Maintenance and Service Guide HP 240R 14 inch G9 Notebook PC

SUMMARY

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

Legal information

Product notice

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

Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows is automatically updated, which is always enabled. High-speed internet and Microsoft account required. ISP fees may apply and additional requirements may apply over time for updates. See http://www.windows.com.

If your product ships with Windows in S Mode: Windows in S Mode works exclusively with apps from the Microsoft Store within Windows. Certain default settings, features, and apps cannot be changed. Some accessories and apps that are compatible with Windows may not work (including some antivirus, PDF writers, driver utilities, and accessibility apps), and performance may vary, even if you switch out of S Mode. If you switch to Windows, you cannot switch back to S Mode. Learn more at Windows.com/SmodeFAQ.

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

To help us improve this document, please send any suggestions, comments, or errors to mailto:hp.doc.feedback@hp.com. Include the document part number when submitting your feedback.

Software terms

Safety warning notice

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

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

Table of contents

1 Product description

This table provides detailed product information.

Table 1-1 Product components and their descriptions

Category	Description
Product Name	**HP 240R 14 inch G9 Notebook PC**
Processor	**13th generation Intel® Core™ processors**
	Intel Core i5-1345U (max turbo up to 4.7 GHz, 10 cores, 12 MB cache, 15 W)
	Intel Core i5-1335U (max turbo up to 4.6 GHz, 10 cores, 12 MB cache, 15 W)
	Intel Core i3-1315U (max turbo up to 4.5 GHz, 6 cores, 10 MB cache, 15 W)
Graphics	Supports HD decode, DX12, and HDMI
	Internal graphics
	Intel UHD Graphics (i3 processors)
	Intel Iris® Xe (i5 processors)
Panel	**35.6 cm (14.0 in), white light-emitting diode (WLED), antiglare, embedded DisplayPort™ (eDP) 1.2 without Panel Self Refresh (PSR), narrow bezel**
	High definition (HD) (1366 × 768), standard viewing angle (SVA), 45% NTSC, 250 nits
	Full high-definition (FHD) (1920 × 1080), ultrawide viewing angle (UWVA), 45% NTSC, 300 nits
Memory	**One or two memory module slots**
	Memory is not customer accessible/non-upgradeable
	DDR4-3200, SODIMM, dual-channel support
	Supports up to 32 GB of system RAM in the following configurations:
	● 32 GB
	● 16 GB
	● 8 GB
	● 4 GB
Primary storage	**PCIe, NVMe, M.2 2280 solid-state drives**
	1 TB
	512 GB
	256 GB
	PCIe, NVMe, M.2 2230 solid-state drive
	128 GB
Camera	**HP TrueVision HD Camera**: Indicator LED, USB2.0, HD BSI sensor, f2.0
	720p by 30 frames per second

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

Category	Description
	Dual-array digital microphone with appropriate software - beam forming, echo cancellation, noise suppression
Audio	Dual speakers
	Far Field Cortana
RJ-45 (network)	Realtek RTL8111HSH-CG
Wireless networking	Compatible with Miracast®-certified devices
	Integrated Wireless options
	Realtek 8852BE-VS Wi-Fi® 6 + Bluetooth® 5.3
	Realtek 8852BE Wi-Fi 6 + Bluetooth 5.3
Ports	Hot plug/unplug and auto detect for correct output to wide-aspect vs. standard aspect video (auto adjust panel resolution to fit embedded panel and external monitor connected)
	HDMI v1.4 supporting: up to 1920 × 1080 @ 60 Hz
	USB 3.2 Gen 1 Type-C®
	USB 3.2 Gen 1 Type-A (2) (right side)
	RJ-45 (network) jack
	Audio-out (headphone)/audio-in (microphone) combo jack
	AC Smart Pin adapter plug
Keyboard/pointing devices	**Keyboard**
	Full-size, textured, island-style keyboard with Copilot key
	Precision touchpad
	Touchpad with image sensor
	Multitouch gestures
	Modern Trackpad Gestures
	Taps enabled by default
Power requirements	**Battery** (prismatic/polymer)
	3 cell, 41 Whr
	AC adapter, standard barrel
	45 W Smart, nPFC, right angle, 4.5 mm
	45 W Smart, nPFC, right angle, 4.5 mm (Argentina Only)
	65 W Smart, nPFC, 4.5 mm barrel
	65 W Smart, nPFC, 4.5 mm barrel, EM
	65 W, USB-C®, halogen free (HF)
	Power cord (C5)
	1 m (3.3 ft), conventional

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

Category	Description
	1 m (3.3 ft), with plug adapter
Security	Mini security cable slot
	Fingerprint reader
	Supports Trusted Platform Module (TPM) 2.0
Operating system	Windows® 11 Pro
	Windows 11 Pro Education
	Windows 11 Home - HP recommends Windows 11 Pro for Business
	Windows 11 Home Single Language - HP recommends Windows 11 Pro for Business
	Windows 11 Pro (Windows 11 Enterprise or Windows 10 Enterprise available with a Volume Licensing Agreement)
	FreeDOS
Serviceability	End user replaceable parts
	AC adapter

2 Getting to know your computer

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

Right side

Identify the components on the right side of the computer.

Table 2-1 Right-side components and their descriptions

		Component	Description
(1)	🎧	Audio-out (headphone)/Audio-in (microphone) combo jack	Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. This jack does not support optional standalone microphones.
			WARNING! To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, see the *Regulatory, Safety, and Environmental Notices*.
			To access this guide:
			■ Select the **Search** icon in the taskbar, type `HP Documentation` in the search box, and then select **HP Documentation**.
			NOTE: When a device is connected to the jack, the computer speakers are disabled.
(2)		USB Type-A 5 Gbps ports (2)	Connects a USB device and provides high-speed data transfer.
(3)		HDMI port	Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component, or a high-speed High-Definition Multimedia Interface (HDMI) device.
(4)		RJ-45 (network) jack/status lights	Connects a network cable.
			● White: The network is connected.
			● Amber: Activity is occurring on the network.

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

	Component	Description
(5)	AC adapter and battery light	• White: The AC adapter is connected and the battery is fully charged. • Blinking amber: The AC adapter is disconnected and the battery has reached a low battery level. • Amber: The AC adapter is connected and the battery is charging. • Off: The battery is not charging.
(6)	Power connector	Connects an AC adapter.

Left side

Identify the components on the left side of the computer.

Table 2-2 Left-side components and their descriptions

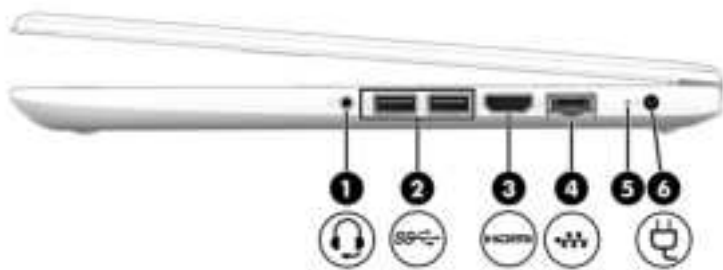|	Component	Description
(1)	Security cable slot	Attaches an optional security cable to the computer. **NOTE:** The security cable is designed to act as a deterrent, but it might not prevent the computer from being mishandled or stolen.
(2)	USB Type-C® power connector and 10 Gbps port with DisplayPort™ output	Connects an AC adapter that has a USB Type-C connector, supplying power to the computer and, if needed, charging the computer battery. – and – Connects a USB device, provides high-speed data transfer, and (for select products) charges small devices (such as a smartphone) when the computer is on or in Sleep mode. **NOTE:** Use a standard USB Type-C charging cable or cable adapter (purchased separately) when charging a small external device. – and – Connects a display device that has a USB Type-C connector, providing DisplayPort output.

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

		Component	Description
(3)		Drive light	• Blinking white (select products only): The hard drive is being accessed.
(4)		Power light	• On: The computer is on. • Blinking: (select products only): The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other unnecessary components. • Off: Depending on your computer model, the computer is off, in Hibernation, or in Sleep. Hibernation is the power-saving state that uses the least amount of power.

Display

The computer display can include essential components such as speakers, antennas, cameras, and microphones.

Display components

WARNING! To reduce the risk of serious injury, read the *Safety & Comfort Guide*. It describes proper workstation setup and proper posture, health, and work habits for computer users. The *Safety & Comfort Guide* also provides important electrical and mechanical safety information. The *Safety & Comfort Guide* is available on the web at http://www.hp.com/ergo.
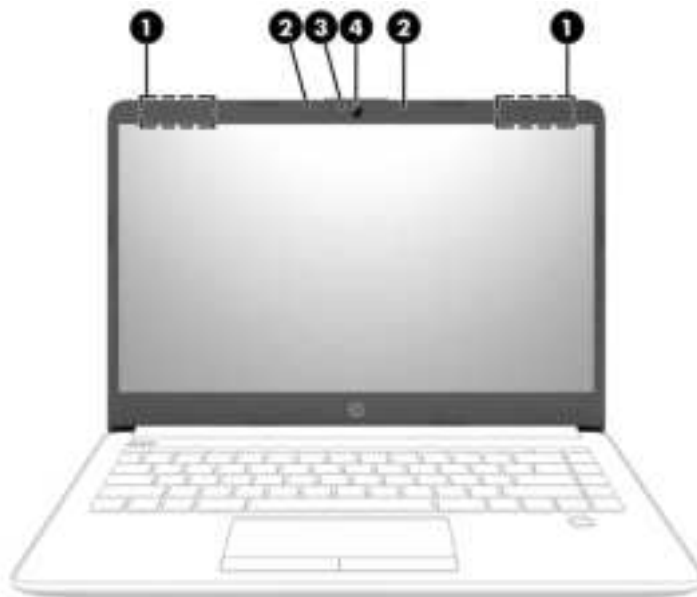
Table 2-3 Display components and their descriptions

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

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

	Component	Description
(2)	Internal microphones (2)	Record sound.
(3)	Camera light	On: The camera is in use.
(4)	Camera	Allows you to video chat, record video, and record still images. Some cameras also allow a facial recognition logon to Windows, instead of a password logon.
		NOTE: Camera functions vary depending on the camera hardware and software installed on your product.

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

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

To access this guide:

- Select the **Search** icon in the taskbar, type `HP Documentation` in the search box, and then select **HP Documentation**.

Keyboard area

Keyboards can vary by language.

NOTE: The keyboard area, including the function keys and (select products only) power key, is disabled in stand, tent, and tablet modes. To enable the keyboard, including the power key, change to the clamshell mode.

Touchpad settings and components

Learn the touchpad settings and components.

Touchpad settings

Learn how to adjust touchpad settings.

Adjusting touchpad settings

Use these steps to adjust touchpad settings and gestures.

1. Select the **Search** icon in the taskbar, type `touchpad settings` in the search box, and then press enter.

2. Choose a setting.

Turning on the touchpad

Follow these steps to turn on the touchpad.

1. Select the **Search** icon in the taskbar, type `touchpad settings` in the search box, and then press enter.

2. Using an external mouse, click the **touchpad** button.

   If you are not using an external mouse, press the Tab key repeatedly until the pointer rests on the **touchpad** button. Then press the spacebar to select the button.
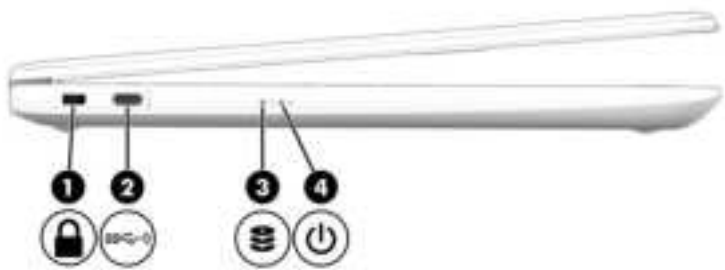
Touchpad components

Identify the touchpad components.
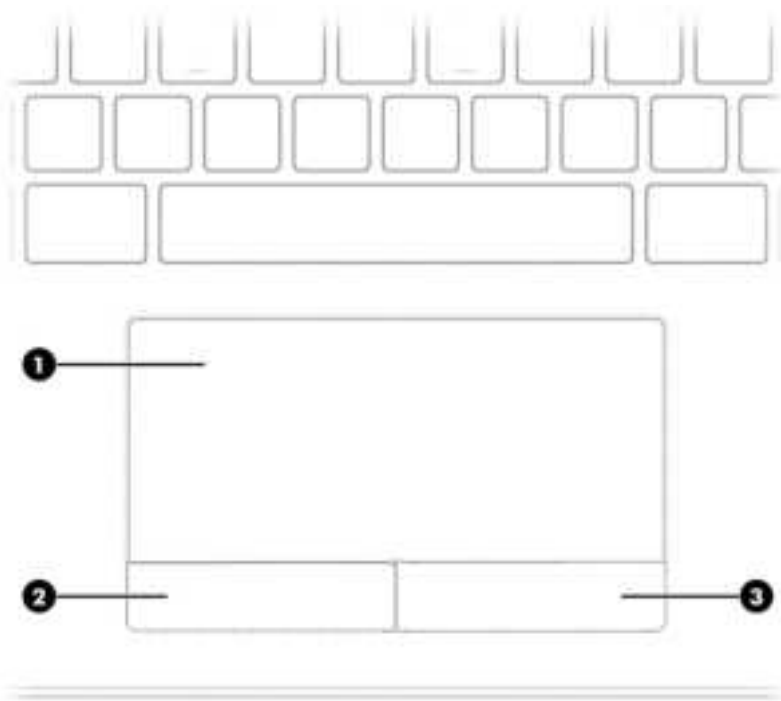
Table 2-4 Touchpad components and their descriptions

	Component	Description
(1)	Touchpad zone	Reads your finger gestures to move the pointer or activate items on the screen.
(2)	Left touchpad button	Functions like the left button on an external mouse.
(3)	Right touchpad button	Functions like the right button on an external mouse.

Lights

Identify the lights on the computer.
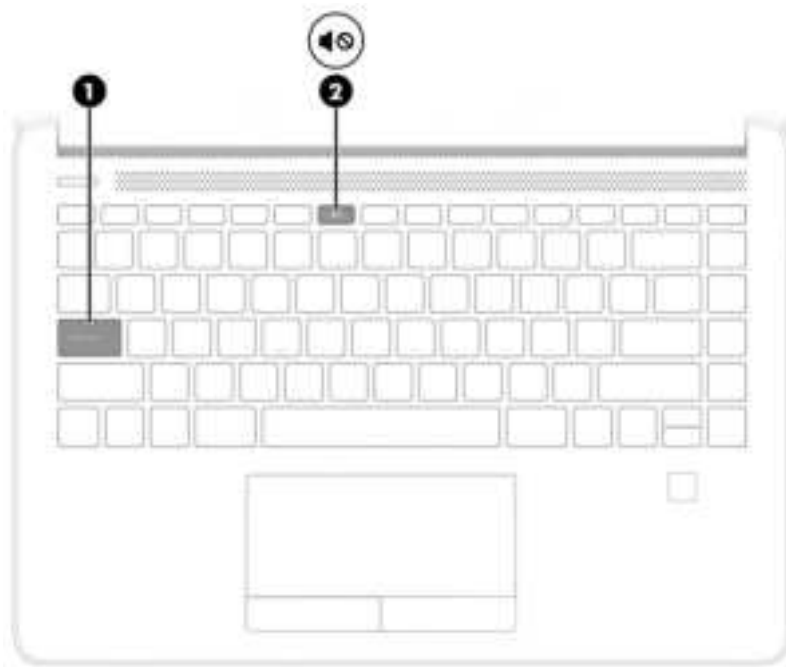
Table 2-5 Lights and their descriptions

	Component	Description
(1)	Caps lock light	On: Caps lock is on, which switches the key input to all capital letters.
(2)	Mute light	● On: Computer sound is off. ● Off: Computer sound is on.

Buttons, speakers, and fingerprint reader

Identify the computer buttons, speakers, and fingerprint reader.
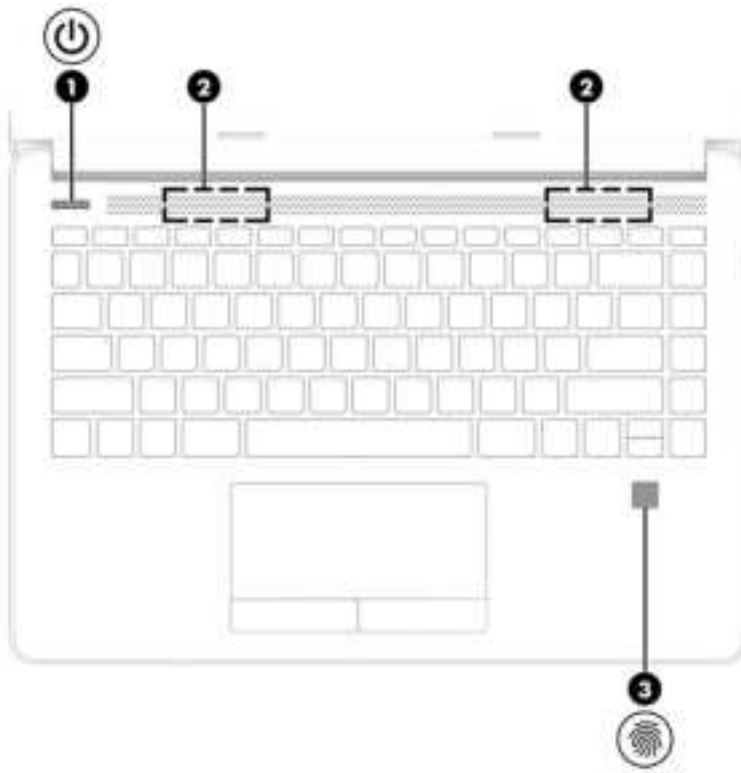
Fingerprint readers, which enable a fingerprint logon, can be located on the touchpad, on a side panel of the computer, or on the top cover below the keyboard.

IMPORTANT: To verify that your computer supports fingerprint reader sign-in, select the **Search** icon in the taskbar, type `Sign-in options` in the search box and press enter. If **Fingerprint recognition** is not listed as an option, then your computer does not include a fingerprint reader.

Table 2-6 Buttons, speakers, and fingerprint reader and their descriptions

	Component	Description
(1) ⏻	Power button	• When the computer is off, press the button briefly to turn on the computer. • When the computer is on, press the button briefly to initiate Sleep. • When the computer is in the Sleep state, press the button briefly to exit Sleep (select products only). • When the computer is in Hibernation, press the button briefly to exit Hibernation. **IMPORTANT:** Pressing and holding down the power button results in the loss of unsaved information. If the computer has stopped responding and shutdown procedures are ineffective, press and hold the power button down for at least 10 seconds to turn off the computer. To learn more about your power and sleep settings: ▪ Right-click the **Power** icon ▬, and then select **Power and sleep settings**.
(2)	Speakers (2)	Produce sound.
(3)	Fingerprint reader (select products only)	Allows a fingerprint logon to Windows, instead of a password logon. ▪ Swipe down across the fingerprint reader. **IMPORTANT:** To prevent fingerprint logon issues, make sure when you register your fingerprint that all sides of your finger are registered by the fingerprint reader.

Special keys

Identify the special keys.
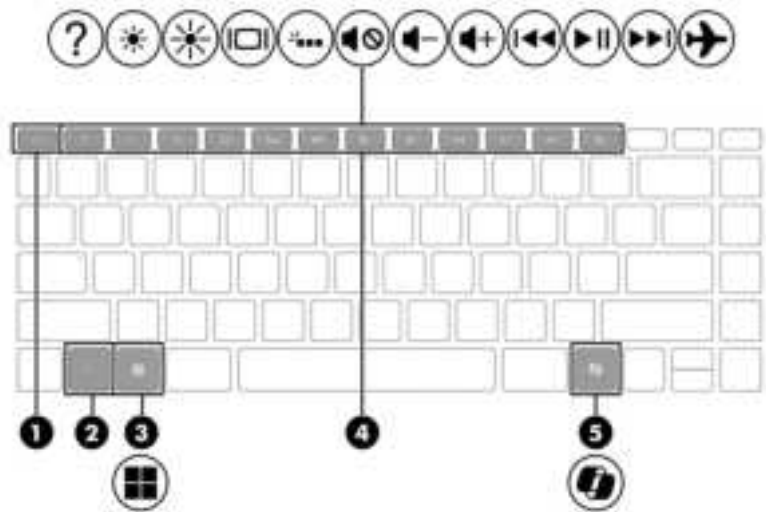
Table 2-7 Special keys and their descriptions

	Component	Description
(1)	esc key	Displays system information when pressed in combination with the fn key.
(2)	fn key	Executes specific functions when pressed in combination with another key.
(3)	Windows key	Opens the Start menu. **NOTE:** Pressing the Windows key again will close the Start menu.
(4)	Action keys	Execute frequently used system functions as defined by the icon symbols on f1 through f12 function keys.
(5)	Windows Copilot key	Opens Windows Copilot (select products only).

Bottom

Identify the bottom components.
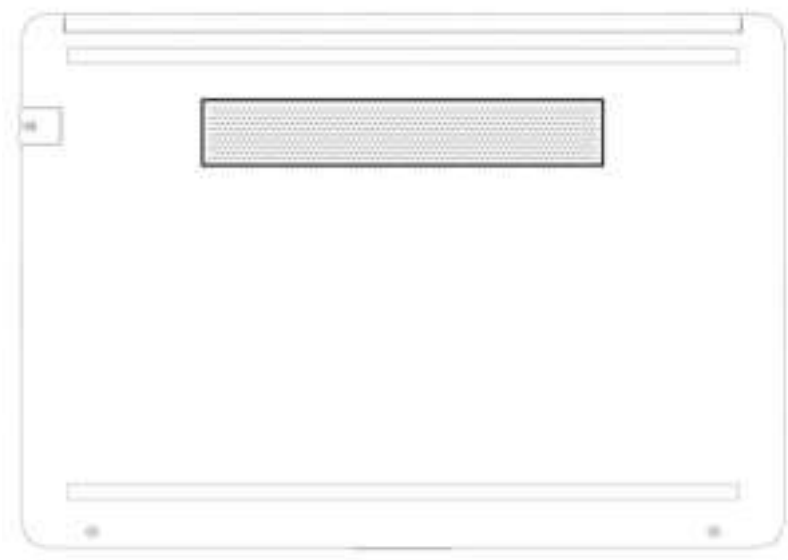
Table 2-8 Bottom components and their descriptions

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

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 might be asked for the serial number, the product number, or the model number. Locate this information before you contact support.

  Your service label will resemble one of the following examples. Refer to the illustration that most closely matches the service label on your computer.
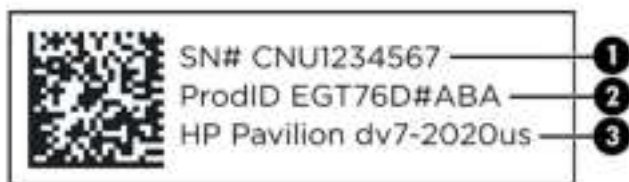
Table 2-9 Service label components

	Component
(1)	Serial number
(2)	Product ID
(3)	HP product name and model number
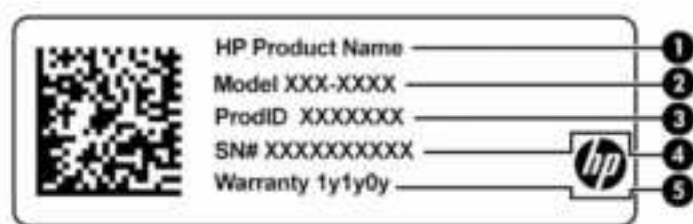
Table 2-10 Service label components

	Component
(1)	HP product name
(2)	Model number
(3)	Product ID
(4)	Serial number
(5)	Warranty period
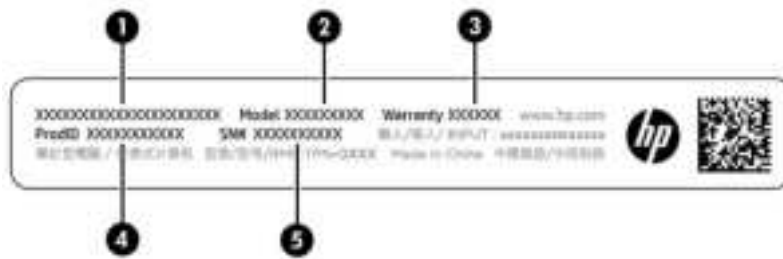
Table 2-11 Service label components

	Component
(1)	HP product name
(2)	Model number
(3)	Warranty period
(4)	Product ID
(5)	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.
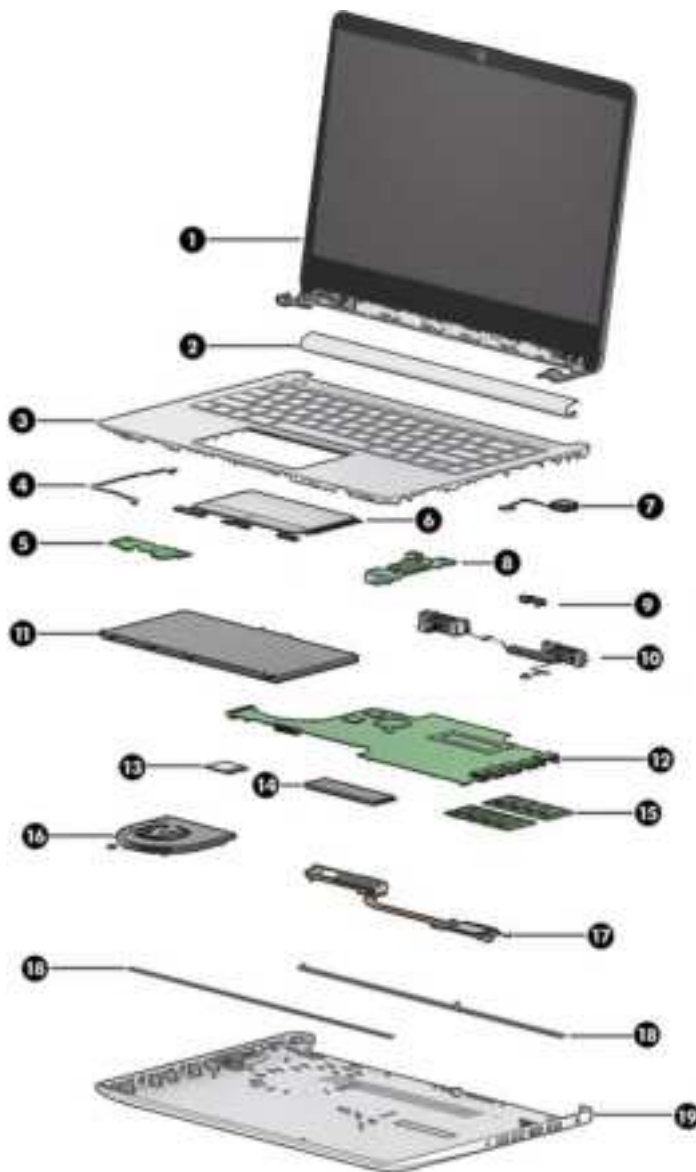
Table 3-1 Computer major components and their descriptions

Item	Component	Spare part number
(1)	**Display assembly** NOTE: Displays are available as spare parts only at the subcomponent level. For display assembly spare part information, see Display assembly subcomponents on page 17.	
(2)	**Hinge cover**	M23371-001
(3)	**Top cover with keyboard** NOTE: For a detailed list of keyboard country codes, see Top cover with keyboard on page 54.	
	Models without a fingerprint reader	P00365-xx1
	Models with a fingerprint reader	P00366-xx1
(4)	**Touchpad board cable**	L23184-001
(5)	**Touchpad click board** NOTE: The touchpad click board cable is available using spare part number L24485-001.	L24486-001
(6)	**Touchpad board**	L24484-001
(7)	**Power connector**	L23188-001
(8)	**USB/power button board** NOTE: The USB/power button board cable is available using spare part number N96337-001. NOTE: The USB/power button board bracket is available using spare part number P04607-001.	N96335-001
(9)	**System board hook**	L88007-001
(10)	**Speakers**	L24489-001
(11)	**Battery** (3 cell, 41 Whr)	L97300-005
(12)	**System board** (includes replacement thermal materials) All system boards use the following part numbers: xxxxxx-001: non-Windows operating system xxxxxx-601: Windows operating system	
	Intel Core i5-1345U processor	N96327-xx1
	Intel Core i5-1335U processor	N96326-xx1
	Intel Core i3-1315U processor	N96325-xx1
(13)	**WLAN module**	
	Realtek 8852BE-VS Wi-Fi 6 + Bluetooth 5.3	M91238-005
	Realtek 8852BE Wi-Fi 6 + Bluetooth 5.3	N26166-005
(14)	**Solid-state drive** (PCIe-4 × 4)	
	1 TB (M.2 2280)	N45474-005
	1 TB (M.2 2280) (for use in the People's Republic of China)	N77394-005
	512 GB (M.2 2280)	N45476-005
	512 GB (M.2 2280) (for use in the People's Republic of China)	N77392-005

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

Item	Component	Spare part number
	256 GB (M.2 2280)	N45477-005
	128 GB (M.2 2230)	N42382-005
(15)	**Memory module**	
	4 GB	L83673-005
	8 GB	L46598-005
	8 GB (for use in the People's Republic of China)	N77402-005
	16 GB	L67710-005
	16 GB (for use in the People's Republic of China)	N77403-005
(16)	**Fan**	N96333-001
(17)	**Heat sink** (includes replacement thermal materials)	N06929-001
(18)	**Rubber feet** (includes front and rear feet)	M23369-001
(19)	**Bottom cover**	N96332-001
	Fingerprint reader board (not illustrated)	N06921-001
	NOTE: The fingerprint reader board cable is available as spare part number N06923-001. The fingerprint reader bracket is available as spare part number N06924-001.	

Display assembly subcomponents

To identify the display assembly subcomponents, use this illustration and table.
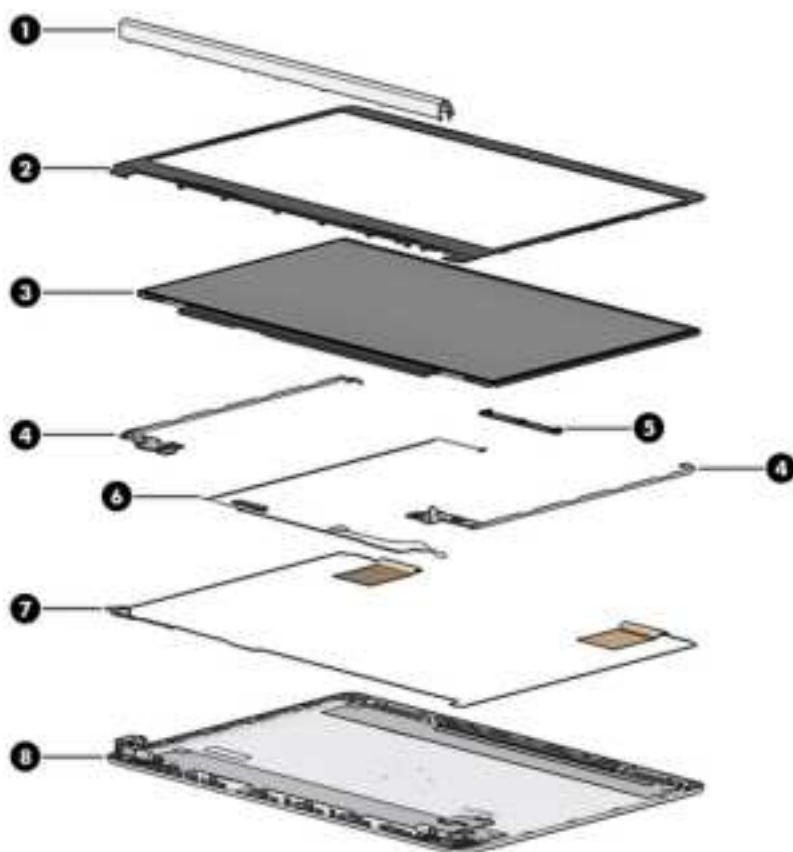
Table 3-2 Display major components and their descriptions

Item	Component	Spare part number
(1)	**Hinge cover**	M23371-001
(2)	**Display bezel**	M99758-001
(3)	**Display panel**	
	FHD, antiglare, 300 nits	N96329-001
	HD, antiglare, 250 nits	N96328-001
(4)	**Hinges** (left and right)	
	HD panel	L24470-001
	FHD panel	N96334-001
(5)	**Camera module**	N06925-001
(6)	**Display/camera cable**	
	HD display	L24492-001
	FHD display	L24493-001
(7)	**Antennas**	
	Dual	L24640-001
	Single	L29012-001

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

Item	Component	Spare part number
(8)	Display rear cover	M23372-001

Miscellaneous parts

To identify the miscellaneous parts, use this table.

Table 3-3 Miscellaneous parts and their descriptions

Component	Spare part number
Adhesive tape kit	L24491-001
Bumper	N91757-001
USB Type-C cable	N96336-001
USB-C-to-USB-A adapter	833960-001
HDMI-to-VGA adapter	701943-001
External DVD±RW drive	747080-001
HP 125 Wired Mouse	M27884-001
HP Prelude Pro 15.6 Backpack	M03617-001
HP Prelude 15.6 Backpack	M16116-001
HP Prelude Pro 15.6 Top Load case	M03618-001
HP Prelude 15.6 Top Load case	M16117-001
HP Smart AC adapter	
45 W, nPFC, 4.5 mm	741727-001
65 W, nPFC, 4.5 mm	N31180-001
65 W, nPFC, USB-C, 1.8 m (6 ft)	L67440-001
65 W, nPFC, USB-C, 1.8 m (6 ft), HF	N90678-001
Power cord (3-pin, black, 1.0 m [3.3 ft]) for use in:	
Argentina	L19357-001
Denmark	L19360-001
Europe	L19361-001
India	L19363-001
Israel	L19362-001
Italy	L19364-001
Japan	L19365-001
North America	L19367-001
People's Republic of China	L19368-001
South America	L19369-001

Table 3-3 Miscellaneous parts and their descriptions (continued)

Component	Spare part number
South Korea	L19366-001
Switzerland	L19370-001
Thailand	L19371-001
Taiwan	L19372-001
United Kingdom	L19373-001
Duckhead power adapter	
Japan	L33157-001
Power cord bundle (1.0 m [3.3 ft]) for use in:	
Thailand	M85418-001
Screw Kit	N06920-001

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 23.

- Avoid touching pins, leads, and circuitry. Handle electronic components as little as possible.

- If you remove a component, place it in an electrostatic-safe container.

Generating static electricity

Follow these static electricity guidelines:

- Different activities generate different amounts of static electricity.

- Static electricity increases as humidity decreases.

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

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

> **NOTE:** Multiple electric components can be packaged together in plastic tubes, trays, or polystyrene foam.
>
> As little as 700 V of static electricity can degrade a product.

Preventing electrostatic damage to equipment

Many electronic components are sensitive to ESD. Circuitry design and structure determine the degree of sensitivity.

The following packaging and grounding precautions are necessary to prevent static electricity damage to electronic components:

- To avoid hand contact, transport products in static-safe containers such as tubes, bags, or boxes.

- Protect all electrostatic parts and assemblies with conductive or approved containers or packaging.

- Keep electrostatic-sensitive parts in their containers until they arrive at static-free stations.

- Place items on a grounded surface before removing them from their container.

- Always be properly grounded when touching a sensitive component or assembly.

- Avoid contact with pins, leads, or circuitry.

- Place reusable electrostatic-sensitive parts from assemblies in protective packaging or conductive foam.

Personal grounding methods and equipment

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

- **Wrist straps** are flexible straps with a maximum of 1 MΩ ±10% resistance in the ground cords. To provide proper ground, a strap must be worn snug against bare skin. The ground cord must be connected and fit snugly into the banana plug connector on the grounding mat or workstation.

- You can use **heel straps, toe straps, and boot straps** at standing workstations. These straps are compatible with most types of shoes or boots. On conductive floors or dissipative floor mats, use them on both feet with a maximum of 1 MΩ ±10% resistance between the operator and ground.

Table 4-2 Static shielding protection levels

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

Grounding the work area

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

- Cover the work surface with approved static-dissipative material.

- 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 MΩ ±10% resistance

- Static-dissipative table or floor mats with hard tie to ground

- Field service kits

- Static awareness labels

- Wrist straps and footwear straps providing 1 MΩ ±10% resistance

- Material handling packages

- Conductive plastic bags

- Conductive plastic tubes

- Conductive tote boxes

- Opaque shielding bags

- Transparent metallized shielding bags

- Transparent shielding tubes

Cleaning your computer

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

Enabling HP Easy Clean (select products only)

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

1. Start HP Easy Clean in one of the following ways:

   - Select the **Start** menu, and then select **HP Easy Clean**.

   - Select the **HP Easy Clean** icon in the taskbar.

   - Select **Start**, and then select the **HP Easy Clean** tile.

2. Now that your device is disabled for a short period, see 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 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 .

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 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 , , 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.

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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 25 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 26 for sanitizing guidelines to help prevent the spread of harmful bacteria and viruses.

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

- To avoid hand contact, transport products in static-safe tubes, bags, or boxes.

- Protect ESD-sensitive parts and assemblies with conductive or approved containers or packaging.

- Keep ESD-sensitive parts in their containers until the parts arrive at static-free workstations.

- Place items on a grounded surface before removing items from their containers.

- Always be properly grounded when touching a component or assembly.

- Store reusable ESD-sensitive parts from assemblies in protective packaging or nonconductive foam.

- Use transporters and conveyors made of antistatic belts and roller bushings. Be sure that mechanized equipment used for moving materials is wired to ground and that proper materials are selected to avoid static charging. When grounding is not possible, use an ionizer to dissipate electric charges.

Accessing support information

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

Table 4-3 Support information locations

Service consideration	Path to access information

Records of reported failure incidents stored on the computer	**Windows®:**
	
	Preoperating system failures are logged in the BIOS Event Log. To view the BIOS Event Log:
	
	1. Press the power button.
	
	2. Immediately and repeatedly press esc when the power button light turns white.
	
	   NOTE: If you do not press esc at the appropriate time, you must restart the computer and again repeatedly press esc when the power button light turns white to access the utility.
	
	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**.
	
	   - or -
	
	   (On consumer products) Under the **Main** tab, select **System Log**.
	
	Post-operating system failures are logged in the Event Viewer.
	
	1. Turn on the computer and allow the operating system to open.
	
	2. Select the search icon ⬚ in the taskbar.
	
	3. Type `Event Viewer`, and then press enter.
	
	4. Select the log from the left panel. Details display in the right panel.
	
	Chrome™:
	
	1. Go to support.google.com/chrome.
	
	2. Search `collect Chrome device logs`.

Technical bulletins	To locate technical bulletins: 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.

Table 4-3 Support information locations (continued)

Service consideration	Path to access information
Repair professionals	To locate repair professionals:
	1. Go to www.hp.com.
	2. Place the cursor over **Support resources** to display more options.
	3. Select **Authorized service providers**.
Component and diagnosis information, failure detection, and required action	To locate diagnosis information and actions:
	1. Go to http://www.hp.com/go/techcenter/pcdiags.
	2. Select **Get Support**.
	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: 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.

Component replacement procedures

To remove and replace computer components, use these procedures.

NOTE: Details about your computer, including model, serial number, product key, and length of warranty, are on the service tag at the bottom of your computer.

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

You must remove, replace, or loosen as many as 58 screws when servicing Authorized Service Provider only parts. 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 21 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.

Rubber feet

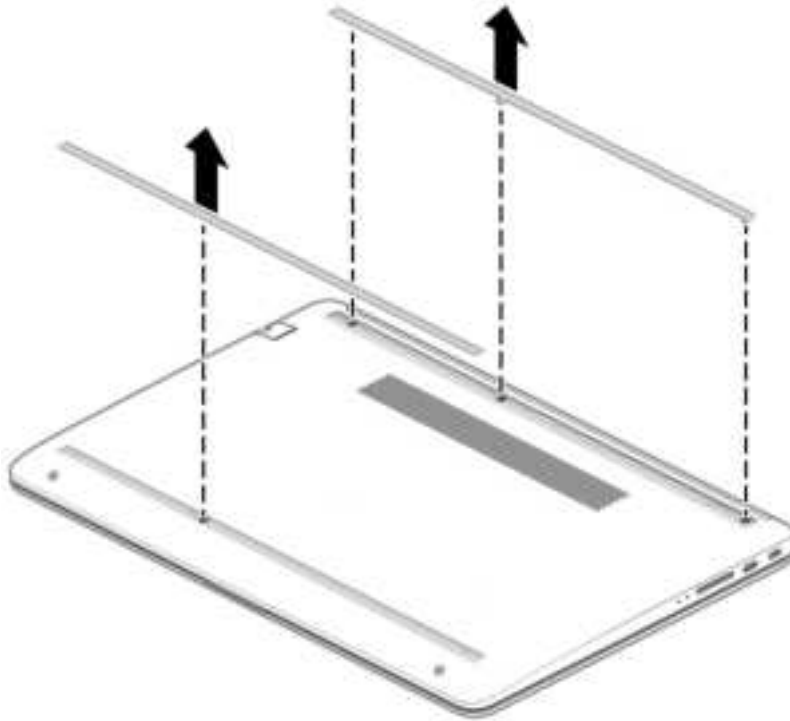To remove the rubber feet, use this procedure and illustration.

Table 5-1 Rubber feet descriptions and part numbers

Description	Spare part number
Rubber feet	M23369-001

Before removing the bottom cover, prepare the computer for disassembly (see Preparation for disassembly on page 30).

Remove the rubber feet:

1. Close the computer and position it upside down with the front toward you.

2. Insert a tool with no sharp edges between the base enclosure and one end of the rubber feet.

3. Pull up the rubber feet.

To install the rubber feet, refit them on the adhesive backing.

> **NOTE:** The bottoms of the rubber feet are ribbed. These ribs are designed to fit only one way in the grooves that are in the bottom cover. Make sure the feet are positioned in those grooves during installation.

Bottom cover

To remove the bottom cover, use this procedure and illustration.
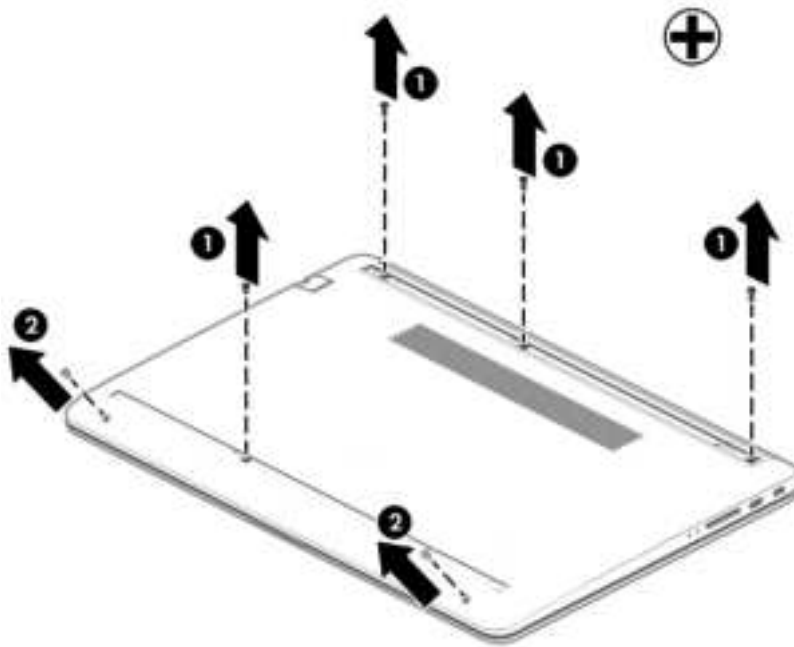
Table 5-2 Bottom cover descriptions and part numbers

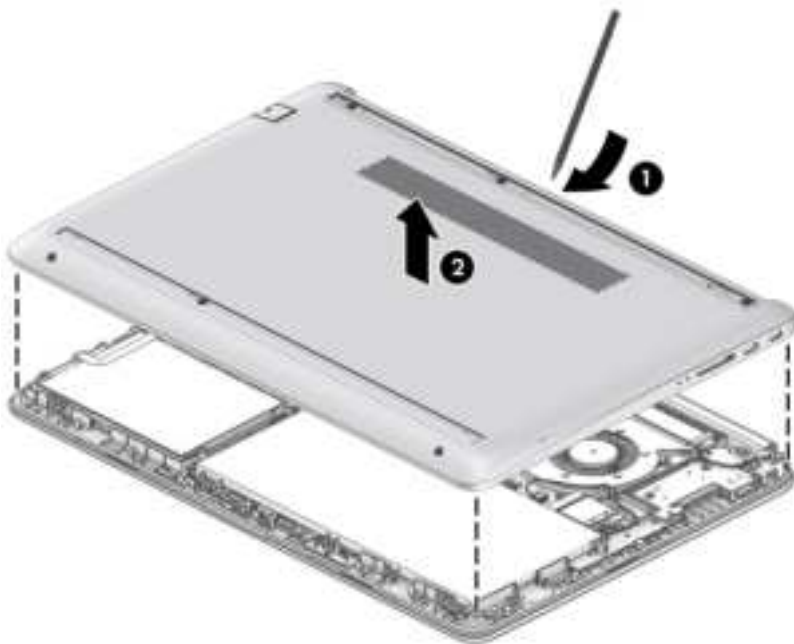| Description	Spare part number
Bottom cover	N96332-001

Before removing the bottom cover, follow these steps:

1. Prepare the computer for disassembly (see Preparation for disassembly on page 30).

2. Remove the rubber feet (see Rubber feet on page 30).

Remove the bottom cover:

1. Remove the four Phillips M2.5 × 6.0 screws **(1)** from under the feet, and the two Phillips M2.5 × 4.0 screws **(2)** in the front corners of the bottom cover.

2. Use a thin plastic tool **(1)** to release the bottom cover. Work your way around to disengage the bottom cover from the computer, and then remove the cover **(2)**.

To install the bottom cover, reverse this procedure.

Battery

To remove the battery, use this procedure and illustration.

Table 5-3 Battery and system board hook descriptions and part numbers

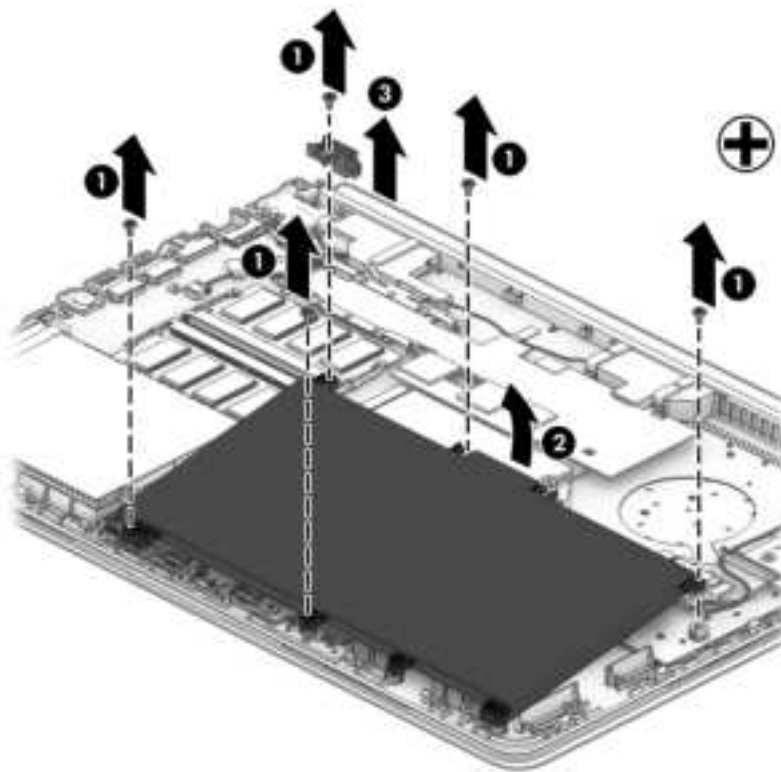| Description	Spare part number
Battery, 3 cell, 41 Whr	L97300-005
System board hook	L88007-001

Before removing the battery, follow these steps:

1. Prepare the computer for disassembly (see Preparation for disassembly on page 30).

2. Remove the rubber feet (see Rubber feet on page 30).

3. Remove the bottom cover (see Bottom cover on page 31).

Remove the battery:

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

1. Remove the five screws **(1)** securing the battery.

2. Lift the top of the battery **(2)**, and then remove the system board hook **(3)** while removing the battery from the computer.

To install the battery, reverse this procedure.

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
Realtek 8852BE-VS Wi-Fi 6 + Bluetooth 5.3	M91238-005
Realtek 8852BE Wi-Fi 6 + Bluetooth 5.3	N26166-005

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 support.

Before removing the WLAN module, follow these steps:

1. Prepare the computer for disassembly (see Preparation for disassembly on page 30).

2. Remove the rubber feet (see Rubber feet on page 30).

3. Remove the bottom cover (see Bottom cover on page 31).

4. Remove the battery (see Battery on page 32).
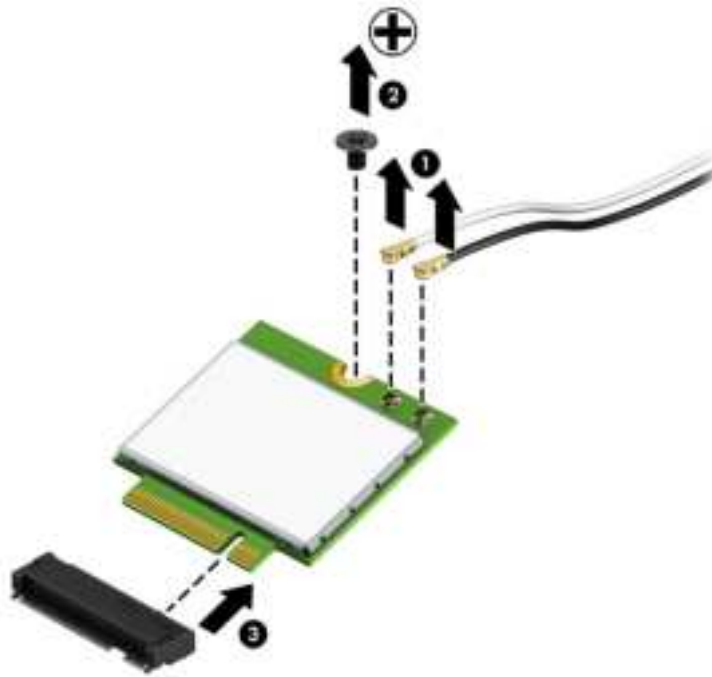
Remove the WLAN module:

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

   NOTE: The #1 WLAN antenna cable is connected to the WLAN module Main terminal. The #2 WLAN antenna cable is connected to the WLAN module Aux terminal.

   NOTE: The number of antennas can vary.

2. Remove the Phillips M2.0 × 3.0 screw **(2)** that secures the WLAN module to the system board. The WLAN module tilts up.

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

📑 **NOTE:** If the WLAN antennas are not connected to the terminals on the WLAN module, the protective sleeves must be installed on the antenna connectors, as shown in the following illustration.
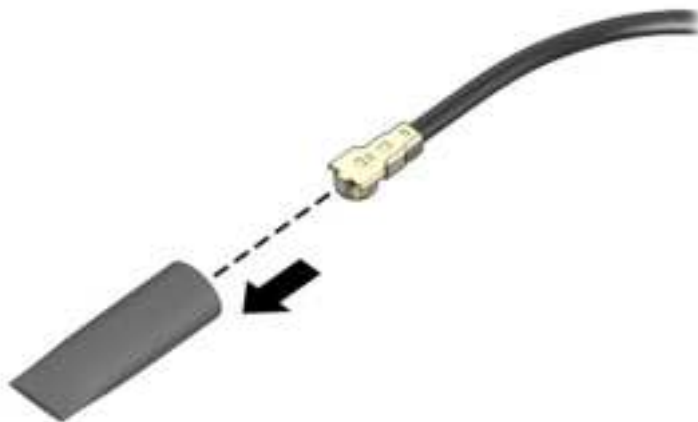
To install the WLAN module, reverse this procedure.

Memory module

To remove the memory modules, use this procedure and illustration.

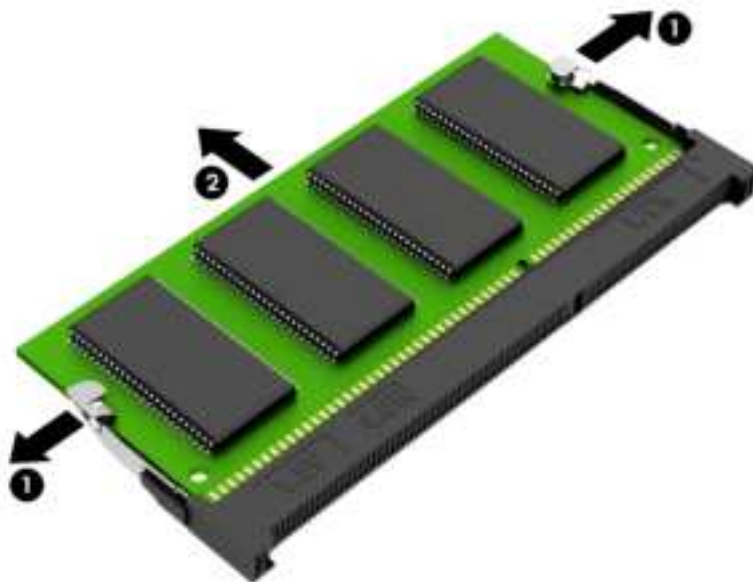**Table 5-5** Memory module descriptions and part numbers

Description	Spare part number
4 GB	L83673-005
8 GB	L46598-005
8 GB (for use in the People's Republic of China)	N77402-005
16 GB	L67710-005
16 GB (for use in the People's Republic of China)	N77403-005

Before removing a memory module, follow these steps:

1. Prepare the computer for disassembly (see Preparation for disassembly on page 30).

2. Remove the rubber feet (see Rubber feet on page 30).

3. Remove the bottom cover (see Bottom cover on page 31).

4. Remove the battery (see Battery on page 32).

To remove a memory module:

1. Spread the retaining tabs **(1)** on each side of the memory module slot to release the memory module. The memory module tilts up.

2. Remove the memory module **(2)** by pulling it away from the slot at an angle.

To install a memory module, reverse this procedure.

Solid-state drive

To remove the solid-state drive, use this procedure and illustration.

Table 5-6 Solid-state drive descriptions and part numbers

Description	Spare part number
1 TB (M.2 2280)	N45474-005
1 TB (M.2 2280) (for use in the People's Republic of China)	N77394-005
512 GB (M.2 2280)	N45476-005
512 GB (M.2 2280) (for use in the People's Republic of China)	N77392-005
256 GB (M.2 2280)	N45477-005
128 GB (M.2 2230)	N42382-005

Before removing the solid-state drive, follow these steps:

1. Prepare the computer for disassembly (see Preparation for disassembly on page 30).

2. Remove the rubber feet (see Rubber feet on page 30).

3. Remove the bottom cover (see Bottom cover on page 31).

4. Remove the battery (see Battery on page 32).

Remove the solid-state drive:

1. Remove the Phillips M2.0 × 2.0 screw **(1)** that secures the drive to the system board.

2. Remove the drive **(2)** by pulling it away from the connector.

📝 **NOTE:** Solid-state drives are designed with notches to prevent incorrect insertion.

📝 **NOTE:** The illustration below shows the M.2 2280 form factor.

To install the solid-state drive, reverse this procedure.

Speakers

To remove the speakers, use this procedure and illustration.

Table 5-7 Speakers description and part number

Description	Spare part number
Speakers (includes left and right speakers and cable)	L24489-001

Before removing the speakers, follow these steps:

1. Prepare the computer for disassembly (see Preparation for disassembly on page 30).

2. Remove the rubber feet (see Rubber feet on page 30).

3. Remove the bottom cover (see Bottom cover on page 31).

4. Remove the battery (see Battery on page 32).

To remove the speakers:

1. Disconnect the speaker cable **(1)** from the system board.

2. Remove the tape **(2)** securing the cable.

3. Lift the speakers **(3)** out of the computer.
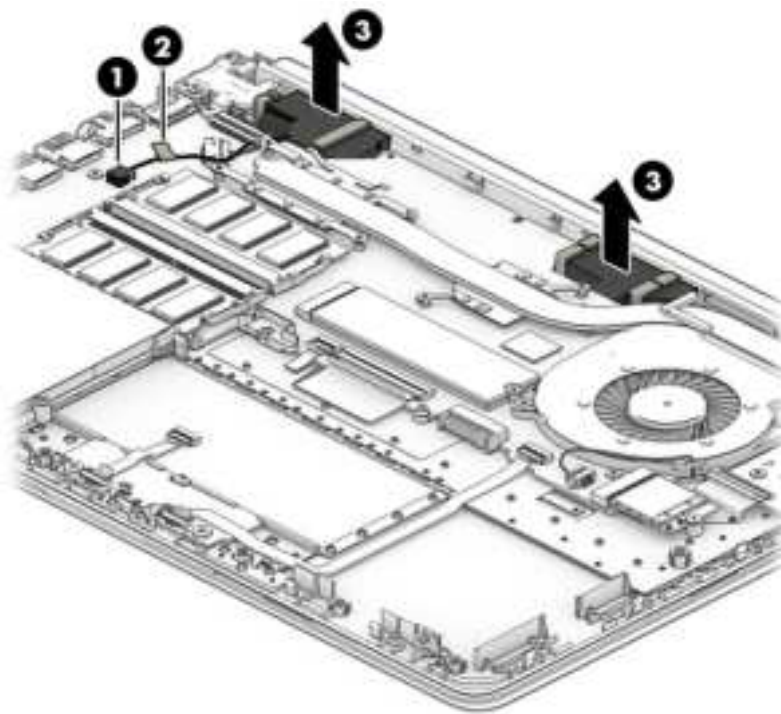
To install the speakers, reverse this procedure.

Touchpad click board and touchpad

To remove the touchpad click board and touchpad, use this procedure and illustration.

Table 5-8 Touchpad click board and touchpad part descriptions and part numbers

| Description	Spare part number
Touchpad click board	L24486-001
Touchpad	L24484-001
Touchpad board cable	L23184-001
Touchpad click board cable	L24485-001

Before removing the touchpad click board and touchpad, follow these steps:

1. Prepare the computer for disassembly (see Preparation for disassembly on page 30).

2. Remove the rubber feet (see Rubber feet on page 30).

3. Remove the bottom cover (see Bottom cover on page 31).

4. Remove the battery (see Battery on page 32).

To remove the touchpad click board and touchpad:

1. Disconnect the touchpad cable **(1)** from the system board.

2. Disconnect the touchpad clock board cable **(2)** from the touchpad.

3. Remove the two Phillips M2.0 × 2.0 screws **(3)** that secure the touchpad click board to the computer.

4. Remove the board **(4)** from the computer.

> **NOTE:** The edge of the board sits under clips. Be sure to slide the board out from under the clips to prevent damage to the board or clips.
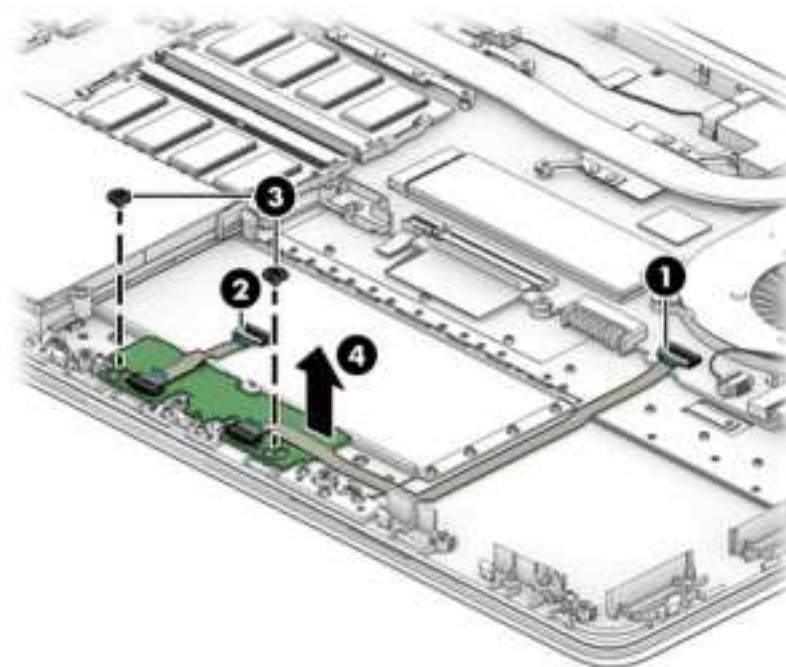
5. Lift the touchpad straight up to remove it from the computer.
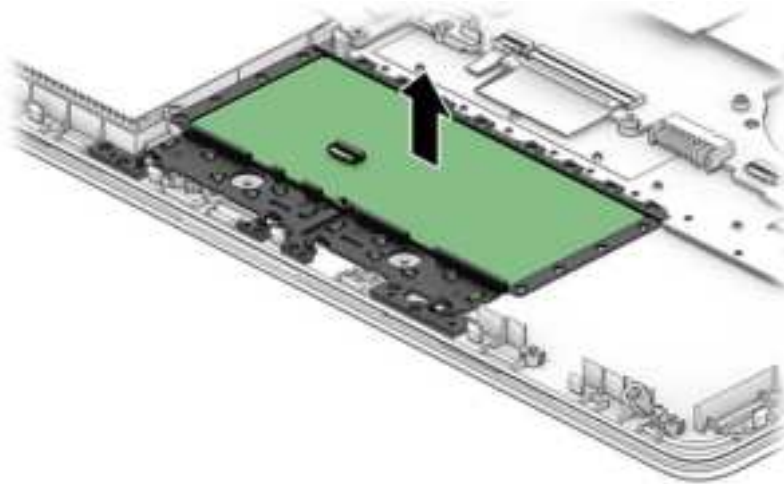
To install the touchpad click board and touchpad, reverse this procedure.

USB/power button board

To remove the USB/power button board, use this procedure and illustration.

Table 5-9 USB/power button board and cable descriptions and part numbers

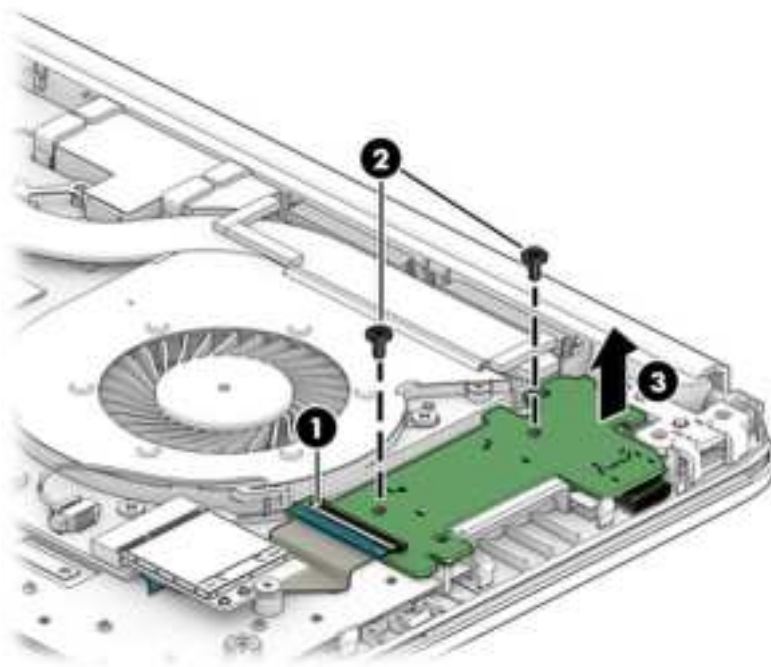| Description	Spare part number
USB/power button board	N96335-001
USB/power button board cable	N96337-001
USB/power button board bracket	P04607-001

Before removing the USB/power button board, follow these steps:

1. Prepare the computer for disassembly (see Preparation for disassembly on page 30).

2. Remove the rubber feet (see Rubber feet on page 30).

3. Remove the bottom cover (see Bottom cover on page 31).

4. Remove the battery (see Battery on page 32).

To remove the USB/power button board:

1. Disconnect the cable from the ZIF connector **(1)** on the board

2. Remove the two Phillips M2.0 × 3.0 screws **(2)** that secure the board to the computer.

3. Remove the board **(3)** from the computer.

To install the USB/power button board, reverse this procedure.

Fan

To remove the fan, use this procedure and illustration.

Table 5-10 Fan description and part number

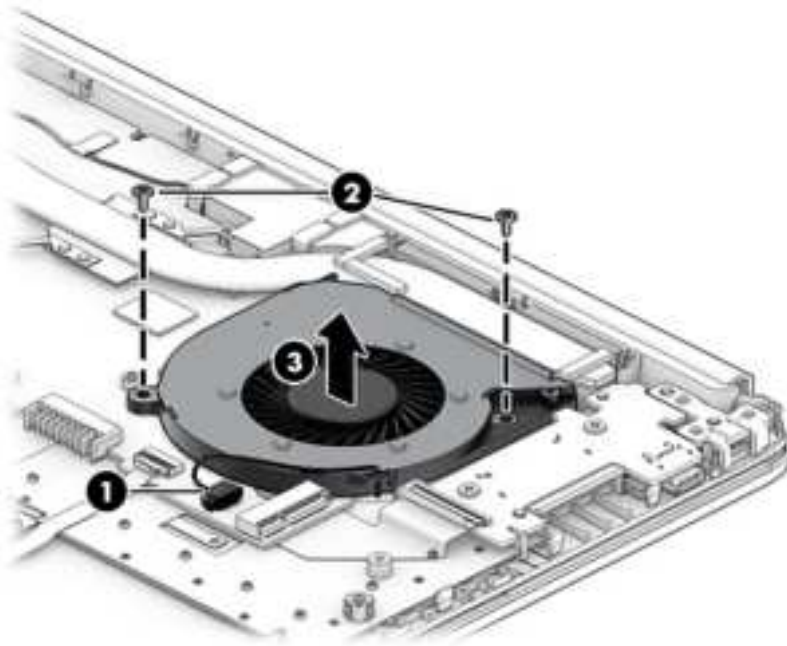| Description	Spare part number
Fan	N96333-001

Before removing the fan, follow these steps:

1. Prepare the computer for disassembly (see).

2. Remove the rubber feet (see).

3. Remove the bottom cover (see).

4. Remove the battery (see).

Remove the fan:

1. Disconnect the fan cable **(1)** from the system board.

2. Remove the two Phillips M2.5 × 5.0 screws **(2)** that secure the fan to the computer.

3.   Lift the fan **(3)** out of the computer.

To install the fan, reverse this procedure.

System board

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

Table 5-11 **System board descriptions and part numbers**

Description	Spare part number
System board	
All system boards use the following part numbers:	
xxxxxx-001: Non-Windows operating system	
xxxxxx-601: Windows operating system	
Intel Core i5-1345U processor	N96327-xx1
Intel Core i5-1335U processor	N96326-xx1
Intel Core i3-1315U processor	N96325-xx1

Before removing the fan, follow these steps:

1.   Prepare the computer for disassembly (see Preparation for disassembly on page 30).

2.   Remove the rubber feet (see Rubber feet on page 30).

3.   Remove the bottom cover (see Bottom cover on page 31).

4.   Remove the battery (see Battery on page 32).

5. Remove the fan (see).

📝 **NOTE:** When replacing the system board, be sure that the following components are removed from the defective system board and installed on the replacement system board:

- WLAN module (see)

- Memory modules (see)

- Solid-state drive (select products only) (see)

- Heat sink assembly (see)

📝 **NOTE:** You can remove the heat sink and the system board at the same time.

Remove the system board:

1. Position the computer upright, and then disconnect the following cables from the system board:

   (1) USB board cable

   (2) WLAN antenna cables

   (3) Touchpad button board cable

   (4) Keyboard cable

   (5) Backlight cable

   (6) Speaker cable

   (7) Power connector cable

   (8) Display cable

📝 **NOTE:** Hard drive not available in this model.
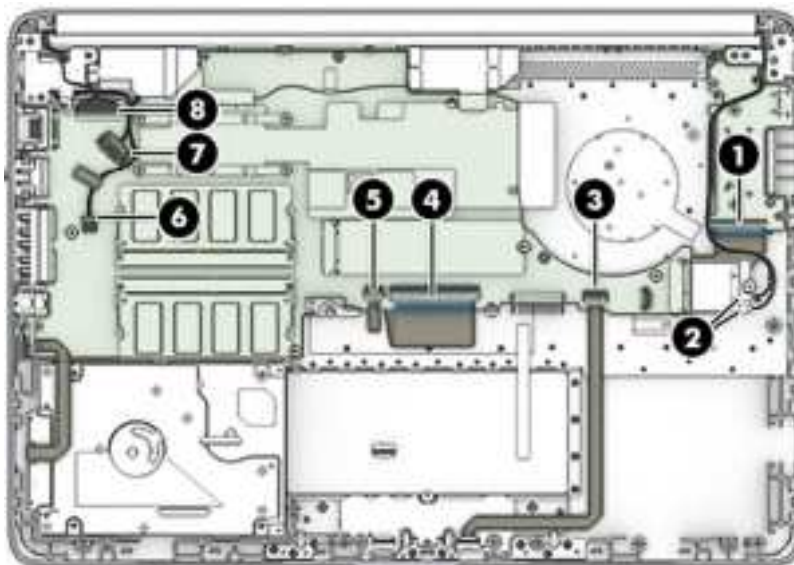
2. Remove the three Phillips M2.0 × 2.0 screws **(1)** that secure the system board to the computer.

3. Remove the Phillips M2.0 × 3.5 screw **(2)** that secures the system board to the computer.

4. Lift the system board **(3)** out of the computer.
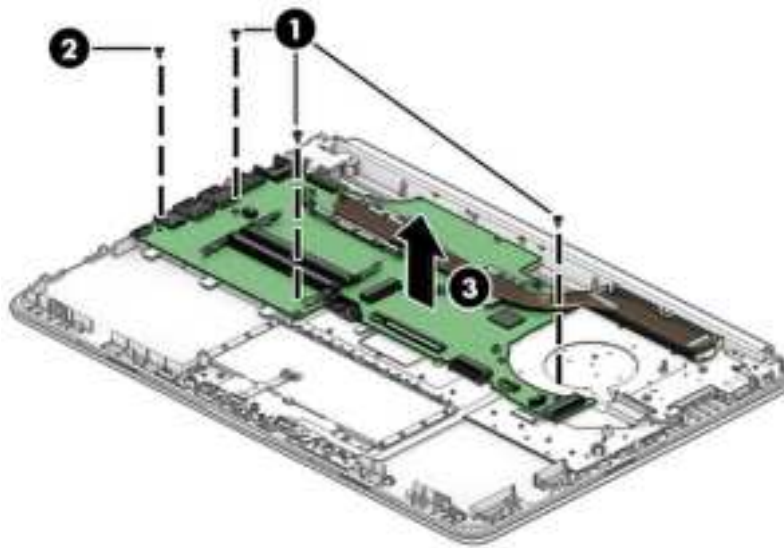
To install the system board, reverse this procedure.

Heat sink

To remove the heat sink, use this procedure and illustration.

Table 5-12 Heat sink description and part number

Description	Spare part number
Heat sink	N06929-001

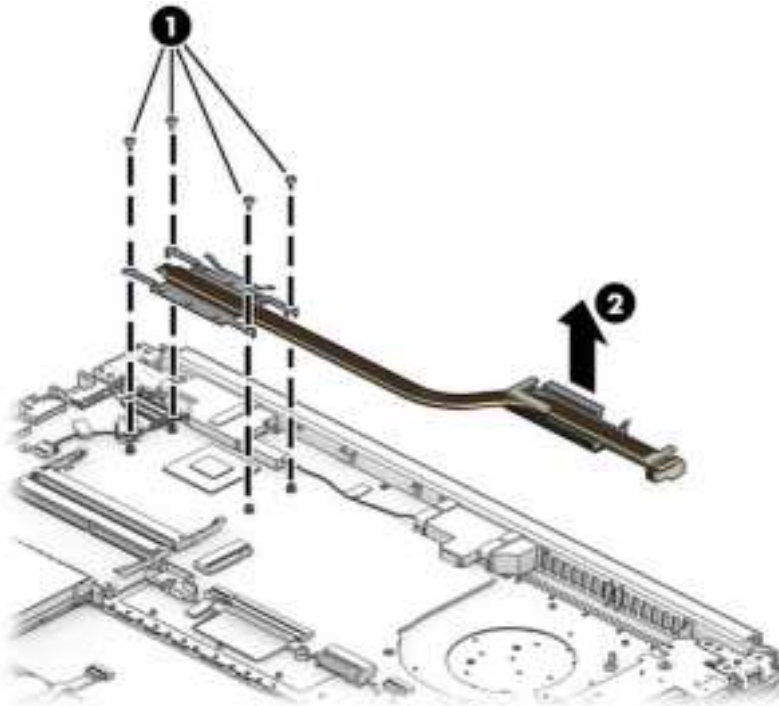**NOTE:** You can remove the heat sink and the system board at the same time.

Before removing the heat sink, follow these steps:

1. Prepare the computer for disassembly (see).

2. Remove the rubber feet (see).

3. Remove the bottom cover (see).

4. Remove the battery (see).

Remove the heat sink:

1. In the order indicated on the heat sink, remove the four Phillips M2.0 × 2.8 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.

   Thermal paste is used on the integrated system board processor **(1)** and the heat sink **(2).**
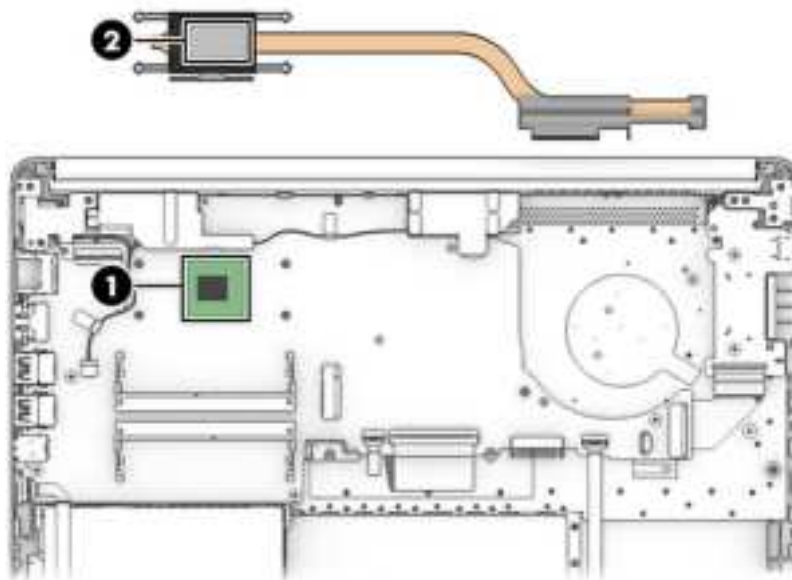
To install the heat sink, reverse this procedure.

Display assembly

To remove the display assembly, use this procedure and illustration.

Before removing the display assembly, follow these steps:

1. Prepare the computer for disassembly (see Preparation for disassembly on page 30).

2. Remove the rubber feet (see Rubber feet on page 30).

3. Remove the bottom cover (see Bottom cover on page 31).

4. Remove the battery (see Battery on page 32).

To remove the display assembly:

1. Disconnect the display cable **(1)** from the system board.

2. Disconnect the wireless antenna cables **(2)** from the WLAN module.
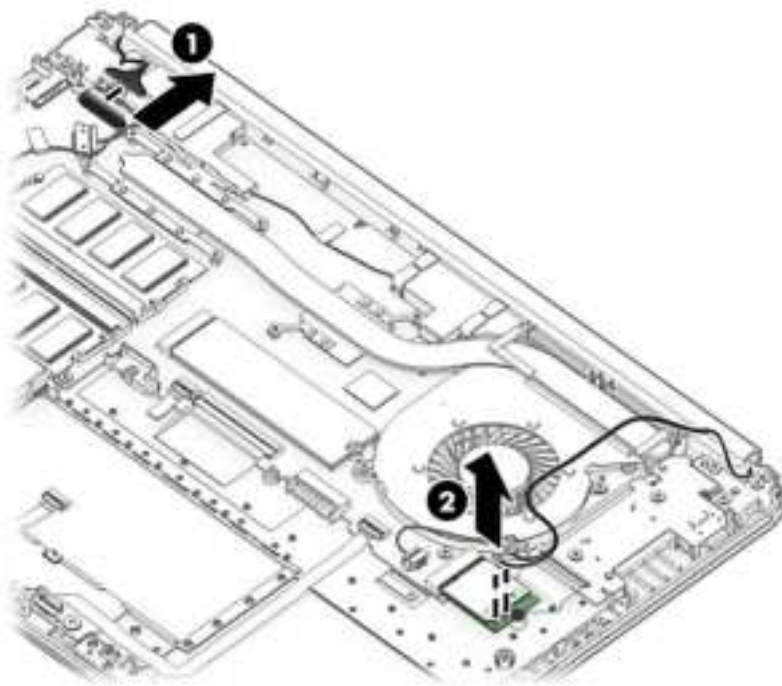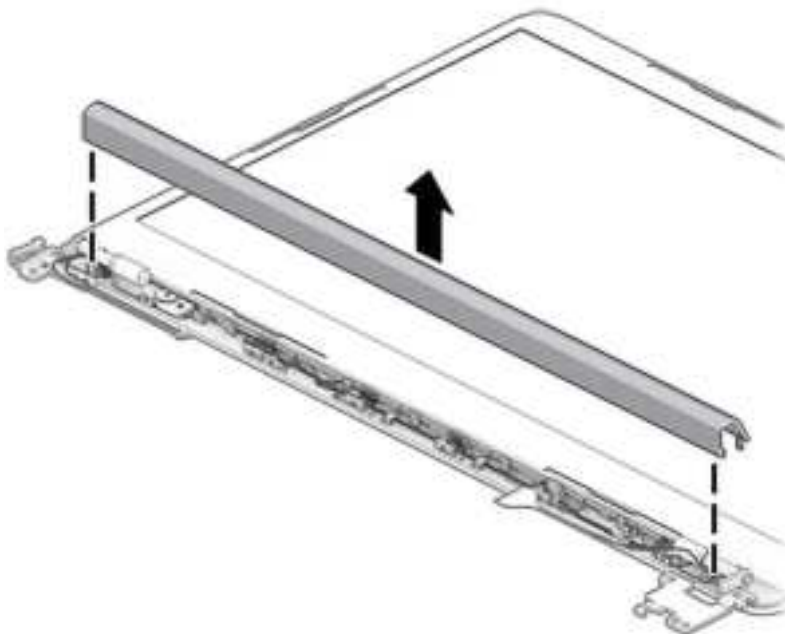

3. Position the computer so it is open with the display **(1)** hanging off the table.

4. Remove the six Phillips M2.5 × 6.0 screws **(2)** from the display hinges.

5. Rotate the hinges **(3)** upward, and then remove the display **(4)**.
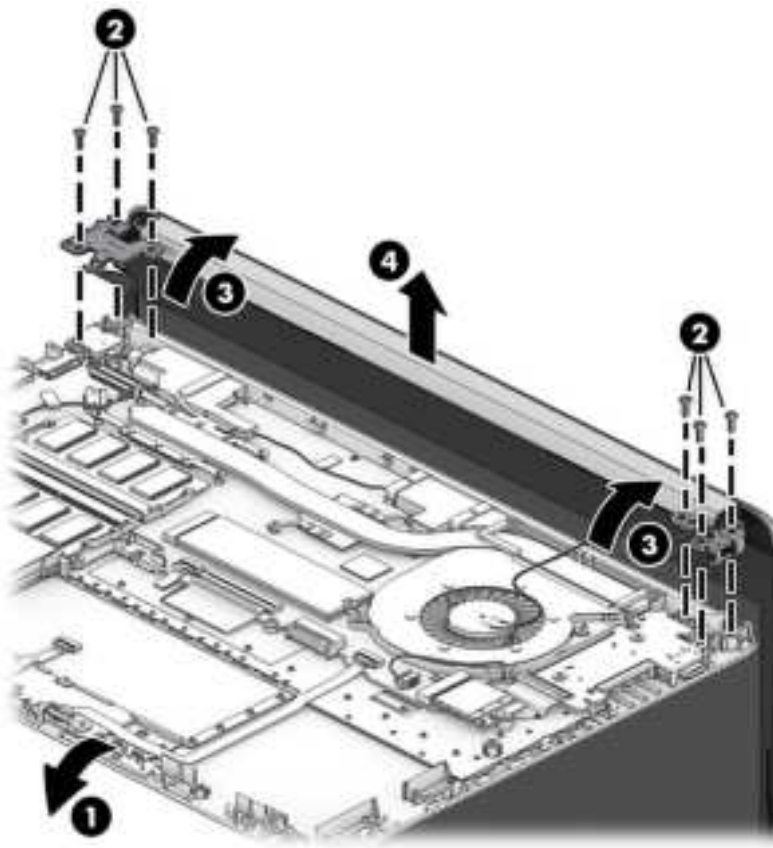
6. Lift the hinge cap to remove it from display.

    The hinge cap is available as spare part number M23371-001.

7. Flex the inside of the top edge **(1)**, left and right sides **(2)**, and the inside of the bottom edge **(3)** of the display bezel until the bezel disengages from the display rear cover.

8. Remove the bezel **(4)**.

   The bezel is available as spare part number M99758-001.

   📝 NOTE: To avoid damaging the panel, do not use a tool to release the inside of the bezel. Use a tool only when you insert it from the outside of the top, left, and right sides of the bezel. Use your fingers to lift up on the bezel. Avoid pressing down on the panel during removal.
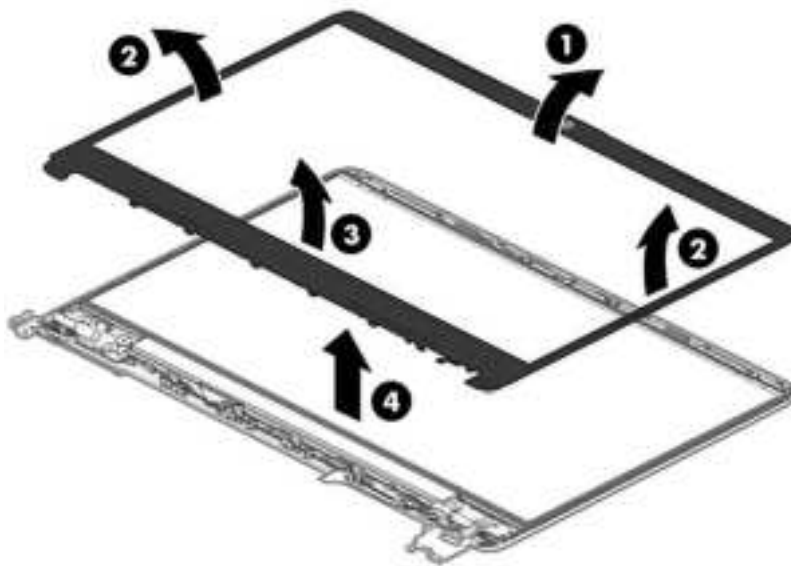
9. To remove the camera module:

   a. Lift the camera module **(1)** to disengage the adhesive that secures the module to the display.

   b. Lift the tape **(2)** on the cable, and then disconnect the cable **(3)** from the module.

      The camera module is available as spare part number N06925-001.
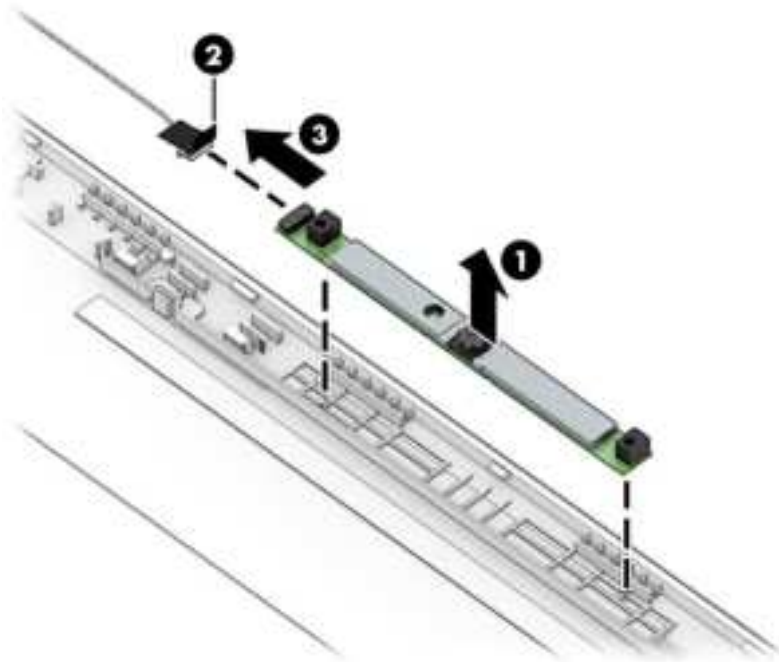
10. To remove the display panel:

    a. Use tweezers to grasp the adhesive tape **(1)** near the bottom corners of the display panel.
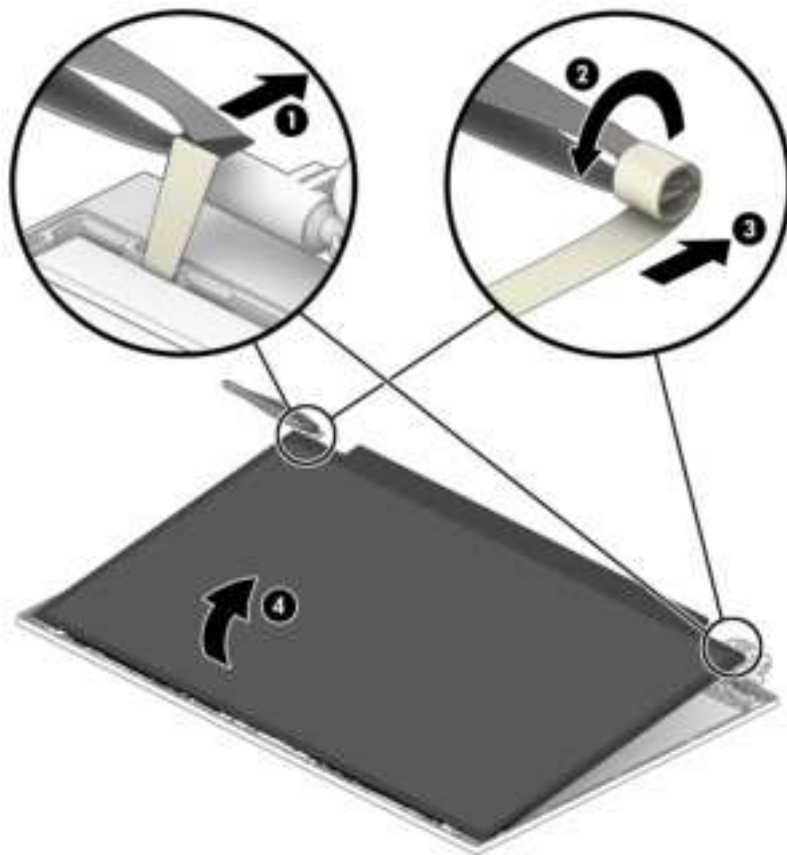   Pull the tape out from under the right **(2)** and left **(3)** corners of the display panel until it is
       completely removed. Lift the top of the panel **(4)**.

    💡 **TIP:** You must pull the tape several times to remove it.

b.   Rotate the display panel **(1)** onto the keyboard to gain access to the display cable connection on the back of the panel.

c.   On the back of the display panel, release the adhesive strip that secures the display panel cable to the display panel, and then disconnect the cable **(2)**.

d.   Lift the display panel **(3)** to remove it.

Display panels are available as spare part number N96328-001 for HD models and N96329-001 for FHD models.
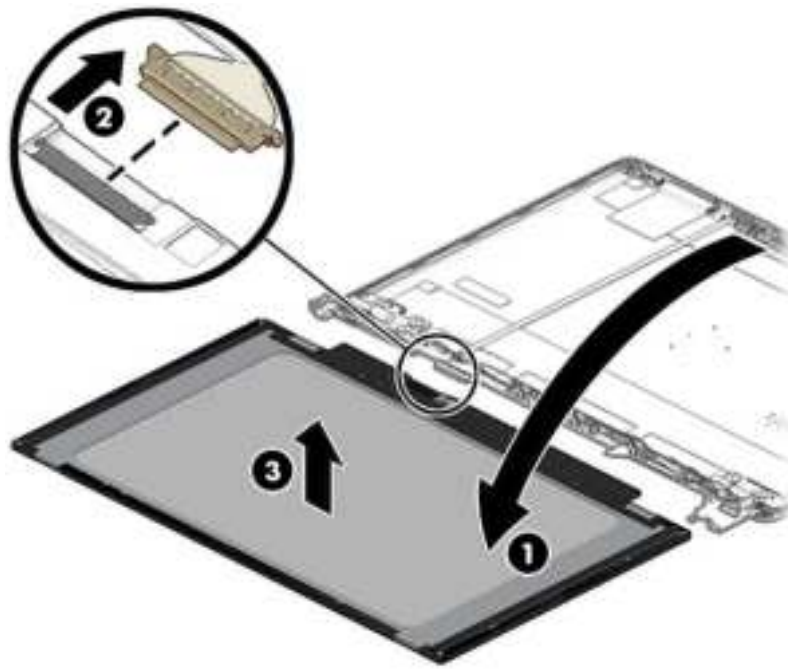
e. When installing a new panel, be sure to install the stretchable tape along the left and right sides of the inside of the display enclosure. Stretchable tape is included in the Adhesive Kit as spare part number L24491-001.

11. To remove the display hinges:

    a. Remove the three Phillips M2.5 × 2.5 screw **(1)** from the bottom of each hinge.

    b. Remove the display hinges **(2)** from the display rear cover.

       Display hinges are available as spare part number L24470-001 for HD models and N96334-001 for FHD models.
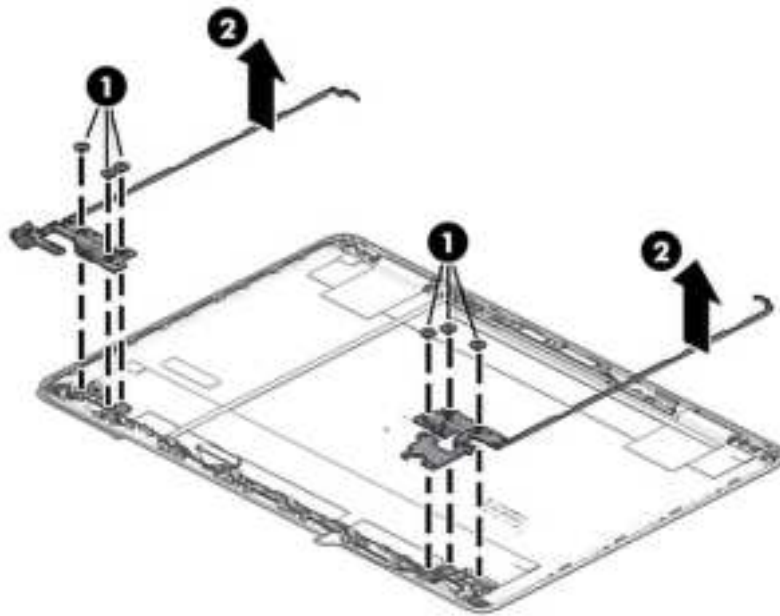
12. To remove the display/camera cable, lift the tape **(1)** from the connector on the camera module, and then disconnect the cable **(2)** from the camera module. Lift the cable **(3)** from the display rear cover to disengage the adhesive that secures the cable to the cover.

   Display/camera cables are available as spare part number L24492-001 for HD models and L24493-001 for FHD models.

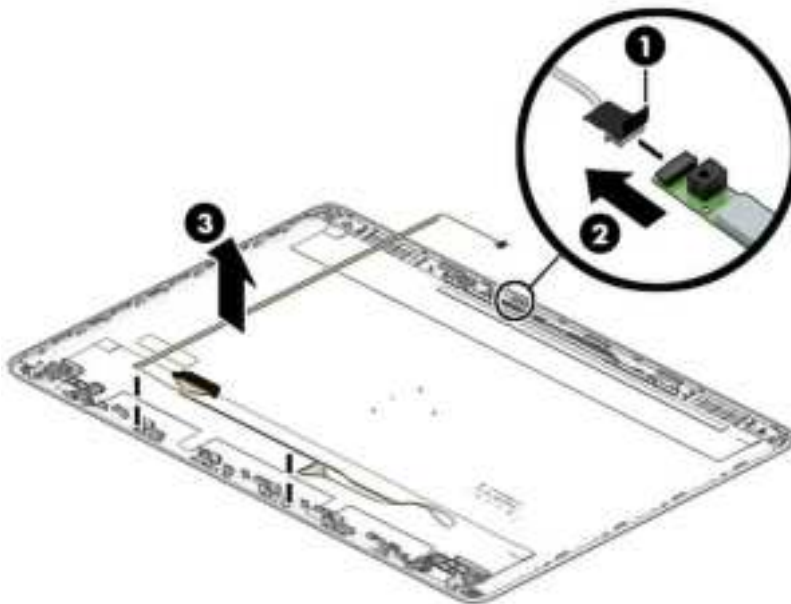13. To remove the wireless antennas and cables, peel the antennas **(1)** off the display enclosure, and then release the cables from the clips **(2)** built into the side of the display enclosure.

   📄 NOTE: The number of antennas can vary.

Wireless antennas and cables are available as spare part number L29012-001 for models with a single antenna and L24640-001 for models with dual antennas.
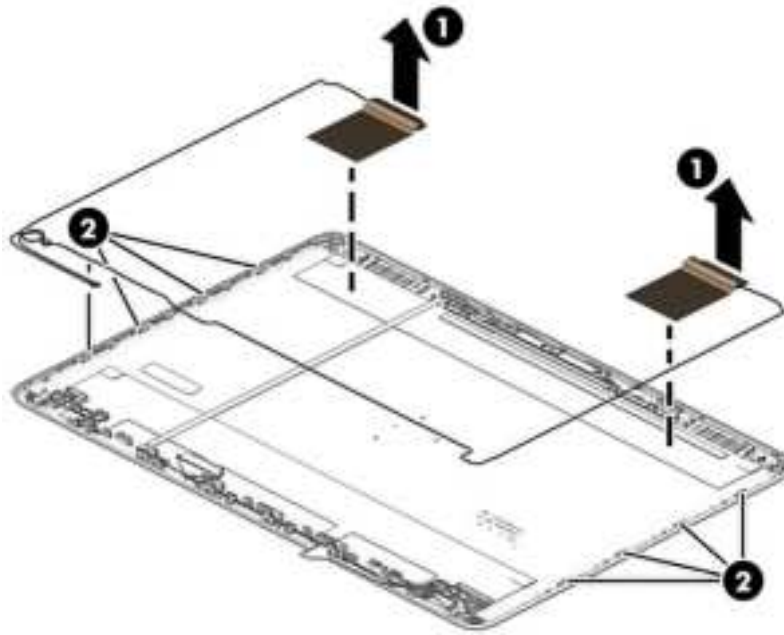
14. If replacing the display enclosure, be sure that the subcomponents are transferred to the new enclosure.

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

Power connector

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

Table 5-13 Power connector description and part number

Description	Spare part number
Power connector	L23188-001

Before removing the power connector, follow these steps:

1. Prepare the computer for disassembly (see).

2. Remove the rubber feet (see).

3. Remove the bottom cover (see).

4. Remove the battery (see).

5. Remove the right hinge screw and lift the right hinge (see).

Remove the power connector:

1. Disconnect the power connector (1) from the system board.

2. Remove the power connector **(2)** from the computer.
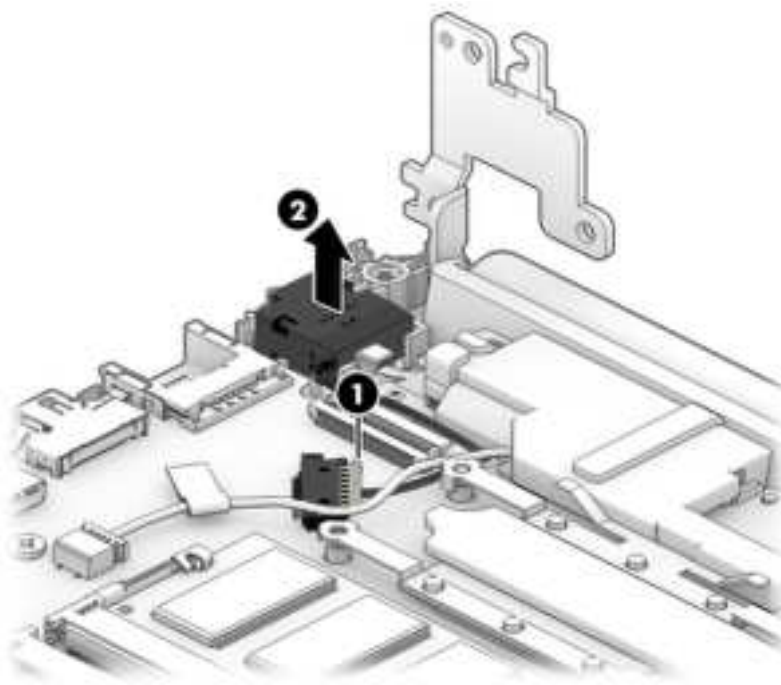
To install the power connector, reverse this procedure.

Top cover with keyboard

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 covers with keyboards. The second table provides the country codes.

Table 5-14 Top cover with keyboard descriptions and part numbers

Description	Spare part number
Models without a fingerprint reader	P00365-xx1
Models with a fingerprint reader	P00366-xx1

Table 5-15 Keyboard 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	Israel	-BB1	Slovenia	-BA1
Bulgaria	-261	Italy	-061	South Korea	-AD1
Canada	-DB1	Japan	-291	Spain	-071
Czech Republic and Slovakia	-FL1	Latin America	-161	Switzerland	-BG1
Denmark, Finland, and Norway	-DH1	The Netherlands	-B31	Taiwan	-AB1

Table 5-15 Keyboard 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	Thailand	-281
Germany	-041	Romania	-271	Turkey	-141
Greece	-151	Russia	-251	United Kingdom	-031
Hungary	-211	Saudi Arabia	-171	United States	-001
India	-002				

6 Using Setup Utility (BIOS)

Setup Utility, or Basic Input/Output System (BIOS), controls communication between all the input and output devices on the system (such as disk drives, display, keyboard, mouse, and printer). Setup Utility (BIOS) includes settings for the types of devices installed, the startup sequence of the computer, and the amount of system and extended memory.

NOTE: To start Setup Utility on convertible computers, your computer must be in notebook mode and you must use the keyboard attached to your notebook.

Starting Setup Utility (BIOS)

You have several ways to access the Setup Utility (BIOS).

IMPORTANT: Use extreme care when making changes in Setup Utility (BIOS). Errors can prevent the computer from operating properly.

Use one of these options:

- Turn on or restart the computer and quickly press f10.

- Turn on or restart the computer, quickly press esc, and then press f10 when the Start menu is displayed.

Updating Setup Utility (BIOS)

Updated versions of Setup Utility (BIOS) might be available on the HP website. Most BIOS updates on the HP website are packaged in compressed files called *SoftPaqs*. Some download packages contain a file named `Readme.txt`, which contains information regarding installing and troubleshooting the file.

Determining the BIOS version

To decide whether you need to update Setup Utility (BIOS), first determine the BIOS version on your computer.

To reveal the BIOS version information (also known as *ROM date* and *System BIOS*), use one of these options.

- HP Support Assistant

  1. Select the **Search** icon in the taskbar, type `support` in the search box, and then select the **HP Support Assistant** app.

     – or –

     Select the question mark icon in the taskbar.

  2. Under **My notebook**, select **Specifications**.

- Setup Utility (BIOS)

  1. Start Setup Utility (BIOS) (see).

2. Select **Main**, and then make note of the BIOS version.

3. Select **Exit**, select one of the options, and then follow the on-screen instructions.

- In Windows, press ctrl+alt+s.

To check for later BIOS versions, see .

Preparing for a BIOS update

Be sure to follow all prerequisites before downloading and installing a BIOS update.

> **IMPORTANT:** To reduce the risk of damage to the computer or an unsuccessful installation, download and install a BIOS update only when the computer is connected to reliable external power using the HP AC adapter provided with the computer (select products only), a replacement AC adapter provided by HP, or an AC adapter with the power rating specified on the product label. Do not download or install a BIOS update while the computer is running on battery power, docked in an optional docking device, or connected to an optional power source. During the download and installation, follow these instructions:
>
> - Do not disconnect power from the computer by unplugging the power cord from the AC outlet.
>
> - Do not shut down the computer or initiate Sleep.
>
> - Do not insert, remove, connect, or disconnect any device, cable, or cord.
> **NOTE:** If your computer is connected to a network, consult the network administrator before installing any software updates, especially system BIOS updates.

Downloading a BIOS update

After you review the prerequisites, you can check for and download BIOS updates.

1. Perform one of these tasks:

   - Select the **Search** icon in the taskbar, type `support` in the search box, and then select the **HP Support Assistant** app.

   - Select the question mark icon in the taskbar.

2. Select **Updates**. The **Checking for Updates** window opens, and Windows checks for updates.

3. Follow the on-screen instructions.

4. At the download area, follow these steps:

   a. Identify the most recent BIOS update and compare it to the BIOS version currently installed on your computer. If the update is more recent than your BIOS version, make a note of the date, name, or other identifier. You might need this information to locate the update later, after it has been downloaded to your hard drive.

   b. Follow the on-screen instructions to download your selection to the hard drive.

      Make a note of the path to the location on your hard drive where the BIOS update is downloaded. You will need to access this path when you are ready to install the update.

Installing a BIOS update

BIOS installation procedures vary. Follow any instructions that appear on the screen after the download is complete. If no instructions appear, follow these steps.

1. Select the **Search** icon in the taskbar, type `file` in the search box, and then select **File Explorer**.

2. Select your hard drive designation. The hard drive designation is typically Local Disk (C:).

3. Using the hard drive path you recorded earlier, open the folder that contains the update.

4. Double-click the file that has an .exe extension (for example, *filename*.exe).

    The BIOS installation begins.

5. Complete the installation by following the on-screen instructions.

NOTE: After a message on the screen reports a successful installation, you can delete the downloaded file from your hard drive.

---

7   Backing up, restoring, and recovering

You can use Windows tools or HP software to back up your information, create a restore point, reset your computer, create recovery media, or restore your computer to its factory state. Performing these standard procedures can return your computer to a working state faster.

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

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

Backing up information and creating recovery media

These methods of creating recovery media and backups are available on select products only.

Using Windows tools for backing up

HP recommends that you back up your information immediately after initial setup. You can do this task either using Windows Backup locally with an external USB flash drive or using online tools.

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

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

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

For details:

- Go to http://www.hp.com, search for HP Cloud Recovery, and then select the result that matches the type of computer that you have.

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

> **IMPORTANT:**   HP recommends that you follow the Restoring and recovery methods on page 60 to restore your computer before you obtain and use the HP recovery discs. Using a recent backup can return your machine to a working state sooner than using the HP recovery discs. After the system is restored, reinstalling all the operating system software released since your initial purchase can be a lengthy process.

Restoring and recovering your system

You have several tools available to recover your system both within and outside of Windows if the desktop cannot load.

HP recommends that you attempt to restore your system using the [Restoring and recovery methods on page 60](#).

Creating a system restore

System Restore is available in Windows. The System Restore software can automatically or manually create restore points, or snapshots, of the system files and settings on the computer at a particular point.

When you use System Restore, it returns your computer to its state at the time you made the restore point. Your personal files and documents should not be affected.

Restoring and recovery methods

After you run the first method, test to see whether the issue still exists before you proceed to the next method, which might now be unnecessary.

1. Run a Microsoft System Restore.

2. Run Reset this PC.

   NOTE: The options **Remove everything** and then **Fully clean the drive** can take several hours to complete and leave no information on your computer. It is the safest way to reset your computer before you recycle it.

3. Recover using HP Recovery media. For more information, see [Recovering using HP Recovery media on page 60](#).

For more information about the first two methods, see the Get Help app:

- Select the **Start** button, select **All apps**, select the **Get Help** app, and then enter the task you want to perform.

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

Recovering using HP Recovery media

You can use HP Recovery media to recover the operating system and drivers that were installed at the factory. On select products, you can create recovery media on a bootable USB flash drive using the HP Cloud Recovery Download Tool.

For details, see [Using the HP Cloud Recovery Download Tool to create recovery media (select products only) on page 59](#).

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

To recover your system:

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

   NOTE: HP recommends that you follow the [Restoring and recovery methods on page 60](#) to restore your computer before you obtain and use the HP recovery discs. Using a recent backup can return your machine to a working state sooner than using the HP recovery discs. After the system is restored, reinstalling all the operating system software released since your initial purchase can be a lengthy process.

Changing the computer boot order

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

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

To change the boot order:

1. Insert the HP Recovery media.

2. Access the system **Startup** menu.

   - For computers or tablets with keyboards attached, turn on or restart the computer or tablet, quickly press esc, and then press f9 for boot options.

   - For tablets without keyboards, turn on or restart the tablet, and then quickly press and hold one of the following buttons:

     - Volume up

     - Volume down

     Then select **f9**.

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

Using HP Sure Recover (select products only)

Select computer models are configured with HP Sure Recover, a PC operating system (OS) recovery solution built into the hardware and software. HP Sure Recover can fully restore the HP OS image without installed recovery software.

Using HP Sure Recover, an administrator or user can restore the system and install:

- Latest version of the operating system

- Platform-specific device drivers

- Software applications, in the case of a custom image

To access the latest documentation for HP Sure Recover, go to http://www.hp.com/support. Follow the on-screen instructions to find your product and locate your documentation.

8 Using HP PC Hardware Diagnostics

You can use the HP PC Hardware Diagnostics utility to determine whether your computer hardware is running properly. The three versions are HP PC Hardware Diagnostics Windows, HP PC Hardware Diagnostics UEFI (Unified Extensible Firmware Interface), and (for select products only) Remote HP PC Hardware Diagnostics UEFI, a firmware feature.

Using HP PC Hardware Diagnostics Windows (select products only)

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

If HP PC Hardware Diagnostics Windows is not installed on your computer, you must download and install it. To download HP PC Hardware Diagnostics Windows, see Downloading HP PC Hardware Diagnostics Windows on page 63.

Using an HP PC Hardware Diagnostics Windows hardware failure ID code

When HP PC Hardware Diagnostics Windows detects a failure that requires hardware replacement, a 24-digit failure ID code is generated for select component tests. For interactive tests, such as keyboard, mouse, or audio and video palette, you must perform troubleshooting steps before you can receive a failure ID.

You have several options after you receive a failure ID:

- Select **Next** to open the Event Automation Service (EAS) page, where you can log the case.

- Scan the QR code with your mobile device, which takes you to the EAS page, where you can log the case.

- Select the box next to the 24-digit failure ID to copy your failure code and send it to support.

Accessing HP PC Hardware Diagnostics Windows

After HP PC Hardware Diagnostics Windows is installed, you can access it from HP Support Assistant or the Start menu.

Accessing HP PC Hardware Diagnostics Windows from HP Support Assistant

After HP PC Hardware Diagnostics Windows is installed, follow these steps to access it from HP Support Assistant:

1. Complete one of the following tasks:

   - Select the **Search** icon in the taskbar, type `support` in the search box, and then select the **HP Support Assistant** app.

   - Select the question mark icon in the taskbar.

2. Select **Fixes & Diagnostics**.

3. Select **Run hardware diagnostics**, and then select **Launch**.

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

NOTE: To stop a diagnostic test, select **Cancel**.

Accessing HP PC Hardware Diagnostics Windows from the Start menu (select products only)

After HP PC Hardware Diagnostics Windows is installed, follow these steps to access it from the Start menu:

1. Select the **Start** button, and then select **All apps**.

2. Select **HP PC Hardware Diagnostics Windows**.

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

NOTE: To stop a diagnostic test, select **Cancel**.

Downloading HP PC Hardware Diagnostics Windows

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

Downloading the latest HP PC Hardware Diagnostics Windows version from HP

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

1. Go to http://www.hp.com/go/techcenter/pcdiags. The HP PC Diagnostics home page is displayed.

2. Select **Download HP Diagnostics Windows**, and then select the specific Windows diagnostics version to download to your computer or a USB flash drive.

The tool downloads to the selected location.

Downloading the HP PC Hardware Diagnostics Windows from the Microsoft Store

You can download the HP PC Hardware Diagnostics Windows from the Microsoft Store:

1. Select the Microsoft Store app on your desktop or select the **Search** icon in the taskbar, and then type `Microsoft Store` in the search box.

2. Type `HP PC Hardware Diagnostics Windows` in the **Microsoft Store** search box.

3. Follow the on-screen directions.

The tool downloads to the selected location.

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

You can download HP PC Hardware Diagnostics Windows by product name or number.

NOTE: For some products, you might have to download the software to a USB flash drive by using the product name or number.

1. Go to http://www.hp.com/support.

2. Select **Software and Drivers**, select your type of product, and then enter the product name or number in the search box that is displayed.

3. In the **Diagnostics** section, select **Download**, and then follow the on-screen instructions to select the specific Windows diagnostics version to be downloaded to your computer or USB flash drive.

The tool downloads to the selected location.

Installing HP PC Hardware Diagnostics Windows

To install HP PC Hardware Diagnostics Windows, navigate to the folder on your computer or the USB flash drive where the .exe file downloaded, double-click the .exe file, and then follow the on-screen instructions.

Using HP PC Hardware Diagnostics UEFI

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

> **NOTE:** For some products, you must use a Windows computer and a USB flash drive to download and create the HP UEFI support environment because only .exe files are provided. For more information, see Downloading HP PC Hardware Diagnostics UEFI to a USB flash drive on page 65.

If your PC does not start in Windows, you can use HP PC Hardware Diagnostics UEFI to diagnose hardware issues.

Using an HP PC Hardware Diagnostics UEFI hardware failure ID code

When HP PC Hardware Diagnostics UEFI detects a failure that requires hardware replacement, a 24-digit failure ID code is generated.

For assistance in solving the problem, complete one of these tasks:

- Select **Contact HP**, accept the HP privacy disclaimer, and then use a mobile device to scan the failure ID code that appears on the next screen. The HP Customer Support - Service Center page appears with your failure ID and product number automatically filled in. Follow the on-screen instructions.

- Contact support, and provide the failure ID code.

Starting HP PC Hardware Diagnostics UEFI

To start HP PC Hardware Diagnostics UEFI, follow this procedure.

1. Turn on or restart the computer, and quickly press esc.

2. Press f2.

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

a. Connected USB flash drive

> 📄 **NOTE:** To download the HP PC Hardware Diagnostics UEFI tool to a USB flash drive, see Downloading the latest HP PC Hardware Diagnostics UEFI version on page 66.

b. Hard drive

c. BIOS

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

Starting HP PC Hardware Diagnostics UEFI through HP Hotkey Support software (select products only)

This section describes how to start HP PC Hardware Diagnostics UEFI through HP Hotkey Support software.

> 📄 **NOTE:** You must disable fast boot to access HP PC Hardware Diagnostics UEFI from the HP System Information application.

To disable fast boot:

1. Turn on or restart the computer, and when the HP logo appears, press f10 to enter Computer Setup.

2. Select **Advanced**, and then select **Boot Options**.

3. Clear **Fast Boot**.

4. Select **Save Changes and Exit**, and then select **Yes**.

To start HP PC Hardware Diagnostics UEFI through HP Hotkey Support software, follow this procedure.:

1. From the **Start** menu, open the HP System Information Application or press fn+esc.

2. In HP System Information screen, select **Run System Diagnostics**, select **Yes** to run the application, and then select **Restart**.

> 📄 **IMPORTANT:** To prevent loss of data, save your work in all open apps before restarting your computer.

> 📄 **NOTE:** When the restart is complete, the computer opens the HP PC Hardware Diagnostics UEFI Application. Proceed with the troubleshooting tests.

Downloading HP PC Hardware Diagnostics UEFI to a USB flash drive

Downloading HP PC Hardware Diagnostics UEFI to a USB flash drive can be useful in some situations.

- HP PC Hardware Diagnostics UEFI is not included in the preinstallation image.

- HP PC Hardware Diagnostics UEFI is not included in the HP Tool partition.

- The hard drive is damaged.

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

Downloading the latest HP PC Hardware Diagnostics UEFI version

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

1. Go to http://www.hp.com/go/techcenter/pcdiags. The HP PC Diagnostics home page is displayed.

2. Select **Download HP Diagnostics UEFI**, and then select **Run**.

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

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

> **NOTE:** For some products, you might have to download the software to a USB flash drive by using the product name or number.

1. Go to http://www.hp.com/support.

2. Enter the product name or number, select your computer, and then select your operating system.

3. In the **Diagnostics** section, follow the on-screen instructions to select and download the specific UEFI Diagnostics version for your computer.

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

Remote HP PC Hardware Diagnostics UEFI is a firmware (BIOS) feature that downloads HP PC Hardware Diagnostics UEFI to your computer. It can then run the diagnostics on your computer, and it might upload results to a preconfigured server.

For more information about Remote HP PC Hardware Diagnostics UEFI, go to http://www.hp.com/go/techcenter/pcdiags, and then select **Find out more**.

Downloading Remote HP PC Hardware Diagnostics UEFI

Remote HP PC Hardware Diagnostics UEFI is also available as a SoftPaq that you can download to a server.

Downloading the latest Remote HP PC Hardware Diagnostics UEFI version

You can download the latest Remote HP PC Hardware Diagnostics UEFI version to a USB flash drive.

1. Go to http://www.hp.com/go/techcenter/pcdiags. The HP PC Diagnostics home page is displayed.

2. Select **Download Remote Diagnostics**, and then select **Run**.

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

You can download Remote HP PC Hardware Diagnostics UEFI by product name or number.

> **NOTE:** For some products, you might have to download the software by using the product name or number.

1. Go to http://www.hp.com/support.

2. Select **Software and Drivers**, select your type of product, enter the product name or number in the search box that is displayed, select your computer, and then select your operating system.

3. In the **Diagnostics** section, follow the on-screen instructions to select and download the **Remote UEFI** version for the product.

Customizing Remote HP PC Hardware Diagnostics UEFI settings

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

- Set a schedule for running diagnostics unattended. You can also start diagnostics immediately in interactive mode by selecting **Execute Remote HP PC Hardware Diagnostics UEFI**.

- Set the location for downloading the diagnostic tools. This feature provides access to the tools from the HP website or from a server that has been preconfigured for use. Your computer does not require the traditional local storage, such as a hard drive or USB flash drive, to run remote diagnostics.

- Set a location for storing the test results. You can also set the user name and password that you use for uploads.

- Display status information about the diagnostics run previously.

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

1. Turn on or restart the computer, and when the HP logo appears, press f10 to enter Computer Setup.

2. Select **Advanced**, and then select **Settings**.

3. Make your customization selections.

4. Select **Main**, then select **Save Changes and Exit** to save your settings.

Your changes take effect when the computer restarts.

9   Specifications

This chapter provides specifications for your computer.

Computer specifications

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

Table 9-1 Computer specifications

	Metric	U.S.
Dimensions		
Depth	**324.0 mm**	12.76 in
Width	**225.0 mm**	8.9 in
Height (rear)	**19.9 mm**	0.78 in
Weight	**1520 g**	3.35 lb
Input power		
Operating voltage and current	19.5 V DC @ 3.33 A – 65 W	
	19.5 V DC @ 2.31 A – 45 W	
	5 V DC @ 3 A / 9 V DC @ 3 A / 12 V DC @ 5 A / 15 V DC @ 4.33 A / 20 V DC @ 3.25 A – 65 W USB-C	
Temperature		
Operating	**5°C to 35°C**	41°F to 95°F
Nonoperating	**–20°C to 60°C**	–4°F to 140°F
Relative humidity (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	**–15 m to 3,048 m**	–50 ft to 10,000 ft
Nonoperating	**–15 m to 12,192 m**	–50 ft to 40,000 ft

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

Display specifications

This section provides specifications for your display.

Table 9-2 Display specifications

	Metric	U.S.
Active diagonal size	35.6 cm	14.0 in
Resolution	1920 × 1080 FHD	
	1366 × 768 HD	
Surface treatment	Antiglare	
Brightness	250 nits (HD)	
	300 nits (FHD)	
Viewing angle	SVA (HD)	
	UWVA (FHD)	
Backlight	WLED	
Graphics adapter	eDP	

Solid-state drive specifications

This section provides specifications for your solid-state drives.

Table 9-3 Solid-state drive specifications

	512 GB*	1 TB*
Dimensions		
Height	1.0 mm	1.0 mm
Length	50.8 mm	50.8 mm
Width	28.9 mm	28.9 mm
Weight	< 10 g	< 10 g
Interface type	PCIe	PCIe
Ready time, maximum (to not busy)	< 1.0 ms	1.0 ms
Access times, logical	0.1 ms	0.1 ms
Transfer rate		
Sequential read	up to 2150 MBps	up to 2150 MBps
Random read	Up to 300,000 IOPs	Up to 300,000 IOPs
Sequential write	up to 1550 MBps	up to 1550 MBps
Random write	Up to 100,000 IOPs	Up to 100,000 IOPs
Total logical sectors	1,000,215,216	1,500,336,388

Table 9-3 Solid-state drive specifications (continued)

	512 GB*	1 TB*
Operating temperature	0°C to 70°C	0°C to 70°C
	(32°F to 158°F)	(32°F to 158°F)

NOTE: *1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less. Actual drive specifications might differ slightly.

Certain restrictions and exclusions apply. Contact support for details.

10 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.

Current BIOS steps

Use these instructions to restore nonvolatile memory.

1. Follow these steps to restore the nonvolatile memory that can contain personal data. Restoring or reprogramming nonvolatile memory that does not store personal data is neither necessary nor recommended.

    a. Turn on or restart the computer, and then quickly press esc.

    NOTE: If the system has a BIOS administrator password, type the password at the prompt.

    b. Select **Main**, select **Apply Factory Defaults and Exit**, and then select **Yes** to load defaults. The computer restarts.

    c. During the restart, press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.

    NOTE: If the system has a BIOS administrator password, type the password at the prompt.

    d. Select the **Security** menu, select **Restore Security Settings to Factory Defaults**, and then select **Yes** to restore security level defaults. The computer restarts.

    e. During the restart, press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.

    NOTE: If the system has a BIOS administrator password, type the password at the prompt.

f.   If an asset or ownership tag is set, select the **Security** menu and scroll down to the **Utilities** menu. Select **System IDs**, and then select **Asset Tracking Number**. Clear the tag, and then make the selection to return to the prior menu.

g.   If a DriveLock password is set, select the **Security** menu, and scroll down to **Hard Drive Utilities** under the **Utilities** menu. Select **Hard Drive Utilities**, select **DriveLock**, and then clear the check box for **DriveLock password on restart**. Select **OK** to proceed.

h.   Select the **Main** menu, and then select **Reset BIOS Security to factory default**. Select **Yes** at the warning message. The computer restarts.

i.   During the restart, press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.

> 📝 **NOTE:**   If the system has a BIOS administrator password, type the password at the prompt.

j.   Select the **Main** menu, select **Apply Factory Defaults and Exit**, select **Yes** to save changes and exit, and then select **Shutdown**.

k.   Restart the system. If the system has a Trusted Platform Module (TPM), fingerprint reader, or both, one or two prompts will appear—one to clear the TPM and the other to Reset Fingerprint Sensor. Press or tap f1 to accept or f2 to reject.

l.   Remove all power and system batteries for at least 24 hours.

2.   Complete one of the following:

●   Remove and retain the storage drive.

       – or –

●   Clear the drive contents by using a third-party utility designed to erase data from an SSD.

       – or –

●   Clear the contents of the drive by using the following BIOS Setup Secure Erase command option steps:

> 📝 **NOTE:**   If you clear data using Secure Erase, you cannot recover it.

a.   Turn on or restart the computer, and then quickly press esc.

b.   Select the **Security** menu and scroll down to the esc menu.

c.   Select **Hard Drive Utilities**.

d.   Under **Utilities**, select **Secure Erase**, select the hard drive storing the data you want to clear, and then follow the on-screen instructions to continue.

       – or –

       Clear the contents of the drive using the following Disk Sanitizer commands steps:

i.   Turn on or restart the computer, and then quickly press esc.

ii.   Select the **Security** menu and scroll down to the **Utilities** menu.

iii.   Select **Hard Drive Utilities**.

iv.   Under **Utilities**, select **Disk Sanitizer**, select the hard drive with the data that you want to clear, and then follow the on-screen instructions to continue.

NOTE: The amount of time it takes for Disk Sanitizer to run can take several hours. Plug the computer into an AC outlet before starting.

Nonvolatile memory usage

Use this table to troubleshoot nonvolatile memory usage.

Table 10-1 Troubleshooting information for nonvolatile memory usage

Description	Volatility description	Storage user data	How to erase
Primary storage device, holds the OS, applications, and application settings	Non-volatile, 8-256 GB of eMMC or NVMe SSD storage, removable	Yes[1]	Follow instructions below under "Erase the Primary Storage Device"
System memory (RAM), holds transient data during system operation	Volatile, SODIMM socket. Removable (4 GB/8 GB/16 GB)	Yes	Unplug unit from power
Permanent system BIOS settings	Non-volatile; 16 KB; stored	No[2]	Follow instructions below under "Clearing BIOS Settings"
System boot ROM (BIOS)	Non-volatile memory, 128 Mbit (16 MB) socketed, removable	No	Download the latest BIOS for your model from the HP website and follow the instructions to flash the BIOS that are on the website
RTC (CMOS) RAM	Volatile memory, 256 bytes located in AMD embedded System on Chip (SoC)	No	**Desktop computers with a CMOS button:** Unplug unit from main power, remove top cover and press the **Clear CMOS** button. **Notebook and desktop computers without a CMOS button:** 1. Press and hold power button for 12 seconds. 2. Press Windows key + V, and then press power button.
Keyboard/mouse (ROM)	Non-volatile, 2 KB embedded in the super I/O controller (SIO2)	Yes	N/A
Keyboard/mouse (RAM)	Volatile, 256 bytes embedded in the super I/O controller (SIO2)	No	Unplug unit from main power
LOM EEPROM	Non-volatile, 2 MB embedded in LAN controller	No	N/A
Trusted Platform Module (TPM)	Non-volatile; 51 KB ROM for firmware and 38 KB system parametric data	No[3]	Follow instructions below under "Clearing TPM"

[1] Under typical operation, the only user data stored on the primary storage device are preferences for device configuration and settings for connections. However, the administrator can configure the system to allow users to store data locally.

[2] The only user data potentially stored in BIOS Settings are the ownership and asset tags, administrator password, and startup password.

[3] The Trusted Platform Module may contain encrypted passwords or certificates generated from user or administrator input.

Questions and answers

Use this section to answer your questions about nonvolatile memory.

1. **How can the BIOS settings be restored (returned to factory settings)?**

    IMPORTANT: The restore defaults feature does not securely erase any information on your hard drive. See question and answer 6 for steps to securely erase information.

    The restore defaults feature does not reset the Custom Secure Boot keys. See question and answer 7 for information about resetting the keys.

    a. Turn on or restart the computer, and then quickly press esc.

    b. Select **Main**, and then select **Apply Factory Defaults and Exit**.

    c. Follow the on-screen instructions.

    d. Select **Main**, select **Save Changes and Exit**, and then follow the on-screen instructions.

2. **What is a UEFI BIOS, and how is it different from a legacy BIOS?**

    The Unified Extensible Firmware Interface (UEFI) BIOS is an industry-standard software interface between the platform firmware and an operating system (OS). It replaces the older BIOS architecture but supports much of the legacy BIOS functionality.

    Like the legacy BIOS, the UEFI BIOS provides an interface to display the system information and configuration settings and to change the configuration of your computer before an OS is loaded. BIOS provides a secure runtime environment that supports a Graphic User Interface (GUI). In this environment, you can use either a pointing device (touch screen, touchpad, pointing stick, or USB mouse) or the keyboard to navigate and make menu and configuration selections. The UEFI BIOS also contains basic system diagnostics.

    The UEFI BIOS provides functionality beyond that of the legacy BIOS. In addition, the UEFI BIOS works to initialize the computer's hardware before loading and executing the OS; the runtime environment allows the loading and execution of software programs from storage devices to provide more functionality, such as advanced hardware diagnostics (with the ability to display more detailed system information) and advanced firmware management and recovery software.

    HP has provided options in Computer Setup (BIOS) to allow you to run in legacy BIOS, if required by the operating system. Examples of this requirement would be if you upgrade or downgrade the OS.

3. **Where is the UEFI BIOS located?**

    The UEFI BIOS is located on a flash memory chip. You must use a utility to write to the chip.

4. **What kind of configuration data is stored on the DIMM Serial Presence Detect (SPD) memory module? How would this data be written?**

   The DIMM SPD memory contains information about the memory module, such as size, serial number, data width, speed and timing, voltage, and thermal information. This information is written by the module manufacturer and stored on an EEPROM. You cannot write to this EEPROM when the memory module is installed in a computer. Third-party tools do exist that can write to the EEPROM when the memory module is not installed in a computer. Various third-party tools are available to read SPD memory.

5. **What is meant by "Restore the nonvolatile memory found in Intel-based system boards"?**

   This message relates to clearing the Real Time Clock (RTC) CMOS memory that contains computer configuration data.

6. **How can the BIOS security be reset to factory defaults and erase the data?**

   IMPORTANT: Resetting results in the loss of information.

   These steps do not reset Custom Secure Boot Keys. See question and answer 7 for information about resetting the keys.

   a.   Turn on or restart the computer, and then quickly press esc.

   b.   Select **Main**, and then select **Reset Security to Factory Defaults**.

   c.   Follow the on-screen instructions.

   d.   Select **Main**, select **Save Changes and Exit**, and then follow the on-screen instructions.

7. **How can the Custom Secure Boot Keys be reset?**

   Secure Boot is a feature to ensure that only authenticated code can start on a platform. If you enabled Secure Boot and created Custom Secure Boot Keys, disabling Secure Boot does not clear the keys. You must also select to clear the Custom Secure Boot Keys. Use the same Secure Boot access procedure that you used to create the Custom Secure Boot Keys, but select to clear or delete all Secure Boot Keys.

   a.   Turn on or restart the computer, and then quickly press esc.

   b.   Select the **Security** menu, select **Secure Boot Configuration**, and then follow the on-screen instructions.

   c.   At the **Secure Boot Configuration** window, select **Secure Boot**, select **Clear Secure Boot Keys**, and then follow the on-screen instructions to continue.

Using HP Sure Start (select products only)

Select computer models are configured with HP Sure Start, a technology that continuously monitors your computer's BIOS for attacks or corruption.

If the BIOS becomes corrupted or is attacked, HP Sure Start restores the BIOS to its previously safe state, without user intervention. Those select computer models ship with HP Sure Start configured and enabled. HP Sure Start is configured and already enabled so that most users can use the HP Sure Start default configuration. Advanced users can customize the default configuration.

To access the latest documentation on HP Sure Start, go to http://www.hp.com/support.

11 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 11-1 Power cord requirements for specific countries and regions

Country/region	Accredited agency	Applicable note number
Argentina	IRAM	1
Australia	SAA	1
Austria	OVE	1
Belgium	CEBEC	1
Brazil	ABNT	1
Canada	CSA	2
Chile	IMQ	1
Denmark	DEMKO	1
Finland	FIMKO	1
France	UTE	1

Country/region	Accredited agency	Applicable note number
Germany	VDE	1
India	BIS	1
Israel	SII	1
Italy	IMQ	1
Japan	JIS	3
Netherlands	KEMA	1
New Zealand	SANZ	1
Norway	NEMKO	1
People's Republic of China	CCC	4
Saudi Arabia	SASO	7
Singapore	PSB	1
South Africa	SABS	1
South Korea	KTL	5
Sweden	SEMKO	1
Switzerland	SEV	1
Taiwan	BSMI	6
Thailand	TISI	1
United Kingdom	ASTA	1
United States	UL	2

1. The flexible cord must be Type HO5VV-F, three-conductor, 0.75 mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.

2. The flexible cord must be Type SVT/SJT or equivalent, No. 18 AWG, three-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V AC) or NEMA 6-15P (15 A, 250 V AC) configuration. CSA or C-UL mark. UL file number must be on each element.

3. The appliance coupler, flexible cord, and wall plug must bear a T mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCTF, three-conductor, 0.75 mm² or 1.25 mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V AC) configuration.

4. The flexible cord must be Type RVV, three-conductor, 0.75 mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the CCC certification mark.

5. The flexible cord must be Type H05VV-F three-conductor, 0.75 mm² conductor size. KTL logo and individual approval number must be on each element. Approval number and logo must be printed on a flag label.

6. The flexible cord must be Type HVCTF three-conductor, 1.25 mm² conductor size. Power cord set fittings (appliance coupler, cable, and wall plug) must bear the BSMI certification mark.

7. For 127 V AC, the flexible cord must be Type SVT or SJT 3-conductor, 18 AWG, with plug NEMA 5-15P (15 A, 125 V AC), with UL and CSA or C-UL marks. For 240 V AC, the flexible cord must be Type H05VV-F three-conductor, 0.75 mm² or 1.00 mm² conductor size, with plug BS 1363/A with BSI or ASTA marks.

12 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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