# HP Pavilion dv4 Entertainment PC

## Maintenance and Service Guide

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## Safety warning notice

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

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# 1 Product description

| Category | Description |
|---|---|
| **Product Name** | **HP Pavilion dv4 Entertainment PC** |
| **Processors** | **Intel Core i7 processor** |
| | Intel® Core™ i7-2620M processor (2.7GHz, SC turbo up to 3.40GHz, 4MB L3), Dual 35W |
| | **Intel Core i5 processor** |
| | Intel® Core™ i5-2540M processor (2.6GHz, SC turbo up to 3.3GHz, 3MB L3), Dual 35W |
| | Intel® Core™ i5-2520M processor (2.5GHz, SC turbo up to 3.2GHz, 3MB L3), Dual 35W |
| | Intel Core i5-2430M (2.4GHz, turbo up to 3.0GHz), 1333MHz/3MB L3, Dual 35W |
| | Intel® Core™ i5-2410M processor (2.3GHz, SC turbo up to 2.9GHz, 3MB L3), Dual 35W |
| | Intel® Core™ i5-480M processor (2.66GHz, turbo up to 2.93GHz, 3MB L3), Dual 35W |
| | **Intel Core i3 processors** |
| | Intel® Core™ i3-2310M processor (2.1GHz, 3MB L3), Dual 35W |
| | Intel Core i3-2330M (2.2GHz), 1333MHz/3MB L3, Dual 35W |
| | Intel Core i3-2350M (2.3GHz), 1333MHz/3MB L3, Dual 35W |
| | Intel® Core™ i3-390M processor (2.66GHz, 3MB L3), Dual 35W |
| | Intel® Core™ i3-380M processor (2.53GHz, 3MB L3), Dual 35W |
| | **Intel Pentium® processors** |
| | Intel® Pentium P6300 processor (2.26GHz, 3MB L3), Dual 35W |
| | Intel® Pentium P6200 processor (2.13GHz, 3MB L3), Dual 35W |
| | Intel Pentium B940 (2.0GHz), TJ85, 2M Cache, Dual 35W TDP |
| | Intel Pentium B950 (2.1GHz) TJ85, 2M Cache, Dual 35W TDP |
| **Chipset** | Intel HM65 Express<br>Intel HM55 Express |
| **Graphics** | **Switchable discrete graphics** |

| Category | Description |
|---|---|
| | AMD Whistler Pro (Radeon™ HD 6750M) with 1024MB of dedicated video memory (32x32 GDDR5 x 8 PCs, 5Gbps) ) |
| | AMD Whistler Pro (Radeon™ HD 6650M) with 1024MB of dedicated video memory (64x16 DDR3 900MHz x 8 PCs) |
| | AMD Whistler Pro (Radeon™ HD 6650M) with 1024MB of dedicated video memory (64x16 DDR3 900MHz x 8 PCs) |
| | Support HD Decode, DX11, and HDMI |
| | Support BACO |
| **Panel** | **35.56-cm** (14.0-in) HD LED BrightView (1366 x 768 resolution) |
| | 16:9 ultra wide aspect ratio |
| **Memory** | 2 SODIMM slots |
| | Customer-accessible and upgradable |
| | Supports up to 8 GB of system memory |
| | DDR3, 1066-MHz, dual-channel memory (DDR3 1333 MHz downgraded to DDR3 1066 MHz) |
| | Supports the following configurations: |
| | • 8 GB (4 GB×2) (select models only) |
| | • 6 GB (2 GB×1 + 4 GB×1) (select models only) |
| | • 4 MB (2 GB×2 or 4 GB×1) |
| | • 3 GB (1 GB×1 + 2 GB×1) |
| | • 2 GB (2 GB×1) |
| | • 2 GB (1 GB×2) |
| | • 1 GB (1 GB×1) (select models only) |
| **Hard drives** | HP ProtectSmart Hard Drive Protection |
| | Supports the following SATA hard drives |
| | • 1 TB, 5400 rpm 12.7 mm |
| | • 750 GB, 7200 and 5400 rpm 9.5 mm |
| | • 640 GB, 7200 and 5400 rpm 9.5 mm |
| | • 500 GB, 7200 and 5400 rpm 9.5 mm |
| | • 320 GB, 7200 and 5400 rpm 7 mm and 9.5 mm |
| | • 250 GB, 7200 rpm 7 mm and 9.5 mm |
| **Optical drives** | Supports the following **12.7-mm** (0.50-in) tray load, fixed, SATA drives: |
| | DVD±RW SuperMulti Double-Layer Drive with LightScribe* |
| | DVD±RW SuperMulti Double-Layer Drive (via SW control) |
| | Blu-ray ROM with LightScribe* DVD±R/RW SuperMulti DL Drive |
| | Blu-ray ROM DVD±R/RW SuperMulti DL Drive (via SW control) |

| Category | Description |
|---|---|
| | **NOTE: *Select models only.** |
| **Camera** | HP TrueVision HD |
| | Fixed (no tilt), activity LED |
| | 1280 × 800 by 30 frames per second |
| **Microphone** | Dual digital microphones, beam forming, echo cancellation, noise suppression |
| **Audio** | Dolby Home Theater, HD audio |
| | Supports Microsoft® Premium requirements |
| | Altec Lansing speakers |
| **Ethernet** | Integrated 10/100/1000 network interface card (NIC) |
| **Wireless** | **Integrated wireless local area network (WLAN) options by way of wireless module:** |
| | Atheros 9285G 802.11b/g/n 1x1 WiFi Adapter |
| | Intel Centrino® Wireless-N 1000 802.11b/g/n 1x2 with WiDi support |
| | Intel Centrino Wireless-N 1030 + Bluetooth® (802.11b/g/n) |
| | Ralink 5390BC8 802.11b/g/n 1x1 WiFi and Bluetooth 3.0+HS Combo Adapter |
| | Ralink 5390GN 802.11b/g/n 1x1 WiFi Adapter |
| | Broadcom 4313GN 802.11b/g/n 1x1 WiFi and 2070 Bluetooth 2.1+EDR Combo Adapter |
| **External media card** | Multi-format Digital Media Slot; supports MultiMediaCard (MMC), Secure Digital (SD) Memory Card, Secure Digital High Capacity (SDHC) Memory Card, Secure Digital Extended Capacity (SDXC) Memory Card with support of UHS 104 |
| **Ports** | • 2048x1536 external resolution at 75 Hz (for Intel models) |
| Internal card expansion | One half-size Mini Card slot for WLAN |
| | Hot plug/unplug and auto detect for wide-aspect or standard-aspect video |
| | HDMI v1.4 supporting up to 1920 x 1200 at 60 Hz |
| | USB 3.0 (2)*<br>**NOTE: *Select models only.** |
| | USB 2.0 (1) |
| | Dual digital microphones |
| | RJ-45 Ethernet |
| | Dolby home theater, HD audio |
| | Combo audio out—1 standalone headphone |
| | Smart-pin AC adapter |
| **Keyboard/pointing devices** | **35.56-cm** (14.0-inch) full-size keyboard |
| | Dura-coat island style keyboard |

| Category | Description |
|---|---|
| | TouchPad (enabled by default: taps, multi-touch gestures, 2-finger scrolling, and pinch zoom) |
| **Power requirements** | 6-cell (52-Wh) polymer battery |
| | 90-W AC adapter |
| **Security** | Security lock |
| **Operating system** | **Preinstalled:** |
| | Microsoft Windows® 7 Professional (32 and 64 bit) |
| | Microsoft Windows 7 Home Premium (32 and 64 bit) |
| | Microsoft Windows 7 Home Basic (32 and 64 bit) |
| **Serviceability** | **End-user replaceable parts:** |
| | AC adapter |
| | Battery (system) |
| | Hard drive |
| | Memory module |
| | Optical drive |
| | WLAN Module |

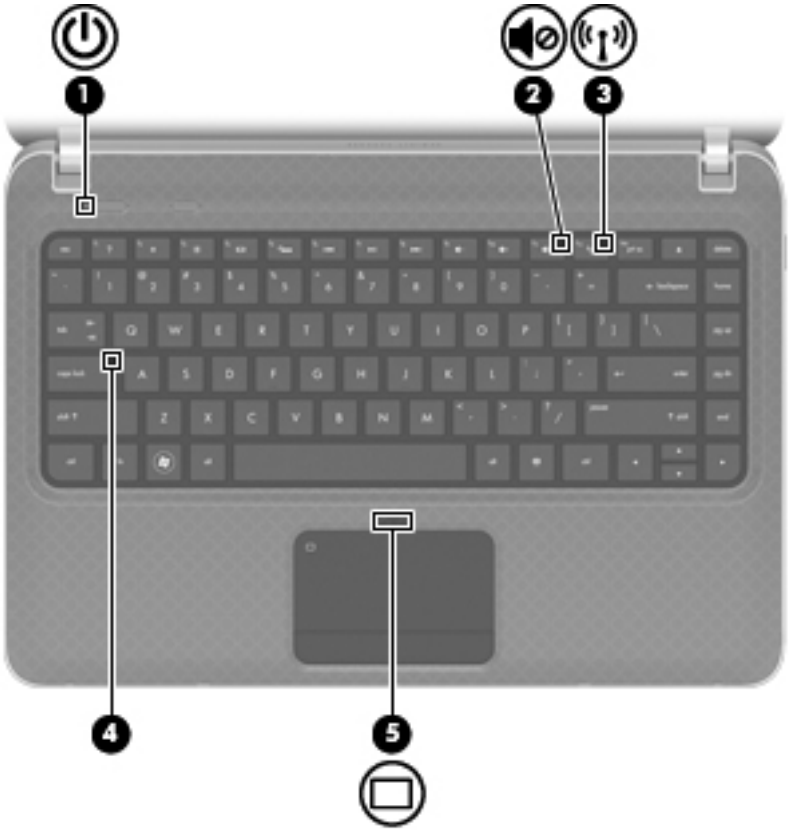
# 2 External component identification

## Top

### TouchPad

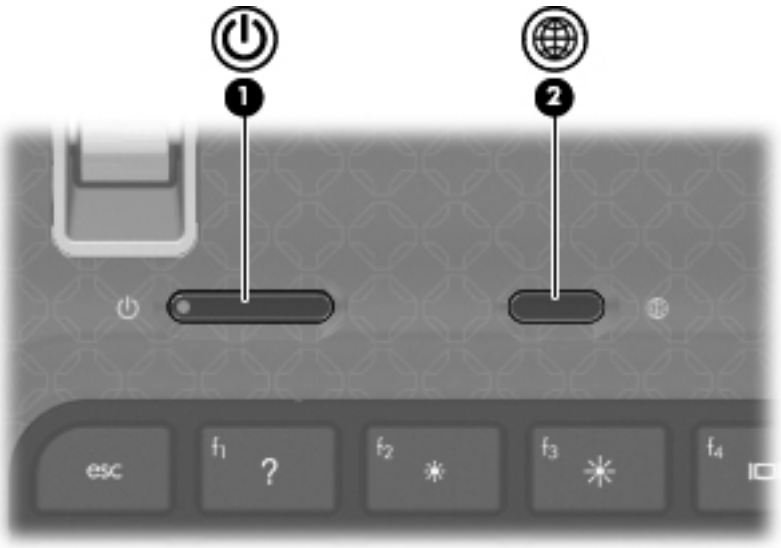
| Component | | Description |
|---|---|---|
| **(1)** | TouchPad light | • Off: The TouchPad is on.<br>• Amber: The TouchPad is off. |
| **(2)** | TouchPad icon | Turns the TouchPad on and off. Quickly double-tap the TouchPad icon to turn the TouchPad on and off. |
| **(3)** | TouchPad zone | Moves the pointer and selects or activates items on the screen. |
| **(4)** | Left TouchPad button | Functions like the left button on an external mouse. |
| **(5)** | Right TouchPad button | Functions like the right button on an external mouse. |

# Lights



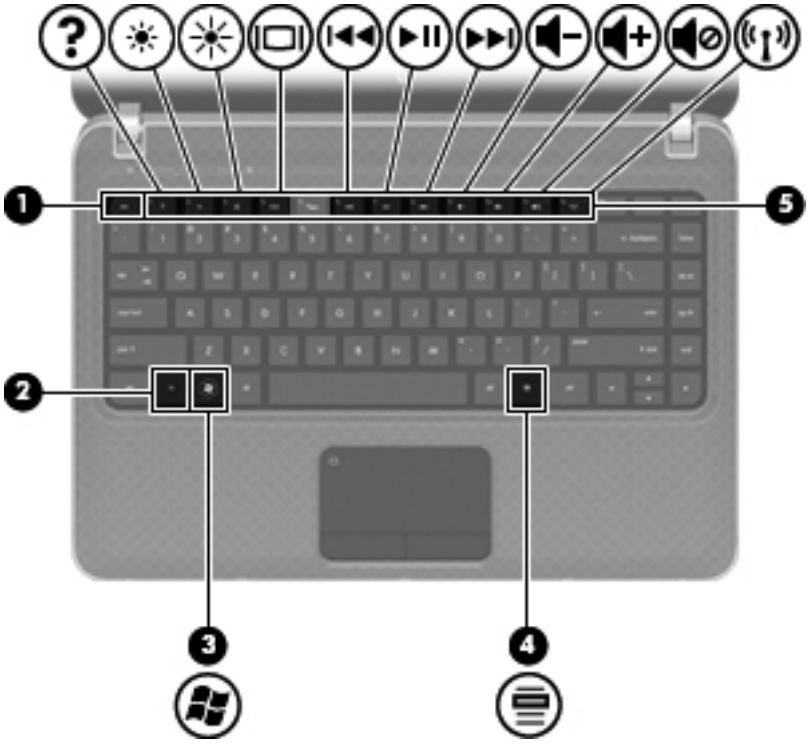

| Component | | | Description |
|---|---|---|---|
| (1) | | Power light | • White: Power is on.<br>• Blinking white: The computer is in the Sleep state.<br>• Off: The computer is off or in Hibernation. |
| (2) | | Mute light | • Amber: Computer sound is off.<br>• Off: Computer sound is on. |
| (3) | | Wireless light | • White: An integrated wireless device, such as a wireless local area network (WLAN) device and/or a Bluetooth® device, is on.<br>• Amber: All wireless devices are off. |
| (4) | | Caps lock light | • White: Caps lock is on.<br>• Off: Caps lock is off. |
| (5) | | TouchPad light | • Amber: The TouchPad is off.<br>• Off: The TouchPad is on. |

## Buttons




| Component | | Description |
|---|---|---|
| (1) | Power button | • When the computer is off, press the button to turn on the computer.<br>• When the computer is on, press the button briefly to initiate Sleep.<br>• When the computer is in the Sleep state, press the button briefly to exit Sleep.<br>• When the computer is in Hibernation, press the button briefly to exit Hibernation.<br>If the computer has stopped responding and Windows® shutdown procedures are ineffective, press and hold the power button for at least 5 seconds to turn off the computer.<br>To learn more about your power settings, select **Start > Control Panel > System and Security > Power Options**, or refer to the *HP Notebook Reference Guide*. |
| (2) | QuickWeb button | Press the button to launch the web browser. |

## Keys

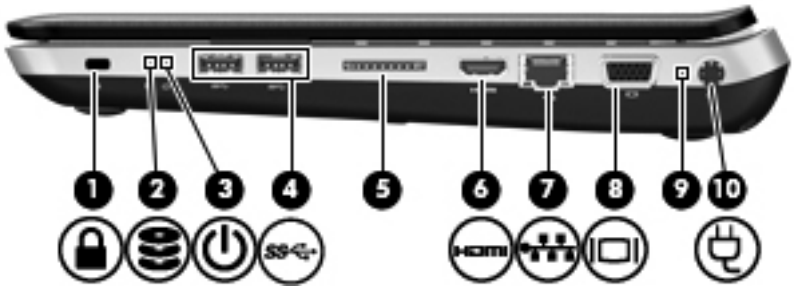



| Component | | Description |
|---|---|---|
| (1) | esc key | Displays system information when pressed in combination with the fn key. |
| (2) | fn key | Executes frequently used system functions when pressed in combination with a function key, the num lk key, or the esc key. |
| (3) | Windows logo key | Displays the Windows Start menu. |
| (4) | Windows applications key | Displays a shortcut menu for items beneath the pointer. |
| (5) | Action keys | Execute frequently used system functions. |

# Front

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

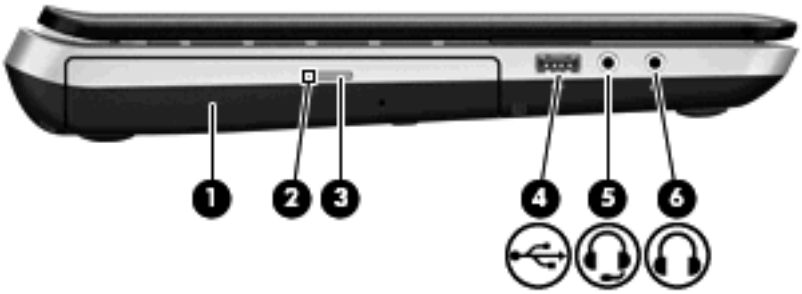
# Right side




| Component | | | Description |
|---|---|---|---|
| (1) | | Security cable slot | Attaches an optional security cable to the computer.<br><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) | | Drive light | • Blinking white: The hard drive is being accessed.<br>• Amber: HP ProtectSmart Hard Drive Protection has temporarily parked the hard drive.<br><br>**NOTE:** For information on HP ProtectSmart Hard Drive Protection, refer to the *HP Notebook Reference Guide*. |
| (3) | | Power light | • White: The computer is on.<br>• Blinking white: The computer is in the Sleep state.<br>• Off: The computer is off or in Hibernation. |
| (4) | | SuperSpeed USB ports (2) | Connect optional USB 3.0* devices and provides enhanced USB power performance.<br><br>**NOTE:** ***Select models only.**<br><br>**NOTE:** The SuperSpeed USB ports are also compatible with USB 1.0 and 2.0 devices. |
| (5) | | Digital media slot | Supports the following digital card formats:<br>• MultiMediaCard<br>• Secure Digital (SD) Card |

| Component | | | Description |
|---|---|---|---|
| **(6)** | HDMI | HDMI port | Connects an optional video or audio device, such as a high-definition television, or any compatible digital or audio component. |
| **(7)** | | RJ-45 (network) jack | Connects a network cable. |
| **(8)** | | External monitor port | Connects an external VGA monitor or projector. |
| **(9)** | | Battery light | • White: The computer is connected to external power and the battery is fully charged.<br>• Blinking white: The computer is in the Sleep state.<br>• Amber: A battery is charging.<br>• Blinking amber: The battery has reached a low battery level, or there is a battery error. When a battery reaches a critical battery level, the battery light begins blinking rapidly. |
| **(10)** | | Power connector | Connects an AC adapter |

# Left side




| Component | | | Description |
|---|---|---|---|
| **(1)** | | Optical drive | Reads and writes (select models only) to an optical disc. |
| **(2)** | | Optical drive light | • On: The optical drive is being accessed.<br>• Off: The optical drive is idle. |
| **(3)** | | Optical drive eject button | Opens the optical drive to insert or remove optical media. |
| **(4)** | | USB port | Connects an optional USB device. |
| **(5)** | | Audio-in (microphone) jack | Connects optional powered stereo speakers, headphones, earbuds, a headset, or television audio. Also connects an optional headset microphone.<br>**WARNING!** To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, refer to the Regulatory, Safety, and Environmental Notices.<br>**NOTE:** When a device is connected to the jack, the computer speakers are disabled. |
| **(6)** | | Audio-out (headphone) jack | Produces sound when connected to optional powered stereo speakers, headphones, ear buds, a headset, or television audio.<br>**WARNING!** To reduce the risk of personal injury, adjust the volume before putting on headphones, ear buds, or a headset. For additional safety information, refer to the *Regulatory, Safety, and Environmental Notices*.<br>**NOTE:** When a device is connected to the headphone jack, the computer speakers are disabled. |

# Rear

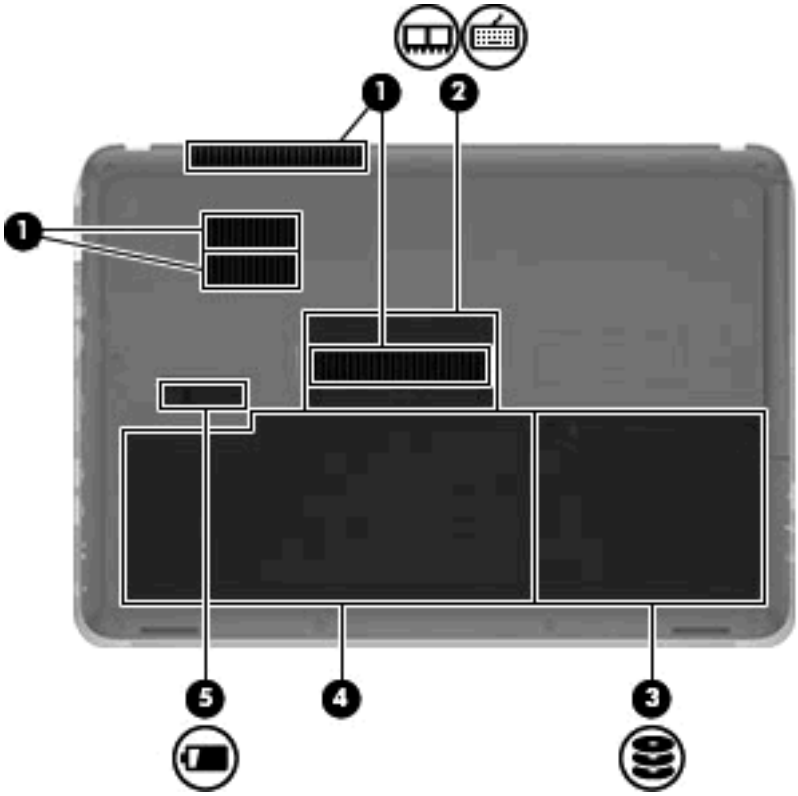
| Component | | Description |
|---|---|---|
| **(1)** | Display hinges | Allow the display to open and close. |
| **(2)** | Vent | Enables airflow to cool internal components.<br><br>**NOTE:** The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation. |

# Display

| Component | | Description |
|---|---|---|
| **(1)** | WLAN antennas (2)* | Send and receive wireless signals to communicate with wireless local area networks (WLAN). |
| **(2)** | Internal microphones (2) | Record sound. |
| **(3)** | Webcam light | On: The webcam is in use. |
| **(4)** | Webcam | Records video and captures still photographs.<br><br>To use the webcam, select **Start > All Programs > CyberLink YouCam > CyberLink YouCam** |

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

# Bottom

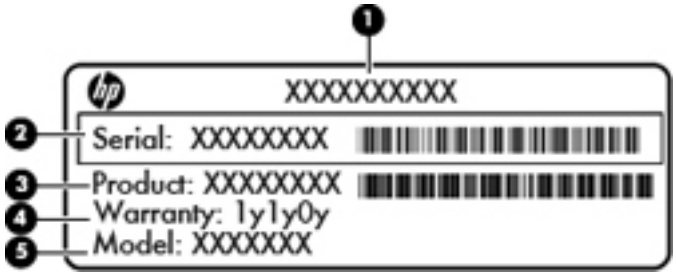



| Component | | Description |
|---|---|---|
| **(1)** | Vents (3) | Enable airflow to cool internal components.<br><br>**NOTE:** The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation. |
| **(2)** | Memory module compartment | Holds the memory module. |
| **(3)** | Hard drive bay | Holds the hard drive. |
| **(4)** | Battery bay | Holds the battery. |
| **(5)** | Battery release latch | Releases the battery from the battery bay. |

# 3 Illustrated parts catalog

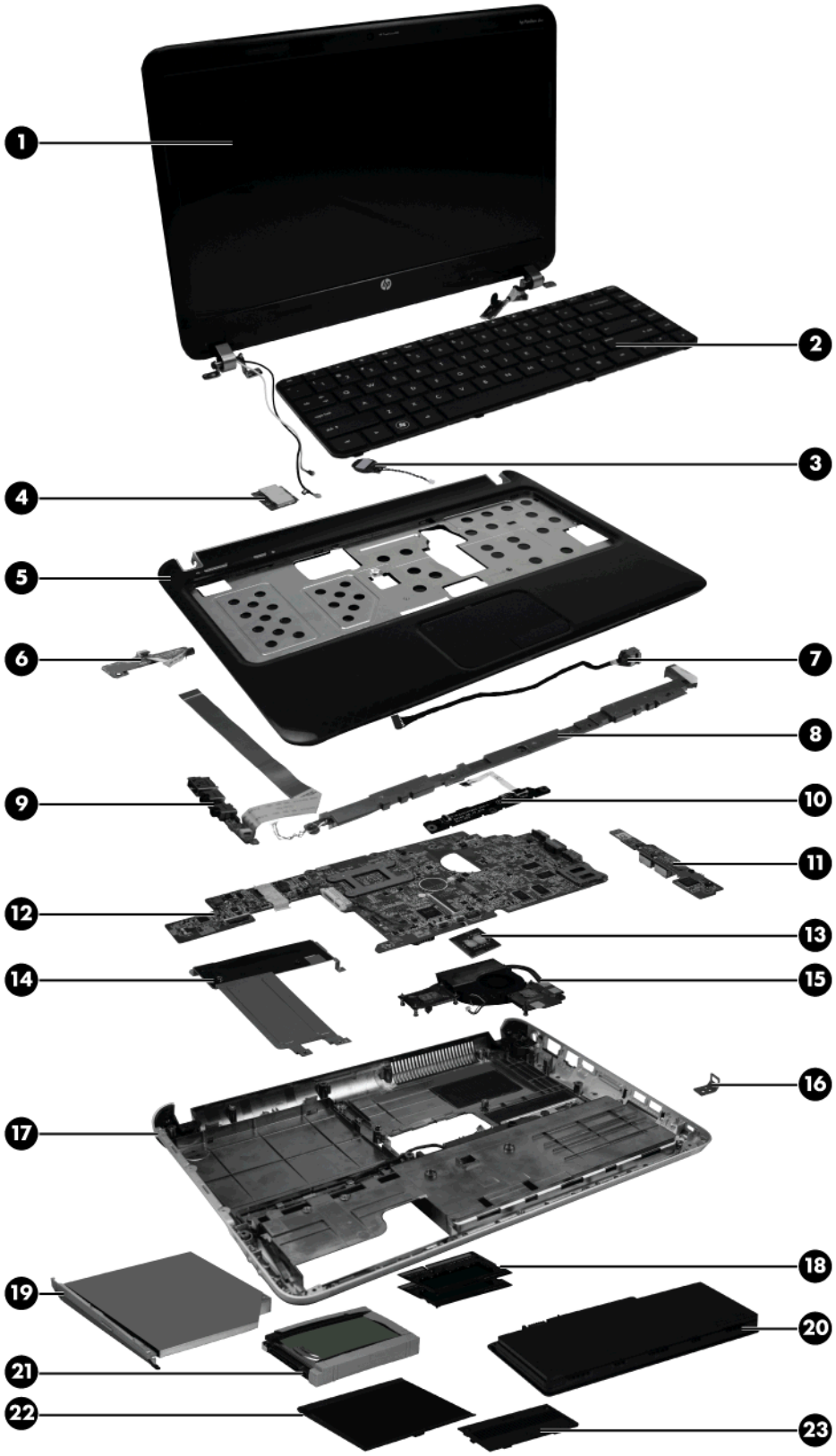
## Serial number location

When ordering parts or requesting information, provide the computer serial number and model number located in the battery bay of the computer.




- Product name **(1)**. This is the product name affixed to the front of the computer.
- Serial number (s/n) **(2)**. This is an alphanumeric identifier that is unique to each product.
- Part number/Product number (p/n) **(3)**. This number provides specific information about the product's hardware components. The part number helps a service technician to determine what components and parts are needed.
- Warranty period **(4)**. This number describes the duration (in years) of the warranty period for the computer.
- Model description **(5)**. This is the alphanumeric identifier used to locate documents, drivers, and support for the computer.

# Computer major components



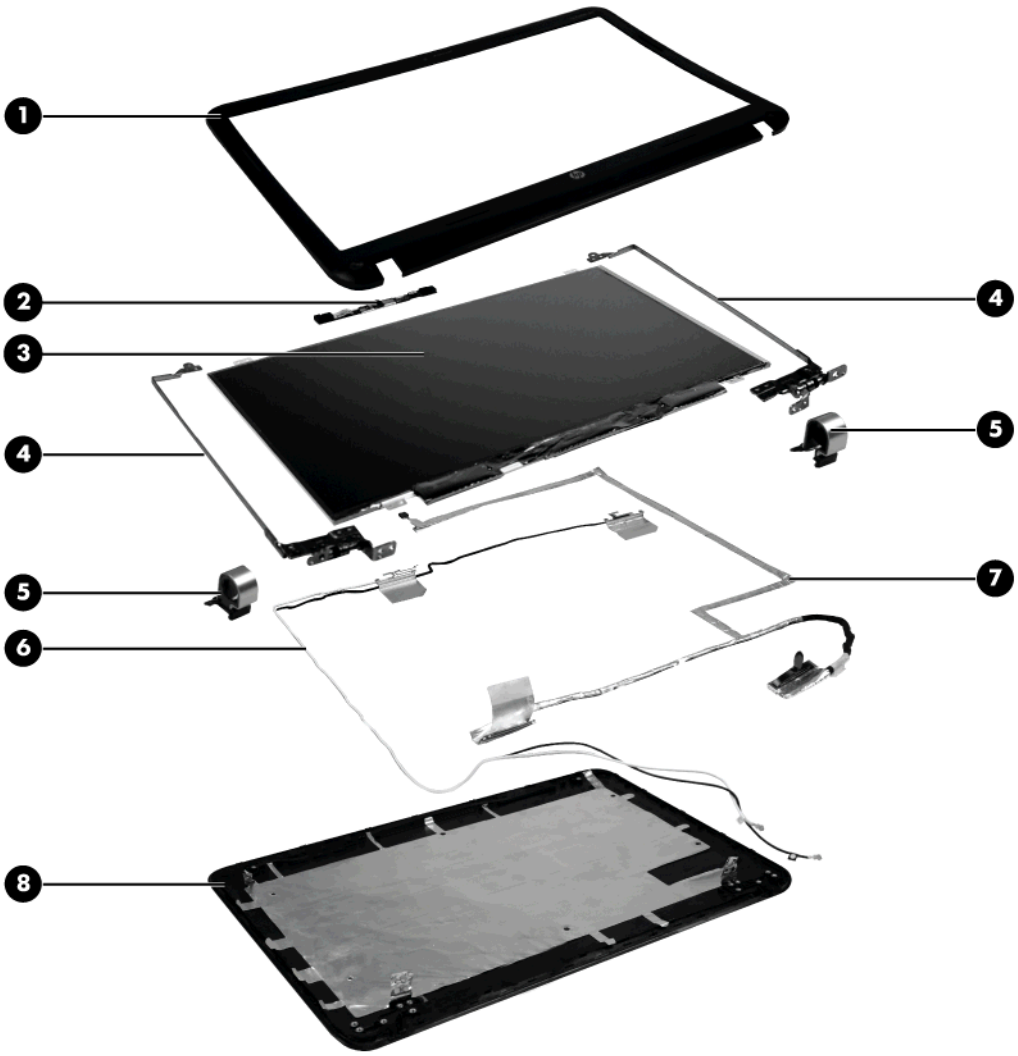
| Item | Description | Spare part number |
|---|---|---|
| (1) | **Display assembly 35.56-cm** (14.0-in)**, HD, BrightView LED** (includes display panel cable)<br><br>**NOTE:** See Display assembly components on page 20 for display assembly internal component spare part information. | 643127-001<br><br>659365 |
| (2) | **Keyboard** | |
| | For use in Japan | 641761-291 |
| | For use in South Korea | 641761-AD1 |
| | For use in Taiwan | 641761-AB1 |
| | For use in Thailand | 641761-281 |
| | For use in the United States | 641761-001 |
| (3) | **RTC battery** | 640354-001 |
| (4) | **WLAN modules** | |
| | **Atheros 9285G 802.11b/g/n 1x1 WiFi Adapter**<br><br>For use in Australia, Bangladesh, Bhutan, Brunei, Cambodia, People's Republic of China, East Timor, Hong Kong, India, Indonesia, Japan, South Korea, Malaysia, Maldives, Nauru, Nepal, New Zealand, Pakistan, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, Tuvalu, and Vietnam | 605560-005 |
| | **Intel Centrino Wireless-N 1000 802.11b/g/n 1x2**<br><br>For use in Australia, Bangladesh, Bhutan, Brunei, Cambodia, People's Republic of China, East Timor, Hong Kong, India, Indonesia, Japan, South Korea, Malaysia, Maldives, Nauru, Nepal, New Zealand, Pakistan, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, Tuvalu, and Vietnam | 593530-001 |
| | **Intel Centrino Wireless–N 1030 + Bluetooth (802.11b/g/n)**<br><br>Australia, Bangladesh, Bhutan, Brunei, Cambodia, People's Republic of China, East Timor, Hong Kong, India, Japan, South Korea, Maldives, Nauru, Nepal, New Zealand, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, Tuvalu, and Vietnam | 631956-001 |
| | **Ralink 5390GN 802.11b/g/n 1x1 WiFi Adapter**<br><br>Australia, Bangladesh, Bhutan, Brunei, Cambodia, People's Republic of China, East Timor, Hong Kong, India, Indonesia, Japan, South Korea, Malaysia, Maldives, Nauru, Nepal, New Zealand, Pakistan, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, Tuvalu, and Vietnam | 630703-001 |
| | **Broadcom 4313GN 802.11b/g/n 1x1 WiFi and 2070 Bluetooth 2.1+EDR Combo Adapter (BT3.0+HS ready)**<br><br>Australia, Bangladesh, Bhutan, Brunei, Cambodia, People's Republic of China, East Timor, Hong Kong, India, Indonesia, Japan, South Korea, Malaysia, Maldives, Nauru, Nepal, New Zealand, Pakistan, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, Tuvalu, and Vietnam | 600370-001 |
| | **Ralink 5390BC8 802.11b/g/n 1x1 WiFi and Bluetooth 3.0+HS Combo Adapter**<br><br>Australia, Bangladesh, Bhutan, Brunei, Cambodia, People's Republic of China, East Timor, Hong Kong, India, Indonesia, Japan, South Korea, Malaysia, Maldives, Nauru, Nepal, New Zealand, Pakistan, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, Tuvalu, and Vietnam | 630705-001 |

| Item | Description | Spare part number |
|---|---|---|
| (5) | **Top cover** (includes TouchPad) | 640335-001<br>657605-001 |
| (6) | **Power button board** (The power button board cable is included in the Cable Kit, spare part number 640363-001.) | 640338-001 |
| (7) | **Power connector**<br>**NOTE:** The power connector and cable are included in the Cable Kit, spare part number 640363-001. | |
| (8) | **Speaker assembly** (includes cable) | 640359-001 |
| (9) | **Audio/USB 2.0 board** (The audio board cable is included in the Cable Kit, spare part number 640363-001.) | 641756-001 |
| (10) | **TouchPad button board** (The TouchPad button board cable is included in the Cable Kit, spare part number 640363-001.) | 640337-001 |
| (11) | **USB 3.0 board***<br>**NOTE: *Select models only.** | 650704-001 |
| (12) | **System board** (includes replacement thermal material) | 640334-001<br>641760-001<br>657602-001<br>657603-001 |
| (13) | **Processor** (includes replacement thermal material) | |
| | **Intel Core i7 processor** | |
| | Intel Core i7-2620M, 2.7GHz | 631252-001 |
| | **Intel Core i5 processor** | |
| | Intel Core i5-480M, 2.66 GHz (turbo up to 2.93 GHz), 3MB L3 cache, Dual 35W | 634693-001 |
| | Intel Core i5-2520M, 2.5GHz | 631253-001 |
| | Intel Core i5-2540M, 2.6GHz | 631255-001 |
| | Intel Core i5-2410M, 2.3GHz, 3MB, L3 cache, Dual 35W | 638039-001 |
| | Intel Core i5-2430M, 2.4GHz | 653341-001 |
| | **Intel Core i3 processors** | |
| | Intel Core i3-380M, 2.53 GHz, 3MB L3 cache, Dual 35W | 625823-001 |
| | Intel Core i3-390M, 2.66 GHz, 3MB L3 cache, Dual 35W | 634692-001 |
| | Intel Core i3-2310M, 2.1 GHz, 3MB L3 cache, Dual 35W | 638037-001 |
| | Intel Core i3-2330M, 2.2GHz | 653339-001 |
| | Intel Core i3-2350M, 2.3GHz | 653340-001 |
| | **Intel Pentium processors** | |
| | Intel Pentium P6300, 2.26 GHz, 3 MB L3 cache, Dual 35 W | 635500-001 |
| | Intel Pentium P6200, 2.13GHz, 3 MB L3 cache, Dual 35W | 625831-001 |

| Item | Description | Spare part number |
|---|---|---|
| | Intel Pentium B940, 2GHz | 653337-001 |
| | Intel Pentium B950, 2.1GHz | 653338-001 |
| **(14)** | **Optical drive bracket**<br><br>**NOTE:** The optical drive bracket is included in the optical drive kits, spare part numbers 641762-001 (for use with the DVD±RW SuperMulti Double-Layer Drive with LightScribe*) and 641763-001 (for use with the Blu-ray ROM with LightScribe* DVD±R/RW SuperMulti DL Drive).<br><br>**NOTE:** ***Select models only.** | |
| **(15)** | **Fan/heat sink assembly** (includes replacement thermal material) | 644515-001 |
| **(16)** | **Security Lock/Bracket Hardware Kit** | 641758-001 |
| **(17)** | **Base enclosure** (includes hard drive cable and optical drive cable) | 640342-001 |
| **(18)** | **Memory modules** | |
| | 2 GB PC3-10600 | 581096-001 |
| | 4 GB PC3-10600 1333 MHz shared | 621569-001 |
| | 1 GB PC3-10600 1333 MHz shared | 639736-001 |
| **(19)** | **Optical drive** | |
| | DVD±RW SuperMulti Double-Layer Drive with LightScribe* | 641762-001 |
| | Blu-ray ROM with LightScribe* DVD±R/RW SuperMulti DL Drive | 641763-001 |
| | **NOTE:** ***Select models only.** | |
| **(20)** | **Battery** | |
| | 6-cell, 52-WH (2.58-Ah) Li-ion | 644184-001 |
| **(21)** | **Hard drive** (includes hard drive bracket)<br><br>**NOTE:** The hard drive cable is included in the Cable Kit, spare part number 640363-001. | |
| | 2.5-in, 750 GB, 7200 RPM | 633252-001 |
| | 2.5-in, 750 GB, 5400 RPM | 634250-001 |
| | 2.5-in, 640 GB, 7200 RPM | 621046-001 |
| | 2.5-in, 640 GB, 5400 RPM | 603785-001 |
| | 2.5-in, 500 GB, 7200RPM | 634925-001 |
| | 2.5-in 320 GB, 7200 RPM | 641672-001 |
| | 2.5-in, 320 GB, 5400 RPM | 622643-001 |
| | 2.5-in, 250 GB, 7200 RPM | 635225-001 |
| | 12.5-mm 1 TB, 5400 RPM | 638974-001 |

| Item | Description | Spare part number |
|---|---|---|
| (22) | **Hard drive cover**<br><br>**NOTE:** The hard drive cover is included in the Plastics Kit, spare part number 640353-001. | |
| (23) | **Memory module compartment cover**<br><br>**NOTE:** The memory module compartment cover is included in the Plastics Kit, spare part number 640353-001. | |

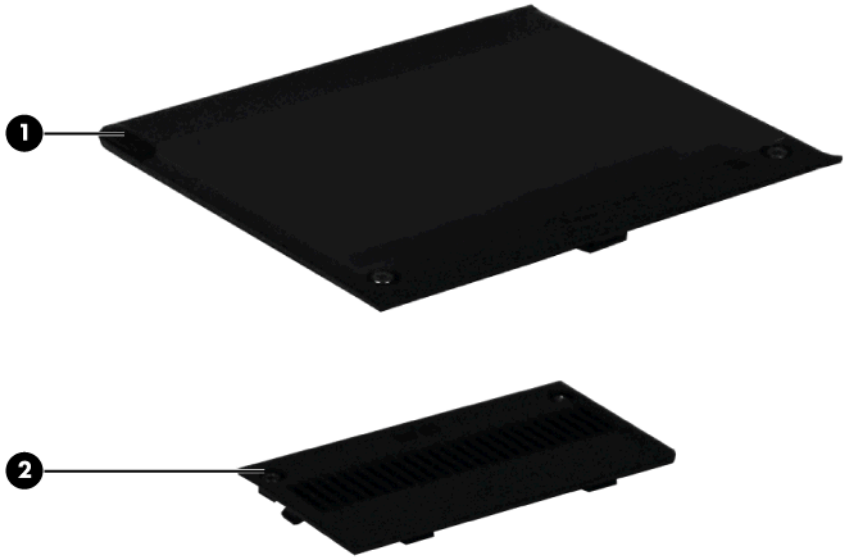
# Display assembly components




| Item | Description | Spare part number |
|---|---|---|
| (1) | **Display bezel** | 640343-001 |
| (2) | **Webcam module** | 640336-001 |
| (3) | **Display panel**, BrightView LED, high-definition, **35.56 cm** (14.0-in) | 643128-001 |

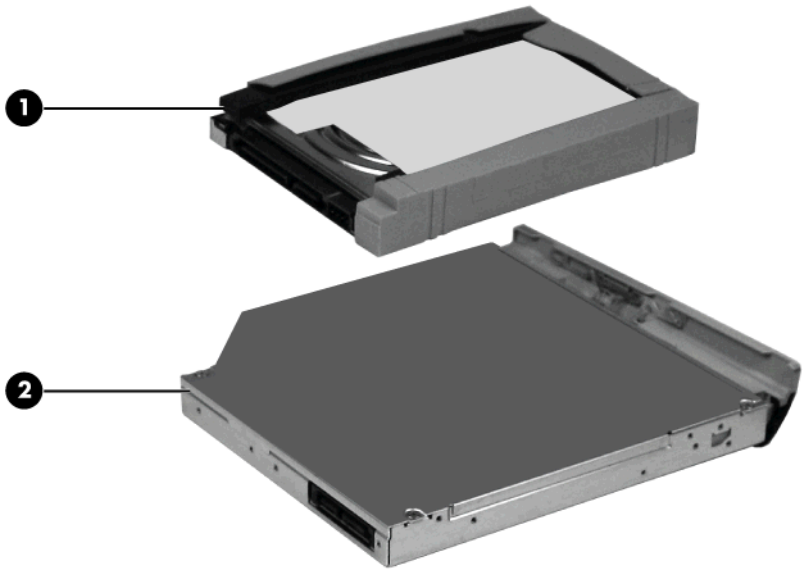
| Item | Description | Spare part number |
|---|---|---|
| (4) | **Display/Hinge Bracket Kit** (includes left and right brackets and hinges) | 640346-001 |
| (5) | **Display hinge cover** | 640347-001 |
| (6) | **Antenna Kit** (includes WLAN main and auxiliary cables) | 640340-001 |
| (7) | **Display cable** | 640344-001 |
| (8) | **Display back cover** | 640341-001<br>657604-001 |
| | **Display Screw Kit** (not illustrated; includes screws and screw covers) | 640357-001 |
| | **Display Rubber Kit** (not illustrated; includes LCD rubber bumpers and screw) | 641757-001 |

# Plastics Kit




| Item | Description | Spare part number |
|---|---|---|
| | **Plastics Kit** | 640353-001 |
| (1) | Hard drive cover | |
| (2) | Memory module compartment cover | |

# Mass storage devices




| Item | Description | Spare part number |
|---|---|---|
| (1) | **Hard drive** | |
| | **NOTE:** The hard drive brackets are included in the Hardware Drive Kit, spare part number 643712-001. | |
| | **NOTE:** The hard drive cable is included in the Cable Kit, spare part number 640363-001. | |
| | 2.5-in, 750 GB, 7200 RPM | 633252-001 |
| | 2.5-in, 750 GB, 5400 RPM | 634250-001 |
| | 2.5-in, 640 GB, 7200 RPM | 621046-001 |
| | 2.5-in, 640 GB, 5400 RPM | 603785-001 |
| | 2.5-in, 500 GB, 7200 RPM | 634925-001 |
| | 2.5-in, 320 GB, 7200 RPM | 641672-001 |
| | 2.5-in, 320 GB, 5400 RPM | 622643-001 |
| | 2.5-in, 250 GB, 7200 RPM | 635225-001 |
| | 12.7-mm, 1 TB, 7200 RPM | 638974-001 |
| | Hard Drive Hardware Kit (not pictured) | 643712-001 |
| (2) | **Optical drive** (12.7 mm, SATA, fixed) | |
| | DVD±RW SuperMulti Double-Layer Drive with LightScribe* | 641762-001 |
| | Blu-ray ROM with LightScribe* DVD±R/RW SuperMulti DL Drive | 641763-001 |
| | **NOTE: *Select models only.** | |

# Miscellaneous parts

| Description | Spare part number |
|---|---|
| **AC adapters** | |
| 90-W Smart AC adapter with power factor correction (PFC), RC/V 3W | 609940-001 |
| 90-W Smart AC adapter with PFC, RC/V EM 3W | 609947-001 |
| TouchPad LED board | 640339-001 |
| **Power cord, AC, 3 wire, black, 1.83-m** | |
| For use in Australia | 490371-011 |
| For use in the People's Republic of China | 490371-AA1 |
| For use in Indonesia | 490371-021 |
| For use in India | 490371-D61 |
| For use in Japan | 490371-291 |
| For use in South Korea | 490371-AD1 |
| For use in Taiwan | 490371-AB1 |
| For use in Thailand | 490371-201 |
| For use in the United Kingdom and Singapore | 490371-031 |
| **Thermal Pad Kit** | 640362-001 |
| **Rubber Feet Kit** | 650045-001 |
| **Screw Kit** | 640356-001 |
| • Phillips M2.5x2.0 screws | |
| • Phillips M2.5x8.0 screws | |
| • Phillips M2.0x3.0 screws | |
| • Phillips M2.5x5.0 screws | |
| • Phillips M3.0x3.0 screws | |

# Sequential part number listing

| Spare part number | Description |
|---|---|
| 490371-011 | Power cord, AC, 3-pin, black, 1.83-m, for use in Australia |
| 490371-021 | Power cord, AC, 3-pin, black, 1.83-m, for use in Indonesia |
| 490371-031 | Power cord, AC, 3-pin, black, 1.83-m, for use in Singapore |
| 490371-201 | Power cord, AC, 3-pin, black, 1.83-m, for use in Thailand |
| 490371-291 | Power cord, AC, 3-pin, black, 1.83-m, for use in Japan |
| 490371-AA1 | Power cord, AC, 3-pin, black, 1.83-m, for use in the People's Republic of China |
| 490371-AB1 | Power cord, AC, 3-pin, black, 1.83-m, for use in Taiwan |
| 490371-AD1 | Power cord, AC, 3-pin, black ,1.83-m, for use in South Korea |
| 490371-D61 | Power cord, AC, 3-pin, black, 1.83-m, for use in India |
| 581096-001 | Memory module, 2GB PC3-10600 |
| 593530-001 | Intel Centrino Wireless-N 1000 802.11b/g/n 1x2 WLAN module for use in Australia, Bangladesh, Bhutan, Brunei, Cambodia, People's Republic of China, East Timor, Hong Kong, India, Indonesia, Japan, South Korea, Malaysia, Maldives, Nauru, Nepal, New Zealand, Pakistan, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, Tuvalu, and Vietnam |
| 600370-001 | Broadcom 4313GN 802.11b/g/n 1x1 WiFi and 2070 Bluetooth 2.1+EDR Combo Adapter (BT3.0+HS ready) for use in Australia, Bangladesh, Bhutan, Brunei, Cambodia, People's Republic of China, East Timor, Hong Kong, India, Indonesia, Japan, South Korea, Malaysia, Maldives, Nauru, Nepal, New Zealand, Pakistan, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, Tuvalu, and Vietnam |
| 603785-001 | Hard drive, 2.5-in, 640 GB, 5400 RPM |
| 605560-005 | Atheros 9285G 802.11b/g/n 1x1 WiFi Adapter for use in Australia, Bangladesh, Bhutan, Brunei, Cambodia, People's Republic of China, East Timor, Hong Kong, India, Indonesia, Japan, South Korea, Malaysia, Maldives, Nauru, Nepal, New Zealand, Pakistan, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, Tuvalu, and Vietnam |
| 609940-001 | 90-W Smart AC adapter with power factor correction (PFC), RC/V 3W |
| 609947-001 | 90-W Smart AC adapter with power factor correction (PFC), RC/V EM 3W |
| 621046-001 | Hard drive, 2.5-in, 640 GB, 7200 RPM |
| 621569-001 | Memory module, 4 GB PC3-10600, 1333Mhz shared |
| 622643-001 | Hard drive, 2.5-in, 320 GB, 5400 RPM |
| 625823-001 | Intel Core i3-380M processor, 2.53 GHz, 3MB L3 cache, Dual 35W (includes replacement thermal material) |
| 625831-001 | Intel Pentium P6200 processor, 2.13GHz, 3 MB L3 cache, Dual 35W (includes replacement thermal material) |
| 630703-001 | Ralink 5390GN 802.11b/g/n 1x1 WiFi Adapter for use in Australia, Bangladesh, Bhutan, Brunei, Cambodia, People's Republic of China, East Timor, Hong Kong, India, Indonesia, Japan, South Korea, Malaysia, Maldives, Nauru, Nepal, New Zealand, Pakistan, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, Tuvalu, and Vietnam |
| 630705-001 | Ralink 5390BC8 802.11b/g/n 1x1 WiFi and Bluetooth 3.0+HS Combo Adapter for use in Australia, Bangladesh, Bhutan, Brunei, Cambodia, People's Republic of China, East Timor, Hong Kong, India, Indonesia, Japan, South Korea, Malaysia, Maldives, Nauru, Nepal, New Zealand, Pakistan, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, Tuvalu, and Vietnam |

| Spare part number | Description |
|---|---|
| 631252-001 | Intel Core i7-2620M, 2.7GHz |
| 631253-001 | Intel Core i5-2520M, 2.5GHz |
| 631255-001 | Intel Core i5-2540M, 2.6GHz |
| 631956-001 | Intel Centrino Wireless–N 1030 + Bluetooth (802.11b/g/n) WLAN module for use in Australia, Bangladesh, Bhutan, Brunei, Cambodia, People's Republic of China, East Timor, Hong Kong, India, Japan, South Korea, Maldives, Nauru, Nepal, New Zealand, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, Tuvalu, and Vietnam |
| 633252-001 | Hard drive, 2.5-in, 750 GB, 7200 RPM |
| 634250-001 | Hard drive, 2.5-in, 750 GB, 5400 RPM |
| 634692-001 | Intel Core i3-390M processor, 2.66 GHz, 3MB L3 cache, Dual 35W (includes replacement thermal material) |
| 634693-001 | Intel Core i5-480M processor, 2.66 GHz (turbo up to 2.93 GHz), 3MB L3 cache, Dual 35W (includes replacement thermal material) |
| 634925-001 | Hard drive, 2.5-in, 500 GB, 7200RPM |
| 635225-001 | Hard drive, 2.5-in, 250 GB, 7200 RPM |
| 635500-001 | Intel Pentium P6300 processor, 2.26 GHz, 3 MB L3 cache, Dual 35 W (includes replacement thermal material) |
| 638037-001 | Intel Core i3-2310M, 2.1 GHz, 3MB, L3 cache, Dual 35W |
| 638039-001 | Intel Core i5-2410M, 2.3GHz, 3MB L3 cache, Dual 35W |
| 638974-001 | Hard drive, 12.5-mm 1 TB, 5400 RPM |
| 639736-001 | Memory module, 1 GB, PC3-10600, 1333 MHz shared |
| 640335-001 | Top cover (includes TouchPad) |
| 640334-001 | System board |
| 640336-001 | Webcam module |
| 640337-001 | TouchPad button board (The TouchPad button board cable is included in the Cable Kit, spare part number 640363-001.) |
| 640338-001 | Power button board (The power button board cable is included in the Cable Kit, spare part number 640363-001.) |
| 640339-001 | TouchPad LED board |
| 640340-001 | Antenna Kit |
| 640341-001 | Display enclosure |
| 640342-001 | Base enclosure (includes hard drive cable and optical drive cable) |
| 640343-001 | LCD bezel |
| 640344-001 | Display Cable Kit |
| 640346-001 | Display Hinge/Bracket Kit |
| 640347-001 | Display hinge cover |
| 640353-001 | Plastics Kit |
| 640354-001 | RTC battery |

| Spare part number | Description |
|---|---|
| 640356-001 | Screw Kit |
| 640357-001 | Display Screw Kit |
| 640359-001 | Speaker assembly (includes cable) |
| 640362-001 | Thermal Pad Kit |
| 640363-001 | Cable Kit (includes cables for the power connector, hard drive, optical drive, audio board, TouchPad button board, and power button board |
| 641672-001 | Hard drive, 2.5-in 320 GB, 7200 RPM |
| 641756-001 | Audio/USB 2.0 board |
| 641757-001 | Display Rubber Kit (includes LCD rubber bumpers and screw) |
| 641758-001 | Security Lock/Bracket Hardware Kit |
| 641760-001 | System board (includes replacement thermal material) |
| 641761-001 | Keyboard for use in the United States |
| 641761-281 | Keyboard for use in Thailand |
| 641761-291 | Keyboard for use in Japan |
| 641761-AB1 | Keyboard for use in Taiwan |
| 641761-AD1 | Keyboard for use in South Korea |
| 64176-D61 | Keyboard for use in India. |
| 641762-001 | DVD±RW SuperMulti Double-Layer Drive with LightScribe* |
| 641763-001 | Blu-ray ROM with LightScribe* DVD±R/RW SuperMulti DL Drive |
| **NOTE:** ***Select models only.** | |
| 643127-001 | Display assembly **35.56-cm** (14.0-in), WXGA, HD, BrightView (includes display panel cable) |
| 643128-001 | Display panel, Brightview, LED high-definition, **35.56-cm** (14.0-in) (includes display panel cable) |
| 643712-001 | Hard Drive Hardware Kit |
| 644184-001 | Battery, 6 cell 52 Wh (2.58 Ah) Li-on |
| 644515-001 | Fan/heat sink assembly (includes replacement thermal material) |
| 650045-001 | Rubber Feet Kit |
| 653337-001 | Intel Pentium-B940, 2GHz |
| 653338-001 | Intel Pentium-B950, 2.1GHz |
| 653339-001 | Intel Core i3-2330M, 2.2 GHz |
| 653340-001 | Intel Core i3-2350M, 2.3GHz |
| 653341-001 | Intel Core i5-, 2.4GHz |
| 657602-001 | System board |
| 657603-001 | System board |
| 657605-001 | Top cover (includes TouchPad) |

| Spare part number | Description |
|---|---|
| 659942-001 | SPS-ODD WEIGHT SAVER |
| | USB 3.0 board*<br><br>**NOTE: *Select models only.** |

# 4 Removal and replacement procedures

## Preliminary replacement requirements

### Tools required

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

- Flat-bladed screwdriver
- Magnetic screwdriver
- Phillips P0 and P1 screwdrivers

### Service considerations

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

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

#### Plastic parts

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

## Cables and connectors

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

Cables must be handled with extreme care to avoid damage. Apply only the tension required to unseat or seat the cables during removal and insertion. Handle cables by the connector whenever possible. In all cases, avoid bending, twisting, or tearing cables. Be sure that cables are routed in such a way that they cannot be caught or snagged by parts being removed or replaced. Handle flex cables with extreme care; these cables tear easily.

## Drive handling

**CAUTION:** Drives are fragile components that must be handled with care. To prevent damage to the computer, damage to a drive, or loss of information, observe these precautions:

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

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

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

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

Avoid dropping drives from any height onto any surface.

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

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

Avoid exposing a drive to temperature extremes or liquids.

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

# Grounding guidelines

## Electrostatic discharge damage

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

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

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

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

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

Use nonmagnetic tools.

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, screwdrivers, 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 strips 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 tabletop 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 plastic | Bags | 1,500 V |
| Carbon-loaded plastic | Floor mats | 7,500 V |
| Metallized laminate | Floor mats | 5,000 V |

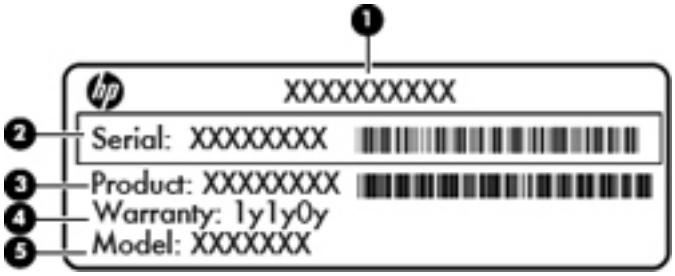
# Component replacement procedures

This chapter provides removal and replacement procedures.

There are as many as 77 screws, in 14 different sizes, that must be removed, replaced, or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

## Serial number

The serial number label, located in the battery bay of the computer, provides important information that you may need when contacting technical support.

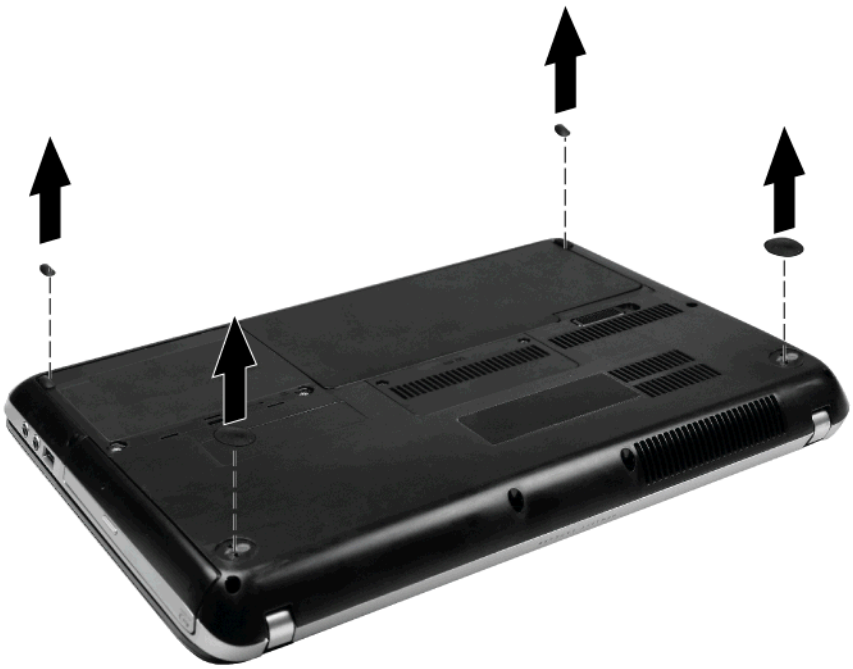



- Product name **(1)**. This is the product name affixed to the front of the computer.
- Serial number (s/n) **(2)**. This is an alphanumeric identifier that is unique to each product.
- Part number/Product number (p/n) **(3)**. This number provides specific information about the product's hardware components. The part number helps a service technician to determine what components and parts are needed.
- Warranty period **(4)**. This number describes the duration (in years) of the warranty period for the computer.
- Model description **(5)**. This is the alphanumeric identifier used to locate documents, drivers, and support for the computer.

## Computer feet

| Description | Spare part number |
|---|---|
| Rubber Feet Kit | 650045-001 |

The computer feet are adhesive-backed rubber pads. The feet attach to the base enclosure in the locations illustrated below.



## Battery

| Description | Spare part number |
|---|---|
| 6-cell, 52-WH (2.58-Ah) Li-ion | 644184-001 |

Before disassembling the computer, 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.

Remove the battery:

1. Turn the computer upside down on a flat surface.
2. Slide the battery release latch **(1)** to release the battery.
3. Pivot the battery **(2)** upward and lift it out of the computer **(3)**.

To insert the battery, insert the rear edge of the battery into the battery bay and pivot the front edge downward until the battery is seated. The battery release latch automatically locks the battery into place.

## Memory module

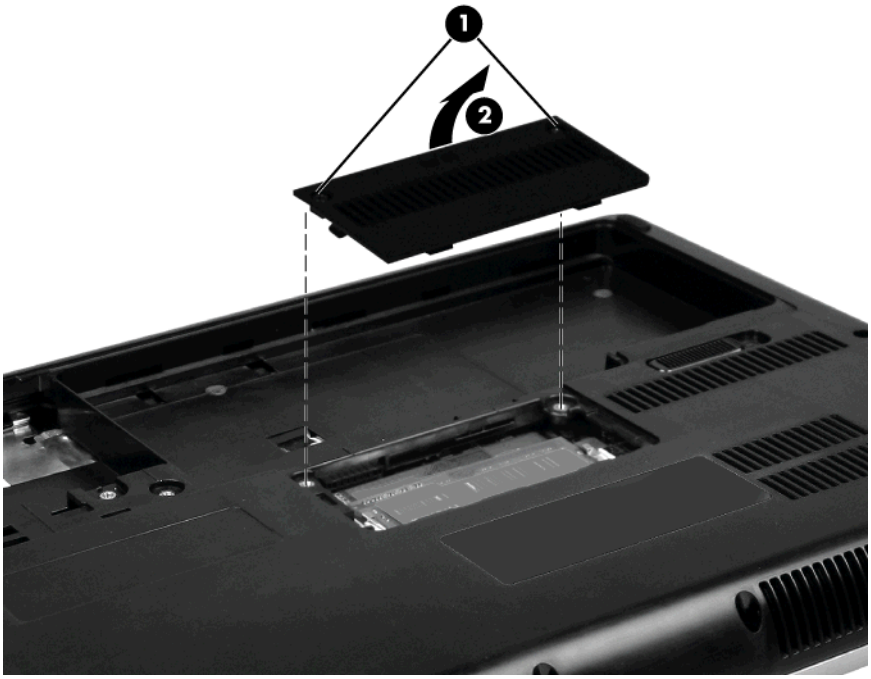
| Description | Spare part number |
|---|---|
| 4096-MB, PC3 10600, 1333-MHz shared | 621569-001 |
| 2048-MB, PC3 10600 | 581096-001 |
| 1024-MB, PC3 10600, 1333-MHz shared | 639736-001 |

Before removing the memory 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 battery (see Battery on page 36).

Remove the memory module:

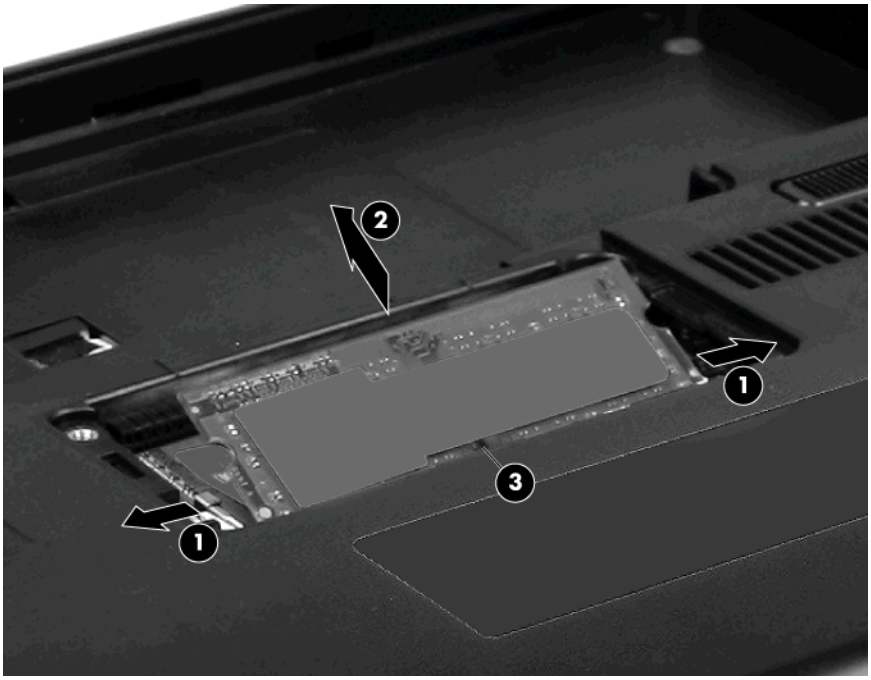
1. Turn the computer upside down with the front toward you.
2. Loosen the two Phillips 4.0x2.5 captive screws **(1)** that secure the memory module compartment cover to the computer.
3. Remove the cover **(2)**. The memory module compartment cover is included in the Plastics Kit, spare part number 640353-001.




4. Spread the retaining tabs **(1)** on each side of the memory module slot to release the memory module. (The edge of the module opposite the slot rises away from the computer.)

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

**NOTE:** Memory modules are designed with a notch **(3)** to prevent incorrect insertion into the memory module slot.




Reverse this procedure to install a memory module.

## Hard drive

**NOTE:** The hard drive kits include a hard drive bracket.

**NOTE:** The hard drive cable is included in the Cable Kit, spare part number 640363-001.

| Description | Spare part number |
|---|---|
| 2.5-in, 750 GB, 7200 RPM | 633252-001 |
| 2.5-in, 750 GB, 5400 RPM | 634250-001 |
| 2.5-in, 640 GB, 7200 RPM | 621046-001 |
| 2.5-in, 640 GB, 5400 RPM | 603785-001 |
| 2.5-in, 500 GB, 7200 RPM | 634925-001 |
| 2.5-in, 320 GB, 7200 RPM | 641672-001 |
| 2.5-in, 320 GB 5400 RPM | 622643-001 |
| 2.5-in, 250 GB 7200 RPM | 635225-001 |
| 12.7-mm, 1 TB, 5400 RPM | 638974-001 |

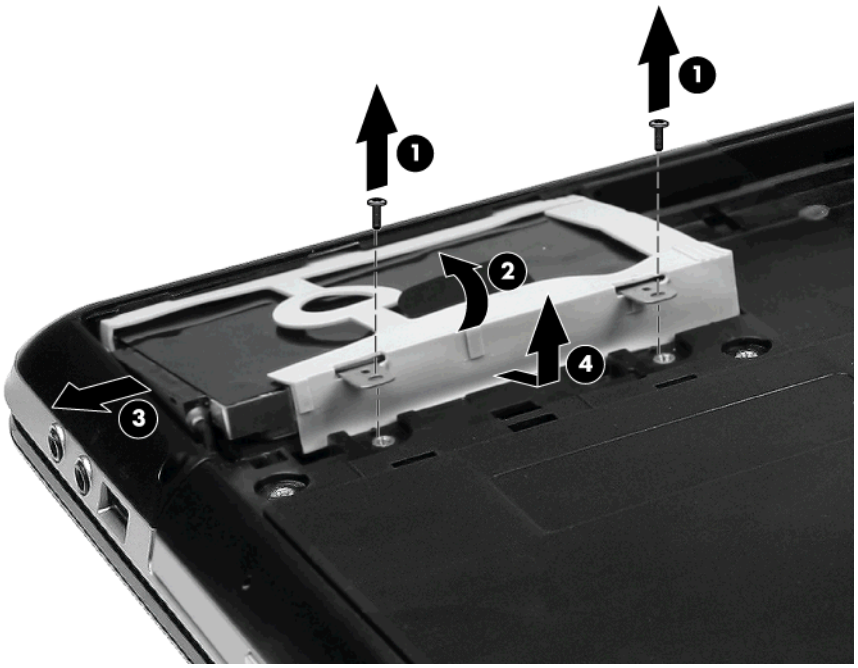
Before removing the hard drive, follow these steps:

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 battery (see Battery on page 36).

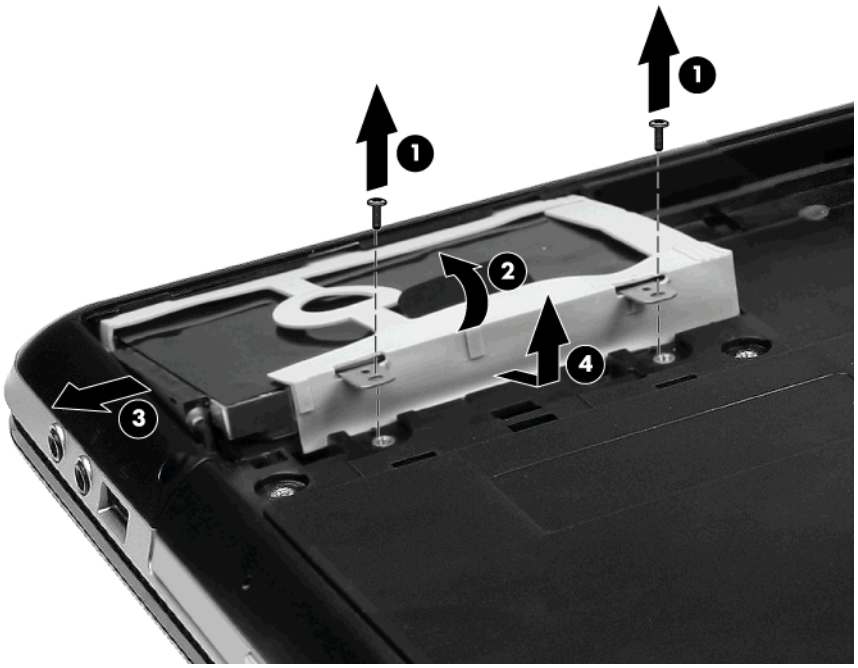
Remove the hard drive:

1. Position the computer with the front toward you.
2. Loosen the two captive Phillips 4.0x2.5 screws **(1)** that secure the hard drive cover to the computer.

3. Remove the cover **(2)**. The hard drive cover is included in the Plastics Kit, spare part number 640353-001.

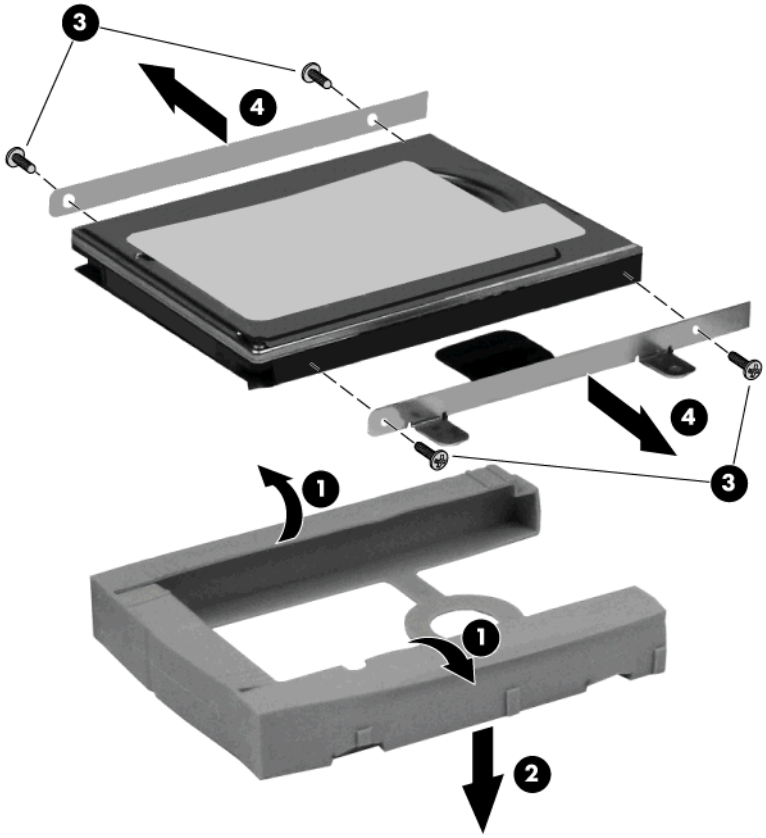



4. Remove the two Phillips 4.5 x 2.5 screws **(1)** that secure the hard drive to the computer.
5. Use the Mylar tab **(2)** to lift the front edge of the drive up and out of the hard drive bay.
6. With the drive propped up out of the bay, disconnect the hard drive adapter cable **(3)** from the hard drive.
7. Remove the hard drive **(4)**.



8. If it is necessary to replace the hard drive bracket, flex the rubber cover **(1)**, and then remove it from the hard drive **(2)**.

9. Remove the two Phillips 2.5 x 3.0 screws **(3)** that secure the hard drive bracket to the hard drive and remove the hard drive brackets **(4)**.




Reverse this procedure to reassemble and install the hard drive.

## Optical drive

| Description | Spare part number |
|---|---|
| DVD±RW SuperMulti Double-Layer Drive with LightScribe* | 641762-001 |
| Blu-ray ROM with LightScribe* DVD±R/RW SuperMulti DL Drive | 641763-001 |
| SPS-ODD WEIGHT SAVER | 659942-001 |

**NOTE:** ***Select models only.**

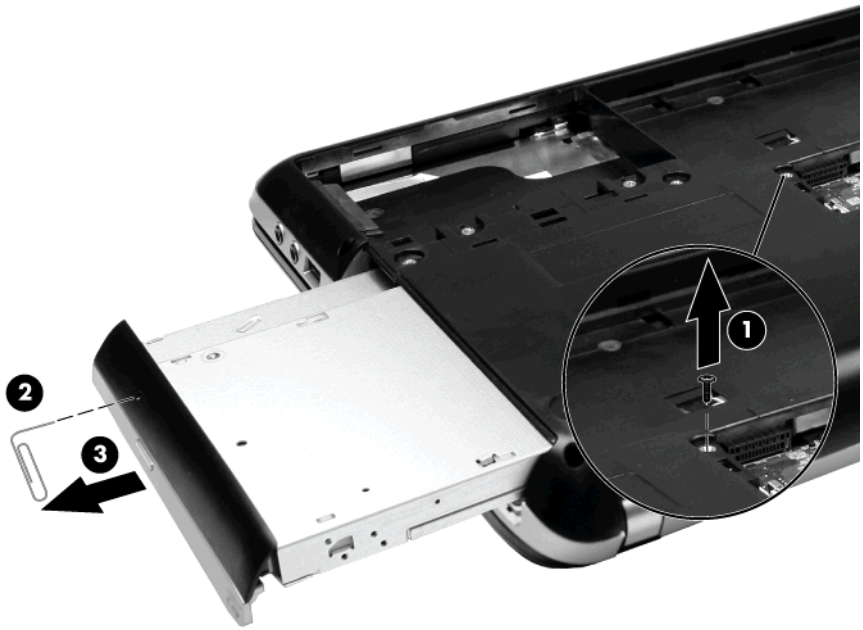
Before removing the optical drive, follow these steps:

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 battery (see Battery on page 36).
5. Remove the memory module compartment cover (see Memory module on page 37).

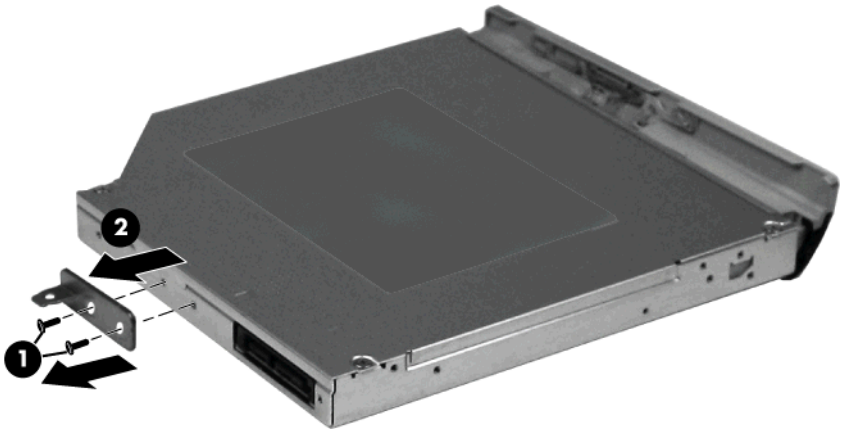
Remove the optical drive:

1. Position the computer upside down, with the front toward you.
2. Remove the Phillips 4.0x2.5 screw **(1)** that secures the optical drive to the computer.
3. Insert the end of a paper clip into the release access hole **(2)** in the optical drive bezel to release the optical drive.

4. Remove the optical drive **(3)**.




5. If it is necessary to replace the optical drive bracket, position the optical drive with the optical drive bracket toward you.
6. Remove the two Phillips 2.5×2.0 screws **(1)** that secure the optical drive bracket to the optical drive.
7. Remove the optical drive bracket **(2)**.




Reverse this procedure to reassemble and install the optical drive.

## Keyboard

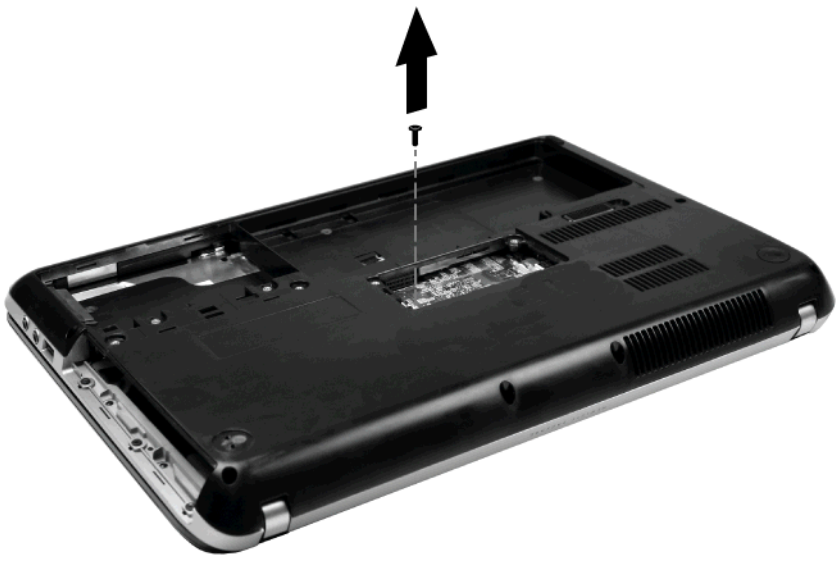
| Description | Spare part number |
|---|---|
| Keyboard for use in Japan | 641761-291 |
| Keyboard for use in South Korea | 641761-AD1 |
| Keyboard for use in India | 64176-D61 |
| Keyboard for use in Taiwan | 641761-AB1 |
| Keyboard for use in Thailand | 641761-281 |
| Keyboard for use in the United States | 641761-001 |

Before removing the keyboard, 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 battery (see Battery on page 36).
5. Remove the memory module compartment cover (see Memory module on page 37).

Remove the keyboard:

1. Position the computer upside down, with the front toward you.
2. Remove the Phillips 7.5×2.5 screw that secures the keyboard to the computer.



3. Position the computer right-side up, with the front toward you.
4. Open the computer as far as possible.

5. Release the top edge of the keyboard by lifting it up to disengage the keyboard from the tabs on the top cover **(1)** and tilt the keyboard forward onto the palm rest.

6. Release the zero insertion force (ZIF) connector **(2)** to which the keyboard cable is attached and disconnect the keyboard cable **(3)** from the system board. Remove the keyboard **(4)**.

Reverse this procedure to install the keyboard.

## WLAN module

| Description | Spare part number |
|---|---|
| Atheros 9285G 802.11b/g/n 1x1 WiFi Adapter<br><br>For use in Australia, Bangladesh, Bhutan, Brunei, Cambodia, People's Republic of China, East Timor, Hong Kong, India, Indonesia, Japan, South Korea, Malaysia, Maldives, Nauru, Nepal, New Zealand, Pakistan, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, Tuvalu, and Vietnam | 605560-005 |
| Intel Centrino Wireless-N 1000 802.11b/g/n 1x2<br><br>For use in Australia, Bangladesh, Bhutan, Brunei, Cambodia, People's Republic of China, East Timor, Hong Kong, India, Indonesia, Japan, South Korea, Malaysia, Maldives, Nauru, Nepal, New Zealand, Pakistan, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, Tuvalu, and Vietnam | 593530-001 |
| Ralink 5390GN 802.11b/g/n 1x1 WiFi Adapter<br><br>For use in Australia, Bangladesh, Bhutan, Brunei, Cambodia, People's Republic of China, East Timor, Hong Kong, India, Indonesia, Japan, South Korea, Malaysia, Maldives, Nauru, Nepal, New Zealand, Pakistan, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, Tuvalu, and Vietnam | 630703-001 |
| Ralink 5390BC8 802.11b/g/n 1x1 WiFi and Bluetooth 3.0+HS Combo Adapter<br><br>For use in Australia, Bangladesh, Bhutan, Brunei, Cambodia, People's Republic of China, East Timor, Hong Kong, India, Indonesia, Japan, South Korea, Malaysia, Maldives, Nauru, Nepal, New Zealand, Pakistan, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, Tuvalu, and Vietnam | 630705-001 |
| Broadcom 4313GN 802.11b/g/n 1x1 WiFi and 2070 Bluetooth 2.1+EDR Combo Adapter (BT3.0+HS ready)<br><br>For use in Australia, Bangladesh, Bhutan, Brunei, Cambodia, People's Republic of China, East Timor, Hong Kong, India, Indonesia, Japan, South Korea, Malaysia, Maldives, Nauru, Nepal, New Zealand, Pakistan, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, Tuvalu, and Vietnam | 600370-001 |
| Intel Centrino Wireless–N 1030 + Bluetooth (802.11b/g/n) WLAN module<br><br>For use in Australia, Bangladesh, Bhutan, Brunei, Cambodia, People's Republic of China, East Timor, Hong Kong, India, Japan, South Korea, Maldives, Nauru, Nepal, New Zealand, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, Tuvalu, and Vietnam | 631956-001 |

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 battery (see Battery on page 36).
5. Remove the memory module (see Memory module on page 37).
6. Remove the keyboard (see Keyboard on page 44).

Remove the WLAN module:

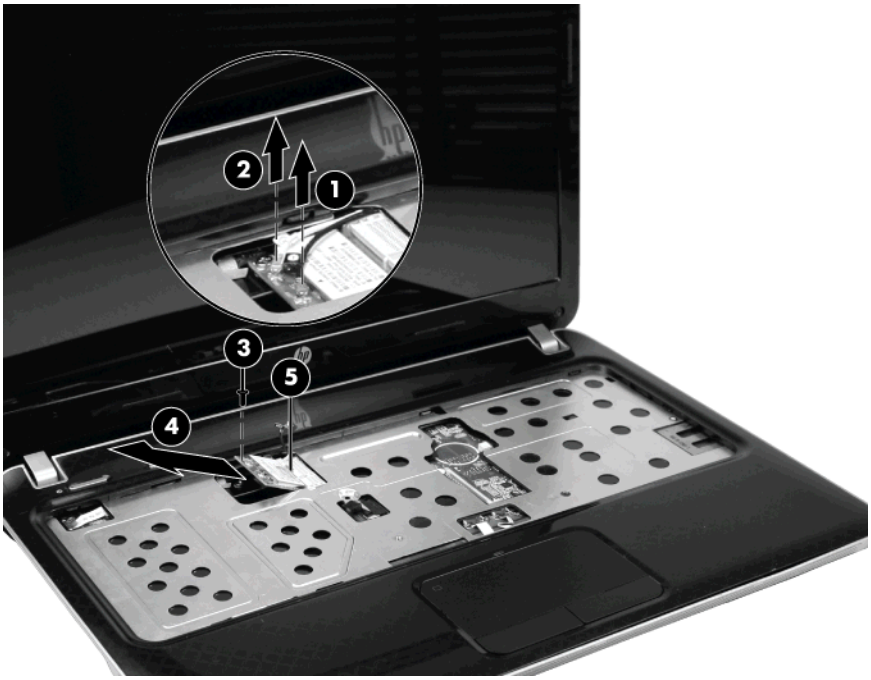
1. Position the computer right-side up, with the front toward you.
2. Disconnect the main **(1)** and auxiliary **(2)** antenna cables from the WLAN module.

3. Remove the Phillips 3.0x2.5 screw **(3)** that secures the WLAN module to the computer. (The edge of the module opposite the slot rises away from the computer.)

4. Remove the WLAN module **(4)** by pulling it away from the slot at an angle.

**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 computer functionality, and then contact technical support through Help and Support.

**NOTE:** WLAN modules are designed with a notch **(5)** to prevent incorrect insertion into the WLAN module slot.




Reverse this procedure to install a WLAN module.

## RTC battery

| Description | Spare part number |
|---|---|
| RTC battery | 640354-001 |

Before removing the RTC battery, 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 battery (see Battery on page 36).
5. Remove the memory module compartment cover (see Memory module on page 37).
6. Remove the keyboard (see Keyboard on page 44).

Remove the RTC battery:

1. Disconnect the RTC battery from the system board **(1)**.
2. Remove the RTC battery **(2)**.

Reverse this procedure to install the RTC battery.

## Top cover

| Description | Spare part number |
|---|---|
| Top cover (includes TouchPad) | 640335-001 |

Before removing the top cover, 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 following components:
   a. Battery (see Battery on page 36)
   b. Hard drive (see Hard drive on page 39)
   c. Memory module (see Memory module on page 37)
   d. Optical drive (see Optical drive on page 42)
   e. Keyboard (see Keyboard on page 44)

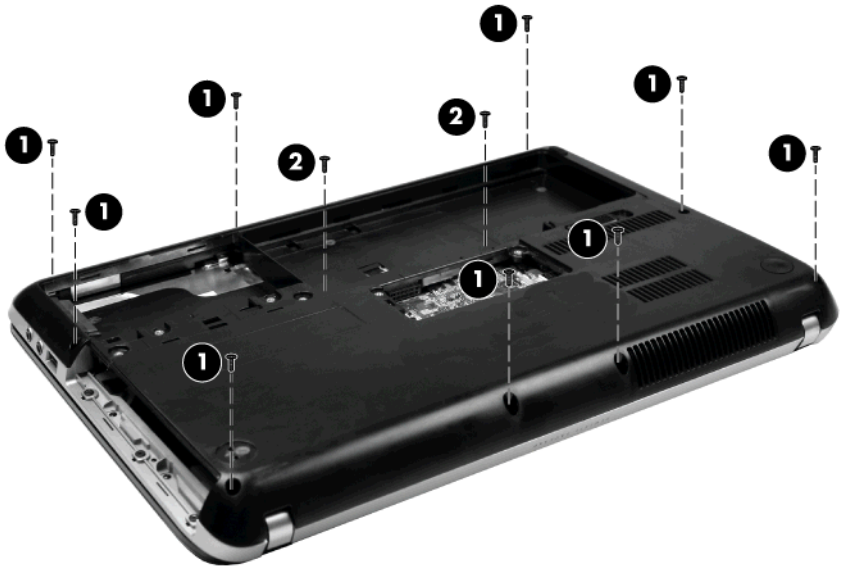
Remove the top cover:

1. Position the computer right-side up, with the front toward you.
2. Open the computer as far as possible.

3. Release the ZIF connectors **(1)**, and then disconnect the power button cable **(2)**, the TouchPad LED cable **(3)**, and the TouchPad cable **(4)** from the system board.

4. Position the computer upside down, with the front toward you.

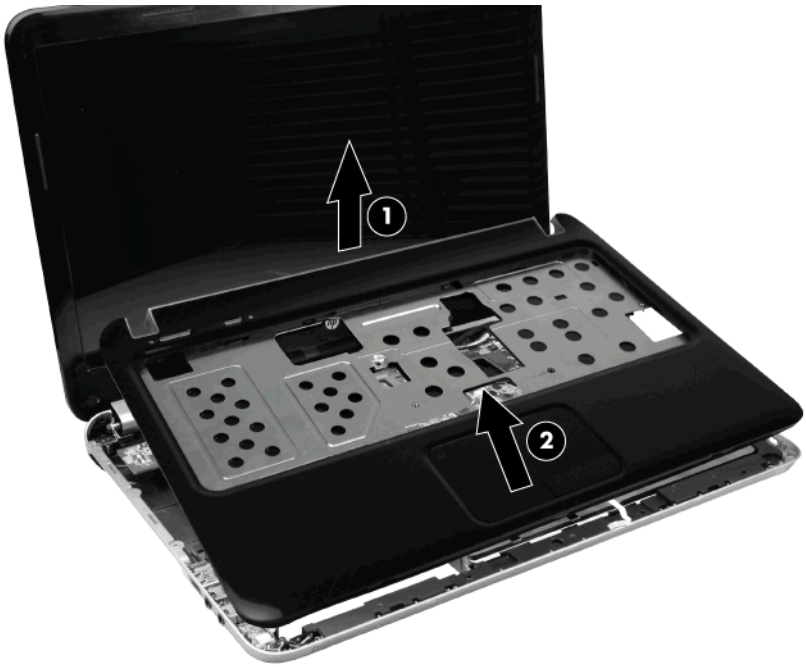
5. Remove the nine Phillips 7.5x2.5 screws **(1)** around the base enclosure edges and the two Phillips 4.0x2.5 screws **(2)** inside the battery bay that secure the top cover to the base enclosure.




6. Position the computer right-side up, with the front toward you.

7. Open the computer as far as possible.

8. Lift the rear edge of the top cover **(1)** and remove it from the base enclosure **(2)**.




Reverse this procedure to install the top cover.

## Power button board

| Description | Spare part number |
|---|---|
| Power button board | 640338-001 |
| **NOTE:** The power button board cable is included in the Cable Kit, spare part number 640363-001. | |

Before removing the power button board, follow these steps:

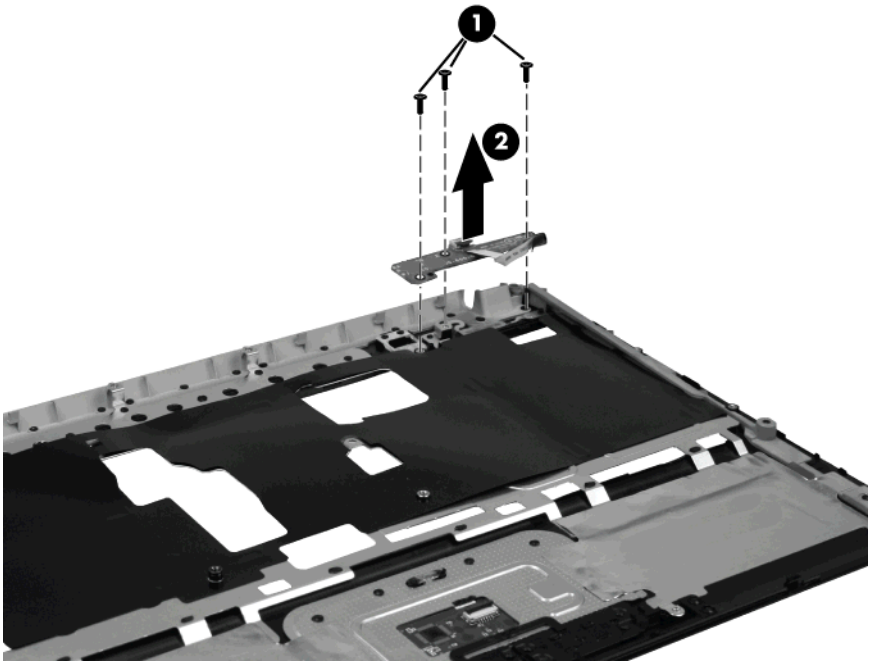
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 36).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 39)
   b. Memory module (see Memory module on page 37)
   c. Optical drive (see Optical drive on page 42)

**d.** Keyboard (see Keyboard on page 44)

**e.** Top cover (see Top cover on page 49)

Remove the power button board:

1. Position the top cover upside down, with the rear edge toward you.
2. Remove the three Phillips 2.5x2.0 screws **(1)** that secure the power button board to the top cover.
3. Remove the power button board **(2)**.




Reverse this procedure to install the power button board.

## TouchPad button board

| Description | Spare part number |
|---|---|
| TouchPad button board | 640337-001 |
| **NOTE:** The TouchPad button board cable is included in the Cable Kit, spare part number 640363-001. | |

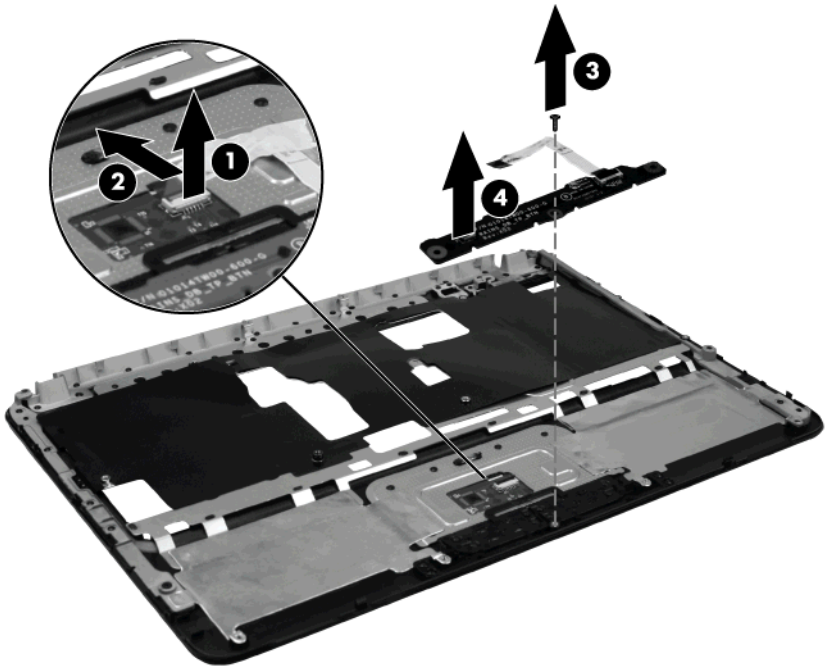
Before removing the TouchPad button board, follow these steps:

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 battery (see Battery on page 36).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 39)
   b. Optical drive (see Optical drive on page 42)
   c. Keyboard (see Keyboard on page 44)
   d. Top cover (see Top cover on page 49)

Remove the TouchPad button board:

1. Position the top cover upside down, with the front toward you.
2. Release the ZIF connector **(1)** to which the TouchPad button board cable is connected and then disconnect the cable **(2)** from the TouchPad.
3. Remove the Phillips 2.0x2.0 screw **(3)** which secures the TouchPad button board to the top cover.

4. Remove the TouchPad button board **(4)**.




Reverse this procedure to install the TouchPad button board.

## Display assembly

| Description | Spare part number |
|---|---|
| **35.56 cm** (14.0-in) LED high-definition BrightView display assembly (includes display panel cable) | 643127-001 |

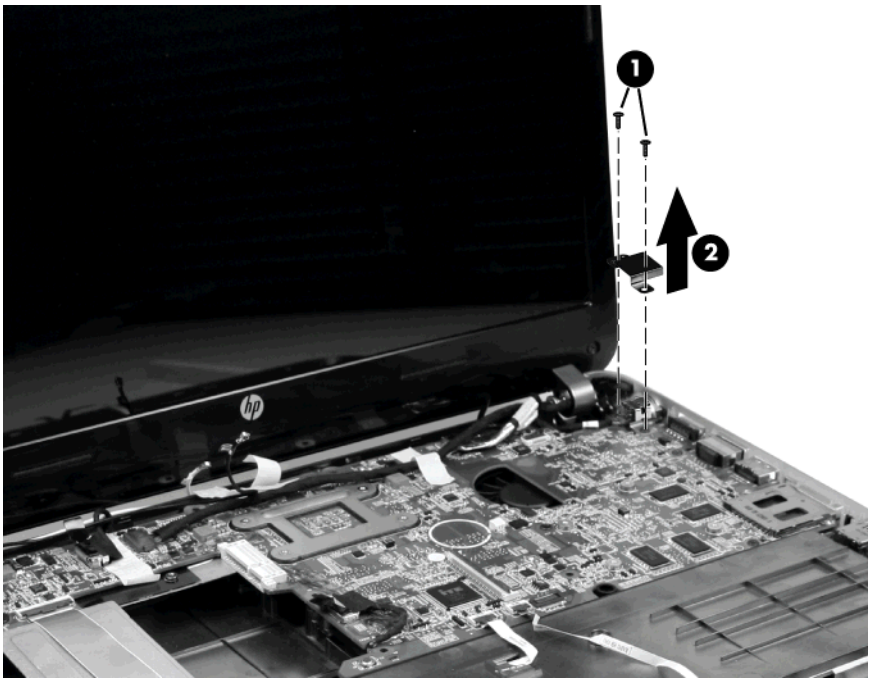
Before removing the display assembly, follow these steps:

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 battery (see Battery on page 36).
5. Remove the following components:
   a. Memory module (see Memory module on page 37)
   b. WLAN module (see WLAN module on page 46)
   c. Optical drive (see Optical drive on page 42)
   d. Keyboard (see Keyboard on page 44)
   e. Top cover (see Top cover on page 49)

Remove the display assembly:

1. Position the computer right-side up, with the front toward you.
2. Open the display as far as possible.
3. Remove the two Phillips 4.0x2.5 screws **(1)** that secure the power connector bracket to the base enclosure.

4. Remove the power connector bracket **(2)**.

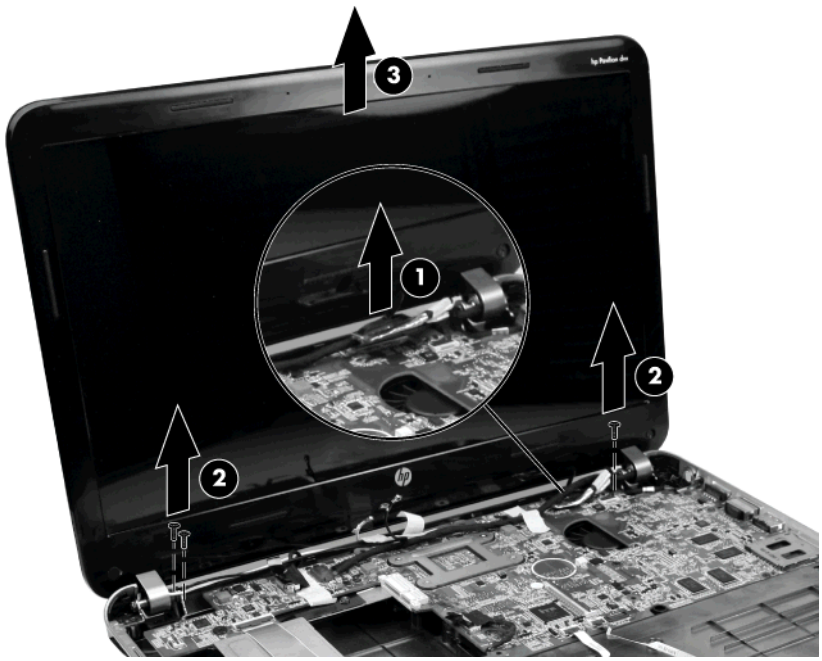



**CAUTION:** Support the display assembly when removing the display screws in the following steps. Failure to support the display assembly can result in damage to the assembly and other components.

5. Disconnect the display cable **(1)** from the system board.

6. Remove the three Phillips 4.0x2.5 screws**(2)** that secure the display assembly to the base enclosure.

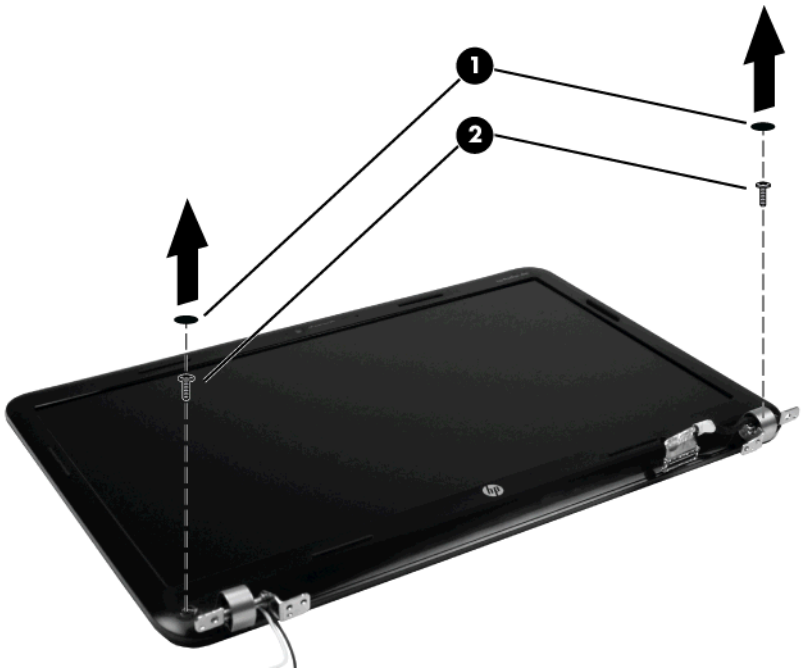
7. Remove the display assembly **(3)**.



8. If it is necessary to replace any of the display assembly internal components, remove the following screw covers and screws. The display screw covers are included in the Display Screw Kit, spare part number 640357-001.

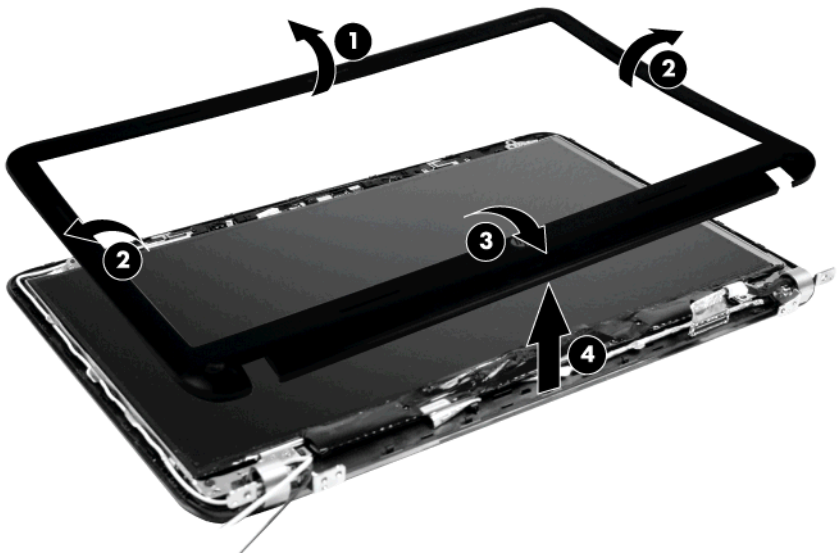
   **(1)** Two Mylar screw covers on the display bezel bottom edge

   **(2)** Two Phillips 3.5x2.5 screws

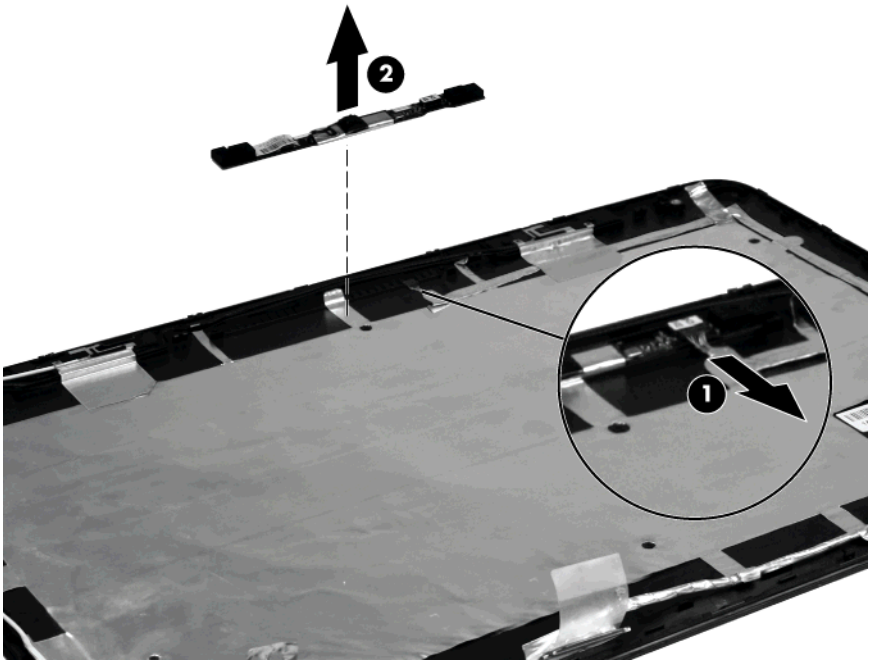



9. Flex the inside edge of the top **(1)**, the left and right sides **(2)**, and the bottom **(3)** of the display bezel until the bezel disengages from the display back cover.

10. Remove the display bezel **(4)**. The display bezel is available using spare part number 640343-001.



11. If it is necessary to replace the webcam module, disconnect the webcam cable **(1)** from the module and remove the webcam module **(2)**. The webcam is available using spare part number 640336-001.

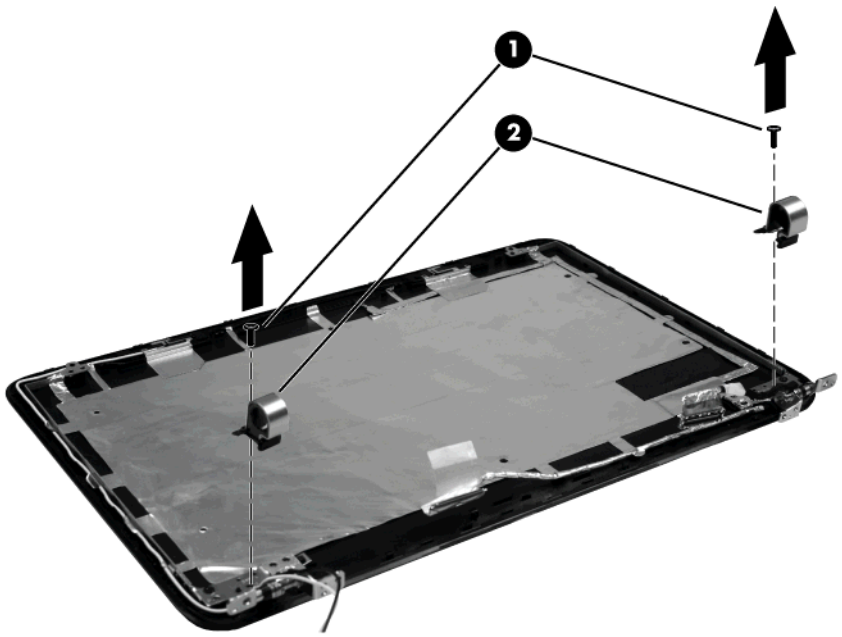



12. If it is necessary to replace the display panel, remove the six Phillips 3.0x2.0 screws that secure the display panel to the display enclosure.

13. Turn the display panel over and peel back the tape **(1)** that holds the display panel cable to the display panel. remove the display panel **(2)**.

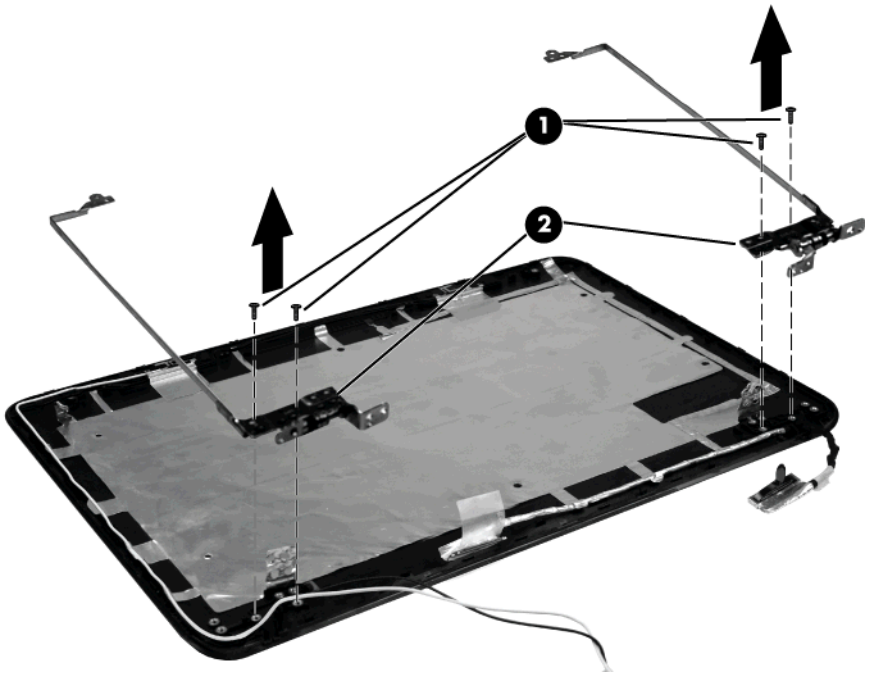
14. If it is necessary to replace the hinge covers, remove the two 3.5x2.5 screws **(1)** that secure the hinge covers to the display enclosure.

15. Remove the hinge covers **(2)**.



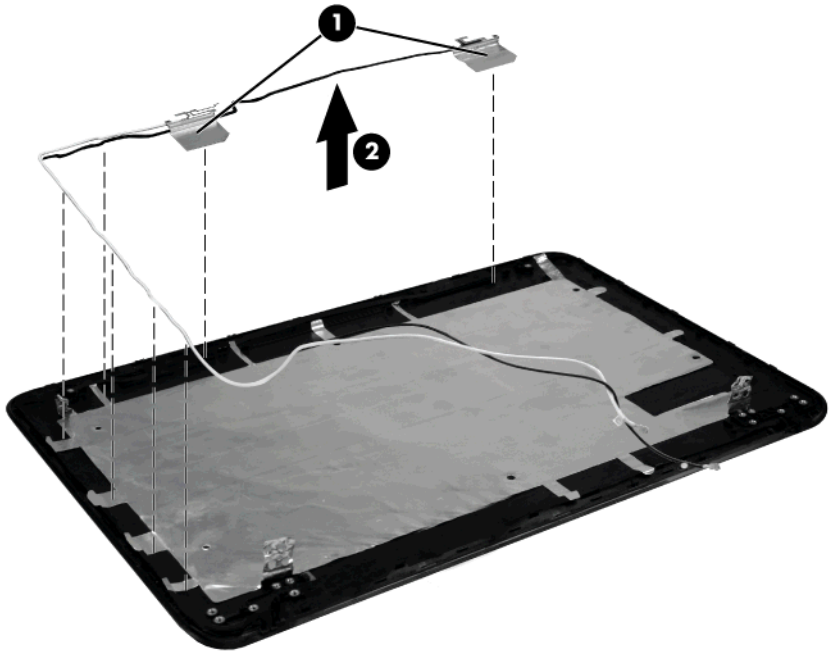

16. If it is necessary to replace the hinge brackets, remove the four Phillips PM2.5×2.5 screws **(1)** that secure the hinge brackets to the display enclosure.

17. Remove the hinge brackets **(2)**.

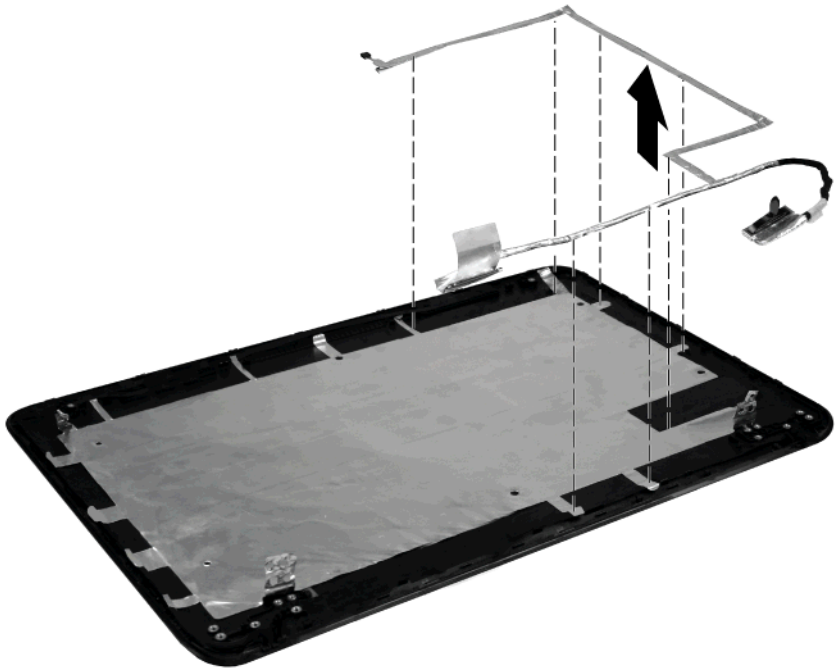



18. If it is necessary to replace the WLAN antenna, remove the adhesive strip **(1)** that secures the antenna to the display enclosure.

19. Remove the antenna **(2)**.



20. If it is necessary to replace the display cable, peel it from the display enclosure to remove it.



Reverse this procedure to reassemble and install the display assembly.

## Speaker assembly

| Description | Spare part number |
|---|---|
| Speaker assembly (includes cable) | 640359-001 |

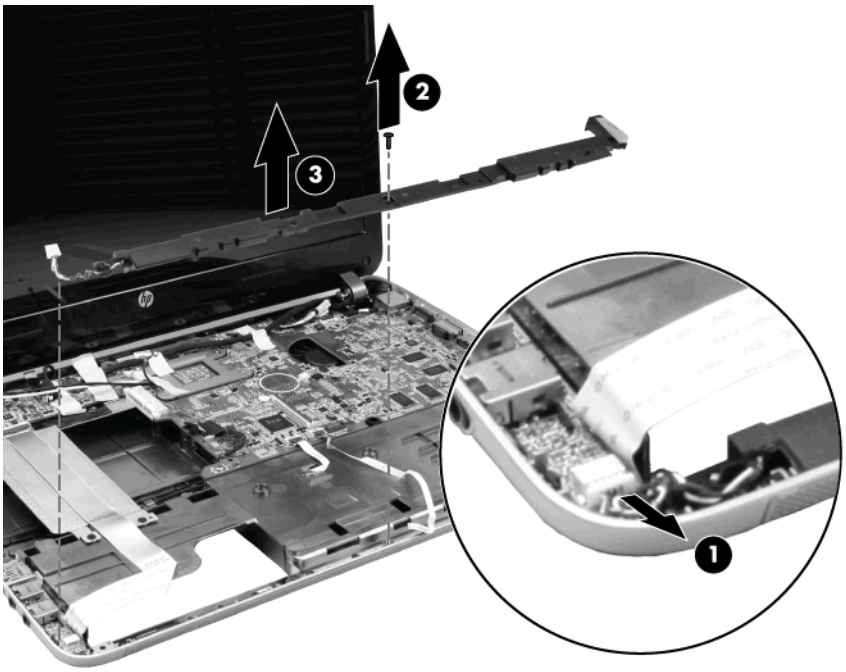
Before removing the speaker assembly, follow these steps:

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 following components:
   a. Battery (see Battery on page 36)
   b. Memory module (see Memory module on page 37 )
   c. Optical drive (see Optical drive on page 42)
   d. Keyboard (see Keyboard on page 44)
   e. Top cover (see Top cover on page 49)

Remove the speaker assembly:

1. Position the computer with the front toward you.
2. Disconnect the speaker cable from the system board **(1)**.
3. Remove the Phillips 4.5x2.5 screw **(2)** that secures the speaker assembly to the base enclosure.

4. Lift the speaker assembly **(3)** straight up to remove it from the base enclosure.




Reverse this procedure to install the speaker assembly.

## Audio/USB 2.0 board

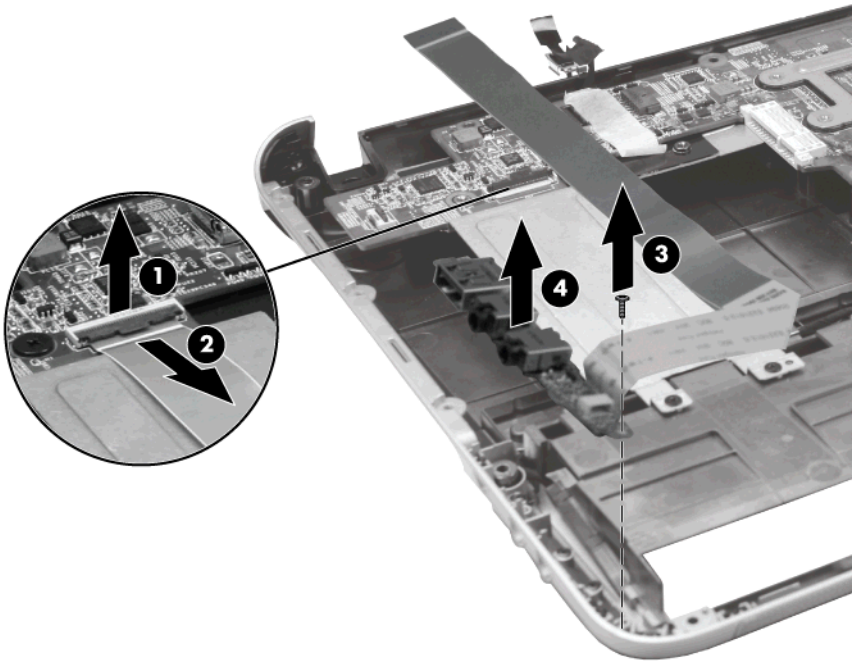
| Description | Spare part number |
|---|---|
| Audio/USB 2.0 board | 641756-001 |
| **NOTE:** The audio board cable is included in the Cable Kit, spare part number 640363-001. | |

Before removing the audio/USB 2.0 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 following components:
   a. Battery (see Battery on page 36)
   b. Memory module (see Memory module on page 37)
   c. Optical drive (see Optical drive on page 42)
   d. Keyboard (see Keyboard on page 44)
   e. Top cover (see Top cover on page 49)

Remove the audio/USB 2.0 board:

1. Position the computer right-side up, with the front toward you.
2. Release the ZIF connector **(1)** to which the audio/USB 2.0 board is connected, and then disconnect the cable **(2)** from the system board.
3. Remove the Phillips 3.5x2.5 screw **(3)** that secures the audio/USB 2.0 board to the base enclosure.
4. Lift the audio/USB 2.0 board straight up **(4)** to remove it from the computer.




Reverse this procedure to install the audio/USB 2.0 board.

## USB 3.0 board*

| Description | Spare part number |
|---|---|
| USB 3.0 board* | 650704-001 |

**NOTE: *Select models only.**

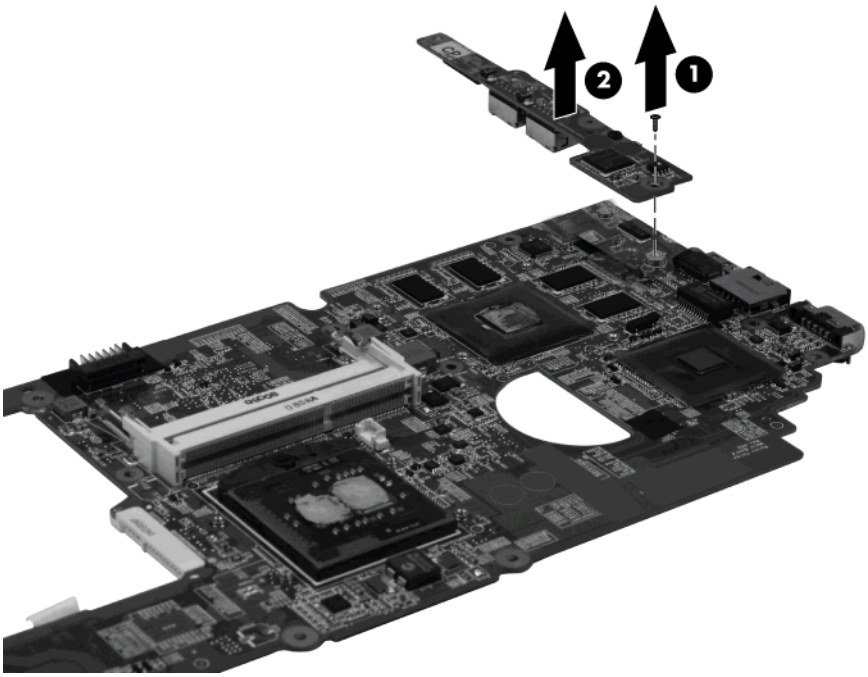
Before removing the USB 3.0 board, follow these steps:

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 following components:
   a. Battery (see Battery on page 36)
   b. Memory module (see Memory module on page 37)
   c. Optical drive (see Optical drive on page 42)
   d. Keyboard (see Keyboard on page 44)
   e. Top cover (see Top cover on page 49)
   f. Power connector (see Power connector on page 69)
   g. System board (see System board on page 71)

Remove the USB 3.0 board:

1. Position the system board upside down.
2. Remove the Phillips 3.0x2.5 screw **(1)** that secures the USB 3.0 board to the system board.
3. Remove the USB 3.0 board **(2)** from the system board.




Reverse this procedure to install the USB 3.0 board.

## TouchPad LED board

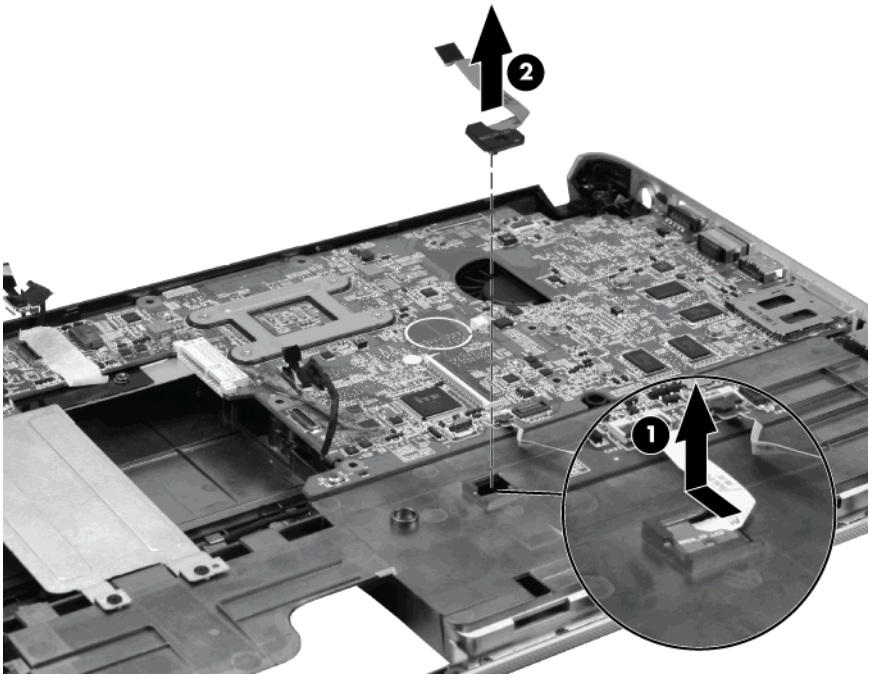
| Description | Spare part number |
|---|---|
| TouchPad LED board | 640339-001 |

Before removing the TouchPad LED 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 following components:
   a. Battery (see Battery on page 36)
   b. Memory module (see Memory module on page 37 )
   c. Optical drive (see Optical drive on page 42)
   d. Keyboard (see Keyboard on page 44)
   e. Top cover (see Top cover on page 49)

Remove the TouchPad LED board:

1. Position the computer right-side up, with the front toward you.
2. Slide the TouchPad LED board **(1)** out from the bracket holding it in the base enclosure.
3. Remove the TouchPad LED board from the base enclosure **(2)**.




Reverse this procedure to install the TouchPad LED board.

## Security lock bracket

| Description | Spare part number |
|---|---|
| Security Lock/Bracket Hardware Kit | 640342-001 |

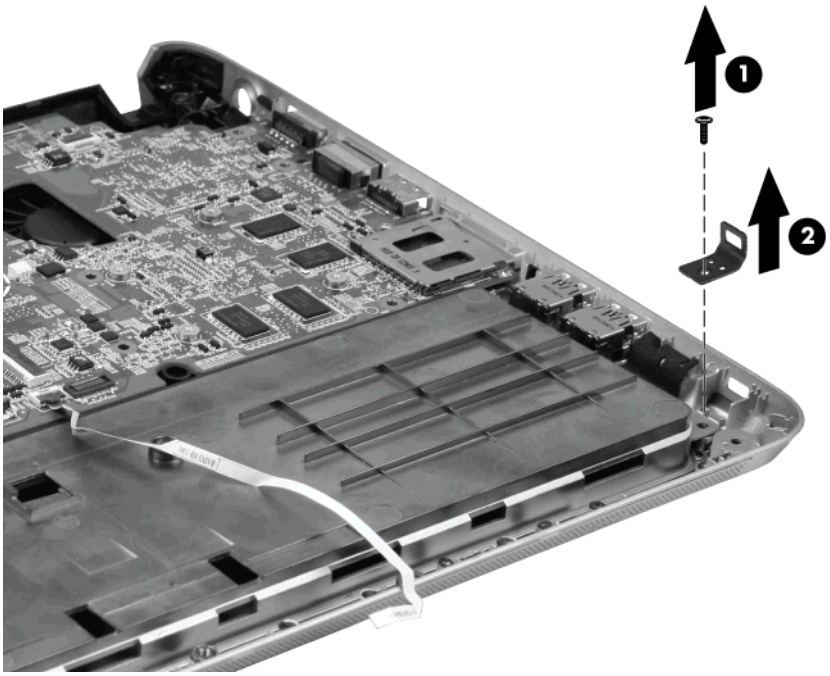
Before removing the security lock bracket, follow these steps:

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 following components:
   a. Battery (see Battery on page 36)
   b. Memory module (see Memory module on page 37 )
   c. Optical drive (see Optical drive on page 42)
   d. Keyboard (see Keyboard on page 44)
   e. Top cover (see Top cover on page 49)
   f. Speaker assembly (see Speaker assembly on page 62)

Remove the security lock bracket:

1. Position the computer right-side up, with the right side toward you.
2. Remove the Phillips 4.5x2.5 screw **(1)** that secures the security lock bracket to the base enclosure.

3. Lift the bracket **(2)** up and out of the base enclosure.




Reverse this procedure to install the security lock bracket.

## Power connector

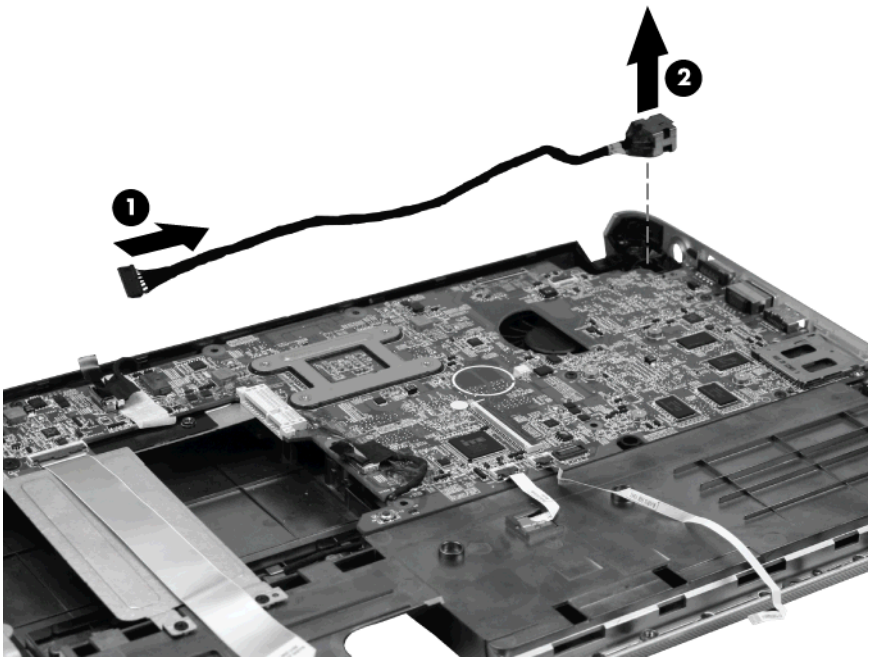
**NOTE:** The power connector and cable are included in the Cable Kit, spare part number 640363-001.

Before removing the power connector, 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 following components:
   a. Hard drive (see Hard drive on page 39)
   b. Memory module (see Memory module on page 37 )
   c. Optical drive (see Optical drive on page 42)
   d. Keyboard (see Keyboard on page 44)
   e. Top cover (see Top cover on page 49)
   f. Display assembly (see Display assembly on page 55)

Remove the power connector:

1. Position the computer right-side up, with the front toward you.
2. Disconnect the power connector cable **(1)** from the system board.
3. Remove the power connector **(2)** from the base enclosure.



Reverse this procedure to install the power connector.

## System board

**NOTE:** The system board kit includes replacement thermal material.

| Description | Spare part number |
|---|---|
| System board | 640334-001 |
| | 641760-001 |
| | 657602-001 |
| | 657603-001 |

When replacing the system board, be sure that the following components are removed from the defective system board and installed on the replacement system board:

- RTC battery (see RTC battery on page 48)
- Memory module (see Memory module on page 37)
- WLAN module (see WLAN module on page 46)
- Fan/heat sink assembly (see Fan/heat sink assembly on page 74)
- Processor (see Processor on page 76)

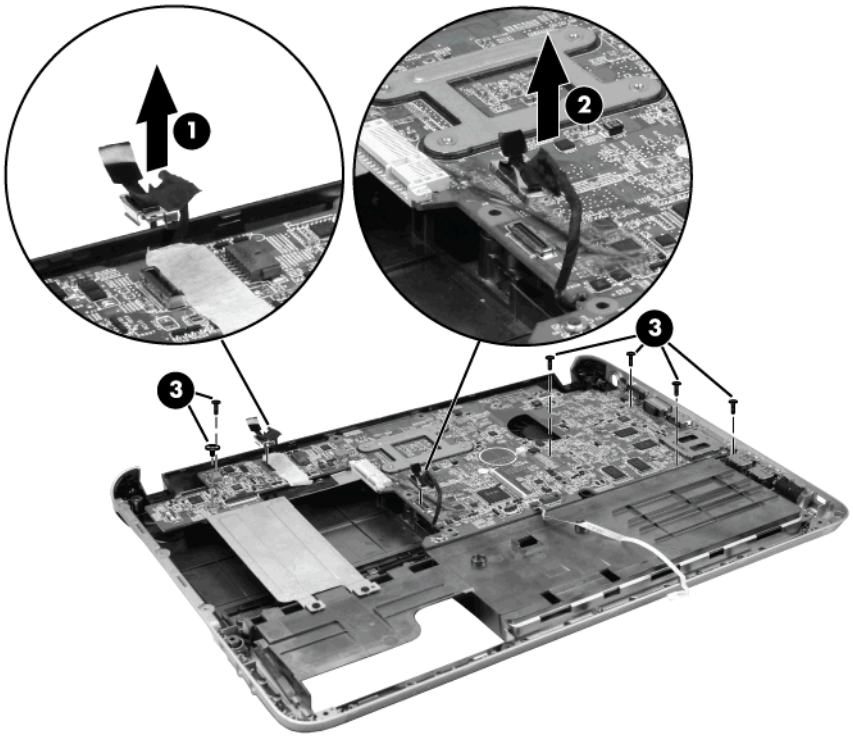
Before removing the system board, follow these steps:

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 following components:
   a. Battery (see Battery on page 36)
   b. Memory module (see Memory module on page 37 )
   c. Optical drive (see Optical drive on page 42)
   d. Keyboard (see Keyboard on page 44)
   e. Top cover (see Top cover on page 49)
   f. Display assembly (see Display assembly on page 55)
   g. Speaker assembly (see Speaker assembly on page 62)

h. Audio/USB 2.0 board (see Audio/USB 2.0 board on page 63)

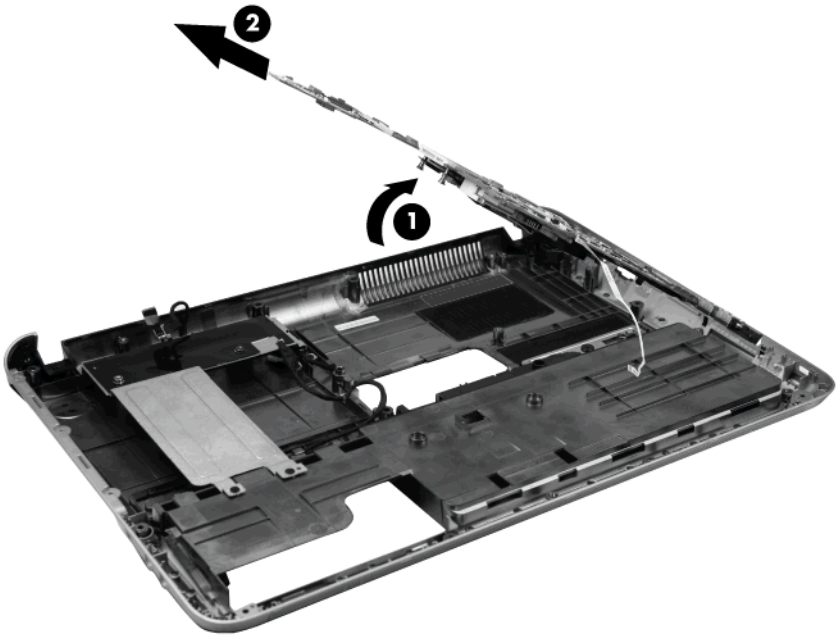
i. Power connector (see Power connector on page 69)

1. Position the computer right-side up, with the front toward you.
2. Disconnect the optical drive cable **(1)** from the system board.
3. Disconnect the hard drive cable **(2)** from the system board .
4. Remove the six Phillips 4.5x2.5 screws **(3)**.




5. Lift the left side of the system board **(1)**.

6. Release the system board by sliding it to the left at an angle **(2)** until the connectors on the right side of the system board clear the base enclosure, and then remove the system board.




Reverse this procedure to install the system board.

## Fan/heat sink assembly

**NOTE:** The fan/heat sink assembly kit includes replacement thermal material.

| Description | Spare part number |
|---|---|
| Fan/heat sink assembly | 644515-001 |

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

Before removing the fan/heat sink assembly, 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 following components:
   a. Battery (see Battery on page 36)
   b. Memory module (see Memory module on page 37 )
   c. Optical drive (see Optical drive on page 42)
   d. Keyboard (see Keyboard on page 44)
   e. Top cover (see Top cover on page 49)
   f. Display assembly (see Display assembly on page 55)
   g. Speaker assembly (see Speaker assembly on page 62)
   h. Audio/USB 2.0 board (see Audio/USB 2.0 board on page 63)
   i. TouchPad LED board (see TouchPad LED board on page 65)
   j. Power connector (see Power connector on page 69)
   k. System board (see System board on page 71)
   l. USB 3.0 board (see USB 3.0 board* on page 64)

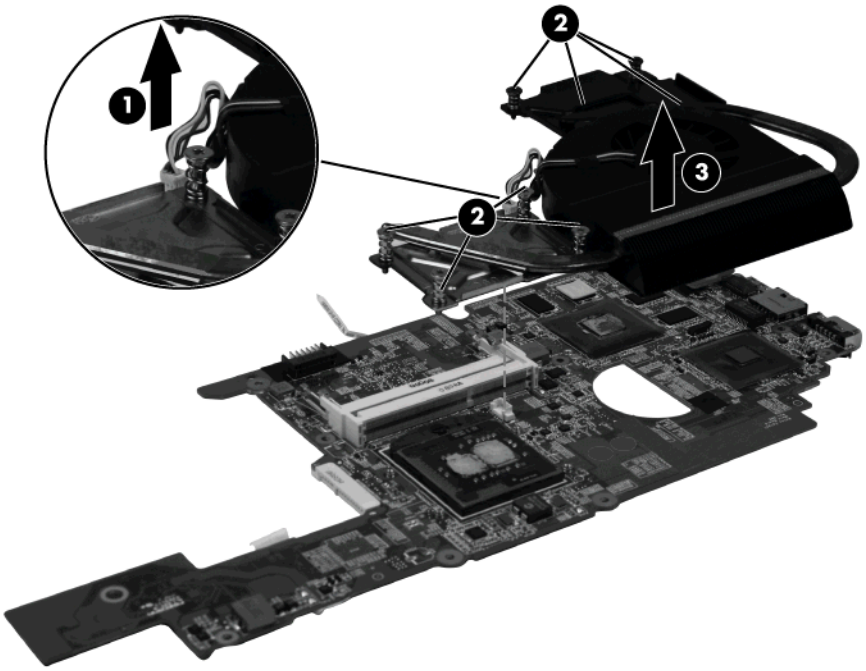
Remove the fan/heat assembly (fan/heat sink appearance may vary):

1. Turn the system board upside down.
2. Disconnect the fan cable from the system board **(1)**.

3. Follow the sequence embossed on the heat sink to loosen the eight Phillips 10.5x2.0 captive screws **(2)** that secure the fan/heat sink assembly to the system board.

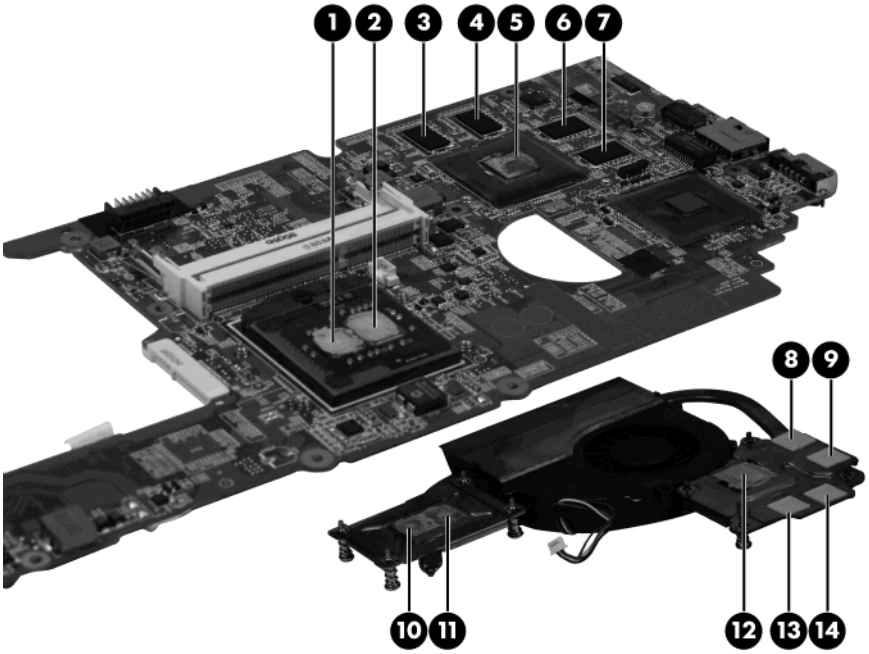
**NOTE:** Due to the adhesive quality of the thermal material located between the fan/heat sink assembly and system board components, it may be necessary to move the fan/heat sink assembly from side to side to detach the assembly.

4. Remove the fan/heat sink assembly **(3)**.



5. The thermal material must be thoroughly cleaned from the surfaces of the processor **(1)** and **(2)**, the system board **(3)**, **(4)**, **(5)**, **(6)**, and **(7)**, and the fan/heat sink assembly **(8)**, **(9)**, **(10)**, **(11)**, **(12)**, **(13)**, and **(14)**. Thermal pads and thermal paste must be installed on all surfaces before the fan/heat sink assembly is reinstalled.

   The following illustration shows the locations for thermal material.




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

## Processor

**NOTE:** The processor kits include thermal material.

| Description | Spare part number |
|---|---|
| Intel Core i5-480M, 2.66 GHz (turbo up to 2.93 GHz), 3MB L3 cache, Dual 35W | 634693-001 |
| Intel Core i3-380M, 2.53 GHz, 3MB L3 cache, Dual 35W | 625823-001 |
| Intel Core i3-390M, 2.66 GHz, 3MB L3 cache, Dual 35W | 634692-001 |
| Intel Pentium P6300, 2.26 GHz, 3 MB L3 cache, Dual 35 W | 635500-001 |
| Intel Pentium P6200, 2.13GHz, 3 MB L3 cache, Dual 35W | 625831-001 |

Before removing the processor, follow these steps:

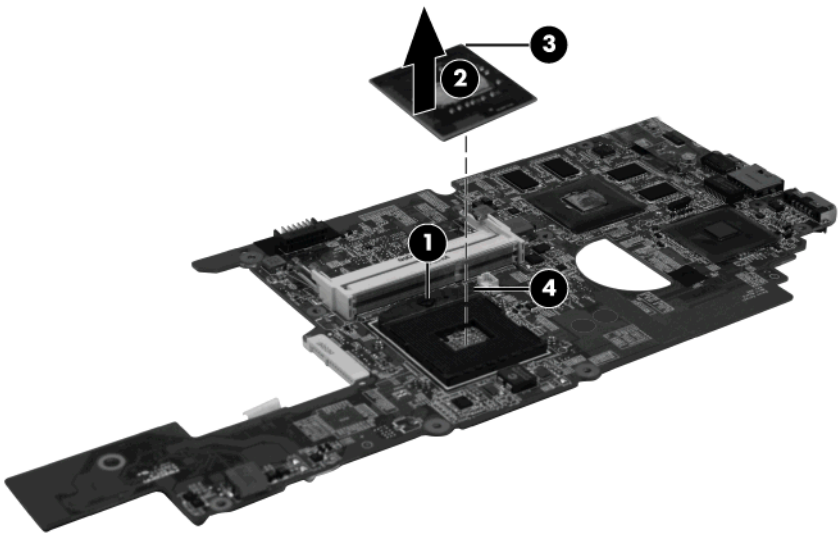
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord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

4. Remove the battery (see Battery on page 36).
5. Remove the following components:
   a. Battery (see Battery on page 36)
   b. Memory module (see Memory module on page 37 )
   c. Optical drive (see Optical drive on page 42)
   d. Keyboard (see Keyboard on page 44)
   e. Top cover (see Top cover on page 49)
   f. Display assembly (see Display assembly on page 55)
   g. Speaker assembly (see Speaker assembly on page 62)
   h. Audio/USB 2.0 board (see Audio/USB 2.0 board on page 63)
   i. TouchPad LED board (see TouchPad LED board on page 65)
   j. Power connector (see Power connector on page 69)
   k. System board (see System board on page 71)
   l. USB 3.0 board (see USB 3.0 board* on page 64)

Remove the processor:

1. Turn the processor locking screw **(1)** one-half turn counterclockwise until you hear a click.
2. Lift the processor **(2)** straight up and remove it.

**NOTE:** The gold triangle **(3)** on the processor must be aligned with the triangle icon **(4)** embossed on the processor socket when you install the processor.




Reverse this procedure to install the processor.

## Mass storage device connector cables

**NOTE:** The optical drive connector cable and hard drive connector cable are available in the Cable Kit, spare part number 640363-001.

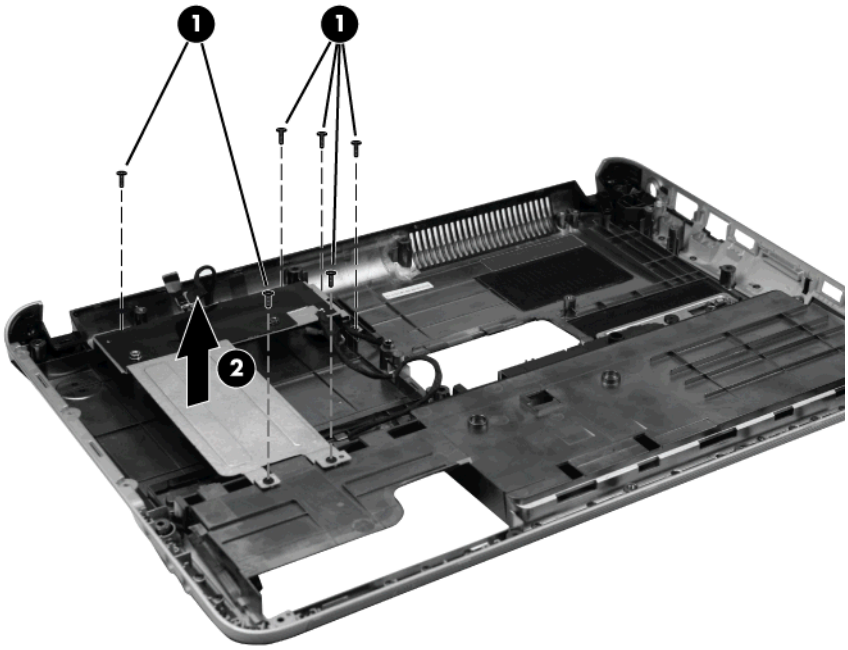
Before removing either of the mass storage device connector cables, follow these steps:

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 following components:
   a. Battery (see Battery on page 36)
   b. Memory module (see Memory module on page 37 )
   c. Optical drive (see Optical drive on page 42)
   d. Keyboard (see Keyboard on page 44)
   e. Top cover (see Top cover on page 49)
   f. Display assembly (see Display assembly on page 55)
   g. Speaker assembly (see Speaker assembly on page 62)
   h. Audio/USB 2.0 board (see Audio/USB 2.0 board on page 63)
   i. TouchPad LED board (see TouchPad LED board on page 65)
   j. Power connector (see Power connector on page 69)
   k. System board (see System board on page 71)

Remove the optical drive bracket:

1. Remove the six Phillips 2.5x2.5 screws **(1)** that secure the optical drive bracket to the base enclosure.
2. Remove the optical drive bracket **(2)** from the base enclosure.
3. Lift the optical drive connector cable from the base enclosure.

4. Lift the hard drive connector cable from the base enclosure.




Reverse this procedure to install the hard drive connector cable, optical drive connector cable, and the optical drive bracket.

# 5 Setup Utility

## Starting Setup Utility

Setup Utility is a ROM-based information and customization utility that can be used even when your Windows operating system is not working.

The utility reports information about the computer and provides settings for startup, security, and other preferences.

To start Setup Utility:

- Open Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press f10.

– or –

1. Open Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press esc.
2. When the Startup Menu is displayed, press f10.

## Using Setup Utility

### Changing the language of Setup Utility

The following procedure explains how to change the language of Setup Utility. If Setup Utility is not already running, begin at step 1. If Setup Utility is already running, begin at step 2.

1. Open Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press f10.

   – or –

   Open Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press esc. When the Startup Menu is displayed, press f10.
2. Use the arrow keys to select **System Configuration > Language**, and then press enter.
3. Use the arrow keys to select a language, and then press enter.
4. When a confirmation prompt with your language selected is displayed, press enter.
5. To save your change and exit Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**, and then press enter.

Your change goes into effect immediately.

## Navigating and selecting in Setup Utility

Because Setup Utility is not Windows based, it does not support the TouchPad. Navigation and selection are by keystroke.

- To choose a menu or a menu item, use the arrow keys.
- To choose an item in a list or to toggle a field, for example an Enable/Disable field, use either the arrow keys or f5 or f6.
- To select an item, press enter.
- To close a text box or return to the menu display, press esc.
- To display additional navigation and selection information while Setup Utility is open, press f1.

## Displaying system information

The following procedure explains how to display system information in Setup Utility. If Setup Utility is not open, begin at step 1. If Setup Utility is open, begin at step 2.

1. Open Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press f10.

   – or –

   Open Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press esc. When the Startup Menu is displayed, press f10.

2. Select the **Main** menu. System information such as the system time and date, and identification information about the computer is displayed.

3. To exit Setup Utility without changing any settings, use the arrow keys to select **Exit > Exit Discarding Changes**, and then press enter.

## Restoring default settings in Setup Utility

The following procedure explains how to restore the Setup Utility default settings. If Setup Utility is not already running, begin at step 1. If Setup Utility is already running, begin at step 2.

1. Open Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press f10.

   – or –

   Open Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press esc. When the Startup Menu is displayed, press f10.

2. Use the arrow keys to select **Exit > Load Setup Defaults**, and then press enter.

3. When the Setup Confirmation is displayed, press enter.

4. To save your change and exit Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**, and then press enter.

The Setup Utility default settings go into effect when the computer restarts.

**NOTE:** Your password, security, and language settings are not changed when you restore the factory default settings.

## Exiting Setup Utility

You can exit Setup Utility with or without saving changes.

- To exit Setup Utility and save your changes from the current session:

  If the Setup Utility menus are not visible, press esc to return to the menu display. Then, use the arrow keys to select **Exit > Exit Saving Changes**, and then press enter.

- To exit Setup Utility without saving your changes from the current session:

  If the Setup Utility menus are not visible, press esc to return to the menu display. Then, use the arrow keys to select **Exit > Exit Discarding Changes**, and then press enter.

After either choice, the computer restarts in Windows.

# Setup Utility menus

The menu tables in this section provide an overview of Setup Utility options.

**NOTE:** Some of the Setup Utility menu items listed in this chapter may not be supported by your computer.

## Main menu

| Select | To do this |
|---|---|
| System information | • View and change the system time and date.<br>• View identification information about the computer.<br>• View specification information about the processor, memory size, system BIOS, and keyboard controller version (select models only). |

## Security menu

| Select | To do this |
|---|---|
| Administrator password | Enter, change, or delete an administrator password. |
| Power-On Password | Enter, change, or delete a power-on password. |

## System Configuration menu

| Select | To do this |
|---|---|
| Language Support | Change the Setup Utility language. |
| Button Sound (select models only) | Enable/disable the capacitive button tapping sound. |
| Virtualization Technology (select models only) | Enable/disable the processor Virtualization Technology. |
| Processor C6 State (select models only) | Enable/disable the processor C6 sleep state. |
| LAN Power Saving (select models only) | Enable/disable LAN Power Saving. When enabled, saves power when the computer is in DC mode. |
| Card Reader/1394 Power Saving (select models only) | Enable/disable Card Reader/1394 Power Saving. |

| Select | To do this |
| --- | --- |
| Fan Always On | Enable/disable Fan Always On. When enabled, the computer fan will always be on. |
| Boot Options | Set the following boot options:<br>• f10 and f12 Delay (seconds)—Set the delay for the f10 and f12 functions of Setup Utility in intervals of 5 seconds each (0, 5, 10, 15, 20).<br>• CD-ROM boot—Enable/disable boot from CD-ROM.<br>• Floppy boot—Enable/disable boot from diskette.<br>• Internal Network Adapter boot—Enable/disable boot from Internal Network Adapter.<br>• Boot Order—Set the boot order for:<br>◦ Hard drive<br>◦ Internal CD/DVD ROM drive<br>◦ USB Diskette on Key/USB hard disk<br>◦ USB CD/DVD ROM drive<br>◦ USB floppy<br>◦ Network adapter |

## Diagnostics menu

| Select | To do this |
| --- | --- |
| Hard Disk Self Test | Run a comprehensive self test on the hard drive.<br>**NOTE:** On models with two hard drives, this menu option is called **Primary Hard Disk Self Test**. |
| Secondary Hard Disk Self Test (select models only) | Run a comprehensive self test on a secondary hard drive. |
| Memory Test | Run a diagnostic test on the system memory. |

# 6 Specifications

## Computer specifications

| **Dimensions** | |
|---|---|
| Dept | **22.8** cm (8.98 in) |
| Width | **34.8 cm** (13.70 in) |
| Height (front to rear) | **2.5 to 3.2 cm** (0.98 to 1.26 in) |
| **Weight** (lowest weight configuration) | < **2.00 kg** (4.42 lbs) |
| **Input power** | |
| Operating voltage | 18.5 V dc @ 4.74 A – 90 W |
| Operating current | 4.74 A |
| **Temperature** | |
| Operating (not writing to optical disc) | **0°C to 35°C** (32°F to 95°F) |
| Operating (writing to optical disc) | **5°C to 35°C** (41°F to 95°F) |
| Nonoperating | **-20°C to 60°C** (-4°F to 140°F) |
| **Relative humidity** | |
| 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 computer operates well within this range of temperatures. | |

# *35.56-cm* (14.0-in) display specifications

| Dimensions | |
|---|---|
| **Active diagonal size** | **35.56 cm** (14.00 in) |
| **Active area** | 309.399 x 173.952 |
| **Resolution** | 1366 × 768 (HD) |
| **Weight** | **320 g** (0.71 lbs) |
| **Contrast ratio** | 500:1 (typical) |
| **Luminance** | 200 nits (typical) |
| **Luminance uniformity** | 1.4 (typical)<br>1.6 (max) |
| **Lifetime** (1/2 luminance) | 12,000 hours |
| **Backlight** | LED |
| **Response time** | 8 ms (typical) |
| **Surface treatment** | BV |
| **Total power consumption** | 2.8 W |
| **Viewing angle** | SVA |

# Hard drive specifications

| | 750-GB* | 640-GB* | 500-GB* | 320-GB* | 250-GB* |
|---|---|---|---|---|---|
| **Dimensions** | | | | | |
| Height | | | 9.5 mm | | |
| Width | | | 70 mm | | |
| Weight | | | 101 g | | |
| **Interface type** | | | SATA | | |
| **Transfer rate** | | | 100 MB/sec | | |
| **Security** | | | ATA security | | |
| **Seek times** (typical read, including setting) | | | | | |
| Single track | 1.0 ms | 1.0 ms | 1.0 ms | 1.5 ms | 2.0 ms |
| Average | 14.0 ms | 14.0 ms | 14.0 ms | 12.0 ms | 12.0 ms |
| Maximum | 22.0 ms | 22.0 ms | 22.0 ms | 22.0 ms | 22.0 ms |
| **Logical blocks** | 1,465,149,168 | 1,250,263,728 | 976,773,168 | 625,142,448 | 488,397,168 |
| **Disc rotational speed** | 5400 and 7200 rpm | 5400 and 7200 rpm | 7200 rpm | 7200 rpm | 7200 rpm |
| **Operating temperature** | | | **5°C to 55°C** (41°F to 131°F) | | |

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

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

# Blu-ray ROM with LightScribe* DVD±R/RW Super Multi Double-Layer Drive specifications

| Applicable disc | Read: | Write: |
|---|---|---|
| | BD-ROM, BD-ROM-DL, BD-R, BD-R-DL, BD-RE, BD-RE-DL, DVD-ROM, DVD+R, DVD+R-DL, DVD+RW, DVD-R, DVD-R-DL, DVD-RW, DVD-RAM (Ver.2), CD-DA, CD-ROM (mode 1 and mode 2), CD-ROM XA (mode 2, form 1 and form 2), Photo CD (single and multiple sessions), CD Extra, CD-R, CD-RW, and CD-TEXT | DVD-RAM (Ver.2), DVD+R, DVD-R, CD-R, and CD-ROM |
| **Access time** | **BD** | **DVD** |
| Random | < 230 ms | < 180 ms |
| **Cache buffer** | 2 MB | |
| **Data transfer rate** | | |
| 2X BD-ROM | 9 MB/sec | |
| 8X DVD ROM | 10,800 KB/sec | |
| 16X CD-R | 2,400 KB/sec | |
| 10X CD-RW | 1,500 KB/sec | |

**NOTE: *Select models only.**

# DVD±RW SuperMulti Double-Layer Drive with LightScribe* specifications

| | |
|---|---|
| **Applicable disc** | |
| Read | CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD +RW, DVD-RAM |
| Write | CD-R and CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM |
| **Random access time** | |
| DVD | < 230 ms |
| CD | < 175 ms |
| **Cache buffer** | 2 MB |
| **Data transfer rate** | |
| 24X CD-ROM | 3,600 KB/sec |
| 8X DVD-ROM | 10,800 KB/sec |
| 24X CD-R | 3,600 KB/sec |
| 16X CD-RW | 2,400 KB/sec |
| 8X DVD+R | 10,800 KB/sec |
| 4X DVD+RW | 5,400 KB/sec |
| 8X DVD-R | 10,800 KB/sec |
| 4X DVD-RW | 5,400 KB/sec |
| 2.4X DVD+R(9) | 2,700 KB/sec |
| 5X DVD-RAM | 6,750 KB/sec |
| **Transfer mode** | Multiword DMA Mode |

**NOTE: *Select models only.**

# System resource specifications

You can use Device Manager to get a graphical view of the system resources that control how the devices work on the computer. System resources you can access from Device Manager are direct memory access (DMA) channels, input/output (I/O) ports, interrupt request (IRQ) lines, and memory addresses.

If two devices require the same resource and create a device conflict, you can manually change the resource settings in Device Manager to be sure each setting is unique.

⚠ **CAUTION:** Improperly changing resource settings can disable your hardware and cause your computer to malfunction or become inoperable. Only users who have expert knowledge of computer hardware and hardware configurations should change resource settings.

To view resource settings in Windows 7:

1. Select **Start > Computer**.
2. Click **System properties** near the top of the Computer folder.
3. On the left, click **Device Manager**.
4. On the **View** menu, click one of the following:
   - **Resources by type**
   - **Resources by connection**

# 7 Backup and recovery

Recovery after a system failure is as complete as your most current backup. HP recommends that you create recovery discs immediately after software setup. As you add new software and data files, you should continue to back up your system on a regular basis to maintain a reasonably current backup.

Tools provided by the operating system and HP Recovery Manager software are designed to help you with the following tasks for safeguarding your information and restoring it in case of a system failure:

- Creating a set of recovery discs (Recovery Manager software feature). Recovery discs are used to start up (boot) your computer and restore the operating system and software programs to factory settings in case of system failure or instability.
- Backing up your information regularly to protect your important system files.
- Creating system restore points (operating system feature). System restore points allow you to reverse undesirable changes to your computer by restoring the computer to an earlier state.
- Recovering a program or driver (Recovery Manager software feature). This feature helps you reinstall a program or driver without performing a full system recovery.
- Performing a full system recovery (Recovery Manager software feature). With Recovery Manager, you can recover your full factory image if you experience system failure or instability. Recovery Manager works from a dedicated recovery partition (select models only) on the hard drive or from recovery discs you create.

**NOTE:** Computers with a solid-state drive (SSD) may not have a recovery partition. Recovery discs have been included for computers that do not have a partition. Use these discs to recover your operating system and software. To check for the presence of a recovery partition, select **Start**, right-click **Computer**, click **Manage**, and then click **Disk Management**. If the partition is present, an HP Recovery drive is listed in the window.

# Creating recovery discs

HP recommends that you create recovery discs to be sure that you can restore your system to its original factory state if you experience serious system failure or instability. Create these discs after setting up the computer for the first time.

Handle these discs carefully and keep them in a safe place. The software allows the creation of only one set of recovery discs.

**NOTE:** You can use an optional external optical drive (purchased separately) to create recovery discs, or you can purchase recovery discs for your computer from the HP Web site.

Note the following guidelines before creating recovery discs:

**NOTE:** The external hard drive must be connected to a USB port on the computer, not to a USB port on an external device such as a hub.

- You will need high-quality DVD-R, DVD+R, BD-R (writable Blu-ray), or CD-R discs. All these discs are purchased separately. DVDs and BDs have a much higher capacity than CDs. If you use CDs, up to 20 discs may be required, whereas only a few DVDs or BDs are required.

  **NOTE:** Read-write discs, such as CD-RW, DVD±RW, double-layer DVD±R, and BD-RE (rewritable Blu-ray) discs, are not compatible with the Recovery Manager software.

- The computer must be connected to AC power during this process.
- Only one set of recovery discs can be created per computer.
- Number each disc before inserting it into the optical drive.
- If necessary, you can exit the program before you have finished creating the recovery discs. The next time you open Recovery Manager, you will be prompted to continue the disc creation process.

To create a set of recovery discs:

1. Select **Start > All Programs > Recovery Manager > Recovery Disk Creation**.
2. Follow the on-screen instructions.

# Backing up your information

As you add new software and data files, you should back up your system on a regular basis to maintain a reasonably current backup. Back up your system at the following times:

- At regularly scheduled times

**NOTE:** Set reminders to back up your information periodically.

- Before the computer is repaired or restored
- Before you add or modify hardware or software

Note the following when backing up:

- Create system restore points using the Windows® System Restore feature, and periodically copy them to disc.
- Store personal files in the Documents library and back up this folder periodically.
- Back up templates stored in their associated programs.
- Save customized settings in a window, toolbar, or menu bar by taking a screen shot of your settings. The screen shot can be a time-saver if you have to reset your preferences.

  To copy the screen and paste it into a word-processing document, follow these steps:

  1. Display the screen.
  2. Copy the screen:

     To copy only the active window, press alt+prt sc.

     To copy the entire screen, press prt sc.
  3. Open a word-processing document, and then select **Edit > Paste**.
  4. Save the document.
- You can back up your information to an optional external hard drive, a network drive, or discs.
- When backing up to discs, use any of the following types of discs (purchased separately): CD-R, CD-RW, DVD+R, DVD-R, or DVD±RW. The discs you use will depend on the type of optical drive installed in your computer.

**NOTE:** DVDs store more information than CDs, so using them for backup reduces the number of recovery discs required.

- When backing up to discs, number each disc before inserting it into the optical drive of the computer.

## Using Windows Backup and Restore

To create a backup using Windows Backup and Restore, follow these steps:

**NOTE:** Be sure that the computer is connected to AC power before you start the backup process.

**NOTE:** The backup process may take over an hour, depending on file size and the speed of the computer.

1. Select **Start > All Programs > Maintenance > Backup and Restore**.
2. Follow the on-screen instructions to set up and create a backup.

**NOTE:** Windows includes the User Account Control feature to improve the security of your computer. You may be prompted for your permission or password for tasks such as installing software, running utilities, or changing Windows settings. Refer to Help and Support for more information.

## Using system restore points

When you back up your system, you are creating a system restore point. A system restore point allows you to save and name a snapshot of your hard drive at a specific point in time. You can then recover back to that point if you want to reverse subsequent changes made to your system.

**NOTE:** Recovering to an earlier restore point does not affect data files saved or e-mails created since the last restore point.

You also can create additional restore points to provide increased protection for your system files and settings.

### When to create restore points

- Before you add or extensively modify software or hardware
- Periodically, whenever the system is performing optimally

**NOTE:** If you revert to a restore point and then change your mind, you can reverse the restoration.

### Create a system restore point

1. Select **Start > Control Panel > System and Security > System**.
2. In the left pane, click **System Protection**.
3. Click the **System Protection** tab.
4. Under **Protection Settings**, select the disk for which you want to create a restore point.
5. Click **Create**.
6. Follow the on-screen instructions.

### Restore to a previous date and time

To revert to a restore point (created at a previous date and time), when the computer was functioning optimally, follow these steps:

1. Select **Start > Control Panel > System and Security > System**.
2. In the left pane, click **System protection**.
3. Click the **System Protection** tab.
4. Click **System Restore**.
5. Follow the on-screen instructions.

# Performing a recovery

**NOTE:** You can recover only files that you have previously backed up. HP recommends that you use HP Recovery Manager to create a set of recovery discs (entire drive backup) as soon as you set up your computer.

Recovery Manager software allows you to repair or restore the system if you experience system failure or instability. Recovery Manager works from recovery discs or from a dedicated recovery partition (select models only) on the hard drive. However, if your computer includes a solid-state drive (SSD), you may not have a recovery partition. If that is the case, recovery discs have been included with your computer. Use these discs to recover your operating system and software.

**NOTE:** Windows has its own built-in repair features, such as System Restore. If you have not already tried these features, try them before using Recovery Manager.

**NOTE:** Recovery Manager recovers only software that was preinstalled at the factory. Software not provided with this computer must be downloaded from the manufacturer's Web site or reinstalled from the disc provided by the manufacturer.

## Recovering from the recovery discs

To restore the system from the recovery discs:

1. Back up all personal files.
2. Insert the first recovery disc into the optical drive and restart the computer.
3. Follow the on-screen instructions.

## Recovering from the dedicated recovery partition (select models only)

**NOTE:** Computers with an SSD may not have a recovery partition. If the computer does not have a recovery partition, you will not be able to recover using this procedure. Recovery discs have been included for computers that do not have a partition. Use these discs to recover your operating system and software.

On some models, you can perform a recovery from the partition on the hard drive, accessed by pressing either the Start button or f11. This restores the computer to its factory condition.

To restore the system from the partition, follow these steps:

1. Access Recovery Manager in either of the following ways:

   - Select **Start > All Programs > Recovery Manager > Recovery Manager**.

     – or –

   - Turn on or restart the computer, and then press esc while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen. Then, press f11 while the “Press <F11> for recovery” message is displayed on the screen.

2. Click **System Recovery** in the **Recovery Manager** window.

3. Follow the on-screen instructions.

# 8 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 or regions must meet the requirements of the country or region where the computer is used.

## Requirements for all countries or regions

The requirements listed below are applicable to all countries or regions:

- The length of the power cord set must be at least 1.5 m (5.0 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 each country or region's power system.
- The appliance coupler must meet the mechanical configuration of an EN 60 320/IEC 320 Standard Sheet C13 connector for mating with the appliance inlet on the back of the computer.

# Requirements for specific countries or 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 | CCC | 5 |
| South Korea | EK | 4 |
| Sweden | SEMKO | 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.

# 9 Recycling

## Battery

When a 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 computer battery disposal.

## Display

**WARNING!** The backlight contains mercury. Exercise caution when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

**CAUTION:** The procedures in this chapter can result in damage to display components. The only components intended for recycling purposes are the liquid crystal display (LCD) panel and the backlight. When you remove these components, handle them carefully.

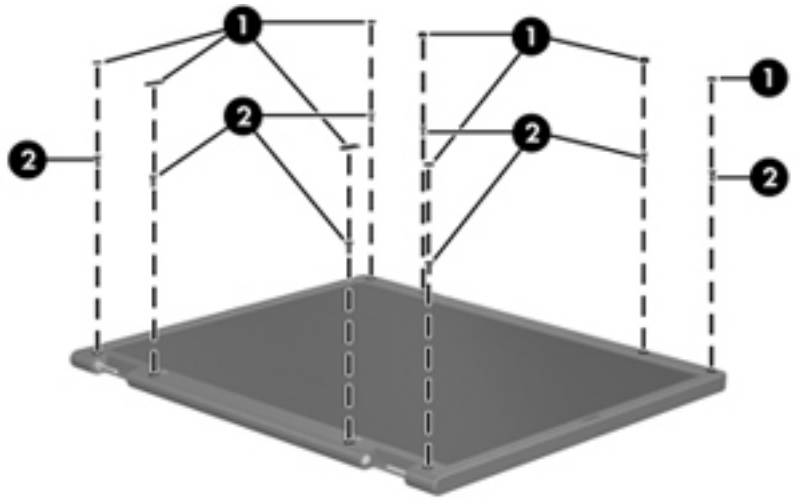
**NOTE:** **Materials Disposal**. This HP product contains mercury in the backlight in the display assembly that might require special handling at end-of-life. Disposal of mercury may be regulated because of environmental considerations. For disposal or recycling information, contact your local authorities, or see the Electronic Industries Alliance (EIA) Web site at http://www.eiae.org.

This section provides disassembly instructions for the display assembly. The display assembly must be disassembled to gain access to the backlight **(1)** and the liquid crystal display (LCD) panel **(2)**.

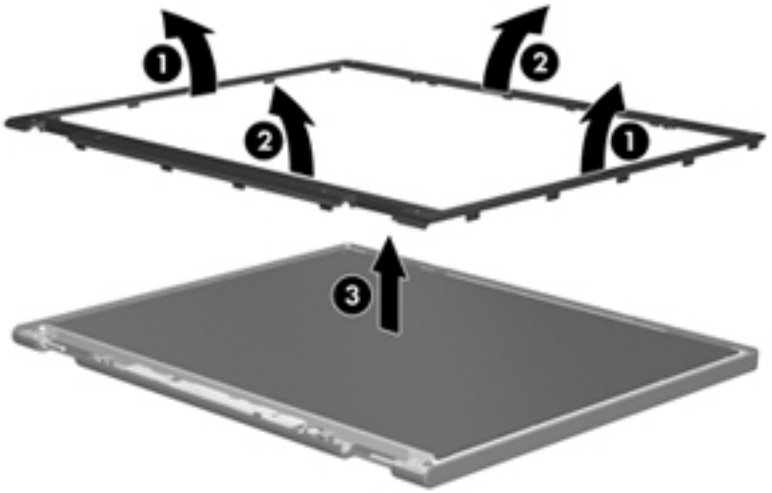
**NOTE:** The procedures provided in this chapter are general disassembly instructions. Specific details, such as screw sizes, quantities, and locations, and component shapes and sizes, can vary from one computer model to another.

Perform the following steps to disassemble the display assembly:

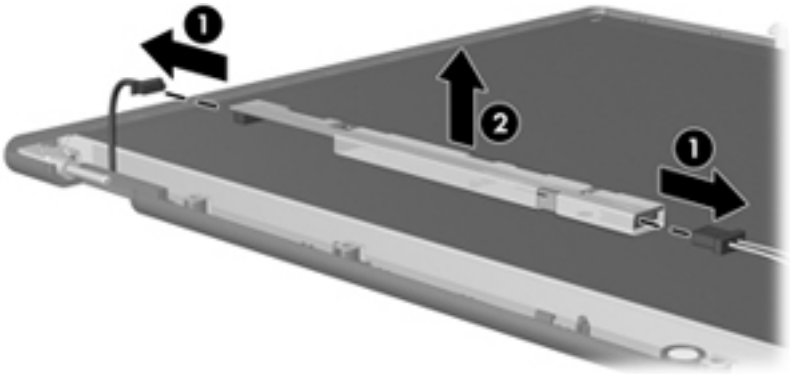
1. Remove all screw covers **(1)** and screws **(2)** that secure the display bezel to the display assembly.



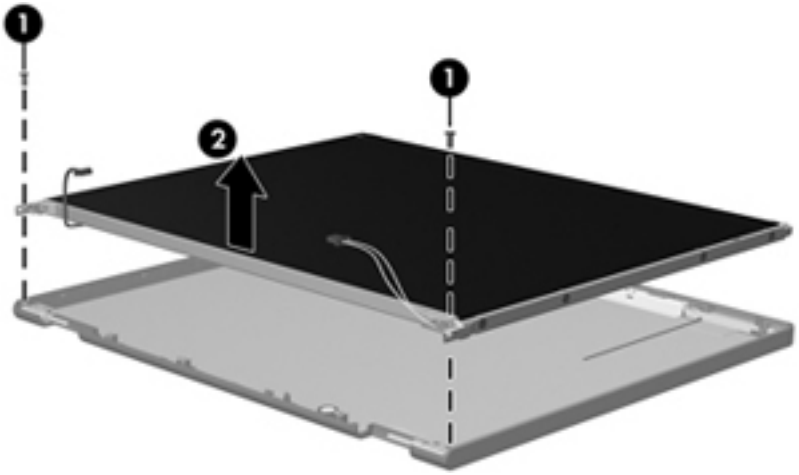
2. Lift up and out on the left and right inside edges **(1)** and the top and bottom inside edges **(2)** of the display bezel until the bezel disengages from the display assembly.
3. Remove the display bezel **(3)**.



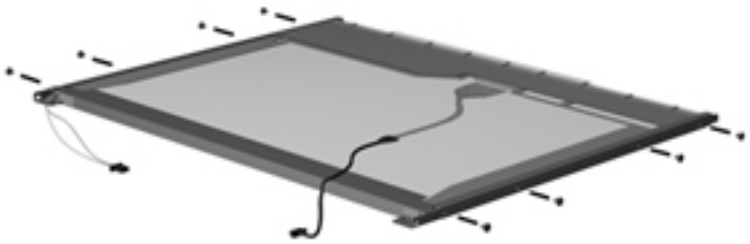
4. Disconnect all display panel cables **(1)** from the display inverter and remove the inverter **(2)**.



5. Remove all screws **(1)** that secure the display panel assembly to the display enclosure.
6. Remove the display panel assembly **(2)** from the display enclosure.

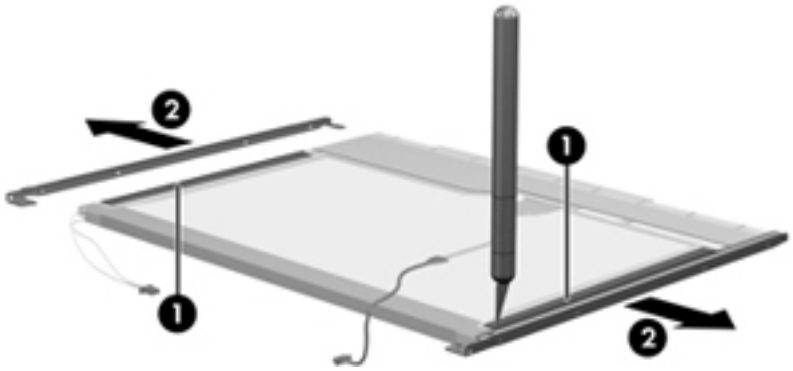


7. Turn the display panel assembly upside-down.
8. Remove all screws that secure the display panel frame to the display panel.

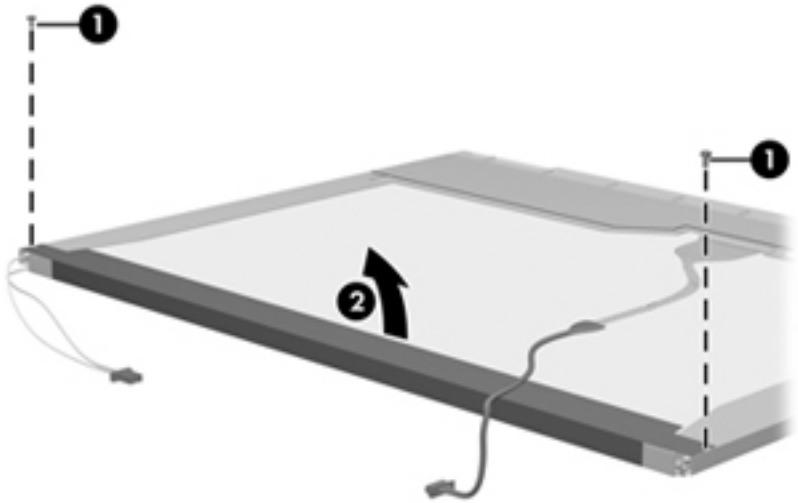


9. Use a sharp-edged tool to cut the tape **(1)** that secures the sides of the display panel to the display panel frame.

10. Remove the display panel frame **(2)** from the display panel.

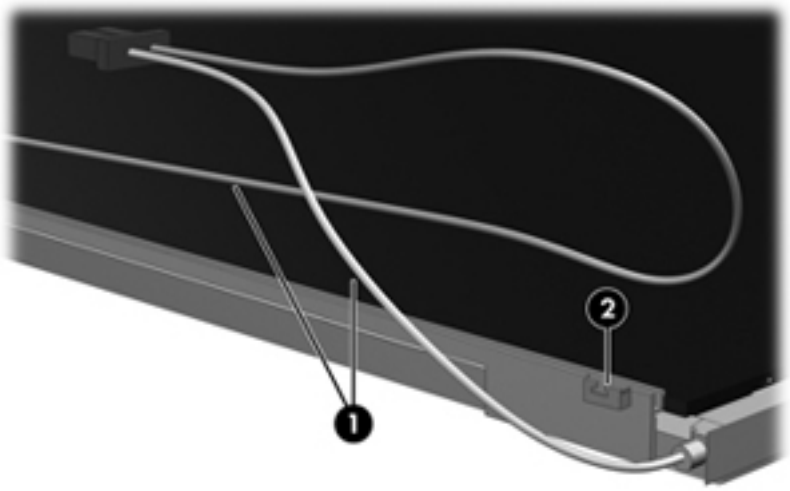


11. Remove the screws **(1)** that secure the backlight cover to the display panel.
12. Lift the top edge of the backlight cover **(2)** and swing it outward.



13. Remove the backlight cover.
14. Position the display panel right-side up.

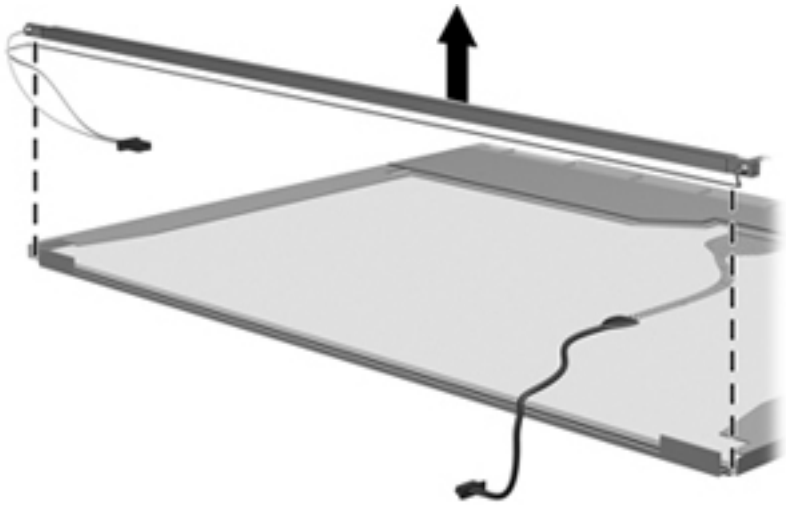
15. Remove the backlight cables **(1)** from the clip **(2)** in the display panel.



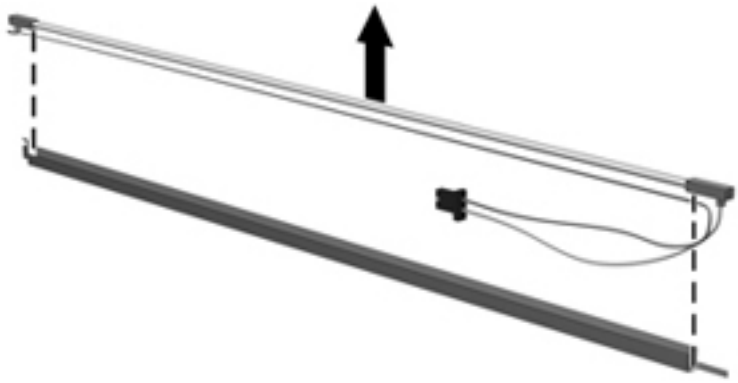

16. Turn the display panel upside-down.

⚠ **WARNING!** The backlight contains mercury. Exercise caution when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

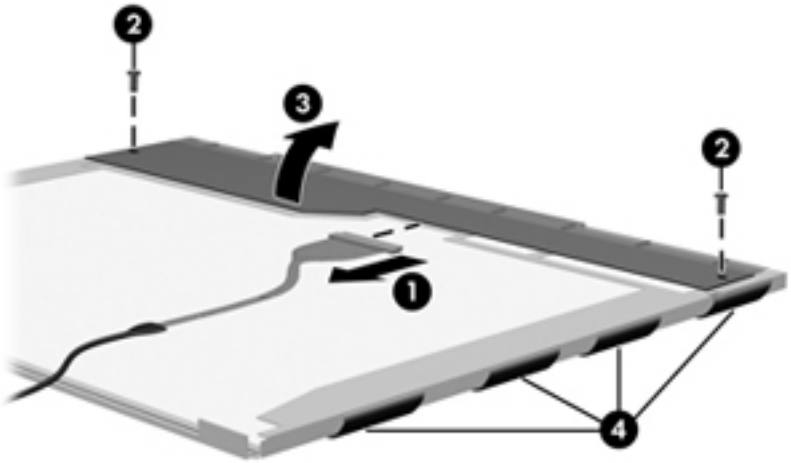
17. Remove the backlight frame from the display panel.



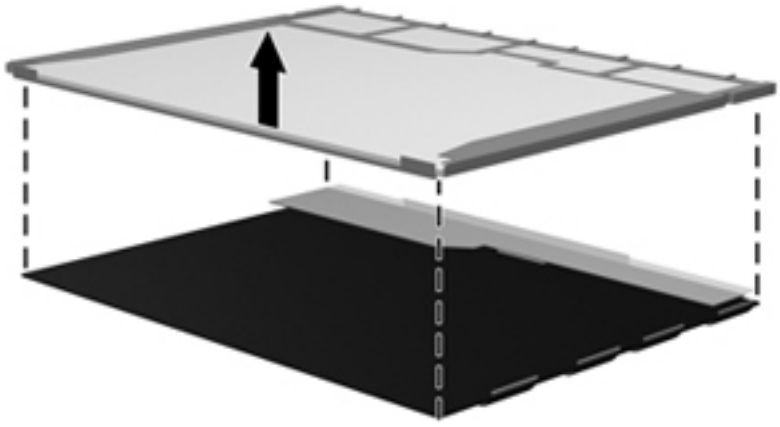
18. Remove the backlight from the backlight frame.



19. Disconnect the display panel cable **(1)** from the LCD panel.
20. Remove the screws **(2)** that secure the LCD panel to the display rear panel.
21. Release the LCD panel **(3)** from the display rear panel.
22. Release the tape **(4)** that secures the LCD panel to the display rear panel.




23. Remove the LCD panel.



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