> **Note**
>
> Before using this information and the product it supports, be sure to read the general information under "Safety information" on page xiii and "Notices" on page 203.

> **Note for using your computer in Japan**
>
> If you are using a modem in Japan, specify the country as "Japan" in the "Dialing Properties" window under the "Modem Properties" window. Using the modem functions with another setting is a violation of the Japanese Telecommunication Business Law.
>
> The AC Adapter complies with the Electrical Appliance and Material Control Law of Japan.
>
> Rating: Input   ac 100 V 50/60 Hz
>   Output   dc 16 V
>
> Certificate numbers (▽): 91-56010
>   91-56011
>   91-56012
>   91-56055
>   91-56887

First Edition (January 1999)

The following paragraph does not apply to the United Kingdom or any country where such provisions are inconsistent with local law:
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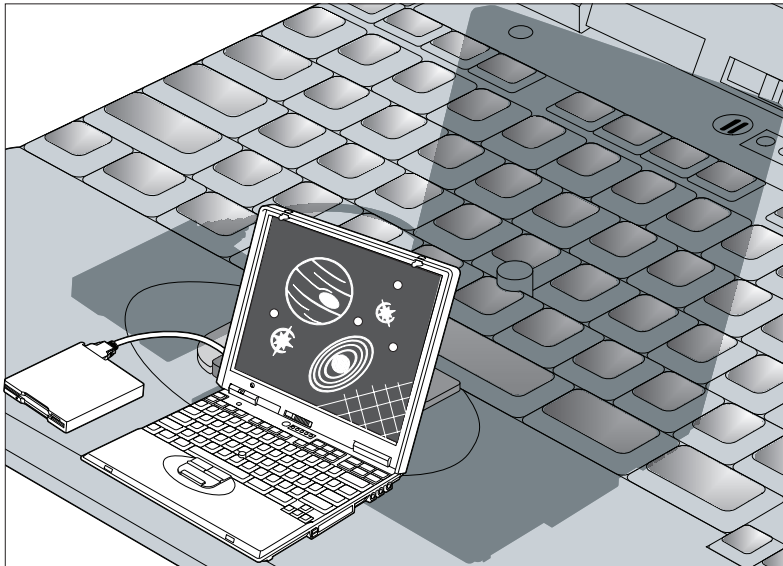
Thank You for Selecting an IBM ThinkPad 570 Computer

We have designed the ThinkPad 570 computer with
your mobile computing needs in mind.
To help us continue to build products
that address your mobile computing needs,
please complete the ThinkPad Registration included
in the *Setup Guide*.

Functional highlights

Compact design

    The slim, lightweight, and portable design of the ThinkPad 570 makes traveling with your computer much easier. At less than 1 inches thin and weighing only about 4 pounds, your computer is available wherever and whenever you need it.

High-performance processor

    The Intel   Mobile Pentium   II 300PE-, 333-, or 366-MHz processor delivers fast desktop-computer-level power and advanced performance.

High-performance memory

    The ThinkPad 570 utilizes for its memory the high-speed 66-MHz SDRAM (synchronous dynamic random access memory), which enhances the computer's advanced performance.

Large-capacity hard disk drive

    The 6.4- or 4.0-GB user-upgradable hard disk drive provides ample storage for your computing needs.

Large color display (LCD)

    The ThinkPad 570's 13.3- or 12.1-inch active matrix TFT (thin-film transistor) display provides clear and brilliant text and graphics.

Easy-to-use keyboard and enhanced pointing device

    The ThinkPad 570 has a full-size, full-stroke keyboard with an enhanced TrackPoint pointing device that enables you to select merely by pressing on the TrackPoint. A center button converts the TrackPoint into a scroll-controlling device or a magnifying glass on the screen.

        v

Lithium-ion battery pack

The large-capacity lithium-ion battery pack extends the operating time of your computer, further enhancing its portability.

Built-in modem

The integrated modem enables you to send or receive data, faxes, and voice over a telephone line. Supporting V.90 protocol and data rates of up to 56 Kbps, the modem makes communication easy and efficient when you are away from your office.

To use the ThinkPad modem function ➡ *Online User's Guide*.

PC Card support

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

To install a PC Card ➡ "Using a PC Card" on page 81.

Capability for further expansion, flexibility, and communication

You can further enhance your ThinkPad 570's functionality by attaching it to the ThinkPad 570 UltraBase and a port replicator (ThinkPad 560 Port Replicator or ThinkPad Port Replicator with Advanced EtherJet Feature).

The ThinkPad 570 UltraBase allows you easily add such options as a second battery, CD-ROM drive, DVD-ROM drive, or many other options. The port replicator provides cable management and easy Ethernet connectivity.

With these options your computer can be both portable when you are mobile and emulate a powerful desktop computer when you are in your office or home.

For more information ➡ "Extending the features of your computer with the ThinkPad 570 UltraBase and port replicators" on page 84.

Contents

About this book

This book contains information that will help you operate the IBM ThinkPad 570 computer. Before using the computer, be sure to read the *ThinkPad Setup Guide* and Chapter 1 of this book.

Chapter 1, "Basic information on your computer," acquaints you with the hardware features, information on how to back up or recover the system, and IBM's support and service.

Chapter 2, "Using your computer and extending its features," provides information on installing devices and using your computer's high-technology features.

Chapter 3, "Protecting your computer," provides information on using passwords and locks.

Chapter 4, "Solving computer problems," describes what to do if you have a computer problem. The chapter includes troubleshooting charts.

Appendix A, "Features and specifications," describes the features and specifications associated with your computer, including information on power cords.

Appendix B, "Product warranty and notices," contains the warranty statement for your computer and notices for this book.

The book concludes with an **index**.

Icons used in this book

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

| WIN 98 | Information for Microsoft Windows 98 users | DOS | Information for IBM DOS users |

| WIN 95 | Information for Microsoft Windows 95 users |

| WIN NT | Information for Microsoft Windows NT users |

Safety information

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.

⚠ **DANGER**

Electrical current from power, telephone, and communication cables 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.

To Connect	To Disconnect
Turn everything OFF.	Turn everything OFF.
First, attach all cables to devices.	First, remove the power cord from the outlet.
Attach the signal cables to receptacles.	Remove signal cables from receptacles.
Attach the power cord to an outlet.	Remove all cables from devices.
Turn the device ON.	
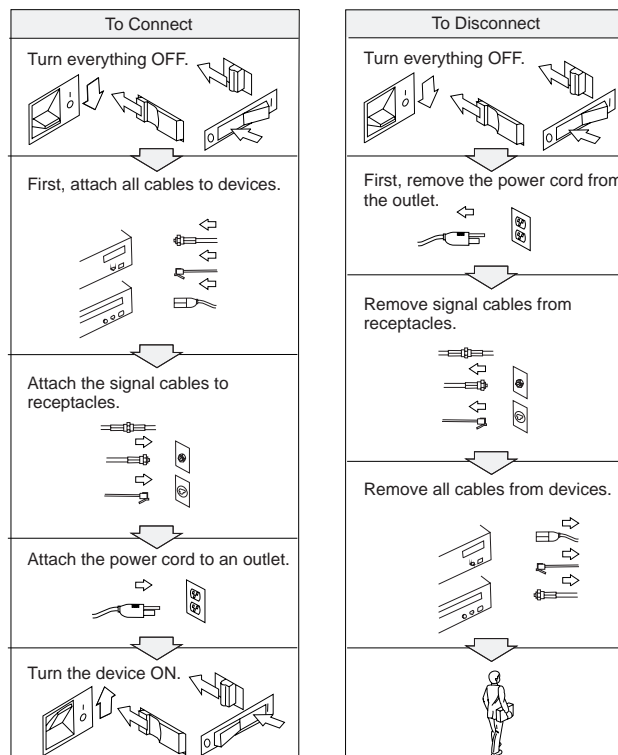
⚠ **DANGER**

> **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.**

⚠ **DANGER**

> **The lithium battery (IBM P/N 02K6572 UL-recognized component—File No. MH12210) 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.

Handling the ThinkPad computer

By using common sense and by following these handling tips, you will get the most use and enjoyment out of your computer for a long time to come.

This section provides tips for handling notebook computers in general. Some descriptions might not suit your situation. Check your shipping checklist to confirm the items you get with your computer.

Notebook computers are precision machines that require a bit of careful handling. Though your computer is designed and tested to be a durable notebook computer that functions reliably in normal work environments, you need to use some common sense in handling it.

Handling tips

Do not subject your computer to physical punishment, such as dropping or bumping.
Do not place heavy objects on your computer.
Do not spill liquids into your computer.
Do not use your computer in or near water (to avoid the danger of electrical shock).
Do not pack your computer in a tightly packed suitcase or bag. Your LCD might be damaged.

A scratchlike marking on your LCD might be a stain transferred from the keyboard (including from the TrackPoint stick) when the cover was pressed from the outside. Wipe such a stain gently with a dry soft cloth. If the stain remains, moisten the cloth with LCD cleaner and wipe the stain again. Be sure to dry the LCD before closing it.

Do not place any objects between the display and keyboard.
Do not move the computer when the hard disk drive is accessing data (when the indicator is blinking).
Do not crush or drop the external or removable hard disk, diskette, or CD-ROM drive when it is outside your computer.
Do not connect the modem to a PBX (private branch exchange) or other digital telephone extension line. **Your computer can use only a public-switched telephone network (PSTN)**. Use of a phone line other than PSTN can damage your modem. If you are not sure which kind of phone line you are using, contact your telephone company. Many hotels or office buildings use digital telephone extension lines, so check before connecting the telephone cable in such places.
Do not leave the base of your computer in contact with your lap or any part of your body for an extended period when the computer is functioning or when the battery is charging. Your computer dissipates some heat during normal operation. This heat is a function of the level of system activity and battery charge level.

For more information ➡ *Online User's Guide*.
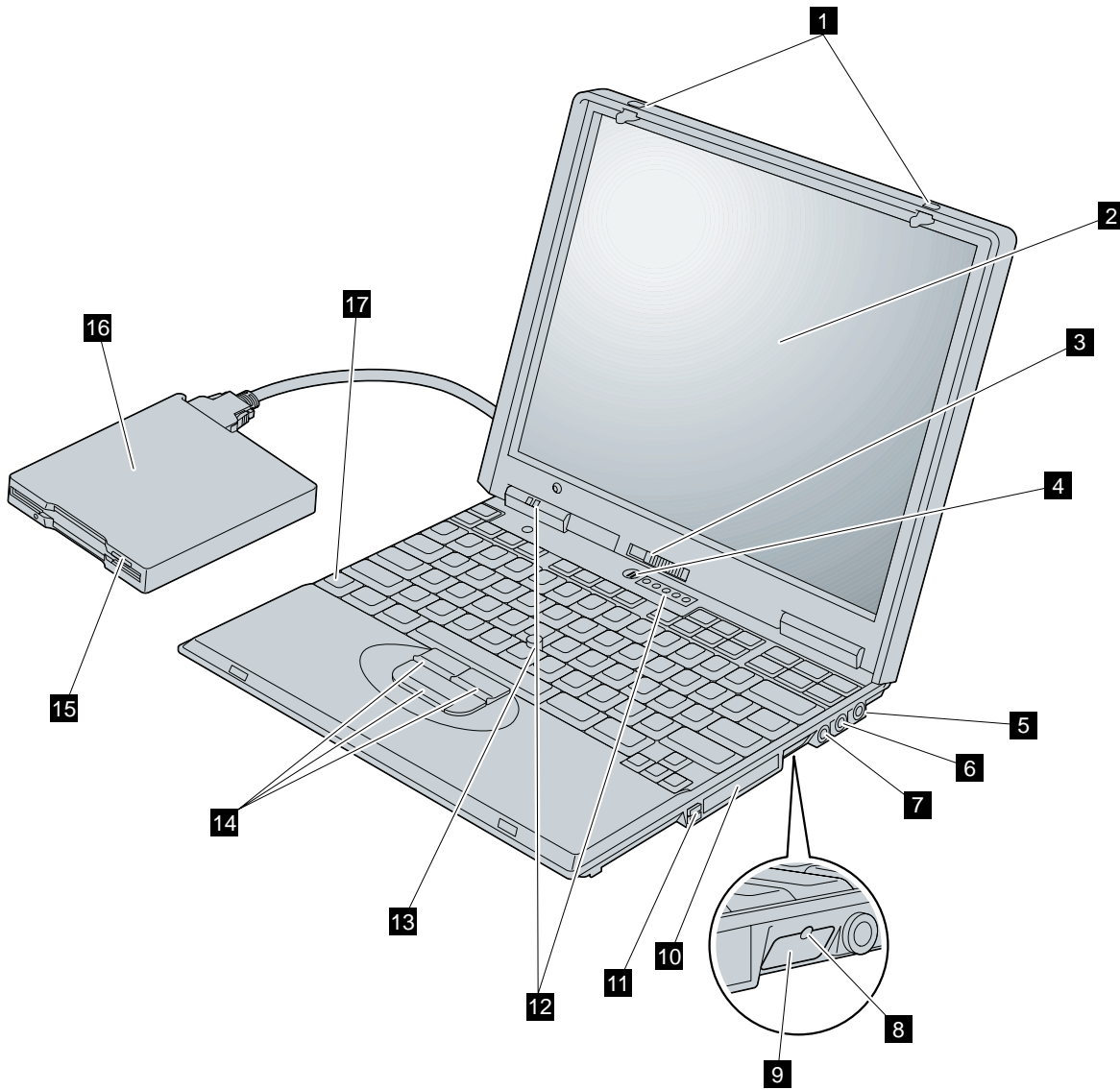
Chapter 1

Basic information on your computer

To power off the computer, hold the power switch for just a second and release it. Wait at least 5 seconds before powering on again (or resuming normal operation from suspend or hibernation mode).
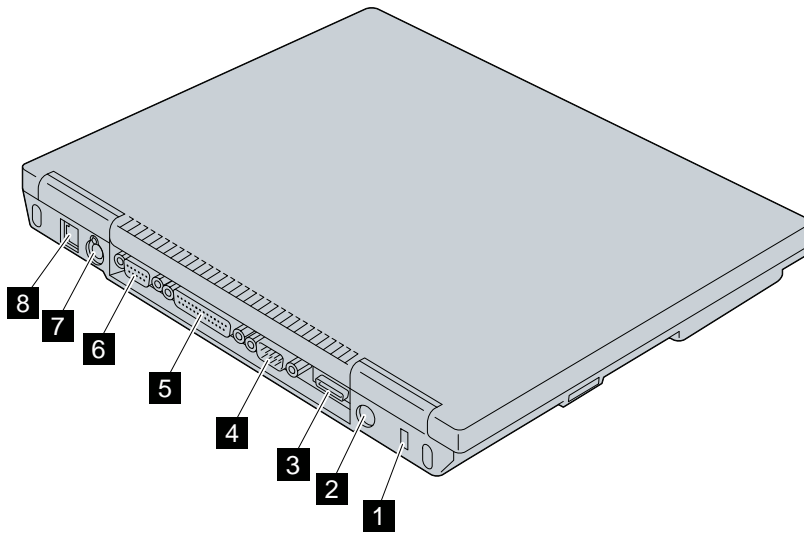
Identifying the hardware features

Front view

1   The **LCD latches** open the LCD.

2   The **color LCD screen** displays computer output.

3   The **brightness control** adjusts the brightness of the display. For the 12.1-inch display, it is located on the right side of the LCD.

4   The **built-in microphone** captures sound and voice when it is used with an application program capable of handling audio.

5   The **headphone jack**, a -inch (3.5-mm) diameter jack, is where you connect a stereo headphone or external speakers.

6   The **line-in jack**, a -inch (3.5-mm) diameter jack, is where you connect an external stereo audio device.

7   The **microphone jack**, a -inch (3.5-mm) diameter jack, is where you connect a microphone.

8   The **reset switch** is used to power the computer off if an application hangs or if the computer will not accept any input. Use the tip of a pen to press this switch.

9   The **infrared port** allows the computer to communicate with other devices that have infrared data-transfer capability.

1   The **PC Card slots** accept PC Cards.

11   The **PC Card-eject buttons** eject the PC Card from the PC Card slot.

12   The **system-status indicators** with their associated symbols show the system status. (➡ page 6.)

13   The **TrackPoint** is a built-in pointing device that provides a function similar to that of a mouse.

14   The **click buttons** work with the TrackPoint 13 and provide a function similar to that of mouse buttons.

15   The **diskette-eject button** ejects the diskette from the diskette drive.

16   You can attach the diskette drive as an **external diskette drive**.

17   The **Fn key** is used with the function keys to activate the **Fn** key functions. (➡ page 39.)

Identifying the hardware features

Rear view

Bottom view

Rear view of the computer

1 The **security keyhole** is used with a mechanical lock. (➡ page 156.)

2 The **power jack** is where the AC Adapter cable is connected.

3 The **external-diskette-drive connector** is where you connect the cable of the external diskette drive.

4 The **serial connector** is where you connect a 9-pin, serial-device cable.

5 The **parallel connector** is where you connect a parallel-printer signal cable.

6 The **external-monitor connector** is where you attach an external monitor (CRT).

7 The **external-input-device connector** is used to attach a mouse or an external numeric keypad to the computer. An external keyboard can be attached to this connector through an optional keyboard/mouse cable.

8 The **modem connector** is used for connecting your computer to a telephone line.

Bottom view of the computer

1 The **battery pack** is a built-in power source for the computer.

2 The **battery-pack latch** locks or releases the battery pack.

3 The **speaker** is built in to the computer.

4 The **system-expansion connector** (244-pin) enables you to connect your computer to a ThinkPad 570 UltraBase or to a ThinkPad 570 Direct Dock Adapter for connection to a port replicator.

5 The **fan louvers** are for circulating air within the computer. *Do not place*

any object in front of these louvers.

6 The **power switch** turns the computer on and off. You can slide this switch by pushing the white notch on it.

7 The **universal serial bus (USB) connector** enables you to connect any device that conforms to the USB interface. Many recent digital devices conform to this new standard.

8 To install or remove the SDRAM dual inline memory module (DIMM) option, loosen this **memory-slot-cover screw**.

9 The **memory slot** accepts an SDRAM dual inline memory module (DIMM) option.

1 To install or remove the hard disk, loosen this **hard-disk-drive screw**. You can use the security screw shipped with your computer as a hard disk screw.

11 The **hard disk drive** is built in to the computer.

12 The **serial number label** identifies your computer. You need this number to get help.

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 and orange). Each indicator is identified with a symbol. The following shows the location and the meaning of each icon:

Symbol	Color	Meaning
1 Battery status 	Green	Enough battery power remains for operation.
	Blinking orange	The battery pack needs to be charged. When the indicator starts blinking orange, the computer beeps three times.
	Orange	The battery pack is being charged.
2 Suspend mode 	Green	The computer is in suspend mode. (See the *Online User's Guide*.)
	Blinking green	The computer is entering suspend or hibernation mode or is resuming normal operation.
3 Hard disk in use 	Orange	Data is being read from or written to the hard disk. *Do not enter the computer into suspend mode or power off the computer when this indicator is on*.
4 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 41.
5 Caps lock 	Green	Caps Lock mode is enabled. All alphabetic characters (*A–Z*) are entered in capital letters without the **Shift** key being pressed. You enable or disable Caps Lock mode by pressing the **Caps Lock** key.
6 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. *Not all application programs support this function.* You enable or disable Scroll Lock mode by pressing the **ScrLk** key.
7 Power on 	Green	The computer is operational. This indicator is on when the computer is on and not in suspend mode.

Online User's Guide

Your computer features an *Online User's Guide* so that you will always have key information at your fingertips even if you are traveling. It contains the following information:

Basics:
– Using your computer outside your home country
– Using the features of your computer
– Protecting your computer
– Using your computer with a battery pack
– Using your computer with a PC Card
– Frequently asked questions

Advanced:
– Resolving system resource conflicts
– Installing software
– Using system management
– Using PS2 commands
– Using modem commands

Information:
– Finding information in the *Online User's Guide*
– Finding information in other publications
– Finding information on the Internet
– Glossary
– Handling tips and ergonomics information
– Getting service

To start the *Online User's Guide*, click **Start** from the Windows main screen, move the cursor to **Programs** and **ThinkPad 570**; then click **ThinkPad 570 User's Guide**.

The *Online User's Guide* appears. Go to the section you want, and make a printout if necessary.

> **NOTE**
>
> You can also access the *Online User's Guide* from the IBM Web site ➡ **http://www.ibm.com/thinkpad**

Backing up your system

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

The Software Selections CD
The Software Selections program on the hard disk
The Recovery CD
ConfigSafe
The ThinkPad Web site or bulletin board

NOTE
If you use the Software Selections CD or the Recovery CD, you
need an external CD-ROM or DVD-ROM drive that is compatible
with your computer. If you have the ThinkPad 570 UltraBase
(option) attached to your computer, and have added a CD-ROM
or DVD-ROM drive to it, you can use either of these drives.

Recovering lost or damaged software

Check the following ThinkPad Web site for the latest information.
When updates become available, they are posted on:

http://www.ibm.com/thinkpad

Using the Software Selections CD

The Software Selections CD is provided for your installation
convenience; you can customize your system using this CD. It
contains all the software applications and hardware device drivers for
your computer in the Windows 98, Windows 95, or Windows NT
environment.

For the device drivers for DOS ➡
http://www.pc.ibm.com/support.
You can select the **Notebook & PDA Support** from the menu on
this site.

If you need to reinstall a software application or a hardware device
driver, put the Software Selections CD in your CD-ROM or
DVD-ROM drive. The features menu appears automatically.

The Software Selections CD includes the following features:

> **NOTE** The Software Selections program on the hard disk provides the same functions as those on the Software Selections CD, except **Create a Software Selections CD Image** ➡ page 11.

Welcome
This page displays the model and serial number of your computer, and a menu from which you can select an item by clicking it.

Install Software
Use this page for doing the following:

– Reinstalling a software application for Windows 98

– Reinstalling a hardware device driver for Windows 98

– Installing all hardware device drivers when installing Windows 95

– Installing all hardware device drivers when installing Windows NT

– Installing value-added software that was not preinstalled on your computer.

Uninstall Software
You can uninstall any application program or device driver that was installed from the Software Selections CD and that has an uninstall entry in the **Add/Remove Program** list.

Advanced Function

– **Change Settings**
You can view the Software Selections CD program text and software products in a language other than the language of your operating system.

– **Create a Device Driver Diskette**
You can create a device driver diskette.

– **Create a Software Selections CD Image**
You can put the Software Selections CD image on your hard disk drive.

Read the Licence Agreement
This page describes the license agreement for the programs.

Help
This page contains an introduction to the Software Selections CD and explains each item.

Using the Software Selections program on the hard disk

A hard disk version of the Software Selections program is provided for your convenience. This version contains the same functions as the Software Selections CD, except **Create a Software Selections CD Image**.

For example, if you do not have the CD-ROM or DVD-ROM drive attached to your computer, you can install the value-added applications that are not preinstalled in your computer.

NOTE
The Software Selections program on the hard disk is contained in the C:\IBMTOOLS\SOFTSEL directory on your hard disk. If you want to remove the Software Selections program to save hard disk space, you can delete this directory. All of the software is on the Software Selections CD.

To use the Software Selections program on the hard disk, do the following:

1 Click **Start**.

2 Move the cursor to **Programs** and **ThinkPad 570**; then click **Software Selections**.

3 Click **Install** and select the item you want to install.

4 Click **Install**.

5 Follow the instructions on the screen.

For more information about installing a new operating system (such as Windows NT) and device drivers ➡ *Online User's Guide.*

Backing up your system

Using the Recovery CD for Windows 98, Windows 95, or Windows NT

A Recovery CD and a Recovery CD Boot Diskette are provided with your computer.

If you accidentally erase the preinstalled Windows 98 or Windows NT in your computer's hard disk, you can recover it by using the Windows 98 or Windows NT Recovery CD.

If you are provided the Windows 95 Recovery CD, you can install Windows 95. This Recovery CD deletes the preinstalled Windows 98 or Windows NT and installs Windows 95.

Attention

These recovery programs delete all personal data and your customized configuration settings. They reset your computer to most of the factory-shipped default values. Be sure to back up your personal files before you use a Recovery CD.

The recovery process might take up to 2 hours.

1 Power off the computer.

2 Connect the CD-ROM or DVD-ROM drive to your computer.

3 Connect the diskette drive to your computer.

4 Insert the Recovery CD Boot Diskette into the diskette drive.

5 Power on the computer.

Your hard disk is formatted.

6 Follow the instruction that appears on the screen.

You are prompted to insert a Recovery CD into the CD-ROM or DVD-ROM drive in the process.

7 When the process is complete, remove the Recovery CD Boot Diskette from the diskette drive.

8 Select **Restart**.

Your computer restarts with the original preloaded Windows 98 or Windows NT configuration (or a Windows 95 configuration if you are provided the Windows 95 Recovery CD and selected it during the process).

ConfigSafe

ConfigSafe is an application program for Windows 98, Windows 95, or Windows NT that periodically takes *snapshots* of your system files. If your computer does not operate properly after you install a new device driver or software, use ConfigSafe to restore the last working version of your system files. Although it might not make your new hardware or software work, it will get your computer up and running again.

ThinkPad Web site or bulletin board

IBM supplies all of the latest hardware device drivers and system BIOS for your computer on the ThinkPad Web site at: **http://www.ibm.com/thinkpad**

You can also use the IBM bulletin board service.

For more information about electronic service and support ➡ *Online User's Guide.*

Getting 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.

> **About your warranty**
>
> During the warranty period, you might 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 the product warranty, see Appendix B.

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 recording sheet on page 16.

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 recording sheet on page 17.

Help at the ThinkPad Web site

You can get support and information at the ThinkPad Web site.

The latest information about the ThinkPad computers

➡ **http://www.ibm.com/thinkpad**

Technical support information

➡ **http://www.pc.ibm.com/support**

IBM might make improvements or changes to these Web sites at any time without any notice.

Help by telephone

You can get support and information by telephone during the limited warranty period at no additional charge, through the IBM PC Help Center. Experienced technical-support representatives will be on hand to answer 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 preinstalled operating system

How to get service

How to get overnight shipment of customer-replaceable parts

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:

Product brochures
Location of IBM resellers
Services available from IBM

For more information ➡ *Online User's Guide*

Recording sheets

Option list

Fill out the following list with the items that correspond with the features of your computer.

DIMM _____MB	External diskette drive
Hard disk drive _____GB	Battery pack
PC Cards	ThinkPad 570 UltraBase
_____	
_____	Port replicator

Identification numbers

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

IBM product name	ThinkPad 570
Machine type	2644- _____
Serial number	_____

To locate your computer's serial number ➡ page 4.

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:

    Windows 98 Version_____

    Windows 95 Version_____

    Windows NT Version_____

Application programs running at the time of the problem:

    _____

    _____

Problem symptom:

    Describe the problem specifically:

    _____

    _____

    _____

Can the problem be reproduced?

    Yes   No

    If yes, describe how it can be reproduced:

    _____

    _____

Getting service

Chapter 2
Using your computer and extending its features

ThinkPad utility programs

Your computer has the following utility programs:

BIOS Setup Utility
ThinkPad Configuration program
PC Doctor

This section summarizes these utility programs.

BIOS Setup Utility

Your computer provides a program called *BIOS Setup Utility*, which enables you to select various setup parameters:

Config: Set the configuration of your computer.
Date/Time: Set the date and time.
Password: Set a password.
Startup: Set the startup device.
Restart: Restart the system.

> **NOTE** Many of these parameters can be set more easily in Windows with the ThinkPad Configuration program ➡ page 32.

To start BIOS Setup Utility, do as follows:

1 Power off the computer, and remove any diskette from the diskette drive.

2 Power on the computer; then press **F1** while the "Press F1 for IBM BIOS Setup Utility" message is being displayed at the lower-right area of the screen.

If you have set a supervisor password, the "BIOS Setup Utility" menu appears after you enter the password. You can enter the utility by pressing **Enter** instead of the supervisor password, though you cannot change the parameters that are protected by the supervisor password. For more information ➡ Chapter 3.

A window such as the following appears:

```
                        IBM BIOS Setup Utility

   ▸ Config
   ▸ Date/Time
   ▸ Password
   ▸ Startup
   ▸ Restart


     Build ID                  XXXXXXXX
     BIOS Date                 01/01/99
     System-unit serial number XXXXXXXXXXXXXX
     System board serial number XXXXXXXXXXX
     CPU Type                  Pentium(R) II processor
     CPU Speed                 300 MHz
     UUID                      00000000-0000-0000-0000-000000000000


   F1      Help↓ ↑ Select Item   Space/- Change Values   F9  Setup Defaults
   F3/ESC  Exit↔  Select Menu    Enter   Select▸Sub-Menu  F10 Save and Exit
```

3 Move to an item you want to change using the arrow keys (↑ or ↓). When the item you want appears in reverse video, press **Enter**.

A submenu is displayed.

4 Change the items you wish to change.

To change the value of an item, use the **-** or **Space** key.

If the item has a submenu, you can display it by pressing **Enter**.

5 Press **F3** or **Esc** to exit from the submenu.

If you are in a nested submenu, press **Esc** until you reach the "BIOS Setup Utility" menu.

> **NOTE**
> If you need to restore the settings to their original state at the time of purchase, press **F9** to load the default settings. You can also select an option in the "Restart" submenu to load the default settings or discard the changes.

6 Select **Restart**; then press **Enter**. Move to the option
you want for restarting your computer; then press **Enter**.

Your computer restarts.

Each item in the menu has the following features:

Selecting the *Config* item displays the following
submenu:

```
                    IBM BIOS Setup Utility

  ┌──────────────────────────────────────┬──────────────────────┐
  │                 Config               │  Item Specific Help  │
  ├──────────────────────────────────────┼──────────────────────┤
  │  ▶ Memory                            │                      │
  │  ▶ System Board                      │                      │
  │  ▶ Network                           │                      │
  │  ▶ Advanced                          │                      │
  │                                      │                      │
  │                                      │                      │
  │                                      │                      │
  │                                      │                      │
  │                                      │                      │
  └──────────────────────────────────────┴──────────────────────┘

   F1      Help  ↕ Select Item   Space/- Change Values    F9  Setup Defaults
   F3/ESC  Exit  ↔ Select Menu   Enter   Select▶Sub-Menu  F10 Save and Exit
```
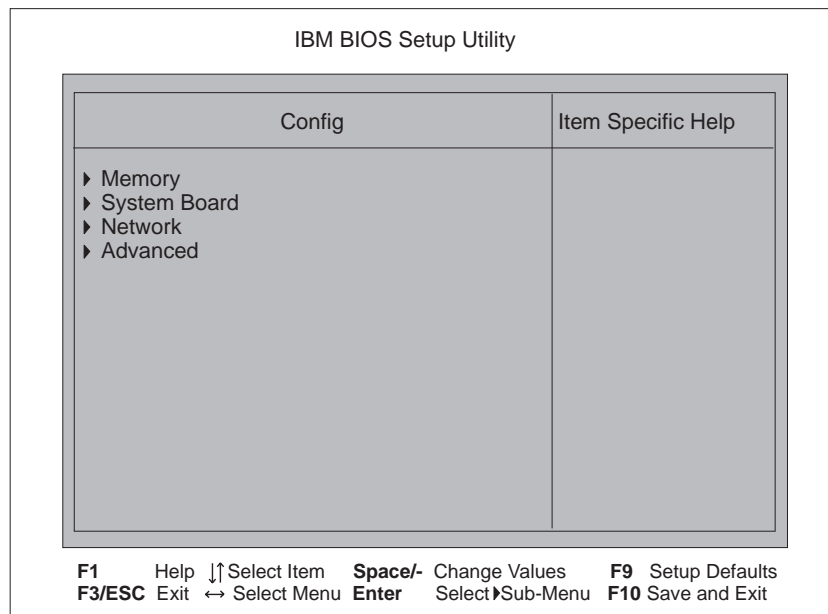
The **Memory** item shows information about the amount of
memory installed.

The **System Board** item shows information on the system
board installed, such as the BIOS version.

The **Network** item enables or disables the Wake-on-LAN
function.

The **Advanced** item displays the "Advanced Setup"
submenu, which includes the following items.

NOTE

The default settings are already optimized for you. Do not change them unless it is absolutely necessary and you are confident you know what you are doing. Inappropriate values might cause device conflicts, and your operating system might not start properly.

In each submenu, you can enable the resource by selecting **Enable**, or disable it by selecting **Disable**.

Serial Port enters a submenu where you can set resource values for the serial port.

InfraRed enters a submenu where you can set resource values for the infrared port.

Parallel Port enters a submenu where you can set resource values for the parallel port.

PCI enters a submenu where you can arrange IRQ lines for PCI devices.

Keyboard/Mouse enters a submenu where you can set values for the keyboard and mouse.

Power enters a submenu where you can set values related to power management. For information about values ➡ *Online User's Guide.*

Alarm enters a submenu where you can enable or disable the audio.

Other enters a submenu where you can set the following values:

– *Reset Configuration Data* enables to restore the system configuration data to the default settings.

– *Boot Display Device* specifies the display output device on startup. For more information ➡ "Using an external monitor" on page 72.

– *HV Expansion* switches between expanded and normal mode of the screen size.

– *Brightness* specifies the brightness level of the LCD.

  - *Normal* specifies that the LCD brightness changes depending on the power source. When

the computer is running on battery power, the LCD brightness level drops to half.

- *High* means the LCD is always at full brightness even when the computer is running on battery power. The computer consumes more power in this setting than in normal mode.

– *Startup Screen* enables or disables the startup screen, which displays the IBM ThinkPad logo. If you want to hide this screen, set this to **Disabled**.

– *RPL Token Ring Speed* enables you to set the speed of a token-ring card if you are using a remote program loading (RPL) system through the card. Do the following:

1. Click **TokenRing Speed**. The "Speed" menu appears.

2. If you are using a token-ring card, select the speed you want (**4** or **16**); then press **Enter**.

   If you are using a network card other than a token-ring card, such as an Ethernet card, you need not specify the RPL speed. Press **Esc** to exit this menu.

Selecting the *Date/Time* item displays the following submenu, which you can use to set the current date and time:

```
                    IBM BIOS Setup Utility

            Date/Time                    Item Specific Help

   System Date        [12/31/1999]      <Tab>,<Shift-Tab>, or
   System Time        [17:28:12]        <Enter> selects field.




   F1       Help  ↕ Select Item   Space/-  Change Values    F9   Setup Defaults
   F3/ESC  Exit   ↔ Select Menu   Enter    Select▶Sub-Menu  F10  Save and Exit
```
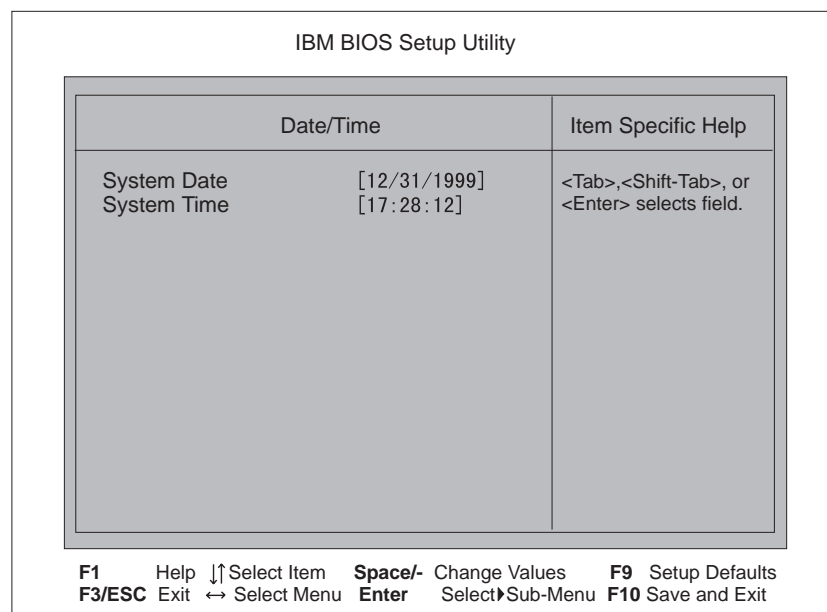
To change the date and time, do the following:

1 Press the up or down arrow keys to select the item to change, date or time.

2 Press **Tab**, **Shift-Tab**, or **Enter** to select a field.

3 Type the date or time.

NOTE
> You can press the **-** or **Space** keys to adjust the date or time instead of typing it.

4 Press **F10** to save the changes and restart the system.

Selecting the *Password* item displays the "Password" submenu, which you can use to set the following passwords:

– **Power-on** password
– **Hard-disk 1** password
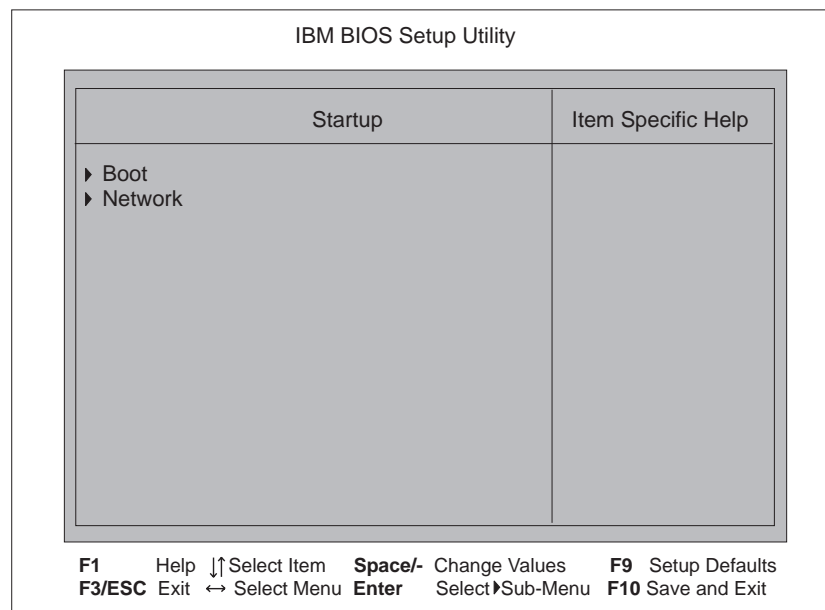– **Hard-disk 2** password
– **Supervisor** password

For more information on passwords ➡ "Using passwords" on page 144.

Selecting the *Startup* item displays the "Startup" submenu, which you can use to change the startup sequence.

For example, if you have different operating systems on different replaceable hard disk drives or PC Cards, you can have the system start 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.

```
IBM BIOS Setup Utility

┌──────────────────────────────┬──────────────────────┐
│          Startup             │  Item Specific Help  │
│                              │                      │
│ ▶ Boot                       │                      │
│ ▶ Network                    │                      │
│                              │                      │
│                              │                      │
│                              │                      │
│                              │                      │
│                              │                      │
└──────────────────────────────┴──────────────────────┘

F1      Help  ↕ Select Item   Space/-  Change Values    F9  Setup Defaults
F3/ESC  Exit  ↔ Select Menu   Enter    Select▶Sub-Menu  F10 Save and Exit
```

To change the startup sequence, do the following:

1 Click **Boot** or **Network**; then press **Enter**.

- The "Boot" submenu sets the startup sequence when the power switch is set to ON.

- The "Network" submenu sets the startup sequence when Wake on LAN is started. Wake on LAN is typically used by LAN administrators in corporate networks to access your computer remotely.

For information on these options ➡ "The "Boot" submenu" on page 29 and "The "Network" submenu" on page 30.

2 Select the first device you want for the startup sequence.

Use these keys to set the startup order that the BIOS will use to attempt to start an operating system:

- **Enter** expands or collapses devices with a **+** or **-**.

- **Ctrl+Enter** expands all.

- **Shift+1** enables or disables a device. You can recognize that the device is disabled by the **!** mark ahead of the device name.

- **+** or **-** moves the device up or down in order.

3 Press **F10** to save the changes and restart the system.

The "Boot" submenu

```
                    IBM BIOS Setup Utility

    ┌─────────────────────────────────────┬──────────────────────┐
    │              Boot                   │  Item Specific Help  │
    ├─────────────────────────────────────┼──────────────────────┤
    │                                     │ Use these keys to set│
    │ - Removable Devices                 │ the boot order that  │
    │        Legacy Floppy Drives         │ the BIOS will use to │
    │   ATAPI CD-ROM Drive                │ attempt to boot an OS:│
    │ - Hard Drive                        │ <Enter> expands or   │
    │          IBM-DADA-26480-(PM)        │ collapses devices with│
    │                                     │ a + or -             │
    │                                     │ <Ctrl+Enter> expands │
    │                                     │ all                  │
    │                                     │ <Shift+1> enables or │
    │                                     │ disables a device.   │
    │                                     │ <+> and <-> moves the│
    │                                     │ device up or down.   │
    │                                     │                      │
    │                                     │                      │
    └─────────────────────────────────────┴──────────────────────┘

    F1       Help  ↕Select Item   Space/-  Change Values   F9  Setup Defaults
    F3/ESC   Exit  ↔Select Menu   Enter    Select▶Sub-Menu F10 Save and Exit
```

NOTE

You can change the order of items within a category (such as Removable Devices, Hard Drive, and ATAPI CD-ROM Drive). But you cannot change the order of the categories.

Items shown in the submenu might be different from those of your computer. They depend on the devices that are attached to your computer.

The **Removable Devices** category includes the removable devices, such as external diskette drive.

The **ATAPI CD-ROM Drive** category is assigned to the CD-ROM or DVD-ROM drive.

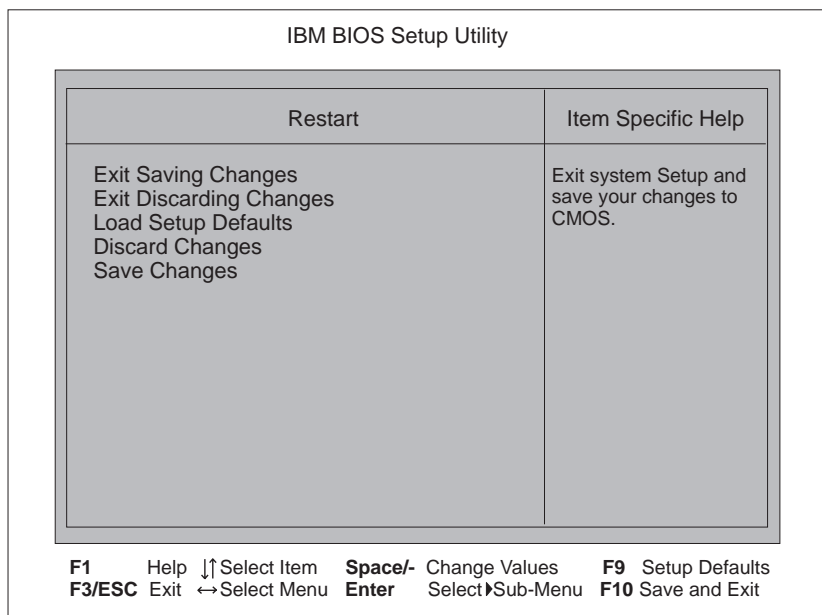The **Hard Drive** category includes hard disk drives.

The "Network" submenu: With the "Network" submenu, you can enable or disable the Wake-on-LAN function. Refer to "The "Boot" submenu" on page 29 for the description of each item.

If Wake on LAN is enabled, the network administrator can power on remote machines connected in a LAN using remote network-management software. Disable the function if your computer is not under the system management of a network administrator.

For more information ➡ "System Management" in the *Online User's Guide*.

Selecting the *Restart* item ends the BIOS Setup Utility and restarts the computer.

```
                     IBM BIOS Setup Utility

 ┌──────────────────────────────────────┬────────────────────────┐
 │               Restart                 │   Item Specific Help   │
 ├──────────────────────────────────────┼────────────────────────┤
 │  Exit Saving Changes                  │  Exit system Setup and │
 │  Exit Discarding Changes              │  save your changes to  │
 │  Load Setup Defaults                  │  CMOS.                 │
 │  Discard Changes                      │                        │
 │  Save Changes                         │                        │
 │                                       │                        │
 │                                       │                        │
 │                                       │                        │
 │                                       │                        │
 └──────────────────────────────────────┴────────────────────────┘
  F1      Help  ↓↑ Select Item   Space/-  Change Values    F9  Setup Defaults
  F3/ESC  Exit  ↔ Select Menu    Enter    Select▸Sub-Menu  F10 Save and Exit
```

You can select one of the following in the "Restart" submenu.

– **Exit Saving Changes** restarts the system after saving the changes you have made.

– **Exit Discarding Changes** restarts the system without saving the changes you have made.

- – **Load Setup Defaults** loads the default setting that was in effect at the time of purchase.
- – **Discard Changes** discards the changes you have made.
- – **Save Changes** saves the changes you have made.

ThinkPad Configuration Program

Attention

To get specific details about ThinkPad Configuration program, click the **Help** button.

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 98:
To start the ThinkPad Configuration program for Windows 98, do as follows:

1 Click **Start** (Start).

2 Move the cursor to **Settings**; then click **Control Panel**.

The "Control Panel" window appears.

3 Double-click the **ThinkPad Configuration** icon.

NOTE

You can also start the ThinkPad Configuration program as follows:

Click **Start** 1 , move the cursor to **Programs**, and **ThinkPad**; then click **ThinkPad Configuration**.

Find the ThinkPad icon on the bottom right of the taskbar 2 ; then double-click the icon.

The following window appears:

1 The **Display Device** buttons. Click one of these buttons to set
   the display output type to the LCD, external monitor (CRT), or
   both.

2 The **Power Scheme** buttons change the preset power options.

3 The **Launch Device Manager** button displays the "System
   Properties" window, where you can make a device available or
   unavailable.

4 The **Show Allocated Resources View** button displays the
   "Allocated Resources View" window, where you can check the
   memory addresses and other allocation settings.

5 The **Help** button displays online help.

6 The **Device** buttons. Click the button of your choice from the
   window. If the device is enabled, the green indicator next to
   the button is lit. Otherwise, it stays off.

ThinkPad Configuration Program

For Windows NT:
To start the ThinkPad Configuration program for Windows NT, do as
follows:

1 Click **Start**.

2 Move the cursor to **Settings**; then click **Control Panel**.

The "Control Panel" window appears.

3 Double-click the **ThinkPad Configuration** icon.

The following window appears:
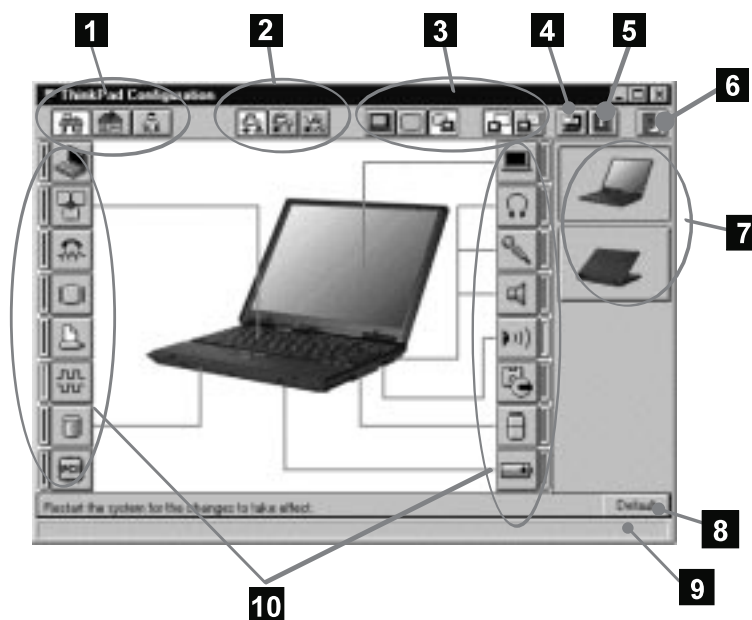
1 The **One-Touch Setup** buttons. Click one of these buttons to
set the system configuration.

2 The **Power Mode** buttons. Click one of these buttons to set
the power mode to High Performance mode, Automatic mode,
or Customized mode.

3   The **Display Device** buttons. Click one of these buttons to set the display output type to the LCD, external monitor (CRT), or both. When making a presentation, you can click the presentation button to disable any system timers, such as the LCD turnoff timer or the power management mode timers.

4   The **About** button shows the version of the ThinkPad Configuration program that is installed.

5   The **Help** button displays online help.

6   The **Exit** button. Click this button to save the changes made and to exit from the ThinkPad Configuration window.

7   The **View Angle** buttons. Click the front view or rear view button to display the hardware feature locations.

8   The **Default** button. Click 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 appear in the status bar when you place the cursor on a device button.

1   The **Device** buttons. Click 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.

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

PC Doctor

If you have a problem with your computer, you can test it by using the PC Doctor.

To start the PC Doctor, do the following:

1 Click **Start**.

2 Move the cursor to **Programs** and **PC Doctor for Windows**.

3 Click **PC Doctor for Windows**.

The following window appears:
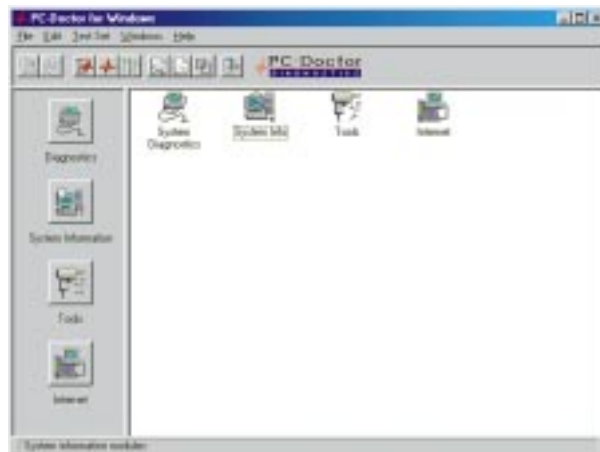
You can select the following items by clicking the navigator that is on the left of the window, or double-click the icon.

Diagnostics or **System Diagnostics** includes icons for testing your computer. For example, you can test your computer's memory by double-clicking the **Memory Test** icon.

You can also select such items as **Run Quick Test Set** or **Run Normal Test Set**, for thorough testing of your computer from **Test Set** on the menu bar.

System Information or **System Info** includes icons for showing the information about your computer.

PC Doctor

Tools includes icons for starting tools, such as **System Monitor** and **Scandisk**.

Internet includes icons for opening the Web site, where you can find support information on your computer.

Using the keyboard functions

Your computer's keyboard has the following functions:

> **Fn** key
> Numeric keypad
> TrackPoint

Fn key

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**, **PgUp**, **PgDn**, or **BackSpace**).
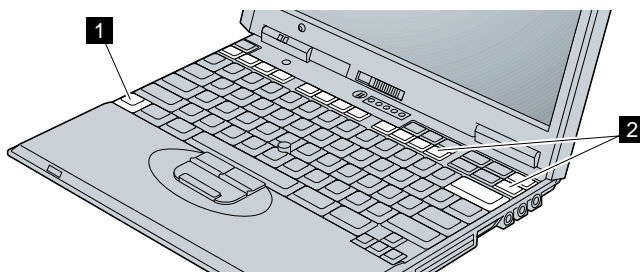
The Fn key lock function

The following setup gives you the same effect as when you press and hold the **Fn** key and then press an appropriate function key.

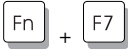Start the ThinkPad Configuration program. (➡ "ThinkPad Configuration Program" on page 32.) Click the **Accessibility**
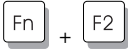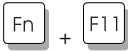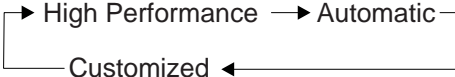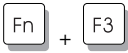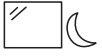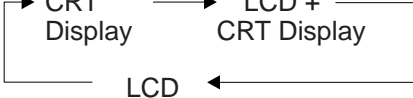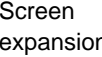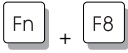
(♿) button, and click **Enable** for **Fn key lock**. You can also set up by typing `PS2 FNS E` at the command prompt.

After you enable the **Fn** key lock and press **Fn** *once*, press one of the function keys. The computer works the same as when you press **Fn** + the function key.

If you press **Fn** *twice* after enabling the lock, pressing a function key alone is recognized as a combination of **Fn** + that function key. To stop this function, press **Fn** again.

The following table shows the function of the **Fn** key combined with other keys:

| Feature and icon	Key combination	Meaning
Fuel-Gauge display on or off	Fn + F2 (Only for Windows users)	If you press this key combination, the window for the battery status appears or disappears. You can set parameters for battery status in the window. **Note:** The Fuel-Gauge program must be activated before you can use this key combination. To activate the Fuel-Gauge program, do the following: *1.* Click **Start**. *2.* Move the cursor to **Programs** and **ThinkPad**; then click **Fuel-Gauge**.
Power mode switching	Fn + F11	The processor speed changes as follows: High Performance → Automatic → Customized →
Power conservation functions for battery power		
Standby mode	Fn + F3	The computer enters standby mode. For more information about this mode → *Online User's Guide*.
Suspend mode	Fn + F4	The computer enters suspend mode. For more information about this mode → *Online User's Guide*.
Hibernation mode	Fn + F12	The computer enters hibernation mode. For more information about this mode → *Online User's Guide*.
Other functions		
Switching between the LCD and the external monitor	Fn + F7	Computer output is displayed in the following order when an external monitor (CRT) is attached. → CRT Display → LCD + CRT Display → LCD →
Screen expansion	Fn + F8	The LCD screen image size switches between expanded and normal mode if the size of your LCD image is smaller than that of the physical LCD.

Using the keyboard functions

Feature and icon	Key combination	Meaning
Volume up	**Fn** + **PgUp**	The volume increases.
Volume down	**Fn** + **PgDn**	The volume decreases.
Mute	**Fn** + **BackSpace**	Sound turns off. **Notes:** 1. This function will not be disabled when you power off the computer and power it on again. 2. To turn on the sound, press **Fn** + **PgUp** or **Fn** + **PgDn**.

NOTE

If the computer is in suspend mode and you press the **Fn** key independently without any function key, the computer returns to normal operation.

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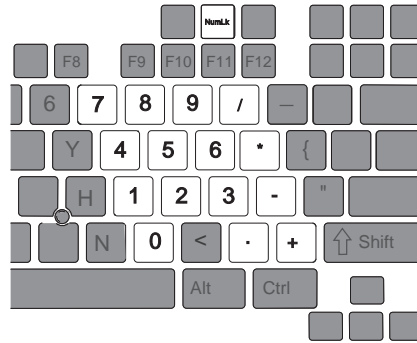
If the numeric keypad is enabled, press and hold **Shift** to temporarily use the cursor- and screen-control keys.

> **NOTE**
> The functions of the cursor- and screen-control keys are not printed on the keys.
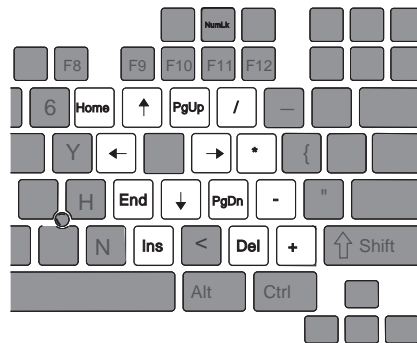
TrackPoint

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

Press-to-Select
Sensitivity
Scrolling or Magnifying Glass

The TrackPoint consists of a **stick** on the keyboard and three **click buttons** below the keyboard. Movement of the cursor on the screen is controlled by the amount of pressure that 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 cursor moves corresponds to the pressure you apply to the stick. The functions of the left and right click buttons correspond to those of the left and right mouse buttons on a traditional mouse; these functions depend on the software you are using. The function of the center button is described on page 47.

Stick

Left click button   Right click button
Center button
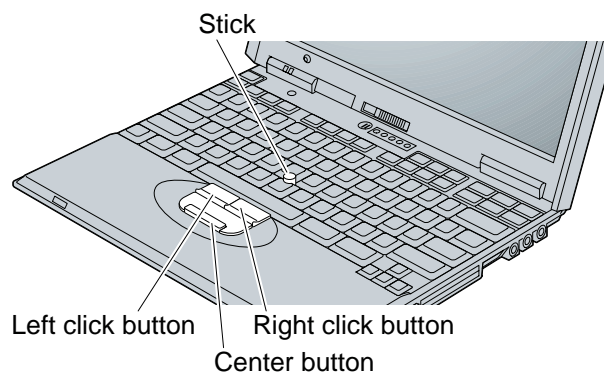
If you are not familiar with using the TrackPoint, these instructions will help you get started:

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

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

NOTE   The cursor might drift. This is not a defect. Do not use the TrackPoint until the cursor stops moving.

Stick

Cursor

Left click button   Right click button

Center button
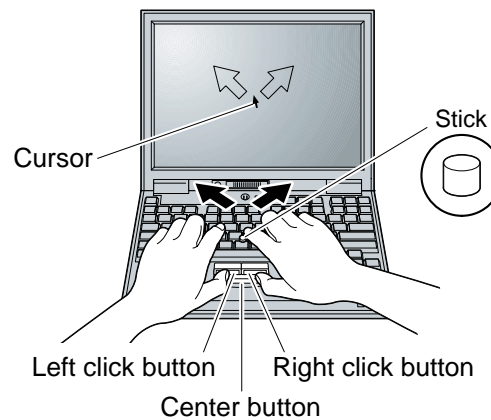
2 Press the left and right click buttons with either thumb to select and drag as required by your software.

By enabling Press-to-Select, you can make the TrackPoint stick function the same as the left or right click button. For more information ➡ "Customizing the TrackPoint" on page 44.

Changing the cap

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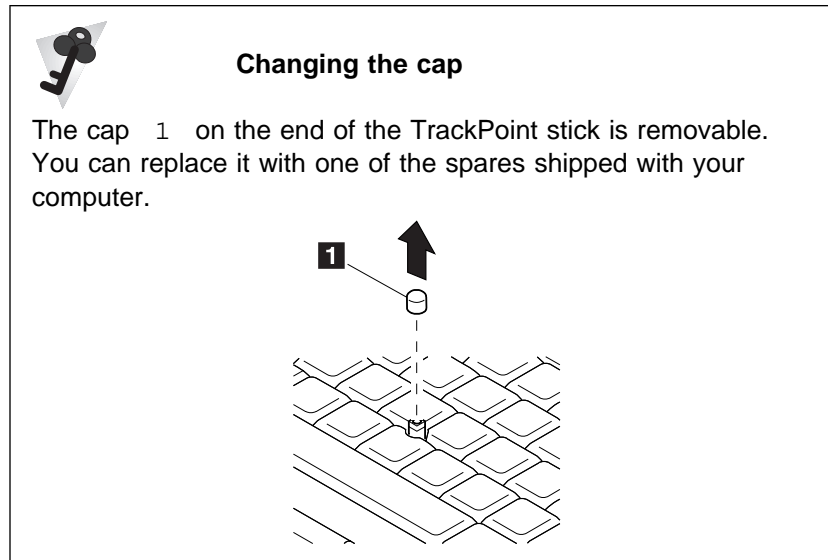
Customizing the TrackPoint

You can customize the TrackPoint by doing the following:

1 Open the ThinkPad Configuration program.

2 Click the **TrackPoint** button ( ).

3 Click **TrackPoint Properties...**.

The "TrackPoint Properties" window appears:

You can set the following features in this window:

Press-to-Select
Sensitivity
Scrolling or Magnifying Glass

Setting Press-to-Select

If you enable Press-to-Select by selecting the **Enable Press-to-Select** check box, you can make the TrackPoint stick function the same as the left or right click button.

If you select **Enable dragging**, you can drag the icon that you select with the TrackPoint stick by putting light pressure on the stick.

If you select **Enable Release-to-Select**, you can click simply by lifting your finger quickly off the TrackPoint. Moving the cursor onto an icon and then lifting your finger off the TrackPoint works like clicking. Pressing the TrackPoint again works like double-clicking.

Click one of the **Press means** radio buttons to select which button the stick will simulate: either the left or the right button. For example, if you select **Left Click**, you can start a program with the TrackPoint by putting the cursor on the program's icon and applying light pressure on the stick.

To adjust the pressing timing of the stick, set **Click Pace**.

> **NOTE**
>
> If you set the pace too slow, you might notice unintended clicks, a cursor delay, or a dragging delay. However, if you set the pace too fast, you might find Press-to-Select hard to use.

Setting sensitivity
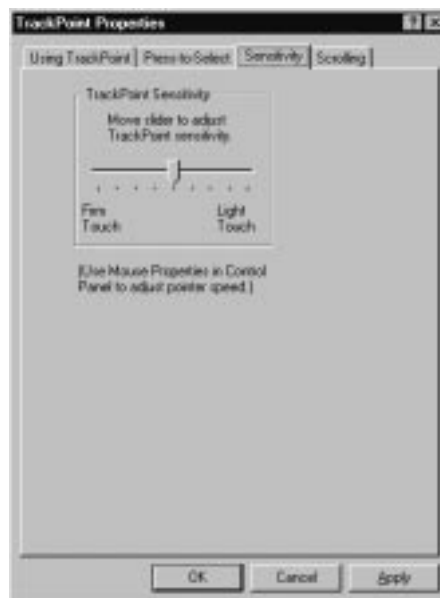
This function adjusts the force required for both cursor movement and Press-to-Select. Slide toward **Firm Touch** to increase the force needed to move the cursor and to activate Press-to-Select. Slide toward **Light Touch** to decrease the force needed to move the cursor and to activate Press-to-Select.

Setting the scrolling or the magnifying glass
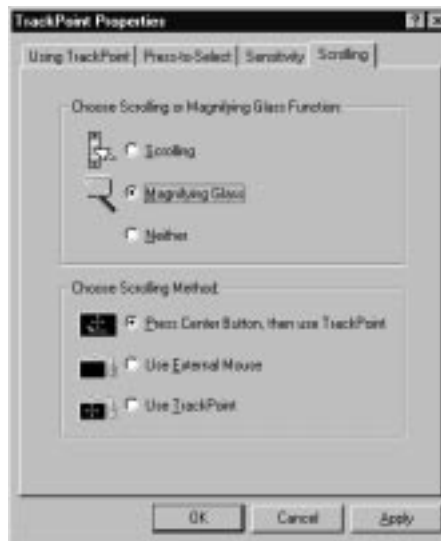
By clicking the **Scrolling** tab, you can set the scrolling properties of
your TrackPoint.

Choose Scrolling or the Magnifying Glass Function
Click one of the following radio buttons:

– **Scrolling**
This function enables you to navigate easily through long
documents or large spreadsheets with the press of a button.
To scroll, press the center click button and then use the
TrackPoint instead of the scroll bars.

– **Magnifying Glass**
This function enables you to enlarge a movable area of your
display. You can click objects "through" the magnifying
glass. The right click button changes the size of the
magnifying glass, and the left click button changes its
magnifying power. You can press the center click button and
then use the TrackPoint to move the magnified area.

– **Neither**
  This function disables the scrolling and magnifying glass functions.

Choose Scrolling Method
Click one of the following radio buttons:

– **Press Center Button, then use TrackPoint**
  This option enables you to hold down the center click button on the keyboard and then use the TrackPoint to control the scrolling or the magnifying glass. When you are not holding down the center button, the TrackPoint operates normally; that is, it controls the mouse cursor.

– **Use External Mouse**
  This option sets an externally attached mouse to scroll (or move the magnifying glass) horizontally or vertically. The TrackPoint functions simply as a cursor.

– **Use TrackPoint**
  This option sets the TrackPoint to scroll horizontally or vertically without your holding down the center button. Use an externally attached mouse as a cursor.

  You can still use the TrackPoint to control the mouse cursor by pressing the center button.

NOTE
The **Use External Mouse** and the **Use TrackPoint** radio buttons are enabled only if a mouse is attached.

Disabling the TrackPoint

The TrackPoint is designed to work simultaneously with another pointing device (such as a mouse) attached to the system. But some mouse types require the TrackPoint to be disabled before you can use them, such as:

A mouse that is not fully compatible with the PS/2 mouse connected to the external-input-device connector

A mouse connected to the serial connector

A mouse connected to the USB connector

To disable the TrackPoint:

1 Start the ThinkPad Configuration program.

See "ThinkPad Configuration Program" on page 32.

2 Click the **TrackPoint** ( ) button.

3 Click **Auto-Disable** for the TrackPoint.

This setting automatically disables the TrackPoint if a mouse is connected to the external-input-device connector when any of the following events occur:

System startup
Resumption from suspend mode
Attachment of the ThinkPad Port Replicator with Advanced EtherJet Feature

If no external mouse is connected, however, the TrackPoint is enabled.

NOTE   If you use a mouse connected to the serial connector or the USB connector, you need to click **Disable** instead of **Auto-Disable**.

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.
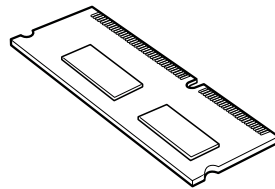
Different capacities of DIMM (up to 128 MB) are available. You can install a DIMM directly in the memory slot on the bottom of the computer. Your computer memory capacity can be expanded up to 192 MB (64-MB base memory and 128-MB DIMM option).

Attention

Your computer supports the synchronous dynamic random access memory (SDRAM) card only. It does not support the extended data output dynamic random access memory (EDO DRAM) card. If you install a DIMM that is not supported by your computer, the following error message might appear when the system starts:

```
ERROR: Memory type mixing detected
```

The appropriate memory option can be purchased through your IBM reseller or IBM marketing representative.

Installing the DIMM

To install the DIMM, do the following:

1 Power off the computer; then disconnect the AC Adapter and all cables from the computer.

2 Close the LCD, turn the computer over, and then remove the battery pack. (➡ page 57)

3 Loosen the screw on the memory slot cover; then remove the cover.
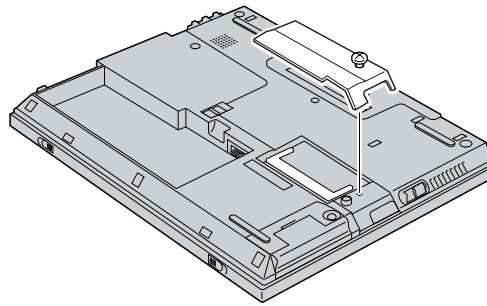
Attention
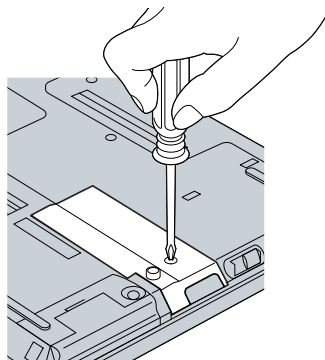
Handling a screwdriver

Use a screwdriver that fits the screw.

Use the screwdriver perpendicular to the head of the screw.

Handle the screwdriver properly; otherwise, you might damage the screw.

Increasing memory

Attention

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

4 Find the notch on the side of the DIMM.

5 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`.

6 Pivot the DIMM until it snaps into place `2`.

Notch

Side view

20°
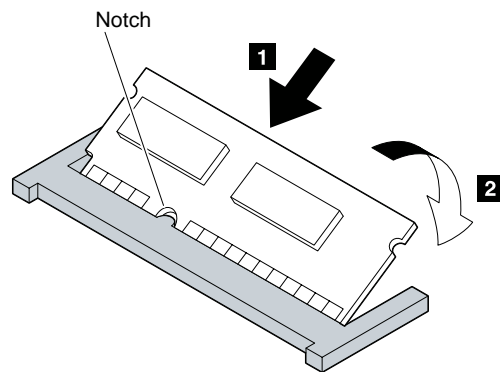
7 Replace the memory slot cover over the memory slot, aligning the back side of the cover first; then tighten the screw.

8 Replace the battery pack. (➡ page 57)

9 Turn the computer over again and power it on.

10 Press **F1** while the "Press F1 for IBM BIOS Setup Utility" message is being displayed at the lower-right area of the screen.

11 Select the **Memory** item from the "Config" submenu of the BIOS Setup Utility. (➡ page 23)

For example, if you install a 32-MB DIMM into your computer with 64-MB base memory, you should see the following. (See page 55 for how to calculate the total memory size.)

```
                        IBM BIOS Setup Utility

    ┌───────────────────────────────────┬─────────────────────┐
    │              Memory                │  Item Specific Help │
    ├───────────────────────────────────┤                     │
    │  Installed Memory:      98304  KB  │                     │
    │  Usable Memory:         97792  KB  │                     │
    │                                    │                     │
    │                                    │                     │
    │                                    │                     │
    │                                    │                     │
    │                                    │                     │
    │                                    │                     │
    │                                    │                     │
    │                                    │                     │
    └───────────────────────────────────┴─────────────────────┘
    F1      Help  ↕ Select Item  Space/- Change Values  F9  Setup Defaults
    F3/ESC  Exit  ↔ Select Menu  Enter   Select▶Sub-Menu  F10 Save and Exit
```
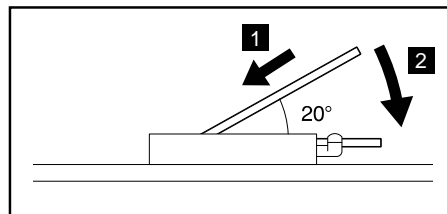
Increasing memory

DIMM (MB)	Total memory (MB)	Installed memory (KB)	Usable memory (KB)
None	64	65536	65024
32	96	98304	97792
64	128	131072	130560
128	192	196608	196096

You have finished installing the DIMM. Reconnect all cables.

NOTE

1. For the following status, power off the computer and go to page 51 to reinstall the DIMM and do the memory test with PC Doctor (see page 36).

    If the following error codes appear:

    ```
    23  - Shadow RAM Failed at offset: nnnn
    231 - System RAM Failed at offset: nnnn
    232 - Extended RAM Failed at offset: nnnn
    ```

    Note: *n* can be any character.

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

2. If the ERROR: Memory type mixing detected message appears, the memory you are installing is not supported by your computer.

3. If you changed the memory installed in the computer, you need to create a new hibernation file as follows:

    a) Power off the computer.
    b) Remove the DIMM you added.
    c) Power on the computer and disable hibernation mode.
    d) Add the DIMM.
    e) Enable hibernation mode.

    To disable and enable hibernation mode ➡ *Online User's Guide*.

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.

For example, if you installed a 32-MB DIMM into your computer with 64-MB base memory, you should have about 96 MB.

Your computer might display usable memory size in kilobytes. For example, 96 MB=97792 KB.

Note: 512 KB is reserved by the system.

Removing the DIMM

1 Power off the computer and disconnect the AC Adapter and all cables from the computer.

2 Close the LCD, turn the computer over, and then remove the battery pack.

3 Loosen the screw and remove the memory slot cover.

4 Press out on the latches on both edges of the socket at the same time.
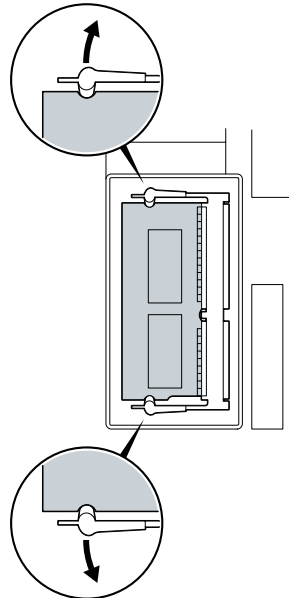
5 Remove the DIMM.

Be sure to save the DIMM for future use.

6 Replace the memory slot cover; then tighten the screw.

7 Replace the battery pack.

8 Turn the computer over again; then connect the AC Adapter and all the cables you disconnected.

Replacing the battery

You can operate your computer without AC Adapter by using the battery pack outside your office or home. Your computer also provides a backup battery.

If you have a ThinkPad 570 UltraBase (option) attached to your computer, you can install the second battery in it, which extends the operating time of the computer.

To replace the battery pack, do as follows:

NOTE You can replace the battery when the computer is in hibernation mode. (You cannot replace it when the computer is in suspend mode.) If you are using a PC Card, however, the computer might not be able to enter hibernation mode. If this happens, power off the computer.

1 Power off your computer, or enter hibernation mode.

2 Disconnect the AC Adapter and cables.

3 Close the LCD, and turn the computer over.

4 Slide the battery pack latch to unlocked position 1 ; then remove the battery pack 2 .
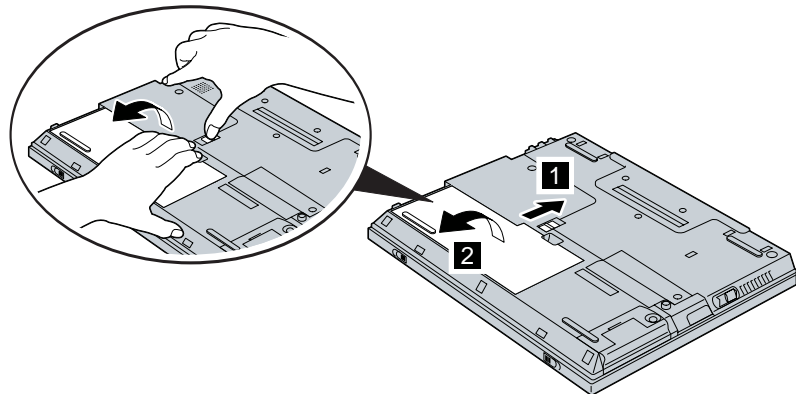
5 Align the front of the fully charged spare battery pack with the front side of the battery space in the computer `1` ; then put the battery pack in place `2` .
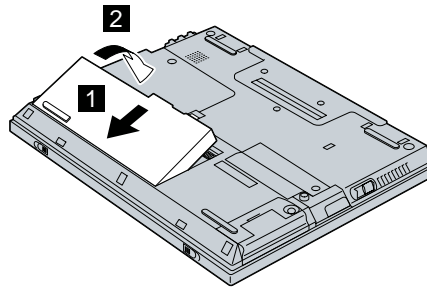
6 Gently push the battery pack back into the space; then slide the battery pack latch to the locked position.
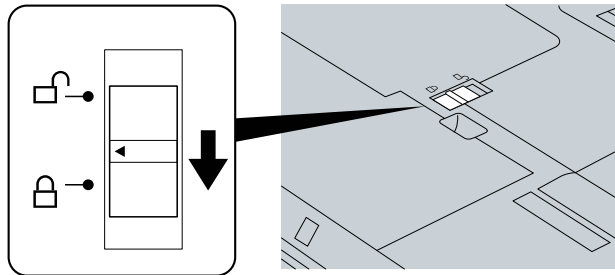
You have finished replacing the battery pack.

Replacing the backup battery

The backup battery is used to preserve the configuration information, such as the date and time, while the computer is powered off. This section explains how to replace the backup battery. You might have to replace it (but see the following note) if the computer displays the following message:

```
ERROR
 271 Check date and time settings
ERROR
 251 System CMOS checksum bad - Default configuration used
```

NOTE
If you see these messages, run the BIOS Setup Utility and start the system by using the default settings first. If you still see these messages after reconfiguring the settings, replace the backup battery.

You can purchase the appropriate backup battery through your IBM reseller or IBM marketing representative.
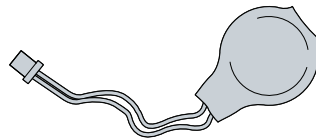
To replace the backup battery, do as follows:

1 Power off the computer; then disconnect the AC Adapter and all cables from the computer.

2 Close the LCD, and turn the computer over.

**3** Slide the battery pack latch to unlocked position; then remove the battery pack. (➡ page 57)

4 Remove the screw ⬛1 and remove from the connector the old backup battery in its holder ⬛2 .
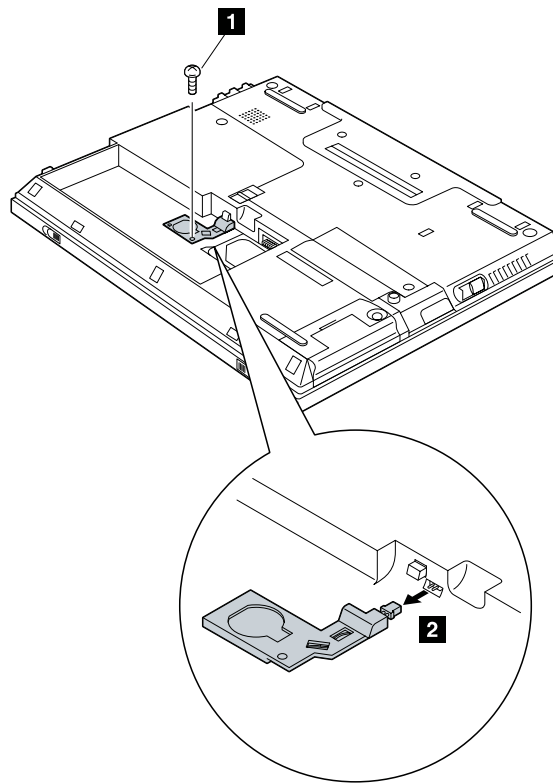
5 Remove the old backup battery from the holder by detaching its wires from the wire catches and sliding the battery out from the battery catches.
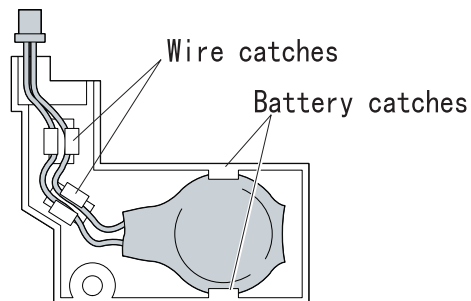
Wire catches

Battery catches

6 Attach the new backup battery to the holder by sliding the backup battery under catches and securing the wires in the wire catches.

7 Install the backup battery holder to the connector, and screw it down.

8 Push the battery pack back into the space; then slide the battery pack latch to the locked position. (➡ page 58)

9 Turn the computer over again, and connect the AC Adapter and cables to the computer.

You have finished replacing the backup battery.

Upgrading the hard disk drive

You can increase the storage capacity of your computer by replacing the original, built-in hard disk drive with an optional one. You can purchase the option from your IBM reseller or IBM marketing representative.

NOTE   Replace the hard disk drive only if you upgrade it or have it repaired. **You should not replace it often**.

Attention   **Handling a hard disk drive**

> **Do not drop or apply any shock.**
> **Do not apply pressure to the cover.**
> **Do not touch the connector.**

The drive is very sensitive. Incorrect handling can cause damage and permanent loss of data on the hard disk. Before removing the hard disk drive, make a backup copy of all the information on the hard disk. Never remove the drive while the system is operating, in suspend mode, or in hibernation mode.


To replace the hard disk drive, do the following:

1 Power off the computer; then disconnect the AC Adapter and all cables from the computer, and turn the computer upside down.

2 Remove the battery pack. (➡ page 57)

3 Remove the coin screw by rotating it counterclockwise with a coin, as shown.
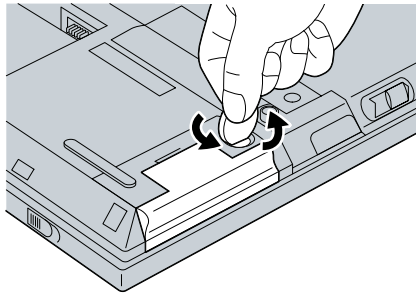
4 Turn the computer over again. Open the LCD; then stand the computer on its side. Push up the hard-disk-drive cover.
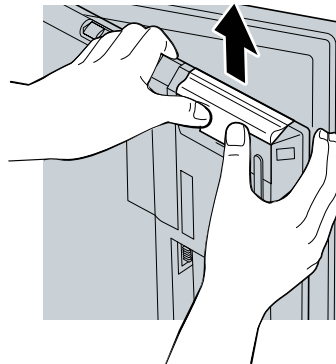
Upgrading the hard disk drive

> **Attention**
>
> Be careful not to drop the hard disk drive. The hard disk drive is still attached to the cover when you push it up.
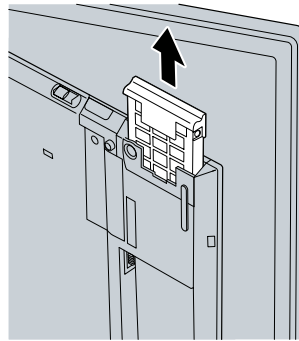
5 Remove the hard-disk-drive cover from the hard disk drive by pressing out on the latches on both edges of the cover at the same time.
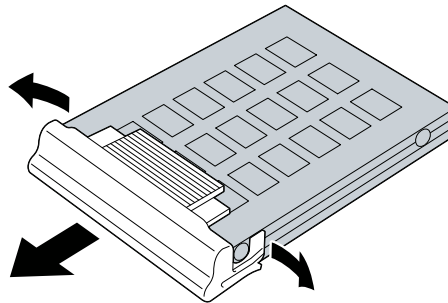
> **NOTE** If the hard disk drive that you will be installing has a spacer on it, remove the spacer, which adheres only by adhesive tape and separates easily.
>
> Spacer
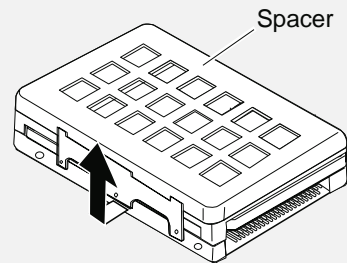
6 Attach the new hard disk drive to the cover by pressing out on the latches on both edges of the cover at the same time.

7 Reinstall the hard disk drive cover, and reinstall the screw.

> **NOTE** Do not use force when inserting the hard-disk-drive cover into the bay. The connector is sensitive, and it might get damaged.
>
> You can replace the coin screw with a security screw to prevent the hard disk drive from being removed easily. For more information ➡ "Using the security screw" on page 157.

8 Replace the battery pack. (➡ page 57)

9 Turn the computer back to its ordinary position. Connect the AC Adapter and the cables to the computer; then power it on.

Attaching the external diskette drive

You can attach the external diskette drive to your computer.

Attention

Do not attach the external diskette drive while the computer is powered on. The external diskette drive might become damaged.

NOTE

You can attach external diskette drives to the external-diskette-drive connectors of both the computer and the port replicator (option), and you can also install a diskette drive in the ThinkPad 570 UltraBase (option). But you can use only one of these drives at the same time.

By detaching its cable, you can install the external diskette drive into the ThinkPad 570 UltraBase.

To attach the external diskette drive, do the following:

1 Power off the computer.

2 Connect the cable first to the external diskette drive by pressing the sides of the connector 1 as you connect it 2 .

External-diskette-drive

3 Connect the cable to the external-diskette-drive connector
on the rear of the computer by pressing the sides of the
connector ③ as you connect it ④ .

External-diskette-drive

3   4

External-diskette-drive connector
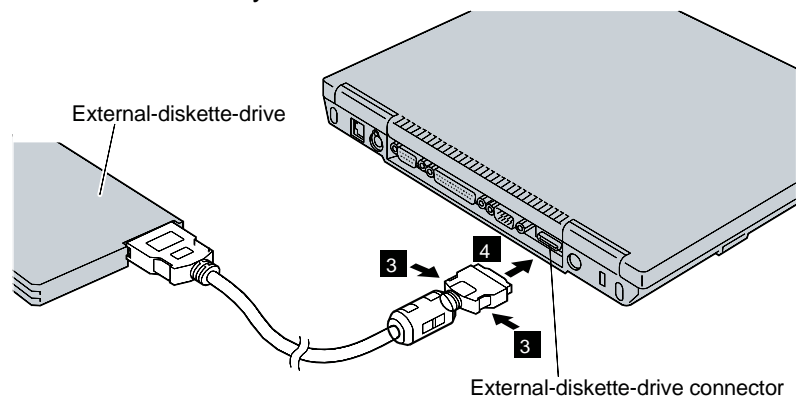
4 Power on the computer.

Using an external mouse, keypad, and keyboard

This section explains how to attach to your computer an external mouse, external numeric keypad, and external keyboard, available as options.

Attaching an external mouse or numeric keypad

You can attach an external mouse or numeric keypad to the

external-input-device connector ( ) on the rear of the computer.
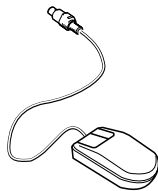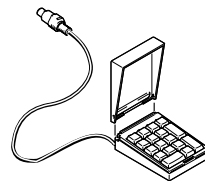
Mouse   **Numeric keypad**

If you want to attach the mouse, attach it directly to the external-input-device connector as shown:
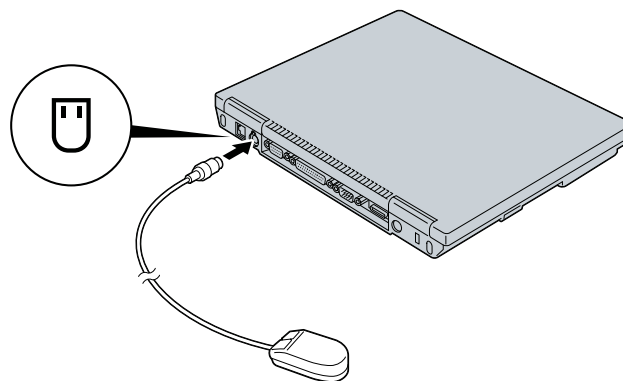
Attention

You can use both the IBM PS/2 Miniature Mouse and the TrackPoint as an input device. To connect a mouse other than an IBM PS/2 Miniature Mouse

➡ "Disabling the TrackPoint" on page 49.

If you want to use both the external numeric keypad and mouse at the same time, first connect the keypad cable to the computer `1`; then connect the mouse cable `2` to the connector at the rear of the keypad.
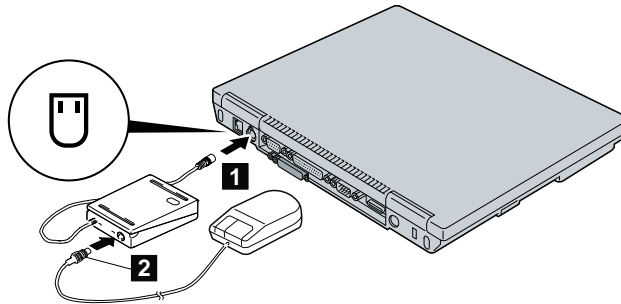
NOTE You can remove the keypad cover and use it as a stand for the keypad.
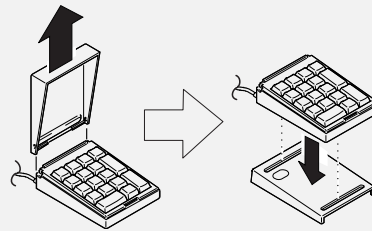
Attaching an external keyboard and mouse
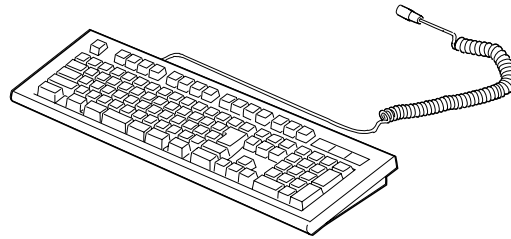
Mouse   **External keyboard**

If you want to attach an external keyboard to your computer, do one of the following:

Use the optional keyboard/mouse cable.
Use an optional port replicator.

The external keyboard will not work if it is connected directly to the computer's external-input-device connector.

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 an external mouse, keypad, and keyboard

To attach the external keyboard, power off the computer, attach the keyboard to the keyboard connector of the keyboard/mouse cable `1`, and then attach the keyboard/mouse cable to the computer `2`.

You can attach a mouse to the mouse connector of the keyboard/mouse cable.

Keyboard/mouse cable

Keyboard connector
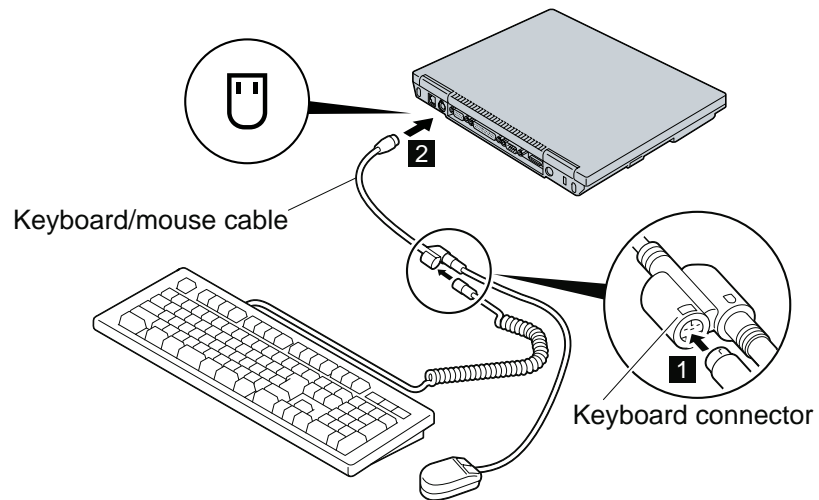
Using the IBM ThinkPad Space Saver Keyboard

If you are using the IBM ThinkPad Space Saver Keyboard, **do not** install the device driver supplied with the keyboard. The device driver on the computer's utility diskette automatically enables or disables the TrackPoint when the power to the computer is turned on.

Using an external monitor

This section provides information about using the computer LCD and an external monitor (CRT).

The LCD of your computer uses thin-film transistor (TFT) technology. The LCD displays output with XGA (1024x768 resolution) video mode or SVGA (800x600 resolution) video mode, and 16M colors.

If you are attaching an external monitor that supports a resolution higher than VGA mode, you can achieve a maximum of 1280x1024 video resolution.

To attach an external monitor, do the following:

1 Power off the computer.

2 Connect the external monitor to the external-monitor connector (▢) on the rear of the computer; then connect the monitor to an electrical outlet.

3 Power on the external monitor and the computer.

4 Start the ThinkPad Configuration program.

See "ThinkPad Configuration Program" on page 32.

5 Change the display output location by clicking the **Both LCD and CRT Display** ( ) button or the **CRT Display Only** ( ) button (with Windows 98, at the *top left* of the screen; with Windows NT, a little to the *right of the top center* of the screen).

Attention

Do not change the display output location while a moving picture is being drawn—for example, while playing a movie or a game. Stop the application before changing the display output location.

If you are attaching an external monitor that supports only VGA mode (640x480 resolution), do ***not*** click on **Both LCD and CRT Display**. Doing so would cause the external monitor screen to be scrambled and the output not to be displayed; in addition, the screen might become damaged. Use **CRT Display Only** instead.

NOTE   You can also change the display output location by pressing **Fn**+**F7**.

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

NOTE   For information on the supported color depths and resolutions ➡ "Resolutions, Color Depths, and Refresh Rates" on page 75.

Using an external monitor

For Windows 98:

a) Click **Start**.

b) Move the cursor to **Settings** and **Control Panel**; and then click **Control Panel**.

c) Double-click **Display**.

d) Click the **Settings** tab.

e) Click **Advanced...**

f) Click the **Monitor** tab.

g) Click **Change...**

The "Update Device Driver Wizard" window appears. Follow the instructions on the screen to select your monitor type from the monitor list, and click a new resolution, color depth, and refresh rate.

For Windows NT:

a) Click **Start**.

b) Move the cursor to **Settings** and **Control Panel**; and then click **Control Panel**.

c) Double-click **Display**.

d) Click the **Settings** tab.

Select an appropriate resolution and color depth in the "Settings" window.

e) Click **Test**.

You can see the test screen on the external monitor. If the output is not displayed, change the resolution and color depth and click **Test** again.

7 Restart the computer to make the changes effective.

IMPORTANT

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 output is not displayed. This restriction does not depend on the resolution value.

Resolutions, Color Depths, and Refresh Rates: The following tables show the resolutions, color depths, and refresh rates available with your computer or external monitor. Use these tables to set the display output (**LCD Only**, **CRT Display Only**, or **Both LCD and CRT Display**).

NOTE
When installing an operating system, you must install the display driver supplied with the computer to use XGA mode for a 13.3-inch LCD and SVGA mode for a 12.1-inch LCD.

Displaying output on the LCD or on both the LCD and the external monitor (**LCD Only** or **Both LCD and CRT Display**)

Resolution	Supported color depth
640x480 (VGA)	256, 64K, and 16M
800x600 (SVGA)	256, 64K, and 16M
1024x768 (XGA)	256, 64K, and 16M
1280x1024 (SXGA)	256

Notes:

1. Virtual screen when using an SVGA-panel.

2. Virtual screen when using either an SVGA- or an XGA-panel.

   For an explanation of the virtual screen, see the following note.

NOTE
You can use the *virtual screen* function to display a part of the high-resolution screen image produced by your computer. You can see other parts by moving the screen with the TrackPoint or other pointing device.

Using an external monitor

Displaying output only on the external monitor (**CRT Display Only**)

Resolution	Supported color depth	Refresh rate
640x480 (VGA)	256, 64K, and 16M	60 Hz, 75 Hz, or 85 Hz
800x600 (SVGA)	256, 64K, and 16M	60 Hz, 75 Hz, or 85 Hz
1024x768 (XGA)	256, 64K, and 16M	60 Hz, 70 Hz, 75 Hz, or 85 Hz
1280x1024 (SXGA)	256	60 Hz

NOTE If you are using an old external monitor, the resolution and refresh rate might be limited.

Using the dual display function

Windows 98 supports a function named *Multiple Display Support*, and your computer supports a function named *dual display* in the Windows 98 environment. This function allows the Windows 98 desktop to display output on the LCD-CRT display pair. You can display different desktop images on each monitor.

To enable the dual display, do as follows:

1 Attach the computer to an external monitor (CRT).

2 Click **Start**.

3 Move the cursor to **Settings** and **Control Panel**; then click **Control Panel**.

4 Double-click **Display**.

5 Click the **Settings** tab.

6 Click **Advanced...**

7 Click the **NeoMagic** tab.

8 Select the **Set Dual Display** check box; then click **OK**.

The "System settings change" window appears, to prompt you to restart the application.

9 Click **Yes** to restart the computer.

10 Open the "Display Properties" window again by double-clicking **Display** in the Control Panel.

11 Click the **Settings** tab.

An image of two monitors assigned with numbers appears.

12 Click the **Monitor-2** icon (for the secondary display, the CRT).

13 Click **Yes** to enable monitor 2.

14 Click the **Monitor-1** icon (for the primary display, the LCD).

15 Select the color depth and the resolution of the primary display.

16 Click the **Monitor-2** icon (for the secondary display, the CRT).

17 Select the color depth and the resolution of the secondary display.

18 Set the relative position of the each monitor by dragging its icon.

> **NOTE** You can set the monitors in any relative position, but the icons must touch each other.

19 Click **OK** to apply the changes.

Disabling the dual display

1 Click **Start**.

2 Move the cursor to **Settings** and **Control Panel**; then click **Control Panel**.

3 Double-click **Display**.

4 Click the **Settings** tab.

5 Click the **Monitor-2** icon (for the secondary display, the CRT).

6 Clear the **Extend my Windows desktop onto this monitor** check box.

The secondary display (monitor 2) is disabled.

If you do not want to disable the dual display function entirely (because you might wish to use it later in this session, for

example), just click **OK** and skip the remaining steps. Then you can enable the secondary display by clicking the display icon.

To disable the dual display function entirely (for better performance and to remove some limitations), continue the procedure as follows. (You can always reenable the function by following the procedure from step 12 on page 77.)

7 Click **Advanced...**

8 Select the **NeoMagic** tab.

9 Clear the **Set Dual Display** check box.

10 Click **OK**.

The "System settings change" window appears, to prompt you to restart the application.

11 Click **Yes** to restart the computer.

Considerations when using the dual display

The primary display is always the LCD of your computer, and the secondary display is a CRT.

You can select up to 64K colors for your secondary display, the CRT.

You can select a resolution up to 1024x768 for your secondary display.

You cannot set the dual display if you specify the primary display (the LCD) to a 1024x768 resolution and 16M colors for color depth.

The following are the settings that are *not* supported:

Primary (LCD)		Secondary (CRT)
1280x1024,256	——	1024x768,64K
1024x768,64K	——	1024x768,64K
800x600,16M	——	1024x768,64K

If you want to show DOS full screen, both primary (LCD) and secondary (CRT) display in DOS full-screen mode.

Using an external monitor

If you play a video clip (AVI or MPEG file) and move the cursor on the window, the cursor disappears under the image.

An application using the DirectDraw or the Direct3D is shown only on the primary display (LCD) when it is played in full-screen mode.

You cannot use the **Fn+F7** (display switching) function when you are in the dual display mode.

Using a PC Card

This section describes how to install or remove a PC Card. For information on how to use the PC Card software ➡ *Online User's Guide.*
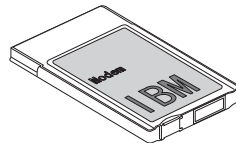
Attention

Do not insert a PC Card while the computer is in suspend mode or hibernation mode. Otherwise, the system might hang when resuming.

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 Card
Zoomed Video (ZV)

Installing a PC Card

To install a PC Card, do as follows:

1 Find the notched edge 1 of the PC Card as shown.
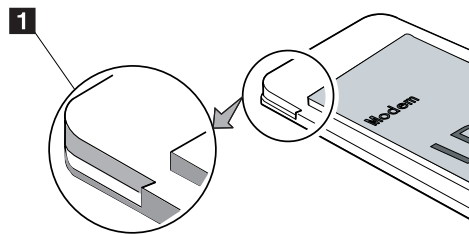
2 Insert the PC Card into the appropriate slot according to your PC Card type.

NOTE

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.

The slots are being covered with a PC Card slot cover. You can easily insert the PC Card by pushing the cover.

Upper slot

Lower slot
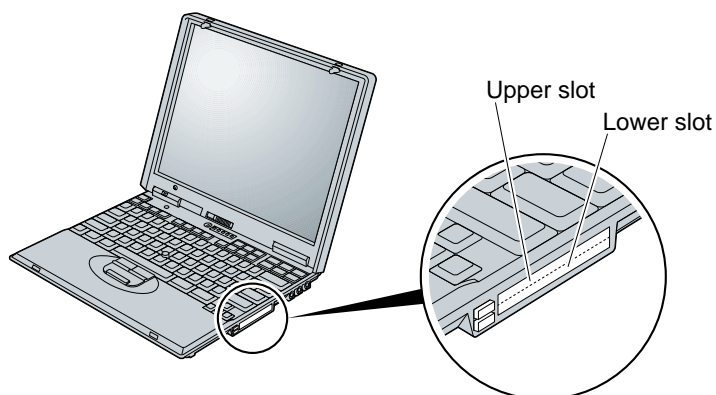
3 Press the PC Card firmly into the connector.

For Windows 98:
If you have not installed the PC Card driver, Windows 98 starts to install it.

For Windows NT:
Your computer has PC Card support software called CardWizard. You can use the PC Card as soon as you insert the card into the computer. The "SystemSoft CardWizard" window appears and informs you about the new card.

Removing the PC Card

Attention

Do not remove a PC Card while the computer is in suspend mode or hibernation mode. Otherwise, the system might hang when resuming.

Before removing storage PC Cards, such as the hard disk PC Card, Flash memory PC Card, or SRAM PC Card from the PC Card slot, **you must stop** the PC Card. Otherwise, data on the PC Card might be corrupted or lost.

1 Stop the card.

   To stop the PC Card ➡ *Online User's Guide*.

   NOTE The **Stop** option appears in gray when you are in CardSoft mode or when the card is already stopped.

2 Press the PC Card eject button to pop out the button. Then press it again until the PC Card pops out.

3 Remove the PC Card and store it safely for future use.

Eject button
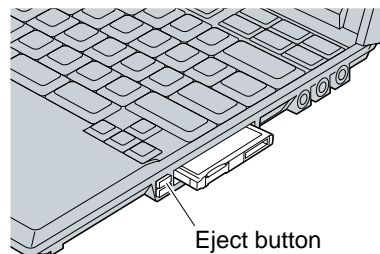
For more information on using a PC Card ➡ *Online User's Guide*.

Extending the features of your computer with the ThinkPad 570 UltraBase and port replicators

This section discusses the ThinkPad 570 UltraBase and port replicators, which are options to enhance features of your computer.

They are represented as follows in this section:
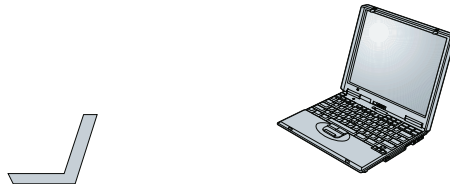
ThinkPad 570

ThinkPad 570 UltraBase
(hereafter called *UtlraBase*)

ThinkPad 570 Direct Dock Adapter
(hereafter called *Direct Dock Adapter*)

Port Replicator with Advanced EtherJet Feature

ThinkPad 560 Port Replicator

Extending features with the UltraBase and port replicators

Following are combinations for attaching or docking your computer. Use the diagrams to find the page number that describes your hardware configuration.

For information on extending the features of your computer with the UltraBase ➡ page 87.
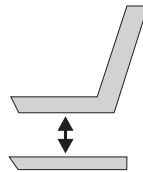
For information on extending the features of your computer with the UltraBase and the Port Replicator with Advanced EtherJet Feature ➡ page 97.
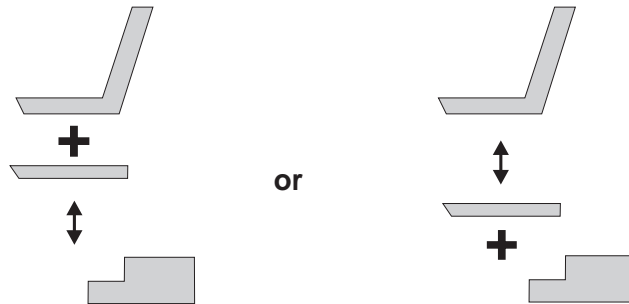
or

For information on extending the features of your computer with the UltraBase and the ThinkPad 560 Port Replicator ➡ page 111.

or
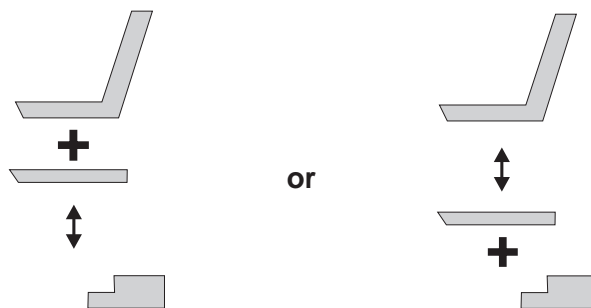
Extending features with the UltraBase and port replicators

For information on extending the features of your computer with the Port Replicator with Advanced EtherJet Feature using the Direct Dock Adapter ➡ page 122.
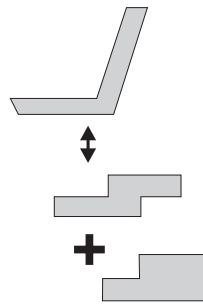
For information on extending the features of your computer with the ThinkPad 560 Port Replicator using the Direct Dock Adapter ➡ page 132.
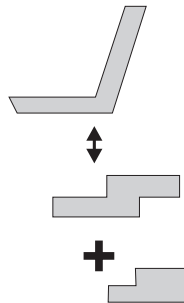
Using your computer with the UltraBase

You can enhance the features of your computer by attaching it to the UltraBase, available as an option.

> **NOTE** Do not be concerned it the bottom of the computer is warm when you detach it from the UltraBase after long use.

Front View

Eject lever

UltraslimBay lock

Docking connector

UltraslimBay

Bay lock

Bay eject lever

Status indicator

Eject request button

Eject lever

Diskette-drive/battery bay

Bottom View

Docking connectors

Holes for docking

UltraBase lock

Holes for docking
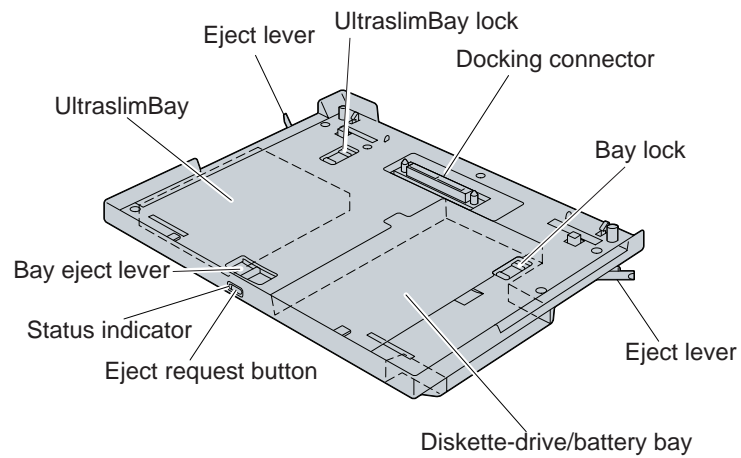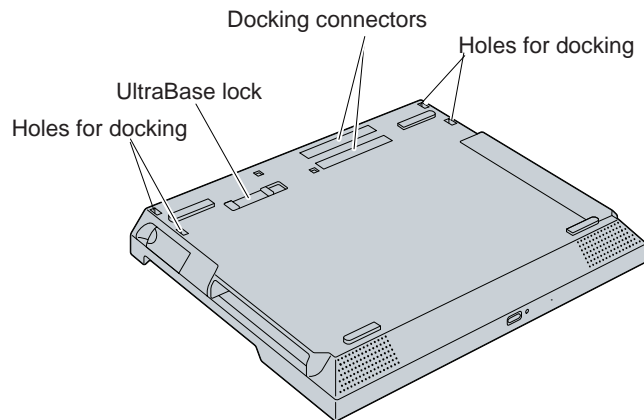
Extending features: UltraBase

The UltraBase has two bays, the diskette-drive/battery bay and the UltraslimBay. In the diskette-drive/battery bay, you can install one of the following:

Diskette drive
Second battery

NOTE   You can install the external diskette drive into the diskette-drive/battery bay. Alternatively, you can install a battery pack there and then use the ThinkPad 570 standard battery pack as a secondary battery.

In the UltraslimBay, you can install one of the following:

CD-ROM drive
DVD-ROM drive
Secondary hard disk drive
LS-120 drive

Attaching to or detaching from the UltraBase

You can attach your computer to or detach it from a UltraBase under the following conditions:

With your computer powered off (*cold attaching or detaching*)

With your computer in suspend mode (*warm attaching or detaching*)

With your computer operating (*hot attaching or detaching*)

	Hot	Warm	Cold
Attach	Yes	Yes	Yes
Detach	Yes	Yes*	Yes
* You can detach your computer from UltraBase while the system is in suspend mode. The system resumes and starts processing for detaching (hot-detaching). The system reenters suspend mode again when it completes the process.			

NOTE

Windows 98 (APM mode) and Windows 95 (Version 2.0 or later version) support hot- or warm-attaching to and -detaching from the UltraBase. You need to cold-attach or -detach if you use a different operating system.

The secondary battery in the UltraBase is charged when the computer and the AC Adapter are attached to the UltraBase. If the computer is removed from the UltraBase, the secondary battery does not charge, even if the AC Adapter is attached to the UltraBase.

Extending features: UltraBase

Attention

Do not insert any device in the UltraBase if it is attached to the computer while it is powered on. The device might be damaged.

Regardless of the condition, you need to install any external devices you use in the UltraBase before you attach your computer to it, but note the following exception:

A diskette drive can be installed in the UltraBase when the system (the computer–UltraBase assembly) is in suspend mode.

NOTE
A secondary hard disk drive in the UltraBase does not work when you hot- or warm-attach the computer. You need to cold-attach the computer to use this device.

For information how to install a device in the UltraBase → the manual shipped with the UltraBase.
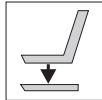
Attaching the computer to the UltraBase

> ## Attention
>
> If you operate the computer by ac power, switch the plug of the AC Adapter from the computer to the UltraBase before the attachment. The AC Adapter connector will be damaged if it remains connected to the computer.

	Condition when attaching	**Sign of successful attachment**
Hot-attaching	The computer is operating.	1. After the window that shows the status of devices in the UltraBase pops up, an **OK** message appears.
Warm-attaching	The computer is in suspend mode. (When you attach the computer, the system resumes and starts processing for attachment.)	2. The status indicator of the UltraBase is *on*.

Extending features: UltraBase

To attach the computer to the UltraBase, do as follows:

1 Align the front of the computer with the front of the
UltraBase 1 .
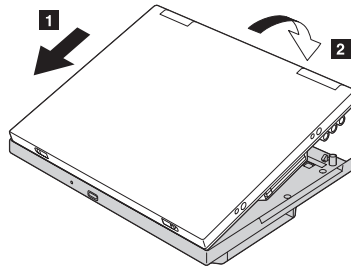
Make sure that the guides of the UltraBase align with the holes
of the computer.
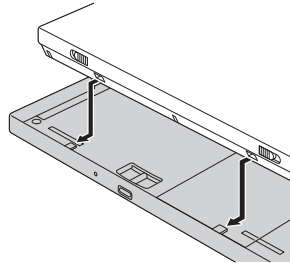
Then put the computer in place 2 .

2 Turn the computer–UltraBase assembly upside down and
press the UltraBase lock to the locked position.

This step is not required, but ensures that the computer will not
detached accidentally.
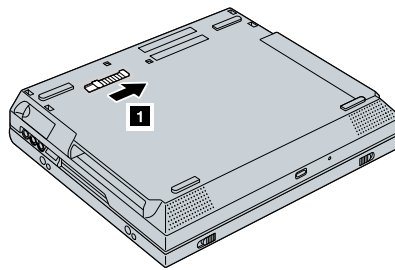
3 Turn the computer–UltraBase assembly right side up.

Detaching the computer from the UltraBase

Attention

Do not detach your computer from the UltraBase while the status indicator of the UltraBase is *blinking* or *on*. Wait until the status indicator turns *off*. Detaching while the indicator is *blinking* or *on* causes the system to beep, and the computer might not work properly.

	Method for detaching	Condition for detaching
Hot-detaching	Using the icon in the Windows main screen: 1. Click the **UltraBase connection status** icon on the bottom right of the taskbar.	1. After the window that shows the status of devices in the UltraBase pops up, an **OK** message appears. 2. The status indicator of the UltraBase is *off*.
Warm-detaching	2. Move the cursor to **Eject from UltraBase** and **Eject now**. 3. Click **Eject now**. *Or* Press the **eject request** button of the UltraBase. *Then* Wait for the condition for undocking to be satisfied.	1. The system resumes. 2. After the window that shows the status of devices in the UltraBase pops up, an **OK** message appears. 3. The status indicator of the UltraBase is *off*. 4. The computer reenters suspend mode.

To detach the computer from the UltraBase, do as follows:

1 Turn the computer–UltraBase assembly upside down, and release the UltraBase lock to the unlocked position `1`.
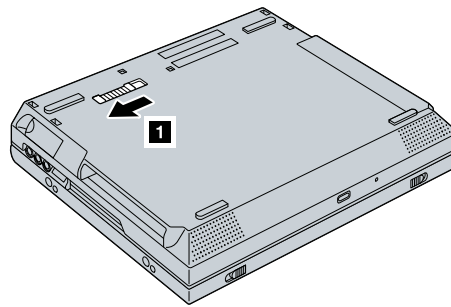
2 Turn the computer–UltraBase assembly right side up.

3 If you are cold-detaching the computer, release the eject lever on the both sides of the UltraBase `1` until the computer lifts up; then remove the computer `2`.
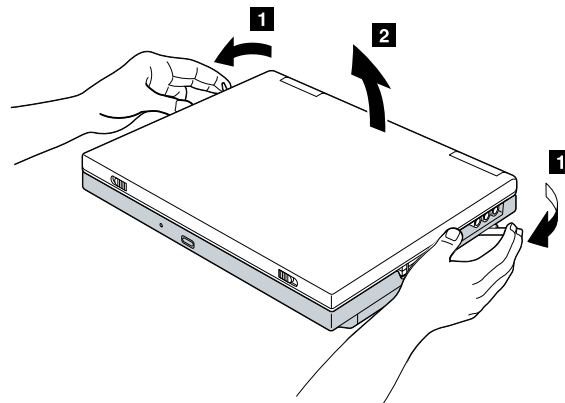
If you are hot- or warm-detaching the computer, click the **UltraBase connection status** icon on the bottom right of the taskbar, or press the **eject request** button of the UltraBase, as described in the preceding table. When the condition for detaching is satisfied, detach the computer, as shown in the preceding illustration.

Security features of the UltraBase

The lock at the bottom of the UltraBase has three positions. Choosing the lock position, you can secure the devices in the bay, your computer, or both.

If you attach a mechanical lock to the security keyhole of the UltraBase, the UltraBase lock position cannot be changed. Using the security screw and mechanical lock with the UltraBase lock, you can efficiently secure your whole system.

> **NOTE** You need to purchase the mechanical lock on the market. You are responsible for evaluating, selecting, and implementing the locking devices and security features.

The three lock positions of the UltraBase lock are called (A), (B), and (C) in this user's reference.
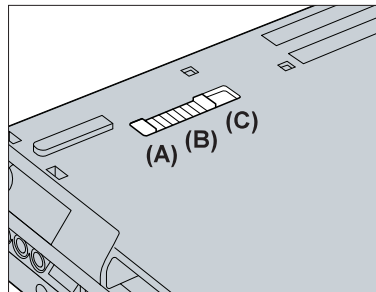
(A) Unlock position:
    If the lever is in this position, nothing is secured.

(B) Bay lock position:
    If the lever is in this position, the UltraslimBay lock and the bay lock are locked. Although you can remove your computer from the UltraBase, you cannot remove a device from the UltraBase.

(C) Full lock position:
    If the lever is in this position, not only are the UltraslimBay lock and the bay lock locked but also you cannot detach your computer from the UltraBase.

Extending features: UltraBase

The following table shows what is secured by a mechanical lock attached to the UltraBase:

Lock position	(A)	(B)	(C)
UltraBase	Secured by the mechanical lock		
Computer	Not secured	Not secured	Secured
Hard disk drive in the computer	Not secured	Not secured	Secured
Device in the UltraslimBay	Not secured	Secured	Secured
Device in the diskette-drive/battery bay	Not secured	Secured	Secured
You can always secure the hard disk drive with the security screw.			

Using your computer with the UltraBase and the Port Replicator with Advanced EtherJet Feature

You can use your computer with the UltraBase and the Port Replicator with Advanced EtherJet Feature. For an illustration of the UltraBase, see "Using your computer with the UltraBase" on page 87. The following is the Port Replicator with Advanced EtherJet Feature:
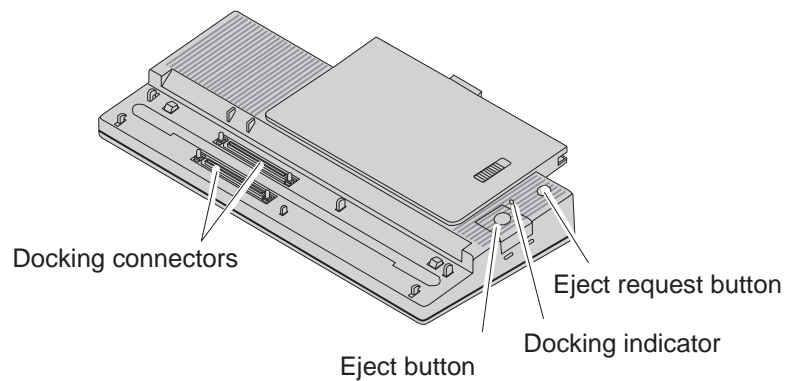
Docking connectors

Eject request button

Docking indicator

Eject button

NOTE Do not use the same type of connector on the computer and the port replicator at the same time (except the USB connector). For example, do not use the computer's serial connector and the port replicator's serial connector at the same time.

Extending features: UltraBase and Port Replicator with Advanced EtherJet Feature

You can attach the UltraBase to the Port Replicator with Advanced EtherJet Feature first and then dock the computer to the UltraBase–port replicator assembly (A). Alternatively, you can attach your computer to the UltraBase first and then dock the computer–UltraBase assembly to the Port Replicator with Advanced EtherJet Feature (B).

A

B

or

Attaching to or detaching from the UltraBase and the Port Replicator with Advanced EtherJet Feature

You can hot- or warm-dock or -undock the computer to or from the UltraBase and the Port Replicator with Advanced EtherJet Feature under the following conditions:

With your computer powered off (*cold docking or undocking*)

With your computer in suspend mode (*warm docking or undocking*)

With your computer operating (*hot docking or undocking*)

	Hot	Warm	Cold
Dock	Yes	Yes	Yes
Undock	Yes	Yes*	Yes

* You can undock your computer from the UltraBase–port replicator assembly, or undock the computer–UltraBase assembly from a port replicator, while the system is in suspend mode. The system resumes and starts processing for undocking (hot-undocking). The system reenters suspend mode when it completes the process.

NOTE

Windows 98 (APM mode) and Windows 95 (Version 2.0 or later version) support hot- or warm-docking or -undocking. You need to cold-dock or -undock the computer to or from these options if you use a different operating system.

Extending features: UltraBase and Port Replicator with Advanced EtherJet Feature

 Docking the computer to the UltraBase–Port Replicator with Advanced EtherJet Feature assembly

> **Attention**
>
> If you operate the computer by ac power, switch the plug of the AC Adapter from the computer to the UltraBase before the attachment. The AC Adapter connector will be damaged if it remains connected to the computer.
>
> Detach the external diskette drive from the Port Replicator with Advanced EtherJet Feature before you hot-dock the computer to the UltraBase–port replicator assembly. The external diskette drive will be damaged if it remains attached to the port replicator.

	Condition when docking	**Sign for successful docking**
Hot-docking	The computer is operating.	The status indicators of both the UltraBase and the port replicator are *on*.
Warm-docking	The computer is in suspend mode. (When you dock the computer, the system resumes and starts processing for docking.)	

Extending features: UltraBase and Port Replicator with Advanced EtherJet Feature

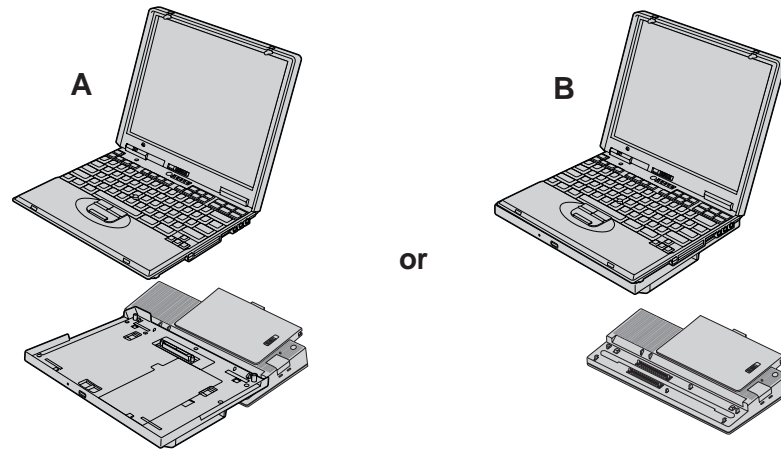To attach the UltraBase to the Port Replicator with Advanced
EtherJet Feature, do as follows:

Align the docking connectors of the UltraBase with those of the port
replicator; then put the UltraBase in place.
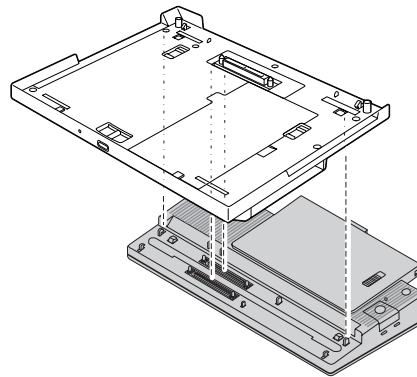
To dock the computer to the UltraBase–Port Replicator with
Advanced EtherJet Feature assembly ➡ the attachment procedure
for the computer and the UltraBase on page 92.
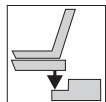
 Docking the computer–UltraBase assembly to the Port Replicator with Advanced EtherJet Feature

To attach the computer to the UltraBase ➡ the attachment procedure for the computer and the UltraBase on page 92.

> ### Attention
>
> Detach the external diskette drive from the Port Replicator with Advanced EtherJet Feature before you hot-dock the computer–UltraBase assembly to the port replicator. The external diskette drive will be damaged if it remains attached to the port replicator.

	Condition when docking	**Sign for successful docking**
Hot-docking	The system is operating. (The status indicator of the UltraBase stays *on*.)	The docking indicator of the port replicator is *on*.
Warm-docking	The computer is in suspend mode. (The status indicator of the UltraBase stays *on*. When you dock the computer–UltraBase assembly, the system resumes and starts processing for docking.)	

Extending features: UltraBase and Port Replicator with Advanced EtherJet Feature

To dock the computer–UltraBase assembly to the Port Replicator with Advanced EtherJet Feature, align the docking connectors of the UltraBase with those of the port replicator; then put the computer–UltraBase assembly in place.
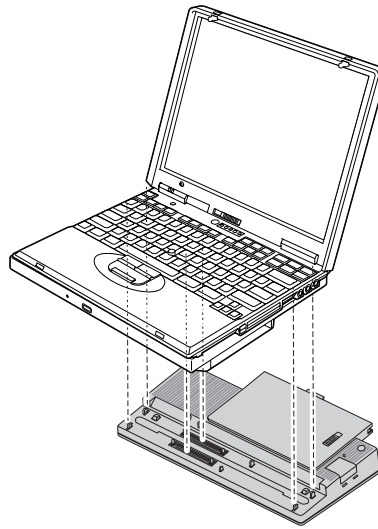
Extending features: UltraBase and Port Replicator with Advanced EtherJet Feature
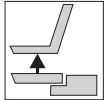
Undocking the computer from the UltraBase–Port Replicator with Advanced EtherJet Feature assembly

Attention

Do not undock the computer from the UltraBase–port replicator assembly while the status indicator of either the UltraBase or the port replicator is *blinking* or *on*. Wait until the status indicator turns *off*. Undocking while the indicator is *blinking* or *on* causes the system to beep, and the computer might not work properly.

Extending features: UltraBase and Port Replicator with Advanced EtherJet Feature

	Method for undocking	Condition for undocking
Hot-undocking	Using the icon in the Windows main screen:	The status indicators of both the UltraBase and the port replicator are *off*.
Warm-undocking	1. Click the **UltraBase connection status** icon on the bottom right of the taskbar. 2. Move the cursor to **Eject from UltraBase** and **Eject now**. 3. Click **Eject now**. *Or* Press the **eject request** button of the UltraBase. *Then* Wait for the condition for undocking to be satisfied.	1. The system resumes. 2. The status indicators of both the UltraBase and the port replicator are *off*. 3. The computer reenters suspend mode.

> **NOTE**
> An eject request is made to the operating system. Considerable time might be required to complete the ejection.
>
> If the operating system rejects the eject request, a message appears on the screen. If this happens, try *cold undocking*.

To detach the computer from the UltraBase–Port Replicator with Advanced EtherJet Feature assembly ➡ the detachment procedure for the computer and UltraBase on page 94.

Undocking the computer–UltraBase assembly from the Port Replicator with Advanced EtherJet Feature

	Method for undocking	Condition for undocking
Hot-undocking	Click **Eject PC** from the **Start** menu. (The LCD of the computer powers off and on.) *Or* Press the **eject request** button of the port replicator. *Then* Wait for the condition for undocking to be satisfied.	1. The **Eject PC** icon disappears from the **Start** menu. 2. The status indicator of the port replicator is *off*. (The status indicator of the UltraBase stays *on*.)
Warm-undocking		1. The system resumes 2. The **Eject PC** icon disappears from the **Start** menu. 3. The status indicator of the port replicator is *off*. (The status indicator of the UltraBase stays *off*.) 4. The system reenters suspend mode.

NOTE

An eject request is made to the operating system. Considerable time might be required to complete the ejection. To verify that the ejection process has completed, click **Start**. If **Eject PC** appears, undocking is still in progress. If not, the ejection process has completed.

If the operating system rejects the eject request, a message appears on the screen. If this happens, try *cold undocking*.

Extending features: UltraBase and Port Replicator with Advanced EtherJet Feature

If you are cold-undocking the computer–UltraBase assembly from the Port Replicator with Advanced EtherJet Feature, push the **eject** button of the port replicator until the computer–UltraBase assembly lifts up; then remove the assembly.
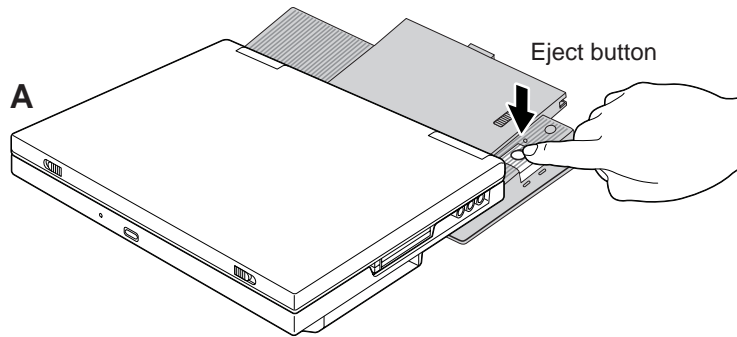
Eject button

A

If you are hot- or warm-undocking the computer–UltraBase assembly from the Port Replicator with Advanced EtherJet Feature, select **Eject PC** in the **Start** menu of the Windows main screen, or press the **eject request** button of the port replicator, as described in the preceding table.

Eject request button

B

Indicator turns off
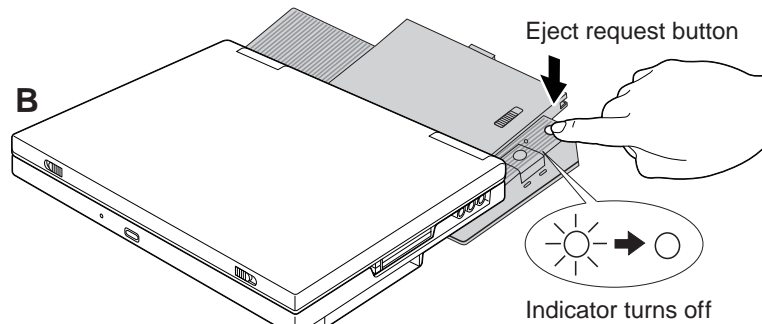
When the condition for undocking is satisfied, undock the computer–UltraBase assembly, as shown in illustration A.

Security features when using the Port Replicator with Advanced EtherJet Feature

If you are using the Port Replicator with Advanced EtherJet Feature through the UltraBase, you achieve the same security features when attaching the mechanical lock to the security keyhole of the port replicator. With the mechanical lock, you can secure your port replicator and the UltraBase.

NOTE

Attach the mechanical lock to the first security system lock of the Port Replicator with Advanced EtherJet Feature . For more information ➡ the manual shipped with the port replicator.

You need to purchase the mechanical lock on the market. You are responsible for evaluating, selecting, and implementing the locking devices and security features.

After setting the UltraBase lock to the either lock position, insert the security plate in the security keyhole of the UltraBase as follows:

(Rear view)

Extending features: UltraBase and Port Replicator with Advanced EtherJet Feature

You can secure the devices in the bay of the UltraBase, your computer, or both by using the lock at the bottom of the UltraBase. The lock has three positions, that are called (A), (B), and (C) in this user's reference.

(A) Unlock position:
   If the lever is in this position, nothing is secured.

(B) Bay lock position:
   If the lever is in this position, the UltraslimBay lock and the bay lock are locked. Although you can remove your computer from the UltraBase, you cannot remove a device from the UltraBase.

(C) Full lock position:
   If the lever is in this position, not only are the UltraslimBay lock and the bay lock locked but also you cannot detach your computer from the UltraBase.

Extending features: UltraBase and Port Replicator with Advanced EtherJet Feature

Lock position	(A)	(B)	(C)
Port replicator	Secured by the mechanical lock		
UltraBase	Secured by the mechanical lock		
Computer	Not secured	Not secured	Secured
Hard disk drive in the computer	Not secured	Not secured	Secured
Device in the UltraslimBay	Not secured	Secured	Secured
Device in the diskette-drive/battery bay	Not secured	Secured	Secured
You can always secure the hard disk drive with the security screw.			

Using your computer with the UltraBase and the ThinkPad 560 Port Replicator

You can use your computer with the UltraBase and the ThinkPad 560 Port Replicator. For an illustration of the UltraBase, see "Using your computer with the UltraBase" on page 87. The following is the ThinkPad 560 Port Replicator:
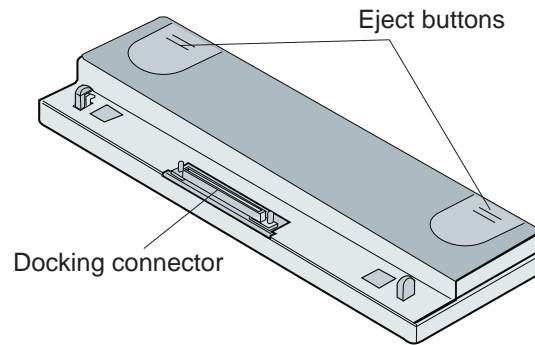
Eject buttons

Docking connector

NOTE Do not use the same type of connector on the computer and the port replicator at the same time (except the USB connector). For example, do not use the computer's serial connector and the port replicator's serial connector at the same time.

Extending features: UltraBase and ThinkPad 560 Port Replicator

You can attach the UltraBase to the ThinkPad 560 Port Replicator first and then dock the computer to the UltraBase–port replicator assembly (A). Alternatively, you can attach your computer to the UltraBase first and then dock the computer–UltraBase assembly to the ThinkPad 560 Port Replicator (B).

A   **or**   **B**

Attaching to or detaching from the UltraBase and the ThinkPad 560 Port Replicator

You can hot- or warm-dock or -undock the computer to or from the UltraBase and the ThinkPad 560 Port Replicator under the following conditions:

With your computer powered off (*cold docking or undocking*)

With your computer in suspend mode (*warm docking or undocking*)

With your computer operating (*hot docking or undocking*)

	Hot	Warm	Cold
Dock	Yes	Yes	Yes
Undock	Yes	Yes	Yes

Notes:

1. You can warm- or cold-dock or -undock the computer–UltraBase assembly to or from the ThinkPad 560 Port Replicator. You cannot hot-dock the computer–UltraBase assembly to or from the ThinkPad 560 Port Replicator.
2. You can undock your computer from the UltraBase–port replicator assembly while the system is in suspend mode. The system resumes and starts processing for undocking (hot-undocking). The system reenters suspend mode when it completes the process.

NOTE Windows 98 (APM mode) and Windows 95 (Version 2.0 or later version) support hot- or warm-docking or -undocking. You need to cold-dock or -undock the computer to or from these options if you use a different operating system.

 Docking the computer to the UltraBase–ThinkPad 560 Port Replicator assembly

Attention

If you operate the computer by ac power, switch the plug of the AC Adapter from the computer to the UltraBase before the attachment. The AC Adapter connector will be damaged if it remains connected to the computer.

	Condition when docking	**Sign for successful docking**
Hot-docking	The computer is operating.	The status indicator of the UltraBase is *on*.
Warm-docking	The computer is in suspend mode. (When you attach the computer, the system resumes and starts processing for docking.)	

To attach the UltraBase to the ThinkPad 560 Port Replicator, align one of the docking connectors of the UltraBase with the one of the port replicator; then put the UltraBase in place.
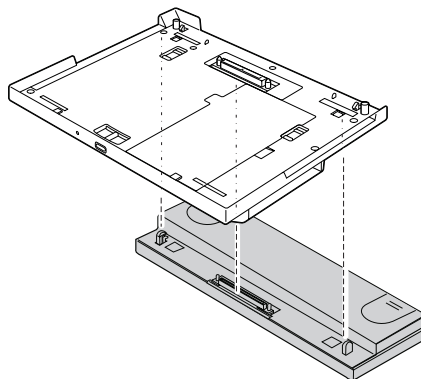
To attach the computer to the UltraBase–ThinkPad 560 Port Replicator ➡ the attachment procedure for the computer and the UltraBase on page 92.
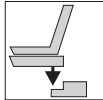
Docking the computer–UltraBase assembly to the ThinkPad 560 Port Replicator

You can dock the computer–UltraBase assembly to the ThinkPad 560 Port Replicator when the system (the computer–UltraBase assembly) is powered off or in suspend mode. You cannot hot-dock the computer–UltraBase assembly to the ThinkPad 560 Port Replicator.

To attach the computer to the UltraBase ➡ the attachment procedure for the computer and UltraBase on page 92.

To dock the computer–UltraBase assembly to the ThinkPad 560 Port Replicator, align one of the docking connectors of the UltraBase with the one of the port replicator; then put the computer–UltraBase assembly in place.

Extending features: UltraBase and ThinkPad 560 Port Replicator

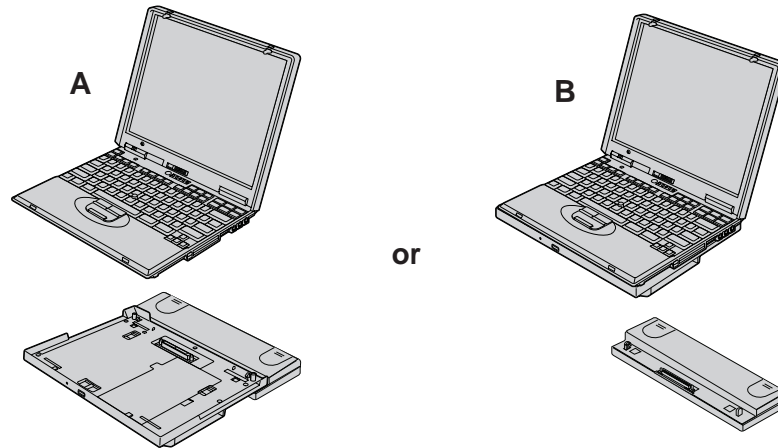*Undocking the computer from the UltraBase–ThinkPad 560 Port Replicator assembly*

> **Attention**
>
> Do not undock the computer from the UltraBase–port replicator assembly while the status indicator of the UltraBase is *blinking* or *on*. Wait until the status indicator turns *off*. Undocking while the indicator is *blinking* or *on* causes the system to beep, and the computer might not work properly.

Extending features: UltraBase and ThinkPad 560 Port Replicator

	Method for undocking	Condition for undocking
Hot-undocking	Using the icon in the Windows main screen:	The status indicator of the UltraBase is *off*.
Warm-undocking	1. Click the **UltraBase connection status** icon on the bottom right of the taskbar. 2. Move the cursor to **Eject from UltraBase** and **Eject now**. 3. Click **Eject now**. Press the **eject** button of the UltraBase. ***Then*** Wait for the condition for undocking to be satisfied.	1. The system resumes. 2. The status indicator of the UltraBase is *off*. 3. The computer reenters suspend mode.

> **NOTE**
>
> An eject request is made to the operating system. Considerable time might be required to complete the ejection.
>
> If the operating system rejects the eject request, a message appears on the screen. If this happens, try *cold undocking*.

To detach the computer from the UltraBase–ThinkPad 560 Port Replicator assembly ➡ the detachment procedure for the computer and UltraBase on page 94.

Extending features: UltraBase and ThinkPad 560 Port Replicator
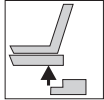
Undocking the computer–UltraBase assembly from the ThinkPad 560 Port Replicator

You can undock the computer–UltraBase assembly from the ThinkPad 560 Port Replicator when the system (the computer–UltraBase assembly) is powered off or in suspend mode. You cannot hot-undock the computer–UltraBase assembly from the ThinkPad 560 Port Replicator.

First, close the LCD; then press the **release** buttons of the port replicator.
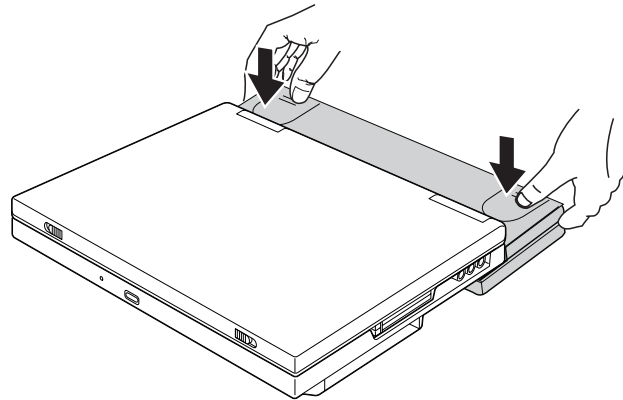
Security features when using the ThinkPad 560 Port Replicator

If you are using the ThinkPad 560 Port Replicator through the UltraBase, you achieve the same security features when attaching the mechanical lock to the security keyhole of the port replicator. With the mechanical lock, you can secure your port replicator and the UltraBase.

NOTE
> Attach the mechanical lock to the security hole of the ThinkPad 560 Port Replicator. For more information ➡ the manual shipped with the port replicator.
>
> You need to purchase the mechanical lock on the market. You are responsible for evaluating, selecting, and implementing the locking devices and security features.

After setting the UltraBase lock to the either lock position, insert the security plate in the security keyhole of the UltraBase as follows:

(Rear view)
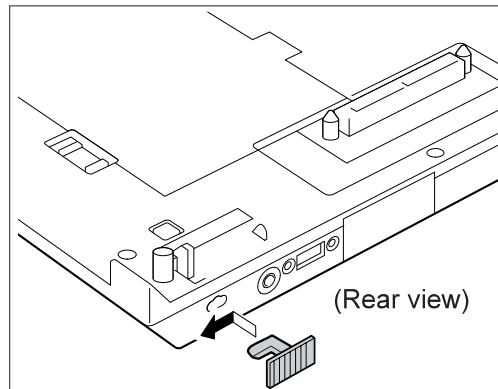
Extending features: UltraBase and ThinkPad 560 Port Replicator

You can secure the devices in the bay of the UltraBase, your computer, or both by using the lock at the bottom of the UltraBase. The lock has three positions, that are called (A), (B), and (C) in this user's reference.

(A) Unlock position:
   If the lever is in this position, nothing is secured.

(B) Bay lock position:
   If the lever is in this position, the UltraslimBay lock and the bay lock are locked. Although you can remove your computer from the UltraBase, you cannot remove a device from the UltraBase.

(C) Full lock position:
   If the lever is in this position, not only are the UltraslimBay lock and the bay lock locked but also you cannot detach your computer from the UltraBase.

Extending features: UltraBase and ThinkPad 560 Port Replicator

Lock position	(A)	(B)	(C)
Port replicator	Secured by the mechanical lock		
UltraBase	Secured by the mechanical lock		
Computer	Not secured	Not secured	Secured
Hard disk drive in the computer	Not secured	Not secured	Secured
Device in the UltraslimBay	Not secured	Secured	Secured
Device in the diskette-drive/battery bay	Not secured	Secured	Secured
You can always secure the hard disk drive with the security screw.			

Using your computer with the Port Replicator with Advanced EtherJet Feature through the Direct Dock Adapter

You can extend the capabilities of your computer by docking the Port Replicator with Advanced EtherJet Feature through the ThinkPad 570 Direct Dock Adapter, available as an option.

Port Replicator with Advanced EtherJet Feature
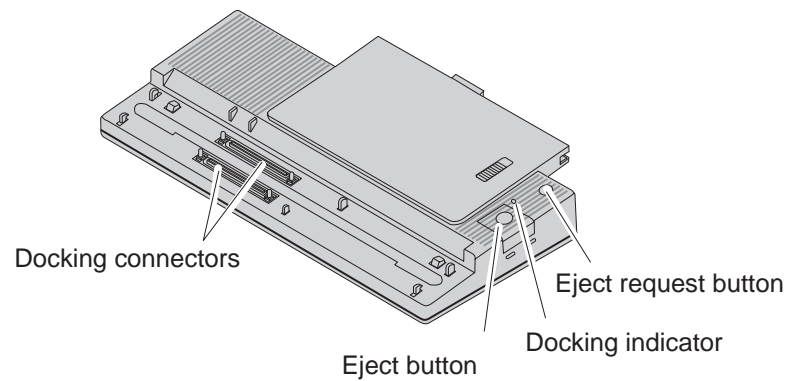
Docking connectors

Eject request button

Docking indicator

Eject button

NOTE Do not use the same type of connector on the computer and the port replicator at the same time (except the USB connector). For example, do not use the computer's serial connector and the port replicator's serial connector at the same time.

Extending features: Port Replicator with Advanced EtherJet Feature and Direct Dock Adapter

Direct Dock Adapter
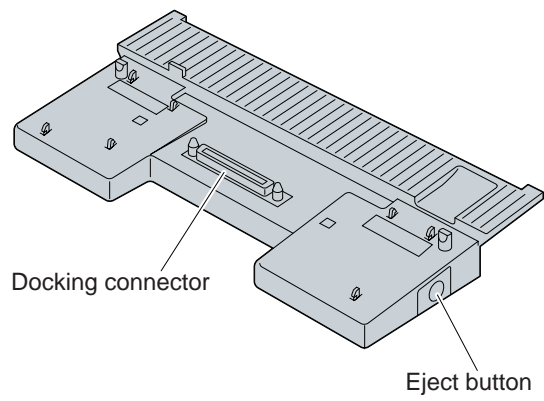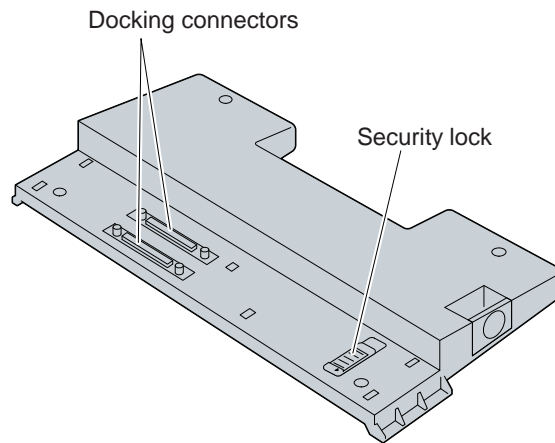
Front view

Docking connector

Eject button

Bottom view

Docking connectors

Security lock

Docking to or undocking from the Port Replicator with Advanced EtherJet Feature

You can hot- or warm-dock or -undock your computer to or from the port replicator through Direct Dock Adapter under the following conditions:

With your computer powered off (*cold docking or undocking*)

With your computer in suspend mode (*warm docking or undocking*)

With your computer operating (*hot docking or undocking*)

	Hot	Warm	Cold
Dock	Yes	Yes	Yes
Undock	Yes	Yes*	Yes
* You can undock the computer from the port replicator through Direct Dock Adapter while the system is in suspend mode. The system resumes and starts processing for undocking (hot-undocking). The system reenters suspend mode again when it completes the process.			

NOTE

Windows 98 (APM mode) and Windows 95 (Version 2.0 or later version) support hot- or warm-docking or -undocking your computer to and from the port replicator through the Direct Dock Adapter. You need to cold-dock or -undock if you use a different operating system.

Extending features: Port Replicator with Advanced EtherJet Feature and Direct Dock Adapter
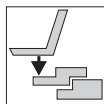
Docking the computer to the Port Replicator with Advanced EtherJet Feature through the Direct Dock Adapter

Attention

Detach the external diskette drive from the Port Replicator with Advanced EtherJet Feature before you hot-dock the computer to the port replicator through the Direct Dock Adapter. The external diskette drive will be damaged if it remains attached to the port replicator.

	Condition when docking	Sign for successful docking
Hot-docking	The computer is operating.	The status indicator of the port replicator is *on*.
Warm-docking	The computer is in suspend mode. (When you dock the computer, the system resumes and starts processing for docking.)	

Extending features: Port Replicator with Advanced EtherJet Feature and Direct Dock Adapter

To dock the computer to the port replicator through the Direct Dock Adapter, do as follows:

1 Attach the computer to the Direct Dock Adapter.

Align the holes on the back of the computer with the guides of the Direct Dock Adapter; then put the computer in place.

2 Dock the computer–Direct Dock Adapter assembly to the port replicator.

Align the holes on the back of the Direct Dock Adapter with the guides of the port replicator; then put the Direct Dock Adapter in place.

NOTE　**Release lever lock**

The Direct Dock Adapter has a security lock on the bottom. If you set the security lock to the locked position, the **eject** button is locked, and you cannot remove your computer from Direct Dock Adapter. Set the security lock on the Direct Dock Adapter to the locked position before you attach the computer–Direct Dock Adapter assembly to the port replicator.
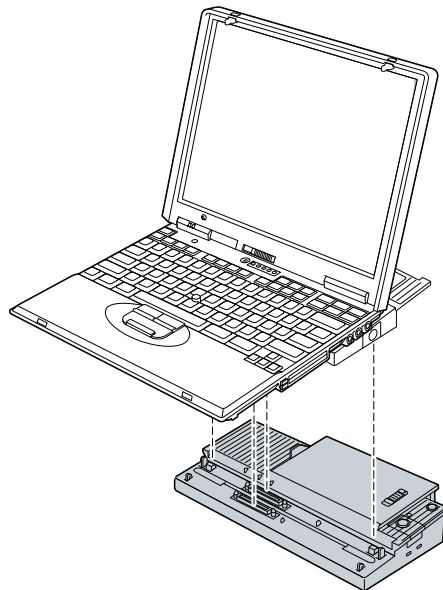
Extending features: Port Replicator with Advanced EtherJet Feature and Direct Dock Adapter
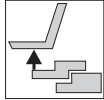
Undocking the computer from the Port Replicator with Advanced EtherJet Feature through the Direct Dock Adapter

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Attention

Do not undock your computer from the port replicator through Direct Dock Adapter by pushing the **eject** button of the port replicator or the Direct Dock Adapter while the status indicator of the port replicator is *blinking* or *on*. Wait until the status indicator turns *off*.

	Method for undocking	Condition for undocking
Hot-undocking	Click **Eject PC** from the **Start** menu. (The LCD of the computer powers off and on.)	The status indicator of the port replicator is *off*.
Warm-undocking	*Or* Press the **eject request** button on the port replicator. *Then* Wait for the condition for undocking to be satisfied.	1. The computer resumes. 2. The status indicator of the port replicator is *off*. 3. The computer reenters suspend mode.

Extending features: Port Replicator with Advanced EtherJet Feature and Direct Dock Adapter

If you are cold-undocking the computer–Direct Dock Adapter assembly from the port replicator, press the **eject** button of the port replicator until the computer–Direct Dock Adapter assembly lifts up `1` ; then remove the assembly.

To detach the computer from the Direct Dock Adapter, press the **eject** button of the Direct Dock Adapter until the computer lifts up `2` ; then remove the computer.

> **NOTE** You cannot undock the computer from Direct Dock Adapter if you have locked the security lever at the bottom of the Direct Dock Adapter ➡ page 127.

If you are hot- or warm-undocking the computer–Direct Dock Adapter assembly from the port replicator, select **Eject PC** in the **Start** menu of the Windows main screen, or press the **eject request** button of the port replicator, as described in the preceding table.

Eject request button

Indicator turns off
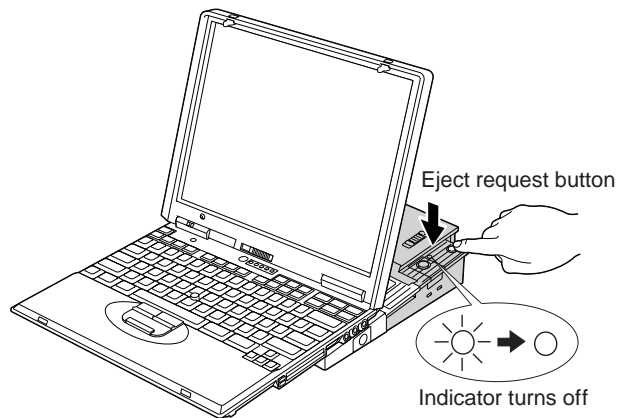
When the condition for undocking is satisfied, undock the computer, as shown on page 129.

NOTE

An eject request is made to the operating system. Considerable time might be required to complete the ejection. To verify that the ejection process has completed, click **Start**. If **Eject PC** appears, undocking is still in progress. If not, the ejection process has completed.

If the operating system rejects the request, messages appear on the screen. In this case, use cold undocking.

Security features of the Direct Dock Adapter

If you attach a mechanical lock to the port replicator, the Direct Dock Adapter's lock cannot be changed. To secure your computer, set the security lock on the Direct Dock Adapter to the locked position before you attach the Direct Dock Adapter to the port replicator.

> **NOTE**
>
> Attach the mechanical lock to the first security system lock of the Port Replicator with Advanced EtherJet Feature. For more information ➡ the manual shipped with the port replicator.
>
> You need to purchase the mechanical lock on the market. You are responsible for evaluating, selecting, and implementing the locking devices and security features.

Using your computer with the ThinkPad 560 Port Replicator through the Direct Dock Adapter

You can extend the capabilities of your computer by docking the ThinkPad 560 Port Replicator through the ThinkPad 570 Direct Dock Adapter, available as an option.

ThinkPad 560 Port Replicator
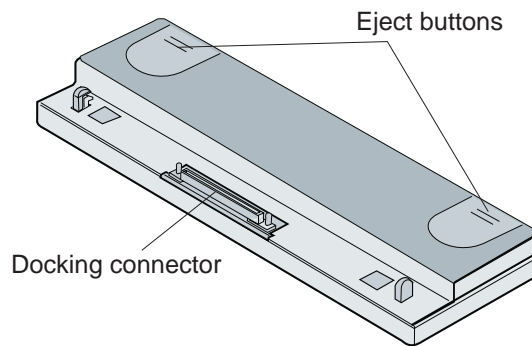
Eject buttons

Docking connector

NOTE

Do not use the same type of connector on the computer and the port replicator at the same time (except the USB connector). For example, do not use the computer's serial connector and the port replicator's serial connector at the same time.

Direct Dock Adapter

Front view

Docking connector

Eject button

Bottom view

Docking connectors

Security lock
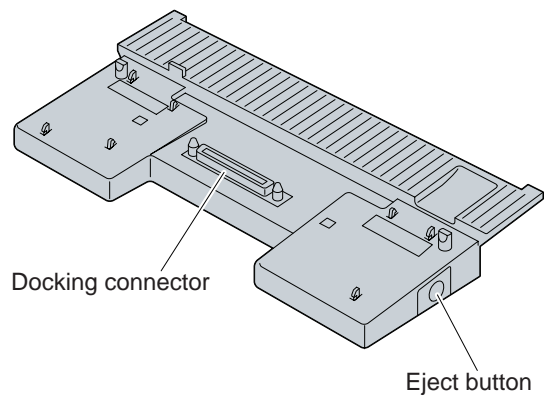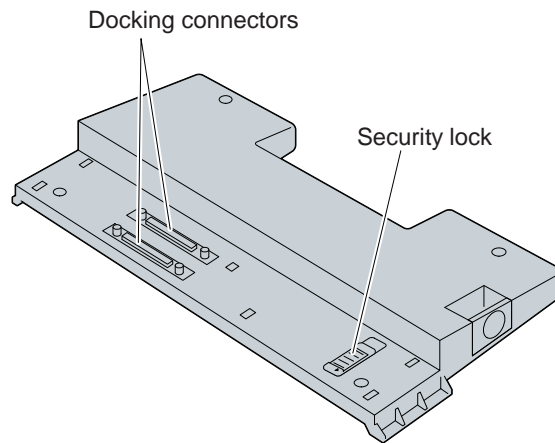
Extending features: ThinkPad 560 Port Replicator and Direct Dock Adapter

Docking to or undocking from the ThinkPad 560 Port Replicator

You can warm- or cold-dock or -undock your computer to or from the port replicator through the Direct Dock Adapter under the following conditions:

With your computer powered off (*cold docking or undocking*)

With your computer in suspend mode (*warm docking or undocking*)

NOTE

Windows 98 (APM mode) and Windows 95 (Version 2.0 or later version) support warm-docking or -undocking the computer to and from the port replicator through Direct Dock Adapter. You need to cold-dock or -undock if you use a different operating system.

Docking the computer to the ThinkPad 560 Port Replicator through the Direct Dock Adapter

To dock the computer to the port replicator through the Direct Dock Adapter, do as follows.

NOTE
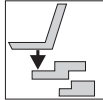
Before you attach the computer to the ThinkPad 560 Port Replicator through the Direct Dock Adapter, attach the port replicator to its own adapter as follows. Hereafter, the port replicator–adapter assembly is referred to as *port replicator*.
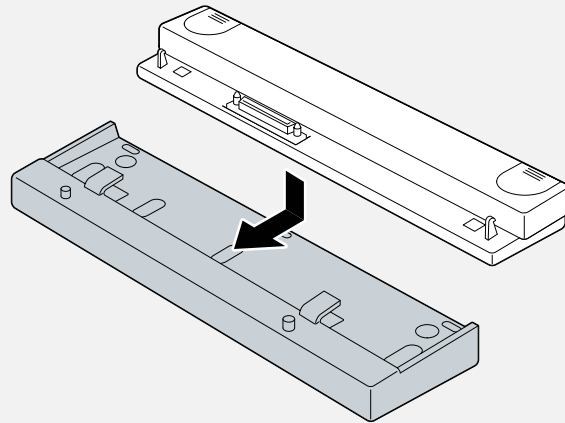
Extending features: ThinkPad 560 Port Replicator and Direct Dock Adapter

1 Attach the computer to the Direct Dock Adapter.

Align the holes on the back of the computer with the guides of the Direct Dock Adapter; then put the computer in place.

2 Dock the computer–Direct Dock Adapter assembly to the port replicator.

Align the holes on the back of the Direct Dock Adapter with the guides of the port replicator; then put the Direct Dock Adapter in place.

NOTE **Release lever lock**

The Direct Dock Adapter has a security lock on the bottom. If you set the security lock to the locked position, the **eject** button is locked, and you cannot remove your computer from the port replicator–Direct Dock Adapter assembly. Set the security lock on the Direct Dock Adapter to the locked position before you dock the computer–Direct Dock Adapter assembly to the port replicator.
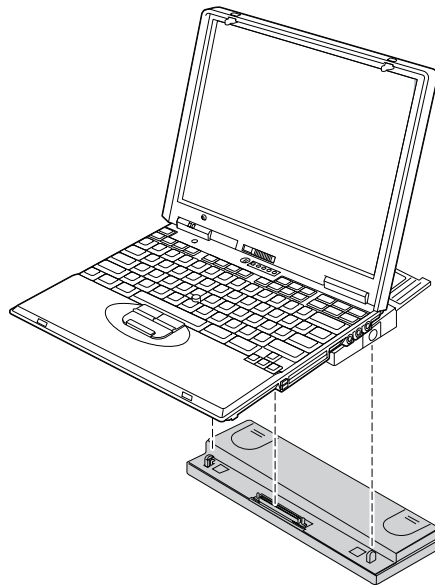
Extending features: ThinkPad 560 Port Replicator and Direct Dock Adapter
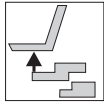
Undocking the computer from the ThinkPad 560 Port Replicator through the Direct Dock Adapter

If you are undocking the computer–Direct Dock Adapter assembly from the port replicator, press the **eject** buttons of the port replicator until the computer–Direct Dock Adapter assembly lifts up; then remove the computer.
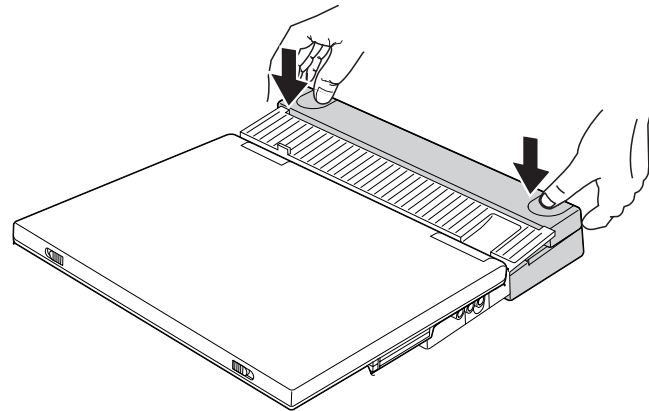
*Extending features: ThinkPad 560 Port Replicator and Direct Dock Adapter*

If you are undocking the computer from the Direct Dock Adapter–port replicator assembly, press the **eject** button of the Direct Dock Adapter until the computer lifts up; then remove the computer.
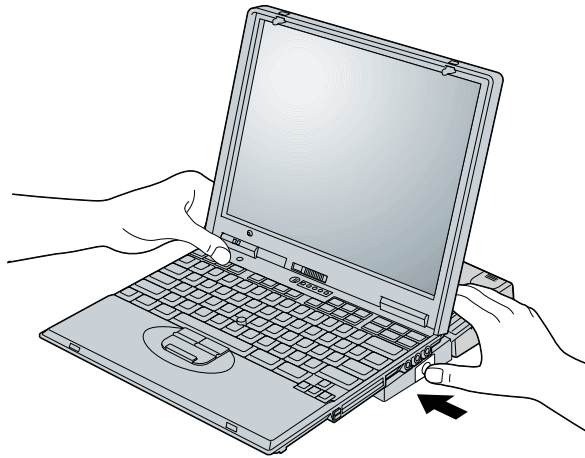
NOTE   You cannot undock the computer from the Direct Dock Adapter–port replicator assembly if you have locked the security lever at the bottom of the Direct Dock Adapter ➡ page 137.

Security features of the Direct Dock Adapter

If you attach a mechanical lock to the port replicator, the Direct Dock Adapter's lock cannot be changed. To secure your computer, set the security lock on the Direct Dock Adapter to the locked position before you attach the Direct Dock Adapter to the port replicator.

> **NOTE**
>
> Attach the mechanical lock to the security keyhole of the ThinkPad 560 Port Replicator For more information ➡ the manual shipped with the port replicator.
>
> You are responsible for evaluating, selecting, and implementing the locking devices and security features.

Using other features

Serial connector

The connector for this port is located at the back of the computer. This port can be used to connect a serial mouse, serial printer, or other serial device and to transfer data between devices.

If the serial connector is disabled, you must enable it by using the ThinkPad Configuration program. For more information about enabling the serial connector ➡ "Frequently Asked Questions" in the *Online User's Guide*.

Parallel connector

The connector for this port is located at the back of the computer. This port can be used to connect a Centronics interface printer, SCSI hard disk, or other parallel device and to transfer data between devices.

If the parallel connector is disabled, you must enable it by using the ThinkPad Configuration program. You can enable it in the same way you enable the serial connector. For more information ➡ "Frequently Asked Questions" in the *Online User's Guide*.

Universal serial bus connector

The connector for this port is located at the left side of the computer. This port can be used to connect any device that conforms to the USB interface, such as an image input device, a keyboard, a speaker, or a terminal adapter.

The USB interface supports "plug-and-play " by which you can connect or disconnect a device whenever you want without powering the computer off.

If the USB connector is disabled, you must enable it by using the Device Manager. To open the "Device Manager" window, click **Start** and move the cursor to **Settings** and **Control Panel**. Double-click **Control Panel**, and **System**. Then click the **Device Manager** tab in the "System Properties" window.

Audio features

Your computer is equipped with the following:

A ‑inch (3.5-mm) diameter external stereo line-in jack

A ‑inch (3.5-mm) diameter monaural microphone jack

A built-in microphone

A ‑inch (3.5-mm) diameter stereo headphone jack

A built-in monaural speaker

For more information ➡ *Online User's Guide*.

Modem features

Your computer is equipped with the built-in Lucent (LT) modem, which enables you to send or receive data, faxes, and voice over the telephone line.

To use the LT modem, connect one end of the telephone cable to the modem connector of your computer; then connect the other end to the telephone outlet on the wall.

> **NOTE**
> You can use the LT modem only on a public-switched telephone network (PSTN). You cannot use a private branch exchange (PBX) or some other type of digital telephone extension line.

For more information ➡ *Online User's Guide*.

Chapter 3

Protecting your computer

This chapter provides information about how to protect your computer from theft or unauthorized use.

Using passwords

The password-setting feature helps to prevent your computer from being used by others. Once you set a password, a prompt appears on the screen each time you power on the computer. You must enter your password at the prompt. You cannot use the computer unless you type the correct password.

You can set the following passwords on your computer:

Power-on password
Set the power-on password to protect your computer from use by another person. The power-on password is required both at startup and when resuming from suspend mode.

Hard-disk-drive password
The hard-disk-drive password provides an extra measure of security. Even if you set a power-on password, another user can remove the hard disk drive in your computer and put it in a different computer to access your data. If you set a hard-disk-drive password, however, another person cannot access the data on your hard disk without knowing the password. A hard-disk-drive password provides the following security features:

– You need to type the hard-disk-drive password at startup.

– If the hard disk drive is moved to another computer, the hard-disk-drive password must be typed at startup. Therefore, unauthorized users cannot access your hard disk even if the drive is removed from the computer.

– If you have not set a supervisor password, the hard-disk-drive password is required when the computer resumes from suspend mode.

– If you select the **Prompt for password when computer goes off standby** check box in the "Power Management Properties" window, you are required to use the Windows 98 logon password to resume from suspend mode.

Supervisor password
The supervisor password is a tool provided for the system administrator to control many ThinkPad computers. The supervisor password is set by the system administrator and it is not required for users. Users can start the computer without

providing the supervisor password. The supervisor password is required only to access the BIOS Setup Utility. It provides the following security features:

– If a supervisor password is set, a password prompt appears if you try to start the BIOS Setup Utility.

– The system administrator can use the supervisor password to access the computer even if you have set a power-on password. The supervisor password overrides the power-on password.

– If both the supervisor password and the power-on password are set, only the supervisor password enables you to access the following items:

  - Changing the boot sequence
  - Changing or deleting the power-on password
  - Changing or deleting the supervisor password
  - Enabling the Wake-on-LAN feature

– The supervisor password has priority over the hard-disk-drive password. The hard disk is protected by the supervisor password so that unauthorized users cannot access data on the hard disk.

– The system administrator can set the same supervisor password on many ThinkPad computers to make administration easier.

Other passwords

Some Microsoft operating systems provide special Windows passwords. Refer to that system user's guide for information on how to set, change, and use these passwords.

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 power 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 because of 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, because the same character will be entered continuously.

2 Press **Enter**.

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 power off the computer, wait 5 seconds, and then power it on again and retry.

Setting a password

To set a password, do the following:

> NOTE
>
> Though the illustrations depict only the power-on password, the procedure is the same for other passwords.
>
> A supervisor password overwrites a hard disk password.

1 Power on the computer.

2 Press **F1** while the "Press F1 for IBM BIOS Setup Utility" message is being displayed at the lower-right area of the screen.

The "IBM BIOS Setup Utility" window appears:

```
                        IBM BIOS Setup Utility


    ▸ Config
    ▸ Date/Time
    ▸ Password
    ▸ Startup
    ▸ Restart


      Build ID                  XXXXXXXX
      BIOS Date                 01/01/99
      System-unit serial number    XXXXXXXXXXXXXX
      System board serial number XXXXXXXXXXX
      CPU Type                  Pentium(R) II processor
      CPU Speed                 300 MHz
      UUID                      00000000-0000-0000-0000-000000000000


    F1      Help↓ ↑ Select Item  Space/-  Change Values  F9   Setup Defaults
    F3/ESC  Exit↔   Select Menu  Enter    Select  Sub-Menu  F10 Save and Exit
```

3 Using the up or down arrow key, select **Password**. The item you selected appears in reverse video.

4 Press **Enter**.

The password selection window appears:

```
                        IBM BIOS Setup Utility

   ┌─────────────────────────────────────────┬──────────────────────┐
   │              Password                    │  Item Specific Help  │
   ├─────────────────────────────────────────┼──────────────────────┤
   │                                          │                      │
   │  Set Power On Password    [Enter]        │ Set Power On Password│
   │  Set Hard Disk 1 Password [Enter]        │                      │
   │  Set Hard Disk 2 Password [Enter]        │                      │
   │  Set Supervisor Password  [Enter]        │                      │
   │                                          │                      │
   │                                          │                      │
   │                                          │                      │
   │                                          │                      │
   │                                          │                      │
   │                                          │                      │
   └─────────────────────────────────────────┴──────────────────────┘
   F1      Help↓ ↑ Select Item  Space/- Change Values   F9  Setup Defaults
   F3/ESC  Exit↔    Select Menu  Enter   Select  Sub-Menu  F10 Save and Exit
```

5 Using the up or down arrow key, select the password that you want to set. The item you selected appears in reverse video.

6 Press **Enter**.

The password setup window appears:

```
                        IBM BIOS Setup Utility

┌──────────────────────────────────────┬──────────────────────┐
│              Password                 │   Item Specific Help │
├──────────────────────────────────────┼──────────────────────┤
│ Set Power On Password      [Enter]    │ Set Power On Password│
│ Set Hard Disk 1 Password   [Enter]    │                      │
│ Set Hard Disk 2 Password   [Enter]    │                      │
│ Set Supervisor                        │                      │
│        ┌───────────────────────────┐  │                      │
│        │   Set Power On Password   │  │                      │
│        │                           │  │                      │
│        │ Enter New Password   [    ]│  │                     │
│        │ Comfirm New Password [    ]│  │                     │
│        └───────────────────────────┘  │                      │
│                                        │                      │
│                                        │                      │
│                                        │                      │
└────────────────────────────────────────────────────────────┘
                       Enter  Accept
                       F3/ESC Exit
```
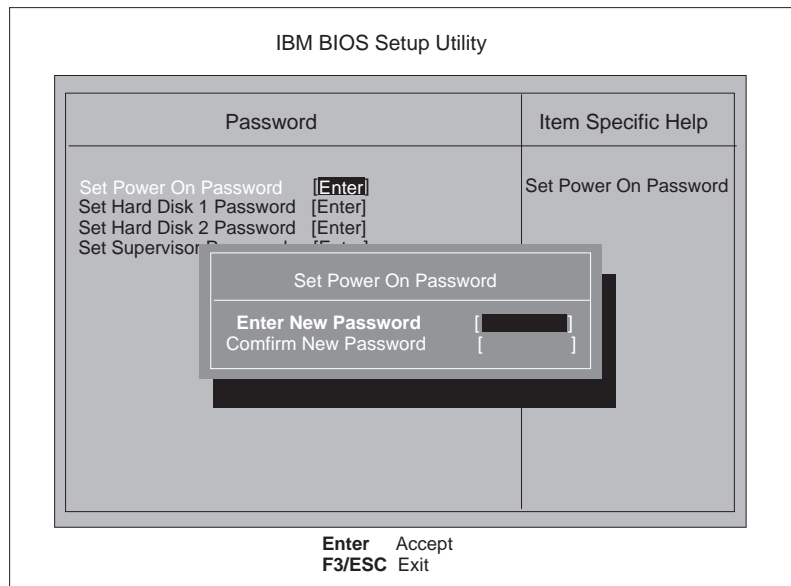
7 Type the password; then press **Enter**.

NOTE

You can type a maximum of seven 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 character.

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

8 Type the password again to confirm it; then press **Enter**.

The "Setup Notice" message appears:

```
                IBM BIOS Setup Utility

   ┌──────────────────────────────────┬─────────────────────┐
   │           Password               │  Item Specific Help │
   ├──────────────────────────────────┼─────────────────────┤
   │ Set Power On Password    [Enter] │ Set Power On Password│
   │ Set Hard Disk 1 Password [Enter] │                     │
   │ Set Hard Disk 2 Password [Enter] │                     │
   │ Set Superviso                    │                     │
   │          ┌───────────────────────┐                     │
   │          │      Setup Notice      │                    │
   │          │  Changes have been saved. │                 │
   │          │      [ Continue ]      │                    │
   │          └───────────────────────┘                     │
   │                                                         │
   └─────────────────────────────────────────────────────────┘
```
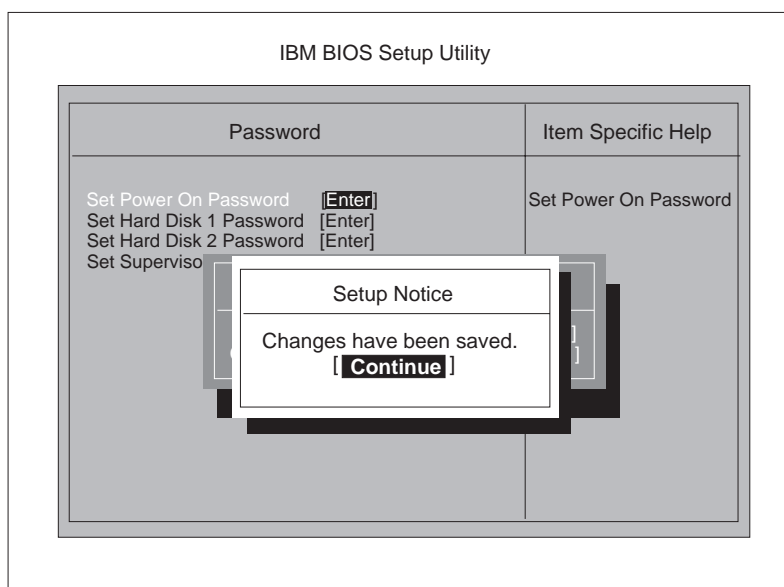
9 Press **Enter**.

> **NOTE**
> If you are setting a supervisor password, the "Setup Warning" message appears, warning that the supervisor password overwrites the hard disk password. Press **Enter**.

10 Press the **F10** key.

The "Setup Configuration" message appears.

11 Press **Enter**.

You are prompted for the password.

12 Type the password.

The computer starts. Your password is set.

Do not forget your password

If you forget your hard-disk-drive 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 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 reseller nor IBM marketing representative can make the hard disk drive usable.

Changing or removing a password

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

NOTE
Though the illustrations depict only the power-on password, the procedure is the same for other passwords.

1 Power off the computer and wait at least 5 seconds; then power on the computer.

2 Press **F1** while the "Press F1 for IBM BIOS Setup Utility" message is being displayed at the lower-right area of the screen.

If you have set a supervisor password, the password prompt appears.

3 Type your current password; then press **Enter**.

The "IBM BIOS Setup Utility" window appears:

```
                        IBM BIOS Setup Utility


   ▸ Config
   ▸ Date/Time
   ▸ Password
   ▸ Startup
   ▸ Restart


     Build ID                    XXXXXXXX
     BIOS Date                   01/01/99
     System-unit serial number   XXXXXXXXXXXXXX
     System board serial number XXXXXXXXXXX
     CPU Type                    Pentium(R) II processor
     CPU Speed                   300 MHz
     UUID                        00000000-0000-0000-0000-000000000000


    F1      Help↓↑ Select Item   Space/- Change Values   F9  Setup Defaults
    F3/ESC  Exit↔   Select Menu   Enter   Select Sub-Menu F10 Save and Exit
```

4 Using the up or down arrow key, select **Password**. The item you selected appears in reverse video.

5 Press **Enter**.

The password selection window appears:

```
                       IBM BIOS Setup Utility


  ┌──────────────────────────────────────────┬─────────────────────────┐
  │              Password                     │    Item Specific Help   │
  ├──────────────────────────────────────────┼─────────────────────────┤
  │  Set Power On Password    [Enter]         │  Set Power On Password  │
  │  Set Hard Disk 1 Password [Enter]         │                         │
  │  Set Hard Disk 2 Password [Enter]         │                         │
  │  Set Supervisor Password  [Enter]         │                         │
  │                                           │                         │
  │                                           │                         │
  │                                           │                         │
  │                                           │                         │
  │                                           │                         │
  │                                           │                         │
  └──────────────────────────────────────────┴─────────────────────────┘
    F1      Help↓ ↑ Select Item   Space/- Change Values   F9  Setup Defaults
    F3/ESC  Exit↔   Select Menu   Enter   Select  Sub-Menu F10 Save and Exit
```
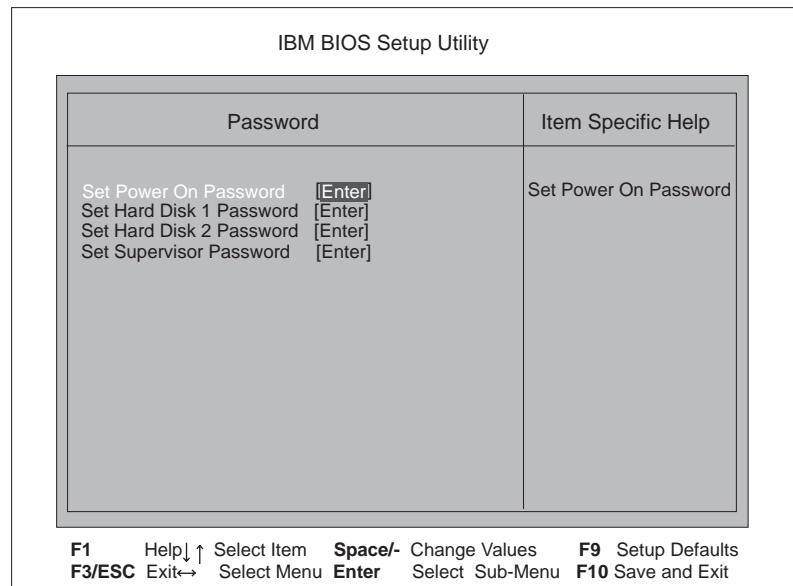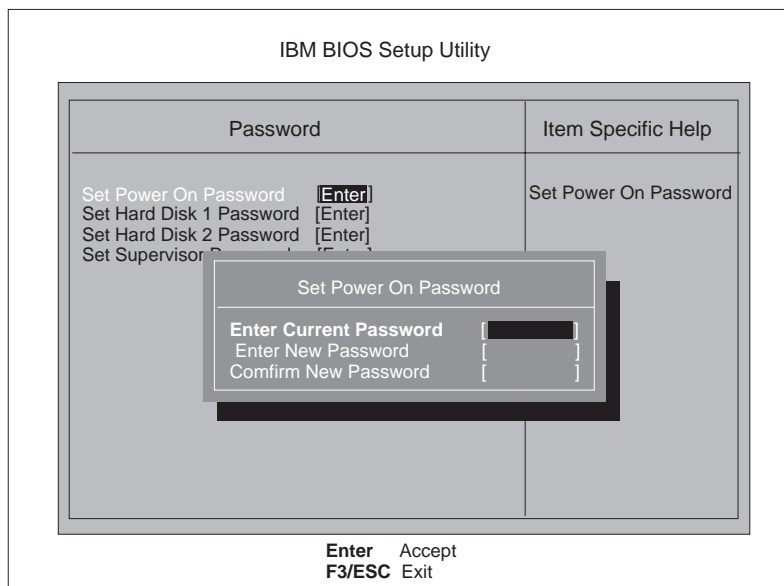
6 Using the up or down arrow key, select the password that you want to change or remove. The item you selected appears in reverse video.

7 Press **Enter**.

The password setup window appears:

```
                     IBM BIOS Setup Utility

    ┌──────────────────────────────────┬──────────────────────┐
    │           Password               │  Item Specific Help  │
    ├──────────────────────────────────┼──────────────────────┤
    │  Set Power On Password   [Enter] │  Set Power On Password│
    │  Set Hard Disk 1 Password [Enter]│                      │
    │  Set Hard Disk 2 Password [Enter]│                      │
    │  Set Supervisor                  │                      │
    │        ┌─────────────────────────────────┐              │
    │        │     Set Power On Password       │              │
    │        │                                 │              │
    │        │ Enter Current Password  [     ] │              │
    │        │  Enter New Password     [     ] │              │
    │        │ Comfirm New Password    [     ] │              │
    │        └─────────────────────────────────┘              │
    │                                  │                      │
    │                                  │                      │
    ├──────────────────────────────────┴──────────────────────┤
    │              Enter   Accept                              │
    │              F3/ESC  Exit                                │
    └─────────────────────────────────────────────────────────┘
```

8 Type the current password; then press **Enter**.

If you want to change the password,

   a Type the new password; then press **Enter**.
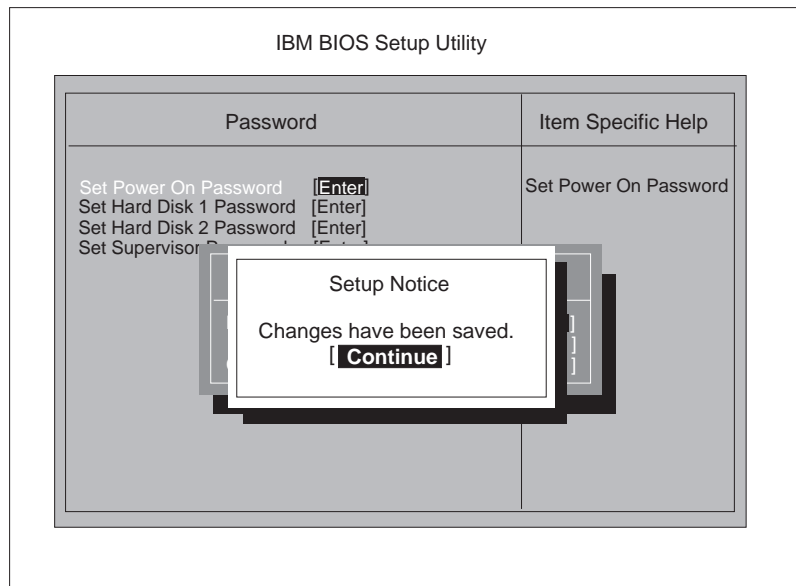   **b** Type the new password; then press **Enter** again.

NOTE   If you are changing the supervisor password, the "Setup Warning" massage appears, warning that the supervisor password overwrites the hard disk password. Press **Enter**.

If you want to remove the password, type nothing in the blank for the new password lines below, just press **Enter** twice.

9 Press **Enter**.

The "Setup Notice" message appears:

```
                    IBM BIOS Setup Utility

    ┌─────────────────────────────────┬──────────────────────┐
    │              Password            │   Item Specific Help  │
    ├─────────────────────────────────┼──────────────────────┤
    │ Set Power On Password    [Enter] │  Set Power On Password│
    │ Set Hard Disk 1 Password [Enter] │                       │
    │ Set Hard Disk 2 Password [Enter] │                       │
    │ Set Supervisor                   │                       │
    │            ┌─────────────────────────────┐              │
    │            │        Setup Notice         │              │
    │            │  Changes have been saved.   │              │
    │            │       [ Continue ]          │              │
    │            └─────────────────────────────┘              │
    │                                  │                       │
    │                                  │                       │
    └─────────────────────────────────┴──────────────────────┘
```

10 Press **Enter**.

The password has been changed or removed.

Using locks

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

Attach a mechanical lock to the keyhole of the computer; then secure the chain on the lock to a stationary object. Refer to the instructions shipped with the mechanical lock. For information on the keyhole location ➡ page 4.
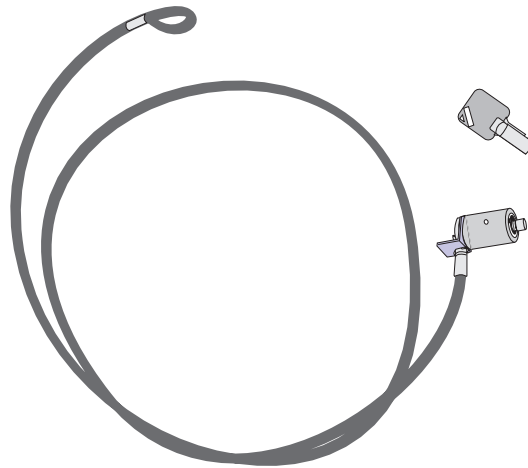
NOTE You are responsible for evaluating, selecting, and implementing the locking devices and security features. IBM makes no comments, judgments, or warranties about the function, quality, or performance of locking devices and security features.

If you attach an option, such as ThinkPad 570 UltraBase or port replicator, to your computer ➡ "Extending the features of your computer with the ThinkPad 570 UltraBase and port replicators" on page 84.

Using the security screw

You can use the security screw shipped with your computer to prevent devices, such as a hard disk drive, from being removed easily.

Security screw

To replace the coin screw with the security screw, do as follows:

1 Power off the computer; then disconnect the AC Adapter and all cables from the computer.

2 Remove the screw with a coin; then install the security screw and tighten it with a 2.5-mm allen wrench.

3 Connect the AC Adapter; then power on the computer.

Using the security screw

Chapter 4

Solving computer problems

Hints and tips

This section provides hints and tips, as well as information on limitations.

For Windows 98:

In Windows 98, it takes longer to enter suspend mode and resume normal operation than it does in Windows 95. This performance difference is a result of Windows 98, not the ThinkPad features.

For more information about Windows 98, see the following Web site:
http://www.ibm.com/thinkpad

See the following site for technical support:
http://www.pc.ibm.com/support

Three power management modes are available: **standby mode**, **suspend mode**, and **hibernation mode**. You can enter these modes as follows:

– **Fn + F3**   standby mode
– **Fn + F4**   suspend mode
– **Fn + F12**   hibernation mode

The computer also enters suspend mode or hibernation mode from other triggers. For example, if you select **Stand by** in the **Shut Down...** menu when you click the **Start** button at the bottom left of the Windows 98 screen, you can enter suspend mode. Also, you can set the **system standby timer** in the "Power Management Properties" window to specify a timeout for entering suspend mode.

> **NOTE**
>
> **The term *standby* in the Windows 98 window has a different meaning from the term *standby mode* in this book.**

For more information ➡ *Online User's Guide*.

WIN 95

For Windows 95:

If you are using the Intel USB camera and the system resumes from suspend mode, the USB camera is disabled. To enable it, unplug it and plug it in again.

Because of the CD-ROM or DVD-ROM drive property settings, your computer might not enter suspend mode or hibernation mode after the end of a timeout period specified in the ThinkPad Configuration program when the drive is installed in UltraslimBay. If you want to use suspend mode and hibernation mode, change the properties of the CD-ROM or DVD-ROM drive as follows:

1. Click **Start** and move the cursor to **Settings** and **Control Panel**. Then click **Control Panel**.
2. Double-click **System**.
3. Click the **Device Manager** tab, and double-click **CD-ROM**.
4. Click the CD-ROM or DVD-ROM drive name under **CD-ROM**; then click the **Properties** button.
5. Click the **Settings** tab and clear the **Auto insert notification** check box in **Options**.
6. Click **OK** to restart the computer.

WIN NT

For Windows NT:

For Windows NT 4.0, hibernation is not supported if the drive is formatted by NTFS.

For more information, refer to the following Web site:
http://www.pc.ibm.com/support

If you insert a PC Card into the PC Card slot, there might be an **X** mark in the list of the card information in the "PC Card [PCMCIA] Device" window in the Control Panel. The **X** does not affect any function, however.

DOS

For DOS:

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

1. Click **Start**; then click the **DOS Prompt** icon.

The DOS prompt window appears.

2. Type `PS2 ?` at the DOS prompt.

   The "ThinkPad Configuration" online help window appears:

```
C:\>PS2 ?

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   US Government Users Restricted Rights - Use, duplication
   or disclosure restricted by GSA ADP Schedule Contract
   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
```

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 POwer 5                    > Nul
PS2 SPeed Fixed Slow          > Nul
PS2 IR Disable                > Nul
```

Using power management

Suppose you activate the alarm action as follows:

Notification: Display message.
Power level: When the alarm goes off, the computer will **Standby**.

Now if your computer enters suspend or hibernation mode when the battery is low before the alarm message appears, you see the message when the computer resumes. To resume normal operation, press **OK**.

Note: You can set the alarm action as follows:

1. Start the ThinkPad Configuration program.

2. Click **Power Management**.

3. Click the **Alarm** tab.

4. Select the **Low Battery Alarm** check box, the **Critical Low Battery Alarm** check box, or both.

5. Set the percentage of the power level.

6. Click the **Alarm Action...** button. You can set the alarm action in the next window.

Using the USB connector

If your computer tries to enter suspend mode and the request is rejected, the device in the USB connector might be disabled. If this occurs, do a hot-unplug-and-plug operation for the USB device.

Using the DVD-ROM drive

Do not switch the display mode from the LCD to the external monitor while viewing a DVD with video content, such as a DVD movie or business presentation. You need to change the display mode before you open an MPEG file to play.

Using a PC Card

If you are communicating with a PC Card modem or inserting a PC Card in a PC Card slot, do not enter your computer into suspend mode, enter into hibernation mode, or click on **Stand by** in the "Shut Down Window" window.

> **Note:** If you want to enter your computer into suspend mode, first stop the PC Card in the "PC Card (PCMCIA) Properties" window as follows:
>
> 1. Click **Start**, move the cursor to **Settings**, and click **Control Panel**.
> 2. Double-click **PC Card (PCMCIA)**.
> 3. From the list, select the card you are stopping.
> 4. Click the **Stop** button.

If you remove a communication PC Card from the PC Card slot and then reinsert it later, it might not work correctly. You need to restart your computer.

If you install a PC Card after removing an IDE device of the UltraslimBay (detaching the ThinkPad 570 UltraBase), and then later reinsert the device, the card might lose its resource name for working. A secondary master IDE device always uses IRQ 15, but after the IDE device is replaced with a diskette drive, IRQ 15 is free, and Windows 95 or Windows 98 assigns it to a new PC Card. But IRQ 15 must be taken over with IDE2 when an IDE device is reinserted.

A CardWorks consideration

If you disabled the PCIC controller and then later reenabled it in the Device Manager, correct the CONFIG.SYS file as follows before you run CardWorks:

1. Click **Start**.

2. Move the cursor over **Programs**; then click **MS-DOS Prompt**.

3. At the command prompt, type `cd..` and press **Enter**.

4. Type `edit config.sys` and press **Enter**.

5. On each line where it occurs in the file, remove the following phrase:
   ```
   REM - by PC Card (PCMCIA) wizard -
   ```
   Do not remove the rest of the line.

6. Save the updated CONFIG.SYS file.

7. Restart the system.

Using a second CardBus Card

If a CardBus Card is already configured in your computer, you must configure a second CardBus manually by using the Device Manager. To get to the Device Manager, click the **System** icon in the Control Panel.

Using a microphone

If you are using a microphone with your computer, use a condenser microphone. Some microphones need a battery. See the instructions that come with the microphone.

The microphone jack supports a self-battery-powered condenser microphone.

If you wish to use an electrically powered condenser microphone and provide power to it from your computer, refer to the specifications provided by the microphone manufacturer to determine if the connector is suitable.

Troubleshooting guide

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

If a beep sounds, if a message appears, or if a function-related problem occurs:

1 Find your symptom from the table and try solving the problem.
→ "Troubleshooting charts" on page 167.

2 If you can't solve the problem, run the test and make sure the hardware and the device drivers are OK.
→ "PC Doctor" on page 36.

3 Note the error code and have the computer serviced.
→ "Getting Service" in the *Online User's Guide.*

If you accidentally lose or damage software in your computer:

Recover it by using either the Software Selections CD, Software Selections, or Recovery CD.
→ "Using the Software Selections CD" on page 9, "Using the Software Selections program on the hard disk" on page 11, and "Using the Recovery CD for Windows 98, Windows 95, or Windows NT" on page 12.

Troubleshooting charts

If your computer has an error, it typically 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 your problem, go to the page indicated and do the specified action. The troubleshooting charts address problems in general, and some descriptions might not apply to your particular computer or suit your situation. Compare the features or options of your computer with this book or the shipping checklist.
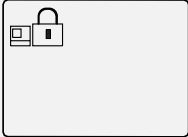
Error codes or messages

Note: In the charts, *x* can be any character.
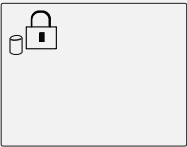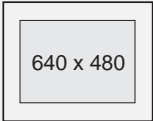
Message	Cause and action
0200 (hard disk error)	The hard disk is not working. Make sure the hard disk drive is attached firmly. Run the BIOS Setup Utility; then make sure the hard disk drive is properly identified.
021*x* (keyboard error)	Make sure that no object is placed on the keyboard or on the external 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: – Power off the computer and disconnect the external keyboard; then power 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 using the PC Doctor. – If the computer stops during the test, have the computer serviced.
0220 (monitor type error)	The monitor type does not match the CMOS. Run the BIOS Setup Utility to verify the configuration.
0230 (shadow RAM error)	The shadow RAM failed. Test your computer's memory with the PC Doctor. If you have increased memory just before powering the computer on, reinstall the DIMM. Then test the memory with the PC Doctor.
0231 (system RAM error)	The system RAM failed. Test your computer's memory with the PC Doctor. If you have increased memory just before powering the computer on, reinstall the DIMM. Then test the memory with the PC Doctor.
0232 (extended RAM error)	The extended RAM failed. Test your computer's memory with the PC Doctor. If you have increased memory just before powering the computer on, reinstall the DIMM. Then test the memory with the PC Doctor.
0250 (system battery error)	The system battery is dead. Replace the battery and run the BIOS Setup Utility to verify the configuration. If you still have a problem, have the computer serviced.
0251 (system CMOS checksum bad)	The system CMOS might have been corrupted by an application program. The computer uses the default settings. Run the BIOS Setup Utility to reconfigure the settings. If you still have a problem, have the computer serviced.

Message	Cause and action
0252 (password checksum bad)	The password you have set is cleared. Run the BIOS Setup Utility to set the password.
0260 (system timer error)	Have the computer serviced.
0270 (real time clock error)	Have the computer serviced.
0271 (date and time error)	Neither the date nor the time is set in the computer. Set the date and time using the BIOS Setup Utility.
0280 (previous boot incomplete)	Your computer was previously unable to complete the boot process. Power the computer off; then power it on to start the BIOS Setup Utility. Verify the configuration and then restart the computer by using the **Exit Saving Changes** option under the **Restart** item or by pressing **PF10**. If you still have a problem, have the computer serviced.
02D0 (system cache error)	The cache is disabled. Have the computer serviced.
02F4 (EISA CMOS not writeable)	Have the computer serviced.
02F5 (DMA test failed)	Have the computer serviced.
02F6 (software NMI failed)	Have the computer serviced.
02F7 (fail-safe timer NMI failed)	Have the computer serviced.
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 147). If the power-on password is not accepted, a supervisor password might have been set. Type the supervisor password and press **Enter**. If you still have a problem, have the computer serviced.

Troubleshooting charts

Message	Cause and action
The hard disk password prompt	A hard disk password is set. Type the correct password and press **Enter** to use the computer (see page 147).
	If you still have a problem, have the computer serviced.
The DOS full-screen looks smaller. 640 x 480	If 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 other DOS applications. To expand the screen image to the same size as the actual screen, start the ThinkPad Configuration program and click **LCD** ( ); then select the **Screen expansion** function. (The image might still look slightly distorted.)
	Note: You can use the **Fn**+**F8** keys to do the same thing if your computer has screen expansion function.
Critical low-battery error	The computer powered 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.
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.
Unsupported port replicator error	The attached port replicator is not supported.
Operating system not found.	Verify the following: The hard disk drive is correctly installed. A bootable diskette is in the diskette drive
	If you still have a problem, check the boot sequence using the BIOS Setup Utility.

No error codes or messages

Problem	Cause and action
The screen is blank and you do not hear any beeps. **Note:** If you are not sure whether you heard any beeps, power off the computer; then power it on again, and listen again. If you are using an external monitor, go to "External monitor problems" on page 189.	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 147). 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, 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 hear a continuous beep, or two or more beeps.	Have the computer serviced.
Only the cursor appears.	Reinstall your operating system, and power on the computer. If you still have a problem, have the computer serviced.

Input problems

Problem	Cause and action
The cursor does not move after the computer awakens from one of the power management modes.	Make sure you followed the instructions in the *Online User's Guide* correctly when you installed Windows with the Advanced Power Management (APM) option.

Troubleshooting charts

Problem	Cause and action

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 does not work. This is not a defect.
	If an external numeric keypad or a mouse is connected:
	  1. Power off the computer.
	  2. Remove the external numeric keypad or the mouse.
	  3. Power 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 mouse.
	
	If you still have a problem, have the computer serviced.

The cursor drifts when the computer is powered on or after it resumes normal operation.	The cursor might drift when you are not using the TrackPoint during normal operation. This is a normal characteristic of the TrackPoint and is not a defect. Cursor drifting might occur for several seconds under the following conditions:
	
	  When the computer is powered on.
	  When the computer resumes normal operation.
	  When the TrackPoint is pressed for a long time.
	  When the temperature changes.

The cursor does not work for a while after the settings in the "TrackPoint Properties" window have been changed.	This is a normal characteristic of the cursor. Wait several seconds until the cursor returns to the normal state.
The mouse or pointing device does not work.	Make sure that the pointing-device cable is enabled in the ThinkPad Configuration program. Make sure that the mouse or pointing-device cable is securely connected to the computer. Try using the TrackPoint. If the TrackPoint works, the error might be due to the mouse. If your mouse is incompatible with the IBM PS/2 mouse, disable the TrackPoint using the ThinkPad Configuration program. **Note:** See the manual supplied with the mouse for more information.
The mouse buttons do not work.	Change the mouse driver to **Standard PS/2 Port Mouse**, and then reinstall **PS/2 TrackPoint**. See the *Online User's Guide* for how to install the driver.
The scrolling or magnifying glass function does not work.	See the **General** tab page in "Mouse Properties," and make sure that the **PS/2 TrackPoint** driver is installed.
A number appears when you type a letter.	The numeric lock function is on. To disable it, press and hold **Shift**; then press **NumLk**.

Problem	Cause and action
All or some keys on the external numeric keypad do not work.	Make sure that the external numeric keypad is correctly connected to the computer.
All or some keys on the external keyboard do not work.	To use an external keyboard, you need to attach the keyboard/mouse cable to the computer. Make sure that: The keyboard/mouse cable is correctly connected to the computer. The keyboard cable is connected to the correct side of the keyboard/mouse cable. If these items are correct, disconnect the keyboard/mouse cable from the computer and make sure that the operation of the system keyboard is correct. If the system keyboard works, have the keyboard/mouse cable or the external keyboard serviced.

Suspend or hibernation problems

Problem	Cause and 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.
The computer enters suspend mode immediately after POST (the suspend indicator 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.
The `critical low-battery error` appears, and the computer immediately powers off.	The battery power is getting low. Connect the AC Adapter to the computer, or replace the battery pack with a fully charged one.
The LCD is blank after resuming.	Check if an external monitor was disconnected while the computer was in 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 output is not displayed. This restriction does not depend on the resolution value.**

Troubleshooting charts

Problem	Cause and action
The computer does not return from suspend mode, or the suspend indicator 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**.
When you are using the port replicator, resuming normal operation from hibernation or suspend mode takes a long time.	This is not the problem. If you have not connected the network cable, the computer queries the Ethernet until the timeout timer is reached. Connect the network cable if you want to use the Ethernet. If you are not using the network, disable the Ethernet port as follows: **For Windows 98:** 1. Double-click the **System** icon in the **Control Panel**. 2. Click the **Device Manager** tab. 3. Double-click **Network Adapter**. 4. Double-click **Intel EtherExpress PRO PCI Adapter**. 5. Select the **Disable in this hardware profile** check box. 6. Click **OK**. 7. Close all windows. 8. Restart the computer. **For Windows NT:** 1. Double-click the **System** icon in the **Control Panel**. 2. Select **Intel EtherExpress PRO Adapter** and click **Startup...** 3. Select **Disabled**. 4. Click **OK**. 5. Click **Close**. 6. Close all windows. 7. Restart the computer by powering it off and on again.
Your computer does not enter suspend or hibernation mode.	Check if the any option has been selected to disable your computer from entering suspend or hibernation mode. For more information ➡ *Online User's Guide*.

Problem	Cause and action

The computer does not enter suspend mode as set by the timer under Windows 98 or Windows NT.	**For Windows 98:**
	The Windows 98 generic CD-ROM or DVD-ROM driver accesses the internal CD-ROM drive or DVD-ROM drive every 3 seconds to see if a CD-ROM is inserted in the CD-ROM drive or DVD-ROM drive. This prevents your computer from entering suspend mode even after a timeout.
	
	To prevent this from occurring, do the following:
	
	1. Click **Start**.
	2. Move the cursor to **Settings** and **Control Panel**.
	3. Click **Control Panel**, and then double-click **System**.
	4. Click the **Device Manager** tab.
	5. Click the + mark of **CD-ROM**.
	6. Double-click the CD-ROM or DVD-ROM name.
	7. Click the **Setting** tab.
	8. Clear the **Auto insert notification** check box.
	
	Windows 98 no longer detects the CD-ROM or DVD-ROM insertion automatically.
	
	For Windows NT:
	The computer does not enter suspend mode through the timer if you enable the CD-ROM AutoRun feature. To enable the timer in this situation, edit the configuration information in the registry as follows:
	
	`HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Cdrom\`
	
	`Autorun:  x1 → Autorun:`

Troubleshooting charts

Problem	Cause and action
The computer does not enter hibernation mode with the **Fn**+**F12** key combination.	Enable hibernation mode as follows: **For Windows 98:** 1. Start the ThinkPad Configuration program. 2. Click **Power Management** ( ). 3. Click the **Hibernation** tab. 4. Click the **Enable hibernation...** button. 5. Click the **Create Now** button. The computer cannot enter hibernation mode if 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 disable 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. If you format your hard disk with NTFS, the Windows NT default format, you cannot use hibernation mode. 1. Start the ThinkPad Configuration program. 2. Click **Power Management** ( ). 3. Click **Suspend/Resume Options** ( ). 4. Click **Enable Hibernation**. 5. Click **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 disable the PC Card slot using the **Control Panel**.

LCD problems

Problem	Cause and action
The screen is unreadable or distorted.	Make sure that: The display device driver is installed correctly. The display resolution and color depth are correctly set. The monitor type is correct. To check these settings, do as follows: **For Windows 98:** 1. Click **Start**. 2. Move the cursor to **Settings** and **Control Panel**. 3. Click **Control Panel**, and then double-click **Display**. 4. Click the **Settings** tab. 5. Check if the color depth and resolution are correctly set. 6. Click **Advanced...** 7. Click the **Adapter** tab. Make sure "NeoMagic MagicMedia 256AV" is shown in the adapter information window. 8. Click the **Monitor** tab. Make sure the information is correct. **For Windows NT:** 1. Click **Start**. 2. Move the cursor to **Settings** and **Control Panel**. 3. Click **Control Panel**, and then double-click **Display**. 4. Click the **Settings** tab. 5. Check if the color depth and resolution are correctly set. 6. Click **Display Type...** Make sure "NeoMagic MagicMedia 256AV" is shown in the "Display Type" window. 7. Click **OK**. 8. Click the **Test** button in the "Settings" window. Make sure the output is displayed correctly.
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 power off your computer; then power it on again.
Missing, discolored, or bright dots appear on the screen every time you power on your computer.	This is an intrinsic characteristic of the TFT technology. Your computer's display contains multiple thin-film transistors (TFTs). A small number of missing, discolored, or bright dots on the screen might exist all the time.

An indicator problem

Problem	Cause and 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 go on, replace the battery pack or have the computer serviced.

Battery problems

Problem	Cause and action
The battery pack cannot be fully charged in 3.5 hours by the power-off charging method.	The battery pack might be over-discharged. Do the following: 1. Power 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.	Discharge and recharge the battery pack.
The operating time for a fully charged battery pack is short.	Discharge and recharge the battery pack. 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. Power off the computer for 1 minute to reset this function; then power it on again.
The battery pack cannot be charged.	The battery pack might not be able to charged when it is hot. In that case, remove it from the computer and leave it at room temperature for a while. After it cools down, reinstall it and recharge it. If it still cannot be charged, have it serviced.

A hard-disk-drive problem

Problem	Cause and action
The hard disk drive makes an intermittent rattling noise.	The rattling noise might be heard when: The hard disk drive starts accessing the data or when it stops. You are carrying the hard disk drive. You are carrying your computer. This is a normal characteristic of a hard disk drive and is not a defect.

CD-ROM drive problems

Problem	Cause and action
The CD-ROM drive does not work.	Make sure that: The computer is powered on and a compact disc is properly loaded on the center pivot of the CD-ROM drive. (You should hear a click.) The CD-ROM drive connector is firmly connected to the computer. If you use an option that has the bay to install a CD-ROM drive, make sure the option is firmly connected to the computer and works appropriately. The CD-ROM drive tray is firmly closed. The device drivers are correctly installed.
You hear a noise from the CD-ROM drive when the compact disc is spinning.	The CD-ROM drive cover might be bent. Have the CD-ROM drive serviced.
The CD-ROM tray does not open even if you press the CD-ROM eject button.	Insert a pin into the CD-ROM emergency eject hole and eject the CD-ROM tray.
A compact disc cannot be read.	Make sure that: The compact disc is not dirty. If it is, clean it with a CD-ROM cleaner kit. The compact disc is not defective. If it is, try another compact disc. The compact disc is placed in the tray with the label side up. (You should hear a click.) The compact disc format conforms with one of the following: – Music CD – CD-ROM or CD-ROM XA – Multisession photo CD – Video CD

DVD-ROM drive problems

Problem	Cause and action
The DVD-ROM does not work.	Make sure that: The computer is powered on and a DVD or a compact disc is properly loaded on the center pivot of the DVD-ROM drive. (You should hear a click.) The DVD-ROM drive connector is firmly connected to the computer. If you use an option that has the bay to install a DVD-ROM drive, make sure that option is firmly connected to the computer and works appropriately. The DVD-ROM drive tray is firmly closed. The device drivers are correctly installed.
You hear a noise from the DVD-ROM drive when the DVD is spinning.	The DVD-ROM drive cover might be bent. Have the DVD-ROM drive serviced.
The DVD tray does not open even if you press the DVD eject button.	Insert a pin into the DVD emergency eject hole and eject the DVD tray.
The DVD cannot be read.	Make sure that: The DVD is not dirty. If it is, clean it. The DVD is not defective. If it is, try another DVD. The DVD is loaded on the center pivot of the DVD-ROM drive with the label side up. (You should hear a click.) The DVD format conforms with one of the following: – Music CD – CD-ROM or CD-ROM XA – Multisession photo CD – Video CD – DVD-ROM (DVD-video)

Infrared communication problems

Problem	Cause and 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. No objects are between the computer and the communicating device. The distance and angle between your computer and the device is within the specified range. You are not operating under direct sunlight. The infrared port is directly facing the other communication port. The communication application running on your computer is compatible with that running on the other computer. Refer to the application manuals for more information.
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.
You cannot use DMA channels for both the parallel connector and the infrared port.	If you enable ECP and choose DMA3 (the default value) for the parallel connector, you might be prompted if you want to disable DMA for the infrared port. To use DMA channels for both the parallel and infrared ports, do the following: 1. Click **OK** to disable DMA for the infrared port. 2. Close a parallel port panel. 3. Click the **Infrared device** button to open the infrared panel. 4. Choose DMA0 or DMA1 for the infrared port on the panel. 5. If you see the panel prompting if you want to disable DMA for an audio device, click **OK**.

Audio or telephony problems

Problem	Cause and action
The voice quality over the Voice-Over-Data communication is poor.	Due to limitations of the ThinkPad modem, the voice quality that is transmitted and received over the Voice-Over-Data communication is not as good as with a normal telephone line. There might be momentary voice discontinuities, delays, or distortions.
Wave or MIDI sound does not play correctly.	Make sure the built-in audio device is configured correctly. **For Windows 95 and Windows 98:** 1. Click **Start**. 2. Move the cursor to **Settings** and **Control Panel**. 3. Click **Control Panel**, and then double-click **System**. 4. Click the **Device Manager** tab. 5. Click the **+** mark of **Sound, video and game controllers**. 6. Make sure the following devices are all enabled and configured correctly: Crystal Sound Fusion PCI audio Accelerator Crystal Sound Fusion Joystick Crystal Sound Fusion Game Device
Other problems.	Problems might be due to such other factors as: The telephone cable configuration is not correct for your application. The telephone cable is defective. The telephone is defective. The audio cable configuration is not correct for your application. The audio cable is defective. The audio equipment is defective.

A universal serial bus (USB) problem

Problem	Cause and action
A device connected to the USB connector does not work.	Do the following: 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 the computer resource assignment and device driver installation are correct. **Note:** To open the "Device Manager" window, click **Start** and move the cursor to **Settings** and **Control Panel**. Double-click **Control Panel**, and **System**. Then click the **Device Manager** tab in the "System Properties" window. Refer to "PC Doctor" on page 36 and run the PC Doctor for a diagnostic test of the USB connector.

PC Card or built-in modem problems

Problem	Cause and action
Your modem application does not work with the ThinkPad modem.	Make sure that the internal modem port is enabled by opening the "Device Manager" window and running the **Modem Wizard** or by opening the ThinkPad Configuration program and doing as follows: 1. Click **Start**. 2. Move the cursor to **Programs** and **ThinkPad**; then click **ThinkPad Configuration**. 3. Click **Internal Modem** ( ). 4. Select **Enable**. 5. Click **OK**. If the modem does not work correctly, see "Resolving System Resource Conflicts" in the *Online User's Guide*. If the modem works correctly, set the following modem settings by doing the following: 1. Click **Start**. 2. Move the cursor to **Settings** and **Control Panel**. 3. Click **Control Panel**, and then double-click **Modem**. **LT Win Modem** is highlighted. 4. Click **Properties**, *not* **Dialing Properties**. 5. Click the **Connection** tab. 6. Clear the **Wait for dial tone before dialing** check box. 7. Click **Advanced**. 8. Clear the **Use error control** check box. 9. Select the **Use flow control** check box, and make sure that **Hardware (RTS/CTS)** is selected. 10. Click **OK** to close the window. 11. Click **OK** and return to the "Modem Properties" window. 12. Click **Dialing Properties**, fill in all boxes, and click either **Tone dialing** or **Pulse dialing**. **Note:** Most telephones today use tone dialing, where each button produces a different tone, instead of pulse dialing. 13. Click **OK**. 14. Click **Close** to close the window. 15. Close all active windows. Run your modem application again.

Problem	Cause and action
Your modem application does not work in the Windows 95 environment.	Make sure that: The modem is connected correctly. The ! mark is to the left of the **LT Win Modem** in the "Device Manager" window. If the ! mark is there, there might be a system resource conflict with the other port.
Your PC Card modem does not work.	Make sure that the infrared port is disabled and the modem is set up correctly by following the instructions in this book or manuals shipped with your PC Card modem.

Other PC Card problems

Problem	Cause and 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 User's Guide*. 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 **PC Card Slots** and the **Allocated Resources** tab in the ThinkPad Configuration program.
A system resource conflict occurred when a PC Card was used.	See "Resolving System Resource Conflicts" in the *Online User's Guide*.

Troubleshooting charts

Problem	Cause and action
PC Card support software does not recognize your PC Card.	Make sure that:
	If the PC Card is not a modem, an ATA, a Flash, or an SRAM card, you have the proper client device driver for the card. In Windows 95, the PC Card must have an INF file associated with it.
	Your PC Card supports PCMCIA Release 2.0, 2.01, or 2.10. Refer to the manual that came with your PC Card. If your PC Card does not support PCMCIA Release 2.0, 2.01, or 2.10, you cannot use PC Card Director. Contact your PC Card supplier.
	Your PC Card is working by following the diagnostic instructions for your PC Card, if any.
The PC Card is recognized by PC Card support software, but the "Not Ready" or "Not Configured" message is shown.	Make sure that:
	The PC Card enabler is installed. Refer to the manuals supplied with your PC Card.
	If the PC Card is not a modem, an ATA, a Flash, or an SRAM card, you have the proper client device driver for the card. In Windows 95, the PC Card must have an INF file associated with it.
	The resources for the PC Card are correctly reserved. Refer to "Resolving System Resource Conflicts" in the *Online User's Guide*.
The system cannot start from the PC Card.	Make sure that the correct system resources are being used for the PC Card.
	RPL (Token Ring): IRQ 9 Memory: X'D0000'–X'D3FFF' I/O: X'A20'–X'A23'
The PC Card is installed and configured, but it does not work.	**Modem card**: Make sure all settings in the "Modem Control" panel and in your communication application correspond and are correct.
	SCSI card: Make sure the correct driver for the SCSI card is installed.
	Note: SCSI cards can be inserted while you are operating your computer; however, it is recommended that you insert them at boot time.
	Network card: Make sure all network components are correctly installed.
	Combo card: Make sure the correct driver for the Combo card is installed. Restart the system, and then insert the Combo card.

Problem	Cause and action
The computer is disconnected from the network when it attempts to access using a PC Card on battery operation.	Your computer limits the processor speed on battery operation to save battery life; however, some network cards do not allow processor control. Do as follows: 1. Click **Start**. 2. Move the cursor to **Settings**; then click **Control Panel**. 3. Double-click the **ThinkPad Configuration** icon. 4. Click **Power Management**. The "Power Management Properties" window appears. 5. Click the **Power Mode** tab. 6. Make sure **Battery** is selected in the **Power Source** list box. If it is not, select **Battery**. 7. Click the **Customized** radio button. 8. Select **Maximize** in the **Processor speed** list box under **Setting details**. 9. Click **OK** to apply the changes.

Port replicator problems

Problem	Cause and action
The MIDI connector on the port replicator does not work.	To enable the MIDI connector of the port replicator, use the ThinkPad Configuration program. Make sure that the MIDI connector is enabled by doing the following: 1. Start the ThinkPad Configuration program. 2. Click **MIDI/Joystick Port**. 3. Confirm that the MIDI connector is enabled. If not, click **Enable**; then click **OK**. 4. Close the ThinkPad Configuration program and restart the computer. **Note:** When you restart the computer, you might need to install the MIDI driver. Follow the instructions on the screen and install the device driver for your computer's operating system.

The computer hangs when you power on or resume operation.	Make sure that:
	
	  The AC Adapter is connected to the port replicator or docking station by following the instructions described in this book.
	  The power-on indicator of the port replicator or docking station is on.
	  The computer is securely attached to the port replicator, or the computer and the port replicator are securely attached to the docking station.
	
	If there is still a problem, refer to the manuals shipped with the port replicator and docking station.

Troubleshooting charts

Problem	Cause and action

The PC Card installed in a port replicator is not recognized and the PC Card slots are unusable.	Make sure that:
	
	    The AC Adapter is connected to the port replicator.
	    The power-on indicator of the port replicator is on.
	    The computer is securely attached to the port replicator.
	
	This problem might happen when you reinstall Windows 98, or when you initialize the system with the BIOS Setup Utility.

PC Cards in the Port Replicator with Advanced EtherJet Feature cannot be recognized after you warm-dock your computer to the port replicator under Windows 95. PC Card modems, SCSI cards, ATA cards, 3Com Combo Cards, or CardBus Cards in the Port Replicator with Advanced EtherJet Feature do not work after the computer resumes from a power management mode under Windows 95.	1. Start Windows 95 2. Insert the Software Selections CD into the CD-ROM or DVD-ROM drive. 3. At the DOS prompt, type: `COPY src_cd:\DATA\WIN95\cc\W95UPD\PCI.VXD C:\WINDOWS\SYSTEM` and press **Enter**. You are prompted if it is okay to overwrite the file. 4. Type `Y` and press **Enter**. **Notes:** 1. `src_cd` is the drive letter of the CD-ROM or DVD-ROM drive. 2. `cc` is the respective country code as follows: | **Denmark**	DK	**Netherlands**	NL
Finland	FL	**Norway**	NO
France	FR	**Spain**	SP
Germany	GR	**Sweden**	SW
Italy	IT	**United States**	US
Japan	JP			
The system restarts when you insert the PC Card into the Port Replicator with Advanced EtherJet Feature under Windows 95.	1. Start Windows 95 2. Insert the Software Selections CD into the CD-ROM or DVD-ROM drive. 3. Click **Start** and move the cursor to **Program**; then click **Windows Explorer**. 4. Click the drive letter of the CD-ROM or DVD-ROM drive. 5. Double-click **PCMCIA.REG** under `DATA\WIN95\cc\W95UPD` 6. Click **OK**. **Note:** `cc` is the respective country code. For details, refer to the "Cause and action" description for the previous problem.

A printer problem

Problem	Cause and action
The printer does not work.	Make sure that: The parallel port is enabled. 1. Click **Start**. 2. Move the cursor to **Programs** and **ThinkPad**; then click **ThinkPad Configuration**. 3. Click **Parallel Port** ( ). 4. Select **Enable**. 5. Click **OK**. The printer is powered 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	Cause and 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. Refer to the manual shipped with the external monitor to check the resolutions and refresh rates that are supported.
	4. Start the ThinkPad Configuration program.
	5. Select one of the **Display Device** buttons on the toolbar in the ThinkPad Configuration program:
	    If the external monitor supports the same resolution as or a higher resolution than the LCD, click **CRT Display Only** or **Both LCD and CRT Display**.
	    If the external monitor supports a lower resolution than the LCD, click **CRT Display Only**. (If you click the **Both LCD and CRT Display**, the external monitor screen will be blank or distorted.)

Troubleshooting charts

Problem	Cause and action

You cannot set a higher resolution than the present one on your external monitor.	Make sure that:
	
	The display driver is installed correctly by doing the following:
	
	For Windows 98:
	1. Click **Start**.
	2. Move the cursor to **Settings** and **Control Panel**.
	3. Click **Control Panel**, and then double-click **Display**.
	4. Click the **Settings** tab.
	5. Click **Advanced...**
	6. Click the **Adapter** tab.
	   Make sure that "NeoMagic MagicMedia 256AV" is shown in the adapter information window.
	7. Click **OK**.
	   If you are not sure that the display driver is installed correctly, reinstall it.
	
	For Windows NT:
	1. Click **Start**.
	2. Move the cursor to **Settings** and **Control Panel**.
	3. Click **Control Panel**, and then double-click **Display**.
	4. Click the **Settings** tab.
	5. Click **Display Type...**
	   Make sure that "NeoMagic MagicMedia 256AV" is shown in the "Display Type" window.
	6. Click **OK**.
	   If you are not sure that the display driver is installed correctly, reinstall it.
	
	(Continued on the next page.)

Problem	Cause and action
You cannot set a higher resolution than the present one on your external monitor.	(Continued from the previous page.) Make sure that: An appropriate monitor type is selected by doing the following: **For Windows 98:** 1. Click **Start**. 2. Move the cursor to **Settings** and **Control Panel**. 3. Click **Control Panel**, and then double-click **Display**. 4. Click the **Settings** tab. 5. Click **Advanced...** 6. Click the **Adapter** tab. Make sure the appropriate monitor type is shown in the monitor information window. If the monitor type is correct, click **OK** to close the window; otherwise do as follows: 7. Click **Change...** The "Update Device Driver Wizard" appears. 8. Click **Next**, and follow the instructions on the screen by selecting **Display a list of all the drivers in a specific location, so you can select the driver you want**, and then **Show all hardware**. 9. Select **Manufacturers** and **Models** for your monitor, and follow the instructions on the screen. 10. Click **OK** to close the "Properties" window after updating the driver. 11. Set **Colors** and **Screen area** in the "Display Properties" window. 12. Click **OK**. **For Windows NT:** 1. Click **Start**. 2. Move the cursor to **Settings** and **Control Panel**. 3. Click **Control Panel**, and then double-click **Display**. 4. Click the **Settings** tab. 5. Click **Display Type...** 6. Click **Change...** The "Change Display" window appears. Make sure the appropriate manufacturer and the monitor type are selected. If they are correct, click **OK** and skip to step 9; otherwise, do as follows: 7. Select an appropriate manufacturer and monitor model. 8. Click **OK**. 9. Click the **Test** button in the "Settings" window. Make sure the test screen is displayed on the external monitor. 10. Click **OK**.

Problem	Cause and action
The screen is unreadable or distorted.	Make sure that: The display driver is installed correctly. (Refer to the "Cause and action" of setting a higher resolution on the external monitor on page 190.) An appropriate monitor type is selected. (Refer to the "Cause and action" of setting a higher resolution on the external monitor on page 191.) An appropriate refresh rate is selected by doing the following (for Windows 98): 1. Click **Advanced...** in the **Settings** tab in the "Display Properties" window. 2. Click the **Adapter** tab. 3. Select the correct refresh rate for your monitor. If you are not sure, select **Optimal**. 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	Cause and 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 according 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.

Problem	Cause and action
An IBM option that used to work no longer works.	Make sure that: The option is securely connected to your computer. The option passes its own test. If the option came with its own test instructions, use those instructions to test the option. There is no system resource conflict (➡ "Resolving System Resource Conflicts" in the *Online User's Guide*). If these items are correct and the test program did not find the problem, have the computer and option serviced.
The serial connector does not work.	Make sure that the serial connector is enabled by doing the following: **For Windows 98:** 1. Start the ThinkPad Configuration program. 2. Click **Serial Port** ( ). 3. Select **Enable**. 4. Click **Device Manager**. 5. Check the ports in the "Device Manager" window and make sure the settings are correct. 6. Click **OK**. **For Windows NT:** 1. Start the ThinkPad Configuration program. 2. Click **Serial Port** ( ). 3. Select **Enable**; then select **COM1**, **COM2**, **COM3**, or **COM4**. 4. Click **OK**.

Software problems

Problem	Cause and 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 ➡ *Online User's Guide*. 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 a service representative for help.
The main window bitmap in the ThinkPad Configuration program is distorted (Windows NT only).	Installing the **Active Desktop**, bundled with Internet Explorer Version 4.0 on Windows NT, might cause this problem. Do one of the following: Uninstall the **Active Desktop**. (Merely disabling the **Active Desktop** is not effective to avoid the problem.) Close the ThinkPad Configuration program and start it again. (This is a temporary recovery.)

Other problems

Problem	Cause and action
The computer locks or does not accept any input.	Your computer might lock when it enters suspend mode during a communication operation. Disable the suspend timer when you are working on the network. To power off the computer, press the power shutdown switch using the tip of a ballpoint pen.
The computer does not power off with the power switch.	If the suspend indicator 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 power shutdown switch using the tip of a ballpoint pen.
The computer does not start from a diskette.	Make sure that the startup sequence in the BIOS Setup Utility is set so that the computer starts from the diskette drive (see "BIOS Setup Utility" on page 21).

Appendix A. Features and specifications

This appendix describes features and specifications for the computer.

Features

Processor

Intel   Mobile Pentium   II processor

Memory

Built-in: 64 MB
Maximum: 192 MB

Storage devices

2.5-inch hard disk drive

Display

The color display uses TFT technology

Up to 1024-by-768 resolution on the 13.3-inch LCD
Up to 800-by-600 resolution on the 12.1-inch LCD
Up to 1280-by-1024 resolution on an external monitor
Brightness control

Keyboard

84-key, 85-key, or 89-key
TrackPoint
Fn key function

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 (IEEE 1284A)

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 jack (supports a condenser microphone with the type of connector that is shown circled in the following illustration)

Line-in jack

Infrared port

Universal serial bus (USB) connector

Telephone connector

Specifications

Size

Width: 300 mm (11.8 in.)
Depth: 240 mm (9.5 in.)
Height:
– 12.1-inch LCD model: 26.65 mm (1.0 in.)
– 13.3-inch LCD model: 27.95 mm (1.1 in.)

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 (operating) at 2438 m (8,000 ft) through 3048 m (10,000 ft): 31.3°C (88° F)

Heat output

56 W (191 BTUs/hour) maximum

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: 2.8 AH

IBM power cords

Attention

Using an improper power cord might cause severe damage to your computer.

To use the AC Adapter outside the country where you purchased your computer, you need an ac power cord that is certified for the country or region you are visiting. You can purchase one through an IBM authorized reseller or IBM marketing representative in that country or region.

NOTE

The grounded adapter is required for full MPRII compliance. If a 3-pin power cord came with your computer ➡ "Safety information" on page xiii.

For 2-pin power cords:

IBM power cord part number	Used in these countries or regions
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, Malaysia, Nigeria, Oman, People's Republic of China (including Hong Kong), Qatar, Singapore, United Kingdom
13H5270	Austria, Bosnia-Herzogovina, Belgium, Bulgaria, Chile, Croatia, Czech Republic, Denmark, Egypt, Finland, France, Germany, Greece, Hungary, Iceland, Indonesia, Israel, Italy, Macedonia, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Yugoslavia
13H5273	Japan
13H5276	Argentina, Australia, New Zealand, Papua New Guinea, Paraguay, Uruguay
13H5279	Bangladesh, Pakistan, South Africa, Sri Lanka

For 3-pin power cords:

IBM power cord part number	Used in these countries or regions
02K0539	People's Republic of China (other than Hong Kong)
76H3514	Argentina, Australia, New Zealand, Papua New Guinea, Paraguay, Uruguay
76H3516	Aruba, Bahamas, Barbados, Bermuda, Bolivia, Brazil, Canada, Cayman Islands, Colombia, Costa Rica, Curacao, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Korea (South), Liberia, Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Saudi Arabia, Suriname, Taiwan, Thailand, Trinidad (West Indies), United States of America, Venezuela
76H3518	Austria, Belgium, Bosnia-Herzogovina, Bulgaria, Croatia, Czech Republic, Egypt, Finland, France, Germany, Greece, Hungary, Iceland, Indonesia, Macao, Macedonia, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Turkey, Yugoslavia
76H3520	Denmark
76H3522	Bangladesh, Myanmar, Pakistan, South Africa, Sri Lanka
76H3524	Abu Dhabi, Albania, Antigua, Bahrain, Brunei, Dubai, Fiji, Hong Kong, India, Ireland, Kenya, Kuwait, Malaysia, Nigeria, Oman, Qatar, Singapore, United Kingdom
76H3528	Liechtenstein, Switzerland
76H3530	Chile, Ethiopia, Italy, Libya
76H3532	Israel
76H3535	Korea

IBM power cords

Appendix B. Product warranty 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 570 and the Battery Pack
>
> **Warranty period*:** Three Years, One Year on the Battery Pack
>
> **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.

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Product warranty

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
   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.

Notices

References in this publication to IBM products, programs, or services do not imply that IBM intends to make these available in all countries in which IBM operates. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any of the intellectual property rights of IBM may be used instead of the IBM product, program, or service. The evaluation and verification of operation in conjunction with other products, except those expressly designated by IBM, are the responsibility of the user.

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Year 2000 readiness and instructions

This is a Year 2000 Readiness Disclosure.

A product is Year 2000 Ready if the product, when used in accordance with its associated documentation, is capable of correctly processing, providing and/or receiving date data within and between the 20th and 21st centuries, provided all other products (for example, software, hardware, and firmware) used with the product properly exchange date data with it.

This IBM PC hardware product has been designed to process four-digit date information correctly within and between the 20th and 21st centuries. If your IBM computer is on when the century changes, you should turn it off and then back on again once, or restart the operating system, to ensure that the internal clock resets itself for the new century.

This IBM PC product cannot prevent errors that might occur if software you use or exchange data with is not ready for the Year 2000. IBM software that comes with this product is Year 2000 Ready. However, software from other companies might come with this IBM PC product. IBM cannot take responsibility for the

readiness of that software. You should contact the software developers directly if you wish to verify readiness, understand limitations, or look for any software updates.

To learn more about IBM PC products and the Year 2000, visit our Web site at http://www.pc.ibm.com/year2000. The information and tools there can help you with your Year 2000 transition plan, especially if you have multiple IBM PCs. IBM encourages you to check periodically for updated information.

Trademarks

The following terms are trademarks of the IBM Corporation in the United States or other countries or both:

IBM	ThinkPad
PS/2	TrackPoint
RediSafe	

Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States and/or other countries.

ActionMedia, LANDesk, MMX, Pentium, and ProShare are trademarks of Intel Corporation in the United States and/or other countries. (For a complete list of Intel trademarks, see http://www.intel.com/tradmarx.htm)

Other company, product, or service names may be the trademarks or service marks of others.

Electronic emission notices

Federal Communications Commission (FCC) Statement

ThinkPad 570, model number 2644

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

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Industry Canada Class B Emission Compliance Statement
This Class B digital apparatus complies with Canadian ICES-003.

Avis de conformité à la réglementation d'Industrie Canada
Cet appareil numérique de la classe B est conform à la norme NMB-003 du Canada.

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

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.

Telecommunication notices

Federal Communications Commission (FCC) and Telephone Company Requirements (Part 68 of the FCC Rules)

1. The Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device to send any message via a telephone fax machine unless such message clearly contains in a margin at the top or bottom of each transmitted page or on the first page of the transmission, the date and time it is sent, and an identification of the business or other entity, or other individual sending the message and the telephone number of the sending machine or such business, other entity, or individual.

   In order to program this information into your computer, you should be sure to follow the installation instructions for your fax software package.

2. The built-in modem is built into the ThinkPad computer. It complies with Part 68 of the FCC Rules. A label is affixed to the bottom of the computer that contains, among other things, the FCC registration number, USOC, and Ringer Equivalency Number (REN) for this equipment. If these numbers are requested, look at the label and provide this information to your telephone company.

3. The REN is useful to determine the quantity of devices you may connect to your telephone line and still have those devices ring when your number is called. In most, but not all, areas, the sum of the RENs of all devices should not exceed five (5.0). To be certain of the number of devices you may connect to your line, as determined by the REN (REN:0.7), you should call your local telephone company to determine the maximum REN for your calling area.

4. If the built-in modem causes harm to the telephone network, the telephone company may discontinue your service temporarily. If possible, they will notify you in advance. But, if advance notice isn't practical, you will be notified as soon as possible. You will be advised of your right to file a complaint with the FCC.

5. Your telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the proper operation of your equipment. If they do, you will be given advance notice so as to give you an opportunity to maintain uninterrupted service.

6. If you experience trouble with this built-in modem, contact your IBM Authorized Seller, or the IBM Corporation, 500 Columbus Avenue, Thornwood, NY 10594, 1-800-772-2227, for repair/warranty information. The telephone company may ask you to disconnect this equipment from the network until the problem has been corrected, or until you are sure the equipment is not malfunctioning.

7. No customer repairs are possible to the modem. If you experience trouble with this equipment, contact your Authorized Seller or the IBM Corporation for information.

8. The modem may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs. Contact your state public utility commission or corporation commission for information.

9. When ordering network interface (NI) service from the Local Exchange Carrier, specify service arrangement USOC RJ11C.

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Fax Branding

The Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device, including fax machines, to send any message unless such message clearly contains in a margin at the top of or bottom of each transmitted page or on the first page of the transmission, the date and time it is sent and an identification of the business or other entity, or other individual sending the message and the telephone number of the sending machine or such business, other entity, or individual. (The telephone number provided may not be a 900 number or any other number for which charges exceed local or long-distance transmission charges.)

In order to program this information into your fax machine, follow the setup instructions for **RingCentral**.

Industry Canada requirements

Notice

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications networks protective, operational, and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of communication. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs of alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

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

Caution

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

The **Ringer Equivalent Number** (REN:0.3) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Number of all the devices does not exceed 5.

Avis

L'étiquette du ministère de l'Industrie Canada identifie le matériel homologué. Cette étiquette certifie que le matériel est conforme à certaines normes de protection, d'exploitation et de sécurité des réseaux de télécommunications. Le Ministère n'assure toutefois pas que le matériel fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer ce matériel, l'utilisateur doit s'assurer qu'il est permis de le raccorder aux installations de l'entreprise locale de télécommunication. Le matériel doit également être installé en suivant une méthode acceptée de raccordement. Dans certains cas, les fils intérieurs de l'entreprise utilisés pour un service individuel à ligne unique peuvent être prolongés au moyen d'un dispositif homologué de raccordement (cordon prolongateur téléphonique interne). L'abonné ne doit pas oublier qu'il est possible que la conformité aux conditions énoncées ci-dessus n'empechent pas la dégradation du service dans certaines situations. Actuellement, les entreprises de

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télécommunication ne permettent pas que l'on raccorde leur matériel à des jacks d'abonné, sauf dans les cas précis prévus par les tarifs paticuliers de ces entreprises.

Les réparations de matériel homologué doivent être effectuées par un centre d'entretien canadien autorisé désigné par le fournisseur. La compagnie de télécommunications peut demander à l'utilisateur de débrancher un appareil à la suite de réparations ou de modifications effectuées par l'utilisateur ou à cause de mauvais fonctionnement.

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

Avertissement

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

L'indice de charge (IC) assigné à chaque dispositif terminal indique (REN:0.3), pour éviter toute surcharge, le pourcentage de la charge totale qui peut être raccordée à un circuit téléphonique bouclé utilisé par ce dispositif. La terminaison du circuit bouclé peut être constituée de n'importe quelle combinaison de dispositifs, pourvu que la somme des indices de charge de l'ensemble des dispositifs ne dépasse pas 5.

Patent protection notice

The following notice applies to machines equipped with DVD and TV out function:

> This device is protected by U.S. patent numbers 4631603, 4577216, 4819098, 4907093 and other intellectual property rights. The use of Macrovision's copy protection technology in the device must be authorized by Macrovision and is intended for home and other limited pay-per-view use only, unless otherwise authorized in writing by Macrovision. Reverse engineering or disassembly is prohibited.

Notice for Australia

The following notice applies when using the telephony functions:

> FOR SAFETY REASONS, ONLY CONNECT AUSTEL PERMITTED OR CERTIFIED EQUIPMENT.

Notice for European Union countries

The built-in modem equipment has been approved to Council Decision 98/482/EC - (TBR 21) for pan-European single terminal connection to the Public Switched Telephone Network (PSTN). However, due to differences between the individual PSTNs provided in different countries, the approval does not, of itself, give an unconditional assurance of successful problems; you should contact your equipment supplier in the first instance.

Setting the RingCentral application for New Zealand

The RingCentral program allows you to set the number of rings for incoming messages before the call is answered.

You can set the value by selecting **Options**, **Answering**, and then **Ring Options** from the RingCentral menu.

The values x and y in the following fields must be between 2 and 5:

> **Answer after x rings if there are new messages.**
> **Answer after y rings if there are no new messages.**

Using the 56-Kbps modem in New Zealand

The high speeds (up to 56 Kbps) at which this modem is capable of operating depend on a specific network implementation which is only one of many ways of delivering high-quality voice telephony to customers. Failure of the modem to operate at a high speed should not be reported as a fault, unless ordinary voice telephone calls are substandard.

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