# HP Chromebook (model numbers 11-2200 through 11-2299)

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.

Not all features are available in all editions of Windows 8. This computer may require upgraded and/or separately purchased hardware, drivers, and/or software to take full advantage of Windows 8 functionality. See for http://www.microsoft.com details.

## 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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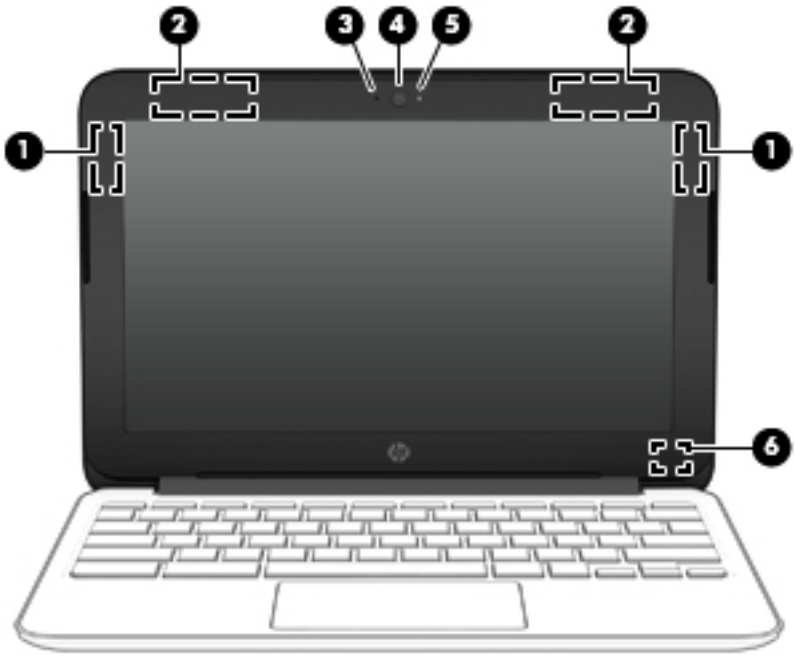
# 1 Product description

| Category | Description |
|---|---|
| **Product Name** | HP Chromebook (model numbers 11-2200 through 11-2299) |
| **Processor** | Intel® Celeron™ N2940 1.83-GHz (SC turbo up to 2.25-GHz) quad core processor (1.0-GB L2 cache, 1333-MHz FSB, 4.5 W)<br>Intel Celeron N2840 2.16-GHz (SC turbo up to 2.58-GHz) dual core processor (1.0-GB L2 cache, 1333-MHz FSB, 4.5 W) |
| **Chipset** | Integrated soldered-on-circuit (SoC) platform controller hub (PCH) |
| **Graphics** | **Internal Graphics**: Intel HD Graphics<br>Supports HD decode, DX11, and HDMI |
| **Panel** | 11.6-in, high-definition (HD), AntiGlare, (1366×768), UWVA, light-emitting diode (LED), slim (3.0-mm); 16:9 aspect ratio; typical brightness: 220 nits, eDP;<br>11.6-in, HD, AntiGlare, (1366×768), SVA, white light-emitting diode (WLED), flat (3.6-mm); 16:9 aspect ratio; typical brightness: 220 nits, eDP;<br>Supports low-voltage differential signaling (LVDS) |
| **Memory** | Supports DDR3L-1600<br>Supports up to 4096-MB maximum on-board system memory (4 pieces of 256-MB × 16) |
| **Storage** | Supports 16-GB embedded MultiMedia Controller (eMMC) |
| **Audio and video** | Fixed (no tilt) integrated HP TrueVision HD webcam, 1280×720 by 30 frames per second with LED<br>Single digital microphone with appropriate echo-cancellation, noise-suppression software<br>Two speakers |
| **Sensors** | Trusted platform module (TPM) |
| **Wireless** | Integrated wireless local area network (WLAN) options by way of wireless module<br>Two built-in WLAN antennas<br>Supports the following WLAN modules:<br>• Intel Dual Band Wireless-AC 7260 802.11 ac 2×2 WiFi + Bluetooth 4.0 Combo Adapter<br>• Intel Dual Band Wireless-N 7260AN 802.11 a/b/g/n 2×2 WiFi + Bluetooth 4.0 Combo Adapter |
| **Ports** | Headphone/microphone combo jack<br>USB 2.0 ports (2) |
| **Keyboard/pointing devices** | Full-sized, textured, island-style, Google keyboard<br>**Touchpad requirements:**<br>Multitouch gestures enabled<br>Taps enabled as default |
| **Keyboard/pointing devices** *(continued)* | Taps enabled as default |

| Category | Description |
|---|---|
| **Power requirements** | Supports a 3-cell, 36-WHr, 3.25-WHr, Li-Ion battery |
| **Power requirements** *(continued)* | Supports a 65-W HP Smart AC adapter (non-PFC, EM, 4.5-mm) and 45-W HP Smart AC adapter (non-PFC, RC, 4.5-mm) AC adapter |
| **Operating system** | **Preinstalled:** Google Chrome operating system |
| **Serviceability** | **End user replaceable parts:** AC adapter |

# 2 External component identification

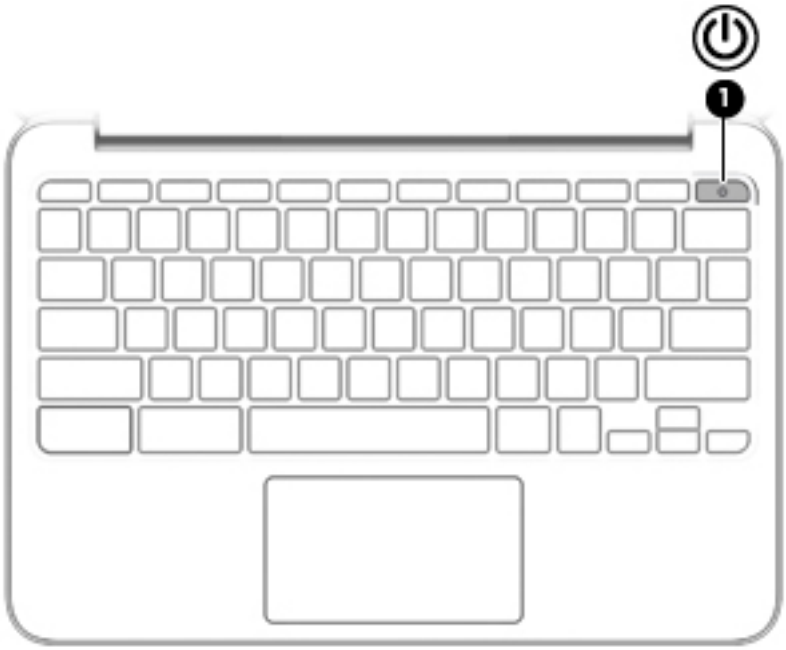
## Display




| Item | Component | Description |
|---|---|---|
| **(1)** | WLAN antennas (2)* | Send and receive wireless signals to communicate with WLANs.<br><br>**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. |
| **(5)** | Internal display switch | Turns off the display or initiates Sleep if the display is closed while the power is on.<br><br>**NOTE:** The display switch is not visible from the outside of the computer. |

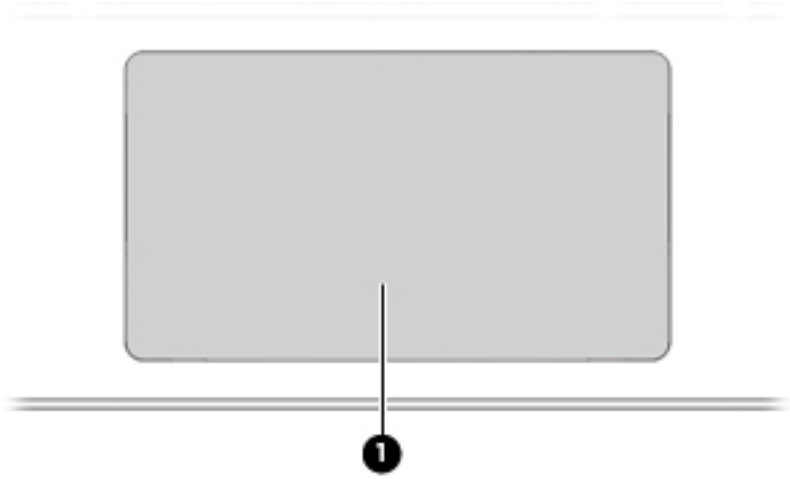
*The antennas, IR emitters (select models only), and sensors are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennas, IR emitters, and sensors free from obstructions. For wireless regulatory notices, see the section of the *Regulatory,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

# Button



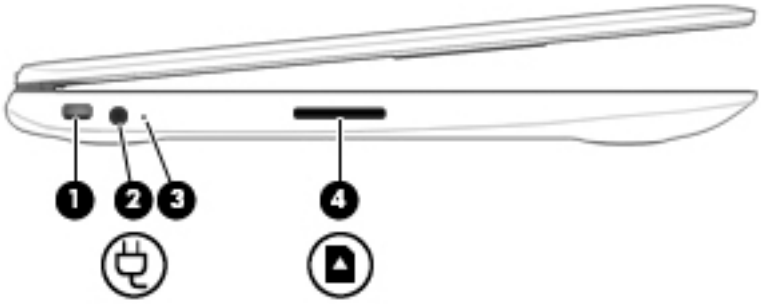

| Item | Component | Description |
|---|---|---|
| **(1)** | Power button | • When the computer is off, press the button to turn on the computer.<br>• When the computer is in the Sleep state, press the button briefly to exit Sleep.<br>• When the computer is on and you want to lock the screen, press the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

# TouchPad



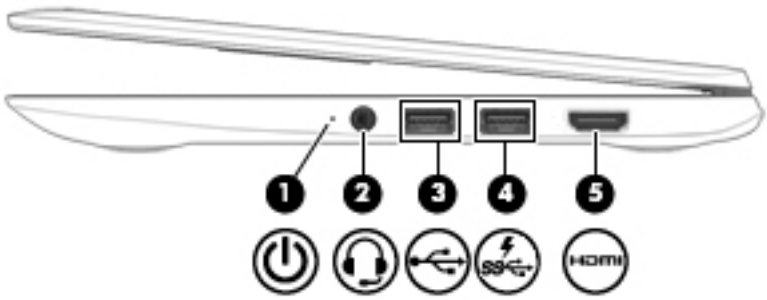

| Item | Component | Description |
|---|---|---|
| (1) | TouchPad zone | Moves the on-screen pointer and selects or activates items on the screen. |

# Left side



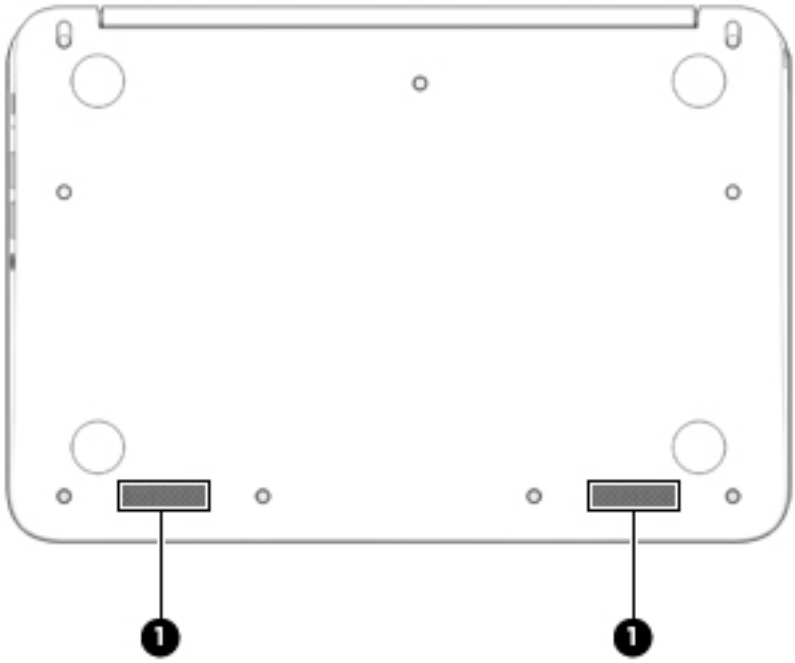

| Item | Component | Description |
|---|---|---|
| **(1)** | Security cable slot | Attaches an optional security cable to the computer.<br>**NOTE:** The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen. |
| **(2)** | Power connector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

# Right side




| Item | Component | Description |
|---|---|---|
| **(1)** | Power light | • White: Computer is on.<br>• Blinking white: Computer is in Sleep mode.<br>• 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.<br>**WARNING!** To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset.<br>**NOTE:** When a device is connected to the jack, the computer speakers are disabled.<br>**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




| Item | Component | Description |
|---|---|---|
| **(1)** | Speakers (2) | Produce sound. |

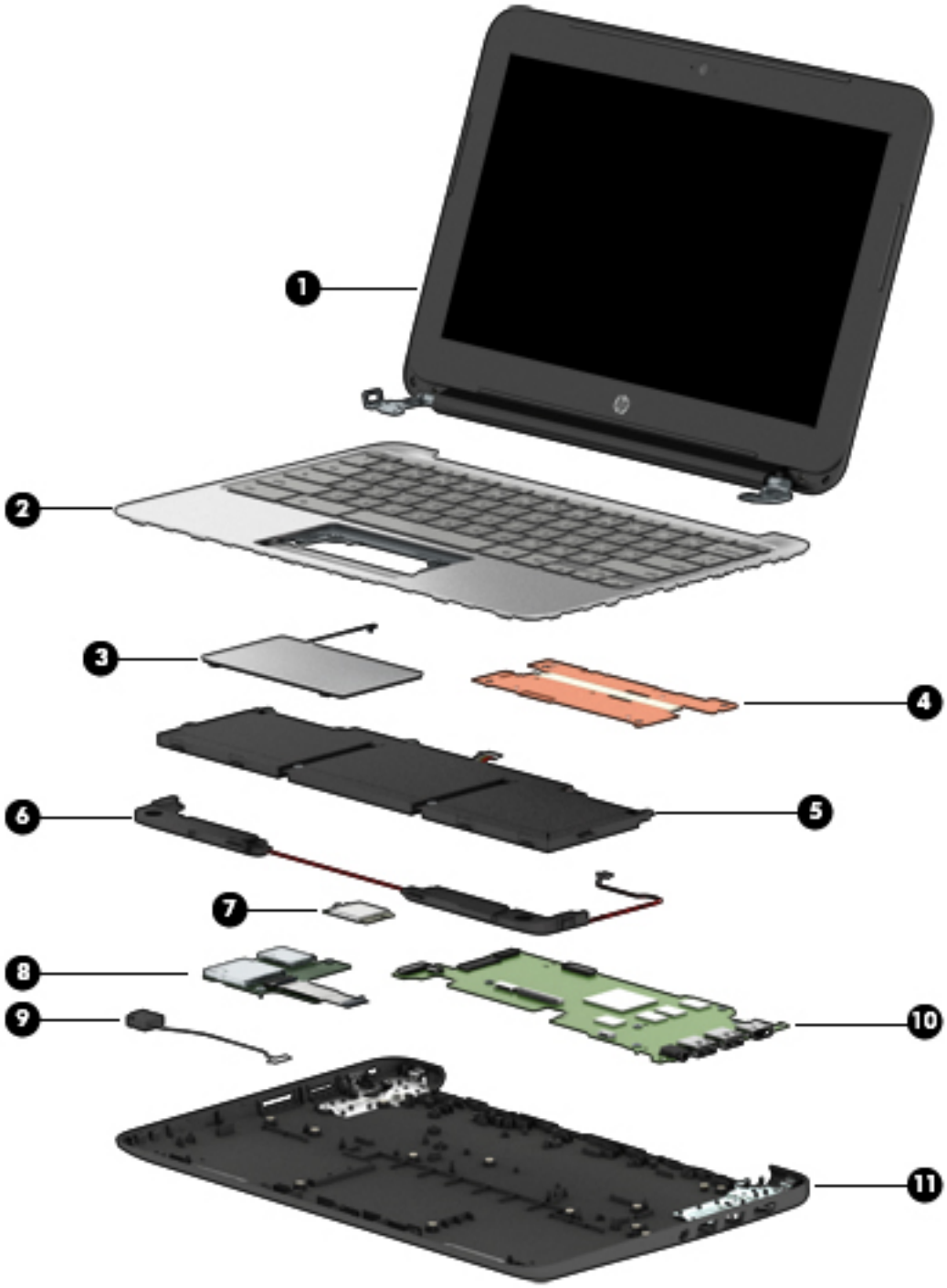
# 3 Illustrated parts catalog

**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.

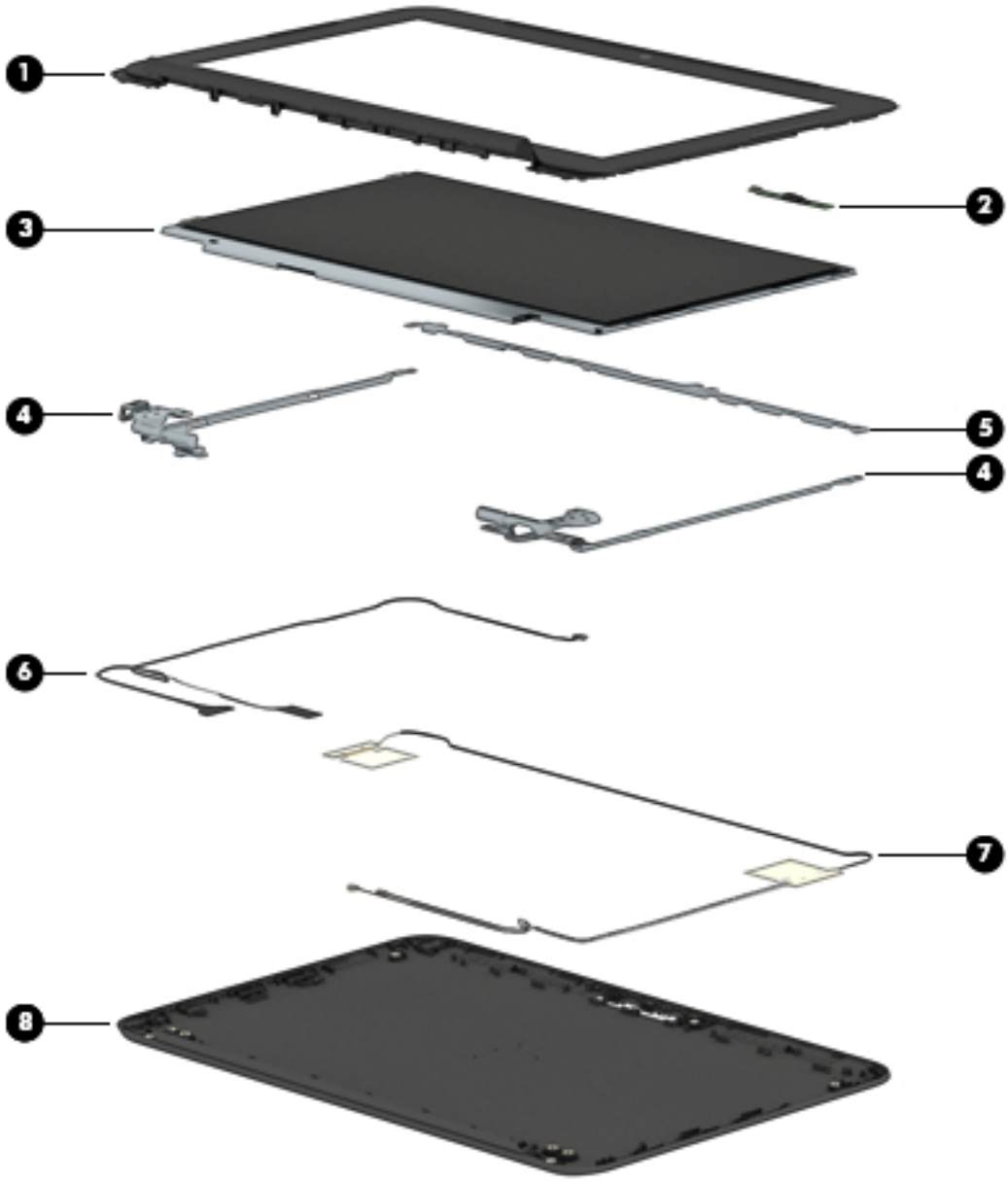
# Computer major components




| Item | Component | Spare part number |
|---|---|---|
| (1) | **Display assembly**: The display assembly is spared at the subcomponent level only. For more display assembly spare part information, see Display assembly subcomponents on page 12. | |
| (2) | **Keyboard/top cover** (includes keyboard cable): | |
| | For use in Belgium | 783090-A41 |

| Item | Component | Spare part number |
|---|---|---|
| | For use in Canada | 783090-DB1 |
| | For use in Denmark, Finland, and Norway | 783090-DH1 |
| | For use in France | 783090-051 |
| | For use in Germany | 783090-041 |
| | For use in Italy | 783090-061 |
| | For use in Latin America | 783090-161 |
| | For use in the Netherlands | 783090-B31 |
| | For use in Russia | 783090-251 |
| | For use in Spain | 783090-071 |
| | For use in Switzerland | 783090-BG1 |
| | For use in the United Kingdom | 783090-031 |
| | For use in the United States | 783090-001 |
| **(3)** | **TouchPad board** (includes cable and double-sided adhesive) | 783086-001 |
| **(4)** | **Heat sink** (includes replacement thermal material) | 825376-001 |
| **(5)** | **Battery** (3-cell, 36-WHr, 3.25-AHr, Li-ion; includes cable) | 767068-005 |
| **(6)** | **Speaker Kit** (includes left and right speakers and cables) | 788555-001 |
| **(7)** | **WLAN module:** | |
| | Intel Dual Band Wireless-AC 7260 802.11 ac 2×2 WiFi + Bluetooth 4.0 Combo Adapter | 784645-005 |
| | Intel Dual Band Wireless-N 7260AN 802.11 a/b/g/n 2×2 WiFi + Bluetooth 4.0 Combo Adapter | 784647-005 |
| **(8)** | **Connector board** (includes SD Card Reader slot and cable) | 783087-001 |
| **(9)** | **Power connector cable** | 787922-001 |
| **(10)** | **System board** equipped with 16-GB of eMMC primary storage (includes replacement thermal material): | |
| | Equipped with an Intel Celeron N2940 1.83-GHz (SC turbo up to 2.25-GHz) quad core processor (1.0-GB L2 cache, 1333-MHz FSB, 4.5 W) and 4.0-GB of system memory | 822638-001 |
| | Equipped with an Intel Celeron N2840 2.16-GHz (SC turbo up to 2.58-GHz) dual core processor (1.0-GB L2 cache, 1333-MHz FSB, 4.5 W) and 4.0-GB of system memory | 822636-001 |
| | Equipped with an Intel Celeron N2840 2.16-GHz (SC turbo up to 2.58-GHz) dual core processor (1.0-GB L2 cache, 1333-MHz FSB, 4.5 W) and 2.0-GB of system memory | 822635-001 |
| **(11)** | **Base enclosure** | 822620-001 |
| | **Rubber Kit** (not illustrated, includes 2 display bezel screw covers, 4 rubber feet, and 2 rubber screw covers) | 822631-001 |

# Display assembly subcomponents




| Item | Component | Spare part number |
|---|---|---|
| (1) | **Display bezel** | 822624-001 |
| (2) | **Webcam/microphone module** (includes double-sided adhesive) | 783088-001 |
| (3) | **Display panel:** | |
| | 11.6-in, HD, AntiGlare, (1366×768), UWVA, LED, slim (3.0-mm) display panel | 822629-001 |
| | 11.6-in, HD, AntiGlare, (1366×768), SVA, WLED, flat (3.6-mm) display panel | 822630-001 |
| (4) | **Display Hinge Kit** (includes left and right display hinges) | 761972-001 |
| (5) | **Display panel bracket** | 783085-001 |

| Item | Component | Spare part number |
|---|---|---|
| **(6)** | **Display panel cable** (includes webcam/microphone module cable) | 783083-001 |
| **(7)** | **WLAN antenna** (includes left and right WLAN cables and transceivers) | 783075-001 |
| **(8)** | **Display enclosure** (includes rubber padding and shielding) | 822617-001 |

# 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:** | |
| For use in Australia | 755530-011 |
| For use in Denmark | 755530-081 |
| For use in Europe | 755530-021 |
| For use in India | 755530-D61 |
| For use in Italy | 755530-061 |
| For use in Japan | 755530-291 |
| For use in North America | 755530-001 |
| For use in Switzerland | 755530-111 |
| For use in the United Kingdom and Singapore | 755530-031 |
| **Rubber Kit** (includes 2 display bezel screw covers, 4 rubber feet, and 2 rubber screw covers) | 822631-001 |
| **Screw Kit** | 822634-001 |

# 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

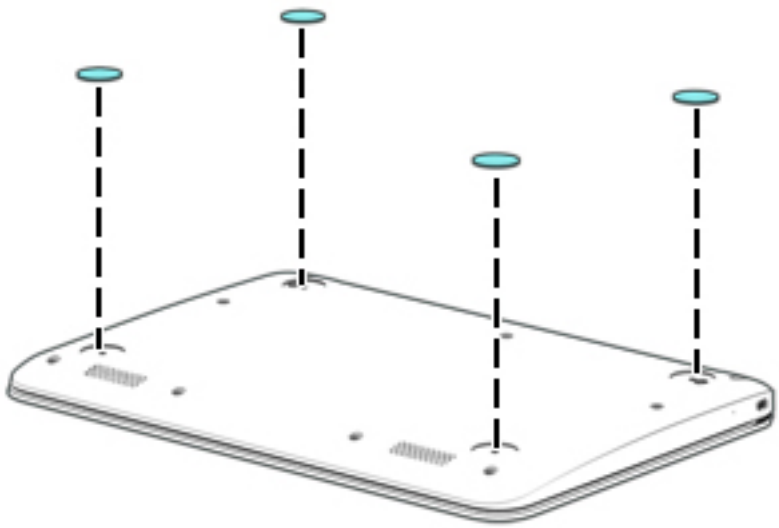
**NOTE:** The computer feet are included in the Rubber Kit, spare part number 822631-001.

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

| Description | Spare part number | Description | Spare part number |
|---|---|---|---|
| Keyboard/top cover in anodized silver finish (includes keyboard cable): | | For use in Latin America | 783090-161 |
| For use in Belgium | 783090-A41 | For use in the Netherlands | 783090-B31 |
| For use in Canada | 783090-DB1 | For use in Russia | 783090-251 |
| For use in Denmark, Finland, and Norway | 783090-DH1 | For use in Spain | 783090-071 |
| For use in France | 783090-051 | For use in Switzerland | 783090-BG1 |
| For use in Germany | 783090-041 | For use in the United Kingdom | 783090-031 |
| For use in Italy | 783090-061 | For use in the United States | 783090-001 |

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).

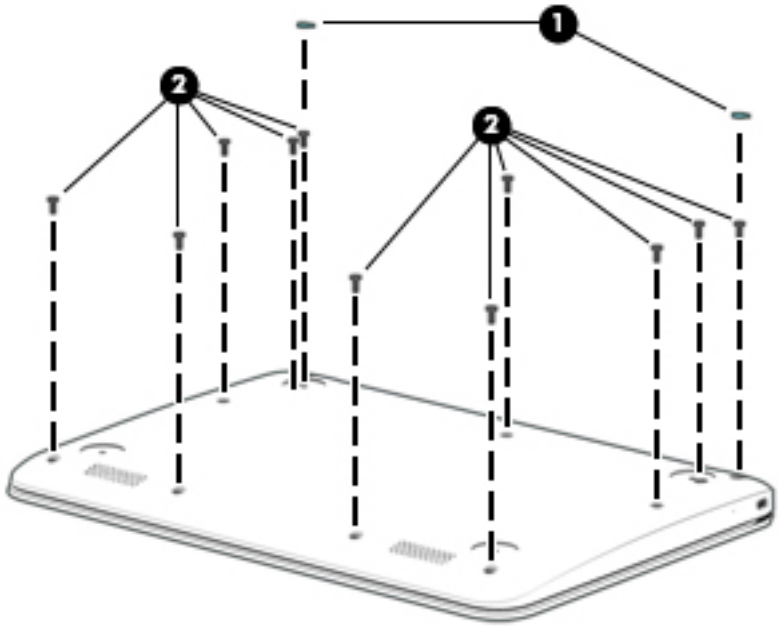
**NOTE:** When replacing the keyboard/top cover, be sure that the heat sink (see Heat sink on page 26) and TouchPad (see TouchPad board on page 27) are removed from the defective keyboard/top cover and installed on the replacement keyboard/top cover.

Remove the keyboard/top cover:

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

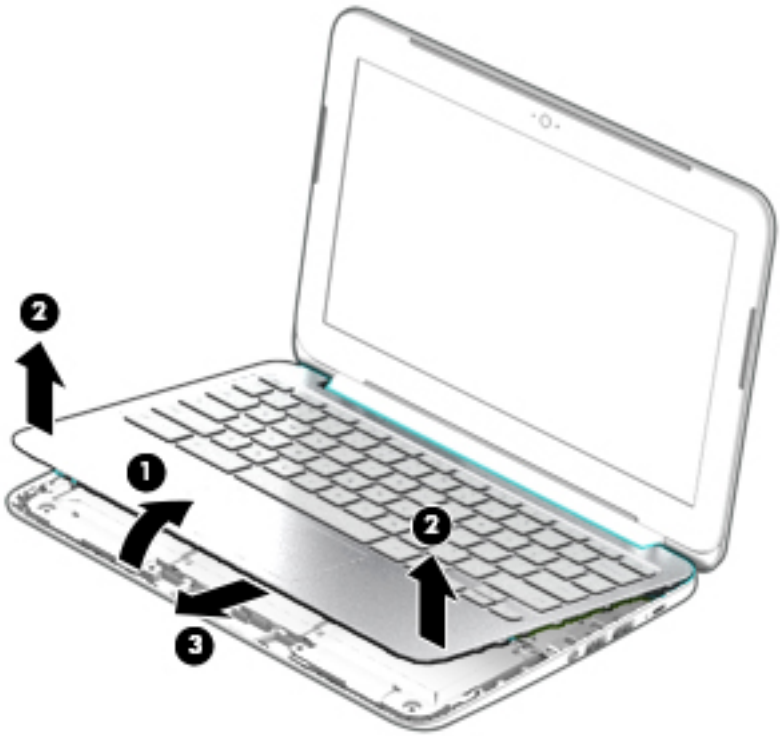
**NOTE:** The rubber screw covers are included in the Rubber Kit, spare part number 822631-001.

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

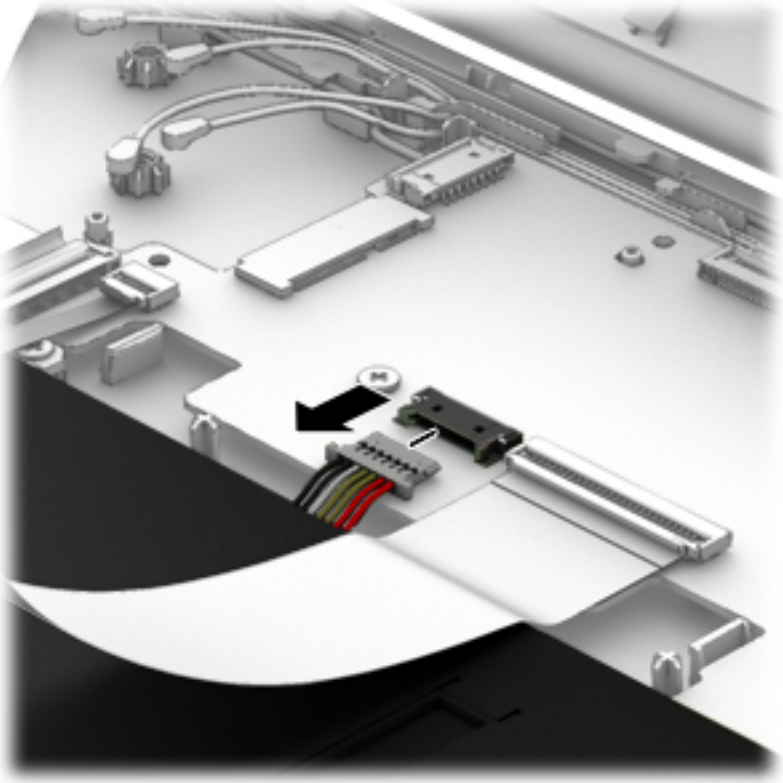



3. Turn the computer right side up with the front toward you.
4. Open the computer as far as it will open.
5. Lift the front edge **(1)** of the keyboard/top cover until it separates from the front edge of the base enclosure.
6. Lift the left **(2)** and right sides of the keyboard/top cover until they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

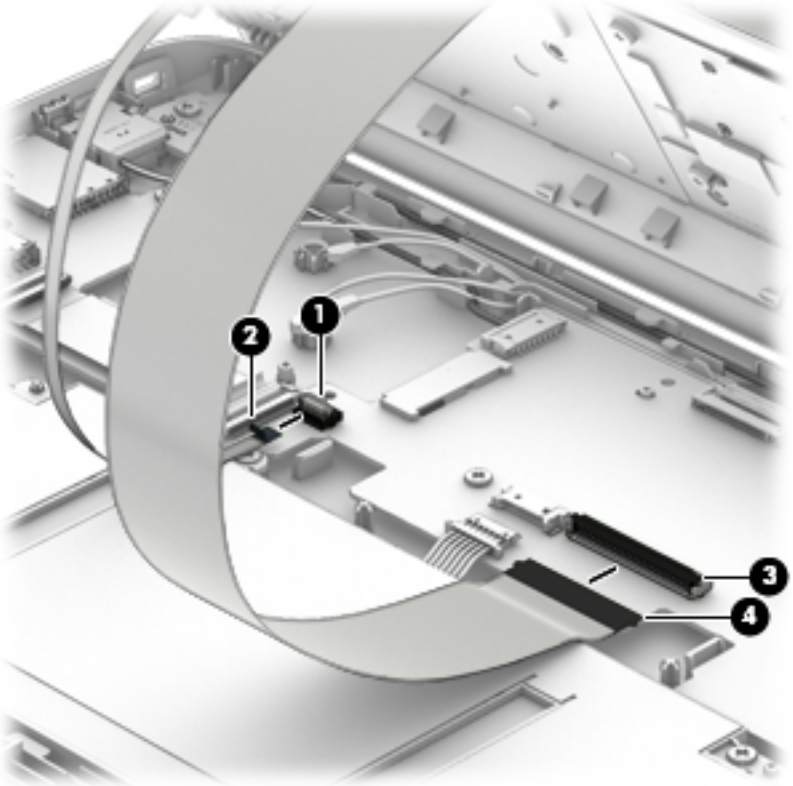
7. Slide the keyboard/top cover **(3)** forward until the battery, TouchPad, and keyboard cables are accessible.




8. Disconnect the battery cable from the system board.

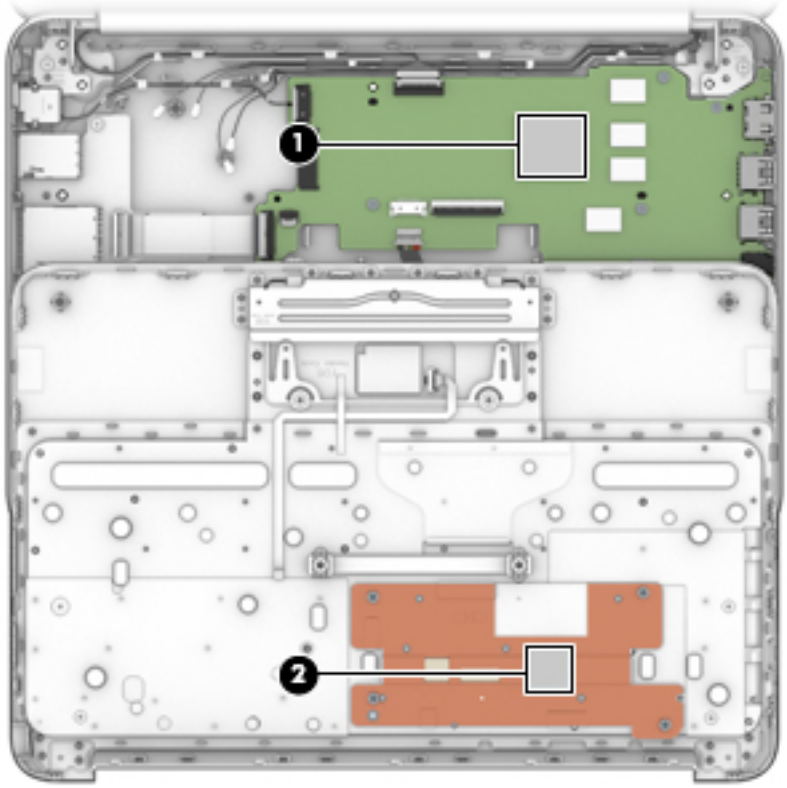


9. Release the zero insertion force (ZIF) connector **(1)** to which the TouchPad cable is attached, and then disconnect the TouchPad cable **(2)** from the system board.
10. Release the ZIF connector **(3)** to which the keyboard cable is attached, and then disconnect the keyboard cable **(4)** from 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. Thermal paste is used on the processor **(1)** and the heat sink section **(2)** that services it.




Reverse this procedure to install the keyboard/top cover.

## Heat sink

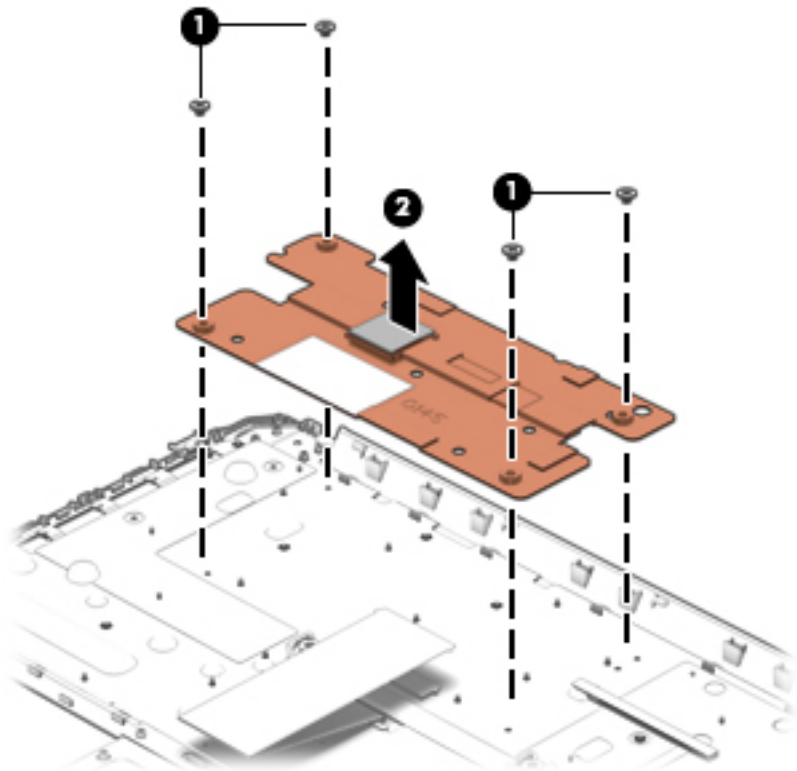
| Description | Spare part number |
|---|---|
| Heat sink (includes replacement thermal material) | 825376-001 |

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 21).

Remove the heat sink:

1. Turn the keyboard/top cover upside down with the front toward you.
2. Remove the four Phillips PM1.9×2.3 screws **(1)** that secure the heat sink to the keyboard/top cover.
3. Remove the heat sink **(2)**.




Reverse this procedure to install the heat sink.

## TouchPad board

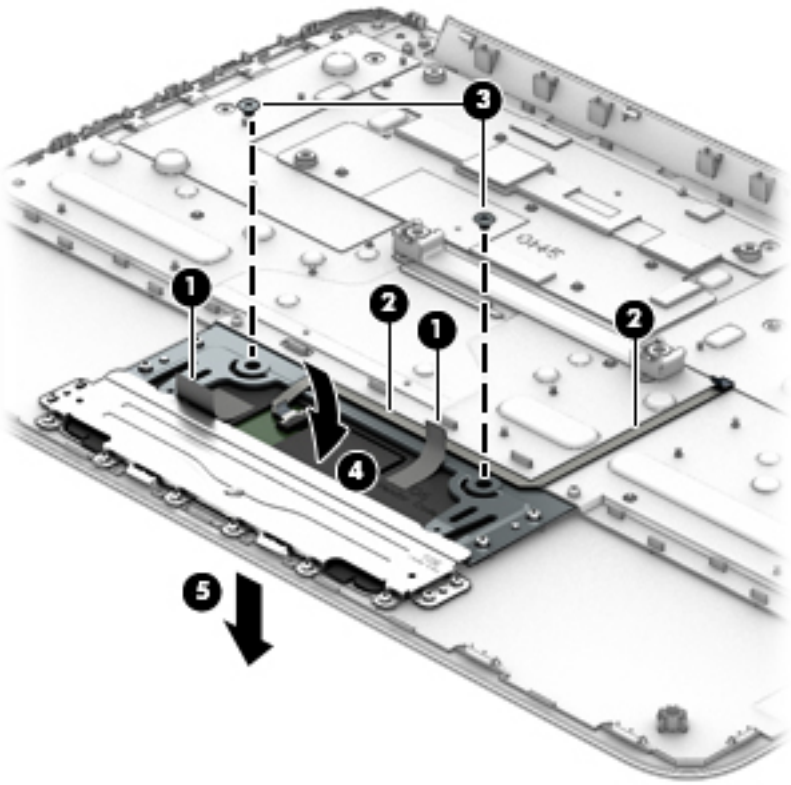
| Description | Spare part number |
|---|---|
| TouchPad board (includes cable and double-sided adhesive) | 822628-001 |

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

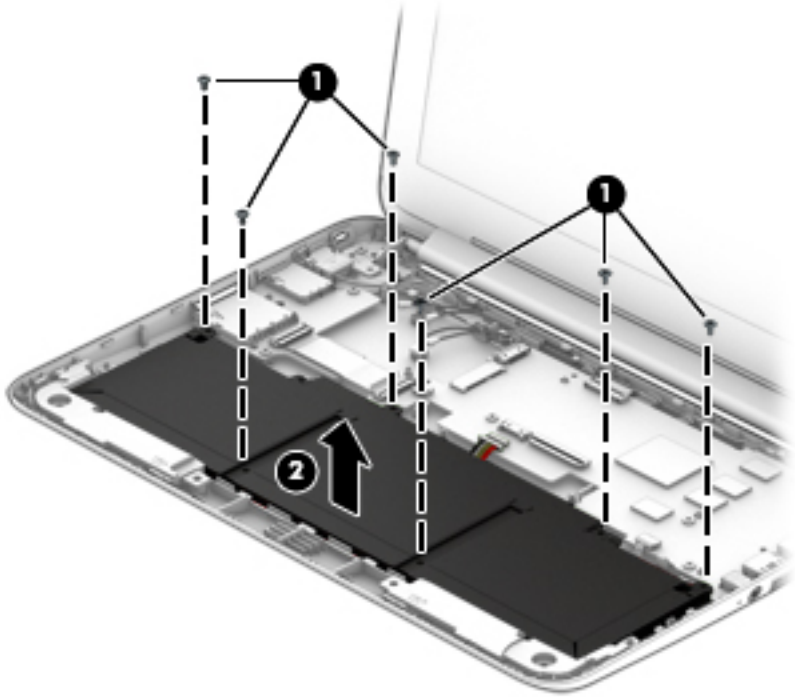
| Description | Spare part number |
|---|---|
| Battery (3-cell, 36-WHr, 3.25-AHr, Li-ion; includes cable) | 767068-001 |

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

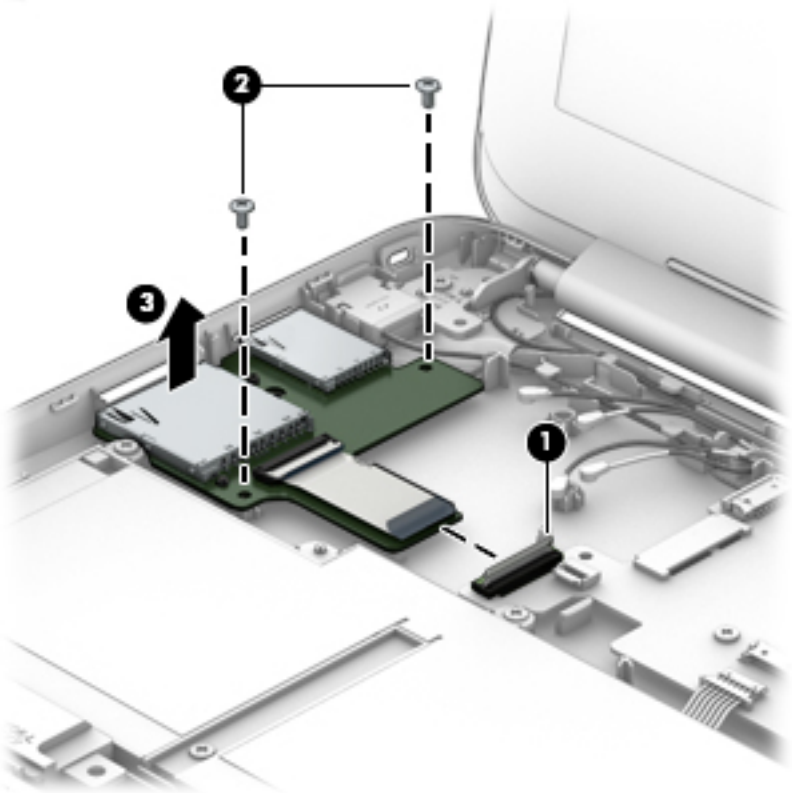
| Description | Spare part number |
|---|---|
| Connector board (includes SD Card Reader slot and cable) | 783087-001 |

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 7260 802.11 ac 2×2 WiFi + Bluetooth 4.0 Combo Adapter | 784645-005 |
| Intel Dual Band Wireless-N 7260AN 802.11 a/b/g/n 2×2 WiFi + Bluetooth 4.0 Combo Adapter | 784647-005 |

**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:

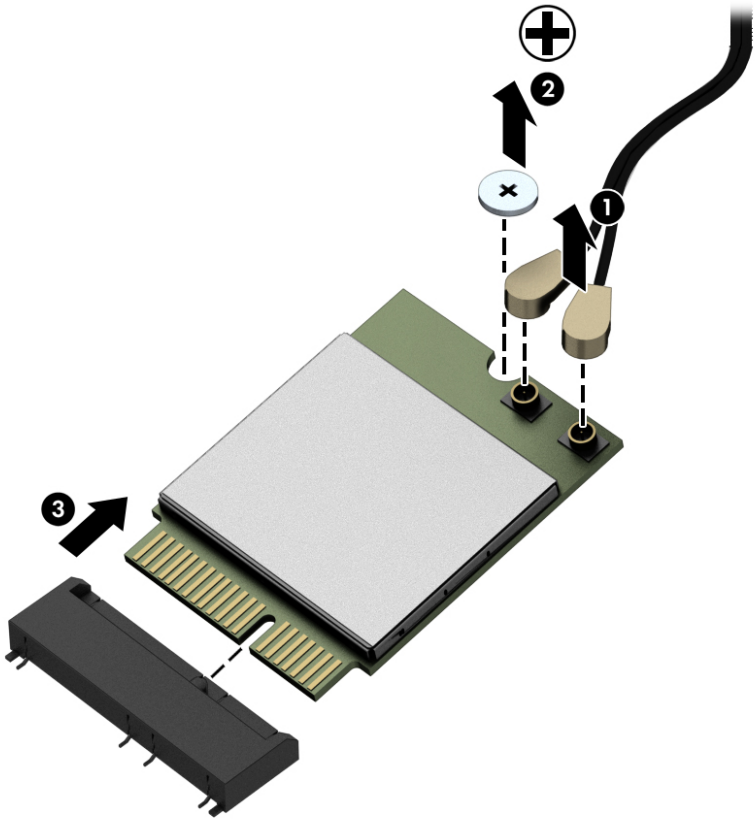
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord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

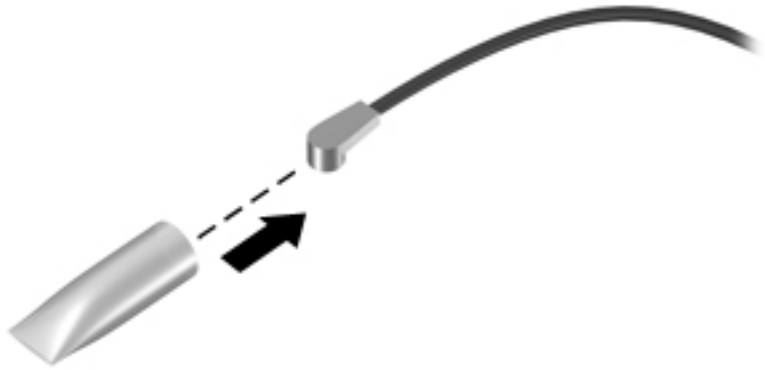
1. Disconnect the WLAN antenna cables **(1)** from the terminals on the WLAN module.

**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

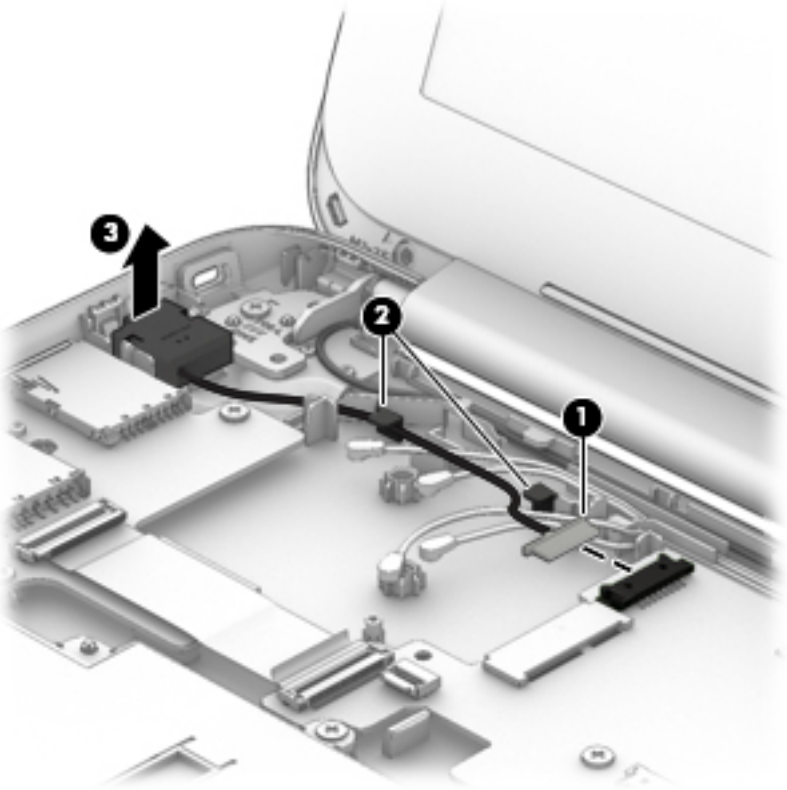
| Description | Spare part number |
|---|---|
| Power connector cable | 787922-001 |

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 16-GB of eMMC primary storage and replacement thermal material.

| Description | Spare part number |
|---|---|
| Equipped with an Intel Celeron N2940 1.83-GHz (SC turbo up to 2.25-GHz) quad core processor (1.0-GB L2 cache, 1333-MHz FSB, 4.5 W) and 4.0-GB of system memory | 822638-001 |
| Equipped with an Intel Celeron N2840 2.16-GHz (SC turbo up to 2.58-GHz) dual core processor (1.0-GB L2 cache, 1333-MHz FSB, 4.5 W) and 4.0-GB of system memory | 822636-001 |
| Equipped with an Intel Celeron N2830 2.16-GHz (SC turbo up to 2.58-GHz) dual core processor (1.0-GB L2 cache, 1333-MHz FSB, 4.5 W) and 2.0-GB of system memory | 822635-001 |

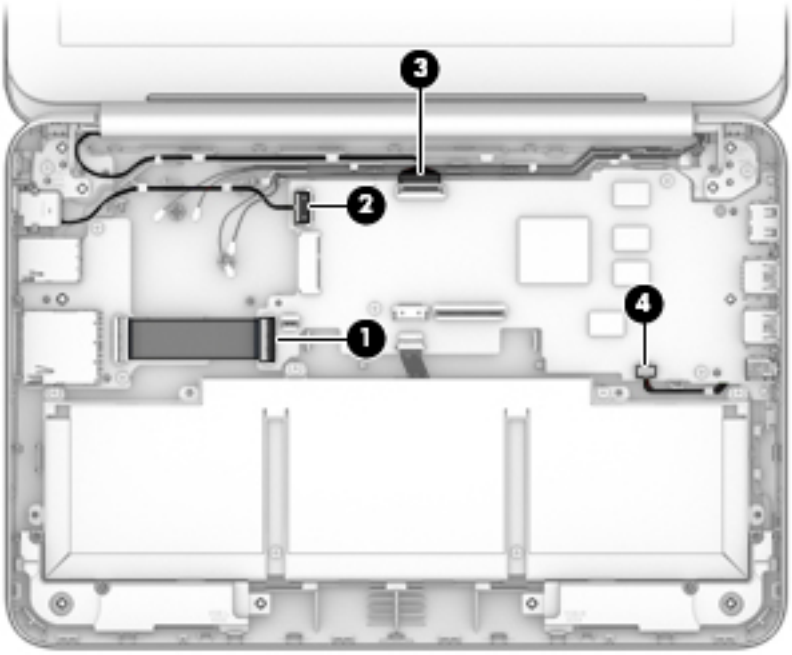
Before removing the system board, follow these steps:

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.

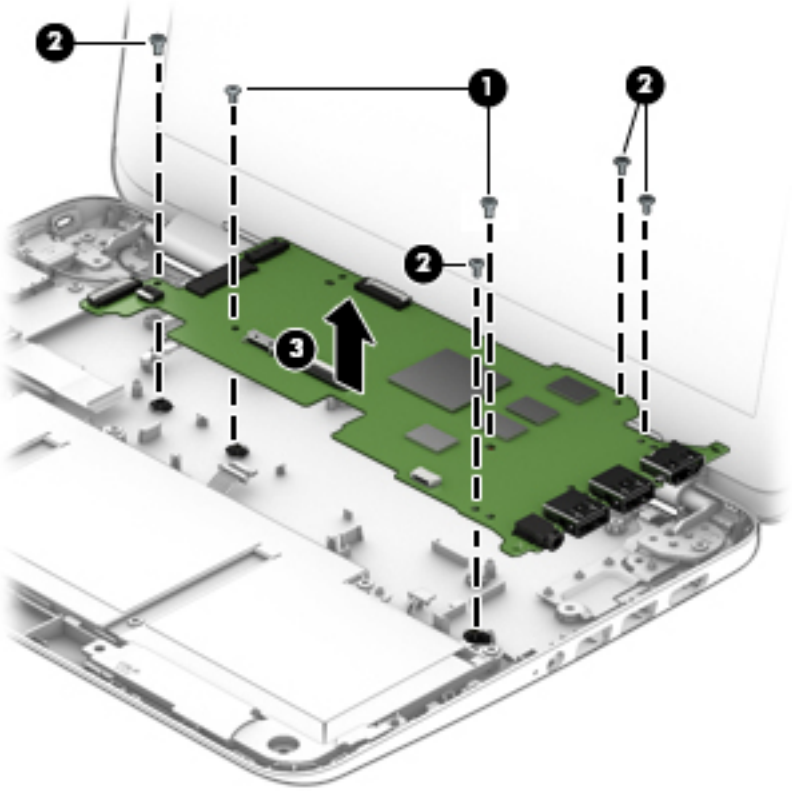



5. Remove the two Phillips PM2.5×3.7 broad head firmware screws **(1)** that secure the system board to the base enclosure.

**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

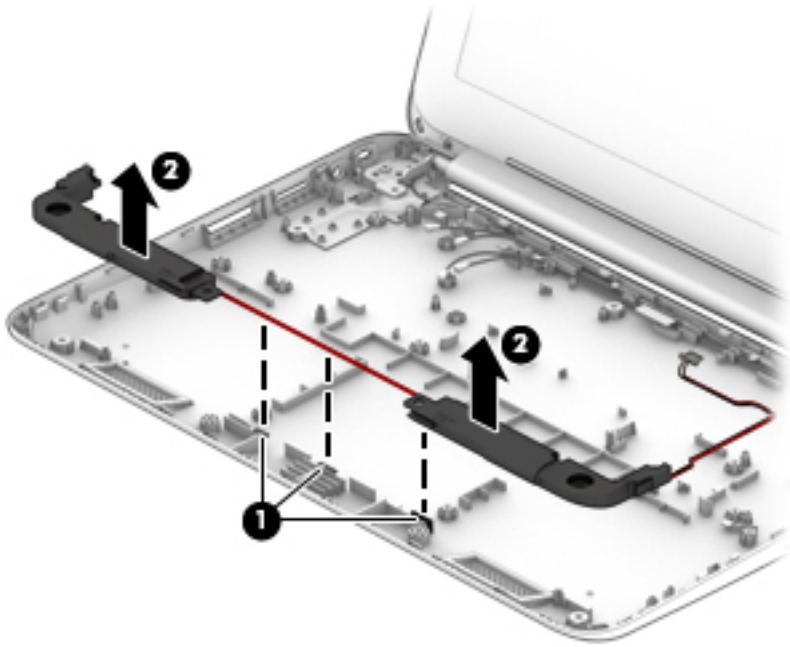
| Description | Spare part number |
|---|---|
| Speaker Kit (includes left and right speakers and cables) | 788555-001 |

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 33).

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

**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:

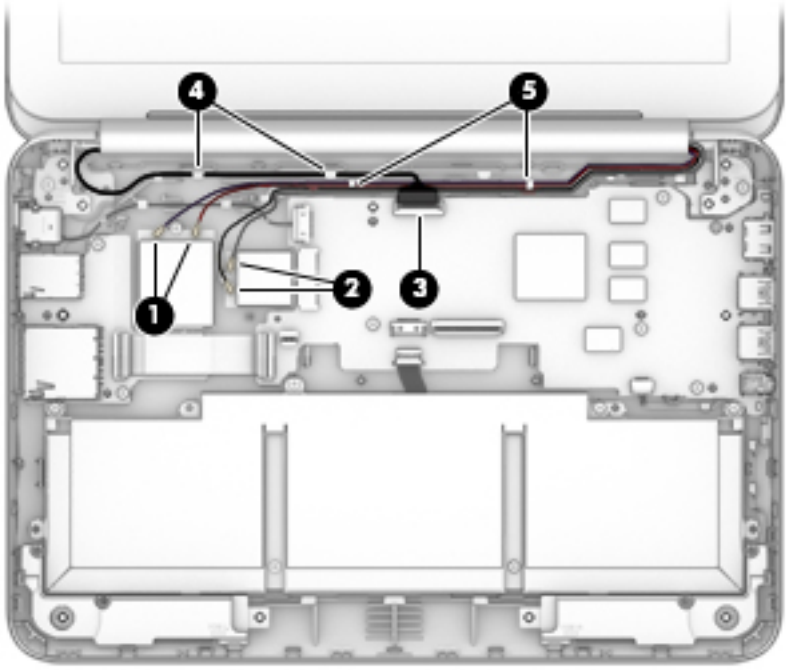
1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.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

Remove the display assembly:

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

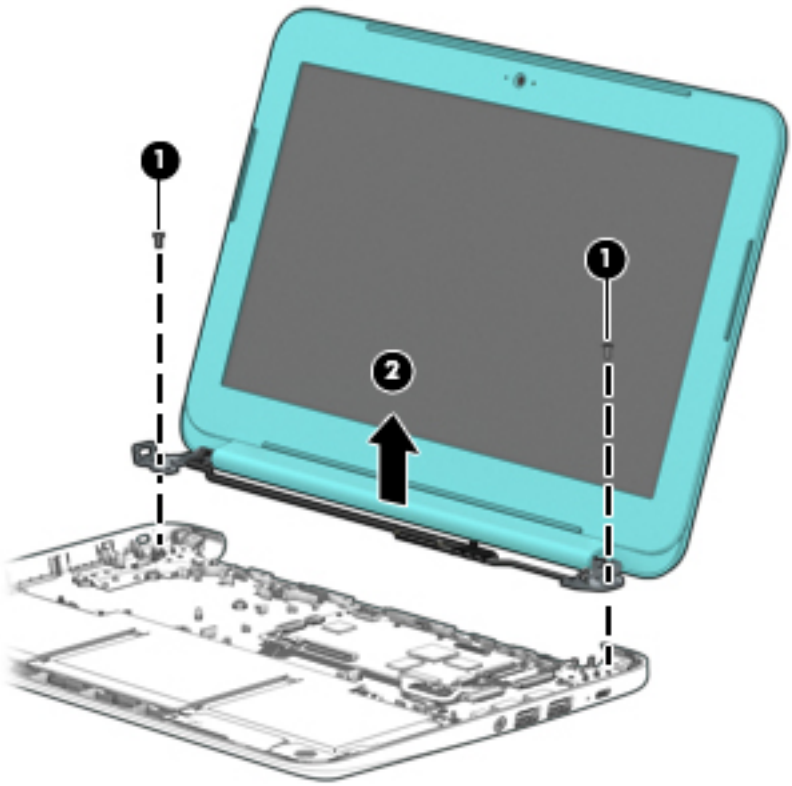
**NOTE:** The #1/white WLAN antenna cable connects to the WLAN module #1/Main terminal. The #2/black WLAN antenna cable connects to the WLAN module #2/Aux terminal.

2. Release the ZIF connector **(3)** 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 **(4)** and channel built into the base enclosure.
4. Release the WLAN antenna cables from the routing clips **(5)** 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)**.

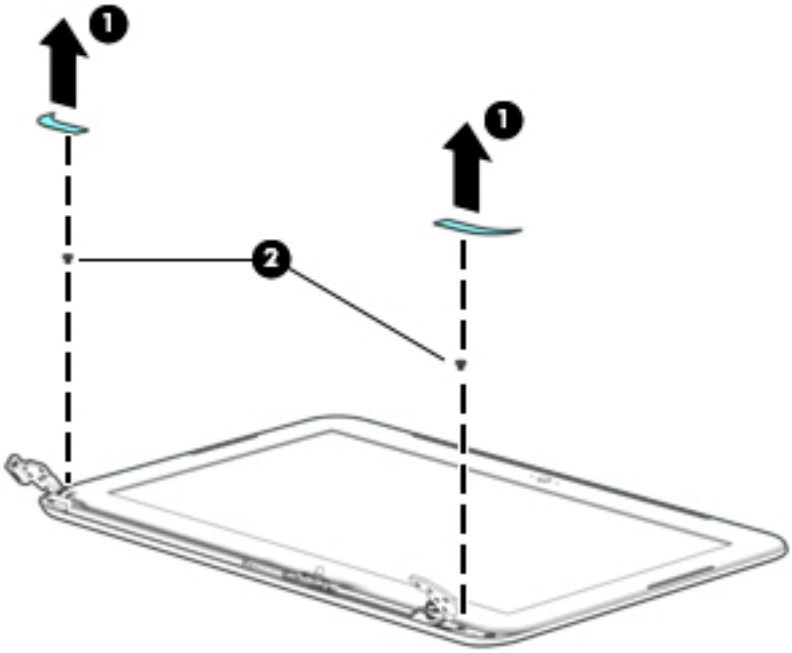



7. If it is necessary to replace the display bezel or any of the display assembly subcomponents:

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

   **NOTE:** The display bezel screw covers are included in the Rubber Kit, spare part number 822631-001.

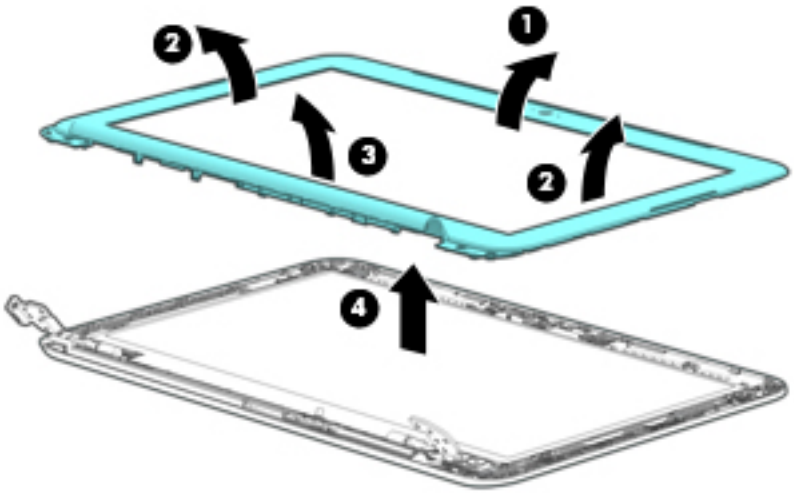
**b.** Remove the two Phillips PM1.9×2.3 screws **(2)** that secure the display bezel to the display assembly.




**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 the spare part number 822624-001.

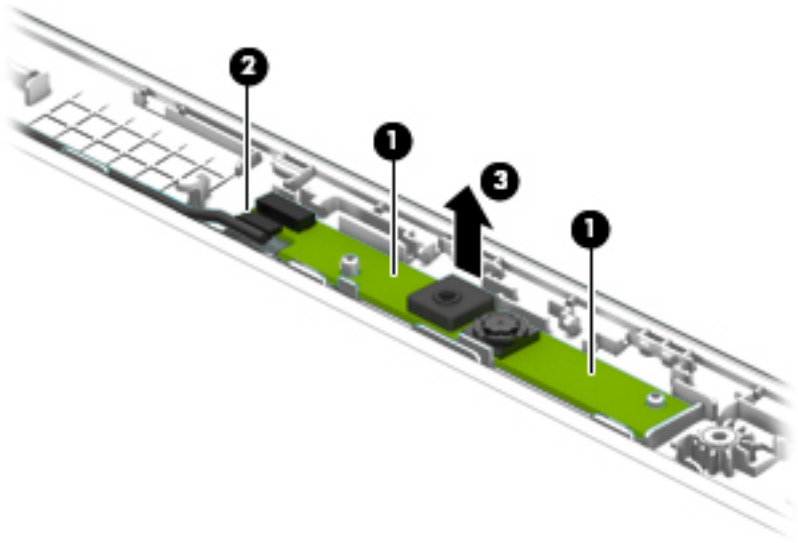



**8.** If it is necessary to replace the webcam/microphone module:

**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.

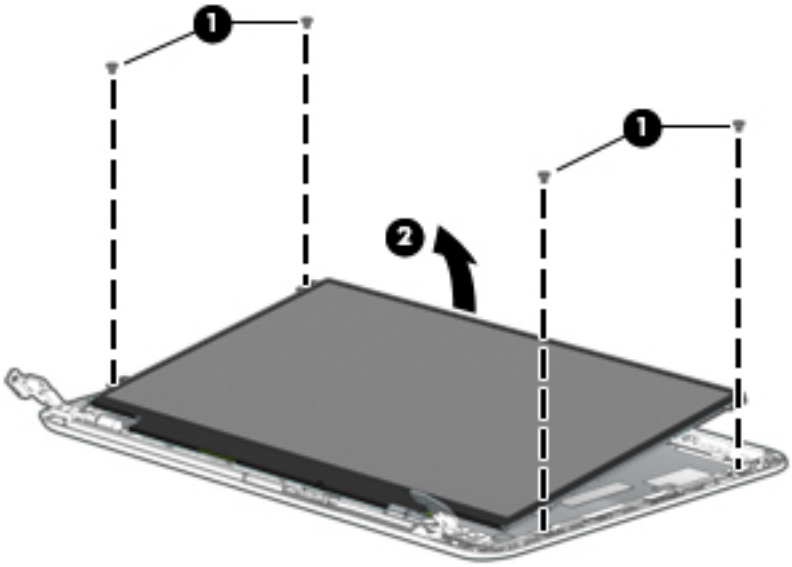
The webcam/microphone module is available using spare part number 783088-001.

**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.

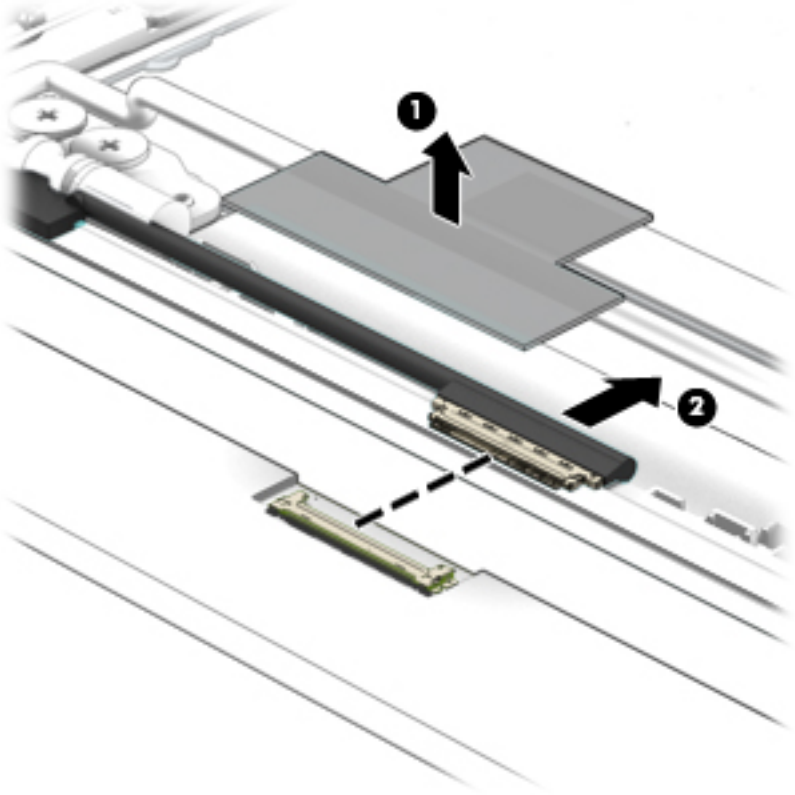
⚠ **CAUTION:** Before turning the display panel upside down, make sure the work surface is clear of tools, screws, and any other foreign objects. Failure to follow this caution can result in damage to the display panel.

**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 numbers 822629-001 (11.6-in, HD, AntiGlare, (1366×768), UWVA, LED, slim [3.0-mm]) and 822630-001 (11.6-in, HD, AntiGlare, (1366×768), SVA, WLED, flat [3.6-mm]).

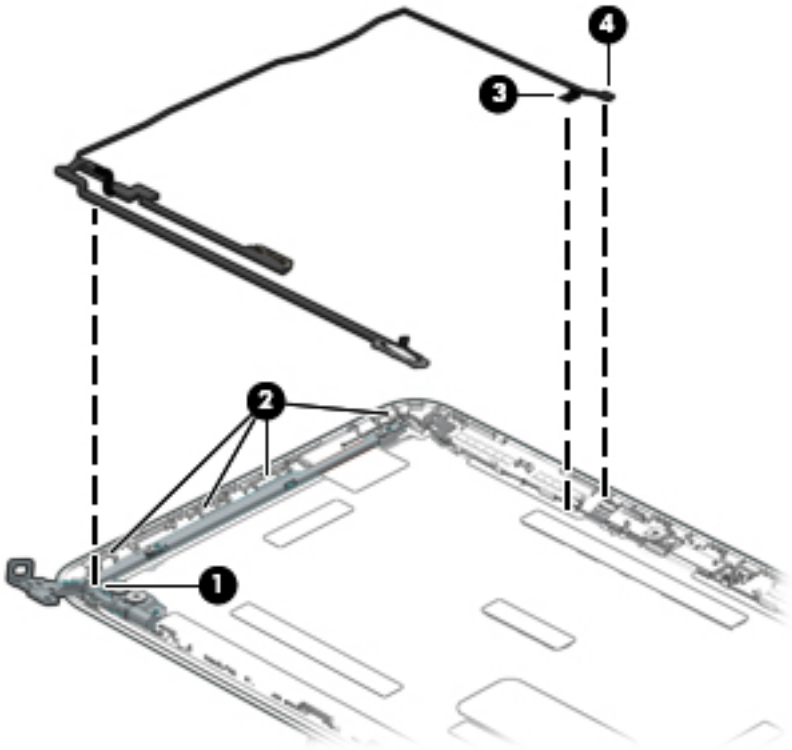
**10.** If it is necessary to replace the display panel cable:

**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 783083-001 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.

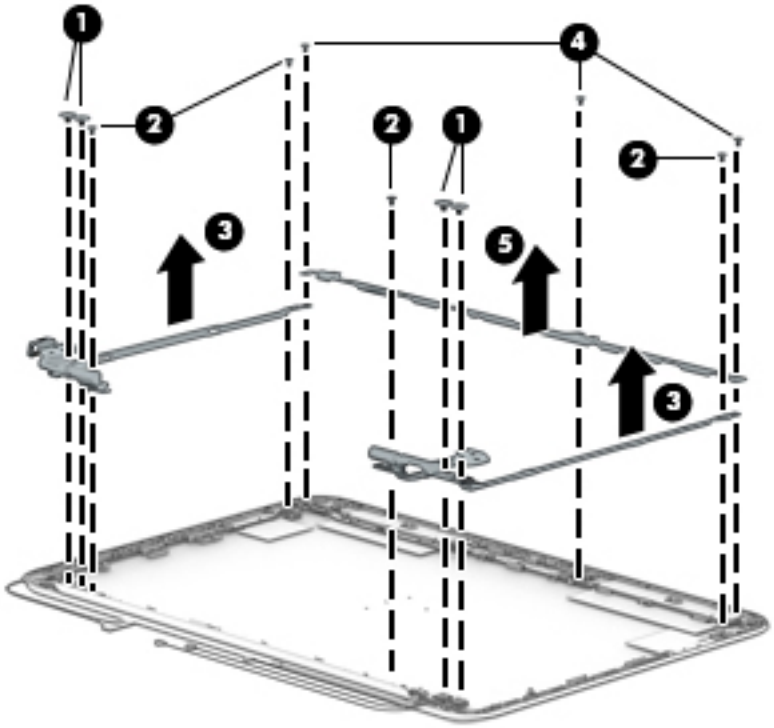
**b.** Remove the display hinges **(3)**.

The display hinges are included in the Display Hinge Kit, spare part number 761972-001.

**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 783085-001.




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

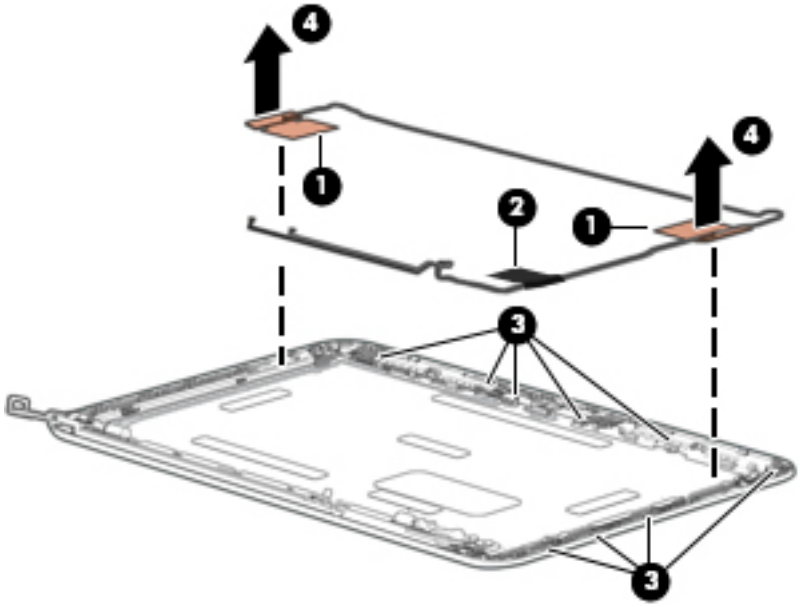
**a.** Detach the WLAN antenna transceivers **(1)** from the display enclosure. (The WLAN antenna transceivers are attached to the display enclosure with double-sided adhesive.)

**b.** Release the grounding tape **(2)** that secures the wireless antenna cable to the display enclosure near the right hinge.

**c.** Release the WLAN antenna cables from the clips **(3)** and routing channel built into the top edge of the display enclosure.

**d.** Remove the WLAN antenna cables and transceivers **(4)**.

The WLAN antenna cables and transceivers are available using spare part number 783075-001.




Reverse this procedure to reassemble install the display assembly.

# 6 Specifications

| | Metric | U.S. |
|---|---|---|
| **Computer dimensions** | | |
| Width | **30.0 cm** | 11.8 in |
| Depth | **20.6 cm** | 8.1 in |
| Height | **2.1 cm** | 0.8 in |
| Weight | **1.3 kg** | 2.9 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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