Using Your IntelliStation M Pro

Professional Workstation (Type 6889)

Using Your IntelliStation M Pro

Professional Workstation (Type 6889)

IBM

First Edition (May 1998)

Contents

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.

To Connect	To Disconnect
Turn everything OFF.	Turn everything OFF.
First, attach all cables to devices.[1]	First, remove power cord from outlet.[2]
Attach signal cables to receptacles.	Remove signal cables from receptacles.
Attach power cord to outlet.	Remove all cables from devices.
Turn device ON.	
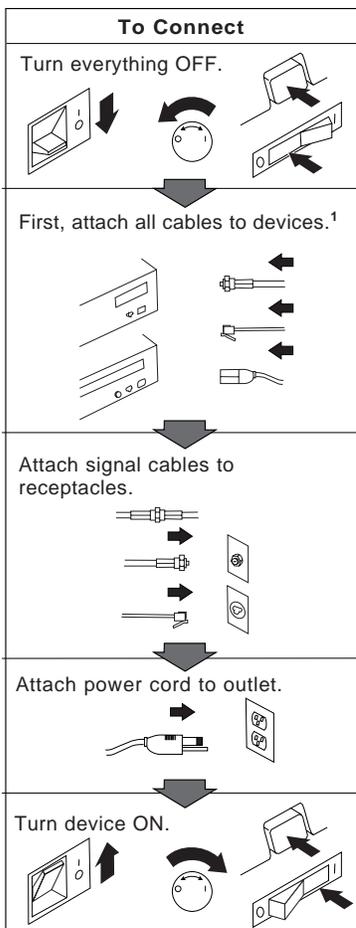
[1] In the U.K., by law, the telephone cable must be connected after the power cord.
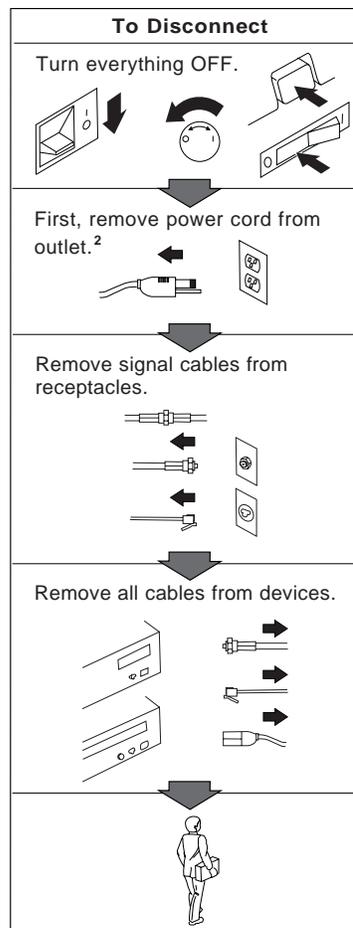
[2] In the U.K., by law, the power cord must be disconnected after the telephone line cable.

Danger

To avoid a shock hazard, do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.

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.

Removing the covers of the CD-ROM drive could result in exposure to hazardous laser radiation. There are no serviceable parts inside the CD-ROM drive. **Do not remove the CD-ROM drive covers.**

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 M Pro 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.

The book is organized as follows:

- Chapter 1, "IBM IntelliStation M Pro Overview," contains an overview of the features of your computer.

- Chapter 2, "Installing Options Overview," contains an overview of installing options in your computer.

- Chapter 3, "Arranging Your Workspace," contains information about setting up your work area to optimize use of your computer. Safety considerations are also discussed.

- Chapter 4, "Operating Your Computer," contains instructions for using your computer, including startup and shutdown procedures.

- Chapter 5, "Using the Configuration/Setup Utility Program," contains instructions for starting and using the Configuration/Setup Utility program.

- Chapter 6, "Taking Care of Your Computer," contains information about the proper handling and care of your computer.

- Chapter 7, "Solving Problems," contains information that will help you identify and correct problems that might arise as you use your computer.

- Chapter 8, "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 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 documentation together with this document, contain information about your computer.

- *Setting Up Your IntelliStation M Pro*
  This publication contains instructions to help you set up your computer.

- *Installing Options in Your IntelliStation M Pro*
  This online publication (provided on the Ready-to-Configure Utility program CD (RTC-CD) that comes with your computer) includes information for adding memory, adapters, drives, and other options to your computer. It is also available as a printable file (.PDF) from the World Wide Web at:

  http://www.pc.ibm.com/us/intellistation

- *Understanding Your IntelliStation M Pro*
  This online publication (provided on the RTC-CD that comes with your computer) includes general information about using personal computers and in-depth information about the specific features of your computer. This document is also available as part of the IBM-preinstalled software.

- *About Your Software*
  This publication (provided only with computers that have IBM-preinstalled software) contains information about the preinstalled software package.

- STB GLyder MAX-2+ AGP graphics adapter README file
  This file on the *RTC-CD* contains instructions for installing device drivers for the STB GLyder MAX-2+ AGP graphics adapter installed in some models.

- Intergraph Intense 3D Pro 3400 PCI graphics adapter README File
  This file on the *RTC-CD* contains instructions for installing device drivers for the Intergraph Intense 3D Pro 3400 PCI graphics adapter installed in some models.

- Matrox Millennium II AGP graphics adapter README File
  This file on the *RTC-CD* contains instructions for installing device drivers for the Matrox Millennium II AGP graphics adapter installed in some models.

- IBM Audio Feature README File
  This file on the *RTC-CD* contains instructions for installing device drivers for the integrated Crystal 4235 audio controller.

- Ethernet Feature README File
  This file on the *RTC-CD* contains instructions for installing device drivers for the integrated Ethernet controller.

- Adaptec SCSI Documentation

This documentation, included on the *RTC-CD*, contains information about installing SCSI device drivers, configuring the AIC-7895 SCSI controller, and instructions for installing and configuring SCSI devices.

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

The following publications contain more information about your computer.

- *Hardware Maintenance Manual*
  This publication contains information for trained service technicians. It can be found on the World Wide Web at:

  `http://www.pc.ibm.com/us/intellistation/hmm.html`

  It can also be ordered from IBM. To purchase a copy, refer to Chapter 8, "Getting Help, Service, and Information" on page 133.

- *Technical Information Manual*
  This publication contains information for individuals who want to know more about the technical aspects of their computer. It can be found on the World Wide Web at:

  `http://www.pc.ibm.com/us/intellistation/treport.html`

Chapter 1. IBM IntelliStation M Pro Overview
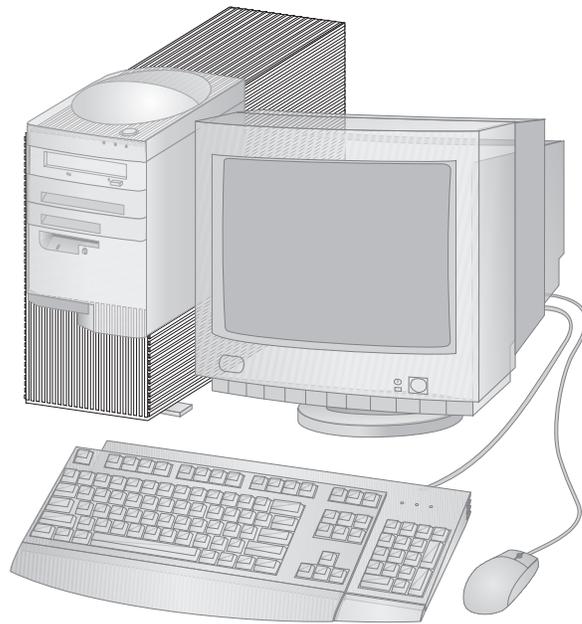
Thank you for selecting an IBM IntelliStation M Pro. Your computer incorporates many of the latest advances in computer technology and is easy to expand and upgrade as your needs change.

What Your IBM Computer Offers

This section describes many of the features of your computer. For a summary of the features your computer offers, see "Features at a Glance" on page 11.

Microprocessor

At the core of your computer is an Intel® Pentium® II microprocessor. The Pentium II can take in, process, and return information at a significantly faster rate than previous microprocessors. In addition, the Pentium II incorporates Intel's MMX™ technology. MMX technology boosts the performance of the microprocessor in processing graphic, video, and audio data, thereby enhancing the performance of multimedia and communication software.

Your computer supports *dual microprocessors*, which means that you can upgrade processor performance by adding a second microprocessor to the system board. If you add a second microprocessor, the speed of the second microprocessor must be the same as that of the primary microprocessor.

Note: To determine the speed of the microprocessor in your computer, refer to "Viewing the System Summary" on page 65.

System Memory

Your computer comes standard with ECC (error correcting code) SDRAM (synchronous dynamic random access memory). This type of system memory uses advanced technology to increase system performance.

L2 Cache

L2 cache memory, which helps speed the exchange of information between the microprocessor and system memory, is integrated into the microprocessor in your computer.

AGP Bus

The main purpose of the Accelerated Graphics Port (AGP) bus is to provide fast access to system memory by video graphics devices. Fast access to system memory is used by the video chip to store 3D video images which might not fit into memory on the graphics adapter. Using the AGP bus, video data can be transferred between the graphics adapter and system memory at a rate up to four times faster than the PCI bus.

PCI Bus

Your computer also has a PCI (peripheral component interconnect) bus. PCI is one of the advanced I/O bus standards 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.

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.

Expansion with Adapters

By installing optional adapters, you can expand the capabilities of your computer and take advantage of a variety of peripheral devices and applications. The system board of your computer has PCI and ISA expansion slots for installing adapters.

Your computer also has an accelerated graphics port (AGP) slot that will accommodate a high-performance AGP graphics adapter. The AGP slot provides a PCI-like interface, with performance extensions added specifically for video functions. AGP adapters are similar in size to PCI adapters. However, PCI-style adapters cannot be used in the AGP slot.

Small Computer System Interface (SCSI)

Your computer has an Adaptec AIC-7895 Dual Channel UltraSCSI PCI controller on the system board. This controller has two channels (A and B). Channel A provides a 68-pin connector on the system board for connecting internal SCSI devices. Channel B provides a 68-pin connector on the system board that is connected by a ribbon cable to an external SCSI connector at the rear of the chassis. Refer to "Input/Output Device Connectors" on page 26 for an illustration of the external SCSI connector. Channel B also provides a 50-pin connector for connecting internal devices. Some models have a preinstalled SCSI hard disk drive connected to the 68-pin connector for channel A.

The SCSI controller in your computer also supports the Adaptec RAIDport connection with an extension to expansion slot 2. RAID (redundant array of independent disks) is a collection of disk drives that collectively act as a single

storage system that provides increased performance and can tolerate the failure of a drive without losing data. The RAID expansion is available with the addition of an optional Adaptec ARO-1130 PCI RAIDport adapter to expansion slot 2.

For further information on the SCSI subsystem, including instructions for installing and configuring SCSI devices, refer to the SCSI documentation provided on the *Ready-to-Configure Utility Program CD* that comes with your computer.

Integrated Drive Electronics (IDE) Interface

Your computer has a PCI-to-IDE interface that complies with the AT attachment interface. This interface includes the original IDE (ATA) interface with extensions for Ultra DMA-33. Two 40-pin IDE connectors are provided on the system board. One connector is designated as primary, and the other as secondary. Some computer models have an EIDE (enhanced integrated drive electronics) hard disk drive connected to the primary connector.

Your computer supports up to two IDE or EIDE devices attached to each IDE connector on the system board, for a total of four devices. However, the number of devices that can be installed is limited by the number of available drive bays in your computer.

CD-ROM Drive

Your computer has a preinstalled CD-ROM (compact disc read-only memory) drive attached to the IDE interface. CD-ROM 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.

Serial Ports

Your computer has two standard 9-pin, 16550-UART serial ports that can be used to communicate with devices such as printers, modems, and plotters.

Universal Serial Bus Ports

The universal serial bus (USB) interface is based on a new, emerging technology being developed to add more diversity and capabilities to computers. Your computer has two 4-pin USB connectors 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 of USB-compatible devices into the USB ports in your computer. Because USB incorporates Plug and Play technology, you can install and remove devices without turning off the computer. Once installed, the devices configure automatically. In addition, if you install a *hub*, you can 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.usb.org`

for further developments.

Video Subsystem

A high-performance, high-resolution graphics adapter provides the video subsystem and monitor connection to your computer. The type of graphics adapter installed varies with computer model. Following is a list of the graphics adapters that you might find preinstalled in an expansion slot in your computer:

- A Matrox Millennium II AGP graphics adapter (AGP adapter)
- A STB GLyder MAX-2+ AGP graphics adapter (AGP adapter)
- An Intergraph Intense 3D Pro 3400 PCI graphics adapter

For further information on these adapters and an illustration of their location, refer to "Input/Output Device Connectors" on page 26.

Audio Subsystem

Your computer has an integrated Crystal 4235 audio subsystem that supports SoundBlaster applications and is compatible with the Microsoft Windows Sound System. Three audio ports (line in, line out, and microphone) are provided.

Ethernet Subsystem

Your computer has an integrated Intel EtherExpress Pro/100B Ethernet Controller with Wake on LAN. This subsystem is a high-performance Ethernet LAN interface that provides both 10Base-T and 100Base-TX connectivity using a single RJ-45 connector. It also provides support for the IBM Wake on LAN feature.

For instructions on connecting a network cable to your computer, refer to *Setting Up Your IntelliStation M Pro.*

System Management Features

Your IntelliStation M Pro has features that make it possible for a network administrator to manage and control your computer remotely over a network. These features are:

- Wake on LAN
- Alert on LAN (supported on certain models)
- RPL (Remote Program Load) and DHCP (Dynamic Host Configuration Protocol)
- Remote Administration
- DMI (Desktop Management Interface) BIOS and DMI software
- Integrated system management hardware
    - System temperature sensors
    - Fan-speed sensors
    - Power supply and processor voltage sensors
    - Stored POST hardware test results (depends on BIOS)
    - Remote reset (from LAN)
    - Chassis-intrusion detection

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.

The Wake on LAN feature is used to turn on your networked computer so that remote network management software can perform several network management tasks. For instance, when Wake on LAN is used with IBM's remote network management software, Netfinity Version 4 (or later), functions such as asset tracking

and software and device driver updates can be performed from a server after hours and on weekends.

Alert on LAN: Alert on LAN is a new hardware and software technology that is supported in certain models of your computer. It provides notification to a network administrator of changes in the computer even if the power is off or has no operating system running. Working with DMI and Wake on LAN technologies, Alert on LAN helps the network administrator to react quickly and effectively when problems occur.

Examples of when Alert on LAN generates an alert are:

- The computer cover has been removed

- Internal components have been removed

- POST fails during a Wake on LAN attempt

- The computer is disconnected from the network or unplugged from the power outlet.

Alert on LAN can be integrated with network-management software such as LANDesk Client Manager and IBM Client Services for Netfinity Manager.

For more information about Alert on Lan, go to the World Wide Web at:

`http://www.pc.ibm.com/us/desktop/alertonlan/index.html`

RPL (Remote Program Load) and DHCP (Dynamic Host Configuration Protocol): RPL and DHCP are features that are built into the Intel EtherExpress Pro/100B Ethernet Controller with Wake on LAN. The RPL feature enables your computer to start up 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 intranet[1] to assign an IP (internet protocol) address to your computer so that a startup 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 Intel LANDesk&reg. Configuration Manager. Your computer requires network management software, such as LANClient Control Manager, in order to take advantage of the RPL and DHCP features.

---

[1] An intranet is a private network that conforms to the same protocols as the internet, but is contained within an organization. The intranet contains one or more servers that provide services to the workstations on the private network. Some intranets are also connected to the Internet.

Update POST and BIOS over the Network: When Remote Administration is enabled, the POST and BIOS code in your computer can be updated remotely by a network administrator. Network management software, such as LANClient Control Manager, is required in order to take advantage of the update POST/BIOS over network (Remote Administration) feature.

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

For more information on these features, refer to "Using System Management Features" on page 35.

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 comes with your computer.

Operating System Support

Your computer is designed to use a variety of operating systems in order to meet your particular needs. See page 14 for a list of operating systems that you can use with your computer.

IBM ViaVoice Gold

ViaVoice Gold is continuous speech dictation and desktop navigation CD-ROM software that comes with your computer. If you experience problems using ViaVoice Gold when Microsoft Internet Explorer 4.0 is installed, see the READ1ST.TXT file in the appropriate language folder on the ViaVoice Gold CD-ROM.

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 easy-to-use diagnostic programs that you can run to help determine if a hardware component is causing the problem. See "IBM Enhanced Diagnostics" on page 129.

Ergonomic Features

Your computer has ergonomic features which make it more comfortable to use. The power switch is located on the top for easy access and the indicator lights are located on the front panel for good visibility. You can easily change monitor settings to reduce flicker and jitter in the display. You can also install the optional keyboard extender and adjust the angle of the keyboard to make typing more comfortable.

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.

Advanced Configuration and Power Interface (ACPI)

ACPI is a BIOS mode that allows your computer's operating system to take control of the power management features of your computer. ACPI must be enabled in the operating system and the ACPI BIOS mode in your computer must also be enabled to give control to the operating system. If ACPI BIOS mode is enabled, the power management settings for APM BIOS mode are ignored. However, the activity monitor settings for the keyboard and mouse are still used to wake up the computer when ACPI is enabled. Not all operating systems support the ACPI mode of operation. Refer to your operating system documentation to see if it supports ACPI. To enable or disable ACPI BIOS mode, see "Setting ACPI BIOS Mode" on page 78.

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.

For the latest information on IBM IntelliStation security features, visit the IBM AssetCare home page at:

`http://www.pc.ibm.com/us/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 8, "Getting Help, Service, and Information" on page 133.

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 65.

Microprocessor

- Intel Pentium II microprocessor
- Support for dual microprocessors

Memory

- Four 3.3 V, synchronous, 168-pin, dual in-line memory module (DIMM) sockets
- Installed: synchronous dynamic random access memory (SDRAM) error correcting code (ECC), 100 MHz, unregistered DIMMs
- Support for:
    - Up to 1024 MB (1 GB) of SDRAM
    - 32 MB, 64 MB, 128 MB, and 256 MB DIMMs in either single-sided or double-sided configurations
    - DIMM heights up to 2.5 inches
- Flash memory for system programs

L2 Cache Memory

- 512 KB L2 cache memory integrated into microprocessor

Removable Media Drives

- Standard: One 3.5-inch, 1.44 MB diskette drive
- Maximum: Two diskette drives and one tape backup
- Options: 5.25-inch, 1.2 MB diskette drive; 3.5-inch, 1.44 MB diskette drive; internal tape drive

Internal Hard Disk Drives

- Standard: One EIDE or one SCSI hard disk drive
- Maximum IDE and EIDE devices: Four total (includes CD-ROM)
- Maximum SCSI devices: Refer to the SCSI documentation that comes with your computer.

CD-ROM Drive

- One IDE CD-ROM drive

Video Subsystem

- One of the following is preinstalled:

    - Matrox Millennium II AGP graphics adapter

    - STB GLyder MAX-2+ AGP graphics adapter

    - Intergraph Intense 3D Pro 3400 PCI graphics adapter

Audio Subsystem

- Integrated Crystal 4235 audio subsystem
- SoundBlaster applications supported

Ethernet Subsystem

- Integrated Intel EtherExpress Pro/100B Ethernet Controller with Wake on LAN
- Provides both 10Base-T and 100Base-TX connectivity

System Management

- RPL (remote program load) and DHCP (dynamic host configuration protocol)
- Wake on LAN, wake up on ring, and wake up on alarm
- Alert on LAN (supported on certain models)
- Update POST and BIOS over the network
- Automatic power-on startup sequence
- Desktop Management Interface (DMI) BIOS and DMI software
- Store POST hardware test results
- Remote reset from LAN
- Built-in system-management hardware (temperature sensors, fan-speed monitor, chassis-intrusion detector, power supply and processor voltage monitor, and power-switch bypass)

Input/Output Features

- 25-pin, ECP/EPP parallel port
- Two 9-pin, 16550 UART serial ports
- Two 4-pin, USB ports
- Mouse port
- Keyboard port
- 15-pin monitor port (on graphics adapter)
- Three audio ports (line in, line out, and microphone)
- Ethernet RJ-45 port

Expansion

- Six drive bays
- Six expansion slots (one dedicated AGP, four dedicated PCI, and one shared ISA/PCI
- Support for PCI/ISA Plug and Play adapters
- Support for dual microprocessors
- Support for additional internal and external SCSI devices (the number of internal devices that can be installed is limited by the number of available drive bays and power and cooling requirements)
- Support for an optional Adaptec ARO-1130 PCI RAIDport adapter

Power

- 330 W, 115/230 V ac, 50/60 Hz
- Automatic ac voltage sensing in power supply
- Built-in overload and surge protection
- Advanced Power Management
- Wake on LAN support

Security

- AssetCare
- Asset ID
- 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

IBM-Preinstalled Software

Your computer might come with preinstalled software. If so, an operating system, device drivers to support built-in features, and other support programs are included. See *About Your Software* for a detailed description of the preinstalled software.

Operating Systems (Supported)

- Microsoft Windows NT Versions 3.51 (some models) and 4.0
- Microsoft Windows 95

Operating Systems (Tested for Compatibility)[2]

- IBM DOS Versions 7.0
- MS DOS Versions 6.2, 7.0
- Novell Netware Versions 3.12, 4.11
- SCO OpenServer 5.0.4
- Solaris V2.6
- DEC PathWorks V5
- DEC Net

---

[2] The operating systems listed here are being tested for compatibility at the time this publication goes to press. Additional operating systems might be identified by IBM as compatible with your computer following the publication of this booklet. Corrections and additions to the list are available in IBM's online compatibility report, which can be found on the World Wide Web (http://www.pc.ibm.com/us/cdt). For additional information, see Chapter 8, "Getting Help, Service, and Information" on page 133.

System Specifications

Size

- Depth: 445 mm (17.5 in.)
- Width: 200 mm (7.9 in.)
- Height: 492 mm (19.4 in.)

Weight

- Maximum configuration (as shipped): 17.3 kg (38 lb)

Environment

- Air temperature:

  - System on: 10° to 35°C (50° to 95°F) at altitude 0–2134 m (7000 ft)
  - System off: 10° to 43°C (50° to 110°F)

- Humidity:

  - System on: 8% to 80%
  - System off: 8% to 80%

Heat Output

- Approximate heat output in British thermal units (Btu) per hour:
  - Maximum configuration (as shipped): 306 Btu/hour (90 watts)
  - Maximum configuration (theoretical)[3]: 1564 Btu/hour (460 watts)

Electrical Input

- Sine-wave input (50/60 Hz) is required
- Input voltage:
  - Low range:
    - Minimum: 90 V ac
    - Maximum: 137 V ac
  - High range:
    - Minimum: 180 V ac
    - Maximum: 265 V ac
  - Input kilovolt-amperes (kVA) (approximately):
    - Maximum (configuration as shipped): 0.75 kVA

---

[3] Under typical maximum configurations, the heat output will be substantially below the theoretical maximum.

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:
    - 37 dBA idle
    - 42 dBA operating
  - At bystander position–1 meter (3.3 ft):
    - 34 dBA idle
    - 36 dBA operating
- Declared (upper limit) sound power levels:
  - 5.0 bels idle
  - 5.2 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. Installing Options Overview

You can easily expand the capabilities of your computer by adding memory, drives, adapters, or an additional microprocessor. If you have installed options before, you might be able to perform some activities without detailed instructions.

For detailed instructions on installing options, refer to *Installing Options in Your IntelliStation M Pro* which is available on the *Ready-to-Configure Utility Program CD* that comes with your computer. It is also available as a printable file (.PDF) on the World Wide Web at:

`http://www.pc.ibm.com/us/intellistation`

DANGER

> **To avoid a shock hazard, do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.**

Electrical Safety

Caution:
**Electrical current from power, telephone, and communication cables can be
hazardous. To avoid any shock hazard, disconnect all power cords and cables as
described in the following information.**

For your safety, always do the following *before* removing the cover:

1. Shut down all programs as described in your operating-system documentation.

2. Turn the computer and any attached devices off, such as printers, monitors, and
   external drives.

   Note:
   Computer users in the United Kingdom who have a modem or fax machine
   attached to their computer must disconnect the telephone line from the
   computer *before* unplugging any power cords (also known as power cables).
   When the computer is reassembled, users must reconnect the telephone line *after*
   plugging in the power cords.

3. Unplug all power cords from electrical outlets.

4. Disconnect all communication cables from external receptacles.

5. Disconnect all cables and power cords from the back of the computer.

   Note:
   Do not reconnect any cables or power cords until you reassemble the computer
   and put the cover back on.

Caution:
**Never remove the cover on the power supply. If you have a problem with the
power supply, have your computer serviced.**

Handling Static-Sensitive Devices

Have you ever walked across a carpeted floor, then touched an object and received a small electrical shock? That's static electricity, and although harmless to you, it can seriously damage computer components and options.

Important:
When you add an option, do *not* open the static-protective package containing the option until you are instructed to do so.

When you handle options and other computer components, take these precautions to avoid static electricity damage:

- Limit your movement. Movement can cause static electricity to build up around you.

- Always handle components carefully. Handle adapters and memory-modules by the edges. Never touch any exposed circuitry.

- Prevent others from touching components.

- When you are installing a new option, touch the static-protective package containing the option to a metal expansion-slot cover or other unpainted metal surface on the computer for at least two seconds. This reduces static electricity in the package and your body.

- When possible, remove the option and install it directly in the computer without setting the option down. When this is not possible, place the static-protective package that the option came in on a smooth, level surface and place the option on it.

- Do not place the option on the computer cover or other metal surface.

Available Options

Following are some of the available options:

- System memory, called dual in-line memory modules (DIMMs)
- A second microprocessor or microprocessor upgrades
- Expansion adapters
  - Accelerated Graphics Port (AGP) adapters
  - Industry standard architecture (ISA) adapters
  - Peripheral component interconnect (PCI) adapters
  - Intergraph Intense 3D Pro 3400GA geometry accelerator PCI adapter used with the Intergraph Intense 3D Pro 3400 PCI graphics adapter
  - Adaptec RAIDport
- Internal drives
- Cover lock
- Security U-bolt

For the latest information about available options:

- Look on the following World Wide Web pages:

  http://www.pc.ibm.com/us/options/
  http://www.pc.ibm.com/us/intellistation/

- Within the United States, call 1-800-IBM-2YOU (1-800-426-2968), your IBM reseller, or IBM marketing representative.
- Within Canada, call 1-800-565-3344 or 1-800-465-7999.
- Outside the United States and Canada, contact your IBM reseller or IBM marketing representative.

Locating Components

The following information helps you locate components and serves as a reference when you need to install options or connect input/output devices.

Your computer comes with the following adapters and devices preinstalled:

- A graphics adapter (slot location varies with model)
- A CD-ROM drive in drive bay 1
- A diskette drive in drive bay 4
- A hard disk drive in drive bay 5 or bay 6

External View

The following illustration shows the external view of your computer as seen from the front.

1	Power switch
2	Power-on light
3	Hard disk drive light
4	Client LAN light
5	Bay 1, CD-ROM drive
6	CD ROM eject button
7	CD ROM emergency eject
8	Bay 2
9	Bay 3
10	Bay 4, 3.5" diskette drive
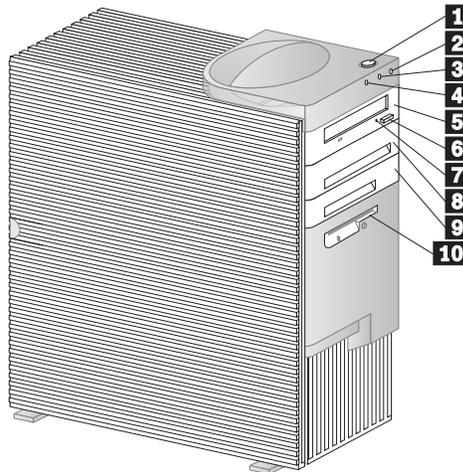
Using the Stabilizing Feet

The four feet attached to the bottom of your computer rotate 90 degrees to provide additional stability for your computer.

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

When you are finished installing option(s) and have reattached the side cover, turn the four stabilizing feet a quarter turn out from the computer and set it carefully back on its feet.

Disconnecting Cables and Removing the Cover

Keyboard	Mouse	USB Device	Parallel Device
Serial Device	Ethernet Device	Audio Device	Microphone
SCSI Device	Monitor		
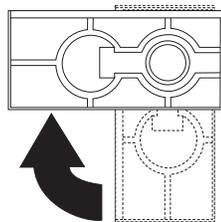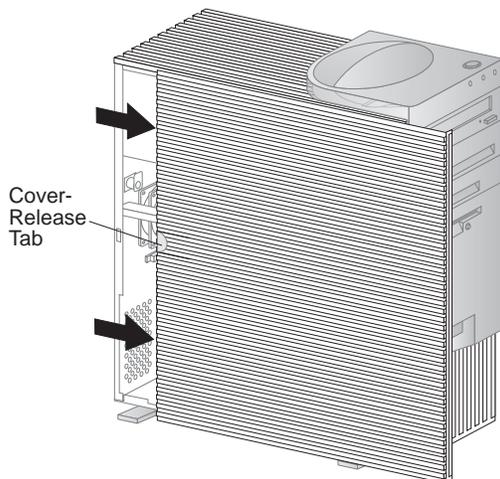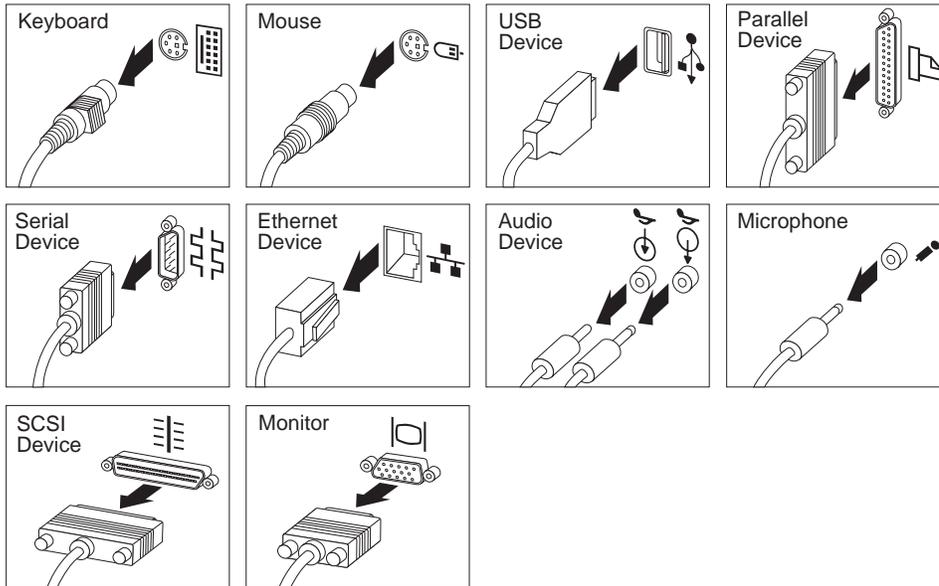
Cover-
Release
Tab

Warning: The cover should always be **on** when operating your computer. Proper cooling is required for the reliable performance of internal components.

Internal Views

The following illustration shows the internal view of your computer as seen with the cover removed.

1 Upper drive bracket (bays 1-4)
2 Lower drive bracket (bays 5-6)
3 System board
4 Expansion adapter
5 Expansion slots
6 Microprocessor
7 Power supply
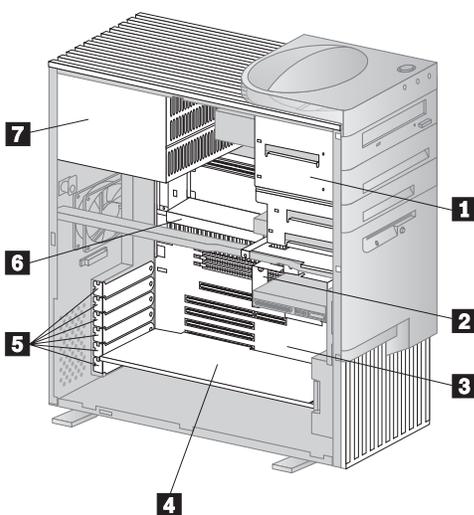
Drive Bays: Your computer has six drive bays. Several of these bays are unoccupied and can be used for installing additional devices such as hard disk, tape drives, and CD-ROM drives.

The following illustration shows the bay locations.

5.25-Inch CD-ROM Drive
5.25-Inch Bay for Optional Drive
3.5-Inch Bay for Optional Drive
3.5-Inch Diskette Drive
3.5-Inch Hard Disk Drive
3.5-Inch Bay for Optional Hard Disk Drive
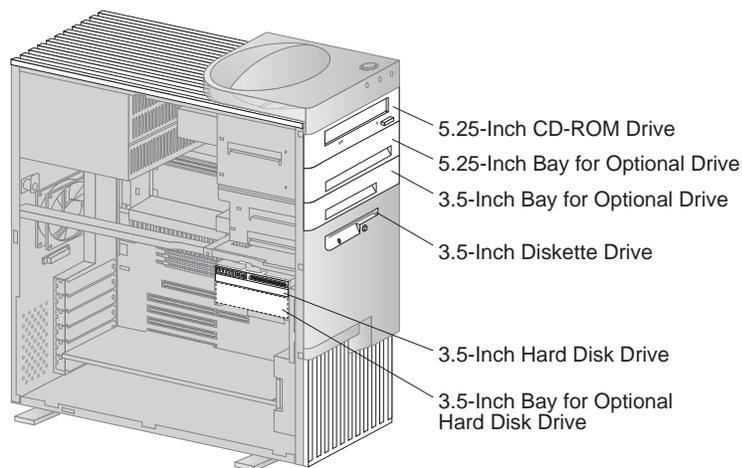
Input/Output Device Connectors

Input/output (I/O) connectors provide ports for transferring information into and out of your computer. You can connect a variety of I/O devices to your computer, including a monitor, keyboard, mouse, and printer.

At the rear of your computer is a panel that provides access to I/O connectors. Adapters installed in expansion slots might also provide I/O connectors. The following illustration shows the location of the external connectors.
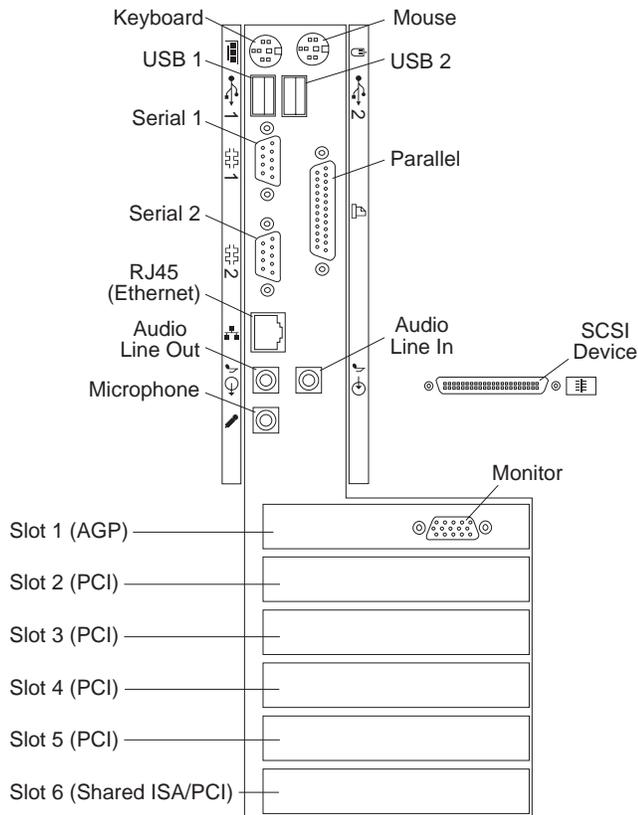
Note that the monitor connector is located on the graphics adapter installed in one of the expansion slots. The type of graphics adapter installed and the slot location varies with computer model.

Identifying Parts on the System Board

The system board, also called the *planar* or *motherboard*, is the main circuit board in your computer. It provides basic computer functions and supports a variety of devices that are IBM-installed or that you can install later.

If you plan to install, remove, or replace hardware in your computer, you will need to know the layout of the system board. The following illustration shows the layout of the system board in your computer. The numbered pointers show the components that are discussed in this book.

1	Secondary microprocessor socket
2	Primary microprocessor socket
3	Power connector
4	5 V auxiliary power connector
5	DIMM sockets
6	Channel B SCSI Connector (68 pin)
7	Diskette drive connector
8	Primary IDE connector
9	Channel B SCSI Connector (50 pin)
10	Secondary IDE connector
11	Battery
12	CMOS clear (password) jumper
13	Rocker switches
14	Wake on LAN Connector
15	Wake on Modem Connector
16	Channel A SCSI Connector (68 pin)
17	Shared ISA/PCI slot connector
18	PCI slot connectors
19	AGP slot connector
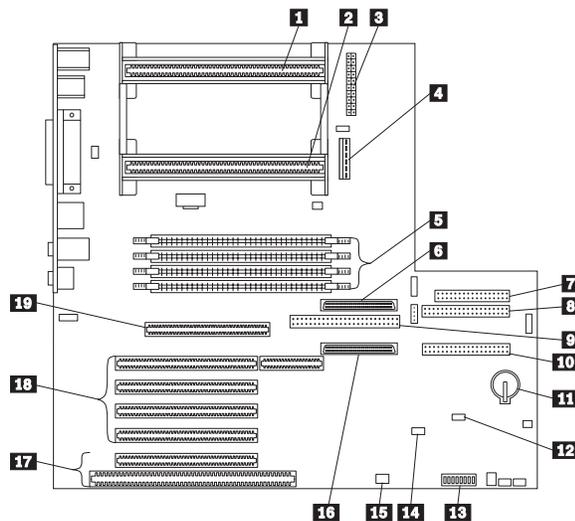
Note: An illustration of the system board and additional information is provided on a label located inside the computer.

Chapter 3. 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.
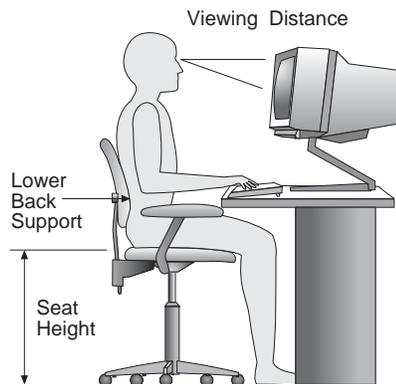
Adjust the monitor so the top of the screen is at, or slightly below, eye level. Place the monitor at a comfortable viewing distance, usually 51 to 61 cm (20 to 24 in.), and position it so you can view it without having to twist your body.

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 154.

Chapter 4. Operating Your Computer

This chapter provides information to help you in the day-to-day use of your computer.

Important Information

The power line and power control behavior of the IntelliStation M Pro is different than some earlier computer models. Please observe the following:

- When the power cord is first plugged in, the computer may appear to power on for a few seconds, then power off. This is a normal sequence to enable the computer to self initialize.

- The power switch will normally operate with a single touch. However, in some circumstances the computer may not immediately power off. In this case, hold the power switch down for approximately 5 seconds. The computer will then turn off.

The cover should always be **on** when operating your computer. Proper cooling is required for the reliable performance of internal components.

Using Controls and Status Indicators
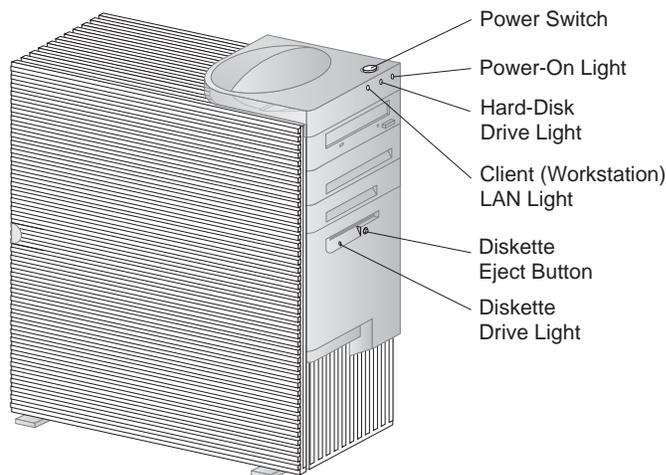
The following describes the operating controls and status indicators located on the front of your computer; for CD-ROM information, see "Using a CD-ROM Drive" on page 41.

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

When power is on, there is a period of time during POST that a single touch of the power switch will not turn power off. If power must be turned off during POST, you should press and hold the power switch for 5 seconds or disconnect the power cord. After POST, the power switch works normally unless the computer is in a hang condition. If the computer is in a hang condition, press and hold the power switch until power turns off.

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.

Client Workstation LAN Light: When this light blinks, it indicates that the integrated Intel EtherExpress Pro/100B Ethernet Controller with Wake on LAN in your computer is transmitting to or receiving from another workstation or server a data block (*frame*) that matches the network address of your computer. Data blocks sent from your computer to other adapters (*broadcast transmits*) will not cause this light to blink.

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

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.

Starting Your Computer

What you see and hear when you start up your computer depends upon the settings in the **Start Options** menu of the Configuration/Setup Utility program. The default settings are **Power On Status** [*Disabled*] and **Power On Self Test** [*Quick*].

Note: There are other selections that might also change what is displayed.

The following briefly describes what you see in the default mode when you turn on your computer:

- The IBM logo appears
- The amount of system memory and extended memory appears in top-left corner of screen
- **Press F1 for Configuration/Setup** prompt appears
- The keyboard is locked
- The SCSI BIOS installs (on some models)
- The keyboard is unlocked

    – If any errors were detected during POST, they are displayed.

- 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 Chapter 5, "Using the Configuration/Setup Utility Program" on page 45 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.

If **Power On Status** is [*Enabled*], and POST finishes without detecting a problem, you hear one beep. 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 92 and "POST Message Charts" on page 95.

If **Power On Self Test** is [*Enhanced*], 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. Prompts for running a fast POST or accessing the Configuration/Setup Utility program appear in the lower-left corner of the screen.

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 method for gathering information about the hardware and software in your computer that makes it possible for 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 LANDesk™, and Microsoft SMS).

Your computer has hardware integrated on the system board that provides system-management 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 Netfinity Version 4 (provided on the *Ready-to-Configure Utility Program CD* that comes with your computer), many types of functions, such as data transfers, software updates, and POST/BIOS updates to your computer can be initiated remotely. These functions can be performed after normal working hours and on weekends to save time, increase productivity, and

help keep LAN traffic down during the busy hours of the day. Refer to Chapter 5, "Using the Configuration/Setup Utility Program" on page 45 for configuration information.

Alert on LAN

Alert on LAN is a new hardware and software technology supported on some models of your computer. It immediately alerts network administrators when a computer has a problem, even if the power is off or has no operating system running. For system management, Alert on LAN helps the network administrator to react quickly and effectively when problems occur, rather than waiting for input from the end-user.

For more information about Alert on Lan, go to the World Wide Web at:

`http://www.pc.ibm.com/us/desktop/alertonlan/index.html`

RPL or DHCP

RPL (Remote Program Load) and 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. 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 from the hybrid images, the bootstrap program initiates the startup process from the hard disk of your computer. An advantage to Hybrid RPL is that the network load associated with standard RPL is avoided.

POST/BIOS Update Over the Network

This feature makes it possible for the POST and BIOS in your computer to be updated remotely by a network administrator. Network-management software, such as LANClient Control Manager, is required in order to take advantage of this feature. Refer to "Setting Remote Administration" on page 77 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. Refer to "Start Options" on page 55 for information on setting keyboard speed.

Using Video Features

Your computer has an SVGA (super video graphics array) controller located on the preinstalled graphics adapter. 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 M 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.

Installing Video Device Drivers

To take full advantage of the 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.

Device drivers for the graphics adapters as well as a README file with instructions for installing the device drivers, are provided on the *Ready-to-Configure Utility Program 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.

See Chapter 8, "Getting Help, Service, and Information" on page 133 for information about obtaining the latest device drivers.

Changing Monitor Settings

To get the best possible image on your screen and to reduce 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 Utility Program 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.

Using Audio Features

Your computer has an integrated Crystal 4235 audio controller that supports SoundBlaster applications and is compatible with the Microsoft Windows Sound System. Your computer also has an internal speaker and three audio ports. These features provide you with the ability to play back and capture sound and music, and enable you to enjoy sound with multimedia applications.

The audio ports in your computer are 3.5 mm (1/8") mini-jacks. A description of the ports follows. (For the location of the ports, refer to "Input/Output Device Connectors" on page 26.)

- Audio Line Out: This jack is used to send audio signals from the computer to external devices, such as stereo-powered speakers with built-in amplifiers, headphones, multimedia keyboards, or the Audio Line-In jack on a stereo system. In order to hear audio, you must connect one of these external devices to the Audio Line-Out port on your computer.

  Note: The internal speaker in your computer is disabled when an external speaker is connected to the Line-Out port on your computer. There is no playback capability through the internal speaker.

- Audio Line In: This port is used to send audio signals from an external device (such as a CD player or stereo) to your computer so that the signals can be recorded on the hard disk. (However, you must go into the mixer provided in your operating system and reduce the input level accordingly.)

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

  Note: If you experience interference or speaker feedback while recording, try reducing the microphone recording volume (gain).

Procedures for recording and playing back sound vary by operating system. Refer to your operating system documentation for information and instructions.

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 a flash update diskette or by using the Remote Administration feature, 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 are available as downloadable files on the World Wide Web (http://www.pc.ibm.com/us) or through the PC Company Bulletin Board Service (see "Using Electronic Support Services" on page 135). Instructions for using the system programs updates are available in a README file included in the download files.

ROM Recovery

If power to your computer is interrupted while POST/BIOS is being updated, your computer might not restart (reboot) correctly. If this happens, perform the following procedure to recover:

 1. Turn the computer off.

 2. See "Electrical Safety" on page 18 and "Handling Static-Sensitive Devices" on page 19.

 3. Remove the cover. See "Disconnecting Cables and Removing the Cover" on page 23.

 4. Locate the configuration/rocker switches on the system board. See the label inside your computer for the location of the switches.

 5. Set switch number 5 ON.

 6. Insert the POST/BIOS update (flash) diskette into drive A.

 7. Turn the computer on.

 8. After the update session completes, turn the computer off and remove the diskette from drive A.

 9. Set switch number 5 OFF.

10. Install the cover and reconnect any cables that were disconnected.

11. Turn the computer on to restart the operating system.

Using a CD-ROM Drive

Your computer has a preinstalled CD-ROM drive. CD-ROM drives can play back or read from a CD, but 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.
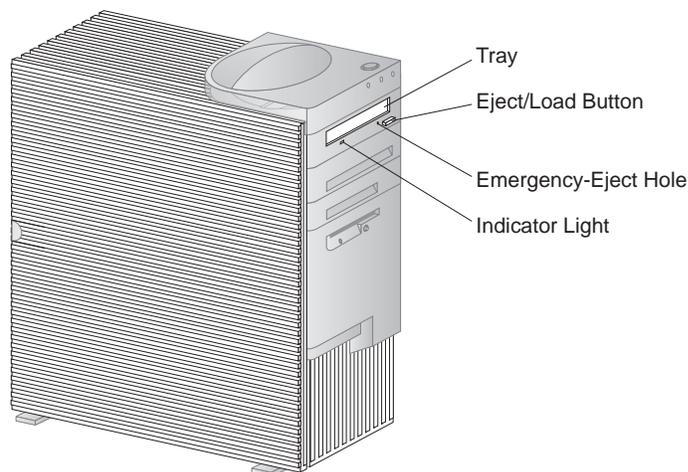
Handling a CD

When handling a CD, follow these guidelines:

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

Loading a CD

To load a disk into a 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 disk 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 disk, press the Eject/Load button. When the tray slides out, carefully remove the disk.

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, refer to the documentation that comes with the 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 141. 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 68.

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

Optional Security U-Bolt

With the optional U-bolt and a steel cable, you can secure your computer to a desk, table, or other fixture. This helps to protect against theft.

Chapter 5. Using the Configuration/Setup Utility Program

The Configuration/Setup Utility 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
- Product Data
- Devices and I/O Ports
- Start Options
- Date and Time
- System Security
- Advanced Setup
- ISA Legacy Resources
- Power Management

This chapter contains the following sections:

- "Starting and Using the Program" on page 46, which contains information about starting, using, and exiting the Configuration/Setup Utility.

- "Overview" on page 50, which contains descriptions of the configuration and setup options by categories.

- "Instructions for Common Procedures" on page 65, which contains more detailed instructions and information for performing some of the more common configuration tasks.

- "Quick Reference for Network-Related Settings" on page 81, which contains concise step-by-step instructions for enabling network-related settings for your computer.

Starting and Using the 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 program 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**. See "Understanding the Power-On Password" on page 66 and "Understanding the Administrator Password" on page 70 for more information.

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

```
┌─────────────────────────────────────────────────┐
│            Configuration/Setup Utility           │
├─────────────────────────────────────────────────┤
│                                                  │
│       Select Option:                             │
│                                                  │
│       • System Summary                           │
│       • Product Data                             │
│       • Devices and I/O Ports                    │
│       • Start Options                            │
│       • Date and Time                            │
│       • System Security                          │
│       • Advanced Setup                           │
│       • ISA Legacy Resources                     │
│       • Power Management                         │
│                                                  │
│       Save Settings                              │
│       Restore Settings                           │
│       Load Default Settings                      │
│                                                  │
│       Exit Setup                                 │
│                                                  │
└─────────────────────────────────────────────────┘
```
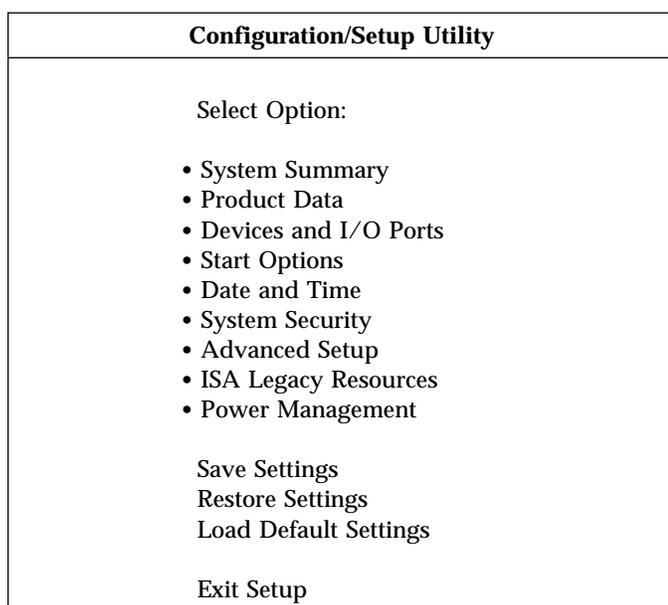
Viewing and Changing Settings

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 M 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.

Important Information about Saving Configuration Settings

In most cases, when you add or remove hardware from your computer or erase passwords, 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, removing hardware, or erasing passwords, 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 from the Configuration/Setup Utility program, and follow the instructions on the screen.

Exiting the 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.

Overview

This section contains descriptions of the configuration options according to category.

System Summary

If you select System Summary from the Configuration/Setup Utility main menu, you can *view* the following information about the features of your computer. The Configuration/Setup Utility program changes this information automatically if you add or remove options, unless otherwise stated.

System Summary	Descriptions
Processor	Indicates the type of microprocessor.
Processor Speed	Indicates the microprocessor internal clock speed.
Cache Size	Indicates the amount of cache memory in Kilobytes. Cache memory is special buffer storage that holds frequently used instructions and data, and works faster than main memory.
Cache State	Indicates the state of cache memory, enabled or disabled.
System Memory	Indicates the amount of synchronous dynamic random access memory (SDRAM).
Memory Type	Indicates the type of memory, such as nonparity or error checking and correction (ECC).
Video Controller	Indicates the type of video controller, which processes images on your monitor.
Ethernet Support	Indicates the type of Ethernet controller, if installed.
Audio Support	Indicates the type of audio controller, if installed.
Diskette Drive A	Shows if diskette drive A is installed. The default is: Drive A — 1.44 MB 3.5". To specify the drive capacity, see **Devices and I/O Ports** on page 52.
Diskette Drive B	Shows if diskette drive B is installed. The program cannot detect the storage capacity of the drives. The default is: Drive B — 1.2 MB 5.25". To specify the drive capacity, see **Devices and I/O Ports** on page 52.
Hard Disk Drive 0	Shows if an IDE device is installed.
Hard Disk Drive 1	Shows if an IDE device is installed.
CD-ROM Drive 2	Shows if a CD-ROM drive is installed.
Hard Disk Drive 3	Shows if an IDE device is installed.

Product Data

If you select Product Data from the Configuration/Setup Utility main menu, you can *view* the following information about your computer model. The Configuration/Setup Utility program changes this information automatically if the EEPROM (electrically erasable programmable read-only memory) or BIOS (basic input/output system) code is upgraded.

Product Data	Descriptions
Machine Type/Model	Shows the type and model of the computer.
Flash EEPROM Revision Level	Indicates the revision level of the software installed in the electrically erasable programmable read-only memory (EEPROM).
Boot Block Revision Level	Indicates the revision level of the boot (startup) record that is flashed in at manufacturing.
System Board Identifier	Shows the ID number of the system board.
System Serial Number	Shows the serial number of the computer.
System UUID	Shows a universally unique identifier for your computer.
BIOS Date	Shows the date of the Basic Input/Output System code that contains such basic hardware operations as interaction with diskette drives, hard disk drives, and the keyboard.
BIOS Mode	Shows the mode (Desktop or Tower) of the Basic Input/Output System code.

Devices and I/O Ports

If you select Devices and I/O Ports from the Configuration/Setup Utility main menu, you can *view* and, in some cases, *change* device or port settings.

Note: The specific device options might vary, depending on the computer model.

You can change port assignments or disable ports if you want to prevent unauthorized transmission of data to any devices attached to the ports.

Devices and I/O Ports	Descriptions
Mouse	You must select whether the mouse is installed or not in this field.
Diskette Drive A	If a drive is installed, this field shows the diskette storage capacity of the drive. If you change or add a diskette drive, you might need to use this option to set the correct type.
Diskette Drive B	If a drive is installed, this field shows the diskette storage capacity of the drive. If you change or add a diskette drive, you might need to use this option to set the correct type.
Serial Port Setup Serial Port A Address Serial Port A IRQ Serial Port B Address Serial Port B IRQ	The Serial Port Setup menu shows the addresses and interrupts for the built-in serial ports. If you add adapter cards with serial ports, an error message will notify you if you have an address conflict among the serial ports. Ensure that each serial port has a different address. If you change serial port addresses in this menu, you might also need to make changes in the software that uses serial ports. For instructions on changing your software, see the user's guide or online information that comes with the software.
USB Setup USB Support USB Keyboard/Mouse Support	The USB Setup menu lets you enable or disable the Universal Serial Bus feature. Select Autodetect for USB Keyboard/Mouse Support if you want this support to be enabled when a USB keyboard or a USB mouse is detected after the computer is started. Select Disabled if you will not be using a USB keyboard or USB mouse.

Devices and I/O Ports	Descriptions
Parallel Port Setup Parallel Port Parallel Port Mode Parallel Port Extended Mode Parallel Port Extended Mode DMA Parallel Port IRQ	The Parallel Port Setup menu shows the address, mode, interrupt, and other settings for the built-in parallel port. The parallel port address can also be set to Disabled if you want to prevent unauthorized transmission of data to devices attached to the port. If you add adapter cards with parallel ports, an error message will notify you if you have an address conflict among the parallel ports. Ensure that each parallel port has a different address. If you change parallel port addresses in this menu, you might also need to make changes in the software that uses parallel ports. For instructions on changing your software, see the user's guide or online information that comes with the software. If the Parallel Port field is not set to Disabled, you can choose an operational mode for the parallel port. You can choose either Standard mode or one of the extended modes (ECP, EPP, ECP and EPP, or Bidirectional). In standard mode, you are limited to write-only (unidirectional) mode. The extended modes are bidirectional and will increase the efficiency of your parallel port; however, the extended modes use recent technology, which is not supported by some hardware. The extended modes are: • ECP: The extended capabilities port (ECP) mode provides higher speed data transfers than the Standard mode. The ECP mode is used for high-speed printers and other devices. • EPP: The enhanced parallel port (EPP) mode also provides high speed data transfers. The EPP mode is used for LAN adapters, disk drives, and tape backups. • ECP and EPP: This mode combines the capabilities of the Extended Capabilities Port and Enhanced Parallel Port modes. Select this mode if you have both ECP and EPP devices connected to the parallel port. • Bidirectional: This mode is used for data transfer to other computers and supported devices. The Parallel Port Extended Mode DMA field shows the channel assignment for direct memory access (DMA). The parallel port can use DMA data transfer when the extended mode is set to either ECP or ECP and EPP. The Parallel Port IRQ field shows the interrupt request number.

Devices and I/O Ports	Descriptions
Video Setup Video Controller Video Memory Video Aperture Palette Snooping Video Interrupt	The Video Setup menu displays the type of video controller, the amount of video memory, and the size of the video aperture, if applicable. You can also enable or disable Palette (color) Snooping and Video interrupt. Enable Palette Snooping if your system has an ISA video multimedia adapter installed and incorrect colors are displayed on the screen AND your system has a PCI video adapter installed that supports palette snooping. Enable Video Interrupt if you are using an application that requires this support.
IDE Drives Setup IDE Hard Disk Drive 0 IDE Hard Disk Drive 1 IDE CD-ROM Drive 2 IDE Hard Disk Drive 3	The IDE Drives Setup menu displays the hard disk and CD-ROM drives that either are already installed or can be installed in your computer. If a hard disk is installed, it shows the size and selectable performance. If a CD-ROM drive is installed, it shows the selectable performance. The performance indicates the speed at which the drive will transfer data. To get better disk performance, run IDE hard disk and CD-ROM drives in High Performance mode. If an IDE drive is set to High Performance mode, you can enable Drive Prefetch for maximum drive performance. **Note:** IDE CD-ROM devices and some operating systems might not work properly with the Drive Prefetch feature enabled.
Audio Setup Audio Support	If your model has the audio feature, you can use the Audio Setup menu to enable or disable this feature.
Ethernet Setup Ethernet Support Alert on LAN Network Boot MAC Address	If your model has an integrated Ethernet controller, you can use the Ethernet Setup menu to enable or disable the Ethernet feature and view or change related settings. **Notes:** 1. If your model has an integrated Ethernet controller and you install an optional network adapter, you must disable Ethernet support. 2. If your model does not have an integrated Ethernet controller but has an optional network adapter, you do not have the option of selecting RPL or DHCP. Also, you do not have the viewable MAC address feature.

Start Options

If you select Start Options from the Configuration/Setup Utility main menu, you can *view* and *change* settings for device startup sequence, keyboard speed, virus detection, various power-on options, and other features of your computer.

Start Options	Descriptions
Startup Sequence Primary Startup Sequence Automatic Power On Startup Sequence Error Startup Sequence	The Startup Sequence menu lets you specify the order in which the computer searches devices for the operating system files when you start up the computer. Primary Startup Sequence: Your computer has a default primary startup sequence. Use this option if you want to view or change the sequence. Automatic Power On Startup Sequence: Select Enabled for this option if you want to use a different startup sequence when your system is started using automatic power-on features. Error Startup Sequence: Select Disabled for this option if you want to automatically start the Configuration/Setup Utility whenever a POST error occurs. Select another option if you want the system to bypass the Configuration/Setup Utility and use a different startup sequence when a POST error occurs. You will still be able to access the Configuration/Setup Utility using the F1 key or the POST error menu.
Keyboard NumLock State	This option indicates whether or not the Num Lock feature on the keyboard turns on automatically each time you start up the computer. When NumLock is set to On, the keys on the keypad act as numeric keys. When NumLock is set to Off, the keys on the keypad act as cursor keys.
Keyboard Speed	This option indicates the speed at which your keyboard responds when you hold down a key (typematic rate). The Normal rate is 10 characters per second. The fast rate is 30 characters per second.
Disketteless Operation	When enabled, this option allows the computer to startup and run without a diskette drive. **Note:** To disable diskette drive access, see the **System Security** option on the Configuration/Setup Utility main menu.

Start Options	Descriptions
Keyboardless Operation Mode	When enabled, this option allows the computer to startup and run without a keyboard. If you enable this option, you must disable your power-on password, which can be done using the **System Security** option on the Configuration/Setup Utility main menu.
Power-On Self-Test	This option lets you set the level of power-on self testing (Quick or Enhanced) that will be done during the power-on sequence. **Note:** The Quick setting reduces the amount of testing; however, Quick setting is not recommended when using an unattended start mode.
Power on Logos	This option lets you control whether or not logos are displayed during the power-on sequence.
Power On F1/Esc Option	This option lets you control whether or not the F1 and Esc key options are displayed during the power-on sequence. This setting does not affect the behavior of these keys, only the display of the options.
Power On Status	This option lets you control whether or not power-on status indicators (such as memory count and system check points) are displayed during the power-on sequence. This option also controls the power-on beeps.
Virus Detection	This option lets you specify if you want the virus checker that comes with your computer's BIOS to check for viruses each time you turn on your computer. When virus detection is enabled, your computer checks the master boot record to see if the information has changed since the last time you turned on the computer. If the information has changed, the BIOS will display a message which warns that your system might contain a virus. **Note:** This option does not have an effect on the IBM AntiVirus program or on additional virus checking programs you may have purchased. It also does not remove viruses from your computer.

Date and Time

If you select Date and Time from the Configuration/Setup Utility main menu, you can *view* and *change* the date and time of the internal clock in your computer.

Date and Time	Descriptions
Time	Time shows the time in a 12- or 24-hour format. In a 24-hour 12 midnight is 00:00:00; 12 noon is 12:00:00; 1 p.m. is 13:00:00.
Date	Date displays the set date in MM/DD/YYYY format. **Note:** Different countries have different date formats.

System Security

If you select System Security from the Configuration/Setup Utility main menu, you can *view* and, in some cases, *change* the system security settings for your computer. You can use this menu to control access to the hard disk and diskette drives. You can also set, change, and delete power-on and administrator passwords.

System Security	Descriptions
Enhanced Security	If your model has the Enhanced Security feature, this option on the System Security menu shows the current setting for enhanced security. Enhanced security can only be enabled or disabled when you update system programs, as further explained under "Enabling and Disabling Enhanced Security" on page 75. Enhanced security provides extra protection for your administrator password and startup (boot) sequence settings. When enhanced security is enabled, your administrator password and startup sequence are stored in a highly-protected, nonvolatile, security EEPROM module that is separate from CMOS memory and the EEPROM module that stores system programs. When your administrator password and startup sequence are locked in the security EEPROM, they remain intact even if the battery in your computer expires or is removed by someone.

System Security	Descriptions
Secure IDE Devices and Diskette Drives	This option lets you enable or disable access to your IDE hard disk drives and diskette drives.
IDE Controller Diskette Drive Access	All IDE devices (such as hard disk and CD-ROM drives) attached to the IDE controller can be disabled using the IDE Controller field.
	Diskette drives attached to the system board or riser card can be disabled using the Diskette Drive Access field.
	If Diskette Write Protect is enabled, diskette drives attached to the system board or riser card will operate in a read-only mode.
Remote Administration	Select Enabled for this option if you want to allow remote administration, such as the POST/BIOS Update Utility program, to be run from a remote system without requiring the entry of your administrator password. If the power-on Password Prompt option is set to On, the prompt option will be reset to Dual when Remote Administration is set to Enabled.
Power-On Password	This options lets you *set, change*, or *delete* a power-on password. You can also set **Password Prompt** to On, Off, or Dual.
	For additional information about the power-on password, see "Understanding the Power-On Password" on page 66.
Administrator Password	This options lets you *set, change*, or *delete* an administrator password. You can also set **Power-on password changeable by user** to No or Yes.
	For additional information about the administrator password, see "Understanding the Administrator Password" on page 70.
	Note: See important information about the administrator password in "Understanding the Administrator Password" on page 70.
Adapter ROM Security	If this option is set to Yes, the keyboard will be locked during adapter ROM initialization. This can be used in conjunction with an administrator password to prevent the use of adapter ROM-based utility programs.
AssetCare	Enabling this option allows the wireless radio-frequency communication feature in your computer to be active. For more information, see "Security Features" on page 9

System Security	Descriptions
Asset ID	This option allows your computer to be scanned by various radio frequency emitting devices supplied by independent companies. Asset ID is intended for use only with Radio Frequency equipment that meets ANSI/IEEE C95.1 1992 RF Radio Frequency Limits.

Enabling this option causes POST to notify the user each time an asset control violation occurs. |

Advanced Setup

If you select Advanced Setup from the Configuration/Setup Utility main menu, you can *view* and, in some cases, *change* settings for advanced hardware features, including ROM shadowing, PCI control, and Plug and Play Control. These settings must be configured correctly; otherwise, your computer might malfunction.

Advanced Setup	Descriptions
Cache Control

Cache State

Cache Size | The Cache Control menu shows how much cache memory is installed and lets you enable or disable its use.

Cache memory is special buffer storage that holds frequently used instructions and data, and works faster than main memory. With cache memory enabled, most of your programs will run faster. If you run programs that require slower speeds, you can disable cache memory to slow down your computer. |
| ROM Shadowing | The ROM Shadowing menu shows which system devices are using read-only memory (ROM) shadowing. With ROM shadowing, your computer stores data from the specified device in random access memory (RAM). Because your computer can access data in RAM faster than it can access data from ROM, programs run faster when ROM shadowing is enabled.

If you install an adapter that has its own ROM, you can enable the ROM shadowing option for that adapter to speed up its performance.

Note: The ROM Shadowing option might not work on adapters that use memory-mapped I/O, such as network adapters. |

Advanced Setup	Descriptions
PCI Control PCI Parity Network Adapters Mass Storage Adapters Display Adapters Multimedia Devices Communication Adapters Serial Adapters	The PCI Control menu lets you enable or disable PCI parity and bus mastering for the PCI adapters installed in your computer. PCI parity allows parity checking of data across the PCI bus. Some adapters do not generate parity and will require the PCI Parity option be set to Disabled. Bus mastering lets installed bus master PCI adapters process information without using the microprocessor. Enable bus master if your device or adapter must have the bus master function enabled when the computer is turned on. Some devices or adapters might not work properly if the bus master function is enabled when the system is restarted. **Note:** If PCI adapters do not operate properly, you might need to disable the PCI Bus Master option.
Plug and Play Control Set Device Node Address Decode Plug and Play Operating System	The Plug and Play Control menu lets you change certain settings for Plug and Play devices. Set Device Node: When this option is disabled, programs will not be able to make changes to the power-on configuration. Address Decode: Most Plug and Play adapters use 16-bit address decoding. If you are experiencing problems with a Plug and Play adapter, changing the address decode setting to 10-bit might fix the problem. Plug and Play Operating System: Select Yes for this option if you are experiencing POST errors numbered 185x and your startup operating system is Plug and Play compliant. See your operating system documentation to determine if your operating system supports this function.
Processor Speed Control Processor ID Processor Updating	If you install a microprocessor, use this option to set the microprocessor speed. Ensure that you set the correct speed. If you select a speed that is faster than the microprocessor supports, unpredictable results might occur. The Processor ID is displayed. Enabling or disabling Processor Updating determines whether the BIOS will apply microprocessor updates when the computer starts.

ISA Legacy Resources

If you select ISA Legacy Resources from the Configuration/Setup Utility main menu, you can configure non-Plug and Play adapters, which are not automatically detected by your computer. You must identify the following ISA Legacy resources as dedicated to your new adapter so the BIOS does not attempt to assign them to Plug and Play adapters:

- Memory Resources
- I/O Port Resources
- DMA Resources
- Interrupt Resources

Each of the options on the ISA Legacy Resources menu opens another menu.

ISA Legacy Resources Options	Descriptions
Memory Resources	The Memory Resources menu lets you allocate system memory regions for an adapter. The menu lists the hexadecimal addresses of the available memory regions. You allocate memory to an adapter by selecting the ISA Resource setting for an available hexadecimal address. Be sure to read the documentation that comes with your adapter. You might need to make changes to the adapter to accommodate the selections you make for Memory Resources. For example, you might have to move jumpers or switches on the adapter, or make changes to the software that comes with the adapter.
I/O Port Resources	The I/O Port Resources menu lets you allocate input/output ports for an adapter. The menu lists the hexadecimal addresses of the available I/O ports. You allocate I/O ports to an adapter by selecting the ISA Resource setting for an available hexadecimal address. Be sure to read the documentation that comes with your adapter. You might need to make changes to the adapter to accommodate the selections you make for I/O Port Resources. For example, you might have to move jumpers or switches on the adapter, or make changes to the software that comes with the adapter.

ISA Legacy Resources Options	Descriptions
DMA Resources	The DMA Resources menu lets you allocate direct memory access (DMA) channels for an adapter. The menu lists the channel assignments for DMA, which allows I/O devices to transfer data to and from memory. You allocate DMA channels to an adapter by selecting the ISA Resource setting for an available channel.
	Be sure to read the documentation that comes with your adapter. You might need to make changes to the adapter to accommodate the selections you make for DMA Resources. For example, you might have to move jumpers or switches on the adapter, or make changes to the software that comes with the adapter.
Interrupt Resources	The Interrupt Resources menu lets you allocate interrupt requests (IRQs) for an adapter. The menu lists the system IRQs and their functions. You allocate IRQs to an adapter by selecting the ISA Resource setting for an available IRQ.
	Be sure to read the documentation that comes with your adapter. You might need to make changes to the adapter to accommodate the selections you make for Interrupt Resources. For example, you might have to move jumpers or switches on the adapter, or make changes to the software that comes with the adapter.

Power Management

If you select Power Management from the Configuration/Setup Utility main menu,
you can *view* and, in some cases, *change* settings that affect the energy-saving
features of your computer, including the automatic power-on feature and advanced
configuration and power interface (ACPI). With Power Management, your
computer and monitor (if your monitor supports Display Power Management
Signaling, DPMS) can be set to go into a reduced-power state if they are inactive for
a specified length of time.

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).

Power Management Options	Descriptions
ACPI BIOS Mode	ACPI BIOS Mode: When ACPI (automatic configuration and power interface) BIOS mode is enabled, the operating system is allowed to control the power management features of your computer. Not all operating systems support ACPI BIOS mode. Refer to your operating system documentation to determine if ACPI is supported.

APM
 	
APM BIOS Mode
Automatic Hardware Power Management
 	
    Time to Low Power
    IDE Drives
 	
Activity Monitor
 	
    PS/2 Keyboard
    PS/2 Mouse
    Diskette
    Serial Port A
    Serial Port B
    Parallel Port
    IDE Hard Disks
    IDE CD-ROM
	The APM features allow automatic power reduction through monitoring of your computer's hardware. These features can be used independent of APM BIOS features controlled by your operating system.
	
	APM BIOS Mode: Enable this function if your operating system supports APM enabled machines.
	
	Automatic Hardware Power Management: Enable this function and the related settings to reduce power consumption during periods of hardware inactivity.
	
	Activity Monitor: This option lets you set up the system activities that you want monitored for automatic power management.

Power Management Options	Descriptions

Automatic Power On
 	
Wake on LAN
Serial Port A Ring Detect
 	
    Startup Sequence
 	
MODEM Ring Detect
 	
    Startup Sequence
 	
Wake Up On Alarm
 	
    Event or Disabled
    Alarm day of month
    Alarm Time
    Alarm day of week
    Startup Sequence
 	
PCI Wake Up
 	
    Startup Sequence
	The Automatic Power On option lets you enable and disable features that automatically turn on your computer.
	
	You must also select the startup sequence you want to use for the type of power-on event selected. If you select **Automatic**, make sure **Automatic Power On Startup Sequence** in the Startup Sequence menu is set to Enabled. Otherwise, the system will use the Primary startup sequence.
	
	Notes:
	
	1. The available automatic power-on options might vary, depending on the computer model.
	
	2. For additional information about the power management options, see "Power Management."

Instructions for Common Procedures

This section contains step-by-step instructions for some of the more common configuration and setup procedures for your computer.

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 and Using the Program" on page 46).

 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 II
Processor Speed	350 MHz[4]
Cache Size	512 KB
Cache State	Enabled
System Memory	64 MB
Memory Type	ECC
Video Controller	Matrox Graphics Inc.
Ethernet Support	Enabled
Audio Support	Enabled
Diskette Drive A:	1.44 MB, 3.5"
Diskette Drive B:	Not Installed
IDE CD-ROM Drive 0	Installed
Hard Disk Drive 1	Not Installed
Hard Disk Drive 2	Not Installed
Hard Disk Drive 3	Not Installed

---

[4] MHz only denotes the internal clock speed of the microprocessor, not application performance; many factors affect application performance.

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.

To set the date and time:

1. Start the Configuration/Setup Utility program (see "Starting and Using the Program" on page 46).

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.

Understanding the Power-On Password

The *power-on* password feature deters unauthorized persons from gaining access to the information stored in your computer. You do not need to set a power-on password, but doing so allows you to control who can use your computer. When a power-on password is set, you must type the password at a 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.

　　　　Note: If **Remote Administration** is enabled, you cannot select **On**. In this case you should select **Dual**. If it is set to **On** when **Remote Administration** is enabled, it will automatically be reset to **Dual**.

Off
In password prompt Off mode (sometimes 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 Windows NT or Windows 95, do the following:
>
> - When the computer is started and the mouse port disabled error message appears, type either your power-on or administrator password to enable the keyboard. Then use the keyboard to put a check mark in the `Do not display this message in the future` check box.

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 66 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 67 for further information.

If both a power-on and administrator password are set, you can type either password at the password prompt *that appears as you start your computer.* However, if you want to change any settings in the Configuration/Setup Utility program, you must type your administrator password at the password prompt *that appears when you try to access the Configuration/Setup Utility program.* If you type your power-on password at this prompt, you will be able to view limited information in the Configuration/Setup Utility program, but you will not be able to change any settings.

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 the computer off 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 a Lost or Forgotten Administrator Password" on page 73 for further information.

To set or change a power-on password:

1. Start the Configuration/Setup Utility program (see "Starting and Using the Program" on page 46).

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 **Off**, **On**, or **Dual**. Press Left Arrow (←) or Right Arrow (→) to toggle between selections.

   Note: If **Remote Administration** is enabled, you cannot select **On**. In this case you should select **Dual**. If it is set to **On** when **Remote Administration** is enabled, it will automatically be reset to **Dual**.

7. Select **Change Power-On Password**, and follow the instructions on the screen.

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.

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 and Using the Program" on page 46).

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. 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.

Understanding the Administrator Password

Important

When enhanced security is enabled, it is vital that you keep a record of your administrator password in a secure place. If you forget or lose the administrator password, the system board in your computer must be replaced in order to regain access to the Configuration/Setup Utility program. For more information on Enhanced Security, see "Enhanced Security" on page 74.

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 the computer off 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.

Important Information

If you have set an administrator password read the following.

The AssetCare and Asset ID settings in the Configuration/Setup Utility program are enabled when your computer is shipped. If you set an administrator password with the AssetCare and Asset ID settings enabled, the following occurs:

- The chassis-intrusion feature of your computer is enabled. After this, each time you remove the computer cover and subsequently power on the computer, the Power-On Self-Test (POST) notifies you that the cover has been removed. The message displayed on the computer screen is the POST message 176.

  To bypass the message, you must enter the correct administrator password.

- Each time a component that is protected by asset security is removed, and the computer is powered on, a POST message notifies you of the removal. Examples of such components are system-memory modules and the microprocessor. The message that displays is the POST message 177.

  To bypass the message, you must enter the correct administrator password.

- Each time the computer passes through portal gates that read Asset ID information, a POST message notifies that there was a security breach when the computer is powered on. To bypass the message, you must enter the correct administrator password.

Setting or 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. If you lose or forget the administrator password, you will not be able to access the Configuration/Setup Utility program, and you will not be able to erase and reset an administrator password. If you lose or forget your password, you must complete *one* of the following steps in order to regain access to the Configuration/Setup Utility program:

1. If enhanced security is disabled (default setting), you must remove the computer cover and move a jumper on the system board. (Refer to "Erasing a Lost or Forgotten Administrator Password" on page 73 for further information.)

2. If enhanced security is enabled, you must replace the system board in your computer.

To set or change an administrator password:

1. Start the Configuration/Setup Utility program (see "Starting and Using the Program" on page 46).

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** and an administrator password is set, the power-on password can be changed without having to enter the administrator password. If you select **No** and an administrator password is set, the power-on password cannot be changed unless the administrator password is entered.)

7. Select **Change Administrator Password** and follow the instructions on the screen.

8. Press **Esc** until you 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 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 and Using the Program" on page 46).
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. Press **Esc** until you 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 a Lost or Forgotten Administrator Password: This section applies to lost or forgotten administrator passwords that are *not* protected by enhanced security. For information on lost or forgotten passwords that *are* protected by enhanced security, refer to "Erasing a Lost or Forgotten Administrator Password Protected by Enhanced Security" on page 76.

If you have lost or forgotten your administrator password and enhanced security is disabled, you must remove the computer cover and move the CMOS Clear jumper (also referred to as the *password* jumper) on the system board in order to erase the password so that you can regain access to the Configuration/Setup Utility program.

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

Important

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.

Enhanced Security

By default, your administrator password is stored in CMOS memory. CMOS memory is battery-powered memory that stores your configuration, setup, and security settings. The information stored in CMOS remains there for the life of the battery, as long as the battery is not removed.

Your computer has a new, enhanced security feature that provides extra protection for your administrator password, as well as your startup (boot) sequence settings. With enhanced security, your administrator password and boot sequence are stored in a highly-protected, nonvolatile, security EEPROM module that is separate from CMOS memory and the EEPROM module that stores system programs. When your administrator password and boot sequence are locked in the security EEPROM, they remain intact even if the battery in your computer expires or is removed by someone.

Enhanced security can be enabled or disabled only when you update system programs. The procedure for enabling enhanced security is explained under "Enabling and Disabling Enhanced Security" on page 75.

If enhanced security is enabled and you have not set an administrator password, your computer will operate as if enhanced security were disabled. If enhanced security is enabled and you have set an administrator password, your computer will operate as follows:

- The contents of the security EEPROM (your administrator password and boot sequence) will be protected from failure of the battery and CMOS memory.

- The security EEPROM will be protected from unauthorized access because it locks after your computer is turned on and the system programs have completed their startup routine. Once it is locked, the security EEPROM cannot be read from or written to by any software application or system software until the computer is turned off and back on again. In a networking environment, this might prevent certain functions from being performed remotely on your computer.

  There is an extra measure of protection for the system programs in your computer. Normally, the entire contents of the system programs EEPROM is write protected with a *soft lock*. A soft lock allows the POST/BIOS update utility to function in a network environment. Enhanced security adds a *hard lock*. With a hard lock, when your computer is turned on and the system programs startup routine is completed, the POST/BIOS update utility is locked and cannot be unlocked until the computer is turned off and back on again and the administrator password is entered. Note that, in a networking environment, this prevents the system programs in your computer from being updated

remotely. Someone must be present at your computer to turn it on and off in order to unlock the POST/BIOS update utility.

- A chassis-intrusion feature will alert you if the cover of your computer has been removed. This feature will work if your computer is on or off when the cover is removed. If the cover has been removed, a prompt for your administrator password will appear on the screen, and your computer will remain in a halted state until your administrator password is entered.

- As with nonenhanced security, your configuration settings are protected. The settings cannot be changed in the Configuration/Setup Utility program until your administrator password is entered. This means that any changes in computer hardware that are detected by the system programs in your computer, such as removal of a memory DIMM, will generate a configuration error until the administrator password is entered.

Enabling and Disabling Enhanced Security: Enhanced security can be enabled or disabled only when you update the system programs in your computer.

To enable or disable enhanced security:

1. Insert a system programs update diskette into drive A in your computer. System programs updates are available on the World Wide Web.

2. Turn on the computer. If it is on already, you must turn it off and back on again.

3. The update begins, your computer halts, and you are prompted for your administrator password (if you have set an administrator password). The computer remains in a halted state until you enter the administrator password.

4. When you enter the administrator password, the update diskette will continue to run, and you are given the option of enabling or disabling enhanced security. Your choice is automatically recorded in the System Security menu of the Configuration/Setup Utility program.

Setting, Changing, and Deleting an Administrator Password Protected by Enhanced Security: To set, change, or delete an administrator password protected by enhanced security, do the following:

1. Turn off all attached devices and the computer.

2. Refer to *Installing Options in Your IntelliStation M Pro* for instructions on safety, disconnecting all cables attached to the computer, and removing the computer cover.

3. Locate the switch marked as 7 on the rocker switches on the system board. Refer to the system board label inside the computer for the location of the

switch. Move the switch to the **ON** position. (To do this, push on the **ON** side.)

4. Set, change, or delete your administrator password in the Configuration/Setup Utility program. Refer to "Setting or Changing an Administrator Password" on page 71 or "Deleting an Administrator Password" on page 73 for instructions.

   Note: You must know the administrator password to change or delete it.

5. Move the switch back to the **OFF** position after you have set, changed, or deleted your password.

6. Replace the cover, and then turn on the computer.

Erasing a Lost or Forgotten Administrator Password Protected by Enhanced Security: When enhanced security is enabled, it is vital that you keep a record of your administrator password in a secure place. If you forget or lose the administrator password, the system board in your computer must be replaced in order to regain access to the Configuration/Setup Utility program.

Setting the Startup Sequence

Your computer can be started (or booted) from several devices including the hard disk drive, diskette drive, CD-ROM drive, and from the network. The startup 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 startup 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 and Using the Program" on page 46).

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. If **Automatic Power On Startup Sequence** is *Enabled*, select the sequence and devices from the choices provided.

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 and press **Enter**.

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

Setting Remote Administration

Enabling remote administration, allows system programs, such as the POST/BIOS, in your computer to be remotely updated 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 and BIOS updates.

To access remote administration:

1. Start the Configuration/Setup Utility program. See "Starting and Using the Program" on page 46.

2. Select **System Security**.

3. Select **Remote Administration**.

4. Press Enter.

5. To enable update remote administration, select **Enabled**. To disable, select **Disabled**.

6. Press **Esc** until you return to the Configuration/Setup Utility main 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.

Understanding Power Management

Your computer comes with built-in energy-saving capabilities. You can view and change energy-saving settings using the Power Management menu in the Configuration/Setup Utility program. This section describes the 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).

Setting ACPI BIOS Mode: When Automatic Configuration and Power Interface (ACPI) BIOS Mode BIOS mode is enabled, the operating system is allowed to control the power management features of your computer and the settings for APM BIOS mode are ignored. Not all operating systems support ACPI BIOS mode. Refer to your operating system documentation to determine if ACPI is supported.

To set ACPI BIOS mode, complete the following steps.

1. Start the Configuration/Setup Utility program (see "Starting and Using the Program" on page 46).

2. Select **Power Management** from the Configuration/Setup Utility program menu.

3. Set **ACPI BIOS Mode** to **Enabled** or **Disabled** as desired using the Left Arrow (←) or Right Arrow (→).

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.

Setting Power Management Features: With Power Management, the computer and monitor (if the monitor supports DPMS) can be set to go into a reduced-power state if they are inactive for a specified length of time.

- **Time to Low Power:** With this option, you can specify the amount of time that the computer must be inactive before Power Management options begin to take affect. You can select from 5 minutes to 1 hour.

- **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.

- **Display:** With this option, you can 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.

If *OFF* is selected, you must specify the **Time to Display 'off'**. You can select 5 minutes to 1 hour.

Note: Time to display off is the amount of time after the reduced-power state before the display enters the off state.

– **Disable:** In this mode, the monitor is unaffected by the power management settings.

- **IDE Drives**: This selection enables you to specify if the IDE drives should be enabled or disabled when power management options take affect.

To set Power Management features:

1. Start the Configuration/Setup Utility program (see "Starting and Using the Program" on page 46).

2. Select **Power Management** from the Configuration/Setup Utility program menu.

3. Select **APM**.

4. Set **APM BIOS Mode** to **Enabled**.

5. Select values for power management (time to low power, system power,, processor speed, display, and time to display off), as necessary.

6. Set **IDE Drives** to **Enabled** or **Disabled**.

   Note: SCSI drives are not affected by APM.

7. Press **Esc** twice to return to the Configuration/Setup Utility program menu.

8. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility program menu.

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

Setting Automatic Power-On Features: The Automatic Power-On features within the Power Management menu allow you to enable and disable features that automatically turn your computer on. You must also select the startup sequence you want to use for the type of power-on event selected. If you select **Automatic**, make sure **Automatic Power On Startup Sequence** in the *Startup Sequence* menu is set to enabled. Otherwise, the system will use the **Primary** startup sequence.

- **Wake on LAN:** If you have remote-network-management software, you can use the IBM-developed Wake on LAN feature built into the integrated Ethernet subsystem in your computer. (You can also use the Wake on LAN feature if you have disabled the integrated Ethernet subsystem and have installed a properly configured token-ring adapter that is enabled for Wake on LAN.) 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).

- **Serial Port Ring Detect:** If your computer has an *external* modem connected to a 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**. The modem must also support this feature.

- **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, a daily event, or a weekly event.

- **PCI Wake Up:** If enabled, this setting allows your system to power on in response to wake up requests from PCI devices that support this feature.

To set Automatic Power-On features:

1. Start the Configuration/Setup Utility program (see "Starting and Using the Program" on page 46).

2. Select **Power Management** from the Configuration/Setup Utility program menu.

3. Select **Automatic Power On**.

4. Select the menu item for the feature you want to set. Use Left Arrow (←) or Right Arrow (→) to select either *Enabled* or *Disabled*.

5. Select Startup Sequence for the feature. Use Left Arrow (←) or Right Arrow (→) to select either *Primary* or *Automatic*.

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.

Quick Reference for Network-Related Settings

The following tables are not intended to help determine which settings to choose. They are only intended to help you quickly find the steps necessary to get to the choices for specific network settings. You can then view the current setting or select a different setting. When finished, you can either save the settings and exit the utility or exit without saving the settings.

The steps in the following tables always start at the Configuration/Setup Utility main menu.

Table 1 (Page 1 of 3). Network-Related Settings		
To Configure	**Select**	**Comments/Notes**
Remote Administration	1. **System Security** 2. **Remote Administration** 3. **Remote Administration** a second time 4. **Enabled** or **Disabled**	Enable Remote Administration to allow POST/BIOS update over the LAN.
Integrated Ethernet and view the MAC address	1. **Devices and I/O Ports** 2. **Ethernet Setup** 3. **Enabled** or **Disabled** 4. **Network Boot** 5. **RPL** or **DHCP**	**Notes:** 1. If your model has an integrated Ethernet controller and you install an optional network adapter, you must disable Ethernet support. 2. If your model does not have an integrated Ethernet controller but has an optional network adapter, you do not have the option of selecting RPL or DHCP. Also, you do not have the viewable MAC address feature.

Table 1 (Page 2 of 3). Network-Related Settings		
To Configure	**Select**	**Comments/Notes**
Wake on LAN	1. **Power Management** 2. **Automatic Power On** 3. **Wake on LAN** and press **Enter** 4. **Enabled** or **Disabled**. If you select **Enabled**, continue to the next step. 5. **Startup Sequence** 6. **Primary** or **Automatic**. Go back to the main menu. 7. **Start Options** 8. The first, second, third, and fourth primary startup devices 9. **Automatic Power On Startup Sequence**. 10. The first, second, third, and fourth startup devices	Your model might not allow you to select four startup devices.
Serial Port Ring Detect	1. **Power Management** 2. **Automatic Power On** 3. **Serial Port Ring Detect** 4. **Enabled** or **Disabled**. If you select **Enabled**, go to the next step. 5. **Startup Sequence** 6. **Primary** or **Automatic**. Go back to the main menu. 7. **Start Options** 8. The first, second, third, and fourth primary startup devices 9. **Automatic Power On Startup Sequence** 10. The first, second, third, and fourth startup devices	Your model might not allow you to select four startup devices.

Table 1 (Page 3 of 3). Network-Related Settings		
To Configure	**Select**	**Comments/Notes**
Modem Ring Detect	1. **Power Management** 2. **Automatic Power On** 3. **Modem Ring Detect** 4. **Enabled** or **Disabled**. If you select **Enabled**, go to the next step. 5. **Startup Sequence** 6. **Primary** or **Automatic**. Go back to the main menu. 7. **Start Options** 8. The first, second, third, and fourth primary startup devices 9. **Automatic Power On Startup Sequence** 10. The first, second, third, and fourth startup devices	Your model might not allow you to select four startup devices.
Remote Administration	1. **System Security** 2. **Remote Administration** 3. **Remote Administration** 4. **Enabled** or **Disabled**	

Chapter 6. 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 might 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 the computer and monitor power switches off 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.
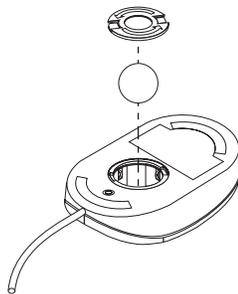
4. Turn the mouse right-side up, and the retainer and ball will drop out.

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 M 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 the computer off 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 the computer and all attached devices off. 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 7. Solving Problems

This chapter describes diagnostic tools that are 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 "IBM Enhanced Diagnostics" on page 129 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.
> - 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

If **Power On Self Test** is set to [*Enhanced*], 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 quick POST or accessing the Configuration/Setup Utility program appear in the lower-left corner of the screen. Quick mode is the default mode of operation.

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, 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 Chapter 5, "Using the Configuration/Setup Utility Program" on page 45.)

If **Power On Status** is *Enabled* and 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 92 and "POST Message Charts" on page 95.

If you hear no beep at all during POST, refer to "Troubleshooting Charts" on page 118. You might need to have your computer serviced.

Types of 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: These messages 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 92 and "POST Message Charts" on page 95.

SCSI error messages: These messages appear if a problem or conflict is detected by the Adaptec AIC-7895 SCSI subsystem. Refer to the SCSI documentation on the *Ready-to-Configure Utility Program CD* that comes with your computer for information about these messages.

Software-generated error messages: These messages 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 codes and messages: These codes and messages appear if a hardware problem is detected by one of the IBM Enhanced Diagnostics test programs. Along with error codes, 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 48. If the procedure on page 48 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. 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 titled 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 probably a malfunction in that item. If you made a change, continue here. If you did not make a change, go to the **Important** text box which follows step 5d.

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 startup device).

> **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 the startup 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 95.
After more than one beep, application program or operating system appears.	"IBM Enhanced Diagnostics" on page 129.
Blank screen, unreadable screen, or other unusual response occurs.	"Troubleshooting Charts" on page 118.

If you are unable to resolve a problem and need assistance, refer to Chapter 8, "Getting Help, Service, and Information" on page 133.

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 M Pro* for important safety information and instructions.

POST Message	Description
101 102 106	A failure occurred during testing of the system board and microprocessor. **Action:** Have the computer serviced.
110 111	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 "IBM Enhanced Diagnostics" on page 129 for information about diagnostic programs provided with your computer.) Refer to *Installing Options in Your IntelliStation M Pro* 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, powering on after each is reinstalled. When this message displays, replace the adapter just installed. 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
151	A real-time clock error occurred.
	Action: Have the computer serviced.
161	The battery on the system board is dead.
	CAUTION: **Danger of explosion if lithium battery is incorrectly replaced.**
	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 86 for important information on battery use, disposal, and replacement.)
	Action: Replace the battery
	Note: The computer can be used until you replace the battery.

POST Message	Description
162	A change in device configuration occurred. This message is displayed under one or more of the following conditions:

- 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.

- The *Erasing Lost or Forgotten Passwords* procedure was performed. This also erases configuration data.

- An invalid checksum is detected in CMOS memory (nonvolatile RAM).

Action:

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, changed the location of a device, or erased passwords, you must save the new configuration in the Configuration/Setup Utility program. Refer to the **Important** text box on page 48 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 39 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 "IBM Enhanced Diagnostics" on page 129 for information about diagnostic programs provided with your computer.)

If the problem cannot be isolated and corrected, have the computer serviced.

POST Message	Description
163	The clock is not working correctly.
	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.
	If this does not correct the problem, have the computer serviced.
	Note: The computer can be used until it is serviced, but any application programs that use the date and time will be affected.
164	A change in the memory configuration occurred. This error can be caused by adding, removing, or incorrectly installing memory.
	Note: The computer can be used with decreased memory capacity until the error is corrected.
	Action:
	1. If you added memory, see *Installing Options in Your IntelliStation M Pro* 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 48 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 "IBM Enhanced Diagnostics" on page 129 for information about diagnostic programs provided with your computer.)
	If the problem cannot be isolated and corrected, have the computer serviced.
167	A different microprocessor was installed that is not supported by the current POST/BIOS (system programs).
	Action:
	1. Obtain the latest POST/BIOS flash update diskette image. See "Updating System Programs" on page 39.
	2. Perform the POST/BIOS flash Update procedure.
	If the problem cannot be isolated and corrected, have the computer serviced.

POST Message	Description
168	Alert on LAN is not working correctly.
	Action: Set Alert on LAN to enabled in the Configuration/Setup Utility program. See Chapter 5, "Using the Configuration/Setup Utility Program" on page 45. Verify that the Ethernet cable is attached to both client and server and that the appropriate software is installed on both the client and the server.
	If this does not correct the problem, have the computer serviced.
175	A failure occurred during testing of the system board and microprocessor.
	Action: Have the computer serviced.
176	System cover has been removed
	Action: You must key in the administrator password to clear this POST message. If the message recurs when the cover has not been removed, have the computer serviced.
177	An inventory violation occurred, such as a hardware component was removed. This error message is part of the AssetCare and Asset ID features of your computer.
	Action: You must enter the administrator password to clear this POST message.
183	Password message received if administrator password is set.
	Action: You must enter the administrator password to clear this POST message. If the message recurs when the cover has not been removed, have the computer serviced.
184	Asset control antenna not detected.
	Action: You must enter the administrator password to clear this POST message. If the message recurs when the cover has not been removed, have the computer serviced.
186	Security hardware control logic error. The security data could either not be read or written and the administrator password and startup sequence are not reliable.
	Action: If your computer is in enhanced security mode, the startup process will not continue. The system board must be replaced.

POST Message	Description
187	A problem occurred with the administrator password and startup (boot) sequence. POST message 167 will normally display, also. **Action:** If enhanced security is not enabled, use the Configuration/Setup Utility program to: 1. Clear the startup sequence (Start Options, Startup sequence). 2. Clear the administrator password. For instructions, see "Deleting an Administrator Password" on page 73. 3. Reload the default settings (Load Default Settings). 4. Reset an administrator password. For instructions, see "Setting or Changing an Administrator Password" on page 71. For instructions on using the Configuration/Setup Utility program, see Chapter 5, "Using the Configuration/Setup Utility Program" on page 45.
190	The computer chassis-intrusion detector was cleared. This is an informational message. No action is required.
20X	A failure occurred during the testing of memory. This error can be caused by incorrectly installed memory, a failing DIMM, or a system-board failure. **Action:** 1. If you have added memory, see *Installing Options in Your IntelliStation M Pro* and Chapter 5, "Using the Configuration/Setup Utility Program" on page 45 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 "IBM Enhanced Diagnostics" on page 129 for information about diagnostic programs provided with your computer.) If the problem cannot be isolated and corrected, have the computer serviced.

POST Message	Description
301 303	A failure occurred during testing of the keyboard and keyboard controller. These error messages also might be accompanied by continuous beeping. **Action:** Ensure that: 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 "Input/Output Device Connectors" on page 26.) **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.
601	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. **Note:** The computer can be used, but one or more diskette drives might not work. **Action:** Verify that all diskette drive cables are properly installed and securely connected. Running the diagnostic programs might isolate the diskette drive that failed, but you must have your computer serviced. (See "IBM Enhanced Diagnostics" on page 129 for information about diagnostic programs provided with your computer.)
602	The computer is not able to start the diskette in the drive. The diskette might be damaged or formatted incorrectly. **Action:** Try another startable diskette that is formatted correctly and is in good condition. (For information and instructions on formatting diskettes, refer to your operating system documentation.) If this does not correct the problem, have the computer serviced.

POST Message	Description
604	A failure occurred during the testing of a diskette drive.
	Action:
	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 Chapter 5, "Using the Configuration/Setup Utility Program" on page 45.)
	2. Run the diagnostic programs. (See "IBM Enhanced Diagnostics" on page 129 for information about diagnostic programs provided with your computer.)
	3. If the diagnostic programs detect a failure, replace the diskette drive.
	If the problem cannot be isolated and corrected, have the computer serviced.
662	A diskette drive configuration error occurred.
	Action:
	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 Chapter 5, "Using the Configuration/Setup Utility Program" on page 45.)
	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 48 for further information and instructions on saving the configuration.
	If this does not correct the problem, have the computer serviced.
762	A Math coprocessor configuration error.
	Action: Have the computer serviced.
11XX	Serial port error (XX=serial port number)
	Action: Have the computer serviced.

POST Message	Description
1762	A hard disk configuration error occurred. **Action:** 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 Chapter 5, "Using the Configuration/Setup Utility Program" on page 45.) 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 48 for further information and instructions on saving the configuration. If the problem cannot be isolated and corrected, have the computer serviced.
178X	A failure occurred during testing of the hard disk drive or a primary or secondary IDE device. **Action:** 1. Run the diagnostic programs. (See "IBM Enhanced Diagnostics" on page 129 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. If the problem cannot be isolated and corrected, have the computer serviced.

POST Message	Description
1800	A PCI adapter has requested a hardware interrupt that is not available.

Action:

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 **ISA Resource** 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 *Installing Options in Your IntelliStation M Pro*. 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 Chapter 5, "Using the Configuration/Setup Utility Program" on page 45.

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 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 *Installing Options in Your IntelliStation M Pro*.

   Note: If you remove an ISA legacy adapter, set the hardware interrupt used by the removed adapter to **Available** before installing another adapter.

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.

If the problem cannot be isolated and corrected, have the computer serviced.

POST Message	Description
1801	A PCI adapter has requested memory resources that are not available.

Action:

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 **ISA Resource** 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 *Installing Options in Your IntelliStation M Pro*. 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 Chapter 5, "Using the Configuration/Setup Utility Program" on page 45.

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 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 *Installing Options in Your IntelliStation M Pro*.

   Note: If you remove an ISA legacy adapter, set the memory resources used by the removed adapter to **Available** before installing another adapter.

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.

If the problem cannot be isolated and corrected, have the computer serviced.

POST Message	Description
1802	A PCI adapter has requested an I/O address that is not available, or the PCI adapter might be defective.

Action:

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 **ISA Resource** 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 *Installing Options in Your IntelliStation M Pro*. 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 Chapter 5, "Using the Configuration/Setup Utility Program" on page 45.

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 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 *Installing Options in Your IntelliStation M Pro*.

   Note: If you remove an ISA legacy adapter, set the I/O address used by the removed adapter to **Available** before installing another adapter.

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.

If the problem cannot be isolated and corrected, have the computer serviced.

POST Message	Description
1803	A PCI adapter has requested a memory address that is not available, or the PCI adapter might be defective.

Action:

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 **ISA Resource** 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 *Installing Options in Your IntelliStation M Pro*. 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 Chapter 5, "Using the Configuration/Setup Utility Program" on page 45.

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 *Installing Options in Your IntelliStation M Pro*.

   Note: If you remove an ISA legacy adapter, set the memory address used by the removed adapter to **Available** before installing another adapter.

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.

If the problem cannot be isolated and corrected, have the computer serviced.

POST Message	Description
1804	A PCI adapter has requested a memory address that is not available. **Action:** 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 **ISA Resource** enables the Plug and Play function to configure around the legacy adapter. For background information on PCI, ISA, Plug and Play, and legacy (non-Plug and Play) adapters, refer to *Installing Options in Your IntelliStation M Pro*. 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 Chapter 5, "Using the Configuration/Setup Utility Program" on page 45. 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 *Installing Options in Your IntelliStation M Pro*. **Note:** If you remove an ISA legacy adapter, set the memory address used by the removed adapter to **Available** before installing another adapter. 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. If the problem cannot be isolated and corrected, have the computer serviced.
1805	A PCI adapter read-only memory (ROM) error occurred. **Action:** Remove all PCI adapters that are not required for system startup and reinstall them one at a time, powering on after each is reinstalled. When this message displays, replace the adapter just installed. If the problem cannot be isolated and corrected, have the computer serviced.

POST Message	Description
1880	A Plug and Play adapter has requested a hardware interrupt that is not available.

Action:

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 **ISA Resource** 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 *Installing Options in Your IntelliStation M Pro*. 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 Chapter 5, "Using the Configuration/Setup Utility Program" on page 45.

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 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 *Installing Options in Your IntelliStation M Pro*.

   Note: If you remove an ISA legacy adapter, set the hardware interrupt used by the removed adapter to **Available** before installing another adapter.

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.

If the problem cannot be isolated and corrected, have the computer serviced.

POST Message	Description
1881	A Plug and Play adapter has requested memory resources that are not available.

Action:

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 **ISA Resource** 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 *Installing Options in Your IntelliStation M Pro*. 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 Chapter 5, "Using the Configuration/Setup Utility Program" on page 45.

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 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 *Installing Options in Your IntelliStation M Pro*.

   Note: If you remove an ISA legacy adapter, set the memory resources used by the removed adapter to **Available** before installing another adapter.

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.

If the problem cannot be isolated and corrected, have the computer serviced.

POST Message	Description
1882	A Plug and Play adapter has requested an I/O address that is not available, or the Plug and Play adapter might be defective.

Action:

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 **ISA Resource** 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 *Installing Options in Your IntelliStation M Pro*. 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 Chapter 5, "Using the Configuration/Setup Utility Program" on page 45.

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 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 *Installing Options in Your IntelliStation M Pro*.

   Note: If you remove an ISA legacy adapter, set the I/O address used by the removed adapter to **Available** before installing another adapter.

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.

If the problem cannot be isolated and corrected, have the computer serviced.

POST Message	Description
1883	A Plug and Play adapter has requested a memory address that is not available, or the Plug and Play adapter might be defective.

Action:

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 **ISA Resource** 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 *Installing Options in Your IntelliStation M Pro*. 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 Chapter 5, "Using the Configuration/Setup Utility Program" on page 45.

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 Plug and Play adapter you want to install. For instructions on removing adapters, see *Installing Options in Your IntelliStation M Pro*.

   Note: If you remove an ISA legacy adapter, set the memory address used by the removed adapter to **Available** before installing another adapter.

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.

If the problem cannot be isolated and corrected, have the computer serviced.

POST Message	Description

1884	A Plug and Play adapter has requested a memory address that is not available.
	
	Action:
	
	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 **ISA Resource** 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 *Installing Options in Your IntelliStation M Pro*. 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 Chapter 5, "Using the Configuration/Setup Utility Program" on page 45.
	
	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 Plug and Play adapter you want to install. For instructions on removing adapters, see *Installing Options in Your IntelliStation M Pro*.
	
	  Note: If you remove an ISA legacy adapter, set the memory address used by the removed adapter to **Available** before installing another adapter.
	
	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.
	
	If the problem cannot be isolated and corrected, have the computer serviced.

1885	A Plug and Play adapter read-only memory (ROM) error occurred. **Action:** Remove all of the Plug and Play adapters that are not required for system startup and reinstall them one at a time, powering on after each is reinstalled. When this message displays, replace the adapter just installed. If the problem cannot be isolated and corrected, have the computer serviced.

POST Message	Description
1886	A Plug and Play adapter has requested a DMA address that is not available.

Action:

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 **ISA Resource** 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 *Installing Options in Your IntelliStation M Pro*. 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 Chapter 5, "Using the Configuration/Setup Utility Program" on page 45.

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 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 *Installing Options in Your IntelliStation M Pro*.

    Note: If you remove an ISA legacy adapter, set the DMA address used by the removed adapter to **Available** before installing another adapter.

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.

If the problem cannot be isolated and corrected, have the computer serviced.

POST Message	Description
1962	A startup sequence error occurred.
	Action:
	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 Chapter 5, "Using the Configuration/Setup Utility Program" on page 45.
	2. Make sure the primary IDE or SCSI cable is properly installed and securely connected.
	3. Make sure all adapters are installed correctly. For instructions on adding adapters, see *Installing Options in Your IntelliStation M Pro*.
	If the problem cannot be isolated and corrected, have the computer serviced.
8603	A pointing device or system board error occurred.
	Action: Have the computer serviced.
I9990301	A hard disk failure occurred.
	Action: Have the computer serviced.
Other Numbers	The computer POST found an error.
	Action: Follow the instructions on the screen.

Error Messages Specific to the Integrated Ethernet Subsystem

Note: The error messages shown in this section are available only with the integrated Ethernet subsystem. These error messages are not available when RPL (remote program load) or DHCP (dynamic host configuration protocol) is used through optional network adapters.

If a failure condition occurs after the Ethernet controller is initialized, an error message appears on the screen. The error messages that can occur are shown below. If you experience any error related to the integrated Ethernet subsystem, record the error message, and tell your network administrator about the problem.

RPL-Related Error Messages: These error messages are specific to the integrated Ethernet controller and the RPL environment of your computer.

The two most common error messages are shown below.

```
RPL-ROM-ERR:  105  The integrated Ethernet 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 module 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: 100	The integrated Ethernet cannot be found.
RPL-ROM-ERR: 101	The integrated Ethernet was unable to initialize.
RPL-ROM-ERR: 102	The integrated Ethernet could not be reset.
RPL-ROM-ERR: 103	There are multiple Ethernets in the system. Specify the correct serial number in NET.CFG.
RPL-ROM-ERR: 104	The integrated Ethernet EEPROM is faulty or not present.
RPL-ROM-ERR: 106	The integrated Ethernet is configured for Plug and Play in non-Plug and Play system.
RPL-ROM-ERR: 110	The integrated Ethernet RAM failed the memory test.

DHCP-Related Error Messages: Error messages related to DHCP and the integrated Ethernet controller are shown in the following table.

E61: Service boot canceled.	M38: Cannot open TFTP connection.
E62: Cannot initialize controller.	M39: Cannot read from TFTP connection.
E63: Cannot initialize controller.	M40: BOOTP canceled by keystroke.
E67: Cannot initialize controller.	M40: DHCP canceled 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 canceled 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 restart.
M21: Cannot write to memory.	M90: Cannot initialize controller for multicast.
M22: Cannot write to memory.	M91: MTFTP canceled by keystroke.
M30: Cannot ARP TFTP address.	M92: MTFTP open timeout.
M31: TFTP canceled by keystroke.	M93: Unknown MTFTP opcode.
M32: TFTP open timeout.	M94: MTFTP read canceled by keystroke.
M33: Unknown TFTP opcode.	M95: MTFTP timeout.
M34: TFTP read canceled 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: An *x* value that follows an error code represents any alphanumeric character.

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 M 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 "IBM Enhanced Diagnostics" on page 129 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 119
General	Page 122
Intermittent	Page 123
Keyboard, Mouse, or Pointing-Device	Page 123
Memory	Page 124
Monitor	Page 119
Option	Page 125
Parallel Port	Page 126
Printer	Page 127
Serial Port 1	Page 126
Serial Port 2	Page 126
Software	Page 127
Universal Serial Bus Ports	Page 128

Diskette Drive Problems	Action
Diskette drive in-use light stays on, or the system bypasses the diskette drive.	If there is a diskette in the drive, verify that: 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 Chapter 5, "Using the Configuration/Setup Utility Program" on page 45. 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 127). If the problem cannot be isolated and corrected, have the computer serviced.

Monitor Problems	Action
General monitor problems.	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. If you cannot find the problem, check the other listings on monitor problems in this table. If the problem cannot be isolated and corrected, have the monitor and computer serviced.

Monitor Problems	Action
Wavy, unreadable, rolling, distorted, or jittery screen images.	If the monitor self-tests show that the monitor is working properly, verify that:

If the monitor self-tests show that the monitor is working properly, verify that:

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 the location is causing the problem:

   a. Turn off the monitor. (Moving a color monitor while it is turned on might cause screen discoloration.)

   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.

   c. Turn on the monitor.

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.

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.

Note: An enhanced monitor signal cable with additional shielding might be available for your monitor. See your IBM reseller or marketing representative for information.

If the problem cannot be isolated and corrected, have the monitor and computer serviced.

Monitor Problems	Action
Screen flickers.	Set the monitor for the highest, noninterlaced refresh rate supported by your monitor and the video controller in your computer. For further information, refer to the documentation that comes with your monitor and the README files for the STB GLyder MAX-2+ AGP graphics adapter, the Matrox Millennium II AGP graphics adapter, or Intergraph Intense 3D Pro 3400 PCI graphics adapter. The README files are on the *Ready-to-Configure Utility Program CD* that comes with your computer. **Attention:** Using a resolution or refresh rate that is not supported by your monitor might damage it. You can reset the refresh rate through your operating system, using the instructions provided in the README files. Refer to your operating system documentation for further information on monitor settings. If this does not correct the problem, have the monitor and computer serviced.
The monitor works when you turn on the system, but goes blank when you start some application programs.	Verify that: 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 "Input/Output Device Connectors" on page 26. 2. The necessary device drivers for the application programs are installed. If the problem cannot be isolated and corrected, have the monitor and computer serviced.
The monitor works when you turn on the system, but goes blank after some period of computer inactivity.	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 "Understanding Power Management" on page 77). If the problem cannot be isolated and corrected, have the computer serviced.

Monitor Problems	Action
Blank screen.	Verify that:
	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 "Input/Output Device Connectors" on page 26.
	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 *Installing Options in Your IntelliStation M Pro*.
	If the problem cannot be isolated and corrected, have the monitor and computer serviced.
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.	Verify that:
	1. All cables are securely connected to the proper connectors on the computer. For the location of the connectors, refer to "Input/Output Device Connectors" on page 26.
	2. The computer cover is properly installed.
	If the problem cannot be isolated and corrected, have the computer serviced.
Problems such as a broken cover lock or indicator lights not working.	Have the computer serviced.

Intermittent Problems	Action
A problem occurs only occasionally and is difficult to detect.	Verify that: 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 SCSI devices are installed, the last external device in each SCSI chain is terminated correctly. (See your SCSI documentation.) If the problem cannot be isolated and corrected, have the computer serviced.

Keyboard, Mouse, or Pointing-Device Problems	Action
All or some keys on the keyboard do not work.	Verify that: 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 "Input/Output Device Connectors" on page 26. If the problem cannot be isolated and corrected, have the keyboard and computer serviced.
The mouse or pointing device does not work.	Verify that: 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, the mouse cable will connect to either the mouse or serial connector. To find the mouse and serial connectors, refer to "Input/Output Device Connectors" on page 26. 2. The device drivers for the mouse are installed correctly. If the problem cannot be isolated and corrected, have the computer and the device serviced.

Memory Problems	Action
The amount of memory displayed is less than the amount of memory installed.	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). Verify that: 1. You have installed the correct type of DIMMs for your computer. Refer to *Installing Options in Your IntelliStation M Pro* for instructions on adding DIMMs. 2. The DIMMs are properly installed and securely connected. 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 48 for instructions on saving the configuration. If the problem persists, run the memory test from the diagnostic program that comes with your computer. (See "IBM Enhanced Diagnostics" on page 129 for further information.) The system might have detected a bad DIMM and automatically reallocated memory to enable your computer to continue to operate. If the problem cannot be isolated and corrected, have the computer serviced.

Option Problems	Action
An IBM option that was just installed does not work.	Verify that:
	1. The option is designed for your computer.
	2. You followed the installation instructions supplied with the option and in *Installing Options in Your IntelliStation M Pro*.
	3. All option files (if required) are installed correctly. See "Installing Files from Option Diskettes" on page 131 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. (For instructions on using the Configuration/Setup Utility program, see Chapter 5, "Using the Configuration/Setup Utility Program" on page 45.)
	If the problem persists, run the diagnostic programs. (See "IBM Enhanced Diagnostics" on page 129 for information about diagnostic programs provided with your computer.)
	If the problem cannot be isolated and corrected, have the computer and the option serviced.
An IBM option that previously worked does not work now.	Verify that all of the option hardware and cable connections are secure.
	If the option comes with its own test instructions, use those instructions to test the option.
	If the failing option is a SCSI option, verify that:
	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.
	For more information, see your SCSI documentation.
	If the problem cannot be isolated and corrected, have the computer and option serviced.

Parallel Port Problems	Action
Parallel port cannot be accessed.	Verify that: 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 *Installing Options in Your IntelliStation M Pro* 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: 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 *Installing Options in Your IntelliStation M Pro* 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: 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 *Installing Options in Your IntelliStation M Pro* 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.	Verify that:

Verify that:

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 "Input/Output Device Connectors" on page 26 for the location of the parallel, serial, and USB ports.)

   Note: Non-IBM printer signal cables might cause unpredictable problems.

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 Chapter 5, "Using the Configuration/Setup Utility Program" on page 45.)

5. If the problem persists, run the tests described in the documentation that comes with your printer.

If the problem cannot be isolated and corrected, have the computer and printer serviced.

Software Problem	Action
Is your software program OK?	To determine if problems are caused by installed software, verify that:

To determine if problems are caused by installed software, verify that:

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.

   Note: If you have just installed an adapter or memory, you might have a memory address conflict.

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.

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.

If the problem cannot be isolated and corrected, have the computer serviced.

Universal Serial Bus Port Problems	Action
The Universal Serial Bus ports cannot be accessed.	Verify that: 1. Each port is assigned a unique address. 2. The USB device is properly installed and firmly seated. If the problem cannot be isolated and corrected, have the computer serviced.

IBM Enhanced Diagnostics

IBM provides programs that you can run to diagnose hardware and some software problems. Several utility programs that provide helpful information about your computer are also included. The user interface for running these diagnostics and utilities is provided by WaterGate Software's PC Doctor.

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

An IBM Enhanced Diagnostics CD-ROM comes with your computer. You can also download the latest image of the diagnostics from the World Wide Web.

To download the latest image of the IBM Enhanced Diagnostics from the World Wide Web and create a bootable Enhanced Diagnostics Diskette:

1. Go to the following World Wide Web page:

   `http://www.pc.ibm.com/us/intellistation/support`

2. Download the .EXE file to a hard disk directory (not to a diskette).

3. Go to a DOS prompt and change the directory to where the file was downloaded.

4. Insert a blank high-capacity diskette in diskette drive A.

5. Key in the following:

   <*filename*> a:

   filename is the name of the file you downloaded from the Web.

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

To start the IBM Enhanced Diagnostics using the CD, do the following:

1. Turn off your computer and any attached devices.
2. Turn on all attached devices; then turn your computer on.
3. When you see *Press F1 For Configuration/Setup*, press the **F1** key.
4. When the Configuration/Setup Utility menu appears, select **Start Options**.
5. Select **Startup Sequence** from the Start Options menu.

6. Note the device selected as the First Startup Device. Later, you must restore this setting.
7. Select *CD ROM* as the First Startup Device.
8. Press **Esc** two times to return to the Configuration/Setup Utility menu.
9. Select **Save Settings** and follow the prompts.
10. Place the IBM Enhanced Diagnostics CD in the CD-ROM drive.
11. Select **Exit Setup** and follow the prompts. The diagnostics will load. Follow the instructions on the screen to run the diagnostics.

Important Information

When you finish running diagnostics and utilities, remove the CD from the CD-ROM drive and turn the computer off. You must restore the First Startup Device back to the original setting. Use steps 2 on page 129 through 9 of the above procedure to do this.

To start the IBM Enhanced Diagnostics using the diagnostic diskette, do the following:

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

Other Programs on the IBM Enhanced Diagnostics CD and Diskette: The IBM Enhanced Diagnostics CD and diskette also contain utility programs designed to provide information about your computer hardware and the way it is configured. This information might be useful in helping to isolate problems related to the operating system and device drivers.

Other Diagnostic Programs on the *Ready-to-Configure Utility Program CD*: The *Ready-to-Configure Utility Program CD* that comes with your computer also contains diagnostic programs designed specifically for certain operating environments (Windows 95 and Windows NT). Because these versions 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.

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 Utility Program CD* that comes with your computer. To use

CoSession, this program must be installed in your computer, and your computer must have a modem or a LAN connection.

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.

Chapter 8. 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.

For example, IBM maintains pages on the World Wide Web where you can get information about IBM products and services, find the latest technical information, and download device drivers and updates. Some of these pages are:

`http://www.ibm.com`	Main IBM home page
`http://www.pc.ibm.com`	IBM Personal Computing
`http://www.pc.ibm.com/us/desktop/`	IBM Commercial Desktop (U.S.)
`http://www.pc.ibm.com/us/intellistation/`	IBM IntelliStation (U.S.)
`http://www.pc.ibm.com/us/netfinity/`	IBM Netfinity and PC Servers (U.S.)
`http://www.pc.ibm.com/us/options/`	IBM Options (U.S.)

You can select a country-specific Web site from these pages.

Help is also available from bulletin boards and online services, as well as by fax and telephone. This section provides information about these sources.

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

Hardware Warranty Summary

With the purchase of an IBM hardware product, you get comprehensive warranty coverage. During the IBM hardware product warranty period, you may call the IBM Personal Computer HelpCenter (1-800-772-2227 in the U.S.) for hardware product assistance.

The following items are covered for the term of the warranty period:

- Problem Determination - Trained personnel are available to assist you with determining if you have a hardware problem and deciding what action is necessary to fix the problem.
- IBM Hardware Repair - If the problem is determined to be caused by IBM hardware, trained service personnel are available worldwide to provide the applicable level of service.

- Engineering Change Management - Occasionally, there might be changes that are required after a product has been sold. IBM or your reseller, if authorized by IBM, will provide Engineering Changes (ECs) that apply to your hardware.

Be sure to retain your proof of purchase to obtain warranty service.

The following items are not covered under this IBM product warranty:

- Replacement or use of nonwarranted parts

   Note: All warranted parts contain a 7-character identification in the format IBM FRU XXXXXXX.

- Identification of software problem sources
- Configuration of BIOS as part of an installation or upgrade
- Changes, modifications, or upgrades to device drivers
- Installation and maintenance of network operating systems (NOS)
- Installation and maintenance of application programs

For additional information, refer to the IBM warranty statement included in your product user's guide or available from your IBM reseller.

Before You Call for Service

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 receive a POST error code when you turn on your computer, refer to the POST error-message charts in your hardware documentation. If you do not receive a POST error code, but suspect a hardware problem, refer to the troubleshooting information in your hardware documentation or run the diagnostic tests.

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 Bulletin Board System (BBS) can be reached 24 hours a day, 7 days a week. Modem speeds of up to 14 400 baud are supported. Long distance telephone charges might apply. To access the IBM BBS:

- In the U.S., call 1-919-517-0001.
- In Canada:
    - In Montreal, call 514-938-3022.
    - In Toronto, call 905-316-4255 or 416-956-7877.
    - In Vancouver, call 604-664-6464.

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**.

Using the World Wide Web

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

```
http://www.pc.ibm.com
```

For information about specific Personal Computer products, visit the following pages:

```
http://www.pc.ibm.com/us/intellistation/
```

```
http://www.pc.ibm.com/us/desktop/
```

```
http://www.pc.ibm.com/us/netfinity/
```

```
http://www.pc.ibm.com/us/thinkpad/
```

```
http://www.pc.ibm.com/us/options/
```

```
http://www.pc.ibm.com/us/aptiva/
```

You can select a country-specific Web site from these pages.

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 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 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 charge 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 HelpCenter. 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 or IBM Netfinity Server, you are eligible for IBM Start Up 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.

---

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

- 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:
- 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 139.

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."

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 though 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 M Pro
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.

Label
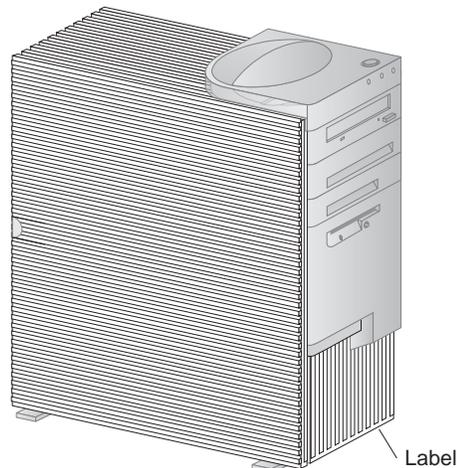
Your computer keys cannot be duplicated by locksmiths. If you lose them, order replacement keys from the key manufacturer. The key serial number and the

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)	□ 32 MB □ 64 MB □ 128 MB □ 256 MB
(Mem 2 DIMM)	□ 32 MB □ 64 MB □ 128 MB □ 256 MB
(Mem 3 DIMM)	□ 32 MB □ 64 MB □ 128 MB □ 256 MB
(Mem 4 DIMM)	□ 32 MB □ 64 MB □ 128 MB □ 256 MB
Expansion Slot 1 (AGP)	□ STB GLyder MAX-2+ AGP graphics adapter □ Matrox Millennium II AGP graphics adapter □ Other _____
Expansion Slot 2 (PCI)	_____
Expansion Slot 3 (PCI)	_____
Expansion Slot 4 (PCI)	_____
Expansion Slot 5 (PCI)	_____
Expansion Slot 6 (ISA/PCI)	_____
Microprocessor 1	□ Intel Pentium II _____ MHz
Microprocessor 2	□ Intel Pentium II _____ MHz
Parallel Connector	_____
Serial Connector 1	_____
Serial Connector 2	_____
USB Connector 1	_____
USB Connector 2	_____
Monitor Connector	_____
Audio Connectors	_____

Location	Option Description
Keyboard Connector	104-key PC-Next Chicony keyboard ☐ 101-key Chicony keyboard ☐ 104-key Cameo keyboard ☐ Other _____
Mouse Connector	☐ 3-button mouse ☐ 2-button mouse ☐ Other _____
5.25-Inch Bay 1	IDE CD-ROM drive ☐ Other: _____
5.25-Inch Bay 2	_____
3.5-Inch Bay 3	_____
3.5-Inch Bay 4	1.44 MB diskette drive ☐ Other: _____
3.5-Inch Bay 5	☐ SCSI hard disk drive _____ Capacity ☐ EIDE hard disk drive _____ Capacity _____
3.5-Inch Bay 6	☐ SCSI hard disk drive _____ Capacity ☐ EIDE hard disk drive _____ Capacity _____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

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 M Pro

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. These programs might not include all documentation or functions. Not all programs are sold separately.

Program Name

System Programs

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 – No.

PROGRAMS DESIGNATED AS "NO" ARE PROVIDED WITHOUT A PROGRAM WARRANTY. THEY ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND. IBM DISCLAIMS ALL WARRANTIES FOR THESE PROGRAMS, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

U.S. Government Users Restricted Rights

U.S. Government Users Restricted Rights—Use, duplication, or disclosure restricted by the GSA ADP Schedule Contract with IBM Corporation.

Other Documentation

Any other documentation with respect to its licensed program, including any such documentation referenced herein, is provided for information purposes only and does not extend or modify the material contained in the License information.

Other Additional Terms and Conditions

These additional terms and conditions apply to device drivers, utility programs, and flash BIOS code ("System Programs") shipped with an IBM system ("System") on diskette or CD-ROM, preinstalled on a System, created on diskette from a CD-ROM, System, or Local Area Network (LAN) using a diskette-creation program provided by IBM, or placed on a LAN. A System includes IBM computers, features, conversions, upgrades, and options, either separately or in any combination.

If you are the rightful possessor of a System, or if you have obtained the System Programs for the sole purpose of maintaining a System, IBM or the applicable IBM country organization grants you a license to use the System Programs as part of or in conjunction with a System, or to restore and maintain the System Programs. You can make copies of the System Programs and distribute them to the rightful possessor of a System and install the System Programs for a rightful possessor (but only to the extent necessary to restore or maintain the System), provided that you supply such party a copy of this Agreement. Initial use of the System Programs by such party shall indicate acceptance of this agreement.

YOU MUST REPRODUCE THE COPYRIGHT NOTICE AND ANY OTHER LEGEND OF OWNERSHIP ON EACH COPY, OR PARTIAL COPY, OF A PROGRAM YOU CREATE ON DISKETTE OR OTHER PORTABLE MEDIUM.

Notices

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

IBM may have patents or pending patent applications covering subject matter in this
document. The furnishing of this document does not give you any license to these
patents. You can send license inquiries, in writing, to:

    IBM Director of Licensing
    IBM Corporation
    500 Columbus Avenue
    Thornwood, NY 10594
    U.S.A.

Trademarks

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

AssetCare	Asset ID	Alert on LAN
IBM	IntelliStation	Netfinity
PowerPC	ThinkPad	ValuePoint
ViaVoice Gold	Wake on LAN	

Intel, Pentium, MMX, EtherExpress, and LANDesk are trademarks or registered
trademarks of Intel Corporation.

Microsoft, MS-DOS, Windows, and Windows NT are trademarks or registered
trademarks of Microsoft Corporation.

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

Electronic Emission Notices

Federal Communications Commission (FCC) Statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

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

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

Australia and New Zealand Class A Statement

Attention: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Industry Canada Class A Emission Compliance Statement

This Class A digital apparatus complies with Canadian ICES-003.

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de la classe A est conform à la norme NMB-003 du Canada.

European Community Directive Conformance Statement

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

Power Cord Notice

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

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

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

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

For units intended to be operated at 230 volts (outside the U.S.): Use a cord set with a grounding-type attachment plug. The cord set should have the appropriate safety approvals for the country in which the equipment will be installed.

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

IBM Power Cord Part Number	Used in These Countries
13F9940	Argentina, Australia, China (PRC), New Zealand, Papua New Guinea, Paraguay, Uruguay, Western Samoa
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

Index

Numerics

A

B

C

IBM ®

Part Number: 10L9163

Printed in U.S.A.

May 1998

10L9163