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HP Notebook PC

**Reference Guide**

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**HP Notebook Customer Care**  
**1000 NE Circle Blvd., MS 425E**  
**Corvallis, OR 97330, U.S.A.**

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## Important Safety Information

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### CAUTION

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**To reduce the risk of fire, use only No. 26 AWG or larger telecommunications line cord to connect a modem to the telephone wall jack.**

When using your computer with a telephone connection, always follow basic safety precautions to reduce the risk of fire, electric shock, and injury to persons:

- Do not use this product with a telephone connection near water (for example, near a bathtub, sink, swimming pool, or in a wet basement).
- Avoid using a telephone connection (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
- Do not use a telephone connection to report a gas leak in the vicinity of the leak.
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## Edition History

Edition 1 (FB) . . . . . December 2001



This manual is printed on recycled paper.



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## Getting Started with Your HP Notebook

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## Taking Inventory

Congratulations! Your notebook computer sets a new standard in personal computing. Although compact and easy to carry, your computer is made with the quality and attention to detail that are the hallmark of Hewlett-Packard.

Your computer has several features that make it convenient to use:

- Two buttons provide convenient options for starting and stopping the computer.
- Volume controls are located within easy reach on the computer's right side, and the audio-off button and light let you cut off all sound quickly when needed.
- All cable connectors are near the back of the computer, keeping cables away from your working area.

This manual shows how to set up and operate your computer, as well as what to do if you run into trouble.

---

## What's in the Box?

Your HP notebook computer is shipped with these items:

- Main battery (installed).
- Floppy disk drive module (certain models only).
- Floppy disk drive USB cable (floppy drive models without expansion base only).
- AC adapter and power cord.
- *Quick Start* sheet.
- *Startup Guide*.
- *Recovery CD*, for restoring Windows and all software included with your computer.
- Microsoft Windows manual.
- Multimedia expansion base and plug-in drive module (certain models only).
- Phone cord (modem models only).

In addition, your HP notebook includes preinstalled software. (The exact software installed depends on your particular notebook model.)

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## To buy accessories

You can buy accessories for your computer online. For the latest accessories and options, visit the HP Notebook web site ([www.hp.com/notebooks](http://www.hp.com/notebooks)).

HP currently offers plug-in modules and other accessories, such as the following:

- AC adapter.
- Plug-in drives, such as CD-ROM, DVD, and similar drives, floppy drive, Zip drive, and second hard disk drive.
- Main battery and secondary battery plug-in module.

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## To find more information

The following table lists other sources of information about your computer and related products.

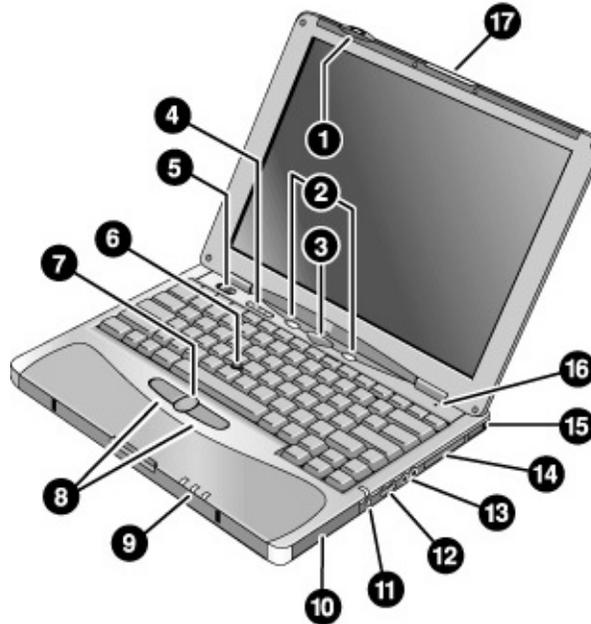
Source	Description and Location
<i>Startup Guide</i>	This printed manual introduces your computer. It also contains setup instructions, basic operation guidelines, troubleshooting information, and warranty information.
<i>Online Reference Guide</i>	The full <i>Reference Guide</i> is shipped on the computer's hard drive, and provides a complete source for operating and maintaining the computer. Look in the online HP Library, or on the <i>Recovery CD</i> in \hp\Library. For Windows XP, the HP Library is in the Help and Support Center.
Online HP Notes	For late-breaking information available after the manuals were completed, see the HP Notes in the online HP Library, or on the <i>Recovery CD</i> in \hp\Library.
Microsoft Windows manual	This is shipped with your computer and contains information about using the version of Microsoft Windows shipped with your computer.
HP Notebook Web Site	<a href="http://www.hp.com/notebooks">www.hp.com/notebooks</a> . <a href="http://www.europe.hp.com/notebooks">www.europe.hp.com/notebooks</a> (European mirror).
HP Business Support Web Site	<a href="http://www.hp.com/go/bizsupport">www.hp.com/go/bizsupport</a> .
<i>Corporate Evaluator's Guide</i>	This provides information about installing alternate operating systems, as well as how to configure your notebook computer in a corporate, networked environment. Located at the HP Business Support web site.

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## Identifying Parts of the Computer

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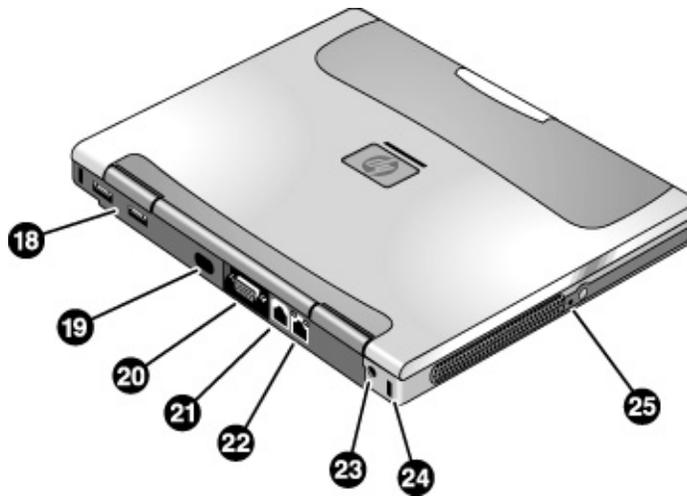
### Front View



- |   |   |
|---|---|
| 1. Wireless on-off button and indicator light (on certain models).        | 9. Main status lights: power mode, hard disk activity, main battery charge. |
| 2. Left and right One-Touch buttons (programmable).                       | 10. Hard disk drive.  |
| 3. Sleep button. Suspends and resumes operation.                          | 11. Audio-off button and audio-off light.                                   |
| 4. Keyboard status lights: Caps Lock, Num Lock, Keypad Lock, Scroll Lock. | 12. Volume control.   |
| 5. Power slide button. Turns the computer on and off.                     | 13. Audio jacks: audio out (headphones), external microphone.               |
| 6. Pointing stick (pointing device).                                      | 14. PC Card slot.   |
| 7. Scroll button.   | 15. PC Card eject button.   |
| 8. Left and right click buttons.  | 16. Built-in microphone.  |
|   | 17. Latch for opening the computer.   |

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Back View



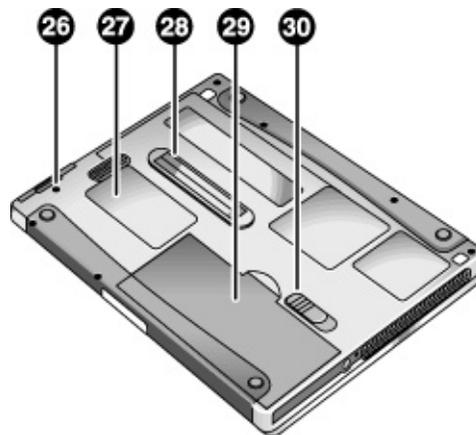
- 18. Universal serial bus ports (USB).
- 19. Infrared port.
- 20. External monitor port.
- 21. Modem port (on certain models).

- 22. LAN port.
- 23. AC adapter jack.
- 24. Kensington lock slot (security connector).
- 25. System-off switch.

Getting Started with Your HP Notebook  
**Identifying Parts of the Computer**

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Bottom View



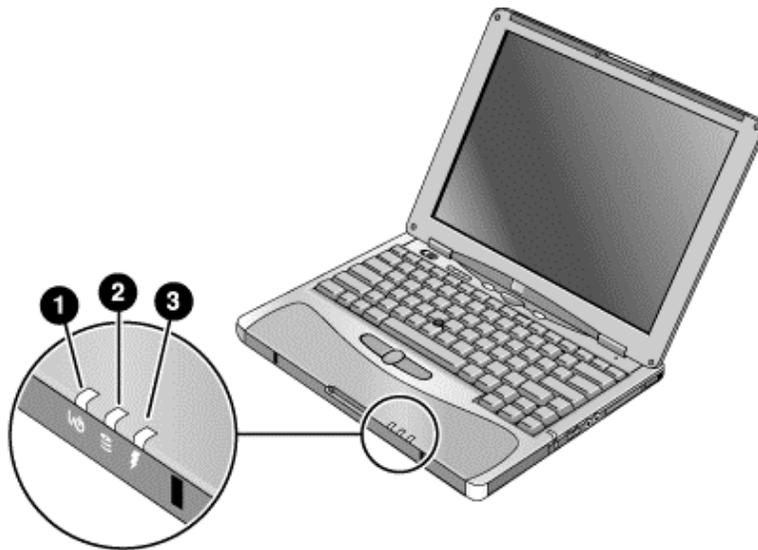
- 26. Hard disk drive retaining screw.
- 27. RAM cover.
- 28. Docking port.

- 29. Main battery.
- 30. Main battery latch.

---

## Status Lights

The main status lights report power and battery status and drive activity.



**1. Power mode.**

- On: the computer is on (even if the display is off).
- Blinking: the computer is in Standby mode.
- Off: the computer is off or in Hibernate mode.

**2. Hard disk drive activity.**

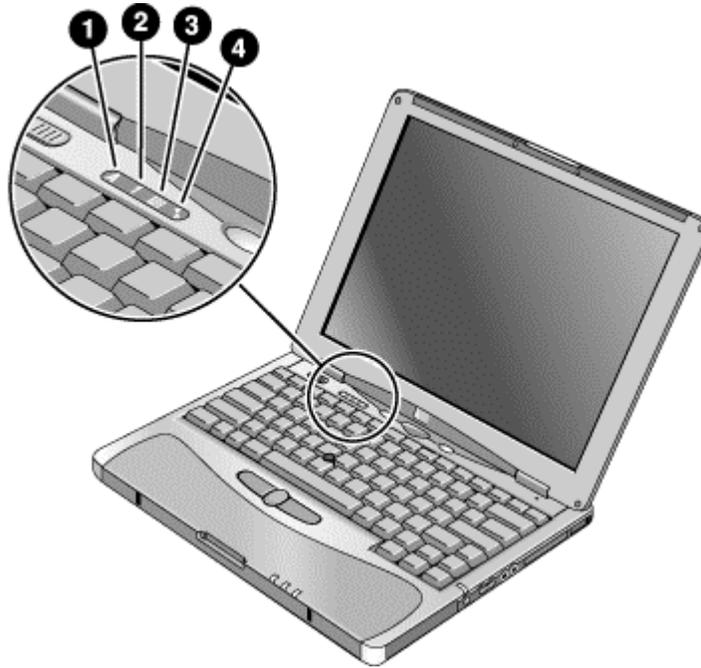
- Blue: the computer is accessing the hard disk drive.

**3. Main battery charge status.**

- Green: the AC adapter is connected and the battery is fully charged.
- Amber: the AC adapter is connected and the battery is charging.
- Blinking: the AC adapter is connected and the battery is missing or has a fault.
- Off: the AC adapter is not connected.

## Getting Started with Your HP Notebook Identifying Parts of the Computer

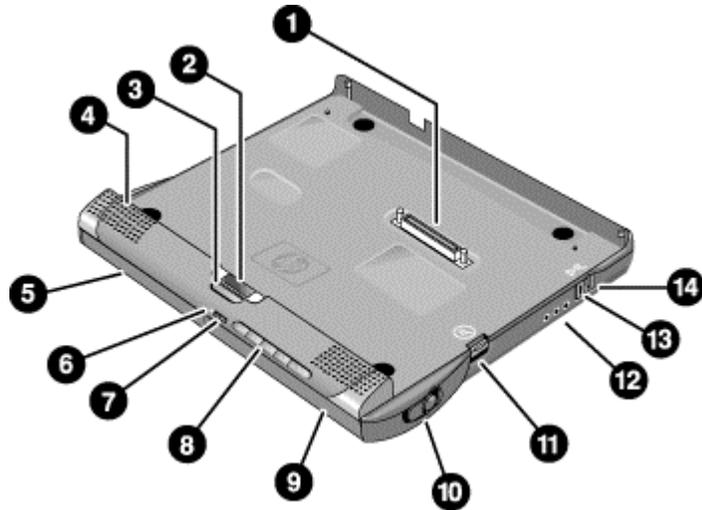
The keyboard status lights, located above the keyboard, indicate the states of the keyboard locks.



1. **Caps Lock.** Caps Lock is active.
2. **Num Lock.** Num Lock is active (Fn+F9). (The Keypad Lock must also be on to use the embedded keypad.)
3. **Keypad Lock.** The embedded keypad is active (Fn+F8). Num Lock must also be on for the numeric keys—otherwise, cursor control is active (as marked on an external keyboard).
4. **Scroll Lock.** Scroll Lock is active (Fn+F10).

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## Expansion Base - Front

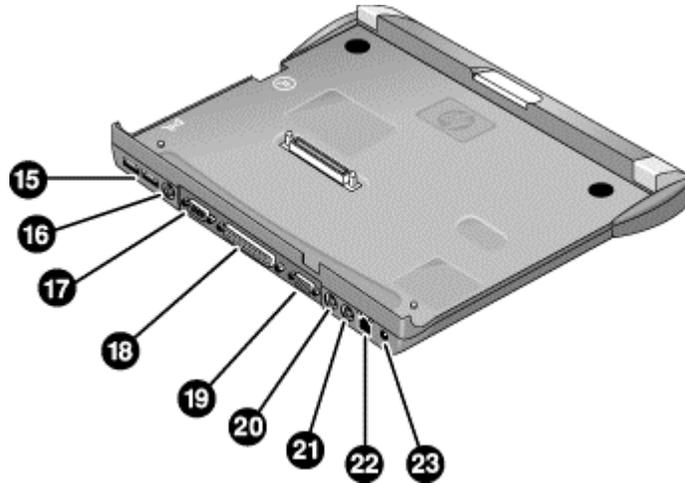


1. Docking connector.
2. Status panel.
3. Status panel button.
4. Speaker (one on each side).
5. Left plug-in module bay. Can contain a CD-ROM or DVD drive, floppy disk drive, secondary battery, or other plug-in module.
6. CD status light.
7. CD player power button.
8. CD player controls: previous track, play/pause, stop, next track, volume.
9. Right plug-in module bay. Used with CD player controls. Can contain any plug-in module.
10. Module eject latch.
11. Undock switch.
12. Audio jacks: audio out (headphones), external microphone, audio in.
13. Kensington lock slot (security connector).
14. Emergency undock latch.

Getting Started with Your HP Notebook  
**Identifying Parts of the Computer**

---

Expansion Base - Back



15. Universal serial bus ports (USB).

16. S-video (TV out) port.

17. Serial port (COM1).

18. Parallel port (LPT1). Use this port for a parallel printer or other parallel device.

19. External monitor port.

20. PS/2 mouse port.

21. PS/2 keyboard port.

22. LAN port (works only if the computer has a built-in LAN port).

23. AC adapter jack.

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## Setting Up Your Computer

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### WARNING

**Improper use of keyboards and other input devices has been associated with ergonomic injury. For information about reducing your risk, see *Working in Comfort* in the online HP Library, or visit our ergonomics web site, [www.hp.com/ergo](http://www.hp.com/ergo). For a summary about working with a notebook computer, see “*Working in Comfort with a Notebook PC*” on page 45.**

**If you are using your notebook computer as your primary computer, or using it for extended periods, you should use it with a full-size keyboard, monitor, and mouse. This can reduce the risk of ergonomic injury. See *Working in Comfort* in the online HP Library.**

---

When you set up your computer for the first time, you'll need to install and charge the battery, connect the AC adapter, turn on the computer, and run the Windows setup program.

---

### Step 1: Install the battery

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### WARNING

**Do not mutilate or puncture batteries. Do not dispose of batteries in fire, or they can burst or explode, releasing hazardous chemicals. Rechargeable batteries must be recycled or disposed of properly.**

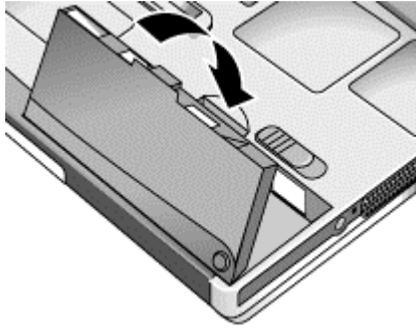
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Your computer is shipped with the battery installed. If the battery has been removed, you should install it:

1. Turn the computer upside down.

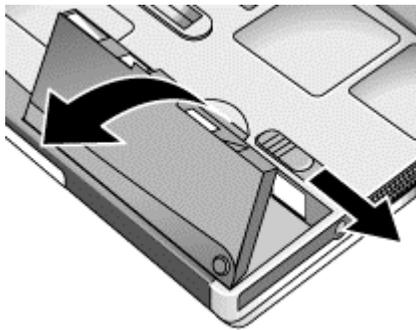
## Getting Started with Your HP Notebook Setting Up Your Computer

2. Insert the front end of the battery into the battery compartment on the bottom of the computer, then press the back end in until it clicks into place.



### To remove the battery

1. Do one of the following:
  - Plug in the AC adapter.
  - Shut down the computer or put it into Hibernate mode.
2. Slide the battery's release latch, then lift the battery out of its compartment.



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## Step 2: Connect AC power

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### CAUTION

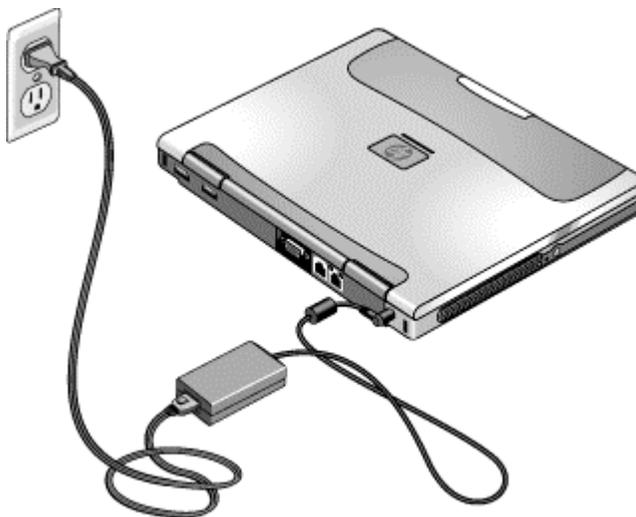
Use only the HP AC adapter included with your computer (or other approved adapter). Using any other AC adapter could damage the computer and may void your warranty (see the warranty statement in this manual).

---

### Important

If you have an expansion base, do *not* dock your computer in it until after the computer boots up for the first time.

- Plug in the AC adapter, and connect it to the AC adapter jack on the back of the computer. The computer's battery then starts charging.

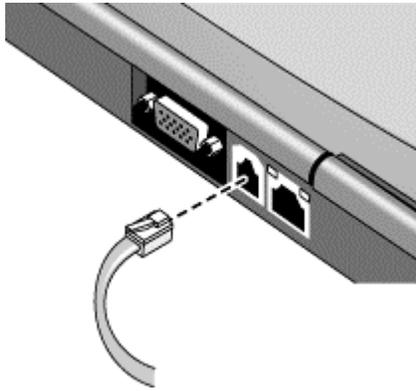


While the battery is charging, you can continue with step 3.

### Step 3: Connect a phone line

If your computer does not include a built-in modem, you can skip this step. Also, if you prefer, you can instead connect to a PC Card modem or an external modem.

1. Make sure the telephone line is an analog line, sometimes called a data line. (You must not use a digital line.)
2. Connect the telephone cord to the built-in modem.



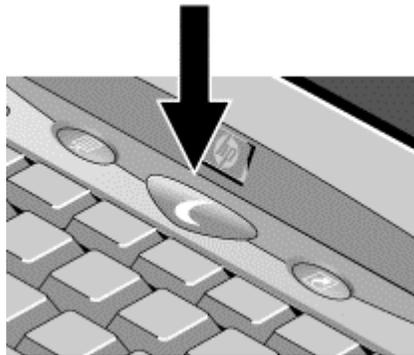
3. Plug the other end of the phone cord into a telephone jack. If the plug on the phone cord doesn't fit the jack, you may need to use an adapter.

For details about using the modem, see "Using the Modem" on page 60.

---

## Step 4: Turn on the computer

- Press the blue sleep button above the keyboard. The computer then boots up, and Windows starts automatically.



---

### Hint

If your computer does not turn on when operating on battery power, the battery may be out of power. Plug in the AC adapter and press the blue sleep button again. Leave the AC adapter plugged in for at least an hour.

---

## Step 5: Set up Windows

Your computer has Microsoft Windows preinstalled on its hard disk drive. The first time you turn on your computer, the Windows Setup program runs automatically so you can customize your setup.

1. Follow the Setup program's instructions as they appear on the screen. If the program prompts you to enter the Product ID code, you will find this code on the bottom of the computer.
2. If your computer has a modem, check the modem's country or region settings:
  - **Windows 98:** click Start, Settings, Control Panel, double-click Modems, then click Dialing Properties.
  - **Windows 2000:** click Start, Settings, Control Panel, double-click Phone and Modem Options, then click Edit on the Dialing Rules tab.
  - **Windows XP:** click Start, Control Panel, Printers and Other Hardware, Phone and Modem Options, then click Edit on the Dialing Rules tab.

## Step 6: Register your notebook

Be sure to register your computer. Registering is free and fast, and ensures you will receive quicker, more personalized support. The information you provide during registration allows us to provide you with better products and services.

Registering your computer does the following:

- Records your ownership of the computer with Hewlett-Packard and provides access to service, support, and information.
- Records your ownership of the Windows 98 or XP operating system with Microsoft. If you have Windows 2000, please contact Microsoft separately to register the operating system.

You can register while setting up Windows, or later in any of three ways: by modem, by phone, or by fax. For some countries and models, an HP notebook registration icon is available on the desktop.

### **By modem**

If your computer does not have a built-in modem, you can register after you set up a PC Card modem or an external modem—or you can register by phone or fax.

- If you are not prompted to register, you can click the Register button in the welcome screen. Make sure the phone line is connected to the modem port and follow the onscreen instructions.

If you choose not to register right away, you can do so by modem later by double-clicking the Registration icon on the desktop (if available). Make sure the phone line is connected and follow the onscreen instructions. The icon disappears after you register.

### **By phone**

You can register by calling your HP Customer Care Center. See “To contact HP for support or service” on page 145 for the phone number.

### **By fax**

If you have a printer connected to your computer, you can print a registration form and fax it to HP. Double-click the HP Notebook Registration icon on the desktop (if available), and print the registration form. You will find the fax number on the form.

## What to do next

Here are a few things you may want to try at this point:

- If you're not familiar with the version of Windows installed on your computer, click Start, Help (Windows 98 or 2000) or Start, Tour Windows XP, or check the Windows manual to discover what's new.
- If your computer shipment includes an expansion base and CD-ROM drive or similar drive, insert the drive in the right module bay—see “To replace a plug-in module” on page 82 for details. Then turn on the computer and insert it into the expansion base—see “To dock the computer” on page 76 for details.
- If your expansion base includes a DVD drive or CD-RW drive, you also received special software for the drive—find the software CD in the box. Click Start, Programs (or All Programs), Multimedia—if the software isn't listed, install it by inserting the CD in the drive. Follow the instructions displayed—run Setup on the CD if it doesn't run automatically.

See the online *Reference Guide* to learn more about using and maintaining your computer—click Start, Programs, HP Library (Windows 98 or 2000) or Start, Help and Support, HP Library (Windows XP).

---

## To connect to the Internet

If your computer has a modem (built-in, PC Card, or external), LAN port, or wireless LAN, you can use it to connect to the Internet. For details, see “Using the Modem” on page 60, “Connecting to a LAN” on page 69, or “Making Wireless Connections” on page 70.

## To connect the floppy disk drive

If you don't have an expansion base, you can connect the floppy disk drive to a USB port.

- Connect the F2101A USB floppy cable directly to the floppy drive and to the USB port.



If you have an expansion base, you can insert the floppy drive in a module bay—see “To replace a plug-in module” on page 82.

You cannot use the USB floppy cable to connect any other type of drive module, such as a CD-ROM or DVD drive. The USB floppy cable is for floppy drives only.

---

## Basic Operation

## Operating Your Computer

You can start and stop your computer using its blue sleep button. However, at certain times you may want to use other methods to start or stop the computer—depending on power considerations, types of active connections, and start-up time.

### To turn the computer on and off

Power mode	To enter this mode
<b>On mode</b> Power mode status light is on.	Press the blue sleep button.
<b>Standby mode</b> Saves significant power. Turns off the display and other components. Maintains current session in RAM. Restarts quickly. Restores network connections. Power mode status light is blinking.	Press blue sleep button –or– click Start, Shut Down, Standby (Windows 98 or 2000) –or– click Start, Turn Off Computer, Stand By (Windows XP) –or– allow timeout.
<b>Hibernate mode</b> Saves maximum power. Saves current session to disk, then shuts down. Restores network connections. Power mode status light is off.	Press Fn+F12 –or– click Start, Hibernate (Windows 98) –or– click Start, Shut Down, Hibernate (Windows 2000) –or– allow timeout.
<b>Shut down (off)</b> Saves maximum power. Turns off without saving current session. At startup, resets everything, starts a new session, and restores network connections. Power mode status light is off.	Click Start, Shut Down, Shut down (Windows 98 or 2000) –or– click Start, Turn Off Computer, Turn Off (Windows XP) –or– slide the power button (only if the Start menu procedure doesn't work).
<b>To turn on:</b> press the blue sleep button to restart, or to resume your session from Standby or Hibernate mode.	

You can also customize the way these power modes work. See “How the computer manages power automatically” on page 50.

---

## To reset the computer

Occasionally, you may find that Windows or the computer has stopped responding, and will not let you turn the computer off. If this happens, try the following in the order listed.

- If possible, shut down Windows:

**Windows 98 or 2000:** press CTRL+ALT+DEL, click Shut Down, and press the blue sleep button to restart.

**Windows XP:** press CTRL+ALT+DEL, then click Shut Down, Restart.

–or, if this fails–

- Slide and hold the power button for 4 seconds, until the display shuts down, then press the blue sleep button to restart.

–or, if this fails–

- Insert a straightened paper clip into the system-off switch on the left side of the computer, then press the blue sleep button to restart.



To reset an expansion base—and the computer, if docked—insert a straightened paper clip into the reset hole on the bottom of the expansion base. You can also reset the expansion base by undocking the computer and removing all AC and battery power from the base.

## To change the boot device

The computer normally boots from its internal hard disk. You can also boot the computer from a floppy disk drive connected to a USB port, an external drive in an expansion base module bay, or an internal network interface card (NIC).

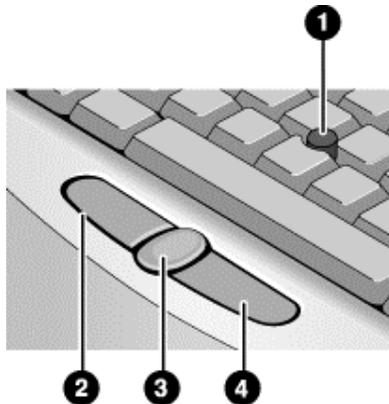
1. Click Start, Shut Down (or Turn Off Computer), Restart.
2. When the HP logo appears, press ESC to display the Boot menu.
3. Use the arrow keys to select the boot device, and press ENTER.

If you want to boot from a specific device whenever it is present, change the boot order using the BIOS Setup utility—see “To run the BIOS Setup utility” on page 131.

---

## To use the pointing stick

Your computer includes a built-in pointing stick and click and scroll buttons.



1. Pointing stick (pressure-sensitive pointing device).
2. Left click button—works like the left button on a standard mouse.
3. Scroll button—works with the pointing stick to scroll the contents of a window.
4. Right click button—works like the right button on a standard mouse.

You can use Mouse in Control Panel to customize the operation of your computer's pointing stick: you can change the left, right, and scroll button actions, double-click speed, pointer speed, and more.

### **Moving and selecting**

1. Place your hands in a normal typing position.
2. With your index finger, press the pointing stick in the direction you want the pointer to move.
3. Use the left and right click buttons, which function like the left and right buttons on a mouse, to make your selection:
  - To open an application, move the pointer over the icon and double-click the left button.
  - To make menu selections, move the pointer to the menu item and click the left button.
  - To open the shortcut menu for an item, move the pointer over the item and click the right button.
  - To drag an item, move the pointer over the item. Then press *and hold* the left button while you move the pointer to the new location, and release the button.

### **Scrolling with the scroll button**

- Hold down the scroll button and press the pointing stick. The contents of the window then scroll in that direction.

## To use the Fn hot keys



The combination of the Fn key plus another key creates a *hot key*—a shortcut key sequence—for various system controls. To use a hot key, press *and hold* Fn, press the appropriate second key, then release both keys.

### **This hot key**

Fn+F1

Fn+F2

Fn+F5

Fn+F7

Fn+F8

Fn+F9

Fn+F10

Fn+F11

Fn+F12

Fn+HOME

### **Does this**

Decreases the display brightness.

Increases the display brightness.

Toggles among the built-in display, an external display, and simultaneous display on both. Does not affect a TV connected to the expansion base S-video port.

Audio mute.

Toggles the built-in keypad on and off. Does not affect an external keyboard. If Num Lock is on, the numeric functions are active; otherwise, cursor control is active (as marked on an external keyboard).

Toggles Num Lock on and off.

Toggles Scroll Lock on and off.

Pause.

Enters Hibernate mode.

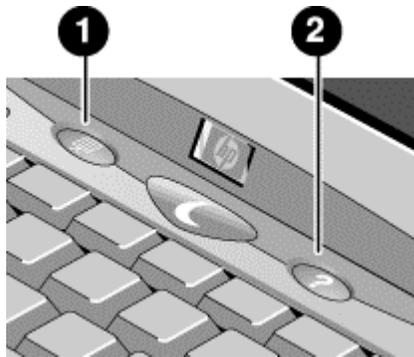
Print screen.

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## To use the One-Touch buttons

Your computer includes two One-Touch buttons that can start any application or open a document or web site with a single press.

- Press the One-Touch button to open the corresponding application, document, or web site.



1. Left One-Touch button (preconfigured with HP Presentation Ready).
2. Right One-Touch button (preconfigured with HP information).

### **To reprogram a One-Touch button**

1. Click Start, Programs, HP One-Touch, HP One-Touch Configuration (Windows 98 or 2000), or Start, All Programs, Hewlett-Packard, Notebook, HP One-Touch, HP One-Touch Configuration (Windows XP).
2. On the One-Touch buttons tab, click the button you want to reprogram.
3. Type a label for the button, then select the application, document, folder, or web site you want the button to open.
4. If you want a label to appear onscreen when you press a One-Touch button, select that option on the Onscreen Display tab.

## To use the Windows and Applications keys



The Windows key brings up the Windows Start menu. This is the same as clicking the Start button on the taskbar.



The Applications key brings up the shortcut menu for the current application. This is the same menu that appears when you right-click while pointing at the application.

### **This key combination**

Windows key+E

Windows key+F1

Windows key+F

Windows key+M

Shift+Windows key+M

Windows key+R

Windows key+U

### **Does this**

Runs Windows Explorer.

Runs Windows Help.

Runs Windows Find: File or Folders (Windows 98 or 2000) or Search (Windows XP).

Minimizes all displayed windows.

Returns all minimized windows to original size.

Runs the Windows Run dialog box.

Runs the Windows Utility Manager (Windows 2000 and XP).

---

## To use the embedded keypad

Your computer's built-in keyboard includes an embedded keypad you can use to type numbers and arithmetic operators. The keys in this keypad are marked using light gold characters.

- Press Fn+F8 to turn on the embedded keypad.
- Hold Fn while typing a key to turn the embedded keypad on temporarily.

When the embedded keypad is active, you can use Num Lock to change how the keypad functions:

- Num Lock on: the keys enter the numbers and arithmetic operator printed in light gold on the keyboard.
- Num Lock off: the keys act as cursor control keys, as marked on an external keyboard.

---

## To use the ALT GR key

Non-U.S. keyboards have an ALT GR key to the right of the spacebar. This is a shift key that provides access to certain special keyboard characters.

- For a character in the lower-right corner of a key, press and hold ALT GR to type the character.



1. Shifted.
2. Unshifted.
3. ALT GR.

---

## To adjust the display

### Changing the brightness

- Press Fn+F1 or Fn+F2 to decrease or increase (respectively) the display's brightness.  
–or–
- Click Start, Programs, HP Display Settings, HP Display Settings (Windows 98), or Start, Programs (or All Programs), Hewlett-Packard, Notebook, HP Display Settings, HP Display Settings (Windows 2000 or XP).

You have the option of adding a display settings icon in the taskbar for quick access.

---

**Hint**

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To maximize your battery operating time, set the brightness to the lowest level you can view comfortably.

### Changing display settings

You can customize a number of display settings for your computer, such as color depth and screen area.

1. Click Start, Settings, Control Panel, then double-click Display (Windows 98 or 2000), or click Start, Control Panel, Appearance and Themes, Display (Windows XP).
2. Click the Settings tab, then make the settings you want.

## Basic Operation

### Operating Your Computer

The computer has an LCD display, which behaves differently from a normal computer monitor. If you change the display resolution, the desktop changes size, but the objects on it do not. You normally won't change the resolution except to use an external monitor.

#### Using an external monitor

If you want, you can attach an external monitor to your computer. See "To use an external monitor" on page 93.

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## To adjust the volume

#### From the computer

- To increase the volume, press the rear half of the volume control on the right side of the computer.
- To decrease the volume, press the front half of the volume control.
- To toggle the standard mute function, press Fn+F7.

#### With the audio-off button

Your computer includes an audio-off button you can use to temporarily disconnect the speakers without changing the volume or mute settings. This feature is handy when you want to block all speaker output regardless of what your computer is doing.

- To toggle the speaker connection on and off, press the audio-off button on the right side of the computer. The audio-off light turns on when the speakers are disconnected.

#### In Windows

1. Click the Volume icon in the taskbar (if not present, see Windows Help).
2. Drag the volume control bar up or down to adjust the volume.
3. To temporarily silence the speakers without changing the volume setting, click Mute.

#### From an expansion base

- Press the volume control above the right module bay.

## To change computer settings for a presentation

When you show a presentation to an audience, you'll often want to adjust some of your video and power settings for the show. You can easily do this with HP Presentation Ready, an application that automatically adjusts your computer for slide shows and similar presentations, and also opens the presentation itself. Once the presentation is through, HP Presentation Ready automatically returns your computer to its normal settings.

### To prepare for the presentation

1. Click Start, Programs (or All Programs), Hewlett-Packard, Notebook, HP Presentation Ready, Configure.

–or–

Click the HP Presentation Ready icon in the taskbar (if present), then click Configure.

2. Select the presentation you want to show. If you don't select one, you can choose one when you start the show.
3. If you want to change the video or power settings for the show, click Settings.

### To show the presentation

- Press the HP Presentation Ready One-Touch button.

–or–

Click Start, Programs (or All Programs), Hewlett-Packard, Notebook, HP Presentation Ready, Start Presentation.

–or–

Click the HP Presentation Ready icon in the taskbar (if present), then click Start Presentation.

To adjust settings during the presentation, press the One-Touch button or click the taskbar icon and choose Configure.

To end the presentation and restore the computer's normal settings, close the presentation application or click the taskbar icon and choose Stop Presentation.

## To use a multimedia expansion base

The multimedia expansion base provides connections for peripheral devices that you can leave in place whenever you remove the computer from your desk. Instead of disconnecting and reconnecting the devices, you can simply undock and dock the computer. For details, see “Using an Expansion Base” on page 76.

In addition, the expansion base is very portable. You can easily set up your computer and expansion base as a flexible multimedia system that’s convenient for travel.

The expansion base also includes a built-in CD player that uses a CD-ROM or DVD drive in the right module bay—see “To work with CDs and DVDs,” below.

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## To work with CDs and DVDs

The expansion base includes a built-in CD player that uses a CD-ROM or DVD drive in the right module bay. If you have an expansion base and a CD-ROM or DVD drive module, you can play audio CDs with or without the computer—see “Using Plug-In Modules” on page 82 and “To play audio CDs” on page 79.

If you have a DVD drive module, you can also use your computer to watch DVD movies—see “To play DVD movies” on page 86.

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## Securing Your Computer

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### To set up password protection

You can protect your computer from access by another user when you set up password protection, which is available through Windows and through the BIOS Setup utility. For complete protection, set passwords in Windows and through BIOS Setup.

To cancel password protection, set an empty password.

#### **BIOS Setup Utility**

1. Click Start, Shut Down (or Turn Off Computer), Restart.
2. When the HP logo appears, press F2 to enter BIOS Setup.
3. From the Security menu, enter or modify the Administrator Password or User Password as needed—see “Security Menu” on page 134.
4. Press F10 to save and exit BIOS Setup.

#### **Windows 98**

1. Click Start, Settings, Control Panel, then double-click Passwords.
2. Click the Change Passwords tab, then click Change Windows Password and set a password.
3. Click Start, Settings, Control Panel, then double-click Power Options or Power Management.
4. On the Advanced tab, select the option to prompt for a password when the computer leaves Standby mode.

#### **Windows 2000**

1. Press CTRL+ALT+DEL, then click Change Password.
2. Create or modify your Windows password.
3. Click Start, Settings, Control Panel, then double-click Power Options.
4. On the Advanced tab, select the option to prompt for a password when the computer leaves Standby mode.

## Basic Operation

### Securing Your Computer

For Windows 2000, to protect against unauthorized undocking while the computer is running, press CTRL+ALT+DEL and click Lock Computer before leaving it unattended, or set up a screen saver with a password in Control Panel Display.

#### Windows XP

1. Click Start, Control Panel, User Accounts, then select your account.
2. Click Create a Password, then set the password.
3. Click Start, Control Panel, Performance and Maintenance, Power Options.
4. On the Advanced tab, select the option to prompt for a password when the computer leaves Standby mode.

For Windows XP, to protect against unauthorized undocking while the computer is running, set up a screen saver with a password in Control Panel Display.

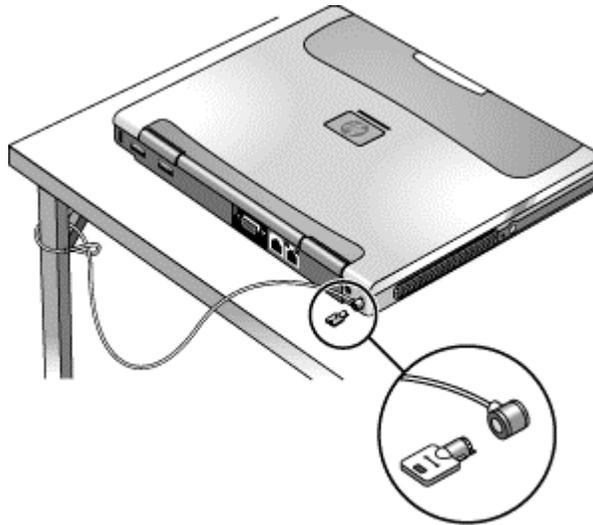
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## To attach a security cable

Your computer includes a built-in connector you can use to secure the computer with a cable and a lock (such as the Kensington MicroSaver lock system, available at many computer stores).

1. Wrap the cable around a secure object, such as a table leg.
2. Loop the cable to create a slip knot around the stationary object, and make sure it can't slip off.

3. Insert the lock into the security connector on the back of the computer, and release the key. Store the key in a safe place away from the computer.



The expansion base also includes a security connector. When the expansion base is secured in this way, you will not be able to use the emergency undock latch. To further prevent the computer from being undocked while the expansion base is secured, add a password for undocking—see “To run the BIOS Setup utility” on page 131.

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## To protect against viruses

Virus-protection software can help protect the integrity of your data. This is especially important if you use the Web.

Your computer includes Norton AntiVirus software. You can get detailed instructions from the software’s online help.

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## To set PC identification

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### **Pavilion models**

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HP TopTools and PC identification are not supported on all Pavilion models.

You must have BIOS administrator password authority to set a PC identification number.

1. If you have not already installed HP TopTools, do so now—see “To set up TopTools” on page 137.
2. Click Start, Programs (or All Programs), hp toptools Agent, HP TopTools, then click Security.
3. In the “Identification String” box, type a unique set of characters that will identify your PC. You can type up to 80 characters including spaces and special characters. Do not press ENTER when typing. The string wraps automatically.
4. Click Apply.
5. Type your BIOS administrator password and press ENTER.

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## To lock the hard disk drive

The computer enables you to lock its internal hard disk drive to help keep your information secure. *Hard disk drive lock does not protect a second hard disk drive installed in an expansion base module bay.*

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### **CAUTION**

**When you enable hard disk drive lock, the current BIOS user password (or administrator password if that is the only password set) is encoded on the hard disk drive.**

***If you move the hard disk drive to another computer, you can't access the drive until you set the user (or administrator) password to match the drive's password. After you match the drive's password, you can change the computer (and drive) password. If you forget the password, you cannot recover your data.***

1. Click Start, Shut Down (or Turn Off Computer), Restart.
2. When the HP logo appears, press F2 to enter the BIOS Setup utility.
3. From the Security menu, enable Password Required to Boot.
4. From the Security menu, enable Internal hard disk drive lock.
5. Press F10 to save and exit BIOS Setup.

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## Working in Comfort with a Notebook PC

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### WARNING

**Improper use of keyboards and other input devices has been associated with ergonomic injury. For more information about reducing your risk, visit our ergonomics web site at [www.hp.com/ergo](http://www.hp.com/ergo)—or see *Working in Comfort in the online HP Library*.**

You can use your HP notebook computer virtually anywhere, anytime. The following recommendations should help you work more comfortably.

---

### Note

Note that if you are using your portable computer as your primary computer, or using it for extended periods, you should use it with a full-size keyboard, monitor, and mouse. This will give your portable computer the adjustability and comfort features of a desktop unit. The multimedia expansion base offers quick, easy connections to these devices. More information on how to prepare your workspace environment and set up your HP equipment is available in *Working in Comfort*, which is preloaded on the hard disk in the HP Library and available on the *Recovery CD* in \hp\Library—as well as at [www.hp.com/ergo](http://www.hp.com/ergo).

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### Your Mobile Work Environment

- Use a chair that provides good support for your lower back. If an adjustable chair is not available, you can use a pillow or rolled-up towel to provide lower back support.
- Try to keep your thighs parallel to the floor and your feet flat on the floor. In a mobile environment, you can do this by using a phone book or briefcase to support your feet.
- Adjust the height of either your work surface or chair to keep your arms in a neutral position. Your arms should be relaxed and loose, elbows at your sides, with the forearms and hands parallel with the floor.
- Position your notebook computer display to minimize glare and reflection. For example, on an airplane, lower the window shade, or in a hotel room, draw the curtains. You also should maintain a comfortable viewing distance—approximately 40 to 60 cm (16 to 24 inches). Adjust the angle of your display to help keep your head angled slightly downward in a comfortable position.

## Basic Operation

### **Working in Comfort with a Notebook PC**

#### **Using Your Mobile Computer**

- Position the computer so your wrists and hands are in a neutral position. Your wrists should be as straight as possible and should not have to bend sideways or more than 10 degrees up or down. If your notebook computer does not have a built-in palm rest, you can use a rolled-up towel.
- Try to type as lightly as possible. The notebook keyboard requires little force to activate.
- Take frequent, short rest breaks—this is especially important in a mobile computing environment.
- Portable computers weigh between approximately 1.4 and 3.7 kilos (3 and 8 pounds). When traveling, be sure to carry your computer properly to minimize strain on your body. Shift the bag containing your notebook equipment frequently between your left and right hands and shoulders.

---

## Taking Care of Your Computer

Use the following recommendations to maintain your computer during everyday use and prevent potential physical damage or data loss.

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### To protect your hard disk drive

Hard disk drives, as well as other internal components, are not indestructible and can be damaged by inappropriate handling and operation.

- Avoid bumps or jolts.
- Do not operate the computer while traveling over bumpy terrain.
- Suspend or shut down the computer before transporting it. This turns off the hard drive. A drop of a few inches onto a rigid surface while the hard drive is operating could destroy data or damage the drive.
- Carry the computer in a padded case to protect against bumps and jolts.

---

### To maintain your computer

- Provide adequate ventilation around the computer. Always set the computer on a flat surface, so that air can flow freely around and underneath it.
- Always shut down the computer or put it in Hibernate mode before putting it in a carrying case or other enclosed space.
- Do not pick up or carry the computer by its display.
- Observe the temperature limits and other specifications listed in “Hardware Specifications” on page 152. Do not use the computer outside in the rain or snow (inclement weather). If the computer is cold, warm it gradually to avoid condensation.
- Maintain your battery for best performance—see “To get the most from your batteries” on page 56.

### To safeguard your data

- Do not use the pointing stick or activate any other device that interrupts operation while the system is starting or stopping.
  - Back up your work regularly. Copy files to floppy, tape, CD-R, or network drives.
  - Use a virus-scanning program (such as the Norton AntiVirus program included with your computer) to check the integrity of your files and operating system. Since new viruses appear frequently, you will also want to update the program's virus definitions from time to time; updates are on the Web at [www.symantec.com](http://www.symantec.com) for Norton AntiVirus.
  - Check your disk periodically using the Scandisk utility (Windows 98) or the Tools tab in the disk's Properties window (Windows 2000 or XP).
- 

### To extend the life of the display

- Set the display brightness to the lowest comfortable level (Fn+F1).
  - When working at your desk, connect an external monitor and turn off the internal display (Fn+F5).
  - If you are not using an external monitor, set the Turn off monitor timeouts (for both AC and battery operation) to the shortest comfortable interval.
  - Avoid using a screen saver or other software that prevents the computer from changing to Standby mode after a timeout period. If you use a screen saver, enable the option to shut off the display after a time delay.
  - Do not disable the Standby timeout.
  - If you are using AC power and have no external monitor attached, put the computer in Standby mode when not in use.
- 

### To clean your computer

- You can clean the computer with a soft cloth dampened with clean water or with water containing a mild detergent. Do not use an excessively wet cloth, and take care to keep water out of the case.
  - Do not use abrasive cleaners, especially on the display. Do not apply any cleaner directly to the display. Instead, apply the cleaner to a soft cloth and then gently wipe the display.
  - You can clean the keyboard with a vacuum cleaner to remove accumulated dust.
-

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## Batteries and Power Management

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## Managing Power Consumption

When you're running your computer on battery power, you will want to maximize operating time without compromising performance. Your computer is designed to help you reduce power consumption and extend battery life without needing to turn it off.

- During idle periods, the computer automatically enters power-saving modes after specified timeout periods. You can adjust these timeouts to suit your working habits.
- You can manually send the computer into a power-saving mode at any time by pressing the appropriate key—see “To manage power manually” on page 53.

---

### How the computer manages power automatically

Your computer automatically enters Hibernate mode and Standby mode, and turns off the hard disk and display based on values set in Power Options or Power Management in Control Panel or in the BIOS Setup utility.

<b>Automatic action</b>	<b>Occurs after...</b>	<b>To resume...</b>
<b>Turns off hard disk.</b> Turns off the hard disk drive. This is usually set to occur shortly after the display is turned off.	The hard disk is not accessed for the specified interval.	Begin using the computer: the hard disk turns on when needed.
<b>Turns off display.</b> Turns off the display to conserve battery power and extend the life of the display.	No keyboard, pointing device, or other input activity occurs for the specified interval.	Press any key or move a pointing device to turn on the display.
<b>Enters Standby mode.</b> Maintains your current session in RAM, and turns off the display and other components to conserve battery power.	No pointing devices are used, no disk drive is accessed, and no port (serial, parallel, or infrared) is active for the specified interval.	Press the blue sleep button to return to your current session.
<b>Enters Hibernate mode.</b> Saves your current session to the hard disk, then turns off the computer.	The computer stays in Standby mode for the specified interval.	Press the blue sleep button to restore your previous session.

---

#### **CAUTION**

**Make a habit of saving your work before allowing your computer to enter Standby mode. If power is interrupted while the computer is in Standby mode, any information that was not saved will be lost.**

The computer can also enter Hibernate mode if battery power reaches a critically low level. (See “To respond to a low-battery warning” on page 55.) If this happens, you will find on resuming that all your data has been saved, but some functions may be disabled. To resume normal operation, restore power by connecting an AC adapter or installing a charged battery, then shut the computer off and restart it.

### **Changing timeout settings and creating power schemes**

You can adjust the periods of non-use after which your computer automatically shuts down components or enters a power-saving mode. You can also save these settings as a power scheme.

1. Open Power Options or Power Management in Control Panel:
  - **Windows 98 or 2000:** click Start, Settings, Control Panel, then double-click Power Options (Windows 2000) or Power Management (Windows 98).
  - **Windows XP:** click Start, Control Panel, Performance and Maintenance, Power Options.
2. Click the Power Schemes tab, and enter the settings you want. If you don't want a particular timeout to occur, set the value to Never. See Windows Help for details.

If you want to save the settings as a power scheme, click Save As and enter a name for the scheme.

For Windows 98, change the Hibernate timeout in BIOS Setup—see “To run the BIOS Setup utility” on page 131.

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**CAUTION**

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**For Windows 2000 or XP, do not disable Hibernate support in the Power settings, or you will lose any unsaved data if the computer's battery runs down completely.**

## Batteries and Power Management

### Managing Power Consumption

#### Managing CPU power

If your computer contains a multispeed processor with Intel SpeedStep Technology, the taskbar in Windows 98 or 2000 contains an Intel SpeedStep Technology icon. This feature enables the processor to automatically switch to lower, power-saving speeds or to higher-performance speeds according to its workload and power source.

You can customize SpeedStep to best suit your working environment.

- **Windows 98 or 2000:** double-click the Intel SpeedStep Technology icon in the taskbar, then select the battery and AC options you want. The Max Battery option uses the lowest processor speeds for maximum battery time. The Auto option uses medium and high processor speeds.
- **Windows XP:** click Start, Control Panel, Performance and Maintenance, Power Options. On the Power Schemes tab, select a power scheme. This scheme automatically controls the processor speeds:
  - The Max Battery scheme uses the lowest processor speeds while running on battery power, but uses medium and high processor speeds on AC power.
  - The Portable/Laptop option uses medium and high processor speeds on battery and AC power.

See Windows Help for additional information about power schemes.

---

## To manage power manually

In addition to allowing the computer to enter its power-saving modes automatically, you can also put it into any of the following three modes whenever you need to.

Power mode	Does this...	Use when...	To enter this mode...
<b>Standby</b>	Maintains your current session in RAM, and turns off the display and other components.	You will be away from your computer for up to several hours.	Press blue sleep button –or– click Start, Shut Down, Standby (Windows 98 or 2000) –or– click Start, Turn Off Computer, Stand By (Windows XP).
<b>Hibernate</b>	Saves the current session to disk, then shuts down. Provides maximum power savings while still allowing you to recover the current session.	You will be away from your computer for a day or more, but want to continue your session.	Press Fn+F12 –or– click Start, Hibernate (Windows 98) –or– click Start, Shut Down, Hibernate (Windows 2000).
<b>Off</b>	Turns off your computer, providing maximum power savings. The current session will not be saved, and any unsaved data will be lost.	You're done with your work.	Click Start, Shut Down, Shut down (Windows 98 or 2000) –or– click Start, Turn Off Computer, Turn Off (Windows XP) –or– slide the power button (only if the Start menu procedure doesn't work).

You can also turn off the display by closing the display lid.

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## Using Battery Power

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### To check battery status

The computer contains one battery: the main battery. An expansion base can contain one or two secondary batteries in the module bays.

#### **From the battery charge light**

The main battery charge light on the front of the computer shows whether the computer's main battery is charging or fully charged—see “Status Lights” on page 17.

#### **From the Windows taskbar**

The Windows taskbar can display a power icon that provides detailed battery status information (see Windows help for details). The icon looks like a battery when AC is not connected.

- Place the pointer over the power icon to display the remaining charge of all batteries combined. This value is shown as either a percentage of charge remaining, or as time remaining.
- Double-click the power icon to open the Power Meter window.

#### **From the Windows Control Panel**

- **Windows 98 or 2000:** click Start, Settings, Control Panel, then double-click Power. This shows the status of each battery, and provides access to all of Windows' power-information options.
- **Windows XP:** click Start, Control Panel, Performance and Maintenance, Power Options, then click the Power Meter tab to see battery status. The Alarms and Advanced tabs provide additional Windows' power-information options.

#### **From the expansion base status panel**

- Press the status panel button several times to display the percent charge remaining for each secondary battery.

### On the battery

1. Remove the battery from the computer (see “Step 1: Install the battery” on page 21) or from the expansion base.
2. Press the contact pad on the back of the battery. The number of lights that turn on indicates the remaining charge (each light represents 20% of a full charge).

---

## To respond to a low-battery warning

The computer automatically alerts you when the battery power drops to a critically low level. If you do not restore power within a short time, the computer then goes into Hibernate mode.

Once the computer enters Hibernate mode in this way, you won't be able to turn it on again until you restore power by doing one of the following:

- Replace the battery with a charged one. See “Step 1: Install the battery” on page 21.
- Plug in the AC adapter.
- Install a charged secondary battery in one of the expansion base's plug-in module bays—see “To use additional batteries,” below.

---

### Note

If you plug in the AC adapter, you can continue to work while your battery recharges.

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## To recharge the battery

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### CAUTION

**The AC adapter is normally warm whenever plugged into an AC outlet. The computer is normally warm while recharging. Don't recharge the computer in a briefcase or other confined space, or its battery could overheat.**

- To recharge the main battery, plug the AC adapter into the computer, or dock the computer and plug the AC adapter into the dock.
- To recharge a secondary battery, plug the AC adapter into the expansion base and insert the battery.

Batteries charge in this order: main battery, secondary battery in the left module bay, secondary battery in the right module bay.

## Batteries and Power Management

### Using Battery Power

To get the longest operating time, wait until the battery's charge is below 50% before recharging, then charge it fully (100%). Charging can take up to approximately 2 hours. You can continue working while the battery charges.

A fully charged battery can operate the computer for up to approximately 4 hours, depending on your computer's model, power management settings, and level of use.

---

### To use additional batteries

You can install a secondary battery in either or both of the expansion base's plug-in module bays. See "Using Plug-In Modules" on page 82 for information about installing plug-in modules.

For instructions on replacing the main battery, see "Step 1: Install the battery" on page 21.

---

### To get the most from your batteries

Follow these suggestions to make your battery's power last as long as possible.

- Plug in the AC adapter, especially when using a drive in the expansion base's module bays, or any external connections such as a PC Card or a modem.
- Set the display brightness to the lowest comfortable level (Fn+F1).
- Put the computer in Standby mode whenever you are not using it for a short while: press the blue sleep button for approximately one second, or click Start, Shut Down (or Turn Off Computer), Standby.
- Put the computer in Hibernate mode whenever you want to save your current session, but will not be using the computer for a day or more: press Fn+F12.
- Set the automatic timeout settings to emphasize saving power. If your computer has a multispeed processor and uses Windows 98 or 2000, use the lower speed on battery power (the default settings conserve battery power)—see "How the computer manages power automatically" on page 50.
- If your computer has a wireless on-off button, turn off the wireless function when you're not using it. Press the wireless on-off button so the light turns off.
- If you have an I/O PC Card—that is, a PC Card having an external connection, such as a network card—remove it when you're not using it. Some I/O cards use significant power even while they're inactive.

- If you work with an application that uses the serial port or an I/O PC Card, exit the application when you finish using it.
- Install another battery—see “To use additional batteries” on page 56.
- If your main battery is rated at 14.8 volts (check its label), purchase a replacement main battery, which is rated at 11.1 volts.

In addition, follow these suggestions to extend the life of your batteries.

- Do not leave batteries unused for long periods. If you have more than one, rotate them.
- If you normally use AC power, make a practice of using the battery as your power source at least once a week.
- Unplug the AC adapter when the computer is not in use.
- To preserve the life of a battery, be sure to charge it regularly.
- For long-term storage, the battery must be charged 20–50% to minimize capacity loss by self-discharge and to avoid deterioration of battery performance.
- To maintain maximum battery capacity and accuracy of the battery gauge, perform this calibration procedure every few months:
  1. Connect the AC adapter.
  2. Restart the computer and press F6 when the HP logo appears.
  3. Follow the startup instructions. The calibration process could take 4-6 hours or more per battery, and you can't use the computer during that time. If you interrupt the process, the battery might be left with a low charge.

---

## To maximize processor speed

If your computer contains a multispeed processor with Intel SpeedStep Technology, the processor can automatically switch to lower, power-saving speeds or to higher-performance speeds according to its workload. See “How the computer manages power automatically” on page 50.



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## Modem and Network Connections

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## Using the Modem

If your computer has a modem port, you can connect your modem to a telephone line and communicate with other computers throughout the world. You can explore the Internet, send and receive e-mail messages, and use your computer to send and receive faxes. Your computer contains several software programs that work with your modem:

- Internet Explorer, for browsing the World Wide Web.
- Outlook Express, for sending and receiving e-mail messages.
- Windows XP Fax Console, Windows 2000 fax software, or QuickLink with Windows 98, for sending and receiving faxes.

The modem is a high-speed 56-Kbps modem. It allows you to connect to any Internet Service Provider (ISP) or modem network that has V.90 interoperable modems. Check with your ISP for a list of telephone numbers that support V.90.

Note that the maximum speed for faxing is 14.4 Kbps. Even though the modem is capable of downloading at 56 Kbps, your ISP or modem network may not operate at this speed or support this technology. Please check with your service provider for information on its capabilities. Furthermore, download transmission rates depend on the condition of the telephone line.

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### To connect the modem

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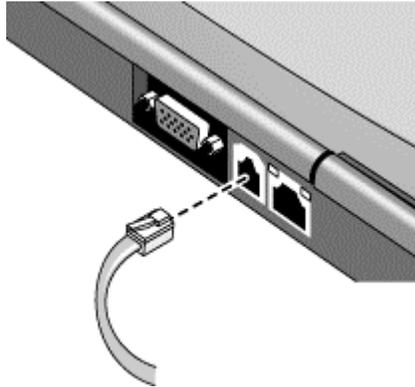
#### **CAUTION**

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**To reduce the risk of fire, use only No. 26 AWG or larger telecommunications line cord to connect the modem to the telephone wall jack.**

1. Make sure the telephone line is an analog line (sometimes called a data line). You must not use a digital line.

2. Connect the telephone cord to the built-in modem.



3. Plug the other end of the phone cord into a telephone jack. If the plug on the phone cord doesn't fit the jack, you may need to use an adapter.
4. Check your modem's country or region settings:
  - **Windows 98:** click Start, Settings, Control Panel, double-click Modems, then click Dialing Properties.
  - **Windows 2000:** click Start, Settings, Control Panel, double-click Phone and Modem Options, then click Edit on the Dialing Rules tab.
  - **Windows XP:** click Start, Control Panel, Printers and Other Hardware, Phone and Modem Options.

---

**CAUTION**

**Your built-in modem may not work with multiple phone lines or a private branch exchange (PBX), cannot be connected to a coin-operated telephone, and does 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.**

**Special restrictions in certain countries**

- Many countries impose a blackout period after a modem repeatedly fails to connect to a service provider. The number of failed attempts and the period you must wait before trying again differ from country to country: check with your telephone company.

For example, if you are dialing from Italy and fail to connect to your server or cancel the connection, you must wait one minute before dialing that number again. If you dial before then, you will get an error message that says "delay." After the fourth failed connection, you must wait one hour before trying the number again. If you dial before the hour is up, you will get a message that says "black list."

## Modem and Network Connections

### Using the Modem

- When using a modem in the Republic of South Africa, an external surge protector may be necessary in order to prevent computer damage by lightning or other electrical surges. Connect any approved surge protector to the modem cable whenever you are using the modem.

---

## To connect to the Internet

### Signing up with an Internet Service Provider

Before you can connect to the Internet, you need to set up an account with an Internet Service Provider (ISP). In some countries, Hewlett-Packard provides easy Internet signup so that you can connect quickly to an ISP.

1. Connect your built-in modem—see the previous topic. (If your computer does not have a built-in modem, you can instead use a PC Card modem or an external modem.)
2. If available, double-click the Connect to the Internet or Easy Internet Signup icon on the desktop. This launches the Internet Connection or New Connection wizard, which helps you locate an ISP in your area, transfer an existing Internet account to this computer, or set up an Internet connection manually.

–or–

If available, click Start, Programs, Online Services (Windows 98 or 2000) or Start, All Programs, Easy Internet Signup (Windows XP), and select one of the listed ISPs. This begins the registration process for the ISP you choose.

### Connecting to the Internet

1. Double-click the Internet Explorer icon on the desktop (if available), or click Start, Programs, Internet Explorer (Windows 98 or 2000) or Start, Internet Explorer (Windows XP). For your first connection, you'll be prompted for information about your connection.
2. Click the Connect button in the Dial-up Connection or Network Connection window.

For Windows 98 or 2000, when you are successfully connected to the Internet, you'll see a connect icon (two connected computers) in the taskbar. For Windows XP, to display an icon for your connection, open Network Connections in Control Panel, right-click the connection, select Properties, and select the icon option.

### **Using AOL as your ISP (Windows 98)**

If you signed up with AOL as your ISP, you can access the Internet only with AOL's own software—you can't use a standard browser such as Internet Explorer. As a result, you cannot view web sites by clicking on links in documents, and you cannot go to a web site by entering the address in Windows Explorer.

If you try to access the Internet without using the AOL software, the Internet Connection wizard automatically launches, asking you to sign up for an ISP. In that case, cancel the wizard and launch AOL.

---

## To disconnect from the Internet

You remain connected to the Internet until you shut down the computer, disconnect the phone line from the computer, or give a command to hang up the connection.

- Double-click the connect icon in the taskbar, and click Disconnect. (For Windows XP, you can enable this icon as described in “To connect to the Internet,” above.)

–or–

For Windows XP, click Start, Control Panel, Network and Internet Connections, Network Connections, then right-click the connection and select Disconnect.

---

## To dial in to a network

You can use the modem to dial in to a LAN (local area network) that supports dial-in connections. This gives you access to network resources from a remote location.

- See Windows Help for information about setting up and using dial-in network connections—click Start, Help (or Help and Support).

## To change your modem settings

The modem is already set up to be compatible with telephone systems and modems in most areas. However, in some situations, you may have to change modem settings to match local conditions. If you have questions about local requirements, contact your telephone company.

- **Control Panel.** Open Modems (Windows 98) or Phone and Modem Options (Windows 2000 or XP) in Control Panel to change many modem settings.

For Windows 98, on the General tab click Properties to set connection speeds or special dialing options.

For Windows 2000 or XP, on the Modems tab click Properties to set connection speeds, or on the Dialing Rules tab click Edit to set dialing options.

- **Communications software.** Many communications applications provide options for controlling modem settings. See the help for your software.
- **AT commands.** You can control many aspects of modem operation using modem AT commands. AT commands are special strings of characters sent to the modem to set up specific conditions. Those command strings normally start with “AT”. For a list of AT commands for the built-in modem, see “Modem Reference Information” on page 155.

For Windows 98, open Modems in Control Panel. On the General tab, click Properties, then on the Connection tab click Advanced. You can type AT commands in the space for extra settings.

For Windows 2000 or XP, open Phone and Modem Options in Control Panel. On the Modems tab, click Properties. You can type AT commands on the Advanced tab in the space for extra settings.

For example, to force a built-in Ambit modem to turn off its speaker, you can use the M0 command as shown in table of AT commands—type ATM0 in the space for extra settings.

## To send and receive e-mail

Sending and receiving e-mail requires an e-mail account with an Internet Service Provider or with your company's communications system. If you are using AOL, e-mail services are part of your AOL service. For another ISP, you can use Outlook Express (included with your computer) or an e-mail system of your choice. This topic includes instructions for using Outlook Express.

### **To start Outlook Express**

1. Click Start, Programs (or All Programs), Outlook Express, or double-click Outlook Express on the desktop (if available).
2. If you are not currently connected to the Internet, the Dial-up Connection window appears. Choose Connect to connect to the Internet.

### **To send an e-mail message**

1. In Outlook Express, click the New Mail or Create Mail tool on the toolbar.
2. Fill in the information in the New Message window.
3. When you're finished, click the Send button.

### **To receive e-mail messages**

1. In Outlook Express, click the Send/Recv tool on the toolbar to have Outlook deliver new messages.
2. Click the Inbox folder to view the list of messages. Unread messages appear bold on the screen.
3. To view a message, click it once. (Or double-click to view the message in its own window.)

## To send and receive faxes (Windows 98)

Sending and receiving faxes requires just a telephone connection—you don't need an Internet connection. You can use the modem and fax software to send and receive faxes on your computer. QuickLink fax software is included with Windows 98 on the hard disk.

### **To start QuickLink**

- Click Start, Programs, QuickLink, QuickLink.

The first time you start QuickLink, the Setup Wizard steps you through the process of setting options and customizing the program for your personal use. Follow the onscreen instructions. If you're not sure which setting to choose, accept the default choice.

### **To send a fax**

1. In QuickLink, click the QuickFax tool on the toolbar.
2. Enter the fax number and the recipient's name and company.
3. Type the message body in the QuickFax Note area.
4. Click Send Fax.

If instead you want to send a document as a fax, open the document in its application window, then open the Print dialog box. Change the selected printer to QuickLink, then print it.

### **To receive faxes**

Faxes are automatically received when QuickLink is running in an open or minimized window. New faxes are indicated in the status box in the QuickLink window. To receive a fax manually, follow these steps.

1. When a fax call is coming in, click Start on the QuickLink menu bar.
2. Click Manual Fax Receive.

### **To view and print a fax**

1. In QuickLink, click the Fax Viewer tool on the toolbar.
2. Click Yes to view the fax now.
3. Click the printer icon to print the fax.

## To send and receive faxes (Windows 2000)

Sending and receiving faxes requires just a telephone connection—you don't need an Internet connection. You can use the modem and fax software to send and receive faxes on your computer. Fax software is built into Windows 2000.

### **To set up for faxing**

1. Click Start, Settings, Control Panel, then double-click Fax. Enter your fax information.
2. On the Advanced Options tab, add a fax printer.  
If you do not want to receive faxes, stop here.
3. On the Advanced Options tab, open the Fax Service Management Console.
4. In the list under Fax Service on Local Computer, double-click Devices, then right-click the modem and click Properties.
5. On the General tab, enable the modem to receive faxes.
6. On the Received Faxes tab, select the option to save faxes in a folder.

### **To send a fax**

- Click Start, Programs, Accessories, Communications, Fax, Send Cover Page Fax. Follow the instructions to create and send the fax.

If instead you want to send a document as a fax, open the document in its application window, then open the Print dialog box. Change the selected printer to the fax printer, then print it.

### **To receive, view, and print faxes**

If you enabled the modem to receive faxes, they are automatically received.

1. Click Start, Programs, Accessories, Communications, Fax, My Faxes.
2. In the Received Faxes folder, double-click the fax.
3. To print, click File, Print.

## To send and receive faxes (Windows XP)

Sending and receiving faxes requires just a telephone connection—you don't need an Internet connection. You can use the modem and fax software to send and receive faxes on your computer. Fax Console fax software is included with Windows XP.

### **To set up Fax Console**

Before you can use Fax Console, you need to install it.

1. Click Start, Control Panel, Add or Remove Programs.
2. Click Add/Remove Windows Components, select Fax Services, and follow the instructions on the screen. If prompted for the Windows CD, point instead to the c:\i386 directory.

### **To start Fax Console**

- Click Start, All Programs, Accessories, Communications, Fax, Fax Console.

The first time you start Fax Console, the Fax Configuration Wizard steps you through the process of setting options and customizing the program for your personal use. Follow the onscreen instructions. If you're not sure which setting to choose, accept the default choice.

### **To send a fax**

- Click Start, All Programs, Accessories, Communications, Fax, Send a Fax, then follow the instructions that appear on the screen.

If instead you want to send a document as a fax, open the document in its application window, then open the Print dialog box. Change the selected printer to Fax, then print it.

### **To receive faxes**

Faxes are automatically received when Fax Console is running in an open or minimized window. New faxes are indicated in the status box in the Fax Console window. To receive a fax manually, follow these steps.

- When a fax call is coming in, click Receive now on the Fax Console menu bar.

### **To view and print a fax**

1. In Fax Console tree, click Inbox, then double-click the fax you want to view.
2. Click the printer icon to print the fax.

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## Connecting to a LAN

Connecting to a local area network (LAN) gives you access to network resources, such as printers and file servers on your corporate network, and possibly to the Internet.

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### To connect to a LAN

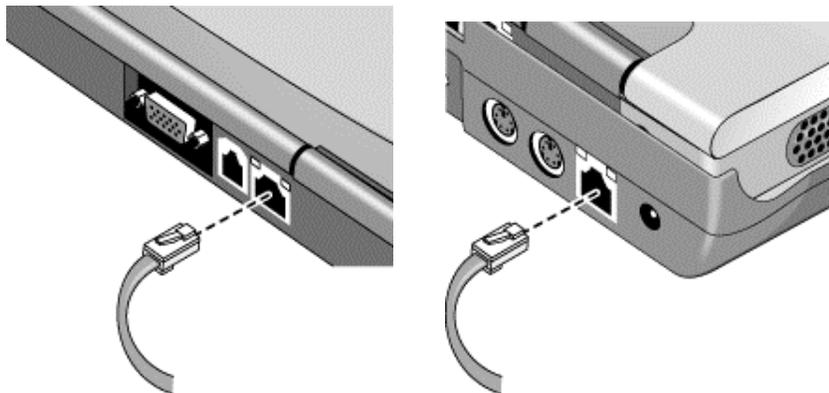
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**Important**

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If your computer does not have a LAN port, the LAN port on an expansion base will not work.

1. Make sure the existing LAN supports Ethernet 10Base-T (10 Mbps) or 100Base-TX (100 Mbps) connections.
2. Plug the LAN cable (not supplied) into the built-in LAN port on the computer or on the expansion base. The cable must have an RJ-45 connector.



3. **Windows 98:** open Network in Control Panel to set up support for a LAN connection on your network. For example, you can add the Microsoft TCP/IP protocol.

**Windows 2000 or XP:** automatically detects and sets up a LAN connection. To edit the settings, open Network Connections in Control Panel.

See Windows Help for information about setting up and using LAN connections—click Start, Help (or Help and Support). Contact your network administrator for network information.

Two lights next to the LAN port indicate the status of the connection (see the figures above): the green light indicates that a link is established to the network, and the yellow light indicates network activity.

---

## Making Wireless Connections

If your computer includes a wireless on-off button—located at the top of the computer’s display—you can connect by radio to a wireless local area network (LAN) and access computers and other resources on the network.

A wireless network provides all the functions of a typical “wired” network, but also provides for “roaming.” Since your computer connects to the network by radio rather than through cables, you can move from place to place within the network—from your office to a conference room, for example—and remain on the network the entire time.

---

### To prepare for connections (Windows 98 or 2000)

Before you can connect your computer to a particular 802.11 wireless network, you have to configure the computer for the specific type of connection: “AdHoc” or “Infrastructure.”

#### **Computer-to-Computer Connection (AdHoc)**

An AdHoc network provides a wireless connection from your computer directly to one or more computers with wireless capabilities, even if they aren’t connected to a LAN. You can then share resources such as shared files, printers, and Internet connections with the other computers.

1. Click the wireless link icon in the taskbar and select Advanced Configuration.

–or–

Click Start, Programs, HP Wireless LAN, Configuration Utility.

2. On the Configuration tab, set these parameters:

Mode: AdHoc.

SSID: any name; must be identical for all computers connecting to each other. Do not use a name that is used by a nearby access point.

AdHoc Channel: must be identical for all computers connecting to each other. For best performance, do not use a channel that is the same as or adjacent to a channel used by a nearby access point.

3. If the computers use encrypted communication, use the Encryption tab to set the following parameters, which must be identical for all computers connecting to each other:
  - Encryption: 64-bit or 128-bit.
  - Key: see the hint below.

The computers automatically connect whenever they're within range of each other and wireless communication is turned on—see “To turn wireless communication on and off,” below.

### **LAN Connection (Infrastructure)**

In an infrastructure network, your computer connects to a LAN (local area network) through a wireless access point. This gives you access to the resources on the network, such as printers, file servers, and possibly the Internet. Your network administrator can provide the settings you'll need to connect to the wireless access point, as well as the additional settings you'll need for the network itself.

1. Click the wireless link icon in the taskbar and select Advanced Configuration.

–or–

Click Start, Programs, HP Wireless LAN, Configuration Utility.

2. On the Configuration tab, set these parameters:

Mode: Infrastructure.

SSID: the ID used by the access point. “ANY” connects to the access point with the strongest signal, regardless of its SSID.

3. If your wireless network uses encrypted communication, use the Encryption tab to set these parameters—see the network administrator for the required settings:
  - Encryption: 64-bit or 128-bit.
  - Key: see the hint below.

The computer automatically connects to the infrastructure network whenever it's within range of an access point and wireless communication is turned on—see “To turn wireless communication on and off,” below.

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#### **Hint**

If you are connecting to an access point or computer that is using Lucent/Agere-based software, you must set up compatible encryption on your computer. You can use the same hexadecimal encryption key on all units. If you know only the Lucent/Agere passphrase, you must convert it to the corresponding hexadecimal key. If this option is not available on the Encryption tab, click Start, Programs, HP Wireless LAN, and use the encryption key converter.

---

## To prepare for connections (Windows XP)

Before you can connect your computer to a particular 802.11 wireless network, you have to configure the computer for the specific wireless connection.

### **Connecting to an Existing Wireless Network**

You can connect to an access point that gives you access to a local area network, or you can connect directly to other computers in an AdHoc network.

1. Right-click the wireless network connection icon in the taskbar, then select View Available Wireless Networks from the pop-up menu.
2. A list of available networks appears. Select the network you want, enter the encryption key if required, and click Connect.

If the network you want is not on the list, click Advanced, Configure, and enter the required network parameters. If the network is not using 802.1x authentication protocol, clear the automatic key option.

3. On the General tab, edit network settings as needed for your local network. See your network administrator. You can also display an icon in the taskbar when connected to a network.
4. On the Wireless Networks tab, view the wireless networks available within range. Each network SSID is listed. Click the network you want and click Configure.
5. If the wireless network uses standard encrypted communication, uncheck the automatic key option, then select the following parameters—see your network administrator for the required settings:
  - Key: ASCII passphrase or hexadecimal key string.
  - Key format: ASCII for passphrase, hexadecimal for key string.
  - Key length: smaller number for 64-bit encryption, larger number for 128-bit.
6. Click OK to save the configuration. This network is added to your list of preferred networks.

The computer automatically connects to the first preferred network that's within range if wireless communication is turned on—see “To turn wireless communication on and off,” below.

### **Creating a New Computer-to-Computer Network (AdHoc)**

You can set up a new network available to other local computers.

1. Click Start, Control Panel, Network and Internet Connections, Network Connections.
2. Double-click the wireless connection to show its status, then click Properties.
3. On the Wireless Networks tab, click Add to create a new network.
4. Type a name for the new network.
5. If you want to use encrypted communication, uncheck the automatic key option, then select the following parameters:
  - Key: ASCII passphrase or hexadecimal key string.
  - Key format: ASCII for passphrase, hexadecimal for key string.
  - Key length: smaller number for 64-bit encryption, larger number for 128-bit.
6. Mark the option to make this a computer-to-computer (ad hoc) network.
7. Click OK to save the configuration. This network is added to your list of preferred networks and becomes available to other computers.

---

### **To turn wireless communication on and off**

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#### **Important**

Wireless communication may be restricted in some situations or environments, such as when traveling in an airplane. If in doubt, be sure to ask for authorization *before* turning on your computer's wireless networking.

In Italy, Singapore, and possibly other countries, you are required to ask the responsible authority for a license paid for by you before using the wireless function.

---

#### **Turning on communication and making a connection**

1. If the computer isn't on, turn it on.
2. The wireless indicator light is lit whenever the wireless function is on. If the indicator isn't lit, do one of the following:

Press the wireless on-off button.

–or–

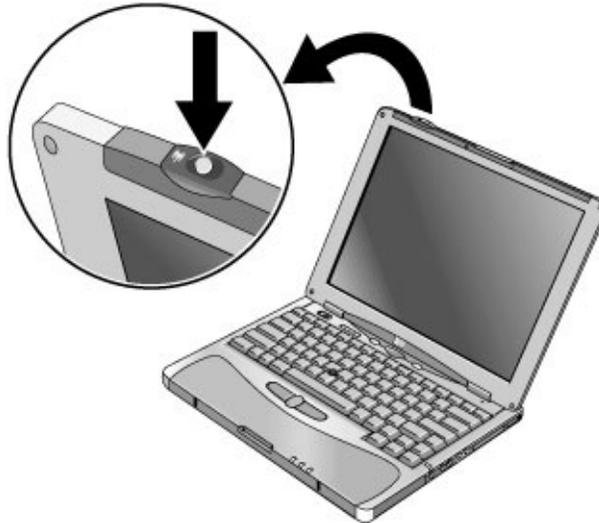
**Windows 98 or 2000:** Click the wireless link icon in the taskbar and select Wireless Radio On.

–or–

## Modem and Network Connections

### Making Wireless Connections

**Windows XP:** Click Start, Control Panel, Network and Internet Connections, Network Connections, then double-click the wireless network connection icon.



If you're within range of your wireless network, your computer automatically connects. To check the status of your wireless connection, click the wireless link icon in the taskbar and select Wireless Status (Windows 98 or 2000), or open Network Connections in Control Panel and double-click the connection (Windows XP).

#### Turning off communication and ending a connection

1. **Important:** close any files that reside on other network computers.
2. To turn off the wireless function without turning off the computer, do one of the following:

Press the wireless on-off button.

–or–

**Windows 98 or 2000:** Click the wireless link icon in the taskbar and select Wireless Radio Off.

–or–

**Windows XP:** Right-click the wireless network connection icon in the taskbar and select Disable.

Suspending or shutting down the computer also turns off the wireless function.

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## Add-On Devices

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## Using an Expansion Base

The multimedia expansion base enhances your computer's capabilities as a portable computer system. It provides space for additional drives and batteries, as well as expanded multimedia performance.

The expansion base also makes your computer more convenient for desktop use. By making a single connection—docking your computer into the base—you get easy access to these devices:

- Printer or other parallel device.
- Universal serial bus (USB) devices.
- External keyboard and mouse.
- External monitor and television.
- Local area network (LAN) if your computer includes a LAN port.
- Audio devices such as external speakers, headphones, or stereo inputs.
- Plug-in modules.

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### To dock the computer

1. For desktop use, plug the AC adapter into the expansion base.

For portable use, you can use power from the computer's battery or from a secondary plug-in battery module in the expansion base.

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**Note**

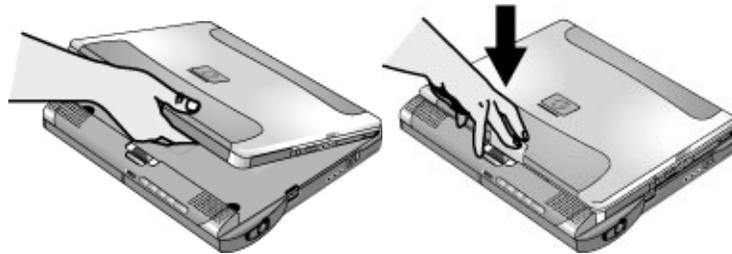
Use the AC adapter that comes with your computer. If you want, you can buy an additional AC adapter—see “To buy accessories” on page 13.

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2. Insert the back of the computer into the expansion base so it's held by the hooks at the back corners. Then lower the front end into the base. Press firmly near the center-front until it latches into the base.

If the computer doesn't latch, plug in the AC adapter.



You can dock or undock the computer in any power state: on, off, Standby mode, or Hibernate mode. Make sure, however, that the computer is not entering or resuming from Standby or Hibernate mode when you dock or undock, or the computer could lock up.

By default, the computer automatically turns on when you dock it. (You can change this setting using BIOS Setup—see “To run the BIOS Setup utility” on page 131.)

The first time you dock, the computer automatically configures itself to operate with the expansion base.

After the computer docks, the blue sleep button on the left side of the expansion base operates the same way as the blue sleep button on the computer.

If you have trouble inserting the computer or the docking latches stick, use the emergency undock latch, or press and hold the undock switch for 5 seconds to release the latches.

Add-On Devices  
**Using an Expansion Base**

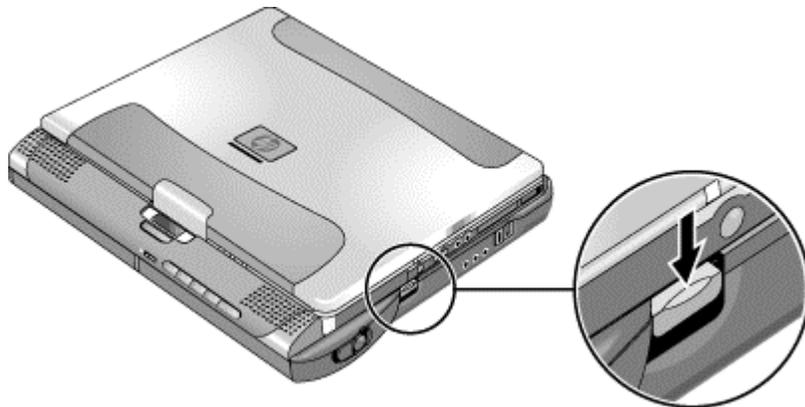
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### To undock the computer

1. **Important:** close any files that reside on network drives or module drives in the expansion base.
2. Press the undock switch on the right side of the expansion base.

–or–

Click Start, Eject PC.



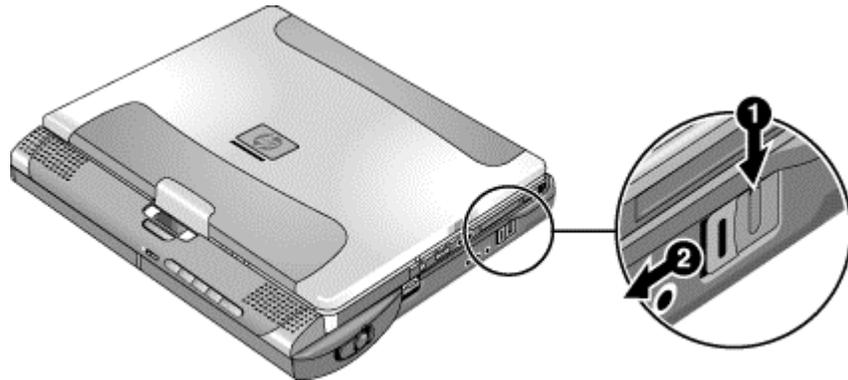
You can use the undock switch when the computer is on, off, or in Standby or Hibernate mode.

When undocking the computer, you may need to wait 10 seconds or more for the computer to undock—the computer may not respond while it is updating its configuration.

### Using the emergency undock latch

If you cannot undock the computer using the undock switch or the Start menu, use the emergency undock latch on the right side of the expansion base.

1. If a security cable is attached to the expansion base, remove it.
2. Slide the button down, then move the entire latch forward to undock the computer.



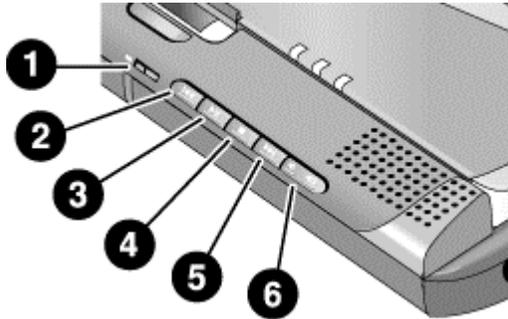
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### To play audio CDs

The multimedia buttons on the front of the expansion base control the CD-ROM or DVD drive in the right module bay. Power is provided by the computer battery, the AC adapter, or a secondary battery in the left module bay.

- If the computer is docked and turned on, use the multimedia buttons to control the Windows player.
- If the computer is off, in Standby or Hibernate mode, or not docked, you can still play audio CDs. Slide the multimedia power switch to the left to activate the player (without turning on the computer), then use the multimedia buttons to control play.
- To load or eject a CD, press the eject button on the drive, or press the Stop button on the expansion base if the computer is off, in Standby or Hibernate mode, or undocked.

## Add-On Devices Using an Expansion Base



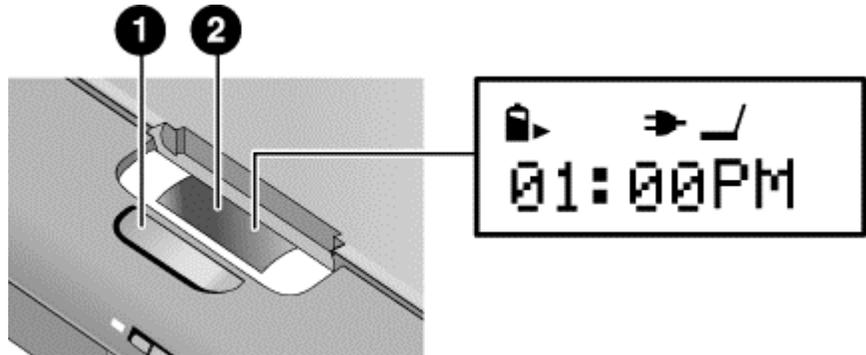
1. Multimedia power switch (and indicator light)—turns the CD player on and off. Works only when the computer is turned off, in Standby or Hibernate mode, or not docked.
2. Previous track.
3. Play/Pause.
4. Stop (when computer is on), or Stop/Eject (when computer is off, in Standby or Hibernate mode, or not docked).
5. Next track.
6. Volume.

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### To use the status panel

The expansion base's status panel can show the time and date, the docking status, the status of the CD player built into the expansion base, and the status of secondary batteries in the expansion base.

- Press the status panel button several times to display the information you want. The first press turns on the backlight. Subsequent presses cycle through the available information in the following order:
    - Time.
    - Date.
    - CD player status (if CD player is running).
    - Audio volume (if CD player is running).
    - Percent charge remaining for the battery in the left bay (if present).
    - Percent charge remaining for the battery in the right bay (if present).
- AC power, battery indicators, and docking status are always shown.



1. Status panel button.
2. Status panel.

For more information about the status panel, see the following table.

Status	Description
AC indicator	Appears when an AC adapter is connected to the expansion base.
Battery indicator	Appears when a secondary battery is installed in a module bay. Shows when the battery is charging. Flashes if the battery has a problem.
Docking indicator	Shows whether a computer is docked in the expansion base.
Time, Date	Formats are defined in BIOS Setup.
CD player	Shows the track, play status (playing, paused, or stopped), and time counter. For information about the CD player, see "To play audio CDs" on page 79.
Volume	Shows volume (off to full), in eight steps.
Battery charge	Shows remaining charge as a percentage.

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## Using Plug-In Modules

You can use any compatible plug-in module with the multimedia expansion base's module bays, such as:

- CD-ROM, DVD, or similar drive.
- Zip drive.
- Second hard drive.
- Floppy disk drive.
- Secondary battery.

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### CAUTION

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**Never install or remove a plug-in module without first notifying Windows, or you could lose data. See “To replace a plug-in module” on page 82.**

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### To install hot-swap support (Windows 98)

If your computer uses Windows 98, it also includes the BayManager “hot-swap” software that lets you disconnect most modules from a plug-in bay in the expansion base without needing to shut down and reboot the computer.

If a plug-in module icon is displayed in the taskbar, BayManager is already installed. If the icon is not present, you can install the software as follows:

- Click Start, Programs, Softex BayManager, Setup, then follow the onscreen instructions.

---

### To replace a plug-in module

Windows 98 uses “hot-swap” software to let you remove or replace most plug-in modules without shutting down the computer. Before replacing a hard drive module, however, you must first shut down the computer.

When a drive module is present, Windows 2000 displays the Unplug or Eject Hardware icon—and Windows XP displays the Safely Remove Hardware icon—at the right end of the taskbar.

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**CAUTION**

Before disconnecting a CD-ROM drive, DVD drive, or any other type of drive, you must either stop the drive using the icon in the taskbar or shut down the computer—otherwise, you could lose data.

**Exception: for Windows 98, you MUST shut down the computer before connecting or disconnecting a hard disk drive.**

**Handle and store modules carefully. Do not drop it or apply excessive pressure to its surfaces—this could damage its internal mechanisms. Do not touch the metallic pins on the computer connectors, module connectors, or cable connectors. Static electricity can damage internal components.**

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1. Close any open files that reside on the plug-in module.
2. **Windows 98:** if the BayManager icon is present in the taskbar, right-click the icon, then click Remove/Swap Bay Device. When prompted, remove the module (if present). Don't click OK until you've inserted the desired module, if any (see step 6).

**Windows 2000 or XP:** left-click the Unplug or Eject Hardware or Safely Remove Hardware icon on the taskbar, and select the module you want to remove. When prompted to remove the module, click OK. (You don't have to do this if the bay is empty or contains a battery.)



–or–

**For any system:** shut off the computer. Click Start, Shut Down, Shut down (Windows 98 or 2000) or Start, Turn Off Computer, Turn Off (Windows XP).

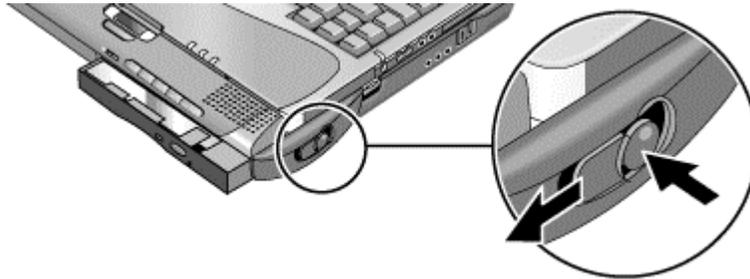
**Important:** for Windows 98, you must shut off the computer if you are removing or inserting a hard disk drive in the module bay.

–or–

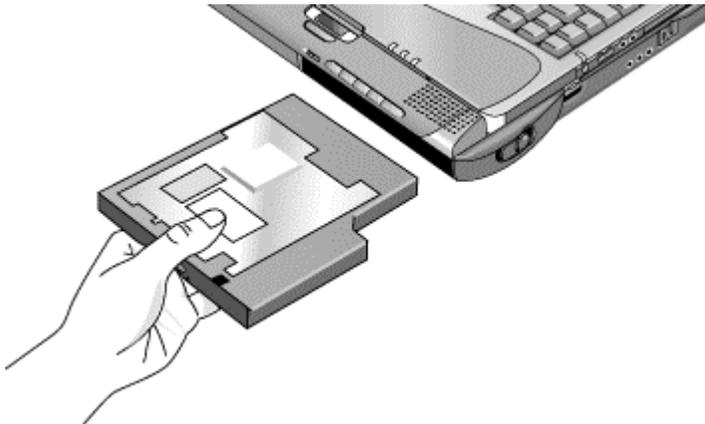
**For any system:** undock the computer.

Add-On Devices  
**Using Plug-In Modules**

3. Press the button on the module release latch, and slide the latch toward the front of the expansion base.



4. Grasp the module and pull it out.



5. Slide the new plug-in module into the computer until it clicks into place.
6. For Windows 98, click OK to close the BayManager window.

If needed, you can connect the floppy disk drive to the USB port on the computer or expansion base—see “To connect the floppy disk drive” on page 28.

If you need to format a hard disk drive module, see “To prepare a new hard disk drive” on page 103.

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## To insert or remove a CD or DVD

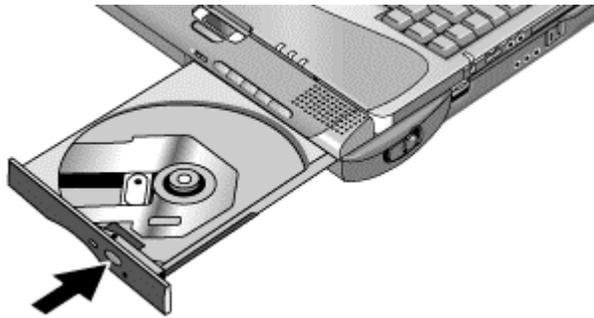
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### CAUTION

**Do not remove a CD or DVD while the computer is reading it. Otherwise, the computer could stop responding and you could lose data.**

**Be sure to press the CD or DVD onto the spindle. You can damage the disk or drive if you just lay the disc on the tray.**

- 
1. Press the button on the face of the drive. (If you are using this drive for the first time, be sure to remove the cardboard packing insert.)



2. Place the CD into the drive (label facing up) and gently press down to seat it on the spindle.

—or—

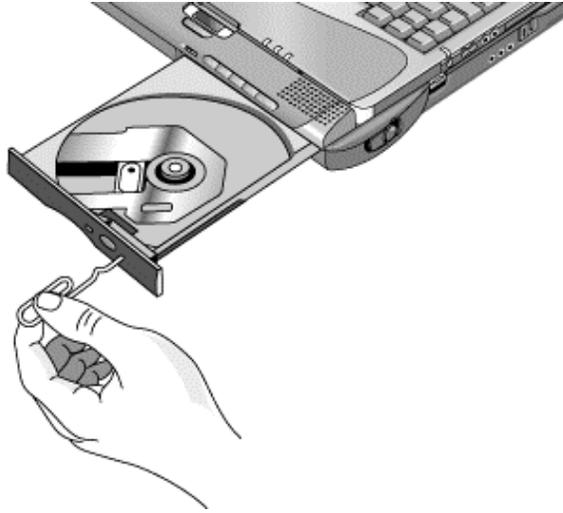
Remove the CD.

3. Slide the tray back into the module to close it.

## Add-On Devices Using Plug-In Modules

If your expansion base loses power, or if you have removed the CD-ROM or DVD module from the base, you can manually open the drive to remove a CD.

- Insert a straightened paper clip into the recessed hole on the front of the drive.



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### To play DVD movies

If your computer came with a DVD drive, it also includes DVD player software that lets you play DVD movies. Click Start, Programs (Windows 98 or 2000) or Start, All Programs, Multimedia, DVD Player (Windows XP)—if InterVideo WinDVD or DVD Express is not listed, do the following:

- Run Setup on the software CD to install the player software.

For Windows XP, if the DVD software is installed, you can also use Windows Media Player to play DVD movies.

To play DVD movies on a TV, see “To use a TV set as a monitor” on page 94.

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#### Hint

For best performance while playing movies on battery power, set the SpeedStep setting to Max Performance (Windows 98 or 2000), or set the Control Panel power scheme to Portable/Laptop (Windows XP). See “How the computer manages power automatically” on page 50.

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**Important**

DVDs can have regional codes embedded in the disc data. These codes prevent DVD movies from being played outside the region of the world in which they are sold. If you get a region code error, you are trying to play a DVD intended for a different region.

Most DVD drives let you change the region code only a limited number of times (usually no more than four). Please note that when you reach this limit, your last change to the region code will be hard-coded on the DVD drive, and will be permanent. Your HP warranty does not cover the expense of correcting this situation. Refer to the help for your DVD player software for details about setting region codes.

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## To create or copy CDs

If your computer came with a CD-RW drive, it also includes software that lets you copy or create CDs. Click Start, Programs (Windows 98 or 2000) or Start, All Programs, Multimedia, CD Writer (Windows XP)—if Adaptec Easy CD, Veritas CDRW, or RecordNow is not listed, do the following:

- Run Setup on the software CD to install the CD-RW software.

For Windows XP, you can use Windows Media Player to create audio CDs, and Windows Explorer to create data CDs using a CD-RW drive.

Refer to the software's help for details about creating or copying CDs. HP recommends using HP C4403A (CD-R) or C4404A (CD-RW) media—read and write quality may vary for other media.

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## Connecting PC Cards

The computer's PC Card slot is available for expanding the computer's data storage and communication capabilities. The computer supports standard Type II PC Cards (PCMCIA and CardBus).

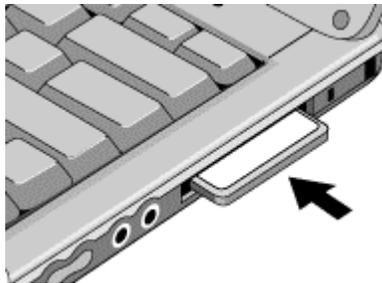
The slot also supports Zoomed Video, which allows a Zoomed Video card to show high-quality multimedia presentations.

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### To insert or remove a PC Card

#### **Inserting a PC Card**

1. Hold the PC Card with its face up and its connector holes toward the card slot.
2. Slide the PC Card all the way into the slot. Most cards are properly seated when the outer edge is flush with the casing of the computer, but some cards are designed to protrude from the case.



### Removing a PC Card

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**CAUTION**

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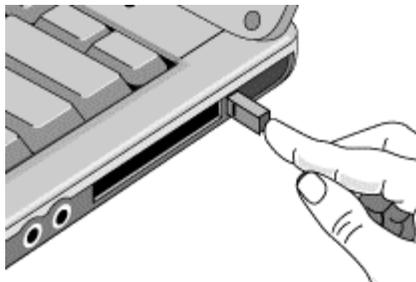
**Before removing a PC Card, you must use the PC Card, Eject Hardware, or Safely Remove Hardware icon in the taskbar, or else shut down the computer. Otherwise, you could lose data.**

1. Before removing the card, click the PC Card, Eject Hardware, or Safely Remove Hardware icon in the taskbar, then click Stop. This protects your data and helps avoid unexpected problems.



If needed, you can restart the card by removing and then reinserting it.

2. Flip the eject button out (so that it stands out from the side of the computer), then press the button and remove the PC Card.



### Finding tested PC Cards

For the current listing of PC Cards that have been tested and approved for use with your computer, visit the Accessories section of the HP Notebook web site ([www.hp.com/notebooks](http://www.hp.com/notebooks)).

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## Connecting External Devices

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### To identify connectors for external devices

The diagrams below shows the connectors for external devices on the computer and expansion base.

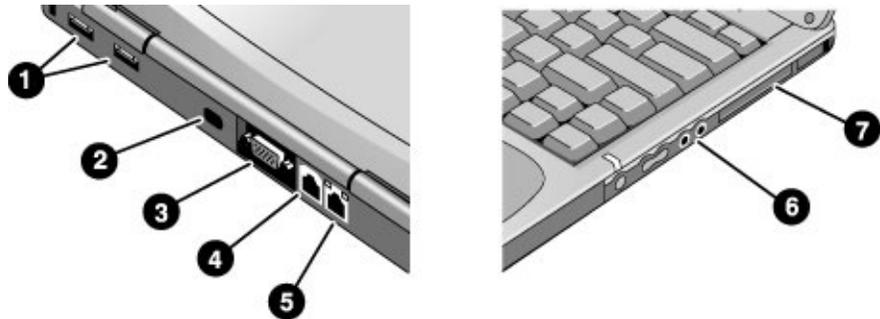
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**Note**

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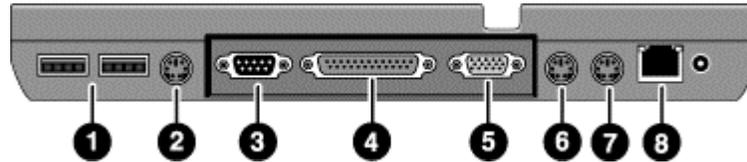
Before you connect any device, check its documentation to see if you need to make any settings or adjustments to the equipment before using it. This might include setting switches so the equipment will operate properly with your computer or expansion base and the software you plan to use.

#### Locating connectors on the computer



1. Universal serial bus (USB) ports.
2. Infrared port.
3. External monitor port.
4. Modem port (on certain models).
5. LAN port.
6. Audio jacks: audio out (headphones), external microphone.
7. PC Card slot.

### Locating connectors on the expansion base



1. Universal serial bus (USB) ports.
2. S-video (TV out) port.
3. Serial port (COM1).
4. Parallel port (LPT1).
5. External monitor port.
6. PS/2 mouse port.
7. PS/2 keyboard port.
8. LAN port (works only if the computer has a built-in LAN port).

---

### To connect a printer or other parallel device

The expansion base's parallel port has a standard 25-pin connector, most commonly used for connecting dot-matrix, ink-jet, and laser printers. You can also use it to connect a parallel Zip drive.

- Connect the cable from the parallel printer or other parallel device to the expansion base's parallel port.

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### To connect an external keyboard or mouse

- Plug a USB mouse or keyboard into a USB port on the computer or expansion base.

–or–

Plug a PS/2 mouse or keyboard into a PS/2 port on the expansion base.

The pointing stick is normally disabled while an external PS/2 mouse is connected.

Add-On Devices  
**Connecting External Devices**

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### To connect a USB device

The universal serial buses (USB) on the computer and expansion base provide a bi-directional serial interface for adding peripheral devices such as a mouse, keyboard, game controller, serial and parallel port, and scanner on a single bus.

- Attach the device's USB cable to a USB port. Windows automatically recognizes the USB device. Some USB devices can be connected to the computer in series—this is called a daisy-chain connection.

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**Note**

If you have problems making this connection, contact the device manufacturer and the HP Business Support web site ([www.hp.com/go/bizsupport](http://www.hp.com/go/bizsupport)) for the latest version of the driver for the device.

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### To connect an audio device

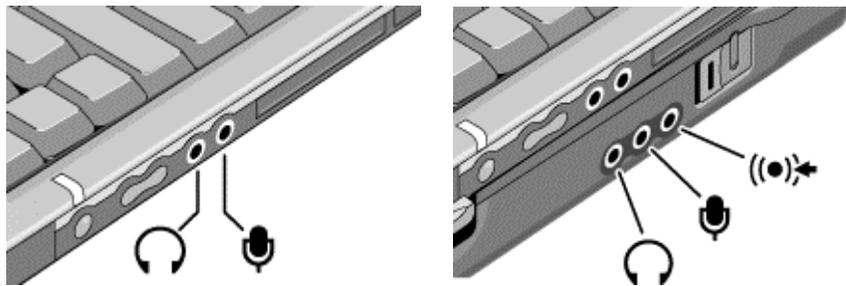
Your computer includes a built-in microphone (in front of the right display hinge) that you can use to record voice, sound, and music. You can also plug in headphones, external speakers, an external microphone, or—if docked—a stereo input source (such as a CD player).

---

**CAUTION**

**The audio jacks are three-terminal stereo jacks. They are not compatible with two-terminal mono plugs. Connecting a mono plug into the speaker-out jack may damage your notebook.**

- Attach the audio cable to the corresponding audio port on the computer or expansion base.



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**Note**

When you plug a device into the external microphone port, the built-in microphone automatically turns off. When you plug a device into the audio out port, the built-in speakers automatically turn off.

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## To use an external monitor

### Connecting an external monitor

1. Click Start, Shut Down, Shut down (Windows 98 or 2000) or Start, Turn Off Computer, Turn Off (Windows XP).
2. Connect the monitor cable from the monitor to the monitor port on the rear of the computer (if undocked) or expansion base (if docked).
3. Connect the monitor to a power source and turn it on.
4. Press the blue sleep button to turn on the computer.

### Switching the display to the external monitor

- Press Fn+F5 to cycle through the display options: notebook display, external monitor, both.

–or–

Click Start, Programs, HP Display Settings, HP Display Settings (Windows 98), or Start, Programs (or All Programs) Hewlett-Packard, Notebook, HP Display Settings, HP Display Settings (Windows 2000 or XP).

You can also add a display settings icon in the taskbar for quick access.

If you need to use both displays at once, press Fn+F5 repeatedly until the image shows on both displays. However, by default, the image is limited by the internal display to 1024 × 768 pixels, so at a higher resolution you will see only part of the desktop on both displays. This doesn't happen if you use only the external monitor.

### Adjusting monitor resolution and other settings

1. Click Start, Settings, Control Panel, then double-click Display (Windows 98 or 2000), or click Start, Control Panel, Appearance and Themes, Display (Windows XP).
2. On the Settings tab, adjust the Screen area. Other settings are also available.

The internal display supports settings of up to 1024 × 768 resolution with 16M colors (24-or 32-bit).

For high-resolution external monitors, see “Hardware Specifications” on page 152 for the maximum supported resolutions, colors, and refresh rates. The capabilities of external monitors vary greatly, and the display quality of your monitor may not be optimal at higher settings.

## Add-On Devices

### Connecting External Devices

#### Using extended display mode (Windows 98 or XP)

You can extend your desktop by connecting an external monitor to your computer.

1. Click Start, Settings, Control Panel, then double-click Display (Windows 98), or click Start, Control Panel, Appearance and Themes, Display (Windows XP).
2. Click the Settings tab.
3. **Windows 98:** right-click display 2, and select Enabled.

**Windows XP:** click the second display, then select the option to extend the desktop.

You can set different resolutions and numbers of colors for each display. However, using the Extended Desktop requires video memory for each display. For this reason, higher resolutions and higher numbers of colors may cause unexpected behavior on the displays. Try starting with 1024 × 768 resolution on the external display and 64 K colors (16-bit) on both displays. You can then try higher settings to see whether they work for your applications. In addition, certain operations such as playing DVDs and running 3D graphics require extra video memory, so you may have to adjust display settings.

If you're playing a DVD movie, the movie will show only on the primary display. To change the primary display, go to the Settings tab of Display Properties (see the steps above), right-click the display you want, and select Primary.

#### Changing display actions

You can use the BIOS Setup utility to change certain display behaviors, such as stretching the image to fill the screen at lower resolutions. See "To run the BIOS Setup utility" on page 131.

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## To use a TV set as a monitor

You can connect a television set or other video device to your computer to use as a display. The computer's built-in display remains active when you connect a TV set.

#### To connect a TV set

You can connect a TV set using a standard S-video cable, or an HP F1459A composite-video adapter with a standard RCA-type video cable.

1. Connect a video cable from the TV set to the expansion base's S-video port. (You don't need to turn the computer off to do this.)
2. Connect the TV set to a power source and turn it on.

### **To activate the TV display**

- Restart the computer: click Start, Shut Down (or Turn Off Computer), Restart.
- or–
1. Click Start, Programs, HP Display Settings, HP Display Settings (Windows 98), or Start, Programs (or All Programs), Hewlett-Packard, Notebook, HP Display Settings, HP Display Settings (Windows 2000 or XP).
  2. Select the TV option.

---

**Hint**

The S-video TV output is optimized for DVD output at 800×600 resolution. For best results, activate only the TV display and set the resolution to 800×600. You can do this using HP Display Settings and Control Panel Display, or you can use the Intel Graphics Technology icon in the taskbar. Restore your normal display and resolution when you're done using the TV.

---

### **To play DVD movies on the TV**

- Open Display in Control Panel, click the Settings tab, then right-click the TV display and select Primary.
- Optional: connect an audio cable from the computer's audio out jack to the TV audio input.

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## **To connect a serial device**

The expansion base includes a standard 9-pin serial port that you can use to connect devices such as external modems and fax modems. If needed, you can set the serial port's address in the BIOS Setup utility.

- Connect the device's serial cable to the expansion base's serial port.

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## **To connect an infrared device**

You can use the infrared port to provide serial communication between the computer and other infrared devices, such as printers or other computers.

By default, the infrared port is not enabled, so you must enable it before you can use it.

1. Enable the infrared port in the BIOS Setup utility—see “To run the BIOS Setup utility” on page 131.

## Add-On Devices

### Connecting External Devices

2. **Windows 98 only:** click Start, Run, and type `c:\hp\drivers\fir\quikbeam\setup.exe` to install the QuickBeam software. For more information, see the Readme file in the same directory.

#### Using the infrared port

- Make sure the infrared ports of your computer and the other device lie in as straight a line as possible. The two ports should be no more than 1 meter apart, with no obstructions between them.
- To check the status of communications, open Infrared (Windows 98) or Wireless Link (Windows 2000 or XP) in Control Panel.

#### Disabling the infrared port

You should generally disable infrared communication when you aren't using it.

1. Close any applications that are using infrared, and any folders on an infrared link.
2. Click Start, Settings, Control Panel (Windows 98 or 2000) or Start, Control Panel, Printers and Other Hardware (Windows XP).
3. **Windows 98:** double-click Infrared and disable communications.

**Windows 2000:** double-click Wireless Link and disable the hardware.

**Windows XP:** click Wireless Link. On the Hardware tab click Properties, and disable the device in the pull-down menu.

#### Printing to an infrared printer

- Install your printer and assign it to the computer's infrared port. You can then print from your applications as you would to any other printer.

#### Transferring files through an infrared connection

You can use your computer's infrared port to transfer files.

- **Windows 98:** use the built-in Direct Cable Connection software. You will first need to install the software as follows:
  1. Click Start, Settings, Control Panel, then double-click Add/Remove Programs.
  2. Click Windows Setup, double-click Communications, and select the Direct Cable Connection checkbox.
- **Windows 2000 or XP:** use Wireless Link.

See the Windows online help for instructions on using Direct Cable Connection or Wireless Link.

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## Installing Additional RAM

Your computer has no memory (RAM) built in, but has two slots for RAM modules: the system RAM slot beneath the keyboard (which contains a module installed at the factory), and an expansion slot on the bottom of the unit. You can use both of these slots to expand your unit's RAM. Use HP PC-133 or higher SDRAM only.

You'll need a small Phillips screwdriver for these procedures.

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### To install a RAM expansion module

To increase your computer's RAM, you can install a RAM module in the expansion slot on the bottom of the computer.

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#### CAUTION

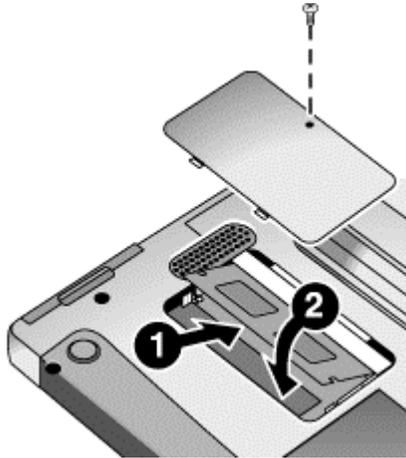
**Your computer's chips are extremely sensitive to static electricity, and can be permanently damaged by it. Handle the RAM module only by its edges. Before installing the memory module, discharge your body's static electricity by touching the metal shielding around the connectors on the rear of the computer.**

1. Click Start, Shut Down, Shut down (Windows 98 or 2000) or Start, Turn Off Computer, Turn Off (Windows XP).
2. **Important:** unplug the AC adapter, if present, and remove the battery.
3. From the bottom of the computer, remove the screw holding the RAM cover, and remove the cover.

## Add-On Devices

### Installing Additional RAM

4. Carefully insert the edge of the RAM module into the connector at about a 30° angle until it is fully seated. Then press down on both sides until the latches snap closed.



5. Replace the cover.
6. Insert the battery.

---

#### Note

**Windows 98 only:** if you increase your computer's memory to more than 512 MB, the computer will not be able to hibernate unless you also increase the size of the Utility partition on the hard disk—see “To recover the factory installation of your hard disk” on page 138.

You can also replace the system RAM module beneath the keyboard—see “To replace the system RAM module” on page 99.

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## To remove a RAM expansion module

You may want to remove a RAM module so you can install a larger one.

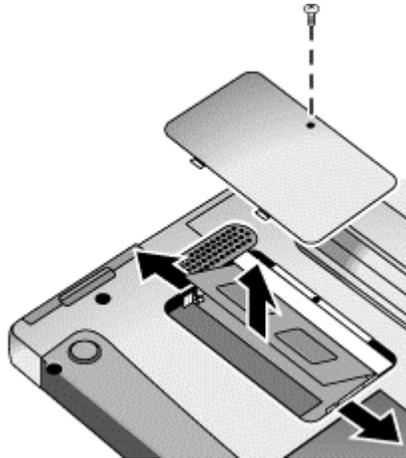
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#### CAUTION

**Your computer's chips are extremely sensitive to static electricity, and can be permanently damaged by it. Handle the RAM module only by its edges. Before installing the memory module, discharge your body's static electricity by touching the metal shielding around the connectors on the rear of the computer.**

1. Click Start, Shut Down, Shut down (Windows 98 or 2000) or Start, Turn Off Computer, Turn Off (Windows XP).
2. **Important:** unplug the AC adapter, if present, and remove the main battery.

3. Turn the unit upside down, remove the screw holding the RAM cover, and remove the cover.
4. Release the two latches at the sides of the RAM module, so the free edge of the module pops up.



5. Pull the module out of the connector.
6. Replace the cover.
7. Insert the battery.

---

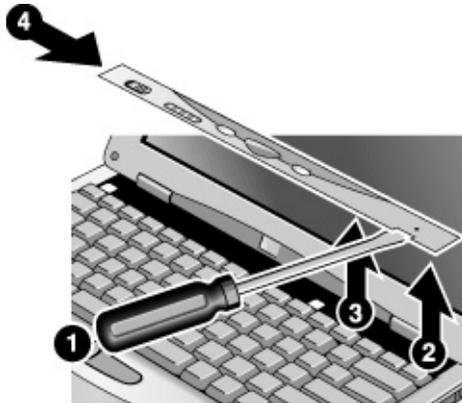
## To replace the system RAM module

If needed, you can replace your computer's system RAM module (under the keyboard) to increase the computer's RAM.

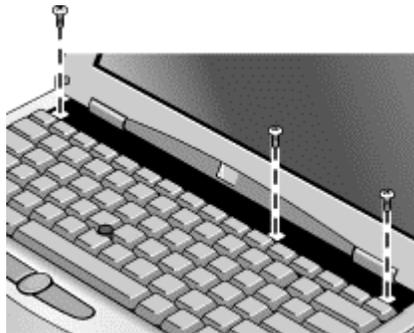
1. If your computer is docked, undock it.
2. Click Start, Shut Down, Shut down (Windows 98 or 2000) or Start, Turn Off Computer, Turn Off (Windows XP).
3. **Important:** unplug the AC adapter, if present, and remove the battery.

Add-On Devices  
**Installing Additional RAM**

4. Remove the plastic panel above the keyboard (containing the power button and keyboard status lights). Pry the right end of the panel up with a small, flat-blade screwdriver, then lift the end until the panel unsnaps above the F12 key. Slide the panel slightly to the right and lift it out.



5. Remove the three screws holding the top of the keyboard.



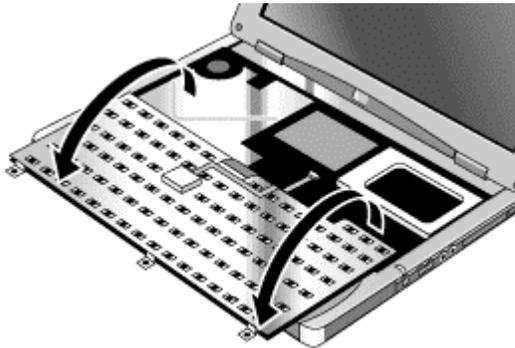
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**CAUTION**

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When opening the keyboard, be careful not to pull on the cables connecting the keyboard to the computer.

6. Raise the top edge of the keyboard slightly, then slide it back about 1 cm (1/2 in) and fold it onto the front of the case.



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**WARNING**

**Do not touch the metal surfaces inside the computer until they have cooled off. They could be very hot if the computer was running recently.**

**Do not touch the electronic components inside the computer. Static electricity can permanently damage them.**

- 
7. Release the two latches at the sides of the RAM module by pressing them outward, so that the free edge of the module pops up.
  8. Pull the module out of the connector.
  9. Carefully insert the edge of the new RAM module into the connector at about a 30° angle until it is fully seated. Then press down on both sides until the latches snap closed.
  10. Move the keyboard back into position. Slide its front edge into the computer case, then lower the top of the keyboard into place.
  11. Reinstall the three screws along the top of the keyboard.
  12. Hold the plastic panel in your right hand, and insert the tabs on the left end of the panel into the slots in the computer case just above the ESC and F4 keys.
  13. Slide the panel to the left and press it into place.
  14. Reinstall the battery.

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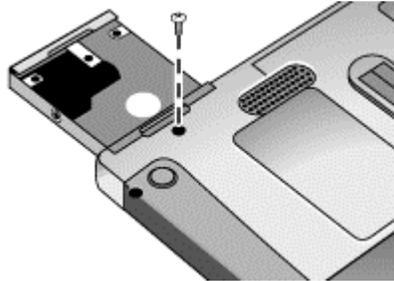
## Replacing the Hard Disk Drive

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### To replace the hard disk drive

You'll need a small Phillips screwdriver for this procedure.

1. Unplug the AC adapter, if present, and remove the battery.
2. Turn the unit bottom side up and remove the hard drive retaining screw.
3. Carefully pull the hard drive out of the computer.



4. Gently slide the new drive into the hard drive compartment. Press firmly to make sure the connector seats properly.
5. Reinstall the hard drive retaining screw.

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#### **Important**

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If you are installing a new hard disk drive, you should create a Utility partition on the drive before loading any software. See “To recover the factory installation of your hard disk” on page 138.

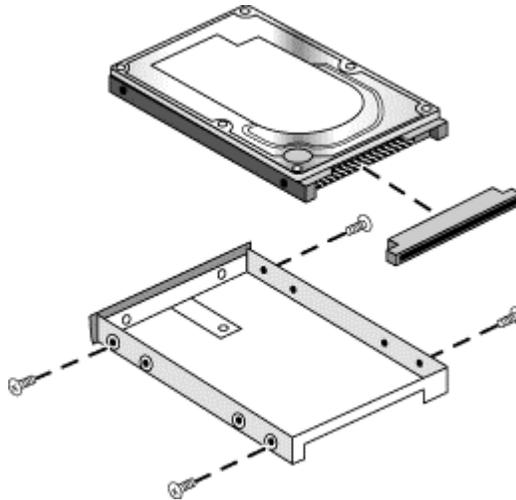
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### To replace the hard disk drive holder

If you are installing a new hard drive that does not have a cover, you can remove the cover parts from the old hard drive. You'll need a small Phillips screwdriver for this procedure.

1. Remove all four screws from the holder and drive case, then lift the drive out of the holder.

2. Notice that the hard drive has a pin connector attachment at one end. Carefully remove this connector from the end of the drive. Work alternately at each end so that the connector slides off evenly without bending the connector pins.



3. Carefully put the pin connector attachment back onto the pins on the end of the new hard drive. Work alternately at each end so that the connector slides on evenly without bending the connector pins.
4. Insert the connector through the end of the holder, and lower the drive into the holder.
5. Reinstall all four screws into the holder and drive case.

---

## To prepare a new hard disk drive

When you install a new hard disk drive, you also need to prepare it to be able to work with your computer.

- If you want to restore the Windows software and operating system that were originally installed on your computer, you can do so using the *Recovery CD* that also came with your computer. See “To recover the factory installation of your hard disk” on page 138.
- If you want to use the hard disk with other than the original software and operating system, prepare the hard disk as described in the *Corporate Evaluator’s Guide*, available at the HP Business Support web site ([www.hp.com/go/bizsupport](http://www.hp.com/go/bizsupport)).

## Replacing the Hard Disk Drive

- To prepare a hard disk drive module in the expansion base, follow these steps:

### **Windows 98**

1. Install the hard drive module and reboot the computer.
2. Click Start, Run, and type **fdisk**.
3. When prompted, choose to enable large disk support.
4. Choose option 5 to change a current disk drive, then select drive number 2.
5. Choose option 1 to create a DOS partition, and let it use the entire drive.
6. When the process finishes, press ESC to exit.
7. Restart the computer.
8. Double-click My Computer.
9. Right-click the new hard disk drive (it may be drive D), then click Format. Follow the instructions that appear.

### **Windows 2000 or XP**

1. Install the hard drive module.
2. Click Start, Settings, Control Panel, then double-click Administrative Tools (Windows 2000), or click Start, Control Panel, Performance and Maintenance, Administrative Tools (Windows XP).
3. Double-click Computer Management, then click Disk Management in the tree.
4. In the lower-right pane, right-click the unused area of the new disk (probably disk 1) and click Create Partition. Follow the instructions that appear to create an NTFS partition that uses the entire drive.

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## Troubleshooting and Maintenance

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## Troubleshooting Your Computer

This section contains solutions to several types of problems you might experience while using your computer. Try the solutions one at a time, in the order in which they are presented.

Here are some other sources of information for troubleshooting:

- Open the HP web-based troubleshooting tool: double-click the HP Instant Support icon on the Windows desktop (Windows 98 or 2000), or click Start, Help and Support, HP Instant Support (Windows XP). Search or browse the troubleshooting database for the information related to your problem.
- Click Start, Help (Windows 98 or 2000) or Start, Help and Support, Fixing a Problem (Windows XP), and use the Windows troubleshooters.
- See the Microsoft Windows manual shipped with the computer.
- For updated information, see the HP Notes in the online HP Library or on the *Recovery CD* in \hp\Library.
- Find technical tips and software updates for the computer at the HP Business Support web site ([www.hp.com/go/bizsupport](http://www.hp.com/go/bizsupport)).
- Test your computer by running the e-Diagtools test program—see “Testing the Hardware” on page 129.
- Contact your dealer or Hewlett-Packard—see “To contact HP for support or service” on page 145. Please have your computer with you when you call.

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### Audio problems

#### **If no sound is audible**

- Press the back end of the volume control several times.
- Click the speaker icon on the taskbar (if present), and make sure that Mute is not checked and the Volume Control slider is not set to the bottom.
- Press the audio-off button on the right side of the computer once or twice until the indicator light goes off.
- When you are operating your computer in MS-DOS mode (for example, when running MS-DOS games), you may find that the sound does not operate properly. Use Windows applications for full use of sound capabilities.

**If sound does not record**

- Check the software controls for recording sound: click Start, Programs (or All Programs), Accessories, Multimedia (or Entertainment), Sound Recorder.
- In Volume Control, click Options, Properties, and make sure the microphone is enabled in the recording controls.
- Test the audio with the e-Diagtools diagnostics—see “Testing the Hardware” on page 129.

**If you hear a loud high-pitched whine (feedback) from the speakers**

- In the Volume Control, try reducing the Master volume: double-click the speaker icon in the taskbar.
- In Volume Control, click Options, Properties, and select the microphone option for the playback settings. Then in Volume Control, make sure the microphone is muted.
- Avoid using the built-in microphone and built-in speakers at the same time.

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## CD and DVD problems

**If you can't boot from a CD or DVD in the CD/DVD drive**

- Make sure the CD or DVD is bootable, such as the *Recovery CD*.
- Make sure the CD-ROM/DVD drive is selected as the boot device—see “To change the boot device” on page 32.
- Restart the computer: click Start, Shut Down (or Turn Off Computer), Restart.
- Test the CD/DVD drive with the e-Diagtools diagnostics—see “Testing the Hardware” on page 129.

**If a DVD plays erratically**

- Dirt or smudges can cause a disc to skip. Clean the disc with a soft cloth. If the disc is badly scratched, it will probably have to be replaced.
- If you're playing the DVD on battery power, try changing the power scheme. See the hint under “To play DVD movies” on page 86.
- Some DVDs include software called “PC Friendly.” You generally should not install this software, as it can cause errors or erratic play. If needed, uninstall it and restart your system.

## Troubleshooting and Maintenance

### Troubleshooting Your Computer

#### **If a DVD movie stops playing in the middle**

- You may have accidentally paused the DVD movie. Press the Play button to resume.
- The DVD may be double-sided. Open the DVD tray, and read the text near the center hole of the disc. If it says Side A, flip the disc over, close the tray, and press the Play button to continue playing the movie.

#### **If you get a Region Code error when playing a DVD movie**

- DVDs can have regional codes embedded in the disc data. These codes prevent DVD movies from being played outside the region of the world in which they are sold. If you get a Region Code error, you are trying to play a DVD intended for a different region.

#### **If the computer cannot read a CD or DVD**

- For a single-sided CD or DVD, make sure the disc is placed in the drive with the label facing up.
- Clean the disc.
- Wait 5 to 10 seconds after closing the tray to give the computer time to recognize the disc.
- Restart the system: remove the disc from the drive, then click Start, Shut Down (or Turn Off Computer), Restart.
- If you created the CD on a CD-RW drive module, try using a different media brand, such as the recommended HP C4403A (CD-R) or C4404A (CD-RW) media. Read and write quality may vary for other media.

#### **If a DVD movie doesn't fill the screen**

- Each side of a double-sided DVD has a different format (standard or widescreen). In widescreen format, black bands appear at the top and bottom of the screen. To view the standard format, flip the disc over and play the other side.

#### **If a DVD doesn't play with two displays**

- For Windows 2000, if both displays are active, press Fn+F5 to switch to one display.
- For Windows 98 or XP, if you're using the Extended Desktop (dual displays), move the player window to the display selected as primary. If you're not using Extended Desktop and both displays are active, press Fn+F5 to switch to one display.

#### **If the computer can't find Wordpad.exe after inserting a CD**

- The system is trying to open a .doc file in WordPad, but cannot find the Wordpad.exe program file. Type C:\Program Files\Accessories in the error message box.

## Display problems

### **If the computer is on, but the screen is blank**

- Move the mouse or pointing stick. This will wake the display if it is off.
- Try pressing Fn+F2 to increase the display brightness.
- Press Fn+F5 in case the internal display was disabled. (Do this three times to return to the state you started from.)
- If the computer is cold, allow it to warm up.

### **If the screen is difficult to read**

- Try setting the display resolution to its default setting of 1024×768: click Start, Settings, Control Panel, double-click Display, then click Settings (Windows 98 or 2000), or click Start, Control Panel, Appearance and Themes, Display, Settings (Windows XP).

### **If an external display does not work**

- Check the connections.
- Press Fn+F5 in case the external monitor was disabled. (Do this three times to return to the state you started from.)
- The external monitor may not be detected. In the BIOS Setup utility, try setting Video Display Device to Both in the Main menu.
- If you're using a TV connected to the S-video port on an expansion base, you must activate the TV—see “To use a TV set as a monitor” on page 94.
- Test the display with the e-Diagtools diagnostics— see “Testing the Hardware” on page 129.

### **If an external display cannot use high resolutions**

- For Windows 98, use the default display type for the internal display: Default Monitor. If you change the display type, non-Plug-and-Play (non-DDC) external monitors will not be able to use resolutions higher than the resolution of the internal display. You can check display settings using Display in Control Panel, or by right-clicking the desktop and then clicking Properties.

## Troubleshooting and Maintenance

### Troubleshooting Your Computer

#### **If HP Presentation Ready does not switch to your video settings**

- If you're using an external monitor that isn't a plug-and-play device, open Control Panel Display and set up a monitor that supports the video settings you intend to use for your presentation.

#### **If one or more display pixels look bad**

TFT display manufacturing is a highly precise but imperfect technology, and manufacturers cannot produce displays that are cosmetically perfect. Most, if not all, TFT displays exhibit some level of cosmetic imperfection. These cosmetic imperfections may be visible under varying display conditions, and can appear as bright, dim, or dark spots. *This issue is common across all vendors supplying TFT displays in their products and is not specific to the HP notebook display.*

HP notebook TFT displays meet or exceed all HP standards for cosmetic quality of TFT displays. HP does not warrant that the displays will be free of cosmetic imperfections. *TFT displays can have a small number of cosmetic imperfections and still conform to HP's cosmetic quality specifications, including the following:*

- No more than 6 pixels remain on (always one color, such as white, red, green, or blue dots).
- No more than 6 pixels remain off (always dark).
- No more than a total of 8 pixels stuck on or off.
- No other stuck pixel within 15 mm of a stuck pixel.

Contact HP Customer Care if you have a display quality problem and require a more comprehensive explanation of HP display quality—see “To contact HP for support or service” on page 145. We expect that over time the industry will continue to produce displays with fewer inherent cosmetic imperfections, and we will adjust our HP guidelines as these improvements are implemented.

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## Expansion base problems

#### **If you can't dock the computer or it gets stuck**

- Plug in the AC adapter.
- Use the emergency undock latch—see “To undock the computer” on page 78.

**If a port on the expansion base isn't working**

- Make sure the computer is fully inserted into the expansion base.
- Reset the expansion base—see “To reset the computer” on page 31.

**If the operating system hangs when you dock or undock**

- Your system may hang if docked or undocked while suspending or resuming. Make sure the computer has completely suspended or resumed before you dock or undock.
- For Windows 98, there may be a delay while the network configuration is updated. During this time, the pointer or other devices may not operate properly. You may have to wait up to a minute or more for the system to be ready.

**If the computer does not respond to the undock switch or Eject command**

- Make sure the expansion base has power: plug in the AC adapter or plug in a secondary battery.
- Restart the computer: click Start, Shut Down (or Turn Off Computer), Restart.
- Use the emergency undock latch—see “To undock the computer” on page 78.

**If a floppy drive connected to the parallel port doesn't work**

- Make sure there is only one floppy drive in the system.
- Use only the HP F2008A parallel floppy cable.
- For Windows 98, you must notify BayManager before you connect or disconnect the parallel floppy drive.

**If the computer pauses for a long time after docking**

- For Windows 98, if you have a LAN port on your computer but never use it, disable the LAN port in Device Manager.

**If an ATA-type PC card causes problems while docked**

- For Windows 98, try installing BayManager hot-swap software. This software prevents certain problems with ATA-type cards.

## Hard disk drive problems

### **If the computer's hard drive doesn't spin**

- Make sure the computer has power. If necessary, connect the AC adapter, and make sure it is fully plugged into a power source and into the rear of the computer.
- Remove and reinsert the hard drive—see “To replace the hard disk drive” on page 102.

### **If the hard disk makes a buzzing or whining noise**

- Back up the drive immediately.
- See whether the noise is coming from elsewhere, such as the fan or a PC Card drive.

### **If files are corrupted**

- For Windows 98, run the Scandisk surface scan to check the hard disk. From the Start menu, click Programs, Accessories, System Tools, Scandisk.
- For Windows 2000 or XP, open My Computer, select the disk you want to scan, click File, Properties, and use the Tools tab.
- Run the virus-scanning program—see “To protect against viruses” on page 43.
- Test the hard disk drive with the e-Diagtools diagnostics— see “Testing the Hardware” on page 129.
- If necessary, format the hard disk and reinstall the original factory software—see “To recover the factory installation of your hard disk” on page 138.

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## Heat problems

Keep in mind that your computer normally gets warm during routine operation. Charging the battery and running games and other programs that drive CPU usage toward 100% can further increase the computer's temperature.

### **If the computer gets abnormally hot**

- Always set the computer on a flat, firm surface, so that air can flow freely around and underneath it.
- Make sure the air vent on the left side of the computer is clear.
- Make sure the fan is working properly. If needed, test the fan's operation—see “Testing the Hardware” on page 129.

## Infrared Problems

By default, the infrared port is not enabled, so you must enable it before you can use it.

### **If you have problems with infrared communication**

- Make sure the line between the two infrared ports is not blocked, and that the ports face each other as squarely as possible. The ports should be no more than 1 meter apart, with no obstructions between them. Sunlight, heat from nearby equipment, or other sources of infrared radiation can cause transmission errors.
- Check settings in the BIOS Setup utility:
  1. Restart the computer: click Start, Shut Down (or Turn Off Computer), Restart.
  2. When the HP logo appears, press F2 to enter BIOS Setup.
  3. From the System Devices menu, make sure Infrared port is enabled and FIR mode is selected.
  4. Press F10 to save and exit BIOS Setup.
- Make sure only one application is using the infrared port.
- For Windows 98, see c:\hp\Drivers\Fir\Readme.txt for additional information.

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## Keyboard and pointing device problems

### **If the pointer is difficult to control**

- Adjust the pointer controls: click Start, Settings, Control Panel, then double-click Mouse (Windows 98 or 2000), or click Start, Control Panel, Printers and Other Hardware, Mouse (Windows XP).

### **If the pointing stick doesn't work**

- Don't move the pointing stick while the computer is rebooting or resuming from Standby mode. If this happens, try the following:
  - Press a key on the keyboard to restore normal operation.
  - Suspend and resume operation using the blue sleep button.

## Troubleshooting and Maintenance

### Troubleshooting Your Computer

- If an external mouse is connected, the pointing stick is normally disabled. You can change this setting with the BIOS Setup utility—see “To run the BIOS Setup utility” on page 131.
- Restart the computer: click Start, Shut Down (or Turn Off Computer), Restart.

#### **If the scroll button doesn't scroll in some applications**

- Some applications do not support the default type of scrolling used by the scroll button. You can use Mouse in Control Panel to make the scroll button work like a standard middle mouse button in all applications.

#### **If a PS/2 scroll mouse doesn't work**

- The mouse must automatically replace the pointing stick for the mouse's scroll feature to work. In the BIOS Setup utility, make sure the PS/2 Pointing Devices option in the System Devices menu is set to Auto. See “To run the BIOS Setup utility” on page 131.
- Suspend or shut down the computer before you attach the scroll mouse, so that it will be detected properly.
- Test the keyboard and pointing stick with the e-Diagtools diagnostics—see “Testing the Hardware” on page 129.

#### **If the embedded numeric keypad doesn't work**

- To type numbers, make sure Num Lock is on.
- Make sure the embedded Keypad Lock (Fn+F8) is on—or that you press and hold the Fn key to temporarily access the embedded keypad.

#### **If you can't type the euro symbol**

- Hold ALT GR when you press the marked key.
- The euro symbol is not on the U.S. English keyboard. Make sure the embedded keypad is active (Fn+F8) and Num Lock is on, then hold ALT while typing 0128 on the numeric keypad.
- Support for the euro symbol requires software available from Microsoft. This software is installed in the factory software, but may not be included with retail Windows.

## LAN problems

### **If the built-in network adapter doesn't connect to the LAN**

- Check all cables and connections. Try connecting at a different network station, if available.
- If the green light next to the LAN port does not light, the LAN cable may not be connected to the network or the network may be down. Try connecting a different computer to the cable.
- For Windows 98, open Network in Control Panel. Make sure you have the correct clients and protocols installed.
- Make sure the LAN cable is Category 3, 4, or 5 for 10Base-T operation, or Category 5 for 100Base-TX operation. Maximum cable length is 100 meters (330 feet).
- Click Start, Help (or Help and Support), and use the Networking troubleshooter.
- Open the hardware Device Manager: click Start, Settings, Control Panel, System (Windows 98 or 2000) or Start, Control Panel, Performance and Maintenance, System (Windows XP). If the network interface is disabled, try to enable it. If it has a conflict, try disabling another device.
- Run the LAN diagnostic software, if available—run  
C:\hp\Drivers\Lan\Windiag\Setup.exe to install the software.

### **If you can't browse the Network Neighborhood or My Network Places**

- Check with your network administrator to make sure NetBEUI protocol is supported on the network.
- Click Start, Find, Find Computer (Windows 98 or 2000) or Start, Search, Computers or People (Windows XP) to look for a computer.

### **If you can't log in to Netware servers**

- If a Netware server is using IPX/SPX protocol, you may need to force your frame type to match the server's frame type. Check with your network administrator.

### **If the computer stops responding after booting**

- Check whether you have a TCP/IP network with no DHCP server. This can cause a long delay at startup because DHCP is enabled. Contact your network administrator to determine the proper TCP/IP configuration.

## Troubleshooting and Maintenance

### Troubleshooting Your Computer

#### **If you have slow or dropped connections on a 10/100 network switch or hub**

- The switch may be forced to 10 Mbps. For Windows 98, use Network in Control Panel to disable Auto Polarity for the network adapter.

#### **If a network connection responds slowly**

- For Windows XP, if your network connection uses a proxy server, try enabling the option for bypassing the proxy server for local addresses. You can do this in Control Panel under your network connection properties.

---

## Memory problems

#### **If a message says you are out of memory**

- Make sure drive C is not running low on free space.
- If you're using Windows 98, use the Memory Troubleshooter in Windows Help: click Start, Help.
- If you are having memory problems while running MS-DOS programs, use the MS-DOS or Application and Software troubleshooter in Windows Help: click Start, Help (or Help and Support).
- Not all third-party memory cards have been tested for use with the computer. Please check the HP Notebook web site ([www.hp.com/notebooks](http://www.hp.com/notebooks)) for a list of approved and tested memory cards.
- Test your computer's memory with the e-Diagtools diagnostics—see “Testing the Hardware” on page 129.

#### **If memory doesn't increase after adding RAM**

- Make sure your computer is using only PC-133 or higher RAM modules.

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## Modem problems

#### **If the modem seems slow**

- Check for excess static or noise on the line, which reduces the overall transmission speed. If necessary, contact your telephone company about fixing this type of problem.

- If you're dialing internationally, line noise is often difficult or impossible to eliminate.
- If you have call-waiting, disable it—your telephone company can provide instructions.
- Eliminate extra connections in the line. If possible, connect directly to the wall jack.
- Try another telephone line, preferably one normally used for a fax machine or modem.

**If the modem doesn't dial or no dial tone is detected**

- Check all cables and connections.
- Connect a standard telephone to the phone line and make sure the line is working.
- Make sure someone else isn't using the same phone line.
- Try another telephone line, preferably one normally used for a fax machine or modem.
- If you're in a foreign country, the dial tone may not be recognized by the modem. In Control Panel, open Modems (Windows 98) or Phone and Modem Options (Windows 2000 or XP), and try disabling the option that waits for a dial tone.

**If the modem dials incorrectly**

- Check the telephone number you entered, including any digits required for outside access or long distance.
- In Control Panel, open Modems (Windows 98) or Phone and Modem Options (Windows 2000 or XP). Check the dialing options—look for duplicate digits for outside access or long distance.
- Make sure the number you're calling isn't busy.
- If you're in a foreign country, the dial tone may not be recognized by the modem. In Control Panel, open Modems (Windows 98) or Phone and Modem Options (Windows 2000 or XP). Try disabling the option that waits for a dial tone.
- If you have call-waiting, disable it—your telephone company can provide instructions.

**If the modem dials but doesn't connect**

- Make sure you're using an analog telephone line. You must not use a digital line. In a hotel, ask for a data line.

## Troubleshooting and Maintenance

### Troubleshooting Your Computer

- Try another telephone line, preferably one normally used for a fax machine or modem.
- The modem at the other end may have a problem. Try dialing to a different modem.
- Try disabling error correction and data compression.

#### **If the modem isn't detected**

- Check the modem setup. In Control Panel, open Modems (Windows 98) or Phone and Modem Options (Windows 2000 or XP). Check the COM port.
- Open the hardware Device Manager: click Start, Settings, Control Panel, System (Windows 98 or 2000) or Start, Control Panel, Performance and Maintenance, System (Windows XP). If the modem is disabled, try to enable it. If it has a conflict, try disabling another device.
- If you're running fax software using fax Class 2, try using Class 1.

#### **If the modem dials but you can't hear it**

- Make sure the audio-off light is turned off. If it's on, press the audio-off button.
- Check the speaker volume setting and mute setting.
- In Control Panel, open Modems (Windows 98) or Phone and Modem Options (Windows 2000 or XP). Select the modem and click Properties, then check the volume setting on the General tab.

#### **If the modem connects, but transferred data is bad**

- In Control Panel, open Modems (Windows 98) or Phone and Modem Options (Windows 2000 or XP). Make sure the parity, speed, word length, and stop bits match on sending and receiving modems.
- Try disabling error correction and data compression.

#### **If the modem causes an ERROR message**

- A string of AT commands may contain an incorrect command. If you entered commands as extra settings for the modem in Control Panel or in your communications software, check the commands.

#### **If the modem doesn't fax**

- If you're using fax Class 2 in the fax software, try using Class 1.
- Close any other communications programs.

- If you're faxing by printing from an application, make sure you've selected the fax printer.
- Try turning off power management features temporarily.

**If excessive line current is detected**

- Make sure you're using an analog telephone line. You must not use a digital line. In a hotel, ask for a data line.

**If the modem clicks repeatedly but doesn't connect**

- Make sure you're using an analog telephone line. You must not use a digital line. In a hotel, ask for a data line.
- Check all cables and connections.

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## PC card (PCMCIA) problems

**If the notebook doesn't recognize a PC Card**

- Remove and reinsert the PC Card.
- Press the blue sleep button to suspend the computer, then press it again to resume.
- Restart the computer: click Start, Shut Down (or Turn Off Computer), Restart.
- If the card requires an IRQ, make sure one is available. If necessary, set the IRQ to an unused value manually (Windows 98 only): click Start, Settings, Control Panel, then double-click System and use the Device Manager tab.
- Check the HP Business Support web site ([www.hp.com/go/bizsupport](http://www.hp.com/go/bizsupport)) for information about installing certain PC Cards.
- Make sure your computer supports the problem PC Card: check the HP Notebook web site ([www.hp.com/notebooks](http://www.hp.com/notebooks)) for a list of approved and tested PC Cards.
- Try the card in another computer to see whether the card functions properly.
- Certain Xircom CE2 (Iips) LAN cards conflict with the game port device in Windows 2000. Contact Xircom to see if your card is one of these.
- Test the PC Card with the e-Diagtools diagnostics—see “Testing the Hardware” on page 129.

## Troubleshooting and Maintenance

### Troubleshooting Your Computer

#### **If an I/O card stops communicating properly**

- The card may have been reset if the computer suspended or turned off. Exit any applications, then remove and reinsert the card.

#### **If a PC Card modem is not working**

- Disable the internal modem:
  1. Open the hardware Device Manager: click Start, Settings, Control Panel, System (Windows 98 or 2000) or Start, Control Panel, Performance and Maintenance, System (Windows XP).
  2. Double-click Modem to list the current modem devices.
  3. Double-click the internal modem, then select the option to disable the modem.

#### **If an I/O card stops communicating properly**

- Exit and restart the application. The card may have been reset if the computer suspended or turned off.
- Check settings in Control Panel.

---

## Performance problems

For best performance with Windows 2000 or XP, your computer should have at least 96 to 128 MB of memory (RAM).

#### **If the computer pauses or runs sluggishly**

- This may be normal Windows behavior. Background processing can affect response time.
- Certain background operations (such as a virus-scanning program) can affect performance.
- Press CTRL+ALT+DEL to see if an application is not responding.
- Restart the computer: click Start, Shut Down (or Turn Off Computer), Restart.
- Some file browsers respond slowly while processing graphics or waiting for broken network connections to time out.

- If the computer's hard disk drive frequently runs (as indicated by the hard drive light on the front of the computer) while the computer appears to be paused or running slowly, Windows is likely spending excess time writing to its swap file on the computer's hard disk. If this occurs frequently, consider installing additional memory.
- Check the amount of available free disk space. Delete temporary and unneeded files.
- Check settings in the BIOS Setup utility:
  1. Click Start, Shut Down (or Turn Off Computer), Restart.
  2. When the HP logo appears, press F2 to enter BIOS Setup.
  3. From the Power menu, set the Power Management Mode to Max. Performance.
  4. Press F10 to save and exit BIOS Setup.

**If the computer stops responding**

- Press CTRL+ALT+DEL to end the application that is not responding.
- Slide and hold the power button for at least four seconds to turn off and reset the computer. Then press the blue sleep button to turn the computer back on.
- If nothing happens, insert a straightened paper clip into the system-off switch on the computer's left side. Then press the blue sleep button to turn the computer back on.
- If the computer is docked, reset the expansion base—see “To reset the computer” on page 31.

**If the computer shuts down slowly**

- For Windows 98, double-click the Norton AntiVirus icon in the taskbar.

---

## Power and battery problems

**If the computer turns off immediately after it turns on**

- Battery power is probably extremely low. Plug in the AC adapter, insert a charged battery (if undocked), or plug in a secondary battery (if docked).

**If the computer keeps beeping**

- The computer beeps repeatedly or displays a warning when battery power is low. Save your work, shut down the computer immediately, and insert a charged battery or plug in the AC adapter.

## Troubleshooting and Maintenance

### Troubleshooting Your Computer

#### **If the main battery doesn't charge**

- Make sure the AC adapter is fully plugged into the power source and the computer or expansion base, and that the light on the adapter is on.
- If you're using a power strip, remove the AC adapter from the power strip and plug it directly into a wall outlet.
- Make sure the battery is fully installed and locked in place.
- Move the computer away from any nearby heat source. Unplug the AC adapter and allow the battery to cool down. If the battery gets too hot, it will not charge properly.
- If available, try another battery and AC adapter.

#### **If a secondary battery doesn't charge**

- A secondary battery won't charge until the main battery is fully charged.
- Make sure the AC adapter is fully plugged into the power source and the expansion base, and that the light on the adapter is on.
- Make sure the secondary battery is correctly installed and locked in place.

#### **If the computer has a short operating time**

- Try conserving power using the suggestions listed in "To get the most from your batteries" on page 56.
- If you are running an application that has an automatic save feature (such as MS Word), disable this feature or increase the specified save time to reduce hard disk access.
- If the operating time has gradually become shorter and the battery is more than a year or two old, you may need to replace the battery.
- Heavy modem use can affect battery operating time.
- PC Card use can affect battery operating time.
- The battery gauge may need to be calibrated. Restart the computer, press F6 when the HP logo appears, and follow the instructions that appear onscreen. The process calibrates the main battery and any secondary batteries in the expansion base, and requires four to five hours per battery. You cannot use the computer during this process.

**If the Time Remaining for the battery is not correct**

- The Time Remaining is an estimate based on the rate at which the computer is using power at the moment, and so assumes that you will continue using power at that rate until the battery runs out. So, if you check the Time Remaining while the computer is using a good deal of power (such as when reading from a CD or DVD), the value will likely show less time remaining than you really have, since you will probably later switch to tasks that require less power.

**If the computer doesn't suspend to Standby mode as expected**

- If you have a connection to another computer, the computer won't suspend if the connection is active.
- If the computer is performing an operation, it normally waits for the operation to finish before suspending.

**If the computer doesn't automatically hibernate as expected**

- For Windows 2000 or XP, make sure hibernate support is enabled: from Control Panel, open Power or Power Options, then click the Hibernate tab.  
Also, check the Power Schemes tab. Make sure the Hibernate timeouts for both AC power and battery power are not set to Never.
- For Windows 98, check the Hibernate timeout in BIOS Setup—see “To run the BIOS Setup utility” on page 131.  
If your computer has more than 512 MB of RAM, you must expand the Utility partition on the hard disk—see “To recover the factory installation of your hard disk” on page 138.

**If the Standby option is missing from the Shut Down window**

- Do not allow Windows 98 to disable APM. It may prompt you to do this in certain situations—always answer “No”.
- If the Windows 98 Standby option is missing, restore it as follows:
  1. In Control Panel, double-click System.
  2. On the System Manager tab, expand the System Devices, select Advanced Power Management, and click Remove.
  3. Restart the computer.
  4. In Control Panel, double-click Add New Hardware, and follow the prompts to install support for APM.
  5. Restart the computer.

## Printing problems

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**Hint**

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You will usually be able to solve most printing problems by using the Print troubleshooter in Windows Help: click Start, Help (or Help and Support).

### **If a serial or parallel printer doesn't print**

- Make sure the printer is on and has paper in it.
- Make sure you are using the correct printer cable or cable adapter, and that the cable is secure at both ends.
- Check for printer errors.

### **If the left edge of printed output is missing**

- Certain applications may not work properly with 600-dpi printers. If you're using such a printer, try selecting a compatible printer driver for a 300-dpi printer. For example, if you were using a 600-dpi HP LaserJet printer, you might try using the HP LaserJet IIIsi driver (300 dpi).

### **If an infrared printer doesn't print**

- Make sure the line between the computer's infrared port (on the back of the computer) and the printer's infrared port is not blocked, and that the ports face each other as squarely as possible. The ports should be no more than 1 meter apart. Sunlight, heat from nearby equipment, or other sources of infrared radiation can also cause problems.
- Make sure the printer is on and has paper in it.
- Check for printer errors.
- Make sure Windows is running; otherwise infrared printing is not available.
- See "Infrared Problems" on page 113.

---

## Serial, parallel, and USB problems

### **If a serial mouse doesn't work**

- Make sure you followed the manufacturer's installation instructions completely and have installed the mouse properly. If not, repeat the procedure.
- Make sure the port connection is secure.

- Press the blue sleep button to suspend and resume.
- Restart the computer: click Start, Shut Down (or Turn Off Computer), Restart.
- Check mouse settings in Control Panel: click Start, Settings, Control Panel, then double-click Mouse (Windows 98 or 2000), or click Start, Control Panel, Printers and Other Hardware, Mouse (Windows XP).
- Make sure the serial port is enabled in BIOS Setup—see “To run the BIOS Setup utility” on page 131.
- Use a mouse that connects to a USB or PS/2 port.
- Check the port settings in Control Panel: open the hardware Device Manager, then double-click Ports (COM & LPT).

**If a serial modem doesn't work properly**

- See “Modem problems” on page 116.
- Make sure the port connection is secure.
- Use the Modem troubleshooter in Windows Help: click Start, Help (or Help and Support).
- In Control Panel, open Modems (Windows 98) or Phone and Modem Options (Windows 2000 and XP), and check the modem settings.
- Make sure the serial port is enabled in BIOS Setup—see “To run the BIOS Setup utility” on page 131.
- Disable the internal modem:
  1. Open the hardware Device Manager: click Start, Settings, Control Panel, System (Windows 98 or 2000) or Start, Control Panel, Performance and Maintenance, System (Windows XP).
  2. Double-click Modem to list the current modem devices.
  3. Double-click the internal modem, then select the option to disable the modem.
- Check the port settings in Control Panel: open the hardware Device Manager, then double-click Ports (COM & LPT).

## Troubleshooting and Maintenance

### Troubleshooting Your Computer

#### **If the serial or parallel port is not working**

- Make sure the port connection is secure.
- Check the port settings in Control Panel: open the hardware Device Manager, then double-click Ports (COM & LPT).
- Use the BIOS Setup utility to make sure the serial and parallel ports are enabled—see “To run the BIOS Setup utility” on page 131.
- Test the ports with the e-Diagtools diagnostics—see “Testing the Hardware” on page 129.

#### **If the USB port is not working**

- Contact the vendor of the peripheral device or check the HP Notebook web site ([www.hp.com/notebooks](http://www.hp.com/notebooks)) for the latest versions of the USB drivers and the driver for the device.
- Check the port settings in Control Panel: open the hardware Device Manager, then double-click Universal Serial Bus Controller.
- Test the USB port with the e-Diagtools diagnostics— see “Testing the Hardware” on page 129.

#### **If a floppy drive connected to the USB port doesn't work**

- For Windows 98, if you connect an HP floppy drive using the USB floppy cable, it is assigned a drive letter greater than C. You cannot access the drive using drive A or B.
- For Windows 98, if you connect a non-HP floppy drive to a USB port, it may prevent the computer from booting. Try disconnecting the drive while booting, or disable the Legacy USB Support setting in BIOS Setup.

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## Startup Problems

#### **If the computer doesn't respond when you turn it on**

- Connect the AC adapter.
- Try turning on the unit by pressing the blue sleep button.
- Reset the computer by inserting a straightened paper clip into the system-off switch on the left side of the computer. Then turn it on by pressing the blue sleep button.
- Don't touch the pointing stick while booting or resuming.

- If the computer still doesn't respond, remove the battery and AC adapter, remove any PC Card, and undock the computer if docked. Then plug the AC adapter in, reset the computer using the system-off switch, and turn it on by pressing the blue sleep button.

**If the computer won't boot from battery power**

- Make sure the battery is properly inserted and fully charged. Check the battery's charge by removing it and pressing the pad on the back of the battery. The lights show the charge level.
- If you have a secondary battery, install it in the expansion base, dock the computer, and try starting the computer.
- If available, try another battery.

**If the computer won't boot from the floppy disk drive**

- Make sure the drive is installed correctly—see “To connect the floppy disk drive” on page 28.
- Make sure the floppy disk drive is selected as the boot device—see “To change the boot device” on page 32.

**If the computer takes a long time to resume after being suspended**

- The computer can routinely take a minute or more to resume if it has a network card installed. While the operating system is loading drivers and checking hardware and network connections, you will see a blinking cursor on your display. As soon as the hardware has been re-initialized, the Windows desktop will appear.

---

## Wireless Problems

**If you have problems with wireless communication**

- Make sure the wireless indicator light is on.
- See “LAN problems” on page 115.

**If you have trouble connecting to another computer in the Network Neighborhood or My Network Places**

- Wait a few minutes, then press F5 to refresh the list of computers on the network.
- Click Start, Find, Find Computer (Windows 98 or 2000) or Start, Search, Computers or People (Windows XP) to locate the computer.

## Troubleshooting and Maintenance

### Troubleshooting Your Computer

- For Windows 98, disable DNS in the TCP/IP properties: click Start, Settings, Control Panel, then double-click Network.

#### **If you cannot connect to a particular computer on the network**

- Make sure the computer is properly connected to the network.
- Make sure your TCP/IP setup is correct for your network: in Control Panel, open Network (Windows 98), Network and Dial-up Connections (Windows 2000), or Network Connections (Windows XP).
- To use an AdHoc™ connection with Windows 98 or 2000, make sure NetBEUI protocol is installed in your wireless network setup.

#### **If the wireless link icon in the taskbar is red**

- Make sure you are using the correct SSID and channel settings: click the wireless link icon in the taskbar and select Advanced Configuration.
- Make sure you are in range of an access point (for an infrastructure connection) or other wireless computer (for an AdHoc connection).

#### **You can connect, but the network is slow**

- Check whether you might be in an area served by more than one wireless LAN. If so, the LANs could be interfering with each other.
- Move closer to the access point (for an infrastructure connection) or other wireless computer (for an AdHoc connection). You could be too far away for high-speed communication.
- Stop using any USB device that may be transferring large amounts of data, or adjust application settings to reduce the required transfer rate.

---

## Testing the Hardware

The e-Diagtools hardware diagnostic program included with your computer provides two levels of testing:

- Automated testing using its basic hardware test.
- Advanced testing using individual hardware tests.

The tests are designed to run after the system reboots. This ensures that the computer will be in a predictable state, so the diagnostic program can properly test the hardware components. The tests are non-destructive and are intended to preserve the state of the computer. The computer reboots when you exit the program so drivers can be loaded.

---

### To run the e-Diagtools diagnostic test

1. Click Start, Shut Down (or Turn Off Computer), Restart.
2. When the HP logo appears, press F10 to start the diagnostic test.
3. When the menu appears, press ENTER to run e-Diagtools.

The first time you run the program, you will be prompted to select the language for the program.

4. Follow the prompts to run e-Diagtools.
5. When the Configuration Description appears, check the list of detected hardware.

---

#### Hint

If a device is not detected or fails its test, it might be configured incorrectly in the BIOS Setup utility. You can confirm this by running BIOS Setup and checking the settings. See “To run the BIOS Setup utility” on page 131.

6. **Run the basic test.** Press F2 to start the basic hardware test. The results appear when the test is complete.
7. If you intend to exit without running the advanced tests, press F4 to view the Support Ticket. Press F3 to exit e-Diagtools.
8. **Optional: run the advanced tests.** Press F2 to open the advanced test screen.

## Troubleshooting and Maintenance

### Testing the Hardware

9. Select and run the appropriate tests. Tests are listed only for detected hardware. Press the following keys to run tests:

ENTER	Runs the highlighted test.
F5 or SPACE	Marks or unmarks the highlighted test.
F6	Marks or unmarks all tests in the current menu.
F7	Marks or unmarks all tests in all menus.
F10	Runs all marked tests.

10. **Save the Support Ticket.** Press T to update and display a Support Ticket containing system and test information.
11. When you are finished running tests, press ESC to exit the advanced tests.
12. Optional: to save the Support Ticket to a floppy disk, press F7 then ALT+C.
13. **Exit.** Press F3 and then any key to exit and reboot.
14. **Optional: open the Support Ticket.** In Windows, click Start, Programs (or All Programs), HP e-Diagtools, e-Diagtools for Windows.
15. Click View to display the Support Ticket.
16. To add information about your problem, click Comments and type the information, then click OK.

To save or print the Support Ticket, click Save As or Print.

To e-mail the Support Ticket to your support agent, click e-Mail. The first time you make an e-mail connection from this program, click Change Settings in the Connect window and enter the settings recommended by your support agent.

e-Diagtools for Windows can also update the version of e-Diagtools on your computer's hard disk. In e-Diagtools for Windows, use the e-Diagtools menu.

If you have trouble running e-Diagtools diagnostics from the hard disk, you can also run it from the *Recovery CD*. Boot from the CD and select the diagnostics option.

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## Configuring the Computer

Your computer includes two tools that help you configure its operation: the BIOS Setup utility and HP TopTools.

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### To run the BIOS Setup utility

The BIOS (Basic Input and Output System) Setup utility enables you to make changes to the computer's system configuration, and to tailor the operation of your computer to your individual work needs.

The settings made in BIOS Setup generally control the computer's hardware, and so greatly affect how the computer operates.

1. Click Start, Shut Down (or Turn Off Computer), Restart.
2. When the HP logo appears, press F2 to enter BIOS Setup.
3. The pointing devices are not active in BIOS Setup, so you will need to use the keyboard to navigate:
  - Press the LEFT and RIGHT arrow keys to move among menus.
  - Press the UP and DOWN arrow keys to move among parameters in a menu.
  - Press F5 or F6 to move through values for the current parameter, or press ENTER to change a setting.
4. After you select the options you want, press F10 or use the Exit menu to exit BIOS Setup.
5. If the settings cause a conflict between devices during reboot, the system prompts you to run BIOS Setup, and marks the conflicting settings.

The following tables describe the settings for the BIOS version at publication. If your BIOS version is different, some settings may differ from those shown or may be absent. Also, the computer and expansion base may have different BIOS versions.

Troubleshooting and Maintenance  
**Configuring the Computer**

**Main Menu**

<b>Setting</b>	<b>Description</b>	<b>Default</b>
BIOS Revision	Shows the current version of the computer's BIOS.	Detected automatically.
Exp. Base BIOS Revision*	Shows the current version of the expansion base's BIOS.	Detected automatically.
System Time	Sets the time using 24-hour format. Value set takes effect immediately.	
System Date	Sets the date using mm/dd/yy format. Value set takes effect immediately.	
LCD Time format*	Sets the format for displaying time on the expansion base's status panel.	12 Hours
LCD Date format*	Sets the format for displaying the date on the expansion base's status panel.	mm/dd/yy
Floppy Drive	Sets the floppy drive type.	Detected automatically.
Internal Hard Disk	Displays the hard disk size.	Detected automatically.
External Primary	Shows the hard disk drive type and capacity if one is present in the right module bay.	Detected automatically.
External Secondary	Shows the hard disk drive type and capacity if one is present in the left module bay.	Detected automatically.
Quiet Boot	When enabled, hides summary of power-on self-test and messages during boot.	Enabled
Video Display Device	Sets whether the computer automatically switches to an external monitor if one is detected.	Auto
Video Expansion	When enabled, the video image covers the entire display in lower resolution modes (SVGA or VGA). When disabled, the video image is centered in the display.	Disabled
Television Type	Controls the signal format (NTSC or PAL) output by the S-video port when Windows is not running.	NTSC
System Memory	Shows the system memory size.	640 KB
Extended Memory	Shows the extended memory size (equal to total memory minus 1 MB).	Detected automatically.
Unique Dock ID	Sets whether the computer creates a unique hardware profile for each expansion base (Enabled) or uses a common profile for all expansion bases (Disabled).	Enabled

Setting	Description	Default
UUID	Displays the value of the 16-byte UUID (Universally Unique ID) as 32 hex characters.	Detected automatically.
MAC Address	Displays the MAC network address of the internal (wired) LAN.	Detected automatically.
* Available only when docked.		

#### System Devices Menu

Setting	Description	Default
PS/2 Pointing Devices	Automatically disables the internal pointing devices when an external PS/2 mouse is connected.	Auto
FDD Controller	Enables the floppy drive.	Enabled
Legacy USB Support	Enables BIOS support for USB mouse, keyboard, and floppy disk drive.	Enabled
Internal LAN	Enables the internal (wired) LAN.	Enabled
Mini PCI Slot	Enables the PCI slot normally used for a modem.	Enabled
Serial port	Enables the serial port (the port is configured by the user).	Enabled
Base I/O and Interrupt	Sets the I/O address and interrupt (appears only if the serial port is Enabled).	3F8h, IRQ4
Infrared port	Enables the infrared port (the port is configured by the user).	Disabled
Mode	Sets the port to FIR (fast IR) or SIR (standard IR) infrared communications.	FIR
Base I/O and Interrupt	Sets the I/O address and interrupt.	2F8h, IRQ3
DMA channel	Sets the DMA channel for the infrared port in FIR mode.	DMA0
Parallel Port	Enables the parallel port (the port is configured by the user).	Enabled
Mode	Sets the port to output only, bi-directional, ECP, or EPP.	ECP
Base I/O and Interrupt	Sets the I/O address and interrupt.	378h, IRQ7
DMA channel	Sets the DMA channel for ECP mode (appears only if the parallel port Mode is ECP).	DMA3

Troubleshooting and Maintenance  
**Configuring the Computer**

**Security Menu**

<b>Setting</b>	<b>Description</b>	<b>Default</b>
User Password is	Shows if a user password is set.	Clear
Administrator Password is	Shows if an administrator password is set.	Clear
Set User Password	Press ENTER to set, change, or clear the user password. The password can have no more than 8 characters (0-9, A-Z), and cannot include special or accented characters.	Enter
Set Administrator Password	Press ENTER to set, change, or clear the administrator password, which protects BIOS Setup settings. The password can have no more than 8 characters (0-9, A-Z), and cannot include special or accented characters.	Enter
Password required to:		
Boot	Sets whether a user password is required when the computer boots. Requires the administrator password for changes.	Enabled
Resume*	Sets whether a user password is required when resuming from Standby or Hibernate mode. Requires the administrator password for changes. (Windows 98.)	Enabled
Undock*	Sets whether a user password is required when undocking the computer. Requires the administrator password for changes. (Windows 98.)	Disabled
Internal hard disk drive lock*	Encodes the current user password (or administrator password if that is the only password set) on the hard disk drive.	Disabled
Removable Device Boot	Sets whether the computer will attempt to boot from a floppy drive or other removable device.	Enabled
* Available only if the Boot option is enabled.		

**Power (APM) Menu**

Windows XP uses only the settings marked with \*. Windows 98 uses only the settings marked with \*, \*\*, and \*\*\*. Windows 2000 use only the settings marked with \* and \*\*\*. All other settings in the Power menu are ignored when Windows is running.

<b>Setting</b>	<b>Description</b>	<b>Default</b>
Power Management Mode	Disables time-outs, selects a pre-set combination of time-outs, or allows customized time-outs.	Max. Power Savings
Suspend Time-out	Sets the period of inactivity after which the computer goes from full power mode to Standby power mode.	4 minutes
Hibernate Time-out**	Sets the period of inactivity after which the computer goes from full power mode or Standby mode to Hibernate mode. (Skips Standby mode if the suspend time-out is disabled.)	4 hours
Hard Disk Time-out	Sets the period of hard disk inactivity after which the internal hard disk (and any hard disk drive in the plug-in module bay) stops spinning.	2 minutes
Time-out on AC	Sets whether power management time-outs occur while the AC adapter is connected.	Disabled
Lid Switch Mode	Sets the action that occurs if the computer's lid is closed.	Turn off LCD
Backlight Control*	When switching to battery power, sets whether the display brightness reverts to the previous battery-power brightness (Auto Restore) or to a very low brightness to save power (Auto Dim).	Auto Restore
Resume On Serial Ring	Sets whether the system resumes if it receives a ring signal.	Disabled
Resume On Time of Day	Sets whether the system resumes at a defined time of day.	Disabled
Resume Time	Sets the 24-hour time when the system resumes if Resume On Time of Day is enabled.	
Auto Suspend on Undock*	Sets whether the computer suspends to Standby power mode after undocking.	When Lid Closed
Auto Turn-On on Dock*	Sets whether the computer turns on after docking.	Enabled
Sleep Button Mode**	Sets the action for the sleep button (APM): go to Standby mode (Suspend) or shut down (Off).	Suspend
<p>* Windows 98, 2000, and XP use these settings.  ** Windows 98 uses this additional setting.  *** Windows 98 and 2000 use this additional setting.</p>		

Troubleshooting and Maintenance  
**Configuring the Computer**

**Boot Menu**

Setting	Description	Default
+Hard Disk +Removable Device CD-ROM/DVD Drive Internal NIC	Shows the order of boot devices, with “+” indicating a device category. Move the entries to change the order. If the computer has more than one device in a category, you can select the one scanned. Internal NIC (Network Interface Card) appears in the list only if a built-in LAN is present—it provides diskless boot from a network server.	1. Hard Disk 2. Removable Device 3. CD-ROM/DVD drive 4. Internal NIC

**Exit Menu**

Setting	Description	
Save Changes and Exit	Saves Setup changes, then exits and reboots.	
Discard Changes and Exit	Discards any Setup changes made since last save, then exits and reboots. Does not affect password, date, or time changes.	
Get Default Values	Restores default settings, and remains in Setup. Does not affect password, date, or time changes.	
Load Previous Values	Discards any Setup changes made since last save, and remains in Setup. Does not affect password, date, or time changes.	
Save Changes	Saves Setup changes, and remains in Setup. Security settings are saved when changed.	

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## To set up TopTools

HP TopTools is for network managers and administrators who are responsible for managing computer systems. It offers configuration and security options that allow you to check which hardware and software components are installed on your computer and how well they are working.

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### **Pavilion models**

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HP TopTools is not supported on all Pavilion models.

The TopTools package is included with your computer, but you'll need to install it before you can use it.

1. Click Start, Programs (or All Programs), hp toptools Agent, Setup.
2. Follow the instructions that appear on the screen.

TopTools can be run locally on an individual computer, or remotely by a network administrator.

- To run TopTools locally, click Start, Programs (or All Programs), hp toptools Agent, HP TopTools.

For information on manageable HP computers, HP TopTools, and how they lower PC operating costs, see the HP web site at [www.hp.com/toptools](http://www.hp.com/toptools).

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## Reinstalling and Updating Software

You can use the *Recovery CD* to recover the original factory software for your computer. The *Recovery CD* also provides Windows drivers specific to your computer to configure a custom system. You can find drivers in these locations:

- On your computer's hard drive under C:\hp\Drivers.
- On the *Recovery CD* under \hp\Drivers.
- On the HP Business Support web site ([www.hp.com/go/bizsupport](http://www.hp.com/go/bizsupport)). This web site contains the latest updates of software drivers for different operating systems.

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### To recover the factory installation of your hard disk

You can use the *Recovery CD* to reinstall the original factory software on your computer's hard disk. You can also use the same process to create a larger Utility partition on your hard disk, or to create a Utility partition on a new hard disk. The hidden Utility partition contains the e-Diagtools diagnostic tests and stores hibernation data for Windows 98 and other operating systems that don't provide hibernation.

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#### CAUTION

**This procedure formats the computer's hard disk drive and erases all data on the disk. After the hard disk is formatted, you'll need to reinstall your applications.**

**Do not interrupt the following process or unplug the AC adapter until the process is complete.**

1. **Important:** back up all data from your hard disk. The following steps delete all data from the disk.
2. Plug in the AC adapter.
3. Insert the *Recovery CD* in the CD-ROM/DVD drive in the expansion base. If the computer is turned off, insert a straightened paper clip into the hole on the front of the drive to open the drive.

–or–

If you have a PC Card or parallel port CD-ROM drive, connect it and insert the *Recovery CD*. Also connect the floppy drive and insert the Support Utility disk—see “To create a Support Utility disk” on page 139.

4. Turn on or restart the computer. If the computer is running, click Start, Shut Down (or Turn Off Computer), Restart.
5. When you see the HP logo, press ESC to select the boot device:
  - If you're using a CD-ROM drive in the expansion base, select the CD-ROM drive as the boot device.
  - If you're using a PC Card or parallel port CD-ROM drive, select the floppy drive ("Removable device") as the boot device.
6. When the *Recovery CD* dialog box appears, follow the displayed instructions. To perform a standard recovery, press 2, 1, 1. If prompted, accept the recommended partition size. If you install the factory software, the recovery process can take up to 15 minutes.

If you want to create the Utility partition without installing the factory software, click Advanced and select not to install the operating system.

If your hard disk is partitioned into several drives, you can install the factory software on drive C without affecting other drives. Click Advanced and select to restore only the C partition.

7. **Important:** When prompted to reboot the computer, first undock it and *remove it from the expansion base* if it is docked, then press CTRL+ALT+DEL and follow any instructions that appear.

For Windows 2000: if you want to convert drive C from FAT32 to NTFS format, click Start, Run, then type **convert c: /fs:ntfs** and click OK. Windows XP is installed using NTFS format.

---

## To create a Support Utility disk

If you want to use the *Recovery CD* in a PC Card CD-ROM drive or parallel port CD-ROM drive, you'll need a Support Utility disk to recover the factory software.

1. Insert a formatted floppy disk in the floppy drive.
2. Run **makesupp.bat** from the \hp\Bootdisk directory on the *Recovery CD*.
3. Copy the MS-DOS device drivers from the installation software provided with the CD-ROM drive to the Support Utility disk into the A:\Tools directory.

## Troubleshooting and Maintenance

### Reinstalling and Updating Software

4. In the CONFIG.SYS file on the Support Utility disk, enable or disable the appropriate drivers for your CD-ROM drive:
  - **For a PC Card drive:** REM the line containing the HP driver (OAKCDROM), and insert the command to run the point enabler for the card.
  - **For a parallel drive:** REM the line containing the HP driver (OAKCDROM).
5. Add the **device=driver** statements to the CONFIG.SYS file on the Support Utility disk. Insert the device statements immediately following the USERCD remark.

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### To create a boot disk (Windows 98 or 2000)

- **Windows 98:** click Start, Settings, Control Panel, then double-click Add/Remove Programs. Use the Startup Disk tab.
- **Windows 2000:** click Start, Run, type c:\i386\Bootdisk\Makeboot.exe, and click OK. You will need four floppy disks.

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### To replace a damaged *Recovery CD*

If you lose or damage the *Recovery CD*, take your computer to a local HP service center to get a replacement CD. Call the HP Customer Care Center for the address and telephone number of an HP service center near you—see “To contact HP for support or service” on page 145.

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### To update the BIOS

Hewlett-Packard may provide updates to the computer BIOS and expansion base BIOS to enhance the capabilities of your system. You can use e-Diagtools for Windows to download and install BIOS updates in your computer and expansion base simultaneously.

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#### CAUTION

**Because a BIOS update replaces the previous version, you must follow these instructions exactly, or you risk damaging your computer or expansion base. The BIOS update process resets the configuration settings in the BIOS Setup utility, except for the PC Identification and BIOS passwords.**

1. In Windows, exit any programs that are running.
2. Remove any PC Cards.

3. If you have an expansion base, dock the computer. If the computer is docked, the expansion base BIOS is automatically updated along with the computer BIOS.
4. Connect the AC adapter.
5. Connect any cables or equipment needed to connect to the Internet.
6. Click Start, Programs (or All Programs), HP e-Diagtools, e-Diagtools for Windows.
7. Click Update, select Download New and click OK. Follow the instructions that appear. **Once the update process begins, do not interrupt it.**

The first time you make an Internet connection from this program, click Change Settings in the Connect window to define your connection settings.

8. When the process is completed, reset the system:
  - If the computer is docked, insert a straightened paperclip into the reset button on the bottom of the expansion base—this resets the computer as well as the expansion base. (You can also reset the base by undocking the computer and then removing all battery and AC power from the base.)
  - If the computer is not docked, insert a straightened paperclip into the system-off button on the left side of the computer.

BIOS updates are also available from the HP Business Support web site ([www.hp.com/go/bizsupport](http://www.hp.com/go/bizsupport)).

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## To update Windows drivers

From time to time, HP releases updated versions of the drivers for your computer. These updates are intended to fix any problems that could be encountered in the drivers, and to keep your computer running smoothly.

In addition, HP normally provides drivers for other versions of Microsoft Windows, in case you decide to install a different version of Windows.

- Download the latest drivers for your computer from [www.hp.com/go/bizsupport](http://www.hp.com/go/bizsupport).

Follow the instructions included with the drivers.



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## HP Support and Service

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## Getting Assistance for Your Computer

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### To get help from the web

HP has several web sites on the Internet dedicated to providing information to HP notebook computer users. The following sites are especially useful for helping you get support for your computer:

- **HP Business Support web site.** Get e-mail and telephone support information, technical information, and software updates.  
[www.hp.com/go/bizsupport](http://www.hp.com/go/bizsupport)
- **HP Notebook Computer web site.** Get the latest information about technical support, plus information about warranty and support programs.  
[www.hp.com/notebooks](http://www.hp.com/notebooks)

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## To contact HP for support or service

HP Customer Care Centers will assist you free of charge during the term of the warranty (you are responsible for the telephone charges).

**During the free assistance period, HP will assist with questions about:**

- Applications and operating systems included with your computer.
- HP-described operation environments and conditions.
- HP accessories, HP upgrades, and basic operation and troubleshooting.

**HP will not be able to help with questions about:**

- Non-HP hardware, software, operating systems, or usage not intended for or included (by HP) with the product.
- How to repair the product yourself.
- Product development or custom installations.
- Consulting.

To contact the HP Customer Care Center by e-mail, visit the HP Business Support web site ([www.hp.com/go/bizsupport](http://www.hp.com/go/bizsupport)) under “Contact HP”.

To call the Customer Care Center, check the HP Business Support web site ([www.hp.com/go/bizsupport](http://www.hp.com/go/bizsupport)) under “Contact HP” for the most complete and current list of phone numbers. If your HP notebook product is not normally sold by HP in the country of use, you must call a Customer Care Center that supports your notebook model. Currently, service and support assistance is provided only in the following countries and regions:

**Pavilion models**

United States only: (208) 323-2551.

**Omnibook models**

See the following table.

HP Support and Service  
**Getting Assistance for Your Computer**

<p><b>North America</b> United States: (970) 635-1000 Canada: (905) 206-4663 Mexico:     Mexico City: 52-58-9922     Outside Mexico City: 01-800-472 6684     Guadalajara: 669-9500     Monterrey: 378-4240</p> <p><b>South America</b> Argentina:     From Argentina: 0810-555-5520     Outside Argentina: 5411-4778-8380 Brazil:     São Paulo: (11) 3747-7799     Outside São Paulo: 0800-157751 Venezuela: 0800-157751</p> <p><b>Europe</b> Austria: +43-(0)7114-20-1080 Belgium:     Dutch: 32-(0)2-626-8806     French: 32-(0)2-626-8807 Czech Republic: 42-(0)2-6130-7310 Denmark: +45-39-29-4099 Finland: 358-(0)203-47-288 France: +33 (0)1-43-62-34-34 Germany: +49-(0)180-52-58-143 Greece: +30-(0)1-619-64-11 Hungary: +36-(0)1-382-1111 Ireland: +353-(0)1-662-5525 Italy: +39-02-264-10350 Netherlands: +31-(0)20-606-8751 Norway: +47-22-11-6299 Poland: +48-22-519-06-00 Portugal: +351-21-317-6333</p>	<p>Russian Federation:     Moscow: +7-095-797-3520     St. Petersburg: +7-812-346-7997 Spain: +34-902-321-123 Sweden: +46-(0)8-619-2170 Switzerland: +41-(0)848-80-11-11 Turkey: +90-216-579-71-71 Ukraine: +7-380-44-490-3520 United Kingdom: +44-(0)207-512-52-02 English (international): +44-(0)171-512-52-02</p> <p><b>Asia and Australia</b> Australia: 61-3-8877-8000 Hong Kong: 852-800-96-7729 India: 91-11-682-6035 Indonesia: 62-21-350-3408 Japan:     Navi. Dial: 0570-000-510     Other: 81-3-5344-7181 Korea:     Seoul: 82-2-3270-0700     Outside Seoul: 080 999-0700 Malaysia:     Penang: 60-3-295-2566     Outside Penang: 03-295-2566 New Zealand: 64-9-356-6640 People's Republic of China: 800-810-5959 Philippines: 63-2-867-3551 Singapore: 65-272-5300 Taiwan: 886-2-2717-0055 Thailand: 66-2-661-4000 Vietnam: 84-8-823-4530</p> <p><b>Africa/Middle East</b> Dubai: +971-(0)4-8839-292 Israel: +972-(0)9-952-4848 Africa:     RSA: 086-000-1030     Outside RSA: +27-(0)11-258-9301</p>
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For best service, make sure you have as much of the following available when you call.

- Your computer's model and serial number.
- Your computer's operating system.
- Any messages displayed when the problem occurred.
- Were there any changes to the computer, software, related hardware, or accessories before this occurred? Can the problem be re-created?

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## To receive repair service

If the HP notebook product is not normally sold by HP in the country of use, it must be returned for service to a country in which it is sold and supported.

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### Note

HP Pavilion notebooks have regional support and service in selected countries. Currently, HP Pavilion notebook PCs are supported only in the country in which they are purchased and marketed. If you are outside the country of purchase, you must cover the cost of shipping your notebook to the appropriate HP authorized repair site.

If you are uncertain about the support available for your notebook, please contact HP Customer Care—see “To contact HP for support or service” on page 145.

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**If your computer is under warranty.** To receive warranty repair service, contact an HP-authorized reseller, or contact the HP Customer Care Center—see “To contact HP for support or service” on page 145. The support technician will help qualify your unit for warranty repair based on the warranty applicable to your unit and original purchase date, and will provide you with repair processes. Warranty service may include the cost of shipping, handling, duties, taxes, freight, or fees to or from the service location.

**If your computer is no longer under warranty.** Contact an HP-authorized reseller or the HP Customer Care Center—see “To contact HP for support or service” on page 145. The support provider will let you know about repair charges and processes.

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### Note

You are financially responsible for any repairs to your notebook that are not covered by the HP warranty—see the warranty statement on the next page. This includes any repairs required if you damage your notebook—for example, by spilling liquid onto it, dropping it, or breaking the display.

In addition, most DVD drives let you change the region code only a limited number of times (usually no more than four) to allow you to set the proper region code for your area. Please note that when you reach this limit, your last change to the region code will be hard-coded on the DVD drive, and will be permanent. Your HP warranty does not cover the expense of correcting this situation.

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## To prepare your computer for shipment

See “To receive repair service” above to determine if your computer must be sent in for service. If so, prepare your computer for shipment as follows.

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**Note**

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If you have questions about packaging requirements when returning your notebook for repair, contact HP Service and Support—see “To contact HP for support or service” on page 145. If your notebook is not packaged properly, you will be responsible for any damages to it that occur during shipping.

1. **Important:** back up your hard disk drive. The hard disk may need to be replaced or reformatted while your computer is being repaired.
2. Hewlett-Packard cannot guarantee the return of removable components. Please remove the following prior to sending your computer in for service:
  - PC Cards.
  - AC adapter and power cord.
  - Any removable media, such as CDs, DVDs, or floppy disks.
  - Any hardware not involved in the problem and not requested for repair.
3. When sending your notebook to Hewlett-Packard, please use the original product packaging or other substantial packaging to avoid damage to the unit in transit. Make sure at least three inches of suitable packing material surround the unit.

Your notebook will be returned to you in new packaging.

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**Note**

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If the hard disk drive is defective, you will receive a replacement drive that is either unformatted or loaded with software for verification. You should restore the computer’s original software using your *Recovery CD* (see “To recover the factory installation of your hard disk” on page 138) or other recovery method.

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## Hewlett-Packard Limited Warranty Statement

1. HP warrants to you, the end-user customer, that HP hardware, accessories and supplies will be free from defects in materials and workmanship after the date of purchase, for the period specified in the Warranty Duration table below. If HP receives notice of such defects during the warranty period, HP will, at its option, either repair or replace products which prove to be defective. Replacement products may be either new or equivalent in performance to new.
2. HP warrants to you that HP software will not fail to execute its programming instructions after the date of purchase, for the period specified in the Warranty Duration table below, due to defects in material and workmanship when properly installed and used. If HP receives notice of such defects during the warranty period, HP will replace software which does not execute its programming instructions due to such defects.
3. HP does not warrant that the operation of HP products will be uninterrupted or error free. If HP is unable, within a reasonable time, to repair or replace any product to a condition as warranted, you will be entitled to a refund of the purchase price upon prompt return of the product.
4. HP's limited warranty is valid in any country or locality where HP has a support presence for this product and where HP has marketed this product. The level of warranty service you receive may vary according to local standards. HP will not alter form, fit or function of the product to make it operate in a country for which it was never intended to function for legal or regulatory reasons.
5. Warranty does not apply to defects resulting from (a) improper or inadequate maintenance or calibration, (b) software, interfacing, parts or supplies not supplied by HP, (c) unauthorized modification or misuse, (d) operation outside of the published environmental specifications for the product, or (e) improper site preparation or maintenance.
6. TO THE EXTENT ALLOWED BY LOCAL LAW, THE ABOVE WARRANTIES ARE EXCLUSIVE AND NO OTHER WARRANTY OR CONDITION, WHETHER WRITTEN OR ORAL, IS EXPRESSED OR IMPLIED AND HP SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY, SATISFACTORY QUALITY, AND FITNESS FOR A PARTICULAR PURPOSE. Some countries, states or provinces do not allow limitations on the duration of an implied warranty, so the above limitation or exclusion might not apply to you. This warranty gives you specific legal rights and you might also have other rights that vary from country to country, state to state, or province to province.

HP Support and Service  
**Hewlett-Packard Limited Warranty Statement**

7. TO THE EXTENT ALLOWED BY LOCAL LAW, THE REMEDIES IN THIS WARRANTY STATEMENT ARE YOUR SOLE AND EXCLUSIVE REMEDIES. EXCEPT AS INDICATED ABOVE, IN NO EVENT WILL HP OR ITS SUPPLIERS BE LIABLE FOR LOSS OF DATA OR FOR DIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL (INCLUDING LOST PROFIT OR DATA), OR OTHER DAMAGE, WHETHER BASED IN CONTRACT, TORT, OR OTHERWISE. Some countries, states or provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

THE WARRANTY TERMS CONTAINED IN THIS STATEMENT, EXCEPT TO THE EXTENT LAWFULLY PERMITTED, DO NOT EXCLUDE, RESTRICT OR MODIFY AND ARE IN ADDITION TO THE MANDATORY STATUTORY RIGHTS APPLICABLE TO THE SALE OF THIS PRODUCT TO YOU.

<b>Product</b>	<b>Duration of Limited Warranty</b>
HP Notebook with "1YR", "3YR", or similar mark on serial-number label	1 year, 3 years, or number of years marked.
HP Notebook with "90D" or similar mark on serial-number label	90 days or number of days marked.
HP Notebook accessories and batteries	1 year
Non-HP accessories, Non-HP "Distributed by HP" accessories	Not warranted by HP. Refer to manufacturer's warranty
HP Software, Microsoft Software	90 days

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## Reference Information

Reference Information  
**Hardware Specifications**

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## Hardware Specifications

Because we are constantly improving our products, the specifications shown below are subject to change. For the latest specifications, see the HP Notebook web site ([www.hp.com/notebooks](http://www.hp.com/notebooks)).

<b>Physical Attributes</b>	<p><b>Computer:</b>            Size: 278 × 222 × 25 mm (10.9 × 8.7 × 1.0 in).            Weight: 1.5 kg (3.4 lb) minimum, depending on model.            Magnesium casing with rubberized grip surfaces.</p> <p><b>Computer docked in expansion base:</b>            Size: 298 × 257 × 45 mm (11.7 × 10.1 × 1.8 in).            Weight: 2.4 kg (5.4 lb) minimum, depending on model.</p>
<b>Processor and Bus Architecture</b>	<p>933- to 1133-MHz Intel Mobile Pentium III processor with Speed Step technology with 512-KB L2 cache.            32-KB L1 cache.            32-bit PCI bus.</p>
<b>Video</b>	<p>12.1-inch XGA active-matrix (TFT) display (1024 × 768 × 16M colors).            External monitors up to 1600 × 1200 × 16M colors at 60 Hz refresh rate, and up to 64K colors at up to 85 Hz refresh rate. Higher resolutions may be available. Refresh rate and clarity may vary depending on monitor, resolution, and color depth.            Up to 32-MB dynamically allocated video RAM shared with system RAM.            MPEG-2 hardware acceleration, support for software MPEG-2.</p>
<b>Power</b>	<p>Rechargeable lithium-ion battery with LED charge-level gauge.            Battery life (one battery): up to 3-4 hours typical (varies with model, usage, and power settings).            Fast battery recharge: approximately 2 hours.            Low-battery warning.            Suspend/resume capability.            Universal AC adapter: 100–240 Vac (50/60 Hz) input, 19 Vdc output, 60 W minimum.            Optional secondary battery available for expansion base module bays.</p>
<b>Mass Storage</b>	<p><b>Computer:</b>            10- to 40-GB removable hard disk drive.            1.44-MB floppy drive module (certain models).</p> <p><b>Expansion base:</b>            Two bays for plug-in drive modules.            Optional drive modules available.</p>
<b>RAM</b>	<p>Two slots for SDRAM expansion (SODIMM, PC-133) up to 1024 MB.            At least 128 MB RAM installed in system RAM slot under keyboard.            133-MHz RAM bus.</p>

<b>Audio System</b>	<p><b>Computer:</b>  16-bit Sound Blaster Pro-compatible stereo sound.  Built-in speaker.  3D-enhanced PCI bus audio.  Built-in microphone.  Separate audio-off button with indicator light.  Headphone-out and microphone-in.</p> <p><b>Expansion base:</b>  CD player (can play with or without computer docked).  Stereo sound via three built-in speakers.  Analog pass-through from the computer.  Headphone-out, microphone-in, and audio line-in.</p>
<b>Keyboard and Pointing Devices</b>	<p>84/85/87-key touch-type QWERTY keyboard with 101/102 key emulation.  Embedded numeric keypad.  12 function (Fn) keys.  2 user-programmable One-Touch buttons.  Pointing stick (TrackPoint technology licensed from IBM).  Left and right click buttons, center scroll button.</p>
<b>LAN</b>	<p>Ethernet 10Base-T (10 Mbps) and 100Base-TX (100 Mbps) support.  Supports wake-on-LAN, fast IP, DMI, dRMON.  MBA (Managed Boot Agent) support for PXE/BINL, BOOTP, NCP/IPX, DHCP.</p>
<b>Modem</b> (certain models)	<p>Data speed: 56 Kbps (V.90) maximum.  Fax speed: 14.4 Kbps, Class 1 and 2.  Modulation: V.21, V.22, V.22bis, V.23, V.32, V.32bis, V.34, V.90, X2, Bell 103, Bell 212A.  Synchronous transfer: V.80.  Compression: V.42bis, MNP5.  Error correction: V.42, MNP2-4.  Fax: Group 3 fax, Class 1. V.17, V.27ter, V.29, V.21 channel 2.</p>
<b>802.11 Wireless LAN</b> (certain models)	<p>Radio: IEEE 802.11b, WECA Wi-Fi compliant, direct sequence spread spectrum.  Operating frequency: 2.5-GHz ISM band, exact frequencies and channels depend on country.  Raw data rate: 1, 2, 5.5, or 11 Mbps.  Transmitter output: 15 dBm typical (approx. 30 mW), 16 dBm max (approx. 40 mW).  Receiver sensitivity: -84 dBm typical.  Range: up to 100 m (300 ft) or more, depending on environment and conditions.  On-off button with power indicator.  USB interface.</p>

Reference Information  
**Hardware Specifications**

<b>Input/Output</b>	<p><b>Computer:</b>  2 universal serial bus (USB) ports.  15-pin VGA video-out with DDC support.  Dual display.  4-Mbps IrDA-compliant infrared port.</p> <p><b>Expansion base:</b>  2 universal serial bus (USB) ports.  9-pin, 115,200-bps serial (16550 UART).  25-pin bi-directional ECP/EPP parallel.  15-pin VGA video-out with DDC support.  S-video (TV out).  Dual display.  PS/2 keyboard and PS/2 mouse.</p>
<b>Expandability</b>	<p><b>Computer:</b>  One Type II 16-/32-bit PC Card slot (3.3- and 5-V support).  CardBus enabled.</p> <p><b>Expansion base:</b>  Two plug-in module bays for accessory modules.</p>
<b>Security Features</b>	<p>User and administrator passwords.  System, hard drive, and docking passwords.  PC identification displayed at boot.  DMI-accessible electronic serial number.  Kensington MicroSaver lock slot.</p>
<b>Environmental Limits</b>	<p>Operating temperature: 5 to 35 °C (41 to 95 °F).  Operating humidity: 20 to 90 percent RH (5 to 35 °C).  Operating altitude: up to 3000 m (10,000 ft) at 25 °C (77 °F).  Storage temperature: -20 to 50 °C (-4 to 122 °F).</p>
<b>Major ICs</b>	<p><b>Computer:</b>  CPU: Intel Mobile Pentium III processor.  Core logic: Intel 830MG/ICH3M chipset.  Display controller: integrated in Intel 830MG, CH7011A.  Audio controller: ESS ES1988 Allegro.  CardBus controller: TI PCI 1410.  Keyboard/embedded controller: National NS87570.  Super I/O: National PC87393F.</p> <p><b>Expansion base:</b>  Embedded controller: National NS87570.  PCI IDE controller: CMD PCI-648/649.  Audio controller: OZ163.</p>

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## Modem Reference Information

If your computer has a built-in modem, you can customize the operation of the modem using AT commands and S-registers. You can do this from Modems (Windows 98) or Phone and Modem Options (Windows 2000 and XP) in Control Panel, from most communications software, or by using terminal mode in your software. See “To change your modem settings” on page 64.

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**Note**

You should have a good understanding of modems and how they operate before you change default settings.

This section contains summary information about AT commands, S-registers, and selected result codes for the built-in modem.

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### Modem Reference (Ambit)

In the following AT command table, default settings are shown in bold. All listed AT commands except A/ must be preceded by “AT.”

#### AT Commands (Ambit)

Command	Function (Ambit)
<b>Basic and Extended AT Commands</b>	
A/	Re-execute command (not preceded by AT)
A	Go off-hook and attempt to answer a call
B0	Select V.22 connect @1200 bps
C1	Return OK message
Dn	Dial modifier
E0	Turn off command echo
<b>E1</b>	Turn on command echo
H0	Initiate a hang-up sequence
H1	If on-hook, go off-hook and enter command mode
I0	Report modem speed
I1	Report chip set
I2	Report DSP code revision
I3	Report controller code revision
I4	Report manufacturer name
I5	Report board name
I6	Report OK
I7	Report OK
I9	Report data/TAM/handset/speakerphone
I10	Report DSP code details
I11	Report controller code details

Reference Information  
**Modem Reference Information**

<b>Command</b>	<b>Function (Ambit)</b>
I12	Report driver time stamp
L0	Set low speaker volume
<b>L1</b>	Set low speaker volume
L2	Set medium speaker volume
L3	Set high speaker volume
M0	Turn speaker off
<b>M1</b>	Turn speaker on during handshaking and turn speaker off while receiving carrier
M2	Turn speaker on during handshaking and while receiving carrier
M3	Turn speaker off during dialing and receiving carrier and turn speaker on during answering
N0	Turn off automode detection
<b>N1</b>	Turn on automode detection
O0	Go on-line
O1	Go on-line and initiate a long retrain sequence
O2	Go on-line and initiate a short retrain sequence
P	Force pulse dialing
<b>Q0</b>	Allow result codes to DTE
Q1	Inhibit result codes to DTE
Sn	Select S-Register n as default
Sn?	Return the value of S-Register n
Sn=v	Set default S-Register n to value v
T	Force DTMF dialing
V0	Report short form result codes
<b>V1</b>	Report long form result codes
W0	Report DTE speed only
W1	Report line speed, EC protocol and DTE speed
<b>W2</b>	Report DCE speed only
X0	Report basic call progress result codes, i.e., Ok, Connect, Ring, No Carrier (also, for busy, if enabled, and dial tone not detected), No Answer and Error
X1	Report basic call progress result codes and connections speeds (Ok, Connect, Ring, No Carrier (also, for busy, if enabled, and dial tone not detected), No Answer, Connect XXXX, and Error
X2	Report basic call progress result codes and connections speeds, i.e., Ok, Connect, Ring, No Carrier (also, for busy, if enabled, and dial tone not detected), No Answer, Connect XXXX, and Error
X3	Report basic call progress result codes and connections rate, i.e., Ok, Connect, Ring, No Carrier, No Answer, Connect XXXX, Busy, and Error
<b>X4</b>	Report all call progress result codes and connections rate, i.e., Ok, Connect, Ring, No Carrier, No Answer, Connect XXXX, Busy, No Dial Tone and Error
Y0	Report OK
Y1	Report OK
Z0	Restore stored profile 0 after warm reset
Z1	Soft reset and restore stored profile 1 after warm reset
<b>&amp;C0</b>	Soft reset and force RLSD active regardless of the carrier state
&C1	Allow RLSD to follow the carrier state
<b>&amp;D0</b>	Modem ignores DTR
&D1	Modem enters command mode at DTR drop
&D2	Modem hangs up at DTR drop
&F0	Restore factory configuration 0
&F1	Restore factory configuration 1
&J0	Set S-Register response only for compatibility
&K0	Disable DTE/DCE flow control

Reference Information  
**Modem Reference Information**

Command	Function (Ambit)
&K3	Enable RTS/CTS DTE/DCE flow control
&K4	Enable XON/XOFF DTE/DCE flow control
&K5	Enable transparent XON/ XOFF flow control
<b>&amp;K6</b>	Enable both RTS/CTS and XON/XOFF flow control
&L0	Report OK
&L1	Report OK
&M0	Report OK
<b>&amp;P0</b>	Set 10 pps pulse dial with 39%/61% make/break
&P1	Set 10 pps pulse dial with 33%/67% make/break
&Q0	Report OK
&Q5	Report OK
&Q6	Report OK
&S0	Report OK
&T0	Terminate any test in progress
&T1	Initiate local analog loopback
&T2	Returns ERROR result code
&T3	Report OK
&T4	Report OK
&T5	Report OK
&T6	Report OK
&T7	Report OK
&T6	Report OK
&T7	Report OK
&T8	Report OK
&V	Display current configuration and stored profiles
&W0	Store the current configuration as profile 0
&W1	Store the current configuration as profile 1
&Y0	Report OK
&Y1	Report OK
&Zn=x	Store dial string x (up to 38 digits) to location n (0 to 3)
<b>FAX Class 1</b>	
<b>+Fclass=0</b>	Select data mode
+Fclass=1	Select facsimile Class 1 mode
+Fclass=2	Select facsimile Class 2 mode
+FAE=0	Disable data/fax auto answer
+FAE=1	Enable data/fax auto answer
+FRH=n	Receive data with HDLC framing: 3=V.21 channel 2, 300bps, 24=V.27ter 2400bps, 48=V.27ter 4800bps, 72=V.29 7200bps, 73=V.17 7200bps long, 74=V.17 7200bps short, 96=V.29 9600bps, 97=V.17 9600bps long, 98=V.17 9600bps short, 121=V.17 12000bps long, 122=V.17 12000bps short, 145=V.17 14400bps long, 146=V.17 14400bps short
+FRM=n	Receive data: 24=V.27ter 2400bps, 48=V.27ter 4800bps, 72=V.29 7200bps, 73=V.17 7200bps long, 74=V.17 7200bps short, 96=V.29 9600bps, 97=V.17 9600bps long, 98=V.17 9600bps short, 121=V.17 12000bps long, 122=V.17 12000bps short, 145=V.17 14400bps long, 146=V.17 14400bps short
+FRS=n	Receive silence, n×10 ms
+FTH=n	Transmit data with HDLC framing: 3=V.21 channel 2, 300bps, 24=V.27ter 2400bps, 48=V.27ter 4800bps, 72=V.29 7200bps, 73=V.17 7200bps long, 74=V.17 7200bps short, 96=V.29 9600bps, 97=V.17 9600bps long, 98=V.17 9600bps short, 121=V.17 12000bps long, 122=V.17 12000bps short, 145=V.17 14400bps long, 146=V.17 14400bps short

Reference Information  
**Modem Reference Information**

Command	Function (Ambit)
+FTM=n	Transmit data: 24=V.27ter 2400bps, 48=V.27ter 4800bps, 72=V.29 7200bps, 73=V.17 7200bps long, 74=V.17 7200bps short, 96=V.29 9600bps, 97=V.17 9600bps long, 98=V.17 9600bps short, 121=V.17 12000bps long, 122=V.17 12000bps short, 145=V.17 14400bps long, 146=V.17 14400bps short
+FTS=n	Stop transmission and wait, n×10 ms
+F<cmd>?	Return active configuration for command
+F<cmd>=?	Return modem capabilities for command
<b>FAX Class 2</b>	
+FMR?	Request manufacturer identification
+FMDL?	Identify product model
+FREV?	Identify product revision
+FDR	Begin or continue phase C receive data
+FDT	Transmit data
+FET=n	Transmit page punctuation
+FK	Terminate session
+FAXERR=n	Report session error
+FBOR=n	Data bit order: 0,2=direct, 1,3=reversed
+FCQ=0	Copy quality checking
+FCR=n	Able to receive: 0=unable, 1=able
+FDCC=...	DCE capabilities
+FDCS=...	Current session results parameters
+FDIS=...	Current session capabilities parameters
+FLID="xxx"	Local ID string
+FPHCTO=n	DTE phase C response timeout n×100ms
+FPTS=n	Page transfer status

**S-Registers (Ambit)**

Register	Function (Ambit)	Range/units	Default
S0	Rings to auto-answer	0-255/rings	0
S1	Ring counter	0-255/rings	0
S2	Escape character	0-255/ASCII	43
S3	Carriage return character	0-127/ASCII	13
S4	Line feed character	0-127/ASCII	10
S5	Backspace character	0-255/ASCII	8
S6	Wait time for dial tone	2-255/s	2
S7	Wait time for carrier	1-255/s	60
S8	Pause time for dial delay modifier	0-255/s	2
S9	Carrier detect response time	1-255/.1 s	6
S10	Carrier loss disconnect time	1-255/.1 s	100
S11	DTMF tone duration	50-255/.001 s	70
S12	Escape prompt delay	0-255/.02 s	50
S14	General bit mapped options status		138 (8Ah)
S16	Test mode bit mapped options status (&T)		0
S21	V.24/general bit mapped options status		52 (34h)
S22	Speaker/results bit mapped options status		117 (75h)
S29	Flash dial modifier time	0-255/10 ms	5
S37	Line connection speed		0
S41	General bit mapped options status		3 (03h)

Reference Information  
**Modem Reference Information**

<b>Register</b>	<b>Function (Ambit)</b>	<b>Range/units</b>	<b>Default</b>
S46	Data compression control	136, 138	138
S91	Data transmit level	6-15/dBm	10 (country dependent)
S92	Fax transmit attenuation level	6-15/dBm	10 (country dependent)
S95	Result code messages control		0

**Selected Result Codes (Ambit)**

<b>Code</b>	<b>Meaning</b>
0	OK
1	CONNECT
2	RING
3	NO CARRIER
4	ERROR
5	CONNECT 1200
6	NO DIAL TONE
7	BUSY
8	NO ANSWER

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## Safety Information

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### Power Cords

The power cord supplied with the computer's AC adapter should match the plug and voltage requirements for your local area. Regulatory approval for the AC adapter has been obtained using the power cord for the local area. However, if you travel to a different area or need to connect to a different outlet or voltage, you should use one of the power cords listed below. To purchase a power cord (including an area not listed below) or a replacement AC adapter, contact your local Hewlett-Packard dealer or Sales office. For any power cord with a fused plug, if you have to replace the fuse, be sure to install an approved fuse.

Country or Region	Rated Voltage and Current	HP Part Number
Canada Mexico Philippines Taiwan United States	125 Vac (3 A)	8120-6313
Europe Egypt Israel Saudi Arabia	250 Vac (2.5 A)	8120-6314
Hong Kong Singapore United Kingdom	250 Vac (2.5 A)	8120-8699
Australia New Zealand	250 Vac (2.5 A)	8120-6312
Japan	125 Vac (3 A)	8120-6316
India	250 Vac (2.5 A)	8121-0702
South Africa	250 Vac (2.5 A)	8120-6317
Argentina	250 Vac (2.5 A)	8120-8367
Chile	250 Vac (2.5 A)	8120-8452
People's Republic of China	250 Vac (2.5 A)	8120-8373

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## Ergonomics

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### WARNING

**Improper use of keyboards and other input devices has been associated with ergonomic injury. For information about reducing your risk, see Working in Comfort in the online HP Library, or visit our ergonomics web site, [www.hp.com/ergo](http://www.hp.com/ergo).**

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## Battery Safety

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### Note

The following batteries are compatible only with HP notebook computers:

- HP F2098 (main battery)
- HP F2014 (secondary battery)

- To avoid risk of fire, burns, or damage to your battery pack, do not allow any metal object to touch the battery contacts.
- Do not disassemble the battery. There are no serviceable parts inside. Do not dispose of the battery pack in fire or water.
- Handle a damaged or leaking battery with extreme care. If you come in contact with the electrolyte, wash the exposed area with soap and water. If it contacts the eye, flush the eye with water for 15 minutes and seek medical attention.
- Do not expose the battery pack to storage temperatures above 60 °C (140 °F).
- When the battery is not in use, store it in the battery pouch provided.
- When discarding a battery pack, contact your local waste disposal provider regarding local restrictions on the disposal or recycling of batteries.
- To obtain a replacement battery, contact your local dealer or HP sales office.
- Do not charge the battery pack if the ambient temperature exceeds 45 °C (113 °F).
- Replace only with the same or equivalent type battery pack recommended by the manufacturer.



## Laser Safety

The CD-ROM and DVD drives used with the computer are certified as a Class 1 laser devices according to the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard and International Standards IEC 825 / IEC 825-1 (EN60825 / EN60825-1). These devices are not considered harmful, but the following precautions are recommended:

- Ensure proper use by reading and following the instructions carefully.
- If the unit requires service, contact an authorized HP service center— see “To contact HP for support or service” on page 145.
- Do not attempt to make any adjustment of the unit.
- Avoid direct exposure to the laser beam—do not open the unit.

CLASS 1 LASER PRODUCT LASER KLASSE 1
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## LED Safety

The infrared port located on the right side of the computer is classified as a Class 1 LED (light-emitting diode) device according to International Standard IEC 825-1 (EN60825-1). This device is not considered harmful, but the following precautions are recommended:

- If the unit requires service, contact an authorized HP service center— see “To contact HP for support or service” on page 145.
- Do not attempt to make any adjustment of the unit.
- Avoid direct eye exposure to the infrared LED beam. Be aware that the beam is invisible light and cannot be seen.
- Do not attempt to view the infrared LED beam with any type of optical device.

CLASS 1 LED PRODUCT LEDSCHÜTZKLASSE 1 PRODUKT
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## Exposure to Radio Frequency Radiation

The radiated output power of the IEEE 802.11 internal wireless radio is far below the FCC radio frequency exposure limits. Nevertheless, the wireless radio shall be used in such a manner that the potential for human contact during normal operation is minimized.

The internal wireless radio operates within guidelines found in radio frequency safety standards and recommendations, which reflect the consensus of the scientific community. HP therefore believes the internal wireless radio is safe for use by consumers. The level of emitted energy emitted is far less than the electromagnetic energy emitted by wireless devices such as mobile phones. However, the use of wireless radios may be restricted in some situations or environments, such as aboard airplanes. If you are unsure of restrictions, you are encouraged to ask for authorization before turning on the wireless radio.

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## Regulatory Information

This section presents information that shows how your computer complies with regulations in certain regions. Any modifications to your computer not expressly approved by Hewlett-Packard could void the authority to operate the computer in these regions.

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### U.S.A.

This computer has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This computer generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this computer does cause harmful interference to radio or television reception (which can be determined by removing the unit's batteries and AC adapter), try the following:

- Reorienting or relocating the receiving antenna.
- Relocating the computer with respect to the receiver.
- Connecting the computer's AC adapter to another power outlet.

### **Connections to Peripheral Devices**

To maintain compliance with FCC Rules and Regulations, use properly shielded cables with this device.

For more information, consult your dealer, an experienced radio/television technician, or the following booklet, prepared by the Federal Communications Commission: *How to Identify and Resolve Radio-TV Interference Problems*. This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock Number 004-000-00345-4. At the first printing of this manual, the telephone number was (202) 512-1800.

### Declaration of Conformity (U.S.A.)

**Responsible Party:** Hewlett-Packard Company  
Manager of Corporate Product Regulations  
3000 Hanover Street  
Palo Alto, CA 94304  
+1 (650) 857-1501  
declares that the product(s)

**Trade name:** Hewlett-Packard Company

**Product name:** HP Omnibook 500 series and Pavilion series notebook PCs, and F2096 expansion base

Complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

---

## Canada

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications. The internal wireless radio complies with RSS 210 of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de Classe B prescrites dans le règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada. Le composant RF interne est conforme à la norme CNR-210 d'Industrie Canada.

L'utilisation de ce dispositif est autorisée seulement aux conditions suivantes : (1) il ne doit pas produire de brouillage et (2) l'utilisateur du dispositif doit être prêt à accepter tout brouillage radioélectrique reçu, même si ce brouillage est susceptible de compromettre le fonctionnement du dispositif.

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## European Union

The equipment has been approved in accordance with Council Decision 98/482/EC for pan-European single terminal connection to the public switched telephone network (PSTN) and to a radio-frequency wireless network. However, due to differences between the individual PSTNs provided in different countries, the approval does not, of itself, give an unconditional assurance of successful operation on every PSTN network termination point.

## Reference Information

### Regulatory Information

In event of problems, you should contact your equipment supplier in the first instance.

This equipment has been designed to work in all of the countries of the European Economic Area (Public Switched Telephone Networks). Network compatibility is dependent on internal software settings. Contact your equipment supplier if it is necessary to use the equipment on a different telephone network. For further product support, contact Hewlett-Packard—see “To contact HP for support or service” on page 145.

**Belgium:** For outdoor usage only channels 10 (2457 MHz) and 11 (2462 MHz) is allowed. For private usage outside buildings across public grounds over less than 300m, no special registration with IBPT/BIPT is required. Registration to IBPT/BIPT is required for private usage outside buildings across public grounds over more than 300m. An IBPT/BIPT license is required for public usage outside building. For registration and license please contact IBPT/BIPT.

**France:** Restricted frequency band: only channels 10 and 11 (2457 MHz and 2462 MHz respectively) may be used in France. License required for every installation, indoor and outdoor installations. Please contact ART for the procedure to follow. Use with outdoor installations not allowed.

**Germany:** License required for outdoor installations. Check with reseller for procedure to follow.

**Netherlands:** License required for outdoor installations. Check with reseller for procedure to follow.

**Italy:** License required for indoor use. Use with outdoor installations not allowed.

Die Geräte wurden gemäß Ratsentscheidung 98/482/EC für den Anschluss an eine einzelne Telefonbuchse im europäischen Raum (Public Switched Telephone Network) und drahtlose Funknetzwerke zertifiziert. In Anbetracht der Unterschiede zwischen den einzelnen Telefonnetzen bietet die Zertifizierung für sich genommen keine absolute Sicherheit, dass die Geräte bei Anschluss an jeder beliebigen Telefonbuchse funktionieren.

Sollten Probleme auftreten, wenden Sie sich zunächst an den Gerätehersteller.

Diese Geräte wurden zum Betrieb in allen Ländern der europäischen Wirtschaftsgemeinschaft entwickelt (Public Switched Telephone Networks). Die Kompatibilität zum Netz ist von internen Software-Einstellungen abhängig. Wenden Sie sich an den Gerätehersteller, wenn Sie die Geräte in einem anderen Telefonnetz einsetzen müssen. Weitere Informationen zur Unterstützung für das Produkt erhalten Sie bei Hewlett-Packard.

Cet équipement a été reconnu conforme aux décisions du Conseil 98/482/EC relatives à la connexion pan-européenne de terminal simple au réseau téléphonique public commuté (RTPC) et à un réseau sans fil RF. Cependant, des différences existant entre les RTPC nationaux présents dans les différents pays, cette homologation en elle-même ne garantit pas la réussite de toutes les opérations sur tous les points de terminaison du réseau téléphonique public commuté.

En cas de problème, prenez contact avec le fournisseur auprès duquel vous vous êtes procuré votre équipement.

Cet équipement a été conçu pour fonctionner dans tous les pays membres de la zone d'échange européenne (Réseaux Téléphoniques Publics Commutés).

La compatibilité entre réseaux dépend des paramètres internes du logiciel.

Prenez contact avec le fournisseur auprès duquel vous vous êtes procuré votre équipement pour savoir s'il est préférable d'utiliser ce dernier sur un autre réseau téléphonique. Si vous souhaitez obtenir de l'aide, prenez contact avec Hewlett-Packard.

Questa apparecchiatura è stata approvata in conformità alla Decisione del Consiglio 98/482/EC che regolamenta, in seno all'Unione Europea, la connessione di singoli terminali alla rete telefonica pubblica commutata (PSTN) e alla rete wireless in radio frequenza. Tuttavia, a causa delle differenze esistenti tra i singoli servizi PSTN forniti nei diversi paesi, l'approvazione in sé stessa non rappresenta una garanzia assoluta di funzionamento su ogni singolo punto di terminazione della rete PSTN.

In caso di problemi, per prima cosa rivolgersi al fornitore dell'apparecchiatura.

Questa apparecchiatura è stata progettata per funzionare in tutti i paesi dell'Area Economica Europea (reti telefoniche pubbliche commutate). La compatibilità della rete dipende dalle impostazioni interne del software. Rivolgersi al fornitore dell'apparecchiatura qualora sia necessario utilizzare quest'ultima su una rete telefonica diversa. Per ulteriore assistenza sul prodotto, contattare Hewlett-Packard.

Reference Information  
**Regulatory Information**

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Japan

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると受信障害を引き起こすことがあります。

取り扱い説明書に従って正しい取り扱いをして下さい。

**Japan Telecommunications Approval**

JATE approval number: A01-1013JP, A01-1038JP

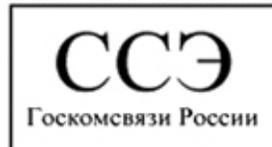
Name of Equipment: T51M044.00, J07M040.04

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Russia

Продукт сертифицирован в системе ГОСТ Р

Модем сертифицирован в системе ЭЛЕКТРОСВ



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International

Products sold internationally by Hewlett-Packard and its authorized dealers meet the specifications listed on the following pages.

**Declaration of Conformity (according to ISO/IEC Guide 22 and EN 45014)**

**Manufacturer's Name:** Hewlett-Packard Company, Mobile Computing Division  
**Manufacturer's Address:** 19310 Pruneridge Ave., Cupertino, CA 95014, U.S.A.

declares that the following product

**Product Name:** HP notebook PC  
**Model Numbers:** Omnibook 500 series and Pavilion series notebook PCs  
**Product Options:** All, including options for analog modem (3Com/USR/Ambit) and radio link

conforms to the following product specifications

**Safety:** IEC 60950: 1991 +A1,A2,A3,A4 / EN 60950: 1992 +A1,A2,A3,A4,A11  
IEC 60825-1: 1993 +A1 / EN 60825-1: 1994 +A11 Class 1 LED  
GB4943-1995

**EMC:** CISPR 22: 1997 / EN 55022: 1998, Class B [1]  
CISPR 24: 1997 / EN 55024: 1998  
IEC 61000-3-2: 1995 / EN 61000-3-2:1995 +A1: 1998 +A2: 1998  
IEC 61000-3-3: 1994 / EN 61000-3-3:1995  
GB9254-1998  
FCC Title 47 CFR, Part 15 Class B/ANSI C63.4: 1992  
AS/NZS 3548: 1995 Rules and Regulations of Class B

**Telecom:** TBR 21: 1998, EG 201 121: 1998

**Radio:** ETS 300-826 General EMC requirements for Radio equipment  
**Equipment Class 2** ETS 300-328 Technical requirements for Radio equipment  
Notified Body Number: 0682  
Notified Body Address: CETECOM ICT Services GmbH, Untertuerkheimer Str. 6-10, D-66117 Saarbruecken

**Supplementary Information:** The product herewith complies with the requirements of the R&TTE Directive 1999/5/EC and carries the CE marking accordingly.

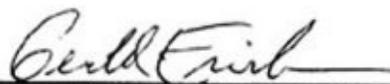
[1] The product was tested in a typical configuration with Hewlett-Packard Personal Computer peripherals.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:  
(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The HP F1454A and F1781A ac/dc adapter used with this product is designed to operate on all power systems, other than IT power systems.

Corvallis, OR, April 11, 2001



  
Jerry Erickson, R&D Product Execution Manager

European Contact for regulatory topics only: Hewlett Packard GmbH, HQ-TRE, Herrenberger Strasse 130, 71034 Boeblingen, Germany. Fax: +49 7031 143143.  
USA Contact: Hewlett Packard Co., Corporate Product Regulations Manager, 3000 Hanover Street, Palo Alto, CA 94304, U.S.A. Phone: +1 (650) 857-1501.

Reference Information  
**Regulatory Information**

**Declaration of Conformity (according to ISO/IEC Guide 22 and EN 45014)**

**Manufacturer's Name:** Hewlett-Packard Company  
**Manufacturer's Address:** Mobile Computing Division  
19310 Pruneridge Ave.  
Cupertino, CA 95014, U.S.A.

declares that the following product

**Product Name:** Expansion base  
**Model Numbers:** F2096  
**Product Options:** All

conforms to the following product specifications

**Safety:** IEC 950: 1991 +A1,A2,A3,A4 / EN 60950: 1992 +A1,A2,A3,A4,A11  
GB4943-1995

**EMC:** CISPR 22: 1997 / EN 55022: 1998, Class B [1]  
CISPR 24: 1997 / EN 55024: 1998  
IEC 61000-3-2: 1995 / EN 61000-3-2:1995 +A1: 1998 +A2: 1998  
IEC 61000-3-3: 1994 / EN 61000-3-3:1995  
GB9254-1998  
FCC Title 47 CFR, Part 15 Class B/ANSI C63.4: 1992  
AS/NZS 3548: 1995 Rules and Regulations of Class B

**Supplementary Information:** The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC, amended by 92/31/EEC & 93/68/EEC, and carries the CE marking accordingly.

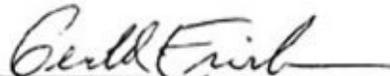
[1] The product was tested in a typical configuration with Hewlett-Packard Personal Computer peripherals.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:  
(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The HP F1454A and F1781A ac/dc adapter used with this product is designed to operate on all power systems, other than IT power systems.

Corvallis, OR, April 12, 2001



  
Jerry Erickson, R&D Product Execution Manager

European Contact for regulatory topics only: Hewlett Packard GmbH, HQ-TRE, Herrenberger Strasse 130, 71034 Boeblingen, Germany. Fax: +49 7031 143143.  
USA Contact: Hewlett Packard Co., Corporate Product Regulations Manager, 3000 Hanover Street, Palo Alto, CA 94304, U.S.A. Phone: +1 (650) 857-1501.

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