

Notebook PC User Guide



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1 Notebook Tour

Components

This chapter explains the hardware features of the computer.

To see a list of installed hardware in the computer:

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**.

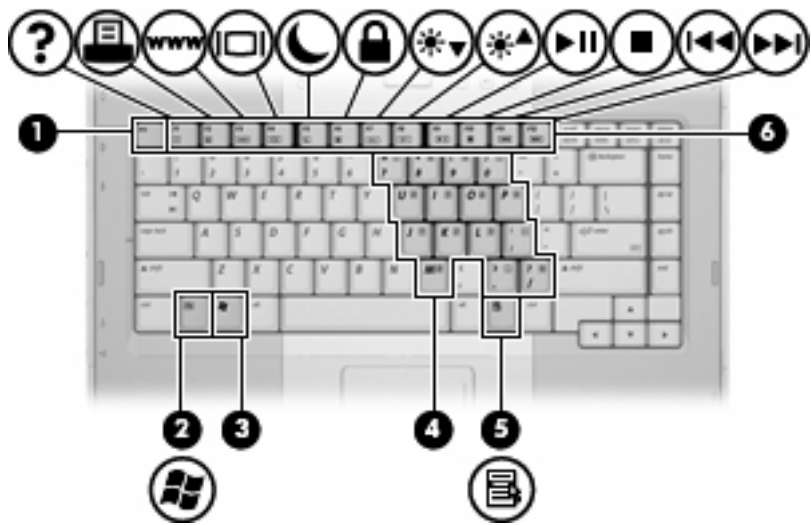
You can also add hardware or modify device configurations using Device Manager.



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

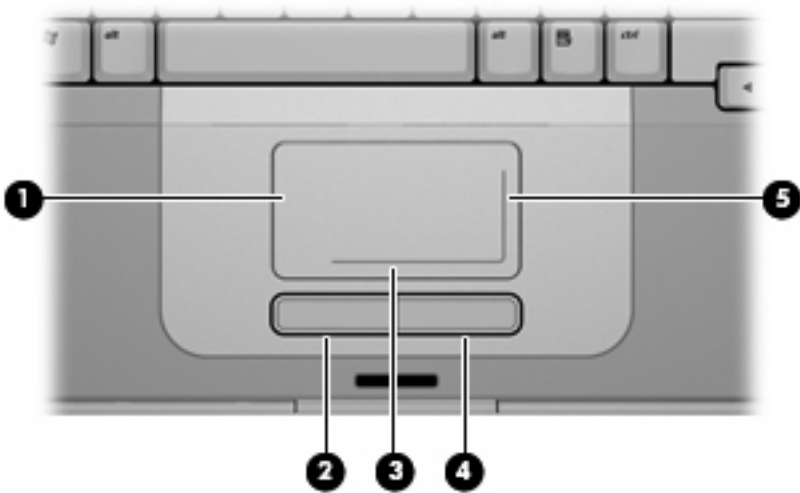
Top components

Keys



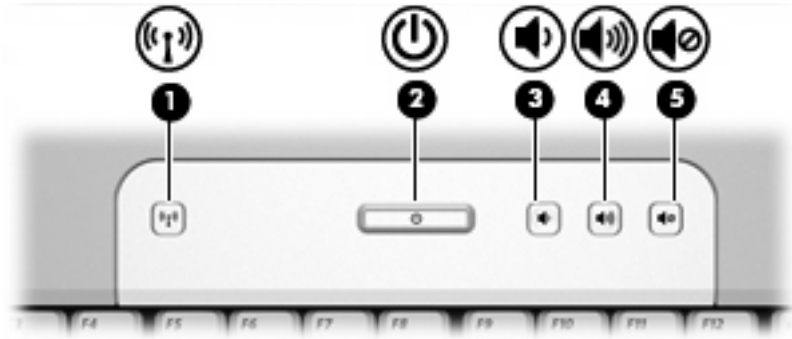
Component	Description
(1) <code>esc</code> key	Displays system information when pressed in combination with the <code>fn</code> key.
(2) <code>fn</code> key	Executes frequently used system functions when pressed in combination with a function key or the <code>esc</code> key.
(3) Windows logo key	Displays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


TouchPad



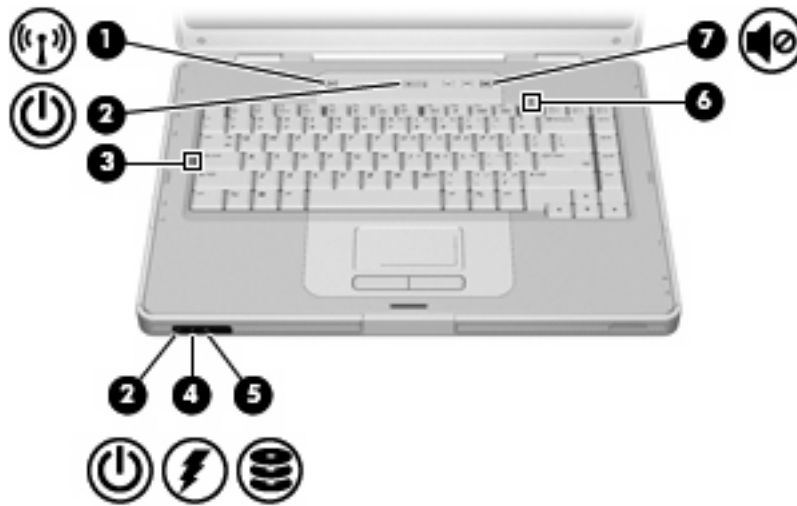
Component		Description
(1)	TouchPad*	Moves the pointer and selects or activates items on the screen. Can be set to perform other mouse functions, such as scrolling, selecting, and double-clicking.
(2)	Left TouchPad button*	Functions like the left button on an external mouse.
(3)	TouchPad horizontal scroll zone*	Scrolls left or right.
(4)	Right TouchPad button*	Functions like the right button on an external mouse.
(5)	TouchPad vertical scroll zone*	Scrolls up or down.
*This table describes default settings. To view and change TouchPad preferences, select Start > Control Panel > Printers and Other Hardware > Mouse .		

Buttons and switches



Component		Description
(1)	Wireless button*	<div><div>Turns the wireless functionality on or off, but does not create a wireless connection.</div><div> NOTE To establish a wireless connection, a wireless network must already be set up.</div></div>
(2)	Power button*	<div><div>When the computer is</div><ul style="list-style-type: none">• Off, press to turn on the computer.• On, press to enter hibernation.• In standby, briefly press to exit standby.• In hibernation, briefly press to exit hibernation.<div>If the computer has stopped responding and Microsoft® Windows® shutdown procedures cannot be used, press and hold the power button for at least 5 seconds to turn off the computer.</div></div>
(3)	Volume down button	Decreases system volume.
(4)	Volume up button	Increases system volume.
(5)	Volume mute button	Mutes system sound.
*This table describes default settings.		


Lights



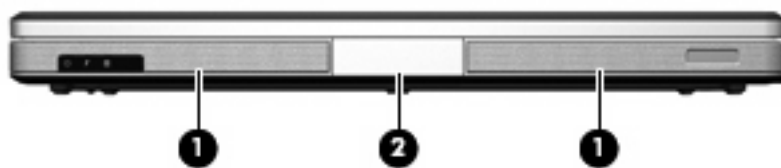
Component	Description
(1) Wireless light	On: An integrated wireless device, such as a wireless local area network (LAN), is turned on.
(2) Power lights* (2)	On: The computer is on. Blinking: The computer is in standby. Off: The computer is off or in hibernation.
(3) Caps lock light	On: Caps lock is on.
(4) Battery light	On: A battery pack is charging or is close to full charge capacity. Blinking: A battery pack that is the only available power source has reached a low-battery condition. When the battery reaches a <i>critical</i> low-battery condition, the battery light begins blinking rapidly. Off: If the computer is plugged into an external power source, the light is turned off when all batteries in the computer are fully charged. If the computer is not plugged into an external power source, the light stays off until the battery reaches a low-battery condition.
(5) IDE (Integrated Drive Electronics) drive light	Blinking: The hard drive or optical drive is being accessed.
(6) Num lock light	On: Num lock is on or the embedded numeric keypad is enabled.
(7) Volume mute light	On: System sound is turned off.
*There are 2 power lights. Both display the same information. The light on the power button is visible only when the computer is open; the other power light is always visible on the front of the computer.	

Display components



Component		Description
(1)	Display release button	Opens the computer.
(2)	Internal display switch	Initiates standby if the display is closed while the notebook is turned on.
<div> CAUTION The internal display switch is magnetic. Keep diskettes and other magnetic media away from magnetic fields, which can erase data.</div>		



Front components



Component		Description
(1)	Speakers (2)	Produce system sound.
(2)	Display release button	Opens the computer.

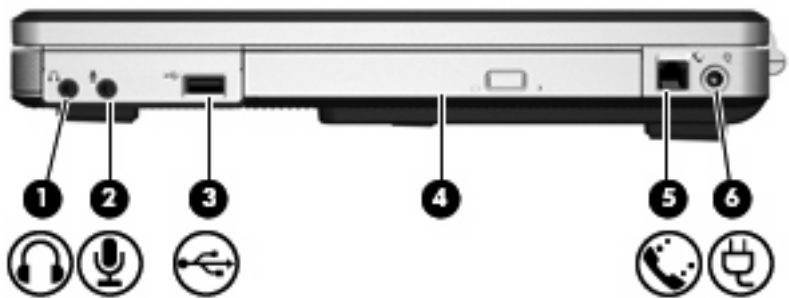
Rear components



Component	Description
Vent*	<p>Provides airflow to cool internal components.</p> <div><div></div><div><p>CAUTION To prevent overheating, do not obstruct 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 thick rugs or clothing, to block airflow.</p></div></div> <div><div></div><div><p>NOTE The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.</p></div></div>

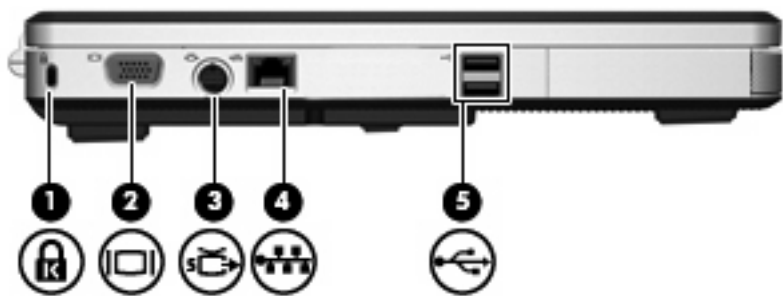
*The computer has 3 vents. The other vents are located on the bottom of the computer.


Right-side components



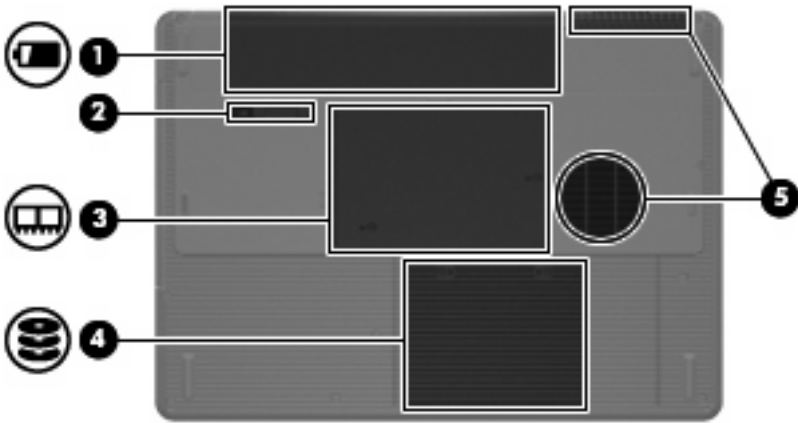
Component		Description
(1)	Audio-out (headphone) jack	Produces system sound when connected to optional powered stereo speakers, headphones, ear buds, a headset, or television audio.
(2)	Audio-in (microphone) jack	Connects an optional computer headset microphone or a microphone.
(3)	USB port (select models only)	Connects an optional USB device.
(4)	Optical drive	Reads an optical disc.
(5)	RJ-11 (modem) jack	Connects an optional modem cable.
(6)	Power connector	Connects an AC adapter or an optional power adapter.

Left-side components



Component		Description
(1)	Security cable slot	Attaches an optional security cable to the computer. <div> NOTE The security cable is designed to act as a deterrent, but may not prevent the computer from being mishandled or stolen.</div>
(2)	External monitor port	Connects an external monitor.
(3)	S-Video-out jack	Connects an optional S-Video device such as a television, VCR, camcorder, overhead projector, or video capture card.
(4)	RJ-45 (network) jack	Connects a network cable.
(5)	USB ports (2)	Connect an optional USB device.

Bottom components



Component		Description
(1)	Battery bay	Holds the primary battery pack.*
(2)	Battery pack release latch	Releases the battery pack from the battery bay.
(3)	Memory module compartment	Contains the memory module slots.
(4)	Hard drive bay	Holds the hard drive.
(5)	Vents (2)†	Enable airflow to cool internal components.

CAUTION To prevent overheating, do not obstruct 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 thick rugs or clothing, to block airflow.

NOTE The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.

*Battery packs vary by model.

†The computer has 3 vents. One other vent is located on the rear of the computer.

Wireless antennae (select models only)

On select computer models, there are at least 2 wireless antennae that send and receive wireless device signals. They are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennae free from obstructions.



Additional hardware components



Component		Description
(1)	Battery pack*	Powers the computer when the computer is not connected to external power.
(2)	AC adapter	Converts AC power to DC power.
(3)	Power cord*	Connects an AC adapter to an AC outlet.
*Battery packs and power cords vary in appearance by region and country.		

Labels

The labels affixed to the computer provide information you may need when you troubleshoot system problems or travel internationally with the computer.

- **Service tag**—Provides the product name, serial number (S/N), and other specifics about the computer. Have this information available when you contact Customer Care. The service tag label is affixed to the bottom of the computer.
- **Microsoft Certificate of Authenticity**—Contains the Microsoft Windows Product Key. You may need the Product Key to update or troubleshoot the operating system. This certificate is affixed to the bottom of the computer.
- **Regulatory label**—Provides regulatory information about the computer. The regulatory label is affixed inside the battery bay.
- **Modem approval label**—Provides regulatory information about the modem and lists the agency approval markings required by some of the countries in which the modem has been approved for use. You may need this information when traveling internationally. The modem approval label is affixed inside the memory door.
- **Wireless certification labels**—Provide information about optional wireless devices available on select models, and the approval markings of some of the countries in which the devices have been approved for use. An optional device may be a wireless local area network (WLAN). If the computer model includes one or more wireless devices, a certification label is included with the computer. You may need this information when traveling internationally. Wireless certification labels are affixed inside the memory door.

Specifications

Operating environment

The operating environment information in the following table may be helpful if you plan to use or transport the computer in extreme environments.

Factor	Metric	U.S.
Temperature		
Operating	10°C to 35°C	50°F to 95°F
Nonoperating	-20°C to 60°C	-4°F to 140°F
Relative humidity (noncondensing)		
Operating	10% to 90%	10% to 90%
Nonoperating	5% to 95%	5% to 95%
Maximum altitude (unpressurized)		
Operating (14.7 to 10.1 psia*)	-15 m to 3,048 m	-50 ft to 10,000 ft
Nonoperating (14.7 to 4.4 psia*)	-15 m to 12,192 m	-50 ft to 40,000 ft
*Pounds per square inch absolute (psia) is another unit of measurement for altitude.		

Rated input power

The power information in this section may be helpful if you plan to travel internationally with the computer.

The computer operates on DC power, which can be supplied by an AC or a DC power source. Although the computer can be powered from a stand-alone DC power source, it should be powered only with an AC adapter or a DC power cord supplied by or approved for this computer.

The computer is capable of accepting DC power within the following specifications.

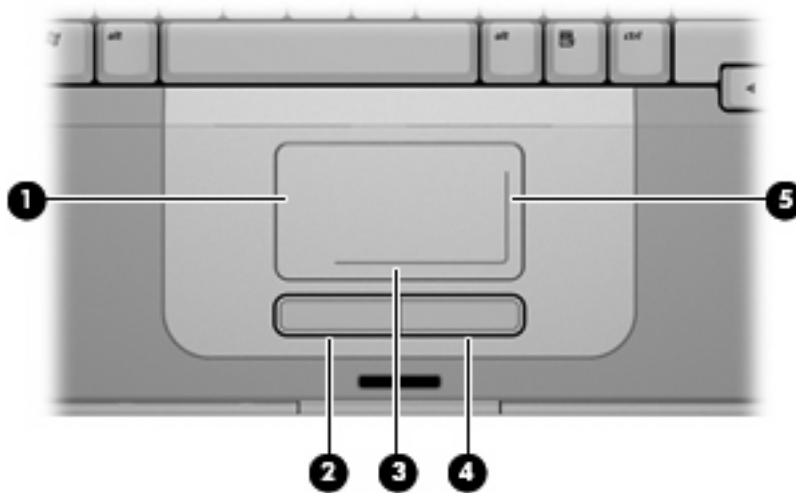
Input Power	Rating
Operating voltage	18.5 V dc to 19.0 V dc
Operating current	3.5 A or 4.74 A

This product is designed for IT power systems in Norway with phase-to-phase voltage not exceeding 240 V rms.

2 TouchPad and Keyboard

TouchPad

The following illustration and table describe the computer TouchPad.



Component	Description
(1) TouchPad*	Moves the pointer and selects or activates items on the screen. Can be set to perform other mouse functions, such as scrolling, selecting, and double-clicking.
(2) Left TouchPad button*	Functions like the left button on an external mouse.
(3) TouchPad horizontal scroll zone*	Scrolls left or right.
(4) Right TouchPad button*	Functions like the right button on an external mouse.
(5) TouchPad vertical scroll zone*	Scrolls up or down.

*This table describes default settings. To view and change TouchPad preferences, select **Start > Control Panel > Printers and Other Hardware > Mouse**.

Using the TouchPad

To move the pointer, slide your finger across the TouchPad surface in the direction you want the pointer to go. Use the left and right TouchPad buttons as you would the left and right buttons on an external mouse. To scroll up and down using the TouchPad vertical scroll zone, slide your finger up or down over the vertical white line. To scroll left and right using the TouchPad horizontal scroll zone, slide your finger left or right over the horizontal white line.

Using an external mouse

An external USB mouse can be connected to the computer using one of the USB ports on the computer.

Setting TouchPad preferences

Mouse Properties in Microsoft® Windows® allows you to customize settings for pointing devices, including

- TouchPad tapping, which enables you to tap the TouchPad once to select an object or twice to double-click an object (enabled by default).
- Edge motion, which enables you to continue to scroll even though your finger has reached the edge of the TouchPad (disabled by default).
- Button preference, which allows you to switch between left-hand and right-hand use (right-hand preference is enabled by default).

Other features, such as mouse speed preferences and mouse trails, are also found in Mouse Properties.

To access Mouse Properties, select **Start> Control Panel > Printers and Other Hardware > Mouse**.

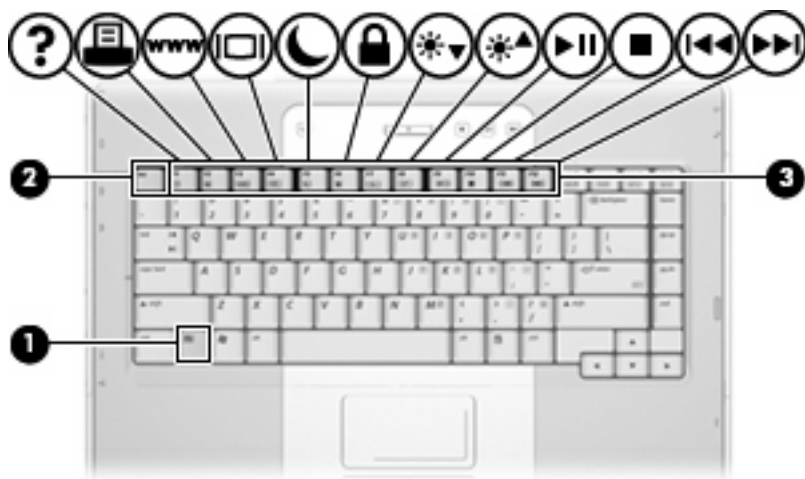
Keyboard

The following sections provide information on the keyboard features of the notebook.

Hotkeys

Hotkeys are combinations of the **fn** key (1) and either the **esc** key (2) or one of the function keys (3).

The icons on the **f1** through **f12** keys represent the hotkey functions. Hotkey functions and procedures are discussed in the following sections.



Hotkey quick reference

Function	Key Combination
Display and clear system information.	fn+esc
Open the Help and Support Center.	fn+f1
Open the Print Options window.	fn+f2
Open a Web browser.	fn+f3
Switch the screen image between the computer display and an external display.	fn+f4
Initiate standby.	fn+f5
Initiate QuickLock.	fn+f6
Decrease screen brightness.	fn+f7
Increase screen brightness.	fn+f8
Play, pause, or resume an audio CD or a DVD.	fn+f9
Stop an audio CD or a DVD.	fn+f10
Play the previous track or section on an audio CD or a DVD.	fn+f11
Play the next track on an audio CD or a DVD.	fn+f12

Hotkey procedures

To use a hotkey command on the computer keyboard, either

- Briefly press the **fn** key, and then briefly press the second key of the hotkey command.
— or —
- Press and hold down the **fn** key, briefly press the second key of the hotkey command, and then release both keys at the same time.

Display and clear system information (fn+esc)

Press **fn+esc** to display information about system hardware components and the system BIOS version number. Press **fn+esc** a second time to remove the system information from the screen.

In the Windows **fn+esc** display, the version of the system BIOS (basic input-output system) is displayed as the BIOS date. On some computer models, the BIOS date is displayed in decimal format. The BIOS date is sometimes called the system ROM version number.

Open the Help and Support Center (fn+f1)

Press **fn+f1** to open the Help and Support Center.

In addition to providing information about your Windows operating system, the Help and Support Center provides

- Information about your computer, such as model and serial number, installed software, hardware components, and specifications.
- Answers to questions about using your computer.
- Tutorials to help you learn to use computer and Windows features.
- Updates for your Windows operating system, drivers, and the software provided on your computer.
- Checkups for computer functionality.
- Automated and interactive troubleshooting, repair solutions, and system recovery procedures.
- Links to support specialists.

You can also access the Help and Support Center by selecting **Start > Help and Support**.

Open the Print Options window (fn+f2)

Press **fn+f2** to open the Print Options window of the active Windows application.

Open a Web browser (fn+f3)

Press **fn+f3** to open your default Web browser.

Until you have set up your Internet or network services, the **fn+f3** hotkey opens the Windows Internet Connection Wizard.

After you have set up your Internet or network services and your Web browser home page, you can press **fn+f3** to quickly access your home page and the Internet.

Switch the screen image (fn+f4)

Press **fn+f4** to switch the screen image among display devices connected to the system. For example, if a monitor is connected to the computer, each time you press **fn+f4** the image switches among the computer display, the monitor display, and a simultaneous display on both the computer and the monitor.

Most external monitors receive video information from the computer using the external VGA video standard. The **fn+f4** hotkey can also toggle images among other devices receiving video information from the computer, such as S-Video.

The following video transmission types, with examples of devices that use them, are supported by the **fn+f4** hotkey:

- LCD (computer display)
- External VGA (most external monitors)
- S-Video (televisions, camcorders, VCRs, and video capture cards with S-Video-in jacks, on select models)

Initiate standby (fn+f5)

Press **fn+f5** to initiate standby.

When standby is initiated, your information is stored in random access memory (RAM), the screen is cleared, and power is conserved. While the computer is in standby, the power light blinks.



CAUTION To reduce the risk of information loss, save your work before initiating standby.

The computer must be turned on before you initiate standby. If the computer is in hibernation, you must restore from hibernation before you can initiate standby.



NOTE To restore from hibernation, briefly press the power button.

To resume from standby, briefly press the power button, use the TouchPad, press any key on the keyboard, or press a TouchPad button.

The function of the **fn+f5** hotkey can be changed. For example, you can set the **fn+f5** hotkey to initiate hibernation instead of standby.



NOTE In all Windows operating system windows, references to the *sleep button* apply to the **fn+f5** hotkey.

Initiate QuickLock (fn+f6)

Press **fn+f6** to initiate the QuickLock security feature.

QuickLock protects your information by displaying the operating system Log On window. While the Log On window is displayed, the computer cannot be accessed until a Windows user password or a Windows administrator password is entered.



NOTE Before you can use QuickLock, you must set a Windows user password or a Windows administrator password. For instructions, refer to the Help and Support Center.

To use QuickLock, press **fn+f6** to display the Log On window and lock the computer. Then follow the instructions on the screen to enter your Windows user password or your Windows administrator password and access the computer.

Decrease screen brightness (fn+f7)

Press **fn+f7** to decrease screen brightness. Hold down the hotkey to decrease the brightness level incrementally.

Increase screen brightness (fn+f8)

Press **fn+f8** to increase screen brightness. Hold down the hotkey to increase the brightness level incrementally.

Play, pause or resume an audio CD or a DVD (fn+f9)

The **fn+f9** hotkey functions only when an audio CD or a DVD is inserted. If the audio CD or the DVD is

- Not playing, press **fn+f9** to begin or resume the play.
- Playing, press **fn+f9** to pause the play.

Stop an audio CD or a DVD (fn+f10)

Press **fn+f10** to stop the play of an audio CD or a DVD.

Play previous track or section of an audio CD or a DVD (fn+f11)

While an audio CD or a DVD is playing, press **fn+f11** to play the previous track of the CD or the previous section of the DVD.

Play next track or section of an audio CD or a DVD (fn+f12)

While an audio CD or a DVD is playing, press **fn+f12** to play the next track of the CD or the next section of the DVD.

Quick Launch Buttons software

You can use the Quick Launch Buttons control panel to

- Set preferences for tiling windows on the Windows desktop.
- Set advanced preferences, including
 - Setting preferences for the display of the Quick Launch Buttons icon.
 - Setting button assignments for the Easy Access buttons on an optional external keyboard.

The following sections provide instructions for setting preferences within the Quick Launch Buttons control panel. For additional on-screen information about any item on the control panel, select the help button in the upper-right corner of the window. The help button is identified with a question-mark icon.

Accessing the Quick Launch Buttons control panel

You can access the Quick Launch Buttons control panel from the Start button or from an icon that you can display in the notification area, at the far right of the taskbar, or on the Windows desktop.

To access the Quick Launch Buttons control panel from the Start button, select **Start > Control Panel > Printers and Other Hardware > Quick Launch Buttons**.

Setting tiling preferences

To set tiling preferences on the Windows desktop:

1. Open the Quick Launch Buttons control panel:
 - Select **Start > Control Panel > Printers and Other Hardware > Quick Launch Buttons**.
 - or –
 - Double-click the Quick Launch Buttons icon in the notification area, at the far right of the taskbar, or on the Windows desktop.
2. Click the **Quick Tile** tab.
3. Click **Vertical Tile** or **Horizontal Tile**, and then click the programs to tile in the **Applications currently running** box.
4. To save your preferences and close the display, click **OK**.

Setting advanced preferences

You can set icon and external keyboard assignments in the Quick Launch Button control panel.

Displaying the Quick Launch Buttons icon

To show or hide the Quick Launch Buttons Properties icon in the notification area, at the far right of the taskbar, or on the Windows desktop:

1. Open the Quick Launch Buttons control panel:
 - Select **Start > Control Panel > Printers and Other Hardware > Quick Launch Buttons**.
 - or –
 - Double-click the Quick Launch Buttons icon, either in the notification area, at the far right of the taskbar, or on the Windows desktop.
2. Click the **Advanced** tab. On the Advanced tab you can display or hide the Quick Launch Buttons icon in the notification area or on the Windows desktop.
 - To display the icon, select the **Show icon on the taskbar** or **Show icon on the desktop** check box.
 - To hide the icon, clear the **Show icon on the taskbar** or **Show icon on the desktop** check box.
3. To save your preferences and close the display, click **OK**.

Setting button assignments on an external keyboard

If you are using an optional HP external keyboard that features Easy Access buttons, you can set Easy Access button assignments and schemes on the Settings tab.

The Settings tab is disabled and hidden by default. To display and enable the Settings tab in the Quick Launch Buttons control panel:

1. Open the Quick Launch Buttons control panel:
 - Select **Start > Control Panel > Printers and Other Hardware > Quick Launch Buttons**.
 - or –
 - Double-click the **Quick Launch Buttons** icon in the notification area, at the far right of the taskbar, or on the Windows desktop.
2. Click the **Advanced** tab. Then:
 - To display and enable the Settings tab, select the **Allow users to modify button assignments on external keyboard** check box.
 - or –
 - To disable and hide the Settings tab, clear the **Allow users to modify button assignments on external keyboard** check box.



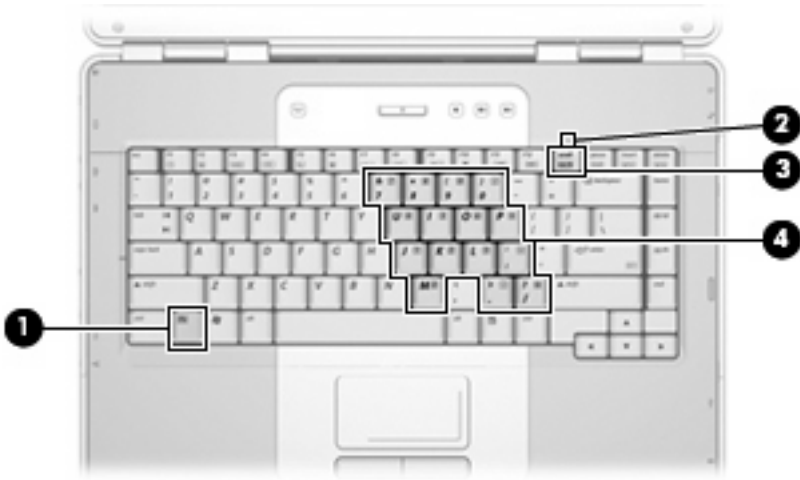
NOTE If you enable the Settings tab, you must close the Quick Launch Buttons Properties dialog box, and then open it again in order to see the Settings tab.

3. To save your preferences and close the display, click **OK**.

For information about managing Easy Access button assignments and schemes, refer to your external keyboard documentation.

Keypads

The computer has an embedded numeric keypad and also supports an optional external numeric keypad or an optional external keyboard that includes a numeric keypad.



Component	
(1)	fn key
(2)	num lock light
(3)	num lk key
(4)	Embedded numeric keypad

Using the embedded numeric keypad

The 15 keys of the embedded numeric keypad can be used like the keys on an external keypad. When the embedded numeric keypad is turned on, each key on the keypad performs the function indicated by the icon in the upper-right corner of the key.

Enabling and disabling the embedded numeric keypad

Press **fn+num lk** to enable the embedded numeric keypad. The num lock light turns on. Press **fn+num lk** again to return the keys to their standard keyboard functions. The num lock light turns off.



NOTE The embedded numeric keypad will not function while an external keyboard or keypad is connected to the computer.

Switching key functions on the embedded numeric keypad

You can temporarily alternate the functions of keys on the embedded numeric keypad between their standard keyboard functions and their keypad functions by using the **fn** key or the **fn+shift** key combination.

- To change the function of a keypad key to keypad functions while the keypad is off, press and hold the **fn** key while pressing the keypad key.
- To use the keypad keys temporarily as standard keys while the keypad is on:
 - Press and hold the **fn** key to type in lowercase.
 - Press and hold **fn+shift** to type in uppercase.

Using an external numeric keypad

Most keys on most external keypads function differently according to whether num lock mode is on or off. (By default num lock mode is off.) For example:

- When num lock is on, most keypad keys type numbers.
- When num lock is off, most keypad keys function like the arrow, page up, or page down keys.

When num lock on an external keypad is turned on, the num lock light on the computer is turned on. When num lock on an external keypad is turned off, the num lock light on the computer is turned off.

If an external keypad is connected, the embedded numeric keypad cannot be turned on.

Enabling or disabling num lock mode as you work

To turn num lock on or off on an external keypad as you work, press the **num lk** key on the external keypad, not on the computer.

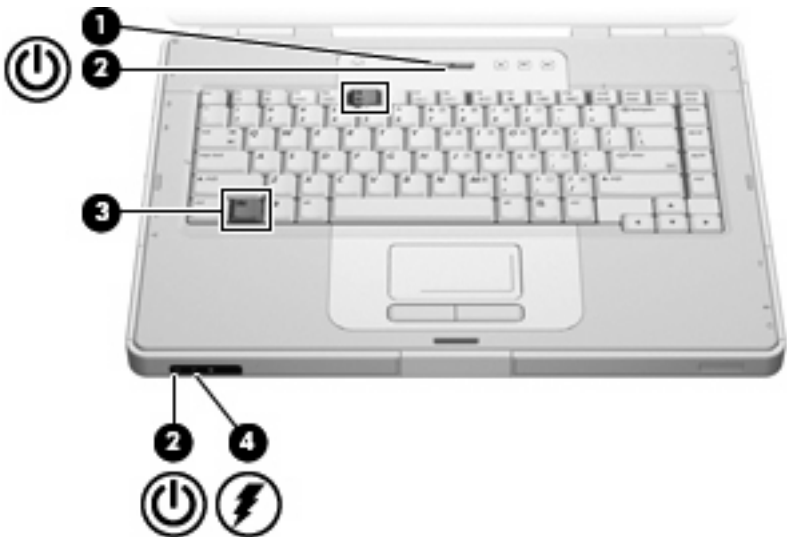
3 Power

Power control and light locations

The following illustration and table identify and describe the power control and light locations.



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




Component		Description
(1)	Power button	<p>When the computer is</p> <ul style="list-style-type: none">• Off, press to turn on the computer.• On, press to enter hibernation.• In standby, briefly press to exit standby.• In hibernation, briefly press to exit hibernation. <p>If the computer has stopped responding and Microsoft® Windows® shutdown procedures cannot be used, press and hold the power button for at least 5 seconds to turn off the computer.</p>
(2)	Power lights* (2)	<p>On: The computer is on.</p> <p>Blinking: The computer is in standby.</p> <p>Off: The computer is off or in hibernation.</p>

	Component	Description
(3)	fn+f5	Initiates standby.
(4)	Battery light	<p>On: A battery pack is charging or is close to full charge capacity.</p> <p>Blinking: A battery pack that is the only available power source has reached a low-battery condition. When the battery reaches a <i>critical</i> low-battery condition, the battery light begins blinking rapidly.</p> <p>Off: If the computer is plugged into an external power source, the light is turned off when all batteries in the computer are fully charged. If the computer is not plugged into an external power source, the light stays off until the battery reaches a low-battery condition.</p>
	<p>*There are 2 power lights. Both display the same information. The light on the power button is visible only when the computer is open; the other power light is always visible on the front of the computer.</p>	

Power sources

The computer can run on internal or external AC power. The following table indicates the best power sources for common tasks.

Task	Recommended power source
Work in most software applications	<ul style="list-style-type: none">• Charged battery pack in the computer• External power supplied through one of the following devices:<ul style="list-style-type: none">• AC adapter• Optional power adapter
Charge or calibrate a battery pack in the computer	External power supplied through <ul style="list-style-type: none">• AC adapter• Optional power adapter
Install or modify system software or write to a CD or DVD	External power supplied through <ul style="list-style-type: none">• AC adapter• Optional power adapter
	 WARNING! Do not charge the computer battery pack on board aircraft.

Connecting the AC adapter



WARNING! To reduce the risk of electric shock or damage to the equipment:

Plug the power cord into an AC outlet that is easily accessible at all times.

Disconnect power from the computer by unplugging the power cord from the AC outlet (not by unplugging the power cord from the computer).

If provided with a 3-pin attachment plug on the power cord, plug the cord into a grounded (earthed) 3-pin outlet. Do not disable the power cord grounding pin; for example, by attaching a 2-pin adapter. The grounding pin is an important safety feature. It is possible to receive an electric shock from a system that is not properly grounded.

To connect the computer to external AC power:

1. Plug the AC adapter into the power connector on the computer **(1)**.
2. Plug the power cord into the AC adapter **(2)**.
3. Plug the other end of the power cord into an AC outlet **(3)**.



Standby and hibernation

Standby and hibernation are energy-saving features that conserve power and reduce startup time. They can be initiated by you or by the system. For more information, refer to "Initiating standby, hibernation or shutdown."

Standby



CAUTION To avoid a complete battery discharge, do not leave the computer in standby for extended periods. Connect the computer to an external power source.

Standby reduces power to system components that are not in use. When standby is initiated, your work is stored in random access memory (RAM), and then the screen is cleared. When the computer is in standby, the power lights blink. When you resume from standby, your work returns to the screen where you left off.



CAUTION To reduce the risk of information loss, save your work before initiating standby.

Hibernation



CAUTION If the configuration of the computer is changed during hibernation, resuming from hibernation may not be possible. When the computer is in hibernation:

Do not add or remove memory modules.

Do not insert or remove any hard drives or optical drives.

Do not connect or disconnect external devices.

Hibernation saves your work to a hibernation file on the hard drive, and then shuts down the computer. The power lights are turned off. When you restore from hibernation, your work returns to the screen where you left off. If a power-on password has been set, the password must be entered to restore from hibernation.



CAUTION To reduce the risk of information loss, save your work before initiating hibernation.

You can disable hibernation. However, if hibernation is disabled and the system reaches a low-battery condition, the system will not automatically save your work while power is on or when standby has been initiated.

Use **Power Options** in Microsoft® Windows® Control Panel to reenable hibernation:

1. Select **Start > Control Panel > Performance and Maintenance > Power Options > Hibernate** tab.
2. Be sure that the **Enable hibernation** check box is selected.

To set the time interval after which the system initiates hibernation:

1. Select **Start > Control Panel > Performance and Maintenance > Power Options**.
2. Click one of the intervals in the **System hibernates** list.

Initiating standby, hibernation or shutdown

The following sections explain when to initiate standby or hibernation and when to shut down the computer.



NOTE You cannot initiate any type of networking communications or perform any computer functions while the computer is in standby or hibernation.

When you leave your work

When standby is initiated, your work is stored in random access memory (RAM), and then the screen is cleared. When the computer is in standby, it uses less power than when it is on. Your work returns instantly to the screen when you resume from standby.

Hibernation saves your work to a hibernation file on the hard drive, and then shuts down the computer. When the computer is in hibernation, it uses much less power than when it is in standby.

When the computer will be unused and disconnected from external power for an extended period, shut down the computer and remove the battery pack to extend the life of the battery pack. For details on battery pack storage, refer to "Storing a battery pack."

When a reliable power supply is unavailable

Be sure that hibernation remains enabled, especially if you are operating the computer on battery power and do not have access to an external power supply. If the battery pack fails, hibernation saves your work to a hibernation file and shuts down the computer.

It is recommended that if you pause your work when the power supply is uncertain, you take one of the following actions:

- Save your work, and then initiate standby.
- Initiate hibernation.
- Shut down the computer.

When using wireless communication or readable or writable media (select models only)



CAUTION To prevent possible audio and video degradation, or loss of audio or video playback functionality, do not initiate standby or hibernation while reading or writing to a CD, DVD, or external media card. To prevent loss of information, do not initiate standby or hibernation while writing to a CD, DVD, or external media card.

Standby and hibernation interfere with the use media. If standby or hibernation is accidentally initiated during playback of a medium such as a CD, DVD, or external media card


- Your playback may be interrupted.
- You may see the following warning message: "Putting the computer into hibernation or standby may stop the playback. Do you want to continue?" Click **No**.
- You may need to restart the media to resume audio and video playback.

Default power settings


This section explains the default standby, hibernation, and shutdown procedures. For information about changing the function of the power features on the computer, refer to "Power options."

The controls and lights discussed in this section are illustrated in "Power control and light locations."

Turning the computer or display on or off

Task	Procedure	Result
Turn on the computer.	Press the power button.	<ul style="list-style-type: none">The power lights are turned on.The operating system loads.
Shut down the computer.	<ol style="list-style-type: none">Save your work and close all open applications.Shut down the computer through the operating system by selecting Start > Turn Off Computer > Turn Off. <div> NOTE If the system is unresponsive and you are unable to shut down the computer with these procedures, refer to "Using emergency shutdown procedures."</div>	<ul style="list-style-type: none">The power lights are turned off.The operating system shuts down.The computer is turned off.
Turn off the display while the power is on.	Close the computer.	Closing the computer activates the display switch, which initiates standby.

Using emergency shutdown procedures

 **CAUTION** Emergency shutdown procedures result in the loss of unsaved information.

If the computer is unresponsive and you are unable to use normal Windows shutdown procedures, try the following emergency procedures in the sequence provided:

- Press **ctrl+alt+delete**. Then, select **Shut Down > Turn Off**.
- Press and hold the power button for at least 5 seconds.
- Disconnect the computer from external power and remove the battery pack.

Initiating or resuming from standby

Task	Procedure	Result
Initiate standby.	<ul style="list-style-type: none"> With the computer on, press the hotkey to initiate standby. Select Start > Turn Off Computer > Stand by. In Windows XP Professional, if Stand by is not displayed: <ol style="list-style-type: none"> Press the down arrow. Select Stand by from the list. Click OK. Close the computer. 	<ul style="list-style-type: none"> The power lights blink. The screen clears.
Allow the system to initiate standby.	<p>No action required.</p> <ul style="list-style-type: none"> If the computer is running on battery power, the system initiates standby after 10 minutes of computer inactivity. (Default setting) <p>Power settings and timeouts can be changed using Power Options in Windows Control Panel.</p>	<ul style="list-style-type: none"> The power lights blink. The screen clears.
Resume from user-initiated or system-initiated standby.	<ul style="list-style-type: none"> Press the power button. If the display was closed while the computer was in standby, open the display. 	<ul style="list-style-type: none"> The power lights are turned on. Your work returns to the screen.

Initiating or restoring from hibernation

Hibernation cannot be initiated unless it is enabled. Hibernation is enabled by default.

To verify that hibernation remains enabled, select **Start > Control Panel > Performance and Maintenance > Power Options > Hibernate** tab. If hibernation is enabled, the **Enable hibernation** check box is selected.

Task	Procedure	Result
Initiate hibernation.	<ul style="list-style-type: none">• Press the power button.– or –• Select Start > Turn Off Computer. Then, hold down the shift key as you select Hibernate. <p>In Windows XP Professional, if hibernate is not displayed:</p> <ol style="list-style-type: none">a. Press the up or down arrow.b. Select Hibernate from the list.c. Click OK.	<ul style="list-style-type: none">• The power lights are turned off.• The screen clears.
Allow the system to initiate hibernation (with hibernation enabled).	<p>No action required. If the computer is running on battery power, the system initiates hibernation</p> <ul style="list-style-type: none">• After 30 minutes of computer inactivity.• When the battery pack reaches a critical low-battery condition. <p>Power settings and timeouts can be changed using Power Options in Windows Control Panel.</p>	<ul style="list-style-type: none">• The power lights are turned off.• The screen clears.
Restore from user-initiated or system-initiated hibernation.	Press the power button.*	<ul style="list-style-type: none">• The power lights are turned on.• Your work returns to the screen.

*If the system initiated hibernation because of a critical low-battery condition, connect external power or insert a charged battery pack before you press the power button. (The system may not respond if the discharged battery pack is the only power source.)

Power options

You can change many default power settings in Windows Control Panel. For example, you can set an audio alert to warn you when the battery pack reaches a low-power condition, or you can change the default settings for the power button.

By default, when the computer is on:

- Pressing the **fn+f5** hotkey, called the "sleep button" by the operating system, initiates standby.
- By default, the display switch turns off the display and initiates standby. The display switch is activated by closing the display.

Accessing Power Options Properties

To access Power Options Properties:

- Right-click the **Power Meter** icon in the notification area, at the far right of the taskbar, and then click **Adjust Power Properties**.
– or –
- Select **Start > Control Panel > Performance and Maintenance > Power Options**.

Displaying the Power Meter icon

By default, the Power Meter icon appears in the notification area, at the far right of the taskbar. The icon changes shape to indicate whether the computer is running on battery or external power.

To show the Power Meter icon in the notification area:

1. Select **Start > Control Panel > Performance and Maintenance > Power Options**.
2. Click the **Advanced** tab.
3. Select the **Always show icon on the taskbar** check box.
4. Click **Apply** and then click **OK**.

To remove the Power Meter icon from the notification area:

1. Right-click the **Power Meter** icon in the notification area, and then click **Adjust Power Properties**.
2. Click the **Advanced** tab.
3. Clear the **Always show icon on the taskbar** check box.
4. Click **Apply** and then click **OK**.



NOTE If you cannot see an icon you have placed in the notification area, at the far right of the taskbar, click the arrow in the notification area to view hidden icons.

Setting or changing a power scheme

The **Power Schemes** tab in the **Power Options Properties** dialog box assigns power levels to system components. You can assign different schemes, depending on whether the computer is running on battery or external power.

You can also set a power scheme that initiates standby or turns off the display or hard drive after a time interval that you specify.

To set a power scheme:

1. Right-click the **Power Meter** icon in the notification area, and then click **Adjust Power Properties**.
2. Click the **Power Schemes** tab.
3. Select the power scheme you want to modify, and adjust options in the lists on the screen.
4. Click **Apply**.

Setting a security prompt

You can add a security feature that prompts you for a password when the computer is turned on, resumes from standby, or restores from hibernation.

To set a password prompt:

1. Right-click the **Power Meter** icon in the notification area, and then click **Adjust Power Properties**.
2. Click the **Advanced** tab.
3. Select the **Prompt for password when computer resumes from standby** check box.
4. Click **Apply**.

Processor performance controls



CAUTION To prevent overheating, do not obstruct vents. Use the computer only on a hard, flat surface. Do not allow another hard surface, such as a printer, or a soft surface, such as pillows, thick rugs, or clothing, to block the airflow. Overheating can damage the computer and reduce processor performance.



NOTE In some cases, a computer may operate at a higher speed on external power than on battery power. If the battery power is extremely low, the computer may attempt to conserve power by reducing processor speed and graphics performance.

Windows XP enables you to manage the processor performance controls by selecting a power scheme. The processing speed can be set for optimal performance or for optimal power conservation.

Processor performance controls are managed in the Power Options Properties dialog box. To access Windows XP processor performance controls, select **Start > Control Panel > Performance and Maintenance > Power Options > Power Schemes** tab.

The power scheme you select determines how the processor performs when the computer is plugged into external power or is running on battery power. Each power scheme for external power or battery power sets a specific processor state.

After a power scheme has been set, no other intervention is required to control the performance of the computer processor. The following table describes the processor performance on external and battery power for the available power schemes.

Power scheme	Processor performance while on external power	Processor performance while on battery power
Home/Office Desk	Always runs at the highest performance state.	Performance state is determined based on CPU demand.
Portable/Laptop (default) *	Performance state is determined based on CPU demand.	Performance state is determined based on CPU demand.
Presentation	Performance state is determined based on CPU demand.	CPU performance is lower on battery power, then steadily decreases as the battery discharges.
Always On	Always runs at the highest performance state.	Always runs at the highest performance state.
Minimal Power Management	Performance state is determined based on CPU demand.	Performance state is determined based on CPU demand.
Max Battery	Performance state is determined based on CPU demand.	CPU performance is lower on battery power, then steadily decreases as the battery discharges.

* It is recommended that you use the Portable/Laptop power scheme.

Battery packs

When a charged battery pack is in the computer and the computer is not plugged into external power, the computer runs on battery power. When the computer is plugged into external AC power, the computer runs on AC power.

If the computer contains a charged battery pack and is running on external AC power supplied through the AC adapter, the computer switches to battery power if the AC adapter is disconnected from the computer.

You can keep a battery pack in the computer or in storage, depending on how you work. Keeping the battery pack in the computer whenever the computer is plugged into external AC power enables the battery pack to charge and also protects your work in case of a power outage. However, a battery pack in the computer slowly discharges when the computer is turned off and not plugged into external power.

Inserting or removing a battery pack



CAUTION To prevent loss of information when removing a battery pack that is the sole power source, initiate hibernation or turn off the computer before removing the battery pack.

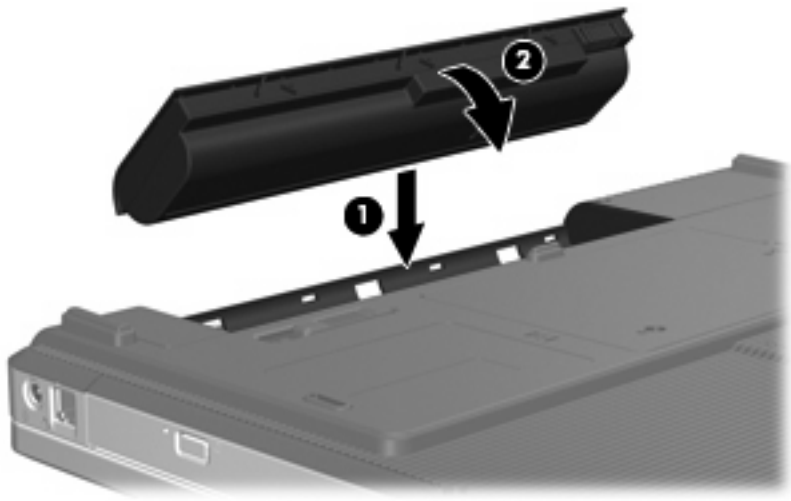
To insert a battery pack:



NOTE Battery packs may vary in appearance.

1. Turn the computer upside down on a flat surface with the battery bay to the left.
2. Insert the battery pack into the battery bay (1) and rotate it until it is seated (2).

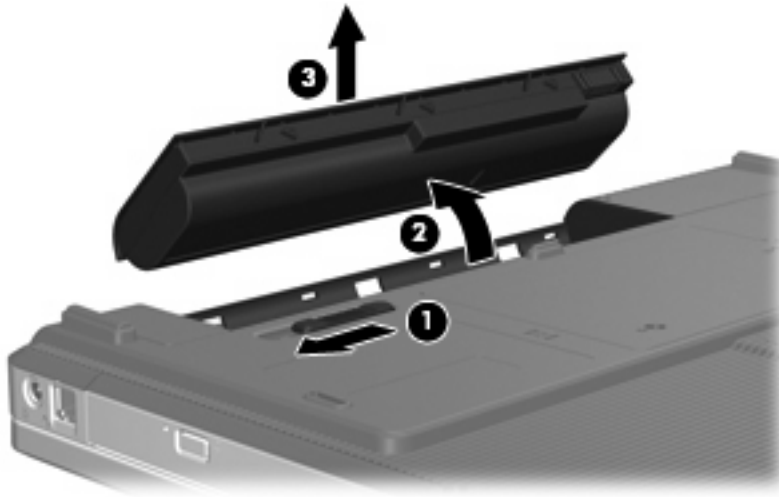
The battery pack release latch automatically locks the battery into place.



To remove a battery pack:

1. Turn the computer upside down with the battery bay to the left.
2. Slide the battery pack release latch (1) to release the battery pack.

3. Pivot the battery pack (2) away from the computer and remove it from the computer (3).



Charging a battery pack

To prolong battery life and optimize the accuracy of battery charge displays:



WARNING! Do not charge the computer battery pack on board aircraft.

- If you are charging a new battery pack:
 - Charge the battery pack while the computer is connected to external power through the AC adapter.
 - When you charge the battery pack, charge it fully before turning on the computer.
- If you are charging an in-use battery pack:
 - Allow the battery pack to discharge to about 10 percent of a full charge through normal use before charging it.
 - When you charge the battery pack, charge it fully before turning on the computer.

A battery pack inserted in the computer charges whenever the computer is connected to external power through an AC adapter or an optional power adapter.

A battery pack inserted in the computer charges whether the computer is off or in use, but the battery pack charges faster while the computer is off. Charging may be delayed if a battery pack is new, has been unused for 2 weeks or more, or is much warmer or cooler than room temperature.

The battery light displays charge status:

- On: the battery pack is charging.
- Blinking: the battery pack has reached a low-battery condition and is not charging.
- Blinking rapidly: The battery pack has reached a critical low-battery condition and is not charging.
- Off: the battery pack is fully charged or not installed.

For information about determining the amount of charge in a battery pack, refer to "Monitoring the charge of the battery pack."

Monitoring the charge of the battery pack

This section explains several ways to determine the amount of charge in a battery pack.

Obtaining accurate charge information

To increase the accuracy of all battery charge indicators:

- Allow a battery pack to discharge to about 10 percent of a full charge through normal use before charging it.
- When you charge a battery pack, charge it fully before turning on the computer.
- If a battery pack has been unused for one month or more, calibrate the battery pack instead of simply charging it. For calibration instructions, refer to "Calibrating a battery pack."

Displaying charge information on the screen

This section explains how to access and interpret battery charge indicators.

Viewing charge displays

To view information about the status of any battery pack in the computer:

- Double-click the **Power Meter** icon in the notification area, at the far right of the taskbar.
— or —
- Select **Start > Control Panel > Performance and Maintenance > Power Options > Power Meter**.

Interpreting charge indicators

Most charge indicators report battery status as both a percentage and as the number of minutes of charge remaining:

- The percentage indicates the approximate amount of charge remaining in the battery pack.
- The time indicates the approximate running time remaining on the battery pack *if the battery pack continues to provide power at the current level*. For example, the time remaining will decrease when you start playing a DVD and will increase when you stop playing a DVD.

When a battery pack is charging, a lightning bolt icon may be superimposed over the battery icon on the Power Meter screen.

Managing low-battery conditions

The information in this section describes the alerts and system responses set at the factory. Some low-battery condition alerts and system responses can be changed using Power Options in Windows Control Panel. Preferences set using Power Options do not affect lights.

Identifying low-battery conditions

This section explains how to identify low-battery and critical low-battery conditions.

Low-battery condition

When a battery pack that is the sole power source for the computer reaches a low-battery condition, the battery light blinks.

Critical low-battery condition

If a low-battery condition is not resolved, the computer enters a critical low-battery condition, and the battery light blinks rapidly.

In a critical low-battery condition:

- If hibernation is enabled and the computer is on or in standby, the computer initiates hibernation.
- If hibernation is disabled and the computer is on or in standby, the computer remains briefly in standby, and then shuts down and loses any unsaved information.

To verify that hibernation is enabled:

1. Select **Start > Control Panel > Performance and Maintenance > Power Options > Hibernate**.
2. Be sure that the **Enable hibernation support** check box is selected.

Resolving low-battery conditions



CAUTION To reduce the risk of losing information when the computer reaches a critical low-battery condition and has initiated hibernation, do not restore power until the power lights are turned off.

When external power is available

To resolve a low-battery condition when external power is available, connect one of the following adapters:

- AC adapter
- Optional power adapter

When a charged battery pack is available

To resolve a low-battery condition when a charged battery pack is available:

1. Turn off the computer or initiate hibernation.
2. Insert a charged battery pack.
3. Turn on the computer.

When no power source is available

To resolve a low-battery condition when no power source is available:

- Initiate hibernation.
– or –
- Save your work and shut down the computer.

When the computer cannot restore from hibernation

To resolve a low-battery condition when the computer lacks the power to restore from hibernation:

1. Insert a charged battery pack or plug the computer into external power.
2. Restore from hibernation by pressing the power button.

Calibrating a battery pack

When to calibrate

Even if a battery pack is heavily used, it should not be necessary to calibrate it more than once a month. It is not necessary to calibrate a new battery pack. Calibrate a battery pack under the following conditions:

- When battery charge displays seem inaccurate
- When you observe a significant change in battery run time
- When the battery pack has been unused for one month or more

How to calibrate

Three steps are involved in calibrating a battery pack: fully charging, fully discharging, and then fully recharging.

Step 1: Charging the battery pack

A battery pack can charge whether the computer is off or in use, but it will charge faster when the computer is off.



WARNING! Do not charge the computer battery pack on board aircraft.

To charge the battery pack:

1. Insert the battery pack into the computer.
2. Connect the computer to an AC adapter or optional power adapter, and then plug the adapter or device into external power.

The battery light on the computer is turned on.

3. Leave the computer plugged into external power until the battery pack is fully charged.

The battery light on the computer is turned off.

Step 2: Discharging the battery pack

Before you begin a full discharge, disable hibernation.

To disable hibernation:

1. Select **Start > Control Panel > Performance and Maintenance > Power Options > Hibernate**.
2. Clear the **Enable hibernation** check box.
3. Click **Apply**.

The computer must remain on while the battery pack is being discharged. The battery pack can discharge whether or not you are using the computer but will discharge faster while the computer is in use.

- If you plan to leave the computer unattended during the discharge, save your information before beginning the discharge procedure.
- If you use the computer occasionally during the discharge procedure and have set energy-saving timeouts, expect the following performance from the system during the discharge process:
 - The monitor will not turn off automatically.
 - Hard drive speed will not decrease automatically when the computer is idle.
 - System-initiated hibernation will not occur.

To fully discharge a battery pack:

1. Right-click the **Power Meter** icon in the notification area, at the far right of the taskbar, and then click **Adjust Power Properties**.

— or —

Access the Power Schemes tab by selecting **Start > Control Panel > Performance and Maintenance > Power Options > Power Schemes** tab.

2. Record the 4 settings listed in the **Running on batteries** and **Plugged In** columns so that you can reset them after the calibration.
3. Set the 4 options to **Never**.
4. Click **OK**.
5. Disconnect the computer from its external power source, but do *not* turn off the computer.
6. Run the computer on battery power until the battery pack is fully discharged. The battery light begins to blink when the battery pack has discharged to a low-battery condition. When the battery pack is fully discharged, the battery light is turned off and the computer shuts down.

Step 3: Recharging the battery pack

To recharge the battery pack:

1. Plug the computer into external power and maintain external power until the battery pack is fully recharged. When the battery pack is recharged, the battery light on the computer is turned off.

You can use the computer while the battery pack is recharging, but the battery pack will charge more quickly if the computer is off.
2. If the computer is off, turn it on when the battery pack is fully charged and the battery light is turned off.
3. Access the Power Schemes tab by selecting **Start > Control Panel > Performance and Maintenance > Power Options > Power Schemes** tab.
4. Reenter the settings that you recorded for the items in the **Plugged In** column and the **Running on Batteries** column.
5. Click **OK**.



CAUTION After calibrating the battery pack, reenabling hibernation. Failure to reenabling hibernation may result in a complete battery discharge and potential information loss.

To reenabling hibernation, select **Start > Control Panel > Performance and Maintenance > Power Options > Hibernate**. Select the **Enable hibernation** check box, and then click **Apply**.

Conserving battery power

Using the battery conservation procedures and settings described in this section extends the time that a battery pack can run the computer from a single charge.

Conserving power as you work

To conserve power as you use the computer:

- Turn off wireless and local area network (LAN) connections and exit modem applications when you are not using them.
- Disconnect external devices that you are not using that are not plugged into an external power source.
- Remove a CD or DVD that you are not using.
- Use the **fn+f7** and **fn+f8** hotkeys to adjust screen brightness as you need it.
- Use optional powered speakers instead of the internal speakers, or adjust system volume as you need it.
- Turn off a device connected to the S-Video-out jack.
- If you leave your work, initiate standby or hibernation, or shut down the computer.

Selecting power conservation settings

To set the computer to conserve power:

- Select a short wait for the screen saver and select a screen saver with minimal graphics and motion.

To access screen saver settings:

Select **Start > Control Panel > Appearance and Themes > Choose a screen saver**.

- Select a Power Scheme with low power-use settings. For more information, refer to "Setting or changing a power scheme."

Storing a battery pack



WARNING! To avoid potential safety issues, use only the battery pack provided with the computer, a replacement battery pack provided by HP, or a compatible battery pack purchased as an accessory from HP.



CAUTION To prevent damage to a battery pack, do not expose it to high temperatures for extended periods of time.

If a computer will be unused and disconnected from external power for more than 2 weeks, remove the battery pack and store it separately.

To prolong the charge of a stored battery pack, place it in a cool, dry place.

Calibrate a battery pack before using it if it has been stored for one month or more.

Disposing of a used battery pack



WARNING! To reduce the risk of fire or burns, do not disassemble, crush, or puncture a battery pack; short the external contacts on a battery pack; or dispose of a battery pack in fire or water. Do not expose a battery pack to temperatures above 60°C (140°F).

Refer to the *Regulatory, Safety, and Environmental Notices* for battery disposal information.

4 Drives

Drive care

Drives are fragile computer components that must be handled with care. The following cautions apply to all drives. Additional cautions are included with the procedures to which they apply.



CAUTION To reduce the risk of damage to the computer, damage to a drive, or loss information, observe these precautions:

Initiate standby before you move a computer or external hard drive from one location to another.

Before handling a drive, discharge static electricity by touching the unpainted metal surface of the drive.

Do not touch the connector pins on a removable drive or on the computer.

Handle a drive carefully; do not drop or compress the drive.

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

Do not use excessive force when inserting a drive into a drive bay.

Do not type on the keyboard or move the computer when the drive is writing to a medium. The write process is sensitive to vibration.

When the battery pack is the only source of power, ensure that the battery pack is sufficiently charged before writing to a medium.

Avoid exposing a drive to temperature or humidity extremes.

Avoid exposing a drive to liquids. Do not spray it with cleaning products.

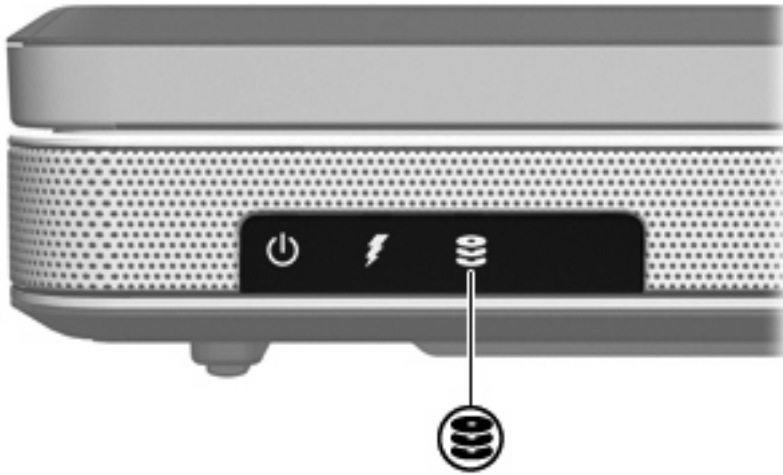
Remove the medium from a drive before removing the drive from the drive bay, or traveling with, shipping, or storing a drive.

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

Avoid exposing a drive to magnetic fields. Security devices with magnetic fields include airport walk-through devices and security wands. The airport security devices that check carry-on luggage, such as conveyor belts, use x-rays instead of magnetism and will not damage a drive.

IDE drive light

The IDE drive light blinks when either the primary hard drive or an optical drive is being accessed.



Hard drive



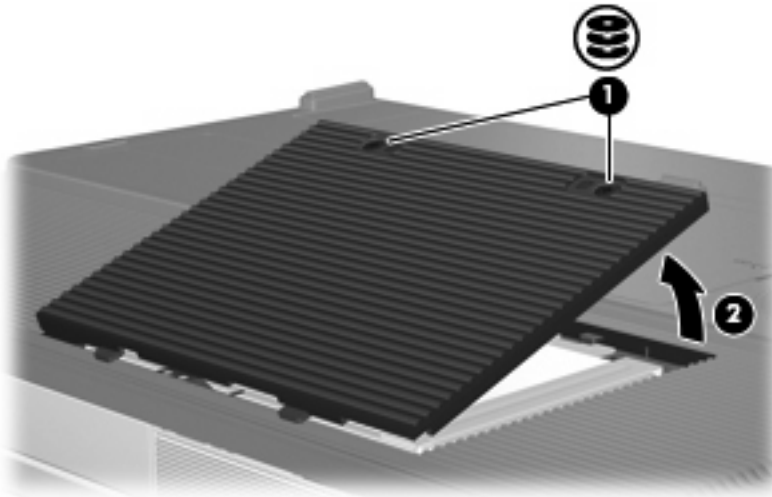
CAUTION To prevent system lockup and loss of information:

Shut down the computer before removing the hard drive from the hard drive bay. Do not remove the hard drive while the computer is on, in standby, or in hibernation.

If you are not sure whether the computer is off or in hibernation, turn the computer on by pressing the power button. Then shut down the computer through the operating system.

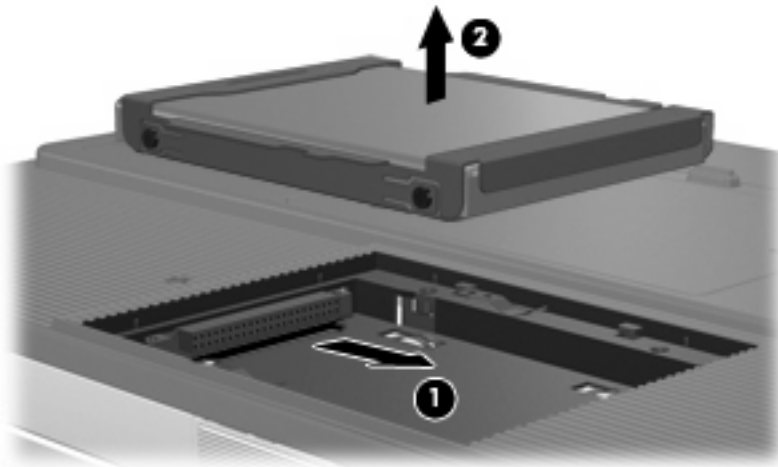
To remove the hard drive:

1. Save your work.
2. Shut down the computer and close the display.
3. Turn the computer upside down, with the hard drive bay toward you.
4. Loosen the 2 hard drive cover screws (1).
5. Lift the hard drive cover away from the computer (2).



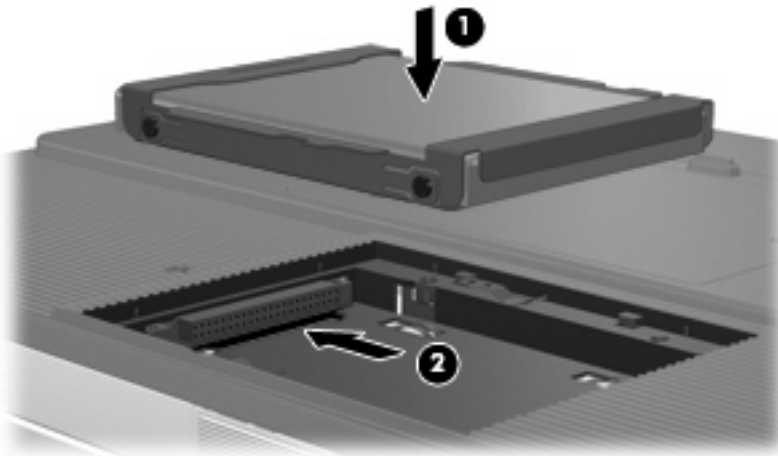
6. Disconnect the hard drive (1) by sliding it to the right.

7. Lift the hard drive away from the computer (2).



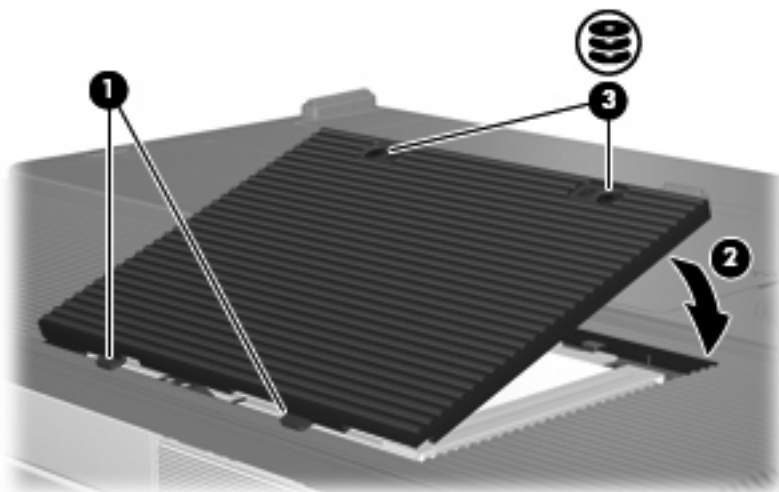
To install a hard drive:

1. Lower the hard drive into the hard drive bay (1).
2. Slide the hard drive toward the hard drive connector (2) until it is fully seated.



3. Align the tabs (1) on the hard drive cover with the notches on the computer.
4. Close the cover (2).

5. Tighten the hard drive cover screws (3).



Optical drives

An optical drive, such as a DVD-ROM drive, supports optical discs (CDs and DVDs). These discs are used to store or transport data and to play music and movies. DVDs have a higher capacity than CDs.

The computer can read or write to optical drives as described in the following table.

Type of Optical Drive	Read CD and DVD-ROM	Write to CD-RW	Write to DVD±RW/R	LightScribe
DVD/CD-RW Drive	Yes	Yes	No	No
DVD±RW Double Layer	Yes	Yes	Yes	No
LightScribe DVD±RW Double Layer	Yes	Yes	Yes	Yes

Some of the optical drives listed may not be supported by your computer. The listed drives are not necessarily all of the supported optical drives.

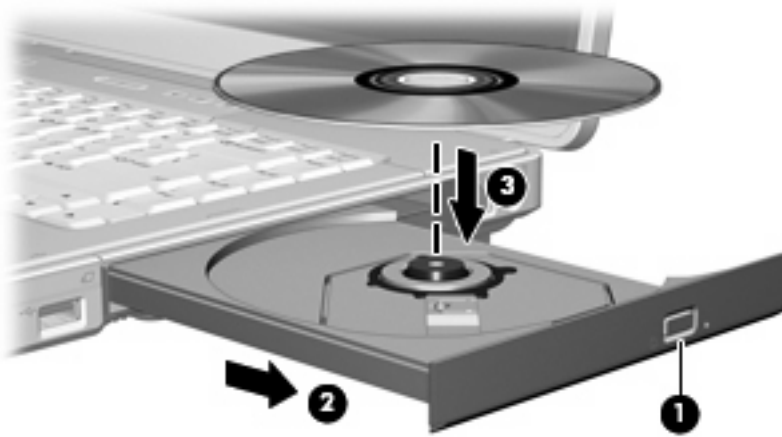
Inserting an optical disc

1. Turn on the computer.
2. Press the release button (1) on the drive bezel to release the media tray.
3. Pull out the tray (2).
4. Hold the CD or DVD by the edges to avoid touching the flat surfaces, and position the disc over the tray spindle, with the label-side up.



NOTE If the tray is not fully accessible, tilt the disc carefully to position it over the spindle.

5. Gently press the disc (3) down onto the tray spindle until the disc snaps into place.



6. Close the media tray.



NOTE After you insert a disc, a short pause is normal. If you have not selected a default media player, an AutoPlay dialog box opens. It prompts you to select how you want to use the media content.

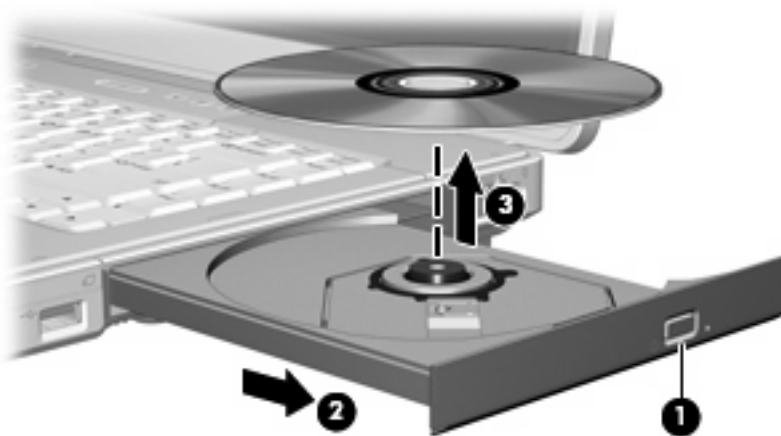
Removing an optical disc (with power)

If the computer is running on external or battery power:

1. Turn on the computer.
2. Press the release button **(1)** on the drive bezel to release the media tray, and then pull out the tray **(2)**.
3. Remove the disc **(3)** from the tray by gently pressing down on the spindle while lifting the outer edges of the disc. Hold the disk by the edges and avoid touching the flat surfaces.



NOTE If the tray is not fully accessible, tilt the disc carefully as you remove it.



4. Close the media tray and place the disc in a protective case.

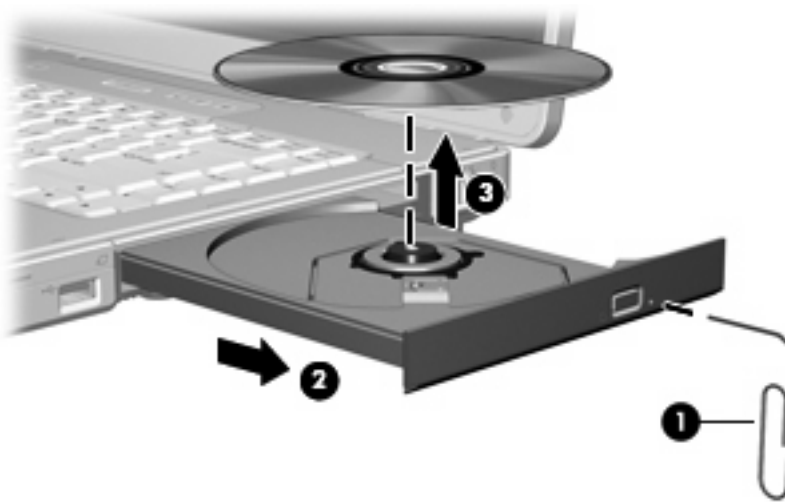
Removing an optical disc (without power)

If external or battery power is unavailable:

1. Insert the end of a paper clip (1) into the release access in the front bezel of the drive.
2. Press in gently until the tray is released, and then pull out the tray (2).
3. Remove the disc (3) from the tray by gently pressing down on the spindle while lifting the outer edges of the disc. Hold the disk by the edges and avoid touching the flat surfaces.



NOTE If the tray is not fully accessible, tilt the disc carefully as you remove it.



4. Close the media tray and place the disc in a protective case.

Avoiding standby or hibernation



CAUTION To prevent possible audio and video degradation, or loss of audio or video playback functionality, do not initiate standby or hibernation while reading or writing to a CD or DVD.

To prevent loss of data, do not initiate standby or hibernation when writing to a CD or DVD.

If standby or hibernation is accidentally initiated during playback of a drive medium (such as a CD or DVD):

- Your playback may be interrupted.
- You may see the following warning: "Putting the computer into hibernation or standby may stop the playback. Do you want to continue?" Click **No**.
- You may need to restart the CD or DVD to resume audio and video playback.

5 Multimedia

Multimedia hardware

Using the optical drive

The optical drive allows you to play, copy, and create CDs or DVDs, depending on the type of installed drive and installed software.

Identifying the installed optical drive

To view the type of optical drive installed in the computer:

- ▲ Select **Start > My Computer**.

The type of optical drive installed in the computer is displayed under Devices with Removable Storage.

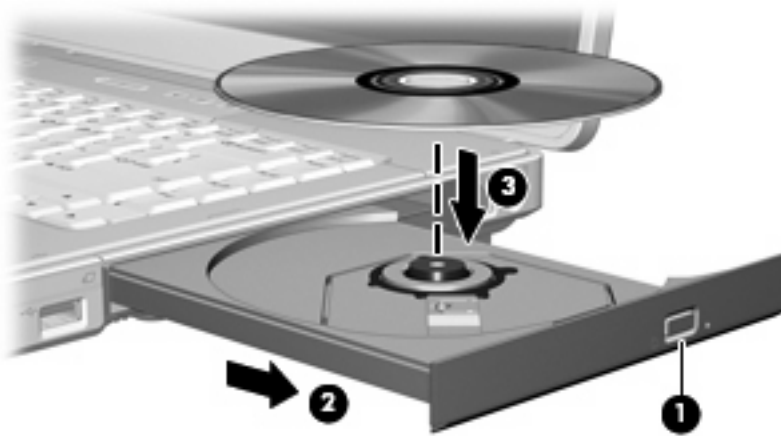
Inserting an optical disc

1. Turn on the computer.
2. Press the release button **(1)** on the drive bezel to release the media tray.
3. Pull out the tray **(2)**.
4. Hold the CD or DVD by the edges to avoid touching the flat surfaces, and position the disc over the tray spindle, with the label-side up.



NOTE If the tray is not fully accessible, tilt the disc carefully to position it over the spindle.

5. Gently press the disc **(3)** down onto the tray spindle until the disc snaps into place.



6. Close the media tray.

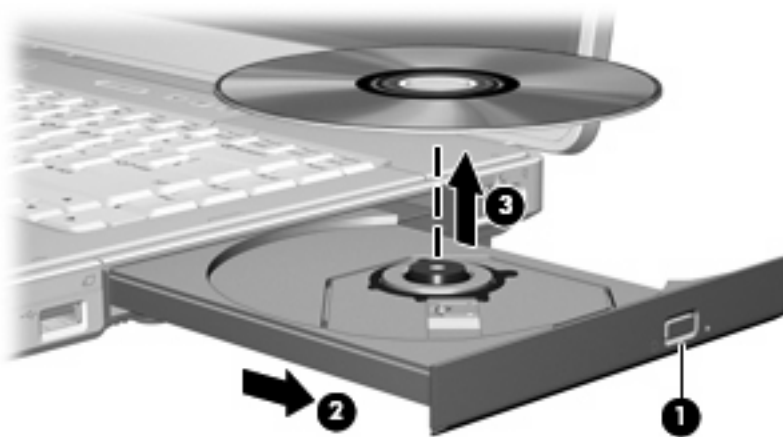


NOTE After you insert a disc, a short pause is normal. If you have not selected a default media player, an AutoPlay dialog box opens. It prompts you to select how you want to use the media content.

Removing an optical disc (with power)

If the computer is running on external or battery power:

1. Turn on the computer.
2. Press the release button (1) on the drive bezel to release the media tray, and then pull out the tray (2).
3. Remove the disc (3) from the tray by gently pressing down on the spindle while lifting the outer edges of the disc. Hold the disk by the edges and avoid touching the flat surfaces.



NOTE If the tray is not fully accessible, tilt the disc carefully as you remove it.

4. Close the media tray and place the disc in a protective case.

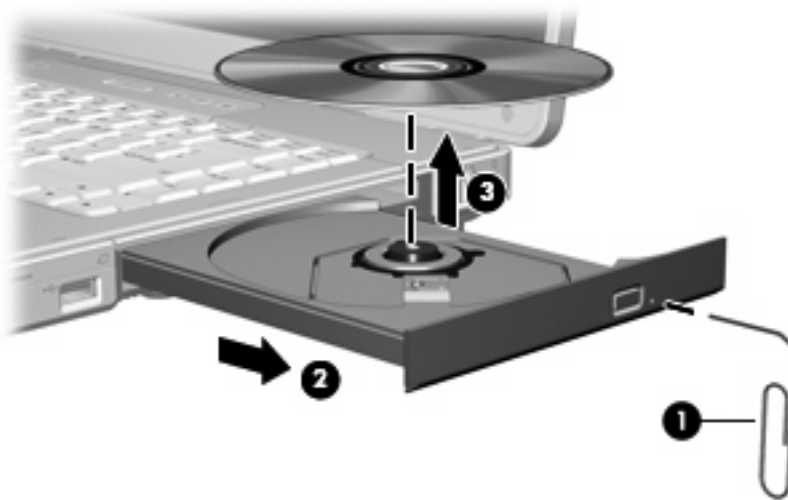
Removing an optical disc (without power)

If external or battery power is unavailable:

1. Insert the end of a paper clip (1) into the release access in the front bezel of the drive.
2. Press in gently until the tray is released, and then pull out the tray (2).
3. Remove the disc (3) from the tray by gently pressing down on the spindle while lifting the outer edges of the disc. Hold the disk by the edges and avoid touching the flat surfaces.



NOTE If the tray is not fully accessible, tilt the disc carefully as you remove it.



4. Close the media tray and place the disc in a protective case.

Using media activity hotkeys

Media activity hotkeys are combinations of the **fn** key (1) and 4 of the function keys. You can use these keys to control the play of an audio CD or a DVD that is inserted in the optical drive.



NOTE To control the play of an inserted video CD, use the media activity controls in your video CD player application.

- To play, pause, or resume an inserted audio CD or a DVD, press **fn+f9** (2).
- To stop an inserted audio CD or a DVD that is playing, press **fn+f10** (3).
- To play the previous track of an audio CD or the previous chapter of a DVD that is playing, press **fn+f11** (4).
- To play the next track of an audio CD or the next chapter of a DVD that is playing, press **fn+f12** (5).



Using the audio features

The following illustration and table describe the audio features of the computer.



Component		Description
(1)	Volume down button	Decreases computer sound.
(2)	Volume up button	Increases computer sound.
(3)	Volume mute button	Turns off computer sound.
(4)	Audio-in (microphone) jack	Connects an optional computer headset or microphone.
(5)	Audio-out (headphone) jack	Connects optional powered stereo speakers, headphones, ear buds, headset, or television audio.
(6)	Speakers (2)	Produce computer sound.

Using the audio-in (microphone) jack

The computer is equipped with a microphone jack that supports an optional monaural (single sound channel) microphone. Select models support a stereo (dual sound channel) microphone.



NOTE When connecting a microphone to the microphone jack, use a microphone with a 3.5-mm plug.

Using the audio-out (headphone) jack



WARNING! To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset.

In addition to connecting headphones, the headphone jack is used to connect the audio function of an audio/video device such as a television or VCR.

When connecting a device to the headphone jack use only a 3.5-mm stereo plug.



NOTE When a device is connected to the headphone jack, the internal speakers are disabled.

Adjusting the volume

You can adjust the volume using the following controls:

- Computer volume buttons:
 - To mute or restore volume, press the volume mute button.
 - To decrease the volume, press the volume down button.
 - To increase the volume, press the volume up button.
- Microsoft® Windows® volume control:
 - a. Click the **Volume** icon in the notification area, at the far right of the taskbar.
 - b. Increase or decrease the volume by moving the slider up or down. Select the **Mute** check box to mute the volume.

– or –

- a. Double-click the **Volume** icon in the notification area.
- b. In the **Volume Control** column, increase or decrease the volume by moving the **Volume** slider up or down. You can also adjust the balance or mute the volume.

If the **Volume** icon is not displayed in the notification area, follow the steps below to place it there:

- a. Select **Start > Control Panel > Sounds, Speech, and Audio Devices > Sounds and Audio Devices**.
- b. Click the **Volume** tab.
- c. Select the **Place volume icon in the taskbar** check box.
- d. Click **Apply**.

Volume can also be adjusted within some applications.

Using the video features

The computer includes the following video features:

- S-Video-out jack that connects a range of video components that allow you to maximize your multimedia features
- External monitor port that connects a television, monitor, or projector to the computer

Using the external monitor port

The external monitor port connects an external display device to the computer.

To connect a display device to the computer, connect the device cable to the external monitor port.



NOTE If a properly connected external display device does not display an image, press **fn+f4** to transfer the image to the device.

Using the S-Video-out jack

The 7-pin S-Video-out jack connects the computer to an optional S-Video device such as a television, VCR, camcorder, overhead projector, or video capture card.

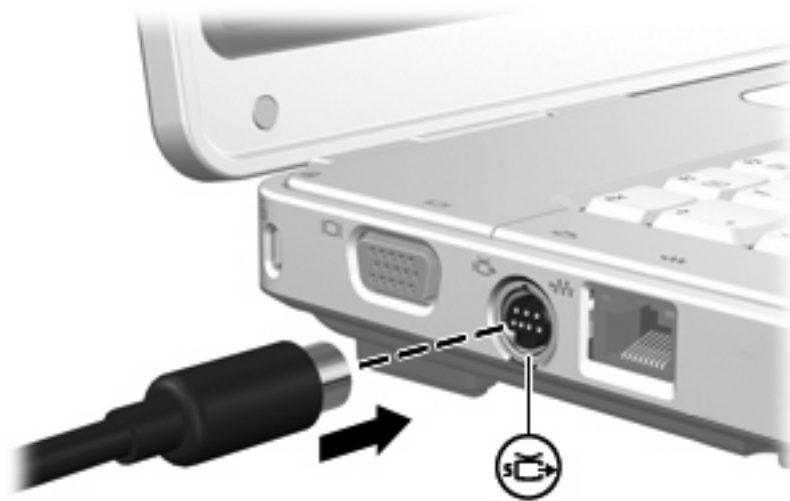
The computer can support one S-Video device connected to the S-Video-out jack, while simultaneously supporting an image on the computer display or on any other supported external display.



NOTE To transmit video signals through the S-Video-out jack, you need an S-Video cable, available from most electronics retailers. If you are combining audio and video functions, such as playing a DVD movie on your computer and displaying it on your television, you also need a standard audio cable connected to the headphone jack, available from most electronics retailers.

To connect a video device to the S-Video-out jack:

1. Plug one end of the S-Video cable into the S-Video-out jack on the computer.



2. Connect the other end of the cable to the video device, as instructed in the documentation included with the device.
3. Press the **fn+f4** keys to switch the image between display devices connected to the computer.

Multimedia software

The computer includes preinstalled multimedia software. Some models may be shipped with additional multimedia software on an optical disc.

Depending on the hardware and software included with the computer, the following multimedia tasks may be supported:

- Playing digital media, including audio and video CDs, audio and video DVDs, and Internet radio
- Creating or copying data CDs
- Creating, editing, and burning audio CDs
- Creating, editing, and burning a video or movie to a DVD or video CD



NOTE For details about using software included with the computer, refer to the software user guides. These guides may be provided on CD or as online help files within the specific application. User guides may also be found on the software manufacturer's Web site.

Identifying preinstalled multimedia software

To view and access the preinstalled multimedia software on the computer:

- ▲ Select **Start > All Programs**.

You can also reinstall multimedia software on the computer. Select **Start > All Programs > Software Setup**.

Installing multimedia software from a CD (select models only)

To install multimedia software from a CD included with the computer:

1. Insert the multimedia software CD into the optical drive.
2. When the installation wizard opens, follow the installation instructions on the screen.
3. Restart the computer if prompted.

Repeat the installation procedure for all multimedia software on CD that you want to install.

Using multimedia software

To use the multimedia software installed on the computer:

1. Select **Start > All Programs**, and then open the multimedia application you want to use. For example, if you want to use Windows Media Player to play an audio CD, select **Windows Media Player**.



NOTE Some applications may be located in subfolders.

2. Insert the media disc, such as an audio CD, into the optical drive.
3. Follow the instructions on the screen.

– or –

1. Insert the media disc, such as an audio CD, into the optical drive.
An AutoPlay dialog box opens.
2. Click the multimedia task you want to perform from the list of installed multimedia applications.
3. Click **OK**.



NOTE The AutoPlay dialog box allows you to select a default multimedia application for the media disc. After you select a multimedia application from the list, click the **Always do the selected action** box.

Protecting playback

To prevent the loss of playback or playback quality:

- Save your work and close all open applications before playing a CD or a DVD.
- Do not connect or disconnect hardware while playing a disc.

To prevent the loss of playback while the computer is in Windows, do not initiate standby or hibernation while playing a disc. If standby or hibernation is initiated while a disc is in use, you may see the warning message “Putting the computer into Hibernation or Standby might stop the playback. Do you want to continue?” If this message is displayed, select No. After you select No:

- Playback may resume.
– or –
- Playback may stop and the screen may clear. To return to playing the CD or DVD, press the power button and then restart the disc.

Protecting the CD or DVD write process



CAUTION To prevent loss of information and damage to a disc:

Before writing to a disc, connect the computer to a reliable external power source. Do not write to a disc while the computer is running on battery power.

Before writing to a disc, close all open applications except the disc software you are using.

Do not copy directly from a source disc to a destination disc or from a network drive to a destination disc. Instead, copy from a source disc or network drive to your hard drive, and then copy from your hard drive to the destination disc.

Do not use the computer keyboard or move the computer while the computer is writing to a disc. The write process is sensitive to vibration.

Changing DVD region settings

Most DVDs that contain copyrighted files also contain region codes. The region codes help protect copyrights internationally.

You can play a DVD containing a region code only if the region code on the DVD matches the region setting on your DVD drive.

If the region code on a DVD does not match the region setting on your drive, the following message is displayed when you insert the DVD: "Playback of content from this region is not permitted." To play the DVD, you must change the region setting on your DVD drive. DVD region settings can be changed through the operating system or through some DVD players.



CAUTION The region settings on your DVD drive can be changed only 5 times.

The region setting you select the fifth time becomes the permanent region setting on the DVD drive.

The number of allowable region changes remaining on the drive is displayed in the **Changes remaining** field on the **DVD Region** tab. The number in the field includes the fifth and permanent change.

To change settings through the operating system:

1. Select **Start > My Computer**.
2. Right-click in the window and select **Properties> Hardware** tab > **Device Manager**.
3. Click **DVD/CD-ROM drives**, right-click the DVD drive for which you want to change region settings, and then click **Properties**.
4. Make the desired changes on the **DVD Region** tab.
5. Click **OK**.

Observing the copyright warning

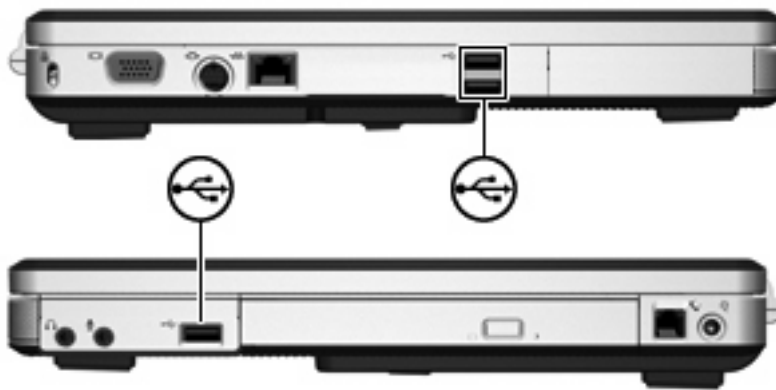
It is a criminal offense, under applicable copyright laws, to make unauthorized copies of copyright-protected material, including computer programs, films, broadcasts, and sound recordings. Do not use this computer for such purposes.

6 External Devices

Using a USB device

Universal Serial Bus (USB) is a hardware interface that can be used to connect an optional external device, such as a USB keyboard, mouse, drive, printer, scanner, or hub, to the computer. A hub provides additional USB ports for the system and can be connected to the computer or to another hub.

The computer has 2 standard USB ports on the left side of the computer. A third USB port on the right side of the computer is available on select models only. The USB ports on the computer support USB 2.0 and USB 1.1 devices.



Connecting a USB device



CAUTION To prevent damage to the USB connectors, use minimal force to connect a USB device.

To connect a USB device to the computer, connect the USB cable of the device to the USB port. The operating system will issue a sound to indicate that a device has been connected.



NOTE The first time you connect a USB device, the "Found New Hardware" message is displayed in the notification area, at the far right of the taskbar.

Stopping a USB device



CAUTION To prevent loss of information or an unresponsive system, stop the USB device before removing it.

To stop a USB device:

1. Double-click the **Safely Remove Hardware** icon in the notification area, at the far right of the taskbar.
2. Click the USB device listing.



NOTE To display the Safely Remove Hardware icon, click **Show Hidden Icons** in the notification area.

3. Click **Stop**.

Required USB software

Some USB devices may require additional support software, which is usually included with the device. For more information about device-specific software, refer to the user guide for the device.

7 Memory Modules

Adding or replacing memory modules

The computer has one memory module compartment, which is located on the bottom of the computer. The memory capacity of the computer can be upgraded by adding a memory module to the vacant expansion memory module slot or by upgrading the existing memory module in the primary memory module slot.



WARNING! To reduce the risk of electric shock and damage to the equipment, unplug the power cord and remove all battery packs before installing a memory module.

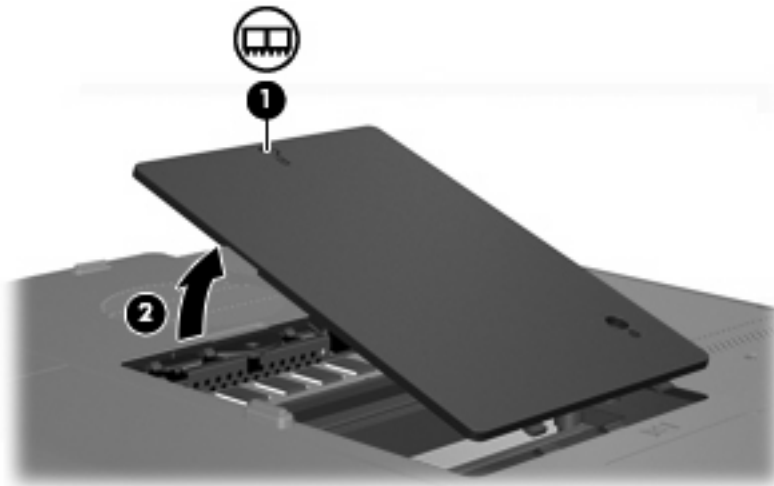


CAUTION Electrostatic discharge (ESD) can damage electronic components. Before beginning any procedure, ensure that you are discharged of static electricity by touching a grounded metal object.

To add or replace a memory module:

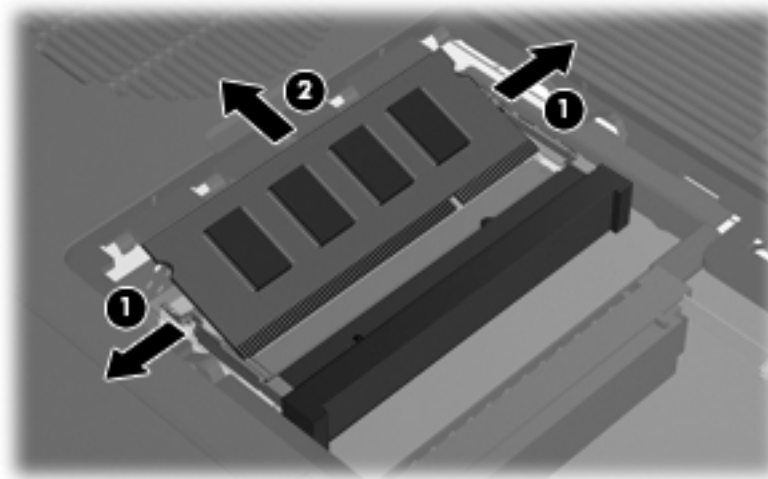
1. Shut down the computer. (If you are not sure whether the computer is off or in hibernation, turn the computer on by pressing the power button. Then shut down the computer through the operating system.)
2. Disconnect all external devices connected to the computer.
3. Disconnect the power cord.
4. Turn the computer upside down.
5. Remove the battery pack from the computer.
6. Loosen the memory module compartment cover screw **(1)**.

7. Lift the memory module compartment cover (2) away from the computer.



8. To remove a memory module:

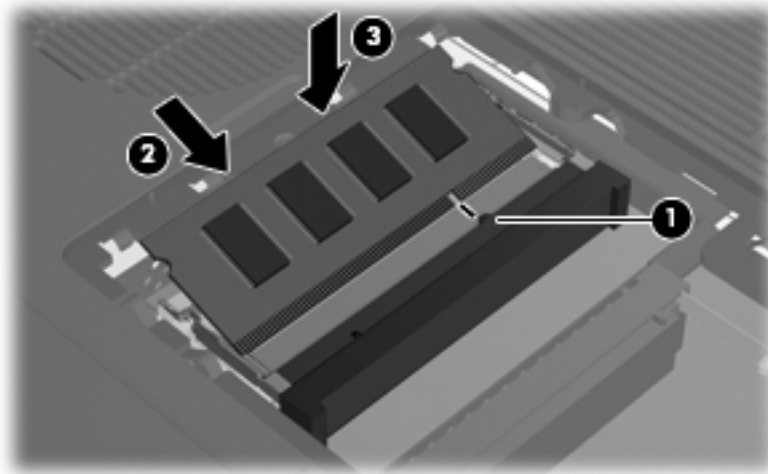
- a. Pull away the retention clips (1) on each side of the memory module . (The memory module tilts up.)
- b. Grasp the edge of the memory module (2) and gently pull the module out of the memory module slot. (To protect a memory module after removal, place it in an electrostatic-safe container.)



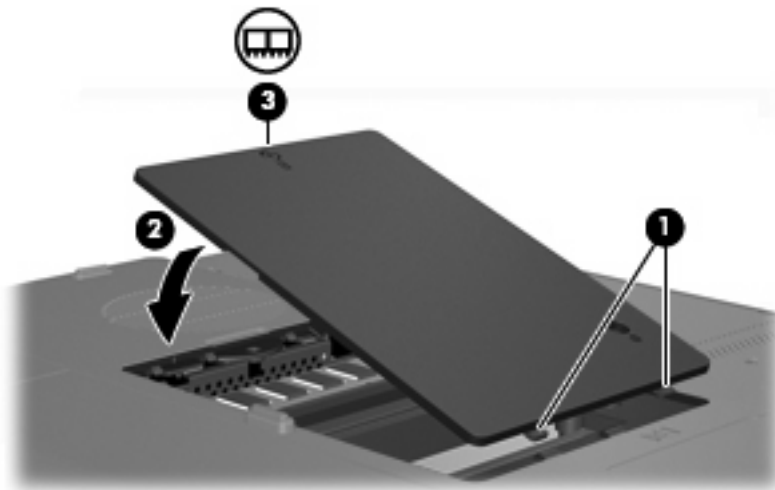
9. To insert a memory module:

- a. Align the notched edge (1) of the memory module with the tab in the memory module slot.
- b. With the memory module at a 45-degree angle from the surface of the memory module compartment, press the module (2) into the memory module slot until it is seated.

- c. Press the memory module (3) down until the retention clips snap into place.



- 10. Align the tabs (1) on the memory module compartment cover with the notches on the computer.
- 11. Close the cover (2).
- 12. Tighten the memory module compartment cover screw (3).



- 13. Replace the battery pack.
- 14. Reconnect external power and external devices.
- 15. Turn on the computer.

Effects of increasing memory

When random access memory (RAM) increases, the operating system increases the hard drive space reserved for the hibernation file.

If you experience problems with hibernation after increasing memory, verify that the hard drive has enough free space to accommodate a larger hibernation file.

To display the amount of space required by the hibernation file:

- ▲ Select **Start > Control Panel > Performance and Maintenance > Power Options > Hibernate** tab.

To display the amount of memory in the system:

- Select **Start > Control Panel > Performance and Maintenance > System > General** tab.
– or –
 - Press **fn+esc**.

To display the amount of free space on the hard drive:

1. Select **Start > My Computer**.
2. Right click the primary hard drive listing, and then click **Properties**.

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