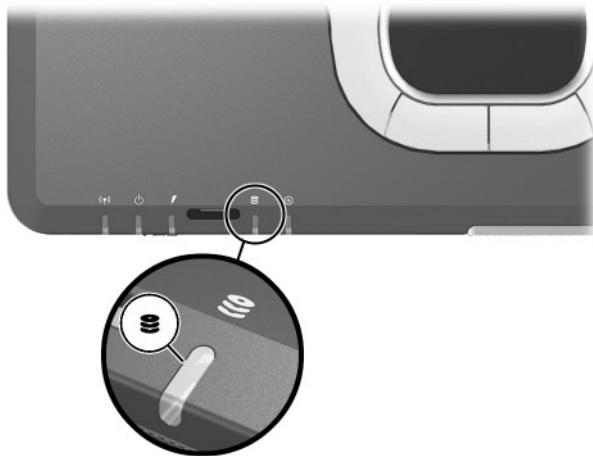


Hard Drive

This section discusses the primary hard drive of the notebook.

Identifying the Hard Drive Activity Light

The hard drive activity light turns on when the primary hard drive is being accessed.



Removing and Installing a Primary Hard Drive

The hard drive that is in the hard drive bay is the primary hard drive. The following sections describe how to remove and install the primary hard drive.

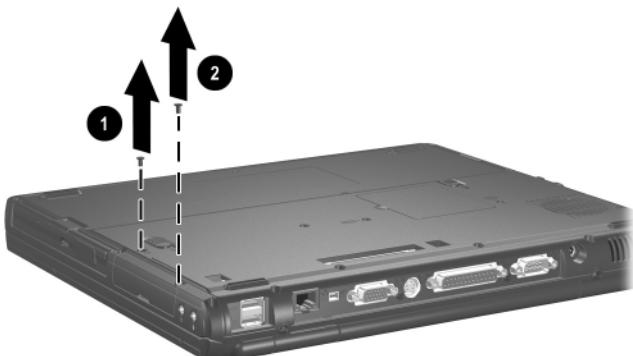
Before You Begin

1. Save your work, exit all applications, and shut down the notebook. If you are not sure whether the notebook is off or in Hibernation, briefly press the power button. If your work returns to the screen, save your work, exit all applications, and then shut down the notebook.
2. Disconnect all external devices connected to the notebook.
3. Disconnect the power cord.
4. Remove any battery packs.

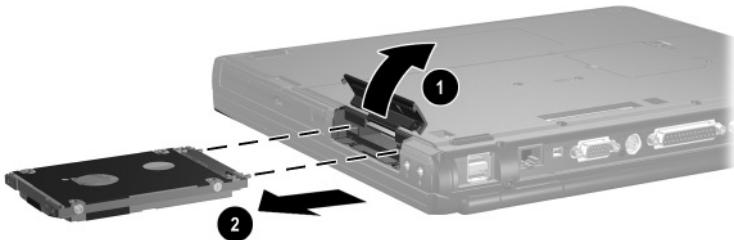
Removing the Primary Hard Drive

To remove the primary hard drive:

1. Follow the procedures in the “[Before You Begin](#)” section.
2. Turn the notebook upside down.
3. Remove the hard drive security screw ①.
4. Remove the hard drive door retaining screw ②.



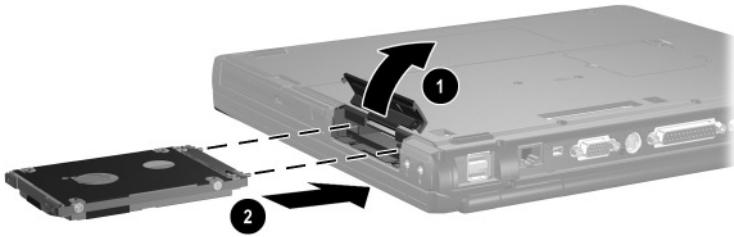
5. To remove the hard drive, lift the hard drive door **1**, and pull the hard drive **2** out of the bay.
6. If you are not installing a hard drive at this time, put the hard drive retaining screw and hard drive security screw in a safe place.



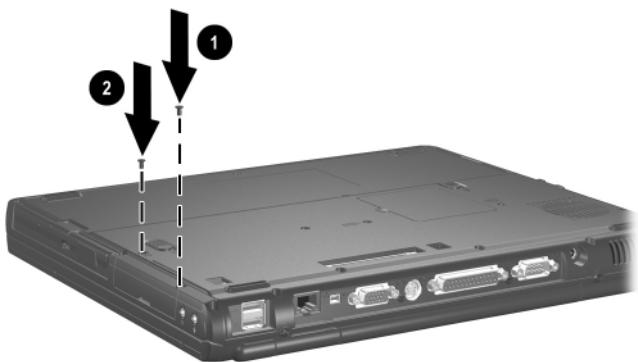
Installing the Primary Hard Drive

To install a hard drive:

1. Follow the procedure in the [“Before You Begin”](#) section.
2. Lift the hard drive door **1**.
3. Slide the hard drive **2** into the bay until the drive is seated.



4. Reinsert the hard drive security screw **1** and hard drive retaining screw **2**.



MultiBay Drive

This section explains how to use optional drives in the notebook MultiBay.

Identifying the MultiBay Activity Light

The MultiBay activity light turns on when any MultiBay device is active, with the exception of the MultiBay battery pack.



Inserting a Drive into the MultiBay



Before inserting a hard drive into the MultiBay, insert the drive into a MultiBay hard drive adapter (purchased separately).

1. Turn the notebook upside down.
2. With the connector on the drive or drive assembly facing the MultiBay, slide the drive or drive assembly into the MultiBay until it is seated.



Removing a Drive from the MultiBay



CAUTION: To prevent system lockup and loss of information, stop the drive before removing it. To stop the drive:

- **Windows XP**—Select the Safely Remove Hardware icon on the taskbar, then select the drive you want to remove. When it is safe to remove the drive, a message is displayed. (To display taskbar icons, select Show Hidden Icons in the system tray.)
- **Windows 2000**—Select the Unplug or Eject Hardware icon on the taskbar, then select the drive you want to remove. When it is safe to remove the drive, a message is displayed.



CAUTION: To protect the MultiBay when no device is inside, insert the weight saver in the bay. This device prevents damage to the MultiBay and does not increase notebook weight.

1. If the drive has a media tray, extend it, remove any media, then close the tray.
2. Stop the drive as instructed in the preceding caution.
3. Turn the notebook upside down.
4. Slide the MultiBay release latch ① toward the rear of the notebook.
5. Pull the drive or drive assembly ② out of the MultiBay.

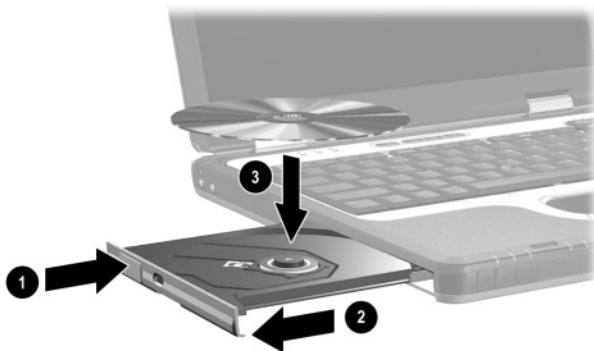


MultiBay Drive Media

This section provides information on using optional optical disc drives (such as CD-ROM and DVD drives) and optional diskette drives in the MultiBay.

Inserting an Optical Disc

1. Turn on the notebook.
2. Press the release button ① on the drive bezel to release the media tray.
3. Pull out the tray ② until it is fully extended. Position a CD or one-sided DVD over the tray with the label side up.
4. Gently press the disc ③ onto the tray spindle until the disc snaps into place. Handle the disc by the edges, not the flat surfaces. If the media tray is not fully extended, tilt the disc to position it over the tray spindle, then press it into position.
5. Close the media tray.

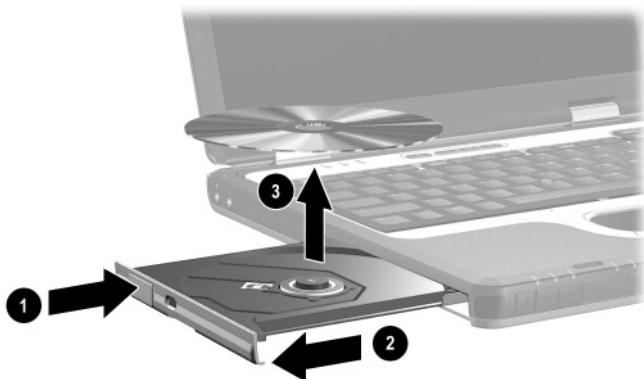


After you insert a DVD, a short pause is normal as Autorun opens the DVD and the WinDVD player if the WinDVD has been installed. To install WinDVD player, see the “Optical Drive Software” chapter in the *Software Guide* on the *Documentation CD*. If Autorun is not enabled, see “[Displaying Optical Disc Contents](#)” later in this chapter.

Removing an Optical Disc (With Power)

If power is available:

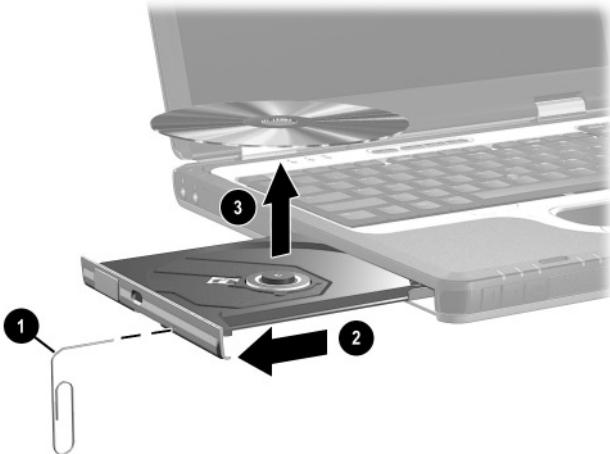
1. Turn on the notebook.
2. Press the release button **1** on the drive bezel to release the media tray, then pull the tray **2** out until it is fully extended.
3. Remove the disc **3** from the tray by gently pressing down on the spindle while lifting the outer edges of the disc. Handle the disc by the edges, not the flat surfaces. If the media tray is not fully extended, tilt the disc as you remove it.
4. Close the media tray and place the disc in a protective case.



Removing an Optical Disc (No Power)

If power is unavailable:

1. Insert the end of a paper clip ① into the manual eject recess in the front bezel of the drive.
2. Press in gently on the paper clip until the media tray is released, then pull out the tray ② until it is fully extended.
3. Remove the disc ③ from the tray by gently pressing down on the spindle while lifting the outer edges of the disc. Handle the disc by the edges, not the flat surfaces. If the media tray is not fully extended, tilt the disc as you remove it. To protect the disc, place it in a protective case.
4. Close the media tray.



Displaying Optical Disc Contents

AutoPlay is enabled by default on the notebook. When an optical disc is inserted into a drive and AutoPlay is enabled, the contents of the disc display on the screen automatically.

To display the contents of a disc when Autorun is not enabled:

1. Click Start > Run, then enter:

X:

where X = the designation of the drive containing the disc.

2. Press **enter**.

For information on disabling AutoPlay or enabling AutoPlay if the feature has been turned off, see your operating system documentation or visit the Microsoft Web site at <http://www.microsoft.com>.

Locating Optical Disc Software

Software that plays and records CDs and DVDs might be preloaded or preinstalled on the notebook or provided on an installation CD. For more information, refer to the “Optical Drive Software” chapter in the *Software Guide* on the *Documentation CD*.

Resuming From Standby or Hibernation



CAUTION: To prevent possible video degradation and loss of audio or video playback functionality, do not initiate Standby or Hibernation while playing any media.

If Standby or Hibernation is accidentally initiated while a drive medium (such as a diskette, CD, CD-RW, DVD, or DVD+RW) is in use, the following results can occur:

- Your playback might be interrupted.
- You might see a pop-up warning: “Putting the computer into Hibernation or Standby may stop the playback. Do you want to continue?” Select No.

Resume from Hibernation or Standby by pressing the power button. Audio or video might resume or you might need to restart the medium.

Inserting a Diskette

To insert a diskette into a diskette drive, gently push the diskette, label side up, into the drive until it clicks into place.

The media eject button pops out to show that the diskette has been inserted correctly.

Removing a Diskette

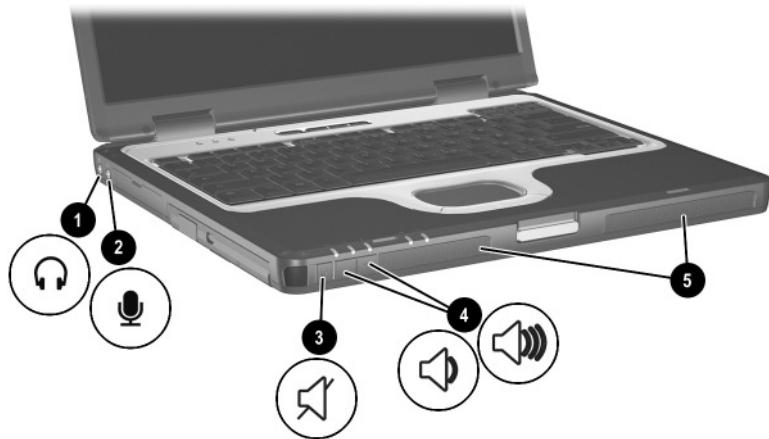
To remove a diskette from a diskette drive:

1. Press the eject button on the drive to eject the diskette.
2. Remove the diskette from the drive.

Audio and Video

Using Audio Features

The notebook includes the audio components described in the following table.



Component	Description
① Audio line-out jack	Connects optional powered stereo speakers, headphones, headset, or television audio.
② Microphone jack	Connects optional external monaural or stereo microphones.

(Continued)

Component	Description
③ Mute buttons	Mutes the system volume.
④ Volume buttons (2)	Adjust the system volume. Press the volume up button to increase sound. Press the volume down button to decrease sound.
⑤ Speakers (2)	Produce system sound.

Using the Audio Line-Out Jack



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



CAUTION: To prevent possible damage to an external device, do not plug a single-sound channel (monaural) connector into the audio line-out jack.

The audio line-out jack is also used to connect the audio function of an audio/video device such as a television or VCR.

When connecting a device to the audio line-out jack:

- Use only a 3.5-mm stereo plug.
- For best sound quality, use 24-ohm to 32-ohm headphones.



The internal speakers are disabled when a device is connected to the audio line-out jack.

Using the Microphone Jack

When connecting a microphone to the microphone jack, use a single-sound channel (monaural) or dual-sound channel (stereo) microphone with a 3.5-mm plug. Monaural or stereo electret condenser microphones are recommended.

- If you connect a monaural microphone, the recorded sound will be the same on both channels.
- If you connect stereo microphones and clear the Noise Reduction check box in the SoundMAX Control Panel, the recorded sound will be in stereo. To open the SoundMAX Control Panel:
 - **In Windows XP**, select Start > Control Panel > SoundMAX Control Panel.
 - **In Windows 2000**, select Start > Settings > Control Panel > SoundMAX Control Panel.
- If you connect a SoundMAX Superbeam stereo microphone array and software, improved speech recognition can be achieved.
- If you connect a dynamic microphone, the recommended sensitivity might not be achieved.

Adjusting the Volume

To adjust the volume, use any of the following controls:

■ Notebook volume buttons

- To mute or restore volume, press the mute button. You can also mute or restore volume by pressing the volume up and volume down buttons simultaneously.
- To decrease the volume, press the volume down button.
- To increase the volume, press the volume up button.

■ Windows Volume Control

In Windows XP:

- a. Select Start > Control Panel > Sounds, Speech and Audio Devices > Sounds and Audio Devices.
- b. Select the Volume tab.
- c. Select the check box for Place Volume Icon in the Taskbar.
- d. Select the OK button.

In Windows 2000: the Windows Volume Control icon is displayed on the taskbar.



Volume can also be adjusted within some applications.

Using Video Features

The notebook features an S-Video-out jack which connects the notebook to an optional S-Video device, such as a television or overhead projector.

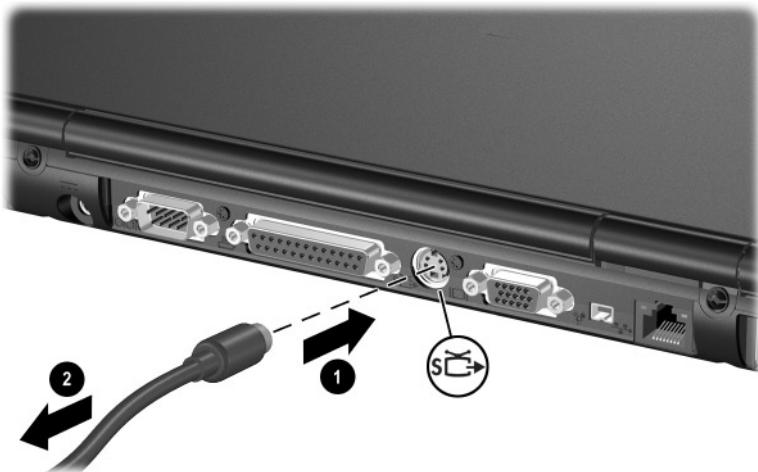
The notebook can support one S-video device connected to the S-video out jack while simultaneously supporting an image on the notebook display or external display attached to the external monitor connector. The S-video-out connection usually provides a higher quality image than a composite-video connection.

To transmit video signals through the S-Video-out jack, you need an S-Video cable, available from most electronic retailers. If you are combining audio and video functions, such as playing a movie from a DVD in an optional MultiBay drive to a television, you also need a standard audio cable, available from most electronics retailers. Connect the audio cable to the external device and to the audio line-out jack.

Using the S-Video-Out Jack

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

1. Plug either end of the S-Video cable ① into the S-Video-out jack on the notebook.
2. Connect the other end of the cable ② to the video device as instructed in the documentation included with the device.



If the S-Video-out jack on the notebook is not accessible because the notebook is docked into an Advanced Port Replicator, you can connect the device to the S-Video-out jack on the optional Advanced Port Replicator.

Communication Devices

Connecting a Modem Cable

A modem cable, which has a 6-pin RJ-11 connector at each end, must be connected to an analog telephone line with, in some countries, the use of a country-specific modem adapter. Modem cables are provided with most notebooks, but may be purchased separately from most electronic retailers. Some notebooks may have been purchased without an internal modem.



WARNING: Connecting the notebook to a digital line can permanently damage the modem. Immediately disconnect your modem cable if accidentally connected to a digital line.

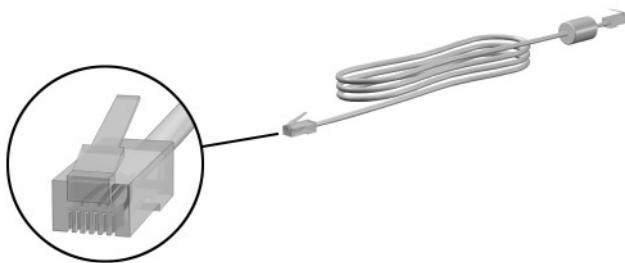


CAUTION: Jacks for digital PBX systems might resemble analog telephone jacks but are not compatible with the modem.



CAUTION: Built-in modems may not work with multiple phone lines or a private branch exchange (PBX), cannot be connected to a coin-operated telephone, and do not work with party lines. Some of these connections may result in excess electrical voltage and could cause a malfunction in the internal modem. Check your telephone line type prior to connecting your phone line.

If the modem cable contains noise suppression circuitry, which prevents interference from TV and radio reception, orient the circuitry end of the cable toward the notebook.



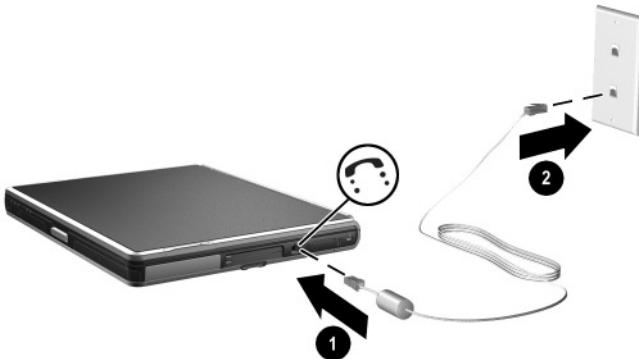
Connecting the RJ-11 Modem Cable

To connect an RJ-11 modem cable:

1. If your notebook is equipped with an internal modem, plug the modem cable ① into the RJ-11 telephone jack on the notebook.

 To reduce the risk of electrical shock, fire, or damage to the equipment, do not plug a modem cable into the RJ-45 network jack.

2. Plug the modem cable ② into the RJ-11 telephone jack.



For more information about using the modem or about using AT commands and dial modifiers, refer to the *Modem and Networking* guide or the *Modem Command Guidelines (Advanced Users Only)*, provided in English, on the *Documentation* CD.

Using a Country-Specific Adapter Cable

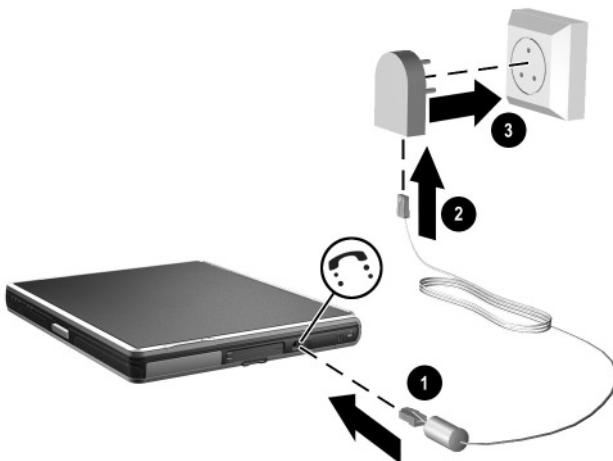
Telephone jacks vary by country. To use the modem and the RJ-11 telephone cable outside the country in which you purchased the notebook, you must obtain a country-specific modem adapter. Refer to the *Modem and Networking* guide on the *Documentation CD* for more details about using your notebook internationally.

To connect the modem to an analog telephone line that does not have an RJ-11 telephone jack:

1. If your notebook is equipped with an internal modem, plug the modem cable ① into the RJ-11 telephone jack on the notebook.

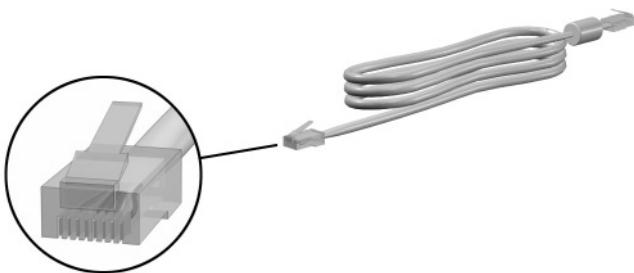
 To reduce the risk of electrical shock, fire, or damage to the equipment, do not plug a modem cable into the RJ-45 network jack.

2. Plug the modem cable ② into the country-specific modem adapter.
3. Plug the country-specific modem adapter ③ into the telephone jack.



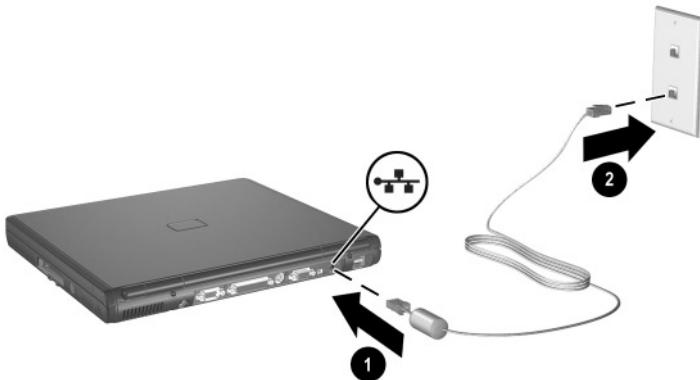
Connecting a Network Cable

A network cable has an 8-pin RJ-45 connector at each end. A network cable is provided with most notebooks, but may be purchased separately from most electronics retailers. If the network cable contains noise suppression circuitry, which prevents interference from TV and radio reception, orient the circuitry end of the cable toward the notebook.



To connect the network cable:

1. Check that the existing LAN supports Ethernet 10BASE-T/100BASE-TX connections.
2. Plug the network cable ① into the RJ-45 network jack on the notebook.
3. Plug the other end of the cable ② into a network jack.



4. Start or restart the notebook.



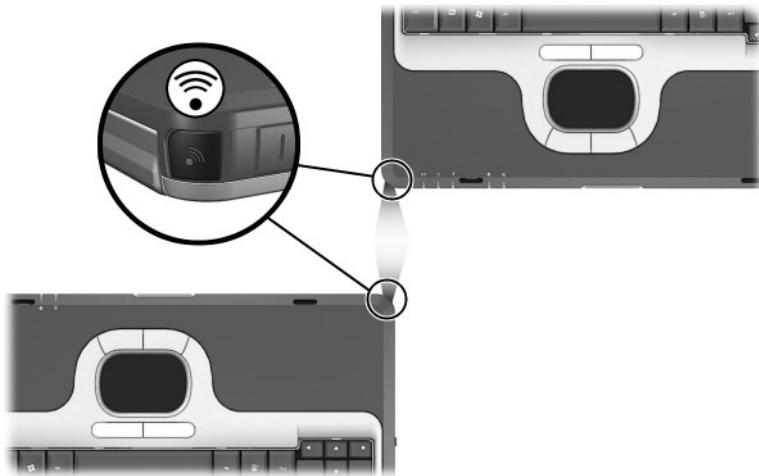
See Windows Help for information about setting up and using LAN connections. Select Start > Help and Support. Contact your network administrator for network information.

Linking to an Infrared Device

The notebook is IrDA-compliant—4-Mbps standard—and can communicate with another infrared-equipped device that is also IrDA compliant.

The infrared port supports both low-speed connections of up to 115 Kbps and high-speed connections of up to 4 Mbps. Infrared performance may vary depending on the performance of infrared peripherals, distance between infrared devices, and applications used.

Infrared signals are sent through an invisible beam of infrared light and require an unobstructed line-of-sight path.



Setting Up an Infrared Transmission

For information about using infrared software, refer to your operating system Help file.

To set up infrared devices for optimal transmission:

- Prepare the infrared ports on both devices for transmission.
- Position the devices so that their infrared ports face each other at a distance no greater than 1 meter (3.3 feet).
- Position the ports so that they face each other directly. Because the maximum capture angle is 30 degrees, the ports must be aligned no more than 15 degrees off-center.
- Shield the ports from direct sunlight, flashing incandescent light, and energy-saving fluorescent light.
- Be sure that no signals from remote control or other wireless devices, such as headphones or audio devices, aim at a port.
- During the transmission, do not move either device and do not allow objects or movement to disrupt the beam.

Using Standby with Infrared

Standby is not compatible with infrared transmission. If the notebook is in Standby, an infrared transmission cannot be initiated. If Standby is initiated during an infrared transmission, the transmission stops. To resume from Standby, press the power button. The transmission resumes when the notebook resumes from Standby. However, any program that was using the infrared transmission when Standby was initiated might not continue from the point at which it was stopped. For example, if a program was printing when Standby was initiated, the program resumes transmission after the notebook resumes, but the print job might not resume.

External Devices

The jacks and connectors described in this guide support standard external devices.

- For information about which jack or connector to use, refer to the documentation included with the device.
- For information about installing or loading any software required by the device, such as drivers, refer to the documentation included with the device.

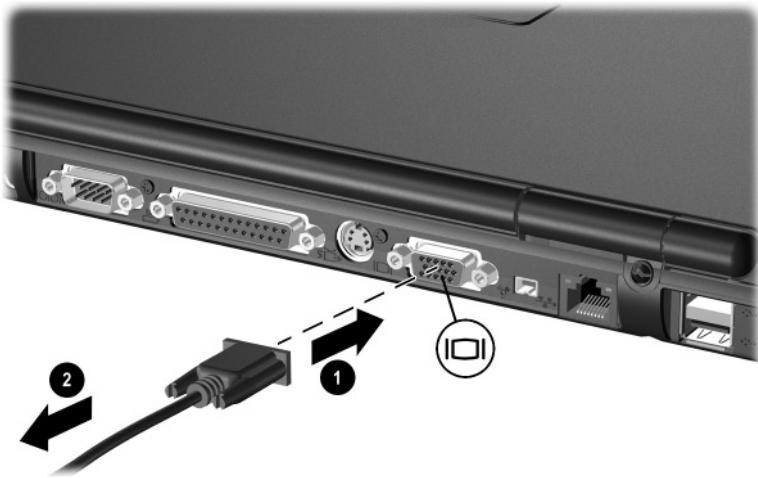
To connect a standard external device to the notebook:

1. Turn off the notebook.
2. If you are connecting a powered device, turn off the device.
3. Connect the device to a connector on the notebook.
4. If you are connecting a powered device, plug the device power cord into a grounded electrical outlet.
5. Turn on the device.
6. Turn on the notebook.

To disconnect a standard external device from the notebook, turn off the device, then disconnect it from the notebook.

Connecting a Monitor or Projector

To connect an external monitor or projector to the notebook, insert the monitor cable ① into the external monitor connector on the back of the notebook, and connect the other end of the cable ② to a monitor or projector.

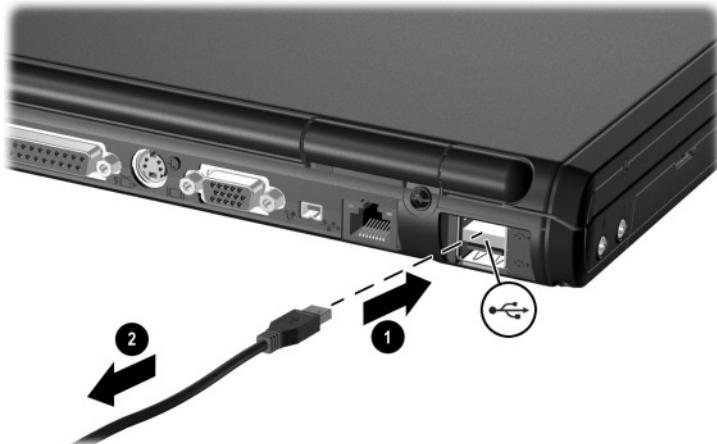


If a properly connected external monitor or projector does not display an image, press the **fn+f4** hotkey to switch the image to the monitor.

Using a USB Device

Two Universal Serial Bus (USB) connectors can be used to connect external USB 2.0 and USB 1.1 devices, such as a USB keyboard, mouse, drive, printer, scanner, hub, or external MultiBay to the notebook.

To connect a USB device to the notebook, insert the USB cable ① into the USB connector on the back of the notebook, and connect the other end of the cable ② to the external device.



USB hubs can be connected to a USB connector on the notebook or on an optional Port Replicator or to other USB devices. Hubs support varying numbers of USB devices and are used to increase the number of USB devices in the system. Powered hubs must be connected to external power. Unpowered hubs must be connected either to a USB connector on the notebook or to a port on a powered hub.

A USB device functions in the same way as a comparable non-USB device, with one exception. By default, USB devices do not function unless an operating system that supports USB is installed in the notebook.

Some USB devices might require additional support software, which is usually included with the device. For more information and software installation instructions, refer to the documentation included with the device.

Enabling USB Legacy Support

You must enable USB legacy support to:

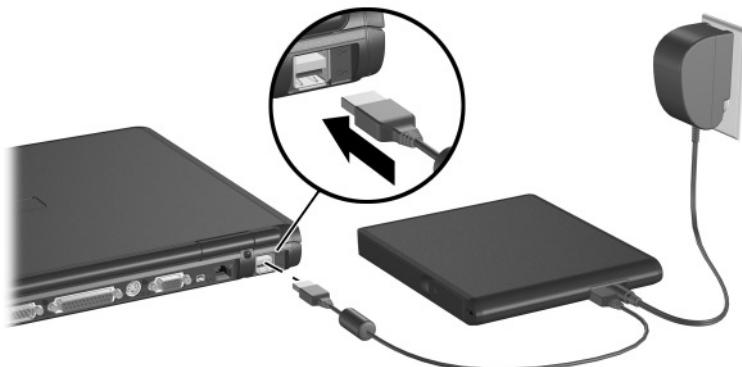
- Use a USB keyboard, mouse, or hub that is connected to a USB connector on the notebook during startup.
- Use a USB keyboard, mouse, or hub that is used in a non-Windows application or utility.
- Boot from an optional external MultiBay.

To enable USB legacy support:

1. Turn on or restart the notebook.
2. Press **f10** while the F10 = ROM Based Setup message is displayed in the lower left corner of the screen.
 - To change the language, press **f2**.
 - For navigation instructions, press **f1**.
3. Select Advanced menu > Device Options.
4. Select Enable USB legacy support.
5. To save your preference and exit Computer Setup, select File > Save Changes and Exit, then follow the instructions on the screen.

Connecting an Optional External MultiBay

An external MultiBay connects to the notebook by means of the USB connector and enables you to use MultiBay drives. For more information about external MultiBay drives, refer to the documentation that is included with such devices.



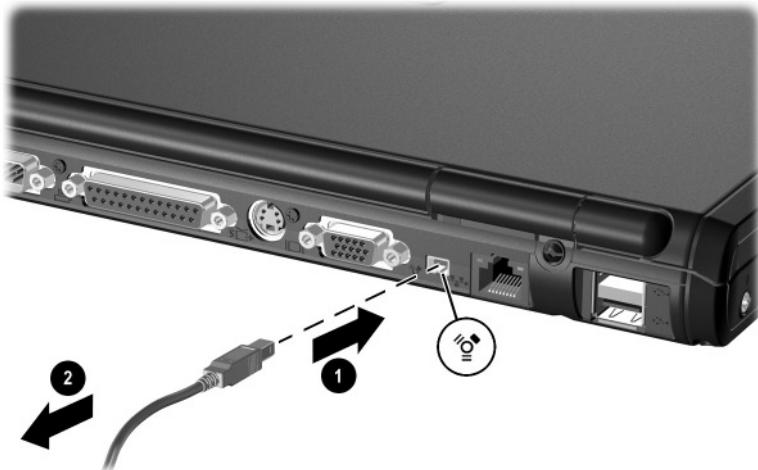
Connecting a 1394 Device

The IEEE 1394 connector can be used to connect an external device such as a digital camera, a digital camcorder, a high-speed storage device, or a scanner to the notebook.

Some 1394 devices might require additional support software, which is usually included with the device. For more information and software installation instructions, refer to the documentation included with the device.

To connect a 1394 device to the notebook, insert the 1394 cable **1** into the 1394 connector on the back of the notebook, and connect the other end of the cable **2** to the external device.

For more information about the 1394 device, refer to the documentation that is included with the device.



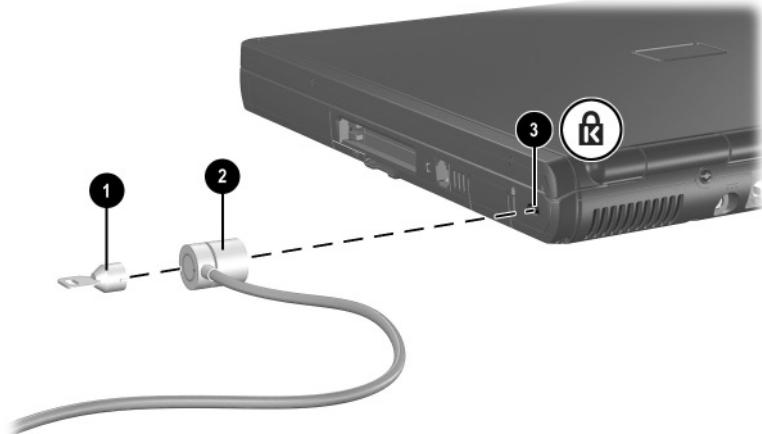
Connecting an Optional Cable Lock



The purpose of security solutions is to act as a deterrent. These solutions do not prevent the product from being mishandled or stolen.

To install a security cable:

1. Loop the security cable around a secured object.
2. Insert the cable lock key ① into the cable lock.
3. Insert the cable lock ② into the security cable slot ③.
4. Turn the key and remove it from the cable lock.



Hardware Upgrades

To order hardware or learn more about upgrades and accessories, visit the HP Web site at <http://www.hp.com> or refer to *Worldwide Telephone Numbers* booklet, included with the notebook, to contact an HP authorized dealer, reseller, or service provider.

For information about obtaining and installing software updates and upgrades, refer to the “Software Updates and Restorations” chapter in the *Software Guide* on the *Documentation CD*.

Using Optional PC Cards

An optional PC Card is a credit card-sized accessory designed to conform to the standard specifications of the Personal Computer Memory Card International Association (PCMCIA).

- The notebook supports 32-bit (CardBus) and 16-bit PC Cards.
- The notebook supports 2 Type I cards, 2 Type II cards, or 1 Type III card.
- Zoomed video PC Cards are not supported.



CAUTION: If you install software or enablers provided by a PC Card manufacturer, you might not be able to use other PC Cards. If you are instructed by the documentation included with your PC Card to install device drivers:

- Install only the device drivers for your operating system.
- Do not install other software, such as card services, socket services, or enablers, that might also be supplied by the PC Card manufacturer.

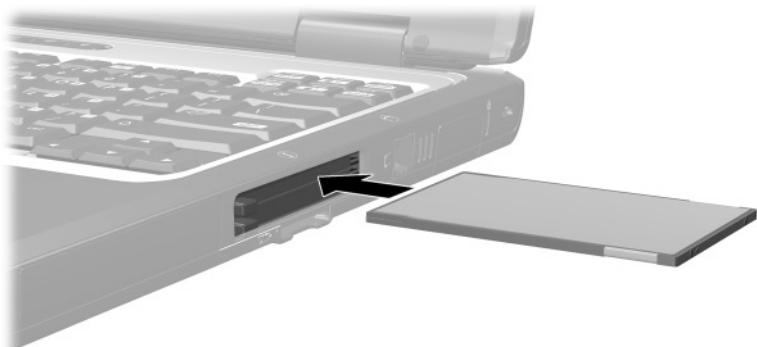
Inserting a PC Card



CAUTION: To prevent damage to the connectors:

- Use minimal pressure when inserting a PC Card into a PC Card slot.
- Do not move or transport the notebook while a PC Card is inserted.

1. Hold the PC Card label side up with the connector facing the notebook.
2. Gently push the PC card into the slot until the card is seated. The notebook will beep to indicate that a device has been detected.



Removing a PC Card



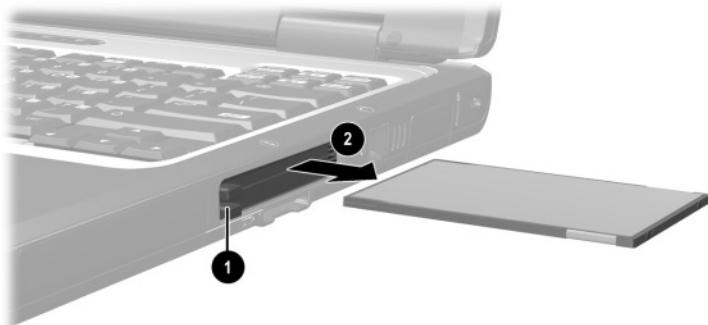
CAUTION: To prevent loss of work or an unresponsive system, stop the PC Card before removing it.

1. Stop the PC Card:

- ❑ **In Windows XP**—Select the Safely Remove Hardware icon on the taskbar, then select the PC Card. (To display the Safely Remove Hardware icon, right-click the taskbar and select Show Hidden Icons.)
- ❑ **In Windows 2000**—Select the Unplug or Eject icon on the taskbar, then select the PC Card you plan to remove. When the card can be safely removed, a message is displayed.

2. Press the PC Card eject button ① adjacent to the PC Card that is to be removed. This action extends the button into position for releasing the PC Card.
3. To release the PC Card, press the extended PC Card eject button.

4. Gently pull out the PC card ②.



An inserted PC Card uses power even when not in use. To conserve power, stop or remove a PC Card when you are not using it.

Using SD Cards

Secure Digital (SD) Cards are removable thumbnail-sized compact flash storage devices that provide a convenient method of storing data and sharing it with other devices such as PDAs, cameras, and other SD-equipped PCs.



Inserting an SD Card

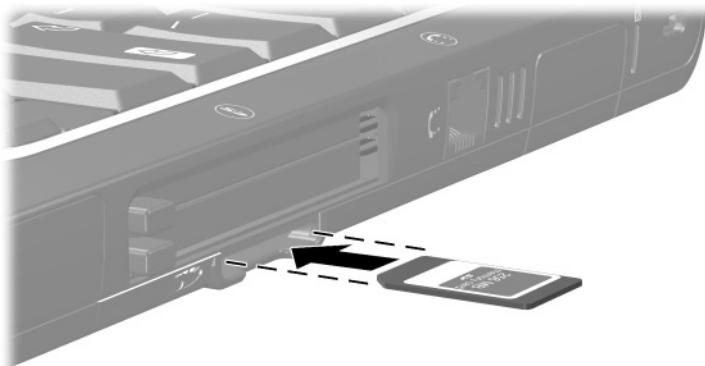


CAUTION: To prevent damage to the connectors:

- Use minimal pressure when inserting an SD Card into an SD Card slot.
- Do not move or transport the notebook while an SD Card is inserted.

To insert an SD Card:

1. Insert the SD Card into the SD Card slot.
2. Push the card firmly into the slot until the card clicks into place.



Removing an SD Card



CAUTION: To prevent loss of work or system lockup, stop the SD Card before removing it.

To remove an SD Card:

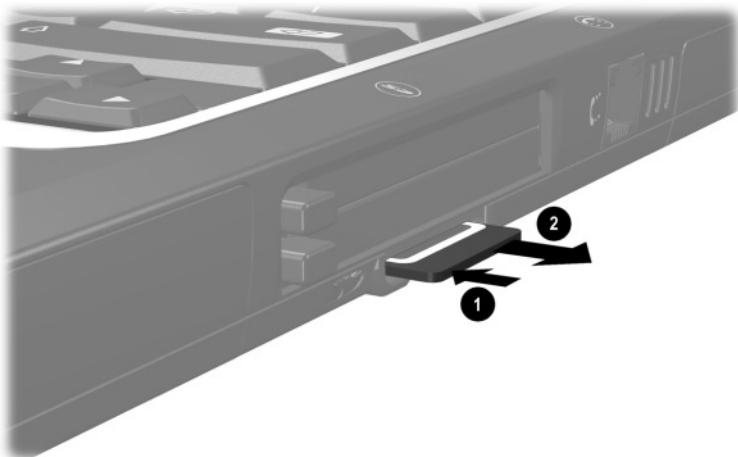
1. Close all files and applications that are using the SD Card.
2. Stop the SD Card:

- In Windows XP**, select the Safely Remove Hardware icon in the taskbar, then select the PC Card. (To display the Safely Remove Hardware icon, right-click the taskbar and select Show Hidden Icons.)
- In Windows 2000**, select the Unplug or Eject icon in the task bar, then select the PC Card you plan to remove. (When the card can be safely removed, a message is displayed.)



CAUTION: Attempting to remove the SD Card without pressing in to unseat it first might damage the connectors in the SD Card slot.

3. Gently press in on the SD Card **1** to unseat it.
4. Pull the SD Card **2** from the slot.



Adding and Upgrading Memory Modules



WARNING: The memory compartments are the only user-accessible internal compartments on the notebook. All other areas that require a tool to open should be opened only by an authorized service provider.

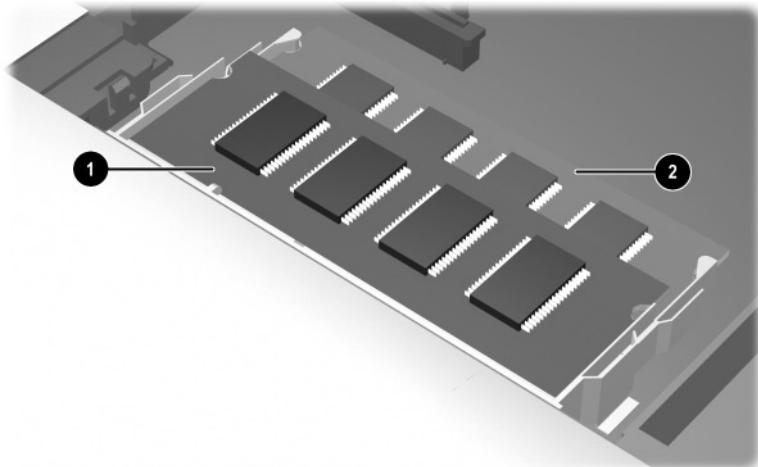


WARNING: Failure to unplug the power cord and remove all battery packs before installing a memory expansion module can damage the equipment and expose you to the risk of electrical shock.



CAUTION: Electrostatic discharge (ESD) can damage electronic components. Before beginning any procedure, touch a grounded metal object to ensure that you are discharged of static electricity. For more information, refer to the *Regulatory and Safety Notices* guide on the *Documentation CD*.

The notebook has 2 memory slots, one on top of the other, located under the keyboard. The memory expansion slot 1 is on top of the primary memory slot 2. One or both of these slots may be populated at the factory.



The memory capacity of the notebook can be upgraded by adding a memory module to the expansion slot or by upgrading the existing memory module in the primary memory slot.

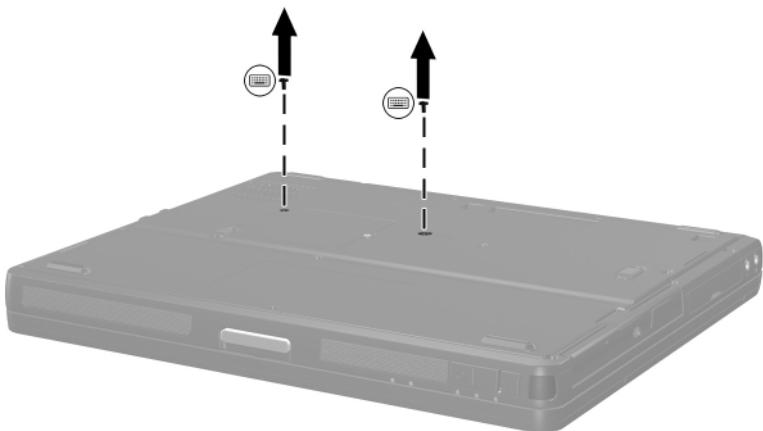
Before You Begin

1. Save your work, exit all applications, and shut down the notebook. If you are not sure whether the notebook is off or in Hibernation, briefly press the power button. If your work returns to the screen, save your work, exit all applications, and then shut down the notebook.
2. Disconnect all external devices connected to the notebook.
3. Disconnect the power cord.
4. Remove any battery packs from the notebook.

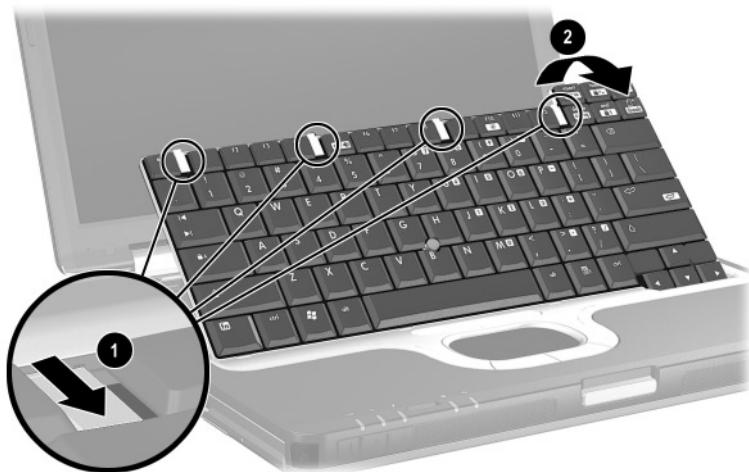
Removing the Memory Module

To remove a memory module:

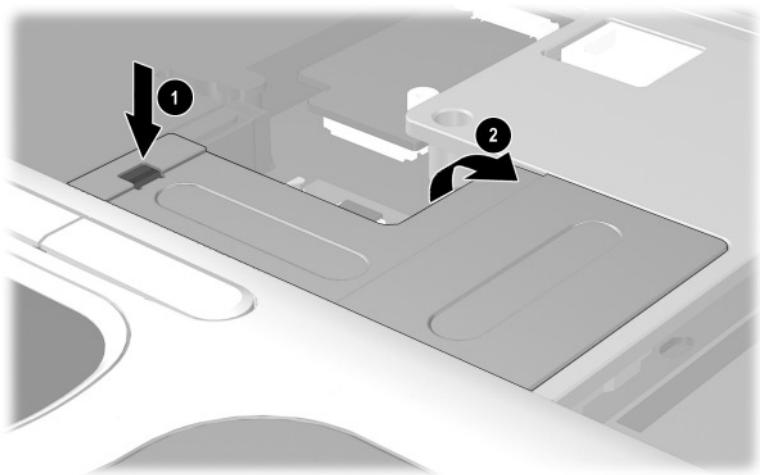
1. Follow the procedure in the “[Before You Begin](#)” section.
2. Remove the 2 keyboard access screws from the bottom of the notebook. (A keyboard icon is located next to both keyboard access screws.)



3. Open the notebook and slide the 4 keyboard latches down ① to release the keyboard, then tilt the keyboard up ② and remove it from the notebook.



4. Press in on the latch ① to release the memory slot cover ②, then tilt it up and remove it from the notebook.

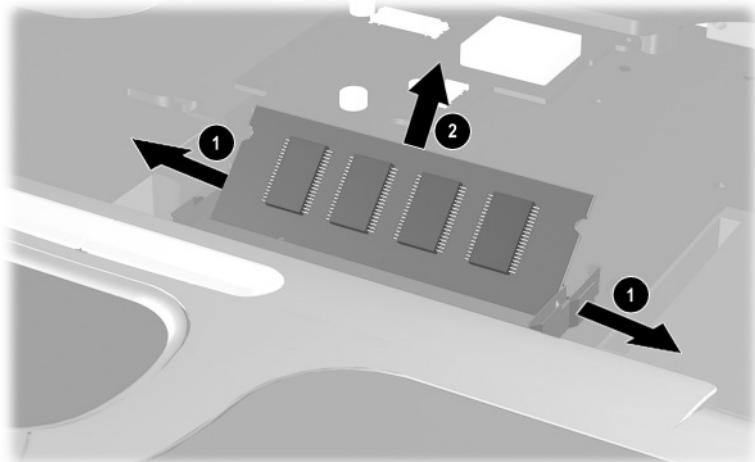


If you are replacing the existing memory in the primary memory slot, you must remove any memory in the memory expansion slot first. Proceed to step 5.

If you are adding memory to the memory expansion slot, see [“Adding a Memory Module”](#) later in this chapter.

5. To remove a memory module from the memory expansion slot:

- a. Pull the retention clips ① away from each side of the module. The module tilts upward when released.
- b. Lift the edge of the memory module ② and gently remove it from the slot.

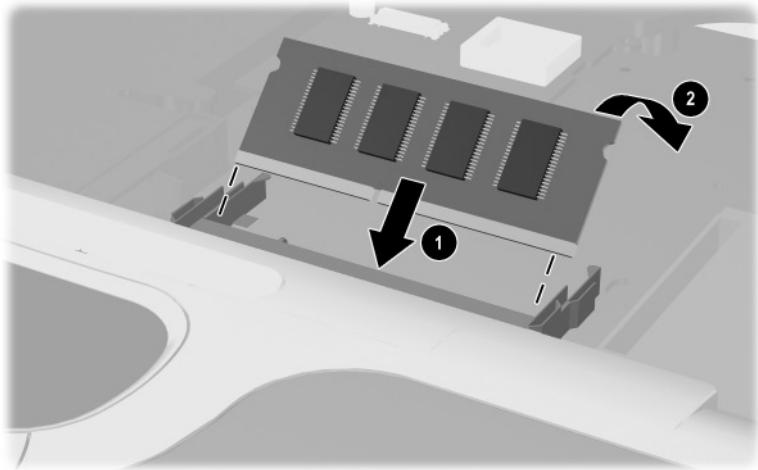


 To protect a memory module after it has been removed, place it in a static-safe container.

Repeat step 5 to remove the memory module from the primary memory slot, if necessary.

Adding a Memory Module

1. Follow the procedures in the “[Before You Begin](#)” section.
2. To insert the new memory module into either memory slot:
 - a. Align the keyed (notched) edge of the module **1** with the keyed area in the expansion slot.
 - b. Press the module into the slot from a 45-degree angle until it is seated, then press the module **2** downward until the retention clips snap into place.



3. Replace the memory slot cover.
4. Replace the keyboard and snap the 4 keyboard latches back into place.
5. Replace the keyboard access screws located on the bottom of the notebook.
6. Replace any battery packs that were removed at the beginning of this procedure.
7. Reconnect external power and external devices.
8. Turn on the notebook.

Effects of Increasing Memory

When memory increases, the operating system increases the hard drive space reserved for the Hibernation file.

If you experience problems with Hibernation after memory has been increased, verify that your hard drive has enough free space to accommodate a larger Hibernation file.

- To display the amount of memory (RAM) in the system:
 - Press **fn+esc**.
 - **In Windows XP**, select Start > Control Panel > Performance and Maintenance > System > General tab.
 - **In Windows 2000**, select Start > Settings > Control Panel > System > General tab.
- To display the amount of free space on your hard drive, double-click the My Computer icon on the desktop, then select your hard drive. Information about the space on the drive is displayed in a status bar at the bottom of the window.
- To display the amount of space required by the Hibernation file:
 - **In Windows XP**, select Start > Control Panel > Performance and Maintenance > Power Options icon > Hibernate tab.
 - **In Windows 2000**, select Start > Settings > Control Panel > Power Options > Hibernation tab.

The free space on your hard drive and the size of the Hibernation file should match or exceed the amount of memory in your system.

Specifications

The information in this chapter might be helpful if you plan to use or transport the notebook internationally or in extreme environments.



Use only compatible AC adapters and battery packs with the notebook. For additional information, visit the HP Web site at <http://www.hp.com> or use the *Worldwide Telephone Numbers* booklet, included with your notebook, to contact an HP authorized dealer.

Notebook Dimensions

Dimension	Metric	U.S.
Height	3.66 cm	1.44 in
Width	32.59 cm	12.83 in
Depth	27.51 cm	10.83 in

Operating Environment

Factor	Metric	U.S.
Temperature		
Operating	10°C to 35°C	50°F to 95°F
Nonoperating	–30°C to 60°C	–22°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	3,048 m	10,000 ft
Nonoperating	9,144 m	30,000 ft

Rated Input Power

Input power	Rating
Operating voltage	100 to 120/220 to 240 VAC RMS
Operating current	1.7/0.85 A RMS
Operating frequency range	47 to 63 Hz AC
When powered by a DC source	18.5 V MAX
 This product is designed for IT power systems in Norway with phase-to-phase voltage not exceeding 240 Vms.	

Modem Specifications

This notebook has been tested and found to comply with the limits for a Class B digital device. For additional governmental agency information, refer to the *Regulatory and Safety Notices* guide on the *Documentation CD*.

Factor	Specification	
Temperature		
Operating	32° to 167°F (0° to 75°C)	
Storage	-40° to 167°F (-40° to 75°C)	
Relative humidity (noncondensing)		
Operating	10 to 90% @ 102°F (10 to 90% @ 39°C)	
Storage	5 to 95% @ 102°F (5 to 95% @ 39°C)	
Interfaces		
	Communications connector	Standard RJ-11 connector
	Telephone, central office network	Internal DAA
Power requirements	+3.3 V ±5%, +5 V ±5%	

Index

1394 connector 1–12

A

AC adapter

connecting 3–12

disconnecting 3–1

AC power connector 1–11

adapter, modem 6–4

Advanced Port Replicator

using video devices with 2–5

Aircraft Power Adapter

connecting 3–12

tasks supported by 3–6

airport security devices 4–1

altitude specifications 9–2

analog vs. digital line 6–2

antennae, wireless 1–10

applications key 1–4

audio devices, connecting external

5–2

audio line-out jack 1–7, 5–1, 5–2

Automobile Power

Adapter/Charger

connecting 3–12

tasks supported by 3–6

Autorun, enabling 4–10

B

battery bay

device supported 3–2

inserting battery pack 3–3

location 1–8

release latch 1–14

removing battery pack 3–3

battery charge information

displays

hotkey 2–6

in Windows 3–9

increasing accuracy 3–8

interpreting 3–9

on MultiBay battery pack 3–10

battery light 1–6

battery packs

battery light 1–6

calibrating 3–13

charging 3–6

discharge sequence 3–7

disposal and recycling 3–20

disposing of 3–20

identifying 3–2

inserting 3–3

management, more information
3–20

monitoring charge 3–8

MultiBay 3–2, 3–4, 4–2
primary 3–2, 3–3
removing 3–3
storing 3–1, 3–19
See also battery power

battery power
conserving 3–17
low-battery conditions 3–11
running notebook on 3–1
See also battery packs

battery release latch 1–14

battery slot 1–8

battery, primary
bay 1–8
release latch 1–8

bay. *See* battery bay, external

diskette bay, hard drive,
MultiBay

Bluetooth compartment 1–8

brightness, screen 2–6

buttons
mute 5–2
PC Card 8–3
power 1–2
Presentation Mode 1–3
Quick Launch 1–3, 2–7
QuickLock 1–3
TouchPad 1–1
volume 5–2
Wireless On/Off 2–7

C

cables
modem 6–1, 6–2, 6–3, 6–4
network 6–5
security 7–7

calibration, battery 3–13

caps lock light 1–5

card and socket services, PC Card
8–1

CD
displaying contents 4–13
inserting into drive 4–10
removing from drive 4–11,
4–12

CD-ROM drive
inserting into MultiBay 4–8
locations supported 4–2
removing CD-ROM 4–11,
4–12
See also drives

CD-RW. *See* CD

charge sequence 3–6

compartments
Bluetooth 1–8
Mini PCI 1–14
primary memory 1–4

Computer Setup
navigating 2–10, 7–4
num lock mode at setup 2–10
USB legacy support 7–4

connecting external devices 7–1

connectors
1394 1–12
AC power 1–11
docking 1–14
drive 4–1
external monitor 1–12
external MultiBay 7–3
parallel 1–11
serial 1–11
USB 1–12

conserving power 3–17
country-specific modem cable
 adapter 6–4
critical low-battery condition
 identifying 3–11
 restoring from 3–12

D

device drivers
 external devices 7–1
 PC Card 8–1

digital vs. analog line 6–2

dimensions, notebook 9–2

discharge sequence, battery 3–7

diskette
 inserting into drive 4–13
 removing from drive 4–14

diskette drive
 inserting into MultiBay 4–8
 locations supported 4–2
 See also drives

display release latch 1–4, 1–9

display, switching image to or
 from 2–5, 7–2

docking connector 1–14

drive media affected by airport
 security 4–1

drives
 adding 4–2
 affected by airport security 4–1
 caring for 4–1
 connectors 4–1
 replacing with weight saver 4–9
 shipping 4–1

DVD
 displaying contents of 4–13
 inserting into drive 4–10
 removing from drive 4–11,
 4–12

DVD-ROM drive
 See also drives
 inserting into MultiBay 4–8
 locations supported 4–2

E

electrostatic discharge (ESD) 4–1

embedded numeric keypad 2–8

enablers, PC Card 8–1

enabling embedded numeric
 keypad 2–9

environmental specifications 9–2

esc key, displaying system
 information 2–6

ESD (electrostatic discharge) 4–1

exhaust vent 1–11

external devices 7–1

external diskette drive bay 4–2

external keypad 2–10

external monitor
 connecting 7–2
 switching display 2–5

external monitor connector 1–12

external mouse 2–2
 See also TouchPad

external MultiBay, connecting 7–3

F

floppy disk drive. *See* diskette
 drive

fn key

- changing screen brightness 2–6
- displaying system information 2–6
- initiating Standby 2–4
- location 1–3, 2–3
- switching displays 2–5
- viewing battery charge information 2–6

function keys

- battery charge information 2–6
- changing screen brightness 2–6
- initiating Standby 2–4
- location 1–3
- overview 2–3
- switching displays 2–5

H

hard drive

- inserting into hard drive bay 4–4
- inserting into MultiBay 4–8
- locations supported 4–2
- MulitBay vs. primary 4–2
- primary bay location 1–7
- See also* drives

hard drive door retaining screw 4–6

hard drive security screw 1–14

headphones 1–7, 5–1

Hibernation

- disabling 3–14
- enabling 3–11, 3–16
- exiting 1–2, 3–12

file space requirements for 8–13

initiating 2–4

initiating during critical low-battery condition 3–11

hotkeys

- battery charge information 2–6
- changing screen brightness 2–6
- defined 2–3
- initiating Standby 2–4
- quick reference 2–4
- switching display 2–5, 2–6
- with external keyboards 2–6
- See also* shortcut keys

hub, USB 7–3

humidity specifications 9–2

I

IDE (Integrated Drive Electronics) light 4–4

increasing memory 8–13

infrared 1–9, 6–7, 6–8

intake vent 1–13

J

jack(s)

- audio line-out (headphone) 1–7
- microphone 1–7, 5–1
- RJ-11 (modem) 1–8
- RJ-45 (network) 1–12
- S-Video out 1–12

K

keyboards

- external 2–6
- USB 7–3

keypads
enabling/disabling num lock 2–9, 2–10
external 2–10
internal 2–8

keys
applications 1–4
embedded keypad 2–8
fn 1–3, 2–3, 2–8
function 1–3, 2–3
hotkeys 2–3
Microsoft logo 1–3
num lk 2–8
shortcut keys 2–3

L

labels 1–15

latches
battery release 1–14
display release 1–4, 1–9
MultiBay release 1–14

lights
battery 1–6
caps lock 1–5
IDE drive 4–4
MultiBay 1–6
num lock 1–5
power/Standby 1–5
primary hard drive 1–6
scroll lock 1–5
Wireless On/Off 1–5

low-battery conditions
identifying 3–11
resolving 3–12

M

memory (RAM)
adding and upgrading 8–6
effects of increasing 8–13
primary slot 1–4

microphone jack 1–7, 5–1

Microsoft logo key 1–3

Mini PCI compartment 1–14

modem
country-specific adapter 6–4
specifications 9–3
Modem and Networking guide 6–3, 6–4
modem cable 6–1, 6–2, 6–3
Modem Command Guidelines (Advanced Users Only) 6–3
modem jack 1–8

monitor, external
connecting 7–2
switching display 2–5, 7–2

mouse, external 2–2
See also TouchPad

MultiBay
battery packs 3–4
external 7–5
inserting a drive 4–8
light 1–6, 4–7
release latch 1–14
removing a drive from 4–9
slot location 1–7
supported devices

MultiBay hard drive 4–2
See also drives; hard drive

mute button 5–2

N

- network cable 6–3, 6–5
- network jack 1–12
- noise suppression circuitry 6–2, 6–5
- num lk** key 2–8
- num lock light 1–5
- numeric keypad 2–8

O

- operating environment
 - specifications 9–2
- optical disc
 - inserting 4–10
 - removing 4–11, 4–12
- overhead projector
 - connecting 1–12, 7–2
 - switching image to or from 7–2
- overhead projector connector 1–12

P

- parallel connector 1–11
- PC Card
 - enablers and card and socket
 - services 8–1
 - inserting 8–2
 - removing 8–3
 - slots 1–8
 - stopping 8–3
 - supported types 8–1
 - zoomed video 8–1
- PC Card button 8–3
- peripherals, connecting and disconnecting 7–1
- playing a DVD 4–13
- pointing devices
- preferences 2–2
- TouchPad 2–1
- port, infrared 1–9, 6–7
- power
 - conserving 3–17
 - rated input 9–3
 - switching between AC and battery 3–1
- See also* battery power
- power button 1–2
- power connector 1–11
- Power Meter (Windows) 3–9
- power/Standby light 1–5
- powered USB hubs 7–3
- Presentation Mode buttons 1–3
- primary battery pack, defined
 - See also* battery packs; battery power
- primary hard drive
 - defined 4–2
 - location 1–7
- See also* drives; hard drive
- primary hard drive light 1–6
- primary memory compartment 1–4
- projector
 - connecting 7–2
- protecting the notebook from damage 4–1

Q

- Quick Launch buttons 1–3, 2–7
- QuickLock buttons 1–3

R

RAM (random access memory)

See memory

regulatory information 9–3

release latches

battery 1–14

display 1–9

MultiBay 1–14

RJ-11 modem jack 1–8

RJ-45 network jack 1–12

S

scroll lock light 1–5

SD (Secure Digital) Card

inserting 8–4

removing 8–5

SD (Secure Digital) Card slot 1–8, 8–4

security cable lock 7–7

security cable slot 1–8

security features 7–7

serial connector 1–11

shortcut keys

defined 2–3

quick reference table 2–4

system information 2–6

with external keyboards 2–6

See also hotkeys

Sleep 2–4

See also Standby

slots

memory 1–4, 8–7

PC Card 1–8

SD Card 1–8, 8–4

security cable 1–8

socket services, PC Card 8–1

software

infrared 6–8

modem 6–3

speakers, external

audio line-out jack 5–1

connecting 5–2

speakers, internal 1–10, 5–2

specifications, notebook 9–1

Standby

exiting 1–2

initiated during critical

low-battery condition 3–11

initiating with hotkey 2–4

using with infrared 6–8

Standby light 1–5

S-Video out jack 1–12

switching displays 7–2

system information 2–6

T

telephone (RJ-11) jack modem

cable 6–4

telephone (RJ-11) modem jack,

location 1–8

television

connecting audio 5–2

connecting video 5–6

S-Video out jack 1–12

switching image to or from 5–5

temperature

operating 9–2

storage for battery packs 3–19

TouchPad

location 1–1

using 2–2

TouchPad buttons 1–1

traveling with the notebook
Aircraft Power Adapter 3–12
Automobile Power
 Adapter/Charger 3–12
battery pack temperature
 considerations 3–19
environmental operating
 considerations 9–2
preventing damage to
 connectors 8–2, 8–4
protecting drives 4–1

U

USB
 hubs 7–3
 legacy support 7–4
USB connector 1–12

V

VCR
 connecting audio 5–2
 connecting video 5–6
 switching image to or from 5–5
vents
 exhaust 1–11
 intake 1–13
video devices
 S-Video jack 1–12, 5–6
 switching displays 7–2
volume control buttons 5–2

W

weight saver 4–9
Windows applications key 1–4
wireless antennae 1–10
Wireless On/Off button 2–7
Wireless On/Off light 1–5