



ThinkPad 700 PS/2 Quick Reference

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Important

Before using this information and the product it supports, be sure to read the general information under Appendix B, "Product Warranties and Notices" on page B-1.

First Edition (September 1992)

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About This Book

This book contains the information necessary for you to operate the IBM ThinkPad 700 PS/2 computer. This book consists of the following chapters and appendixes:



Chapter 1, “Getting To Know Your Computer” provides general information about your computer and the diskettes that you can use.



Chapter 2, “Operating Your Computer” provides the information necessary to operate your computer and also explains how to install and remove IBM options.



Chapter 3, “Using Your System Programs” explains the system programs and how to use them.



Chapter 4, “Solving Computer Problems” provides information on how you can detect and resolve computer problems.

Appendix A, “Features and Specifications” describes the features and specifications associated with your computer, the power cords, and the diskettes.

Appendix B, “Product Warranties and Notices” contains the warranty statements of your computer and notices for this manual.

Related Publications

- *Getting Started*

This book provides information on the basic setup of your computer with or without options.

- *Reference Summary*

This small booklet provides a summary of information necessary to use the computer while traveling away from the office or home.

- *Battery Operation Guide*

This pamphlet provides information necessary to use the computer with the battery pack.

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Electronic Emission Notices

Federal Communications Commission (FCC) Statement

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

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

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Canadian Department of Communications compliance statement

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

Avis de conformité aux normes du ministère des Communications du Canada

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

CAUTION:

The lithium battery called Backup Battery (3V, 190 mAh, UL** recognized component or equivalent) which is not customer-replaceable and contains less than 500 mg of lithium, 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) recharge, repair, or disassemble. Dispose of it as required by your company's safety procedures or local procedures.

CAUTION:

The rechargeable battery called Standby Battery which is not customer-replaceable, contains a small amount of nickel and cadmium. Do not disassemble it, incinerate it, or short-circuit it. Dispose of it as required by your company's safety procedures or local procedures.

CAUTION:

The fluorescent lamp which is located in the liquid crystal display (LCD) contains a small amount of mercury. Dispose of it as required by your company's safety procedures or local procedures.

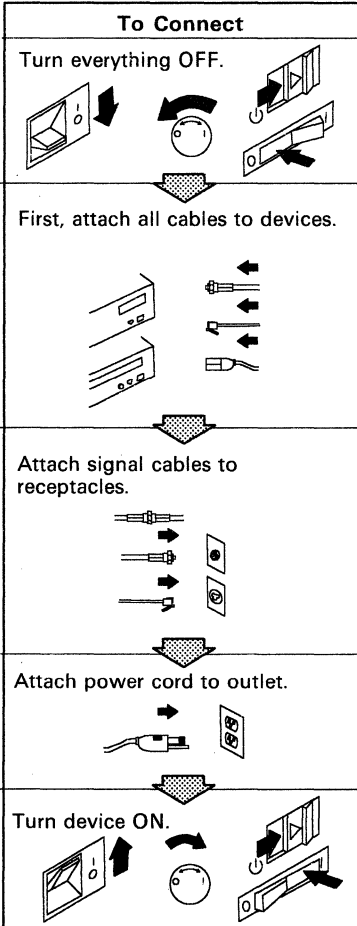
** UL is a Trademark of the Underwriters Laboratories Inc.

Electrical Safety Notice

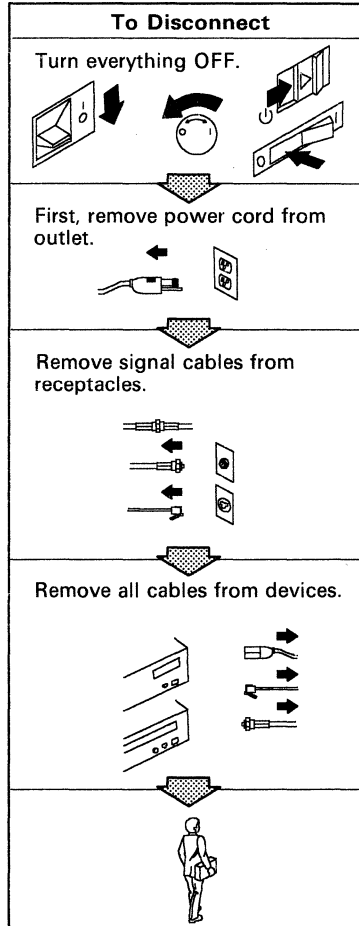


DANGER:

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 power cord must be used with a properly-grounded outlet.



Note: In the U.K., by law, the telephone cable must be connected after the power cord.



Note: In the U.K., by law, the power cord must be disconnected after the telephone line cable.

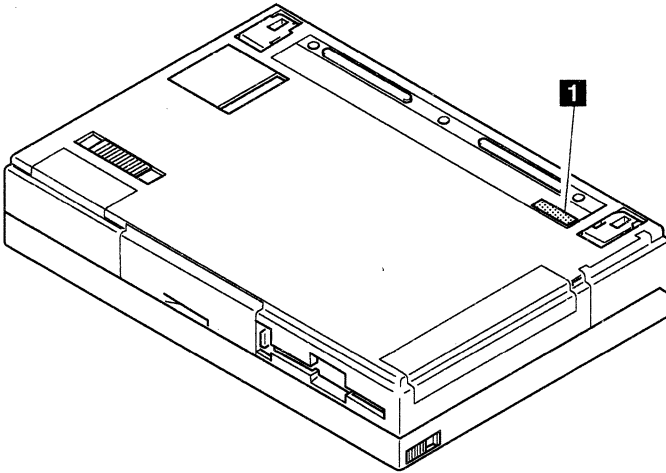
Record of Identification Numbers

The following information is needed for obtaining repair services.

IBM Product Name	IBM ThinkPad 700 PS/2
Machine Type	_____
Serial Number	_____

The machine type and serial number **1** are located on the bottom of the computer as shown.

- The machine type has a prefix of **Type**.
- The serial number has a prefix of **S/N**.





Chapter 1. Getting To Know Your Computer

This chapter gives general information concerning the IBM® ThinkPad® 700 PS/2* (hereafter called the computer or the ThinkPad 700). To become familiar with available power sources and features, be sure to read this chapter.

Before Using Your Computer

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Caring for Your Computer

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

- Do not place anything heavy on your computer.
- Do not scratch, twist, or hit the surface of the display.
- Keep the computer at least 13 cm (5 in.) away from any electrical appliance such as a motor, TV, refrigerator, or audio speaker that generates a strong magnetic field.
- Use your computer at temperatures between 5°C to 35°C (41°F to 95°F).
- Remove the battery pack and keep it in a cool place if you do not use the computer for a long period of time.
- Do not disassemble the computer.

We recommend you occasionally clean your computer as follows.

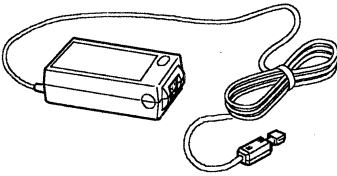
- Use a soft cloth moistened with non-alkaline detergent to wipe the exterior of the computer.
- Gently wipe the liquid crystal display (LCD) with a dry, soft cloth. Avoid using alcohol or detergent to clean the LCD.



Power for Your Computer

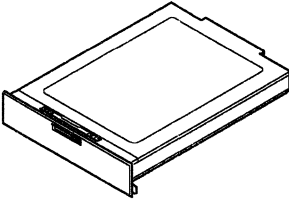
Your computer can be operated with one of three different power sources: ac power from an electrical outlet through the AC adapter **1**, the battery pack **2** that is installed into the computer, and a car battery through the Car Battery Adapter **3** connected to the cigarette lighter socket of your car.

1



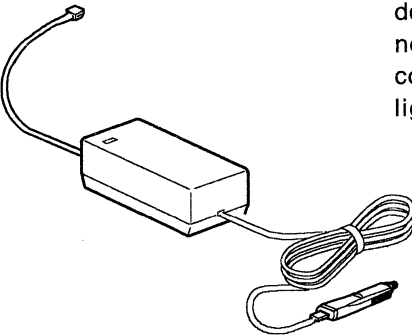
The AC adapter is an alternating current (ac) to direct current (dc) converter to supply necessary power to the computer. The AC adapter also charges the battery pack when it is installed in the computer.

2



The battery pack is an internal power source to the computer when the AC adapter is not available. The battery pack is rechargeable and is charged using the AC adapter, the IBM Quick Charger, or the Car Battery Adapter.

3



The Car Battery Adapter is a dc-to-dc converter to supply necessary power to the computer through the cigarette lighter socket of an automobile.

Before Using Your Computer

AC Adapter

In your office or home, you can use ac power for your computer operation. The AC adapter used for this computer must meet the following requirements.

Input rating: 100 - 240 V ac, 50/60 Hz

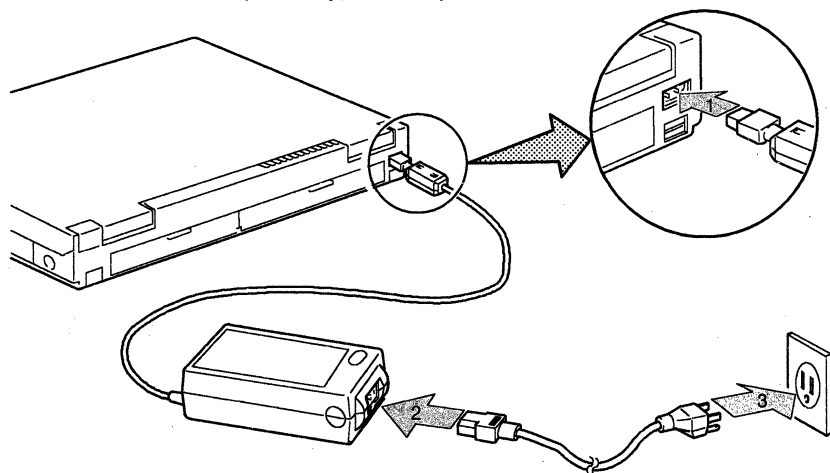
Output rating: +20 V dc, 1.25 A

Warning: Always use the AC adapter shipped with your computer. Operating the computer with a wrong AC adapter can cause both the battery pack and the computer to be damaged.

CAUTION:

Do not attempt to open the AC adapter case. The AC adapter is permanently enclosed and cannot be repaired.

Connect the AC adapter to your computer as shown.



Notes:

1. The AC adapter supplies power to the computer, and will charge the battery pack at the same time if it is installed in the computer.
2. If the computer is turned on with the battery pack installed, you will hear a short beep when you connect or disconnect the AC adapter from the computer. This indicates that the power source has been changed.



Battery Pack

Outside the office environment, you can use the rechargeable battery pack for your computer operation. With a fully-charged battery pack, you can operate your computer for 3.8 to 7.5 hours depending on the applications and the configuration.

Battery packs shipped from the factory can be in an almost discharged state, so you *must charge* the battery packs before using them.

Your computer has another rechargeable battery called the *standby battery* that supplies power to keep data during a battery pack replacement in suspend mode. This standby battery is rechargeable but is not customer replaceable. To charge this battery, connect the AC adapter to the computer. For first time use, it is recommended that the AC adapter be connected for at least 8 hours to allow the standby battery to be fully charged.

To operate your computer with the battery pack, see “Starting Battery-Powered Operation” on page 2-14.

Car Battery Adapter

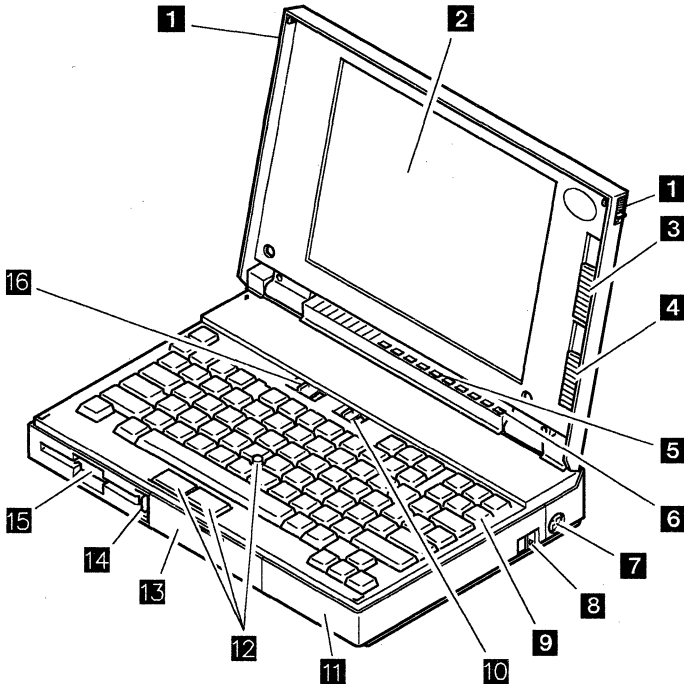
In a car, you can use the car battery to power the computer through the Car Battery Adapter. All you need to do is attach the adapter cable to the computer and plug the adapter cable into the cigarette lighter socket of your car. For more information, refer to the instructions supplied with the Car Battery Adapter.

The Car Battery Adapter is available as an option.

Identifying Computer Features

This section shows the locations of switches and controls, and describes their functions.

Front View



- 1 Latches** are to keep the display closed. Sliding these latches backward causes the LCD to open.
- 2 LCD** displays the computer output. You can also use an external display which is attached to the external display connector at the rear of the computer.
- 3 Contrast Control** adjusts the display contrast.
- 4 Brightness Control** adjusts the display brightness.

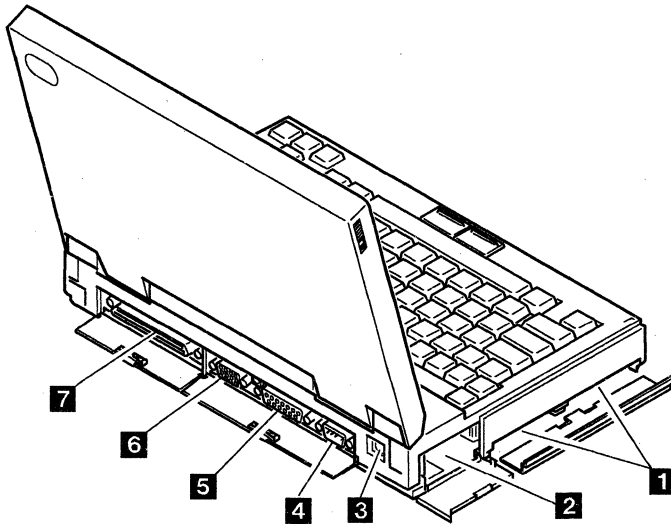


- 5** **Indicator Panel** consists of the system status indicators and their associated symbols. The system status indicators show the current computer status by their On/Off states or colors (green, yellow, and orange.) For more information of the system status indicators, see page 1-10.
- 6** **Power-On Light** (green) turns on when the computer power switch is set to on.
- 7** **External Input Device Connector** is where a mouse, an external numeric keypad, or the keyboard/mouse connector is plugged in. Through the keyboard/mouse connector, an external keyboard can also be connected to this connector. For more information, see 2-54.

When you attach the external numeric keypad and/or the mouse, see page 2-45.

- 8** **Power Switch** turns the computer on and off.
- 9** **Keyboard** is used to enter data into the computer.
- 10** **LCD Reverse Switch** changes the screen image from black-on-white to white-on-black or vice versa.
- 11** **Removable Hard Disk Drive** is a mass data storage device that reads data from or writes data to the hard disk drive (fixed disk drive). The hard disk drive can be replaced with an optional one.
- 12** **Pointing Stick** is IBM's new type of built-in pointing device that provides a function similar to that of the mouse. The Pointing Stick consists of a stick and a pair of click buttons. For more information, see page 2-31.
- 13** **Battery Compartment** is where the battery pack is installed.
- 14** **Diskette-Eject Button** ejects a diskette from the diskette drive when this button is pressed.
- 15** **Diskette Drive** reads data from or writes data to a diskette. The Reference Diskette or any other 3.5-inch diskette is inserted here.
- 16** **Speaker Volume Control** controls the audio-output of the computer. This control has three different positions: the *left* position turns off the audio-output, the *middle* position makes it quieter, and the *right* position makes it louder.

Rear View



1 IC DRAM Card Slots are where one or two IC DRAM cards are installed. Three different capacities of IC DRAM cards are available as an option: 2MB, 4MB, and 8MB. See page 2-58 on how to install the IC DRAM card.

2 Communication Interface Connector is for the serial adapter or the internal data/fax modem for external communications. The serial adapter and the internal data/fax modem are provided as options. See page 2-63 for further information.

3 Power Jack is where the AC adapter or the Car Battery Adapter is plugged in.

Note: When you disconnect the AC adapter cable from this power jack, the LCD brightness becomes slightly dimmer to conserve battery energy if the computer is turned on with the battery pack installed.

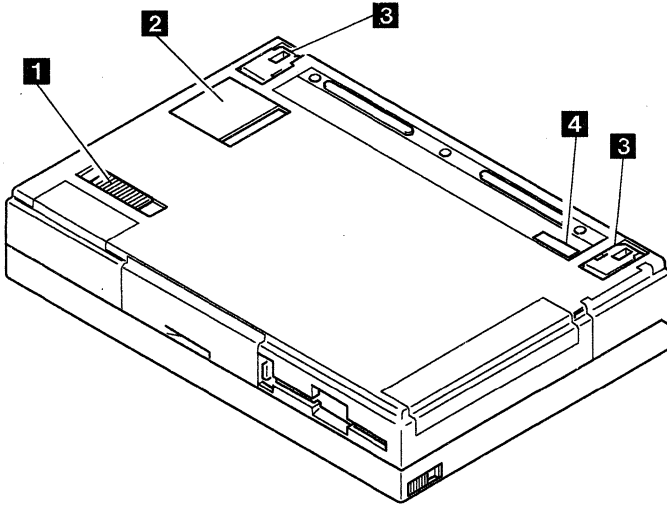
4 Serial Connector is where a 9-pin, serial device cable is plugged in. The interface is programmable and supports asynchronous communications.

5 Parallel Connector is where a parallel-printer signal cable is usually plugged in. See page 2-47 on how to connect a printer to the computer.






- 6 External Display Connector** is where the signal cable of a video graphics array (VGA) or a compatible display is plugged in. See page 2-49 on how to connect and use an external display.
- 7 System Expansion Connector** enables the computer to expand its communications capability.

Bottom View



- 1 Locking Lever** locks the hard disk drive in the computer. The locking lever has three different positions: left, middle, and right.

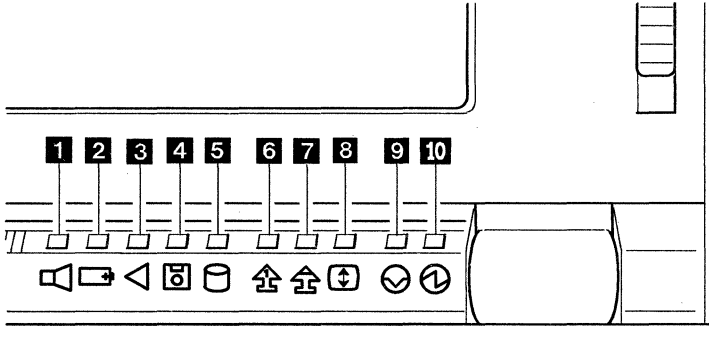
The *left* position  locks the hard disk drive in place, and at the same time provides a lever to fasten the computer for security purposes. The *middle* position  locks the hard disk drive in place. The locking lever is usually in this position. The *right* position  allows you to replace the hard disk drive.





- 2 Math Coprocessor Socket** is where a math coprocessor is plugged in. See page 2-72 for more information.
- 3 Legs** are used to adjust the keyboard angle.
- 4 Machine Identification Label** indicates both machine type and serial number. This information is needed to get repair service. Record them on page **xv** if you have not yet recorded them.

System Status Indicators







The system status indicators show the current computer status by their On/Off states or colors (green, yellow, and orange). The indicator panel below these indicators shows the names of each indicator with a special symbol.

The following figure and table show the location of each symbol and the meaning of each indicator.



Symbol	Color	Meaning
1 Speaker 	Blinking green	Blinks when the speaker is sounded. This indicator is turned off when any key is pressed. When the speaker volume control is in the left position (off), this indicator is turned off and no audio-output can be heard.
2 Battery Power Status 	Green	Shows the condition of the battery pack. See "Monitoring Battery Power Status" on page 2-19 for more information.
	Yellow	
	Orange	
	Blinking orange	
3 Battery Charging 	Green	Turns on while the battery pack is charging. Let it charge until this indicator turns off. This shows that the battery is fully charged.
4 Diskette Drive In-Use 	Orange	Turns on when data is read from or written to a diskette. Neither entering suspend mode nor ejecting a diskette is allowed when this indicator is turned on.



Symbol	Color	Meaning
5 Hard Disk In-Use 	Orange	Turns on when data is read from or written to the hard disk. Neither entering suspend mode nor turning off the computer is allowed when this indicator is turned on.
6 Numeric Lock 	Green	Alternately turns on and off when you press and hold the Shift key, then press the NumLk key. The keys defined as numeric keypad, which is part of the keyboard, are enabled when this indicator is turned on. For more information about the numeric keypad, see "Numeric Keypad" on page 2-35.
7 Caps Lock 	Green	Alternately turns on and off each time the Caps Lock key is pressed. While this indicator is on, all alphabetic characters (A-Z) can be entered in capital letters without pressing the Shift key.
8 Scroll Lock 	Green	Alternately turns on and off each time the Scroll Lock key is pressed. Some application programs support this function. While this indicator is on, the cursor move keys can be used as screen-scroll function keys. In this state, you cannot move the cursor with the cursor move keys.
9 Suspend Mode 	Green	Indicates that the computer has entered suspend mode. This indicator stays on as long as the computer is in suspend mode. See page 1-14 for more information about suspend mode.
	Blinking green	Indicates that the computer is resuming normal operation.
10 Power On 	Green	Shows that the computer is operational when this indicator is turned on. This indicator turns on when the power switch is set to the On position and the computer is not in suspend mode.
	Blinking green	Indicates that the computer's inside temperature has exceeded its operating range, between 5°C and 35°C (41°F and 95°F); this condition also forces the computer into suspend mode. Turn off the computer. Do not use it until the temperature returns to its operating range.

Getting Better Views on the Screen

This section describes the adjustment of the brightness and contrast controls, and the adjustment of the display angle for operating comfort.

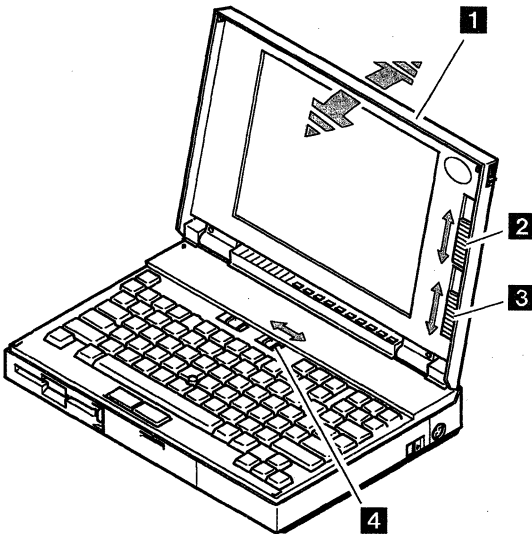
Display Angle: The LCD **1** can be moved forward or backward to any desired viewing angle.

Contrast Control: Move this control **2** up or down to get the best contrast.

Brightness Control: Move this control **3** up to increase brightness or move it down to decrease brightness.

Decreasing the brightness reduces the battery power consumption.

LCD Reverse Switch: Slide this switch **4** to change the screen image from black-on-white to white-on-black or vice versa.

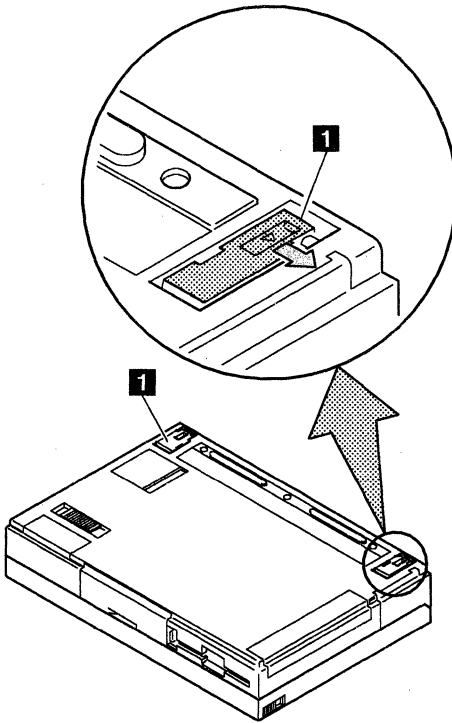




Adjusting Keyboard Angle

The keyboard angle can be adjusted to 7 degrees by using the legs kept under the keyboard. To adjust the keyboard angle, follow these instructions.

- 1** Turn the computer upside down so the front side faces you.
- 2** Slide the upper end of each leg **1** to the outside to pop out the legs.



- 3** Turn the computer over.

You have completed the adjustment of the keyboard angle.

What Are the Suspend and Resume Functions?

Your computer has a built-in battery power-saving function. For example, if the LCD is closed while you are operating the computer, it automatically enters suspend mode **1**. All tasks are stopped and stored in the memory to save power. When the display is opened, the computer automatically restores the tasks and resumes normal operation **2**.

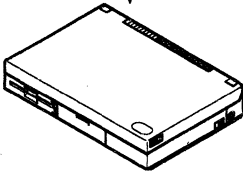
The following figure shows what causes the computer to enter suspend mode and to resume normal operation.



Normal Operation



Suspending



1 Suspend Mode (Power Saving)

What Causes Suspend Mode

- Closing the LCD.
- Performing the PS2 OFF command.
- No activity occurs for more than the time specified by the *System suspend* option.
- Detecting a low-battery condition.
- The temperature is outside the operating range of the computer, approximately 5°C-35°C (41°F-95°F).

What Causes Normal Operation

- Opening the LCD.
- Pressing the click button of the pointing stick.
- Performing the PS2 ON at *HH:MM:SS* command before entering suspend mode.
- Receiving a phone call signal to the Internal Data/Fax Modem. (Ring Indicator is activated.)

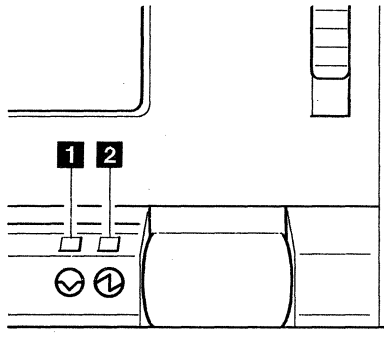
Resuming



2 Normal Operation

Getting Familiar with Your Computer

The current status of the computer is shown by the following indicators.



Current Status	Indicators	
	1 Suspend Mode	2 Power-On
Suspend Mode	Green	Off
Resuming	Blinking green	Off
Normal Operation	Off	Green

You can enter suspend mode or return to normal operation by using the PS2 commands with various parameters. For more information about the PS2 commands, see “What Is the Set Advanced Features?” on page 3-12.

Full and Partial Suspend Modes

Suspend mode is referred to as full suspend mode, as compared to partial suspend mode.

Partial suspend mode is entered when an application software program interferes with the power management capability of the computer and prevents it from entering full suspend mode. When the computer enters suspend mode:

- One beep is sounded for full suspend mode
- Two beeps are sounded for partial suspend mode

Note: No beep sounds if the *Power controller beep* parameter is set to off by the Set Advanced Features program. See page 3-17 for more information.



Considerations for Full and Partial Suspend Modes

The following should be considered before using suspend or partial suspend mode.

- Power saving is less in partial suspend mode

Avoid leaving the computer in partial suspend mode for an extended period. Partial suspend mode uses more power than full suspend mode.

- Battery charging time

Approximately 2 hours both in full and partial suspend modes.

- Pointing devices

Warning: Do not move the Pointing Stick or a connected pointing device, such as a mouse, when the computer is entering suspend mode or resuming normal operation. Pointing devices are movement sensitive. Moving a pointing device when changing from suspend mode to normal operation or vice versa can cause data to be lost.

One or two beeps for suspend, and one beep for resume operation can be heard when their operation is completed.

- Diskette or hard disk

While the computer is reading data from or writing data to a diskette or the hard disk, avoid entering suspend or partial suspend mode.

- Attached devices

Attached devices, such as a printer or a serial device, stop running when the computer enters suspend mode. After resuming the operation, the resultant output can differ from the one you expect, because the device can be reset or lose its configuration settings when the computer returns to normal operation.

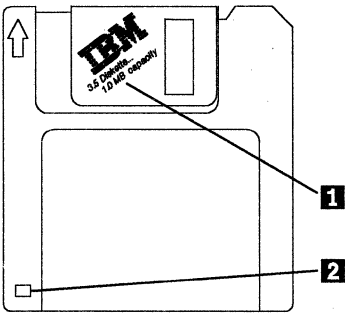
Working with Diskettes and Diskette Drives

Your computer operates with a 1.44MB diskette drive.

You can use either a 1MB or a 2MB 3.5-inch diskette in the 1.44MB diskette drive. If you intend to transfer 3.5-inch diskettes between computers that have diskette drives with different capacities, use diskettes that can be used by all the computers.

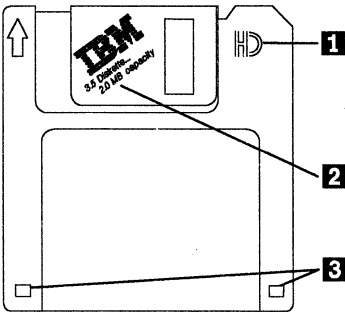
Identifying 3.5-Inch Diskettes

A 1MB diskette looks like this:



It is usually labeled **1.0MB capacity** or **2DD 1**, and has a square cutout **2**.

A 2MB diskette looks like this:



It has the letters **HD 1**, is usually labeled **2.0MB capacity 2**, and has two square cutouts **3**.



Formatting Diskettes

A diskette must be formatted before being used. Your operating system manual describes the commands for formatting diskettes.

1MB diskettes *must* be formatted to 720KB.

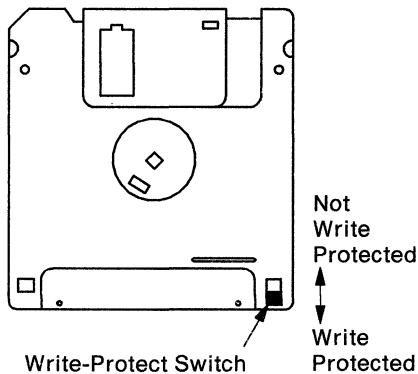
2MB diskettes *must* be formatted to 1.44MB.

Write-Protecting Diskettes

It is possible to format a diskette or write (record) information to a diskette unintentionally. Important information could be lost. For this reason, you should write-protect important diskettes. When diskettes are write-protected, you can read from the diskettes, but you cannot write to them.

To locate the write-protect switch, turn the diskette over, with the label facing down.

- *To prevent writing* to a diskette, slide the switch down.
- *To allow writing* to a diskette, slide the switch up.



Carrying the Computer

Whenever you carry your computer, follow these instructions to avoid possible damage to data and to your computer.

- 1** Remove any diskette from the diskette drive.
- 2** Turn off all attached devices.
- 3** Turn off the computer and close the LCD.
- 4** Unplug all external cables and cords connected to the computer.
- 5** Make sure all doors and covers of the computer are closed.

Notes:

1. We recommend that you occasionally back up data on the hard disk onto diskettes or tapes.
2. We recommend that you carry a fully-charged spare battery pack with you.
3. To use the AC adapter outside your home country, be sure you have an ac power cord that is certified in the country where you will be using the computer. You can purchase one through IBM or an IBM authorized dealer in each country. For more information about the power cords, see "IBM Power Cords" on page A-5.
4. For your convenience, a carrying case is available from IBM or an IBM authorized dealer.



Chapter 2. Operating Your Computer

Important

Read the *Getting Started* and *Battery Operation Guide* before you start operating your computer.

This chapter provides information on how to set passwords, start your computer with the battery, and install external devices and IBM options. The software information is also included in this chapter.

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Expanding Capabilities of Your Computer

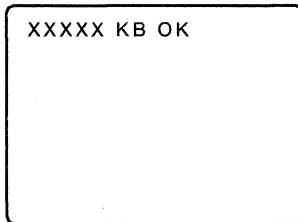
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What Happens after Power-On?

This section describes what happens when you turn on the computer.

Note: Make sure that the speaker volume control is set to the rightmost position.

- 1** While the computer memory is being tested, the size of the tested memory area is displayed on the screen. The XXXXX represents this number.



- 2** When the computer successfully completes the power-on self-test (POST), you will hear one beep.

If you do not hear a beep, or you hear multiple beeps, an error condition has occurred. Usually an error prompt, as shown on page 2-5, accompanies the error condition.

- 3** One of the following appears:

- Operating system or application screen.
- *Diskette* and *F1 prompts* are displayed if an operating system has not yet been installed. See the figure on page 2-5.
- Password prompt. See the figure on page 2-6.
- System Programs Main Menu. See the figure on page 3-2.
- Error prompt. See the figure on page 2-5.

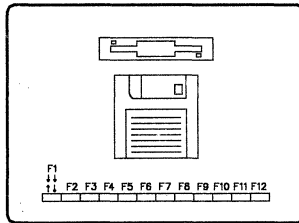
Note: If something other than the above happens, go to Chapter 4, "Solving Computer Problems" on page 4-1.



What Do the Diskette and F1 Prompts Mean?

When the computer is turned on, it tries to find an operating system on the diskette drive. If no diskette is in the drive, the computer tries to read from the hard disk. If there is no operating system installed on the hard disk, the *Diskette and F1* prompts appear. These prompts are telling you to insert a diskette into the diskette drive and press F1 to start the diskette. If you press F1 with no diskette in the drive, an 19990305 message appears on the screen.

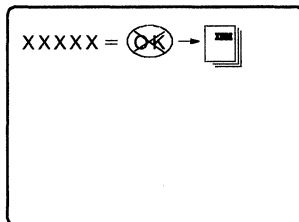
The order in which the drives are checked is the drive-startup sequence and can be changed as required. If this drive-startup sequence includes a drive in a network server, the computer also checks if the drive contains an operating system. See “Selectable Drive Startup Sequence” on page 3-10 for more information.



What Does the Error Prompt Mean?

If an error is found when the computer is turned on, the computer displays the error prompt. This prompt indicates that there is a problem with the computer. Go to Chapter 4, “Solving Computer Problems” on page 4-1.

The error prompt looks like this.



Starting the Computer

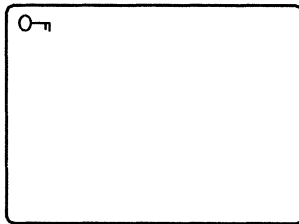
What Does the Password Prompt Mean?

If a power-on password is set, the computer will respond with either of the following:

- Each time you turn on the computer, the password prompt appears on the screen.
- After returning to normal operation from suspend mode, the password prompt also appears on the screen.

The password prompt looks like a key and appears in the top-left corner of the screen.

To use the computer, you must type the correct password and press Enter. For more information, see "Using a Power-On Password" on page 2-8.





Starting the Computer from a Diskette

You may want to start your computer from a diskette instead of the hard disk. The following procedure allows you to start the computer using a self-starting diskette such as a Reference Diskette or a Disk Operating System (DOS) diskette.

If the computer is off:

- 1** Insert a self-starting diskette, with the label up and metal-shutter end first, into the diskette drive. Make sure the diskette clicks into place.
- 2** Turn on the computer and follow the instructions on the screen.

If the computer is already on:

- 1** Insert a self-starting diskette, with the label up and metal-shutter end first, into the diskette drive. Make sure the diskette clicks into place.
- 2** Press and hold **Ctrl+Alt**, then press **Delete**. Release the keys.
- 3** Follow the instructions on the screen.

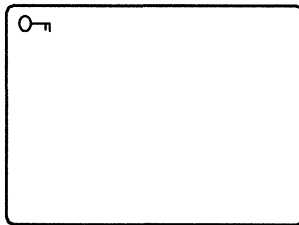
If the above procedure does not work, check that the startup sequence is correctly set (see page 3-11).

Using a Power-On Password

You do not need to set a password to use your computer, but using a password helps protect the information stored in your system against unauthorized use.

If a power-on password is set, the password prompt (O—n) appears each time the computer is turned on.

The password prompt also appears when the computer returns to normal operation from suspend mode by opening the LCD. If returning to normal operation is caused by the PS2 ON HH:MM:SS command, the password prompt does not appear.



Note: If you are using the unattended start mode, you do not get the password prompt. Instead, you get your operating system or application screen. The keyboard remains locked until the correct power-on password is typed. (See “Using the Unattended Start Mode” on page 2-12.)

To use the computer, type the password when the password prompt (O—n) appears on the screen, and press **Enter**. For security purposes, the password is not displayed when you type it.

If you entered the power-on password correctly, an **OK** appears. If you entered the password incorrectly, a **O×n** appears. If you have not entered the password correctly after three tries, you must turn the computer off, wait at least 5 seconds, then turn it on to try again.



Notes:

1. Do *not* press the Spacebar after entering the password. A space following the password removes the password.
2. After resuming normal operation, a OX_n does not appear even if an incorrect password is entered.

When typing your password, release each key quickly. If you hold a key down too long, the same letter can be entered repeatedly, and the password you type will not be what you intended.

Setting a Power-On Password

You can use any combination of up to 7 characters (A to Z and 0 to 9) for the power-on password.

- 1** Start the system programs from the hard disk (see "From the Hard Disk" on page 3-5).
- 2** Select **Set features** from the Main Menu.
- 3** Select **Set password and unattended start mode**.
- 4** Select **Set power-on password** and follow the instructions on the screen.

Do Not Forget Your Power-On Password

If you forget your power-on password, you cannot reset it by any means. You have to take the computer to IBM or an IBM authorized dealer to have the password canceled. Proof of purchase is required and you may also be charged for this service.

Changing a Power-On Password

Notes:

1. If the computer is in unattended start mode, you must take the computer out of unattended start mode *before* you can change the power-on password. See “Using the Unattended Start Mode” on page 2-12.
2. You cannot change a power-on password after resuming normal operation. You must change it after the computer is turned on.

To change a power-on password, do the following:

Important

Do *not* press Enter until you have finished all of the steps.

- 1** Turn off the computer, wait at least 5 seconds, then turn it on.
- 2** When the password prompt (O—) appears, type your *current* password and press the **Spacebar**.
- 3** Type the *new* password (no more than 7 characters) and press the **Spacebar**.
- 4** Type the *new* password again to verify the new password.
- 5** Press **Enter**.



Removing a Power-On Password

Note: If the computer is in unattended start mode, you must take the computer out of unattended start mode *before* you can remove the power-on password. See “Using the Unattended Start Mode” on page 2-12.

To remove a power-on password, do the following:

- 1** Turn off the computer, wait at least 5 seconds, then turn it on.
- 2** When the password prompt (O—) appears, type your current password, and press the **Spacebar**.
- 3** Press **Enter**.

Using the Unattended Start Mode

A power-on password must be set before the computer is used in the unattended start mode. (See “Using a Power-On Password” on page 2-8.)

The unattended start mode locks your keyboard when the computer is turned on, then allows the computer to load the operating system and any application programs. For security purposes, your keyboard remains locked until you type your power-on password and press Enter.

You must enter the power-on password at the password prompt *before* you attempt to start the computer with a diskette.

To set the unattended start mode, do the following:

- 1** Start the system programs from the hard disk (see “From the Hard Disk” on page 3-5).
- 2** Select **Set features** from the Main Menu.
- 3** Select **Set password and unattended start mode**.
- 4** Select **Set unattended start mode**.

When the message

Set unattended start mode?

is displayed, type **Y**.

Note: The password prompt does not appear if the unattended start mode is set.

To remove the unattended start mode, do the following:

- 1** Start the system programs from the hard disk (see “From the Hard Disk” on page 3-5).
- 2** Type your password and press **Enter**.
- 3** Select **Set features** from the Main Menu.



4 Select **Set password and unattended start mode**.

5 Select **Set unattended start mode**.

When the message

Set unattended start mode?

is displayed, type **N**.

Starting Battery-Powered Operation

The battery pack allows you to operate your computer without connecting the AC adapter. Follow the instructions in this section to operate your computer with the battery pack.

Charge your battery pack for first time use

*Because battery packs are shipped in an almost discharged state from the factory, you **must charge** the battery packs before starting battery-powered operation. Using a discharged battery pack causes its life to be shortened.*

To charge the battery pack, see “Charging the Battery Pack” on page 2-21.

CAUTION:

The battery pack provided with your computer contains a small amount of harmful substances. To avoid possible danger, follow these instructions.

- **Do not touch the battery terminals together with any metal parts.**
- **Keep the battery pack away from fire.**
- **Always keep the battery terminals clean. When they become dirty or corroded, clean them with a soft cloth.**
- **Do not soak the battery pack in water or expose it to rain.**
- **Do not attempt to disassemble the battery pack.**
- **Avoid any mechanical shock.**
- **Always use battery packs recommended by IBM.**
- **Whenever you carry the battery pack, keep the protective cover on it.**
- **Keep the battery pack away from children.**

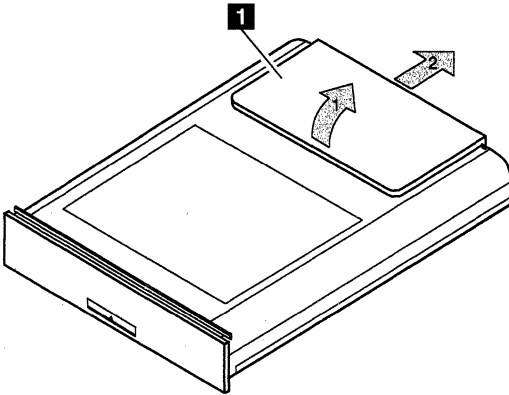
When disposing of the rechargeable battery, comply with the law of your locality or your company’s safety standards.

- 1** If the battery pack is new or low in power, charge it, then return here. (See “Charging the Battery Pack” on page 2-21.)
- 2** Make sure the computer power is turned off.

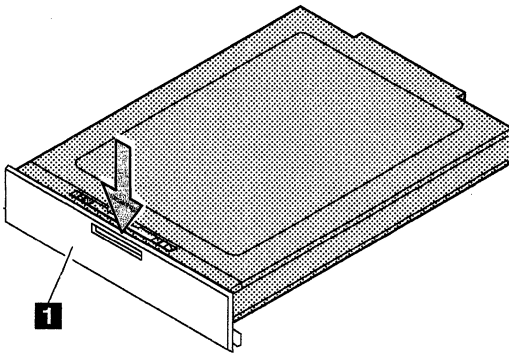


- 3** Remove the protective cover **1** from the battery pack.

Warning: Do not throw away the protective cover. The protective cover prevents the battery terminals from accidentally short circuiting when the cover is put on the battery pack.

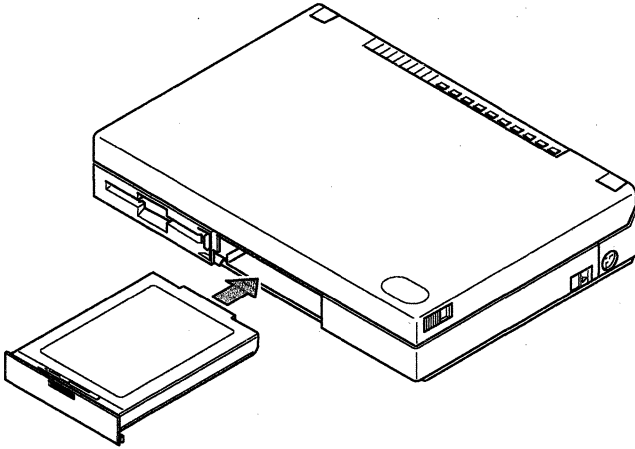


- 4** Turn the battery pack over and ensure that the latch **1** is in its lower position.

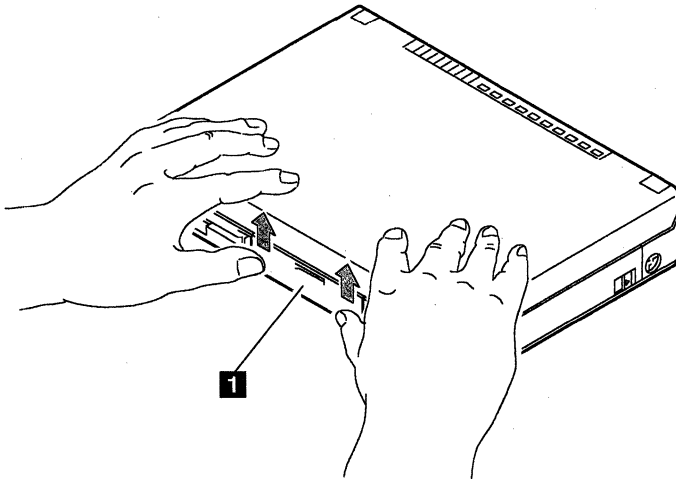


Battery-Powered Operation

- 5 Slightly lift and hold the front of the computer, and insert the fully-charged battery pack into the compartment until it stops.



- 6 Move the latch **1** upward until the battery pack clicks into place.



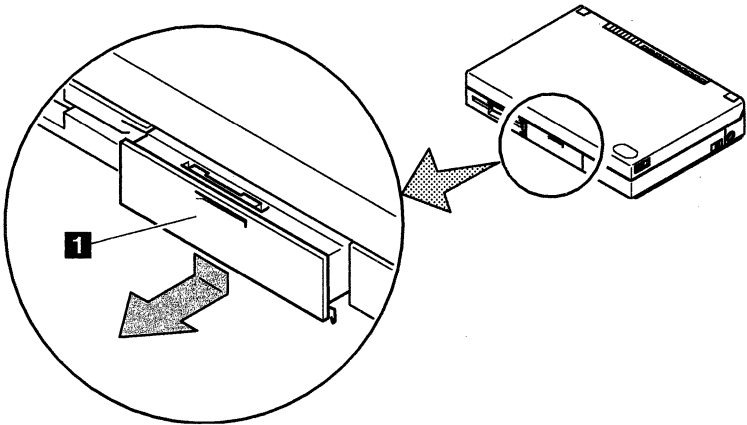
Now, you are ready to operate your computer with the battery pack. For more information about the battery-powered operation, refer to the *Battery Operation Guide*.



Removing the Battery Pack

This section explains how to remove the battery pack when the computer is turned off. If you want to replace the battery pack without turning off the computer, follow the instructions described under “Replacing the Battery Pack” on page 2-25.

- 1** Turn off the computer.
- 2** Firmly press down the latch **1** and slightly lift the front of the computer, then remove the battery pack from the compartment.

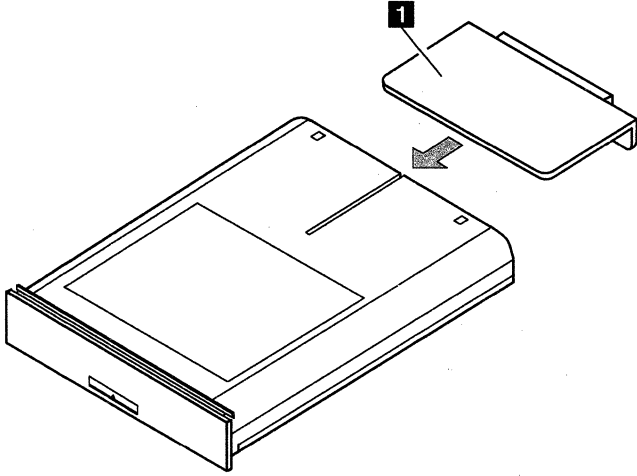


Battery-Powered Operation

- 3** Put the protective cover **1** on the battery pack.

CAUTION:

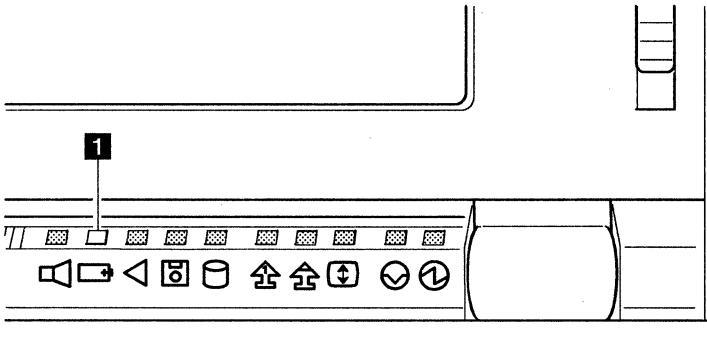
When you carry the battery pack, always keep the protective cover on the battery pack. The protective cover prevents the battery terminals from accidentally short circuiting when the cover is put on the battery pack.





Monitoring Battery Power Status

Observe the battery-power status indicator **1** and compare it with the status listed below to find out the condition of the battery.



Status	Condition	Action Required
Green	Fully charged.	Continue your work.
Yellow	Usable.	
Orange	A little power remains. You will hear three beeps when the indicator turns orange.	It is recommended that the AC adapter be connected to the computer to charge the battery pack.
Blinking orange	Almost discharged (low battery). See "Low Battery Condition" on page 2-20.	Do either of the following actions within 1 minute: <ul style="list-style-type: none">• Connect the AC adapter or the Car Battery Adapter to the computer without removing the battery pack.• Close the LCD and carefully listen to how many beeps are sounded. Then, replace the battery pack with a fully-charged spare by referring to "Replacing the Battery Pack" on page 2-25.

Battery-Powered Operation

Status	Condition	Action Required
Off	<ul style="list-style-type: none">• The battery pack is not installed.• The computer is turned off.• The computer is in suspend mode when the external power source such as the ac power or the car battery is not connected.	<p>If suspend mode is caused by a low battery condition, data can be lost. Do either of the following actions immediately.</p> <p>Note: We recommend you take the necessary action when the <i>blinking orange</i> condition occurs.</p> <ul style="list-style-type: none">• To continue your work with the AC adapter:<ol style="list-style-type: none">1. Connect the AC adapter to the computer.2. Press either click button of the Pointing Stick to resume normal operation.• To continue your work with a fully-charged battery pack:<ol style="list-style-type: none">1. Connect the AC adapter to the computer.2. Replace the battery pack with a fully-charged spare.3. Press either click button of the Pointing Stick to resume normal operation.4. Disconnect the AC adapter from the computer.

Low Battery Condition




When the battery pack is low in power, the computer sounds three consecutive beeps and the battery-power status indicator starts blinking to indicate that the battery pack immediately needs charging. Take the necessary action within 1 minute or the computer enters suspend mode.

Warning: Do not leave the computer in this condition for an extended period of time. Otherwise, data will be lost.



Charging the Battery Pack

The battery pack can be charged with the AC adapter or the Quick Charger. You need to charge the battery pack with one of the charging devices when you have any of the following conditions.

- During setup of your computer.
- A new battery pack was purchased.
- The battery status indicator  (orange) stays on.
- The battery status indicator  (orange) starts blinking for less than 1 minute, then the suspend mode indicator  turns on.

Warning: Before charging the battery pack, always use the battery pack until its power is completely used up. Charging a battery pack that is not completely discharged can cause battery life to be shortened. To discharge the Battery Pack, see “Discharging the Battery Pack” on page 2-23.



Charging with the AC Adapter

The following procedure explains how to charge the battery pack when the computer is turned off. The battery pack is also charged when the computer is used with the AC adapter. However, a longer period of time is needed for the charging.

- 1** Make sure that the computer is turned off.
- 2** Install a new or discharged battery pack in the computer.
- 3** Connect the AC adapter cable to the computer, the power cord to the AC adapter, then the other end to a properly grounded electrical outlet.

Battery-Powered Operation

The system status indicators will be in the following states:

Indicator	State (color)	Meaning
	On (green)	This indicator turns on to show the battery is charging. This indicator turns off when the battery is fully charged. It takes about 2 hours to fully charge the battery pack.
	On (yellow)	The battery pack is charging.
Other indicators	Off (blank)	—

Notes:

1. If you operate the computer using the ac power, it takes about 3 hours to fully charge the battery pack.
2. If the battery pack is not used for a long period of time or if it is a new one, it will not reach a full charge by charging it only once. You must fully charge and discharge it 3 to 6 times to maximize battery operation time.

Charging with the Quick Charger

When you use the Quick Charger, which is available as an option, it takes about 1.4 hours to fully charge the battery pack.

For the charging procedure, refer to the instructions supplied with the Quick Charger.



Discharging the Battery Pack

Your battery pack needs to be discharged occasionally to operate properly. It is recommended that you discharge the battery pack completely by following the procedure.

You can also discharge the battery pack with the Quick Charger. For more information, see the manual that came with the Quick Charger.

1 Turn off the computer and disconnect the external power cord from the computer.

2 Install the battery pack that you want to discharge.

3 Turn on the computer and start the operating system.


Note: If you are using the IBM Operating System/2* or a Microsoft** Windows**, do not perform any other tasks until the discharging of the battery is completed. This prevents unexpected data loss.

4 Type **IPS2 DISCHARGE** at the command prompt and press **Enter**.

Notes:

a. If you have not installed the Set Advanced Features, install it now. This is explained in "Installing the Set Advanced Features onto the Hard Disk" on page 3-13.

b. If you are using OS/2* or Windows, install the appropriate power management device driver. See page 2-37 for OS/2 and page 2-42 for Windows.

5 Ignore all battery warnings and wait until the computer automatically enters suspend mode. The suspend mode indicator  (green) turns on.

* Trademark of the International Business Machines Corporation.

** Trademark of the Microsoft Corporation.

Battery-Powered Operation

6 Turn off your computer.

Note: If you do not turn off your computer, the parameters set by DISCHARGE are still active.

7 The battery pack is now completely discharged. Recharge it by following the procedures in "Charging the Battery Pack" on page 2-21.



Replacing the Battery Pack

If you have a spare battery pack (available as an option) and the current battery pack is low in power, replace it with the spare battery pack. The spare pack should be fully charged in advance.

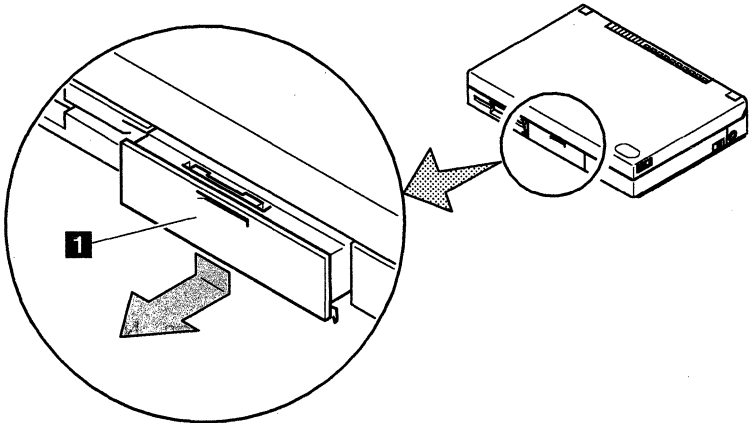
You can replace the battery pack after the computer is turned off. The ThinkPad 700, however, provides another convenient way to replace the battery pack without terminating your application or turning off the computer. To replace the battery pack, follow these instructions.

- 1** Close the LCD and wait about 10 seconds after you hear one beep.

Warning: If you heard two beeps, the computer has entered partial suspend mode (see “Full and Partial Suspend Modes” on page 1-16). Connect the AC adapter or the Car Battery Adapter, then go to the next step; otherwise data will be lost.

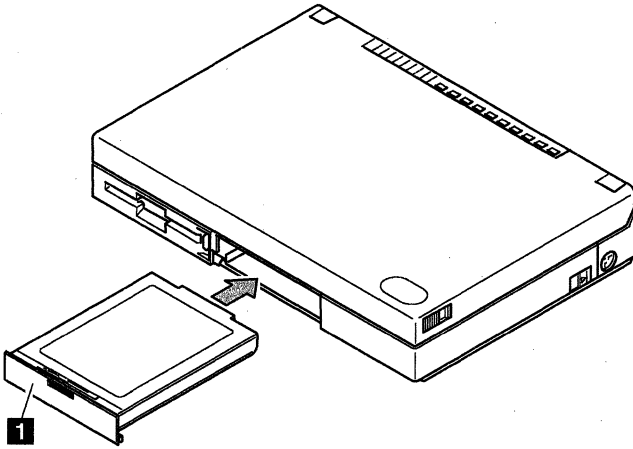
- 2** Quickly replace the battery pack with a fully-charged one.

- Firmly press down the latch **1** and slightly lift the front of the computer, then remove the battery pack from the compartment.

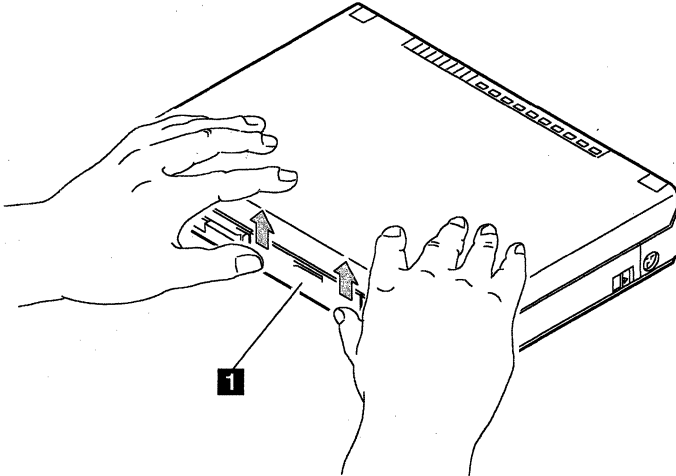


Battery-Powered Operation

- b. Ensure that the latch **1** is in its lower position, then insert the fully-charged battery pack into the compartment.



- c. Move the latch **1** upward until the battery pack clicks into place.



- 3** Open the LCD to resume normal operation. Now you can continue your work.

Note: If you replace the battery pack with a fully charged one during suspend mode, the substitute battery, called the *standby battery*, supplies power to keep the data until the battery pack replacement is completed.



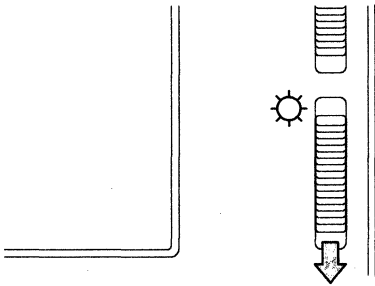
Maximizing Battery-Powered Operation

When you use your computer outside the home or office environment, you will want the battery power to last longer before a recharge is needed. The computer provides you with the following effective ways of saving battery power.

- Decreasing the LCD brightness
- Using the suspend function
- Using the power-saving options

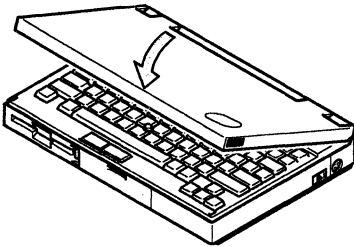
Decreasing the LCD Brightness

Adjust the brightness control to the lowest level that allows you to comfortably view the screen.



Using the Suspend Function

Close the LCD when you do not need it open.



Closing the LCD allows the computer to enter suspend mode. For more information about suspend mode, see “What Are the Suspend and Resume Functions?” on page 1-14.

Battery-Powered Operation

Using the Power-Saving Options

Before doing any of the following, make sure that the computer has the Set Advanced Features installed on the hard disk. If not, install it now. See “Installing the Set Advanced Features onto the Hard Disk” on page 3-13.

- *Perform the TRAVEL power-management command.*

Performing this command causes all power-saving options to be automatically set to optimum conditions and makes it possible to use the battery pack longer before a recharge is needed.

Warning: This command can alter some previously set power management options.

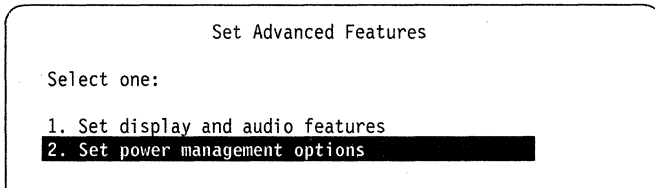
At the command prompt, type **\PS2 TRAVEL** and press **Enter**.

- *Manually set each option by using the Set Advanced Features Menu.*

1 At the command prompt, type **\PS2** and press **Enter**.

2 The following menu appears. Select **2** and press **Enter**.

If the menu does not appear, the **Set Advanced Features** is not installed on the hard disk. See “Installing the Set Advanced Features onto the Hard Disk” on page 3-13 to install the Set Advanced Features.





3 The following menu appears:

Move the cursor to the desired item by the cursor move keys (↑ ↓) and press the Spacebar or Backspace to change the option value. To save the specified value, press **Enter**.

For more information of each value, see page 3-18.

Set Power Management Options Menu

Press Spacebar or Backspace to select.
Press Enter to save the changes.

Automatic power saving timer (0 = Always on)

LCD off:	[05 minute(s)]
Internal HDD off:	[05 minute(s)]
System suspend:	[00 minute(s)]

Speed

Processor:	[Auto(Long Battery Life)]
------------	---------------------------

Serial device power

Onboard:	[On]
Optional:	[On]

Enter F1=Help F3=Exit

We recommend *Processor* be set to *Auto*; and *System suspend* be set to a low value, but not to *00*.

Extending Battery Pack Life

The battery pack can be recharged about 500 times. When you follow these instructions, you can extend the life of the battery pack.

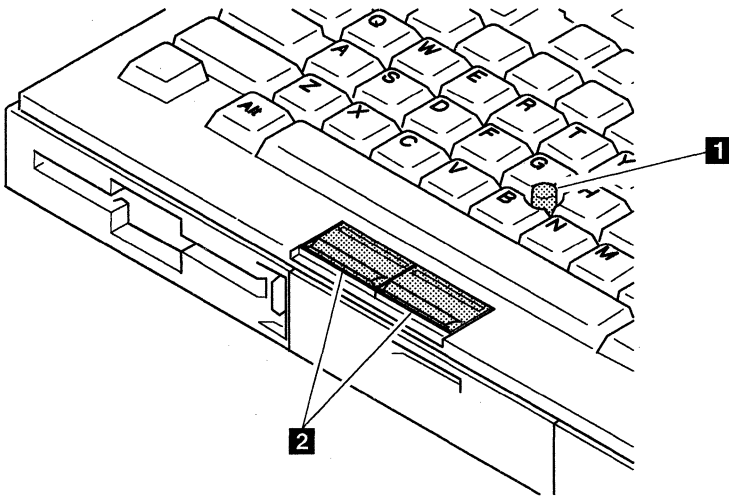
- Do not charge your battery pack until all of its power is used.
- Once you start charging the battery pack, do not use it until it is fully charged.
- Discharge your battery pack occasionally. See “Discharging the Battery Pack” on page 2-23.
- If you do not plan to use the computer for a long time, remove the battery pack. This prevents the contact points of the battery from corroding.
- Turn off the computer whenever it is not in use.



Pointing Stick

With the ThinkPad 700, you can use the full function of a mouse right under your fingertips as you type. The keyboard contains a unique cursor-pointing device called the Pointing Stick. With it, you can use the popular mixed type-and-point interfaces smoothly, without moving your fingers from their typing positions. There is no effort, time loss, or distraction of reaching for an extra device, and nothing extra to carry or find usable space. Typing, pointing, selecting, and dragging all become part of a single process using a single device, the Pointing Stick-keyboard. The Pointing Stick can be used equally as well with either hand.

The Pointing Stick adds to the keyboard: a stick **1** between the G, H, and B keys, and a pair of click buttons **2** positioned below the Spacebar. The stick rises only slightly above the typing keys. It detects pressure in the horizontal directions, but does *not* move. It controls the motion of the cursor on the screen. The cursor moves in the direction in which the stick is pressed, at a speed that corresponds to the amount of pressure. The click buttons function like those on other pointing devices; just what they do depends on the software that is used.



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

Using the Pointing Stick

The Pointing Stick is very easy to use, but as with any new device it takes a few minutes to get used to. If you are new to the Pointing Stick, these instructions will help you get started.

- 1** Place your hands in the typing position, with the heels or palms of your hands resting on something solid (the edge of the desk, your thighs, or whatever is available). You can easily place either index finger on the stick, just as you would place it on a key. If you are left-handed, you will probably want to use your left index finger. Your thumbs can rest comfortably above the click buttons.
- 2** Press gently in the direction in which you want the cursor to move; away from you to move up the screen and toward you to move down the screen. Think of the stick as an extension of your finger. Press down only enough to keep your finger from slipping. Remember that the stick does not move, and your finger should not move on it.

Hint

- The secret of efficient pointing is, **keep your eye on the cursor**. If you press too hard, the cursor will move too fast and you will lose sight of it. It will take time to find it again and bring it back to your target.
- Drive the cursor as you might drive a car, straight to your target. It is quicker to go a little slower, directly to the target, than to lose control and wander about the screen.
- The Pointing Stick makes it easy to hold a speed close to the fastest that most people can control. You can go faster, but then you may lose control. You will reach your target faster if you use a controllable speed.

- 3** Use the click buttons to select and drag as required by your software, just as you would with any other pointing device. You can use the thumb of the hand you use for the stick, or the other one, whichever you prefer.



The Simultaneous Mouse

You can use an IBM PS/2 Mouse concurrently with the Pointing Stick. It is plugged into the external input device connector of the computer and will function normally when the Pointing Stick is not actually moving the cursor. You can use whichever pointing device that seems to be the most natural at the moment. If you are used to the mouse, you can continue to use it normally when there is space for it, and while you are getting used to the Pointing Stick.

If either the external keyboard or the numeric keypad is attached, its mouse connector can be used for a mouse in the same way.

A device which is not compatible with the PS/2 mouse can be connected to the external input device connector. In this case, follow these instructions to set the Pointing Stick to *Disable*; the appropriate software must already be loaded.

1. Turn on the computer and start the system programs (see “Starting the System Programs” on page 3-5).
2. Select **Set configuration**.
3. Select **Change configuration**.
4. Position the cursor on the *Pointing Stick*. Using F5 or F6, change it to **Disable**.
5. Press **F10** to save the change.
6. Restart the computer.

Notes:

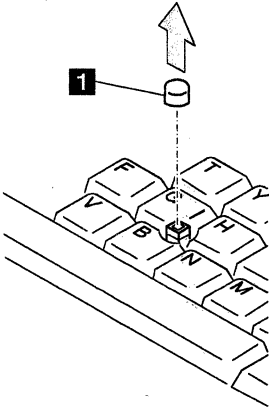
1. Pressing either click button causes the computer to resume when it is in suspend mode after the PS2 OFF command is performed.
2. When the computer is starting up or resuming, do not touch the Pointing Stick until you hear one beep.

Using the Advanced Functions

Cleaning the Cap

The cap **1** on the end of the stick is removable. You can replace it with the different color spares that are shipped with your computer.

To maintain a smooth pointing operation, occasionally clean the cap with a soft cloth moistened with non-alkaline detergent. When the cap is worn out, replace it with a spare one.

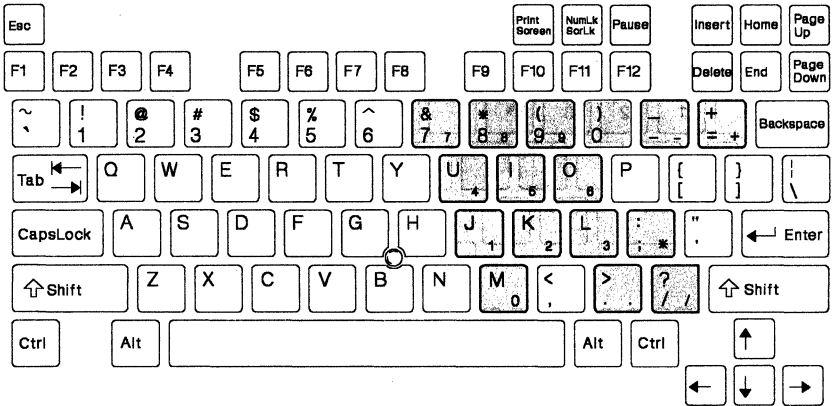




Numeric Keypad

The numeric keypad, which is part of the keyboard, enables some keys on the keyboard to work as if they were a 10-keypad. The numeric keypad on the keyboard is not active when the external numeric keypad is attached to the computer.

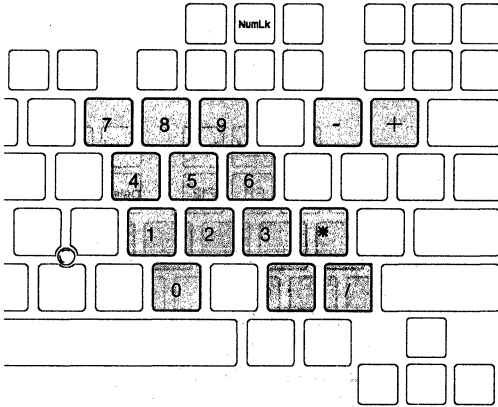
The keys in color on the following figure are defined as the numeric keypad.



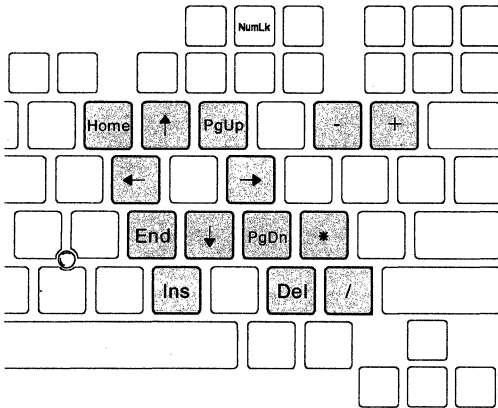
Using the Advanced Functions

Using the Numeric Keypad

The numeric keypad can be enabled and disabled momentarily by pressing the NumLk key. When you press and hold **Shift**, then press **NumLk**, the Numeric Lock indicator turns on and the keys shown previously are switched to the following.



During this mode, pressing and holding **Shift** causes the keys shown below to temporarily work as the cursor and screen control keys.



The label for each key is shown on the front surface of the key.

To leave the numeric keypad, press and hold **Shift**, then press **NumLk** again.

Note: This numeric keypad is available for the ThinkPad 700 when the 84-key keyboard is installed.



Operating Systems

Operating systems that the computer supports are:

- IBM DOS Version 5.0 or later.
- IBM DOS Version J5.02/V or later.
- IBM OS/2 Version 2.00.1 or later.

If you have installed OS/2, it is recommended that you install the power management device driver for OS/2 to save battery power. This device driver is contained on the Diagnostic Diskette shipped with your computer. Do the following to install the power management device driver.

Considerations for the Software EMS Driver

When you use a software EMS driver such as EMM386.EXE and QEMM.SYS** on your computer, refer to the READ.ME file contained on the Diagnostic Diskette.

Using the Advanced Power Management

The computer supports the Advanced Power Management (APM) Version 1.0. To use the APM, refer to the manuals that came with the operating system.

Installing the Power Management Device Driver for OS/2

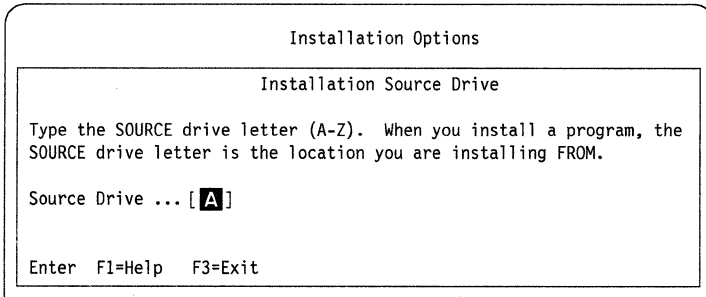
- 1** Insert the Diagnostic Diskette into the diskette drive.

** QEMM is a trademark of the Quarterdeck Office System.

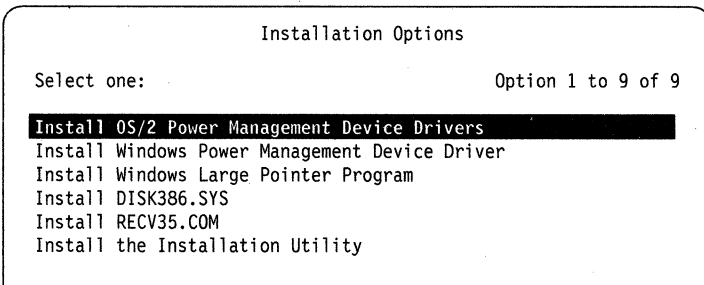
Software Considerations

- At the DOS prompt, type **A:UINSTALL** and press **Enter**.

The following screen appears:



- Press **Enter**.
- Follow the instructions on the screen until you get the following screen:



Note: The above menu items might look different from those in the actual menu.

- Select **Install OS/2 Power Management Device Drivers** from the screen menu and follow the instructions on the screen.
- After the installation is successfully completed, remove the Diagnostic Diskette.
- Shut down OS/2.
- Press and hold **Ctrl+Alt**, then press **Delete** to restart the system.



Hot Key Program

The hot key program that is contained on the Diagnostic Diskette allows you to instantly change the following operational features by pressing Ctrl+Alt and an alphabetic key. You can define any alphabetic key (A through Z) as the hot key.

- Display device; LCD and/or CRT
- Processor speed
- LCD variable

Note: When a system reset is performed, all values set by this program are reset to their original values that are kept in the memory by the Set Advanced Features.

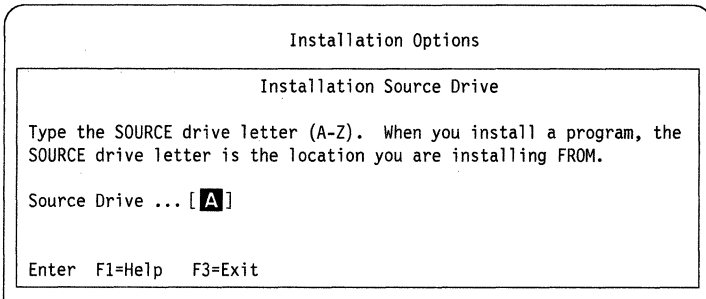
This hot key program works under DOS or Windows. The following procedure is for DOS users. If you are Windows user, refer to “Installing the Hot Key Program for Windows” on page 2-43.

Installing the Hot Key Program for DOS

- 1** Insert the Diagnostic Diskette into the diskette drive.
- 2** At the DOS prompt, type **A:UINSTALL** and press **Enter**.

Software Considerations

3 The following screen appears:



4 Press **Enter**.

5 Follow the instructions on the screen until the screen for selection appears.

6 Use the cursor move keys (↓ ↑) to select **Install Hot Key Main Program**, then press **Enter**. Follow the instructions on the screen.

7 Remove the Diagnostic Diskette from the diskette drive.

You have completed the installation of the hot key program. To activate the hot key program, follow these instructions.

8 At the DOS prompt, type **C:\NOTEUT\HK /MENU** and press **Enter**. The menu for defining hot key appears.

9 Define a key for the hot key function by following the instructions on the menu. Press **F10** to save your definition and press **F3** to exit from the menu.



Using Windows

Be sure to read this entire section before installing Microsoft Windows for the first time.

For Windows to operate properly on your computer, it is necessary to make changes to the Windows installation. Some changes are made during the Windows SETUP procedure; others are made after the installation.

Setting Display Type

When you install Microsoft Windows 3.1, the Windows SETUP program automatically detects the hardware configuration of the computer and sets the display type to VGA. This display type, however, prevents the computer from switching screen dynamically from the LCD to the external display or vice versa. Neither the Set Advanced Features nor the hot key program works to enable this function.

To enable this function, follow these instructions to change the display type to **VGA (Version 3.0)**.

- 1** Start Windows.
- 2** Select **Windows Setup** from the Main window.
- 3** Select **Options** on the action bar, then select **Change System Settings...** from the pull-down menu.
- 4** Change the display type from VGA to **VGA (Version 3.0)** and click **OK** button to save the change, then follow the instructions on the screen.
- 5** Restart Windows.

Software Considerations

Installing the Power Management Device Driver for Windows

If you have installed Windows, it is recommended that you install the power management device driver for Windows to save battery power. This device driver is stored on the Diagnostic Diskette shipped with your computer. Do the following to install the power management device driver.

- 1 Insert the Diagnostic Diskette into the diskette drive.
- 2 At the DOS prompt, type **A:UINSTALL** and press **Enter**.

The following screen appears:

Installation Options

Installation Source Drive

Type the SOURCE drive letter (A-Z). When you install a program, the SOURCE drive letter is the location you are installing FROM.

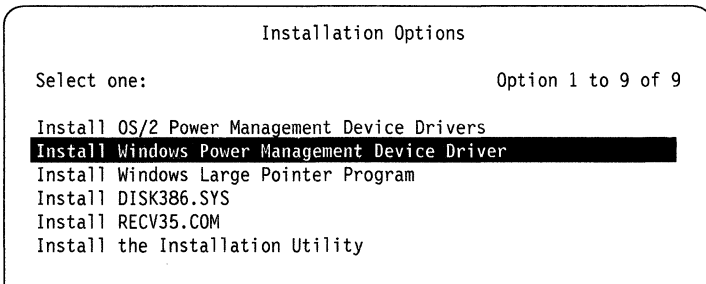
Source Drive ... [**A**]

Enter F1=Help F3=Exit

- 3 Press **Enter**.



- 4 Follow the instructions on the screen until you get the following screen:



Note: The above menu items might look different from those in the actual menu.

- 5 Select **Install Windows Power Management Device Driver** and press **Enter**. Follow the instructions on the screen.
- 6 After the installation is successfully completed, remove the Diagnostic Diskette.
- 7 Press and hold **Ctrl+Alt**, then press **Delete** to restart the system.

Considerations for Suspend Mode

When you start Windows from the DOS prompt, do not close the LCD while the program is loading. Otherwise the computer will stop running.

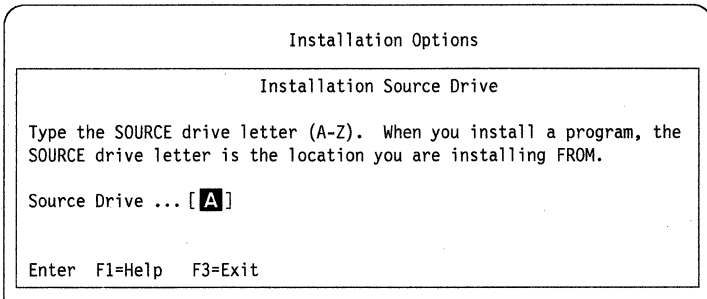
Installing the Hot Key Program for Windows

For more information about the hot key program, see "Hot Key Program" on page 2-39.

- 1 Insert the Diagnostic Diskette into the diskette drive.
- 2 At the DOS prompt, type **A:UINSTALL** and press **Enter**.

Software Considerations

3 The following screen appears:



4 Press **Enter**.

5 Follow the instructions on the screen until the screen for selection appears.

6 Use the cursor move key (↓ ↑) to select **Install Hot Key Program Windows Extension**, then press **Enter**. Follow the instructions on the screen to install the program.

7 Remove the Diagnostic Diskette from the diskette drive.

You have completed the installation of the hot key program for Windows. To activate the hot key program, follow these instructions.

8 At the DOS prompt, type **C:\NOTEUT\HK /MENU** and press **Enter**. The menu for defining the hot key appears.

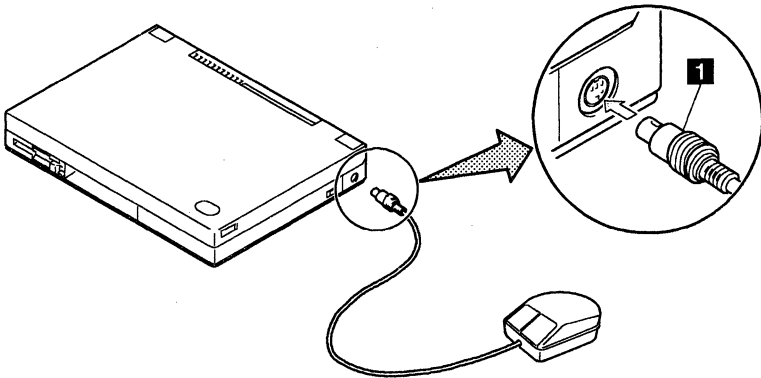
9 Define a key for the hot key function by following the instructions on the menu. Press **F10** to save your definition and press **F3** to exit from the menu.

10 Start Windows in enhanced mode.



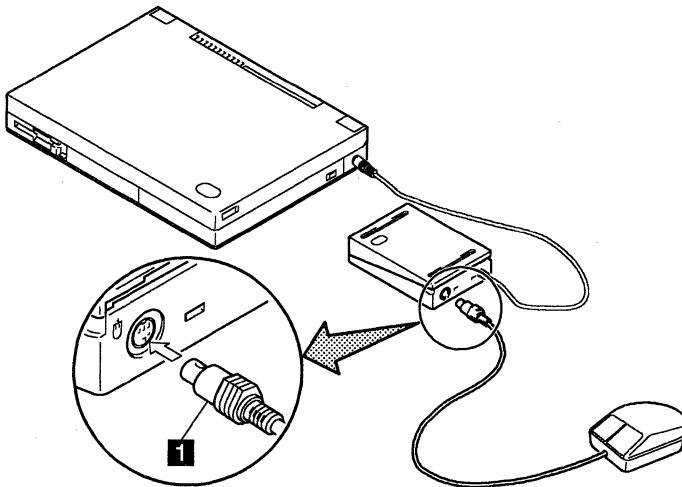
Attaching the External Numeric Keypad and the Mouse

The external numeric keypad or the mouse can be directly attached to the connector at the right side of the computer.



Note: Make sure that the mouse connector **1** is connected with the IBM logo facing *downward*.

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

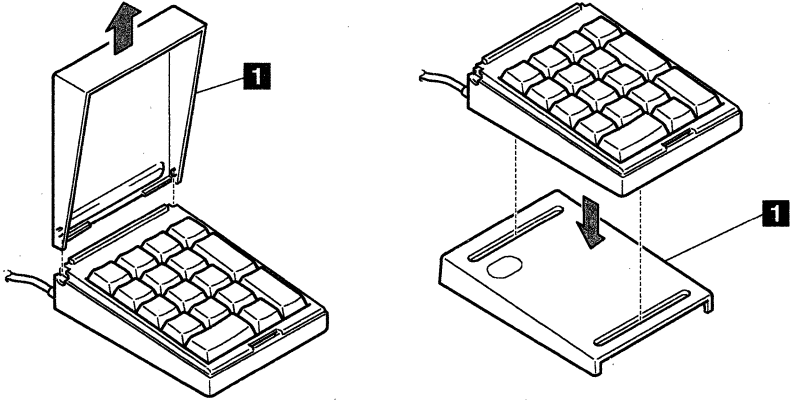


Note: Make sure that the mouse connector **1** is connected with the IBM logo facing *upward*.

Attaching External Devices

For your convenience

The cover **1** of the external numeric keypad is removable. This allows you to adjust the keypad angle by putting the keypad on this cover.

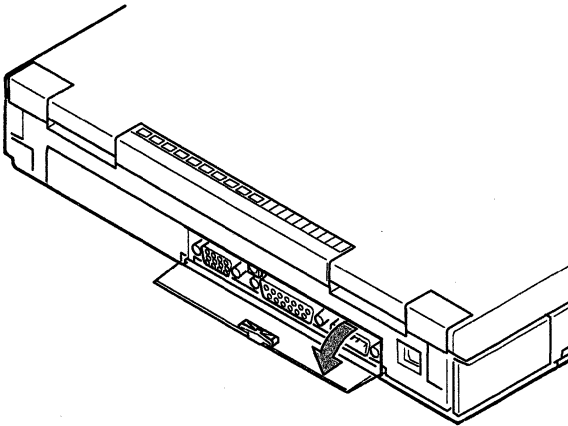




Attaching a Printer

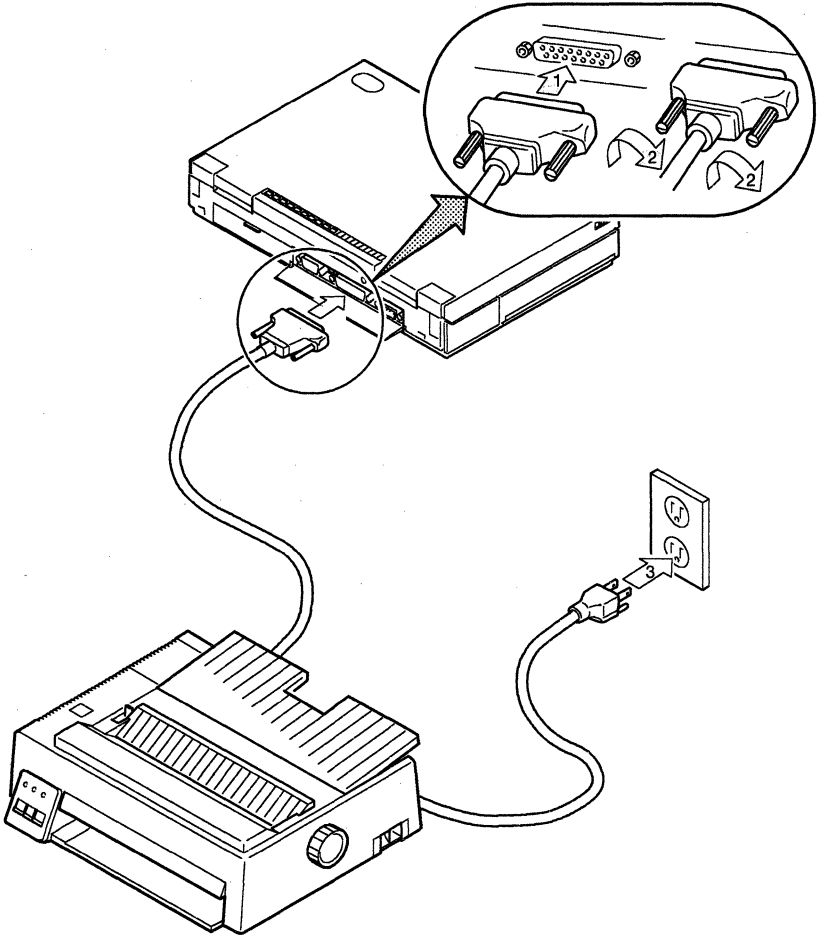
Any parallel printer with the standard Centronics interface can be attached to the 25-pin, parallel connector at the rear of the computer. To attach the printer, follow these instructions.

- 1** Turn off the computer.
- 2** Make sure that one end of the printer cable is connected to the printer.
- 3** Open the right door at the rear of the computer.



Attaching External Devices

- 4 Connect the other end of the printer cable to the parallel connector of the computer and fasten it with the two thumbscrews, then plug the printer power cord into a properly grounded electrical outlet.



- 5 Turn on the computer and the printer, then make the printer ready.

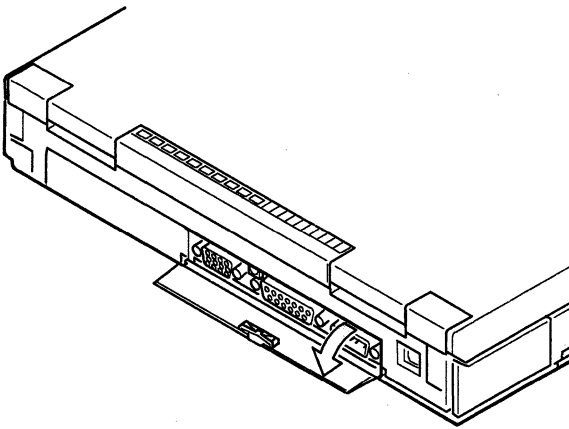


Attaching an External Display

The computer is capable of displaying information not only on the LCD, but on a VGA compatible display that is externally attached to the computer. If necessary, information can be displayed on both the LCD and the external display at the same time.

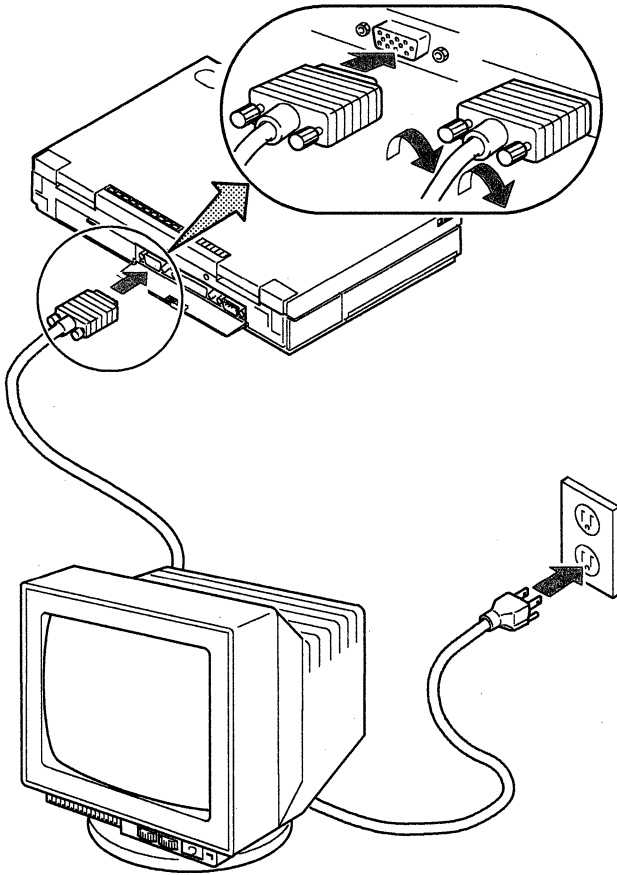
To attach the external display, follow these instructions.

- 1** Turn off the computer or close the LCD to allow the computer to enter suspend mode.
- 2** Open the right door at the rear of the computer.



Attaching External Devices

- 3 Connect the signal cable of the external display to the computer, and plug the power cord into a properly grounded electrical outlet.



- 4 Turn on the computer and the external display. If you had closed the LCD in step 1, open it to resume normal operation.

Note: The default setting for the display device is the external display. If you want to use both the LCD and the external display at the same time, see page 2-52.

When you do not use both displays at the same time, it is recommended that the default setting, that is, **CRT (High Performance)** be selected. See page 2-51.



You can control information to be displayed with two different display modes: *normal* and *high performance*. The following explains each mode.

Using High-Performance Display Mode

In high-performance display mode, information can be displayed on the LCD or an external display in higher quality font than in normal display mode. You can dynamically change the display device (LCD and external display) on which the information is displayed.

- **To display information on the LCD:** Select **LCD (High Performance)** for the *Display device* parameter on the Set Display and Audio Features Menu. See “From the Set Advanced Features Menus” on page 3-14.

Information is displayed only on the LCD even if the external display is attached.

- **To display information on the external display:** Select **CRT (High Performance)** for the *Display device* parameter on the Set Display and Audio Features Menu. See “From the Set Advanced Features Menus” on page 3-14.

The **CRT (High Performance)** is the default and is automatically set each time you start the computer.

Information appears only on an external display when the external display is connected to the computer. If the external display is not connected, the information is automatically switched to the LCD.

There are some constraints that are necessary to follow when you use the external display in this mode.

- If you disconnect the external display during suspend mode, some characters on the LCD can touch each other when the computer returns to normal operation.
- If the external display is connected during suspend mode, displayed characters on the external display look slightly different from the ones when the computer is turned on with the external display attached.

Attaching External Devices

Notes:

1. It is possible to switch information from one display to the other or vice versa using the PS2 command (see “From the Command Line” on page 3-20).
2. When you want to change display devices between normal display mode and high-performance display mode, change the option and restart the computer to have them take effect.

Using Normal Display Mode

In normal display mode, information can be displayed on the LCD, an external display, or both the LCD and an external display at the same time. The vertical expansion control is automatically in effect to adjust display size vertically on the LCD. You can dynamically control information to be displayed on the above display devices one after the other.

- **To display information on both the LCD and the external display at the same time:** Select **LCD and CRT** for the *Display device* parameter on the Set Display and Audio Features Menu. See “From the Set Advanced Features Menus” on page 3-14. If the external display is not connected, the information appears on the LCD.
- **To display information on the LCD:** Select **LCD** for the *Display device* parameter on the Set Display and Audio Features Menu. See “From the Set Advanced Features Menus” on page 3-14.
- **To display information on the external display:** Select **CRT** for the *Display device* parameter on the Set Display and Audio Features Menu. See “From the Set Advanced Features Menus” on page 3-14.

Information appears only on an external display when the external display is connected to the computer. If the external display is not connected, the information is automatically switched to the LCD.

There are some constraints that you must keep in mind when you use the external display in this mode.

- If you disconnect the external display during suspend mode, some characters on the LCD can touch each other when the computer returns to normal operation.

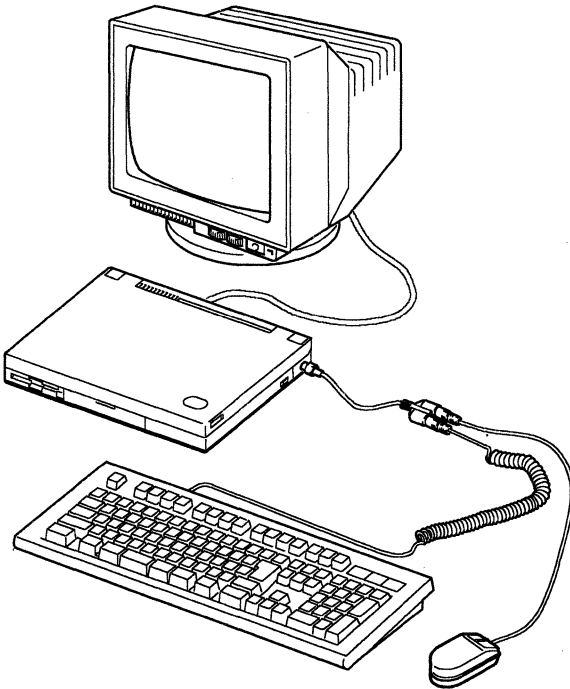


- If the external display is connected during suspend mode, displayed characters on the external display look slightly different from the ones when the computer is turned on with the external display attached.

Attaching an External Keyboard

In an office environment or at your home, you can operate your computer with a PS/2 keyboard that is externally attached to the computer through the keyboard/mouse connector which is separately available as an option.

With the external keyboard attached, the computer does not enter suspend mode even if the LCD is closed. This makes it possible to use your computer with an external display and the external keyboard as shown.



Notes:

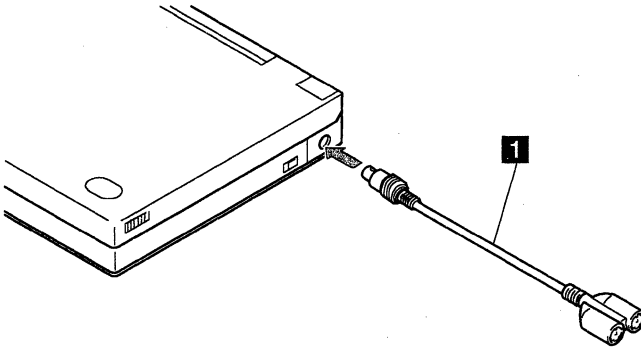
1. The external keyboard must be connected through the keyboard/mouse connector. The external keyboard does not work when you directly connect it to the computer.
2. When you use the external keyboard, the external numeric keypad and the keyboard that is built into the computer cannot be used.




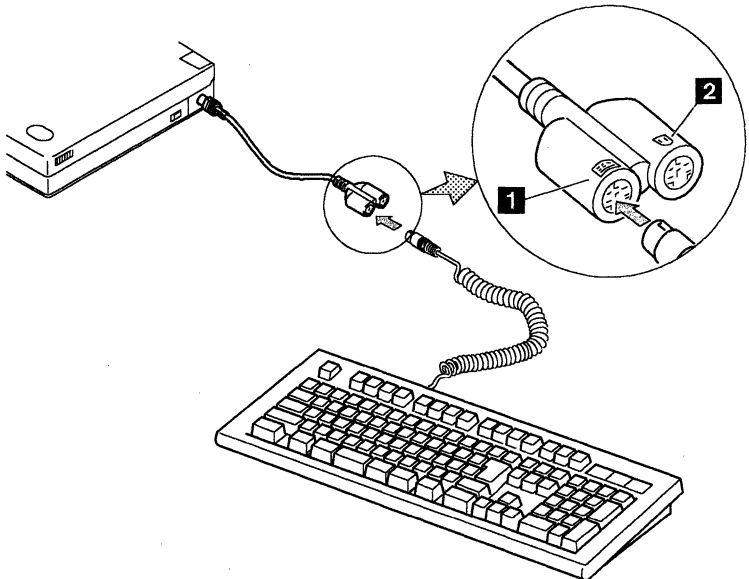
To attach the external keyboard, follow these instructions.

- 1** Turn off the computer.
- 2** Connect the keyboard/mouse connector **1** to the external input device connector on the right side of the computer.


Note: Make sure that the mouse connector is connected with the IBM logo facing *downward*.



- 3** Connect the keyboard cable to the socket **1** indicated by the icon  on the keyboard/mouse connector.



Attaching External Devices

If you need to use a pointing device such as a mouse, connect it to the other socket **2** indicated by the icon .

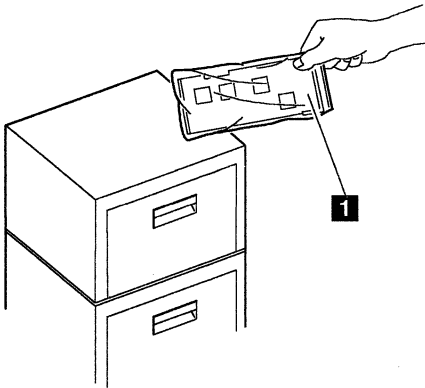


Handling Instructions for Adapters

Some adapters can be damaged by static electricity. When handling an adapter, follow these precautions.

Warning: Static electricity can damage the option if these instructions are not followed.

- Do not open the static-protective bag containing the option until you are instructed to install the option.
- Touch the static-protective bag **1** containing the option to a metal table, cabinet, or grounded metal objects before removing the option from the static-protective bag. This action reduces any static electricity from the package and from your body.



- Do not touch any exposed circuitry on the option.
- Prevent other people from touching the option.
- Always handle the option carefully and by its edges.
- If you must put the option down after it has been removed from the bag, place the option on the static-protective bag on a level surface. Do not place the option on the computer or on a metal table.

Expanding Computer Memory

The capacity of the computer memory can be increased by installing one or two option IC DRAM cards. Three different capacities of IC DRAM cards are available for the ThinkPad 700: 2MB, 4MB, and 8MB. With these IC DRAM cards, the memory can be expanded up to 16MB.

Important

The computer memory is not allowed to exceed 16MB.

Although the ThinkPad 700 has 4MB of memory installed at the time of shipment, the total memory will be 16MB even if the memory slots are occupied with two 8MB of IC DRAM cards.

Follow these instructions to install and remove an IC DRAM card.

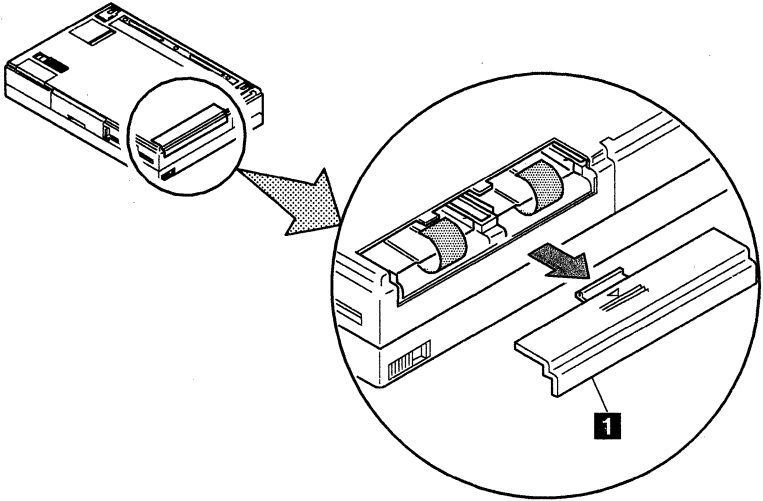
Installing an IC DRAM Card

Warning: To avoid damaging the IC DRAM card, do not touch the contact edge of the IC DRAM card.

- 1** Make sure that the computer is turned off and all the cables are disconnected.
- 2** Remove the battery pack (see "Removing the Battery Pack" on page 2-17).
- 3** Turn the computer upside down.

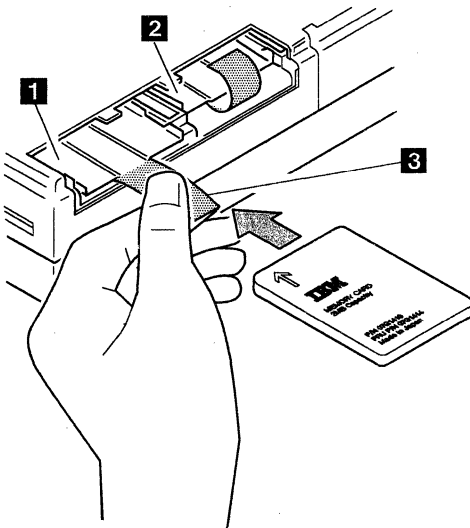


4 Remove the slot cover **1**.



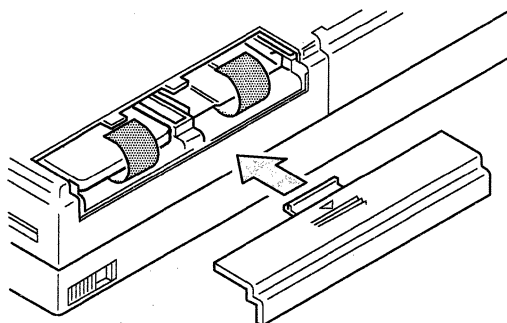
5 While holding down the strap **3**, set the IC DRAM card on either left or right tray **1** with the IBM logo up and the arrow pointing in the direction of entry. Slide the IC DRAM card forward and press it firmly into the connector.

If you have another IC DRAM card, install it on the other tray **2** in the same manner.



Expanding Capabilities of Your Computer

- 6** Replace the slot cover.



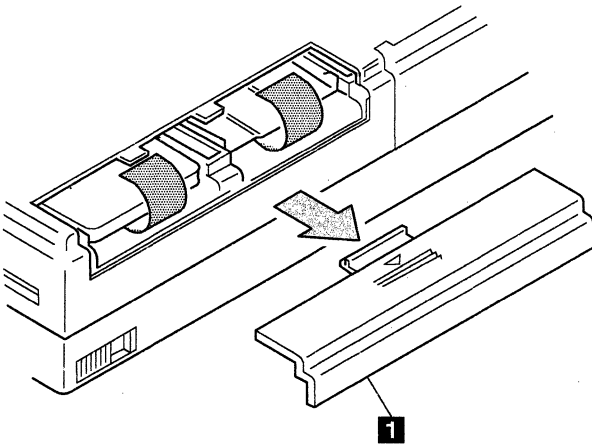
- 7** Reinstall the battery pack.
- 8** Reconnect all the cables.
- 9** Start the computer and follow the instructions on the screen to automatically configure the computer (see "After Installing or Removing an Option" on page 2-78).

You have completed the installation of the IC DRAM card.



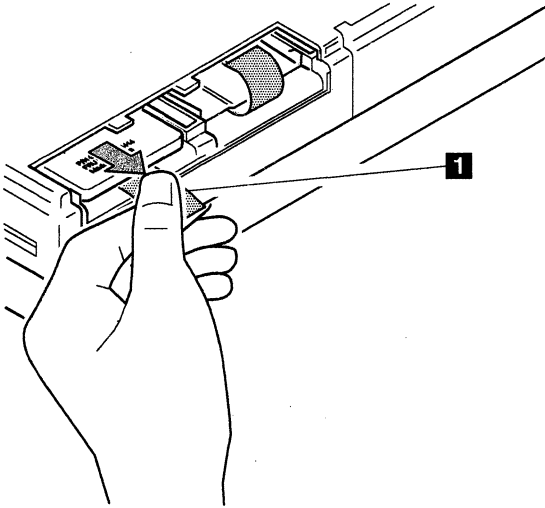
Removing an IC DRAM Card

- 1** Make sure that the computer is turned off and all the cables are disconnected.
- 2** Remove the battery pack (see “Removing the Battery Pack” on page 2-17).
- 3** Turn the computer upside down.
- 4** Remove the slot cover **1**.

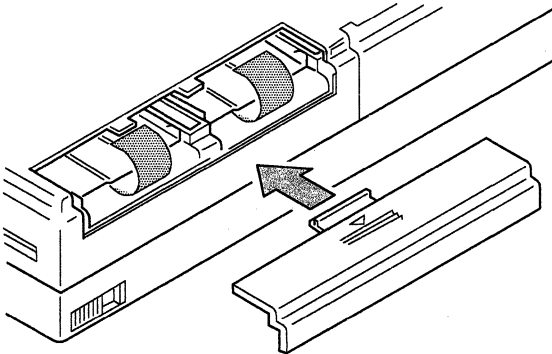


Expanding Capabilities of Your Computer

- 5 While holding the strap **1**, gently pull it to pop out the IC DRAM card and remove it.



- 6 Replace the memory slot cover.



- 7 Reinstall the battery pack.
- 8 Reconnect all the cables.
- 9 Start the computer and follow the instructions on the screen to automatically configure the computer (see "After Installing or Removing an Option" on page 2-78).



Communicating with Another System

The computer has the capability of communicating with other computer systems if one of the following communication adapters is installed.

Serial Adapter: Provides a communication interface to an external communication device through an attachable cable. The adapter complies with the EIA-232D standard and is capable of data rates from 50 to 19200 bits per second (bps).

Internal Data/Fax Modem: Makes it possible for your computer to operate as a Group 3 facsimile as well as a data communication terminal. Hereafter, we refer to the internal data/fax modem as the modem.

These options can be purchased through IBM or an IBM authorized dealer.

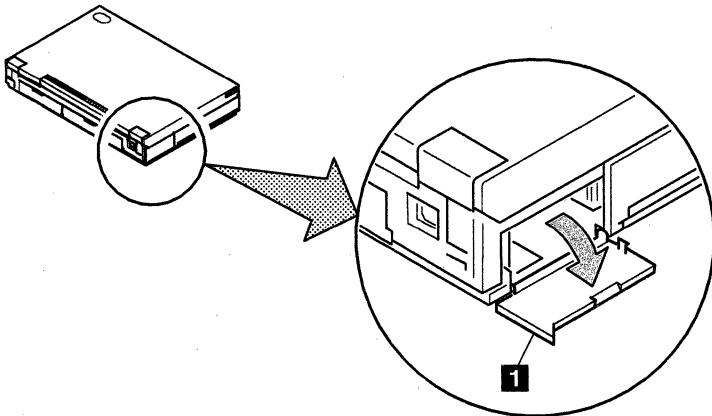
To install and remove these options, refer to the following instructions.

Installing the Modem and the Serial Adapter

Note: The following procedure is for installing the modem into the computer. The same instructions apply when you install the serial adapter.

Warning: The modem can be damaged by static electricity. Do not open the static-protective bag containing the modem until you are instructed. When handling the modem, follow the handling procedures described under “Handling Instructions for Adapters” on page 2-57.

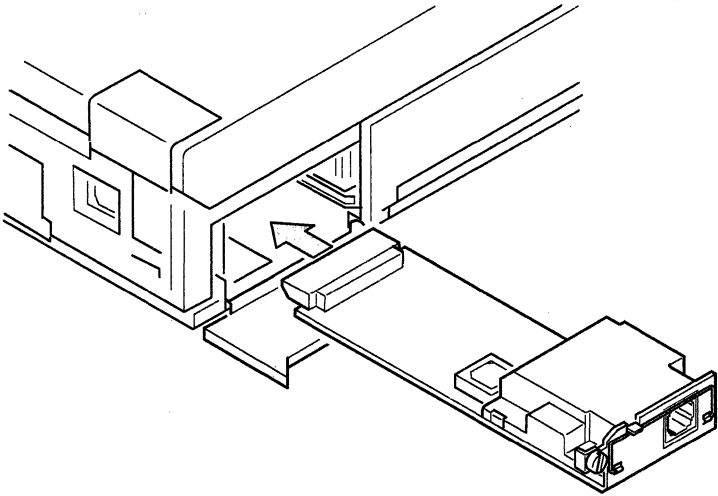
- 1** Make sure that the computer is turned off and all the cables are disconnected.
- 2** Remove the battery pack (see “Removing the Battery Pack” on page 2-17).
- 3** Open the door **1**.



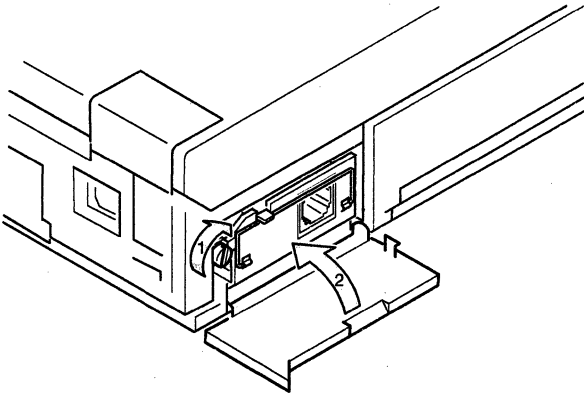
- 4** Touch the static-protective bag to a grounded metal object, then remove the modem from the bag.



- 5** Insert the modem into the slot, then firmly push it into the connector.



- 6** Using a coin, tighten the holding screw and close the door.



- 7** Reinstall the battery pack.

- 8** Reconnect all the cables.

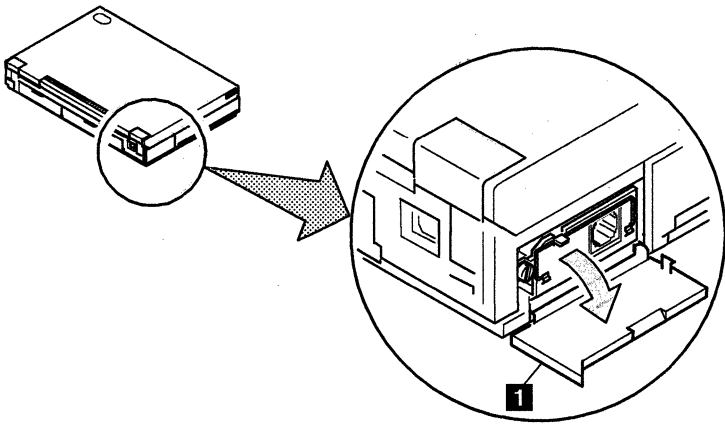
You have completed the installation of the modem.

Removing the Modem and the Serial Adapter

Note: The following procedure is for removing the modem from the computer. The same instructions apply when you remove the serial adapter.

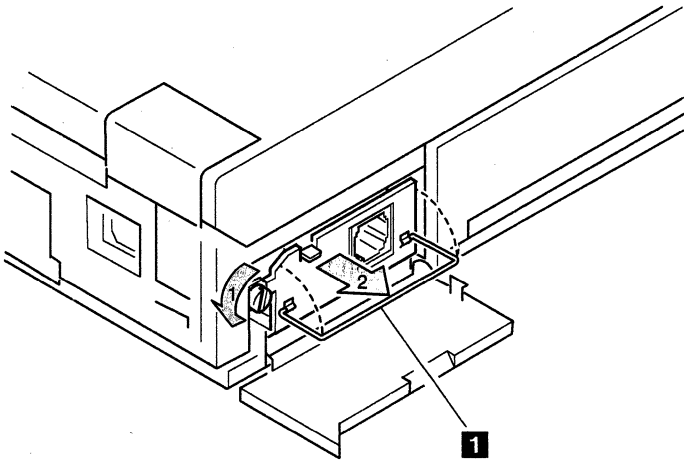
Warning: The modem can be damaged by static electricity. When handling the modem, follow the handling procedures described under “Handling Instructions for Adapters” on page 2-57.

- 1** Make sure that the computer is turned off and all the cables are disconnected.
- 2** Remove the battery pack (see “Removing the Battery Pack” on page 2-17).
- 3** Open the door **1**.

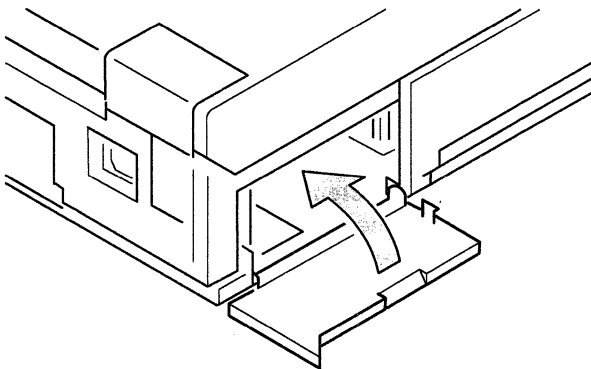




- 4** Fully loosen the screw with a coin. While holding the handle **1**, pull the modem straight out of the slot.



- 5** Close the door.



- 6** Reinstall the battery pack.

- 7** Reconnect all the cables.

Upgrading Your Hard Disk

The capacity of the hard disk can be expanded by replacing the original hard disk drive with an optional one. This option can be purchased through IBM or an IBM authorized dealer.

Note: A replacement hard disk drive does not contain the system programs. Restore the system programs onto the replacement hard disk after replacing the drive.

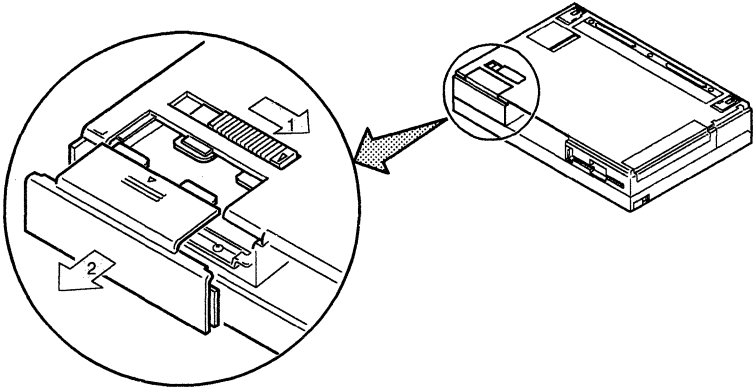
Replacing the hard disk drive requires you to:

- Back up the system programs on the hard disk (steps 1 and 2).
- Replace the hard disk drive with the replacement one (steps 3 through 10).
- Restore the backed-up system programs onto the replaced hard disk (steps 11 through 17).

- 1** Back up your data onto diskettes or tape media.
- 2** Make sure you have a backup copy of the system programs with you. If you have the backup copy, go to step 3. If not, do the following:
 - a. Start the system programs from the hard disk (see “From the Hard Disk” on page 3-5).
 - b. Select **Backup/Restore system programs** from the Main Menu, and run **Backup the system partition** and follow the instructions on the screen. For more information on how to make a backup copy of the system programs, see “Making a Backup Copy of System Programs” on page 3-7.
- 3** Turn off the computer and disconnect all the cables from the computer.
- 4** Remove the battery pack (see “Removing the Battery Pack” on page 2-17).
- 5** Close the LCD and turn the computer upside down, so that the front faces you.



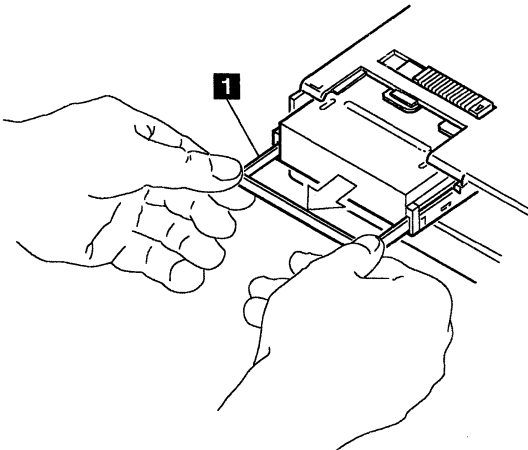
- 6** Set the locking lever to the right and remove the cover.



- 7** While holding the handle **1**, carefully pull out the drive. Be careful that you hold the drive when it comes out of the compartment. Do not release the drive from your hand until the drive is gently put on a flat surface.

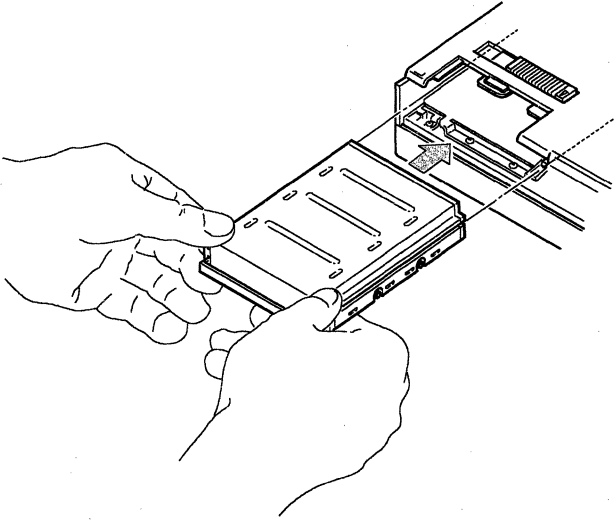
Warning: The hard disk drive is a very delicate device that needs careful handling. If the drive falls more than 3 cm (1.2 in.) and lands on a hard surface, severe damage can occur to the drive.

After removing the hard disk drive, keep it in the shipping carton that contained the replacement drive. Do not use the removed drive for other computers.

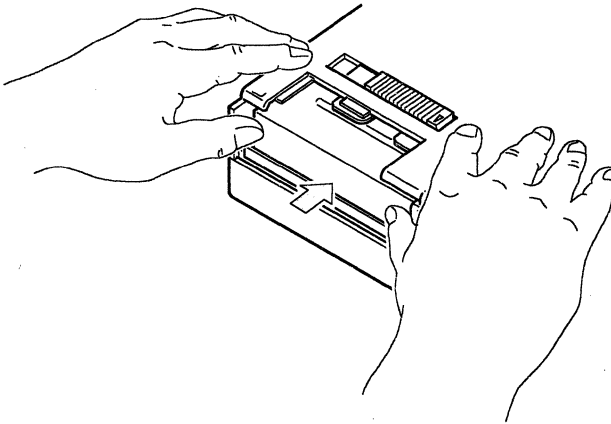


Expanding Capabilities of Your Computer

- 8** Insert the replacement drive into the compartment.

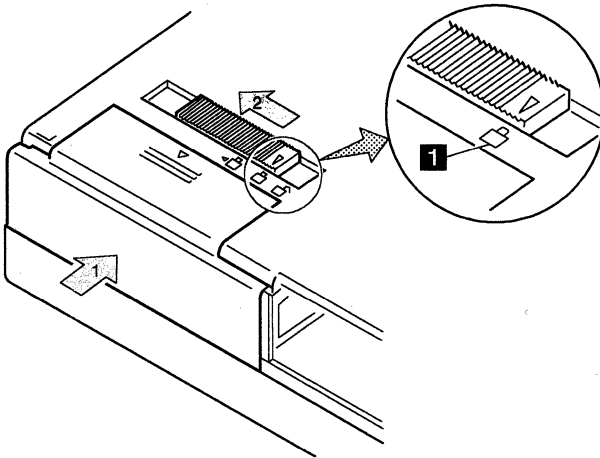


- 9** Press the drive until it snaps into the connector.





- 10** Replace the cover and slide the locking lever back to the normal position **1**.



- 11** Turn the computer over and reinstall the battery pack.
- 12** Connect the AC adapter to the computer if required.
- 13** Insert the backup copy of the Reference Diskette. This diskette should be labeled “Reference Diskette – Backup Copy”.
- 14** Turn on the computer to start the system programs.
- Note:** If you see any error messages on the screen, follow the instructions until you get the Main Menu.
- 15** Select **Backup/Restore system programs** from the Main Menu, and run **Restore the system partition**. Follow the instructions on the screen.
- 16** Install your operating system after the system programs have been restored.
- 17** Restore your data onto the hard disk.

You have completed the replacement of the hard disk drive.

Boosting Processor Power

The computer has a socket to accept a 25-MHz 387SL or the same type of math coprocessor. Installing the math coprocessor supplements the operation of the processor and enables the computer to perform complex mathematical operations.

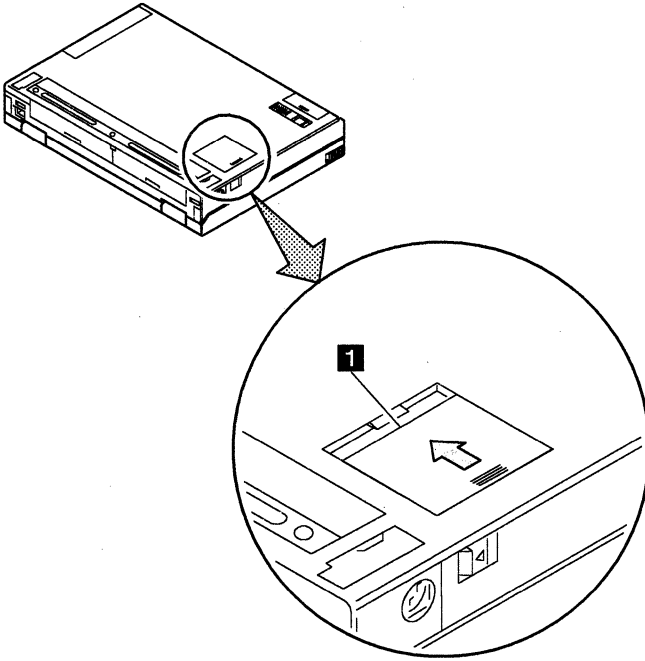
You can purchase the math coprocessor through an IBM authorized dealer.

Installing the Math Coprocessor

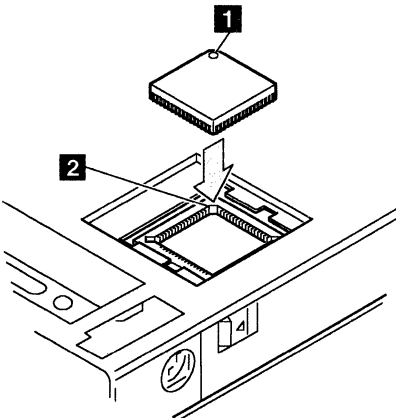
- 1** Make sure that the computer is turned off and all the cables are disconnected.
- 2** Remove the battery pack (see "Removing the Battery Pack" on page 2-17).
- 3** Close the LCD and turn the computer upside down.



- 4** Slightly raise and hold the edge of the cover **1**, then slide and remove it.



- 5** Find the dot **1** on the math coprocessor. Align this dot with the beveled corner **2** on the math coprocessor socket. Carefully align the pins of the math coprocessor with the openings in the socket, then firmly press the math coprocessor into the socket.



Expanding Capabilities of Your Computer

- 6** Replace the cover.
- 7** Reinstall the battery pack, then reconnect the AC adapter to the computer.
- 8** Start the computer and follow the instructions on the screen to automatically configure the computer (see “After Installing or Removing an Option” on page 2-78).

You have completed the installation of the math coprocessor.

Removing the Math Coprocessor

To remove the math coprocessor, take the computer to your place of purchase.



Improving Pointer Visibility

You may find it difficult to see the pointer moving across on the LCD screen when working with a pointing device such a mouse or the Pointing Stick. The pointer program allows you to make the pointer larger by changing its style from the standard to one of two styles: a white large pointer or a black large pointer.

The programs for Windows are available on the Diagnostic Diskette. If you are using OS/2 Version 2.0, the program is included in the operating system. See the manuals that came with the operating system for use of the large pointer.

Installing the Large Pointer Program for Windows

Follow the steps below.

- 1** Turn on the computer and start Windows.
- 2** Insert the Diagnostic Diskette into the diskette drive.
- 3** At the DOS prompt, type **A:UINSTALL** and press **Enter**.

The following screen appears:

Installation Options

Installation Source Drive

Type the SOURCE drive letter (A-Z). When you install a program, the SOURCE drive letter is the location you are installing FROM.

Source Drive ... [**A**]

Enter F1=Help F3=Exit

- 4** Press **Enter**.
- 5** Follow the instructions on the screen until you get the Installation Options menu appears.

Expanding Capabilities of Your Computer

- 6 Using the Down Arrow (↓) or Up Arrow (↑), select **Install Windows Large Pointer Program**. Press **Enter**. Follow the instructions on the screen.
- 7 Remove the Diagnostic Diskette from the drive.
- 8 Press **F3** to exit from the screen for selection.
- 9 Do you want to change the pointer style using an icon?
Yes Perform only step 11.
No Perform only step 10.
- 10 Pull down the File menu and select **Run** in the Windows Program Manager. Type on the command line:

C:\NOTEUT\LRGPTR.EXE /S /style

and press **Enter**. *The pointer you selected appears.*

Note: To select the white large pointer, specify **1** for **style**. To select the black large pointer, specify **2** for **style**. To select the standard pointer, specify **0** for **style**.

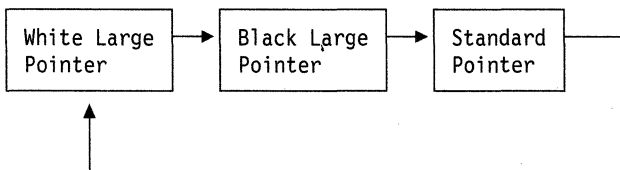
- 11 Pull down the File menu and select **Run** in the Windows Program Manager. Type on the command line:

C:\NOTEUT\LRGPTR.EXE /S /I /style

and press **Enter**.

Note: To select the white large pointer, specify **1** for **style**. To select the black large pointer, specify **2** for **style**. To select the standard pointer, specify **0** for **style**.

The pointer you selected appears and the pointer icon is displayed. Each time you double-click on this icon, the pointer style changes as shown below.





Removing the Large Pointer Program for Windows

To remove the large pointer program, follow the steps below.

- 1** Locate the header [**Windows**] in the WIN.INI file using a non-formatting text editor.
- 2** Find either of the the following lines:

```
run = C:\NOTEUT\LRGPTR.EXE  
load = C:\NOTEUT\LRGPTR.EXE
```
- 3** Delete **C:\NOTEUT\LRGPTR.EXE** from the line to read:

```
run =  
or  
load =
```
- 4** Save the file and exit the text editor.
- 5** Restart the system.

After Installing or Removing an Option

Installing or removing an option from your computer changes the configuration information stored in the computer. Start the computer and follow the instructions on the screen to run the *automatic configuration* program. This program automatically updates the configuration information of your computer.

If an option diskette came with the option, use the following procedure to copy the option diskette onto the hard disk and to your backup copy of the system programs. For more information about the system programs, see "What Are the System Programs?" on page 3-2.

Copying an Option Diskette

- 1** Make sure that the computer is turned off.
- 2** Remove any diskette from the diskette drive.
- 3** Turn on the computer.
- 4** Watch closely the flashing cursor in the top-left corner of the screen. When the cursor jumps to the top-right corner of the screen, press and hold **Ctrl+Alt**, then press **Insert**. *You must do this while the cursor is at the top-right corner of the screen.* Release the keys.
- 5** Did the Main Menu appear on your screen?
 - Yes** Select **Copy an option diskette** and follow the instructions on the screen to copy the option diskette to the hard disk.

To make a backup copy of the system programs, select **Backup/Restore system programs** and follow the instructions on the screen.
 - No** You may have pressed the keys too slowly.

When the cursor moves to the top-right corner of the screen, you have a few seconds to enter the **Ctrl+Alt+Insert** key combination. Return to step 1 and



repeat the process. If you still cannot start the system programs, go to Chapter 4, “Solving Computer Problems” on page 4-1.



Chapter 3. Using Your System Programs

This chapter provides information about the system programs that are stored on the hard disk of your computer. The same programs are also available on the Reference Diskette supplied with your computer.

Accessing the System Programs

What Are the System Programs?	3-2
Starting the System Programs	3-5
From the Hard Disk	3-5
From the Backup Copy of the System Programs	3-6
From the Reference Diskette	3-6
Making a Backup Copy of System Programs	3-7
The Presence Error Reporting and Not Present Programs	3-9

Changing the Startup Sequence

Selectable Drive Startup Sequence	3-10
Changing the Startup Sequence	3-11

Defining Your Operational Features

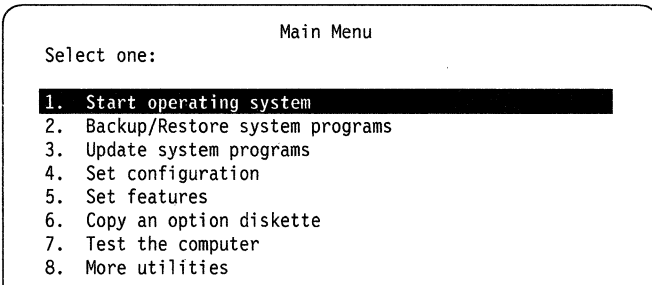
What Is the Set Advanced Features?	3-12
Installing the Set Advanced Features onto the Hard Disk	3-13
Starting the Set Advanced Features	3-14
From the Set Advanced Features Menus	3-14
From the Command Line	3-20

What Are the System Programs?

System programs are used to configure, test, and update your computer.

The system programs on the hard disk are stored in a protected area, called the system partition. To start the system programs, see "Starting the System Programs" on page 3-5.

You can gain access to these programs through the Main Menu.



The system programs shown on the Main Menu are:

- **Start operating system** is used to exit from the system programs and to start the operating system.
 - **Backup/Restore system programs** contain the following:
 - Backup the system diskettes** is used to make a backup copy of the Reference Diskette and Diagnostic Diskette (system diskettes).
 - Backup the system partition** is used to make a backup copy of the system programs that are on the hard disk.
 - Restore the system partition** installs updated system programs onto the system partition whenever you receive a new version of the system diskettes from IBM. (You must send in the registration card supplied with the *Quick Reference* to receive the new system diskettes with updated system programs.)
- Use this restore program in case of accidental loss of, or magnetic damage to, the system programs in the system partition. This program allows you to copy the system programs *from* the Reference Diskette and Diagnostic Diskette



or the backup copy of the system programs mentioned above, onto the system partition on the hard disk.

- **Update system programs** is used to copy new or revised system program files from an update diskette onto the system partition on the hard disk.
- **Set configuration** is used to view, change, backup, or restore the configuration information. **Set configuration** consists of the following system programs that are displayed on the “Set Configuration Menu”.

View configuration is used to display the current configuration information stored in memory.

Change configuration is used to alter the configuration information stored in memory.

Backup configuration is used to copy the configuration information stored in memory to the hard disk. Use this program to keep a current copy of the system configuration information after you make changes to the configuration.

Restore configuration is used to restore the configuration information copied by **Backup configuration** and restore that information to the memory.

Run automatic configuration is used to verify and update the configuration information stored in memory.

This information is then stored in memory that is kept active by the backup battery even when the computer is turned off.

Set and view SCSI device configuration is used to set, view, or change SCSI (small computer systems interface) device configurations when the attached expansion unit has an IBM SCSI adapter installed. For more detail on SCSI device configurations, see “The Presence Error Reporting and Not Present Programs” on page 3-9.

Display memory map is used to show how the computer assigns parts of the system memory.

- **Set features** contains the following:

Set date and time is used to set the current date and time in memory. This information is maintained by the backup battery even after the computer is turned off.

Set password and unattended start mode is used to prevent the unauthorized use of the computer and contains the following:

Accessing the System Programs

- Power-on password
- Unattended start mode

Set keyboard speed is used to change the typematic speed (repeat-action speed) at which the keyboard responds.

Set startup sequence is used to select the sequence of the drives that the computer will access when the computer is turned on.

For most applications, the default drive-startup sequence can be applied without any modification. See “Selectable Drive Startup Sequence” on page 3-10.

Set advanced features is used to change the display and audio functions and power management settings. For more information, see “What Is the Set Advanced Features?” on page 3-12.

- **Copy an option diskette** is used to copy option-diskette information onto the system partition of the hard disk. The option diskette contains the testing program and configuration information for the option. See “Copying an Option Diskette” on page 2-78 for more information.
- **Test the computer** is used to test the computer hardware. If a problem occurs during this testing, see Chapter 4, “Solving Computer Problems” on page 4-1 for corrective actions.
- **More Utilities**

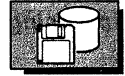
Display revision levels is used to present information that might be needed if service is required. If a printer is attached, the computer information presented on the screen can be printed by pressing the Print Screen key.

Display system error log is used to view the system error log.

Set system identification is used to set the serial number that is printed on the machine identification label.

Expansion unit utilities is used to view or delete information on the expansion unit configuration, which is saved in the system partition.

The *expansion unit* is referred to as an expansion cartridge or any device that attaches to the system expansion connector.



Starting the System Programs

You can start the system programs from one of the following:

- System partition on the hard disk
- Backup copy of the system programs
- Reference Diskette

From the Hard Disk

To start the system programs from the system partition on the hard disk, follow these instructions:

- 1** Make sure that the computer is turned off.
- 2** Remove any diskette from the diskette drive.
- 3** Turn on the computer.
- 4** Watch closely the flashing cursor in the top-left corner of the screen. When the cursor jumps to the top-right corner of the screen, press and hold **Ctrl+Alt**, then press **Insert**. *You must do this while the cursor is at the top-right corner of the screen.* Release the keys.
- 5** Did the Main Menu appear on your screen?
 - Yes** You have successfully started the system programs from the hard disk. Select a menu item and follow the instructions on the screen.
 - No** You may have pressed the keys too slowly. When the cursor moves to the top-right corner of the screen, you have a few seconds to enter the **Ctrl+Alt+Insert** key combination. Return to step 1 and repeat the process. If you still cannot start the system programs, go to Chapter 4, "Solving Computer Problems" on page 4-1.

Accessing the System Programs

From the Backup Copy of the System Programs

Use the backup copy when the system programs cannot be started from the hard disk.

To start the computer with the backup copy of the system programs, follow these instructions.

- 1** Make sure that the computer is turned off.
- 2** Insert the backup copy of the Reference Diskette, with the label up and metal-shutter end first, into the diskette drive. Make sure the diskette clicks into place.
- 3** Turn on the computer and follow the instructions on the screen.

From the Reference Diskette

The Reference Diskette is a write-protected diskette that contains a copy of the system programs as they were shipped with your computer. Information can be *read from* the diskette, but cannot be changed.

Use the Reference Diskette to start the system programs when they cannot be started from either the hard disk or the backup copy of the system programs. Keep the Reference Diskette in a safe place.



Making a Backup Copy of System Programs

IBM recommends that you back up the system programs from the hard disk to the diskette. This backup copy of the system programs can be used in the event that the system programs on the hard disk cannot be used.

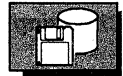
Before starting to make a backup copy of the system programs, get two blank 3.5-inch, 2.0MB-capacity diskettes. With the label side down and the metal-shutter end facing away from you, locate the write-protect switch in the lower-right corner of the diskette. Slide the write-protect switch up toward the metal-shutter end. This allows data to be copied onto this diskette.

To make a backup copy of the system programs, follow these instructions:

- 1** Make sure that the computer is turned off.
- 2** Remove any diskette from the diskette drive.
- 3** Turn on the computer.
- 4** Watch closely the flashing cursor in the top-left corner of the screen. When the cursor jumps to the top-right corner of the screen, press and hold **Ctrl+Alt**, then press **Insert**. *You must do this while the cursor is at the top-right corner of the screen.* Release the keys.
- 5** Did the Main Menu appear on the screen?
 - Yes** You have successfully started the system programs from the hard disk. Continue at step 6 on page 3-8.
 - No** You may have pressed the keys too slowly. When the cursor moves to the top-right corner of the screen, you have a few seconds to enter the **Ctrl+Alt+Insert** key combination. Return to step 1 and repeat the process. If you still cannot start the system programs, go to Chapter 4, "Solving Computer Problems" on page 4-1.

Accessing the System Programs

- 6** Insert the blank diskette, label side up and metal-shutter end first, into the diskette drive. Make sure the diskette clicks into place.
- 7** Select **Backup/Restore system programs** from the Main Menu. Then select **Backup the system partition** and follow the instructions on the screen.
- 8** When the copy is completed, remove the diskette from the diskette drive and label it. Label the first diskette "Reference Diskette – Backup Copy" and the second one "Diagnostic Diskette – Backup Copy".



The Presence Error Reporting and Not Present Programs

Use these programs when you disconnect a SCSI device, such as a CD-ROM or optical disk drive, from an expansion unit that is externally attached to the computer. These programs allow you to remove a SCSI device from the SCSI configuration. These programs also allow you to keep a SCSI device in the SCSI configuration, without the computer reporting a power-on self-test (POST) error.

To use these programs, select **Set configuration** from the Main Menu, then select **Set and view SCSI device configuration**. Follow the instructions on the screen to set the **Not Present** function.

- **Keep** causes the computer to keep a SCSI device in the current SCSI configuration. Use this function when you temporarily disconnect a SCSI device from the computer.

Change the **Presence Error Reporting** from **Enabled** to **Disabled** if you want to prevent a POST error (00017300, 00017400).

- **Remove** causes the computer to remove a SCSI device from the current SCSI configuration. Use this function when you permanently remove a SCSI device from the computer.

Note: This function sometimes causes the drive letters to change.

Selectable Drive Startup Sequence

Selectable drive-startup (selectable boot) allows you to control the startup sequence of the drives in your computer. Each time you turn on the computer, it sequentially looks for a drive that contains your operating system. The order which the computer looks for the drives is the *drive-startup sequence*.

In most cases, the *default* drive-startup sequence need not be changed. However, if you are working with multiple operating systems, you are loading the operating system from the hard disk without checking the diskette drive, or you are planning to do a remote program load (RPL) from a drive in a network server, you might want to change the drive-startup sequence.

The default sequence checks the diskette drive for a self-starting (bootable) diskette. If one exists, the operating system or program is loaded from the diskette. If not, the computer checks the hard disk for an operating system. If one exists, the operating system is loaded from the hard disk. If not, the computer displays the *Diskette and F1* prompts. See "What Do the Diskette and F1 Prompts Mean?" on page 2-5.

You can change the drive-startup sequence by the order in which the computer checks the drives. When you change the startup sequence, the drive letters might also be changed. Drive letters are assigned by the operating system when the computer starts. The assignment of drive names will vary with the defined startup sequence and with the operating system or the device drivers used.

Warning: If you changed your startup sequence, you must be extremely careful when you do write operations (such as copying, saving, or formatting). Your data or programs can be overwritten if you select the wrong drive.



The following shows the default startup sequence for your computer.

Set Startup Sequence	
Startup Number	Device
1.	[1.44MB 3.5-inch Diskette Drive 0]
2.	[Hard disk drive 0]
3.	[RPL from network]

Changing the Startup Sequence

To change the startup sequence, do the following:

- 1** Start the system programs from the hard disk (see “From the Hard Disk” on page 3-5 for more information).
- 2** Select **Set features** from the Main Menu.
- 3** Select **Set startup sequence** and follow the instructions on the screen.

Set Startup Sequence	
Startup Number	Device
1.	[1.44MB 3.5" Diskette Drive 0]
2.	[RPL from network]
3.	[Hard Disk Drive 0]

In this example the computer looks for a self-starting diskette in the diskette drive. If the self-starting diskette is not installed in the drive, the computer loads the operating system from a drive in a network server. If the network server does not work, the computer will load the operating system from the hard disk.

What Is the Set Advanced Features?

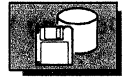
The Set Advanced Features is a program contained on the Reference Diskette that is used to set up the options through the following two menus or the PS2 command with various parameters.

- **Set Display and Audio Features Menu** enables you to specify:
 - Display devices
 - Vertical expansion on LCD
 - LCD display mode (color or monochrome)
 - Power controller beep On/Off
 - Low battery alarm On/Off
- **Set Power Management Options Menu** enables you to specify:
 - Automatic power saving timer for the LCD
 - Automatic power saving timer for the hard disk drive
 - Automatic system suspend
 - Processor speed
 - Power On/Off for the onboard (built-in) serial adapter
 - Power On/Off for the optional serial adapter

This program runs in one of the following system environments.

- DOS
- OS/2
- Microsoft Windows
- Set features menu in the system programs (hard disk or Reference Diskette)

To use this program, first install the Set Advanced Features as explained on the next page. Then you can specify parameters for each advanced feature by either the screen menus or the commands from the command line (for example, **PS2 DISK 3**, which is used to set automatic power saving timer for the hard disk to 3 minutes.).



Installing the Set Advanced Features onto the Hard Disk

- 1** Turn on the computer and start the operating system.
- 2** Insert the Reference Diskette into the diskette drive.
- 3** At the command prompt, type **COPY A:\PS2.EXE C:** and press **Enter**.
- 4** Remove the Reference Diskette from the diskette drive.

You have completed the installation of the Set Advanced Features.

Starting the Set Advanced Features

Once the Set Advanced Features are installed, you can start the Set Advanced Features with either of the following methods:

- From the Set Advanced Features Menus
- From the command line

From the Set Advanced Features Menus

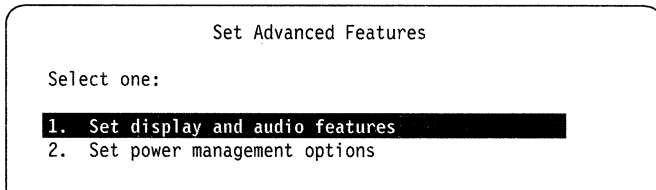
If you have not installed the Set Advanced Features onto the hard disk, see “Installing the Set Advanced Features onto the Hard Disk” on page 3-13.

1 At the command prompt, type **\PS2** and press **Enter**.

2 The following menu appears.

To change display features such as display mode and display device, or audio features such as a beep for resume normal operation or low battery state, select **1** and press **Enter**. Go to step 3 on page 3-15.

To set power management items, select **2** and press **Enter**. Go to step 4 on page 3-17.





3 If you selected **1**, the following menu appears. Move the cursor to the desired item by the cursor move keys (↑ ↓) and press the **Spacebar** or **Backspace** to change the option value.

To save the specified value, press **Enter**.

```
                Set Display and Audio Features Menu

Press Spacebar or Backspace to select.
Press Enter to save the changes.

Display features

  Display device:          [CRT (High Performance)]
  LCD vertical expansion: [Off]
  LCD display mode:       [Color]

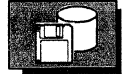
Audio features

  Power controller beep:  [On]
  Low battery alarm:      [On]

Enter   F1=Help   F3=Exit
```

Defining Your Operational Features

Parameter	Option	Purpose
Display device	CRT (High Performance) LCD (High Performance) LCD and CRT CRT LCD	<p>This parameter determines which display devices are selected for the following.</p> <ul style="list-style-type: none"> In <i>High Performance</i> CRT/LCD, you can get the best display results either on the attached external display or on the LCD. The output display device can be dynamically changed from the attached external display to the LCD or vice versa in this mode. In <i>LCD</i>, <i>CRT</i>, and <i>LCD and CRT</i>, you can dynamically change the display device one after the other. The LCD vertical expansion is automatically in effect and cannot be disabled. <p>When you change the display device from <i>High Performance</i> to the others or vice versa, changes take effect only after you restart the computer.</p> <p>See "Attaching an External Display" on page 2-49 for more information.</p> <p>See Note 2.</p>
LCD vertical expansion	Off On	<p>Enables or disables vertical data expansion (text or graphics) from 350 or 400 lines to 480 lines.</p> <p>See Note 2.</p> <p>This parameter is in effect only on the High-Performance display mode when the LCD is used.</p>
LCD display mode	Color Mono	<p>Select <i>Color</i> if you are running programs written for a color display.</p> <p>Select <i>Mono</i> if you are running programs written for a monochrome display.</p> <p>This parameter is not in effect when an external display is attached.</p> <p>See Note 2.</p>



Parameter	Option	Purpose
Power controller beep	On Off	Specifies the alarm to beep or not to beep when: <ul style="list-style-type: none">• The state of the computer is changed from suspend mode to resume normal operation or vice versa.• The power source is changed from battery to external power or vice versa.• The Battery Power Status indicator turns orange.
Low battery alarm	On Off	Specifies the alarm to beep or not to beep when the battery power is low.
Notes: <ol style="list-style-type: none">1. In the Option column, the default values are highlighted.2. In the OS/2 environment, this parameter will be in effect after the system is restarted.		

4 If you have selected **2**, the following menu appears. Move the cursor to the desired item by the cursor move keys (↑ ↓) and press **Spacebar** or **Backspace** to change the option value.

To save the specified value, press **Enter**.

```
Set Power Management Options Menu

Press Spacebar or Backspace to select.
Press Enter to save the changes.

Automatic power saving timer (0 = Always on)

LCD off: [05 minute(s)]
Internal HDD off: [05 minute(s)]
System suspend: [00 minute(s)]

Speed

Processor: [Auto(Long Battery Life)]

Serial device power

Onboard: [On]
Optional: [On]

Enter F1=Help F3=Exit
```

Defining Your Operational Features

Parameter	Option	Purpose
LCD off	05 (00 to 20 minutes) See Note 2.	The LCD and its backlight turn off if no input from the keyboard, Pointing Stick, mouse, or external numeric keypad is made in a specified time. Note: To turn on the LCD and its backlight, make any input using the above devices.
Internal HDD off	05 (00 to 20 minutes) See Note 2.	The hard disk turns off when it is not used for a specified time.
System suspend	00 (00 to 20 minutes) See Note 2.	The system enters suspend mode if no activity occurs in a specified time. To return from suspend mode to normal operation: <ul style="list-style-type: none"> • Close the LCD and open it slowly. • Press either click button of the Pointing Stick. See Note 3.
Processor	Auto Max	Selects either the processor speed Auto (Long Battery Life) or Max (High Performance). When the computer is used with the AC adapter, the processor speed is always set to 25 MHz no matter which option is selected. When the computer is used with the battery pack, the processor speed depends on which option is selected: <ul style="list-style-type: none"> • In <i>Auto</i> the processor speed is slowed down to economize battery power until there is any activity such as a key stroke or disk access. If any activity is found, the processor speed will automatically jump to 25 MHz, its maximum speed. If no activity is found for the specified time, the speed gradually slows down to 0 MHz to save power. It is recommended that <i>Auto</i> be set when you want a longer operation with the battery pack. <ul style="list-style-type: none"> • The <i>Max</i> enables the computer to operate at 25 MHz, its maximum speed.
Onboard	On Off	Turns on or off the serial adapter that is built into the computer.



Parameter	Option	Purpose
Optional	On Off See Note 4.	Turns on or off the optional serial adapter or the internal data/fax modem.
Notes: <ol style="list-style-type: none">1. In the Option column, the default values are highlighted.2. If 00 is specified as the option, no automatic power saving is assumed.3. This parameter is not valid if an external keyboard or an expansion unit is attached. The computer will not enter suspend mode.4. If the internal data/fax modem is installed but is not used for a while during battery-powered operation, it is recommended to set this option to Off to save battery power.5. When you are using ac power, the following parameters are temporarily set: Processor speed: <i>Max (High Performance)</i> Onboard serial adapter: <i>On</i> Optional serial adapter: <i>On</i>		

Defining Your Operational Features

From the Command Line

You can specify any of the operational features by typing a command with the appropriate parameters.

At the command prompt, enter the command in the following syntax.

PS2 [*Parameter1*] [*Parameter2*]

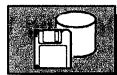
Syntax Rules

Follow the rules below when you enter a command.

Syntax	Rule
[]	Letters in brackets are optional.
	Select one of the options on either side of a vertical bar ().
Highlighted	Enter the exact highlighted letters. You can use uppercase or lowercase letters.
UPPERCASE	Enter any value for the following: XX: 0 - 20 HH: 0 - 23 MM: 0 - 59 SS: 0 - 59 Note: The MM (minutes) and SS (seconds) are optional. The default values are 00.
lowercase	Command elements in lowercase are optional. For example, entering PS2 BE OF and PS2 BEep OF causes the same results to occur.

Parameter1

Value	Meaning
SET	Stores a parameter into memory. Once any command that can be specified for <i>Parameter2</i> is set, it is kept in memory until it is changed.
? Help	Displays the format of all the commands available.



Parameter2

Parameter1	Parameter2	
	First Value	Second Value
[SET]	BEep	ON Off
—	DEFAULT	—
—	DISCHARGE	—
[SET]	DISK	XX minutes
[SET]	DISPly	Color Mono
[SET]	LCd	XX minutes
[SET]	LOw battery alarm	ON Off
[SET]	MODEM	ON Off
—	OFF	—
[SET]	ON at	HH:MM:SS Clear
[SET]	POwer	XX minutes
[SET]	SCreen	HCRT HLCD BOTH CRT LCD
[SET]	SErial	ON Off
[SET]	SPeed	AUTO MAX
—	TRAVEL	—
[SET]	VEXPansion	ON Off

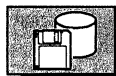
Note: If you specify **SET**, the command you enter is stored and remains in the computer memory even if the power switch is turned off. If you do not specify **SET**, the command is no longer in effect when the power switch is turned off.

Sample Command Formats: The following shows the command examples.

Command	Meaning
PS2	Displays the Set Advanced Features Main Menu.
PS2 BE OF	Sets the power controller beep to off.
PS2 BE ON	Sets the power controller beep to on.
PS2 DEFAULT	Resets all the parameters to the default values.
PS2 DISCHARGE	Sets the parameters suitable for discharging the battery pack.
PS2 DISP C	Sets the LCD to color emulation. The screen image is displayed in various hues.
PS2 LO OF	Sets the low battery alarm to off.

Defining Your Operational Features

Command	Meaning
PS2 LO ON	Sets the low battery alarm to on.
PS2 MODEM OF	Turns off the optional serial adapter or the internal data/fax modem.
PS2 OFF	Enters suspend mode immediately. Entering this command can cause your computer to enter suspend mode even when the display is opened. To resume normal operation, close the display and open it again, or press one of the click buttons of the Pointing Stick.
PS2 ON	Displays the current setting of resume time.
PS2 ON C	Resets resume time and the system never resumes by the timer. To return from suspend mode to normal operation mode, close the display and open it slowly.
PS2 ON 23:59:01	Resumes at 11:59:01 p.m.
PS2 SC BOTH	Displays data on both the LCD and the attached external display.
PS2 SC CRT	Displays data only on the attached external display.
PS2 SC LCD	Displays data only on the LCD.
PS2 SE OF	Turns off the onboard serial adapter.
PS2 SP AUTO	Sets the processor speed to AUTO (long battery life mode).
PS2 SP MAX	Sets the processor speed to MAX.
PS2 SET DISK 10	Sets automatic power saving timer for the hard disk drive to 10 minutes. Parameters are stored in memory.
PS2 SET DISP M	Sets the LCD to mono. Parameters are stored in memory.
PS2 SET LC 5	Sets automatic power saving timer for the LCD and its backlight to 5 minutes. Parameters are stored in memory.
PS2 SET P0 3	Sets automatic power saving timer for entering suspend mode to 3 minutes. Parameters are stored in memory.
PS2 VEXP ON	Enables the LCD vertical expansion.
PS2 TRAVEL	Sets the parameters to extend battery operation time.



Using the System Command

Three system commands are provided so that you can set up your system with a single command such as PS2 DEFAULT for high system performance, PS2 TRAVEL for longer battery operation time, and PS2 DISCHARGE for easy battery discharging. The following table lists the setup parameters to be set by each command. To use the program, type the command at the command prompt.

Note: If you have not installed the Set Advanced Features onto the hard disk, see “Installing the Set Advanced Features onto the Hard Disk” on page 3-13.

System Command	Parameters to Be Set
PS2 DEFAULT	<ul style="list-style-type: none">• Sets the display device to <i>CRT (High Performance)</i>.• Disables the LCD vertical expansion.• Sets the display mode to <i>Color</i>.• Sets the power controller beep to <i>ON</i>.• Sets the low battery alarm to <i>ON</i>.• Turns off the LCD after 5 minutes of inactivity.• Turns off the hard disk drive after 5 minutes.• No system suspend is assumed.• Sets the processor speed to <i>AUTO</i>.• Turns on both onboard and optional serial adapters, and the internal data/fax modem.
PS2 TRAVEL	<ul style="list-style-type: none">• Sets the power controller beep to <i>OFF</i>.• Sets the low battery alarm to <i>ON</i>.• Turns off the LCD after 3 minutes of inactivity.• Turns off the hard disk drive after 2 minutes.• Enters suspend mode in 5 minutes.• Sets the processor speed to <i>AUTO</i>.• Turns off both onboard and optional serial adapters, and the internal data/fax modem.
PS2 DISCHARGE	<p>Starts discharging the battery pack.</p> <p>Note: Disconnect the external power cord from the computer before performing this command.</p>



Chapter 4. Solving Computer Problems

Computer problems can be caused by software, hardware, or both. Many problems can be diagnosed and solved with the assistance of the self-tests and the system programs. If a hardware problem is detected by the self-test, an error message is displayed with an 8-digit number.

By using the system programs, you can solve the problem yourself or provide information to the service technician. Make a note of any error messages and give them to the service technician if you need to call for service. If the system programs cannot be loaded, the troubleshooting charts and other information in this chapter will help you determine what corrective action to take.

Important

Use this chapter to test only *IBM* products. Non-*IBM* products might cause misleading error information or incorrect computer responses. For testing non-*IBM* products, refer to the instructions supplied with those products.

What If Your Computer Does Not Work?

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What If Your Computer Does Not Work?

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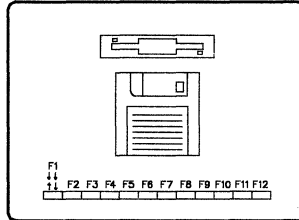


Testing

- 1 Turn on the computer.** The power-on self-test (POST) automatically runs.

If the test goes to completion without detecting an error, you hear one beep and one of the following occurs:

- The Diskette and F1 prompts (shown below) appear.



- If an operating system or application program is installed, the operating system or application screen appears.

Did one of these screens appear?

Yes Continue with step 2.

No Refer to the following table. In the table, an X can be any number.

Screen Messages	Action
00016X00 or 00017X00	If you encounter an error, follow the instructions on the screen to correct the error.

What If Your Computer Does Not Work?

Screen Messages	Action
00030X00	<p>Turn off the computer and all the attached devices. Turn on the computer first, then turn on the attached devices. If the problem remains, go to the Main Menu and select <i>Test the computer</i> to test your system.</p> <ul style="list-style-type: none">• If the computer has an external keyboard connected, verify that:<ol style="list-style-type: none">1. The external keyboard is connected to the correct side of the keyboard/mouse connector (see page 2-54).2. The keyboard/mouse connector is properly connected to the computer. <p>If the above items are correct, disconnect the keyboard/mouse connector from the computer and verify correct operation on the system keyboard. If the system keyboard works, have the keyboard/mouse connector or the external keyboard serviced.</p> <ul style="list-style-type: none">• If you cannot go beyond the first screen, have the computer serviced.• If the computer stops during testing and does not continue, have the computer serviced.• If testing does not find a problem and a problem still exists, find the problem in "Troubleshooting Charts" on page 4-6.
The Main Menu of the System Programs appears.	<p>Select <i>Test the computer</i> and follow the instructions to test your system.</p> <ul style="list-style-type: none">• If you cannot go beyond the first screen, have the computer serviced.• If the computer stops during testing and does not continue, have the computer serviced.• If testing does not find a problem and a problem still exists, find the problem in the Troubleshooting Charts on page 4-6.
Blank screen or any other screen response	Go to page 4-6.

2 Turn off the computer, then turn it on.

When the cursor moves to the top-right corner of the screen, press and hold **Ctrl+Alt**, then press **Insert**. Release the keys.



3 Did the system programs Main Menu appear on the screen?

Yes The computer has successfully completed the POST (internal tests) and the system programs are loaded. To start the testing programs, select **Test the computer** and press **Enter**.

- *If the computer did not beep*, the speaker is not working. Have the computer serviced. If you are not sure about the beep, turn off the computer, then on again. Repeat step 2 on page 4-4.
- *If you cannot go beyond the first screen*, have the computer serviced.
- *If the computer stops during testing and does not continue*, have the computer serviced.
- *If testing does not find a problem and a problem still exists*, find the problem in the Troubleshooting Charts on page 4-6.

No You may have pressed the keys too slowly. You must enter the key combination while the cursor is at the top-right corner of the screen. Return to step 2 on page 4-4 and try to start the system programs again. If you still cannot start the system programs, find the problem in the Troubleshooting Charts on page 4-6.

Troubleshooting Charts

In the following troubleshooting charts, you may be instructed to use the backup copy of the system programs. If problems occurred before you were able to make a backup copy of the system programs, you must use the original Reference Diskette.

In the charts, an X can be any character.

LCD Problems

Problems	Action
Blank screen plus no beeps. Note: If you are not sure about the beeps, turn the computer off, then on again, and listen for the beep.	Verify that: <ol style="list-style-type: none">1. The battery pack is correctly installed.2. The AC adapter or the Car Battery Adapter is connected to the computer and the power cord is plugged into a working electrical outlet.3. The computer power switch is turned on.4. The speaker volume control is set to the rightmost (loudest) position. If the above items are correct and the screen remains blank, have the computer serviced.
Blank screen plus one beep. Note: If you are using an external display, go to "External Display Problems" on page 4-16.	Verify that: <ol style="list-style-type: none">1. Both the brightness and contrast controls on the computer are properly adjusted.2. An external display is not attached to the computer. When an external display is attached and <i>LCD (High Performance)</i> is not selected in the Set Advanced Features. If the above items are correct and the screen remains blank, have the computer serviced.
Blank screen plus continuous beep, or two or more beeps.	Have the computer serviced.
Only the cursor appears.	Have the computer serviced.
XXXXX KB OK and the computer hangs.	Have the computer serviced.
Screen is unreadable or distorted.	Have the computer serviced.
Wrong characters appear on the screen.	Have the computer serviced.



Problems	Action
The LCD stays on although the power switch is turned off.	Have the computer serviced.
The computer goes into suspend mode immediately after the POST. (The suspend mode indicator turns on.)	Verify that: <ol style="list-style-type: none"><li>1. The battery pack is charged. (The battery power status indicator is green or yellow.)<li>2. The environment temperature is suitable. Refer to "Specifications" on page A-2. If the above items are correct, have the computer serviced.

What If Your Computer Does Not Work?

Error Codes

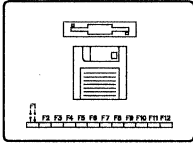
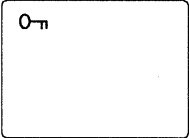
Note: Faulty connection of the hard disk drive can cause the following error codes to appear.

Screen Messages	Action
I9990301 I9990302 I9990305	<p>The computer cannot find the startup drive.</p> <p>Action:</p> <ol style="list-style-type: none">1. Turn off the computer.2. Insert the backup copy of the Reference Diskette.3. Turn on the computer.4. Select Set features from the Main Menu.5. Select Set startup sequence. If you are unable to set the startup sequence, have the computer serviced.6. Check the list of devices on the Set startup sequence screen. Is the default drive in the startup sequence? Yes Exit from this screen and the Main Menu, remove the backup copy of the Reference Diskette, and turn off the computer. Continue with step 7. No Follow the instructions on the screen to add the default drive.7. Is an operating system installed? Yes Go to step 9. No Install the operating system in your computer.8. When the operating system is installed, turn off the computer.9. Turn on the computer. <p>If the same error code message appears, have the computer serviced.</p>





Screen Messages	Action
I99800XX I99900XX (I99900X5, see note) I9990303	<p>The computer cannot find the system programs.</p> <p>Action:</p> <ol style="list-style-type: none">1. Turn off the computer.2. Insert the backup copy of the Reference Diskette.3. Turn on the computer. <p>Note: If you have an I99900X5 error message, a power-on password was previously set. You must type the password and press Enter before continuing with the next step.</p> <ol style="list-style-type: none">4. Select Backup/Restore system programs; then select Restore the system partition.5. When this procedure is complete, turn off the computer and remove the backup copy of the Reference Diskette.6. Turn on the computer. <p>If the same error message appears, have the computer serviced.</p>
I99XXXXX	Have the computer serviced.

Messages on the Screen

Messages	Action
<p>Diskette and F1 prompts.</p> 	<p>Verify that a self-starting diskette is inserted correctly (with the label up and metal-shutter end first) into the diskette drive.</p> <p>If the above item is correct, press F1. If both prompts remain, have the computer serviced.</p>
<p>Password prompt.</p> 	<p>A power-on password is set. To use the computer, type the correct password and press Enter (see page 2-8).</p> <p>If typing the power-on password is not working properly, a privileged-access password may have been set.</p> <p>If the problem still exists, have the computer serviced.</p>

What If Your Computer Does Not Work?

Messages	Action
<p>Error prompt.</p> <div style="border: 1px solid black; padding: 5px;"><p>xxxxx =  → </p></div> <p>—or—</p> <p>A screen or message that is not listed.</p>	<p>Verify that the backup diskette is inserted correctly (with the label up and metal-shutter end first) into the diskette drive.</p> <p>If the above item is correct and you cannot get the Main Menu, have the computer serviced.</p>

General Problems

Problems	Action
<p>Problems such as a broken key lock or indicator not working.</p>	<p>Have the computer serviced.</p>
<p>Power-on light is blinking.</p>	<p>The computer was forced into suspend mode because the inside temperature has exceeded the normal operating range.</p> <p>Turn off the computer. Do not use it until the temperature is within the operating range, 5°C - 35°C (41°F - 95°F). If the problem still exists, have the computer serviced.</p>



What If Testing Cannot Find the Problem?

Always use the system programs from the system partition on the hard disk, but also keep the backup copy of your system programs on your system partition updated. They both should contain the current configuration information and testing programs for your computer. If the system programs are not current, problems with the computer might not be found when you run the testing programs.

In the following troubleshooting charts, you may be instructed to use the backup copy of the system programs. *If problems occurred before you were able to make a backup copy of the system programs, you must use the original Reference Diskette.*

If the testing programs cannot find the problem, use the following troubleshooting charts:

Diskette Drive Problems

Problems	Action
Diskette drive in-use indicator stays on.	<ul style="list-style-type: none">• If there is a diskette in the drive, verify that:<ol style="list-style-type: none">1. The diskette is good and not damaged. Try another backup copy if you have one.2. The diskette is inserted correctly (label up and metal-shutter end first) into the diskette drive.3. The diskette contains the necessary files to start the system.4. Your application program is OK (see page 4-15).<p>If the above items are correct, have the computer serviced.</p>• If there is no diskette in the drive, have the computer serviced.

What If Your Computer Does Not Work?

Keyboard, External Numeric Keypad, or Pointing Device Problems

Problems	Action
All or some keys on the keyboard do not work.	<ul style="list-style-type: none">• If the problem occurs immediately after the computer returns to normal operation from suspend mode, enter the power-on password. If a power-on password is already set, the computer expects you to enter the password. (See "Using a Power-On Password" on page 2-8.)• If the external keyboard is connected, the system keyboard does not work.• If the external numeric keypad or the mouse is connected:<ol style="list-style-type: none">1. Turn off the computer.2. Remove the external numeric keypad or the mouse.3. Turn on the computer and try the keyboard operation again. <p>If the keyboard problem is solved, suspect the connection of the external numeric keypad, external keyboard, or the mouse. If the problem still exists, have the computer serviced.</p>
The mouse or pointing device does not work.	<ul style="list-style-type: none">• Verify that the mouse or pointing-device cable is securely connected to the computer.• Try to operate the Pointing Stick. If the Pointing Stick works fine, suspect the externally attached pointing device.• If you use a mouse that is not compatible with the IBM PS/2 Mouse, disable the Pointing Stick by following these instructions.<ol style="list-style-type: none">1. Turn on the computer and start the system programs.2. Select Set configuration.3. Select Change configuration.4. Position the cursor on the <i>Pointing Stick</i>. Using F5 or F6, change it to Disable.5. Press F10 to save the change.6. Restart the computer.
All or some keys on the external numeric keypad do not work.	Verify the external numeric keypad is properly connected to the computer.



Problems	Action
All or some keys on the external keyboard do not work.	Verify that: <ol style="list-style-type: none">1. The keyboard connector is connected to the correct side of the keyboard/mouse connector.2. The keyboard/mouse connector is properly connected to the computer. <p>If the above items are correct, disconnect the keyboard/mouse connector from the computer and verify correct operation on the system keyboard. If the system keyboard works, have the keyboard/mouse connector or the external keyboard serviced.</p>
A number appears after typing an alphabetic character.	The Numeric Lock indicator is on. Press and hold Shift , then press NumLk .

Printer Problem

Problems	Action
The printer does not work.	Verify that: <ol style="list-style-type: none">1. The printer is turned on and is ready.2. The printer signal cable is connected to the correct connector on the computer. (For the location of the printer connector, see "parallel connector" on page 1-8.) <p>If the above items are correct and the printer still does not work, run the tests described in the printer manual. If the tests show the printer is OK, have the computer serviced.</p>

What If Your Computer Does Not Work?

Option Problems

Problems	Action
<p>An IBM option that was just installed does not work.</p>	<p>Verify that:</p> <ol style="list-style-type: none">1. The option is designed for the computer.2. The system partition on the hard disk and your backup copy of the system programs were updated with the option diskette.3. Be sure to follow the instructions supplied with the option. (See "After Installing or Removing an Option" on page 2-78, for more information.)4. The option is installed correctly.5. You have not loosened any other installed options or cables.6. The configuration information has been updated. To update the configuration information, select Run automatic configuration from the Set Configuration Menu in the system programs. <p>If the testing programs found no problem, have the computer and the option serviced.</p>
<p>An IBM option that used to work does not work now.</p>	<p>Verify that:</p> <ol style="list-style-type: none">1. All of the option hardware and cable connections are secure.2. If the option came with its own testing instructions, use those instructions to test the option.3. If the option came with a diskette and instructions to update the backup copy of the system programs, be sure to check the instructions supplied with the option. (See "After Installing or Removing an Option" on page 2-78, for more information.) <p>If the above items are correct and the testing programs found no problem, have the computer and option serviced.</p>
<p>The onboard serial adapter does not work.</p>	<p>Ensure that <i>Onboard</i> is set to On in the Set Advanced Features.</p>
<p>The internal data/fax modem or optional serial adapter does not work.</p>	<p>Ensure that <i>Optional</i> is set to On in the Set Advanced Features.</p>



Software Problems

Problems	Action
Is your application program OK?	<p>To determine if a problem is caused by the software, verify that:</p> <ol style="list-style-type: none">1. Your computer has the minimum memory required to use the software. Refer to the manuals supplied with the software to verify this.2. The software is designed to operate on your computer.3. Other software works on your computer.4. The software you are using works on another computer.5. If you received any error messages when using the application program, refer to the manuals supplied with the software for a description of the messages and solutions to the problem. <p>If the above items are correct and the problem remains, contact your place of purchase or service technician for help.</p>

Intermittent Problems

Problems	Action
Does your computer have an intermittent problem?	<p>A problem can be difficult to find because it occurs just once in a while. If your computer has such a problem, verify that:</p> <ol style="list-style-type: none">1. All cables and cords are securely connected to the rear of the computer and to the attached options.2. If the problem occurs only when the computer is powered by a battery pack, replace it with a fully-charged one. <p>If the above items are correct and the problem remains, write down what the problem is and what the computer is doing when the problem occurs. Then contact your place of purchase or service technician for help.</p>

What If Your Computer Does Not Work?

Problems with the Backup Copy

Problems	Action
Did you update the backup copy of your system programs?	<p>Always use the system programs from the system partition on your hard disk, but also keep the backup copy of your system programs updated. They both should contain the current configuration information and testing programs for your computer. If the system programs are not current, problems with the computer might not be found when you run the testing programs.</p> <p>Some options come with a diskette. Be sure to copy the option diskette to the system partition and the backup copy of the system programs. This option diskette contains the option testing program and configuration information. If you installed an option, check its instructions to see if it came with such a diskette.</p>

External Display Problems

Problems	Action
Both the LCD and the attached external display are not active at the same time.	If the <i>CRT</i> or <i>LCD</i> is specified to be active, you need to change the parameter of the Set Advanced Features to <i>LCD and CRT</i> . See "Starting the Set Advanced Features" on page 3-14 for more information.



Problems	Action
Blank screen.	<p>Verify that:</p> <ol style="list-style-type: none">1. The power cord for the external display is plugged into a working electrical outlet and into the external display.2. The external display is turned on and the brightness and contrast controls for the display are turned up.3. The signal cable for the external display is plugged into the external display connector on the computer. Some signal cables may not fit into the external display connector because of the connector type.4. The external display does not work when the <i>Display device</i> parameter is set to <i>LCD</i> or <i>LCD (High Performance)</i>. See page 3-16.5. Turn off the computer and turn it on. <p>If the above items are correct and the screen of the external display remains blank, run the display tests described in the instructions supplied with the external display. If those tests show the external display is OK, have the computer serviced.</p>
Screen is unreadable or distorted.	Run the tests described in the instructions supplied with the external display. If those tests show the external display is OK, have the computer serviced.
Wrong characters appear on the screen.	<p>Verify that operating systems and application programs have been installed and configured correctly.</p> <p>If they are already installed and configured, have the computer serviced.</p>

Battery Power Problems

Problems	Action
A fully-charged battery pack is discharged too soon.	<ol style="list-style-type: none">1. Check to see if the battery pack you are using has been charged more than 2 hours under power-off charging.2. Repeat complete charge and discharge several times. Note: A fully-charged battery gradually loses its charge if not used for a month or so. In this condition, the battery does not reach full charge by charging it only once.3. Have the battery pack checked or the computer serviced.

What If Your Computer Does Not Work?

Problems	Action
<p>The battery power status indicator has turned off although a fully charged battery pack is installed in the computer.</p>	<p>The over-current protection device inside the battery pack has been activated. Wait for several hours and use it again. If the problem still appears, replace the battery pack or have the computer serviced.</p>
<p>The battery pack cannot be fully-charged in 2 hours under power-off charging.</p>	<p>The battery pack is over-discharged. Do the following:</p> <ol style="list-style-type: none">1. Turn off the computer.2. Make sure that the over-discharged battery pack is in the computer.3. Connect the AC adapter to the computer and let it charge for about 7 hours to complete charging. <p>If you have the Quick Charger, charge the over-discharged battery pack by using the charger.</p>
<p>The battery charging indicator has turned on; along with a blinking battery power status indicator.</p>	<p>A problem has occurred while charging the battery pack.</p> <ul style="list-style-type: none">• Check to see if the AC adapter is correct and suitable for your computer.• Take the battery pack out of the compartment and let it cool down for a while, then charge it again. <p>If the problem still appears, have the computer serviced.</p>



Getting Service

If your computer needs service, you can:

- Call an IBM-authorized service technician to come and repair it.
- Take it to an IBM-authorized service center for repair.
- Call your place of purchase.

When requesting service, describe the error message or problem to the service technician. Error messages help identify what service action is required and help the service technician provide quick and efficient service to you.

For your convenience, write down service phone numbers here:

Installed Option List

When getting service, you may need to know what options you have in your system. Check the name of your options below.

- | | |
|---|--|
| <input type="checkbox"/> Internal Data/Fax Modem | <input type="checkbox"/> Serial Adapter |
| <input type="checkbox"/> IC DRAM Card
(2MB, 4MB, or 8MB) | <input type="checkbox"/> External Numeric Keypad |
| <input type="checkbox"/> Miniature Mouse | <input type="checkbox"/> Hard Disk Drive Upgrade Kit |
| <input type="checkbox"/> Others | |

Appendix A. Features and Specifications

This appendix describes features and specifications for the ThinkPad 700. For more information, refer to the *Technical Reference*.

Features

Microprocessor

- IBM 486SLC 25-MHz

Memory

- Onboard (built-in): 4MB RAM (expandable to 16MB)
- Optional: 2MB, 4MB, and 8MB IC DRAM cards

Coprocessor

- A socket for the 25-MHz 387SL or the same type of math coprocessor

Storage devices

- 2.5-inch hard disk drive
- 3.5-inch 1.44MB diskette drive

Display

- 64-level STN-LCD with fluorescent backlight
- VGA (640 x 480 resolution)
- Normal or reverse video
- Brightness and contrast control

Keyboard

- 84-key or 85-key
- Pointing Stick

External interface

- Serial connector (EIA-232D)
- Parallel connector (Centronics)
- External input device connector
- External display connector

- Communication interface connector that accepts the optional serial adapter or the internal data/fax modem

System expansion

- 240-pin, 16-bit Micro Channel* bus connector

Specifications

Size

- Width: 297 mm (11.7 in.)
- Depth: 210 mm (8.3 in.)
- Height: 47 mm (1.9 in.)

Weight

- Minimum configuration: Approximately 3.0 kg (6.6 lb) with a battery pack

Environment

- Temperature:
 - Operating¹ 5° to 35°C (41° to 95°F)
 - Operating² 10° to 35°C (50° to 95°F)
 - Non-operating 5° to 43°C (41° to 109°F)
- Relative Humidity:
 - Operating¹ 8% to 95%
 - Operating² 8% to 80%
- Maximum altitude: 2437 m (8000 ft)³

Heat Output

- Approximately 85.3 British Thermal Units (BTUs) per hour (25.0 watts)

* Trademark of the International Business Machines Corporation.

1 With no diskette in drive

2 With diskette in drive

3 With no pressurized condition

Electrical (AC Adapter)

- Sine-wave input, 50 to 60 Hz, is required
100 - 240 V ac

Battery Pack

- Nickel metal hydride (NiMH)
- Output voltage: 10.8 V dc
- Maximum current: 2900 mAH

Diskette Standards

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

1MB, 3.5-inch, unformatted diskette

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

2MB, 3.5-inch, unformatted diskette

- ANSI X3.171
- ISO 9529
- ECMA 125

IBM Power Cords

For your safety, IBM provides a power cord with a grounded attachment plug to use with this IBM product. To avoid electrical shock, always use the power cord and plug with a properly grounded outlet.

IBM power cords used in the United States and Canada are listed by Underwriters Laboratories (UL) and certified by the Canadian Standards Association (CSA).

For units intended to be operated at 115 volts: Use a UL-listed and CSA-certified cord set consisting of a minimum 18 AWG, Type SVT or SJT, three-conductor cord, a maximum of 15 feet in length and a parallel blade, grounding-type attachment plug rated 15 amperes, 125 volts.

For units intended to be operated at 230 volts (in the U.S.): Use a UL-listed and CSA-certified cord set consisting of a minimum 18 AWG, Type SVT or SJT, three-conductor cord, a maximum of 15 feet in length and a tandem blade, grounding-type attachment plug rated 15 amperes, 250 volts.

For units intended to be operated at 230 volts (outside the U.S.): Use a cord set with a grounding-type attachment plug rated 15 amperes (minimum), 250 volts. The cord set should be marked <HAR> and have the appropriate safety approvals for the country in which the equipment will be installed.

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

IBM Power Cord Part Number	Used in These Countries
13F9940	Argentina, Paraguay, Uruguay, Australia, New Guinea, New Zealand, Papua
13F9959	Bahamas, Barbados, Bermuda, Bolivia, Canada, Cayman Islands, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Korea (South), Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Saudi Arabia, Suriname, Taiwan, Trinidad (West Indies), United States of America, Venezuela
1838574	Thailand
13F9979	Austria, Belgium, Bulgaria, Czechoslovakia, Egypt, Finland, France, Germany, Greece, Hungary, Iceland, Indonesia, Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Turkey, Yugoslavia
13F9997	Denmark
14F0015	Bangladesh, Pakistan, South Africa, Sri Lanka
14F0033	Abu Dhabi, Albania, Antigua, Bahrain, Brunei, Dubai, Fiji, Hong Kong, India, Ireland, Kenya, Kuwait, Macao, Malaysia, Nigeria, Oman, People's Republic of China, Qatar, Singapore, United Kingdom
14F0051	Switzerland
14F0069	Chile, Italy
14F0087	Israel
65F0031	Japan (3-pin)
6454377	Japan (2-pin)

Appendix B. Product Warranties and Notices

International Business Machines Corporation

Armonk, New York, 10504

Statement of Limited Warranty

The warranties provided by IBM in this Statement of Limited Warranty applies 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 700 PS/2

Warranty Period*: One Year

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

Production Status

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

The IBM Warranty

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

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

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

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

If a Machine does not function as warranted during the warranty period, IBM or your reseller will repair or replace it 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-IBM-SERV (426-7378)**. In Canada, call IBM at **1-800-465-6666**. 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.

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.

Misuse, accident, modification, unsuitable physical or operating environment, improper maintenance by you, 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.

Statement of Limited Warranty — Canada

This Statement of Limited Warranty applies to Machines you originally purchase from IBM Canada Ltd. (IBM) or an IBM authorized or approved reseller for your use, and not for resale. The term Machine includes an IBM Machine, its features, conversions, upgrades, elements, and accessories, or any combination of them. Machines are subject to these terms only if purchased and located in Canada. If you have any questions, please contact IBM or your reseller.*

Machine: IBM ThinkPad 700 PS/2

Warranty Period:** One Year

*** Elements and accessories are warranted for three months. Please 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 IBM Machine conforms to its Official Published Specifications and is free from defects in materials and workmanship. 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 tells you otherwise.

During the warranty period, IBM or your reseller will provide warranty service under the type of service designated for the Machine and 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 the designated, serial-numbered Machine and 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 any.

If the Machine does not function as warranted during the warranty period, IBM or your reseller will repair or replace it 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 the 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 at **1-800-465-6666**. You may be required to present your proof of purchase.

Depending on the Machine, the service may be 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 an exchange service, either On-site or Carry-in.

* *If you have signed an IBM Customer Agreement, this document is for your information only and the terms of your IBM Customer Agreement apply to this Machine.*

When a type of service involves the exchange of the 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.

It is your responsibility to:

- obtain authorization from the owner to have IBM or your reseller service a Machine that you do not own;
- where applicable, before service is provided -
 - follow the problem determination, problem analysis, and service request procedures that IBM or your reseller provide,
 - secure all programs, data, and funds contained in a Machine,
 - inform IBM or a reseller of changes in a Machine's location, and
 - 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
- be responsible for loss of, or damage to, a Machine in transit in those cases where you are responsible for the transportation charges.

Extent of Warranty

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

These warranties apply only if you use the Machine in the manner specified. They will have no legal effect if the Machine is misused, damaged by accident, modified, placed in an unsuitable physical or operating environment, maintained improperly by you, or caused to fail by a product for which IBM is not responsible.

These warranties replace all other warranties or conditions, express or implied, including, but not limited to, the implied warranties or conditions of merchantable quality and fitness for a particular purpose.

Limitation of Liability

Circumstances may arise where you are entitled to recover damages from IBM. In each such instance, IBM is liable for no more than:

1. damages for physical harm to persons caused by our negligence;
2. damages for physical harm to tangible personal property and real property caused by our negligence; and
3. any direct damages up to the greater of \$100,000 or the charges paid for the Machine that is the subject of the claim.

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

- damages of third parties claimed against you (other than those under 1 and 2 above);
- harm to your records or data; or
- special, indirect or consequential damages (other than those under 1 above) including, but not limited to, lost profits, lost business revenue, or failure to realize expected savings, even if you informed IBM of their possibility.

This "Limitation of Liability" applies regardless of the basis on which you are entitled to claim damages from us, including but not limited to:

- breach of contract even if a fundamental breach, or
- tort, including but not limited to negligence or misrepresentation.

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OS/2	Micro Channel	

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Microsoft	Microsoft Corporation
Windows	Microsoft Corporation
QEMM	Quarterdeck Office System

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