HP Chromebook 14

Maintenance and Service Guide
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Product notice

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

Software terms

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For any further information or to request a full refund of the computer, please contact your local point of sale (the seller).

Safety warning notice

⚠ **WARNING!** To reduce the possibility of heat-related injuries or of overheating the device, do not place the device directly on your lap or obstruct the device air vents. Use the device only on a hard, flat surface. Do not allow another hard surface, such as an adjoining optional printer, or a soft surface, such as pillows or rugs or clothing, to block airflow. Also, do not allow the AC adapter to contact the skin or a soft surface, such as pillows or rugs or clothing, during operation. The device and the AC adapter comply with the user-accessible surface temperature limits defined by the International Standard for Safety of Information Technology Equipment (IEC 60950).

Table of contents

1 Product description 1

2 External component identification 3

Display 3
Button 4
TouchPad 5
Left side 6
Right side 7
Bottom 8

3 Illustrated parts catalog 9

Locating the serial number, product number, and model number 9
Computer major components 10
Display assembly components 13
Miscellaneous parts 14
Sequential part number listing 15

4 Removal and replacement procedures preliminary requirements 18

Tools required 18
Service considerations 18
Plastic parts 18
Cables and connectors 19
Drive handling 19
Grounding guidelines 20
Electrostatic discharge damage 20
Packaging and transporting guidelines 21
Workstation guidelines 21
Component replacement procedures 23
Keyboard/top cover 23
Speakers 26
Battery 28

SIM slot board 31
WLAN module 32
Fan 34
USB board 35
WWAN module 37
Power connector cable 38
Hall sensor board 39
Display assembly 40
System board 52
Heat sink 54
Solid-state drive 56

5 Specifications 58

6 Power cord set requirements 59

Requirements for all countries 59
Requirements for specific countries and regions 59

7 Recycling 61

Index 62

1 Product description

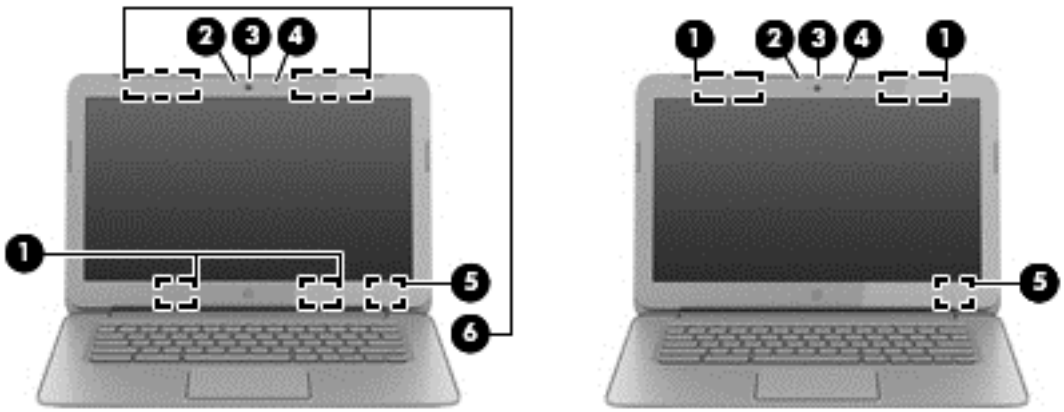
Category	Description
Product Name	HP Chromebook[14]
Processor	Intel® Celeron® 2955U 1.40-GHz processor (2.0-MB L3 cache, 15 W)
Chipset	Intel Lynx Point-LP processor controller hub (PCH), ULT, soldered on circuit (SoC), integrated in MCP
Panel	14.0-in, BrightView (BV), high-definition (HD), white light-emitting display (WLED), (1366×768), SVA, typical brightness: 200 nits, flat (3.6-mm), 16:9 ultra wide aspect ratio Support for low-voltage differential signalling (LVDS, co-layout with eDP1.3+PSR)
Graphics	Intel Graphics: Intel HD Graphics Support for HD decode, DX11.1, and HDMI
Memory	Support for up to 4096-MB on-board system memory, DDR3L at 1600-MHz • 4096-MB (256-MB × 16 × 8) - dual channel • 2048-MB (256-MB × 16 × 4) - single channel
Mass storage device	Solid-state drive (2242/DS M.2 form factor) Support for 32- or 16-GB
Audio and video	HP TrueVision HD slim webcamera (fixed, no tilt with activity light; 1280×720 by 30 frames per second) One digital microphone with echo cancellation and noise suppression appropriate software Stereo speakers HD audio
Sensor	Trusted Platform Module (TPM, Infineon SLB9655TT1.2)
Wireless networking	Integrated wireless local area network (WLAN) options by way of wireless module Two WLAN antennas built into display assembly Support for the Atheros AR9462 802.11a/b/g/n 2×2 Bluetooth 4.0 Combo Adapter Antenna support for following bands: 850/900/1800/1900/2100-MHz

Category	Description
	Integrated wireless wide area network (WWAN) options by way of wireless module (select models only) Two WWAN antennas built into display assembly (select models only) Support for the HP cr3124 HSPA+ Mobile Broadband Module SIM card slot (user accessible) Support for HSPA, HSPA+
External expansion	HP multi-format digital media card deader Support for SD/SDHC/SDXC up to UHS-50 Push-push insertion/removal SIM slot (populated with WWAN; tool-less user-accessible)
Ports	• AC adapter, HP Smart (4.5-mm barrel • Audio-in (mono microphone)/audio-out (stereo headphone) combo jack • USB 3.0 (2) • USB 2.0 (1)
Keyboard/ pointing devices	Full-sized, textured, island-style, Google, keyboard **Touchpad Requirements**: Multitouch gestures and Taps enabled as default
Power requirements	Support for 4-cell, 51-WHr, 3.42-AHr, Li-ion battery (non-removable) Support for the following AC adapters: • 65-W HP Smart adapter (non-PFC, EM, 3-wire, 4.5-mm) • 65-W HP Smart adapter (non-PFC, S-3P, 3-wire, 4.5-mm) • 45-W HP Smart adapter (non-PFC, RC, 3-wire, 4.5-mm)
Security	Security cable lock
Operating system	**Preinstalled**: Google Chrome
Serviceability	**End user replaceable part**: AC adapter

2 External component identification

Display

NOTE: The position of the WLAN antennas differs according to model. If your model has WWAN capability in addition to WLAN, the WLAN antennas will be are located below the display. See **(1)** in the table below.

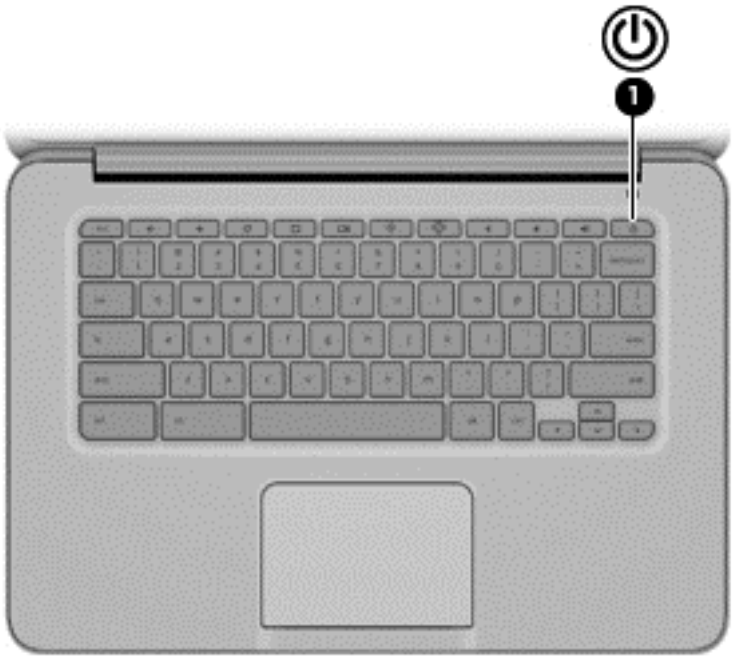


Item	Component	Description
(1)	WLAN antennas (2)*	Send and receive wireless signals to communicate with wireless local area networks. **NOTE:** To set up a WLAN and connect to the Internet, you need a broadband modem (either DSL or cable) (purchased separately), high-speed Internet service, purchased from an Internet service provider, and a wireless router (purchased separately).
(2)	Webcamera light	On: The webcam is in use.
(3)	HP TrueVision HD Webcamera	Records video, captures still photographs, and allows you to video conference and chat online using streaming video
(4)	Internal microphone	Records sound.
(5)	Internal display switch	Turns off the display and initiates Sleep if the display is closed while the power is on. **NOTE:** The internal display switch is not visible from the outside of the computer.

Item	Component	Description
(6)	WWAN antennas (2)* (select models only)	Send and receive wireless signals to communicate with wireless wide area networks.

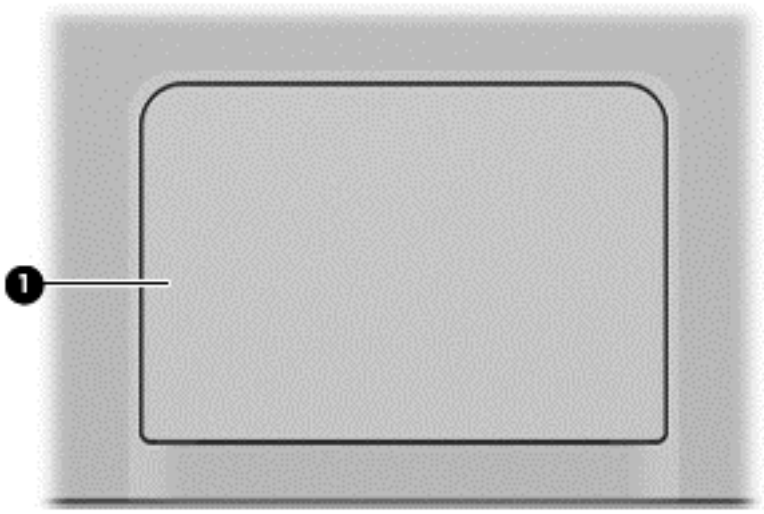
*The antennas are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennas free from obstructions. For wireless regulatory notices, see the section of the *Regulatory, Safety and Environmental Notices* that applies to your country or region.

Button



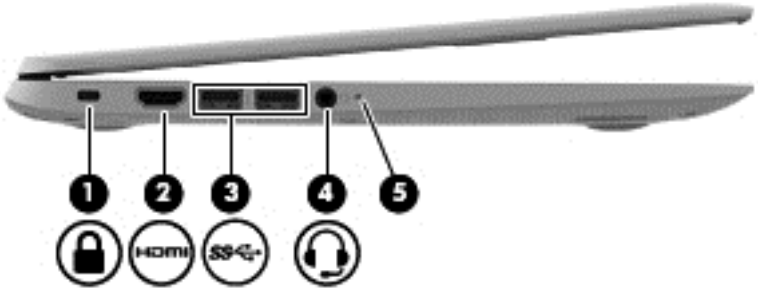
Item	Component	Description
(1)	Power button	• When the computer is off, press the button to turn on the computer. • When the computer is in the Sleep state, press the button briefly to exit Sleep. • When the computer is on and you want to lock the screen, press the power button until you see the sign-in screen appear. Pressing the power button during screen-lock mode turns off the computer. • When the computer is on and you want to turn it off, press and hold the power button.

TouchPad



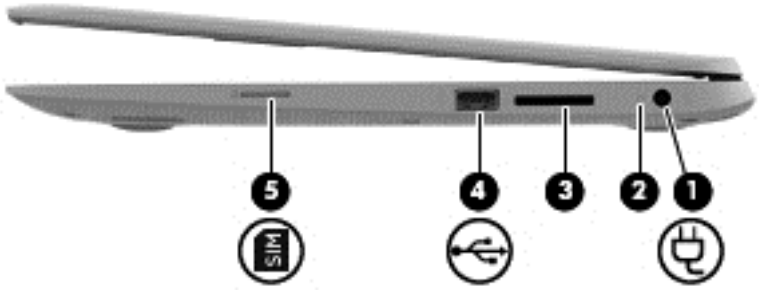
Item	Component	Description
(1)	TouchPad zone	Reads your finger gesture to move the pointer or activate items on the screen.

Left side



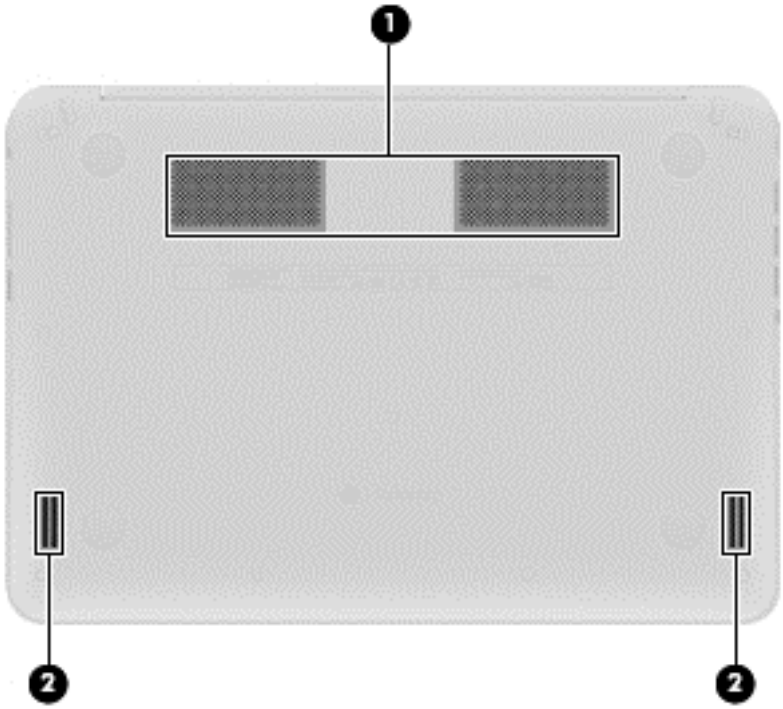
Item	Component	Description
(1)	Security cable slot	Attaches an optional security cable to the computer. **NOTE:** The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.
(2)	HDMI port	Connects an optional video or audio device, such as a high-definition television, or any compatible digital or audio device.
(3)	USB 3.0 ports (2)	Each USB 3.0 port connects an optional USB device, such as a keyboard, mouse, external drive, printer, or USB hub.
(4)	Audio-out (headphone) jack/Audio-in (microphone) combo jack	Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. This jack does not support optional microphone-only devices. **WARNING!** To reduce the risk of personal injury, adjust the volume before using headphones, earbuds, or a headset. For additional safety information, see the *Regulatory, Safety and Environmental Notices*. **NOTE:** When a device is connected to the jack, the computer speakers are disabled. **NOTE:** Be sure that the device cable has a 4-conductor connector that supports both audio-out (headphone) and audio-in (microphone).
(5)	Power light	• White: Computer is on • Blinking white: Computer is in sleep mode • Off: Computer is off

Right side



Item	Component	Description
(1)	Power connector	Connects an AC adapter.
(2)	AC adapter light	• White: AC adapter is attached • Amber: Battery is charging. • Blinking white: The AC adapter is connected and battery capacity is low • Off: Running on battery power.
(3)	Memory card reader	Reads optional memory cards that store, manage, share, or access information. To insert a card: 1. Hold the card label-side up, with connectors facing the slot. Insert the card into the slot, and then press in on the card until it is firmly seated. To remove a card: 1. Press in on the card until it pops out.
(4)	USB 2.0 port	Connects an optional USB device, such as a keyboard, mouse, external drive, printer, or USB hub.
(5)	SIM slot (select models only)	Supports a wireless subscriber identity module (SIM).

Bottom

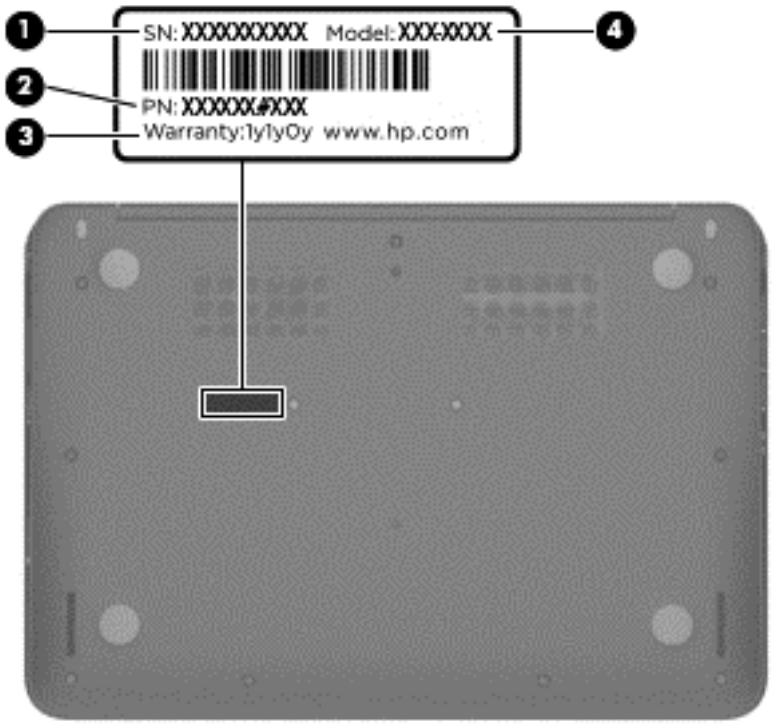


Item	Component	Description
(1)	Vents (2)	Enable airflow to cool internal components. **NOTE:** The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(2)	Speakers (2)	Produce sound.

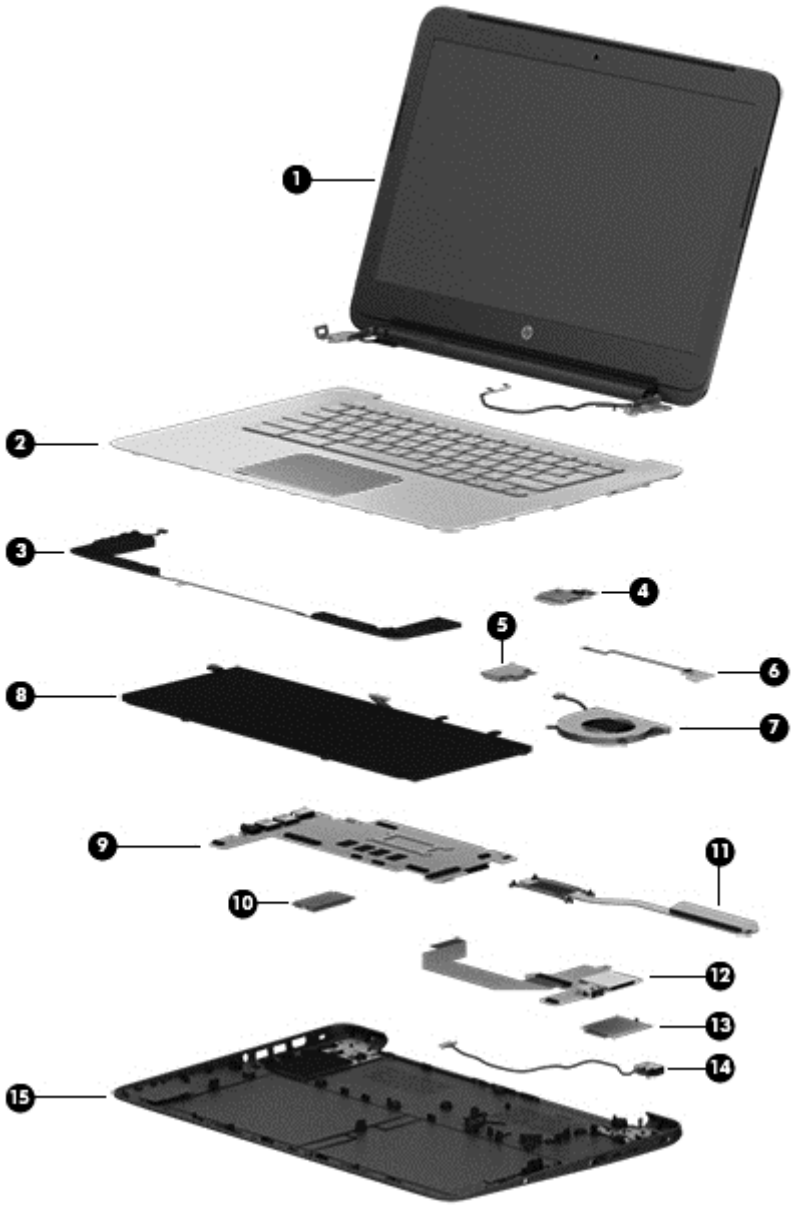
3 Illustrated parts catalog

Locating the serial number, product number, and model number

The serial number and product number of your tablet are located on the left edge of the tablet. The model number of your tablet is located on the back of your tablet. You may need the information when you travel internationally or when you contact support.



Computer major components

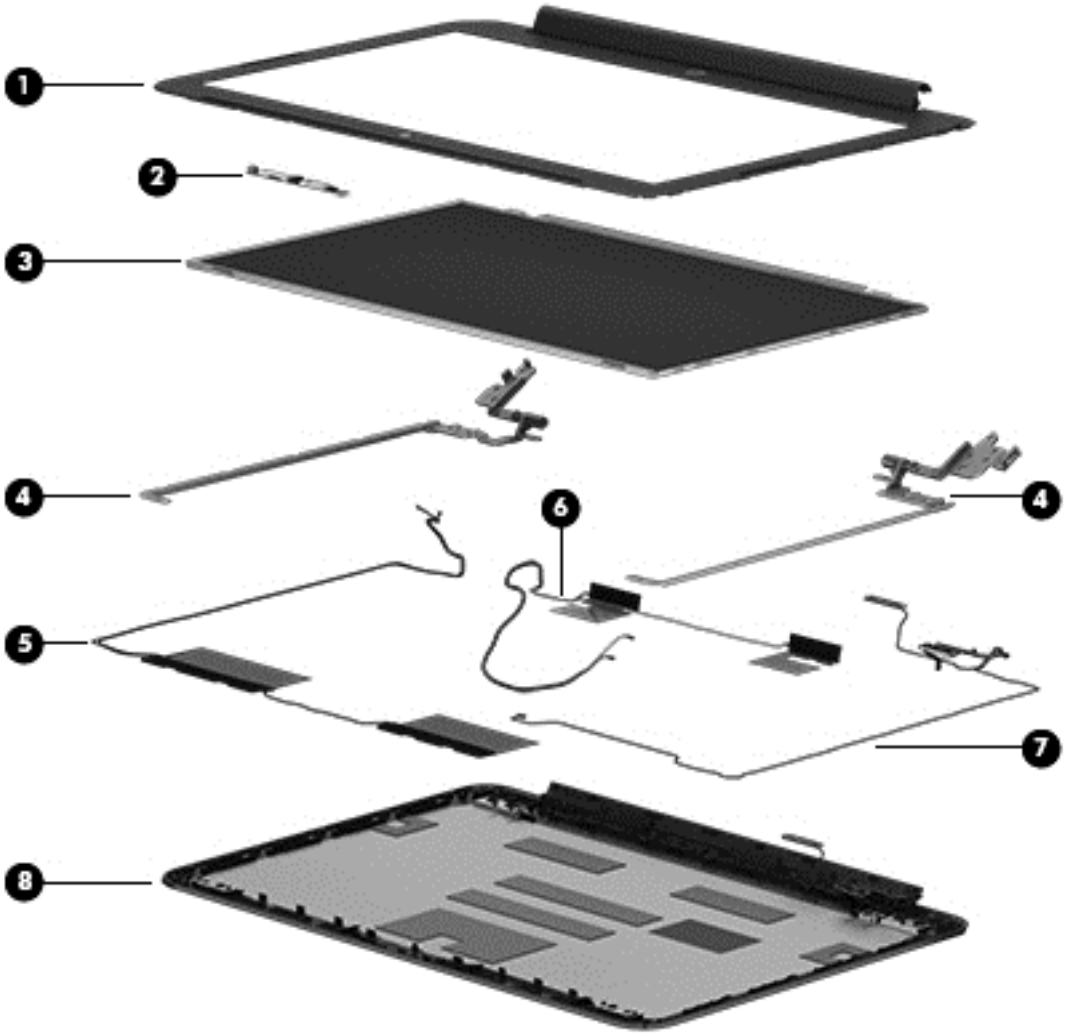


Item	Component	Spare part number
(1)	**Display assembly**: The display assembly is spared at the subcomponent level only. For more display assembly spare part information, see Display assembly components on page 13.	
(2)	**Keyboard/top cover** (includes keyboard cable, TouchPad, and TouchPad cable):	
	For use in Canada	740172-DB1
	For use in Denmark, Finland, and Norway	740172-DH1
	For use in France	740172-051
	For use in Germany	740172-041

Item	Component	Spare part number
	For use in the Netherlands	740172-B31
	For use in the United Kingdom and Singapore	740172-031
	For use in the United States	740172-001
(3)	**Speaker Kit** (includes left and right speakers and cables)	740154-001
(4)	**SIM slot board** (includes cable)	740168-001
(5)	**Atheros AR9462 802.11a/b/g/n 2×2 Bluetooth 4.0 Combo Adapter**	676786-005
(6)	**Hall sensor board** (includes cable)	740169-001
(7)	**Fan** (includes cable)	740149-001
(8)	**4-cell, 51-WHr, 3.42-AHr, Li-ion battery** (includes cable)	738392-005
(9)	**System board** equipped with an Intel Celeron 2955U 1.40-GHz processor (2.0-MB L3 cache, 15 W) and a graphics subsystem with UMA memory (includes replacement thermal material):	
	Includes 4.0-GB of system memory	740160-001
	Includes 2.0-GB of system memory	742097-001
(10	**Solid-state drive:**	
	32 GB	740159-001
	16 GB	740158-001
(11)	**Heat sink** (includes replacement thermal material)	740146-001
(12)	**USB board** (includes cable):	
	For use only on computer models equipped with WWAN capability (includes Media Card Reader slot and WWAN module slot)	744781-001
	For use only on computer models not equipped with WWAN capability (includes Media Card Reader slot)	740151-001
(13)	**HP cr3124 HSPA+ Mobile Broadband Module**	741284-005
(14)	**Power connector cable**	740148-001
(15)	**Base enclosure:**	
	In ocean turquoise finish for use only on computer models equipped with WWAN capability	740144-001
	In peach coral finish for use only on computer models equipped with WWAN capability	740161-001
	In snow white finish for use only on computer models equipped with WWAN capability	740163-001
	In ocean turquoise finish for use only on computer models not equipped with WWAN capability	740164-001
	In peach coral finish for use only on computer models not equipped with WWAN capability	740165-001

Item	Component	Spare part number
	In snow white finish for use only on computer models not equipped with WWAN capability	740167-001
	Rubber Kit (not illustrated, includes base enclosure rubber feet and display bezel rubber screw covers):	
	For use on computer models with ocean turquoise finish	741055-001
	For use on computer models with peach coral finish	743914-001
	For use on computer models with snow white finish	743915-001

Display assembly components



Item	Component	Spare part number
(1)	**Display bezel:**	
	In ocean turquoise finish	741671-001
	In peach coral finish	740150-001
	In snow white finish	741670-001
(2)	**Webcamera/microphone module** (includes double-sided adhesive)	740152-001
(3)	**14.0-in, BV, HD, WLED, SVA display panel**	740155-001
(4)	**Display Hinge Kit** (includes left and right display hinges)	740147-001
(5)	**WWAN Antenna Kit** (includes WWAN left and right antenna cables and transceivers)	740170-001
(6)	**WLAN Antenna Kit** (includes WLAN left and right antenna cables and transceivers)	740171-001

Item	Component	Spare part number
(7)	**Display panel cable** (includes webcamera/microphone module cable)	740145-001
(8)	**Display enclosure:**	
	In ocean turquoise finish for use only on computer models equipped with WWAN capability	740136-001
	In peach coral finish for use only on computer models equipped with WWAN capability	740137-001
	In snow white finish for use only on computer models equipped with WWAN capability	740139-001

Miscellaneous parts

Component	Spare part number
AC adapter:	
65-W HP Smart adapter (non-PFC, EM, 3-wire, 4.5-mm)	714657-001
65-W HP Smart adapter (non-PFC, S-3P, 3-wire, 4.5-mm)	710412-001
45-W HP Smart adapter (non-PFC, RC, 3-wire, 4.5-mm)	741727-001
HP HDMI-to-VGA adapter	701943-001
HP RJ-45-to-USB adapter dongle	539614-001
Power cord (3-pin, black, 1.83-m):	
For use in Australia	490371-011
For use in Europe	490371-021
For use in India	490371-D61
For use in North America	490371-001
For use in the United Kingdom and Singapore	490371-031
Screw Kit	740156-001

Sequential part number listing

Spare part number	Description
490371-001	Power cord for use in North America (3-pin, black, 1.83-m)
490371-011	Power cord for use in Australia (3-pin, black, 1.83-m)
490371-021	Power cord for use in Europe (3-pin, black, 1.83-m)
490371-031	Power cord for use in the United Kingdom and Singapore (3-pin, black, 1.83-m)
490371-D61	Power cord for use in India (3-pin, black, 1.83-m)
539614-001	HP RJ-45-to-USB adapter dongle
676786-005	Atheros AR9462 802.11a/b/g/n 2×2 Bluetooth 4.0 Combo Adapter
701943-001	HP HDMI-to-VGA adapter
710412-001	65-W HP Smart adapter (non-PFC, S-3P, 3-wire, 4.5-mm)
714657-001	65-W HP Smart adapter (non-PFC, EM, 3-wire, 4.5-mm)
738392-005	4-cell, 51-WHr, 3.42-AHr, Li-ion battery
740136-001	Display enclosure in ocean turquoise finish
740137-001	Display enclosure in peach coral finish
740139-001	Display enclosure in snow white finish
740144-001	Base enclosure in ocean turquoise finish for use only on computer models equipped with WWAN capability
740145-001	Display panel cable (includes webcamera/microphone module cable)
740146-001	Heat sink (includes replacement thermal material)
740147-001	Display Hinge Kit (includes left and right display hinges and left)
740148-001	Power connector cable
740149-001	Fan (includes cable)
740150-001	Display bezel in peach coral finish
740151-001	USB board for use only on computer models not equipped with WWAN capability (includes Media Card Reader slot and cable)
740152-001	Webcamera/microphone module (includes double-sided adhesive)
740154-001	Speaker Kit (includes left and right speakers and cables)
740155-001	14.0-in, BV, HD, WLED, SVA display panel
740156-001	Screw Kit
740158-001	16-GB solid-state drive
740159-001	32-GB solid-state drive

Spare part number	Description
740160-001	System board equipped with an Intel Celeron 2955U 1.40-GHz processor (2.0-MB L3 cache, 15 W), 4.0-GB of system memory, and a graphics subsystem with UMA memory (includes replacement thermal material)
740161-001	Base enclosure in peach coral finish for use only on computer models equipped with WWAN capability
740163-001	Base enclosure in snow white finish for use only on computer models equipped with WWAN capability
740164-001	Base enclosure in ocean turquoise finish for use only on computer models not equipped with WWAN capability
740165-001	Base enclosure in peach coral finish for use only on computer models not equipped with WWAN capability
740167-001	Base enclosure in snow white finish for use only on computer models not equipped with WWAN capability
740168-001	SIM slot board (includes cable)
740169-001	Hall sensor board (includes cable)
740170-001	WWAN Antenna Kit (includes WWAN left and right antenna cables and transceivers)
740171-001	WLAN Antenna Kit (includes WLAN left and right antenna cables and transceivers)
740172-001	Keyboard/top cover for use in the United States (includes keyboard cable, TouchPad, and TouchPad cable)
740172-031	Keyboard/top cover for use in the United Kingdom and Singapore (includes keyboard cable, TouchPad, and TouchPad cable)
740172-041	Keyboard/top cover for use in Germany (includes keyboard cable, TouchPad, and TouchPad cable)
740172-051	Keyboard/top cover for use in France (includes keyboard cable, TouchPad, and TouchPad cable)
740172-B31	Keyboard/top cover for use in the Netherlands (includes keyboard cable, TouchPad, and TouchPad cable)
740172-DB1	Keyboard/top cover for use in Canada (includes keyboard cable, TouchPad, and TouchPad cable)
740172-DH1	Keyboard/top cover for use in Denmark, Finland, and Norway (includes keyboard cable, TouchPad, and TouchPad cable)
741055-001	Rubber Kit for use on computer models with ocean turquoise finish
741284-005	HP cr3124 HSPA+ Mobile Broadband Module
741670-001	Display bezel in snow white finish
741671-001	Display bezel in ocean turquoise finish
741727-001	45-W HP Smart adapter (non-PFC, RC, 3-wire, 4.5-mm)
742097-001	System board equipped with an Intel Celeron 2955U 1.40-GHz processor (2.0-MB L3 cache, 15 W), 2.0-GB of system memory, and a graphics subsystem with UMA memory (includes replacement thermal material)
743914-001	Rubber Kit for use on computer models with peach coral finish

Spare part number	Description
743915-001	Rubber Kit for use on computer models with rubber white finish
744781-001	USB board for use only on computer models equipped with WWAN capability (includes (includes Media Card Reader slot, WWAN module slot, and cable)

4 Removal and replacement procedures preliminary requirements

Tools required

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

- Flat-bladed screw driver
- Magnetic screw driver
- Phillips P0 screw driver

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

CAUTION: Using excessive force during disassembly and reassembly can damage plastic parts. Use care when handling the plastic parts. Apply pressure only at the points designated in the maintenance instructions.

Cables and connectors

⚠ **CAUTION:** 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.

Cables must be handled with extreme care to avoid damage. 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 in such a way that they cannot be caught or snagged by parts being removed or replaced. Handle flex cables with extreme care; these cables tear easily.

Drive handling

⚠ **CAUTION:** Drives are fragile components that must be handled 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 a diskette drive or optical drive, be sure that a diskette or disc is not in the drive and be sure that the optical drive tray is closed.

Handle drives on surfaces covered with at least one inch of shock-proof foam.

Avoid dropping drives from any height onto any surface.

After removing a hard drive, an optical drive, or a diskette 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.”

Grounding guidelines

Electrostatic discharge damage

Electronic components are sensitive to electrostatic discharge (ESD). Circuitry design and structure determine the degree of sensitivity. Networks built into many integrated circuits provide some protection, but in many cases, ESD contains enough power to alter device parameters or melt silicon junctions.

A discharge of static electricity from a finger or other conductor can destroy static-sensitive devices or microcircuitry. Even if the spark is neither felt nor heard, damage may have occurred.

An electronic device exposed to ESD may not be affected at all and can work perfectly throughout a normal cycle. Or the device may function normally for a while, then degrade in the internal layers, reducing its life expectancy.

⚠ **CAUTION:** To prevent damage to the computer when you are removing or installing internal components, observe these precautions:

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

Before touching an electronic component, discharge static electricity by using the guidelines described in this section.

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.

The following table shows how humidity affects the electrostatic voltage levels generated by different activities.

⚠ **CAUTION:** A product can be degraded by as little as 700 V.

Typical electrostatic voltage levels

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

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.

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 Styrofoam.
- 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.

Equipment guidelines

Grounding equipment must include either a wrist strap or a foot strap at a grounded workstation.

- When seated, wear a wrist strap connected to a grounded system. Wrist straps are flexible straps with a minimum of one megohm ±10% resistance in the ground cords. To provide proper ground, wear a strap snugly against the skin at all times. On grounded mats with banana-plug connectors, use alligator clips to connect a wrist strap.
- When standing, use foot straps and a grounded floor mat. Foot straps (heel, toe, or 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 foot straps on both feet with a minimum of one megohm resistance between the operator and ground. To be effective, the conductive must be worn in contact with the skin.

The following grounding equipment is recommended to prevent electrostatic damage:

- Antistatic tape
- Antistatic smocks, aprons, and sleeve protectors
- Conductive bins and other assembly or soldering aids
- Nonconductive foam
- Conductive computerop workstations with ground cords of one megohm resistance
- Static-dissipative tables or floor mats with hard ties to the ground
- Field service kits
- Static awareness labels
- Material-handling packages
- Nonconductive plastic bags, tubes, or boxes
- Metal tote boxes
- Electrostatic voltage levels and protective materials

The following table lists the shielding protection provided by antistatic bags and floor mats.

Material	Use	Voltage protection level
Antistatic plastics	Bags	1,500 V
Carbon-loaded plastic	Floor mats	7,500 V
Metallized laminate	Floor mats	5,000 V

Component replacement procedures

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

There are as many as 47 screws that must be removed, replaced, and/or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

Keyboard/top cover

NOTE: The keyboard/top cover spare part kit includes the keyboard cable, TouchPad, and TouchPad cable.

Description	Spare part number
For use in Canada	740172-DB1
For use in Denmark, Finland, and Norway	740172-DH1
For use in France	740172-051
For use in Germany	740172-041
For use in the Netherlands	740172-B31
For use in the United Kingdom and Singapore	740172-031
For use in the United States	740172-001

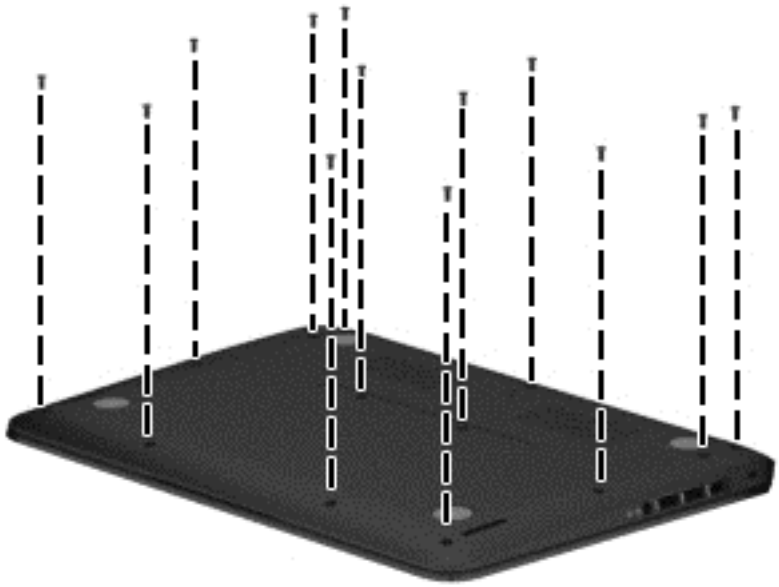
Before removing the disassembling the computer, follow these steps:

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

Remove the keyboard/top cover:

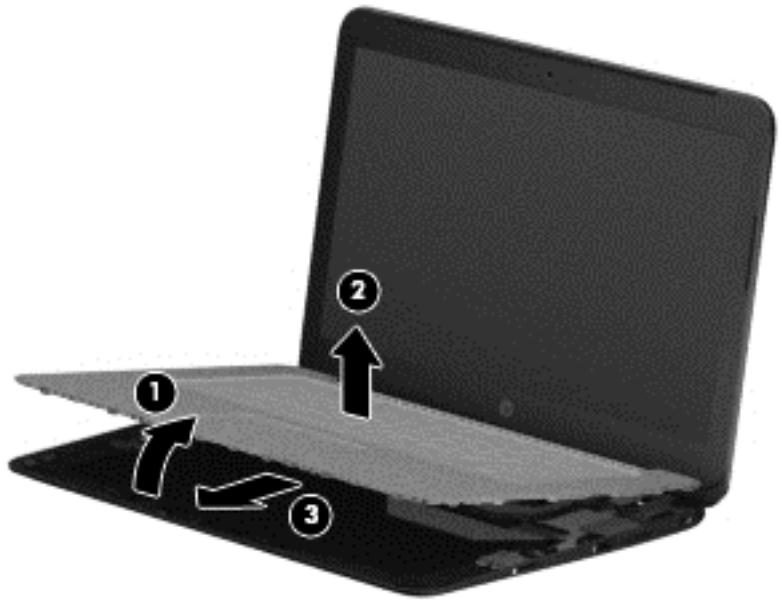
1. Close the computer.
2. Turn the computer upside down, with the front toward you.

3. Remove the thirteen Phillips PM2.5×6.5 screws that secure the keyboard/top cover to the computer.



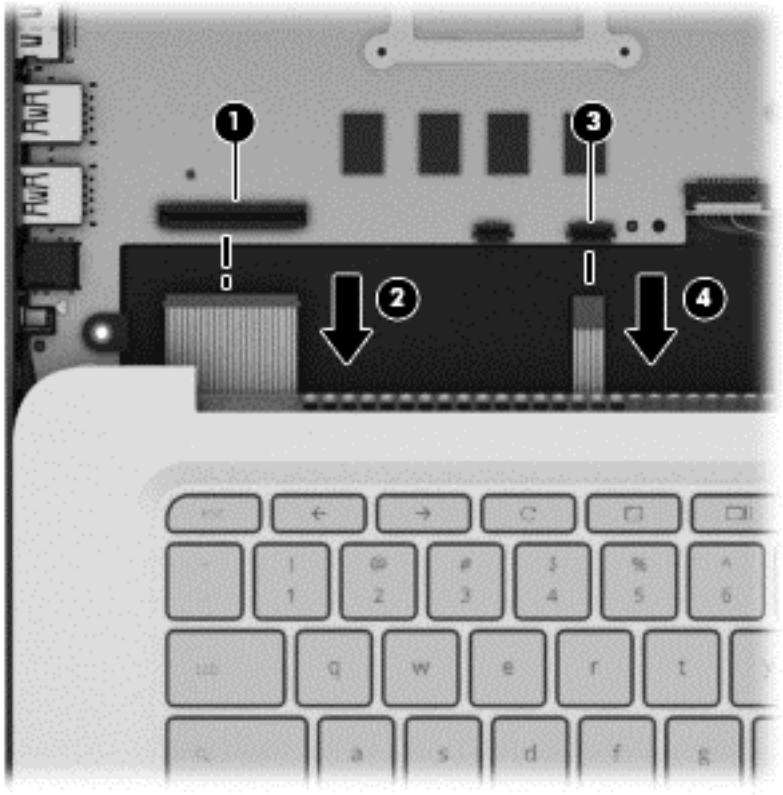
⚠ **CAUTION:** Use caution when detaching the keyboard/top cover from the base enclosure. The keyboard and TouchPad ribbon cables are still connected to the system board and can be damaged.

4. Lift the front end of the keyboard/top cover **(1)** and swing it up and back until the left and right edges detach from the base enclosure.
5. Lift the keyboard/top cover **(2)** until the back edge detaches from the base enclosure.
6. Slide the keyboard/top cover **(3)** forward until the keyboard and TouchPad ribbon cables are accessible.



7. Release the zero insertion force (ZIF) connector **(1)** to which the keyboard cable is attached, and then disconnect the keyboard cable **(2)** from the system board.

8. Release the ZIF connector **(3)** to which the TouchPad cable is attached, and then disconnect the TouchPad cable **(4)** from the system board.



9. Remove the keyboard/top cover.

Reverse this procedure to install the keyboard/top cover.

Speakers

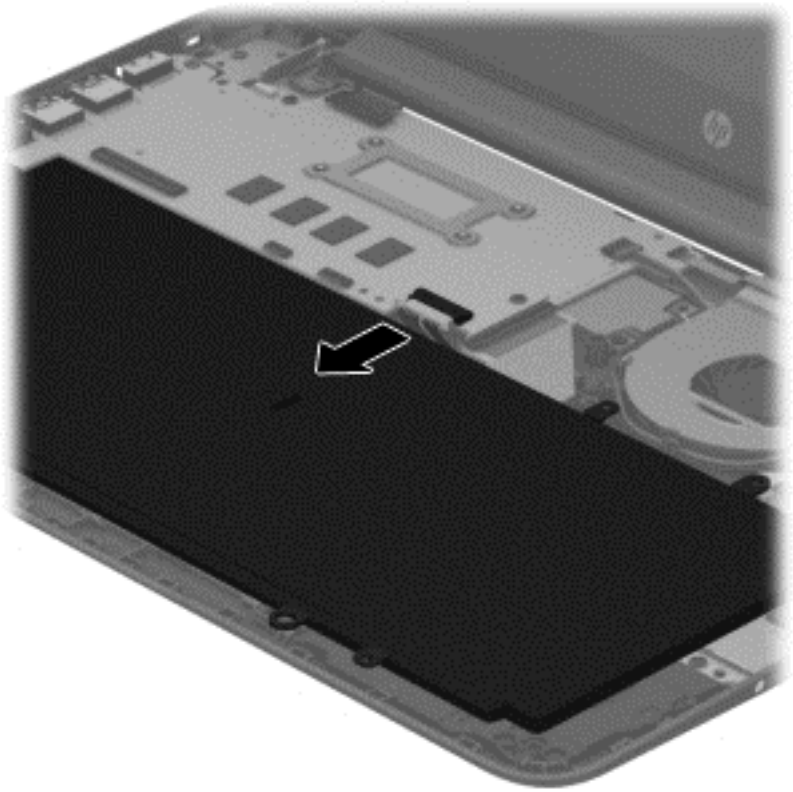
Description	Spare part number
Speaker Kit (includes left and right speakers and cables)	740154-001

Before removing the speakers, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the keyboard/top cover (see Keyboard/top cover on page 23).
5. Remove the battery (see Battery on page 28).

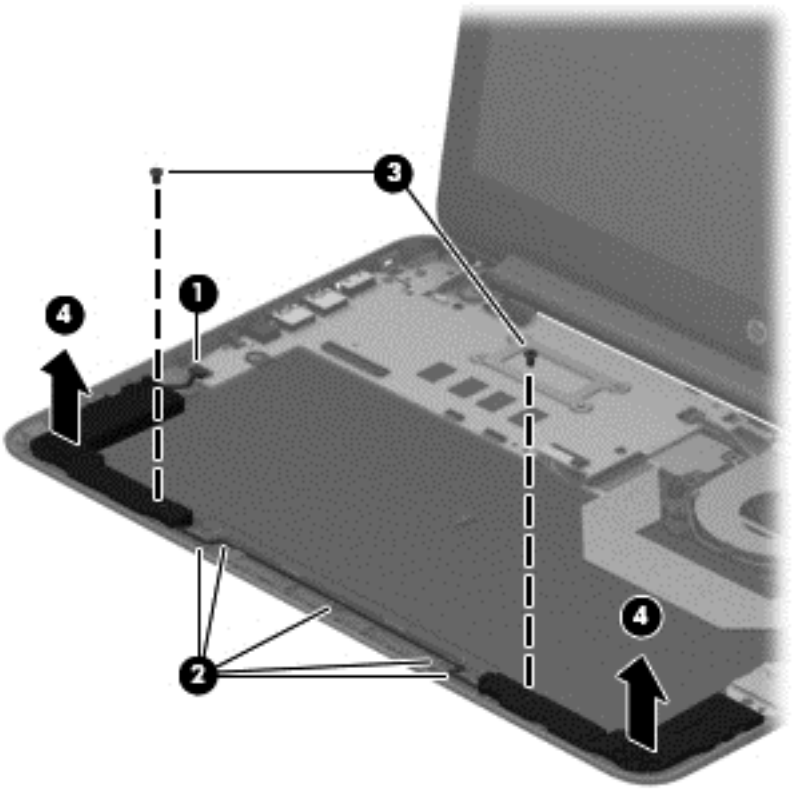
Remove the speakers:

1. Disconnect the battery cable from the system board.



2. Disconnect the speaker cable **(1)** from the system board.
3. Release the speaker cable from the clips **(2)** built into the base enclosure.
4. Remove the two Phillips PM2.5×4.5 screws **(3)** that secure the speakers to the base enclosure.

5. Remove the speakers **(4)**.



Reverse this procedure to install the speakers.

Battery

Description	Spare part number
4-cell, 51-WHr, 3.42-AHr, Li-ion battery (includes cable)	738392-005

Before removing the battery, follow these steps:

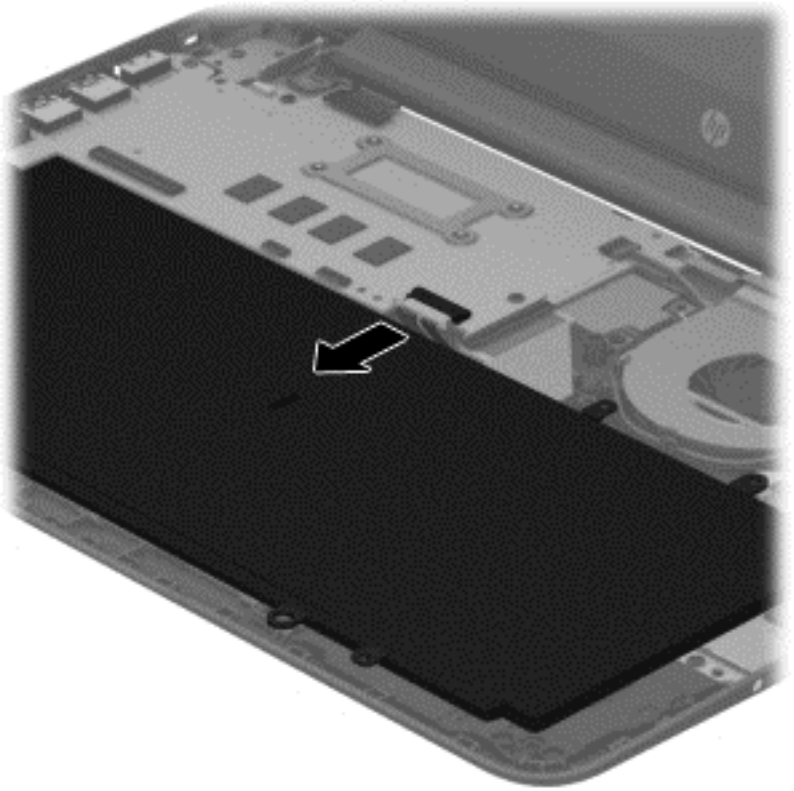
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the keyboard/top cover (see Keyboard/top cover on page 23).
5. Remove the speakers (see Speakers on page 26).

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

⚠ **CAUTION:** 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 removing the battery.

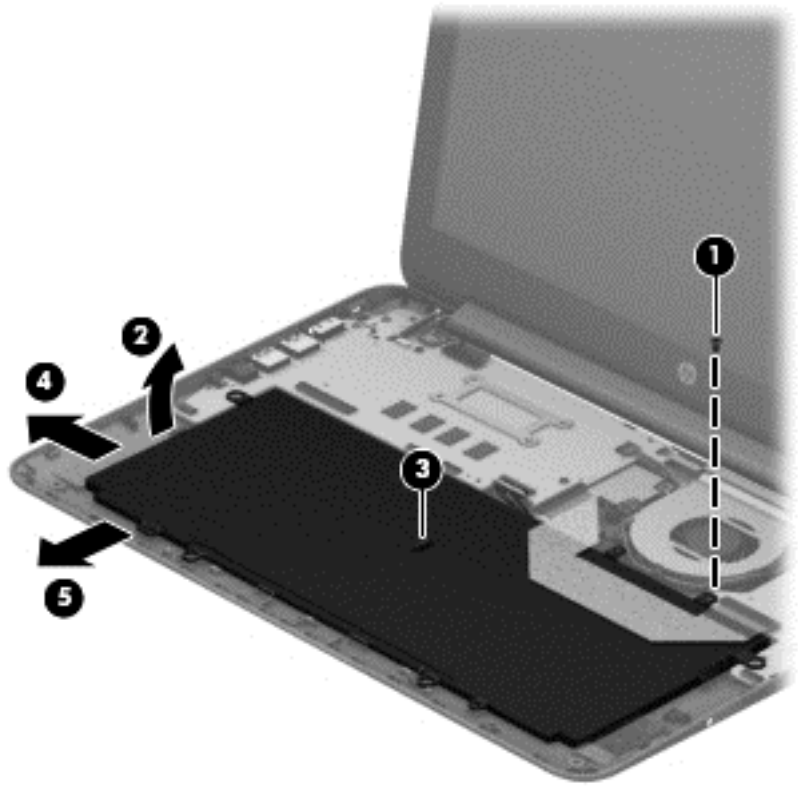
Remove the battery:

1. Disconnect the battery cable from the system board.



2. Remove the Phillips PM2.5×4.5 screw **(1)** that secures the battery to the base enclosure.
3. Lift the left side of the battery **(2)** until the battery is clear of the alignment post **(3)** in the middle of the battery.
4. Release the battery **(4)** by sliding it to the left.

5. Remove the battery **(5)** by sliding it forward.



Reverse this procedure to install the battery.

SIM slot board

Description	Spare part number
SIM slot board (includes cable)	740168-001

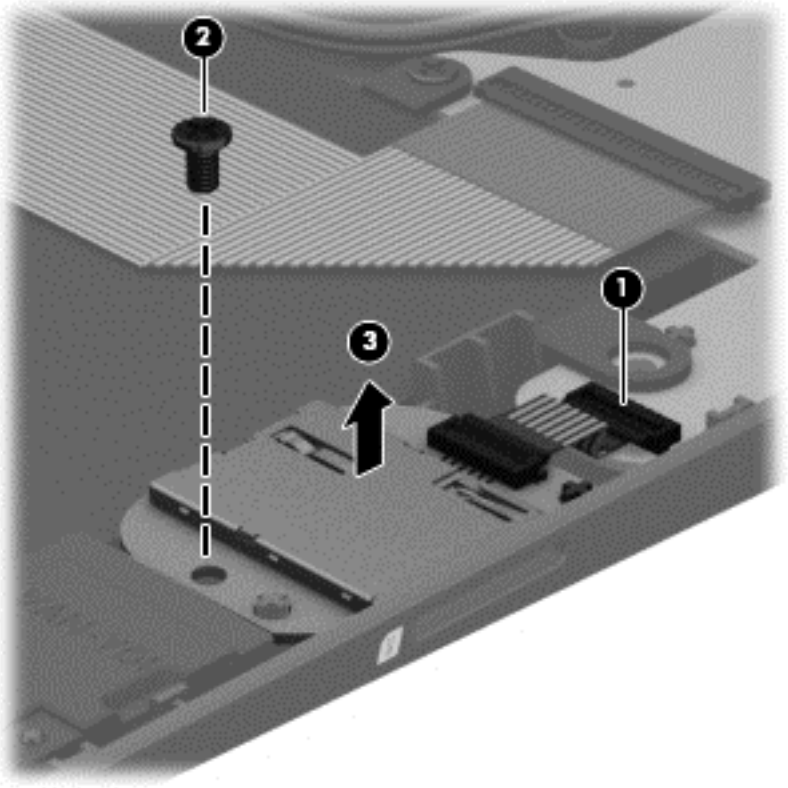
Before removing the SIM slot board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the keyboard/top cover (see Keyboard/top cover on page 23).
5. Remove the speakers (see Speakers on page 26).
6. Remove the battery (see Battery on page 28).

Remove the SIM slot board:

1. Release the ZIF connector **(1)** to which the SIM slot board cable is attached, and then disconnect the SIM slot board cable from the USB board.
2. Remove the Phillips PM2.5×4.5 screw **(2)** that secure the SIM slot board to the computer.

3. Remove the SIM slot board **(3)** and cable.



Reverse this procedure to install the SIM slot board.

WLAN module

Description	Spare part number
Atheros AR9462 802.11a/b/g/n 2×2 Bluetooth 4.0 Combo Adapter	676786-005

Before removing the WLAN module, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the keyboard/top cover (see Keyboard/top cover on page 23).
5. Disconnect the battery cable from the system board (see Speakers on page 26).

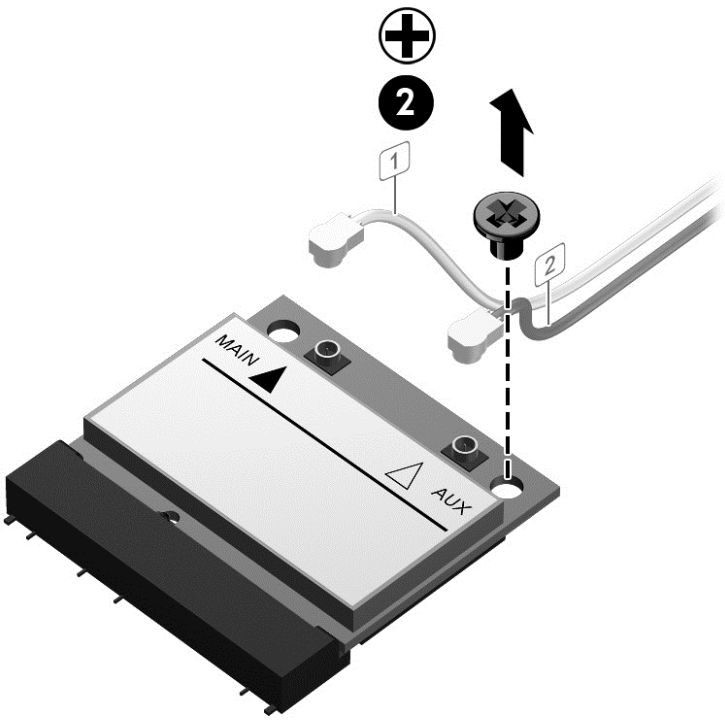
⚠ **CAUTION:** To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module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

Remove the WLAN module:

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

NOTE: The WLAN antenna cable labeled "1" connects to the WLAN module "Main" terminal labeled "1". The WLAN antenna cable labeled "2" connects to the WLAN module "Aux" terminal labeled "2".

2. Remove the Phillips PM2.0×2.5 screw **(2)** that secures the WLAN module to the system board. (The WLAN module tilts up.)
3. Remove the WLAN module **(3)** by pulling the module away from the slot at an angle.



NOTE: If the WLAN antenna cables are not connected to the terminals on the WLAN module, protective sleeves should be installed on the antenna connectors, as shown in the following illustration.

Reverse this procedure to install the WLAN module.

Fan

Description	Spare part number
Fan (includes cable)	740149-001

NOTE: To properly ventilate the computer, allow at least 7.6 cm (3 in) of clearance on the rear edge of the computer. The computer uses an electric fan for ventilation. The fan is controlled by a temperature sensor and is designed to turn on automatically when high temperature conditions exist. These conditions are affected by high external temperatures, system power consumption, power management/battery conservation configurations, battery fast charging, and software requirements. Exhaust air is displaced through the ventilation grill located on the rear edge of the computer.

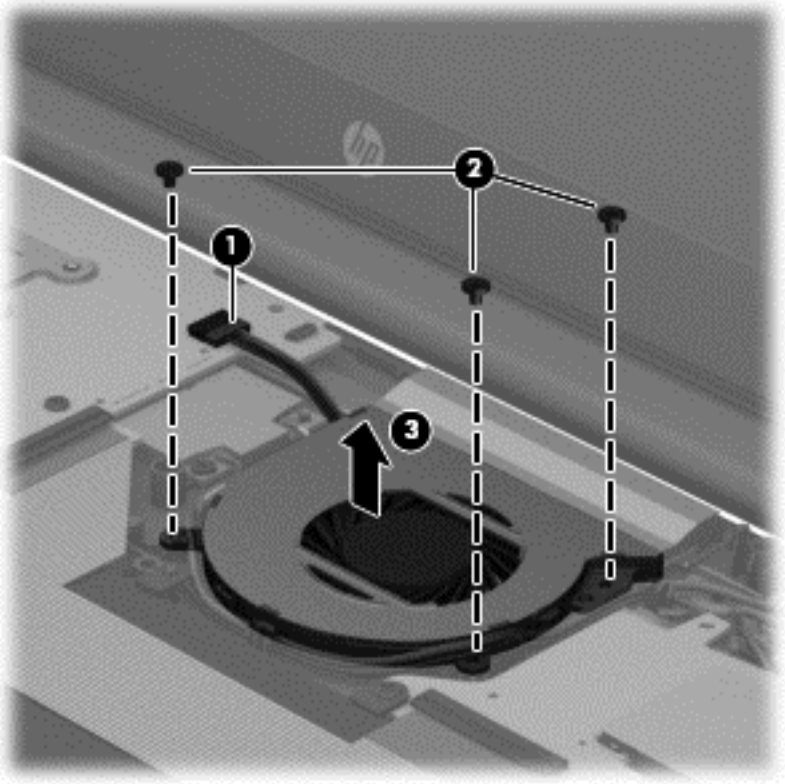
Before removing the fan, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the keyboard/top cover (see Keyboard/top cover on page 23).
5. Disconnect the battery cable from the system board (see Speakers on page 26).

Remove the fan:

1. Disconnect the fan cable from the system board.
2. Remove the three Phillips PM2.0×2.5 screws **(2)** that secure the fan to the base enclosure.

3. Remove the fan **(3)**.



Reverse this procedure to install the fan.

USB board

NOTE: The USB board spare part kit includes a cable.

Description	Spare part number
For use only on computer models equipped with WWAN capability (includes Media Card Reader slot and WWAN module slot)	744781-001
For use only on computer models not equipped with WWAN capability (includes Media Card Reader slot)	740151-001

Before removing the USB board, follow these steps:

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

4. Remove the keyboard/top cover (see Keyboard/top cover on page 23).
5. Disconnect the battery cable from the system board (see Speakers on page 26).

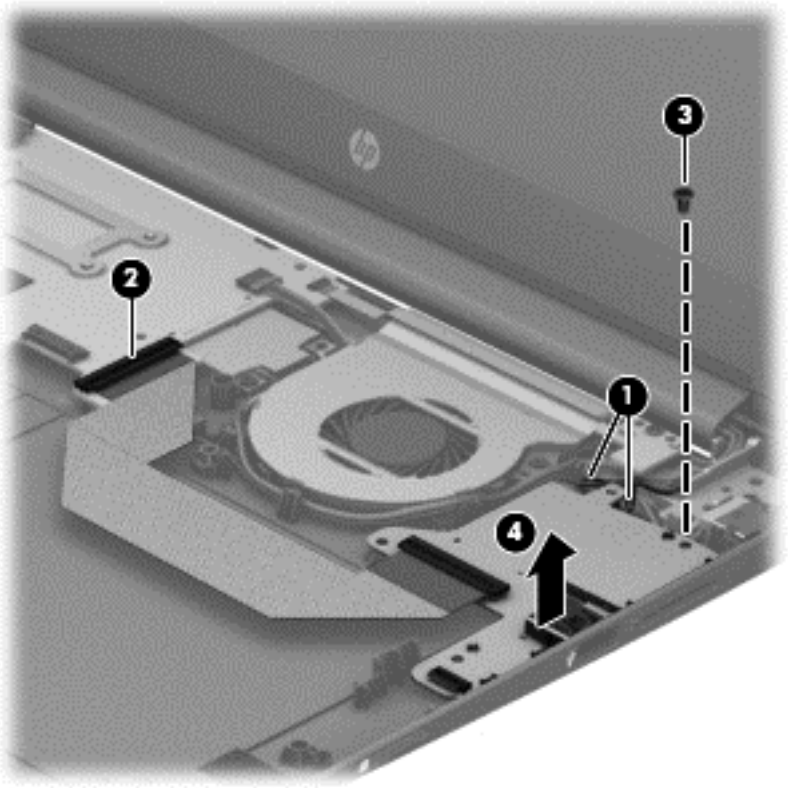
NOTE: When replacing the USB board, be sure that the WWAN module (see WWAN module on page 37) is removed from the defective USB board and installed on the replacement USB board.

Remove the USB board:

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

NOTE: The WWAN antenna cable labeled "5" connects to the WWAN module "Main" terminal labeled "5". The WWAN antenna cable labeled "6" connects to the WWAN module "Aux" terminal labeled "6".

2. Release the ZIF connector **(2)** to which the USB board cable is attached, and then disconnect the USB board cable from the system board.
3. Remove the Phillips PM2.5×4.5 screw **(3)** that secures the USB board to the base enclosure.
4. Remove the USB board **(4)** and cable.



Reverse this procedure to install the USB board.

WWAN module

Description	Spare part number
HP cr3124 HSPA+ Mobile Broadband Module	741284-005

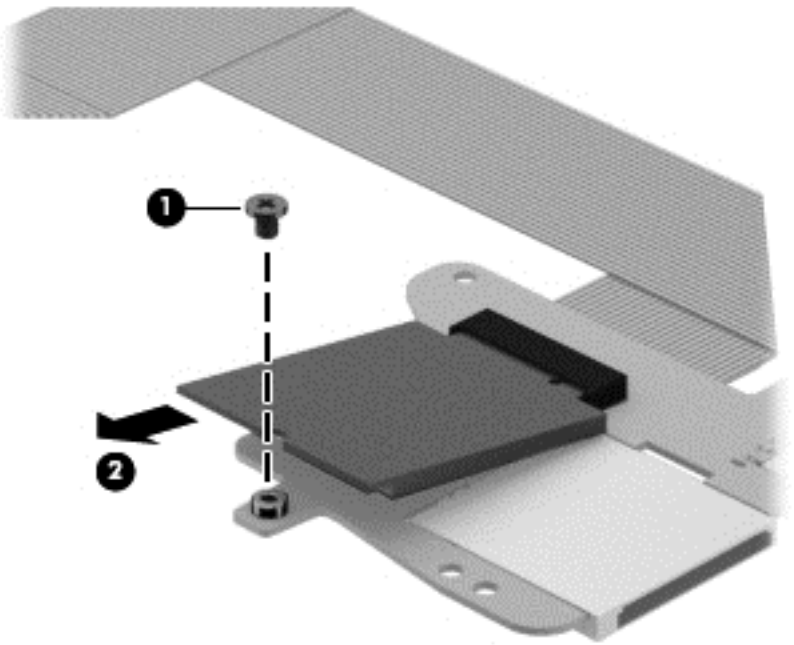
Before removing the WWAN module, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the keyboard/top cover (see Keyboard/top cover on page 23).
5. Disconnect the battery cable from the system board (see Speakers on page 26).

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

Remove the WWAN module:

1. Remove the Phillips PM2.0×2.5 screw **(1)** that secures the WWAN module to the USB board. (The WWAN module tilts up.)
2. Remove the WWAN module **(2)** by pulling the module away from the slot at an angle.



NOTE: If the WLAN antenna cables are not connected to the terminals on the WLAN module, protective sleeves should be installed on the antenna connectors, as shown in the following illustration.

Reverse this procedure to install the WWAN module.

Power connector cable

Description	Spare part number
Power connector cable	740148-001

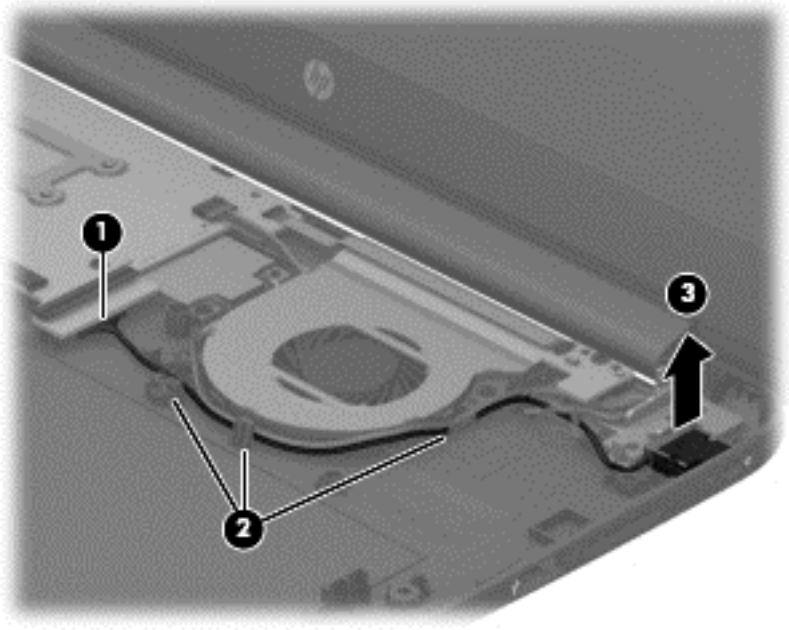
Before removing the power connector cable, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the keyboard/top cover (see Keyboard/top cover on page 23).
5. Disconnect the battery cable from the system board (see Speakers on page 26).
6. Remove the USB board (see USB board on page 35).

Remove the power connector cable:

1. Disconnect the power connector cable **(1)** from the system board.
2. Release the power connector cable from the retention clips/channel **(2)** built into the base enclosure.

3. Release the power connector **(3)** from the retention clips built into the base enclosure.



4. Remove the power connector cable.

Reverse this procedure to install the power connector cable.

Hall sensor board

Description	Spare part number
Hall sensor board (includes cable)	740149-001

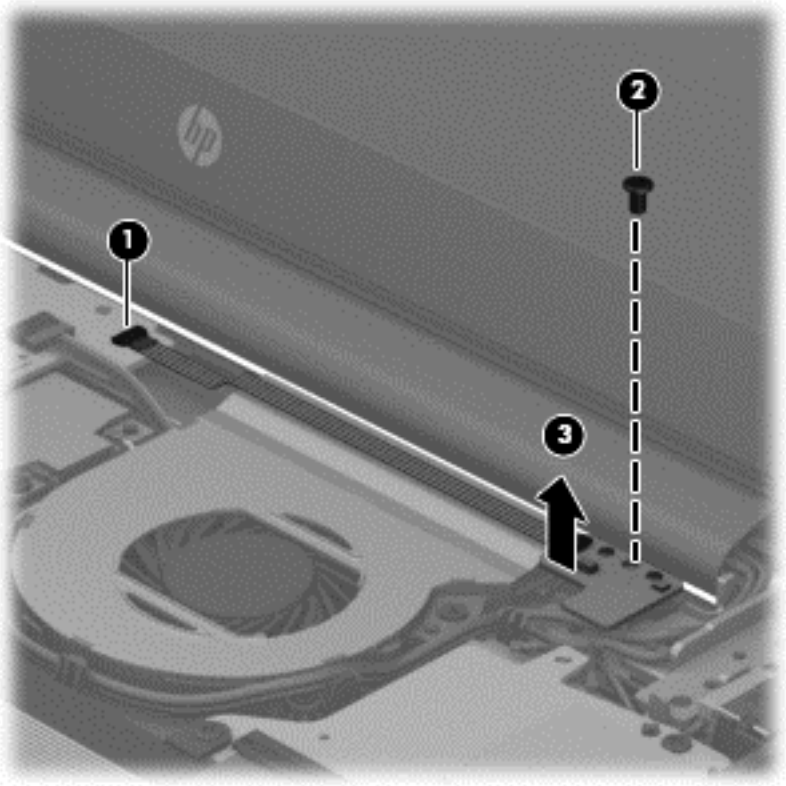
Before removing the hall sensor board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the keyboard/top cover (see Keyboard/top cover on page 23).
5. Disconnect the battery cable from the system board (see Speakers on page 26).

Remove the hall sensor board:

1. Release the ZIF connector **(1)** to which the hall sensor board cable is attached, and then disconnect the hall sensor board cable from the USB board.
2. Remove the Phillips PM2.5×4.5 screw **(2)** that secures the hall sensor board to the base enclosure.

3. Remove the hall sensor board **(3)**.



Reverse this procedure to install the hall sensor board.

Display assembly

NOTE: The display assembly is spared at the subcomponent level only. For more display assembly spare part information, see the individual removal subsections.

Before removing the display assembly, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the keyboard/top cover (see Keyboard/top cover on page 23).
5. Disconnect the battery cable from the system board (see Speakers on page 26).

Remove the display assembly:

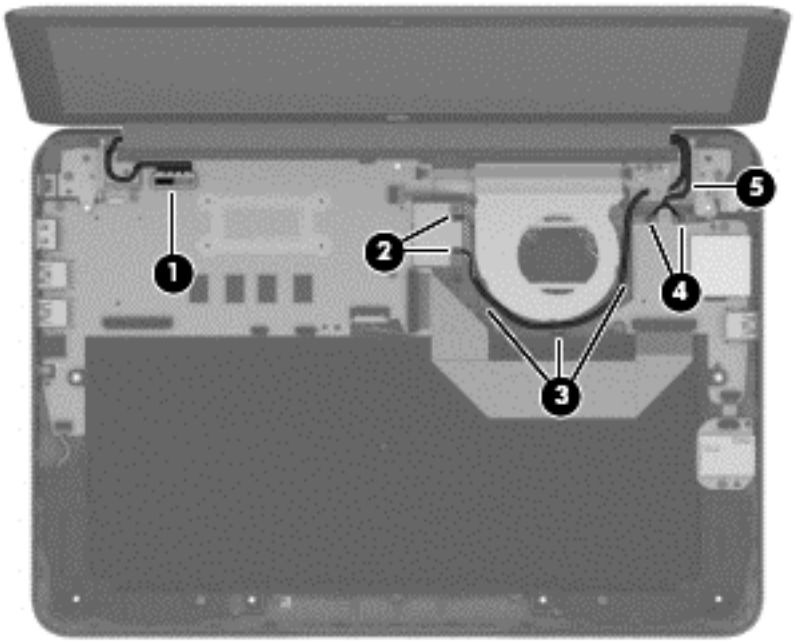
1. Disconnect the display panel cable **(1)** from the system board.
2. Disconnect the WLAN antenna cables **(2)** from the terminals on the WLAN module.

NOTE: The WLAN antenna cable labeled "1" connects to the WLAN module "Main" terminal labeled "1". The WLAN antenna cable labeled "2" connects to the WLAN module "Aux" terminal labeled "2".

3. Release the WLAN antenna cables from the routing channel **(3)** built into the base enclosure.
4. Disconnect the WWAN antenna cables **(4)** from the terminals on the WWAN module.

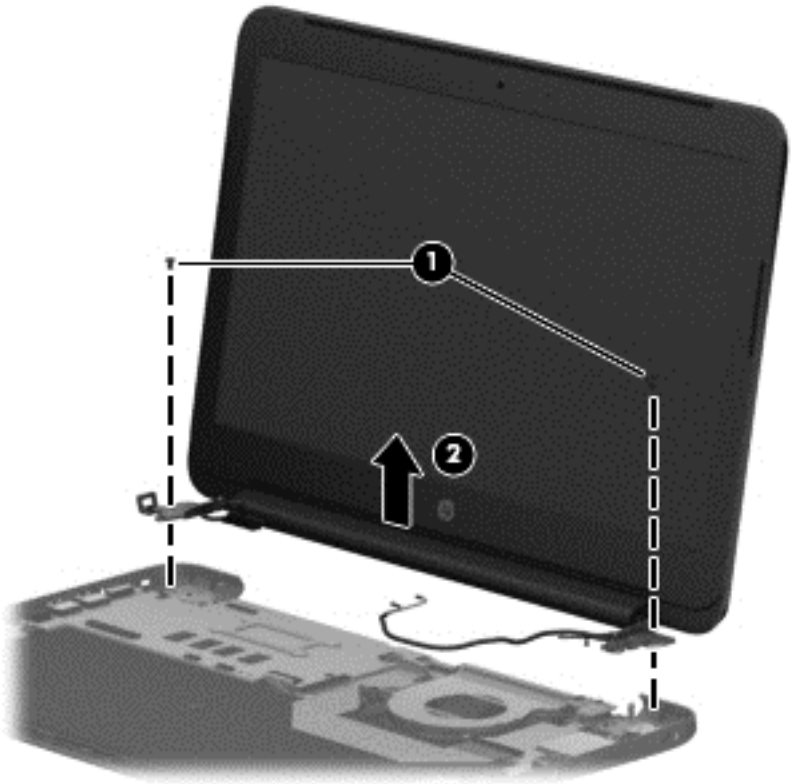
NOTE: The WWAN antenna cable labeled "5" connects to the WWAN module "Main" terminal labeled "5". The WWAN antenna cable labeled "6" connects to the WWAN module "Aux/GPS" terminal labeled "6".

5. Release the WWAN antenna cables from the routing channel **(5)** built into the base enclosure.



6. Remove the two Phillips PM2.5×5.5 screws **(1)** that secure the display assembly to the base enclosure.

7. Remove the display assembly **(2)**.

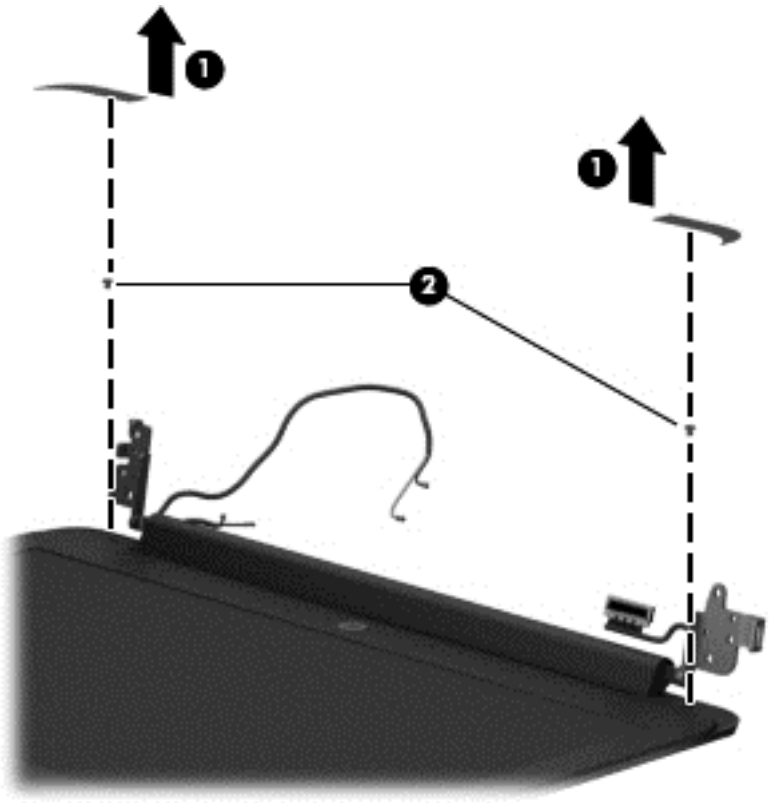


8. If it is necessary to replace the display bezel or any of the display assembly subcomponents:

   a. Remove the two screw covers **(1)** and the two Phillips PM2.0×2.5 screws **(2)** that secure the display bezel to the display assembly.

      The screw covers are available in the following Rubber Kits:

      - 741055-001–For use on computer models with ocean turquoise finish
      - 743914-001–For use on computer models with peach coral finish
      - 743915-001–For use on computer models with snow white finish

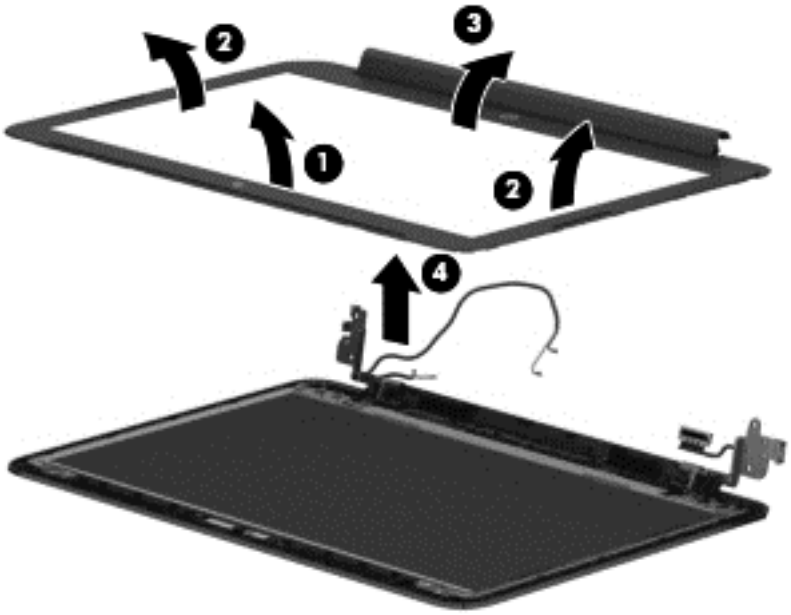


b. Flex the inside edges of the top edge **(1)**, the left and right sides **(2)**, and the bottom edge **(3)** of the display bezel until the bezel disengages from the display enclosure.

c. Remove the display bezel **(4)**.

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

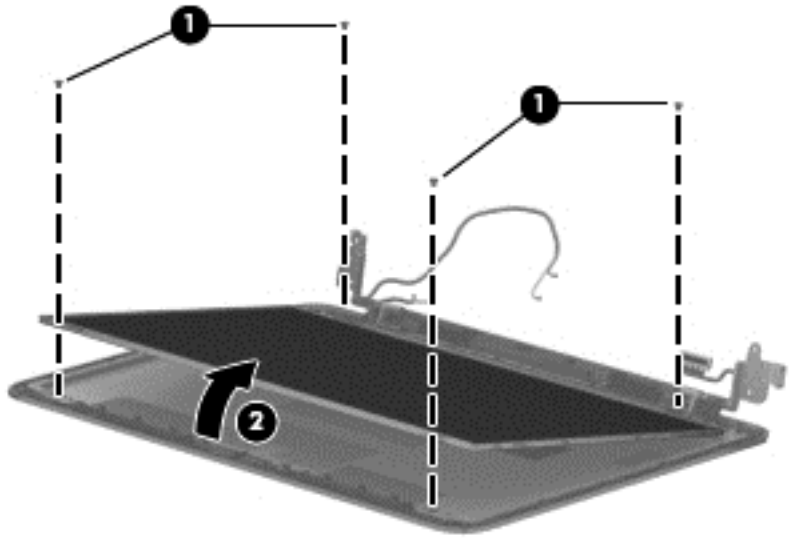
- 741671-001–For use on computer models with ocean turquoise finish
- 740150-001–For use on computer models with peach coral finish
- 741670-001–For use on computer models with snow white finish



9. If it is necessary to replace the display panel:

   a. Remove the four Phillips PM2.0×2.5 screws **(1)** that secure the display panel to the display enclosure.

   b. Lift the top edge of the display panel **(2)** until it rests at an angle.

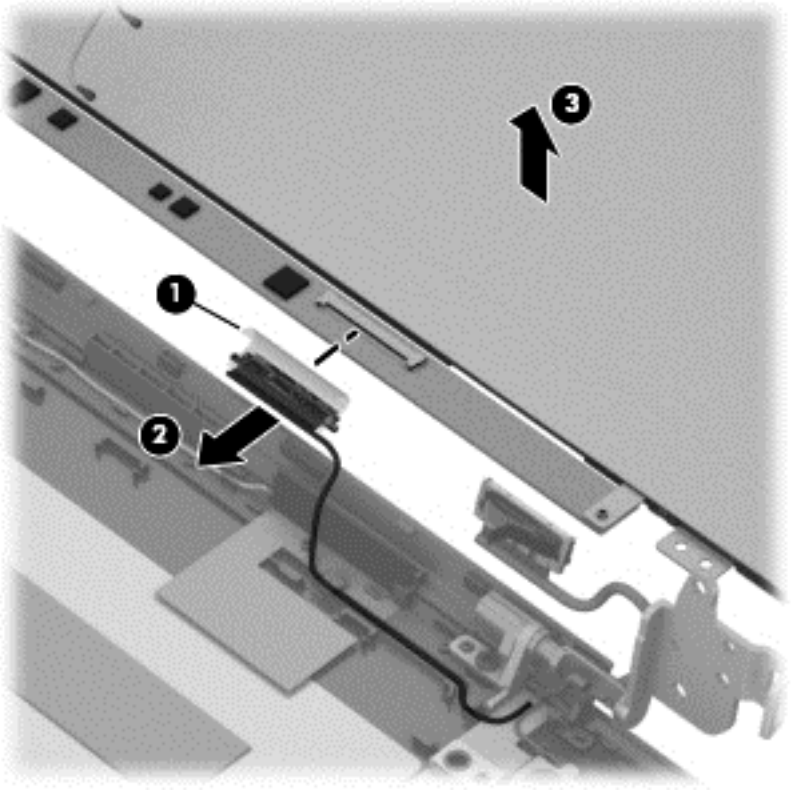


   c. Release the adhesive support strip **(1)** that secures the display panel cable to the display panel.

   d. Disconnect the display panel cable **(2)** from the display panel.

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

The display panel is available using spare part number 740155-001.



10. If it is necessary to replace the webcamera/microphone module:

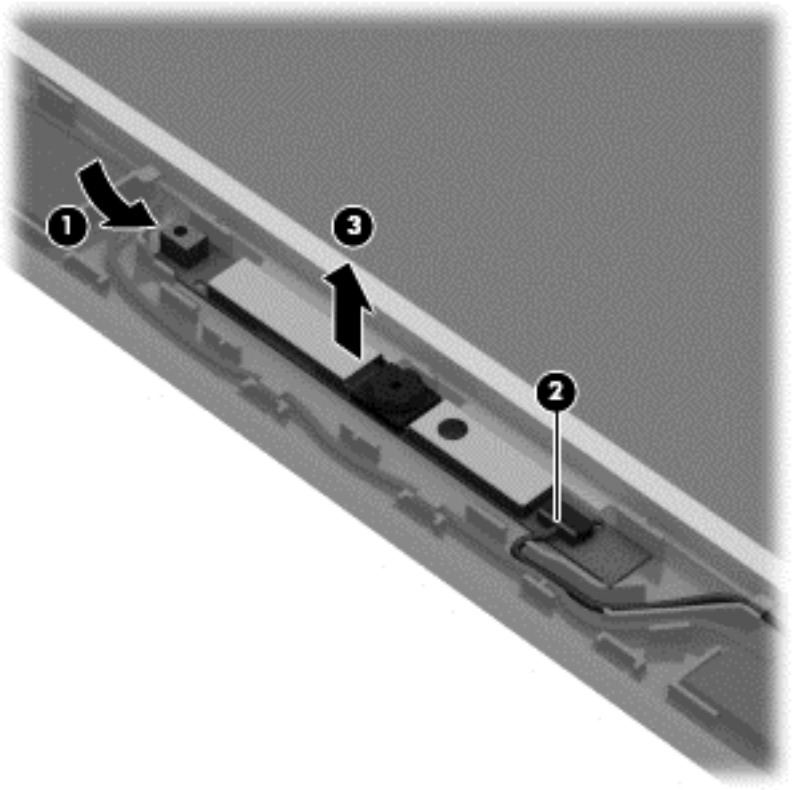
⚠ **CAUTION:** Handle the webcamera/microphone module with caution. This module has a thin profile and is susceptible to damage when not handled carefully.

a. Detach the webcamera/microphone module **(1)** from the display enclosure by carefully lifting up on the left side of the module. (The webcamera/microphone module is attached to the display enclosure with double-sided adhesive.)

b. Disconnect the webcamera/microphone module cable **(2)** from the webcamera/microphone module.

c. Remove the webcamera/microphone module **(3)**.

The webcamera/microphone module is available using spare part number 740152-001.

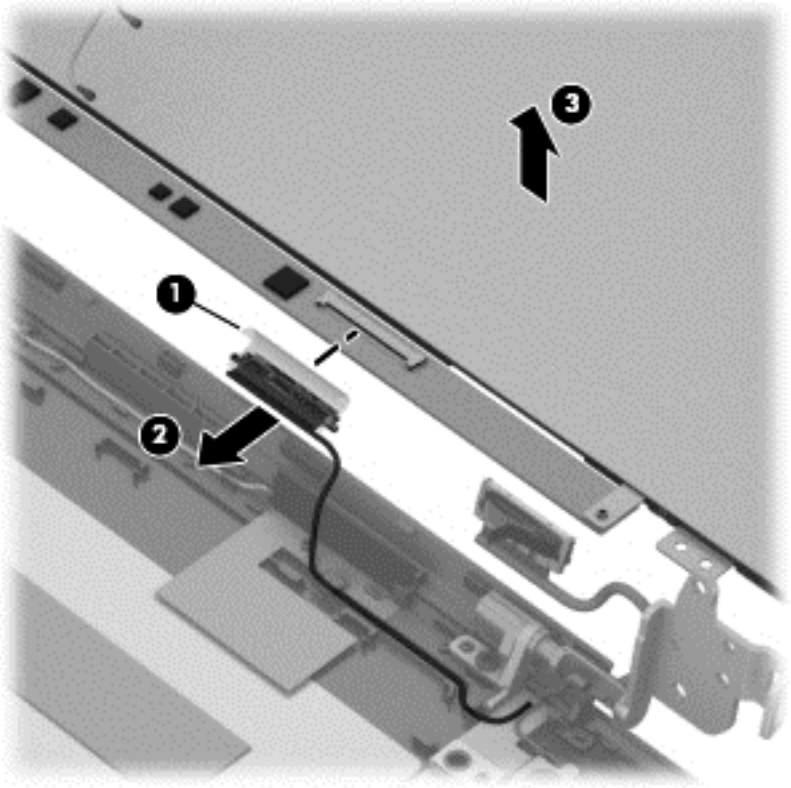


d. Release the adhesive support strip **(1)** that secures the display panel cable to the display panel.

e. Disconnect the display panel cable **(2)** from the display panel.

f. Remove the display panel **(3)**.

The display panel is available using spare part number 740155-001.



11. If it is necessary to replace the display hinges:

a. Remove the following screws that secure the display hinges to the display enclosure:

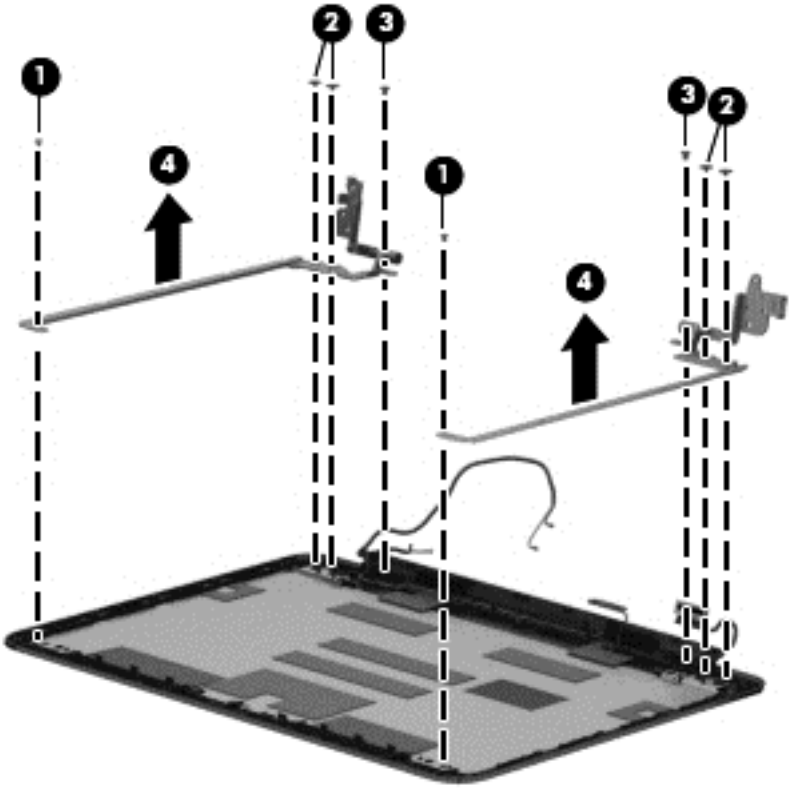
(1) Two Phillips PM2.0×2.5 screws

(2) Four Phillips PM2.0×3.0 broad head screws

(3) Two Phillips PM2.5×3.5 screws

b. Remove the display hinges **(4)**.

The display hinges are included in the Display Hinge Kit, spare part number 740147-001.



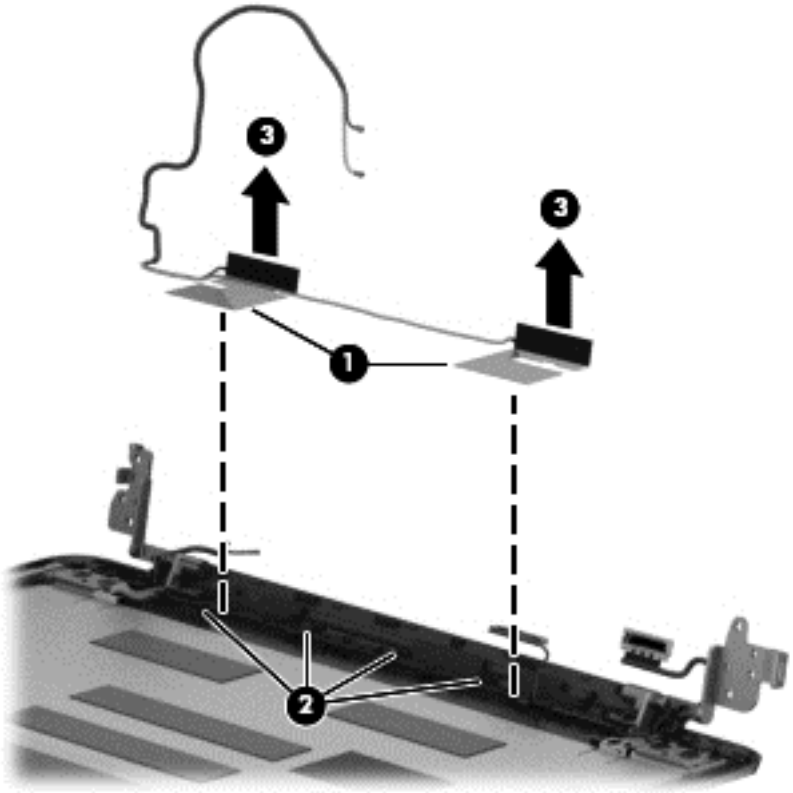
12. If it is necessary to replace the WLAN antenna cables and transceivers:

a. Detach the WLAN antenna transceivers **(1)** from the display enclosure. (The WLAN antenna transceivers are attached to the display enclosure with double-sided adhesive.)

b. Release the WLAN antenna cables **(2)** from the routing clips built into the bottom edge of the display enclosure.

c. Remove the WLAN antenna cables and transceivers **(3)**.

The WLAN antenna cables and transceivers are included in the WLAN Antenna Kit, spare part number 740171-001.



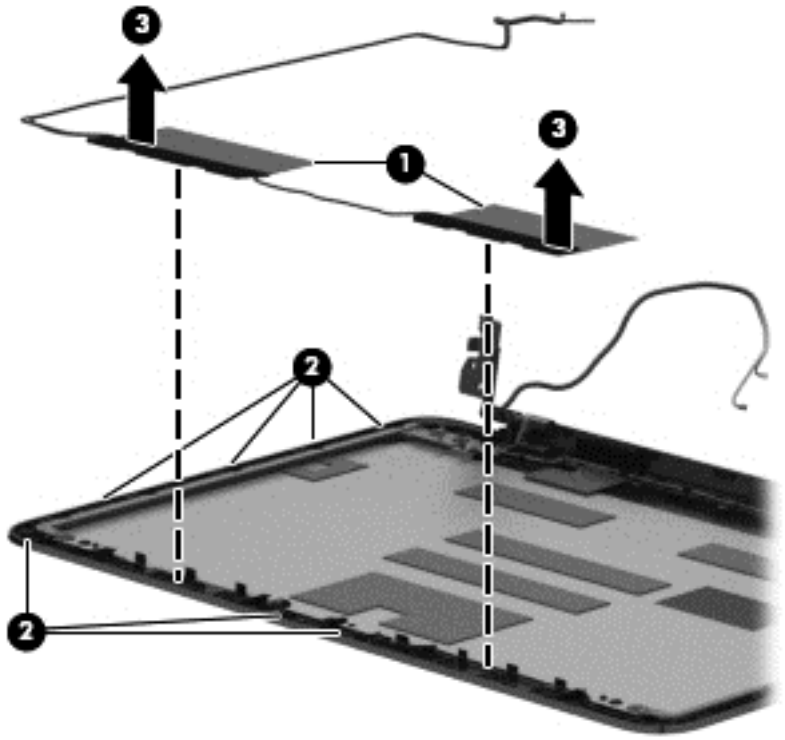
13. If it is necessary to replace the WWAN antenna cables and transceivers:

a. Detach the WWAN antenna transceivers **(1)** from the display enclosure. (The WWAN antenna transceivers are attached to the display enclosure with double-sided adhesive.)

b. Release the WWAN antenna cables **(2)** from the routing clips and channel built into the top edge and right side of the display enclosure.

c. Remove the WWAN antenna cables and transceivers **(3)**.

The WWAN antenna cables and transceivers are included in the WWAN Antenna Kit, spare part number 740170-001.



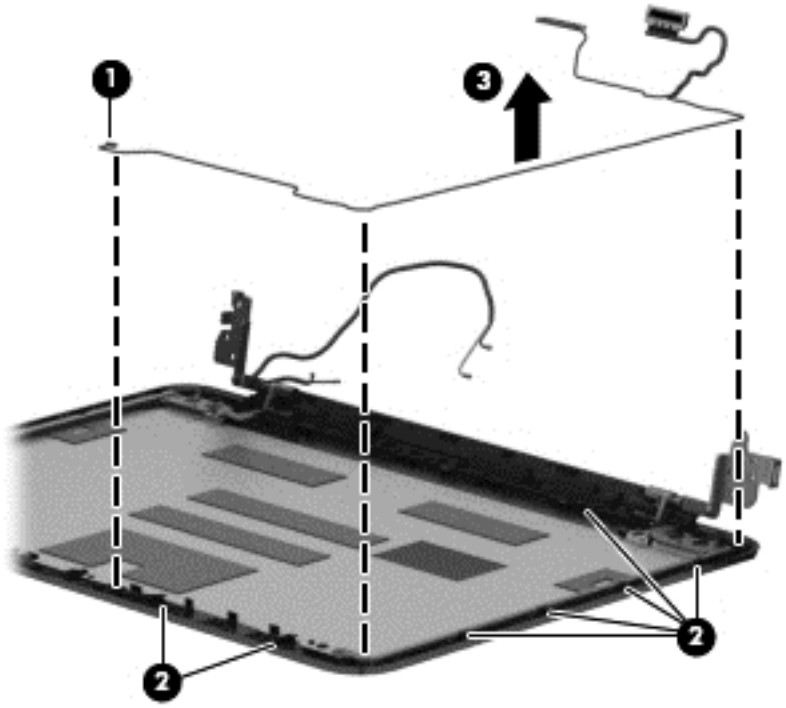
14. If it is necessary to replace the display panel cable:

a. Disconnect the display panel cable **(1)** from the webcamera/microphone module.

b. Release the display panel cable **(2)** from the routing clips and channel built into the top edge and left side of the display enclosure.

c. Remove the display panel cable **(3)**.

The display panel cable is available using spare part number 740145-001.



Reverse this procedure to reassemble and install the display assembly.

System board

NOTE: The system board spare part kit includes replacement thermal material.

Description	Spare part number
Equipped with an Intel Celeron 2955U 1.40-GHz processor (2.0-MB L3 cache, 15 W), 4.0-GB of system memory, and a graphics subsystem with UMA memory	740160-001
Equipped with an Intel Celeron 2955U 1.40-GHz processor (2.0-MB L3 cache, 15 W), 2.0-GB of system memory, and a graphics subsystem with UMA memory	742097-001

Before removing the system board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the keyboard/top cover (see Keyboard/top cover on page 23), and then remove the following components:
   a. Speakers (see Speakers on page 26)
   b. Battery (see Battery on page 28)
   c. WLAN module (see WLAN module on page 32)
   d. Hall sensor board (see Hall sensor board on page 39)

NOTE: When replacing the system board, be sure that the heat sink (see Heat sink on page 54) and the solid-state drive (see Solid-state drive on page 56) are removed from the defective system board and installed on the replacement system board.

Remove the system board:

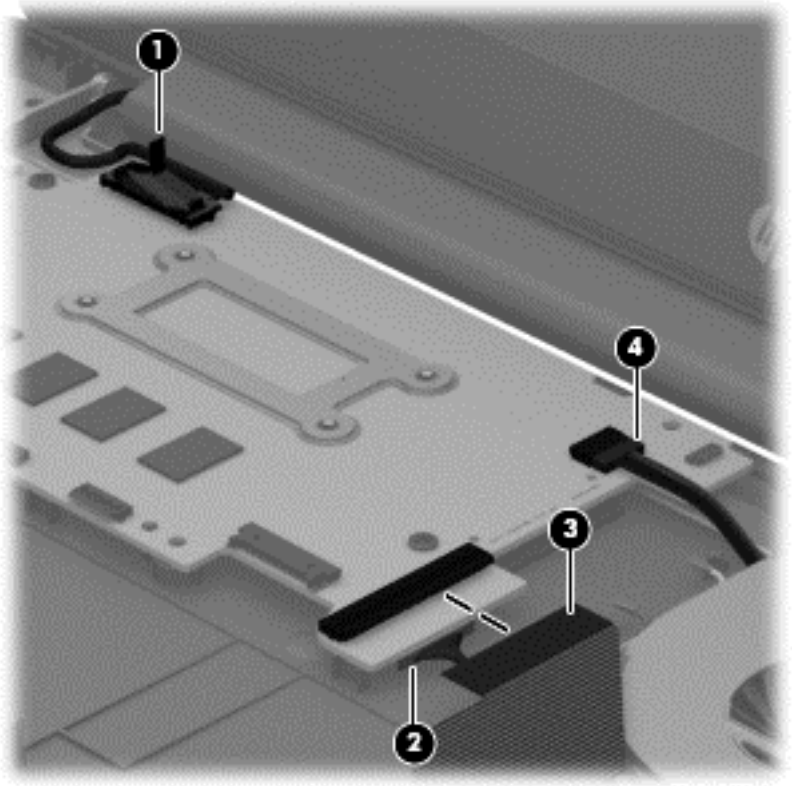
1. Disconnect the following cables from the system board:

   (1) Display panel cable

   (2) Power connector cable

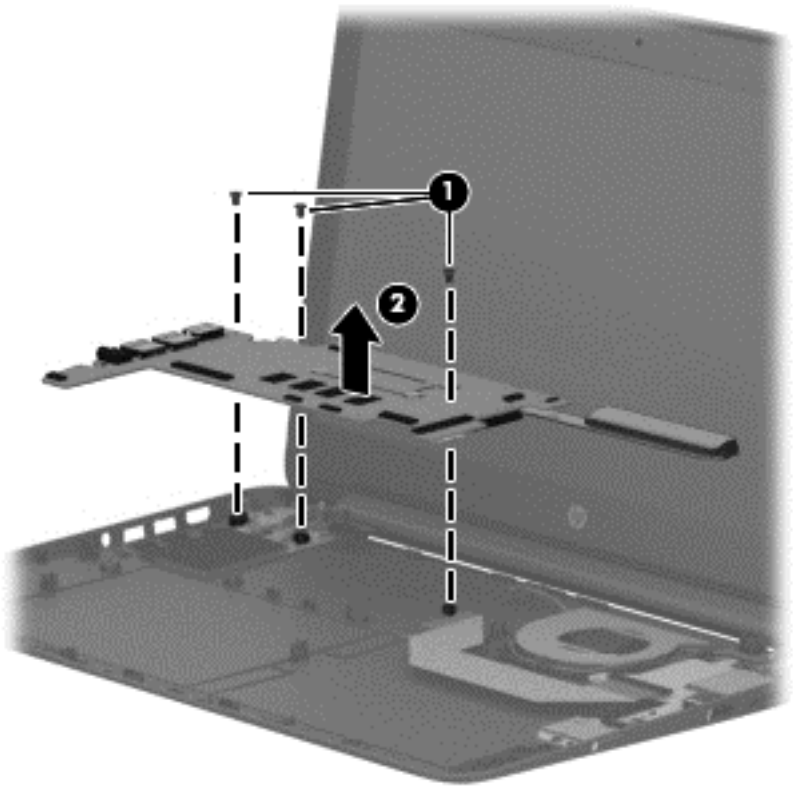
   (3) USB board cable

   (4) Fan cable



2. Remove the three Phillips PM2.5×4.5 screws **(1)** that secure the system board to the base enclosure.

3. Remove the system board **(2)**.



Reverse this procedure to install the system board.

Heat sink

Description	Spare part number
Heat sink (includes replacement thermal material)	740146-001

Before removing the heat sink, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the keyboard/top cover (see Keyboard/top cover on page 23), and then remove the following components:
   a. Speakers (see Speakers on page 26)
   b. Battery (see Battery on page 28)
   c. WLAN module (see WLAN module on page 32)

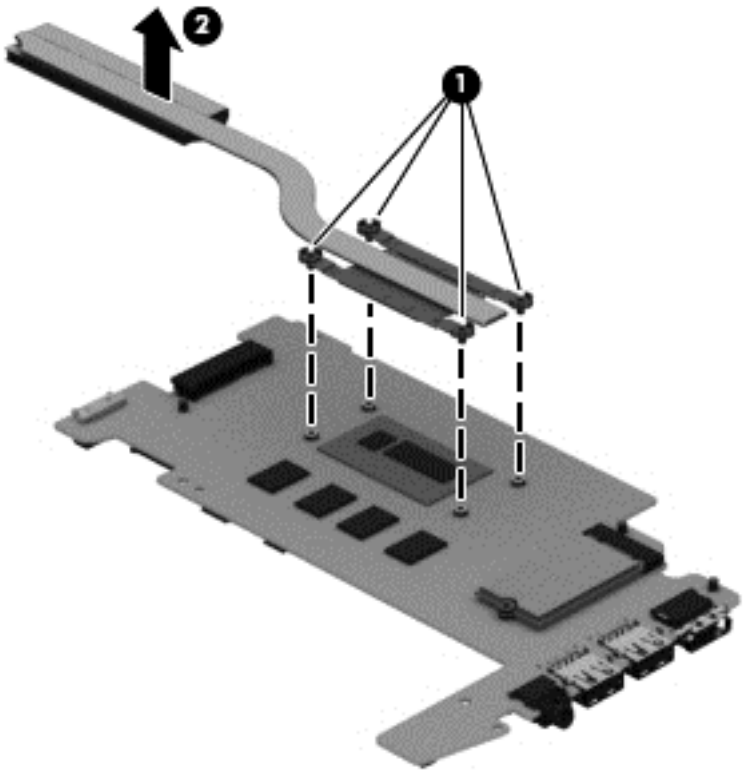
d. Hall sensor board (see Hall sensor board on page 39)

e. System board (see System board on page 52)

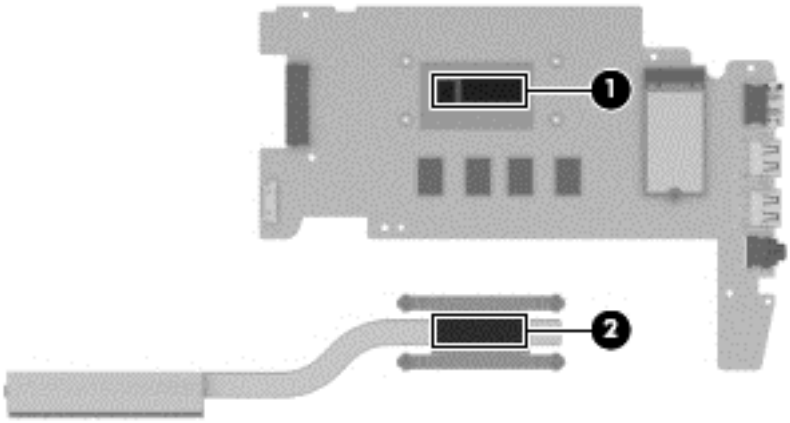
Remove the heat sink:

1. Turn the system board upside down, with the rear toward you.
2. Following the 1 through 4 sequence stamped into the heat sink, loosen the four Phillips captive screws **(1)** that secure the heat sink to the system board.
3. Remove the heat sink **(2)**.

NOTE: Due to the adhesive quality of the thermal material located between the heat sink and the system board components, it may be necessary to move the heat sink from side to side to detach it.



NOTE: The thermal material must be thoroughly cleaned from the surfaces of the system board **(1)** and the heat sink **(2)** each time the heat sink is removed. Replacement thermal material is included with the heat sink and system board spare part kits.



Reverse this procedure to install the heat sink.

Solid-state drive

Description	Spare part number
32 GB	740159-001
16 GB	740158-001

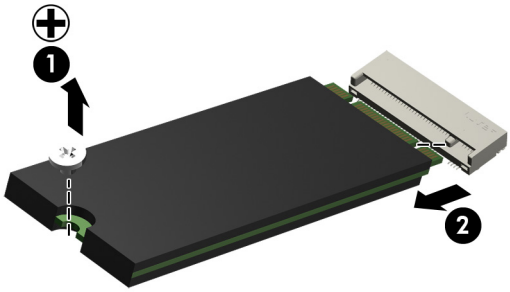
Before removing the solid-state drive, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the keyboard/top cover (see Keyboard/top cover on page 23), and then remove the following components:
   a. Speakers (see Speakers on page 26)
   b. Battery (see Battery on page 28)
   c. WLAN module (see WLAN module on page 32)
   d. Hall sensor board (see Hall sensor board on page 39)
   e. System board (see System board on page 52)

Remove the solid-state drive:

1. Turn the system board upside down, with the rear toward you.
2. Remove the Phillips PM2.0×2.5 **(1)** that secures the solid-state drive to the system board. (The solid-state drive tilts up.)

3. Remove the solid-state drive **(2)** by pulling the drive away from the slot at an angle.



Reverse this procedure to install the solid-state drive.

5 Specifications

	Metric	U.S.
Dimensions		
Width	**34.44 cm**	13.56 in
Depth	**23.98 cm**	9.44 in
Height	**2.16 cm**	0.86 in
Weight (lowest weight configuration)	**2.15 g**	4.74 lb
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 (non-condensing)		
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.

6 Power cord set requirements

The wide-range input feature of the computer permits it to operate from any line voltage from 100 to 120 volts AC, or from 220 to 240 volts 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 and regions must meet the requirements of the country or region where the computer is used.

Requirements for all countries

The following 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 amps and a nominal voltage rating of 125 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 all countries 113

Requirements for specific countries and regions

Country/region	Accredited agency	Applicable note number
Australia	EANSW	1
Austria	OVE	1
Belgium	CEBC	1
Canada	CSA	2
Denmark	DEMKO	1
Finland	FIMKO	1

Country/region	Accredited agency	Applicable note number
France	UTE	1
Germany	VDE	1
Italy	IMQ	1
Japan	METI	3
The Netherlands	KEMA	1
Norway	NEMKO	1
The People's Republic of China	COC	5
South Korea	EK	4
Sweden	CEMKO	1
Switzerland	SEV	1
Taiwan	BSMI	4
The United Kingdom	BSI	1
The United States	UL	2

1. The flexible cord must be Type HO5VV-F, 3-conductor, 1.0-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 SPT-3 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) or NEMA 6-15P (15 A, 250 V) configuration.
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 VCT or VCTF, 3-conductor, 1.00-mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V) 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 certification mark of the agency responsible for evaluation in the country or region where it will be used.
5. The flexible cord must be Type VCTF, 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.

7 Recycling

When a non-rechargeable 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 Web site at http://www.hp.com/recycle.

Index

A

AC adapter light 7
AC adapter, spare part numbers 15, 16
antenna
  location 3, 4
  removal 48, 49
  spare part numbers 13, 16, 49, 50
audio, product description 1
audio-in jack 6
audio-out jack 6

B

base enclosure, spare part numbers 11, 15, 16
battery
  removal 28
  spare part number 11, 15, 28
bottom components 8
button component 4

C

cables, service considerations 19
chipset, product description 1
components
  bottom 8
  button 4
  display 3
  left side 6
  right side 7
  TouchPad 5
computer
  major components 10
  specifications 58
connectors, service considerations 19

D

display assembly components
  spare part numbers 13, 40
display assembly, removal 40
display bezel
  removal 42
  spare part numbers 13, 15, 16, 43
display components 3
display enclosure, spare part numbers 14, 15
Display Hinge Kit, spare part number 13, 15, 48
display panel
  product description 1
  removal 44
  spare part number 13, 15, 45, 47
display panel cable
  removal 50
  spare part number 14, 15, 51
drives, preventing damage 19

E

electrostatic discharge 20
equipment guidelines 22
external expansion, product description 2

F

fan
  removal 34
  spare part number 11, 15, 34

G

graphics, product description 1
grounding guidelines 20
guidelines
  equipment 22
  grounding 20
  packaging 21
  transporting 21
  workstation 21

H

hall sensor board
  removal 39
  spare part number 11, 16, 39
HDMI port 6
HDMI-to-VGA adapter, spare part number 14, 15
headphone jack 6
heat sink
  removal 54
  spare part number 11, 15, 54
hinge
  removal 47
  spare part number 13, 15, 48

I

internal display switch 3

J

jacks
  audio-in 6
  audio-out 6
  headphone 6
  microphone 6

K

keyboard, product description 2
keyboard/top cover
  removal 23
  spare part numbers 10, 16, 23

L

left-side components 6

lights
AC adapter 7
power 6
webcamera 3

M
mass storage device
precautions 19
product description 1
memory card reader 7
memory module, product description 1
microphone
location 3
product description 1
microphone jack 6
model name 1

O
operating system, product description 2

P
packaging guidelines 21
plastic parts, service considerations 18
pointing device, product description 2
ports
HDMI 6
product description 2
USB 2.0 7
USB 3.0 port 6
power adapter, spare part numbers 14
power button 4
power connector 7
power connector cable
removal 38
spare part number 11, 15, 38
power cord
set requirements 59
spare part numbers 14, 15
power light 6
power requirements, product description 2
processor, product description 1
product description
audio 1
chipset 1
display panel 1
external expansion 2
graphics 1
keyboard 2
mass storage device 1
memory module 1
microphone 1
operating system 2
pointing device 2
ports 2
power requirements 2
processor 1
product name 1
security 2
sensor 1
serviceability 2
video 1
wireless networking 1
product name 1

R
removal/replacement procedures 23
right-side components 7
RJ-45-to-USB adapter dongle, spare part number 14, 15
Rubber Kit, spare part numbers 12, 16, 17

S
Screw Kit, spare part number 14, 15
security cable slot 6
security, product description 2
sensor, product description 1
service considerations
cables 19
connectors 19
plastic parts 18
serviceability, product description 2
SIM slot 7
SIM slot board
removal 31
spare part number 11, 16, 31
solid-state drive
precautions 19
removal 56
spare part numbers 11, 15, 56
Speaker Kit, spare part number 11, 15, 26
speakers
location 8
removal 26
spare part number 11, 15, 26
specifications 58
system board
removal 52
spare part numbers 11, 16, 52

T
tools required 18
TouchPad components 5
TouchPad zone 5
transporting guidelines 21

U
USB 2.0 port 7
USB 3.0 port 6
USB board
removal 35
spare part numbers 11, 15, 17, 35

V
vents 8
video, product description 1

W
webcamera light 3
webcamera, location 3
webcamera/microphone module
removal 45
spare part number 13, 15, 46
wireless antenna
location 3, 4
removal 48, 49
spare part numbers 13, 16, 49, 50
wireless networking, product description 1
WLAN Antenna Kit, spare part number 13, 16, 49
WLAN module
removal 32
spare part number 11, 15, 32
workstation guidelines 21
WWAN Antenna Kit, spare part number 13, 16, 50

WWAN module
removal 37
spare part number 11, 16, 37