

Hardware Maintenance Manual



# IBM IntelliStation Type 6836, 6846



Hardware Maintenance Manual



# IBM IntelliStation Type 6836, 6846

**Note:**

Before using this information and the product it supports, be sure to read the general information under "Notices" on page 153.

**First Edition (October 2000)**

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## About this manual

This manual contains diagnostic information, a Symptom-to-FRU index, service information, error indications, and configuration information for the IBM IntelliStation Type 6836 and Type 6846 computers.

**Attention:** This manual is intended for trained servicers who are familiar with IBM PC computer products.

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## Important safety information

Be sure to read all caution and danger statements in this book before performing any of the instructions.

Leia todas as instruções de cuidado e perigo antes de executar qualquer operação.

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### 注意和危险声明 (简体中文)

重要事项:

本书中的所有注意和危险声明之前都有编号。该编号用于英语的注意或危险声明与 *Safety Information* 一书中可以找到的翻译版本的注意或危险声明进行交叉引用。

例如，如果一个注意声明以编号 1 开始，那么对该注意声明的翻译出现在 *Safety Information* 一书中的声明 1 中。

在按说明执行任何操作前，请务必阅读所有注意和危险声明。

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### 注意及危險聲明 (中文)

重要資訊:

本書中所有「注意」及「危險」的聲明均以數字開始。此一數字是用來作為交互參考之用，英文「注意」或「危險」聲明可在「安全資訊」(Safety Information) 一書中找到相同內容的「注意」或「危險」聲明的譯文。

例如，有一「危險」聲明以數字 1 開始，則該「危險」聲明的譯文將出現在「安全資訊」(Safety Information) 一書的「聲明」1 中。

執行任何指示之前，請詳讀所有「注意」及「危險」的聲明。

Prenez connaissance de toutes les consignes de type Attention et

Danger avant de procéder aux opérations décrites par les instructions.

Lesen Sie alle Sicherheitshinweise, bevor Sie eine Anweisung ausführen.

Accertarsi di leggere tutti gli avvisi di attenzione e di pericolo prima di effettuare qualsiasi operazione.

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## 주의 및 위험 경고문(한글)

### 중요:

이 책에 나오는 모든 주의 및 위험 경고문은 번호로 시작됩니다.  
이 번호는 *Safety Information* 책에 나오는 영문판 주의 및 위험  
경고문과 한글판 주의 및 위험 경고문을 상호 참조하는데 사용됩  
니다.

예를 들어 주의 경고문이 번호 1로 시작되면 *Safety Information*  
책에서 이 주의 경고문은 경고문 1번 아래에 나옵니다.

지시를 따라 수행하기 전에 먼저 모든 주의 및 위험 경고문을 읽  
도록 하십시오.

Lea atentamente todas las declaraciones de precaución y peligro ante de llevar a  
cabo cualquier operación.

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## Online support

Use the World Wide Web (WWW) to download Diagnostic, BIOS Flash, and Device  
Driver files, and Documents.

The Web address is:

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

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## Chapter 1. General checkout

This general checkout procedure is for type 6836, 6846 computers.

### Attention:

The drives in the computer you are servicing might have been rearranged or the drive startup sequence changed. Be extremely careful during write operations such as copying, saving or formatting. Data or programs can be overwritten if you select an incorrect drive.

Diagnostic error messages appear when a test program finds a problem with a hardware option. For the test programs to properly determine if a test *Passed*, *Failed* or *Aborted*, the test programs check the error-return code at test completion. See Chapter 3, "Diagnostics" on page 13.

General error messages appear if a problem or conflict is found by an application program, the operating system, or both. For an explanation of these messages, refer to the information supplied with that software package.

### Notes:

- Type 6836, 6846 computers default to come up quiet (no beep and no memory count and checkpoint code display) when no errors are detected by POST.
- To enable beep and memory count and checkpoint code display when a successful POST occurs, do the following:
  1. Select **Start Options** in the Configuration/Setup Utility program (see "Using the Configuration/Setup Utility program" on page 23).
  2. Set **Power-On Self-Test** to **Enhanced**.
- Before replacing any FRUs, ensure that the latest level of BIOS is installed on the system. A down-level BIOS might cause false errors and unnecessary replacement of the system board.
- If multiple error codes are displayed, diagnose the first error code displayed.
- If the computer hangs and no error is displayed, go to "Undetermined problems" on page 106.
- If an installed device is not recognized by the diagnostics program, that device might be defective.

### 001

1. Power-off the computer and all external devices.
2. Check all cables and power cords.
3. Make sure the system board is seated properly.
4. Set all display controls to the middle position.
5. Power-on all external devices.
6. Power-on all external devices.
7. Power-on the computer.
8. Check for the following response:
  - Readable instructions or the Main Menu.

### DID YOU RECEIVE THE CORRECT RESPONSE?

If NO, continue to **002** .

If YES, proceed to **003** .

**002**

If the Power Management feature is enabled, do the following:

1. Start the Configuration/Setup Utility program (see “Starting the Configuration/Setup Utility program” on page 23.)
2. Select **Power Management** from the Configuration/Setup Utility program menu.
3. Select **APM**.
4. Be sure **APM BIOS Mode** is set to **Disabled**. If it is not, press Left Arrow (←) or Right Arrow (→) to change the setting.
5. Select **Automatic Hardware Power Management**.
6. Set **Automatic Hardware Power Management** to **Disabled**.
7. If the problem persists, continue to **003**.

**003**

Run the Diagnostic programs. If necessary, refer to “Starting the diagnostic programs” on page 15.

- If you receive an error, replace the part that the diagnostic program calls out or go to Chapter 3, “Diagnostics” on page 13.
- If the test stops and you cannot continue, replace the last device tested.

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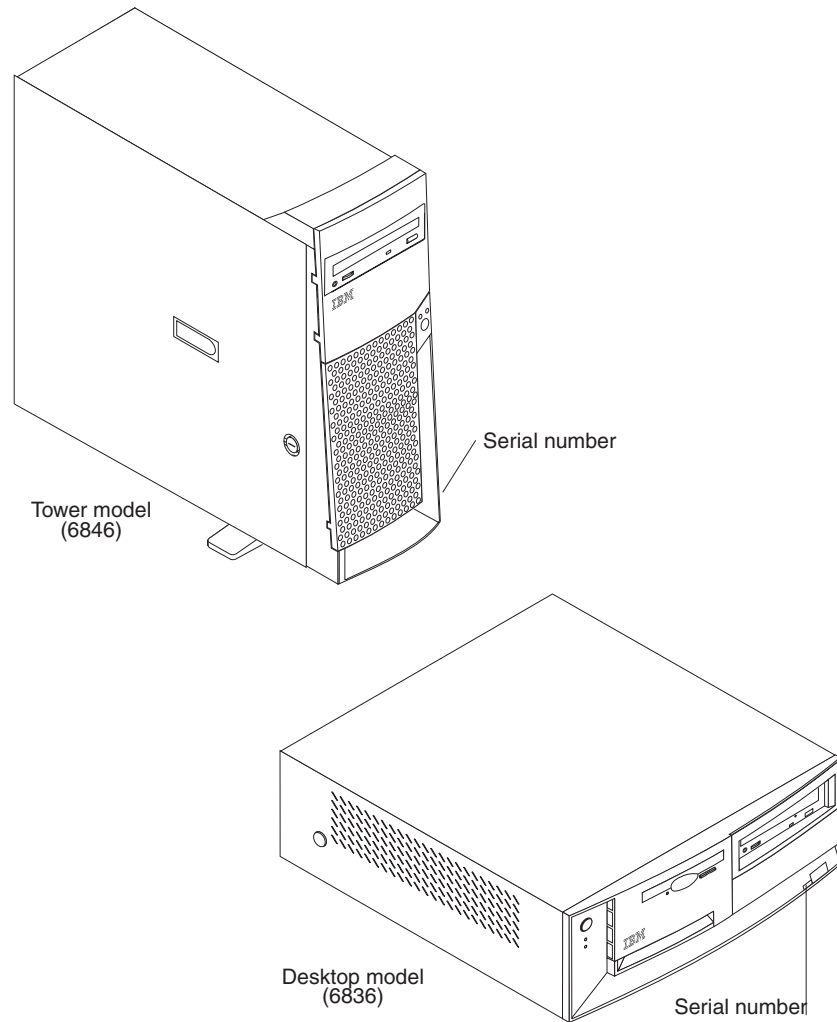
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### IntelliStation E Pro Types 6846 and 6836

Your computer model and serial numbers are located on labels on the bottom of the computer and on the lower right side of the bezel on the tower model. These labels are located on the bottom of the computer and on the lower right front of the bezel on the desktop model.



## Features and specifications for the tower model - Type 6846

The following table provides a summary of the features and specifications for the tower model. Some features and specifications might not apply.

Table 1. Tower Model Features and Specifications

<p><b>Microprocessor:</b></p> <ul style="list-style-type: none"> <li>• Supports one microprocessor <ul style="list-style-type: none"> <li>– Intel® Pentium® III with 256 KB Level-2 cache and MMX™ (MMX2) technology</li> </ul> </li> </ul> <p><b>Memory:</b></p> <ul style="list-style-type: none"> <li>• Minimum: 64 MB</li> <li>• Maximum: 1.5 GB</li> <li>• Type: PC133 MHz, ECC SDRAM, unregistered DIMMs only</li> <li>• Slots: 3 dual inline</li> </ul> <p><b>Drives:</b> (depending on your model)</p> <ul style="list-style-type: none"> <li>• Diskette: 1.44 MB</li> <li>• CD-ROM : IDE</li> <li>• Hard disk drive</li> </ul> <p><b>Expansion bays :</b></p> <ul style="list-style-type: none"> <li>• Two 5.25-in. bays (1 CD-ROM drive installed)</li> <li>• Two 3.5-in. bays (1 diskette drive installed)</li> <li>• Three 3.5-in. slim-high bays available (1 hard disk drive installed)</li> </ul> <p><b>PCI expansion slots :</b></p> <ul style="list-style-type: none"> <li>• Three 33 MHz/32-bit on the system board (some models come with a SCSI adapter installed)</li> <li>• Two 33 MHz/32-bit on the PCI Bus extender board</li> </ul> <p><b>AGP slot :</b> Accelerated graphics port (AGP)</p> <ul style="list-style-type: none"> <li>• Video adapter installed on the system board</li> </ul> <p><b>Power supply :</b></p> <p>One 330 watt (90-240 V ac)</p>	<p><b>Video :</b> (depending on your model)</p> <ul style="list-style-type: none"> <li>• Matrox or NVidia AGP video adapter</li> <li>• Compatible with SVGA and VGA</li> <li>• Matrox has 16 MB SDRAM video memory</li> <li>• NVidia has 32 MB SDRAM video memory</li> </ul> <p><b>Size:</b></p> <ul style="list-style-type: none"> <li>• Height: 470 mm (18.5 in.)</li> <li>• Depth: 508 mm (19.9 in.)</li> <li>• Width: 165 mm (6.5 in.)</li> <li>• Weight: approximately 19.5 Kg (43 lb.) when fully configured or 15.9 Kg (35 lb.) minimum</li> </ul> <p><b>Integrated functions:</b></p> <ul style="list-style-type: none"> <li>• 10BASE-T/100BASE-TX Ethernet controller on the system board with an RJ-45 Ethernet port</li> <li>• Two serial ports</li> <li>• One parallel port</li> <li>• Two USB ports</li> <li>• Keyboard port</li> <li>• Mouse port</li> <li>• MIDI port</li> <li>• Audio ports <ul style="list-style-type: none"> <li>– Line out</li> <li>– Line in</li> <li>– Mic</li> </ul> </li> <li>• Dual-channel bus mastering IDE controller</li> </ul> <p><b>Acoustical noise emissions :</b></p> <ul style="list-style-type: none"> <li>• Sound power, idling: 6.6 bel maximum</li> <li>• Sound power, operating: 6.8 bel maximum</li> </ul>	<p><b>Environment:</b></p> <ul style="list-style-type: none"> <li>• Air temperature : <ul style="list-style-type: none"> <li>– Computer on: 10° to 35° C (50.0° to 95.0° F). Altitude: 0 to 914 m (2998.7 ft.)</li> <li>– Computer on: 10° to 32° C (50.0° to 89.6° F). Altitude: 914 m (2998.7 ft.) to 2133 m (6998.0 ft.)</li> <li>– Computer off: 10° to 43° C (50.0° to 109.4° F). Maximum altitude: 2133 m (6998.0 ft.)</li> </ul> </li> <li>• Humidity : <ul style="list-style-type: none"> <li>– Computer on: 8% to 80%</li> <li>– Computer off: 8% to 80%</li> </ul> </li> </ul> <p><b>Heat output :</b></p> <p>Approximate heat output in British Thermal Units (Btu) per hour</p> <ul style="list-style-type: none"> <li>• Minimum configuration: 341 Btu (100 watts)</li> <li>• Maximum configuration: 1604 Btu (470 watts)</li> </ul> <p><b>Electrical input :</b></p> <ul style="list-style-type: none"> <li>• Sine-wave input (50-60 Hz) required</li> <li>• Input voltage low range: <ul style="list-style-type: none"> <li>– Minimum: 90 V ac</li> <li>– Maximum: 137 V ac</li> </ul> </li> <li>• Input voltage high range: <ul style="list-style-type: none"> <li>– Minimum: 180 V ac</li> <li>– Maximum: 265 V ac</li> </ul> </li> <li>• Input kilovolt-amperes (kVA) approximately: <ul style="list-style-type: none"> <li>– Minimum: 0.08 kVA</li> <li>– Maximum: 0.52 kVA</li> </ul> </li> </ul>
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## Features and specifications for the desktop model - Type 6836

The following table provides a summary of the features and specifications for the desktop model. Some features and specifications might not apply.

Table 2. Desktop Model Features and Specifications

<p><b>Microprocessor:</b></p> <ul style="list-style-type: none"> <li>• Supports one microprocessor             <ul style="list-style-type: none"> <li>– Intel Pentium III with 256 KB Level-2 cache and MMX (MMX2) technology</li> </ul> </li> </ul> <p><b>Memory:</b></p> <ul style="list-style-type: none"> <li>• Minimum: 64 MB</li> <li>• Maximum: 1.5 GB</li> <li>• Type: PC133 MHz, ECC SDRAM, unregistered DIMMs only</li> <li>• Slots: 3 dual inline</li> </ul> <p><b>Drives:</b> (depending on your model)</p> <ul style="list-style-type: none"> <li>• Diskette: 1.44 MB</li> <li>• CD-ROM : IDE</li> <li>• Hard disk drive</li> </ul> <p><b>Expansion bays :</b></p> <ul style="list-style-type: none"> <li>• Two 5.25-in. bays (1 CD-ROM drive installed)</li> <li>• Two 3.5-in. bays (1 diskette drive and 1 hard disk drive installed)</li> </ul> <p><b>PCI expansion slots :</b></p> <ul style="list-style-type: none"> <li>• Three 33 MHz/32-bit on the system board (some models come with a SCSI adapter installed)</li> </ul> <p><b>AGP slot :</b> Accelerated graphics port (AGP)</p> <ul style="list-style-type: none"> <li>• Video adapter installed on the system board</li> </ul> <p><b>Power supply :</b></p> <p>One 155 watt (90-240 V ac)</p>	<p><b>Video :</b> (depending on your model)</p> <ul style="list-style-type: none"> <li>• Matrox or NVidia AGP video adapter</li> <li>• Compatible with SVGA and VGA</li> <li>• Matrox has 16 MB SDRAM video memory</li> <li>• NVidia has 32 MB SDRAM video memory</li> </ul> <p><b>Size:</b></p> <ul style="list-style-type: none"> <li>• Height: 140 mm (5.5 in.)</li> <li>• Depth: 425 mm (16.7 in.)</li> <li>• Width: 425 mm (16.7 in.)</li> <li>• Weight: approximately 11.3 Kg (25 lb.) when fully configured</li> </ul> <p><b>Integrated functions:</b></p> <ul style="list-style-type: none"> <li>• 10BASE-T/100BASE-TX Ethernet controller on the system board with an RJ-45 Ethernet port</li> <li>• Two serial ports</li> <li>• One parallel port</li> <li>• Two USB ports</li> <li>• Keyboard port</li> <li>• Mouse port</li> <li>• MIDI port</li> <li>• Audio ports             <ul style="list-style-type: none"> <li>– Line out</li> <li>– Line in</li> <li>– Mic</li> </ul> </li> <li>• Dual-channel bus mastering IDE controller</li> </ul> <p><b>Acoustical noise emissions :</b></p> <ul style="list-style-type: none"> <li>• Sound power, idling: 6.6 bel maximum</li> <li>• Sound power, operating: 6.8 bel maximum</li> </ul>	<p><b>Environment:</b></p> <ul style="list-style-type: none"> <li>• Air temperature :             <ul style="list-style-type: none"> <li>– Computer on: 10° to 35° C (50.0° to 95.0° F). Altitude: 0 to 914 m (2998.7 ft.)</li> <li>– Computer on: 10° to 32° C (50.0° to 89.6° F). Altitude: 914 m (2998.7 ft.) to 2133 m (6998.0 ft.)</li> <li>– Computer off: 10° to 43° C (50.0° to 109.4° F). Maximum altitude: 2133 m (6998.0 ft.)</li> </ul> </li> <li>• Humidity :             <ul style="list-style-type: none"> <li>– Computer on: 8% to 80%</li> <li>– Computer off: 8% to 80%</li> </ul> </li> </ul> <p><b>Heat output :</b></p> <p>Approximate heat output in British Thermal Units (Btu) per hour</p> <ul style="list-style-type: none"> <li>• Minimum configuration: 272 Btu (80 watts)</li> <li>• Maximum configuration: 767 Btu (225 watts)</li> </ul> <p><b>Electrical input :</b></p> <ul style="list-style-type: none"> <li>• Sine-wave input (50-60 Hz) required</li> <li>• Input voltage low range:             <ul style="list-style-type: none"> <li>– Minimum: 90 V ac</li> <li>– Maximum: 137 V ac</li> </ul> </li> <li>• Input voltage high range:             <ul style="list-style-type: none"> <li>– Minimum: 180 V ac</li> <li>– Maximum: 265 V ac</li> </ul> </li> <li>• Input kilovolt-amperes (kVA) approximately:             <ul style="list-style-type: none"> <li>– Minimum: 0.08 kVA</li> <li>– Maximum: 0.52 kVA</li> </ul> </li> </ul>
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## Software

Your IBM® computer comes with Microsoft® Windows 2000® Professional<sup>1</sup> preinstalled with the option of recovering Windows NT® Workstation.

In addition to your OS, a variety of other software programs comes with your computer, such as application programs, diagnostic tools, and device drivers. Some of the software is *preinstalled*, and some is on the CDs that comes with your computer.

1. The Microsoft Certificate of Authenticity is your assurance that the Windows software in your computer is legally licensed from Microsoft Corporation.

## Preinstalled software

In addition to the Microsoft operating system, your preinstalled software includes the following programs:

- **Access IBM** is a desktop interface through which you can register your computer, set up hard disk drive partitions, create diagnostic diskettes, install software provided by IBM, set the date and time, set up your printer, view online books, attach your computer to a network, read the license agreement and online warranty, and obtain information about IBM products and technical support.
- **Adobe Acrobat Reader** is used to read portable document format files. The most updated versions of Adobe Acrobat Reader for other languages and operating systems can be downloaded from the Adobe Web site at <http://www.adobe.com> on the World Wide Web.
- **ConfigSafe** is a comprehensive configuration tracking and recovery tool. It provides features that you can use to restore your system if your desktop becomes damaged, unusable, or unstartable.
- **IBM Backup and Restore** program creates and stores a backup image of the primary partition (drive C) of your hard disk drive. You can recover this backup image in the event that drive C becomes damaged or unusable.
- **IBM Registration** program can be used to register your computer with IBM. When you register your computer with IBM, information is entered into an IBM database, which enables IBM to contact you in case of a recall or other severe problem. In addition, some locations offer extended privileges and services to registered users.
- **Online Books** enable you to access documentation that contains detailed information about your computer.
- **PC-Doctor for Windows** is a program to help you to locate and resolve some problems that might occur with your computer.
- **Product Recovery Program** enables you to recover the Windows 2000 or Windows NT operating systems and other software programs.

For more troubleshooting information, see Chapter 7, "Symptom-to-FRU index" on page 87.

### Important:

1. No backup diskettes for your preinstalled software come with your computer. However, the *Software Selections* CD contains most of your IBM-preinstalled programs.
2. The device drivers and some programs are also available at <http://www.ibm.com/pc/support> on the World Wide Web and on the *Device Drivers and IBM Enhanced Diagnostics* CD.

## Software Selections CD

The *Software Selections* CD contains application programs and support software for use with your computer, such as:

IBM Universal Manageability Services	UM Services streamline and automate personal computer (PC) systems management and support tasks, such as asset deployment and tracking.
IBM Update Connector™	You can use IBM Update Connector to download software programs, software updates, data, and data updates from IBM via the Internet. Update Connector automatically determines whether your computer needs available updates and, if so, it downloads and installs them at your option.
Netscape Communicator	You can use Netscape Communicator to navigate your company intranet or the World Wide Web. Netscape Communicator provides a full suite of Internet functions, including e-mail, threaded discussion groups (newsgroups), and support for the latest features on the World Wide Web.
Norton AntiVirus for IBM	You can use Norton AntiVirus for IBM to detect and remove viruses from your computer.

## Other software CDs

### Software

Your IBM® computer comes with Microsoft® Windows 2000® Professional<sup>2</sup> preinstalled with the option of recovering Windows NT® Workstation.

In addition to your OS, a variety of other software programs comes with your computer, such as application programs, diagnostic tools, and device drivers. Some of the software is *preinstalled*, and some is on the CDs that comes with your computer.

### Important:

The software, other than the Microsoft operating system, is licensed under the terms of the *IBM International License Agreement for Non-Warranted Programs*. Use of your computer signifies acceptance of this license agreement. For detailed instructions for viewing the license agreement, see Appendix D, *Viewing the International License Agreement for Non-Warranted Programs*.

**Preinstalled software:** In addition to the Microsoft operating system, your preinstalled software includes the following programs:

- **Access IBM** is a desktop interface through which you can register your computer, set up hard disk drive partitions, create diagnostic diskettes, install software provided by IBM, set the date and time, set up your printer, view online books, attach your computer to a network, read the license agreement and online warranty, and obtain information about IBM products and technical support.
- **Adobe Acrobat Reader** is used to read portable document format files. The most updated versions of Adobe Acrobat Reader for other languages and operating systems can be downloaded from the Adobe Web site at <http://www.adobe.com> on the World Wide Web.
- **ConfigSafe** is a comprehensive configuration tracking and recovery tool. It provides features that you can use to restore your system if your desktop becomes damaged, unusable, or unstartable.

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2. The Microsoft Certificate of Authenticity is your assurance that the Windows software in your computer is legally licensed from Microsoft Corporation.

- **IBM Backup and Restore** program creates and stores a backup image of the primary partition (drive C) of your hard disk drive. You can recover this backup image in the event that drive C becomes damaged or unusable.
- **IBM Registration** program can be used to register your computer with IBM. When you register your computer with IBM, information is entered into an IBM database, which enables IBM to contact you in case of a recall or other severe problem. In addition, some locations offer extended privileges and services to registered users.
- **Online Books** enable you to access documentation that contains detailed information about your computer.
- **PC-Doctor for Windows** is a program to help you to locate and resolve some problems that might occur with your computer.
- **Product Recovery Program** enables you to recover the Windows 2000 or Windows NT operating systems and other software programs.

For more troubleshooting information, see Chapter 7, “Symptom-to-FRU index” on page 87.

**Important:**

1. No backup diskettes for your preinstalled software come with your computer. However, the *Software Selections* CD contains most of your IBM-preinstalled programs.
2. The device drivers and some programs are also available at <http://www.ibm.com/pc/support> on the World Wide Web and on the *Device Drivers and IBM Enhanced Diagnostics* CD.

**Software Selections CD:** The *Software Selections* CD contains application programs and support software for use with your computer, such as:

IBM Universal Manageability Services	UM Services streamline and automate personal computer (PC) systems management and support tasks, such as asset deployment and tracking.
IBM Update Connector™	You can use IBM Update Connector to download software programs, software updates, data, and data updates from IBM via the Internet. Update Connector automatically determines whether your computer needs available updates and, if so, it downloads and installs them at your option.
Netscape Communicator	You can use Netscape Communicator to navigate your company intranet or the World Wide Web. Netscape Communicator provides a full suite of Internet functions, including e-mail, threaded discussion groups (newsgroups), and support for the latest features on the World Wide Web.
Norton AntiVirus for IBM	You can use Norton AntiVirus for IBM to detect and remove viruses from your computer.

**Other software CDs:** Some models come with additional CDs that include software that you can install and programs to test hardware components of your computer.



Lotus® SmartSuite

Lotus SmartSuite, a package of award-winning productivity applications, contains powerful applications and everything you need to access the Internet. Your computer comes with either a Lotus *SmartSuite* CD or a proof of entitlement to receive one free CD-ROM version of Lotus SmartSuite. See the *Quick Reference* that came with your computer for the proof of entitlement. To install your SmartSuite package, insert the Lotus *SmartSuite* CD into your CD-ROM drive, or contact your network administrator for assistance.

Device Driver and IBM Enhanced Diagnostic CD

The diagnostic test programs are stored on the Device Drivers and IBM Enhanced Diagnostic CD that comes with your computer. The programs provide the primary methods of testing system components. Some of the preinstalled software is also stored on this CD.

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## What your IntelliStation Type 6836, 6846 E Pro offers

The design of your computer takes advantage of advancements in data storage, and memory management. Your computer combines:

- High-performance AGP graphics
- Large system memory

The memory bus in your computer supports up to 1.5 gigabytes (GB)<sup>3</sup> of system memory. The memory controller provides error code correction (ECC) support for up to three industry standard PC133, 3.3 V, 168-pin, 133 megahertz (MHz), unregistered, synchronous dynamic random access memory (SDRAM) dual in-line memory modules (DIMMs).

- Systems-management capabilities

See the documentation provided with your systems-management software for more information.

- Integrated network environment support

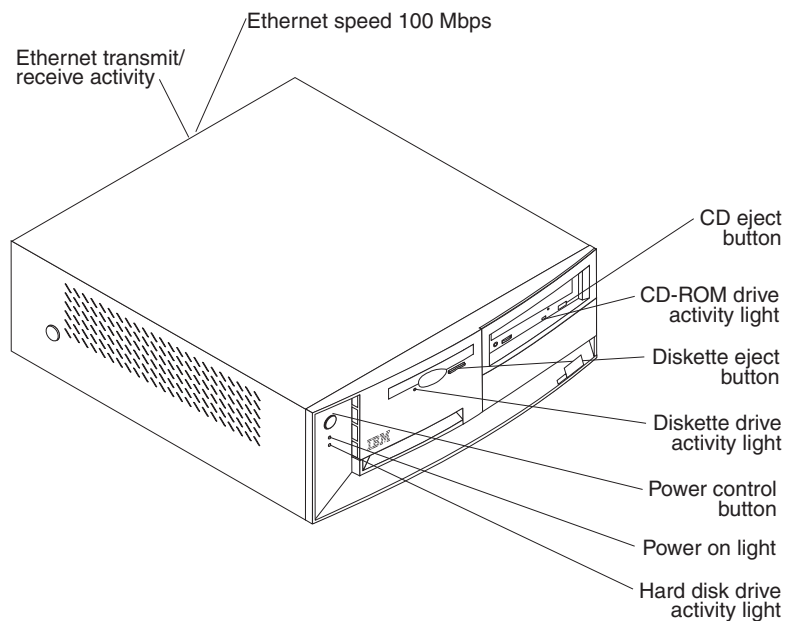
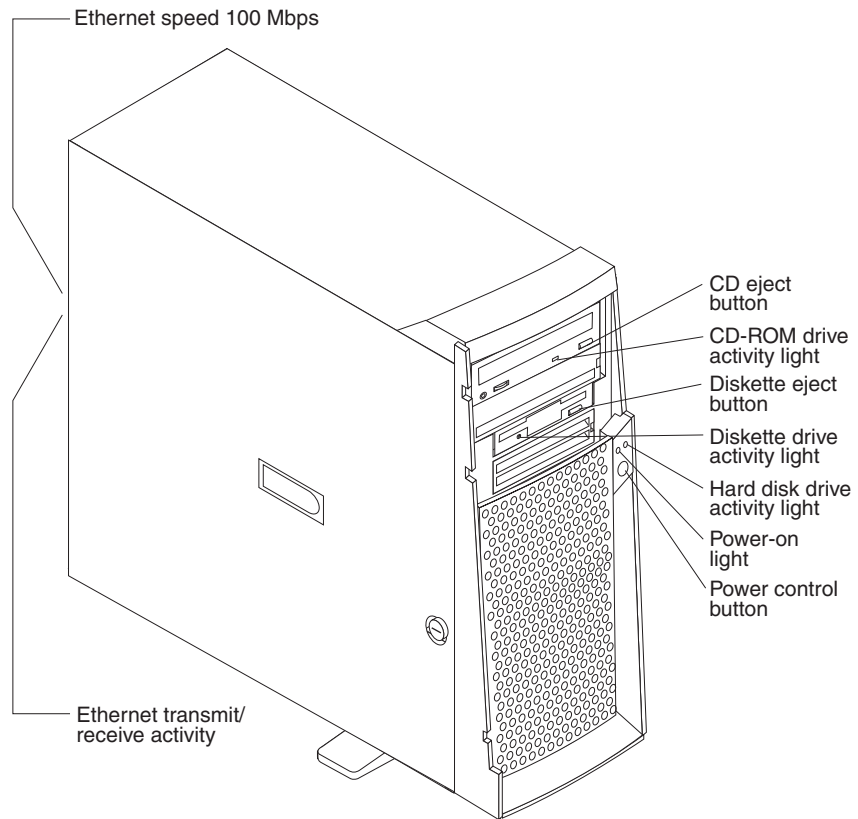
Your computer comes with an Ethernet controller on the system board. This Ethernet controller has an interface for connecting to 10-Mbps or 100-Mbps networks. The computer automatically selects between 10BASE-T and 100BASE-TX environments. The controller provides full-duplex (FDX) capability, which allows simultaneous transmission and reception of data on the Ethernet local area network (LAN).

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3. One Gigabyte is equal to 1,000,000,000 bytes.

## Computer controls and indicators

This topic identifies the controls and indicators on your tower and desktop models.



**CD eject button:** Push this button to open the CD tray to remove a CD from the drive.

**CD-ROM drive activity light:** When this light is on, it indicates that the CD-ROM drive is in use.

**Diskette eject button:** Push this button to release a diskette from the drive.

**Diskette drive activity light:** When this light is on, it indicates that the diskette drive is in use.

**Hard disk drive activity light:** When this light is on, it indicates that the hard disk drive is in use.

**Power-on light:** This status indicator lights when you turn on your computer.

**Power control button:** Press this button to manually turn the computer on or off.

## Starting the computer

After you plug one end of the computer power cord into the power supply outlet on the rear of the computer, and the other end of the power cord into an electrical outlet, the computer can be turned on as follows:

- You can press the power control button on the front of the computer to start the computer.
- If the computer is turned on and a power failure occurs, the computer will start automatically when power is restored.

**Attention:** If your computer is the desktop model, you must set the voltage-selection switch located on the rear of the computer.

- If the voltage supply range is 90-137 V ac, set the voltage-selection switch to 115 V.
- If the voltage supply range is 180-265 V ac, set the voltage-selection switch to 230 V.

The voltage-selection switch is located next to the power cord connector, see “I/O connector/port locations - Type 6846 and 6836” on page 30.

## Turning off the computer

You can turn off the computer as follows:

- You can press the power control button on the front of the computer for fewer than four seconds. This starts an orderly shutdown of the operating system, if this feature is supported by your operating system, and places the computer in standby mode.

**Note:** After turning off the computer, wait at least five seconds before you press the power control button to turn on the computer again.

- You can press and hold the power control button for more than four seconds to cause an immediate shutdown of the computer and place the computer in standby mode. You can use this feature if the operating system stops functioning.
- You can disconnect the computer power cords from the electrical outlets to shut off all power to the computer.

**Note:** After disconnecting the power cords, wait approximately 15 seconds for your system to stop running.



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## Chapter 3. Diagnostics

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### POST

When you turn on the computer, it performs a series of tests to check the operation of system components and some of the options that are installed in the computer. This series of tests is called the power-on self-test or POST.

If POST finishes without detecting any problems, the first window of your operating system or application program appears.

#### Notes:

1. If you have a power-on password set, you must type the password and press Enter, when prompted, before POST will continue.
2. A single problem might cause several error messages. When this occurs, work to correct the cause of the first error message. After you correct the cause of the first error message, the other error messages usually will not occur the next time you run the test.

### POST beep code descriptions

The possible types of beep codes that your system might emit are:

#### Repeating long beeps

Indicates that a memory error has occurred. Ensure that all DIMMs are correctly installed.

#### One long beep and two short beeps

Indicates that a video error has occurred and the BIOS cannot initialize the video screen to display any additional information. Ensure that the video adapter is correctly installed.

---

### Small computer system interface messages (some models)

The following table lists actions to take if you receive any error message.

**Note:** If your system does not have a hard disk drive, ignore any message that indicates that the BIOS is not installed.

You will get these messages only when running the SCSISelect Utility.

Table 3. SCSI messages

SCSI Messages	Description
All	<p>One or more of the following might be causing the problem.</p> <ul style="list-style-type: none"> <li>• A failing SCSI device (adapter or drive)</li> <li>• An improper SCSI configuration</li> <li>• Duplicate SCSI IDs in the same SCSI chain</li> <li>• An improperly installed SCSI terminator</li> <li>• A defective SCSI terminator</li> <li>• An improperly installed cable</li> <li>• A defective cable</li> </ul> <p><b>Action:</b> Verify that:</p> <ul style="list-style-type: none"> <li>• The external SCSI devices are turned on. External SCSI devices must be turned on <i>before</i> the computer.</li> <li>• The cables for all external SCSI devices are connected correctly.</li> <li>• The last device in each SCSI chain is terminated properly.</li> <li>• The SCSI devices are configured correctly.</li> </ul> <p>If the above items are correct, run the diagnostic programs to obtain additional information about the failing device.</p>

## IBM Enhanced Diagnostics

The system diagnostic programs are stored on the *Device Drivers and IBM Enhanced Diagnostics* CD. These programs are the primary method of testing the major components of your computer.

Diagnostic error messages indicate that a problem exists; they are not intended to be used to identify a failing part. Troubleshooting and servicing of complex problems that are indicated by error messages should be performed by trained service personnel.

Sometimes the first error to occur causes additional errors. In this case, the computer displays more than one error message. Always follow the suggested action instructions for the *first* error message that appears.

The following sections contain the error codes that might appear in the detailed test log and summary log, when running the diagnostic programs.

The error code format is as follows:

fff-ttt-iii-date-cc-text message

where:

**fff** is the three-digit function code that indicates the function being tested when the error occurred. For example, function code 089 is for the microprocessor.

**ttt** is the three-digit failure code that indicates the exact test failure that was encountered. (These codes are for trained service personnel and are described in the *Hardware Maintenance Manual*.)

**iii** is the three-digit device ID. (These codes are for trained service personnel and are described in the *Hardware Maintenance Manual*.)

**date** is the date that the diagnostic test was run and the error recorded.  
**cc** are the check digits that are used to verify the validity of the information.  
**text message**  
is the diagnostic message that indicates the reason for the problem.

## Text messages

The diagnostic text message format is as follows:

Function Name: Result (test specific string)

where:

### Function Name

is the name of the function being tested when the error occurred. This corresponds to the function code (fff) given in the previous list.

**Result** can be one of the following:

#### Passed

This result occurs when the diagnostic test completes without any errors.

**Failed** This result occurs when the diagnostic test discovers an error.

#### User Aborted

This result occurs when you stop the diagnostic test before it is complete.

#### Not Applicable

This result occurs when you specify a diagnostic test for a device that is not present.

#### Aborted

This result occurs when the test could not proceed because of the system configuration.

#### Warning

This result occurs when a possible problem is reported during the diagnostic test, such as when a device that is to be tested is not installed.

### Test Specific String

is additional information that is used to analyze the problem.

## Starting the diagnostic programs

The IBM Enhanced Diagnostics programs will isolate your computer hardware from software that you have installed on your hard disk drive. The programs run independently of the operating system, and *must be run either from a CD or diskette*. This method of testing is generally used when other methods are not accessible or have not been successful in isolating a problem suspected to be hardware related.

*A Device Drivers and IBM Enhanced Diagnostics CD* comes with your computer. You can also download the latest image of the diagnostics from <http://www.ibm.com/pc/support> on the World Wide Web.

### Using the diagnostics CD

Complete the following steps to start the IBM Enhanced Diagnostics using the CD:

1. Turn off your computer and any attached devices.
2. Turn on all attached devices; then, turn on your computer.

3. When you see *Press F1 For Configuration/Setup*, press the F1 key.
4. When the Configuration/Setup Utility menu appears, select **Start Options**.
5. From the Start Options menu, select **Startup Sequence**.
6. Note the device selected as the First Startup Device. Later, you must restore this setting.
7. Select **CD-ROM** as the First Startup Device.
8. Press Esc two times to return to the Configuration/Setup Utility menu.
9. Place the *Device Drivers and IBM Enhanced Diagnostics* CD in the CD-ROM drive.
10. Select **Save &Exit Setup** and follow the prompts. The diagnostics will load. Follow the instructions on the screen to run the diagnostics.

**Important:**

When you finish running the diagnostics and utilities, remove the CD from the CD-ROM drive and turn off the computer. You must restore the First Startup Device to the original settings. Use steps 2 through 7 of this procedure to do this.

### **Downloading the diagnostics program**

Complete the following steps to download the latest image of the IBM Enhanced Diagnostics from the World Wide Web and create a startable Enhanced Diagnostics diskette:

1. Go to the following World Wide Web site: <http://www.ibm.com/pc/support/>
2. Download the diagnostics file for your computer to a hard disk drive directory (not to a diskette).
3. Go to a DOS prompt and change to the directory where the file was downloaded.
4. Insert a blank high-density diskette in diskette drive A.
5. Type in the following, and then press Enter: *filename a:* where *filename* is the name of the file you downloaded from the Web.

The downloaded file is self-extracting and will be copied to the diskette. When the copy completes, you have a startable IBM Enhanced Diagnostics diskette.

The downloaded file is self-extracting and will be copied to the diskette. When the copy completes, you have a startable IBM Enhanced Diagnostics diskette.

### **Using the diagnostic diskette**

Complete the following steps to start the IBM Enhanced Diagnostics using the diagnostics diskette:

1. Turn off your computer and any attached devices.
2. Insert the IBM Enhanced Diagnostics diskette into the diskette drive.
3. Turn on all attached devices; then, turn on your computer.
4. Follow the instructions on the screen.
5. Place the *Device Drivers and IBM Enhanced Diagnostics* CD in the CD-ROM drive. The diagnostics will load. Follow the instructions on the screen to run the diagnostics.

When the tests have completed, you can view the Test Log by selecting **Utility** from the top of the screen.



If the hardware checks out OK but the problem persists during normal computer operations, a software error might be the cause. If you suspect a software problem, refer to the information that comes with the software package.

## Viewing the test log

The test log records data about system failures and other pertinent information. The test log will not contain any information until after the diagnostic program has run.

**Note:** If you already are running the diagnostic programs, begin with step 4.

Complete the following steps to view the test log:

1. Insert the *IBM Enhanced Diagnostics* CD.
2. Turn on the computer and watch the screen.  
If the system is on, shut down your operating system and restart the system.
3. If a power-on password is set, the system prompts you for it. Type in the appropriate password; then, press Enter.
4. Run the appropriate diagnostics program and when the Diagnostic Programs screen appears, select **Utility**.
5. Select **View Test Log** from the list that appears; then, follow the instructions on the screen.
6. You can save the test log to a file on a diskette or to your hard disk drive.

**Note:** The system maintains the test-log data while the system is powered on. When you turn off the power to the computer, the test log is cleared.

---

## Recovering your operating system and preinstalled software

This section contains instructions for recovering BIOS, device drivers, operating system, and other support software.

### Notes:

1. The Product Recovery program is provided on your computer to assist you with recovery operations.  
**Important:** The Product Recovery program is preinstalled on the hard disk drive that comes with your IBM computer and is designed to be hidden from view to protect the program from accidental damage.  
If you are using fdisk, NT Disk Administrator, or another utility to reformat your hard disk drive, you might be able to see the partition where the Product Recovery program is stored. Do not delete this information, or your Product Recovery program will be lost.  
If you replace the original hard disk drive, or suffer damage to your original hard disk drive, you will need to run the Recovery CDs included with your machine.
2. Some recovery process deletes all information stored on the primary partition (drive C). If possible, back up your data files before starting the process.

## Recovering BIOS

If the BIOS has become corrupted, such as from a power failure during a flash update, you can recover the BIOS using the boot block jumper and a BIOS flash diskette. The boot block jumper selects which of two BIOS images to use. In the

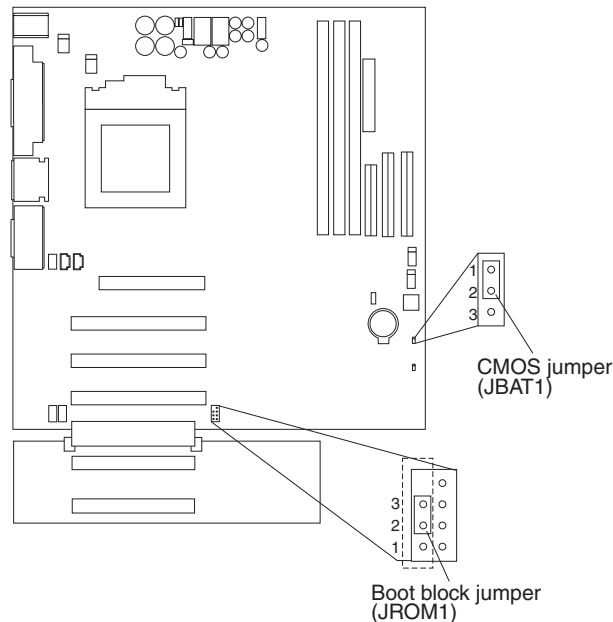
normal position, the jumper will be installed on pins 2 and 3. In the alternate block position, the jumper will be installed on pins 1 and 2.

**Note:** You can obtain a BIOS flash diskette from one of the following sources:

- Download files to make a BIOS flash diskette from the World Wide Web. Go to <http://www.pc.ibm.com/support/> and make the selections for your computer.
- Contact your IBM service representative.

Do the following to recover the BIOS:

1. Remove any media (diskettes, CDs, or tapes) from the drives and shut down your operating system.
2. Turn off the computer and all attached devices and disconnect all external cables and power cords.
3. If necessary, unlock the computer cover; then, remove the cover. For the tower model, see "Removing the side cover" on page 48 and for the desktop model, see "Removing the computer cover" on page 35.
4. Locate jumper JROM1 on the system board.



**Note:** The PCI extender board is only available in the tower model.

5. Move the JROM1 jumper to the alternate position (pins 1 and 2) to enable BIOS recovery mode.
6. Reinstall the computer cover, see "Installing the cover" on page 61 for the tower model and "Installing the cover" on page 45 for the desktop model.
7. Reconnect all external cables and power cords and turn on the attached devices.
8. Insert the BIOS flash diskette in the diskette drive.
9. Restart the computer. The BIOS begins the power-on self-test.
10. Select **1 - Update POST/BIOS** from the menu that contains various flash (update) options.
11. When prompted as to whether you want to save the current code to a diskette, select **N**.

12. When prompted to choose a language, select a language (from 0 to 7) and press Enter to accept your choice.
13. Do not restart your computer at this time.
14. Remove the BIOS flash diskette from the diskette drive.
15. Remove any media (diskettes, CDs, or tapes) from the drives, shut down your operating system.
16. Turn off the computer and all attached devices and disconnect all external cables and power cords.
17. Remove the cover. See “Removing the side cover” on page 48 for the tower model and “Removing the computer cover” on page 35 for the desktop model.
18. Move the JROM1 jumper to the normal position (pins 2 and 3) to return to normal startup mode.
19. Reinstall the computer cover, see “Installing the cover” on page 61 for the tower model and “Installing the cover” on page 45 for the desktop model.
20. Reconnect the external cables and power cords; then turn on the attached devices and the computer, which should start up normally.

## Recovering or installing device drivers

Use the following steps to recover or install device drivers on your computer.

### Notes:

1. Before you can recover or install device drivers, your operating system must be installed on your computer.
2. Before you start recovering or installing device drivers, make sure you have the documentation and software media for the device.
3. Device drivers for IBM devices and the instructions to install them (README.TXT) are located on the *Device Drivers and Diagnostics* CD and on the hard disk drive C:\IBMTOOLS\DRIVERS directory.
4. The latest device drivers are also available on the World Wide Web at <http://www.ibm.com/pc/support>

Do the following to recover or install device drivers:

1. Start your computer and operating system, if you have not already do so.
2. Display the directory structure of the hard disk drive. (You can also display the directory structure by using the DOS Command Prompt window.)
3. Click to open the IBMTOOLS directory; then, click to open the DRIVERS directory.
4. Click to open the directory of the device driver they you want to install.
5. In the directory of the device driver, double-click the README file to view it.  
**Note to Reviewers: Several READXXX files are available in the Video directory, but no README file. Will there be a README file available?**
6. Follow the device-driver installation instructions in the README file.
7. When the installation is finished, restart the computer.

## Recovering your operating system

Use the following steps to recover or install the operating system that comes with your computer. To install other operating systems, see “Installing alternate operating systems” on page 20.

## Performing a partial or full recovery

**Attention:** The Product Recovery program will only overwrite all files on the C:\ drive. A **full recovery** will restore the operating system, device drivers, and applications. A **partial recovery** will restore your operating system and device drivers without restoring applications.

1. If you can shut down your operating system normally, do so. If you cannot shut down normally, turn your computer off.

**Note:** If the computer will not turn off after you hold down the power button for at least four seconds, unplug the power cord and wait a few seconds before reconnecting it.

2. Turn on your computer
3. Wait for the prompt,  
To Start the Product Recovery program, press F11.

Quickly press F11. The prompt displays for only a few seconds.

4. You might have a choice of operating systems to recover. Select the operating system you want to recover. Otherwise, select the option given.
5. Select the recovery options you want and follow the instructions on the screen.
6. When recovery is complete, restart your computer.

**Note:** After the operating system is recovered or installed, the setup program starts the first time the operating system starts up. For information about setup, see "Using the Configuration/Setup Utility program" on page 23.

**Installing alternate operating systems:** To install an operating system, follow the instructions in the documentation provided with the operating system and any updates.

**Note:** Before installing any operating system, be sure to obtain the latest updates. Contact the operating system manufacturer or, check the manufacturer's World Wide Web site to obtain any updates available.

## Using Norton AntiVirus for IBM

The Norton AntiVirus for IBM program is comprehensive antivirus product that detects and removes viruses from your computer. To install the Norton AntiVirus for IBM program, complete the following steps.

1. Click on the Software Selection icon on your desktop.
2. When prompted, insert the Software Selection CD into the CD-ROM drive; then, click **OK**.
3. When the Software Selection menu opens, click **Install Software**. Then, when the software menu opens, select the Norton AntiVirus for IBM check box.
4. After selecting the software, click **Install**. A window opens showing the software programs that are selected for installation. Click **OK** to continue with the installation process, or click **Cancel** to clear your selections.

## Using the ConfigSafe program

ConfigSafe can be used as a troubleshooting tool, especially if problems develop after you install a new application or option. Before you make any changes to your computer configuration, use ConfigSafe to take a snapshot of your current, working operating system configuration. If you have preinstalled software, ConfigSafe automatically takes a snapshot of your initial operating system

configuration settings when you first start up your computer. Then, you can easily return to that configuration if your computer becomes disabled by changes in the configuration files.

If you are unable to solve a problem yourself, and you need assistance from an IBM technical support representative, use ConfigSafe to generate a report about recent changes in your configuration before you call the PC HelpCenter®. The IBM technical support representative will be able to use the information in this report to help you solve the problem.

Complete the following steps to access the ConfigSafe program.

Click **Start**Æ **Programs**Æ **ConfigSafe**

---

## Clearing CMOS

If you need to *erase* configuration information, you must move the CMOS jumper. See the illustration in “Recovering BIOS” on page 17 for the location of the CMOS jumper.

The default position is a jumper installed on pins 1 and 2. Before you change the position of this jumper, you *must* turn off the computer and attached devices, and disconnect all external cables and power cords. Remove the cover and then move the jumper to pins 2 and 3.

After moving the jumper, wait at least 5 minutes for the CMOS information to clear.

Changing the position of this jumper erases all configuration and setup information, including the power-on and administrator passwords. Therefore, you must reconfigure the computer after clearing CMOS memory (see Chapter 4, “Configuration” on page 23). If possible, record your computer configuration information *before* moving the CMOS jumper.

After you clear the CMOS information, move the jumper back to its normal position (pins 1 and 2). Reconnect the external cables and power cords; then, turn on the attached devices and the computer.

---

## Replacing the battery

When replacing the battery, you must replace it with a lithium battery of the same type from the same manufacturer. To avoid possible danger, read and follow the safety statement below.

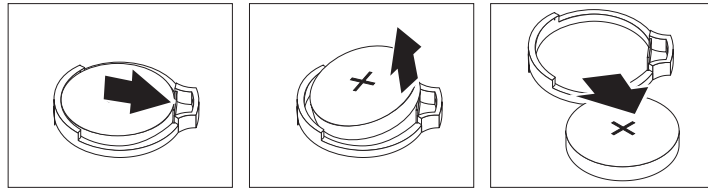
To order replacement batteries, call 1-800-772-2227 within the United States, and 1-800-465-7999 or 1-800-465-6666 within Canada. Outside the U.S. and Canada, call your IBM reseller or IBM marketing representative.

**Note:** After you replace the battery, you must reconfigure your system and reset the system date and time.

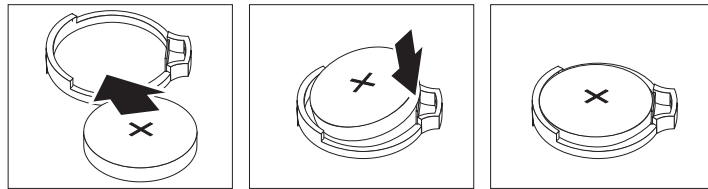
Do the following to replace the battery:

1. Read “Before you begin” on page 29, and follow any special handling and installation instructions supplied with the replacement battery.

2. Remove any media (diskettes, CDs, or tape) from the drives and shut down your operating system.
3. Turn off the computer and attached devices and disconnect all external cables and power cords.
4. If necessary, unlock the computer cover; then, remove the computer cover. See "Removing the side cover" on page 48 for the tower model and see "Removing the computer cover" on page 35 for the desktop model.
5. Do the following to remove the battery:
  - a. Press the battery release tab to release the battery from the socket.
  - b. Lift the battery out of the socket.



6. Do the following to insert the new battery:
  - a. Tilt the battery so that you can insert it into the socket.
  - b. Press down on the battery after you insert it into the socket.



7. Reinstall the cover, see "Installing the cover" on page 61 for the tower model. See "Installing the cover" on page 45 for the desktop model.
8. Reconnect the external cables and power cords; then turn on the attached devices and the computer.
9. Start the Configuration/Setup Utility program and set configuration parameters.
  - Set the system date and time.
  - Set the power-on password.
  - Reconfigure your system.

---

## Chapter 4. Configuration

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Starting the Configuration/Setup Utility program	23	Using the SCSISelect Utility program (some models)	26
Choices available from the Configuration/Setup		Starting the SCSISelect Utility program . . . . .	26
Utility main menu . . . . .	23	Choices available from the SCSISelect menu . . . . .	26

The following configuration programs are provided with your computer:

- **Configuration/Setup Utility program**

This program is part of the BIOS code that comes with your computer. You can use this program to configure serial- and parallel-connector assignments, change the drive startup sequence, set the date and time, and set passwords. See “Using the Configuration/Setup Utility program” on page 23 for more information.

- **SCSISelect Utility program (some models)**

With the built-in SCSISelect Utility program, you can configure the devices that are attached to the optional SCSI adapter. See “Using the SCSISelect Utility program (some models)” on page 26 for more information.

---

### Using the Configuration/Setup Utility program

This section provides the instructions for starting the Configuration/Setup Utility program and descriptions of the menu choices that are available.

#### Starting the Configuration/Setup Utility program

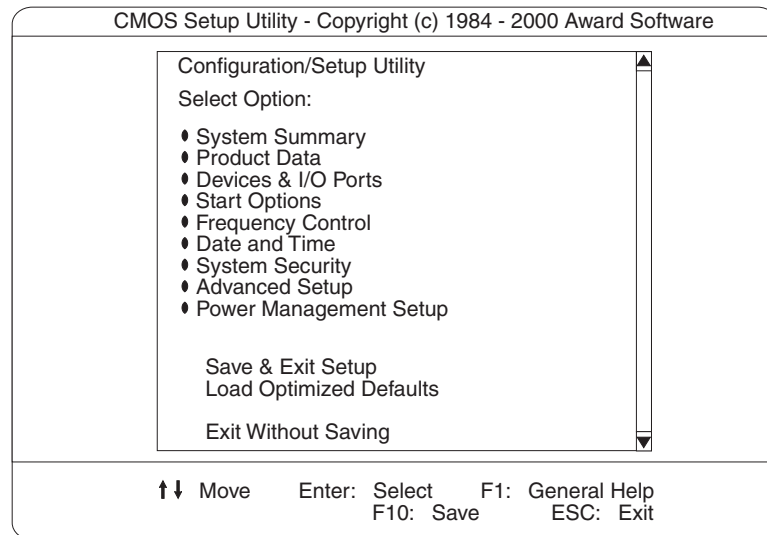
Complete the following steps to start the Configuration/Setup Utility program:

1. Turn on the computer and watch the monitor screen.
2. When the message, Press F1 for Configuration/Setup, appears, press F1.
3. Follow the instructions that appear on the screen.

#### Choices available from the Configuration/Setup Utility main menu

From the Configuration/Setup Utility main menu, you can select settings that you want to change. The Configuration/Setup Utility main menu is similar to the

following:



**Notes:**

1. You can press F1 to display help information for a selected menu item.
2. The choices on some menus might differ slightly from the ones that are described in this book, depending on the BIOS version in your computer.

Descriptions of the choices available from the main menu are as follows:

- **System Summary**

Select this choice to display configuration information. This includes the type and speed of the microprocessor and the amount of memory that is installed. Changes that you make to configuration settings appear on this summary screen. You cannot edit the fields.

This choice appears on both the full and limited Configuration/Setup Utility menus.

- **Product Data**

Select this choice to view system information, such as the machine type and model, the computer serial number, and the revision level or issue date of the BIOS that is stored in the flash EEPROM.

- **Devices & I/O Ports**

Select this choice to view or change the assignments for devices and input/output ports. This choice appears only on the full Configuration/Setup Utility main menu.

- **Start Options**

Select this choice to view or change the start options. Start options take effect when you start your computer.

You can select keyboard operating characteristics, such as the keyboard speed. You also can specify whether the computer starts with the keyboard number lock on or off.

The computer uses a startup sequence to determine the device from which the operating system starts. For example, you can define a startup sequence that checks for a startable diskette in the diskette drive; then, checks the hard disk drive, and then checks a network adapter.



You can enable a virus-warning test that checks for changes in the master boot record at startup. You also can choose to run POST in the quick mode, and read the microprocessor serial number.

- **Frequency Control**

Select this choice to enable or disable the auto-detect DIMM/PCI clock.

- **Date and Time**

Select this choice to set the system date and time.

The system time is in a 24-hour format: hour:minute:second.

- **System Security**

Select this choice to set a power-on or an administrator password. See “Using passwords” on page 26 for more information.

- **Advanced Setup**

Select this choice to change values for advanced hardware features, such as Cache Control and PCI configuration .

A message appears above the choices on this menu to alert you that the system might malfunction if these options are configured incorrectly. Follow the instructions on the screen carefully.

- **Cache Control**

Select this choice to enable or disable the microprocessor cache.

**Attention:** Do not make changes to the Cache Control unless directed to do so by an IBM authorized service representative.

- **ROM Shadowing**

Select this choice to enable or disable the state of a ROM shadowing.

- **Chipset Feature**

Select this choice to modify settings that control features of the core chip set on the system board.

**Attention:** Do not make changes to the Chipset Feature unless directed to do so by IBM.

- **Memory Settings**

If a memory error is detected during POST or memory configuration, the computer can automatically disable the failing memory bank and continue operating with reduced memory capacity. If this occurs, you must manually enable the memory bank after the problem is corrected. Select **Memory Settings** from the Advanced Setup menu, use the arrow keys to highlight the bank that you want to enable; then, use the arrow keys to select **Enable**.

- **Power Management Setup**

Select this choice to enable or disable system power savings.

- **Save and Exit Setup**

Select this choice to save your customized settings.

- **Load Optimized Defaults**

Select this choice to discard your changes and restore the factory settings.

- **Exit Without Saving**

Select this choice if you want to exit without saving changes, or if no changes have been made.

## Using passwords

The **System Security** choice appears only on the full Configuration/Setup Utility menu. After you select this choice, you can implement a power-on password or an administrator password.

You can use any combination of up to seven characters (A–Z, a–z, and 0–9) for your power-on password. Keep a record of your password in a secure place. If you forget the power-on password, you can regain access to the computer through either of the following methods:

- Start the Configuration/Setup Utility program and change the power-on password.
- Change the jumper position on the complimentary metal oxide semiconductor (CMOS) jumper as described in “Clearing CMOS” on page 21.
- If both a power-on and administrator password are set, you can type either password at the password prompt *that appears as you start your computer*. However, if you want to change any settings in the Configuration/Setup Utility program, you must type your administrator password at the password prompt *that appears when you try to access the Configuration/Setup Utility program*. If you type your power-on password at this prompt, you will be able to view limited information in the Configuration/Setup Utility program, but you will not be able to change any settings.

---

## Using the SCSISelect Utility program (some models)

SCSISelect is a built-in, menu-driven configuration utility program that you can use to:

- View the default SCSI IDs
- Locate and correct configuration conflicts

The following sections provide the instructions for starting the SCSISelect Utility program and descriptions of the menu choices that are available.

### Starting the SCSISelect Utility program

Complete the following steps to start the SCSISelect Utility program:

1. Turn on the computer.
2. When the <<< Press <CTRL><A> for SCSISelect Utility! >>> prompt appears, press Ctrl+A.
3. When the Would you like to configure the host adapter or run the SCSI disk utility? question appears, make your selection and press Enter.
4. Use the arrow keys to select a choice from the menu.
  - Press Esc to exit the SCSISelect Utility program.
  - Press the F5 key to switch between color and monochrome modes (if your monitor permits).
5. Follow the instructions on the screen to change the settings of the selected items; then, press Enter.

### Choices available from the SCSISelect menu

The following choices appear on the SCSISelect Utility menu:

- **Configure/View Host Adapter Settings**

Select this choice to view or change the SCSI controller settings. To reset the SCSI controller to its default values, press F6; then, follow the on-screen instructions.

You can view or change the following controller settings:

– **Host Adapter SCSI ID**

Select this choice to view the SCSI controller identification (ID), which is usually 7.

– **SCSI Parity Checking**

Select this choice to view the assigned value of *Enabled*.

– **Host Adapter SCSI Termination**

Select this choice to view the assigned value of *Automatic*.

– **Boot Device Options**

Select this choice to configure startable-device parameters. Before you can make updates, you must know the ID of the device whose parameters you want to configure.

– **SCSI Device Configuration**

Select this choice to configure SCSI-device parameters. Before you can make updates, you must know the ID of the device whose parameters you want to configure.

**Note:** The Maximum Sync Transfer Rate represents the transfer rate for Ultra SCSI devices.

- The transfer rate for Ultra 160 low voltage differential (LVD) devices is 160.0 Mbps.
- The transfer rate for Ultra2 SCSI LVD devices is 80.0 Mbps.
- The transfer rate for Fast SCSI devices is 20.0 Mbps.

– **Advanced Configuration Options**

Select this choice to view or change the settings for advanced configuration options. These options include enabling support for large hard disk drives and support for drives with Ultra SCSI speeds.

• **SCSI Disk Utilities**

Select this choice to view the SCSI IDs that are assigned to each device or to format a SCSI device.

To use the utility program, select a drive from the list. Read the on-screen instructions carefully before making a selection.

**Note:** If you press Ctrl+A before the selected drives are ready, an Unexpected SCSI Command Failure screen might appear. Restart the computer and watch the SCSISelect messages as each drive starts. After the drive that you want to view or format starts, press Ctrl+A.



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## Chapter 5. Installing options Type 6836, 6846

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### Before you begin

Before you begin to install options in your computer, read the following information:

- Become familiar with the safety and handling guidelines specified under “Handling electrostatic discharge-sensitive devices” on page 116, and read the safety statements in “Safety information” on page 113. These guidelines will help you work safely with your computer or options.
- Make sure that you have an adequate number of properly grounded electrical outlets for your computer, monitor, and any other options that you intend to install.
- Back up all important data before you make changes to hard disk drives.
- Have a small, flat-blade screwdriver available.
- For a list of supported options for your computer, refer to <http://www.ibm.com/pc/support> on the World Wide Web.

## System reliability considerations

To help ensure proper cooling and system reliability, make sure:

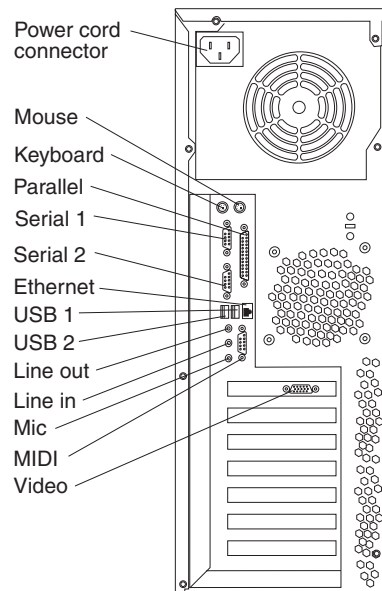
- Each of the drive bays either has a drive, or a filler panel and electromagnetic compatibility (EMC) shield installed.
- There is space around the computer to allow the computer cooling system to work properly. Leave about 127 mm (5 in.) of space around the front and rear of the computer.
- Cables for optional adapters are routed according to the instructions that are provided with the adapters.
- A failed fan is replaced within 1 hour.

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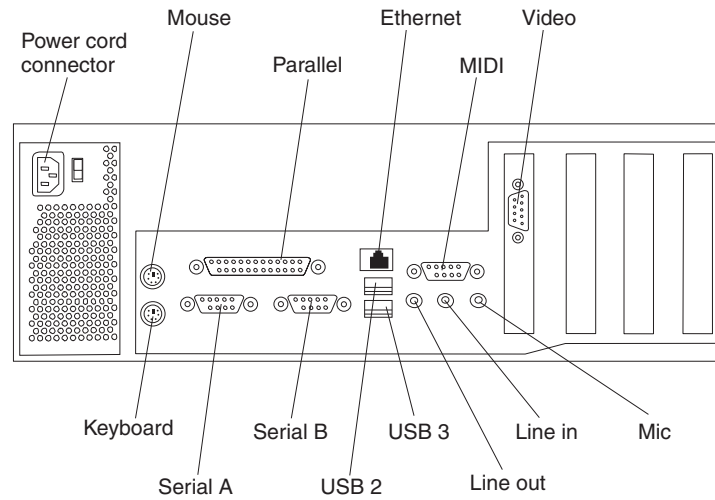
## I/O connector/port locations - Type 6846 and 6836

The following illustration shows the input/output connectors and the expansion slots on the rear of the computer. For other details about these connectors, see "I/O connector/port locations - Type 6846 and 6836".

The following illustration displays the I/O connectors on the rear of the tower model.



The following illustration displays the I/O connectors on the rear of the desktop model.



**Note:** If your computer is a SCSI model, the SCSI adapter will be located in PCI slot 1; the external connector will be located in the slot below the video connector on the tower model and to the right of the video connector on the desktop model. See “System and PCI extender board options connectors” on page 32 for the location of the PCI slots.

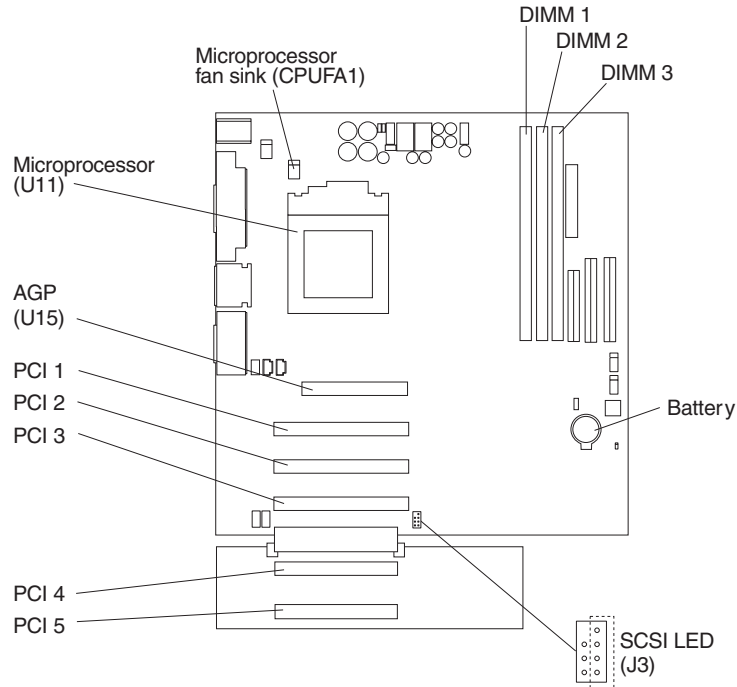
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## System and PCI extender boards - Type 6836 and 6846

The illustrations in the following sections show the components on the system and PCI extender boards.

## System and PCI extender board options connectors

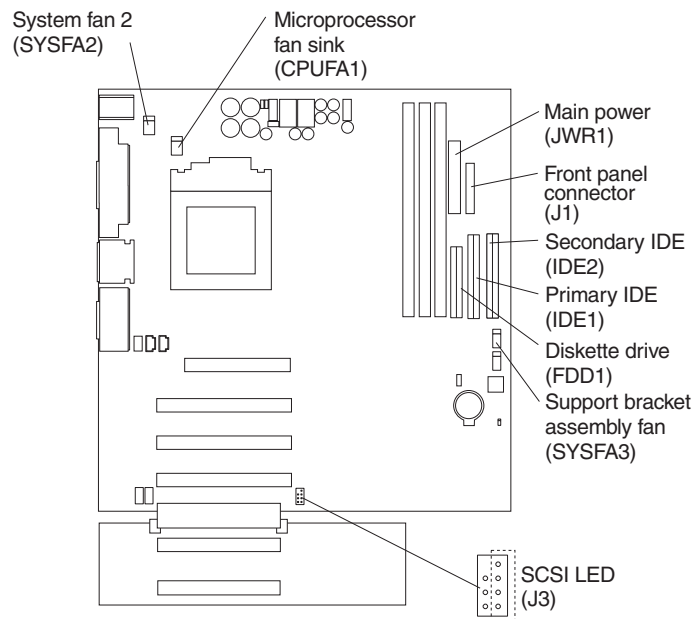
The following illustration identifies the system and PCI extender board connectors for options you can install.



**Note:** The PCI extender board is only available in the tower model.

## System board internal cable connectors

The following illustration identifies system and PCI extender board connectors for internal cables.

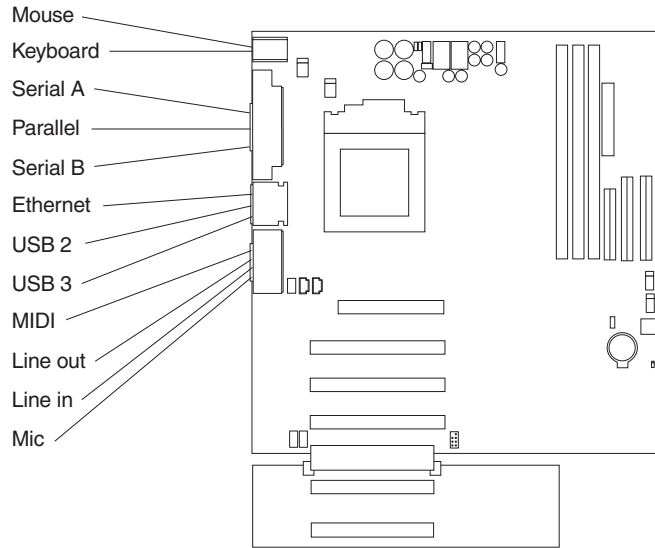


**Note:** The PCI extender board is only available in the tower model.



## System board external connectors

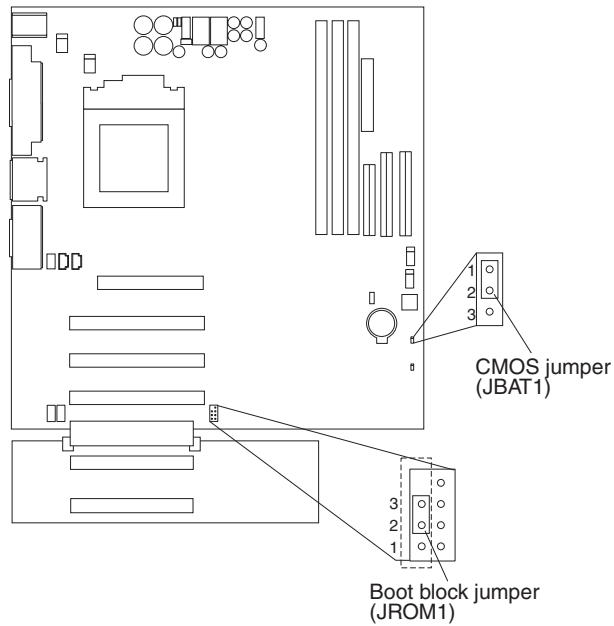
The following illustration identifies system PCI board connectors for external devices.



**Note:** The PCI extender board is only available in the tower model.

## System board switches and jumpers

The following illustration identifies the switches and jumpers on the system board.



**Note:** The PCI extender board is only available in the tower model.

### Boot block jumper

For normal operations of the system, a jumper is installed on pins 2 and 3 of the boot block jumper. See “Recovering BIOS” on page 17 for information about the boot block jumper.

### CMOS jumper

For normal operation of the system, a jumper is installed on pins 1 and 2 of the CMOS jumper. See “Clearing CMOS” on page 21 for information about the CMOS jumper.

---

## Power and signal cables for internal drives

Your computer uses cables to connect IDE and SCSI drives to the power supply and to the system board. The following cables are provided:

- Four-wire power cables connect the drives to the power supply. At the end of these cables are plastic connectors that attach to different drives; these connectors vary in size. Also, certain power cables attach to the system board.
- Flat signal cables, also called ribbon cables, connect IDE, SCSI, and diskette drives to the system board. There are two sizes of ribbon signal cables that come with your computer.
  - The wider IDE signal cable has two or three connectors.
    - If the cable has three connectors, one of these connectors is attached to the drive, one is a spare, and the third attaches to the primary or secondary IDE connector on the system board.
    - If the cable has two connectors, one of these connectors is attached to the hard disk drive, and the other attaches to the primary or secondary IDE connector on the system board.

### Notes:

1. If you want to add another device, and your computer does not come with a CD-ROM drive preinstalled, you will need a second signal cable with three connectors. You will need an 80-conductor ATA 66 signal cable if you are replacing the existing signal cable or adding a second hard disk drive. ATA 66 signal cables are color-coded. The blue connector attaches to the system board; the black connector attaches to the master device, and the gray middle connector attaches to the slave device.

If your computer comes with a CD-ROM drive, it will have an ATA 66 signal cable. However, if you are installing a hard disk drive, you must change the switch setting on the CD-ROM drive to secondary and change the connector used for the CD-ROM drive to the gray middle connector.

2. If you are installing a slimline CD-ROM drive in the small form factor desktop model, the IDE cable requires a special connector to attach to the slimline CD-ROM drive. This connector can be attached only to an optional slimline CD-ROM drive.
  - The narrower signal cable has two connectors, one to attach to the diskette drive and the other to attach to the connector (FDD1) on the system board.

**Note:** To locate connectors on the system board, see “System board internal cable connectors” on page 32.

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

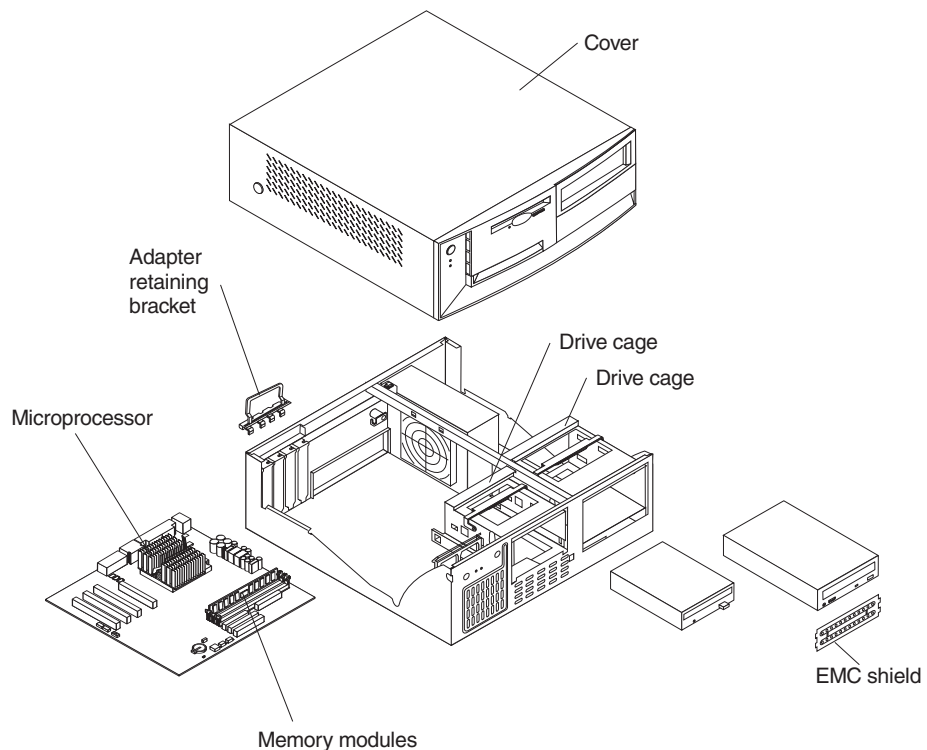
- The drives that are preinstalled in your computer come with power and signal cables attached. If you replace any drives, it is important to remember which cable is attached to which drive.
- When you install a drive, ensure that the drive connector at the *end* of the signal cable is always connected to a drive; also, ensure that the drive connector at the other end is connected to the system board. This reduces electronic noise from the computer.
- If two IDE devices are used on a single cable, one must be designated as the primary or master device and the other as the secondary or subordinate device; otherwise, some of the IDE devices might not be recognized by the system. The primary and secondary designation is determined by switch or jumper settings on each IDE device.
- If two IDE devices are on a single cable, and only one is a hard disk drive, the hard disk drive must be set as the master device.
- If you have only one IDE device on a cable, it must be set as master.

---

## Type 6836 - Major components

**Note:** The illustrations in this document might differ slightly from your hardware.

The following illustration shows the locations of major components in your desktop model.

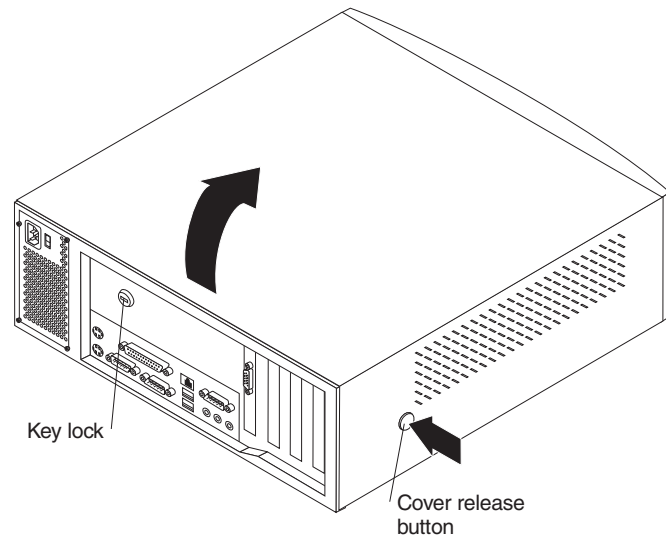



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## Removing the computer cover

The following information describes how to remove the computer cover.

**Note:** The illustrations in this document might differ slightly from your hardware.



Complete the following steps to remove the cover of the computer:

1. Review the information in "Before you begin" on page 29 and the safety precautions listed in "Safety information" on page 113.
2. Remove any media (diskettes, CDs, or tapes) from the drives and shut down your operating system.
3. Turn off the computer and all attached devices and disconnect all external cables and power cords.
4. If necessary, unlock the computer cover.
5. Press the buttons on the sides of the computer and pivot the rear of the cover up toward the front of the computer.

**Attention:** For proper cooling and airflow, replace the cover before turning on the computer. Operating the computer with the cover removed might damage computer components.

To reinstall the cover, see "Installing the cover" on page 45.

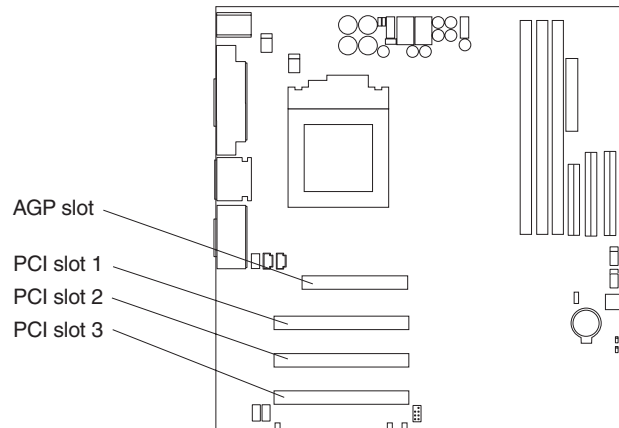
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## Working with adapters

Your computer comes with adapter connectors, called *slots*. The AGP video adapter is installed in the AGP slot. You can install up to three PCI adapters in slots 1 through 3. All PCI slots are 32-bit, 33 MHz slots.

**Note:** The illustrations in this document might differ slightly from your hardware.

The following illustration shows the location of the system PCI slots on the system board.



## Adapter considerations

Before you install adapters, review the following:

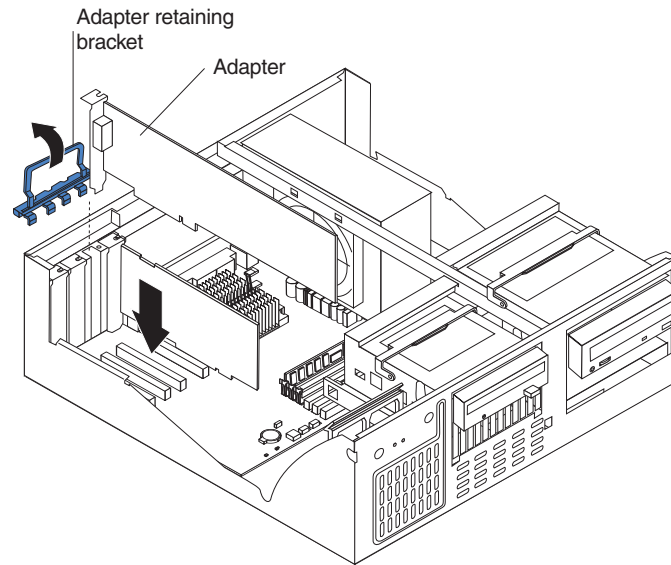
- Locate the documentation that comes with the adapter and follow those instructions in addition to the instructions given in this chapter. If you need to change the switch or jumper settings on your adapter, follow the instructions that come with the adapter.
- You can install full-length adapters in all PCI slots.
- Your computer supports 5.0 V and universal PCI adapters; it does not support 3.3 V adapters.
- Your computer uses a rotational interrupt technique to configure PCI adapters. Because of this technique, you can install a variety of PCI adapters that currently do not support sharing of PCI interrupts.
- PCI slots 1 through 3 are on PCI bus 0. The system scans the AGP slot and PCI slots 1 through 3 to assign system resources; then, the system starts (boots) the PCI devices in the following order, if you have not changed the default boot sequence: PCI slots 1 and 2, system board integrated drive electronics (IDE) or SCSI devices, and then PCI slot 3.

**Note:** To change the boot sequence for PCI devices, start the Configuration/Setup Utility program, select **Start Options** from the main menu, select **Startup Sequence**; then, select **Second device (SCSI)** to designate the adapter boot sequence. See Chapter 4, "Configuration" on page 23 for details on using the Configuration/Setup Utility program.

- For a list of supported options for your computer, refer to <http://www.ibm.com/pc/support> on the World Wide Web.

## Installing an adapter

Complete the following steps to install an adapter:



**Attention:** When you handle ESD-sensitive devices, take precautions to avoid damage from static electricity. For details on handling these devices, see “Handling electrostatic discharge-sensitive devices” on page 116.

1. Review the safety precautions listed in “Safety information” on page 113.
2. Remove any media (diskettes, CDs, or tapes) from the drives and shut down your operating system.
3. Turn off the computer and all attached devices and disconnect all external cables and power cords; then, remove the cover. See “Removing the computer cover” on page 35 for details.
4. Determine which PCI slot you will use for the adapter.

**Note:** Check the instructions that come with the adapter for any requirements, restrictions, or cabling instructions. It might be easier for you to route any device cables before you install the adapter.

5. Rotate the rear adapter retaining bracket to the open (unlocked) position and remove it from the computer. Keep it in a safe place.
6. Remove the expansion-slot cover. From the rear of the computer, press in on the slot cover. Grasp it and pull it out of the expansion slot. Store it in a safe place for future use.

**Attention:** Expansion-slot covers must be installed on all vacant slots. This maintains the electromagnetic emissions characteristics of the computer and ensures proper cooling of system components.

7. Remove the adapter from the static-protective package. Avoid touching the components and gold-edge connectors on the adapter.
8. Place the adapter, component-side up, on a flat, static-protective surface.
9. Set any jumpers or switches as described by the adapter manufacturer.
10. To install the adapter, carefully grasp the adapter by its top edge or upper corners, and align it with the expansion slot guides; then, press the adapter *firmly* into the expansion slot.

**Attention:** When you install an adapter in the computer, be sure that it is completely and correctly seated in the expansion slot before you turn on the computer. Incomplete insertion might cause damage to the system board or the adapter.

11. Connect required cables to the adapter.

**Attention:** Route cables so that they do not block the flow of air from the fans.

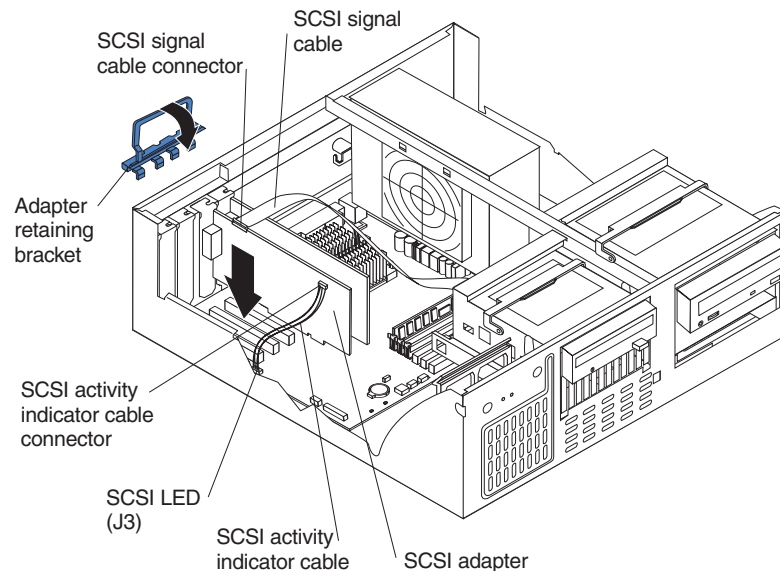
12. If you have another adapter to install, do so now.
13. Reinstall the rear adapter retaining bracket; then, rotate the bracket to the closed (locked) position.
14. Reinstall the cover, see “Installing the cover” on page 45.
15. Reconnect the external cables and power cords; then, turn on the attached devices and the computer.

---

## Installing a SCSI adapter (some models)

Complete the following steps to install a SCSI adapter:

1. Review the safety precautions listed in “Safety information” on page 113.
2. If you have not already installed the SCSI adapter, complete steps 1 through 10 of “Installing an adapter” on page 38. Then, return here to complete the installation.



3. Connect the SCSI signal cable to the adapter and one or more of the signal cable connectors to the rear of the SCSI devices.
4. Connect the SCSI activity indicator cable to the adapter and to the SCSI LED connector (J3) on the system board, see “System and PCI extender board options connectors” on page 32 for the location of the SCSI LED connector.
5. Rotate the rear adapter retaining bracket to the closed (locked) position.
6. Reinstall the cover, see “Installing the cover” on page 45.
7. Reconnect the external cables and power cords; then, turn on the attached devices and the computer.

---

## Installing internal drives

Different types of drives enable your computer to read multiple types of media and store data in different formats. Depending on your computer model, you might have one or more of the following drives installed.

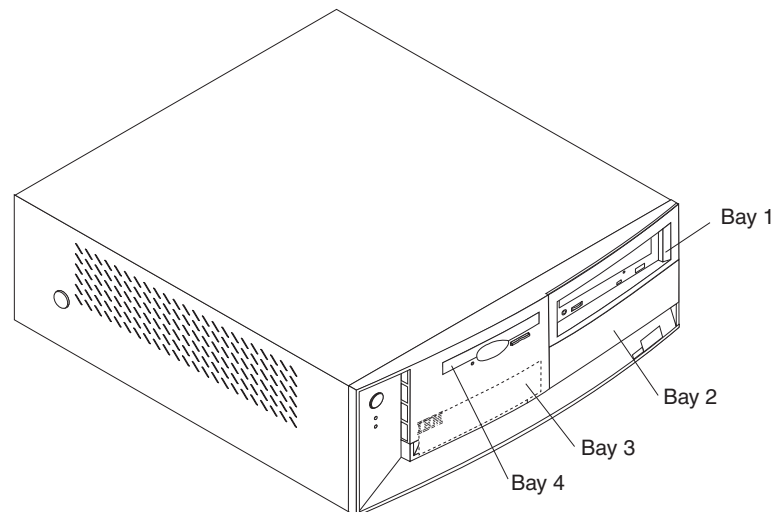
- Diskette
- Hard Disk
- CD-ROM
- Tape

### Internal drive bays

#### Internal drive bays

Your computer comes with an IDE CD-ROM drive installed in bay 1, a hard disk drive in bay 3, and a 3.5-in., 1.44 MB diskette drive in bay 4.

**Note:** The illustrations in this document might differ slightly from your hardware.



#### Notes:

1. Diskette drives, tape drives, and CD-ROM drives are removable media drives. You can install removable media drives in bays 1, 2, and 4.
2. You can install a 3.5-in, slim-high, or a 5.25-in., half-high, removable-media drive in bay 2.
3. The IntelliStation xxxx E Pro computer supports only one diskette drive, which uses 1 MB and 2 MB diskettes.
4. Before you install a 3.5-in. drive in a 5.25-in. bay, you must attach the 5.25 in. conversion kit, supplied with your option, to the 3.5-in drive. Refer to the documentation that comes with the option for the conversion kit installation instructions.
5. If you have a tape backup drive installed, use a dry process cleaning cartridge to clean the tape head two hours after you first use a new data cartridge. Then, clean the tape head once a month, or after each eight hours of continuous read/write operations, whichever occurs first. For complete details about the tape backup drive, refer to the documentation that comes with your computer or your backup option
6. The electromagnetic interference (EMI) integrity and cooling of the computer are both protected by having bays 1 through 4 covered or occupied. When you



install a drive, save the EMC shield and filler panel from the bay, in case you later remove the drive and do not replace it with another.

7. For a list of supported options for your computer, refer to <http://www.ibm.com/pc/support> on the World Wide Web.

## Preinstallation steps (all bays)

Before you install drives in your computer, verify that you have all the cables and other equipment specified in the documentation that comes with the drive. You might also need to perform certain preinstallation activities. Some of the steps are required only during the initial installation of an option.

1. Read "Safety information" on page 113, "Handling electrostatic discharge-sensitive devices" on page 116, and the documentation that comes with your drive.
2. Choose the bay in which you want to install the drive.
3. Check the instructions that come with the drive to see if you need to set any switches or jumpers on the drive. If you are installing a SCSI device, be sure to set the SCSI ID for that device.

## Installing a drive in 2 or 3

Complete the following steps to install a drive in bay 2 or 3.

**Attention:** When you handle ESD-sensitive devices, take precautions to avoid damage from static electricity. For details on handling these devices, see "Handling electrostatic discharge-sensitive devices" on page 116.

1. Read the information in "Preinstallation steps (all bays)" and review the safety precautions listed in Statement 1 and Statement 5 in "Safety information" on page 113.
2. Remove any media (diskettes, CDs, or tapes) from the drives and shut down your operating system.
3. Turn off the computer and all attached devices and disconnect all external cables and power cords; then, remove the cover. See "Removing the computer cover" on page 35 for details.
4. If you are installing a drive in bay 2, use a screwdriver to pry the EMC shield away from the computer. Otherwise, go to the next step.

**Note:** If you are installing a drive that is a laser product, observe the following safety precaution:

### Statement 3

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**CAUTION:**

When laser products (such as CD-ROMs, DVD drives, fiber optic devices, or transmitters) are installed, note the following:

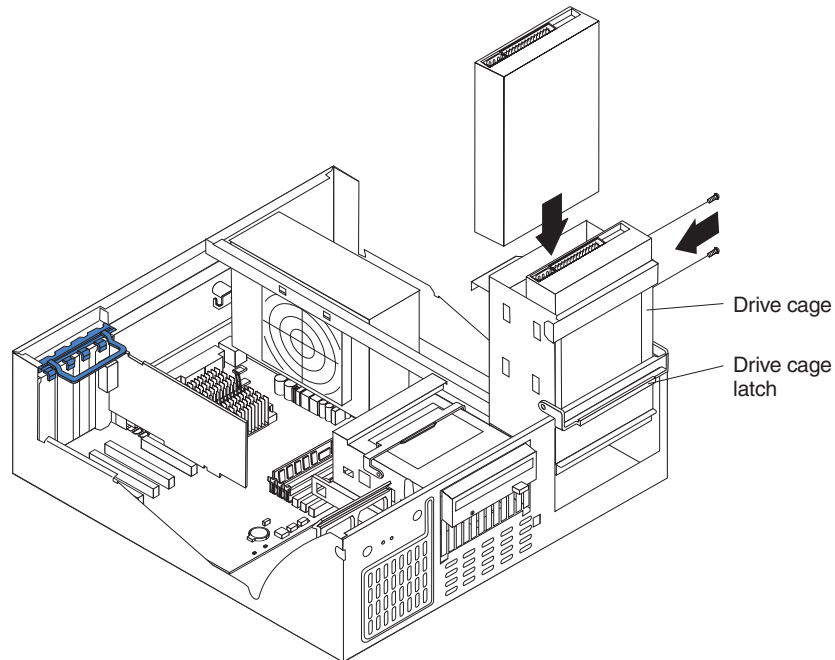
- Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.
- Use of controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.

### Statement 3



#### Danger

Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following. Laser radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam.



**Note:** If your computer has a CD-ROM drive installed in bay 1, remove the signal and power cables from the CD-ROM drive before rotating the drive cage out of the computer.

5. Rotate the drive cage toward the front of the computer until the drive cage latch locks on the chassis.

**Attention:** Do not use the drive cage latch to rotate either drive cage out of the computer.

6. Touch the static-protective bag containing the drive to any unpainted metal surface on the computer; then, remove the drive from the bag and place it on a static-protective surface.
7. Set any jumpers or switches on the drive according to the documentation that comes with the drive.
8. Push the drive into the bay; then, use the two screws to attach the drive to the drive cage.
9. If installing a 3.5-in. drive bay 2, you must attach the 5.25 in. conversion kit, supplied with your option, to the 3.5-in drive.
10. If you are installing a drive in drive bay 3, attach the blue, plastic guide rails to the sides of the drive using the screws provided.

Note to Reviewers: Where will the guide rails and screws be located, inside the empty drive bay?

11. Slide the drive into the drive cage until the plastic tabs on the guide rails lock into place in the drive cage.
12. If the drive is an IDE device, plug one connector of the IDE signal cable into the back of the drive and the other end of the cable into the IDE connector (IDE1) on the system board. For the location of the IDE connectors, see “System board internal cable connectors” on page 32.

If the drive is a SCSI device, plug one connector of the SCSI signal cable into the back of the drive and the other end of the cable into the SCSI adapter.

**Note:** Make sure to route the cable so that it does not block the air flow to the rear of the drives or over the microprocessor.

13. If you are installing another drive, do so now.
14. Connect one of the power cables from the power supply into the back of the drive. The connectors are keyed and can be inserted only one way.
15. Hold the drive cage so it does not fall and pull out on the drive cage latch to release the drive cage.

**Attention:** Ensure that all cables have been moved from under the drive cage so that the power or signal cables are not damaged.

16. Pivot the drive bay cage back into the computer and press down on the cage until it locks in place.
17. If you have other adapters or options to install or remove, do so now.
18. Reinstall the cover (see “Installing the cover” on page 45 for details).
19. Reconnect the external cables and power cords; then turn on the attached devices and the computer.

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## Installing memory modules

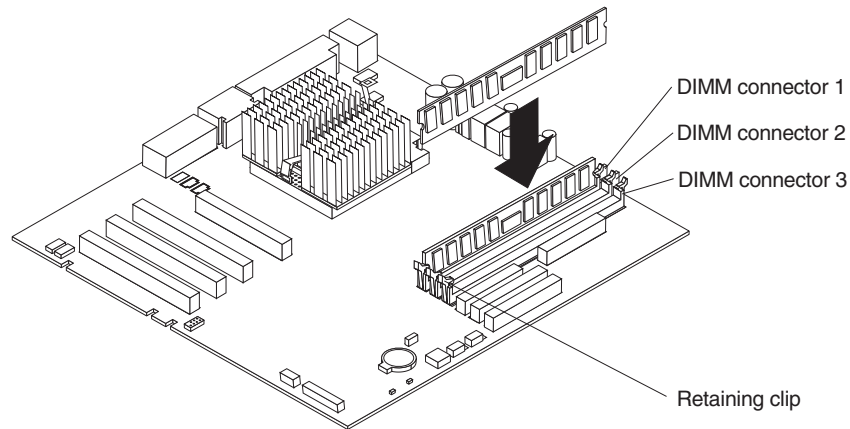
Adding memory to your computer is an easy way to make programs run faster. You can increase the amount of memory in your computer by installing options called memory modules. Each module contains one industry-standard, dual-inline memory module (DIMM). Your computer uses a noninterleaved memory configuration.

Your computer comes with a DIMM installed on the system board in DIMM slot 1.

### Notes:

1. When installing additional memory modules, install the second memory module in DIMM slot 2, and the third in DIMM slot 3. (See the illustration in this section for memory connector locations.)
2. Your IntelliStation xxxx E Pro computer supports 64 MB, 128 MB, 256 MB, and 512 MB DIMMs. Your computer supports a minimum of 64 MB and a maximum of 1.5 GB of system memory. Go to <http://www.ibm.com/pc/support> for a list of memory modules for use with your computer.
3. Installing or removing DIMMs changes the configuration information in the computer. Therefore, after installing or removing a DIMM, you must change and save the new configuration information by using the Configuration/Setup Utility program. When you restart the computer, the system displays a message indicating that the memory configuration has changed. Start the Configuration/Setup Utility program and select **Save & Exit Setup**. See “Using the Configuration/Setup Utility program” on page 23 for more information.

**Note:** The illustrations in this document might differ slightly from your hardware



Complete the following steps to install a DIMM:

**Attention:** When you handle ESD-sensitive devices, take precautions to avoid damage from static electricity. For details on handling these devices, see “Handling electrostatic discharge-sensitive devices” on page 116.

1. Review the safety precautions listed in “Safety information” on page 113.
2. Remove any media (diskettes, CDs, or tapes) from the drives and shut down your operating system.
3. Turn off the computer and all attached devices and disconnect all external cables and power cords; then, remove the cover. See “Removing the computer cover” on page 35 for details.
4. Touch the static-protective package containing the DIMM to any unpainted metal surface on the computer. Then, remove the DIMM from the package.
5. Install the DIMM:
6.
  - a. If you are installing a DIMM in slot 1 or 2, remove the AGP adapter.  
You only have to remove the AGP adapter if you are replacing the DIMM in slot 1 or 2. See “System and PCI extender board options connectors” on page 32 for the location of the AGP slot. See “Installing an adapter” on page 38 for details about removing the AGP adapter.
  - b. Open the retaining clip on each end of the DIMM slot. Turn the DIMM so that the pins align correctly with the connector.

**Note:** To avoid breaking the retaining clips or damaging the DIMM connectors, open and close the clips gently.

- c. Insert the DIMM into the connector by aligning the DIMM edges with the slots at each end of the DIMM connector. Firmly press the DIMM straight down into the connector by applying pressure on both ends of the DIMM simultaneously. Be sure that the retaining clips snap into the locked position when the DIMM is firmly seated in the connector.
    - d. If a gap exists between the DIMM and the retaining clips, the DIMM has not been properly installed. In this case, open the retaining clips and remove the DIMM; then, reinsert the DIMM.
7. If you removed the AGP adapter, reinstall it now, see “Installing an adapter” on page 38 for details on reinstalling the AGP adapter.
8. If you have other options to install or remove, do so now.
9. Replace the cover, see “Installing the cover” on page 45.

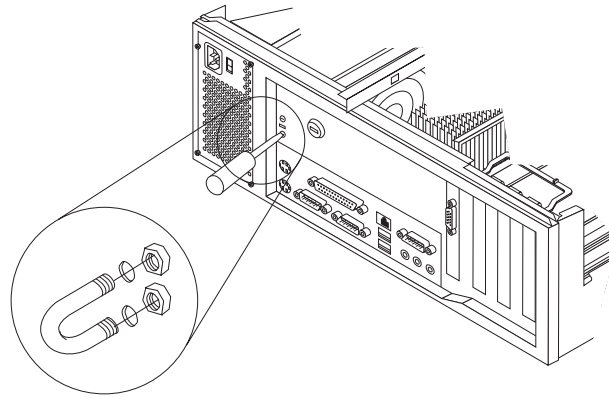
10. Reconnect the external cables and power cords; then, turn on the attached devices and the computer.

If you want to remove a DIMM, reverse the previous steps.

---

## Installing a security U-bolt

To help prevent hardware theft, you can add a security U-bolt and cable to your computer. After you add the security cable, make sure that it does not interfere with other cables that are connected to the computer.



Complete the following steps to install a U-bolt:

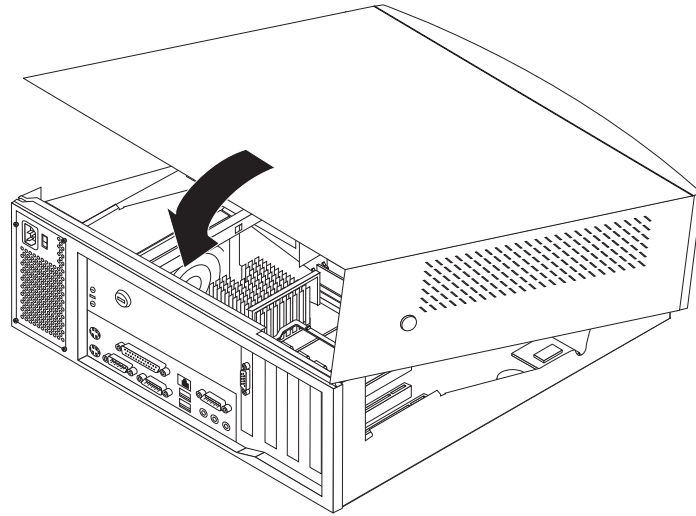
1. Review the safety precautions listed in “Safety information” on page 113.
2. Remove any media (diskettes, CDs, or tapes) from the drives and shut down your operating system.
3. Turn off the computer and all attached devices and disconnect all external cables and power cords; then, remove the cover. See “Removing the computer cover” on page 35 for details.
4. Use a screwdriver to remove the two metal knockouts.
5. Insert the U-bolt through the rear panel; then, attach and tighten the nuts.
6. If you have other options to install or remove, do so now.
7. Replace the computer cover, see “Installing the cover”.
8. Thread the cable through the U-bolt and around an object that is a part of or permanently secured to the building structure or foundation, and from which it cannot be removed; then, fasten the cable ends together with a lock.
9. Reconnect the external cables and power cords; then, turn on the attached devices and the computer.

---

## Installing the cover

The following information describes the cover installation procedure.

**Note:** The illustrations in this document might differ slightly from your hardware.



Complete the following steps to install the computer cover:

1. Clear any cables that might impede the replacement of the cover.
2. Position the cover over the computer and pivot the cover down until the cover snaps into place.
3. Lock the cover.
4. Reconnect the external cables and power cords to the computer; then, plug the power cords into electrical outlets.
5. Turn on all attached devices; then, turn on the computer.

---

## Connecting external options

You can attach a SCSI storage expansion enclosure to your computer.

### Installation procedure

To attach an external device:

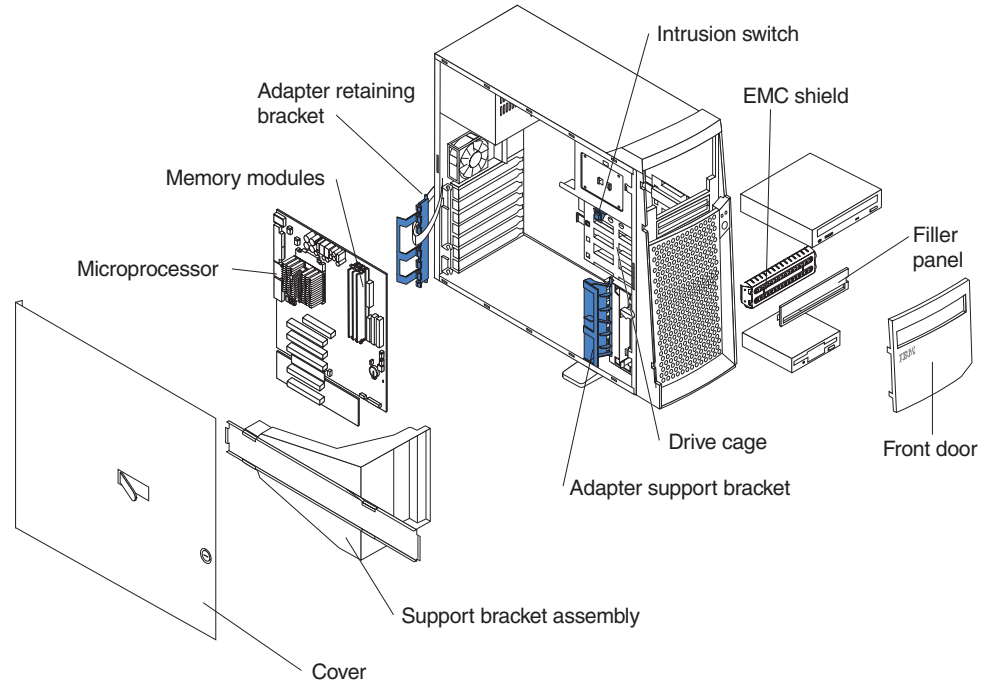
1. Read "Before you begin" on page 29, review the safety precautions listed in "Safety information" on page 113, and read the documentation that comes with your options.
2. Be sure your computer and all attached devices are turned off.
3. Follow the instructions that come with the option to prepare it for installation and to connect it to the computer.

**Note:** If you are attaching a SCSI device, see "Ultra 3/160 SCSI connector (some models)" on page 66 for SCSI ID and cabling information.

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## Type 6846 - Major components

**Note:** The illustrations in this document might differ slightly from your hardware. The following illustration shows the locations of major components in your computer.



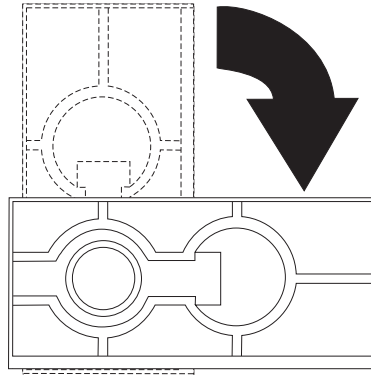
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## Moving the stabilizing feet

### Moving the stabilizing feet

The two front feet attached to the bottom of the tower model rotate 90 degrees to provide additional stability.

When you need to access the inside of the computer to install options, you might find it easier to lay the computer on its side. If you do so, rotate the feet in towards the computer, so they do not break off due to the weight of the computer.



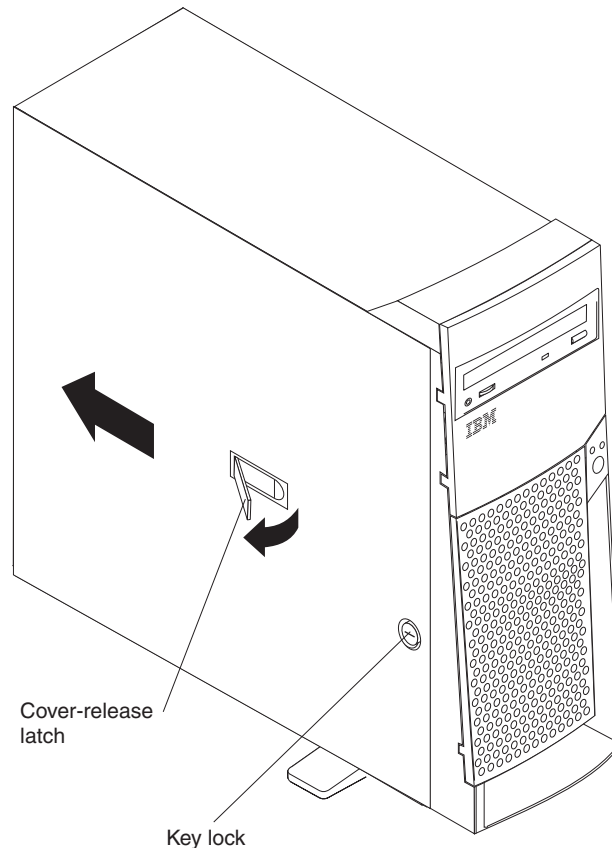
When you are finished installing options and have reinstalled the side cover, turn the two front stabilizing feet a quarter turn out from the computer and set it carefully back on its feet.

---

## Removing the side cover

The following information describes how to remove the side cover.

**Note:** The illustrations in this document might differ slightly from your hardware.



Complete the following steps to remove the side cover of the computer:

1. Review the information in “Before you begin” on page 29 and the safety precautions listed in “Safety information” on page 113.
2. Remove any media (diskettes, CDs, or tapes) from the drives and shut down your operating system.
3. Turn off the computer and all attached devices and disconnect all external cables and power cords.
4. If necessary, unlock the computer cover.
5. Pull out on the cover-release latch, which will slide the cover toward the rear of the computer about 12.7 mm (1/2 in.). Then, remove the cover from the computer.

To replace the side cover, see “Installing the cover” on page 61.

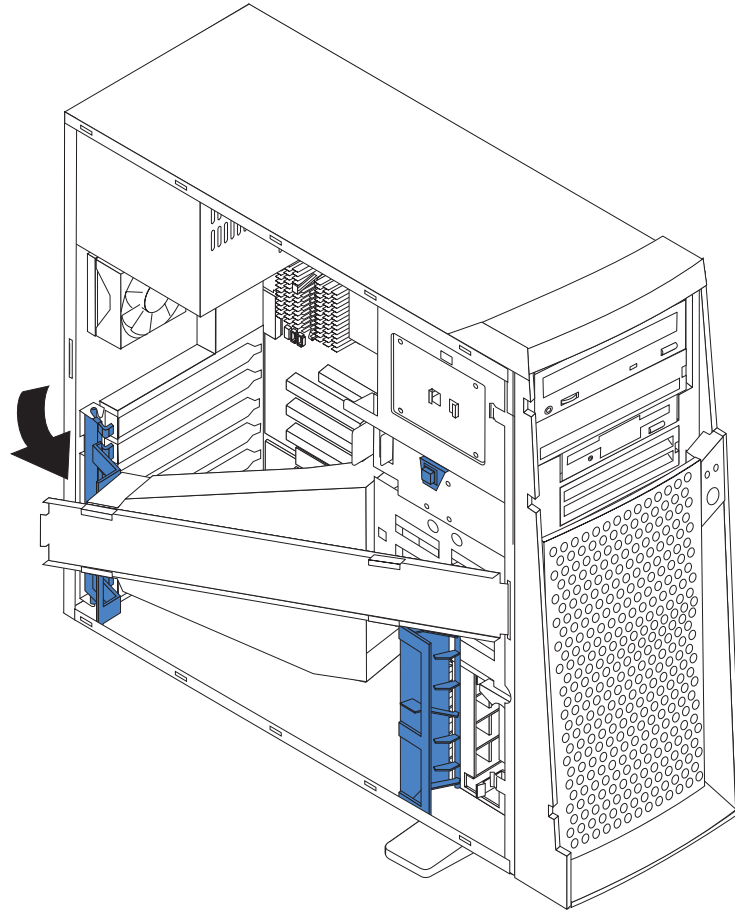
**Attention:** For proper cooling and airflow, replace the cover before turning on the computer. Operating the computer with the cover removed might damage computer components.

---

## Removing the support bracket assembly

When working with some options, such as hard disk drives and memory modules, you must first remove the support bracket assembly to access the option.





Complete the following steps to remove the support bracket assembly:

1. Review the safety precautions listed in “Safety information” on page 113.
2. Remove any media (diskettes, CDs, or tapes) from the drives and shut down your operating system
3. Turn off the computer and all attached devices and disconnect all external cables and power cords.
4. Disconnect the support bracket assembly fan cable from the connector (SYSFA3) on the system board. For the location of the fan cable connector, see “System board internal cable connectors” on page 32.
5. Pull out, about 152.4 mm (6 in.), on the end of the support bracket assembly located at the rear of the computer.
6. Pull the front end of the support bracket assembly away from the computer and place the assembly aside.

To reinstall the support bracket assembly, reverse the previous steps.

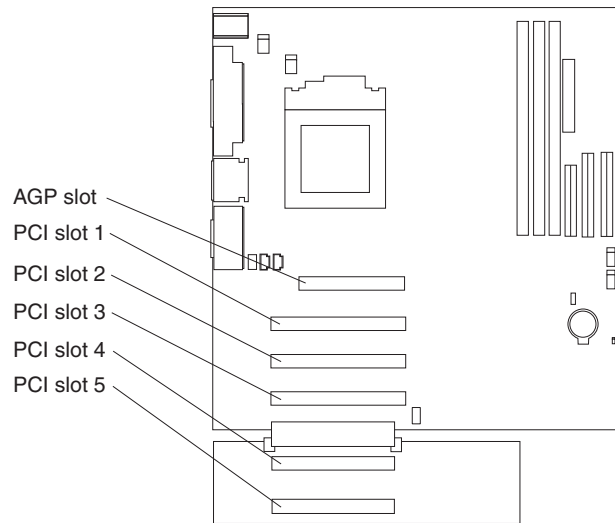
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## Working with adapters

Your computer comes with adapter connectors, call *slots*. The AGP video adapter is installed in the AGP slot. You can install up to five PCI adapters in PCI expansion slots 1 through 5. All PCI expansion slots are 32-bit, 33 MHz slots.

**Note:** The illustrations in this document might differ slightly from your hardware.

The following illustration shows the location of the PCI expansion slots on the system and PCI extender boards.



**Note:** The PCI extender board is only available in the tower model.

## Adapter considerations

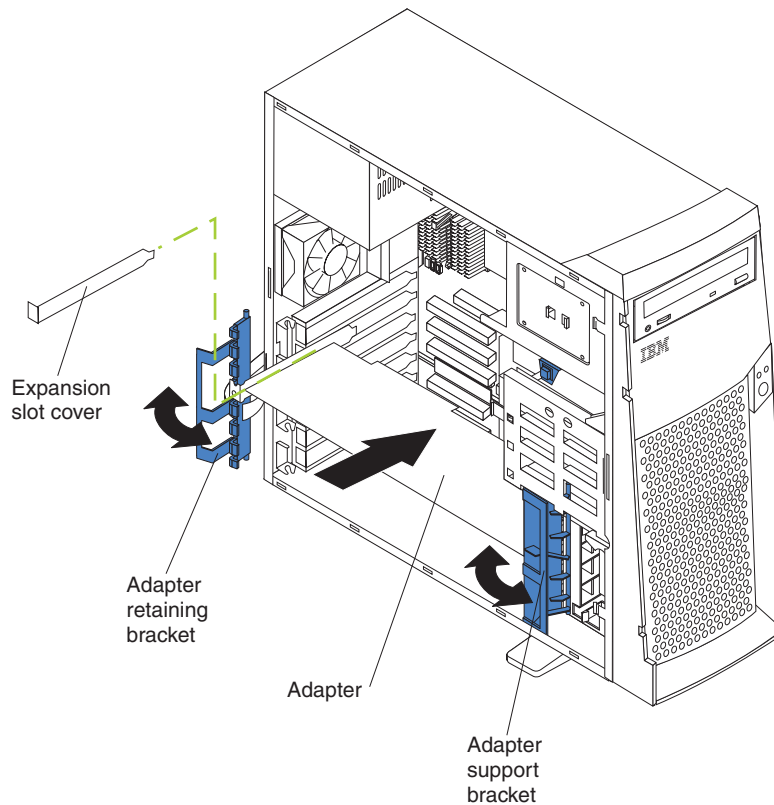
Before you install adapters, review the following:

- Locate the documentation that comes with the adapter and follow those instructions in addition to the instructions given in this chapter. If you need to change switch or jumper settings on your adapter, follow the instructions that come with the adapter.
- You can install full-length adapters in all PCI expansion slots.
- Your computer supports 5.0 V and universal PCI adapters; it does not support 3.3 V adapters.
- Your computer uses a rotational interrupt technique to configure PCI adapters. Because of this technique, you can install a variety of PCI adapters that currently do not support sharing of PCI interrupts.
- PCI slots 1 through 5 are on PCI bus 0 . The system scans the AGP slot and PCI slots 1 through 5 to assign system resources; then, the system starts (boots) the PCI devices in the following order, if you have not changed the default boot sequence : PCI slots 1 and 2, system board integrated drive electronics (IDE) or SCSI devices, and then PCI slots 3 through 5.

**Note:** To change the boot sequence for PCI devices, start the Configuration/Setup Utility program, select **Start Options** from the main menu, select **Startup Sequence**; then, select **Second device (SCSI)** to designate the adapter boot sequence. See Chapter 4, “Configuration” on page 23 for details on using the Configuration/Setup Utility program.

- For a list of supported options for your computer, refer to <http://www.ibm.com/pc/support> on the World Wide Web.

## Installing an adapter



Complete the following steps to install an adapter:

**Attention:** When you handle ESD-sensitive devices, take precautions to avoid damage from static electricity. For details on handling these devices, see “Handling electrostatic discharge-sensitive devices” on page 116.

1. Review the safety precautions listed in “Safety information” on page 113.
2. Remove any media (diskettes, CDs, or tapes) from the drives and shut down your operating system.
3. Turn off the computer and attached devices and disconnect all external cables and power cords; then, remove the side cover. See “Removing the side cover” on page 48 for details.
4. Determine which PCI expansion slot you will use for the adapter.

**Note:** Check the instructions that come with the adapter for any requirements, restrictions, or cabling instructions. It might be easier for you to route any cables before you install the adapter.

5. If you are installing a full-length adapter, rotate the front adapter support bracket to the open (unlocked) position.
6. Rotate the rear adapter retaining bracket to the open (unlocked) position; then, place it over the rear of the computer.
7. Remove the PCI expansion-slot cover. From the rear of the computer, press in on the slot cover. Grasp it and pull it out of the expansion slot. Store it in a safe place for future use.

**Attention:** PCI expansion-slot covers must be installed on all vacant slots. This maintains the electromagnetic emissions characteristics of the computer and ensures proper cooling of system components.

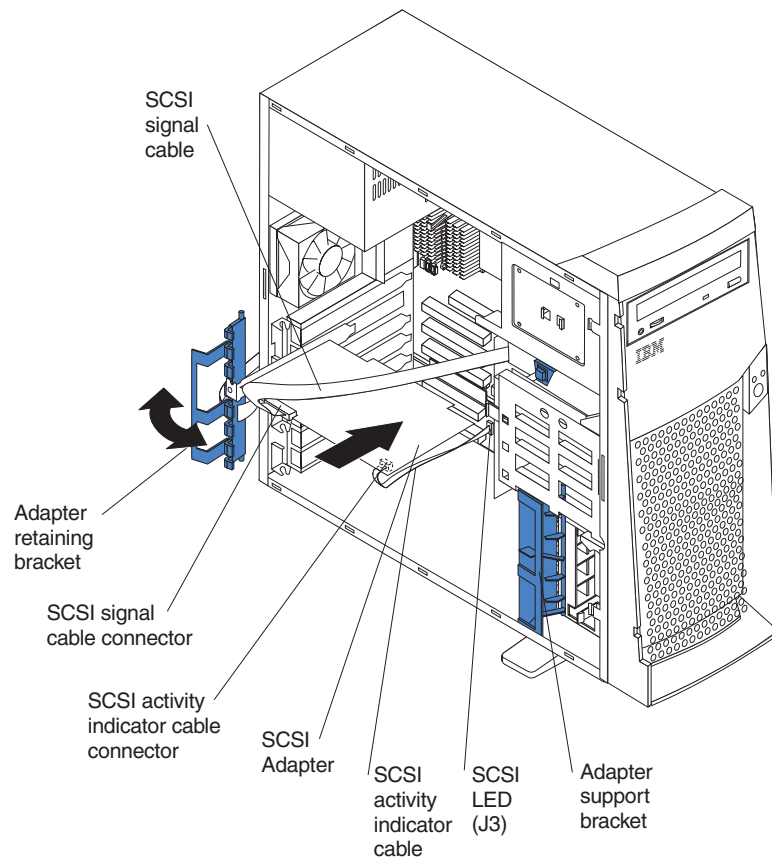
8. Remove the adapter from the static-protective package. Avoid touching the components and gold-edge connectors on the adapter.
9. Place the adapter, component-side up, on a flat, static-protective surface.
10. Set any jumpers or switches as described by the adapter manufacturer.
11. To install the adapter, carefully grasp the adapter by the top edge or upper corners, and align it with the expansion slot guides (only if installing a full-length adapter); then, press the adapter *firmly* into the expansion slot.  
**Attention:** When you install an adapter in the computer, be sure that it is completely and correctly seated in the expansion slot before you turn on the computer. Incomplete insertion might cause damage to the system board, PCI extender board, or the adapter.
12. Connect required cables to the adapter.  
**Attention:** Route cables so that they do not block the flow of air from the fans.
13. If you have another adapter or other options to install, do so now.
14. If you have installed a full-length adapter, rotate the front adapter support bracket to the closed (locked) position.
15. Reinstall the rear adapter retaining bracket; then rotate the bracket to the closed (locked) position.
16. Reinstall the side cover, see “Installing the cover” on page 61 for details.
17. Reconnect the external cables and power cords; then, turn on the attached devices and the computer.

## Installing a SCSI adapter (some models)

Complete the following steps to install a SCSI adapter:

1. Review the safety precautions listed in “Safety information” on page 113.
2. If you have not already installed the SCSI adapter, complete steps 1 through 11 of “Installing an adapter” on page 51. Then, return here to complete the

installation.



3. Connect the SCSI signal cable to the adapter and one or more of the signal cable connectors to the rear of the SCSI devices.
4. Connect the SCSI activity indicator cable to the adapter and to the SCSI LED connector (J3) on the system board. See "System and PCI extender board options connectors" on page 32 for the location of the SCSI LED connector.
5. If you have other adapters to install or remove, do so now. Complete steps 1 through 10 of "Installing an adapter" on page 51. Then, return here to complete the installation.
6. Rotate the front adapter support bracket to the closed (locked) position.
7. Reinstall the rear adapter retaining bracket; then, rotate the bracket to the closed (locked) position.
8. Reinstall the cover, see "Installing the cover" on page 61 for details.
9. Reconnect the external cables and power cords; then, turn on the attached devices and the computer.

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## Installing internal drives

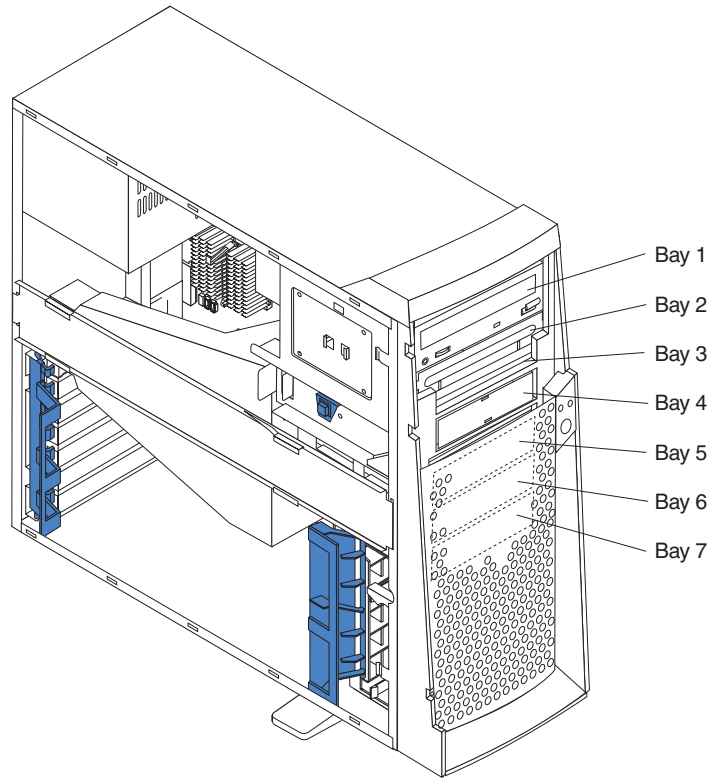
Different types of drives enable your computer to read multiple types of media and store data in different formats. Depending on your computer model, you might have one or more of the following drives installed.

- Diskette
- Hard disk
- CD ROM
- Tape

## Internal drive bays

Your IntelliStation xxx E Pro comes with an IDE CD-ROM drive installed in bay 1, a 3.5-in., 1.44 MB diskette drive in bay 3, and a hard disk drive in bay 5 in some models.

**Note:** The illustrations in this document might differ slightly from your hardware.



### Notes:

1. Diskette drives, tape drives, and CD-ROM drives are removable media drives. You can install removable-media drives in bays 1, 2, 3, and 4.
2. You can install a 3.5-in., slim-high, or a 5.25-in., half-high, removable-media drive, such as a tape backup drive, in bay 2.
3. You can only install a 3.5-in., slim-high, removable-media drive in bay 4.
4. The IntelliStation xxx E Pro computer supports only one diskette drive, which uses 1 MB and 2 MB diskettes.
5. Before you install a 3.5-in. drive in a 5.25-in. bay, you must attach the 5.25 in. conversion kit, supplied with your option, to the 3.5-in drive. Refer to the documentation that comes with the option for the conversion kit installation instructions.
6. If you have a tape drive model, use a dry process cleaning cartridge to clean the tape head two hours after you first use a new data cartridge. Then, clean the tape head once a month, or after each eight hours of continuous read/write operations, whichever occurs first. For complete details about the tape backup drive, refer to the documentation that comes with your computer or your backup option.
7. The electromagnetic interference (EMI) integrity and cooling of the computer are both protected by having bays 1 through 4 covered or occupied. When you install a drive, save the EMC shield and filler panel from the bay, in case you later remove the drive and do not replace it with another.

8. For a list of supported options for your computer, refer to <http://www.ibm.com/pc/support> on the World Wide Web.

## Preinstallation steps (all bays)

Before you install drives in your computer, verify that you have all the cables and other equipment specified in the documentation that comes with the drive. You might also need to perform certain preinstallation activities. Some of the steps are required only during the initial installation of an option.

1. Read “Safety information” on page 113, “Handling electrostatic discharge-sensitive devices” on page 116, and the documentation that comes with your drive.
2. Choose the bay in which you want to install the drive.
3. Check the instructions that come with the drive to see if you need to set any switches or jumpers on the drive. If you are installing a SCSI device, be sure to set the SCSI ID for that device.

## Installing a drive in bay 2 or 4

Complete the following steps to install a drive in bay 2 or 4.

**Attention:** When you handle ESD-sensitive devices, take precautions to avoid damage from static electricity, see “Handling electrostatic discharge-sensitive devices” on page 116.

1. Review the safety precautions listed in “Safety information” on page 113 and read the information in “Preinstallation steps (all bays)”.
2. Remove any media (diskettes, CDs, or tapes) from the drives and shut down your operating system.
3. Turn off the computer and attached devices and disconnect all external cables and power cords; then, remove the side cover. See “Removing the side cover” on page 48 for details.
4. Use a screwdriver to pry the filler panel and EMC shield away from the computer.

**Note:** If you are installing a drive that is a laser product, observe the following safety precaution:

### Statement 3

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#### CAUTION:

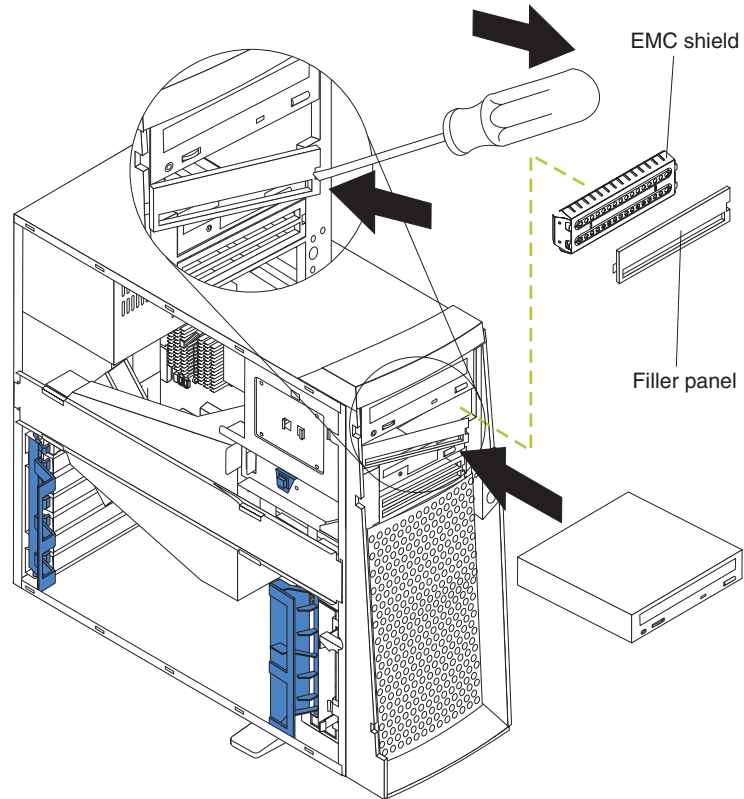
When laser products (such as CD-ROMs, DVD drives, fiber optic devices, or transmitters) are installed, note the following:

- Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.
- Use of controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.



**Danger**

Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following. Laser radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam.



5. Touch the static-protective bag containing the drive to any unpainted metal surface on the computer; then, remove the drive from the bag and place it on a static-protective surface.
6. Set any jumpers or switches on the drive according to the documentation that comes with the drive.
7. If you are installing a 5.25-in drive in bay 2, push the drive into the bay; then, use the two screws to attach the drive to the drive cage.
8. If you are installing a 3.5-in drive in bay 2, you must attach the 5.25-in conversion kit, supplied with your option, to the 3.5-in drive.

**Note:** You can only install a 3.5-in device in bay 4.

9. If the drive is an IDE device, plug one connector of the IDE signal cable into the back of the drive and the other end of the cable into the IDE connector (IDE1) on the system board. For the location of the IDE connectors, see "System board internal cable connectors" on page 32.
10. If the drive is a SCSI device, plug one connector of the SCSI signal cable into the back of the drive and the other end of the cable into the SCSI adapter. See "Installing a SCSI adapter (some models)" on page 52 for details.

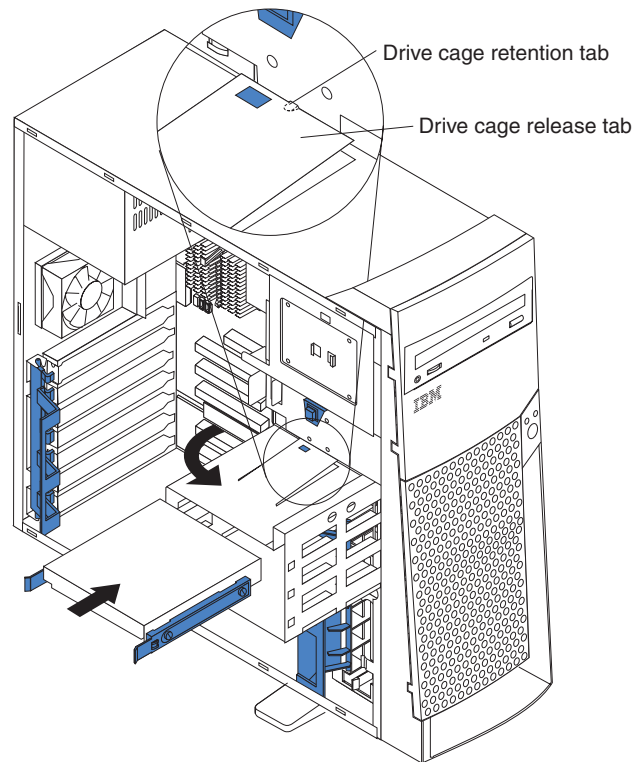
**Note:** Make sure to route the signal cable so that it does not block the air flow to the rear of the drives or over the microprocessor.



11. Connect one of the power cables from the power supply into the back of the drive. The connectors are keyed and can be inserted only one way.
12. If you have other options to install or remove, do so now.
13. Reinstall the side cover, see “Installing the cover” on page 61 for details.
14. Reconnect the external cables and power cords; then, turn on the attached devices and the computer.

## Installing a hard disk drive in bay 5, 6, or 7

Complete the following steps to install a hard disk drive in bay 5, 6, or 7.



1. Review the safety precautions listed in “Safety information” on page 113 and read the information in “Preinstallation steps (all bays)” on page 55.
2. Remove any media (diskettes, CDs, or tapes) from the drives and shut down your operating system.
3. Turn off the computer and attached devices and disconnect all external cables and power cords; then, remove the cover. See “Removing the side cover” on page 48 for details).
4. Remove the support bracket assembly and disconnect the fan cable from the connector (SYSFA3) on the system board. See “Removing the support bracket assembly” on page 48 for removal instructions.
5. Access the drive cage.
  - a. If your computer has hard disk drives installed in the drive cage, disconnect the power and signal cables from the rear of the drives.
  - b. Rotate the drive cage out of the computer until it locks into place over the drive cage retention tab.

**Note:** Before you install a hard disk drive, ensure that the drive cage locks into place over the drive cage retention tab by pressing on the side of the drive cage.

6. Remove the guide rails from the drive cage. Attach the blue, plastic guide rails to the sides of the drive using the screws provided.
7. Slide the drive into the drive cage until the plastic tabs on the guide rails lock into place in the drive cage.
8. Lift the drive cage up and press in on the drive cage release tab; then, rotate the cage back into the computer.

**Note:** Clear any cables that might impede the replacement of the drive cage.

9. Connect the power and signal cables to the rear of each drive.

**Note:** Make sure to route the signal cable so that it does not block the air flow to the rear of the drives or over the microprocessor.

10. If you have other options to install or remove, do so now.
11. Reinstall the support bracket assembly and reconnect the fan cable to the connector (SYSFA3) on the system board. See "Removing the support bracket assembly" on page 48 for removal instructions.
12. Reinstall the side cover, see "Installing the cover" on page 61 for details.
13. Reconnect the external cables and power cords; then, turn on the attached devices and the computer.

For a list of supported options for your computer, refer to <http://www.ibm.com/pc/us/compat> on the World Wide Web.

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## Installing memory modules

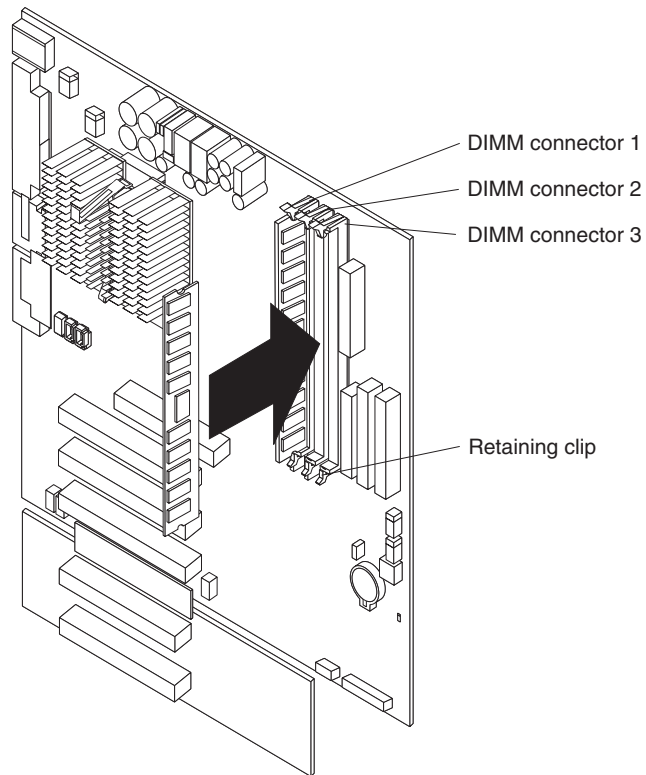
Adding memory to your computer is an easy way to make programs run faster. You can increase the amount of memory in your computer by installing options called memory modules. Each module contains one industry-standard, dual in-line memory module (DIMM). Your computer uses a noninterleaved memory configuration.

Your computer comes with a DIMM installed on the system board in DIMM slot 1.

### Notes:

1. When installing additional memory modules, install the second memory module in DIMM slot 2, and the third in DIMM slot 3. (See the illustration in this section for memory connector locations.)
2. Your IntelliStation xxxx E Pro computer supports 64 MB, 128 MB, 256 MB, and 512 MB DIMMs. Your computer supports a minimum of 64 MB and a maximum of 1.5 GB of system memory. Go to <http://www.ibm.com/pc/support> for a list of memory modules for use with your computer.
3. Installing or removing DIMMs changes the configuration information in the computer. Therefore, after installing or removing a DIMM, you must change and save the new configuration information by using the Configuration/Setup Utility program. When you restart the computer, the system displays a message indicating that the memory configuration has changed. Start the Configuration/Setup Utility program and select **Save Settings**. See "Using the Configuration/Setup Utility program" on page 23 for more information.

**Note:** The illustrations in this document might differ slightly from your hardware.



Complete the following steps to install a DIMM:

**Attention:** When you handle ESD-sensitive devices, take precautions to avoid damage from static electricity. For details on handling these devices, see “Handling electrostatic discharge-sensitive devices” on page 116.

1. Review the safety precautions listed in “Safety information” on page 113.
2. Remove any media (diskettes, CDs, or tapes) from the drives and shut down your operating systems.
3. Turn off the computer and attached devices and disconnect all external cables and power cords; then, remove the cover (see “Removing the side cover” on page 48 for details).
4. Remove the support bracket assembly and disconnect the fan cable from the connector (SYSFA3) on the system board. See “Removing the support bracket assembly” on page 48 for removal instructions.
5. Touch the static-protective package containing the DIMM to any unpainted metal surface on the computer. Then, remove the DIMM from the package.
6. Install the DIMM:
7.
  - a. If you are installing a DIMM in slot 1, remove the AGP adapter.  
You only have to remove the AGP adapter if you are replacing the DIMM in slot 1. See “System and PCI extender board options connectors” on page 32 for the location of the AGP slot. See “Installing an adapter” on page 51 for details about removing the AGP adapter.
  - b. Open the retaining clip on each end of the DIMM slot. Turn the DIMM so that the pins align correctly with the connector.

**Note:** To avoid breaking the retaining clips or damaging the DIMM connectors, open and close the clips gently.

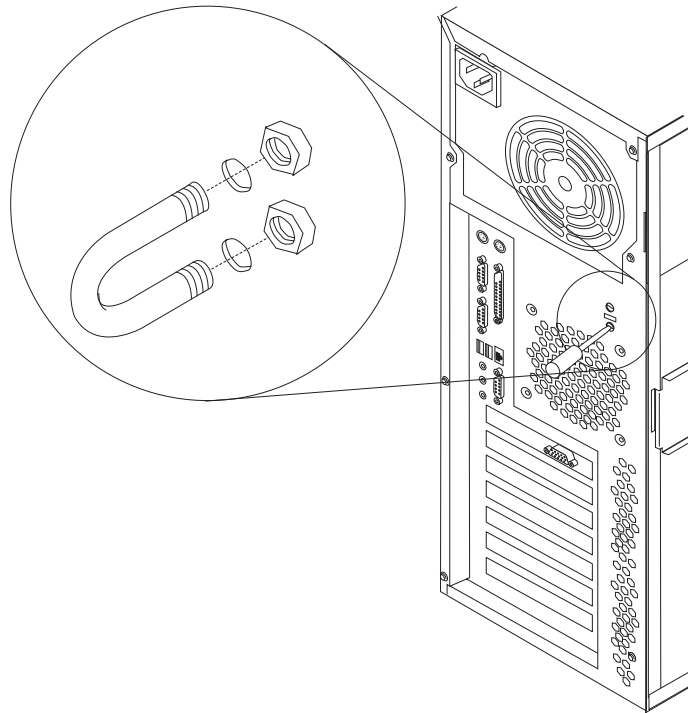
- c. Insert the DIMM into the connector by aligning the DIMM edges with the slots at each end of the DIMM connector. Firmly press the DIMM straight down into the connector by applying pressure on both ends of the DIMM simultaneously. Be sure that the retaining clips snap into the locked position when the DIMM is firmly seated in the connector.
  - d. If a gap exists between the DIMM and the retaining clips, the DIMM has not been correctly installed. In this case, open the retaining clips and remove the DIMM; then, reinsert the DIMM.
8. If you removed the AGP adapter, reinstall it now, see “Installing an adapter” on page 51.
  9. If you have other options to install or remove, do so now.
  10. Replace the support bracket assembly and reconnect the fan cable to the connector (SYSFA3) on the system board. See “Removing the support bracket assembly” on page 48 for removal instructions.
  11. Replace the side cover, see “Installing the cover” on page 61.
  12. Reconnect the external cables and power cords, and turn on the attached devices and the computer.

If you want to remove a DIMM, reverse the steps.

---

## Installing a security U-bolt

To help prevent hardware theft, you can add a security U-bolt and cable to your computer. After you add the security cable, make sure that it does not interfere with other cables that are connected to the computer.



Complete the following steps to install the U-bolt:

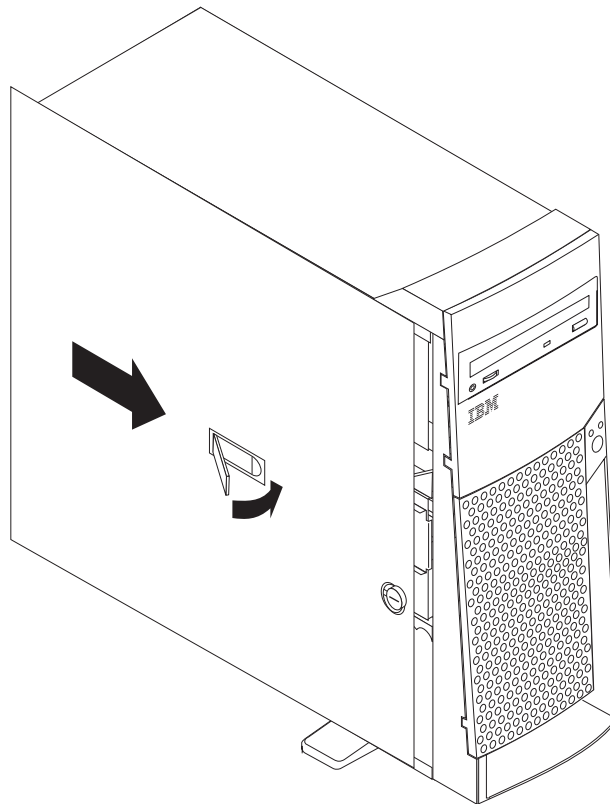
1. Review the safety precautions listed in “Safety information” on page 113.
2. Remove any media (diskettes, CDs, or tapes) from the drives and shut down your operating system.
3. Turn off the computer and attached devices, and disconnect all external cables and power cords; then, remove the cover (see “Removing the side cover” on page 48 for details).
4. Use a screwdriver to remove the two metal knockouts.
5. Insert the U-bolt through the rear panel; then, attach and tighten the nuts.
6. If you have other options to install or remove, do so now.
7. Replace the side cover, see “Installing the cover”.
8. Thread the cable through the U-bolt and around an object that is a part of or permanently secured to the building structure or foundation, and from which it cannot be removed; then, fasten the cable ends together with a lock.
9. Reconnect the external cables and power cords, and turn on the attached devices and the computer.

---

## Installing the cover

The following information describes the cover installation procedure.

**Note:** The illustrations in this document might differ slightly from your hardware.



**Note:** If you removed the support bracket assembly after you removed the cover, reinstall it before you install the cover. See “Removing the support bracket assembly” on page 48 for details.

Complete the following steps to install the computer cover:

1. Clear any cables that might impede the replacement of the cover.
2. Install the side cover by placing it into position on the computer. Close the cover release latch to secure the cover in place.
3. Lock the cover.
4. If you have not done so already, make sure that the two front stabilizing feet are rotated outward so that they properly support the computer. Rotate each individual foot outward 90 degrees.
5. Reconnect the external cables and power cords to the computer; then, plug the power cords into electrical outlets.
6. Turn on the attached devices; then, turn on the computer.

---

## Connecting external options

You can attach a SCSI storage expansion enclosure to your computer.

### Installation procedure

To attach an external device:

1. Read “Before you begin” on page 29 and the documentation that comes with your options.
2. Be sure your computer and all attached devices are turned off.
3. Follow the instructions that come with the option to prepare it for installation and to connect it to the computer.

**Note:** If you are attaching a SCSI device, see “Ultra 3/160 SCSI connector (some models)” on page 66 for SCSI ID and cabling information.

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## Input/Output ports Types 6836 and 6846

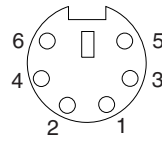
This section provides information about the I/O connectors on the rear of your computer. These connectors include the following:

- One mouse
- One keyboard
- One parallel
- Two serial
- One Ethernet
- Two USB
- Line out
- Line in
- Mic
- MIDI
- One video
- One Ultra 3/160 SCSI (some models)

### Mouse connector

The system board has one mouse connector that supports a mouse or other pointing device. The mouse connector is located on the rear of your computer, see

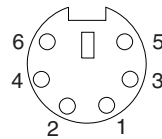
“I/O connector/port locations - Type 6846 and 6836” on page 30 for its location.



## Keyboard connector

There is one keyboard connector on the rear of your computer, see “I/O connector/port locations - Type 6846 and 6836” on page 30 for its location.

**Note:** If you attach a standard (non-USB) keyboard to the keyboard connector, the USB connectors and devices will be disabled during the power-on self-test.



## Parallel connector

Your computer has one parallel connector. This connector supports three standard Institute of Electrical and Electronics Engineers (IEEE) 1284 modes of operation: standard parallel port (SPP), enhanced parallel port (EPP), and extended capability port (ECP).

### Viewing or changing the connector assignments

You can use the built-in Configuration/Setup Utility program to configure the parallel connector as bidirectional; that is, so that data can be both read from and written to a device. In bidirectional mode, the computer supports the ECP and EPP modes.

Complete the following steps to view or change the parallel-connector assignment:

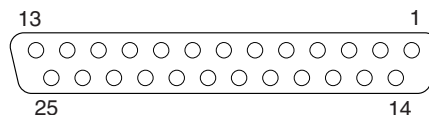
1. Restart the computer and watch the monitor screen.
2. When the message Press F1 for Configuration/Setup appears, press F1.
3. When the Configuration/Setup Utility menu appears, select **Devices & I/O Ports**; then, press Enter.
4. Select the parallel connector; then, use the arrow keys to advance through the settings available.

**Note:** When you configure the parallel connector as bidirectional, use an IEEE 1284-compliant cable. The cable must not exceed 3 meters (9.8 feet).

5. Press Esc twice to return to the Configuration/Setup main menu; then, select **Save & Exit Setup** to exit from the Configuration/Setup Utility main menu.

### Parallel connector

There is a 25-pin, female D-shell parallel connector on the rear of your computer, see “I/O connector/port locations - Type 6846 and 6836” on page 30 for the location of this connector.



## Serial connector

Your computer has two standard serial connectors: serial connector A and serial connector B.

Some application programs require specific connectors, and some modems function properly only at certain communication connector addresses. You might need to use the Configuration/Setup Utility program to change communication connector address assignments to prevent or resolve address conflicts.

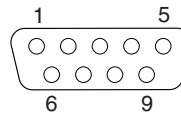
### Viewing or changing the serial-connector assignments

Complete the following steps to view or change the serial-connector assignments:

1. Restart the computer and watch the monitor screen.
2. When the message Press F1 for Configuration/Setup appears, press F1.
3. When the Configuration/Setup Utility menu appears, select **Devices & I/O Ports**; then, press Enter.
4. Select the serial connector; then, use the arrow keys to advance through the available settings.
5. Press Esc twice to return to the Configuration/Setup Utility main menu; then, select **Save & Exit Setup** to exit from the Configuration/Setup Utility main menu.

### Serial connectors

There are two 9-pin, male D-shell serial connectors located on the rear of your computer, see "I/O connector/port locations - Type 6846 and 6836" on page 30 for their locations.



## Ethernet connector

Your computer comes with an integrated Ethernet controller. This controller provides an interface for connecting to 10-Mbps or 100-Mbps networks and provides full-duplex capability, which enables simultaneous transmission and reception of data on the Ethernet LAN.

To access the Ethernet connector, attach a Category 3, 4 or 5 unshielded twisted-pair (UTP) cable to the RJ-45 connector on the rear of your computer, see "I/O connector/port locations - Type 6846 and 6836" on page 30.

**Note:** The 100BASE-TX Fast Ethernet standard requires that the cabling in the network be Category 5.

### Configuring the Ethernet controller

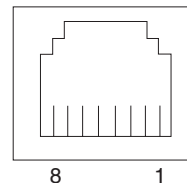
When you connect your computer to the network, the Ethernet controller automatically detects the data-transfer rate (10 Mbps or 100 Mbps) on the network and then sets the controller to operate at the appropriate rate. In addition, if the Ethernet connector that your computer is connected to supports auto-negotiation, the Ethernet controller will set the appropriate duplex state. That is, the Ethernet controller will adjust to the network data rate, whether the data rate is standard Ethernet (10BASE-T), Fast Ethernet (100BASE-TX), half duplex (HDX), or FDX. The controller supports HDX and FDX modes at both speeds.



The Ethernet controller is integrated on the system board. You do not need to set any jumpers or configure the controller for your operating system before you use the Ethernet controller. However, you must install a device driver to enable your operating system to address the Ethernet controller. The device drivers are provided on the preloaded software and the *Device Drivers and IBM Enhanced Diagnostics* CD.

### Ethernet connector

There is an RJ-45 connector on the rear of the computer, see “I/O connector/port locations - Type 6846 and 6836” on page 30 for the location of this connector.



## Universal Serial Bus connectors

Your computer has two Universal Serial Bus (USB) connectors, which are configured automatically. USB is a serial interface standard for telephony and multimedia devices. It uses Plug and Play technology to determine the type of device that is attached to the connector.

### Notes:

1. If you attach a standard (non-USB) keyboard to the keyboard connector, the USB connectors and devices will be disabled during the power-on self-test.
2. If you install a USB keyboard that has a mouse connector, the USB keyboard emulates a mouse, and you will not be able to disable the mouse settings in the Configuration/Setup Utility program.

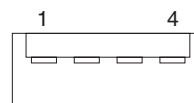
### USB cables and hubs

You need a 4-pin cable to connect devices to USB 2 or USB 3. If you plan to attach more than two USB devices, you must use a hub to connect the devices. The hub provides multiple connectors for attaching additional external USB devices.

USB technology transfers data at up to 12 megabits-per-second (Mbps) with a maximum of 127 external devices and a maximum signal distance of five meters (16 ft.) per segment.

### USB connectors

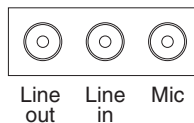
There are two USB connectors on the rear of the computer for attaching USB compatible devices, see “I/O connector/port locations - Type 6846 and 6836” on page 30 for the location of the USB connectors.



## Audio connectors

The audio connectors are used to connect external audio equipment to your computer, see “I/O connector/port locations - Type 6846 and 6836” on page 30 for

the location of these connectors.



### Line out

This connector is used to send audio signals from the computer to external devices, such as powered speakers with built-in amplifiers, headphones, multimedia keyboards, or the audio Line in connector on a stereo system.

### Line in

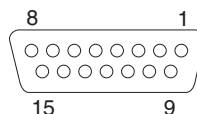
This connector is used to accept audio signals from external devices, such as line output from a stereo, television, or musical instrument into the computer sound system.

### Mic

This connector is used to connect a microphone to your computer when you want to record voice or other sounds on the hard disk drive. It can also be used by speech recognition software.

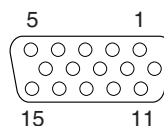
## MIDI connector

The musical instrument digital interface (MIDI) connector allows your computer to interact with musical instruments and other musical equipment. You might use the MIDI connector as an interface between your computer and a synthesizer to edit and store sound information for the synthesizer on the computer, see "I/O connector/port locations - Type 6846 and 6836" on page 30 for the location of the MIDI connector.



## Video connector

Your computer uses an AGP adapter located in the AGP slot on the system board. There is a 15-pin analog video connector located on the rear of your computer. See "I/O connector/port locations - Type 6846 and 6836" on page 30 for the location of this connector.



## Ultra 3/160 SCSI connector (some models)

Some IntelliStation xxxx E Pro computer models come with a SCSI adapter, which supports an Ultra 3/160/MB SCSI internal channel in a full-featured PCI 2.1-/2.2-compliant bus master package. This configuration supports a zero wait state, 32-bit memory transfers at 160 Mbytes/second, when LVD SCSI peripherals are attached. This channel supports up to 15 SCSI devices. In addition, this adapter uses:

- Double-transition clocking to achieve high transfer rates

- Domain name validation to negotiate compatible data transfer speeds with each device
- Cyclic-redundancy checking, instead of the usual parity checking, to significantly improve data reliability

### SCSI cabling requirements

You can install two internal SCSI devices using the SCSI signal cable that comes with your computer. If you plan to attach external SCSI devices, you must order additional SCSI cables. To select and order the correct cables for use with external devices, contact your IBM reseller or IBM marketing representative. To receive indication of SCSI hard-disk drive activity, you must also connect the SCSI adapter to the SCSI LED (J3) connector on the system board. See “System and PCI extender board options connectors” on page 32 for the location of the SCSI connector.

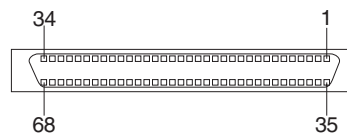
For information about the maximum length of a SCSI cable between the terminated ends of the cable, refer to the American National Standards Institute (ANSI) SCSI standards. Adhering to these standards will help ensure that your computer operates correctly.

### Setting SCSI IDs

Each SCSI device connected to a SCSI controller must have a unique SCSI ID. This ID enables the SCSI controller to identify the device and ensure that different devices on the same SCSI channel do not attempt to transfer data simultaneously. SCSI devices that are connected to different SCSI channels can have duplicate SCSI IDs.

To install external SCSI devices, you must first install an optional SCSI PCI adapter. Refer to the information that is provided with the device for instructions to set its SCSI ID.

With a SCSI adapter installed in your computer, you can use its 68-pin SCSI connector to connect different types of SCSI devices.





## Chapter 6. FRU information (service only)

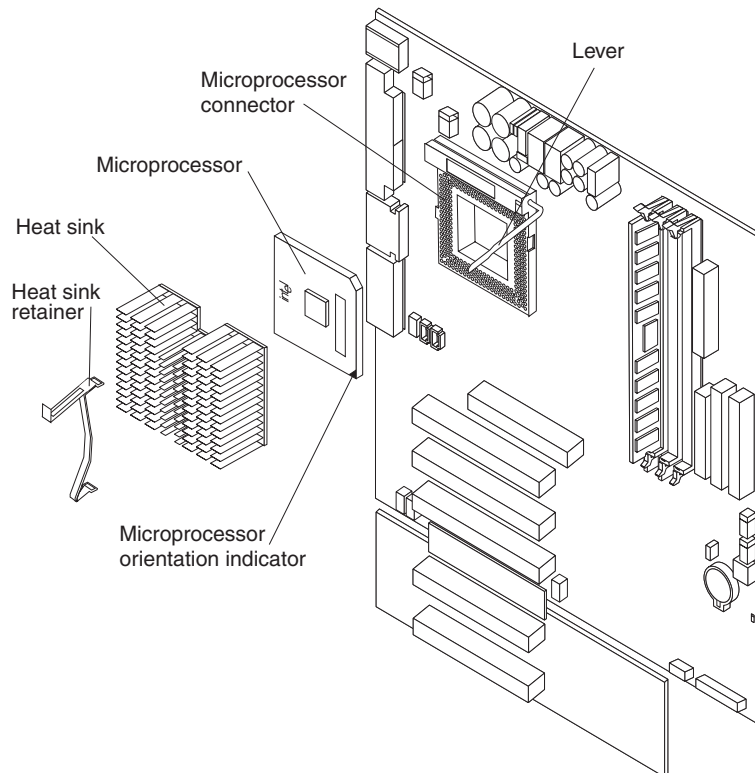
Removing a microprocessor Types 6836 and 6846. . . . .	69	Type 6846 removals. . . . .	77
Installing a microprocessor . . . . .	71	Handle assembly removal . . . . .	77
Type 6836 removals. . . . .	72	Front bezel removal . . . . .	78
Drive cage removal. . . . .	72	Bezel release latch removal . . . . .	78
Adapter retainer removal. . . . .	73	Adapter retainer removal. . . . .	80
System board removal. . . . .	73	Top/side cover removal . . . . .	80
Power supply removal. . . . .	74	Hard drive cage removal . . . . .	82
Speaker/fan bracket removal . . . . .	75	System board removal. . . . .	83
Baffle duct removal. . . . .	75	Power supply removal. . . . .	84
Processor fansink removal . . . . .	76	Speaker/fan assembly removal . . . . .	85
Control panel assembly removal . . . . .	76	LED/power switch assembly removal . . . . .	86

This section covers the service removals for the Type 6836 and Type 6846 computers.

**Note:** This section is for trained servicers

### Removing a microprocessor Types 6836 and 6846

You can replace a microprocessor with either one with the same processor speed or upgrade to a higher speed.

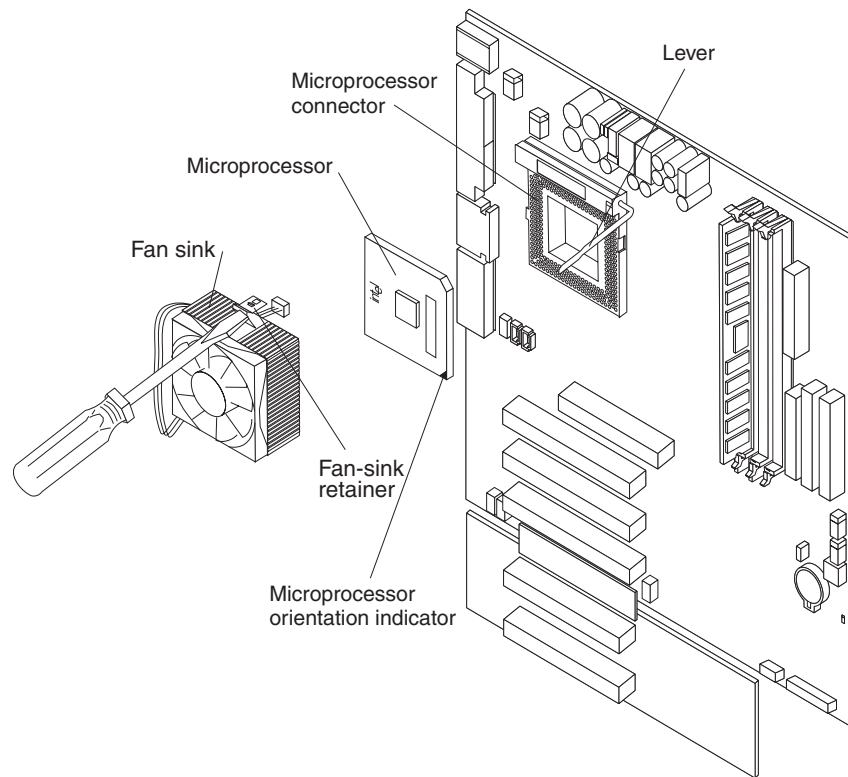


Do the following to remove an 866 MHz or lower microprocessor:

**Attention:** When you handle ESD-sensitive devices, take precautions to avoid damage from static electricity. For details on handling these devices, refer to the following Web site, <http://www.ibm.com/> and use a search term of ESD.

1. Review the safety precautions listed in "Safety information" on page 113.

2. Turn off the computer and attached devices and disconnect all external cables and power cords; then, remove the cover for Type 6836 (see "Removing the computer cover" on page 35 or for Type 6846 "Removing the side cover" on page 48 for details).
3. To remove the processor fansink see "Processor fansink removal" on page 76 for Type 6846 or see "Processor fansink removal" on page 76 for Type 6836.
4. Firmly grasp the heat sink and lift it off the microprocessor. Store the device in a safe, clean place with the bottom side up. The thermal material on the heat sink must stay clean if you intend to reuse the device in the future.
5. Lift up the release lever and remove the microprocessor from the connector. Store the microprocessor in a static-protective bag for possible future use.
6. If you are installing a new microprocessor, continue with step 4 in the Installing a new microprocessor section.



Do the following to remove a 933 MHz microprocessor:

**Attention:** When you handle ESD-sensitive devices, take precautions to avoid damage from static electricity. For details on handling these devices, refer to the following Web site, <http://www.ibm.com/> and use a search term of ESD.

1. Review the safety precautions listed in "Safety information" on page 113.
2. Turn off the computer and attached devices and disconnect all external cables and power cords; then, remove the cover for Type 6836 (see "Removing the computer cover" on page 35 or for Type 6846 "Removing the side cover" on page 48 for details).
3. Insert a small, flat-bladed screwdriver into the tab on the fan-sink retainer.
4. Press the screwdriver down and in to remove the fan-sink retainer from the fan sink.

5. Firmly grasp the heat sink and lift it off the microprocessor. Store the device in a safe, clean place with the bottom side up. The thermal material on the fan sink must stay clean if you intend to reuse the device in the future.
6. Disconnect the fan-sink power cable from the microprocessor fan-sink connector (CPUFA1) on the system board. See "System board internal cable connectors" on page 32 for the location of the microprocessor fan-sink connector.
7. Lift up the release lever and remove the microprocessor from the connector. Store the microprocessor in a static-protective bag for possible future use.
8. If you are installing a new microprocessor, continue with step 4 in the following section.

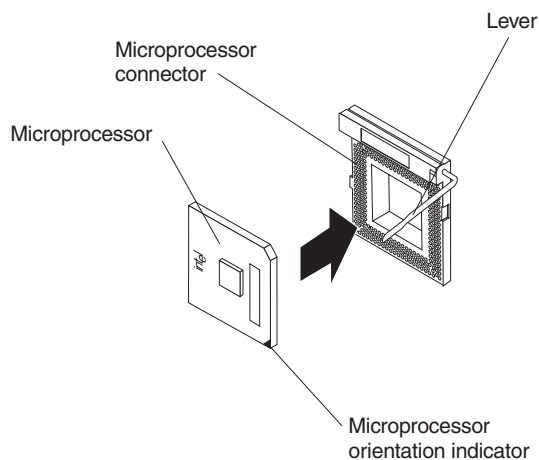
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## Installing a microprocessor

Do the following to install a microprocessor:

**Attention:** When you handle ESD-sensitive devices, take precautions to avoid damage from static electricity. For details on handling these devices, refer to the following IBM Web site, <http://www.ibm.com/> and use a search term of ESD.

1. Review the safety precautions listed in "Safety information" on page 113.
2. Turn off the computer and attached devices and disconnect all external cables and power cords; then, remove the cover for Type 6836 (see "Removing the computer cover" on page 35 or for Type 6846 "Removing the side cover" on page 48 for details).
3. Install the microprocessor:
  - a. Touch the static-protective package containing the new microprocessor to any unpainted metal surface on the computer; then, remove the microprocessor from the package.
  - b. Lift up on the microprocessor release lever to unlock the microprocessor connector.
  - c. Orient the microprocessor over the microprocessor connector as shown in the following illustration. Carefully press the microprocessor into the connector.



**Note:** Do not use excessive force when pressing the microprocessor into the connector.

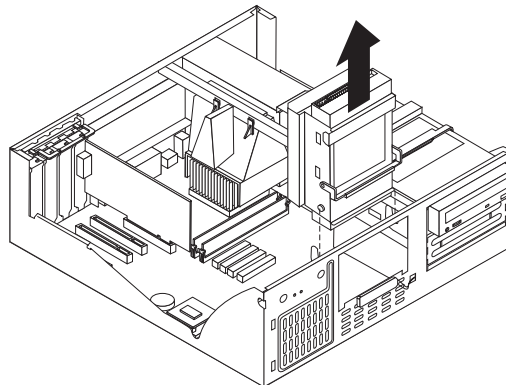
4. Push the microprocessor release lever down to lock the microprocessor into the connector.

5. Do the following to install the heat sink on an 866 MHz or lower microprocessor:
  - a. Peel the plastic protective strip off the bottom of the heat sink. Make sure the square of thermal material is still on the bottom of the heat sink; if not, replace the heat sink.
  - b. Align and place the heat sink on top of the microprocessor.
  - c. Align and place the clip over the heat sink, then snap it into place.
6. Do the following to install the fan sink on a 933 MHz microprocessor:
  - a. Peel the plastic protective strip off the bottom of the heat sink. Make sure the square of thermal material is still on the bottom of the heat sink; if not, replace the heat sink.
  - b. Align and place the fan sink on top of the microprocessor.
  - c. Align and push the fan-sink retainer through the groove in the center of the fan sink.
  - d. Insert a small, flat-bladed screwdriver into the tab on the fan-sink retainer.
  - e. Press the screwdriver down and in to snap the fan-sink retainer into place.
  - f. Connect the fan-sink power cable to the microprocessor fan-sink connector (CPUFA1) on the system board. See "System board internal cable connectors" on page 32 for the location of the microprocessor fan-sink connector.
7. If you have other options to install or remove, do so now; otherwise, for the Type 6846, replace the support bracket assembly. See "Installing the cover" on page 61 for instructions on installing the cover.

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## Type 6836 removals

### Drive cage removal



#### Before you begin:

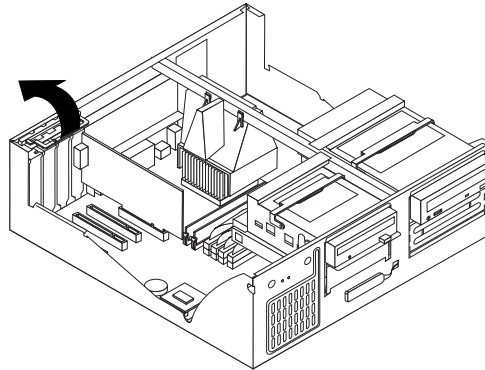
- Read "Safety information" on page 113.
- Review the information in "Before you begin" on page 29.

To remove the hard drive cage, do the following:

1. Power-off the computer, if it is on.
2. Unplug the computer.
3. Remove the cover (see "Removing the computer cover" on page 35).
4. Grasp the handle found on the top of the hard drive cage.
5. Pivot the cage up and lift on the handle to remove.



## Adapter retainer removal



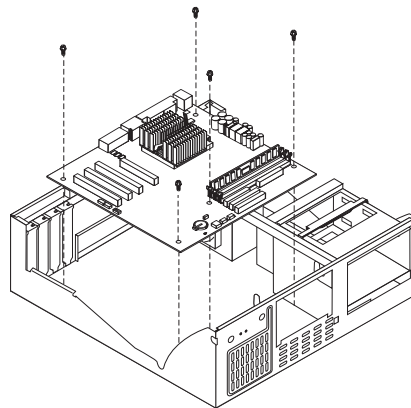
### Before you begin:

- Read “Safety information” on page 113.
- Review the information in “Before you begin” on page 29.

To remove the adapter retainer, do the following:

1. Power-off the computer, if it is on.
2. Unplug the computer.
3. Remove the cover (see “Removing the side cover” on page 48).
4. Remove all adapter cards (see “Installing an adapter” on page 51).
5. Grasp the adapter retainer and gently slide the top and bottom tabs out of the notches.

## System board removal



### Before you begin:

- Read “Safety information” on page 113.
- Review the information in “Before you begin” on page 29.

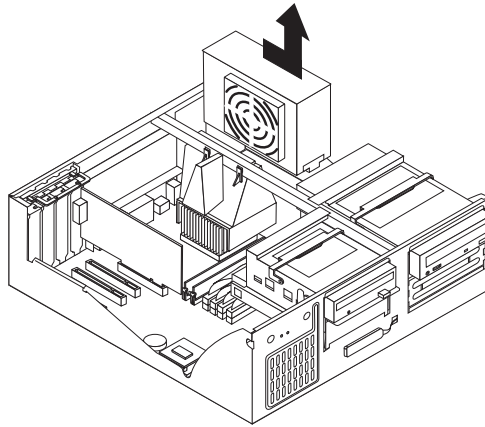
**Note:** It is recommended that the computer be placed on its left side before performing this service procedure. Rotate the feet in toward the computer so they do not detach due to the weight of the computer.

To remove the system board, do the following:

1. Power-off the computer, if it is on.
2. Unplug the computer.

3. Remove the cover (see "Removing the side cover" on page 48).
4. Removing the main Bezel (see "Removing the side cover" on page 48).
5. Remove the support bracket (see "Removing the support bracket assembly" on page 48).
6. Disconnect the cables.
7. Remove the adapter cards and both adapter retaining brackets (see "Installing an adapter" on page 38).
8. Remove the hot-swap hard disk drive cage (see "Drive cage removal" on page 72).
9. Remove memory modules (see "Installing memory modules" on page 43).
10. Remove microprocessors and/or terminator cards (see "Removing a microprocessor Types 6836 and 6846" on page 69).
11. Remove screws and lift the system board out of the computer.

## Power supply removal



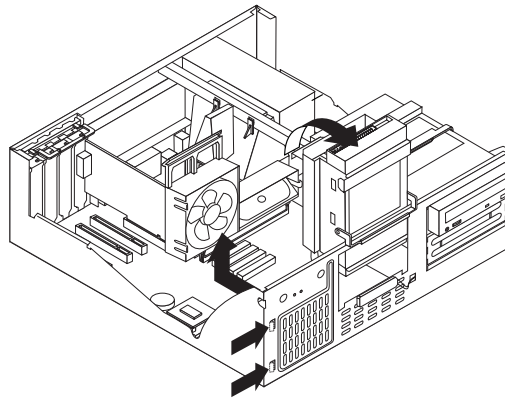
### Before you begin:

- Read "Safety information" on page 113.
- Review the information in "Before you begin" on page 29.

To remove the power supply, do the following:

1. Power-off the computer, if it is on.
2. Unplug the computer.
3. Remove the cover (see "Removing the side cover" on page 48).
4. Disconnect the power cables from the system board.
5. Remove the 5.25 drive cage (see "Drive cage removal" on page 72)
6. Remove the screws from the rear of the computer.
7. Gently move the power supply away from the chassis and lift it out of the computer.

## Speaker/fan bracket removal



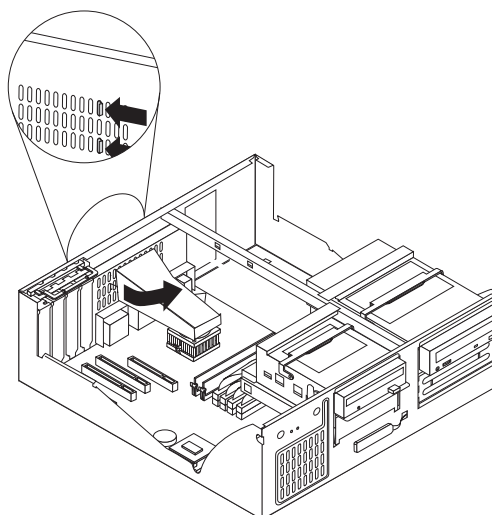
### Before you begin:

- Read “Safety information” on page 113.
- Review the information in “Before you begin” on page 29.

To remove the fan/speaker bracket, do the following:

1. Power-off the computer, if it is on.
2. Unplug the computer.
3. Remove the cover (see “Removing the side cover” on page 48).
4. Remove the front bezel (see “Front bezel removal” on page 78).
5. Remove all adapter cards.
6. Unplug the speaker from the system board.
7. Remove the 3.5 drive cage (see “Drive cage removal” on page 72).
8. Gently push the tabs of the fan/speaker bracket to release from the chassis; lift it up and out of the computer.
9. Depress the tabs and slide the speaker up and out to remove.

## Baffle duct removal



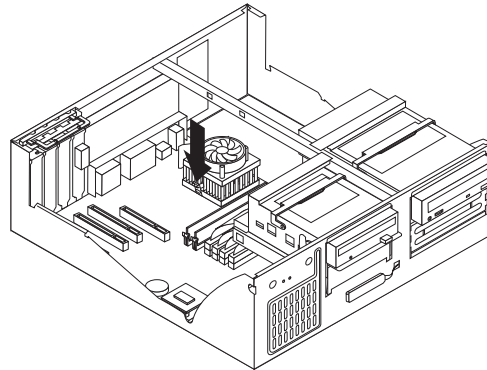
### Before you begin:

- Read “Safety information” on page 113.
- Review the information in “Before you begin” on page 29.

To remove the baffle duct, do the following:

1. Power-off the computer, if it is on.
2. Unplug the computer.
3. Remove the cover (see "Removing the side cover" on page 48).
4. Depress the tabs as shown and slide the baffle away from the back of the computer.

## Processor fansink removal



### Before you begin:

- Read "Safety information" on page 113.
- Review the information in "Before you begin" on page 29.

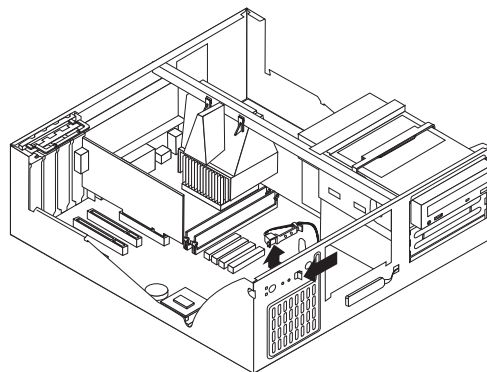
To remove the fan, do the following:

1. Power-off the computer, if it is on.
2. Unplug the computer.
3. Remove the cover (see "Removing the side cover" on page 48).
4. Remove all adapter cards (see "Installing an adapter" on page 38).
5. Remove the four screws and lift up on the fan apparatus.

To remove the heatsink, do the following:

1. Power-off the computer, if it is on.
2. Unplug the computer.
3. Press down and in on the tab of the heatsink retainer clip to release the catch.
4. Firmly grasp the heatsink and gently lift up to remove.

## Control panel assembly removal



**Before you begin:**

- Read “Safety information” on page 113.
- Review the information in “Before you begin” on page 29.

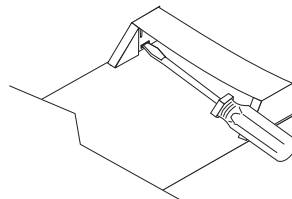
To remove the handle cap, do the following:

1. Power-off the computer, if it is on.
2. Unplug the computer.
3. Remove the drive cage (see “Drive cage removal” on page 72).
4. Remove the speaker/fan bracket (see “Speaker/fan bracket removal” on page 75).
5. Disconnect the control panel from the system board.
6. Depress the tab and pull the control panel back away from the chassis to remove.

---

## Type 6846 removals

### Handle assembly removal



**Before you begin:**

- Read “Safety information” on page 113.
- Review the information in “Before you begin” on page 29.

**Note:** It is recommended that the computer be placed on its left side before performing this service procedure. Rotate the feet in toward the computer so they do not detach due to the weight of the computer.

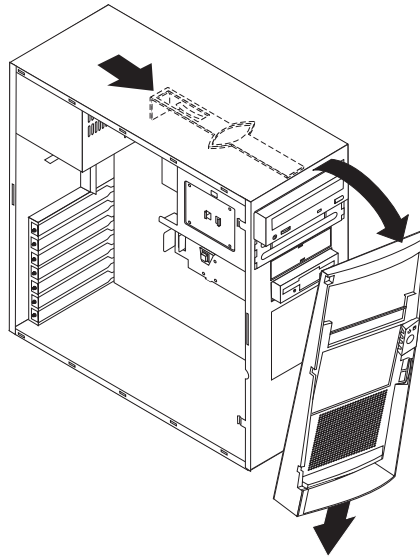
To remove the handle cap, do the following:

1. Power-off the computer, if it is on.
2. Unplug the computer.
3. Use a flathead screwdriver to gently press in and down on the tabs located on the interior side wall of the handle.
4. Lift up on the handle cap to separate it from the handle support.

To remove the handle support, do the following:

1. Power-off the computer, if it is on.
2. Unplug the computer.
3. Firmly grasp the handle support and slide it away from the front bezel.
4. Lift up on the handle support to remove it from the slots in the top of the chassis.

## Front bezel removal



### Before you begin:

- Read “Safety information” on page 113.
- Review the information in “Before you begin” on page 29.

**Note:** It is recommended that the computer be placed on its left side before performing this service procedure. Rotate the feet in toward the computer so they do not detach due to the weight of the computer.

To remove the front bezel, do the following:

1. Power-off the computer, if it is on.
2. Unplug the computer.
3. Remove the cover (see “Removing the side cover” on page 48).
4. Slide the bezel release latch forward to release the bezel.
5. Pull the bezel down and away from the chassis to remove.

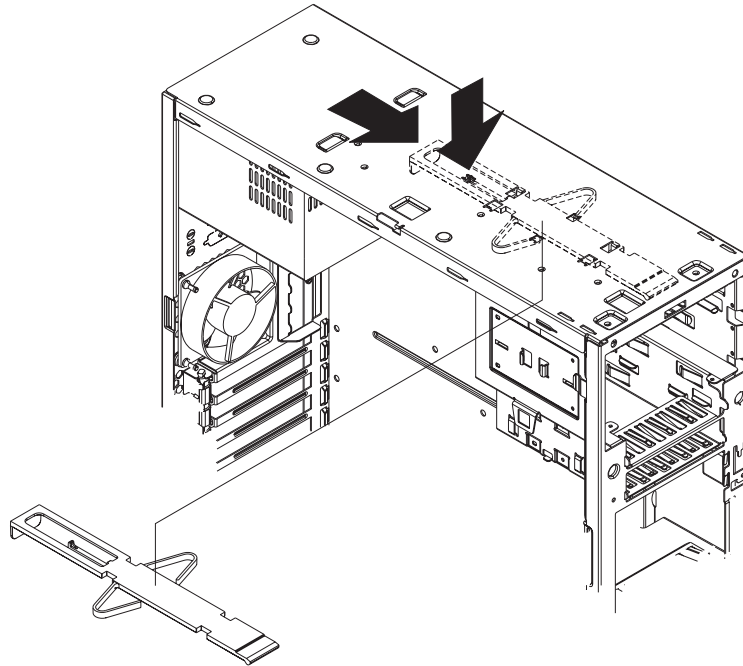
## Bezel release latch removal

### Before you begin:

- Read “Safety information” on page 113.
- Review the information in “Before you begin” on page 29.

**Note:** It is recommended that the computer be placed on its left side before performing this service procedure. Rotate the feet in toward the computer so

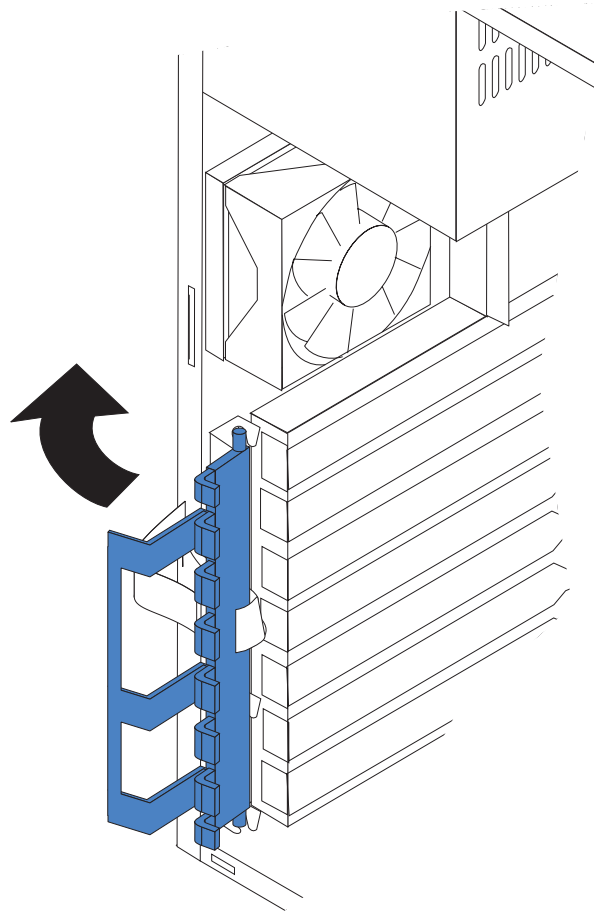
they do not detach due to the weight of the computer.



To remove the bezel release latch, do the following:

1. Power-off the computer, if it is on.
2. Unplug the computer.
3. Remove the cover (see "Removing the side cover" on page 48).
4. Remove the front bezel (see "Front bezel removal" on page 78).
5. Remove the handle assembly (see "Handle assembly removal" on page 77).
6. Remove the top/side cover (see "Top/side cover removal" on page 80).
7. Remove the four screws from the back of the computer and put them in a safe place.
8. Using a screwdriver, gently pry the cover away from the computer in the rear and slide the unit away from the computer.
9. Grasp the bezel release latch in the center and gently pull it back and away from the computer.
10. Press down on the tab.
11. From the underside of the top of the chassis, grasp the bezel release latch in the center and gently pull it back and away from the computer.

## Adapter retainer removal



### Before you begin:

- Read “Safety information” on page 113.
- Review the information in “Before you begin” on page 29.

**Note:** It is recommended that the computer be placed on its left side before performing this service procedure. Rotate the feet in toward the computer so they do not detach due to the weight of the computer.

To remove the adapter retainer, do the following:

1. Power-off the computer, if it is on.
2. Unplug the computer.
3. Remove the cover (see “Removing the side cover” on page 48).
4. Remove all adapter cards (see “Installing an adapter” on page 38).
5. Grasp the adapter retainer and gently slide the top and bottom tabs out of the notches.

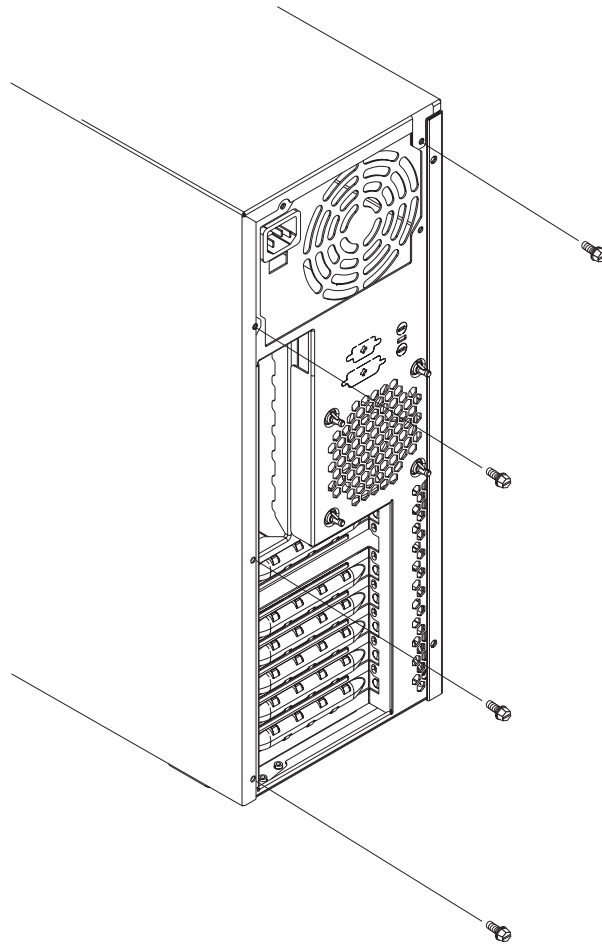
## Top/side cover removal

### Before you begin:

- Read “Safety information” on page 113.
- Review the information in “Before you begin” on page 29.



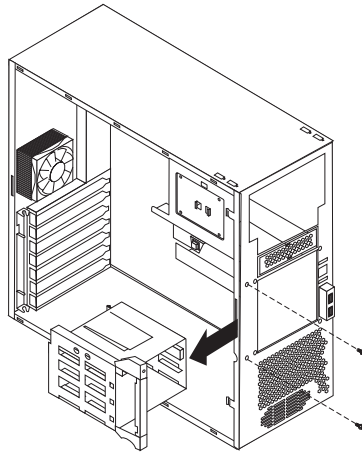
**Note:** It is recommended that the computer be placed on its left side before performing this service procedure. Rotate the feet in toward the computer so they do not detach due to the weight of the computer.



To remove the top/side cover, do the following:

1. Power-off the computer, if it is on.
2. Unplug the computer.
3. Remove the cover (see “Removing the side cover” on page 48).
4. Remove the front bezel (see “Front bezel removal” on page 78).
5. Remove the handle assembly (see “Handle assembly removal” on page 77).
6. Remove the four screws from the back of the computer and put them in a safe place.
7. Using a screwdriver, gently pry the cover away from the computer in the rear and slide the unit away from the computer.

## Hard drive cage removal



### Before you begin:

- Read “Safety information” on page 113.
- Review the information in “Before you begin” on page 29.

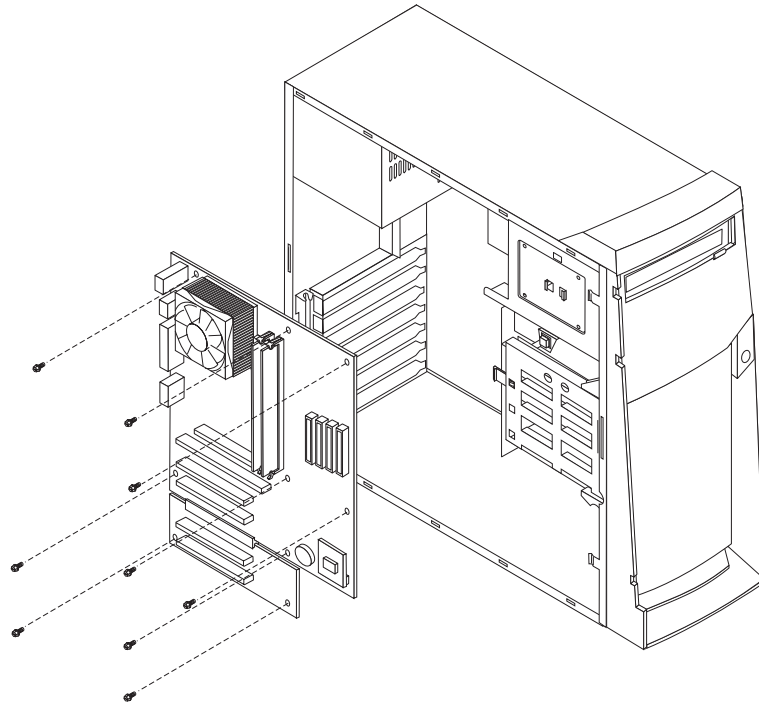
**Note:** It is recommended that the computer be placed on its left side before performing this service procedure. Rotate the feet in toward the computer so they do not detach due to the weight of the computer.

To remove the hot-swap hard disk drive, do the following:

1. Power-off the computer, if it is on.
2. Unplug the computer.
3. Remove the front bezel (see “Processor fansink removal” on page 76).
4. Remove the cover (see “Removing the side cover” on page 48).
5. Remove the support bracket (see “Removing the support bracket assembly” on page 48).
6. Remove any hard disk drives or drive fillers from the drives.
7. Disconnect the hard disk drive cables from the system board.
8. Remove the screws from the front of the hard disk drive cage.
9. Move the cage slightly in and up until it is free of the chassis and lift it out of the computer.

**Note:** Take care not to dislodge the memory when you remove the cage.

## System board removal



### Before you begin:

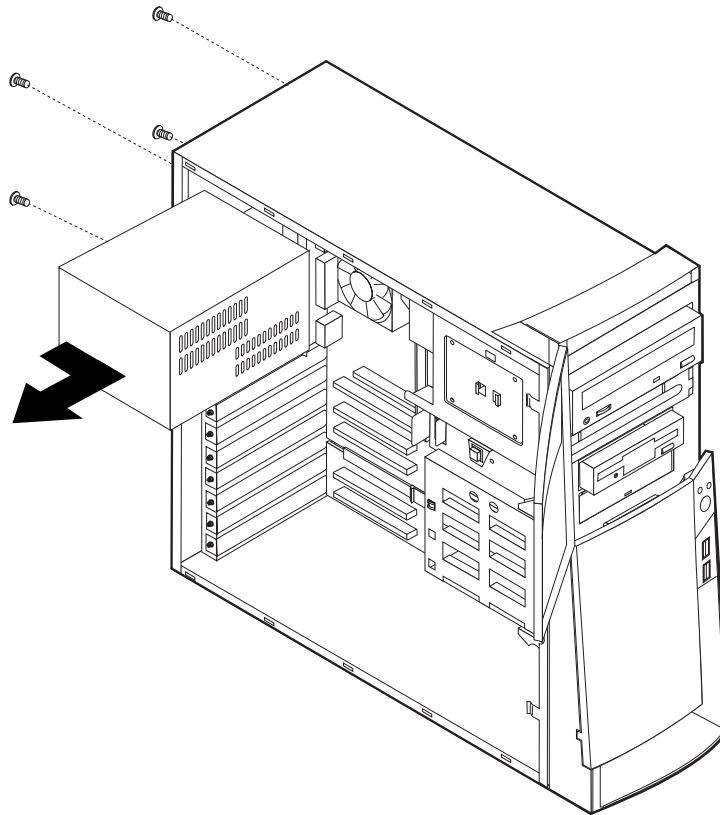
- Read “Safety information” on page 113.
- Review the information in “Before you begin” on page 29.

**Note:** It is recommended that the computer be placed on its left side before performing this service procedure. Rotate the feet in toward the computer so they do not detach due to the weight of the computer.

To remove the system board, do the following:

1. Power-off the computer, if it is on.
2. Unplug the computer.
3. Remove the cover (see “Removing the side cover” on page 48).
4. Removing the main bezel (see “Front bezel removal” on page 78).
5. Remove the support bracket (see “Removing the support bracket assembly” on page 48).
6. Disconnect the cables.
7. Remove the adapter cards and both adapter retaining brackets (see “Installing an adapter” on page 38).
8. Remove the hot-swap hard disk drive cage (see “Hard drive cage removal” on page 82).
9. Remove memory modules (see “Installing memory modules” on page 43).
10. Remove microprocessors and/or terminator cards (see “Removing a microprocessor Types 6836 and 6846” on page 69).
11. Remove screws and lift the system board out of the computer.

## Power supply removal



### Before you begin:

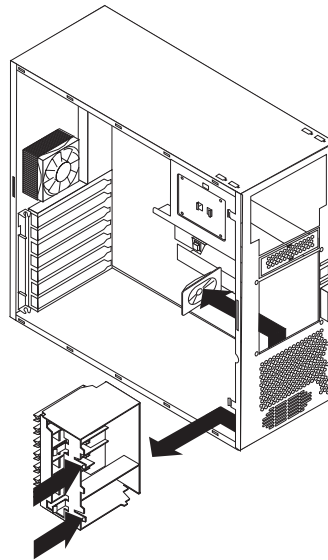
- Read “Safety information” on page 113.
- Review the information in “Before you begin” on page 29.

**Note:** It is recommended that the computer be placed on its left side before performing this service procedure. Rotate the feet in toward the computer so they do not detach due to the weight of the computer.

To remove the power supply, do the following:

1. Power-off the computer, if it is on.
2. Unplug the computer.
3. Remove the cover (see “Removing the side cover” on page 48).
4. Disconnect the power cables from the system board.
5. Remove the screws from the rear of the computer.
6. Gently move the power supply away from the chassis and lift it out of the computer.

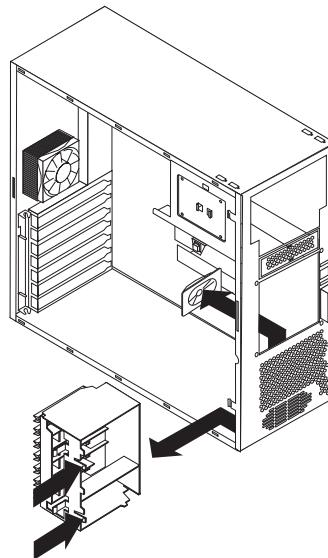
## Speaker/fan assembly removal



### Before you begin:

- Read “Safety information” on page 113.
- Review the information in “Before you begin” on page 29.

**Note:** It is recommended that the computer be placed on its left side before performing this service procedure. Rotate the feet in toward the computer so they do not detach due to the weight of the computer.

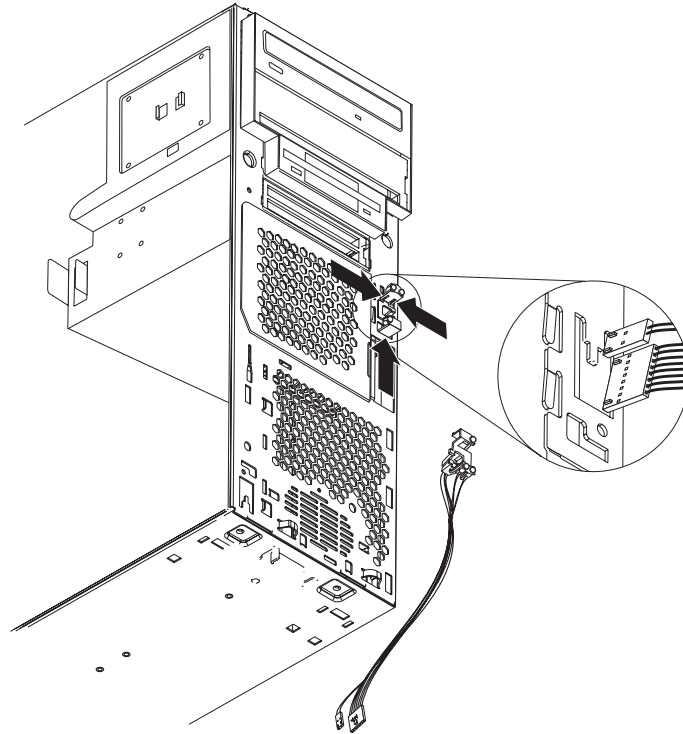


To remove the speaker, do the following:

1. Power-off the computer, if it is on.
2. Unplug the computer.
3. Remove the cover (see “Removing the side cover” on page 48).
4. Remove the front bezel (see “Front bezel removal” on page 78).
5. Remove the support bracket (see “Removing the support bracket assembly” on page 48).
6. Remove all adapter cards.

7. Unplug the speaker from the system board.
8. Gently push the tabs of the I/O card retainer assembly in to release; lift it up and out of the computer.
9. Slide the speaker up and out of the computer.

## LED/power switch assembly removal



### Before you begin:

- Read “Safety information” on page 113.
- Review the information in “Before you begin” on page 29.

**Note:** It is recommended that the computer be placed on its left side before performing this service procedure. Rotate the feet in toward the computer so they do not detach due to the weight of the computer.

To remove the button kit, do the following:

1. Power-off the computer, if it is on.
2. Unplug the computer.
3. Remove the cover (see “Removing the side cover” on page 48).
4. Remove the front bezel (see “Front bezel removal” on page 78).
5. Remove the hot-swap hard disk drive (see “Hard drive cage removal” on page 82).
6. Disconnect the cable of the button kit from the system board.
7. Place a screwdriver against the bottom release latch of the button kit and gently press upward and slide the latch through the aperture.
8. Gently pinch together the upper release latches and slide the latches through the aperture and remove the button kit.

## Chapter 7. Symptom-to-FRU index

Diagnostic error codes . . . . .	87	NDIS Ethernet teaming messages. . . . .	104
Ethernet controller messages . . . . .	103	Undetermined problems. . . . .	106
NDIS 4.0 (Windows NT and 2000) driver messages . . . . .	103		

Refer to the following diagnostic error codes when using the diagnostic tests. See Chapter 3, “Diagnostics” on page 13 for the specific type for information about the Diagnostic programs.

In the following index, X can represent any number.

### Diagnostic error codes

Diagnostic Error Code	FRU/Action
000-000-XXXBIOS Test Passed	1. <b>No action</b>
000-002-XXXBIOS Timeout	1. <b>Flash the system</b> 2. System board
000-024-XXXBIOS Addressing test failure	1. <b>Flash the system</b> 2. System board
000-025-XXXBIOS Checksum Value error	1. <b>Flash the system</b> 2. Boot block 3. System board
000-026-XXXFLASH data error	1. <b>Flash the system</b> 2. Boot block 3. System board
000-027-XXXBIOS Configuration/Setup error	1. <b>Run Setup</b> 2. Flash the system 3. Boot block 4. System board
000-034-XXXBIOS Buffer Allocation failure	1. <b>Reboot the system</b> 2. Flash the system 3. Run memory test 4. System board
000-035-XXXBIOS Reset Condition detected	1. <b>Flash the system</b> 2. System board
000-036-XXXBIOS Register error	1. <b>Flash the system</b> 2. Boot block 3. System board
000-038-XXXBIOS Extension failure	1. <b>Flash the system</b> 2. Adapter card 3. System board

Diagnostic Error Code	FRU/Action
000-039-XXXBIOS DMI data error	<ol style="list-style-type: none"> <li>1. <b>Flash the system</b></li> <li>2. System board</li> </ol>
000-195-XXXBIOS Test aborted by user	<ol style="list-style-type: none"> <li>1. <b>Information</b></li> <li>2. Re-start the test, if necessary</li> </ol>
000-196-XXXBIOS test halt, error threshold exceeded	<ol style="list-style-type: none"> <li>1. <b>Press F3 to review the log file</b></li> <li>2. Re-start the test to reset the log file</li> </ol>
000-197-XXXBIOS test warning	<ol style="list-style-type: none"> <li>1. <b>Make sure the component that is called out is connected and/or enabled</b></li> <li>2. Re-run test</li> <li>3. Component that is called out in warning statement</li> <li>4. Component under test</li> </ol>
000-198-XXXBIOS test aborted	<ol style="list-style-type: none"> <li>1. <b>If a component is called out, make sure it is connected and/or enabled</b></li> <li>2. Flash the system and re-test</li> <li>3. Go to the "Undetermined problems" section</li> </ol>
000-199-XXXBIOS test failed, cause unknown	<ol style="list-style-type: none"> <li>1. <b>Go to the "Undetermined problems" section</b></li> <li>2. Flash the system and re-test</li> <li>3. Replace component under function test</li> </ol>
000-250-XXXBIOS APM failure	<ol style="list-style-type: none"> <li>1. <b>Flash the system</b></li> <li>2. System board</li> </ol>
000-270-XXXBIOS ACPI failure	<ol style="list-style-type: none"> <li>1. <b>Flash the system</b></li> <li>2. System board</li> </ol>
001-000-XXXSystem Test Passed	<ol style="list-style-type: none"> <li>1. <b>No action</b></li> </ol>
001-00X-XXXSystem Error	<ol style="list-style-type: none"> <li>1. <b>System board</b></li> </ol>
001-01X-XXXSystem Error	<ol style="list-style-type: none"> <li>1. <b>System board</b></li> </ol>
001-024-XXXSystem Addressing test failure	<ol style="list-style-type: none"> <li>1. <b>System board</b></li> </ol>
001-025-XXXSystem Checksum Value error	<ol style="list-style-type: none"> <li>1. <b>Flash the system</b></li> <li>2. System board</li> </ol>
001-026-XXXSystem FLASH data error	<ol style="list-style-type: none"> <li>1. <b>Flash the system</b></li> <li>2. System board</li> </ol>
001-027-XXXSystem Configuration/Setup error	<ol style="list-style-type: none"> <li>1. <b>Run Setup</b></li> <li>2. Flash the system</li> <li>3. System board</li> </ol>
001-032-XXXSystem Device Controller failure	<ol style="list-style-type: none"> <li>1. <b>System board</b></li> </ol>
001-034-XXXSystem Device Buffer Allocation failure	<ol style="list-style-type: none"> <li>1. <b>Reboot the system</b></li> <li>2. Flash the system</li> <li>3. Run memory test</li> <li>4. System board</li> </ol>



Diagnostic Error Code	FRU/Action
001-035-XXX System Device Reset condition detected	1. <b>System board</b>
001-036-XXX System Register error	1. <b>System board</b>
001-038-XXX System Extension failure	1. <b>Adapter card</b> 2. System board
001-039-XXX System DMI data structure error	1. <b>Flash the system</b> 2. System board
001-040-XXX System IRQ failure	1. <b>Power-off/on system and re-test</b> 2. System board
001-041-XXX System DMA failure	1. <b>Power-off/on system and re-test</b> 2. System board
001-195-XXX System Test aborted by user	1. <b>Information</b> 2. Re-start the test, if necessary
001-196-XXX System test halt, error threshold exceeded	1. <b>Press F3 to review the log file</b> 2. Re-start the test to reset the log file
001-197-XXX System test warning	1. <b>Make sure the component that is called out is connected and/or enabled</b> 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
001-198-XXX System test aborted	1. <b>If a component is called out, make sure it is connected and/or enabled</b> 2. Flash the system and re-test 3. Go to the "Undetermined problems" section
001-199-XXX System test failed, cause unknown	1. <b>Go to the "Undetermined problems" section</b> 2. Flash the system and re-test 3. Replace component under function test
001-250-XXX System ECC error	1. <b>System board</b>
001-254-XXX 001-255-XXX 001-256-XXX 001-257-XXX System DMA error	1. <b>System board</b>
001-260-XXX 001-264-XXX System IRQ error	1. <b>System board</b>
001-268-XXX System IRQ1 failure	1. <b>Device on IRQ1</b> 2. System board
001-269-XXX System IRQ2 failure	1. <b>Device on IRQ2</b> 2. System board
001-270-XXX System IRQ3 failure	1. <b>Device on IRQ3</b> 2. System board
001-271-XXX System IRQ4 failure	1. <b>Device on IRQ4</b> 2. System board

<b>Diagnostic Error Code</b>	<b>FRU/Action</b>
001-272-XXX System IRQ5 failure	1. <b>Device on IRQ5</b> 2. System board
001-273-XXX System IRQ6(diskette drive) failure	1. <b>Diskette Cable</b> 2. Diskette drive 3. System board
001-274-XXX System IRQ7 failure	1. <b>Device on IRQ7</b> 2. System board
001-275-XXX System IRQ8 failure	1. <b>Device on IRQ8</b> 2. System board
001-276-XXX System IRQ9 failure	1. <b>Device on IRQ9</b> 2. System board
001-277-XXX System IRQ10 failure	1. <b>Device on IRQ10</b> 2. System board
001-278-XXX System IRQ11 failure	1. <b>Device on IRQ11</b> 2. System board
001-279-XXX System IRQ12 failure	1. <b>Device on IRQ12</b> 2. System board
001-280-XXX System IRQ13 failure	1. <b>Device on IRQ13</b> 2. System board
001-281-XXX System IRQ14(hard disk drive) failure	1. <b>Hard disk drive cable</b> 2. Hard disk drive 3. System board
001-282-XXX System IRQ15 failure	1. <b>Device on IRQ15</b> 2. System board
001-286-XXX 001-287-XXX 001-288-XXX System Timer failure	1. <b>System board</b>
001-292-XXX System CMOS RAM error	1. <b>Run Setup and re-test</b> 2. System board
001-293-XXX System CMOS Battery	1. <b>Battery</b> 2. System board
001-298-XXX System RTC date/time update failure	1. <b>Flash the system</b> 2. System board
001-299-XXX System RTC periodic interrupt failure	1. <b>System board</b>
001-300-XXX System RTC Alarm failure	1. <b>System board</b>
001-301-XXX System RTC Century byte error	1. <b>Flash the system</b> 2. System board
005-000-XXX Video Test Passed	1. <b>No action</b>
005-00X-XXX Video error	1. <b>Video card, if installed</b> 2. System board

Diagnostic Error Code	FRU/Action
005-010-XXX 005-011-XXX 005-012-XXX 005-013-XXXVideo Signal failure	<ol style="list-style-type: none"> <li>1. <b>Video card, if installed</b></li> <li>2. System board</li> </ol>
005-016-XXXVideo Simple Pattern test failure	<ol style="list-style-type: none"> <li>1. <b>Video Ram</b></li> <li>2. Video card, if installed</li> <li>3. System board</li> </ol>
005-024-XXXVideo Addressing test failure	<ol style="list-style-type: none"> <li>1. <b>Video card, if installed</b></li> <li>2. System board</li> </ol>
005-025-XXXVideo Checksum Value error	<ol style="list-style-type: none"> <li>1. <b>Video card, if installed</b></li> <li>2. System board</li> </ol>
005-027-XXXVideo Configuration/Setup error	<ol style="list-style-type: none"> <li>1. <b>Run Setup</b></li> <li>2. Video drivers update</li> <li>3. Video card, if installed</li> <li>4. System board</li> </ol>
005-031-XXXVideo Device Cable failure	<ol style="list-style-type: none"> <li>1. <b>Video cable</b></li> <li>2. Monitor</li> <li>3. Video card, if installed</li> <li>4. System board</li> </ol>
005-032-XXXVideo Device Controller failure	<ol style="list-style-type: none"> <li>1. <b>Video card, if installed</b></li> <li>2. System board</li> </ol>
005-036-XXXVideo Register error	<ol style="list-style-type: none"> <li>1. <b>Video card, if installed</b></li> <li>2. System board</li> </ol>
005-038-XXXSystem BIOS extension failure	<ol style="list-style-type: none"> <li>1. <b>Video card, if installed</b></li> <li>2. System board</li> </ol>
005-040-XXXVideo IRQ failure	<ol style="list-style-type: none"> <li>1. <b>Video card, if installed</b></li> <li>2. System board</li> </ol>
005-195-XXXVideo Test aborted by user	<ol style="list-style-type: none"> <li>1. <b>Information</b></li> <li>2. Re-start the test, if necessary</li> </ol>
005-196-XXXVideo test halt, error threshold exceeded	<ol style="list-style-type: none"> <li>1. <b>Press F3 to review the log file</b></li> <li>2. Re-start the test to reset the log file</li> </ol>
005-197-XXXVideo test warning	<ol style="list-style-type: none"> <li>1. <b>Make sure the component that is called out is connected and/or enabled</b></li> <li>2. Re-run test</li> <li>3. Component that is called out in warning statement</li> <li>4. Component under test</li> </ol>
005-198-XXXVideo test aborted	<ol style="list-style-type: none"> <li>1. <b>If a component is called out, make sure it is connected and/or enabled</b></li> <li>2. Flash the system and re-test</li> <li>3. Go to the "Undetermined problems" section</li> </ol>

<b>Diagnostic Error Code</b>	<b>FRU/Action</b>
005-199-XXX Video test failed, cause unknown	<ol style="list-style-type: none"> <li>1. Go to the "Undetermined problems" section</li> <li>2. Flash the system and re-test</li> <li>3. Replace component under function test</li> </ol>
005-2XX-XXX 005-3XX-XXX Video subsystem error	<ol style="list-style-type: none"> <li>1. Video card, if installed</li> <li>2. System board</li> </ol>
006-000-XXX Diskette interface Test Passed	<ol style="list-style-type: none"> <li>1. No action</li> </ol>
006-0XX-XXX Diskette interface error	<ol style="list-style-type: none"> <li>1. Diskette drive Cable</li> <li>2. Diskette drive</li> <li>3. System board</li> </ol>
006-195-XXX Diskette interface Test aborted by user	<ol style="list-style-type: none"> <li>1. Information</li> <li>2. Re-start the test, if necessary</li> </ol>
006-196-XXX Diskette interface test halt, error threshold exceeded	<ol style="list-style-type: none"> <li>1. Press F3 to review the log file</li> <li>2. Re-start the test to reset the log file</li> </ol>
006-197-XXX Diskette interface test warning	<ol style="list-style-type: none"> <li>1. If a component is called out, make sure it is connected and/or enabled</li> <li>2. Re-run test</li> <li>3. Component that is called out in warning statement</li> <li>4. Component under test</li> </ol>
006-198-XXX Diskette interface test aborted	<ol style="list-style-type: none"> <li>1. If a component is called out, make sure it is connected and/or enabled</li> <li>2. Flash the system and re-test</li> <li>3. Go to the "Undetermined problems" section</li> </ol>
006-199-XXX Diskette interface test failed, cause unknown	<ol style="list-style-type: none"> <li>1. Go to the "Undetermined problems" section</li> <li>2. Flash the system and re-test</li> <li>3. Replace component under function test</li> </ol>
006-25X-XXX Diskette interface Error	<ol style="list-style-type: none"> <li>1. Diskette drive cable</li> <li>2. Diskette drive</li> <li>3. System board</li> </ol>
011-000-XXX Serial port Interface Test Passed	<ol style="list-style-type: none"> <li>1. No action</li> </ol>
011-001-XXX Serial port Presence	<ol style="list-style-type: none"> <li>1. Remove external serial device, if present</li> <li>2. Run setup, enable port</li> <li>3. System board</li> </ol>
011-002-XXX 011-003-XXX Serial port Timeout/Parity error	<ol style="list-style-type: none"> <li>1. System board</li> </ol>
011-013-XXX 011-014-XXX Serial port Control Signal/Loopback test failure	<ol style="list-style-type: none"> <li>1. System board</li> </ol>
011-015-XXX Serial port External Loopback failure	<ol style="list-style-type: none"> <li>1. Wrap plug</li> <li>2. System board</li> </ol>

Diagnostic Error Code	FRU/Action
011-027-XXX Serial port Configuration/Setup error	<ol style="list-style-type: none"> <li>1. <b>Run Setup, enable port</b></li> <li>2. Flash the system</li> <li>3. System board</li> </ol>
011-03X-XXX 011-04X-XXX Serial port failure	<ol style="list-style-type: none"> <li>1. <b>System board</b></li> </ol>
011-195-XXX Serial port Test aborted by user	<ol style="list-style-type: none"> <li>1. <b>Information</b></li> <li>2. Re-start the test, if necessary</li> </ol>
011-196-XXX Serial port test halt, error threshold exceeded	<ol style="list-style-type: none"> <li>1. <b>Press F3 to review the log file</b></li> <li>2. Re-start the test to reset the log file</li> </ol>
011-197-XXX Serial port test warning	<ol style="list-style-type: none"> <li>1. <b>Make sure the component that is called out is connected and/or enabled</b></li> <li>2. Re-run test</li> <li>3. Component that is called out in warning statement</li> <li>4. Component under test</li> </ol>
011-198-XXX Serial port test aborted	<ol style="list-style-type: none"> <li>1. <b>If a component is called out, make sure it is connected and/or enabled</b></li> <li>2. Flash the system and re-test</li> <li>3. Go to the "Undetermined problems" section</li> </ol>
011-199-XXX Serial port test failed, cause unknown	<ol style="list-style-type: none"> <li>1. <b>Go to the "Undetermined problems" section</b></li> <li>2. Flash the system and re-test</li> <li>3. Replace component under function test</li> </ol>
011-2XX-XXX Serial port signal failure	<ol style="list-style-type: none"> <li>1. <b>External serial device</b></li> <li>2. System board</li> </ol>
014-000-XXX Parallel port Interface Test Passed	<ol style="list-style-type: none"> <li>1. <b>No action</b></li> </ol>
014-001-XXX Parallel port Presence	<ol style="list-style-type: none"> <li>1. <b>Remove external parallel device, if present</b></li> <li>2. Run setup, enable port</li> <li>3. System board</li> </ol>
014-002-XXX 014-003-XXX Parallel port Timeout/Parity error	<ol style="list-style-type: none"> <li>1. <b>System board</b></li> </ol>
014-013-XXX 014-014-XXX Parallel port Control Signal/Loopback test failure	<ol style="list-style-type: none"> <li>1. <b>System board</b></li> </ol>
014-015-XXX Parallel port External Loopback failure	<ol style="list-style-type: none"> <li>1. <b>Wrap plug</b></li> <li>2. System board</li> </ol>
014-027-XXX Parallel port Configuration/Setup error	<ol style="list-style-type: none"> <li>1. <b>Run Setup, enable port</b></li> <li>2. Flash the system</li> <li>3. System board</li> </ol>
014-03X-XXX 014-04X-XXX Parallel port failure	<ol style="list-style-type: none"> <li>1. <b>System board</b></li> </ol>
014-195-XXX Parallel port Test aborted by user	<ol style="list-style-type: none"> <li>1. <b>Information</b></li> <li>2. Re-start the test, if necessary</li> </ol>

Diagnostic Error Code	FRU/Action
014-196-XXXParallel port test halt, error threshold exceeded	<ol style="list-style-type: none"> <li>1. <b>Press F3 to review the log file</b></li> <li>2. Re-start the test to reset the log file</li> </ol>
014-197-XXXParallel port test warning	<ol style="list-style-type: none"> <li>1. <b>Make sure the component that is called out is connected and/or enabled</b></li> <li>2. Re-run test</li> <li>3. Component that is called out in warning statement</li> <li>4. Component under test</li> </ol>
014-198-XXXParallel port test aborted	<ol style="list-style-type: none"> <li>1. <b>If a component is called out, make sure it is connected and/or enabled</b></li> <li>2. Flash the system and re-test</li> <li>3. Go to the "Undetermined problems" section</li> </ol>
014-199-XXXParallel port test failed, cause unknown	<ol style="list-style-type: none"> <li>1. <b>Go to the "Undetermined problems" section</b></li> <li>2. Flash the system and re-test</li> <li>3. Replace component under function test</li> </ol>
014-2XX-XXX 014-3XX-XXXParallel port failure	<ol style="list-style-type: none"> <li>1. <b>External parallel device</b></li> <li>2. System board</li> </ol>
015-000-XXXUSB port Interface Test Passed	<ol style="list-style-type: none"> <li>1. <b>No action</b></li> </ol>
015-001-XXXUSB port Presence	<ol style="list-style-type: none"> <li>1. <b>Remove USB device(s) and re-test</b></li> <li>2. System board</li> </ol>
015-002-XXXUSB port Timeout	<ol style="list-style-type: none"> <li>1. <b>Remove USB device(s) and re-test</b></li> <li>2. System board</li> </ol>
015-015-XXXUSB port External Loopback failure	<ol style="list-style-type: none"> <li>1. <b>Remove USB device(s) and re-test</b></li> <li>2. System board</li> </ol>
015-027-XXXUSB port Configuration/Setup error	<ol style="list-style-type: none"> <li>1. <b>Flash the system</b></li> <li>2. System board</li> </ol>
015-032-XXXUSB port Device Controller failure	<ol style="list-style-type: none"> <li>1. <b>System board</b></li> </ol>
015-034-XXXUSB port bufferallocation failure	<ol style="list-style-type: none"> <li>1. <b>Reboot the system</b></li> <li>2. Flash the system</li> <li>3. Run memory test</li> <li>4. System board</li> </ol>
015-035-XXXUSB port Reset condition detected	<ol style="list-style-type: none"> <li>1. <b>Remove USB device(s) and re-test</b></li> <li>2. System board</li> </ol>
015-036-XXXUSB port Register error	<ol style="list-style-type: none"> <li>1. <b>System board</b></li> </ol>
015-040-XXXUSB port IRQ failure	<ol style="list-style-type: none"> <li>1. <b>Run setup and check for conflicts</b></li> <li>2. Flash the system</li> <li>3. System board</li> </ol>
015-195-XXXUSB port Test aborted by user	<ol style="list-style-type: none"> <li>1. <b>Information</b></li> <li>2. Re-start the test, if necessary</li> </ol>

Diagnostic Error Code	FRU/Action
015-196-XXXUSB port test halt, error threshold exceeded	<ol style="list-style-type: none"> <li>1. <b>Press F3 to review the log file</b></li> <li>2. Re-start the test to reset the log file</li> </ol>
015-197-XXXUSB port test warning	<ol style="list-style-type: none"> <li>1. <b>Make sure the component that is called out is connected and/or enabled</b></li> <li>2. Re-run test</li> <li>3. Component that is called out in warning statement</li> <li>4. Component under test</li> </ol>
015-198-XXXUSB port test aborted	<ol style="list-style-type: none"> <li>1. <b>If a component is called out, make sure it is connected and/or enabled</b></li> <li>2. Flash the system and re-test</li> <li>3. Go to the "Undetermined problems" section</li> </ol>
015-199-XXXUSB port test failed, cause unknown	<ol style="list-style-type: none"> <li>1. <b>Go to the "Undetermined problems" section</b></li> <li>2. Flash the system and re-test</li> <li>3. Replace component under function test</li> </ol>
018-000-XXXPCI Card Test Passed	<ol style="list-style-type: none"> <li>1. <b>No action</b></li> </ol>
018-0XX-XXXPCI Card Failure	<ol style="list-style-type: none"> <li>1. <b>Riser card, if installed</b></li> <li>2. System board</li> </ol>
018-195-XXXPCI Card Test aborted by user	<ol style="list-style-type: none"> <li>1. <b>PCI card</b></li> <li>2. Information</li> <li>3. Re-start the test, if necessary</li> </ol>
018-196-XXXPCI Card test halt, error threshold exceeded	<ol style="list-style-type: none"> <li>1. <b>Press F3 to review the log file</b></li> <li>2. Re-start the test to reset the log file</li> </ol>
018-197-XXXPCI Card test warning	<ol style="list-style-type: none"> <li>1. <b>Make sure the component that is called out is connected and/or enabled</b></li> <li>2. Re-run test</li> <li>3. Component that is called out in warning statement</li> <li>4. Component under test</li> </ol>
018-198-XXXPCI Card test aborted	<ol style="list-style-type: none"> <li>1. <b>Make sure the component that is called out is connected and/or enabled</b></li> <li>2. Flash the system and re-test</li> <li>3. Go to the "Undetermined problems" section</li> </ol>
018-199-XXXPCI Card test failed, cause unknown	<ol style="list-style-type: none"> <li>1. <b>Go to the "Undetermined problems" section</b></li> <li>2. Flash the system and re-test</li> <li>3. Replace component under function test</li> </ol>
018-250-XXXPCI Card Services error	<ol style="list-style-type: none"> <li>1. <b>PCI card</b></li> <li>2. Riser card, if installed</li> <li>3. System board</li> </ol>
020-000-XXXPCI Interface Test Passed	<ol style="list-style-type: none"> <li>1. <b>No action</b></li> </ol>

Diagnostic Error Code	FRU/Action
020-0XX-XXXPCI Interface error	<ol style="list-style-type: none"> <li>1. <b>PCI card</b></li> <li>2. Riser card, if installed</li> <li>3. System board</li> </ol>
020-195-XXXPCI Test aborted by user	<ol style="list-style-type: none"> <li>1. <b>Information</b></li> <li>2. Re-start the test, if necessary</li> </ol>
020-196-XXXPCI test halt, error threshold exceeded	<ol style="list-style-type: none"> <li>1. <b>Press F3 to review the log file</b></li> <li>2. Re-start the test to reset the log file</li> </ol>
020-197-XXXPCI test warning	<ol style="list-style-type: none"> <li>1. <b>Make sure the component that is called out is connected and/or enabled</b></li> <li>2. Re-run test</li> <li>3. Component that is called out in warning statement</li> <li>4. Component under test</li> </ol>
020-198-XXXPCI test aborted	<ol style="list-style-type: none"> <li>1. <b>If a component is called out, make sure it is connected and/or enabled</b></li> <li>2. Flash the system and re-test</li> <li>3. Go to the "Undetermined problems" section</li> </ol>
020-199-XXXPCI test failed, cause unknown	<ol style="list-style-type: none"> <li>1. <b>Go to the "Undetermined problems" section</b></li> <li>2. Flash the system and re-test</li> <li>3. Replace component under function test</li> </ol>
020-262-XXXPCI system error	<ol style="list-style-type: none"> <li>1. <b>PCI card</b></li> <li>2. Riser card, if installed</li> <li>3. System board</li> </ol>
025-000-XXXIDE interface Test Passed	<ol style="list-style-type: none"> <li>1. <b>No action</b></li> </ol>
025-00X-XXX 025-01X-XXXIDE interface failure	<ol style="list-style-type: none"> <li>1. <b>IDE signal cable</b></li> <li>2. Check power supply</li> <li>3. IDE device</li> <li>4. System board</li> </ol>
025-027-XXXIDE interface Configuration/Setup error	<ol style="list-style-type: none"> <li>1. <b>IDE signal cable</b></li> <li>2. Flash the system</li> <li>3. IDE device</li> <li>4. System board</li> </ol>
025-02X-XXX 025-03X-XXX 025-04X-XXXIDE Interface failure	<ol style="list-style-type: none"> <li>1. <b>IDE signal cable</b></li> <li>2. Check power supply</li> <li>3. IDE device</li> <li>4. System board</li> </ol>
025-195-XXXIDE interface Test aborted by user	<ol style="list-style-type: none"> <li>1. <b>Information</b></li> <li>2. Re-start the test, if necessary</li> </ol>
025-196-XXXIDE interface test halt, error threshold exceeded	<ol style="list-style-type: none"> <li>1. <b>Press F3 to review the log file</b></li> <li>2. Re-start the test to reset the log file</li> </ol>



Diagnostic Error Code	FRU/Action
025-197-XXXIDE interface test warning	<ol style="list-style-type: none"> <li>1. <b>Make sure the component that is called out is connected and/or enabled</b></li> <li>2. Re-run test</li> <li>3. Component that is called out in warning statement</li> <li>4. Component under test</li> </ol>
025-198-XXXIDE interface test aborted	<ol style="list-style-type: none"> <li>1. <b>If a component is called out, make sure it is connected and/or enabled</b></li> <li>2. Flash the system and re-test</li> <li>3. Go to the "Undetermined problems" section</li> </ol>
025-199-XXXIDE interface test failed, cause unknown	<ol style="list-style-type: none"> <li>1. Go to the "Undetermined problems" section</li> <li>2. Flash the system and re-test</li> <li>3. Replace component under function test</li> </ol>
030-000-XXXSCSI interface Test Passed	1. <b>No action</b>
030-00X-XXX 030-01X-XXXSCSI interface failure	<ol style="list-style-type: none"> <li>1. <b>SCSI signal cable</b></li> <li>2. Check power supply</li> <li>3. SCSI device</li> <li>4. SCSI adapter card, if installed</li> <li>5. System board</li> </ol>
030-027-XXXSCSI interface Configuration/Setup error	<ol style="list-style-type: none"> <li>1. <b>SCSI signal cable</b></li> <li>2. Flash the system</li> <li>3. SCSI device</li> <li>4. SCSI adapter card, if installed</li> <li>5. System board</li> </ol>
030-03X-XXX 030-04X-XXXSCSI interface error	<ol style="list-style-type: none"> <li>1. <b>SCSI signal cable</b></li> <li>2. Check power supply</li> <li>3. SCSI device</li> <li>4. SCSI adapter card, if installed</li> <li>5. installed System board</li> </ol>
030-195-XXXSCSI interface Test aborted by user	<ol style="list-style-type: none"> <li>1. <b>Information</b></li> <li>2. Re-start the test, if necessary</li> </ol>
030-196-XXXSCSI interface test halt, error threshold exceeded	<ol style="list-style-type: none"> <li>1. <b>Press F3 to review the log file</b></li> <li>2. Re-start the test to reset the log file</li> </ol>
030-197-XXXSCSI interface test warning	<ol style="list-style-type: none"> <li>1. <b>Make sure the component that is called out is connected and/or enabled</b></li> <li>2. Re-run test</li> <li>3. Component that is called out in warning statement</li> <li>4. Component under test</li> </ol>

Diagnostic Error Code	FRU/Action
030-198-XXXSCSI interface test aborted	<ol style="list-style-type: none"> <li>1. <b>If a component is called out, make sure it is connected and/or enabled</b></li> <li>2. Flash the system and re-test</li> <li>3. Go to the "Undetermined problems" section</li> </ol>
030-199-XXXSCSI interface test failed, cause unknown	<ol style="list-style-type: none"> <li>1. <b>Go to the "Undetermined problems" section</b></li> <li>2. Flash the system and re-test</li> <li>3. Replace component under function test</li> </ol>
035-000-XXXRAID interface Test Passed	<ol style="list-style-type: none"> <li>1. <b>No action</b></li> </ol>
035-0XX-XXXRAID interface Failure	<ol style="list-style-type: none"> <li>1. <b>RAID signal cable</b></li> <li>2. RAID device</li> <li>3. RAID adapter card, if installed</li> <li>4. System board</li> </ol>
035-195-XXXRAID interface Test aborted by user	<ol style="list-style-type: none"> <li>1. <b>Information</b></li> <li>2. Re-start the test, if necessary</li> </ol>
035-196-XXXRAID interface test halt, error threshold exceeded	<ol style="list-style-type: none"> <li>1. <b>Press F3 to review the log file</b></li> <li>2. Re-start the test to reset the log file</li> </ol>
035-197-XXXRAID interface test warning	<ol style="list-style-type: none"> <li>1. <b>Make sure the component that is called out is connected and/or enabled</b></li> <li>2. Re-run test</li> <li>3. Component that is called out in warning statement</li> <li>4. Component under test</li> </ol>
035-198-XXXRAID interface test aborted	<ol style="list-style-type: none"> <li>1. <b>If a component is called out, make sure it is connected and/or enabled</b></li> <li>2. Flash the system and re-test</li> <li>3. Go to the "Undetermined problems" section</li> </ol>
035-199-XXXRAID interface test failed, cause unknown	<ol style="list-style-type: none"> <li>1. <b>Go to the "Undetermined problems" section</b></li> <li>2. Flash the system and re-test</li> <li>3. Replace component under function test</li> </ol>
071-000-XXXAudio port Interface Test Passed	<ol style="list-style-type: none"> <li>1. <b>No action</b></li> </ol>
071-00X-XXX 071-01X-XXX 071-02X-XXXAudio port error	<ol style="list-style-type: none"> <li>1. <b>Run Setup</b></li> <li>2. Flash the system</li> <li>3. System board</li> </ol>
071-03X-XXXAudio port failure	<ol style="list-style-type: none"> <li>1. <b>Speakers</b></li> <li>2. Microphone</li> <li>3. Audio card, if installed</li> <li>4. System board</li> </ol>
071-04X-XXXAudio port failure	<ol style="list-style-type: none"> <li>1. <b>Run Setup</b></li> <li>2. Audio card, if installed</li> <li>3. System board</li> </ol>

Diagnostic Error Code	FRU/Action
071-195-XXX Audio port Test aborted by user	<ol style="list-style-type: none"> <li>1. <b>Information</b></li> <li>2. Re-start the test, if necessary</li> </ol>
071-196-XXX Audio port test halt, error threshold exceeded	<ol style="list-style-type: none"> <li>1. <b>Press F3 to review the log file</b></li> <li>2. Re-start the test to reset the log file</li> </ol>
071-197-XXX Audio port test warning	<ol style="list-style-type: none"> <li>1. <b>Make sure the component that is called out is connected and/or enabled</b></li> <li>2. Re-run test</li> <li>3. Component that is called out in warning statement</li> <li>4. Component under test</li> </ol>
071-198-XXX Audio port test aborted	<ol style="list-style-type: none"> <li>1. <b>If a component is called out, make sure it is connected and/or enabled</b></li> <li>2. Flash the system and re-test</li> <li>3. Go to the "Undetermined problems" section</li> </ol>
071-199-XXX Audio port test failed, cause unknown	<ol style="list-style-type: none"> <li>1. <b>Go to the "Undetermined problems" section</b></li> <li>2. Flash the system and re-test</li> <li>3. Replace component under function test</li> </ol>
071-25X-XXX Audio port failure	<ol style="list-style-type: none"> <li>1. <b>Speakers</b></li> <li>2. Audio card, if installed</li> <li>3. System board</li> </ol>
080-000-XXX Game Port interface Test Passed	<ol style="list-style-type: none"> <li>1. <b>No action</b></li> </ol>
080-XXX-XXX Game Port interface Error	<ol style="list-style-type: none"> <li>1. <b>Remove the game port device and re-test the system</b></li> </ol>
080-195-XXX Game Port interface Test aborted by user	<ol style="list-style-type: none"> <li>1. <b>Information</b></li> <li>2. Re-start the test, if necessary</li> </ol>
080-196-XXX Game Port interface test halt, error threshold exceeded	<ol style="list-style-type: none"> <li>1. <b>Press F3 to review the log file</b></li> <li>2. Re-start the test to reset the log file</li> </ol>
080-197-XXX Game Port interface test warning	<ol style="list-style-type: none"> <li>1. <b>Make sure the component that is called out is connected and/or enabled</b></li> <li>2. Re-run test</li> <li>3. Component that is called out in warning statement</li> <li>4. Component under test</li> </ol>
080-198-XXX Game Port interface test aborted	<ol style="list-style-type: none"> <li>1. <b>If a component is called out, make sure it is connected and/or enabled</b></li> <li>2. Flash the system and re-test</li> <li>3. Go to the "Undetermined problems" section</li> </ol>
080-199-XXX Game Port interface test failed, cause unknown	<ol style="list-style-type: none"> <li>1. <b>Go to the "Undetermined problems" section</b></li> <li>2. Flash the system and re-test</li> <li>3. Replace component under function test</li> </ol>

<b>Diagnostic Error Code</b>	<b>FRU/Action</b>
086-000-XXX Mouse Port interface Test Passed	1. <b>No action</b>
086-001-XXX Mouse Port interface Presence	1. <b>Mouse</b> 2. System board
086-032-XXX Mouse Port interface Device controller failure	1. <b>Mouse</b> 2. System board
086-035-XXX Mouse Port interface Reset	1. <b>Mouse</b> 2. System board
086-040-XXX Mouse Port interface IRQ failure	1. <b>Run Setup</b> 2. Mouse 3. System board
086-195-XXX Mouse Port interface Test aborted by user	1. <b>Information</b> 2. Re-start the test, if necessary
086-196-XXX Mouse Port interface test halt, error threshold exceeded	1. <b>Press F3 to review the log file</b> 2. Re-start the test to reset the log file
086-197-XXX Mouse Port interface test warning	1. Make sure the component that is called out is connected and/or enabled 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
086-198-XXX Mouse Port interface test aborted	1. If a component is called out, make sure it is connected and/or enabled 2. Flash the system and re-test 3. Go to the "Undetermined problems" section
086-199-XXX Mouse Port interface test failed, cause unknown	1. <b>Go to the "Undetermined problems" section</b> 2. Flash the system and re-test 3. Replace component under function test
089-000-XXX Microprocessor Test Passed	1. <b>No action</b>
089-XXX-XXX Microprocessor failure	1. <b>Microprocessor(s)</b> 2. System board
089-195-XXX Microprocessor Test aborted by user	1. <b>Information</b> 2. Re-start the test, if necessary
089-196-XXX Microprocessor test halt, error threshold exceeded	1. <b>Press F3 to review the log file</b> 2. Re-start the test to reset the log file
089-197-XXX Microprocessor test warning	1. <b>Make sure the component that is called out is connected and/or enabled</b> 2. Re-run test 3. Component that is called out in warning statement 4. Component under test

Diagnostic Error Code	FRU/Action
089-198-XXX Microprocessor test aborted	<ol style="list-style-type: none"> <li>1. <b>Flash the system and re-test</b></li> <li>2. Go to the "Undetermined problems" section</li> </ol>
089-199-XXX Microprocessor test failed, cause unknown	<ol style="list-style-type: none"> <li>1. <b>If a component is called out, make sure it is connected and/or enabled</b></li> <li>2. Go to the "Undetermined problems" section</li> <li>3. Flash the system and re-test</li> <li>4. Replace component under function test</li> </ol>
170-000-XXX Voltage Sensor(s) Test Passed	<ol style="list-style-type: none"> <li>1. <b>No action</b></li> </ol>
170-0XX-XXX Voltage Sensor(s) failure	<ol style="list-style-type: none"> <li>1. <b>Flash system</b></li> <li>2. System board</li> </ol>
170-195-XXX Voltage Sensor(s) Test aborted by user	<ol style="list-style-type: none"> <li>1. <b>Information</b></li> <li>2. Re-start the test, if necessary</li> </ol>
170-196-XXX Voltage Sensor(s) test halt, error threshold exceeded	<ol style="list-style-type: none"> <li>1. <b>Press F3 to review the log file</b></li> <li>2. Re-start the test to reset the log file</li> </ol>
170-197-XXX Voltage Sensor(s) test warning	<ol style="list-style-type: none"> <li>1. <b>Make sure the component that is called out is connected and/or enabled</b></li> <li>2. Re-run test</li> <li>3. Component that is called out in warning statement</li> <li>4. Component under test</li> </ol>
170-198-XXX Voltage Sensor(s) test aborted	<ol style="list-style-type: none"> <li>1. <b>If a component is called out, make sure it is connected and/or enabled</b></li> <li>2. Flash the system and re-test</li> <li>3. Go to the "Undetermined problems" section</li> </ol>
170-199-XXX Voltage Sensor(s) test failed, cause unknown	<ol style="list-style-type: none"> <li>1. <b>Go to the "Undetermined problems" section</b></li> <li>2. Flash the system and re-test</li> <li>3. Replace component under function test</li> </ol>
170-250-XXX 170-251-XXX Voltage Sensor(s) Voltage limit error	<ol style="list-style-type: none"> <li>1. <b>Power supply</b></li> <li>2. System board</li> </ol>
170-254-XXX Voltage Sensor(s) Voltage Regulator Module error	<ol style="list-style-type: none"> <li>1. <b>Voltage Regulator Module (VRM)</b></li> <li>2. Microprocessor</li> <li>3. System board</li> </ol>
175-000-XXX Thermal Sensor(s) Test Passed	<ol style="list-style-type: none"> <li>1. <b>No action</b></li> </ol>
175-0XX-XXX Thermal Sensor(s) failure	<ol style="list-style-type: none"> <li>1. <b>Flash system</b></li> <li>2. System board</li> </ol>
175-195-XXX Thermal Sensor(s) Test aborted by user	<ol style="list-style-type: none"> <li>1. <b>Information</b></li> <li>2. Re-start the test, if necessary</li> </ol>
175-196-XXX Thermal Sensor(s) test halt, error threshold exceeded	<ol style="list-style-type: none"> <li>1. <b>Press F3 to review the log file</b></li> <li>2. Re-start the test to reset the log file</li> </ol>

Diagnostic Error Code	FRU/Action
175-197-XXX Thermal Sensor(s) test warning	<ol style="list-style-type: none"> <li>1. <b>Make sure the component that is called out is connected and/or enabled</b></li> <li>2. Re-run test</li> <li>3. Component that is called out in warning statement</li> <li>4. Component under test</li> </ol>
175-198-XXX Thermal Sensor(s) test aborted	<ol style="list-style-type: none"> <li>1. <b>If a component is called out, make sure it is connected and/or enabled</b></li> <li>2. Flash the system and re-test</li> <li>3. Go to "Undetermined problems" section</li> </ol>
175-199-XXX Thermal Sensor(s) test failed, cause unknown	<ol style="list-style-type: none"> <li>1. <b>Go to the "Undetermined problems" section</b></li> <li>2. Flash the system and re-test</li> <li>3. Replace component under function test</li> </ol>
175-250-XXX 175-251-XXX Thermal Sensor(s) limit error	<ol style="list-style-type: none"> <li>1. <b>Check fans</b></li> <li>2. Check Power supply</li> <li>3. Microprocessor</li> <li>4. System board</li> </ol>
185-000-XXX Asset Security Test Passed	<ol style="list-style-type: none"> <li>1. <b>No action</b></li> </ol>
185-XXX-XXX Asset Security failure	<ol style="list-style-type: none"> <li>1. <b>Flash system</b></li> <li>2. System board</li> </ol>
185-278-XXX Asset Security Chassis Intrusion	<ol style="list-style-type: none"> <li>1. <b>Assure Asset Security Enabled</b></li> <li>2. C2 Cover Switch</li> <li>3. System board</li> </ol>
201-000-XXX System Memory Test Passed	<ol style="list-style-type: none"> <li>1. <b>No action</b></li> </ol>
201-XXX-XXX System Memory error	<ol style="list-style-type: none"> <li>1. <b>Replace the memory module called out by the test</b></li> <li>2. System board</li> </ol>
202-000-XXX System Cache Test Passed	<ol style="list-style-type: none"> <li>1. <b>No action</b></li> </ol>
202-XXX-XXX System Cache error	<ol style="list-style-type: none"> <li>1. <b>Cache, if removable</b></li> <li>2. System board</li> <li>3. Microprocessor</li> </ol>
206-000-XXX Diskette Drive Test Passed	<ol style="list-style-type: none"> <li>1. <b>No action</b></li> </ol>
206-XXX-XXX Diskette Drive error	<ol style="list-style-type: none"> <li>1. <b>Diskette Drive Cable</b></li> <li>2. Check power supply voltages</li> <li>3. Diskette drive</li> <li>4. System board</li> </ol>
215-000-XXX CD-ROM Drive Test Passed	<ol style="list-style-type: none"> <li>1. <b>No action</b></li> </ol>
215-XXX-XXX CD-ROM Drive error	<ol style="list-style-type: none"> <li>1. <b>CD-ROM Drive Cable</b></li> <li>2. Check power supply voltages</li> <li>3. CD-ROM drive</li> <li>4. System board</li> </ol>

Diagnostic Error Code	FRU/Action
217-000-XXXHard Disk Drive Test Passed	1. <b>No action</b>
217-25X-XXX 217-26X-XXXHard Disk Drive (IDE) error	1. <b>Hard Disk Drive Cable</b> 2. Check power supply voltages 3. Hard Disk drive (IDE) 4. System board
217-28X-XXX 217-29X-XXXHard Disk Drive (SCSI) error	1. <b>Hard Disk Drive Cable</b> 2. Check power supply voltages 3. Hard Disk drive (SCSI) 4. SCSI adapter card 5. System board
220-000-XXXHi-Capacity Cartridge Drive Test Passed	1. <b>No action</b>
220-XXX-XXXHi-Capacity Cartridge Drive error	1. <b>Remove the Hi-Capacity Cartridge Drive and re-test the system</b>
301-XXX-XXXKeyboard error	1. <b>Keyboard</b> 2. Check and test mouse 3. System board
301-000-XXXKeyboard Test Passed	1. <b>No action</b>
302-000-XXXMouse Test Passed	1. <b>No action</b>
302-XXX-XXXMouse error	1. <b>Mouse</b> 2. Check and test Keyboard 3. System board
303-000-XXXJoystick Test Passed	1. <b>No action</b>
303-XXX-XXXJoystick error	1. <b>Remove the Joystick and re-test the system</b>
305-000-XXXMonitor DDC Test Passed	1. <b>No action</b>
305-250-XXXMonitor DDC self test failure	1. <b>Run Setup to enable DDC</b> 2. Cable 3. Monitor 4. Video card 5. System board
415-000-XXXModem Test Passed	1. <b>No action</b>
415-XXX-XXXModem error	1. <b>Remove the Modem and re-test the system</b>

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## Ethernet controller messages

The integrated Ethernet controller might display messages from the Network driver interface specification (NDIS) adapter for level 4.0 (Windows NT).

### NDIS 4.0 (Windows NT and 2000) driver messages

This section contains the error messages for the NDIS 4.0 drivers. The explanation and recommended action are included with each message.

Table 4. NDIS (Windows NT or Windows 2000) driver messages for the Ethernet controller

Error code (hex)	Description
0x00	<b>Explanation:</b> The driver could not register the specified interrupt. <b>Action:</b> Using the Configuration/Setup Utility program, make sure that a PCI interrupt is assigned to your Ethernet card, and that Ethernet is enabled.
0x01	<b>Explanation:</b> One of the PCI cards did not get the required resources. <b>Action:</b> Using the Configuration/Setup Utility program, make sure that a PCI interrupt is assigned to your Ethernet card, and that Ethernet is enabled.
0x02	<b>Explanation:</b> Bad node address (multicast address). <b>Action:</b> Make sure the locally administered address is valid, if one is specified. The address can not be a multicast address.
0x03	<b>Explanation:</b> Failed self-test. <b>Action:</b> Make sure a cable is attached to the Ethernet connector.
0x0D	<b>Explanation:</b> Could not allocate enough memory for transmit queues. <b>Action:</b> <ol style="list-style-type: none"> <li>1. From the Windows NT desktop, select <b>Start --&gt; Control Panel --&gt; Networks --&gt; Adapters</b>.</li> <li>2. Select your IBM Ethernet adapter from the list.</li> <li>3. Select <b>Properties --&gt; Advanced</b>.</li> <li>4. Lower the resource values that apply to the transmit queue.</li> </ol>
0x0E	<b>Explanation:</b> Could not allocate enough memory for receive queue. <b>Action:</b> <ol style="list-style-type: none"> <li>1. From the Windows NT desktop, select <b>Start --&gt; Control Panel --&gt; Networks --&gt; Adapters</b>.</li> <li>2. Select your IBM Ethernet adapter from the list.</li> <li>3. Select <b>Properties --&gt; Advanced</b>.</li> <li>4. Lower the resource values that apply to the receive queue.</li> </ol>
0x0F	<b>Explanation:</b> Could not allocate enough memory for other structures. <b>Action:</b> <ol style="list-style-type: none"> <li>1. From the Windows NT desktop, select <b>Start --&gt; Control Panel --&gt; Networks --&gt; Adapters</b>.</li> <li>2. Select your IBM Ethernet adapter from the list.</li> <li>3. Select <b>Properties --&gt; Advanced</b>.</li> <li>4. Lower the value for the resource named in the message.</li> </ol>
0x10	<b>Explanation:</b> Did not find any Ethernet controllers. <b>Action:</b> Using the Configuration/Setup Utility program, make sure that Ethernet is enabled.
0x11	<b>Explanation:</b> Multiple Ethernet controllers found, but none matched the required ID. <b>Action:</b> Using the Configuration/Setup Utility program, make sure that Ethernet is enabled.
0x13	<b>Explanation:</b> Did not find any Ethernet controllers that matched the required subven/subdev. <b>Action:</b> Using the Configuration/Setup Utility program, make sure that Ethernet is enabled.
0x16	<b>Explanation:</b> Single adapter found, but multiple instances tried to load. <b>Action:</b> Using the Configuration/Setup Utility program, make sure that Ethernet is enabled, and that the slot containing the IBM IntelliStation 10/100 Ethernet Adapter or the IBM 10/100 Etherjet PCI adapter is enabled.
0x17	<b>Explanation:</b> Slot parameter not specified in the registry. <b>Action:</b> Remove the adapter driver and reinstall it.
All other 4-character hexadecimal codes	<b>Action:</b> Replace the ethernet controller.

## NDIS Ethernet teaming messages

This section contains error messages associated with Ethernet teaming.



Table 5. NDIS (Windows NT or Windows 2000) driver teaming messages for the Ethernet controller

Event ID	Type	Description
01	Error	<b>Explanation:</b> Team Name and physical adapter name are the same. This is an invalid configuration. <b>Action:</b> Reconfigure the adapter team by double-clicking the <b>PROSet</b> icon in the control panel.
02	Error	<b>Explanation:</b> Unable to allocate required resources. <b>Action:</b> Free some memory resources and restart.
03	Error	<b>Explanation:</b> Unable to read required registry parameters. <b>Action:</b> Reconfigure the adapter team by double-clicking the <b>PROSet</b> icon in the control panel.
04	Error	<b>Explanation:</b> Unable to bind to physical adapter. <b>Action:</b> Reconfigure the adapter team by double-clicking the <b>PROSet</b> icon in the control panel.
05	Error	<b>Explanation:</b> Unable to initialize an adapter team. <b>Action:</b> Reconfigure the adapter team by double-clicking the <b>PROSet</b> icon in the control panel.
06	Informational	<b>Explanation:</b> Team <i>nn</i> . Primary adapter is initialized. <b>Action:</b> None.
07	Informational	<b>Explanation:</b> Team <i>nn</i> . Secondary adapter is initialized. <b>Action:</b> None.
08	Informational	<b>Explanation:</b> Team <i>nn</i> . Virtual adapter or Team is initialized. <b>Action:</b> None.
09	Informational	<b>Explanation:</b> Team <i>nn</i> . Primary adapter is switching over. <b>Action:</b> None.
10	Warning	<b>Explanation:</b> Team <i>nn</i> . Adapter link down. <b>Action:</b> Make sure the adapter is functioning properly.
11	Informational	<b>Explanation:</b> Team <i>nn</i> . Secondary adapter took over. <b>Action:</b> None.
12	Warning	<b>Explanation:</b> Team <i>nn</i> . Secondary adapter is deactivated from the Team. <b>Action:</b> Make sure the secondary adapter is functioning properly and that the adapter cable is securely connected to the LAN.
13	Informational	<b>Explanation:</b> Team <i>nn</i> . Secondary adapter has rejoined the Team. <b>Action:</b> None.
14	Informational	<b>Explanation:</b> Team <i>nn</i> . Secondary adapter link is working. <b>Action:</b> None.
15	Error	<b>Explanation:</b> Team <i>nn</i> . The last adapter has lost its link. Network connection has been lost. <b>Action:</b> Shut down the computer and replace the adapters; then, restart the system to reestablish the connection.
16	Informational	<b>Explanation:</b> Team <i>nn</i> . An adapter has reestablished the link. Network connection has been restored. <b>Action:</b> None.
17	Informational	<b>Explanation:</b> Team <i>nn</i> . Preferred primary adapter has been detected. <b>Action:</b> None.
18	Informational	<b>Explanation:</b> Team <i>nn</i> . Preferred secondary adapter has been detected. <b>Action:</b> None.
19	Informational	<b>Explanation:</b> Team <i>nn</i> . Preferred primary adapter took over. <b>Action:</b> None.
20	Informational	<b>Explanation:</b> Team <i>nn</i> . Preferred secondary adapter took over. <b>Action:</b> None.
21	Warning	<b>Explanation:</b> Team <i>nn</i> . Primary adapter does not sense any Probes. Possible reason: partitioned Team. <b>Action:</b> Make sure the cables of the adapter team are connected to the same LAN segment. Reconfigure the team if necessary.

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## Undetermined problems

1. Power-off the computer.
2. Remove or disconnect the following components (if installed) one at a time.
  - a. Non-IBM devices
  - b. External devices (modem, printer, or mouse)
  - c. Any adapters
  - d. Memory modules Before removing or replacing memory modules, see "Installing memory modules" on page 43" or "Installing memory modules" on page 58.
  - e. Extended video memory
  - f. External Cache
  - g. External Cache RAM
  - h. Hard disk drive
  - i. Diskette drive
3. Power-on the computer to re-test the system.
4. Repeat steps 1 through 3 until you find the failing device or adapter.

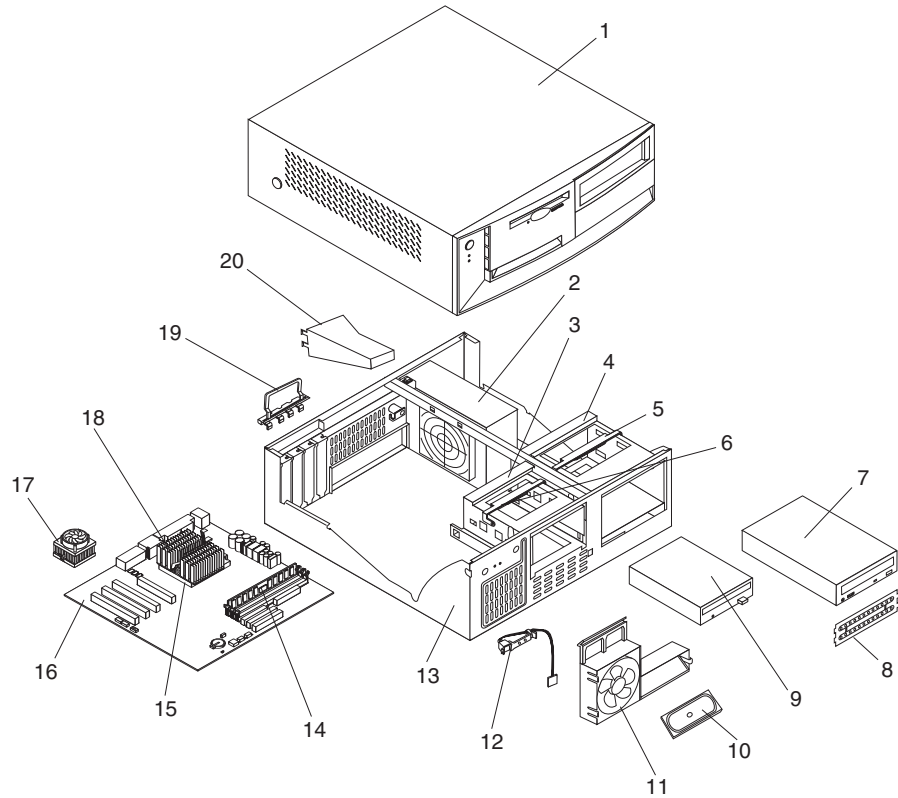
If all devices and adapters have been removed, and the problem continues, replace the system board (see ... Replacing system board....

## Chapter 8. Parts listing

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### System, Type 6836

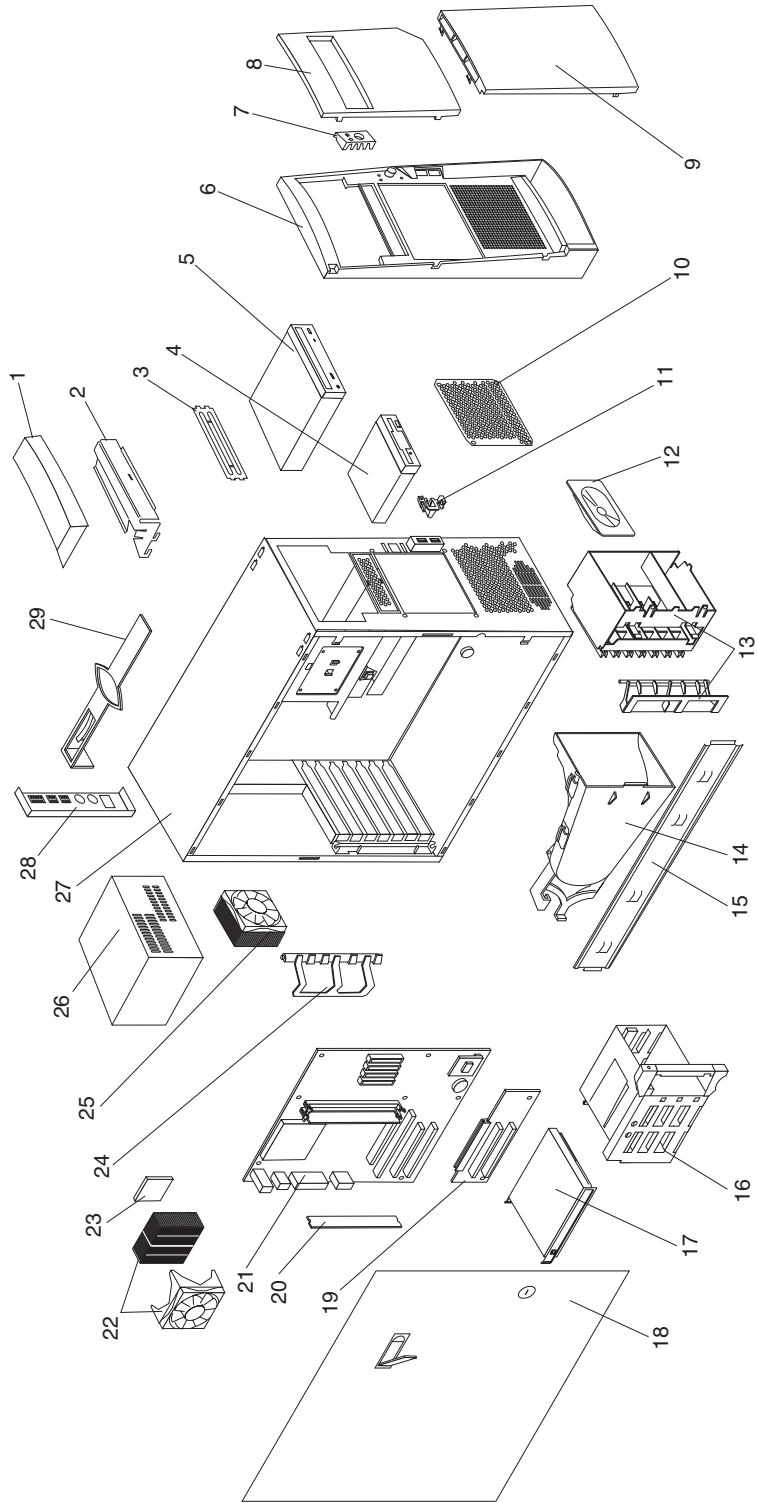


This parts listing supports these models: 10x, 21x, 22x, 31x, 35x, 36x, 41x

Index	System (IntelliStation – Type 6836)	FRU No.
1	Top cover assembly, stealth black (all models)	19K7644
2	Power supply	00N7685
3	3.5 DASD bracket (all models)	06P2734
4	5.25 DASD bracket (all models)	09N5746
5	Lock - 5.25 DASD bracket (all models)	09N5747
6	Lock - 3.5 DASD bracket (all models)	09N5748
7	CD-ROM drive (48X) - black - primary (all models)	19K1531
7	CD-ROM drive (48X) - black - alternate (all models)	19K1535
7	CD-ROM drive (48X) - black - alternate (all models)	06P5167
8	Shield, 5.25 EMC (DR9) (all models)	19K5548
9	Floppy disk drive	76H4091
10	Speaker assembly (all models)	01K4909
11	Bracket - fan/speaker (all models)	09N5763
12	Control panel assembly (all models)	37L5092

Index	System (IntelliStation – Type 6836)	FRU No.
13	Chassis assembly (all models)	06P2731
14	DIMM Memory 64MB (model 10X)	33L3080
14	DIMM Memory 128MB (models 21X, 22X, 31X, 35X, 36X, 41X)	33L3082
15	800 Mhz 256KB Cache PIII processor (model 10X)	10K1196
15	866 Mhz 256KB Cache PIII processor (models 21X, 22X)	22P1718
15	933 Mhz 256KB Cache PIII processor (models 31X, 35X, 36X)	22P1716
15	1000 MHz 256KB Cache PIII processor (model 41X)	24P9479
16	System board (all models)	25P3325
17	Fansink (for processor speeds 866MHz and higher)	22P2457
18	Heatsink (for processor speeds less than 866MHz)	09N4372
19	I/O cam bracket - plastic (all models)	09N5734
20	Duct - baffle (all models)	22P0107
	Bezel kit, stealth black (all models)	19K7645
	Nameplate (all models)	19K7701
	Hard disk drive rail kit, soft mount w/clip (all models)	19K5331
	Foot (4) (all models)	03K9655
	Fan assembly, 92mm w/grommet (all models)	33L2594
	Fan, 80mm	22P2462
	C2 cable (all models)	09K9827
	Cable - Primary IDE (ATA66 x 1 drop) (all models)	37L4525
	Floppy disk drive cable (all models)	33L2596
	Secondary IDE cable (ATA66 x 2 Drop) (all models)	09N5925
	CD ROM audio cable (all models)	75H9219
	SCSI LED cable (all models)	76H7344
	Key lock assembly (all models)	09K9829
	System board assembly (all models)	06P6106
	Cable, IDE 2-drop	09N5925
	System board locating label kit (all models)	09N5715
	Mouse assembly, stealth gray (all models)	10L6149
	SSD 15 GB IDE hard file, 7K rpm (models 10X, 21X, 31X, 35X, 41X)	19K1564
	SSD 9.1 GB SCSI hard file 7.2K rpm (models 22X, 36X)	19K1479
	G450 video adapter (models 10X, 21X, 22X, 31X, 41X)	09N9237
	Video card (models 35X, 36X)	09K9692
	SCSI U160 adapter (models 22X, 36X)	06P2215
	SCSI LVD 3 drops cable	33L2598
	Miscellaneous hardware kit, contains: bracket, new I/O blank (1); M3 machine screw (FDD and CD ROM) (4); M3.5 machine screw (6); M3.5 thread rolling screw (7); power supply bracket (145/155 Watt) (1); fan isolation mounts (4); I/O EMC shield 2 position (1); clamp, cable (1); spacer, system board (4); thumbscrew (1).	09N5764

# System, Type 6846



This parts listing supports these models: 11U, 21U, 22U, 26U, 31X, 35U, 37X, 47X

Index	System (IntelliStation – Type 6846)	FRU No.
1	Handle caps kit (all models)	19K4934
2	Handle support (all models)	19K4936
3	Shield, 5.25" EMC (all models)	19K5548
4	Floppy disk drive (all models)	76H4091
5	48X CDROM (all models)	09N0737
5	48X CDROM (Alternate) (all models)	19K1531
5	48X CDROM (Alternate) (all models)	19K1535
6	Bezel, front (all models)	19K4958
7	Power button kit (all models)	19K4940
8	Half door (all models)	19K4952
9	Panel, full perforated ventilation (all models)	19K4954
10	Plate, EMC (hot swap) (models 31X, 35U, 37X, 47X)	19K4949
11	Panel, control (all models)	19K4935
12	Speaker (all models)	19K4929
13	I/O card retainer assembly (all models)	19K4945
14	Fan 92x38MM fan and duct assembly (models 31X, 35U, 37X, 47X)	19K4960
15	Bracket, Support (all models)	19K4963
16	Cage, DASD rotating (all models)	19K4931
17	SSD 9.1 GB SCSI Hard file 7.2K rpm (models 22X, 26U, 37X, 47X)	19K1479
17	SSD 15 GB IDE Hard file, 7K rpm (models 11U, 21U, 31X, 35U)	19K1564
18	Door assembly, sliding w/lock & latch (all models)	06P5854
19	PCI extender card (all models)	22P9768
20	Memory, 128MB (models 11U, 21U, 22U, 26U)	33L3082
20	Memory, 256MB (models 37X, 47X)	33L3084
21	System board (all models)	25P3325
22	Heatsink (models with processor speed less than 933MHz))	09N4372
22	Heatsink w/fan assembly (models 31X, 35U, 37X, 47X)	22P2457
23	Processor, 133/800MHz 256K/L2, FC-PGA (model 11U)	10K1196
23	Processor, 133/866MHz 256KB Cache PIII (models 21U, 22U, 26U)	19K7536
23	Processor, 133/933MHz 256K/L2, FC-PGA (models 31X, 35U, 37X)	19K7537
23	Processor, 1000MHz 256KB Cache PIII (model 47X)	21P9479
24	Card guide (all models)	19K4947
25	Fan 80MM (all models)	37L4526
26	Power supply (all models)	00N7718
27	Chassis, staked (all models)	06P5856
28	Shield, 3.5" EMC (all models)	19K4943
29	Bezel release bar (all models)	19K4946
	Feet, snap-in (4) (all models)	01N2196
	Bezel kit (all models)	00N7082
	Service label kit (all models)	06P5899
	System feet (all models)	12J4506
	Lock assembly (all models)	19K4948
	USB blank rack bezel kit (all models)	19K4951
	Cover, side/top (all models)	19K4957
	DASD hard disk drive rail kit (all models)	19K5331
	Shield, system board EMC (all models)	22P0105
	Miscellaneous hardware kit (all models)	09N5764
	Mouse assembly (stealth gray) (all models)	10L6149
	Panel, power (all models)	19K4942
	Video adapter, Adaptec 29160op SCSI U160 (models 22U, 26U, 37X, 47X)	06P2215
	NVideo Video Card (models 26U, 35U, 37X, 47X)	09K9692
	G450 Graphics Adapter (models 11U, 21U,22U, 31X)	09N9237
	Cable, SCSI 5-drop (models 22U, 26U, 37X, 47X)	00N7110
	Cable, IDE 2-drop (all models)	09N5925

<b>Index</b>	<b>System (IntelliStation – Type 6846)</b>	<b>FRU No.</b>
	Cable, CD-ROM audio (all models)	75H9219
	Cable, floppy disk drive (all models)	76H4228
	Cable, SCSI LED (models 22U, 26U, 37X, 47X)	76H7344
	Power cord (all models)	6952301





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## Chapter 9. Related service information

**Note:** The service procedures are designed to help you isolate problems. They are written with the assumption that you have model-specific training on all computers, or that are familiar with the computers, functions, terminology, and service information provided in this manual.

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### Safety information

The following section contains the safety information that you need to be familiar with before servicing an IBM mobile computer.

#### General safety

Follow these rules to ensure general safety:

- Observe good housekeeping in the area of the machines during and after maintenance.
- When lifting any heavy object:
  1. Ensure you can stand safely without slipping.
  2. Distribute the weight of the object equally between your feet.
  3. Use a slow lifting force. Never move suddenly or twist when you attempt to lift.
  4. Lift by standing or by pushing up with your leg muscles; this action removes the strain from the muscles in your back. *Do not attempt to lift any objects that weigh more than 16 kg (35 lb) or objects that you think are too heavy for you.*
- Do not perform any action that causes hazards to the customer, or that makes the equipment unsafe.
- Before you start the machine, ensure that other service representatives and the customer's personnel are not in a hazardous position.
- Place removed covers and other parts in a safe place, away from all personnel, while you are servicing the machine.
- Keep your tool case away from walk areas so that other people will not trip over it.
- Do not wear loose clothing that can be trapped in the moving parts of a machine. Ensure that your sleeves are fastened or rolled up above your elbows. If your hair is long, fasten it.
- Insert the ends of your necktie or scarf inside clothing or fasten it with a nonconductive clip, approximately 8 centimeters (3 inches) from the end.
- Do not wear jewelry, chains, metal-frame eyeglasses, or metal fasteners for your clothing.

**Remember:** Metal objects are good electrical conductors.
- Wear safety glasses when you are: hammering, drilling soldering, cutting wire, attaching springs, using solvents, or working in any other conditions that might be hazardous to your eyes.
- After service, reinstall all safety shields, guards, labels, and ground wires. Replace any safety device that is worn or defective.
- Reinstall all covers correctly before returning the machine to the customer.

## Electrical safety



### CAUTION:

Electrical current from power, telephone, and communication cables can be hazardous. To avoid personal injury or equipment damage, disconnect the attached power cords, telecommunication systems, networks, and modems before you open the computer covers, unless instructed otherwise in the installation and configuration procedures.

Observe the following rules when working on electrical equipment.

**Important:** Use only approved tools and test equipment. Some hand tools have handles covered with a soft material that does not insulate you when working with live electrical currents.

Many customers have, near their equipment, rubber floor mats that contain small conductive fibers to decrease electrostatic discharges. Do not use this type of mat to protect yourself from electrical shock.

- Find the room emergency power-off (EPO) switch, disconnecting switch, or electrical outlet. If an electrical accident occurs, you can then operate the switch or unplug the power cord quickly.
- Do not work alone under hazardous conditions or near equipment that has hazardous voltages.
- Disconnect all power before:
  - Performing a mechanical inspection
  - Working near power supplies
  - Removing or installing main units
- Before you start to work on the machine, unplug the power cord. If you cannot unplug it, ask the customer to power-off the wall box that supplies power to the machine and to lock the wall box in the off position.
- If you need to work on a machine that has exposed electrical circuits, observe the following precautions:
  - Ensure that another person, familiar with the power-off controls, is near you.  
**Remember:** Another person must be there to switch off the power, if necessary.
  - Use only one hand when working with powered-on electrical equipment; keep the other hand in your pocket or behind your back.  
**Remember:** There must be a complete circuit to cause electrical shock. By observing the above rule, you may prevent a current from passing through your body.
  - When using testers, set the controls correctly and use the approved probe leads and accessories for that tester.
  - Stand on suitable rubber mats (obtained locally, if necessary) to insulate you from grounds such as metal floor strips and machine frames.

Observe the special safety precautions when you work with very high voltages; these instructions are in the safety sections of maintenance information. Use extreme care when measuring high voltages.

- Regularly inspect and maintain your electrical hand tools for safe operational condition.
- Do not use worn or broken tools and testers.
- *Never assume* that power has been disconnected from a circuit. First, *check* that it has been powered-off.
- Always look carefully for possible hazards in your work area. Examples of these hazards are moist floors, nongrounded power extension cables, power surges, and missing safety grounds.
- Do not touch live electrical circuits with the reflective surface of a plastic dental mirror. The surface is conductive; such touching can cause personal injury and machine damage.
- Do not service the following parts with the power on when they are removed from their normal operating places in a machine:
  - Power supply units
  - Pumps
  - Blowers and fans
  - Motor generators

and similar units. (This practice ensures correct grounding of the units.)

- If an electrical accident occurs:
  - Use caution; do not become a victim yourself.
  - Switch off power.
  - Send another person to get medical aid.

## Safety inspection guide

The intent of this inspection guide is to assist you in identifying potentially unsafe conditions on these products. Each machine, as it was designed and built, had required safety items installed to protect users and service personnel from injury. This guide addresses only those items. However, good judgment should be used to identify potential safety hazards due to attachment of non-IBM features or options not covered by this inspection guide.

If any unsafe conditions are present, you must determine how serious the apparent hazard could be and whether you can continue without first correcting the problem.

Consider these conditions and the safety hazards they present:

- Electrical hazards, especially primary power (primary voltage on the frame can cause serious or fatal electrical shock).
- Explosive hazards, such as a damaged CRT face or bulging capacitor
- Mechanical hazards, such as loose or missing hardware

The guide consists of a series of steps presented in a checklist. Begin the checks with the power off, and the power cord disconnected.

Checklist:

1. Check exterior covers for damage (loose, broken, or sharp edges).
2. Power-off the computer. Disconnect the power cord.

3. Check the power cord for:
  - a. A third-wire ground connector in good condition. Use a meter to measure third-wire ground continuity for 0.1 ohm or less between the external ground pin and frame ground.
  - b. The power cord should be the appropriate type as specified in the parts listings.
  - c. Insulation must not be frayed or worn.
4. Remove the cover.
5. Check for any obvious non-IBM alterations. Use good judgment as to the safety of any non-IBM alterations.
6. Check inside the unit for any obvious unsafe conditions, such as metal filings, contamination, water or other liquids, or signs of fire or smoke damage.
7. Check for worn, frayed, or pinched cables.
8. Check that the power-supply cover fasteners (screws or rivets) have not been removed or tampered with.

## Handling electrostatic discharge-sensitive devices

Any computer part containing transistors or integrated circuits (ICs) should be considered sensitive to electrostatic discharge (ESD). ESD damage can occur when there is a difference in charge between objects. Protect against ESD damage by equalizing the charge so that the machine, the part, the work mat, and the person handling the part are all at the same charge.

### Notes:

1. Use product-specific ESD procedures when they exceed the requirements noted here.
2. Make sure that the ESD protective devices you use have been certified (ISO 9000) as fully effective.

When handling ESD-sensitive parts:

- Keep the parts in protective packages until they are inserted into the product.
- Avoid contact with other people.
- Wear a grounded wrist strap against your skin to eliminate static on your body.
- Prevent the part from touching your clothing. Most clothing is insulative and retains a charge even when you are wearing a wrist strap.
- Use the black side of a grounded work mat to provide a static-free work surface. The mat is especially useful when handling ESD-sensitive devices.
- Select a grounding system, such as those listed below, to provide protection that meets the specific service requirement.

**Note:** The use of a grounding system is desirable but not required to protect against ESD damage.

- Attach the ESD ground clip to any frame ground, ground braid, or green-wire ground.
- Use an ESD common ground or reference point when working on a double-insulated or battery-operated system. You can use coax or connector-outside shells on these systems.
- Use the round ground-prong of the ac plug on ac-operated computers.

## Grounding requirements

Electrical grounding of the computer is required for operator safety and correct system function. Proper grounding of the electrical outlet can be verified by a certified electrician.

## Safety notices (multi-lingual translations)

The caution and danger safety notices in this section are provided in the following languages:

- English
- Brazilian/Portuguese
- Chinese
- French
- German
- Italian
- Korean
- Spanish

**Important:** All caution and danger statements in the *Server Library* begin with a number. This number is used to cross reference an English caution or danger statement with translated versions of the caution or danger statement in this section.

For example, if a caution statement begins with a number 1, translations for that caution statement appear in this section under statement 1.

Be sure to read all caution and danger statements before performing any of the instructions.

- Statement 1



### DANGER

Electrical current from power, telephone and communication cables is hazardous.

**To avoid a shock hazard:**

- **Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.**
- **Connect all power cords to a properly wired and grounded electrical outlet.**
- **Connect to properly wired outlets any equipment that will be attached to this product.**
- **When possible, use one hand only to connect or disconnect signal cables.**
- **Never turn on any equipment when there is evidence of fire, water, or structural damage.**
- **Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.**

- Connect and disconnect cables as described in the following table when installing, moving, or opening covers on this product or attached devices.

To Connect	To Disconnect
<ol style="list-style-type: none"> <li>1. Turn everything OFF.</li> <li>2. First, attach all cables to devices.</li> <li>3. Attach signal cables to connectors.</li> <li>4. Attach power cords to outlet.</li> <li>5. Turn device ON.</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn everything OFF.</li> <li>2. First, remove power cords from outlet.</li> <li>3. Remove signal cables from connectors.</li> <li>4. Remove all cables from devices.</li> </ol>

- Statement 2



**CAUTION:**

When replacing the lithium battery, use only IBM Part Number 33F8354 or an equivalent type battery recommended by the manufacturer. If your system has a module containing a lithium battery, replace it only with the same module type made by the same manufacturer. The battery contains lithium and can explode if not properly used, handled, or disposed of.

*Do not:*

- Throw or immerse into water
- Heat to more than 100°C (212°F)
- Repair or disassemble

Dispose of the battery as required by local ordinances or regulations.

- Statement 3



**CAUTION:**

When laser products (such as CD-ROMs, DVD-ROM drives, fiber optic devices, or transmitters) are installed, note the following:

- Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.
- Use of controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.

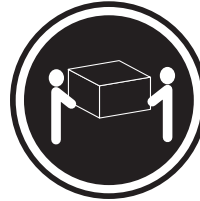


**DANGER**

Some laser products contain an embedded Class 3A or Class 3B laser diode.  
Note the following:

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

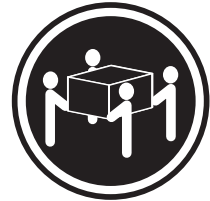
- Statement 4



≥18 kg (37 lbs)



≥32 kg (70.5 lbs)



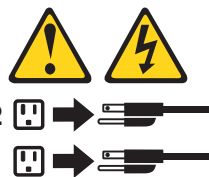
≥55 kg (121.2 lbs)

**CAUTION:**  
Use safe practices when lifting.

- Statement 5



**CAUTION:**  
The power control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.



- Statement 10



**CAUTION:**

**Do not place any object weighing more than 82 kg (180 lbs.) on top of rack-mounted devices.**



### Importante:

Todas as instruções de cuidado e perigo da *Server Library* começam com um número. Este número é utilizado para fazer referência cruzada de uma instrução de cuidado ou perigo no idioma inglês com as versões traduzidas das instruções de cuidado ou perigo encontradas nesta seção.

Por exemplo, se uma instrução de cuidado é iniciada com o número 1, as traduções para aquela instrução de cuidado aparecem nesta seção sob a instrução 1.

Certifique-se de ler todas as instruções de cuidado e perigo antes de executar qualquer operação.

Instrução 1



### PERIGO

A corrente elétrica proveniente de cabos de alimentação, de telefone e de comunicações é perigosa.

Para evitar risco de choque:

- Não conecte ou desconecte cabos e não realize instalação, manutenção ou reconfiguração deste produto durante uma tempestade com raios.
- Conecte todos os cabos de alimentação a tomadas elétricas corretamente instaladas e aterradas.
- Conecte todos os equipamentos ao qual esse produto será conectado a tomadas corretamente instaladas.
- Sempre que possível, utilize apenas uma das mãos para conectar ou desconectar cabos de sinal.
- Nunca ligue qualquer equipamento quando existir evidência de danos por fogo, água ou na estrutura.
- Desconecte cabos de alimentação, sistemas de telecomunicação, redes e modems antes de abrir as tampas dos dispositivos, a menos que especificado de maneira diferente nos procedimentos de instalação e configuração.
- Conecte e desconecte cabos conforme descrito na seguinte tabela, ao instalar ou movimentar este produto ou os dispositivos conectados, ou ao abrir suas tampas.

Para Conectar:	Para Desconectar:
<ol style="list-style-type: none"><li>1. DESLIGUE Tudo.</li><li>2. Primeiramente, conecte todos os cabos aos dispositivos.</li><li>3. Conecte os cabos de sinal aos conectores.</li><li>4. Conecte os cabos de alimentação às tomadas.</li><li>5. LIGUE os dispositivos.</li></ol>	<ol style="list-style-type: none"><li>1. DESLIGUE Tudo.</li><li>2. Primeiramente, remova os cabos de alimentação das tomadas.</li><li>3. Remova os cabos de sinal dos conectores.</li><li>4. Remova todos os cabos dos dispositivos.</li></ol>

## Instrução 2



### **CUIDADO:**

Ao substituir a bateria de lítio, utilize apenas uma bateria IBM, Número de Peça 33F8354 ou uma bateria de tipo equivalente, recomendada pelo fabricante. Se o seu sistema possui um módulo com uma bateria de lítio, substitua-o apenas pelo mesmo tipo de módulo, do mesmo fabricante. A bateria contém lítio e pode explodir se não for utilizada, manuseada e descartada de maneira correta.

Não:

- Jogue ou coloque na água
- Aqueça a mais de 100°C (212°F)
- Conserte nem desmonte

Para descartar a bateria, entre em contato com a área de atendimento a clientes IBM, pelo telefone (011) 889-8986, para obter informações sobre como enviar a bateria pelo correio para a IBM.

## Instrução 3



### **PRECAUCIÓN:**

Quando produtos a laser (unidades de CD-ROM, unidades de DVD, dispositivos de fibra ótica, transmissores, etc.) estiverem instalados, observe o seguinte:

- Não remova as tampas. A remoção das tampas de um produto a laser pode resultar em exposição prejudicial à radiação de laser. Nenhuma peça localizada no interior do dispositivo pode ser consertada.
- A utilização de controles ou ajustes ou a execução de procedimentos diferentes dos especificados aqui pode resultar em exposição prejudicial à radiação.

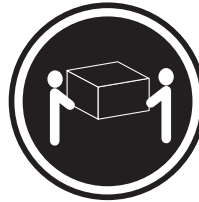


### **PERIGO**

Alguns produtos a laser contêm um diodo laser da Classe 3A ou Classe 3B embutido. Observe o seguinte:

Radiação de laser quando aberto. Não olhe diretamente para o raio a olho nu ou com instrumentos ópticos, e evite exposição direta ao raio.

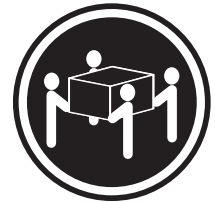
#### Instrução 4



≥18 kg (37 lbs)



≥32 kg (70,5 lbs)



≥55 kg (121,2 lbs)

#### CUIDADO:

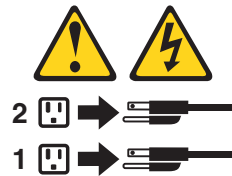
Ao levantar a máquina, faça-o com segurança.

#### Instrução 5



#### CUIDADO:

Os botões Liga/Desliga localizados no dispositivo e na fonte de alimentação não desligam a corrente elétrica fornecida ao dispositivo. O dispositivo também pode ter mais de um cabo de alimentação. Para remover toda a corrente elétrica do dispositivo, assegure que todos os cabos de alimentação estejam desconectados da fonte de energia elétrica.



#### CUIDADO:

#### Instrução 10



**CUIDADO:**



Não coloque nenhum objeto com peso superior a 82 kg (180 lbs.) sobre dispositivos montados em rack.

**重要:**

Netfinity Server Library 中的所有提醒和危险条款前都有一个数字标识。该数字是用来交叉引用一个英文的提醒和危险条款及本部分中的与之对应的已翻译成其它文字的提醒和危险条款。

例如, 如果一个提醒条款前的数字为 1, 则本部分中相应的译文也带有标号 1。

在执行任何指示的操作之前, 请确保您已经阅读了全部提醒和危险条款。

**声明 1**



**危险**

电源、电话和通信电缆中带有危险电流。  
为避免电击：  
雷电期间不要拆接电缆或安装、维修及重新配置本产品。  
将所有电源线连接至正确布线并已安全接地的电源插座上。  
将与本产品连接的所有设备连接至正确布线的插座上。  
尽量只使用单手拆接信号电缆。  
有水、火及结构损坏迹象时，请勿打开任何设备。  
除非在安装配置过程中有明确指示，否则，打开设备机盖前应先断开与电源线、远程通信系统、网络和调制解调器的所有连接。  
安装、移动或打开本产品及其附带设备的机盖时，应按下表所述连接和断开电缆。

连接时:	断开连接时:
1. 关闭所有设备。	1. 关闭所有设备。
2. 首先将所有电缆连接至设备。	2. 首先从插座中拔出电源线。
3. 将信号电缆连接至接口。	3. 从接口上拔下信号电缆。
4. 将电源线连接至插座。	

## 声明 2



### 警告:

更换锂电池时，只能使用 IBM 产品号 33F8354 或者是厂商推荐的等同类型的电池。

如果系统模块中含有锂电池，则只能使用同一厂商制造的同一类型的模块进行更换。电池中含有锂，如果使用、拿放或处理不当，可能会发生爆炸。

请勿对电池进行下列操作：  
扔入或浸入水中  
加热超过 100 (212 F)  
进行修理或分解  
请按本地法规要求处理电池。

## 声明 3



### 警告:

安装激光产品（如 CD-ROM、DVD 驱动器、光纤设备或送话器）时，应注意以下事项：

不要拆除外盖。拆除激光产品的外盖可能会导致激光辐射的危险，本设备中没有用户可维修的部件。

非此处指定的其它控制、调整或与性能有关的操作都有可能导致激光辐射的危险。



### 危险

某些激光产品中包含内嵌的 3A 级或 3B 级激光二极管。请注意以下事项。  
打开时会产生激光辐射。不要直视光束，不要使用光学仪器直接观看光束，避免直接暴露于光束之下。

#### 声明 4



≥18 kg (37 磅)



≥32 kg (70.5 磅)



≥55 kg (121.2 磅)

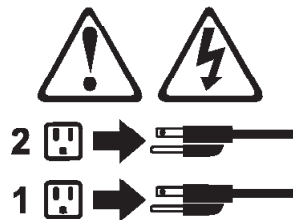
**警告：**  
抬起时请采用安全操作方法。

#### 声明 5



**警告：**

使用设备上的电源控制按钮和电源上的开关都不能断开本设备上的电流。另外，本设备可能带有多条电源线。如要断开设备上的所有电流，请确保所有电源线均已与电源断开连接。



#### 声明 6



**警告：**

如果在电源线连接设备的一端安装了固定松紧夹，则必须将电源线的另一端连接至使用方便的电源。

### 声明 7



**警告：**

如果设备带有外门，则在移动或抬起设备前应将其拆除或固定以避免造成人员伤害。外门支撑不了设备的重量。

### 声明 8



**警告：**

不要拆除电源外盖或贴有下列标签的任何部件。



贴有此标签的组件内部存在高电压、高电流的危险。这些组件中没有用户可维修的部件。如果怀疑其中的部件存在问题，应与服务技术人员联系。

### 声明 9



**警告：**

为避免人员伤害，拆除设备上的风扇前应拨下热插拔风扇电缆。

### 声明 10



**警告：**

机柜安装的设备上面不能放置重于 82kg（180 磅）的物品。



> 82 kg (180 磅)



声明 11



警告:

下面的标签表明附近有锋利的边、角或接头。



声明 12



警告:

下面的标签表明附近有高热表面。



重要資訊：

*Netfinity Server Library* 中所有「注意」及「危險」的聲明均以數字開始。此一數字是用來作為交互參考之用，英文「注意」或「危險」聲明可在本節中找到相同內容的「注意」或「危險」聲明的譯文。

例如，有一「危險」聲明以數字 1 開始，則該「危險」聲明的譯文將出現在本節的「聲明」1 中。

執行任何指示之前，請詳讀所有「注意」及「危險」的聲明。

聲明 1



危險

電源、電話及通信電纜上所產生的電流均有危險性。

欲避免電擊危險：

- 在雷雨期間，請勿連接或切斷本產品上的任何電纜線，或安裝、維修及重新架構本產品。
- 請將電源線接至接線及接地正確的電源插座。
- 請將本產品隨附的設備連接至接線正確的插座。
- 儘可能使用單手來連接或切斷信號電纜線。
- 當設備有火燒或池水的痕跡，或有結構性損害時，請勿開啓該設備的電源。
- 在安裝及架構之時，若非非常熟悉，在開啓裝置蓋子之前，請切斷電源線、電信系統、網路及數據機。
- 在安裝、移動本產品或附加裝置，或開啓其蓋子時，請依照下表中「連接」及「切斷」電纜線的步驟執行。

連接：

1. 關閉所有開關。
2. 先將所有電纜線接上裝置。
3. 將信號電纜接上接頭。
4. 再將電源線接上電源插座。
5. 開啓裝置的電源。

切斷：

1. 關閉所有開關。
2. 先自電源插座拔掉電源線。
3. 拔掉接頭上的所有信號電纜。
4. 再拔掉裝置上的所有電纜線。

聲明 2



注意：

更換鋰電池時，只可使用 IBM 零件編號 33F8354 的電池，或製造商建議之相當類型的電池。若系統中具有包含鋰電池的模組，在更換此模組時，請使用相同廠商製造的相同模組類型。如未正確使用、處理或丟棄含有鋰的電池時，可能會引發爆炸。

請勿將電池：

- 丟入或浸入水中
- 加熱超過 100 °C (212 °F)
- 修理或拆開

請遵照當地法令規章處理廢棄電池。

### 聲明 3



注意：

安裝雷射產品(如 CD-ROM、DVD 光碟機、光纖裝置或發射器)時，請注意下列事項：

- 請勿移開蓋子。移開雷射產品的蓋子，您可能會暴露於危險的雷射輻射之下。裝置中沒有需要維修的組件。
- 不依此處所指示的控制、調整或處理步驟，您可能會暴露於危險的輻射之下。



危險

有些雷射產品含有內嵌式 Class 3A 或 Class 3B 雷射二極體。請注意下列事項：

開啓時會產生雷射輻射。請勿凝視光束，不要使用光學儀器直接觀察，且應避免直接暴露在光束下。

### 聲明 4



≥ 18 公斤 (37 磅) ≥ 32 公斤 (70.5 磅) ≥ 55 公斤 (121.2 磅)

注意：

抬起裝置時，請注意安全措施。

### 聲明 5



注意：

裝置上的電源控制按鈕及電源供應器上的電源開關均無法關閉裝置上的電流。

本裝置可能有一條以上的電源線。如要移除裝置上的所有電流，請確認所有電源線已與電源分離。



聲明 10



注意：

請勿將任何重量超過 82 公斤 (180 磅) 的物品置於已安裝機架的裝置上方。



>82 公斤 (180 磅)

### Important:

Toutes les consignes Attention et Danger indiquées dans la bibliothèque *Server* sont précédées d'un numéro. Ce dernier permet de mettre en correspondance la consigne en anglais avec ses versions traduites dans la présente section.

Par exemple, si une consigne de type Attention est précédée du chiffre 1, ses traductions sont également précédées du chiffre 1 dans la présente section.

Prenez connaissance de toutes les consignes de type Attention et Danger avant de procéder aux opérations décrites par les instructions.

Notice n<sup>o</sup> 1



### DANGER

Le courant électrique passant dans les câbles de communication, ou les cordons téléphoniques et d'alimentation peut être dangereux.

Pour éviter tout risque de choc électrique:

- Ne manipulez aucun câble et n'effectuez aucune opération d'installation, d'entretien ou de reconfiguration de ce produit au cours d'un orage.
- Branchez tous les cordons d'alimentation sur un socle de prise de courant correctement câblé et mis à la terre.
- Branchez sur des socles de prise de courant correctement câblés tout équipement connecté à ce produit.
- Lorsque cela est possible, n'utilisez qu'une seule main pour connecter ou déconnecter les câbles d'interface.
- Ne mettez jamais un équipement sous tension en cas d'incendie ou d'inondation, ou en présence de dommages matériels.
- Avant de retirer les carters de l'unité, mettez celle-ci hors tension et déconnectez ses cordons d'alimentation, ainsi que les câbles qui la relient aux réseaux, aux systèmes de télécommunication et aux modems (sauf instruction contraire mentionnée dans les procédures d'installation et de configuration).
- Lorsque vous installez ou que vous déplacez le présent produit ou des périphériques qui lui sont raccordés, reportez-vous aux instructions ci-dessous pour connecter et déconnecter les différents cordons.

Connexion	Déconnexion
1. Mettez les unités hors tension.	1. Mettez les unités hors tension.
2. Commencez par brancher tous les cordons sur les unités.	2. Débranchez les cordons d'alimentation des prises.
3. Branchez les câbles d'interface sur des connecteurs.	3. Débranchez les câbles d'interface des connecteurs.
4. Branchez les cordons d'alimentation sur des prises.	4. Débranchez tous les câbles des unités.
5. Mettez les unités sous tension.	



Notice n<sup>o</sup> 2

**ATTENTION:**

Remplacez la pile au lithium usagée par une pile de référence identique exclusivement - voir la référence IBM - ou par une pile équivalente recommandée par le fabricant. Si votre système est doté d'un module contenant une pile au lithium, vous devez le remplacer uniquement par un module identique, produit par le même fabricant. La pile contient du lithium et présente donc un risque d'explosion en cas de mauvaise manipulation ou utilisation.

- Ne la jetez pas à l'eau.
- Ne l'exposez pas à une température supérieure à 100 °C.
- Ne cherchez pas à la réparer ou à la démonter.

Pour la mise au rebut, reportez-vous à la réglementation en vigueur.



Notice n<sup>o</sup> 3

**ATTENTION:**

Si des produits laser sont installés (tels que des unités de CD-ROM ou de DVD, des périphériques contenant des fibres optiques ou des émetteurs-récepteurs), prenez connaissance des informations suivantes:

- N'ouvrez pas ces produits pour éviter une exposition directe au rayon laser. Vous ne pouvez effectuer aucune opération de maintenance à l'intérieur.
- Pour éviter tout risque d'exposition au rayon laser, respectez les consignes de réglage et d'utilisation des commandes, ainsi que les procédures décrites dans le présent document.

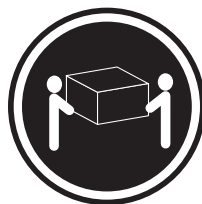


**DANGER**

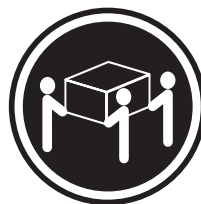
Certains produits laser contiennent une diode laser de classe 3A ou 3B. Prenez connaissance des informations suivantes:

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

Notice n<sup>o</sup> 4



≥18 kg



≥32 kg



≥55 kg

**ATTENTION:**

Faites-vous aider pour soulever ce produit.

Notice n<sup>o</sup> 5



**ATTENTION:**

**Le bouton de mise sous tension/hors tension de l'unité et l'interrupteur d'alimentation du bloc d'alimentation ne coupent pas l'arrivée de courant électrique à l'intérieur de la machine. Il se peut que votre unité dispose de plusieurs cordons d'alimentation. Pour isoler totalement l'unité du réseau électrique, débranchez tous les cordons d'alimentation des socles de prise de courant.**



Notice n<sup>o</sup> 10





**ATTENTION:**

Ne posez pas d'objet dont le poids dépasse 82 kg sur les unités montées en armoire.



## Wichtig:

Alle Sicherheitshinweise in dieser *Server-Bibliothek* beginnen mit einer Nummer. Diese Nummer verweist auf einen englischen Sicherheitshinweis mit den übersetzten Versionen dieses Hinweises in diesem Abschnitt.

Wenn z. B. ein Sicherheitshinweis mit der Nummer 1 beginnt, so erscheint die Übersetzung für diesen Sicherheitshinweis in diesem Abschnitt unter dem Hinweis 1.

Lesen Sie alle Sicherheitshinweise, bevor Sie eine Anweisung ausführen.

Hinweis 1



## VORSICHT

Elektrische Spannungen von Netz-, Telefon- und Datenübertragungsleitungen sind gefährlich.

Aus Sicherheitsgründen:

- Bei Gewitter an diesem Gerät keine Kabel anschließen oder lösen. Ferner keine Installations-, Wartungs- oder Rekonfigurationsarbeiten durchführen.
- Gerät nur an eine Schutzkontaktsteckdose mit ordnungsgemäß geerdetem Schutzkontakt anschließen.
- Alle angeschlossenen Geräte ebenfalls an Schutzkontaktsteckdosen mit ordnungsgemäß geerdetem Schutzkontakt anschließen.
- Signalkabel möglichst einhändig anschließen oder lösen.
- Keine Geräte einschalten, wenn die Gefahr einer Beschädigung durch Feuer, Wasser oder andere Einflüsse besteht.
- Die Verbindung zu den angeschlossenen Netzkabeln, Telekommunikationssystemen, Netzwerken und Modems ist vor dem Öffnen des Gehäuses zu unterbrechen. Es sei denn, dies ist in den zugehörigen Installations- und Konfigurationsprozeduren anders angegeben.
- Nur nach den nachfolgend aufgeführten Anweisungen arbeiten, die für Installation, Transport oder Öffnen von Gehäusen von Personal Computern oder angeschlossenen Einheiten gelten.

Kabel anschließen:	Kabel lösen:
<ol style="list-style-type: none"><li>1. Alle Geräte ausschalten und Netzstecker ziehen.</li><li>2. Zuerst alle Kabel an Einheiten anschließen.</li><li>3. Signalkabel an Anschlußbuchsen anschließen.</li><li>4. Netzstecker an Steckdose anschließen.</li><li>5. Gerät einschalten.</li></ol>	<ol style="list-style-type: none"><li>1. Alle Geräte ausschalten.</li><li>2. Zuerst Netzstecker von Steckdose lösen.</li><li>3. Signalkabel von Anschlußbuchsen lösen.</li><li>4. Alle Kabel von Einheiten lösen.</li></ol>

## Hinweis 2



### **ACHTUNG:**

Eine verbrauchte Batterie nur durch eine Batterie mit der IBM Teilenummer 33F8354 oder durch eine vom Hersteller empfohlene Batterie ersetzen. Wenn Ihr System ein Modul mit einer Lithium-Batterie enthält, ersetzen Sie es immer mit dem selben Modultyp vom selben Hersteller. Die Batterie enthält Lithium und kann bei unsachgemäßer Verwendung, Handhabung oder Entsorgung explodieren.

Die Batterie nicht:

- mit Wasser in Berührung bringen.
- über 100 C erhitzen.
- reparieren oder zerlegen.

Die örtlichen Bestimmungen für die Entsorgung von Sondermüll beachten.

## Hinweis 3



### **ACHTUNG:**

Wenn ein Laserprodukt (z. B. CD-ROM-Laufwerke, DVD-Laufwerke, Einheiten mit Glasfaserkabeln oder Transmitter) installiert ist, beachten Sie folgendes.

- Das Entfernen der Abdeckungen des CD-ROM-Laufwerks kann zu gefährlicher Laserstrahlung führen. Es befinden sich keine Teile innerhalb des CD-ROM-Laufwerks, die vom Benutzer gewartet werden müssen. Die Verkleidung des CD-ROM-Laufwerks nicht öffnen.
- Steuer- und Einstellelemente sowie Verfahren nur entsprechend den Anweisungen im vorliegenden Handbuch einsetzen. Andernfalls kann gefährliche Laserstrahlung auftreten.

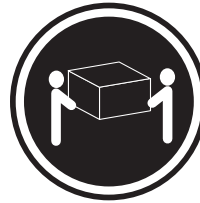


### **VORSICHT**

Manche CD-ROM-Laufwerke enthalten eine eingebaute Laserdiode der Klasse 3A oder 3B. Die nachfolgend aufgeführten Punkte beachten.

Laserstrahlung bei geöffneter Tür. Niemals direkt in den Laserstrahl sehen, nicht direkt mit optischen Instrumenten betrachten und den Strahlungsbereich meiden.

#### Hinweis 4



≥18 kg



≥32 kg



≥55 kg

#### ACHTUNG:

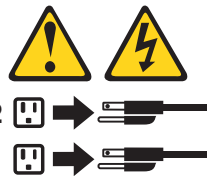
Beim Anheben der Maschine die vorgeschriebenen Sicherheitsbestimmungen beachten.

#### Hinweis 5



#### ACHTUNG:

Mit dem Betriebsspannungsschalter an der Vorderseite des Servers und dem Betriebsspannungsschalter am Netzteil wird die Stromversorgung für den Server nicht unterbrochen. Der Server könnte auch mehr als ein Netzkabel aufweisen. Um die gesamte Stromversorgung des Servers auszuschalten, muß sichergestellt werden, daß alle Netzkabel aus den Netzsteckdosen herausgezogen wurden.



#### Hinweis 10



**ACHTUNG:**



Keine Gegenstände, die mehr als 82 kg wiegen, auf Rack-Einheiten ablegen.

### Importante:

Tutti gli avvisi di attenzione e di pericolo riportati nella pubblicazione *Server Library* iniziano con un numero. Questo numero viene utilizzato per confrontare avvisi di attenzione o di pericolo in inglese con le versioni tradotte riportate in questa sezione.

Ad esempio, se un avviso di attenzione inizia con il numero 1, la relativa versione tradotta è presente in questa sezione con la stessa numerazione.

Prima di eseguire una qualsiasi istruzione, accertarsi di leggere tutti gli avvisi di attenzione e di pericolo.

Avviso 1



### PERICOLO

La corrente elettrica circolante nei cavi di alimentazione, del telefono e di segnale è pericolosa.

Per evitare il pericolo di scosse elettriche:

- Non collegare o scollegare i cavi, non effettuare l'installazione, la manutenzione o la riconfigurazione di questo prodotto durante i temporali.
- Collegare tutti i cavi di alimentazione ad una presa elettrica correttamente cablata e munita di terra di sicurezza.
- Collegare qualsiasi apparecchiatura collegata a questo prodotto ad una presa elettrica correttamente cablata e munita di terra di sicurezza.
- Quando possibile, collegare o scollegare i cavi di segnale con una sola mano.
- Non accendere qualsiasi apparecchiatura in presenza di fuoco, acqua o se sono presenti danni all'apparecchiatura stessa.
- Scollegare i cavi di alimentazione, i sistemi di telecomunicazioni, le reti e i modem prima di aprire i coperchi delle unità, se non diversamente indicato nelle procedure di installazione e configurazione.
- Collegare e scollegare i cavi come descritto nella seguente tabella quando si effettuano l'installazione, la rimozione o l'apertura dei coperchi di questo prodotto o delle unità collegate.

Per collegare:	Per scollegare:
1. SPEGNERE tutti i dispositivi.	1. SPEGNERE tutti i dispositivi.
2. Collegare prima tutti i cavi alle unità.	2. Rimuovere prima i cavi di alimentazione dalle prese elettriche.
3. Collegare i cavi di segnale ai connettori.	3. Rimuovere i cavi di segnale dai connettori.
4. Collegare i cavi di alimentazione alle prese elettriche.	4. Rimuovere tutti i cavi dalle unità.
5. ACCENDERE le unità.	

## Avviso 2



### ATTENZIONE:

Quando si sostituisce la batteria al litio, utilizzare solo una batteria IBM con numero parte 33F8354 o batterie dello stesso tipo o di tipo equivalente consigliate dal produttore. Se il sistema di cui si dispone è provvisto di un modulo contenente una batteria al litio, sostituire tale batteria solo con un tipo di modulo uguale a quello fornito dal produttore. La batteria contiene litio e può esplodere se utilizzata, maneggiata o smaltita impropriamente.

Evitare di:

- Gettarla o immergerla in acqua
- Riscaldarla ad una temperatura superiore ai 100°C
- Cercare di ripararla o smontarla

Smaltire secondo la normativa in vigore (D.Lgs 22 del 5/2/9) e successive disposizioni nazionali e locali.

## Avviso 3



### ATTENZIONE:

Quando si installano prodotti laser come, ad esempio, le unità DVD, CD-ROM, a fibre ottiche o trasmettitori, prestare attenzione a quanto segue:

- Non rimuovere i coperchi. L'apertura dei coperchi di prodotti laser può determinare l'esposizione a radiazioni laser pericolose. All'interno delle unità non vi sono parti su cui effettuare l'assistenza tecnica.
- L'utilizzo di controlli, regolazioni o l'esecuzione di procedure non descritti nel presente manuale possono provocare l'esposizione a radiazioni pericolose.

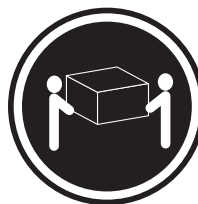


### PERICOLO

Alcuni prodotti laser contengono all'interno un diodo laser di Classe 3A o Classe 3B. Prestare attenzione a quanto segue:

Aperto l'unità vengono emesse radiazioni laser. Non fissare il fascio, non guardarlo direttamente con strumenti ottici ed evitare l'esposizione diretta al fascio.

Avviso 4



≥18 kg



≥32 kg



≥55 kg

**ATTENZIONE:**

Durante il sollevamento della macchina seguire delle norme di sicurezza.

Avviso 5



**ATTENZIONE:**

Il pulsante del controllo dell'alimentazione situato sull'unità e l'interruttore di alimentazione posto sull'alimentatore non disattiva la corrente elettrica fornita all'unità. L'unità potrebbe disporre di più di un cavo di alimentazione. Per disattivare la corrente elettrica dall'unità, accertarsi che tutti i cavi di alimentazione siano scollegati dalla sorgente di alimentazione.



Avviso 10



**ATTENZIONE:**



Non poggiare oggetti che pesano più di 82 kg sulla parte superiore delle unità montate in rack.



## 경고문 1



위험

전원, 전화 및 통신 케이블로부터 흘러 나오는 전류는 위험합니다.

전기 충격을 피하려면:

- 노우를 동반할 때는 케이블의 연결이나 철수, 이 제품의 설치, 유지보수 또는 재구성을 하지 마십시오.
- 모든 전원 코드를 적절히 배선 및 접지해야 합니다.
- 이 제품에 연결될 모든 장비를 적절하게 배선된 콘센트에 연결하십시오.
- 가능한 한 신호 케이블을 한 손으로 연결하거나 끊으십시오.
- 화재, 수해 또는 구조상의 손상이 있을 경우 장비를 켜지 마십시오.
- 설치 및 구성 프로시저에 다른 설명이 없는 한, 장치 덮개를 열기 전에 연결된 전원 코드, 원거리 통신 시스템, 네트워크 및 모뎀을 끊어 주십시오.
- 제품 또는 접속된 장치를 설치, 이동 및 덮개를 열 때 다음 설명에 따라 케이블을 연결하거나 끊도록 하십시오.

연결하려면:

1. 모든 스위치를 끕니다.
2. 먼저 모든 케이블을 장치에 연결합니다.
3. 신호 케이블을 커넥터에 연결합니다.
4. 콘센트에 전원 코드를 연결합니다.
5. 장치 스위치를 켭니다.

연결을 끊으려면:

1. 모든 스위치를 끕니다.
2. 먼저 콘센트에서 전원 코드를 뽑습니다.
3. 신호 케이블을 커넥터에서 제거합니다.
4. 장치에서 모든 케이블을 제거합니다.

## 경고문 2



주의:

리튬 배터리를 교체할 때는 IBM 부품 번호 33F8354 또는 제조업체에서 권장하는 동등한 유형의 배터리를 사용하십시오. 시스템에 리튬 배터리를 갖고 있는 모듈이 있으면 동일한 제조업체에서 생산된 동일한 모듈 유형으로 교체하십시오. 배터리에 리튬이 있을 경우 제대로 사용, 처리 또는 처분하지 않으면 폭발할 수 있습니다.

다음은 주의하십시오.

- 던지거나 물에 담그지 않도록 하십시오.
- 100°C(212°F) 이상으로 가열하지 마십시오.
- 수리하거나 분해하지 마십시오.

지역 법령이나 규정의 요구에 따라 배터리를 처분하십시오.

경고문 3



주의:

레이저 제품(CD-ROMs, DVD 드라이브, 광 장치 또는 트랜스미터 등과 같은)이 설치되어 있을 경우 다음을 유의하십시오.

- 덮개를 제거하지 마십시오. 레이저 제품의 덮개를 제거했을 경우 위험한 레이저 광선에 노출될 수 있습니다. 이 장치 안에는 서비스를 받을 수 있는 부품이 없습니다.

- 여기에서 지정하지 않은 방식의 제어, 조절 또는 실행으로 인해 위험한 레이저 광선에 노출될 수 있습니다.



위험

일부 레이저 제품에는 클래스 3A 또는 클래스 3B 레이저 다이오드가 들어 있습니다. 다음을 주의하십시오.

열면 레이저 광선에 노출됩니다. 광선을 주시하거나 광학 기계를 직접 쳐다보지 않도록 하고 광선에 노출되지 않도록 하십시오.

경고문 4



≥ 18 kg (37 lbs)



≥ 32 kg (70.5 lbs)



≥ 55 kg (121.2 lbs)

주의:

기계를 들 때는 안전하게 들어 올리십시오.

경고문 5



주의:

장치의 전원 제어 버튼 및 전원 공급기의 전원 스위치는 장치에 공급되는 전류를 차단하지 않습니다. 장치에 둘 이상의 전원 코드가 연결되어 있을 수도 있습니다. 장치에서 모든 전류를 차단하려면 모든 전원 코드가 전원으로부터 차단되어 있는지 확인하십시오.



경고문 10



주의:

서랍형 모델의 장치 상단에 82 kg(180 lbs.)이 넘는 물체를 올려 놓지 마십시오.



> 82 kg (180 lbs)

### Importante:

Todas las declaraciones de precaución de esta *Biblioteca del servidor* empiezan con un número. Dicho número se emplea para establecer una referencia cruzada de una declaración de precaución o peligro en inglés con las versiones traducidas que de dichas declaraciones pueden encontrarse en esta sección.

Por ejemplo, si una declaración de peligro empieza con el número 1, las traducciones de esta declaración de precaución aparecen en esta sección bajo Declaración 1.

Lea atentamente todas las declaraciones de precaución y peligro antes de llevar a cabo cualquier operación.

#### Declaración 1



### PELIGRO

La corriente eléctrica de los cables telefónicos, de alimentación y de comunicaciones es perjudicial.

Para evitar una descarga eléctrica:

- No conecte ni desconecte ningún cable ni realice las operaciones de instalación, mantenimiento o reconfiguración de este producto durante una tormenta.
- Conecte cada cable de alimentación a una toma de alimentación eléctrica con conexión a tierra y cableado correctos.
- Conecte a tomas de alimentación con un cableado correcto cualquier equipo que vaya a estar conectado a este producto.
- Si es posible, utilice una sola mano cuando conecte o desconecte los cables de sent.al.
- No encienda nunca un equipo cuando haya riesgos de incendio, de inundación o de daños estructurales.
- Desconecte los cables de alimentación, sistemas de telecomunicaciones, redes y módems conectados antes de abrir las cubiertas del dispositivo a menos que se indique lo contrario en los procedimientos de instalación y configuración.
- Conecte y desconecte los cables tal como se describe en la tabla siguiente cuando desee realizar una operación de instalación, de traslado o de apertura de las cubiertas para este producto o para los dispositivos conectados.

Para la conexión	Para la desconexión
<ol style="list-style-type: none"><li>1. APÁGUELO todo.</li><li>2. En primer lugar, conecte los cables a los dispositivos.</li><li>3. Conecte los cables de señal a los conectores.</li><li>4. Conecte cada cable de alimentación a la toma de alimentación.</li><li>5. ENCIENDA el dispositivo.</li></ol>	<ol style="list-style-type: none"><li>1. APÁGUELO todo.</li><li>2. En primer lugar, retire cada cable de alimentación de la toma de alimentación.</li><li>3. Retire los cables de señal de los conectores.</li><li>4. Retire los cables de los dispositivos.</li></ol>

## Declaración 2



### PRECAUCIÓN:

Cuando desee sustituir la batería de litio, utilice únicamente el número de pieza 33F8354 de IBM o cualquier tipo de batería equivalente que recomiende el fabricante. Si el sistema tiene un módulo que contiene una batería de litio, sustitúyalo únicamente por el mismo tipo de módulo, que ha de estar creado por el mismo fabricante. La batería contiene litio y puede explotar si el usuario no la utiliza ni la maneja de forma adecuada o si no se desprende de la misma como corresponde.

No realice las acciones siguientes:

- Arrojarla al agua o sumergirla
- Calentarla a una temperatura que supere los 100°C (212°F)
- Repararla o desmontarla

Despréndase de la batería siguiendo los requisitos que exija el reglamento o la legislación local.

## Declaración 3



### PRECAUCIÓN:

Cuando instale productos láser (como, por ejemplo, CD-ROM, unidades DVD, dispositivos de fibra óptica o transmisores), tenga en cuenta las advertencias siguientes:

- No retire las cubiertas. Si retira las cubiertas del producto láser, puede quedar expuesto a radiación láser perjudicial. Dentro del dispositivo no existe ninguna pieza que requiera mantenimiento.
- El uso de controles o ajustes o la realización de procedimientos que no sean los que se han especificado aquí pueden dar como resultado una exposición perjudicial a las radiaciones.

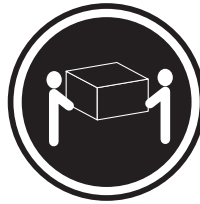


### PELIGRO

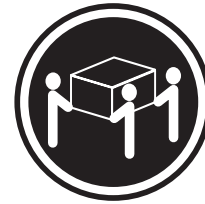
Algunos productos láser contienen un diodo de láser incorporado de Clase 3A o de Clase 3B. Tenga en cuenta la advertencia siguiente.

Cuando se abre, hay radiación láser. No mire fijamente el rayo ni lleve a cabo ningún examen directamente con instrumentos ópticos; evite la exposición directa al rayo.

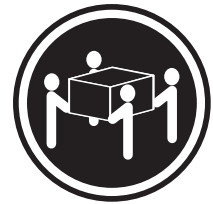
#### Declaración 4



≥18 kg (37 libras)



≥32 kg (70,5 libras)



≥55 kg (121,2 libras)

#### PRECAUCIÓN:

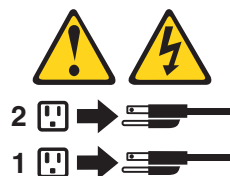
Tome medidas de seguridad al levantar el producto.

#### Declaración 5



#### PRECAUCIÓN:

El botón de control de alimentación del dispositivo y el interruptor de alimentación de la fuente de alimentación no apagan la corriente eléctrica suministrada al dispositivo. Es posible también que el dispositivo tenga más de un cable de alimentación. Para eliminar la corriente eléctrica del dispositivo, asegúrese de desconectar todos los cables de alimentación de la fuente de alimentación.



Declaración 10



**PRECAUCIÓN:**



No coloque ningún objeto que pese más de 82 kg (180 libras) encima de los dispositivos montados en bastidor.

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## Send us your comments!

We want to know your opinion about this manual (part number 06P8515). Your input will help us to improve our publications.

Please photocopy this survey, complete it, and then fax it to **IBM HMM Survey at 919-543-8167 (USA)**.

Name: \_\_\_\_\_

Phone number: \_\_\_\_\_

1. Do you like this manual?

Yes  No

\_\_\_\_\_

2. What would you like to see added, changed, or deleted in this manual?

\_\_\_\_\_

3. What is your service experience level?

Less than five years

More than five years

4. Which servers do you service most?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Thank you for your response!**



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## Problem determination tips

Due to the variety of hardware and software combinations that can be encountered, use the following information to assist you in problem determination. If possible, have this information available when requesting assistance from Service Support and Engineering functions.

- Machine type and model
- Processor or hard disk upgrades
- Failure symptom
  - Do diagnostics fail?
  - What, when, where, single, or multiple systems?
  - Is the failure repeatable?
  - Has this configuration ever worked?
  - If it has been working, what changes were made prior to it failing?
  - Is this the original reported failure?
- Reference/Diagnostics version
  - Type and version level
- Hardware configuration
  - Print (print screen) configuration currently in use
  - BIOS level
- Operating system software
  - Type and version level

**Note:** To eliminate confusion, identical systems are considered identical only if they:

1. Are the exact machine type and models
2. Have the same BIOS level
3. Have the same adapters/attachments in the same locations
4. Have the same address jumpers/terminators/cabling
5. Have the same software versions and levels
6. Have the same Reference/Diagnostics Diskette (version)
7. Have the same configuration options set in the system
8. Have the same setup for the operation system control files

Comparing the configuration and software set-up between "working and non-working" systems will often lead to problem resolution.

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