# 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 | Intel processors with discrete graphics subsystem | Intel processors with UMA graphics subsystem | AMD processors with UMA graphics subsystem |
|---|---|---|---|---|
| **Product Name** | **HP Pavilion dv4 Entertainment PC** | √ | √ | √ |
| **Processors** | **Intel® Core™ Duo with 1066-MHz front side bus (FSB)** | | | |
| | T9600 2.8-GHz processor with 6-MB L2 cache | √ | √ | |
| | T9550 2.66-GHz processor with 6-MB L2 cache | √ | √ | |
| | T9400 2.53-GHz processor with 6-MB L2 cache | √ | √ | |
| | P8700 2.53-GHz processor with 3-MB L2 cache | √ | √ | |
| | P8600 2.4-GHz processor with 3-MB L2 cache | √ | √ | |
| | P8400 2.26-GHz processor with 3-MB L2 cache | √ | √ | |
| | T5900 2.2-GHz processor with 2-MB L2 cache | √ | √ | |
| | P7450 2.13-GHz processor with 3-MB L2 cache | √ | √ | |
| | P7350 2.0-GHz processor with 3-MB L2 cache | √ | √ | |
| | T6600 2.2-GHz processor with 3-MB L2 cache | √ | √ | |
| | T6400 2.06-GHz processor with 3-MB L2 cache | √ | √ | |
| | T5800 2.0-GHz processor with 2-MB L2 cache | √ | √ | |
| | **Intel Pentium® Dual-Core** | | | |
| | T4200 2.0-GHz processor with 4-MB L2 cache | √ | √ | |
| | T3400 2.16-GHz processor with 1-MB L2 cache | √ | √ | |



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| Category | Description | Intel processors with discrete graphics subsystem | Intel processors with UMA graphics subsystem | AMD processors with UMA graphics subsystem |
|---|---|---|---|---|
| | T3200 2.00-GHz processor with 1-MB L2 cache | √ | √ | |
| | **Intel Celeron®** | | | |
| | T1600 1.66-GHz processor with 2-MB L2 cache | √ | √ | |
| | **AMD Turion™ Ultra Dual-Core/35W** | | | |
| | ZM-86 2.4-GHz processor with 2-MB L2 cache | | | √ |
| | ZM-84 2.3-GHz processor with 2-MB L2 cache | | | √ |
| | ZM-82 2.2-GHz processor with 2-MB L2 cache | | | √ |
| | ZM-80 2.1-GHz processor with 2-MB L2 cache | | | √ |
| | **AMD Turion Dual-Core/35W** | | | |
| | RM-74 2.2-Ghz processor with 1-MB L2 cache | | | √ |
| | RM-72 2.1-Ghz processor with 1-MB L2 cache | | | √ |
| | RM-70 2.0-Ghz processor with 1-MB L2 cache | | | √ |
| | **AMD Athlon™ ×2 Dual-Core/35W** | | | |
| | QL-64 2.1-GHz processor with 1-MB L2 cache | | | √ |
| | QL-62 2.0-GHz (1-MB L2 cache) | | | √ |
| | QL-60 1.9-GHz processor with 1-MB L2 cache | | | √ |
| | **AMD Sempron™ ×2 Single-Core/35W** | | | |
| | SI-42 2.1-GHz processor with 512-KB L2 cache | | | √ |
| | SI-40 2.0-GHz processor with 512-KB L2 cache | | | √ |
| **Chipset** | Northbridge: Intel PM45 | √ | | |
| | Northbridge: Intel GM45 | | √ | |
| | Northbridge: Intel GL40 | √ | √ | |
| | Southbridge: Intel ICH9m | √ | √ | |
| | Northbridge: AMD M780G | | | √ |
| | Southbridge: AMD SB700 | | | √ |



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| Category | Description | Intel processors with discrete graphics subsystem | Intel processors with UMA graphics subsystem | AMD processors with UMA graphics subsystem |
|---|---|---|---|---|
| **Graphics** | **nVidia Discrete PCI Express × 64 Graphics**<br>• nVidia GeForce9200M GS (NB9M-GE-S) with 256 MB of dedicated video memory (32MB × 16 DDR2 × 4 PCs) with 256 MB of video memory when system memory is less than 1 GB (64 MB + 192 MB Turbo cache)<br>• nVidia GeForce9200M GS (NB9M-GE-S) with 512 MB of dedicated video memory (64MB × 16 DDR2 × 4 PCs) with 512 MB of video memory when system memory is less than 1 GB (64 MB + 448 MB Turbo cache)<br>System design supports up to 55-W GPU requirement. | √ | | |
| | **AMD Internal Graphics** with Layout “Sideport” memory | | | √ |
| | **UMA nVidia**<br>Unified Memory Architecture (UMA) with shared video memory (ATI Radeon HD 3200 Graphics):<br>• Up to 251 MB on computers with 1024 MB of system memory<br>• Up to 358 MB on computers with 2048 MB of system memory<br>Memory size is a dynamic change. | | | √ |
| **Panel** | Display panel options:<br>• 14.1-inch, WXGA LED with BrightView<br>• 14.1-inch, WXGA with BrightView<br>• 14.1-inch, WXGA, Anti-Glare with Flushed Glass (1280 × 800) | √ | √ | √ |



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| Category | Description | Intel processors with discrete graphics subsystem | Intel processors with UMA graphics subsystem | AMD processors with UMA graphics subsystem |
|---|---|---|---|---|
| **Memory** | 2 SODIMM slots<br>Customer-accessible/upgradable<br>DDRII PC2-5300 (800-MHz)<br>Supports up to 4 GB of system RAM<br>Supports the following configurations: | √ | √ | √ |
| | 4096 MB (2048 × 2) | √ | √ | √ |
| | 3072 MB (2048 × 1, 1024 × 1) | √ | √ | √ |
| | 2048 MB (2048 × 1) | √ | √ | √ |
| | 2048 MB (1024 × 2) | √ | √ | √ |
| | 1024 MB (1024 × 1) | √ | √ | √ |
| **Hard drives** | Supports all 9.5-mm SATA, 2.5-inch hard drives<br>Swappable bay support, hot plug and play | √ | √ | √ |
| | Supports the following drives:<br>• 500-GB, 5400-rpm<br>• 400-GB, 5400-rpm<br>• 320-GB, 5400-rpm<br>• 250-GB, 5400-rpm<br>• 160-GB, 5400-rpm<br>• 120-GB, 5400-rpm | √ | √ | √ |
| **Optical drives** | Swappable bay SATA, 12.7mm tray load | √ | √ | √ |
| | 8× DVD±RW DL SuperMulti | √ | √ | √ |
| | DVD±RW DL LightScribe SuperMulti | √ | √ | √ |
| | Blu-ray ROM DVD±R/RW SuperMulti DL Drive | √ | √ | √ |
| | Blu-ray ROM with LightScribe DVD ±R/RW SuperMulti DL Drive | √ | √ | |
| **Webcam** | Low-light, VGA camera, fixed (no tilt) with activity light<br>640×480 by 24 frames per second | √ | √ | √ |
| **Microphone** | 2 integrated omnidirectional digital microphones | √ | √ | √ |



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| Category | Description | Intel processors with discrete graphics subsystem | Intel processors with UMA graphics subsystem | AMD processors with UMA graphics subsystem |
|---|---|---|---|---|
| | Dual array microphones with software (beam forming, echo cancellation, noise suppression) | √ | √ | √ |
| **Audio** | HD audio | √ | √ | √ |
| | Supports Windows Vista® Premium Logo requirements | √ | √ | √ |
| | Pavilion-branded Altec Lansing speakers | √ | √ | √ |
| **Modem** | 56K V.92 data/fax modem | √ | √ | √ |
| | Supports all worldwide certification requirements | √ | √ | √ |
| | Modem cable not included | √ | √ | √ |
| **Ethernet** | Integrated Gibabit 10/100/1000 network interface card (NIC) | √ | | √ |
| | Integrated 10/100 network interface card (NIC) | | √ | √ |
| **Wireless** | **Integrated wireless (WLAN and WWAN) options:** | | | |
| | Intel WiFi Link 5100 Wireless ABG and Bluetooth with 2 antennae | √ | √ | |
| | Intel WiFi Link 5100 with 2 antennae | √ | √ | |
| | Broadcom 4321AGN Wi-Fi Adapter (802.11a/b/g/n) + Bluetooth with 2 antennae | √ | √ | √ |
| | Broadcom 4321AGN Wi-Fi Adapter (802.11a/b/g/n) with 2 antennae | √ | √ | √ |
| | Broadcom 802.11a/b/g/n with 2 antennae | | | √ |
| | Broadcom 802.11a/b/g/n with Bluetooth and 2 antennae | | | √ |
| | 54g 802.11b/g with 2 antennae | √ | √ | |
| | 54g 802.11b/g with Bluetooth and 2 antennae | √ | √ | |
| | 2 WWAN 5-band antennae built into display assembly | √ | √ | |
| | Subscriber identity module (SIM) security (customer-accessible in battery bay) | √ | √ | |



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| Category | Description | Intel processors with discrete graphics subsystem | Intel processors with UMA graphics subsystem | AMD processors with UMA graphics subsystem |
|---|---|---|---|---|
| | Support for the following WWAN formats:<br>• Evolution-data optimized (EVDO)<br>• High-speed downlink packet access (HSDPA) | √ | √ | |
| **Integrated TV tuner** | TV tuner antenna and cable for both DVB-T and ATSC/NTSC | √ | √ | |
| | Integrated NTSC/ATSC/QAM Hybrid TV tuner (not available with WWAN) | √ | √ | |
| | Integrated Analog/DVB-T TV tuner (not available with WWAN) | √ | √ | |
| | Integrated DVB-T TV tuner (not available with WWAN) | √ | √ | |
| **External card expansion** | One ExpressCard54 slot | √ | √ | √ |
| | Digital Media Slot, supports SD, MMC, MS, MSpro, ×D | √ | √ | √ |
| **Internal card expansion** | 2 mini full-size PCI slots | √ | √ | √ |
| **Ports** | Audio-in (stereo microphone) | √ | √ | √ |
| | Audio-out (2) (stereo headphones) | √ | √ | √ |
| | AC Adapter (smart pin) | √ | √ | √ |
| | Consumer infrared | √ | √ | √ |
| | eSATA (third USB port) | √ | √ | √ |
| | HDMI | √ | √ | √ |
| | MCX | √ | √ | √ |
| | RJ-11 (modem) | √ | √ | √ |
| | RJ-45 (Ethernet, includes link and activity lights) | √ | √ | √ |
| | USB (3) | √ | √ | √ |
| | VGA (Dsub 15-pin) | √ | √ | √ |
| **Docking** | Expansion port 3 supports HP xb4 Docking Station and HP Notebook QuickDock | √ | √ | √ |
| **Keyboard/TouchPad** | 14.1-inch keyboard | √ | √ | √ |
| | TouchPad (supports 2-way scroll with legend) | √ | √ | √ |



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| Category | Description | Intel processors with discrete graphics subsystem | Intel processors with UMA graphics subsystem | AMD processors with UMA graphics subsystem |
|---|---|---|---|---|
| **Power requirements** | 12-cell 2.20-Ah Li-ion battery | √ | √ | √ |
| | 6-cell 2.55-Ah Li-ion battery | √ | √ | √ |
| | 6-cell 2.20-Ah Li-ion battery | √ | √ | √ |
| | 65-W AC adapter with localized cable plug support (2-wire plug with ground pin, supports 2-pin DC connector) | | √ | √ |
| | 90-W AC adapter with localized cable plug support (2-wire plug with ground pin, supports 2-pin DC connector) | √ | | √ |
| | Standard commercial smart pin | √ | √ | √ |
| **Security** | Security cable slot | √ | √ | √ |
| | Fingerprint reader | √ | √ | √ |
| **Operating system** | **Preinstalled:** | | | |
| | Windows Vista Business (32-bit) | √ | √ | √ |
| | Windows Vista Home Basic (32-bit) | √ | √ | √ |
| | Windows Vista Premium (32- and 64-bit) | √ | √ | √ |
| | Windows Vista Ultimate (64-bit) | √ | √ | |
| **Serviceability** | **End-user replaceable parts:** | | | |
| | AC adapter | √ | √ | √ |
| | Battery (system) | √ | √ | √ |
| | Hard drive | √ | √ | √ |
| | Memory module | √ | √ | √ |
| | Optical drive | √ | √ | √ |
| | Mini Card components | √ | √ | √ |



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# 2 External component identification

## Top components

### TouchPad

| Component | | Description |
|---|---|---|
| **(1)** | TouchPad light | • White: TouchPad is enabled.<br>• Amber: TouchPad is disabled. |
| **(2)** | TouchPad* | Moves the pointer and selects or activates items on the screen. |
| **(3)** | Left TouchPad button* | Functions like the left button on an external mouse. |
| **(4)** | TouchPad on/off button | Enables/disables the TouchPad. |
| **(5)** | TouchPad vertical scroll zone* | Scrolls up or down. |
| **(6)** | Right TouchPad button* | Functions like the right button on an external mouse. |

*This table describes factory settings. To view or change pointing device preferences, select **Start > Control Panel > Hardware and Sound > Mouse**.



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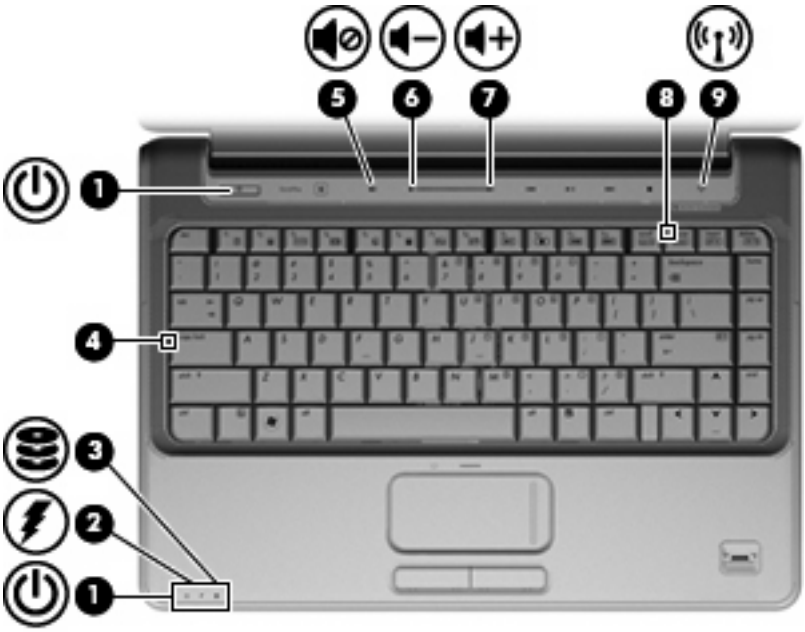
# Lights

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




| Component | | Description |
|---|---|---|
| **(1)** | Power lights (2)* | • On: The computer is on.<br>• Blinking: The computer is in the Sleep state.<br>• Off: The computer is off or in Hibernation. |
| **(2)** | Battery light | • On: A battery is charging.<br>• Blinking: A battery that is the only available power source has reached a low battery level or a critical battery level.<br>• Off: If the computer is plugged into an external power source, the light is turned off when all batteries in the computer are fully charged. If the computer is not plugged into an external power source, the light stays off until the battery reaches a low battery level. |
| **(3)** | Drive light | • Blinking: The hard drive or optical drive (select models only) is being accessed.<br>• On: HP ProtectSmart Hard Drive Protection has temporarily parked the internal hard drive, and if present, the hard drive in the SmartBay. |
| **(4)** | Caps lock light | On: Caps lock is on. |
| **(5)** | Volume mute light | • White: Computer sound is turned on.<br>• Amber: Computer sound is turned off. |
| **(6)** | Volume down light | On: The volume scroll zone is being used to decrease speaker volume. |
| **(7)** | Volume up light | On: The volume scroll zone is being used to increase speaker volume. |



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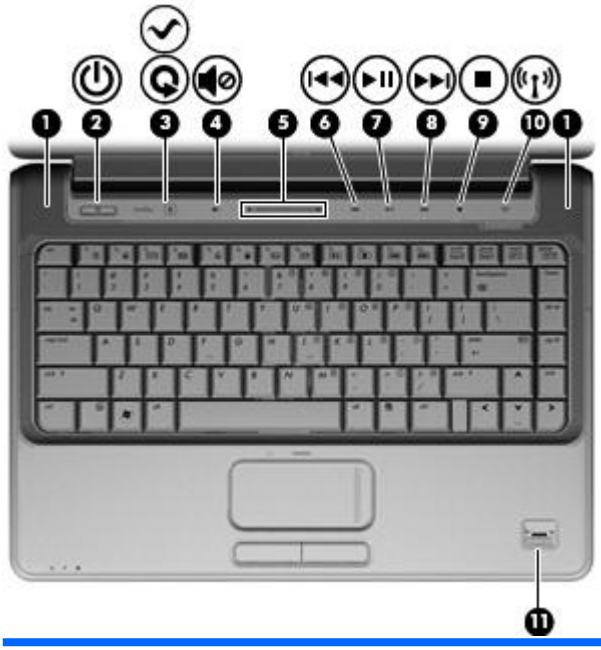
| Component | | Description |
|---|---|---|
| **(8)** | Num lock light | On: Num lock is on or the embedded numeric keypad is enabled. |
| **(9)** | Wireless light | • Blue: An integrated wireless device, such as a wireless local area network (WLAN) device and/or a Bluetooth® device, is on.<br>• Amber: All wireless devices are off. |
| *The 2 power lights display the same information. The light on the power button is visible only when the computer is open. The power light on the front of the computer is visible whether the computer is open or closed. | | |

## Buttons, speakers, and fingerprint reader

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




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



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| Component | | Description |
|---|---|---|
| **(2)** | Power button* | • When the computer is off, press the button to turn on the computer.<br>• When the computer is on, briefly press the button to initiate Sleep.<br>• When the computer is in the Sleep state, briefly press the button to exit Sleep.<br>• When the computer is in Hibernation, briefly press the button 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 Maintenance > Power Options**. |
| **(3)** | Media button | • Launches the MediaSmart program (for models with MediaSmart preinstalled).<br>• Launches the QuickPlay program (for models with QuickPlay preinstalled).<br>• Launches the DVDPlay program (for models with DVDPlay preinstalled).<br>**NOTE:** If the computer has been set up to require a logon password, you may be asked to log on to Windows. MediaSmart, QuickPlay, or DVDPlay launches after you log on. Refer to the MediaSmart, QuickPlay, or DVDPlay software Help for more information. |
| **(4)** | Volume mute button | Mutes and restores speaker sound. |
| **(5)** | Volume scroll zone | Adjusts speaker volume. Slide your finger to the left to decrease volume and to the right to increase volume. You can also tap the minus sign on the scroll zone to decrease volume, or tap the plus sign on the scroll zone to increase volume. |
| **(6)** | Previous/rewind button | • Plays the previous track or chapter when the button is pressed once.<br>• Rewinds media when the button is pressed simultaneously with the fn key. |
| **(7)** | Play/pause button | Plays or pauses media. |
| **(8)** | Next/fast forward button | • Plays the next track or chapter when the button is pressed once.<br>• Fast forwards media when pressed simultaneously with the fn key. |
| **(9)** | Stop button | Stops playback. |
| **(10)** | Wireless button | Turns the wireless feature on or off but does not establish a wireless connection.<br>**NOTE:** A wireless network must be set up in order to establish a wireless connection. |



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| Component | | Description |
|---|---|---|
| **(11)** | Fingerprint reader (select models only) | Allows a fingerprint logon to Windows, instead of a password logon. |

*This table describes factory settings. For information about changing factory settings, refer to the user guides located in Help and Support.



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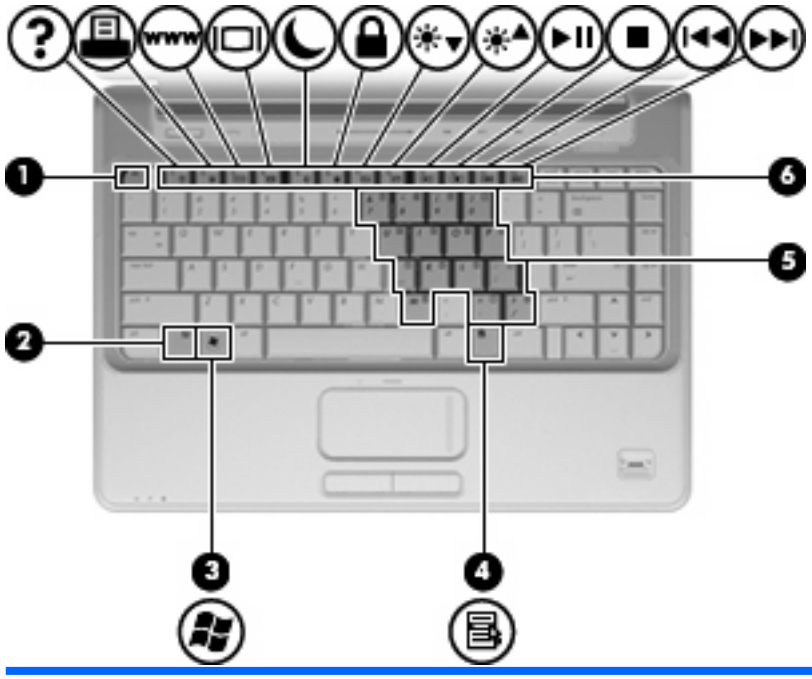
# Keys

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




| 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 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)** | Embedded numeric keypad keys | Can be used like the keys on an external numeric keypad. |
| **(6)** | Function keys | Execute frequently used system functions when pressed in combination with the fn key. |



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# Display

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

| Component | | Description |
|---|---|---|
| **(1)** | Internal display switch | Turns off the display if the display is closed while the computer is turned on. |
| **(2)** | Internal digital dual array microphones (2) | Record sound. |
| **(3)** | Integrated webcam light (select models only) | On: The integrated webcam is in use. |
| **(4)** | Integrated webcam (select models only) | Records video and captures still photographs. |



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# Front components

| Component | | Description |
|---|---|---|
| **(1)** | Power light | • On: The computer is on.<br>• Blinking: The computer is in the Sleep state.<br>• Off: The computer is off or in Hibernation. |
| **(2)** | Battery light | • On: A battery is charging.<br>• Blinking: A battery that is the only available power source has reached a low battery level or a critical battery level.<br>• Off: If the computer is plugged into an external power source, the light is turned off when all batteries in the computer are fully charged. If the computer is not plugged into an external power source, the light stays off until the battery reaches a low battery level. |
| **(3)** | Drive light | • Blinking: The hard drive or optical drive (select models only) is being accessed.<br>• On: HP ProtectSmart Hard Drive Protection has temporarily parked the internal hard drive, and if present, the hard drive in the SmartBay. |
| **(4)** | Consumer infrared lens | Receives a signal from the HP Remote Control (select models only). |
| **(5)** | Audio-in (microphone) jack | Connects an optional computer headset microphone, stereo array microphone, or monaural microphone. |
| **(6)** | Audio-out (headphone) jacks (2) | Produce sound when connected to optional powered stereo speakers, headphones, ear buds, a headset, or television audio. |



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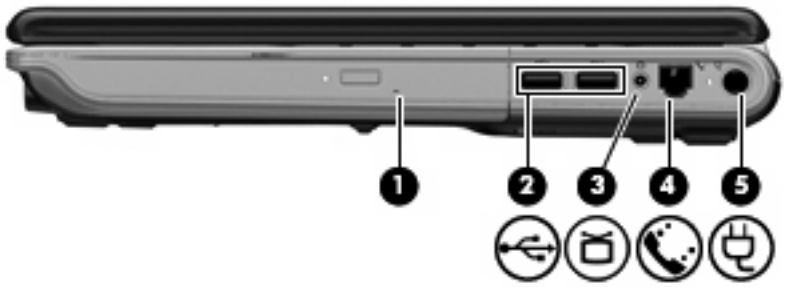
# Rear component

| Component | Description |
|---|---|
| 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. |

# Right-side components

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




| Component | | Description |
|---|---|---|
| **(1)** | SmartBay | Supports an optical drive or hard drive. |
| **(2)** | USB ports (2) | Connect optional USB devices. |
| **(3)** | TV antenna/cable jack (select models only) | Connects a TV antenna, a digital cable device, or a satellite device that receives standard or high-definition TV broadcasts. |
| **(4)** | RJ-11 (modem) jack (select models only) | Connects a modem cable. |
| **(5)** | Power connector | Connects an AC adapter. |



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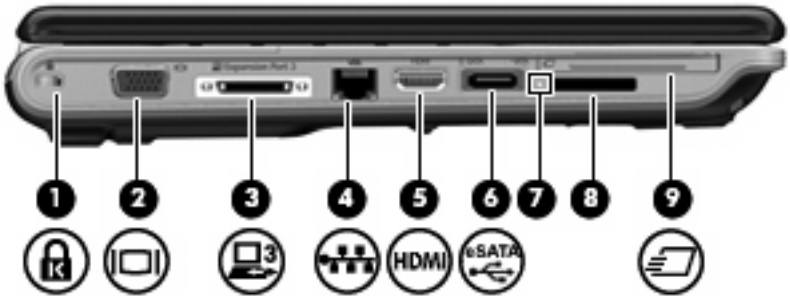
# Left-side components




| 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)** | External monitor port | Connects an external VGA monitor or projector. |
| **(3)** | Expansion port 3 | Connects the computer to an optional docking device or optional expansion product.<br><br>**NOTE:** The computer has only one expansion port. The term *expansion port 3* describes the type of expansion port. |
| **(4)** | RJ-45 (network) jack | Connects a network cable. |
| **(5)** | HDMI port | Connects an optional video or audio device, such as a high-definition television, or any compatible digital or audio component. |
| **(6)** | eSATA/USB port | Connects high-performance eSATA components, such as an eSATA external hard drive, or connect an optional USB device. |
| **(7)** | Digital Media Slot light | On: A digital card is being accessed. |
| **(8)** | Digital Media Slot | Supports the following optional digital card formats:<br><br>• Memory Stick (MS)<br>• Memory Stick Pro (MSP)<br>• MultiMediaCard (MMC)<br>• Secure Digital (SD) Memory Card<br>• xD-Picture Card (XD) |
| **(9)** | ExpressCard slot | Supports optional ExpressCard/54 cards. |



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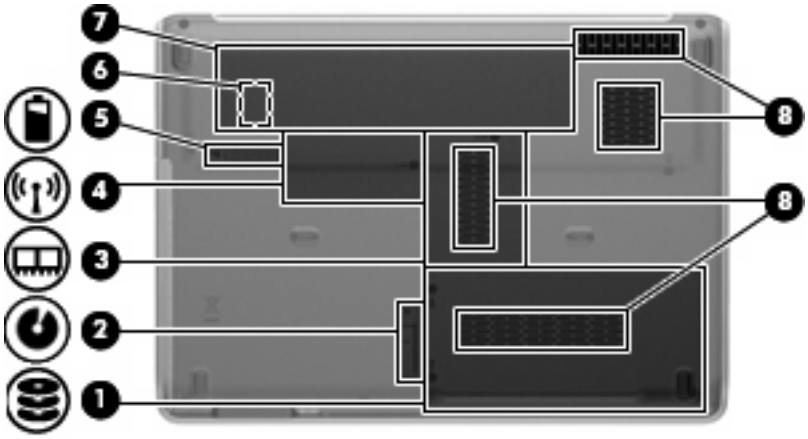
# Bottom components




| Component | | Description |
|---|---|---|
| **(1)** | Hard drive and WLAN module compartment | Holds the hard drive and the wireless LAN (WLAN) module.<br><br>**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. |
| **(2)** | SmartBay release latch | Releases the SmartBay module. |
| **(3)** | Memory module compartment | Contains the 2 memory module slots. |
| **(4)** | Mini Card compartment | On select models, holds a wireless WAN (WWAN) module and/or the TV tuner card.<br><br>**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. |
| **(5)** | Battery release latch | Releases the battery from the battery bay. |
| **(6)** | SIM slot (select models only) | Contains a subscriber identity module (SIM). The SIM slot is located inside the battery bay. |
| **(7)** | Battery bay | Holds the battery. |
| **(8)** | Vents (4) | 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. |



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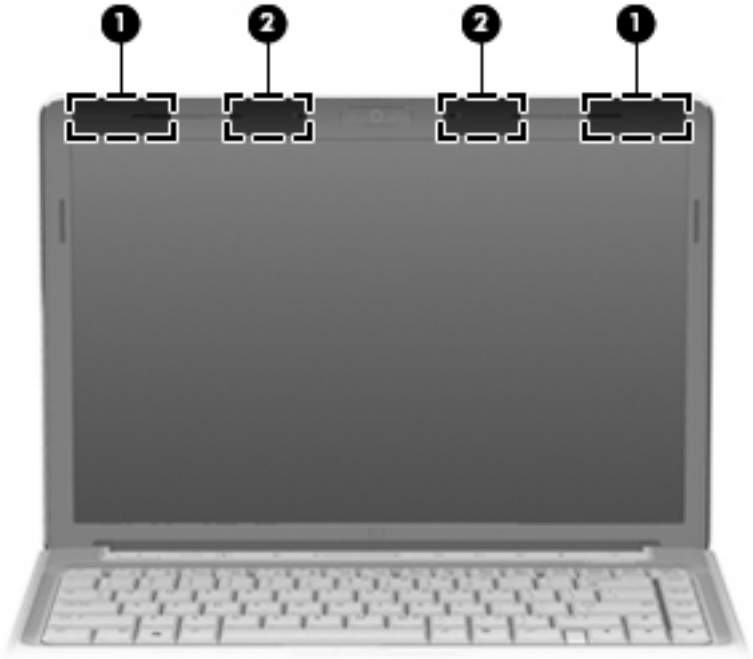
# Wireless antennae




| Component | | Description |
|---|---|---|
| **(1)** | WWAN antennae (2)* | Send and receive wireless signals to communicate with wireless wide-area networks (WWAN). |
| **(2)** | WLAN antennae (2)* | Send and receive wireless signals to communicate with wireless local area networks (WLAN). |

*The antennae are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennae 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.



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# 3 Illustrated parts catalog

## Serial number location

When ordering parts or requesting information, provide the computer serial number and model number located on the bottom of the computer.

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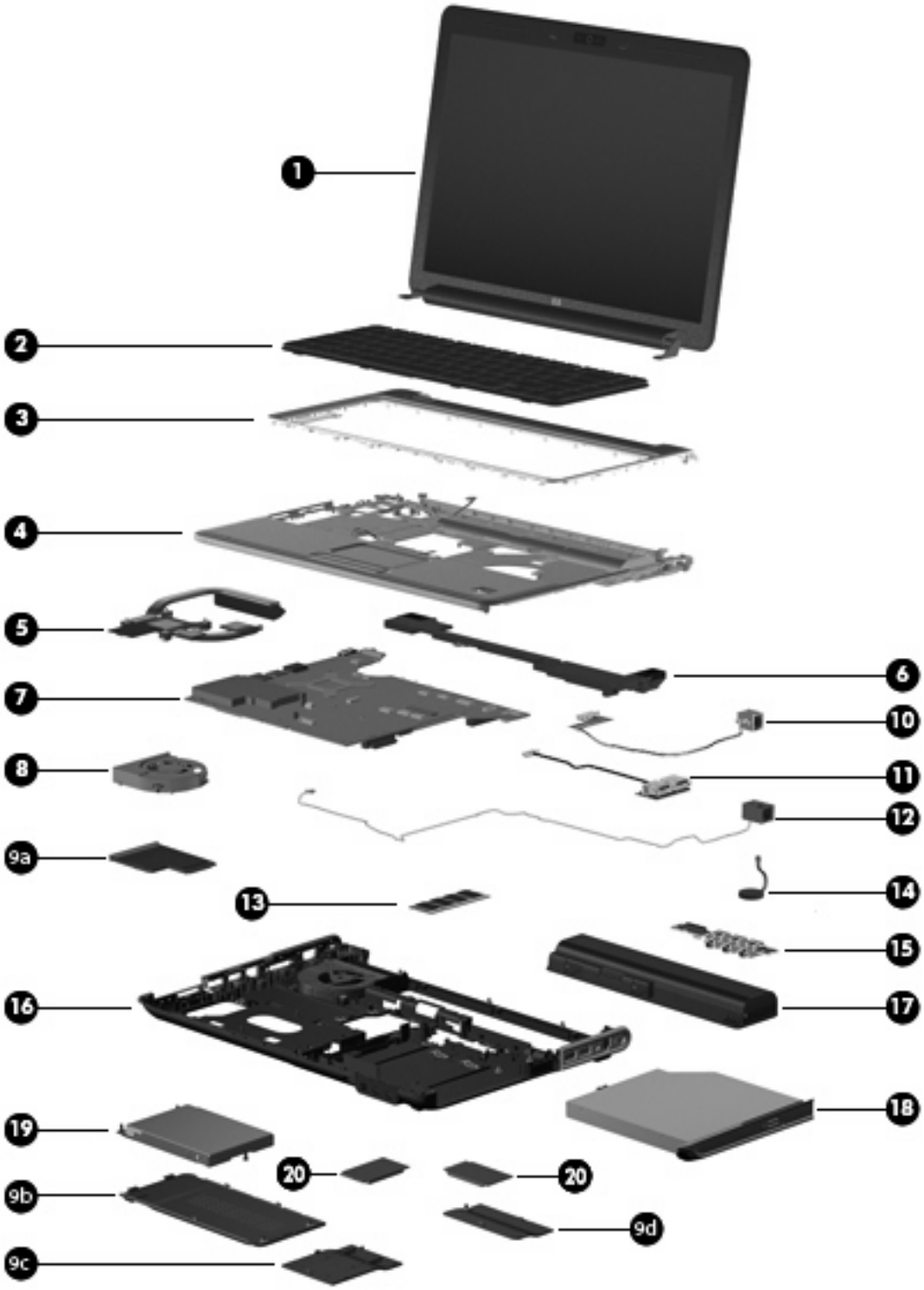
# Computer major components




| Item | Description | Spare part number |
|---|---|---|
| (1) | **Display assemblies** (see Display assembly components on page 25 for display assembly spare part component information) | |



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| Item | Description | Spare part number |
|---|---|---|
| **(2)** | **Keyboards**<br><br>**NOTE:** For a comprehensive list of keyboard spare part numbers, see the Sequential part number listing on page 36. | |
| | For use with standard computer models | 486901-xxx |
| | For use only with bronze-colored computer models | 508119-xx1 |
| | For use in blue-colored computer models | 508120-xx1 |
| | For use in blue-colored computer models only in the United States | 507319-001 |
| **(3)** | **Keyboard covers** | |
| | • For use with standard computer models | 486852-001 |
| | • For use with bronze-colored computer models | 495663-001 |
| | • For use with standard computer models | 512231-001 |
| | • For use with bronze-colored computer models | 512232-001 |
| **(4)** | **Top covers** (include TouchPad and TouchPad cable) | |
| | • Equipped with a fingerprint reader (includes fingerprint reader board and cable) | 486830-001 |
| | • Not equipped with a fingerprint reader | 488105-001 |
| | • For bronze-colored computer models equipped with a fingerprint reader | 495661-001 |
| | • For bronze-colored computer models not equipped with a fingerprint reader | 495662-001 |
| | • For use in blue-colored computer models | 502579-001 |
| **(5)** | **Heat sink** (includes thermal material) | |
| | • For use in models with Intel processors and UMA graphics subsystems | 486838-001 |
| | • For use in models with AMD processors and UMA graphics subsystems | 492260-001 |
| **(6)** | **Speaker assembly** | 486837-001 |
| **(7)** | **System boards** (include thermal material) | |
| | For use in computer models with Intel processors: | |
| | • On models equipped with a 256-MB discrete graphics subsystem | 486723-001 |
| | • On models equipped with a 512-MB discrete graphics subsystem | 496730-001 |
| | • On models equipped with a UMA graphics subsystem | 486724-001 |
| | For use in computer models with AMD processors: | |
| | • With QuickPlay | 488238-001 |
| | • With MediaSmart | 511858-001 |
| **(8)** | **Fan** (includes thermal material) | 486844-001 |
| **(9)** | **Plastics Kit** (see Plastics Kit on page 28 for Plastics Kit spare part component information) | 486833-001 |
| **(9a)** | ExpressCard slot bezel | |
| **(9b)** | Hard drive bay cover | |



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| Item | Description | Spare part number |
|---|---|---|
| **(9c)** | Memory module compartment cover | |
| **(9d)** | Wireless module compartment cover | |
| **(10)** | **Modem modules and cable** | |
| | Modem module for use with most computer models | 461749-001 |
| | Modem module for use with computer models in Australia and New Zealand | 461749-011 |
| | **Modem module cable** for use with computer models with Intel processors | 494981-001 |
| **(11)** | **USB board** (includes USB board cable) | 486842-001 |
| **(12)** | **Power button with connector cable** | 486853-001 |
| **(13)** | **Memory modules** (800-MHz, PC2-6400, 1-DIMM) | |
| | For use in computer models with AMD processors: | |
| | • 2048-GB | 482169-002 |
| | • 1024-MB | 482168-002 |
| | • 512-MB | 482167-002 |
| | For use in computer models with Intel processors: | |
| | • 2048-MB | 482169-001 |
| | • 1024-MB | 482168-001 |
| | • 512-MB | 482167-001 |
| **(14)** | **RTC battery** | 486835-001 |
| **(15)** | **Audio board** (includes audio connectors, infrared lens, and audio board cable) | 486840-001 |
| **(16)** | **Base enclosures** | |
| | • For use only in standard computer models without a modem module or TV tuner | 486848-001 |
| | • For use only in standard computer models with a TV tuner | 486849-001 |
| | • For use only in standard computer models with a modem module | 486850-001 |
| | • For use only in standard computer models with a modem module and TV tuner | 486851-001 |
| | • For use only in bronze-colored computer models without a modem module or TV tuner | 495664-001 |
| | • For use only in bronze-colored computer models with a TV tuner | 495665-001 |
| | • For use only in bronze-colored computer models with a modem module | 495666-001 |
| | • For use only in bronze-colored computer models with a modem module and TV tuner | 495667-001 |
| **(17)** | **Batteries** | |
| | • 12-cell, 8.80-Ah | 484172-001 |
| | • 6-cell, 2.55-Ah | 484171-001 |
| | • 6-cell, 2.20-Ah | 482186-003 |



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| Item | Description | Spare part number |
|---|---|---|
| (18) | **Optical drives** (include bezel and bracket) (see Mass storage devices on page 29 for optical drive spare part component information) | |
| (19) | **Hard drives** (include hard drive bracket) (see Mass storage devices on page 29 for hard drive spare part component information) | |
| (20) | **Processors** (include thermal material) | |
| | **AMD processors:** | |
| | • Athlon QL-64 (2.1-GHz, 1-MB L2 cache) | 506053-001 |
| | • Turion 64 ZM-86 (2.4-GHz, 2-MB L2 cache) | 487345-005 |
| | • Turion 64, ZM-84 (2.3-GHz, 2-MB L2 cache) | 497177-001 |
| | • Turion 64 ZM-82 (2.2-GHz, 2-MB L2 cache) | 487346-005 |
| | • Turion 64 ZM-80 (2.1-GHz, 2-MB L2 cache) | 487347-005 |
| | • Turion 64 RM-74 (2.2-GHz, 1-MB L2 cache) | 507979-001 |
| | • Turion 64 RM-72 (2.1-GHz, 1-MB L2 cache) | 497178-001 |
| | • Turion 64 RM-70 (2.0-GHz, 1-MB L2 cache) | 487348-006 |
| | • Turion 64 QL-62 (2-GHz, 1-MB L2 cache) | 497179-001 |
| | • Turion 64 QL-60 (1.9-GHz, 1-MB L2 cache) | 487349-006 |
| | • Sempron SI-42 (2.1GHz, 512-KB cache) | 497180-001 |
| | • Sempron SI-40 (2.0-GHz, 512-KB L2 cache) | 487350-004 |
| | **Intel processors:** | |
| | • Core 2 Duo T9600 (2.80-GHz, 6-MB L2 cache) | 486727-001 |
| | • Core 2 Duo T9550 (2.66-GHz, 6-MB L2 cache) | 507953-001 |
| | • Core 2 Duo T9400 (2.53-GHz, 6-MB L2 cache) | 483260-001 |
| | • Core 2 Duo P8700 (2.53-GHz, 3-MB L2 cache) | 507960-001 |
| | • Core 2 Duo P8600 (2.40-GHz, 3-MB L2 cache) | 483259-001 |
| | • Core 2 Duo P8400 (2.26-GHz, 3-MB L2 cache) | 483258-001 |
| | • Core 2 Duo T5900 (2.2-GHz, 2-MB L2 cache) | 495639-001 |
| | • Core 2 Duo P7450 (2.13-GHz, 3-MB L2 cache) | 495640-001 or 507965-001 |
| | • Core 2 Duo P7350 (2.0-GHz, 3-MB L2 cache) | 491856-001 |
| | • Core 2 Duo T6600 (2.2 GHz, 3-MB L2 cache) | 513593-001 |
| | • Core 2 Duo T6400 (2.06 GHz, 3-MB L2 cache) | 513592-001 |
| | • Core 2 Duo T5800 (2.0-GHz, 2-MB L2 cache) | 495638-001 |
| | • Pentium Dual-Core T4200 (2.0-MHz, 4-MB L2 cache) | 513599-001 |
| | • Pentium Dual-Core T3400 (2.16-GHz, 1-MB L2 cache) | 504784-001 |
| | • Pentium Dual-Core T3200 (2.0-GHz, 1-MB L2 cache) | 504783-001 |



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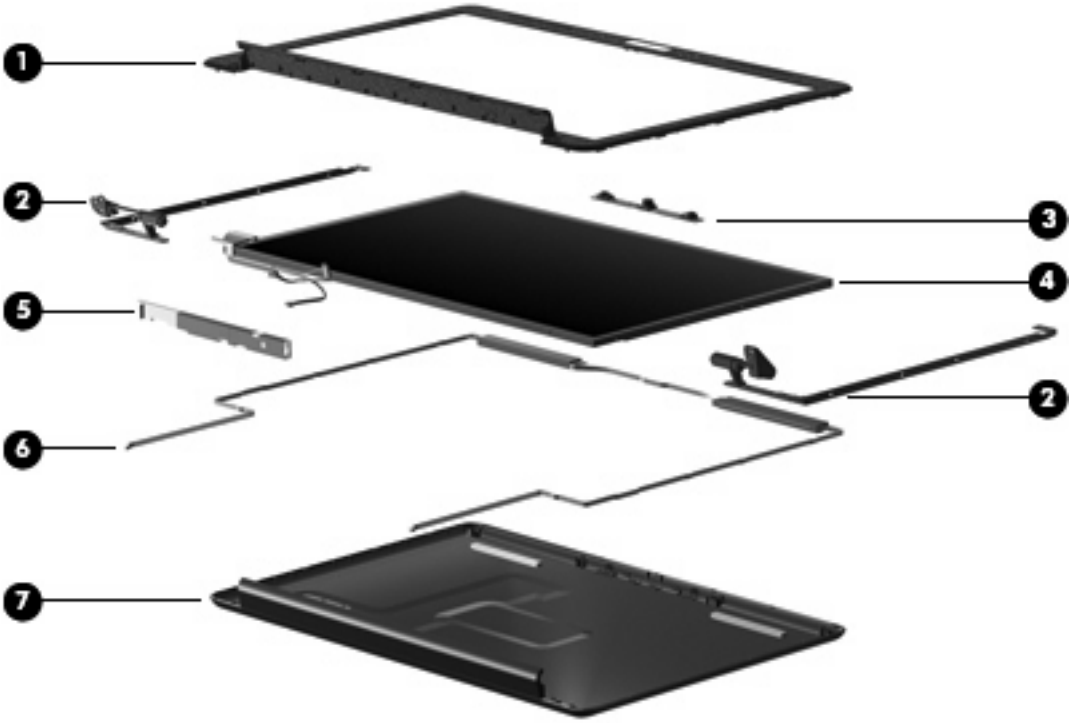
| Item | Description | Spare part number |
|---|---|---|
| | • Celeron 575 (2.2-GHz, 1-MB L2 cache) | 502838-001 |
| | • Celeron T1600 (1.66-GHz, 2-MB L2 cache | 497773-001 |

# Display assembly components




| Item | Description | Spare part number |
|---|---|---|
| | **Display assemblies** (not illustrated) | |
| | • 14.1-inch WXGA, Brightview display assembly with a camera/microphone module for use with standard computer models | 486882-001 |
| | • 14.1-inch WXGA, Brightview display assembly with a camera/microphone module for use with bronze-colored computer models | 496736-001 |
| | • 14.1-inch WXGA, Brightview LED display assembly with a camera/microphone module for use with standard computer models | 486883-001 |
| | • 14.1-inch WXGA, Brightview LED display assembly with a camera/microphone module for use with bronze-colored computer models | 496741-001 |
| | • 14.1-inch WXGA, Brightview Flush Glass display assembly with a camera/ microphone module for use with standard computer models | 486872-001 |
| | • 14.1-inch WXGA, Brightview Flush Glass display assembly with a camera/ microphone module for use with bronze-colored computer models | 496732-001 |
| | • 14.1-inch WXGA, Brightview Flush Glass display assembly with a camera/ microphone module for use in blue-colored computer models | 502577-001 |
| **(1)** | **Display bezels** | |



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| Item | Description | Spare part number |
|---|---|---|
| | • For use only with standard computer models equipped with a camera/microphone module (includes openings for camera module and microphones) | 494978-001 |
| | • For use only with standard computer models not equipped with a camera/microphone module (includes openings for microphones) | 486893-001 |
| | • For use only with bronze-colored computer models equipped with a camera/microphone module (includes openings for camera module and microphones) | 496743-001 |
| | • For use only with bronze-colored computer models not equipped with a camera/microphone module (includes openings for camera/microphone module and microphones) | 496735-001 |
| **(2)** | **Display Hinge Kits** | |
| | • For use with standard display assemblies | 486894-001 |
| | • For use with Flush Glass display assemblies | 486880-001 |
| **(3)** | **Camera/microphone module** (includes camera/microphone module bracket and 2-sided tape) | 486876-001 |
| **(4)** | **Display panels** (includes display panel cable) | |
| | • 14.1-inch, WXGA, BrightView display panel for use in computers with Intel processors (includes display panel cable) | 483261-001 |
| | • 14.1-inch, WXGA, BrightView LED display panel for use in computers with Intel processors (includes display panel cable) | 483262-001 |
| | • 14.1-inch, WXGA, BrightView display panel for use in computers with AMD processors (includes display panel cable) | 497182-001 |
| | • 14.1-inch, WXGA, BrightView LED display panel for use in computers with AMD processors (includes display panel cable) | 497183-001 |
| **(5)** | **Display inverter** (includes Mylar shield) | 486736-001 |
| **(6)** | **Wireless Antenna Kits** | |
| | • For use with standard display assemblies | 489068-001 |
| | • For use with Flush Glass display assemblies | 489067-001 |
| **(7)** | **Display enclosures** (includes logo light and cables) | |
| | • For use with standard computer models with a camera/microphone module | 486890-001 |
| | • For use with bronze-colored computer models with a camera/microphone module | 496734-001 |
| | • For use with standard computer models | 494967-001 |
| | • For use with bronze-colored computer models | 496742-001 |
| | • For use with standard computer models with Flush Glass display assemblies | 486875-001 |
| | • For use with bronze-colored computer models with Flush Glass display assemblies | 496733-001 |
| | • For use in blue-colored computer models | 502578-001 |
| | **Rubber display bezel kits** (contains all rubber pieces for the display bezel; not illustrated) | |
| | • For use with standard computer models | 496729-001 |
| | • For use with bronze-colored computer models | 486874-001 |



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| Item | Description | Spare part number |
|---|---|---|
| | **Miscellaneous display parts** (not illustrated) | |
| | • Hinge trim for use on standard computer models with Flush Glass display assemblies | 495629-001 |
| | • Hinge trim for use on bronze-colored computer models with Flush Glass display assemblies | 502592-001 |
| | • Hinge trim for use on blue-colored computer models | 502595-001 |
| | • Display trim for use with standard computer models with Flush Glass display assemblies | 486877-001 |
| | • Display trim for use with bronze-colored computer models with Flush Glass display assemblies | 502593-001 |
| | • Display trim for use with blue-colored computer models | 502596-001 |
| | • LCD cable for Flush Glass display assemblies | 486878-001 |
| | • Microphone cable for Flush Glass display assemblies | 495631-001 |
| | • LED transfer board for standard display assemblies | 494977-001 |



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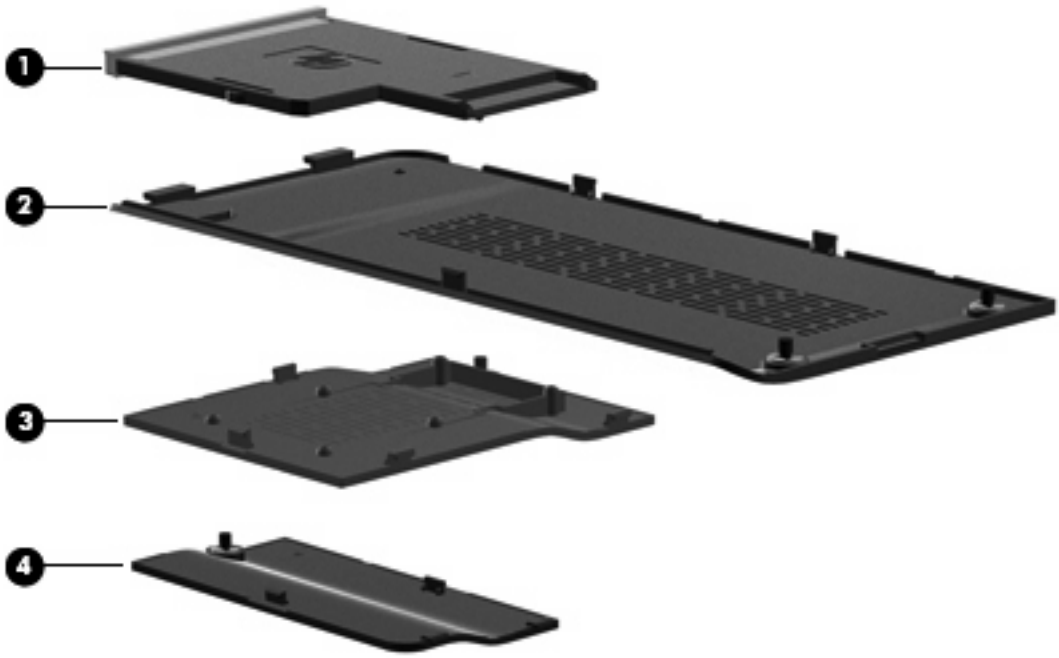
# Plastics Kit




| Item | Description | Spare part number |
|---|---|---|
| | **Plastics Kit** | 486833-001 |
| **(1)** | ExpressCard slot bezel | |
| **(2)** | Hard drive bay cover (includes 2 captive screws, secured by C-clips) | |
| **(3)** | Memory module compartment cover (includes 1 captive screw secured by a C-clip) | |
| **(4)** | Wireless module compartment cover (includes 1 captive screw, secured by a C-clip) | |



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# Mass storage devices

| Item | Description | Spare part number |
|---|---|---|
| (1) | **Hard drives** (include hard drive bracket) | |
| | **For use in computer models with AMD processors:** | |
| | • 500-GB, 5400-rpm | 497184-001 |
| | • 400-GB, 5400-rpm | 499993-001 |
| | • 320-GB, 5400-rpm | 459611-004 |
| | • 320-GB, 5400-rpm, MultiBay | 497186-001 |
| | • 250-GB, 5400-rpm | 454605-002 |
| | • 250-GB, 5400-rpm, MultiBay | 497185-001 |
| | • 160-GB, 5400-rpm | 454925-002 |
| | • 120-GB, 5400-rpm | 454924-002 |
| | **For use in computer models with Intel processors:** | |
| | • 500-GB, 5400-rpm | 497775-001 |
| | • 400-GB, 5400-rpm | 497774-001 |
| | • 320-GB. 5400-rpm | 459611-005 |
| | • 250-GB, 5400-rpm | 454605-003 |
| | • 160-GB, 5400-rpm | 454925-003 |
| | • 120-GB, 5400-rpm | 454924-003 |
| | **For use in swappable bay in standard computer models** (includes metal bracket) | |
| | • 320-GB, 5400-rpm | 496726-001 |
| | • 250-GB, 5400-rpm | 488126-001 |
| | • 160-GB, 5400-rpm | 488127-001 |



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| Item | Description | Spare part number |
|---|---|---|
| | **For use in swappable bay in bronze-colored computer models** (includes metal bracket) | |
| | • 320-GB, 5400-rpm | 496728-001 |
| | • 250-GB, 5400-rpm | 496727-001 |
| | **For use in blue-colored computer models** | |
| | • 320-GB, 5400-rpm | 507275-001 |
| | • 250-GB, 5400-rpm | 507274-001 |
| | **Hard drive hardware kits** (contains screws, hard drive bracket, and connector; not illustrated) | |
| | • Internal hard drive hardware kit | 482158-001 |
| | • Swappable bay hard drive hardware kit for use in standard computer models | 488128-001 |
| | • Swappable bay hard drive hardware kit for use in bronze-colored computer models | 502597-001 |
| | • Swappable bay blank for use in standard computer models | 491876-001 |
| | • Swappable bay blank for use in bronze-colored computer models | 502591-001 |
| **(2)** | **Optical drives** (include bezel and bracket) | |
| | For use in standard computer models with AMD processors: | |
| | • Blu-ray ROM DVD±R/RW SuperMulti DL Drive | 482181-002 |
| | • DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe | 482177-002 |
| | • DVD±RW and CD-RW Super Multi Double-Layer Combo Drive | 482175-002 |
| | For use in bronze-colored computer models with AMD processors: | |
| | • Blu-ray ROM DVD±R/RW SuperMulti DL Drive | 497524-001 |
| | • DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe | 497523-001 |
| | • DVD±RW and CD-RW Super Multi Double-Layer Combo Drive | 497522-001 |
| | For use in standard computer models with Intel processors: | |
| | • Blu-ray ROM DVD±R/RW SuperMulti DL Drive | 482181-001 |
| | • Blu-ray ROM with LightScribe DVD±R/RW SuperMulti DL Drive | 508123-001 |
| | • DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe | 482177-001 |
| | • DVD±RW and CD-RW Super Multi Double-Layer Combo Drive | 482175-001 |
| | For use in bronze-colored computer models with Intel processors: | |
| | • Blu-ray ROM DVD±R/RW SuperMulti DL Drive | 495655-001 |
| | • DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe | 495654-001 |
| | • DVD±RW and CD-RW Super Multi Double-Layer Combo Drive | 495653-001 |



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| Item | Description | Spare part number |
|---|---|---|
| | • Blu-ray ROM with LightScribe DVD±R/RW SuperMulti DL Drive | 508124-001 |
| | Swappable bay hardware kits for use with standard computer models (Includes pre-attached front bezel) | |
| | • Blu-ray BD ROM and DVD±RW Drive hardware kit | 488210-001 |
| | • DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe hardware kit | 488209-001 |
| | • DVD±RW and CD-RW Super Multi Double-Layer Combo Drive hardware kit | 482183-001 |
| | Swappable bay hardware kits for use with bronze-colored computer models. Includes pre-attached front bezel. | |
| | • Blu-ray BD ROM and DVD±RW Drive hardware kit | 495658-001 |
| | • DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe hardware kit | 495657-001 |
| | • DVD±RW and CD-RW Super Multi Double-Layer Combo Drive hardware kit | 495656-001 |



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# Miscellaneous parts

| Description | Spare part number |
|---|---|
| **AC adapters** | |
| • 90-W PFC AC adapter | 463955-001 |
| • 65-W PFC AC adapter | 463958-001 |
| **Bluetooth module** | 483113-001 |
| **Cables** | |
| • Audio cable | 486841-001 |
| • Bluetooth module cable for use in models with discrete graphics subsystems | 488130-001 |
| • Bluetooth module cable for use in models with UMA graphics subsystems | 486847-001 |
| • CAT5e network cable | 454619-001 |
| • DC-in audio cable | 486836-001 |
| • USB cable | 486843-001 |
| **Carrying cases** | |
| • Standard carrying case | 418162-001 |
| • Ladies slim case | 418163-001 |
| **Display lid switch assembly** | 486846-001 |
| **Fingerprint reader** | 486828-001 |
| **Mouse options** | |
| • Optical wired mouse | 436238-001 |
| • Wireless laser mouse with USB adapter | 430958-001 |
| • Notebook sleeve for use in blue-colored computer models | 504582-001 |
| **Power cords:** | |
| • Argentina | 490371-D01 |
| • Australia and New Zealand | 490371-011 |
| • Belgium, Europe, Finland, France, Germany, Greece, the Netherlands, Norway, Portugal, Spain, and Sweden | 490371-021 |
| • Brazil | 490371-201 |
| • Canada, French Canada, Latin America, Thailand, and the United States | 490371-001 |
| • Denmark | 490371-081 |
| • India | 490371-D61 |
| • Israel | 490371-BB1 |
| • Italy | 490371-061 |
| • Japan | 490371-291 |
| • The People's Republic of China | 490371-AA1 |



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| Description | Spare part number |
|---|---|
| • South Africa | 490371-AR1 |
| • South Korea | 490371-AD1 |
| • Switzerland | 490371-111 |
| • Taiwan | 490371-AB1 |
| • The United Kingdom and Hong Kong | 490371-031 |
| **Remote Controls** | |
| • ExpressCard remote control | 464793-001 |
| • ExpressCard remote control for use in blue-colored computer models | 464793-002 |
| • Full function remote control | 465540-001 |
| • Full function remote control for use with blue-colored computer models | 465540-002 |
| • Full function remote control with Teletext | 465541-001 |
| • Full function remote control with Teletext for use with blue-colored computer models | 465541-002 |
| **Rubber Kit** for use with all computer models (includes computer feet and screw covers) | 486834-001 |
| **Screw Kits** (includes all screws) | |
| • For use with standard display assemblies | 486873-001 |
| • For use with Flush Glass display assemblies | 496731-001 |
| **SIM module for models with WWAN** | 486845-001 |
| **TouchPad** (include TouchPad bracket and TouchPad cable) | 494960-001 |
| **TouchPad button** | 486832-001 |
| **TouchPad bracket** (included with top cover spare part kits and with TouchPad) | 494961-001 |
| **TV tuners** | |
| • ATSC/NTSC TV tuner antenna | 482900-001 |
| • TV tuner antenna with PAL jack | 482900-002 |
| • ATSC/NTSC TV tuner | 482899-001 |
| • DVB-T/ANG Integrated TV tuner | 482899-002 |
| • DVB-T tuner | 482899-003 |
| • DVB-T tuner for use only in the AP region | 482899-004 |
| **Wired headset with volume control** | 371693-001 |
| **WLAN modules** | |
| 802.11a/b/g/n WLAN modules: | |
| • For use in Antigua & Barbuda, Argentina, Aruba, the Bahamas, Barbados, Bermuda, Brunei, Canada, the Cayman Islands, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Haiti, Honduras, Hong Kong, India, Indonesia, Malaysia, Mexico, Panama, Paraguay, Peru, Saudi Arabia, Taiwan, Uruguay, the United States, Venezuela, and Vietnam | 480985-001 |



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| Description | Spare part number |
| --- | --- |
| • For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia & Herzegovina Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe | 487330-002 |
| • For use in the United States and Canada | 487330-001 |
| 802.11a/b/g WLAN module for use in the United States and Canada | 482957-001 |
| 802.11b/g WLAN modules | |
| • For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia & Herzegovina Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe | 459263-002 |
| • For use in the United States and Canada | 459263-001 |
| 802.11n WLAN modules: | |



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| Description | Spare part number |
|---|---|
| • For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia & Herzegovina Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe | 453730-002 |
| • For use in Japan | 453730-291 |
| • For use in the United States and Canada | 453730-001 |
| **WWAN modules** | |
| HP EVDO-A WWAN module for use in the United States | 451131-002 |
| HP un2400 Mobile Broadband Module | 483377-001 |
| HP UMTS/HSDPA/EDGE WWAN module, including GPRS | 459350-001 |



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# Sequential part number listing

| Spare part number | Description |
|---|---|
| 371693-001 | Wired headset with volume control |
| 418162-001 | Standard carrying case |
| 418163-001 | Ladies slim carrying case |
| 430958-001 | Wireless laser mouse with USB adapter |
| 436238-001 | Optical wired mouse |
| 451131-002 | EVDO-A WWAN module for use in the United States |
| 453730-001 | 802.11n WLAN for use in the United States and Canada |
| 453730-002 | 802.11n WLAN for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia & Herzegovina Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe |
| 453730-291 | 802.11n WLAN for use in Japan |
| 454605-002 | 250-GB hard drive for use in computer models with AMD processors |
| 454605-003 | 250-GB hard drive for use in computer models with Intel processors |
| 454619-001 | CAT5e network cable |
| 454924-002 | 120-GB hard drive for use in computer models with AMD processors |
| 454924-003 | 120-GB hard drive for use in computer models with Intel processors |
| 454925-002 | 160-GB hard drive for use in computer models with AMD processors |
| 454925-003 | 160-GB hard drive for use in computer models with Intel processors |
| 459263-001 | 802.11b/g WLAN for use in the United States and Canada |



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| Spare part number | Description |
|---|---|
| 459263-002 | 802.11b/g WLAN for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia & Herzegovina Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe |
| 459350-001 | UMTS/HSDPA/EDGE WWAN module, including GPRS |
| 459611-004 | 320-GB hard drive for use in computer models with AMD processors |
| 459611-005 | 320-GB hard drive for use in computer models with Intel processors |
| 461749-001 | Modem module for use with most computer models |
| 461749-011 | Modem module for use with computer models in Australia and New Zealand |
| 463955-001 | 90-W PFC AC adapter |
| 463958-001 | 65-W PFC AC adapter |
| 464793-001 | ExpressCard remote control |
| 464793-002 | ExpressCard remote control for use with blue-colored computer models |
| 465540-001 | Full function remote control |
| 465540-002 | Full function remote control for use with blue-colored computer models |
| 465541-001 | Full function remote control with TeleText |
| 465541-002 | Full function remote control with TeleText for use in blue-colored computer models |
| 480985-001 | 802.11a/b/g/n WLAN for use in Antigua & Barbuda, Argentina, Aruba, the Bahamas, Barbados, Bermuda, Brunei, Canada, the Cayman Islands, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Haiti, Honduras, Hong Kong, India, Indonesia, Malaysia, Mexico, Panama, Paraguay, Peru, Saudi Arabia, Taiwan, Uruguay, the United States, Venezuela, and Vietnam |
| 482158-001 | Internal hard drive hardware kit (contains screws, hard drive bracket, and connector) |
| 482167-001 | 512-KB memory module for use in computer models with Intel processors |
| 482167-002 | 512-KB memory module for use in computer models with AMD processors |
| 482168-001 | 1024-MB memory module for use in computer models with Intel processors |
| 482168-002 | 1024-MB memory module for use in computer models with AMD processors |
| 482169-001 | 2048-MB memory module for use in computer models with Intel processors |



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| Spare part number | Description |
|---|---|
| 482169-002 | 2048-MB memory module for use in computer models with AMD processors |
| 482175-001 | DVD±RW and CD-RW Super Multi Double-Layer Combo optical drive for use in standard computer models with Intel processors (includes bezel and bracket) |
| 482175-002 | DVD±RW and CD-RW Super Multi Double-Layer Combo optical drive for use in standard computer models with AMD processors (includes bezel and bracket) |
| 482177-001 | DVD±RW and CD-RW Super Multi Double-Layer Combo with LightScribe optical drive for use in standard computer models with Intel processors (includes bezel and bracket) |
| 482177-002 | DVD±RW and CD-RW Super Multi Double-Layer Combo with LightScribe optical drive for use in standard computer models with AMD processors (includes bezel and bracket) |
| 482181-001 | Blu-ray BD ROM and DVD±RW optical drive for use in standard computer models with Intel processors (includes bezel and bracket) |
| 482181-002 | Blu-ray BD ROM and DVD±RW optical drive for use in standard computer models with AMD processors (includes bezel and bracket) |
| 482183-001 | DVD±RW and CD-RW Super Multi Double-Layer Combo Drive hardware kit for use with standard computer models (includes front bezel) |
| 482186-003 | 6-cell battery, 2.20-Ah |
| 482899-001 | ATSC/NTSC TV tuner |
| 482899-002 | DVB-T/ANG Integrated TV tuner |
| 482899-003 | DVB-T tuner |
| 482899-004 | DVB-T tuner for use only in the AP region |
| 482900-001 | ATSC/NTSC TV tuner antenna |
| 482900-002 | TV tuner antenna with PAL jack |
| 482957-001 | 802.11a/b/g WLAN module for use in the United States and Canada |
| 483113-001 | Bluetooth module |
| 483258-001 | Intel Core 2 Duo P8400 processor (2.26-GHz, 3-MB L2 cache) |
| 483259-001 | Intel Core 2 Duo P8600 processor (2.40-GHz, 3-MB L2 cache) |
| 483260-001 | Intel Core 2 Duo T9400 processor (2.53-GHz, 6-MB L2 cache) |
| 483261-001 | 14.1-inch, WXGA, BrightView display panel for use in computers with Intel processors (includes display panel cable) |
| 483262-001 | 14.1-inch, WXGA, BrightView LED display panel for use in computers with Intel processors (includes display panel cable) |
| 483377-001 | HP un2400 Mobile Broadband Module |
| 484171-001 | 6-cell battery, 2.55-Ah |
| 484172-001 | 12-cell battery, 8.80-Ah |
| 486723-001 | System board (includes thermal material) for use in models with Intel processors equipped with a 256-MB discrete graphics subsystem |
| 486724-001 | System board (includes thermal material) for use in models with Intel processors equipped with a UMA graphics subsystem |
| 486727-001 | Intel Core 2 Duo T9600 processor (2.80-GHz, 6-MB L2 cache) |



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| Spare part number | Description |
|---|---|
| 486736-001 | Display inverter (includes Mylar shield) |
| 486828-001 | Fingerprint reader |
| 486830-001 | Top cover (includes TouchPad and TouchPad cable) for use with standard computer models equipped with a fingerprint reader (includes fingerprint reader and cable) |
| 486832-001 | TouchPad button |
| 486833-001 | Plastics kit |
| 486834-001 | Rubber feet kit for use with all computer models |
| 486835-001 | RTC battery |
| 486836-001 | DC-in audio cable |
| 486837-001 | Speaker assembly |
| 486838-001 | Heat sink (includes thermal material) for use in models with Intel processors and UMA graphics subsystems |
| 486840-001 | Audio board (includes audio connectors, infrared lens, and audio board cable) |
| 486841-001 | Audio cable |
| 486842-001 | USB board (includes USB board cable) |
| 486843-001 | USB cable |
| 486844-001 | Fan (includes thermal material) |
| 486845-001 | SIM module for models with WWAN |
| 486846-001 | Display lid switch assembly |
| 486847-001 | Bluetooth module cable for use in models with UMA graphics subsystems |
| 486848-001 | Base enclosure for use in standard computer models without a modem module or TV tuner |
| 486849-001 | Base enclosure for use in standard computer models with a TV tuner |
| 486850-001 | Base enclosure for use in standard computer models with a modem module |
| 486851-001 | Base enclosure for use in standard computer models with a modem module and TV tuner |
| 486852-001 | Keyboard cover for use with standard computer models |
| 486853-001 | Power button with connector cable |
| 486872-001 | 14.1-inch WXGA, Brightview LED display assembly with a camera/microphone module for use with bronze-colored computer models |
| 486873-001 | Screw kit for use with standard display assemblies |
| 486874-001 | Rubber display bezel kit for use with bronze-colored computer models (contains all rubber pieces for the display bezel) |
| 486875-001 | Display enclosure for use with standard computer models with Flush Glass display assemblies (includes Logo light and cables) |
| 486876-001 | Camera/microphone module (includes bracket and 2-sided tape) |
| 486877-001 | Display trim for use with standard computer models with Flush Glass display assemblies |
| 486878-001 | LCD cable for Flush Glass display assemblies |



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| Spare part number | Description |
|---|---|
| 486880-001 | Display hinge kit for use with standard display assemblies |
| 486882-001 | 14.1-inch WXGA, Brightview display assembly with a camera/microphone module for use with standard computer models |
| 486883-001 | 14.1-inch WXGA, Brightview LED display assembly with a camera/microphone module for use with standard computer models |
| 486890-001 | Display enclosure for use with standard computer models with a camera/microphone module (includes logo light and cable) |
| 486893-001 | Display bezel for use only with standard computer models not equipped with a camera/microphone module (includes openings for microphones) |
| 486894-001 | Display hinge kit for use with Flush Glass display assemblies |
| 486901-001 | Keyboard for use with standard computer models for use in The United States |
| 486901-031 | Keyboard for use with standard computer models for use in The United Kingdom |
| 486901-041 | Keyboard for use with standard computer models for use in Germany |
| 486901-051 | Keyboard for use with standard computer models for use in France |
| 486901-061 | Keyboard for use with standard computer models for use in Italy |
| 486901-071 | Keyboard for use with standard computer models for use in Spain |
| 486901-111 | Keyboard for use with standard computer models for use in Switzerland |
| 486901-121 | Keyboard for use with standard computer models for use in French Canada |
| 486901-131 | Keyboard for use with standard computer models for use in Portugal |
| 486901-141 | Keyboard for use with standard computer models for use in Turkey |
| 486901-151 | Keyboard for use with standard computer models for use in Greece |
| 486901-161 | Keyboard for use with standard computer models for use in Latin America |
| 486901-171 | Keyboard for use with standard computer models for use in Saudi Arabia |
| 486901-201 | Keyboard for use with standard computer models for use in Brazil |
| 486901-251 | Keyboard for use with standard computer models for use in Russia |
| 486901-281 | Keyboard for use with standard computer models for use in Thailand |
| 486901-291 | Keyboard for use with standard computer models for use in Japan |
| 486901-A41 | Keyboard for use with standard computer models for use in The Netherlands and Europe |
| 486901-AB1 | Keyboard for use with standard computer models for use in Taiwan |
| 486901-AD1 | Keyboard for use with standard computer models for use in South Korea |
| 486901-B31 | Keyboard for use with standard computer models for International use |
| 486901-BB1 | Keyboard for use with standard computer models for use in Israel |
| 486901-DH1 | Keyboard for use with standard computer models for use in Denmark, Finland, Norway, and Sweden |
| 487330-001 | 802.11a/b/g/n WLAN for use in the United States and Canada |



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| Spare part number | Description |
|---|---|
| 487330-002 | 802.11a/b/g/n WLAN for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia & Herzegovina Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe |
| 487345-005 | AMD Turion 64 ZM-86 processor (2.4-GHz, 2-MB L2 cache) |
| 487346-005 | AMD Turion 64 ZM-82 processor (2.2-GHz, 2-MB L2 cache) |
| 487347-005 | AMD Turion 64 ZM-80 processor (2.1-GHz, 2-MB L2 cache) |
| 487348-006 | AMD Turion 64 RM-70 processor (2.0-GHz, 1-MB L2 cache) |
| 487349-006 | AMD Turion 64 QL-60 processor (1.9-GHz, 1-MB L2 cache) |
| 487350-004 | AMD Sempron SI-40 processor (2.0-GHz, 512-KB L2 cache) |
| 488105-001 | Top cover (includes TouchPad and TouchPad cable) for use with standard computer models not equipped with a fingerprint reader |
| 488126-001 | 250-GB hard drive for use in swappable bay in standard computer models (includes metal bracket) |
| 488127-001 | 160-GB hard drive for use in swappable bay in standard computer models (includes metal bracket) |
| 488128-001 | Swappable bay hard drive hardware kit for use in standard computer models (contains screws, hard drive bracket, and connector) |
| 488130-001 | Bluetooth module cable for use in models with discrete graphics subsystems |
| 488209-001 | DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe hardware kit for use with standard computer models (includes front bezel) |
| 488210-001 | Blu-ray BD ROM and DVD±RW Drive hardware kit for use with standard computer models (includes front bezel) |
| 488238-001 | System board (includes thermal material) for use in models with AMD processors with QuickPlay |
| 489067-001 | Wireless antenna kit for use with Flush Glass display assemblies |
| 489068-001 | Wireless antenna kit for use with standard display assemblies |
| 490371-001 | Power cord for use in Canada, French Canada, Latin America, Thailand, and the United States |
| 490371-011 | Power cord for use in Australia and New Zealand |



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| Spare part number | Description |
|---|---|
| 490371-021 | Power cord for use in Belgium, Europe, Finland, France, Germany, Greece, the Netherlands, Norway, Portugal, Spain, and Sweden |
| 490371-031 | Power cord for use in The United Kingdom and Hong Kong |
| 490371-061 | Power cord for use in Italy |
| 490371-081 | Power cord for use in Denmark |
| 490371-111 | Power cord for use in Switzerland |
| 490371-201 | Power cord for use in Brazil |
| 490371-291 | Power cord for use in Japan |
| 490371-AA1 | Power cord for use in The People's Republic of China |
| 490371-AB1 | Power cord for use in Taiwan |
| 490371-AD1 | Power cord for use in South Korea |
| 490371-AR1 | Power cord for use in South Africa |
| 490371-BB1 | Power cord for use in Israel |
| 490371-D01 | Power cord for use in Argentina |
| 490371-D61 | Power cord for use in India |
| 491856-001 | Intel Core 2 Duo P7350 processor (2.0-GHz, 3-MB L2 cache) |
| 491876-001 | Swappable bay blank for use in standard computer models |
| 492260-001 | Heat sink (includes thermal material) for use in models with AMD processors and UMA graphics subsystems |
| 494960-001 | TouchPad (includes TouchPad bracket and TouchPad cable) |
| 494961-001 | TouchPad bracket (included with top cover and TouchPad spare parts kits) |
| 494967-001 | Display enclosure for use with standard computer models (includes logo light and cables) |
| 494977-001 | LED transfer board for standard display assemblies |
| 494978-001 | Display bezel for use only with standard computer models equipped with a camera/microphone module (includes openings for camera module and microphones) |
| 494981-001 | Modem module cable for use in computer models with Intel processors |
| 495629-001 | Hinge trim for use on standard computer models with Flush Glass display assemblies |
| 495631-001 | Microphone cable for Flush Glass display assemblies |
| 495638-001 | Intel Core 2 Duo T5800 processor (2.0-GHz, 2-MB L2 cache) |
| 495639-001 | Intel Core 2 Duo T5900 processor (2.2-GHz, 2-MB L2 cache) |
| 495640-001 | Intel Core 2 Duo P7450 processor (2.13-GHz, 3-MB L2 cache) |
| 495653-001 | DVD±RW and CD-RW Super Multi Double-Layer Combo optical drive for use in bronze-colored computer models with Intel processors (includes bezel and bracket) |
| 495654-001 | DVD±RW and CD-RW Super Multi Double-Layer Combo with LightScribe optical drive for use in bronze-colored Standard Edition computer models with Intel processors (includes bezel and bracket) |



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| Spare part number | Description |
|---|---|
| 495655-001 | Blu-ray BD ROM and DVD±RW optical drive for use in bronze-colored computer models with Intel processors (includes bezel and bracket) |
| 495656-001 | DVD±RW and CD-RW Super Multi Double-Layer Combo Drive hardware kit for use with bronze-colored computer models (includes front bezel) |
| 495657-001 | DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe hardware kit for use with bronze-colored computer models (includes front bezel) |
| 495658-001 | Blu-ray BD ROM and DVD±RW Drive hardware kit for use with bronze-colored computer models (includes front bezel) |
| 495661-001 | Top cover (includes TouchPad and TouchPad cable) for use with bronze-colored computer models equipped with a fingerprint reader (includes fingerprint reader and cable) |
| 495662-001 | Top cover (includes TouchPad and TouchPad cable) for use with bronze-colored computer models not equipped with a fingerprint reader |
| 495663-001 | Keyboard cover for use with bronze-colored computer models |
| 495664-001 | Base enclosure for use in bronze-colored computer models without a modem module or TV tuner |
| 495665-001 | Base enclosure for use in bronze-colored computer models with a TV tuner |
| 495666-001 | Base enclosure for use in bronze-colored computer models with a modem module |
| 495667-001 | Base enclosure for use in bronze-colored computer models with a modem module and TV tuner |
| 496726-001 | 320-GB hard drive for use in swappable bay in standard computer models (includes metal bracket) |
| 496727-001 | 250-GB hard drive for use in swappable bay in bronze-colored computer models (includes metal bracket) |
| 496728-001 | 320-GB hard drive for use in swappable bay in bronze-colored computer models (includes metal bracket) |
| 496729-001 | Rubber kit for use with standard computer models |
| 496730-001 | System board (includes thermal material) for use in models with Intel processors equipped with a 512-MB discrete graphics subsystem |
| 496731-001 | Screw kit for use with Flush Glass display assemblies |
| 496732-001 | 14.1–inch WXGA, Brightview Flush Glass display assembly with a camera/microphone module for use with standard computer models |
| 496733-001 | Display enclosure use with bronze-colored computer models with Flush Glass display assemblies (includes Logo light and cables) |
| 496734-001 | Display enclosure for use with bronze-colored computer models with a camera/microphone module (includes logo light and cable) |
| 496735-001 | Display bezel for use only with bronze-colored computer models not equipped with a camera/microphone module (includes openings for camera/microphone module and microphones) |
| 496736-001 | 14.1-inch WXGA, Brightview display assembly with a camera/microphone module for use with bronze-colored computer models |
| 496741-001 | 14.1-inch WXGA, Brightview LED display assembly with a camera/microphone module for use with bronze-colored computer models |
| 496742-001 | Display enclosure for use with bronze-colored computer models (includes Logo light and cables) |
| 496743-001 | Display bezel for use only with bronze-colored computer models equipped with a camera/microphone module (includes openings for camera module and microphones) |
| 497177-001 | AMD Turion 64, ZM-84 processor (2.3-GHz, 2-MB L2 cache) |



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| Spare part number | Description |
|---|---|
| 497178-001 | AMD Turion 64 RM-72 processor (2.1-GHz, 1-MB L2 cache) |
| 497179-001 | AMD Turion 64 QL-62 processor (2-GHz, 1-MB L2 cache) |
| 497180-001 | AMD Sempron SI-40 processor (2.0-GHz, 512-KB L2 cache) |
| 497182-001 | 14.1-inch, WXGA, BrightView display panel for use in computers with AMD processors (includes display panel cable) |
| 497183-001 | 14.1-inch, WXGA, BrightView LED display panel for use in computers with AMD processors (includes display panel cable) |
| 497184-001 | 500-GB hard drive for use in computer models with AMD processors |
| 497185-001 | 250-GB MultiBay hard drive for use in computer models with AMD processors |
| 497186-001 | 320-GB MultiBay hard drive for use in computer models with AMD processors |
| 497522-001 | DVD±RW and CD-RW Super Multi Double-Layer Combo optical drive for use in bronze-colored computer models with AMD processors (includes bezel and bracket) |
| 497523-001 | DVD±RW and CD-RW Super Multi Double-Layer Combo with LightScribe optical drive for use in bronze-colored computer models with AMD processors (includes bezel and bracket) |
| 497524-001 | Blu-ray BD ROM and DVD±RW optical drive for use in bronze-colored computer models with AMD processors (includes bezel and bracket) |
| 497773-001 | Intel Celeron T1600 processor (1.66-GHz) |
| 497774-001 | 400-GB hard drive for use in computer models with Intel processors |
| 497775-001 | 500-GB hard drive for use in computer models with Intel processors |
| 499993-001 | 400-GB hard drive for use in computer models with AMD processors |
| 502577-001 | 14.1-inch WXGA, Brightview Flush Glass display assembly with a camera/microphone module for use in blue-colored computer models |
| 502578-001 | Display enclosure for use in blue-colored computer models |
| 502579-001 | Top cover for use in blue-colored computer models |
| 502591-001 | Swappable bay blank for use in bronze-colored computer models |
| 502592-001 | Hinge trim for use on bronze-colored computer models with Flush Glass display assemblies |
| 502593-001 | Display trim for use with bronze-colored computer models with Flush Glass display assemblies |
| 502595-001 | Hinge trim for use on blue-colored computer models |
| 502596-001 | Display trim for use with blue-colored computer models |
| 502597-001 | Swappable bay hard drive hardware kit for use in bronze-colored computer models (contains screws, hard drive bracket, and connector) |
| 502838-001 | Intel Celeron 575 processor (2.2 GHz, 1-MB L2 cache) |
| 504582-001 | Notebook sleeve for use in blue-colored computer models |
| 504783-001 | Intel Pentium Dual-Core T3200 processor (2.0 GHz, 1-MB L2 cache) |
| 504784-001 | Intel Pentium Dual-Core T3400 processor (2.16 GHz, 1-MB L2 cache) |
| 506053-001 | AMD Athlon QL-64 processor (2.1 GHz, 1-MB L2 cache) |
| 507274-001 | 250-GB hard drive for use in blue-colored computer models |



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| Spare part number | Description |
|---|---|
| 507275-001 | 320-GB hard drive for use in blue-colored computer models |
| 507319-001 | Keyboard for use only in blue-colored computer models in the United States |
| 507953-001 | Intel Core 2 Duo T9550 processor (2.66-GHz, 6-MB L2 cache) |
| 507960-001 | Intel Core 2 Duo P8700 processor (2.53-GHz, 3-MB L2 cache) |
| 507965-001 | Intel Core 2 Duo T5800 processor (2.0 GHz, 2-MB L2 cache) |
| 507979-001 | Turion 64 RM-74 [processor (2.2 GHz, 1-MB L2 cache) |
| 508119-001 | Keyboard for use with bronze-colored computer models for use in The United States |
| 508119-031 | Keyboard for use with bronze-colored computer models for use in The United Kingdom |
| 508119-041 | Keyboard for use with bronze-colored computer models for use in Germany |
| 508119-051 | Keyboard for use with bronze-colored computer models for use in France |
| 508119-061 | Keyboard for use with bronze-colored computer models for use in Italy |
| 508119-071 | Keyboard for use with bronze-colored computer models for use in Spain |
| 508119-111 | Keyboard for use with bronze-colored computer models for use in Switzerland |
| 508119-121 | Keyboard for use with bronze-colored computer models for use in French Canada |
| 508119-131 | Keyboard for use with bronze-colored computer models for use in Portugal |
| 508119-141 | Keyboard for use with bronze-colored computer models for use in Turkey |
| 508119-151 | Keyboard for use with bronze-colored computer models for use in Greece |
| 508119-161 | Keyboard for use with bronze-colored computer models for use in Latin America |
| 508119-171 | Keyboard for use with bronze-colored computer models for use in Saudi Arabia |
| 508119-201 | Keyboard for use with bronze-colored computer models for use in Brazil |
| 508119-251 | Keyboard for use with bronze-colored computer models for use in Russia |
| 508119-281 | Keyboard for use with bronze-colored computer models for use in Thailand |
| 508119-291 | Keyboard for use with bronze-colored computer models for use in Japan |
| 508119-A41 | Keyboard for use with bronze-colored computer models for use in The Netherlands and Europe |
| 508119-AB1 | Keyboard for use with bronze-colored computer models for use in Taiwan |
| 508119-AD1 | Keyboard for use with bronze-colored computer models for use in South Korea |
| 508119-B31 | Keyboard for use with bronze-colored computer models for International use |
| 508119-BB1 | Keyboard for use with bronze-colored computer models for use in Israel |
| 508119-DH1 | Keyboard for use with bronze-colored computer models for use in Denmark, Finland, Norway, and Sweden |
| 508120-001 | Keyboard for use with blue-colored computer models for use in the United States |
| 508120-031 | Keyboard for use with blue-colored computer models for use in the United Kingdom |
| 508120-041 | Keyboard for use with blue-colored computer models for use in Germany |
| 508120-051 | Keyboard for use with blue-colored computer models for use in France |
| 508120-061 | Keyboard for use with blue-colored computer models for use in Italy |



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| Spare part number | Description |
|---|---|
| 508120-071 | Keyboard for use with blue-colored computer models for use in Spain |
| 508120-111 | Keyboard for use with blue-colored computer models for use in Switzerland |
| 508120-121 | Keyboard for use with blue-colored computer models for use in French Canada |
| 508120-131 | Keyboard for use with blue-colored computer models for use in Portugal |
| 508120-141 | Keyboard for use with blue-colored computer models for use in Turkey |
| 508120-151 | Keyboard for use with blue-colored computer models for use in Greece |
| 508120-161 | Keyboard for use with blue-colored computer models for use in Latin America |
| 508120-171 | Keyboard for use with blue-colored computer models for use in Saudi Arabia |
| 508120-201 | Keyboard for use with blue-colored computer models for use in Brazil |
| 508120-251 | Keyboard for use with blue-colored computer models for use in Russia |
| 508120-281 | Keyboard for use with blue-colored computer models for use in Thailand |
| 508120-291 | Keyboard for use with blue-colored computer models for use in Japan |
| 508120-A41 | Keyboard for use with blue-colored computer models for use in The Netherlands and Europe |
| 508120-AB1 | Keyboard for use with blue-colored computer models for use in Taiwan |
| 508120-AD1 | Keyboard for use with blue-colored computer models for use in South Korea |
| 508120-B31 | Keyboard for use with blue-colored computer models for International use |
| 508120-BB1 | Keyboard for use with blue-colored computer models for use in Israel |
| 508120-DH1 | Keyboard for use with blue-colored computer models for use in Denmark, Finland, Norway, and Sweden |
| 508123-001 | Blu-ray BD ROM and DVD±RW Drive with LightScribe |
| 508124-001 | Blu-ray ROM with LightScribe DVD±R/RW SuperMulti DL drive for use in bronze-colored computer models |
| 511858-001 | System board (includes thermal material) for use in models with AMD processors with MediaSmart |
| 512231-001 | Keyboard cover for use in standard computer models |
| 512232-001 | Keyboard cover for use in bronze-colored computer models |
| 513592-001 | Core 2 Duo T6400 (2.06 GHz, 3-MB L2 cache) |
| 513593-001 | Core 2 Duo T6600 (2.2 GHz, 3-MB L2 cache) |
| 513599-001 | Pentium Dual-Core T4200 processor, 2.0-MHz, 4-MB L2 cache; includes thermal material |



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# 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

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



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## 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 shockproof 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.”



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# 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 |



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### 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.



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### 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 |



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## Unknown user password

If the computer you are servicing has an unknown user password, follow these steps to clear the password.

**NOTE:** These steps also clear CMOS.

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.
4. Remove the battery (see Battery on page 55).
5. Remove the RTC battery (see RTC battery on page 69).
6. Wait approximately 5 minutes.
7. Replace the RTC battery and reassemble the computer.
8. Connect AC power to the computer. Do not reinsert any batteries at this time.
9. Turn on the computer.

All passwords and all CMOS settings have been cleared.



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# Component replacement procedures

This chapter provides removal and replacement procedures.

There are as many as 104 screws, in 12 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

Report the computer serial number to HP when requesting information or ordering spare parts. The serial number is located on the bottom of the computer.

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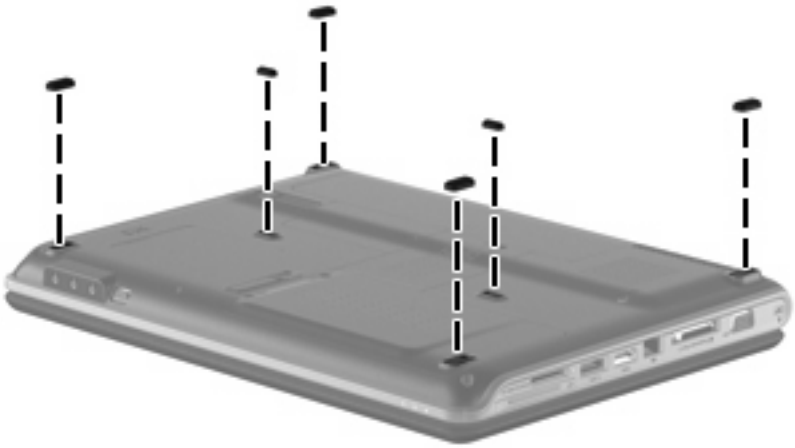
## Computer feet

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

| Description | Spare part number |
|---|---|
| **Rubber Kit** for use with all computer models (includes computer feet and screw covers) | 486834-001 |





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## Battery

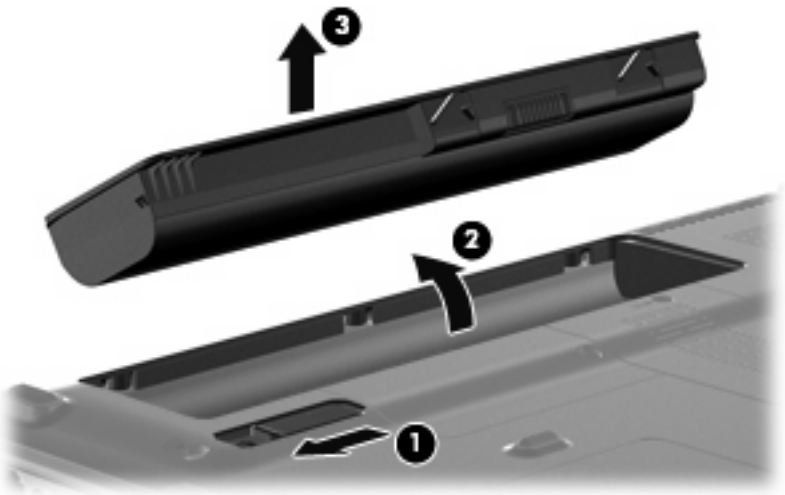
| Description | Spare part number |
|---|---|
| • 12-cell, 8.80-Ah | 484172-001 |
| • 6-cell, 2.55-Ah | 484171-001 |
| • 6-cell, 2.20-Ah | 482186-003 |

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 remove it from 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.



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## SIM

**NOTE:** This section applies only to computer models with WWAN capability.

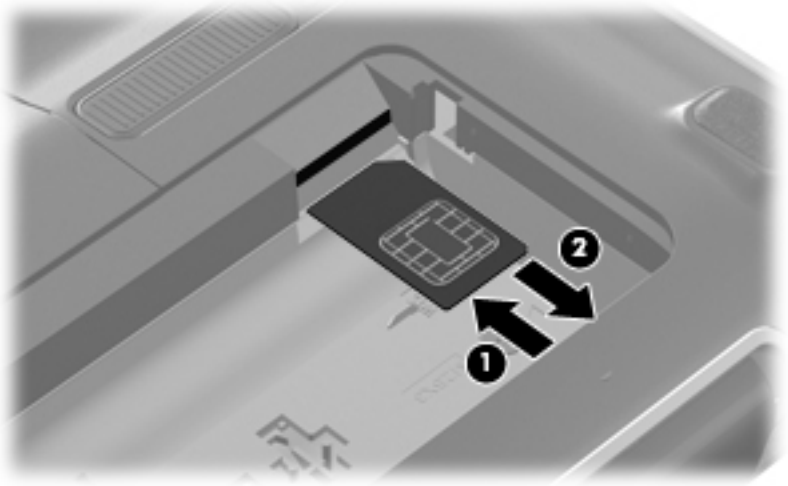
**NOTE:** If there is a SIM inserted in the SIM slot, it must be removed before disassembling the computer. Be sure that the SIM is reinserted in the SIM slot after reassembling the computer.

Before removing the SIM, 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 55).

Remove the SIM:

1. Press in on the SIM **(1)**. (The module is partially ejected from the SIM slot.)
2. Remove the SIM **(2)** from the SIM slot.




Reverse this procedure to insert the SIM.



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# Optical drive

| Description | Spare part number |
|---|---|
| For use in standard computer models with AMD processors: | |
| • Blu-ray BD ROM and DVD±RW Drive | 482181-002 |
| • DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe | 482177-002 |
| • DVD±RW and CD-RW Super Multi Double-Layer Combo Drive | 482175-002 |
| For use in bronze-colored computer models with AMD processors: | |
| • Blu-ray BD ROM and DVD±RW Drive | 497524-001 |
| • DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe | 497523-001 |
| • DVD±RW and CD-RW Super Multi Double-Layer Combo Drive | 497522-001 |
| For use in standard computer models with Intel processors: | |
| • Blu-ray BD ROM and DVD±RW Drive | 482181-001 |
| • DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe | 482177-001 |
| • DVD±RW and CD-RW Super Multi Double-Layer Combo Drive | 482175-001 |
| • Blu-ray BD ROM and DVD±RW Drive with LightScribe | 508123-001 |
| For use in bronze-colored computer models with Intel processors: | |
| • Blu-ray BD ROM and DVD±RW Drive | 495655-001 |
| • DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe | 495654-001 |
| • DVD±RW and CD-RW Super Multi Double-Layer Combo Drive | 495653-001 |
| • Blu-ray ROM with LightScribe DVD±R/RW SuperMulti DL Drive | 508124-001 |
| Swappable bay hardware kits for use with standard computer models (Includes pre-attached front bezel) | |
| • Blu-ray BD ROM and DVD±RW Drive hardware kit | 488210-001 |
| • DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe hardware kit | 488209-001 |
| • DVD±RW and CD-RW Super Multi Double-Layer Combo Drive hardware kit | 482183-001 |
| Swappable bay hardware kits for use with bronze-colored computer models. Includes pre-attached front bezel. | |
| • Blu-ray BD ROM and DVD±RW Drive hardware kit | 495658-001 |
| • DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe hardware kit | 495657-001 |
| • DVD±RW and CD-RW Super Multi Double-Layer Combo Drive hardware kit | 495656-001 |

**NOTE:** All optical drive spare part kits include an optical drive bezel.



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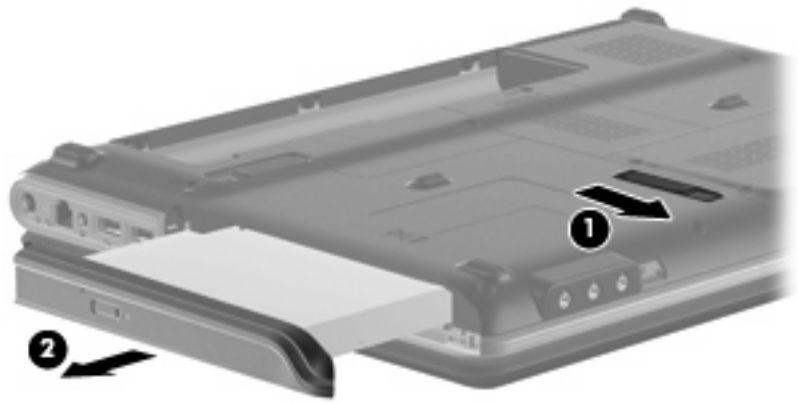
Before removing the optical drive, follow these steps:

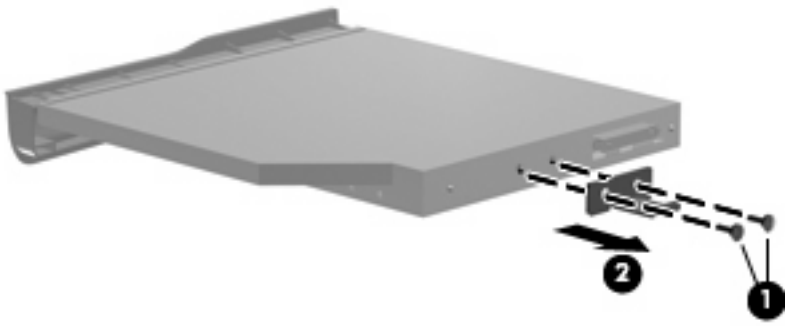
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 55).

Remove the optical drive:

1. Position the computer with right side toward you.
2. Slide the swappable bay release latch **(1)** away from the battery bay.
3. Remove the optical drive **(2)**.




4. If it is necessary to replace the optical drive bracket, position the optical drive with the optical drive bracket toward you.
5. Remove the two Phillips PM2.0×4.0 screws **(1)** that secure the optical drive bracket to the optical drive.
6. Remove the optical drive bracket **(2)**.




Reverse the above procedure to reassemble and install the optical drive.



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# Hard drive

| Description | Spare part number |
|---|---|
| **For use in computer models with AMD processors:** | |
| • 500-GB, 5400-rpm | 497184-001 |
| • 400-GB, 5400-rpm | 499993-001 |
| • 320-GB, 5400-rpm | 459611-004 |
| • 320-GB, 5400-rpm, MultiBay | 497186-001 |
| • 250-GB, 5400-rpm | 454605-002 |
| • 250-GB, 5400-rpm, MultiBay | 497185-001 |
| • 160-GB, 5400-rpm | 454925-002 |
| • 120-GB, 5400-rpm | 454924-002 |
| **For use in computer models with Intel processors:** | |
| • 500-GB, 5400-rpm | 497775-001 |
| • 400-GB, 5400-rpm | 497774-001 |
| • 320-GB. 5400-rpm | 459611-005 |
| • 250-GB, 5400-rpm | 454605-003 |
| • 160-GB, 5400-rpm | 454925-003 |
| • 120-GB, 5400-rpm | 454924-003 |
| **For use in swappable bay in standard computer models** (includes metal bracket) | |
| • 320-GB, 5400-rpm | 496726-001 |
| • 250-GB, 5400-rpm | 488126-001 |
| • 160-GB, 5400-rpm | 488127-001 |
| **For use in swappable bay in bronze-colored computer models** (includes metal bracket) | |
| • 320-GB, 5400-rpm | 496728-001 |
| • 250-GB, 5400-rpm | 496727-001 |
| **For use in blue-colored computer models** (includes metal bracket) | |
| • 320-GB, 5400-rpm | 507275-001 |
| • 250-GB, 5400-rpm | 507274-001 |
| **Hard drive hardware kits** (contains screws, hard drive bracket, and connector; not illustrated) | |
| • Internal hard drive hardware kit | 482158-001 |
| • Swappable bay hard drive hardware kit for use in standard computer models | 488128-001 |
| • Swappable bay hard drive hardware kit for use in bronze-colored computer models | 502597-001 |
| • Swappable bay blank for use in standard computer models | 491876-001 |
| • Swappable bay blank for use in bronze-colored computer models | 502591-001 |



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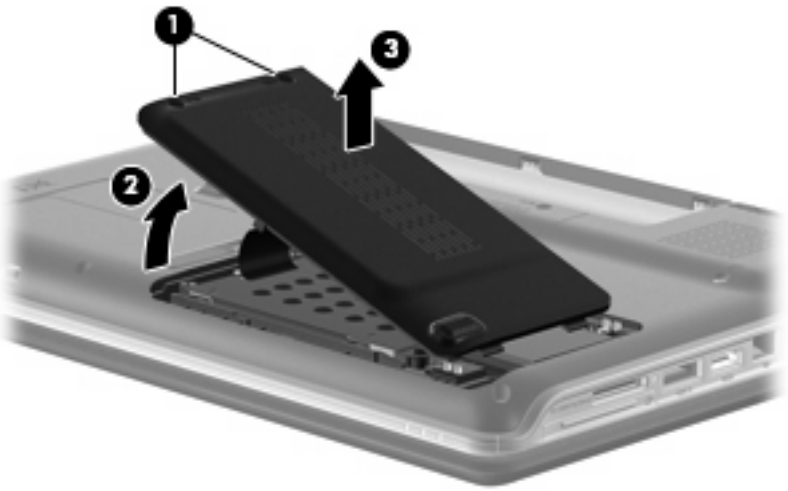
**NOTE:** All hard drive spare part kits include a hard drive bracket.

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 55).

Remove the hard drive:

1. Position the computer with the front toward you.
2. Loosen the two Phillips PM2.5×6.0 captive screws **(1)** that secure the hard drive bay cover to the computer.
3. Lift the left side of the hard drive bay cover **(2)**, swing it to right, and remove the cover **(3)**. The hard drive bay cover is included in the Plastics Kit, spare part number 486833-001.




4. Remove the three black Phillips PM2.0×4.0 screws **(1)** that secure the hard drive to the computer.
5. Use the Mylar tab **(2)** to slide the hard drive away from the hard drive connector **(3)**.



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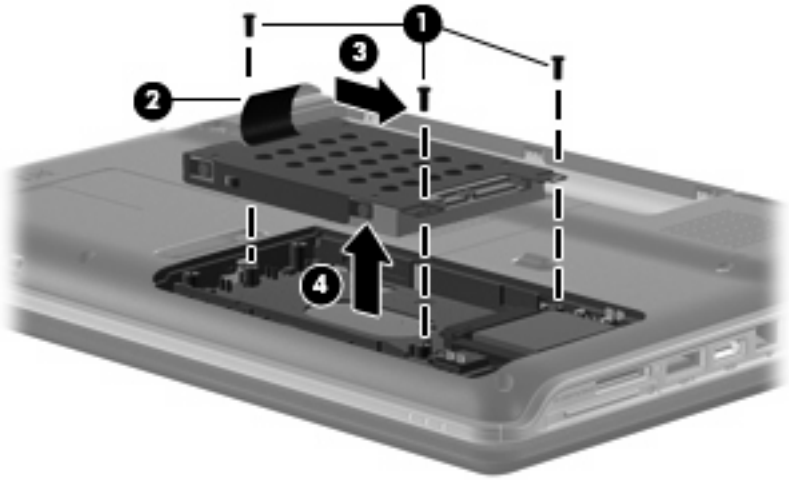
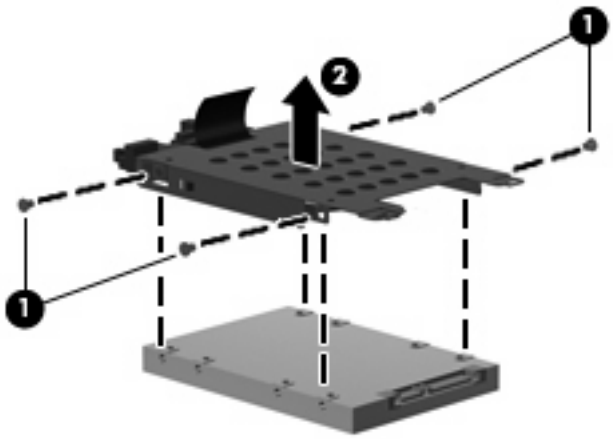
6. Remove the hard drive from the hard drive bay **(4)**.




7. If it is necessary to replace the hard drive bracket, remove the four Phillips PM3.0×4.0 screws **(1)** that secure the hard drive bracket to the hard drive.

8. Lift the bracket **(2)** straight up to remove it from the hard drive.




Reverse this procedure to reassemble and install the hard drive.



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# WLAN module

| Description | Spare part number |
|---|---|
| **WLAN modules** | |
| 802.11a/b/g/n WLAN modules: | |
| • For use in Antigua & Barbuda, Argentina, Aruba, the Bahamas, Barbados, Bermuda, Brunei, Canada, the Cayman Islands, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Haiti, Honduras, Hong Kong, India, Indonesia, Malaysia, Mexico, Panama, Paraguay, Peru, Saudi Arabia, Taiwan, Uruguay, the United States, Venezuela, and Vietnam | 480985-001 |
| • For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia & Herzegovina Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe | 487330-002 |
| • For use in the United States and Canada | 487330-001 |
| 802.11a/b/g WLAN module for use in the United States and Canada | 482957-001 |
| 802.11b/g WLAN modules | |



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| Description | Spare part number |
|---|---|
| • For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia & Herzegovina Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe | 459263-002 |
| • For use in the United States and Canada | 459263-001 |
| 802.11n WLAN modules: | |
| • For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia & Herzegovina Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe | 453730-002 |
| • For use in Japan | 453730-291 |
| • For use in the United States and Canada | 453730-001 |



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△ **CAUTION:** The WWAN module and the WLAN module are not interchangeable.

**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.

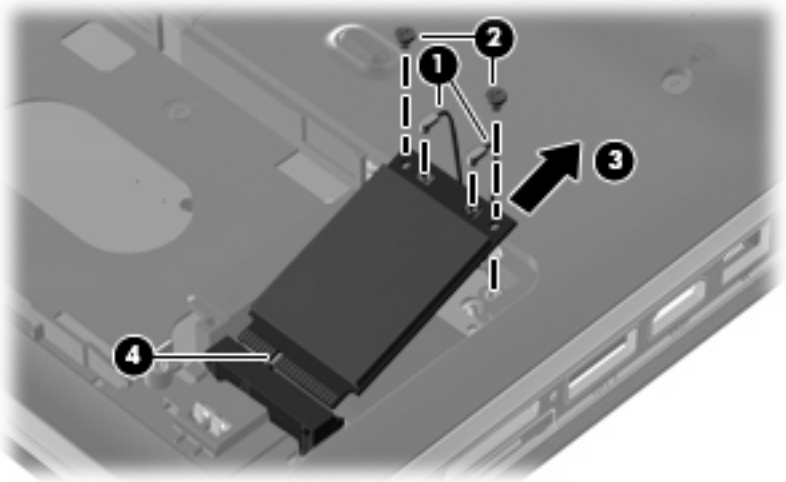
Before removing the WLAN module, follow these steps:

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 55).
5. Remove the hard drive bay cover (see Hard drive on page 59)

Remove the WLAN module:

1. Disconnect the wireless antenna wires **(1)** from the from the wireless module.
2. Remove the 2 Phillips PM2.0×4.0 screws **(2)** securing the WLAN module to the computer.
3. Remove the WLAN module **(3)** by pulling it away from the slot at an angle. (The edge of the module opposite the slot rises away from the computer.)

**NOTE:** WLAN modules are designed with a notch **(4)** to prevent incorrect insertion into the WLAN module slot.




Reverse this procedure to install a WLAN module.



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# WWAN module

| Description | Spare part number |
|---|---|
| **WWAN modules** | |
| HP EVDO-A WWAN module for use in the United States | 451131-002 |
| HP un2400 Mobile Broadband Module | 483377-001 |
| HP UMTS/HSDPA/EDGE WWAN module, including GPRS | 459350-001 |

△ **CAUTION:** The WWAN module and the WLAN module are not interchangeable.

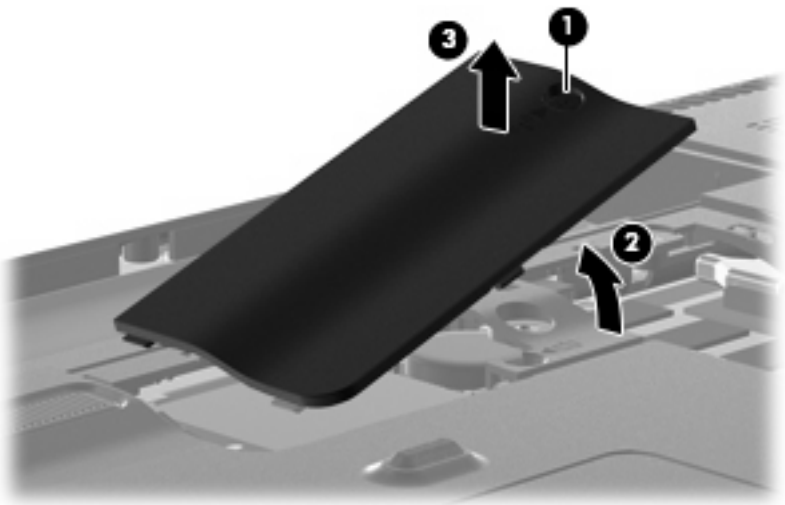
**CAUTION:** To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module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

Before removing the WWAN 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 55).

Remove the WWAN module:

1. Loosen the Phillips PM2.5×6.0 captive screw **(1)** that secures the WWAN module cover to the computer. (The edge of the module opposite the slot rises away from the computer.)
2. Lift the inside edge of the cover and slide out to disengage the tabs **(2)**.
3. Remove the cover **(3)**.




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



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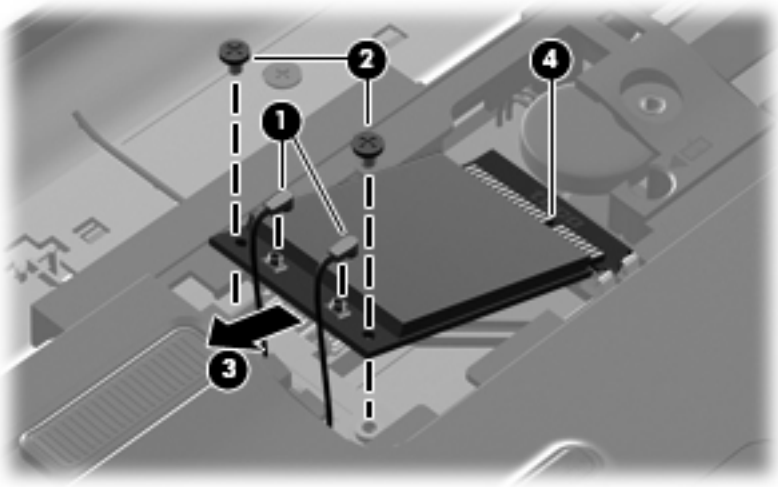
**NOTE:** The red WWAN antenna cable is connected to the WWAN module “Main” terminal. The blue WWAN antenna cable is connected to the WWAN module “Aux” terminal.

5. Remove the two Phillips PM2.0×4.0 screws that secure the module to the computer **(2)**.
6. Remove the WWAN module **(3)** by pulling the module away from the slot at an angle.

**NOTE:** WWAN modules are designed with a notch **(4)** to prevent incorrect insertion.




Reverse this procedure to install the WWAN module.



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# Memory module

| Description | Spare part number |
|---|---|
| **Memory modules** (800-MHz, PC2-6400, 1-DIMM) | |
| For use in computer models with AMD processors: | |
| • 2048-GB | 482169-002 |
| • 1024-MB | 482168-002 |
| • 512-MB | 482167-002 |
| For use in computer models with Intel processors: | |
| • 2048-MB | 482169-001 |
| • 1024-MB | 482168-001 |
| • 512-MB | 482167-001 |

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 55).

Remove the memory module:

1. Position the computer with the front toward you.
2. Loosen the Phillips PM2.5×6.0 captive screw **(1)** that secures the memory module compartment cover to the computer.



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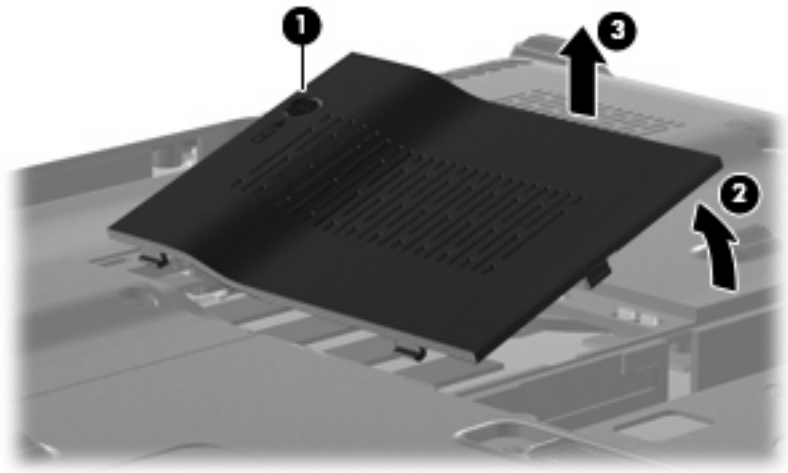
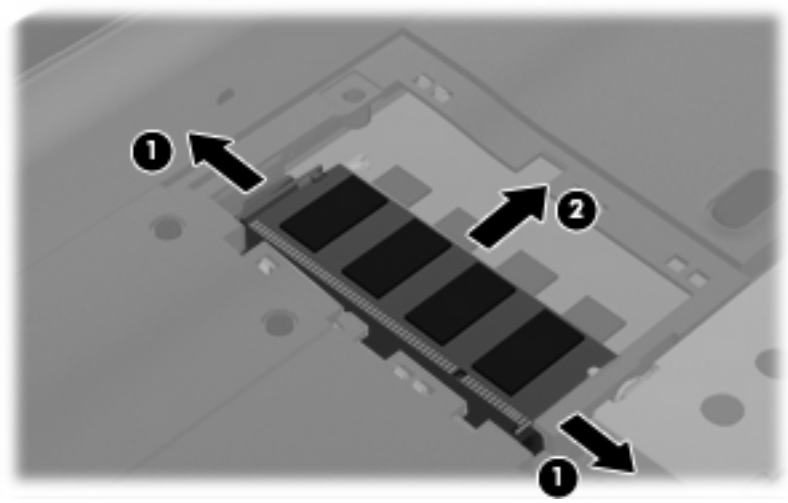
3. Lift the right side of the cover **(2)**, swing it to the left, and remove the cover **(3)**. The memory module compartment cover is included in the Plastics Kit, spare part number 486833-001.




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 to prevent incorrect insertion into the memory module slot.




Reverse this procedure to install a memory module.



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# RTC battery

| Description | Spare part number |
|---|---|
| RTC battery | 486835-001 |

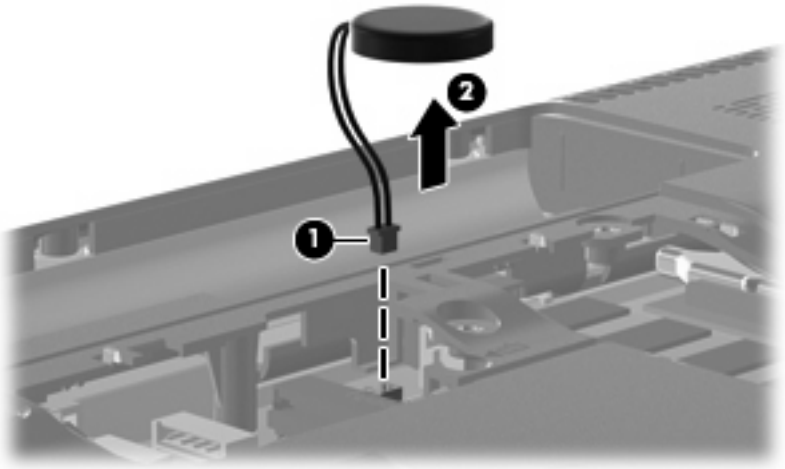
**NOTE:** Removing the RTC battery and leaving it uninstalled for 5 or more minutes causes all passwords and CMOS settings to be cleared.

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 55).
5. Remove the hard drive bay cover (see Hard drive on page 59).

Remove the RTC battery:

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




Reverse this procedure to install the RTC battery.



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## Camera/microphone module for standard display assembly

| Description | Spare part number |
|---|---|
| Camera/microphone module (includes camera/microphone module bracket and 2-sided tape) | 486876-001 |

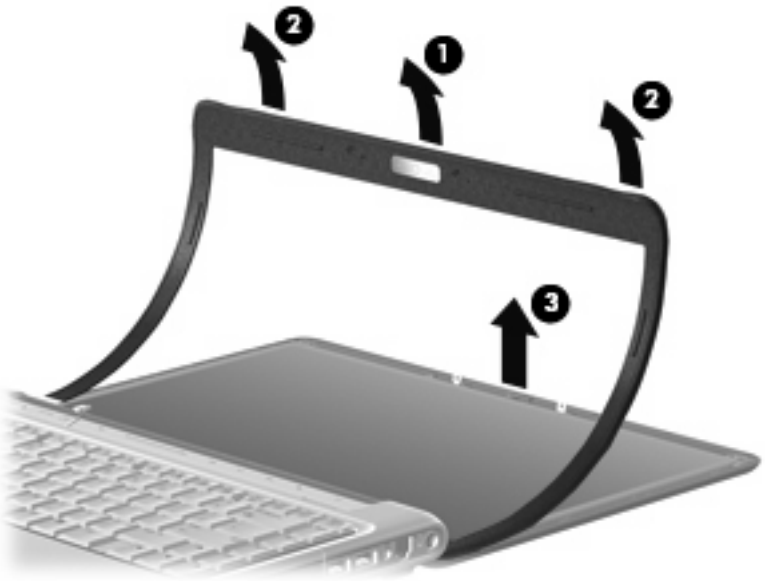
If it has been determined that the camera/microphone module is the component that must be replaced to complete the computer repair, the display assembly does not have to be removed. Follow the procedures in this section to replace the camera/microphone module. For information on replacing the display assembly and display assembly internal components replacement part numbers, see Display assembly on page 80.

Before removing the camera/microphone 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 55).

Remove the camera/microphone module:

1. Turn the computer display-side up, with the front toward you, and open the display as far as it will open.
2. Flex the top edge **(1)**, and the inside edges of the left and right sides **(2)** of the display bezel until the bezel disengages from the display enclosure.
3. Release the display bezel top edge **(3)**.



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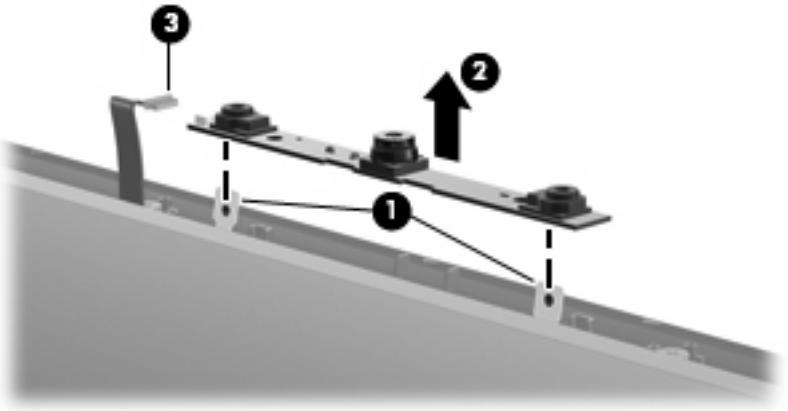
4. Release the camera/microphone module assembly from the display enclosure brackets **(1)**, and lift it out as far as the camera/microphone module cable allows **(2)**.

5. Disconnect the camera/microphone module cable **(3)** from the camera/microphone module.




Reverse this procedure to install the camera/microphone module.



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# Keyboard

| Description | Spare part number |
|---|---|
| **Keyboards** | |
| For use with standard computer models | 486901-xxx |
| For use in blue-colored computer models only in the United States | 507319-001 |
| For use only with bronze-colored computer models | 508119-xxx |
| For use in blue-colored computer models | 508120-xxx |

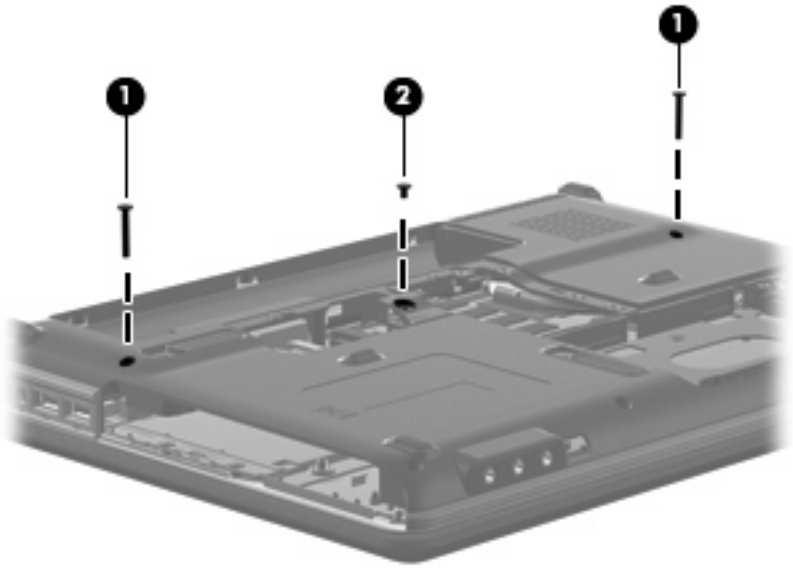
**NOTE:** For a comprehensive list of keyboard spare part numbers, see the Sequential part number listing on page 36.

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 55).

Remove the keyboard:

1. Turn the computer upside down, with the front toward you.
2. Remove the two Phillips PM2.5×17.0 screws **(1)**, and the Phillips PM2.5×9.0 screw **(2)** that secure the keyboard to the computer.




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



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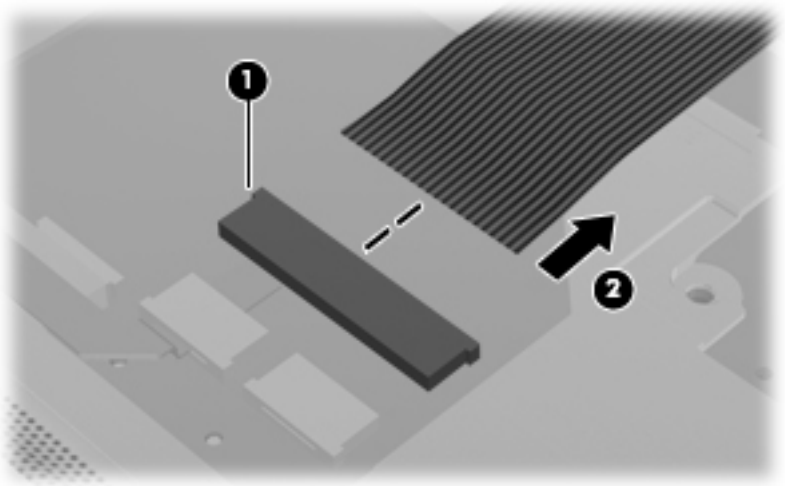
5. Lift the rear edge of the keyboard **(1)** until it rests at an angle.

6. Release the keyboard **(2)** by sliding it back to disengage the tabs on the front edge of the keyboard from the top cover.

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




8. Remove the keyboard.

Reverse this procedure to install the keyboard.



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# Keyboard cover

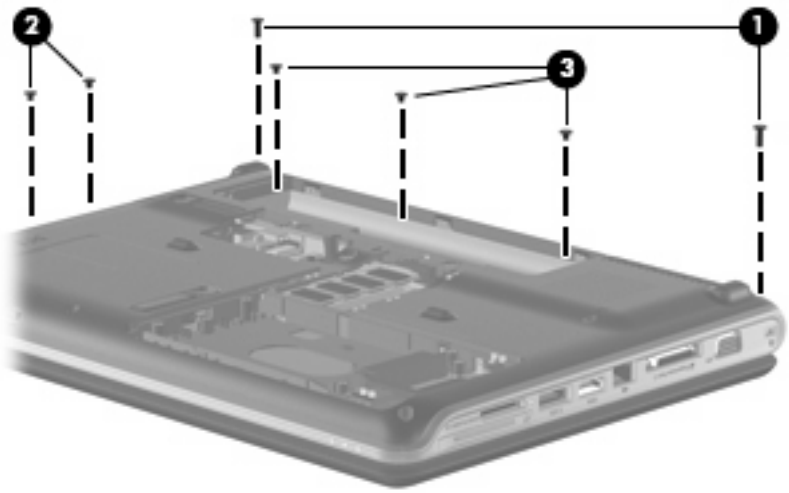
| Description | Spare part number |
|---|---|
| **Keyboard covers** | |
| • For use with standard computer models | 486852-001 |
| • For use with bronze-colored computer models | 495663-001 |
| • For use with standard computer models | 512231-001 |
| • For use with bronze-colored computer models | 512232-001 |

Before removing the keyboard 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 battery (see Battery on page 55).
5. Remove the keyboard (see Keyboard on page 72).

Remove the keyboard cover:

1. Remove the two Phillips PM2.5×7.0 screws **(1)**, the two Phillips PM2.0×4.0 screws **(2)**, and the three Phillips PM2.5×3.0 screws **(3)** that secure the keyboard cover to the computer.




2. Turn the computer display-side up, with the front toward you.
3. Open the computer as far as possible.
4. Remove the Phillips PM2.5×9.0 screw **(1)**, and the Phillips PM2.5×4.0 screw **(2)** securing the keyboard cover to the top cover.



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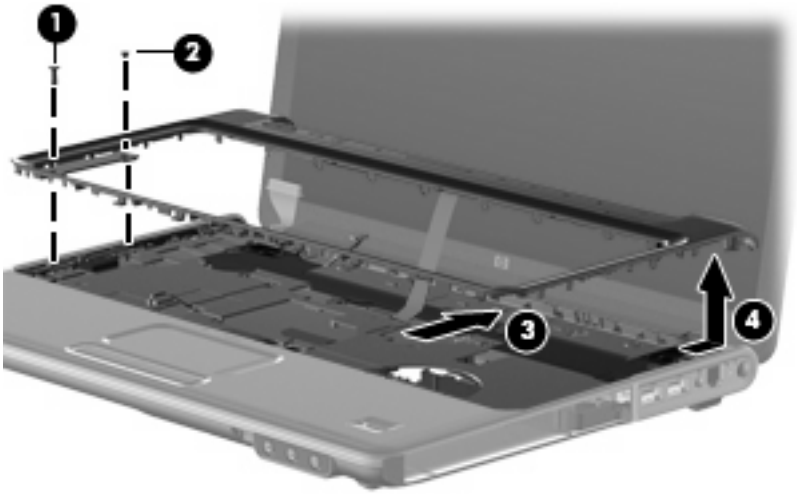
5. Release the keyboard cover **(3)** by sliding it toward the display assembly until it disengages from the computer.

6. Remove the keyboard cover **(4)**.




Reverse this procedure to install the keyboard cover.



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## Bluetooth module

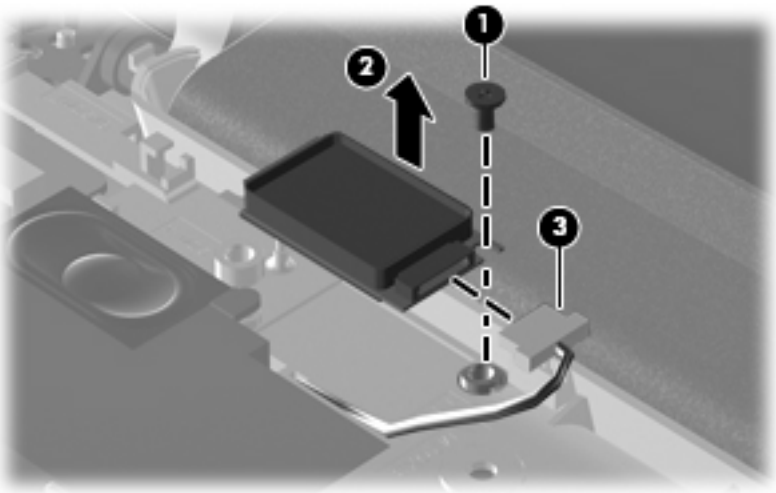
| Description | Spare part number |
|---|---|
| Bluetooth module | 483113-001 |

Before removing the Bluetooth 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 55).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 59)
   b. WLAN cover (see WLAN module on page 62)
   c. Optical drive (see Optical drive on page 57)
   d. Keyboard (see Keyboard on page 72)
   e. Keyboard cover (see Keyboard cover on page 74)

Remove the Bluetooth module:

1. Remove the Phillips PM2.0×4.0 screw **(1)** that secures the Bluetooth module to the system board.
2. Lift the Bluetooth module from the system board **(2)**.
3. Disconnect the Bluetooth module cable from the Bluetooth module **(3)**.




Reverse the above procedure to install the Bluetooth module.



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## Speaker assembly

| Description | Spare part number |
|---|---|
| Speaker assembly | 486837-001 |

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 battery (see Battery on page 55).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 59)
   b. Wireless module compartment cover (see WLAN module on page 62)
   c. Optical drive (see Optical drive on page 57)
   d. Keyboard (see Keyboard on page 72)
   e. Keyboard cover (see Keyboard cover on page 74)
   f. Display assembly (see Display assembly on page 80)
   g. Top cover (see Top cover on page 92)

Remove the speaker assembly:

1. Disconnect the num lock cable **(1)** from the system board.
2. Remove the two Phillips PM2.5×4.0 screws **(2)** that secure the speaker assembly to the computer.
3. Remove the Phillips PM2.5×9.0 screw **(3)** that secures the speaker assembly to the computer.
4. Disconnect the speaker cable **(4)** from the system board.



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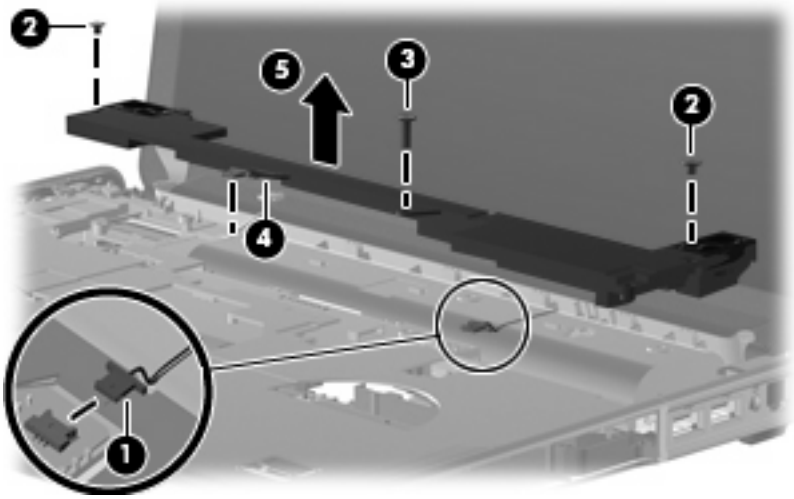
5. Lift the speaker assembly **(5)** straight up to remove it from the computer.




Reverse this procedure to install the speaker assembly.



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## SIM connector board

| Description | Spare part number |
|---|---|
| SIM module for models with WWAN | 486845-001 |

**NOTE:** This section applies only to computer models with WWAN capability.

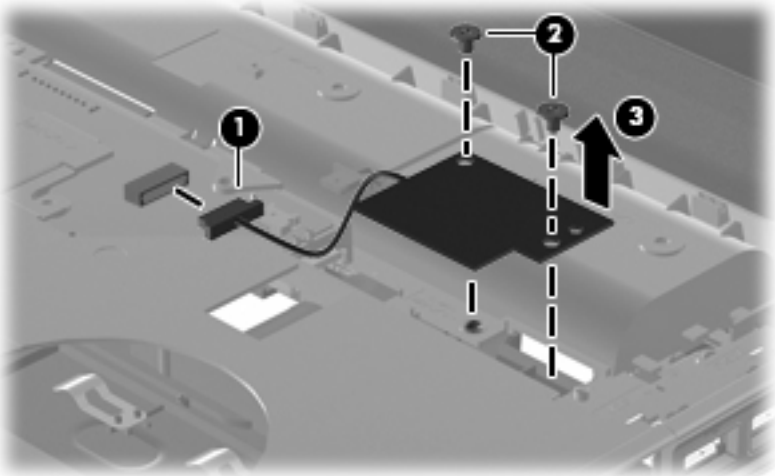
**NOTE:** If there is a SIM inserted in the SIM slot, it must be removed before disassembling the computer. Be sure that the SIM is reinserted in the SIM slot after reassembling the computer.

Before removing the SIM connector board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 55).
5. Remove the SIM (see SIM on page 56)
6. Remove the keyboard (see Keyboard on page 72)
7. Remove the keyboard cover (see Keyboard cover on page 74)
8. Remove the speaker. (see Speaker assembly on page 77)

Remove the SIM connector board:

1. Disconnect the SIM connector board cable **(1)** from the system board.
2. Remove the 2 Phillips PM2.5×4.0 screws **(2)** that secure the SIM connector board to the system board.
3. Remove the SIM connector board **(3)**.



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Reverse this procedure to install the SIM connector board.

## Display assembly

| Description | Spare part number |
|---|---|
| **Display assemblies** | |
| • 14.1-inch WXGA, Brightview display assembly with a camera/microphone module for use with standard computer models | 486882-001 |
| • 14.1-inch WXGA, Brightview display assembly with a camera/microphone module for use with bronze-colored computer models | 496736-001 |
| • 14.1-inch WXGA, Brightview LED display assembly with a camera/microphone module for use with standard computer models | 486883-001 |
| • 14.1-inch WXGA, Brightview LED display assembly with a camera/microphone module for use with bronze-colored computer models | 496741-001 |
| • 14.1-inch WXGA, Brightview Flush Glass display assembly with a camera/microphone module for use with standard computer models | 486872-001 |
| • 14.1-inch WXGA, Brightview Flush Glass display assembly with a camera/microphone module for use with bronze-colored computer models | 496732-001 |
| • 14.1-inch WXGA, Brightview Flush Glass display assembly with a camera/microphone module for use in blue-colored computer models | 502577-001 |
| **Display bezels** | |
| • For use only with standard computer models equipped with a camera/microphone module (includes openings for camera module and microphones) | 494978-001 |
| • For use only with standard computer models not equipped with a camera/microphone module (includes openings for microphones) | 486893-001 |
| • For use only with bronze-colored computer models equipped with a camera/microphone module (includes openings for camera module and microphones) | 496743-001 |
| • For use only with bronze-colored computer models not equipped with a camera/microphone module (includes openings for camera/microphone module and microphones) | 496735-001 |
| **Display Hinge Kits** | |
| • For use with standard display assemblies | 486894-001 |
| • For use with Flush Glass display assemblies | 486880-001 |
| **Display panels** (includes display panel cable) | |
| • 14.1-inch, WXGA, BrightView display panel for use in computers with Intel processors (includes display panel cable) | 483261-001 |
| • 14.1-inch, WXGA, BrightView LED display panel for use in computers with Intel processors (includes display panel cable) | 483262-001 |
| • 14.1-inch, WXGA, BrightView display panel for use in computers with AMD processors (includes display panel cable) | 497182-001 |
| • 14.1-inch, WXGA, BrightView LED display panel for use in computers with AMD processors (includes display panel cable) | 497183-001 |
| **Display inverter** (includes Mylar shield) | 486736-001 |
| **Wireless Antenna Kits** | |



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| Description | Spare part number |
|---|---|
| • For use with standard display assemblies | 489068-001 |
| • For use with Flush Glass display assemblies | 489067-001 |
| **Display enclosures** (includes logo light and cables) | |
| • For use with standard computer models with a camera/microphone module | 486890-001 |
| • For use with bronze-colored computer models with a camera/microphone module | 496734-001 |
| • For use with standard computer models | 494967-001 |
| • For use with bronze-colored computer models | 496742-001 |
| • For use with standard computer models with Flush Glass display assemblies | 486875-001 |
| • For use with bronze-colored computer models with Flush Glass display assemblies | 496733-001 |
| • For use in blue-colored computer models | 502578-001 |
| **Rubber display bezel kits** (contains all rubber pieces for the display bezel) | |
| • For use with standard computer models | 496729-001 |
| • For use with bronze-colored computer models | 486874-001 |
| **Miscellaneous display parts** | |
| • Hinge trim for use on standard computer models with Flush Glass display assemblies | 495629-001 |
| • Hinge trim for use on bronze-colored computer models with Flush Glass display assemblies | 502592-001 |
| • Hinge trim for use on blue-colored computer models | 502595-001 |
| • Display trim for use with standard computer models with Flush Glass display assemblies | 486877-001 |
| • Display trim for use with bronze-colored computer models with Flush Glass display assemblies | 502593-001 |
| • Display trim for use with blue-colored computer models | 502596-001 |
| • LCD cable for Flush Glass display assemblies | 486878-001 |
| • Microphone cable for Flush Glass display assemblies | 495631-001 |
| • LED transfer board for standard display assemblies | 494977-001 |

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 55).



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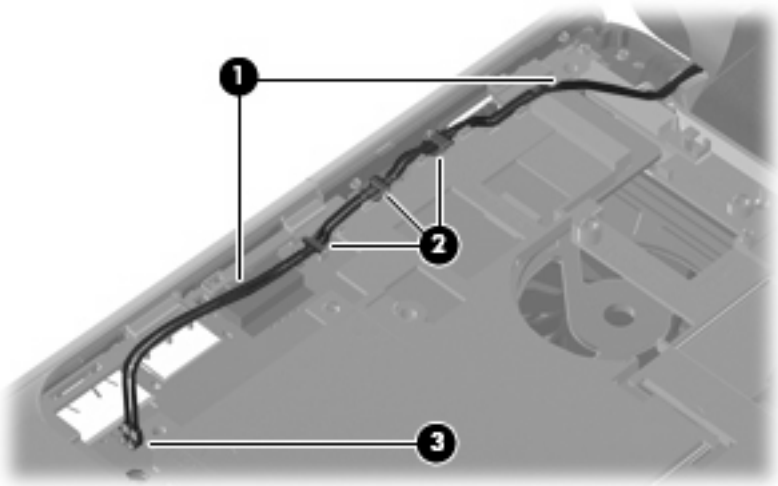
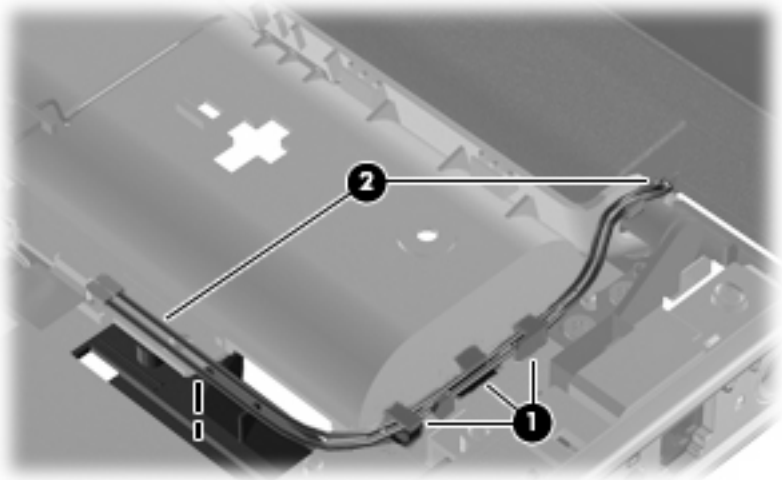
5. Disconnect the wireless antenna cables from the WLAN module (see WLAN module on page 62).
6. Remove the following components:
   a. Keyboard (see Keyboard on page 72)
   b. Keyboard cover (see Keyboard cover on page 74)
   c. Speaker (see Speaker assembly on page 77)

Remove the display assembly:

1. Locate the wireless antenna cable **(1)**, and remove from path **(2)**.
2. Disconnect the wireless antenna cable from the system board **(3)**.




3. Remove the wireless antenna cable from the path **(1)** and disconnect it from the system board **(2)**.




△ **CAUTION:** The display assembly will be unsupported when the following screws are removed. To prevent damage to the display assembly, support it before removing the screws.

4. Remove the four Phillips PM2.5×7.0 screws **(1)** that secure the display assembly to the computer.



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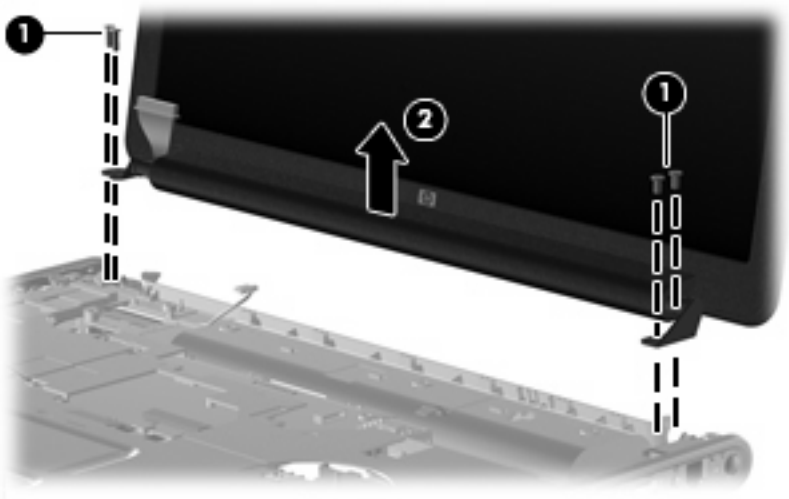
5. Remove the display assembly **(2)**.




If it is necessary to replace other display assembly components, continue to the section that corresponds to the appropriate display assembly



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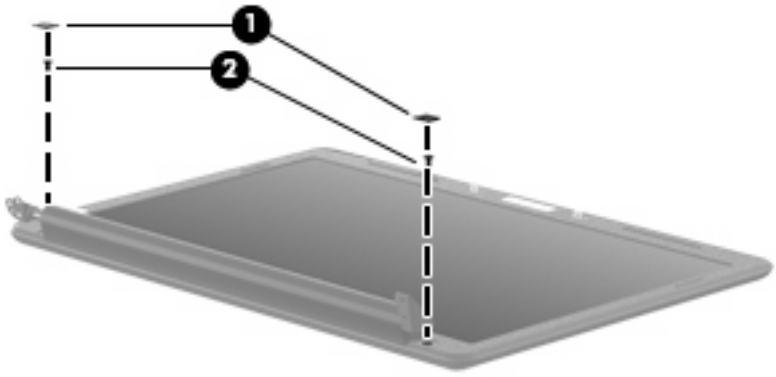
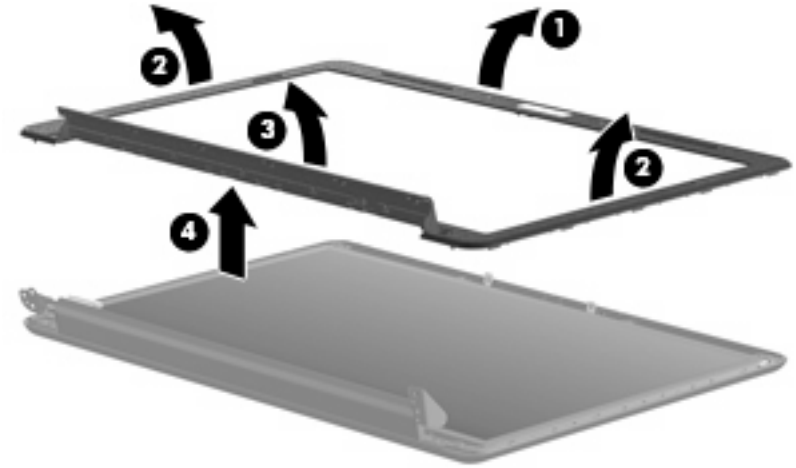
## Standard display assembly

1. If it is necessary to replace the standard display bezel or any of the standard display assembly internal components, remove the following screw covers **(1)** and screws **(2)**.



2. Flex the inside edges of the top **(1)** and sides **(2)** of the display bezel until the bezel disengages from the display enclosure.
3. Swing the bezel forward **(3)**, and remove the display bezel **(4)**.



**NOTE:** See Camera/microphone module for standard display assembly on page 70 for camera/microphone module replacement instructions.

4. If it is necessary to replace the standard display inverter, release the display inverter **(1)** from the display enclosure as far as the display panel cable and the backlight cable allow.



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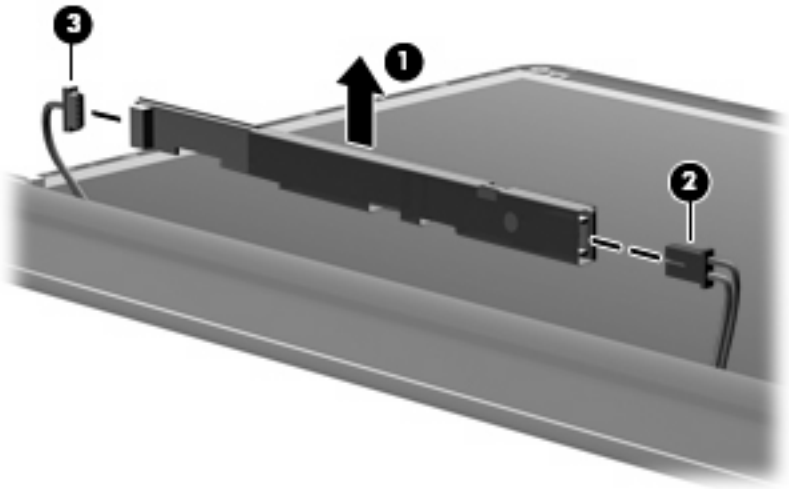
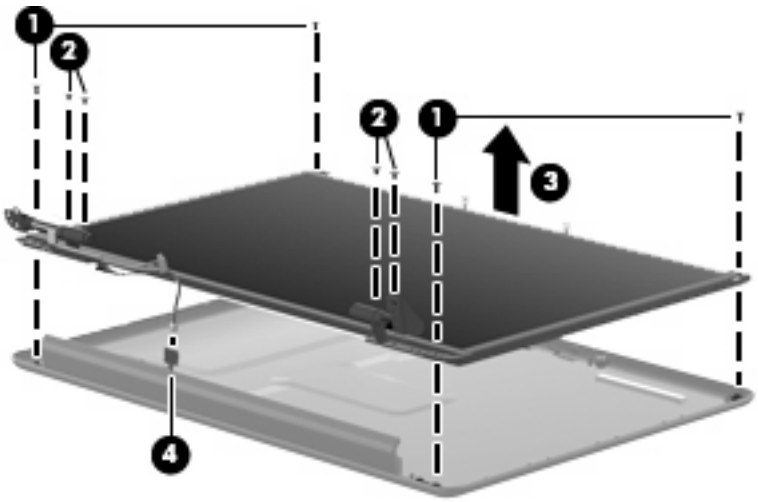
5. Disconnect the display panel cable **(2)** and the backlight cable **(3)** from the display inverter.




6. Remove the display inverter.
7. If it is necessary to replace the standard display panel, remove the four Phillips PM2.5×6.0 screws **(1)**, and the four Phillips PM2.5×4.0 screws **(2)** that secure the display panel to the display enclosure.
8. Lift the display panel out of the display enclosure **(3)**, and disconnect the display LED cable **(4)**.




9. If it is necessary to replace the standard display panel cable, release the foil shield **(1)** covering the cable.
10. Remove the tape **(2)** securing the cable to the display panel.
11. Disconnect the display panel cable **(3)** from the display panel.



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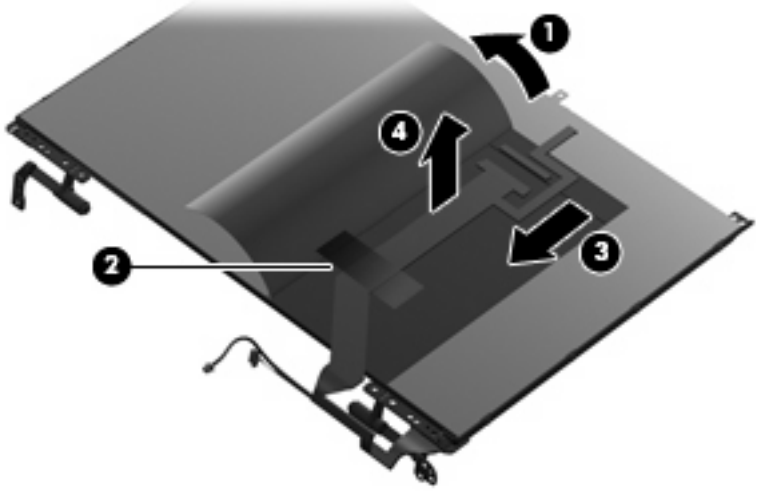
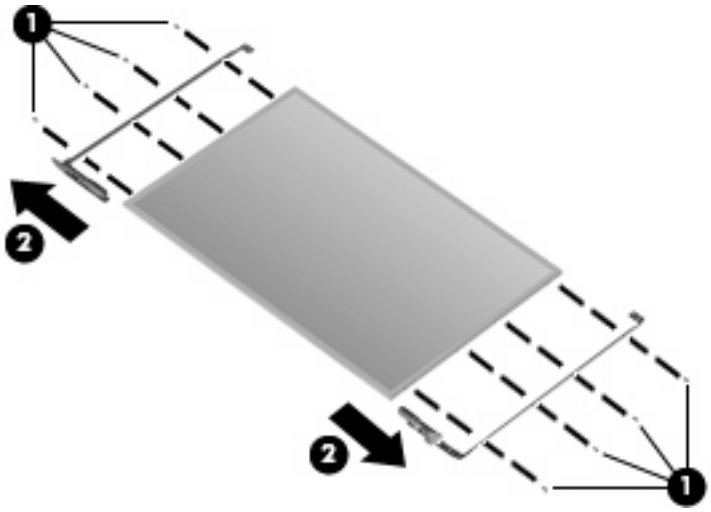
12. Remove the display panel cable **(4)**.




13. If it is necessary to replace the standard display hinges, remove the eight Phillips PM2.0×4.0 screws **(1)** that secure the hinges to the display panel.
14. Remove the display hinges **(2)**.




15. If it is necessary to replace the standard display wireless antenna transceivers and cables, remove the two Phillips PM2.5×4.0 screws **(1)** that secure each transceiver to the display enclosure.
16. Remove the wireless antenna cables from the clips **(2)** built into the display enclosure.
17. Detach the wireless antenna transceivers **(3)** from the display enclosure.



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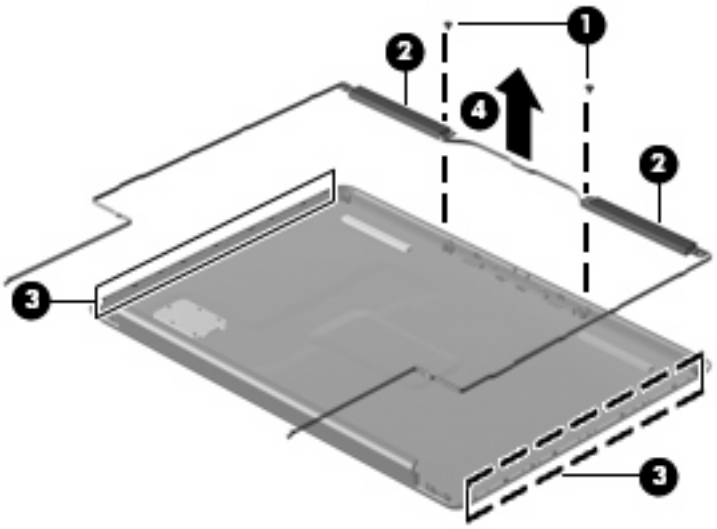
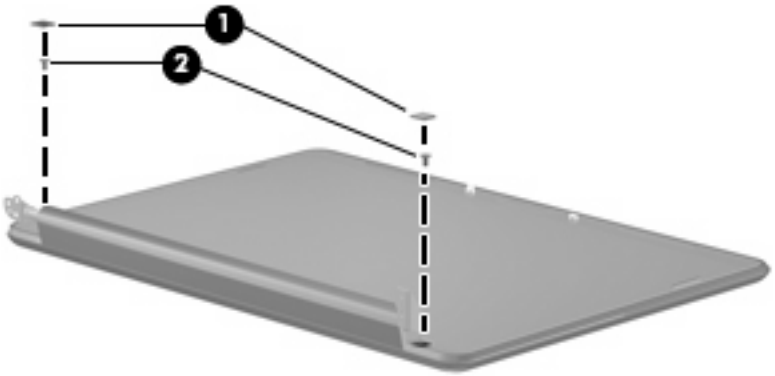
18. Remove the wireless antenna transceivers and cables **(4)** from the display enclosure.




Reverse this procedure to reassemble and install the standard display assembly.

## Flush Glass display assembly

1. If it is necessary to replace the Flush Glass display enclosure or any of the replaceable Flush Glass display assembly components, remove the following screw covers **(1)** and screws **(2)**:




2. Turn the display assembly over.
3. Slide the display enclosure toward the bottom edge of the assembly **(1)**, and lift up to detach **(2)**.



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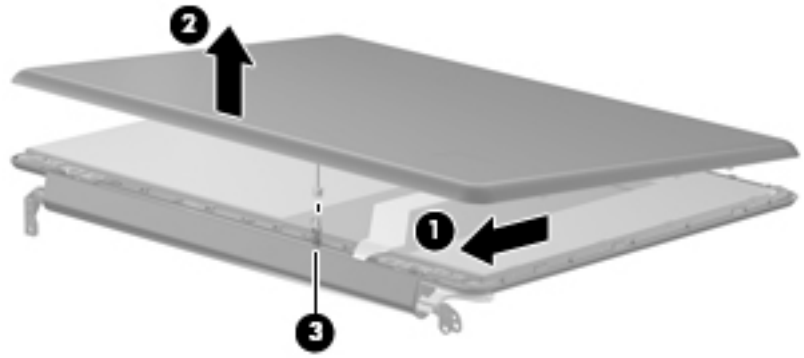
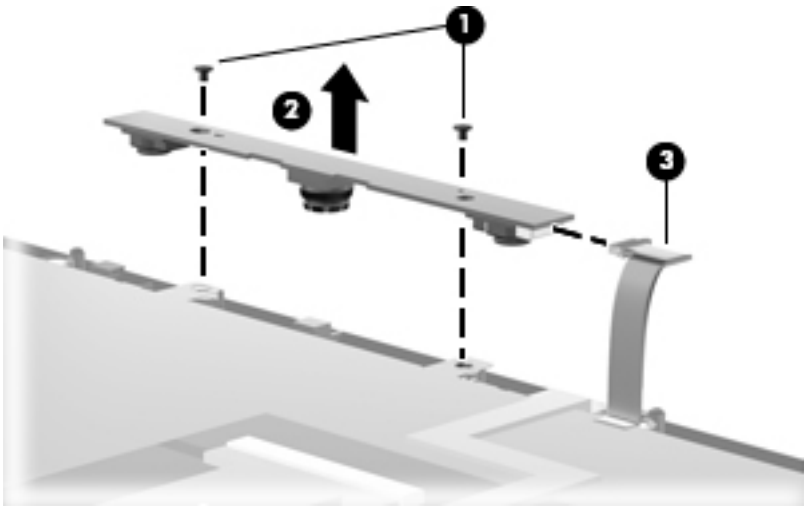
4. Disconnect the LED board from the enclosure **(3)** to remove the enclosure.




5. If it is necessary to replace the camera/microphone assembly, remove the two Phillips PM2.5×4.0 screws **(1)** that secure the camera/microphone module.
6. Lift the module out as far as the camera/microphone module cable allows **(2)**.
7. Disconnect the camera/microphone module cable **(3)** from the camera/microphone module.




8. If it is necessary to replace the Flush Glass display panel cable, turn the display assembly over.
9. Release the foil shield covering the display panel cable **(1)**.
10. Remove the tape **(2)** securing the cable to the display panel.
11. Disconnect the display panel cable **(3)** from the display panel.



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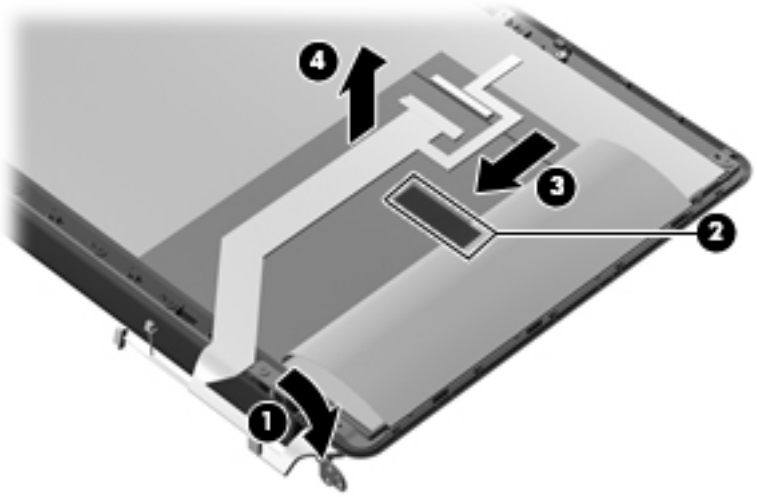
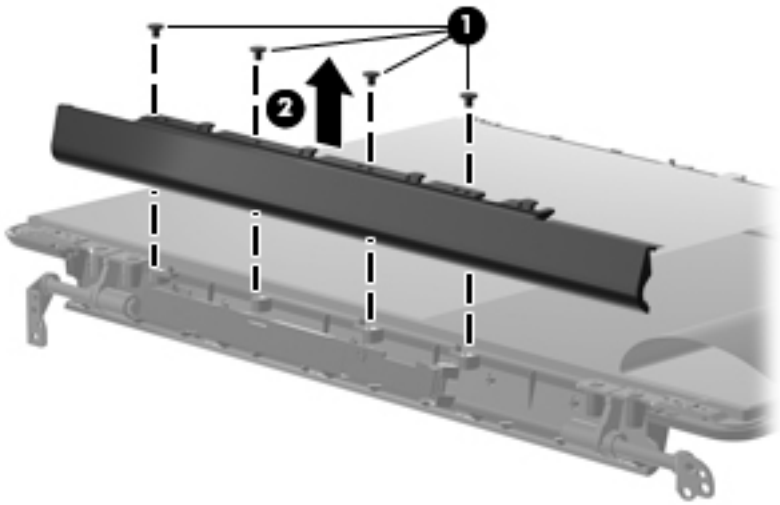
12. Remove the display panel cable **(4)**.




13. If it is necessary to replace the inverter, remove the four Phillips PM2.5×4.0 screws **(1)** that secure the inverter cover to the display assembly, and remove the inverter cover **(2)**.




14. Release the inverter from the display assembly, and lift as far as the attached cables will allow **(1)**.



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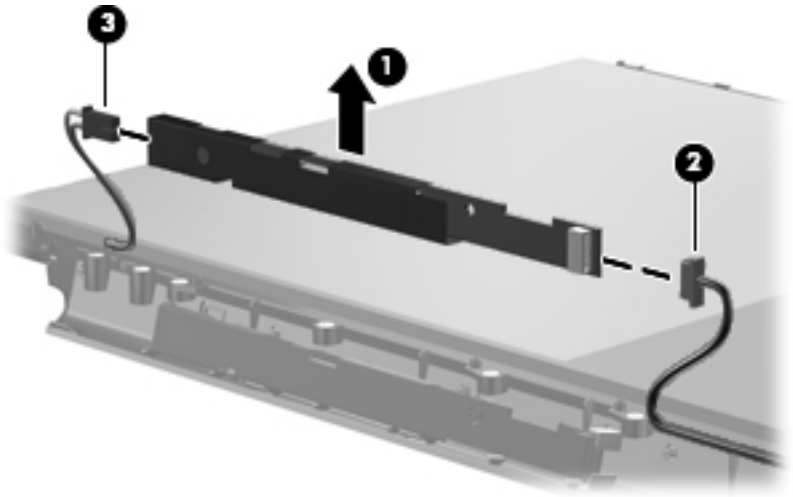
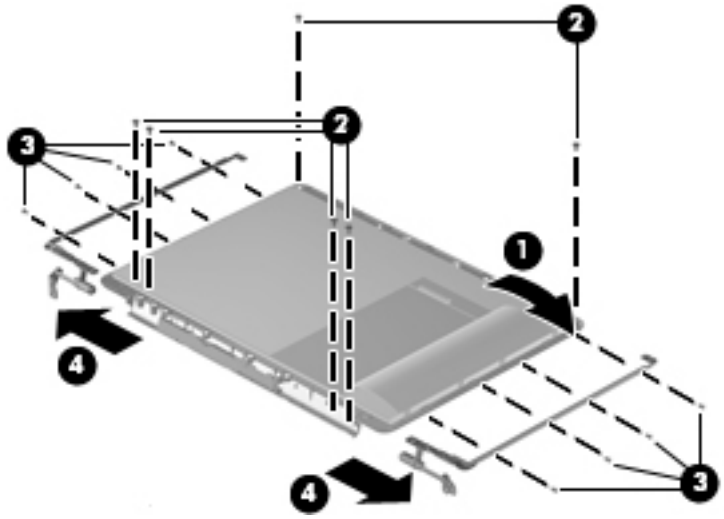
15. Disconnect the backlight cable **(2)**, and the display panel cable **(3)** from the inverter.



16. If it is necessary to replace the display hinges, release the foil tab **(1)**.
17. Remove the six Phillips PM2.5×4.0 screws **(2)**, and the eight Phillips PM2.0×4.0 screws **(3)** that secure the hinges to the display panel.
18. Remove the hinges **(4)**.



19. If it is necessary to replace the wireless antenna assembly, remove the two Phillips PM2.5×4.0 screws **(1)** that secure the transceivers to the display enclosure.
20. Detach the wireless antenna transceivers **(2)** from the display enclosure.
21. Remove the wireless antenna cables from the clips **(3)** built into the display enclosure.



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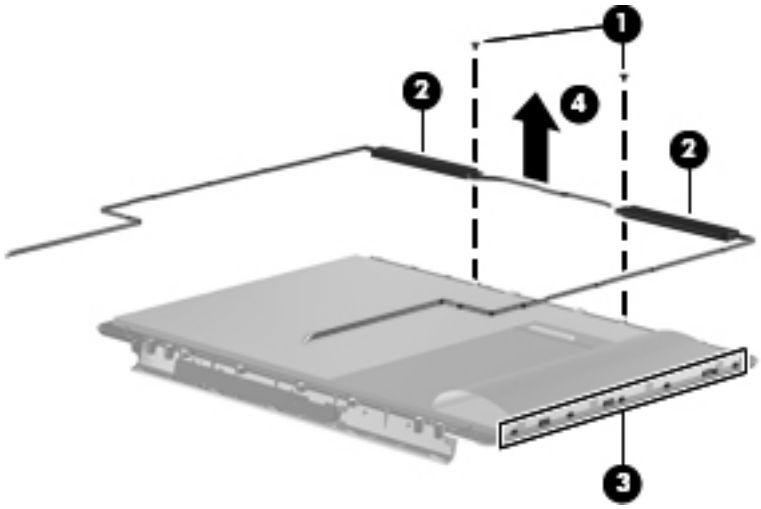
22. Remove the wireless antenna transceivers and cables **(4)** from the display enclosure.




Reverse this procedure to reassemble and install the Flush Glass display assembly.



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## Top cover

| Description | Spare part number |
|---|---|
| **Top covers** (include TouchPad and TouchPad cable) | |
| • Equipped with a fingerprint reader (includes fingerprint reader board and cable) | 486830-001 |
| • Not equipped with a fingerprint reader | 488105-001 |
| • For bronze-colored computer models equipped with a fingerprint reader | 495661-001 |
| • For bronze-colored computer models not equipped with a fingerprint reader | 495662-001 |
| • For use in blue-colored computer models | 502579-001 |

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 battery (see Battery on page 55).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 59)
   b. WLAN cover (see WLAN module on page 62)
   c. Optical drive (see Optical drive on page 57)
   d. Keyboard (see Keyboard on page 72)
   e. Keyboard cover (see Keyboard cover on page 74)
   f. Speaker (see Speaker assembly on page 77)
   g. Display assembly (see Display assembly on page 80)

Remove the top cover:

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



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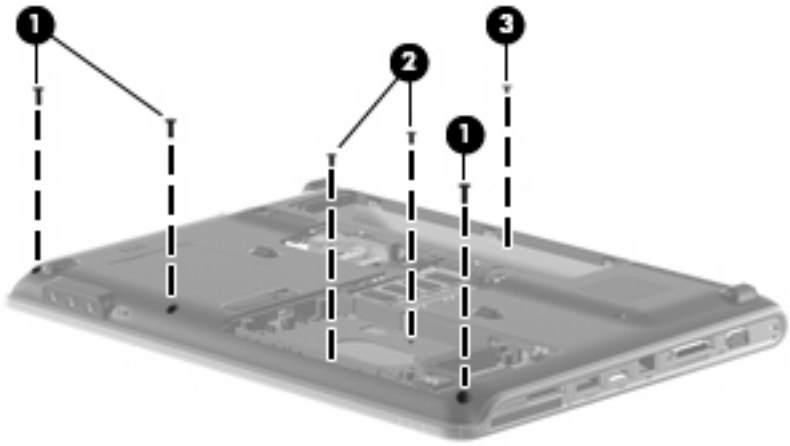
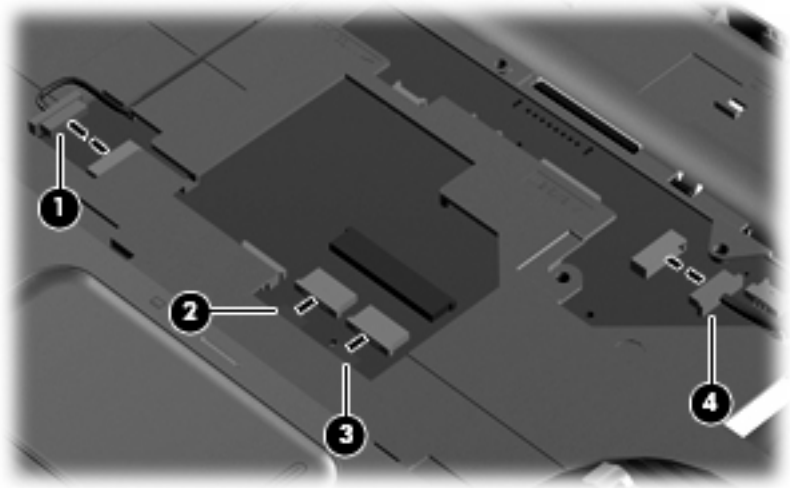
2. Remove the three Phillips PM2.5×9.0 screws **(1)**, the two Phillips PM2.5×6.0 screws **(2)**, and the one Phillips PM2.5×4.0 screws **(3)** that secure the top cover to the computer.




3. Turn the computer right-side up, with the front toward you.

4. Disconnect the Bluetooth module cable **(1)**, the TouchPad cable **(2)**, the fingerprint reader board cable **(3)**, and the USB board cable **(4)** from on the system board.




5. Remove the three Phillips PM2.5×4.0 screws **(1)**.



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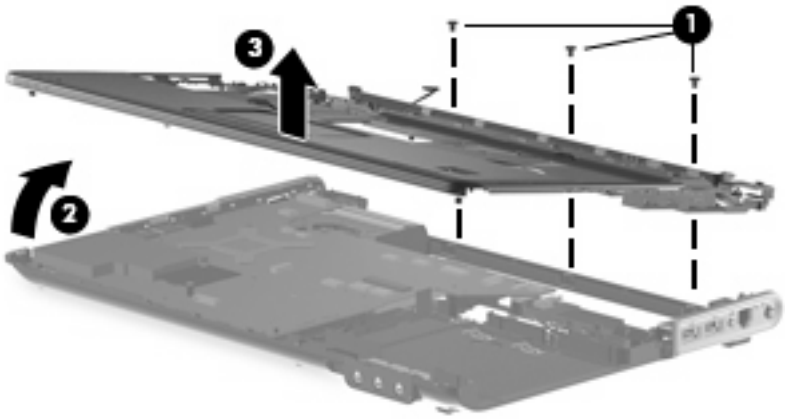
6. Lift the front edge of the top cover **(2)** and remove it **(3)**.




Reverse this procedure to install the top cover.



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## TouchPad

| Description | Spare part number |
|---|---|
| TouchPad (include TouchPad bracket and TouchPad cable) | 494960-001 |
| TouchPad button | 486832-001 |
| TouchPad bracket (included with top cover spare part kits and with TouchPad) | 494961-001 |

Before removing the TouchPad, 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 55).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 59)
   b. WLAN cover (see WLAN module on page 62)
   c. Optical drive (see Optical drive on page 57)
   d. Keyboard (see Keyboard on page 72)
   e. Keyboard cover (see Keyboard cover on page 74)
   f. Display assembly (see Display assembly on page 80)
   g. Top cover (see Top cover on page 92)

Remove the TouchPad:

1. Turn the top cover upside down, with the front toward you.
2. Disconnect the TouchPad cable **(1)**.
3. Remove the five Phillips PM2.5×4.0 screws that secure the TouchPad to the top cover **(2)**.



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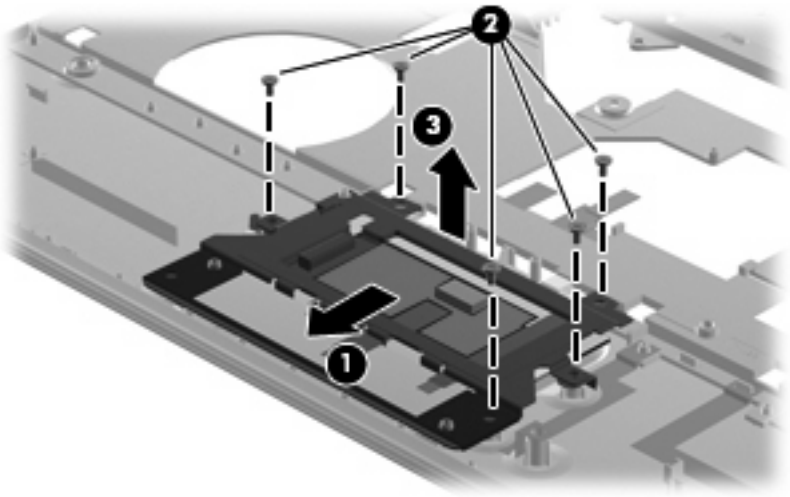
4. Remove the TouchPad board from the top cover **(3)**.




Reverse the above procedure to reassemble and install the TouchPad.



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## Fingerprint reader board

| Description | Spare part number |
|---|---|
| Fingerprint reader | 486828-001 |

Before removing the fingerprint reader, 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 55).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 59)
   b. WLAN cover (see WLAN module on page 62)
   c. Optical drive (see Optical drive on page 57)
   d. Keyboard (see Keyboard on page 72)
   e. Keyboard cover (see Keyboard cover on page 74)
   f. Display assembly (see Display assembly on page 80)
   g. Top cover (see Top cover on page 92)

Remove the TouchPad:

1. Turn the top cover upside down, with the front toward you.
2. Fold back the Mylar cover **(1)**.
3. Remove the two Phillips PM2.0×3.0 screws that secure the fingerprint reader to the top cover **(2)**.



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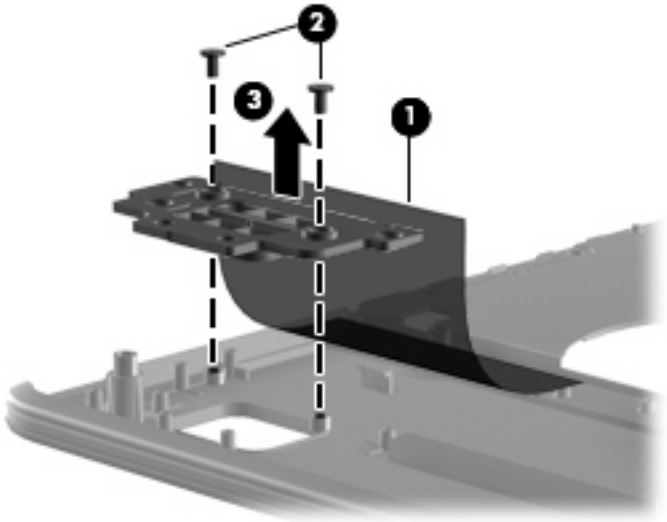
4. Remove the fingerprint reader from the top cover **(3)**.




Reverse the above procedure to reassemble and install the fingerprint reader.



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## Modem module

| Description | Spare part number |
|---|---|
| Modem module for use with most computer models | 461749-001 |
| Modem module for use with computer models in Australia and New Zealand | 461749-011 |

Before removing the modem 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 55).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 59)
   b. WLAN cover (see WLAN module on page 62)
   c. Optical drive (see Optical drive on page 57)
   d. Keyboard (see Keyboard on page 72)
   e. Keyboard cover (see Keyboard cover on page 74)
   f. Display assembly (see Display assembly on page 80)
   g. Top cover (see Top cover on page 92)

Remove the modem module:

1. Disconnect the modem module cable **(1)** from the modem module.
2. Remove the two Phillips PM2.0×4.0 screws **(2)** that secure the modem module to the system board.



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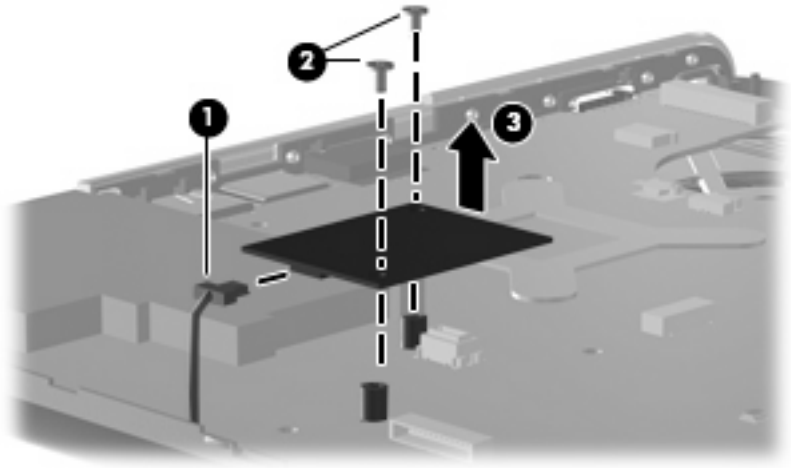
3. Lift up on the back of the modem module **(3)** to disconnect it from the system board.




4. Remove the modem module.

Reverse the above procedure to install the modem module.



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## Audio board

| Description | Spare part number |
|---|---|
| Audio board (includes audio connectors, infrared lens, and audio board cable) | 486840-001 |

Before removing the audio 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 55).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 59)
   b. WLAN cover (see WLAN module on page 62)
   c. Optical drive (see Optical drive on page 57)
   d. Keyboard (see Keyboard on page 72)
   e. Keyboard cover (see Keyboard cover on page 74)
   f. Display assembly (see Display assembly on page 80)
   g. Top cover (see Top cover on page 92)

Remove the audio board:

1. Disconnect the audio board cable **(1)** from the system board, and remove the cable from the audio board **(2)**.
2. Remove the two Phillips PM2.5×4.0 screws **(3)** that secure the audio board to the computer.



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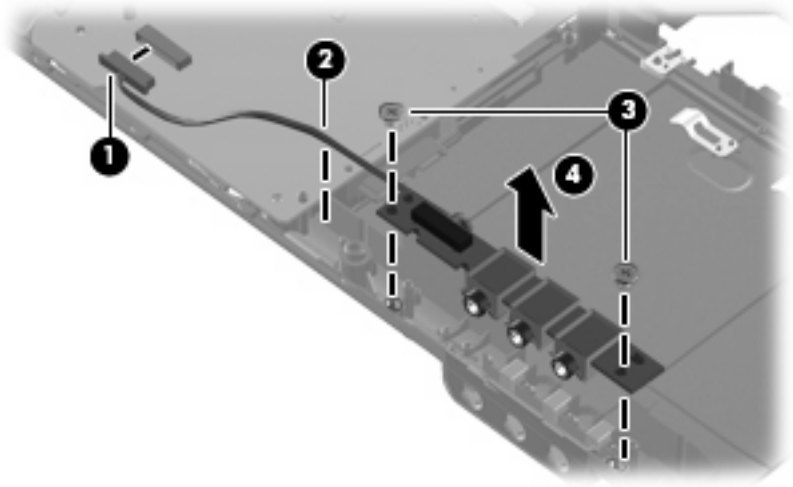
3. Remove the audio board **(4)**.




Reverse the above procedure to install the audio board.



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## USB board

| Description | Spare part number |
|---|---|
| USB board (includes USB board cable) | 486842-001 |

Before removing the USB 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 55).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 59)
   b. Wireless module compartment cover (see WLAN module on page 62)
   c. Optical drive (see Optical drive on page 57)
   d. Keyboard (see Keyboard on page 72)
   e. Keyboard cover (see Keyboard cover on page 74)
   f. Display assembly (see Display assembly on page 80)
   g. Top cover (see Top cover on page 92)

Remove the USB board:

1. Disconnect the USB board cable **(1)** from the system board.
2. Remove the cable **(2)** from the clip in the base enclosure.
3. Remove the Phillips PM2.5×4.0 screw **(3)** that secures the USB board to the computer.



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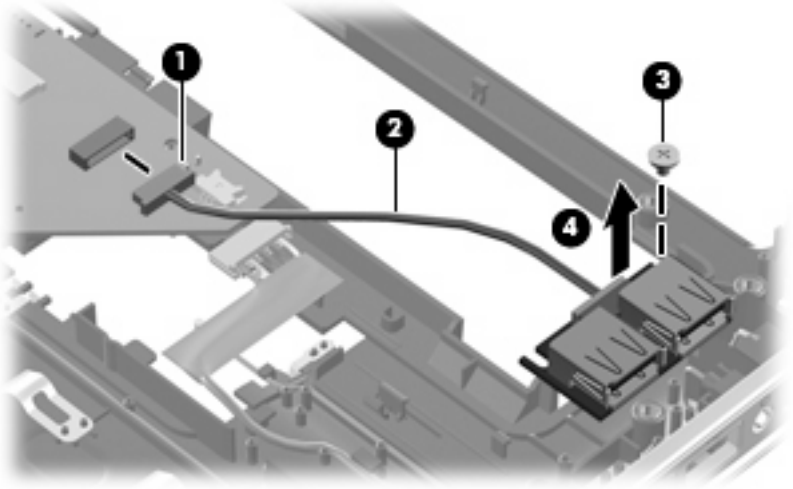
4. Lift the USB board **(4)** straight up to remove it from the computer.




Reverse this procedure to install the USB board.



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# TV tuner antenna

| Description | Spare part number |
|---|---|
| **TV tuners** | |
| • ATSC/NTSC TV tuner antenna | 482900-001 |
| • TV tuner antenna with PAL jack | 482900-002 |
| • ATSC/NTSC TV tuner | 482899-001 |
| • DVB-T/ANG Integrated TV tuner | 482899-002 |
| • DVB-T tuner | 482899-003 |
| • DVB-T tuner for use only in the AP region | 482899-004 |

If it has been determined that the TV tuner antenna cable is the component that must be replaced to complete the computer repair, follow the procedures in this section to replace the cable.

Before removing the TV antenna cable, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 55)
5. Remove the keyboard (see Keyboard on page 72)
6. Remove the keyboard cover (see Keyboard cover on page 74)
7. Remove the display assembly (see Display assembly on page 80)
8. Remove the top cover (see Top cover on page 92)
9. Remove the USB board (see USB board on page 103)

Remove the TV tuner antenna cable:

1. Disconnect the TV tuner antenna cable from the system board **(1).**



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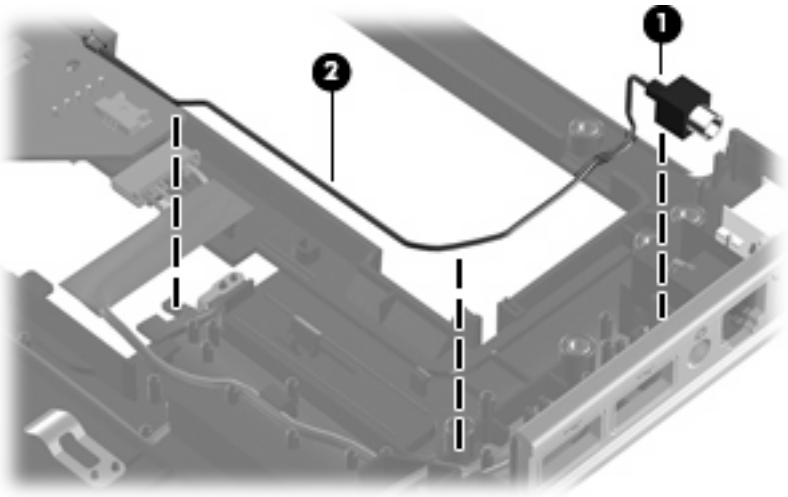
2. Remove the cable from the base enclosure clips **(2)**.




Reverse this procedure to install the TV tuner antenna cable.



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## System board

| Description | Spare part number |
|---|---|
| **System boards** (include thermal material) | |
| For use in computer models with Intel processors: | |
| • On models equipped with a 256-MB discrete graphics subsystem | 486723-001 |
| • On models equipped with a 512-MB discrete graphics subsystem | 496730-001 |
| • On models equipped with a UMA graphics subsystem | 486724-001 |
| For use in computer models with AMD processors: | |
| • With QuickPlay | 488238-001 |
| • With MediaSmart | 511858-001 |

**NOTE:** All system board spare part kits include replacement thermal material.

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 battery (see Battery on page 55).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 59)
   b. Optical drive (see Optical drive on page 57)
   c. Keyboard (see Keyboard on page 72)
   d. Keyboard cover (see Keyboard cover on page 74)
   e. Display assembly (see Display assembly on page 80)
   f. Top cover (see Top cover on page 92)

Remove the system board:

1. Disconnect the following cables from the system board:
   - Modem module cable **(1)**
   - Audio board cable **(2)**



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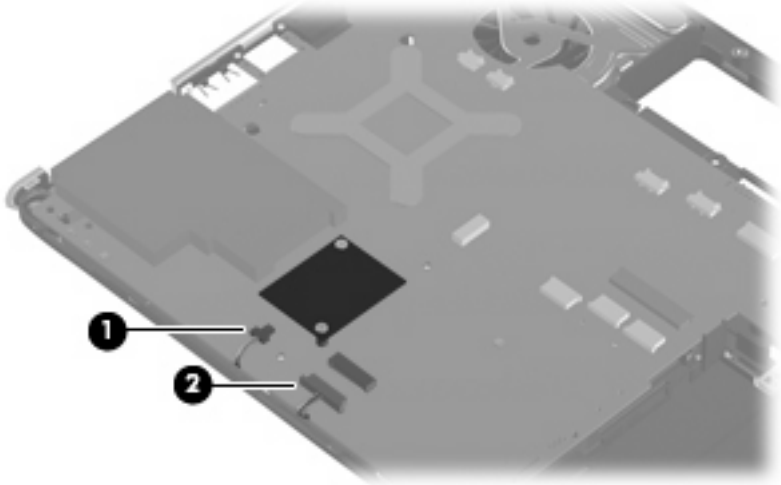
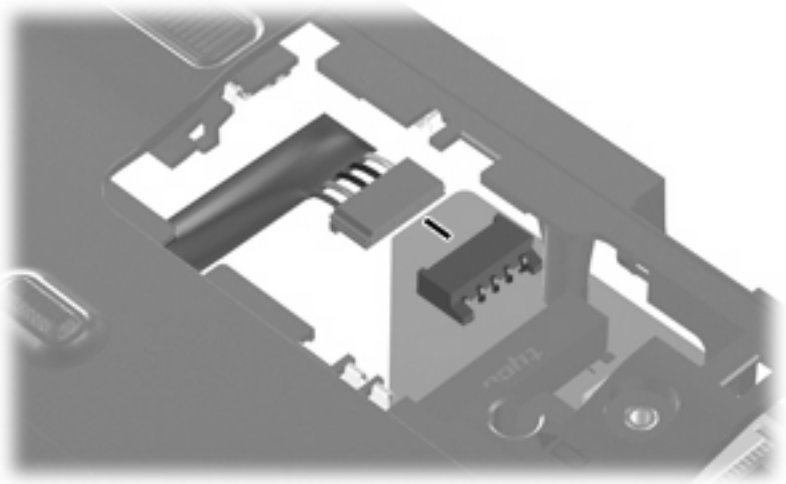
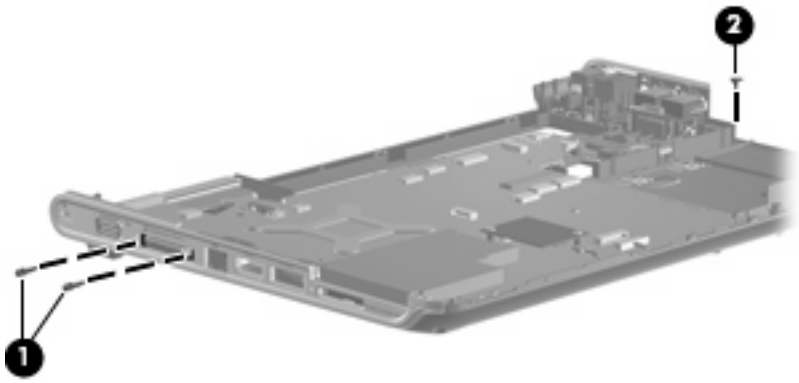



2. Disconnect the power connector cable from the system board.



3. Remove the two Phillips PM1.5×9.0 slotted screws **(1)**, and the Phillips PM2.5×4.0 screw **(2)** that secure the system board to the computer.




4. Use the optical drive connector **(1)** to lift the right side of the system board until it rests at an angle.
5. Lift the system board **(2)**.



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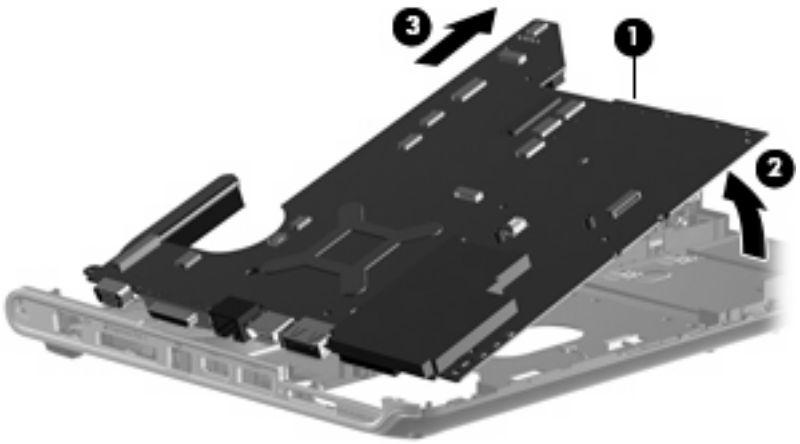
6. Release the system board **(3)** by sliding it to the right at an angle until the connectors on the left side of the system board disengage from the base enclosure.




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:

- Fan and heat sink assembly (see Fan and heat sink on page 114)
- Processor (see Processor on page 118)
- RTC battery (see RTC battery on page 69)
- Memory modules (see Memory module on page 67)
- WLAN module (see WLAN module on page 62)
- Modem module (see Modem module on page 99)

Reverse the preceding procedure to install the system board.



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## Power button board

| Description | Spare part number |
|---|---|
| Power button with connector cable | 486853-001 |

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 55).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 59)
   b. Optical drive (see Optical drive on page 57)
   c. Keyboard (see Keyboard on page 72)
   d. Keyboard cover (see Keyboard cover on page 74)
   e. Display assembly (see Display assembly on page 80)
   f. Top cover (see Top cover on page 92)
   g. System board (see System board on page 107)

Remove the power button board:

1. Disconnect the low insertion force (LIF) cable **(1)** from the power button board.
2. Remove the Phillips PM2.0×4.0 screw **(2)** that secures the power button board to the system board.



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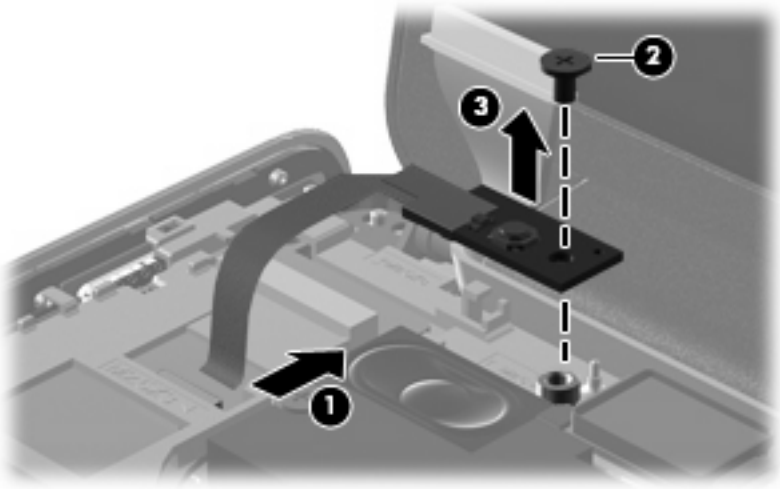
3. Remove the power button board **(3)**.




Reverse this procedure to install the power button board.



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## Modem module cable

| Description | Spare part number |
|---|---|
| Modem module cable for use with computer models with Intel processors | 494981-001 |

Before removing the modem module cable, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 55)
5. Remove the following components:
   a. Hard drive (see Hard drive on page 59)
   b. WLAN cover (see WLAN module on page 62)
   c. Optical drive (see Optical drive on page 57)
   d. Keyboard (see Keyboard on page 72)
   e. Keyboard cover (see Keyboard cover on page 74)
   f. Display assembly (see Display assembly on page 80)
   g. Top cover (see Top cover on page 92)
   h. Modem module (see Modem module on page 99)
   i. System board (see System board on page 107)
   j. USB board (see USB board on page 103)
   k. Audio board (seeAudio board on page 101)

Remove the modem module cable:

1. Disconnect the modem module cable from the system board **(1).**



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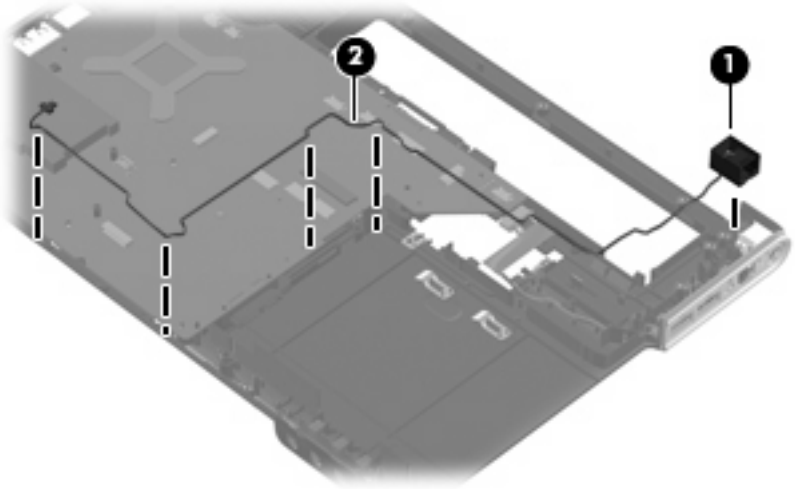
2. Remove the cable from the base enclosure clips **(2)**.




Reverse the preceding procedure to install the modem module cable.



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## Fan and heat sink

| Description | Spare part number |
|---|---|
| Heat sink (includes thermal material) | |
| • For use in models with Intel processors UMA graphics subsystems | 486838-001 |
| • For use in models with AMD processors and UMA graphics subsystems | 492260-001 |
| Fan (includes thermal material) | 486844-001 |

**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 and heat sink assemblies, 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 55).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 59)
   b. Optical drive (see Optical drive on page 57)
   c. Keyboard (see Keyboard on page 72)
   d. Keyboard cover (see Keyboard cover on page 74)
   e. Display assembly (see Display assembly on page 80)
   f. Top cover (see Top cover on page 92)
   g. System board (see System board on page 107)

Remove the fan:

1. Turn the system board upside down with the front toward you.
2. Remove the two Phillips PM2.5×4.0 screws **(1)** securing the fan to the system board.



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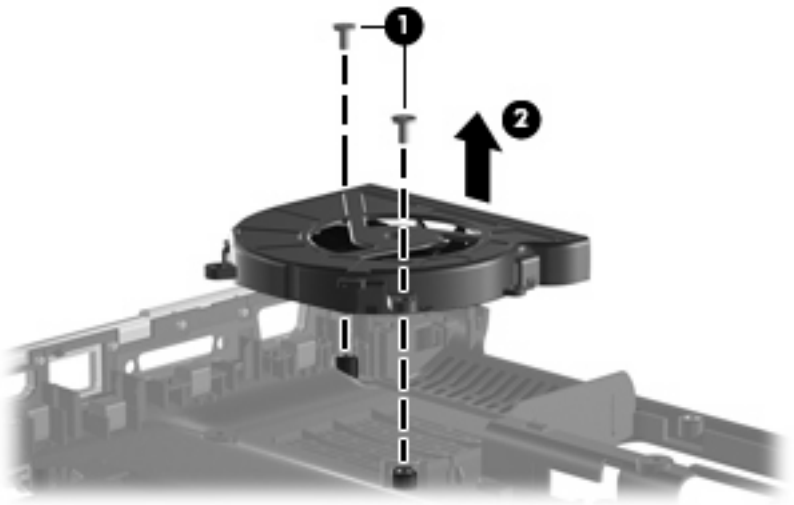
3. Lift the fan up **(2)** to remove.



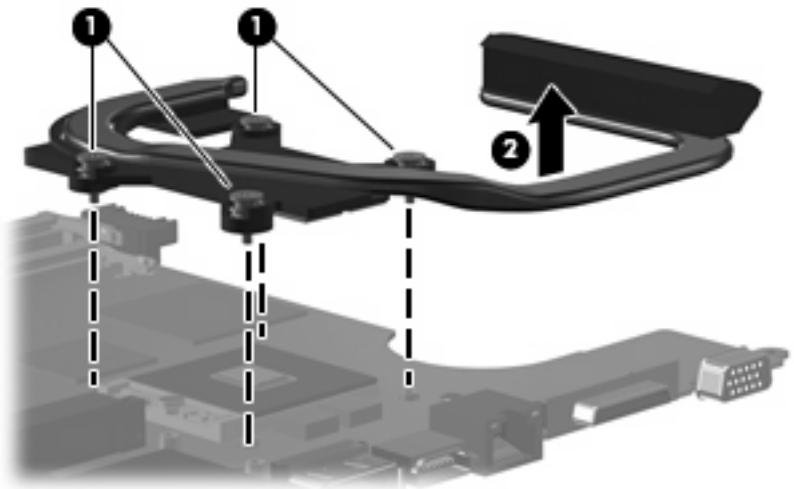
4. If it is necessary to replace the heat sink, select the section following that relates to the correct system board.

## Heat sink assembly for discrete graphics system

1. Loosen the four Phillips PM2.0×10.0 captive screws **(1)** that secure the 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.

2. Remove the fan/heat sink assembly **(2)**.



**NOTE:** Each time the fan and heat sink are removed, the thermal material must be thoroughly cleaned from the surfaces of the heat sink and system board components: heat sink **(1)**, processor **(2)**, heat sink **(3)**, Northbridge clip **(4)**, nVidia video chip **(5)**, and capacitors **(6)**. Thermal pads and thermal paste must be installed on all surfaces before the fan and heat sink are reinstalled. Thermal pads and thermal paste are included with all fan, heat sink, system board, and processor spare part kits.



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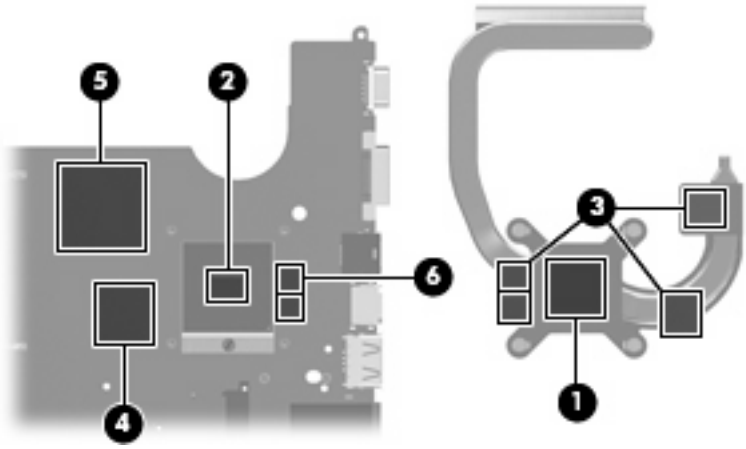


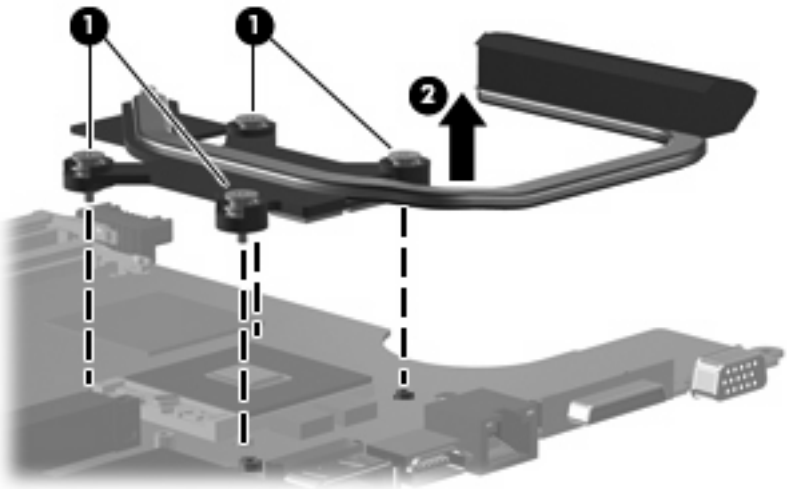

Reverse this procedure to install the fan/heat sink assembly.

## Heat sink assembly for UMA graphics system

1. Loosen the four Phillips PM2.0×10.0 captive screws **(1)** that secure the 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.

2. Remove the fan/heat sink assembly **(2)**.




**NOTE:** Each time the fan and heat sink are removed, the thermal material must be thoroughly cleaned from the surfaces of the heat sink and system board components: heat sink **(1)**, processor **(2)**, Northbridge clip **(3)**, and capacitor **(4)**. Thermal pads and thermal paste must be installed on all surfaces before the fan and heat sink are reinstalled. Thermal pads and thermal paste are included with all fan, heat sink, system board, and processor spare part kits.



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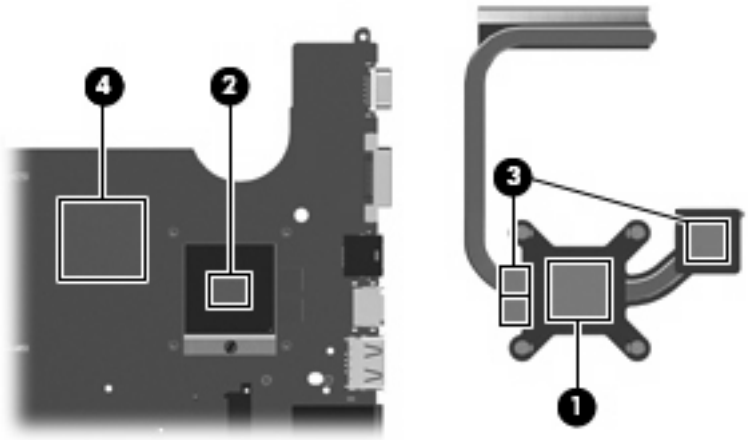


Reverse this procedure to install the fan/heat sink assembly.



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# Processor

| Description | Spare part number |
|---|---|
| Processors (include thermal material) | |
| AMD processors: | |
| • Athlon QL-64 (2.1 GHz, 1-MB L2 cache) | 506053-001 |
| • Turion 64 ZM-86 (2.4 GHz, 2-MB L2 cache) | 487345-005 |
| • Turion 64, ZM-84 (2.3 GHz, 2-MB L2 cache) | 497177-001 |
| • Turion 64 ZM-82 (2.2 GHz, 2-MB L2 cache) | 487346-005 |
| • Turion 64 ZM-80 (2.1 GHz, 2-MB L2 cache) | 487347-005 |
| • Turion 64 RM-74 (2.2-GHz, 1-MB L2 cache) | 507979-001 |
| • Turion 64 RM-72 (2.1 GHz, 1-MB L2 cache) | 497178-001 |
| • Turion 64 RM-70 (2.0 GHz, 1-MB L2 cache) | 487348-006 |
| • Turion 64 QL-62 (2 .0 GHz, 1-MB L2 cache) | 497179-001 |
| • Turion 64 QL-60 (1.9 GHz, 1-MB L2 cache) | 487349-006 |
| • Sempron SI-42 (2.1 GHz, 512-KB L2 cache) | 497180-001 |
| • Sempron SI-40 (2.0 GHz, 512-KB L2 cache) | 487350-004 |
| Intel processors: | |
| • Core 2 Duo T9600 (2.80 GHz, 6-MB L2 cache) | 486727-001 |
| • Core 2 Duo T9550 (2.66-GHz, 6-MB L2 cache) | 507953-001 |
| • Core 2 Duo T9400 (2.53 GHz, 6-MB L2 cache) | 483260-001 |
| • Core 2 Duo P8700 (2.53-GHz, 3-MB L2 cache) | 507960-001 |
| • Core 2 Duo P8600 (2.40 GHz, 3-MB L2 cache) | 483259-001 |
| • Core 2 Duo P8400 (2.26 GHz, 3-MB L2 cache) | 483258-001 |
| • Core 2 Duo T6600 (2.2 GHz, 3-MB L2 cache) | 513593-001 |
| • Core 2 Duo T6400 (2.06 GHz, 3-MB L2 cache) | 513592-001 |
| • Core 2 Duo T5900 (2.2 GHz, 2-MB L2 cache) | 495639-001 |
| • Core 2 Duo P7450 (2.13 GHz, 3-MB L2 cache) | 495640-001 or 507965-001 |
| • Core 2 Duo P7350 (2.0 GHz, 3-MB L2 cache) | 491856-001 |
| • Core 2 Duo T6600 (2.2 GHz, 3-MB L2 cache) | 513593-001 |
| • Core 2 Duo T6400 (2.06 GHz, 3-MB L2 cache) | 513592-001 |
| • Core 2 Duo T5800 (2.0 GHz, 2-MB L2 cache) | 495638-001 |
| • Pentium Dual-Core T4200 (2.0-MHz, 4-MB L2 cache) | 513599-001 |
| • Pentium Dual-Core T3400 (2.16 GHz, 1-MB L2 cache) | 504784-001 |
| • Pentium Dual-Core T3200 (2.0 GHz, 1-MB L2 cache) | 504783-001 |



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| Description | Spare part number |
|---|---|
| • Celeron 575 (2.2 GHz, 1-MB L2 cache) | 502838-001 |
| • Celeron T1600 (1.66 GHz, 2-MB L2 cache) | 497773-001 |

**NOTE:** All processor spare part kits include thermal material.

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 55).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 59)
   b. Optical drive (see Optical drive on page 57)
   c. Keyboard (see Keyboard on page 72)
   d. Keyboard cover (see Keyboard cover on page 74)
   e. Display assembly (see Display assembly on page 80)
   f. Top cover (see Top cover on page 92)
   g. System board (see System board on page 107)
   h. Fan and heat sink (see Fan and heat sink on page 114)

Remove the processor:

1. Turn the processor locking screw **(1)** one-half turn counterclockwise until you hear a click.



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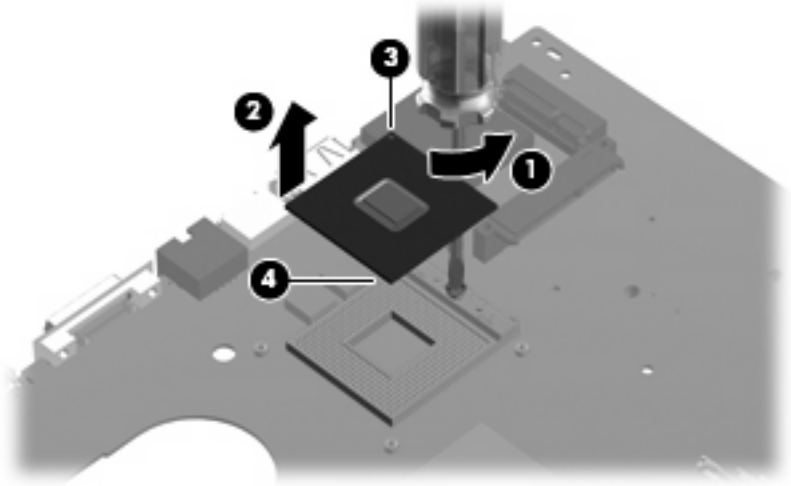
2. Lift the processor **(2)** straight up and remove it.

**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.



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# 5 Setup Utility

⚠ **WARNING!** Only authorized technicians trained by HP must repair this equipment. All troubleshooting and repair procedures are detailed to allow repair at only the subassembly or module level. Because of the complexity of the individual boards and subassemblies, do not attempt to make repairs at the component level or modify any printed wiring board. Improper repairs can create a safety hazard. Any indication of component replacement or printed wiring board modification may void any warranty or exchange allowances.

## Starting the Setup Utility

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

**NOTE:** The fingerprint reader (select models only) cannot be used to access the Setup Utility.

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

To start the Setup Utility:

- ☐ Open the 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 the 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.

## Changing the language of the Setup Utility

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

1. Open the 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 the 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.



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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 the 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 the Setup Utility

Because the 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 the Setup Utility is open, press f1.

# Displaying system information

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

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



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# Restoring default settings in the Setup Utility

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

1. Open the 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 the 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 the 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 the Setup Utility

You can exit the Setup Utility with or without saving changes.

- To exit the 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 the 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.



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# 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. |
| Fan Always On | Enabled/disable Fan Always On. When enabled, the computer fan will always be on. |
| Boot Options | Set the following boot options:<br>• f9 and f10 Delay (sec.)—Set the delay for the f9 and f10 functions of the 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: |



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| Select | To do this |
| --- | --- |
| | ◦ USB Floppy<br>◦ Internal CD/DVD ROM drive<br>◦ USB CD/DVD ROM drive<br>◦ Hard drive<br>◦ USB Diskette on Key<br>◦ USB Hard drive<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 the **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. |



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# 6 Specifications

## Computer specifications

| | Metric | U.S. |
|---|---|---|
| **Dimensions** | | |
| Height (front to back) | 2.60 to 3.90 cm | 1.02 to 1.54 in |
| Width | 33.40 cm | 13.15 in |
| Depth | 23.70 cm | 9.33 in |
| **Weight** (with optical drive, hard drive, and battery) | 2.49 kg | 5.49 lbs |
| **Input power** | | |
| Operating voltage | 18.5 V dc —19.0 V dc | |
| Operating current | 3.5 A or 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.



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# 14.1-inch, WXGA, BrightView display specifications

| | Metric | U.S. |
|---|---|---|
| **Dimensions** | | |
| Height | 27.94 cm | 11.0 in |
| Width | 20.83 cm | 8.2 in |
| Diagonal | 35.56 cm | 14.1 in |
| **Number of colors** | Up to 16.8 million | |
| **Contrast ratio** | 250:1 (typical) | |
| **Brightness** | 180 nits (typical) | |
| **Pixel resolution** | | |
| Pitch | 0.279 × 0.279 mm | |
| Format | 1280 × 800 | |
| Configuration | RGB vertical stripe | |
| **Backlight** | Edge lit | |
| **Character display** | 80 × 25 | |
| **Total power consumption** | 4 W | |
| **Viewing angle** | +/-40° horizontal, +20/-40° vertical (typical) | |



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# Hard drive specifications

| | 250-GB* | 200-GB* | 160-GB* | 120-GB* | 80-GB* |
|---|---|---|---|---|---|
| **Dimensions** | | | | | |
| Height | 9.5 mm | 9.5 mm | 9.5 mm | 9.5 mm | 9.5 mm |
| Width | 70 mm | 70 mm | 70 mm | 70 mm | 70 mm |
| Weight | 102 g | 102 g | 102 g | 102 g | 102 g |
| **Interface type** | SATA | SATA | SATA | SATA | SATA |
| **Transfer rate** | | | | | |
| Synchronous (maximum) | 100 MB/sec | 100 MB/sec | 100 MB/sec | 100 MB/sec | 100 MB/sec |
| Security | ATA security | ATA security | ATA security | ATA security | ATA security |
| **Seek times** (typical read, including setting) | | | | | |
| Single track | 3 ms | 2 ms | 3 ms | 3 ms | 3 ms |
| Average | 13 ms | 12 ms | 13 ms | 13 ms | 13 ms |
| Maximum | 24 ms | 22 ms | 24 ms | 24 ms | 24 ms |
| **Logical blocks** | 495,702,655 | 390,721,968 | 317,249,699 | 237,937,274 | 158,624,849 |
| **Disk rotational speed** | 5400 rpm | | | | |
| **Operating temperature** | 5°C to 55°C (41°F to 131°F) | | | | |

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

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

| | 500-GB* | 400-GB* | 320-GB* |
|---|---|---|---|
| **Dimensions** | | | |
| Height | 9.5 mm | 9.5 mm | 9.5 mm |
| Width | 70 mm | 70 mm | 70 mm |
| Weight | 102 g | 102 g | 102 g |
| **Interface Type** | SATA | SATA | SATA |
| Synchronous (maximum) | 100 MB/sec | 100 MB/sec | 100 MB/sec |
| Security | ATA security | ATA security | ATA security |
| **Seek times** (typical read, including setting) | | | |
| Single track | 1 ms | 1 ms | 3 ms |
| Average | 11 ms | 11 ms | 13 ms |
| Maximum | 22 ms | 25 ms | 24 ms |
| **Logical blocks** | 976,773,168 | 781,422,768 | 604,234,532 |
| **Disk rotational speed** | 5400 rpm | | |



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| | |
|---|---|
| **Operating temperature** | 5°C to 55°C (41°F to 131°F) |

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

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

# Blu-ray Disc ROM Drive with SuperMulti DVD±R/RW Double-Layer (DL) support specifications

| **Applicable disc** | **Read:** | **Write:** | |
|---|---|---|---|
| | 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, BD-ROM, BD-RE. BD-R | CD-R and CD-RW<br><br>DVD+R, DVD+R(9), DVD+RW, DVD-R, DVD-R(9),DVD-RW, DVD-RAM | |
| **Access time** | **CD** | **DVD** | **Blu-ray** |
| Random | 150 ms | 180 ms | 300 ms |
| **Cache buffer** | 8 MB | | |
| **Data transfer rate** | | | |
| 24× CD-ROM | 3,600 KB/sec | | |
| 8× DVD | 10,800 KB/sec | | |
| 24× CD-R | 3,600 KB/sec | | |
| 16× CD-RW | 2,400 KB/sec | | |
| 8× DVD+R | 10,800 KB/sec | | |
| 4× DVD+RW | 5,400 KB/sec | | |
| 8× DVD-R | 10,800 KB/sec | | |
| 4× DVD-RW | 5,400 KB/sec | | |
| 2.4× DVD+R(9) | 2,700 KB/sec | | |
| 5× DVD-RAM | 6,750 KB/sec | | |
| 1× BD-ROM | 4,500 KB/sec | | |
| 1× BD-R read | 4,500 KB/sec | | |
| 1× BD-RE read | 4,500 KB/sec | | |
| **Transfer mode** | Multiword DMA Mode | | |



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# DVD±RW and CD-RW Super Multi Double-Layer Combo Drive specifications

| **Applicable disc** | **Read:**<br><br>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:**<br><br>CD-R and CD-RW<br><br>DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM |
|---|---|---|
| **Access time** | CD | DVD |
| Random | < 175 ms | < 230 ms |
| **Cache buffer** | 2 MB | |
| **Data transfer rate** | | |
| 24X CD-ROM | 3,600 KB/sec | |
| 8X DVD | 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 | |



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# System DMA specifications

| Hardware DMA | System function |
|---|---|
| DMA0 | Not applicable |
| DMA1* | Not applicable |
| DMA2* | Not applicable |
| DMA3 | Not applicable |
| DMA4 | Direct memory access controller |
| DMA5* | Available for PC Card† |
| DMA6 | Not assigned |
| DMA7 | Not assigned |

*PC Card controller can use DMA 1, 2, or 5.

†Not assigned for computer models with AMD processors.



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# System interrupt specifications—Intel processors

| Hardware IRQ | System function |
|---|---|
| IRQ0 | System timer |
| IRQ1 | Standard 101-/102-Key or Microsoft® Natural Keyboard |
| IRQ2 | Cascaded |
| IRQ3 | Intel 82801DB/DBM USB2 Enhanced Host Controller—24CD |
| IRQ4 | COM1 |
| IRQ5* | Conexant AC—Link Audio Intel 82801DB/DBM SMBus Controller—24C3 Data Fax Modem with SmartCP |
| IRQ6 | Diskette drive |
| IRQ7* | Parallel port |
| IRQ8 | System CMOS/real-time clock |
| IRQ9* | Microsoft ACPI-compliant system |
| IRQ10* | Intel USB UHCI controller—24C2<br>Intel 82852/82855 GM/GME Graphic Controller<br>Realtek RTL8139 Family PCI Fast Ethernet Controller |
| IRQ11 | Intel USB EHCI controller—24CD<br>Intel USB UHCI controller—24C4<br>Intel USB UHCI controller—24C7<br>Intel Pro/Wireless 2200BG<br>TI OHCI 1394 host controller<br>TI PCI1410 CardBus controller |
| IRQ12 | Synaptics PS/2 TouchPad |
| IRQ13 | Numeric data processor |
| IRQ14 | Primary IDE channel |
| IRQ15 | Secondary IDE channel |
| *Default configuration; audio possible configurations are IRQ5, IRQ7, IRQ9, IRQ10, or none. | |
| **NOTE:** PC Cards may assert IRQ3, IRQ4, IRQ5, IRQ7, IRQ9, IRQ10, IRQ11, or IRQ15. Either the infrared or the serial port may assert IRQ3 or IRQ4. | |



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# System interrupt specifications—AMD processors

| Hardware IRQ | System function |
|---|---|
| ISA0 | High precision event timer |
| ISA1 | Standard 101/102-Key or Microsoft Natural PS/2 Keyboard |
| ISA8 | High precision event timer |
| ISA12 | Alps Pointing-device (2 way) |
| ISA13 | Numeric data processor |
| ISA14 | ATA Channel 0 |
| ISA15 | ATA Channel 1 |
| PCI5 | Ricoh OHCI Compliant IEEE 1394 Host Controller |
| PCI7 | Ricoh Memory Stick Controller |
| PCI7 | Ricoh SD/MMC Host Controller |
| PCI7 | Ricoh xD-Picture Card Controller |
| PCI7 | SDA Standard Compliant SD Host Controller |
| PC10 | nVidia nForce PCI System Management |
| PC16 | Standard Enhanced PCI to USB Host Controller |
| PC16 | Standard OpenHCD USB Host Controller |
| PC17 | Standard Enhanced PCI to USB Host Controller |
| PC17 | Standard OpenHCD USB Host Controller |
| PC18 | nVidia nForce PCI System Management |
| PC19 | Broadcom 802.11b/g WLAN |
| PCI-2 | PCI standard PCI-to-PCI bridge |
| PC21 | High Definition Audio Controller |
| PC22 | Standard Dual Channel PCI IDE Controller |
| PC23 | nVidia MCP67M |
| PC-3 | PCI standard PCI-to-PCI bridge |
| PC-4 | nVidia nForce Networking Controller |



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# System I/O address specifications—Intel processors

| I/O address (hex) | System function (shipping configuration) |
|---|---|
| 000 - 00F | DMA controller no. 1 |
| 010 - 01F | Unused |
| 020 - 021 | Interrupt controller no. 1 |
| 022 - 024 | Opti chipset configuration registers |
| 025 - 03F | Unused |
| 02E - 02F | 87334 “Super I/O” configuration for CPU |
| 040 - 05F | Counter/timer registers |
| 044 - 05F | Unused |
| 060 | Keyboard controller |
| 061 | Port B |
| 062 - 063 | Unused |
| 064 | Keyboard controller |
| 065 - 06F | Unused |
| 070 - 071 | NMI enable/RTC |
| 072 - 07F | Unused |
| 080 - 08F | DMA page registers |
| 090 - 091 | Unused |
| 092 | Port A |
| 093 - 09F | Unused |
| 0A0 - 0A1 | Interrupt controller no. 2 |
| I/O Address (hex) | System Function (shipping configuration) |
| 0A2 - 0BF | Unused |
| 0C0 - 0DF | DMA controller no. 2 |
| 0E0 - 0EF | Unused |
| 0F0 - 0F1 | Coprocessor busy clear/reset |
| 0F2 - 0FF | Unused |
| 100 - 16F | Unused |
| 170 - 177 | Secondary fixed disk controller |
| 178 - 1EF | Unused |
| 1F0 - 1F7 | Primary fixed disk controller |
| 1F8 - 200 | Unused |
| 201 | JoyStick (decoded in ESS1688) |
| 202 - 21F | Unused |



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| I/O address (hex) | System function (shipping configuration) |
|---|---|
| 220 - 22F | Entertainment audio |
| 230 - 26D | Unused |
| 26E - 26 | Unused |
| 278 - 27F | Unused |
| 280 - 2AB | Unused |
| 2A0 - 2A7 | Unused |
| 2A8 - 2E7 | Unused |
| 2E8 - 2EF | Reserved serial port |
| 2F0 - 2F7 | Unused |
| 2F8 - 2FF | Infrared port |
| 300 - 31F | Unused |
| 320 - 36F | Unused |
| 370 - 377 | Secondary diskette drive controller |
| 378 - 37F | Parallel port (LPT1/default) |
| 380 - 387 | Unused |
| 388 - 38B | FM synthesizer—OPL3 |
| 38C - 3AF | Unused |
| 3B0 - 3BB | VGA |
| 3BC - 3BF | Reserved (parallel port/no EPP support) |
| 3C0 - 3DF | VGA |
| 3E0 - 3E1 | PC Card controller in CPU |
| 3E2 - 3E3 | Unused |
| 3E8 - 3EF | Internal modem |
| 3F0 - 3F7 | “A” diskette controller |
| 3F8 - 3FF | Serial port (COM1/default) |
| CF8 - CFB | PCI configuration index register (PCIDIVO-1) |
| CFC - CFF | PCI configuration data register (PCIDIVO-1) |



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# System I/O address specifications—AMD processors

| I/O address (hex) | System function (shipping configuration) |
|---|---|
| 000 - 008 | Direct memory access controller |
| 000 - CF7 | PCI Bus |
| 00A - 00F | Direct memory access controller |
| 010 - 01F | Motherboard resources |
| 020 - 021 | Programmable interrupt controller |
| 022 - 03F | Motherboard resources |
| 040 - 043 | System timer |
| 044 - 05F | Motherboard resources |
| 060 - 060 | Standard 101/102-Key or Microsoft Natural PS/2 Keyboard |
| 061 - 061 | System speaker |
| 062 - 062 | Microsoft ACPI-Compliant Embedded Controller |
| 063 - 063 | Motherboard resources |
| 064 - 064 | Standard 101/102-Key or Microsoft Natural PS/2 Keyboard |
| 065 - 065 | Motherboard resources |
| 066 - 066 | Microsoft ACPI-Compliant Embedded Controller |
| 067 - 06F | Motherboard resources |
| 070 - 071 | |
| 072 - 071=3 | Motherboard resources |
| 074 - 07f | Motherboard resources |
| 080 - 080 | Motherboard resources |
| 081 - 083 | Direct memory access controller |
| 087 - 087 | Direct memory access controller |
| 089 - 08B | Direct memory access controller |
| 08F - 08F | Direct memory access controller |
| 091 - 093 | Motherboard resources |
| 097 - 09F | Motherboard resources |
| 0A0 - 0A1 | Programmable interrupt controller |
| 0A2 - 0BF | Motherboard resources |
| 0C0 - 0D1 | Direct memory access controller |
| 0D4 - 0DF | Direct memory access controller |
| 0E0 - 0EF | Motherboard resources |
| 0F0 - 0F1 | Numeric data processor |
| 1F0 - 1F7 | ATA Channel 0 |



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| I/O address (hex) | System function (shipping configuration) |
|---|---|
| 360 - 361 | Motherboard resources |
| 376 - 376 | ATA Channel 1 |
| 3B0 - 3BB | nVidia MCP67M |
| 3C0 - 3DF | nVidia MCP67M |
| 3F6 - 3F6 | ATA Channel 0 |
| 4D0 - 4D1 | Motherboard resources |
| 0D00 - FFFF | PCI bus |
| 1000 - 107F | Motherboard resources |
| 1080 - 10FF | Motherboard resources |
| 1400 - 147F | Motherboard resources |
| 1480 - 14FF | Motherboard resources |
| 1800 - 187F | Motherboard resources |
| 1880 - 18FF | Motherboard resources |
| 3000 - 303F | nVidia nFOrce PCI System Management |
| 3040 - 307F | nVidia nFOrce PCI System Management |
| 3080 - 30BF | nVidia nFOrce PCI System Management |
| 30C0 - 30CF | Standard Dual Channel PCI IDE Controller |
| 30D0 - 30DF | Standard Dual Channel PCI IDE Controller |
| 30E0 - 30E3 | Standard Dual Channel PCI IDE Controller |
| 30E4 - 30E7 | Standard Dual Channel PCI IDE Controller |
| 30E8 - 30EF | Standard Dual Channel PCI IDE Controller |
| 30F0 - 30F7 | Standard Dual Channel PCI IDE Controller |
| 400 - 4FFF | PCI standard PCI-to-PCI bridge |



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# System memory map specifications—Intel processors

| Size | Memory address | System function |
|---|---|---|
| 640 KB | 00000000-0009FFFF | Base memory |
| 128 KB | 000A0000-000BFFFF | Video memory |
| 48 KB | 000C0000-000CBFFF | Video BIOS |
| 160 KB | 000C8000-000E7FFF | Unused |
| 64 KB | 000E8000-000FFFFF | System BIOS |
| 15 MB | 00100000-00FFFFFF | Extended memory |
| 58 MB | 04800000-07FFFFFF | Super extended memory |
| 58 MB | 04800000-07FFFFFF | Unused |
| 2 MB | 08000000-080FFFFF | Video memory (direct access) |
| 4 GB | 08200000-FFFEFFFF | Unused |
| 64 KB | FFFF0000-FFFFFFFF | System BIOS |



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# System memory map specifications—AMD processors

| Memory address (hex) | System function |
|---|---|
| 000A0000 - 000BFFFF | nVidia MCP67M |
| 000A0000 - 000BFFFF | PCI bus |
| 000C0000 - 000C3FFF | PCI bus |
| 000C4000 - 000C7FFF | PCI bus |
| 000C80000 - 00CBFFF | PCI bus |
| 000CC000 - 000CFFFF | PCI bus |
| 000D000 - 00D3FFF | PCI bus |
| 000D4000 - 000D7FFF | PCI bus |
| 000D800 - 00DBFFF | PCI bus |
| 000DC00 - 00DFFFF | PCI bus |
| 000E0000 - 00E3FFF | PCI bus |
| 000E4000 - 000E7FFF | PCI bus |
| 000E800 - 000EBFFF | PCI bus |
| 000EC00 - 000EFFFF | PCI bus |
| 000F0000 - 000FFFFF | PCI bus |
| 4000000 - FEBFFFFF | PCI bus |
| D0000000 - DFFFFFFF | nVidia MCP67M |
| E000000 - EFFFFFFF | Motherboard resources |
| F00000 - F3FFFFFF | PCI standard PCI-to-PCI bridge |
| F4000000 - F4FFFFFF | nVidia MCP67M |
| F500000 - F5FFFFFF | nVidia MCP67M |
| F6000000 – F6003FFF | Broadcom 802.11b/g WLAN |
| F600000 - F60FFFFF | PCI standard PCI-to-PCI bridge |
| F610000 - F61007FF | RICOH OHCI Compliant IEEE 1394 Host Controller |
| F6100000 - F61FFFFF | PCI standard PCI-to-PCI bridge |
| F6100800 - F61008FF | SDA Standard Compliant SD Host Controller |
| F6100C00 - F6100CFF | Ricoh SD/MMC Host Controller |
| F6101000 - F61010FF | Ricoh Memory Stick Controller |
| F6101400 - F61014FF | Ricoh xD-Picture Card Controller |
| F620000 - F627FFFF | nVidia nForce System Management Controller |
| F6480000 - F6483FFF | High Definition Audio Controller |
| F6484000 - F6485FFF | Standard Dual Channel PCI IDE Controller |
| F6486000 - F6486FFF | Standard OpenHCD USB Host Controller |



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| Memory address (hex) | System function |
|---|---|
| F6487000 - F6487FFF | Standard OpenHCD USB Host Controller |
| F6488000 - F6488FFF | nVidia nForce Networking Controller |
| F6489000 - F64890FF | Standard Enhanced PCI to USB Host Controller |
| FF6489400 - F64894FF | Standard Enhanced PCI to USB Host Controller |
| F6489800 - F648980F | nVidia nForce Networking Controller |
| F6489C00 - F6489CFF | nVidia nForce Networking Controller |
| FEC00000 - FEC00FFF | System board |
| FEC80000 - FEC80FFF | System board |
| FED00000 - FED003FF | High precision event timer |
| FEE00000 - FEEFFFFF | System board |
| FEF00000 - FEF00FFF | System board |
| FFC00000 - FFFFFFFF | System board |



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# 7 Screw listing

This section provides specification and reference information for the screws and screw locks used in the computer. All screws listed in this section are available in the Screw Kits.

| Description | Spare part number |
|---|---|
| **Screw Kits** (includes all screws) | |
| • For use with standard display assemblies | 486873-001 |
| • For use with Flush Glass display assemblies | 496731-001 |



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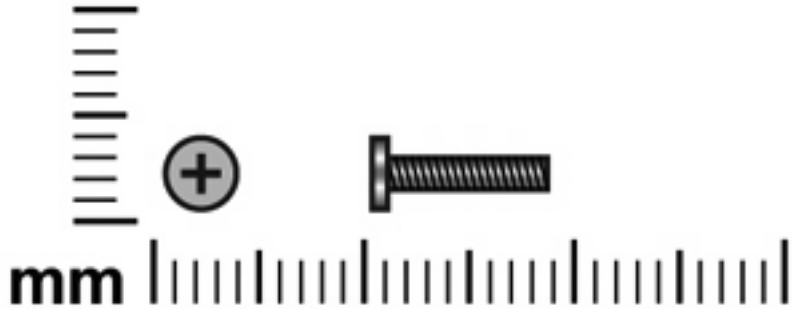
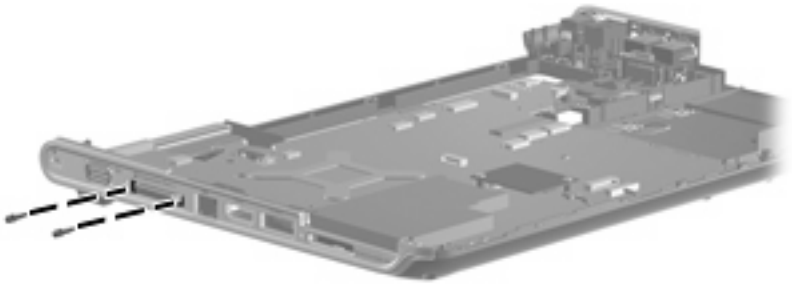
# Phillips PM1.5×9.0 slotted screw




| Color | Quantity | Length | Thread | Head diameter |
|---|---|---|---|---|
| Black | 2 | 9.0 mm | 1.5 mm | 4.0 mm |



**Where used:** Two slotted screws that secure the system board to the base enclosure



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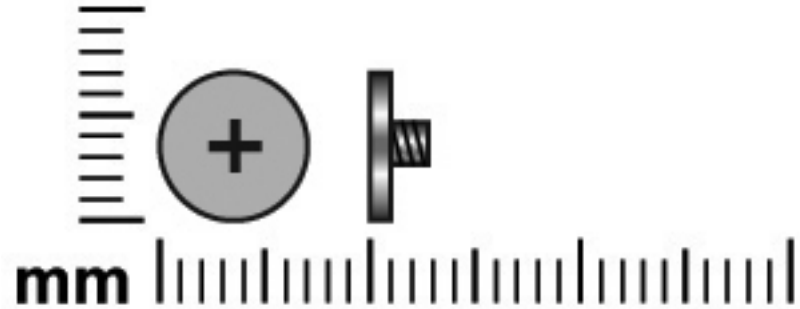
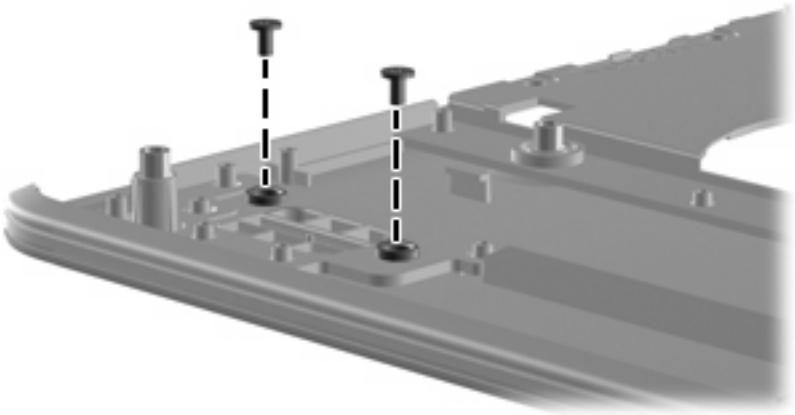
# Phillips PM2.0×3.0 broadhead screw




| Color | Quantity | Length | Thread | Head diameter |
|---|---|---|---|---|
| Black | 2 | 3.0 mm | 2.0 mm | 7.0 mm |



**Where used:** Two broadhead screws that secure the fingerprint reader board to the top cover



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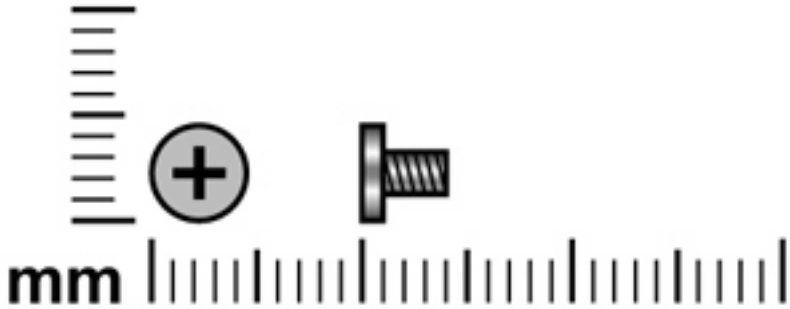
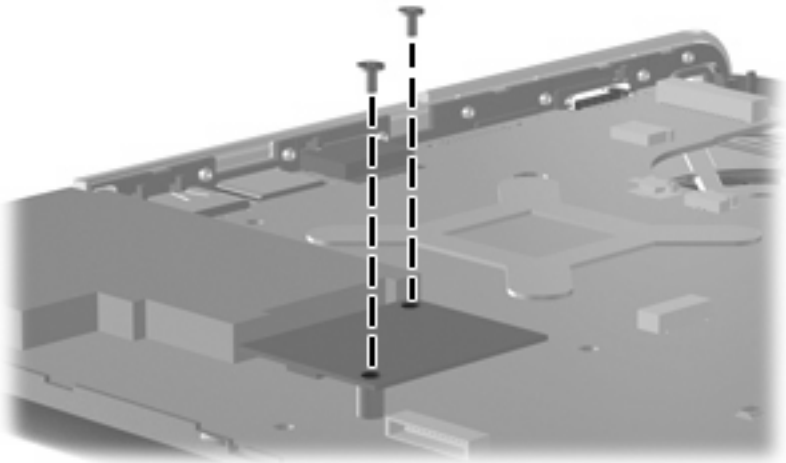
# Phillips PM2.0×4.0 screw




| Color | Quantity | Length | Thread | Head diameter |
|---|---|---|---|---|
| Black | 23 | 4.0 mm | 2.0 mm | 5.0 mm |



**Where used:** Two screws that secure the modem module to the computer

**Where used:** Two screws that secure the optical drive to the computer



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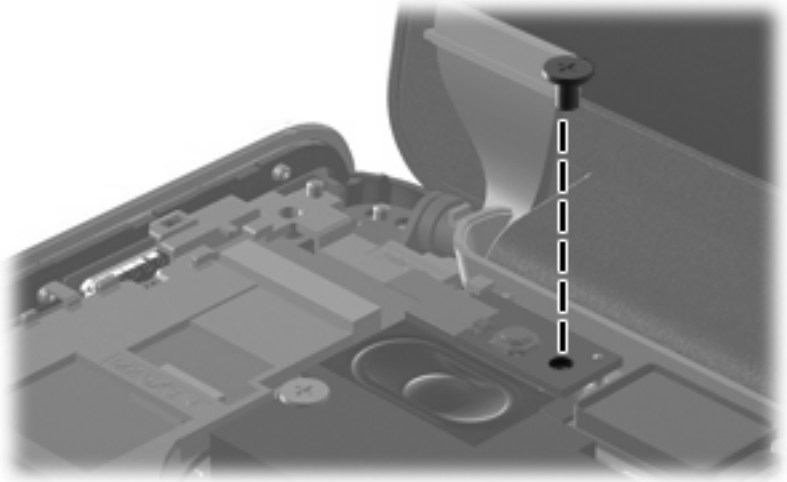
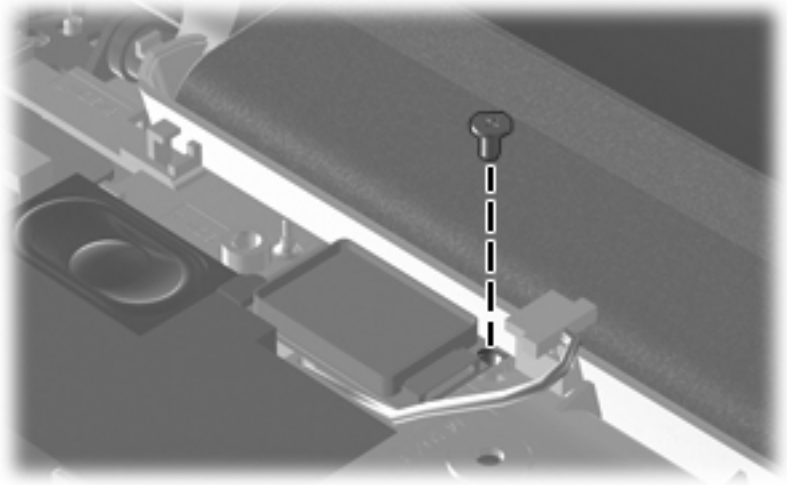
**Where used:** Two screws that secure the keyboard cover to the computer



**Where used:** One screw that secures the power button board to the computer



**Where used:** One screw that secures the Bluetooth module to the computer



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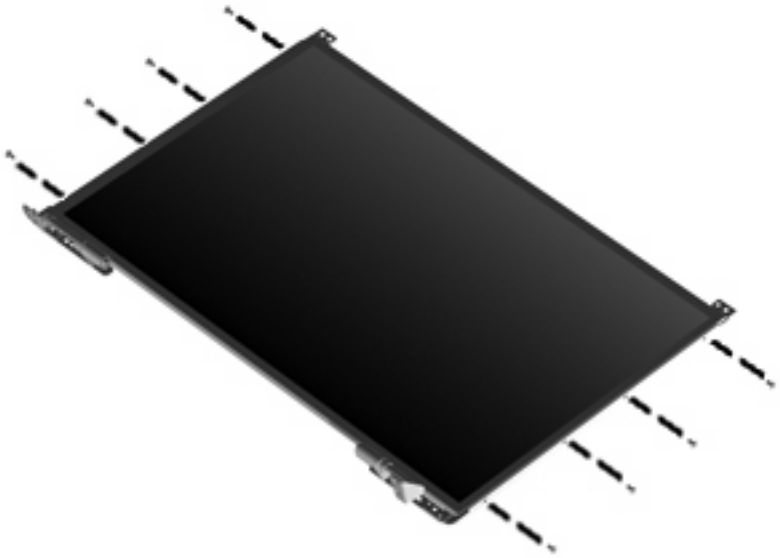
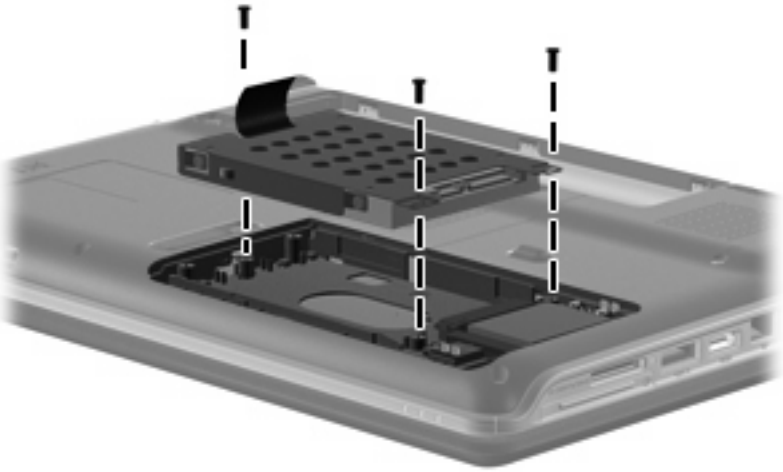
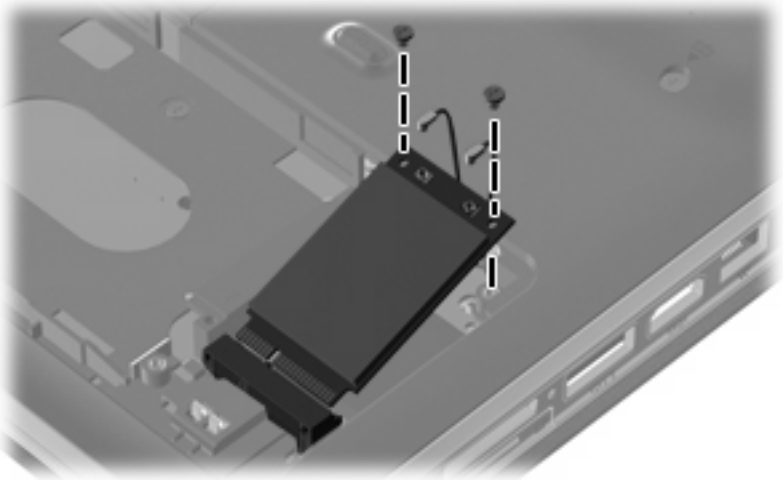


**Where used:** Eight screws that secure the display assembly hinge to the computer



**Where used:** Three screws that secure the hard drive to the computer



**Where used:** Two screws that secure the WLAN module to the computer



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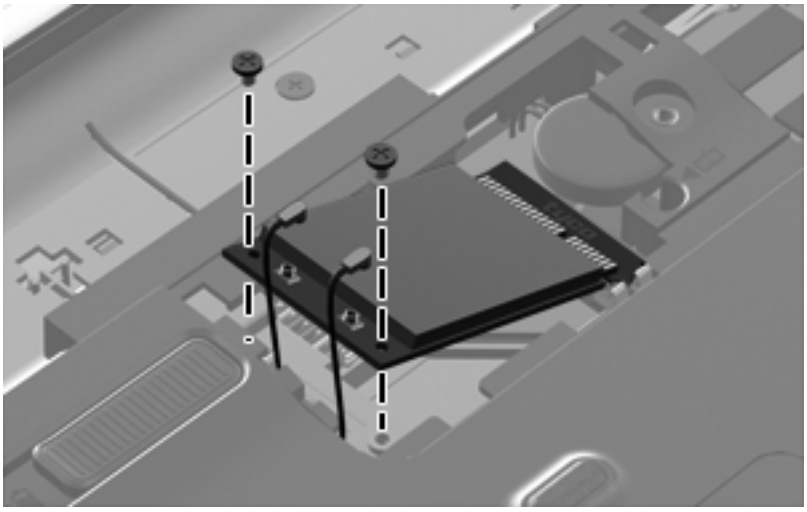

**Where used:** Two screws that secure the WWAN module to the computer

Phillips PM2.0×4.0 screw 147

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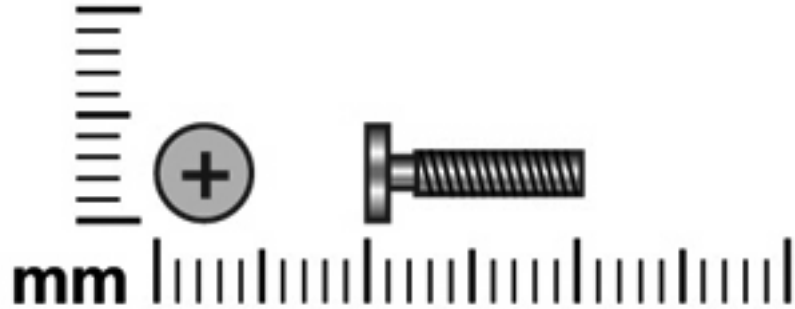
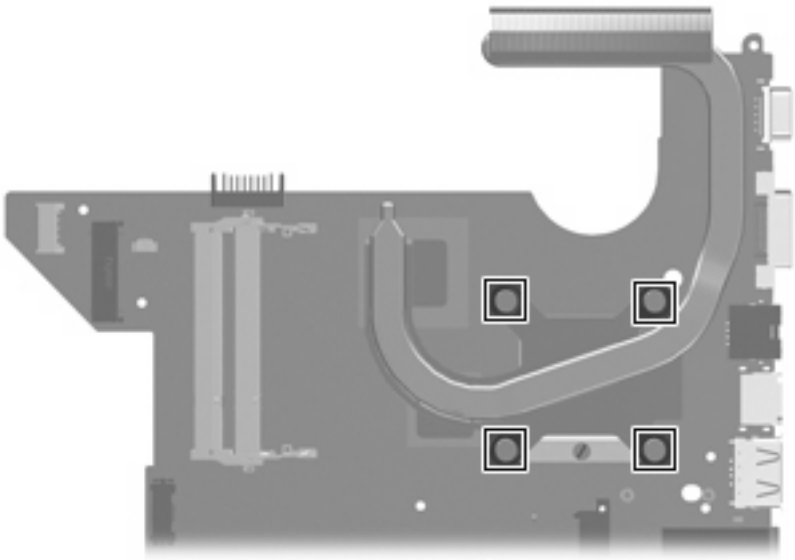
# Phillips PM2.0×10.0 captive screw




| Color | Quantity | Length | Thread | Head diameter |
|---|---|---|---|---|
| Silver | 4 | 10.0 mm | 2.0 mm | 5.0 mm |



**Where used:** Four captive screws (secured by C-clips) that secure the heat sink assembly to the system board



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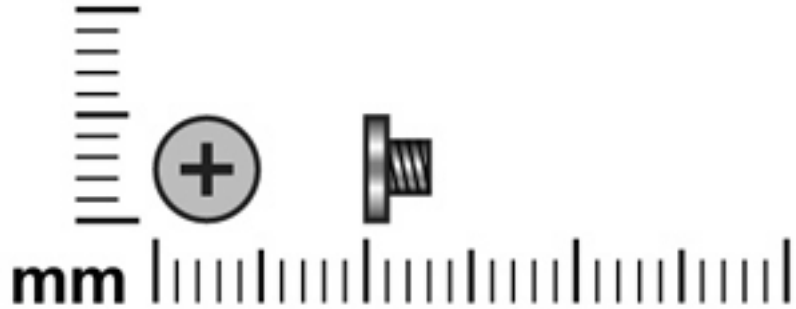
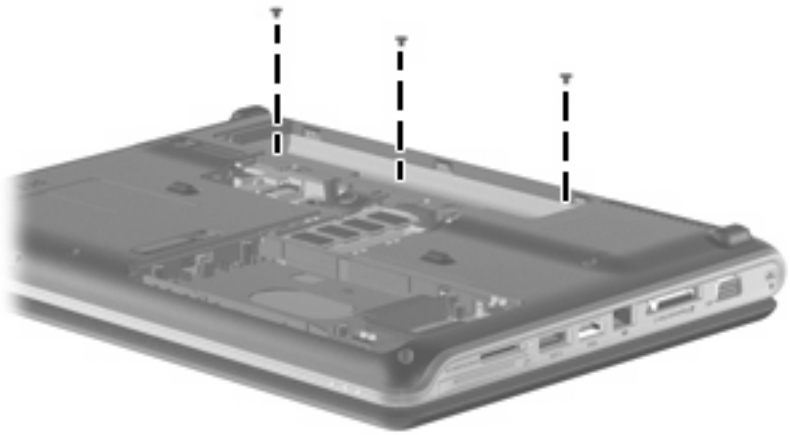
# Phillips PM2.5×3.0 screw




| Color | Quantity | Length | Thread | Head diameter |
|---|---|---|---|---|
| Black | 3 | 3.0 mm | 2.5 mm | 4.0 mm |



**Where used:** Three screws that secure the keyboard cover to the computer



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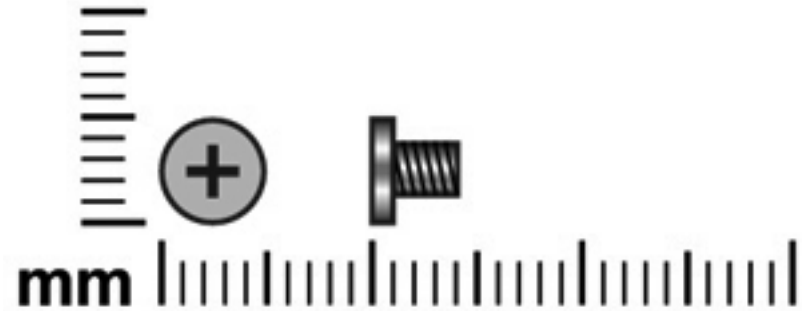
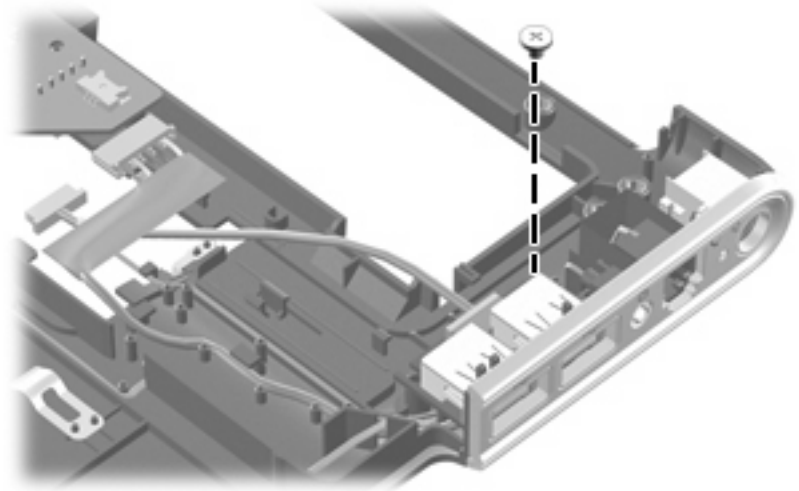
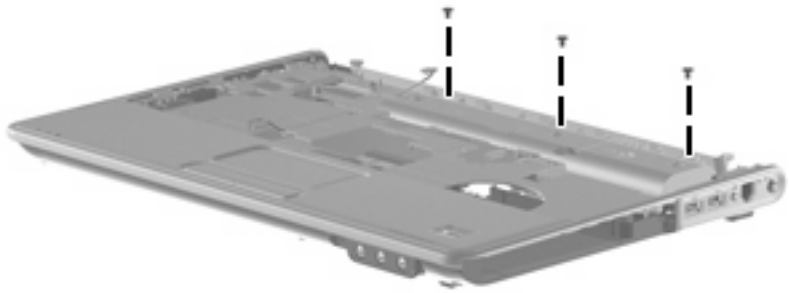
# Phillips PM2.5×4.0 screw




| Color | Quantity | Length | Thread | Head diameter |
|---|---|---|---|---|
| Black | 38 | 4.0 mm | 2.5 mm | 5.0 mm |



**Where used:** One screw that secures the USB board to the computer



**Where used:** Three screws that secure the top cover to the computer



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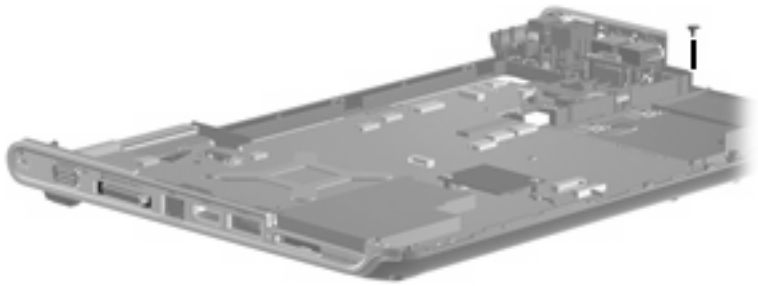
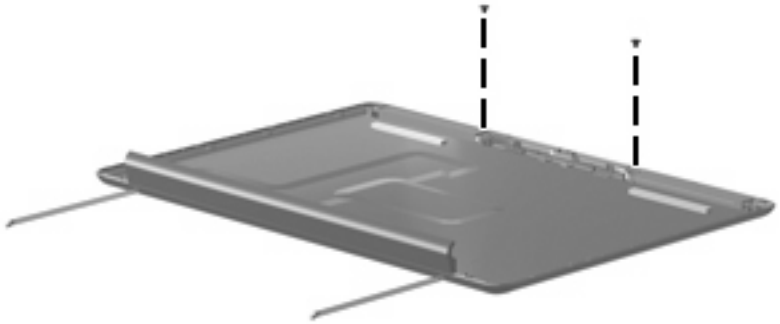
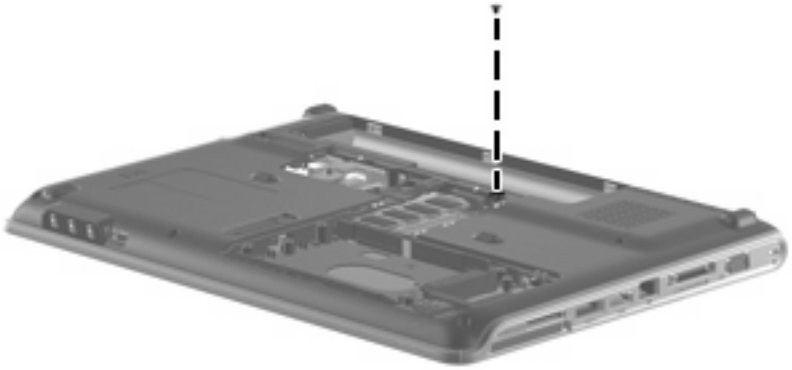


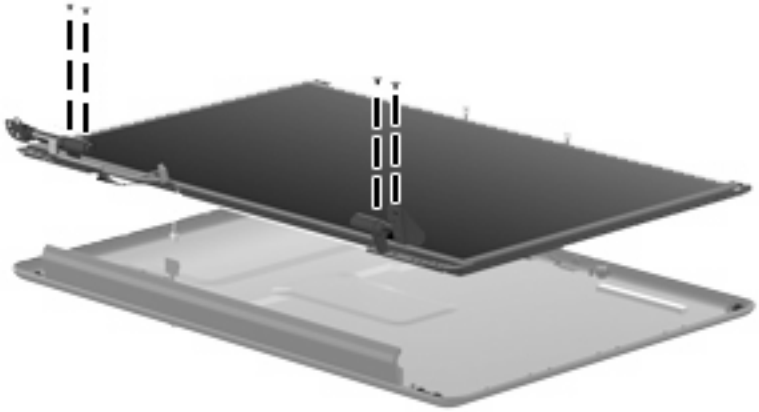
**Where used:** One screw that secures the system board to the base enclosure



**Where used:** Two screws that secure the wireless antenna transceivers to the display enclosure



**Where used:** One screw that secures the top cover to the computer





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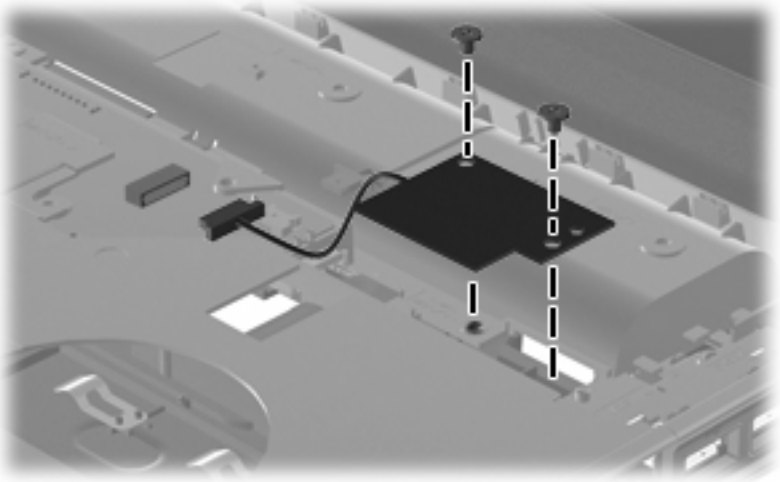
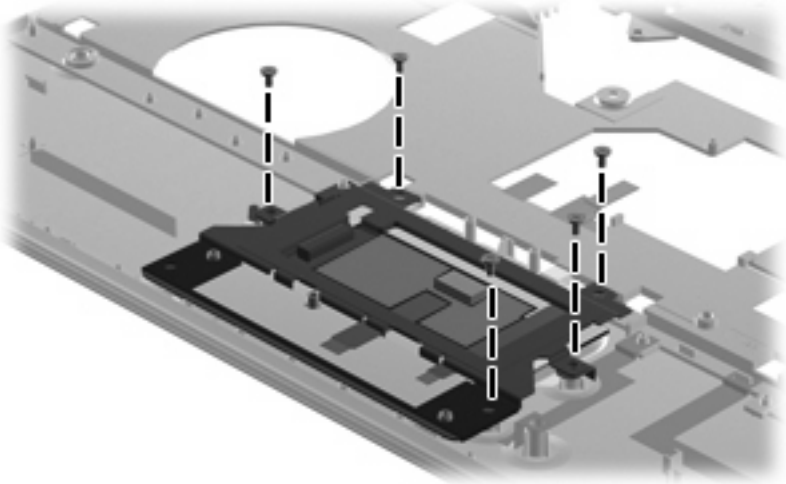
**Where used:** Four screws that secure the display panel to the display assembly



**Where used:** Two screws that secure the SIM connector board to the system board

**Where used:** One screw that secures the keyboard cover to the top cover



**Where used:** Five screws that secure the TouchPad to the top cover



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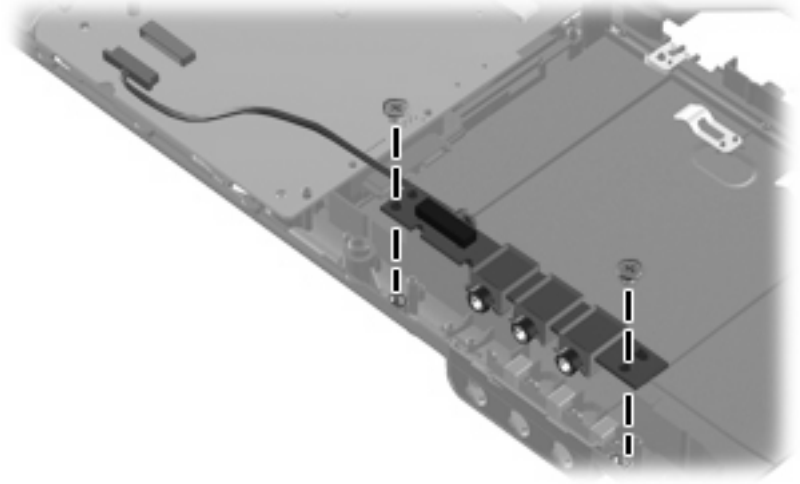
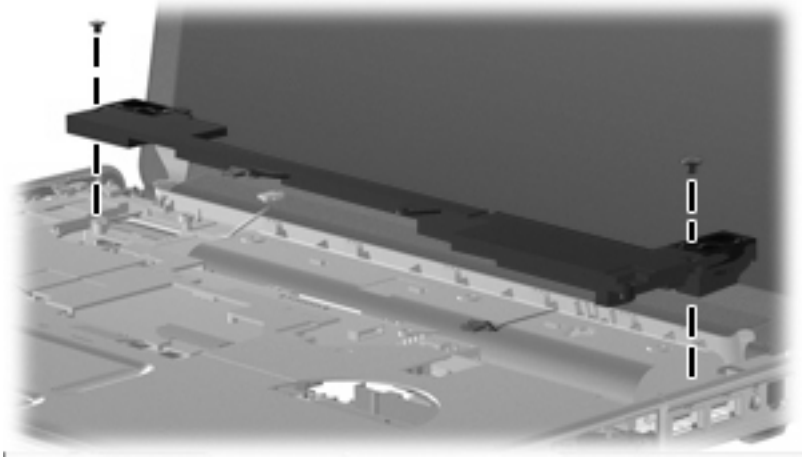
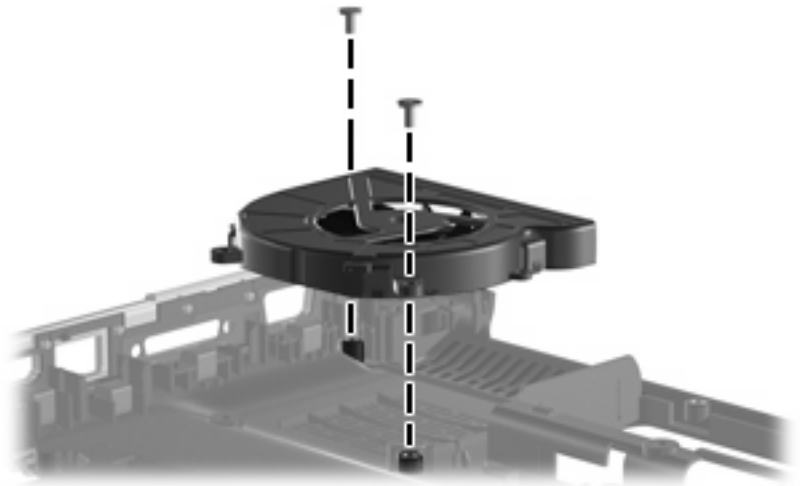


**Where used:** Two screws that secure the audio board to the computer



**Where used:** Two screws that secure the speaker assembly to the computer



**Where used:** Two screws that secure the fan to the system board



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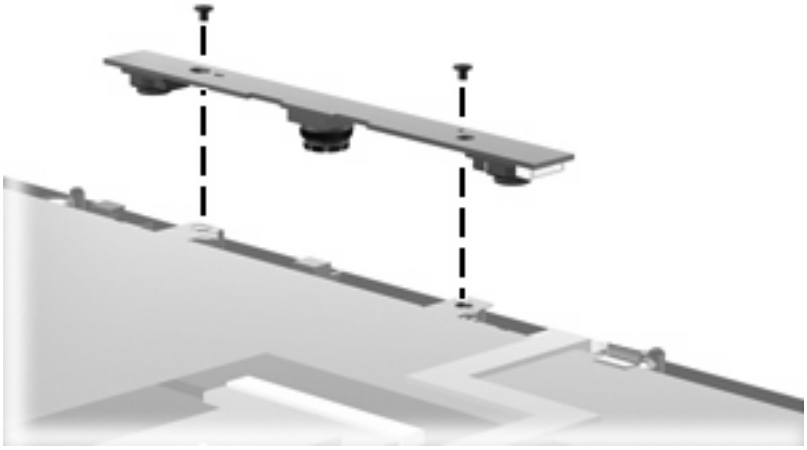
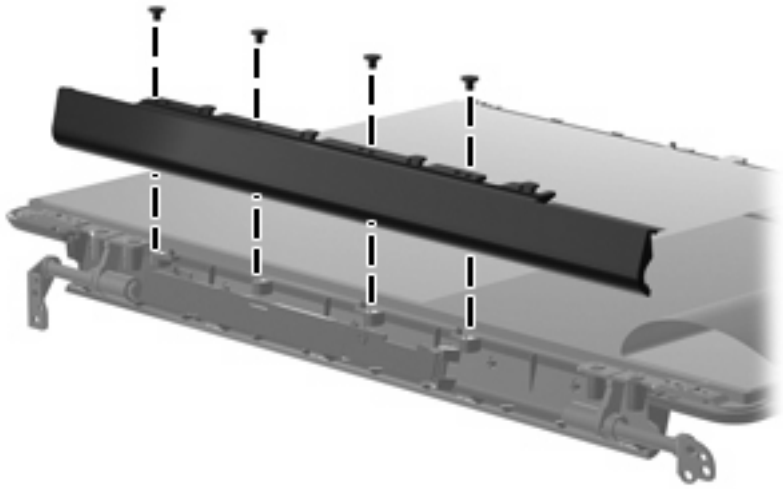
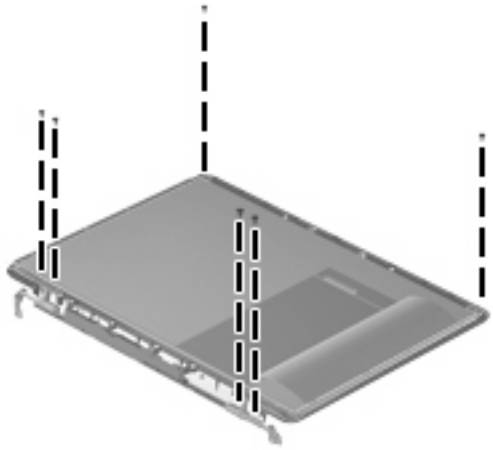


**Where used:** Two screws that secure the camera/microphone module to the Flush Glass display assembly



**Where used:** Four screws that secure the inverter cover to the Flush Glass display assembly



**Where used:** Six screws that secure the hinge to the Flush Glass display assembly



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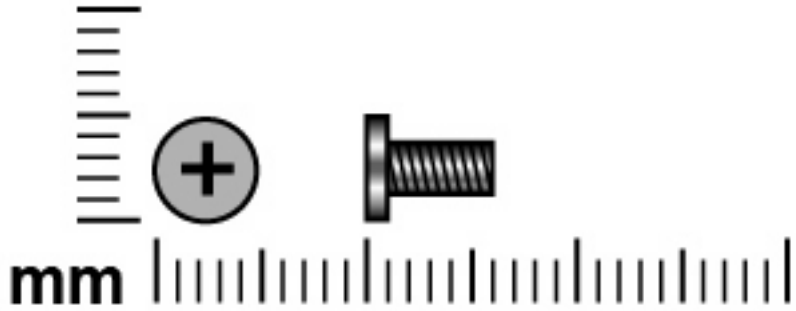
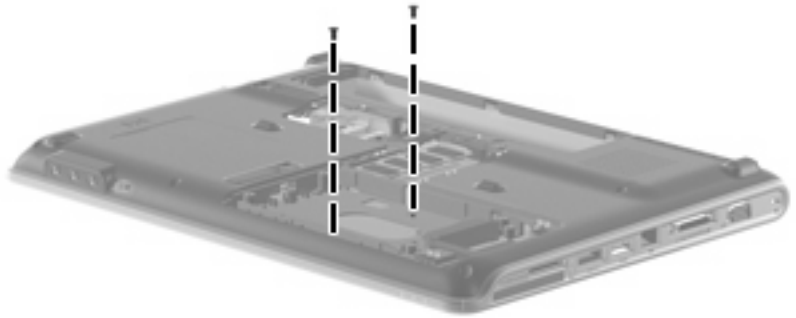
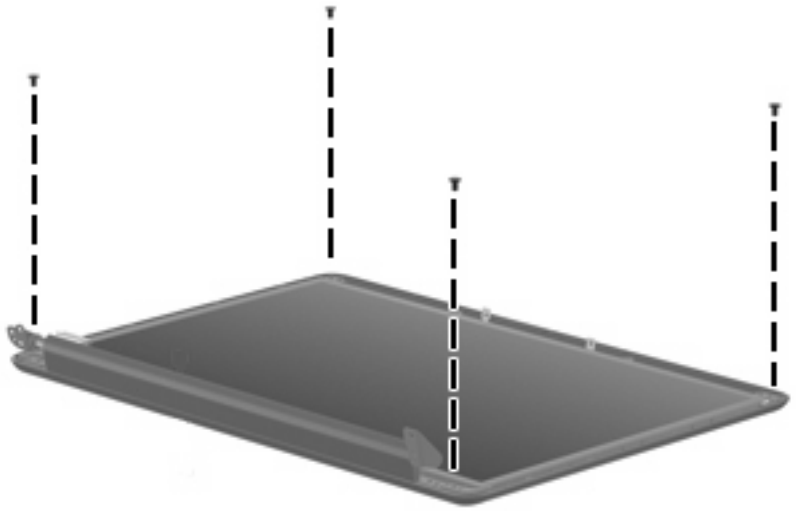
# Phillips PM2.5×6.0 screw




| Color | Quantity | Length | Thread | Head diameter |
|---|---|---|---|---|
| Black | 8 | 6.0 mm | 2.5 mm | 4.0 mm |



**Where used:** Two screws that secure the top cover to the computer



**Where used:** Four screws that secure the display bracket to the display assembly



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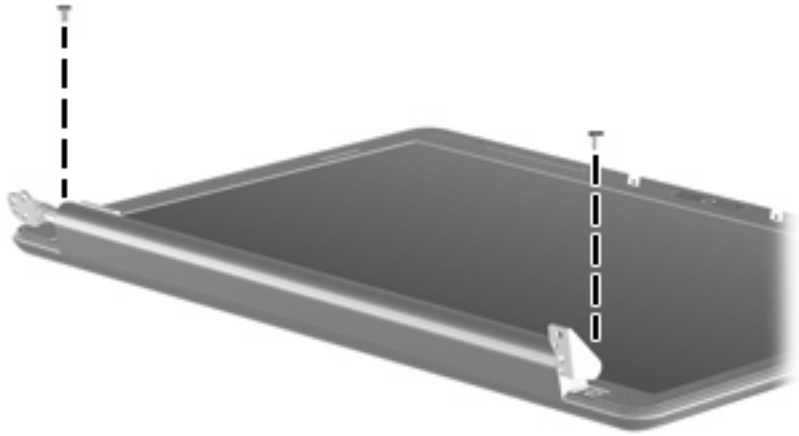

**Where used:** Two screws that secure the enclosure to the Flush Glass display assembly



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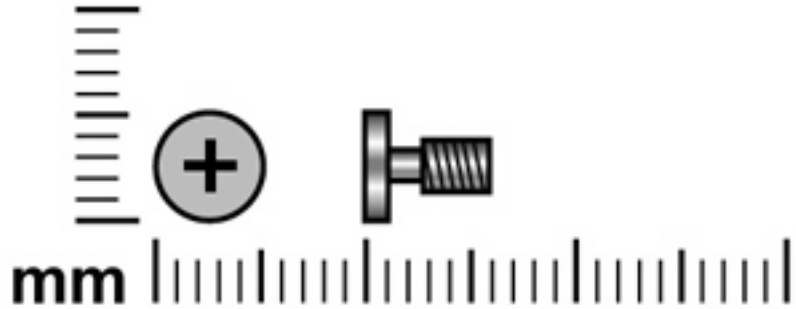
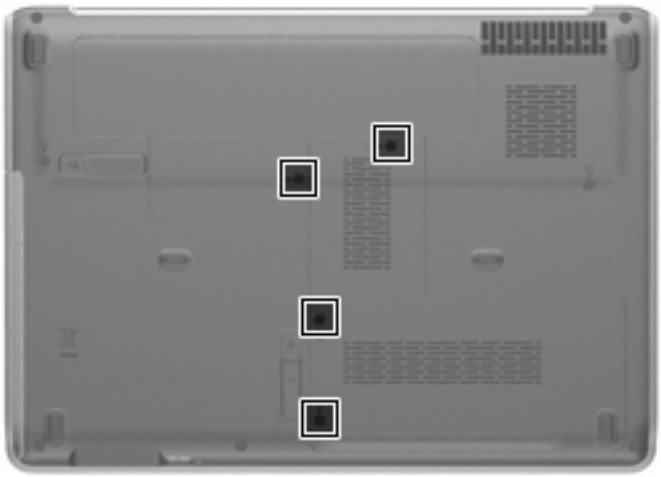
# Phillips PM2.5×6.0 captive screw




| Color | Quantity | Length | Thread | Head diameter |
|---|---|---|---|---|
| Black | 4 | 6.0 mm | 2.5 mm | 5.0 mm |



**Where used:** Four captive screws that secure the hard drive, memory, and WWAN covers to the computer



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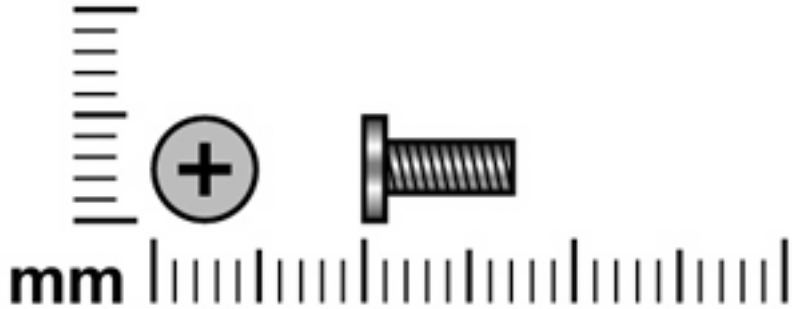
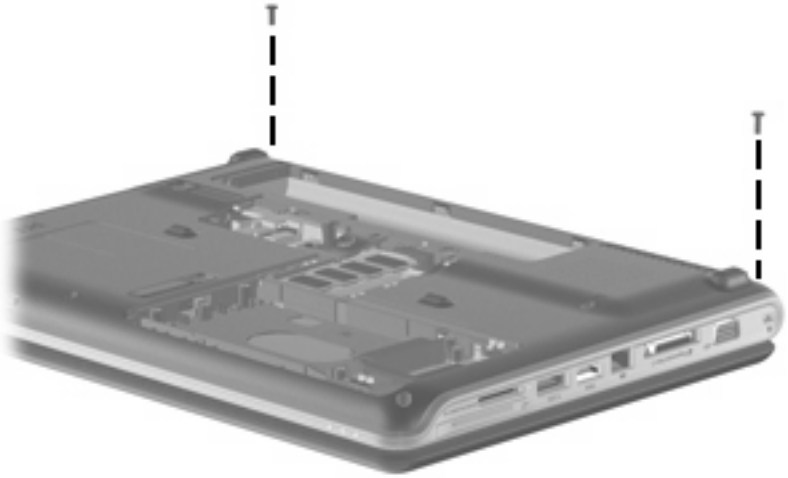
# Phillips PM2.5×7.0 screw




| Color | Quantity | Length | Thread | Head diameter |
|---|---|---|---|---|
| Black | 4 | 7.0 mm | 2.5 mm | 5.0 mm |



**Where used:** Two screws securing the keyboard cover to the computer

**Where used:** Two screws that secure the bezel to the display assembly



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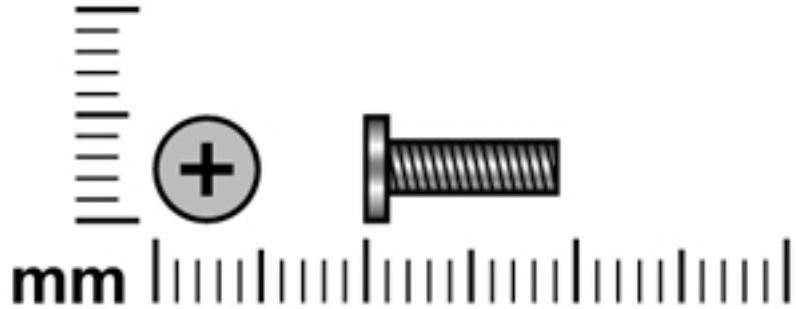
# Phillips PM2.5×9.0 screw




| Color | Quantity | Length | Thread | Head diameter |
|---|---|---|---|---|
| Black | 6 | 9.0 mm | 2.5 mm | 4.0 mm |

**Where used:** Three screws that secure the top cover to the computer

**Where used:** One screw that secures the keyboard to the computer



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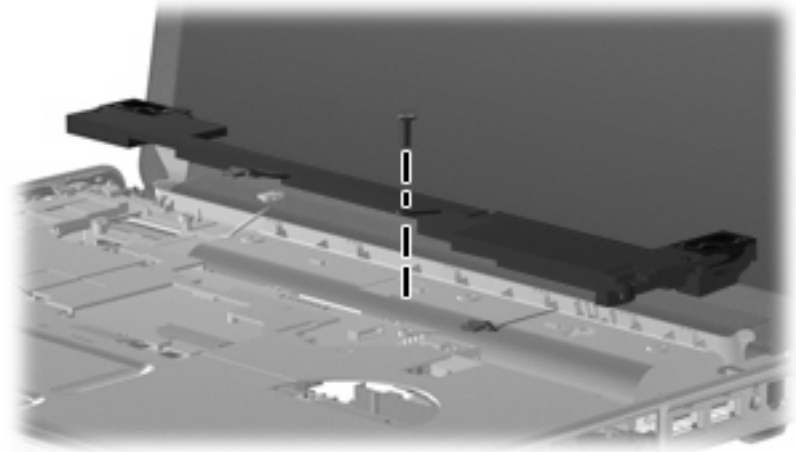
**Where used:** One screw that secures the keyboard cover to the top cover



**Where used:** One screw that secures the speaker assembly to the top cover



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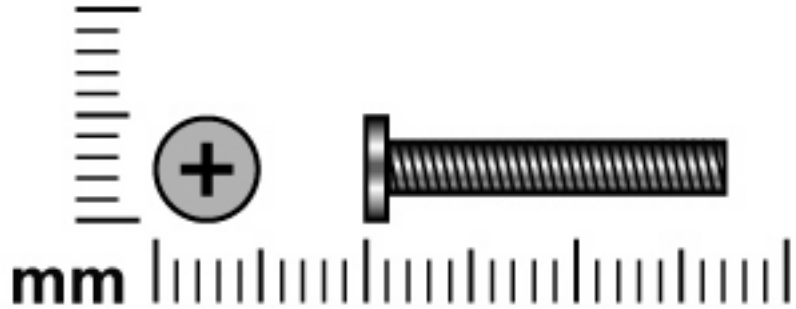
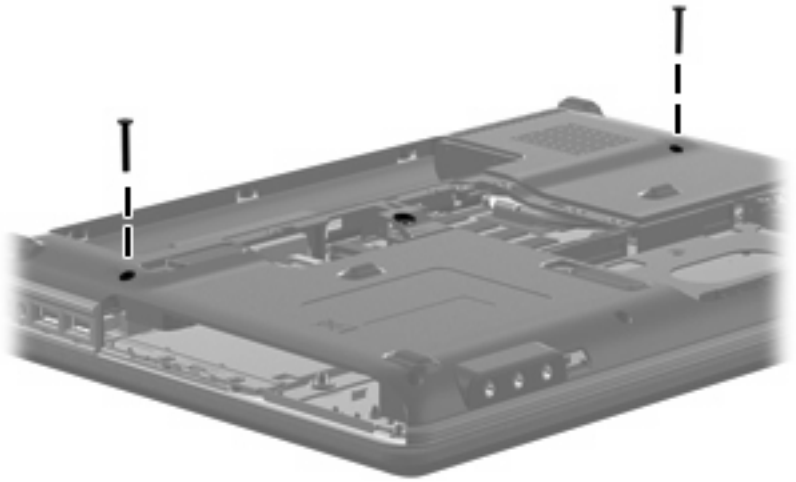
# Phillips PM2.5×17.0 screw




| Color | Quantity | Length | Thread | Head diameter |
|---|---|---|---|---|
| Black | 2 | 17.0 mm | 2.5 mm | 4.0 mm |



**Where used:** Two screws that secure the keyboard to the computer



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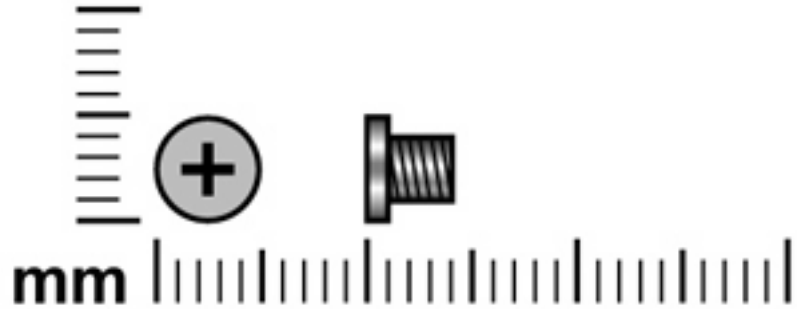
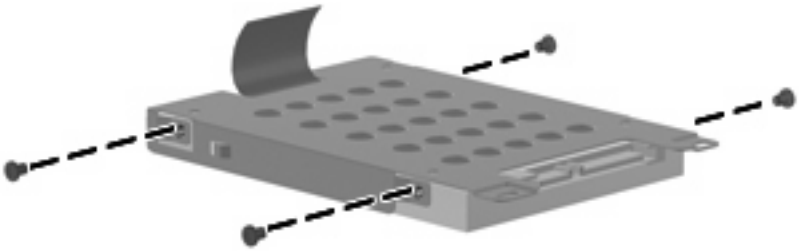
# Phillips PM3.0×4.0 screw




| Color | Quantity | Length | Thread | Head diameter |
|---|---|---|---|---|
| Silver | 4 | 4.0 mm | 3.0 mm | 5.0 mm |



**Where used:** Four screws that secure the hard drive bracket to the hard drive



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# 8 Backup and recovery

## Recovering system information

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:** If your computer includes a solid-state drive (SSD), you 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 > Computer**. If the partition is present, an HP Recovery drive is listed in the Hard Disk Drives section of the window.

## Backing up your information

### When to back up

- On a regularly scheduled basis

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

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



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## Backup suggestions

- Create a set of recovery discs using Recovery Manager.
- Create system restore points using the Windows® System Restore feature, and periodically copy them to disc.
- Store personal files in the Documents folder 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:

  **a.** Display the screen.

  **b.** Copy the screen:

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

  To copy the entire screen, press fn+prt sc.

  **c.** Open a word-processing document, and then select **Edit > Paste**.

## 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 Maintenance > System**.
2. In the left pane, click **System Protection**.
3. Click the **System Protection** tab.
4. Under **Automatic restore points**, select the disk for which you want to create a restore point.
5. Click **Create**.



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The System Protection window opens.

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 Maintenance > System**.
2. In the left pane, click **System protection**.
3. Click the **System Protection** tab.
4. Click the **System Restore** button, and then click **Next**.

   The System Restore window opens.

5. Follow the on-screen instructions.

## Creating recovery discs

**NOTE:** 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.

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

Note the following guidelines before creating recovery discs:

- You will need high-quality DVD-R, double-layer DVD-R, DVD+R, double-layer 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±RW, 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 computer 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 Manager**.

   Recovery Manager opens.

2. Click **Advanced Options**.

   **NOTE:** If you are operating the computer on battery power, you will be prompted to connect to AC power before you can go to the next step.



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3. Click **Recovery disc creation**, and then click **Next**.

4. 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 Recovery Manager to create an 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 that you create 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 and driver roll-back capabilities. 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:** If your computer includes an SSD, you may 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 from either the Start button or f11. This restores the computer to it's 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–

   - Restart the computer and press f11 while the “Press <F11> for recovery” message is displayed on the screen. Then select **Recovery Manager**.

   Recovery Manager opens.

2. Click **Advanced Options**.



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3. Click **System recovery**, and then click **Next**.
4. Follow the on-screen instructions.



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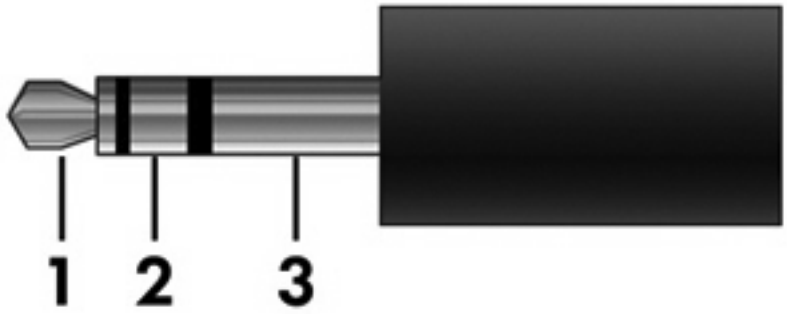
# 9 Connector pin assignments

## Audio-in (microphone)




| Pin | Signal |
|---|---|
| 1 | Audio signal in |
| 2 | Audio signal in |
| 3 | Ground |



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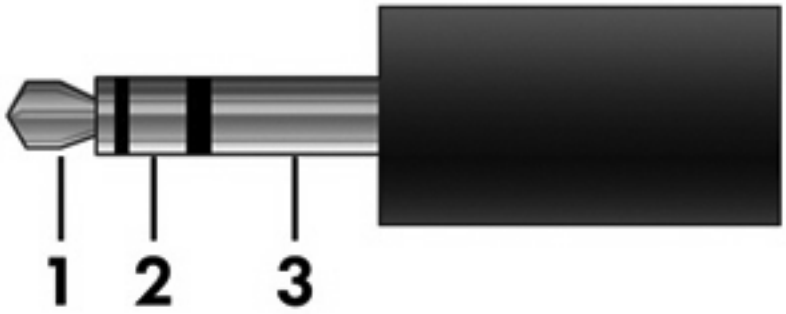
# Audio-out (headphone)




| Pin | Signal |
|---|---|
| 1 | Audio out, left channel |
| 2 | Audio out, right channel |
| 3 | Ground |



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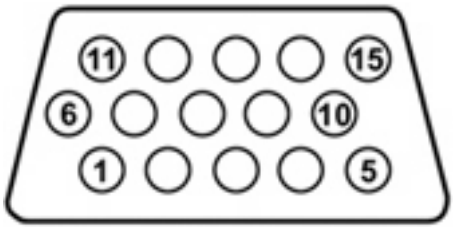
# External monitor




| Pin | Signal |
|---|---|
| 1 | Red analog |
| 2 | Green analog |
| 3 | Blue analog |
| 4 | Not connected |
| 5 | Ground |
| 6 | Ground analog |
| 7 | Ground analog |
| 8 | Ground analog |
| 9 | +5 VDC |
| 10 | Ground |
| 11 | Monitor detect |
| 12 | DDC 2B data |
| 13 | Horizontal sync |
| 14 | Vertical sync |
| 15 | DDC 2B clock |



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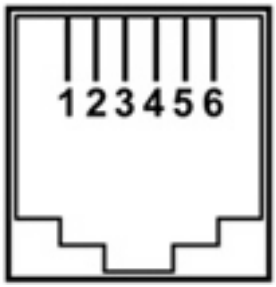
# RJ-11 (modem)




| Pin | Signal |
|---|---|
| 1 | Unused |
| 2 | Tip |
| 3 | Ring |
| 4 | Unused |
| 5 | Unused |
| 6 | Unused |



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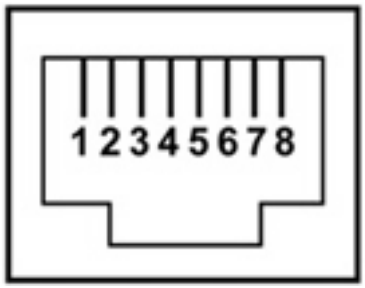
# RJ-45 (network)




| Pin | Signal |
|---|---|
| 1 | Transmit + |
| 2 | Transmit - |
| 3 | Receive + |
| 4 | Unused |
| 5 | Unused |
| 6 | Receive - |
| 7 | Unused |
| 8 | Unused |



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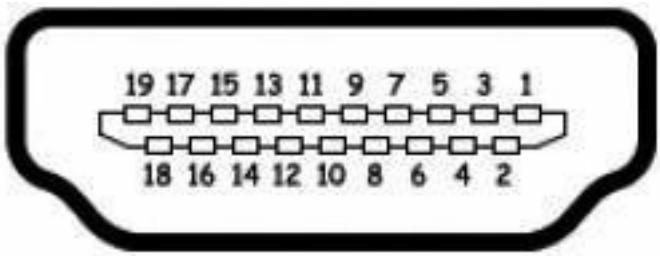
# HDMI




| Pin | Signal |
|---|---|
| 1 | Transition minimized differential signal (TDMS) data 2+ |
| 2 | Transition minimized differential signal (TDMS) data 2 shield |
| 3 | Transition minimized differential signal (TDMS) data 2- |
| 4 | Transition minimized differential signal (TDMS) data 1+ |
| 5 | Transition minimized differential signal (TDMS) data 1 shield |
| 6 | Transition minimized differential signal (TDMS) data 1- |
| 7 | Transition minimized differential signal (TDMS) data 0+ |
| 8 | Transition minimized differential signal (TDMS) data 0 shield |
| 9 | Transition minimized differential signal (TDMS) data 0- |
| 10 | Transition minimized differential signal (TDMS) Clock + |
| 11 | Transition minimized differential signal (TDMS) data clock shield |
| 12 | Transition minimized differential signal (TDMS) data clock- |
| 13 | Consumer electronics control (CEC) |
| 14 | No connect |
| 15 | Display data channel (DDC) clock |
| 16 | Display data channel (DDC) data |
| 17 | Ground |
| 18 | +5V power |
| 19 | Hot plug detect |



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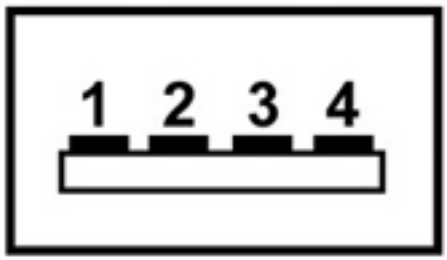
# Universal Serial Bus




| Pin | Signal |
|---|---|
| 1 | +5 VDC |
| 2 | Data - |
| 3 | Data + |
| 4 | Ground |



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# 10 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.



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# 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.



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# 11 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. Caution must be exercised when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

△ **CAUTION:** The procedures in this appendix can result in damage to display components. The only components intended for recycling purposes are the liquid crystal display (LCD) panel and the backlight. Careful handling must be exercised when removing these components.

**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 appendix 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.



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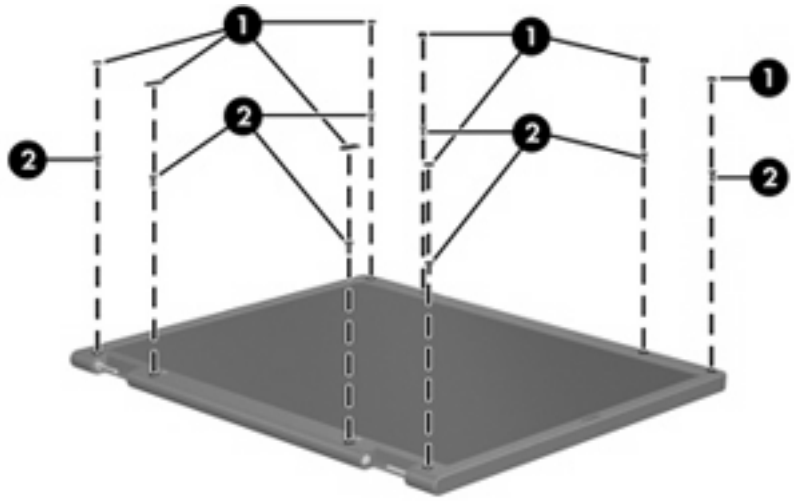
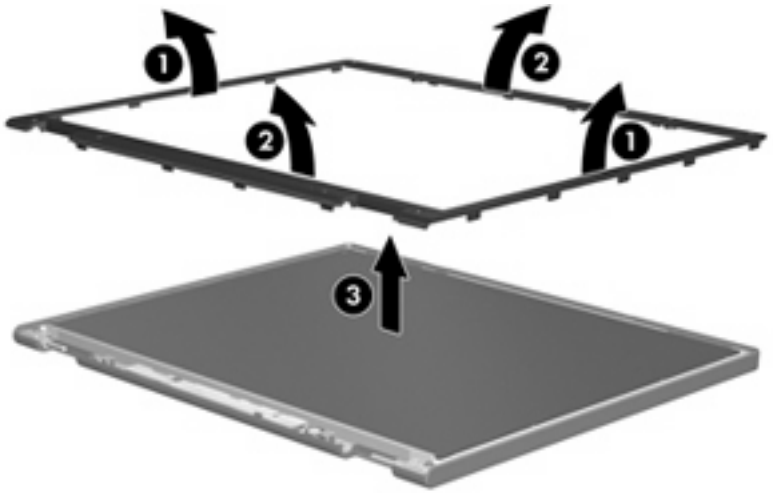
Perform the following steps to disassemble the display assembly:

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)**.





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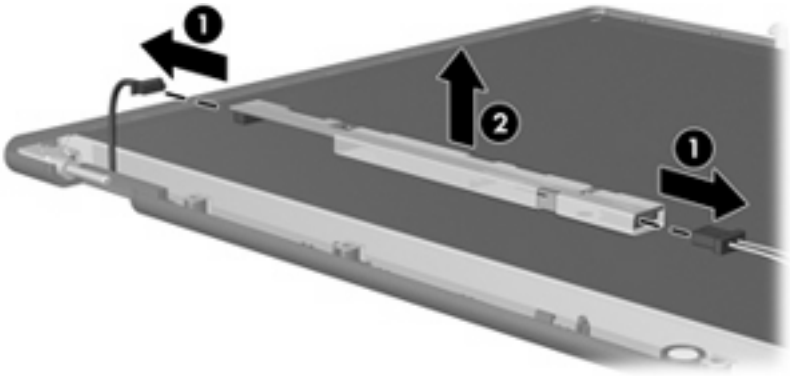
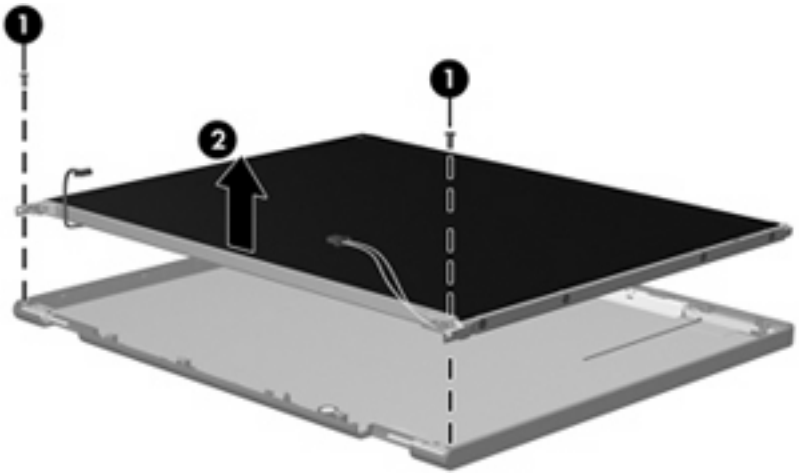
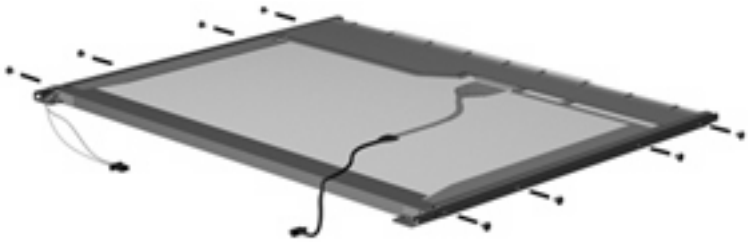
4. Disconnect all display panel cables **(1)** from the display inverter and remove the inverter **(2)**.



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.



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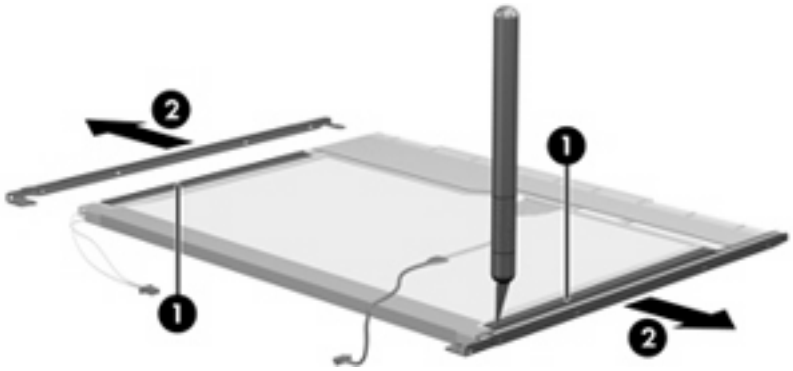
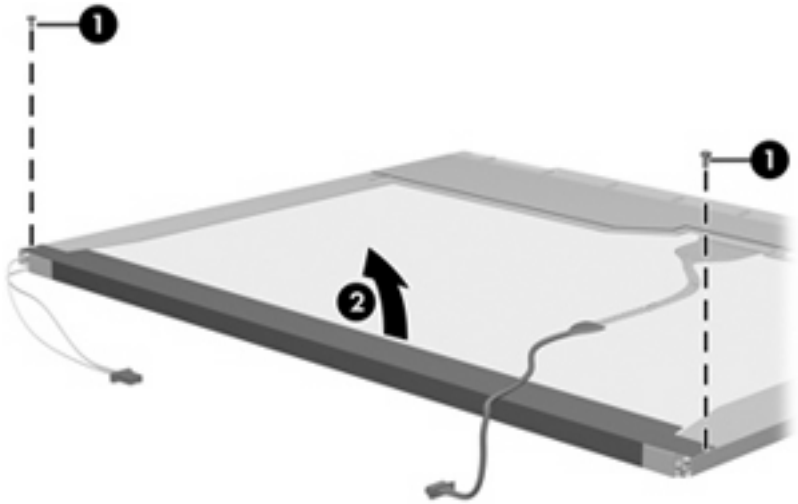
10. Remove the display panel frame **(2)** from the display panel.




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. Turn the display panel right-side up.



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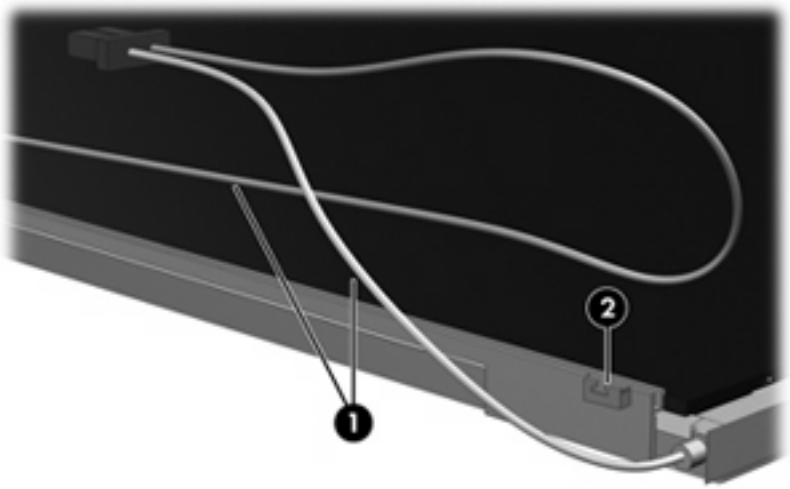
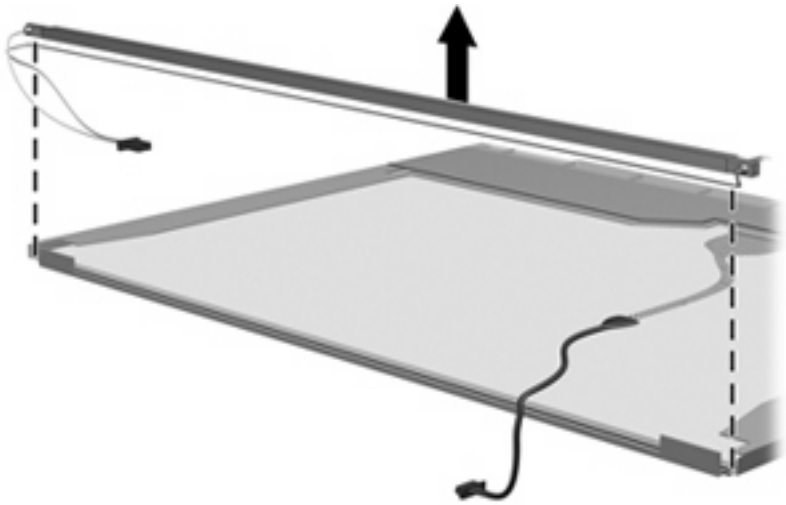
15. Remove the backlight cables **(1)** from the clip **(2)** in the display panel.



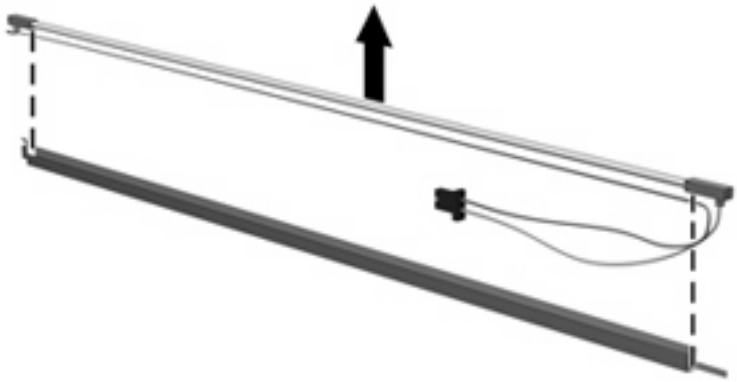

16. Turn the display panel upside down.

17. Remove the backlight frame from the display panel.



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

18. Remove the backlight from the backlight frame.





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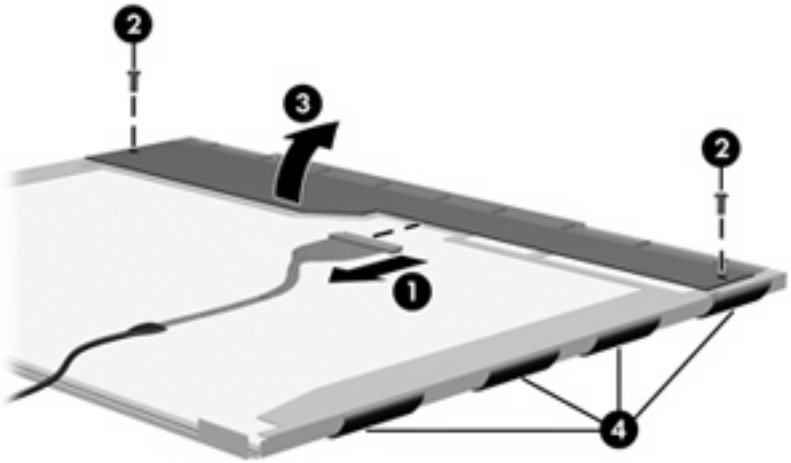
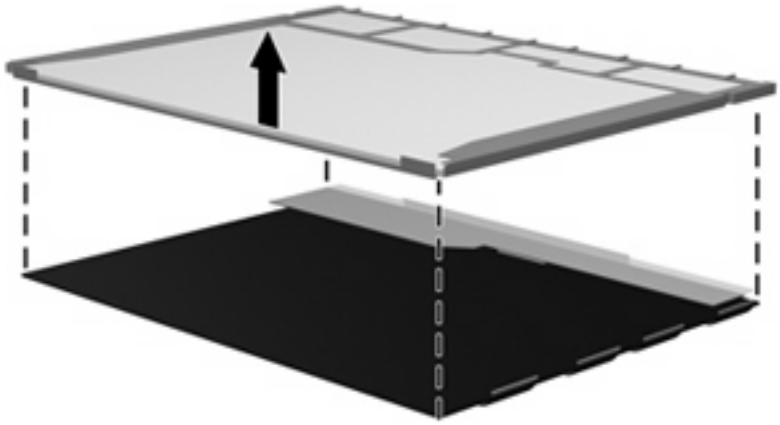
19. Disconnect the display cable **(1)** from the LCD panel.
20. Remove the screws **(2)** that secure the LCD panel to the display rear panel.
21. Release the LCD panel **(3)** from the display rear panel.
22. Release the tape **(4)** that secures the LCD panel to the display rear panel.




23. Remove the LCD panel.



24. Recycle the LCD panel and backlight.



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