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First Edition (August 1997)

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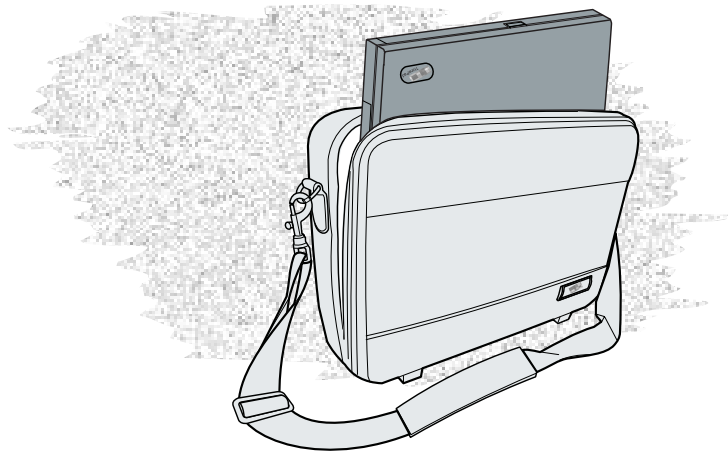
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Thank You for Selecting an IBM ThinkPad 560X Computer

The thin and light IBM ThinkPad 560X computer
is designed to be convenient
for your mobile computing needs.

We hope you enjoy its fast processing power,
brilliant and colorful TFT LCD display,
audio capabilities, and infrared communication.



Functional Highlights

Ultra portability

The slim 1.9 kilogram computer has excellent portability, especially when you are traveling. The computer can assist you in your business anytime and anywhere.

High-speed processor

The Intel MMX Pentium processor enables high-speed data processing and advanced performance.

Large-capacity Hard Disk Drive

The 2.5-inch 4.0 GB* hard disk drive can respond to a wide variety of your business demands.

Large SVGA color LCD

The 12.1-inch TFT (thin-film transistor) display offers 256,144 colors at 800-by-600 resolution.

Lithium-Ion battery pack

The large-capacity lithium-ion battery pack further extends the operating time of the computer, further contributing to ultra portability.

Audio

The audio feature supports the following:

Wave audio recording and playback of up to 16 bits, stereo, and 44 KHz sampling.

DOS games using the Sound Blaster** interface.

PC Card Support

The computer provides two PC Card slots that accept a 16-bit PC Card, CardBus Card, and Zoomed Video Card.

* Gigabyte, one billion (10⁹) bytes.

Icons Used in This Book

For procedures or information unique to the operating system installed in your computer:



Information for IBM Operating System/2 (OS/2) users.



Information for IBM DOS users.



Information for Microsoft Windows 3.11 users.



Information for Microsoft Windows NT users.



Information for Microsoft Windows 95 users.

Safety Information



DANGER

Do not disassemble, incinerate, or short-circuit the rechargeable battery pack. Do not put it in trash that is disposed of in landfills. Dispose of it as required by local ordinances or regulations. In the United States, call IBM at 1-800-IBM-4333 for information on disposal.

CAUTION:

The lithium battery (IBM P/N 12J1695 UL-recognized component—File No. MH12210) can be replaced only by your dealer or an IBM service representative. It contains lithium and can explode if not properly used, handled, or disposed of. Do not: (1) throw or immerse into water, (2) heat to more than 100°C (212°F), or (3) repair or disassemble. Dispose of it as required by local ordinances or regulations.

CAUTION:

The fluorescent lamp in the liquid crystal display (LCD) contains mercury. Do not put it in trash that is disposed of in landfills. Dispose of it as required by local ordinances or regulations.

The LCD is made of glass, and rough handling or dropping the computer can cause the LCD to break. If the LCD breaks and the internal fluid gets into your eyes or on your hands, immediately wash the affected areas with water for at least 15 minutes; then get medical care if any symptoms are present after washing.

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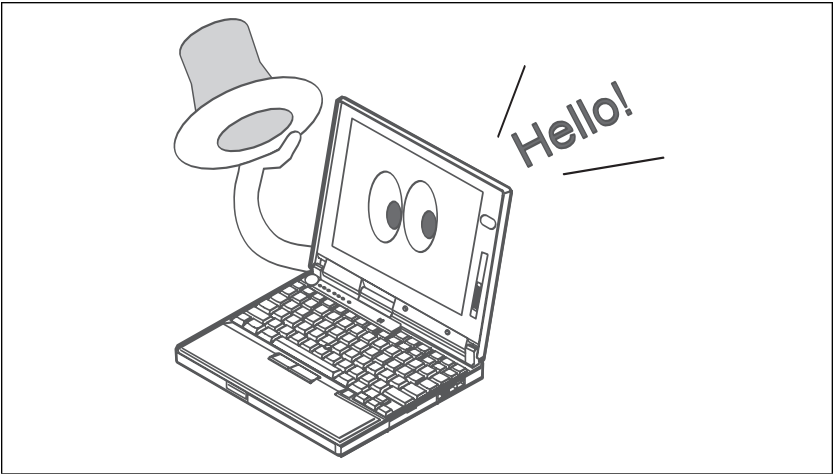
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Chapter 1. Getting Familiar with Your Computer

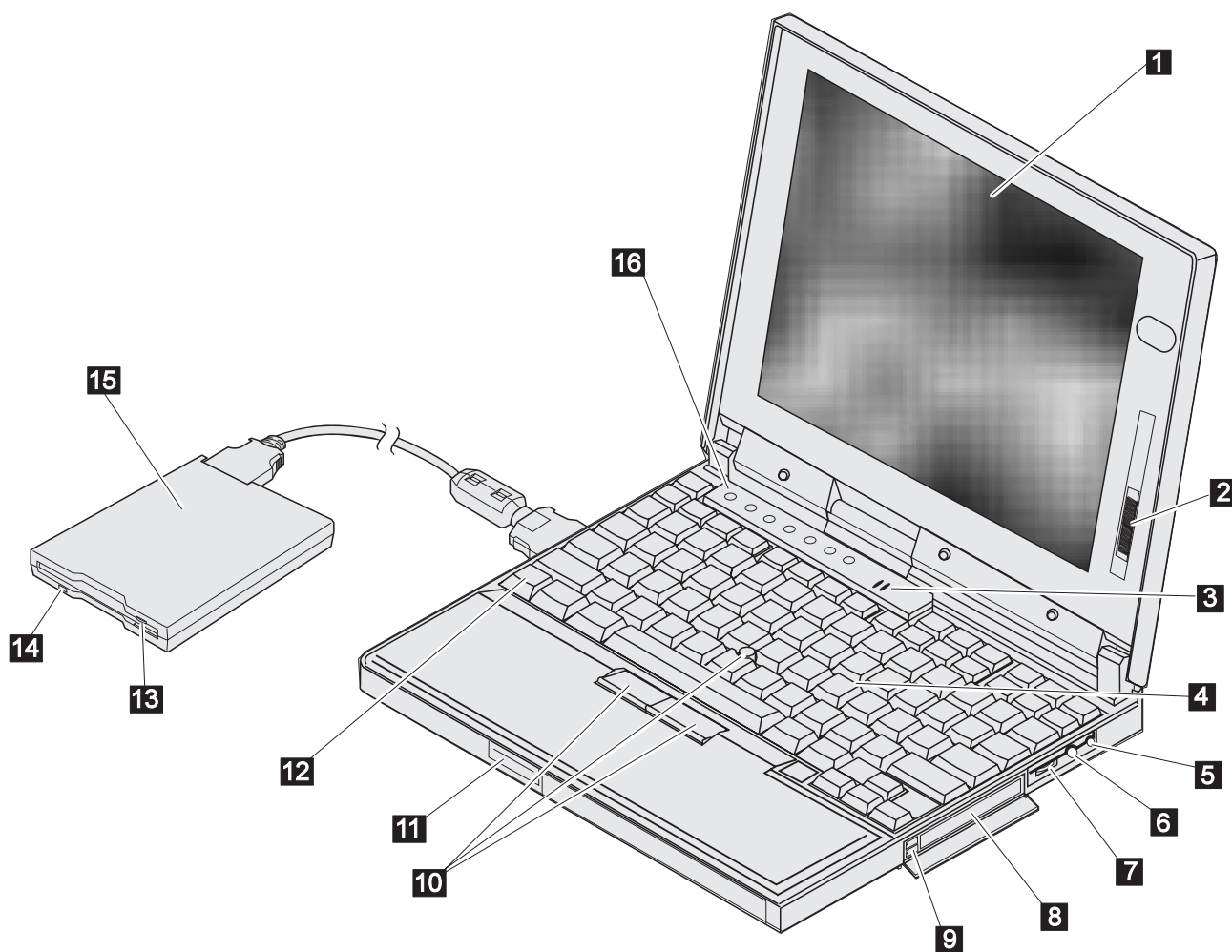
This chapter provides basic information about your computer.

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Identifying the Hardware Features

Front View

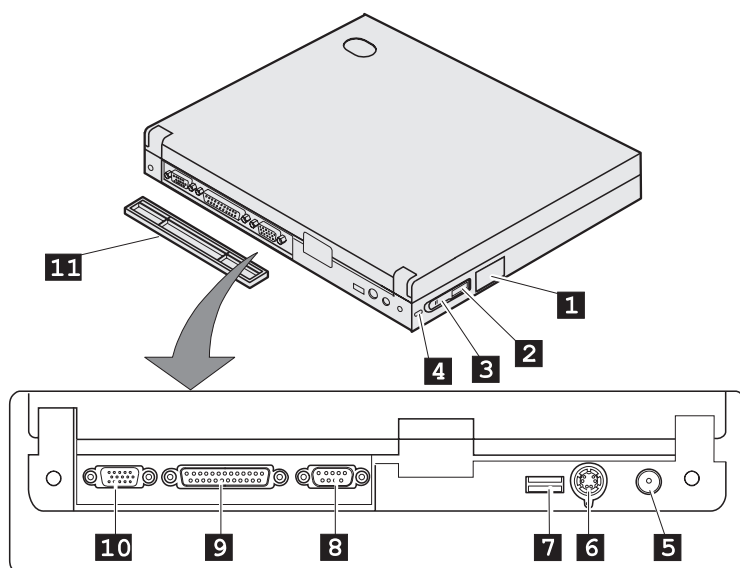


Getting Familiar with Your Computer

- 1 The **color LCD screen** displays computer output.
- 2 The **brightness control** moves up or down to adjust the brightness of the display.
- 3 The **built-in microphone** captures sound and voice when it is used with an application program capable of handling audio.
- 4 The **keyboard** is used to enter data into the computer. (To use the **numeric keypad** on the keyboard, see page 14.)
- 5 The **headphone jack**, a 1/8 inch (3.5-mm) diameter jack, is where you connect a stereo headphone or external speakers.
- 6 The **microphone/line-in jack**, a 1/8 inch (3.5-mm) diameter jack, is where you connect a stereo microphone or an external audio device.
- 7 The **volume control** adjusts the sound level for the built-in speaker.
- 8 The **PC Card slots** accept PC Cards.
- 9 The **PC Card eject buttons** eject the PC Card from the PC Card slot.
- 10 The **TrackPoint III** is a built-in pointing device that provides a function similar to that of a mouse.
- 11 The **LCD latch** opens the LCD when pressed.
- 12 The **Fn key** is used with the function keys to activate the **Fn key** functions.
- 13 The **diskette-eject button** ejects the diskette from the diskette drive.
- 14 The **diskette drive in use indicator** is on when data is read or written to a diskette.
- 15 The **external diskette drive**
- 16 The **indicator panel** consists of the system-status indicators and their associated symbols.

Getting Familiar with Your Computer

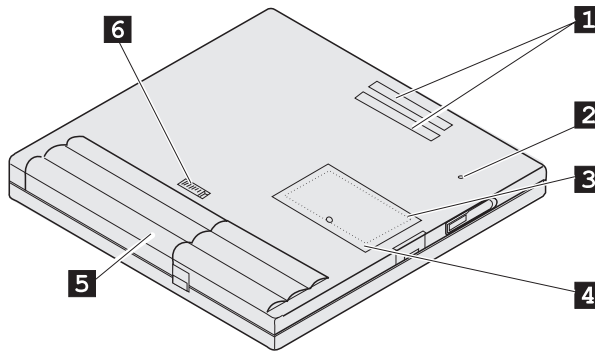
Rear View



- 1 The **external-diskette-drive connector** is where you connect the cable of the external diskette drive.
- 2  The **infrared port** on the power switch allows the computer to communicate with other devices that have infrared data-transfer capability.
- 3 The **power switch** turns the computer on and off.
- 4  The **security keyhole** is used with a mechanical lock.
- 5  The **power jack** is where the AC Adapter cable is connected.
- 6  The **external-input-device connector** is used to attach a mouse, external keyboard, or external numeric keypad to the computer.
- 7 The **Universal Serial Bus (USB) port** is where the USB cable is connected.
- 8  The **serial connector** is where you connect a 9-pin, serial-device cable.
- 9  The **parallel connector** is where you connect a parallel-printer signal cable.
- 1  The **external-monitor connector** is where you attach the external monitor.
- 11 The **connector cover** is removable.

Getting Familiar with Your Computer

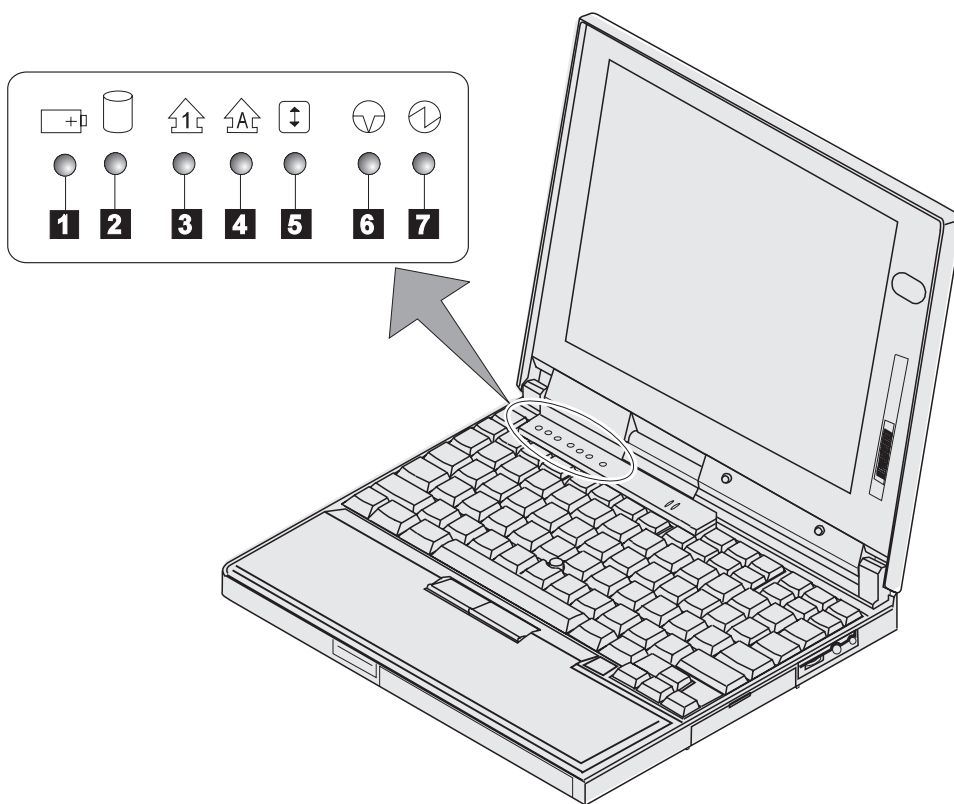
Bottom View (with Battery Installed)



- | | | | | | |
|---|--|---|---|---|--|
| 1 | The expansion connector is where you attach a port replicator (available as an option). | 3 | The memory slot accepts a dual inline memory module (DIMM) option. | 5 | The battery pack is a built-in power source for the computer. |
| 2 | The power shutdown switch is used to turn the computer off when an application locks up or the computer will not accept any input. Use the tip of a pen to press this switch. | 4 | The memory-slot cover covers the memory slot. | 6 | The battery-pack latch locks or releases the battery pack. |

System-Status Indicators

The system-status indicators on the computer show the current status of your computer by their on or off states and colors (green, yellow, and orange). Each indicator is identified with a symbol. The following shows the location and the meaning of each icon:



Getting Familiar with Your Computer

Symbol	Color	Meaning
1 Battery 	Green	Enough battery power remains for operation.
	Orange	The battery pack is being charged.
	Blinking orange	The battery pack needs charging. If the indicator starts blinking orange, the computer beeps three times.
2 Hard disk in use 	Orange	Data is being read from or written to the hard disk. <i>Do not enter suspend mode or turn off the computer when this indicator is on.</i>
3 Numeric lock 	Green	The numeric keypad on the keyboard is enabled. You enable or disable the keypad by pressing and holding the Shift key, and pressing the NumLk key. For details, see “Numeric Keypad” on page 14.
4 Caps lock 	Green	The Caps Lock mode is enabled. All alphabetic characters (A–Z) are entered in capital letters without using the Shift key. You enable or disable the Caps Lock mode by pressing the Caps Lock key.
5 Scroll lock 	Green	Scroll Lock mode is enabled. The Arrow keys can be used as screen-scroll function keys. The cursor cannot be moved with the Arrow keys. <i>Not all application programs support this function.</i> You enable or disable Scroll Lock mode by pressing the ScrLk key.
6 Suspend mode 	Green	The computer is in suspend mode. (See page 33 for details.)
	Blinking green	The computer is entering suspend mode or hibernation mode, or is resuming normal operation.
7 Power on 	Green	Indicates that the computer is operational. This indicator is on when the computer is on and not in suspend mode.

ThinkPad Features

Your ThinkPad Model 560X computer features a diskette drive that is attached externally. Your computer also has unique keyboard functions and utility programs for easy configuration. This section describes the following features:

External diskette drive

Keyboard

ThinkPad utilities

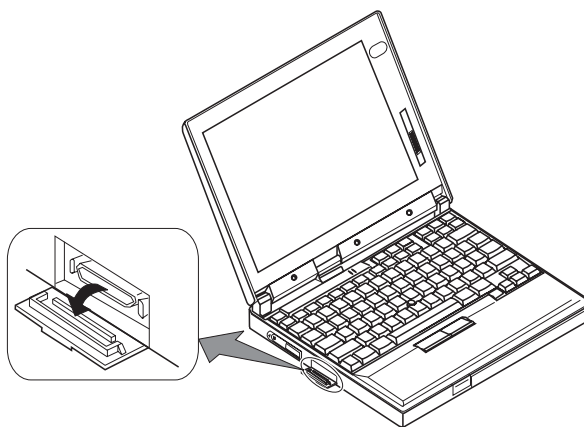
Online book

Attaching the External Diskette Drive

- 1** Turn off the computer.

Make sure you turn off the computer. Otherwise, the computer will not recognize the external diskette drive when computer power is turned on.

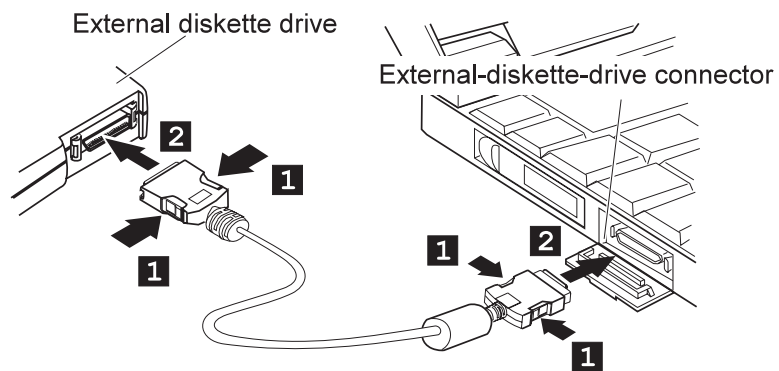
- 2** Open the cover on the external-diskette-drive connector.



Getting Familiar with Your Computer

- 3** Attach the cable to the external diskette drive; then to the external-diskette-drive connector on the side of the computer.

Press the sides of the connector **1** as you connect it to the devices **2**.



- 4** Turn on the computer.

Keyboard Functions

Your ThinkPad computer's keyboard has the following functions:

- TrackPoint III
- Fn key Function
- Numeric Keypad

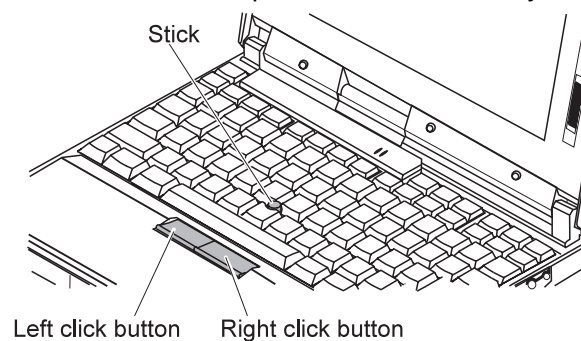
TrackPoint III

The keyboard contains a unique cursor-pointing device called the *TrackPoint III*. Pointing, selecting, and dragging all become part of a single process you can perform without moving your fingers from their typing position.

Note:

No other software is required for the TrackPoint III; it works with the PS/2 mouse driver.

The TrackPoint III consists of a **stick** on the keyboard and a pair of **click buttons** below the keyboard. Movement of the pointer on the screen is controlled by the amount of pressure you apply to the nonslip cap on the stick in any direction parallel to the keyboard; the stick itself does *not* move. The speed at which the pointer moves corresponds to the applying pressure you apply to the stick. The function of the click buttons depends on the software you are using.



Getting Familiar with Your Computer

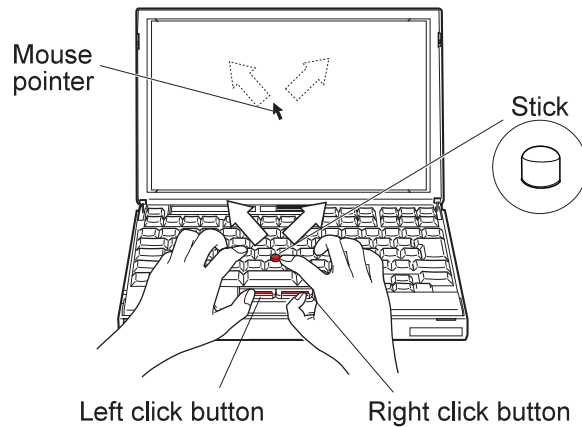
If you are not familiar with using the TrackPoint III, these instructions will help you get started:

- 1** Place your hands in the typing position and press gently on the stick with either index finger in the direction you want the pointer to move.

Pressing the stick away from you moves the pointer up the screen; pressing it toward you moves the pointer down the screen. You can also move the pointer side to side by pressing sideways.

Note:

The pointer may drift. This is not a defect. Do not use the TrackPoint III until the pointer stops moving.

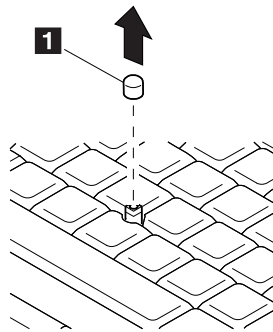


- 2** Press the click buttons with either thumb to select and drag as required by your software, as with any other pointing device.

Getting Familiar with Your Computer

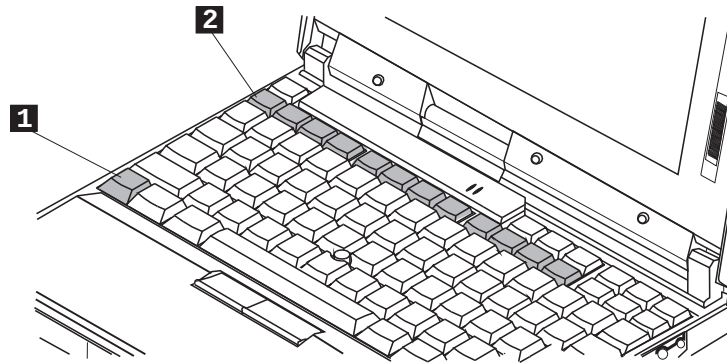
Changing the Cap

The cap 1 on the end of the TrackPoint III is removable. You can replace it with one of the spares shipped with your computer.



Fn Key Function

The **Fn** key function allows you to change operational features instantly. When you use the following functions, press and hold the **Fn** key 1 ; then press the appropriate function key 2 (**F1** to **F12**).



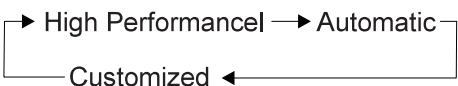
Getting Familiar with Your Computer

The Fn Key Lock Function

You can set up your computer so that you need to press **Fn** only once to get the same effect as when you press and hold **Fn**. With this setup, after you press a function key in the top row, **Fn** returns to its normal state. Set up the **Fn** key this way, select the

Accessibility () button in the ThinkPad Configuration program window, or type PS2 FNS E at the command prompt.

Function keys not shown in the following table have no function.

Key Combination	Feature	Meaning
 +  (Only for OS/2 or Windows users)	Fuel-Gauge display on or off 	The Fuel-Gauge program must be activated before you can use this key combination. If you press this key combination, the window for the battery power status appears or disappears. You can set parameters for power status in the window.
 + 	Standby mode 	The computer enters standby mode. For more information about this mode, see "Using the Power-Saving Modes" on page 33.
 + 	Suspend mode 	The computer enters suspend mode. For more information about this mode, see "Using the Power-Saving Modes" on page 33.
 + 	LCD/external monitor switching 	Computer output is displayed in the following order when an external monitor is attached. 
 + 	Power mode switching 	During battery-power operation, the power mode changes as follows: 
 + 	Hibernation mode 	The computer enters hibernation mode. See "Using the Power-Saving Modes" on page 33 for more information.

Getting Familiar with Your Computer

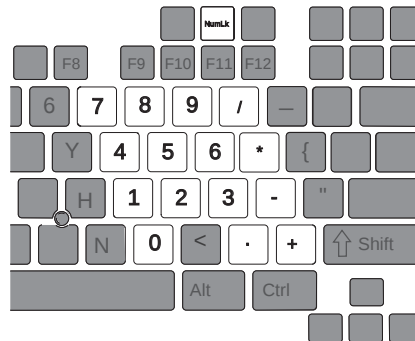
Numeric Keypad

The keyboard has some keys that, when enabled, work as if they were a 10-key numeric keypad. (The numeric keypad on the keyboard is not active when the external keyboard or the external numeric keypad is attached to the computer.)

To enable or disable the numeric keypad, press and hold **Shift** and then press **NumLk**.

Note:

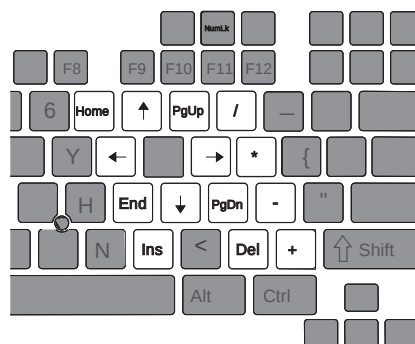
The functions of the numeric keypad are printed on the front of the keys.



When the numeric keypad is enabled, press and hold **Shift** to temporarily use the cursor- and screen-control keys.

Note:

The functions of the cursor- and screen-control keys are not printed on the keys.



ThinkPad Utilities

Your ThinkPad computer has the following utility programs for easy configuration:

ThinkPad Configuration program
Easy-Setup

This section summarizes these utilities.

ThinkPad Configuration Program

The ThinkPad Configuration program allows you to set up and customize the computer's built-in devices to your needs, for example, you can enable or disable a port, switch between your computer's LCD and an external monitor, and set the power management mode.

This section describes how to start the ThinkPad Configuration program.



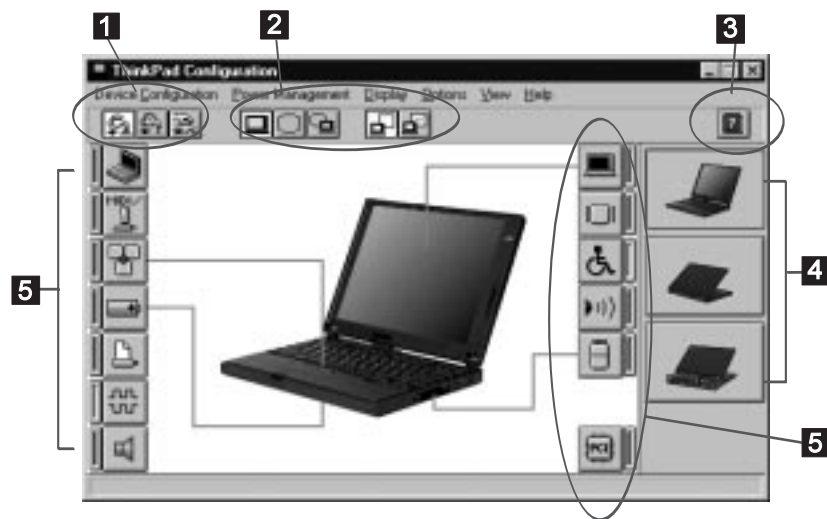
For Windows 95:

To start the **ThinkPad Configuration** program for Windows 95:

- 1** Click on **Start**.
- 2** Move the cursor on **Programs, ThinkPad**; then click on **ThinkPad Configuration**.

The following window appears:

Getting Familiar with Your Computer



- 1 The **Power Mode** buttons
Click on one of these buttons to set the power mode to high performance mode, automatic mode, or customized mode.
- 2 The **Display Device** buttons
Click on one of these buttons to set the display output type to the LCD, external monitor, or both. When making a presentation, you can click on the presentation button to disable any system timers, such as the LCD turn-off timer or the power management mode timers.
- 3 The **Help** button displays online help.
- 4 The **View Angle** buttons
Click on the front view or rear view buttons to display the hardware feature locations.
- 5 The **Device** buttons
Click on the button of your choice from the window.
When the device is enabled, the red indicator next to the button is lit. Otherwise, it stays off.

Only the top portion of the window is displayed if you click on the triangular minimize button in the top-right corner.

Getting Familiar with Your Computer



For Windows NT:

To start the **ThinkPad Configuration** program for Windows NT:

- 1** Click on **Start**.
- 2** Move the cursor on **Programs, ThinkPad**; then click on **ThinkPad Configuration**.



For Windows 3.11:

Double-click on **ThinkPad Configuration** icon.

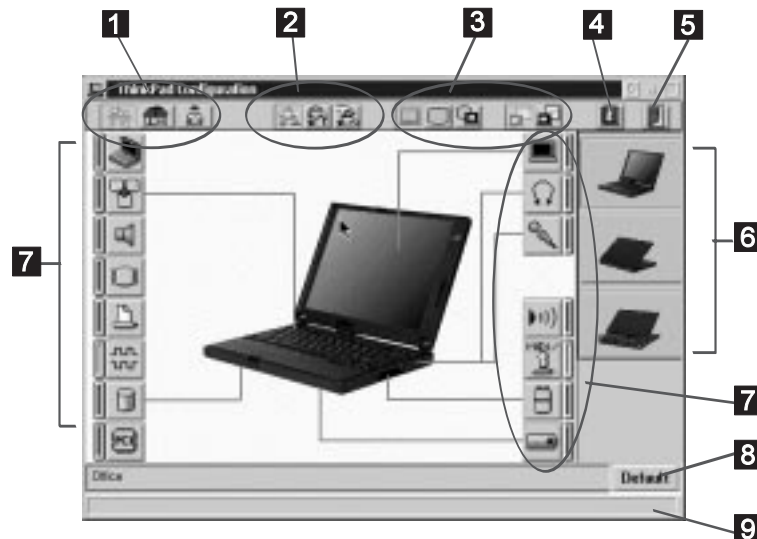


For OS/2:

To start the **ThinkPad Configuration** program for OS/2:

- 1** Double-click on the **ThinkPad Configuration** folder.
- 2** Double-click on **ThinkPad Configuration**.

The following window appears:



Getting Familiar with Your Computer

- 1 The **One-Touch Setup** buttons
Click on one of these buttons to set the system configuration.
- 2 The **Power Mode** buttons
Click on one of these buttons to set the power mode to high performance mode, automatic mode, or customized mode.
- 3 The **Display Device** buttons
Click on one of these buttons to set the display output type to the LCD, external monitor, or both. When making a presentation, you can click on the presentation button to disable any system timers, such as the LCD turn-off timer or the power management mode timers.
- 4 The **Help** button displays online help.
- 5 The **Exit** button
Click on this button to save the changes made and to exit the ThinkPad Configuration window.
- 6 The **View Angle** buttons
Click on the front view or rear view buttons to display the hardware feature locations.
- 7 The **Device** buttons
Click on the button of your choice from the window; then set the options for that device from the window that appears.

If the device is enabled, the red indicator next to the button is lit. Otherwise, it stays off.
- 8 The **Default** button
Click on this button to set the default values for each option and to cancel the changes you just made.
- 9 The **Status** bar
The device name and its status appears in the status bar when you place the cursor on a device button.

Only the top portion of the window is displayed when you click on the triangular minimize button in the top-right corner.



For DOS:

You can use the ThinkPad Configuration program from the DOS prompt. To start the program, do the following:

- 1** Click on **Start**; then the **DOS Prompt** icon.

The DOS prompt window appears.

- 2** Type **PS2 ?** at the **c:\ThinkPad>** prompt.

The “ThinkPad Configuration” online help window appears:

```
C:\>PS2 ?

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with IBM Corp.

Command Syntax: PS2  [Parameter1] [Parameter2] [Parameter3]

Following are available [Parameter1].
For the complete command syntax,
type 'PS2 ? [Parameter]'.

1.Power Management related

   PMode,   SErial,   DDC,       CARD,
```

Getting Familiar with Your Computer

- 3 Select an item from the menu and follow the instructions on the screen to set the features.

You can also create a batch file like the one shown to match your operating environment. The following sample batch file sets a longer battery operating time.

```
@Echo Off

Rem SAMPLE:Set the parameters to provide maximum power utilization.

Rem =====

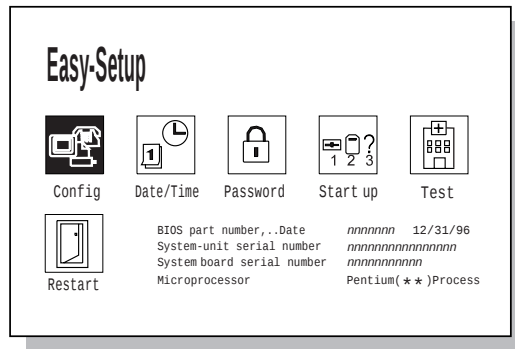
PS2 PMode Custom DC           > Nul
PS2 LCd 3                     > Nul
PS2 DISK 3                    > Nul
PS2 POver 5                   > Nul
PS2 SPeed Fixed MIN           > Nul
PS2 STandby 3                 > Nul
PS2 IR Off                    > Nul
PS2 SErial Off                > Nul
```

Getting Familiar with Your Computer

Easy-Setup

Your computer provides a user-friendly program called *Easy-Setup*, which allows you to select various setup parameters. You should run this program before you start using your computer. Follow these steps to start the program:

- 1** Turn off the computer, and remove any diskette from the diskette drive.
- 2** Press and hold **F1**; then turn on the computer. Hold **F1** until the “Easy-Setup” menu appears:



- 3** Move to an icon you want to change, using the arrow keys or the TrackPoint III, and click on the icon.
A submenu is displayed.
- 4** Change the items you wish to change.
- 5** Click on **Exit** to exit to the submenu.
- 6** Click on **Restart** to exit to the “Easy-Setup” menu.
Your computer restart.

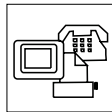
Getting Familiar with Your Computer

Changing the Screen Color

You can change the color of the “Easy-Setup” menu by pressing the **Ctrl+PgUp** keys or by pressing the **Ctrl+PgDn** keys.

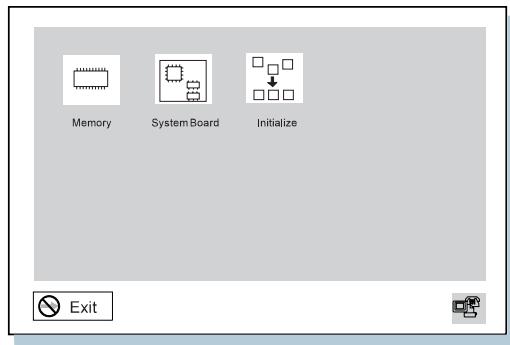
To return to the original color, press the **Ctrl+Home** keys.

Easy-Setup Menus



Config

Pressing the **Config** button displays the following “Config” submenu. It shows information about the installed memory and system board.



The **Memory** button shows the amount of memory installed and available.

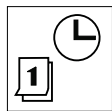


The **System Board** button provides information on the system board installed.



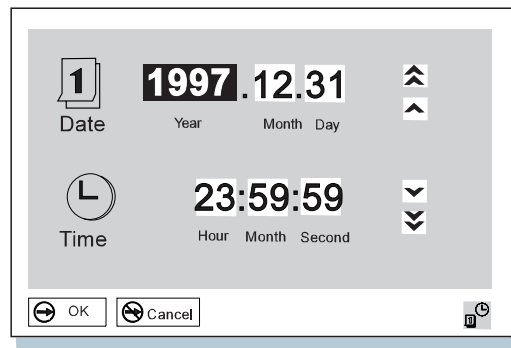
Initialize sets all device settings to the default values.

Getting Familiar with Your Computer



Date/Time

Pressing the **Date/Time** button displays the following “Date and Time” submenu. It is used to set the current date and time.



To change the date and time, do the following:

- 1** Move the cursor to any field (Year, Month, Day, Hour, Minute, or Second) and place the pointer on any of the arrow icons (⬆, ⬇, ⬆, or ⬇) to adjust the date and time.

Clicking on the double-arrow icon scrolls the numbers faster.

- 2** Click on **OK** to save the changes or on **Cancel** to cancel them.

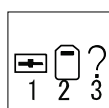


Password

Pressing the **Password** button displays the “Password” submenu. It is used to set the power-on password, hard disk password, and supervisor password. Go to “Using Passwords” on page 50.

Note: An open lock icon shows that a password has not been set yet.

Getting Familiar with Your Computer



Start up

Pressing the **Start up** button displays the “Start up” submenu. It is used to change the startup sequence of your computer.

You can change the startup sequence of the drives in your computer. For example, if you have different operating systems on different replaceable hard disk drives or PC cards, you can have the system boot up from one of these devices.

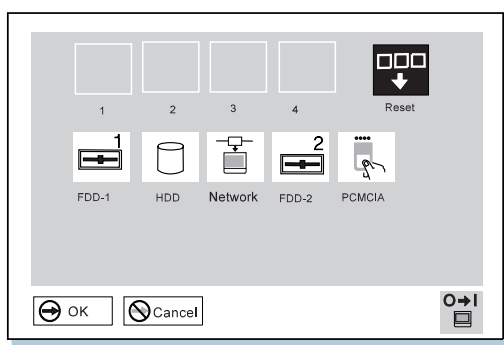
Attention

You must be extremely careful not to specify a wrong device during a copy, save, or a format operation after you change your startup sequence. If you specify a wrong device, your data and programs might be erased or overwritten.

To change the startup sequence, do the following:

- 1** Reset the current startup sequence by moving the cursor to the **Reset** icon; and click on it.

The sequence is reset, and all available device icons appear at the bottom of the screen.

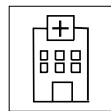


- 2** Select the first device you want for the startup sequence; then click on it.

Repeat this step to set the other devices for the startup sequence. You can set up to four devices.

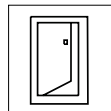
- 3** Click on **OK** or press **Enter** to save the changes.

Getting Familiar with Your Computer



Test

Pressing the **Test** button displays the “Test” submenu. It is used to run diagnostic tests on your computer to check for hardware errors. Go to “Testing Your Computer” on page 126.



Restart

Pressing the **Restart** button ends the Easy-Setup program and restarts the computer.

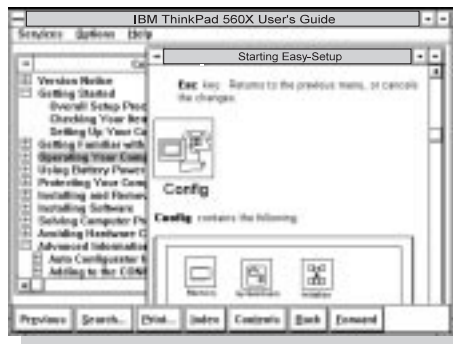
Online Book

Your ThinkPad computer has an online book containing the following advanced information:

- Using PC Card
- Resolving system resource conflicts
- Solving computer problems
- Installing software

To start the online book, double-click on **ThinkPad Information**; then **ThinkPad 560X Online Book**.

The online book appears. Go to the section you want, and make a printout if necessary.



Backing Up Your System

To back up your system or reinstall the operating system, your ThinkPad computer has the following features:

Recovery CD

Diskette Factory program

Recovery CD (Windows 95 Only)

If you accidentally erase your hard disk, you can use the Recovery CD to restore the contents of the preloaded hard disk to what it was at the time of purchase. (Refer to "Using the Recovery CD (Windows 95 Only)" on page 130.)

Diskette Factory

With the Diskette Factory program, you can create the utility and device driver diskettes for Windows 95, Windows NT, Windows 3.11, DOS, or OS/2. (Refer to "Using the Diskette Factory" on page 128.)

Keeping Your Computer from Being Damaged

Your computer is a delicate device that requires careful handling. To keep it from being damaged, keep these precautions in mind:

Do not force the LCD to open flat.

Do not allow your computer to be subject to any physical shock.

Do not place anything heavy on your computer.

Do not pour liquid onto your computer.

Keep the computer at least 13 cm (5 in.) away from any electrical appliance that generates a strong magnetic field, such as a motor, magnet, TV, refrigerator, or large audio speakers.

Use your computer only when temperatures are between 5°C to 35°C (41°F to 95°F). When operating with diskettes, use your computer only between 10°C to 35°C (50°F to 95°F)

Do not disassemble the computer.

Do not scratch, twist, hit, or push the LCD surface.

If you will not be using the computer for a long period of time, the battery pack and keep it in a cool place.

Insert diskettes straight into the external diskette drive. Inserting them at an angle can damage the front of the drive.

Getting Familiar with Your Computer

Do not place more than one diskette label on a diskette. Two or more labels can cause a label to tear apart inside the external diskette drive and damage the drive.

Occasionally clean your computer as follows:

Use a soft cloth moistened with nonalkaline detergent to wipe the exterior of the computer.

Gently wipe the LCD with a dry, soft cloth. Do not use alcohol or detergent.

Carrying the Computer

When carrying your computer, you need not power it off.

When carrying it a short time, put the computer in suspend mode.

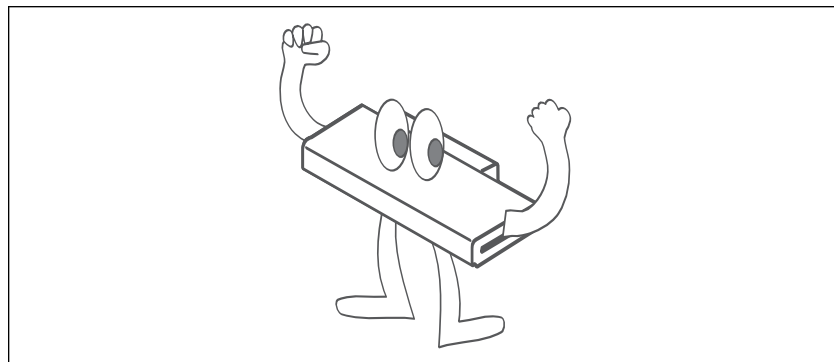
When carrying it a long time, put the computer in hibernation mode.

There is an optional carrying bag for your ThinkPad 560X computer.

Chapter 2. Using Battery Power

This chapter describes battery pack operations.

Using the Battery Pack	29
Charging the Battery Pack	29
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Using the Fuel-Gauge Program	32
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Using the Power-Saving Modes	33
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Setting the Suspend Timer	38
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Using the Battery Pack

This section describes how to charge your battery pack, display its status, or replace it.

Charging the Battery Pack

You can charge the battery pack when the AC Adapter is connected to the computer and the battery pack is installed. You must charge the battery pack in any of the following conditions:

- If you purchase a new battery pack.
- If the battery status indicator starts blinking
- If the battery pack has not been used for a long time.

Notes:

1. Before you charge the battery pack, ensure that its temperature is at least 10°C (50°F).
2. If the battery pack has not been used for a long time, it will not be fully charged with only a single charging. You will have to completely discharge it; then recharge it three to six times to maximize battery operating time.

Monitoring the Battery Status

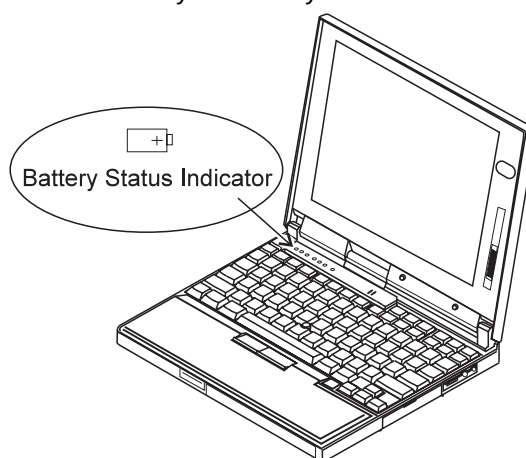
You can monitor the battery status through the battery status indicator and the Fuel-Gauge program.

Using Battery Power

Using the Battery Status Indicator

The battery status indicator shows the current status of the battery pack (only when the battery is installed).

Compare the battery status indicator with the following table to determine the condition of your battery.



Status	Condition
Green	Enough power remains for operation.
Orange	The battery pack is being charged.
Blinking orange	The battery pack needs charging. If the indicator starts blinking orange, the computer beeps three times.
Off	The battery pack is not installed. The computer is turned off or is in suspend mode when the AC Adapter is not connected.

Attention

You should take corrective actions when the battery status indicator is *blinking orange*, and your computer sounds three consecutive beeps. (If your computer enters suspend mode because of a low-battery condition, data in memory might be lost.)

Immediately connect the AC Adapter to the computer.

Then take either of the following actions:

To continue your work with AC Adapter, press the **Fn** key.

or:

To continue your work with a fully charged battery pack, do the following:

1. Replace the battery pack with a fully charged one. (See “Replacing the Battery Pack” on page 46.)
2. Press the **Fn** key.
3. Disconnect the AC Adapter from the computer.

If you do not take corrective actions within about 30 seconds, the computer will enter suspend mode.

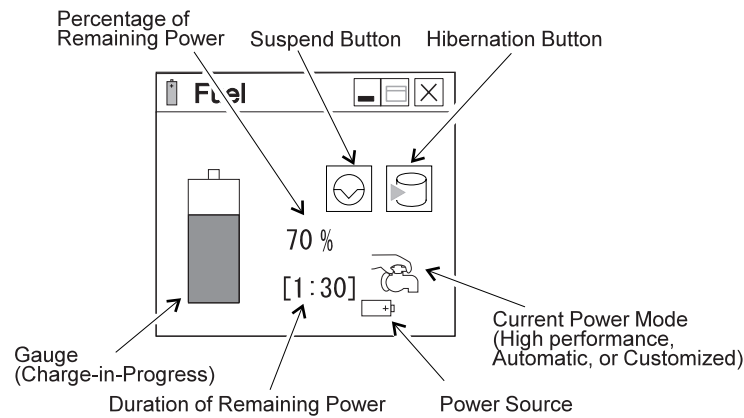
Do not leave the computer in this condition for an extended time. Data in memory will be lost.

Using Battery Power

Using the Fuel-Gauge Program

Using the Fuel-Gauge program, you can display the battery status and power mode (High performance, Automatic, or Customized). You also can select suspend or hibernation mode.

To start the Fuel-Gauge program, click on the **Fuel-Gauge** icon in the ThinkPad Configuration window. The following window appears:



Notes:

1. The "Current Power Mode" icon depends on the power mode.
2. The "Power Source" icon depends on the power source. (— is for the AC Adapter and + is for battery pack.)
3. The "Duration of Remaining Power" does not appear when the AC Adapter is connected.

You can minimize the window to an icon by clicking on  on the status bar of the window. You can toggle between the Fuel-Gauge window and the icon by pressing the **Fn+F2** key combination.

Saving Battery Power

Your battery pack should be useful for approximately 3 years or 300 charge-discharge cycles. The number of years or charge-discharge cycles may vary depending on how efficiently you use your computer. This section describes the following:

- How to use the power management modes.
- How to use other battery saving methods.

Using the Power-Saving Modes

Your ThinkPad computer has three power management modes to save power. You can use your computer under battery power for a considerable length of time by using these power management modes:

CAUTION

It is not recommended to enter suspend or hibernation mode when your computer is working the following applications:

- Playing or recording audio
- Playing a movie
- Playing a game
- Other multimedia application

Stop these application before entering suspend or hibernation mode.

Using Battery Power

Standby Mode

In standby mode, the LCD turns off. Also, if a power-saving monitor (Energy Star Monitor) is in use when the computer enters standby mode, the computer activates the monitor's low-power mode.

Your computer enters this mode by default when there is inactivity on your computer for a set duration of time. You can also enter this mode by pressing the **Fn+F3** keys.

To return to normal operation, press any key or move the TrackPoint.

Suspend Mode

In this mode, your computer stops all tasks and stores all data in memory. You can enter suspend mode by:

- Pressing the **Fn+F4** keys
- Closing the cover
- Selecting the **Suspend** button () in the Fuel-Gauge program

RediSafe

To prevent loss of data during suspend mode when the battery is critically low, the ThinkPad has a **RediSafe** function. Once you set this function, the hibernation file is activated each time the computer enters suspend mode, and is ready to enter hibernation mode from suspend mode whenever the battery is low.

Set **RediSafe** as following:

Windows 95:

1. Start the ThinkPad Configuration program.
2. Click on **Power Management** button (.
3. Select **Hibernation** tab.
4. Enable hibernation mode if it is disabled.
 - a) Click on the **Enable Hibernation..** button.
 - b) Click on **Create Now**; then **Close**.
5. Select **RediSafe**.
6. Click on **OK**.

Windows NT, Windows 3.11, or OS/2:

1. Start the ThinkPad Configuration program.
2. Click on **Power Management** button (.
3. Select **Suspend/Hibernation/Resume Options** button (.
4. Enable the hibernation if it is disabled.
 - a) Click on the **Enable Hibernation..** button.
 - b) Click on **OK**.
5. Select **RediSafe**.
6. Click on **OK**.

Using Battery Power

Hibernation Mode

In this mode, your computer stops all tasks and stores all data in the hard disk; then it powers off. You should set your computer to this mode when you want to maintain the present operating condition until the next day, for instance.

To use this mode, you have to create a hibernation file with the ThinkPad Configuration program. (See “Enabling Hibernation Mode” on page 39.)

For Windows NT Users

You cannot create a hibernation file in a Windows NT system that uses the NTFS format, the Windows NT default. If you want to use hibernation mode, you should reinstall Windows NT with FAT format.

You can set hibernation mode by doing any of the following:

- Pressing the **Fn+F12** keys.
- Selecting the **Hibernation** button () in the Fuel-Gauge program.

Notes:

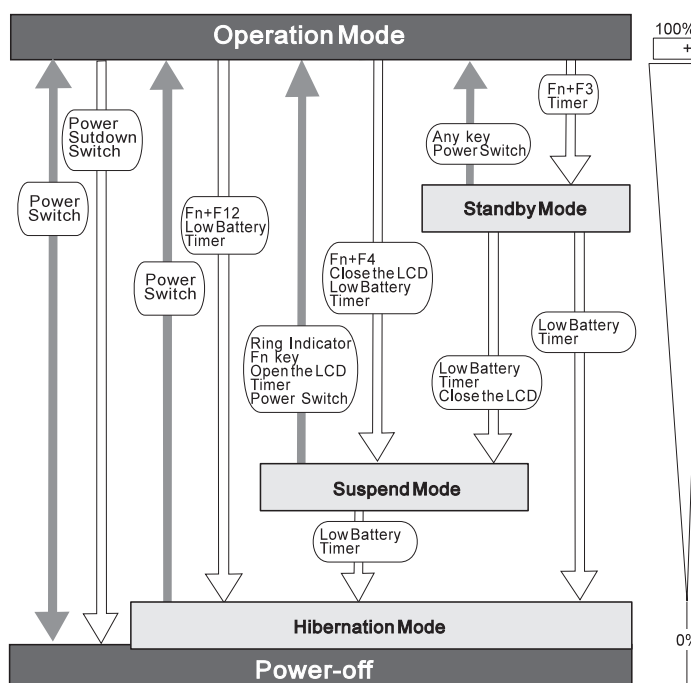
1. You cannot enter hibernation mode when you are using the communication network.
2. Hibernation mode might be terminated if you connect your computer to a port replicator or if you use a particular PC Card.

Using Battery Power

The following table shows how the indicator behaves in each power management mode:

Current Status	Indicator	
	 Suspend Mode	 Power-On
Normal operation or standby mode	Off	Green
Suspend mode	Green	Off
Entering or resuming from suspend mode	Blinking green	Off
Power off or hibernation mode	Off	Off

The following figure shows the relationship between different power management modes, how to switch between them and battery power consumption:



Customizing the Power Management

This section describes how to customize the power management. Use the power management mode appropriate to your operation.

Setting the Suspend Timer

To set the suspend timer, do the following:



For Windows 95:

- 1** Start the ThinkPad Configuration program.
- 2** Click on the **Power Management** () button.
The “Power Properties” window appears.
- 3** Select the **Power Mode** tab.
The “Power Mode” window appears.
- 4** Select **Customized**.
The bottom gray portion is displayed in black, and you can specify the timeout value in minutes in the **Suspend Timer** box.
- 5** Click on **OK**.



For Windows NT, Windows 3.11, or OS/2:

- 1** Start the ThinkPad Configuration program.
- 2** Click on the **Power Management** () button.
Three buttons appear on the right.
- 3** Click on the **Power Mode Settings** () button.
The “Power Mode Settings” window appears.
- 4** Specify the timeout value in minutes in the **Suspend Timer** box.
- 5** Click on **OK**.

Enabling Hibernation Mode

To enable hibernation mode, do the following:



For Windows 95:

- 1** Start the ThinkPad Configuration program.
- 2** Click on the **Power Management** () button.
The "Power Properties" window appears.
- 3** Select the **Hibernation** tab.
The "Hibernation" subwindow appears.
- 4** Click on **Enable Hibernation**. (If you have already created a hibernation file, this button appears in gray and you cannot click on it.)
The "Enable Hibernation" subwindow appears.
- 5** Click on **Create Now**.
- 6** Click on **Close**; then **OK**.



For Windows NT, Windows 3.11, or OS/2:

- 1** Start the ThinkPad Configuration program.
- 2** Click on the **Power Management** () button.
- 3** Click on the **Suspend/Resume Options** () button.
The "Suspend/Resume Options" window appears.
- 4** Click on the **Enable Hibernation..** button.
- 5** Click on **OK**.

Considerations When Using a Power Management Mode

When you use a power management mode, you need to consider a few points, especially if you are using the network.

Considerations for Suspend Mode

Consider the following before using suspend mode:

The computer can enter suspend mode when used with the following operating systems:

- DOS Version 7.0
- OS/2 Warp Version 4
- Microsoft Windows Version 3.11 with DOS Version 7.0
- Microsoft Windows 95
- Microsoft Windows NT 4.0

Important

If you use Windows Version 3.11, ensure that Advanced Power Management (APM) is installed according to the instructions in page 44.

Attached devices, such as a printer or serial device, stop running when the computer enters suspend mode. When you resume normal operation, the output might differ from what you expect, because the device might be reset or lose its configuration settings.

Sometimes you might want to use the computer with the LCD closed—for example, when an external monitor and keyboard are used. In such a case, turn on the computer with the LCD closed or use the ThinkPad Configuration program to set the computer to not enter suspend mode when the LCD is closed.

If the computer resumes normal operation by reaching the ThinkPad Configuration timer setting or because of an incoming call, only a blank screen is displayed. To display a power-on password prompt, press any key or move your pointing device.

If the computer is powered with ac power and is using one of the following IBM PC Cards, it enters *standby mode*:

- IBM 3270 Emulation Credit Card Adapter
- IBM Token-Ring 16/4 Credit Card Adapter

Using Battery Power

- IBM Credit Card Adapter for Ethernet
- IBM 5250 Emulation Credit Card Adapter

If other PC Cards are used and the computer enters suspend mode, all application programs stop. Communication also stops for communication PC Cards not in the preceding list. For some PC Cards, power to the PC Cards might also turn off.

If the computer is powered with battery power, the computer turns power off to the PC Card, and communication stops for communication PC Cards, so the duration of suspend mode is longer.

If communication for a PC Card is not reestablished after resuming normal operation, remove and then reinstall the PC Card before restarting the system or application program. For other kinds of PC Cards, if the PC Card or computer does not operate, restart the application or computer.

If the computer is using one of the following IBM modem cards and detects an incoming call while in suspend mode, the computer automatically resumes normal operation:

- IBM 28.8/14.4 Data/FAX Modem
- IBM PCMCIA Data/FAX Modem
- IBM High Speed PCMCIA Data/FAX Modem
- IBM Microelectronics 2.4/9.6 Data/FAX Modem
- IBM Microelectronics 14.4/14.4 Data/FAX Modem
- IBM Wireless Modem for ARDIS
- IBM Wireless Modem for Mobitex
- IBM Wireless Modem for Cellular/CDPD

While a communication link is active, the computer does not enter suspend mode.

Using Battery Power

Note:

You must set the **Resume on incoming call** option in the ThinkPad Configuration program so the computer automatically resumes normal operation.

For Windows 95:

1. Click on the **Battery** () button.
2. Click on the **Suspend/Resume options** tab.
3. Select the **Resume on incoming call** option.

For Windows NT, Windows 3.11, or OS/2:

1. Click on the **Battery** () button.
2. Click on the **Suspend/Hibernation/Resume options** () button; then select the **Resume on incoming call** option.

For DOS: Enter PS2 RI E

Considerations for Hibernation Mode

Consider the following before using hibernation mode:

Do not run any tasks while the hibernation file is being created.

The computer uses battery power to enter hibernation mode. Therefore, it reserves some battery power when it is set to enter hibernation mode when a low-battery condition occurs. This can cause the battery operating time to be shorter than the time publicly stated.

Do not add or remove memory during hibernation mode. If you do, the computer resumes from hibernation mode without recognizing the changed memory size. To ensure that the computer recognizes the correct memory size, shut down; then restart your operating system.

If the computer is powered with battery power, the computer turns power off to the PC Card when entering hibernation mode. When resuming normal operation, if the PC Card or computer does not operate, restart the application or computer.

Using Battery Power

If the computer is powered with ac power, it does not enter hibernation mode if it is using one of the following IBM PC Cards:

- IBM 28.8/14.4 Data/FAX Modem
- IBM PCMCIA Data/FAX Modem
- IBM High Speed PCMCIA Data/FAX Modem
- IBM 3270 Emulation Credit Card Adapter
- IBM Token-Ring 16/4 Credit Card Adapter
- IBM Credit Card Adapter for Ethernet
- IBM 5250 Emulation Credit Card Adapter
- IBM Microelectronics 2.4/9.6 Data/FAX Modem
- IBM Microelectronics 14.4/14.4 Data/FAX Modem
- IBM Wireless Modem for ARDIS
- IBM Wireless Modem for Mobitex
- IBM Wireless Modem for Cellular/CDPD

This prevents possible problems from occurring with communication application programs after the computer returns to normal operation.

Note:

If the communication links are still not reestablished, remove and then reinstall the PC Card before restarting the system or application program.

Notes for Reinstalling or Installing the Operating System

When you install an operating system, install it with Advanced Power Management (APM). Also install the ThinkPad Configuration program with the Utility Diskette to use power management mode.

Note: To install the software, see the online book.



If you are using Windows 95 or OS/2, APM is automatically installed in your computer.

Using Battery Power



*If you are using DOS, APM is automatically installed in your computer. To verify that the computer has installed APM correctly, type power at the command prompt and press **Enter**. If a screen similar to the following appears, APM is successfully installed.*

```
Power Management Status
-----
Setting = ADV: REG
CPU: idle 32% of time.

AC Line Status : OFFLINE

Battery status : High
```

If not, add the following line to your CONFIG.SYS file, using a text editor such as the DOS Editor:

```
DEVICE=C:\DOS\POWER.EXE
```



If you are using Windows 3.11, follow these instructions to check and install APM for Windows:

1 Start the computer.

Make sure that the current directory is Windows (usually C:\WINDOWS>).

2 Type SETUP at the command prompt and press **Enter**.

The following appears:

```
Windows Setup
=====

If your computer or network appears on the Hardware Compatibility List
with an asterisk next to it, press F1 before continuing.

System Information
Computer:      MS-DOS System
Display:      MagicGraph128XD 8  x6  256 small font
Mouse:        Microsoft, or IBM PS/2
```

If **MS-DOS System with APM** appears for the item **Computer:**, APM is already installed. Press **F3** to exit the setup.

Using Battery Power

- 3** Using the Arrow keys (↑, ↓), position the highlighted cursor over **MS-DOS System** and press **Enter**.
- 4** Position the highlighted cursor over **MS-DOS System with APM** and press **Enter**.
- 5** Verify that the item **Computer** has changed to **MS-DOS System with APM** on the screen. If not, return to step 3.

```
Windows Setup
=====

If your computer or network appears on the Hardware Compatibility List
with an asterisk next to it, press F1 before continuing.

System Information
Computer:      MS-DOS System with APM
Display:      MagicGraph128XD 8 x6 256 small font
Mouse:        Microsoft, or IBM PS/2
```

- 6** Press **Enter** to install APM.
- 7** Restart the system to make APM effective.

Using Other Battery Saving Methods

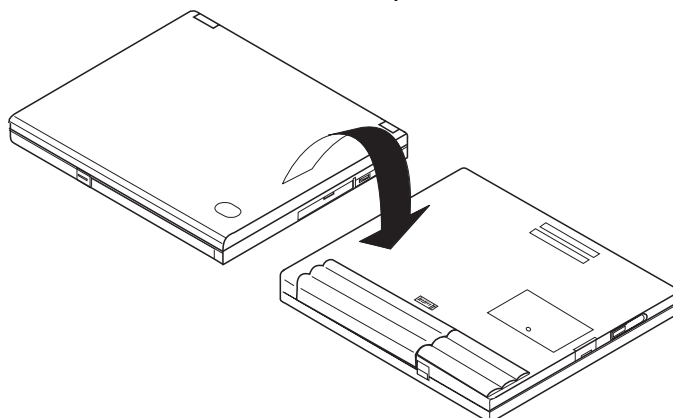
Another battery-saving method is to decrease the LCD brightness. You can use the ThinkPad Configuration program to decrease the brightness of the LCD by clicking on the **LCD** () button and selecting **Normal** for **Brightness (battery operation)** in the window that appears.

Using Battery Power

Replacing the Battery Pack

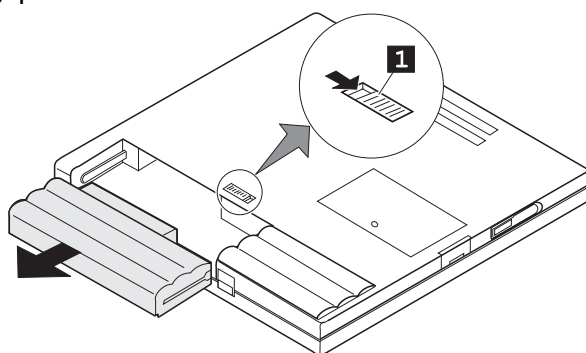
To replace the battery pack, do as follows:

- 1** Power off your computer or connect the AC Adapter.
- 2** Close the LCD and turn the computer over.



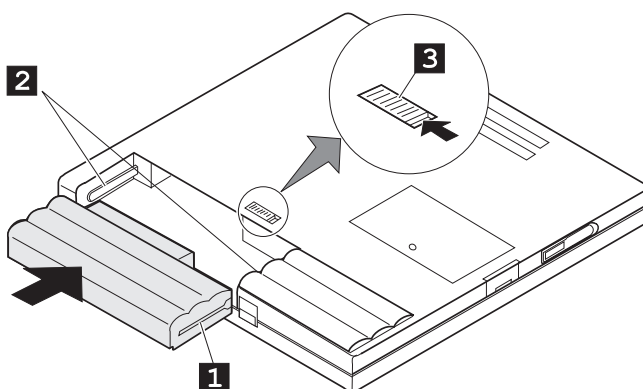
Using Battery Power

- 3** Slide the battery pack latch **1** ; then slide the battery pack toward the front of the computer and remove the battery pack.



- 4** Align the guides on the fully charged spare **1** with the guides on the computer **2** ; then slide the battery pack into the computer.

Fully press the battery pack into the computer. When it is fully installed, the battery pack latch **3** automatically locks into place.



Using Battery Power

5 Turn the computer over again; then open the LCD.

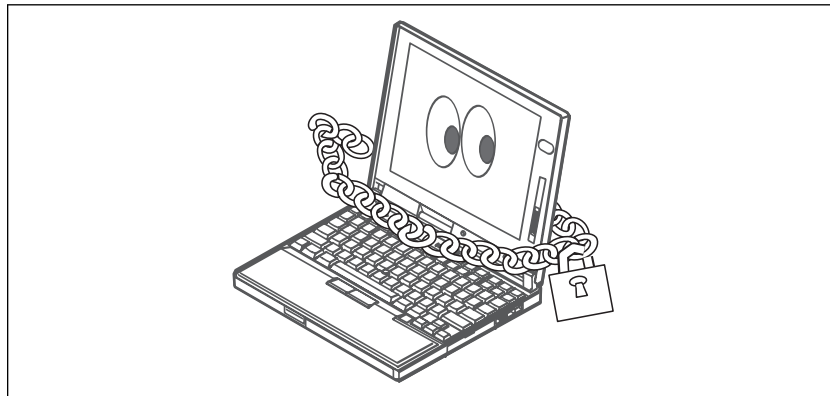
You have finished replacing the battery pack.

Note: You can replace the battery when the computer is in hibernation mode. When you use the PC Card, the computer might not be able to enter hibernation mode. If this happens, power off the computer.

Chapter 3. Protecting Your Computer

This chapter provides information about how to protect your computer from theft or unauthorized use. It also describes how to display your personal information, such as your name or address, on the password prompt screen.

Using Passwords	50
Entering a Password	50
Setting a Password	51
Changing and Removing a Password	54
For a Power-On Password or HDD Password	54
For a Supervisor Password	56
Using the Personalization Editor	60
Using Locks	64



Using Passwords

The password-setting feature prevents your computer from being used by others. Once you set a password, a prompt appears on the screen each time you turn on the computer. You must enter your password at the prompt. You will not be able to use the computer unless you type the correct password. You can set the following passwords on your computer:

The **power-on password** protects your computer from being used by unauthorized persons.

The **hard disk password** protects the data on your hard disk from being accessed by unauthorized persons.

The **supervisor password** protects the system information stored in Easy-Setup and also makes your computer tamper-resistant.

Entering a Password

Once you set a password, a password prompt appears at the top left corner of the screen. This prompt appears each time you turn on your computer or when your computer returns from suspend mode to normal operation.

However, a password prompt is not displayed if the computer returns to normal operation by a preset timer or an incoming call on the modem, in which case you will have to display it by pressing a key or moving the pointing device.

To enter a password, do the following:

1 Type your password.

The  symbol appears each time you press a key. Don't hold down a key too long, since the same character will be entered continuously.

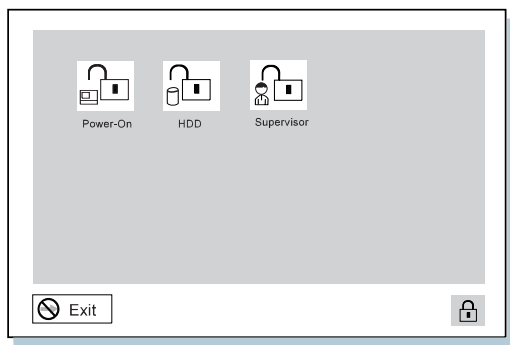
2 Press the **Enter** key.

An **OK** appears if you enter the correct password, and an **X** appears if you enter the wrong password. If you fail to enter the correct password in three tries, you must turn off the computer, wait 5 seconds, and then turn it on again and retry.

Setting a Password

To set a password, do the following:

- 1** Start Easy-Setup.
 - a)** Press and hold **F1**; then turn on the computer.
 - b)** Hold **F1** until the “Easy-Setup” menu appears.
- 2** Click on **Password** in the “Easy-Setup” menu. The “Password” submenu appears:



Selecting this icon displays a submenu for setting the **power-on** password.



Selecting this icon displays a submenu for setting the **hard disk drive (HDD)** password.



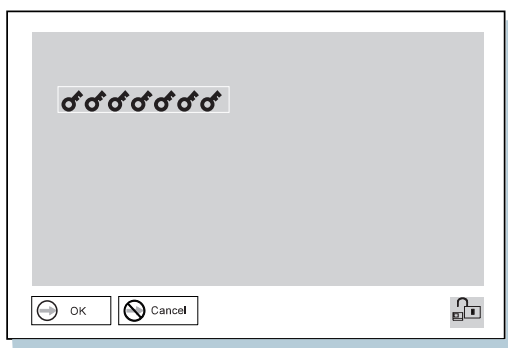
Selecting this icon displays a submenu for setting the **supervisor** password.

Note: An unlocked keylock icon indicates a password that is not yet set.

- 3** Click on the type of password you want to set:
Power-On, **HDD**, or **Supervisor**.

Protecting Your Computer

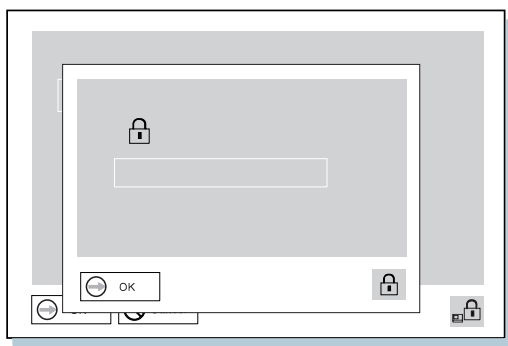
4 Type your desired appropriate password.



Note: You can type a maximum of 7 random characters using a combination of letters (A to Z) and numbers (0 to 9). Uppercase and lowercase letters (for example, A and a) are treated as the same characters.

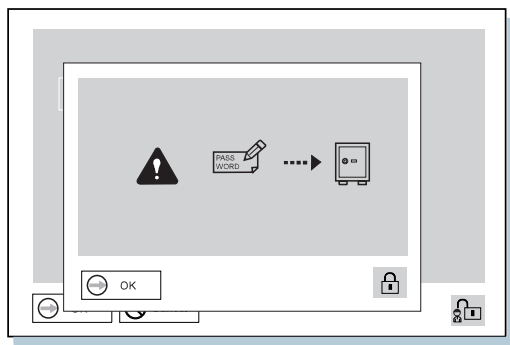
If you type a wrong character, use the **Backspace** key to erase it and then type the correct one.

5 Press **Enter**. The “Password Confirmation” submenu appears:



- 6** Type your password again to verify it; then press **Enter** again.

Note: The following submenu appears if you are setting the hard disk or the supervisor password, reminding you to write down the password on a piece of paper and to keep it in a safe place.



Your password is set.

Do Not Forget Your Password

If you forget your hard disk or supervisor password, there is **no way to reset your password or recover data from the hard disk**. You have to take your computer to an IBM authorized reseller or an IBM marketing representative to have the hard disk or the system board replaced. Proof of purchase is required, and an additional charge might be required for the service. Neither an IBM authorized reseller nor IBM marketing representative can make the hard disk drive usable.

Changing and Removing a Password

This security feature prevents someone from removing a password and using your computer. To remove a password, do the following:

For a Power-On Password or HDD Password

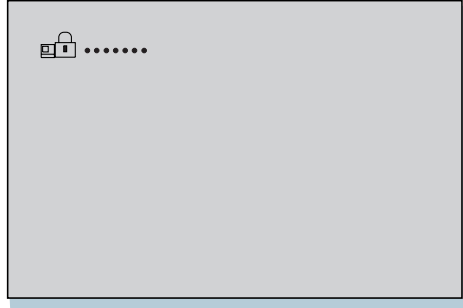
- 1** Turn off the computer and wait at least 5 seconds; then turn on the computer.

The password prompt appears.

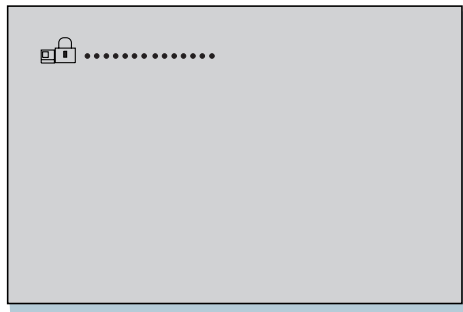
To change the password, go to the next step.

To remove the password, go to step 5 on page 55.

- 2** Type your current password and press the **Spacebar**.



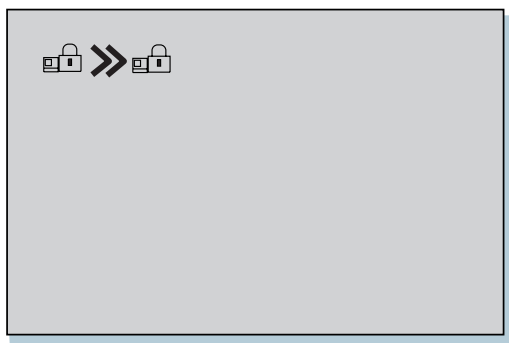
- 3** To change the password, type the new password; then press the **Spacebar**.



- 4** Type the new password again to verify it; then press **Enter**.

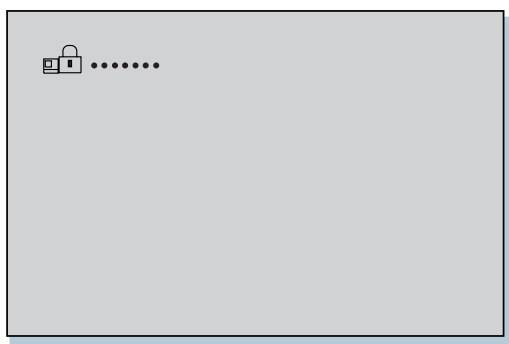
The following submenu appears and system starts.

Note: Write down the password on a piece of paper and keep it in a safe place.



You have changed your password. Skip the remaining steps.

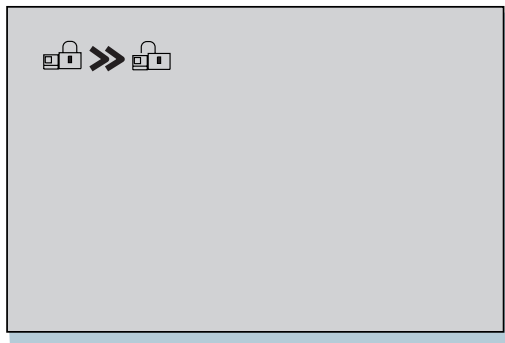
- 5** Type your current password and press the **Spacebar**.



Protecting Your Computer

6 Press **Enter**.

The following submenu appears and system starts.

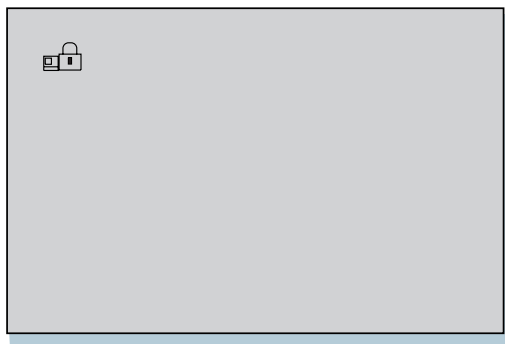


You have removed your password.

For a Supervisor Password

1 Start Easy-Setup.

- a) Press and hold **F1**; then turn on the computer.
- b) Hold **F1** until the password prompt appears.



2 Enter the supervisor password.

The “Easy-Setup” menu appears.

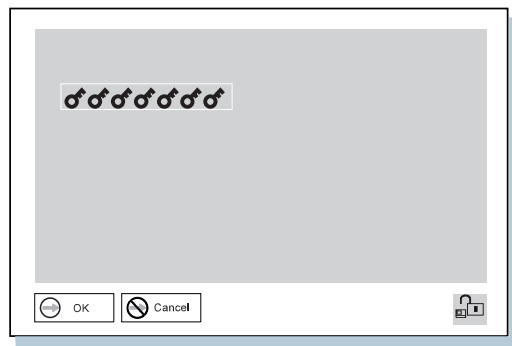
3 Select **Password** on the menu.

4 Select **Supervisor**.

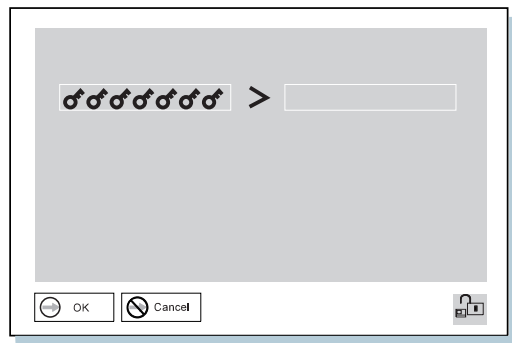
To change the password, go to the next step.

To remove the password, go to step 10 on page 58.

5 Enter the current password and press the **Spacebar**.



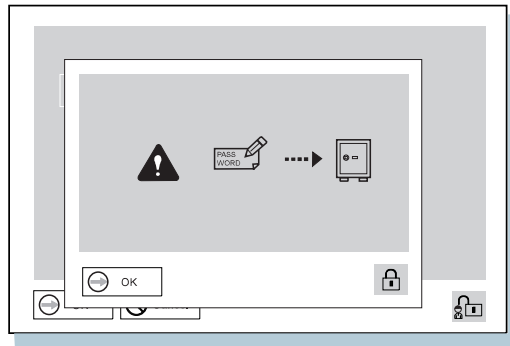
6 Type the new password; then press the **Spacebar**.



Protecting Your Computer

- 7** Type the new password again to verify it; then press **Enter**.

Note: The following submenu appears and reminding you to write down the password on a piece of paper and keep it in a safe place.



- 8** Press **Enter** again.
- 9** Click on **Exit**; then **Restart**.

The supervisor password has been changed. Your computer restarts. Skip the remaining steps.

- 10** Enter the current password and press the **Spacebar**.
- 11** Press **Enter**.
- 12** Click on **Exit**.
- 13** Select **Restart**.

The supervisor password has been removed. Your computer restarts.

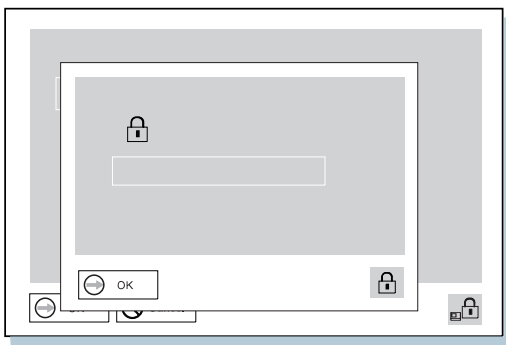
Power-on Password with Supervisor Authority

You can remove a power on password (even if you don't know it) if you know the supervisor password.

1. Power on the computer by pressing **F1**.

The password prompt appears.

2. Enter the supervisor password. The “Easy-Setup” menu appears.
3. Select **Password** on the menu.
4. Select **Power on** on the menu.
5. Type the supervisor password; then press **Spacebar**.
6. Press **Enter**. The “Password Confirmation” submenu appears:

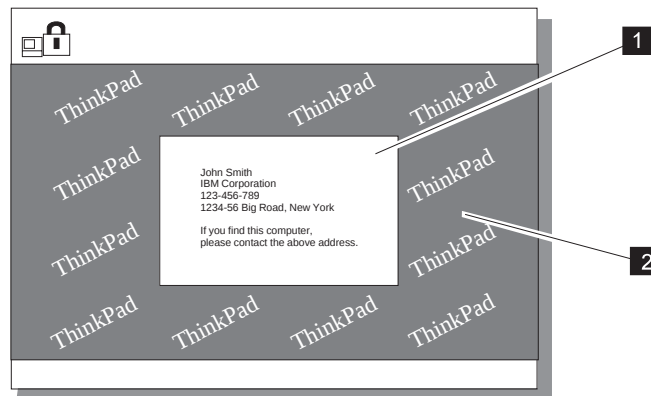


7. Press **Enter** again.
8. Click on **Exit**; then select **Restart**. Your computer restarts. The power-on password has been removed.

Using the Personalization Editor

With the Personalization Editor, you can display such personal information as your name and address on the screen each time you power on your computer. This feature helps you to identify your computer when identical computers are being used in your location, or to deter theft.

A personalized password-prompt screen consists of two parts: the *personal data area* 1 and the *background bitmap area* 2 .



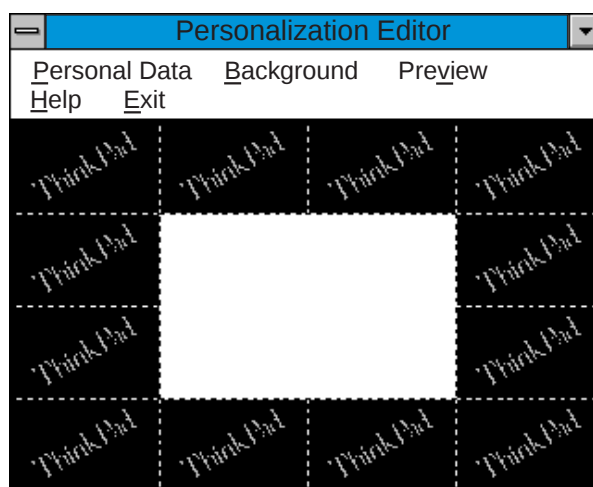
Protecting Your Computer

To register your name, address, and company on the Personalization Editor, do the following:

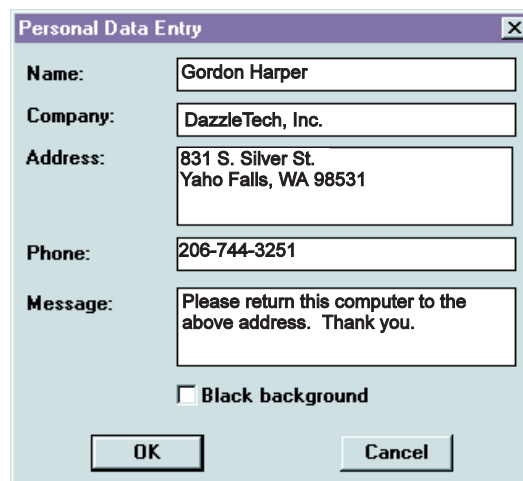
Note: To display this information, the power-on password must already have been set.

- 1** Turn on the computer.
- 2** Make a backup copy of the DOS, Personalization Utility Diskette using your operating system's diskcopy command.
- 3** Insert the backup copy of the DOS, Personalization Utility Diskette into the diskette drive.
- 4** Open the **Personalization Editor**
 - a) Click on **Start**.
 - b) Move the cursor to **Programs, ThinkPad**: then click on **Personalization Editor**.

The following window appears:



- 5** Click on **Personal Data** and type in the necessary information into the boxes.



If you want to create the background bitmap, do as follows, otherwise, go to step 10.

- 6** Select **Background** in the “Personalization Editor” window.

Windows Paintbrush automatically opens.

- 7** Draw an image or color the background.

Your bitmap size must be 160 by 100 pels. To change the size, select **Open** and then **Image Attribute**. Specify a **Width** of 160, **Height** of 100, and set **Unit** to pels.

- 8** Select **File** and save **Save As** to save the and name your drawing as a 16-color bitmap file on the backup copy of the DOS, Personalization Utility Diskette.

Note: For preview the actual full-size of the screen, select **Preview**.

- 9** Press **Enter** to return the previous window.

- 10** Turn off the computer.

11 Insert the backup copy of the DOS, Personalization Utility Diskette into the diskette drive; then turn on the computer.

12 Select **Update personalization data** at the menu window; then follow the instruction on the window.

Your data will be copied from DOS, Personalization Utility Diskette and stored in the nonvolatile memory in the computer.

13 After the data is stored, turn off the computer.

14 Set your password if you have not set yet.

Click on **Help** for more information.

The information that you typed in will be displayed the next time you power on.

Delete a Personalization Screen

To delete a personalization screen from the password-prompt screen as follows:

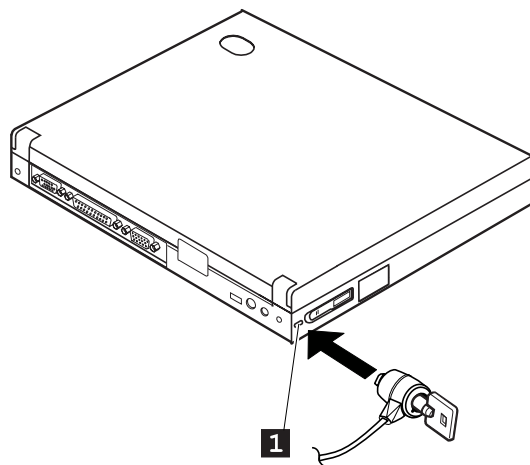
- 1.** Turn off the computer.
- 2.** Insert the backup copy of the DOS, Personalization Utility Diskette into the diskette drive; then turn on the computer.
- 3.** Select **Delete personalization data** from the menu; then follow the instructions on the screen.
- 4.** After the data is updated, restart the computer.

Using Locks

You can attach a mechanical lock to your computer, to prevent it from being removed without your permission.

To attach a lock, do the following:

Attach a mechanical lock to the keyhole **1** on the rear of the computer; then secure the chain on the lock to a secure stationary object.

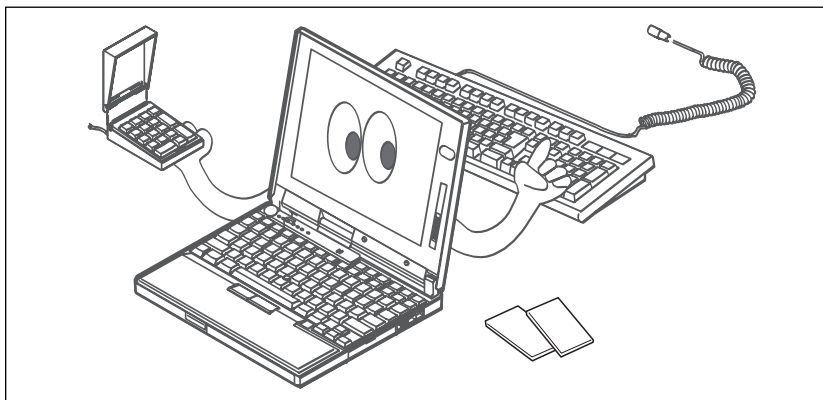


Note: You are responsible for evaluating, selecting, and implementing the locking devices and security features. IBM makes no comments, judgments, or warranties about the function, quality, or performance of locking devices and security features.

Chapter 4. Using the Advanced Features of Your ThinkPad

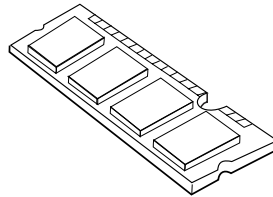
This chapter provides information about how to attach external devices or to increase memory.

Increasing Memory	66
Installing the Memory Option	66
Using an External Pointing Device	70
Disabling the TrackPoint III	74
Switching between the LCD and an External Monitor	75
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Stop	95
Slot Management	97
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Using the 3D Sound Retrieval System (SRS) Function	99
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Increasing Memory

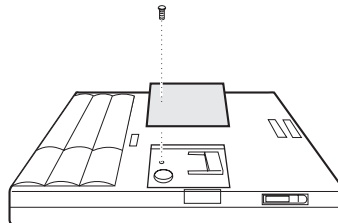
Increasing memory capacity is an effective way to make programs run faster. You can increase the amount of memory in your computer by installing a dual inline memory module (DIMM), available as an option.



Different capacities of DIMM (up to 64 MB) are available. You can install a DIMM directly in the memory slot on the bottom of the computer. Your computer memory capacity can be expanded up to 96 MB (32 MB base memory and a 64 MB DIMM option).

Installing the Memory Option

- 1** Turn off the computer; then remove the battery pack, disconnect the AC Adapter and all cables from the computer.
- 2** Turn the computer over.
- 3** Remove the screw on the memory slot cover.



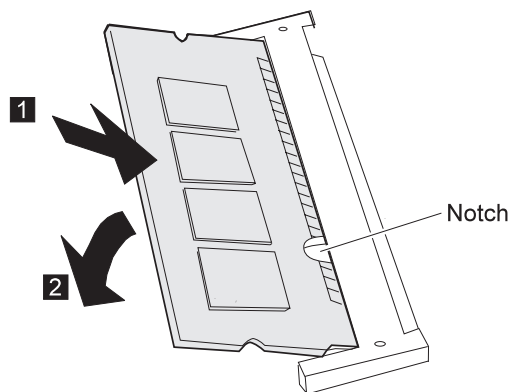
Using Advanced Features of Your ThinkPad

4 Install the DIMM into the memory slot.

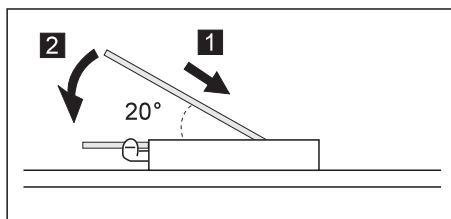
Attention

To avoid damaging the DIMM, do not touch its contact edge.

- a** Find the notch on the side of the DIMM.
- b** With the notched end of the DIMM toward the right side of the socket, insert the DIMM, at an angle of approximately 20°, into the socket; then press it firmly 1.
- c** Pivot the DIMM until it snaps into place 2.

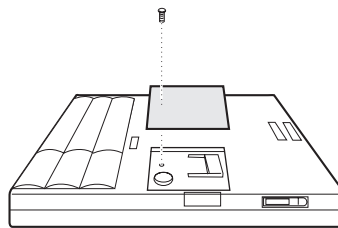


Side View



Using Advanced Features of Your ThinkPad

- 5 Place the memory slot cover over the memory slot; then install the screw back into its place.



- 6 Turn the computer over again and confirm that the new memory size appears at the upper left corner of the screen.

For example, if you install the 32 MB DIMM you should see the following:

```
6496  KB  OK
```

You have finished installing the DIMM. Reconnect all cables.

Notes:

1. For the following status, turn off the computer and go to page 66 to reinstall the DIMM and do the memory test with Easy-Setup (see page 25).

If a 2 1 error code appears under the memory count.

```
48576 KB OK
2 1
```

If the total memory size is not the same as the value you calculated.

2. If you changed the memory installed in the computer, you need to create a new hibernation file.

Using Advanced Features of Your ThinkPad

How to Calculate Total Memory Size

Calculate your total memory size in kilobytes (KB) by adding the DIMM memory size to the base memory size (32192 KB).

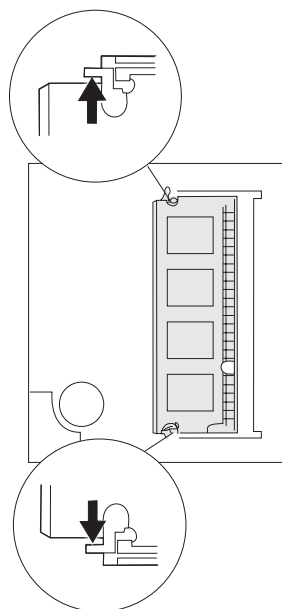
For example, if you installed a 32 MB DIMM, calculate the total memory size as follows.

Note: 1MB=1024KB

$$[32(\text{MB}) \times 1024(\text{KB})/(\text{MB})] + 32192(\text{KB}) = 64960 (\text{KB})$$

Removing the DIMM

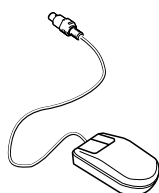
1. Remove the screw and memory slot cover.
2. Press out on the latches on both edges of the socket at the same time.



3. Remove the DIMM.
Be sure to save the DIMM for future use.
4. Replace the memory slot cover; then replace the screw.

Using Advanced Features of Your ThinkPad

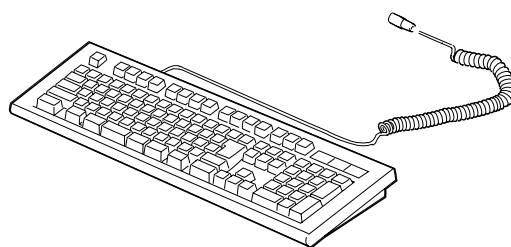
Using an External Pointing Device



Mouse

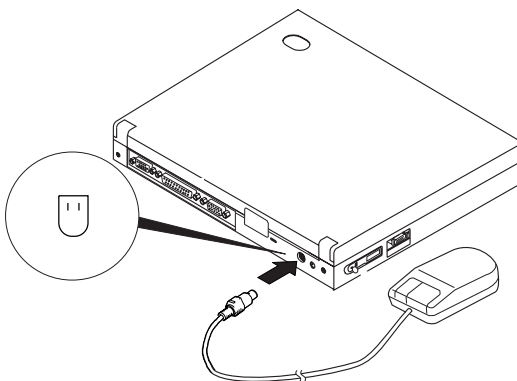


Numeric keypad



External keyboard

You can attach an external numeric keypad, a mouse, or an external keyboard directly to the external-input-device connector (🖱️) on the rear of the computer.



Using Advanced Features of Your ThinkPad

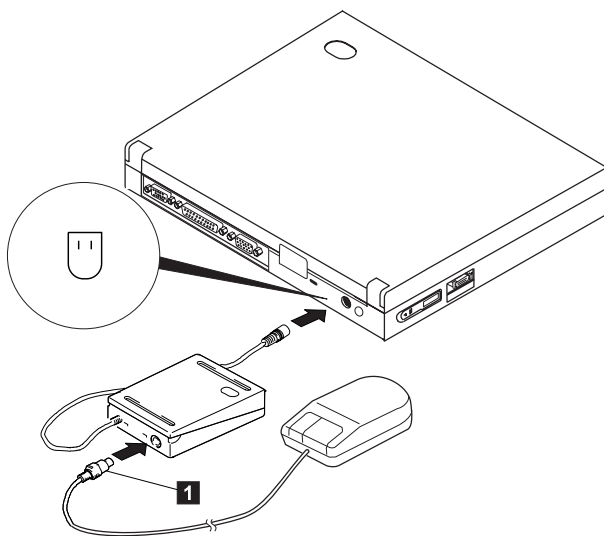
Attaching a Mouse

You can use both the IBM PS/2 Miniature Mouse and TrackPoint III as the pointing device. For other mouse types, see the following attention note.

Attention

When you connect a mouse other than an IBM PS/2 Miniature Mouse, turn off the computer. Then go to “Disabling the TrackPoint III” on page 74.

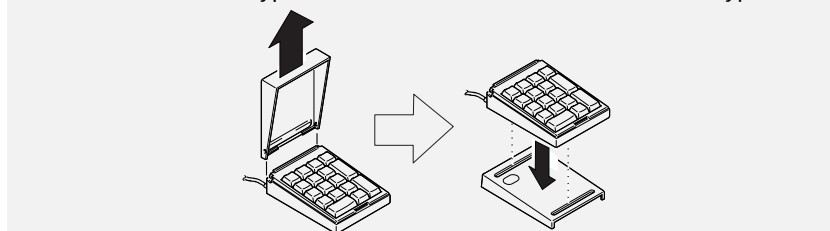
If you want to use the external numeric keypad and mouse at the same time, first connect the keypad cable to the computer; then connect the mouse cable 1 to the connector at the rear of the keypad.



Using Advanced Features of Your ThinkPad

Note:

You can remove the keypad cover and use it as a stand for the keypad.



You can connect an external keyboard to your computer through the keyboard/mouse cable (available separately as an option). ***It will not work if it is connected directly to the computer.***

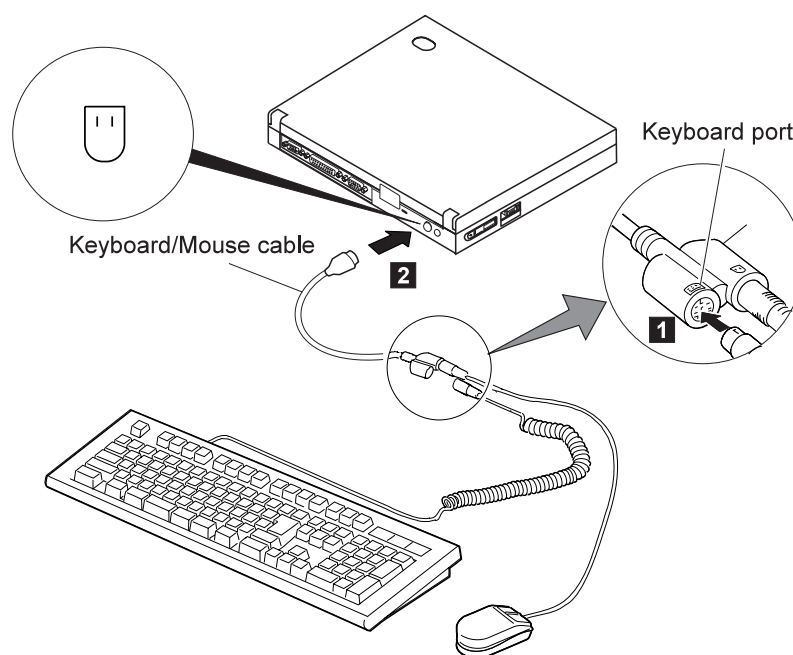
When the external keyboard is attached, the following keys are not available:

- Numeric keypad on the computer keyboard
- External numeric keypad

Instead, use the numeric keypad on the external keyboard.

Using Advanced Features of Your ThinkPad

When you attach the external keyboard, turn off the computer, attach the keyboard to the keyboard port of the keyboard/mouse cable **1** , and then attach the keyboard/mouse cable to the computer **2** .



Disabling the TrackPoint III

A serial mouse connected to the serial port or a device that is not compatible with the PS/2 Mouse can be connected to the external-input-device connector. Some mouse types require the TrackPoint III to be disabled before you can use them.

To disable the TrackPoint III:



For Windows 95:

- 1** Start the ThinkPad Configuration program.
- 2** Click on the **TrackPoint** () button.
- 3** Click on **Disable** for the TrackPoint.

These changes become effective when computer power is turned off and then on again.



For Windows NT, Windows 3.11, and OS/2:

- 1** Start the ThinkPad Configuration program.
- 2** Click on the **Keyboard/Pointing Device** () button.
- 3** Click on **Disable** for the TrackPoint.

These changes become effective when computer power is turned off and then on again.

Using the IBM ThinkPad Space Saver Keyboard

When using the IBM ThinkPad Space Saver Keyboard, **do not** install the device driver supplied with the Space Saver Keyboard. When the Space Saver Keyboard is used, the device driver on the computer's utility diskette automatically enables or disables the TrackPoint III of the computer when power is turned on.

Switching between the LCD and an External Monitor

This section provides information about using the computer LCD and an external monitor. It also provides considerations when using DOS applications. The computer LCD output with SVGA (800-by-600 resolution) video mode and 256K colors.

When you attach an external monitor that supports resolution higher than VGA mode, you can get a maximum of 1024-by-768 video resolution.

Attaching the Monitor

The following summarizes how to attach an external monitor:

- 1** Turn off the computer.
- 2** Connect the external monitor to the external monitor connector () on the rear of the computer; then connect it to an electrical outlet.
- 3** Turn on the external monitor and the computer.
- 4** Start the ThinkPad Configuration program.
- 5** Change the display output type by clicking on the **Both** () button or the **External Display** () button.

Note: If you select the **Both** button, do not attach an external monitor that supports only VGA mode (640-by-480 resolution). Otherwise, the external monitor screen is scrambled and the output is not displayed, or the screen might be damaged. Use **External Display** instead.

Using Advanced Features of Your ThinkPad

- 6** Set your monitor type and display device driver as follows.

If you are attaching an SVGA monitor, refer to “Using SVGA Video Mode” on page 79 for information on the supported color depth or resolution.

- a)** Click on the **Display** ( or ) button.
- b)** Click on the **Advanced Properties..** button.

You can select your display type from the monitor list, or click on a new resolution or refresh rate.

Note: Refer to the specifications for your external monitor to determine its supported resolutions and refresh rates.

- 7** Restart the computer to make the changes effective.

CAUTION

It is not recommended to change the LCD type while a moving picture is being drawn, for example, playing a movie or a game. Stop the application before changing the LCD type.

Changing the LCD Type

You can change the display output type with ThinkPad Configuration program. Select one of the following display output types:

LCD (): The computer output is displayed only on the LCD of the computer.

External Display (): The computer output is displayed only on the attached external monitor.

If no external monitor is attached to the computer and the display output type is set to *External Display*, the output is displayed on the LCD.

Both (): The computer output is displayed on both the LCD and the external monitor.

You can also change the display output type as follows:

Using the **Fn** key function:

Press and hold the **Fn** key; then press the **F7** key. The output is displayed sequentially as follows:

External Both
Display

LCD

Using PS2 Command:

For DOS, use the PS2 Command to change the display output type.

- Type PS2 SC BOTH to display information on both the LCD and external monitor.
- Type PS2 SC External Display to display information on the external monitor.
- Type PS2 SC LCD to display information on the LCD.

Using Advanced Features of Your ThinkPad

Important

If you are using OS/2 Warp, do not use **System** in the System Setup folder to change the resolution or color depth. Use the ThinkPad Configuration program to configure the monitor.

Do not disconnect the external monitor while the computer is in suspend mode or hibernation mode. If no external monitor is attached when the computer resumes, the LCD remains blank and the output is not displayed. This restriction does not depend on the resolution value.

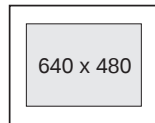
Virtual Screen Function

The *virtual screen* function is available with the ThinkPad Configuration program. It is used to display a part of the high-resolution screen image that is produced by your computer. Other parts can be seen by moving the screen with the TrackPoint III or other pointing device. The virtual screen can be disabled on Windows 3.11 with ThinkPad Configuration program. In this case, restart your computer to make screen size fit the display.

Using Advanced Features of Your ThinkPad

Considerations for DOS Screen on the LCD

When you use a DOS application that supports only VGA mode (640-by-480 resolution) with your computer, the screen image might appear smaller than the display size, as shown:



This is to maintain compatibility with DOS applications. To expand the screen image to the same size as the actual screen, you can use the *screen expansion* function. You can expand the screen image by clicking on the **Display** button () in the ThinkPad Configuration program or by entering the PS2 HVEXP ON command. However, the image may look slightly distorted.

Using SVGA Video Mode

Your ThinkPad 560X computer has an LCD that supports an SVGA video mode with 800x600 resolution. You can also display information in higher resolutions by attaching an external monitor that supports higher resolutions. The following table shows the various display modes (resolution and color depth) available with your computer or external monitor. Use this table to set the display output (**LCD**, **External Display**, or **Both**).

Note:

When installing an operating system, you must install the display driver supplied with the computer to use SVGA mode.

Using Advanced Features of Your ThinkPad

Displaying output on the LCD or both on the LCD and monitor
(LCD or Both)

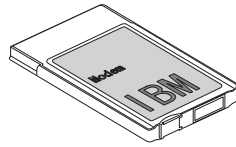
Resolution	Supported Color Depth
640x480	16; 256; 65,536; and 16,777,216
800x600	256; 65,536; and 16,777,216
1024x768 (virtual screen)	256 and 65,536

Displaying output on the monitor **(External Display)**

Resolution	Supported Color Depth	Frame Rate
640x480	256	60 Hz, 75 Hz, or 85 Hz
	16,777,216	
	65,536	
800x600	256	60 Hz, 75 Hz, or 85 Hz
	65,536	
	16,777,216	
1024x768	256	60 Hz, 70 Hz, or 75 Hz
	65,536	

Using a PC Card

This section describes how to insert a PC Card.



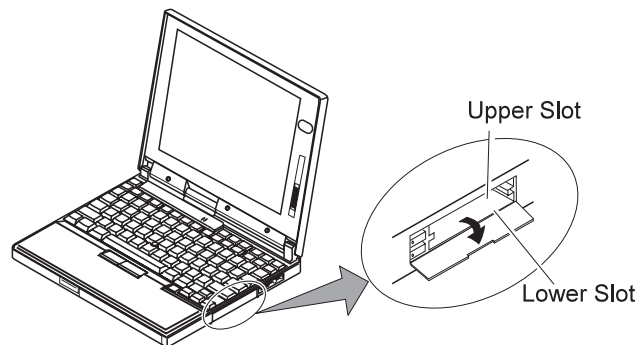
Your computer has two PC Card slots (upper slot and lower slot) and supports the following types of cards:

- PC Card (Type I, Type II, and Type III)

- CardBus

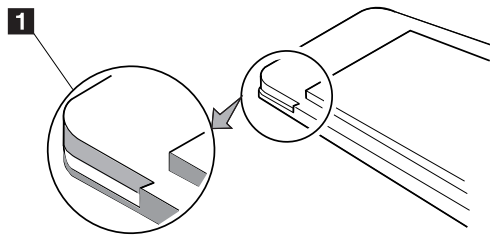
- Zoomed Video (ZV)

You can insert a *Type I* or *Type II* PC Card one in either slot (you can insert cards in both slots), or a single *Type III* PC Card in the lower slot.

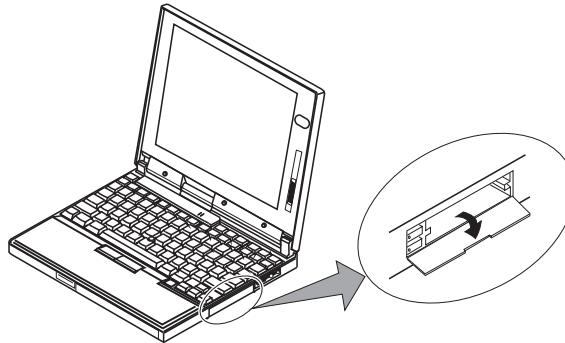


Installing the PC Card

- 1** Find the notched edge 1 of the PC Card as shown.



- 2** Open the the PC Card slot cover.



- 3** Insert the PC Card into the appropriate slot according to your PC Card type.

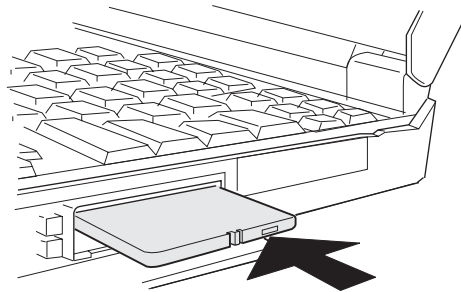
Note:

If you are using a PC Card with a XJACK** connector, insert it into the upper slot.

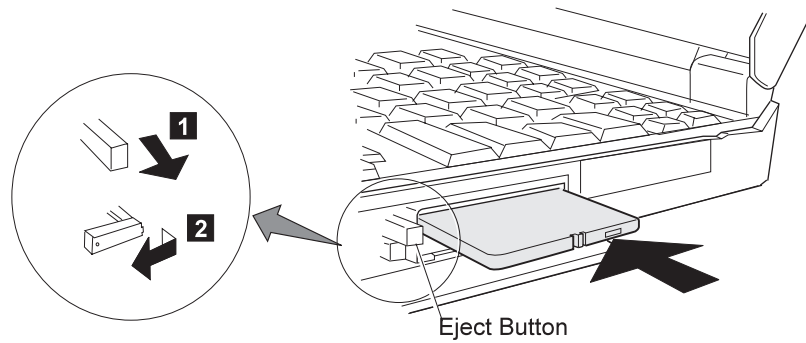
If you are using a Type I or Type II PC Card, insert it into either the upper slot or the lower slot.

If you are using a Type III PC Card, insert the card into the lower slot.

Using Advanced Features of Your ThinkPad

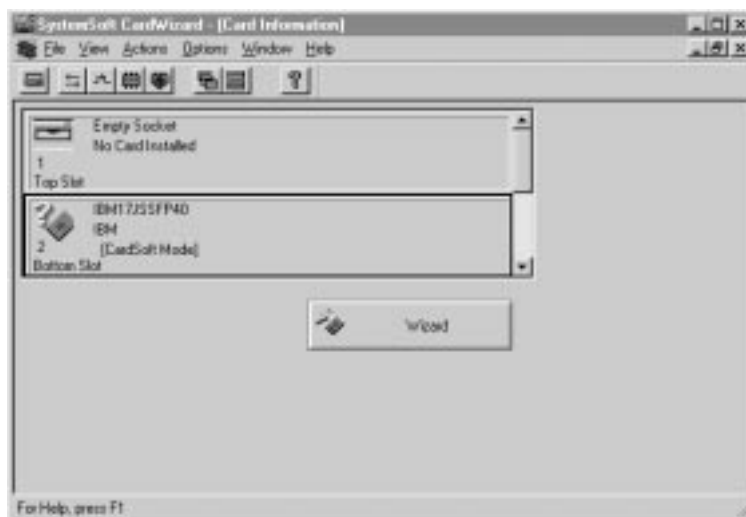


- 4** Press the PC Card firmly into the connector until the eject button pops out. Then, pull the eject button out slightly **1** and fold it to the left. **2** .



Using Advanced Features of Your ThinkPad

The following CardWizard** information panel pops up and informs you about the new card.



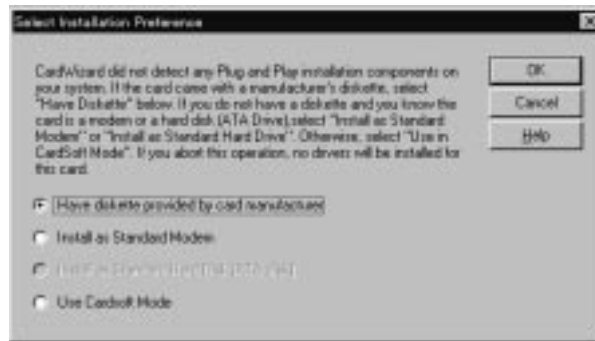
You have completed to setup the PC Card. You can use the PC Card.

When you install the PC Card modem, "Location Information" windows appears. Go to "Installing the PC Card Modem" on page 87.

Using Advanced Features of Your ThinkPad

Note

When the CardWizard does not have the device driver of the PC Card, the following “Select Installation Preference” window appears and you have to install the PC Card device driver. Go to “Installing the PC Card Device Driver .”

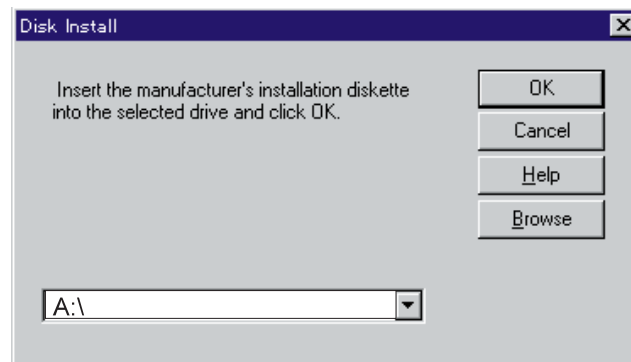


Installing the PC Card Device Driver

Install the device driver as follows:

- 1 Click on **OK** in the “Select Installation Preference” window.

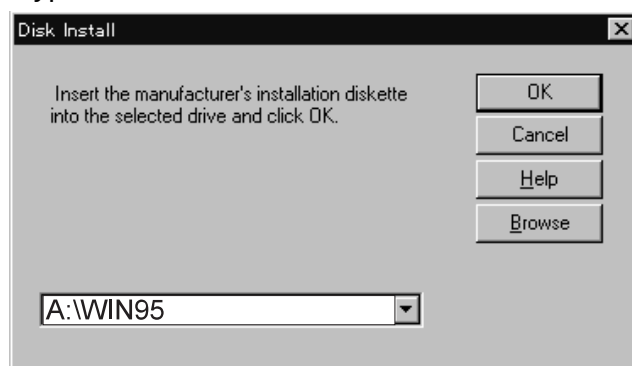
The following window appears.



- 2 Insert the device driver (or option) diskette for the PC Card into the diskette drive.

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3 Type **win95** after **a:** then click on **OK**



Follows the instructions on the screen.

Note: If you use the PC Card Modem, you need to set up the modem. Double-click on **My Computer**, **Control Panel**; then **Modem**. Set up the modem with following the instructions on the window.

Installing the PC Card Modem

Attention

Your computer can only be connect to a public telephone line (**analog line**). Do not use a digital telephone line. Use of a phone line other than an analog can damage your modem.



Danger:

To avoid shock hazard, do not connect the cable to or disconnect the cable from the telephone outlet on the wall during electrical storms.

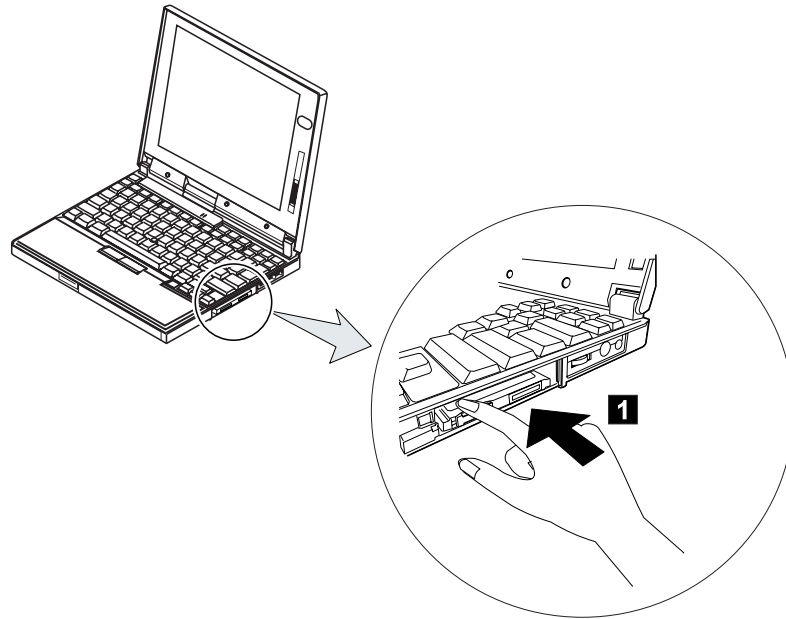
When you install the PC Card modem, the “Location Information” window appears. Do as follows:



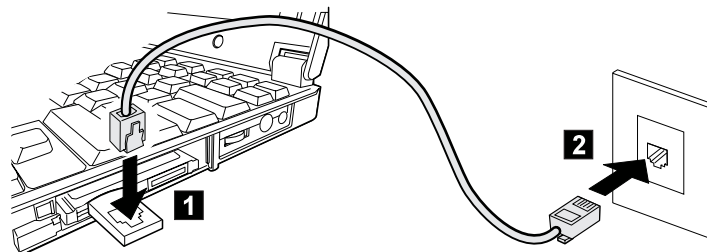
- 1** Fill in the necessary information.
- 2** Click on **OK**.

Using Advanced Features of Your ThinkPad

- 3** Push the push-pop of the PC Card modem 1 .



- 4** Connect one end of the telephone cable to the PC Card modem 1 and the other end of the cable to a telephone outlet 2 .



Note: If your ThinkPad shares a single telephone cable with a telephone, use the cable supplied with your computer.

You have completed setting up the PC Card modem.

For details on PC Card Support Software, go to “Using CardWorks**” on page 90.

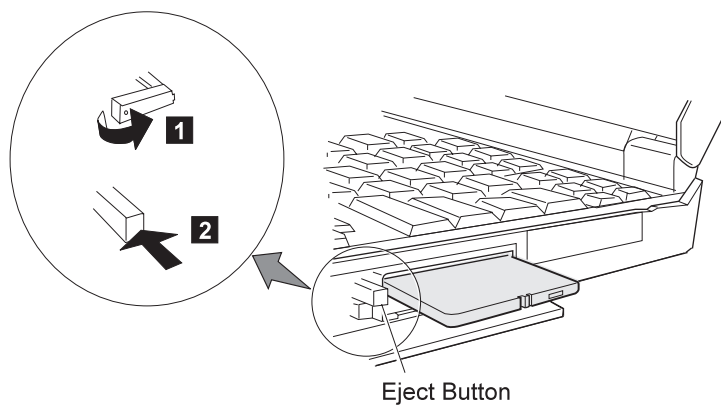
Using Advanced Features of Your ThinkPad

Removing the PC Card

For a network modem, stop the PC Card before removing the PC Card from the PC Card slot (see “Stop” on page 95).

Raise the PC Card eject button 1 for the PC Card you want to remove. Then, press the PC Card eject button 2 until the PC Card pops out.

Remove the PC Card and save it for future use.



Using Advanced Features of Your ThinkPad

Using CardWorks**

The CardWorks application features a PC Card expert system that addresses advanced configurations.

CardWorks extends the PC Card support for Windows 95 in the following ways:

- It minimizes user intervention in configuring many PC Cards.
- It supports cards using device driver for Windows 95 (Plug and Play mode).
- It supports cards using existing PC Card device driver and device driver for Windows 3.11 (CardSoft mode).

The CardWizard application of CardWorks acts as a computer-based technical advisor to help you diagnose and correct such problems as:

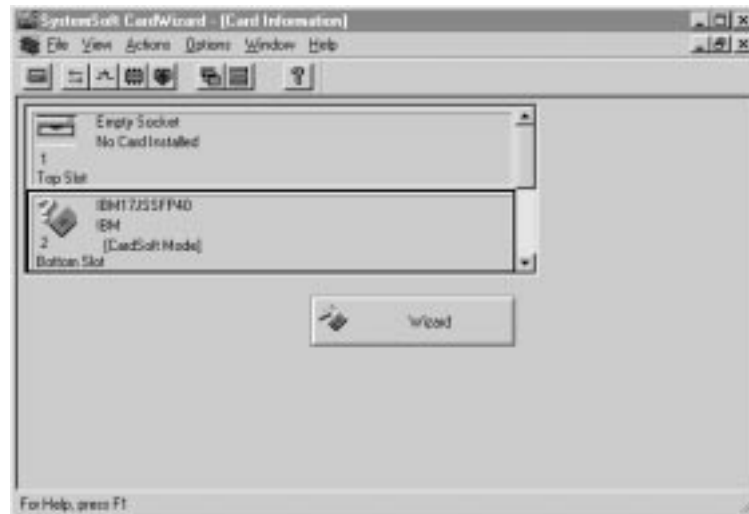
- Incorrect or missing PC Card device drivers
- Resource conflicts (I/O address, IRQ, and memory address)
- Improperly installed (CardSoft) software
- Conflicts between PC Card programs and extended memory manager (EMM386)

Using Advanced Features of Your ThinkPad

To start the CardWizard, do as follows:

- 1** Click on **Start**.
- 2** Move the cursor over **Programs** and **CardWorks**. Then click on **CardWizard**.

The CardWizard information panel appears.



The information panel displays up-to-date information about the PC Cards and PC Card slots using in your computer.

It also displays up to three lines of card information, which it reads directly from the card:

- The first line shows the card name
- The second line shows the manufacturer
- The third line shows the card's function or type

Wizard Button

If there are any problems, click on **Wizard**. Wizard solves such problems as incorrect or missing PC Card device drivers, system resource conflicts (IRQ, memory, or I/O ports), and unconfigured PC Cards, as well as memory conflicts.

Using Advanced Features of Your ThinkPad

Each time you press the Wizard button, a series of self-checks is run to assure that all necessary components are installed and working properly. CardWizard then analyzes the computer to verify that there are resources available for PC Card configuration.

Even if CardWizard cannot automatically solve a problem, it can pinpoint the problem exactly so that you or a technical support engineer can fix the problem more easily.

PC Card Properties Window

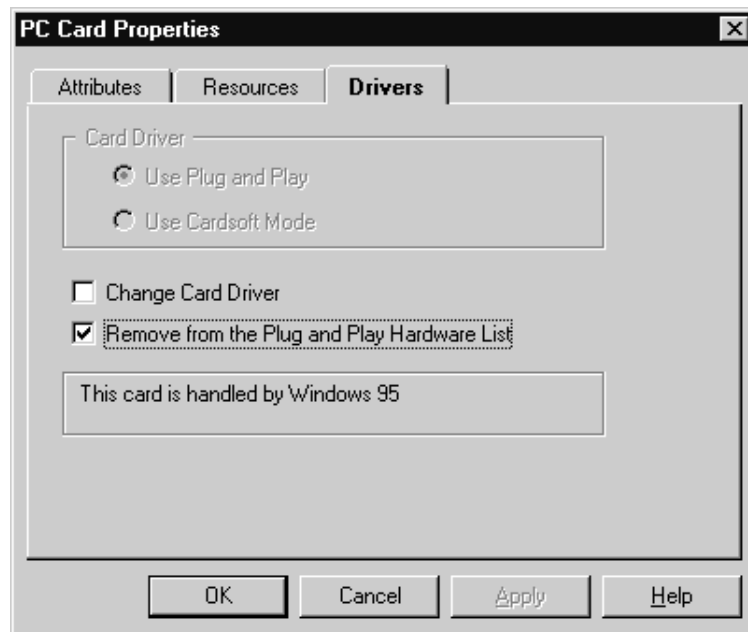
The PC Card Properties window displays information about the attributes, resources, drivers, and memory card utilities that are loaded for PC Card support. CardWizard extracts important information from the PC Card software device drivers and lists it in a panel.

To open the PC Card Properties window of the PC Card that you are using, do the following:

- 1** Select the PC Card in the information panel by clicking on it.
- 2** Click on **View** in the menu bar of the information panel.
- 3** Click on **Properties..** in the pop-up menu.

The "PC Card Properties" window appears.

Using Advanced Features of Your ThinkPad



The window provides the following information:

Attributes
Resources
Drivers

Attributes

Note: The following information appears depending on the type of PC Card:

Slot:	The slot number and assigned name for the slot. (You can change the slot name by selecting slot management from the options menu.)
Card:	The unique identification number of the module.
Manufacturer:	The manufacturer of the PC Card.
Size:	The storage capacity of the PC Card.
Drive:	The drive letter.
Battery status:	The charge status of the SRAM Card battery.

Using Advanced Features of Your ThinkPad

Write protect:	The write protect status—either enabled or disabled.
File system:	The file system used by the PC storage or hard disk card.
Port:	The communication port used by this PC modem card.

Resources

Note: Some resource information is not relevant to all types of PC Cards. These nonrelevant resources are displayed as “Not Applicable.”

IRQ:	The interrupt request being used.
I/O:	The starting and ending addresses of the input/output range for the PC Card.
Memory range:	The range of physical memory.

Drivers

Note: CardWizard determines the type of device driver being used. It also displays whether the card is configured by Windows 95 or by CardWorks.

Card driver:	Indicates whether Plug&Play mode or CardSoft mode is used in configuring the PC Card. This field is enabled only if the Change card driver box is checked. You should <i>not</i> change drivers if your card has been identified and configured successfully.
Change card driver:	When this item is enabled (checked), you can select either Plug and Play (if available) or the CardWorks device drivers.
Remove from the Plug and Play hardware list:	When this item is enabled (checked), you can delete the Plug and Play device driver assigned to a card. This applies only when a card is handled by Windows 95 (Plug and Play mode). Later, when

Using Advanced Features of Your ThinkPad

you reinsert the same PC Card, CardWorks configures the card as if it were the first insertion.

Memory Card Utility:

This item appears only when you insert the SRAM card or Flash memory card. You can format the SRAM card or Flash memory card as follows:

Note: You can also format these card from the file system with the DOS FORMAT command.

- 1.** Open the PC Card Properties window.
- 2.** Select **Memory Card Utility** tab.
- 3.** Enter a **Volume Label** (if desired).
- 4.** Click on **Format Drive/Partition**.
- 5.** Click on **Start**.

This function enables you to completely erase a SRAM/Flash memory card, especially a brand-new card. Make sure to save the data on the card before erasing it.

Stop

This function stops cards configured as Windows 95 Plug and Play devices. Stop is used by Windows 95 to flush all buffers and make sure no application is using or accessing the card.

Attention

If you are removing a PC Card, you must use stop. The system may freeze or data may be lost if a PC Card is removed before it is stopped.

Note: You can only stop one card at a time. After invoking stop, you cannot stop another card until the first stop has either completed or failed.

Using Advanced Features of Your ThinkPad

You can stop a card in one of the following ways:

Stop (Method 1):

- 1** Click the left mouse button on on the **SystemTray Card** located at the bottom right corner of the desktop:

One of the following messages appears:

```
Stop <manufacturer name> Card <slot number>
Stop card <slot number>
```

- 2** Click on **OK**; then the following message appears:

The card has been stopped. You can safely remove the card.

If the stop fails, no message appears.

Stop (Method 2):

You can stop a card also by pressing the right mouse button on the card icon in the information panel.

- 1** Click the right mouse button on the card icon and selecting stop in the pop up menu.

One of the following messages appears:

```
Stop <manufacturer name> Card <slot number>
Stop card <slot number>
```

Note: The stop option appears in gray when you are in CardSoft mode or when the card is already stopped.

- 2** Click on **OK**; then the following message appears:

The card has been stopped. You can safely remove the card.

If the stop fails, no message appears.

The card has been stopped. You can safely remove the card.

Using Advanced Features of Your ThinkPad

Slot Management

Slot management enables you to choose the first slot number (either 1 or 2) to represent the top or bottom slot as the first slot, and to assign names to each available slot supported by your computer. Select **slot management** from the options menu. The Slot Management window appears.

First slot number:

This box enables you to decide whether CardWizard should refer to your first slot as slot 1 or slot 2. Your selection becomes effective immediately. The default setting of the first slot number is slot 1.

Slot representation:

CardWizard displays your computer's PC Card slots one on top of the other. This box enables you to decide whether the top displayed slot or the bottom displayed slot is your first slot. Your selection becomes effective immediately. The default slot setting is that the top slot is the first slot.

Slot name:

You can enter a slot name for each slot on your computer.

Help

By pressing **F1** or selecting the **HELP** button, You can get help for most of the windows. A glossary of terms and an index of Help items are also available.

Using the Audio Features

Your computer is equipped with the following:

A 1/8-inch (3.5-mm) diameter external stereo line-in or monaural microphone/line-in jack.

A 1/8-inch (3.5-mm) diameter stereo headphone or an external-powered speaker jack.

A MIDI/joystick port on the port replicator. To use a MIDI device, you should first connect your computer to a port replicator; then connect an external MIDI device to the port replicator. After docking your computer in the port replicator, you should enable this port using the ThinkPad Configuration program.

Your computer also has an audio chip that enables you to enjoy various multimedia audio features. This audio chip provides the following features:

Recording and playing back of PCM and WAV files in 8-bit or 16-bit format.

Sampling of various rates from 8 KHz to 44 KHz for the WAV file.

Playback of MIDI files through an FM synthesizer.

Recording from various sound sources, such as an integrated microphone, an external microphone, or an audio device attached to a line-in jack or an integrated CD-ROM drive.

DOS game compatibility. You should select Sound Blaster Pro** for the audio adapter in the sound setup of the game.

The 3D Sound Retrieval System (SRS) function compensates for the flat, two dimensional sound image limitations by reestablishing the necessary information that allows the human ear to hear in three dimensions.

CAUTION

Do not enter suspend or hibernation mode when you are using audio features. You need to restart or resetup the application for continuous use.

Using the 3D Sound Retrieval System (SRS) Function

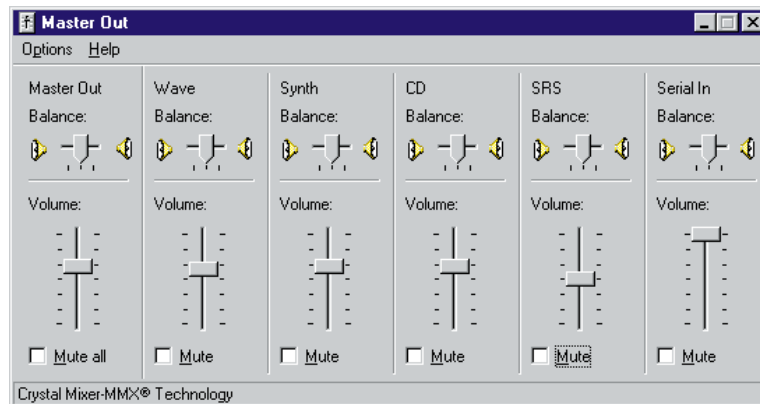
To use the SRS function, do the following:

- 1 Double-click on the small speaker icon () at the bottom right of the Windows desktop.

or

Click on the **Start** button, and then select **Programs**, **Accessories**, **Multimedia**, and **Volume Control**.

The “Master Out” window appears:

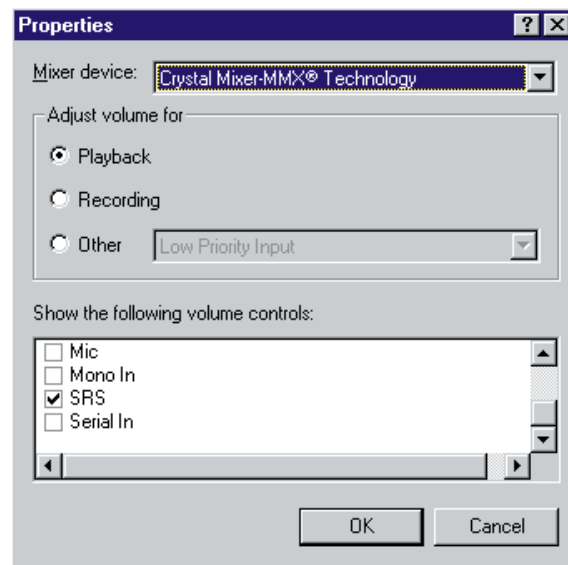


- 2 Make sure that the **SRS Balance** column is displayed and the **Mute** checkbox is unchecked.

If the column is displayed and the checkbox is not checked, exit the window. You can use the SRS function; skip the remaining steps.

If the column is not displayed, select **Options** on the upper left corner of the window and select **Properties**. The “Properties” window appears:

Using Advanced Features of Your ThinkPad



3 Put a check mark on **SRS** and press **OK**.

You return to the “Master Out” window.

4 Make sure that the **Mute** checkbox is unchecked.

5 Exit the “Master Out” window.

Now you can use the SRS function.

Using Infrared Communication

The infrared communication technology allows wireless point-to-point communication with other ThinkPad computers or systems equipped with an infrared port. The infrared port can communicate at a distance of up to approximately 1 meter (3.3 ft.) at a rate of up to 4 megabytes per second (Mbps).

Your ThinkPad computer has a infrared port that can communicate with another ThinkPad.

Before using TranXit, both of the ThinkPads need to enable the IR ports by the ThinkPad Configuration program; then setup the TranXit.

1 Enable the IR port by ThinkPad Configuration program as follows:

- a) Start the ThinkPad Configuration program.
- b) Click on **Infrared** button ().
- c) Select **Enable**; then click on **OK**.

2 Click on **Start**.

3 Move the cursor to **Programs, TranXit**, and click on **TranXit**.

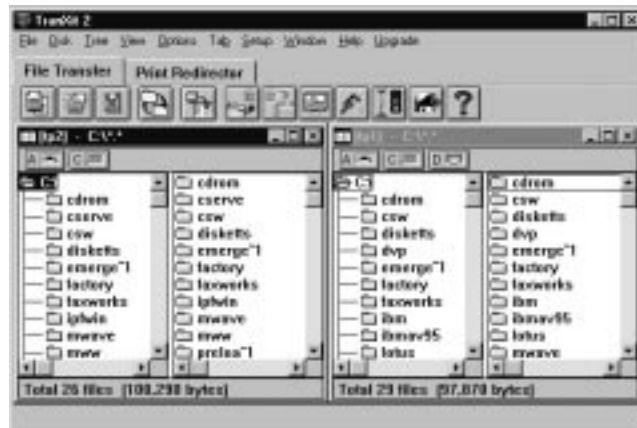
The TranXit window appears.



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- 4 Place the two ThinkPads so that the infrared ports face each other.

Remove all obstacles between the two ThinkPads. When the two IR ports are lined up properly, the TranXit window separates into two sub windows, one is for your ThinkPad and the other is for the other ThinkPad.

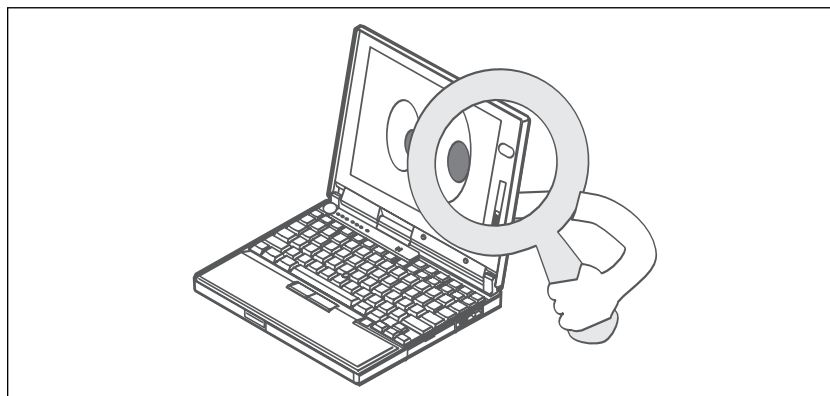


- 5 Click and drag the file you want to send from your ThinkPad window to the other ThinkPad window.

You can send the file.

Chapter 5. Solving Computer Problems

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Frequently Asked Questions

How can I expand my hard disk space?

Most preloaded applications in the hard disk can be uninstalled to make more room for other applications. Check whether the application you want to delete has its own deletion icon.

After you create the necessary driver diskettes using the Diskette Factory, delete the files.

How can I get the operating system or the device driver diskettes?

You can restore Windows 95 using the Recovery CD, which is shipped with your computer. For details, refer to the online book.

You can make a backup copy of your device drivers by using the Diskette Factory program as follows:

1. Click on **Start**.
2. Move the cursor on **ThinkPad Tool**.
3. Click on **Diskette Factory**.

How can I resolve a resource conflict (such as an IRQ or a COM port setting) occurring during the installation of a new option or a new application?

See "Solving the Hardware Conflict" in the online book to obtain information on hardware resources used by the devices in the computer.

Why doesn't my computer perform as I expected?

Your computer's performance varies depending on the hardware and software installed, such as memory size, swapper file size, and smart drive settings.

Also, close all windows you are not using; for example, close the "Media Player" window when you play a CD in the CD-ROM drive.

Hints, Tips, and Limitations

This chapter describes hints, tips, and limitations.



For Windows 95:

When the the system cannot enter suspend mode due to on-going activities, the Intel USB camera attached to the system will be disabled. To enable the USB camera, unplug it and plug it in again.



For OS/2 Warp:

When you have formatted the drive in HPFS which has more than 64 MB memory, hibernation is not supported.

If the COM port does not work even if you have set it up correctly with the ThinkPad Configuration program, do as follows:

1. Open **System Setup**.
2. Select **Hardware Manager**.
3. Select a folder from the menu.
4. Select **Properties**.
5. Under the default pull down menu, select **No Hardware Detection**. If it has already been selected, change the setting.
6. Open the ThinkPad Configuration program.
7. Set the COM port as desired.
8. Reboot the system.



For Windows NT:

For Windows NT 3.51 and 4.0, hibernation is not supported when the drive is formatted by NTFS.

Troubleshooting Guide

The following chart shows how to find or solve a problem.

When a beep sounds, when a message appears, or when a function-related problem occurs:

- | | |
|---|--|
| 1 Find your symptom from the table and try solving the problem. | ➔ "Troubleshooting Charts" on page 107 |
| 2 If you can't solve the problem, run test and make sure the hardware and the device drivers are OK. | ➔ "Testing Your Computer" on page 126 |
| 3 Note the error code and have the computer serviced. | ➔ Chapter 6 |

When you accidentally lose or damage software in your computer:

- | | |
|--|--|
| Recover it by using the Recovery CD or the Diskette Factory. | ➔ "Recovering Lost or Damaged Software" on page 128. |
|--|--|

Troubleshooting Charts

If your computer has an error, it often displays a message or an error code, or a beep sounds when you power it on. Go through the charts and look for your problem. If you find the problem, go to the page indicated and do the specified action.

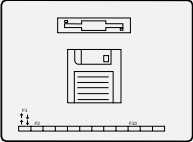
Troubleshooting Chart	Page
Error codes or screen messages	108
No error codes or screen messages	112
Input problems	113
Suspend or hibernation problems	114
LCD problems	117
Indicator problems	118
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A universal serial bus problem	120
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Printer problems	122
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Error Codes or Screen Messages

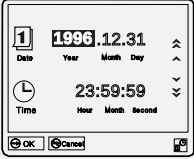
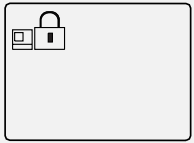
Note: In the charts, x can be any character.

Message	Action
I9990301 I9990302 I9990305 (Incorrect connection of the hard disk drive may cause these error codes to appear.)	Your computer can't find the startup drive. Do the following: 1. Turn off the computer. 2. Press and hold F1; then turn on the computer to start Easy-Setup. Hold F1 until the Easy-Setup menu appears. 3. Select the Start up icon. If you are unable to set the startup sequence, have the computer serviced. 4. Check the devices in the startup sequence box. Is the default drive listed in the startup sequence box? Yes Exit this window, and turn off the computer. No Select the Reset icon. 5. Is an operating system installed? Yes Go to step 7. No Install the operating system in your computer. 6. After you install the operating system, turn off the computer. 7. Turn on the computer. If the same screen message appears, have the computer serviced.
I99xxxxx (except the above I999030x errors)	Have the computer serviced.
16x or 17x (undefined date or configuration error)	Follow the instructions on the screen.
174 (device configuration error)	Have the computer serviced.
184 (invalid password error)	The password entered is invalid. Turn off the computer and wait at least 5 seconds; then turn it on again and type the correct password.
190 (critical low-battery error)	The computer turned off because the battery is low. Connect the AC Adapter to the computer and charge the battery pack, or replace the battery pack with a fully charged one.

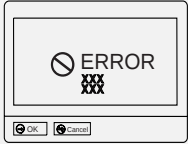
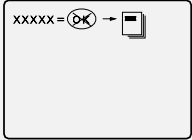
Solving Computer Problems

Message	Action
195 (hibernation error)	The system configuration differs between the time your computer entered hibernation mode and the time it exited this mode, and your computer cannot resume normal operation. Change the system configuration to what it was before your computer entered hibernation mode. If the memory size was changed, re-create the hibernation file.
196 (hibernation error)	The computer cannot read the hibernation file. Have the computer serviced.
2xx (memory error)	Make sure that the DIMM option is correctly installed.
30x (keyboard error)	Make sure that no object is placed on the keyboard or on the external keyboard, if you have one. Power off the computer and power off all attached devices. Power on the computer first; then power on the attached devices. If you still have a problem, do the following: If an external keyboard is connected, do the following: – Turn off the computer and disconnect the external keyboard; then turn on the computer. Make sure that your keyboard operation is correct. If it is, have the external keyboard serviced. – Make sure that the external keyboard is connected to the correct connector. Test the computer by selecting the Start icon in the Easy-Setup “Test” submenu. – If the computer stops during the test, have the computer serviced.
Diskette and F1 prompts 	Make sure that the self-starting diskette is inserted correctly (with the label facing up and metal-shutter end first) in the diskette drive. If it is, press F1. If both prompts remain, have the computer serviced.

Solving Computer Problems

Message	Action
A 163 error appears and then the <i>Date and Time</i> window appears. 	Neither the date nor the time is set in the computer. Set the date and time by typing or clicking on ▲ or ▼ to set the values; then click on OK. When both the power-on password and supervisor password are set, do the following: 1. Power on the computer. The password prompt appears after the error code. 2. Type the supervisor password, not the power-on password. An error window appears. 3. Click on OK or press Enter. 4. Set the time and date in the next screen; then press Enter. The system reboots. Note: If the power-on password is rejected, reset the power-on password using Easy-Setup if you need to.
The power-on password prompt 	A power-on password or supervisor password is set. Type the correct password and press Enter to use the computer (see page 51). If the power-on password is not accepted, a supervisor password may have been set. Type the supervisor password and press Enter. If you still have a problem, have the computer serviced.
The hard disk password prompt 	A hard disk password is set. Type the correct password and press Enter to use the computer (see page 51). If you still have a problem, have the computer serviced.
The “Test” submenu 	Select the Start icon and follow the instructions to test your system. If you cannot complete the test, have the computer serviced. If the test does not find the problem, but the problem persists nonetheless, go through the Troubleshooting Charts one by one. If the test ends in an error, note the error code and have the computer serviced.

Solving Computer Problems

Message	Action
A POST error prompt 	An error was found during POST. Press Enter; then select Start from the "Test" submenu and run the test. If the test ends in an error, note the error code and have the computer serviced.
An error prompt 	Turn off the computer and start Easy-Setup; then select Test to test the computer. If the test ends in an error, note the error code and have the computer serviced. You can start the operating system by pressing F1 instead, and ignore the error.
The DOS full-screen looks smaller. 	When you use a DOS application that supports only the 640x480 resolution (VGA mode), the screen image might look slightly distorted or might appear smaller than the display size. This is to maintain compatibility with the other DOS applications. To expand the screen image to the same size as the actual screen, start the ThinkPad Configuration program and click on LCD (); then select the Screen expansion function. (The image may still look slightly distorted.) Note: You can use the Fn+F8 keys to do the same thing.
A panel or message that is not listed.	Turn off the computer and start Easy-Setup; then select Test to test the computer. If the test ends in an error, note the error code and have the computer serviced. If you cannot start Easy-Setup, have the computer serviced.
xxxxx KB OK appears and the computer stops.	Have the computer serviced.

Solving Computer Problems

No Error Codes or Screen Messages

Problem	Action
The screen is blank and you don't hear any beeps. Note: If you are not sure whether you heard any beeps or not, turn the computer off; then turn it on again, and listen again.	Make sure that: The battery pack is installed correctly. The AC Adapter is connected to the computer and the power cord is plugged into a working electrical outlet. The computer power is on. (Turn on the power switch again for confirmation.) If these items are correct and the screen remains blank, have the computer serviced.
The screen is blank and you can't hear any beeps. Note: If you are using an external monitor, go to "External Monitor Problems" on page 122.	If a power-on password is set, press any key to display the power-on password prompt, and then type the correct password and press Enter (see page 51). If the power-on password does not appear, the brightness control lever might be set to minimum brightness. Adjust the brightness level. If the screen still remains blank, have the computer serviced.
The screen is blank and you hear a continuous beep, or two or more beeps.	Have the computer serviced.
Only the cursor appears.	Reinstall your operating system and turn on the computer. If you still have a problem, have the computer serviced.

Input Problems

Problem	Action
The pointer does not move after the computer awakens from one of the power management modes.	Make sure you followed the instructions in the online book correctly when you installed Windows with the Advanced Power Management (APM) option.
All or some keys on the keyboard do not work.	If the problem occurred immediately after the computer returned from suspend mode, enter the power-on password if it is set. If an external keyboard is connected, the numeric keypad on your computer will not work. This is not a defect. If an external numeric keypad or a mouse is connected: 1. Turn off the computer. 2. Remove the external numeric keypad or the mouse. 3. Turn on the computer and try using the keyboard again. If the keyboard problem is resolved, check the connection of the external numeric keypad, external keyboard, or the mouse. If you still have a problem, have the computer serviced.
The pointer drifts when the computer is turned on or after it resumes normal operation.	The pointer may drift when you are not using the TrackPoint III during normal operation. This is a normal characteristic of the TrackPoint III and is not a defect. Pointer drifting may occur for several seconds under the following conditions: - When the computer is turned on. - When the computer resumes normal operation. - When the TrackPoint III is pressed for a long time. - When the temperature changes.
The mouse or pointing device does not work.	Make sure that the mouse or pointing-device cable is securely connected to the computer. Try using the TrackPoint III. If the TrackPoint III works, the error might be due to the mouse. If your mouse is incompatible with the IBM PS/2 mouse, disable the TrackPoint III using the ThinkPad Configuration program. Note: See the manual supplied with the mouse for more information.
The mouse buttons don't work.	Change the mouse driver to Standard PS/2 Port Mouse , and then change to PS/2 TrackPoint III .
A number appears when you type a letter.	The numeric lock function is on. To disable it, press and hold Shift ; then press NumLk .

Suspend or Hibernation Problems

Problem	Action
The computer enters suspend mode automatically.	The computer enters suspend mode automatically when the processor temperature reaches a certain level. This is not a defect.
Performance degrades when the computer gets hot during use.	The processor speed might decrease under the following conditions: Use in a hot environment High-powered processing that requires high-power consumption This is not a defect.
The computer enters suspend mode immediately after POST (the suspend lamp turns on).	Make sure that: The battery pack is charged. The operating temperature is within the acceptable range. Refer to Appendix A. If these items are correct, have the computer serviced.
Error 19 appears and the computer immediately turns off.	The battery pack power is getting low. Connect the AC Adapter to the computer, or replace the battery pack with a fully charged one.
The computer does not return from suspend mode, or the suspend lamp stays on and the computer does not work.	The computer automatically enters suspend or hibernation mode when the battery power is empty. Do one of the following: Replace the battery pack with a fully charged one and then press Fn . Connect the AC Adapter to the computer; then press Fn .
The LCD is blank after resuming.	Check if an external display was not connected before entering suspend mode. Do not disconnect the external monitor while the computer is in suspend mode or hibernation mode. If no external monitor is attached when the computer resumes, the LCD remains blank and the output is not displayed. This restriction does not depend on the resolution value.

Solving Computer Problems

Problem	Action
Your computer does not enter suspend or hibernation mode.	Check if the suspend or hibernation mode is disabled. If you are using the AC Adapter and your computer is connected to a network, do the following: Windows 95: 1. Start the ThinkPad Configuration program. 2. Click on Power Management (). 3. Click on Hibernation tab. 4. Make sure that hibernation mode is enabled. Windows NT: 1. Start the ThinkPad Configuration program. 2. Click on Power Management (). 3. Click on the Suspend/Hibernation/Resume Options (). 4. Make sure that hibernation mode is enabled. 5. Click on OK.

Solving Computer Problems

Problem	Action
The computer does not enter hibernation mode with the Fn+F12 key combination.	Enable hibernation mode as follows: For Windows 95: 1. Start the ThinkPad Configuration program. 2. Click on Power Management (). 3. Click on the Hibernation tab. 4. Click on Enable Hibernation. Note: If you have already created the hibernation file, this button is displayed in gray and you cannot click on it. 5. Click on Create Now. 6. Click on OK. The computer cannot enter hibernation mode when you are using one of the IBM communication PC Cards. To enter hibernation mode, stop the communication program, and then remove the PC Card or turn off power on the PC Card slot using the Control Panel. For Windows NT: Note: You must format your hard disk with the FAT format system to use hibernation mode in Windows NT. When you format your hard disk with NTFS, the Windows NT default format, you will not be able to use hibernation mode. 1. Start the ThinkPad Configuration program. 2. Click on Power Management (). 3. Click on Suspend/Hibernation/Resume Options (). 4. Click on Enable Hibernation. 5. Click on OK. The computer cannot enter hibernation mode when you are using one of the IBM communication PC Cards.

LCD Problems

Problem	Action
The screen is unreadable or distorted.	Make sure that: The display driver is installed correctly by doing the following: 1. Double-click on My Computer, Control Panel, and then Display 2. Select the Settings tab. 3. Click on Advanced Properties. The "Adapter/Driver Information" window appears. Make sure the display driver information in the window is correct. The refresh rate setting is set to your display resolution and color depth by doing the following: 1. Start the ThinkPad Configuration program. 2. Click on LCD (. 3. (For Windows 95) Click on Properties... (For Windows NT) Click on Advanced... 4. Make sure that the setting in the next window is correct. 5. Click on OK.
Incorrect characters appear on the screen.	Did you install the operating system or application program correctly? If they are installed and configured correctly, have the computer serviced.
The screen stays on even after you power off your computer.	Press the reset switch with the tip of a pen and turn off your computer; then turn it on again.
Missing, discolored, or bright dots appear on the screen every time you power on your computer.	This is not a problem. It is an intrinsic characteristic of the TFT technology. Your computer display contains multiple thin-film transistors (TFTs). A small number of missing, discolored, or bright dots on the screen might exist all the time.

Solving Computer Problems

Indicator Problems

Problem	Action
The battery status indicator does not go on even though a battery pack is installed in the computer.	The over-current protection device inside the battery pack has been activated. Wait several hours and try again. If the indicator does not appear, replace the battery pack or have the computer serviced.
The diskette-drive-in-use icon stays on.	If a diskette is in the drive, make sure that: – The externally diskette drive is firmly connected to the computer. – The diskette contains the necessary files to start the system. – There is nothing wrong with your application program. – There is nothing wrong with the diskette. – The diskette is inserted correctly (label facing up and the metal-shutter end first) in the diskette drive. If these items are correct, have the computer serviced. If there is no diskette in the drive, have the computer serviced.

Battery Problems

Problem	Action
The battery pack cannot be fully charged in 3 hours by the power-off charging method.	The battery pack might be over-discharged. Do the following: 1. Turn off the computer. 2. Make sure that the over-discharged battery pack is in the computer. 3. Connect the AC Adapter to the computer and let it charge. If the battery pack cannot be fully charged in 24 hours, use a new battery pack. If the optional Quick Charger is available, use it to charge the over-discharged battery pack.
Your computer shuts down before the battery status indicator shows empty, –or– Your computer operates after the battery status indicator shows empty.	Repeat discharging and charging the battery pack at least three times.

Solving Computer Problems

Problem	Action
The operating time for a fully charged battery pack is short.	Repeat discharging and charging of the battery pack three to six times. If you still have a problem, use a new battery pack.
The computer does not operate with a fully charged battery pack.	The over-current protective function in the battery pack might be activated. Turn off the computer for 1 minute to reset this function; then turn it back on again.

Infrared Communication Problems

Problem	Action
Your computer cannot communicate with other devices using the infrared port.	Make sure that: - The communication speeds are the same. - The infrared ports are clean and do not have any spots. - No objects are between the computer and the communicating device. - The distance and angle between your computer and the device is within the set range. - The other computer is the same model as yours. - You are not operating under direct sunlight. - The infrared port is not directly facing the other communicating port. - Communication can be affected by the light from the display on the computer. To avoid this, open the display to a wide angle. - The same communication application has to be run on your computer and the other computer. Refer to the application manuals for more information. ThinkPad mode cannot be used if you are using a conventional communication application that uses the serial port and cable for data exchange. In this case, the infrared port is a substitute for them.
Incorrect data is sent between your computer and a communicating device.	Make sure that: - The distance and angle between your computer and the device is within the set range. - The communication speeds are the same. - There are no other devices that radiate infrared rays, such as remote-controlled devices or wireless headphones, near your computer or the communicating device. - You are not operating under direct sunlight. - No fluorescent lamps are near your computer or the communicating device.

Solving Computer Problems

A Universal Serial Bus (USB) Problem

Problem	Cause and Action
A device connected to the USB port does not work.	1. Make sure that the USB device is connected correctly. 2. Open the "Device Manager" window, and make sure that the USB device setup is correct, and that computer resource assignment and device driver installation are correct. Note: To open the "Device Manager" window, double-click on My Computer, Control Panel, and System. Then click on the Device Manager tab in the "System Properties" window. Refer to "Testing Your Computer" on page 126 and run the diagnostic test for the USB port.

PC Card Problems

Problem	Action
The PC Card shows "Ready," but it does not work correctly.	Make sure that: - The system resources reserved for the PC Card do not conflict with other system devices. - Refer to "Resolving System Resource Conflicts" in the online book. - The resources reserved for the PC Card match the settings in the application program. - If you are using a modem card, check the COM number, I/O port address, and IRQ level. If you are using a network card, check the I/O port address, IRQ level, and memory window address. To check the resources assigned to the PC Card, click on Status in the Easy-Setup program.
A system resource conflict occurred when a PC Card was used.	See "Resolving System Resource Conflicts" in the online book.
The screen looks busy or the overlay position is shifted.	1. Run VPMADJ.EXE in the Windows directory. 2. Adjust the x and y positions.

Solving Computer Problems

Problem	Action
My PC Card modem does not work	Make sure that the infrared port is disabled and the modem is set up correctly. Make sure that the COM port you set for modem by the ThinkPad Configuration program is same in the following procedure and there is not resource conflict. For Windows 95: To set up the modem, do the following: 1. Double-click on My Computer, Control Panel, and then Modem. The "Modem Properties" window appears. 2. Make sure the PC Card (PCMCIA) modem is in the window. 3. Click on Properties, <i>not</i> Dialing Properties. 4. Click on the Connection tab. 5. Remove the check mark () in the Wait for dial tone before dialing box if it is checked. 6. Click on Advanced. 7. If there is a check mark () in the Use error control box, click and remove it. 8. Add a check mark () to the Use flow control by clicking on the box and make sure that the Hardware (RTS/CTS) is selected. 9. Close the window by clicking on OK. 10. Return to the "Modem Properties" window by clicking on OK. 11. Click on Dialing Properties in the "Modem Properties" window, and fill in all boxes. Note: Click on either Tone dialing or Pulse dialing. Most telephones today use tone dialing. 12. Click on OK. 13. Click on Close to close the window. 14. Close all active windows. Run your modem application again.

Printer Problems

Problem	Action
The printer does not work.	Make sure that: - The parallel port is enabled. 1. Start the ThinkPad Configuration program. 2. Click on Parallel Port (). 3. Select Enable. 4. Click on OK. The printer is turned on and ready to print. The printer signal cable is connected to the correct connector of your computer. If these items are correct and the printer still does not work, run the tests described in the printer manual. If the tests show that the printer is OK, have the computer serviced.

External Monitor Problems

Problem	Action
The external monitor is blank.	Do the following: 1. Connect the external monitor to another computer to make sure it works. 2. Reconnect the external monitor to your computer. 3. Start the ThinkPad Configuration program. 4. Click on External Display () or LCD + External Display () on the toolbar in the ThinkPad Configuration. If nothing appears on the external monitor, have the external monitor serviced.

Solving Computer Problems

Problem	Action
You cannot set a higher resolution than the present one on your external monitor.	Make sure that: The ThinkPad display driver is installed correctly. 1. Double-click on My Computer, Control Panel, and then Display. 2. Select the Settings tab in the "Display Properties" window. 3. Click on Advanced Properties. The "Adapter/Driver Information" window appears. Make sure that the ThinkPad display driver is installed. If you are not sure that the ThinkPad display driver is installed correctly, reinstall it. An appropriate display type or refresh rate is selected. 1. Start the ThinkPad Configuration program. 2. Click on LCD (. 3. (For Windows 95) Click on Properties.... (For Windows NT) Click on Advanced.... 4. Make sure the setting in the next window is correct. 5. Click on OK to close the window.
The screen is unreadable or distorted.	Make sure that: The ThinkPad display driver is installed correctly by doing the following: 1. Double-click on My Computer, Control Panel, and then Display. 2. Select the Settings tab in the "Display Properties" window. 3. Click on Advanced Properties. The "Adapter/Driver Information" window appears. Make sure that the ThinkPad display driver is installed. The display is set correctly. 1. Start the ThinkPad Configuration program. 2. Click on LCD (. 3. (For Windows 95) Click on Properties.... (For Windows NT) Click on Advanced.... 4. Make sure the setting in the next window is correct. 5. Click on OK to close the window. If the settings are correct, run the tests described in the manual supplied with the external monitor. If the tests show that the external monitor is OK, have the computer serviced.
Wrong characters appear on the screen.	Did you install the operating system or application program with the correct procedure? If you did, have the external monitor serviced.

Other Option Problems

Problem	Action
An IBM option that you just installed does not work.	Make sure that: - The option is designed for your computer. - The option was installed following to the instructions supplied with the option or this book. - Other installed options or cables are not loose. - There is no I/O address or interrupt level (IRQ) DMA channel conflict. To see the system resource status, start the ThinkPad Configuration program and click on the respective device buttons. If the test program for the option did not find the problem, have the computer and option serviced.
An IBM option that used to work no longer works.	Make sure that: - The option is securely connected to your computer. - If the option came with its own test instructions, use those instructions to test the option. - There is no system resource conflict (see "Resolving System Resource Conflicts" in the online book). If these items are correct and the test program did not find the problem, have the computer and option serviced.
The serial port does not work.	Make sure that the serial port is enabled by doing the following: For Windows 95: 1. Start the ThinkPad Configuration program. 2. Click on Serial Port (. 3. Select Enable. 4. Click on Device Manager. 5. Set up the port in the "Device Manager" window. 6. Click on OK. For Windows NT: 1. Start the ThinkPad Configuration program. 2. Click on Serial Port (. 3. Select Enable; then select COM1, COM2, COM3, or COM4. 4. Click on OK.

Software Problems

Problem	Action
An application does not run correctly.	Check the following to make sure that the problem is not being caused by the application: - Your computer has the minimum required memory to run the application. - Refer to the manuals supplied with the application. - The application is designed to operate with your operating system. - Other applications run correctly on your computer. - The necessary device drivers are installed (see the online book). - The application works OK when it is run on some other computer. If an error message appears when you are using the application program, refer to the manuals supplied with the application. If these items are correct and you still have a problem, contact your place of purchase or the service representative for help.
You cannot install OS/2 Warp.	See the online book.

Other Problems

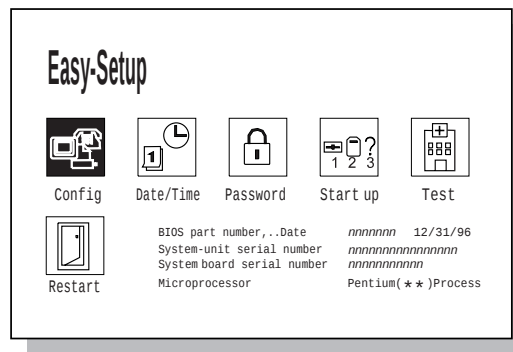
Problem	Cause or Action
The computer locks or does not accept any input.	Your computer might lock when it enters suspend mode during a communication operation. You should disable the Suspend Timer when you are working on the network. When you turn on the computer with OS/2 Warp installed, make sure no compact disc (CD) is in the CD-ROM drive. If there is, remove the CD, turn off the computer, and turn it on again. To turn off the computer, press the reset switch using the tip of a ballpoint pen.
The computer does not turn off with the power switch.	If the suspend lamp is on and you are working under battery power, change the battery to a fully charged one or change your power source to ac power. If you still have a problem, press the reset switch using the tip of a ballpoint pen.
The computer does not start from a diskette.	Make sure that the startup sequence in Easy-Setup is set so that the computer boots from the diskette drive (see page 24).

Testing Your Computer

If you still have a problem with your computer after using the Troubleshooting Charts, test the computer using the Easy-Setup **Test** function.

To test your computer, do the following:

- 1** Make sure that the speaker volume control is in the middle position.
- 2** Press and hold **F1**; then turn on the computer to start Easy-Setup. Hold **F1** until the “Easy-Setup” menu appears:

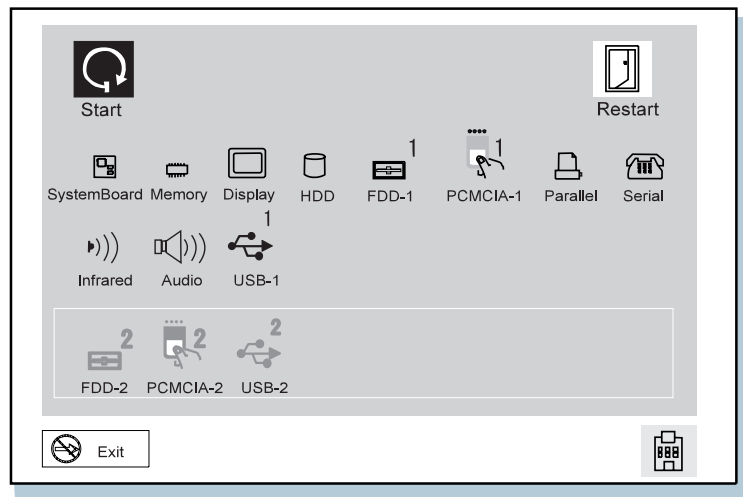


You will hear a short beep. If you are not sure whether you heard a beep or not, turn off the computer and try again. If you still don't hear a beep, the speaker is not working. Have your computer serviced.

Solving Computer Problems

- 3** Select the **Test** icon; then select the **Start** icon or press **Enter**.

Note: Do not touch the keyboard or the pointing device during the test.



If you cannot go to the next menu, have the computer serviced.

If an X appears to the left of a device with an error code appears below it, make a note of the error code and have the computer serviced.

Recovering Lost or Damaged Software

This section describes how to recover lost or damaged software. If you want to recover one or several pieces of software, use the Diskette Factory. If you want to restore your system to what it was at the time of purchase, and if you are using Windows 95, use the Recovery CD.

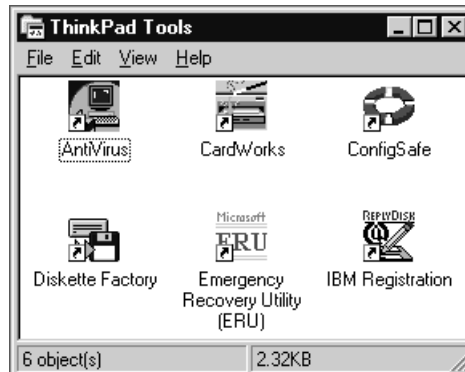
Using the Diskette Factory

To recover a particular device driver or utility, create the backup diskettes for it with the Diskette Factory; then reinstall it.

To create the backup diskettes, do the following:

- 1 Double-click on **ThinkPad Tools**.  (ThinkPad Tools)

The following window appears.



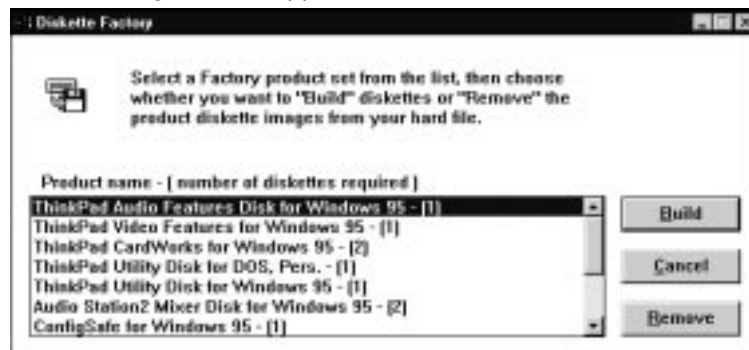
2 Double-click on **Diskette Factory**.

The “Diskette Factory” window appears.



3 Select the operating system you are installing and click on **Yes**.

The following window appears.



4 Click on the diskette group for the backup copy you want to create. Then click on **Build**.

You need to create all the diskettes for each group.

Note

You need blank diskettes. The number of diskettes required is shown beside the diskette group.

For details on how to install software, see the online book.

Using the Recovery CD (Windows 95 Only)

The Recovery CD package consists of a boot diskette and a CD-ROM containing the original preload image.

Attention

This CD deletes all personal data and your customized configuration setting. Resetting your computer to most of the factory-shipped default values. You should back up your personal files before you use this CD.

You need an external CD-ROM drive.

Note: Use the CD-ROM drive supplied with IBM or CNF.

- 1** Connect the CD-ROM drive to your computer.
- 2** Insert the Recovery CD Boot Diskette into the diskette drive.
- 3** Turn on or restart the computer.
Your hard disk is formatted.
- 4** Insert the CD-ROM into the CD-ROM drive.
- 5** Follow the instruction that appears on the screen.
- 6** When the process is complete, remove the Recovery CD-ROM Boot Diskette from the diskette drive.
- 7** Press **Restart**.

Your computer restarts with the original preloaded software and hardware configuration.

Chapter 6. Getting Service

Preparation

If you need further assistance, call your IBM authorized reseller or IBM marketing representative.

You will need to know the following information when requesting repair service:

Identification number of your computer

Options installed in your system

Note: Use the checklist on page 132.

Error message or problem

Note: Error messages can help identify which service action is required and help the service representative provide quick and efficient service.

Use the record sheet on page 133

About Your Warranty

During the warranty period, you may be responsible for repair costs if the product damage was due to misuse, accident, modification, unsuitable physical or operating environment, or improper maintenance.

For full information on product warranties, see Appendix C.

For your convenience, write the service phone numbers here:

Information on Your ThinkPad

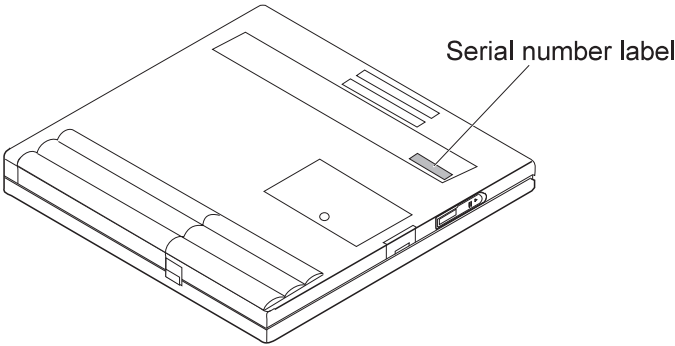
Option List

DIMM	PC Cards
_____ MB	_____
_____ MB	_____
_____ MB Hard Disk Drive	Battery Pack
External Diskette Drive	

Identification Numbers

The serial number label is on the bottom of your computer. Write down the machine **Type** and the serial number (**S/N**) in the following box:

IBM Product Name	ThinkPad 560X
Machine Type	2640- _____
Serial Number	_____



Problem Recording Sheet

Computer information:

Machine type: _____

Serial number: _____

Date of purchase: ____/____/____

Type of problem:

Continuous problem

Intermittent problem

Error code:

The operating system and its version number, if available:

DOS Version _____

Windows 3.11

Windows NT Version _____

OS/2 Version _____

Windows 95

Application programs running at the time of the problem:

Problem symptom:

Describe the problem more specifically.

Can the system be reproduced?:

Yes No

If yes, describe how it can be reproduced:

HelpWare Customer Support and Service

Purchasing an IBM PC hardware product entitles you to receive support and services during the limited warranty period. If you need additional support and services, a wide variety of extended solutions that addresses most needs are available for purchase.

Help by Telephone

You can get support and information by telephone during the limited warranty period at no additional charge, through the IBM PC Support Line. Experienced technical-support representatives will be on hand to assist you in answering any questions you might have, such as:

- How to set up your computer
- How to install and set up your IBM options purchased directly from IBM or through an IBM reseller
- How to use the 30-day support for the preloaded operating system
- How to get service

Please have the following information ready when you call:

- Serial number of your computer and proof of purchase
- Description of the problem
- Exact wording of the error message
- Hardware and software configuration information for your system

If possible, be at your computer when you call:

- In the U.S. and Puerto Rico, call 1-800-772-2227.
- In Canada, call 1-800-565-3344.

These lines are available 24 hours a day, 7 days a week. The answering technical-support representative can also fax or mail you technical or product information, such as:

- Sales information
- Product brochures
- Location of IBM resellers
- Services available from IBM

ThinkPad EasyServ

ThinkPad *EasyServ* is a courier repair service for IBM mobile products whereby your ThinkPad computer will be picked up, sent to IBM for repair, and then returned to the location of your choice. This service is available at no additional charge during the limited warranty period. Most computers can be repaired the day that it arrives at the IBM repair location.

Support personnel first try to solve your problem over the phone. If they are unsuccessful, you can arrange for EasyServ service by calling the PC Support Line.

If possible, you should use the original ThinkPad shipping materials that your computer came in, for re-sending it to IBM. If the box is not available, the courier will deliver a shipping carton and will return later to pick it up. This service is available only in the U.S. and Canada.

Getting Help around the World

If you make frequent overseas trips or you are residing abroad, you can register with the International Warranty Service Office. The office will issue an International Warranty Service Certificate, which you can use wherever IBM or IBM resellers sell and service IBM PC products.

For more information on registering with the International Warranty Service Office, call 1-800-497-7426 in the U.S. or Canada.

Fax Information

In the U.S. and Canada, if you have a touch-tone telephone and access to a fax machine, you can receive marketing and technical information on such topics as computer hardware, operating systems, and local area networks (LANs) by fax. You can call the IBM PC Company Automated Fax System 24 hours a day, 7 days a week. Follow the recorded instructions, and the information that you request will be sent your fax machine.

Getting Service

To access the IBM PC Company Automated Fax System, call:

In the U.S., 1-800-426-3395

In Canada, 1-800-465-3299

Electronic Support Services

If you have a modem, you can access such public information services as the electronic bulletin boards and messaging areas, electronic conferences, and searchable databases available in several of the most popular online information services.

Bulletin boards and online services contain information on many topics such as:

- PC user groups
- PC questions and answers
- OS/2 topics
- Problem solving
- Technical information
- Hardware and software configurations
- Networking

The IBM PC Company Bulletin Board System (BBS) can be reached 24 hours a day, 7 days a week. Modem speeds of up to 14,400 baud are supported. Long-distance telephone charges may apply.

To access the PC Company BBS, call:

In the U.S., 1-919-517-0001

For Canada, call the center closest to you:

- 905-316-4255 (Markham; Ontario)
- 514-938-3022 (Montreal)
- 416-492-1823 (Toronto)
- 604-664-6466 (Vancouver)

Commercial online services that have information on IBM products are:

CompuServe:
Use the **GO** word **ThinkPad**.

Getting Service

Prodigy:

Use the **Jump** command; type IBM and select **PC Product Support**.

America Online:

Use the **Go to** keyword **IBM**.

You can also contact us on the internet for answers to your technical support questions. When you link to our support home page, you can search for technical tips, download up date drivers and find out about many other things. You can visit the site at the URL:

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

Purchasing Additional Services

During and after the limited warranty period, you can purchase additional services, such as:

- Support for IBM and non-IBM hardware, operating systems, and application programs
- Network setup and configuration
- Upgraded or extended hardware repair services
- Custom installation

The availability of the service and its name might vary by country.

Enhanced PC Support Line

Enhanced PC Support is available for desktop and mobile IBM computers that are not connected to a network. Technical support is provided for IBM computers and IBM or non-IBM options, operating systems, and application programs on the supported products list.

This service includes technical support for the following:

- Installing and configuring your out-of-warranty IBM computer
- Installing and configuring non-IBM options in IBM computers
- Assistance with the preloaded operating system
- Using selected application software and games
- Tuning performance, such as memory management
- Installing device drivers remotely
- Setting up and using multimedia devices
- Identifying system problems

Getting Service

Interpreting documentation

You can purchase this service for a single incident or for multiple incidents. For more information about purchasing the Enhanced PC Support, see "Ordering Support Line Services."

Client Support Line

Client support is available to provide assistance with the following:

- Installation and configuration of clients.

- Identification of system problems related to the client in a network environment.

- Assistance with client network interface cards and options.

You can purchase this service as a single incident.

Network and Server Support Line

Network and Server Support includes all the features of the Enhanced PC Support Line and is available for simple and complex networks made up of IBM workstations and servers using major network operating systems. This line also supports the many popular non-IBM adapters and network interface cards.

This service includes technical support for the following:

- Installing and configuring client workstations and servers

- Identifying system problems and correcting problems on the client or the server

- Using IBM and non-IBM network operating systems

- Interpreting documentation

You can purchase this service for a single incident or for multiple incidents. For more information about purchasing Network and Server Support, see "Ordering Support Line Services."

Ordering Support Line Services

Enhanced PC Support Line, Client Support Line, and the Network and Server Support Line services are available for products on the Supported Products list.

Getting Service

To receive a Supported Products list,

In the U.S:

- Call 1-800-772-2227.
- Select the automated fax system option.
- Select the service for which you would like a Supported Products list:
 - For Enhanced PC Support Line, select document 11682.
 - For Network and Server Support Line, select document 11683.

In Canada:

- Call 1-800-465-7999 or 1-800-465-3299

In other countries, contact your IBM reseller or IBM marketing representative.

For more information on how to purchase the Support Line Services:

In the U.S.: call 1-800-772-2227.

In Canada: call 1-800-465-7999.

In other countries, contact your IBM reseller or IBM marketing representative.

Warranty and Repair Services

You can upgrade your ThinkPad EasyServ/Customer Carry-In warranty services or extend their period of service.

Upgradable warranties for the U.S. include:

Overnight service option. You can upgrade your current warranty that provides ThinkPad EasyServ/Carry-in repair service. Your warranty provides ThinkPad EasyServ/Carry-in repair service.

You can also extend your period of warranty. The "Warranty and Repair Services" offers a ThinkPad EasyServ Maintenance Agreement.

Getting Service

For more information on warranty upgrades and extensions:

In the U.S.: call 1-800-426-7697.

In Canada: call 1-800-465-7999.

In other countries, contact your IBM reseller or IBM marketing representative.

Obtaining IBM Operating System Updates

IBM provides update diskettes, called ServicePaks or corrective service diskettes (CSDs), to customers who report a DOS or OS/2 problem for which there is or will be a corrective program.

Getting Update Diskettes

You can obtain update diskettes from:

IBM PC Company BBS

IBM Software Solutions Center (1-800-992-4777 for the U.S. and Canada)

An IBM authorized reseller or an IBM marketing representative

Ordering Publications

Additional publications are available for purchase from IBM. For a list of publications available in your country:

In the U.S. and Puerto Rico: call IBM PC Books at 1-800-426-7282.

In Canada: call 1-800-465-1234.

In other countries, contact your IBM authorized reseller or IBM marketing representative.

Appendix A. Features and Specifications

This appendix describes features and specifications for the computer. For more information, refer to the *Technical Reference* manual.

Features

Microprocessor

Intel Pentium processor with MMX

Memory

Built-in: 32 MB

Optional: Max. 96 MB

Storage devices

2.5-inch hard disk drive

Display

The color LCD display uses TFT technology and support

TFT color LCD

Width of 12.1 inches (when measured diagonally)

Up to 262,144 colors

Up to 800-by-600 resolution on the LCD

Up to 1024-by-768 resolution on the external monitor

Brightness control

Keyboard

84-key, 85-key, or 89-key

TrackPoint III

Fn key function

Features and Specifications

External Diskette Drive

To get the best performance from your diskette drives, use high-quality diskettes (such as IBM diskettes) that meet or exceed the following standards:

1-MB, 3.5-inch, unformatted diskette:

- ANSI (American National Standards Institute) X3.137
- ISO (International Standards Organization) 8860
- ECMA (European Computer Manufacturers Association) 100

2-MB, 3.5-inch, unformatted diskette:

- ANSI X3.171
- ISO 9529
- ECMA 125

External interface

- Serial connector (EIA-RS232D)
- Parallel connector (Centronics)
- External input-device connector
- External-monitor connector
- External-diskette-drive connector
- Expansion connector
- PC Card slots (two Type I or Type II PC Cards, or one Type III PC Card)
- Headphone jack
- Microphone/line-in jack (supports a dynamic microphone or a self-battery-powered condenser microphone)
- Infrared port
- Universal Serial Bus (USB) port

Specifications

Size

Width: 297 mm (11.7 in.)
Depth: 222 mm (8.7 in.)
Height: 31.0 mm (1.22 in.)

Weight

Minimum configuration with battery pack:
With a TFT display: 1.9 kg (4.2 lb)

Environment

Note:

When you charge the battery pack, its temperature must be at least 10°C (50°F).

Temperature (at altitudes less than 2438 m [8000 ft]):

- Operating with no diskette: 5° to 35°C (41° to 95°F)
- Operating with a diskette: 10° to 35°C (50° to 95°F)
- Nonoperating: 5° to 43°C (41° to 109°F)

Relative humidity:

- Operating with no diskette in the drive: 8% to 95%
- Operating with a diskette in the drive: 8% to 80%

Maximum altitude: 3048 m (10 000 ft) in unpressurized conditions

- Maximum temperature at 3048 m (10 000 ft): 31.3°C (88° F)

Heat output

Approximately 30 Kcal per hour

Electrical (AC Adapter)

Sine-wave input, at 50 to 60 Hz, is required
The input rating of the AC Adapter: 100–240 V ac, 50/60 Hz

Lithium-ion battery pack

Nominal voltage: 10.8 V dc
Capacity: 2.2 AH

Features and Specifications

IBM Power Cords

IBM power cords for a specific country are usually available only in that country:

For 2-pin power cords:

IBM Power Cord Part Number	Used in These Countries
13H5264	Bahamas, Barbados, Bermuda, Bolivia, Canada, Cayman Islands, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Korea (South), Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Saudi Arabia, Suriname, Taiwan, Thailand, Trinidad (West Indies), United States of America, Venezuela
13H5267	Abu Dhabi, Albania, Antigua, Bahrain, Brunei, Dubai, Fiji, India, Ireland, Kenya, Kuwait, Macao, Malasia, Nigeria, Oman, People's Republic of China (including Hong Kong), Qatar, Singapore, United Kingdom
13H5270	Austria, Belgium, Bulgaria, Chile, Czech Republic, Denmark, Egypt, Finland, France, Germany, Greece, Hungary, Iceland, Indonesia, Israel, Italy, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden, Switzerland, Turkey, former Yugoslavia
13H5273	Japan
13H5276	Argentina, Australia, New Zealand, Papua New Guinea, Paraguay, Uruguay
13H5279	Bangladesh, Pakistan, South Africa, Sri Lanka

Features and Specifications

For 3-pin power cords:

Note

The grounded adapter is required for full MPRII compliance.

IBM Power Cord Part Number	Used in These Countries
25H2205	Argentina, Australia, New Zealand, Papua New Guinea, Paraguay, Uruguay
25H2207	Bahamas, Barbados, Bermuda, Bolivia, Canada, Cayman Islands, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Korea (South), Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Saudi Arabia, Suriname, Taiwan, Trinidad (West Indies), United States of America, Venezuela
25H2209	Austria, Belgium, Bulgaria, Czech Republic, Egypt, Finland, France, Germany, Greece, Hungary, Iceland, Indonesia, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden, Turkey, former Yugoslavia
25H2211	Denmark
25H2213	Bangladesh, Pakistan, South Africa, Sri Lanka
25H2215	Abu Dhabi, Albania, Antigua, Bahrain, Brunei, Dubai, Fiji, India, Ireland, Kenya, Kuwait, Macao, Malaysia, Nigeria, Oman, People's Republic of China (including Hong Kong), Qatar, Singapore, United Kingdom
25H2219	Thailand
25H2221	Switzerland
25H2223	Chile, Italy
25H2225	Israel

Features and Specifications

Electrical Safety Notice

Important

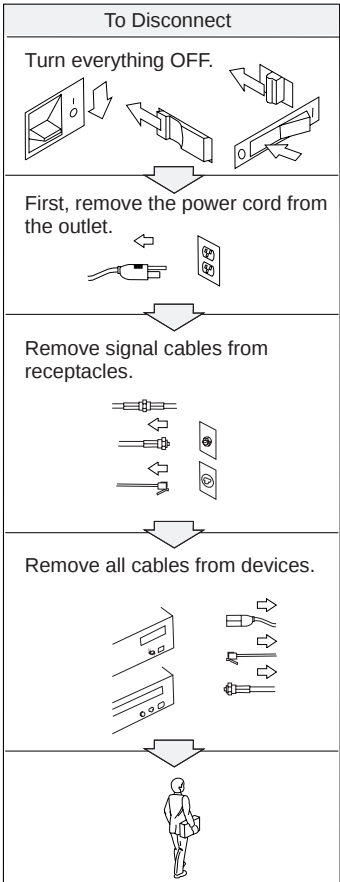
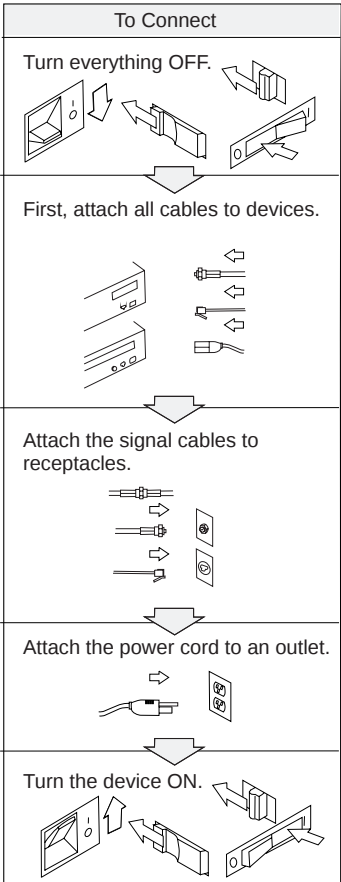
If a 3-pin power cord came with your computer, you must follow the following safety notice.

Note:
In the U.K., by law:

The telephone line cable must be connected after the power cord.
The power cord must be disconnected after the telephone line cable.



Electrical current from power, telephone, and communication cable is hazardous. To avoid shock hazard, connect and disconnect cables as shown below when installing, moving, or opening the covers of this product or attached devices. The 3-pin power cord must be used with a properly grounded outlet.



Appendix B. Ergonomics Information

This is important information you should read before using your portable ThinkPad notebook computer in your “virtual office.”

Working in the virtual office may mean adapting to frequent changes in your environment. Following some simple “rules of the road” will make things easier and bring you the maximum benefits of your ThinkPad computer. Keeping in mind such basics as good lighting and proper seating, for example, can go a long way in helping you enhance your performance and achieve greater comfort wherever you are.

What if I am traveling?

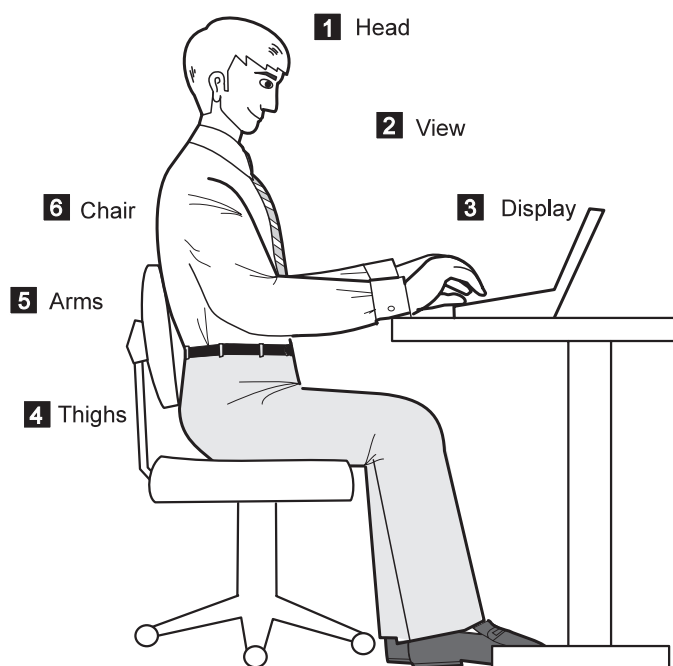
It may not be possible to observe the best ergonomic practices when you are using the ThinkPad computer while on the move or in a “casual” setting. Regardless of the setting, try to observe as many of the tips for proper usage as possible. Sitting properly and using adequate lighting, for example, will help you maintain desirable comfort and performance levels.

Questions about vision?

IBM's visual display screens are designed to meet the highest standards and to provide you with clear, crisp images and large, bright displays that are easy to see, yet easy on the eyes. Of course, any concentrated and sustained visual activity can be tiring. If you have questions on eye fatigue or visual discomfort, consult a vision care specialist for advice.

Note: The example shown here of someone in a traditional setting. Even when not in such a setting, you can follow many of these tips. Develop good habits, and they will serve you well.

Ergonomics Information



1 Head

Keep your head in a comfortable and vertical position.

2 View

Maintain a comfortable viewing distance of 510–760 mm (20–30 in.).

3 Display

Position the display to avoid glare or reflections from overhead lighting or outside sources of light.

Keep the display screen clean and set the contrast and brightness to levels that allow you to see the screen clearly.

4 Thighs

Keep your thighs parallel to the floor and your feet flat on the floor or on a footrest.

5 Arms

Keep your forearms, wrists, and hands in a relaxed and neutral position. Don't pound the keys; type with a soft touch.

6 Chair

Use a chair that gives you good back support.

Appendix C. Product Warranties and Notices

International Business Machines Corporation

Armonk, New York 10504

Statement of Limited Warranty

The warranties provided by IBM in this Statement of Limited Warranty apply only to Machines you originally purchase for your use, and not for resale, from IBM or an IBM authorized reseller. The term "Machine" means an IBM machine, its features, conversions, upgrades, elements, or accessories, or any combination of them. Machines are subject to these terms only if purchased in the United States or Puerto Rico, or Canada, and located in the country of purchase. If you have any questions, contact IBM or your reseller.

Machine: IBM ThinkPad 560X except the Battery Pack

Warranty Period*: One Year

**Elements and accessories are warranted for three months. Contact your place of purchase for warranty service information.*

Production Status

Each Machine is manufactured from new parts, or new and serviceable used parts (which perform like new 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 warranty terms apply.

The IBM Warranty

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

During the warranty period, IBM or your reseller will provide warranty service under the type of service designated for the Machine and will manage and install engineering changes that apply to the Machine. IBM or your reseller will specify the type of service.

For a feature, conversion, or upgrade, IBM or your reseller may require that the Machine on which it is installed be 1) the designated, serial-numbered Machine and 2) at an engineering-change level compatible with the feature, conversion, or upgrade. Some of these transactions (called "Net-Priced" transactions) may include additional parts and associated replacement parts that are provided on an exchange basis. All removed parts become the property of IBM and must be returned to IBM.

Replacement parts assume the remaining warranty of the parts they replace.

If a Machine does not function as warranted during the warranty period, IBM or your reseller will repair or replace it (with a Machine that is at least functionally equivalent) without charge. If IBM or your reseller is unable to do so, you may return it to your place of purchase and your money will be refunded.

If you transfer a Machine to another user, warranty service is available to that user for the remainder of the warranty period. You should give your proof of purchase and this Statement to that user.

Warranty Service

To obtain warranty service for the Machine, you should contact your reseller or call IBM. In the United States, call IBM at **1-800-772-2227**. In Canada, call IBM at **1-800-565-3344**. You may be required to present proof of purchase.

Depending on the Machine, the service may be 1) a "Repair" service at your location (called "On-site") or at one of IBM's or a reseller's service locations (called "Carry-in") or 2) an "Exchange" service, either On-site or Carry-in.

When a type of service involves the exchange of a Machine or part, the item IBM or your reseller replaces becomes its property and the replacement becomes yours. The replacement may not be new, but will be in good working order and at least functionally equivalent to the item replaced.

It is your responsibility to:

1. obtain authorization from the owner (for example, your lessor) to have IBM or your reseller service a Machine that you do not own;
2. where applicable, before service is provided —
 - a) follow the problem determination, problem analysis, and service request procedures that IBM or your reseller provide,
 - b) secure all programs, data, and funds contained in a Machine,
 - c) inform IBM or your reseller of changes in a Machine's location, and

Product Warranties and Notices

- d) for a Machine with exchange service, remove all features, parts, options, alterations, and attachments not under warranty service. Also, the Machine must be free of any legal obligations or restrictions that prevent its exchange; and
3. be responsible for loss of, or damage to, a Machine in transit when you are responsible for the transportation charges.

Extent of Warranty

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

Unless IBM specifies otherwise, IBM provides non-IBM machines on an "AS IS" basis. However, non-IBM manufacturers may provide their own warranties to you.

Misuse, accident, modification, unsuitable physical or operating environment, improper maintenance by you, removal of product labels or parts identification labels, or failure caused by a product for which IBM is not responsible may void the warranties.

THESE WARRANTIES REPLACE ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. HOWEVER, SOME LAWS DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES. IF THESE LAWS APPLY, THEN ALL EXPRESS AND IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE WARRANTY PERIOD. NO WARRANTIES APPLY AFTER THAT PERIOD.

In Canada, warranties include both warranties and conditions.

Some jurisdictions do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

Limitation of Liability

Circumstances may arise where, because of a default on IBM's part (including fundamental breach) or other liability (including negligence and misrepresentation), you are entitled to recover damages from IBM. In each such instance, regardless of the basis on which you are entitled to claim damages, IBM is liable only for:

1. bodily injury (including death), and damage to real property and tangible personal property; and
2. the amount of any other actual loss or damage, up to the greater of \$100,000 or the charge for the Machine that is the subject of the claim.

Under no circumstances is IBM liable for any of the following:

1. third-party claims against you for losses or damages (other than those under the first item listed above);
2. loss of, or damage to, your records or data; or
3. economic consequential damages (including lost profits or savings) or incidental damages, even if IBM 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.

This warranty gives you specific legal rights and you may also have other rights which vary from jurisdiction to jurisdiction.

Product Warranties and Notices

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Armonk, New York 10504

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Machine: Battery Pack

Warranty Period*: One Year

**Elements and accessories are warranted for three months. Contact your place of purchase for warranty service information.*

Production Status

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Replacement parts assume the remaining warranty of the parts they replace.

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It is your responsibility to:

1. obtain authorization from the owner (for example, your lessor) to have IBM or your reseller service a Machine that you do not own;
2. where applicable, before service is provided —
 - a) follow the problem determination, problem analysis, and service request procedures that IBM or your reseller provide,
 - b) secure all programs, data, and funds contained in a Machine,
 - c) inform IBM or your reseller of changes in a Machine's location, and

Product Warranties and Notices

- d) for a Machine with exchange service, remove all features, parts, options, alterations, and attachments not under warranty service. Also, the Machine must be free of any legal obligations or restrictions that prevent its exchange; and
3. be responsible for loss of, or damage to, a Machine in transit when you are responsible for the transportation charges.

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Under no circumstances is IBM liable for any of the following:

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Operating System/2	TrackPoint III
OS/2	WIN-OS/2
PC Card Director	

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Other company, product, and service names, which may be denoted by a double asterisk (**), may be trademarks or service marks of others.

Product Warranties and Notices

Electronic Emission Notice

Federal Communications Commission (FCC) Statement

ThinkPad 560X, 2640

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 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
Old Orchard Road
Armonk, NY 10504
Telephone 1-919-543-2193

Product Warranties and Notices

Canadian Department of Communications Compliance Statement

This equipment does not exceed Class B limits per radio noise emissions for digital apparatus, set out in the Radio Interference Regulation of the Canadian Department of Communications.

Avis de conformité aux normes du ministère des Communications du Canada

Cet équipement ne dépasse pas les limites de Classe B d'émission de bruits radioélectriques pour les appareils numériques, telles que prescrites par le Règlement sur le brouillage radioélectrique établi par le ministère des Communications du Canada.

European Community Directive Conformance Statement

This product is in conformity with the protection requirements of EC Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electro-magnetic compatibility.

A declaration of Conformity with the requirements of the Directive has been signed by IBM United Kingdom Limited, PO BOX 30 Spango Valley Greenock Scotland PA160AH.

This product satisfies the Class B limits of EN 55022.

Glossary

This glossary includes terms and definitions from the *IBM Dictionary of Computing* (New York: McGraw-Hill, 1994).

ac. Alternating current.

ac power. Power that is supplied to the computer through an electrical outlet.

Advanced Power Management (APM). A facility consisting of one or more layers of software that support power management in computers with power manageable hardware. The APM software interface allows applications, operating systems, device drivers, and the APM BIOS to work together to reduce power consumption, without reducing system performance.

APM. Advanced Power Management

ANSI. American National Standards Institute.

application program. A program that performs specific tasks on your computer, such as word processing or creating spreadsheets.

ASCII. American National Standard Code for Information Interchange.

ATA PC Card. A PC Card with an AT attachment hard disk drive interface such as a storage device PC Card.

AUTOEXEC.BAT. A file that contains a startup procedure of DOS. Each time you start your system, DOS performs the commands that are stored in this file.

backup copy. A copy, usually of a file or group of files, that is kept in case the original file or files are unintentionally changed or destroyed.

batch. A process method in which a program or programs records with little or no operator action.

BIOS (Basic Input/Output System).

Microcode that contains such basic hardware operations as interactions with diskette drives, hard disk drives, and the keyboard.

bitmap graphics. (1) A form of graphics in which all points on the display are directly addressable. (2) In multimedia applications, a form of graphics in an area of computer memory or storage that can be displayed as an image.

boot. To prepare a computer system for operation by loading an operating system.

bps. Bits per second. In serial transmission, the instantaneous bit speed with which a device or channel transmits a character.

bus. A facility for transferring data between several devices located between two end points, only one device being able to transmit at a given moment.

cache memory. A special memory, smaller and faster than main memory, that is used to hold a copy of instructions and data in main memory that are likely to be needed next by the processor, and that have been obtained automatically from main memory.

CD-I. Compact disc-interactive.

combination keys. Keys that have specific functions when you hold them down at the same time.

CONFIG.SYS. A file that contains a group of commands to load installable device drivers and reserve space in system memory for information processing. This file is referred to by DOS during system startup.

configuration. (1) The manner in which the hardware and software of an

Glossary

information processing system are organized and interconnected. (2) The physical and logical arrangement of devices and programs that make up a data processing system. (3) The devices and programs that make up a system, subsystem, or network.

CRT. Cathode ray tube display.

device driver. (1) A file that contains the code needed to use an attached device. Operating system loads device drivers for screens, (2) A program that enables a computer to communicate with a specific peripheral device—for example, a printer, a video disc player, or a CD drive. (3) A collection of subroutines that control the interface between I/O device adapters and processors.

DIMM. Dual inline memory module.

directory. A type of file containing the names and controlling information for other files or other directories.

DMA. Direct memory access. The transfer of data between memory and input/output units without processor intervention.

double-click. To press and release a mouse button twice within a time frame defined by the user, without moving the pointer off the choice.

ECP. Extended Capability Port.

EGA. Enhanced graphics adapter.

EIA. Electronics Industries Association.

EIA-232D. An EIA interface standard that defines the physical, electronic, and functional characteristics of an interface line that connects a communication device and associated workstation. It uses a 25-pin connector and an unbalanced line voltage.

EMS. Expanded memory specification.

FAQ. Frequently asked questions.

fax. (1) Facsimile machine. (2) A transmitted document from a facsimile machine.

fixed disk. In personal computing, *fixed disk* is synonymous with *hard disk*.

Flash memory. Electrically rewritable storage.

folder. A file used to store and organize documents.

fuel gauge. An indicator on the screen that constantly shows the current power status of the battery pack.

HHR. Half-horizontal resolution.

hibernation. One of the power-saving methods that stores data and applications running in the computer's memory on the hard disk. During hibernation, the computer is automatically turned off to save power. When power is turned on again, the computer immediately restores the same data and applications as when hibernation started, without restarting the operating system.

high-resolution mode. Video resolutions that are greater than 640 by 480 pels.

icon. A graphic symbol, displayed on a screen, that a user can point to with a pointing device such as a TrackPoint III or mouse to select a particular function or software application.

IDE. Integrated device electronics.

IR. Infrared.

ISA. Industry standard architecture.

Glossary

ISO. International Organization for Standardization.

JEIDA. Japan Electronics Industry Development Association.

kilobyte (KB). 1024 bytes.

LAN. Local area network.

MCI. Media Control Interface.

megabyte (MB). 1024 kilobytes. About 1 million bytes.

memory. Often referred to as random-access memory (RAM), measured in kilobytes (KB) or megabytes (MB) of information.

MHz. Megahertz.

microcode. One or more microinstructions used in a product as an alternative to hard-wired circuitry to implement functions of a processor or other system component.

MIDI. Musical Instrument Digital Interface.

modem. A device that connects your computer to a telephone line, allowing it to communicate with another computer at another location.

parallel port. A port used to attach such devices as dot-matrix printers and input/output units; it transmits data 1 byte at a time.

partial suspend mode. A kind of suspend mode where only a part of the system components uses power.

password. A series of letters or numbers that you designate to restrict access to your computer.

PC Card. A card that is based on the PC Card standard.

PCMCIA. Personal Computer Memory Card International Association.

pel. Picture element.

picture element. In computer graphics, the smallest element of a display surface that can be independently assigned color and intensity.

pixel. Picture element.

pointing device. An instrument, such as a mouse, TrackPoint III, or joystick, that is used to move a pointer on the screen.

pop-up menu. On the display screen, a menu that emerges in an upward direction from a particular point or line on a display screen.

POST. Power-on self-test.

prompt. A visual or audible message sent by a program to request the user's response.

pull-down menu. On the display screen, a menu that emerges in a downward direction from a point or line at or near the top of the screen.

reboot. To restart all operations of the computer as if the power had just been turned on.

resume. To begin computer operations again from suspend mode.

ROM. Read-only memory.

serial port. A port used to attach such devices as display devices, letter-quality printers, modems, plotters, and such pointing devices as light pens and mice; it transmits data 1 bit at a time.

Glossary

suspend. To stop all operations of the computer to reduce power drain and restrict access to the files.

SVGA. Super video graphics adapter.

TFT. Thin-film transistor.

TSRs. Terminate-and-stay-resident programs, memory-resident programs that are loaded into memory and stay there so you can conveniently access them whenever you need to.

vertical expansion. A video display technique in character-display mode to fit

video images on the whole LCD screen by adjusting the number of character dots vertically.

VESA. Video Electronics Standards Association.

VGA. Video graphics adapter, a video mode that produces up to 640-by-480 resolution.

VSNC. Vertical synchronization frequency.

XMS. Extended memory specification.

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