



Maintenance and Service Guide

SUMMARY

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

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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 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. Go to <http://www.microsoft.com> for details.

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Table of contents

1 Product description	1
2 Components	5
Right side	5
Left side	7
Touchpad components	7
Button, speakers, and fingerprint reader	8
Lights	10
Special keys	11
Bottom	12
3 Illustrated parts catalog	15
Computer major components	15
Mass storage devices	24
Cables	24
Miscellaneous parts	25
4 Removal and replacement procedures preliminary requirements	27
Tools required	27
Service considerations	28
Plastic parts	28
Cables and connectors	28
Drive handling	28
Workstation guidelines	28
Electrostatic discharge information	30
Generating static electricity	30
Preventing electrostatic damage to equipment	31
Personal grounding methods and equipment	31
Grounding the work area	31
Recommended materials and equipment	32
Packaging and transporting guidelines	32

5 Removal and replacement procedures for authorized service provider parts	35
Component replacement procedures	36
Preparation for disassembly	37
Bottom cover	37
Battery	38
Speakers	39
Solid-state drive	40
34.3 cm (13.5 in) display assembly	42
Touchpad cable	44
Touchpad	45
System board	46
Fan/heat sink assembly	49
Connector board cable	50
Connector board	51
Rear speakers	52
Infrared sensor board	53
Infrared sensor board cable	54
Keyboard	55
Fingerprint reader module	59
6 Using Setup Utility (BIOS)	61
Starting Setup Utility (BIOS)	61
Updating Setup Utility (BIOS)	62
Determining the BIOS version	62
Preparing for a BIOS update	63
Downloading a BIOS update	63
Installing a BIOS update	63
7 Backing up, restoring, and recovering	65
Backing up information and creating recovery media	66
Using Windows tools for backing up	66
Using the HP Cloud Recovery Download Tool to create recovery media (select products only)	66
Restoring and recovering your system	67
Creating a system restore	67
Restoring and recovery methods	67
Recovering using HP Recovery media	67
Changing the computer boot order	68
Using HP Sure Recover (select products only)	68

8 Using HP PC Hardware Diagnostics	69
Downloading the HP PC Hardware Diagnostics Windows from the Microsoft Store	69
Customizing Remote HP PC Hardware Diagnostics UEFI settings	69
9 Specifications	71
Computer specifications	71
34.3 cm (15.6 in) display specifications	73
Solid-state drive specifications (SATA-3)	73
Solid-state drive specifications	74
10 Power cord set requirements	75
Requirements for all countries	75
Requirements for specific countries and regions	75
11 Recycling	79
Index	81

1 Product description

This table provides detailed product information.

Table 1-1 Product components and their descriptions

Category	Description
Product Name	HP Spectre x360 14 Convertible PC Model number: 14-ea000 CTO model number: 14t-ea000
Processors	Intel® Core™ i7-1165G7 2.8 GHz (Turbo up to 4.7 GHz) processor (4267 MHz front side bus (FSB), quad core, 12 MB L3 cache, 12 to 28 W) Intel Core i5-1135G7 2.4 GHz (Turbo up to 4.2 GHz) processor (4267 MHz FSB, quad core, 8 MB L3 cache, 12 to 28 W)
Chipset	Intel integrated soldered-on-circuit (SoC)
Graphics controller	Intel Iris® Xe
Display	<ul style="list-style-type: none">• 34.3 cm (13.5 in), liquid crystal display (LCD), (3000 × 2000), BrightView, active matrix organic light emitting diode (AMOLED), UWVA, DCI-P3 100%, eDP 1.4 + PSR2, ultraslim touchscreen display panel with narrow bezel; typical brightness: 400 nits• 34.3 cm (13.5 in), LCD, WUXGA+ (1920 × 1280), BrightView, WLED, UWVA, sRGB 100%, eDP 1.4 + PSR2, ultraslim touchscreen display panel with narrow bezel; typical brightness: 400 nits• 34.3 cm (13.5 in), LCD, WUXGA+ (1920 × 1280), antiglare, white light-emitting diode (WLED), UWVA, sRGB 100%, eDP 1.4 + PSR, touchscreen display panel with narrow bezel; typical brightness: 1000 nits
Memory	LPDDR4× 3733 (LPDDR4× 4266 downgrade to LPDDR4× 3733) Supports 16 GB (32 GB × 32, 4 pieces) and 8 GB (16 GB × 32, 4 pieces) configurations (integrated on system board)
Primary storage	M.2 solid-state drive: 512 GB, M.2 2280, peripheral component interconnect express (PCIe)-3 × 4, non-volatile memory express (NVMe), Secure Seal (SS) solid-state drive with three-layer cell (TLC) 256 GB, M.2 2280, PCIe-3 × 4, NVMe, SS solid-state drive with TLC

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

Category	Description
	<p>Solid-state drive:</p> <ul style="list-style-type: none"> • 2 TB, M.2 2280, PCIe-3 × 4, NVMe, SS solid-state drive with TLC • 1 TB, M.2 2280, PCIe-3 × 4, NVMe, SS solid-state drive with TLC • 1 TB, M.2 2280, PCIe-3 × 2 × 2, NVMe + 32 GB, 3D Xpoint solid-state drive • 512 GB, M.2 2280, PCIe-3 × 2 × 2, NVMe + 32 GB, 3D Xpoint solid-state drive • 256 GB, M.2 2280, PCIe-3 × 2 × 2, NVMe + 16 GB, 3D Xpoint solid-state drive
Connectors	<ul style="list-style-type: none"> • Audio-out (headphone)/Audio-in (microphone) combo jack • Next generation form factor (NGFF) connector for solid-state drive • USB Type-A port • USB Type-C® Thunderbolt™ ports (2)
Audio and video	<p>Integrated, one-piece, fixed, HP True Vision HD infrared 720p camera with shutter</p> <ul style="list-style-type: none"> • BANG and OLUFSEN • Quad speakers • Support for Alexa • Support for HP Audio Boost 2.0 • Support for HP Far Field Cortana • Support for Speaker Swap • Support for XiaoWei
Wireless	<p>Intel Wi-Fi 6 AX201 ax 2 × 2 + Bluetooth® 5.0 MU-MIMO M.2 1216 non-vPro® 160 MHz MIPI + BRI WW with 2 antennas</p>
Keyboard/pointing devices	<p>Standard notebook, island-style, backlit, all-in-one keyboard with clickpad with image sensor in natural silver, nightfall black, and Poseidon blue finish featuring:</p> <ul style="list-style-type: none"> • Audio mute key • Camera shutter key • HPCC key • Microphone mute key • Privacy screen key <p>Touchpad requirements:</p> <ul style="list-style-type: none"> • Clickpad with image sensor • Multitouch gestures enabled • Precision touchpad supported • Support modern trackpad gestures • Taps enabled as default

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

Category	Description
Media card reader (MCR)	HP MultiFormat microSD MCR
Power requirements	<p>Battery: 4 cell, 66 WHr, long life, PL Fast Charge</p> <p>65 W AC adapter (non-PFC, USB Type-C, straight)</p> <p>65 W AC adapter (non-PFC, RC, EM, USB Type-C, straight)</p> <ul style="list-style-type: none"> • C5, 1.0 m (3.3 ft), premium power cord with sticker • C5, 1.0 m (3.3 ft), premium power cord with plug adapter and sticker • C5NS, 1.0 m (3.3 ft), black power cord with duck-head adapter and sticker
Security	<p>Integrated fingerprint reader</p> <p>Trusted Platform Module (TPM) 2.0, discrete</p>
Sensors	<ul style="list-style-type: none"> • Accelerometer + Gyroscope + eCompass • Accelerometer × 2 • Ambient light sensor for privacy panel only • Color temperature sensor • Infrared thermal sensor
Operating system	<ul style="list-style-type: none"> • Windows 10 Home 64 High-End Chinese Market CPPP • Windows 10 Home 64 Plus • Windows 10 Home 64 Plus Single Language • Windows 10 Home 64 Plus Single Language Africa Market PPP • Windows 10 Home 64 Plus Single Language APAC EM PPP • Windows 10 Home 64 Plus Single Language India Market PPP • Windows 10 Home 64 Plus Single Language Indonesia Market PPP • Windows 10 Professional 64
Serviceability	End user replaceable part: AC adapter

2 Components

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

Right side

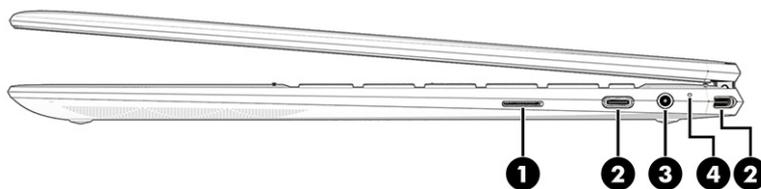


Table 2-1 Right-side components and their descriptions

Component	Description
(1) microSD™ memory card reader	<p>Reads optional memory cards that enable you to store, manage, share, or access information.</p> <p>To insert a card:</p> <ol style="list-style-type: none">1. Hold the card label-side up, with connectors facing the computer.2. Insert the card into the memory card reader, and then press in on the card until it is firmly seated. <p>To remove a card:</p> <ul style="list-style-type: none">▲ Press in on the card, and then remove it from the memory card reader.

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

Component	Description
(2) USB Type-C power connector and Thunderbolt™ ports with HP Sleep and Charge (2)	<p>Connect an AC adapter that has a USB Type-C connector, supplying power to the computer and, if needed, charging the computer battery.</p> <p>– and –</p> <p>Connect a USB device, provide high-speed data transfer, and charge small devices, even when the computer is off.</p> <p>– and –</p> <p>Connect a display device that has a USB Type-C connector, providing DisplayPort™ output.</p> <p>NOTE: Your computer might also support a Thunderbolt docking station.</p> <p>NOTE: Cables, adapters, or both (purchased separately) might be required.</p>
(3)  Audio-out (headphone)/Audio-in (microphone) combo jack	<p>Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. This jack does not support optional standalone microphones.</p> <p>WARNING! To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, see the <i>Regulatory, Safety, and Environmental Notices</i>.</p> <p>To access this guide:</p> <ul style="list-style-type: none"> ▲ Type HP Documentation in the taskbar search box, and then select HP Documentation. <p>NOTE: When a device is connected to the jack, the computer speakers are disabled.</p>
(4) AC adapter and battery light	<ul style="list-style-type: none"> • White: The AC adapter is connected and the battery is fully charged. • Blinking white: 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.

Left side

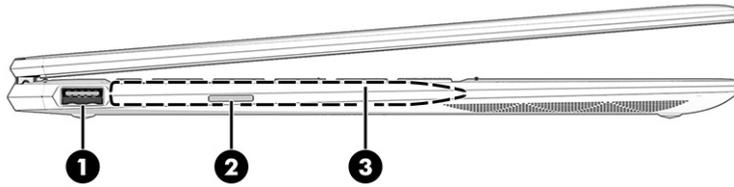


Table 2-2 Left-side components and their descriptions

Component	Description
(1)	USB port with HP Sleep and Charge Connects a USB device, provides high-speed data transfer, and charges small devices, even when the computer is off.
(2)	Nano SIM card slot (select products only) Supports a wireless subscriber identity module (SIM) card.
(3)	Magnetic pen attachment area Holds an optional pen. With the pen tip facing towards you, place the flat magnetic side of the pen against the left side of the computer near the display. NOTE: For more information about the pen, see the documentation provided with the pen.

Touchpad components

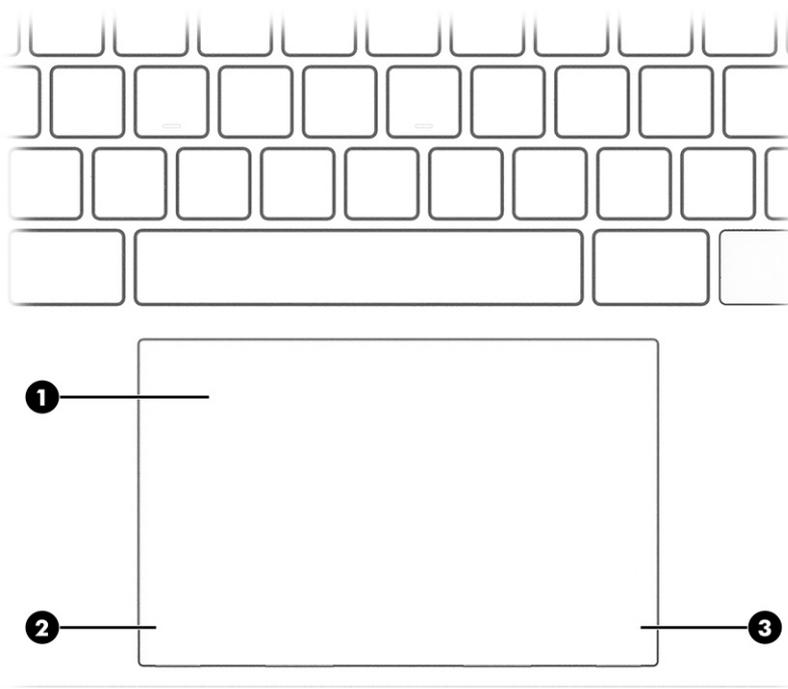
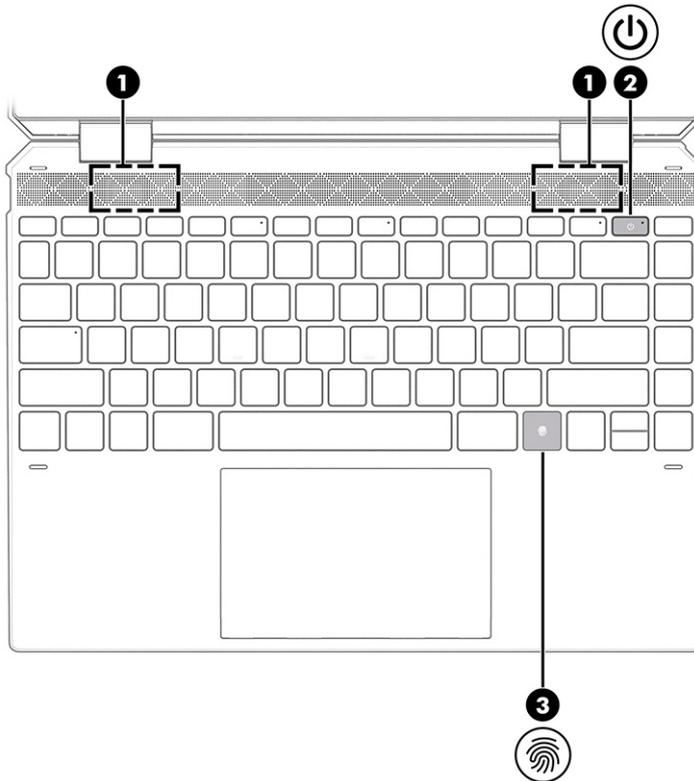


Table 2-3 Touchpad components and their descriptions

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

Button, speakers, and fingerprint reader



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

Table 2-4 Button, speakers, and fingerprint reader and their descriptions

Component	Description
(1) Speakers (2)	Produce sound.

Table 2-4 Button, speakers, and fingerprint reader and their descriptions (continued)

Component	Description
(2)  Power button	<ul style="list-style-type: none"> • 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. <p>IMPORTANT: Pressing and holding down the power button results in the loss of unsaved information.</p> <p>If the computer has stopped responding and shutdown procedures are ineffective, press and hold the power button down for at least 10 seconds to turn off the computer.</p> <p>To learn more about your power settings, see your power options:</p> <ul style="list-style-type: none"> ▲ Right-click the Power icon  , and then select Power Options.
(3)  Fingerprint reader	<p>Allows a fingerprint logon to Windows, instead of a password logon.</p> <ul style="list-style-type: none"> ▲ Touch your finger to the fingerprint reader. <p>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.</p>

Lights

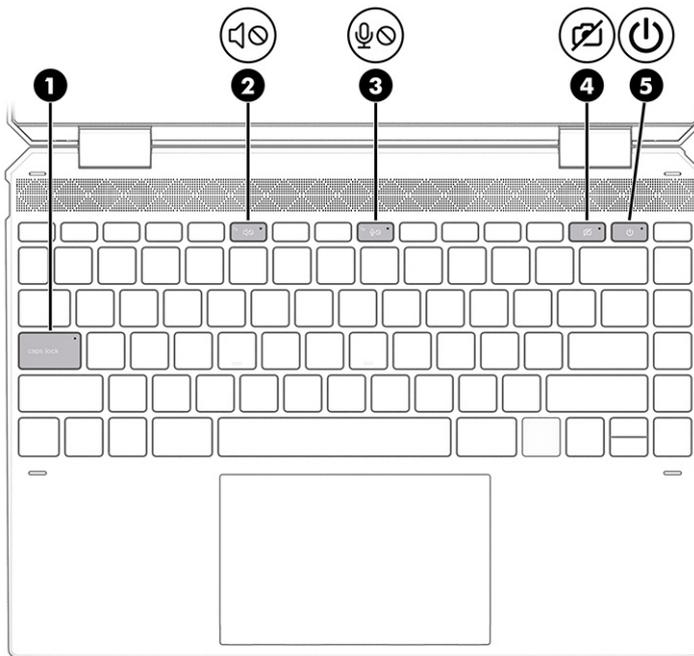


Table 2-5 Lights and their descriptions

Component	Description
(1) Caps lock light	On: Caps lock is on, which switches the key input to all capital letters.
(2)  Mute light	<ul style="list-style-type: none">• On: Computer sound is off.• Off: Computer sound is on.
(3)  Microphone mute light	<ul style="list-style-type: none">• On: Microphone is off.• Off: Microphone is on.
(4)  Camera privacy light	<ul style="list-style-type: none">• On: The camera is off.• Off: The camera is on.
(5)  Power light	<ul style="list-style-type: none">• 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.

Special keys

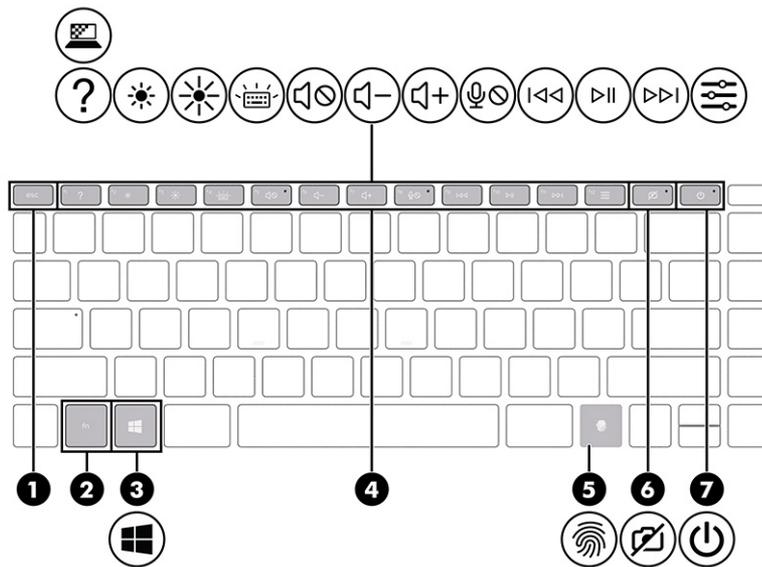


Table 2-6 Special keys and their descriptions

Component	Description
(1) fn key	Displays system information when pressed in combination with the fn key.
(2) fn key	Executes specific functions when pressed in combination with another key.
(3)  Windows key	Opens the Start menu. NOTE: Pressing the Windows key again will close the Start menu.
(4) Action keys	Execute frequently used system functions as defined by the icon symbols on f1 through f12 function keys.
(5)  Fingerprint reader	Allows a fingerprint logon to Windows, instead of a password logon. ▲ Touch your finger to 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.

Table 2-6 Special keys and their descriptions (continued)

Component	Description
(6)  Camera privacy key	Turns the camera off and on.
(7)  Power button	<ul style="list-style-type: none">• 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. <p>IMPORTANT: Pressing and holding down the power button results in the loss of unsaved information.</p> <p>If the computer has stopped responding and shutdown procedures are ineffective, press and hold the power button down for at least 10 seconds to turn off the computer.</p> <p>To learn more about your power settings, see your power options:</p> <ul style="list-style-type: none">▲ Right-click the Power icon , and then select Power Options.

Bottom

 **NOTE:** Your computer might look slightly different from the illustration in this section.

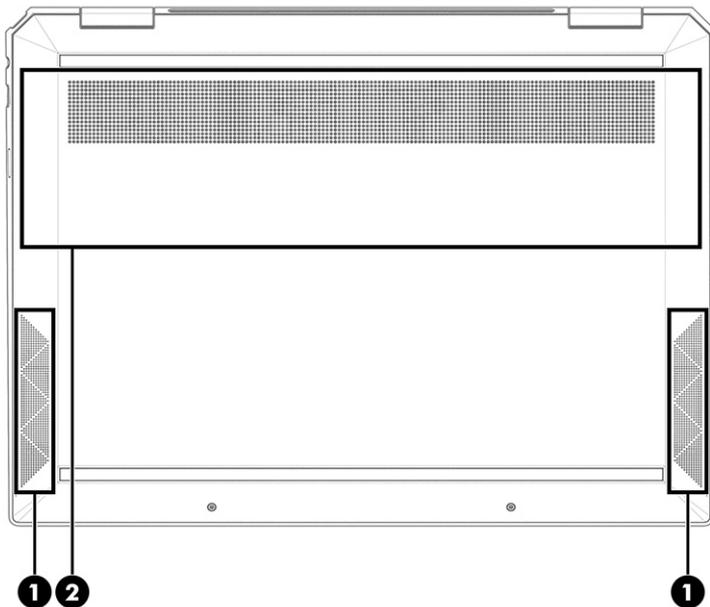


Table 2-7 Bottom components and their descriptions

Component	Description
(1) Speakers (2)	Produce sound.
(2) 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.

3 Illustrated parts catalog

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

Computer major components

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

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

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

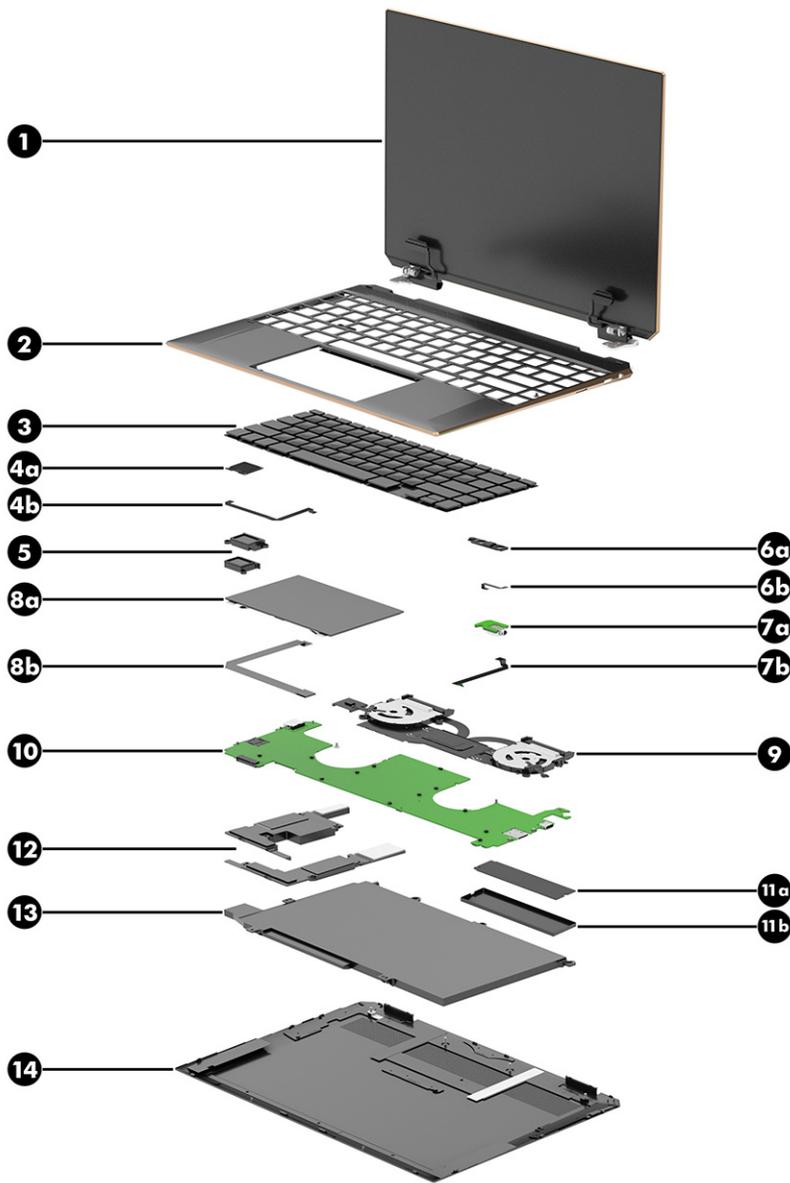


Table 3-1 Computer major component descriptions and part numbers

Item	Component	Spare part number
(1)	34.3 cm (13.5 in) display assembly:	
	Antiglare, WLED, touchscreen display assembly with privacy filter in natural silver finish; typical brightness: 1000 nits	M22161-001
	Antiglare, WLED, touchscreen display assembly with privacy filter in nightfall black finish; typical brightness: 1000 nits	M22160-001
	Antiglare, WLED, touchscreen display assembly with privacy filter in Poseidon blue finish; typical brightness: 1000 nits	M22162-001
	BrightView, OLED, touchscreen display assembly in natural silver finish; typical brightness: 400 nits	M22155-001
	BrightView, OLED, touchscreen display assembly in nightfall black finish; typical brightness: 400 nits	M22154-001
	BrightView, OLED, touchscreen display assembly in Poseidon blue finish; typical brightness: 400 nits	M22156-001

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

Item	Component	Spare part number
	BrightView, WLED, touchscreen display assembly in natural silver finish; typical brightness: 400 nits	M22158-001
	BrightView, WLED, touchscreen display assembly in nightfall black finish; typical brightness: 400 nits	M22157-001
	BrightView, WLED, touchscreen display assembly in Poseidon blue finish; typical brightness: 400 nits	M22159-001
(2)	Top cover:	
	In natural silver finish for use in all countries and regions except Japan	M22184-001
	In natural silver finish for use only in Japan	M22185-001
	In nightfall black finish for use in all countries and regions except Japan	M22182-001
	In nightfall black finish for use only in Japan	M22183-001
	In Poseidon blue finish for use in all countries and regions except Japan	M22186-001
	In Poseidon blue finish for use only in Japan	M22187-001
(3)	Keyboard with backlight and privacy filter in natural silver finish (includes backlight cable and keyboard cable):	
	For use in Belgium	M22195-A41
	For use in Bulgaria	M22195-261
	For use in Canada	M22195-DB1
	For use in the Czech Republic and Slovakia	M22195-FL1
	For use in Denmark, Finland, and Norway	M22195-DH1
	For use in France	M22195-051
	For use in Germany	M22195-041
	For use in Greece	M22195-151
	For use in Hungary	M22195-211
	For use in Israel	M22195-BB1
	For use in Italy	M22195-061
	For use in Japan	M22195-291
	For use in Latin America	M22195-161
	For use in the Netherlands	M22195-B31
	For use in Portugal	M22195-131
	For use in Romania	M22195-271
	For use in Russia	M22195-251
	For use in Saudi Arabia	M22195-171
	For use in Slovenia	M22195-BA1
	For use in South Korea	M22195-AD1
	For use in Spain	M22195-071
	For use in Switzerland	M22195-BG1

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

Item	Component	Spare part number
	For use in Taiwan	M22195-AB1
	For use in Thailand	M22195-281
	For use in Turkey	M22195-141
	For use in Ukraine	M22195-BD1
	For use in the United Kingdom	M22195-031
	For use in the United States	M22195-001
	Keyboard with backlight and privacy filter in nightfall black finish (includes backlight cable and keyboard cable):	
	For use in Belgium	M22193-A41
	For use in Bulgaria	M22193-261
	For use in Canada	M22193-DB1
	For use in the Czech Republic and Slovakia	M22193-FL1
	For use in Denmark, Finland, and Norway	M22193-DH1
	For use in France	M22193-051
	For use in Germany	M22193-041
	For use in Greece	M22193-151
	For use in Hungary	M22193-211
	For use in Israel	M22193-BB1
	For use in Italy	M22193-061
	For use in Japan	M22193-291
	For use in Latin America	M22193-161
	For use in the Netherlands	M22193-B31
	For use in Portugal	M22193-131
	For use in Romania	M22193-271
	For use in Russia	M22193-251
	For use in Saudi Arabia	M22193-171
	For use in Slovenia	M22193-BA1
	For use in South Korea	M22193-AD1
	For use in Spain	M22193-071
	For use in Switzerland	M22193-BG1
	For use in Taiwan	M22193-AB1
	For use in Thailand	M22193-281
	For use in Turkey	M22193-141
	For use in Ukraine	M22193-BD1

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

Item	Component	Spare part number
	For use in the United Kingdom	M22193-031
	For use in the United States	M22193-001
	Keyboard with backlight and privacy filter in Poseidon blue finish (includes backlight cable and keyboard cable):	
	For use in Belgium	M22197-A41
	For use in Bulgaria	M22197-261
	For use in Canada	M22197-DB1
	For use in the Czech Republic and Slovakia	M22197-FL1
	For use in Denmark, Finland, and Norway	M22197-DH1
	For use in France	M22197-051
	For use in Germany	M22197-041
	For use in Greece	M22197-151
	For use in Hungary	M22197-211
	For use in Israel	M22197-BB1
	For use in Italy	M22197-061
	For use in Japan	M22197-291
	For use in Latin America	M22197-161
	For use in the Netherlands	M22197-B31
	For use in Portugal	M22197-131
	For use in Romania	M22197-271
	For use in Russia	M22197-251
	For use in Saudi Arabia	M22197-171
	For use in Slovenia	M22197-BA1
	For use in South Korea	M22197-AD1
	For use in Spain	M22197-071
	For use in Switzerland	M22197-BG1
	For use in Taiwan	M22197-AB1
	For use in Thailand	M22197-281
	For use in Turkey	M22197-141
	For use in Ukraine	M22197-BD1
	For use in the United Kingdom	M22197-031
	For use in the United States	M22197-001
	Keyboard with backlight in natural silver finish (includes backlight cable and keyboard cable):	
	For use in Belgium	M22194-A41

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

Item	Component	Spare part number
	For use in Bulgaria	M22194-261
	For use in Canada	M22194-DB1
	For use in the Czech Republic and Slovakia	M22194-FL1
	For use in Denmark, Finland, and Norway	M22194-DH1
	For use in France	M22194-051
	For use in Germany	M22194-041
	For use in Greece	M22194-151
	For use in Hungary	M22194-211
	For use in Israel	M22194-BB1
	For use in Italy	M22194-061
	For use in Japan	M22194-291
	For use in Latin America	M22194-161
	For use in the Netherlands	M22194-B31
	For use in Portugal	M22194-131
	For use in Romania	M22194-271
	For use in Russia	M22194-251
	For use in Saudi Arabia	M22194-171
	For use in Slovenia	M22194-BA1
	For use in South Korea	M22194-AD1
	For use in Spain	M22194-071
	For use in Switzerland	M22194-BG1
	For use in Taiwan	M22194-AB1
	For use in Thailand	M22194-281
	For use in Turkey	M22194-141
	For use in Ukraine	M22194-BD1
	For use in the United Kingdom	M22194-031
	For use in the United States	M22194-001
	Keyboard with backlight in nightfall black finish (includes backlight cable and keyboard cable):	
	For use in Belgium	M22192-A41
	For use in Bulgaria	M22192-261
	For use in Canada	M22192-DB1
	For use in the Czech Republic and Slovakia	M22192-FL1
	For use in Denmark, Finland, and Norway	M22192-DH1

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

Item	Component	Spare part number
	For use in France	M22192-051
	For use in Germany	M22192-041
	For use in Greece	M22192-151
	For use in Hungary	M22192-211
	For use in Israel	M22192-BB1
	For use in Italy	M22192-061
	For use in Japan	M22192-291
	For use in Latin America	M22192-161
	For use in the Netherlands	M22192-B31
	For use in Portugal	M22192-131
	For use in Romania	M22192-271
	For use in Russia	M22192-251
	For use in Saudi Arabia	M22192-171
	For use in Slovenia	M22192-BA1
	For use in South Korea	M22192-AD1
	For use in Spain	M22192-071
	For use in Switzerland	M22192-BG1
	For use in Taiwan	M22192-AB1
	For use in Thailand	M22192-281
	For use in Turkey	M22192-141
	For use in Ukraine	M22192-BD1
	For use in the United Kingdom	M22192-031
	For use in the United States	M22192-001
	Keyboard with backlight in Poseidon blue finish (includes backlight cable and keyboard cable):	
	For use in Belgium	M22196-A41
	For use in Bulgaria	M22196-261
	For use in Canada	M22196-DB1
	For use in the Czech Republic and Slovakia	M22196-FL1
	For use in Denmark, Finland, and Norway	M22196-DH1
	For use in France	M22196-051
	For use in Germany	M22196-041
	For use in Greece	M22196-151
	For use in Hungary	M22196-211

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

Item	Component	Spare part number
	For use in Israel	M22196-BB1
	For use in Italy	M22196-061
	For use in Japan	M22196-291
	For use in Latin America	M22196-161
	For use in the Netherlands	M22196-B31
	For use in Portugal	M22196-131
	For use in Romania	M22196-271
	For use in Russia	M22196-251
	For use in Saudi Arabia	M22196-171
	For use in Slovenia	M22196-BA1
	For use in South Korea	M22196-AD1
	For use in Spain	M22196-071
	For use in Switzerland	M22196-BG1
	For use in Taiwan	M22196-AB1
	For use in Thailand	M22196-281
	For use in Turkey	M22196-141
	For use in Ukraine	M22196-BD1
	For use in the United Kingdom	M22196-031
	For use in the United States	M22196-001
	Keyboard Screw Kit	M36389-001
	Keyboard Shield Kit	M22191-001
(4a)	Fingerprint reader module:	
	In natural silver finish	M22189-001
	In nightfall black finish	M22188-001
	In Poseidon blue finish	M22190-001
(4b)	Fingerprint reader module cable (the fingerprint reader module cable is not available as spare part component)	
(5)	Rear speakers (includes rear left and right speakers and cables)	M22173-001
(6a)	Infrared sensor board	M22164-001
(6b)	Infrared sensor board cable	M22151-001
(7a)	Connector board	M22163-001
(7b)	Connector board cable	M22150-001
	Connector Board Rubber Kit (includes rubber lenses and tape)	M22171-001
(8a)	Touchpad:	

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

Item	Component	Spare part number
	In natural silver finish	M22166-001
	In nightfall black finish	M22165-001
	In Poseidon blue finish	M22167-001
(8b)	Touchpad cable	M22152-001
(9)	Fan/heat sink assembly (includes replacement thermal material):	
	For use only on computer models equipped with an OLED display assembly	M22181-001
	For use only on computer models equipped with a WLED display assembly	M22180-001
	Fan Shield Kit (not illustrated)	M22153-001
(10)	System board (includes the processor, a graphics subsystem with UMA memory, and replacement thermal material):	
	Equipped with an Intel Core i7-1165G7 processor, 16 GB of system memory, and the Windows 10 operating system, for use only on computer models equipped with an OLED display assembly	M22177-601
	Equipped with an Intel Core i7-1165G7 processor, 16 GB of system memory, and the Windows 10 operating system, for use only on computer models equipped with a WLED display assembly	M22176-601
	Equipped with an Intel Core i7-1165G7 processor, 8 GB of system memory, and the Windows 10 operating system	M22178-601
	Equipped with an Intel Core i5-1135G7 processor, 16 GB of system memory, and the Windows 10 operating system	M22179-601
	Equipped with an Intel Core i5-1135G7 processor, 8 GB of system memory, and the Windows 10 operating system	M22175-601
(11a)	Solid-state drive:	
	2 TB, M.2 2280, PCIe-NVMe-3 × 4, SS solid-state drive with TLC	L85358-005
	1 TB, M.2 2280, PCIe-NVMe-3 × 4, SS solid-state drive with TLC	L85348-005
	512 GB, M.2 2280, PCIe-3 × 4, SS solid-state drive with TLC	L85360-005
	256 GB, M.2 2280, PCIe-3 × 4, SS solid-state drive with TLC	L85350-005
	1 TB, M.2 2280, PCIe + 32 GB, 3D Xpoint solid-state drive	L85374-005
	512 GB, M.2 2280, PCIe + 32 GB, 3D Xpoint solid-state drive	L85366-005
	256 GB, M.2 2280, PCIe + 16 GB, 3D Xpoint solid-state drive	L85356-005
(11b)	Solid-state drive shield (not available as a spare part)	
(12)	Front speakers (includes front left and right speakers, cables, and five rubber isolators)	M22174-001
(13)	Battery (4 cell, 66 WHr, Li, includes cable)	L97357-005
(14)	Bottom cover:	
	In natural silver finish	M22148-001
	In nightfall black finish	M22147-001
	In Poseidon blue finish	M22149-001
	Rubber Foot Kit (not illustrated, includes rubber foot strips):	
	In natural silver finish	M22169-001

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

Item	Component	Spare part number
	In nightfall black finish	M22168-001
	In Poseidon blue finish	M22170-001

Mass storage devices

To identify the mass storage devices, use this illustration and table.

Table 3-2 Solid-state drive descriptions and part numbers

Item	Component	Spare part number
Solid-state drive:		
	2 TB, M.2 2280, PCIe-NVMe-3 × 4, SS solid-state drive with TLC	L85358-005
	1 TB, M.2 2280, PCIe-NVMe-3 × 4, SS solid-state drive with TLC	L85348-005
	512 GB, M.2 2280, PCIe-3 × 4, SS solid-state drive with TLC	L85360-005
	256 GB, M.2 2280, PCIe-3 × 4, SS solid-state drive with TLC	L85350-005
	1 TB, M.2 2280, PCIe + 32 GB, 3D Xpoint solid-state drive	L85374-005
	512 GB, M.2 2280, PCIe + 32 GB, 3D Xpoint solid-state drive	L85366-005
	256 GB, M.2 2280, PCIe + 16 GB, 3D Xpoint solid-state drive	L85356-005

Cables

To identify the cables, use this illustration and table.

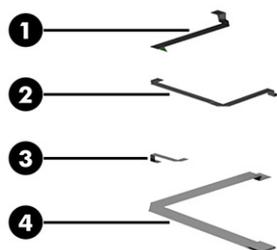


Table 3-3 Cable descriptions and part numbers

Item	Component	Spare part number
(1)	Connector board cable	M22150-001
(2)	Fingerprint reader module cable: the fingerprint reader module cable is not available as a spare part component	
(3)	Infrared sensor board cable	M22151-001
(4)	Touchpad cable	M22152-001

Miscellaneous parts

To identify the miscellaneous parts, use this table.

Table 3-4 Miscellaneous part descriptions and part numbers

Component	Spare part number
AC adapter:	
65 W AC adapter (USB Type-C straight, non-PFC, 1.8 m [6.0 ft], slim barrel)	L04650-850
65 W AC dapter (USB Type-C, non-PFC, RC, 1.8 m [6.0 ft])	L32392-001
Adapters:	
Duck-head adapter for use in India	L50818-006
Duck-head adapter for use in Japan	L33157-001
HP USB-to-gigabit R-J45 adapter	829941-001
HP USB-C-to-HDMI 2.0 adapter	935325-001
HP USB-C-to-RJ-45 adapter	855560-001
HP USB-C-to-VGA adapter	831751-001
USB Type-C-to-USB Type-A cable adapter	833960-001
HP USB External DVD+/-RW Drive	747080-001
Hubs:	
HP Elite USB Type-C multiport hub	L39572-001
HP USB Type-C-to-USB Type-A hub	916838-001
Pens:	
Zenvo natural silver pen with cable	L95614-001
Zenvo nightfall black pen with cable	L95615-001
HP 34.3 mm (13.5 in) dark ash sleeve	M10760-001
Power cord (C5, 1.0 m [3.3 ft], premium with sticker):	
For use in Argentina	L30811-001
For use in Australia	L22327-001
For use in Denmark	L22322-001
For use in Europe	L22321-001
For use in India	L36820-001
For use in Israel	L22323-001
For use in Italy	L30813-001
For use in Japan	L22330-001
For use in North America	L22319-001
For use in the People's Republic of China	L21930-001
For use in South Africa	L22325-001

Table 3-4 Miscellaneous part descriptions and part numbers (continued)

Component	Spare part number
For use in South Korea	L22328-001
For use in Switzerland	L22324-001
For use in Taiwan	L22329-001
For use in Thailand	L22326-001
For use in the United Kingdom	L22320-001
Screw Kit	M22172-001

4 Removal and replacement procedures preliminary requirements

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

Tools required

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

- Tweezers
- Case utility tool or similar thin, nonmarking, plastic tool
- Flat-bladed screwdriver
- Magnetic Phillips P0 and P1 screwdrivers
- Suction cups

Service considerations

The following sections include some of the considerations that you must keep in mind during disassembly and assembly procedures.

 **NOTE:** As you remove each subassembly from the computer, place the subassembly (and all accompanying screws) away from the work area to prevent damage.

Plastic parts

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

Cables and connectors

Handle cables with extreme care to avoid damage.

 **IMPORTANT:** When servicing the computer, be sure that cables are placed in their proper locations during the reassembly process. Improper cable placement can damage the computer.

Apply only the tension required to unseat or seat the cables during removal and insertion. Handle cables by the connector whenever possible. In all cases, avoid bending, twisting, or tearing cables. Be sure that cables are routed so that they cannot be caught or snagged as you remove or replace parts. Handle flex cables with extreme care; these cables tear easily.

Drive handling

Note the following guidelines when handling drives.

 **IMPORTANT:** Drives are fragile components. Handle them with care. To prevent damage to the computer, damage to a drive, or loss of information, observe these precautions:

Before removing or inserting a hard drive, shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

Before handling a drive, be sure that you are discharged of static electricity. While handling a drive, avoid touching the connector.

Before removing an optical drive, be sure that a disc is not in the drive, and be sure that the optical drive tray is closed.

Handle drives on surfaces covered with at least 2.54 cm (1 inch) of shock-proof foam.

Avoid dropping drives from any height onto any surface.

After removing a hard drive or an optical drive, place it in a static-proof bag.

Avoid exposing an internal hard drive to products that have magnetic fields, such as monitors or speakers.

Avoid exposing a drive to temperature extremes or liquids.

If a drive must be mailed, place the drive in a bubble pack mailer or other suitable form of protective packaging, and label the package “FRAGILE.”

Workstation guidelines

Follow these grounding workstation guidelines:

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

Electrostatic discharge information

A sudden discharge of static electricity from your finger or other conductor can destroy static-sensitive devices or microcircuitry. Often the spark is neither felt nor heard, but damage occurs. An electronic device exposed to electrostatic discharge (ESD) might not appear to be affected at all and can work perfectly throughout a normal cycle. The device might function normally for a while, but it has been degraded in the internal layers, reducing its life expectancy.

Networks built into many integrated circuits provide some protection, but in many cases, the discharge contains enough power to alter device parameters or melt silicon junctions.

 **IMPORTANT:** To prevent damage to the device when you remove or install internal components, observe these precautions:

Keep components in their electrostatic-safe containers until you are ready to install them.

Before touching an electronic component, discharge static electricity by using the guidelines described [Personal grounding methods and equipment on page 31](#).

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

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

Generating static electricity

Follow these static electricity guidelines.

- Different activities generate different amounts of static electricity.
- Static electricity increases as humidity decreases.

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

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

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

 **NOTE:** As little as 700 V can degrade a product.

Preventing electrostatic damage to equipment

Many electronic components are sensitive to ESD. Circuitry design and structure determine the degree of sensitivity. The following packaging and grounding precautions are necessary to prevent static electricity damage to electronic components.

- To avoid hand contact, transport products in static-safe containers such as tubes, bags, or boxes.
- Protect all electrostatic parts and assemblies with conductive or approved containers or packaging.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free stations.
- Place items on a grounded surface before removing them from their container.
- Always be properly grounded when touching a sensitive component or assembly.
- Avoid contact with pins, leads, or circuitry.
- Place reusable electrostatic-sensitive parts from assemblies in protective packaging or conductive foam.

Personal grounding methods and equipment

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

- **Wrist straps** are flexible straps with a maximum of $1\text{ M}\Omega \pm 10\%$ resistance in the ground cords. To provide proper ground, a strap must be worn snug against bare skin. The ground cord must be connected and fit snugly into the banana plug connector on the grounding mat or workstation.
- **Heel straps/Toe straps/Boot straps** can be used at standing workstations and are compatible with most types of shoes or boots. On conductive floors or dissipative floor mats, use them on both feet with a maximum of $1\text{ M}\Omega \pm 10\%$ resistance between the operator and ground.

Table 4-2 Static shielding protection levels

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

Grounding the work area

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

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

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

Recommended materials and equipment

HP recommends certain materials and equipment to prevent static electricity.

- Antistatic tape
- Antistatic smocks, aprons, or sleeve protectors
- Conductive bins and other assembly or soldering aids
- Conductive foam
- Conductive tabletop workstations with ground cord of $1\text{ M}\Omega \pm 10\%$ resistance
- Static-dissipative table or floor mats with hard tie to ground
- Field service kits
- Static awareness labels
- Wrist straps and footwear straps providing $1\text{ M}\Omega \pm 10\%$ resistance
- Material handling packages
- Conductive plastic bags
- Conductive plastic tubes
- Conductive tote boxes
- Opaque shielding bags
- Transparent metallized shielding bags
- Transparent shielding tubes

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment.

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

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

5 Removal and replacement procedures for authorized service provider parts

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

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

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

Component replacement procedures

To remove and replace computer components, use these procedures.



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

You must remove, replace, or loosen as many as 64 screws when you service the parts described in this chapter. Make special note of each screw size and location during removal and replacement.

Preparation for disassembly

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
In natural silver finish	M22148-001
In nightfall black finish	M22147-001
In Poseidon blue finish	M22149-001

Before removing the bottom cover, prepare the computer for disassembly ([Preparation for disassembly on page 37](#)).

Remove the bottom cover:

1. Close the computer and position it upside down with the front toward you.
2. Remove the rear rubber foot strip (1).

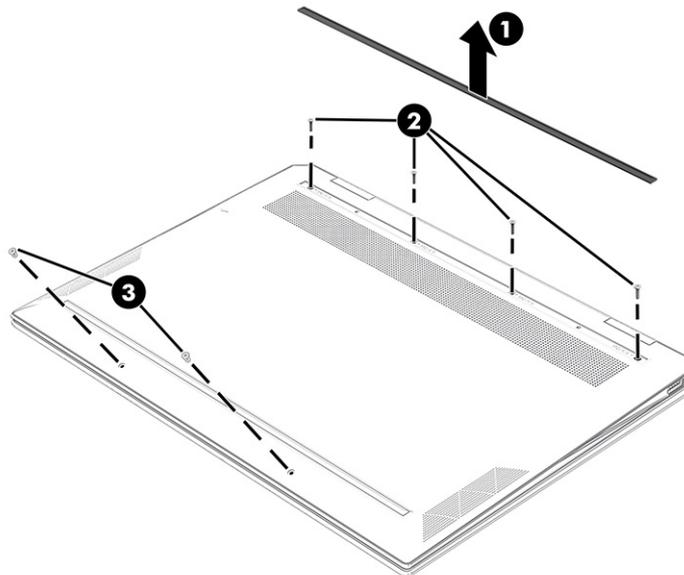
The rear rubber foot strip is available using the following spare part numbers:

M22169-001: In natural silver finish

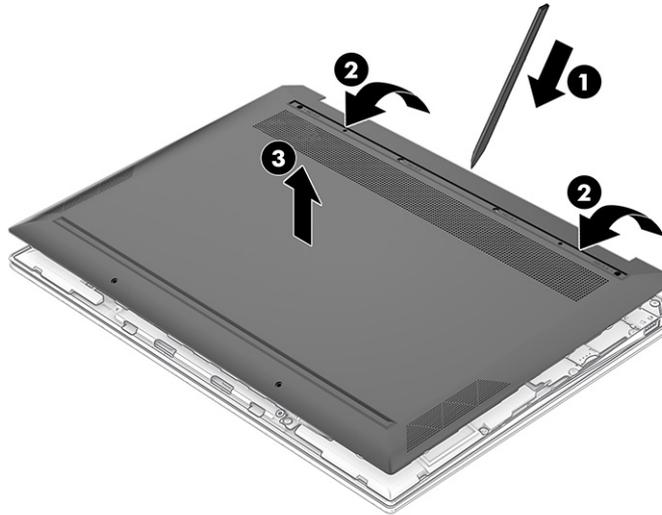
M22168-001: In nightfall black finish

M22170-001: In Poseidon blue finish

3. Remove the four Phillips M2.0 × 6.9 screws (2) and the two Torx5 M2.0 × 3.9 screws (3) that secure the bottom cover to the top cover.



4. Use a case utility tool or similar thin plastic tool (1) to separate the rear edge of the bottom cover (2) from the top cover.
5. Remove the bottom cover (3).



To replace the bottom cover, reverse the removal procedures.

Battery

To remove the battery, use this procedure and illustration.

Table 5-2 Battery description and part number

Description	Spare part number
4 cell, 66 WHr, Li-ion battery (includes cable)	L97357-005

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

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

Before removing the battery, follow these steps:

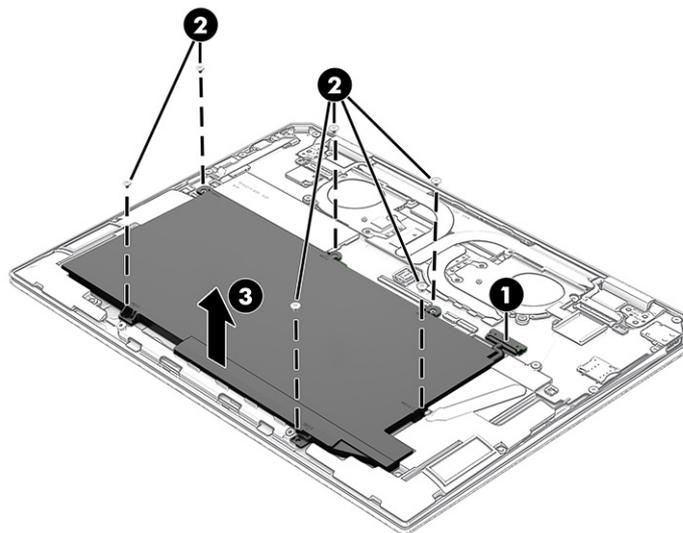
1. Prepare the computer for disassembly ([Preparation for disassembly on page 37](#)).
2. Remove the bottom cover ([Bottom cover on page 37](#)).

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

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

Remove the battery:

1. Disconnect the battery cable (1) from the system board.
2. Remove the six Phillips M2.0 × 2.0 screws (2) that secure the battery to the top cover.
3. Remove the battery (3).



To insert the battery, reverse the removal procedures.

Speakers

To remove the front speakers, use this procedure and illustration.

Table 5-3 Front speakers description and part number

Description	Spare part number
Front speakers (includes front left and right speakers, cables, and five rubber isolators)	M22174-001

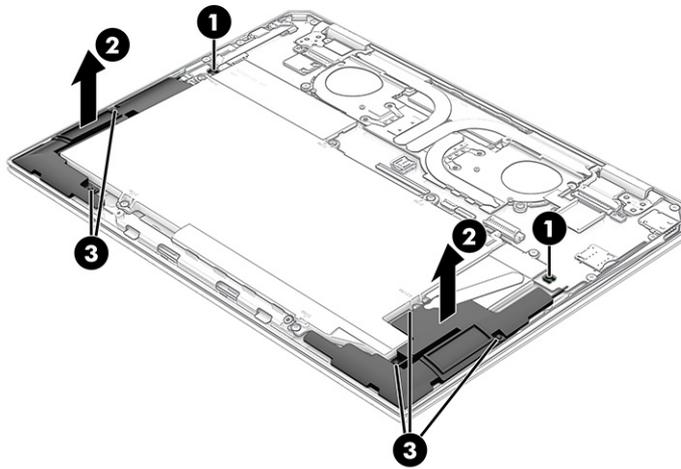
Before removing the front speakers, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 37](#)).
2. Remove the bottom cover ([Bottom cover on page 37](#)).
3. Disconnect the battery cable from the system board (see [Battery on page 38](#)).

Remove the front speakers:

1. Disconnect the front speaker cables (1) from the system board.
2. Remove the front speakers (2).

 **NOTE:** When removing the front speakers, make note of the location of the five rubber isolator locations (3). The absence of or damage to these isolators can result in degraded speaker performance.



Reverse this procedure to install the front speakers.

Solid-state drive

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

Table 5-4 Solid-state drive description and part numbers

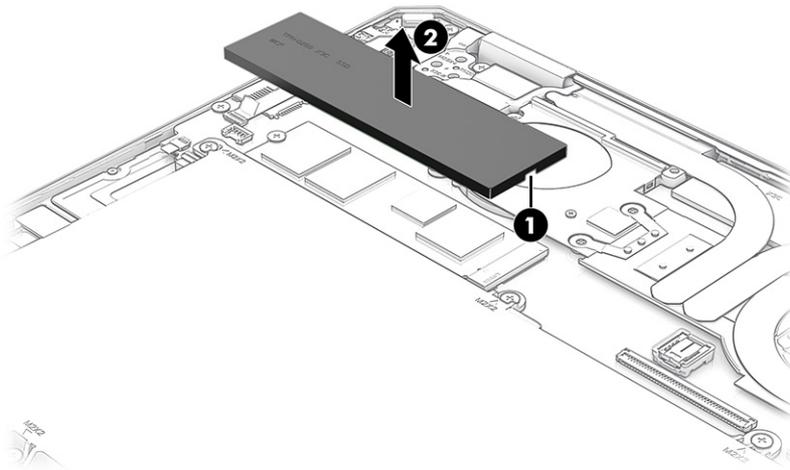
Description	Spare part number
1 TB, M.2 2280, PCIe, NVMe-3 × 4, SS solid-state drive with TLC	L85348-005
1 TB, M.2 2280, PCIe, NVMe, value solid-state drive	L85370-005
512 GB, M.2 2280, PCIe, NVMe-3 × 4, SS solid-state drive with TLC	L85360-005
512 GB, M.2 2280, PCIe, NVMe, value solid-state drive	L85364-005
256 GB, M.2 2280, PCIe-3 × 4, SS solid-state drive with TLC	L85350-005
256 GB, M.2 2280, PCIe, NVMe, value solid-state drive	L85354-005
1 TB, M.2 2280, PCIe + 32 GB, 3D Xpoint solid-state drive	L85374-005
512 GB, M.2 2280, PCIe + 32 GB, 3D Xpoint solid-state drive	L85366-005

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

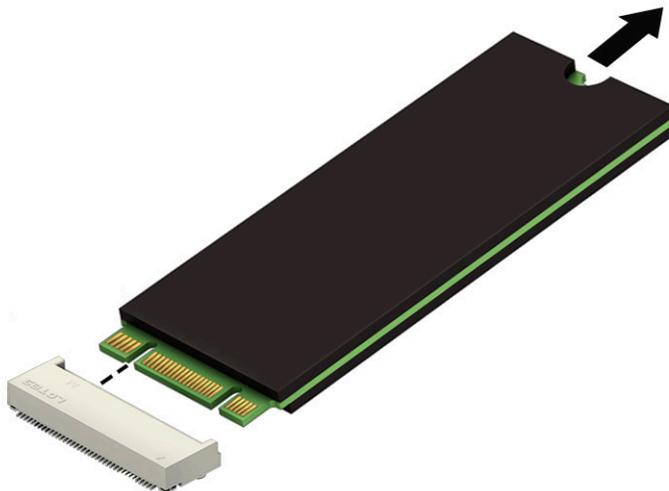
1. Prepare the computer for disassembly ([Preparation for disassembly on page 37](#)).
2. Remove the bottom cover ([Bottom cover on page 37](#)).
3. Disconnect the battery cable from the system board (see [Battery on page 38](#)).

Remove the solid-state drive:

1. Use the notch (1) in the side of the solid-state drive shield to remove the shield (2).



2. Remove the solid-state drive by sliding it away from the slot at an angle.



Reverse this procedure to install the solid-state drive.

34.3 cm (13.5 in) display assembly

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

Table 5-5 Display assembly descriptions and part numbers

Description	Spare part number
34.3 cm (13.5 in) display assembly:	
Antiglare, WLED, touchscreen display assembly with privacy filter in natural silver finish; typical brightness: 1000 nits	M22161-001
Antiglare, WLED, touchscreen display assembly with privacy filter in nightfall black finish; typical brightness: 1000 nits	M22160-001
Antiglare, WLED, touchscreen display assembly with privacy filter in Poseidon blue finish; typical brightness: 1000 nits	M22162-001
BrightView, OLED, touchscreen display assembly in natural silver finish; typical brightness: 400 nits	M22155-001
BrightView, OLED, touchscreen display assembly in nightfall black finish; typical brightness: 400 nits	M22154-001
BrightView, OLED, touchscreen display assembly in Poseidon blue finish; typical brightness: 400 nits	M22156-001
BrightView, WLED, touchscreen display assembly in natural silver finish; typical brightness: 400 nits	M22158-001
BrightView, WLED, touchscreen display assembly in nightfall black finish; typical brightness: 400 nits	M22157-001
BrightView, WLED, touchscreen display assembly in Poseidon blue finish; typical brightness: 400 nits	M22159-001

Before removing the display assembly, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 37](#)).
2. Remove the bottom cover ([Bottom cover on page 37](#)).
3. Disconnect the battery cable from the system board (see [Battery on page 38](#)).

Remove the display assembly:

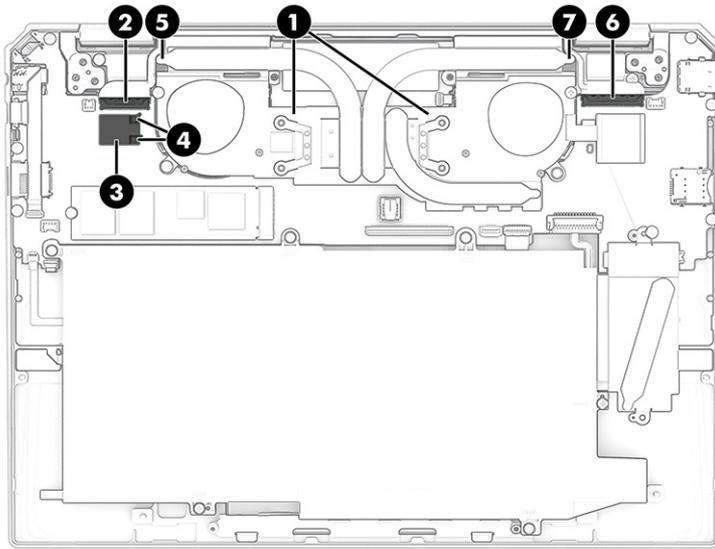
1. Remove the heat sink shield **(1)**.
2. Disconnect the webcam/microphone module cable **(2)** from the system board.
3. Remove the WLAN module shield **(3)**.
4. Disconnect the wireless antenna cables **(4)** from the WLAN module.



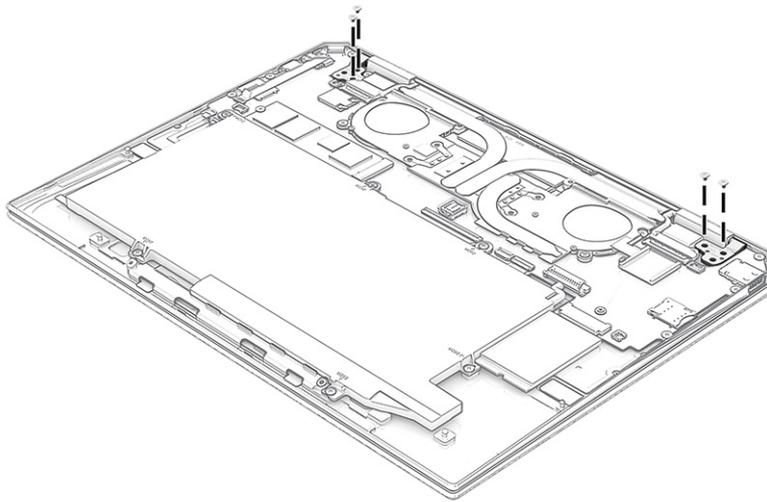
NOTE: The #1/Main WLAN antenna cable connects to the WLAN module **#1/Main** terminal. The #2/Aux WLAN antenna cable connects to the WLAN module **#2/Aux** terminal.

5. Release the webcam/microphone module cable and the WLAN antenna cables from the retention clip **(5)** built into the top cover.
6. Disconnect the display panel cable **(6)** from the system board.

7. Release the display panel cable from the retention clip (7) built into the top cover.

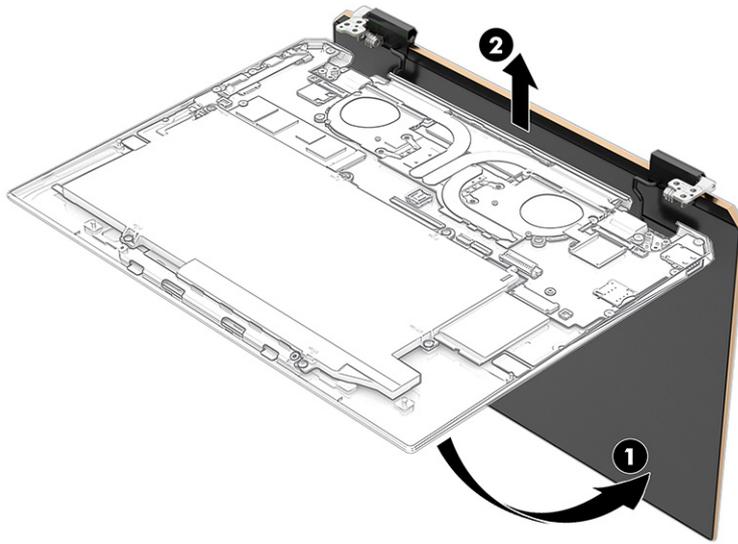


8. Remove the four Phillips M2.5 × 4.8 screws that secure the display assembly to the top cover.



9. Swing the top edge of the display assembly (1) away from the top cover. (The top cover disengages from the display assembly hinges.)

10. Separate the display assembly **(2)** from the top cover.



Reverse this procedure to replace the display assembly.

Touchpad cable

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

The touchpad cable is available using spare part number M22152-001.

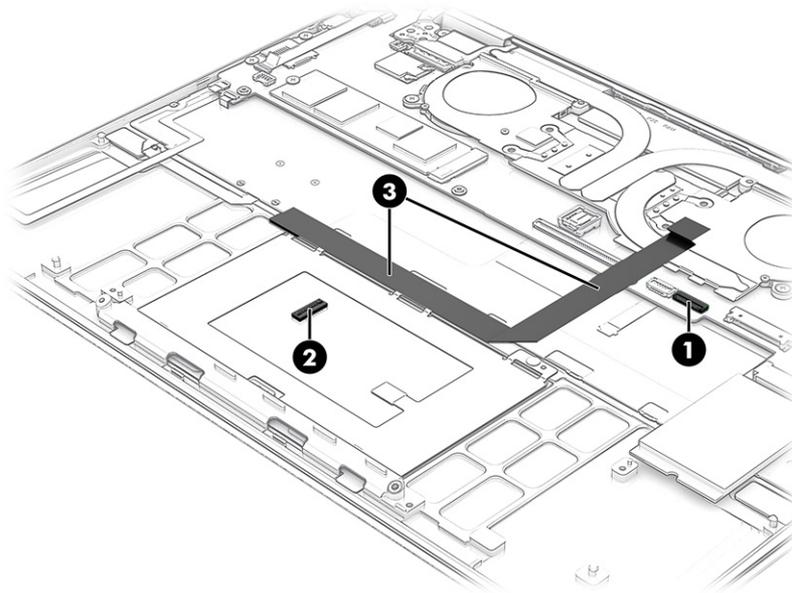
Before removing the touchpad cable, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 37](#)).
2. Remove the bottom cover ([Bottom cover on page 37](#)).
3. Remove the battery (see [Battery on page 38](#)).

Remove the touchpad cable:

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

3. Detach the touchpad cable (3) from the top cover and touchpad. (The touchpad cable is attached to the top cover and touchpad with double-sided adhesive at two locations.)



4. Remove the touchpad cable.
Reverse this procedure to install the touchpad cable.

Touchpad

To remove the touchpad, use this procedure and illustration.

Table 5-6 Touchpad descriptions and part numbers

Description	Spare part number
Touchpad:	
In natural silver finish	M22166-001
In nightfall black finish	M22165-001
In Poseidon blue finish	M22167-001

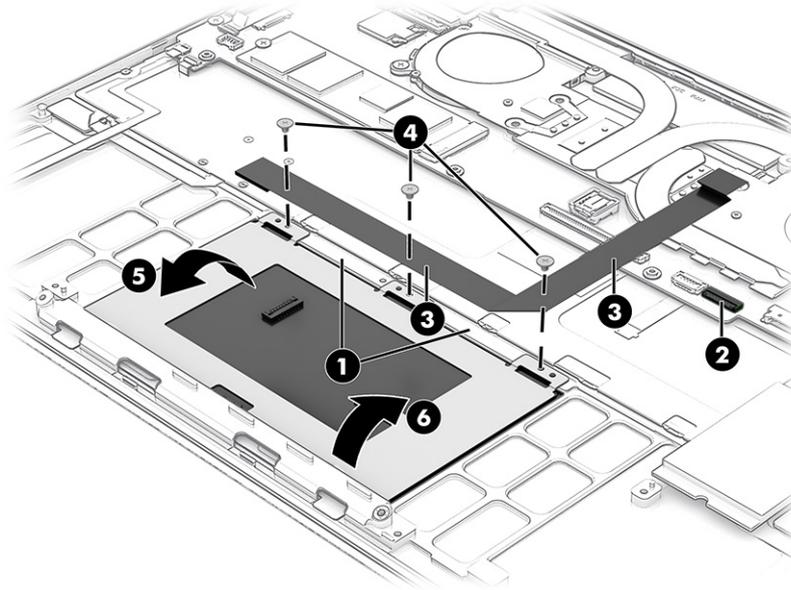
NOTE: The touchpad spare part kit does not include the touchpad cable. The touchpad cable is available using spare part number M22152-001.

Before removing the touchpad, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 37](#)).
2. Remove the bottom cover ([Bottom cover on page 37](#)).
3. Remove the battery (see [Battery on page 38](#)).

Remove the touchpad:

1. Detach the black tape (1) that secures the top edge of the touchpad to the top cover.
2. Release the ZIF connector (2) to which the touchpad cable is connected, and then disconnect the touchpad cable from the system board.
3. Detach the touchpad cable (3) from the top cover. (The touchpad cable is attached to the top cover with double-sided adhesive.)
4. Remove the three Phillips M1.5 × 2.3 screws (4) that secure the touchpad to the top cover.
5. Release the touchpad (5) by swinging the top edge up and toward the front of the top cover.
6. Remove the touchpad (6) by sliding it up and away from the front of the top cover.



Reverse this procedure to install the touchpad.

System board

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

Table 5-7 System board descriptions and part numbers

Description	Spare part number
The system board spare part kit includes the processor, a graphics subsystem with UMA memory, and replacement thermal material.	
Equipped with an Intel Core i7-1165G7 processor, 16 GB of system memory, and the Windows 10 operating system, for use only on computer models equipped with an OLED display assembly	M22177-601
Equipped with an Intel Core i7-1165G7 processor, 16 GB of system memory, and the Windows 10 operating system, for use only on computer models equipped with a WLED display assembly	M22176-601
Equipped with an Intel Core i7-1165G7 processor, 8 GB of system memory, and the Windows 10 operating system	M22178-601
Equipped with an Intel Core i5-1135G7 processor, 16 GB of system memory, and the Windows 10 operating system	M22179-601
Equipped with an Intel Core i5-1135G7 processor, 8 GB of system memory, and the Windows 10 operating system	M22175-601

Before removing the system board, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 37](#)).
2. Remove the bottom cover ([Bottom cover on page 37](#)).
3. Remove the battery (see [Battery on page 38](#)).

When you replace the system board, be sure to remove the solid-state drive (see [Solid-state drive on page 40](#)) and fan/heat sink assembly heat sink (see [Fan/heat sink assembly on page 49](#)) from the defective system board and install them on the replacement system board.

Remove the system board:

1. Remove the heat sink shield **(1)**.

The heat sink shield is included in the Fan Shield Kit, spare part number M22153-001.

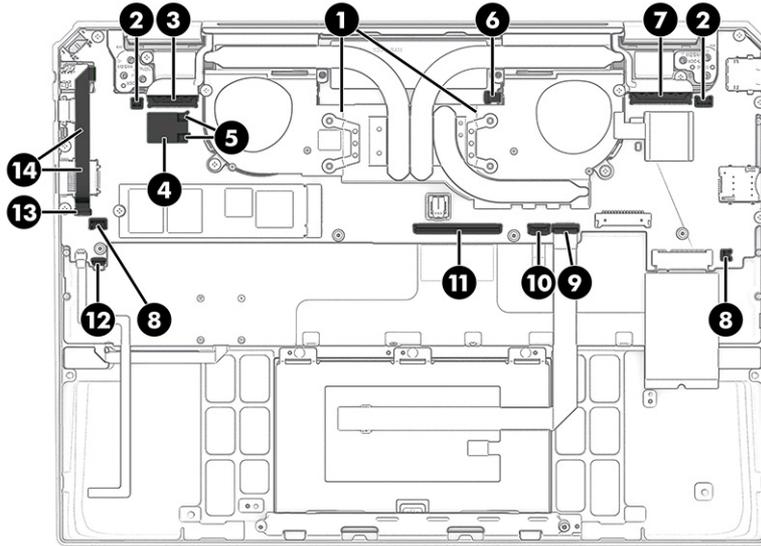
2. Disconnect the rear speaker cables (2 locations) **(2)** from the system board.
3. Disconnect the webcam/microphone module cable **(3)** from the system board.
4. Remove the WLAN module shield **(4)**.

The WLAN module shield is included in the Fan Shield Kit, spare part number M22153-001.

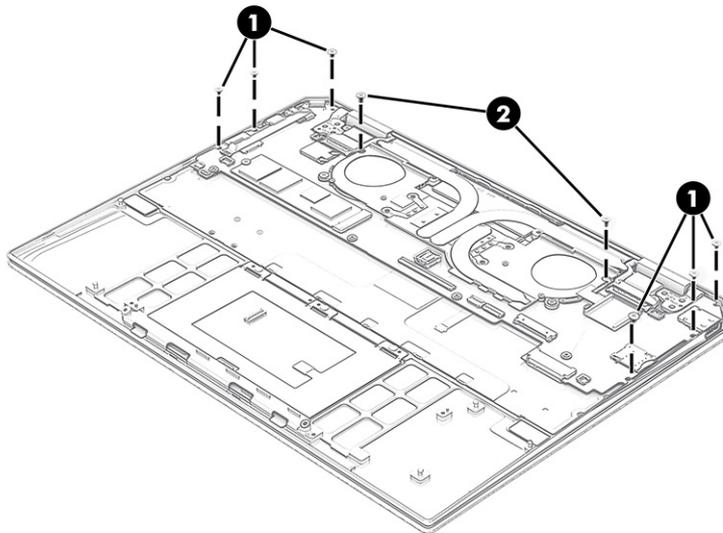
5. Disconnect the following cables from the system board:

- WLAN antenna cables **(5)**
- Infrared sensor board ZIF connector cable **(6)**
- Display panel cable **(7)**
- Front speaker cables (2 locations) **(8)**
- Touchpad ZIF connector cable **(9)**
- Backlight ZIF connector cable **(10)**
- Keyboard ZIF connector cable **(11)**
- Fingerprint reader ZIF connector cable **(12)**
- Connector board ZIF connector cable **(13)**

6. Detach the connector board cable (14) from the top cover. (The connector board cable is attached to the top cover in two locations with double-sided adhesive.)



7. Remove the six Phillips M2.0 × 2.0 screws (1) that secure the system board to the top cover.
8. Remove the two Phillips M2.0 × 4.1 screws (2) that secure the system board to the top cover.

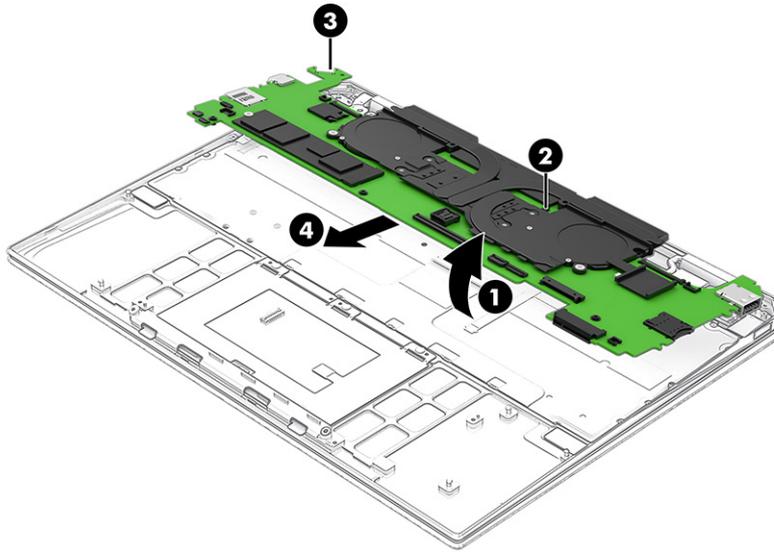


9. Lift the front edge of the system board (1) until it rests at an angle.

 **NOTE:** When removing the system board, be sure that the infrared system board cable (2) routes cleanly through the opening in the system board.

 **NOTE:** When removing the system board, be sure that the USB Type-C connector (3) releases cleanly from the opening in the top cover.

- Remove the system board (4) by sliding it up and forward at an angle.



Reverse this procedure to install the system board.

Fan/heat sink assembly

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

Table 5-8 Fan/heat sink assembly descriptions and part numbers

Description	Spare part number
NOTE: The fan/heat sink assembly spare kit includes replacement thermal material.	
For use only on computer models equipped with an OLED display assembly	M22181-001
For use only on computer models equipped with a WLED display assembly	M22180-001

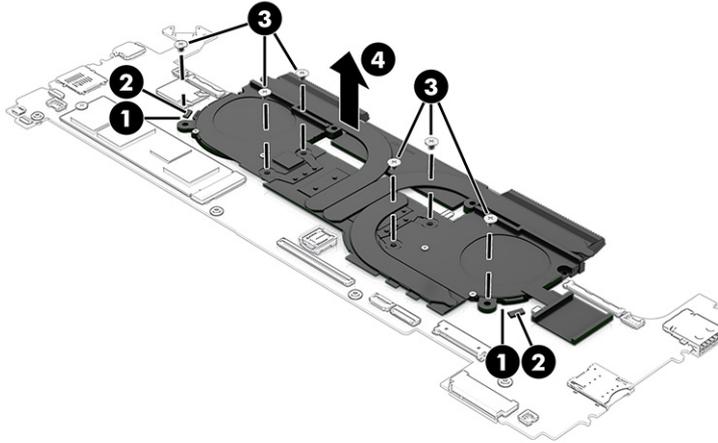
Before removing the fan/heat sink assembly, follow these steps:

- Prepare the computer for disassembly ([Preparation for disassembly on page 37](#)).
- Remove the bottom cover ([Bottom cover on page 37](#)).
- Remove the battery (see [Battery on page 38](#)).
- Remove the system board (see [System board on page 46](#)).

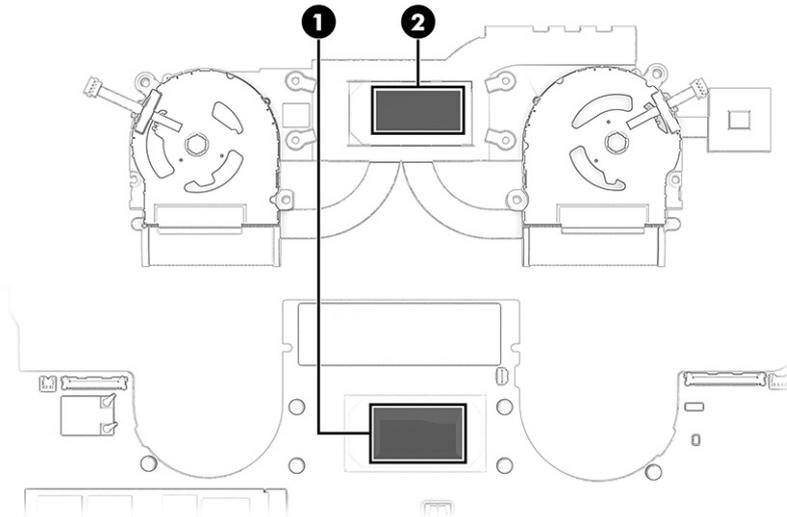
Remove the fan/heat sink assembly:

- Remove the fan shields (2 locations) (1) that secure the fan cables to the system board.
The fan shields are included in the Fan Shield Kit, spare part number M22153-001.
- Disconnect the fan cables (2 locations) (2) from the system board.
- Remove the six Phillips M2.0 × 2.0 screws (3) that secure the fan/heat sink assembly to the system board.

4. Remove the fan/heat sink assembly (4).



Each time the fan/heat sink assembly is removed, thoroughly clean the thermal material from the processor component (1) and the surface of the fan/heat sink assembly (2). Replacement thermal material is included with the fan/heat sink assembly and system board spare part kits.



Reverse this procedure to install the fan/heat sink assembly.

Connector board cable

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

The connector board cable is available using spare part number M22150-001.

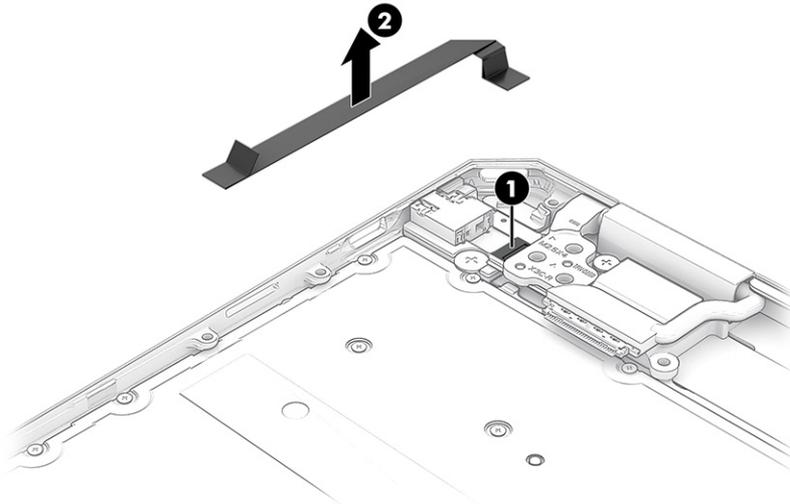
Before removing the connector board cable, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 37](#)).
2. Remove the bottom cover ([Bottom cover on page 37](#)).

3. Remove the battery (see [Battery on page 38](#)).
4. Remove the system board (see [System board on page 46](#)).

Remove the connector board cable:

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



Reverse this procedure to install the connector board cable.

Connector board

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

Table 5-9 Connector board description and part number

Description	Spare part number
Connector board	M22163-001

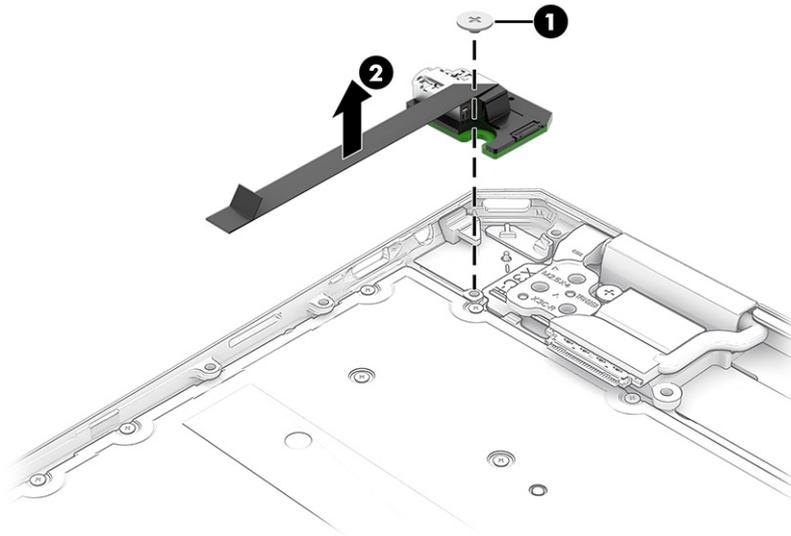
NOTE: The connector board spare part kit does not include the connector board cable. The connector board cable is available using spare part number M22150-001.

Before removing the connector board, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 37](#)).
2. Remove the bottom cover ([Bottom cover on page 37](#)).
3. Remove the battery (see [Battery on page 38](#)).
4. Remove the system board (see [System board on page 46](#)).

Remove the connector board:

1. Remove the Phillips M2.0 × 1.8 broad head screw (1) that secures the connector board to the top cover.
2. Remove the connector board (2) and cable.



Reverse this procedure to install the connector board.

Rear speakers

To remove the rear speakers, use this procedure and illustration.

Table 5-10 Rear speakers description and part number

Description	Spare part number
Rear speakers (includes rear left and right rear speakers, cables, and four rubber isolators)	M22173-001

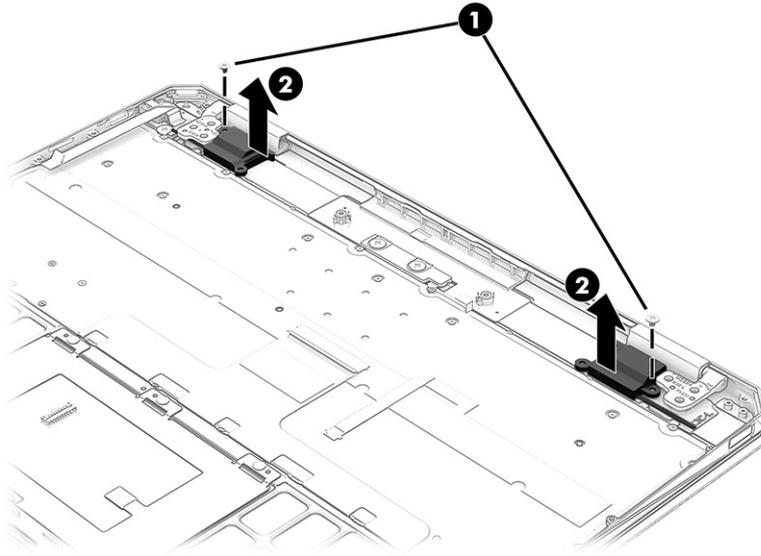
Before removing the rear speakers, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 37](#)).
2. Remove the bottom cover ([Bottom cover on page 37](#)).
3. Remove the battery (see [Battery on page 38](#)).
4. Remove the system board (see [System board on page 46](#)).

Remove the rear speakers:

1. Remove the two Phillips M2.0 × 2.0 screws (1) that secure the rear speakers to the top cover.

2. Remove the rear speakers (2).



Reverse this procedure to install the rear speakers.

Infrared sensor board

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

Table 5-11 Infrared sensor board description and part number

Description	Spare part number
Infrared sensor board	M22164-001

NOTE: The infrared sensor board spare part kit does not include the infrared sensor board cable. The infrared sensor board cable is available using spare part number M22151-001.

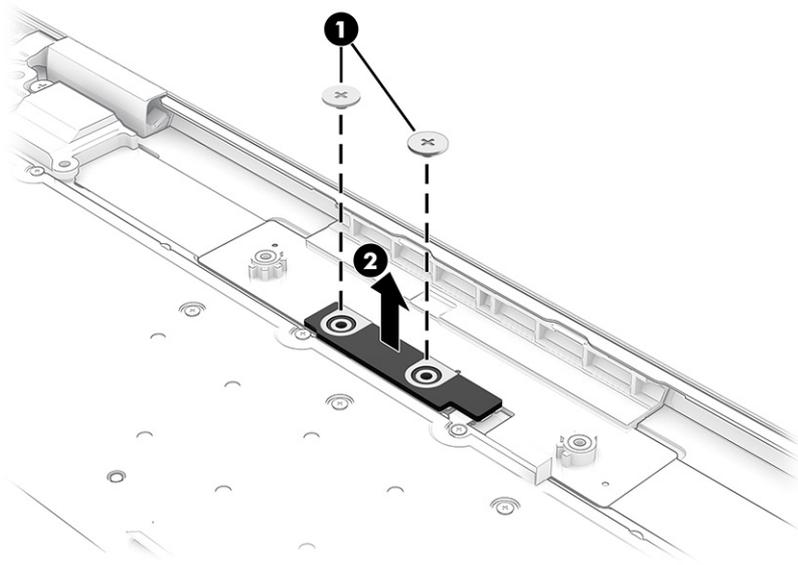
Before removing the infrared sensor board, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 37](#)).
2. Remove the bottom cover ([Bottom cover on page 37](#)).
3. Remove the battery (see [Battery on page 38](#)).
4. Remove the system board (see [System board on page 46](#)).

Remove the infrared sensor board:

1. Remove the two Phillips M2.0 × 1.8 broad head screws (1) that secure the infrared sensor board to the top cover.

2. Remove the infrared sensor board (2).



Reverse this procedure to install the infrared sensor board.

Infrared sensor board cable

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

The infrared sensor board cable is available using spare part number M22151-001.

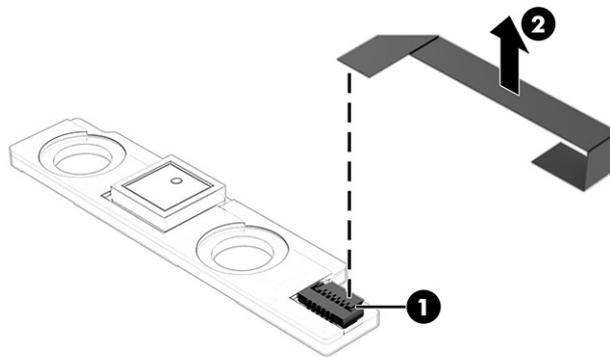
Before removing the infrared sensor board cable, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 37](#)).
2. Remove the bottom cover ([Bottom cover on page 37](#)), and then remove the following components:
 1. Battery (see [Battery on page 38](#))
 2. System board (see [System board on page 46](#))
 3. Infrared sensor board (see [Infrared sensor board on page 53](#))

Remove the infrared sensor board cable:

1. Turn the infrared sensor board right side up with the cable away from you.
2. Release the ZIF connector (1) to which the infrared sensor board cable is connected, and then disconnect the infrared sensor board cable from the infrared sensor board.

- Remove the infrared sensor board cable (2).



Reverse this procedure to install the infrared sensor board cable.

Keyboard

To remove the keyboard, use this procedure and illustration.

Table 5-12 Keyboard descriptions and part numbers

For use in country/region	Spare part number	For use in country/region	Spare part number
Keyboard with backlight and privacy filter in natural silver finish (includes backlight cable and keyboard cable):			
For use in Belgium	M22195-A41	For use in Portugal	M22195-131
For use in Bulgaria	M22195-261	For use in Romania	M22195-271
For use in Canada	M22195-DB1	For use in Russia	M22195-251
For use in the Czech Republic and Slovakia	M22195-FL1	For use in Saudi Arabia	M22195-171
For use in Denmark, Finland, and Norway	M22195-DH1	For use in Slovenia	M22195-BA1
For use in France	M22195-051	For use in South Korea	M22195-AD1
For use in Germany	M22195-041	For use in Spain	M22195-071
For use in Greece	M22195-151	For use in Switzerland	M22195-BG1
For use in Hungary	M22195-211	For use in Taiwan	M22195-AB1
For use in Israel	M22195-BB1	For use in Thailand	M22195-281
For use in Italy	M22195-061	For use in Turkey	M22195-141
For use in Japan	M22195-291	For use in Ukraine	M22195-BD1
For use in Latin America	M22195-161	For use in the United Kingdom	M22195-031
For use in the Netherlands	M22195-B31	For use in the United States	M22195-001
Keyboard with backlight and privacy filter in nightfall black finish (includes backlight cable and keyboard cable):			
For use in Belgium	M22193-A41	For use in Portugal	M22193-131
For use in Bulgaria	M22193-261	For use in Romania	M22193-271
For use in Canada	M22193-DB1	For use in Russia	M22193-251

Table 5-12 Keyboard descriptions and part numbers (continued)

For use in country/region	Spare part number	For use in country/region	Spare part number
For use in the Czech Republic and Slovakia	M22193-FL1	For use in Saudi Arabia	M22193-171
For use in Denmark, Finland, and Norway	M22193-DH1	For use in Slovenia	M22193-BA1
For use in France	M22193-051	For use in South Korea	M22193-AD1
For use in Germany	M22193-041	For use in Spain	M22193-071
For use in Greece	M22193-151	For use in Switzerland	M22193-BG1
For use in Hungary	M22193-211	For use in Taiwan	M22193-AB1
For use in Israel	M22193-BB1	For use in Thailand	M22193-281
For use in Italy	M22193-061	For use in Turkey	M22193-141
For use in Japan	M22193-291	For use in Ukraine	M22193-BD1
For use in Latin America	M22193-161	For use in the United Kingdom	M22193-031
For use in the Netherlands	M22193-B31	For use in the United States	M22193-001
Keyboard with backlight and privacy filter in Poseidon blue finish (includes backlight cable and keyboard cable):			
For use in Belgium	M22197-A41	For use in Portugal	M22197-131
For use in Bulgaria	M22197-261	For use in Romania	M22197-271
For use in Canada	M22197-DB1	For use in Russia	M22197-251
For use in the Czech Republic and Slovakia	M22197-FL1	For use in Saudi Arabia	M22197-171
For use in Denmark, Finland, and Norway	M22197-DH1	For use in Slovenia	M22197-BA1
For use in France	M22197-051	For use in South Korea	M22197-AD1
For use in Germany	M22197-041	For use in Spain	M22197-071
For use in Greece	M22197-151	For use in Switzerland	M22197-BG1
For use in Hungary	M22197-211	For use in Taiwan	M22197-AB1
For use in Israel	M22197-BB1	For use in Thailand	M22197-281
For use in Italy	M22197-061	For use in Turkey	M22197-141
For use in Japan	M22197-291	For use in Ukraine	M22197-BD1
For use in Latin America	M22197-161	For use in the United Kingdom	M22197-031
For use in the Netherlands	M22197-B31	For use in the United States	M22197-001
Keyboard with backlight in natural silver finish (includes backlight cable and keyboard cable):			
For use in Belgium	M22194-A41	For use in Portugal	M22194-131
For use in Bulgaria	M22194-261	For use in Romania	M22194-271
For use in Canada	M22194-DB1	For use in Russia	M22194-251
For use in the Czech Republic and Slovakia	M22194-FL1	For use in Saudi Arabia	M22194-171

Table 5-12 Keyboard descriptions and part numbers (continued)

For use in country/region	Spare part number	For use in country/region	Spare part number
For use in Denmark, Finland, and Norway	M22194-DH1	For use in Slovenia	M22194-BA1
For use in France	M22194-051	For use in South Korea	M22194-AD1
For use in Germany	M22194-041	For use in Spain	M22194-071
For use in Greece	M22194-151	For use in Switzerland	M22194-BG1
For use in Hungary	M22194-211	For use in Taiwan	M22194-AB1
For use in Israel	M22194-BB1	For use in Thailand	M22194-281
For use in Italy	M22194-061	For use in Turkey	M22194-141
For use in Japan	M22194-291	For use in Ukraine	M22194-BD1
For use in Latin America	M22194-161	For use in the United Kingdom	M22194-031
For use in the Netherlands	M22194-B31	For use in the United States	M22194-001
Keyboard with backlight in nightfall black finish (includes backlight cable and keyboard cable):			
For use in Belgium	M22192-A41	For use in Portugal	M22192-131
For use in Bulgaria	M22192-261	For use in Romania	M22192-271
For use in Canada	M22192-DB1	For use in Russia	M22192-251
For use in the Czech Republic and Slovakia	M22192-FL1	For use in Saudi Arabia	M22192-171
For use in Denmark, Finland, and Norway	M22192-DH1	For use in Slovenia	M22192-BA1
For use in France	M22192-051	For use in South Korea	M22192-AD1
For use in Germany	M22192-041	For use in Spain	M22192-071
For use in Greece	M22192-151	For use in Switzerland	M22192-BG1
For use in Hungary	M22192-211	For use in Taiwan	M22192-AB1
For use in Israel	M22192-BB1	For use in Thailand	M22192-281
For use in Italy	M22192-061	For use in Turkey	M22192-141
For use in Japan	M22192-291	For use in Ukraine	M22192-BD1
For use in Latin America	M22192-161	For use in the United Kingdom	M22192-031
For use in the Netherlands	M22192-B31	For use in the United States	M22192-001
Keyboard with backlight in Poseidon blue finish (includes backlight cable and keyboard cable):			
For use in Belgium	M22196-A41	For use in Portugal	M22196-131
For use in Bulgaria	M22196-261	For use in Romania	M22196-271
For use in Canada	M22196-DB1	For use in Russia	M22196-251
For use in the Czech Republic and Slovakia	M22196-FL1	For use in Saudi Arabia	M22196-171
For use in Denmark, Finland, and Norway	M22196-DH1	For use in Slovenia	M22196-BA1

Table 5-12 Keyboard descriptions and part numbers (continued)

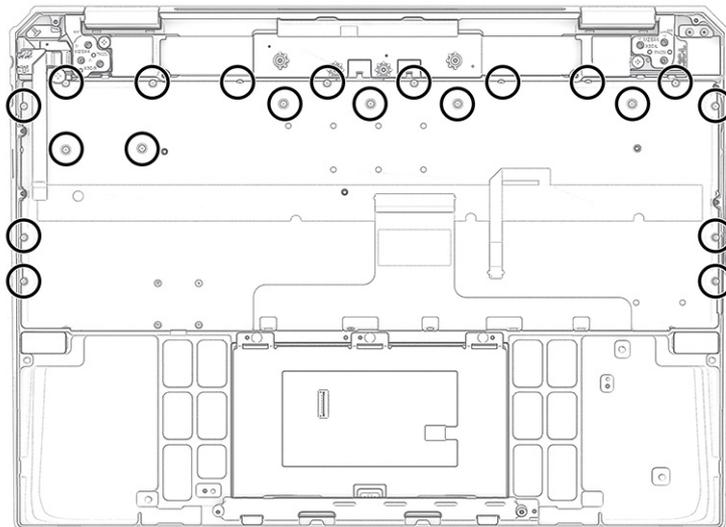
For use in country/region	Spare part number	For use in country/region	Spare part number
For use in France	M22196-051	For use in South Korea	M22196-AD1
For use in Germany	M22196-041	For use in Spain	M22196-071
For use in Greece	M22196-151	For use in Switzerland	M22196-BG1
For use in Hungary	M22196-211	For use in Taiwan	M22196-AB1
For use in Israel	M22196-BB1	For use in Thailand	M22196-281
For use in Italy	M22196-061	For use in Turkey	M22196-141
For use in Japan	M22196-291	For use in Ukraine	M22196-BD1
For use in Latin America	M22196-161	For use in the United Kingdom	M22196-031
For use in the Netherlands	M22196-B31	For use in the United States	M22196-001

1. Prepare the computer for disassembly ([Preparation for disassembly on page 37](#)).
2. Remove the bottom cover ([Bottom cover on page 37](#)).
3. Remove the battery (see [Battery on page 38](#)).
4. Remove the system board (see [System board on page 46](#)).

Remove the keyboard:

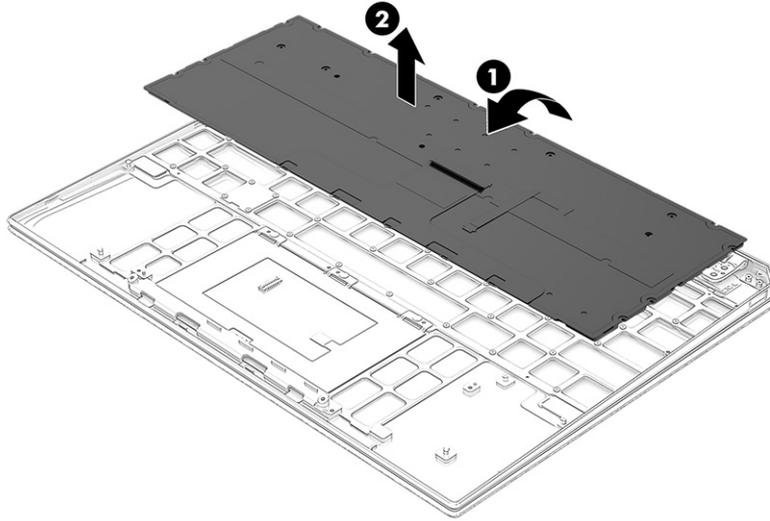
1. Remove the 20 Phillips 1.0 × 1.0 screws that secure the keyboard to the top cover.

 **NOTE:** The keyboard screws are available in the Keyboard Screw Kit, spare part number M22191-001.



2. Lift the rear edge of the keyboard (1) until it separates from the top cover.

3. Remove the keyboard (2).



Reverse this procedure to install the keyboard.

Fingerprint reader module

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

Table 5-13 Fingerprint reader module descriptions and part numbers

Description	Spare part number
In natural silver finish	M22189-001
In nightfall black finish	M22188-001
In Poseidon blue finish	M22190-001

NOTE: The fingerprint reader module spare part kit does not include the fingerprint reader module cable. The fingerprint reader module cable is not available as a spare part component.

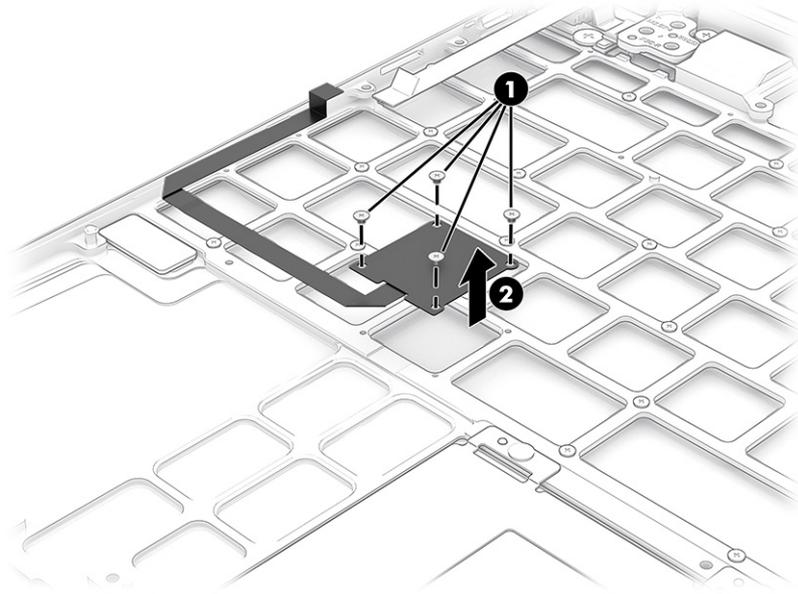
Before removing the fingerprint reader module, follow these steps:

1. Prepare the computer for disassembly ([Preparation for disassembly on page 37](#)).
2. Remove the bottom cover ([Bottom cover on page 37](#)), and then remove the following components:
 1. Battery (see [Battery on page 38](#))
 2. System board (see [System board on page 46](#))
 3. Keyboard (see [Keyboard on page 55](#))

Remove the fingerprint reader module:

1. Remove the four Phillips M1.5 × 1.5 screws (1) that secure the fingerprint reader module to the top cover.

2. Remove the fingerprint reader module (2).



Reverse this procedure to install the fingerprint reader module.

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. Type `support` in the taskbar search box, and then select the **HP Support Assistant** app.
– or –
Select the question mark icon in the taskbar.
 2. Select **My notebook**, and then select **Specifications**.
- Setup Utility (BIOS)
 1. Start Setup Utility (BIOS) (see [Starting Setup Utility \(BIOS\) on page 61](#)).
 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 on page 63](#).

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. Type `support` in the taskbar search box, and then select the **HP Support Assistant** app.
– or –
Select the question mark icon in the taskbar.
2. Select **Updates**, and then select **Check for updates and messages**.
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. Type `file` in the taskbar 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 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/support>, 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 67](#) to restore your computer before you obtain and use the HP recovery discs. Using a recent backup can return your machine to a working state sooner than using the HP recovery discs. After the system is restored, reinstalling all the operating system software released since your initial purchase can be a lengthy process.

Restoring and recovering your system

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

HP recommends that you attempt to restore your system using the [Restoring and recovery methods on page 67](#).

Creating a system restore

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

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

Restoring and recovery methods

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

1. Run a Microsoft System Restore.
2. Run Reset this PC.

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

3. Recover using HP Recovery media. For more information, see [Recovering using HP Recovery media on page 67](#).

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

Select the **Start** button, 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 original operating system and software programs 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 [Using the HP Cloud Recovery Download Tool to create recovery media \(select products only\) on page 66](#).

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

To recover your system:

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



NOTE: HP recommends that you follow the [Restoring and recovery methods on page 67](#) 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.

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 enter `Microsoft Store` in the taskbar search box.
2. Enter `HP PC Hardware Diagnostics Windows` in the **Microsoft Store** search box.
3. Follow the on-screen directions.

The tool downloads to the selected location.

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

Your changes take effect when the computer restarts.

9 Specifications

This chapter provides specifications for your computer.

Computer specifications

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

Table 9-1 Computer specifications

	Metric	U.S.
Dimensions		
Width	29.8 cm	11.7 in
Depth	22.0 cm	8.7 in
Height (front to back)	1.7 cm	0.7 in
Weight (varies by computer configuration and components)	1.4 kg	3.1 lb
Input power		

Table 9-1 Computer specifications (continued)

	Metric	U.S.
Operating voltage and current	5 V dc @ 2 A / 12 V dc @ 3 A / 15 V dc @ 3 A – 45 W USB Type-C	
	5 V dc @ 3 A / 9 V dc @ 3 A / 12 V dc @ 3.75 A / 15 V dc @ 3 A – 45 W USB Type-C	
	5 V dc @ 3 A / 9 V dc @ 3 A / 10 V dc @ 3.75 A / 12 V dc @ 3.75 A / 15 V dc @ 3 A / 20 V dc @ 2.25 A – 45 W USB Type-C	
	5 V dc @ 3 A / 9 V dc @ 3 A / 12 V dc @ 5 A / 15 V dc @ 4.33 A / 20 V dc @ 3.25 A – 65 W USB Type-C	
	5 V dc @ 3 A / 9 V dc @ 3 A / 10 V dc @ 5 A / 12 V dc @ 5 A / 15 V dc @ 4.33 A / 20 V dc @ 3.25 A – 65 W USB Type-C	
	5 V dc @ 3 A / 9 V dc @ 3 A / 10 V dc @ 5 A / 12 V dc @ 5 A / 15 V dc @ 5 A / 20 V dc @ 4.5 A – 90 W USB Type-C	
	19.5 V dc @ 2.31 A – 45 W	
	19.5 V dc @ 3.33 A – 65 W	
	19.5 V dc @ 4.62 A – 90 W	
	19.5 V dc @ 6.15 A – 120 W	
	19.5 V dc @ 6.9 A – 135 W	
	19.5 V dc @ 7.70 A – 150 W	
	19.5 V dc @ 10.3 A – 200 W	
	19.5 V dc @ 11.8 A – 230 W	
19.5 V dc @ 16.92 A – 330 W		
19.5 V dc @ 3.33 A – 65 W		
19.5 V dc @ 4.62 A – 90 W		
19.5 V dc @ 7.70 A – 150 W		
19.5 V dc @ 10.3 A – 200 W		
Temperature		
Operating	5°C to 35°C	41°F to 95°F
Nonoperating	–20°C to 60°C	–4°F to 140°F
Relative humidity (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	–15 m to 3,048 m	–50 ft to 10,000 ft
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.		

34.3 cm (15.6 in) display specifications

This section provides specifications for your display.

Table 9-2 Display specifications

	Metric	U.S.
Active diagonal size	34.3 cm	13.5 in
Resolution	1920 × 1080 (FHD) 3840 × 2160 (UHD)	
Surface treatment	Antiglare (FHD, UHD panels) BrightView (UHD panel)	
Brightness	300 nits (FHD, sRGB panels) 550 nits (UHD panel)	
Viewing angle	UWVA	
Backlight	WLED	
Display panel interface	eDP	

Solid-state drive specifications (SATA-3)

This section provides specifications for your solid-state drive.

Table 9-3 Solid-state drive specifications

	256 GB*
Dimensions	
Height	1.35 mm
Weight	< 10 g
Interface type	SATA-3
Ready time, maximum (to not busy)	1.0 ms
Access times, logical	0.1 ms
Transfer rate	up to 540 MB/s
Total logical sectors	234,441,648
Operating temperature	0°C to 70°C (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.

Solid-state drive specifications

This section provides specifications for your solid-state drives.

Table 9-4 Solid-state drive specifications

	256 GB*	512 GB*	1 TB*
Dimensions			
Height	1.0 mm	1.0 mm	1.0 mm
Length	50.8 mm	50.8 mm	50.8 mm
Width	28.9 mm	28.9 mm	28.9 mm
Weight	< 10 g	< 10 g	< 10 g
Interface type			
	PCIe	PCIe	PCIe
Ready time, maximum (to not busy)	1.0 ms	< 1.0 ms	1.0 ms
Access times, logical	0.1 ms	0.1 ms	0.1 ms
Transfer rate			
Sequential read	up to 2150 MB/s	up to 2150 MB/s	up to 2150 MB/s
Random read	Up to 300,000 IOPs	Up to 300,000 IOPs	Up to 300,000 IOPs
Sequential write	up to 1550 MB/s	up to 1550 MB/s	up to 1550 MB/s
Random write	Up to 100,000 IOPs	Up to 100,000 IOPs	Up to 100,000 IOPs
Total logical sectors	468,883,296	1,000,215,216	1,500,336,388
Operating temperature	0°C to 70°C (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 may 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 3-conductor power cord set included with the computer meets the requirements for use in the country or region where the equipment is purchased.

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

Requirements for all countries

These power cord requirements are applicable to all countries and regions.

- The length of the power cord set must be at least **1.0 m** (3.3 ft) and no more than **2.0 m** (6.5 ft).
- All power cord sets must be approved by an acceptable accredited agency responsible for evaluation in the country or region where the power cord set will be used.
- The power cord sets must have a minimum current capacity of 10 A and a nominal voltage rating of 125 V ac or 250 V ac, as required by the power system of each country or region.
- The appliance coupler must meet the mechanical configuration of an EN 60 320/IEC 320 Standard Sheet C13 connector for mating with the appliance inlet on the back of the computer.

Requirements for specific countries and regions

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

Table 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

Table 10-1 Power cord requirements for specific countries and regions (continued)

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

Table 10-1 Power cord requirements for specific countries and regions (continued)

Country/region	Accredited agency	Applicable note number
The United States	UL	2
<ol style="list-style-type: none"> 1. The flexible cord must be Type H05VV-F, 3-conductor, 0.75 mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used. 2. The flexible cord must be Type SVT/SJT or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V ac) or NEMA 6-15P (15 A, 250 V ac) configuration. CSA or C-UL mark. UL file number must be on each element. 3. The appliance coupler, flexible cord, and wall plug must bear a T mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCTF, 3-conductor, 0.75 mm² or 1.25 mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V ac) configuration. 4. The flexible cord must be Type RVV, 3-conductor, 0.75 mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the CCC certification mark. 5. The flexible cord must be Type H05VV-F 3-conductor, 0.75 mm² conductor size. KTL logo and individual approval number must be on each element. Approval number and logo must be printed on a flag label. 6. The flexible cord must be Type HVCTF 3-conductor, 1.25 mm² conductor size. Power cord set fittings (appliance coupler, cable, and wall plug) must bear the BSMI certification mark. 7. For 127 V ac, the flexible cord must be Type SVT or SJT 3-conductor, 18 AWG, with plug NEMA 5-15P (15 A, 125 V ac), with UL and CSA or C-UL marks. For 240 V ac, the flexible cord must be Type H05VV-F 3-conductor, 0.75 mm² or 1.00 mm² conductor size, with plug BS 1363/A with BSI or ASTA marks. 		

11 Recycling

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

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

Index

B

- backup, creating 65
- backups 65, 66
- BIOS
 - determining version 62
 - downloading an update 63
 - starting the Setup Utility 61
 - updating 62
- Bluetooth label 5
- boot order, changing 68
- bottom components 12
- bottom cover
 - removal 37
 - spare part numbers 37

C

- cautions
 - electrostatic discharge 27, 30
- components
 - bottom 5, 12
 - display 5
 - left side 5, 7
 - lights 10
 - right side 5
 - top 5
 - touchpad 7
- computer feet
 - spare part numbers 37
- computer major components 15
- computer specifications 71
- connector board
 - removal 51
 - spare part number 51
- connector board cable
 - removal 50
 - spare part number 50

D

- display
 - specifications 71, 73
- display assembly
 - removal 42
 - spare part numbers 42

E

- electrostatic discharge (ESD) 27, 30
 - preventing damage 27, 30, 31

F

- fan/heat sink assembly
 - illustrated 23
 - removal 49
 - spare part numbers 23, 49
- fingerprint reader module
 - removal 59
 - spare part numbers 59
- foot strip
 - spare part numbers 37
- front speakers
 - removal 39
 - spare part number 39

G

- grounding methods 27, 30, 31
- guidelines
 - packaging 27, 32
 - transporting 27, 32
 - workstation 27, 28

H

- hard drive
 - specifications 71
- hot keys
 - break 5
 - insert 5
 - pause 5

- programming query 5

- scroll lock 5

- hotkeys, using 5

- HP PC Hardware Diagnostics Windows
 - downloading 69

- HP Recovery media
 - recovery 67

- HP Sure Recover 68

I

- illustrated parts catalog 15
- infrared sensor board
 - removal 53
 - spare part number 53
- infrared sensor board cable
 - removal 54
 - spare part number 54

K

- keyboard
 - product description 2
 - removal 55
 - spare part numbers 55

L

- labels
 - Bluetooth 5
 - regulatory 5
 - serial number 5
 - service 5
 - wireless certification 5
 - WLAN 5
- left side components 7

M

- magnetic pen attachment area,
 - identifying 7

O

- optical drive, spare part number 25

P

- packaging guidelines 27, 32
- pointing device, product description 2
- power cord
 - requirements for all countries 75
 - requirements for specific countries and regions 75
 - set requirements 75
- product description
 - keyboard 2
 - pointing device 2
- product name and number, computer 5

R

- rear speakers
 - removal 52
 - spare part number 52
- recovery 65, 67
 - discs 67
 - media 67
 - USB flash drive 67
- recovery media 66
 - creating using HP Cloud Recovery Download Tool 66
 - creating using Windows tools 66
- regulatory information
 - regulatory label 5
 - wireless certification labels 5
- Remote HP PC Hardware Diagnostics UEFI settings
 - customizing 69
- removal and replacement
 - procedures 36
- restoring 65
- restoring and recovery methods 67
- right side components 5
- rubber foot
 - removal 37
- Rubber Foot Kit
 - spare part numbers 37

S

- serial number, computer 5
- service labels, locating 5
- solid-state drive
 - removal 40
 - spare part numbers 24, 40
 - specifications 73, 74

- speakers
 - removal 39, 52
 - spare part numbers 39, 52
- special keys
 - identifying 11
 - using 11
- specifications
 - computer 71
 - display 71, 73
 - hard drive 71
 - solid-state drive 73, 74
- static electricity 27, 30
- system board
 - removal 46
 - spare part numbers 46
- system restore 67
- system restore point, creating 66

T

- touchpad
 - removal 45
 - spare part numbers 45
- touchpad cable
 - removal 44
 - spare part number 44
- transporting guidelines 27, 32
- traveling with the computer 5

U

- USB Type-C-to-USB Type-A cable adapter, spare part number 25

W

- Windows
 - backup 65
 - recovery media 65
 - system restore point 66
- Windows tools, using 66
- wireless certification label 5
- WLAN device 5
- WLAN label 5
- workstation guidelines 27, 28