



HP ProBook 4325s Notebook PC  
HP ProBook 4326s Notebook PC  
HP ProBook 4425s Notebook PC  
Maintenance and Service Guide

**SUMMARY**

This guide is a troubleshooting reference used for maintaining and servicing the computer. It provides comprehensive information on identifying computer features, components, and spare parts; troubleshooting computer problems; and performing computer disassembly procedures.

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## Safety warning notice

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 **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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# Table of contents

|  |           |
|--|-----------|
| <b>1 Product description</b> .....   | <b>1</b>  |
| <b>2 External component identification</b> .....                               | <b>9</b>  |
| Identifying hardware .....   | 9         |
| Top components .....   | 10        |
| TouchPad .....   | 10        |
| Lights .....   | 11        |
| Buttons, speakers, switches, and fingerprint reader (select models only) ..... | 12        |
| Keys .....   | 13        |
| Front components .....   | 14        |
| Right-side components .....  | 15        |
| Left-side components .....   | 16        |
| Bottom components .....  | 17        |
| Display .....  | 18        |
| Wireless antennas (select models only) .....                                   | 19        |
| Additional hardware components .....   | 20        |
| <b>3 Illustrated parts catalog</b> .....                                       | <b>21</b> |
| Serial number label location .....   | 21        |
| Computer major components .....  | 22        |
| Display assembly components .....  | 28        |
| Plastics Kit .....   | 30        |
| Cable kit .....  | 31        |
| Mass storage devices .....   | 32        |
| Miscellaneous parts .....  | 33        |
| Sequential part number listing .....   | 34        |
| <b>4 Removal and replacement procedures</b> .....                              | <b>39</b> |
| Preliminary replacement requirements .....                                     | 39        |
| Tools required .....   | 39        |
| Service considerations .....   | 39        |

|  |           |
|--|-----------|
| Plastic parts .....                                | 39        |
| Cables and connectors .....                        | 40        |
| Drive handling .....                               | 40        |
| Grounding guidelines .....                         | 41        |
| Electrostatic discharge damage .....               | 41        |
| Packaging and transporting guidelines .....        | 42        |
| Workstation guidelines .....                       | 42        |
| Equipment guidelines .....                         | 43        |
| Component replacement procedures .....             | 44        |
| Serial number label .....                          | 44        |
| Computer feet .....                                | 44        |
| Battery .....                                      | 45        |
| SIM .....  | 46        |
| Switch cover .....                                 | 47        |
| Keyboard .....                                     | 49        |
| Memory module .....                                | 51        |
| Optical drive .....                                | 53        |
| Power button board .....                           | 55        |
| Speakers .....                                     | 56        |
| Palm rest .....                                    | 58        |
| Hard drive .....                                   | 61        |
| RTC battery .....                                  | 64        |
| WLAN module .....                                  | 65        |
| Bluetooth module .....                             | 68        |
| Heat sink and fan .....                            | 70        |
| Processor .....                                    | 74        |
| Power connector cable .....                        | 76        |
| Display assembly .....                             | 77        |
| Top cover .....                                    | 85        |
| Modem module .....                                 | 87        |
| System board .....                                 | 89        |
| USB connector board .....                          | 91        |
| Modem module cable .....                           | 93        |
| <b>5 Computer Setup .....</b>                      | <b>95</b> |
| Computer Setup in Windows 7 .....                  | 95        |
| Starting Computer Setup .....                      | 95        |
| Using Computer Setup .....                         | 95        |
| Navigating and selecting in Computer Setup .....   | 95        |
| Restoring factory settings in Computer Setup ..... | 96        |
| Computer Setup menus .....                         | 97        |

|  |            |
|--|------------|
| File menu .....  | 97         |
| Security menu .....  | 98         |
| System Configuration menu .....  | 99         |
| Computer Setup in Windows Vista and Windows XP .....                           | 101        |
| Starting Computer Setup .....  | 101        |
| Using Computer Setup .....   | 101        |
| Navigating and selecting in Computer Setup .....                               | 101        |
| Restoring factory settings in Computer Setup .....                             | 102        |
| Computer Setup menus .....   | 103        |
| File menu .....  | 103        |
| Security menu .....  | 104        |
| Diagnostics menu .....   | 105        |
| System Configuration menu .....  | 106        |
| Computer Setup in Linux .....  | 108        |
| Starting Computer Setup .....  | 108        |
| Using Computer Setup .....   | 108        |
| Navigating and selecting in Computer Setup .....                               | 108        |
| Restoring factory settings in Computer Setup .....                             | 109        |
| Computer Setup menus .....   | 109        |
| File menu .....  | 109        |
| Security menu .....  | 110        |
| Diagnostics menu .....   | 111        |
| System Configuration menu .....  | 112        |
| <b>6 Specifications .....</b>  | <b>114</b> |
| Computer specifications .....  | 114        |
| 33.8-cm (13.3-in) display specifications .....                                 | 115        |
| 35.6-cm (14.0-in) display specifications .....                                 | 116        |
| Hard drive specifications .....  | 117        |
| DVD ROM Drive specifications .....   | 118        |
| DVD±RW SuperMulti Double-Layer Drive with LightScribe specifications .....     | 119        |
| Blu-ray ROM with LightScribe DVD±R/RW SuperMulti DL Drive specifications ..... | 120        |
| System resource specifications .....   | 121        |
| <b>7 Backup and recovery .....</b>   | <b>122</b> |
| Windows 7 backup and recovery .....  | 122        |
| Backing up .....   | 122        |
| Recovering .....   | 124        |
| Backup and recovery in Windows Vista .....                                     | 125        |
| Overview .....   | 125        |
| Backing up your information .....  | 125        |

|   |            |
|---|------------|
| Performing a recovery .....   | 126        |
| Using the Windows recovery tools .....                                  | 126        |
| Using f11 .....   | 127        |
| Using a Windows Vista operating system DVD (purchased separately) ..... | 128        |
| Backup and recovery in Windows XP .....                                 | 129        |
| Overview .....  | 129        |
| Backing up your information .....                                       | 129        |
| Performing a recovery .....   | 130        |
| Recovering your information .....                                       | 130        |
| Recovering the operating system and programs .....                      | 130        |
| Linux backup and recovery .....   | 131        |
| <b>8 Connector pin assignments .....</b>                                | <b>132</b> |
| Audio-in (microphone) .....   | 132        |
| Audio-out (headphone) .....   | 133        |
| External monitor .....  | 134        |
| HDMI .....  | 135        |
| RJ-11 (modem) .....   | 136        |
| RJ-45 (network) .....   | 137        |
| Universal Serial Bus .....  | 138        |
| eSATA/USB .....   | 139        |
| <b>9 Power cord set requirements .....</b>                              | <b>140</b> |
| Requirements for all countries and regions .....                        | 140        |
| Requirements for specific countries and regions .....                   | 141        |
| <b>10 Recycling .....</b>   | <b>142</b> |
| Battery .....   | 142        |
| Display .....   | 142        |
| <b>Index .....</b>  | <b>148</b> |



# 1 Product description

| Category            | Description  | HP ProBook 4325s | HP ProBook 4326s | HP ProBook 4425s |
|---------------------|--|------------------|------------------|------------------|
|                     |  | UMA              | Discrete         | UMA              |
| <b>Product Name</b> | HP ProBook 4325s Notebook PC   | √                |                  |                  |
|                     | <b>NOTE:</b> Discrete not for use in the People's Republic of China.                             |                  |                  |                  |
|                     | HP ProBook 4326s Notebook PC   |                  | √                |                  |
|                     | <b>NOTE:</b> For use in the People's Republic of China.  |                  |                  |                  |
|                     | HP ProBook 4425s Notebook PC   |                  |                  | √                |
| <b>Processors</b>   | <b>AMD</b>   |                  |                  |                  |
|                     | <b>AMD Phenom II Quad-Core Mobile Processors</b>   |                  |                  |                  |
|                     | <ul style="list-style-type: none"> <li>Phenom II P960 1.8 GHz, 2-MB L2 cache (25W)</li> </ul>    | √                | √                | √                |
|                     | <ul style="list-style-type: none"> <li>Phenom II P940 1.7 GHz, 2-MB L2 cache (25W)</li> </ul>    | √                | √                | √                |
|                     | <ul style="list-style-type: none"> <li>Phenom II P920 1.6 GHz, 2-MB L2 cache (25W)</li> </ul>    | √                | √                | √                |
|                     | <b>AMD Phenom II Triple-Core Mobile Processors</b>   |                  |                  |                  |
|                     | <ul style="list-style-type: none"> <li>Phenom II P860, 2.0 GHz, 1.5-MB L2 cache (25W)</li> </ul> | √                | √                | √                |
|                     | <ul style="list-style-type: none"> <li>Phenom II P840, 1.9 GHz, 1.5-MB L2 cache (25W)</li> </ul> | √                | √                | √                |
|                     | <ul style="list-style-type: none"> <li>Phenom II P820, 1.8 GHz, 1.5-MB L2 cache (25W)</li> </ul> | √                | √                | √                |
|                     | <b>AMD Phenom II Dual-Core Mobile Processors</b>   |                  |                  |                  |
|                     | <ul style="list-style-type: none"> <li>Phenom II P650, 2.6 GHz, 2-MB L2 cache (25W)</li> </ul>   | √                | √                | √                |
|                     | <b>AMD Turion II Dual-Core Mobile Processors</b>   |                  |                  |                  |
|                     | <ul style="list-style-type: none"> <li>Turion II P560 2.5 GHz, 2-MB L2 cache (25W)</li> </ul>    | √                | √                | √                |
|                     | <ul style="list-style-type: none"> <li>Turion II P540 2.4 GHz, 2-MB L2 cache (25W)</li> </ul>    | √                | √                | √                |
|                     | <ul style="list-style-type: none"> <li>Turion II P520 2.3 GHz, 2-MB L2 cache (25W)</li> </ul>    | √                | √                | √                |
|                     | <b>AMD Athlon II Dual-Core Mobile Processors</b>   |                  |                  |                  |
|                     | <ul style="list-style-type: none"> <li>Athlon II P360 2.3 GHz, 1-MB L2 cache (25W)</li> </ul>    | √                | √                | √                |
|                     | <ul style="list-style-type: none"> <li>Athlon II P340 2.2 GHz, 1-MB L2 cache (25W)</li> </ul>    | √                | √                | √                |

| Category        | Description  | HP ProBook 4325s | HP ProBook 4326s | HP ProBook 4425s |
|-----------------|--|------------------|------------------|------------------|
|                 |  | UMA              | Discrete         | UMA              |
|                 | <ul style="list-style-type: none"> <li>Athlon II P320 2.1 GHz, 1-MB L2 cache (25W)</li> </ul>                      | √                | √                | √                |
|                 | <b>AMD V-Series Single-Core Processors</b>   |                  |                  |                  |
|                 | <ul style="list-style-type: none"> <li>V160 2.4 GHz, 512-KB L2 cache (25W)</li> </ul>                              | √                | √                | √                |
|                 | <ul style="list-style-type: none"> <li>V140 2.3 GHz, 512-KB L2 cache (25W)</li> </ul>                              | √                | √                | √                |
|                 | <ul style="list-style-type: none"> <li>V120 2.2 GHz, 512-KB L2 cache (25W)</li> </ul>                              | √                | √                | √                |
| <b>Chipsets</b> | AMD  | √                | √                | √                |
|                 | <ul style="list-style-type: none"> <li>RS880M</li> </ul>   | √                |                  | √                |
|                 | <ul style="list-style-type: none"> <li>RS880MD</li> </ul>  |                  | √                |                  |
|                 | <ul style="list-style-type: none"> <li>SB820</li> </ul>  | √                | √                | √                |
| <b>Graphics</b> | ATI Mobility Radeon™ HD 4250   | √                |                  | √                |
|                 | Universal Memory Architecture (UMA) graphics subsystem integrated with shared video memory (dynamically allocated) |                  |                  |                  |
|                 | ATI Mobility Radeon™ HD 530v   |                  | √                |                  |
|                 | AMD discrete graphics ATI-M93S3-LP with Hypermemory support; 512-MB DDR3, 800 MHz                                  |                  |                  |                  |
|                 | ATI Mobility Radeon HD 6370  |                  | √                |                  |
|                 | ATI Mobility Radeon HD 5470  |                  | √                |                  |
| <b>Panels</b>   | All display panel assemblies support privacy filter  | √                | √                | √                |
|                 | LED backlight  | √                | √                | √                |
|                 | <ul style="list-style-type: none"> <li><b>33.8-cm</b> (13.3-in) HD (1366×768 resolution)</li> </ul>                | √                | √                |                  |
|                 | <ul style="list-style-type: none"> <li><b>33.8-cm</b> (13.3-in) HD BrightView</li> </ul>                           | √                | √                |                  |
|                 | <ul style="list-style-type: none"> <li><b>33.8-cm</b> (13.3-in) HD BrightView with webcam</li> </ul>               | √                | √                |                  |
|                 | <ul style="list-style-type: none"> <li><b>33.8-cm</b> (13.3-in) HD AG with webcam</li> </ul>                       | √                | √                |                  |
|                 | <ul style="list-style-type: none"> <li><b>33.8-cm</b> (13.3-in) HD (1366×768 resolution) red</li> </ul>            | √                | √                |                  |
|                 | <ul style="list-style-type: none"> <li><b>33.8-cm</b> (13.3-in) HD BrightView, red</li> </ul>                      | √                | √                |                  |
|                 | <ul style="list-style-type: none"> <li><b>33.8-cm</b> (13.3-in) HD BrightView with webcam, red</li> </ul>          | √                | √                |                  |
|                 | <ul style="list-style-type: none"> <li><b>33.8-cm</b> (13.3-in) HD AG with webcam, red</li> </ul>                  | √                | √                |                  |
|                 | <ul style="list-style-type: none"> <li><b>35.6-cm</b> (14.0-in) HD (1366×768 resolution)</li> </ul>                |                  |                  | √                |
|                 | <ul style="list-style-type: none"> <li><b>35.6-cm</b> (14.0-in) HD BrightView</li> </ul>                           |                  |                  | √                |
|                 | <ul style="list-style-type: none"> <li><b>35.6-cm</b> (14.0-in) HD BrightView with webcam</li> </ul>               |                  |                  | √                |
|                 | <ul style="list-style-type: none"> <li><b>35.6-cm</b> (14.0-in) HD AG with webcam</li> </ul>                       |                  |                  | √                |
|                 | <ul style="list-style-type: none"> <li><b>35.6-cm</b> (14.0-in) HD (1366x768), red</li> </ul>                      |                  |                  | √                |
|                 | <ul style="list-style-type: none"> <li><b>35.6-cm</b> (14.0-in) HD BrightView, red</li> </ul>                      |                  |                  | √                |

| Category              | Description   | HP ProBook 4325s | HP ProBook 4326s | HP ProBook 4425s |
|-----------------------|---|------------------|------------------|------------------|
|                       |   | UMA              | Discrete         | UMA              |
|                       | <ul style="list-style-type: none"> <li>35.6-cm (14.0-in) HD BrightView with webcam, red</li> </ul>  |                  |                  | √                |
|                       | <ul style="list-style-type: none"> <li>35.6-cm (14.0-in) HD AG with webcam, red</li> </ul>  |                  |                  | √                |
| <b>Memory</b>         | 2 customer-accessible/upgradable SODIMM memory module slots   | √                | √                | √                |
|                       | Supports dual-channel memory  | √                | √                | √                |
|                       | PC3-10600, 1333-MHz, DDR3   | √                | √                | √                |
|                       | Supports the following configuration:   | √                | √                | √                |
|                       | <ul style="list-style-type: none"> <li>8192-MB total system memory (4096-MB × 2, dual-channel)</li> <li>4096-MB total system memory (4096-MB × 1)</li> <li>4096-MB total system memory (2048-MB × 2, dual channel)</li> <li>3072-MB total system memory (2048-MB + 1024-MB, dual channel)</li> <li>2048-MB total system memory (2048-MB × 1)</li> <li>2048-MB total system memory (1024-MB × 2, dual channel)</li> <li>1024-MB total system memory (1024-MB × 1)</li> </ul> |                  |                  |                  |
| <b>Hard drives</b>    | Supports 9.5-mm, 6.35-cm (2.50-in) hard drives  | √                | √                | √                |
|                       | Customer-accessible   | √                | √                | √                |
|                       | Serial ATA  | √                | √                | √                |
|                       | Supports the following drives:  | √                | √                | √                |
|                       | <ul style="list-style-type: none"> <li>640-GB, 5400-rpm</li> <li>500-GB, 7200-rpm</li> <li>320-GB, 7200-rpm</li> <li>250-GB, 7200-rpm</li> </ul>  |                  |                  |                  |
|                       | HP 3D DriveGuard (not available on Linux)   | √                | √                | √                |
| <b>Optical drives</b> | Fixed   | √                | √                | √                |
|                       | 12.7-mm (0.50-in) tray load   | √                | √                | √                |
|                       | Supports option of no optical drive   | √                | √                | √                |
|                       | Supports the following drives:  |                  |                  |                  |
|                       | <ul style="list-style-type: none"> <li>Blu-ray ROM with LightScribe DVD±R/RW SuperMulti DL Drive</li> </ul>   | √                | √                | √                |

**NOTE:** Not available with UMA base model and Window XP.

| Category              | Description  | HP ProBook 4325s | HP ProBook 4326s | HP ProBook 4425s |
|-----------------------|--|------------------|------------------|------------------|
|                       |  | UMA              | Discrete         | UMA              |
|                       | <ul style="list-style-type: none"> <li>DVD±RW SuperMulti Double-Layer Drive with LightScribe</li> </ul>  | √                | √                | √                |
|                       | <ul style="list-style-type: none"> <li>DVD ROM Drive</li> </ul>  | √                | √                | √                |
| <b>Diskette drive</b> | Supports external USB diskette drive only  | √                | √                | √                |
| <b>Audio/Visual</b>   | HD audio - IDT 92HD80  | √                | √                | √                |
|                       | Integrated microphone  | √                | √                | √                |
|                       | Two stereo speakers  | √                | √                | √                |
|                       | Integrated 2.0-megapixel webcam (fixed focus)  | √                | √                | √                |
|                       | Headphone and microphone jacks   | √                | √                | √                |
| <b>Modem</b>          | High-speed 56k modem   | √                | √                | √                |
|                       | High-speed 56k modem for use in Brazil   | √                | √                |                  |
|                       | Modem cable not included   | √                | √                | √                |
|                       | Supports no modem option   | √                | √                | √                |
| <b>Ethernet</b>       | Realtek 10/100/1000 Ethernet network interface card (NIC)  | √                | √                | √                |
|                       | S3/S4/S5 wake on LAN (AC only mode)  | √                | √                | √                |
|                       | S3/S4/S5 wake on LAN (AC only mode)  | √                | √                | √                |
|                       | Ethernet cable not included  | √                | √                | √                |
| <b>Wireless</b>       | <b>Integrated WLAN options by way of wireless module:</b>  |                  |                  |                  |
|                       | Support for the following WLAN formats:  | √                | √                | √                |
|                       | <ul style="list-style-type: none"> <li>Broadcom 802.11b/g</li> <li>Broadcom 802.11b/g/n 1x1</li> <li>Atheros 802.11b/g/n 1x1</li> <li>Realtek 802.11b/g/n 1x1</li> </ul> |                  |                  |                  |
|                       | 2 WLAN antennas built into display assembly  | √                | √                | √                |
|                       | Support for no-WLAN option   | √                | √                | √                |
|                       | <b>Integrated personal area network (PAN) options by way of Bluetooth® module:</b>   |                  |                  |                  |
|                       | Support for no-WPAN option   | √                | √                | √                |
|                       | Broadcom Bluetooth 2.1 + EDR   | √                | √                | √                |
|                       | <b>Integrated WWAN options by way of WWAN module:</b>  |                  |                  |                  |
|                       | WWAN module UNDP with 2 antennas (not available with Linux)  | √                |                  |                  |
|                       | Two five-band WWAN antennas built into display assembly  | √                |                  |                  |

| Category                             | Description   | HP ProBook 4325s | HP ProBook 4326s | HP ProBook 4425s |
|--------------------------------------|---|------------------|------------------|------------------|
|                                      |   | UMA              | Discrete         | UMA              |
|                                      | Subscriber identity module (SIM) security (customer-accessible in battery bay)  | √                |                  |                  |
| <b>External media cards</b>          | One ExpressCard slot (34 mm)  | √                | √                | √                |
|                                      | Media Card Reader supporting Memory Stick (MS), Memory Stick Pro (MSP), Secure Digital (SD) Memory Card, Secure Digital High Capacity (SDHC) Memory Card, MultiMediaCard (MMC), and xD-Picture Card formats | √                | √                | √                |
| <b>Ports</b>                         | Audio-in (stereo microphone)  | √                | √                | √                |
|                                      | Audio-out (stereo headphone)  | √                | √                | √                |
|                                      | RJ-11 (modem)   | √                | √                | √                |
|                                      | RJ-45 (Ethernet, includes link and activity lights)   | √                | √                | √                |
|                                      | USB 2.0 (3)   | √                | √                | √                |
|                                      | Combo eSATA/USB 2.0 (1)   | √                | √                | √                |
|                                      | HDMI  | √                | √                | √                |
|                                      | VGA (Dsub 15-pin) supporting 1600 × 1200 external resolution at 75-GHz (hot plug/unplug with auto-detect)   | √                | √                | √                |
|                                      | Multi-pin AC power  | √                | √                | √                |
| <b>Keyboard and pointing devices</b> | <b>33.8-cm</b> (13.3-in) keyboard with TouchPad   | √                | √                |                  |
|                                      | <b>35.6-cm</b> (14.0-in) keyboard with TouchPad   |                  |                  | √                |
|                                      | TouchPad only, with 2 TouchPad buttons and vertical scrolling (taps enabled as default)   | √                | √                | √                |
| <b>Power requirements</b>            | 65-W AC adapter with localized cable plug support (3-wire plug with ground pin)   | √                |                  | √                |
|                                      | 90-W AC adapter with localized cable plug support (3-wire plug with ground pin)   |                  | √                |                  |
|                                      | 9-cell, 93-Wh Li-ion battery  | √                | √                | √                |
|                                      | 6-cell, 47-Wh Li-ion battery  | √                | √                | √                |
| <b>Security</b>                      | Supports Kensington security lock   | √                | √                | √                |
| <b>Operating system</b>              | <b>Preinstalled:</b><br><b>NOTE:</b> Windows Vista® includes SP2 and Windows® XP Pro includes SP3 (Ver 2)   |                  |                  |                  |
|                                      | Windows 7 Professional 32 (with Windows XP Professional images) with MS Basics (Japan only)   | √                | √                |                  |
|                                      | Windows 7 Professional 32 with MS Basics (Japan only)   | √                | √                |                  |
|                                      | Windows 7 Home Premium 32 with MS Basics (Japan only)   | √                | √                |                  |
|                                      | Windows Vista Business 32 with MS Basics (Japan only)   | √                | √                |                  |

| Category | Description   | HP ProBook 4325s | HP ProBook 4326s | HP ProBook 4425s |
|----------|---|------------------|------------------|------------------|
|          |   | UMA              | Discrete         | UMA              |
|          | Windows Vista Home Basic 32 with MS Basics (Japan only)   | √                | √                |                  |
|          | FreeDOS   | √                | √                | √                |
|          | RedFlag Linux (People's Republic of China only)   | √                | √                |                  |
|          | SUSE Linux (SLED11)   | √                | √                | √                |
|          | <b>Preinstalled with Office:</b>  |                  |                  |                  |
|          | Windows 7 Starter with Office 2007 Ready (excludes Japan)   | √                | √                | √                |
|          | Windows 7 Starter with Office 2007 Ready - EDGI (available for Argentina, Brazil - English, Brazil, Latin America, Latin America - English, Russia, India, Asia Pacific, Thailand)  | √                | √                | √                |
|          | Windows 7 Home Basic 32 with Office 2007 Ready (excludes Japan)   | √                | √                | √                |
|          | Windows 7 Home Basic with Office 2007 Ready - EDGI (available for Argentina, Brazil - English, Brazil, Latin America, Latin America - English, Russia, People's Republic of China, India, Asia Pacific, Thailand)                 | √                | √                | √                |
|          | Windows 7 Home Premium 32 with Office 2007 Ready (excludes Japan)   | √                | √                | √                |
|          | Windows 7 Home Premium with Office 2007 Ready - EDGI (available for Argentina, Brazil - English, Brazil, Latin America, Latin America - English, Russia, People's Republic of China, Hong Kong, India, Asia Pacific, Thailand)    | √                | √                | √                |
|          | Windows 7 Home Premium 32 with Office 2007 Personal (Japan only)  | √                | √                |                  |
|          | Windows 7 Home Premium 32 with Office 2007 Personal with PowerPoint (Japan only)  | √                | √                |                  |
|          | Windows 7 Home Premium 32 with Office 2007 Professional (Japan only)  | √                | √                |                  |
|          | Windows 7 Professional 32 with Office 2007 Ready (excludes Japan)   | √                | √                | √                |
|          | Windows 7 Professional 32 with Office 2007 Ready - EDGI (available for Argentina, Brazil - English, Brazil, Latin America, Latin America - English, Russia, People's Republic of China, Hong Kong, India, Asia Pacific, Thailand) | √                | √                | √                |
|          | Windows 7 Professional 32 with Office 2007 Personal (Japan only)  | √                | √                |                  |
|          | Windows 7 Professional 32 with Office 2007 Personal with PowerPoint (Japan only)  | √                | √                |                  |
|          | Windows 7 Professional 32 with Office Professional (Japan only)   | √                | √                |                  |
|          | Windows 7 Professional (with Windows XP Professional images) with Office 2007 Ready (excludes Japan)  | √                | √                | √                |

| Category | Description  | HP ProBook 4325s | HP ProBook 4326s | HP ProBook 4425s |
|----------|--|------------------|------------------|------------------|
|          |  | UMA              | Discrete         | UMA              |
|          | Windows 7 Professional (with Windows XP Professional images) with Office 2007 Ready - EDGI (available for Argentina, Brazil - English, Brazil, Latin America, Latin America - English, Russia, People's Republic of China, Hong Kong, India, Asia Pacific, Thailand) | √                | √                | √                |
|          | Windows 7 Professional (with Windows XP Professional images) with Office 2007 Personal (Japan only)  | √                | √                |                  |
|          | Windows 7 Professional (with Windows XP Professional images) with Office 2007 Personal with PowerPoint (Japan only)  | √                | √                |                  |
|          | Windows 7 Professional (with Windows XP Professional images) with Office 2007 Professional (Japan only)  | √                | √                |                  |
|          | Windows Vista Home Basic 32 with Office 2007 Ready (excludes Japan)  | √                | √                | √                |
|          | Windows Vista Home Basic 32 with Office 2007 Personal (Japan only)   | √                | √                | √                |
|          | Windows Vista Home Basic 32 with Office 2007 Personal with PowerPoint (Japan only)   | √                | √                | √                |
|          | Windows Vista Home Basic 32 with Office 2007 Professional (Japan only)   | √                | √                | √                |
|          | Windows Vista Business 32 with Office 2007 Ready (excludes Japan)  | √                | √                | √                |
|          | Windows Vista Business 32 with Office 2007 Personal (Japan only)   | √                | √                | √                |
|          | Windows Vista Business 32 with Office 2007 Personal with PowerPoint (Japan only)   | √                | √                | √                |
|          | Windows Vista Business 32 with Office Professional (Japan only)  | √                | √                | √                |
|          | <b>Restore media:</b>  |                  |                  |                  |
|          | Windows 7 Professional 64  | √                | √                | √                |
|          | Windows 7 Professional 32  | √                | √                | √                |
|          | Windows 7 Home Premium 32  | √                | √                | √                |
|          | Windows 7 Home Basic 32  | √                | √                | √                |
|          | Windows 7 Starter  | √                | √                | √                |
|          | Windows Vista Business 32  | √                | √                | √                |
|          | Windows Vista Home Basic 32  | √                | √                | √                |
|          | Windows XP Professional  | √                | √                | √                |
|          | Microsoft Office Ready DVD   | √                | √                | √                |
|          | DRDVD Windows 7 Home Premium/Windows 7 Professional  | √                | √                | √                |

| Category              | Description   | HP ProBook 4325s | HP ProBook 4326s | HP ProBook 4425s |
|-----------------------|---|------------------|------------------|------------------|
|                       |   | UMA              | Discrete         | UMA              |
|                       | DRDVD Windows 7 Starter/Windows 7 Home Basic            | √                | √                | √                |
|                       | DRDVD Windows XP Professional                           | √                | √                | √                |
|                       | DRDVD Windows Vista                                     | √                | √                | √                |
|                       | Red Flag Linux (in the People's Republic of China only) | √                | √                | √                |
|                       | SUSE Linux  | √                | √                | √                |
|                       | <b>Certified:</b> Microsoft® WHQL                       | √                | √                | √                |
|                       | <b>Web Support:</b>                                     |                  |                  |                  |
|                       | Windows 7 Professional 64                               | √                | √                | √                |
|                       | Windows Vista Business 64                               | √                | √                | √                |
| <b>Serviceability</b> | <b>End-user replaceable parts:</b>                      |                  |                  |                  |
|                       | AC adapter  | √                | √                | √                |
|                       | Battery (system)  | √                | √                | √                |
|                       | Bluetooth module  | √                | √                | √                |
|                       | Keyboard  | √                | √                | √                |
|                       | Speaker assembly  | √                | √                | √                |
|                       | Hard drive  | √                | √                | √                |
|                       | Memory module   | √                | √                | √                |
|                       | Optical drive   | √                | √                | √                |
|                       | WLAN module   | √                | √                | √                |
|                       | WWAN module   | √                |                  | √                |
|                       | WWAN SIM  | √                |                  | √                |




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## 2 External component identification

### Identifying hardware

Components included with the computer may vary by region and model. The illustrations in this chapter identify the standard features on most computer models.

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

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Use the following instructions to see a list of hardware installed in the computer.

#### In Windows® 7:

- ▲ Select **Start > Control Panel > System and Security > Device Manager**.

You can also add hardware or modify device configurations using Device Manager.

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


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#### In Windows Vista®:

1. Select **Start > Computer > System Properties**.
2. In the left pane, click **Device Manager**.

You can also add hardware or modify device configurations using Device Manager.

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

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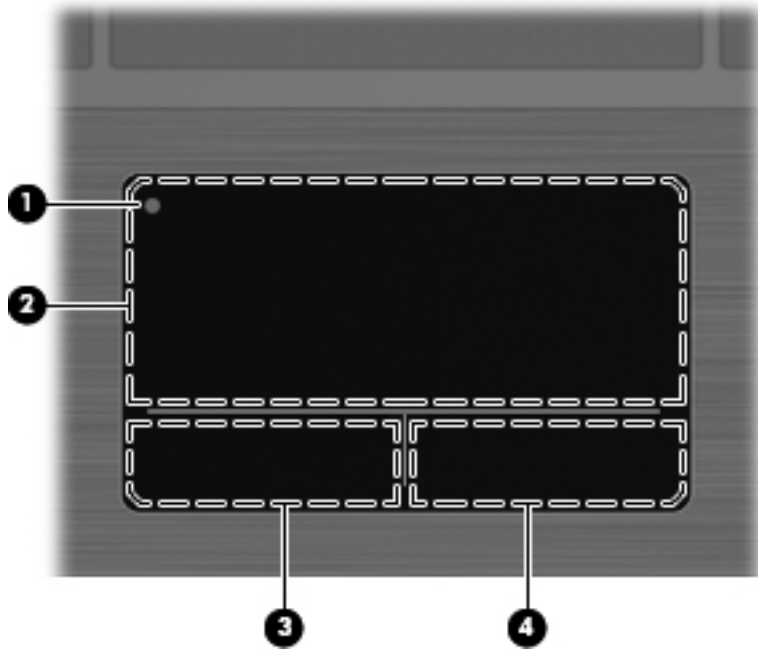
#### In Windows XP:

1. Select **Start > My Computer**.
2. In the left pane of the System Tasks window, select **View system information**.
3. Select **Hardware** tab > **Device Manager**.

You can also add hardware or modify device configurations using Device Manager.

# Top components

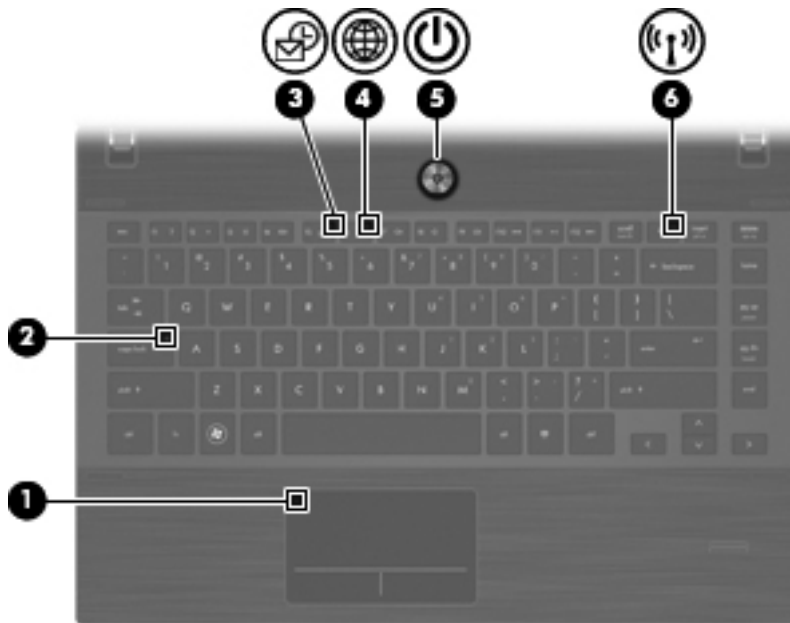
## TouchPad



| Component                  | Description  |
|----------------------------|--|
| (1) TouchPad off indicator | To turn the TouchPad zone on and off, quickly double-tap the TouchPad off indicator.<br><br><b>NOTE:</b> When the TouchPad zone is active, the light is off. |
| (2) TouchPad zone*         | 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) 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 > Printers and Other Hardware > Mouse**.

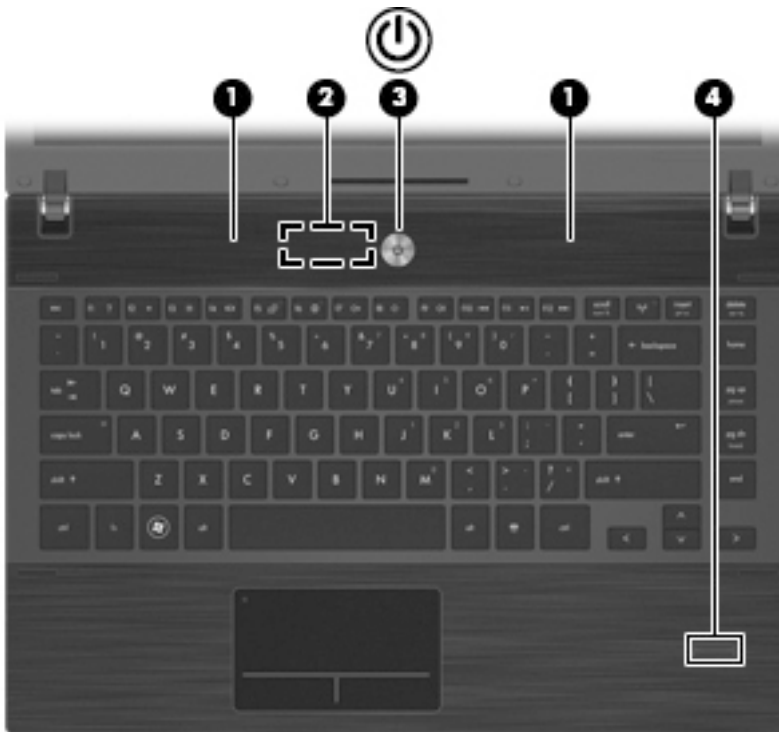
## Lights



| Component                  | Description  |
|----------------------------|--|
| (1) TouchPad off indicator | <ul style="list-style-type: none"> <li>• Amber: The TouchPad is off.</li> <li>• Off: The TouchPad is on.</li> </ul>  |
| (2) Caps lock light        | On: Caps lock is on.   |
| (3) HP QuickLook light     | Blinking: QuickLook is being opened or closed.   |
| (4) HP QuickWeb light      | Blinking: The Web browser is being opened or closed.   |
| (5) Power light            | <ul style="list-style-type: none"> <li>• On: The computer is on.</li> <li>• Blinking: The computer is in Standby.</li> <li>• Off: The computer is off or in Hibernation.</li> </ul>  |
| (6) Wireless light         | <ul style="list-style-type: none"> <li>• White: An integrated wireless device, such as a wireless local area network (WLAN) device and/or a Bluetooth® device, is on.</li> <li>• Amber: All wireless devices are off.</li> </ul> |

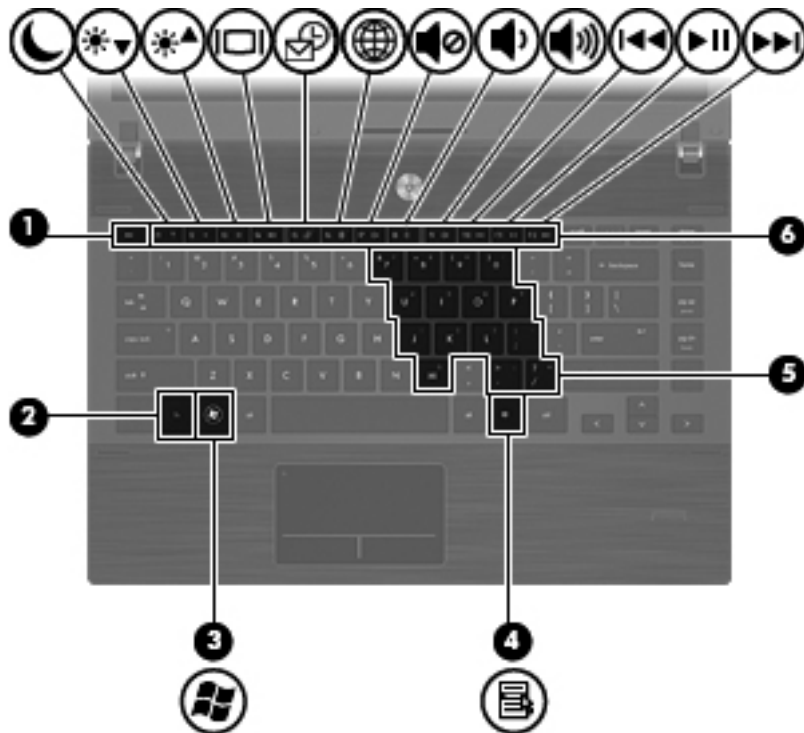
## Buttons, speakers, switches, and fingerprint reader (select models only)

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



| Component                                   | Description  |
|---|--|
| (1) Speakers (2)                            | Produce sound.   |
| (2) Internal display switch                 | Turns off the display if the display is closed while the power is on.  |
| (3) Power button                            | <ul style="list-style-type: none"><li>• When the computer is off, press the button to turn on the computer.</li><li>• When the computer is on, press the button to shut down the computer.</li><li>• When the computer is in Standby, press the button briefly to exit Standby.</li><li>• When the computer is in Hibernation, press the button briefly to exit Hibernation.</li></ul> <p>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.</p> <p>To learn more about your power settings and how to change them, select <b>Start &gt; Control Panel &gt; Performance and Maintenance &gt; Power Options</b>.</p> |
| (4) Fingerprint reader (select models only) | Allows a fingerprint logon to Windows, instead of a password logon.  |

## Keys



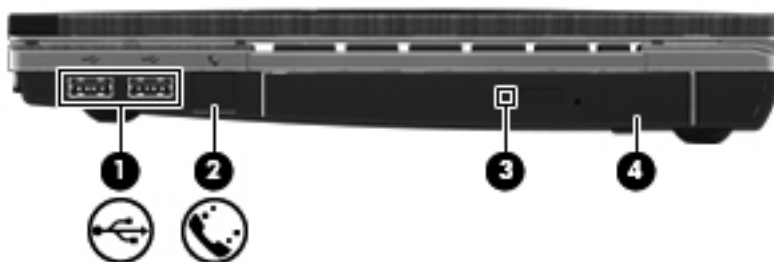
| Component                        | Description  |
|----------------------------------|--|
| (1) <a href="#">esc</a> key      | Displays system information when pressed in combination with the <a href="#">fn</a> key.   |
| (2) <a href="#">fn</a> key       | Executes frequently used system functions when pressed in combination with a function key or the <a href="#">esc</a> key.                        |
| (3) Windows logo key             | Displays the Windows Start menu.   |
| (4) Windows applications key     | Displays a shortcut menu for items beneath the cursor.   |
| (5) Embedded numeric keypad keys | Can be used like the keys on an external numeric keypad when pressed in combination with the <a href="#">fn</a> and <a href="#">num lk</a> keys. |
| (6) Function keys                | Execute frequently used system functions when pressed in combination with the <a href="#">fn</a> key.  |

# Front components



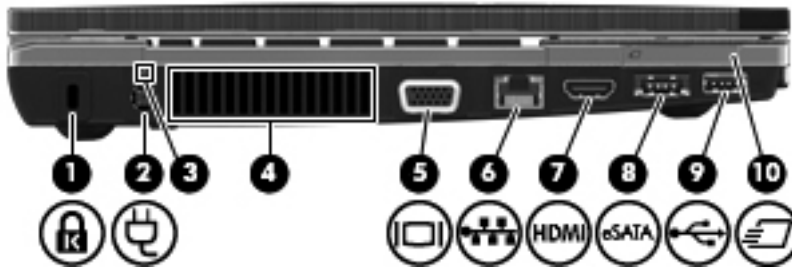
| Component                      | Description  |
|--------------------------------|--|
| (1) Drive light                | <ul style="list-style-type: none"><li>Blinking white: The hard drive or optical drive is being accessed.</li><li>Amber: HP 3D DriveGuard has temporarily parked the hard drive.</li></ul>  |
| (2) Media Card Reader          | Supports the following optional digital card formats: <ul style="list-style-type: none"><li>Memory Stick</li><li>Memory Stick Duo (adapter required)</li><li>Memory Stick Pro (adapter required)</li><li>MultiMediaCard (MMC)</li><li>Secure Digital (SD) Memory Card</li><li>xD-Picture Card (XD)</li><li>xD-Picture Card (XD) Type H</li><li>xD-Picture Card (XD) Type M</li></ul> |
| (3) Audio-out (headphone) jack | Produces sound when connected to optional powered stereo speakers, headphones, ear buds, a headset, or television audio.<br><b>NOTE:</b> When a device is connected to the headphone jack, the computer speakers are disabled.   |
| (4) Audio-in (microphone) jack | Connects an optional computer headset microphone, stereo array microphone, or monaural microphone.   |

## Right-side components



| Component                                    | Description  |
|--|--|
| (1) USB ports (2)                            | Connect optional USB devices.  |
| (2) RJ-11 (modem) jack (select models only)  | Connects a modem cable.  |
| (3) Optical drive light (select models only) | Blinking: The optical drive is being accessed.                           |
| (4) Optical drive (select models only)       | Reads optical discs and, on select models, also writes to optical discs. |

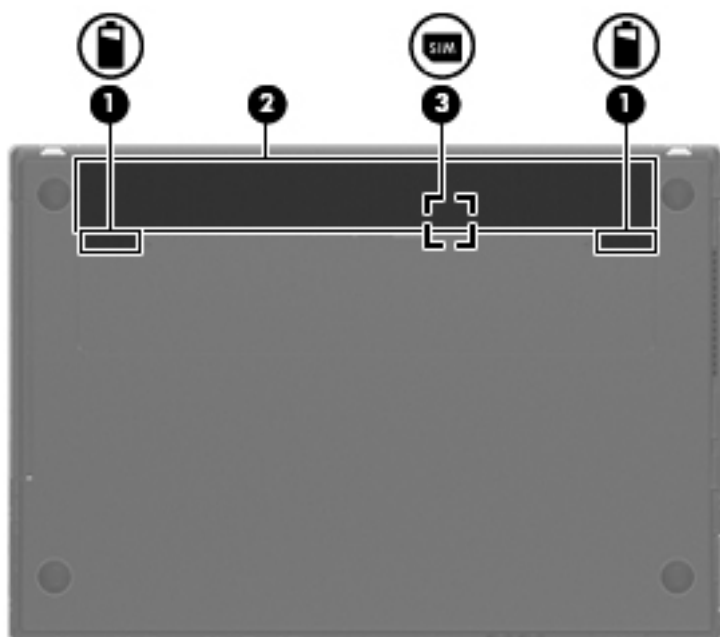
## Left-side components



| Component                 | Description  |
|---------------------------|--|
| (1) Security cable slot   | Attaches an optional security cable to the computer.<br><br><b>NOTE:</b> The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.  |
| (2) Power connector       | Connects an AC adapter.  |
| (3) AC adapter light      | <ul style="list-style-type: none"><li>On: The computer is connected to external power and the battery is charging.</li><li>Off: The computer is not connected to external power.</li></ul>   |
| (4) Vent                  | Enables airflow to cool internal components.<br><br><b>NOTE:</b> 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. |
| (5) External monitor port | Connects an external VGA monitor or projector.   |
| (6) RJ-45 (network) jack  | Connects a network cable.  |
| (7) HDMI port             | Connects an optional HDMI device.  |
| (8) Combo eSATA/USB port  | Connects an optional USB device or high-performance eSATA components, such as an eSATA external hard drive.  |
| (9) USB port              | Connects optional USB device.  |
| (10) ExpressCard slot     | Supports optional ExpressCards.  |




## Bottom components



| Component                         | Description   |
|-----------------------------------|---|
| (1) Battery release latches (2)   | Release the battery from the battery bay.   |
| (2) Battery bay                   | Holds the battery.  |
| (3) SIM slot (select models only) | Contains a wireless subscriber identity module (SIM). The SIM slot is located inside the battery bay. |

# Display

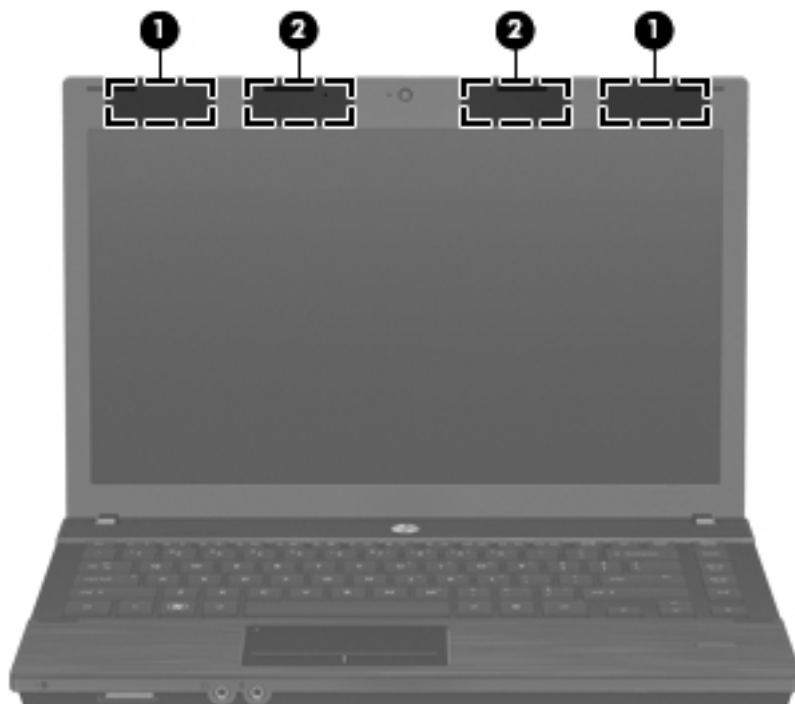
 **NOTE:** Your computer may look slightly different from the illustration in this section.



| Component                             | Description   |
|---------------------------------------|---|
| (1) Internal display switch           | Turns off the display if the display is closed while the power is on. |
| (2) Internal microphone               | Records sound.  |
| (3) Webcam light (select models only) | On: The webcam is in use.   |
| (4) Webcam (select models only)       | Records video and captures still photographs.                         |

## Wireless antennas (select models only)

The antennas send and receive signals from one or more wireless devices. These antennas are not visible from the outside of the computer.

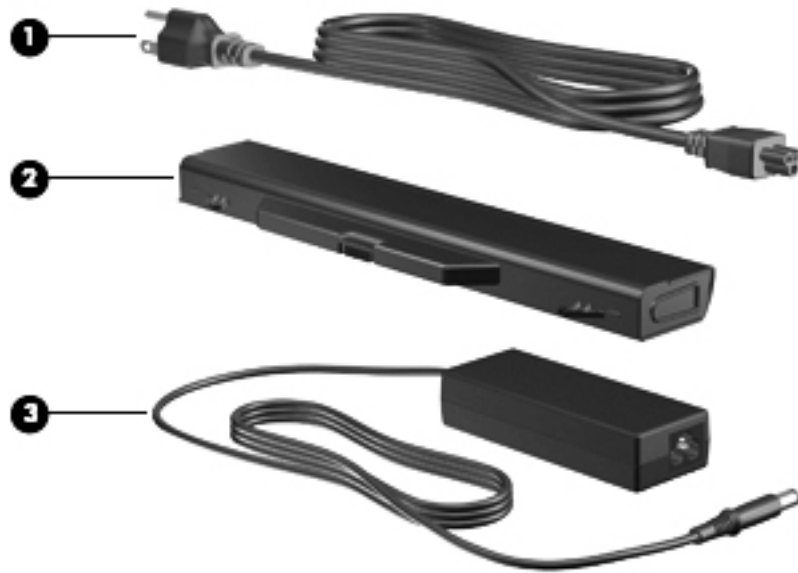


| Component              | Description   |
|------------------------|---|
| (1) WWAN antennas (2)* | Send and receive wireless signals to communicate with wireless wide area networks (WWANs).  |
| (2) WLAN antennas (2)* | Send and receive wireless signals to communicate with wireless local area networks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

\*The antennas are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennas free from obstructions.

To see wireless regulatory notices, refer to the section of the *Regulatory, Safety and Environmental Notices* that applies to your country or region. These notices are located in Help and Support.

## Additional hardware components



| Component       | Description   |
|-----------------|---|
| (1) Power cord* | Connects an AC adapter to an AC outlet.   |
| (2) Battery*    | Powers the computer when the computer is not plugged into an external power source. |
| (3) AC adapter  | Converts AC power to DC power.  |

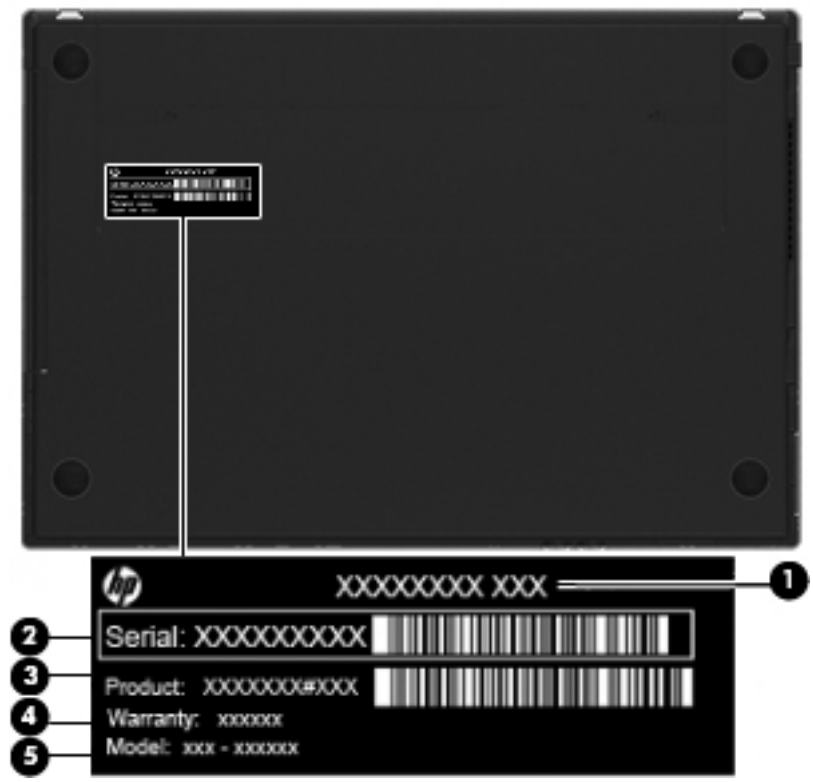
\*Batteries and power cords vary in appearance by country or region.

# 3 Illustrated parts catalog

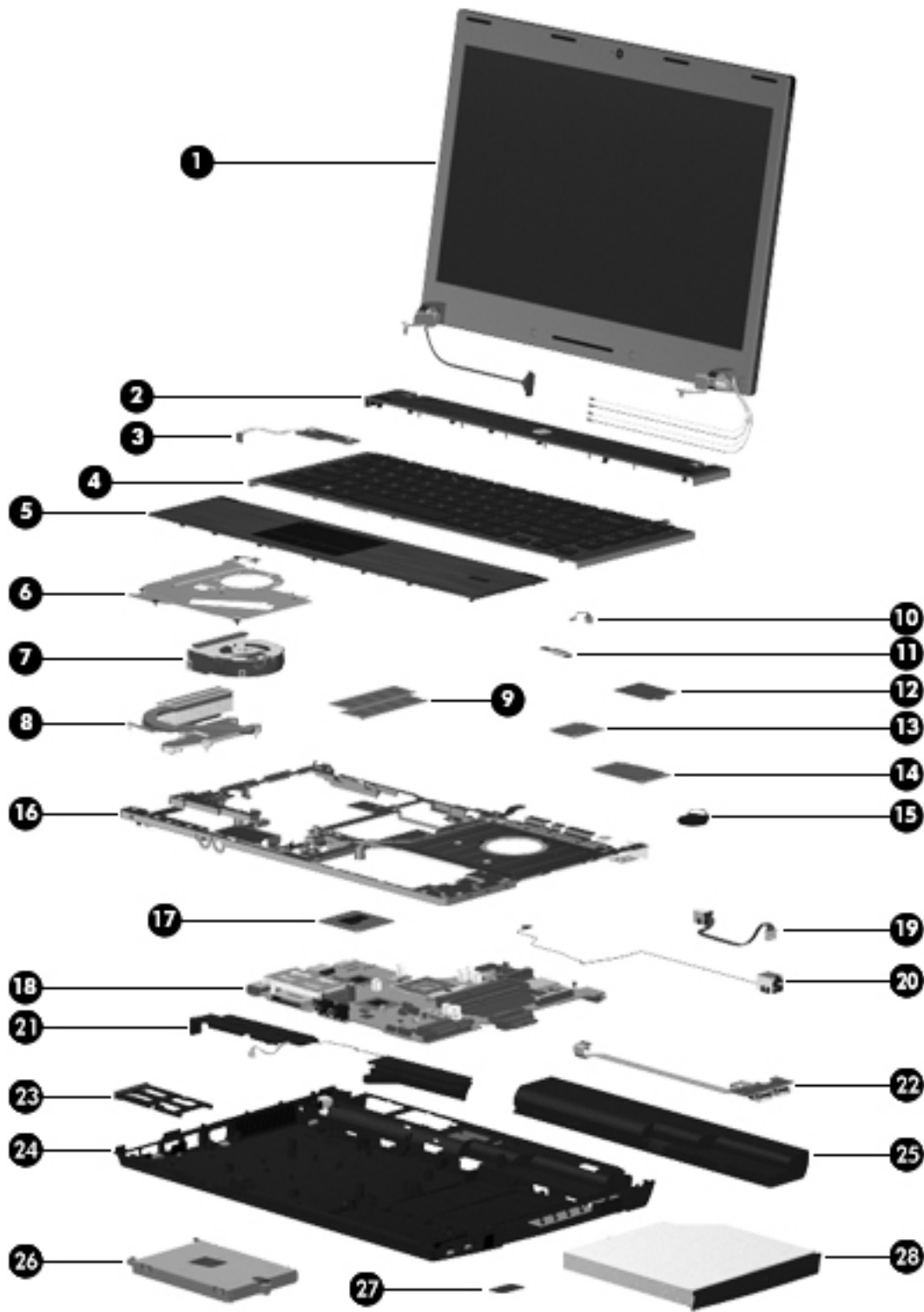
## Serial number label location

When ordering parts or requesting information, the serial number label, located on the bottom of the computer, provides important information that you may need when contacting technical support.

|                    |                                       |
|--------------------|---------------------------------------|
| (1) Product name   | (4) Warranty period                   |
| (2) Serial number  | (5) Model description (select models) |
| (3) Product number |                                       |



# Computer major components



| Item | Description  | Spare part number |
|------|--|-------------------|
| (1)  | <b>Display assembly</b> (includes 2 WLAN antennas and cables and, on select computer models, 2 WWAN antennas and cables) |                   |
|      | <b>NOTE:</b> WWAN is available only on select models with <b>33.8-cm</b> 13.3-in displays.                               |                   |
|      | For use in black models:   |                   |
|      | • <b>33.8-cm</b> (13.3-in) HD (1366x768 resolution)  | 599553-001        |
|      | • <b>33.8-cm</b> (13.3-in) HD BrightView   | 599554-001        |
|      | • <b>33.8-cm</b> (13.3-in) HD BrightView with webcam   | 608127-001        |
|      | • <b>33.8-cm</b> (13.3-in) HD AG with webcam   | 608128-001        |
|      | • <b>33.8-cm</b> (13.3-in) HD (1366x768 resolution) , red  | 608736-001        |
|      | • <b>35.6-cm</b> (14.0-in) HD (1366x768 resolution)  | 599559-001        |
|      | • <b>35.6-cm</b> (14.0-in) HD BrightView   | 599560-001        |
|      | • <b>35.6-cm</b> (14.0-in) HD BrightView with webcam   | 608131-001        |
|      | • <b>35.6-cm</b> (14.0-in) HD AG with webcam   | 608132-001        |
|      | For use in red models:   |                   |
|      | • <b>33.8-cm</b> (13.3-in) HD BrightView   | 608737-001        |
|      | • <b>33.8-cm</b> (13.3-in) HD BrightView with webcam   | 608730-001        |
|      | • <b>33.8-cm</b> (13.3-in) HD AG with webcam   | 608731-001        |
|      | • <b>35.6-cm</b> (14.0-in) HD (1366x768 resolution)  | 608740-001        |
|      | • <b>35.6-cm</b> (14.0-in) HD BrightView   | 608741-001        |
|      | • <b>35.6-cm</b> (14.0-in) HD BrightView with webcam   | 608734-001        |
|      | • <b>35.6-cm</b> (14.0-in) HD AG with webcam   | 608735-001        |
|      | For use in champagne models:   |                   |
|      | • <b>33.8-cm</b> (13.3-in) HD (1366x768 resolution)  | 625690-001        |
|      | • <b>33.8-cm</b> (13.3-in) HD (1366x768 resolution) with a webcam  | 625718-001        |
|      | • <b>33.8-cm</b> (13.3-in) HD BrightView   | 625692-001        |
|      | • <b>33.8-cm</b> (13.3-in) HD BrightView with a webcam   | 625719-001        |
| (2)  | <b>Switch cover</b>  |                   |
|      | For use in black models:   |                   |
|      | • For with <b>35.6-cm</b> (14.0-in) displays   | 599568-001        |
|      | • For with <b>33.8-cm</b> (13.3-in) displays   | 599567-001        |
|      | For use in red models:   |                   |
|      | • For with <b>35.6-cm</b> (14.0-in) displays   | 607653-001        |
|      | • For with <b>33.8-cm</b> (13.3-in) displays   | 607652-001        |
|      | For use in champagne models:   |                   |

| Item       | Description   | Spare part number |
|------------|---|-------------------|
|            | <ul style="list-style-type: none"> <li>For with <b>33.8-cm</b> (13.3-in) displays</li> </ul>                            | 625716-001        |
| <b>(3)</b> | <b>Power button board (with cable)</b>  | 599517-001        |
| <b>(4)</b> | <b>Keyboard</b>   |                   |
|            | In computer models with <b>33.8-cm</b> (13.3-in) displays:  |                   |
|            | <ul style="list-style-type: none"> <li>For use in Greece</li> </ul>   | 599572-DJ1        |
|            | <ul style="list-style-type: none"> <li>For use in Japan</li> </ul>  | 599572-291        |
|            | <ul style="list-style-type: none"> <li>For use in Korea</li> </ul>  | 599572-AD1        |
|            | <ul style="list-style-type: none"> <li>For use in Taiwan</li> </ul>   | 599572-AB1        |
|            | <ul style="list-style-type: none"> <li>For use in Thailand</li> </ul>   | 599572-281        |
|            | <ul style="list-style-type: none"> <li>For use in the United States</li> </ul>  | 599572-001        |
|            | In computer models with <b>35.6-cm</b> (14.0-in) displays:  |                   |
|            | <ul style="list-style-type: none"> <li>For use in Brazil</li> </ul>   | 599573-201        |
|            | <ul style="list-style-type: none"> <li>For use in Canada (French)</li> </ul>  | 599573-121        |
|            | <ul style="list-style-type: none"> <li>For use in Latin America</li> </ul>  | 599573-161        |
|            | <ul style="list-style-type: none"> <li>For use in the United States</li> </ul>  | 599573-001        |
| <b>(5)</b> | <b>Palm rest (includes TouchPad)</b>  |                   |
|            | For use in black models:  |                   |
|            | <ul style="list-style-type: none"> <li>For use with fingerprint reader and <b>33.8-cm</b> (13.3-in) displays</li> </ul> | 599549-001        |
|            | <ul style="list-style-type: none"> <li>For use with <b>33.8-cm</b> (13.3-in) displays</li> </ul>                        | 599551-001        |
|            | <ul style="list-style-type: none"> <li>For use with fingerprint reader and <b>35.6-cm</b> (14.0-in) displays</li> </ul> | 599550-001        |
|            | <ul style="list-style-type: none"> <li>For use with <b>35.6-cm</b> (14.0-in) displays</li> </ul>                        | 599552-001        |
|            | For use in red models:  |                   |
|            | <ul style="list-style-type: none"> <li>For use with fingerprint reader and <b>33.8-cm</b> (13.3-in) displays</li> </ul> | 607648-001        |
|            | <ul style="list-style-type: none"> <li>For use with <b>33.8-cm</b> (13.3-in) displays</li> </ul>                        | 607650-001        |
|            | <ul style="list-style-type: none"> <li>For use with fingerprint reader and <b>35.6-cm</b> (14.0-in) displays</li> </ul> | 607649-001        |
|            | <ul style="list-style-type: none"> <li>For use with <b>35.6-cm</b> (14.0-in) displays</li> </ul>                        | 607651-001        |
|            | For use in champagne models:  |                   |
|            | <ul style="list-style-type: none"> <li>For use with fingerprint reader and <b>33.8-cm</b> (13.3-in) displays</li> </ul> | 625712-001        |
|            | <ul style="list-style-type: none"> <li>For use with <b>33.8-cm</b> (13.3-in) displays</li> </ul>                        | 625714-001        |
| <b>(6)</b> | <b>Top heat shield/bracket (included with top cover)</b>  |                   |
| <b>(7)</b> | <b>Fan</b>  | 599544-001        |
| <b>(8)</b> | <b>Processor heat sink</b>  |                   |
|            | For use with discrete graphics subsystems   | 615575-001        |
|            | For use with Unified Memory Architecture (UMA) graphics subsystems  | 615576-001        |

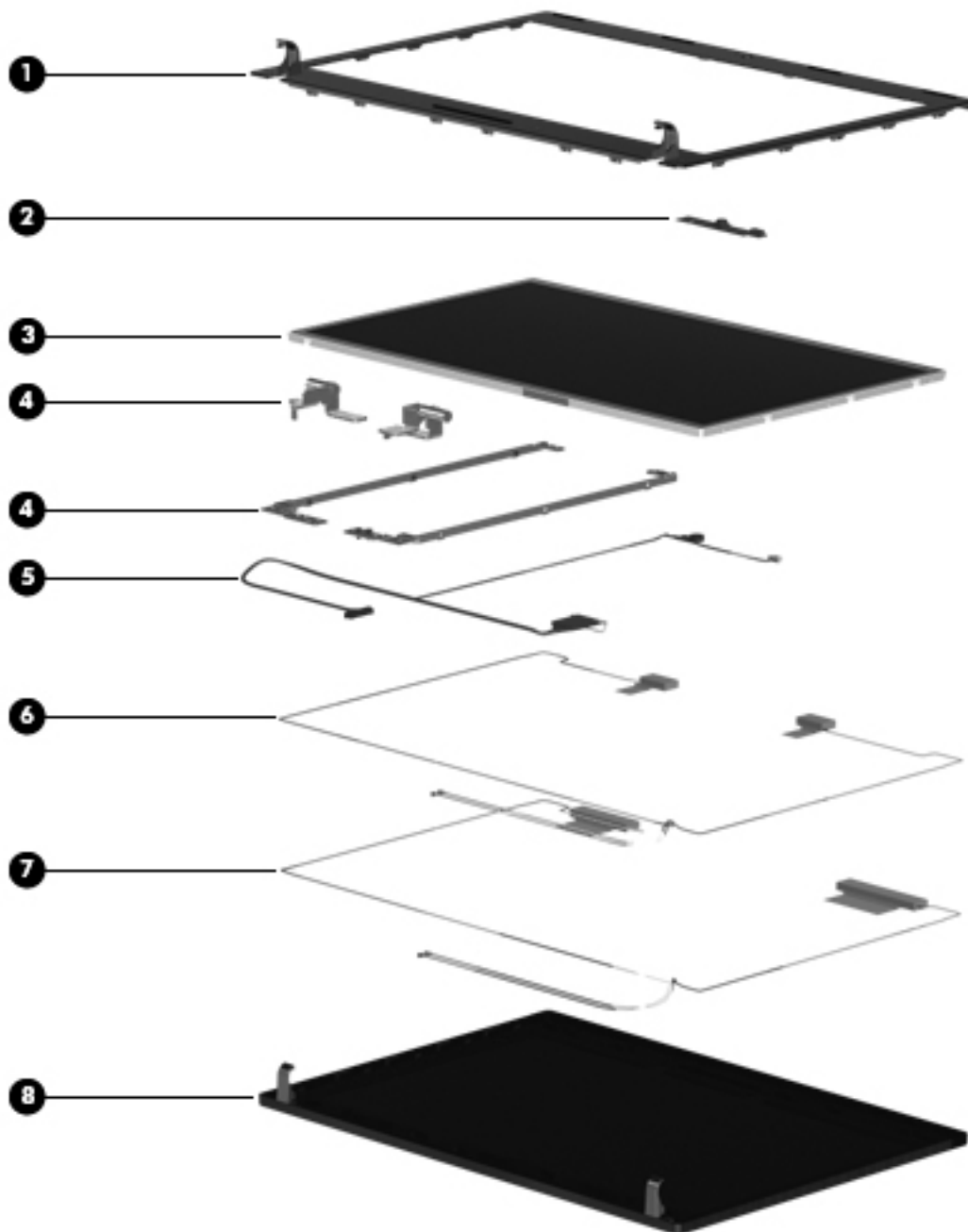


| Item | Description  | Spare part number |
|------|--|-------------------|
| (9)  | <b>Memory module</b> (PC3-10600, 1333-MHz, DDR3, shared)   |                   |
|      | 4096-MB  | 599092-001        |
|      | 2048-MB  | 598856-002        |
| (10) | <b>Bluetooth module cable</b> (included in <a href="#">Cable kit on page 31</a> , part number 599525-001)  |                   |
| (11) | <b>Bluetooth module</b> (without cable)  | 537921-001        |
| (12) | <b>Modem module</b>  | 628824-001        |
|      | <b>NOTE:</b> The modem module spare part kit does not include a modem module cable. The modem module cable is included in the Cable kit. See <a href="#">Cable kit on page 31</a> for more Cable Kit spare part information.   |                   |
| (13) | <b>WLAN module</b>   |                   |
|      | <b>Atheros AR 9285 802.11b/g/n</b>   | 605560-005        |
|      | <b>Broadcom BCM94313HMG2L 802.11b/g/n</b>  | 593836-001        |
|      | <b>Broadcom 4312G 802.11b/g WiFi Adapter</b>   |                   |
|      | For use in Canada, the Cayman Islands, Guam, Puerto Rico, the United States, and the U.S. Virgin Islands   | 504593-003        |
|      | For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial 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, Japan, 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, Pakistan, 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 and 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 and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe | 504593-004        |
|      | <b>Realtek RTL8191SE 802.11b/g/n 1x1 WiFi Adapter</b>  | 593533-001        |
|      | <b>Ralink RT3090BC4 802.11b/g/n 1x1 WiFi and Bluetooth 2.1+EDR Combo Adapter (Bluetooth 3.0+high-speed ready)</b>  | 602992-001        |
|      | <b>Broadcom 4313/2070 802.11b/g/n (1x1) and Bluetooth high-speed Half Mini Card</b>  | 600370-001        |
| (14) | <b>WWAN module, Qualcomm EV-DO HSPA</b>  | 531993-001        |
| (15) | <b>RTC battery</b>   | 599516-001        |

| Item        | Description  | Spare part number |
|-------------|--|-------------------|
| <b>(16)</b> | <b>Top cover</b>   |                   |
|             | For use with <b>33.8-cm</b> (13.3-in) displays   | 599569-001        |
|             | For use with <b>35.6-cm</b> (14.0-in) displays   | 599570-001        |
| <b>(17)</b> | <b>Processor</b> (includes replacement thermal material)   |                   |
|             | AMD Phenom II processors:  |                   |
|             | • P960, 1.8Ghz   | 634689-001        |
|             | • P940, 1.7Ghz   | 616336-001        |
|             | • P920, 1.6Ghz   | 594170-001        |
|             | • P860, 2.0Ghz   | 634688-001        |
|             | • P840, 1.9Ghz   | 616335-001        |
|             | • P820, 1.8Ghz   | 594167-001        |
|             | • P650, 2.6Ghz   | 634687-001        |
|             | AMD Turion II processors:  |                   |
|             | • P560, 2.5GHz   | 634691-001        |
|             | • P540, 2.4GHz   | 616347-001        |
|             | • P520, 2.3GHz   | 594173-001        |
|             | AMD Athlon II processors:  |                   |
|             | • P360, 2.3GHz   | 636635-001        |
|             | • P340, 2.2GHz   | 616343-001        |
|             | • P320, 2.1GHz   | 594165-001        |
|             | AMD Sempron processor:   |                   |
|             | • N120, 2.2GHz   | 594171-001        |
|             | AMD single-core processors:  |                   |
|             | • V160. 2.4GHz   | 636634-001        |
|             | • V140. 2.3GHz   | 616333-001        |
| <b>(18)</b> | <b>System board</b> (includes replacement thermal material)  |                   |
|             | For use in all countries and regions except for Russia and the People's Republic of China          |                   |
|             | • For use with ATI Mobility Radeon HD 530v discrete graphics and <b>33.8-cm</b> (13.3-in) displays | 607654-001        |
|             | • For use with ATI Mobility Radeon HD 5470 discrete graphics and <b>33.8-cm</b> (13.3-in) displays | 628489-001        |
|             | • For use with ATI Mobility Radeon HD 6370 discrete graphics and <b>33.8-cm</b> (13.3-in) displays | 628619-001        |
|             | • For use with UMA graphics subsystem and <b>33.8-cm</b> (13.3-in) displays                        | 607655-001        |
|             | • For use with UMA graphics subsystem and <b>35.6-cm</b> (14.0-in) displays                        | 607656-001        |

| Item        | Description  | Spare part number |
|-------------|--|-------------------|
|             | For use in only Russia and the People's Republic of China:   |                   |
|             | <ul style="list-style-type: none"> <li>For use with ATI Mobility Radeon HD 530v discrete graphics and <b>33.8-cm</b> (13.3-in) displays</li> </ul> | 614962-001        |
|             | <ul style="list-style-type: none"> <li>For use with ATI Mobility Radeon HD 5470 discrete graphics and <b>33.8-cm</b> (13.3-in) displays</li> </ul> | 628490-001        |
|             | <ul style="list-style-type: none"> <li>For use with ATI Mobility Radeon HD 6370 discrete graphics and <b>33.8-cm</b> (13.3-in) displays</li> </ul> | 628620-001        |
|             | <ul style="list-style-type: none"> <li>For use with UMA graphics subsystem and <b>33.8-cm</b> (13.3-in) displays</li> </ul>                        | 614963-001        |
| <b>(19)</b> | <b>Power connector board with cable</b>  | 599517-001        |
| <b>(20)</b> | <b>RJ11 (modem) cable</b> (see Cable kit)  |                   |
| <b>(21)</b> | <b>Speakers</b>  |                   |
|             | <ul style="list-style-type: none"> <li>For use with <b>33.8-cm</b> (13.3-in) displays</li> </ul>   | 599566-001        |
|             | <ul style="list-style-type: none"> <li>For use with <b>35.6-cm</b> (14.0-in) displays</li> </ul>   | 605559-001        |
| <b>(22)</b> | <b>USB connector board and cable</b>   | 599524-001        |
| <b>(23)</b> | <b>ExpressCard slot bezel</b> (included in Plastics kit, see <a href="#">Plastics Kit on page 30</a> )   |                   |
| <b>(24)</b> | <b>Base enclosure</b>  |                   |
|             | For use in computer models with <b>33.8-cm</b> (13.3-in) displays  | 599514-001        |
|             | For use in computer models with <b>35.6-cm</b> (14.0-in) displays  | 599515-001        |
| <b>(25)</b> | <b>Battery</b>   |                   |
|             | 9-cell, 93-Wh (2.8Ah) Li-ion   | 593573-001        |
|             | 6-cell, 47-Wh (2.2Ah) Li-ion   | 593572-001        |
| <b>(26)</b> | <b>Hard drive</b> (includes hard drive bracket)  |                   |
|             | 750-GB, 5400-rpm   | 634250-001        |
|             | 640-GB, 5400-rpm   | 631160-001        |
|             | 500-GB, 7200-rpm   | 634919-001        |
|             | 320-GB, 7200-rpm   | 603783-001        |
|             | 250-GB, 7200-rpm   | 599541-001        |
|             | <b>Hard Drive Hardware Kit</b> (not illustrated)   | 630889-001        |
| <b>(27)</b> | <b>SIM</b> (provided by your wireless vendor for use with WWAN option)   |                   |
| <b>(28)</b> | <b>Optical drive</b> (includes bezel)  |                   |
|             | Blu-ray Disc ROM Drive with SuperMulti DVD±R/RW Double-Layer   | 599538-001        |
|             | DVD±RW SuperMulti Double-Layer Drive with LightScribe  | 599540-001        |
|             | DVD ROM Drive  | 599539-001        |
|             | <b>Battery Latch Kit</b> (not illustrated)   | 657098-001        |
|             | <b>Optical drive connector</b> for use in <b>35.6-cm</b> (14.0-in) models (not illustrated)  | 632213-001        |

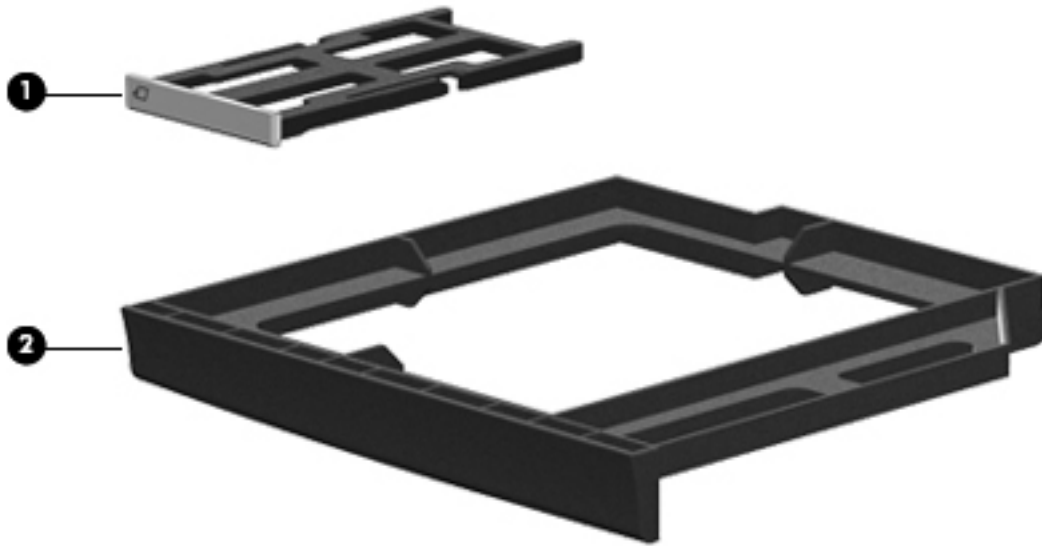
## Display assembly components



| Item | Description  | Spare part number |
|------|--|-------------------|
| (1)  | <b>Display bezel</b>   |                   |
|      | <ul style="list-style-type: none"> <li>For <b>33.8-cm</b> (13.3-in) displays with webcam</li> </ul>    | 599530-001        |
|      | <ul style="list-style-type: none"> <li>For <b>35.6-cm</b> (14.0-in) displays with webcam</li> </ul>    | 599531-001        |
|      | <ul style="list-style-type: none"> <li>For <b>33.8-cm</b> (13.3-in) displays without webcam</li> </ul> | 599532-001        |
|      | <ul style="list-style-type: none"> <li>For <b>35.6-cm</b> (14.0-in) displays without webcam</li> </ul> | 599533-001        |

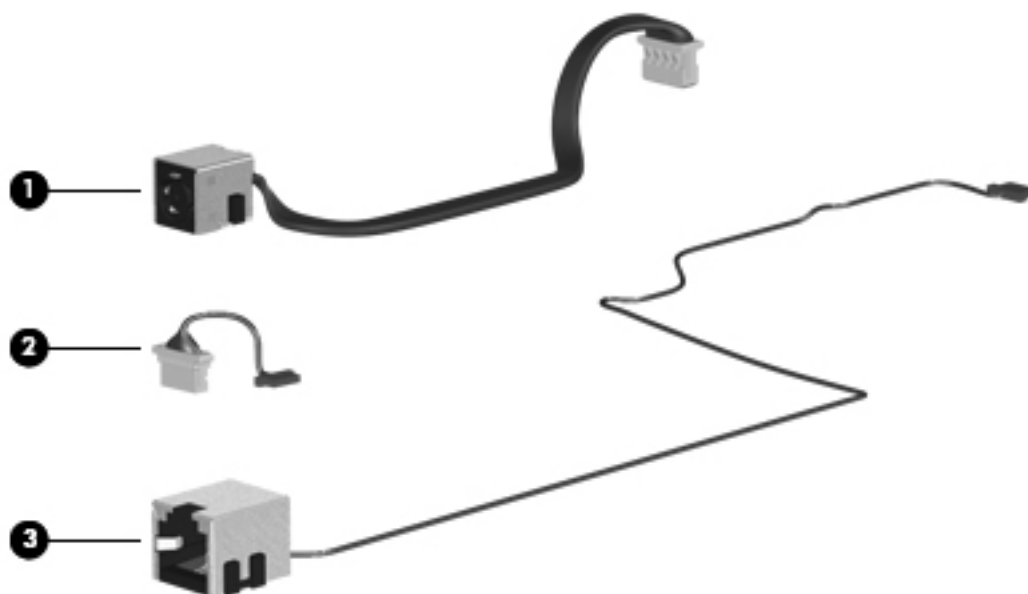
| Item | Description   | Spare part number |
|------|---|-------------------|
| (2)  | <b>Webcam module</b>  | 617666-001        |
| (3)  | <b>Display panel</b> (also included with display assembly; see <a href="#">Computer major components on page 22</a> ) |                   |
|      | • <b>33.8-cm</b> (13.3-in), HD, BrightView  | 588160-001        |
|      | • <b>35.6-cm</b> (14.0-in), HD, BrightView  | 592144-001        |
|      | • <b>33.8-cm</b> (13.3-in), HD, Anti-Glare  | 623175-001        |
|      | • <b>35.6-cm</b> (14.0-in), HD, Anti-Glare  | 623176-001        |
| (4)  | <b>Display hinge kit</b>  |                   |
|      | • Display hinge and panel bracket (left and right) for <b>33.8-cm</b> (13.3-in) displays                              | 599536-001        |
|      | • Display hinge and panel bracket (left and right) for <b>35.6-cm</b> (14.0-in) displays                              | 599537-001        |
| (5)  | <b>Display cable</b> (includes microphone and, on select models, webcam connector)                                    |                   |
|      | • Display cable for <b>33.8-cm</b> (13.3-in) displays with webcam   | 599534-001        |
|      | • Display cable for <b>35.6-cm</b> (14.0-in) displays with webcam   | 605558-001        |
|      | • Display cable for <b>33.8-cm</b> (13.3-in) displays without webcam  | 605557-001        |
|      | • Display cable for <b>35.6-cm</b> (14.0-in) displays without webcam  | 599535-001        |
|      | • Display cable for <b>33.8-cm</b> (13.3-in) displays with webcam without WWAN  | 616070-001        |
| (6)  | <b>WLAN antennas and cables</b> (included with back cover)  |                   |
| (7)  | <b>WWAN antennas and cables</b> (included with back covers used with WWAN option)                                     |                   |
| (8)  | <b>Display back cover</b>   |                   |
|      | For use on black models:  |                   |
|      | • For <b>33.8-cm</b> (13.3-in) displays without WWAN  | 599526-001        |
|      | • For <b>35.6-cm</b> (14.0-in) displays without WWAN  | 599527-001        |
|      | • For <b>35.6-cm</b> (14.0-in) displays with webcam and without WWAN  | 605556-001        |
|      | • For <b>33.8-cm</b> (13.3-in) displays with webcam and without WWAN  | 607094-001        |
|      | For use on red models:  |                   |
|      | • For <b>33.8-cm</b> (13.3-in) displays without WWAN  | 607643-001        |
|      | • For <b>33.8-cm</b> (13.3-in) displays with webcam and without WWAN  | 607644-001        |
|      | • For <b>33.8-cm</b> (14.0-in) displays without WWAN  | 607645-001        |
|      | • For <b>35.6-cm</b> (14.0-in) displays with webcam and without WWAN  | 607646-001        |
|      | For use on champagne models:  |                   |
|      | • For <b>33.8-cm</b> (13.3-in) displays without WWAN  | 625698-001        |
|      | • For <b>33.8-cm</b> (13.3-in) displays with webcam and without WWAN  | 625699-001        |

## Plastics Kit



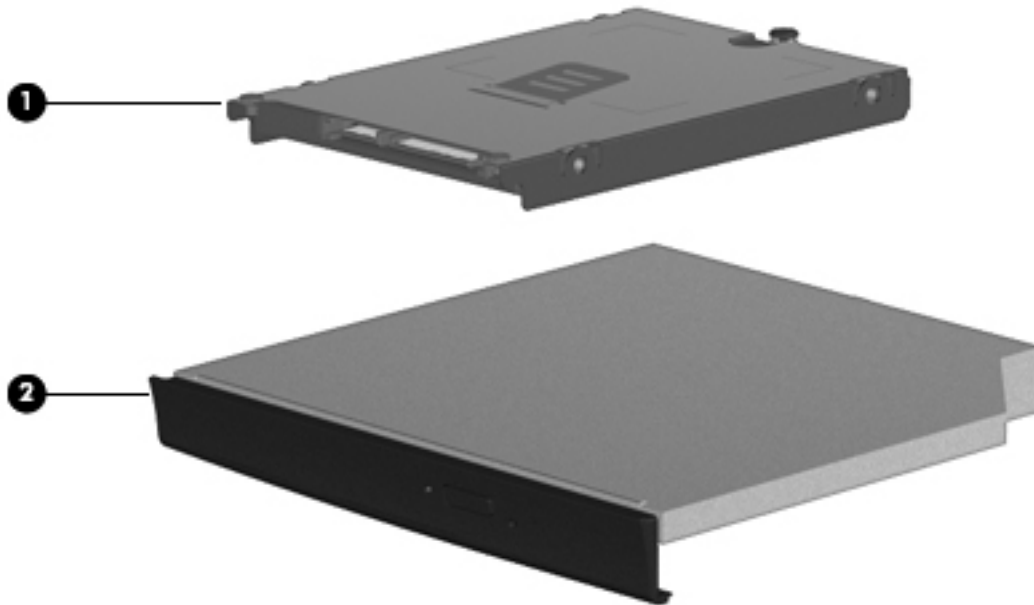
| Item | Description   | Spare part number |
|------|---|-------------------|
|      | <b>Plastics Kit:</b>  | 599563-001        |
| (1)  | ExpressCard slot bezel  |                   |
| (2)  | Optical drive blank (used with no ODD option)                             |                   |
|      | RJ11 (modem) connector blank (not illustrated, used with No-Modem option) |                   |

## Cable kit



| Item | Description              | Spare part number |
|------|--------------------------|-------------------|
|      | <b>Cable kit:</b>        | 599525-001        |
| (1)  | Power cable              |                   |
| (2)  | Bluetooth cable          |                   |
| (3)  | RJ-11 (modem) jack cable |                   |

## Mass storage devices



| Item       | Description  | Spare part number |
|------------|--|-------------------|
| <b>(1)</b> | <b>Hard drive</b> (includes bracket)                               |                   |
|            | 750-GB, 5400-rpm   | 634250-001        |
|            | 640-GB, 5400-rpm   | 631160-001        |
|            | 500-GB, 7200-rpm   | 634919-001        |
|            | 320-GB, 7200-rpm   | 603783-001        |
|            | 250-GB, 7200-rpm   | 599541-001        |
|            | <b>Hard Drive Hardware Kit</b>                                     | 630889-001        |
| <b>(2)</b> | <b>Optical drive</b> (includes bezel)                              |                   |
|            | Blu-ray Disc ROM Drive with SuperMulti DVD $\pm$ R/RW Double-Layer | 599538-001        |
|            | DVD $\pm$ RW SuperMulti Double-Layer Drive with LightScribe        | 599540-001        |
|            | DVD-ROM Drive  | 599539-001        |



## Miscellaneous parts

| Description   | Spare part number |
|---|-------------------|
| <b>AC adapters</b>  |                   |
| 65-W, 3-pin Smart AC adapter  |                   |
| <ul style="list-style-type: none"> <li>For use in all countries and regions except India</li> </ul>   | 609939-001        |
| <ul style="list-style-type: none"> <li>For use in India</li> </ul>  | 609948-001        |
| 90-W Slimline AC adapter  |                   |
| <ul style="list-style-type: none"> <li>For use in all countries and regions except India</li> </ul>   | 609940-001        |
| <ul style="list-style-type: none"> <li>For use in India</li> </ul>  | 609947-001        |
| <b>Power cords</b> (AC power, 3-pin, black, 1.83 m)   |                   |
| <ul style="list-style-type: none"> <li>For use in Argentina</li> </ul>  | 490371-D01        |
| <ul style="list-style-type: none"> <li>For use in Austria</li> </ul>  | 490371-011        |
| <ul style="list-style-type: none"> <li>For use in Brazil</li> </ul>   | 490371-202        |
| <ul style="list-style-type: none"> <li>For use in India</li> </ul>  | 490371-D61        |
| <ul style="list-style-type: none"> <li>For use in Japan</li> </ul>  | 490371-291        |
| <ul style="list-style-type: none"> <li>For use in North America</li> </ul>  | 490371-001        |
| <ul style="list-style-type: none"> <li>For use in the People's Republic of China</li> </ul>   | 490371-AA1        |
| <ul style="list-style-type: none"> <li>For use in South Korea</li> </ul>  | 490371-AD1        |
| <ul style="list-style-type: none"> <li>For use in Taiwan</li> </ul>   | 490371-AB1        |
| <ul style="list-style-type: none"> <li>For use in the United Kingdom and Singapore</li> </ul>   | 490371-031        |
| <b>Rubber kit</b> (includes display bumpers, display screw covers, base enclosure feet, and display hinge bumpers)  | 599564-001        |
| <b>Screw kit</b> , includes:  | 599565-001        |
| <ul style="list-style-type: none"> <li>T8 slotted-torx M2.5x6.5</li> <li>T8 slotted-torx M2.5x5.0</li> <li>T8 slotted-torx M2.5x3.0</li> <li>Phillips P1 M2.5x5.0</li> <li>Phillips P1 M2.5x3.0</li> <li>Phillips P1 M2.0x3.0</li> <li>Phillips P0 M2.0x2.5</li> <li>Phillips M3.0x3.5</li> </ul> |                   |

## Sequential part number listing

| Spare part number | Description  |
|-------------------|--|
| 490371-001        | Power cord (AC power, 3-pin, black, 1.83 m), for use in North America  |
| 490371-011        | Power cord (AC power, 3-pin, black, 1.83 m), for use in Austria  |
| 490371-031        | Power cord (AC power, 3-pin, black, 1.83 m), for use in the United Kingdom and Singapore   |
| 490371-202        | Power cord (AC power, 3-pin, black, 1.83 m), for use in Brazil   |
| 490371-291        | Power cord (AC power, 3-pin, black, 1.83 m), for use in Japan  |
| 490371-AA1        | Power cord (AC power, 3-pin, black, 1.83 m), for use in the People's Republic of China   |
| 490371-AB1        | Power cord (AC power, 3-pin, black, 1.83 m), for use in Taiwan   |
| 490371-AD1        | Power cord (AC power, 3-pin, black, 1.83 m), for use in South Korea  |
| 490371-D01        | Power cord (AC power, 3-pin, black, 1.83 m), for use in Argentina  |
| 490371-D61        | Power cord (AC power, 3-pin, black, 1.83 m), for use in India  |
| 504593-003        | Broadcom 4312G 802.11b/g WiFi Adapter for use in Canada, the Cayman Islands, Guam, Puerto Rico, the United States, and the U.S. Virgin Islands   |
| 504593-004        | Broadcom 4312G 802.11b/g WiFi Adapter for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial 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, Japan, 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, Pakistan, 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 and 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 and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe |
| 531993-001        | WWAN module, Qualcomm EV-DO HSPA   |
| 537921-001        | Bluetooth module (without cable)   |
| 588160-001        | Display panel, <b>33.8-cm</b> (13.3-in), HD, BrightView  |
| 592144-001        | Display panel, <b>35.6-cm</b> (14.0-in), HD, BrightView  |
| 593533-001        | Realtek RTL8191SE 802.11b/g/n 1x1 WiFi Adapter   |
| 593572-001        | Battery, 6-cell, 47-Wh (2.2Ah) Li-ion  |
| 593573-001        | Battery, 9-cell, 93-Wh (2.8Ah) Li-ion  |
| 593836-001        | Broadcom BCM94313HMG2L 802.11b/g/n   |

| <b>Spare part number</b> | <b>Description</b>  |
|--------------------------|---|
| 594165-001               | Athlon II P320 processor, 2.1GHz  |
| 594167-001               | Phenom II P820 processor, 1.8Ghz  |
| 594170-001               | Phenom II P920 processor, 1.6Ghz  |
| 594171-001               | Sempron N120 processor, 2.2GHz  |
| 594173-001               | Turion II P520 processor, 2.3GHz  |
| 598856-002               | Memory module (PC3-10600 shared), 2048-MB   |
| 599092-001               | Memory module (PC3-10600 shared), 4096-MB   |
| 599514-001               | Base enclosure, for use with <b>33.8-cm</b> (13.3-in) models                                  |
| 599515-001               | Base enclosure, for use in <b>35.6-cm</b> (14.0-in) models                                    |
| 599516-001               | RTC battery   |
| 599517-001               | Power connector board with cable  |
| 599524-001               | USB board and cable   |
| 599525-001               | Cable kit   |
| 599526-001               | Display back cover for <b>33.8-cm</b> (13.3-in) displays without WWAN                         |
| 599527-001               | Display back cover for <b>35.6-cm</b> (14.0-in) displays without WWAN                         |
| 599530-001               | Display bezel for <b>33.8-cm</b> (13.3-in) models with webcam                                 |
| 599531-001               | Display bezel for <b>35.6-cm</b> (14.0-in) models with webcam                                 |
| 599532-001               | Display bezel for <b>33.8-cm</b> (13.3-in) models without webcam                              |
| 599533-001               | Display bezel for <b>35.6-cm</b> (14.0-in) models without webcam                              |
| 599534-001               | Display cable for <b>33.8-cm</b> (13.3-in) displays with webcam                               |
| 599535-001               | Display cable for <b>35.6-cm</b> (14.0-in) displays without webcam                            |
| 599536-001               | Display hinge and bracket (left and right) for <b>33.8-cm</b> (13.3-in) models                |
| 599537-001               | Display hinge and bracket (left and right) for <b>35.6-cm</b> (14.0-in) models                |
| 599538-001               | Blu-ray Disc ROM Drive with SuperMulti DVD $\pm$ R/RW Double-Layer                            |
| 599539-001               | DVD ROM Drive   |
| 599540-001               | DVD $\pm$ RW SuperMulti Double-Layer Drive with LightScribe                                   |
| 599541-001               | Hard drive, 250-GB, 7200-rpm  |
| 599544-001               | Fan   |
| 599549-001               | Palm rest with Touchpad and fingerprint reader for use with <b>33.8-cm</b> (13.3-in) displays |
| 599550-001               | Palm rest with Touchpad and fingerprint reader for use with <b>35.6-cm</b> (14.0-in) displays |
| 599551-001               | Palm rest with Touchpad for use with <b>33.8-cm</b> (13.3-in) displays, red                   |
| 599552-001               | Palm rest with Touchpad for use with <b>35.6-cm</b> (14.0-in) displays                        |
| 599553-001               | Display assembly, <b>33.8-cm</b> (13.3-in) HD (1366x768 resolution)                           |
| 599554-001               | Display assembly, <b>33.8-cm</b> (13.3-in) HD BrightView                                      |

| <b>Spare part number</b> | <b>Description</b>   |
|--------------------------|--|
| 599559-001               | Display assembly, <b>35.6-cm</b> (14.0-in) HD (1366x768 resolution)  |
| 599560-001               | Display assembly, <b>35.6-cm</b> (14.0-in) HD BrightView   |
| 599563-001               | Plastics kit   |
| 599564-001               | Rubber kit   |
| 599565-001               | Screw kit  |
| 599566-001               | Speaker assembly, <b>33.8-cm</b> (13.3-in)   |
| 599567-001               | Switch cover, <b>33.8-cm</b> (13.3-in)   |
| 599568-001               | Switch cover, <b>35.6-cm</b> (14.0-in)   |
| 599569-001               | Top cover, for use with <b>33.8-cm</b> (13.3-in) models  |
| 599570-001               | Top cover, for use with <b>35.6-cm</b> (14.0-in) models  |
| 599572-001               | Keyboard, <b>33.8-cm</b> (13.3-in), for use in the United States   |
| 599572-281               | Keyboard, <b>33.8-cm</b> (13.3-in), for use in Thailand  |
| 599572-291               | Keyboard, <b>33.8-cm</b> (13.3-in), for use in Japan   |
| 599572-AB1               | Keyboard, <b>33.8-cm</b> (13.3-in), for use in Taiwan  |
| 599572-AD1               | Keyboard, <b>33.8-cm</b> (13.3-in), for use in South Korea   |
| 599573-001               | Keyboard, <b>35.6-cm</b> (14.0-in), for use in the United States   |
| 599573-121               | Keyboard, <b>35.6-cm</b> (14.0-in), for use in Canada (French)   |
| 599573-161               | Keyboard, <b>35.6-cm</b> (14.0-in), for use in Latin America   |
| 599573-201               | Keyboard, <b>35.6-cm</b> (14.0-in), for use in Brazil  |
| 600370-001               | Broadcom 4313/2070 802.11b/g/n (1x1) and Bluetooth high-speed Half Mini Card                               |
| 602992-001               | Ralink RT3090BC4 802.11b/g/n 1x1 WiFi and Bluetooth 2.1+EDR Combo Adapter (Bluetooth 3.0+high-speed ready) |
| 603783-001               | Hard drive, 320-GB, 7200-rpm   |
| 605556-001               | Display back cover for <b>35.6-cm</b> (14.0-in) displays with webcam and without WWAN                      |
| 605557-001               | Display cable for <b>33.8-cm</b> (13.3-in) displays without webcam   |
| 605558-001               | Display cable for <b>35.6-cm</b> (14.0-in) displays with webcam  |
| 605559-001               | Speaker assembly, <b>35.6-cm</b> (14.0-in)   |
| 605560-005               | Atheros AR 9285 802.11b/g/n  |
| 607094-001               | Display back cover for <b>33.8-cm</b> (13.3-in) displays with webcam and without WWAN                      |
| 607643-001               | Display back cover for <b>33.8-cm</b> (13.3-in) displays without WWAN, red                                 |
| 607644-001               | Display back cover for <b>33.8-cm</b> (13.3-in) displays with webcam and without WWAN, red                 |
| 607645-001               | Display back cover for <b>35.6-cm</b> (14.0-in) displays without WWAN, red                                 |
| 607646-001               | Display back cover for <b>35.6-cm</b> (14.0-in) displays with webcam and without WWAN, red                 |
| 607648-001               | Palm rest with Touchpad and fingerprint reader for use with <b>33.8-cm</b> (13.3-in) displays, red         |

| <b>Spare part number</b> | <b>Description</b>  |
|--------------------------|---|
| 607649-001               | Palm rest with Touchpad and fingerprint reader for use with <b>35.6-cm</b> (14.0-in) displays, red                                      |
| 607650-001               | Palm rest with Touchpad for use with <b>33.8-cm</b> (13.3-in) displays, red   |
| 607651-001               | Palm rest with Touchpad for use with <b>35.6-cm</b> (14.0-in) displays, red   |
| 607652-001               | Switch cover, <b>33.8-cm</b> (13.3-in), red   |
| 607653-001               | Switch cover, <b>35.6-cm</b> (14.0-in), red   |
| 607654-001               | System board, for use with <b>33.8-cm</b> (13.3-in) models with ATI Mobility Radeon HD 530v discrete graphics                           |
| 607655-001               | System board, for use with <b>33.8-cm</b> (13.3-in) models with UMA graphics  |
| 607656-001               | System board for use with <b>35.6-cm</b> (14.0-in) models with UMA graphics   |
| 608127-001               | Display assembly, <b>33.8-cm</b> (13.3-in) HD BrightView with webcam, black   |
| 608128-001               | Display assembly, <b>33.8-cm</b> (13.3-in) HD AG with webcam, black   |
| 608131-001               | Display assembly, <b>35.6-cm</b> (14.0-in) HD BrightView with webcam, black   |
| 608132-001               | Display assembly, <b>35.6-cm</b> (14.0-in) HD AG with webcam, black   |
| 608730-001               | Display assembly, <b>33.8-cm</b> (13.3-in) HD BrightView with webcam, red   |
| 608731-001               | Display assembly, <b>33.8-cm</b> (13.3-in) HD AG with webcam, red   |
| 608734-001               | Display assembly, <b>35.6-cm</b> (14.0-in) HD BrightView with webcam, red   |
| 608735-001               | Display assembly, <b>35.6-cm</b> (14.0-in) HD AG with webcam, red   |
| 608736-001               | Display assembly, <b>33.8-cm</b> (13.3-in) HD (1366x768 resolution) , red   |
| 608737-001               | Display assembly, <b>33.8-cm</b> (13.3-in) HD BrightView, red   |
| 608740-001               | Display assembly, <b>35.6-cm</b> (14.0-in) HD (1366x768 resolution), red  |
| 608741-001               | Display assembly, <b>35.6-cm</b> (14.0-in) HD BrightView, red   |
| 609939-001               | 65-W, 3-pin Smart AC adapter for use in all countries and regions except India  |
| 609940-001               | 90-W Slimline AC adapter for use in all countries and regions except India  |
| 609947-001               | 90-W Slimline AC adapter for use in India   |
| 609948-001               | 65-W, 3-pin Smart AC adapter for use in India   |
| 614962-001               | System board, for use with <b>33.8-cm</b> (13.3-in) models and discrete graphics subsystem in the People's Republic of China and Russia |
| 614963-001               | System board, for use with <b>33.8-cm</b> (13.3-in) models and UMA graphics subsystem in the People's Republic of China and Russia      |
| 615575-001               | Processor heat sink for use with discrete graphics subsystem  |
| 615576-001               | Processor heat sink for use with Unified Memory Architecture (UMA) graphics subsystem   |
| 616333-001               | AMD V140, 2.3-GHz, single-core processor  |
| 616335-001               | AMD Phenom II P840, 1.9-GHz processor   |
| 616336-001               | AMD Phenom II P940, 1.7-GHz processor   |
| 616343-001               | AMD Athlon II P340, 2.2-GHz processor   |

| <b>Spare part number</b> | <b>Description</b>  |
|--------------------------|---|
| 616347-001               | AMD Turion II P540, 2.4-GHz processor   |
| 617070-001               | Display cable for <b>33.8-cm</b> (13.3-in) displays with webcam without WWAN  |
| 617666-001               | Webcam module   |
| 623175-001               | Display panel, <b>33.8-cm</b> (13.3-in), HD, Anti-Glare   |
| 623176-001               | Display panel, <b>35.6-cm</b> (14.0-in), HD, Anti-Glare   |
| 625690-001               | Display assembly, <b>33.8-cm</b> (13.3-in) HD (1366x768 resolution), champagne  |
| 625691-001               | Display assembly, <b>33.8-cm</b> (13.3-in) HD with webcam, champagne  |
| 625698-001               | Display back cover for <b>33.8-cm</b> (13.3-in) displays without WWAN, champagne  |
| 625699-001               | Display back cover for <b>33.8-cm</b> (13.3-in) displays with webcam and without WWAN, champagne  |
| 625712-001               | Palm rest with TouchPad and fingerprint reader for use with <b>33.8-cm</b> (13.3-in) displays, champagne  |
| 625714-001               | Palm rest with TouchPad for use with <b>33.8-cm</b> (13.3-in) displays, champagne   |
| 625716-001               | Switch cover, <b>33.8-cm</b> (13.3-in), champagne   |
| 625718-001               | Display assembly, <b>33.8-cm</b> (13.3-in) HD (1366x768 resolution) with a webcam, champagne  |
| 625719-001               | Display assembly, <b>33.8-cm</b> (13.3-in) BrightView, HD (1366x768 resolution), champagne  |
| 628489-001               | System board for use in models with ATI Mobility Radeon HD 5470 discrete graphics and <b>33.8-cm</b> (13.3-in) displays in all countries and regions except for Russia and the People's Republic of China |
| 628490-001               | System board for use in models with ATI Mobility Radeon HD 5470 discrete graphics and <b>33.8-cm</b> (13.3-in) displays in only Russia and the People's Republic of China                                 |
| 628619-001               | System board for use in models with ATI Mobility Radeon HD 6370 discrete graphics and <b>33.8-cm</b> (13.3-in) displays in all countries and regions except for Russia and the People's Republic of China |
| 628620-001               | System board for use in models with ATI Mobility Radeon HD 6370 discrete graphics and <b>33.8-cm</b> (13.3-in) displays in only Russia and the People's Republic of China                                 |
| 628824-001               | High-speed 56K modem for use in all countries and regions   |
| 630889-001               | Hard Drive Hardware Kit   |
| 631160-001               | Hard drive, 640-GB, 5400 rpm  |
| 632213-001               | Optical drive connector for use in 35.6-cm (14.0-in) models   |
| 634250-001               | Hard drive, 750-GB, 5400-rpm  |
| 634687-001               | AMD Phenom II P650, 2.6-GHz processor   |
| 634688-001               | AMD Phenom II P860, 2.0-GHz processor   |
| 634689-001               | AMD Phenom II P960, 1.8-GHz processor   |
| 634691-001               | AMD Turion II P560, 2.5-GHz processor   |
| 634919-001               | Hard drive, 500-GB, 7200-rpm  |
| 636634-001               | AMD V160, 2.4-GHz, single-core processor  |
| 636635-001               | AMD Athlon II P360, 2.3-GHz processor   |
| 657098-001               | Battery Latch Kit   |

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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
- Phillips P0 and P1 screwdrivers
- Torx T8 screwdriver

### 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.

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### Plastic parts

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

---

## Cables and connectors

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**⚠ 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

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

---

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

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

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

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

Avoid dropping drives from any height onto any surface.

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

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

Avoid exposing a drive to temperature extremes or liquids.

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

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

## Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

- To avoid hand contact, transport products in static-safe tubes, bags, or boxes.
- Protect ESD-sensitive parts and assemblies with conductive or approved containers or packaging.
- Keep ESD-sensitive parts in their containers until the parts arrive at static-free workstations.
- Place items on a grounded surface before removing items from their containers.
- Always be properly grounded when touching a component or assembly.
- Store reusable ESD-sensitive parts from assemblies in protective packaging or nonconductive foam.
- Use transporters and conveyors made of antistatic belts and roller bushings. Be sure that mechanized equipment used for moving materials is wired to ground and that proper materials are selected to avoid static charging. When grounding is not possible, use an ionizer to dissipate electric charges.

## Workstation guidelines

Follow these grounding workstation guidelines:

- Cover the workstation with approved static-shielding material.
- Use a wrist strap connected to a properly grounded work surface and use properly grounded tools and equipment.
- Use conductive field service tools, such as cutters, screwdrivers, and vacuums.
- When fixtures must directly contact dissipative surfaces, use fixtures made only of static-safe materials.
- Keep the work area free of nonconductive materials, such as ordinary plastic assembly aids and Styrofoam.
- Handle ESD-sensitive components, parts, and assemblies by the case or PCM laminate. Handle these items only at static-free workstations.
- Avoid contact with pins, leads, or circuitry.
- Turn off power and input signals before inserting or removing connectors or test equipment.

## Equipment guidelines

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

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

The following grounding equipment is recommended to prevent electrostatic damage:

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

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

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


# Component replacement procedures

This section provides removal and replacement procedures.

There are as many as 83 screws, in 8 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 label

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

 **NOTE:** Serial number label color varies on select models.



(1) Product name

(4) Warranty period

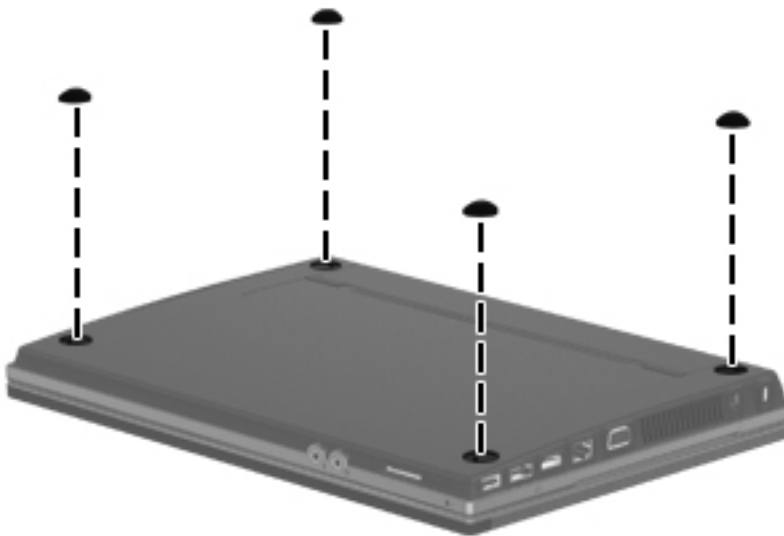
(2) Serial number

(5) Model description (select models)

(3) Product number

## Computer feet

The computer feet are adhesive-backed rubber pads. The feet are included in the rubber kit, spare part number 599564-001. There are 4 rubber feet that attach to the base enclosure in the locations illustrated below.



## Battery

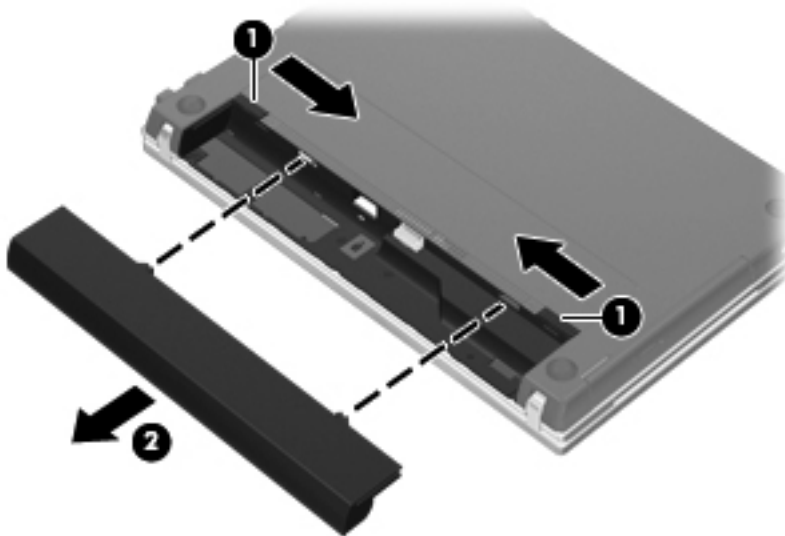
| Description                  | Spare part number |
|------------------------------|-------------------|
| <b>Battery</b>               |                   |
| 9-cell, 93-Wh (2.8Ah) Li-ion | 593573-001        |
| 6-cell, 47-Wh (2.2Ah) Li-ion | 593572-001        |

Before disassembling the computer, follow these steps:

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

Remove the battery:


1. Turn the computer upside-down on a flat surface with the battery bay toward you.
2. Slide the battery release latches (1) to release the battery.
3. Remove the battery (2) from the computer.




Install the battery by inserting it into the battery bay until you hear a click.

## SIM

---

 **NOTE:** This section applies only to select 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.

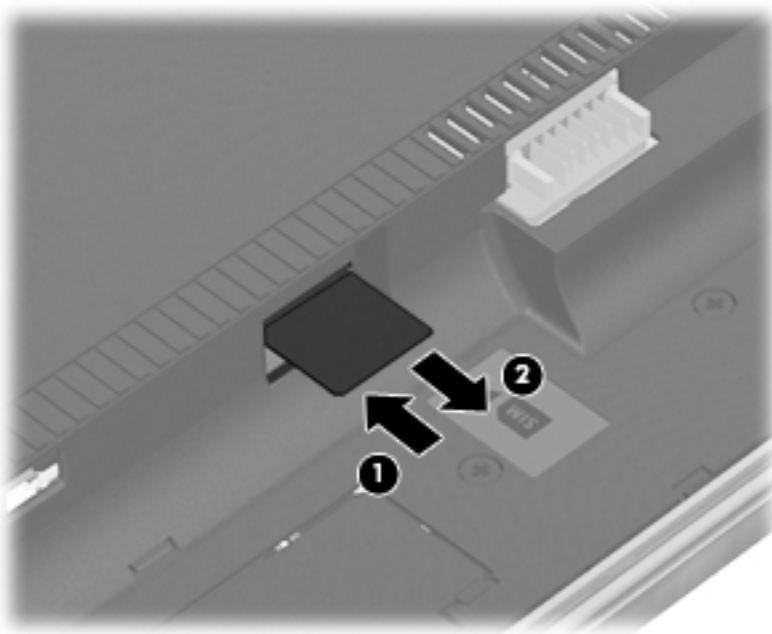
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Before removing the SIM, follow these steps:

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 45](#)).


Remove the SIM:

1. Push on the SIM (1) to release it from the SIM slot.
2. Remove the SIM (2) from the computer.



Install the SIM by inserting it into the SIM slot and pushing until you hear a click.

---

 **CAUTION:** If a SIM is inserted backwards or upside down, the battery may not snap into place properly and could damage the SIM and the SIM connector.

---

To prevent damage to the connectors, use minimal force when inserting a SIM.

## Switch cover

| Description  | Spare part number |
|--|-------------------|
| <b>Switch cover</b>  |                   |
| For use in black models:   |                   |
| <ul style="list-style-type: none"><li>For with <b>33.8-cm</b> (13.3-in) displays</li></ul> | 599567-001        |
| <ul style="list-style-type: none"><li>For with <b>35.6-cm</b> (14.0-in) displays</li></ul> | 599568-001        |
| For use in red models:   |                   |
| <ul style="list-style-type: none"><li>For with <b>33.8-cm</b> (13.3-in) displays</li></ul> | 607652-001        |
| <ul style="list-style-type: none"><li>For with <b>35.6-cm</b> (14.0-in) displays</li></ul> | 607653-001        |
| For use in champagne models:   |                   |
| <ul style="list-style-type: none"><li>For with <b>33.8-cm</b> (13.3-in) displays</li></ul> | 625716-001        |

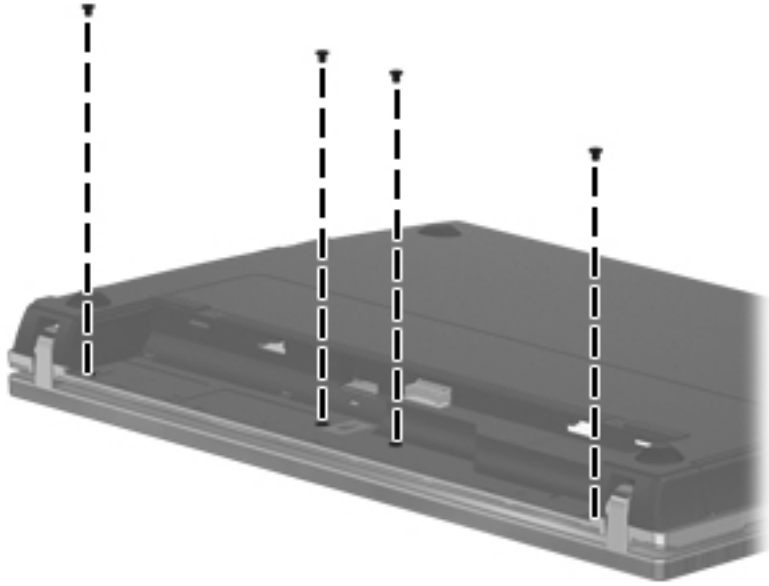
Before removing the switch cover, follow these steps:

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 45](#)).

Remove the switch cover:

1. Position the computer upside down with the rear toward you.

2. Remove the four PM2.5×3.0 screws in the battery bay.



3. Open the computer as far as possible.
4. Slide the switch cover back (1), and then remove it from the computer (2).



Reverse this procedure to install the switch cover and keyboard.



# Keyboard

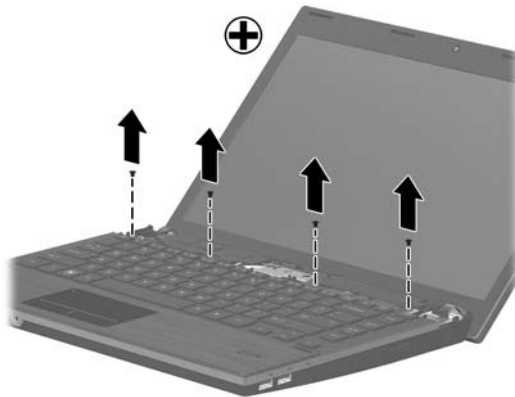
| Description  | Spare part number |
|--|-------------------|
| <b>Keyboard</b>  |                   |
| For computer models with <b>33.8-cm</b> (13.3-in) displays   | 599572-xxx        |
| For computer models with <b>35.6-cm</b> (14.0-in) displays:  | 599573-xxx        |
| <b>NOTE:</b> For a detailed list of keyboards see the parts list in <a href="#">Computer major components on page 22</a> |                   |

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 45](#)).
5. Remove the switch cover (see [Switch cover on page 47](#)).

Remove the keyboard:

1. Remove the four Phillips PM2.5×3.0 screws that secure the keyboard to the computer.



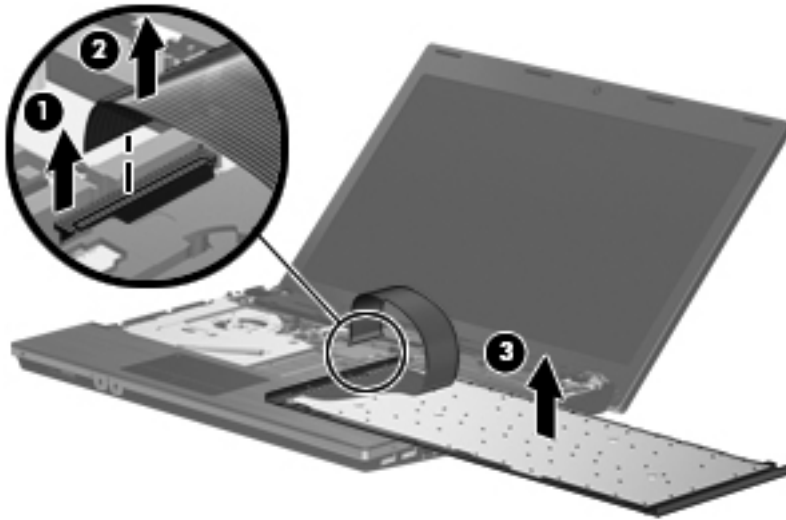
2. Slide the keyboard back toward the display.



3. Rotate it right until it rests upside down on the right side of the computer.



4. 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.
5. Remove the keyboard (3).




## Memory module

| Description  | Spare part number |
|--|-------------------|
| <b>Memory module</b> (PC3-10600, 1333-MHz, DDR3, shared) |                   |
| 4096-MB  | 599092-001        |
| 2048-MB  | 598856-002        |

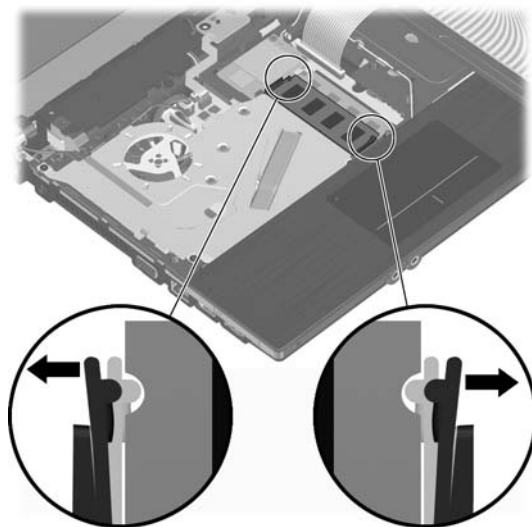
Before removing the memory module, follow these steps:

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 45](#)).
5. Remove the switch cover (see [Switch cover on page 47](#)).
6. Remove the keyboard (see [Keyboard on page 49](#)).


 **NOTE:** You can release the keyboard without removing the keyboard cable from the system board, and then rotate it right until it rests upside down on the right side of the computer to remove the memory modules.

Remove the memory module:

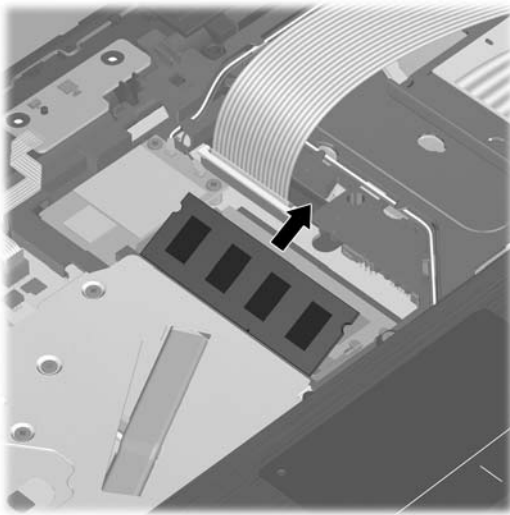
1. Position the computer right-side up with the front toward you.
2. Spread the retaining tabs on each side of the memory module slot to release the memory module. (The edge of the module opposite the slot rises away from the computer.)



3. Remove the memory module by pulling the module 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.


## Optical drive

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

| Description   | Spare part number |
|---|-------------------|
| Blu-ray ROM with LightScribe DVD±R/RW SuperMulti DL Drive | 599538-001        |
| DVD ±RW SuperMulti Double-Layer Drive with LightScribe    | 599540-001        |
| DVD ROM Drive   | 599539-001        |

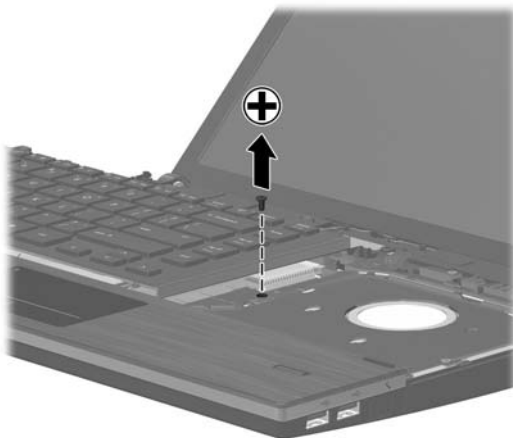
Before removing the optical drive, follow these steps:

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 45](#)).
5. Remove the switch cover (see [Switch cover on page 47](#)).
6. Remove the keyboard (see [Keyboard on page 49](#)).

 **NOTE:** You can release the keyboard without removing the keyboard cable from the system board, and then rotate it left until it rests upside down on the left side of the computer to remove the optical drive .

Remove the optical drive:

1. Position the computer with the right side toward you.
2. Remove the Phillips PM2.5×5.0 screw that secures the optical drive to the computer.



3. Insert a flat-bladed screwdriver (1) or similar tool into the access point on the top cover to the optical drive bracket and press the to the right to release the optical drive from the computer.

4. Remove the optical drive **(2)** from the computer.



5. If it is necessary to replace the optical drive bracket, position the optical drive with the rear toward you.
6. Remove the two Phillips PM2.0×3.0 screws **(1)** that secure the optical drive bracket to the optical drive.
7. Remove the optical drive bracket **(2)**.



Reverse this procedure to reassemble and install an optical drive.

## Power button board

---

### Description

---

Power button board with cable (included with switch cover, see [Switch cover on page 47](#))

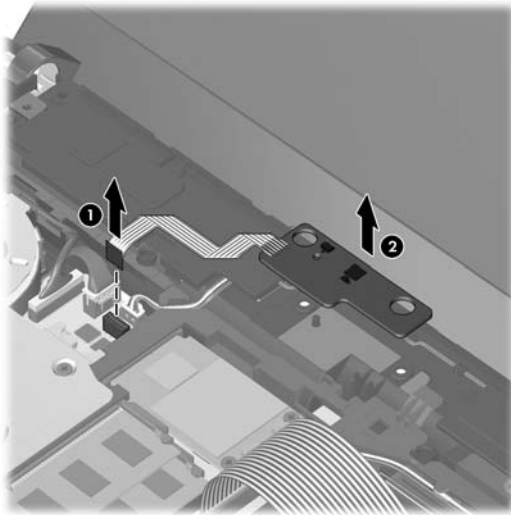
---

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 45](#)).
5. Switch cover (see [Switch cover on page 47](#))

Remove the power button board:

1. Disconnect the power button board cable (1).
2. Gently pull the power button board away from the double-sided tape that secures the board to the base enclosure.
3. Remove the power button board (2).



Reverse this procedure to install the power button board.

## Speakers

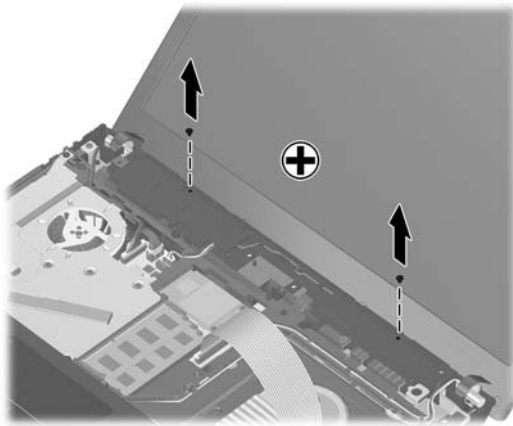
| Description  | Spare part number |
|--|-------------------|
| Speakers for use in computer models with <b>33.8-cm</b> (13.3-in) displays | 599566-001        |
| Speakers for use in computer models with <b>35.6-cm</b> (14.0-in) displays | 605559-001        |

Before removing the speakers, 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 45](#)).
5. Remove the switch cover and keyboard (see [Switch cover on page 47](#)).

Remove the speakers:

1. Position the computer right-side up with the front toward you.
2. Remove the two Phillips PM2.5×3.0 screws that secure the speakers to the base enclosure.

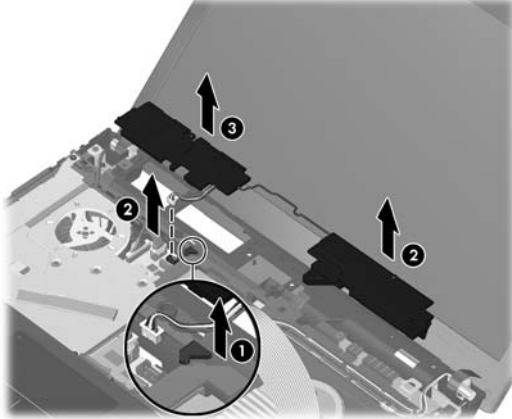


3. Disconnect the speaker cable (1) from the system board.

 **NOTE:** The two speakers are connected with a single cable.



4. Remove the speaker cable (2) from the clips and routing channel, and then remove the speakers from the computer (3).



Reverse this procedure to install the speakers.

## Palm rest

| Description   | Spare part number |
|---|-------------------|
| <b>Palm rest</b> (includes TouchPad)  |                   |
| For use in black models:  |                   |
| <ul style="list-style-type: none"><li>For use with fingerprint reader and <b>33.8-cm</b> (13.3-in) displays</li></ul> | 599549-001        |
| <ul style="list-style-type: none"><li>For use with <b>33.8-cm</b> (13.3-in) displays</li></ul>                        | 599551-001        |
| <ul style="list-style-type: none"><li>For use with fingerprint reader and <b>35.6-cm</b> (14.0-in) displays</li></ul> | 599550-001        |
| <ul style="list-style-type: none"><li>For use with <b>35.6-cm</b> (14.0-in) displays</li></ul>                        | 599552-001        |
| For use in red models:  |                   |
| <ul style="list-style-type: none"><li>For use with fingerprint reader and <b>33.8-cm</b> (13.3-in) displays</li></ul> | 607648-001        |
| <ul style="list-style-type: none"><li>For use with <b>33.8-cm</b> (13.3-in) displays</li></ul>                        | 607650-001        |
| <ul style="list-style-type: none"><li>For use with fingerprint reader and <b>35.6-cm</b> (14.0-in) displays</li></ul> | 607649-001        |
| <ul style="list-style-type: none"><li>For use with <b>35.6-cm</b> (14.0-in) displays</li></ul>                        | 607651-001        |
| For use in champagne models:  |                   |
| <ul style="list-style-type: none"><li>For use with fingerprint reader and <b>33.8-cm</b> (13.3-in) displays</li></ul> | 625712-001        |
| <ul style="list-style-type: none"><li>For use with <b>33.8-cm</b> (13.3-in) displays</li></ul>                        | 625714-001        |

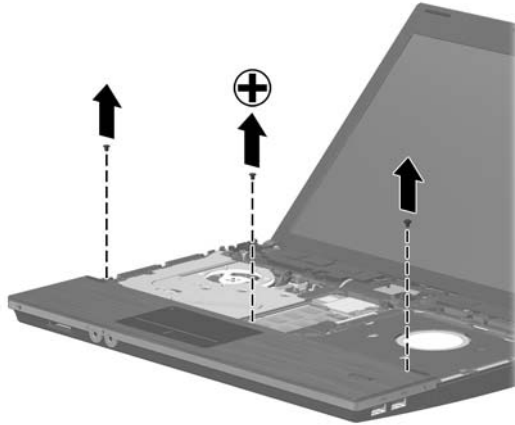
Before removing the palm rest, follow these steps:

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 45](#)).
5. Remove the switch cover (see [Switch cover on page 47](#)).
6. Remove the keyboard (see [Keyboard on page 49](#)).

Remove the palm rest:

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

2. Remove the three Phillips PM2.5×3.0 broadhead screws that secure the palm rest to the computer.



3. Slide the palm rest to the right.

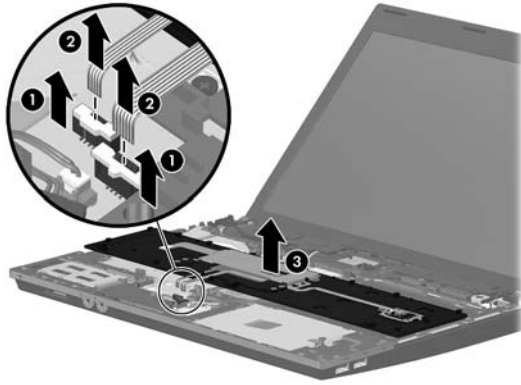


4. Turn it over from the front edge until it rests upside down on the top cover.



5. Release the fingerprint reader connector (1) and the TouchPad cable connector (1).
6. Remove the fingerprint reader cable (2) and the TouchPad cable (2) from the system board.

7. Remove the palm rest (3).



Reverse this procedure to install the palm rest.

## Hard drive



**NOTE:** The hard drive spare part kit includes a hard drive bracket.

| Description                 | Spare part number |
|-----------------------------|-------------------|
| 750-GB, 5400-rpm hard drive | 634250-001        |
| 640-GB, 5400-rpm hard drive | 631160-001        |
| 500-GB, 7200-rpm hard drive | 634919-001        |
| 320-GB, 7200-rpm hard drive | 603783-001        |
| 250-GB, 7200-rpm hard drive | 599541-001        |
| Hard Drive Hardware Kit     | 630889-001        |

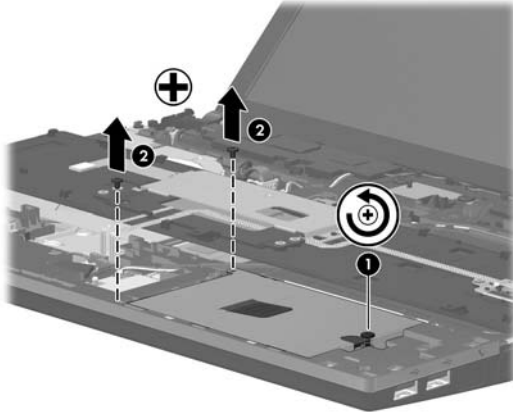
Before removing the hard drive, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 45](#)).
5. Remove the following components:
  - a. Switch cover (see [Switch cover on page 47](#))
  - b. Keyboard (see [Keyboard on page 49](#))
  - c. Palm rest (see [Palm rest on page 58](#))

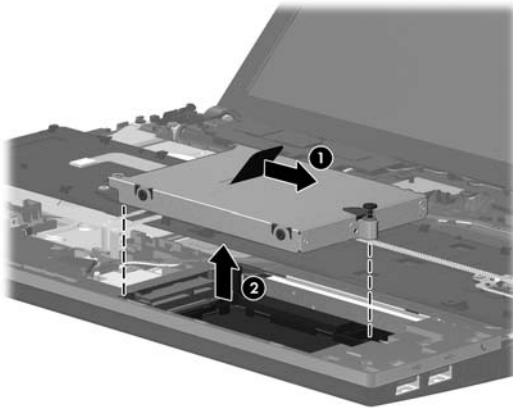
Remove the hard drive:

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

2. Loosen the Phillips PM2.5×10.0 captive screw (1) that secures the hard drive to the computer and remove the two Phillips PM2.0×3.0 screws (2).

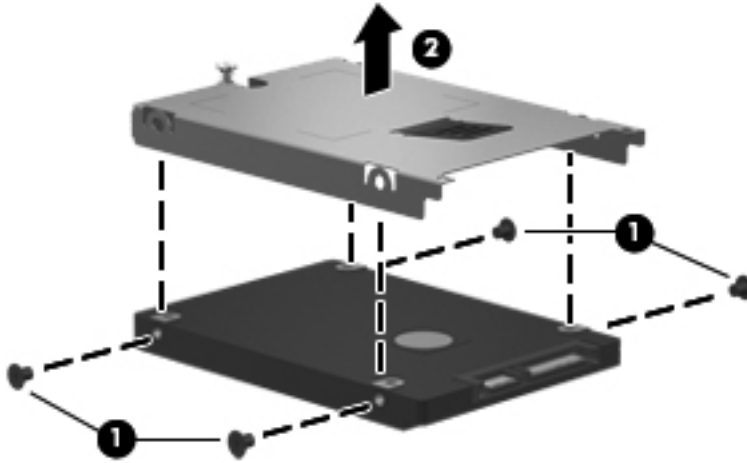


3. Grasp the Mylar tab on the hard drive and slide the hard drive (1) to the left to disconnect it from the system board.
4. Remove the hard drive (2) from the hard drive bay.



5. If it is necessary to replace the hard drive bracket, remove the two Phillips PM3.0×3.0 hard drive bracket screws (1) from each side of the hard drive.

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



Reverse this procedure to reassemble and install the hard drive.

## RTC battery

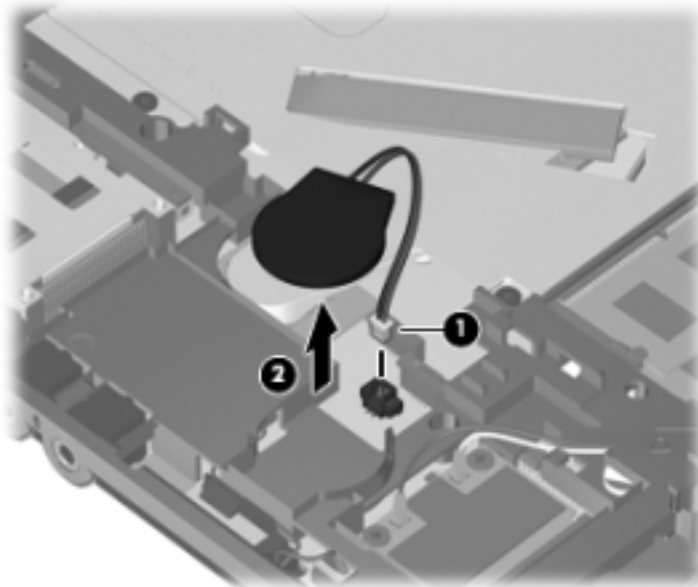
| Description | Spare part number |
|-------------|-------------------|
| RTC battery | 599516-001        |

Before removing the RTC battery, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the following components:
  - a. Battery (see [Battery on page 45](#))
  - b. Switch cover (see [Switch cover on page 47](#))
  - c. Keyboard (see [Keyboard on page 49](#))
  - d. Palm rest (see [Palm rest on page 58](#))

Remove the RTC battery:

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




Reverse this procedure to install the RTC battery.



## WLAN module

| Description  | Spare part number |
|--|-------------------|
| <b>Atheros AR 9285 802.11b/g/n</b>   | 605560-005        |
| <b>Broadcom BCM94313HMG2L 802.11b/g/n</b>  | 593836-001        |
| <b>Broadcom 4312G 802.11b/g WiFi Adapter</b>   |                   |
| For use in Canada, the Cayman Islands, Guam, Puerto Rico, the United States, and the U.S. Virgin Islands   | 504593-003        |
| For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial 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, Japan, 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, Pakistan, 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 and 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 and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe | 504593-004        |
| <b>Realtek RTL8191SE 802.11b/g/n 1x1 WiFi Adapter</b>  | 593533-001        |
| <b>Broadcom 4313/2070 802.11b/g/n (1x1) and Bluetooth high-speed Half Mini Card</b>  | 600370-001        |
| <b>Ralink RT3090BC4 802.11b/g/n 1x1 WiFi and Bluetooth 2.1+EDR Combo Adapter (Bluetooth 3.0+high-speed ready)</b>  | 602992-001        |

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


Before removing the WLAN module, follow these steps:

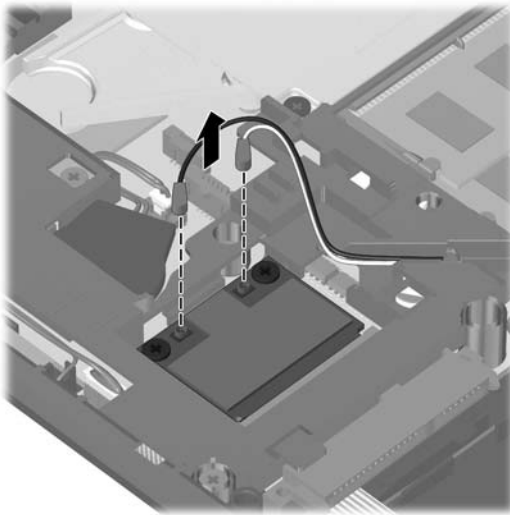
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord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

4. Remove the battery (see [Battery on page 45](#)).
5. Remove the following components:
  - a. Switch cover (see [Switch cover on page 47](#))
  - b. Keyboard (see [Keyboard on page 49](#))
  - c. Palm rest (see [Palm rest on page 58](#))

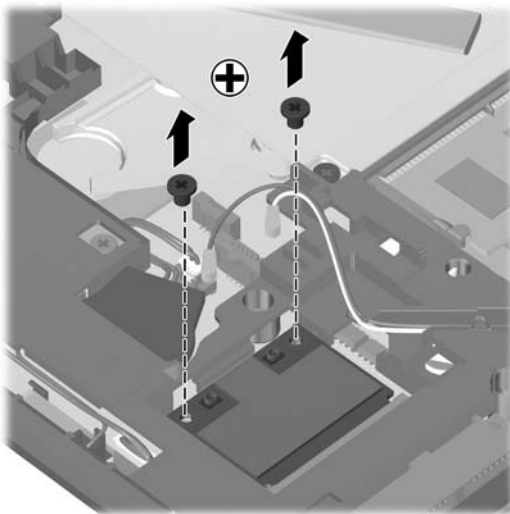
Remove the WLAN module:

1. Position the computer right-side up with the front toward you.
2. Disconnect the WLAN antenna cables from the terminals on the WLAN module.


 **NOTE:** The black WLAN antenna cable is connected to the WLAN module “Main” terminal. The white WLAN antenna cable is connected to the WLAN module “Aux” terminal.



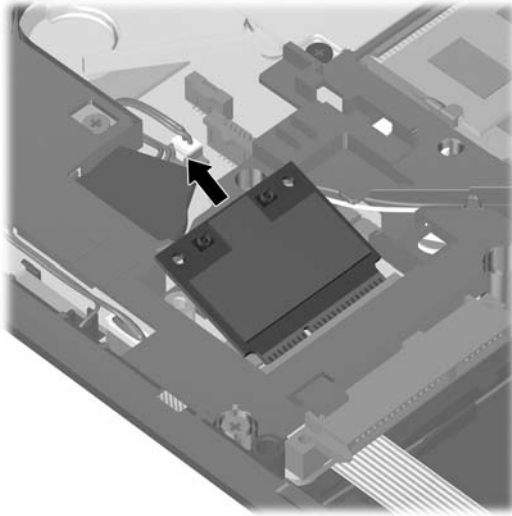
3. Remove the two Phillips PM2.5×3.0 screws that secure the WLAN module to the computer. (The edge of the module opposite the slot rises away from the computer.)



4. Remove the WLAN module by pulling the module away from the slot at an angle.

 **NOTE:** WLAN modules are designed with a notch to prevent incorrect insertion.

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Reverse this procedure to install the WLAN module.

## Bluetooth module

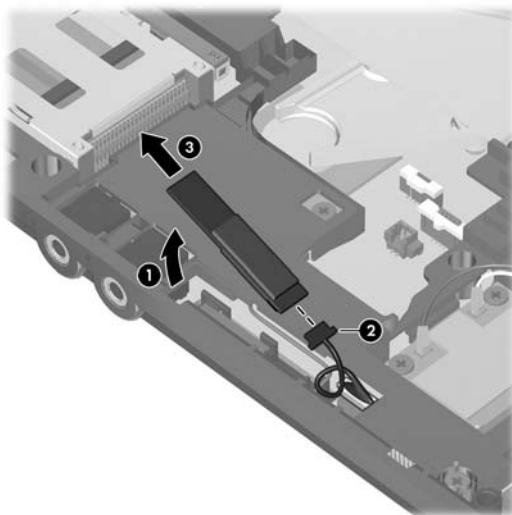
| Description  | Spare part number |
|--|-------------------|
| Bluetooth module (Bluetooth module cable included in the Cable kit, part number 599525-001, see <a href="#">Cable kit on page 31</a> ) | 537921-001        |

Before removing the Bluetooth module, follow these steps:

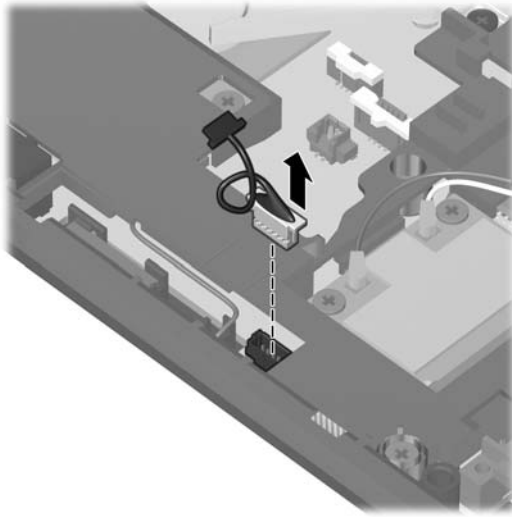
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 45](#)).
5. Remove the following components:
  - a. Switch cover (see [Switch cover on page 47](#))
  - b. Keyboard (see [Keyboard on page 49](#))
  - c. Palm rest (see [Palm rest on page 58](#))

Remove the Bluetooth module:

1. Position the computer right-side up with the front toward you.
2. Remove the Bluetooth module from the base enclosure **(1)**.
3. Disconnect the Bluetooth module cable **(2)**, and then remove the Bluetooth module **(3)**.



4. Remove the Bluetooth module cable from the system board.



Reverse this procedure to install the Bluetooth module.

## Heat sink and fan



**NOTE:** The heat sink spare part kit includes replacement thermal material.

| Description  | Spare part number |
|--|-------------------|
| <b>Fan</b>   | 599544-001        |
| <b>Processor heat sink</b>   |                   |
| For use with discrete graphics subsystems                          | 615575-001        |
| For use with Unified Memory Architecture (UMA) graphics subsystems | 615576-001        |

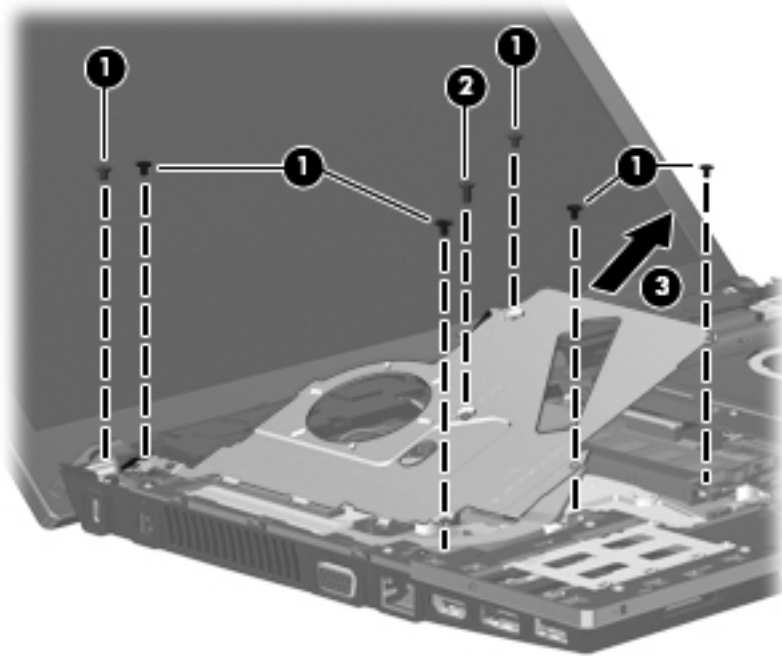
Before removing the heat sink, follow these steps:

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 45](#)).
5. Remove the following components:
  - a. Switch cover (see [Switch cover on page 47](#))
  - b. Keyboard (see [Keyboard on page 49](#))
  - c. Palm rest (see [Palm rest on page 58](#))

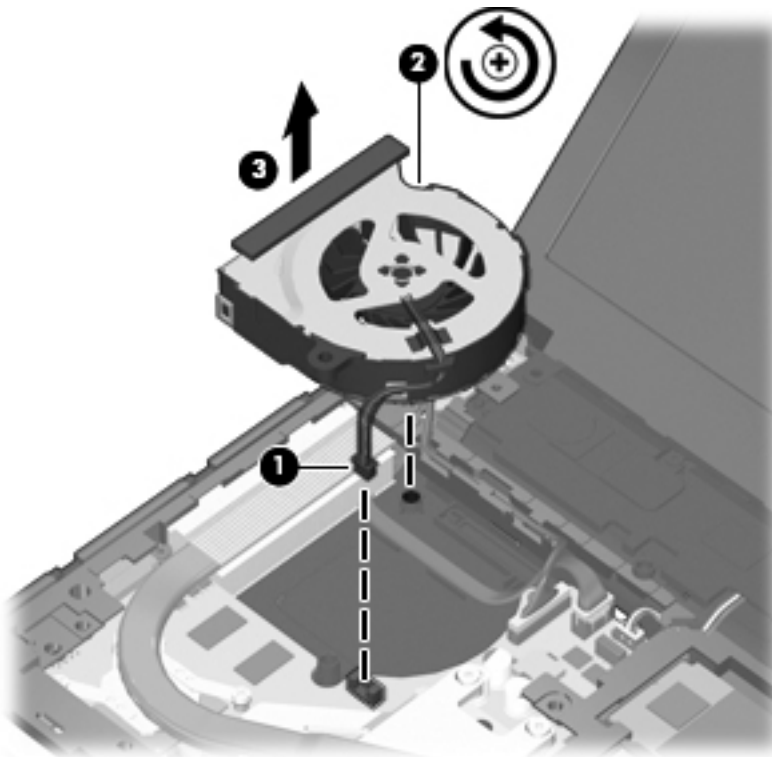
Remove the heat sink:

1. Position the computer right-side up with the front toward you.
2. Remove the six Phillips PM2.5×3.0 screws **(1)** that secure the heat shield to the top cover.
3. Remove the Phillips PM2.5×5.0 screw **(2)** that secures the heat shield to the top cover.


4. Lift the right edge of the heat shield to disengage the tabs on the left side of the heat shield from the top cover, and then remove the heat shield (3).



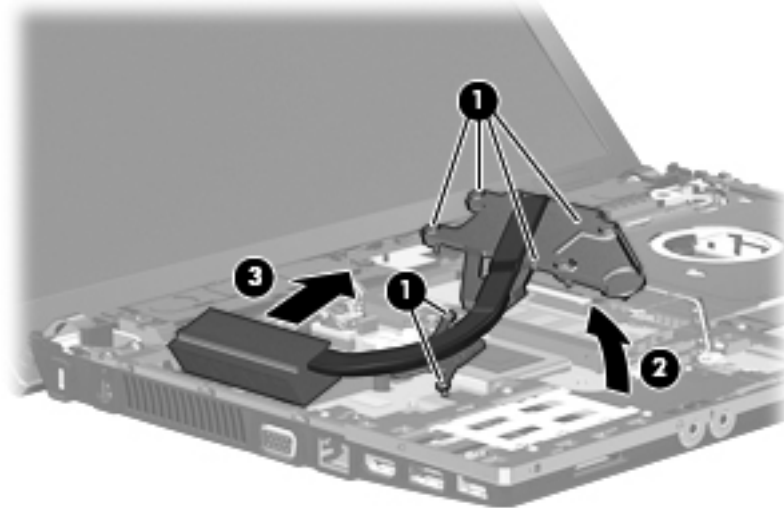
5. Disconnect the fan cable from the system board (1).
6. Loosen the 2.0×5.0 captive screw from the system board, and then remove the fan (3).




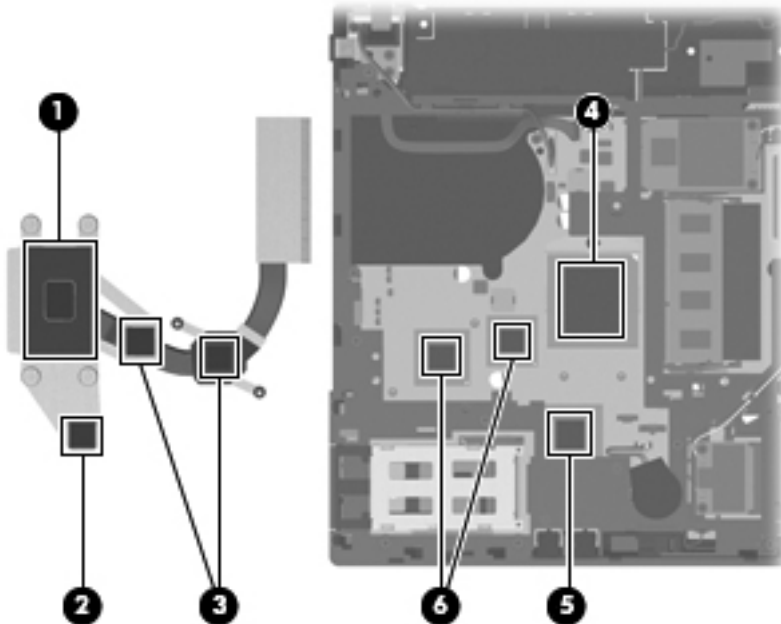
7. Following the sequence stamped into the heat sink, loosen the four PM2.5×10.0 captive screws (1) that secure the heat sink to the processor.

 **NOTE:** Loosen the two additional screws that secure the heat sink to the graphics devices on models with discrete graphics subsystem memory.


8. Lift the heat sink off the processor (2), and then lift the heat sink up and to the right to remove the heat sink from the base enclosure (3).

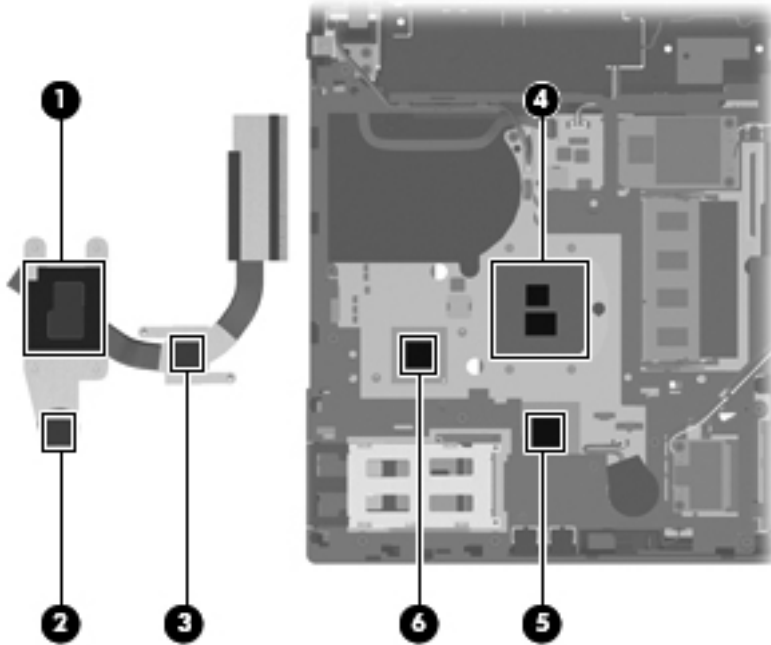


 **NOTE:** The thermal material must be thoroughly cleaned from the surfaces heat sink for the discrete system board (1), (2), and (3), and the system board (4), (5), and (6) each time the heat sink is removed. Replacement thermal material is included with all heat sink, system board, and processor spare part kits.





 **NOTE:** The thermal material must be thoroughly cleaned from the surfaces of heat sink for the UMA system board (1), (2), and (3) and the system board components (3), (4) and (5) each time the heat sink is removed. Replacement thermal material is included with all heat sink, system board, and processor spare part kits.



Reverse this procedure to install the heat sink and fan.

## Processor



**NOTE:** The processor spare part kit includes replacement thermal material.

| Description  | Spare part number |
|--|-------------------|
| <b>Processor</b> (includes replacement thermal material) (not illustrated) |                   |
| AMD Phenom II processors:  |                   |
| • P960, 1.8Ghz   | 634689-001        |
| • P940, 1.7Ghz   | 616336-001        |
| • P920, 1.6Ghz   | 594170-001        |
| • P860, 2.0Ghz   | 634688-001        |
| • P840, 1.9Ghz   | 616335-001        |
| • P820, 1.8Ghz   | 594167-001        |
| • P650, 2.6Ghz   | 634687-001        |
| AMD Turion II processors:  |                   |
| • P560, 2.5GHz   | 634691-001        |
| • P540, 2.4GHz   | 616347-001        |
| • P520, 2.3GHz   | 594173-001        |
| AMD Athlon II processors:  |                   |
| • P360, 2.3GHz   | 636635-001        |
| • P340, 2.2GHz   | 616343-001        |
| • P320, 2.1GHz   | 594165-001        |
| AMD Sempron processors:  |                   |
| • N120, 2.2GHz   | 594171-001        |
| AMD single-core processors:  |                   |
| • V160, 2.4GHz   | 636634-001        |
| • V140, 2.3GHz   | 616333-001        |

Before removing the processor, follow these steps:


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

4. Remove the battery (see [Battery on page 45](#)).
5. Remove the following components:
  - a. Switch cover (see [Switch cover on page 47](#))
  - b. Keyboard (see [Keyboard on page 49](#))
  - c. Optical drive (see [Optical drive on page 53](#))
  - d. Speakers (see [Speakers on page 56](#))
  - e. Palm rest (see [Palm rest on page 58](#))
  - f. Top cover (see [Top cover on page 85](#))

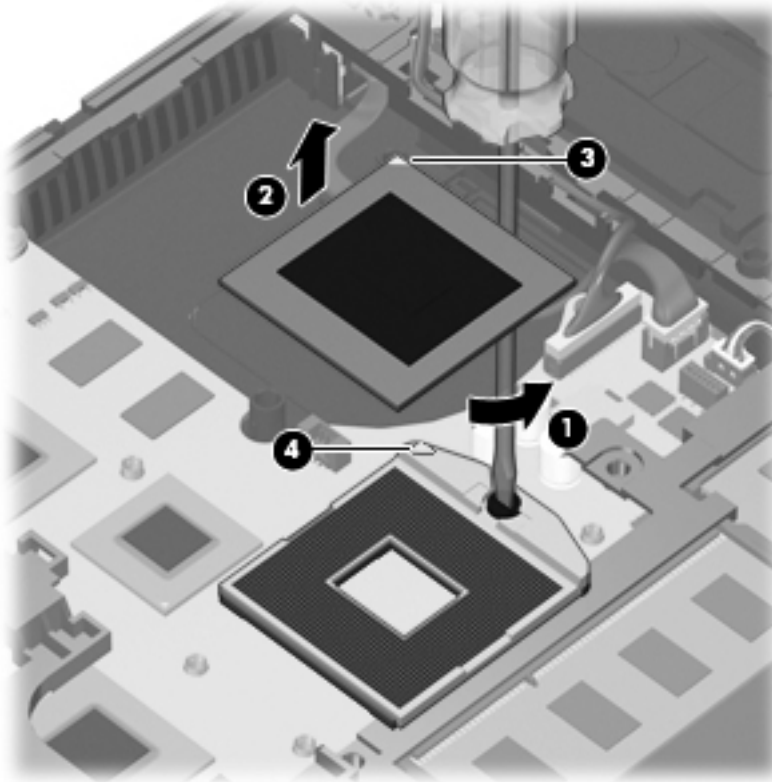
Remove the processor:

1. Position the computer right-side up with the front toward you.
2. Use a flat-bladed screwdriver to turn the processor locking screw **(1)** one-half turn counterclockwise until you hear a click.
3. Lift the processor **(2)** straight up and remove it.

---


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

---



Reverse this procedure to install the processor.

## Power connector cable

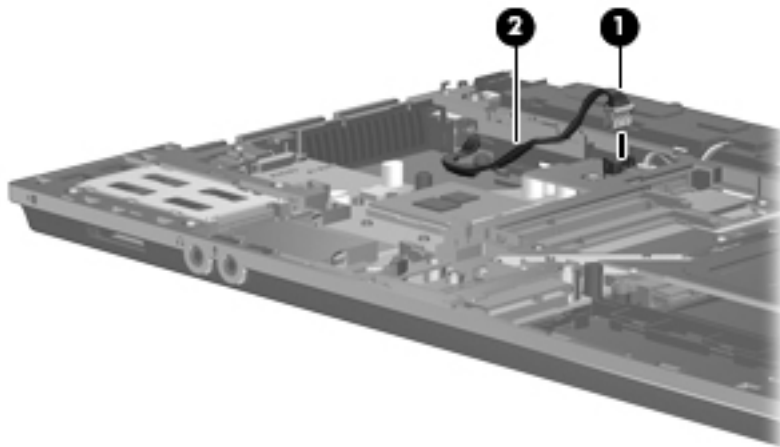
 **NOTE:** The power connector cable is included in the [Cable kit on page 31](#), part number 599525-001.

Before removing the power connector cable, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 45](#)).
5. Remove the following components:
  - a. Switch cover (see [Switch cover on page 47](#))
  - b. Keyboard (see [Keyboard on page 49](#))
  - c. Fan and heat sink (see [Heat sink and fan on page 70](#))
  - d. Speakers (see [Speakers on page 56](#))

Remove the power connector cable.

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



4. Remove the power connector cable

Reverse this procedure to install the power connector cable.

## Display assembly



**NOTE:** The display assembly spare part kit includes 2 WLAN antennas and cables.

| Description  | Spare part number |
|--|-------------------|
| <b>Display assembly</b> (includes 2 WLAN antennas and cables and, on select computer models, 2 WWAN antennas and cables) |                   |
| <b>NOTE:</b> WWAN is available only on select models with <b>33.8-cm</b> 13.3-in displays.                               |                   |
| For use in black models:   |                   |
| <ul style="list-style-type: none"> <li>• <b>33.8-cm</b> (13.3-in) HD (1366x768 resolution)</li> </ul>                    | 599553-001        |
| <ul style="list-style-type: none"> <li>• <b>33.8-cm</b> (13.3-in) HD BrightView</li> </ul>                               | 599554-001        |
| <ul style="list-style-type: none"> <li>• <b>33.8-cm</b> (13.3-in) HD BrightView with webcam</li> </ul>                   | 608127-001        |
| <ul style="list-style-type: none"> <li>• <b>33.8-cm</b> (13.3-in) HD AG with webcam</li> </ul>                           | 608128-001        |
| <ul style="list-style-type: none"> <li>• <b>35.6-cm</b> (14.0-in) HD (1366x768 resolution)</li> </ul>                    | 599559-001        |
| <ul style="list-style-type: none"> <li>• <b>35.6-cm</b> (14.0-in) HD BrightView</li> </ul>                               | 599560-001        |
| <ul style="list-style-type: none"> <li>• <b>35.6-cm</b> (14.0-in) HD BrightView with webcam</li> </ul>                   | 608131-001        |
| <ul style="list-style-type: none"> <li>• <b>35.6-cm</b> (14.0-in) HD AG with webcam</li> </ul>                           | 608132-001        |
| For use in red models:   |                   |
| <ul style="list-style-type: none"> <li>• <b>33.8-cm</b> (13.3-in) HD (1366x768 resolution)</li> </ul>                    | 608736-001        |
| <ul style="list-style-type: none"> <li>• <b>33.8-cm</b> (13.3-in) HD BrightView</li> </ul>                               | 608737-001        |
| <ul style="list-style-type: none"> <li>• <b>33.8-cm</b> (13.3-in) HD BrightView with webcam</li> </ul>                   | 608730-001        |
| <ul style="list-style-type: none"> <li>• <b>33.8-cm</b> (13.3-in) HD AG with webcam</li> </ul>                           | 608731-001        |
| <ul style="list-style-type: none"> <li>• <b>35.6-cm</b> (14.0-in) HD (1366x768 resolution)</li> </ul>                    | 608740-001        |
| <ul style="list-style-type: none"> <li>• <b>35.6-cm</b> (14.0-in) HD BrightView</li> </ul>                               | 608741-001        |
| <ul style="list-style-type: none"> <li>• <b>35.6-cm</b> (14.0-in) HD BrightView with webcam</li> </ul>                   | 608734-001        |
| <ul style="list-style-type: none"> <li>• <b>35.6-cm</b> (14.0-in) HD AG with webcam</li> </ul>                           | 608735-001        |
| For use in champagne models:   |                   |
| <ul style="list-style-type: none"> <li>• <b>33.8-cm</b> (13.3-in) HD (1366x768 resolution)</li> </ul>                    | 625690-001        |
| <ul style="list-style-type: none"> <li>• <b>33.8-cm</b> (13.3-in) HD (1366x768 resolution) with a webcam</li> </ul>      | 625718-001        |
| <ul style="list-style-type: none"> <li>• <b>33.8-cm</b> (13.3-in) HD BrightView</li> </ul>                               | 625692-001        |
| <ul style="list-style-type: none"> <li>• <b>33.8-cm</b> (13.3-in) HD BrightView with a webcam</li> </ul>                 | 625719-001        |
| <b>Display bezel</b>   |                   |
| <ul style="list-style-type: none"> <li>• For use with <b>33.8-cm</b> (13.3-in) displays with webcam</li> </ul>           | 599530-001        |
| <ul style="list-style-type: none"> <li>• For use with <b>35.6-cm</b> (14.0-in) displays with webcam</li> </ul>           | 599531-001        |
| <ul style="list-style-type: none"> <li>• For use with <b>33.8-cm</b> (13.3-in) displays without webcam</li> </ul>        | 599532-001        |
| <ul style="list-style-type: none"> <li>• For use with <b>35.6-cm</b> (14.0-in) displays without webcam</li> </ul>        | 599533-001        |
| <b>Webcam module</b>   | 617666-001        |

| Description  | Spare part number |
|--|-------------------|
| <b>Display panel</b> (also included with display assembly)                               |                   |
| • <b>33.8-cm</b> (13.3-in), HD, BrightView   | 588160-001        |
| • <b>35.6-cm</b> (14.0-in), HD, BrightView   | 592144-001        |
| • <b>33.8-cm</b> (13.3-in), HD, Anti-Glare   | 623175-001        |
| • <b>35.6-cm</b> (14.0-in), HD, Anti-Glare   | 623176-001        |
| <b>Display hinge kit</b>   |                   |
| • Display hinge and panel bracket (left and right) for <b>33.8-cm</b> (13.3-in) displays | 599536-001        |
| • Display hinge and panel bracket (left and right) for <b>35.6-cm</b> (14.0-in) displays | 599537-001        |
| <b>Display cable</b> (includes microphone and, on select models, webcam connector)       |                   |
| • Display cable for use with <b>33.8-cm</b> (13.3-in) displays with webcam               | 599534-001        |
| • Display cable for use with <b>35.6-cm</b> (14.0-in) displays with webcam               | 605558-001        |
| • Display cable for use with <b>33.8-cm</b> (13.3-in) displays without webcam            | 605557-001        |
| • Display cable for use with <b>35.6-cm</b> (14.0-in) displays without webcam            | 599535-001        |
| <b>WLAN antennas and cables</b>  |                   |
| <b>WWAN antennas and cables</b>  |                   |
| <b>Display back cover</b>  |                   |
| For use in black models:   |                   |
| • For use with <b>33.8-cm</b> (13.3-in) displays without WWAN                            | 599526-001        |
| • For use with <b>35.6-cm</b> (14.0-in) displays without WWAN                            | 599527-001        |
| • For use with <b>35.6-cm</b> (14.0-in) displays with webcam and without WWAN            | 605556-001        |
| • For use with <b>33.8-cm</b> (13.3-in) displays with webcam and without WWAN            | 607094-001        |
| For use in red models:   |                   |
| • For use with <b>33.8-cm</b> (13.3-in) displays without WWAN                            | 607643-001        |
| • For use with <b>33.8-cm</b> (13.3-in) displays with webcam and without WWAN            | 607644-001        |
| • For use with <b>33.8-cm</b> (14.0-in) displays without WWAN                            | 607645-001        |
| • For use with <b>35.6-cm</b> (14.0-in) displays with webcam and without WWAN            | 607646-001        |
| For use in champagne models:   |                   |
| • For use with <b>33.8-cm</b> (13.3-in) displays without WWAN,                           | 625698-001        |
| • For use with <b>33.8-cm</b> (13.3-in) displays with webcam and without WWAN            | 625699-001        |

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 45](#)).
5. Remove the following components:
  - a. Switch cover (see [Switch cover on page 47](#))
  - b. Keyboard (see [Keyboard on page 49](#))
  - c. Speakers (see [Speakers on page 56](#))
  - d. Palm rest (see [Palm rest on page 58](#))
  - e. WLAN cables (see [WLAN module on page 65](#))

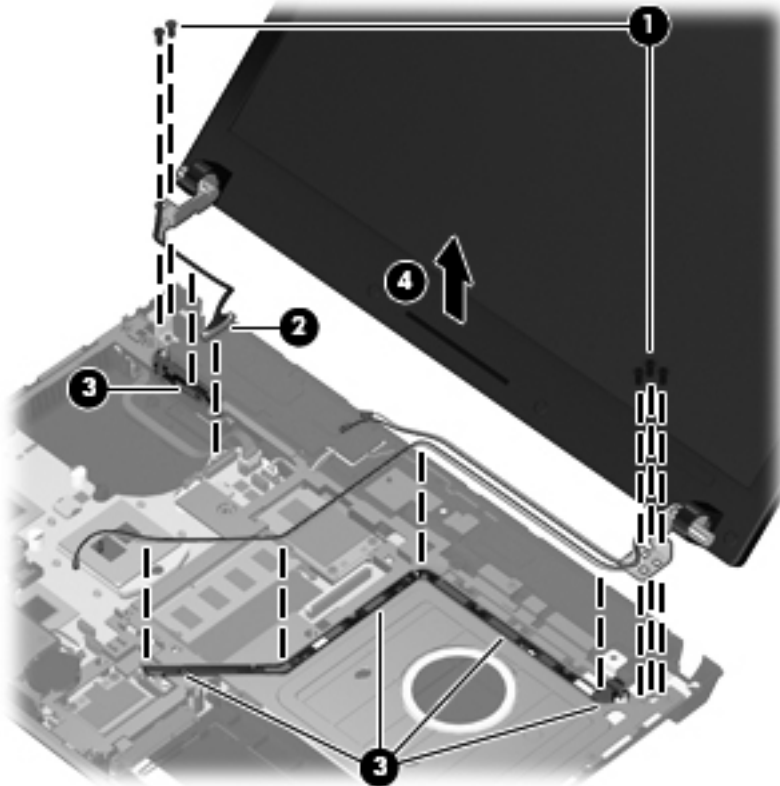
Remove the display assembly:

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

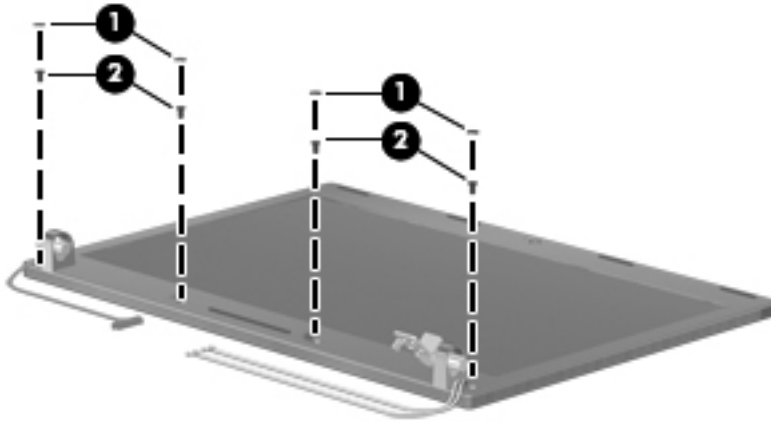
1. Remove the five T8 slotted-Torx M2.5×6.0 screws (1) that secure the display assembly to the base enclosure.

**NOTE:** Your model of the computer have four screws.

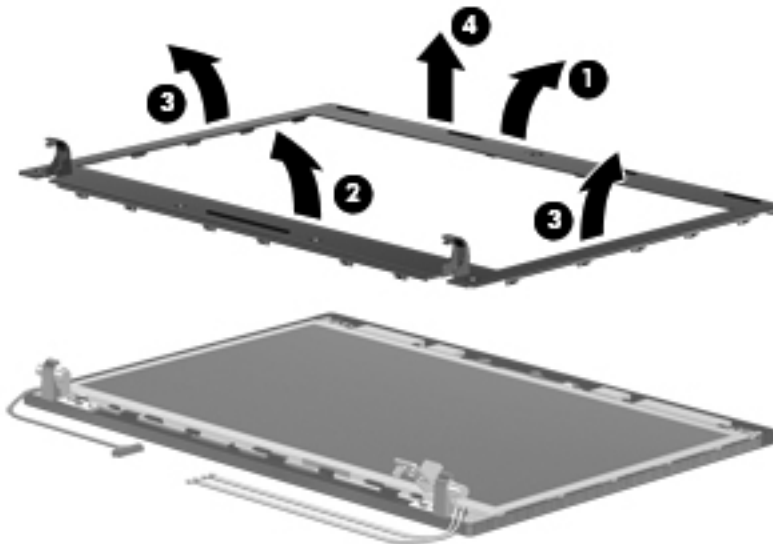
2. Disconnect the display cable from the system board (2), and remove all cables from the routing channels along the top cover (3).
3. Lift the display assembly (4) straight up and remove it from the base enclosure.



4. If it is necessary to replace the display bezel, display enclosure, or display hinges, remove the four Mylar screw covers (1) and the four T8 slotted-Torx M2.5×6.0 screws (2) that secure the display bezel to the display assembly. The screw covers are available in the rubber kit, spare part number 599564-001.

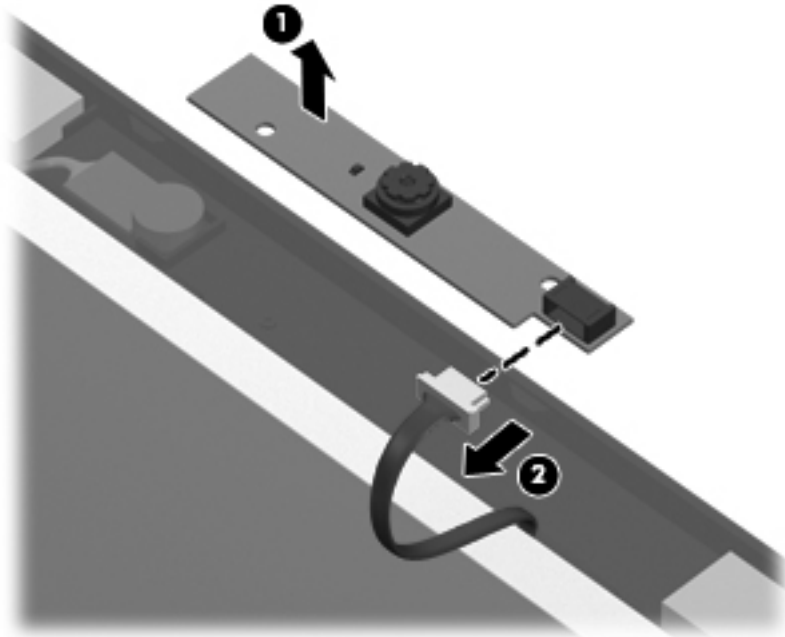


5. Remove the bezel:
  - a. Flex the top of the bezel from the inside edge until it disengages from the display back cover (1).
  - b. Flex the bottom of the bezel from the inside edge until it disengages from the display back cover (2).
  - c. Flex the inside edge of the left side and the right side of the bezel until it disengages from the display back cover (3).
  - d. Remove the display bezel from the display back cover (4).






6. If it is necessary to replace the webcam module, gently pull the webcam module away from the double-sided tape on the display back cover (1), disconnect the webcam cable from the module (2), and then remove the webcam.



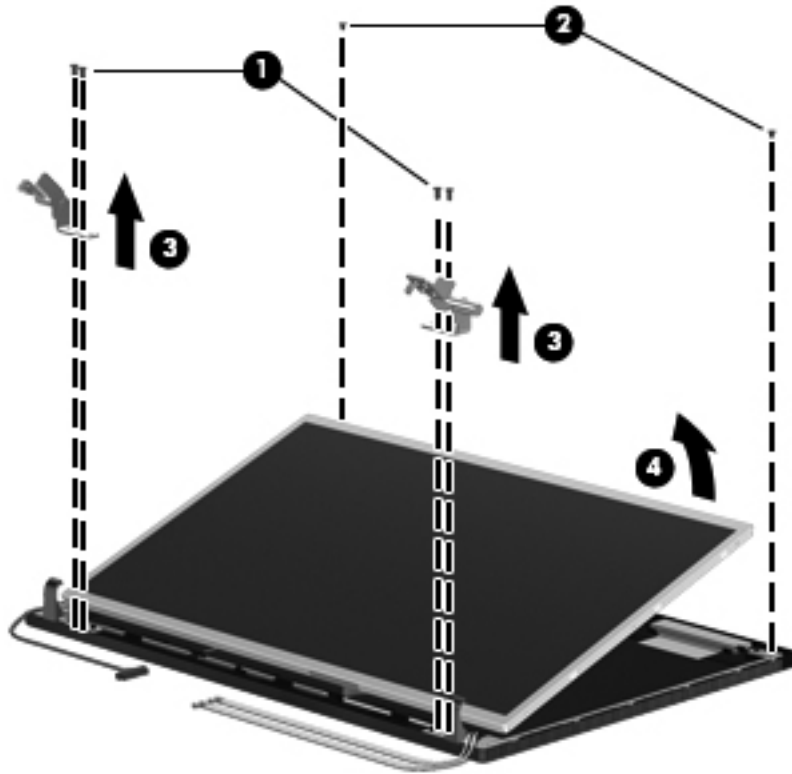
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 **NOTE:** To replace the webcam module in the display enclosure, align the holes on the webcam module with the pins on the display enclosure and press onto the double-sided tape.

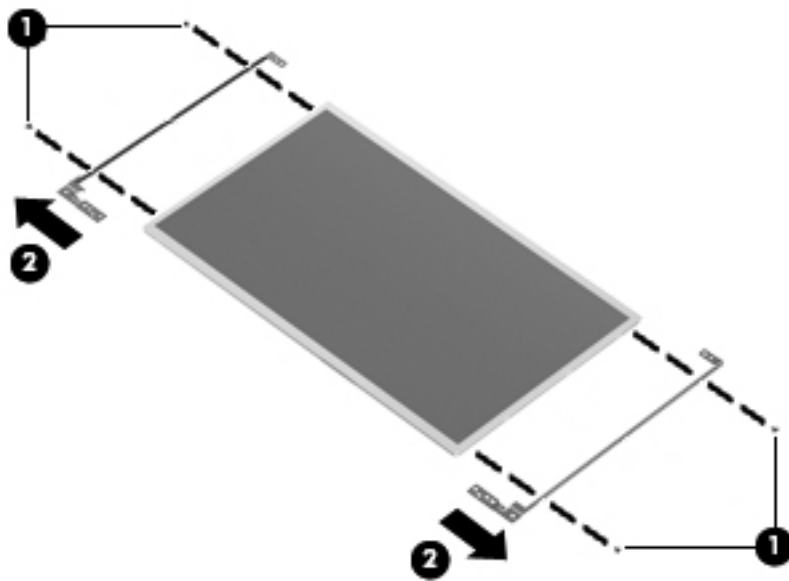
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7. If it is necessary to replace the display hinges, remove the display panel by removing the four T8 slotted-Torx 2.5×5.0 screws (1) that secure the panel to the bottom of the display back cover and the two T8 slotted-Torx 2.5×3.0 screws (2) that secure the display panel to the top of the display back cover.

8. Lift the top of the display panel away from the back cover (3), and then remove the display panel (4).




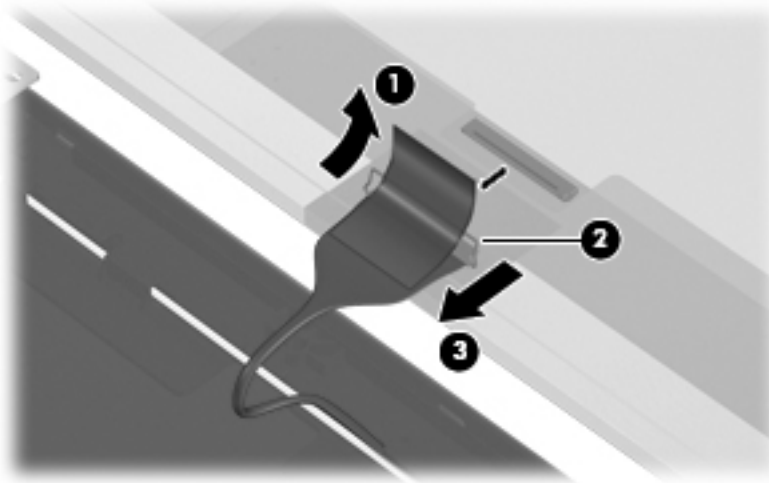
9. Remove the four Phillips PM2.0×3.0 screws (1) that secure the display hinges to the display panel, and then remove the display hinges (2). The left and right display hinges are available in the display hinge kit.



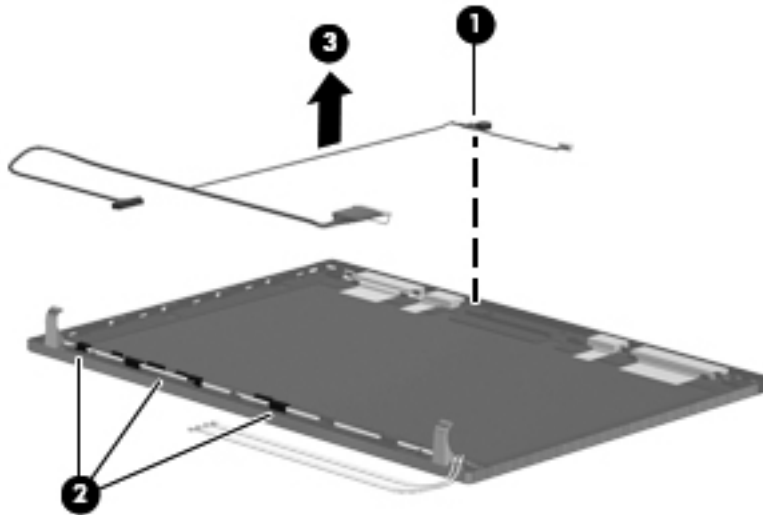
10. If it is necessary to replace the display/webcam cable, turn the display panel upside-down and peel back the tape that secures the display cable to the display panel (1), and then release the connector locking bar (2).

11. Release the cable from the display panel connector (3).

 **NOTE:** The display cable includes the microphone and webcam connector.

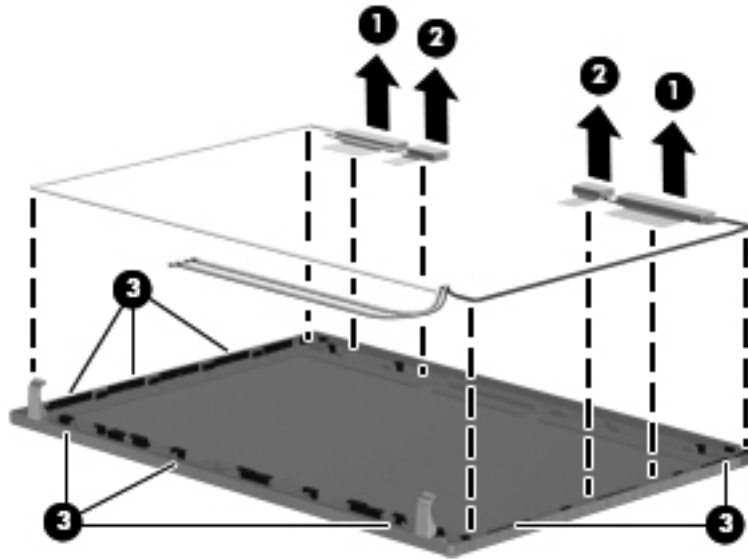


12. Gently pull the integrated microphone (1) from the clips at the top of the display back cover, remove the display cable from the clips and routing channels (2) along the bottom of the display back cover, and then remove the display cable (3). The display/mic/webcam cable is included in the display cable kit.



13. If it is necessary to remove the wireless antennas and cables:

- a. Detach the WLAN antennas (1) and the WWAN antennas (2) from the adhesive on the back cover, and then route the cables through the clips (3) that secure the antenna cables to the display back cover.



- b. Remove the wireless antennas and cables.

Reverse this procedure to reassemble and install the display assembly.

## Top cover

| Description                                    | Spare part number |
|--|-------------------|
| <b>Top cover</b>                               |                   |
| For use with <b>33.8-cm</b> (13.3-in) displays | 599569-001        |
| For use with <b>35.6-cm</b> (14.0-in) displays | 599570-001        |

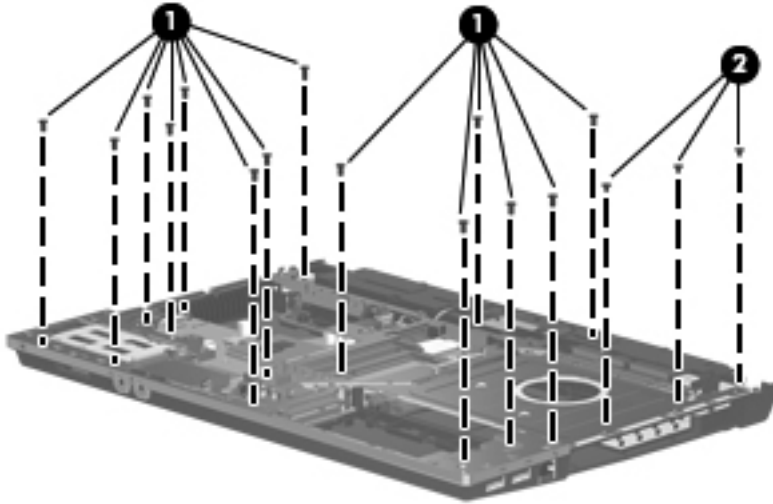
Before removing the top cover, follow these steps:

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 45](#)).
5. Remove the following components:
  - a. Switch cover (see [Switch cover on page 47](#))
  - b. Keyboard (see [Keyboard on page 49](#))
  - c. Speakers (see [Speakers on page 56](#))
  - d. Optical drive (see [Optical drive on page 53](#))
  - e. Palm rest (see [Palm rest on page 58](#))

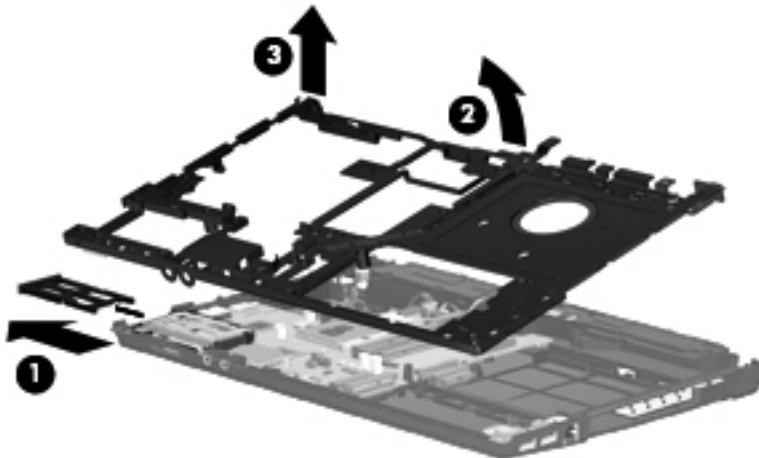
Remove the top cover:

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

2. Remove the 14 T8 slotted-Torx 2.5×5.0 screws (1) and the 3 PM2.0×3.0 screws (2) that secure the top cover to the base enclosure.



3. If installed, remove the ExpressCard slot bezel (1), release the top cover from the sides of the base enclosure (2), and then remove the top cover (3).



Reverse this procedure to install the top cover.

## Modem module

| Description  | Spare part number |
|--------------|-------------------|
| Modem module | 628824-001        |

**NOTE:** The modem module spare part kit does not include a modem module cable. The modem module cable is included in the cable kit. See [Cable kit on page 31](#) for more cable kit spare part information.

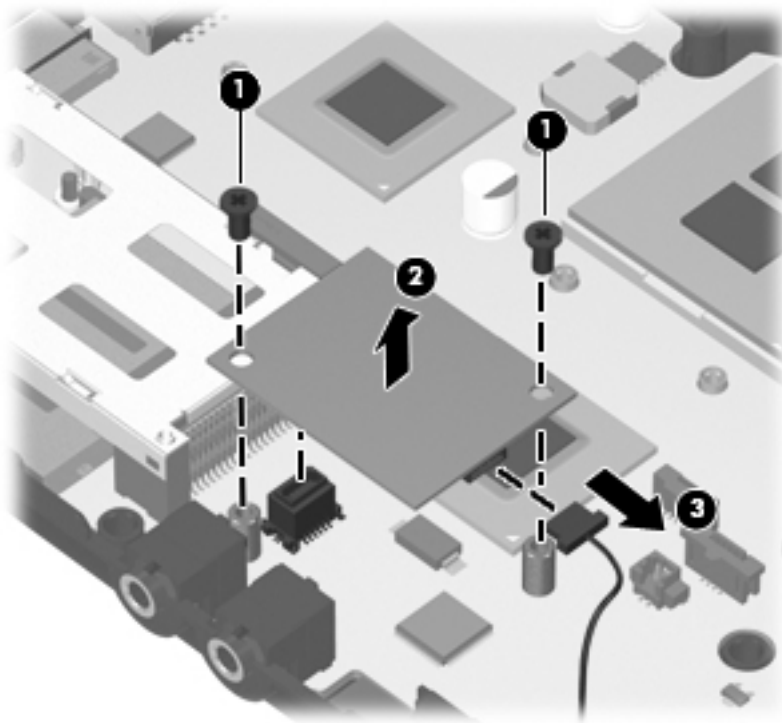
Before removing the modem module, follow these steps:

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 45](#)).
5. Remove the following components:
  - a. Switch cover (see [Switch cover on page 47](#))
  - b. Keyboard (see [Keyboard on page 49](#))
  - c. Optical drive (see [Optical drive on page 53](#))
  - d. Speakers (see [Speakers on page 56](#))
  - e. Palm rest (see [Palm rest on page 58](#))
  - f. Top cover (see [Top cover on page 85](#))

Remove the modem module:

1. Position the computer right-side up with the front toward you.
2. Remove the two Phillips PM2.5×3.0 screws **(1)** that secure the modem module to the system board.
3. Lift the modem module **(2)** straight up to disconnect it from the system board.

4. Disconnect the modem module cable (3).



5. Remove the modem module.

Reverse this procedure to install the modem module.



## System board



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

| Description  | Spare part number |
|--|-------------------|
| <b>System board</b> (includes replacement thermal material)  |                   |
| For use in all countries and regions except for Russia and the People's Republic of China:         |                   |
| • For use with ATI Mobility Radeon HD 530v discrete graphics and <b>33.8-cm</b> (13.3-in) displays | 607654-001        |
| • For use with ATI Mobility Radeon HD 5470 discrete graphics and <b>33.8-cm</b> (13.3-in) displays | 628489-001        |
| • For use with ATI Mobility Radeon HD 6370 discrete graphics and <b>33.8-cm</b> (13.3-in) displays | 628619-001        |
| • For use with UMA graphics subsystem and <b>33.8-cm</b> (13.3-in) displays                        | 607655-001        |
| • For use with UMA graphics subsystem and <b>35.6-cm</b> (14.0-in) displays                        | 607656-001        |
| For use in only Russia and the People's Republic of China:   |                   |
| • For use with ATI Mobility Radeon HD 530v discrete graphics and <b>33.8-cm</b> (13.3-in) displays | 614962-001        |
| • For use with ATI Mobility Radeon HD 5470 discrete graphics and <b>33.8-cm</b> (13.3-in) displays | 628490-001        |
| • For use with ATI Mobility Radeon HD 6370 discrete graphics and <b>33.8-cm</b> (13.3-in) displays | 628620-001        |
| • For use with UMA graphics subsystem and <b>33.8-cm</b> (13.3-in) displays                        | 614963-001        |

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 45](#)).
5. Remove the following components:
  - a. SIM (see [SIM on page 46](#))
  - b. Switch cover (see [Switch cover on page 47](#))
  - c. Keyboard (see [Keyboard on page 49](#))
  - d. Speakers (see [Speakers on page 56](#))
  - e. Palm rest (see [Palm rest on page 58](#))
  - f. Bluetooth module and cable (see [Bluetooth module on page 68](#))
  - g. WLAN module (see [WLAN module on page 65](#))
  - h. Hard drive (see [Hard drive on page 61](#))
  - i. Optical drive (see [Optical drive on page 53](#))

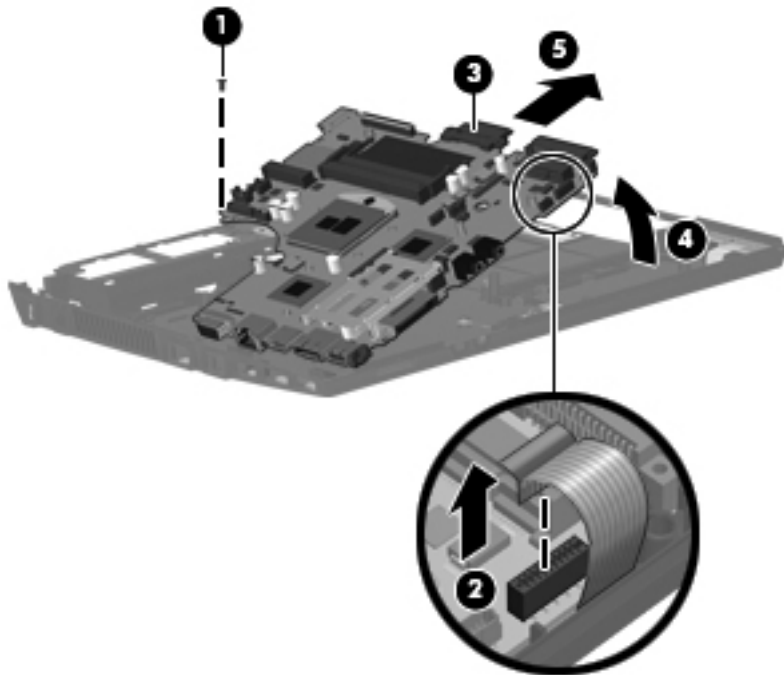
- j. Display assembly (see [Display assembly on page 77](#))
- k. Top cover (see [Top cover on page 85](#))
- l. Power connector and cable

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:

- Memory module (see [Memory module on page 51](#))
- WLAN module (see [WLAN module on page 65](#))
- Modem module (see [Modem module on page 87](#))
- Processor (see [Processor on page 74](#))

Remove the system board:

1. Position the computer right-side up with the front toward you.
2. Remove the T8 slotted-Torx 2.5×5.0 screw (1) that secures the system board to the base enclosure.
3. Disconnect the USB board cable from the system board (2).
4. Use the ODD connector (3) to lift the right side of the system board from the base enclosure (4).
5. Lift the system board up and to the right to remove the system board (5).



Reverse this procedure to install the system board.

## USB connector board

| Description          | Spare part number |
|----------------------|-------------------|
| USB board with cable | 599524-001        |

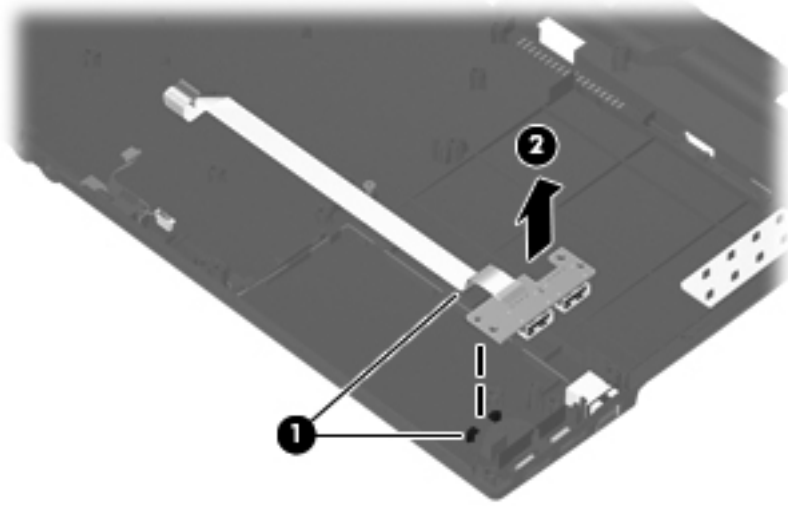
Before removing the USB connector assembly, follow these steps:

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 45](#)).
5. Remove the following components:
  - a. Switch cover (see [Switch cover on page 47](#))
  - b. Keyboard (see [Keyboard on page 49](#))
  - c. Optical drive (see [Optical drive on page 53](#))
  - d. Speakers (see [Speakers on page 56](#))
  - e. Palm rest (see [Palm rest on page 58](#))
  - f. Hard drive (see [Hard drive on page 61](#))
  - g. Display assembly (see [Display assembly on page 77](#))
  - h. Top cover (see [Top cover on page 85](#))
  - i. System board (see [System board on page 89](#))

Remove the USB connector assembly:


1. Position the computer right-side up with the right side toward you.
2. Release the USB connector board cable from the base enclosure clips and routing channel **(1)**.

3. Remove the USB connector assembly (2) from the base enclosure.



Reverse this procedure to install the USB connector assembly.

## Modem module cable

 **NOTE:** The modem module cable with RJ11 connector is included in the [Cable kit on page 31](#), part number 599525-001.

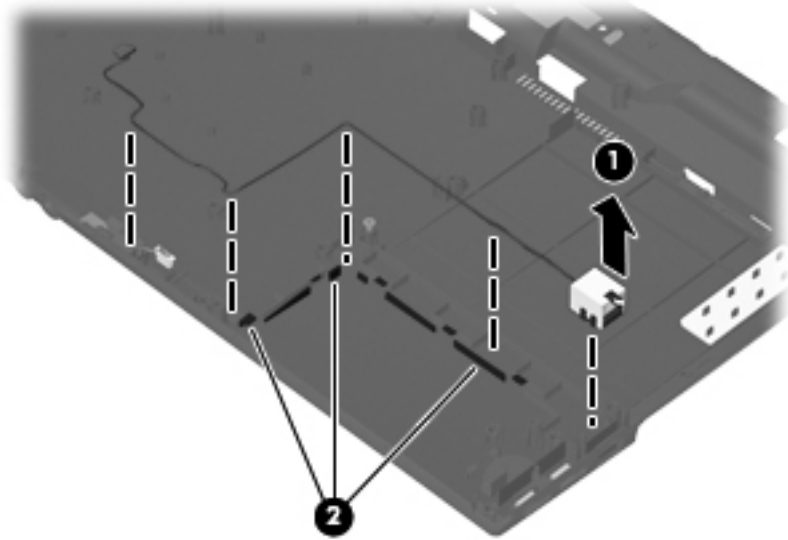
Before removing the modem module cable, follow these steps:

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 45](#)).
5. Remove the following components:
  - a. Switch cover (see [Switch cover on page 47](#))
  - b. Keyboard (see [Keyboard on page 49](#))
  - c. Optical drive (see [Optical drive on page 53](#))
  - d. Speakers (see [Speakers on page 56](#))
  - e. Palm rest (see [Palm rest on page 58](#))
  - f. Hard drive (see [Hard drive on page 61](#))
  - g. Display assembly (see [Display assembly on page 77](#))
  - h. Top cover (see [Top cover on page 85](#))
  - i. System board (see [System board on page 89](#))
  - j. USB connector board and cable (see [USB connector board on page 91](#))

Remove the modem cable.

1. Position the computer right-side up with the front toward you.
2. Release the modem RJ11 connector from the base enclosure clips **(1)**.

3. Remove the modem cable (2) from the routing in the base enclosure.



4. Remove the modem cable.

Reverse this procedure to install the modem cable.

---

# 5 Computer Setup

## Computer Setup in Windows 7


To view the drives installed on the computer, select **Start>Computer**.


On models with a secondary hard drive (drive D), the optical drive becomes drive E. The next drive added to the system, such as a new USB drive, will be assigned the next available drive letter.

### Starting Computer Setup

Computer Setup is a preinstalled, ROM-based utility that can be used even when the operating system is not working or will not load.

---

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

 **NOTE:** An external keyboard connected by USB can be used with Computer Setup only if USB legacy support is enabled.

---

To start Computer Setup, follow these steps:

1. Turn on or restart the computer.
2. Before your operating system opens and while the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press **esc**.
3. Press **f10** to enter BIOS Setup.

### Using Computer Setup

#### Navigating and selecting in Computer Setup

The information and settings in Computer Setup are accessed from the File, Security, Diagnostics, and System Configuration menus.

To navigate and select in Computer Setup, follow these steps:

1. Turn on or restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.
  - To select a menu or a menu item, use the tab key and the keyboard arrow keys and then press **enter**, or use a pointing device to click the item.
  - To scroll up and down, click the up arrow or the down arrow in the upper-right corner of the screen, or use the up arrow key or the down arrow key.
  - To close open dialog boxes and return to the main Computer Setup screen, press **esc**, and then follow the on-screen instructions.



---

**NOTE:** You can use either a pointing device (TouchPad, pointing stick, or USB mouse) or the keyboard to navigate and make selections in Computer Setup.

---

2. Press **f10** to enter BIOS Setup.
3. Select the **File, Security, Diagnostics, or System Configuration** menu.
4. To exit Computer Setup, choose one of the following methods:
  - To exit Computer Setup without saving your changes, click the **Exit** icon in the lower-left corner of the screen, and then follow the on-screen instructions.  
– or –  
use the tab key and the arrow keys to select **File>Ignore changes and exit**, and then press **enter**.
  - To save your preferences and exit Computer Setup menus, click the **Save** icon in the lower-left corner of the screen, and then follow the instructions on the screen.  
– or –  
Use the tab key and the arrow keys to select **File>Save changes and exit** and then press **enter**.

Your changes go into effect when the computer restarts.


## Restoring factory settings in Computer Setup

To return all settings in Computer Setup to the values that were set at the factory, follow these steps:

1. Open Computer Setup by turning on or restarting the computer, and then pressing **esc** while the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen.
2. Press **f10** to enter BIOS Setup.
3. Use the arrow keys to select **File>Restore defaults**, and then press **enter**.
4. When the confirmation dialog box opens, press **f10**.
5. To save your preferences and exit Computer Setup, use the arrow keys to select **File>Save changes and exit**. Then follow the instructions on the screen.




Your preferences go into effect when the computer restarts.

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

## Computer Setup menus

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

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

### File menu

| Select                                 | To do this   |
|--|--|
| System information                     | <ul style="list-style-type: none"><li>• View identification information for the computer.</li><li>• View specification information for the processor, cache and memory size, and system ROM.</li></ul> |
| Set system date and time               | Change date and time <ul style="list-style-type: none"><li>• Set date: MM:DD:YYYY</li><li>• Set time: HH:MM</li></ul>  |
| System Diagnostics                     | <ul style="list-style-type: none"><li>• F1: System information</li><li>• F2: Start-up test</li><li>• F3: Run-in test</li><li>• F4: Hard disk test</li></ul>  |
| Restore defaults                       | Replace the configuration settings in Computer Setup with the original factory settings. (Password settings and security settings are not changed when you restore the factory settings.)              |
| Reset BIOS security to factory default | Restore the BIOS security settings to the factory default.   |
| Ignore changes and exit                | Cancel any changes entered during the current session. Then exit and restart the computer.   |
| Save changes and exit                  | Save any changes entered during the current session. Then exit and restart the computer. Your changes go into effect when the computer restarts.   |

## Security menu



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

| Select  | To do this   |
|---|--|
| <b>Administrator Tools</b>                                      |  |
| BIOS administrator password                                     | Enter, change, or delete a BIOS administrator password.  |
| <b>User Management (requires a BIOS administrator password)</b> |  |
| Create New BIOS User Account password                           | <ul style="list-style-type: none"><li>• Select from a list of BIOS users.</li><li>• Select from a list of ProtectTools users.</li></ul>  |
| Password Policy (requires a BIOS administrator password)        | Revise password policy criteria.   |
| HP SpareKey   | Enable/disable HP SpareKey (enabled by default).   |
| Always Prompt for HP SpareKey Enrollment                        | Enable/disable HP SpareKey enrollment (enabled by default).  |
| <b>User Tools</b>   |  |
| Change Password   | Enter, change, or delete a BIOS administrator password.  |
| HP SpareKey Enrollment  | Enroll or reset HP SpareKey, which is a set of security questions and answers used if you forget your password.  |
| Disk Sanitizer  | <p>Run Disk Sanitizer to destroy all existing data on the primary hard drive. The following options are available:</p> <ul style="list-style-type: none"><li>• Fast: Runs the Disk Sanitizer erase cycle once.</li><li>• Optimum: Runs the Disk Sanitizer erase cycle 3 times.</li><li>• Custom: Allows you to select the desired number of Disk Sanitizer erase cycles from a list.</li><li>• Last Pass: Displays Disk Sanitizer Completion Report</li></ul> <p><b>CAUTION:</b> If you run Disk Sanitizer, the data on the primary hard drive is destroyed permanently.</p> |
| System IDs  | Enter a user-defined computer asset tracking number and ownership tag.   |

## System Configuration menu



**NOTE:** Some of the listed System Configuration options may not be supported by your computer.

| Select       | To do this  |
|--------------|---|
| Language     | Change the Computer Setup language.   |
| Boot options | <ul style="list-style-type: none"><li>• Set a Startup Menu delay in seconds.</li><li>• Set the MultiBoot Express Boot Popup delay in seconds.</li><li>• Enable/disable Custom Logo (disabled by default).</li><li>• Enable/display Display Diagnostic URL.</li><li>• Enable/disable SD card boot.</li><li>• Enable/disable floppy boot.</li><li>• Enable/disable PXE Internal NIC boot.</li><li>• Set the UEFI boot order: Windows Boot Manager.</li><li>• Set the legacy boot order:<ul style="list-style-type: none"><li>◦ 1st boot device: Notebook hard drive</li><li>◦ 2nd boot device: USB floppy</li><li>◦ 3rd boot device: USB CD-ROM</li><li>◦ 4th boot device: USB hard drive</li><li>◦ 5th boot device: Notebook Ethernet</li><li>◦ 6th boot device: SD card</li></ul></li></ul> |


| Select                    | To do this   |
|---------------------------|--|
| Device configurations     | <ul style="list-style-type: none"> <li>• Enable/disable USB legacy support. When enabled, USB legacy support allows the following: <ul style="list-style-type: none"> <li>◦ Use of a USB keyboard in Computer Setup even when your operating system is not running.</li> <li>◦ Startup from bootable USB devices, including a hard drive, diskette drive, or optical drive connected by a USB port to the computer.</li> </ul> </li> <li>• Enable/disable fan always on while connected to an AC outlet.</li> <li>• Enable/disable HP QuickLook.</li> <li>• Enable/disable HP QuickLook preboot authentication on HP QuickLook boot.</li> <li>• Enable/disable HP QuickWeb.</li> <li>• Enable/disable HP QuickWeb: Write Protect (disabled by default).</li> <li>• Enable/disable Virtualization Technology.</li> <li>• Enable/disable Wake on USB (disabled by default).</li> <li>• Enable/disable Numlock state at boot: Off /On (disabled by default).</li> </ul> |
| Built-in device options   | <ul style="list-style-type: none"> <li>• Enable/disable the wireless switch state.</li> <li>• Enable/disable embedded WLAN device radio.</li> <li>• Enable/disable Network Interface Controller (NIC).</li> <li>• Enable/disable LAN/WLAN Switching (disabled by default).</li> <li>• Set the wake on LAN state. <ul style="list-style-type: none"> <li>◦ Disabled</li> <li>◦ Boot to Network</li> <li>◦ Follow Boot Order</li> </ul> </li> <li>• Enable/disable the integrated camera (webcam).</li> <li>• Enable/disable Power Monitor Circuit.</li> <li>• Enable/disable the audio device.</li> <li>• Enable/disable the microphone.</li> <li>• Enable/disable the internal speakers.</li> </ul>  |
| Port options              | Enable/disable USB port.   |
| Set Security Level        | Change, view, or hide security levels for all BIOS menu items.   |
| Restore Security Defaults | Restore the default security settings.   |


# Computer Setup in Windows Vista and Windows XP

## Starting Computer Setup

Computer Setup is a preinstalled, ROM-based utility that can be used even when the operating system is not working or will not load.

---

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

 **NOTE:** An external keyboard or mouse connected to a USB port can be used with Computer Setup only if USB legacy support is enabled.

---

To start Computer Setup, follow these steps:

1. Turn on or restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.
2. Press **f10** to enter BIOS Setup.

## Using Computer Setup


### Navigating and selecting in Computer Setup

The information and settings in Computer Setup are accessed from the File, Security, Diagnostics, and System Configuration menus.

To navigate and select in Computer Setup, follow these steps:

1. Turn on or restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.
  - To select a menu or a menu item, use the tab key and the keyboard arrow keys and then press **enter**, or use a pointing device to click the item.
  - To scroll up and down, click the up arrow or the down arrow in the upper-right corner of the screen, or use the up arrow key or the down arrow key.
  - To close open dialog boxes and return to the main Computer Setup screen, press **esc**, and then follow the on-screen instructions.

---

 **NOTE:** You can use either a pointing device (TouchPad, pointing stick, or USB mouse) or the keyboard to navigate and make selections in Computer Setup.

---

2. Press **f10** to enter BIOS Setup.
3. Select the **File**, **Security**, **Diagnostics**, or **System Configuration** menu.

To exit Computer Setup menus, choose one of the following methods:

- To exit Computer Setup menus without saving your changes, click the **Exit** icon in the lower-left corner of the screen, and then follow the on-screen instructions.

– or –

Use the tab key and the arrow keys to select **File > Ignore changes and exit**, and then press [enter](#).

– or –

- To save your changes and exit Computer Setup menus, click the **Save** icon in the lower-left corner of the screen, and then follow the on-screen instructions.

– or –

Use the tab key and the arrow keys to select **File > Save changes and exit**, and then press [enter](#).

Your changes go into effect when the computer restarts.

## Restoring factory settings in Computer Setup



---

**NOTE:** Restoring defaults will not change the hard drive mode.

---

To return all settings in Computer Setup to the values that were set at the factory, follow these steps:

1. Turn on or restart the computer, and then press [esc](#) while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.
2. Press [f10](#) to enter BIOS Setup.
3. Use a pointing device or the arrow keys to select **File > Restore defaults**.
4. Follow the on-screen instructions.
5. To save your changes and exit, click the **Save** icon in the lower-left corner of the screen, and then follow the on-screen instructions.

– or –

Use the arrow keys to select **File > Save changes and exit**, and then press [enter](#).

Your changes go into effect when the computer restarts.



---

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

---

## Computer Setup menus

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



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

### File menu

| Select                   | To do this  |
|--------------------------|---|
| System Information       | <ul style="list-style-type: none"><li>• View identification information for the computer and the batteries in the system.</li><li>• View specification information for the processor, cache and memory size, system ROM, video revision, and keyboard controller version.</li></ul> |
| Set System Date and Time | Set or change the date and time on the computer.  |
| Restore defaults         | Replace the configuration settings in Computer Setup with the original factory settings. (Hard drive mode, password settings, and security settings are not changed when you restore the factory settings.)   |
| Ignore changes and exit  | Cancel any changes entered during the current session. Then exit and restart the computer.  |
| Save changes and exit    | Save any changes entered during the current session. Then exit and restart the computer. Your changes go into effect when the computer restarts.  |

## Security menu



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

| Select   | To do this   |
|--|--|
| Setup BIOS Administrator Password                        | Set up a BIOS administrator password.  |
| User Management (requires a BIOS administrator password) | <ul style="list-style-type: none"><li>• Create a new BIOS user account.</li><li>• View a list of ProtectTools users.</li></ul>   |
| Password Policy (requires a BIOS administrator password) | Revise password policy criteria.   |
| HP SpareKey  | Enable/disable HP SpareKey (disabled by default).  |
| Always Prompt for HP SpareKey Enrollment                 | Enable/disable HP SpareKey enrollment (disabled by default).   |
| Allow Reset of HP ProtectTools security keys             | Enable/disable reset of HP ProtectTools security keys.   |
| Change Password  | Enter, change, or delete a BIOS administrator password.  |
| HP SpareKey Enrollment                                   | Enroll or reset HP SpareKey, which is a set of security questions and answers used if you forget your password.  |
| DriveLock Passwords                                      | <ul style="list-style-type: none"><li>• Enable/disable DriveLock on any computer hard drive (enabled by default).</li><li>• Change a DriveLock user password or master password.</li></ul> <p><b>NOTE:</b> DriveLock settings are accessible only when you enter Computer Setup by turning on (not restarting) the computer.</p> |
| Automatic DriveLock                                      | Enable/disable Automatic DriveLock support.  |
| Disk Sanitizer   | Run Disk Sanitizer to destroy all existing data on the primary hard drive or the drive in the upgrade bay.<br><br><b>CAUTION:</b> If you run Disk Sanitizer, the data on the selected drive is destroyed permanently.  |
| System IDs   | Enter a user-defined computer asset tracking number and ownership tag.   |



## Diagnostics menu

---

| Select                  | To do this  |
|-------------------------|---|
| System Diagnostics Menu | <ul style="list-style-type: none"><li>• System Information—Displays the following information:<ul style="list-style-type: none"><li>◦ Identification information for the computer and the batteries in the system.</li><li>◦ Specification information for the processor, cache and memory size, system ROM, video revision, and keyboard controller version.</li></ul></li><li>• Start-up Test—Verifies the system components needed for starting the computer.</li><li>• Run-In Test—Runs a comprehensive check on system memory.</li><li>• Hard Disk Test—Runs a comprehensive self-test on any hard drive in the system.</li><li>• Error Log—Displays a log file if any errors have occurred.</li></ul> |

---

## System Configuration menu



**NOTE:** Some of the listed System Configuration options may not be supported by your computer.


| Select                | To do this   |
|-----------------------|--|
| Language              | Change the Computer Setup language.  |
| Boot Options          | <ul style="list-style-type: none"><li>• Set a Startup Menu delay (in seconds).</li><li>• Enable/disable Custom Logo (disabled by default).</li><li>• Enable/disable Display Diagnostic URL (enabled by default).</li><li>• Enable/disable CD-ROM boot (enabled by default).</li><li>• Enable/disable SD Card boot (enabled by default).</li><li>• Enable/disable floppy boot (enabled by default).</li><li>• Enable/disable PXE Internal NIC boot (disabled by default).</li><li>• Set the Express Boot Popup delay in seconds.</li><li>• Set the boot order.</li></ul>  |
| Device Configurations | <ul style="list-style-type: none"><li>• Enable/disable USB legacy support (enabled by default). When enabled, USB legacy support allows the following:<ul style="list-style-type: none"><li>◦ Use of a USB keyboard in Computer Setup even when a Windows® operating system is not running.</li><li>◦ Startup from bootable USB devices, including a hard drive, diskette drive, or optical drive connected by a USB port to the computer.</li></ul></li><li>• Enable/disable fan always on while connected to an AC outlet (disabled by default).</li><li>• Enable/disable HP QuickLook.</li><li>• Enable/disable HP QuickLook preboot authentication on HP QuickLook boot.</li><li>• Enable/disable HP QuickWeb.</li><li>• Enable/disable HP QuickWeb: Write Protect (disabled by default).</li><li>• Enable/disable Virtualization Technology.</li><li>• Enable/disable Wake on USB (disabled by default).</li><li>• Enable/disable Numlock state at boot: Off /On (disabled by default).</li></ul> |


| Select                                    | To do this   |
|---|--|
| Built-In Device Options                   | <ul style="list-style-type: none"> <li>• Enable/disable the wireless button state (enabled by default).</li> <li>• Enable/disable embedded WWAN device radio (enabled by default).</li> <li>• Enable/disable embedded Bluetooth® device radio (enabled by default).</li> <li>• Enable/disable the Network Interface Controller (LAN) (enabled by default).</li> <li>• Set the wake on LAN state. Options include the following: <ul style="list-style-type: none"> <li>◦ Disabled</li> <li>◦ Boot to Network (set by default)</li> <li>◦ Follow Boot Order</li> </ul> </li> <li>• Enable/disable the optical disc drive (enabled by default).</li> <li>• Enable/disable the microphone.</li> <li>• Enable/disable a modem device (enabled by default).</li> <li>• Enable/disable the embedded WLAN device (enabled by default).</li> <li>• Enable/disable LAN/WLAN switching (disabled by default).</li> <li>• Enable/disable the integrated camera (select models only; enabled by default).</li> </ul> |
| Port Options (all are enabled by default) | <p><b>NOTE:</b> All port options are enabled by default.</p> <ul style="list-style-type: none"> <li>• Enable/disable the ExpressCard slot.</li> <li>• Enable/disable the flash media reader.</li> <li>• Enable/disable the USB port.</li> </ul> <p><b>CAUTION:</b> Disabling the USB port also disables MultiBay devices and ExpressCard devices on the advanced port replicator.</p>  |
| Set Security Level                        | Change, view, or hide security levels for all BIOS menu items.   |
| Restore Security Defaults                 | Restore the default security settings.   |


# Computer Setup in Linux

## Starting Computer Setup

Computer Setup is a preinstalled, ROM-based utility that can be used even when the operating system is not working or will not load.

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

 **NOTE:** Pointing devices are not supported in Computer Setup. You must use the keyboard to navigate and make selections.

 **NOTE:** An external keyboard connected by USB can be used with Computer Setup only if USB legacy support is enabled.

---

To start Computer Setup, follow these steps:

1. Turn on or restart the computer.
2. Before your operating system opens and while the “F10=ROM Based Setup” message is displayed in the lower-left corner of the screen, press **f10**.

## Using Computer Setup

### Navigating and selecting in Computer Setup

The information and settings in Computer Setup are accessed from the File, Security, Diagnostics, and System Configuration menus.

1. Open Computer Setup by turning on or restarting the computer, and then pressing **f10** while the “F10 = ROM Based Setup” message is displayed in the lower-left corner of the screen.

Because Computer Setup is not operating system 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 select an item, press **enter**.
  - To close open dialog boxes and return to the main Computer Setup screen, press **esc**.
  - To view navigation information, press **f1**.
  - To change the language, press **f2**.
2. Select the **File**, **Security**, **Diagnostics**, or **System Configuration** menu.
  3. To exit Computer Setup, choose one of the following methods:
    - To exit Computer Setup without saving your preferences, use the arrow keys to select **File > Ignore Changes And Exit**. Then follow the instructions on the screen.
    - To save your preferences and exit Computer Setup, use the arrow keys to select **File > Save Changes And Exit**. Then follow the instructions on the screen.

Your preferences go into effect when the computer restarts.


## Restoring factory settings in Computer Setup

To return all settings in Computer Setup to the values that were set at the factory, follow these steps:

1. Open Computer Setup by turning on or restarting the computer, and then pressing **f10** while the "F10 = ROM Based Setup" message is displayed in the lower-left corner of the screen.
2. Use the arrow keys to select **File > Restore Defaults**, and then press **enter**.
3. When the confirmation dialog box opens, press **f10**.
4. To save your preferences and exit Computer Setup, use the arrow keys to select **File > Save Changes And Exit**. Then follow the instructions on the screen.

Your preferences go into effect when the computer restarts.

---


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

---

## Computer Setup menus

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

---

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

---

### File menu

| Select                  | To do this   |
|-------------------------|--|
| System information      | <ul style="list-style-type: none"><li>• View identification information for the computer.</li><li>• View specification information for the processor, cache and memory size, and system ROM.</li></ul> |
| Restore Defaults        | Replace the configuration settings in Computer Setup with the original factory settings. (Password settings and security settings are not changed when you restore the factory settings.)              |
| Ignore Changes And Exit | Cancel any changes entered during the current session. Then exit and restart the computer.   |
| Save Changes And Exit   | Save any changes entered during the current session. Then exit and restart the computer. Your changes go into effect when the computer restarts.   |

## Security menu



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

| Select              | To do this   |
|---------------------|--|
| Setup Password      | Enter, change, or delete a setup password.   |
| Power-On Password   | Enter, change, or delete a power-on password.  |
| Password Options    | <ul style="list-style-type: none"><li>• Enable/disable stringent security.</li><li>• Enable/disable the password requirement on computer restart.</li></ul>  |
| DriveLock Passwords | <ul style="list-style-type: none"><li>• Enable/disable DriveLock on any computer hard drive.</li><li>• Enter, change, or disable DriveLock on an optional MultiBay hard drive.</li></ul> <p><b>NOTE:</b> DriveLock settings are accessible only when you enter Computer Setup by turning on (not restarting) the computer.</p>   |
| System IDs          | Enter a user-defined computer asset tracking number and ownership tag.   |
| Disk Sanitizer      | Run Disk Sanitizer to destroy all existing data on the primary hard drive. The following options are available: <ul style="list-style-type: none"><li>• Fast: Runs the Disk Sanitizer erase cycle once.</li><li>• Optimum: Runs the Disk Sanitizer erase cycle 3 times.</li><li>• Custom: Allows you to select the desired number of Disk Sanitizer erase cycles from a list.</li></ul> <p><b>CAUTION:</b> If you run Disk Sanitizer, the data on the primary hard drive is destroyed permanently.</p> |

## Diagnostics menu

| Select                | To do this  |
|-----------------------|---|
| HDD Self-Test Options | Run a comprehensive self-test on any hard drive in the system or on any optional MultiBay hard drive. |
| Memory Check          | Run a comprehensive check on system memory.   |

## System Configuration menu



**NOTE:** Some of the listed System Configuration options may not be supported by your computer.

| Select                | To do this  |
|-----------------------|---|
| Language              | Change the Computer Setup language.   |
| Boot options          | <ul style="list-style-type: none"><li>• Set an <b>f9</b>, <b>f10</b>, and <b>f12</b> delay when starting up.</li><li>• Enable/disable CD-ROM boot.</li><li>• Enable/disable floppy boot.</li><li>• Enable/disable internal network adapter boot.</li><li>• Enable/disable MultiBoot, which sets a boot order that can include most boot devices in the system.</li><li>• Set the Express Boot Popup delay in seconds.</li><li>• Set the boot order.<ul style="list-style-type: none"><li>◦ 1st boot device: USB CD-ROM</li><li>◦ 2nd boot device: USB floppy</li><li>◦ 3rd boot device: USB SuperDisk</li><li>◦ 4th boot device: Notebook hard drive</li><li>◦ 5th boot device: USB hard disk</li><li>◦ 6th boot device: Network controller</li></ul></li></ul>   |
| Device Configurations | <ul style="list-style-type: none"><li>• Enable/disable USB legacy support. When enabled, USB legacy support allows the following:<ul style="list-style-type: none"><li>◦ Use of a USB keyboard in Computer Setup even when a your operating system is not running.</li><li>◦ Startup from bootable USB devices, including a hard drive, diskette drive, or optical drive connected by a USB port to the computer.</li></ul></li><li>• Enable/disable fan always on while connected to an AC outlet.</li><li>• Enable/disable HP QuickLook.</li><li>• Enable/disable HP QuickLook preboot authentication on HP QuickLook boot.</li><li>• Enable/disable HP QuickWeb.</li><li>• Enable/disable HP QuickWeb: Write Protect (disabled by default).</li><li>• Enable/disable Virtualization Technology.</li><li>• Enable/disable Wake on USB (disabled by default).</li><li>• Enable/disable Wake on USB (disabled by default).</li><li>• Enable/disable Numlock state at boot: Off /On (disabled by default).</li></ul> |



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| Select                  | To do this  |
|-------------------------|---|
| Built-in device options | <ul style="list-style-type: none"><li data-bbox="879 226 1385 247">• Enable/disable embedded WLAN Device Radio.</li><li data-bbox="879 279 1414 300">• Enable/disable embedded Bluetooth Device Radio.</li><li data-bbox="879 331 1401 352">• Enable/disable Network Interface Controller (NIC)</li><li data-bbox="879 384 1289 405">• Enable/disable LAN/WLAN Switching.</li><li data-bbox="879 436 1214 457">• Enable/disable Wake on LAN.</li><li data-bbox="879 489 1385 510">• Enable/disable the integrated camera (webcam)</li></ul> |
| Port options            | <ul style="list-style-type: none"><li data-bbox="879 531 1166 552">• Enable/disable USB port.</li><li data-bbox="879 583 1246 604">• Enable/disable ExpressCard slot.</li></ul>   |

---

# 6 Specifications

## Computer specifications

|   | <b>33.8-cm (13.3-in) models</b>                | <b>35.6-cm (14.0-in) models</b>          |
|---|--|--|
| <b>Dimensions</b>   |  |  |
| Depth   | <b>22.81 cm</b> (8.98 in)                      | <b>23.24 cm</b> (9.15 in)                |
| Width   | <b>32.2 cm</b> (12.68 in)                      | <b>33.6 cm</b> (13.23 in)                |
| Height (front to rear)  | <b>27.0 to 35.3 cm</b> (1.07 to 1.39 in)       | <b>27.0 to 35.0 cm</b> (1.07 to 1.38 in) |
| <b>Weight</b>   |  |  |
| <ul style="list-style-type: none"><li>With 6-cell battery, no WWAN, no Bluetooth, no modem, one memory module, and optical disk drive</li></ul>     | <b>&lt; 2.15 kg</b> (4.74 lbs)                 | <b>&lt; 2.27 kg</b> (5.0 lbs)            |
| <ul style="list-style-type: none"><li>With 6-cell battery, no WWAN, no Bluetooth, no modem, one memory module; without optical disk drive</li></ul> | <b>&lt; 2.02 kg</b> (4.45 lbs )                | <b>&lt; 4.71 kg</b> (2.14 lbs )          |
| <b>Input power</b>  |  |  |
| Operating voltage   | 18.5 V dc @ 4.74 A – 90 W                      |  |
| Operating current   | 4.74 A   |  |
| <b>Temperature</b>  |  |  |
| Operating (not writing to optical disc)   | <b>0°C to 35°C</b> (32°F to 95°F)              |  |
| Operating (writing to optical disc)   | <b>5°C to 35°C</b> (41°F to 95°F)              |  |
| Nonoperating  | <b>-20°C to 60°C</b> (-4°F to 140°F)           |  |
| <b>Relative humidity</b>  |  |  |
| Operating   | 10% to 90%                                     |  |
| Nonoperating  | 5% to 95%                                      |  |
| <b>Maximum altitude</b> (unpressurized)   |  |  |
| Operating   | <b>-15 m to 3,048 m</b> (-50 ft to 10,000 ft)  |  |
| Nonoperating  | <b>-15 m to 12,192 m</b> (-50 ft to 40,000 ft) |  |

|   | 33.8-cm (13.3-in) models                                      | 35.6-cm (14.0-in) models |
|---|---|--------------------------|
| <b>Shock</b>  |   |                          |
| Operating   | 125 g, 2 ms, half-sine  |                          |
| Nonoperating  | 200 g, 2 ms, half-sine  |                          |
| <b>Random vibration</b>   |   |                          |
| Operating   | 0.75 g zero-to-peak, 10 Hz to 500 Hz, 0.25 oct/min sweep rate |                          |
| Nonoperating  | 1.50 g zero-to-peak, 10 Hz to 500 Hz, 0.5 oct/min sweep rate  |                          |
| <b>NOTE:</b> Applicable product safety standards specify thermal limits for plastic surfaces. The computer operates well within this range of temperatures. |   |                          |

## 33.8-cm (13.3-in) display specifications

|                                |   |
|--------------------------------|---|
| <b>Dimensions</b>              |   |
| Height                         | 20.83 cm (8.2 in)                             |
| Width                          | 27.94 cm (11.0 in)                            |
| Diagonal                       | 33.6 cm (13.3 in)                             |
| <b>Number of colors</b>        | Up to 16.8 million                            |
| <b>Contrast ratio</b>          | 250:1 (typical)                               |
| <b>Brightness</b>              | 200 nits (typical)                            |
| <b>Pixel resolution</b>        |   |
| Pitch                          | 0.279 × 0.279 mm                              |
| Format                         | SD: 1280 × 800; HD: 1366 × 768                |
| Configuration                  | RGB vertical stripe                           |
| <b>Backlight</b>               | LED   |
| <b>Character display</b>       | 80 × 25                                       |
| <b>Total power consumption</b> | 4.0 W   |
| <b>Viewing angle</b>           | ±40° horizontal, +120/-40° vertical (typical) |

## 35.6-cm (14.0-in) display specifications

|                                |   |
|--------------------------------|---|
| <b>Dimensions</b>              |   |
| Height                         | 17.6 cm (17.6 cm)                             |
| Width                          | 31.1 cm (12.24 in)                            |
| Diagonal                       | 35.7 cm (14.06 in)                            |
| <b>Number of colors</b>        | Up to 16.8 million                            |
| <b>Contrast ratio</b>          | 300:1 (typical)                               |
| <b>Brightness</b>              | 200 nits (typical)                            |
| <b>Pixel resolution</b>        |   |
| Pitch                          | 0.259 × 0.259 mm                              |
| Format                         | 1280 × 800; HD: 1366 × 768                    |
| Configuration                  | RGB vertical stripe                           |
| <b>Backlight</b>               | LED   |
| <b>Character display</b>       | 80 × 25                                       |
| <b>Total power consumption</b> | 4.0 W   |
| <b>Viewing angle</b>           | ±40° horizontal, +120/-40° vertical (typical) |

## Hard drive specifications

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

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

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

## DVD ROM Drive specifications

|                           |   |
|---------------------------|---|
| <b>Applicable disc</b>    | DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18, CD-ROM (Mode 1 and 2), CD Digital Audio, CD-XA ready (Mode 2, Form 1 and Form 2), CD-I (Mode 2, Form 1 and Form 2), CD-R, CD-RW, Photo CD (single and multisession), CD-Bridge |
| <b>Random access time</b> |   |
| DVD                       | < 125 ms  |
| CD                        | < 100 ms  |
| <b>Cache buffer</b>       | 512 KB  |
| <b>Data transfer rate</b> |   |
| CD-R (24X)                | 3600 KB/s (150 KB/s at 1X CD rate)  |
| CD-RW (10X)               | 1500 KB/s (150 KB/s at 1X CD rate)  |
| CD-ROM (24X)              | 3600 KB/s (150 KB/s at 1X CD rate)  |
| DVD (8X)                  | 10,800 KB/s (1,352 KB/s at 1X DVD rate)   |
| Multiword DMA mode 2      | 16.6 MB/s   |

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

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

# Blu-ray ROM with LightScribe DVD±R/RW SuperMulti DL Drive specifications

| <b>Applicable disc</b>    |  |
|---------------------------|--|
| Read                      | BD-ROM, BD-ROM-DL, BD-R, BD-R-DL, BD-RE, BD-RE-DL, DVD-ROM, DVD+R, DVD+R-DL, DVD+RW, DVD-R, DVD-R-DL, DVD-RW, DVD-RAM (Ver.2), CD-DA, CD-ROM (mode 1 and mode 2), CD-ROM XA (mode 2, form 1 and form 2), Photo CD (single and multiple sessions), CD Extra, CD-R, CD-RW, and CD-TEXT |
| Write                     | DVD-RAM (Ver.2), DVD+R, DVD-R, CD-R, and CD-ROM  |
| <b>Random access time</b> |  |
| BD                        | < 230 ms   |
| DVD                       | < 180 ms   |
| CD                        | < 180 ms   |
| <b>Cache buffer</b>       | 8 MB   |
| <b>Data transfer rate</b> |  |
| 24X CD-ROM                | 3,600 KB/sec   |
| 8X DVD-ROM                | 10,800 KB/sec  |
| 4X BD                     | 18,000 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   |
| 1X BD-ROM                 | 4,500 KB/sec   |
| 1X BD-R read              | 4,500 KB/sec   |
| 1X BD-RE read             | 4,500 KB/sec   |
| <b>Transfer mode</b>      | Multiword DMA Mode   |




# System resource specifications

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

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

---

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

---

To view resource settings in Windows 7 and Windows Vista:

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

To view resource settings in Windows XP:

1. Select **Start > My Computer**, or double-click **My Computer** on the desktop.
2. Under System Tasks, click **View system information**.
3. In the System Properties window, select the **Hardware** tab.
4. Click **Device Manager**.
5. On the **View** menu, click one of the following:
  - **Resources by type**
  - **Resources by connection**

---

# 7 Backup and recovery


## Windows 7 backup and recovery


To protect your information, use Windows® Backup and Restore to back up individual files and folders, back up your entire hard drive (select models only), create system repair discs (select models only), or create system restore points. In case of system failure, you can use the backup files to restore the contents of your computer.

Windows Backup and Restore provides the following options:

- Creating a system repair disc (select models only)
- Backing up individual files and folders
- Creating a system image (select models only)
- Scheduling automatic backups (select models only)
- Creating system restore points
- Recovering individual files
- Restoring the computer to a previous state
- Recovering information using recovery tools

---

 **NOTE:** For detailed instructions, perform a search for these topics in Help and Support.

 **NOTE:** In case of system instability, HP recommends that you print the recovery procedures and save them for later use.

---

### Backing up

Recovery after a system failure is as complete as your most current backup. You should create system repair discs (select models only) and your initial backup 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. The system repair discs (select models only) are used to start up (boot) the computer and repair the operating system in case of system instability or failure. Your initial and subsequent backups allow you to restore your data and settings if a failure occurs.

You can back up your information to an optional external hard drive, a network drive, or discs.

Note the following when backing up:

- Store personal files in the Documents library, and back it up regularly.
- Back up templates that are stored in their associated programs.
- Save customized settings that appear 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 create a screen shot:

1. Display the screen you want to save.
2. Copy the screen image:

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

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


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

The screen image is added to the document.

4. Save the document.

- When backing up to discs, use any of the following types of discs (purchased separately): CD-R, CD-RW, DVD+R, DVD+R DL, DVD-R, DVD-R DL, or DVD±RW. The discs you use will depend on the type of optical drive installed in your computer.

---


 **NOTE:** DVDs and DVDs with double-layer (DL) support store more information than CDs, so using them for backup reduces the number of recovery discs required.

---


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

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

---

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


---

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

---

1. Select **Start>All Programs>Maintenance>Backup and Restore**.
2. Follow the on-screen instructions to set up your backup, create a system image (select models only), or create a system repair disc (select models only).

---

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


---


## Recovering

In case of system failure or instability, the computer provides the following tools to recover your files.

- Windows recovery tools: You can use Windows Backup and Restore to recover information you have previously backed up. You can also use Windows Startup Repair to fix problems that might prevent Windows from starting correctly.
- **f11** recovery tools: You can use **f11** recovery tools to recover your original hard drive image. The image includes the Windows operating system and software programs installed at the factory.

---


 **NOTE:** If you are unable to boot (start up) your computer and you cannot use the system repair discs you previously created (select models only), you must purchase a Windows 7 operating system DVD to reboot the computer and repair the operating system.

 **CAUTION:** Using **f11** completely erases hard drive contents and reformats the hard drive. All files you have created and any software installed on the computer are permanently removed. The **f11** recovery tool reinstalls the operating system and HP programs and drivers that were installed at the factory. Software not installed at the factory must be reinstalled. Personal files must be restored from a backup.

---

1. If possible, back up all personal files.
2. If possible, check for the presence of the HP Recovery partition. select **Start**, right-click **Computer**, click **Manage**, and then click **Disk Management**.


---


 **NOTE:** If the HP Recovery partition is not listed, you must recover your operating system and programs using the *Windows 7 Operating System Operating System* DVD and the *Driver Recovery* disc (both purchased separately). For additional information, contact technical support by selecting **Start>Help and Support>Contact support**.

---

3. If the HP Recovery partition is listed, restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.
4. Press **f11** while the “Press **f11** for recovery” message is displayed on the screen.
5. Follow the on-screen instructions.

---

 **NOTE:** Windows 7 provides additional recovery tools through the operating system. For additional information, go to Help and Support.

 **NOTE:** If you are unable to boot (start up) your computer, you must purchase a *Windows 7 Operating System* DVD to reboot the computer and repair the operating system. For additional information, contact technical support by selecting **Start>Help and Support>Contact support**.

---

# Backup and recovery in Windows Vista

## Overview

To protect your information, use the Backup and Restore Center to back up individual files and folders, back up your entire hard drive (select models only), or create system restore points. In case of system failure, you can use the backup files to restore the contents of your computer.

The Backup and Restore Center provides the following options:

- Backing up individual files and folders
- Backing up the entire hard drive (select models only)
- Scheduling automatic backups (select models only)
- Creating system restore points
- Recovering individual files
- Restoring the computer to a previous state
- Recovering information using recovery tools



**NOTE:** For detailed instructions, perform a search for these topics in Help and Support.



**NOTE:** In case of system instability, HP recommends that you print the recovery procedures and save them for later use.

## Backing up your information

Recovery after a system failure is as complete as your most current backup. You should create your initial backup 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.

You can back up your information to an optional external hard drive, a network drive, or discs.

Note the following when backing up:

- Store personal files in the Documents folder, and back it up regularly.
- Back up templates that are stored in their associated programs.
- Save customized settings that appear 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 create a screen shot:

1. Display the screen you want to save.
2. Copy the screen image:

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

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


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

The screen image is added to the document.

4. Save the document.

- When backing up to discs, use any of the following types of discs (purchased separately): CD-R, CD-RW, DVD+R, DVD+R DL, DVD-R, DVD-R DL, or DVD±RW. The discs you use will depend on the type of optical drive installed in your computer.

---


 **NOTE:** DVDs and DVDs with double-layer (DL) support store more information than CDs, so using them for backup reduces the number of recovery discs required.

---


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

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

---

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


---

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

---

1. Select **Start > All Programs > Maintenance > Backup and Restore Center**.
2. Follow the on-screen instructions to back up your entire computer (select models only) or your files.

---

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


---

## Performing a recovery

In case of system failure or instability, the computer provides the following tools to recover your files:

- Windows recovery tools: You can use the Backup and Restore Center to recover information you have previously backed up. You can also use Windows Startup Repair to fix problems that might prevent Windows from starting correctly.
- f11 recovery tools: You can use the f11 recovery tools to recover your original hard drive image. The image includes the Windows operating system and software programs installed at the factory.

---

 **NOTE:** If you are unable to boot (start up) your computer, you must purchase a Windows Vista® operating system DVD to reboot the computer and repair the operating system. For additional information, refer to the “Using a Windows Vista operating system DVD (purchased separately)” section in this guide.


---

## Using the Windows recovery tools

To recover information you previously backed up, follow these steps:


1. Click **Start > All Programs > Maintenance > Backup and Restore Center**.
2. Follow the on-screen instructions to recover your entire computer (select models only) or your files.

---

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


---

To recover your information using Startup Repair, follow these steps:

 **CAUTION:** Using Startup Repair completely erases hard drive contents and reformats the hard drive. All files you have created and any software installed on the computer are permanently removed. When reformatting is complete, the recovery process restores the operating system, as well as the drivers, software, and utilities from the backup used for recovery.


---

1. If possible, back up all personal files.
2. If possible, check for the presence of the Windows partition and the HP Recovery partition. To find the partitions, select **Start > Computer**.

 **NOTE:** If the Windows partition and the HP Recovery partition have been deleted, you must recover your operating system and programs using the Windows Vista operating system DVD and the *Driver Recovery* disc (both purchased separately). For additional information, refer to the “Using a Windows Vista operating system DVD (purchased separately)” section in this guide.


---

3. Restart the computer, and then press **f8** before the Windows operating system loads.
4. Select **Repair your computer**.
5. Follow the on-screen instructions.

 **NOTE:** For additional information on recovering information using the Windows tools, perform a search for these topics in Help and Support.

---


## Using f11

 **CAUTION:** Using **f11** completely erases hard drive contents and reformats the hard drive. All files you have created and any software installed on the computer are permanently removed. The **f11** recovery tool reinstalls the operating system and HP programs and drivers that were installed at the factory. Software not installed at the factory must be reinstalled.

---

To recover the original hard drive image using **f11**, follow these steps:

1. If possible, back up all personal files.
2. If possible, check for the presence of the HP Recovery partition. To find the partition, select **Start > Computer**.

 **NOTE:** If the HP Recovery partition has been deleted, you must recover your operating system and programs using the Windows Vista operating system DVD and the *Driver Recovery* disc (both purchased separately). For additional information, refer to the “Using a Windows Vista operating system DVD (purchased separately)” section in this guide.


---

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

## Using a Windows Vista operating system DVD (purchased separately)

If you are unable to boot (start up) your computer, you must purchase a Windows Vista operating system DVD to reboot the computer and repair the operating system. Make sure that your most recent backup (stored on discs or on an external drive) is easily accessible. To order a Windows Vista operating system DVD, go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions. You can also order the DVD by calling technical support. For contact information, refer to the *Worldwide Telephone Numbers* booklet included with the computer.


---

 **CAUTION:** Using a Windows Vista operating system DVD completely erases hard drive contents and reformats the hard drive. All files you have created and any software installed on the computer are permanently removed. When reformatting is complete, the recovery process helps you restore the operating system, as well as drivers, software, and utilities.

---

To initiate recovery using a Windows Vista operating system DVD, follow these steps:

---

 **NOTE:** This process takes several minutes.

---

1. If possible, back up all personal files.
2. Restart the computer, and then insert the Windows Vista operating system DVD into the optical drive before the Windows operating system loads.
3. When prompted, press any keyboard key.
4. Follow the on-screen instructions.
5. Click **Next**.
6. Select **Repair your computer**.
7. Follow the on-screen instructions.



# Backup and recovery in Windows XP

## Overview

To protect your information, use the Windows® Backup utility (select models only) to back up files and folders or create recovery points. In case of system failure, you can use the backup files to restore your computer.

Windows provides the following options:

- Backing up individual files and folders
- Backing up all files and folders
- Scheduling automatic backups
- Creating recovery points
- Recovering information



---

**NOTE:** For detailed instructions, perform a search for these topics in Help and Support.



---

**NOTE:** In case of system instability, HP recommends that you print the recovery procedures and save them for later use.

---

## Backing up your information

Recovery after a system failure is as complete as your most current backup. You should create your initial backup 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.

You can back up individual files or folders to an optional external hard drive or to a network drive.

Note the following when backing up:


- Store personal files in the My Documents folder, and back it up periodically.
- Back up templates stored in their associated programs.
- Save customized settings that appear 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:

- a. Display the screen you want to save.
- b. Copy the screen image:
  - 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, click **Edit > Paste**.
  - The screen image is added to the document.
- d. Save the document.

To create a backup using the Windows Backup utility (select models only), follow these steps:

---

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

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

---

1. Click **Start > All Programs > Accessories > System Tools > Backup**.
2. Follow the on-screen instructions.

## Performing a recovery

In case of system failure or instability, the computer provides the following tools to recover your files:

- Windows recovery tools (select models only): You can use the Windows Backup utility to recover information you have previously backed up.
- *Operating System* and *Driver Recovery* discs (included with your computer): You can use the discs to recover your operating system and programs installed at the factory.

## Recovering your information


To recover information you previously backed up, follow these steps:

1. If possible, back up all personal files.
2. Click **Start > All Programs > Accessories > System Tools > Backup**.

The Backup or Restore Wizard opens.


3. Click **Restore files and settings**, and then click **Next**.
4. Follow the on-screen instructions.

---

 **NOTE:** For additional information on initiating a recovery in Windows, perform a search for this topic in Help and Support.

---

## Recovering the operating system and programs

 **CAUTION:** The recovery process reformats and completely erases the hard drive. All files you have created and any software installed on the computer are permanently removed. The recovery process reinstalls the original operating system, software, and drivers. Software, drivers, and updates not installed by HP must be manually reinstalled.

---

To recover your operating system and programs, follow these steps:


1. If possible, back up all personal files.
2. Insert the *Operating System* disc into the optical drive.
3. Shut down the computer.
4. Turn on the computer.
5. Follow the on-screen instructions to install the operating system.
6. After the operating system is installed, remove the *Operating System* disc and insert the *Driver Recovery* disc.
7. Follow the on-screen instructions to install the drivers and programs.

# Linux backup and recovery

Use the instructions in this section if SUSE Linux SLED 11 is installed on your computer.

To protect your information, back up your files and folders. Then if the system fails, you can restore your important files from copies. You can also use the options listed in this section to restore the operating system and programs that were installed at the factory.

---

 **CAUTION:** Using **f11** completely erases hard drive contents and reformats the hard drive. All files you have created and any software installed on the computer are permanently removed. The **f11** recovery tool reinstalls the original operating system and HP programs and drivers that were installed at the factory. Software, drivers, and updates not installed by HP must be manually reinstalled. Personal files must be restored from a backup.

---

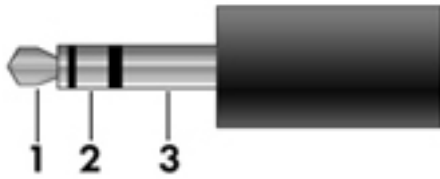
To recover the original hard drive image using **f11**, follow these steps:

1. If possible, back up all personal files.
2. Restart the computer, and then press **f11** while the “Press <F11> for recovery” message is displayed on the screen.
3. Follow the on-screen instructions.

---

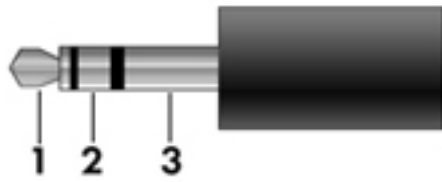
## 8 Connector pin assignments

### Audio-in (microphone)



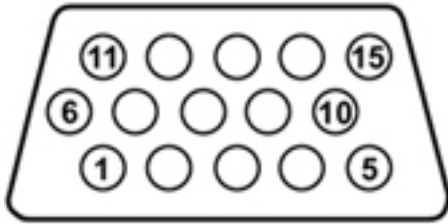
| Pin | Signal          |
|-----|-----------------|
| 1   | Audio signal in |
| 2   | Audio signal in |
| 3   | Ground          |

## Audio-out (headphone)



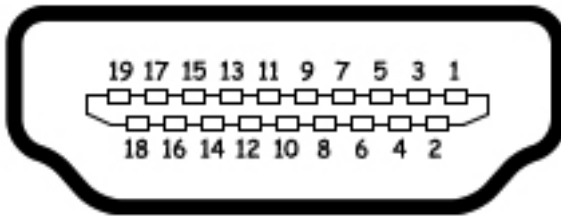
| Pin | Signal                   |
|-----|--------------------------|
| 1   | Audio out, left channel  |
| 2   | Audio out, right channel |
| 3   | Ground                   |

## External monitor



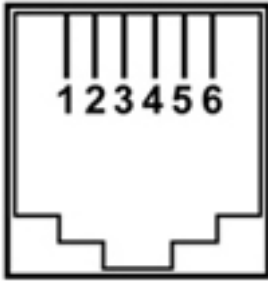
| Pin | Signal          |
|-----|-----------------|
| 1   | Red analog      |
| 2   | Green analog    |
| 3   | Blue analog     |
| 4   | Not connected   |
| 5   | Ground          |
| 6   | Ground analog   |
| 7   | Ground analog   |
| 8   | Ground analog   |
| 9   | +5 VDC          |
| 10  | Ground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

# HDMI



| Pin | Signal  |
|-----|---|
| 1   | Transition minimized differential signal (TMDS) data 2+ |
| 2   | TMDS data 2 shield                                      |
| 3   | TMDS data 2-  |
| 4   | TMDS data 1+  |
| 5   | TMDS data 1 shield                                      |
| 6   | TMDS data 1-  |
| 7   | TMDS data 0+  |
| 8   | TMDS data 0 shield                                      |
| 9   | TMDS data 0-  |
| 10  | TMDS clock+   |
| 11  | TMDS clock shield                                       |
| 12  | TMDS clock-   |
| 13  | Consumer electronic control (CEC)                       |
| 14  | Not connected   |
| 15  | DDC clock   |
| 16  | DDC data  |
| 17  | Ground  |
| 18  | +5V power   |
| 19  | Hot plug detect   |

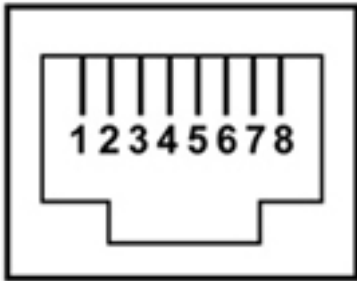
## RJ-11 (modem)



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

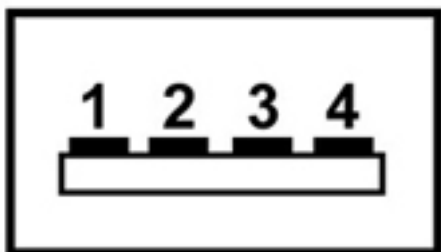


## RJ-45 (network)



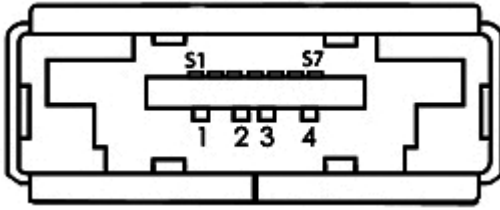
| Pin | Signal     |
|-----|------------|
| 1   | Transmit + |
| 2   | Transmit - |
| 3   | Receive +  |
| 4   | Unused     |
| 5   | Unused     |
| 6   | Receive -  |
| 7   | Unused     |
| 8   | Unused     |

## Universal Serial Bus



| Pin | Signal  |
|-----|---|
| 1   | +5 VDC (4.75 V minimum under a continuous 0.5-A load) |
| 2   | Data -  |
| 3   | Data +  |
| 4   | Ground  |

## eSATA/USB



| Pin | Signal                 |
|-----|------------------------|
| 1   | USB +5 VDC             |
| 2   | USB Data -             |
| 3   | USB Data +             |
| 4   | USB Ground             |
| S1  | eSATA Ground           |
| S2  | eSATA Transmit Data A+ |
| S3  | eSATA Transmit Data A- |
| S4  | eSATA Ground           |
| S5  | eSATA Receive Data B-  |
| S6  | eSATA Transmit Data B+ |
| S7  | eSATA Ground           |

---

## 9 Power cord set requirements

The wide range input feature of the computer permits it to operate from any line voltage from 100 to 120 volts AC or from 220 to 240 volts AC.

The 3-conductor power cord set included with the computer meets the requirements for use in the country or region where the equipment is purchased.

Power cord sets for use in other countries and regions must meet the requirements of the country or region where the computer is used.

### Requirements for all countries and regions

The requirements listed below are applicable to all countries and 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 the power system of each country or region.
- The appliance coupler must meet the mechanical configuration of an EN 60 320/IEC 320 Standard Sheet C13 connector for mating with the appliance inlet on the back of the computer.

## Requirements for specific countries and regions

| Country/region                 | Accredited agency | Applicable note number |
|--------------------------------|-------------------|------------------------|
| Australia                      | EANSW             | 1                      |
| Austria                        | OVE               | 1                      |
| Belgium                        | CEBC              | 1                      |
| Canada                         | CSA               | 2                      |
| Denmark                        | DEMKO             | 1                      |
| Finland                        | FIMKO             | 1                      |
| France                         | UTE               | 1                      |
| Germany                        | VDE               | 1                      |
| Italy                          | IMQ               | 1                      |
| Japan                          | METI              | 3                      |
| The Netherlands                | KEMA              | 1                      |
| Norway                         | NEMKO             | 1                      |
| The People's Republic of China | 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-mm<sup>2</sup> 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-mm<sup>2</sup> 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-mm<sup>2</sup> 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-mm<sup>2</sup> 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.

---

# 10 Recycling

## Battery

When a battery has reached the end of its useful life, do not dispose of the battery in general household waste. Follow the local laws and regulations in your area for computer battery disposal.

## Display

---

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

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

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

---

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



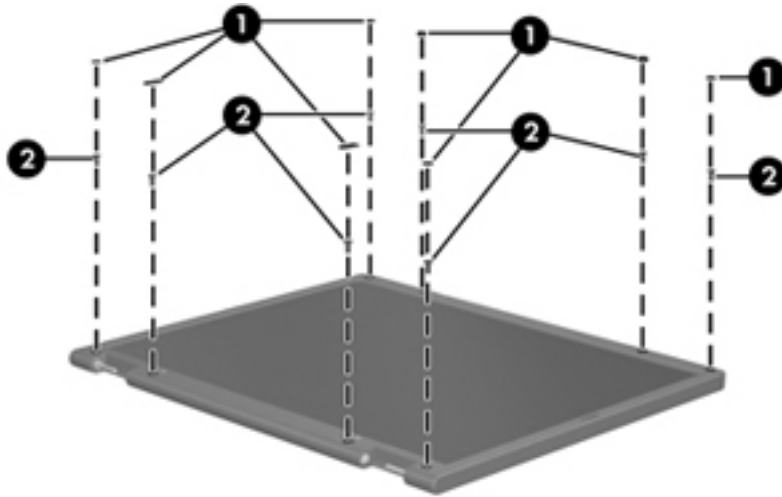
---

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

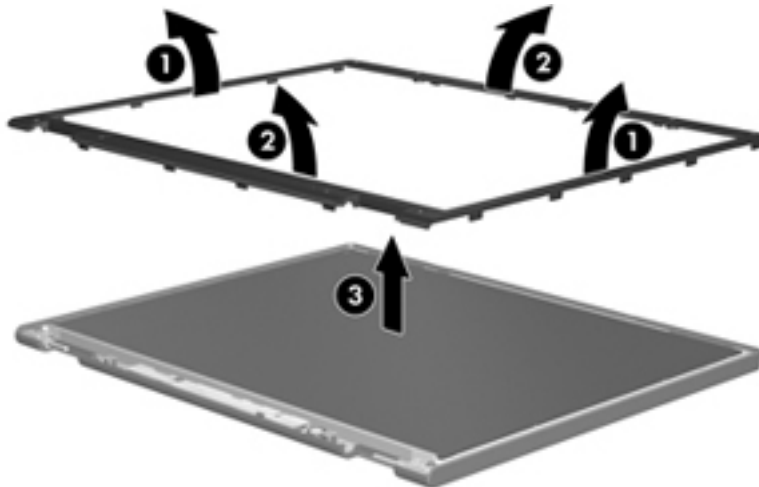
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Perform the following steps to disassemble the display assembly:

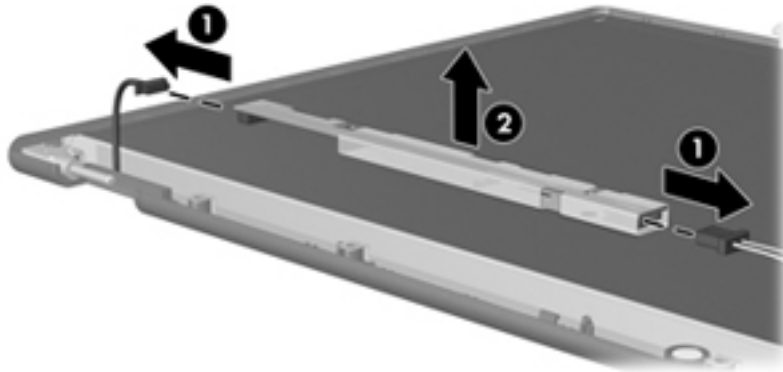
1. Remove all screw covers (1) and screws (2) that secure the display bezel to the display assembly.



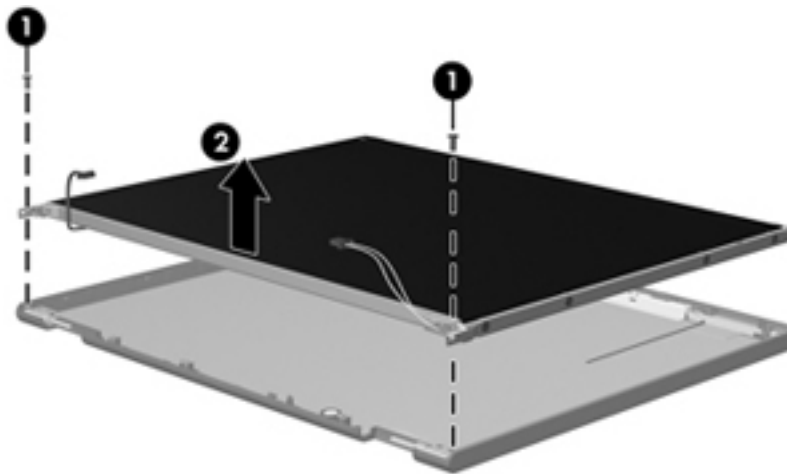
2. Lift up and out on the left and right inside edges (1) and the top and bottom inside edges (2) of the display bezel until the bezel disengages from the display assembly.
3. Remove the display bezel (3).



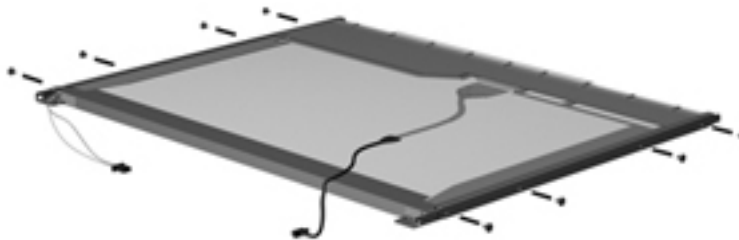
4. Disconnect all display panel cables (1) from the display inverter and remove the inverter (2).



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



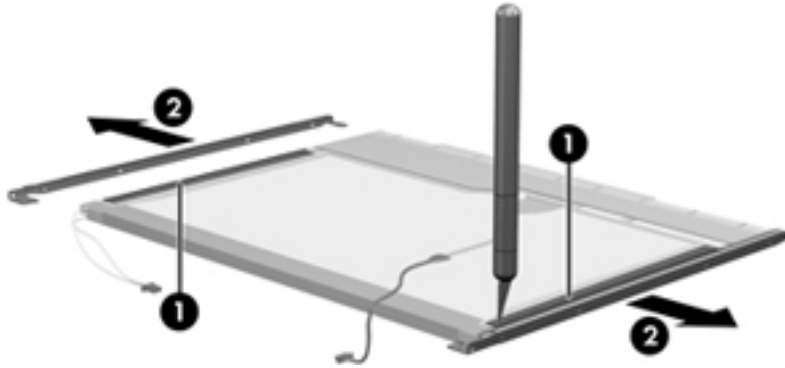
7. Turn the display panel assembly upside-down.
8. Remove all screws that secure the display panel frame to the display panel.



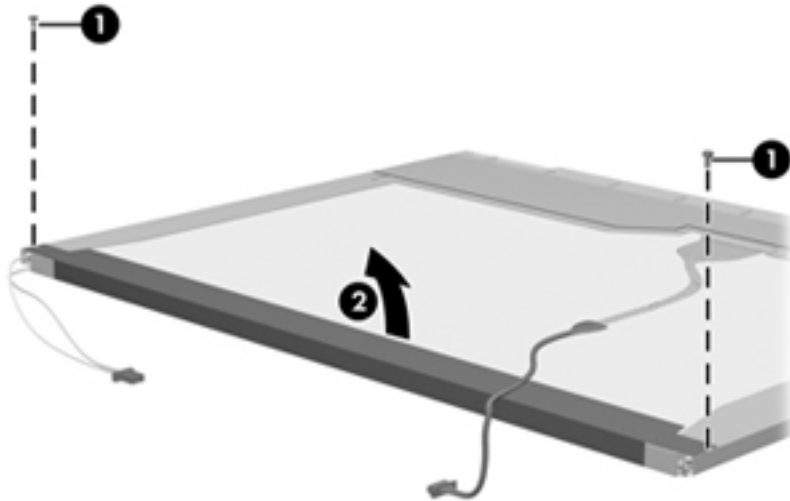
9. Use a sharp-edged tool to cut the tape (1) that secures the sides of the display panel to the display panel frame.



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

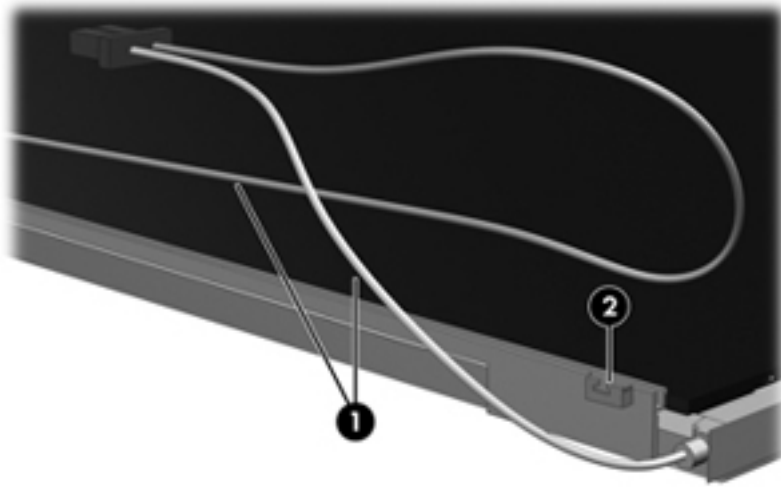


11. Remove the screws (1) that secure the backlight cover to the display panel.
12. Lift the top edge of the backlight cover (2) and swing it outward.



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

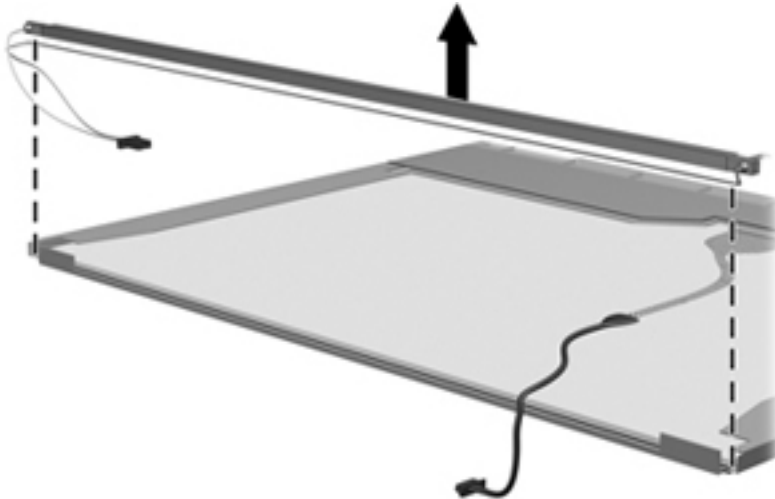
15. Remove the backlight cables (1) from the clip (2) in the display panel.



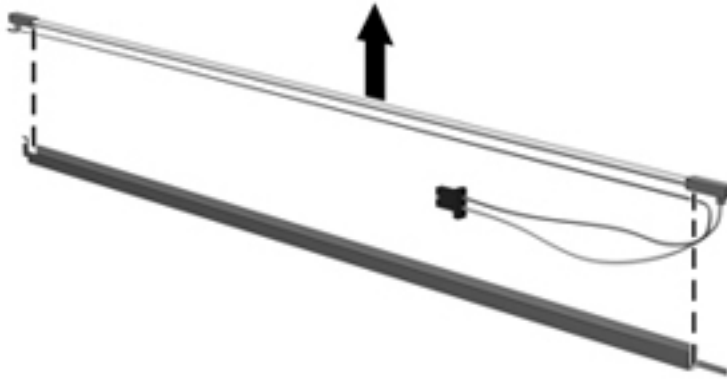
16. Turn the display panel upside-down.

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

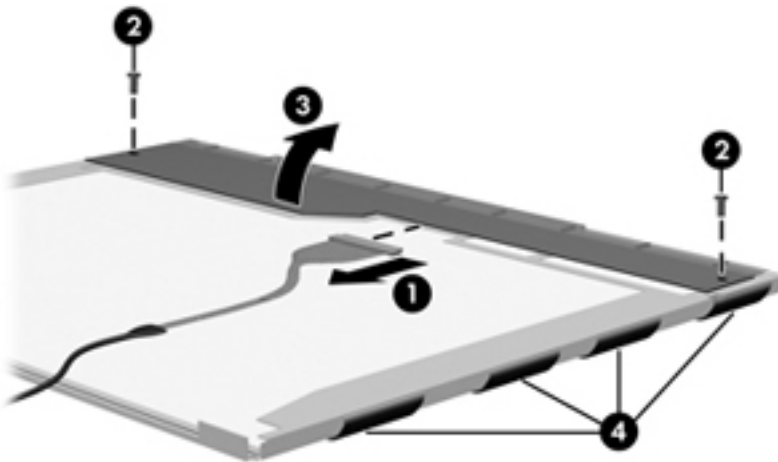
17. Remove the backlight frame from the display panel.



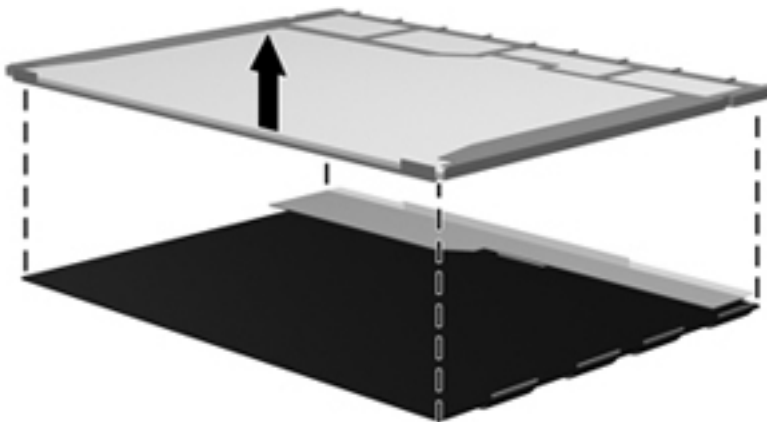
18. Remove the backlight from the backlight frame.



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



23. Remove the LCD panel.



24. Recycle the LCD panel and backlight.

---

# Index

- A**
- AC adapter
  - identifying 20
- AC adapter light, identifying 16
- AC adapter, spare part numbers 33
- antenna, disconnecting 66
- antennas 19
  - WLAN 19
  - WWAN 19
- applications key, Windows 13
- audio, product description 4
- audio-in (microphone) jack
  - pin assignments 132
- audio-in (microphone) jack, identifying 14
- audio-out (headphone) jack
  - pin assignments 133
- audio-out (headphone) jack, identifying 14
- B**
- backing up 122
  - Windows Vista 125
  - Windows XP 129
- Backup and Restore 122, 123
- Backup and Restore Center 125, 126
- base enclosure, spare part number 27
- battery
  - removal 45
  - spare part number 27, 45
- battery bay 17
- battery release latches, identifying 17
- battery, identifying 20
- bays
  - battery 17
- BIOS administrator password 104
- Blu-ray Disc ROM Combo Drive
  - spare part number 27, 32
- Blu-ray ROM with LightScribe DVD  $\pm$ R/RW SuperMulti DL Drive
  - removal 53
  - spare part number 53
  - specifications 120
- Bluetooth module
  - cable 25
  - removal 68
  - spare part number 25, 68
- Bluetooth module cable, illustrated 31
- boot options 99, 106, 112
- boot order 99, 106, 112
- built-in device
  - Bluetooth device radio 107
  - embedded WLAN 107
  - integrated camera 107
  - LAN/WLAN switching 107
  - microphone 107
  - modem 107
  - Network Interface Controller (LAN) 107
  - optical disc drive 107
  - options 107
  - Wake on LAN 107
  - wireless button 107
  - WWAN device radio 107
- buttons
  - power 12
- C**
- cable kit
  - contents 31
  - spare part number 31
- cables, service considerations 40
- caps lock light, identifying 11
- chipset, product description 2
- components
  - additional hardware 20
  - bottom 17
  - display 18
  - front 14
  - left-side 16
  - right-side 15
  - top 10
- computer feet
  - locations 44
  - spare part number 44
- Computer Setup
  - accessing 101, 108
  - Diagnostics menu 105, 111
  - File menu 97, 103, 109
  - navigating and selecting 95, 101, 108
  - restoring factory settings 96, 102, 109
  - Security menu 98, 104, 110
  - System Configuration menu 99, 106, 112
  - using 101, 108
- computer specifications 114
- connector, power 16
- connectors, service considerations 40
- cord, power 20
- D**
- device configurations 106
- Diagnostics menu 105, 111
- discs
  - Driver Recovery 130
  - Operating System 130
- Disk Sanitizer 104

- diskette drive
  - precautions 40
  - product description 4
- display assembly
  - removal 77
  - spare part numbers 23, 77
- display bezel
  - removal 80
  - spare part number 80
- display component recycling 142
- display hinge, removal 82
- display panel
  - removal 82
- display specifications 115, 116
- drive light, identifying 14
- DriveLock
  - automatic 104
  - password 104
- Driver Recovery disc 130
- drives
  - boot order 99, 106, 112
  - optical 15
  - preventing damage 40
- DVD-ROM Drive
  - removal 53
  - spare part number 27, 32, 53
  - specifications 118
- DVD±RW Double-Layer Drive with LightScribe
  - precautions 40
- DVD±RW SuperMulti Double-Layer Drive with LightScribe
  - spare part number 27, 32, 53
  - specifications 119

**E**

- electrostatic discharge 41
- embedded keypad keys, identifying 13
- error log 105
- eSATA port
  - pin assignments 139
- eSATA port, identifying 16
- esc key, identifying 13
- Ethernet, product description 4
- ExpressCard slot bezel, illustrated 30
- ExpressCard slot, identifying 16
- external media cards, product description 5

- external monitor port
  - pin assignments 134
- external monitor port, identifying 16

**F**

- f11 recovery 127
- fan
  - removal 70
  - spare part number 24, 70
- feet
  - locations 44
  - spare part number 44
- File menu 97, 103, 109
- fingerprint reader, identifying 12
- fn key, identifying 13
- function keys, identifying 13

**G**

- graphics, product description 2
- grounding equipment and methods 43

**H**

- hard disk test 105
- hard drive
  - precautions 40
  - product description 3
  - removal 61
  - spare part numbers 27, 32, 61
  - specifications 117
- hard drive bracket, removal 63
- hard drive recovery 127
- HDMI port, pin assignments 135
- headphone (audio-out) jack 14
  - pin assignments 133
- heat sink
  - removal 70
  - spare part number 24, 70
- HP QuickLook 106, 112
- HP SpareKey enrollment 104

**I**

- internal display switch, identifying 12, 18
- internal microphone, identifying 18

**J**

- jacks
  - audio-in (microphone) 14

- audio-out (headphone) 14
- RJ-11 (modem) 15
- RJ-45 (network) 16

**K**

- keyboard
  - product description 5
  - removal 49
  - spare part number 24, 49
- keys
  - embedded keypad 13
  - esc 13
  - fn 13
  - function 13
  - Windows applications 13
  - Windows logo 13

**L**

- language, changing in Computer Setup 106
- latches, battery release 17
- legacy support, USB 95, 100, 101, 106, 108, 112
- lights
  - AC adapter 16
  - caps lock 11
  - drive 14
  - optical drive 15
  - power 11
  - QuickLook 11
  - QuickWeb 11
  - TouchPad 10, 11
  - webcam 18

**M**

- mass storage devices, spare part numbers 32
- Media Card Reader, identifying 14
- memory module
  - product description 3
  - removal 51
  - spare part numbers 51
  - spare part number 25, 51
- microphone (audio-in) jack 14
  - pin assignments 132
- model name 1
- modem jack, pin assignments 136
- modem module
  - product description 4

- removal 87
- spare part numbers 25, 87
- monitor port
  - pin assignments 134
- monitor port, external 16

## N

- network jack, pin assignments 137
- numeric keypad 13

## O

- Operating System disc 130
- operating system, product description 5
- optical drive
  - precautions 40
  - product description 3
  - removal 53
  - spare part number 27, 32, 53
  - specifications 118, 119, 120
- optical drive blank, illustrated 30
- optical drive light, identifying 15
- optical drive, identifying 15

## P

- packing guidelines 42
- palm rest
  - removal 58
  - spare part number 24, 58
  - spare part numbers 58
- panels, product description 2
- passwords 98, 104, 110
- pin assignments
  - audio-in jack 132
  - audio-out (headphone) jack 133
  - eSATA port 139
  - external monitor port 134
  - HDMI 135
  - headphone (audio-out) jack 133
  - microphone (audio-in) jack 132
  - modem jack 136
  - monitor port 134
  - network jack 137
  - RJ-11 136
  - RJ-45 (network) jack 137
  - Universal Serial Bus (USB) port 138

- plastic parts 39
- Plastics Kit
  - contents 30
  - spare part number 30
- pointing devices, product description 5
- port options 107
  - ExpressCard slot 107
  - flash media reader 107
  - USB port 107
- ports
  - eSATA 16
  - external monitor 16
  - HDMI 16
  - product description 5
  - USB 15, 16
- power button board
  - removal 55
  - spare part number 55
- power button, identifying 12
- power cable, illustrated 31
- power connector
  - spare part number 27
- power connector, identifying 16
- power cord
  - set requirements 140
  - spare part numbers 33
- power cord, identifying 20
- power light, identifying 11
- power requirements, product description 5
- processor
  - product description 1
  - removal 74
  - spare part numbers 26, 74
- product description
  - audio 4
  - chipset 2
  - diskette drive 4
  - Ethernet 4
  - external media cards 5
  - graphics 2
  - hard drives 3
  - keyboard 5
  - memory module 3
  - modem module 4
  - operating system 5
  - optical drives 3
  - panels 2
  - pointing devices 5

- ports 5
- power requirements 5
- processors 1
- product name 1
- security 5
- serviceability 8
- visual 4
- wireless 4
- product name 1

## Q

- QuickLook light, identifying 11
- QuickWeb light, identifying 11

## R

- recovering 124
- recovery partition 127
- release latches, battery 17
- removal/replacement
  - preliminaries 39
  - procedures 44
- restore security defaults 107
- restore the factory settings 103
- restoring the hard drive 127
- RJ-11 (modem) jack
  - pin assignments 136
- RJ-11 (modem) jack, identifying 15
- RJ-11(modem) jack cable, illustrated 31
- RJ-45 (network) jack
  - pin assignments 137
- RJ-45 (network) jack, identifying 16
- RJ11 modem cable 27
- RTC battery
  - removal 64
  - spare part number 25, 64
- rubber kit
  - spare part number 33
- run-in test 105

## S

- screw kit
  - spare part number 33
- security cable slot, identifying 16
- Security menu 98, 104, 110
  - allow reset of HP ProtectTools security keys 104
- always prompt for HP SpareKey enrollment 104

- Automatic DriveLock 104
- change password 104
- Disk Sanitizer 104
- DriveLock 104
- HP Sparekey 104
- HP Sparekey enrollment 104
- password policy 104
- set up BIOS administrator
  - password 104
- System IDs 104
- user management 104
- security, product description 5
- serial number label, location 21
- serial number label, location 44
- service considerations 39
- serviceability, product
  - description 8
- set security level 107
- setup utility
  - Diagnostics menu 105, 111
  - File menu 97, 103, 109
  - navigating and selecting 95, 101, 108
  - restoring factory settings 96, 102, 109
  - Security menu 98, 104, 110
  - System Configuration menu 99, 106, 112
- SIM
  - removal 46
  - spare part number 46
- SIM slot, identifying 17
- slots
  - ExpressCard 16
  - security cable 16
  - SIM 17
- speakers
  - removal 56
  - spare part number 27, 56
- speakers, identifying 12
- specifications
  - Blu-ray ROM with LightScribe DVD±R/RW SuperMulti DL Drive 120
  - computer 114
  - display 115, 116
  - DVD ±RW SuperMulti Double-Layer Drive with LightScribe 119
  - DVD-ROM Drive 118

- hard drive 117
  - optical drive 118, 119, 120
  - system resources 121
- start-up test 105
- static-shielding materials 43
- stringent security 110
- switch cover
  - removal 47
  - spare part number 23, 47
- system board
  - removal 89
  - spare part numbers 26, 89
- System Configuration menu 99, 106, 112
- system date and time 97, 103
- System Diagnostics menu 105
- system fan 100, 106, 112
- system IDs 104
- system information 97, 103, 109
- system resources 121

## T

- thermal material, replacement 72, 73
- tools required 39
- top cover
  - removal 85
  - spare part number 26, 85
- TouchPad 10
  - identifying 10
- TouchPad indicator, identifying 10, 11
- transporting guidelines 42

## U

- USB connector board
  - removal 91
  - spare part number 27, 91
- USB legacy support 95, 100, 101, 106, 108, 112
- USB port
  - pin assignments 138
- USB ports, identifying 15, 16

## V

- vents, identifying 16
- Virtualization Technology 106, 112
- visual, product description 4

## W

- webcam
  - identifying 18
- webcam light, identifying 18
- Windows applications key, identifying 13
- Windows Backup utility 129, 130
- Windows logo key, identifying 13
- Windows recovery 126, 130
- Windows Vista operating system
  - DVD 128
- wireless antenna, disconnecting 66
- wireless antennas 19
- wireless, product description 4
- WLAN antennas, identifying 19
- WLAN module
  - removal 65
  - spare part numbers 25, 65
- workstation guidelines 42
- WWAN antennas, identifying 19

