# Maintenance and Service Guide

**SUMMARY**

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

# Legal information

## Product notice

This guide describes features that are common to most models. Some features may 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 **Manuals**.

## 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 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 Pavilion x360 14 inch 2-in-1 Laptop PC** |
| | Model numbers: 14-ek0xxx |
| **Processors** | **12th generation Intel® processors** |
| | Intel® Core™ i7-1255U 1.7 GHz (max turbo frequency 4.7 GHz) processor (10 cores, 12 MB Intel Smart Cache) |
| | Intel Core i5-1235U 1.3 GHz (max turbo frequency 4.4 GHz) processor (10 cores, 12 MB Intel Smart Cache) |
| | Intel Core i3-1215U 1.2 GHz (max turbo frequency 4.4 GHz) processor (6 cores, 10 MB Intel Smart Cache) |
| **Graphics** | **Internal graphics** |
| | Intel Iris® X$^e$ Graphics (i7, i5 processors) |
| | Intel UHD Graphics (i3 processor) |
| | Supports HD Decode, DX12, and HDMI |
| **Display** | **35.6 cm (14.0 in), full high definition (FHD) (1920 × 1080), white light-emitting diode (WLED), narrow bezel, embedded DisplayPort (eDP) 1.2 without panel self refresh (PSR), antiglare, 45% NTSC, 250 nits, bent (3.0 [.12 in]/5.0 mm [.2 in]), touch screen** |
| | Flicker free |
| | Supports active stylus |
| | Supports simultaneous pen & touch |
| | Microsoft HDR streaming capable |
| **Memory** | Onboard, not customer accessible or upgradeable |
| | Up to 16 GB of DDR4-3200 dual-channel support |
| | Supports the following configurations: |
| | ● 16 GB |
| | ● 8 GB |
| **Primary storage** | **M.2 2280 solid-state drives, Non-Volatile Memory express (NVMe), Peripheral Component Interconnect express (PCIe)** |
| | 1 TB |
| | 512 GB, PCIe-4 × 4 |
| | 512 GB |
| | 256 GB |

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

| Category | Description |
|---|---|
| Audio and video | **HP Wide Vision HD Camera**: indicator LED, USB 2.0, back-illuminated sensor (BSI), f2.0, wide dynamic range (WDR), 88° wide field-of-view (WFOV) |
| | 720p by 30 frames per second |
| | Dual array digital microphone with appropriate software: beam forming, echo cancellation, and noise suppression |
| | **HP True Vision 5 MP Camera**: indicator LED, USB2.0, 5MP BSI sensor, f2.0, WDR/TNR, 76° NFOV |
| | 5 MP by 30 frames per second |
| | Dual array digital microphone with appropriate software: beam forming, echo cancellation, and noise suppression |
| | Shutter door |
| | Dual speakers |
| | Audio brand: B&O |
| | HP Audio Boost |
| | Supports speaker swap |
| | Supports Cortana (far field) |
| | Supports Alexa |
| | Supports XiaoWei |
| Wireless | **Wireless Local Area Network (WLAN)** |
| | Intel Wi-Fi® 6E AX211 + Bluetooth® 5.2 (802.11ax 2 × 2, MU-MIMO, supporting gigabit data rate) |
| | Realtek™ RTL8822CE 802.11ac 2 × 2 Wi-Fi + Bluetooth 5 (MU-MIMO supported) |
| | Realtek 8852BE Wi-Fi 6 Bluetooth 5.2 WLAN (MU-MIMO supported, supporting gigabit data rate) |
| | Compatible with Miracast® devices |
| | Supports modern standby (connected) |
| | Wi-Fi BIOS SAR |
| | Turbo Lite WLAN SVTP |
| | Intel Bluetooth audio offload |
| | Dynamic antenna gain |
| | **Wireless Wide Area Network (WWAN)** (select products only) |
| | Intel 5000 5G Solution WWAN |
| | Supports 5G non-standalone (NSA) and standalone (SA) |
| | Supports Sub6 |
| | Supports High Speed Packet Access (HSPA)+/LTE/GPS/A-GPS |
| | Supports eSIM (on-module) |

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

| Category | Description |
| --- | --- |
| Card reader | Micro Secure Digital (SD) Media Reader |
| | Supports MicroSD™/SDHC™/SDXC™ |
| | Push-push insertion/removal |
| | Nano SIM slot (WWAN models only) |
| Ports | Hot plug/unplug and auto detect for correct output to wide-aspect vs standard aspect video |
| | HDMI v2.1 + HDCP 2.2 supporting: up to 4 K @ 60 Hz |
| | Audio-out (headphone)/Audio-in (microphone) combo jack |
| | USB 3.2 Gen 2 Type-C port, supporting: |
| | - data transfer |
| | - Power Delivery 3.0 |
| | - HP Sleep & Charge |
| | - DisplayPort 1.4 out up to 5 K @ 60 Hz through adapter |
| | - HDMI 2.0 out up to 5 K @ 60 Hz with HDCP 2.3 through adapter |
| | (2) USB 3.2 Gen 1 Type-A ports |
| | AC Smart Pin adapter plug |
| Sensors | Accelerometer |
| | Accelerometer + Gyroscope (WLAN models only) |
| | Accelerometer + Gyroscope + eCompass (WWAN models only) |
| Pen | **HP active pen with cable** |
| Keyboard/pointing devices | **Keyboard** |
| | Full size keyboard |
| | Island-style keyboard, backlit |
| | **Clickpad with image sensor** |
| | Multitouch gestures enabled |
| | Precision touchpad support |
| | Support for Modern Trackpad Gestures |
| | Taps enabled as default |

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

| Category | Description |
|---|---|
| Power requirements | **Battery** |
| | 3 cell, 43 Whr, Li polymer |
| | Long life |
| | Fast charge technology |
| | **Smart AC adapters** (non-power correction factor [nPFC]) |
| | 65 W, right angle, 4.5 mm, 1.8 m (6.0 ft) |
| | 65 W, 4.5 mm, EM |
| | 45 W, right angle, 4.5 mm, 1.8 m (6.0 ft) |
| | **Power cord** |
| | C5, 1.0 m (3.3 ft) conventional |
| Security | Trusted Platform Module (TPM) 2.0 |
| | Fingerprint reader (select products only) |
| | Camera privacy cover (WWAN models only) |
| Operating system | Windows 11® Home 64 |
| | Windows 11 Home 64 Chinese Market CPPP |
| | Windows 11 Home 64 High-End Chinese Market CPPP |
| | Windows 11 Home 64 Plus |
| | Windows 11 Home 64 Plus Single Language |
| | Windows 11 Home 64 Plus Single Language Africa Market PPP |
| | Windows 11 Home 64 Plus Single Language APAC EM PPP |
| | Windows 11 Home 64 Plus Single Language India Market PPP |
| | Windows 11 Home 64 Plus Single Language Indonesia Market PPP |
| | Windows 11 Home 64 Single Language |
| | Windows 11 Home 64 Single Language Africa Market PPP |
| | Windows 11 Home 64 Single Language APAC EM PPP |
| | Windows 11 Home 64 Single Language India Market PPP |
| | Windows 11 Home 64 Single Language Indonesia Market PPP |
| | Windows 11 Home S 64 |
| | Windows 11 Home S 64 Plus |
| | Windows 11 Pro 64 |
| | Windows 11 Pro 64 Chinese Market |
| | FreeDOS 3.0 |
| 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)** | nano SIM card slot (select products only) | Supports a wireless subscriber identity module (nano SIM) card. |
| | | For SIM card installation steps, see Using a SIM card (select products only) on page 17. |
| **(2)** | microSD™ memory card reader (select products only) | Reads optional memory cards that enable you to store, manage, share, or access information. |
| | | To insert a card: |
| | | 1. Hold the card label-side up, with connectors facing the computer. |
| | | 2. Insert the card into the memory card reader, and then press in on the card until it is firmly seated. |
| | | To remove a card: |
| | | ▪ Press in on the card, and then remove it from the memory card reader. |
| **(3)** | USB SuperSpeed 5 Gbps ports (2) | Connect a USB device, provide high-speed data transfer, and (for select products) charge small devices (such as a smartphone) when the computer is on or in Sleep mode. |
| | | **NOTE:**  Use a standard USB Type-A charging cable or cable adapter (purchased separately) when charging a small external device. |

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

| Component | | Description |
|---|---|---|
| (4) | 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. |
| (5) | 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

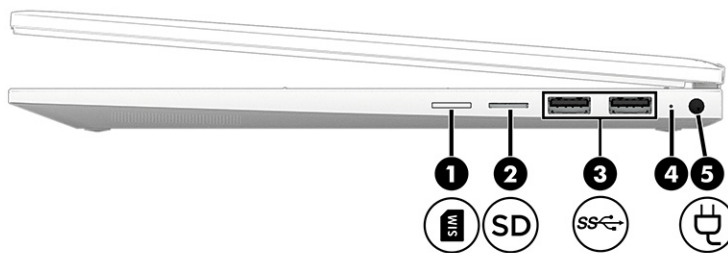| Component | | Description |
|---|---|---|
| (1) | HDMI port | Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component, or a high-speed High-Definition Multimedia Interface (HDMI) device. |
| (2) | USB Type-C® power connector and SuperSpeed 10 Gbps port with HP Sleep and Charge and 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.<br><br>– and –<br><br>Connects a USB device, provides high-speed data transfer, and charges small devices (such as a smartphone), even when the computer is off.<br><br>NOTE:  Use a standard USB Type-C charging cable or cable adapter (purchased separately) when charging a small external device.<br><br>– and –<br><br>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)** | 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. |
| **(4)** | Audio-out (headphone)/Audio-in (microphone) combo jack | Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. This jack does not support optional 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: |
| | | ▪   In the taskbar, select the **Search** icon, 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. |

# Display

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

## Low blue-light mode (select products only)

Your computer display is shipped from the factory in low blue-light mode for improved eye comfort and safety. Also, blue light mode automatically adjusts blue light emissions when you are using the computer at night or for reading.

⚠ **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.

## Wake-on-touch (select products only)

Use the wake-on-touch feature to bring the computer out of the Sleep state quickly.

To wake your computer, double-tap the touchscreen.

📝 **NOTE:**   This feature is available in stand, tent, and tablet modes, but not in clamshell mode.

📝 **NOTE:**   This feature is not available when the computer is in Hibernation.
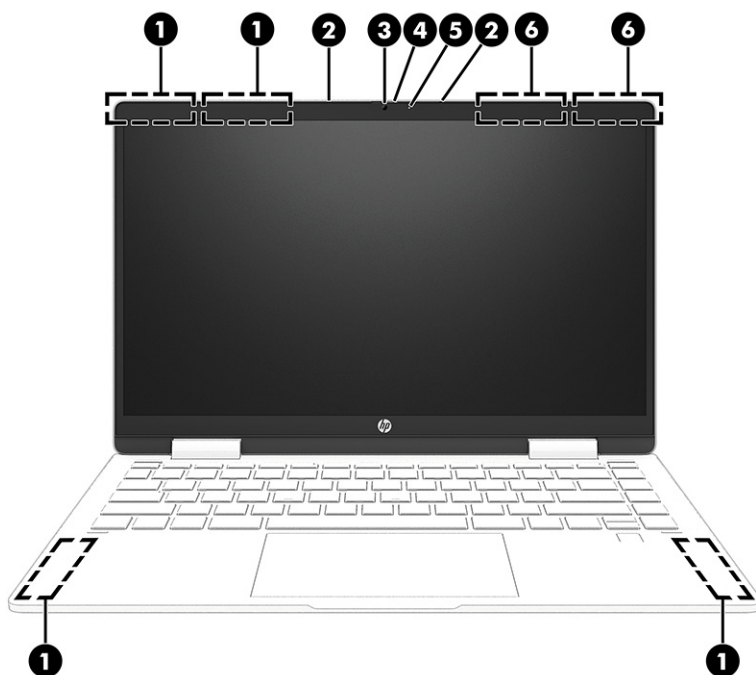
**Table 2-3** Display components and their descriptions

| | Component | Description |
|---|---|---|
| **(1)** | WWAN antennas* (select products only) | Send and receive wireless signals to communicate with wireless wide area networks (WWANs). |
| **(2)** | Internal microphones (2) | Record sound. |
| **(3)** | 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. |
| **(4)** | Camera privacy cover (select products only) | By default, the camera lens is uncovered, but you can slide the camera privacy cover to block the camera's view. To use the camera, slide the camera privacy cover in the opposite direction to reveal the lens. |
| | | **NOTE:** If you have both front-facing and rear-facing cameras, when one camera lens is revealed and ready to use, the other is concealed. |
| **(5)** | Camera light | On: The camera is in use. |
| **(6)** | WLAN antennas* | Send and receive wireless signals to communicate with wireless local area networks (WLANs). |

*The antennas are not visible from outside 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:

■   In the taskbar, select the **Search** icon, 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.
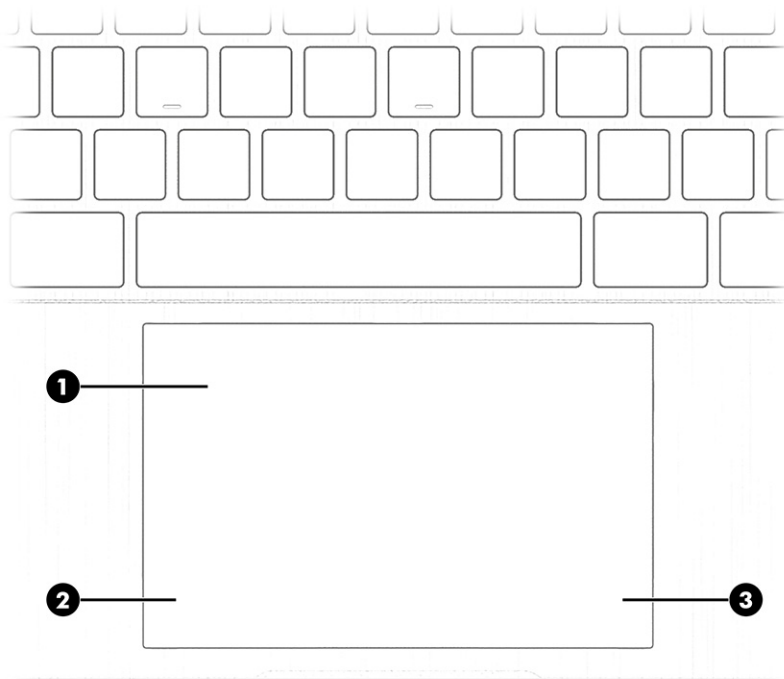
**Table 2-4** Touchpad components and their descriptions

| Component | | Description |
| --- | --- | --- |
| (1) | Touchpad zone | Reads your finger gestures to move the pointer or activate items on the screen. |
| (2) | Left control zone | Textured area that allows you to perform additional gestures. |
| (3) | Right control zone | Textured area that allows you to perform additional gestures. |

## Lights

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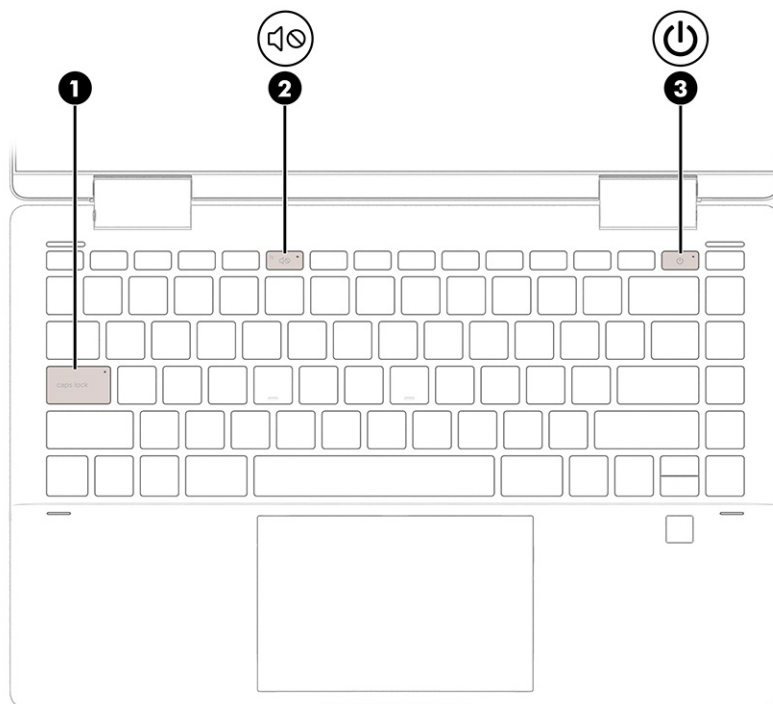
**Table 2-5** Lights and their descriptions

| 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. |
| **(3)** | 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. |

# Button and fingerprint reader

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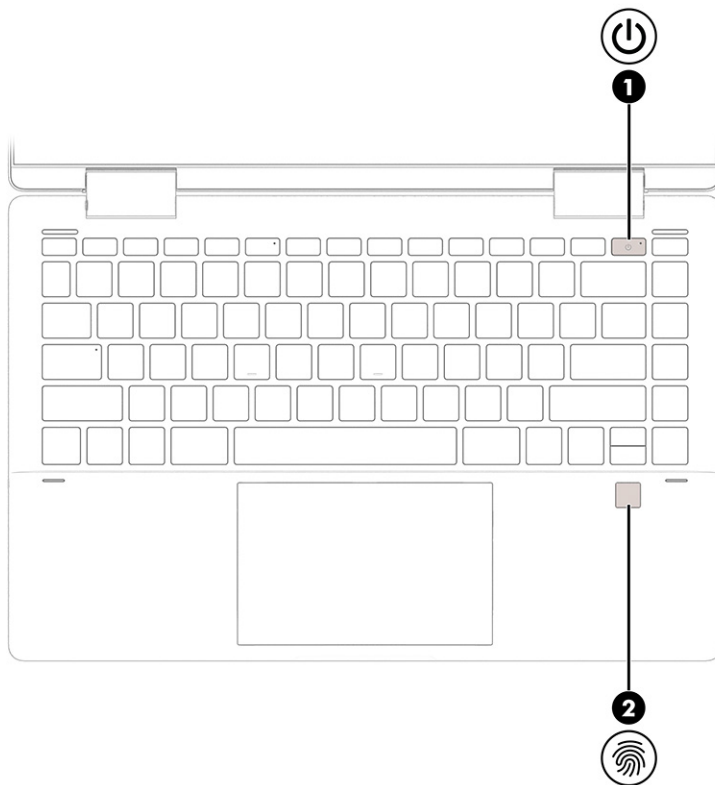
Fingerprint readers, which enable a fingerprint logon, can be located on the touchpad, on a side panel of the computer, or on the top cover below the keyboard.

**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**  Button 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) | 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.
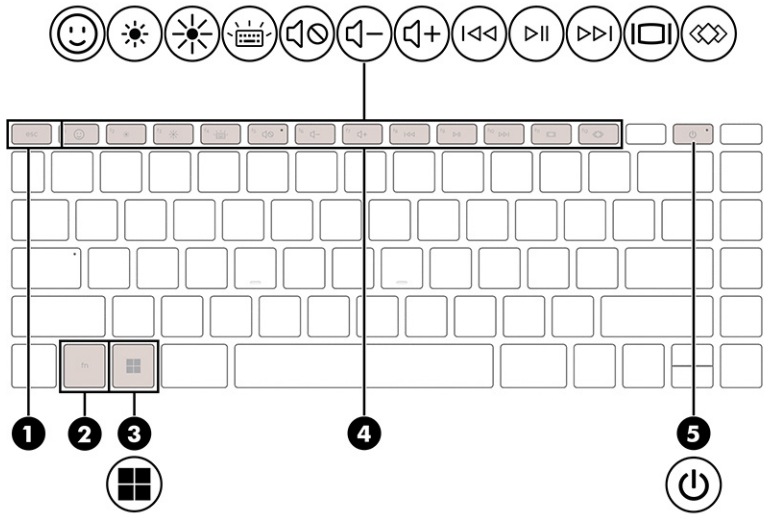
**Table 2-7  Special keys and their descriptions**

| 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.<br><br>**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)** | Power button | ● When the computer is off, press the button briefly to turn on the computer.<br><br>● When the computer is on, press the button briefly to initiate Sleep.<br><br>● When the computer is in the Sleep state, press the button briefly to exit Sleep (select products only).<br><br>● When the computer is in Hibernation, press the button briefly to exit Hibernation.<br><br>**IMPORTANT:**  Pressing and holding down the power button results in the loss of unsaved information.<br><br>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.<br><br>To learn more about your power and sleep settings:<br><br>■ Right-click the **Power** icon, and then select **Power and sleep settings**. |

# Front

Use the illustration and table to identify the front component.

**Table 2-8  Front component and its description**

| Component | Description |
|---|---|
| Speakers (2) | Produce sound. |

# Bottom

Identify the bottom components.

**NOTE:** Refer to the illustration that most closely matches your computer.
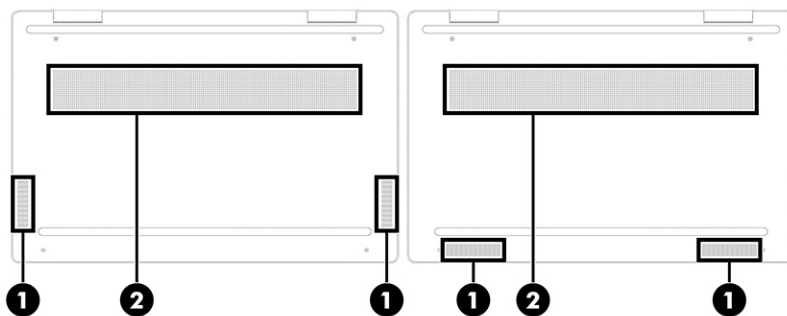


**Table 2-9** Bottom components and their descriptions

| Component | | Description |
|---|---|---|
| **(1)** | Speakers (2) | Produce sound. |
| **(2)** | Vent | Enables airflow to cool internal components.<br><br>**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 2-10 Service label components**

| Component | |
|---|---|
| **(1)** | Serial number |
| **(2)** | Product ID |
| **(3)** | HP product name and model number |
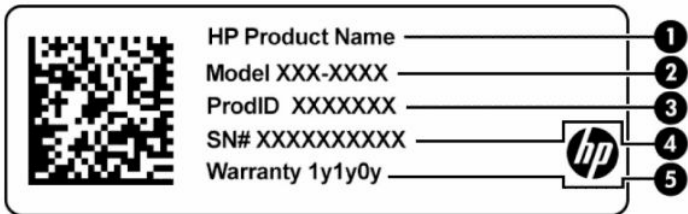


**Table 2-11 Service label components**

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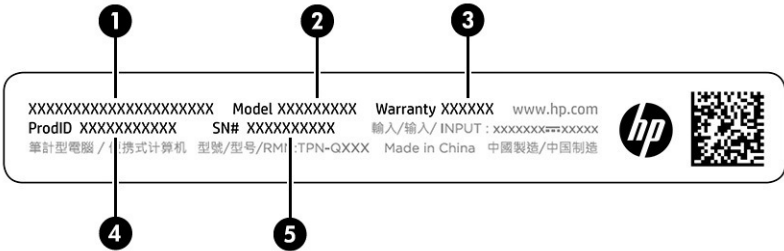


**Table 2-12 Service label components**

| 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.

# Using a SIM card (select products only)

Use these instructions to insert a SIM card.

**IMPORTANT:** You can damage the SIM card if you insert the wrong size card or insert it or the SIM card tray in the wrong direction. The card might also become stuck in the slot. Do not use SIM card adapters. To prevent damage to the SIM card or connectors, use minimal force when inserting or removing a SIM card.

## Inserting a nano SIM card

To insert a nano SIM card, follow these steps.

1. Turn off the computer by using the **Shut down** command.

2. Position the computer display-side up on a flat surface.

3. Press in gently on the SIM card access tray to disengage the SIM lock, and the tray will pop out of the slot **(1)**.

4. Remove the tray **(2)** from the computer and insert the card **(3)**.

5. Replace the tray in the computer. Press in gently on the tray **(4)** until it is firmly seated.
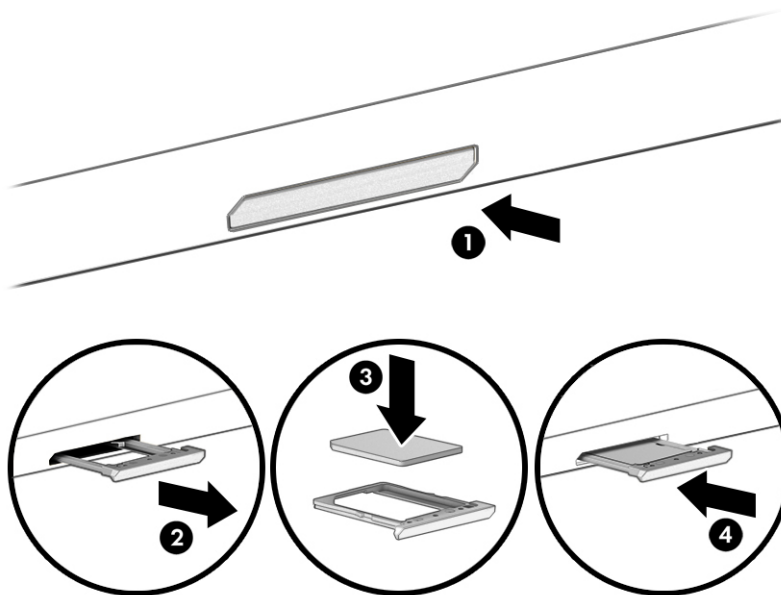
To remove the SIM card, press in gently on the SIM card access tray to disengage the SIM lock, and the tray will pop out of the slot. Remove the SIM card. Replace the tray in the computer and press in gently on the tray until it is firmly seated.

# 3 Illustrated parts catalog

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

## Computer major components

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

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

> **NOTE:** Details about your computer, including model, serial number, product key, and length of warranty, are on the service tag at the bottom of your computer.
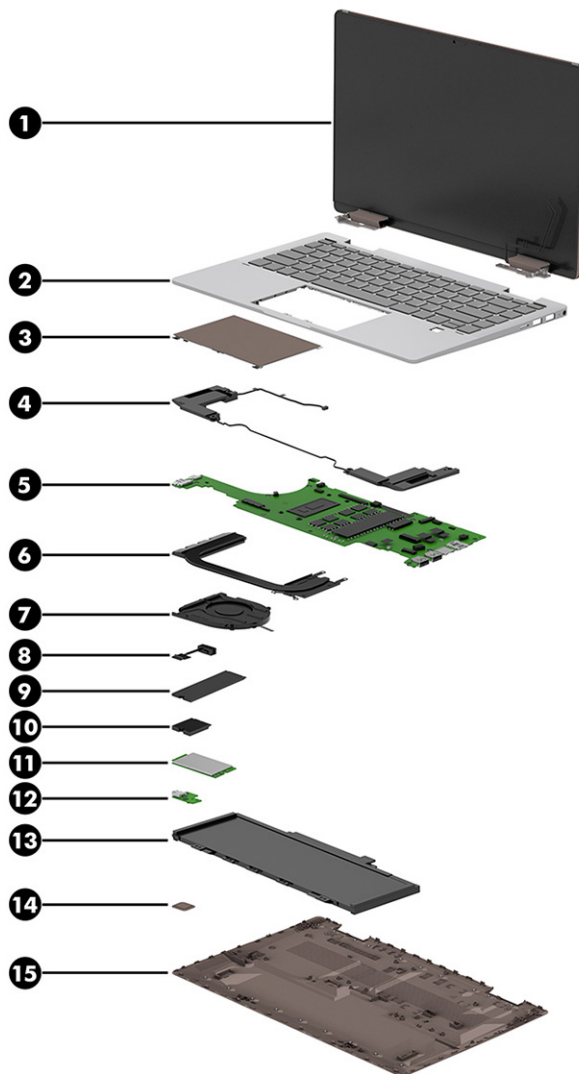
**Table 3-1  Computer major component descriptions and part numbers**

| Item | Component | Spare part number |
|------|-----------|-------------------|
| (1) | **Touch display assembly** (includes panel, touch control board, and cables) | |
| | Models with an HD camera | N09468-001 |
| | Models with a 5 MP camera (models without WWAN) | N09469-001 |
| | Models with a 5 MP camera (models with WWAN) | N14600-001 |
| (2) | **Top cover/keyboard** | |
| | For use in natural silver models: | |
| | ● Fingerprint reader, not backlit, WWAN, FF+ (aluminum top cover) | N09381-xx1 |
| | ● Fingerprint reader, backlit, WWAN, FF+ (aluminum top cover) | N09382-xx1 |
| | ● Fingerprint reader, not backlit, no WWAN, FF+ (aluminum top cover) | N09383-xx1 |
| | ● Fingerprint reader, backlit, no WWAN, FF+ (aluminum top cover) | N09384-xx1 |
| | ● No fingerprint reader, not backlit, WWAN, FF+ (aluminum top cover) | N09385-xx1 |
| | ● No fingerprint reader, backlit, WWAN, FF+ (aluminum top cover) | N09386-xx1 |
| | ● No fingerprint reader, backlit, no WWAN, FF (plastic top cover) | N09433-xx1 |
| | ● No fingerprint reader, not backlit, no WWAN, FF+ (aluminum top cover) | N09600-xx1 |
| | ● No fingerprint reader, backlit, no WWAN, FF+ (aluminum top cover) | N09601-xx1 |
| | ● Fingerprint reader, not backlit, no WWAN, FF (plastic top cover) | N09602-xx1 |
| | ● Fingerprint reader, backlit, no WWAN, FF (plastic top cover) | N09603-xx1 |
| | ● No fingerprint reader, not backlit, no WWAN, FF (plastic top cover) | N09604-xx1 |
| | For use in space blue models: | |
| | ● Fingerprint reader, not backlit, no WWAN | N09435-xx1 |
| | ● Fingerprint reader, backlit, no WWAN | N09436-xx1 |
| | ● No fingerprint reader, not backlit, no WWAN | N09437-xx1 |
| | ● No fingerprint reader, backlit, no WWAN | N09438-xx1 |
| | For use in pale rose gold models: | |
| | Fingerprint reader, backlit, no WWAN | N09434-xx1 |
| (3) | **Touchpad** | |
| | **NOTE:** The touchpad cable is available as spare part number N09466-001 for models without WWAN and N09467-001 for models with WWAN. | |
| | Natural silver | N09452-001 |
| | Space blue | N09453-001 |
| | Pale rose gold | N09454-001 |
| (4) | **Speakers** (left and right) | |
| | Models without WWAN | N09482-001 |
| | Models with WWAN | N09483-001 |

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

| Item | Component | Spare part number |
|---|---|---|
| (5) | **System board** (includes integrated processor) | |
| | NOTE:  The system board repair kit is available as spare part number N20244-888. | |
| | All system boards use the following part numbers: | |
| | xxxxxx-001: Non-Windows operating systems | |
| | xxxxxx-601: Windows operating system | |
| | Intel Core i7-1255U and 16 GB of system memory (models without WWAN) | N08799-xx1 |
| | Intel Core i5-1235U and 16 GB of system memory (models without WWAN) | N08796-xx1 |
| | Intel Core i5-1235U and 8 GB of system memory (models without WWAN) | N08797-xx1 |
| | Intel Core i5-1235U and 8 GB of system memory (models with WWAN) | N08798-xx1 |
| | Intel Core i3-1215U and 8 GB of system memory (models without WWAN) | N08795-xx1 |
| (6) | **Heat sink** (includes replacement thermal material) | N09478-001 |
| (7) | **Fan** | N09477-001 |
| (8) | **Power connector cable** | M45022-001 |
| (9) | **Solid-state drive** (PCIe) | |
| | NOTE:  A thermal pad with foil for use in models with WWAN is available as spare part number N16727-001. | |
| | 1 TB | L85370-005 |
| | 512 GB | L85364-005 |
| | 512 GB, PCIe4 × 4, TLC | M17436-005 |
| | 256 GB, PCIe | L85354-005 |
| (10) | **WLAN module** | |
| | Realtek 802.11b/g/n/a/ac (2 × 2) MU-MIMO supported and Bluetooth 5 | L44796-005 |
| | Intel AX211 Wi-Fi 6e Bluetooth 5.2 WLAN | M53366-005 |
| | Realtek 8852BE Wi-Fi 6 Bluetooth 5.2 WLAN | M91238-005 |
| (11) | **WWAN module** | |
| | Intel 5000 5G Solution WWAN | M46335-005 |
| | Heat sink for WWAN module (not illustrated) | N09479-001 |
| (12) | **Audio board** | |
| | NOTE:  The audio board cable is available as spare part number N09462-001 for use in models without WWAN and N09463-001 for use in models with WWAN. | |
| | FF (plastic top cover) | N09450-001 |
| | FF+ (aluminum top cover) | N20632-001 |
| (13) | **Battery** (3 cell, 43 Whr) | |
| | For use in models without WWAN | M24648-009 |
| | For use in models with WWAN | M24648-010 |

| Item | Component | Spare part number |
|------|-----------|-------------------|
| (14) | **Fingerprint reader**<br><br>**NOTE:**   The fingerprint reader cable is available as spare part number N09464-001 for use in models without WWAN and N09465-001 for use in models with WWAN. | |
| | Natural silver | N09455-001 |
| | Space blue | N09456-001 |
| | Pale rose gold | N09457-001 |
| (15) | **Bottom cover** | |
| | FF (plastic top cover), natural silver | N09472-001 |
| | FF+ (aluminum top cover), natural silver | N09473-001 |
| | FF+ (aluminum top cover), natural silver, WWAN models | N09474-001 |
| | FF (plastic top cover), gray (for space blue models) | N09475-001 |
| | FF+ (aluminum top cover), pale rose gold | N09476-001 |
| * | **SIM card tray** | N09480-001 |

*not illustrated

# Display assembly subcomponents

To identify the display assembly subcomponents, use this illustration and table.
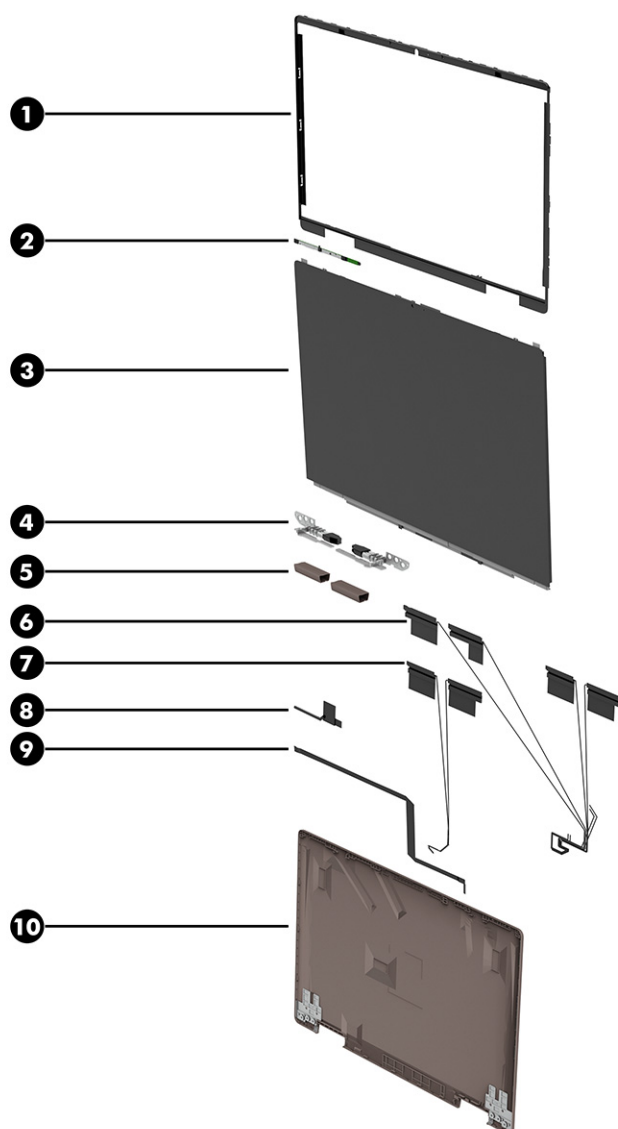
**Table 3-2** Display component descriptions and part numbers

| Item | Component | Spare part number |
|------|-----------|-------------------|
| (1) | **Display bezel** | not available as as a spare part |
| (2) | **Camera module** | |
| | HD | N09470-001 |
| | 5 MP | N09471-001 |
| (3) | **Display panel**<br><br>NOTE:  Display panels are included in the touch panel spare part kits. Panels are not available as separate spare parts. | not available as an individual spare part |
| | **Display panel adhesive kit** | N09481-001 |
| (4) | **Hinges** (left and right) | N09445-001 |

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

| Item | Component | Spare part number |
|---|---|---|
| (5) | **Hinge covers** | |
| | NOTE:    Hinge rubber inserts are available as spare part number N09449-001. | |
| | Natural silver | N09446-001 |
| | Space blue | N09447-001 |
| | Pale rose gold | N09448-001 |
| (6) | **WWAN antennas and cables** | N09440-001 |
| (7) | **WLAN antennas and cables** | N09439-001 |
| (8) | **Display cable** | |
| | For use in models without WWAN | N09458-001 |
| | For use in models with WWAN | N09459-001 |
| (9) | **Camera cable** | |
| | For use in models without WWAN | N09460-001 |
| | For use in models with WWAN | N09461-001 |
| (10) | **Display back cover** | |
| | Natural silver, HD camera | N24066-001 |
| | Natural silver, 5 MP camera | N09441-001 |
| | Natural silver, 5 MP camera, WWAN models | N09444-001 |
| | Space blue, HD camera | N09442-001 |
| | Pale rose gold, 5 MP camera | N09443-001 |

# Miscellaneous parts

To identify the miscellaneous parts, use this table.

**Table 3-3  Miscellaneous part descriptions and part numbers**

| Component | Spare part number |
|---|---|
| **AC adapters** | |
| 65 W, nPFC, SMART, 3 pin, 4.5 mm | 710412-001 |
| 65 W, nPFC, SMART, 3 pin, 4.5 mm, EM | 913691-850 |
| 45 W, nPFC, SMART, RC, 4.5 mm, nonslim | 741727-001 |
| External DVD±RW drive | 747080-001 |
| **Screw Kit** | N09484-001 |
| **SIM card tray** | N09480-001 |
| **Zenvo Pen with cable** | L95614-001 |
| **Adapters** | |

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

| Component | Spare part number |
|---|---|
| HDMI-to-VGA adapter | 701943-001 |
| USB-C-to-VGA adapter | 831751-001 |
| USB-C-to-USB-A adapter | 833960-001 |
| USB-C-to-RJ-45 adapter | M95985-001 |
| **Hubs** | |
| USB-C-to-USB-A hub | 916838-001 |
| HP Elite USB-C MultiPort Hub | L39572-001 |
| USB-C travel hub | L72056-001 |
| **Power cord** (C5, conventional, 1.0 m [3.3 ft]) | |
| Australia | L19358-001 |
| Denmark | L19360-001 |
| Europe (Austria, Belgium, Finland, France, Germany, the Netherlands, Norway, and Sweden) | L19361-001 |
| India | L19363-001 |
| Israel | L19362-001 |
| North America | L19367-001 |
| People's Republic of China | L19368-001 |
| South Africa | L19369-001 |
| South Korea | L19366-001 |
| Switzerland | L19370-001 |
| Taiwan | L19372-001 |
| Thailand | L19371-001 |
| Thailand (bundle) | M85418-001 |
| The United Kingdom | L19373-001 |

# 4 Removal and replacement procedures preliminary requirements

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

## Tools required

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

- 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 27.

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

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

## Generating static electricity

Follow these static electricity guidelines:

- Different activities generate different amounts of static electricity.

- Static electricity increases as humidity decreases.

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

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

**NOTE:** As little as 700 V 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**.

     – or –

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

     – or –

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

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

## 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.

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 29 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 30 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:**<br><br>Pre-operating system failures are logged in the BIOS Event Log. To view the BIOS Event Log:<br><br>1. Press the power button.<br><br>2. Immediately and repeatedly press esc when the power button light turns white.<br><br>    **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.<br><br>3. Press f10 to enter the BIOS setup.<br><br>4. (On commercial products) Under the **Main** tab, select **BIOS event log**, and then select **View BIOS Event Log**.<br><br>    - or -<br><br>    (On consumer products) Under the **Main** tab, select **System Log**.<br><br>Post-operating system failures are logged in the Event Viewer.<br><br>1. Turn on the computer and allow the operating system to open.<br><br>2. Select the search icon 🔍 in the taskbar.<br><br>3. Type `Event Viewer`, and then press enter.<br><br>4. Select the log from the left panel. Details display in the right panel.<br><br>**Chrome:**<br><br>1. Go to support.google.com/chrome.<br><br>2. Search `collect Chrome device logs`. |
| Technical bulletins | To locate technical bulletins:<br><br>1. Go to www.hp.com.<br><br>2. Place the cursor over **Problem solving** to display more options.<br><br>3. Select **Support & Troubleshooting**.<br><br>4. Type the serial number, product number, or product name to go to the product support page.<br><br>5. Select **Advisories** to view technical bulletins. |
| Repair professionals | To locate repair professionals:<br><br>1. Go to www.hp.com.<br><br>2. Place the cursor over **Support resources** to display more options.<br><br>3. Select **Authorized service providers**. |

Table 4-3 Support information locations (continued)

| Service consideration | Path to access information |
|---|---|
| Component and diagnosis information, failure detection, and required action | To locate diagnosis information and actions:<br><br>1. Go to http://www.hp.com/go/techcenter/pcdiags.<br><br>2. Select **Get Support**.<br><br>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:** Only an authorized service provider should access the components described in this chapter. Accessing these parts can damage the computer or void the warranty.

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

## Component replacement procedures

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

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

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

### Preparation for disassembly

To remove and replace computer components, use these procedures:

For initial safety procedures, see .

1.  Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

2.  Disconnect the power from the computer by unplugging the power cord from the computer.

3.  Disconnect all external devices from the computer.

### Bottom cover

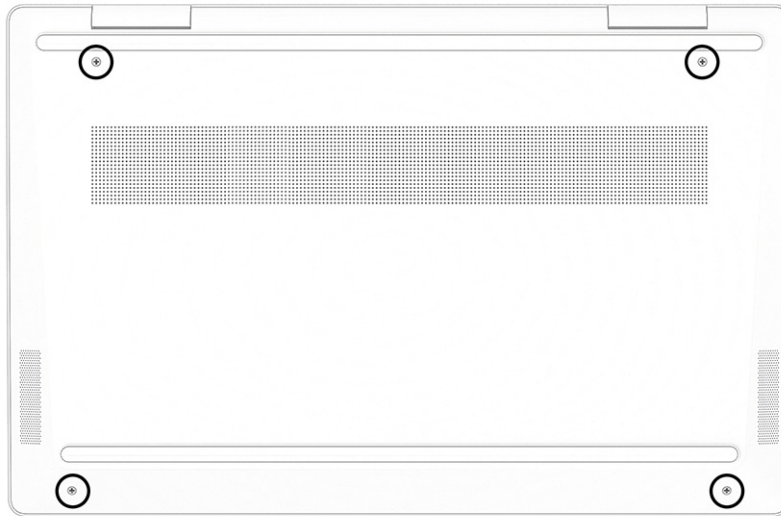To remove the bottom cover, use this procedure and illustration.

**Table 5-1** Bottom cover descriptions and part numbers

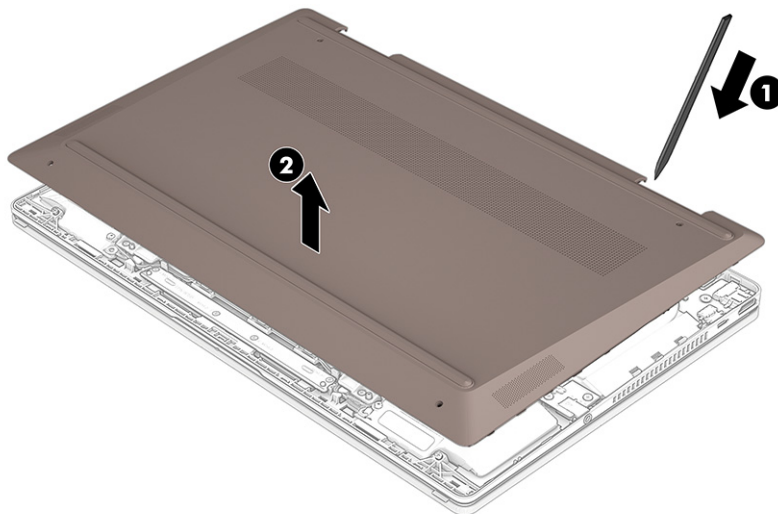| Description | Spare part number |
| --- | --- |
| FF (plastic top cover), natural silver | N09472-001 |
| FF+ (aluminum top cover), natural silver | N09473-001 |
| FF+ (aluminum top cover), natural silver, WWAN models | N09474-001 |
| FF (plastic top cover), gray (for space blue models) | N09475-001 |
| FF+ (aluminum top cover), pale rose gold | N09476-001 |

Before removing the bottom cover, prepare the computer for disassembly (see ).

Remove the bottom cover:

1. Remove the five Phillips 2.5 × 5.0 screws that secure the bottom cover to the computer.



2. Starting near the hinges, use a nonmarking, nonconductive tool to release the edges of the bottom cover from the computer **(1)**.

3. Remove the bottom cover from the computer **(2)**.



To replace the bottom cover, reverse the removal procedures.

## Battery

To remove the battery, use this procedure and illustration.

**Table 5-2  Battery description and part number**

| Description | Spare part number |
|---|---|
| Battery for use in models without WWAN | M24648-009 |
| Battery for use in models with WWAN | M24648-010 |

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

- Do *not* puncture, twist, or crack the battery.

- Do *not* cause an external puncture or rupture to the battery. They can cause a short inside the battery, which can result in battery thermal runaway.

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

- Do *not* compress or squeeze the battery case with tools or heavy objects stacked on top of the case. These actions can apply undue force on the battery.

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

Before removing the battery, follow these steps:

1.  Prepare the computer for disassembly (see ).

2.  Remove the bottom cover (see ).

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

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

Remove the battery:

1.  Remove the five Phillips M2.0 × 3.5 screws **(1)** that secure the battery to the computer.

2.  Lift the tape that secures the speaker cable to the battery **(2)**.

3.  Remove the speaker cable from the clips along the bottom of the battery **(3)**.

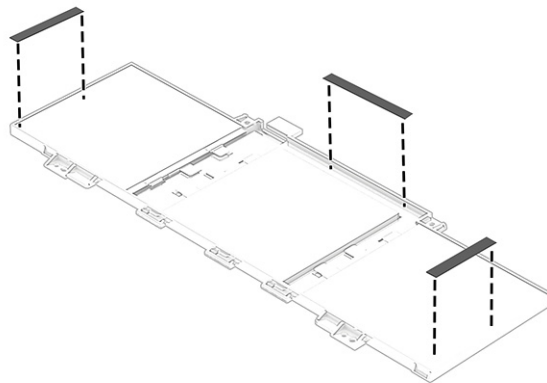4. Remove the battery from the computer.
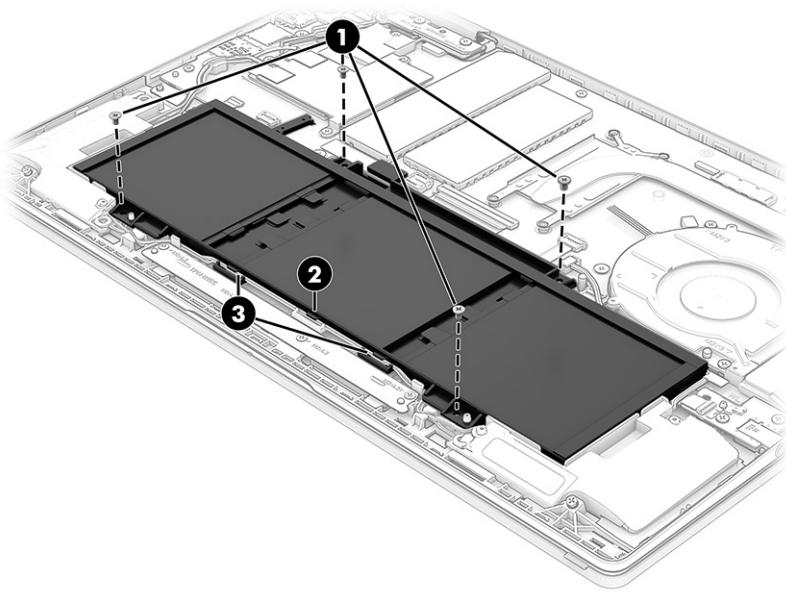


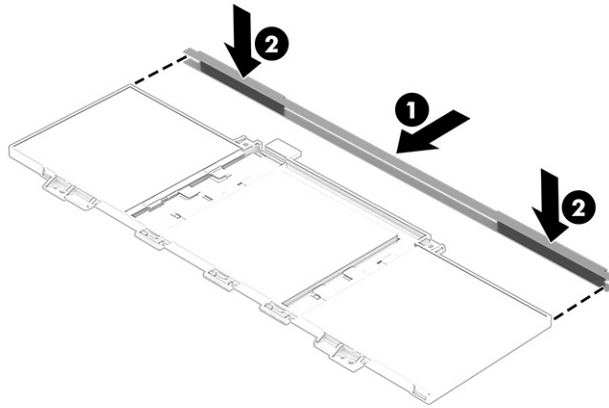To install the battery, reverse the removal procedures.

When installing a new battery, be sure to install items onto the battery as shown in the following steps:
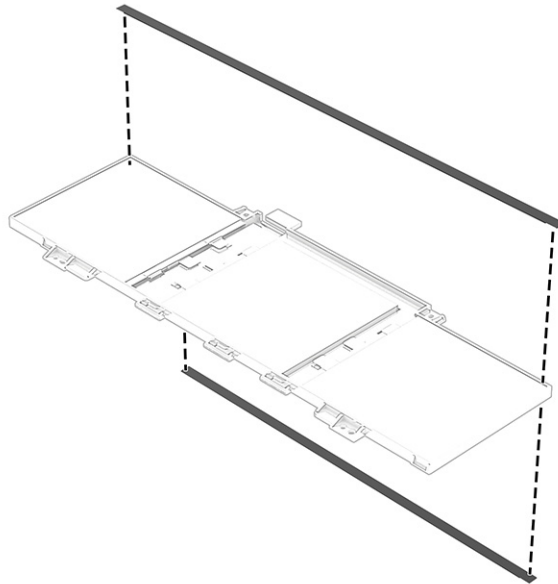
**WLAN models:**

1. Install three strips of conductive tape onto the battery.



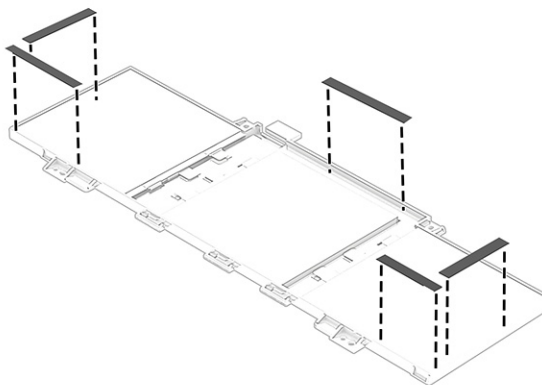2. Install foil on top of the battery **(1)**, and then press down to flatten **(2)**.
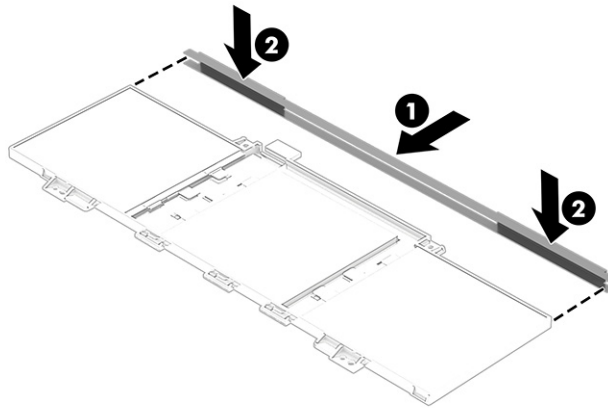
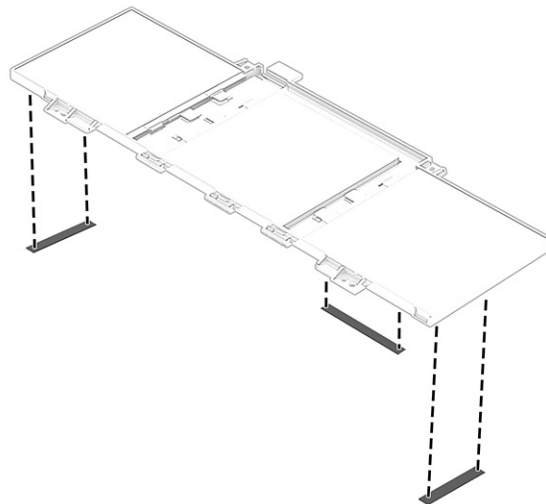3. Install two foam strips onto the battery.



**WWAN models:**

1. Install five pieces of tape onto the battery.

2. Install foil on top of the battery **(1)**, and then press down to flatten **(2)**.



3. Install three pieces of foil onto the battery. Be sure to smooth the foil so it is flat with no wrinkles at the junctions.



# Solid-state drive

To remove the M.2 solid-state drive, use this procedure and illustration.

**Table 5-3  Solid-state drive descriptions and part numbers**

| Description | Spare part number |
| --- | --- |
| 1 TB | L85370-005 |
| 512 GB | L85364-005 |
| 512 GB, PCIe4 × 4, TLC | M17436-005 |
| 256 GB, PCIe | L85354-005 |
| Thermal pad and foil | N16727-001 |

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

1. Prepare the computer for disassembly (see Preparation for disassembly on page 34).

2. Remove the bottom cover (see Bottom cover on page 34).

3. Disconnect the battery cable from the system board (see Battery on page 35).

Remove the solid-state drive:

1. Use a tool to remove the cover from the solid-state drive.
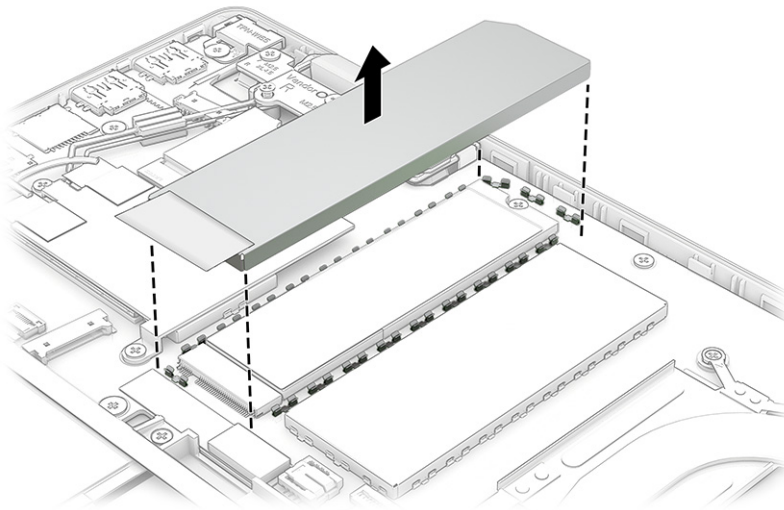


2. Remove the Phillips M2.0 × 2.5 screw **(1)** that secures the drive to the computer.

3. Pull the drive away from the socket to remove it **(2)**.
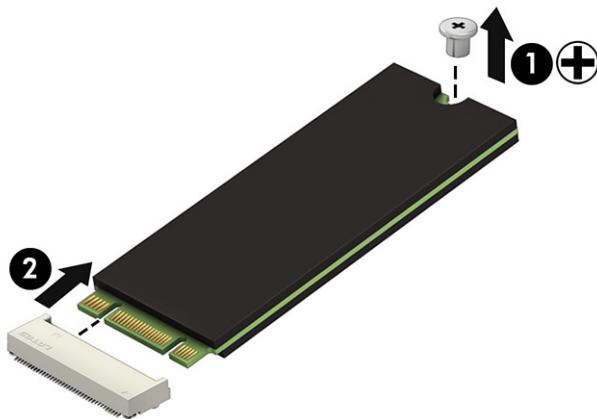


To install the solid-state drive, reverse the removal procedures.

When installing a solid-state drive, be sure to install the thermal pad under the cover.

# 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 802.11b/g/n/a/ac (2 × 2) MU-MIMO supported and Bluetooth 5 | L44796-005 |
| Intel AX211 Wi-Fi 6e Bluetooth 5.2 WLAN | M53366-005 |
| Realtek 8852BE Wi-Fi 6 Bluetooth 5.2 WLAN | M91238-005 |

**IMPORTANT:**   To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module to restore device functionality, and then contact technical support.

Before removing the WLAN module, follow these steps:

1.  Prepare the computer for disassembly (see ).

2.  Remove the bottom cover (see ).

3.  Disconnect the battery cable from the system board (see ).

Remove the WLAN module:

1.  Remove the tape from the WLAN module.

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

3.  Remove the Phillips M2.0 × 2.5 screw **(2)**, and then remove the WLAN module **(3)**.

**NOTE:**   Models have either one or two WLAN antennas. On models with two antennas, the #1 white WLAN antenna cable connects to the WLAN module #1 Main terminal. The #2 black WLAN antenna cable connects to the WLAN module #1 Aux terminal.
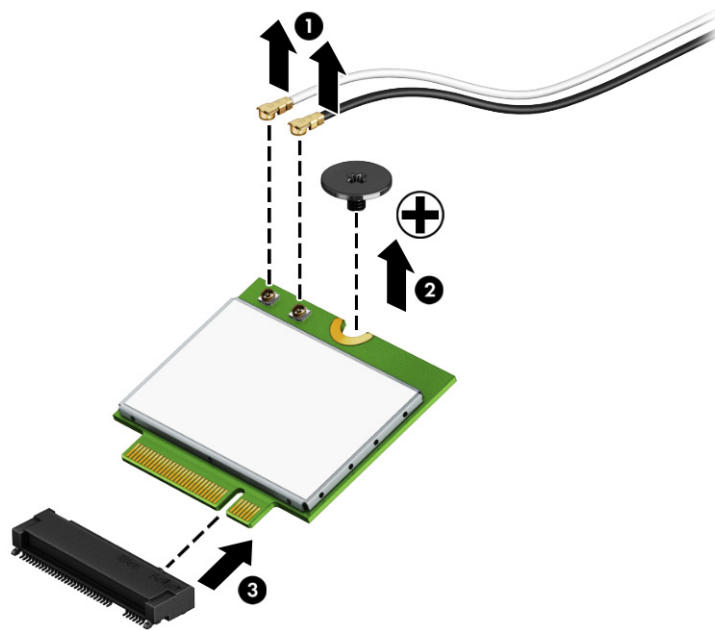
4.  If the WLAN antenna is not connected to the terminal on the WLAN module, install a protective sleeve on the antenna connector, as shown in the following illustration.
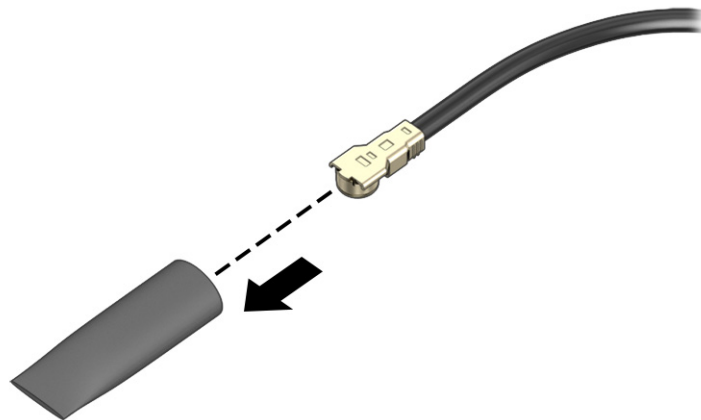


Reverse this procedure to install the WLAN module.

## WWAN module

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

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

| Description | Spare part number |
| --- | --- |
| Intel 5000 5G Solution WWAN | M46335-005 |

Table 5-5  WWAN module descriptions and part numbers  (continued)

| Description | Spare part number |
|---|---|
| Heat sink for WWAN module | N09479-001 |

**IMPORTANT:**   To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module to restore device functionality, and then contact technical support.

Before removing the WWAN module, follow these steps:

1. Prepare the computer for disassembly ().

2. Remove the bottom cover ().

3. Disconnect the battery cable from the system board (see ).
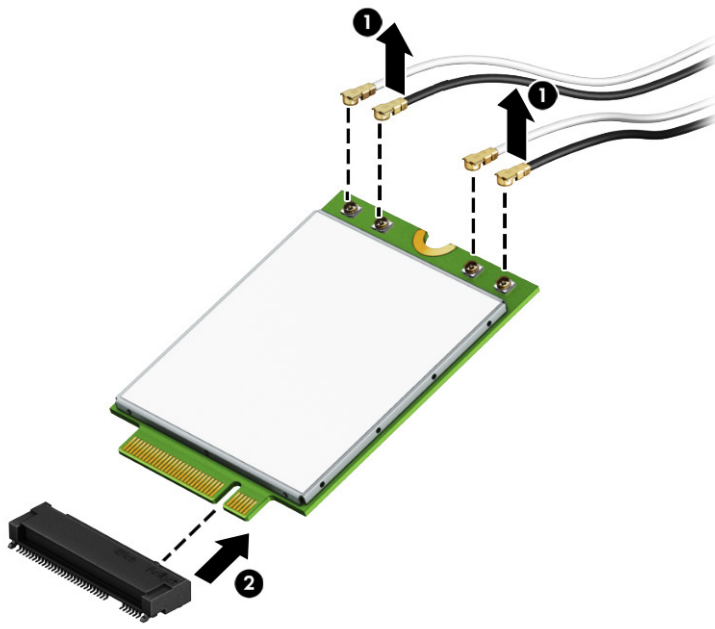
Remove the WWAN module:

1. Remove the three Phillips M2.0 × 3.0 screws **(1)** that secure the WWAN cover, and then remove the cover **(2)**.
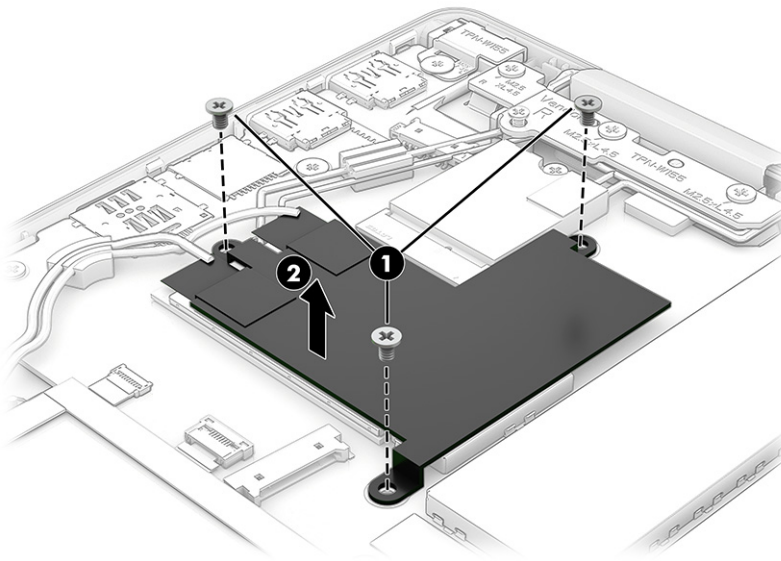


2. Disconnect the WWAN antenna cables **(1)** from the terminals on the WWAN module.

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

**NOTE:**   The number of antennas connected to the module can vary.

When viewed with the antenna terminals at the top of the module, the white WWAN antenna cables connect to the terminal to the left of the black WWAN antenna cables.

4. If the WWAN antenna is not connected to the terminal on the WWAN module, a protective sleeve must be installed on the antenna connector, as shown in the following illustration.
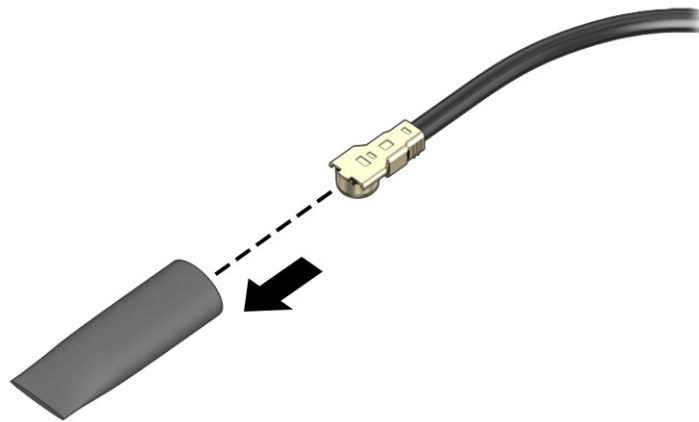


Reverse this procedure to install the WWAN module.

## Speakers

To remove the speakers, use this procedure and illustration.
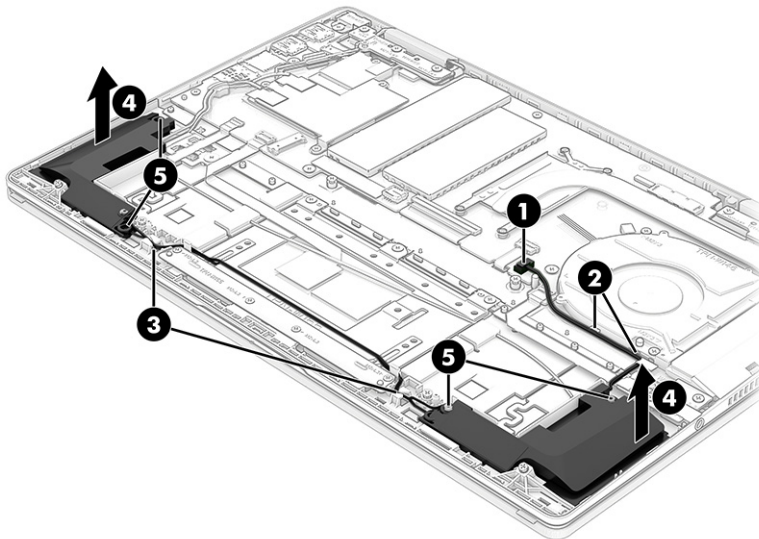
Table 5-6  Speaker description and part number

| Description | Spare part number |
| --- | --- |
| Speaker Kit for use in models without WWAN | N09482-001 |
| Speaker Kit for use in models with WWAN | N09483-001 |

Before removing the speakers, follow these steps:

1. Prepare the computer for disassembly (see Preparation for disassembly on page 34).

2. Remove the bottom cover (see Bottom cover on page 34).

3. Disconnect the battery cable from the system board (see Battery on page 35).

Remove the speakers:

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

2. Remove the tape that secures the cable to the bottom of the fan **(2)**.

3. Remove the cable between the speakers from the clips along the bottom of the battery **(3)**.

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

5. Be sure the rubber washers are in place when installing new speakers **(5)**.



Reverse this procedure to install the speakers.

## Touchpad

To remove the touchpad, use this procedure and illustration.

**Table 5-7  Touchpad description and part number**

| Description | Spare part number |
| --- | --- |
| Touchpad, natural silver | N09452-001 |
| Touchpad, space blue | N09453-001 |
| Touchpad, pale rose gold | N09454-001 |
| Touchpad cable for use in models without WWAN | N09466-001 |
| Touchpad cable for use in models with WWAN | N09467-001 |

Before removing the touchpad, follow these steps:

1. Prepare the computer for disassembly (see Preparation for disassembly on page 34).

2. Remove the bottom cover (see Bottom cover on page 34).

3. Remove the battery (see Battery on page 35).

Remove the touchpad:

1. Remove the four Phillips M2.0.× 3.0 screws **(1)** that secure the touchpad bracket to the computer.

2. Remove the bracket from the computer **(2)**.
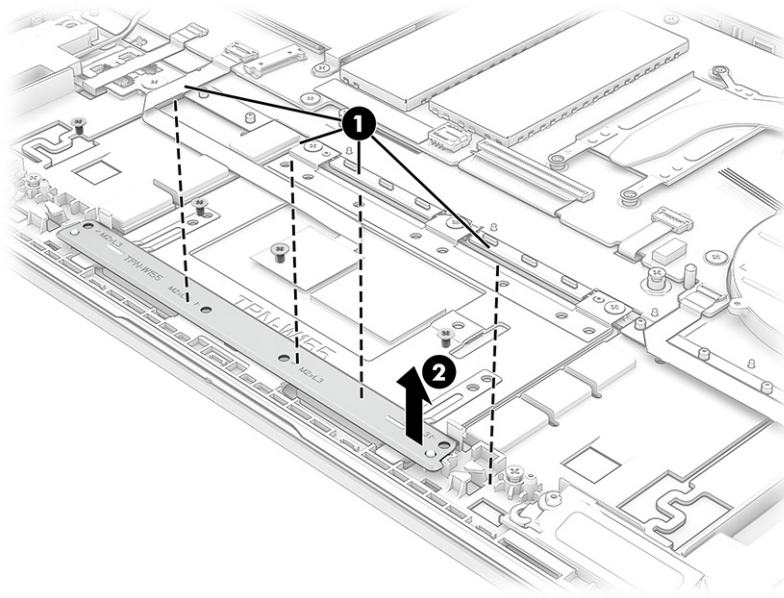


3. Remove the Mylar and disconnect the cable from the ZIF connector on the touchpad module **(1)**.

4. Remove the three Phillips M2.0 × 2.0 screws **(2)** that secure the touchpad to the computer.

5. Lift the top of the touchpad up **(3)**, and then pull it into the computer to remove it **(4)**.
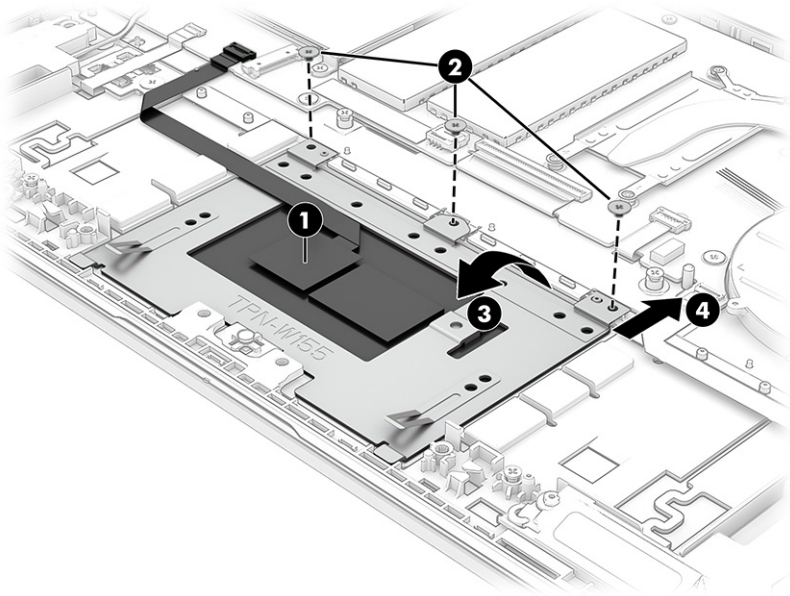
Reverse this procedure to install the touchpad.

## Fan

To remove the fan, use this procedure and illustration.

Table 5-8  Fan description and part number
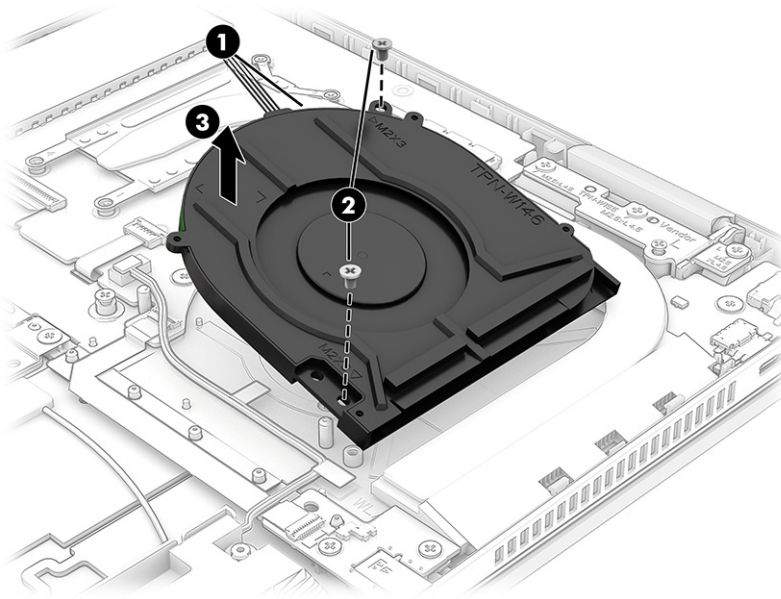
| Description | Spare part number |
| --- | --- |
| Fan | N09477-001 |

Before removing the fan, follow these steps:

1. Prepare the computer for disassembly (see ).

2. Remove the bottom cover (see ).

3. Disconnect the battery cable from the system board (see ).

Remove the fan:

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

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

3. Lift the left side of the fan up about 30°, and then pull the fan out from under the heat sink to remove it **(3)**.



Reverse this procedure to install the fan.

## Audio board

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

**Table 5-9  Audio board description and part number**

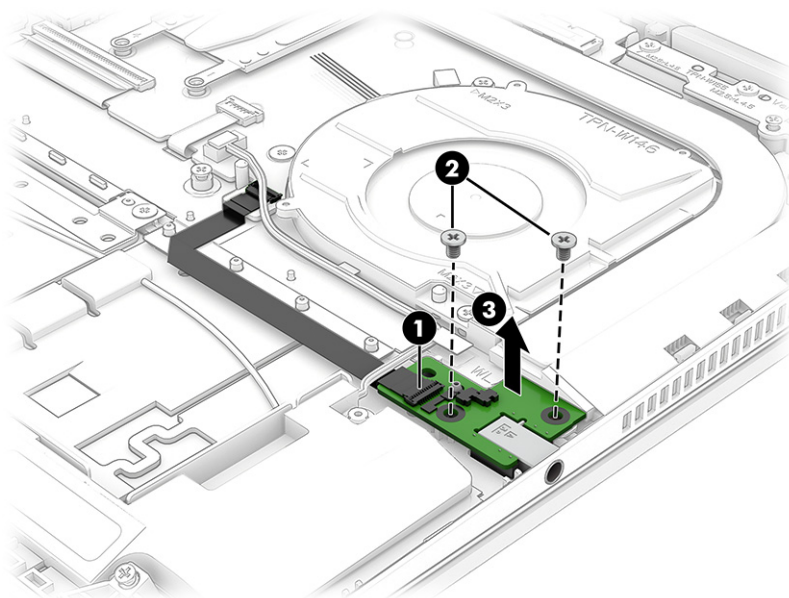| Description | Spare part number |
|---|---|
| Audio board for use in FF (plastic top cover) models | N09450-001 |
| Audio board for use in FF+ (aluminum top cover) models | N20632-001 |
| Audio board cable for use in models without WWAN | N09462-001 |
| Audio board cable for use in models with WWAN | N09463-001 |

Before removing the audio board, follow these steps:

1. Prepare the computer for disassembly (see Preparation for disassembly on page 34).

2. Remove the bottom cover (see Bottom cover on page 34).

3. Disconnect the battery cable from the system board (see Battery on page 35).

Remove the audio board:

1. Disconnect the audio board cable from the audio board **(1)**.

2. Remove the Phillips M2.0 × 3.0 screw **(2)** that secures the board to the computer.

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



Reverse this procedure to install the audio board.

## Fingerprint reader

To remove the fingerprint reader, use this procedure and illustration.

Table 5-10  **Fingerprint reader description and part number**

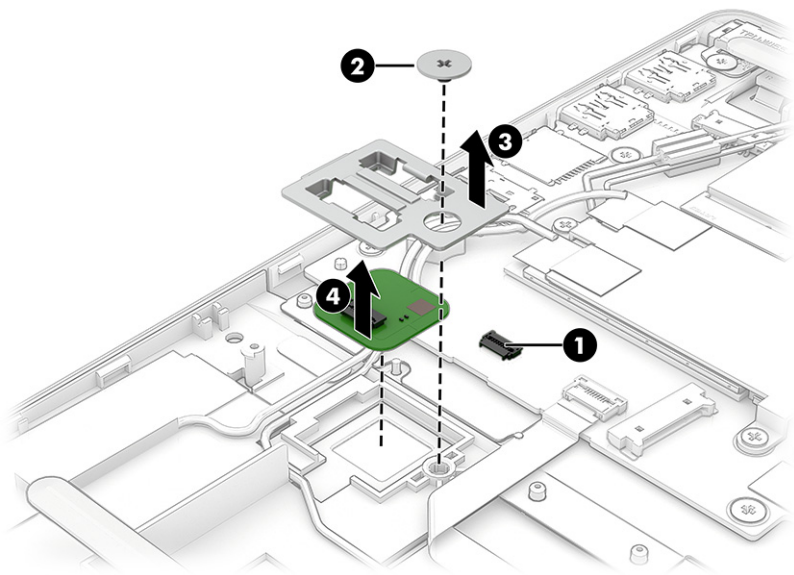| Description | Spare part number |
| --- | --- |
| Fingerprint reader, natural silver | N09455-001 |
| Fingerprint reader, space blue | N09456-001 |
| Fingerprint reader, pale rose gold | N09457-001 |
| Fingerprint reader cable for use in models without WWAN | N09464-001 |
| Fingerprint reader cable for use in models with WWAN | N09465-001 |

Before removing the fingerprint reader, follow these steps:

1. Prepare the computer for disassembly (see ).

2. Remove the bottom cover (see ).

3. Remove the battery (see ).

Remove the fingerprint reader:

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

2. Remove the Phillips M2.0 × 2.0 screw **(2)** that secures the fingerprint reader bracket to the computer, and then remove the bracket **(3)**.

3. Remove the fingerprint reader from the computer **(4)**.

Reverse this procedure to install the fingerprint reader.

## Power connector cable

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

Table 5-11  **Power connector cable description and part number**
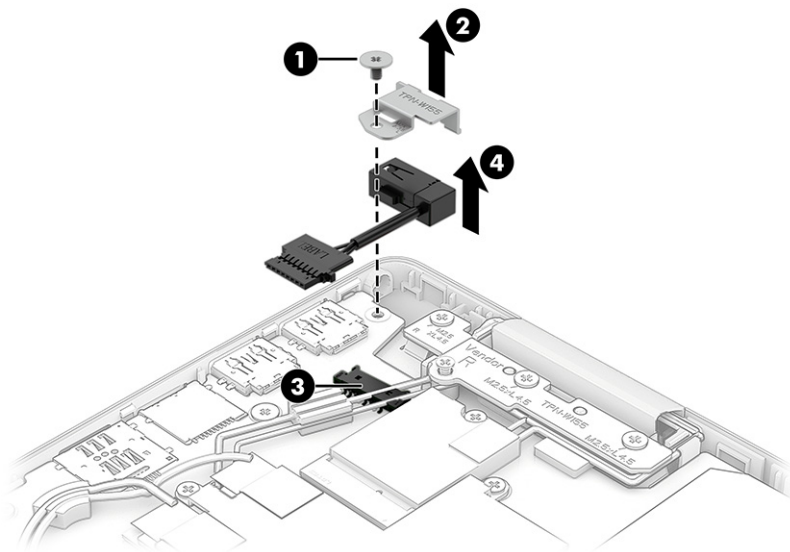
| Description | Spare part number |
|---|---|
| Power connector cable | M45022-001 |

Before removing the power connector cable, follow these steps:

1. Prepare the computer for disassembly (see ).

2. Remove the bottom cover (see ).

3. Disconnect the battery cable from the system board (see ).

Remove the power connector cable:

1. Remove the Phillips M2.0 × 3.0 screw **(1)**, and then remove the power connector bracket from the computer **(2)**.

2. Disconnect the power connector cable from the system board **(3)**.

3. Remove the power connector and cable from the computer **(4)**.

Reverse this procedure to install the power connector cable.

# Heat sink

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

**Table 5-12  Heat sink description and part number**

| Description | Spare part number |
| --- | --- |
| Heat sink | N09478-001 |

Before removing the heat sink, follow these steps:

1. Prepare the computer for disassembly (see Preparation for disassembly on page 34).

2. Remove the bottom cover (see Bottom cover on page 34).

3. Disconnect the battery cable from the system board (see Battery on page 35).
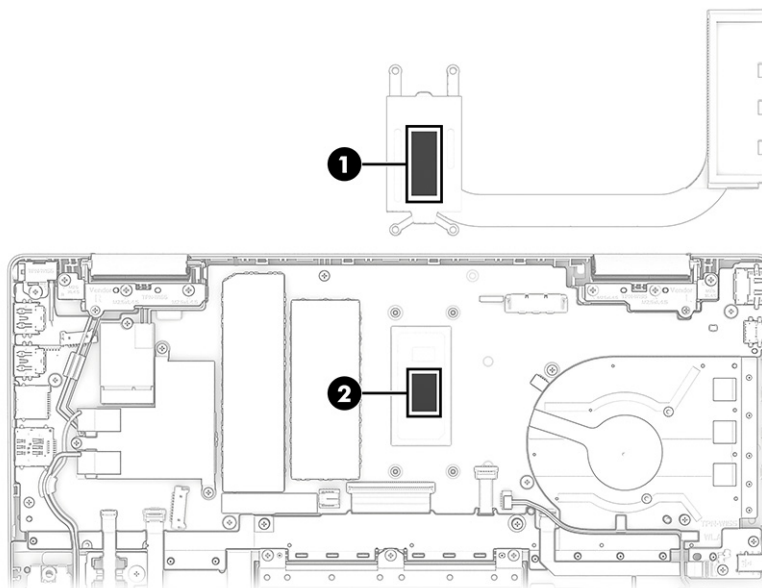
Remove the heat sink:

1. In the order indicated on the heat sink, remove the four Phillips M2.0 × 3.0 screws **(1)** that secure the heat sink to the computer.

2. Remove the heat sink from the computer **(2)**.
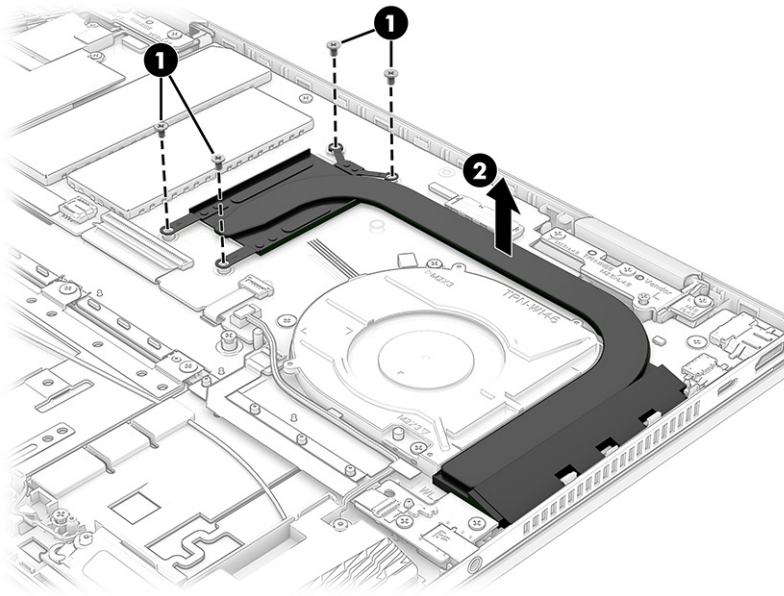


3. Thoroughly clean the thermal material from the surfaces of the heat sink and the system board components each time the heat sink is removed. Replacement thermal material is included with the heat sink and system board spare part kits. The following illustration shows the replacement thermal material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

   Thermal paste is used on the heat sink **(1)** and associated system board component **(2)**.



   Reverse this procedure to install the heat sink.

## System board

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

**Table 5-13  System board descriptions and part numbers**

| Description | Spare part number |
|---|---|
| **System board** (includes processor): | |
| All system boards use the following part numbers: | |
| xxxxxx-001: Non-Windows operating system | |
| xxxxxx-601: Windows 10 operating system | |
| Intel Core i7-1255U and 16 GB of system memory (models without WWAN) | N08799-xx1 |
| Intel Core i5-1235U and 16 GB of system memory (models without WWAN) | N08796-xx1 |
| Intel Core i5-1235U and 8 GB of system memory (models without WWAN) | N08797-xx1 |
| Intel Core i5-1235U and 8 GB of system memory (models with WWAN) | N08798-xx1 |
| Intel Core i3-1215U and 8 GB of system memory (models without WWAN) | N08795-xx1 |
| System board repair kit | N20244-888 |

Before removing the system board, follow these steps:

1. Prepare the computer for disassembly (see Preparation for disassembly on page 34).

2. Remove the bottom cover (see Bottom cover on page 34).

3. Remove the battery (see Battery on page 35).

4. Remove the fan (see Fan on page 47).

5. Remove the power connector cable (see Power connector cable on page 50).

When you remove the system board, the following components can remain installed. If you replace the system board, be sure to remove the following components (as applicable) from the defective system board and install them on the replacement system board:

- WLAN module (see WLAN module on page 41).

- WWAN module (see WWAN module on page 42).

- Solid-state drive (see Solid-state drive on page 39).

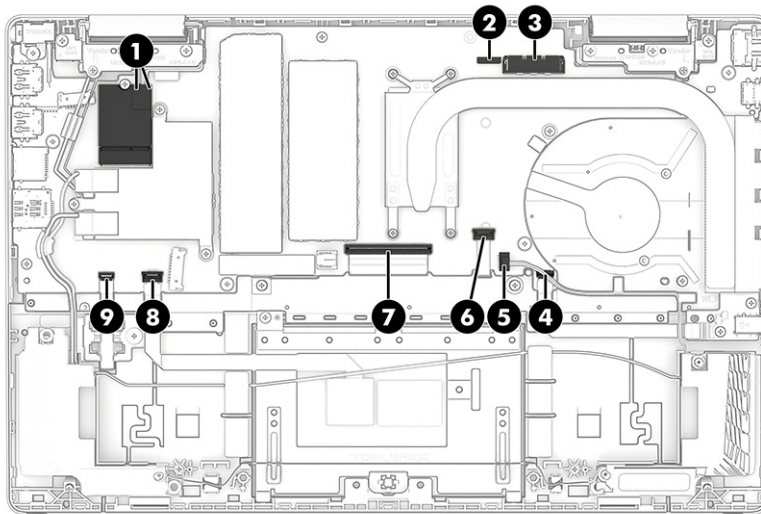- Heat sink (see Heat sink on page 51).

Remove the system board:

1. Peel the protective Mylar off the system board.
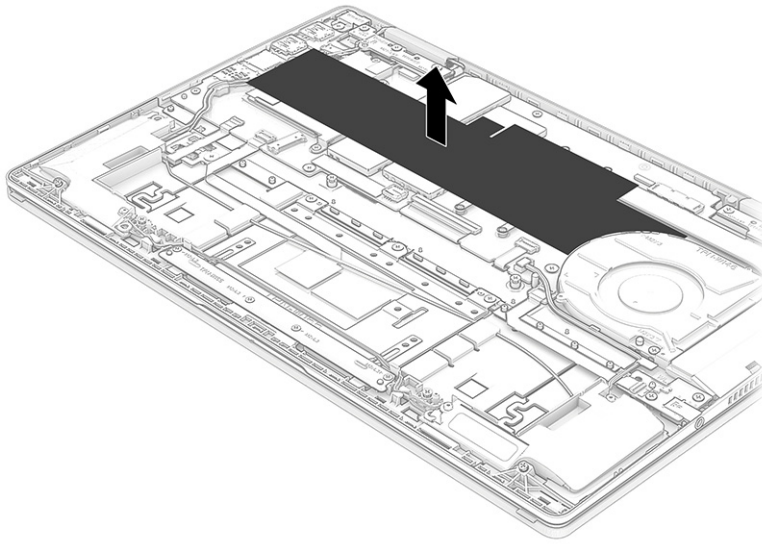
2. Disconnect the following cables from the system board:

   - Antenna cables from the WLAN module **(1)**
   - Camera cable **(2)**
   - Display cable **(3)**
   - Audio board cable **(4)**
   - Speaker cable **(5)**
   - Backlight cable (ZIF) **(6)**
   - Keyboard cable (ZIF) **(7)**
   - Touchpad board (ZIF) **(8)**
   - Fingerprint reader cable (ZIF) **(9)**

3. Remove the two Phillips M2.0 × 3.0 screws **(1)** and the four Phillips M2.0 × 2.0 screws **(2)** that secure the system board to the computer.
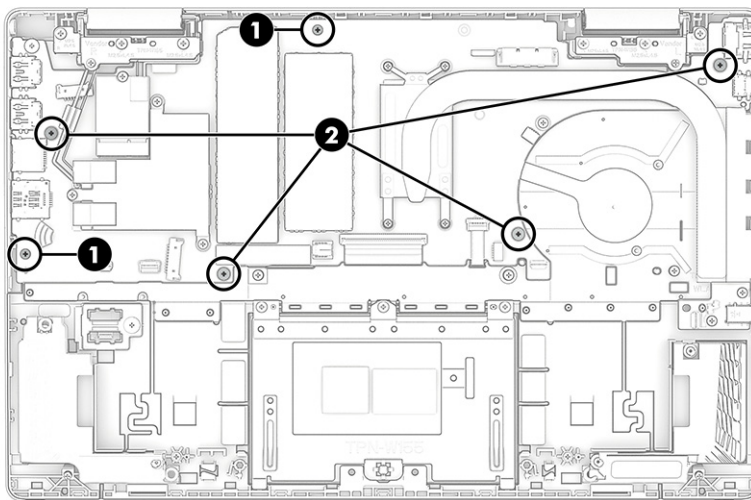
4. Lift the side of the system board upward **(1)**, and then pull the system board away from the connectors on the side of the computer to remove it **(2)**.
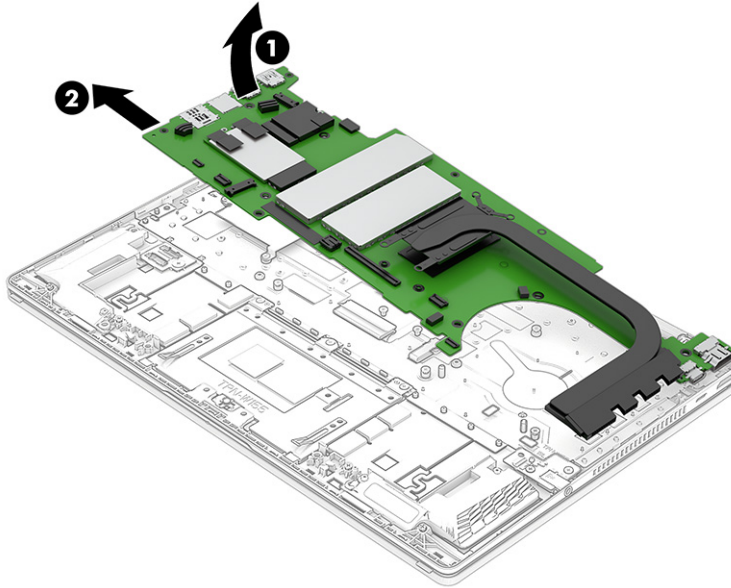
Reverse this procedure to install the system board.

## Display assembly

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

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

Before removing the display panel, follow these steps:

1. Prepare the computer for disassembly (see Preparation for disassembly on page 34).

2. Remove the bottom cover (see Bottom cover on page 34).

3. Disconnect the battery cable from the system board (see Battery on page 35).

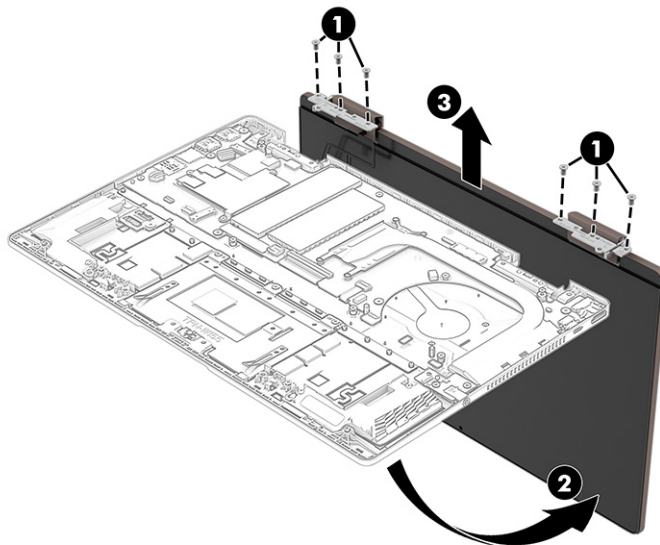Remove the display assembly:

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

2. Disconnect the camera cable **(2)** and display cable **(3)**.
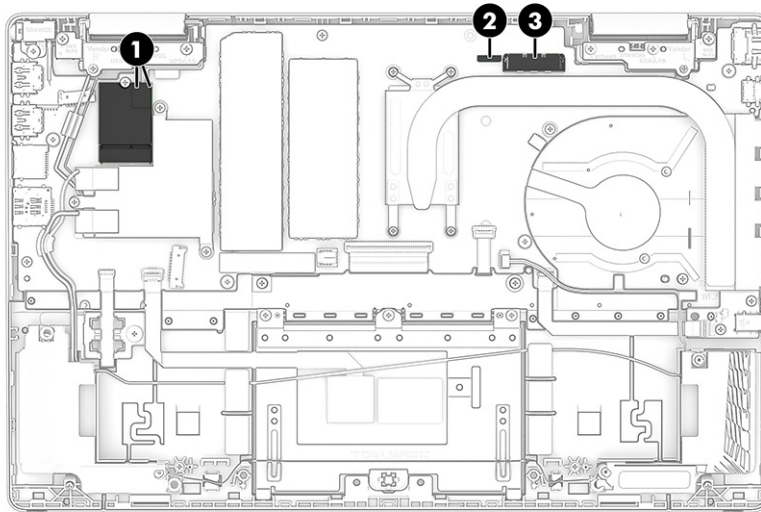


3. Remove the six Phillips M2.5 × 4.5 screws **(1)** that secure the display assembly to the computer.
4. Rotate the display to open the hinges **(2)**.
5. Separate the display assembly from the computer **(3)**.

6. Note that with proper cable routing, the camera cable and WLAN cables are routed under the right hinge and from under the hinge bar in the display **(1)**, and the display cable routes under the left hinge and from under the hinge bar in the display **(2)**.
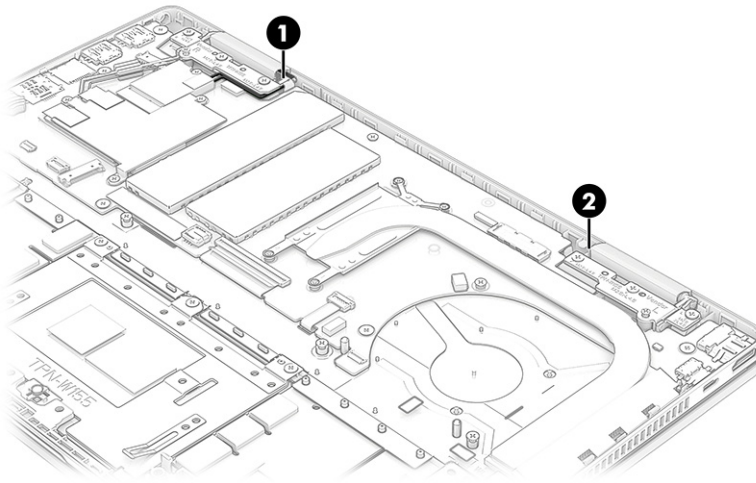


7. If you need to remove the display panel:

   a. Use a tool to release the display panel from the display back cover.
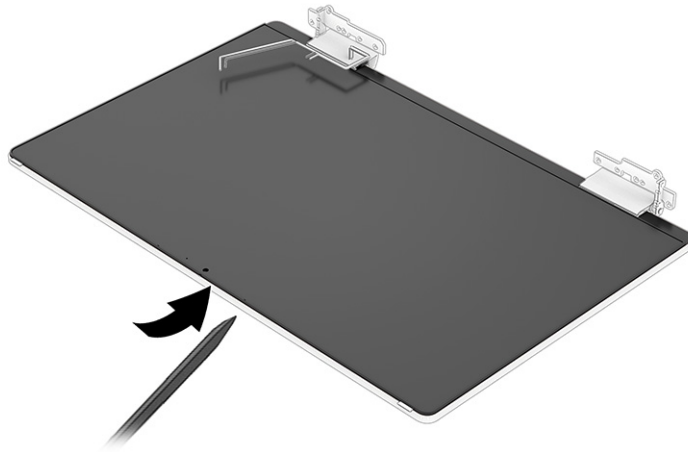


   b. The display panel is secured to the display enclosure with tape that is installed under the left and right sides of the panel. To remove the panel, from the upper left and right sides of the panel **(1)**, use tweezers to grasp and pull the end of the tape out from behind the panel **(2)**. While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

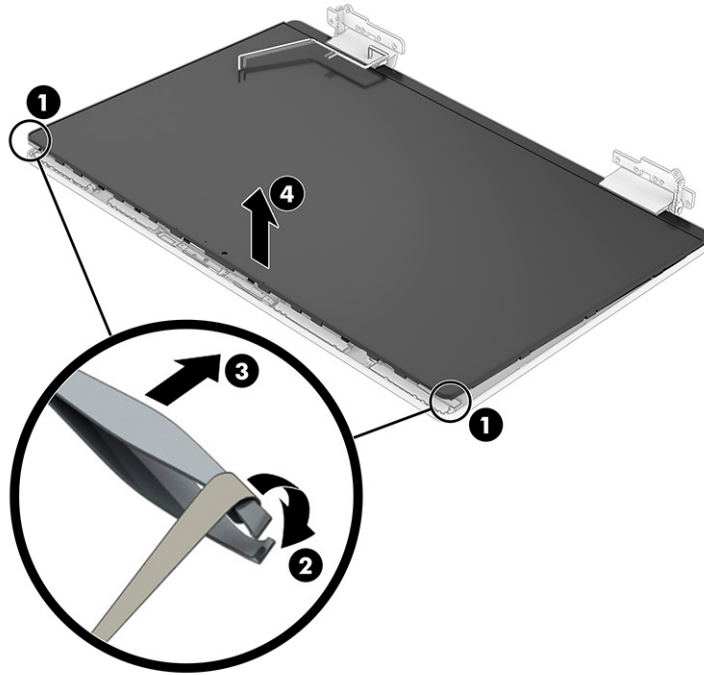   c. Remove the display panel from the display back cover **(4)**.

   Touch panel kits, which include the panel, touch control board, and cables, are available as the following spare part numbers:

   N09468-001: Models with an HD camera

   N09469-001: Models with a 5 MP camera (models without WWAN)

   N14600-001: Models with a 5 MP camera (models with WWAN)

The display panel adhesive kit is available as spare part number N09481-001.

8. If you need to disconnect the display cable from the display panel:

   a. Remove the conductive tape (1) and the clear of tape (2) from the connector on the back of the display panel.

   b. Lift the retention lever off the connector (3).

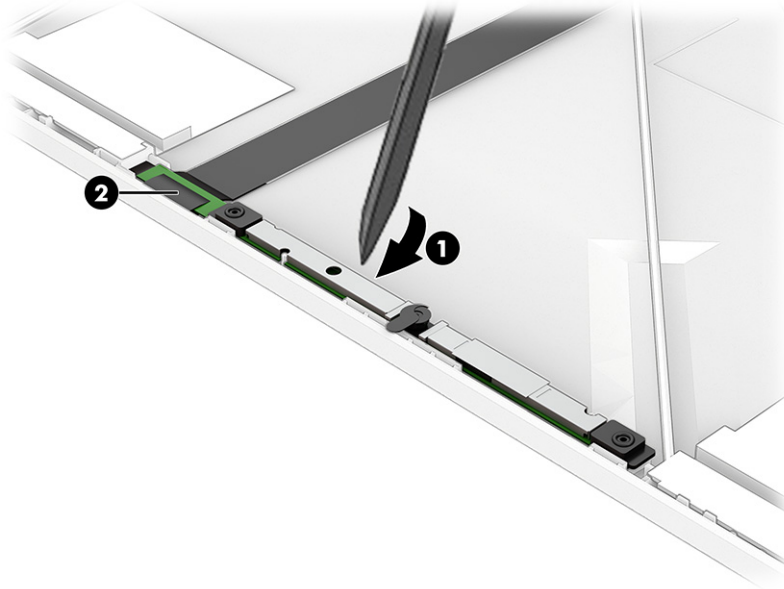   c. Disconnect the cable from the panel (4).

      The display cable is available as spare part number N09458-001 for models without WWAN and N09459-001 for models with WWAN.
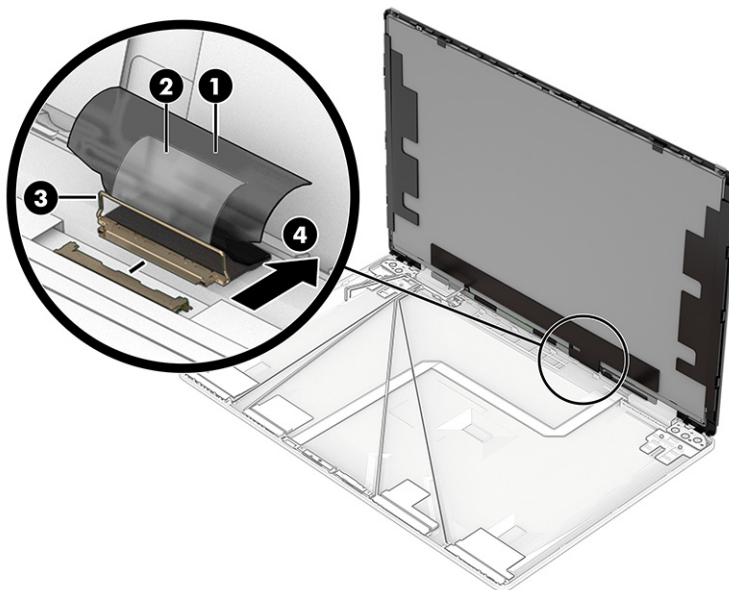
9. If you need to remove the camera module:

   ▪ Use a tool to lift up evenly across the module and peel the module up from the display back cover **(1)**, and then disconnect the cable from the reverse ZIF connector on the module **(2)**. The camera modules are available as spare part number N09470-001 for an HD camera and N09471-001 for a 5 MP camera.

   📝 **NOTE:** For installation, note that the cable routes under the camera module before it connects to the module.

10. If you need to remove the camera cable, remove the cable from the inside of the hinge **(1)**, and then peel the cable from the locations it is adhered to the inside of the display back cover **(2)**.
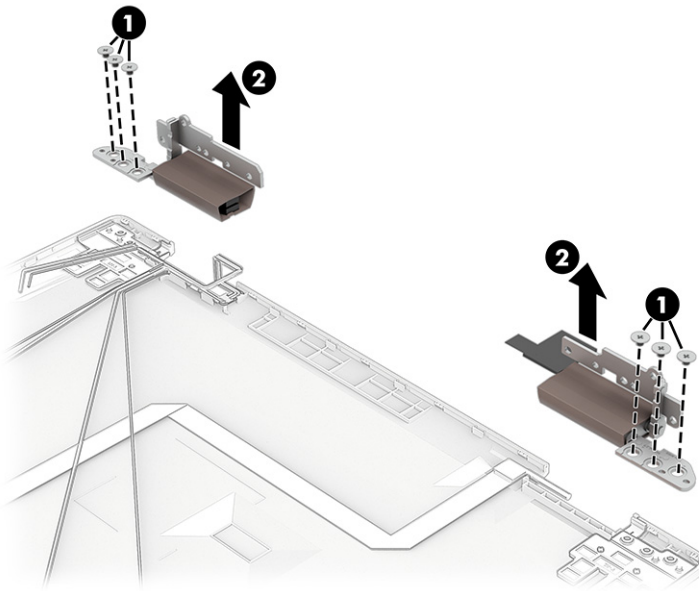
    The camera cable is available as spare part number N09460-001 for models without WWAN and N09461-001 for models with WWAN.
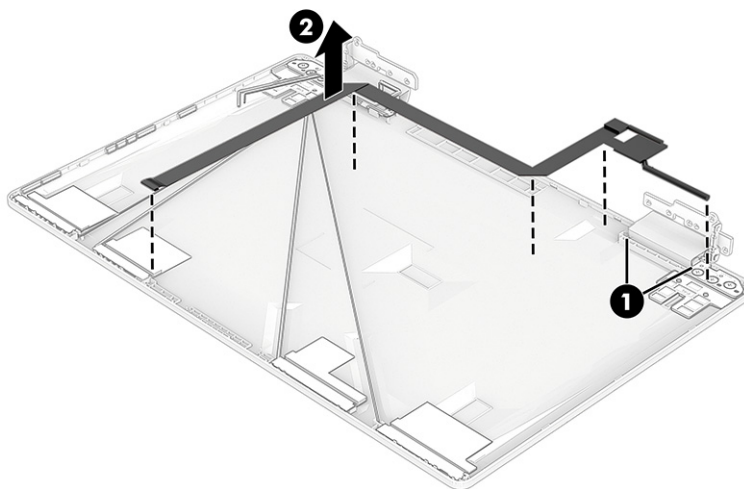
11. If you need to remove the hinges from the display back cover:

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

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

The hinges are available in the Hinge Kit as spare part number N09445-001.

12. If you need to remove a hinge cover from a display hinge:

    **a.** Remove the rubber insert from each hinge **(1)**.

    **b.** Remove the Phillips M1.6 × 2.0 screw **(2)** that secures each hinge cover to each hinge.

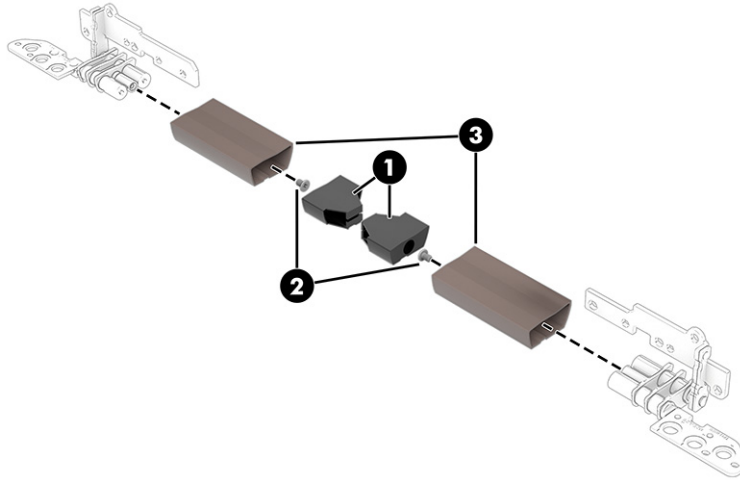    **c.** Slide the hinge covers off the hinges **(3)**.

The hinge covers are available as the following spare part numbers:

N09446-001: Natural silver

N09447-001: Space blue

N09448-001: Pale rose gold

Hinge cover rubber inserts are available as spare part number N09449-001.

13. If you need to remove the wireless antenna cables, remove the cables from the clips at the bottom of the cover **(1)**, and then peel the antennas off the inside of the display back cover **(2)**. The wireless antennas and cables are available as spare part number N09439-001.
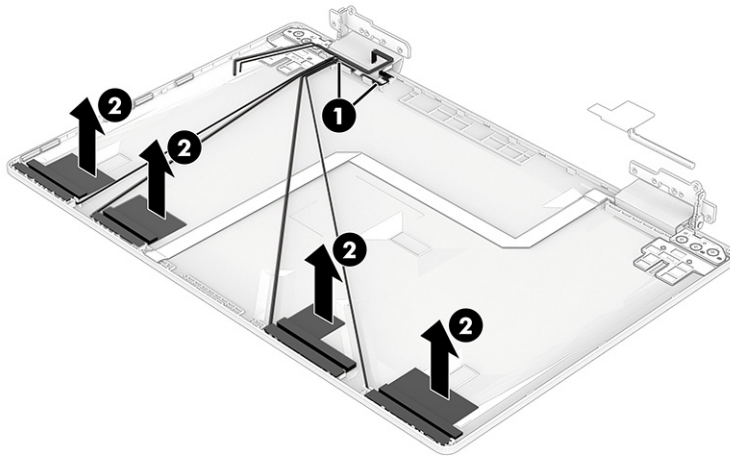


Reverse this procedure to reassemble and replace the display assembly.

# Keyboard with top cover

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

**Table 5-14 Keyboard with top cover descriptions and part numbers**

| Description | Spare part number |
|---|---|
| For use in natural silver models: | |
| ● Fingerprint reader, not backlit, WWAN, FF+ (aluminum top cover) | N09381-xx1 |
| ● Fingerprint reader, backlit, WWAN, FF+ (aluminum top cover) | N09382-xx1 |

**Table 5-14 Keyboard with top cover descriptions and part numbers (continued)**

| Description | Spare part number |
|---|---|
| ● Fingerprint reader, not backlit, no WWAN, FF+ (aluminum top cover) | N09383-xx1 |
| ● Fingerprint reader, backlit, no WWAN, FF+ (aluminum top cover) | N09384-xx1 |
| ● No fingerprint reader, not backlit, WWAN, FF+ (aluminum top cover) | N09385-xx1 |
| ● No fingerprint reader, backlit, WWAN, FF+ (aluminum top cover) | N09386-xx1 |
| ● No fingerprint reader, backlit, no WWAN, FF (plastic top cover) | N09433-xx1 |
| ● No fingerprint reader, not backlit, no WWAN, FF+ (aluminum top cover) | N09600-xx1 |
| ● No fingerprint reader, backlit, no WWAN, FF+ (aluminum top cover) | N09601-xx1 |
| ● Fingerprint reader, not backlit, no WWAN, FF (plastic top cover) | N09602-xx1 |
| ● Fingerprint reader, backlit, no WWAN, FF (plastic top cover) | N09603-xx1 |
| ● No fingerprint reader, not backlit, no WWAN, FF (plastic top cover) | N09604-xx1 |
| For use in space blue models: | |
| ● Fingerprint reader, not backlit, no WWAN | N09435-xx1 |
| ● Fingerprint reader, backlit, no WWAN | N09436-xx1 |
| ● No fingerprint reader, not backlit, no WWAN | N09437-xx1 |
| ● No fingerprint reader, backlit, no WWAN | N09438-xx1 |
| For use in pale rose gold models: | |
| ● Fingerprint reader, backlit, no WWAN | N09434-xx1 |

**Table 5-15 Spare part country codes**

| For use in country or region | Spare part number | For use in country or region | Spare part number | For use in country or region | Spare part number |
|---|---|---|---|---|---|
| Belgium | -A41 | Hungary | -211 | Saudi Arabia | -171 |
| Brazil | -201 | Iceland | -DD1 | Slovenia | -BA1 |
| Bulgaria | -261 | India | -002 | South Korea | -AD1 |
| Chile | -161 | Israel | -BB1 | Spain | -071 |
| Czech Republic/Slovakia | -FL1 | Italy | -061 | Switzerland | -BG1 |
| Denmark | -081 | Japan | -291 | Taiwan | -AB1 |
| Denmark, Finland, and Norway | -DH1 | The Netherlands | -B31 | Thailand | -281 |
| French Canada | -DB1 | Northern Africa | -FP1 | Turkey | -141 |
| Finland/Sweden | -B71 | Norway | -091 | Turkey-F | -541 |
| France | -051 | Portugal | -131 | Ukraine | -BD1 |
| Germany | -041 | Romania | -271 | United Kingdom | -031 |
| Greece | -151 | Russia | -251 | United States | -001 |

# 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.

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

  – or –

  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 AC adapter. 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. 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. 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 will be 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.

**IMPORTANT:** Windows is the only option that allows you to back up your personal information. Schedule regular backups to avoid information loss.

**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 68 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 <u>Restoring and recovery methods on page 68</u>.

## 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 <u>Recovering using HP Recovery media on page 68</u>.

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, it can be created on a bootable USB flash drive using the HP Cloud Recovery Download Tool.

For details, see <u>Using the HP Cloud Recovery Download Tool to create recovery media (select products only) on page 67</u>.

**NOTE:** If you cannot create recovery media yourself, contact support to obtain recovery discs. Go to <u>http://www.hp.com/support</u>, 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 <u>Restoring and recovery methods on page 68</u> 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, 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, quickly press and hold the volume up button, and then select **f9**.

     – or –

     Turn on or restart the tablet, quickly press and hold the volume down button, and 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, first you must download and install it. To download HP PC Hardware Diagnostics Windows, see .

### 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.

  – or –

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

  – or –

- 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. 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. 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 UEFI (Unified Extensible Firmware Interface) 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 .

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:

- 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.

  – or –

  Contact support, and provide the failure ID code.

**NOTE:** To start diagnostics on a convertible computer, your computer must be in notebook mode, and you must use the attached keyboard.

**NOTE:** If you need to stop a diagnostic test, press esc.

## 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 73.

    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.

# 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 execute 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

HP Remote 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 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 HP Remote 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**.

- 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 **Exit**, 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 system.

## 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** | | |
| Width | **322.0 mm** | 12.68 in |
| Depth | **210.0 mm** | 8.27 in |
| Height (front) | **18.9 mm** | 0.74 in |
| Height (rear) | **19.9 mm** | 0.78 in |
| **Weight** | **1520 g** | 3.35 lbs |
| **Input power** | | |
| Operating voltage and current | 19.5 V dc @ 2.31 A – 45 W | |
|  | 19.5 V dc @ 3.33 A – 65 W | |
| **Temperature** | | |
| Operating | **5°C to 35°C** | 41°F to 95°F |
| Nonoperating | **−20°C to 60°C** | −4°F to 140°F |
| **Relative humidity** (noncondensing) | | |
| Operating | 10% to 90% | |
| Nonoperating | 5% to 95% | |
| **Maximum altitude** (unpressurized) | | |
| Operating | **−15 m to 3,048 m** | −50 ft to 10,000 ft |
| Nonoperating | **−15 m to 12,192 m** | −50 ft to 40,000 ft |
| NOTE:   Applicable product safety standards specify thermal limits for plastic surfaces. The device operates well within this range of temperatures. | | |

## 35.6 cm (14.0 in) display specifications

This section provides specifications for your display.

Table 9-2  Display specifications

| | Metric | U.S. |
|---|---|---|
| Active diagonal size | **35.6 cm** | 14.0 in |
| Resolution | 1920 × 1080 (FHD) | |
| Surface treatment | Antiglare | |
| Brightness | 250 nits | |
| Viewing angle | UWVA (FHD panels) | |
| Backlight | WLED | |
| Display panel interface | eDP | |

# Solid-state drive specifications

This section provides specifications for your solid-state drives.

Table 9-3  Solid-state drive specifications

| | 128 GB* | 256 GB* | 512 GB* | 1 TB* |
|---|---|---|---|---|
| **Dimensions** | | | | |
| Height | 1.0 mm | 1.0 mm | 1.0 mm | 1.0 mm |
| Length | 50.8 mm | 50.8 mm | 50.8 mm | 50.8 mm |
| Width | 28.9 mm | 28.9 mm | 28.9 mm | 28.9 mm |
| Weight | < 10 g | < 10 g | < 10 g | < 10 g |
| **Interface type** | PCIe | PCIe | PCIe | PCIe |
| Ready time, maximum (to not busy) | 1.0 ms | 1.0 ms | < 1.0 ms | 1.0 ms |
| Access times, logical | 1.0 ms | 0.1 ms | 0.1 ms | 0.1 ms |
| **Transfer rate** | | | | |
| Sequential read | up to 2150 MBps | up to 2150 MBps | up to 2150 MBps | up to 2150 MBps |
| Random read | Up to 300,000 IOPs | Up to 300,000 IOPs | Up to 300,000 IOPs | Up to 300,000 IOPs |
| Sequential write | up to 1550 MBps | up to 1550 MBps | up to 1550 MBps | up to 1550 MBps |
| Random write | Up to 100,000 IOPs | Up to 100,000 IOPs | Up to 100,000 IOPs | Up to 100,000 IOPs |
| **Total logical sectors** | 234,441,648 | 468,883,296 | 1,000,215,216 | 1,500,336,388 |
| **Operating temperature** | **0℃ to 70℃** (32°F to 158°F) | | | |

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

NOTE:  Certain restrictions and exclusions apply. Contact support for details.

# 10 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 10-1**  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 |
| Germany | VDE | 1 |

| Country/region | Accredited agency | Applicable note number |
|---|---|---|
| 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.

# 11 Recycling

When a nonrechargeable or rechargeable battery has reached the end of its useful life, do not dispose of the battery in general household waste. Follow the local laws and regulations in your area for battery disposal.

HP encourages customers to recycle used electronic hardware, HP original print cartridges, and rechargeable batteries. For more information about recycling programs, see the HP website at http://www.hp.com/recycle.

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