

Aptiva Reference Guide

Aptiva Reference Guide



Note

Before using this information and the product it supports, be sure to read the general information under Appendix C, "Product warranties and notices" on page 137.

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Safety information

Read the following safety information before you set up and use your computer.

Caution and danger conventions used in the book

The conventions used in this book denote text with special meaning. The following are explanations of conventions related to your safety. For more information about other conventions in this book, see “Conventions used in the book” on page xix.

Convention	Purpose/Explication
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A Caution notice contains important information that can help you avoid potential injury.

CAUTION!



Les consignes de sécurité de type ATTENTION indiquent la présence d'un risque de blessures légères.

ATTENTION !

This convention is used in safety notices that are translated into French. It is the equivalent of the English caution notice.



A Danger box contains important information that can help you avoid the risk of serious personal injury or death.

DANGER

Les consignes de sécurité de type DANGER indiquent la présence d'un risque de blessure grave ou mortelle.

Installation

The construction of the IBM Aptiva Personal Computer provides extra protection against the risk of electrical shock. The IBM Aptiva PC has a power cord with a three-prong plug that is required to ground metal parts. It is the responsibility of the person installing the computer to connect it to a properly grounded electrical outlet. Seek professional assistance before using an adapter or extension cord; these devices could interrupt the grounding circuit.

If the computer is connected to an electrical outlet that is incorrectly connected to the building wiring, serious electrical shock could result.



DANGER

To avoid shock hazard:

Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.

The power cord must be connected to a properly wired and grounded receptacle.

Any equipment to which this product will be attached must also be connected to properly wired electrical outlets.

Electrical current from power, telephone, and communications cables is hazardous. To avoid shock hazard, use the steps described in this section to connect and disconnect cables when installing, moving, or opening the cover of this product.

Continued protection against electrical shock

For continued protection against the risk of electrical shock, follow these steps:

- Connect your computer only to an electrical outlet of the correct voltage. If you are unsure about the voltage of the electrical outlet you are using, contact your local power company.
- If your computer has cables other than the power cords, you must connect them before plugging the power cords into an electrical outlet. Before removing these cables, you must first unplug the power cords from the electrical outlet.
- If your computer has a telephone connection, do not touch the telephone cords when there is lightning in the area.
- Do not use or store the computer in an area where it can become wet.
- Make sure all replacement parts have characteristics identical or equivalent to the original parts. Other parts may not have the same safety features.
- Personal injury or electrical shock might result if you undertake actions other than those specifically described in this book. This is particularly true if you try to service or repair the power supply, monitor, or built-in modem. Always refer service or repairs to qualified service personnel.

Safety while working with hardware

Each time you open your computer, you must follow specific safety procedures to ensure that you do not damage your computer. For your safety, and the safety of your equipment, follow the steps for “Disconnecting your computer” on page ix before you remove the cover of the system unit.

Connecting your computer

To connect your computer:

1. Turn off the computer and any external devices (such as a monitor or printer) that have their own power switches.
2. Attach a signal cable to each external component (such as a monitor or printer), and then connect the other end of the signal cable to the computer.
3. Attach communication cables (such as modem cables or network cables) to the computer. Then, attach the other ends of the cables to properly wired communication outlets.
4. Attach the power cords to the computer and any external devices (such as a monitor or printer), and then connect the other ends of the power cords to properly grounded electrical outlets.
5. Turn on the computer and any attached devices that have their own power switches.

Disconnecting your computer

To disconnect your computer:

1. Turn off the computer and any attached devices that have their own power switches.
2. Unplug all power cables from electrical outlets.
3. Disconnect all communication cables (such as modem or network cables) from communication outlets.
4. Disconnect all cables and cords from the computer; this includes power cords, signal cables from external devices, communication cables, and any other cables attached to the computer.

Working inside the computer



DANGER

Do not detach the power-supply bracket from the power supply or remove any of the power-supply screws.

Safety while cleaning your computer



CAUTION:

Be sure to turn off the computer and monitor power switches before cleaning the computer and monitor screen.

Modem safety information

To reduce the risk of fire, electrical shock, or injury when using telephone equipment, always follow basic safety precautions, such as:

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.
- Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
- Do not use the telephone to report a gas leak in the vicinity of the leak.

Lithium battery notice



CAUTION! Your computer uses lithium batteries. There may be a risk of fire, explosion, or burns if the batteries are handled incorrectly. To ensure safety:

- **Do not recharge, disassemble, heat, or incinerate a lithium battery.**
- **Replace the battery with an identical or equivalent type lithium battery.**
- **Do not throw or immerse the battery into water.**
- **Discard used lithium batteries according to local country dispositions.**

Regulatory safety notice for CD and DVD drives

This notice contains required safety information about the CD or DVD drive in your computer (if included with the model you purchased). The CD or DVD drive is a Class 1 laser product, and Class 1 laser products are not considered to be hazardous. The design of the laser system and CD or DVD drive ensures that during normal operation, there is no exposure to laser radiation above Class 1 level.

Please note that the CD or DVD drive does not contain any user adjustable or serviceable parts. Service on this drive should be performed only by a trained service provider.

Laser compliance statement

Some IBM Personal Computer models are equipped from the factory with a CD or DVD drive. CD and DVD drives are also sold separately as options. The CD or DVD drive is a laser product. The CD or DVD drive is certified in the U.S. to conform to the requirements of the Department of Health and Human Services 21 Code of Federal Regulations (DHHS 21 CFR) Subchapter J for Class 1 laser products. Elsewhere, the drive is certified to conform to the requirements of the International Electrotechnical Commission (IEC) 825 and CENELEC EN 60 825 for Class 1 laser products.

When a CD or DVD drive is installed, note the following:



CAUTION! Use of controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.

Removing the covers of the CD or DVD drive could result in exposure to hazardous laser radiation. There are no serviceable parts inside the CD or DVD drive. Do not remove the CD or DVD drive covers.

Some CD and DVD drives contain an embedded Class 3A or Class 3B laser diode.

Note the following:



DANGER

Laser radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam.

Consignes de sécurité

Installation

La conception de fabrication de l'ordinateur personnel Aptiva IBM assure une protection accrue contre les risques d'électrocution. Le PC Aptiva IBM possède un cordon d'alimentation équipé d'une fiche à trois broches qui permet une mise à la terre des principaux éléments métalliques de la machine. Il incombe au responsable de l'installation de vérifier le branchement. Si vous devez installer un adaptateur ou une rallonge, faites appel à un professionnel pour ne pas risquer de créer une rupture dans le circuit de mise à la terre.

Un socle de prise de courant incorrectement relié à l'alimentation électrique du bâtiment peut être à l'origine d'une électrocution.



DANGER

Pour éviter tout risque de choc électrique :

Ne manipulez aucun cordon et n'effectuez aucune opération d'installation, de maintenance ou reconfiguration de ce produit au cours d'un orage.

Les cordons d'alimentation du présent produit et de tous les appareils qui lui sont connectés doivent être branchés sur des socles de prise de courant correctement câblés et mis à la terre.

Le courant électrique circulant dans les câbles de communication et les cordons téléphoniques et d'alimentation est dangereux. Pour éviter tout risque de choc électrique, respectez les consignes de la présente section pour connecter et déconnecter des câbles lors de l'installation, du retrait ou de l'ouverture du panneau de ce produit.

Protection contre les risques d'électrocution

Pour vous prémunir contre les risques d'électrocution, respectez les consignes ci-après:

- Ne branchez l'ordinateur que sur un socle de prise de courant présentant la tension adéquate.
- Ne branchez le cordon d'alimentation sur le socle de prise de courant qu'après avoir connecté tout autre cordon à la machine. Inversement, débranchez le cordon d'alimentation du socle de la prise de courant avant de déconnecter tout autre cordon.
- Si votre ordinateur est doté d'un cordon téléphonique, ne manipulez jamais ce cordon pendant un orage.
- Évitez d'utiliser et de placer votre ordinateur dans un endroit humide.
- Ne remplacez un élément que par un élément identique ou possédant des caractéristiques équivalentes et équipé des mêmes dispositifs de sécurité.
- Le non-respect de ces consignes peut être à l'origine de blessures ou d'une électrocution, en particulier si vous intervenez sur le bloc d'alimentation, l'écran ou le modem intégré. Confiez la maintenance et la réparation de l'ordinateur à une personne qualifiée.

Consignes de sécurité lors de la manipulation du matériel

Lorsque vous ouvrez l'unité centrale, il convient de suivre un certain nombre de consignes de sécurité afin de ne pas endommager l'ordinateur. Pour votre sécurité et celle de votre matériel, suivez les instructions de la section "Débranchement de l'ordinateur" on page xv, avant d'ouvrir l'unité centrale (le cas échéant).

Branchement de l'ordinateur

Pour brancher l'ordinateur, procédez comme suit:

1. Mettez l'ordinateur hors tension ainsi que tout périphérique (écran ou imprimante) que vous allez connecter, qui dispose d'un interrupteur d'alimentation.
2. Connectez tous les câbles (de l'écran, par exemple) à l'ordinateur.
3. Branchez tous les câbles d'interface (par exemple, un câble téléphonique) sur des socles de prise de courant correctement mis à la terre.

4. Branchez les cordons d'alimentation sur des socles de prise de courant correctement mis à la terre.
5. Mettez l'ordinateur sous tension ainsi que tout périphérique connecté disposant d'un interrupteur d'alimentation.

Débranchement de l'ordinateur

Pour débrancher l'ordinateur, procédez comme suit:

1. Mettez l'ordinateur hors tension ainsi que tout périphérique connecté disposant d'un interrupteur d'alimentation.
2. Débranchez tous les cordons d'alimentation des prises de courant.
3. Débranchez tous les câbles (câble de téléphone, par exemple) de leurs prises.
4. Débranchez tous les câbles de l'ordinateur (les cordons d'alimentation, les câbles d'entrée-sortie et tous les autres câbles qui pourraient y être connectés).

Consignes de manipulation de l'ordinateur châssis ouvert



DANGER

Ne détachez pas le bloc d'alimentation de son support et ne retirez aucune vis du bloc d'alimentation.

Consignes de sécurité lors du nettoyage de l'ordinateur



ATTENTION !

Veillez à mettre l'ordinateur et l'écran hors tension avant de procéder à leur nettoyage.

Consignes de sécurité relatives au modem

Lors de l'utilisation de votre matériel téléphonique, il est important de respecter les consignes ci-après afin de réduire les risques d'incendie, d'électrocution et d'autres blessures :

- N'installez jamais de cordons téléphoniques durant un orage.
- Les prises téléphoniques ne doivent pas être installées dans des endroits humides, excepté si le modèle a été conçu à cet effet.
- Ne touchez jamais un cordon téléphonique ou un terminal non isolé avant que la ligne ait été déconnectée du réseau téléphonique.
- Soyez toujours prudent lorsque vous procédez à l'installation ou à la modification de lignes téléphoniques.
- Si vous devez téléphoner pendant un orage, pour éviter tout risque de choc électrique, utilisez toujours un téléphone sans fil.
- En cas de fuite de gaz, n'utilisez jamais un téléphone situé à proximité de la fuite.

Consignes relatives à la pile au lithium



ATTENTION ! Votre ordinateur est équipé de piles au lithium. Prenez garde aux risques d'incendie, d'explosion ou de brûlures liés à une mauvaise utilisation des piles. Respectez les consignes de sécurité suivantes:

- **Ne rechargez pas la pile, ne la démontez pas, ne l'exposez pas à la chaleur et ne la faites pas brûler.**
- **Ne la remplacez que par une pile identique ou de type équivalent.**
- **Ne la jetez pas à l'eau.**
- **Pour le recyclage ou la mise au rebut des piles au lithium, reportez-vous à la réglementation en vigueur.**

Consignes de sécurité pour l'unité et CD-ROM et de DVD-ROM

La présente consigne contient les informations de sécurité relatives à l'unité de CD-ROM/ DVD-ROM de votre ordinateur (le cas échéant). L'unité de CD-ROM/DVD-ROM est un produit à laser de classe 1. Les produits de classe 1 ne sont pas considérés comme dangereux. Le système à laser et l'unité de CD-ROM/DVD-ROM ont été conçus de façon telle qu'il n'existe aucun risque d'exposition à un rayonnement laser de niveau supérieur à la classe 1 dans des conditions normales d'utilisation.

Veillez noter qu'aucune pièce de l'unité de CD-ROM/ DVD-ROM n'est réglable ni réparable. Ne confiez la réparation de cette unité qu'à une personne qualifiée.

Conformité aux normes relatives aux appareils laser

Certains modèles d'ordinateurs personnels sont équipés d'origine d'une unité de CD-ROM ou de DVD-ROM. Mais ces unités sont également vendues séparément en tant qu'options. L'unité de CD-ROM/ DVD-ROM est un appareil à laser. Aux Etats-Unis, l'unité de CD-ROM/ DVD-ROM est certifiée conforme aux normes indiquées dans le sous-chapitre J du DHHS 21 CFR relatif aux produits à laser de classe 1. Dans les autres pays, elle est certifiée être un produit à laser de classe 1 conforme aux normes CEI 825 et CENELEC EN 60 825.

Lorsqu'une unité de CD-ROM/DVD-ROM est installée, tenez compte des remarques suivantes:



ATTENTION ! Pour éviter tout risque d'exposition au rayon laser, respectez les consignes de réglage et d'utilisation des commandes, ainsi que les procédures décrites. L'ouverture de l'unité de CD-ROM/DVD-ROM peut entraîner un risque d'exposition au rayon laser. Pour toute intervention, faites appel à du personnel qualifié.

Certaines unités de CD-ROM/DVD-ROM peuvent contenir une diode à laser de classe 3A ou 3B. Tenez compte de la consigne qui suit:



DANGER

Rayonnement laser lorsque le carter est ouvert. Evitez toute exposition directe des yeux au rayon laser. Evitez de regarder fixement le faisceau ou de l'observer à l'aide d'instruments optiques.

About this book

This book will help you become familiar with your IBM® Aptiva® Personal Computer and its features. It describes how to operate, maintain, and install options in your computer. In the unlikely event you experience problems, you will find helpful troubleshooting information and instructions for obtaining service in this book. The conventions used in this book denote text with special meaning. The following are explanations of the conventions. (For safety conventions used in this book, refer to “Caution and danger conventions used in the book” on page vii.)

Conventions used in the book

The conventions used in this book denote text with special meaning. The following are explanations of the conventions.

Convention	Purpose
Note:	A Note contains information you might find especially useful.
Important	An Important notice warns you about possible problems you could encounter.
Attention	An Attention box contains important information that can help you avoid damage to the hardware or software that comes with your computer.

Highlighted text is also used as a convention in this book. There are several ways that text is highlighted, and each highlighting convention has a specific purpose.

Highlight	Purpose
Bold	Bold font is used to identify items on the screen you are instructed to click or double-click. Bold font is also used in table titles, in numbered lists, and in certain other lists to call attention to a term or phrase being defined.
Example	Example font is used to show text that you need to type from your keyboard.
<i>Italic</i>	Italic font is used to show proper names of books and disks, and to emphasize a particular word or instruction. This font also is used to show variable information, such as numbers in an error code or a drive letter.

Related information

The following documentation contains additional information about your computer:

- *Setup Guide*: This poster-style setup sheet provides easy-to-follow instructions for cabling your computer and starting it for the first time.
- *Product Recovery and Diagnostics CD* instruction booklet: This publication (packaged with the Product Recovery and Diagnostics CD) provides step-by-step instructions to:
 - Reinstall *all* of the software originally preinstalled by IBM on your computer
 - Reinstall *selected* programs that were originally preinstalled by IBM on your computer
 - Run the diagnostic program
- Access Aptiva: This online program is accessible from the Microsoft® Windows® desktop. It provides:
 - How do I: This selection provides topics describing how to complete a specific task.
 - Customize: This selection provides information about customizing the Access Aptiva program and adding other programs from the *Software Selections* CD.
 - Get help: This selection provides help information and ways of getting help from IBM.
 - View license and warranties: This selection gives you access to the warranty for your computer and the license that covers the programs preinstalled by IBM (excluding the operating system) and those programs on the *Software Selections* CD that are not covered by their own licenses.
- *Windows 98 Start Here* guide: This publication provides information for users who are new to the Windows 98 operating system. It describes the basic features and functions of the Windows 98 operating system as well as some of the more advanced features.

Chapter 1. Product overview

Thank you for selecting an IBM® Aptiva® computer. Your computer incorporates many of the latest advances in computer technology and can be upgraded as your needs change.

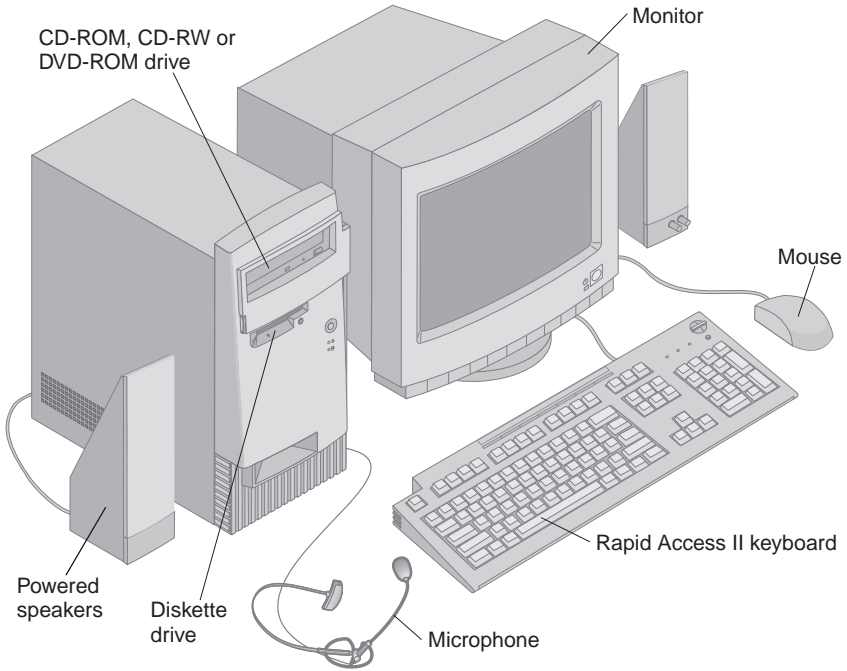
This section provides an overview of the computer features, information about selecting a location for your computer, and ergonomic guidelines to help you work comfortably.

Identifying your computer

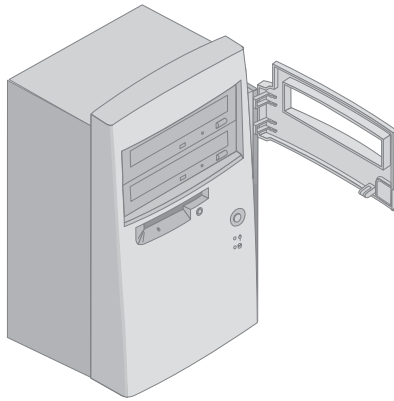
In most instances, the best way to identify your computer is by the machine type/model number. The machine type/model number indicates the various features of the computer, such as the type of microprocessor or the number of bays. You can find this number on the small label on the front of your computer in the bottom-right corner. An example of a machine type/model number is 2178-820. The four-digit number is the machine type, and the three-digit number is the model number. You need to know these numbers if you request service, order options, or use some of the IBM support services (such as the IBM Online Assistant) available to you on the World Wide Web. Record this number in Appendix A, "Computer records" on page 131 for future reference.

Features

The following illustration shows the main components of your computer system.



Depending on your model, you might have an optional drive installed behind the drive-access door.



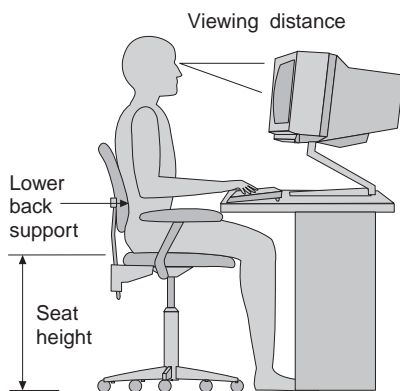
- For a detailed listing of the features, see Appendix B, “Computer features” on page 133.
- For information about using these features, see Chapter 2, “Operating your computer” on page 7.
- For information about installing internal options, see Chapter 7, “Installing internal options” on page 57.
- For information about connecting external options, see Chapter 8, “Installing external options” on page 87.

Selecting a location for your computer

Make sure you have an adequate number of properly grounded electrical outlets for the computer, monitor, speakers, and any other devices that require an ac power source. Select a location for the computer that will remain dry. Leave about 50mm (2 in.) of space around the computer for proper air circulation.

For information about arranging your computer for comfort and ease of use, see “Ergonomic guidelines” on page 4. For information about setting up your computer and starting it for the first time, refer to the *Setup Guide* sheet provided with the computer.

Ergonomic guidelines



Arranging a comfortable and productive work area

When you arrange your computer, position your monitor and keyboard directly in front of you. Place the mouse close to the keyboard so that you can use it without stretching or leaning over to one side.

The system unit is usually kept on the floor under or beside your desk. Be sure to place it in an area that will not block the space you need to put your legs under the work surface.

Organize your desk to reflect the way you use work materials and equipment. Place the things that you use most regularly, such as a mouse or telephone, within the easiest reach.

Choosing a chair

You should adjust your chair so that your thighs are horizontal and there is support for your lower back. Your feet should rest flat on the floor or on a foot rest when you are seated and using your keyboard.

Positioning the monitor

- Place the monitor at a comfortable viewing distance. You can also use the length of your arm to determine a comfortable viewing distance.
- Adjust your monitor so that the top of the screen is at, or slightly below, eye level.
- Keep the screen clean. For cleaning instructions, refer to the documentation that comes with your monitor.

- If you place the monitor near a window, consider using curtains or blinds to minimize glare from sunlight. Also be sure to keep the monitor perpendicular to the windows to reduce glare when the curtains or blinds are open. Try to avoid placing the monitor directly in front of a window.
- Use dim room lighting. If you need more light on your work, you should position the light so that it shines on your work surface but not onto the monitor screen.
- Use the monitor controls to adjust the screen brightness and contrast levels to a comfortable level. You may have to do this more than once a day if the light in the room changes. For monitor control adjustment instructions, refer to the documentation that comes with your monitor.
- When your eyes focus on a specific object for a long period of time, they may become tired. If you spend a lot of time looking at your screen, remember to take frequent breaks. Look up periodically and focus on an object that is farther away. This will give the muscles in your eyes a chance to relax.

Positioning the keyboard

- Make sure the keyboard height is comfortable for typing.
- When you type, the keyboard should be positioned so that your arms are relaxed and comfortable, and your forearms are roughly horizontal. Your shoulders should be relaxed and not hunched up.
- Type with a light touch, keeping your hands and fingers relaxed. Your wrists should also be straight.
- If your computer comes with a wristrest and you choose to use it, do not rest your hands on the wristrest or desktop while you are typing. Instead, use the wristrest only when resting. If you prefer not to use the wristrest, you may remove it and use the keyboard without it.

Positioning the mouse

- Position your mouse on the same surface as your keyboard so that they are at the same level. Allow enough space so that you can use your mouse without stretching or leaning over.
- When you use the mouse, hold it lightly with all your fingers and click gently. Move the mouse with your entire arm instead of only using your wrist.

Where to find more information

For more detailed information and tips about how to use your computer, visit the IBM Healthy Computing Web site at:

<http://www.ibm.com/pc/ww/healthycomputing>

Chapter 2. Operating your computer

This chapter provides information to help you in the day-to-day use of your computer.

Important

- When the power cord is first plugged in, the computer might appear to turn on for a few seconds, then turn off. This is a normal sequence.
- The power switch will normally operate with a single touch. However, in some circumstances the computer might not turn off immediately. In this case, press and hold the power button for approximately 4 seconds. The computer will then turn off.
- Always shut down the Windows operating system before turning off the computer. Refer to your Windows operating system documentation for the proper procedure to shut down your operating system.
- Proper cooling is required for the reliable performance of internal components. Do not operate your computer with the cover off.

Starting your computer

What you see and hear when you start up your computer depends on the settings in the Start Options menu of the Configuration/Setup Utility program. For information about the Configuration/Setup Utility program, see Chapter 4, “Using the Configuration/Setup Utility program” on page 27.

The following briefly describes what happens when you turn on your computer if the Configuration/Setup Utility settings are set to the factory default settings:

1. The IBM logo screen appears.
2. The following message appears:
Press F1 for Configuration/Setup
Do *not* press F1 at this time.
3. A quick power-on self-test (POST) runs. If any errors are detected during POST, one or more error codes are displayed, sometimes accompanied by a series of beeps. If an error occurs, see Chapter 9, “Troubleshooting” on page 93.
4. The Windows operating system starts from the hard disk.

Note: If a self-starting (*bootable*) CD or diskette was inserted in one of the drives, the computer would have started from that drive instead of the hard disk. The computer first attempts to start from the diskette drive; then from the CD-ROM drive. If there is nothing in either drive, it starts from the hard disk.

If necessary, you can use the Start Options menu in the Configuration/Setup Utility program to add or change features that affect what you see and hear during startup.

For details on using the Configuration/Setup Utility program, see Chapter 4, "Using the Configuration/Setup Utility program" on page 27.

Shutting down

When you are ready to turn off your computer, shut down the Windows operating system to prevent the loss of unsaved data or damage to your software programs. To shut down your Windows operating system, do the following:

1. In the lower left corner of the Windows desktop, click **Start**.
2. Click **Shut Down**. The Shut Down Windows menu appears.
3. Click **Shut down**, and then click **OK**.

When the shutdown procedure is complete, the computer automatically turns off.

If a malfunction prevents the computer from turning off automatically, press and hold the power button for approximately 4 seconds.

Using the Rapid Access II keyboard

The Rapid Access™ keyboard features special buttons for your convenience.

The buttons provide *shortcuts* on the keyboard to start a program, open a file, or perform a specific function when you press them. These keys enable you to go straight to a file, program, or Internet address with the press of a button instead of having to click an icon, search for the program in the Start menu, or type an Internet address in your browser.

Some of the Rapid Access Buttons are preset to support important functions on your computer (Mute, Volume, and CD/DVD controls); these cannot be changed.

There are seven color-coded Rapid Access Buttons positioned across the top of the keyboard. Some of these buttons are preset to start certain

programs on your computer. The preset functions are printed on the label above the buttons. You can keep these settings, or customize five of the buttons to start any program or file you want. For example, if you enjoy playing Solitaire, you can customize a Rapid Access Button to open the Solitaire program. The Help and Standby buttons are permanently programmed.

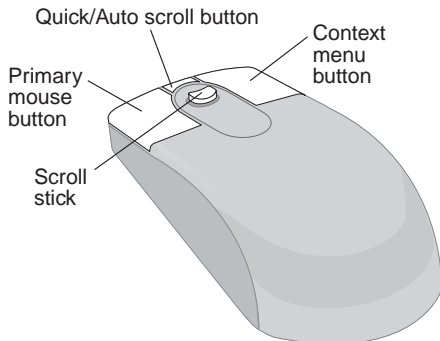
To customize a Rapid Access Button:

1. From the Windows desktop, click **Start**.
2. Select **Settings**, and then click **Control Panel**.
3. Double-click **Keyboard (Rapid Access)**. The Rapid Access Keyboard Customization program starts.
4. Follow the instructions on the screen.

To learn more about the Rapid Access keyboard, click **Help**.

Using the IBM ScrollPoint II mouse

The ScrollPoint™ II mouse has the following controls:



- **Primary mouse button:** Use this button to select or start a program or menu item.
- **Quick/Auto scroll button:** Use this button to put the mouse into *auto-scroll* mode. When the mouse is in auto-scroll mode, the movement of the mouse controls the scrolling direction and speed. To exit from the auto-scroll mode, click any of the mouse buttons.
- **Context menu button:** Use this button to display a menu for the active program, icon, or object.

- **Scroll stick:** Use this stick to control the scrolling action of the mouse. This stick is pressure sensitive. The direction in which you apply pressure controls the direction of the scrolling action. The amount of pressure you apply controls the the scrolling speed.

Using diskettes

You can use 3.5-inch diskettes in the diskette drive of your computer. The information in this section will help you use 3.5-inch diskettes.

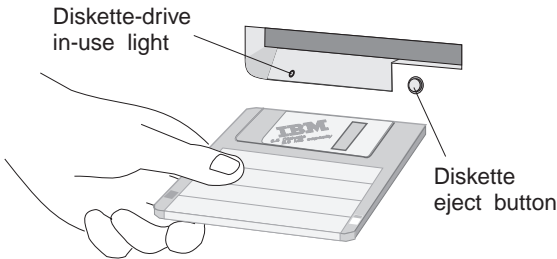
Handling and storing diskettes

Inside the protective diskette cover is a flexible disk with a magnetic-sensitive coating. This disk can be damaged by heat, dust, a magnetic field, or even a fingerprint. Use the following guidelines when handling and storing diskettes:

- If the plastic diskette cover is damaged, *do not* use the diskette. A damaged diskette might damage the diskette drive.
- A protective slide on the top of a 3.5-inch diskette covers part of the magnetic surface. The diskette drive moves this slide to read data from or write data to the diskette. *Do not* move this slide, because fingerprints and dust can cause loss of data.
- Never touch the magnetic disk itself.
- Keep diskettes away from magnets or devices that create a strong magnetic field, such as electric motors and generators. Diskettes are sensitive to magnets found in television sets, telephones, stereo speakers, and other such items. A magnetic field can erase the data on your diskettes. *Do not* set diskettes on the monitor or use magnets to attach notes to your computer.
- Do not store diskettes at high temperatures, low temperatures, or in direct sunlight. Temperatures ranging from 4° to 53° C (39° to 127° F) are acceptable for 3.5-inch diskettes. Keep diskettes away from heat. The protective plastic cover might warp, damaging the diskette.

Inserting and removing diskettes

To insert a 3.5-inch diskette, hold the diskette with the label facing up, and insert the end with the protective slide first. Push the diskette into the diskette drive until the diskette clicks into place.



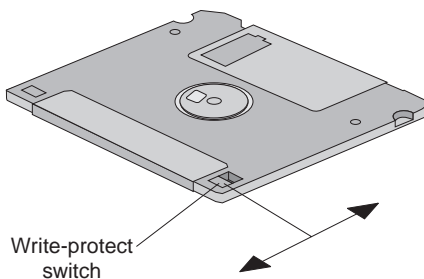
To remove the diskette, press the eject button and slide the diskette out of the drive. Do not remove the diskette while the in-use light is on.

Write-protecting diskettes

It is possible to accidentally format a diskette or unintentionally write data to it. Important information can be written over or lost. To prevent accidental data loss, you can write-protect important diskettes. You can read data from a write-protected diskette, but you cannot erase or change the data.

Most 3.5-inch diskettes have a write-protect switch that can be used to prevent data from being written to or erased from the diskette. If a 3.5-inch diskette does not have a write-protect switch, it is permanently write-protected.

The write-protect switch is located on the back of 3.5-inch diskettes.



- To allow writing to the diskette, slide the switch so that the write-protect window is covered.
- To prevent writing to the diskette, slide the switch so that the write-protect window is open.

Using a CD-ROM, CD-RW, or DVD-ROM drive

Some models have a preinstalled CD-ROM, CD-RW, or DVD-ROM drive. These drives use industry-standard, 12 cm (4.75-inch) CD media. CD-ROM drives read CDs. CD-RW drives can read CDs and, depending on the media used, write to CDs. DVD-ROM drives can read both CDs and DVDs. The following describes the various types of CD media and the types of drives that can use the media:

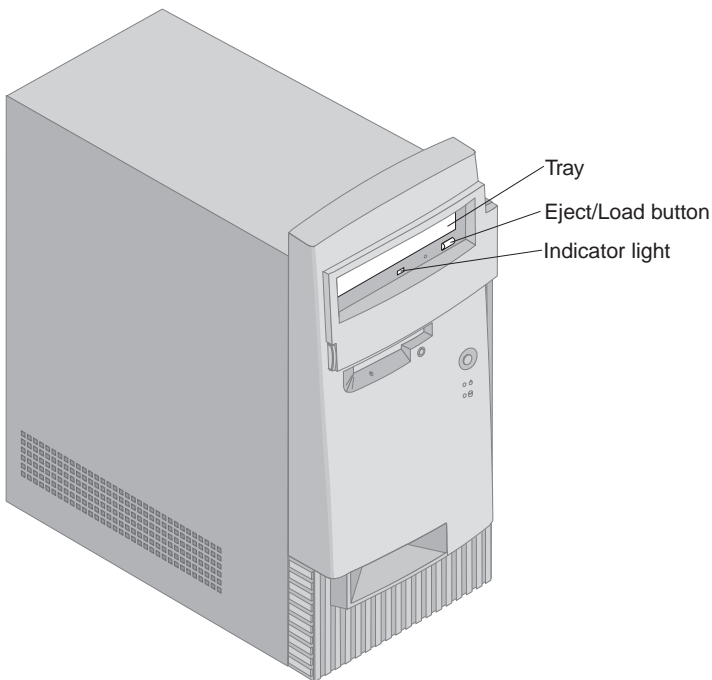
- **Digital data:** These prerecorded discs contain data and programs for use by computers only. Digital data discs can be read by CD-ROM, CD-RW, and DVD-ROM drives.
- **Audio:** These prerecorded discs are the same discs that are sold in music stores for audio CD players. Audio discs can be played by CD-ROM, CD-RW, and DVD-ROM drives.
- **CD-R:** You can use a CD-RW drive to write audio or digital files on these discs *one time only*. Once the data is written on the disc, the disc can be read by CD-ROM drives, CD-RW drives, and some DVD-ROM drives. In most cases, DVD-ROM drives that operate at speeds of 2x and faster can read CD-R media. If the files are in audio format, the CD-R disc can be played by most home audio CD players also. Some disc manufacturers advertise that files can be stored on a CD-R disc for up to 100 years.
- **CD-RW:** You can use a CD-RW drive to write and rewrite audio or digital files on these discs *many times*. Once the data is written on the disc, the disc can be read by CD-RW drives and some CD-ROM and DVD-ROM drives. In most cases, CD-ROM drives 24x and faster and DVD-ROM drives 4x and faster have the circuitry required to read CD-RW media. Unfortunately, most home audio CD players do not have the circuitry required to play audio CDs recorded on CD-RW media. Some disc manufacturers advertise that files can be written and rewritten on CD-RW discs up to 1000 times, and that files can be stored on a CD-RW disc for up to 30 years.
- **DVD:** These prerecorded discs usually contain movies or games and are for use in DVD-ROM drives only.

Follow these guidelines when using a CD-ROM, CD-RW, or DVD-ROM drive:

- Do not place the computer in a location where the drive is exposed to:

- High temperature
- High humidity
- Excessive dust
- Excessive vibration or sudden shock
- An inclined surface
- Direct sunlight
- Do not insert any object other than a CD or DVD into the drive.
- Before moving the computer, remove the CD or DVD from the drive.

The following illustration shows the front of a CD-ROM drive. The Eject/load button and Indicator light on your drive might be in slightly different locations.



Handling a CD or DVD

When handling a CD or DVD, follow these guidelines:

- Hold the disc by its edges. Do not touch the surface of the side that is not labeled.
- To remove dust or fingerprints, wipe the disc with a clean, soft cloth from the center to the outside. Wiping the disc in a circular direction might cause loss of data.
- Do not write or stick paper on the disc.

- Do not scratch or mark the disc.
- Do not place or store the disc in direct sunlight.
- Do not use benzene, thinners, or other cleaners to clean the disc.
- Do not drop or bend the disc.
- Do not insert damaged discs into the drive. Warped, scratched, or dirty discs can damage a drive.

Inserting and Removing a CD or DVD

To insert a CD or DVD:

1. With the computer on, press the Eject/Load button on the drive. The tray slides out of the drive. (Do not manually force the tray open.)
2. Place the CD in the tray with the label facing up. If you are inserting a DVD, place the disc with the "side 1" label facing up to play side 1.
3. Close the tray by pressing the Eject/Load button or by gently pushing the tray forward. When the tray is closed, the indicator light on the front of the drive will activate to indicate that the drive is in use.

To remove a CD or DVD:

1. With the computer on, press the Eject/Load button. When the tray slides out, carefully remove the disc.
2. Close the tray by pressing the Eject/Load button or by gently pushing the tray forward.

Note: If you are using a CD-ROM drive and the tray does not slide out of the drive when you press the Eject/Load button, insert a straightened paper clip into the emergency-eject hole located on the front of the CD-ROM drive.

The computer is preset to automatically start an audio CD, *Auto-Play enabled* CD, or DVD when you insert the disc into the drive. For more information, see "Installing and using software with the AutoPlay feature" on page 26

Recording a CD

If your computer has a CD-RW drive, you will not be able to write CDs until you install the following software from the *Software Selections* CD:

- Adaptec DirectCD
- Adaptec Easy CD Creator
- Adaptec UDF Reader

Each of these programs performs a unique function. Using these programs, you can create CDs that can be read by almost any CD-R, CD-RW,

CD-ROM, or DVD-ROM drive. Without these programs, you will be able to read CDs from your CD-RW drive, but you will not be able to write to CDs.

Adaptec DirectCD

Install Adaptec DirectCD if you want to write to CD-R or CD-RW media in much the same manner as you do a diskette. Using DirectCD, you can format a blank CD-R or CD-RW and access it as a drive letter in Windows. CD-R media recorded through DirectCD can be read by computers running Windows 95, Windows 98, or Windows NT 4 with Service Pack 3. CD-RW media recorded through DirectCD are recorded in Universal Disk Format (UDF) and can only be read by computers running Adaptec DirectCD or the Adaptec UDF Reader.

Adaptec CD Creator

Install Adaptec CD Creator to permanently record audio or data on CD-R or CD-RW media, or to create copies of existing CDs. CDs recorded through CD Creator can be read in computers running DOS, Windows 3.1, Windows 95, Windows 98, or Windows NT without using any special software.

Adaptec UDF Reader

This program allows CD-RW media recorded through DirectCD to be read by other computers running Windows NT 4.0, Windows 95, or Windows 98. When you install the UDF Reader on your computer from the *Software Selections* CD, it creates an installation file, UDFRINST.EXE, in the C:\WINDOWS directory of your hard disk. To install the UDF Reader program on other computers, copy UDFRINST.EXE onto a diskette or send it electronically to the other computers; then, run UDFRINST.EXE on the other computers. Once the UDF Reader program is installed, the other computers will be able to read UDF CD-RW discs.

Using video features

Your computer has a super video graphics array (SVGA) graphics controller. SVGA is a video standard for displaying text and graphic images on a monitor screen and supports a variety of *video modes*. Video modes are different combinations of resolution, refresh rate, and colors.

Depending on the applications you use and your personal preferences, you might need to change the video mode.

Attention

Before you change any monitor settings, be sure to review the information that comes with your monitor. Using a resolution or refresh rate that is not supported by your monitor might cause the screen to become unreadable and could damage the monitor. The information that comes with your monitor usually includes the resolutions and refresh rates that the monitor supports. If you need additional information, contact the manufacturer of the monitor.

To change the video mode, do the following:

1. From the Windows desktop, click **Start**.
2. Select **Settings**, and then click **Control Panel**.
3. Double-click **Display**.
4. Click **Settings**, make the necessary changes, and then click **OK**.

If your monitor complies with the VESA Display Data Channel (DDC) standard, it is probably already set to the highest refresh rate that the monitor and video controller can support. If you are not sure if your monitor is DDC-compliant, refer to the documentation provided with the monitor.

Using audio features

Your computer has a digital audio controller built into the system board. Some models also have a high-performance audio adapter installed in one of the expansion slots. If a factory-installed, high-performance audio adapter is installed in expansion slot 1, the system-board audio connectors and MIDI/joystick connector are disabled; you must use the connectors provided on the adapter.

Both the system-board audio and high-performance audio adapter support applications written for Sound Blaster standards and are compatible with the Microsoft Windows Sound System.

Each audio solution provides a MIDI/joystick connector and three audio connectors: Audio line in, Audio line out, and Microphone. The audio controller provides you with the ability to record and play back sound and music, as well as to enjoy sound with multimedia applications. Optionally, you can connect a set of powered stereo speakers to the Line Out connector to enjoy better sound with multimedia applications.

Note: On models with the high-performance audio adapter, the internal speaker is disabled during normal operation. You must use external speakers or headphones for audio.

The audio connectors in your computer are 3.5 mm (1/8-in.) mini-jacks. (For additional information about the audio and MIDI/Joystick connectors, see Chapter 8, “Installing external options” on page 87.)

Controlling volume

You can control the volume through several different means:

- If you have external powered speakers attached, one speaker has a set of controls. The power control must be in the On position for the speakers to operate. You can control the volume by using the volume control on the speaker. However, this volume control can be overridden by the software volume control. On some speaker styles, a single control is used for both power and volume.
- The software volume control is accessible through the speaker icon in the taskbar, which is located at the bottom-right corner of the Windows desktop.
 - If you click the speaker icon one time, the volume control appears. Use your mouse to drag the volume-control slider up or down to control the volume, or click the Mute box to turn the audio off.
 - If you double-click the speaker icon, a master volume-control window opens. You can use the settings in the window to control individually the volume for each type of audio format.

If you are using a Rapid Access II keyboard, you can also adjust the software volume control through the volume-control button located at the top-right corner of the keyboard. The software volume control can be overridden by volume control on the external speakers.

- If you have a CD-ROM, CD-RW, or DVD-ROM drive installed, you might have a volume control and headset connector on the drive. If you attach a headset to the drive, use the volume control on the drive to control the volume for the headset. The volume control on the drive has no effect on the external speakers.

Recording and playing back sound

Procedures for recording and playing back sound vary from program to program. One method of recording sound is to use the Sound Recorder program provided with the Windows 98 operating system. Refer to your operating system documentation for information and instructions.

Note: If you experience interference or speaker feedback while recording, try reducing the microphone recording volume (gain).

Using power-management features

Your computer supports the system Standby feature. This feature lets the computer enter a low-power state to conserve energy. You can put the system in Standby mode in three ways:

- Using the Windows 98 Start menu
- Using the Standby button on the Rapid Access II keyboard
- Using the power button

When the computer is put in standby mode, programs that are running go into a standby state, but are not shut down. The monitor screen goes blank, but the power indicator light on the computer flashes to indicate the computer is in standby mode.

Using the Windows 98 Start menu

Follow these steps to put the system in standby mode using Windows 98:

1. From your Windows 98 desktop, click the **Start** button.
2. Click **Shutdown**.
3. Click **Stand by**.
4. Click **OK**.

Using the Standby button on the keyboard

If you are using the Rapid Access II keyboard, you can put the system in Standby mode by pressing the Standby button located at the top of the keyboard.

To bring the system out of Standby mode, press any key on the keyboard, move the mouse, or press the computer power button for less than 4 seconds.

Using the power button

Windows 98 enables you set your power button to one of two modes: shutdown or standby. Your computer is preset to the shutdown mode; that is, when you press the power button your system power turns off without Windows 98 performing an orderly shutdown. To change the power-button mode, do the following:

1. From the Windows desktop, click the **Start** button.
2. Select **Settings**; then, click **Control Panel**.
3. Double-click the **Power Management** icon. The Power Management Properties window opens.

4. Click the **Advanced** tab.
5. In the Power buttons area, locate the **When I press the power button on my computer** field, select either **Shutdown** or **Standby**, and then click **OK**.

After making the necessary setting change, you can use the power button to have the computer enter Standby mode if you press the button for less than four seconds while the computer is on. To bring the system out of Standby mode, press any key on the keyboard or move the mouse. An incoming modem ring while the system is in Standby mode also wakes the system up. Take note of the following when using Standby feature.

- When the system is in *normal on* state:
 - Pressing the power button for more than four seconds turns off the system power. It does not force Windows 98 to perform an orderly shutdown routine.
 - Pressing the power button for less than four seconds puts the system into Standby mode.
 - Any use of the keyboard or mouse, or an incoming modem ring, wakes up the system from Standby mode and puts it in the *normal on* state.
- When the computer is in the *normal off* state, pressing the power button, regardless of the length of time you hold it in (less than or more than four seconds), simply starts the computer.

Using other power-management features in Windows 98

You can also set a duration of inactivity that must elapse before the computer system, monitor, or hard disk automatically enter a standby state. To do so:

1. From the Windows desktop, click the **Start** button.
2. Select **Settings**; then, click **Control Panel**.
3. Double-click the **Power Management** icon. The Power Management Properties window opens.
4. From the **Power Schemes** tab, you can:
 - Select an existing power scheme with preset durations.
 - Modify an existing power scheme by changing the preset durations.
 - Create a new power scheme with custom durations.
5. After making the changes, click **OK**.

Once the computer system, drive, or monitor has entered the standby state, any use of the keyboard or mouse, or an incoming modem ring, brings the computer system, monitor, or hard disk out of the standby mode.

Using security features

To deter unauthorized use of your computer, you can lock the cover and keyboard.

Locking the cover

Your computer comes with a built-in padlock loop located on the back of the computer. It is positioned at the top-right corner. You can use this loop to lock the cover to your computer with a padlock.

Locking the keyboard

You can set a power-on password through the Configuration/Setup Utility program and use the security features built into the Windows operating system. If you decide to use passwords, do not forget them.

If you set a power-on password, the keyboard is locked when you turn on the computer. You must type the correct password before the keyboard will unlock. You set a power-on password through the Configuration/Setup Utility program (see Chapter 4, "Using the Configuration/Setup Utility program" on page 27).

You also can use the password and screen-saver features built into the Windows operating system to assign a password that locks the keyboard and mouse after a predefined period of inactivity. To use these features, do the following:

1. From the Windows desktop, click **Start**.
2. Select **Settings**, and then click **Control Panel**.
3. Double-click **Display**, and then click **Screen Saver**.
4. Select a screen saver.
5. In the **Wait** field, select the number minutes of inactivity that is to pass before the screen saver becomes active.
6. Click the **Password protected** check box so that the check mark is visible, and then click **Change**.
7. Type your password, then confirm your password by typing it in the **Confirm new password** field.
8. Click **OK**.

After the defined period of inactivity, the screen saver appears. You must type your password to disable the screen saver. For more information about Windows passwords, refer to the Windows help system.

Using a security U-bolt

With the optional security U-bolt and a steel cable, you can secure your computer to a desk, table, or other fixture. This helps protect against theft. For instructions on installing a security U-bolt, see “Installing a security U-bolt” on page 81.

Chapter 3. Aptiva Software

Your computer comes with several types of online information, programs, and CDs. This chapter contains information about:

- Access Aptiva
- Aptiva Help
- README files
- *Software Selections* CD
- *Product Recovery and Diagnostics* CD
- Other programs
- Updating software
- Installing software with the AutoPlay feature

Access Aptiva

The Access Aptiva program is preinstalled on your computer and is accessible from the Windows desktop. It provides:

- **How Do I:** This selection provides topics describing how to complete specific tasks.
- **Customize:** This selection provides information about customizing the Access Aptiva program and adding other programs from the *Software Selections* CD.
- **Get Help:** This selection provides help information and ways of getting help from IBM.
- **View License and Warranty:** This selection gives you access to the warranty for your computer and the license that covers the programs preinstalled by IBM (excluding the operating system) and those programs on the *Software Selections* CD that are not covered by their own licenses.

Aptiva Help

The Aptiva Help system helps you use and understand features that are unique to your Aptiva PC. These help topics contain information on additional system setup, using and maintaining your computer, and solving problems. You will also find overviews of some of the programs that came with your computer.

Aptiva Help is accessible from the **Get Help** selection in Access Aptiva and from the Windows Start menu. If your computer has a Rapid Access Keyboard, you can open Aptiva Help by pressing the Help key.

README files

Another type of online information is README.TXT files. These files usually come with programs or device drivers and usually contain information about installing, using, or setting up a program to run most efficiently.

If there is late-breaking news about a feature or program related to your Aptiva computer, it is contained in a file named APTIVA.TXT. To access the APTIVA.TXT file, do the following:

1. In the Access Aptiva menu, click **Get Help**.
2. Click **Aptiva Readme**.

Software Selections CD

The *Software Selections* CD contains a variety of application programs. Some of these programs are installed automatically the first time you insert the CD into the drive. You can optionally install any of the other programs at any time.

To use the Software Selections program:

1. Insert the *Software Selections* CD into the drive. The Software Selections program automatically starts.
2. In the Software Selections menu, click the check box next to the programs you want to install.
3. After selecting the programs, click **Install**. A window appears showing the programs that will be installed. Click **OK** to continue with the installation process, or click **Cancel** to reset your options.
4. To complete the installation, follow any instructions that appear on the screen.

After a program is installed, you can access it through the **Programs** choice on the Windows Start menu.

Product Recovery and Diagnostics CD

The Aptiva *Product Recovery and Diagnostics* CD contains a complete backup of the software that was installed on your hard disk at the factory. Use this CD for recovery and diagnostic purposes on your Aptiva PC only. This CD will not function on other computers. You can use this CD to perform the following:

- Full Recovery (reinstall all of the preinstalled software)
- Custom Recovery (reinstall some of the preinstalled software)

- Run the IBM Enhanced Diagnostics program
- Selectively reinstall device drivers

Instructions for using the CD for recovery purposes are provided in a separate publication packaged with the CD. Read the instructions carefully before using the CD, and read the screens carefully as you use the CD. In some cases, the Product Recovery program will format your hard disk. If you choose this option, all data on your hard disk will be erased. If possible, back up your data to diskettes or another hard disk before performing a Full Recovery operation.

For information about the IBM Enhanced Diagnostics program, refer to “IBM Diagnostic Programs” on page 123.

The *Product Recovery and Diagnostics* CD contains copies of the device drivers that were preinstalled on your hard disk. If necessary, you can reinstall a device driver without performing a recovery operation. For instructions on reinstalling device drivers from the *Product Recovery and Diagnostics* CD, see “Reinstalling device drivers” on page 125.

Other programs

Other programs might come with your computer either on CD, DVD, or preinstalled on your hard disk. The titles vary by model and by country or region. To locate the programs installed on your hard disk, do the following:

1. From the Windows desktop, click **Start**.
2. Select **Programs**. You see a listing of programs and folders containing programs.

Some entertainment programs that come with your computer might contain language not suitable for children. The Entertainment Software Review Board (ESRB) has reviewed many software programs and maintains a list of program titles and ratings. To find a rating for a program, contact the ESRB Web site at:

<http://www.esrb.org>

Programs might vary from retail versions and might not include all documentation or functions.

Installing and using software with the AutoPlay feature

Most CDs and DVDs are *AutoPlay enabled*. If the *auto insert* feature of Windows is enabled, the installation program on a disc will automatically start when the disc is inserted into the drive. If an audio CD is inserted in the drive, music starts playing starting at track 1. For more information on the auto insert feature, refer to the Windows help system.

Some programs have files that are stored on your hard disk and also require a CD or DVD. If the program is already installed and you insert the disc, in most cases the auto insert feature will start the program automatically.

If your computer has a DVD-ROM drive, the auto insert feature will always start AutoPlay-enabled CDs or DVDs. If there are no AutoPlay-enabled programs on a DVD, the auto insert feature will start the DVD movie.

Updating programs

You have two important methods of updating programs: the IBM Update Connector program and the Norton LiveUpdate program.

IBM Update Connector

You can use the IBM Update Connector program to look for available updates for software that comes from the factory with your computer. To access the IBM Update Connector program, do the following:

1. From the Windows desktop, click **Start**.
2. Click **IBM Update Connector**.

You can find additional information about the IBM Update Connector program in Chapter 5, "IBM HelpWare support and services" on page 39.

Norton LiveUpdate

If you have the Norton AntiVirus program installed, you can update it using the Norton LiveUpdate program. The Norton LiveUpdate program gets the updates through the World Wide Web and automatically applies the updates to the Norton AntiVirus program.

Chapter 4. Using the Configuration/Setup Utility program

The Configuration/Setup Utility program controls many features of your computer, such as passwords and other security features, the startup sequence, power management, and hardware resources. Some of these features are also controlled by your operating system. The settings you select in your operating system might override similar settings in the Configuration/Setup Utility program.

This chapter provides an overview on starting and using the Configuration/Setup Utility program and some of the options and settings available. After starting the Configuration/Setup Utility program, a help system is available that offers information about the options and settings not discussed in this chapter.

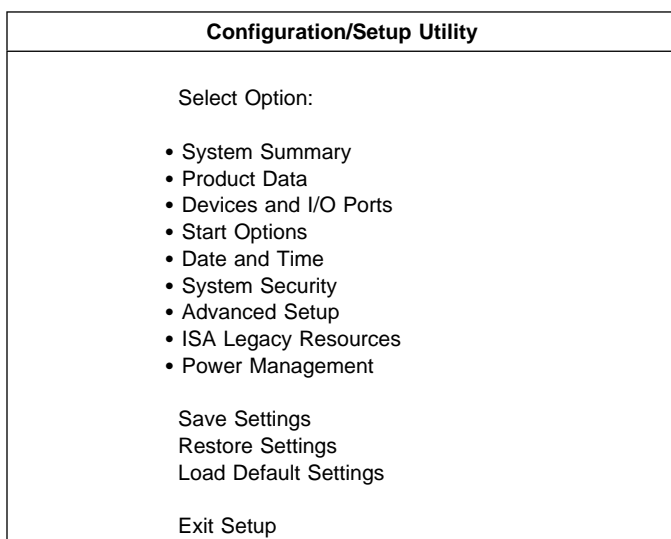
Starting and using the Configuration/Setup Utility program

The Configuration/Setup Utility program is started either automatically or manually. If a hardware configuration change is detected during the power-on self-test (POST), a POST message is displayed, and the Configuration/Setup Utility program starts automatically. A hardware configuration change occurs when a device (such as a drive or adapter) has been added or removed, or if a device has failed and can no longer be detected. For more information about POST, see “Power-on self-test (POST)” on page 96.

To start the Configuration/Setup Utility program manually:

1. Turn on your computer. If your computer is already on when you start this procedure, you must shut down the operating system, turn off the computer, wait a few seconds until all in-use lights go off, and restart the computer. (Do not use Ctrl+Alt+Del to restart the computer.)
2. When the Configuration/Setup Utility prompt appears in the lower-left corner of the screen during startup, press F1. (This prompt appears on the screen for only a few seconds. You must press F1 quickly.)
3. If you have *not* set either an administrator or a power-on password, the Configuration/Setup Utility menu appears on the screen. If you have set a password, the Configuration/Setup Utility menu will not appear until you type your password and press Enter. See “Using passwords” on page 30 for more information.

The Configuration/Setup Utility menu you see on your computer looks similar to the menu shown here.



Viewing and changing settings

The Configuration/Setup Utility program menu lists items that identify system configuration topics. Some of the configuration menu items have symbols next to them. See the following table for the meaning of the symbols.

Symbol	Explanation
•	An additional menu or screen is available
▶	A change to that item has been made in the system configuration or the Configuration/Setup Utility program has detected an error and attempted to correct it. Also, an additional menu might follow a menu item with a ▶ beside it.
*	A system resource conflict was detected. Resolve this conflict before exiting from the Configuration/Setup Utility program so that your computer will function correctly.
[]	In the Configuration/Setup Utility program menus, the configuration information you can change is enclosed in brackets like these []. You cannot change information that is not surrounded by brackets.

When working with the Configuration/Setup Utility menu, you must use the keyboard; the program does not support a mouse. Refer to the following table for the keys used to accomplish various tasks.

Keys	Function
↑ ↓	Use these arrow keys to move among menu items until the item you want is highlighted.
← →	Use these arrow keys to display and toggle among choices for a menu item.
Enter	Press this key to select a highlighted menu item.
Esc	Press this key to exit from a menu after viewing or making changes to the settings in the menu.
+	Use this key in some menus to increase the numerical value of a setting.
-	Use this key (the minus or hyphen key) in some menus to decrease the numerical value of a setting.
0–9	Use these number keys in some menus to change the numerical value of a setting.
F1	Press this key for help on a selected menu item.
F9	Press this key if you changed and saved the setting of a selected menu item and you want to restore the setting that was active before you made the change.
F10	Press this key to return the setting of a selected menu item to a default value.

Note: Active keys are displayed at the bottom of each screen; not all of the above keys are active on every menu.

Exiting from the Configuration/Setup Utility program

When you finish viewing or changing settings, press Esc until you return to the Configuration/Setup Utility menu. Depending on where you are in the program, you might have to press Esc several times to get back to the Configuration/Setup Utility menu. If you want to save the changes or settings, select **Save Settings** and press Enter before you exit. Otherwise, your changes will not be saved.

Using passwords

You can use passwords to provide security for your computer and data. You can set two kinds of passwords through the Configuration/Setup Utility program: a power-on password and an administrator password. You do not have to set a password of either type to use your computer. However, if you want to use a password, read the following sections to become familiar with both types of passwords before you set one.

Using a power-on password

The *power-on* password feature deters unauthorized persons from gaining access to your computer. When you set the power-on password, you can choose one of two password prompt modes:

- Off** In password prompt Off mode (sometimes referred to as unattended start mode), you are not prompted to enter your power-on password when you turn on the computer. The computer starts the operating system, but the keyboard remains locked until you type your power-on or administrator password. The mouse (if attached to the mouse port) remains disabled, even after the password has been typed. This mode is designed primarily for environments where programs are run unattended or from a remote location over a network.

Important information for mouse users

This information applies only to those who have a mouse connected to the mouse port; a serial mouse is not affected by the password prompt Off mode.

The password prompt Off mode prevents the computer from detecting that a mouse is attached. Therefore, the mouse device driver does not load automatically. Whenever the computer is restarted, by default the Windows operating system displays a message informing you that the mouse connector is disabled. The operating system will not start until you bypass or disable this message.

To bypass this error message, type your password, press Enter, and then press Enter again.

To disable this message:

1. Type your password.
2. Press Enter.
3. Press Tab. The **Do not display this message in the future** field is highlighted.
4. Press the Spacebar to put a check in the box.
5. Press Enter.

Disabling the message allows the operating system to automatically load on future restarts without displaying the error message. When the operating system starts in password prompt Off mode, the keyboard remains locked until you type your password. However, the mouse connected to the mouse port remains locked even after you type the password. All operations must be done using the keyboard.

Dual

In password prompt Dual mode, the startup behavior of the computer depends on whether the computer is started from the computer power switch or by an unattended method, such as a modem ring detection, a serial port ring detection, or a Wake Up on Alarm operation.

If you start the computer by using the power switch, you are prompted for the power-on password. Until the password is entered, the computer operating system will not start, and the keyboard and the mouse connected to the mouse port, will remain locked.

If the computer is started by an unattended method, such as the methods mentioned earlier, the computer operates the same as it does in password prompt Off mode. Refer to page 30 for further information.

If you need to access the the Configuration/Setup Utility program, and either a power-on password or an administrator password is set, you will be required to type a password before the Configuration/Setup Utility program appears. If only a power-on password is set, you must type your power-on password. If both a power-on password and administrator password are set and you type your power-on password, you will be able to view limited information in the Configuration/Setup Utility program, but you will not be able to change any settings.

The password does not appear on the screen as you type it. If you type the wrong password, you receive a screen message telling you so. If you type the wrong password three times, you must turn off the computer and start again. When you type the correct password, the keyboard and mouse unlock, and the computer begins normal operation.

Setting, changing, and deleting a power-on password

A power-on password can be any combination of up to seven characters (A–Z, a–z, and 0–9).

Attention

Keep a record of your power-on password in a secure place. If you lose or forget your password, you cannot change or delete it without removing the computer cover and changing settings on the system board. Refer to “Erasing a lost or forgotten password” on page 34 for further information.

To set, change, or delete a power-on password:

1. Start the Configuration/Setup Utility program (see “Starting and using the Configuration/Setup Utility program” on page 27).
2. From the Configuration/Setup Utility menu, select **System Security** and then press Enter.
3. Select **Power-On Password** and then press Enter.
 - To delete a power-on password, select **Delete Power-On Password**, press Enter, press Enter again, and then go to step 4 on page 33.
 - To set a new password or change an existing password:
 - a. Type your new password and press Enter.
 - b. Type your new password again and press Enter
 - c. Select **Change Power-On Password** and press Enter.
 - d. When the Change Power-on Password window opens, press Enter. The Change Power-on Password window closes.

- e. At the **Password Prompt** line, select **Off** or **Dual**. Press Left Arrow (←) or Right Arrow (→) to toggle among selections, and then press Enter. Continue with step 4 on page 33.
4. Press Esc twice to return to the Configuration/Setup Utility menu.
5. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility menu and press Enter.
6. To exit from the Configuration/Setup Utility program, press Esc and follow the instructions on the screen.

Using an administrator password

Setting an administrator password deters unauthorized persons from changing configuration settings. If you are responsible for maintaining the settings of the computer and people other than you use the computer, you might want to set an administrator password.

After you set an administrator password, a password prompt appears each time you try to access the Configuration/Setup Utility program. If you type the wrong password, you receive a message telling you so. If you type the wrong password three times in succession, you must turn off the computer and start again.

If both a power-on and administrator password are set, you can type either of the passwords. However, to change any settings in the Configuration/Setup Utility program, you must use your administrator password. If you type the power-on password, you will be able to view limited information only.

Setting, deleting, or changing an administrator password

An administrator password can be any combination of up to seven characters (A–Z, a–z, and 0–9).

To set, change, or delete an administrator password:

1. Start the Configuration/Setup Utility program (see “Starting and using the Configuration/Setup Utility program” on page 27).
2. From the Configuration/Setup Utility menu, select **System Security** and then press Enter.
3. Select **Administrator Password** and then press Enter.
 - To delete an administrator password, select **Delete Administrator Password**, press Enter, press Enter again, then go to step 4 on page 34.

- To set a new administrator password or change an existing administrator password:
 - a. Type your new password and press Enter.
 - b. Type your new password again and press Enter.
 - c. Select **Change Administrator Password** and press Enter.
 - d. When the Change Administrator Password window opens, press Enter. The Change Administrator Password window closes.
 - e. At **Power-On Password Changeable by User**, select **Yes** or **No**. Press Left Arrow (←) or Right Arrow (→) to toggle between selections. (If you select **Yes** and an administrator password is set, the power-on password can be changed without having to enter the administrator password. If you select **No** and an administrator password is set, you cannot change the power-on password unless you type the administrator password.)
 - f. Continue with step 4.
- 4. Press Esc until you return to the Configuration/Setup Utility menu.
- 5. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility program menu and press Enter.
- 6. To exit from the Configuration/Setup Utility program, press Esc and follow the instructions on the screen.

Erasing a lost or forgotten password

This section applies to lost or forgotten power-on or administrator passwords.

Important

If possible, record the configuration information of your computer *before* you start this procedure.

To erase a lost or forgotten password:

1. Turn off the computer and all attached devices.
2. Unplug the power cord.
3. Remove the cover. See “Removing the cover” on page 59.
4. Refer to “Identifying parts on the system board” on page 65 to locate the small rocker-switch block.

5. Move switch 2 on the small rocker-switch block from the OFF position to the ON position. It might be helpful to use a ballpoint pen to change the position of the switch.
6. Replace the cover.
7. Plug in the power cord.
8. Restart the computer.
9. When the computer starts issuing a repeating series of two beeps, press and hold the computer power button until the computer turns off (approximately 5 seconds).
10. Unplug the power cord and remove the cover. See “Removing the cover” on page 59.
11. Move switch 2 back to the OFF position.
12. Replace the computer cover.
13. Plug in the power cord.
14. Turn on the computer.
15. When the computer enters the Configuration/Setup Utility program and posts a 162 error, press Enter. The Error screen appears.
16. In the Error screen, select **Automatically reconfigure system and continue**, and then press Enter.
17. Disable the power-on or administrator password settings or set new passwords. Then, reset the date and time.
18. Save the settings, exit from the Configuration/Setup Utility program, and then turn off the computer.
19. Restart the computer.

After you finish this procedure, you might need to reconfigure some settings in the Configuration/Setup Utility program. Start the Configuration/Setup Utility program and reset any settings that have changed.

Other settings in the Configuration/Setup Utility program

The information in this section includes instructions for changing other settings in the Configuration/Setup Utility program, such as the startup sequence and enabling the processor serial-number feature. For information about settings not discussed in this section, refer to the Configuration/Setup Utility program help system.

Setting the startup sequence

Your computer can be started from several devices, including the hard disk drive, diskette drive, or CD-ROM drive. The startup program looks for these devices in a selected sequence. The startup sequence on your computer is preset from the factory to start up from a diskette, CD, or hard disk. This startup sequence allows you to start the diagnostic and recovery programs from the *Product Recovery and Diagnostics* CD, use emergency diskettes to recover from a startup failure, and start from your hard disk for normal day-to-day operation. In most cases, there is no reason to change the startup sequence. However, if you must change the startup sequence, you can do so through the Configuration/Setup Utility program.

To change the startup sequence:

1. Start the Configuration/Setup Utility program (see “Starting and using the Configuration/Setup Utility program” on page 27).
2. Select **Start Options** and press Enter.
3. Select **Startup Sequence** from the **Start Options** menu and press Enter.
4. Select **First Startup Device** and press Enter.
5. Use the arrow keys to make your selection and press Enter.
6. If necessary, repeat the above steps for **Second Startup Device**, **Third Startup Device**, and **Fourth Startup Device**.
7. If **Automatic Power On Startup Sequence** is *Enabled*, select the sequence and devices from the choices provided.
Note: **Automatic Power On Startup Sequence** is used only if the computer is to be started remotely, for example, through the telephone lines or through the Wake Up on Alarm mechanism built into the Configuration/Setup Utility program.
8. Press Esc until you return to the Configuration/Setup Utility program menu.
9. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility menu and press Enter.
10. To exit from the Configuration/Setup Utility program, press Esc and follow the instructions on the screen.

Pentium III processor Serial Number feature

Your computer features an Intel® Pentium® III processor. This processor features a unique electronic identification number that is designed to enhance security during electronic commerce transactions and to hamper software piracy.

Your computer was shipped to you with this processor identification feature OFF (disabled). If you decide to enable this identification feature, complete the following steps:

1. Start the Configuration/Setup Utility program (see “Starting and using the Configuration/Setup Utility program” on page 27).
2. From the Configuration/Setup Utility program menu, select **Advanced Setup** and press Enter.
3. At the Advanced Setup menu, select **Processor Control** and press Enter.
4. At the Processor Control menu, press the right arrow key to change the setting to **Enabled**.
5. Press Esc two times to return to the Configuration/Setup Utility program menu.
6. Select **Save Settings** and press Enter.
7. Select **Exit Setup** and press Enter.
8. When prompted, press Enter to exit from the Configuration/Setup Utility program.

For more information about the Pentium III processor, visit the Intel Web site at <http://www.intel.com/pentiumiii/utility.htm>

Chapter 5. IBM HelpWare support and services

IBM HelpWare® services are available from IBM whenever you need help, for as long as you own your IBM Aptiva Personal Computer. They include a variety of services, options, and solutions. When your warranty period expires, HelpWare services are available for purchase.

There are two ways to get help quickly from IBM:

- **On the World Wide Web.** Refer to “Using electronic services” on page 41 for the address of your country- or region-specific IBM Aptiva Support Web page.
- **By telephone.** Refer to “Getting help by telephone” on page 43 for information about HelpWare telephone services.

Before you call for service

Many computer problems can be solved without outside assistance, by using the online help or by looking in the online or printed documentation that comes with your computer or software. Following are some methods you can use to solve problems yourself.

Printed documentation

The documentation that comes with your computer contains information about how to troubleshoot hardware and software problems. When you know the nature of the problem, you can follow the instructions in Chapter 9, “Troubleshooting” on page 93. Match the description or error codes with your question, and follow the instructions to solve the problem.

Online documentation

Your computer also comes with online documentation, such as Help and README files installed on your hard disk, which you can use to solve problems.

Help files

The operating system and most preinstalled programs on your computer contain online help files. Most help files contain information about solving problems and preventing future problems.

README files

Most operating systems and software programs also come with a file named README.TXT. This is a text file that contains important information about the program. You can read README.TXT files by opening them in any text file editor on your computer. If an Aptiva README file is provided, it is named APTIVA.TXT.

Software

Your computer comes with several software programs to help you solve problems or find answers to your questions.

Diagnostic programs provided with your computer

Your computer comes with a set of diagnostic programs to help you identify computer problems: PC-Doctor for Windows and IBM Enhanced Diagnostics.

PC-Doctor for Windows works through the Windows operating system to diagnose hardware and report operating-system-controlled settings that can cause hardware problems. You must install PC-Doctor for Windows from the *Software Selections* CD before you can use it. IBM Enhanced Diagnostics is an enhanced version of the DOS-based PC-Doctor program. IBM Enhanced diagnostics performs tests directly on the hardware, independent of the Windows operating system. You run IBM Enhanced Diagnostics directly from the *Product Recovery and Diagnostics* CD. Make sure you run both of these programs before you contact the IBM PC HelpCenter® for technical support. For more information about installing or using the diagnostic programs, see “IBM Diagnostic Programs” on page 123.

IBM Update Connector

With IBM Update Connector, you can connect to the IBM PC HelpCenter technical-support center to receive and download updates for some of the software that comes with your computer. After you have received the files, you can begin the automated installation process. IBM Update Connector is available to registered Aptiva customers during the warranty period at no charge. Telephone line charges might apply.

Using electronic services

There are many ways to receive technical support and information. When you use electronic support, the only charges that typically apply are the ones you pay to your telephone company or to the company you use to log onto the World Wide Web (your Internet service provider). Here are some of the electronic support options that you can use.

The World Wide Web

You can link to the IBM Aptiva Support page to search for technical tips, download device-driver updates, and find out about many other things.

For the United States, Canada, Australia, and New Zealand, the address for the IBM Personal Computing Support home page is:

<http://www.ibm.com/pc/support>

From the Support home page, under **Select a Brand**, click the arrow, and select **Aptiva & PS/1** to go to the IBM Aptiva Support page.

For other countries or regions, use the following address:

<http://www.ibm.com/pc/xx/aptiva.html>

Replace *xx* with the two-letter code as shown in the following table.

Country or region	Code
Austria	AT
Belgium	BE
Denmark	DK
Finland	FI
France	FR
Germany	DE
Ireland	UK
Italy	IT
Luxembourg	BE
Netherlands	NL
Norway	NO
Spain	ES
Sweden	SE

Country or region	Code
Switzerland	CH
United Kingdom	UK

You can access the IBM Online Assistant from most of these Web sites. The IBM Online Assistant is a tool that you can use to diagnose common technical problems. To use the IBM Online Assistant, you must first connect to the IBM Aptiva Support Web page and complete a personal profile. Use the IBM Online Assistant for troubleshooting and step-by-step solutions.

Using electronic support services

If you have a modem, you can get help from several popular services. Online information services provide assistance through question-and-answer message areas, live chat rooms, searchable databases, and more.

Technical information is available on a wide range of topics, such as:

- Hardware setup and configuration
- Preinstalled software
- Operating systems
- Networking
- Communications
- Multimedia

In addition, the latest device driver updates are available.

Commercial online services, such as America Online (AOL), contain information about IBM products. (For AOL, use the keyword **IBM**.)

Getting information by fax

If you have a touch-tone telephone and access to a fax machine, in the U.S. and Canada you can receive by fax marketing and technical information on many topics, including hardware, operating systems, and local area networks (LANs). You can call the IBM Automated Fax System 24 hours a day, 7 days a week. Follow the recorded instructions, and the requested information will be sent to your fax machine.

To access the IBM Automated Fax System, call 1-800-426-3395.

A catalog (approximately 40 pages) of IBM Automated Fax topics is available.

Getting help by telephone

During the warranty period, you can get help and information by telephone through the IBM PC HelpCenter technical-support center. Expert technical-support representatives are available to assist you. You might be charged for some calls and not for others, depending upon the type of problem. You must register your computer to receive telephone support.

For help with installing, configuring, or using software, see “Purchasing additional support” on page 47.

The following services are available by telephone.

30-day "Up and Running" support

During the first 30 days after you purchase your computer, you can call the IBM HelpCenter technical-support center at no charge to ask questions about:

- Setting up your computer and attaching a monitor and printer
- Starting the preinstalled operating system
- Starting the preinstalled software programs and the software programs that come with your computer

Long distance telephone charges might apply.

Technical support for software

If you need help setting up or installing the preinstalled software programs or the software programs that come with your computer during the 30-day “Up and Running” support period, technical-support representatives can help you install (or reinstall) the software that comes with your computer, if necessary. Answers to your “how to” questions about software programs are available for a fee. For more information, see “Purchasing additional support” on page 47.

Additional support

At times, you might need additional assistance after the 30-day “Up and Running” support period, or you might require “how to” help and support. IBM PC HelpCenter technical-support representatives can assist you for a fee. For more information, see “Purchasing additional support” on page 47.

Note: Make sure that you write down your date of purchase and keep your receipt in a safe place. You will be required to present your proof of purchase to receive service under your IBM warranty.

Hardware warranty service

If the Aptiva PC that you purchased does not function as warranted, during the period of your warranty, the IBM PC HelpCenter technical-support center will provide warranty service for IBM factory-installed hardware.

Your Aptiva PC is subject to the terms of your IBM warranty and the IBM International License Agreement for Non-Warranted Programs, which are included with your computer. Please read these terms carefully.

Note: To find your machine and model type and your serial number, look on the front lower-right corner of the system unit.

If your computer needs to be serviced, please provide the servicer with the Aptiva *Product Recovery and Diagnostics* CD that comes with your computer. This will help the servicer to complete the required service.

If your computer is having a problem that is not covered by your IBM warranty, see “Purchasing additional support” on page 47.

What to do before you call

Note: If your call is not covered by 30-day “Up and Running” support or by your IBM warranty, you will be required to provide a major credit-card number for support.

By doing the following items, you will help the IBM PC HelpCenter technical-support representative handle your call, and you will help reduce the amount of time it takes to diagnose problems and answer your questions.

1. Register your computer through the IBM Product Registration program that comes installed on your computer.
2. If possible, run both the DOS version and the Windows version of PC-Doctor diagnostics. Save and print the log files created by both the DOS and Windows versions of diagnostics so that you can provide these to the technical-support representative. (The log file created in the Windows version is automatically saved in C:\PCDR\DETAILED.TXT.) For information about how to use the PC-Doctor diagnostics, refer Chapter 9, “Troubleshooting” on page 93.

When you call the IBM HelpCenter, you will be required to provide the following information

- Name
- Address
- Telephone number
- Machine type, model, and serial number (found on the front of the computer at the bottom-right corner).

- Registration number (when you receive one)
- Date of purchase
- A description of the problem
- The exact wording of any error messages
- Hardware and software configuration information for your computer

If your call is not covered by 30-day “Up and Running” support or by your IBM warranty, you might be required to provide a major credit-card number for support. You will not be billed if it is determined that your call is covered under “Up and Running” support or by your IBM warranty.

Please be at your computer when you call.

Country or region	Phone number	Hours of operation
Australia	13-14-26	9 a.m. to 9 p.m. (EST - Australia), 365 days a year
Austria	1 546 325 102	10 a.m. to 1 p.m. and 2 p.m. to 7 p.m. CET Monday–Friday
Belgium (Dutch)	02-714-3504	9 a.m. to 9 p.m. CET Monday–Friday
Belgium (French)	02-714-3503	9 a.m. to 9 p.m. CET Monday–Friday
Canada	1-800-565-3344	24 hours a day, 7 days a week (excluding holidays)
Denmark	3525-6904	9 a.m. to 9 p.m. CET Monday–Friday 10 a.m. to 7 p.m. CET Saturday
Finland	(09) 2294 3004	8 a.m. to 8 p.m. CET Monday–Friday
France	01-6932-4004	9 a.m. to 9 p.m. CET Monday–Friday
Germany	069-6654-9004	10 a.m. to 1 p.m. and 2 p.m. to 7 p.m. CET Monday–Friday
Ireland	01-8159208	9 a.m. to 9 p.m. GMT Monday–Friday

Country or region	Phone number	Hours of operation
Italy	02-4827-7003	10 a.m. to 1 p.m. and 2 p.m. to 7 p.m. CET Monday–Friday
Luxembourg	298-977-5058	9 a.m. to 9 p.m. CET Monday–Friday
Netherlands	020-504-0530	9 a.m. to 9 p.m. CET Monday–Friday
New Zealand	0800-446-149	9 a.m. to 9 p.m. (EST - Australia), 365 days a year
Norway	2-305-0304	9 a.m. to 9 p.m. CET Monday–Friday 12 noon to 5:30 p.m. CET Saturday and Sunday
Portugal	01 791-5147	Voice mail only
Spain	91-662-4261	10 a.m. to 1 p.m. and 2 p.m. to 7 p.m. CET Monday–Friday
Sweden	08-632-0051	9 a.m. to 9 p.m. CET Monday–Friday
Switzerland (French)	0848 80 55 00	9 a.m. to 9 p.m. CET Monday–Friday
Switzerland (German)	0848 80 55 00	10 a.m. to 1 p.m. and 2 p.m. to 7 p.m. CET Monday–Friday
Switzerland (Italian)	0848 80 55 00	10 a.m. to 1 p.m. and 2 p.m. to 7 p.m. CET Monday–Friday
United Kingdom	01475-555 001	9 a.m. to 9 p.m. GMT Monday–Friday
U.S.A. and Puerto Rico	1-919-517-2800	24 hours a day, 365 days a year (response times may vary)

In the United States and Canada, the technical-support representative might also be able to fax or mail additional technical or product information to you, such as:

- Sales information
- Product brochures
- Locations of IBM resellers
- Services available through IBM

If you need help with a specific program or if you need help after your warranty has ended, these services are available for a fee. For more information about additional services, see “Purchasing additional support.”

Purchasing additional support

During and after the warranty period for your computer, you can purchase additional HelpWare services. Enhanced PC Support Line service includes assistance with the following items:

- Assistance with installing, configuring, and using selected software applications
- Using the operating system
- Setting up and using multimedia device drivers
- Installing and configuring out-of-warranty IBM PC products

How to purchase additional support

You can purchase support in the following ways. All of the following support options are available in all countries unless otherwise noted.

900 number

In the United States and Canada, you can call the 900 number to receive immediate support from an IBM PC HelpCenter technical-support representative. Your local telephone company will bill you by the minute for each call. Persons under age 18 must have permission of a parent or legal guardian prior to placing the call.

Country	Phone number	Hours of operation	Cost
United States	For installing and configuring in-warranty IBM Aptiva products: 1-900-555-HELP(4357)	Monday–Friday, 9 a.m. to 9 p.m. Eastern Time	\$2.99 (U.S. currency) per minute beginning after the first minute

Country	Phone number	Hours of operation	Cost
United States	For using application software and for out-of-warranty IBM products: 1-900-555-CLUB(2582)	Monday–Friday, 9 a.m. to 9 p.m. Eastern Time	\$2.99 (U.S. currency) per minute beginning after the first minute
Canada	1-900-565-9988	24 hours a day	\$3.50 (Canadian currency) per minute

Flat rate

You can call the IBM PC HelpCenter technical-support center to purchase support for a single incident or multiple incidents (in Canada, call 1-800-565-3344). The flat-rate option is not available in Australia or New Zealand.

Single incident

The single-incident option allows you to pay a flat fee for each individual problem you need to resolve.

Multiple-incident packs

With multiple-incident packs, you can purchase a block of problem resolutions at a discount from the single-incident price. Each pack expires one year from the date of purchase. The following multiple-incident packs are available:

- 3-incident pack
- 5-incident pack (Australia and New Zealand only)
- 10-incident pack

In most countries, all available options are payable by credit card only. In Australia, all options are payable by credit card, cheque, or money order.

An incident is a request for telephone assistance about a single question or problem. An incident can involve multiple conversations or actions that might include (but are not limited to):

- Your initial request
- Research by IBM
- A call back from IBM to you

Requests for assistance on multiple questions or problems will be considered as multiple incidents.

To order additional support packages, refer to page 45 for the phone numbers and hours of operation in your country or region. In the United States and Canada, use the following part numbers when you call.

Support package	U.S. part number	Canadian part number
Single incident	2419720	EPCS1
3-incident pack	2419721	EPCS3
10-incident pack	2419722	EPCS10

Getting more information

Enhanced PC Support Line services are available for products on the Supported Products list. To receive a brochure of Enhanced PC Support Line services or a Supported Products list:

- In the U.S.:
 1. Call 1-800-426-3395.
 2. Select option 1.
 3. Select option 1.
 4. Select a document:
 - For a brochure, select document number 11690.
 - For a Supported Products list, select document number 11682.
 5. When you have finished, press 1.
 6. Enter your fax number and press the # key.
- In Canada, contact the IBM HelpFax™ service:
 1. Call 1-800-465-3299.
 2. Select your language.
 3. Select option 1.
 4. Select option 1.
 5. Select a document:
 - For a brochure, select document number 16129.
 - For a Supported Products list, select document number 16130.
 6. Follow the instructions given to complete the call.
- In all other countries, contact your IBM reseller or IBM marketing representative.

Express Maintenance

Express Maintenance is available to customers in the United States and Canada. Express Maintenance is a parts-exchange service that allows IBM HelpCenter personnel to replace selected in-warranty hardware parts and ship them directly to you, so that you do not have to completely disassemble your computer and take it to an authorized IBM servicer for repair. Some servicers function as drop-off points that can send your computer to another location for repair.

When you call for Express Maintenance at 1-919-517-2800, your credit-card information will be requested, but you will not be billed if you return the defective part to IBM within 30 days of your receipt of the new part. If the part is not returned within 30 days, your credit card will be charged the full retail price of the part. Credit-card information will not be made available to anyone outside IBM.

Depot repair

Depot repair is a process for obtaining service for an eligible IBM computer that requires repair. The computer is picked up at a location you designate, delivered to the IBM repair center, repaired, and returned to you.

Eligibility for depot repair depends on your model and your geographic location. In some cases, depot repair is the only repair method provided during the warranty period. Eligibility for depot repair will be determined when you call the IBM HelpCenter for service.

If HelpCenter personnel determine that your computer requires service, and the problem cannot be resolved remotely or by the Express Maintenance parts exchange process, you will be offered depot repair if the computer is eligible. The HelpCenter will then send an IBM-approved shipping container, packing materials, and preprinted shipping labels for the IBM-approved courier. IBM is not responsible for:

- computers damaged in transit if you do not use the IBM-approved shipping container
- computers lost in transit to the repair center if you do not use the IBM-approved courier indicated on the shipping label.

International Warranty Service - Not Available

International Warranty Service (IWS) is an IBM program that is available on selected IBM Commercial PC products. IWS allows customers who travel or need to move products to another country to register the products with IBM's International Warranty Service Office (IWSO). Upon registering the product with the IWSO, IBM will issue a certificate that will be honored wherever IBM or IBM resellers sell and service IBM Commercial PC products. The IWS program is not available for Aptiva products.

Chapter 6. Taking care of your computer

This section provides guidelines for the proper handling and care of your computer.

Basics

Here are some basic points about keeping your computer functioning properly:

- Keep your computer in a clean, dry environment. Make sure it rests on a flat, sturdy surface.
- Do not place items on top of the monitor or cover any of the vents in the monitor or computer. These vents provide air flow to keep your computer from overheating.
- Keep food and drinks away from all parts of your computer. Food particles and spills might make the keyboard and mouse sticky and unusable.
- Do not get the power switches or other controls wet. Moisture can damage these parts and cause an electrical hazard.
- Always disconnect a power cord by grasping the plug, not the cord.

Cleaning your computer

It is a good practice to clean your computer periodically to protect the surfaces and ensure trouble-free operation.



CAUTION:

Be sure to turn off the computer and monitor power switches before cleaning the computer and monitor screen.

Computer and keyboard

Use only mild cleaning solutions and a damp cloth to clean the painted surfaces of the computer.

Monitor screen

Do not use abrasive cleaners when cleaning the surface of the monitor screen. The screen surface is easily scratched, so avoid touching it with pens, pencil points, and erasers.

To clean the screen surface, wipe it gently with a soft, dry cloth, or blow on the screen to remove grit and other loose particles. Then use a soft cloth moistened with a nonabrasive liquid glass cleaner.

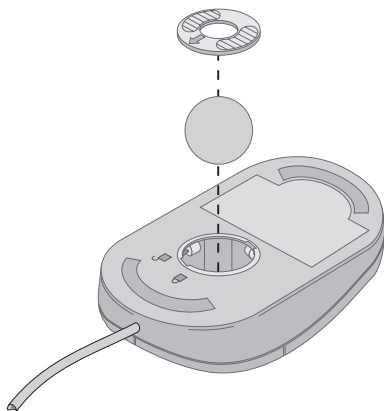
Mouse

If the pointer on the screen does not move smoothly with the mouse, you might need to clean the mouse.

To clean your mouse:

1. Turn off the computer.
2. Disconnect the mouse cable from the computer.
3. Turn the mouse upside down. Unlock the retainer on the bottom of the mouse by rotating it clockwise until the arrows align with the unlock symbol.

Note: Some mouse types have retainers that are removed differently. If your mouse does not have lock and unlock symbols, move the retainer in the direction indicated by the arrow on the retainer.



4. Place your hand over the retainer and turn the mouse right-side up. The retainer and ball will drop out into your hand.
5. Wash the ball in warm, soapy water and dry it well.

6. Using a damp cloth, wipe the outside of the mouse and the retainer. Be sure to wipe the rollers inside the mouse.
7. Insert the ball and retainer. Lock the retainer by rotating it so the arrow is aligned with the lock symbol.
8. Reconnect the mouse cable to the computer.

Moving your computer

Take the following precautions before moving your computer.

1. Back up all files and data from the hard disk.
Operating systems can vary in the way they perform backup procedures. Refer to your operating system documentation for information about software backup.
2. Remove all media (diskettes, compact discs, tapes, and so on) from the drives.
3. Turn off the computer and all attached devices. Your hard disk drive automatically parks the read/write heads in a nondata area. This process prevents damage to the hard disk.
4. Unplug the power cords from electrical outlets.
5. Disconnect communication cables, such as modem or network cables, from the outlets first, and then disconnect the other ends of cables from the computer.
6. Note where any remaining cables are attached to the rear of the computer; then remove them.
7. If you saved the original shipping cartons and packing materials, use them to pack the units. If you are using different cartons, cushion the units to avoid damage.

Chapter 7. Installing internal options

You can expand the capabilities of your computer by adding memory, drives, or adapters. Use the instructions in this chapter along with the instructions that come with the option.

Attention

- Before you install or remove any option, read the “Safety information” on page vii. These precautions and guidelines will help you work safely.
- The presence of 5 V standby power might result in damage to your hardware unless you disconnect the power cord from the electrical outlet before opening the computer cover.

Handling static-sensitive devices

Static electricity, although harmless to you, can seriously damage computer components and options. When you add an option, do *not* open the static-protective package containing the option until you are instructed to do so.

When you handle options and other computer components, take these precautions to avoid static electricity damage:

- Limit your movement. Movement can cause static electricity to build up around you.
- Always handle components carefully. Handle adapters and memory modules by the edges. Never touch any exposed circuitry.
- Prevent others from touching components.
- When you install a new option, touch the static-protective package containing the option to an unpainted metal surface on the computer for at least two seconds. This reduces static electricity in the package and your body.
- When possible, remove the option and install it directly in the computer without setting the option down. When this is not possible, place the static-protective package that the option came in on a smooth, level surface and place the option on it.
- Do not place the option on the computer cover or other metal surface.

Backing up configuration settings

Important

Run ConfigSafe (or a similar application) to take a *snapshot* of your computer configuration before installing an optional device. Using this snapshot, you can view and compare the changes in the computer configuration after you install an option. Also, if you have problems configuring the option after it is installed, ConfigSafe allows you to restore the configuration to the previous settings.

When you started your computer for the first time, ConfigSafe took a snapshot of the initial configuration of your computer. You might be able to use this snapshot to restore the configuration to the initial settings.

ConfigSafe is a part of the preinstalled software in your computer. For more information, see the ConfigSafe help system.

Available options

For the latest information about available options, see the following World Wide Web pages:

- <http://www.ibm.com/pc/us/options/>
- <http://www.ibm.com/pc/support/>

You can also obtain information through the following sources:

- Within the United States, call 1-800-IBM-2YOU (1-800-426-2968), your IBM reseller, or IBM marketing representative.
- Within Canada, call 1-800-565-3344 or 1-800-465-7999.
- Outside the United States and Canada, contact your IBM reseller or IBM marketing representative.

Tools required

To install or remove some options in your computer, you will need a flat-blade screwdriver. Additional tools might be needed for certain options. See the instructions that come with the option.

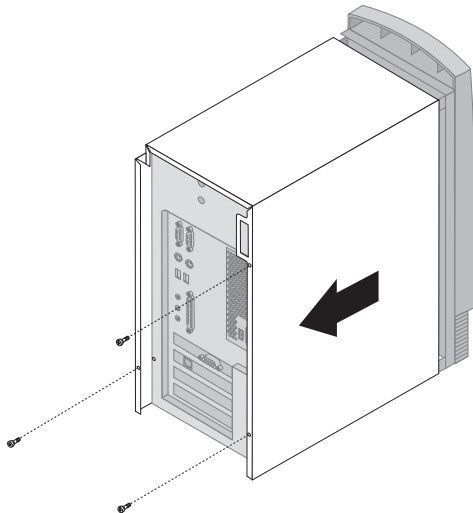
Removing the cover

Important:

Read “Safety information” on page vii and “Handling static-sensitive devices” on page 57 before removing the cover.

To remove the cover:

1. Shut down your operating system, remove any media (diskettes, CDs, or tapes) from the drives, and turn off all attached devices and the computer.
2. Unplug all power cords from electrical outlets.
3. Disconnect all communication cables (such as modem and network cables) from communication outlets.
4. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables connected to the computer.
5. Remove the three thumbscrews located on the rear of the computer that hold the cover onto the chassis. Use a screwdriver to loosen the thumbscrews if necessary.
6. Slide the cover straight toward the rear approximately 25 mm (1.0 in.) until it stops and lift the cover from the chassis.



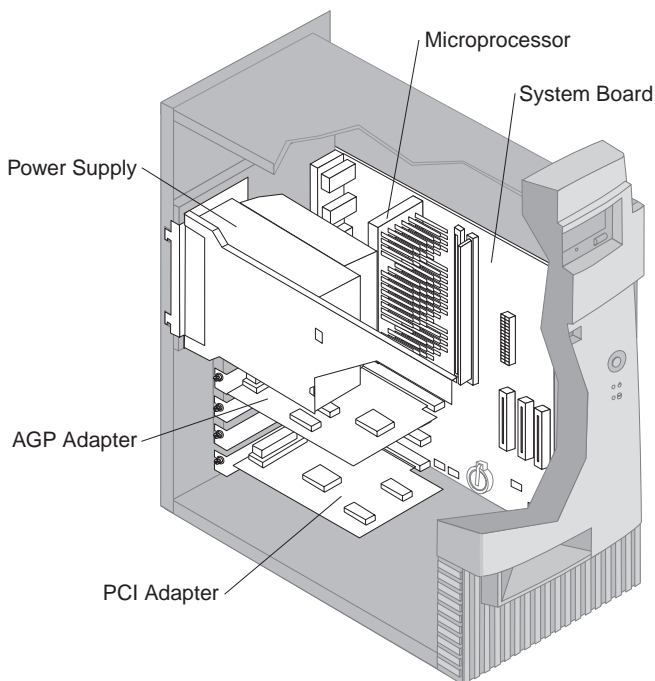
Attention

Proper cooling is required for the reliable performance of internal components. Do not operate your computer with the cover removed.

Locating components

To install options in your computer, you will need to remove the cover. See “Removing the cover” on page 59. You also will need to locate components inside your computer.

The following illustration will help you locate various components in your computer.



Note: If you prefer, you can place the computer on its side to install or remove options.

Moving the power supply

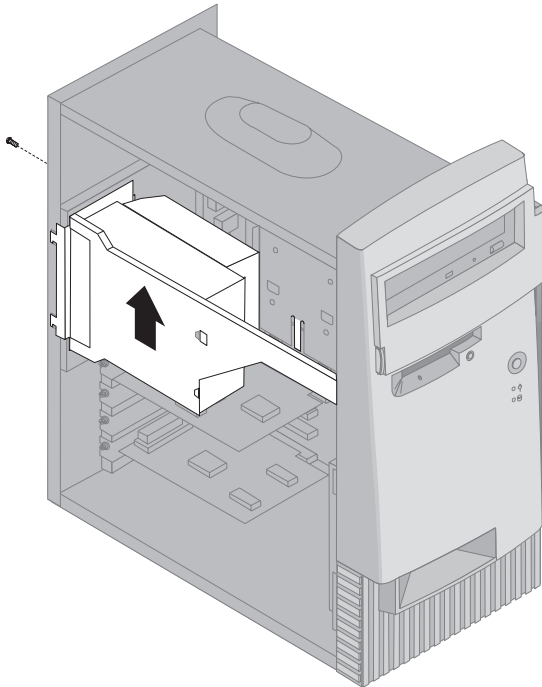
To perform some operations inside the computer, you might need to move the power supply. This enables easy access to parts of the system board that are difficult to see or hard to reach.



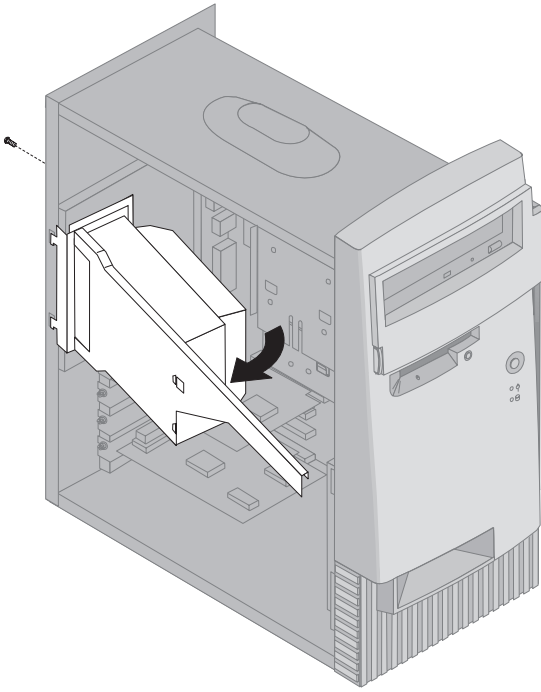
DANGER

Do not detach the power supply bracket from the power supply or remove any of the power supply screws.

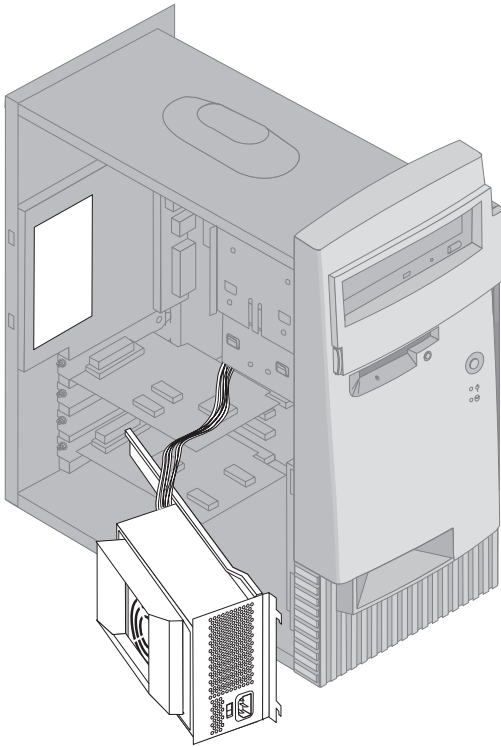
1. Remove the screw securing the power supply to the rear of the chassis.
2. To release the power supply, push in on the metal tab securing the power supply to the chassis.
3. Slide the power supply unit up toward the top of the chassis.



4. Pivot the power supply toward the opened side slightly.



5. Pull the power supply forward and carefully rotate it toward the front of the chassis. Lay it to the side.



6. To replace the power supply, reverse these steps.

Working with options on the system board

This section provides instructions for installing options and setting the diskette write-protect switch on the system board.

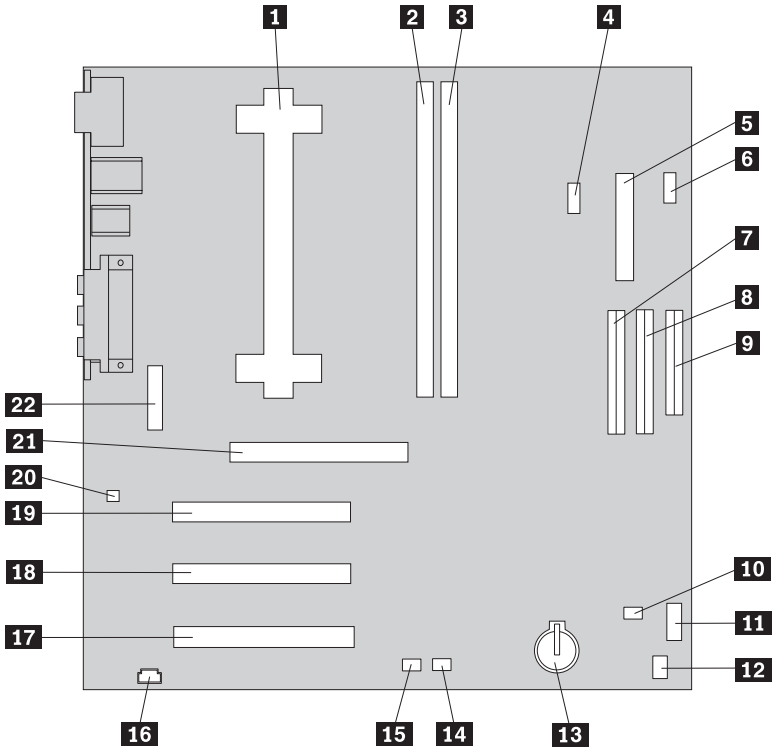
Accessing the system board

To access the system board, you must remove the computer cover. For information on removing the computer cover, see “Removing the cover” on page 59. Depending on your computer model, you might need to remove adapters in order to access some components of the system board. For information about expansion adapters, see “Working with adapters” on page 68. When disconnecting cables, be sure to note where they attach, so you can correctly reattach them later.

Note: For easier access to the system board, it helps to place the computer on its side.

Identifying parts on the system board

The system board, also called the *planar* or *motherboard*, is the main circuit board in your computer. It provides basic computer functions and supports a variety of devices that are IBM-installed or that you can install later. Refer to the following illustration for the location of parts on the system board.



- | | |
|---|--|
| 1 Microprocessor | 12 Small rocker-switch block |
| 2 DIMM 0 | 13 Battery |
| 3 DIMM 1 | 14 Reserved |
| 4 Fan connector | 15 Reserved |
| 5 Power connector | 16 CD audio connector (for integrated audio only) |
| 6 Switch/LED connector | 17 PCI adapter slot 1 |
| 7 Primary EIDE connector | 18 PCI adapter slot 2 |
| 8 Secondary EIDE connector | 19 PCI adapter slot 3 |
| 9 Diskette drive connector | 20 Chassis speaker connector |
| 10 Fan connector | 21 AGP adapter slot |
| 11 Large rocker-switch block (not on all models) | 22 MIDI/Joystick connector |

Note: Your system board might not have all connectors that are shown.

Setting the diskette write-protect switch

The diskette write-protect switch controls whether you can write information to a diskette using a diskette drive. The ability to prevent writing to a diskette is particularly useful if you are concerned about the security of information that can be obtained through a network or stored on your hard disk.

Note:

This switch does not affect the ability to read information from a diskette.

Before you begin:

- Read “Safety information” on page vii and “Handling static-sensitive devices” on page 57.
- Turn off the computer and all other connected devices.
- Disconnect all power cords and external cables attached to the computer, and then remove the computer cover (see “Removing the cover” on page 59).

1. Locate the small rocker switch on the system board. See “Identifying parts on the system board” on page 65. It might be helpful to use a small screwdriver or ballpoint pen to set the switch.
2. Set the switch as follows:
 - For read-only diskette operation, set switch 1 to the ON position. Write-protect is now enabled.
 - For normal diskette operation, set switch 1 to the OFF position. Write-protect is now disabled.

Working with memory

You can add memory to your computer to increase system performance. Your computer has two connectors for installing memory modules that provide up to a maximum of 512 MB of system SDRAM.

Your computer uses dual inline memory modules (DIMMs). The IBM-installed DIMMs that come with your computer are unbuffered, synchronous dynamic random access memory (SDRAM).

When installing or replacing DIMMs, the following rules apply:

- Fill each system memory connector sequentially, starting at *DIMM 0*.
- Use only 3.3 V, 133 MHz, unbuffered, SDRAM DIMMs.

- Use only 64, 128, or 256 MB DIMMs in any combination of supported SDRAM DIMMs.

Installing and removing a DIMM

Before you begin:

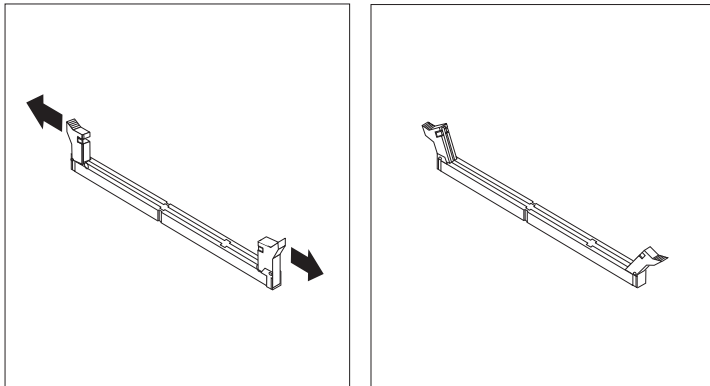
- Read “Safety information” on page vii and “Handling static-sensitive devices” on page 57.
- Read the instructions that come with the new system memory.
- Turn off the computer and all other connected devices.
- Disconnect all power cords and external cables attached to the computer, and then remove the computer cover (see “Removing the cover” on page 59).
- Read “Identifying parts on the system board” on page 65 to locate the memory connectors on the system board.

Notes:

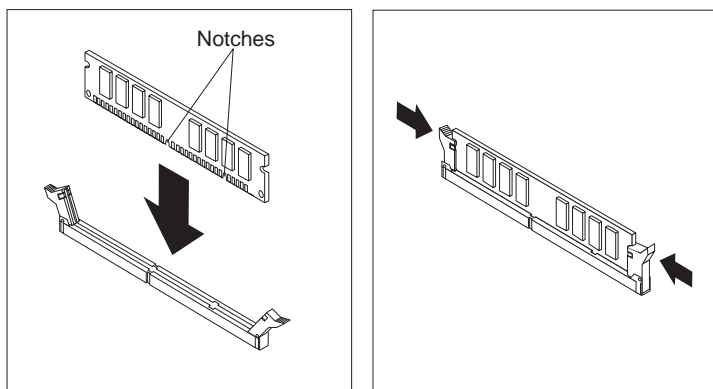
1. You might need to move the power supply to gain access to the DIMM sockets. See “Moving the power supply” on page 61.
2. You might also have to remove an adapter for clear access to the DIMM sockets. For more information about adapters, see “Working with adapters” on page 68.

To install a DIMM:

1. Open the module retaining clips on the DIMM socket.



2. Position the DIMM over the the connector making sure that the notches in the DIMM are aligned with the tabs on the connector.
3. Push the DIMM straight down into the connector until the retaining clips close.



4. Reinstall any adapters that you removed. See “Installing adapters” on page 69 for instructions to reinstall the adapter.
5. Reinstall the power supply if you removed it.

What to do next:

- To work with another option, go to the appropriate section.
- To complete the installation, go to “Completing the installation” on page 82.

Working with adapters

This section provides information and instructions for installing and removing adapters.

Adapters and expansion slots

Your computer system board has three expansion slots that support the peripheral component interconnect (PCI) architecture. Depending on your model, some of the expansion slots might already have adapters installed. There is also one advanced graphics port (AGP) expansion slot, which is occupied by the video adapter. You can install PCI adapters in any of the available PCI expansion slots as long as the adapter does not exceed 228 mm (9 inches) in length.

Most PCI adapters do not require any configuration before installation. However, always check the documentation provided with the adapter to see if any preparation has to be done to the adapter before it is installed. After the adapter is installed, it is recognized by the system and usually configured

automatically. However, there are circumstances in which you must use the Configuration/Setup Utility program to configure a PCI adapter. For information about these circumstances, see “Configuring PCI adapters” on page 84.

Note: If you install an audio adapter, you must disable the system-board audio, using the Configuration/Setup Utility program. The only exception to this is if you install an Aureal Audio PCI Adapter in PCI slot 1. In this case, the adapter is automatically detected and the system-board audio is disabled.

Some adapters require device drivers and other support software, which usually ship with the adapter. The method of installing device drivers varies; so, always follow the instructions in the documentation provided with the adapter to install any device drivers and support software.

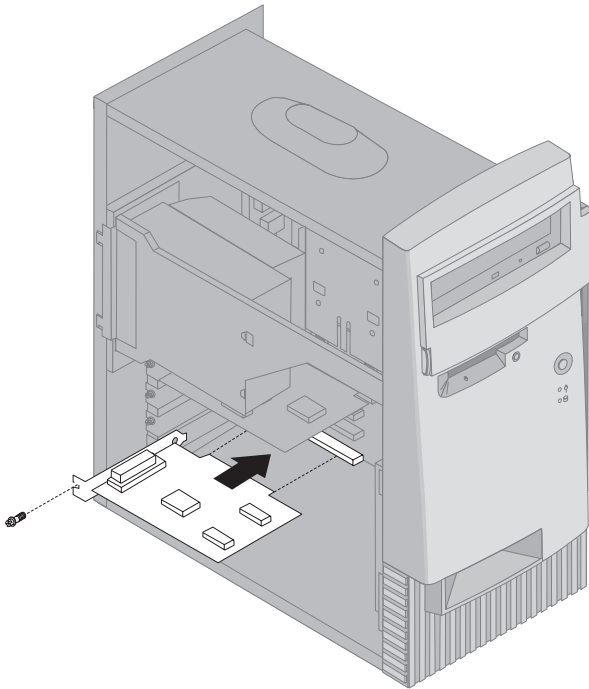
Installing adapters

Before you begin:

- Read “Safety information” on page vii and “Handling static-sensitive devices” on page 57.
- Read the instructions that come with the new adapter.
- Turn off the computer and all other connected devices.
- Disconnect all power cords and external cables attached to the computer, and then remove the computer cover (see “Removing the cover” on page 59).

To install an adapter:

1. Move the power supply aside if necessary. See “Moving the power supply” on page 61.
2. Remove the screw and slot cover for the appropriate expansion slot.
3. Remove the adapter from its static-protective package.
4. Install the adapter into the appropriate slot on the system board.
5. Install the screw that secures the adapter.



6. If you moved the power supply aside, replace it. See “Moving the power supply” on page 61.
7. Replace the cover and continue with “Configuring PCI adapters” on page 84.

What to do next:

- To work with another option, go to the appropriate section.
- To complete the installation, go to “Completing the installation” on page 82.

Working with internal drives

This section provides information and instructions for installing internal drives.

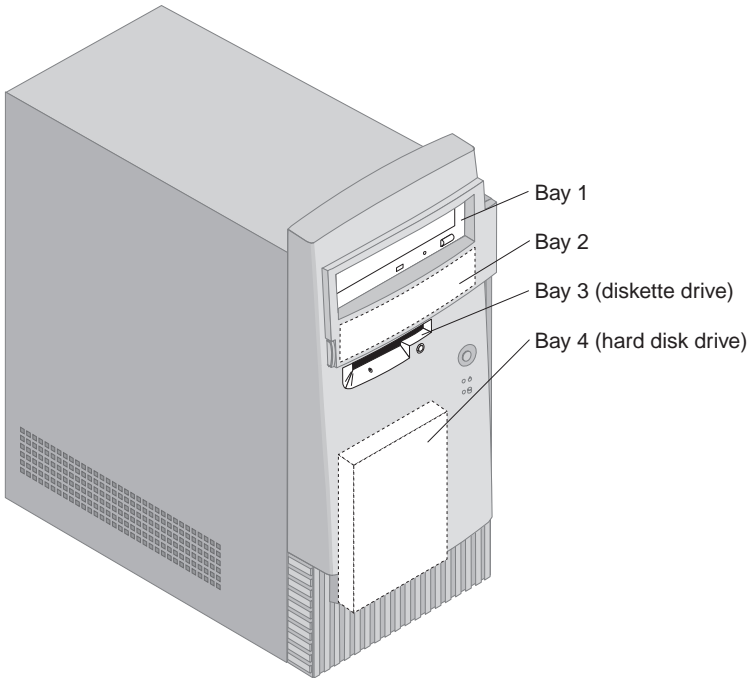
When you install an internal drive, it is important to note the type and size of the drive you can install in each bay. Also, it is important to correctly connect the internal drive cables to the installed drive.

Internal drives

Internal drives are devices that your computer uses to read and store data. You can add drives to your computer to increase storage capacity and to enable your computer to use other types of media. Some of the different drives available for your computer are:

- Hard disk drives
- Tape drives
- CD-ROM, DVD-ROM, and CD-RW drives

Your computer has four drive *bays* to accommodate various types of drives. In this book, bays are referred to as bay 1, bay 2, bay 3, and bay 4. On most models, three of the bays hold factory-installed drives and bay 2 is empty. Some models have drives installed in all four bays.



Drive specifications

The following describes some of the drives you can install in each bay and their height requirements.

Bay 1: This bay can accommodate a 5.25-inch drive that has a maximum height of 41.3 mm (1.6 in.). Normally, this bay holds a factory-installed CD-ROM, DVD-ROM, or CD-RW drive (varies by model).

Bay 2: This bay can accommodate a 5.25-inch drive such as a CD-ROM, DVD-ROM, or CD-RW drive. You can also install a 3.5 inch drive in this bay with a commercially-available 3.5-inch to 5.25-inch mounting kit. The maximum height for any drive is 41.3 mm (1.6 in.).

Bay 3 This bay contains the factory-installed 3.5-inch diskette drive. The maximum height for a replacement diskette drive is 25.4 mm (1.0 in.).

Bay 4: This bay contains the factory installed 3.5-inch hard disk drive. The maximum height for a replacement 3.5-inch hard disk drive is 25.4 mm (1.0 in.).

Power and signal cables for internal drives

Cables connect drives to the power supply and system board. The following cables are provided:

- Four-wire *power cables* connect most drives to the power supply. At the end of these cables are plastic connectors that attach to different drives; these connectors vary in size. Also, certain power cables attach to the system board.
- Flat *signal cables*, also called *ribbon cables*, connect the drives to EIDE and diskette drive connectors on the system board (see “Identifying parts on the system board” on page 65 for the location of these connectors). There are three drive signal cables in your computer:
 - Primary IDE cable: This cable connects the factory-installed hard disk drive to the Primary EIDE connector on the system board. This cable supports one drive only.
 - Secondary IDE cable: This cable connects the factory-installed CD-ROM, DVD-ROM, or CD-RW drive in bay 1 to the secondary EIDE connector on the system board. If a factory-installed drive is in bay 2, this cable supports that drive also. If there is not a factory-installed drive in bay 2, there is a spare connector on the cable that you can use, if you are installing an IDE drive in bay 2.
 - Diskette drive cable: This cable connects the factory-installed diskette drive to the diskette drive connector on the system board.

This cable supports one drive only. If you want to install a diskette drive in bay 2, you will have to replace this cable with a diskette cable that supports two drives.

Guidelines for connecting drives

The following are important points to remember when connecting power and signal cables to internal drives:

- If you replace any drives, it is important to remember which cable is attached to which drive.
- Ensure that the drive connector at the *end* of the signal cable is always connected to a drive; also, ensure that the drive connector at the other end is connected to the system board. This reduces electronic noise from the computer.
- If two IDE devices are used on a single cable, one must be designated as the master device and the other as the slave device. The master and slave designation is determined by switch or jumper settings on each IDE device.
- If two IDE devices are on a single cable, and only one is a hard disk drive, the hard disk drive must be set as the master device.
- If you have only one IDE device on a cable, it must be set as the master device.

Installing an internal drive

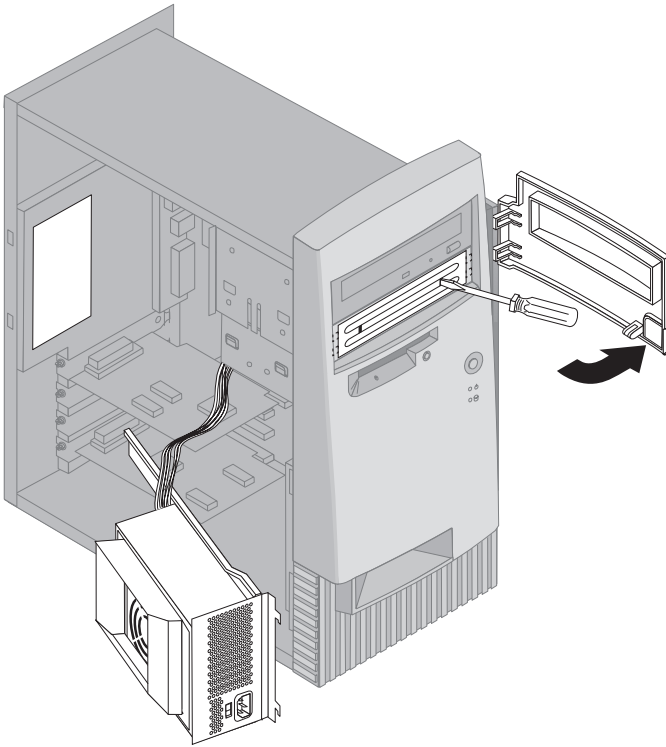
Before you begin:

- Read “Safety information” on page vii and “Handling static-sensitive devices” on page 57.
- Turn off the computer and all other connected devices.
- Disconnect all power cords and external cables attached to the computer, and then remove the computer cover (see “Removing the cover” on page 59).

To install an internal drive:

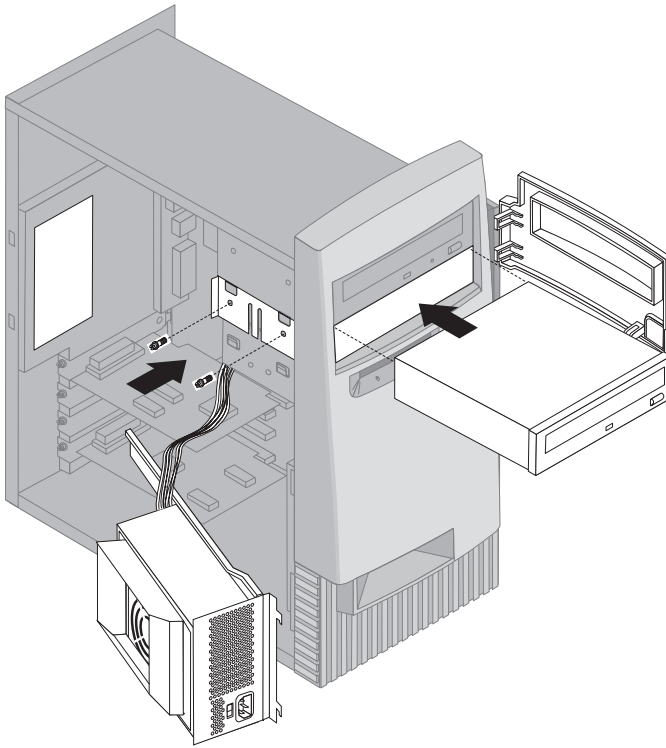
1. Move the power supply aside so you have clear access to the cables. See “Moving the power supply” on page 61.
2. Open the swinging door in front of bays 1 and 2.
3. Remove the drive bay panel from the bay into which you are installing the drive by inserting a flat-blade screwdriver in the cutout along the left edge of the panel and prying slightly to the left.

4. Insert a flat-blade screwdriver into one of the slots on the metal static shield and pry the static shield from the drive bay.



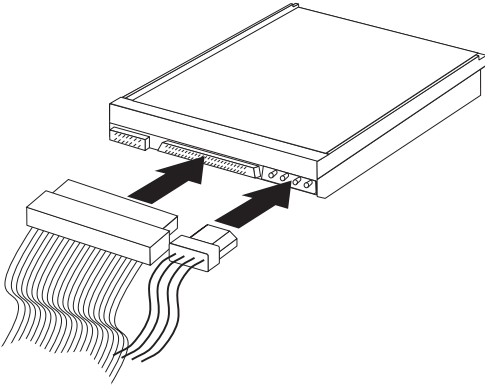
Note: To install a 3.5-inch drive into drive bay 2 (a 5.25-inch bay), you must use a commercially available 3.5-inch to 5.25-inch conversion kit, such as IBM PN 70G8165. For information on purchasing the kit, contact your IBM reseller or IBM marketing representative.

5. Install the drive in the bay. Align the screw holes and insert the two screws.



6. If the drive you installed has nonremovable media (such as a hard disk drive), replace the bay panel.

7. Connect the power and signal cables to the drive.



8. Replace the power supply by reversing the steps in “Moving the power supply” on page 61

What to do next:

- To work with another option, go to the appropriate section.
- To complete the installation, go to “Completing the installation” on page 82.

Removing internal drives

Before you begin:

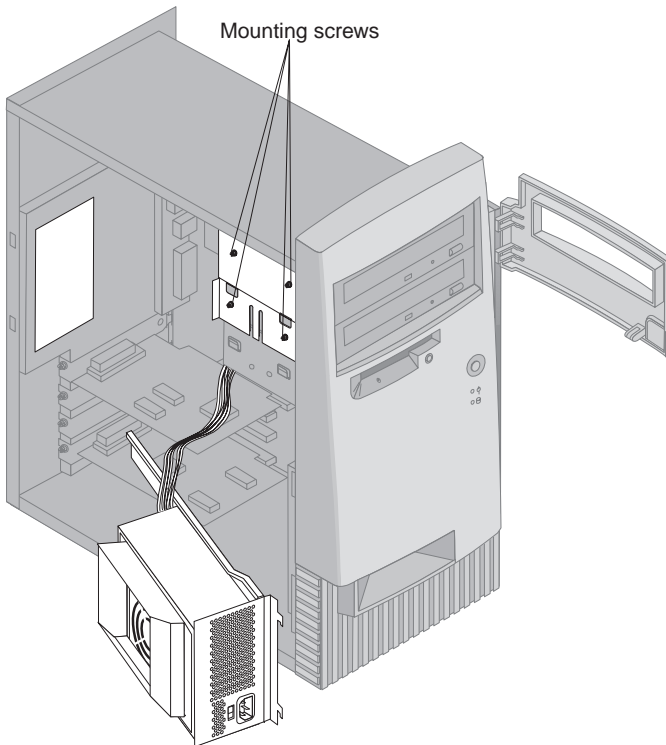
- Read “Safety information” on page vii and “Handling static-sensitive devices” on page 57.
- Turn off the computer and all other connected devices.
- Disconnect all power cords and external cables attached to the computer, and then remove the computer cover (see “Removing the cover” on page 59).

Removing a drive from bay 1 or 2

To remove a drive from bay 1 or 2:

1. Open the swinging door in front of bays 1 and 2.
2. If you are removing a hard disk drive from bay 2, go to step 3 on page 77. If you are removing any other type of drive from either bay 1 or 2, go to step 4 on page 77.

3. Remove the drive bay panel in front of bay 2 by inserting a flat-blade screwdriver in the cutout along the left edge of the panel and prying slightly to the left. Continue with step 4 on page 77.
4. Disconnect the signal and power cables from the rear of the drive.
5. Remove the two mounting screws that secure the drive in place.



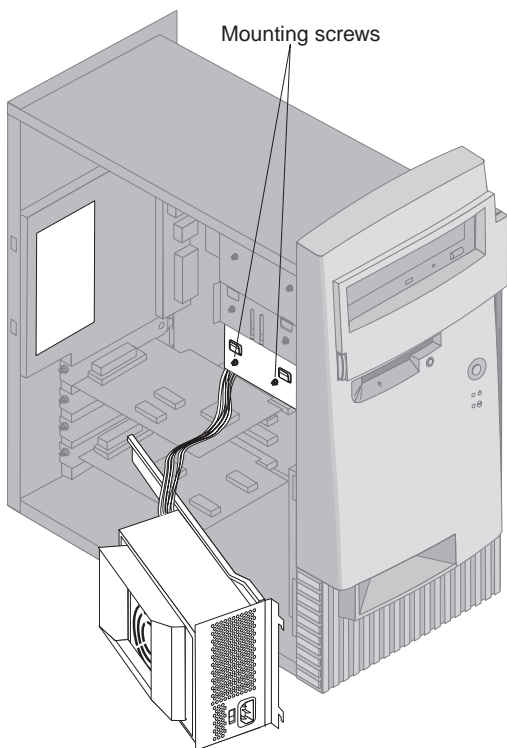
6. Slide the drive forward through the front of the computer and remove the drive.
7. To reinstall the drive, reverse this procedure.

Note: If you are replacing an IDE drive with a new drive, make sure that the drive settings (master or slave) on the replacement drive are the same as the drive you are replacing.

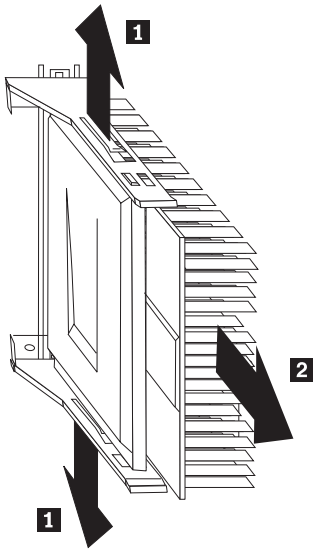
Removing a drive from bay 3

To remove the diskette drive from bay 3:

1. Move the power supply aside to gain access to the drive mounting screws. See "Moving the power supply" on page 61.
2. Disconnect the signal and power cables from the rear of the drive.
3. Remove the two mounting screws that secure the drive in place.



4. Remove the processor by spreading the lower retaining clips at each end of the processor, and then carefully lifting the processor straight out. Set the processor aside.

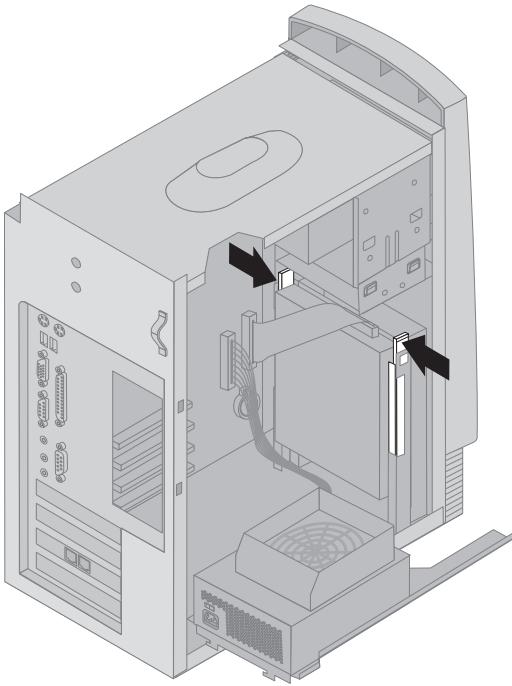


5. Slide the drive toward the rear of the computer and remove it from the bay.
6. To reinstall the drive, reverse this procedure.

Removing a drive from bay 4

To remove the hard disk drive from bay 4:

1. Move the power supply aside to gain access to the drive mounting clips. See "Moving the power supply" on page 61.
2. Locate the blue retaining clips on each side of the drive. The clip located closest to the system board is difficult to see.
3. Squeeze both blue retaining clips toward the drive; then, pivot the top of the drive toward the rear of the computer about 12.5 mm (0.5 in.).



4. Slide the drive toward the top of the computer until it clears the bay.
5. Move the drive into an open area and disconnect the signal and power cables from the rear of the drive.
6. To reinstall the drive, reverse this procedure.

Note: If you are replacing the hard disk drive with a new drive, make sure that the replacement drive is set as the master device.

Installing a security U-bolt

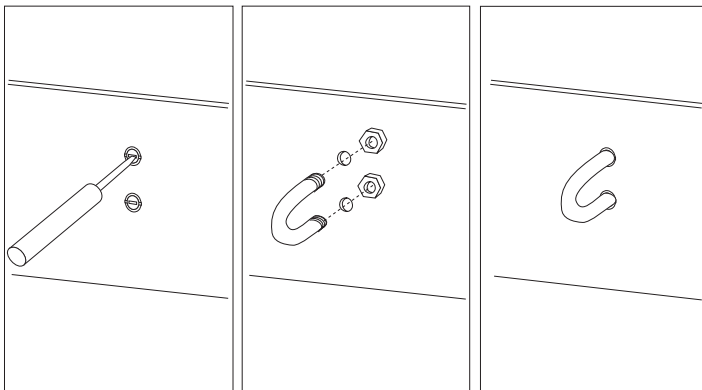
To help prevent hardware theft, you can use the cover lock loop with a padlock and add a security U-bolt and cable to your computer.

Before you begin:

- Obtain the following:
 - A 19-mm (3/4 in.) U-bolt and threaded nuts that fit the U-bolt
 - A security cable
 - A lock, such as a combination lock or padlock
 - A wrench to fit the nuts
 - A small, flat-blade screwdriver
- Read “Safety information” on page vii and “Handling static-sensitive devices” on page 57.
- Turn off the computer and all other connected devices.
- Disconnect all power cords and external cables attached to the computer, and then remove the computer cover (see “Removing the cover” on page 59).

To install a U-bolt:

1. Use a tool, such as a screwdriver, to remove the two metal knockouts from the back of the computer.



2. Insert the U-bolt through the holes; then attach and tighten the nuts.
3. Replace the computer cover. For more information, see “Replacing the cover and connecting the cables” on page 82.
4. Thread the cable through the U-bolt and around an object that is not a part of or permanently secured to the building structure or foundation and from which it cannot be removed; then fasten the cable ends together with a lock.

Completing the installation

After working with options, you need to reinstall any removed parts, replace the cover, and reconnect any cables, including power cords and communication cables. Also, depending on the option installed, you might need to update information in the Configuration/Setup Utility program.

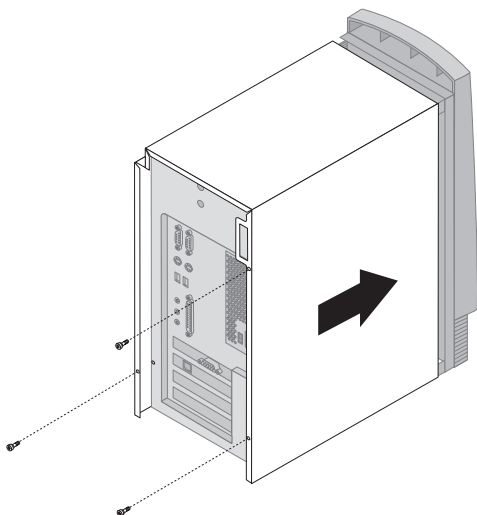
The following list is a quick reference to these procedures:

- “Replacing the cover and connecting the cables”
- “Updating the computer configuration” on page 83

Replacing the cover and connecting the cables

To replace the cover and connect cables to your computer:

1. Ensure that all components have been reassembled correctly and that no tools or loose screws are left inside your computer.
2. Clear any cables that might impede the replacement of the cover.
3. Position the cover over the chassis as shown and slide forward. You might need to lift the front of the cover slightly to align it properly.
4. Insert the three thumbscrews into the holes in the cover and the chassis and tighten.



5. Reconnect the external cables and cords to the computer.

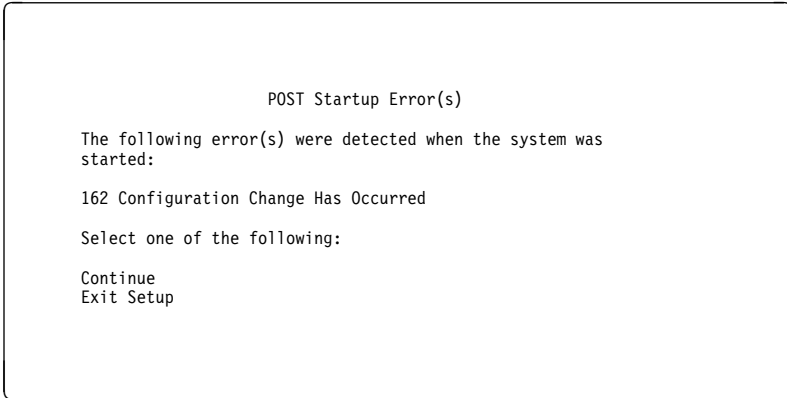
Updating the computer configuration

Important:

This section addresses the actions required to update configuration settings and install device drivers, if required, after a new option has been installed. For more information about using the Configuration/Setup Utility program, see the Chapter 4, "Using the Configuration/Setup Utility program" on page 27.

After adding, removing, or replacing options, the configuration settings must be updated. In most cases, this configuration update is performed automatically, and sometimes transparently.

In some cases, when you start your computer after installing or removing an option, a screen similar to the following might appear.



If a screen similar to the one shown appears, select **Continue** and press Enter. The Configuration/Setup Utility program automatically starts. From the Configuration/Setup Utility menu, do the following:

1. Select **Save Settings** and press Enter
2. Select **Exit Setup** and press Enter.

The computer will restart and the Windows operating system will open.

The Windows operating system will usually detect the new option, update its configuration information, and prompt you for device drivers, if required. Before installing any device drivers, always check the documentation provided with your option for specific instructions. Not all device drivers install in the same way. Some options might also require you to install other software.

Verifying that an option is installed correctly

To verify if a new adapter or drive is correctly installed and configured, do the following:

1. From the Windows desktop, use the right mouse button to click the **My Computer** icon; then, click **Properties**.
2. In the System Properties window, click the **Device Manager** tab.
3. Click **View devices by type**.
4. Click the plus sign next to each of the device types to expand the list.
 - If neither an X nor a circled exclamation point appears over any of the icons, all devices are working properly.
 - An X over an icon indicates that the device is disabled. A circled exclamation point over an icon indicates a resource conflict. If an X or a circled exclamation point appears over an icon, click **Properties** to learn more about the source of the problem.
 - If the device is not listed, it might not be physically installed correctly. Make sure the option is installed according to instructions, all cables and connections are secure, and any jumper or switch settings are correct.
 - If the device is listed under **Other devices**, a required device driver is either missing or installed incorrectly, or the operating system was not restarted after the device driver was installed. Restart the computer and recheck the device again. If it is still listed under **Other devices**, refer to the documentation that comes with the option and reinstall the device driver.

Configuring PCI adapters

Along with the documentation that comes with your adapter, use the following information to help with adapter configuration.

PCI adapters generally require no user configuration. The computer and operating system work together to automatically manage the resources required by each device installed in the computer and to assign resources to new devices in a manner that avoids system conflicts. However, two conditions might require you to change some settings in the Configuration/Setup Utility program:

- Parity checking

Some PCI adapters do not support parity checking (check the documentation that comes with your adapter). If you install a PCI adapter that does not support parity checking, you might need to disable parity checking on the PCI bus. To disable parity checking:

1. Start the Configuration/Setup Utility program (see “Starting and using the Configuration/Setup Utility program” on page 27).
 2. From the Configuration/Setup Utility program menu, select **Advanced Setup** and press Enter.
 3. Select **PCI Control** and press Enter.
 4. Use the arrow key (→ or ←) to set the PCI Parity setting to **Disabled**.
 5. Press Esc until you return to the Configuration/Setup Utility program menu.
 6. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility menu and press Enter.
 7. To exit from the Configuration/Setup Utility program, press Esc and follow the instructions on the screen.
- Automatic power on

If you install a PCI adapter that supports an automatic power-on function, you can enable the power-on function through the Configuration/Setup Utility program. When the automatic power-on function is enabled, the computer can be started remotely through a network or through the telephone lines, depending on the type of adapter installed. An example of this type of adapter is a modem that supports the ring-detection function. To enable the PCI Wakeup function:

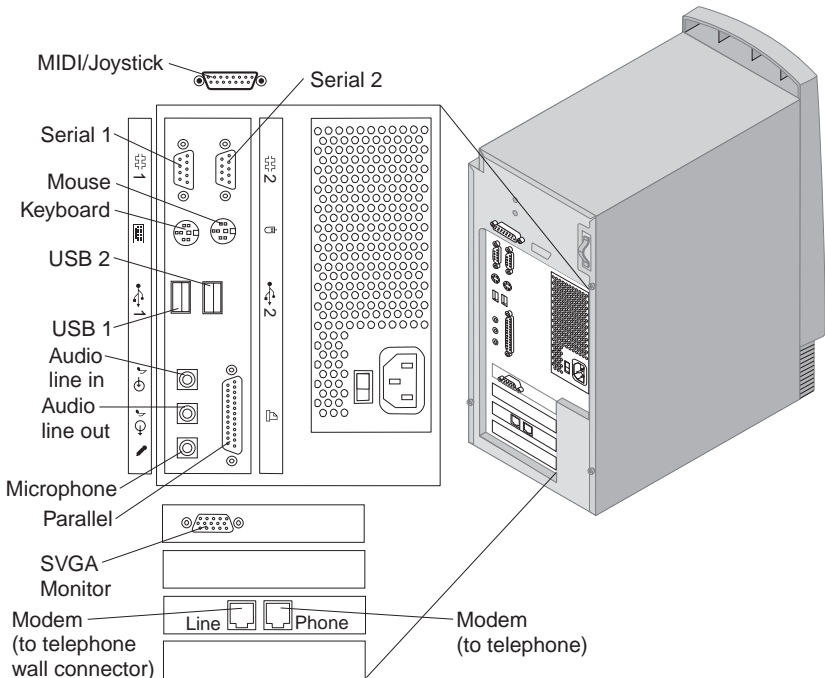
1. Start the Configuration/Setup Utility program (see “Starting and using the Configuration/Setup Utility program” on page 27).
2. From the Configuration/Setup Utility program menu, select **Power Management** and press Enter.
3. Select **Automatic Power On** and press Enter.
4. In the PCI Wakeup line or the PCI MODEM Ring Detect line (depending on the type of device), use the arrow key (→ or ←) to set the setting to **Enabled**. Then, in the corresponding Startup Sequence line, select either **Primary** (for primary power-on sequence) or **Automatic** (for automatic power-on sequence). For an explanation of the power-on sequence, see “Setting the startup sequence” on page 36.
5. Press Esc until you return to the Configuration/Setup Utility program menu.
6. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility menu and press Enter.
7. To exit from the Configuration/Setup Utility program, press Esc and follow the instructions on the screen.

Chapter 8. Installing external options

This chapter shows the various external connectors on your computer to which you can attach external options, such as a joystick, printer, or scanner. For some external options, you must install additional software in addition to making the physical connection. When adding an external option, use the information in this chapter to identify the required connector, and then use the instructions that come with the option for the installation instructions.

Important

Before you install or remove any option, read “Safety information” on page vii. These precautions and guidelines will help you work safely.



Note: If your model comes with a factory-installed, high-performance audio adapter installed in expansion slot 1, the MIDI/Joystick, Audio line out, Audio line in, and Microphone connectors shown in the above illustration are disabled. For more information about the

high-performance audio adapter, see “High-performance audio adapter” on page 90.

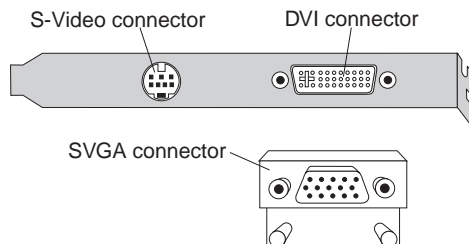
Modem connections vary by country and region. If a telephone splitter is provided, use the splitter to attach the modem cable and telephone cable to the telephone wall connector. If a converter is provided, use the converter to attach the modem cable to the telephone wall connector.

Connector	Description
MIDI/Joystick connector	Use this connector to attach a joystick, gamepad, or a Musical Instrument Digital Interface (MIDI) device such as a MIDI keyboard.
Serial connectors	Use either of these connectors to attach an external modem, serial printer, or other device that uses a 9-pin serial connector. The serial connector marked 1 is the primary serial connector; the serial connector marked 2 is the alternate serial connector.
Keyboard connector	Use this connector to attach a keyboard that uses a standard keyboard connector.
Mouse connector	Use this connector to attach a mouse, trackball, or other pointing device that uses a standard mouse connector.
USB connectors	Use either of these connectors to attach a device that requires a Universal Serial Bus (USB) connection, such as a USB scanner or USB printer. If you have more than two USB devices, you can purchase a USB hub, which you can use to connect additional USB devices. The USB connector marked 1 is the primary USB connector; the USB connector marked 2 is the alternate USB connector.
Parallel connector	Use this connector to attach a parallel printer, parallel scanner, or any other device that requires a 25-pin parallel connection.
Audio line-out connector	Use this connector to send audio signals from the computer to external devices, such as powered stereo speakers (speakers with built-in amplifiers), headphones, multimedia keyboards, or the Audio line-in connector on a stereo system or other external recording device. Note: The internal speaker in your computer is disabled when external speakers are connected to the Audio line-out connector on your computer.

Connector	Description
Audio line-in connector	Use this jack to receive audio signals from an external audio device, such as a stereo system. When you attach an external audio device, run the cable between the Audio line-out connector of the device and the Audio line-in connector of the computer.
Microphone connector	Use this connector to attach a microphone to your computer when you want to record voice or other sounds on the hard disk or if you use speech-recognition software.
Monitor connector	Use this connector for most SVGA monitors.

High-performance video adapter

Some models come with a high-performance video adapter.

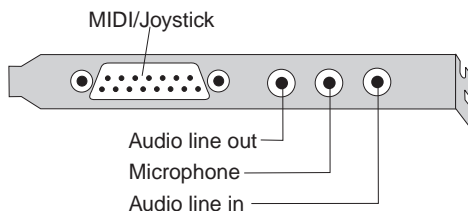


Connector	Description
Digital video interface (DVI) connector	Use this connector for a digital monitor. This connector provides the signals necessary to support the Display Power Management Signaling (DPMS) standard.
SVGA monitor converter	Use this converter to attach analog SVGA monitors to the DVI connector.
S-Video connector	Use this connector to attach a television set that has an S-Video connector. The S-Video cable (required to connect the television set to the adapter) is a separately purchased item.

High-performance audio adapter

If this adapter is installed in expansion slot 1, the MIDI/Joystick, Audio line out, Audio line in, and Microphone connectors on the system board are disabled. This disablement feature applies to this audio adapter only. The internal speaker of the computer is also disabled during normal operation. You must use external speakers or headphones for audio.

The following shows the connectors on the high-performance audio adapter shipped in some models.



Connector	Description
Audio line-out connector	Use this connector to send audio signals from the computer to external devices, such as powered stereo speakers (speakers with built-in amplifiers), headphones, multimedia keyboards, or the Audio line-in connector on a stereo system or other external recording device.
Audio line-in connector	Use this connector to receive audio signals from an external audio device, such as a stereo system. When you attach an external audio device, run the cable between the Audio line-out connector of the device and the Audio Line In connector of the computer.
Microphone connector	Use this connector to attach a microphone to your computer when you want to record voice or other sounds on the hard disk or if you use speech-recognition software.
MIDI/Joystick connector	Use this connector to attach a joystick, gamepad, or a Musical Instrument Digital Interface (MIDI) device such as a MIDI keyboard.

ADSL modem

Some models have an Asymmetric Digital Subscriber Line (ADSL) modem for high-speed communication. To use an ADSL modem, you must have the correct telephone wiring in your home or office and you must be enrolled with an ADSL service provider.

Depending on how your home or office is wired, the ADSL modem uses either wires 2 and 5 or wires 3 and 4 of the telephone-line wall connector. Refer to the label on the back of the ADSL modem and set the switch on the back of the ADSL modem to match the wiring scheme. If you do not know which wiring scheme to use, contact your ADSL service provider.

Home PNA Network card with integrated modem

Some models have a Home Phoneline Network Alliance (PNA) Network card with an integrated V.90 modem. In addition to its modem function, this card allows you to use the telephone wiring in your home for peer-to-peer networking. To use the Home PNA Network card, you must install the Intel® AnyPoint™ software from the Software Selections CD. Each computer on the home PNA network must have a home PNA network card and the associated software installed. For information about using the PNA Network card or the AnyPoint software, refer to the AnyPoint documentation (provided with PNA models only).

Connect each computer on a home PNA network directly to a telephone-line wall connector. If you have more computers than telephone-line wall connectors in a room, use a telephone splitter at the wall connector.

Actual network transfer speeds depend on many factors, such as home wiring configuration, and are often less than the maximum possible.

Some Internet Service Provider (ISP) accounts do not allow or charge extra for Internet sharing. Your ISP access agreement might require you to have more than one account. Check your ISP access agreement for more information.

Chapter 9. Troubleshooting

This chapter describes tools that you can use to diagnose and correct computer problems. This chapter also contains information about option diskettes and reinstalling device drivers from the *Product Recovery and Diagnostics* CD.

To start diagnosing a problem, go to “Troubleshooting procedure.” This step-by-step procedure is the starting point for diagnosing most computer related problems. Depending on the symptom and computer responses, it will direct you to the other diagnostic tools.

Note: If your computer is functional enough to run the diagnostic programs and you are unable to isolate and repair the problem, you will need the log files created by the diagnostic programs when you call IBM and speak to a technical-support representative.

If you suspect a problem with the operating system, check the operating-system documentation supplied with your computer and the operating-system help system provided on your computer. If you have installed software applications yourself, see the documentation and help systems supplied with the software.

Troubleshooting procedure

Use this procedure as a starting point for problem isolation.

Note

If your computer does not start when you press the power switch, do the following:

- Make sure your computer and monitor are connected to working electrical outlets. If the outlets are controlled by a wall switch, make the wall switch is in the On position.
- Make sure all cables are securely connected to the correct locations (see Chapter 8, “Installing external options” on page 87).

If this does not correct the problem, have the computer serviced.

001

- Remove all diskettes and CDs from the drives.
- Turn off the computer and wait a few seconds.
- Turn on the monitor, speakers, and any other attached devices; then, turn on the computer.

(Step **001** continues)

001 (continued)

- Wait the normal amount of time for the first screen of your application or the operating system to display.

Is either the Windows desktop or the first screen of your application program displayed?

Yes No

002

Continue at Step 004.

003

The power-on self-test (POST) did not detect a problem. Further diagnostic testing is required.

Go to “IBM Diagnostic Programs” on page 123 and run the diagnostic programs. If you are unable to run the diagnostic programs or if the diagnostic programs do not detect an error, go to “Device troubleshooting charts” on page 104.

004

You have an unreadable display, an error message, or the computer is sounding a series of beeps.

Is an error message displayed?

Yes No

005

Do you hear a series of beeps?

Yes No

006

- Go to “Monitor problems” on page 111. Find the symptom that best describes the problem and take the appropriate actions. If the problem persists, have the computer serviced.

007

Go to “POST beep codes” on page 103.

008

- Refer to “POST error codes” on page 97 and look for the error message; then return here.

(Step **008** continues)

008 (continued)

Is the error message in this table?

Yes No

009

The message might be from your software. Refer to documentation for your application program.

010

Did the Configuration/Setup Utility program start automatically after the error message displayed?

Yes No

011

– Follow the action for this error message described in “POST error codes” on page 97.

012

Have you recently added, removed, or changed any hardware?

Yes No

013

Have the computer serviced.

014

Do one of the following:

- If the failure occurred *immediately* after installing or removing an option, and you have not yet updated the configuration, see “Updating the computer configuration” on page 83.
- If the computer was functioning correctly after installing an option and is now malfunctioning, have the computer serviced.
- If the failure occurred immediately after making a change to the Configuration/Setup Utility program, do the following:
 1. At the POST Startup Errors screen, select **Continue** and press Enter. The Configuration/Setup Utility menu appears on the screen. You will see a pointer (▶) next to any menu items for components that are malfunctioning or that have been changed since the last time you turned on your computer.
 2. Select the menu item that is flagged (or that you wish to view) by pressing Up Arrow (↑) or Down Arrow (↓), and then press Enter.
 3. A new menu specific to the item that you selected appears. Press Left Arrow (←) or Right Arrow (→) to toggle between choices for a menu item. (Note that each menu item has a Help screen. To view

the Help screen, select the menu item, and then press F1.)

4. When you have finished viewing and changing settings, press Esc to return to the Configuration/Setup Utility program menu.
5. Before you exit from the program, select **Save Settings**. When you exit from the Configuration/Setup Utility program menu, your operating system will start automatically (unless there is an unresolved problem with the startup device).

Important

If you did *not* change any settings in the Configuration/Setup Utility program, note the following:

- If you exit from the Configuration/Setup Utility program without selecting **Save Settings**, the computer will attempt to start the operating system, but might fail because of the unresolved problem. When the computer restarts, you will get a POST error message, and then the Configuration/Setup Utility program will again start automatically.
- If you select **Save Settings**, and then exit the Configuration/Setup Utility program, your computer will save all settings as they appeared in the Configuration/Setup Utility program and your operating system will start (unless there is an unresolved problem with the startup device).

To exit from the Configuration/Setup Utility program, press Esc and follow the instructions on the screen.

For more information about what caused an error message to appear and what action to take, refer to the POST error list.

Power-on self-test (POST)

Each time you turn on your computer, it performs the *power-on self-test (POST)*, a series of tests that check the basic operation of the base computer.

POST modes of operation

POST has two modes of operation:

- Quick mode: The quick mode runs an abbreviated set of tests. This is the default mode of operation.
- Enhanced mode: The enhanced mode runs an extended set of tests, which take longer to complete. During the tests, you see memory being counted at the top left corner of the screen.

Note: The amount of available memory shown might be somewhat less than expected because of basic input/output system (BIOS) shadowing requirements.

You can select the enhanced mode of operation through the **Start Options** menu of the Configuration/Setup Utility program.

If POST finishes without detecting a problem, the Windows operating system loads, unless you have set a power-on password. If you have set a power-on password, a password prompt appears, and you must enter your password first; then, the operating system will load. For more information on passwords, see “Using passwords” on page 30.

Power on status

There are no visual or audio cues that indicate POST is being run, other than a momentary delay during startup and the memory count in the Enhanced mode. However, you can enable a set of audio and visual indicators by enabling **Power On Status** in the **Start Options** menu of the Configuration/Setup Utility program. When **Power On Status** is enabled, a set of checkpoint indicators appears at the top right corner of the screen while POST is running. The checkpoint indicators change as each test completes. Upon the successful completion of POST, the computer sounds a single beep.

POST error codes and messages

If POST detects a problem, you will hear multiple beeps. In most cases, the beeps are accompanied by a POST error code. POST error codes are 3-, 4-, 5-, 8-, or 12-character alphanumeric messages. A description of the error is sometimes displayed beside the code. In some cases, the screen might display multiple error codes and descriptions. For more information about what caused an error message to appear and what action to take, see “POST error codes” and “POST beep codes” on page 103.

POST error codes

Within the POST error charts, the letter *x* represents any numeric character.

Table 1 (Page 1 of 7). POST error codes

Code	Description	Action
101	Interrupt failure	Have the computer serviced.
102	Timer failure	Have the computer serviced.

Table 1 (Page 2 of 7). POST error codes

Code	Description	Action
106	System board failure	Have the computer serviced.
114	External ROM checksum error	If the problem started after installing an adapter, remove the adapter and restart the computer. If the problem corrects itself, the most likely cause is the adapter that you removed. If the problem persists, have the computer serviced.
129	Level 1 cache error	Have the computer serviced
131	POST detected a system-board voltage out of range	Have the computer serviced
135	Microprocessor fan failure	Have the computer serviced
151	Real time clock failure	Go to Chapter 4, "Using the Configuration/Setup Utility program" on page 27, start the Configuration/Setup Utility program, and reset the date and time. If the problem persists have the computer serviced.
161	Defective CMOS Battery	Replace the battery. See "Replacing the battery" on page 129.
162	A change in device configuration occurred	<ol style="list-style-type: none"> 1. Verify that all external devices are turned on. 2. Verify that all devices are properly installed and securely connected. 3. If you added, removed, or changed the location of a device, you must save the new configuration in the Configuration/Setup Utility program. See "Updating the computer configuration" on page 83 and Chapter 4, "Using the Configuration/Setup Utility program" on page 27 for more information.

Table 1 (Page 3 of 7). POST error codes

Code	Description	Action
163	Date and time incorrect	Go to Chapter 4, "Using the Configuration/Setup Utility program" on page 27, start the Configuration/Setup Utility program, and reset the date and time. If the problem persists have the computer serviced.
164	CMOS RAM memory size does not match	Go to "Memory problems" on page 116.
166	Boot block checksum error	Have the computer serviced.
167	Processor BIOS not updated	Update the BIOS. BIOS updates are available as downloadable files on the World Wide Web (see "The World Wide Web" on page 41) or through the Update Connector program. Instructions for installing an update are in a README file included with the update file.
183	Administrator password required	Type the administrator password.
187	Administrator password and startup sequence have been cleared.	Go to Chapter 4, "Using the Configuration/Setup Utility program" on page 27 and follow the instructions to set an administrator password and the startup sequence.
20x	Memory error	Go to "Memory problems" on page 116.
301 or 303	Keyboard error	<ol style="list-style-type: none"> 1. Make sure nothing is resting on the keys or wedged between the keys 2. Make sure the keyboard is properly connected. 3. If the keyboard is properly connected, have the computer serviced.

Table 1 (Page 4 of 7). POST error codes

Code	Description	Action
604	Unsupported diskette drive installed	<ol style="list-style-type: none"> 1. Go to "IBM Diagnostic Programs" on page 123 and if possible run the IBM Enhanced Diagnostics program. 2. If the problem persists, have the computer serviced.
605	Diskette unlocked problem	Have the computer serviced.
662	Diskette drive configuration error	<ol style="list-style-type: none"> 1. Go to Chapter 4, "Using the Configuration/Setup Utility program" on page 27 and start the Configuration/Setup Utility program. Verify that the diskette drive is enabled and the configuration for the drive is correct. If you change any settings, make sure you save the settings before you exit the Configuration/Setup Utility program. 2. Make sure the diskette drive cables are correctly installed and securely connected to the drive and system board. 3. Run diagnostics on the diskette drive. See "IBM Diagnostic Programs" on page 123. 4. If the problem persists, have the computer serviced.
762	Math coprocessor configuration error	Have the computer serviced.
962	Parallel port configuration error	Go to "Parallel-port problems" on page 121.
11xx	Serial port error (xx = serial port number)	Go to "Serial-port problems" on page 121.

Table 1 (Page 5 of 7). POST error codes

Code	Description	Action
1762 or 17	Hard disk configuration error	<ol style="list-style-type: none"> 1. Go to Chapter 4, "Using the Configuration/Setup Utility program" on page 27 and start the Configuration/Setup Utility program. Verify that the hard disk is enabled and the configuration for the drives is correct. If you change any settings, make sure you save the settings before you exit the Configuration/Setup Utility program. 2. Make sure the hard disk cables are correctly installed and securely connected to the drives and system board. 3. If the problem persists, have the computer serviced.
178x	Hard disk or other IDE device failed	<ol style="list-style-type: none"> 1. Go to Chapter 4, "Using the Configuration/Setup Utility program" on page 27 and start the Configuration/Setup Utility program. Verify that all installed IDE drives are enabled and the configuration for the drives is correct. If you change any settings, make sure you save the settings before you exit the Configuration/Setup Utility program. 2. Make sure the cables are correctly installed and securely connected to the IDE drives and system board. 3. If the problem persists, have the computer serviced.

Table 1 (Page 6 of 7). POST error codes

Code	Description	Action
18xx	A PCI adapter has requested an unavailable resource.	Go to Chapter 4, "Using the Configuration/Setup Utility program" on page 27, start the Configuration/Setup Utility program, and reconfigure the PCI devices.
1962	No startup device found	<ol style="list-style-type: none">1. Go to Chapter 4, "Using the Configuration/Setup Utility program" on page 27 and follow the instructions to verify that the startup sequence is configured correctly.2. If the problem persists, have the computer serviced.
2400	Display adapter failed; using alternate	Have the computer serviced.
2462	Video configuration error	If you added or changed video adapters, go to Chapter 4, "Using the Configuration/Setup Utility program" on page 27, start the Configuration/Setup Utility program, verify the new configuration, and save the settings. If the problem persists, have the computer serviced.

Table 1 (Page 7 of 7). POST error codes

Code	Description	Action
5962	IDE CD-ROM configuration error	<ol style="list-style-type: none"> 1. Go to Chapter 4, "Using the Configuration/Setup Utility program" on page 27 and start the Configuration/Setup Utility program. Verify that all installed IDE drives are enabled and the configuration for the drives is correct. If you change any settings, make sure you save the settings before you exit the Configuration/Setup Utility program. 2. Make sure the cables are correctly installed and securely connected to the IDE drives and system board. 3. If the problem persists, have the computer serviced.
860x	Pointing device or system board error	Have the computer serviced.
I9990301	Hard disk failure	Have the computer serviced.

POST beep codes

Beep codes are to be used as a last resort only. If the beeps are accompanied by an error code, use the error code for diagnostic purposes. For information about error codes, see "POST error codes" on page 97. If any tone other than one short beep sounds, have your computer serviced. No beep or one beep and the appearance of text on the monitor indicate successful completion of POST. More than one beep or a long, solid tone indicates that POST detected an error.

If the following beep codes occur, make a note of the beep code, and then have the computer serviced. When you call for service, the HelpCenter technician will use the beep code to determine the failing part.

Beep code	Probable cause
1-1-3	CMOS write/read failure

Beep code	Probable cause
1-1-4	BIOS ROM checksum failure
1-2-1	Programmable interval timer test failure
1-2-2	DMA initialization failure
1-2-3	DMA page register write/read test failure
1-2-4	RAM refresh verification failure
1-3-1	First 64 K RAM test failure
1-3-2	First 64 K RAM parity test failure
1-4-3	Fail-safe timer test in progress
1-4-4	Software NMI port test in progress
2-1-1	Secondary DMA register test in progress or failure
2-1-2	Primary DMA register test in progress or failure
2-1-3	Primary interrupt mask register test failure
2-1-4	Secondary interrupt mask register test failure
2-2-2	Keyboard controller test failure
2-3-2	Screen memory test in progress or failure
2-3-3	Screen retrace tests in progress or failure

Device troubleshooting charts

You can use the troubleshooting charts in this section to find solutions to problems that have definite symptoms.

Important

If you find it necessary to remove the computer cover, first read "Safety information" on page vii and "Removing the cover" on page 59 for important safety information and instructions.

If you have just added new software or a new computer option and your computer is not working, do the following before using the troubleshooting charts:

1. Remove the software or device you just added.
2. Run the diagnostic programs to determine if your computer is running correctly. (See "IBM Diagnostic Programs" on page 123 for information about diagnostic programs provided with your computer.)
3. Reinstall the new software or new device.

The following directory will help you quickly locate problem categories in the troubleshooting charts.

Problem type	Go to:
Audio	"Audio problems" on page 106
CD	"CD problems" on page 107
DVD	"DVD problems" on page 109
Diskette drive	"Diskette-drive problems" on page 110
General	"General problems" on page 113
Intermittent	"Intermittent problems" on page 113
Joystick or gamepad problems	"Joystick or gamepad problems" on page 114
Keyboard, mouse, or pointing device	"Keyboard, mouse, or pointing-device problems" on page 115
Memory	"Memory problems" on page 116
Modem	"Modem problems" on page 116
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Printer	"Printer problems" on page 122
Serial port 1	"Serial-port problems" on page 121
Serial port 2	"Serial-port problems" on page 121
Software	"Software problems" on page 123
Universal Serial Bus ports	"Universal Serial Bus port problems" on page 123

Audio problems

Audio problems	Action
No audio in Windows.	<ol style="list-style-type: none">1. Make sure your external speakers are turned on and the volume control on the speaker is not set too low.2. Check the Windows Volume Control program to ensure the volume settings are not set too low or that the mute setting is not enabled. To access the Windows Volume Control program, do the following:<ol style="list-style-type: none">a. From the Windows desktop, click Start.b. Select Programs.c. Select Accessories.d. Select Multimedia.e. Click Volume Control.3. Make sure your speakers are connected properly. If your speakers have a power light, make sure the light is lit. For instructions on connecting your speakers, refer to the <i>Setup Guide</i> sheet or the instructions that came with your speakers. For audio connector locations, see, Chapter 8, "Installing external options" on page 87.<p>Important: If you have a factory-installed, high-performance audio adapter installed in PCI slot 1, the speakers must be connected to the line-out connector on the adapter, not the line out connector on the system board.</p>4. Make sure the program you are using is designed for use in Windows. If the program is designed to run in DOS, it does not use Windows sound features and must be configured to use Sound Blaster Pro or Sound Blaster emulation. <p>If these actions do not correct the problem, run the diagnostic programs (see "IBM Diagnostic Programs" on page 123). If you need technical assistance, see Chapter 5, "IBM HelpWare support and services" on page 39.</p>

Audio problems	Action
No audio when you play DOS games or use DOS programs.	<ol style="list-style-type: none"> <li>1. Make sure the game or program is configured to use Sound Blaster Pro or Sound Blaster emulation. Refer to the documentation that came with your DOS program for instructions on selecting sound card settings. <li>2. Shut down and restart your computer in MS-DOS mode. Then try to run the program again. <p>If these actions do not correct the problem, run the diagnostic programs (see "IBM Diagnostic Programs" on page 123). If you need technical assistance, see Chapter 5, "IBM HelpWare support and services" on page 39.</p>

CD problems

CD problems	Action
An audio or AutoPlay-enabled disc does not automatically play when inserted into the drive.	<p>Make sure you have the Windows AutoPlay feature enabled. To enable the AutoPlay feature, do the following:</p> <ol style="list-style-type: none"> <li>1. From the Windows desktop, double-click My Computer. <li>2. In the My Computer window, double-click Control Panel. <li>3. In the Control Panel window, double-click System. <li>4. In the System Properties window, click the Device Manager tab. <li>5. Double-click the CD-ROM or DVD-ROM list item and then double-click the listed CD-ROM option. <li>6. In the Properties window, click the Settings tab. <li>7. Under Options, click the Auto insert notification check box to add a check to the box. <li>8. Click OK to exit the Properties window and save the setting. <li>9. Click OK to exit the System Properties window. <p>If this procedure does not correct the problem, run the diagnostic programs (see "IBM Diagnostic Programs" on page 123). If you need technical assistance, see Chapter 5, "IBM HelpWare support and services" on page 39.</p>

CD problems	Action
A CD or DVD does not work.	<ul style="list-style-type: none"><li>• Verify that the disc is inserted correctly, with its label up.<li>• Make sure that the disc you are using is clean. To remove dust or fingerprints, wipe the CD with a clean, soft cloth from the center to the outside. Wiping the CD in a circular direction might cause loss of data.<li>• Verify that the disc you are using is good and not scratched or damaged. Try inserting another disc that you know is good. If you cannot read from a known-good disc, you might have a problem with your drive. Check that the power-supply cable and signal cable are securely connected to the drive (see Chapter 7, "Installing internal options" on page 57 for cover removal instructions).<li>• Use the Configuration/Setup Utility program to verify that the drive is enabled (see Chapter 4, "Using the Configuration/Setup Utility program" on page 27).

If these actions do not correct the problem, run the diagnostic programs (see "IBM Diagnostic Programs" on page 123). If you need technical assistance, see Chapter 5, "IBM HelpWare support and services" on page 39.

DVD problems

DVD problems	Action
Black screen instead of DVD video.	<ol style="list-style-type: none">1. Restart the DVD player program.2. Close any open files, shut down Windows, and restart your computer. <p>If you need technical assistance, see Chapter 5, "IBM HelpWare support and services" on page 39.</p>
DVD movie will not play.	<ol style="list-style-type: none">1. Make sure that the disc surface is clean and not scratched.2. Check the disc or package for regional coding. You might need to purchase a disc with coding for the region in which you are using your computer. <p>If you need technical assistance, see Chapter 5, "IBM HelpWare support and services" on page 39.</p>
No audio or intermittent audio while playing DVD movie.	<ol style="list-style-type: none">1. Check the volume control settings in Windows and on your speakers.2. Make sure that the disc surface is clean and not scratched.3. Check all cable connections to and from the speakers.4. Use the DVD menu for the video to select a different audio track. <p>If you need technical assistance, see Chapter 5, "IBM HelpWare support and services" on page 39.</p>
Playback is very slow or choppy.	<ol style="list-style-type: none">1. Disable any background programs, such as AntiVirus or Desktop Themes.2. Ensure that video resolution is set to less than 1152 x 864.3. Make sure that the DMA box is checked in Device Manager for the DVD-ROM drive. <p>If you need technical assistance, see Chapter 5, "IBM HelpWare support and services" on page 39.</p>
Invalid disk or no disk found message	<ol style="list-style-type: none">1. Ensure that a DVD video is in the drive with the shiny side of the disk facing down.2. Ensure that video resolution is set to less than 1152 x 864.3. On systems with a CD-ROM or CD-RW drive as well as a DVD-ROM drive, make sure that the DVD is in the drive labeled "DVD" <p>If you need technical assistance, see Chapter 5, "IBM HelpWare support and services" on page 39.</p>

Diskette-drive problems

Diskette-drive problems	Action
Diskette drive in-use light stays on, or the system bypasses the diskette drive.	<p>If there is a diskette in the drive, verify that:</p> <ol style="list-style-type: none"><li>1. The diskette drive is enabled. Use the Configuration/Setup Utility program to check this. For more information, see Chapter 4, "Using the Configuration/Setup Utility program" on page 27.<li>2. The computer is checking for the diskette drive in the startup sequence. Use the Configuration/Setup Utility program to verify this.<li>3. The diskette you are using is good and not damaged. Try inserting another diskette if you have one.<li>4. The diskette is inserted correctly, with its label up and its metal shutter end first in the drive.<li>5. The diskette contains the necessary files to start the computer (the diskette must be startable).<li>6. The diskette drive cables are properly installed and securely connected.<li>7. There is no problem with your software program (see "Software problems" on page 123). <p>If you cannot correct the problem, have the computer serviced.</p>

Monitor problems

Monitor problems	Action
General monitor problems.	<p>Some IBM monitors have their own self-tests. If you suspect a problem with your monitor, see the information supplied with the monitor for adjustment and testing instructions.</p> <p>If you cannot find the problem, check the other listings on monitor problems in this table.</p> <p>If you cannot correct the problem, have the computer serviced.</p>
Wavy, unreadable, rolling, distorted, or jittery screen images.	<p>If the monitor self-tests show that the monitor is working properly, verify that:</p> <ol style="list-style-type: none">1. The location of the monitor is appropriate. Magnetic fields around other devices, such as transformers, appliances, fluorescent lights, and other monitors might be causing the problem. To determine if the location is causing the problem:<ol style="list-style-type: none">a. Turn off the monitor. (Moving a color monitor while it is turned on might cause screen discoloration.)b. Adjust the placement of the monitor and other devices so that they are at least 305 mm (12 in.) apart. Also, when relocating the monitor, be sure it is at least 75 mm (3 in.) from the diskette drives to prevent diskette drive read/write errors.c. Turn on the monitor.2. An IBM monitor signal cable is properly connected to the monitor and computer, and that the cable is installed securely. Non-IBM monitor signal cables might cause unpredictable problems.3. You are not trying to run your monitor at a higher refresh rate than the monitor supports. See the documentation supplied with your monitor for supported refresh rates. <p>Note: An enhanced monitor signal cable with additional shielding might be available for your monitor. See your IBM reseller or marketing representative for information.</p> <p>If you cannot correct the problem, have the computer serviced.</p>

Monitor problems	Action
Screen flickers.	<p>Set the monitor for the highest, noninterlaced refresh rate supported by your monitor and the video controller in your computer.</p> <p>Attention: Using a resolution or refresh rate that is not supported by your monitor might damage it.</p> <p>You can reset the refresh rate through your operating system, using the instructions provided in the README files. See your operating-system documentation for further information on monitor settings.</p> <p>If this does not correct the problem, have the monitor and computer serviced.</p>
The monitor works when you turn on the system, but goes blank when you start some application programs.	<p>Verify that:</p> <ol style="list-style-type: none"> 1. The monitor signal cable is securely connected to the monitor and the monitor connector on the graphics adapter. For the location of the monitor connector on the graphics adapter installed in your computer, see Chapter 8, "Installing external options" on page 87. 2. The necessary device drivers for the application programs are installed. <p>If you cannot correct the problem, have the computer serviced.</p>
The monitor works when you turn on the system, but goes blank after some period of computer inactivity.	<p>The computer is probably set for energy savings with the power-management feature. If the power-management feature is enabled, disabling it or changing the settings might solve the problem (see "Using power-management features" on page 18).</p> <p>If you cannot correct the problem, have the computer serviced.</p>
Blank screen.	<p>Verify that:</p> <ol style="list-style-type: none"> 1. The computer power cord is plugged into the computer and a working electrical outlet. 2. The monitor is turned on and the Brightness and Contrast controls are adjusted correctly. 3. The monitor signal cable is securely connected to the monitor and the monitor connector on the system board. To find the monitor connector on the system board, see Chapter 8, "Installing external options" on page 87. <p>If you cannot correct the problem, have the computer serviced.</p>
Only the cursor appears.	Have the computer serviced.

Monitor problems	Action
Wrong characters appear on the screen.	Have the computer serviced.

General problems

General problems	Action
The computer does not start when you press the power switch.	Verify that: <ol style="list-style-type: none">1. All cables are securely connected to the proper connectors on the computer. For the location of the connectors, see Chapter 8, "Installing external options" on page 87.2. The computer cover is properly installed. If you cannot correct the problem, have the computer serviced.
Problems such as a broken cover lock or indicator lights not working.	Have the computer serviced.

Intermittent problems

Intermittent problems	Action
A problem occurs only occasionally and is difficult to repeat.	Verify that: <ol style="list-style-type: none">1. All cables and cords are securely connected to the rear of the computer and attached devices.2. When the computer is turned on, the fan grill is not blocked (there is air flow around the grill), and the fans are working. If airflow is blocked or the fans are not working, the computer might overheat.3. If SCSI devices are installed, the last external device in each SCSI chain is terminated correctly. (See your SCSI documentation.) If you cannot correct the problem, have the computer serviced.

Joystick or gamepad problems

Joystick or gamepad problems	Action
Joystick or gamepad does not work or does not work properly.	<ol style="list-style-type: none"><li>1. Make sure that the joystick or gamepad is properly connected to the computer.<li>2. You might need to recalibrate the joystick or gamepad. You can recalibrate a joystick or gamepad in the Joystick section of the Windows Control Panel.<li>3. Refer to the documentation that came with the joystick or gamepad for additional troubleshooting information.

If these actions do not correct the problem, run the diagnostic programs (see "IBM Diagnostic Programs" on page 123). If you need technical assistance, see Chapter 5, "IBM HelpWare support and services" on page 39.

Keyboard, mouse, or pointing-device problems

Keyboard, mouse, or pointing-device problems

Action

All or some keys on the keyboard do not work.

Verify that:

1. The computer and the monitor are turned on.
2. The keyboard cable is securely connected to the keyboard connector on the computer. For the location of the keyboard connector, see Chapter 8, "Installing external options" on page 87.
3. If one or more of the Rapid Access buttons are the only keys that are not working, you might have these buttons disabled or not assigned to a function. Use the help system in the the Rapid Access Customization Keyboard program to help diagnose problems with Rapid Access Buttons. To access the program and start the help system:
 - a. From the Windows desktop, click **Start**.
 - b. Select **Settings**, and then click **Control Panel**.
 - c. Double-click **Keyboard (Rapid Access)**. The Rapid Access Keyboard Customization program starts.
 - d. Click **Help**.

If you cannot correct the problem, have the computer serviced.

The mouse or pointing device does not work.

Verify that:

1. The mouse or pointing-device cable is securely attached to the proper connector on the computer. Depending on the type of mouse you have, the mouse cable will connect to either the mouse or serial connector. To find the mouse and serial connectors, see Chapter 8, "Installing external options" on page 87.
2. The device drivers for the mouse are installed correctly.

If you cannot correct the problem, have the computer and the device serviced.

Memory problems

Memory problems	Action
The amount of memory displayed is less than the amount of memory installed.	<p>The amount of available memory shown might be somewhat less than expected because of basic input/output system (BIOS) shadowing and other resource requirements (such as ACPI and USB).</p> <p>Verify that:</p> <ol style="list-style-type: none">1. You have installed the correct type of DIMMs for your computer. See “Working with memory” on page 66 for instructions on adding DIMMs.2. The DIMMs are properly installed and securely connected.3. If you added or removed memory, you saved the new configuration before exiting the Configuration/Setup Utility program. <p>If the problem persists, run the memory test from the diagnostic program supplied with your computer. (See “IBM Diagnostic Programs” on page 123 for further information.) The system might have detected a bad DIMM and automatically reallocated memory to enable your computer to continue to operate.</p> <p>If you cannot correct the problem, have the computer serviced.</p>

Modem problems

Modem problems	Action
When you try to use the modem, your computer or modem is unable to detect a dial tone.	<ol style="list-style-type: none">1. Make sure the telephone line is correctly connected to your computer. Connections for a standard modem are shown in Chapter 8, “Installing external options” on page 87. If you are using other communication devices in conjunction with the modem, such as an ADSL adapter or home networking adapter, refer to the documentation for those devices to ensure the cords are properly connected.2. Make sure no one is using the telephone.3. Make sure the telephone line is working.4. Add the modem command x3 to the initialization string for the communications program you are using. For help with changing the initialization string, refer to the documentation that came with your communications program.

Modem problems**Action**

General modem/communication problems.

1. Make sure the telephone cords are connected correctly and securely. Connections for a standard modem are shown in Chapter 8, "Installing external options" on page 87. If you are using other communication devices in conjunction with the modem, such as an ADSL adapter or home networking adapter, refer to the documentation for those devices to ensure the cords are properly connected.
2. Make sure the telephone line works. If you have a telephone connected to the modem, try making a call. If you do not have a telephone connected to the modem, plug a telephone into the same telephone outlet that the computer is plugged into (remember to reconnect the computer to the telephone outlet after verifying that the line is working).
3. Make sure you are calling the correct number, and that you are using the correct communications settings. For additional help, refer to the documentation for your communications software.
4. Make sure no one else is using the telephone while you are communicating with another computer.
5. If you have call waiting, make sure it is disabled.
6. If some communications programs work, but others do not, there might be a configuration problem. For additional help, refer to the documentation for your communications software.
7. Make sure your modem cord is attached to an analog telephone line. The local telephone company can determine the type of telephone line.
8. Make sure the modem is securely installed inside the computer. (See Chapter 7, "Installing internal options" on page 57 for cover removal instructions.)

If these actions do not correct the problem, run the diagnostic programs (see "IBM Diagnostic Programs" on page 123). If you need technical assistance, see Chapter 5, "IBM HelpWare support and services" on page 39.

Modem problems	Action
When you try to use the modem, it does not work.	<ol style="list-style-type: none"> 1. If you added, changed, or reinstalled a modem, make sure it is installed correctly. 2. Make sure your communications program is configured correctly. The following settings are generally compatible: <ul style="list-style-type: none"> • Modem settings: <ul style="list-style-type: none"> – Generic Hayes-type modem – Hayes-compatible error correcting – Hayes-compatible high speed – User-defined modem – Hayes modem – Other <p>If you select a modem type of Other, you must include the proper modem initialization string. For most programs, the initialization string AT&F will work.</p> • Baud rate: 115200 Kbps or the maximum setting offered by your communications software • COM port: COM1 <p>For help on how to configure your communications program, refer to the documentation that came with your communications program.</p> <p>If these actions do not correct the problem, run the diagnostic programs (see “IBM Diagnostic Programs” on page 123). If you need technical assistance, see Chapter 5, “IBM HelpWare support and services” on page 39.</p>

Modem problems	Action
You added a second modem and it does not work.	<p>Make sure that:</p> <ol style="list-style-type: none">1. The telephone line is connected to the modem you want to use.2. The communications software you are using is properly configured to use the second modem.3. The second modem is properly configured. A second modem must use a COM port and system IRQ different from the first modem. <p>For help on how to configure, refer to the documentation that came with your communications program.</p> <p>If these actions do not correct the problem, run the diagnostic programs (see "IBM Diagnostic Programs" on page 123). If you need technical assistance, see Chapter 5, "IBM HelpWare support and services" on page 39.</p>

Option problems

Option problems	Action
An IBM option that was just installed does not work.	<p>Verify that:</p> <ol style="list-style-type: none"><li>1. The option is designed for your computer.<li>2. You followed the installation instructions supplied with the option and in Chapter 7, "Installing internal options" on page 57.<li>3. All option files (if required) are installed correctly. See "Installing files from option diskettes and CDs" on page 128 for information about installing option files.<li>4. You have not loosened other installed options or cables.<li>5. If the option is an adapter, you have provided enough hardware resources for the adapter to function correctly. See the documentation supplied with the adapter (as well as the documentation for any other installed adapters) to determine the resources required for each adapter.<li>6. You updated the configuration information in the Configuration/Setup Utility program, if necessary, and have no conflicts. For more information, see Chapter 4, "Using the Configuration/Setup Utility program" on page 27.) <p>If the problem persists, run the diagnostic programs. (See "IBM Diagnostic Programs" on page 123 for information about diagnostic programs provided with your computer.)</p> <p>If you cannot correct the problem, have the computer and the option serviced.</p>

Option problems	Action
An IBM option that previously worked does not work now.	<p>Verify that all option hardware and cable connections are secure.</p> <p>If the option comes with its own test instructions, use those instructions to test the option.</p> <p>If the failing option is a SCSI option, verify that:</p> <ol style="list-style-type: none"> 1. The cables for all external SCSI options are connected correctly. 2. The last option in each SCSI chain, or the end of the SCSI cable, is terminated correctly. 3. All external SCSI options are turned on. External SCSI options must be turned on before the system is turned on. <p>For more information, see your SCSI documentation.</p> <p>If you cannot correct the problem, have the computer serviced.</p>

Parallel-port problems

Parallel-port problems	Action
Parallel port cannot be accessed.	<ol style="list-style-type: none"> 1. Use Windows Device Manager to verify that each port is assigned a unique address. 2. Make sure that the parallel-port adapter, if you added one, is properly installed and firmly seated. See Chapter 7, "Installing internal options" on page 57 for instructions on adding adapters. <p>If you cannot correct the problem, have the computer serviced.</p>

Serial-port problems

Serial-port problems	Action
Serial port cannot be accessed.	<ol style="list-style-type: none"> 1. Use Windows Device Manager to verify that each port is assigned a unique address. 2. Make sure the serial-port adapter, if you added one, is properly installed and firmly seated. See Chapter 7, "Installing internal options" on page 57 for instructions on adding adapters. <p>If you cannot correct the problem, have the computer serviced.</p>

Printer problems

Printer problems	Action
The printer does not work.	<p>Verify that:</p> <ol style="list-style-type: none"><li>1. The printer is turned on and is online.<li>2. The printer signal cable is securely connected to the correct parallel, serial, or USB port on the computer. (See Chapter 8, "Installing external options" on page 87 for the location of the parallel, serial, and USB ports.) Note: Non-IBM printer signal cables might cause unpredictable problems.<li>3. You have assigned the printer port correctly in your operating system or application program.<li>4. You have assigned the printer port correctly in the Configuration/Setup Utility program. For more information, see Chapter 4, "Using the Configuration/Setup Utility program" on page 27.<li>5. If the problem persists, run the tests described in the documentation that comes with your printer. <p>If you cannot correct the problem, have the computer serviced.</p>

Software problems

Software problem	Action
Software does not work as expected.	<p>To determine if problems are caused by installed software, verify that:</p> <ol style="list-style-type: none">1. Your computer has the minimum memory requirements needed to use the software. See the information supplied with the software to verify memory requirements. <p>Note: If you have just installed an adapter or memory, you might have a memory address conflict.</p> <ol style="list-style-type: none">2. The software is designed to operate on your computer.3. Other software works on your computer.4. The software you are using works on another computer. <p>If you received any error messages while using the software program, see the information supplied with the software for a description of the messages and solutions to the problem.</p> <p>If you cannot correct the problem, have the computer serviced.</p>

Universal Serial Bus port problems

Universal Serial Bus port problems	Action
The Universal Serial Bus ports cannot be accessed.	<p>Verify that the USB device is properly installed and firmly seated.</p> <p>If you cannot correct the problem, have the computer serviced.</p>

IBM Diagnostic Programs

Your computer comes with two diagnostic programs:

- **PC-Doctor for Windows:** This diagnostic program is provided on the *Software Selections* CD. You must install the program on your hard disk before you can use it. PC-Doctor for Windows works through the Windows operating system to diagnose hardware problems and report operating-system-controlled settings that can cause hardware failures. For instructions on installing PC-Doctor for Windows, see "Installing

PC-Doctor for Windows” on page 124. For instructions on using PC-Doctor for Windows, see “Starting PC-Doctor for Windows” on page 124.

- IBM Enhanced Diagnostics: This program is on the *Product Recovery and Diagnostics* CD. IBM Enhanced Diagnostics works independently of Windows and runs tests directly on the hardware. IBM Enhanced Diagnostics is generally used under the following conditions:
 - When computer problems prevent you from using PC-Doctor for Windows
 - When PC-Doctor for Windows and other diagnostic methods have not been successful in isolating a problem suspected to be hardware related

In most cases, run PC-Doctor for Windows first. If PC-Doctor for Windows does not detect an error, run IBM Enhanced Diagnostics. This provides the most thorough and effective way of diagnosing a problem. Save and print the log files created by both versions of diagnostics. If you are unable to isolate and repair the problem yourself, you will need the logs when you speak to an IBM technical-support representative. (The log file created by PC-Doctor for Windows is automatically saved in C:\PCDR\DETAILED.TXT.)

Installing PC-Doctor for Windows

To install PC-Doctor for Windows, do the following:

1. Turn on your computer and wait for the Windows desktop to appear.
2. Insert the *Software Selections* CD into the CD-ROM drive. The Software Selections program starts automatically.
3. Scroll down to **PC-Doctor**, and click the box so that a check mark is visible.
4. Click **Install**. A pop-up message appears.
5. Click **OK**.
6. After the program has been installed, click **Exit**.

Starting PC-Doctor for Windows

To start the PC-Doctor for Windows, do the following:

1. From the Windows desktop, in the Access Aptiva menu, click **Get Help**.
2. Click **Diagnose Problems**.

Note: If **Diagnose Problems** is not listed as a menu selection, PC-Doctor for Windows has not been installed. See “Installing PC-Doctor for Windows” for installation instructions.

If you removed the Access Aptiva program, you can access PC-Doctor for Windows from the Windows desktop by doing the following:

1. Click **Start**.
2. Select **Programs**.
3. Select **PC-Doctor for Windows**
4. Click **PC-Doctor for Windows**.

For additional information about running PC-Doctor for Windows, refer to the PC-Doctor for Windows help system.

Starting the IBM Enhanced Diagnostics program

To start the IBM Enhanced Diagnostics program, do the following:

1. Insert the *Product Recovery and Diagnostics* CD into the CD-ROM drive.
2. Shut down your operating system and turn off your computer and any attached devices. Wait for the power light to turn off.
3. Turn on all attached devices; then turn on your computer.
4. When you see the Main Menu, use the cursor movement keys to select **System Utilities**; then, press Enter.
5. From the System Utilities menu, select **Run Diagnostics**, and press Enter.
6. From the menu bar, select **Diagnostics**, and press Enter.
7. Select **Run Normal Test**, and press Enter.

Reinstalling device drivers

When you reinstall device drivers, you are changing the current configuration of your computer. Reinstall device drivers only when it is necessary to correct a problem with your computer. Copies of the device drivers that come preinstalled on your Aptiva PC are located on the Aptiva *Product Recovery and Diagnostics* CD in a folder called Drivers.

If you need to reinstall a device driver, refer to the Drivers folder on the CD and choose the appropriate device subfolder. Reinstall the device driver using one of the following methods:

- In the device subfolder, look for a README.TXT file or other file with the .TXT extension. This file might be named after the operating system, such as WIN98.TXT. The text file contains information on how to reinstall that device driver.

-or-

- Use the Add New Hardware program (located in the Windows Control Panel) to reinstall the device driver. Not all device drivers can be reinstalled using this program. If the device subfolder contains a file with an .INF extension, you can use the Add New Hardware program. In the Add New Hardware program, when prompted for the device driver you want to install, click **Have Disk** and **Browse**. Then select the appropriate device driver file from the Aptiva *Product Recovery and Diagnostics* CD.
- or-
- In the device subfolder, look for a SETUP.EXE file. Double-click the SETUP.EXE file and follow the instructions on the screen.

Recovering factory-installed programs and files

Your Aptiva PC comes with programs and files installed on the hard disk. These preinstalled programs and files are also included on the *Product Recovery and Diagnostics* CD. In some cases, the original programs and files on the hard disk can become damaged. If this happens, you will need to reinstall them on the hard disk.

You might also install programs from other sources and create your own files. When you install programs, the installation process might change certain configuration files that the operating system uses. Be sure to make regular backup copies of these configuration files and any files you create.

When you make backup copies of the operating system configuration files, copy the original directory structure. When you reinstall the files, you must put them into the original directory structure. If you do not, the computer might not work correctly.

Note: Some models come with the ConfigSafe program, which runs in the background. ConfigSafe automatically takes a “snapshot” of your configuration files. Before doing a full recovery, you might want to start ConfigSafe and restore system files to see if an earlier snapshot might fix your problem.

To recover all factory-installed system and program files, follow these steps to perform a full-recovery operation:

Attention: All personal data in the computer will be lost. If possible, back up important files before starting the procedure.

1. Insert the *Product Recovery and Diagnostics* disc into your CD or DVD drive.
2. Make sure you do not have a diskette, CD, or DVD in any other drive.
3. Shut down and turn off your computer.

4. Wait 15 seconds.
5. Turn on your monitor and computer.
6. When you see the IBM Product Recovery Program Main Menu, select **Full Recovery** and follow the instructions on the screen.
7. Remove the disc before you restart your computer at the end of the recovery.
8. After the Aptiva software has been reinstalled, copy your personal configuration and data files back into their original directories on the hard disk.

If the *Product Recovery and Diagnostics* CD does not start automatically, use the Configuration/Setup Utility program to verify that the startup sequence has a CD drive listed before the hard disk. From the factory, the startup sequence is set as follows: Diskette drive is the first startup device, CD drive is the second startup device, and hard disk is the third startup device. For more information about selecting startup devices, see Chapter 4, "Using the Configuration/Setup Utility program" on page 27.

Recovering from a POST/BIOS update failure

If power to your computer is interrupted while POST/BIOS is being updated (flash update), your computer might not restart correctly. If this happens, perform the following procedure to recover:

1. Turn off the computer and any attached devices, such as printers, monitors, and external drives.
2. Unplug all power cords from electrical outlets and remove the cover. See "Removing the cover" on page 59.
3. Refer to "Identifying parts on the system board" on page 65 to locate the small rocker-switch block.
4. Remove any adapters that impede access to the switch block. For more information about adapters, see "Working with adapters" on page 68.
5. Move switch 2 on the small rocker-switch block from the OFF position to the ON position. It might be helpful to use a ballpoint pen to change the position of the switch.
6. Replace any adapters that were removed, and replace the cover. See "Replacing the cover and connecting the cables" on page 82.
7. Reconnect the power cords for the computer and monitor to electrical outlets.
8. Insert the POST/BIOS update (flash) diskette into drive A and turn on the monitor and computer. The update program starts automatically.

9. Follow the prompts on the screen.
Note: Do not remove the diskette or restart the computer until prompted to do so by a message on the screen.
10. After the update session completes, turn off the monitor and computer.
11. Remove the POST/BIOS update (flash) diskette.
12. Unplug the power cords and remove the computer cover. See “Removing the cover” on page 59.
13. Move switch 2 back to the OFF position.
14. Replace the computer cover.
15. Plug in the power cords.
16. Turn on the monitor and all installed external devices, and then turn on the computer.
17. When the computer enters the Configuration/Setup Utility program and posts a 162 error, press Enter. The Error screen appears.
18. In the Error screen, select **Automatically reconfigure system and continue**, and then press Enter.
19. Reset the date and time.
20. Save the settings, exit from the Configuration/Setup Utility program, and then turn off the computer.
21. Restart the computer.

After you finish this procedure, you might need to reconfigure some settings in the Configuration/Setup Utility program. Start the Configuration/Setup Utility program and reset any settings that have changed.

Installing files from option diskettes and CDs

An optional device such as an adapter, printer, or CD-ROM drive might come with a diskette or CD. Diskettes or CDs that are included in option packages usually contain files that the system needs for recognizing and activating the option. Until you install the necessary files, the new device might cause an error message or might not function.

If your optional device or adapter comes with a diskette or CD, follow the instructions that come with the option to install any required files.

Replacing the battery

Your computer has a special type of memory that maintains the date, time, and settings for built-in features, such as serial- and parallel-port assignments (configuration). A battery keeps this information active when you turn off the computer.

The battery requires no charging or maintenance throughout its life; however, no battery lasts forever. If the battery fails, the date, time, and configuration information (including passwords) are lost. An error message is displayed when you turn on the computer.

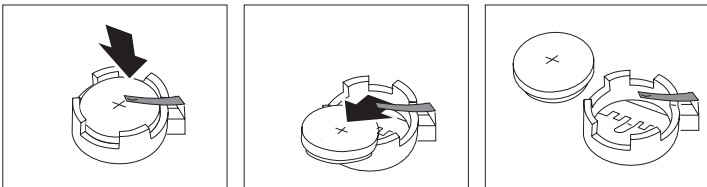
Before replacing the battery, review the “Lithium battery notice” on page x for safety and handling precautions.

If you replace the original lithium battery with a heavy-metal battery or a battery with heavy-metal components, be aware of the following environmental consideration. Batteries and accumulators that contain heavy metals must not be disposed of with normal domestic waste. They will be taken back free of charge by the manufacturer, distributor, or representative, to be recycled or disposed of in a proper manner.

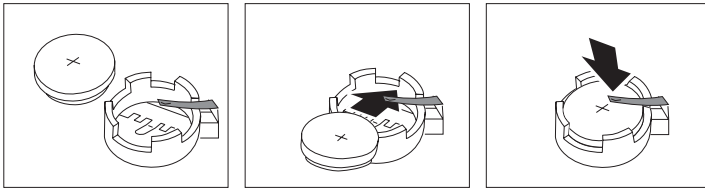
For further information on battery disposal, call IBM at 1-800-IBM-4333 (1-800-426-4333) in the U.S. For information outside of the U.S., contact your IBM reseller or marketing representative.

To change the battery:

1. Turn off the computer and all attached devices.
2. Unplug the power cord and remove the cover. See “Removing the cover” on page 59.
3. Locate the battery. Refer to the system board label inside your computer or see “Identifying parts on the system board” on page 65.
4. If necessary, remove any adapters that impede access to the battery. See “Installing adapters” on page 69 for more information.
5. Remove the old battery.



6. Install the new battery.



7. Replace any adapters that were removed to gain access to the battery. See “Installing adapters” on page 69 for instructions for replacing adapters.
8. Replace the cover and plug in the power cord.
Note: When the computer is turned on for the first time after battery replacement, an error message might be displayed. This is normal after replacing the battery.
9. Turn on the computer and all attached devices.
10. Use the Configuration/Setup Utility program to set the date and time and any passwords. For more information about the Configuration/Setup Utility program, see “Starting and using the Configuration/Setup Utility program” on page 27.
11. Dispose of the old battery as required by local ordinances or regulations.

Appendix A. Computer records

This appendix contains a form for recording information about your computer, which can be helpful if you ever need to have your computer serviced.

Record and retain the following information.

Product Name	Aptiva PC
Machine type (M/T)-model	_____
Serial Number (S/N)	_____
Date of purchase	_____
Registration number	_____

The machine type (M/T) and model numbers and the serial number (S/N) for your computer are located on a label on the rear of the computer and also on a label on the front of the computer located at the bottom-right corner.

The registration number is required for service or support. You can register your computer by telephone when call for service or support. See “What to do before you call” on page 44 for more information about registering your Aptiva PC.

Appendix B. Computer features

Note: The following information applies to the standard and optional features on computer models that were available when this book was written. Features and options can vary by country or region. Some features listed here might not be available in your location. Additional features might be available as options or as standard features in some regions or countries.

System summary

The following information covers a variety of models. For a listing of features for your specific model, refer to the System Summary screen in the Configuration/Setup Utility program. See Chapter 4, "Using the Configuration/Setup Utility program" on page 27 for more information.

Microprocessor:

- Intel® Pentium®
- Speed varies by model (see the System Summary screen)

Memory:

- Two dual inline memory module (DIMM) sockets
- Requires 133 MHz synchronous dynamic random access memory (SDRAM)
- Supports 64 MB, 128 MB, and 256 MB DIMMs
- Maximum memory capacity: 512 MB

Expansion slots:

- One AGP video/graphics slot
- Three PCI slots

Internal drives and bays:

- Four drive bays total
 - Two 5.25-inch bays with external access
 - One 3.5-inch bay for the factory-installed diskette drive
 - One 3.5-inch bay for the factory-installed hard disk drive (no external access)
- One 3.5-inch, 1.44 MB diskette drive
- One internal 3.5-inch EIDE hard disk drive (capacity varies by model – see the System Summary screen)
- EIDE CD-ROM, DVD-ROM, or CD-RW drive (varies by model – some models have a combination of these drives)

AGP 3D video adapter (varies by model):

- SR9 AGP 2X adapter (standard video)
 - S3 Savage4 LT video controller
 - 8 MB of SDRAM
 - 15-pin SVGA connector
- or–
- NVIDIA AGP 4X adapter (high-performance video option)
 - TNT2 M64 video controller
 - 32 MB of SDRAM
 - Digital Visual Interface (DVI) connector for flat panel monitor
 - SVGA converter provides a standard 15-pin connector for analog VGA/SVGA monitors
 - S-Video connector for television support

Audio (varies by model)

- Allegro audio controller (standard audio)
 - 16-bit SoundBlaster Pro compatible
 - Integrated on the system board
- or–
- Aureal Audio PCI Adapter (high-performance audio option)
 - 16-bit SoundBlaster Pro compatible
 - Disables the integrated system board audio and MIDI/Joystick connectors when installed in PCI adapter slot 1

Communications (varies by model)

- 56K V.90 data/fax modem
- or–
- Home Phonetline Network Alliance (PNA) card with integrated 56K V.90 data/fax modem
- or–
- ADSL modem

Note: Communication options vary by country, region, and model.

Input/output features

- 25-pin, ECP/EPP parallel port
- Two 9-pin, 16550 UART serial ports
- Two 4-pin, USB ports
- Mouse port
- Keyboard port
- MIDI/Joystick port
- 15-pin SVGA monitor connector for analog monitors or a Digital Visual Interface (DVI) port for digital monitors (varies by model). Models with the DVI port also come with a DVI-to-SVGA monitor connector so an analog monitor can be connected and an S-Video port for a television.
- Three audio connectors:

- Line out (stereo)
- Line in (stereo)
- Microphone

Note: See Chapter 8, “Installing external options” on page 87 for additional information about the input/output features.

Power

- 145 W power supply
- Manual voltage-selection switch (90–137/180–265 V ac)
- Built-in overload and surge protection
- Advanced Power Management (APM) support
- Advanced Configuration and Power Interface (ACPI) support

IBM preinstalled software

- Microsoft® Windows® 98 Second Edition
- Device drivers for factory-installed hardware
- Application and utility programs (see Chapter 3, “Aptiva Software” on page 23 for more information)

Appendix C. Product warranties and notices

This appendix includes product warranties, trademarks, and notices.

Warranty Statements

The warranty statements consist of two parts: Part 1 and Part 2. Part 1 varies by country. Part 2 is the same for both statements. Be sure to read both the Part 1 that applies to your country and Part 2.

- **United States, Puerto Rico, and Canada (Z125-4753-05 11/97)**
(Part 1 - General Terms on page 137)
- **Worldwide except Canada, Puerto Rico, Turkey, and United States (Z125-5697-01 11/97)**
(Part 1 - General Terms on page 140)
- **Worldwide Country-Unique Terms**
(Part 2 - Country-Unique Terms on page 143)

IBM Statement of Limited Warranty for United States, Puerto Rico, and Canada (Part 1 - General Terms)

This Statement of Limited Warranty includes Part 1 - General Terms and Part 2 - Country-unique Terms. The terms of Part 2 may replace or modify those of Part 1. The warranties provided by IBM in this Statement of Limited Warranty apply only to Machines you purchase for your use, and not for resale, from IBM or your reseller. The term "Machine" means an IBM machine, its features, conversions, upgrades, elements, or accessories, or any combination of them. The term "Machine" does not include any software programs, whether pre-loaded with the Machine, installed subsequently or otherwise. Unless IBM specifies otherwise, the following warranties apply only in the country where you acquire the Machine. Nothing in this Statement of Warranty affects any statutory rights of consumers that cannot be waived or limited by contract. If you have any questions, contact IBM or your reseller.

Machine - Aptiva PC Type 2178

Warranty Period* - Parts: One (1) Year Labor: One (1) Year

Machine - Aptiva PC Type 2198

Warranty Period* - Parts: Three (3) Years Labor: Three (3) Years

**Contact your place of purchase for warranty service information. Some IBM Machines are eligible for On-site warranty service depending on the country where service is performed.*

The IBM Warranty for Machines

IBM warrants that each Machine 1) is free from defects in materials and workmanship and 2) conforms to IBM's Official Published Specifications. The warranty period for a

Machine is a specified, fixed period commencing on its Date of Installation. The date on your sales receipt is the Date of Installation, unless IBM or your reseller informs you otherwise.

During the warranty period IBM or your reseller, if approved by IBM to provide warranty service, will provide repair and exchange service for the Machine, without charge, under the type of service designated for the Machine and will manage and install engineering changes that apply to the Machine.

If a Machine does not function as warranted during the warranty period, and IBM or your reseller are unable to either 1) make it do so or 2) replace it with one that is at least functionally equivalent, you may return it to your place of purchase and your money will be refunded. The replacement may not be new, but will be in good working order.

Extent of Warranty

The warranty does not cover the repair or exchange of a Machine resulting from misuse, accident, modification, unsuitable physical or operating environment, improper maintenance by you, or failure caused by a product for which IBM is not responsible. The warranty is voided by removal or alteration of Machine or parts identification labels.

THESE WARRANTIES ARE YOUR EXCLUSIVE WARRANTIES AND REPLACE ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THESE WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM JURISDICTION TO JURISDICTION. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF EXPRESS OR IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU. IN THAT EVENT, SUCH WARRANTIES ARE LIMITED IN DURATION TO THE WARRANTY PERIOD. NO WARRANTIES APPLY AFTER THAT PERIOD.

Items Not Covered by Warranty

IBM does not warrant uninterrupted or error-free operation of a Machine.

Unless specified otherwise, IBM provides non-IBM machines **WITHOUT WARRANTIES OF ANY KIND.**

Any technical or other support provided for a Machine under warranty, such as assistance via telephone with “how-to” questions and those regarding Machine set-up and installation, will be provided **WITHOUT WARRANTIES OF ANY KIND.**

Warranty Service

To obtain warranty service for the Machine, contact your reseller or IBM. In the United States, call IBM at **1-919-517-2800**. In Canada, call IBM at **1-800-565-3344**. You may be required to present proof of purchase.

IBM or your reseller provides certain types of repair and exchange service, either at your location or at a service center, to keep Machines in, or restore them to, conformance with their Specifications. IBM or your reseller will inform you of the available types of service for a Machine based on its country of installation. IBM may repair the failing Machine or exchange it at its discretion.

When warranty service involves the exchange of a Machine or part, the item IBM or your reseller replaces becomes its property and the replacement becomes yours. You represent that all removed items are genuine and unaltered. The replacement may not be new, but will be in good working order and at least functionally equivalent to the item replaced. The replacement assumes the warranty service status of the replaced item.

Any feature, conversion, or upgrade IBM or your reseller services must be installed on a Machine which is 1) for certain Machines, the designated, serial-numbered Machine and 2) at an engineering-change level compatible with the feature, conversion, or upgrade. Many features, conversions, or upgrades involve the removal of parts and their return to IBM. A part that replaces a removed part will assume the warranty service status of the removed part.

Before IBM or your reseller exchanges a Machine or part, you agree to remove all features, parts, options, alterations, and attachments not under warranty service.

You also agree to

1. ensure that the Machine is free of any legal obligations or restrictions that prevent its exchange;
2. obtain authorization from the owner to have IBM or your reseller service a Machine that you do not own; and
3. where applicable, before service is provided
 - a. follow the problem determination, problem analysis, and service request procedures that IBM or your reseller provides,
 - b. secure all programs, data, and funds contained in a Machine,
 - c. provide IBM or your reseller with sufficient, free, and safe access to your facilities to permit them to fulfill their obligations, and
 - d. inform IBM or your reseller of changes in a Machine's location.

IBM is responsible for loss of, or damage to, your Machine while it is 1) in IBM's possession or 2) in transit in those cases where IBM is responsible for the transportation charges.

Neither IBM nor your reseller is responsible for any of your confidential, proprietary or personal information contained in a Machine which you return to IBM or your reseller for any reason. You should remove all such information from the Machine prior to its return.

Production Status

Each IBM Machine is manufactured from new parts, or new and used parts. In some cases, the Machine may not be new and may have been previously installed. Regardless of the Machine's production status, IBM's appropriate warranty terms apply.

Limitation of Liability

Circumstances may arise where, because of a default on IBM's part or other liability, you are entitled to recover damages from IBM. In each such instance, regardless of the basis on which you are entitled to claim damages from IBM (including fundamental breach, negligence, misrepresentation, or other contract or tort claim), IBM is liable for no more than

1. damages for bodily injury (including death) and damage to real property and tangible personal property; and
2. the amount of any other actual direct damages, up to the greater of U.S. \$100,000 (or equivalent in local currency) or the charges (if recurring, 12 months' charges apply) for the Machine that is the subject of the claim.

This limit also applies to IBM's suppliers and your reseller. It is the maximum for which IBM, its suppliers, and your reseller are collectively responsible.

UNDER NO CIRCUMSTANCES IS IBM LIABLE FOR ANY OF THE FOLLOWING: 1) THIRD-PARTY CLAIMS AGAINST YOU FOR DAMAGES (OTHER THAN THOSE UNDER THE FIRST ITEM LISTED ABOVE); 2) LOSS OF, OR DAMAGE TO, YOUR RECORDS OR DATA; OR 3) SPECIAL, INCIDENTAL, OR INDIRECT DAMAGES OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES (INCLUDING LOST PROFITS OR SAVINGS), EVEN IF IBM, ITS SUPPLIERS OR YOUR RESELLER IS INFORMED OF THEIR POSSIBILITY. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

IBM Statement of Warranty Worldwide except Canada, Puerto Rico, Turkey, United States (Part 1 - General Terms)

This Statement of Warranty includes Part 1 - General Terms and Part 2 - Country-unique Terms. The terms of Part 2 may replace or modify those of Part 1. The warranties provided by IBM in this Statement of Warranty apply only to Machines you purchase for your use, and not for resale, from IBM or your reseller. The term "Machine" means an IBM machine, its features, conversions, upgrades, elements, or accessories, or any combination of them. The term "Machine" does not include any software programs, whether pre-loaded with the Machine, installed subsequently or otherwise. Unless IBM specifies otherwise, the following warranties apply only in the country where you acquire the Machine. Nothing in this Statement of Warranty affects any statutory rights of consumers that cannot be waived or limited by contract. If you have any questions, contact IBM or your reseller.

Machine - Aptiva PC Type 2178
Warranty Period* - Parts: One (1) Year Labor: One (1) Year

**Contact your place of purchase for warranty service information. Some IBM Machines are eligible for On-site warranty service depending on the country where service is performed.*

The IBM Warranty for Machines

IBM warrants that each Machine 1) is free from defects in materials and workmanship and 2) conforms to IBM's Official Published Specifications. The warranty period for a Machine is a specified, fixed period commencing on its Date of Installation. The date on your sales receipt is the Date of Installation, unless IBM or your reseller informs you otherwise.

During the warranty period IBM or your reseller, if approved by IBM to provide warranty service, will provide repair and exchange service for the Machine, without charge, under the type of service designated for the Machine and will manage and install engineering changes that apply to the Machine.

If a Machine does not function as warranted during the warranty period, and IBM or your reseller are unable to either 1) make it do so or 2) replace it with one that is at least functionally equivalent, you may return it to your place of purchase and your money will be refunded. The replacement may not be new, but will be in good working order.

Extent of Warranty

The warranty does not cover the repair or exchange of a Machine resulting from misuse, accident, modification, unsuitable physical or operating environment, improper maintenance by you, or failure caused by a product for which IBM is not responsible. The warranty is voided by removal or alteration of Machine or parts identification labels.

THESE WARRANTIES ARE YOUR EXCLUSIVE WARRANTIES AND REPLACE ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THESE WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM JURISDICTION TO JURISDICTION. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF EXPRESS OR IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU. IN THAT EVENT, SUCH WARRANTIES ARE LIMITED IN DURATION TO THE WARRANTY PERIOD. NO WARRANTIES APPLY AFTER THAT PERIOD.

Items Not Covered by Warranty

IBM does not warrant uninterrupted or error-free operation of a Machine.

Unless specified otherwise, IBM provides non-IBM machines **WITHOUT WARRANTIES OF ANY KIND.**

Any technical or other support provided for a Machine under warranty, such as assistance via telephone with "how-to" questions and those regarding Machine set-up and installation, will be provided **WITHOUT WARRANTIES OF ANY KIND.**

Warranty Service

To obtain warranty service for the Machine, contact your reseller or IBM. You may be required to present proof of purchase.

IBM or your reseller provides certain types of repair and exchange service, either at your location or at a service center, to keep Machines in, or restore them to, conformance with their Specifications. IBM or your reseller will inform you of the available types of service for a Machine based on its country of installation. IBM may repair the failing Machine or exchange it at its discretion.

When warranty service involves the exchange of a Machine or part, the item IBM or your reseller replaces becomes its property and the replacement becomes yours. You represent that all removed items are genuine and unaltered. The replacement may not be new, but will be in good working order and at least functionally equivalent to the item replaced. The replacement assumes the warranty service status of the replaced item.

Any feature, conversion, or upgrade IBM or your reseller services must be installed on a Machine which is 1) for certain Machines, the designated, serial-numbered Machine and 2) at an engineering-change level compatible with the feature, conversion, or upgrade. Many features, conversions, or upgrades involve the removal of parts and their return to IBM. A part that replaces a removed part will assume the warranty service status of the removed part.

Before IBM or your reseller exchanges a Machine or part, you agree to remove all features, parts, options, alterations, and attachments not under warranty service.

You also agree to

1. ensure that the Machine is free of any legal obligations or restrictions that prevent its exchange;
2. obtain authorization from the owner to have IBM or your reseller service a Machine that you do not own; and
3. where applicable, before service is provided
 - a. follow the problem determination, problem analysis, and service request procedures that IBM or your reseller provides,
 - b. secure all programs, data, and funds contained in a Machine,
 - c. provide IBM or your reseller with sufficient, free, and safe access to your facilities to permit them to fulfil their obligations, and
 - d. inform IBM or your reseller of changes in a Machine's location.

IBM is responsible for loss of, or damage to, your Machine while it is 1) in IBM's possession or 2) in transit in those cases where IBM is responsible for the transportation charges.

Neither IBM nor your reseller is responsible for any of your confidential, proprietary or personal information contained in a Machine which you return to IBM or your reseller for any reason. You should remove all such information from the Machine prior to its return.

Production Status

Each IBM Machine is manufactured from new parts, or new and used parts. In some cases, the Machine may not be new and may have been previously installed. Regardless of the Machine's production status, IBM's appropriate warranty terms apply.

Limitation of Liability

Circumstances may arise where, because of a default on IBM's part or other liability, you are entitled to recover damages from IBM. In each such instance, regardless of the basis on which you are entitled to claim damages from IBM (including fundamental breach, negligence, misrepresentation, or other contract or tort claim), IBM is liable for no more than

1. damages for bodily injury (including death) and damage to real property and tangible personal property; and
2. the amount of any other actual direct damages, up to the greater of U.S. \$100,000 (or equivalent in local currency) or the charges (if recurring, 12 months' charges apply) for the Machine that is the subject of the claim.

This limit also applies to IBM's suppliers and your reseller. It is the maximum for which IBM, its suppliers, and your reseller are collectively responsible.

UNDER NO CIRCUMSTANCES IS IBM LIABLE FOR ANY OF THE FOLLOWING: 1) THIRD-PARTY CLAIMS AGAINST YOU FOR DAMAGES (OTHER THAN THOSE UNDER THE FIRST ITEM LISTED ABOVE); 2) LOSS OF, OR DAMAGE TO, YOUR RECORDS OR DATA; OR 3) SPECIAL, INCIDENTAL, OR INDIRECT DAMAGES OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES (INCLUDING LOST PROFITS OR SAVINGS), EVEN IF IBM, ITS SUPPLIERS OR YOUR RESELLER IS INFORMED OF THEIR POSSIBILITY. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

Part 2 - Worldwide Country-Unique Terms

ASIA PACIFIC

AUSTRALIA: The IBM Warranty for Machines: The following paragraph is added to this Section:

The warranties specified in this Section are in addition to any rights you may have under the Trade Practices Act 1974 or other legislation and are only limited to the extent permitted by the applicable legislation.

Extent of Warranty: The following replaces the first and second sentences of this Section:

The warranty does not cover the repair or exchange of a Machine resulting from misuse, accident, modification, unsuitable physical or operating environment, operation in other than the Specified Operating Environment, improper maintenance by you, or failure caused by a product for which IBM is not responsible.

Limitation of Liability: The following is added to this Section:

Where IBM is in breach of a condition or warranty implied by the Trade Practices Act 1974, IBM's liability is limited to the repair or replacement of the goods or the supply of equivalent goods. Where that condition or warranty relates to right to sell, quiet possession or clear title, or the goods are of a kind ordinarily acquired for personal,

domestic or household use or consumption, then none of the limitations in this paragraph apply.

PEOPLE'S REPUBLIC OF CHINA: Governing Law: The following is added to this Statement:

The laws of the State of New York govern this Statement.

INDIA: Limitation of Liability: The following replaces items 1 and 2 of this Section:

1. liability for bodily injury (including death) or damage to real property and tangible personal property will be limited to that caused by IBM's negligence;
2. as to any other actual damage arising in any situation involving nonperformance by IBM pursuant to, or in any way related to the subject of this Statement of Warranty, IBM's liability will be limited to the charge paid by you for the individual Machine that is the subject of the claim.

NEW ZEALAND: The IBM Warranty for Machines: The following paragraph is added to this Section:

The warranties specified in this Section are in addition to any rights you may have under the Consumer Guarantees Act 1993 or other legislation which cannot be excluded or limited. The Consumer Guarantees Act 1993 will not apply in respect of any goods which IBM provides, if you require the goods for the purposes of a business as defined in that Act.

Limitation of Liability: The following is added to this Section:

Where Machines are not acquired for the purposes of a business as defined in the Consumer Guarantees Act 1993, the limitations in this Section are subject to the limitations in that Act.

EUROPE, MIDDLE EAST, AFRICA (EMEA)

The following terms apply to all EMEA countries.

The terms of this Statement of Warranty apply to Machines purchased from an IBM reseller. If you purchased this Machine from IBM, the terms and conditions of the applicable IBM agreement prevail over this warranty statement.

Warranty Service

If you purchased an IBM Machine in Austria, Belgium, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland or United Kingdom, you may obtain warranty service for that Machine in any of those countries from either (1) an IBM reseller approved to perform warranty service or (2) from IBM.

If you purchased an IBM Personal Computer Machine in Albania, Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Georgia, Hungary, Kazakhstan, Kirghizia, Federal Republic of Yugoslavia, Former Yugoslav Republic of Macedonia (FYROM), Moldova, Poland, Romania, Russia, Slovak Republic, Slovenia, or Ukraine, you may obtain warranty service for that Machine in any of those countries from either (1) an IBM reseller approved to perform warranty service or (2) from IBM.

The applicable laws, Country-unique terms and competent court for this Statement are those of the country in which the warranty service is being provided. However, the laws of Austria govern this Statement if the warranty service is provided in Albania, Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic,

Federal Republic of Yugoslavia, Georgia, Hungary, Kazakhstan, Kirghizia, Former Yugoslav Republic of Macedonia (FYROM), Moldova, Poland, Romania, Russia, Slovak Republic, Slovenia, and Ukraine.

The following terms apply to the country specified:

EGYPT: Limitation of Liability: The following replaces item 2 in this Section:
2. as to any other actual direct damages, IBM's liability will be limited to the total amount you paid for the Machine that is the subject of the claim.

Applicability of suppliers and resellers (unchanged).

FRANCE: Limitation of Liability: The following replaces the second sentence of the first paragraph of this Section:

In such instances, regardless of the basis on which you are entitled to claim damages from IBM, IBM is liable for no more than: (items 1 and 2 unchanged).

GERMANY: The IBM Warranty for Machines: The following replaces the first sentence of the first paragraph of this Section:

The warranty for an IBM Machine covers the functionality of the Machine for its normal use and the Machine's conformity to its Specifications.

The following paragraphs are added to this Section:

The minimum warranty period for Machines is six months.

In case IBM or your reseller are unable to repair an IBM Machine, you can alternatively ask for a partial refund as far as justified by the reduced value of the unrepaired Machine or ask for a cancellation of the respective agreement for such Machine and get your money refunded.

Extent of Warranty: The second paragraph does not apply.

Warranty Service: The following is added to this Section:

During the warranty period, transportation for delivery of the failing Machine to IBM will be at IBM's expense.

Production Status: The following paragraph replaces this Section:

Each Machine is newly manufactured. It may incorporate in addition to new parts, re-used parts as well.

Limitation of Liability: The following is added to this Section:

The limitations and exclusions specified in the Statement of Warranty will not apply to damages caused by IBM with fraud or gross negligence and for express warranty.

In item 2, replace "U.S. \$100,000" with "1.000.000 DEM."

The following sentence is added to the end of the first paragraph of item 2:

IBM's liability under this item is limited to the violation of essential contractual terms in cases of ordinary negligence.

IRELAND: Extent of Warranty: The following is added to this Section:

Except as expressly provided in these terms and conditions, all statutory conditions, including all warranties implied, but without prejudice to the generality of the foregoing

all warranties implied by the Sale of Goods Act 1893 or the Sale of Goods and Supply of Services Act 1980 are hereby excluded.

Limitation of Liability: The following replaces items one and two of the first paragraph of this Section:

1. death or personal injury or physical damage to your real property solely caused by IBM's negligence; and 2. the amount of any other actual direct damages, up to the greater of Irish Pounds 75,000 or 125 percent of the charges (if recurring, the 12 months' charges apply) for the Machine that is the subject of the claim or which otherwise gives rise to the claim.

Applicability of suppliers and resellers (unchanged).

The following paragraph is added at the end of this Section:

IBM's entire liability and your sole remedy, whether in contract or in tort, in respect of any default shall be limited to damages.

ITALY: Limitation of Liability: The following replaces the second sentence in the first paragraph:

In each such instance unless otherwise provided by mandatory law, IBM is liable for no more than: (item 1 unchanged) 2) as to any other actual damage arising in all situations involving non-performance by IBM pursuant to, or in any way related to the subject matter of this Statement of Warranty, IBM's liability, will be limited to the total amount you paid for the Machine that is the subject of the claim.

Applicability of suppliers and resellers (unchanged).

The following replaces the second paragraph of this Section:

Unless otherwise provided by mandatory law, IBM and your reseller are not liable for any of the following: (items 1 and 2 unchanged) 3) indirect damages, even if IBM or your reseller is informed of their possibility.

SOUTH AFRICA, NAMIBIA, BOTSWANA, LESOTHO AND SWAZILAND: Limitation of Liability: The following is added to this Section:

IBM's entire liability to you for actual damages arising in all situations involving nonperformance by IBM in respect of the subject matter of this Statement of Warranty will be limited to the charge paid by you for the individual Machine that is the subject of your claim from IBM.

TURKIYE: Production Status: The following replaces this Section:

IBM fulfils customer orders for IBM Machines as newly manufactured in accordance with IBM's production standards.

UNITED KINGDOM: Limitation of Liability: The following replaces items 1 and 2 of the first paragraph of this Section:

1. death or personal injury or physical damage to your real property solely caused by IBM's negligence;
2. the amount of any other actual direct damages or loss, up to the greater of Pounds Sterling 150,000 or 125 percent of the charges (if recurring, the 12 months' charges apply) for the Machine that is the subject of the claim or which otherwise gives rise to the claim.

The following item is added to this paragraph:

3. breach of IBM's obligations implied by Section 12 of the Sale of Goods Act 1979 or Section 2 of the Supply of Goods and Services Act 1982.

Applicability of suppliers and resellers (unchanged).

The following is added to the end of this Section:

IBM's entire liability and your sole remedy, whether in contract or in tort, in respect of any default will be limited to damages.

NORTH AMERICA

CANADA: Warranty Service: The following is added to this Section:

To obtain warranty service from IBM, call **1-800-565-3344**.

UNITED STATES OF AMERICA: Warranty Service: The following is added to this Section:

To obtain warranty service from IBM, call **1-919-517-2800**.

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Notice: Year 2000 readiness status of certain software that might be included with your IBM PC

(14 January 1998)

IBM has included with your IBM PC selected software products that are supplied by independent software vendors (also known as ISVs). As of the date of this notice, some software vendors have not designated as ready for the Year 2000 some versions of their software products as distributed. This means that (a) the software requires updates to become Year 2000 ready, compliant, or compliant with minor issues (as defined by the vendor) or (b) the vendor had not yet published Year 2000 readiness or compliance status. The software products that the software vendors had not designated as Year 2000 ready as distributed include (but are not limited to) the following software products or certain national language versions or service releases of such software products:

Product	Web site address
AOL (by America Online)	http://www.aol.com/info/year2000.html
CompuServe (by CompuServe Interactive Services)	http://www.compuserve.com/content/cs_y2kfaq.asp
Internet Explorer 3.x, 4.x (by Microsoft)	http://www.microsoft.com/technet/topics/year2k/default.htm
Netscape Navigator 3.x, 4.0x (by Netscape)	http://www.netscape.com/products/year2000/index.html
Office Small Business Edition (by Microsoft)	http://www.microsoft.com/technet/topics/year2k/default.htm
Prodigy Internet (by Prodigy Communications)	http://y2k.prodigy.net/
Windows 95 (by Microsoft)	http://www.microsoft.com/technet/topics/year2k/default.htm
Windows 98 (by Microsoft)	http://www.microsoft.com/technet/topics/year2k/default.htm
Windows NT Workstation 4.0 (by Microsoft)	http://www.microsoft.com/technet/topics/year2k/default.htm

The software products listed above are applicable to a variety of IBM PC products, and not all of them might be included with your particular IBM PC model.

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Electronic emission notices

Aptiva PC Types 2178 and 2198

Federal Communications Commission (FCC) Statement

Note: This equipment 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 equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an IBM authorized dealer or service representative for help.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Proper cables and connectors are available from IBM authorized dealers. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

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.

Responsible Party:

International Business Machines Corporation
New Orchard Road
Armonk, NY 10504
Telephone: 1-919-543-2193



Tested To Comply
With FCC Standards

FOR HOME OR OFFICE USE

Industry Canada Class B emission compliance statement

This Class B digital apparatus complies with Canadian ICES-003.

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de classe B est conforme à la norme NMB-003 du Canada.

European Union EMC Directive conformance statement

This product is in conformity with the protection requirements of EU Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a nonrecommended modification of the product, including the fitting of non-IBM option cards.

This product has been tested and found to comply with the limits for Class B Information Technology Equipment according to CISPR 22/European Standard EN 55022. The limits for Class B equipment were derived for typical residential environments to provide reasonable protection against interference with licensed communication devices.

Telecommunication notices

Federal Communications Commission (FCC) and telephone company requirements

1. The modem adapter card is located in the back of the system unit. It complies with Part 68 of the FCC rules. A label is affixed to the built-in modem that contains, among other things, the FCC registration number, USOC, and Ringer Equivalency Number (REN) for this equipment. If these numbers are requested, refer to "Removing the cover" on page 59 for instructions on how to open the system unit to see the label, and provide this information to your telephone company.
2. The REN is useful to determine the quantity of devices you may connect to your telephone line and still have those devices ring when your number is called. In most, but not all areas, the sum of the RENs of all devices should not exceed five (5.0). To be certain of the number of devices you may connect to your line, as determined by the REN, you should call your local telephone company to determine the maximum REN for your calling area.
3. If the built-in modem causes harm to the telephone network, the telephone company may discontinue your service temporarily. If

possible, they will notify you in advance; if advance notice is not practical, you will be notified as soon as possible. You will be advised of your right to file a complaint with the FCC.

4. Your telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the proper operation of your equipment. If they do, you will be given advance notice to give you an opportunity to maintain uninterrupted service.
5. If you experience trouble with this built-in modem, contact your authorized reseller, or call the IBM HelpCenter for repair/warranty information. In the United States, call IBM at **1-919-517-2800**. In Canada, call IBM at **1-800-565-3344**. You may be required to present proof of purchase.

The telephone company may ask you to disconnect this equipment from the network until the problem has been corrected, or until you are sure the device is not malfunctioning.

6. No customer repairs are possible to the modem. If you experience trouble with the device, contact your authorized reseller or see the troubleshooting section of this manual for information.
7. This device may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs. Contact your state public utility commission or corporation commission for information.
8. When ordering network interface (NI) service from the local Exchange Carrier, specify service arrangement USOC RJ11C.

Canadian Department of Communications certification label

NOTICE: The Industry Canada label identifies certified equipment. This certification means that the equipment meets telecommunications network protective, operational and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements documents. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations. Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

NOTICE: The Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed 5.

Étiquette d'homologation du ministère des Communications du Canada

AVIS : L'étiquette d'Industrie Canada identifie le matériel homologué. Cette étiquette certifie que le matériel est conforme aux normes de protection, d'exploitation et de sécurité des réseaux de télécommunications, comme le prescrivent les documents concernant les exigences techniques relatives au matériel terminal. Le ministère n'assure toutefois pas que le matériel fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer ce matériel, l'utilisateur doit s'assurer qu'il est permis de le raccorder aux installations de l'entreprise locale de télécommunications. Le matériel doit également être installé en suivant une méthode acceptée de raccordement. L'abonné ne doit pas oublier qu'il est possible que la conformité aux conditions énoncées ci-dessus n'empêche pas la dégradation du service dans certaines situations.

Les réparations de matériel homologué doivent être coordonnées par un représentant désigné par le fournisseur. L'entreprise de télécommunications peut demander à l'utilisateur de débrancher un appareil à la suite de réparations ou de modifications effectuées par l'utilisateur ou à cause de mauvais fonctionnement.

Pour sa propre protection, l'utilisateur doit s'assurer que tous les fils de mise à la terre de la source d'énergie électrique, des lignes téléphoniques et des canalisations d'eau métalliques, s'il y en a, sont raccordés ensemble. Cette précaution est particulièrement importante dans les régions rurales.

Avertissement : L'utilisateur ne doit pas tenter de faire ces raccordements lui-même; il doit avoir recours à un service d'inspection des installations électriques ou à un électricien, selon le cas.

AVIS : L'indice d'équivalence de la sonnerie (IES) assigné à chaque dispositif terminal indique le nombre maximal de terminaux qui peuvent être raccordés à une interface. La terminaison d'une interface téléphonique peut consister en une combinaison de quelques dispositifs, à la seule condition que la somme d'indices d'équivalence de la sonnerie de tous les dispositifs n'excède pas 5.

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