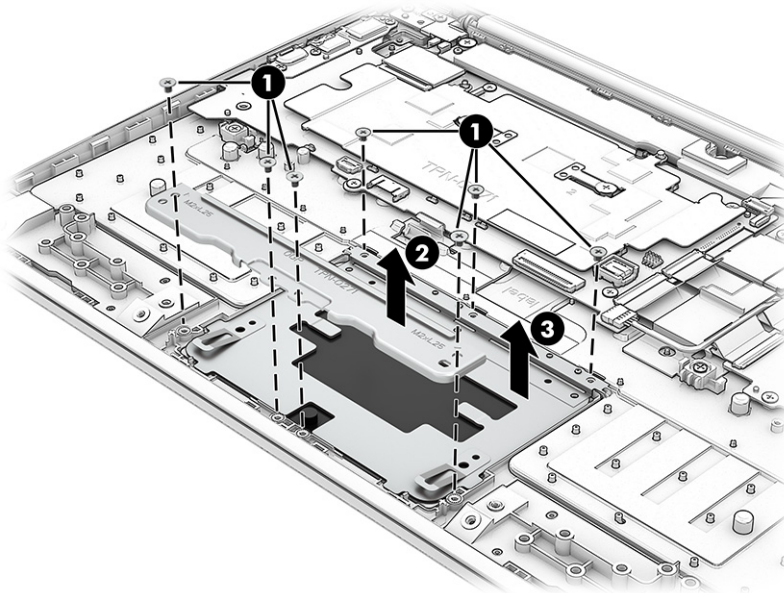
Remove the touchpad:

1. Remove the seven Phillips M2.0 × 2.9 screws **(1)** that secure the touchpad and touchpad bracket to the computer.

2. Remove the touchpad bracket (2).

The touchpad bracket is included in the Bracket Kit, spare part number N01962-001.

3. Remove the touchpad (3).



Reverse this procedure to install the touchpad.

Keyboard with top cover

The top cover with keyboard remains after removing all other spare parts from the computer. In this section, the first table provides the main spare part number for the top cover/keyboards. The second table provides the country codes.

Table 5-11 Keyboard with top cover descriptions and part numbers

Description	Spare part number
Top cover/keyboard in jet black finish for use on computer models equipped with WWAN capability	N01977-xx1
Top cover/keyboard in jet black finish for use on computer models not equipped with WWAN capability	N01976-xx1

Table 5-12 Spare part country codes

For use in country or region	Spare part number	For use in country or region	Spare part number	For use in country or region	Spare part number
Belgium	-A41	India	-D61	Slovenia	-BA1
Brazil	-201	Israel	-BB1	South Korea	-AD1
Bulgaria	-261	Italy	-061	Spain	-071
Czech Republic/Slovakia	-FL1	Japan	-291	Switzerland	-BG1
Denmark, Finland, and Norway	-DH1	Latin America	-161	Taiwan	-AB1
French Canada	-DB1	The Netherlands	-B31	Thailand	-281

Table 5-12 Spare part country codes (continued)

For use in country or region	Spare part number	For use in country or region	Spare part number	For use in country or region	Spare part number
France	-051	Portugal	-131	Turkey	-141
Germany	-041	Romania	-271	United Kingdom	-031
Greece	-151	Russia	-251	United States	-001
Iceland	-DD1	Saudi Arabia	-171		

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.


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

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 have tried restarting your computer, and it is still not working properly.
- You want to change the owner of your computer.

To reset your computer:

1. Under the **Settings** menu, click **Advanced**.
2. In the **Powerwash** section, click **Powerwash**.
3. Click **Restart**, and then sign in with your Google Account.

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

4. Follow the on-screen instructions to reset your computer.

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

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.

To install the Chromebook Recovery Utility:

- ▲ Open the Chrome Web Store, search for , click **Chromebook Recovery Utility** from the Apps list, and follow the on-screen instructions.

Creating recovery media

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

To create recovery media:

1. Turn on a computer with Internet access.



NOTE: You must have administrative rights to the computer.

2. Click the **Launcher** icon, and then click **All Apps**.
3. In the Apps window, click **Recovery**, and then click **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

To recover the Chrome operating system on your computer using the recovery media 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 “Chrome OS is missing or damaged” screen displays, 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 displays, 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 displays, remove the recovery media.

The computer restarts with Chrome OS reinstalled.

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.

1. Click the **Launcher** icon, and then click **All Apps**.
2. In the apps window, click **Recovery**.
3. Click the **Settings** icon, and then click **Erase recovery media**.
4. Select the USB flash drive or SD memory card you inserted, click **Continue**, and then click **Erase now**.
5. After the recovery media is erased, click **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.

7 Specifications

This chapter provides specifications for your computer.

Computer specifications

This section provides specifications for your computer. When you travel 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	331.9 mm	13.07 in
Depth	230.5 mm	9.08 in
Height (front to back)	20.9 mm	0.82 in
Weight		
	1.64 kg	3.62 lb
Input power		
Operating voltage and current	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 @ 7.70 A – 150 W	
	19.5 V dc @ 10.3 A – 200 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

Table 7-1 Computer specifications (continued)

	Metric	U.S.
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) 1366 × 768 (FD)	
Surface treatment	Antiglare (FHD, HD panels)	
Brightness	250 nits (FHD, 45% NTSC panel) 250 nits (HD, 45% NTSC panel)	
Viewing angle	UWVA SVA	
Backlight	WLED LED	
Display panel interface	eDP 1.2 without PSR eDP	


8 Statement of memory volatility

For general information regarding nonvolatile memory in HP business computers, and to restore nonvolatile memory that can contain personal data after the system has been turned off and the hard drive has been removed, use these instructions.

HP business computer products that use Intel®-based or AMD®-based system boards contain volatile DDR memory. The amount of nonvolatile memory present in the system depends upon the system configuration. Intel-based and AMD-based system boards contain nonvolatile memory subcomponents as originally shipped from HP, with the following assumptions:

- No subsequent modifications were made to the system.
- No applications, features, or functionality were added to or installed on the system.

Following system shutdown and removal of all power sources from an HP business computer system, personal data can remain on volatile system memory (DIMMs) for a finite period of time and also remains in nonvolatile memory. Use the following steps to remove personal data from the computer, including the nonvolatile memory found in Intel-based and AMD-based system boards.

 **NOTE:** If your tablet has a keyboard base, connect to the keyboard base before beginning steps in this chapter.

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

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

Country/region	Accredited agency	Applicable note number
Canada	CSA	2
Chile	IMQ	1
Denmark	DEMKO	1
Finland	FIMKO	1
France	UTE	1
Germany	VDE	1
India	BIS	1
Israel	SII	1
Italy	IMQ	1
Japan	JIS	3
Netherlands	KEMA	1
New Zealand	SANZ	1
Norway	NEMKO	1
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 H05VV-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.

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

Country/region	Accredited agency	Applicable note number
6.	The flexible cord must be Type HVCTF three-conductor, 1.25 mm ² conductor size. Power cord set fittings (appliance coupler, cable, and wall plug) must bear the BSMI certification mark.	
7.	For 127 V ac, the flexible cord must be Type SVT or SJT 3-conductor, 18 AWG, with plug NEMA 5-15P (15 A, 125 V ac), with UL and CSA or C-UL marks. For 240 V ac, the flexible cord must be Type H05VV-F three-conductor, 0.75 mm ² or 1.00 mm ² conductor size, with plug BS 1363/A with BSI or ASTA marks.	

10 Recycling

When a 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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