HP Chromebook 11 G5 Education Edition

Maintenance and Service Guide
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Product notice

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

Not all features are available in all editions of Windows 10. This computer may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows 10 functionality. See http://www.microsoft.com for details.

The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

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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).

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1 Product description

Category	Description
Product Name	HP Chromebook 11 G5 Education Edition
Processor	Intel® Celeron™ N3060 1.60-GHz (turbo up to 2.48-GHz) dual core processor (2.0-GB L2 cache, 1600-MHz front-side bus (FSB), 6.0 W TDP / 4.0 W SDP)
Chipset	Integrated soldered-on-circuit (SoC)
Graphics	**Internal Graphics**: Intel HD Graphics 400 Support for HD decode, DX12, and HDMI
Panel	11.6-in, high-definition (HD), BrightView, (1366×768), white light-emitting diode (WLED), UWVA, slim, TOP TouchScreen display panel with air bonding; 16:9 ultra wide aspect ratio; typical brightness: 220 nits; eDP 1.2 without PSR; 50-percent cg 11.6-in, HD, AntiGlare, (1366×768), WLED, SVA, slim (3.0 mm), non-TouchScreen display panel; 16:9 ultra wide aspect ratio; typical brightness: 220 nits; eDP 1.2
Memory	Memory soldered to system board Support for LPDDR3-1600 dual channel (LPDDR3-1866 downgraded to LPDDR3-1600; 4096-MB (8-GB @ 128-MB × 32 × 2 × 4 pieces) Support for LPDDR3-1600 single channel (LPDDR3-1866 downgraded to LPDDR3-1600; 2048-MB (8-GB @ 128-MB × 32 × 2 × 2 pieces)
Storage	Support for 32-GB and 16-GB embedded MultiMedia Controller (eMMC)
Wireless	Integrated wireless local area network (WLAN) options by way of wireless module Two built-in WLAN antennas (M.2 / PCIe) Support for the Intel Dual Band Wireless-AC 7265 802.11 ac 2×2 WiFi + Bluetooth 4.0 Combo Adapter (non-vPro)
External media cards	Micro-Secure Digital (SD®) media reader slot
Ports	**NOTE:** All ports support hot plug/unplug and autodetect for correct output to wide-aspect vs. standard aspect video. • HDMI v.1.4b supporting up to 1920×1080 @ 60-hz • HP Smart Plug AC adapter (4.5-mm barrel) • Headphone/microphone combo jack • USB 3.0 port (supports HP USB Boost (Sleep & Charge) • USB 2.0 port
Keyboard/pointing devices	Full-sized, textured, island-style, Google keyboard **Touchpad requirements:** Multitouch gestures enabled Taps enabled as default
Power requirements	Support for a 3-cell, 44-WHr, 4.08-WHr, Li-Ion battery

Category	Description
Power requirements *(continued)*	Support for a 65-W HP Smart AC adapter (non-PFC, EM, 4.5-mm) and a 45-W HP Smart AC adapter (non-PFC, RC, 4.5-mm) AC adapter
Security	Support for Trusted Platform Module (TPM) 1.2 Support for an ultraslim security cable lock
Operating system	**Preinstalled:** Google Chrome operating system
Serviceability	**End user replaceable parts:** AC adapter

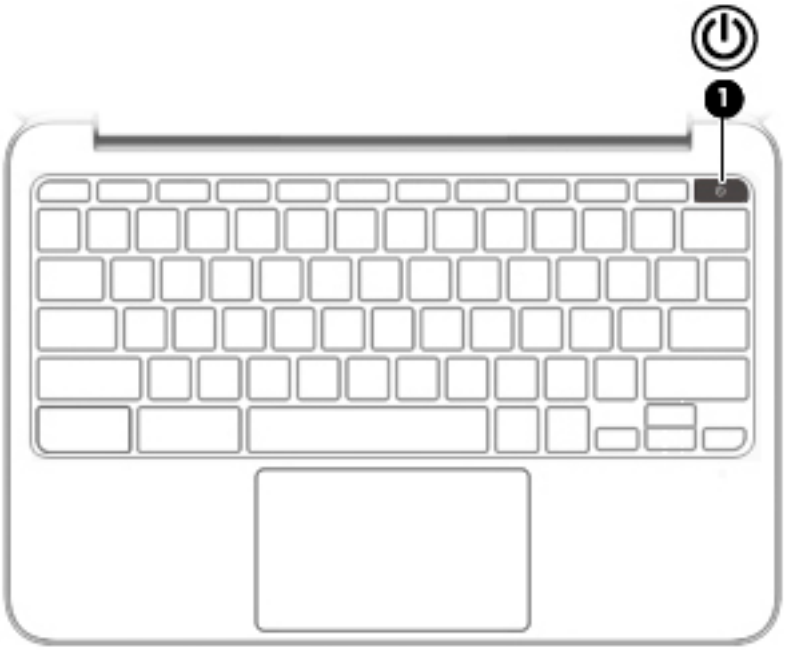
2 External component identification

Display

Item	Component	Description
(1)	WLAN antennas (2)*	Send and receive wireless signals to communicate with WLANs. **NOTE:** The position of the WLAN antennas may differ, depending on model.
(2)	Internal microphone	Records sound.
(3)	Webcam	Records video, captures still photographs, and allows video conferences and online chat by means of streaming video.
(4)	Webcam light	On: The webcam is in use.

*The antennas, IR emitters (select models only), and sensors are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennas, IR emitters, and sensors 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

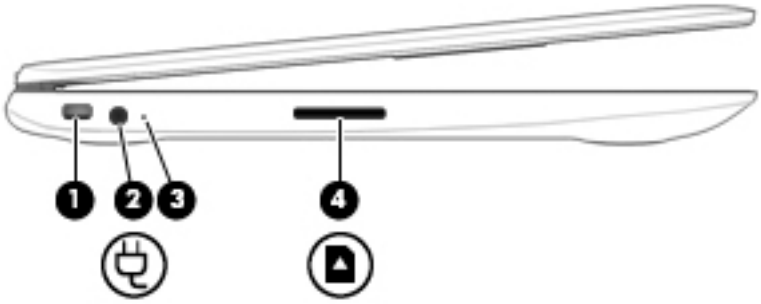


Item	Component	Description
(1)	Power button	• When the computer is off, press the button to turn on the computer. • When the computer is in the Sleep state, press the button briefly to exit Sleep. • When the computer is on and you want to lock the screen, press the power button until you see the sign-in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

TouchPad

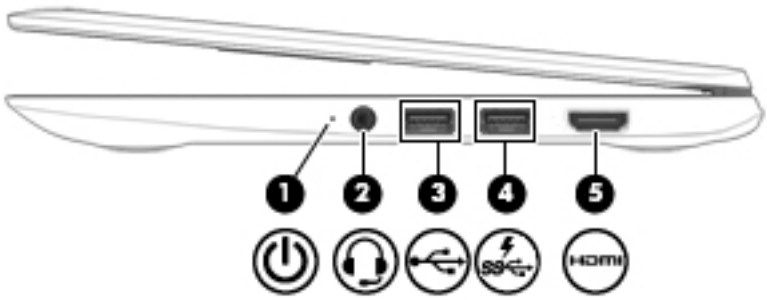
Component	Description
TouchPad zone	Moves the on-screen pointer and selects or activates items on the screen.

Left side



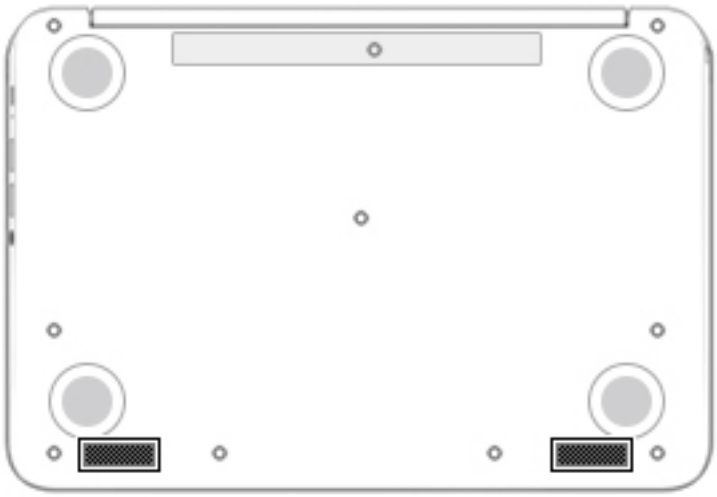
Item	Component	Description
(1)	Security cable slot	Attaches an optional security cable to the computer. **NOTE:** The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.
(2)	Power connector	Connects an AC adapter.
(3)	AC adapter light	• White: The AC adapter is connected and the battery is charged. • Amber: The AC adapter is connected and the battery is charging. • Off: The computer is using battery power.
(4)	Memory card reader	Reads optional memory cards that store, manage, share, or access information. To insert a card: ▲ Hold the card label-side up, with connectors facing the slot, insert the card into the slot, and then push in on the card until it is firmly seated. To remove a card: ▲ Press in on the card it until it pops out.

Right side



Item	Component	Description
(1)	Power light	• White: Computer is on. • Blinking white: Computer is in Sleep mode. • Off: The computer is off.
(2)	Audio-out (headphone)/Audio-in (microphone) 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 putting on headphones, earbuds, or a headset. **NOTE:** When a device is connected to the jack, the computer speakers are disabled. **NOTE:** Be sure that the device cable has 4-conductor connector that supports both audio-out (headphone) and audio-in (microphone).
(3)	USB 2.0 port	Connect optional USB devices, such as a keyboard, mouse, external drive, printer, scanner or USB hub.
(4)	USB 3.0 charging (powered) port	Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub. Standard USB ports will not charge all USB devices or will charge using a low current. Some USB devices require power and require you to use a powered port.
(5)	HDMI port	Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component, or a high-speed High-Definition Multimedia Interface (HDMI) device.

Bottom



Component	Description
Speakers (2)	Produce sound.

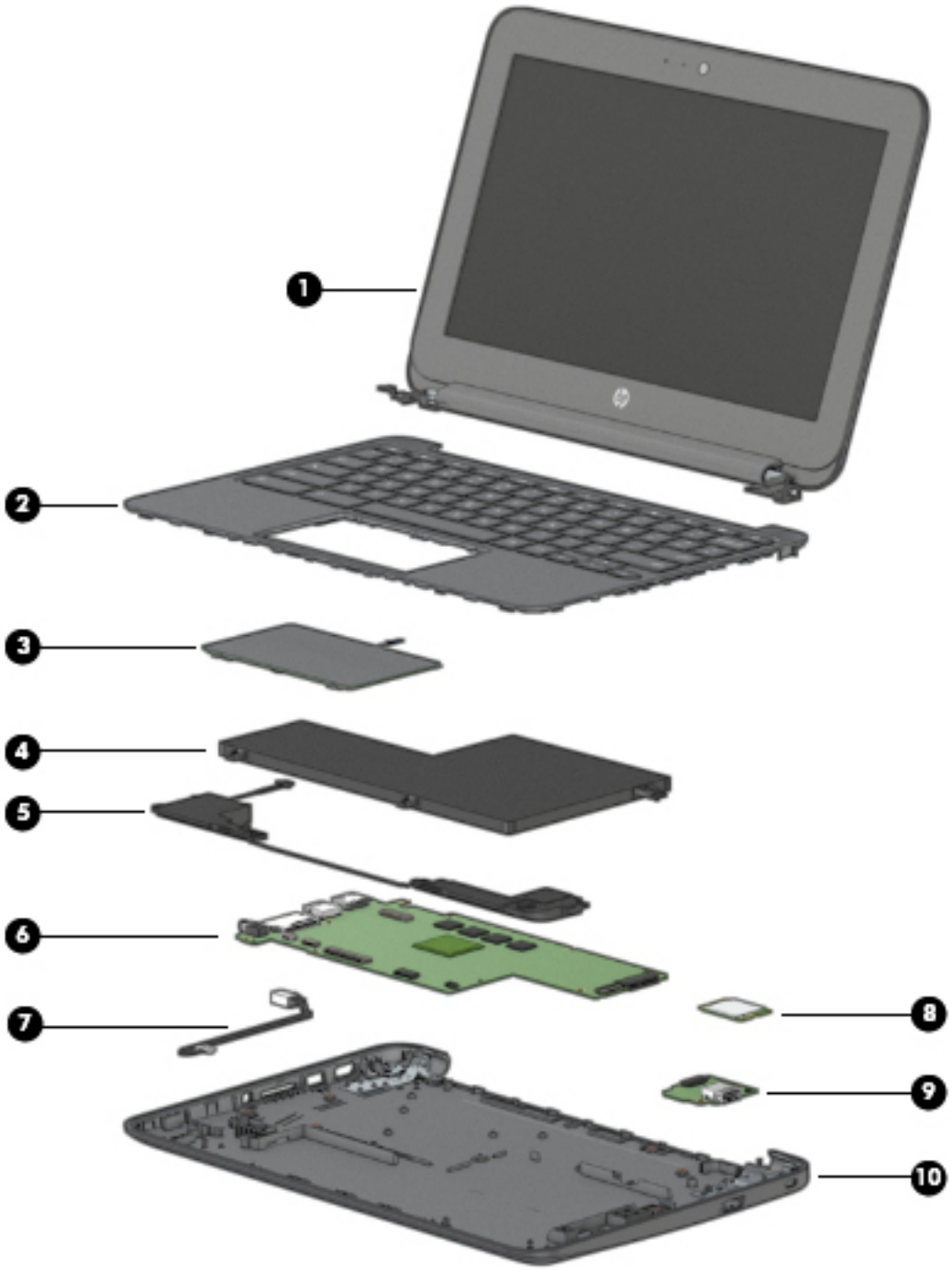
3 Illustrated parts catalog

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

Locating the serial number, model number, product number, and warranty information

The serial number **(1)**, model number **(2)**, product number **(3)**, and warranty information **(4)** are located on the bottom of the computer. This information may be needed when travelling internationally or when contacting support.

Computer major components

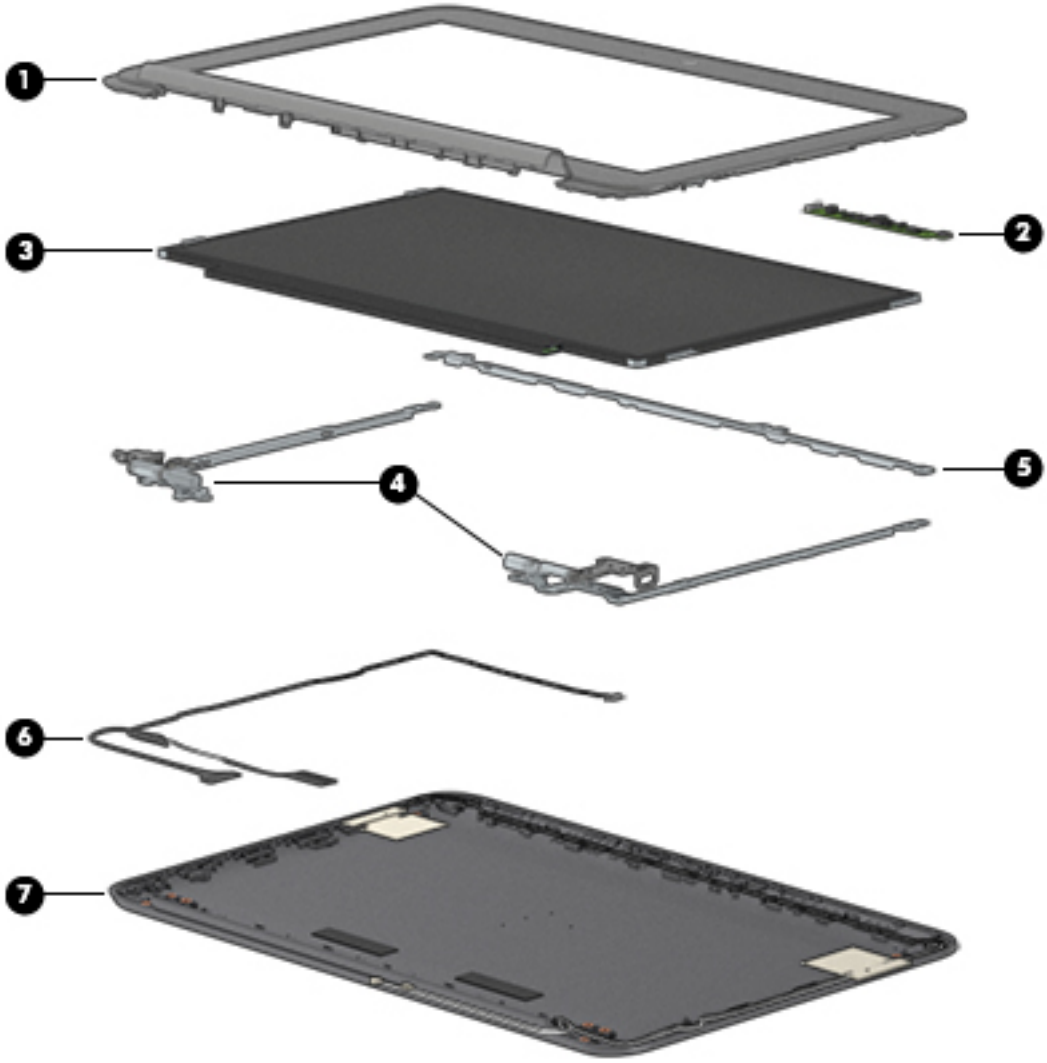


Item	Component	Spare part number
(1)	**Display assembly**: The TouchScreen display is spared as an entire assembly. The non-TouchScreen display is spared at the subcomponent level. For more non-TouchScreen display assembly spare part information, see Display assembly subcomponents on page 12.	
	11.6-in, HD, BrightView (1366×768), LED, UWVA, slim, TouchScreen display panel assembly	920843-001

Item	Component	Spare part number
(2)	**Keyboard/top cover** (includes keyboard cable):	
	For use in Belgium	917442-A41
	For use in Canada	917442-DB1
	For use in the Czech Republic and Slovenia	917442-FL1
	For use in Denmark, Finland, and Norway	917442-DH1
	For use in France	917442-051
	For use in Germany	917442-041
	For use in Israel	917442-BB1
	For use in Italy	917442-061
	For use in Latin America	917442-161
	For use in the Netherlands	917442-B31
	For use in Romania	917442-271
	For use in Russia	917442-251
	For use in Saudi Arabia	917442-171
	For use in Spain	917442-071
	For use in Switzerland	917442-BG1
	For use in Taiwan	917442-AB1
	For use in Thailand	917442-281
	For use in the United Kingdom	917442-031
	For use in the United States	917442-001
(3)	**TouchPad board** (includes cable and double-sided adhesive)	917437-001
(4)	**Battery** (3-cell, 44-WHr, 4.08-AHr, Li-ion)	918669-855
(5)	**Speaker Kit** (includes left and right speakers and cables)	917439-001
(6)	**System board** (includes replacement thermal material): **NOTE:** The system board spare part kit includes replacement thermal material. Replacement thermal pads are also available in the Thermal Pad Kit, spare part number 917441-001.	
	Equipped with an Intel Celeron N3060 1.60-GHz (turbo up to 2.48-GHz) dual core processor (2.0-GB L2 cache, 1600-MHz FSB, 6.0 W TDP / 4.0 W SDP), 4.0-GB of system memory, and 32-GB of eMMC system storage	917496-001
	Equipped with an Intel Celeron N3060 1.60-GHz (turbo up to 2.48-GHz) dual core processor (2.0-GB L2 cache, 1600-MHz FSB, 6.0 W TDP / 4.0 W SDP), 4.0-GB of system memory, and 16-GB of eMMC system storage	917495-001
	Equipped with an Intel Celeron N3060 1.60-GHz (turbo up to 2.48-GHz) dual core processor (2.0-GB L2 cache, 1600-MHz FSB, 6.0 W TDP / 4.0 W SDP), 2.0-GB of system memory, and 16-GB of eMMC system storage	917494-001
(7)	**Power connector cable**	920842-001
(8)	**Intel Dual Band Wireless-AC 7265 802.11 ac 2×2 WiFi + Bluetooth 4.0 Combo Adapter (non-vPro)**	860883-001

Item	Component	Spare part number
(9)	**Connector board** (includes cable)	917436-001
(10)	**Base enclosure:**	
	In Jack Black finish	917426-001
	In electric green finish	917427-001
	Rubber Kit (not illustrated, includes 2 display bezel screw covers, 4 rubber feet, and 2 rubber screw covers)	917438-001

Display assembly subcomponents



Item	Component	Spare part number
(1)	**Display bezel**	917430-001
(2)	**Webcam/microphone module** (includes double-sided adhesive)	922797-001

Item	Component	Spare part number
(3)	**11.6-in, HD, AntiGlare, (1366×768), WLED, SVA, eDP, slim non-TouchScreen display panel**	912370-003
(4)	**Display Hinge Kit** (includes left and right display hinges)	917434-001
(5)	**Display panel bracket**	917435-001
(6)	**Display panel cable** (includes webcam/microphone module cable)	917431-001
(7)	**Display enclosure** (includes left and right WLAN cables and transceivers, rubber padding, and shielding):	
	In Jack Black finish	917426-001
	In electric green finish	917427-001

Miscellaneous parts

Component	Spare part number
AC adapter:	
65-W HP Smart AC adapter (non-PFC, EM, 4.5-mm)	714657-001
45-W HP Smart AC adapter (non-PFC, RC, 4.5-mm)	741727-001
HP HDMI-to-VGA adapter	701943-001
HP RJ45-to-USB adapter dongle	539614-001
Power cord (C5-receptacle, 1.00-meter):	
For use in Australia	213356-008
For use in Denmark	213353-008
For use in Europe	213350-009
For use in India	404827-003
For use in Israel	398063-003
For use in Italy	213352-008
For use in Japan	349756-002
For use in North America	213349-009
For use in Switzerland	213354-008
For use in Taiwan	393313-003
For use in Thailand	285096-006
For use in the United Kingdom and Singapore	213351-008
Mylar Kit	924727-001
Rubber Kit (includes 2 display bezel screw covers, 4 rubber feet, and 2 rubber screw covers)	917438-001
Screw Kit	917439-001

4 Removal and replacement 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 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 drive, place it in a static-proof bag.

Avoid exposing a 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

5 Removal and replacement procedures

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

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

Component replacement procedures

There are as many as 54 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.

Computer feet

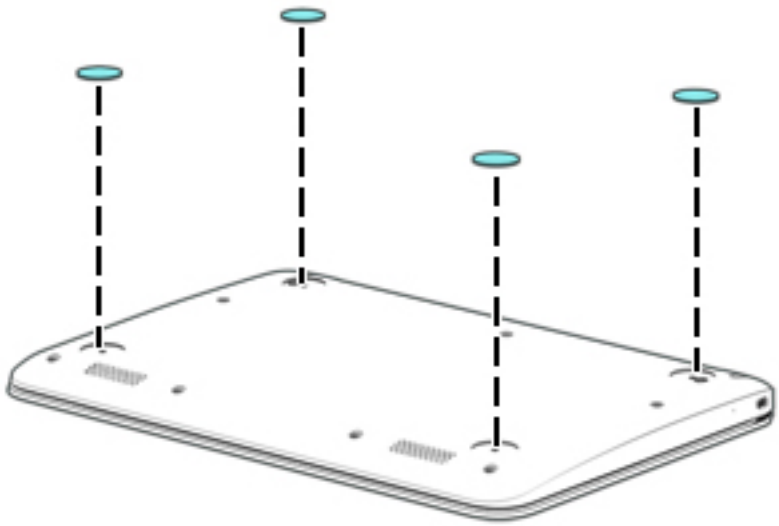
The computer feet are included in the Rubber Kit, spare part number 917438-001.

Before replacing the computer feet, 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 computer feet:

1. Close the computer.
2. Turn the computer upside down with the front toward you.
3. Remove the 4 rubber feet.



To install the rubber feet, remove the protective backing from the rubber feet and install them in the locations indicated in the above illustration.

Keyboard/top cover

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

Description	Spare part number	Description	Spare part number
For use in Belgium	917442-A41	For use in the Netherlands	917442-B31
For use in Canada	917442-DB1	For use in Russia	917442-251
For use in the Czech Republic and Slovenia	917442-FL1	For use in Saudi Arabia	917442-171
For use in Denmark, Finland, and Norway	917442-DH1	For use in Spain	917442-071
For use in France	917442-051	For use in Switzerland	917442-BG1
For use in Germany	917442-041	For use in Taiwan	917442-AB1
For use in Israel	917442-BB1	For use in Thailand	917442-281
For use in Italy	917442-061	For use in the United Kingdom	917442-031
For use in Japan	917442-291	For use in the United States	917442-001
For use in Latin America	917442-161		

Before removing the keyboard/top cover, 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 2 rear computer feet (see Computer feet on page 20).

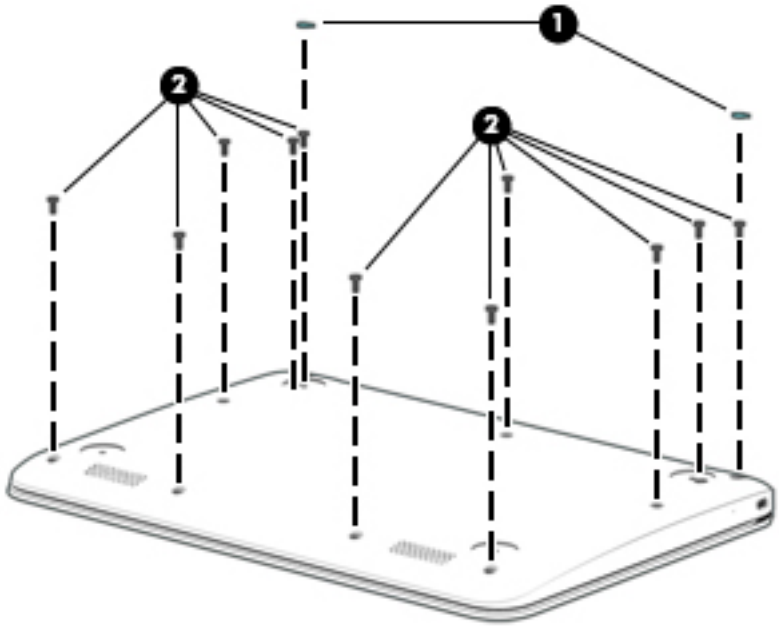
NOTE: When replacing the keyboard/top cover, be sure that the TouchPad (see TouchPad board on page 26) is removed from the defective keyboard/top cover and installed on the replacement keyboard/top cover.

Remove the keyboard/top cover:

1. Remove the two rubber screw covers **(1)**.

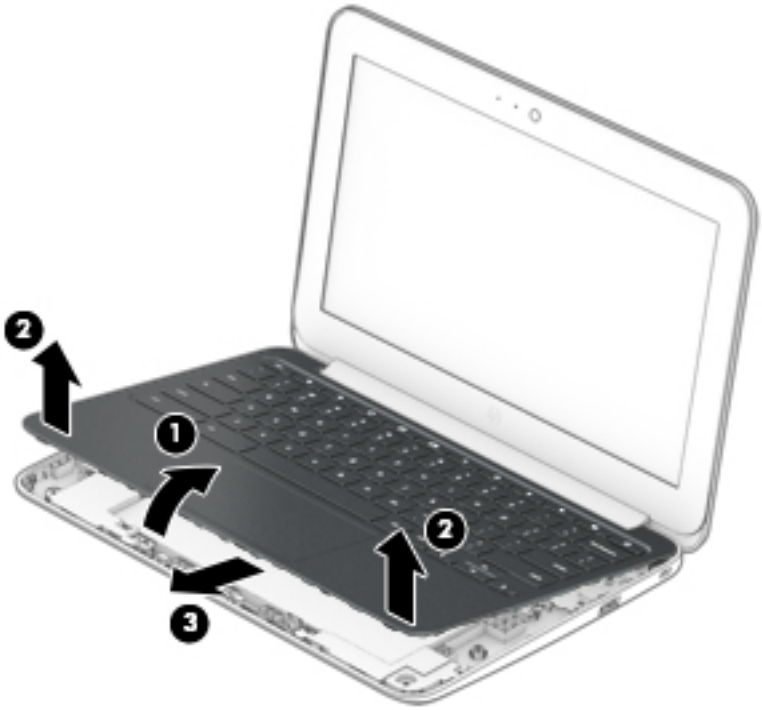
   The rubber screw covers are included in the Rubber Kit, spare part number 917438-001.

2. Remove the eleven Phillips PM1.9×6.7 screws **(2)** that secure the keyboard/top cover to the base enclosure.

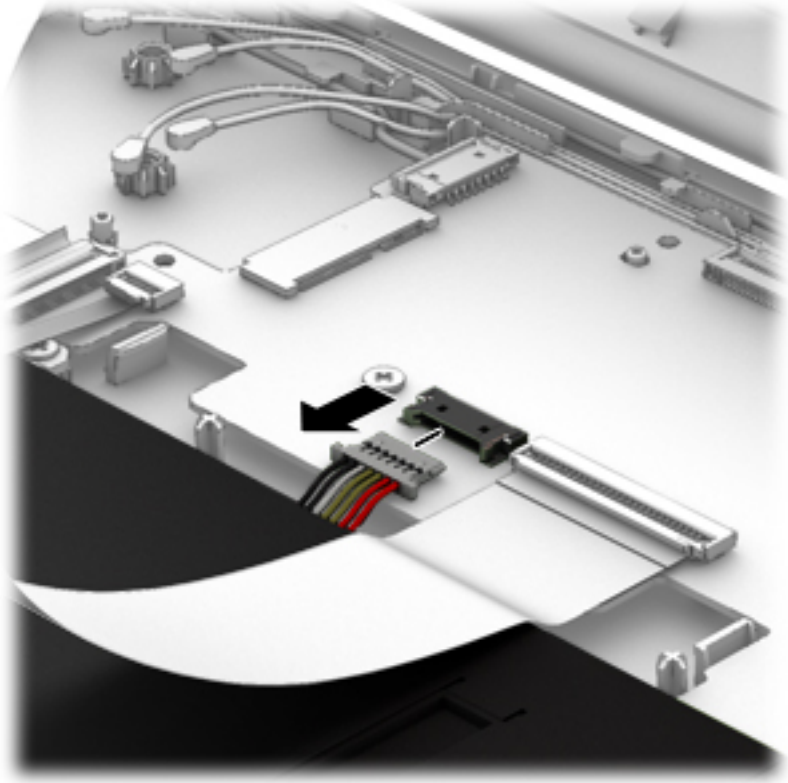


3. Turn the computer right side up with the front toward you.
4. Open the computer as far as it will open.
5. Lift the front edge **(1)** of the keyboard/top cover until it separates from the front edge of the base enclosure.
6. Lift the left **(2)** and right sides of the keyboard/top cover until they separate from the left and right sides of the base enclosure.

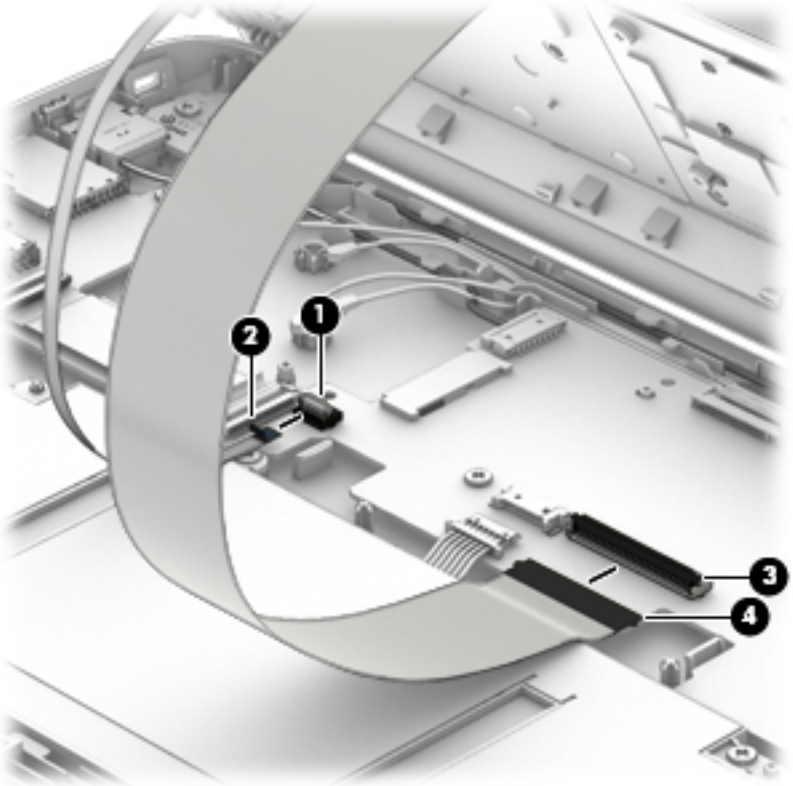
7. Slide the keyboard/top cover **(3)** forward until the battery, TouchPad, and keyboard cables are accessible.



8. Disconnect the battery cable from the system board.

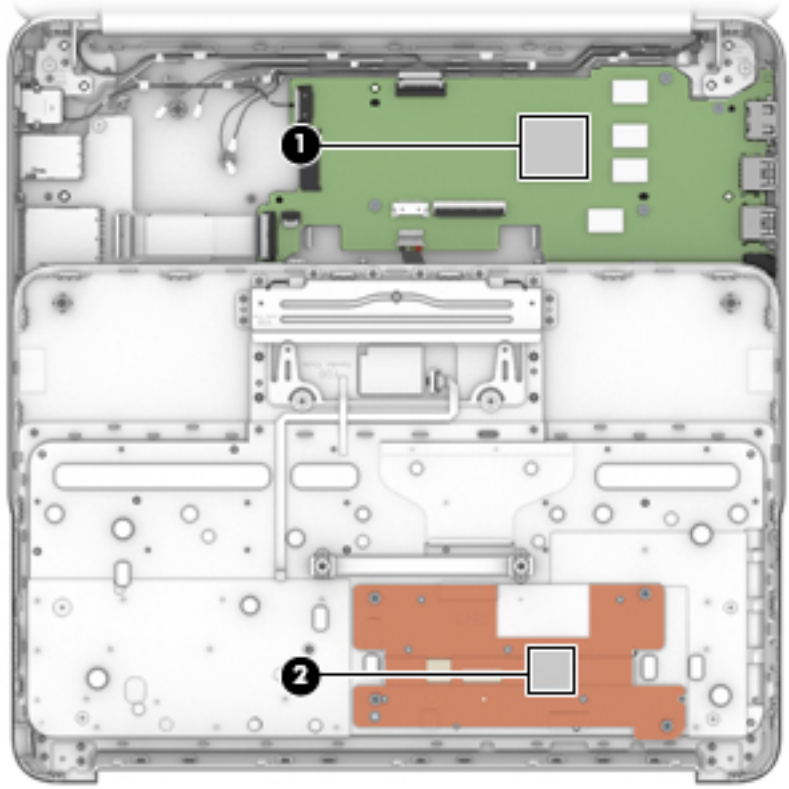


9. Release the zero insertion force (ZIF) connector **(1)** to which the TouchPad cable is attached, and then disconnect the TouchPad cable **(2)** from the system board.
10. Release the ZIF connector **(3)** to which the keyboard cable is attached, and then disconnect the keyboard cable **(4)** from the system board.



11. Remove the keyboard/top cover.

NOTE: The thermal material must be thoroughly cleaned from the surfaces of the heat sink and the system board components each time the keyboard/top cover is removed. A thermal pad is used on the processor **(1)** and the heat sink section **(2)** that services it. The system board spare part kit includes replacement thermal material. Replacement thermal pads are also available in the Thermal Pad Kit, spare part number 917441-001.



Reverse this procedure to install the keyboard/top cover.

TouchPad board

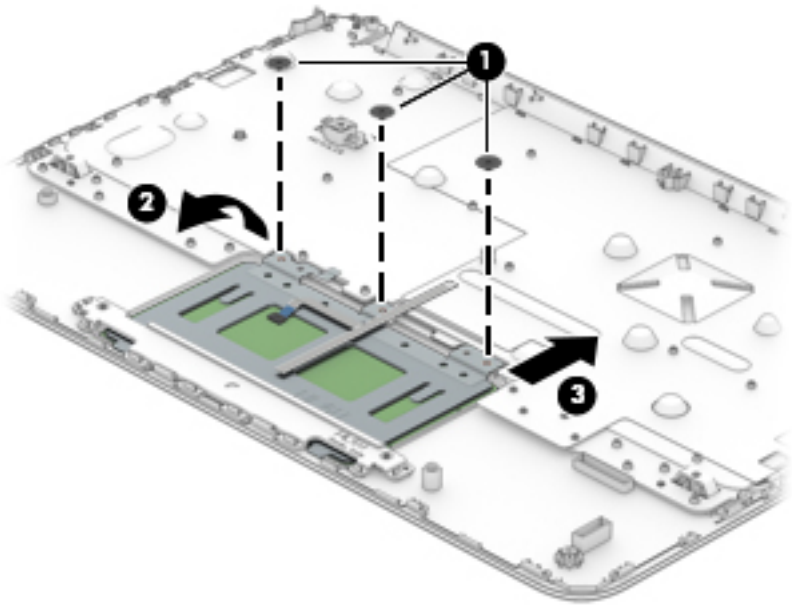
Description	Spare part number
TouchPad board (includes the cable and double-sided adhesive)	917437-001

Before removing the TouchPad 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 21).

Remove the TouchPad button board:

1. Turn the keyboard/top cover upside down with the front toward you.
2. Release the two pieces of grounding tape **(1)** that secure the TouchPad board to the keyboard/top cover.
3. Detach the TouchPad board cable **(2)** from the keyboard/top cover. (The TouchPad board cable is attached to the keyboard/top cover with double-sided adhesive at two locations.)
4. Remove the two Phillips PM1.9×2.3 screws **(3)** that secure the TouchPad board to the top cover.
5. Release the TouchPad board **(4)** by pressing it through the opening in the keyboard/top cover.
6. Remove the TouchPad board **(5)** and cable.



Reverse this procedure to install the TouchPad board.

Battery

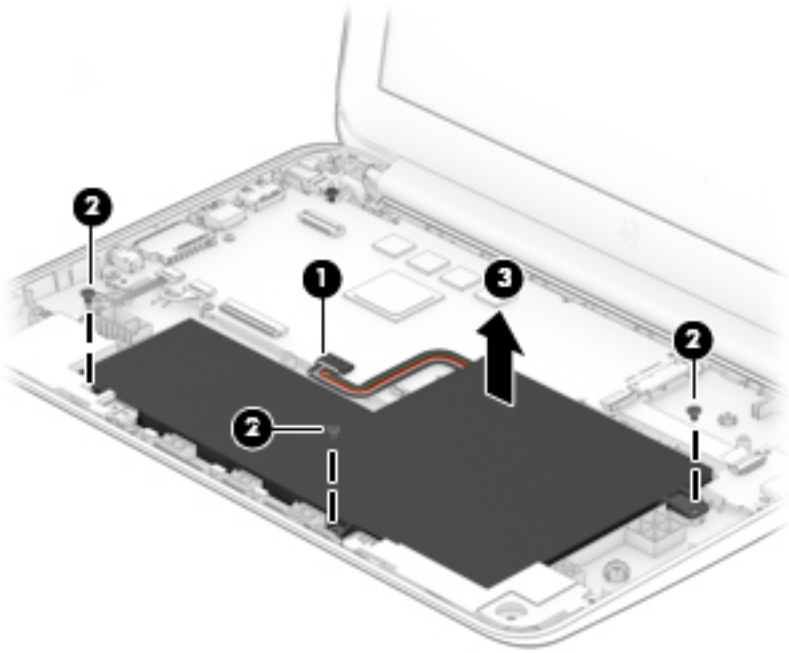
Description	Spare part number
Battery (3-cell, 44-WHr, 4.08-AHr, Li-ion; includes cable)	918669-855

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 21).

Remove the battery:

1. Remove the six Phillips PM1.9×4.2 screws **(2)** that secure the battery to the base enclosure.
2. Remove the battery **(2)**.



Reverse this procedure to install the battery.

Connector board

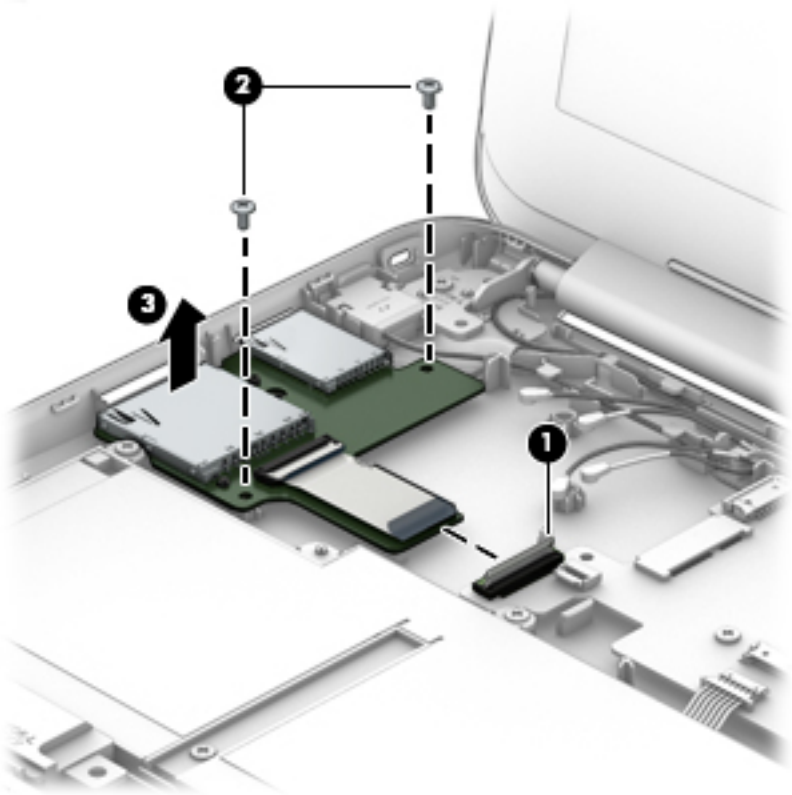
Description	Spare part number
Connector board (includes cable)	917436-001

Before removing the connector board, follow these steps:

1. 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.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see Keyboard/top cover on page 21).

Remove the connector board:

1. Release the ZIF connector **(1)** to which the connector board cable is attached, and then disconnect the connector board cable from the system board.
2. Remove the two Phillips PM1.9×4.2 screws **(2)** that secure the connector board to the base enclosure.
3. Remove the connector board **(3)**.



Reverse this procedure to install the connector board.

WLAN module

Description	Spare part number
Intel Dual Band Wireless-AC 7265 802.11 ac 2×2 WiFi + Bluetooth 4.0 Combo Adapter (non-vPro)	860883-001

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.

Before removing the WLAN module, follow these steps:

1. 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.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see Keyboard/top cover on page 21).

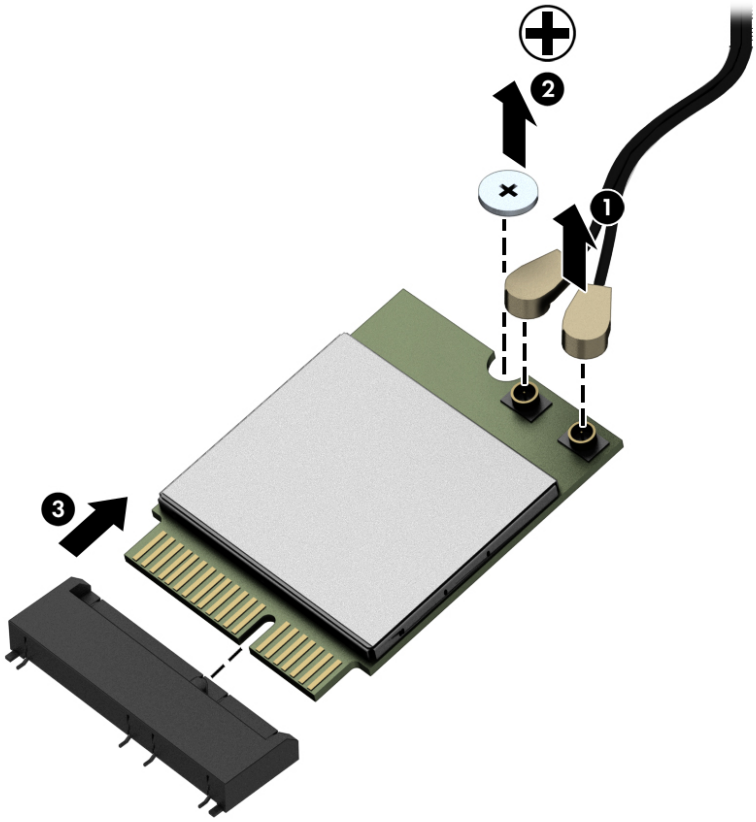
Remove the WLAN module:

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

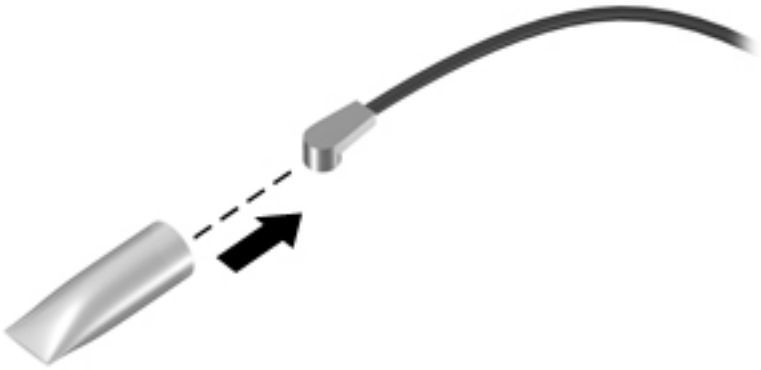
NOTE: The #1/white WLAN antenna cable connects to the WLAN module #1/Main terminal. The #2/black WLAN antenna cable connects to the WLAN module #1/Aux terminal.

2. Remove the Phillips PM1.9×4.2 screw **(2)** that secures the WLAN module to the base enclosure. (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 is not connected to the terminal on the WLAN module, a protective sleeve must be installed on the antenna connector, as shown in the following illustration.



Reverse this procedure to install the WLAN module.

Power connector cable

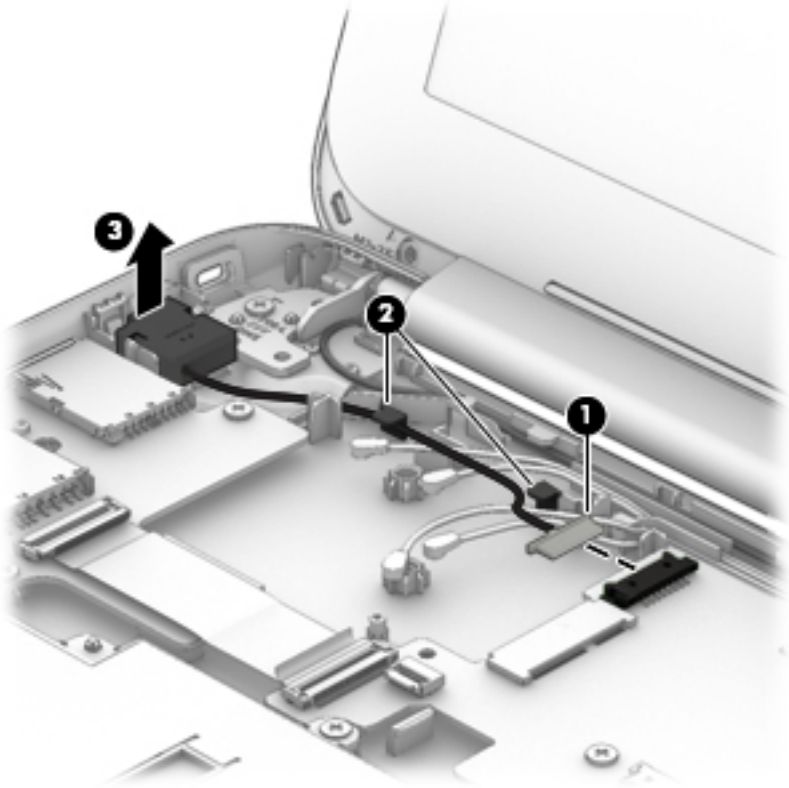
Description	Spare part number
Power connector cable	920842-001

Before removing the power connector cable, follow these steps:

1. 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.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the keyboard/top cover (see Keyboard/top cover on page 21).

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



4. Remove the power connector cable.

Reverse this procedure to install the power connector cable.

System board

NOTE: The system board spare part kit includes replacement thermal material. Replacement thermal pads are also available in the Thermal Pad Kit, spare part number 917441-001.

Description	Spare part number
Equipped with an Intel Celeron N3060 1.60-GHz (turbo up to 2.48-GHz) dual core processor (2.0-GB L2 cache, 1600-MHz FSB, 6.0 W TDP / 4.0 W SDP), 4.0-GB of system memory, and 32-GB of eMMC system storage	917496-001
Equipped with an Intel Celeron N3060 1.60-GHz (turbo up to 2.48-GHz) dual core processor (2.0-GB L2 cache, 1600-MHz FSB, 6.0 W TDP / 4.0 W SDP), 2.0-GB of system memory, and 16-GB of eMMC system storage	917495-001
Equipped with an Intel Celeron N3060 1.60-GHz (turbo up to 2.48-GHz) dual core processor (2.0-GB L2 cache, 1600-MHz FSB, 6.0 W TDP / 4.0 W SDP), 2.0-GB of system memory, and 16-GB of eMMC system storage	917494-001

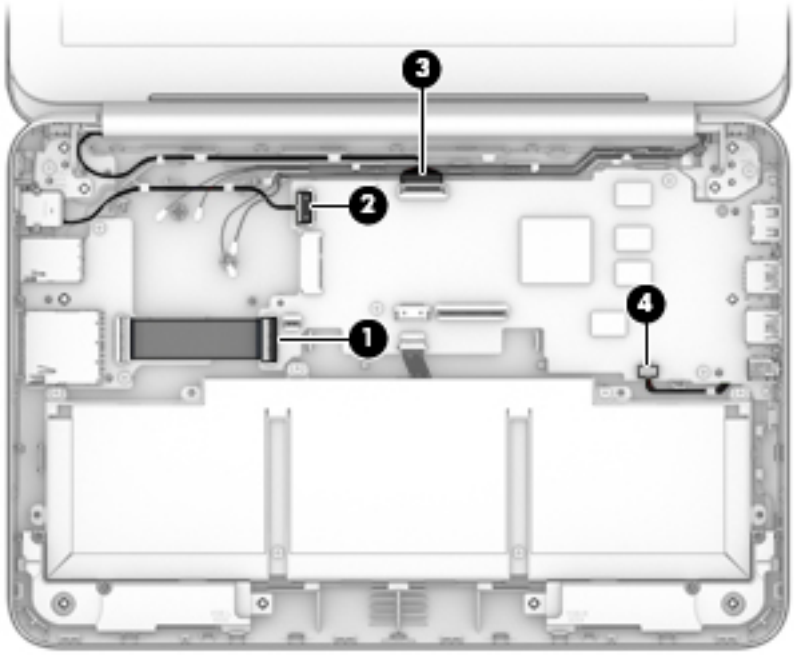
Before removing the system board, follow these steps:

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 21).
5. Remove the WLAN module (see WLAN module on page 29).

Remove the system board:

1. Release the ZIF connector **(1)** to which the connector board cable is attached, and then disconnect the connector board cable from the system board.
2. Disconnect the power connector cable **(2)** from the system board.
3. Release the ZIF connector **(3)** to which the display panel cable is attached, and then disconnect the display panel cable from the system board.

4. Disconnect the speaker cable **(4)** from the system board.

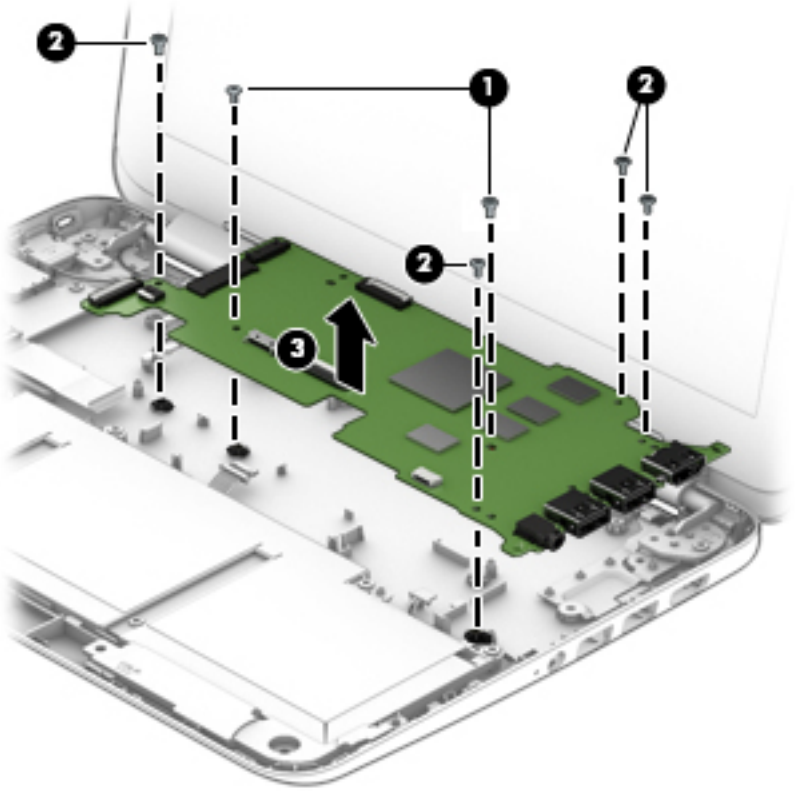


5. Remove the two Phillips PM2.5×3.7 broad head firmware screws **(1)** that secure the system board to the base enclosure.

IMPORTANT: The firmware screws must be installed in the locations shown in the following image. These screws have specific properties that ensure the proper operation of the computer.

6. Remove the four Phillips PM1.9×4.2 screws **(2)** that secure the system board to the base enclosure.

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



Reverse this procedure to install the system board.

Speakers

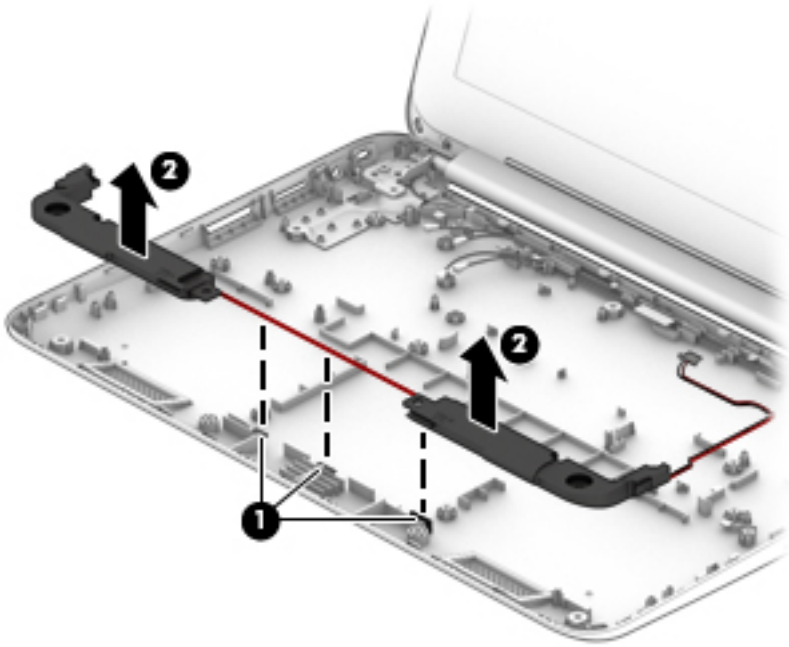
Description	Spare part number
Speaker Kit (includes left and right speakers and cables)	917440-001

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 21).
5. Remove the system board (see System board on page 32).

Remove the speakers:

1. Release the speaker cables from the routing clips **(1)** and channels built into the base enclosure.
2. Remove the speakers **(2)**.



Reverse this procedure to install the speakers.

Display assembly

The TouchScreen display is spared as an entire assembly. The non-TouchScreen display is spared at the subcomponent level. For non-TouchScreen display assembly spare part information, see the individual removal subsections.

Description	Spare part number
11.6-in, HD, BrightView (1366×768), LED, UWVA, slim, TouchScreen display panel assembly	920843-001

Before removing the display assembly, follow these steps:

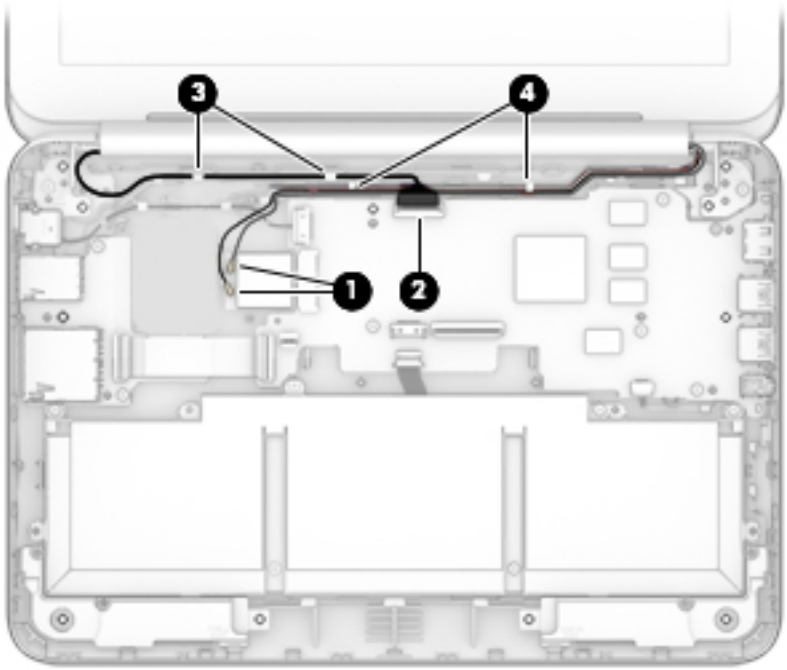
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.
4. Remove the keyboard/top cover (see Keyboard/top cover on page 21).

Remove the display assembly:

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

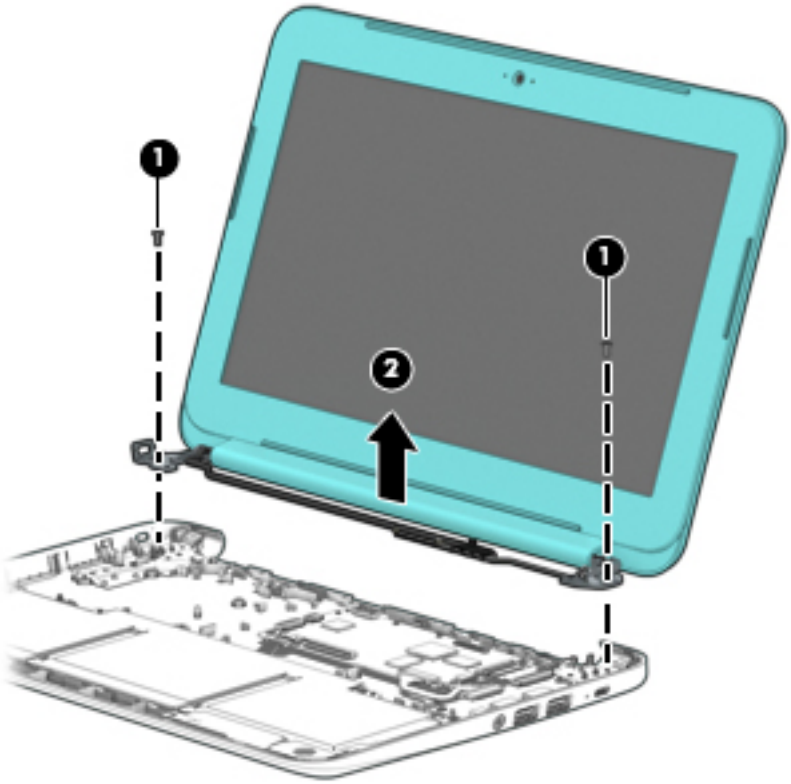
NOTE: The #1/white WLAN antenna cable connects to the WLAN module #1/Main terminal. The #2/black WLAN antenna cable connects to the WLAN module #2/Aux terminal.

2. Release the ZIF connector **(2)** to which the display panel cable is attached, and then disconnect the display panel cable from the system board.
3. Release the display panel cable from the routing clips **(3)** and channel built into the base enclosure.
4. Release the WLAN antenna cables from the routing clips **(4)** and channel built into the base enclosure.



5. Remove the two Phillips PM2.4×5.7 screws **(1)** that secure the display assembly to the base enclosure.

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

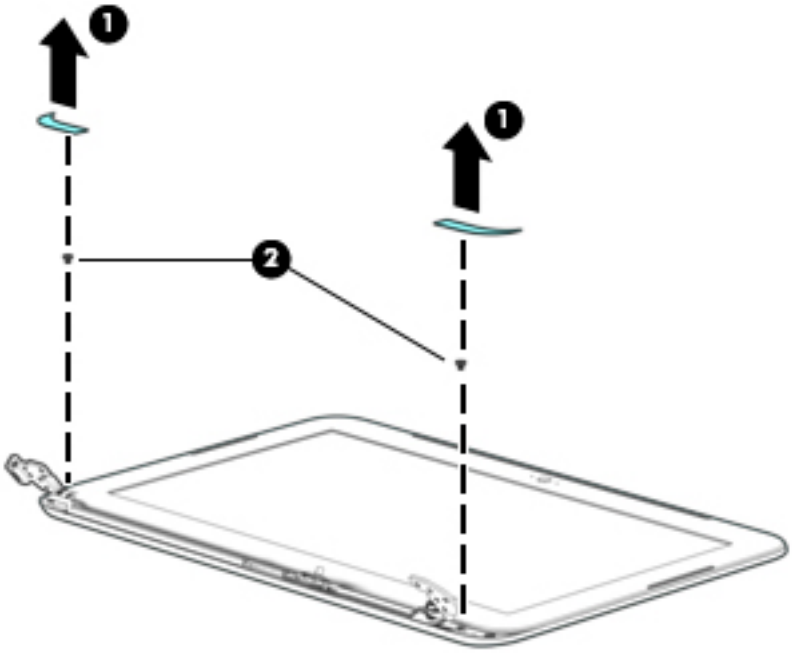


7. If it is necessary to replace the display bezel or any of the display assembly subcomponents:

   a. Remove the two display bezel screw covers **(1)**.

      The display bezel screw covers are included in the Rubber Kit, spare part number 917438-001.

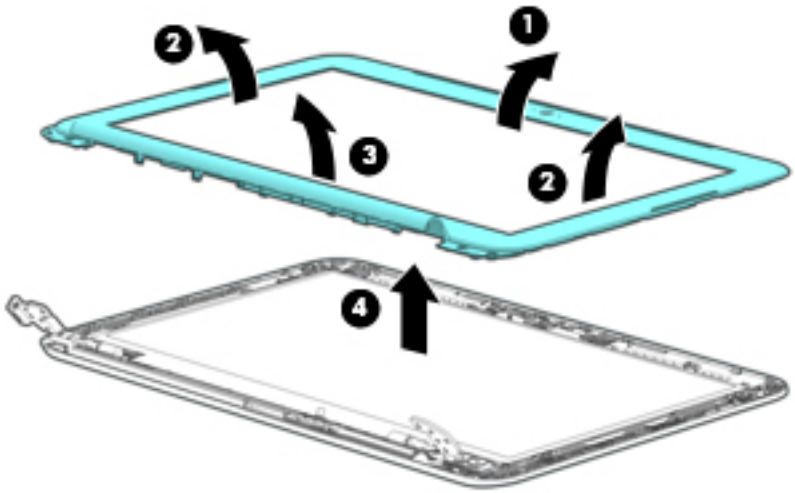
b. Remove the two Phillips PM1.9×2.3 screws **(2)** that secure the display bezel to the display assembly.



c. 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.

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

The display bezel is available using spare part number 917430-001.

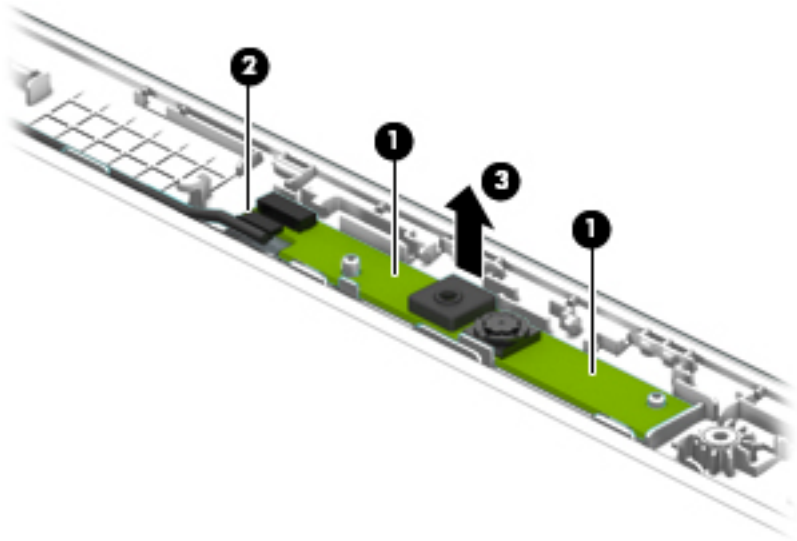


8. If it is necessary to replace the webcam/microphone module:

a. Detach the webcam/microphone module **(1)** from the display enclosure. (The webcam/microphone module is attached to the display enclosure with double-sided adhesive at two locations.)

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

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



d. Remove the webcam/microphone module.

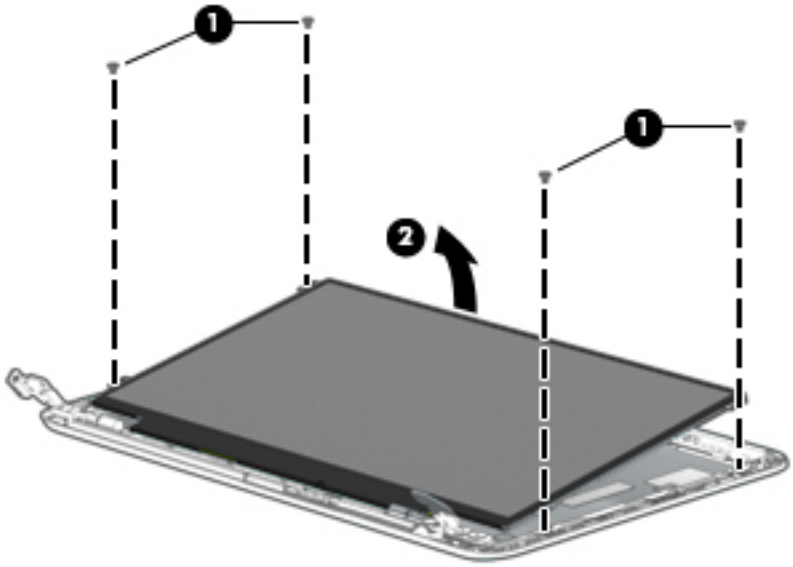
   The webcam/microphone module is available using spare part number 922797-001.

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

   a. Remove the four Phillips PM1.9×3.4 screws **(1)** that secure the display panel to the display enclosure.

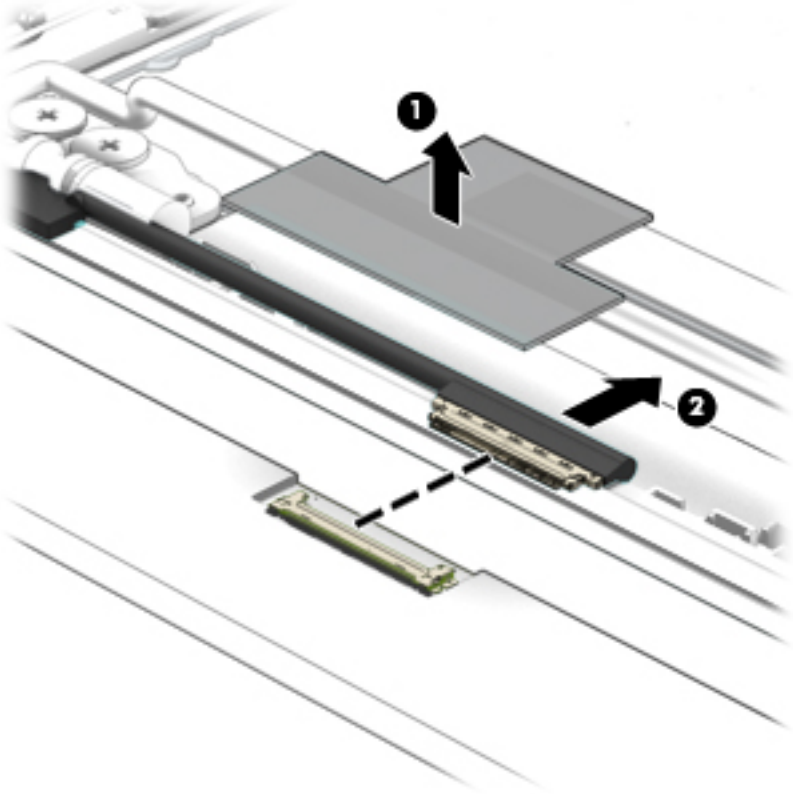
   ⚠ **CAUTION:** Before turning the display panel upside down, make sure the work surface is clear of tools, screws, and any other foreign objects. Failure to follow this caution can result in damage to the display panel.

b. Lift the top edge of the display panel **(2)** and swing it up and forward until it rests upside down in front of the display enclosure.



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

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



e. Remove the display panel.

The display panel is available using spare part number 912370-003.

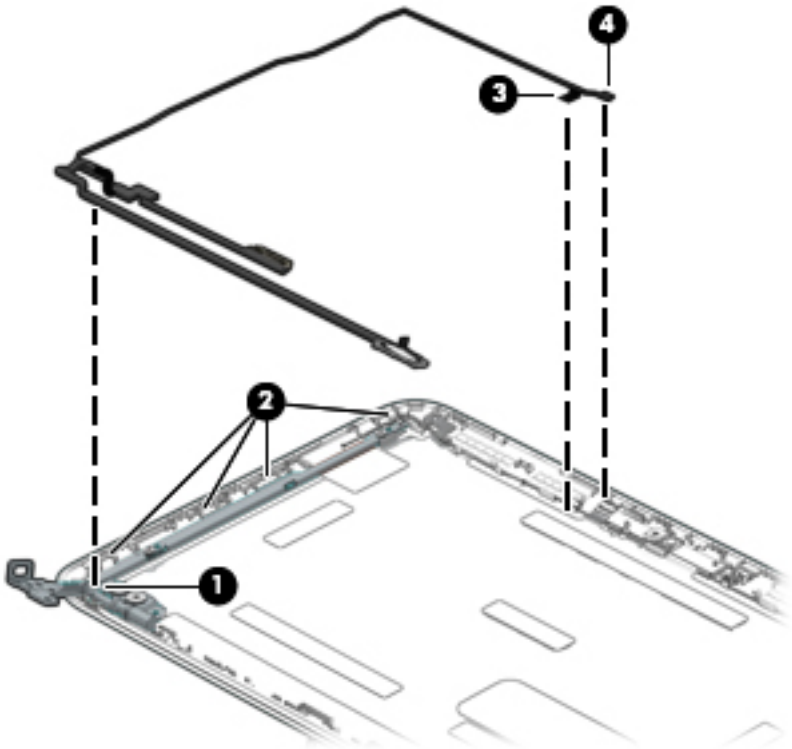
10. If it is necessary to replace the display panel cable:

    a. Release the display panel cable from the retention clip **(1)** built into the left hinge.

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

    c. Release the grounding tape **(3)** that secures the display panel cable to the display enclosure.

    d. Disconnect the display panel cable **(4)** from the webcam/microphone module.



    e. Remove the display panel cable.

       The display panel cable is available using spare part number 917431-001 and includes the webcam/microphone module cable.

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

    a. Remove the four Phillips PM2.4×3.6 broad head screws **(1)** and the four Phillips PM1.9×3.4 screws **(2)** that secure the display hinges to the display enclosure.

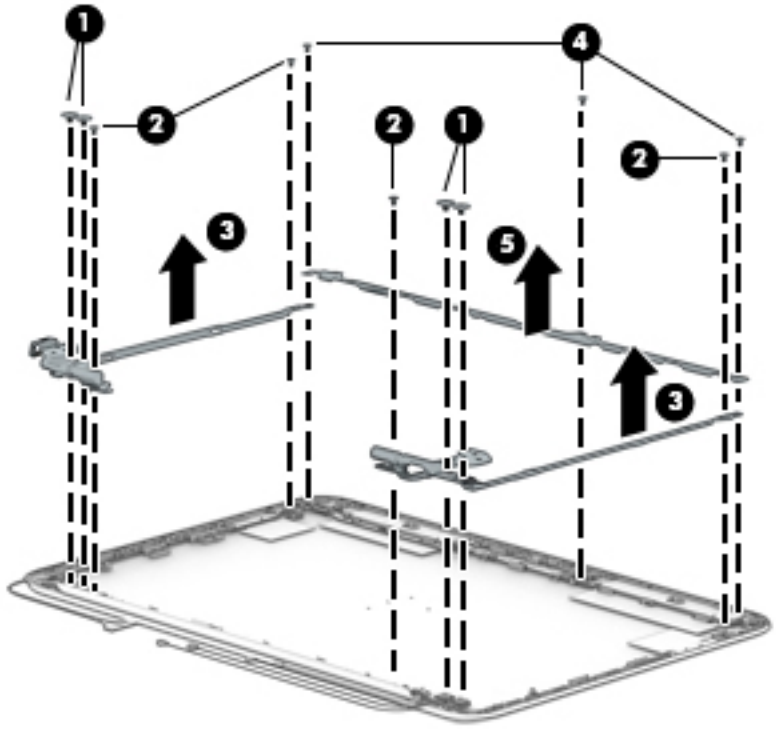
    b. Remove the display hinges **(3)**.

       The display hinges are included in the Display Hinge Kit, spare part number 917434-001.

    c. Remove the three Phillips PM1.9×3.4 screws **(4)** that secure the display panel bracket to the display enclosure.

d. Remove the display panel bracket **(5)**.

The display panel bracket is available using spare part number 917435-001.



Reverse this procedure to reassemble install the display assembly.

6 Specifications

	Metric	U.S.
Computer dimensions		
Width	**30.0 cm**	11.8 in
Depth	**20.7 cm**	8.1 in
Height	**2.1 cm**	0.8 in
Weight (computer model equipped with a TouchScreen display assembly)	**1.28 kg**	2.82 lbs
Weight (computer model equipped with a non-TouchScreen display assembly)	**1.23 kg**	2.72 lbs
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.

7 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
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

Country/region	Accredited agency	Applicable note number
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.

8 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.

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audio-out jack 7

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