# 4

# Drives

## Caring for Drives

Drives are fragile notebook 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 prevent loss or damage to the notebook or a drive:

- Handle a drive carefully. Do not drop it.
- Excessive force can damage drive connectors. When you insert a drive, use only enough force to seat the drive.
- Do not spray a drive with cleaning fluid or other liquid or expose it to temperature extremes.
- Do not remove the primary hard drive (the hard drive in the hard drive bay) except for repair or replacement.
- Electrostatic discharge can damage electronic components. To prevent electrostatic damage to the notebook or a drive:
  - ❏ Discharge yourself from static electricity before handling a drive by touching a grounded metal object; and
  - ❏ Avoid touching the connectors on a drive.
  - ❏ For more information about preventing electrostatic damage, refer to the *Regulatory and Safety Notices* guide on the *Documentation Library* CD.
- Avoid exposing a drive or a diskette to devices with magnetic fields. Security devices with magnetic fields include airport walk-through devices and security wands. The airport security devices that check carry-on luggage, usually while it is placed on a conveyor belt, use x-rays instead of magnetism and will not damage a drive or a diskette.
- If you mail a drive, ship it in packaging that protects it from shock, vibration, temperature, and high humidity. Label the package "FRAGILE."

Airport security devices that check carry-on luggage placed on a conveyor belt use x-rays instead of magnetism and will not damage a hard drive.

# Adding a Drive to the System

Removable drives enable you to store and access data.

- A standard drive can be added to the system by inserting the drive into the notebook MultiBay or optional Advanced Port Replicator.
- A diskette drive can also be added.
- A USB drive can be added by connecting the drive to a USB connector on the notebook or optional Port Replicator.

  For information about connecting a USB drive, refer to the "External Devices" chapter in this book.

The notebook has 2 drive bays:

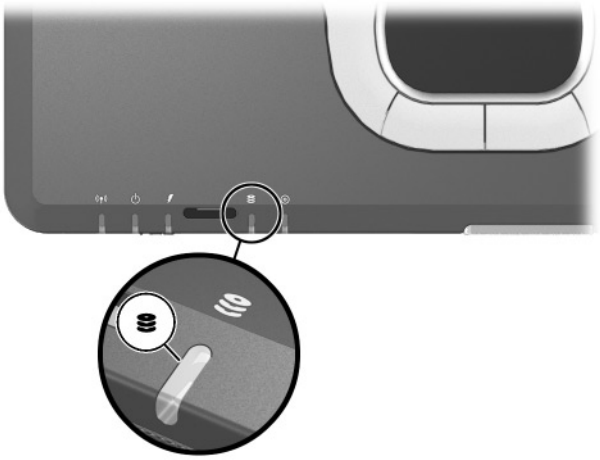
- The hard drive bay supports only a hard drive. The hard drive in the hard drive bay is the *primary* hard drive.
- The MultiBay supports any MultiBay device, including the following:
  - ❏ Hard drive (inserted into a MultiBay hard drive adapter)
  - ❏ CD or CD-RW drive
  - ❏ DVD or DVD/CD-RW or DVD+RW
  - ❏ Diskette drive
  - ❏ MultiBay battery

# 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.



# Replacing the Primary Hard Drive

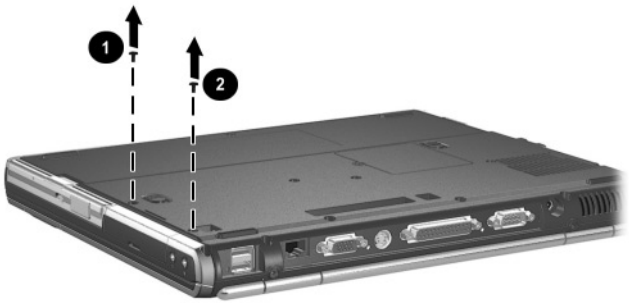
The hard drive that is in the hard drive bay is the *primary* hard drive. Remove it only after the notebook is properly shut down.

**CAUTION:** To prevent system lockup and loss of information:

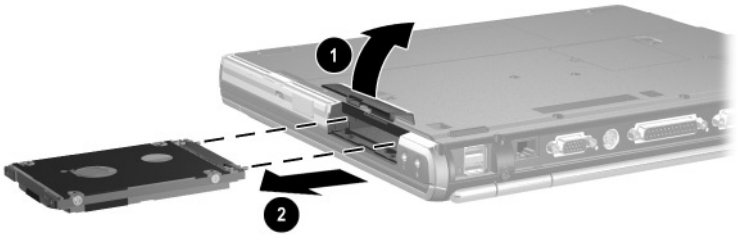
- Shut down the notebook before removing the hard drive from the hard drive bay. Do not remove the hard drive while the notebook is on, in Standby, or in Hibernation.
- If you are not sure whether the notebook is in Hibernation, turn the notebook on by pressing the power button. Then shut down the notebook through the operating system.

To remove the primary hard drive:

1. Save your work.
2. Shut down the notebook and close the display.
3. Turn the notebook bottom side up.
4. Remove the hard drive security screw ❶.
5. Remove the hard drive retaining screw ❷.

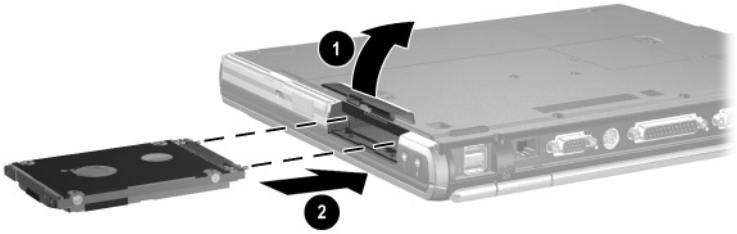


6. To remove the hard drive, lift the hard drive door ❶, and pull the hard drive ❷ out of the bay.



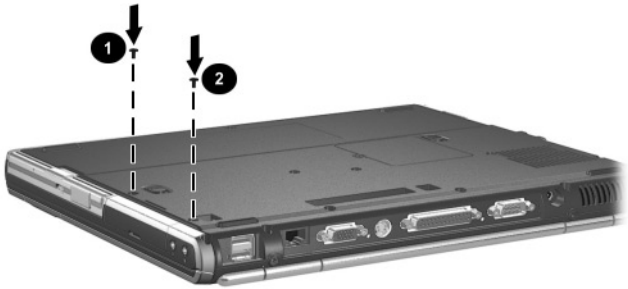

To install a hard drive:

1. Lift the hard drive door ❶.
2. Slide the hard drive ❷ into the bay until the drive is seated.



3. Do one of the following:

   - ❑ If you have inserted a hard drive, reinsert the hard drive security screw ❶ and hard drive retaining screw ❷.
   - ❑ If you removed but did not replace a hard drive, put the hard drive retaining screw and hard drive security screw in a safe place.

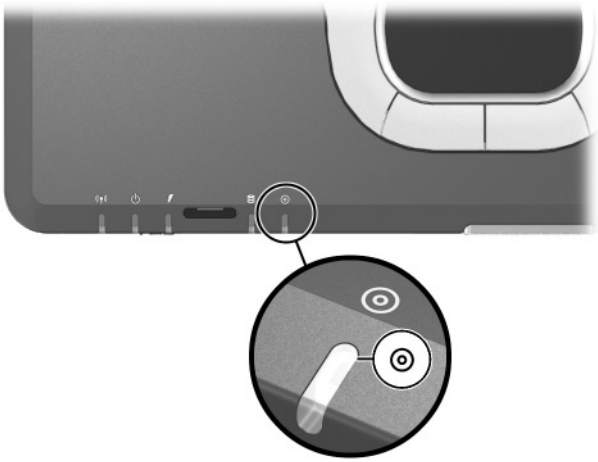


# MultiBay Drive

This section explains how to use drives the MultiBay on the notebook.

## 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.



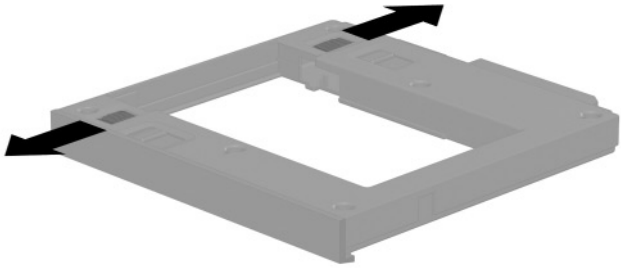
## Using a MultiBay Hard Drive Adapter

A hard drive must be inserted into an optional MultiBay hard drive adapter before it can be used in the MultiBay.

The hard drive assembly (the hard drive inserted into the MultiBay adapter) is then inserted into and removed from the MultiBay in the same way as any other MultiBay device.

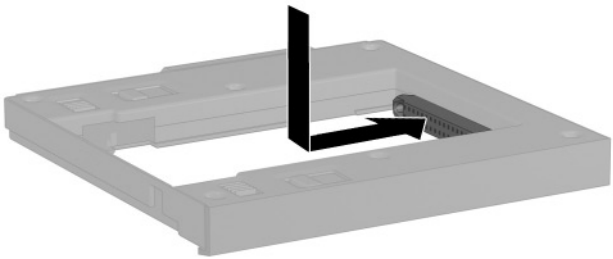
## Inserting a Hard Drive into the Adapter

1. Slide the 2 adapter selection switches to the outer edge.



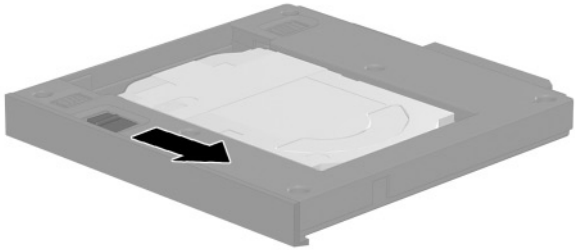
2. Lower the hard drive into the adapter, then slide the drive connectors on the drive toward the drive connectors in the adapter until the connectors engage and the hard drive is seated.



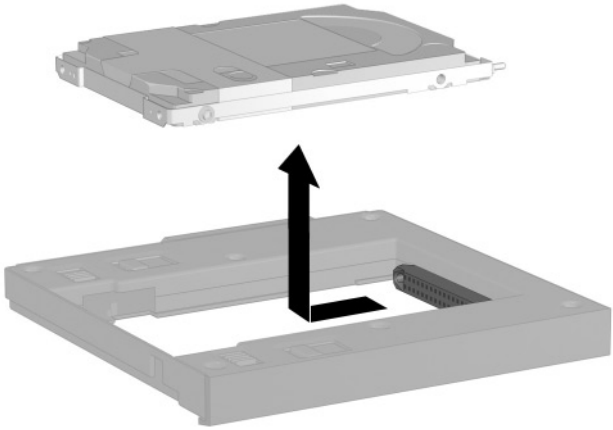


## Removing a Hard Drive from the Adapter

1. Slide the adapter release latch to the outside as indicated below.



2. Gently disengage the drive connectors by sliding the drive away from the connectors, then remove the drive.

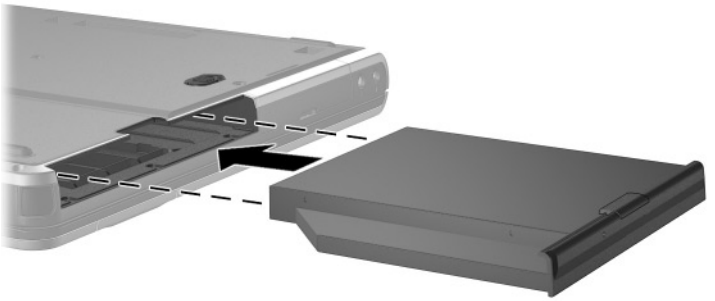


# Inserting a Hard Drive into the MultiBay

Before inserting a hard drive into the MultiBay, insert the drive into a MultiBay hard drive adapter as described earlier in this chapter.

Turn the notebook upside down.

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.



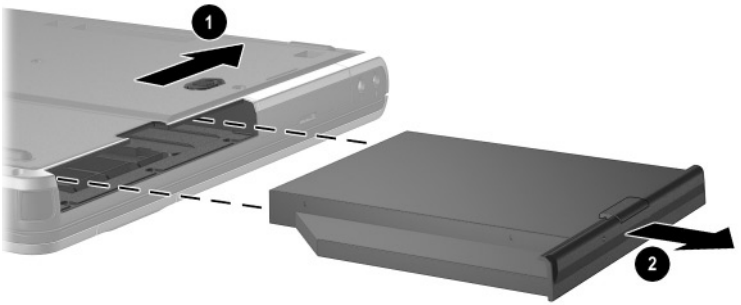
# Removing a Drive from the MultiBay

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

- **Windows 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.
- **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.)

**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, remove the 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 ❶ toward the rear of the notebook.
5. Pull the drive or drive assembly ❷ out of the MultiBay.

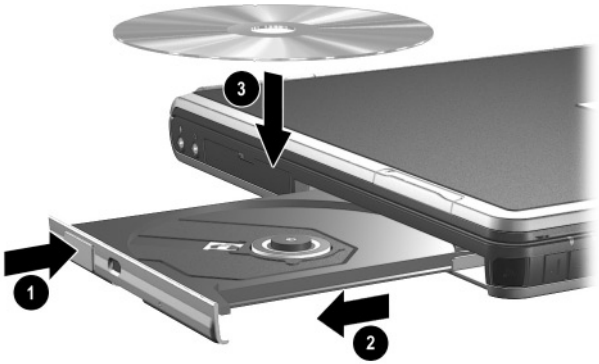


# MultiBay Drive Media

This section provides information on using optical discs (such as CD-ROMs and DVDs) and diskettes in the MultiBay.

## Inserting an Optical Disc

1. Turn on the notebook.
2. Press the release button ❶ on the drive bezel to release the media tray.
3. Pull the tray out ❷ 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 ❸ 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.

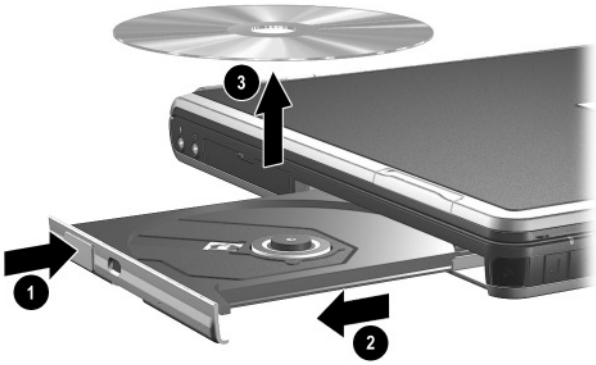


After you insert a DVD, a short pause is normal as Autorun opens the DVD and WinDVD player.

# Removing an Optical Disc (With Power)

If power is available:

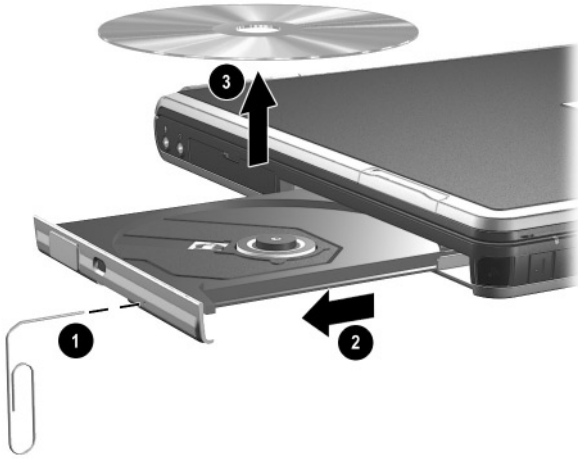
1. Turn on the notebook.
2. Press the release button ❶ on the drive bezel to release the media tray, then pull the tray ❷ out until it is fully extended.
3. Remove the disc ❸ from the tray by gently pushing down on the spindle while lifting the outer edges of the disc. Handle the disc by the edges, not 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 ❶ into the release access in the front bezel of the drive.
2. Press gently on the paper clip until the media tray is released, then pull out the tray ❷ until it is fully extended.
3. Remove the disc ❸ from the tray by gently pushing 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.



## 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.

## Displaying Optical Disc Contents

When an optical disc is inserted into a drive, the contents of the disc display on the screen when Autorun is enabled.

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

1. Click Start > Run, then type:

   X:

   where X = the designation of the drive containing the disc.
2. Press **enter.**

## Locating Optical Disc Software

Software that plays CDs and DVDs is preloaded, but not preinstalled, on the notebook. You will need to install the software before you can use it. For more information, refer on the *Documentation Library* CD to the *Software Guide,* "Optical Drive Software" chapter.

To create and copy CDs or DVDs, you will need additional software, such as Roxio Easy CD & DVD Creator 6, which is included with select notebook models.

## Initiating Standby or Hibernation

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

- Your playback may be interrupted.
- You may 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 may resume or you may need to restart the medium.

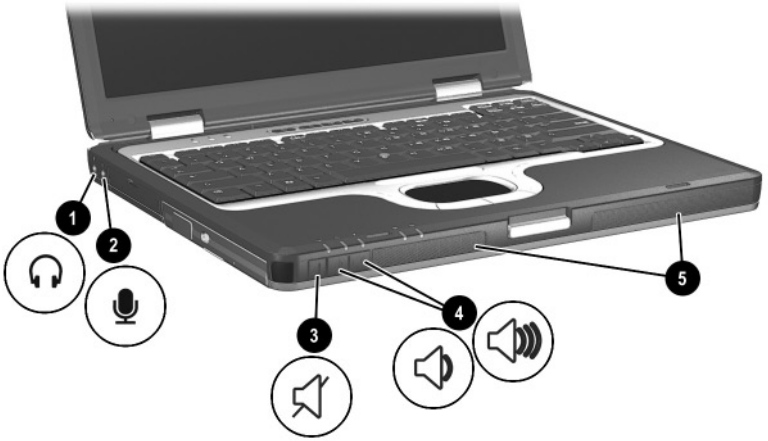
**CAUTION:** To prevent possible video degradation and loss of audio or video playback functionality, do not initiate Standby or Hibernation while playing any media.

# 5

# Audio and Video

## Using Audio Features

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




### Audio components

| Item | Component | Description |
|---|---|---|
| ❶ | Audio line-out jack | Connects optional, powered stereo speakers, headphones, headset, or television audio. |
| ❷ | Microphone jack | Connects an optional monaural microphone. |
| ❸ | Mute button | Mutes the system volume. |

**Audio components *(Continued)***

| Item | Component | Description |
|---|---|---|
| ❹ | Volume buttons (2) | Adjust the system volume. Press the volume up button to increase sound. Press the volume down button to decrease sound. |
| ❺ | 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.

# Using the Microphone Jack

When connecting a microphone to the microphone jack, use a single-sound channel (monaural) microphone with a 3.5-mm plug. A monaural electret condenser microphone is recommended.

- If you connect a stereo microphone, left-channel sound will record on both channels.
- If you connect a dynamic microphone, the recommended sensitivity may 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 – and volume + 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 2000:** the Windows Volume Control icon is displayed on the taskbar.
  - **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.

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, VCR, camcorder, overhead projector, or video capture card.

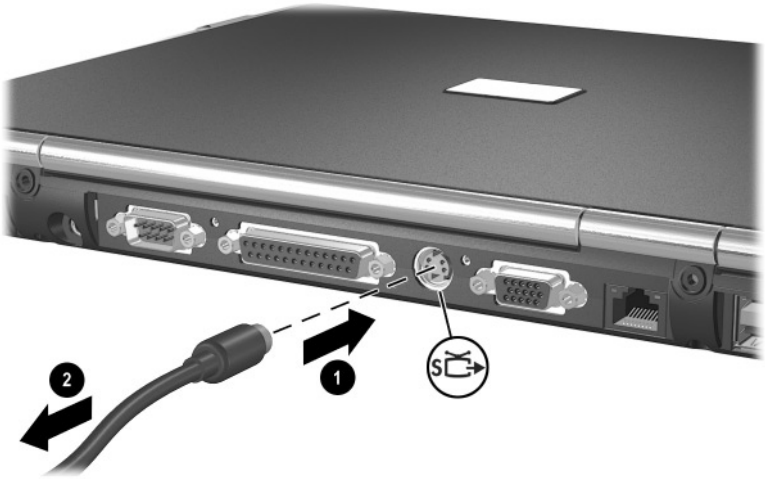
The notebook can support one S-Video device connected to the S-Video out jack while simultaneously supporting an image on the notebook display and on any other supported external display. The S-Video connection usually provides a higher quality image than a composite-video connection.

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.

# Using the S-Video Jack

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

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




If the S-Video 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 jack on the optional Advanced Port Replicator.

# 6

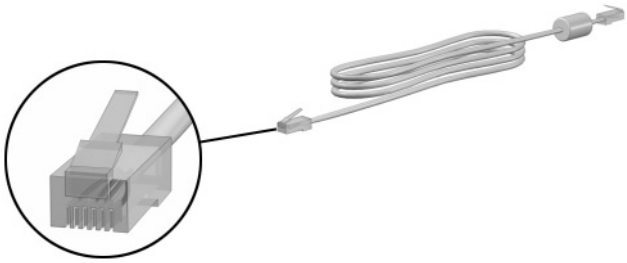
# Communication Devices

## 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, in some countries, with the use of a country-specific modem adapter. Jacks for digital PBX systems may resemble analog telephone jacks, but are not compatible with the 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.

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.



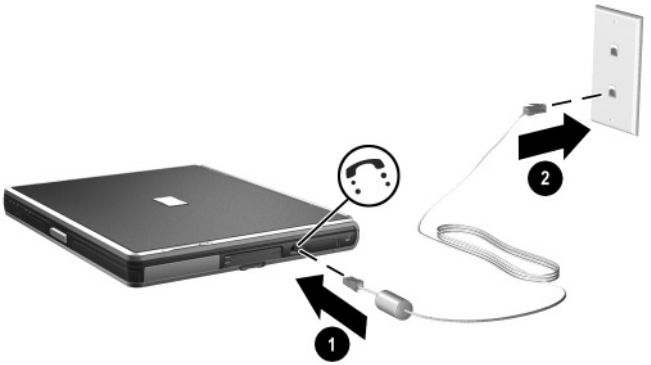
# Using the RJ-11 Telephone Cable

To connect an RJ-11 telephone cable:

1. Plug the modem cable ❶ into the RJ-11 telephone jack on the notebook.

**WARNING:** To avoid the risk of electrical shock, fire, or damage to the equipment, do not plug a telephone cable into the RJ-45 network jack.

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




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

# Using a Country-Specific Adapter Cable

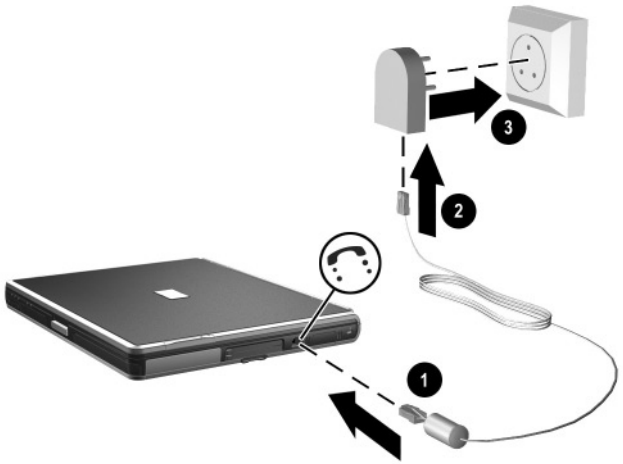
Telephone jacks vary by country. To use the modem and the RJ-11 telephone cable outside the country in which you purchased the notebook, you must obtain a country-specific modem adapter. Refer on the *Documentation Library* CD to the *Modem and Networking* guide for more details about using your notebook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

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

1. Plug the modem cable ❶ into the RJ-11 telephone jack on the notebook.

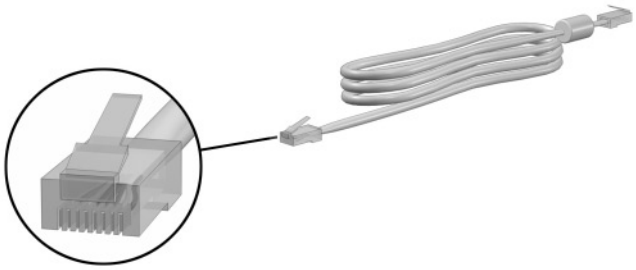
**WARNING:** To avoid the risk of electrical shock, fire, or damage to the equipment, do not plug a telephone cable into the RJ-45 network jack.

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



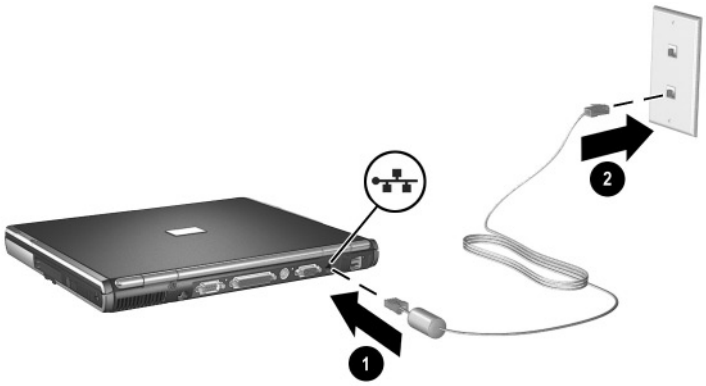
# Connecting a Network Cable

A network cable has an 8-pin RJ-45 connector at each end. 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. Plug the network cable ❶ into the RJ-45 network jack on the notebook.
2. Plug the other end of the cable ❷ into a network jack.



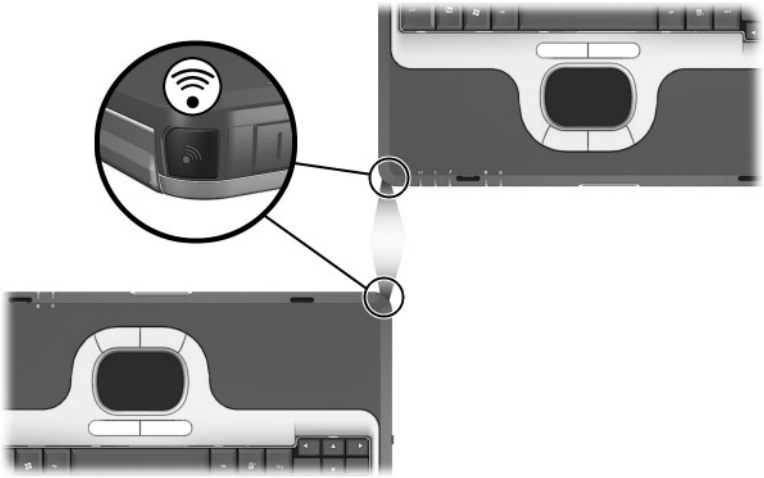

3. Start or restart the notebook.
4. Connect to the network.

# Linking to an Infrared Device

The notebook is IrDA-compliant—4 megabits per second (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 kilobits per second (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 one another at a distance no greater than 1 meter (3.3 feet).
- Position the ports so that they face one another 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 may not continue at the point 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 may not resume.

# 7

# 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.

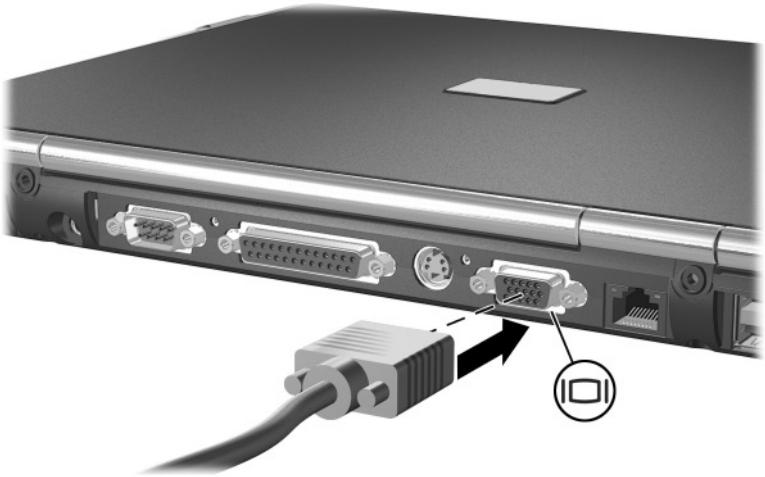
To connect a standard external device to the notebook:

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 into the external monitor connector on the back of the notebook.



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

# Using a USB Device

Universal serial bus (USB) is a hardware interface that can be used to connect external devices, such as a USB keyboard, mouse, drive, printer, scanner, or hub, to the notebook. The notebook has a standard USB connector ❶ and a self-powered USB connector ❷ that connects an optional external MultiBay. The USB connectors support USB 2.0 and USB 1.1 devices.

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 may 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:

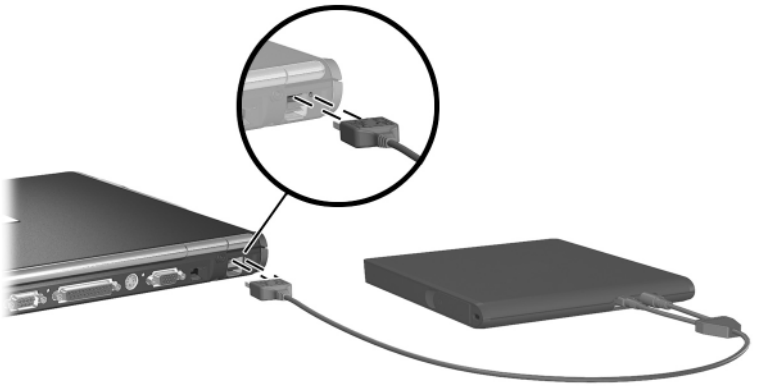
- Use a USB keyboard, mouse, or hub connected to a USB connector on the notebook during startup or in a non-Windows application or utility.
- Boot from an optional external MultiBay.

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 way of the self-powered USB connector and enables you to use MultiBay drives. For more information about the external MultiBay, refer to the documentation that is included with the device.

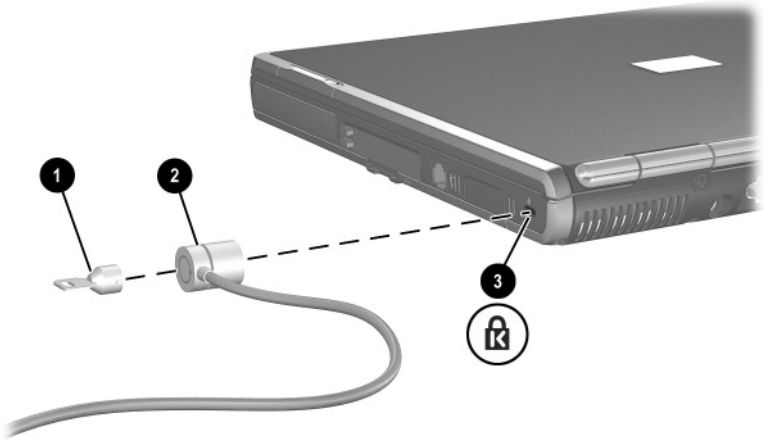


# Connecting an Optional Cable Lock

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 ❶ into the cable lock.
3. Insert the cable lock ❷ into the security cable slot ❸.
4. Lock it with the cable lock key.



# 8

# 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,* 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 on the *Documentation Library* CD to the *Software Guide,* "Software Updates and Restorations" chapter.

## Using PC Cards

A 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 Card.
- If your notebook is equipped with two PC Card slots, and it supports two Type I cards, two Type II cards, or one Type III card.
- If your notebook is equipped with an embedded Smart Card Reader, the PC Card slot supports one Type I or one Type II PC Card.
- Zoomed video PC Cards are not supported.

**CAUTION:** If you install software or enablers provided by a PC Card manufacturer, you may 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 may also be supplied by the PC Card manufacturer.

# Inserting a PC Card

**CAUTION:** To prevent damage to the connectors:

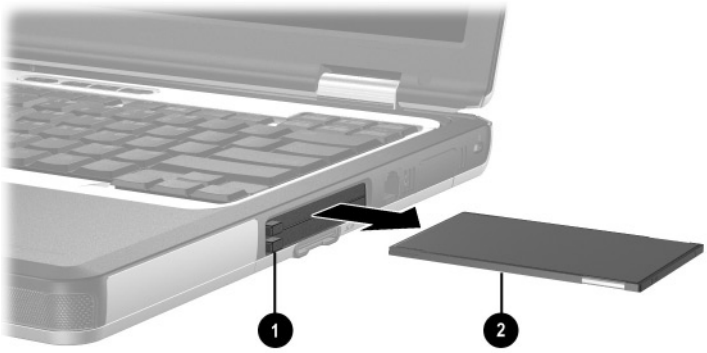
- Use minimal pressure when inserting a PC Card into a PC Card slot.
- Do not move or transport the notebook while a PC Card is inserted.

1. Hold the PC Card label side up with the connector facing the notebook.
2. Gently push the card into the slot until the card is seated. The operating system will issue a sound 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 2000**—Select the Unplug or Eject icon on the taskbar, then stop the card you plan to remove. When the card can be safely removed, a message is displayed.
   - ❏ **In Windows XP**—Select the Safely Remove Hardware icon on the taskbar, then select the PC Card. (To display the Safely Remove Hardware icon, select Show Hidden Icons on the taskbar.)
2. Press the PC Card eject button ❶ 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 card ❷.




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 CompactFlash 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:

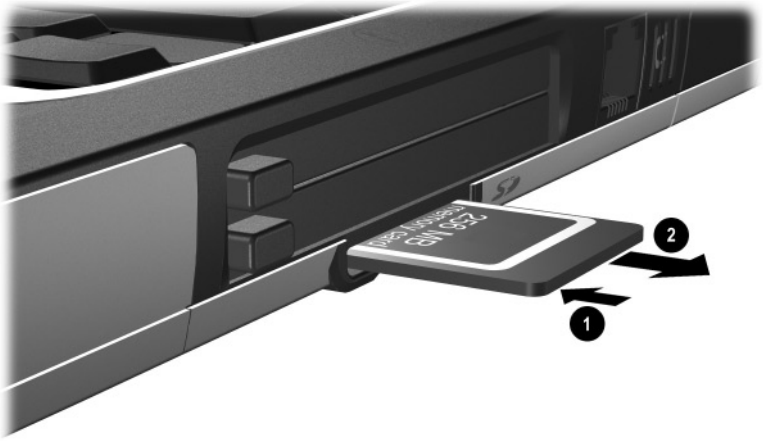
1. Insert the SD Card into the SD Card slot.
2. Push the card firmly into the slot until the card clicks into place.

# 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 using the SD Card.
2. Stop the SD Card.
   - **In Windows 2000,** select the Unplug or Eject icon in the task bar, then stop the card you plan to remove. (When the card can be safely removed, a message is displayed.)
   - **In Windows XP,** select the Safely Remove Hardware icon in the taskbar, then select the PC Card. (To display the Safely Remove Hardware icon, select Show Hidden Icons in the taskbar.)
3. Gently press in on the SD Card ❶ to unlock it.
4. Pull the SD Card ❷ from the slot.



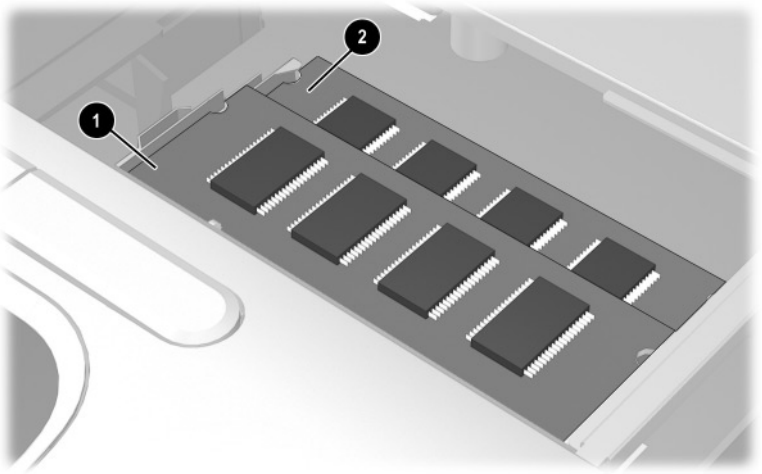
# Adding and Upgrading Memory Modules

**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, ensure that you are discharged of static electricity by touching a grounded metal object. For more information, refer on the *Documentation Library* CD to the *Regulatory and Safety Notices* guide.

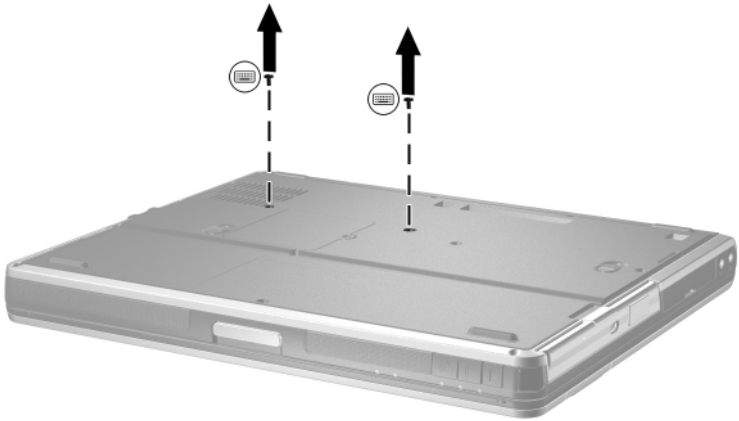
The notebook has 2 memory slots, one on top of the other, located under the keyboard. The memory expansion slot ❶ is on top of the primary memory slot ❷. The primary memory slot is on the bottom and is populated at the factory.



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.

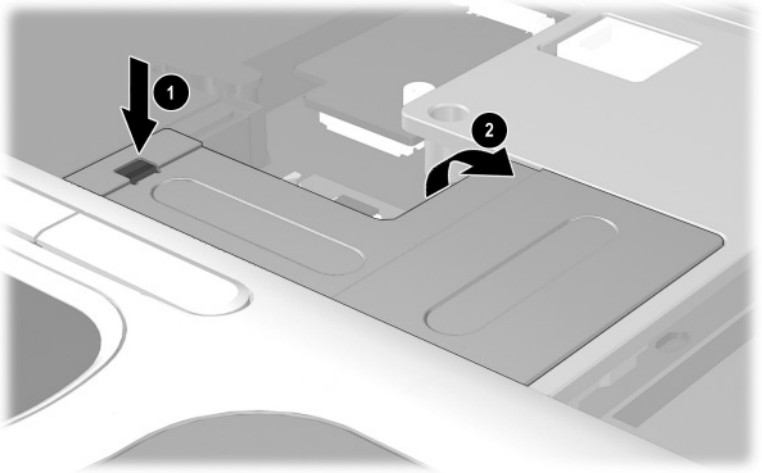
To add or upgrade a memory module:

1. Shut down the notebook. (If you are not sure whether the notebook is off or in Hibernation, turn the notebook on by pressing the power button. Then shut down the notebook through the operating system.)
2. Disconnect all external devices connected to the notebook.
3. Disconnect the power cord.
4. Remove any battery packs from the notebook.
5. Remove the 2 keyboard access screws from the bottom of the notebook. A keyboard icon is located next to both keyboard access screws.



6. Open the notebook and slide the 4 keyboard latches down ❶ to release the keyboard, then tilt the keyboard ❷ and remove it from the notebook.

7. Press in on the latch ❶ to release the memory slot cover ❷, then tilt it up and remove it from the notebook.



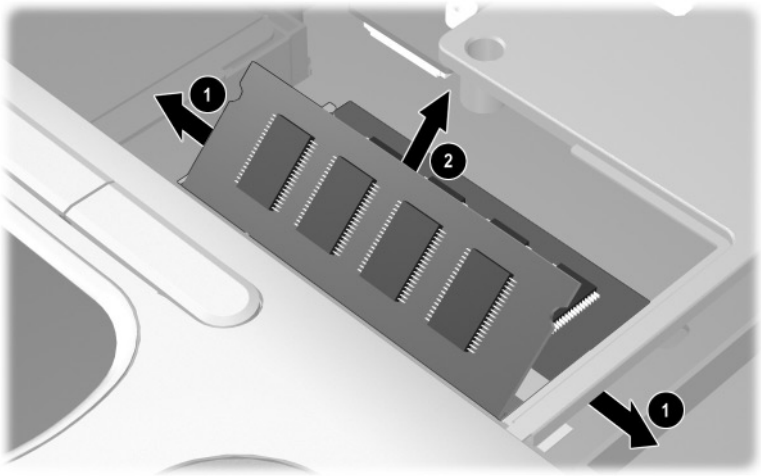
If replacing the existing memory in the primary memory slot, you must remove any memory in the memory expansion slot first.

If you are adding memory to the memory expansion slot, proceed to step 9.

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

   a. Pull the retention clips ❶ away from each side of the module. The module tilts upward when released.

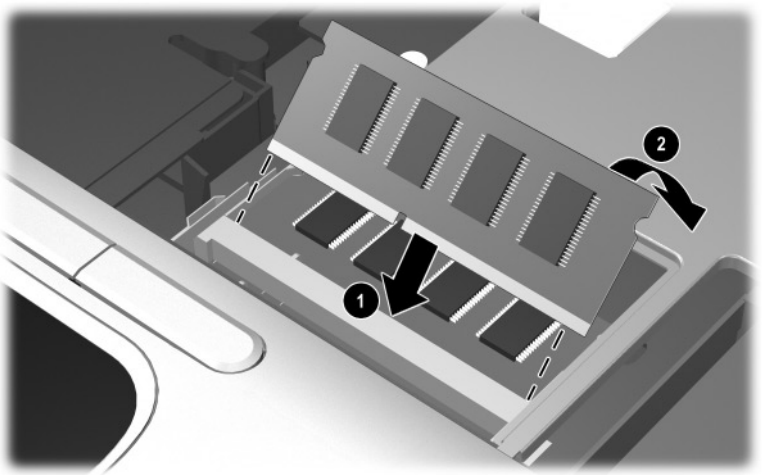
   b. Lift the edge of the memory module ❷, and gently remove it from the slot.




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

Repeat step 8 to remove the memory module from the primary memory slot, if necessary.

9. To insert the new memory module into either memory slot:
   a. Align the keyed (notched) edge of the module ❶ 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 push the module ❷ downward until the retention clips snap into place.




10. Replace the memory slot cover.
11. Replace the keyboard and snap the 4 keyboard latches back into place.
12. Replace the keyboard access screws located on the bottom of the notebook.
13. Replace the battery packs.
14. Reconnect external power and external devices.
15. Restart the notebook.

# 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 RAM, verify that your hard drive has enough free space to accommodate a larger Hibernation file.

- To display the amount of RAM in the system:
  - **In Windows 2000,** select Start > Settings > Control Panel > System > General tab.
  - **In Windows XP,** select Start > Control Panel > Performance and Maintenance > System > General tab.
  - **In Windows 2000 or Windows XP,** press **fn+esc.**
- 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 2000,** select Start > Settings > Control Panel > HP Power > Hibernation tab.
  - **In Windows XP,** select Start > Control Panel > Performance and Maintenance > Power Options icon > Hibernate tab.

# 9

# Specifications

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

Only compatible AC adapters and battery packs should be used 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 | U.S. | Metric |
|---|---|---|
| Height | 1.28 in | 3.26 cm |
| Width | 12.5 in | 31.8 cm |
| Depth | 10.3 in | 26.2 cm |

# Operating Environment

| Factor | U.S. | Metric |
|---|---|---|
| **Temperature** | | |
| Operating | 50° to 95° F | 10° to 35° C |
| Nonoperating | –22° to 140° F | –30° to 60° C |
| **Relative humidity (noncondensing)** | | |
| Operating | 10 to 90% | 10 to 90% |
| Nonoperating | 5 to 95% | 5 to 95% |
| **Maximum altitude (unpressurized)** | | |
| Operating | 10,000 ft | 3,048 m |
| Nonoperating | 30,000 ft | 9,144 m |

# Rated Input Power

| Input power | Rating |
|---|---|
| Operating voltage | 100–120/220–240 VAC RMS |
| Operating current | 1.7/0.85 A RMS |
| Operating frequency range | 47 to 63 Hz AC |
| When powered by a DC source | 18.5V 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 on the *Documentation Library* CD to the *Regulatory and Safety Notices* guide.

| 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% (10 to 90%) | |
| 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 volts ±5%, +5 volts ±5% | |

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