

Using Your IntelliStation Z Pro

Professional Workstation

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Note

Before using this information and the product it supports, be sure to read the general information under Appendix B, "Product Warranties, License Information, and Notices" on page 111.

First Edition (February 1997)

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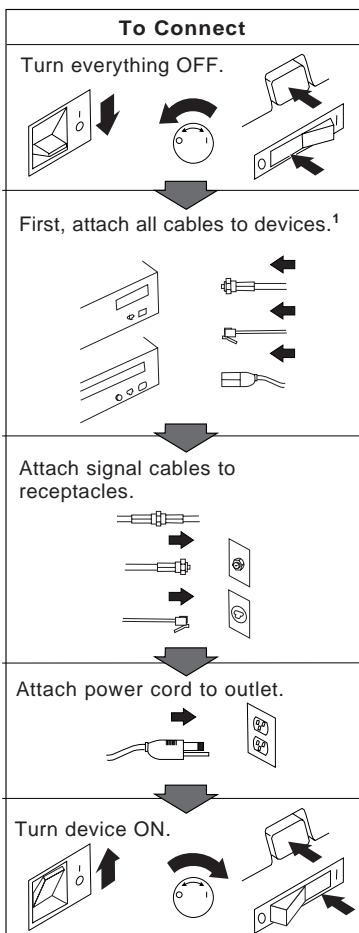
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Safety Information

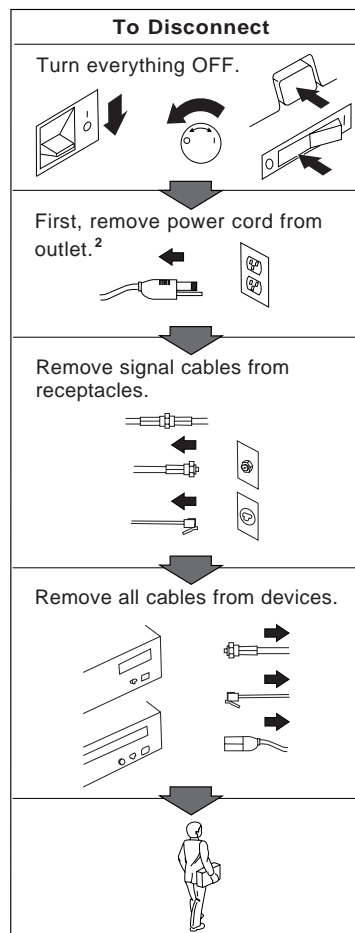


DANGER:

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



¹ In the U.K., by law, the telephone cable must be connected after the power cord.



² In the U.K., by law, the power cord must be disconnected after the telephone line cable.

Laser Compliance Statement

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

When a CD-ROM drive is installed, note the following.

CAUTION:

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

Opening the CD-ROM drive could result in exposure to hazardous laser radiation. There are no serviceable parts inside the CD-ROM drive. **Do not open.**

Some CD-ROM drives contain an embedded Class 3A or Class 3B laser diode. Note the following.

DANGER

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

Lithium Battery Notice

CAUTION:

Danger of explosion if battery is incorrectly replaced.

When replacing the battery, use only IBM Part Number 33F8354 or an equivalent type battery recommended by the 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.

ATTENTION

Danger d'explosion en cas de remplacement incorrect de la batterie.

Remplacer uniquement par une batterie IBM de type 33F8354 ou d'un type équivalent recommandé par le fabricant. La batterie contient du lithium et peut exploser en cas de mauvaise utilisation, de mauvaise manipulation ou de mise au rebut inappropriée.

Ne pas :

- **Lancer ou plonger dans l'eau**
- **Chauffer à plus de 100°C (212°F)**
- **Réparer ou désassembler**

Mettre au rebut les batteries usagées conformément aux règlements locaux.

About This Book

This book will help you become familiar with your IBM IntelliStation and its many features. It describes how to configure, operate, and maintain your computer. In the unlikely event you experience problems, you will also find helpful troubleshooting information, as well as instructions for obtaining service in this book.

The book is organized as follows:

- Chapter 1, "Your IBM IntelliStation," contains an overview of the features of your computer.
- Chapter 2, "Arranging Your Workspace," contains information about setting up your work area to optimize use of your computer. Safety considerations are also discussed.
- Chapter 3, "Operating Your Computer," contains instructions for using your computer, including startup and shutdown procedures.
- Chapter 4, "Using the Configuration/Setup Utility Program," contains instructions for starting and using the Configuration/Setup Utility program.
- Chapter 5, "Taking Care of Your Computer," contains information about the proper handling and care of your computer.
- Chapter 6, "Solving Problems," contains information that will help you identify and correct problems that might arise as you use your computer.
- Chapter 7, "Getting Help, Service, and Information," contains a description of the wide variety of resources available from IBM to assist you in the use of your computer. This chapter also describes how to obtain additional information about IBM products.
- Appendix A, "Computer Records," contains forms for recording information about your computer, which can be helpful if you decide to install any additional options, or if you ever need to have your computer serviced.
- Appendix B, "Product Warranties, License Information, and Notices," contains a copy of the warranty and license agreement for your computer, legal notices, and trademark information.

Related Information

The following publications, together with this book, contain information about your computer.

- *Setting Up Your IntelliStation Z Pro*
This publication contains instructions to help you set up your computer.
- *Installing Options in Your IntelliStation Z Pro*
This publication contains instructions for adding memory, adapters, drives, and other options to your computer.
- *Understanding Your IntelliStation Z Pro*
This online publication (provided only with computers that have IBM-preinstalled software) includes general information about using personal computers and in-depth information about the specific features of your computer. To purchase a printed copy of this publication, refer to "Ordering Publications" in Chapter 7.
- *About Your Software*
This publication (provided only with computers that have IBM-preinstalled software) contains information about the preinstalled software package.
- Intergraph Intense 3D Graphics Adapter *README file*
This file on the *Ready-to-Configure CD* contains instructions for installing device drivers for the *Intergraph Intense 3D Graphics Adapter* installed in some models.
- Matrox MGA Millennium Graphics Adapter *README file*
This file on the *Ready-to-Configure CD* contains instructions for installing device drivers for the *Matrox MGA Millennium Graphics Adapter* installed in some models. This file also includes technical data and troubleshooting information for video related problems.
- IBM Audio Feature *README file*
This file on the *Ready-to-Configure CD* contains instructions for installing device drivers for the *IBM Audio Feature*.
- Ethernet Adapter *README file*
This file on the *Ready-to-Configure CD* contains instructions for installing device drivers for the *Intel EtherExpress Pro/100 Adapter w/ Wake on LAN™*.
- *Adaptec SCSI Documentation*
This documentation, which is provided with computers that have an IBM-preinstalled SCSI adapter, includes information on configuring the adapter and instructions for installing and configuring SCSI devices.

- *Your Ready-to-Configure CD*

This publication contains information about the *Ready-to-Configure CD* that comes with your computer. The publication also contains instructions for starting the CD.

The following publications contain more information about your computer. Both publications can be found on the World Wide Web at <http://www.pc.ibm.com/cdt> or can be ordered from IBM. To purchase a copy, refer to "Ordering Publications" in Chapter 7.

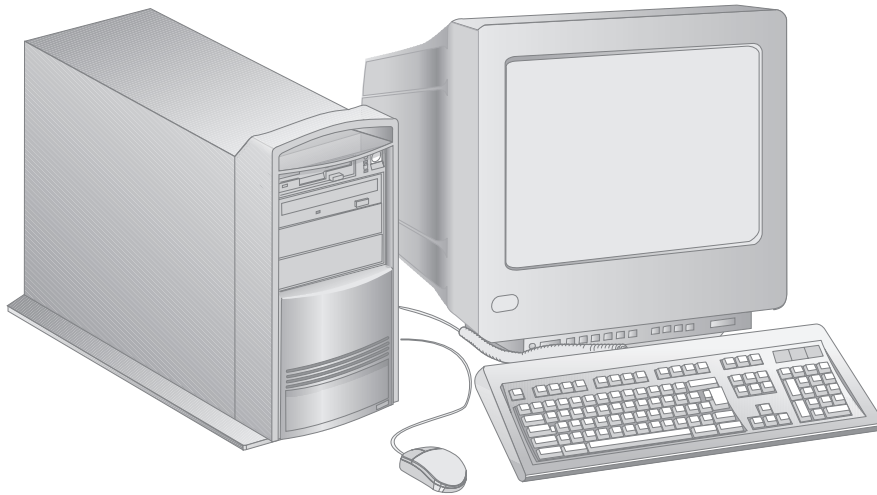
- *Hardware Maintenance Manual*

This separately purchased publication contains information for trained service technicians.

- *Technical Information Manual*

This separately purchased publication contains information for individuals who want to know more about the technical aspects of their computer.

Chapter 1. Your IBM IntelliStation



Thank you for selecting an IBM IntelliStation. Your computer incorporates many of the latest advances in computer technology and is easy to expand and upgrade as your needs change.

What Your IBM Computer Offers

This section describes many of the features of your computer.

Support for Pentium Pro Microprocessors

At the core of your computer is an Intel Pentium Pro microprocessor. With its advanced performance features, this microprocessor supplies the speed and power you need to take advantage of even the most complex programs.

Your computer supports *dual microprocessors*, which means that you can upgrade processor performance by adding a second microprocessor to the system board. When you add a second microprocessor, the internal and external speeds of the second microprocessor must be as fast or faster than those of the primary microprocessor.

Note: To determine the speed of your microprocessor, see “Viewing the System Summary” on page 42.

ISA Bus

Your computer has an ISA (industry standard architecture) bus, which is one of the most widely used and successful I/O (input/output) buses available. The ISA bus is popular because so many adapters and devices have been designed and marketed for it.

PCI Bus

Your computer also has a PCI (peripheral component interconnect) bus. PCI is one of the advanced I/O bus standards recently developed by the computer industry to keep up with performance improvements of processor buses and advanced peripheral devices. The PCI bus adds to the capability of the ISA bus, speeding up the exchange of information among the microprocessor and peripheral devices within your computer system. This improves the overall performance of your computer, including the monitor and the hard disk drives.

Expansion with Adapters

Your computer has an ISA/PCI riser card for installing optional adapters. By installing adapters, you can expand the capabilities of your computer and take advantage of a variety of peripheral devices and applications.

High-Capacity Hard Disk Drives

Your computer has a hard disk drive with a type of interface referred to as SCSI (small computer system interface). It has a SCSI adapter installed in one of the expansion slots. The SCSI adapter has one external 68-pin, 16-bit connector; one internal 50-pin, 8-bit internal connector; and one internal 68-pin, 16-bit connector. With this adapter, you can connect up to 15 peripheral devices to your computer. (However, the number of internal SCSI devices you can install is limited by the number of available drive bays in your computer.)

Your computer also has an EIDE (enhanced integrated drive electronics) bus master interface to transmit data to and from a hard disk drive. EIDE drives have a controller built into the drive (as opposed to a drive with a separate controller). The single-unit drive and controller plugs into one of the two EIDE connectors located on the system board of your computer. You can connect an additional IDE or EIDE device to the ribbon cable already attached to the system board. You can also purchase another cable and connect two more hard disk drives or other IDE or EIDE devices to the second connector on the system board.

CD-ROM Drive

A *16X Max* CD-ROM drive is installed in some models. CD-ROM (compact disc read-only memory) technology offers quick access to enormous amounts of information. A compact disc can store more than 650 MB of data, such as the large files needed for audio, still and full-motion video, and still and animated graphics. A CD-ROM drive can play back or read from a CD, but it cannot write information on it.

ECP/EPP Parallel Port

Your computer has one 25-pin parallel port. The parallel port is most often used to communicate with a parallel printer, but it can also be used with other parallel devices.

The parallel port can operate in several different modes. The default mode for your computer is SPP (standard parallel port). However, your computer also supports the ECP/EPP (extended capabilities port/enhanced parallel port) mode. ECP/EPP has two advantages over SPP. When your computer is in ECP/EPP mode, you can print documents faster than when the computer is in SPP mode, and you can attach devices other than printers, such as communication and storage devices, to the parallel port. You can set modes of operation for the parallel port using the Configuration/Setup Utility program.

Audio Feature Ports

Your computer comes with three audio ports that are compatible with the Microsoft Windows Sound System, SoundBlaster, and SoundBlaster Pro. These ports provide you with the ability to playback and capture sound and music as well as the ability to enjoy sound with multimedia applications.

The ports are labeled:

- Mic In** Connection for a microphone
- Line In** Connection for an external sound source such as a CD player
- Line Out** Connection for stereo headphones or powered speakers. Your audio system requires a set of speakers connected to the line output in order to hear audio. These speakers must be powered (with a built-in amplifier). In general, any powered speakers designed for use with personal computers can be used with your audio feature. These speakers are available with a wide range of features and power output.

Your computer also has an internal speaker and provisions on the system board for connecting to the CD-ROM.

Serial Ports

Your computer has two standard 9-pin, 16550-UART serial ports (1 and 2) that can be used to communicate with devices such as modems, plotters, and printers. Serial port 2 and the infrared port share the same system resources. Therefore, you can use only one or the other but not both at the same time. See “Configuring Your Computer” on page 37 for more information.

Universal Serial Bus Port

The Universal Serial Bus (USB) interface is based on a new, emerging technology being developed to add more diversity and capabilities to computers. IBM has provided one 4-pin USB connector on your computer as a standard feature so you can be ready to take advantage of new USB devices as they become available.

Using this new technology, you will be able to plug many different types USB-compatible devices into the USB port on your computer. Because USB incorporates Plug and Play technology, you can install and remove devices without turning off your computer. Once installed, the devices configure automatically. In addition, an option called a *hub* enables you to plug in more than one device at a time. A hub converts a single USB connector into multiple ports where USB devices

can be attached. Note that your computer does not support a keyboard or mouse attached to the USB port.

Watch the USB web site at <http://www.teleport.com/~USB> for further developments.

Infrared Port

With infrared technology, wireless communication is possible between infrared-enabled devices. Your computer has one infrared port to which you can connect an optional infrared-transceiver module. Refer to the documentation that comes with your operating system for information about the software required for infrared communication. The infrared port, transceiver module, and software enable your computer to transfer data to and from other infrared-capable devices, such as portable computers and printers. Serial port 2 and the infrared port share the same system resources. Therefore, you can use only one or the other but not both at the same time. See “Configuring Your Computer” on page 37 for more information.

Network Features

Your computer comes Ethernet network-ready with a preinstalled *Intel EtherExpress Pro/100 Adapter w/ Wake on LAN™*. It has an 8-bit RJ-45 unshielded twisted pair (UTP) connector which provides for a high-performance LAN connection.

System Management Features

Your computer has features that make it possible for a network administrator or file server to manage and control it remotely over a network. These features are:

- WOL (Wake on LAN)
- RPL (Remote Program Load) or DHCP (Dynamic Host Configuration Protocol)
- Flash over LAN (Update POST/BIOS over network)
- DMI (Desktop Management Interface) BIOS and DMI software
- Thermal sensing

For more information on these features, refer to “Using System Management Features” on page 24 and “Network Settings” on page 52.

Wake on LAN: If you have remote network management software, you can use the IBM-developed Wake on LAN feature. For this feature to function correctly, you must enable the Wake on LAN setting in the Configuration/Setup Utility program.

You can use the Wake on LAN function to turn on any or all of the networked computers so that your remote network management software can perform the tasks it has been programmed to do. For instance, when Wake on LAN is used with IBM's remote network management software, TME 10 NetFinity Version 4 (or later), you can perform functions such as asset tracking and software and device driver updates on remote computers after hours and on weekends. Wake on LAN and NetFinity work together to turn on the networked computers and make the appropriate updates.

RPL (Remote Program Load) and DHCP (Dynamic Host Configuration):

RPL and DHCP are features that are built into the *Intel EtherExpress Pro/100 Adapter w/ Wake on LAN™*. The RPL feature enables your computer to boot directly from a server on your LAN that has been configured for RPL. The DHCP feature makes it possible for a DHCP server on your intranet¹ to assign an IP (internet protocol) address to your computer so that a boot image can be loaded from the server. The DHCP server must be one that supports BOOTP (Boot Protocol) on your intranet using software such as the Intel LAN Desk Configuration Manager. Your computer requires network management software, such as the LANClient Control Manager in order to take advantage of the RPL and DHCP features built into the *Intel EtherExpress Pro/100 Adapter w/ Wake on LAN™*.

Flash over LAN (Update POST/BIOS over network): This feature enables your computer's POST/BIOS to be updated remotely by a network administrator. Network management software, such as the LANClient Control Manager, is required in order to take advantage of the Flash over LAN feature.

DMI (Desktop Management Interface) BIOS and DMI software: DMI is a mechanism for gathering information about the hardware and software in your computer to enable a network administrator to remotely monitor and control it in a network environment. See your operating system documentation for information about using DMI.

Thermal sensing: Your computer has a built-in thermal sensor that monitors the temperature of the processor. This sensor, used in conjunction with system management software, enables a network administrator to monitor the internal temperature of the computer and take appropriate action if it becomes too high. For

¹ An intranet is a network within an organization that provides services similar to those provided by the internet, but is not necessarily connected to the internet. In many cases, an intranet consists of one or more World Wide Web servers linked to an internal network for distribution of information within an organization.

example, if the computer fan stops, causing the internal temperature to rise, the computer could be shut down before internal components are damaged.

IBM-Preinstalled Software

IBM-preinstalled software is provided with some computer models. This software, installed by IBM during manufacture of the computer, includes an operating system, device drivers to support built-in features, and other support programs. Detailed information about this software is included in *About Your Software*, which is included with the preinstallation package.

Operating System Support

Your computer is designed to use a variety of operating systems in order to meet your particular needs. See page 16 for a list of operating systems that you can use with your computer.

Ease-of-Use Features

Your computer has many features that make it easy to work with, including Plug and Play technology and easy-to-use diagnostic programs.

Support for Plug and Play technology is built into the system board of your computer. This feature makes adding options easier. When you add an adapter that is Plug and Play compatible, the adapter is configured automatically. In most cases, no switches or jumpers have to be set on the adapter.

If you have a problem with your computer, IBM provides an easy-to-use diagnostic program (QAPLus/PRO) that you can run to help determine if a hardware component is causing the problem. QAPLus/PRO and other operating system-specific diagnostic programs are included on the *Ready-to-Configure CD* that comes with your computer.

Ergonomic Features

Your computer has ergonomic features which make it more comfortable to use. The power switch and indicator lights are located on the front panel for easy access and visibility. Also, you can easily change monitor settings to reduce or eliminate flicker and jitter, and you can adjust the angle of the keyboard to make typing more comfortable.

Advanced Power Management

Energy conservation is an important concern. Your computer has Advanced Power Management (APM) features that allow you to set different levels of energy conservation for specific components of your computer. You can view and change APM settings using the Configuration/Setup Utility program.

Security Features

Your computer has security features that protect both hardware and software. For example, you can set power-on and administrator passwords to deter unauthorized persons from gaining access to your software. A cover lock helps prevent others from tampering with the hardware components inside your computer. An optional U-bolt is available that enables you to secure your computer with a cable. Also, you can select a secure startup sequence so that only certain drives are available for use, and you can prevent the diskette drive from writing to diskettes.

IBM is committed to the future improvement of security with such features as serializing high cost components (system boards, processors, hard files and memory modules) and the registration of systems and components to aid in the tracking capability. As other viable security options become available in the future, they will also be implemented.

Important

For the latest information on IBM IntelliStation security features, refer to the following Internet Home Page:

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

Service and Support

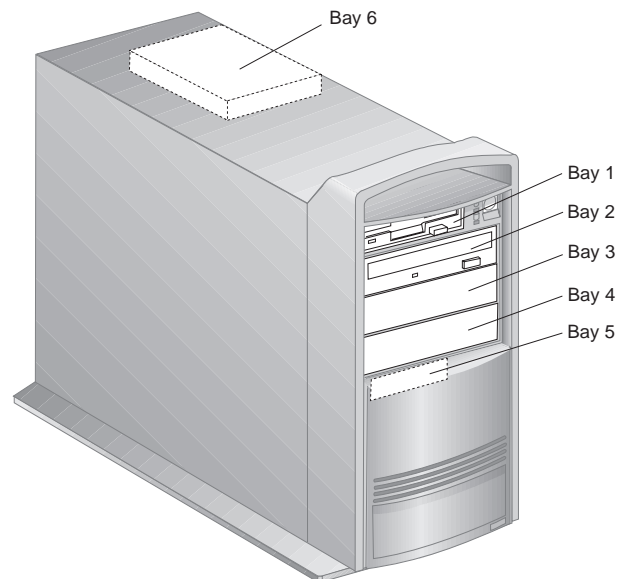
You can obtain assistance for using your computer, as well as service, from a number of sources. Help is available by phone, fax, and modem. For detailed information, see Chapter 7, "Getting Help, Service, and Information" on page 99.

Expandability

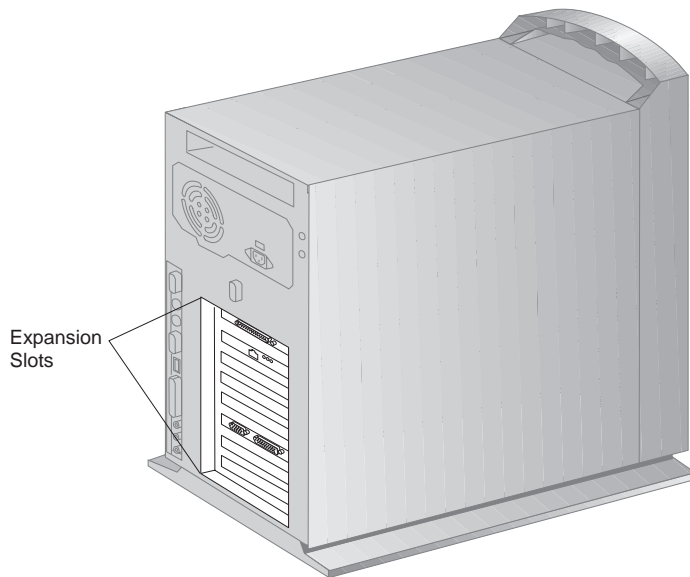
You can easily expand the capabilities of your computer by adding memory, drives, adapters, or an additional microprocessor.

Drive Bays: Your computer has six drive bays. Several of these bays are unoccupied and can be used for installing additional devices such as hard disk, diskette, tape, and CD-ROM drives.

The following illustration shows the bay locations. Bay 1 has a diskette drive, bay 2 has a CD-ROM drive, and bay 6 has a SCSI hard disk drive.



Expansion Slots: Your computer has seven expansion slots. Unoccupied slots can be used for installing additional adapters. The following illustration shows the locations of the expansion slots.



Connectivity

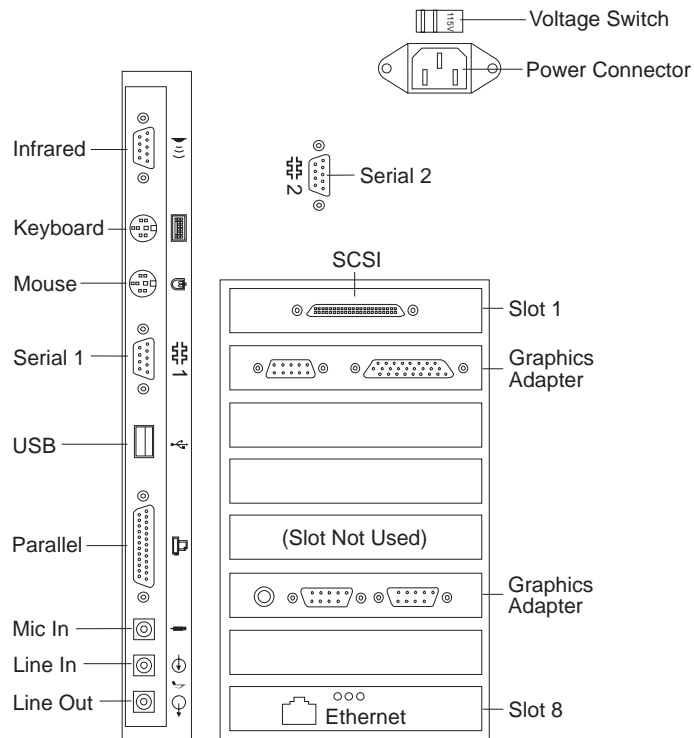
The following illustration shows the location of the external connectors. Note that there is a graphics adapter installed in either slot 2 or slot 6 that provides a 15-pin monitor connector. All models also have an *Adaptec SCSI Adapter* installed in slot 1 (the top expansion slot) and an *Intel EtherExpress Pro/100 Adapter w/ Wake on LAN™* installed in slot 8.

The *Adaptec SCSI* adapter has one external 16-bit connector and two internal connectors (one 8-bit and one 16-bit) to which you can attach SCSI devices.

The *Intel EtherExpress Pro/100 Adapter w/ Wake on LAN™* has an 8-conductor RJ-45 unshielded twisted pair (UTP) connector which provides for a high-performance Ethernet LAN connection.

The *Matrox MGA Millennium Graphics Adapter* has two external connectors. The connector on the left is the monitor connector. The connector on the right is a multimedia upgrade connector (video feature connector). By attaching an optional Media/XL kit to this connector, you can capture video from an external source, such as a VCR. Media/XL kits can be purchased from Matrox Electronic Systems, Ltd.

The *Intergraph Intense 3D Graphics Adapter* has three external connectors. The round connector on the left is the display output connector. The blue connector in the middle is the monitor connector. The black connector on the right is a VGA input connector. The Intense 3D has VGA capability built in but you can override this by installing a separate VGA display adapter and cabling its output to the Intense 3D VGA input connector.



Note: Depending on the model, your computer has a graphics adapter installed in either slot 2 or slot 6.

Features at a Glance

The following information covers a variety of models. For a listing of features for your specific model, refer to the System Summary screen in the Configuration/Setup Utility program. For instructions on gaining access to the Configuration/Setup Utility program and the System Summary screen, refer to “Viewing the System Summary” on page 42.

Microprocessor

- Intel Pentium Pro

Memory

- Maximum addressable: 512 MB
- Installed: ECC (error correcting code) 60 ns unbuffered DIMMs
- Supported: EDO nonparity or error correcting code, 60 ns or faster, unbuffered DIMMs
- Four 168-pin DIMM sockets, 3.3 V dc
- Flash memory for system programs

Level 2 Cache

- 256 KB or 512 KB (embedded)

Diskette Drives

- Standard: One 3.5-inch, 1.44 MB
- Maximum: Three
- Options:
 - 5.25-inch, 1.2 MB drive
 - 3.5-inch, 1.44 MB drive

Internal Hard Disk Drives

- One SCSI
- Enhanced PCI IDE bus master or SCSI interface
- Maximum IDE and EIDE devices: Four total
- Maximum SCSI devices: 15 total (8-bit and 16-bit internal devices); however, the number of internal devices that can be installed is limited by the number of available drive bays in your computer and their power and cooling requirements.

CD-ROM Drive

- One 16X Max IDE CD-ROM drive

Input/Output Features

- One 25-pin, ECP/EPP parallel port
- Audio ports
- Two 9-pin, 16550 UART serial ports (1 and 2)
- One infrared port

Note: Since Serial port 2 and the infrared port share the same system resources, only one or the other can be configured and used at the same time.

- One 4-pin, USB port
- Mouse port
- Keyboard port
- One 15-pin monitor connector, one 15-pin VGA input connector, and a 5-pin stereoscopic display connector located on the *Intergraph Intense 3D Graphics Adapter* (standard in some models)
- One 15-pin, monitor port and one 26-pin, multimedia upgrade port (video feature port) located on the *Matrox MGA Millennium Graphics Adapter* (standard in some models)

Video

Your computer comes preinstalled with one of the following graphics adapters:

- *Intergraph Intense 3D Graphics Adapter* with 16 MB of SDRAM² and 4 MB of SGRAM²
- *Matrox MGA Millennium Graphics Adapter* with 4 MB of WRAM²

Communications Features

- *Intel EtherExpress Pro/100 Adapter w/ Wake on LAN™*

Expansion

- Six drive bays
- Seven expansion slots
 - Four PCI
 - Two ISA
 - One shared PCI/ISA
- PCI/ISA Plug and Play adapter support

² SDRAM (synchronous dynamic random-access memory), SGRAM (synchronous graphics random-access memory) and WRAM (window random-access memory) are types of DRAM (dynamic random-access memory) that are located on a video adapter and are used for storing data to be processed by the video adapter.

- Support for up to 15 SCSI devices (seven 8-bit internal and eight 16-bit internal or external devices, or fifteen 16-bit internal and external SCSI devices). The number of internal devices is limited by the number of drive bays available.
- Dual-processor support

Power

- 200 W, 115/230 V ac, 50/60 Hz
- Built-in overload and surge protection
- Advanced Power Management
- Wake on LAN support

Security

- Power-on and administrator passwords
- Lockable cover
- U-bolt
- Startup sequence control
- Startup without diskette drive, keyboard, or mouse
- Unattended start mode
- Diskette and hard disk I/O control
- Serial and parallel port I/O control
- Software-readable hardware IDs

System Management

- Wake on LAN
- Wake up on ring
- Wake up on alarm
- Flash over LAN
- RPL and DHCP
- DMI
- Thermal sensing

IBM-Preinstalled Software

Your computer has Microsoft Windows NT Version 4.0 Workstation preinstalled. Included also are device drivers to support built-in features and other support programs. See *About Your Software* for a detailed description of the preinstallation package.

Operating Systems (Compatible)³

- IBM OS/2 Warp 3 and 4
- IBM PC DOS Versions 6.3 and 7.0
- Microsoft Windows Version 3.11
- Microsoft Windows for Workgroups Version 3.11
- Microsoft Windows 95
- Microsoft Windows NT Version 3.51
- Microsoft Windows NT Version 4.0
- Microsoft DOS Version 6.22
- Novell NetWare Versions 3.12 and 4.10
- IBM OS/2 SMP Version 2.11 (dual processing)
- IBM OS/2 WARP SERVER SMP Version 4
- Novell NetWare SMP Version 4.10 (dual processing)

System Specifications

Size

- Depth: 435 mm (17.13 in.)
- Width: 190 mm (7.48 in.)
- Height: 435 mm (17.13 in.)

Weight

- Maximum (configuration as shipped): 62.7 kg (28.5 lb)

Environment

- Air temperature:
 - System on: 10° to 35°C (50° to 95°F) at altitude 0-915m (3000ft)
10° to 32°C (50° to 90°F) at altitude 915-2134m (3000-7000ft)
 - System off: 10° to 43°C (50° to 110°F)
- Humidity:
 - System on: 8% to 80%
 - System off: 8% to 80%

³ The operating systems listed here have been designated by IBM to be certified for use with your computer. However, it is possible that certification testing might not have been completed for some of these systems at the time this publication went to press. Also, additional operating systems might be certified for use with your computer following publication of this booklet. Corrections and additions to the list here are available in IBM's online compatibility report, which can be found on the World Wide Web (<http://www.pc.ibm.com/cdt/index.html>).

Heat Output

- Approximate heat output in British thermal units (Btu) per hour:
 - Maximum configuration as shipped: 137 Btu/hour (40 watts)
 - Maximum configuration: 785 Btu/hour (230 watts)

Electrical Input

- Sine-wave input (50/60 Hz) is required
- Input voltage:
 - Low range:
 - Minimum: 90 V ac
 - Maximum: 137 V ac
 - Voltage switch setting: 115 or 115 V
 - High range:
 - Minimum: 180 V ac
 - Maximum: 265 V ac
 - Voltage switch setting: 230 or 230 V
 - Input kilovolt-amperes (kVA) (approximately):
 - Maximum (configuration as shipped): 0.52 kVA

Power consumption and heat output vary depending on the number and type of optional features installed and the power-management optional features in use.

Acoustical Noise-Emission Values

- Average sound-pressure levels:
 - At operator position:
 - 42 dBA idle
 - 46 dBA operating
 - At bystander position-1 meter (3.3 ft):
 - 36 dBA idle
 - 40 dBA operating
- Declared (upper limit) sound power levels:
 - 5.1 bels idle
 - 5.5 bels operating

These levels were measured in controlled acoustical environments according to procedures specified by the American National Standards Institute (ANSI) S12.10 and ISO 7779, and are reported in accordance with ISO 9296.

Actual sound-pressure levels in your location might exceed the average values stated because of room reflections and other nearby noise sources. The declared sound power levels indicate an upper limit, below which a large number of computers will operate.

Chapter 2. Arranging Your Workspace

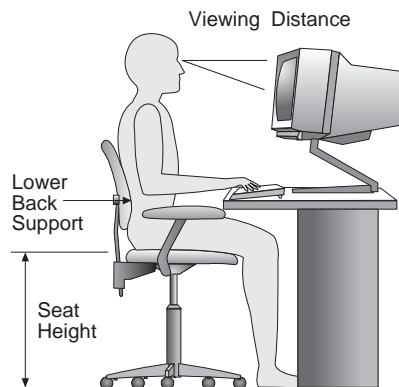
To get the most from your computer, arrange both the equipment you use and your work area to suit your needs and the kind of work you do. Your comfort is of foremost importance, but light sources, air circulation, and the location of electrical outlets also can affect the way you arrange your workspace.

Comfort

Although no single working position is ideal for everyone, here are a few guidelines to help you find a position that suits you best.

Sitting in the same position for a long time causes fatigue. A good chair can make a big difference. The backrest and seat should adjust independently and provide good support. The seat should have a curved front to relieve pressure on the thighs. Adjust the seat so that your thighs are parallel to the floor and your feet are either flat on the floor or on a footrest.

When using the keyboard, keep your forearms parallel to the floor and your wrists in a neutral, comfortable position. Try to keep a light touch on the keyboard and your hands and fingers relaxed. You can change the angle of the keyboard for maximum comfort by adjusting the position of the keyboard feet.



Adjust the monitor so the top of the screen is at, or slightly below, eye level. Place the monitor at a comfortable viewing distance, usually 51 to 61 cm (20 to 24 in.), and position it so you can view it without having to twist your body.

Glare and Lighting

Position the monitor to minimize glare and reflections from overhead lights, windows, and other light sources. Place the monitor at right angles to windows and other light sources, when possible. Reduce overhead lighting, if necessary, by turning off lights or using lower wattage bulbs. If you install the monitor near a window, use curtains or blinds to block the sunlight. You might have to adjust the Brightness and Contrast controls on the monitor as the room lighting changes throughout the day.

Where it is impossible to avoid reflections or to adjust the lighting, an antiglare filter placed over the screen might be helpful. However, these filters might affect the clarity of the image on the screen; try them only after you have exhausted other methods of reducing glare.

Dust buildup compounds problems associated with glare. Remember to clean your monitor screen periodically using a soft cloth moistened with a nonabrasive liquid glass cleaner.

Air Circulation

Your computer and monitor produce heat. The computer has a fan that pulls in fresh air and forces out hot air. The monitor lets hot air escape through vents. Blocking the air vents can cause overheating, which might result in a malfunction or damage. Place the computer and monitor so that nothing blocks the air vents; usually, 51 mm (2 in.) of air space is sufficient. Also, make sure the vented air is not blowing on someone else.

Electrical Outlets and Cable Lengths

The location of electrical outlets and the length of power cords and cables that connect to the monitor, printer, and other devices might determine the final placement of your computer.

When arranging your workspace:

- Avoid the use of extension cords. When possible, plug the computer power cord directly into an electrical outlet.
- Keep power cords and cables neatly routed away from walkways and other areas where they might get kicked accidentally.

For more information about power cords, see “Power Cord Notice” on page 120.

Chapter 3. Operating Your Computer

This chapter provides information to help you in the day-to-day use of your computer. Information about the Configuration/Setup Utility program is also included in this chapter.

Using Controls and Status Indicators

The following operating controls and status indicators are located on the front of your computer:

Diskette-Drive Light: When this light is on, it indicates that the diskette drive heads are being positioned or that your computer is reading from or writing to a diskette.

Diskette Eject Button: Push this button to release a diskette from the drive.

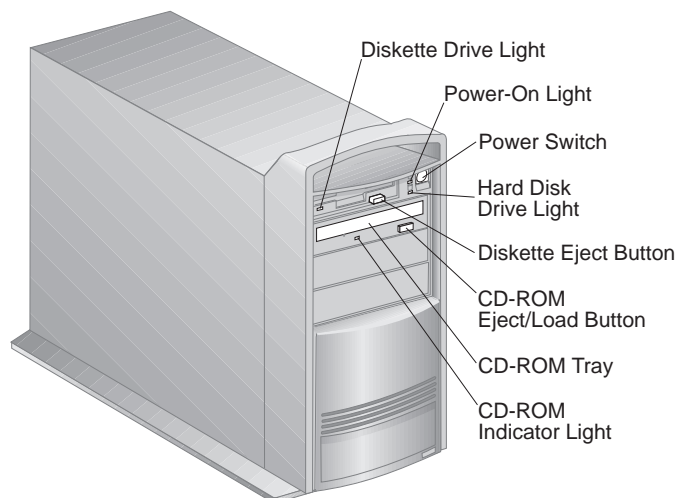
Power Switch: Press this switch to turn your computer on or off. Do not turn off your computer if the in-use light for the hard disk drive or diskette drive is on.

Power-On Light: This status indicator lights when you turn on your computer.

Hard-Disk Drive Light: When this light is on, it indicates that the hard disk drive heads are being positioned or that your computer is reading from or writing to the hard disk.

CD-ROM Eject/Load Button: Push this button to remove the CD-ROM from the tray or to insert a CD-ROM after placing it in the tray.

CD-ROM Indicator Light: When this light is on, it indicates that your computer is reading from the CD-ROM.



Starting Your Computer

1. Turn on all external devices, and then turn on your computer.

Numbers showing the amount of memory being tested appear in the top-left corner of the screen until the total amount of memory in the system is reached. Your computer is running the power-on self-test (POST). Options for running a fast POST or accessing the Configuration/Setup Utility program appear in the lower-left corner of the screen.

If POST finishes without detecting a problem, you hear one beep, and the first screen of your operating system or application program appears (if you have not set a power-on password). If you have set a power-on password, complete step 2.

2. If you have set a power-on password, a prompt appears on the screen. If you have set both power-on and administrator passwords, you can type either password at the password prompt. (Refer to “Passwords” on page 43 for instructions on setting and using passwords.) Type your password at the prompt and press **Enter**. The first screen of your operating system or application program appears.

Note: If POST detects a problem when you start your computer, you hear multiple beeps or no beep. In most cases, an error code appears in the top-left corner of the screen, and in some cases a description of the error is displayed beside the code. (Note that the screen will sometimes display multiple error codes and descriptions.) Write down all error code numbers and descriptions. For information on what caused an error message to appear and what action to take, refer to “Solving POST Error Message Problems” on page 62 and “POST Message Charts” on page 65.

If you hear no beep during POST, refer to “Troubleshooting Charts” on page 84. You might need to have your computer serviced.

Using a Mouse

A *mouse* is a device that you use to point to and select objects on the monitor screen. It connects to your computer by a cable. Some mouse devices are designed for the round mouse connector on the back of your computer; other mouse devices are designed for the D-shaped serial connector. You can use either type of mouse, if the correct software (device driver) is installed.

With a mouse, you can move the *pointer* on the monitor screen. If you have never used a mouse before, it might feel a bit awkward at first. However, with a little practice, the mouse movements will seem natural.

Place the mouse beside the keyboard on a flat surface or *mouse pad*. (A mouse pad is a flat, smooth, foam-rubber pad available at most computer stores.) The mouse has a ball on the bottom, so working on a flat, smooth surface is important. You can use your right or left hand to control the mouse.

Notice that the mouse has three buttons on the top. Rest your hand comfortably on the mouse with your index finger on the left button (if you are using your right hand). Some programs and operating systems provide an option to set up the mouse for left-hand use. When a mouse is set up for left-hand use, the button functions are reversed.

Use the left button to select and open objects with the mouse. Some programs also use the middle and right buttons. The use of the middle and right mouse buttons vary.

To use the mouse, slide it from side to side and forward and backward on a flat surface. The pointer on the monitor screen moves as you move the mouse. When you see an item that you want to select on the screen, you simply move the pointer to that item (this is called *pointing*). Then you press and release the left button on the mouse (this is called *clicking*).

To learn how to use the mouse with the software in your computer, see the documentation accompanying the software.

Some programs support only one mouse button, others support two, and some support three. Despite the differences, some terms are fairly standard throughout the industry.

- | | |
|---------------------|--|
| Point | Move the mouse so the pointer is on the object you want. |
| Click | Press and release the mouse button once. |
| Double-click | Rapidly press and release the mouse button twice. |
| Drag | Point to an object, press the mouse button, and hold it down as you move the mouse to relocate the object. |
| Drop | After dragging an object to a new location, release the mouse button. |

Shutting Down

When you are ready to turn off your computer, follow the shutdown procedure for your operating system to prevent the loss of unsaved data or damage to your software programs. See your operating system documentation for instructions.

Using System Management Features

This section is intended primarily for network administrators. It describes features that make it possible for a network administrator or file server to remotely manage and control your computer.

The BIOS (basic input output system) of your computer supports an interface called DMI (Desktop Management Interface). DMI is a mechanism for gathering information about the hardware and software in your computer to enable network administrators to remotely monitor and control computers in a network environment. DMI can be used to remotely track many types of information about computers, including serial numbers, memory attributes, product-specific characteristics of installed peripherals, temperature, and operating system configuration information. This information can be accessed using a DMI browser. DMI browsers are provided by all major operating systems and all major LAN management packages (including NetFinity, Intel LAN Desk, and Microsoft SMS).

Your computer has imbedded hardware (LM75 module) that provides processor temperature information to the DMI browser.

The following describes some of the other functions that can be performed on your computer remotely.

Wake on LAN

The Wake on LAN feature can be used by network administrators to turn on your computer from a remote location. When Wake on LAN is used in conjunction with network management software, such as TME 10 NetFinity Version 4 (provided on the *Ready-to-Configure CD* that comes with your computer), many types of functions, such as data transfers, software updates, and POST/BIOS flashes can be performed remotely on your computer and all other Wake on LAN enabled computers linked to your network. This can be done after hours and on weekends, which saves time and increases productivity. Users are not interrupted during normal working hours and LAN traffic is kept to a minimum. Refer to “Wake on LAN” on page 53 for configuration information.

RPL or DHCP

RPL (Remote Program Load) or DHCP (Dynamic Host Configuration Protocol) enable a network administrator to control your computer. If you use RPL in conjunction with software such as LANClient Control Manager, you can use a feature called *Hybrid RPL*. Using LANClient Control Manager, you set up your computer by installing hybrid images (or files) on the hard disk drive. Then, each

time the computer starts from the network, LANClient Control Manager recognizes your computer as a Hybrid RPL client and a *bootstrap* program is downloaded to your computer. This bootstrap program is small and helps prevent network congestion. Working off the hybrid images, the bootstrap program initiates the startup process from the hard disk drive of your computer. An advantage to Hybrid RPL is that the network load associated with standard RPL is avoided.

Flash over LAN (Update POST/BIOS over Network)

This feature enables your computer's POST/BIOS to be updated remotely by a network administrator. Network management software, such as the LANClient Control Manager, is required in order to take advantage of the Flash over LAN feature. Refer to “Flash over LAN (Update POST/BIOS over Network)” on page 52 for configuration information.

Changing Keyboard Speed

You can change the speed at which the keyboard responds when you hold down a key. The normal *typematic rate* is 10 characters per second, but you can use the Configuration/Setup Utility program to increase this rate to 30 characters per second.

To change the keyboard speed:

1. Start the Configuration/Setup Utility program (see “Starting the Configuration/Setup Utility Program” on page 38).
2. Select **Start Options** from the Configuration/Setup Utility program menu.
3. Set **Keyboard Speed** to **Normal** or **Fast**. Use Left Arrow (←) or Right Arrow (→) to toggle between selections.
4. Press **Esc** to return to the Configuration/Setup Utility program menu.
5. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility program menu.
6. To exit from the Configuration/Setup Utility program, press **Esc** and follow the instructions on the screen.

Installing Video Device Drivers

To take full advantage of the *Intergraph Intense 3D Graphics Adapter* or *Matrox MGA Millennium Graphics Adapter* in your computer, some operating systems and application programs require custom software, known as video device drivers.

These device drivers provide support for greater speed, higher resolution, more available colors, and flicker-free images.

The *Intergraph Intense 3D Graphics Adapter* and *Matrox MGA Millennium Graphics Adapter* device drivers and a README file with the instructions for installing them are provided on the *Ready-to-Configure CD* that comes with your computer. If your computer has IBM-preinstalled software, video device drivers have already been installed on the hard disk. However, the device driver installation instructions will be helpful if you ever need to reinstall the device drivers; if you want to change video resolution, color depth, or monitor settings; or if you need information on obtaining and installing updated device drivers.

Changing Monitor Settings

Your computer has an *Intergraph Intense 3D Graphics Adapter* or a *Matrox MGA Millennium Graphics Adapter* SVGA (super video graphics array) controller. SVGA is a video standard for displaying text and graphic images on a monitor screen. Like other video standards, SVGA supports a variety of *video modes*. Video modes are different combinations of resolution, refresh rate, and color defined by a video standard for displaying text or graphics. (For further information on video modes, refer to *Understanding Your IntelliStation Z Pro*.)

SVGA provides higher-resolution graphics, faster refresh rates, and more colors than previous video standards, such as video graphics array (VGA). At the same time, SVGA supports all standard VGA modes.

To get the best possible image on your screen and to reduce or eliminate flicker, you might need to reset the resolution and refresh rate of your monitor. You can view and change monitor settings through your operating system, using the instructions provided in the README files on *Ready-to-Configure CD* that comes with your computer. Refer to your operating system documentation for further information on monitor settings.

Attention

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

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

Updating System Programs

System programs are the basic layer of software built into your computer. They include the power-on self-test (POST), the basic input/output system (BIOS) code, and the Configuration/Setup Utility program. POST is a set of tests and procedures that is performed every time you turn on your computer. BIOS is a layer of software that translates instructions from other layers of software into electrical signals that the computer hardware can understand. The Configuration/Setup Utility program enables you to view and change the configuration and setup of your computer.

In the past, the system programs were contained in a read-only memory (ROM) module on the system board. If you wanted to update POST routines, BIOS instructions, and the Configuration/Setup Utility program, you had to disassemble the computer and replace modules, or you had to replace the system board. Now, a module called *electrically erasable programmable read-only memory* (EEPROM, also referred to as *flash memory*) has replaced the ROM module on the system board. You can easily update POST information, the BIOS code, and the Configuration/Setup Utility program by using an update diskette or by using the *Flash over LAN* function, if enabled.

As part of the continuing work to improve quality, IBM might make changes and enhancements to the system programs. When updates are released, they will be available via download files on the World Wide Web (<http://www.pc.ibm.com>) or through the PC Company Bulletin Board Service (see “Using Electronic Support Services” on page 99). Instructions for using the system programs updates will be available in a README file included in the download files.

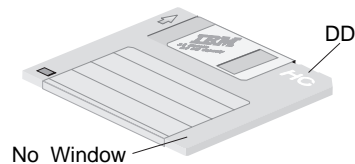
Diskettes

You can use 3.5-inch diskettes in the diskette drive of your computer. If you want to use 5.25-inch diskettes, you must install a 5.25-inch diskette drive. (Refer to *Installing Options in Your IntelliStation Z Pro* for instructions on installing optional diskette drives.)

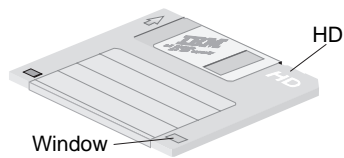
The information that follows will help you identify and use 3.5-inch diskettes.

Identifying Diskettes

The labeling on 3.5-inch diskettes is not consistent among manufacturers. Some diskettes are labeled with the letters *DD* or *HD* to identify the diskette type; other diskettes might not be labeled. However, the appearance of the lower-right corner of a 3.5-inch diskette always can be used to identify the diskette type, as shown in the following illustrations.



1 MB Double Density (DD)

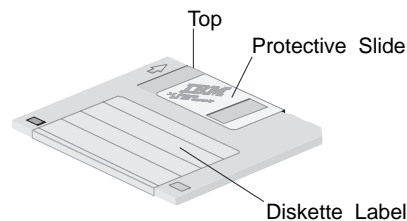


2 MB High Density (HD)

Handling and Storing Diskettes

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

- Data is stored on the magnetic surface of the diskette. On 3.5-inch diskettes, this surface is protected by a plastic cover. If the cover is damaged, *do not* use the diskette. A damaged diskette might damage the diskette drive.
- A protective slide on the top of a 3.5-inch diskette covers part of the magnetic surface. The diskette drive moves this slide to read data from or write data to the diskette. *Do not* move this slide, because fingerprints and dust can cause loss of data.



- Never touch the magnetic disk itself.
- Keep diskettes away from magnets or devices that create a strong magnetic field, such as electric motors and generators. Diskettes are sensitive to magnets found in television sets, telephones, stereo speakers, and other such items. A magnetic field can erase the data on your diskettes. *Do not* set diskettes on the monitor or use magnets to attach notes to your computer.
- Do not store diskettes at high temperatures, low temperatures, or in direct sunlight. Temperatures ranging from 4° to 53°C (39° to 127°F) are acceptable for 3.5-inch diskettes. Keep diskettes away from heat. The plastic outer covering might warp, damaging the diskette.

Labeling Diskettes

Before using a diskette, label it so that you can identify the data stored on it. Labels usually come in the package with the diskettes. Diskette labels can become a problem if you do not apply them correctly. Loose edges or an excessive buildup of labels can prevent the diskette from being inserted or ejected.

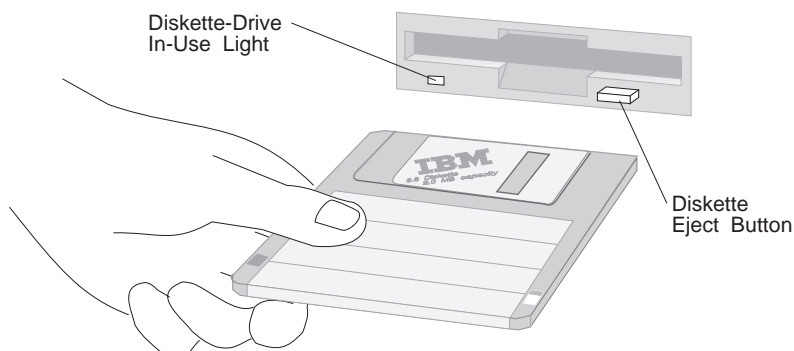
To prevent this problem, take the following precautions:

- Remove an old label before you apply a new one.
- Apply labels carefully to ensure that all edges are secure.
- Apply labels only to the front of diskettes. Do not place a label where it interferes with the protective slide or covers an opening in the protective diskette case.

Inserting and Removing Diskettes

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

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

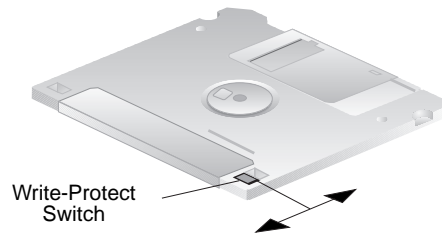


Write Protecting Diskettes

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

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

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



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

Formatting Diskettes

You can buy diskettes either formatted or unformatted. Formatted diskettes are ready to use; unformatted diskettes must be formatted by your operating system before you can use them. The format operation checks a diskette for defects and prepares it for storing data. If data is already stored on the diskette, the format operation writes over it, and the data is lost.

The operating system `FORMAT` command specifies how to format a specific type of diskette.

Attention: Always format diskettes to their correct capacity. Failing to do so might cause unreliable results. Differences such as magnetic coatings, the thickness of the diskette material, and the recording technique used all affect the formatting operation. Refer to your operating-system documentation for detailed information on formatting diskettes.

The following table shows diskette types, their formatted capacities, and the drive type that can be used with each diskette.

3.5-Inch Diskette Type	Formatted Capacity	Drive Type
1 MB (MF2DD)	720 KB	1.44 MB
2 MB (MF2HD)	1.44 MB	1.44 MB

Notes:

1. MF2DD = Mini-floppy, two-sided, double density
2. MF2HD = Mini-floppy, two-sided, high density
3. If you are using DOS, use `FORMAT A: /F:720` to format a 1 MB diskette in a 1.44 MB drive.

Copying Diskettes

If you are using DOS, you can copy one or more files to or from a diskette using the `COPY` command. Groups of files can be copied faster using the `XCOPY` command. Both `COPY` and `XCOPY` can copy files to different types of diskettes. For duplicating a diskette, use the `DISKCOPY` command. `DISKCOPY` requires that both the source diskette (the diskette you copy from) and the target diskette (the diskette you copy to) be the same type.

Refer to your operating-system documentation for more information on copying diskettes.

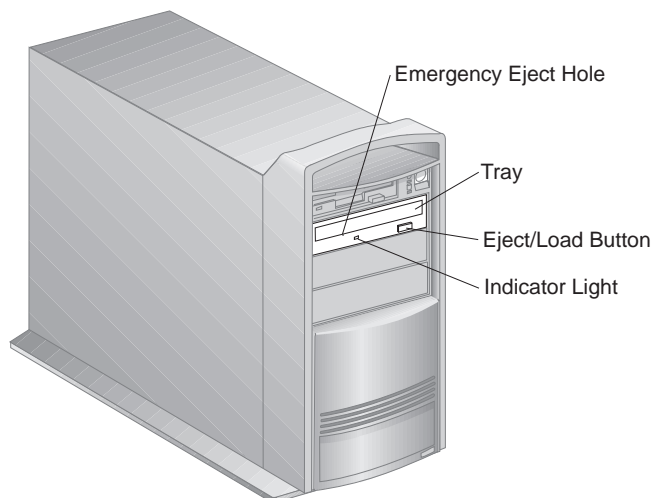
Using a CD-ROM Drive

Your computer has a preinstalled *16X Max* CD-ROM drive. CD-ROM (compact disc read-only memory) technology offers quick access to enormous amounts of information. A compact disc can store more than 650 MB of data, such as the large files needed for audio, still and full-motion video, and still and animated graphics. A CD-ROM drive can play back or read from a CD, but it cannot write information to it. CD-ROM drives use industry-standard, 12 cm (4.75-inch) CDs.

Follow these guidelines when using a CD-ROM drive:

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

The following is an illustration of the front bezel of the CD-ROM drive.



Handling a CD

When handling a CD, follow these guidelines:

- Hold the CD by its edges. Do not touch the surface.
- To remove dust or fingerprints, wipe the CD from the center to the outside. Wiping the CD in a circular direction might cause loss of data.
- Do not write or stick paper on the CD.
- Do not scratch or mark the CD.
- Do not place or store the CD in direct sunlight.
- Do not use benzene, thinners, or other cleaners to clean the CD.
- Do not drop or bend the CD.

Loading a CD

To load a CD into the CD-ROM drive:

1. Press the Eject/Load button. The tray slides out of the drive. (Do not manually force the tray open.)
2. Place the CD in the tray with the label facing up.
3. Close the tray by pressing the Eject/Load button, or by gently pushing the tray forward. When the tray is closed, the indicator light on the front of the drive will activate to indicate that the drive is in use.
4. To eject the CD, press the Eject/Load button. When the tray slides out, carefully remove the CD.
5. Close the tray by pressing the Eject/Load button, or by gently pushing the tray forward.

Note: If the tray does not slide out of the drive when you press the Eject/Load button, insert the pointed end of a large paper clip into the emergency eject hole located above and to the left of the CD-ROM indicator light.

If you have installed a CD-ROM drive yourself and need additional information about the drive, refer to the documentation that comes with the CD-ROM drive.

Using Locks

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

Locking the Cover

You can use the cover lock and keys to secure the outside cover.

Two identical keys are provided with your computer. Locksmiths are not authorized to duplicate these keys. You must order replacement keys from the key manufacturer. The key serial number and the address of the manufacturer are on a tag attached to the keys. Record this information in the space provided in Appendix A, “Computer Records” on page 107. Store the tag in a safe place.

Locking the Keyboard

You can disable the keyboard so that others are unable to use it. If a power-on password is set, the keyboard is locked when you turn on the computer. You must type the correct password before the keyboard will unlock. You can enable the power-on password feature with the Configuration/Setup Utility program. See “Setting and Changing a Power-On Password” on page 45.

Some operating systems have a keyboard and mouse lock-up feature. Check the documentation that comes with your operating system for more information.

Chapter 4. Using the Configuration/Setup Utility Program

This chapter provides information to help you use the Configuration/Setup Utility program.

Configuring Your Computer

The Configuration/Setup Utility program enables you to view and change the configuration and setup of your computer. The program is stored in the EEPROM (electrically erasable programmable read-only memory) of your computer.

You can use the Configuration/Setup Utility program to view and change the configuration and setup of your computer, regardless of which operating system you are using. However, the settings you select in your operating system might override any similar settings in the Configuration/Setup Utility program.

The following is a brief description of the categories that appear in the main menu of the Configuration/Setup Utility program.

- **System Summary** provides information about the current options and features in your computer. Included in the system summary is information about the microprocessor, memory, video controller, and diskette and hard disk drives.
- **Product Data** contains information about the machine type and model, flash EEPROM revision level, system-board identifier, system serial number, and BIOS date.
- **Devices and I/O Ports** allows you to view and change settings for devices and I/O ports, including video, IDE drive, serial ports, audio ports, and parallel port.
- **Date and Time** allows you to view and change the date and time of the internal clock in your computer.
- **System Security** allows you to control access to the hard disk and diskette drives. You can also set, change, and delete power-on and administrator passwords.
- **Start Options** allows you to view and change settings for device startup sequence, keyboard speed, virus detection, various power-on options, and other features of your computer.
- **Advanced Setup** allows you to view and change settings for advanced hardware features, including ROM shadowing and microprocessor, memory, and PCI control. The settings in Advanced Setup must be configured correctly. If they are not, your computer might malfunction.

- **ISA Legacy Resources** allows you to indicate which system resources (DMA, interrupt, memory, and I/O port) are used by ISA non-plug and play adapters.
- **Advanced Power Management** allows you to view and change settings that affect the energy-saving features of your computer, including the automatic power-on feature.

Important

In most cases, when you add or remove hardware from your computer, the BIOS (basic input/output system) detects the changes and then updates the configuration automatically. Although the computer changes the configuration settings automatically, you must *save* these changes in the Configuration/Setup Utility program for the new configuration to take effect. If you do not save the new settings, your operating system will not start. To save the configuration after adding or removing hardware, complete the following steps.

1. When you turn on the computer, an error message indicating that a configuration change has occurred appears approximately 30 seconds after the memory count numbers stop cycling in the top-left corner of the screen. When the configuration error message disappears, the POST Startup Errors screen appears, and you are prompted to **Continue** or **Exit Setup**. Select **Continue**. (If you select **Exit Setup**, you will get another error message.)
2. The Configuration/Setup Utility program menu appears with a right arrowhead (▶) next to the menu category in which the configuration change has occurred. Select this menu item if you want to view the new configuration settings, and then press **Esc** to return to the Configuration/Setup Utility program menu.
3. Select **Save Settings** from the Configuration/Setup Utility program menu.
4. Press **Esc** to exit the Configuration/Setup Utility program, and follow the instructions on the screen.

Starting the Configuration/Setup Utility Program

To start the Configuration/Setup Utility program:

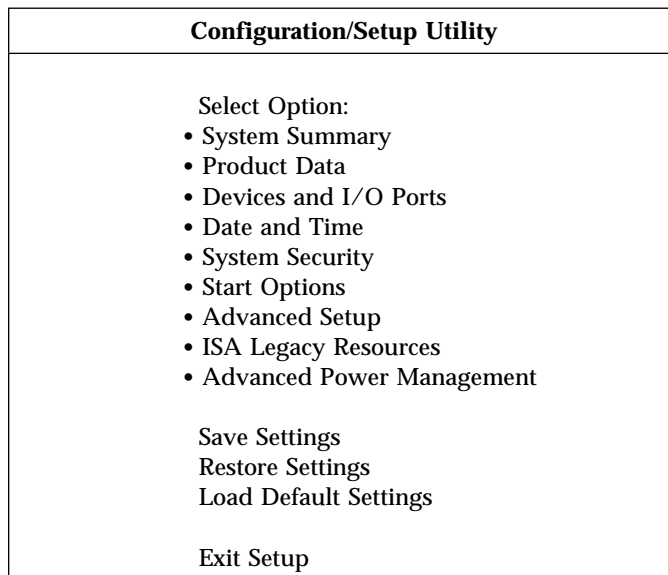
1. Turn on your computer. If your computer is already on when you start this procedure, you must shut down the operating system, turn off the computer, wait a few seconds until all in-use lights go off, and restart the computer. (Do not use **Ctrl+Alt+Del** to restart the computer.)
2. When the Configuration/Setup Utility prompt appears in the lower left corner of the screen during startup, press **F1**. (The Configuration/Setup Utility

program prompt appears on the screen for only a few seconds. You must press **F1** quickly.)

3. If you have *not* set an administrator password, the Configuration/Setup Utility program menu appears on the screen. If you have set an administrator password, the Configuration/Setup Utility program menu will not appear until you type your administrator password at the password prompt and press **Enter**.

If you have set both an administrator and a power-on password, you can type either of the passwords at the password prompt. However, if you think you might need to change any settings in the Configuration/Setup Utility program, you must type your administrator password at the password prompt. If you type your power-on password, you will be able to *view* limited information in the Configuration/Setup Utility program, but you will not be able to *change* any settings.

The menu you see on your computer might look slightly different from the menu shown here, but it will operate the same way.



Viewing and Changing Settings in the Configuration/Setup Utility Program

The Configuration/Setup Utility program menu lists items that identify system configuration topics. If a bullet (•) appears beside a menu item, then an additional menu is available. If a right arrowhead (▶) appears beside a menu item, then a change to that item has been made or the Configuration/Setup Utility program

detected an error and attempted to correct it. Also, an additional menu might follow a menu item with a ► beside it. If an asterisk (*) appears next to a menu item, it indicates a system resource conflict. Resolve this conflict before exiting from the Configuration/Setup Utility program so that your computer will function properly. For information and instructions on resolving system resource conflicts, refer to *Installing Options in Your IntelliStation Z Pro* and the documentation that comes with the hardware you want to install.

When working with the Configuration/Setup Utility program menu, you must use the keyboard. Refer to the following table for the keys used to accomplish various tasks.

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

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

In the Configuration/Setup Utility program menus, the configuration information you can change is enclosed in brackets like these []. You cannot change information that is not surrounded by brackets.

Exiting from the Configuration/Setup Utility Program

When you finish viewing or changing settings in the Configuration/Setup Utility program, follow these steps to exit from the program:

1. Press **Esc** to return to the Configuration/Setup Utility program menu.
(Depending on where you are in the program, you might have to press **Esc** several times to get back to the Configuration/Setup Utility program menu.)
2. Before you exit from the Configuration/Setup Utility program menu, select **Save Settings** if you want to save all settings as they currently appear. If you do not complete this step, your settings will not be saved.
3. From the Configuration/Setup Utility program menu, press **Esc**, and follow the instructions on the screen.

Viewing the System Summary

You can use the Configuration/Setup Utility program to view a summary of the options and features in your computer. To view the system summary:

1. Start the Configuration/Setup Utility program (see “Starting the Configuration/Setup Utility Program” on page 38).
2. Select **System Summary** from the Configuration/Setup Utility program menu. The System Summary screen appears.

Depending on your model and configuration, your screen might appear slightly different from the one shown here.

System Summary	
Processor	Pentium Pro
Processor Speed	200 MHz ⁴
Dual Processor	Not Installed
Math Coprocessor	Internal
System Memory	640 KB
Extended Memory	63 MB
Video Controller	Matrox Graphics Inc.
Cache Size	256 KB
Cache State	Enabled
Shadow RAM	384 KB
System ROM	F000h - FFFFh
Memory Type	ECC
Diskette Drive A:	1.44 MB, 3.5"
Diskette Drive B:	Not Installed
CD-ROM Drive 0	Installed
Hard Disk Drive 1	Not Installed
Hard Disk Drive 2	Not Installed
Hard Disk Drive 3	Not Installed
Mouse	Installed

Setting the Date and Time

Your computer has an internal clock that maintains the date and time. A battery keeps the clock active when you turn off the computer.

⁴ MHz denotes internal clock speed of the microprocessor only; other factors might also affect application performance.

To set the date and time:

1. Start the Configuration/Setup Utility program (see “Starting the Configuration/Setup Utility Program” on page 38).
2. Select **Date and Time** from the Configuration/Setup Utility program menu.
3. Type the date and time in the appropriate fields.
4. Press **Esc** to return to the Configuration/Setup Utility program menu.
5. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility program menu and press **Enter**.
6. To exit from the Configuration/Setup Utility program, press **Esc** and follow the instructions on the screen.

Your operating system might also have a function for setting the date and time. Refer to your operating system documentation for more information.

Passwords

Two types of password protection are available to help you secure your computer and the information you store in it. The *power-on* password feature deters unauthorized persons from gaining access to the information stored in your computer. The *administrator password* feature helps prevent unauthorized persons from accessing the Configuration/Setup Utility program and changing the setup of your computer. If you are responsible for maintaining the settings of several computers, you might want to set an administrator password.

Other password security features might be available through your operating system or network.

Power-On Password

You do not need a power-on password to use your computer, but setting this type of password deters unauthorized persons from using your computer. When a power-on password is set, you must type the password at the password prompt that appears as the computer starts.

When you set the power-on password, you can choose one of three password prompt modes:

- On** In password prompt On mode, you are prompted for the power-on password when you turn on the computer. Until the correct password is entered, the computer's operating system will not start, and the keyboard will remain locked. If you have a mouse connected to the mouse port, it

also will remain locked. If you have a mouse connected to a serial port, it will be activated when the computer is started, regardless of whether a password is set.

Off In password prompt Off mode (also referred to as Unattended Start mode), you are not prompted to enter your power-on password when you turn on the computer. The computer will start the operating system. However, if you have a mouse connected to the mouse port, refer to the following text box.

Important Information for Mouse Users

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

The password prompt Off mode prevents the computer from detecting that a mouse is attached. Because the mouse device driver will not be loaded automatically through the CONFIG.SYS or AUTOEXEC.BAT files in this mode, an error message that the mouse port is disabled will appear and the computer will halt. To enable the operating system to load without displaying the error message, read the information below that applies to your operating system.

If you are using OS/2, do one of the following before enabling password prompt Off mode:

- Set the CONFIG.SYS file so the operating system does not stop on a device-driver error. To do this, put the command "PAUSEONERROR=NO" near the top of the CONFIG.SYS file.

or

- Remove the mouse driver statement from the CONFIG.SYS file.

If you are using Windows NT or Windows 95, do the following:

- When the computer is started and the mouse port disabled error message appears, enter either your power-on or administrator password to enable the keyboard. Then use the keyboard to put a checkmark in the "Do not display this message in the future" checkbox.

Once the operating system starts in password prompt Off mode, the keyboard will remain locked. If you have a mouse connected to the mouse port, it also will remain locked.

Although you are not prompted to type a password in this mode, you can type either your power-on or administrator password anytime after

POST has completed, even after the operating system has loaded. If you type a password, the keyboard will unlock, but the mouse connected to the mouse port will remain disabled.

Password prompt Off mode is useful for network servers and other computers that operate unattended. If a power failure occurs, the computer will automatically restart and resume operating in this mode when power is restored, without operator intervention.

Dual In the password prompt Dual mode, the startup behavior of the computer depends on whether the computer is started from the computer power switch or by an unattended method, such as a modem or timer.

If you start the computer by using the power switch, the computer operates the same as it does in password prompt On mode. Refer to page 43 for further information.

If the computer is started by an unattended method, such as remotely over a LAN, the computer operates the same as it does in password prompt Off mode. Refer to page 44 for further information.

If both a power-on and administrator password are set, you can type either of the passwords 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.

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

Setting and Changing a Power-On Password: Use the Configuration/Setup Utility program to set or change a power-on password. You can use any combination of up to seven characters (A-Z, a-z, and 0-9) for this password.

Attention: Keep a record of your power-on password in a secure place. When a power-on password has been set, you cannot activate the keyboard and mouse without first using the password. If you lose or forget your password, you cannot change or delete it without removing the computer cover and moving a jumper on

the system board. Refer to “Erasing Lost or Forgotten Passwords” on page 48 for further information.

To set or change a power-on password:

1. Start the Configuration/Setup Utility program (see “Starting the Configuration/Setup Utility Program” on page 38).
2. Select **System Security** from the Configuration/Setup Utility program menu.
3. Select **Power-On Password**.
4. Type your password and press Down Arrow (↓).
5. Type your password again.
6. At **Password Prompt**, select **On**, **Off**, or **Dual**. Press Left Arrow (←) or Right Arrow (→) to toggle between selections.
7. Select **Change Power-On Password**, and follow the instructions on the screen.
8. The System Security menu appears. Press **Esc** to return to the Configuration/Setup Utility program menu.
9. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility program menu.
10. To exit from the Configuration/Setup Utility program, press **Esc** and follow the instructions on the screen.

Deleting a Power-On Password: Use the Configuration/Setup Utility program to delete a power-on password.

To delete a power-on password:

1. Start the Configuration/Setup Utility program (see “Starting the Configuration/Setup Utility Program” on page 38).
2. Select **System Security** from the Configuration/Setup Utility program menu.
3. Select **Power-On Password**.
4. Select **Delete Power-On Password** and follow the instructions on the screen.
5. The System Security screen appears. Press **Esc** to return to the Configuration/Setup Utility program menu.
6. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility program menu.
7. To exit from the Configuration/Setup Utility program, press **Esc** and follow the instructions on the screen.

Administrator Password

Setting an administrator password deters unauthorized persons from changing settings in the Configuration/Setup Utility program. When an administrator password is set, you can change settings in the Configuration/Setup Utility program only after typing the administrator password at the password prompt that appears when you try to access the Configuration/Setup Utility program.

If you are responsible for maintaining the settings of several computers, you might want to set an administrator password.

When you set an administrator password, a password prompt appears each time you try to access the Configuration/Setup Utility program. The password does not appear on the screen as you type it. If you type the wrong password, you receive a screen message telling you so. If you type the wrong password three times, you must turn off the computer and start again. When you type the correct password, the Configuration/Setup Utility program menu appears.

If both a power-on and administrator password are set, you can type either of the passwords 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.

Setting and Changing an Administrator Password: Use the Configuration/Setup Utility program to set or change an administrator password. You can use any combination of up to seven characters (A–Z, a–z, and 0–9) for the password.

Attention: Keep a record of your administrator password in a secure place. When an administrator password has been set, you cannot access the Configuration/Setup Utility program without first using the administrator password. If you lose or forget your password, you cannot change or delete it without removing the computer cover and moving a jumper on the system board. Refer to “Erasing Lost or Forgotten Passwords” on page 48 for further information.

To set or change an administrator password:

1. Start the Configuration/Setup Utility program (see “Starting the Configuration/Setup Utility Program” on page 38).
2. Select **System Security** from the Configuration/Setup Utility program menu.

3. Select **Administrator Password**.
4. Type your password and press Down Arrow (↓).
5. Type your password again.
6. At **Power-On Password Changeable by User**, select **Yes** or **No**. Press Left Arrow (←) or Right Arrow (→) to toggle between selections. (If you select **Yes**, the user will be able to change the power-on password if an administrator password is set. If you select **No**, the user will not be able to change the power-on password if an administrator password is set.)
7. Select **Set or Change Administrator Password** and follow the instructions on the screen.
8. The Administrator Password menu appears. Press **Esc** twice to return to the Configuration/Setup Utility program menu.
9. Before you exit from the Configuration/Setup Utility program, select **Save Settings** from the Configuration/Setup Utility program menu.
10. To exit from the Configuration/Setup Utility program, press **Esc** and follow the instructions on the screen.

Deleting an Administrator Password: Use the Configuration/Setup Utility program to delete an administrator password.

To delete an administrator password:

1. Start the Configuration/Setup Utility program (see “Starting the Configuration/Setup Utility Program” on page 38).
2. Select **System Security** from the Configuration/Setup Utility program menu.
3. Select **Administrator Password**.
4. Select **Delete Administrator Password** and follow the instructions on the screen.
5. The System Security screen appears. Press **Esc** to return to the Configuration/Setup Utility program menu.
6. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility program menu.
7. To exit from the Configuration/Setup Utility program, press **Esc** and follow the instructions on the screen.

Erasing Lost or Forgotten Passwords

To erase a lost or forgotten power-on or administrator password, you must remove the computer cover and move the CMOS Clear jumper (also referred to as the

password jumper) on the system board. See *Installing Options in Your IntelliStation Z Pro* for instructions on removing the computer cover and moving jumpers. Refer to the system board label inside the computer cover for the location of the CMOS Clear (password) jumper.

Attention

If you move the CMOS Clear jumper, you will lose all setup data stored in the computer, and you will need to reconfigure the computer. Use the Configuration/Setup Utility program to reconfigure the computer and to set a new password.

Startup Sequence

Your computer can be started (or booted) from several devices including the hard disk drive, diskette drive, CD-ROM, and the network. The boot program looks for these devices in a selected sequence. The Configuration/Setup Utility program is used to select the startup sequence.

Note: The hard disk drive is the default boot device when no other devices are ready. It does not appear in the choices provided by the Configuration/Setup Utility program.

To set the startup sequence:

1. Start the Configuration/Setup Utility program (see “Starting the Configuration/Setup Utility Program” on page 38).
2. Select **Start Options** from the Configuration/Setup Utility program menu.
3. Select **Startup Sequence** from the Start Options menu.
4. Select the sequence and devices from the choices provided.
5. Press **Esc** to return to the Configuration/Setup Utility program menu.
6. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility program menu and press **Enter**.
7. To exit from the Configuration/Setup Utility program, press **Esc** and follow the instructions on the screen.

Advanced Power Management

Your computer comes with built-in energy-saving capabilities. You can view and change energy-saving settings using the Advanced Power Management menu in the

Configuration/Setup Utility program. This section describes the Advanced Power Management features in your computer and provides instructions for using these features.

Attention: If a device, such as a monitor, does not have power-management capabilities, it can be damaged when exposed to a reduced-power state. Before you make energy-saving selections for your monitor, check the documentation that comes with your monitor to see if it supports Display Power Management Signaling (DPMS).

Automatic Hardware Power Management Features

With Automatic Hardware Power Management, you can have the computer, microprocessor, and monitor (if the monitor supports DPMS) go into reduced-power states if they are inactive for a predetermined length of time.

There are three levels of power management. For each level, you can specify the amount of time that the computer must be inactive before the power management options you select begin to take effect. For Level 1, you can select 5 minutes to 4 hours; for Level 2, you can select 10 minutes to 5 hours; and for Level 3, you can select 15 minutes to 6 hours. At each level, you can define the amount of energy savings by specifying values for the following options.

- **System Power:** With this option, you can select **On** if you want the computer to remain on, or **Off** if you want the computer to shut down.
- **Processor Speed:** With this option, you can set your microprocessor to run at 1, 10, 25, or 50 percent of its internal clock speed, or you can disable the microprocessor entirely. Any computer activity returns the microprocessor to full speed.
- **Display:** With this option, you can disable the monitor entirely, or select one of the following reduced-power states:
 - **Standby:** In this mode, the screen is blanked, but the screen image is restored *immediately* when any activity is detected.
 - **Suspend:** In this mode, the monitor uses less power than in Standby mode. The screen is blanked, but the screen image is restored *within a few seconds* after any activity is detected.
 - **Off:** In this mode, the monitor power is turned off. To restore power to the monitor, you must press the monitor power switch. On some monitors, you might have to press the power switch twice.

Setting Automatic Hardware Power Management Features: To set Automatic Hardware Power Management features, complete the following steps.

1. Start the Configuration/Setup Utility program (see “Starting the Configuration/Setup Utility Program” on page 38).
2. Select **Advanced Power Management** from the Configuration/Setup Utility program menu.
3. Be sure **APM BIOS Mode** is set to **Enabled**. If it is not, press Left Arrow (←) or Right Arrow (→) to change the setting.
4. Select **Automatic Hardware Power Management**.
5. Set **Automatic Hardware Power Management** to **Enabled**.
6. Select values for the three levels of power management (system power, processor speed, and display), as necessary.
7. Set **Hard Disk** to **Enabled** or **Disabled**.
Note: This does not apply to SCSI drives.
8. Press **Esc** twice to return to the Configuration/Setup Utility program menu.
9. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility program menu.
10. To exit from the Configuration/Setup Utility program, press **Esc** and follow the instructions on the screen.

Automatic Power-On Features

The Automatic Power-On features within the Advanced Power Management menu allow you to enable and disable features that turn your computer on automatically.

- **Serial Port Ring Detect:** If your computer has an *external* modem connected to the serial port and you want the computer to turn on automatically when a ring is detected on the modem, set this feature to **Enabled**.
- **Modem Ring Detect:** If your computer has an *internal* modem and you want the computer to turn on automatically when a ring is detected on the modem, set this feature to **Enabled**.
- **Wake Up on Alarm:** With this feature, you can specify a date and time at which the computer will be turned on automatically. This can be either a single event or a daily event.
- **Wake on LAN:** If your computer has a properly configured token-ring or Ethernet LAN adapter card that is Wake on LAN-enabled and you have remote network management software, you can use the IBM-developed Wake on LAN feature. When you set Wake on LAN to **Enabled**, your computer will turn on

when it receives a specific signal from another computer on your local area network (LAN). For further information, see “Wake on LAN” on page 53.

Setting Automatic Power-On Features: To set Automatic Power-On features, complete the following steps.

1. Start the Configuration/Setup Utility program (see “Starting the Configuration/Setup Utility Program” on page 38).
2. Select **Advanced Power Management** from the Configuration/Setup Utility program menu.
3. Select **Automatic Power On**.
4. Select the menu item for which you want to view or change settings. Use Left Arrow (←) or Right Arrow (→) to toggle between selections.
5. Press **Esc** twice to return to the Configuration/Setup Utility program menu.
6. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility program menu.
7. To exit from the Configuration/Setup Utility program, press **Esc** and follow the instructions on the screen.

Network Settings

This section applies only to computers linked to a network.

The Configuration/Setup Utility program includes settings that can be enabled and disabled to configure the network interface in your computer. These settings are:

- Flash over LAN (Update POST/BIOS over Network)
- Wake on LAN

Instructions for accessing these settings are provided in the sections that follow. Contact your network administrator to determine how your computer should be configured for your specific environment.

Flash over LAN (Update POST/BIOS over Network)

This setting is used to enable or disable the Flash over LAN feature. When the feature is enabled, the system programs in your computer can be updated remotely from a network server. If you have set an administrator password for your computer, it does *not* have to be entered by the server. Consult your network administrator for information on setting up your network server to perform POST/BIOS updates.

To access the FLash over LAN setting:

1. Start the Configuration/Setup Utility program. See “Starting the Configuration/Setup Utility Program” on page 38.
2. Select **System Security**.
3. Select **POST/BIOS Update** from the Configuration/Setup Utility program menu.
4. To enable Flash over LAN, select **Enabled**. To disable Flash over LAN, select **Disabled**.
5. Press **Esc** twice to return to the Configuration/Setup Utility program menu.
6. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility program menu.
7. To exit from the Configuration/Setup Utility program, press **Esc** and follow the instructions on the screen.

Wake on LAN

This setting is used to enable or disable the IBM-developed Wake on LAN feature. This feature makes it possible for your computer to be turned on remotely by a network server. Remote network management software must be used in conjunction with this feature. For more information on Wake on LAN, see “Using System Management Features” on page 24.

To access the Wake on LAN setting:

1. Start the Configuration/Setup Utility program. See “Starting the Configuration/Setup Utility Program” on page 38.
2. Select **Advanced Power Management**.
3. Select **Automatic Power On** from the program menu.
4. Select **Wake on LAN** from the **Automatic Power On** menu.
5. To enable Wake on LAN, select **Enabled**. To disable Wake on LAN, select **Disabled**.
6. Press **Esc** until you return to the Configuration/Setup Utility program menu.
7. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility program menu.
8. To exit from the Configuration/Setup Utility program, press **Esc** and follow the instructions on the screen.

Chapter 5. Taking Care of Your Computer

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

Basics

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

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

Cleaning Your Computer

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

CAUTION:

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

Computer and Keyboard

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

Monitor Screen

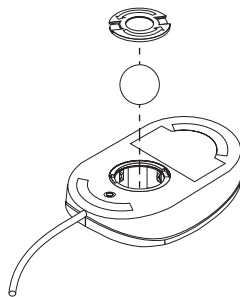
Do not use abrasive cleaners when cleaning the surface of the monitor screen. The screen surface is easily scratched, so avoid touching it with pens, pencil points, and erasers.

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

Mouse

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

1. Turn off the computer.
2. Disconnect the mouse cable from the computer.
3. Turn the mouse upside down. Unlock the retainer on the bottom of the mouse by moving it in the direction indicated by the arrow on the retainer.



4. Turn the mouse right-side up, and the retainer and ball will drop out.
5. Wash the ball in warm, soapy water, and dry it well.
6. Using a damp cloth, wipe the outside of the mouse and the retainer. Be sure to wipe the rollers inside the mouse.
7. Insert the ball and retainer. Lock the retainer by moving it in the opposite direction of the arrow.
8. Reconnect the mouse cable to the computer.

Replacing the Battery

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

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

Refer to “Lithium Battery Notice” on page ix of this publication and *Installing Options in Your IntelliStation Z Pro* for information about replacing the battery.

If you replace the original lithium battery with a heavy-metal battery or a battery with heavy-metal components, be aware of the following environmental consideration: batteries and accumulators that contain heavy metals must not be disposed of with normal domestic waste. They will be taken back free of charge by the manufacturer, distributor, or representative to be recycled or disposed of in a proper manner. For further information on battery disposal, call IBM at 1-800-IBM-4333 (1-800-426-4333) in the U.S. For information outside of the U.S., contact your IBM reseller or marketing representative.

Moving Your Computer

Important

Do not move your computer while it is on. Always turn off the computer before you move it.

Normal shipping and handling can cause loss of data from a hard disk. If your computer has a hard disk drive, take the following precautions:

1. Back up all files and data from the hard disk.
Operating systems can vary in the way they perform backup procedures. Some operating systems save only data files, while others make copies of application program files *and* data files. Refer to your operating system documentation for information about software backup.
2. Remove all media (diskettes, compact discs, tapes, and so on) from the drives.
3. Turn off the computer and all attached devices. Your hard disk drive automatically parks the read/write heads in a nondata area. This process prevents damage to the hard disk.
4. Unplug the power cords from electrical outlets.
5. Note where you have attached your cables to the rear of the computer; then remove them.

CAUTION:

Do not risk injury by moving or lifting the computer by yourself. Ask another person to help you.

6. If you saved the original shipping cartons and packing materials, use them to pack the units. If you are using different cartons, cushion the units to avoid any damage.

Chapter 6. Solving Problems

This chapter presents an overview of diagnostic tools available to you. You can use these tools to identify and correct problems that might come up as you use your computer. This chapter also contains information about option diskettes and terminate-and-stay-resident (TSR) programs.

Using Diagnostic Tools

Computer problems can be caused by hardware, software, or user error (for example, pressing the wrong key). Using the diagnostic aids discussed in this chapter, you might be able to solve such problems yourself or gather helpful information you can pass on to a service technician.

You can check the hardware by following the procedures in this chapter. You can also use the diagnostic programs provided with your computer (see “Diagnostic Programs” on page 97 for a description of these programs).

If the hardware checks out OK, and you have not made a user error, you might have a software problem. If you suspect that you have a software problem and your computer came with IBM-preinstalled software, refer to *About Your Software* and the operating system documentation that comes with your computer. If you have installed software applications yourself, consult the documentation that comes with the software.

The following tools are available to diagnose hardware-related problems:

- Power-on self-test (POST)
- Error messages
- POST message charts
- Troubleshooting charts
- Diagnostic programs

Descriptions of these tools follow.

Power-On Self-Test (POST)

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

Note

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

- Make sure all cables are securely connected to the correct locations.
- Check to see if the voltage-selection switch is set to the correct position.
- Make sure the computer cover is installed properly (pushed all the way on).

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

POST does the following:

- Checks basic system-board operations
- Checks the memory operation
- Compares the current system configuration with that established by the Configuration/Setup Utility program
- Starts the video operation
- Verifies that the diskette drives are working
- Verifies that the hard disk drive and the CD-ROM drive are working

As POST starts, numbers showing the amount of memory being tested appear in the top-left corner of the screen until the total amount of memory in the system is reached. Options for running a fast POST or accessing the Configuration/Setup Utility program appear in the lower-left corner of the screen.

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

If POST finishes without detecting any problems, you will hear one beep and the first screen of your operating system or application program appears (if you have not set a power-on password). If you have set a power-on password, a password prompt appears. You must enter your password before the first screen of your operating system or application program will appear. (For further information on using passwords, refer to “Passwords” on page 43.)

If POST detects a problem, you will hear multiple beeps or no beep. In most cases, an error code appears in the top left corner of the screen, and in some cases a description of the error is displayed beside the code. (Note that the screen will sometimes display multiple error codes and descriptions.) For more information about what caused an error message to appear and what action to take, refer to

“Solving POST Error Message Problems” on page 62 and “POST Message Charts” on page 65.

If you hear no beep at all during POST, refer to “Troubleshooting Charts” on page 84. You might need to have your computer serviced.

Error Messages

Error messages that appear on the screen might be text, numeric, or both. There are several types of error messages:

- POST error messages

Messages that appear when POST finds problems with the hardware during startup or when a change in the hardware configuration is found. POST error messages are 3-, 4-, 5-, 8-, or 12-character alphanumeric messages and include brief explanations (except I999XXXX errors).

For more information about what caused an error message to appear and what action to take, refer to “Solving POST Error Message Problems” on page 62 and “POST Message Charts” on page 65.

- SCSI error messages

Messages that appear if a problem or conflict is detected by the SCSI host adapter. Refer to the SCSI documentation that comes with your computer for information about these messages.

- Software-generated error messages

Messages that appear if a problem or conflict is detected by the application program, the operating system, or both. Error messages for operating-system and other software problems are generally text messages, but they also can be numeric messages. For information about these software error messages, refer to the information that comes with the operating system or application program, or both.

- Diagnostic error messages

Messages that appear if a hardware problem is detected by a diagnostic test program. The messages present text information that can be used to identify a failing part.

Solving POST Error Message Problems: If you receive an error message during the power-on-self-test (POST), completing the steps outlined in this section might enable you to resolve the problem.

Note

If you have just added, removed, or changed the location of a device and you receive an error message, follow the procedure described in the **Important** text box on page 38. If the procedure on page 38 does not eliminate the error message, then proceed with the following instructions.

1. Write down all error code numbers and descriptions that appear on the screen as you start your computer. (Note that a single problem can cause several error messages to appear. When you correct the cause of the first error message, the other error messages probably will not appear on the screen the next time you turn on your computer.)
2. If you have set a power-on password, a password prompt appears. (You must wait approximately one minute after the memory count numbers stop cycling in the top-left corner of the screen for the password prompt to appear.) If you have set both power-on and administrator passwords, you can type either of the passwords at the password prompt. However, if you think you might need to change any settings in the Configuration/Setup Utility program, you must type your administrator password at the password prompt. If you type your power-on password, you will be able to view error codes and error code descriptions displayed on the POST Startup Errors screen, and you will also be able to view limited information in the Configuration/Setup Utility program. However, you will not be able to change any settings.
3. In the case of most errors, the Configuration/Setup Utility program starts automatically so that you can attempt to identify and correct the problem. When the Configuration/Setup Utility program starts, a screen labeled POST Startup Errors appears. (Note that the POST Startup Errors screen does not appear immediately. You must wait approximately one minute.) If the POST Startup Errors screen does not appear, proceed to step 6.
4. At the POST Startup Errors screen, select **Continue** if you want to access the Configuration/Setup Utility program menu. Select **Exit Setup** if you want to exit the Configuration/Setup Utility program. (See the **Important** text box in step 5 for information on exiting the Configuration/Setup Utility program without making any changes to current settings.) To select an item, press Up Arrow (↑) or Down Arrow (↓) to highlight the item, and then press **Enter**.
5. If you selected **Continue** in step 4, the Configuration/Setup Utility program menu appears on the screen. You will see a pointer next to any menu items

that are malfunctioning or that have been changed since the last time you turned on your computer. If you did not knowingly make a change to a flagged menu item, there is likely a malfunction in that item. If you made a change, continue here. If you did not make a change, go to step 5e.

To use the Configuration/Setup Utility program, do the following:

- a. Select the menu item that is flagged (or that you wish to view) by pressing Up Arrow (↑) or Down Arrow (↓), and then press **Enter**.
- b. A new menu specific to the item that you selected appears. Press Left Arrow (←) or Right Arrow (→) to toggle between choices for a menu item. (Note that each menu item has a Help screen. To view the Help screen, select the menu item, and then press **F1**.)
- c. When you have finished viewing and changing settings, press **Esc** to return to the Configuration/Setup Utility program menu.
- d. Before you exit from the program, select **Save Settings**. When you exit from the Configuration/Setup Utility program menu (see step 5e), your operating system will start automatically (unless there is an unresolved problem with the IDE hard disk drive).

Important

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

- You will get an error message if you exit from the Configuration/Setup Utility program without selecting **Save Settings**. Your operating system will not start, but the computer will automatically restart. When the computer restarts, you will get a POST error message, and then the Configuration/Setup Utility program will again start automatically.
- You will *not* get an error message if you select **Save Settings**, and then exit the Configuration/Setup Utility program. Your system will save all settings as they currently appear in the Configuration/Setup Utility program and your operating system will start (unless there is an unresolved problem with an IDE device).

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

6. For more information about what caused an error message to appear and what action to take, refer to the following chart.

Problem	Go to:
POST error code or message appears.	“POST Message Charts” on page 65.
After more than one beep, application program or operating system appears.	“Diagnostic Programs” on page 97.
Blank screen, unreadable screen, or other unusual response occurs.	“Troubleshooting Charts” on page 84.

If you are unable to resolve a problem and need assistance, refer to Chapter 7, “Getting Help, Service, and Information” on page 99.

POST Message Charts

The computer might display more than one error message. Often, the first error to occur causes subsequent errors. When using the POST message charts in this section, always begin by following the suggested action for the *first* error message that appears on your computer screen. Note that, in these charts, “X” can be any alphanumeric character.

Important

If you find it necessary to remove the computer cover, first read "Removing the Cover" in *Installing Options in Your IntelliStation Z Pro* for important safety information and instructions.

POST Message	Description
101 102	A failure occurred during testing of the system board and microprocessor. Action: Have the computer serviced.
110	A memory parity failure occurred during testing of the system board. Action: Run the diagnostic programs to verify that a problem exists in a DIMM. (See “Diagnostic Programs” on page 97 for information about diagnostic programs provided with your computer.) Refer to <i>Installing Options in Your IntelliStation Z Pro</i> if you need to reconfigure the system memory to aid in identifying the defective DIMM. If you cannot identify the defective DIMM in this way, have the computer serviced.
114	An adapter read-only memory (ROM) error occurred. Action: Remove all adapters that are not required for system startup and reinstall them one at a time, retesting after each is reinstalled. When an adapter fails, replace it. If the problem cannot be isolated and corrected, have the computer serviced.
121	A hardware error occurred. Action: Have the computer serviced.

POST Message	Description
161	<p>The battery on the system board is dead.</p> <p>CAUTION: Danger of explosion if lithium battery is incorrectly replaced.</p> <p>Replace the battery with the same or equivalent type recommended by the manufacturer. Dispose of batteries as required by local ordinances or regulations. (See “Lithium Battery Notice” on page ix and “Replacing the Battery” on page 56 for important information on battery use, disposal, and replacement.)</p> <p>Action: The computer can be used until you replace the battery. However, you will have to run the Configuration/Setup Utility program to set the time and date each time the computer is turned on until a new battery is installed. (For instructions on using the Configuration/Setup Utility program, see “Configuring Your Computer” on page 37.)</p>

POST Message	Description
162	<p>A change in device configuration occurred. This message is displayed under one or more of the following conditions:</p> <ul style="list-style-type: none"> • A new device has been installed. • A device has been moved to a different location or cable connection. • A device has been removed or disconnected from a cable. • A device is failing and is no longer recognized by the computer as being installed. • An external device is not turned on. • Processor update code has not been installed or cannot be found. • An invalid checksum is detected in CMOS memory (nonvolatile RAM). <p>Action:</p> <ol style="list-style-type: none"> 1. Verify that all external devices are turned on. External devices must be turned on before the computer is turned on. 2. Verify that all devices are properly installed and securely connected. 3. If you added, removed, or changed the location of a device, you must save the new configuration in the Configuration/Setup Utility program. Refer to the Important text box on page 38 for further information and instructions on saving the configuration. 4. If you added or changed a microprocessor, you must update system programs. Refer to “Updating System Programs” on page 27 for instructions. 5. If you did not add, remove, or change the location of a device, a device is probably failing. Running the diagnostic programs might isolate the failing device. (See “Diagnostic Programs” on page 97 for information about diagnostic programs provided with your computer.) <p>If the problem cannot be isolated and corrected, have the computer serviced.</p>

POST Message	Description
163	<p>The clock is not working correctly.</p> <p>Action: Set the correct date and time. If the date and time are set correctly and saved and the 163 error message reappears, replace the battery.</p> <p>If this does not correct the problem, have the computer serviced.</p> <p>Note: The computer can be used until it is serviced, but any application programs that use the date and time will be affected.</p>
164	<p>A change in the memory configuration occurred. This error can be caused by adding, removing, or incorrectly installing memory.</p> <p>Note: The computer can be used with decreased memory capacity until the error is corrected.</p> <p>Action:</p> <ol style="list-style-type: none"> 1. If you added memory, see <i>Installing Options in Your IntelliStation Z Pro</i> to verify that the new memory is correct for your computer and that it is installed correctly. 2. If you added or removed memory, you must save the new configuration in the Configuration/Setup Utility program. Refer to the Important text box on page 38 for further information and instructions on saving the configuration. 3. Running the diagnostic programs might isolate the location of the problem DIMM and provide additional information. (See "Diagnostic Programs" on page 97 for information about diagnostic programs provided with your computer.) <p>If the problem cannot be isolated and corrected, have the computer serviced.</p>

POST Message	Description
20X	<p>A failure occurred during testing of the memory. This error can be caused by incorrectly installed memory, a failing DIMM, or a system-board failure.</p> <p>Action:</p> <ol style="list-style-type: none"> 1. If you have added memory, see <i>Installing Options in Your IntelliStation Z Pro</i> and “Configuring Your Computer” on page 37 of this booklet to verify that the new memory is correct for your computer, and that it is installed and configured correctly. 2. Run the diagnostic programs to verify the problem. (See “Diagnostic Programs” on page 97 for information about diagnostic programs provided with your computer.) <p>If the problem cannot be isolated and corrected, have the computer serviced.</p>
301 303	<p>A failure occurred during testing of the keyboard and keyboard controller. These error messages also might be accompanied by continuous beeping.</p> <p>Action:</p> <p>Ensure that:</p> <ol style="list-style-type: none"> 1. Nothing is resting on the keyboard and pressing a key. 2. No key is stuck. 3. The keyboard cable is securely attached to the keyboard connector on the computer. (For the location of the keyboard connector, refer to “Connectivity” on page 11.) <p>Note: If you have just connected a new mouse or other pointing device, turn the computer off and disconnect that device. Wait at least 5 seconds, and then turn the computer on. If the error message goes away, replace the device. If the error message remains, have the keyboard and cable or the computer serviced.</p>

POST Message	Description
601	<p>A failure occurred during testing of the diskette drive and diskette-drive controller. This error can be caused by a loose or incorrectly connected cable, a failing drive, or a failing system board.</p> <p>Note: The computer can be used, but one or more diskette drives might not work.</p> <p>Action: Verify that all diskette drive cables are properly installed and securely connected.</p> <p>Running the diagnostic programs might isolate the diskette drive that failed, but you must have your computer serviced. (See “Diagnostic Programs” on page 97 for information about diagnostic programs provided with your computer.)</p>
602	<p>The computer is not able to start the diskette in the drive. The diskette might be damaged or formatted incorrectly.</p> <p>Action: Try another startable diskette that is formatted correctly and is in good condition. (For information and instructions on formatting diskettes, refer to “Formatting Diskettes” on page 31 and your operating system documentation.)</p> <p>If this does not correct the problem, have the computer serviced.</p>
604	<p>A failure occurred during the testing of a diskette drive.</p> <p>Action:</p> <ol style="list-style-type: none"> 1. Verify that the Configuration/Setup Utility program correctly reflects the type of diskette drive you have installed. (For instructions on using the Configuration/Setup Utility program, refer to “Configuring Your Computer” on page 37.) 2. Run the diagnostic programs. (See “Diagnostic Programs” on page 97 for information about diagnostic programs provided with your computer.) 3. If the diagnostic programs detect a failure, replace the diskette drive. <p>If the problem cannot be isolated and corrected, have the computer serviced.</p>

POST Message	Description
662	<p>A diskette drive configuration error occurred.</p> <p>Action:</p> <ol style="list-style-type: none"> 1. Verify that the Configuration/Setup Utility program correctly reflects the number of diskette drives you have installed. (For instructions on using the Configuration/Setup Utility program, refer to “Configuring Your Computer” on page 37.) 2. If you installed or removed a diskette drive, you must save the new configuration in the Configuration/Setup Utility program. Refer to the Important text box on page 38 for further information and instructions on saving the configuration. <p>If this does not correct the problem, have the computer serviced.</p>
178X	<p>A failure occurred during testing of the hard disk drive or a primary or secondary IDE device.</p> <p>Action:</p> <ol style="list-style-type: none"> 1. Run the diagnostic programs. (See “Diagnostic Programs” on page 97 for information about diagnostic programs provided with your computer.) 2. If the diagnostic programs detect a failure, replace the defective hard disk drive or primary or secondary IDE or EIDE device. <p>If the problem cannot be isolated and corrected, have the computer serviced.</p>
1762	<p>A hard disk configuration error occurred.</p> <p>Action:</p> <ol style="list-style-type: none"> 1. Verify that the Configuration/Setup Utility program correctly reflects the number of hard disk drives you have installed. (For instructions on using the Configuration/Setup Utility program, refer to “Configuring Your Computer” on page 37.) 2. If you added or removed a hard disk drive, you must save the new configuration in the Configuration/Setup Utility program. Refer to the Important text box on page 38 for further information and instructions on saving the configuration. <p>If the problem cannot be isolated and corrected, have the computer serviced.</p>

POST Message	Description
1800	<p data-bbox="431 596 1094 653">A PCI adapter has requested a hardware interrupt that is not available.</p> <p data-bbox="431 674 509 699">Action:</p> <ol data-bbox="444 720 1162 894" style="list-style-type: none"> <li data-bbox="444 720 1162 894">1. Make sure that all ISA legacy adapters are set correctly in the Configuration/Setup Utility program. If the hardware interrupt settings are not correct, change and save the settings. Setting the resources used by ISA legacy adapters to Not available enables the Plug and Play function to configure around the legacy adapters. <p data-bbox="472 915 1162 1115">For background information on PCI, ISA, Plug and Play, and legacy (non-Plug and Play) adapters, refer to <i>Installing Options in Your IntelliStation Z Pro</i>. For information about required interrupt resource settings for ISA legacy adapters, refer to the documentation that comes with these adapters. For instructions on using the Configuration/Setup Utility program, see “Configuring Your Computer” on page 37.</p> <ol data-bbox="444 1136 1162 1587" style="list-style-type: none"> <li data-bbox="444 1136 1162 1220">2. Make sure that switches on all ISA legacy adapters are set correctly. For information about switch settings, refer to the documentation that comes with the ISA legacy adapters. <li data-bbox="444 1241 1162 1377">3. If all hardware interrupts are being used by ISA legacy adapters, you might need to remove an ISA legacy adapter to make an interrupt available to the PCI adapter you want to install. For instructions on removing adapters, see <i>Installing Options in Your IntelliStation Z Pro</i>. <p data-bbox="472 1398 1162 1482">Note: If you remove an ISA legacy adapter, set the hardware interrupt used by the removed adapter to Available before installing another adapter.</p> <ol data-bbox="444 1503 1162 1587" style="list-style-type: none"> <li data-bbox="444 1503 1162 1587">4. If you have other PCI or Plug and Play adapters installed, you might need to remove one of these adapters to make an interrupt available to the PCI adapter you want to install. <p data-bbox="431 1608 1162 1665">If the problem cannot be isolated and corrected, have the computer serviced.</p>

POST Message	Description
1801	<p data-bbox="542 596 1195 653">A PCI adapter has requested memory resources that are not available.</p> <p data-bbox="542 674 623 699">Action:</p> <ol data-bbox="553 716 1263 890" style="list-style-type: none"> <li data-bbox="553 716 1263 890">1. Make sure that all ISA legacy adapters are set correctly in the Configuration/Setup Utility program. If the memory resource settings are not correct, change and save the settings. Setting the resources used by ISA legacy adapters to Not available enables the Plug and Play function to configure around the legacy adapters. <p data-bbox="583 909 1268 1115">For background information on PCI, ISA, Plug and Play, and legacy (non-Plug and Play) adapters, refer to <i>Installing Options in Your IntelliStation Z Pro</i>. For information about required memory resource settings for ISA legacy adapters, refer to the documentation that comes with these adapters. For instructions on using the Configuration/Setup Utility program, see “Configuring Your Computer” on page 37.</p> <ol data-bbox="553 1134 1268 1587" style="list-style-type: none"> <li data-bbox="553 1134 1268 1220">2. Make sure that switches on all ISA legacy adapters are set correctly. For information about switch settings, refer to the documentation that comes with the ISA legacy adapters. <li data-bbox="553 1239 1268 1381">3. If all memory resources are being used by ISA legacy adapters, you might need to remove an ISA legacy adapter to make memory available to the PCI adapter you want to install. For instructions on removing adapters, see <i>Installing Options in Your IntelliStation Z Pro</i>. <p data-bbox="583 1400 1247 1486">Note: If you remove an ISA legacy adapter, set the memory resources used by the removed adapter to Available before installing another adapter.</p> <ol data-bbox="553 1505 1263 1587" style="list-style-type: none"> <li data-bbox="553 1505 1263 1587">4. If you have other PCI or Plug and Play adapters installed, you might need to remove one of these adapters to make memory available to the PCI adapter you want to install. <p data-bbox="542 1606 1268 1656">If the problem cannot be isolated and corrected, have the computer serviced.</p>

POST Message	Description
1802	<p data-bbox="431 596 1162 655">A PCI adapter has requested an I/O address that is not available, or the PCI adapter might be defective.</p> <p data-bbox="431 672 513 697">Action:</p> <ol data-bbox="444 714 1162 1587" style="list-style-type: none"> <li data-bbox="444 714 1162 890">1. Make sure that all ISA legacy adapters are set correctly in the Configuration/Setup Utility program. If the I/O address settings are not correct, change and save the settings. Setting the resources used by ISA legacy adapters to Not available enables the Plug and Play function to configure around the legacy adapters. For background information on PCI, ISA, Plug and Play, and legacy (non-Plug and Play) adapters, refer to <i>Installing Options in Your IntelliStation Z Pro</i>. For information about required I/O resource settings for ISA legacy adapters, refer to the documentation that comes with these adapters. For instructions on using the Configuration/Setup Utility program, see “Configuring Your Computer” on page 37. <li data-bbox="444 1129 1162 1213">2. Make sure that switches on all ISA legacy adapters are set correctly. For information about switch settings, refer to the documentation that comes with the ISA legacy adapters. <li data-bbox="444 1234 1162 1377">3. If all I/O addresses are being used by ISA legacy adapters, you might need to remove an ISA legacy adapter to make an I/O address available to the PCI adapter you want to install. For instructions on removing adapters, see <i>Installing Options in Your IntelliStation Z Pro</i>. Note: If you remove an ISA legacy adapter, set the I/O address used by the removed adapter to Available before installing another adapter. <li data-bbox="444 1499 1162 1587">4. If you have other PCI or Plug and Play adapters installed, you might need to remove one of these adapters to make an I/O address available to the PCI adapter you want to install. <p data-bbox="431 1604 1162 1663">If the problem cannot be isolated and corrected, have the computer serviced.</p>

POST Message	Description
1803	<p data-bbox="542 596 1179 653">A PCI adapter has requested a memory address that is not available, or the PCI adapter might be defective.</p> <p data-bbox="542 674 623 699">Action:</p> <ol data-bbox="553 716 1256 890" style="list-style-type: none"> <li data-bbox="553 716 1256 890">1. Make sure that all ISA legacy adapters are set correctly in the Configuration/Setup Utility program. If the memory address settings are not correct, change and save the settings. Setting the resources used by ISA legacy adapters to Not available enables the Plug and Play function to configure around the legacy adapters. <p data-bbox="583 909 1268 1115">For background information on PCI, ISA, Plug and Play, and legacy (non-Plug and Play) adapters, refer to <i>Installing Options in Your IntelliStation Z Pro</i>. For information about required memory resource settings for ISA legacy adapters, refer to the documentation that comes with these adapters. For instructions on using the Configuration/Setup Utility program, see “Configuring Your Computer” on page 37.</p> <ol data-bbox="553 1134 1268 1612" style="list-style-type: none"> <li data-bbox="553 1134 1268 1213">2. Make sure that switches on all ISA legacy adapters are set correctly. For information about switch settings, refer to the documentation that comes with the ISA legacy adapters. <li data-bbox="553 1232 1268 1377">3. If all memory addresses are being used by ISA legacy adapters, you might need to remove an ISA legacy adapter to make a memory address available to the PCI adapter you want to install. For instructions on removing adapters, see <i>Installing Options in Your IntelliStation Z Pro</i>. <p data-bbox="583 1396 1247 1482">Note: If you remove an ISA legacy adapter, set the memory address used by the removed adapter to Available before installing another adapter.</p> <ol data-bbox="553 1501 1256 1612" style="list-style-type: none"> <li data-bbox="553 1501 1256 1612">4. If you have other PCI or Plug and Play adapters installed, you might need to remove one of these adapters to make a memory address available to the PCI adapter you want to install. <p data-bbox="542 1631 1268 1688">If the problem cannot be isolated and corrected, have the computer serviced.</p>

POST Message	Description
1804	<p>A PCI adapter has requested a memory address that is not available.</p> <p>Action:</p> <ol style="list-style-type: none"> 1. Make sure that all ISA legacy adapters are set correctly in the Configuration/Setup Utility program. If the memory address settings are not correct, change and save the settings. Setting the resources used by ISA legacy adapters to Not available enables the Plug and Play function to configure around the legacy adapter. <p>For background information on PCI, ISA, Plug and Play, and legacy (non-Plug and Play) adapters, refer to <i>Installing Options in Your IntelliStation Z Pro</i>. For information about required memory resource settings for ISA legacy adapters, refer to the documentation that comes with these adapters. For instructions on using the Configuration/Setup Utility program, see “Configuring Your Computer” on page 37.</p> <ol style="list-style-type: none"> 2. Make sure that switches on all ISA legacy adapters are set correctly. For information about switch settings, refer to the documentation that comes with the ISA legacy adapters. 3. If all memory addresses are being used by ISA legacy adapters, you might need to remove an ISA legacy adapter to make a memory address available to the PCI adapter you want to install. For instructions on removing adapters, see <i>Installing Options in Your IntelliStation Z Pro</i>. <p>Note: If you remove an ISA legacy adapter, set the memory address used by the removed adapter to Available before installing another adapter.</p> <ol style="list-style-type: none"> 4. If you have other PCI or Plug and Play adapters installed, you might need to remove one of these adapters to make a memory address available to the PCI adapter you want to install. <p>If the problem cannot be isolated and corrected, have the computer serviced.</p>
1805	<p>A PCI adapter read-only memory (ROM) error occurred.</p> <p>Action: Remove all of the PCI adapters that are not required for system startup and reinstall them one at a time, retesting after each is reinstalled. When an adapter fails, replace it.</p> <p>If the problem cannot be isolated and corrected, have the computer serviced.</p>

POST Message	Description
1850	<p data-bbox="542 596 1268 653">A Plug and Play adapter has requested a hardware interrupt that is not available.</p> <p data-bbox="542 674 623 699">Action:</p> <ol data-bbox="553 716 1268 890" style="list-style-type: none"> <li data-bbox="553 716 1268 890">1. Make sure that all ISA legacy adapters are set correctly in the Configuration/Setup Utility program. If the hardware interrupt settings are not correct, change and save the settings. Setting the resources used by ISA legacy adapters to Not available enables the Plug and Play function to configure around the legacy adapters. <p data-bbox="583 909 1268 1115">For background information on PCI, ISA, Plug and Play, and legacy (non-Plug and Play) adapters, refer to <i>Installing Options in Your IntelliStation Z Pro</i>. For information about required interrupt resource settings for ISA legacy adapters, refer to the documentation that comes with these adapters. For instructions on using the Configuration/Setup Utility program, see “Configuring Your Computer” on page 37.</p> <ol data-bbox="553 1134 1268 1614" style="list-style-type: none"> <li data-bbox="553 1134 1268 1215">2. Make sure that switches on all ISA legacy adapters are set correctly. For information about switch settings, refer to the documentation that comes with the ISA legacy adapters. <li data-bbox="553 1234 1268 1379">3. If all hardware interrupts are being used by ISA legacy adapters, you might need to remove an ISA legacy adapter to make an interrupt available to the Plug and Play adapter you want to install. For instructions on removing adapters, see <i>Installing Options in Your IntelliStation Z Pro</i>. <p data-bbox="583 1398 1268 1480">Note: If you remove an ISA legacy adapter, set the hardware interrupt used by the removed adapter to Available before installing another adapter.</p> <ol data-bbox="553 1499 1268 1614" style="list-style-type: none"> <li data-bbox="553 1499 1268 1614">4. If you have other PCI or Plug and Play adapters installed, you might need to remove one of these adapters to make an interrupt available to the Plug and Play adapter you want to install. <p data-bbox="542 1633 1268 1682">If the problem cannot be isolated and corrected, have the computer serviced.</p>

POST Message	Description
1851	<p data-bbox="431 596 1153 653">A Plug and Play adapter has requested memory resources that are not available.</p> <p data-bbox="431 674 509 699">Action:</p> <ol data-bbox="444 720 1153 892" style="list-style-type: none"> <li data-bbox="444 720 1153 892">1. Make sure that all ISA legacy adapters are set correctly in the Configuration/Setup Utility program. If the memory resource settings are not correct, change and save the settings. Setting the resources used by ISA legacy adapters to Not available enables the Plug and Play function to configure around the legacy adapters. <p data-bbox="472 913 1153 1115">For background information on PCI, ISA, Plug and Play, and legacy (non-Plug and Play) adapters, refer to <i>Installing Options in Your IntelliStation Z Pro</i>. For information about required memory resource settings for ISA legacy adapters, refer to the documentation that comes with these adapters. For instructions on using the Configuration/Setup Utility program, see “Configuring Your Computer” on page 37.</p> <ol data-bbox="444 1136 1153 1587" style="list-style-type: none"> <li data-bbox="444 1136 1153 1220">2. Make sure that switches on all ISA legacy adapters are set correctly. For information about switch settings, refer to the documentation that comes with the ISA legacy adapters. <li data-bbox="444 1241 1153 1377">3. If all memory resources are being used by ISA legacy adapters, you might need to remove an ISA legacy adapter to make memory available to the Plug and Play adapter you want to install. For instructions on removing adapters, see <i>Installing Options in Your IntelliStation Z Pro</i>. <p data-bbox="472 1398 1153 1482">Note: If you remove an ISA legacy adapter, set the memory resources used by the removed adapter to Available before installing another adapter.</p> <ol data-bbox="444 1503 1153 1587" style="list-style-type: none"> <li data-bbox="444 1503 1153 1587">4. If you have other PCI or Plug and Play adapters installed, you might need to remove one of these adapters to make memory available to the Plug and Play adapter you want to install. <p data-bbox="431 1608 1153 1654">If the problem cannot be isolated and corrected, have the computer serviced.</p>

POST Message	Description
1852	<p data-bbox="542 596 1268 653">A Plug and Play adapter has requested an I/O address that is not available, or the Plug and Play adapter might be defective.</p> <p data-bbox="542 674 623 699">Action:</p> <ol data-bbox="553 716 1268 890" style="list-style-type: none"> <li data-bbox="553 716 1268 890">1. Make sure that all ISA legacy adapters are set correctly in the Configuration/Setup Utility program. If the I/O address settings are not correct, change and save the settings. Setting the resources used by ISA legacy adapters to Not available enables the Plug and Play function to configure around the legacy adapters. <p data-bbox="583 909 1268 1115">For background information on PCI, ISA, Plug and Play, and legacy (non-Plug and Play) adapters, refer to <i>Installing Options in Your IntelliStation Z Pro</i>. For information about required I/O resource settings for ISA legacy adapters, refer to the documentation that comes with these adapters. For instructions on using the Configuration/Setup Utility program, see “Configuring Your Computer” on page 37.</p> <ol data-bbox="553 1134 1268 1381" style="list-style-type: none"> <li data-bbox="553 1134 1268 1215">2. Make sure that switches on all ISA legacy adapters are set correctly. For information about switch settings, refer to the documentation that comes with the ISA legacy adapters. <li data-bbox="553 1234 1268 1381">3. If all I/O addresses are being used by ISA legacy adapters, you might need to remove an ISA legacy adapter to make an I/O address available to the Plug and Play adapter you want to install. For instructions on removing adapters, see <i>Installing Options in Your IntelliStation Z Pro</i>. <p data-bbox="583 1400 1268 1482">Note: If you remove an ISA legacy adapter, set the I/O address used by the removed adapter to Available before installing another adapter.</p> <ol data-bbox="553 1501 1268 1614" style="list-style-type: none"> <li data-bbox="553 1501 1268 1614">4. If you have other PCI or Plug and Play adapters installed, you might need to remove one of these adapters to make an I/O address available to the Plug and Play adapter you want to install. <p data-bbox="542 1633 1268 1682">If the problem cannot be isolated and corrected, have the computer serviced.</p>

POST Message	Description
1853	<p data-bbox="431 596 1162 653">A Plug and Play adapter has requested a memory address that is not available, or the Plug and Play adapter might be defective.</p> <p data-bbox="431 674 513 699">Action:</p> <ol data-bbox="444 720 1162 1619" style="list-style-type: none"> <li data-bbox="444 720 1162 894">1. Make sure that all ISA legacy adapters are set correctly in the Configuration/Setup Utility program. If the memory address settings are not correct, change and save the settings. Setting the resources used by ISA legacy adapters to Not available enables the Plug and Play function to configure around the legacy adapters. For background information on PCI, ISA, Plug and Play, and legacy (non-Plug and Play) adapters, refer to <i>Installing Options in Your IntelliStation Z Pro</i>. For information about required memory resource settings for ISA legacy adapters, refer to the documentation that comes with these adapters. For instructions on using the Configuration/Setup Utility program, see “Configuring Your Computer” on page 37. <li data-bbox="444 1136 1162 1213">2. Make sure that switches on all ISA legacy adapters are set correctly. For information about switch settings, refer to the documentation that comes with the ISA legacy adapters. <li data-bbox="444 1241 1162 1381">3. If all memory addresses are being used by ISA legacy adapters, you might need to remove an ISA legacy adapter to make a memory address available to the Plug and Play adapter you want to install. For instructions on removing adapters, see <i>Installing Options in Your IntelliStation Z Pro</i>. Note: If you remove an ISA legacy adapter, set the memory address used by the removed adapter to Available before installing another adapter. <li data-bbox="444 1503 1162 1619">4. If you have other PCI or Plug and Play adapters installed, you might need to remove one of these adapters to make a memory address available to the Plug and Play adapter you want to install. <p data-bbox="431 1640 1162 1694">If the problem cannot be isolated and corrected, have the computer serviced.</p>

POST Message	Description
1854	<p data-bbox="540 596 1268 653">A Plug and Play adapter has requested a memory address that is not available.</p> <p data-bbox="540 674 623 699">Action:</p> <ol data-bbox="553 716 1255 890" style="list-style-type: none"> <li data-bbox="553 716 1255 890">1. Make sure that all ISA legacy adapters are set correctly in the Configuration/Setup Utility program. If the memory address settings are not correct, change and save the settings. Setting the resources used by ISA legacy adapters to Not available enables the Plug and Play function to configure around the legacy adapters. <p data-bbox="583 909 1268 1115">For background information on PCI, ISA, Plug and Play, and legacy (non-Plug and Play) adapters, refer to <i>Installing Options in Your IntelliStation Z Pro</i>. For information about required memory resource settings for ISA legacy adapters, refer to the documentation that comes with these adapters. For instructions on using the Configuration/Setup Utility program, see “Configuring Your Computer” on page 37.</p> <ol data-bbox="553 1134 1255 1614" style="list-style-type: none"> <li data-bbox="553 1134 1255 1215">2. Make sure that switches on all ISA legacy adapters are set correctly. For information about switch settings, refer to the documentation that comes with the ISA legacy adapters. <li data-bbox="553 1234 1255 1379">3. If all memory addresses are being used by ISA legacy adapters, you might need to remove an ISA legacy adapter to make a memory address available to the Plug and Play adapter you want to install. For instructions on removing adapters, see <i>Installing Options in Your IntelliStation Z Pro</i>. <p data-bbox="583 1398 1247 1480">Note: If you remove an ISA legacy adapter, set the memory address used by the removed adapter to Available before installing another adapter.</p> <ol data-bbox="553 1499 1255 1614" style="list-style-type: none"> <li data-bbox="553 1499 1255 1614">4. If you have other PCI or Plug and Play adapters installed, you might need to remove one of these adapters to make a memory address available to the Plug and Play adapter you want to install. <p data-bbox="540 1633 1268 1688">If the problem cannot be isolated and corrected, have the computer serviced.</p>
1855	<p data-bbox="540 1707 1268 1732">A Plug and Play adapter read-only memory (ROM) error occurred.</p> <p data-bbox="540 1751 1268 1833">Action: Remove all of the Plug and Play adapters that are not required for system startup and reinstall them one at a time, retesting after each is reinstalled. When an adapter fails, replace it.</p> <p data-bbox="540 1852 1268 1906">If the problem cannot be isolated and corrected, have the computer serviced.</p>

POST Message	Description
1856	<p data-bbox="431 596 1153 653">A Plug and Play adapter has requested a DMA address that is not available.</p> <p data-bbox="431 674 513 699">Action:</p> <ol data-bbox="444 716 1143 890" style="list-style-type: none"> <li data-bbox="444 716 1143 890">1. Make sure that all ISA legacy adapters are set correctly in the Configuration/Setup Utility program. If the DMA address settings are not correct, change and save the settings. Setting the resources used by ISA legacy adapters to Not available enables the Plug and Play function to configure around the legacy adapters. <p data-bbox="472 909 1153 1115">For background information on PCI, ISA, Plug and Play, and legacy (non-Plug and Play) adapters, refer to <i>Installing Options in Your IntelliStation Z Pro</i>. For information about required DMA resource settings for ISA legacy adapters, refer to the documentation that comes with these adapters. For instructions on using the Configuration/Setup Utility program, see “Configuring Your Computer” on page 37.</p> <ol data-bbox="444 1134 1153 1381" style="list-style-type: none"> <li data-bbox="444 1134 1153 1220">2. Make sure that switches on all ISA legacy adapters are set correctly. For information about switch settings, refer to the documentation that comes with the ISA legacy adapters. <li data-bbox="444 1239 1153 1381">3. If all DMA addresses are being used by ISA legacy adapters, you might need to remove an ISA legacy adapter to make a DMA address available to the Plug and Play adapter you want to install. For instructions on removing adapters, see <i>Installing Options in Your IntelliStation Z Pro</i>. <p data-bbox="472 1400 1105 1486">Note: If you remove an ISA legacy adapter, set the DMA address used by the removed adapter to Available before installing another adapter.</p> <ol data-bbox="444 1505 1153 1619" style="list-style-type: none"> <li data-bbox="444 1505 1153 1619">4. If you have other PCI or Plug and Play adapters installed, you might need to remove one of these adapters to make a DMA address available to the Plug and Play adapter you want to install. <p data-bbox="431 1638 1153 1686">If the problem cannot be isolated and corrected, have the computer serviced.</p>

POST Message	Description
1962	<p>A startup sequence error occurred.</p> <p>Action:</p> <ol style="list-style-type: none"> 1. Make sure the startup options are set correctly in the Configuration/Setup Utility program. If the settings are not correct, change and save them. For instructions on using the Configuration/Setup Utility program, see “Configuring Your Computer” on page 37. 2. Make sure the primary IDE cable is properly installed and securely connected. 3. Make sure all adapters are installed correctly. For instructions on adding adapters, see <i>Installing Options in Your IntelliStation Z Pro</i>. <p>If the problem cannot be isolated and corrected, have the computer serviced.</p>
2462	<p>A video configuration error occurred.</p> <p>Action:</p> <ol style="list-style-type: none"> 1. Make sure the preinstalled graphics adapter in your computer is securely connected to the riser card. (For the location of the riser card, refer to <i>Installing Options in Your IntelliStation Z Pro</i>.) 2. Make sure the monitor signal cable is securely attached to the proper connector on the graphics adapter. (For the location of the connector on the graphics adapter, refer to “Connectivity” on page 11.) 3. If you just added or removed video memory, you must save the new configuration in the Configuration/Setup Utility program. Refer to the Important text box on page 38 for further information and instructions on saving the configuration. <p>If the problem cannot be isolated and corrected, have the computer serviced.</p>
I9990301	<p>A hard disk failure occurred.</p> <p>Action: Have the computer serviced.</p>
Other Numbers	<p>The computer POST found an error.</p> <p>Action: Follow the instructions on the screen.</p>

Troubleshooting Charts

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

Important

If you find it necessary to remove the computer cover, first read "Removing the Cover" in *Installing Options in Your IntelliStation Z Pro* for important safety information and instructions.

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

- Remove the software or device you just added.
- Run the diagnostic programs to determine if your computer is running correctly. (See "Diagnostic Programs" on page 97 for information about diagnostic programs provided with your computer.)
- Reinstall the new software or new device.

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

Problem Type	Go to:
Diskette Drive	Page 85
General	Page 88
Infrared Port	Page 89
Intermittent	Page 89
Keyboard, Mouse, or Pointing-Device	Page 89
Memory	Page 90
Monitor	Page 85
Option	Page 91
Parallel Port	Page 92
Printer	Page 93
Serial Port 1	Page 92
Serial Port 2	Page 92
Software	Page 93
Universal Serial Bus Port	Page 94

Diskette Drive Problems	Action
Diskette drive in-use light stays on, or the system bypasses the diskette drive.	<p>If there is a diskette in the drive, verify that:</p> <ol style="list-style-type: none"> 1. The diskette drive is enabled. Use the Configuration/Setup Utility program to check this. For instructions on using the Configuration/Setup Utility program, refer to “Configuring Your Computer” on page 37. 2. The computer is checking for the diskette drive in the startup sequence. Use the Configuration/Setup Utility program to verify this. 3. The diskette you are using is good and not damaged. Try inserting another diskette if you have one. 4. The diskette is inserted correctly, with its label up and its metal-shutter end first in the drive. 5. The diskette contains the necessary files to start the computer (the diskette must be startable). 6. The diskette drive cable is properly installed and securely connected. 7. There is no problem with your software program (see Software Problem on page 93). <p>If the problem cannot be isolated and corrected, have the computer serviced.</p>

Monitor Problems	Action
General monitor problems.	<p>Some IBM monitors have their own self-tests. If you suspect a problem with your monitor, refer to the information supplied with the monitor for adjustment and testing instructions.</p> <p>If you cannot find the problem, check the other listings on monitor problems in this table.</p> <p>If the problem cannot be isolated and corrected, have the monitor and computer serviced.</p>

Monitor Problems	Action
Wavy, unreadable, rolling, distorted, or jittery screen images.	<p data-bbox="431 598 1162 657">If the monitor self-tests show that the monitor is working properly, verify that:</p> <ol data-bbox="444 674 1162 1304" style="list-style-type: none"> <li data-bbox="444 674 1162 789">1. The location of the monitor is appropriate. Magnetic fields around other devices, such as transformers, appliances, fluorescent lights, and other monitors might be causing the problem. To determine if this is the difficulty: <ol data-bbox="488 806 1162 1066" style="list-style-type: none"> <li data-bbox="488 806 1162 865">a. Turn off the monitor. (Moving a color monitor while it is turned on might cause screen discoloration.) <li data-bbox="488 882 1162 1024">b. Adjust the placement of the monitor and other devices so that they are at least 305 mm (12 in.) apart. Also, when relocating the monitor, be sure it is at least 75 mm (3 in.) from the diskette drives to prevent diskette drive read/write errors. <li data-bbox="488 1041 743 1066">c. Turn on the monitor. <li data-bbox="444 1083 1162 1199">2. An IBM monitor signal cable is properly connected to the monitor and computer, and that the cable is installed securely. Non-IBM monitor signal cables might cause unpredictable problems. <li data-bbox="444 1215 1162 1304">3. You are not trying to run your monitor at a higher refresh rate than the monitor supports. Refer to the documentation that comes with your monitor for supported refresh rates. <p data-bbox="431 1320 1162 1409">Note: An enhanced monitor signal cable with additional shielding might be available for your monitor. See your IBM reseller or marketing representative for information.</p> <p data-bbox="431 1425 1162 1484">If the problem cannot be isolated and corrected, have the monitor and computer serviced.</p>

Monitor Problems	Action
Screen flickers.	<p>Set the monitor for the highest, noninterlaced refresh rate supported by your monitor and the video controller in your computer. Refer to the documentation that comes with your monitor and the <i>Intergraph Intense 3D Graphics Adapter</i> or <i>Matrox MGA Millennium Graphics Adapter</i> README file on the <i>Ready-to-Configure CD</i> that comes with your computer for further information.</p> <p>Attention: Using a resolution or refresh rate that is not supported by your monitor might damage it.</p> <p>You can reset the refresh rate through your operating system, using the instructions provided in the <i>Intergraph Intense 3D Graphics Adapter</i> or <i>Matrox MGA Millennium Graphics Adapter</i> README file on the <i>Ready-to-Configure CD</i> that comes with your computer. Refer to your operating system documentation for further information on monitor settings.</p> <p>If this does not correct the problem, have the monitor and computer serviced.</p>
The monitor works when you turn on the system, but goes blank when you start some application programs.	<p>Verify that:</p> <ol style="list-style-type: none"> 1. The monitor signal cable is securely connected to the monitor and the monitor connector on the graphics adapter. For the location of the monitor connector on the graphics adapter installed in your computer, see “Connectivity” on page 11. 2. The necessary device drivers for the application programs are installed. <p>If the problem cannot be isolated and corrected, have the monitor and computer serviced.</p>
The monitor works when you turn on the system, but goes blank after some period of computer inactivity.	<p>The computer is probably set for energy savings with the Advanced Power Management (APM) feature. If the APM feature is enabled, disabling APM or changing APM settings may solve the problem (see “Advanced Power Management” on page 49).</p> <p>If the problem cannot be isolated and corrected, have the computer serviced.</p>

Monitor Problems	Action
Blank screen.	<p>Verify that:</p> <ol style="list-style-type: none"> 1. The computer power cord is plugged into the computer and a working electrical outlet. 2. The monitor is turned on and the Brightness and Contrast controls are adjusted correctly. 3. The monitor signal cable is securely connected to the monitor and the monitor connector on the graphics adapter. To find the monitor connector on the graphics adapter installed in your computer, see “Connectivity” on page 11. 4. If your computer comes with two PCI expansion slots and three shared PCI/ISA expansion slots, make sure the graphics adapter is installed in one of the primary PCI expansion slots. For the location of the primary PCI expansion slots, refer to <i>Installing Options in Your IntelliStation Z Pro</i>. <p>If the problem cannot be isolated and corrected, have the monitor and computer serviced.</p>
Only the cursor appears.	Have the computer serviced.
Wrong characters appear on the screen.	Have the computer serviced.
General Problems	Action
The computer does not start when you press the power switch.	<p>Verify that:</p> <ol style="list-style-type: none"> 1. All cables are securely connected to the proper connectors on the computer. For the location of the connectors, refer to “Connectivity” on page 11. 2. The voltage-selection switch is set to the correct position. 3. The computer cover is properly installed. <p>If the problem cannot be isolated and corrected, have the computer serviced.</p>
Problems such as a broken cover lock or indicator lights not working.	Have the computer serviced.

Infrared Port Problems	Action
The Infrared port cannot be accessed.	<p>Verify that:</p> <ol style="list-style-type: none"> 1. The Infrared port is enabled. 2. Each port is assigned a unique address. 3. The infrared device cable is securely connected to the infrared connector on the computer. Refer to “Connectivity” on page 11 for the location of the infrared port. <p>If the problem cannot be isolated and corrected, have the computer serviced.</p>

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

Keyboard, Mouse, or Pointing-Device Problems	Action
All or some keys on the keyboard do not work.	<p>Verify that:</p> <ol style="list-style-type: none"> 1. The computer and the monitor are turned on. 2. The keyboard cable is securely connected to the keyboard connector on the computer. For the location of the keyboard connector, see “Connectivity” on page 11. <p>If the problem cannot be isolated and corrected, have the keyboard and computer serviced.</p>

Keyboard, Mouse, or Pointing-Device Problems	Action
The mouse or pointing device does not work.	<p>Verify that:</p> <ol style="list-style-type: none"> <li data-bbox="444 701 1146 848">1. The mouse or pointing-device cable is securely attached to the proper connector on the computer. Depending on the type of mouse you have, it will connect to either the mouse or serial connector. To find the mouse and serial connectors, see “Connectivity” on page 11. <li data-bbox="444 869 1078 890">2. The device drivers for the mouse are installed correctly. <p>If the problem cannot be isolated and corrected, have the computer and the device serviced.</p>
Memory Problems	Action
The amount of memory displayed is less than the amount of memory installed.	<p>The amount of available memory shown might be somewhat less than expected because of basic input/output system (BIOS) shadowing in random access memory (RAM).</p> <p>Verify that:</p> <ol style="list-style-type: none"> <li data-bbox="444 1220 1130 1304">1. You have installed the correct type of DIMMs for your computer. Refer to <i>Installing Options in Your IntelliStation Z Pro</i> for instructions on adding DIMMs. <li data-bbox="444 1325 1110 1346">2. The DIMMs are properly installed and securely connected. <li data-bbox="444 1367 1154 1482">3. If you added or removed memory, you saved the new configuration in the Configuration/Setup Utility program. See the Important text box on page 38 for instructions on saving the configuration. <p>If the problem persists, run the memory test from the diagnostic program that comes with your computer. (See “Diagnostic Programs” on page 97 for further information.) The system might have detected a bad DIMM and automatically reallocated memory to enable you to continue to operate.</p> <p>If the problem cannot be isolated and corrected, have the computer serviced.</p>
“Not enough memory” message is displayed.	Verify that terminate-and-stay-resident programs (TSRs) are not taking up memory. (See “Managing TSR Programs” on page 98.)

Option Problems	Action
An IBM option that was just installed does not work.	<p>Verify that:</p> <ol style="list-style-type: none"> 1. The option is designed for your computer. 2. You followed the installation instructions supplied with the option and in <i>Installing Options in Your IntelliStation Z Pro</i>. 3. All option files (if required) are installed correctly. See "Installing Files from Option Diskettes" on page 98 for information about installing option files. 4. You have not loosened any other installed options or cables. 5. If the option is an adapter, you have provided enough hardware resources for the adapter to function correctly. Refer to the documentation that comes with the adapter (as well as the documentation for any other installed adapters) to determine the resources required for each adapter. 6. You updated the configuration information in the Configuration/Setup Utility program, if necessary, and have no conflicts. <p>If the problem persists, run the diagnostic programs. (See "Diagnostic Programs" on page 97 for information about diagnostic programs provided with your computer.)</p> <p>If the problem cannot be isolated and corrected, have the computer and the option serviced.</p>
An IBM option that previously worked does not work now.	<p>Verify that all of the option hardware and cable connections are secure.</p> <p>If the option comes with its own test instructions, use those instructions to test the option.</p> <p>If the failing option is a SCSI option, verify that:</p> <ol style="list-style-type: none"> 1. The cables for all external SCSI options are connected correctly. 2. The last option in each SCSI chain, or the end of the SCSI cable, is terminated correctly. 3. All external SCSI options are turned on. External SCSI options must be turned on before the system is turned on. <p>For more information, see your SCSI documentation.</p> <p>If the problem cannot be isolated and corrected, have the computer and option serviced.</p>

Parallel Port Problems	Action
Parallel port cannot be accessed.	Verify that: <ol style="list-style-type: none"> 1. Each port is assigned a unique address. 2. The parallel-port adapter, if you added one, is properly installed and firmly seated. Refer to <i>Installing Options in Your IntelliStation Z Pro</i> for instructions on adding adapters. If the problem cannot be isolated and corrected, have the computer serviced.
Serial Port 1 Problems	Action
Serial port 1 cannot be accessed.	Verify that: <ol style="list-style-type: none"> 1. Each port is assigned a unique address. 2. The serial-port adapter, if you added one, is properly installed and firmly seated. Refer to <i>Installing Options in Your IntelliStation Z Pro</i> for instructions on adding adapters. If the problem cannot be isolated and corrected, have the computer serviced.
Serial Port 2 Problems	Action
Serial port 2 cannot be accessed.	Verify that: <ol style="list-style-type: none"> 1. The infrared port is disabled. <p data-bbox="472 1482 1138 1566">Note: Serial port 2 and the infrared port share system resources. If the infrared port is enabled, serial port 2 cannot be accessed.</p> 2. Each port is assigned a unique address. 3. The serial-port adapter, if you added one, is properly installed and firmly seated. Refer to <i>Installing Options in Your IntelliStation Z Pro</i> for instructions on adding adapters. If the problem cannot be isolated and corrected, have the computer serviced.

Printer Problems	Action
The printer does not work.	<p>Verify that:</p> <ol style="list-style-type: none"> 1. The printer is turned on and is online. 2. The printer signal cable is securely connected to the correct parallel, serial, or USB port on the computer. (Refer to “Connectivity” on page 11 for the location of the parallel, serial, and USB ports.) <p>Note: Non-IBM printer signal cables might cause unpredictable problems.</p> <ol style="list-style-type: none"> 3. You have assigned the printer port correctly in your operating system or application program. 4. You have assigned the printer port correctly in the Configuration/Setup Utility program. (For instructions on using the Configuration/Setup Utility program, refer to “Configuring Your Computer” on page 37.) 5. If the problem persists, run the tests described in the documentation that comes with your printer. <p>If the problem cannot be isolated and corrected, have the computer and printer serviced.</p>
Software Problem	Action
Is your software program OK?	<p>To determine if problems are caused by installed software, verify that:</p> <ol style="list-style-type: none"> 1. Your computer has the minimum memory requirements needed to use the software. Refer to the information supplied with the software to verify memory requirements. <p>Note: If you have just installed an adapter or memory, you might have a memory address conflict.</p> <ol style="list-style-type: none"> 2. The software is designed to operate on your computer. 3. Other software works on your computer. 4. The software you are using works on another computer. <p>If you received any error messages while using the software program, refer to the information supplied with the software for a description of the messages and solutions to the problem.</p> <p>If the problem cannot be isolated and corrected, have the computer serviced.</p>

Universal Serial Bus Port Problems	Action
The Universal Serial Bus port cannot be accessed.	Verify that: <ol style="list-style-type: none"><li data-bbox="438 663 901 701">1. Each port is assigned a unique address.<li data-bbox="438 709 1071 747">2. The USB device is properly installed and firmly seated. If the problem cannot be isolated and corrected, have the computer serviced.

Error Messages Specific to the Ethernet Adapter

An error message appears on the screen after the Ethernet adapter is initialized and a failure condition occurs. These error messages are shown below. If you experience any error related to the Ethernet adapter, record the error message, and notify your network administrator of the problem.

RPL-Related Error Messages

These error messages are specific to the Ethernet adapter and the RPL environment of your computer.

The two most common error messages are shown below.

RPL-ROM-ERR: 105 The Ethernet Adapter Failed the Loopback Test

RPL-ROM-ERR: 107 Media Test Failed; Check the Cable

Error 105 indicates that a power-on diagnostic test performed by the Ethernet adapter did not execute correctly. If this error message appears, you must have the computer serviced. Error 107 indicates that the cable from the LAN is not securely connected to the Ethernet port on your computer. Check the cable to ensure that it is properly connected.

Other error messages that might occur are shown in the following table.

RPL-ROM-ERR: 101 Ethernet adapter was unable to initialize
RPL-ROM-ERR: 102 Ethernet adapter could not be reset
RPL-ROM-ERR: 100 The Ethernet adapter cannot be found
RPL-ROM-ERR: 103 There are multiple Ethernets in the system. Please specify the correct serial number in NET.CFG.
RPL-ROM-ERR: 104 The Ethernet adapter EEPROM is faulty or not present
RPL-ROM-ERR: 106 The Ethernet adapter is configured for PnP on non-PnP system
RPL-ROM-ERR: 110 Ethernet adapter RAM failed the memory test

DHCP-Related Error Messages

Error messages related to DHCP and the Ethernet adapter are shown in the following table. Each error message consists of an error code followed by a text message.

If you encounter one of these error messages, record the message, and contact your network administrator.

E61: Service boot cancelled.	M38: Cannot open TFTP connection.
E62: Cannot initialize controller.	M39: Cannot read from TFTP connection.
E63: Cannot initialize controller.	M40: BOOTP cancelled by keystroke.
E67: Cannot initialize controller.	M40: DHCP cancelled by keystroke.
E6d: Cannot find BOOTP server.	M41: BOOTP timeout.
E6e: Cannot start from downloaded image.	M41: DHCP timeout.
E71: Too many MTFTP packages.	M42: No client or server IP.
M10: ARP cancelled by keystroke.	M43: No bootfile name.
M11: ARP timeout.	M44: Cannot ARP redirected BOOTP server.
M20: Cannot copy memory.	M6f: System is locked! Press Ctrl+Alt+Del to reboot.
M21: Cannot write to memory.	M90: Cannot initialize controller for multicast.
M22: Cannot write to memory.	M91: MTFTP cancelled by keystroke.
M30: Cannot ARP TFTP address.	M92: MTFTP open timeout.
M31: TFTP cancelled by keystroke.	M93: Unknown MTFTP opcode.
M32: TFTP open timeout.	M94: MTFTP read cancelled by keystroke.
M33: Unknown TFTP opcode.	M95: MTFTP timeout.
M34: TFTP read cancelled by keystroke.	M96: Cannot ARP MTFTP address.
M35: TFTP timeout.	M98: Cannot open MTFTP connection.
M99: Cannot read from MTFTP connection.	Txx: <message from TFTP error packet>

Note: Any x value that follows an error code represents any alphanumeric character.

Diagnostic Programs

IBM provides programs that you can run to diagnose hardware and some software problems. A description of these programs follows.

QAPLus/PRO: You can use QAPLus/PRO to diagnose hardware problems. QAPLus/PRO also includes several utility programs that provide helpful information about your computer.

For testing purposes, QAPLus/PRO isolates your computer hardware from any software that was preinstalled (or that you have installed) on your hard disk. The program runs independent of the operating system, and *must be run from 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.

QAPLus/PRO is provided on the *Ready-to-Configure CD* that comes with your computer. You can create a startable QAPLus/PRO diskette using the Diskette Factory on the *Ready-to-Configure CD*. Refer to *Your Ready-to-Configure CD* for information and instructions on starting the CD. Once you start the CD, follow the instructions on the screen.

Note: A startable QAPLus/PRO diskette might be provided with some models.

To start QAPLus/PRO, do the following:

1. Turn off your computer and any attached devices.
2. Insert the QAPLus/PRO diskette into diskette drive A.
3. Turn on all attached devices; then turn on your computer.
4. Follow the instructions on the screen.

Other QAPLus Diagnostic Programs: The *Ready-to-Configure CD* that comes with your computer also contains diagnostic programs designed specifically for certain operating environments (QAPLus/WIN-WIN for Windows 3.1 and Windows 95). Because these versions of QAPLus work with the operating system, they not only test the hardware, but also analyze certain software components of your computer. They are especially useful in isolating problems related to the operating system and device drivers. Although the hardware diagnostic capabilities of these QAPLus programs are not quite as strong as those of QAPLus/PRO, they are still a good tool for isolating hardware problems.

CoSession: CoSession is a remote-control diagnostic program that can be used by another individual, such as your in-house administrator, to help diagnose problems with your computer from a remote location. CoSession is provided on the *Ready-to-Configure CD* that comes with your computer. To use CoSession, it must be installed in your computer, and your computer must have a modem.

Important

Before attempting to use CoSession, contact your in-house administrator for specific instructions on setting up and using the program.

Installing Files from Option Diskettes

An optional device or adapter might come with a diskette. Diskettes that are included in option packages usually contain files that the system needs for recognizing and activating the options. Until you install the necessary files, the new device or adapter might cause error messages.

If your optional device or adapter comes with a diskette, you might need to install some configuration (.CFG) files or diagnostic files (.EXE or .COM) from the diskette to your hard disk. Refer to the documentation that comes with the option to see if you need to install files.

Managing TSR Programs

Terminate-and-stay-resident programs (TSRs) are loaded into memory and stay there so you can access them whenever you want. If you are loading or using an application program and receive a message that you do not have enough memory, TSR programs might be taking up valuable space.

Check the documentation that comes with each TSR program to find out how to solve this problem. You might be able to remove the program from memory for the rest of your current work session. Sometimes you can change the order in which the TSRs are loaded so that memory is used more efficiently. Or perhaps you can remove from the AUTOEXEC.BAT file the TSR programs that you do not use frequently.

See your operating system documentation for assistance on editing or disabling statements in the AUTOEXEC.BAT file.

Chapter 7. Getting Help, Service, and Information

If you need help, service, technical assistance, or just want more information about IBM products, you will find a wide variety of sources available from IBM to assist you. This section provides information about those sources.

Services available and telephone numbers listed are subject to change without notice.

Solving Problems

Many computer problems can be solved without outside assistance, by using the online help or by looking in the online or printed documentation that comes with your computer or software. Also, be sure to read the information in any README files that come with your software.

Most computers, operating systems, and application programs come with documentation that contains troubleshooting procedures and explanations of error messages. The documentation that comes with your computer also contains information about the diagnostic tests you can perform.

If you suspect a hardware problem, run the diagnostic tests and make a note of any error messages you receive. Then look up the message in the documentation and take the appropriate action.

If you suspect a software problem, consult the documentation (including README files) for the operating system or application program.

Getting Customer Support and Service

Purchasing an IBM PC hardware product entitles you to standard help and support during the warranty period. If you need additional support and services, a wide variety of extended services are available for purchase that address almost any need.

Using Electronic Support Services

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

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

- Hardware setup and configuration
- Preinstalled software
- OS/2, DOS, and Windows
- Networking
- Communications
- Multimedia

In addition, the latest device driver updates are available.

The IBM PC Company Bulletin Board System (BBS) can be reached 24 hours a day, 7 days a week. Modem speeds of up to 14400 baud are supported. Long distance telephone charges might apply. To access the PC Company BBS:

- In the U.S., call 1-919-517-0001.
- In Canada:
 - In Halifax, call 902-420-0300.
 - In Montreal, call 514-938-3022.
 - In Toronto, call 905-316-4255 or 416-956-7877.
 - In Vancouver, call 604-664-6461 or 604-664-6464.
 - In Winnipeg, call 204-934-2735.

Commercial online services that contain information about IBM products include:

- CompuServe
Use the following GO words: APTIVA, IBMPS2, ThinkPad, PowerPC, ValuePoint, IBMSVR, or IBMObI.
- PRODIGY
Use the Jump command; type **IBM** and select **PC Product Support**.
- America Online
Use the “Go to” keyword **IBM Connect**.

On the World Wide Web, the IBM Personal Computers home page has information about IBM Personal Computer products and support. The address for the IBM Personal Computer home page is:

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

Getting Information by Fax

If you have a touch-tone telephone and access to a fax machine, in the U.S. and Canada you can receive by fax free marketing and technical information on many topics, including hardware, operating systems, and local area networks (LANs).

You can call the IBM PC Company Automated Fax System 24 hours a day, 7 days a week. Follow the recorded instructions, and the requested information will be sent to your fax machine.

To access the IBM PC Company Automated Fax System, do the following:

- In the U.S., call 1-800-426-3395.
- In Canada, call 1-800-465-3299.

Getting Help Online

Online Housecall is a remote communication tool that allows an IBM technical-support representative to access your PC by modem. Many problems can be remotely diagnosed and corrected quickly and easily. In addition to a modem, a remote-access application program is required. This service is not available for servers. There might be a change for this service, depending on the request.

For more information about configuring your PC for Online Housecall:

- In the U.S., call 1-800-772-2227.
- In Canada, call 1-800-565-3344.
- In all other countries, contact your IBM reseller or IBM marketing representative.

Getting Help by Telephone

During the warranty period, you can get help and information by telephone through the IBM PC Support Line. Expert technical-support representatives are available to assist you with questions you might have on the following:

- Setting up your computer and IBM monitor
- Installing and setting up IBM options purchased from IBM or an IBM reseller
- 30-day, preinstalled-operating-system support
- Arranging for service (on-site or carry-in)
- Arranging for overnight shipment of customer-replaceable parts

In addition, if you purchased an IBM PC Server, you are eligible for Server Startup Support for 90 days after installation. This service provides assistance for:

- Setting up your network operating system
- Installing and configuring interface cards
- Installing and configuring network adapters

Please have the following information ready when you call:

- Serial numbers of your computer, monitor, and other components, or your proof of purchase

- Description of the problem
- Exact wording of any error messages
- Hardware and software configuration information for your system

If possible, be at your computer when you call.

These services are available 24 hours a day, 7 days a week.⁵

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

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

Getting Help Around the World

If you travel with your computer or need to move it to another country, you can register for International Warranty Service. When you register with the International Warranty Service Office, you will receive an International Warranty Service Certificate that is honored virtually worldwide, wherever IBM or IBM resellers sell and service IBM PC products.

For more information or to register for International Warranty Service in the U.S. or Canada, call 1-800-497-7426.

Purchasing Additional Services

During and after the warranty period, you can purchase additional services, such as support for IBM and non-IBM hardware, operating systems, and application programs; network setup and configuration; upgraded or extended hardware repair services; and custom installations. Service availability and name might vary by country.

Enhanced PC Support Line

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

This service includes technical support for:

⁵ Response time will vary depending on the number and complexity of incoming calls.

- Installing and configuring your out-of-warranty IBM computer
- Installing and configuring non-IBM options in IBM computers
- Using IBM operating systems in IBM and non-IBM computers
- Using application programs and games
- Tuning performance
- Installing device drivers remotely
- Setting up and using multimedia devices
- Identifying system problems
- Interpreting documentation

You can purchase this service on a per-call basis, as a multiple-incident package, or as an annual contract with a 10-incident limit. For more information about purchasing Enhanced PC Support, see “Ordering Support Line Services” on page 104.

900-Number Operating System and Hardware Support Line

In the U.S., if you prefer to obtain technical support on a pay-as-you go basis, you can use the 900-number support line. The 900-number support line provides support for IBM PC products that are out of the warranty period.

To access this support, call 1-900-555-CLUB (2582). You will be notified of the charge per minute.

Network and Server Support Line

Network and Server Support is available for simple or complex networks made up of IBM servers and workstations using major network operating systems. In addition, many popular non-IBM adapters and network interface cards are supported.

This service includes all of the features of the Enhanced PC Support Line, plus:

- Installing and configuring client workstations and servers
- Identifying system problems and correcting problems on the client or the server
- Using IBM and non-IBM network operating systems
- Interpreting documentation

You can purchase this service on a per-call basis, as a multiple-incident package, or as an annual contract with a 10-incident limit. For more information about purchasing Network and Server Support, see “Ordering Support Line Services” on page 104.

Ordering Support Line Services

Enhanced PC Support Line and Network and Server Support Line services are available for products on the Supported Products list. To receive a Supported Products list:

- In the U.S.:
 1. Call 1-800-426-3395.
 2. Select document number 11683 for Network and Server support.
 3. Select document number 11682 for Enhanced PC support.
- In Canada, contact IBM Direct at 1-800-465-7999, or:
 1. Call 1-800-465-3299.
 2. Select the HelpWare catalog.
- In all other countries, contact your IBM reseller or IBM marketing representative.

For more information or to purchase these services:

- In the U.S., call 1-800-772-2227.
- In Canada, call 1-800-465-7999.
- In all other countries, contact your IBM reseller or IBM marketing representative.

Warranty and Repair Services

You can upgrade your standard hardware warranty service or extend the service beyond the warranty period.

Warranty upgrades in the U.S. include:

- Carry-in service to on-site service

If your warranty provides carry-in repair service, you can upgrade to on-site repair service, either standard or premium. The standard upgrade provides a trained servicer within the next business day (9 a.m. to 5 p.m., local time, Monday through Friday). The premium upgrade provides 4-hour average response, 24 hours a day, 7 days a week.

- On-site service to premium on-site service

If your warranty provides for on-site service, you can upgrade to premium on-site service (4-hour average on-site response, 24 hours a day, 7 days a week).

You also can extend your warranty. Warranty and Repair Services offers a variety of post-warranty maintenance options, including ThinkPad EasyServ Maintenance Agreements. Availability of the services varies by product.

For more information about warranty upgrades and extensions:

- In the U.S., call 1-800-426-4968.
- In Canada, call 1-800-465-7999.
- In all other countries, contact your IBM reseller or IBM marketing representative.

Ordering Publications

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

- In the U.S., Canada, and Puerto Rico, call 1-800-879-2755.
- In other countries, contact your IBM reseller or IBM marketing representative.

Appendix A. Computer Records

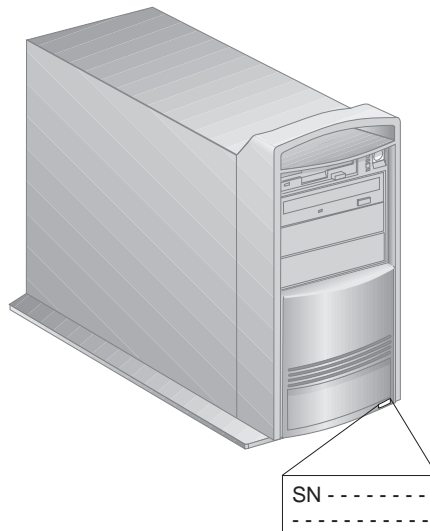
This appendix contains forms for recording information about your computer, which can be helpful if you decide to install additional hardware, or if you ever need to have your computer serviced.

Serial Numbers and Keys

Record and retain the following information.

Product Name	IntelliStation Z Pro Professional Workstation
Model/Type (M/T)	_____
Serial Number (S/N)	_____
Key Serial Number	_____
Key Address	_____

The model and type (M/T) numbers and the serial number (S/N) for your computer are located on a label on the front of the computer, as shown in the illustration that follows.



Your computer keys cannot be duplicated by locksmiths. If you lose them, order replacement keys from the key manufacturer. The key serial number and the address of the manufacturer are on a tag attached to the keys. Anyone who has the key serial number and manufacturer's address can order duplicate keys, so store the tag in a safe place. If you record the key serial number on this page, either remove the page and store it in a secure place, or store this manual in a secure place when you are not using it.

Device Records

Use the following tables to keep a record of the options in or attached to your computer. This information can be helpful when you install additional options, or if you ever need to have your computer serviced.

Location	Option Description
System Memory (Mem 1 DIMM) (Mem 2 DIMM) (Mem 3 DIMM) (Mem 4 DIMM)	<input type="checkbox"/> 16 MB <input type="checkbox"/> 32 MB <input type="checkbox"/> 64 MB <input type="checkbox"/> 128 MB <input type="checkbox"/> 16 MB <input type="checkbox"/> 32 MB <input type="checkbox"/> 64 MB <input type="checkbox"/> 128 MB <input type="checkbox"/> 16 MB <input type="checkbox"/> 32 MB <input type="checkbox"/> 64 MB <input type="checkbox"/> 128 MB <input type="checkbox"/> 16 MB <input type="checkbox"/> 32 MB <input type="checkbox"/> 64 MB <input type="checkbox"/> 128 MB
Expansion Slot 1	Adaptec SCSI Adapter
Expansion Slot 2	<input type="checkbox"/> <i>Matrox MGA Millennium Graphics Adapter</i>
Expansion Slot 3	_____
Expansion Slot 4	_____
Expansion Slot 6	<input type="checkbox"/> <i>Intergraph Intense 3D Graphics Adapter</i>
Expansion Slot 7	_____
Expansion Slot 8	<i>Intel EtherExpress Pro/100 Adapter w/ Wake on LAN™</i>
Microprocessor 1	Intel Pentium Pro <input type="checkbox"/> 200 MHz <input type="checkbox"/> Other
Microprocessor 2	Intel Pentium Pro <input type="checkbox"/> 200 MHz <input type="checkbox"/> Other
Monitor Connector	_____
Mouse Connector	<input type="checkbox"/> 3-button <input type="checkbox"/> Other: _____
Keyboard Connector	104-key keyboard <input type="checkbox"/> Other: _____
Parallel Connector	_____
Serial Connector A	_____
Serial Connector B	_____
USB Connector	_____

Location	Option Description
Infrared Connector	_____
3.5-Inch Bay 1	1.44 MB diskette drive
5.25-Inch Bay 2	<input type="checkbox"/> 16X Max IDE CD-ROM drive <input type="checkbox"/> Other:
5.25-Inch Bay 3	_____
3.5-Inch Bay 4	_____
3.5-Inch Bay 5	_____
3.5-Inch Bay 6	<input type="checkbox"/> 2.1 GB SCSI hard disk drive <input type="checkbox"/> 4.5 GB SCSI hard disk drive <input type="checkbox"/> Other:
_____	_____
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Appendix B. Product Warranties, License Information, and Notices

Hardware Limited Warranty

The following is the statement of limited warranty for the United States, Canada, and Puerto Rico.

International Business Machines Corporation

Armonk, New York, 10504

Statement of Limited Warranty

The warranties provided by IBM in this Statement of Limited Warranty apply only to Machines you originally purchase for your use, and not for resale, from IBM or your reseller. The term "Machine" means an IBM machine, its features, conversions, upgrades, elements, or accessories, or any combination of them. Unless IBM specifies otherwise, the following warranties apply only in the country where you acquire the Machine. If you have any questions, contact IBM or your reseller.

Machine: IntelliStation Z Pro Professional Workstation

Warranty Period*: Parts: Three (3) years Labor: One (1) year

IBM will provide warranty service without charge for:

1. parts and labor during the first year of the warranty period
2. parts only, on an exchange basis, in the second and third years of the warranty period.

IBM will charge you for any labor it provides in performance of the repair or replacement.

**Contact your place of purchase for warranty service information.*

Production Status

Each Machine is manufactured from new parts, or new and used parts. In some cases, the Machine may not be new and may have been previously installed.

The IBM Warranty for Machines

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

During the first year of the warranty period IBM or your reseller, if authorized by IBM, will provide warranty service under the type of service designated for the Machine and will manage and install engineering changes that apply to the Machine. During the second and third years, IBM will provide replacement parts in exchange for defective parts.

If a Machine does not function as warranted during the first year of the warranty period, IBM or your reseller will repair it or replace it with one that is at least functionally equivalent, without charge. The replacement may not be new, but will be in good working order. If IBM or your reseller is unable to repair or replace the Machine, you may return it to your place of purchase and your money will be refunded.

For IBM or your reseller to provide warranty service for a feature, conversion, or upgrade, IBM or your reseller may require that the Machine on which it is installed be 1) for certain Machines, the designated, serial-numbered Machine and 2) at an engineering-change level compatible with the feature, conversion, or upgrade. Many of these transactions involve the removal of parts and their return to IBM. You represent that all removed parts are genuine and unaltered. A part that replaces a removed part will assume the warranty service status of the replaced part.

If you transfer a Machine to another user, warranty service is available to that user for the remainder of the warranty period. You should give your proof of purchase and this Statement to that user. However, for Machines which have a life-time warranty, this warranty is not transferable.

Warranty Service

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

IBM or your reseller will provide certain types of repair and exchange service, either at your location or at a service center, to restore Machines to good working order.

When a type of service involves the exchange of a Machine or part, the item IBM or your reseller replaces becomes its property and the replacement becomes yours. You represent that all removed items are genuine and unaltered. The replacement may not be new, but will be in good working order and at least functionally equivalent to the item replaced. The replacement assumes the warranty service status of the replaced item. Before IBM or your reseller exchanges a Machine or part, you agree to remove all features, parts, options, alterations, and attachments not under warranty service. You also agree to ensure that the Machine is free of any legal obligations or restrictions that prevent its exchange.

You agree to:

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

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

Extent of Warranty

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

Non-IBM machines are provided by IBM "AS IS" WITHOUT WARRANTIES OF ANY KIND.

The warranties will be voided by misuse, accident, modification, unsuitable physical or operating environment, improper maintenance by you, removal or alteration of Machine or parts identification labels, or failure caused by a product for which IBM is not responsible.

THESE WARRANTIES REPLACE ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THESE WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM JURISDICTION TO JURISDICTION. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF EXPRESS OR

IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU. IN THAT EVENT, SUCH WARRANTIES ARE LIMITED IN DURATION TO THE WARRANTY PERIOD. NO WARRANTIES APPLY AFTER THAT PERIOD.

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

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

Limitation of Liability

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

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

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

License Information

The license information in this booklet is for IBM and non-IBM logo programs covered by the IBM International Program License Agreement. IBM may provide programs with this computer which come with their own license agreements. Unless otherwise expressly provided by IBM, IBM provides these programs to you "AS IS" WITHOUT WARRANTIES OF ANY KIND, INCLUDING, BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Some programs referred to in this booklet might not be available in all languages or in all countries. Some programs might be different from the retail versions and might be customized to work only with the product with which they are shipped.

Program Name

- System Programs
- Intel LANDesk Client Manager

Additional Terms and Conditions

Authorization for Copy and Use on Home/Portable Computer: Not applicable for these programs.

Transfer of Program: Programs are transferable with written consent from the party (IBM or its reseller) from whom you acquired the program.

Proof of Entitlement: The Proof of Purchase for the computer that contains these programs should be retained in order to support eligibility provided by IBM or its authorized reseller for future upgrade program prices (if announced), potential special or promotional opportunities (if any), and as evidence of the end user's authorized use of these IBM-licensed programs.

Technical support for programs provided with your system is available on a limited basis. See the publications provided with your system for details.

Program Services

Availability/Duration of Program Services: No program services are available for these programs.

Statement of Service: No program services are available. These licensed programs are provided "AS IS."

Warranty

System Programs – Yes.

Intel LANDesk Client Manager – No.

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13F9979	Afghanistan, Algeria, Andorra, Angola, Austria, Belgium, Benin, Bulgaria, Burkina Faso, Burundi, Cameroon, Central African Rep., Chad, Czech Republic, Egypt, Finland, France, French Guiana, Germany, Greece, Guinea, Hungary, Iceland, Indonesia, Iran, Ivory Coast, Jordan, Lebanon, Luxembourg, Macau, Malagasy, Mali, Martinique, Mauritania, Mauritius, Monaco, Morocco, Mozambique, Netherlands, New Caledonia, Niger, Norway, Poland, Portugal, Romania, Senegal, Slovakia, Spain, Sudan, Sweden, Syria, Togo, Tunisia, Turkey, former USSR, Vietnam, former Yugoslavia, Zaire, Zimbabwe
13F9997	Denmark
14F0015	Bangladesh, Burma, Pakistan, South Africa, Sri Lanka
14F0033	Antigua, Bahrain, Brunei, Channel Islands, Cyprus, Dubai, Fiji, Ghana, Hong Kong, India, Iraq, Ireland, Kenya, Kuwait, Malawi, Malaysia, Malta, Nepal, Nigeria, Polynesia, Qatar, Sierra Leone, Singapore, Tanzania, Uganda, United Kingdom, Yemen, Zambia
14F0051	Liechtenstein, Switzerland
14F0069	Chile, Ethiopia, Italy, Libya, Somalia
14F0087	Israel
1838574	Thailand
62X1045	Bahamas, Barbados, Bermuda, Bolivia, Brazil, Canada, Cayman Islands, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Korea (South), Liberia, Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Saudi Arabia, Suriname, Taiwan, Trinidad (West Indies), United States of America, Venezuela

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