



NCR S26 Hot Plug Server

User Guide
Release 3

BST0-2140-4700
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Address correspondence to:

Systems Information
NCR Corporation
3325 Platt Springs Road
West Columbia, SC 29170

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Preface

About This Book

This book provides information about the installation, set up, configuration, and operation of the server.

Its goal is to familiarize you with the system and to provide a reference to answer your future questions.

Who Should Read This Book

This book should be used by persons experienced in configuring and installing server hardware.

Conventions Used in This Book

The following are various conventions used in this book:

F1	A letter, number, symbol, or word in this font represents a key on your keyboard. For example, the instruction “press F1 ” means press the key labeled “F1” on your keyboard.
Enter	This represents the key labeled “Enter” on your keyboard.
X + Y	Two or three key names, separated by plus signs, indicate multiple-key entries. For example, Ctrl + Alt + Del means hold down Ctrl and Alt and press Del .
Keyboard Detected	This is the font used to denote screen messages.
Note	Notes indicate pivotal information and may be used to emphasize a recommended sequence of steps.
CAUTION	Cautions indicate hazards that might cause personal injury, damage to hardware, or software if the hazards are not avoided.
WARNING	Warnings indicate hazards that can cause personal injury or equipment damage if the hazards are not avoided.

Related Publications

For supplementary information, refer to the following books:

<i>NCR S26 Hot Plug Server Installing Network Operating System</i>	BST0-2140-48
<i>NCR S26 Hot Plug Server Quick Hardware Installation</i>	BST0-2140-49

Other publications may later become available. Check with your NCR sales representative for the latest information.

Installation and Documentation Overview

Where to Start

To install and configure your server, perform these steps.

Step	What to Do	How to Do It	Where to Find Information
1	Install any hardware you want to add	Install appropriate disk drives, peripherals, and adapters	<i>Quick Hardware Installation</i> brochure Chapters 2 and 3 of <i>User Guide</i> Drive, peripheral, CPU board, and adapter documentation
2	Configure system settings	Use the BIOS Setup Utility	<i>Quick Hardware Installation</i> brochure Chapter 2 of <i>Installing Network Operating System</i> Chapter 4 of <i>User Guide</i>
3	Configure the PCI adapters	Use the BIOS Setup Utility	Same as Step 2
4	Configure the SCSI adapters and drives	Use the Adaptec SCSI adapter firmware Setup Utility	Adaptec SCSI Adapter documentation Chapter 4 of <i>Installing Network Operating System</i>
5	Configure memory and other system board settings	Use the EISA Configuration Utility	<i>Quick Hardware Installation</i> brochure Chapter 3 of <i>Installing Network Operating System</i> Chapters 3 and 5 of <i>User Guide</i>
6	Configure EISA adapters	Use the ESIA Configuration Utility	<i>Quick Hardware Installation</i> brochure Chapter 3 of <i>Installing Network Operating System</i> Chapter 5 of <i>User Guide</i>

Documentation and Additional Help

This section describes the documentation packaged with your server and how to find additional help.

Documentation

The following documents are provided to help you install, upgrade, maintain, and troubleshoot your server. Keep all documentation together in a safe place.

- *Quick Hardware Installation* (BST0-2140-49)
This brochure provides you with information to install your server quickly.
- *User Guide* (BST0-2140-47)
This is the manual you are now reading. It provides you with more detailed server information.
- *Installing Network Operating System* (BST0-2140-48)
This manual describes the procedures for installing an operating system. You should also refer to the documentation that comes with your operating system.
- Drive, peripheral, CPU board, and adapter documentation
If you have ordered optional features, such as drives, peripheral devices, CPU boards, or adapters, documentation for those items is packed with the server. This documentation is important to configure your server properly.

CAUTION: Do not discard any of this documentation. You may need it again if your server ever requires service or you change the configuration. Keep it in a safe place with the other server documentation.

Additional Help

If you need additional help, refer to Appendix E, “System Support Log,” of this manual. Appendix E contains a list of NCR support telephone numbers and instructions on maintaining support data.

Compliance and Regulatory Statements

Declaration of the Manufacturer or Importer

We hereby certify that this product is in compliance with European Union EMC Directive 89/336/EEC, using standards EN55022 (Class A) and EN50082-1 and Low Voltage Directive 73/23/EEC, Standard EN60950.

Safety Compliance

USA:	UL listed to 1950, 3rd Edition
Canada:	UL certified to CSA C22.2 No. 950-95 for Canada
Europe:	TUV/GS certified to EN60950 2nd Edition, with amendments
International:	GOST-R certified for Russia

Electromagnetic Compatibility (EMC)

USA:	FCC 47 Class A CFR Parts 2 and 15, Tested Class A
Canada:	IC ICES-003 Class A
Europe:	EN55022, Class A EN50082-1 EN61000-4-2 ESD Susceptibility EN61000-4-3 Radiated Immunity EN61000-4-4 Electrical Fast Transient
International:	CISPR 22/93, Class A
Australia	VAS/N253548, C-Tick Mark
Taiwan	EMC Certification CNS13438
Japan:	VCCI Class A ITE

Electromagnetic Compatibility Notice (USA)

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 in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on; the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment. The customer is responsible for ensuring compliance of the modified product.

Only peripherals (computer input/output devices, terminals, printers, etc.) that comply with FCC Class A limits may be attached to this computer product. Operation with noncompliant peripherals is likely to result in interference to radio and TV reception.

All cables used to connect to peripherals must be shielded and grounded. Operation with cables, connected to peripherals, that are not shielded and grounded may result in interference to radio and TV reception.

Note: A Class A device installed within a residential area is likely to cause harmful interference.

FCC Declaration of Conformity

Product Type: COLRED

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.

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 in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help.

Electromagnetic Compatibility Notices (International)

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

When used near a radio or TV receiver, it may become the cause of radio interference.

Read the instructions for correct handling.

This equipment has been tested for radio frequency emissions and has been verified to meet CISPR 22 Class A.

Cet appareil numérique respecte les limites bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouilleur: “Appareils Numériques”, NMB-003 édictée par le Ministre Canadian des Communications.

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the interference-causing equipment standard entitled “Digital Apparatus”, ICES-003 of the Canadian Department of Communications.

Using System Features

ESD Precautions

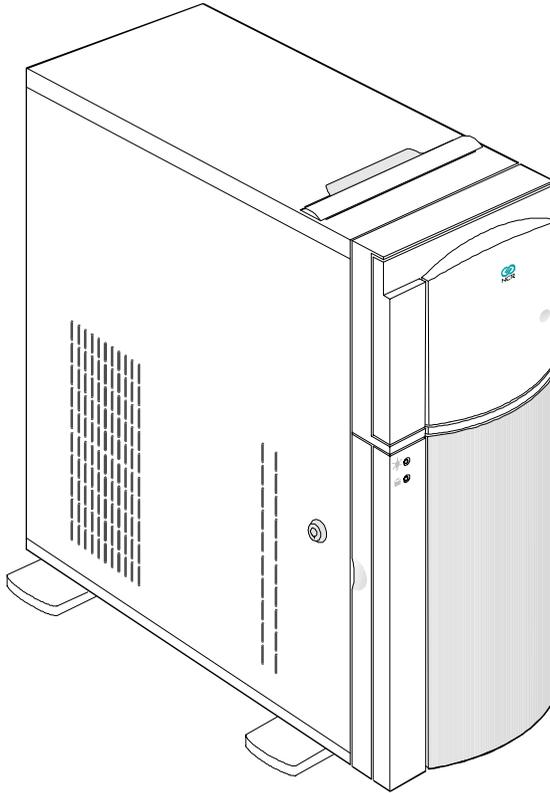
To avoid damaging electronic equipment from electrostatic discharge (ESD), always observe the following precautions before installing any system component:

1. Do not remove a board from its packaging until you are ready to install it.
Integrated circuits (ICs) on expansion boards are highly sensitive to static electricity.
2. Wear a wrist grounding strap before handling electronic components.
Wrist grounding straps are available at most electronic component stores.

Identifying System Features

This section describes major system features.

Figure 2-1. Front View



The system has the following minimum features:

- System board
- 420-watt power supply
- Seven I/O expansion slots (2 EISA, 4 PCI and 1 shared)
- Fast and Wide SCSI-2 controller integrated on the system board
- Video port

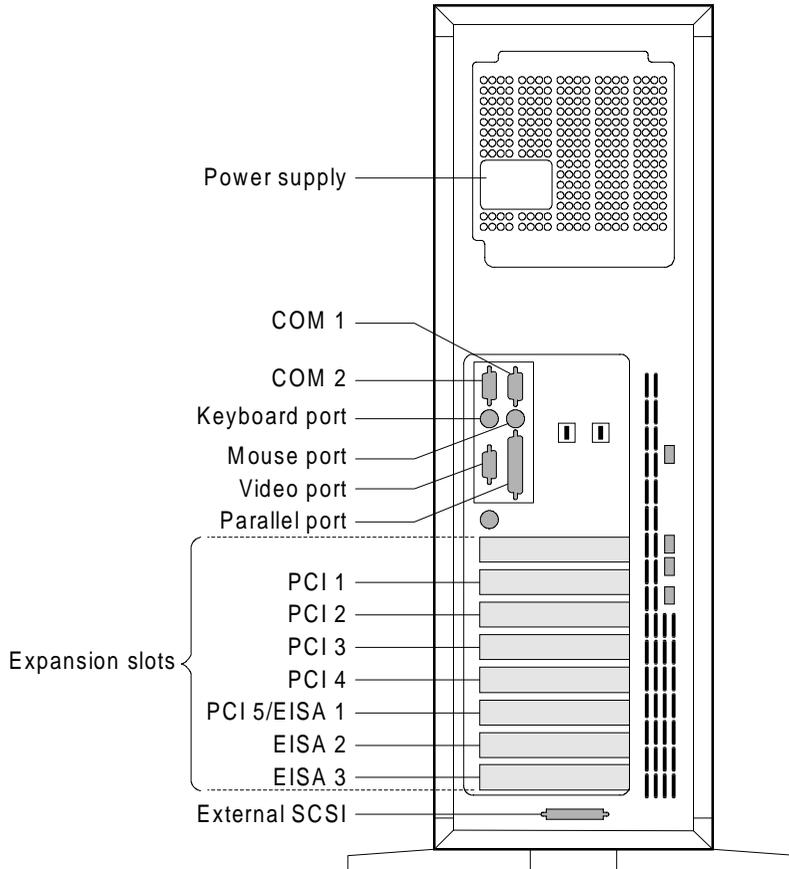
Identifying System Features

- Two 9-pin serial ports
- 25-pin parallel port
- Keyboard and mouse ports
- One 3.5-inch 1.44 MB flex drive
- System cabinet
- Eight 3.5-inch hot plug bays and three 5.25-inch user accessible bays, plus a bay for the 3.5-inch flex drive
- Remote Diagnostic Management (RDM) Module

Identifying the Rear Panel Features

The figure below illustrates the rear panel features.

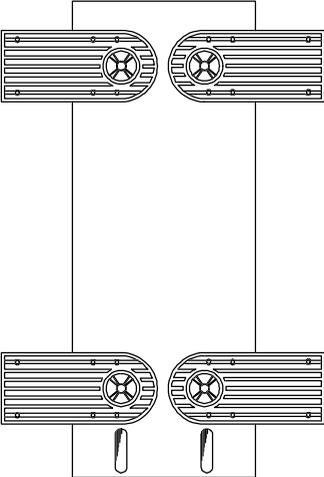
Figure 2-2. Rear Panel Features



Positioning the System

When positioning the system, arrange the legs of the housing so that the weight of the system is evenly distributed and is stable.

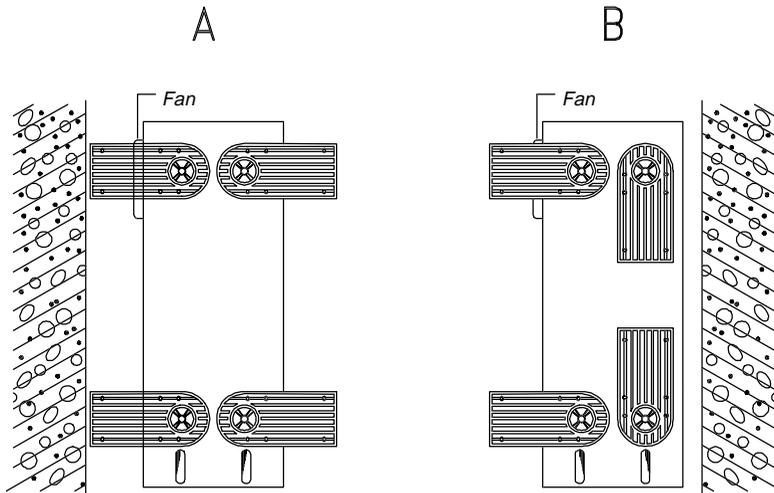
Figure 2-3. Arranging the System in a Stable Position (Bottom View)



When standing the system with the fan against a wall, leave a space of 5-10 cm from the wall to allow air circulation, then position the legs as in “Position A” below.

When standing the system with the fan facing out, you can put the system close to the wall and position the legs as in “Position B” below.

Figure 2-4. Allowing for Air Circulation (Bottom View)

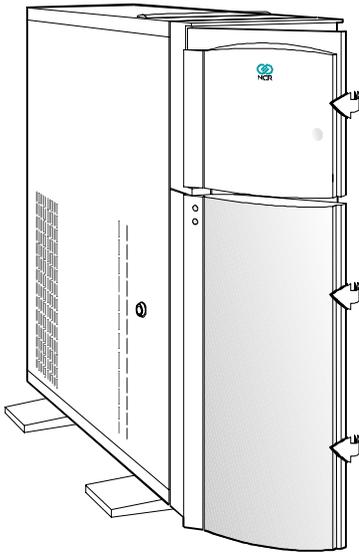


Opening the System

CAUTION: Read the “ESD Precautions” section earlier in this chapter before proceeding.

The figure below illustrates how to open the system. The keys to the housing are inside the upper front panel.

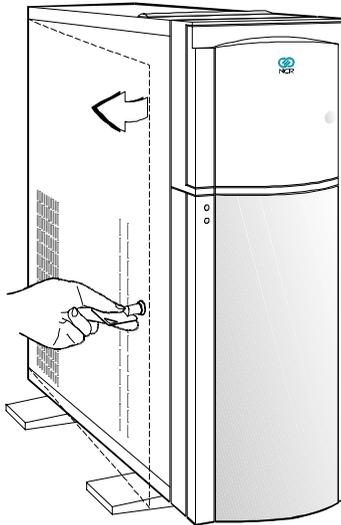
Figure 2-5. Opening the System



To open the system, follow these steps:

1. Open the top front cover by pressing the indentation.
2. Open the lower front panel by pulling on the right side, at the indentation.
3. Unlock the housing, using the key.

Figure 2-6. Opening the Cabinet Housing



Note: You can not remove the key after you have unlocked the housing. You can remove it only when you lock the housing again.

4. Pull on the key to swing the left side of the housing open. If necessary, you may use a screwdriver gently to pry the side of the housing open.

Configuring the System Board

This section contains information to help you properly configure the system board.

Features

The 64-bit, high-performance system board supports both the Intel Pentium™ and Pentium Pro™ microprocessors (also called CPUs). However, to provide maximum upgradability and flexibility, the microprocessors are not installed on the system board.

Instead, the system board has a special slot designed to accommodate a separate CPU board. This dual-processor CPU board contains both microprocessors and the embedded 512 KB pipeline burst second-level cache. See the section, “Installing CPU Boards,” in Chapter 3 of this manual.

Standard features such as a video port, two serial ports, one parallel port, diskette drive interface, and embedded fixed disk drive interface reside on the system board.

The system board has a 0 MB base memory and supports a maximum memory of 512 MB using 64 MB single-density single inline memory modules (SIMMs). A functional system is recommended to have at least 16 MB of RAM.

Major Components

The system board has the following major components:

- Eight 72-pin SIMM sockets labeled Bank 0, 1, 2, and 3 (two sockets comprise one bank) that support single- and double-density 60/70 ns SIMMs
- One CPU board slot
- Two 32-bit EISA expansion slots supporting master/slave add-on cards
- Four PCI local bus slots

- One shared slot (EISA or PCI)
- 256 KB flash ROM for easy system BIOS upgrade
- System clock/calendar plus 8 KB extended CMOS RAM with battery backup
- Onboard AIC-7880 chip that supports one SCSI-2 port
- 50-pin Fast SCSI-2 and 68-pin Wide SCSI interfaces
- Remote Diagnostic Management (RDM) module
- I/O interfaces for one video slot, two serial ports, one parallel port, peripheral drives, IDE drives, and one PS/2 keyboard and mouse
- Power connector for 420-watt switching power supply

The figure below shows the location of the major components on the system board.

Figure 2-7. System Board Layout

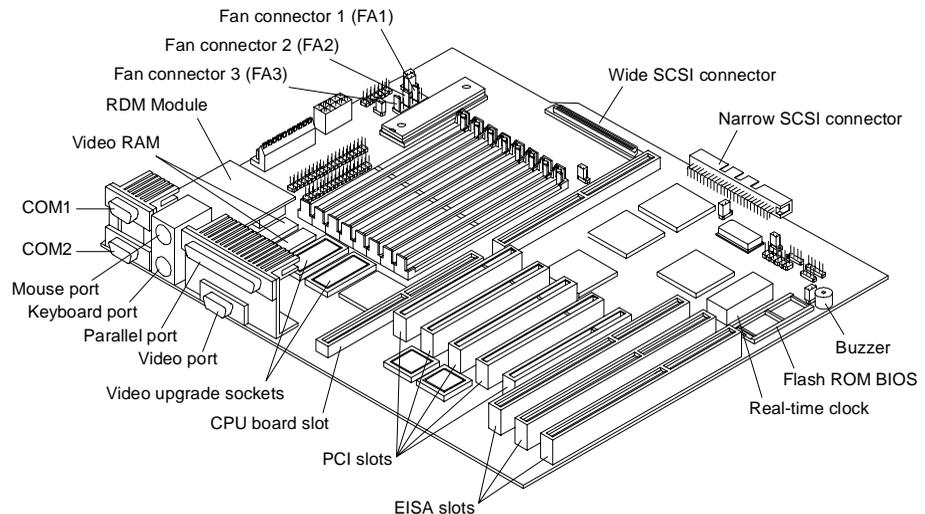
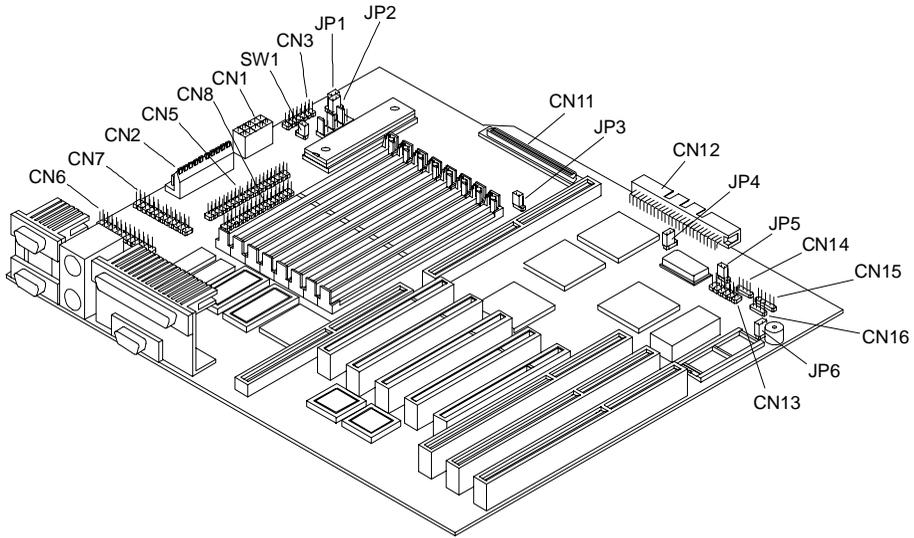


Figure 2-8. System Board Jumper Locations



Jumper Settings

You have to change the jumper settings on the system board when you upgrade the CPU or reconfigure the system.

To change a jumper setting, follow these steps:

1. Remove the jumper cap from the jumper.
2. Position the jumper cap over the two pins for the desired setting.
3. Gently press the cap over the pins.

The table below lists the system board jumpers and their corresponding settings. The asterisks indicate the default settings. See Figure 2-8 for jumper locations.

Table 2-1. Jumper Settings

Jumper	Setting	Function
JP1	1-2 2-3*	Check Password Bypass Password
JP2	2-3	Standard System BIOS
JP3	1-2 2-3*	Terminator always set to ON Use SCSI Setup Utility to set terminator to ON or OFF
JP4	1-2* 2-3	Wide SCSI Standard
JP5	1-2 2-3*	Hardware Reset Enabled Hardware Reset Disabled
JP6	1-2* 2-3	Audio to Buzzer Audio to Speaker

Connector Functions

The table below lists the different connectors on the system board and their respective functions.

Table 2-2. Connector Functions

Connector	Function
CN1	Power connector
CN2	Power connector
CN3	Backplane board HDD status connector
CN5	IDE hard disk connector
CN6	RDM connector
CN7	RDM connector
CN8	Diskette drive connector

Connector	Function
CN11	68-pin Wide SCSI connector
CN12	50-pin Fast SCSI-2 connector
CN13	Power LED connector and RDM switch cable from front of unit
CN14	Hard disk LED connector
CN15	No connection
CN16	Speaker connector
SW1	NMI switch

Adding and Replacing Components

ESD Precautions

To avoid damaging electronic equipment from electrostatic discharge (ESD), always observe the following precautions before installing any system component:

1. Do not remove a board from its packaging until you are ready to install it.
Integrated circuits (ICs) on expansion boards are highly sensitive to static electricity.
2. Wear a wrist grounding strap before handling electronic components.
Wrist grounding straps are available at most electronic component stores.

Installing CPU Boards

This section provides information on CPU boards for your server.

Types of CPU Boards

The system board has one CPU board slot that supports these two types of CPU boards:

- CPU board that supports the Intel Pentium™ processor
- CPU board that supports the Intel Pentium Pro™ processor

Installation

If you ordered a CPU board factory-installed, you may skip this chapter. If you must install a CPU board in your system, read all of this information.

When actually performing the installation, refer to the following documents for information on installing CPU boards in the system:

- *Quick Hardware Installation* that came with your system
- *Release Notes* that came with your CPU board
- Figure 2-7 in Chapter 2 of this manual for the location of the CPU board slot on the system board

Warnings

When installing CPU boards, do not attempt to make any hardware changes unless you are a qualified technician. Ask your dealer for assistance.

There are two released versions of system BIOS. One is for the CPU board that supports the Pentium processor. The other is for the CPU board that supports the Pentium Pro processor. These versions of BIOS are not interchangeable. Flashing the incorrect version renders the system unusable.

For example, if you flash the BIOS version released for a Pentium CPU board on a system configured with a Pentium Pro CPU board you cannot use the system. If this happens, you must insert the appropriate CPU board into the system and reflash the original BIOS.

Refer to the diskette label to make sure you are using the appropriate BIOS for your system configuration.

Upgrading the Memory

You can upgrade the system memory by adding single inline memory modules (SIMMs) into the SIMM sockets or by changing the SIMMs for a higher memory configuration.

Configurations

The table below lists the available memory configurations.

Table 3-1. Memory Configurations

Bank 0		Bank 1		Bank 2		Bank 3		Total
S1	S2	S3	S4	S5	S6	S7	S8	Memory
8 MB	8 MB							16 MB
16 MB	16 MB							32 MB
32 MB	32 MB							64 MB
				8 MB	8 MB	8 MB	8 MB	32 MB
				16 MB	16 MB	16 MB	16 MB	64 MB
				32 MB	32 MB	32 MB	32 MB	128 MB
8 MB	8 MB	16 MB	16 MB					48 MB
8 MB	8 MB	32 MB	32 MB					80 MB
16 MB	16 MB	32 MB	32 MB					96 MB
8 MB	8 MB	16 MB	16 MB					48 MB
8 MB	8 MB	16 MB	16 MB	16 MB	16 MB			80 MB
8 MB	8 MB	16 MB	16 MB	32 MB	32 MB			112 MB

Bank 0		Bank 1		Bank 2		Bank 3		Total
S1	S2	S3	S4	S5	S6	S7	S8	Memory
8 MB	8 MB	16 MB	16 MB	32 MB	32 MB	32 MB	32 MB	176 MB
8 MB	8 MB	8 MB	8 MB	16 MB	16 MB	16 MB	16 MB	96 MB
8 MB	8 MB	8 MB	8 MB	32 MB	32 MB	32 MB	32 MB	160 MB
16 MB	16 MB	16 MB	16 MB	32 MB	32 MB	32 MB	32 MB	192 MB
8 MB	8 MB	64 MB						
16 MB	16 MB	128 MB						
32 MB	32 MB	256 MB						
64 MB	64 MB	512 MB						

The configurations in Table 3-1 are only some of the available memory combinations. You can use other combinations if you follow the rules for upgrading memory as described below.

Restrictions

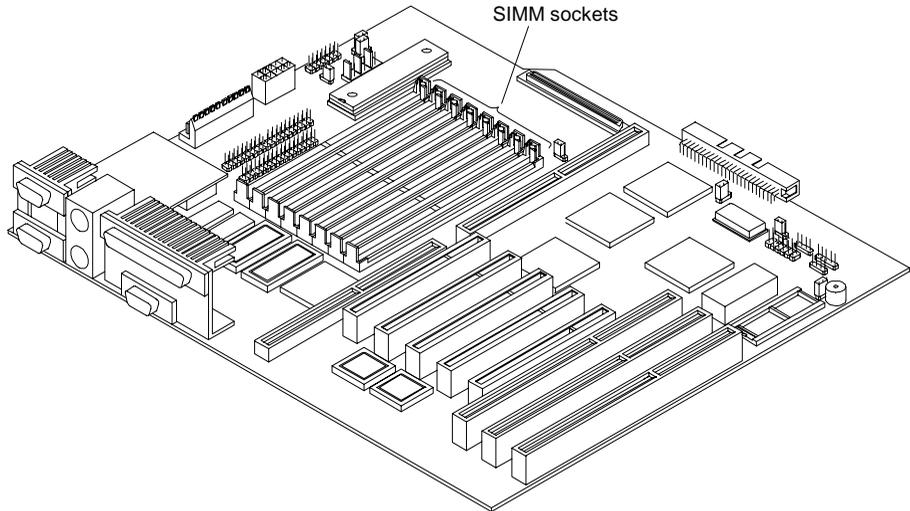
When adding memory, consider the following:

- Use only one type of SIMM in a given bank. You may combine different types of SIMMs for a memory configuration only if the SIMMs in each bank are the same type.
- You may use the memory banks (Bank0 ~ Bank3) in any order.
- Always install SIMMs in pairs. For example, for a total memory of 16 MB, install two 8 MB SIMMs in a bank. You cannot use a 16 MB SIMM alone for 16 MB of memory.

Installing and Removing SIMMs

CAUTION: Read the ESD precautions section earlier in this chapter before proceeding.

Figure 3-1. SIMM Sockets

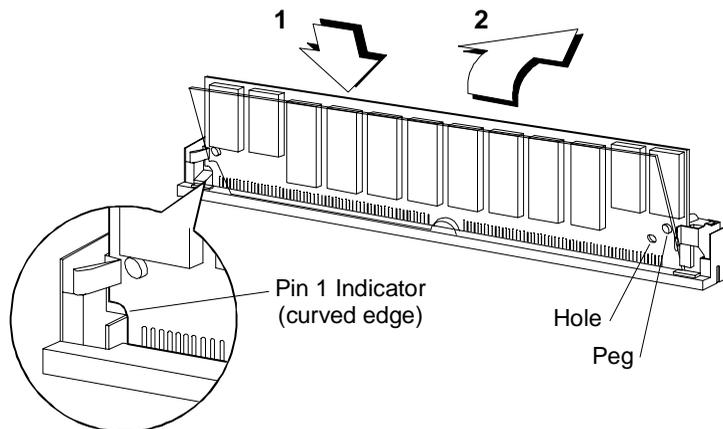


Installing SIMMs

To install a SIMM, follow these steps:

1. Carefully slip a SIMM at a 45° angle into a socket. Make sure that the curved edge that indicates pin 1 of the SIMM matches pin 1 of the socket.

Figure 3-2. Installing a SIMM



CAUTION: A SIMM fits only in one direction. If you slip in a SIMM but it does not appear to completely fit, you may have inserted it the wrong way.

2. Gently push the SIMM to a vertical position until the pegs of the socket slip into the holes on the SIMM. Make sure the holding clips lock the SIMM into position.

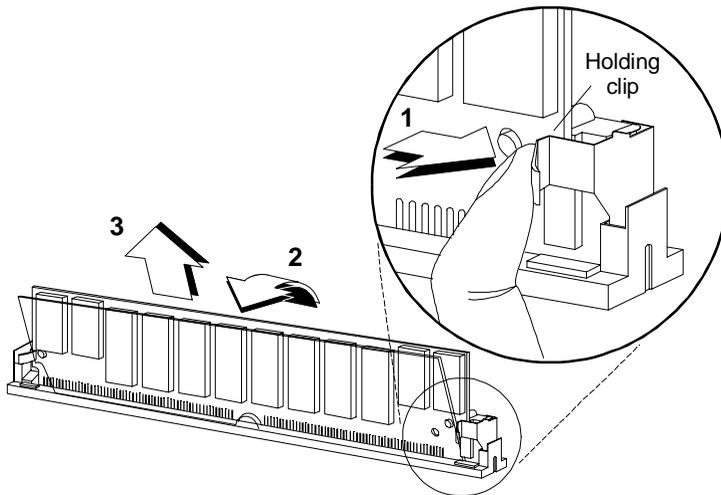
Note: The SIMM should be at a 90° angle when installed on the system board.

Removing SIMMs

To remove SIMMs, follow these steps:

1. Press the holding clips on both sides of the SIMM outward to release it.
2. Press the SIMM downward at about a 45o angle.
3. Pull the SIMM out of the socket.

Figure 3-3. Removing a SIMM



Reconfiguring the System

Reconfigure the system after installing or removing SIMMs.

To reconfigure the system, follow these steps:

1. Reboot the system. A memory error message appears, indicating that the total memory does not match the value stored in CMOS.
2. Press **Ctrl + Alt + Esc** to run Setup. A warning message appears, indicating a wrong memory configuration.
3. Press **Esc** twice to exit Setup and reboot the system.

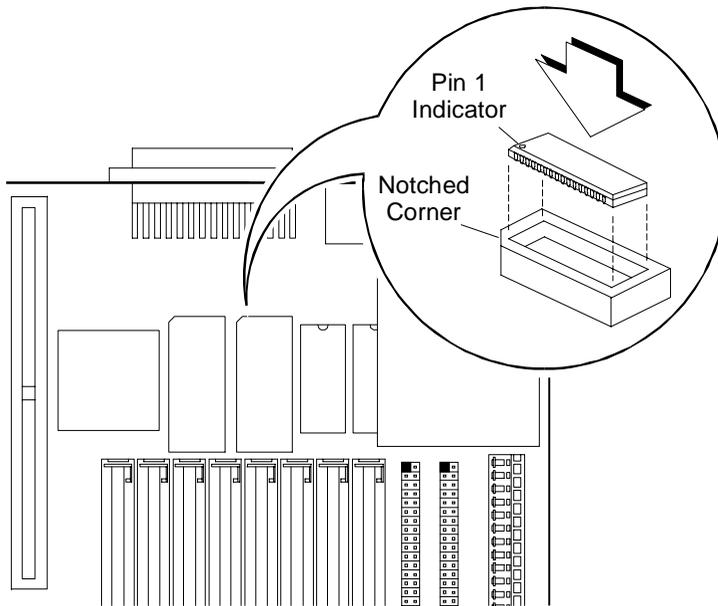
Upgrading the Video Memory

Increased video memory permits you to display higher resolution and more colors. The system board has 1 MB of video memory factory-installed. You may upgrade the video memory to 2 MB.

To upgrade the video memory, follow these steps:

1. Locate the video DRAM upgrade socket labeled U18 and U21 on the system board. See the figure below.

Figure 3-4. Installing a Video Memory Chip



2. Gently insert a video chip into each of the upgrade sockets. Make sure that the pin 1 indicator on the chip matches the notched corner of the socket.

Expanding the PCI System

The system board has a PCI-to-PCI bridge controller chipset that expands the capability of the PCI system. This feature allows all five PCI slots in the system to be bus masters.

The bridge has two interfaces. The primary interface connects directly to the PCI bus close to the host CPU. The secondary interface creates a new PCI bus that can operate independently from the primary PCI bus.

Installing PCI Devices

The devices you install in PCI slots 1 and 2 operate on the primary PCI bus. The devices you install in PCI slots 3, 4, and 5 operate on the secondary PCI bus.

Since the primary PCI bus operates faster than the secondary PCI bus, install PCI add-on boards in PCI slots 1 and 2 first. Then use PCI slots 3, 4, and 5. If you configure your PCI devices in this manner, the system will perform better. See Figure 2-7 in Chapter 2 of this manual for the locations of the PCI slots.

Using the SCSI Feature

The system board features a single-chip Ultra Fast and Wide SCSI-2 host adapter that adds SCSI I/O capability to the system.

The chipset consists of all the components found on the state-of-the-art SCSI host adapters such as the following:

- Onboard microcontroller
- Bus master interface controller
- SCSI controller

The chipset allows transfers at a full 40 MB/second burst transfer rate.

Note: Ultra SCSI speed is not supported on external SCSI devices because of the Ultra SCSI stringent requirements in total SCSI bus length. To use an external SCSI devices, use the SCSISelect utility to disable support for Ultra SCSI speed. See the heading, “Configuring the SCSI Adapters and Drives” in the “Sample Standard Configuration” section of Appendix C.

To use the feature, install any SCSI device in your system and connect it to the SCSI interface on the system board. (See Figure 2-7 in Chapter 2 of this manual for the location.) Then, enter the BIOS Setup utility to set the PCI slot parameters. See Chapter 4, “Using the BIOS Setup Utility”, for details in setting the parameters. Refer to the SCSI manual for more information on using SCSI.

Installing and Removing Expansion Boards

This section describes in detail the steps needed to install expansion boards in the system.

CAUTION: Read the “ESD Precautions” section earlier in this chapter before proceeding.

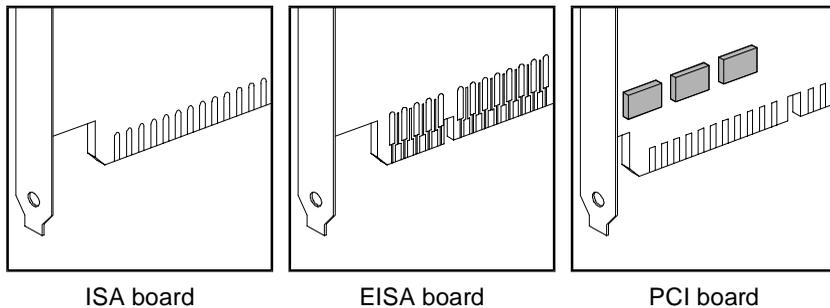
Identifying Expansion Boards

There are three types of expansion boards:

- EISA
- ISA
- PCI

Each expansion board has a different type of connector, as illustrated below.

Figure 3-5. Expansion Board Connectors



An ISA board has a single row of contacts along its connectors. There is usually a single notch in the connector.

An EISA board has a double row of tightly spaced contacts along its connector. There are usually six notches (five small ones and one large one) in the connector.

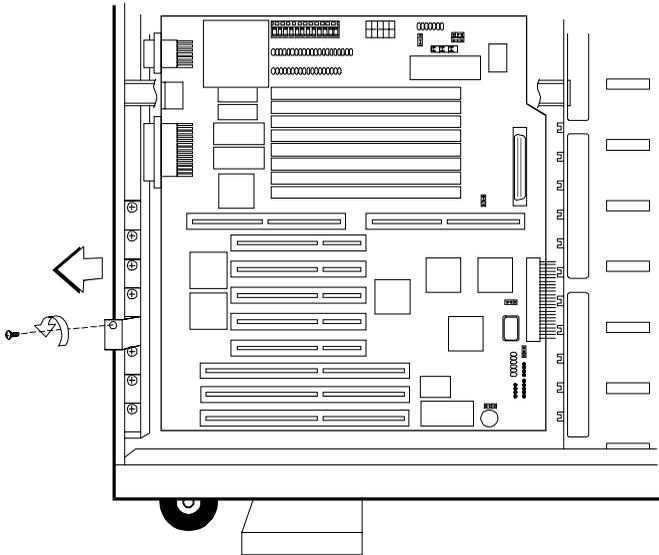
A PCI board has a single row of tightly spaced contacts along its connectors. There is usually a single notch in the connector.

Installing an Expansion Board

To install an expansion board, follow these steps:

1. Study the documentation that came with your expansion board, and configure any jumpers or switches on the board as directed.
2. Remove a bracket from any empty expansion slot. Save the screw to secure the new board. Keep the bracket for future use. See the figure below.

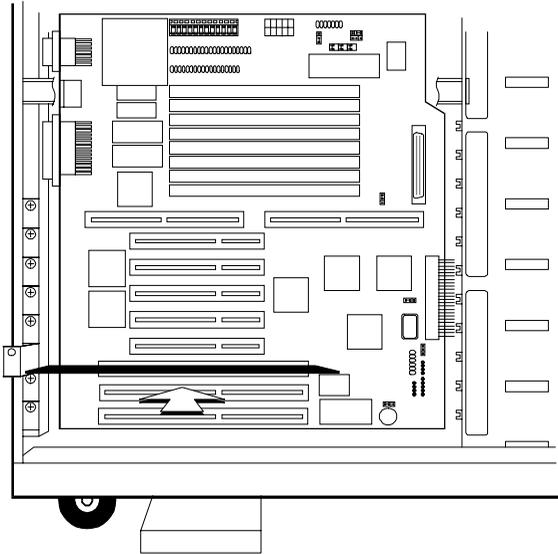
Figure 3-6. Removing a Bracket



3. Gently insert the board into an expansion slot. Make sure the board is securely seated. See Figure 3-7.
4. Secure the board with the bracket screw.

CAUTION: Do not neglect this step. The board uses the screw for grounding.

Figure 3-7. Installing a Board



Removing an Expansion Board

To remove an expansion board, follow these steps:

1. Unplug any cables connected to the board.
2. Remove the bracket screw and pull the board out of the slot.
3. Secure a bracket cover to the empty slot with the screw.

Installing Drives

CAUTION: Read the “ESD Precautions” section earlier in this chapter before proceeding.

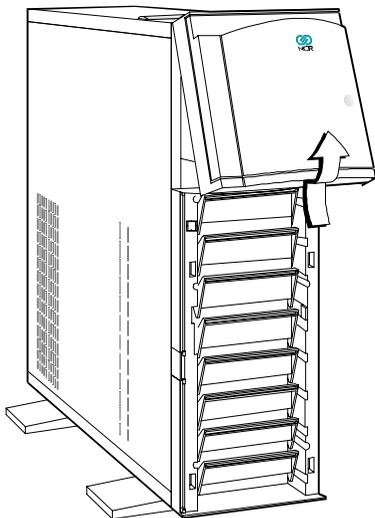
This section describes in detail how to install disk drives in the system.

Removing the Upper Front Panel Cover and Frame

When installing drives on the 5.25-inch drive bays, you have to remove the upper front panel cover and frame. Follow these steps:

1. Open the lower front panel cover.
2. Press the latch under the upper front panel and pull as shown in the figure below.

Figure 3-8. Removing the Upper Front Panel Cover and Frame

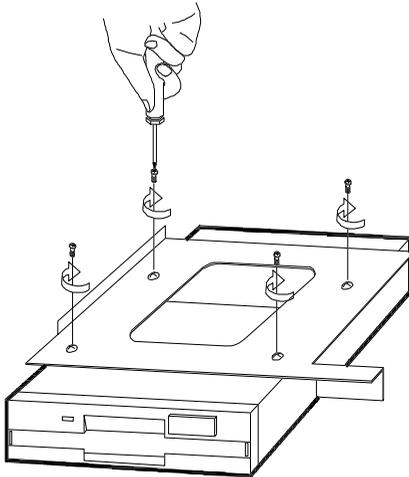


Installing a 3.5-inch Peripheral Drive

To install a 3.5-inch peripheral drive, follow these steps:

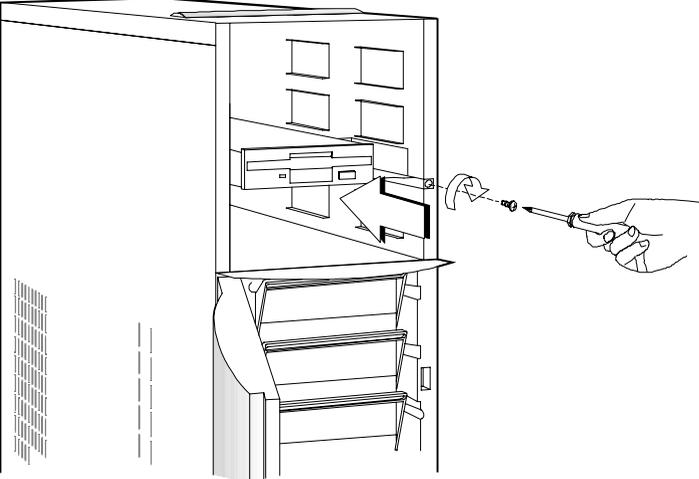
1. Remove the screw attaching the 3.5-inch drive frame to the housing.
2. Secure the drive on the drive frame.

Figure 3-9. Securing the Drive on the Frame



3. Insert the drive into the third drive bay.
4. Secure it with a screw.
5. Connect the drive cables.

Figure 3-10. Securing the Drive

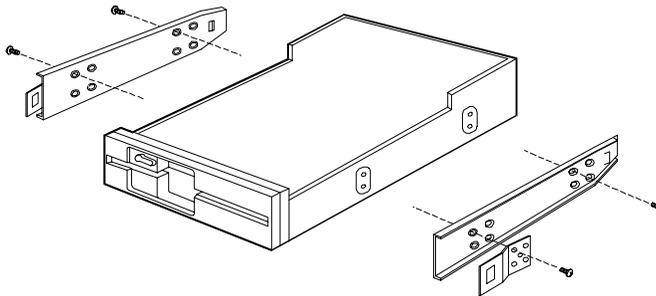


Installing a 5.25-inch Peripheral Drive

To install a 5.25-inch peripheral drive, follow these steps:

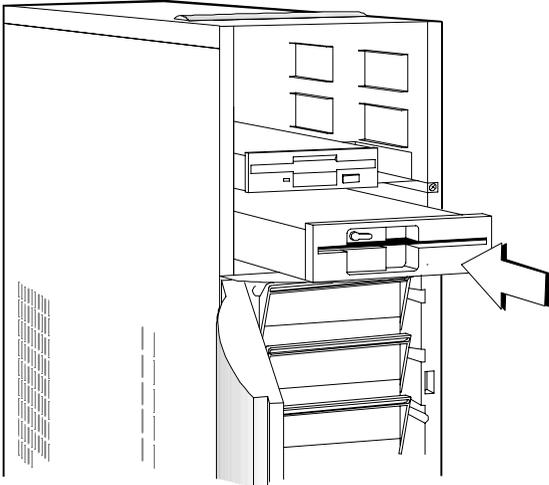
1. Secure the drive guides on the sides of the peripheral drive as shown in the figure below.

Figure 3-11. Securing the Drive Guides



2. Insert the drive into a 5.25-inch drive bay.
3. Connect the drive cables.

Figure 3-12. Inserting the Drive into the Drive Bay

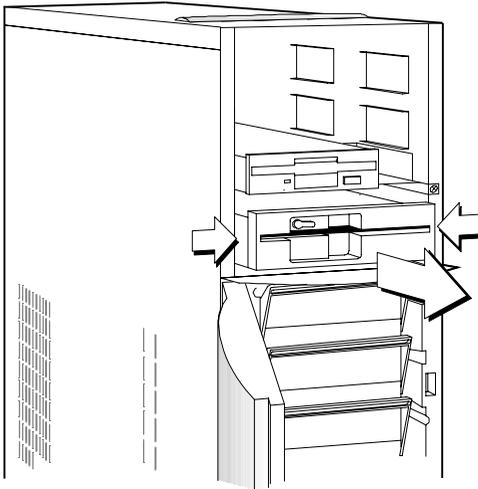


Removing a 5.25-inch Peripheral Drive

To remove a 5.25-inch peripheral drive, follow these steps:

1. Disconnect all the drive cables.
2. Press the metal tabs on the sides of the drive and pull the drive out as shown in the figure below.

Figure 3-13. Pulling the Drive Out



Installing a Hot Plug Fixed Disk Drive

To install a hot plug fixed disk drive, refer to Appendix D in this manual. The complete procedure is described there.

Using the BIOS Setup Utility

When to Use the BIOS Setup Utility

Most systems are already configured by the manufacturer or the dealer. There is no need to run Setup when starting the computer unless you get a configuration error.

Running Setup loads the configuration values into the battery-backed nonvolatile memory called CMOS RAM. This memory area is not part of the system RAM.

Run Setup Message Repeatedly Received

If you repeatedly receive a Run Setup message, the battery may be bad. In this case, the system cannot retain the configuration values in CMOS. Ask a qualified technician for assistance.

Before Running Setup

Before you run Setup, do the following:

- Know the type of diskette drive you have. The standard type is a 3.5-inch 1.44 MB diskette drive.
- Close all files and applications.

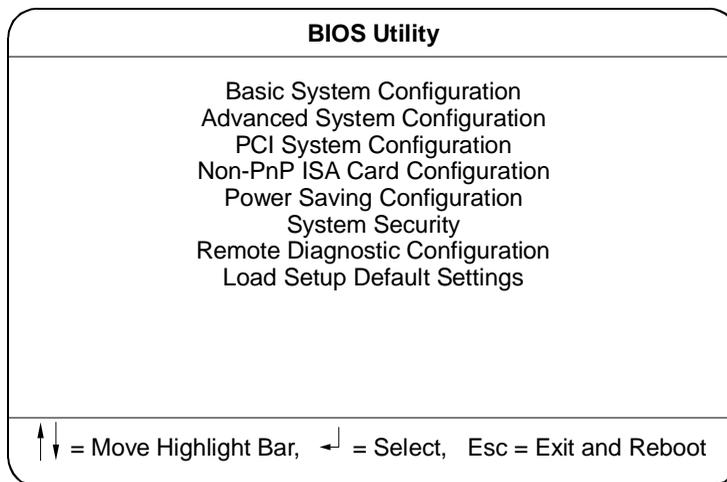
Entering Setup

CAUTION: Close all open files and leave your application program before entering Setup. You cannot exit back into an application. The system automatically reboots when you leave Setup.

Press the key combination **Ctrl + Alt + Esc** during the power-on self-test (POST) to enter Setup. The BIOS Utility (Setup) main menu, as shown in the figure below appears.

Note: You can only enter Setup during POST. After POST, pressing **Ctrl + Alt + Esc** has no effect.

Figure 4-1. BIOS Utility (Setup) Main Menu



Basic System Configuration

Select Basic System Configuration to input configuration values such as date, time, and disk types.

The figure below shows page 1 of the Basic System Configuration menu.

Figure 4-2. Basic System Configuration Menu, Page 1

Basic System Configuration		Page 1/2	
Date	[MM/DD/YY]		
Time	[HH:MM:SS]		
Diskette Drive A	[xx-MB xx-inch]		
Diskette Drive B	[xx-MB xx-inch]		
		Cylinder	Head
Hard Disk 0 (xxx MB)	[Auto]	xx	xx
Hard Disk 1 (xxx MB)	[Auto]	xx	xx
Hard Disk 2 (xxx MB)	[Auto]	xx	xx
Base Memory	[xxx] KB		
Extended Memory	[xxx] KB		
Total Memory	[xxx] KB		
Math Coprocessor	[Installed]		
Video Display	[VGA/EGA]		
↑↓ = Move Highlight Bar, ←→ = Change setting, PgDn/PgUp = Move Screen, F1 = Help, Esc = Exit			

The command line at the bottom of the menu tells you how to highlight items, change settings, and move from one screen to another.

- Press the up or down arrow key on the cursor-edit keypad to highlight the desired parameter.
- Press the left or right arrow key to select the desired option for a parameter.
- Press **Page Down** to move to the next page or **Page Up** to return to the previous page.
- Press **Esc** to exit the configuration menu.

The figure below shows page 2 of the Basic System Configuration menu.

Figure 4-3. Basic System Configuration Menu, Page 2

Basic System Configuration		Page 2/2
Communication Settings		
Baud Rate	[9600]	BPS
Parity	[None]	
Stop Bits	[1]	Bits
Data Lengths	[8]	Bits
Enhanced IDE Features		
Hard Disk Block Mode	[Disabled]	
Hard Disk Size > 504MB	[Disabled]	
On Board IDE	[Disabled]	
Large Memory Support Mode	[Advanced]	
Num Lock After Boot	[Enabled]	
Memory Test	[Enabled]	
Auto Configuration Mode	[Disabled]	
Fast Boot Mode	[Disabled]	
↑↓ = Move Highlight Bar, → ← = Change setting, PgDn/PgUp = Move Screen, F1 = Help, Esc = Exit		

The following sections explain the different parameters and their settings.

Date and Time

The real-time clock keeps the system date and time. After setting the date and time, you need not enter them every time you turn on the system. As long as the internal battery remains good (approximately seven years) and connected, the clock continues to keep the date and time accurately even when the power is off.

Date

Highlight the items on the Date parameter and press the left or right arrow key to set the date following the month-day-year format.

Valid values for month, day, and year are as follows:

Month	1 to 12
Day	1 to 31
Year	00 to 99

The setting 00 for the Year represents year 2000.

Time

Highlight the items on the Time parameter and press the left or right arrow key to set the time following the hour-minute-second format.

Valid values for hour, minute, and second are as follows:

Hour	00 to 23
Minute	00 to 59
Second	00 to 59

Diskette Drives

To enter the configuration value for the diskette drive(s), follow these steps:

1. Highlight the Diskette Drive A parameter.
2. Press the right or left arrow key to view the options and select the appropriate value.

The Diskette Drive parameters have the following options:

- None
- 360 KB, 5.25-inch
- 1.2 MB, 5.25-inch
- 720 KB, 3.5-inch

- 1.44 MB, 3.5-inch
- 2.88 MB, 3.5-inch

Follow the same procedure for the Diskette Drive B parameter. Choose None if you do not have a second diskette drive.

IDE Hard Disk Drives

To enter the configuration value for the IDE hard disk drives, follow these steps:

1. Move the highlight bar to the Hard Disk 0 parameter to configure the hard disk drive (drive C).
2. Press the left or right arrow key to display the hard disk options with their respective values.
3. Select the option that corresponds to your hard disk type.

Follow the same procedure for the Hard Disk 1 parameter. Choose None if you do not have a second hard disk drive.

Selecting the Auto Option

If you do not know the exact type of your IDE hard disk, select the option Auto. During POST, when the system performs self-testing and self-initialization before loading the operating system and applications, the BIOS utility automatically determines the type of your hard disk. You can see the hard disk values when you enter Setup.

```
Cylinder      Head      Sector
Hard Disk 0 (xxx MB)  [Auto]   xx xx xx
```

The next time you boot the system, Setup does not have to auto-configure your hard disk because it reads the saved hard disk information during POST.

Note: We recommend that you copy the hard disk values and keep them in a safe place in case you have to reconfigure the disk in the future.

Follow the same procedure to auto-configure other hard disks.

Selecting the User Option

Choose the User option when you have installed a hard disk that was previously formatted but does not use the disk native parameters or structure. That is, the disk type may be in the hard disk types list but the number of cylinders, heads, and sectors differ.

```
Cylinder      Head      Sector
Hard Disk 0 (xxx MB)  [User]   xx xx xx
```

To configure a hard disk with the User option, follow these steps:

1. Highlight the hard disk drive parameter.
2. Select the option User then press **Enter**.
3. Type in the number of cylinders, heads, and sectors of the hard disk drive, under the appropriate columns.

Note: Be sure to have the correct hard disk information beforehand.

4. Choose YES when asked if you want to save the CMOS data.

System Memory

The system automatically detects the total amount of onboard memory during the POST and sets the memory parameters accordingly. If you install additional memory, the system automatically adjusts the Total Memory parameter to display the new memory size.

Communication Settings

The Communication Settings parameters permit you to set the baud rate, parity, stop bit and data length for the first serial port (COM 1). The values for this parameter are:

Baud rate: 300 to 38400 bits per second (bps)
Parity: Odd, even, or none
Stop bit: 1 or 2 stop bits
Data length: 7- or 8-bit data word

Note: The baud rate maximum value is only for the BIOS POST under UNIX environment. The system I/O chipset SMC 37C665GT supports up to 115.2 Kbps.

Enhanced IDE Features

This section describes several enhanced IDE features.

Hard Disk Block Mode

The Hard Disk Block Mode function enhances disk performance depending on the hard disk in use. If you set this parameter to Enabled, it permits data transfer in block (multiple sectors) by increasing the data transfer rate to 256 bytes per cycle.

If your system does not boot after enabling this parameter, change the setting to Disabled. This parameter is normally set to Disabled.

Hard Disk Size > 504 MB

This enhanced IDE feature works only under MS-DOS™ and Microsoft Windows™ 3.x environments. If enabled, it permits you to use a hard disk with a capacity of more than 504 MB. This is made possible through the Logical Block Address (LBA) mode translation. Other operating systems require this parameter to be set to Disabled.

To prevent data loss, keep this parameter to Enabled if you are using a hard disk with more than 504 MB capacity and was previously configured through LBA mode. When you use a hard disk configured through the cylinder-head-sector (CHS) mode, set this parameter to Disabled.

On Board IDE

This parameter permits the IDE to be disabled so that IRQ 14 can be used for PCI or EISA adapters.

Large Memory Support Mode

This parameter permits the system to support an extended memory higher than 64 MB. Set this parameter to Advanced if you are working under Microsoft Windows NT™ environment and the system memory size is greater than or equal to 64 MB. Otherwise, set it to Normal.

Num Lock After Boot

This parameter permits you to activate the Num Lock function upon booting. The default setting is Enabled.

Memory Test

When set to Enabled, this parameter permits the system to perform a RAM test during the POST routine. When set to Disabled, the system detects only the memory size and bypasses the test routine. The default setting is Disabled.

This item is set to Disabled and is not user-configurable if you enabled the Auto Configuration Mode and the Fast Boot Mode parameters on page 2 of the Basic System Configuration menu. See the following headings, “Auto Configuration Mode“ and “Fast Boot Mode.”

Auto Configuration Mode

When enabled , this parameter automatically sets the system configuration values to their optimized settings. At the same time, it causes the Memory Test parameter to be set to Disabled and the shadow RAM region for system and video BIOS to be set to Enabled. For additional information, see the headings, “Memory Test“ and “Shadow RAM.”

Set this parameter to Enabled if you do not know the hard disk drive type parameters and the onboard communication port configuration.

Fast Boot Mode

When enabled, this parameter permits the system to boot faster by skipping some POST routines. It bypasses memory test, enables shadow RAM, and enables primary- and second-level cache.

When set to Enabled, this parameter also causes the Memory Test parameter to be set to Disabled and the shadow RAM regions for system and video BIOS to Enabled. For additional information, see the headings, “Memory Test“ and “Shadow RAM.”

Advanced System Configuration

The Advanced System Configuration option permits you to configure the advanced system memory functions.

CAUTION: Do not attempt to change any setting in the Advanced System Configuration if you are not a qualified technician.

The figure below shows page one of the Advanced System Configuration parameters.

Figure 4-4. Advanced System Configuration, Page One

Advanced System Configuration		Page 1/1
Shadow RAM		
E0000h - FFFFFh (System BIOS)	[Enabled]	
C0000h - C7FFFh (Video BIOS)	[Enabled]	
C8000h - CBFFFh	[Disabled]	
CC000h - CFFFFh	[Disabled]	
D0000h - D3FFFh	[Disabled]	
D4000h - D7FFFh	[Disabled]	
D8000h - DBFFFh	[Disabled]	
DC000h - DFFFFh	[Disabled]	
Internal Cache (CPU Cache)	[Enabled]	
External Cache	[Enabled]	
ECC/Parity Mode Selection	[ECC]	
Operation of ECC	[None]	
Memory at 15MB-16MB Researved for	[System]	Use
↑↓ = Move Highlight Bar, → ← = Change setting, PgDn/PgUp = Move Screen, F1 = Help, Esc = Exit		

Shadow RAM

The system reserves 256 KB of random access memory (RAM) for the shadow RAM function. This parameter has eight range addresses. When you set these addresses to Enabled, the system BIOS, video BIOS, and I/O ROM functions run directly from the shadow RAM for faster operation. When you set them to Disabled, the functions run normally from ROM.

The address range E0000h - FFFFFh is for shadowing the system BIOS. This item is always set to Enabled and is not user-configurable. The address range C0000h - C7FFFh is for shadowing the video BIOS. Shadow RAM is set to Enabled and is not user-configurable if the Auto Configuration Mode and the Fast Boot Mode parameters on page 2 of the Basic System Configuration menu are enabled. Otherwise, you can disable this item.

The remaining address ranges are for I/O ROM functions.

Internal Cache (CPU Cache)

This parameter enables or disables the internal cache memory. It is set to Enabled and is not user-configurable if you enabled the Auto Configuration Mode and Fast Boot Mode parameters on page 2 of the Basic System Configuration menu. Otherwise, you can disable this item.

External Cache

This parameter enables or disables the external cache memory. It is set to Enabled and is not user-configurable if you enabled the Auto Configuration Mode and Fast Boot Mode parameters on page 2 of the Basic System Configuration menu. Otherwise, you can disable this item.

ECC/Parity Mode Selection

This parameter permits you to enable or disable the ECC and parity check feature. Fast-page mode SIMMs supports both ECC and parity mode while EDO SIMMs supports only ECC mode.

You must disable this parameter if you installed SIMMs without parity.

Operation of ECC

This parameter permits you to select the error detection mode. The ECC operation options follow:

- **None** - detects single-bit errors and automatically corrects any error but does not set the single-bit error flag in the chipset. In this option, the operating system does not receive any signal even if there are system errors.
- **Single-bit** - detects single-bit errors, automatically corrects any error, and sets the single-bit error flag in the chipset. The setting of the single-bit error flag is a signal to the operating system that ECC detected single-bit errors.
- **Multiple-bit** - detects multiple-bit errors and sets the multiple-bit error flag in the chipset but does not correct the errors. The setting of the multiple-bit error flag is a signal to the operating system that ECC detected multiple-bit errors.
- **Both** - detects both single- and multiple-bit errors but corrects only single-bit errors. This option sets both the single-and multiple-bit flags in the chipset to send signals to the operating system that ECC detected errors.

Memory at 15 MB - 16 MB

To prevent memory address conflicts between the system and expansion boards, reserve this memory range for the use of either the system or an expansion board. Before setting this parameter, check your add-on expansion board manual to determine if the board needs this memory space. If not, set this parameter to System Use.

PCI System Configuration

The PCI System Configuration, as shown in the figure below, permits you to specify the settings for your PCI devices.

Figure 4-5. PCI System Configuration

PCI System Configuration		Page 1/1			
PCI IRQ Setting [Auto]					
	INTA	INTB	INTC	INTD	
PCI Slot 1	[--]	[--]	[--]	[--]	
PCI Slot 2	[--]	[--]	[--]	[--]	
PCI Slot 3	[--]	[--]	[--]	[--]	
PCI Slot 4	[--]	[--]	[--]	[--]	
PCI Slot 5	[--]	[--]	[--]	[--]	
Onboard VGA	[--]				
Onboard SCSI	[--]				
VGA Palette Snoop [Disabled]					
On Board SCSI [Enabled]					
Boot Device [Disabled]					
↑↓ = Move Highlight Bar, → ← = Change setting, PgDn/PgUp = Move Screen, F1 = Help, Esc = Exit					

PCI IRQ Setting

This parameter allows for Auto or Manual configuration of PCI devices. If you use plug-and-play (PnP) devices, you can keep the default setting Auto. The system then automatically configures the PnP devices. If your PCI device is not a PnP, you can manually assign the interrupt for each device. Refer to your adapter board documentation for technical information.

Note: When the PCI IRQ Setting is set to Auto, all the IRQ setting fields become gray and non-configurable.

PCI Slots

These parameters permit you to specify the appropriate interrupt for each of the PCI devices. You can assign IRQ5, IRQ9, IRQ10, IRQ11, or IRQ15 to the slots. If you disabled the parallel, serial, and IDE ports, you may also use IRQ3, IRQ4, IRQ7, or IRQ14 for the PCI slots.

Note: To avoid conflicts, make sure that the interrupts you assign in any of the PCI slots are not used by other devices.

Press the up and down arrows to move between fields. Press left and right arrows to select options.

Onboard VGA

This parameter permits you to manually assign the interrupt for the onboard VGA when the PCI IRQ Setting parameter is set to Manual. This parameter is grayed and not configurable when the PCI IRQ Setting is set to Auto.

Press the up and down arrows to move between fields. Press left and right arrows to select options.

Onboard SCSI

This parameter permits you to manually assign the interrupt for the onboard SCSI hard disk when the PCI IRQ Setting parameter is set to Manual. This parameter is grayed and not configurable when the PCI IRQ Setting is set to Auto.

Press the up and down arrows to move between fields. Press left and right arrows to select options.

VGA Palette Snoop

PCI devices support the palette snooping technique that enables the device to control access to their palette registers. Set this parameter to Enabled to activate the palette snooping function if both the PCI VGA and the ISA video devices are installed. Check your VGA board documentation for more information about this function.

Onboard SCSI

This parameter permits you to enable or disable the onboard SCSI feature.

Boot Device

This parameter permits you to enable or disable the onboard SCSI boot priority.

Non-PnP ISA Card Configuration

The Non-PnP (plug-and-play) ISA Card Configuration parameters permit you to specify the settings for ISA boards (called cards by this utility) without the plug-and-play (PnP) feature.

Figure 4-6. Non-PnP ISA Card Configuration, Page One

Non-PnP ISA Card Configuration
Page 1/2

System Resources Used by Non-PnP ISA Cards

IRQ/DMA

IRQ 00 .. [---]*	IRQ 08 .. [---]*	DMA 0 .. [No]
IRQ 01 .. [---]*	IRQ 09 .. [No]	DMA 1 .. [No]
IRQ 02 .. [---]*	IRQ 10 .. [No]	DMA 2 .. [---]*
IRQ 03 .. [No]	IRQ 11 .. [No]	DMA 3 .. [No]
IRQ 04 .. [No]	IRQ 12 .. [No]	DMA 4 .. [---]*
IRQ 05 .. [No]	IRQ 13 .. [---]*	DMA 5 .. [No]
IRQ 06 .. [---]*	IRQ 14 .. [---]*	DMA 6 .. [No]
IRQ 07 .. [No]	IRQ 15 .. [No]	DMA 7 .. [No]

Expansion ROM Region

C8000h - CBFFFh .. [No]	D4000h - D7FFFh .. [No]
CC000h - CFFFFh .. [No]	D8000h - DBFFFh .. [No]
D0000h - D3FFFh .. [No]	DC000h - DFFFFh .. [No]

↑↓ = Move Highlight Bar, → ← = Change setting,
 PgDn/PgUp = Move Screen, F1 = Help, Esc = Exit

Note: The items marked No are currently not in use, while those marked Yes are in use by PnP boards. The grayed items (here denoted with asterisks) have fixed settings and are not user-configurable.

Refer to your non-PnP ISA board documentation when setting the parameters shown in Figure 4-7.

Figure 4-7. Non-PnP ISA Card Configuration, Page Two

Non-PnP ISA Card Configuration			Page 2/2
I/O Region			
100h - 10Fh .. [No]	200h - 20Fh .. [No]	300h - 30Fh .. [No]	
110h - 11Fh .. [No]	210h - 21Fh .. [No]	310h - 31Fh .. [No]	
120h - 12Fh .. [No]	220h - 22Fh .. [No]	320h - 32Fh .. [No]	
130h - 13Fh .. [No]	230h - 23Fh .. [No]	330h - 33Fh .. [No]	
140h - 14Fh .. [No]	240h - 24Fh .. [No]	340h - 34Fh .. [No]	
150h - 15Fh .. [No]	250h - 25Fh .. [No]	350h - 35Fh .. [No]	
160h - 16Fh .. [No]	260h - 26Fh .. [No]	360h - 36Fh .. [No]	
170h - 17Fh .. [No]	270h - 27Fh .. [No]	370h - 37Fh .. [No]	
180h - 18Fh .. [No]	280h - 28Fh .. [No]	380h - 38Fh .. [No]	
190h - 19Fh .. [No]	290h - 29Fh .. [No]	390h - 39Fh .. [No]	
1A0h - 1AFh .. [No]	2A0h - 2AFh .. [No]	3A0h - 3AFh .. [No]	
1B0h - 1BFh .. [No]	2B0h - 2BFh .. [No]	3B0h - 3BFh .. [No]	
1C0h - 1CFh .. [No]	2C0h - 2CFh .. [No]	3C0h - 3CFh .. [No]	
1D0h - 1DFh .. [No]	2D0h - 2DFh .. [No]	3D0h - 3DFh .. [No]	
1E0h - 1EFh .. [No]	2E0h - 2EFh .. [No]	3E0h - 3EFh .. [No]	
1F0h - 1FFh .. [---] *	2F0h - 2FFh .. [No]	3F0h - 3FFh .. [No]	

↑↓ = Move Highlight Bar, → ← = Change setting,
 PgDn/PgUp = Move Screen, F1 = Help, Esc = Exit

IRQ/DMA

These items permit you to assign specific IRQ and DMA channels to non-PnP ISA boards. The system will not use such IRQ and DMA channels when it automatically assigns channels to PnP boards.

Expansion ROM Region

These items specify the memory regions available for add-on board use. You can manually assign specific regions to non-PnP boards so that the system will not use those regions when it automatically configures PnP boards.

I/O Region

The items under this parameter permit you to reserve 16-byte memory address ranges for non-PnP boards. When the system configures PnP boards, the address ranges that you marked will not be used.

You can assign random memory addresses to non-PnP boards as long as you cover the address range required by the board. For example, for a board that requires 178h-188h address, you have to set regions 170h-17Fh and 180h-18Fh to Yes.

Power Saving Configuration

The Power Saving Configuration parameters permit you to configure the system power management feature.

The figure below shows the Power Saving Configuration parameters and their default settings.

Figure 4-8. Power Saving Configuration

Power Saving Configuration		Page 1/1
Power Management Mode	[Disabled]	
IDE Hard Disk Standby Timer	[OFF]	
System Suspend Timer	[OFF]	
System Wake Up Events		
IRQ 0 [Disabled] *	IRQ 8 [Disabled]	
IRQ 1 [Enabled] *	IRQ 9 [Disabled]	
IRQ 3 [Disabled]	IRQ 10 . . . [Disabled]	
IRQ 4 [Disabled]	IRQ 11 . . . [Disabled]	
IRQ 5 [Disabled]	IRQ 12 . . . [Enabled] *	
IRQ 6 [Enabled] *	IRQ 13 . . . [Disabled]	
IRQ 7 [Disabled]	IRQ 14 . . . [Enabled] *	
	IRQ 15 . . . [Disabled]	
↑↓ = Move Highlight Bar, ← → = Change setting, PgDn/PgUp = Move Screen, F1 = Help, Esc = Exit		

Note: The grayed items (here denoted with asterisks) have fixed settings and are not user-configurable.

Power Management Mode

This parameter permits you to reduce power consumption. When it is set to Enabled, you can configure the monitor power-saving timer, IDE hard disk standby timer, and the system suspend timer. The following sections describe the timers.

IDE Hard Disk Standby Timer

This parameter permits the hard disk to enter standby mode after inactivity of 1 to 15 minutes, depending on your setting. When you access the hard disk again, allow 3 to 5 seconds (depending on the hard disk used) for the disk to return to normal speed. Set this parameter to Off if your hard disk does not support this function.

System Suspend Timer

This parameter supports the lowest power saving mode. To resume system operation from suspend mode, you can either press a key or move the mouse. Any IRQ activity representing green/wake up events also resumes system operation. See the following heading, “System Wake Up Events.”

Note: If you connected the system to a network, we strongly suggest you set this item to OFF.

System Wake Up Events

This parameter permits you to monitor system activities occurring through the IRQ and determine whether or not to enter power saving mode.

For example, if you assign IRQ3 to a fax/modem, and you set this item to Enabled, any fax/modem activity wakes up the system from suspend mode.

System Security

The Setup program has a number of security features to prevent unauthorized access to the system and its data.

Enter the Setup program and select System Security. The following screen appears.

Figure 4-9. System Security

System Security		Page 1/1
Disk Drive Control		
Diskette Drive	[Normal]	
Hard Disk Drive	[Normal]	
System Boot Drive	[Drive A then C]	
Onboard Communication Ports		
Serial Port 1	[3F8h]	
Serial Port 2	[2F8h]	
Parallel Port	[378h (IRQ7)]	
Operation Mode	[Standard Parallel Port (SPP)]	Mode
ECP DMA Channel	[-]	
Onboard PS/2 Mouse (IRQ12) [Enabled]		
Setup Password [None]		
Power-on Password [None]		
↑↓ = Move Highlight Bar, →← = Change setting, PgDn/PgUp = Move Screen, F1 = Help, Esc = Exit		

Disk Drive Control

The disk drive control features permit you to enable or disable the read/write functions of a disk drive. These features can also control the diskette drive or hard disk drive boot function. They prevent loading operating systems or other programs from a certain drive while the other drives remain operational.

The table below lists the drive control settings and their corresponding functions.

Table 4-1. Drive Control Settings

Diskette Drive

Setting	Description
Normal	Diskette drive functions normally
Write Protect All Sectors	Disables the write function on all sectors
Write Protect Boot Sector	Disables the write function only on boot sector
Disabled	Disables all diskette functions

Hard Disk Drive

Setting	Description
Normal	Hard disk drive functions normally
Write Protect All Sectors	Disables the write function on all sectors
Write Protect Boot Sector	Disables the write function only on boot sector
Disabled	Disables all hard disk functions

System Boot Drive

Setting	Description
Drive A then C	System boots from drive A to C
Drive C then A	System boots from drive C to A
C:	System always boots from drive C
A:	System always boots from drive A

Onboard Communication Ports

This section describes the onboard communication ports.

Serial Port 1 Base Address

This parameter permits you to set serial port 1 logical base address.

Table 4-2. Serial Port 1 Settings

Setting	Description
3F8h (default)	Serial port 1 with address 3F8h using IRQ4
2F8h	Serial port 1 with address 2F8h using IRQ3
3E8h	Serial port 1 with address 3E8h using IRQ4
2E8h	Serial port 1 with address 2E8h using IRQ3
Disabled	Disables serial port 1

Serial Port 2 Base Address

This parameter permits you to set serial port 2 logical base address.

Table 4-3. Serial Port 2 Settings

Setting	Description
3F8h	Serial port 2 with address 3F8h using IRQ4
2F8h (default)	Serial port 2 with address 2F8h using IRQ3
3E8h	Serial port 2 with address 3E8h using IRQ4
2E8h	Serial port 2 with address 2E8h using IRQ3
Disabled	Disables serial port 2

Note: If you assign 3F8h to serial port 1, you can only assign 2F8h or 2E8h to serial port 2. If you assign 2F8h to serial port 1, you can only assign 3F8h or 3E8h to serial port 2.

Parallel Port Base Address

The system has one parallel port. The table below lists the options for selecting the parallel port address. You also have the option to disable the parallel port.

Table 4-4. Parallel Port Settings

Setting	Function
3BCh (IRQ 7)	Corresponds to the parallel port with address 3BCh
378h (IRQ 7)	Corresponds to the parallel port with address 378h
278h (IRQ 5)	Corresponds to the parallel port with address 278h
Disabled	Disables the parallel port

To deactivate the parallel port, select the Disabled option. If you install an add-on card with a parallel port whose address conflicts with the onboard parallel port, the system automatically disables the onboard functions.

Check the parallel port address on the add-on card and change the address to one that does not conflict.

Operation Mode permits you to set the operation mode of the parallel port. The table below lists the available operation modes of the parallel port.

Table 4-5. Parallel Port Operation Mode Settings

Setting	Function
Standard Parallel Port (SPP)	Allows normal speed one-way operation
Standard and Bidirectional	Allows normal speed operation in a two-way mode
Enhanced Parallel Port (EPP)	Allows bidirectional parallel port operation at maximum speed
Extended Capabilities Port (ECP)	Allows parallel port to operate in bidirectional mode and at a speed higher than the maximum data transfer rate

ECP DMA Channel becomes active only if you selected Extended Capabilities Port (ECP) as the operation mode. It permits you to select DMA channel 1 or DMA channel 3 (as required in Microsoft Windows95™).

Onboard PS/2 Mouse (IRQ 12)

This parameter enables or disables the onboard PS/2 mouse. When set to Enabled, it permits you to use the onboard PS/2 mouse assigned with IRQ12. When set to Disabled, it deactivates the mouse and frees IRQ12 for the use of other devices.

Setup Password

The Setup password prevents unauthorized access to the BIOS Utility.

Note: Set jumper JP1 on the system board to pins 1-2 to enable the password function.

Setting a Password

1. Highlight the Setup Password parameter and press the left- or right-arrow key. The password prompt appears.
2. Type a password. The password may consist of up to seven characters.
CAUTION: Be careful when typing your password because the characters do not appear on the screen.
3. Press **Enter**. A screen message asks you to retype the password to verify your first entry.
4. Retype the password then press **Enter**.

After setting the password, the system automatically sets the Setup Password parameter to Present. The next time you want to enter the BIOS utility, you must type your Setup password.

If You Forget the Password

If you forget your password, you must reset the configuration values stored in CMOS to their default values. Should this happen, call your dealer for assistance.

Power On Password

The power-on password secures your system against unauthorized use. Once you set this password, you have to type it whenever you boot the system. To set this password, follow the same procedure as setting a Setup password.

Remote Diagnostic Configuration

The remote diagnostic configuration allows the RDM notification procedure to be set. This is described fully in the NCR ValuePlus CD for BackOffice, Release 4.2, *User's Guide* that is included with the system.

Load Setup Default Settings

Use this option to load the default settings for the optimized system configuration.

When you load the default settings, some of the parameters are grayed-out with their fixed settings. These grayed parameters are not user-configurable.

To change the settings of these “non user-configurable” items, disable the Auto Configuration Mode and the Fast Boot Mode parameters under the Basic System Configuration menu.

Leaving Setup

Examine the system configuration values. When you are satisfied that all the values are correct, write them down. Store the recorded values in a safe place. In the future, if the battery loses power or the CMOS chip is damaged, you know what values to enter when you rerun Setup.

To leave Setup, follow these steps:

1. Press **Esc** to leave Setup.
2. If there is any change in the BIOS utility functions, the following message appears:

Do you want to save CMOS data?

[Yes] [No]

Select your response with the arrow keys. Select Yes to store the new data in the CMOS. Select No to retain the old configuration values.

3. Press **Enter**.

Hard Disk Drive Types

The table below lists the hard disk drive types and parameters.

Table 4-6. Hard Disk Drive Types

Type	Cylinders	Heads	Sectors Per Track
0	(indicates SCSI or no hard disk)		
1	306	4	17
2	615	4	17
3	615	6	17
4	940	8	17
5	940	6	17
6	615	4	17
7	462	8	17
8	733	5	17
9	900	15	17
10	820	3	17
11	855	5	17
12	855	7	17
13	306	8	17
14	733	7	17
15	(reserved)		
16	612	4	17
17	977	5	17
18	977	7	17
19	1024	7	17
20	733	5	17
21	733	7	17
22	733	5	17

Type	Cylinders	Heads	Sectors Per Track
23	306	4	17
24	612	4	17
25	306	4	17
26	612	4	17
27	698	7	17
28	976	5	17
29	306	4	17
30	611	4	17
31	732	7	17
32	1023	5	17
33	751	8	17
34	755	16	17
35	731	13	26
36	980	15	17
37	936	16	17
38	981	5	17
39	981	10	17
40	762	8	39
41	980	5	17
42	832	8	33
43	683	12	38
44	513	16	38
45	776	8	33
46	683	16	38
47	832	6	33
48	615	2	34
49	989	16	63
50	823	4	38

Type	Cylinders	Heads	Sectors Per Track
51	1001	15	17
52	1024	17	22
53	723	13	51
54	548	8	38
55	1013	4	41
56	929	15	17
57	817	14	36
58	723	13	81
59	802	4	39
60	1024	9	17
61	895	5	55
62	(reserved)		
63	966	10	34
64	1024	8	17
65	1024	11	17
66	918	11	17
67	905	9	17
68	1024	10	17
69	1024	12	17
70	1024	13	17
71	1024	14	17
72	1024	2	17
73	1024	16	17
74	918	15	17
75	820	6	17
76	1024	5	17
77	1024	8	17
78	(reserved)		

Hard Disk Drive Types

Type	Cylinders	Heads	Sectors Per Track
79	1001	15	32
80	1024	16	63
81	1024	10	17
82	1024	11	17
83	1024	15	17
84	776	8	33
85	926	13	17
86	805	4	26
87	976	5	17
88	745	4	28
89	747	2	28
90	782	2	1Bh
91	985	13	32
92	816	15	32
93	968	5	17
94	903	8	46
95	966	5	34
96	535	10	50
97	715	10	50
98~100	(reserved)		
Auto or User	(User-defined)		

Using the System Utilities

Identifying the System Utilities

This chapter contains information about the system utilities that you use when you upgrade your system.

These utilities are as follows:

- AFlash BIOS Utility
- EISA Configuration Utility (ECU)

Note: The AFlash BIOS Utility diskette does not come with the system package. Ask your dealer or NCR sales representative for assistance if you need the utility.

Using the AFlash BIOS Utility

This section contains information on using the AFlash BIOS utility.

CAUTION: Do not install memory-related drivers (XMS, EMS, DPMI) when you use AFlash.

The AFlash functions support all the operations required for system Flash ROM. The functions are as follows:

- **Load BIOS file to buffer** reads a specified file from a diskette to memory for future program use or for check only. It supports the 64-KB, 128-KB, 192-KB, or 256-KB files.
- **Save BIOS to disk file** reads BIOS from the current BIOS area and writes to the file specified by the user.
- **Edit OEM string** reads specified file from a diskette to memory, edits OEM string and writes to a file.
- **Program flash memory** programs Flash memory according to the data loaded in **Load BIOS file to buffer**. This function also shows the BIOS checksum and BIOS type to make sure that the operation is correct.

AFlash features password security to prevent unauthorized access.

Executing AFlash

To start AFlash, follow these steps:

1. Copy the MSG.DAT and AFLASH.EXE files from the system utilities diskette into a subdirectory of your choice.
2. From that subdirectory, type AFLASH and press **Enter**.
3. A help message displays. Press any key to continue.
4. The main menu displays. Use the up- or down-arrow keys to highlight the options. Press **Enter** to select.
5. If you want to save a copy of the current BIOS into a file, select Save BIOS to Disk File.

6. Select Load BIOS File to load the BIOS file into memory.
7. Select Program Flash Memory to erase the current BIOS, and program Flash ROM.

WARNING: Never turn off the system power while Flash BIOS is programming. This will destroy the BIOS.

8. Reboot the system.

Quick Way to Execute AFlash

When you have already copied the AFlash files into your hard disk, you can type `AFLASH [filename]` and press **Enter** at the DOS prompt (subdirectory where the files are located) to quickly execute the program.

The program automatically performs the loading and programming functions, then reboots the system.

If the program cannot find the BIOS file, it returns to the main menu and flashes the following message:

```
Can't Read This File !!!  
Press any key to continue...
```

In this case, follow the previous procedure in the section, “Executing AFlash,” for loading and programming the BIOS file using the main menu.

Using the EISA Configuration Utility

The EISA Configuration Utility (ECU) is a program that allows you to easily configure your server. Use this utility for these tasks:

- To set up your server for the first time
- To change your configuration by adding or removing EISA or ISA boards

The program stores the configuration information in the nonvolatile memory where it is available whenever you use your server.

Functions

The ECU does the following:

- Supports EISA and ISA boards, PCI devices, and plug-and-play ISA boards
- Automatically detects EISA boards, PCI devices, and plug-and-play ISA boards installed in the computer
- Helps you configure ISA board by providing the appropriate switch and jumper settings
- Notifies you immediately if a conflict occurs during configuration
- Creates and maintains the System Configuration Information (SCI) file as a backup for the computer's nonvolatile memory
- Supports configuration (CFG) file extensions
- Allows you to set the computer's date and time

Making Menu Selections

You can either use the keyboard or the mouse to make menu selections in the EISA Configuration Utility program.

Using the Keyboard

To use the keyboard when making menu selections, refer to the table below.

Table 5-1. Keyboard Function Keys

Key	Function
Tab or down arrow	Moves the cursor to the next field
Shift + Tab or up arrow	Moves the cursor to the previous field
Up arrow or down arrow	Moves the cursor between items within a list
Enter	Selects an item
Esc	Cancels the most recent action
Page Up, Page Down , up arrow, or down arrow	Scrolls a screen
Home	Moves the cursor to the top of a list
End	Moves the cursor to the bottom of a list
Ctrl + Home	Moves the cursor to the beginning of a menu
Ctrl + End	Moves the cursor to the end of a menu

Using the Mouse

To use the mouse when making menu selections, follow these steps:

1. Position the cursor over the desired option and press the left mouse button to select it.
2. When a sub-menu displays, press the left button again to make a selection.
3. If a scroll bar displays on the right side of the screen, place the mouse cursor over the arrow at the top or at the bottom of the scroll bar, then press and hold the left mouse button to scroll up or down the page.

Getting Help

The EISA Configuration Utility (ECU) automatically displays information about each choice on the main menu and the second-level menus. The utility also allows you to access online help once you begin the configuration process.

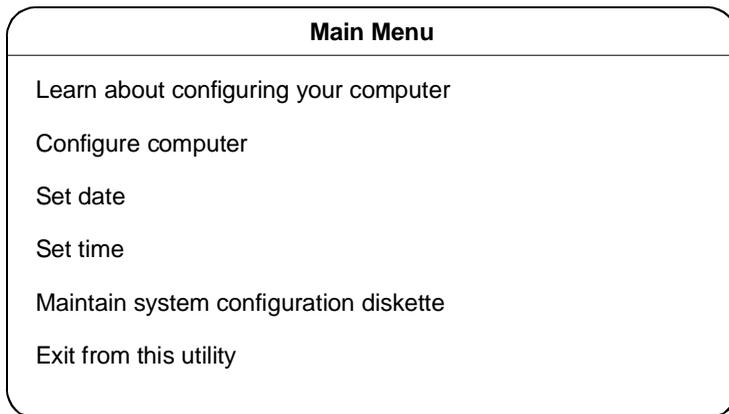
Press **F1** to display the help menu. Press **Esc** to remove the help menu on the screen.

Accessing the ECU

To use the basic ECU functions, follow these steps:

1. Insert the System Configuration diskette in drive A and turn on the computer. (Reset the system if the power is already on.) The ECU Logo screen displays.
2. Press any key to continue. A Welcome screen displays.
3. Press **Enter** to display the main menu, as shown in the figure below.

Figure 5-1. ECU Main Menu



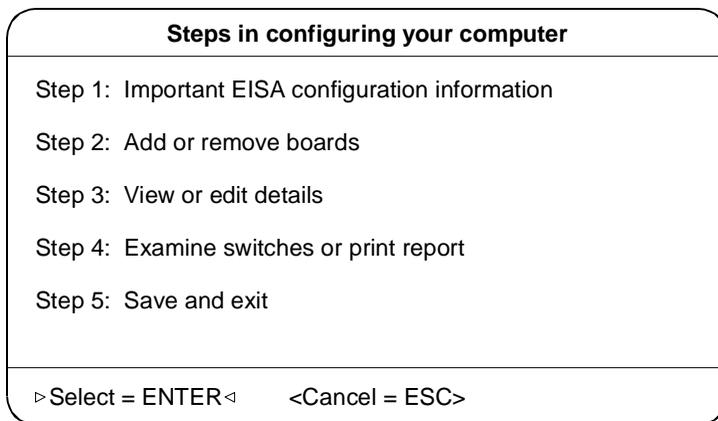
Learn About Configuring Your Computer

This item is highlighted when you first enter the main menu. It gives an overview on how to configure your computer with this utility. Press **Enter** to select this item. Then press the up arrow and down arrow keys to move up or down the text.

Configure Computer

This option allows you to view or change the system configuration. Highlight “Configure computer” from the main menu and press **Enter** to display the screen, as shown in the figure below.

Figure 5-2. Steps in Configuring Your Computer



See the following heading, “Configuring Your Computer “ for more information on configuring your computer.

Setting the Date and Time

The “Set date” and “Set time” options allow you to set your computer date and time. Once you set the date and time, your computer will keep track of it, even when the power is turned off.

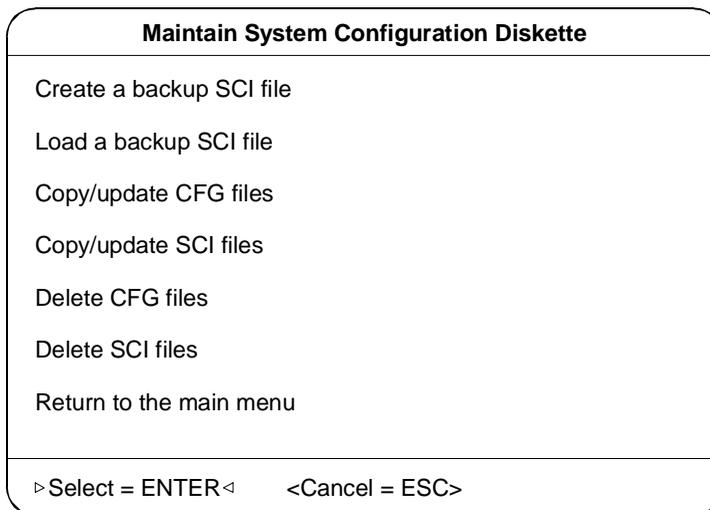
Note: If you want to set the date and time for your computer, you must do so before you configure the system.

Maintain System Configuration Diskette

The System Configuration diskette contains the Configuration Utility and CFG files. When you run the utility to configure your computer, the configuration information is stored in the computer's nonvolatile memory and in a system configuration information (SCI) file. This file is saved on the System Configuration diskette.

Select "Maintain system configuration diskette" from the main menu to display the screen, as shown in the figure below.

Figure 5-3. Maintain Configuration Diskette



Exit from this Utility

This selection exits the utility. The system reboots. If you do not have an operating system installed on your hard disk, replace the system utilities diskette in the diskette drive with an operating system diskette.

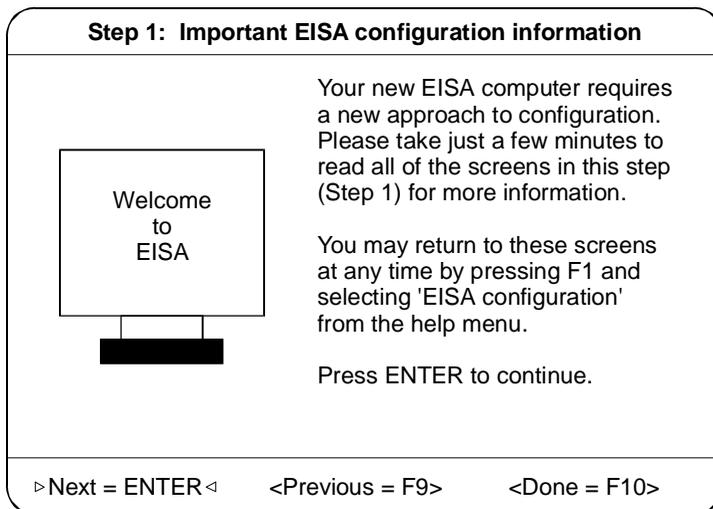
Note: All the ECU screens have a command bar at the bottom to guide you through the utility.

Configuring Your Computer Initially

To configure your computer for the first time, follow these steps:

1. Select “Configure computer” from the main menu. See the previous heading, “Accessing the ECU” on how to access the main menu. The “Steps in configuring your computer” screen displays.
2. Select “Step 1: Important EISA configuration information” from the menu to display the screen, as shown in the figure below.

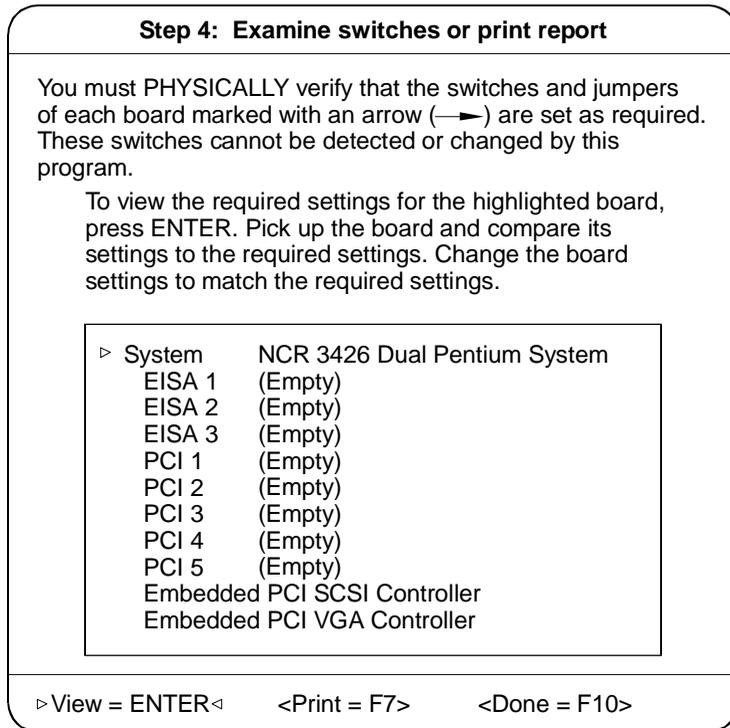
Figure 5-4. Important EISA Configuration Information



3. Read through the information and press **Esc** when finished.

4. Select “Step 4: Examine switches or print report,” and press **Enter** to display the screen as shown in the figure below.

Figure 5-5. Examine Switches or Print Report



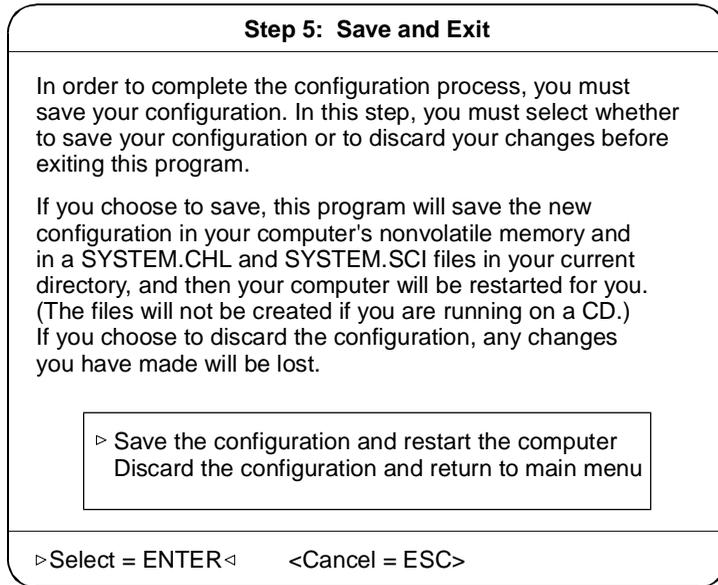
5. Notice the boards marked with an arrow on the screen, if any. The arrow indicates that the boards in your computer may have defined jumpers and switches that you must physically verify. It may also mean that there is a software statement with additional information about the board.
6. To view the switch and jumper settings, highlight the board marked with an arrow and press **Enter**. The switch/jumpers settings screen for the board displays.
7. Scroll through the switch and jumper settings for the board, and press **F10** when you have finished viewing the information.

8. To print the information, select Print by pressing **F7**. The “Print settings” screen displays.
 - If you have a printer attached to your computer, select “Print all configuration settings” or “Print settings for selected board or option,” and press **Enter** to print a hard copy of the switch and jumper settings and other configuration information.
 - If you do not have a printer, select “Print all configuration settings to a file” or “Print settings for selected board or option to a file.” A “Print information to TXT file” screen displays.
 - If you want to print the switch and jumper settings to a different diskette, insert a diskette in drive A and press **Enter**. Another “Print Information to TXT File” screen displays. Enter the name of your file or choose an existing filename and press **Enter**.

Note: If you inserted a different diskette, remember to reinsert the System Configuration diskette after printing is complete.
9. Press **F10** when you are through. The “Steps in configuring your computer” screen displays.

10. Select “Step 5: Save and exit” and press **Enter**. The screen, as shown in Figure 5-6, displays.

Figure 5-6. Save and Exit



11. To save your changes, select “Save the configuration and restart the computer” and press **Enter**. To discard the changes, choose “Discard the configuration and return to the main menu.” Any changes that you made are lost.
12. When the reboot screen displays, press **Enter**.
13. Turn off the computer and remove the System Configuration diskette.

Adding or Removing Boards

Each time you add or remove a board, you must reconfigure your server using the EISA Configuration Utility program.

Adding Boards

Note: If you are adding a PCI device or a plug-and-play ISA board, proceed to step 5.

PCI devices and plug-and-play (PnP) ISA boards do not require a corresponding CFG file. The configuration information is already stored on the board.

To add a board, follow these steps:

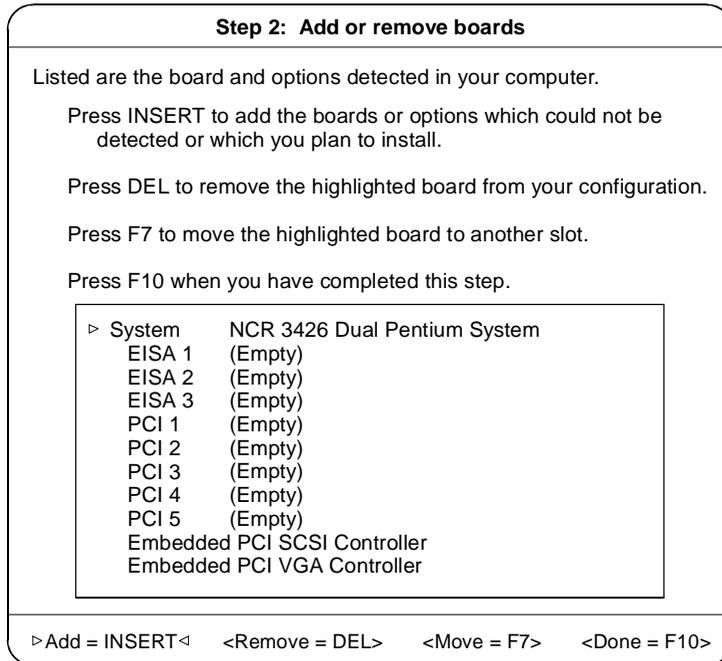
1. Select “Maintain system configuration diskette” from the main menu and press **Enter**.
2. From the screen that displays, select “Copy/Update CFG files” and press **Enter**. A list of CFG files from your system configuration diskette displays.

Note: The EISA Configuration Utility uses the CFG file to configure the board into the system without creating conflict with other boards or devices.

3. Select the appropriate CFG files and press **Enter** to return to the “Maintain system configuration diskette” screen.
4. Select “Return to the main menu” and press **Enter**.
5. From the main menu, select “Configure computer” and press **Enter**. The screen “Steps in configuring your computer” displays.

- Select “Step 2: Add or remove boards” and press **Enter** to display the screen as shown in the figure below.

Figure 5-7. Add or Remove Boards



The screen contains the configuration data that the ECU read from your CFG file. It includes the number of EISA slots and device controllers detected.

- If you want to add or have already added a board, highlight a slot and press **Insert** to select an option from the list that displays.
- Press **F10** when done.
- Follow steps 4 to 13 in the “Configuring Your Computer Initially” section to complete your configuration.

Removing a Board

When you remove a board, follow these steps:

1. Perform steps 5 and 6 in the “Adding or Removing Boards“ section.
2. Select the board that you want to remove from the configuration and press **Delete**. A remove confirmation screen displays.
3. Press **Enter**. The “Step 2: Add or remove boards” screen displays.
4. Press **F10** when complete.
5. Follow steps 4 to 13 in the “Configuring Your Computer Initially” section to complete your configuration.

Viewing or Editing Configuration Details

The ECU also allows you to view or edit your system configuration information. You may have to edit your system settings under the following conditions:

- When you add or remove boards
- When you make other hardware changes
- When there are device assignment conflicts

To view or edit your configuration, select “Step 3: View or edit details” from the main menu and press **Enter** to display the screen as shown in the figure below.

Figure 5-8. View or Edit Details

Step 3: View or edit details

Press ↑ and ↓ to see all information.

Press ENTER to edit the functions of the highlighted item.
 Press F6 to edit its resources (IRQs, DMAs, I/O ports, or memory).
 Press F10 when you have finished this step.

System - NCR 3426 Server
 System BIOS Type RAM BIOS Enable (128 K)
 System Processor Pentium at 166 MHz
 Special System Ports Special System Ports
 EISA Reserved Devices EISA Reserved Devices

System Memory Functions
 Base System Memory Enabled
 8 - 16 MB System Memory 8 MB system Memory
 16 - 64 MB System Memory Disabled
 64 - 128 MB System Memory Disabled
 128 - 192 MB System Memory Disabled
 192 - 256 MB System Memory Disabled
 256 - 320 MB System Memory Disabled
 320 - 384 MB System Memory Disabled
 384 - 448 MB System Memory Disabled
 448 - 512 MB System Memory Disabled

Mouse Port Enabled
 Keyboard Port Enabled
 Floppy Disk Controller Enabled
 IDE HDD Interface Enabled
 Parallel Port Enabled as LPT1 (3BCh)
 Serial Ports
 Select COM1 Port Address 3F8h
 Select COM2 Port Address 2F8h

▷Edit = ENTER◁ <Edit Resources = F6> <Advanced = F7> <Done = F10>

See the next page for continuation of the above screen.

Press ↑ and ↓ to see all information.

Press ENTER to edit the functions of the highlighted item.
Press F6 to edit its resources (IRQs, DMAs, I/O ports, or memory).
Press F10 when you have finished this step.

PCI 1 - PCI Raid Controller	Auto-Added
PCI Function 1	Enabled
PCI 2 - PCI Ethernet Controller	Auto-Added
PCI Function 1	Enabled
Embedded - PCI SCSI Controller	Auto-Added
PCI Function 1	Enabled
Embedded - PCI VGA Controller	Auto-Added
PCI Function 1	Enabled
Standard VGA Resources	Enabled

>Edit = ENTER< <Edit Resources = F6> <Advanced = F7> <Done = F10>

Note: The configuration data shown in Figure 5-8 depends on your CFG file and may not be identical to the one on your screen.

420-Watt Power Supply Requirements

Input Requirements

The following represent the input requirements of the 420-watt power supply:

- Maximum waveform harmonic distortion shall be less than 5%. The power supply must operate above frequency with both 100~120/200~240 VRMS input voltage ranges.
- The power supply must operate over both voltage ranges with an outside switch.

The table below shows the 420-watt power supply input requirements.

Table A-1. 420-Watt Power Supply Input Requirements

Input Frequency	Nominal Frequency	Frequency Variations
	50 Hz	47 Hz ~ 53 Hz
	60 Hz	57 Hz ~ 63 Hz
Input Voltage	Nominal Voltage	Variation Range
	100 ~ 120 VRMS	90 ~ 132 VRMS
	200 ~ 240 VRMS	180 ~ 264 VRMS
Input Current	Maximum Input Current	Measuring Range
	8 A	90 ~ 132 VRMS
	4 A	180 ~ 264 VRMS
Inrush Current	The power supply inrush current shall be less than the ratings of its critical components (including the fuse, rectifiers, and the surge-limiting device) for all conditions of line voltage.	
Efficiency	63% minimum (measuring at maximum load, applying nominal line)	

Output Requirements

The following represent the output requirements of the 420-watt power supply:

- Ripple and noise bandwidth is from DC to 20 MHz.
- +12V should provide 15 A surge current for the first 10 seconds after power on, and this regulation should be within $\pm 10\%$.
- Total power consumption is 420 watts.

The table below shows the 420-watt power supply output requirements (measured at output power connector).

Table A-2. 420-Watt Power Supply Output Requirements

Out-put	Nominal	Regulation	Minimum Output Load	Maximum Output Load	Ripple	Noise
1	+5 V	+5% to -3%	4.0 A	44 A	50 mV	100 mV
2	-5 V	+10% to -8%	0.0 A	0.5 A	100 mV	200 mV
3	+12 V	+5% to -4%	0.5 A	13 A	200 mV	200 mV
4	-12 V	+8% to -8%	0.0 A	1 A	120 mV	240 mV
5	+3.3 V	+4% to -4%	0.0 A	10 A	50 mV	80 mV

Output Requirements

Error Messages

Types of Error Messages

Do not continue using the computer if you receive an error message of any type. Note the message and take corrective action. This appendix explains the different types of error messages and corresponding corrective measures.

There are two general types of error messages:

- Software
- System

Software Error Messages

Software error messages are returned by your operating system or application. These messages typically occur after you boot the operating system or when you run your application programs. If you receive this type of message, consult your application or operating system manual for help.

System Error Messages

A system error message indicates a problem with the computer itself. A message of this type normally appears during the power-on self-test, before the operating system prompt appears.

The table below lists system error messages and the corresponding corrective measures.

Table B-1. Error Messages

Message	Action
CMOS battery error	Replace the RTC chip or contact your dealer.
CMOS checksum error	Check the RTC chip and the necessary jumper. If the battery is still good, run Setup.
Display card mismatch	Run Setup.
Diskette drive controller error or not installed	Check the control cable to the diskette controller.
Diskette drive error	Diskette may be bad. If not, replace the diskette drive or cable.
Diskette drive A type mismatch	Run Setup and select the proper drive type.
Diskette drive B type mismatch	Run Setup and select the proper drive type.
Equipment configuration error	Modify the memory configuration to agree with one of the options in the memory configuration shown in Table 2-2.
Hard disk controller error	Run Setup.
Hard disk 0 error	Check all cable connections. Replace hard disk.
Hard disk 1 error	Check all cable connections. Replace hard disk.
Keyboard error or no keyboard connected	Check and connect the keyboard to the system unit.
Keyboard interface error	Replace the keyboard or contact your dealer.

Message	Action
Memory error at: MMMM:SSSS:OOO (W:XXXX,R:YYYY) where M is MB, S is Segment, O is Offset, X/Y is write/read pattern	Check SIMMs on the system board. Contact your dealer.
Memory Size Mismatch CPU Clock Mismatch	Run Setup. Check if the values shown in the memory parameters are correct. If correct, exit Setup and reboot the system. If the error message reappears, seek technical assistance.
Onboard serial port 1 conflict	Run Setup and disable the port.
Onboard serial port 2 conflict	Run Setup and disable the port.
Onboard parallel port conflict	Run Setup and disable the port.
Pointing device error	Check and connect pointing device.
Pointing device interface error	Replace the pointing device or contact your dealer.
Press F1 key to continue or Ctrl-Alt-Esc for setup	Press F1 or Ctrl + Alt + Esc to enter Setup.
Real time clock error	Check the RTC chip. If it is still good, run Setup. If not, replace the RTC chip.

Correcting Error Conditions

As a general rule, if an error message says “Press F1 to continue,” it is caused by a configuration problem, which can be easily corrected. An equipment malfunction is more likely to cause a fatal error, that is, an error that causes complete system failure.

Here are some corrective measures for error conditions:

1. Run Setup. You must know the correct configuration values for your system before you enter Setup. Always write them down when the system is correctly configured.

Note: An incorrect configuration is a major cause of power-on error messages, especially for a new system.

2. Remove the system cover. Check that the jumpers on the system board and any expansion boards are set correctly.
3. If you cannot access a new disk, it may be because your disk is not properly formatted. Format the disk first using the FDISK and FORMAT commands.
4. Check that all connectors and boards are securely plugged in.

If you go through the corrective steps above and still receive an error message, the cause may be an equipment malfunction.

If you are sure that your configuration values are correct and your battery is in good condition, the problem may lie in a damaged or defective chip.

In either case, contact an authorized service center for assistance.

Sample Configurations

Types of Sample Configurations

Two sample configurations are discussed in this appendix:

- Standard Configuration
- RAID Configuration

Use the sample configurations to help configure your system.

Sample Standard Configuration

A standard configuration might consist of the following:

- Pentium 166 MHz processor
- 32 MB system memory
- PCI Ethernet adapter (SMC8432BTA)
- PCI Token Ring adapter (Olicom OC-3136)
- 2 GB SCSI Fast and Wide disk drive connected to the integrated Adaptec 7880 PCI SCSI controller
- SCSI CD-ROM drive connected to the integrated Adaptec 7880 PCI SCSI controller

Following are the steps to install and configure this sample configuration.

Installing the Hardware

To install the hardware, follow these steps:

1. Strap the 2 GB SCSI disk drive as SCSI ID 0 and the SCSI CD-ROM drive as SCSI ID 5. (See the documentation that came with your drives for strapping information.)
2. Install the 2 GB SCSI disk drive in a hot plug carrier and install in the top hot plug bay.
3. Install the SCSI CD-ROM drive in the top front drive bay.
4. Connect power cables and SCSI cables to the SCSI CD-ROM drive. A Fast/Wide SCSI cable should already be connected from the Adaptec controller on the baseboard to the hot plug backplane.
5. Install the memory SIMMs in bank 1 on the system baseboard (installed in groups of two SIMMs).
6. Install the PCI Ethernet Adapter in PCI slot 1 (topmost PCI slot).

7. Install the PCI Token Ring Adapter in PCI slot 2 (below the PCI Ethernet adapter).

Configuring the System Settings

To configure the system settings in the BIOS Setup Utility, follow these steps:

1. Turn on power to the system. Observe that the memory test is executed (memory addresses should be rapidly displayed in upper left-hand corner of screen). Ignore any memory size mismatch error displayed on the screen.
2. Press **Ctrl + Alt + Esc** when prompted to enter the BIOS Setup Utility.
3. Select Load System Defaults and press **Enter**.

Basic System Configuration

1. Select Basic System Configuration. To go from page to page, press **Page Down** or **Page Up**.
2. Go to page 2 and set parameters as follows (in the order indicated):

Fast Boot Mode	[Disabled]
Auto Configuration Mode	[Disabled]
Memory Test	[Disabled]
Num Lock After Boot	[Enabled]
Large Memory Support	[Advanced]
On Board IDE	[Disabled]
Hard Disk Size > 504 MB	[Disabled]
Hard Disk Block Mode	[Disabled]

3. Return to page 1, and set parameters as follows:

Diskette Drive A	[1.44 MB 3.5-inch]
Diskette Drive B	[None]

4. Press **Esc** to return to the main menu in BIOS Setup.

Advanced System Configuration

1. Select Advanced System Configuration.

Page 1 - Verify that the parameters are set as follows:

C8000h - CBFFFh	[Disabled]
CC000h - CFFFFh	[Disabled]
D0000h - D3FFFh	[Disabled]
D4000h - D7FFFh	[Disabled]
D8000h - DBFFFh	[Disabled]
Internal Cache (CPU Cache)	[Enabled]
External Cache	[Enabled]
ECC/Parity Mode Selection	[ECC]
Operation of ECC	[Both]
Memory at 15 MB-16 MB Reserved for	[System] Use

2. Press **Esc** to return to the main menu in BIOS Setup.

Non-PnP ISA Card Configuration

1. Select Non-PnP ISA Card Configuration. For all non-PnP ISA boards, set the IRQ/DMA, the Expansion ROM Region, and the I/O Region.

Note: Configure all non-PnP ISA boards with straps and/or driver software. These BIOS settings are only used by the BIOS Setup to reserve settings that are being used by non-PnP ISA boards.

2. Press **Esc** to return to the BIOS Setup main menu.

Power Saving Configuration

1. Select Power Saving Configuration. Set the parameters as follows:

Power Management Mode... [Disabled]

2. Press **Esc** to return to the BIOS Setup main menu.

Remote Diagnostic Configuration

1. Select Remote Diagnostic Configuration. Set the parameters as follows:

RDM Mode Number [Disabled]

Note: Refer to the NCR ValuePlus CD for BackOffice, Release 4.2, *User's Guide* for information on configuring this for remote diagnostic management.

2. Press **Esc** to return to the BIOS Setup main menu.

System Security

1. Select System Security. On Page 1, set the parameters as follows:

Disk Drive Control

Diskette Drive [Normal]

Hard Disk Drive [Normal]

System Boot Drive [Drive A Then C]

On Board Communication Ports

Serial Port 1 Base Address [3F8h]

Serial Port 2 Base Address [2F8h]

Parallel Port Base Address [3BCh (IRQ 7)]

Operation Mode [Stdnd PP (SPP)] Mode

ECP DMA Channel [-]

On Board PS/2 Mouse (IRQ 12)	[Enabled]
Setup Password	[None]
Power On Password	[None]

2. Press **Esc** to return to the main menu in BIOS Setup.

Configuring the PCI Adapters

To configure the PCI adapters, follow these steps:

1. Select PCI System Configuration from the main menu in BIOS Setup.
2. Change the PCI IRQ Setting to [Manual]. Then use the up and down arrow keys to select the PCI slot number. Use the right and left arrow keys to change the IRQ Level for INTA Pin settings.
 - Available IRQ settings for primary PCI Bus (Slots 1 and 2, video, and SCSI) are 3, 4, 5, 7, 9, 10, 11, 14, and 15.
 - Available IRQ settings for secondary PCI Bus (Slots 3, 4, and 5) are 4, 9, 10, 11, 14, and 15.
 - To make IRQ 3 available for selection, you must disable Serial Port 2 in the System Security menu.
 - To make IRQ 4 available for selection, you must disable Serial Port 1 in the System Security menu.
 - To make IRQ 7 available for selection, you must disable Parallel Port 1 in the System Security menu.
 - To make IRQ 14 available for selection, you must disable On Board IDE in the Basic System Configuration menu.
3. Make the following settings:
 - PCI IRQ Setting to Manual
 - PCI slot 1 (PCI Ethernet Adapter SMC8432BTA) to IRQ 9
 - PCI slot 2 (PCI Token Ring Adapter Olicom OC-3136) to IRQ 10
 - PCI slot 3 to --

- PCI slot 4 to --
- PCI slot 5 to --
- On Board VGA to 5
- On Board SCSI to IRQ 11
- VGA Palette Snoop to Disabled
- On Board SCSI to Enabled
- Boot Drive to Enabled

When you finish, the screen should look like the following:

PCI IRQ Setting	[Manual]
	INTA INTB INTC INTD
PCI Slot 1	[9] [10] [9] [11]
PCI Slot 2	[10] [9] [11] [5]
PCI Slot 3	[--] [--] [--] [--]
PCI Slot 4	[--] [--] [--] [--]
PCI Slot 5	[--] [--] [--] [--]
On Board VGA	[5]
On Board SCSI	[11]
VGA Palette Snoop	[Disabled]
On Board SCSI	[Enabled]
Boot Device	[Enabled]

4. Press **Esc** to return to the main menu in BIOS Setup.
5. Press **Esc**, again. Select Yes to save System Settings and PCI Adapter settings, and to reboot the system.

Configuring the SCSI Adapters and Drives

After configuring the System Settings and PCI Adapter settings using the BIOS Setup Utility, the system reboots.

To configure the SCSI adapters and drivers, if connected to an Adaptec SCSI adapter, follow these steps:

1. Press **Ctrl + A** when the following displays:

```
Adaptec AIC-7880 Ultra/Ultra Wide BIOS v1.22S2
<<Press hot key for SCSI Select (TM) Utility>>
```

(Refer to the Adaptec SCSI documentation for additional information about these settings).

2. Select SCSI Disk Utilities. Observe that the 2 GB disk drive and the CD-ROM drive are displayed with the correct information. If a low-level format on the 2 GB disk drive is needed, perform it now. It is usually not needed.
3. Select Configure/View Host Adapter Settings and set the parameters as follows:

SCSI Bus Interface Definitions

Host Adapter SCSI ID	[7]
SCSI Parity Checking	[Enabled]
Host Adapter SCSI Term	[Low OFF/High ON]

Boot Device Options:

Boot Target ID	[0]
Boot LUN Number	[0]

4. Select SCSI Device Configuration and set the parameters as follows:

SCSI Device ID (tab to desired device)

Initiate Sync Negotiation	[yes]
Maximum Sync Transfer Rate*	[40]
Enable Disconnection	[yes]
Initiate Wide Negotiation	[yes]
Send Start Unit Command	[yes]

***Note:** See note in step 6.

5. Press **Esc** to return to previous menu.
6. Select Advanced Configuration Options and set the parameters as follows:

Host Adapter BIOS (Config Util...)	[Enabled]
Support Removable Disks...	[Boot Only]
Extended BIOS Translation...	[Enabled]
Display <CTRL-A> Message During BIOS Initialization...	[Enabled]
Multiple LUN Support	[Disabled]
BIOS Support for Bootable CD-ROM	[Disabled]
BIOS Support for Int13 Extension	[Enabled]
Support for Ultra SCSI Speed*	[Enabled]

Note: Set to Disabled if using external SCSI devices.

7. Press **Esc** to return to previous menu.
8. Press **Esc** until prompted to save configuration. Save the configuration and the system reboots.

If the ECU Will Not Boot

Sometimes the EISA Configuration Utility (ECU) will not boot. If this happens, perform the following procedure:

1. Using the BIOS Setup Utility, disable all PCI adapters.
2. Boot the EISA Configuration Utility.
3. Configure the system.
4. Return to the BIOS Setup Utility, and re-enable the PCI adapters.

Configuring Memory and Other Baseboard Settings

To configure memory and other baseboard settings, follow these steps:

1. Insert the EISA Configuration Utility in the diskette drive. Observe that the EISA Configuration Utility boots properly.
2. Select NCR 3426 Dual Pentium System from the Advanced Configuration menu.

Note: Refer to the “Viewing or Editing Configuration Details” section in Chapter 5 for additional information on configuring memory.

The PCI Adapter IRQ values entered below do **not** set the IRQ level for PCI Adapters.

Note: PCI Adapter IRQ settings are set in the BIOS Setup Utility. You enter the IRQ settings in the EISA Configuration Utility so that the EISA Configuration Utility does not assign IRQ values to EISA Adapters that have already been used for PCI Adapters.

Make sure the parallel port and serial ports are configured the same way as in the BIOS Setup Utility.

3. Configure the baseboard options as follows:

System BIOS Type	[RAM BIOS Enabled]
System Processor	[Pentium at 166 MHz]
Special System Parts	[Special System Parts]
EISA Reserved Devices	[EISA Reserved Devices]
System Memory Function	
Base System Memory	[640K Base Mem]
8-16 MB System Memory	[16 MB System Memory]
16-64 MB System Memory	[Enabled]

Note: You should manually configure the system memory by enabling appropriate memory ranges and using **Ctrl + R** to configure the memory site within these memory ranges.

Mouse Port	[Enabled]
Keyboard Port	[Enabled]
Floppy Disk Controller	[Enabled]

Sample Standard Configuration

IDE HDD Interface	[Disabled]
Parallel Port	[Enabled as LPT1 (3BCh)]
Serial Port	
Select COM1 Port Address	[3F8h]
Select COM2 Port Address	[2F8h]
PCI 1 - PCI Ethernet CControl	[Auto Added]
PCI Function 1	[Enabled]
PCI 2 - PCI Token Ring	[Auto Added]
PCI Function 1	[Enabled]
Embedded - PCI SCSI	[Auto Added]
PCI Function 1	[Enabled]
Embedded - PCI VGA	[Auto Added]
PCI Function 1	[Enabled]
Standard VGA Resources	[Enabled]

***Note:** If a PCI adapter is configured in the system, it will be displayed in one of the PCI slots. Select [F6] to configure the interrupt.

4. Exit and save the configuration.

The server is now set up, configured, and ready for the operating system.

Sample RAID Configuration

A RAID configuration might consist of the following:

- Pentium Pro 200 MHz Processor w/ECC Mem Support
- 128 MB System Memory
- PCI Ethernet Adapter (SMC8432BTA)
- PCI Token Ring Adapter (Olicom OC-3136)
- PCI RAID Adapter (Mylex)
- Four 4 GB SCSI wide hard drives connected to the Mylex RAID controller
- SCSI CD-ROM drive connected to the onboard AIC-7880 SCSI controller

Installing the Hardware

To install the hardware, follow these steps:

1. Combine the hot plug backplane.
2. Connect a wide SCSI cable between the Mylex PCI RAID adapter and the top SCSI connector on the hot plug backplane. (If a wide SCSI cable is connected between the system board and the top SCSI connector on the hot plug backplane, remove this cable.)
3. Strap the CD-ROM drive as SCSI ID 3. Insert it into the top, front 5.25-inch drive bay. Connect the power cable and the narrow SCSI cable to the CD-ROM drive.
4. Strap the four 4 GB wide drives as SCSI IDs 0, 1, 2, 3. Plug them into the hot plug backplane in drive bays 1, 2, 3, and 4 (top four hot-plug drive bays).
5. Install the memory SIMMs in banks one and two on the system baseboard (installed in groups of two SIMMs).
6. Install the PCI RAID Adapter in PCI slot 1 (topmost PCI slot).
7. Install the PCI Token Ring Adapter in PCI slot 2.

8. Install the PCI Ethernet Adapter in PCI slot 3.

Configuring the System Settings

The procedure is the same as the procedure for configuring the system settings in the Standard Configuration. The procedure is repeated here for your convenience.

To configure the system settings, follow these steps:

1. Turn on power to the system. Observe that the memory test is executed (memory addresses should be rapidly displayed in upper left-hand corner of screen). Ignore any memory size mismatch error displayed on the screen.
2. Press **Ctrl + Alt + Esc** when prompted to enter the BIOS Setup Utility.
3. Select Load System Defaults and press **Enter**.

Basic System Configuration

1. Select Basic System Configuration. To go from page to page, press **Page Down** or **Page Up**.
2. Go to page 2 and set parameters as follows (in the order indicated):

Fast Boot Mode	[Disabled]
Auto Configuration Mode	[Disabled]
Memory Test	[Disabled]
Num Lock After Boot	[Enabled]
Large Memory Support	[Advanced]
On Board IDE	[Disabled]
Hard Disk Size > 504 MB	[Disabled]
Hard Disk Block Mode	[Disabled]

- Return to page 1, and set parameters as follows:

Diskette Drive A	[1.44 MB 3.5-inch]
Diskette Drive B	[None]

- Press **Esc** to return to the main menu in BIOS Setup.

Advanced System Configuration

- Select Advanced System Configuration.

Page 1 - Verify that the parameters are set as follows:

C8000h - CBFFFh	[Disabled]
CC000h - CFFFFh	[Disabled]
D0000h - D3FFFh	[Disabled]
D4000h - D7FFFh	[Disabled]
D8000h - DBFFFh	[Disabled]
Internal Cache (CPU Cache)	[Enabled]
External Cache	[Enabled]
ECC/Parity Mode Selection	[ECC]
Operation of ECC	[Both]
Memory at 15 MB-16 MB Reserved for	[System] Use

- Press **Esc** to return to the main menu in BIOS Setup.

Non-PnP ISA Card Configuration

- Select Non-PnP ISA Card Configuration. For all non-PnP ISA boards, set the IRQ/DMA, the Expansion ROM Region, and the I/O Region.

Note: Configure all non-PnP ISA boards with straps and/or driver software. These BIOS settings are only used by the BIOS Setup to reserve settings that are being used by non-PnP ISA boards.

- Press **Esc** to return to the BIOS Setup main menu.

Power Saving Configuration

1. Select Power Saving Configuration. Set the parameters as follows:

Power Management Mode... [Disabled]

2. Press **Esc** to return to the BIOS Setup main menu.

Remote Diagnostic Configuration

1. Select Remote Diagnostic Configuration. Set the parameters as follows:

RDM Mode Number [Disabled]

Note: Refer to the NCR ValuePlus CD for BackOffice, Release 4.2, *User's Guide* for information on configuring this setting for remote diagnostic management.

2. Press **Esc** to return to the BIOS Setup main menu.

System Security

1. Select System Security. On Page 1, set the parameters as follows:

Disk Drive Control

Diskette Drive [Normal]

Hard Disk Drive [Normal]

System Boot Drive [Drive A Then C]

On Board Communication Ports

Serial Port 1 Base Address [3F8h]

Serial Port 2 Base Address [2F8h]

Parallel Port Base Address [3BCh (IRQ 7)]

Operation Mode [Stdnd PP (SPP)] Mode

ECP DMA Channel [-]

On Board PS/2 Mouse (IRQ 12)	[Enabled]
Setup Password	[None]
Power On Password	[None]

2. Press **Esc** to return to the main menu in BIOS Setup.

Configuring the PCI Adapters

To configure the PCI adapters, follow these steps:

1. Select PCI System Configuration from the main menu in BIOS Setup.
2. Change the PCI IRQ Setting to [Manual]. Then use the up and down arrow keys to select the PCI slot number. Use the right and left arrow keys to change the IRQ Level for INTA Pin settings.
 - Available IRQ settings for primary PCI Bus (Slots 1 and 2, video, and SCSI) are 3, 4, 5, 7, 9, 10, 11, 14, and 15.
 - Available IRQ settings for secondary PCI Bus (Slots 3, 4, and 5) are 4, 9, 10, 11, 14, and 15.
 - To make IRQ 3 available for selection, you must disable Serial Port 2 in the System Security menu.
 - To make IRQ 4 available for selection, you must disable Serial Port 1 in the System Security menu.
 - To make IRQ 7 available for selection, you must disable Parallel Port 1 in the System Security menu.
 - To make IRQ 14 available for selection, you must disable On Board IDE in the Basic Security Configuration menu.
3. Make the following settings:
 - PCI IRQ setting to Manual
 - PCI slot 1 (Mylex PCI RAID Adapter) to IRQ 14
 - PCI slot 2 (PCI Token Ring Adapter Olicom OC-3136) to IRQ 10
 - PCI slot 3 (PCI Ethernet Adapter SMC8432BTA) to IRQ 9
 - On Board VGA to IRQ 5

- On Board SCSI to IRQ 11
- VGA Palette Snoop to Disabled
- On Board SCSI AIC-7880 to Enabled
- Boot Device to Disabled

When you finish, the screen should look like the following:

PCI IRQ Setting	[Manual]
	INTA INTB INTC INTD
PCI Slot 1	[14] [10] [5] [11]
PCI Slot 2	[10] [5] [11] [14]
PCI Slot 3	[9] [--] [--] [10]
PCI Slot 4	[--] [--] [10] [9]
PCI Slot 5	[--] [10] [9] [--]
On Board VGA	[5]
On Board SCSI	[11]
VGA Palette Snoop	[Disabled]
On Board SCSI	[Enabled]
Boot Device	[Disabled]

4. Press **Esc** to return to the main menu in BIOS Setup.
5. Press **Esc** again. Select Yes to save System Settings and PCI Adapter settings and to reboot the system.

Configuring the SCSI Adapters and Drives

After configuring the System Settings and PCI Adapter settings using the BIOS Setup Utility, the system reboots.

To configure the SCSI adapters and drivers, if connected to an Adaptec SCSI adapter, follow these steps:

1. Press **Ctrl + A** when the following displays:

```
Adaptec AIC-7880 Ultra/Ultra Wide BIOS v1.22S2
<<Press hot key for SCSI Select (TM) Utility>>
```

(Refer to the Adaptec SCSI documentation for additional information about these settings).

2. Select SCSI Disk Utilities. Observe that the 2 GB disk drive and the CD-ROM drive are displayed with the correct information. If a low-level format on the 2 GB disk drive is needed, perform it now. It is usually not needed.
3. Select Configure/View Host Adapter Settings and set the parameters as follows:

SCSI Bus Interface Definitions

Host Adapter SCSI ID	[7]
SCSI Parity Checking	[Enabled]
Host Adapter SCSI Term	[Low ON/High ON]

Boot Device Options:

Boot Target ID	[0]
Boot LUN Number	[0]

4. Select SCSI Device Configuration and set the parameters as follows:

SCSI Device ID (tab to desired device)

Initiate Sync Negotiation	[yes]
Maximum Sync Transfer Rate*	[40]
Enable Disconnection	[yes]
Initiate Wide Negotiation	[yes]
Send Start Unit Command	[yes]

***Note:** See note in step 6.

5. Press **Esc** to return to previous menu.

6. Select Advanced Configuration Options and set the parameters as follows:

Host Adapter BIOS (Config Util...)	[Enabled]
Support Removable Disks...	[Boot Only]
Extended BIOS Translation...	[Enabled]
Display <CTRL-A> Message During BIOS Initialization...	[Enabled]
Multiple LUN Support	[Disabled]
BIOS Support for Bootable CD-ROM	[Disabled]
BIOS Support for Int13 Extension	[Enabled]
Support for Ultra SCSI Speed*	[Enabled]

***Note:** Set to Disabled if using external SCSI devices.

7. Press **Esc** to return to previous menu.
8. Press **Esc** until prompted to save configuration. Save the configuration and the system reboots.

Configuring the Memory and Other Baseboard Settings

The procedure is the same as the procedure for configuring memory and other baseboard settings in the Standard Configuration. The procedure is repeated for your convenience.

Sometimes the EISA Configuration Utility will not boot. If this happens, perform the following procedure:

1. Using the BIOS Setup Utility, disable all PCI adapters.
2. Boot the EISA Configuration Utility.
3. Configure the system.
4. Return to the BIOS Setup Utility, and re-enable the PCI adapters.

To configure memory and other baseboard settings, follow these steps:

1. Insert the EISA Configuration Utility in the diskette drive. Observe that the EISA Configuration Utility boots properly.

2. Select NCR 3426 Dual Pentium Pro System from the Advanced Configuration menu.

Note: Refer to Chapter 5 for instructions on configuring the memory correctly.

The PCI Adapter IRQ values entered below do **not** set the IRQ level for PCI Adapters.

Note: PCI Adapter IRQ settings are set in the BIOS Setup Utility. You enter the IRQ settings in the EISA Configuration Utility so that the EISA Configuration Utility does not assign IRQ values to EISA Adapters that have already been used for PCI Adapters.

Make sure the parallel port and serial ports are configured the same way as in the BIOS Setup Utility.

3. Configure the baseboard options as follows:

System BIOS Type	[RAM BIOS Enabled]
System Processor	[Pentium Pro at 200 MHz]
Special System Parts	[Special System Parts]
EISA Reserved Devices	[EISA Reserved Devices]
System Memory Function	
Base System Memory	[640K Base Mem]
8-16 MB System Memory	[16 MB System Memory]
16-64 MB System Memory	[Enabled]

Note: You should manually configure the system memory by enabling appropriate memory ranges and using **Ctrl + R** to configure the memory site within these memory ranges.

Mouse Port	[Enabled]
Keyboard Port	[Enabled]
Floppy Disk Controller	[Enabled]
IDE HDD Interface	[Disabled]
Parallel Port	[Enabled as LPT1 (3BCh)]

Serial Port	
Select COM1 Port Address	[3F8h]
Select COM2 Port Address	[2F8h]
PCI 1 - PCI Raid CControlSlot 1*	[Auto Added]
PCI Function 1	[Enabled]
PCI 2 - PCI Ethernet CControlSlot 1*	[Auto Added]
PCI Function 1	[Enabled]
PCI 3 - PCI Token Ring	[Auto Added]
PCI Function 1	[Enabled]
Embedded - PCI SCSI	[Auto Added]
PCI Function 1	[Enabled]
Embedded - PCI VGA	[Auto Added]

***Note:** If a PCI adapter is configured in the system, change Disabled to Enabled and press **F6** to select the interrupt.

4. Exit and save the configuration.

The server is now setup, configured, and ready for the operating system.

Configuring the Mylex RAID Array Group

Prior to installing the operating system, you must use the Mylex Disk Array Configuration Utility to configure the Array Group.

With four drives connected to the Mylex, one possible configuration is to combine three of the drives in a RAID 5 configuration, with the fourth drive reserved as a Hot Spare drive.

After the operating system is installed, make sure the Mylex DACADM and DACMON utilities are loaded. If a drive fails, these utilities can be used to rebuild the RAID 5 configuration with the hot spare drive, without interrupting operation of the operating system and user applications.

Refer to the *Mylex Disk Array Controller User's Manual* for detailed instructions.

Hot Plug Backplane

Features

The hot plug ultra-wide SCSI backplane subsystem consists of a BP-W8 backplane and drive trays that support wide SCSI hard drives. It is specifically designed for a tower housing (IDUN) and accommodates up to eight SCSI drives.

The backplane subsystem has the following major features:

- Hot plug feature that allows replacement of a defective hard drive even while the system is in full operation
- Two LEDs on the SCSI drive front panel to indicate power and drive failure
- Supports ultra-fast/wide (16-bit) devices
- Allows “split” and “combine” SCSI-channel configurations
- Fixed 2.85-volt and controlled impedance of 90 ~ 110 ohms for more stable hard disk performance (For ultra SCSI, the impedance is $90 \pm 10\%$)
- Supports other external SCSI devices that are not directly connected to the backplane board

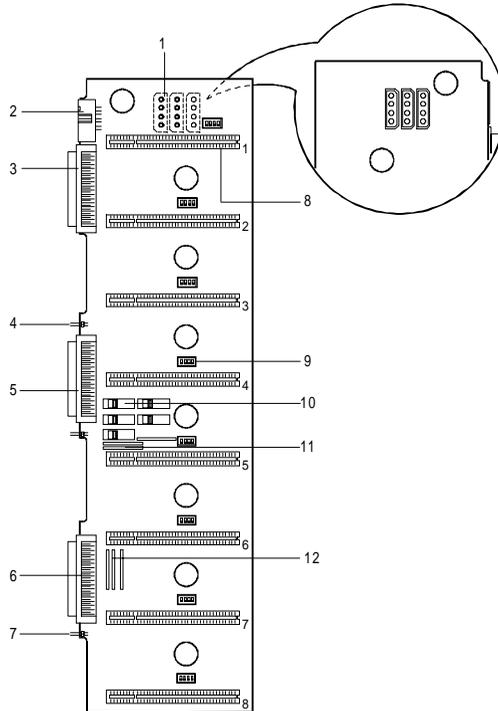
Major Components

This section describes the major components of the hot plug backplane.

Hot Plug Backplane

The figure below illustrates components of the hot plug backplane.

Figure D-1. Hot Plug Backplane Components

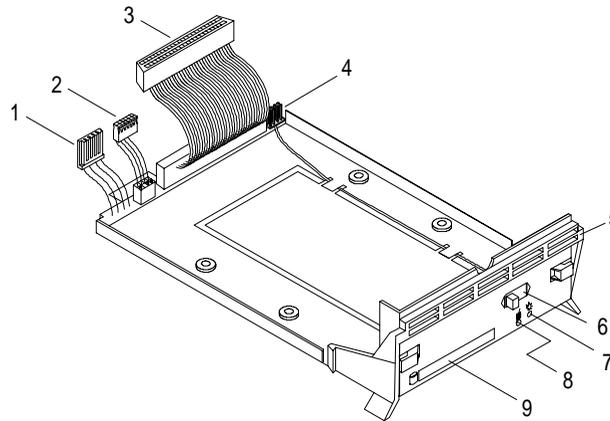


Item	Description	Item	Description
1	Power connector	7	J4
2	Front panel LED connector	8	SCSI drive slot
3	SCSI channel 1	9	Drive ID DIP switches (JB1-8)
4	J3	10	Terminators switches (SW1-5)
5	SCSI channel 2	11	Terminators RA4, RA5, RA6
6	SCSI channel 3	12	Terminators RA1, RA2, RA3

Hot Plug SCSI Drive Tray

The backplane subsystem comes with a 68-pin wide SCSI drive tray connector.

Figure D-2. Hot Plug SCSI Drive Tray Components



Item	Description	Item	Description
1	Power connector	6	Power switch
2	8/12-pin wide SCSI ID cable	7	Power LED
3	68-pin wide-SCSI connector	8	Faulty drive LED
4	Power control connector (J4)	9	Drive activity LED window
5	Drive tray handle		

SCSI Channel Configurations

The backplane SCSI channels 1 and 2 can support eight SCSI devices. You can configure the backplane as single-channel (combine) or dual-channel (split) controller.

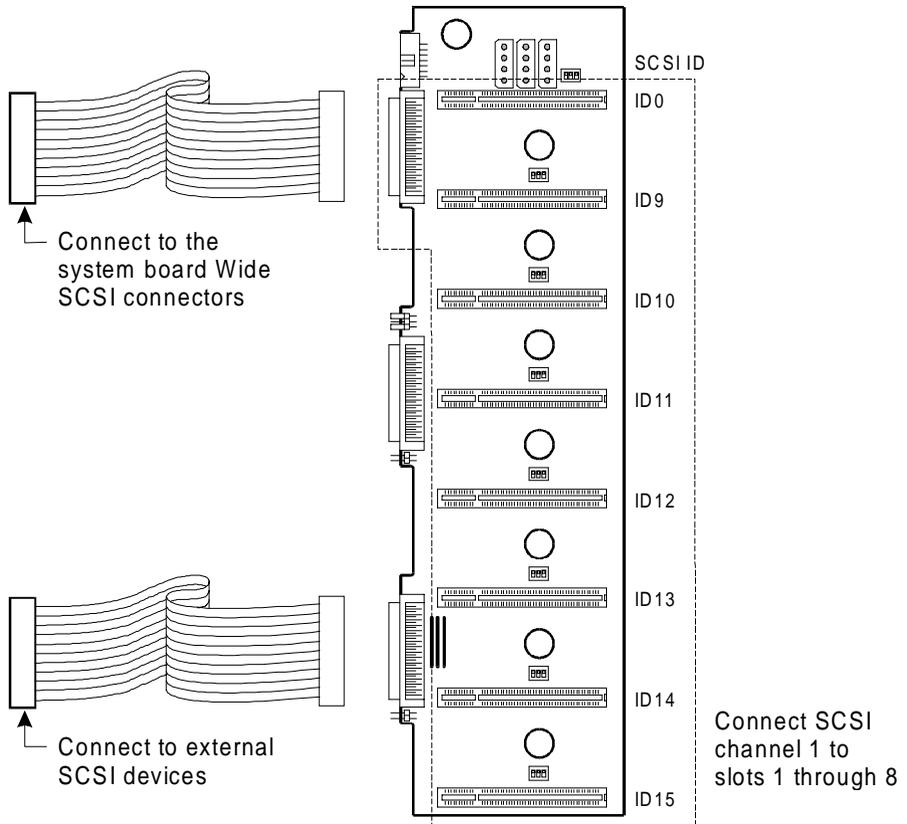
In single-channel configuration, channel 1 supports the SCSI devices plugged into slots 1 through 8.

In a dual-channel configuration, channel 1 supports the devices in slots 1 through 4, and channel 2 supports the devices in slots 5 through 8.

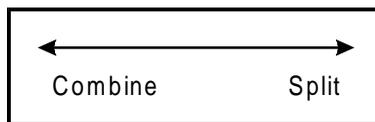
Single-Channel Configuration

The figure below illustrates a single-channel configuration.

Figure D-3. Single-Channel Configuration

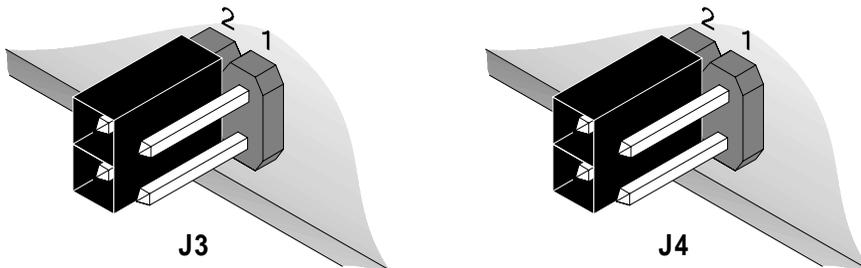


Set the terminator switches to “Combine” for Single-Channel.



Connect the second set pins for both jumpers J3 and J4 as shown in the figure below.

Figure D-4. J3 and J4 Jumper Settings



The table below lists the terminator settings for the single-channel configuration.

Table D-1. Terminator Settings for Single-Channel Configuration

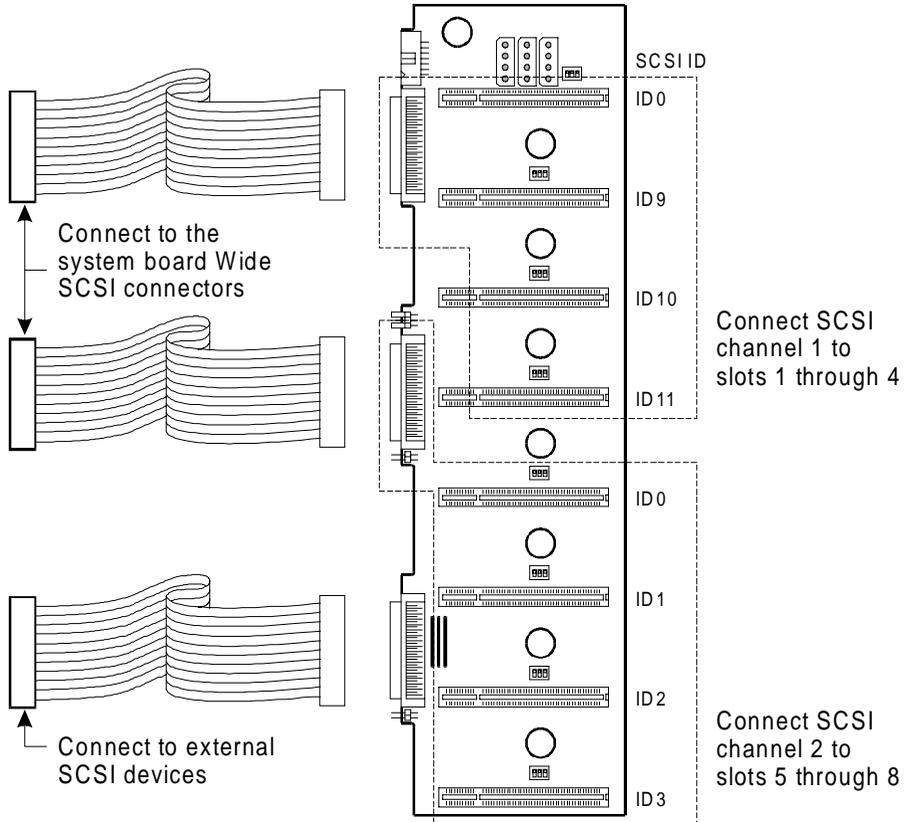
Terminator	Setting
With External Device	
RA1, RA2, RA3	Removed
RA4, RA5, RA6	Removed (see note)
Without External Device	
RA1, RA2, RA3	Installed
RA4, RA5, RA6	Removed

Note: For configurations with external device, terminate the signal at the external device. Also, be sure the terminator switches are set to the left (combine) position when installing a single-channel configuration.

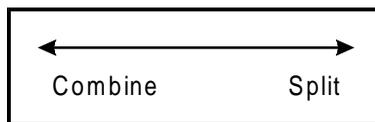
Dual-Channel Configuration

The figure below illustrates a dual-channel configuration

Figure D-5. Dual-Channel Configuration

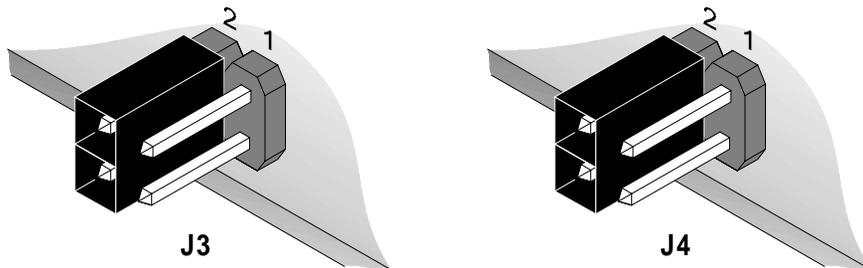


Set the terminator switches to “Split” for Dual-Channel.



Connect the second set pins for both jumpers J3 and J4 as shown in the figure below.

Figure D-6. J3 and J4 Jumper Settings



The table below lists the terminator settings for the dual-channel configuration.

Table D-2. Terminator Settings for Dual-Channel Configuration

Terminator	Setting
With External Device	
RA1, RA2, RA3	Removed
RA4, RA5, RA6	Installed
Without External Device	
RA1, RA2, RA3	Installed
RA4, RA5, RA6	Installed

Note: Be sure the terminator switches are set to the right (split) position when installing a dual-channel configuration.

Setting Hard Disk ID Options

You have two options in setting the hard disk ID:

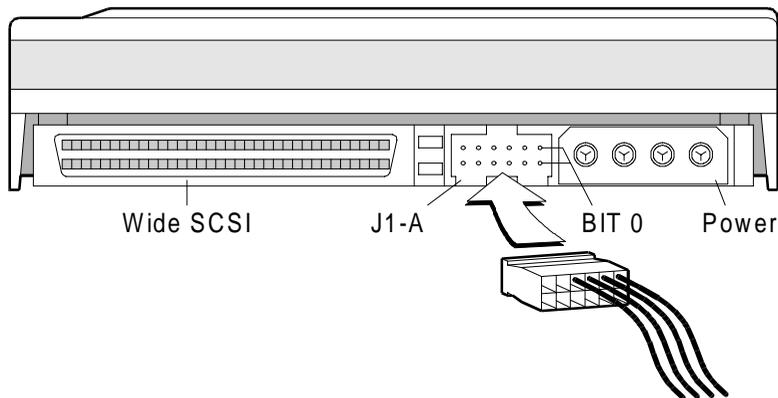
- Strapping the SCSI IDs on the hotplug backplane
- Strapping the SCSI IDs on the drive

Strapping the SCSI IDs on the Backplane

The wide SCSI hot-swap drive tray includes an 8/12-pin ID cable. See item 2 on Figure D-2. This cable allows you to define the hard disk ID using the ID switches (see item 9 in Figure D-1) on the backplane board.

The figure below shows how to connect the 8/12-pin ID cable to the drive.

Figure D-7. Connecting the ID Cable to the Drive

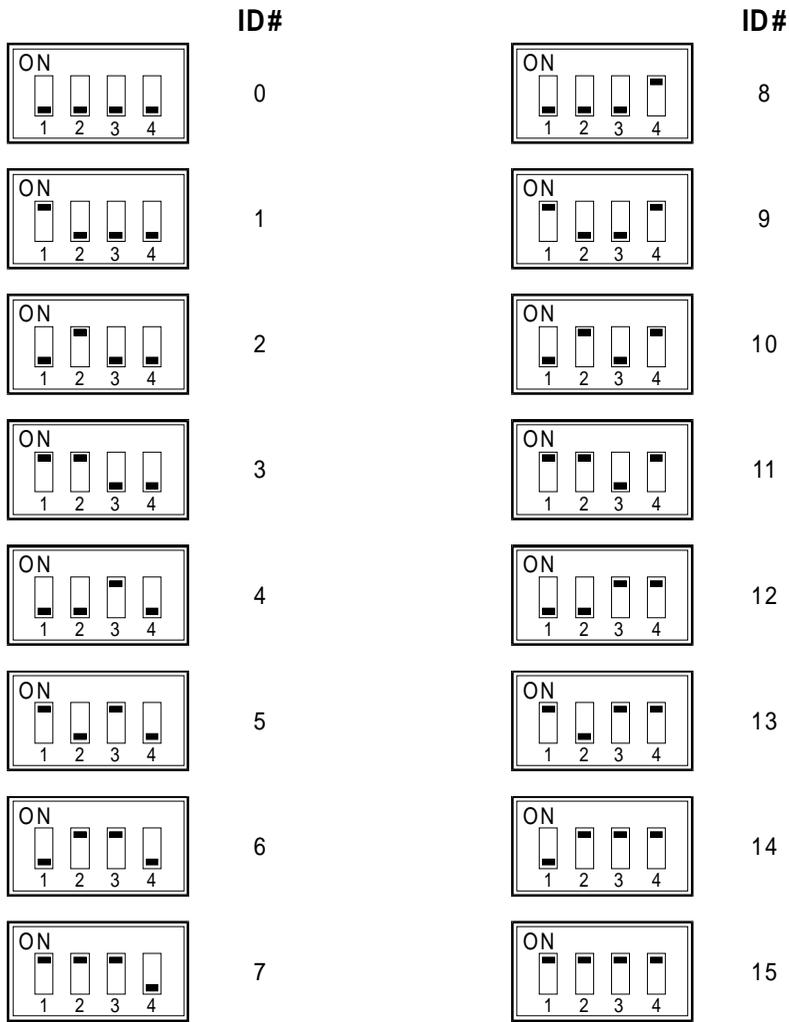


The other end of the ID cable connects to the hot plug drive tray. See item 2 in Figure D-2.

Note: Normally, SCSI ID7 is reserved for the SCSI controller board.

The figure below shows how to set the dip switches for the SCSI drive ID. See item 9 in Figure D-1 for the location of the dip switches on the backplane board.

Figure D-8. SCSI ID Switch Settings



Strapping the SCSI IDs on the Drive

You can use connector J1-A (see Figure D-7) to configure the SCSI IDs. See the table below.

Table D-3. SCSI Drive ID Settings

SCSI ID	Bit3	Bit 2	Bit 1	Bit 0
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7*	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

0=Jumper shunt not installed

1=Jumper shunt installed

*SCSI ID7 reserved for SCSI controller board

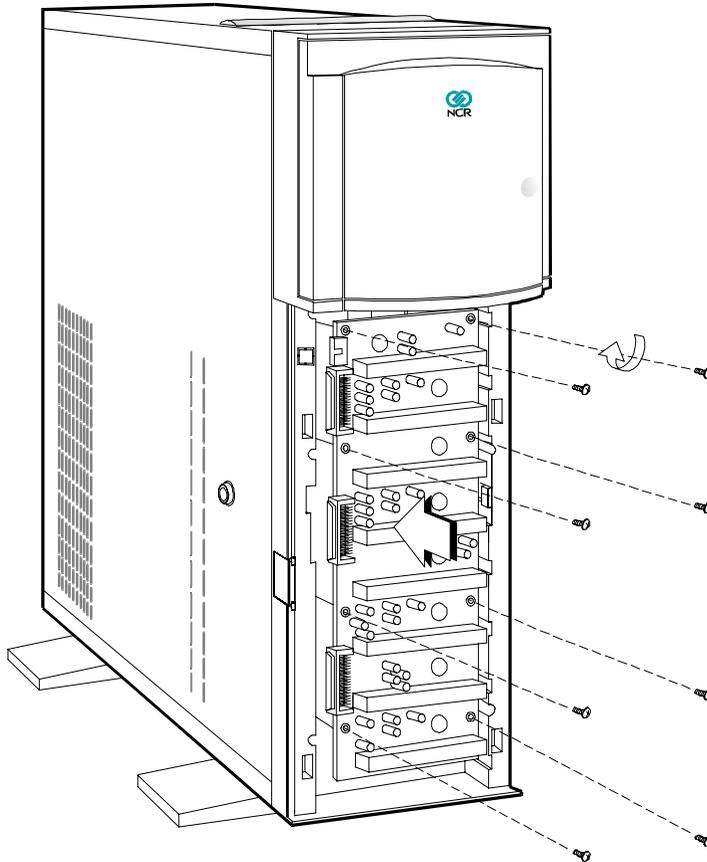
Installation

This section describes the hot plug backplane installation procedures.

Using the System Board SCSI Connectors

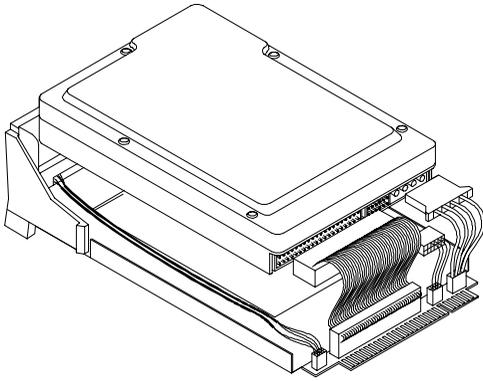
To install the backplane when you are using the SCSI connectors on the system board, follow these steps:

1. Set the terminator switches on the backplane according to your planned SCSI channel configuration. Refer to the “SCSI Channel Configurations” section earlier in this appendix for the channel configurations.
2. Define the SCSI drive IDs by setting the SCSI ID switches or jumpers on the drive.
3. Remove all the old hard disk drive trays from the system, if any.
4. Install the backplane and secure it with eight screws.

Figure D-9. Installing the Hot Plug Backplane

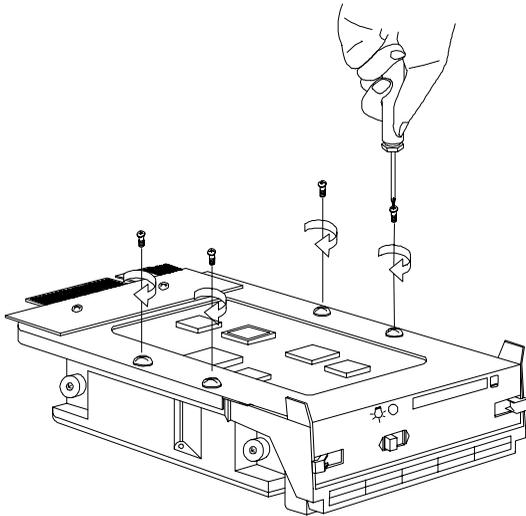
5. Connect three power cables into the connectors at the back of the backplane board.
6. Remove the terminators on each of the SCSI drives that you will install.
7. Position the drive over the hot plug tray and connect the SCSI cable and power cable.

Figure D-10. Connecting the Drive Cables



8. Secure the drive to the tray with four screws.

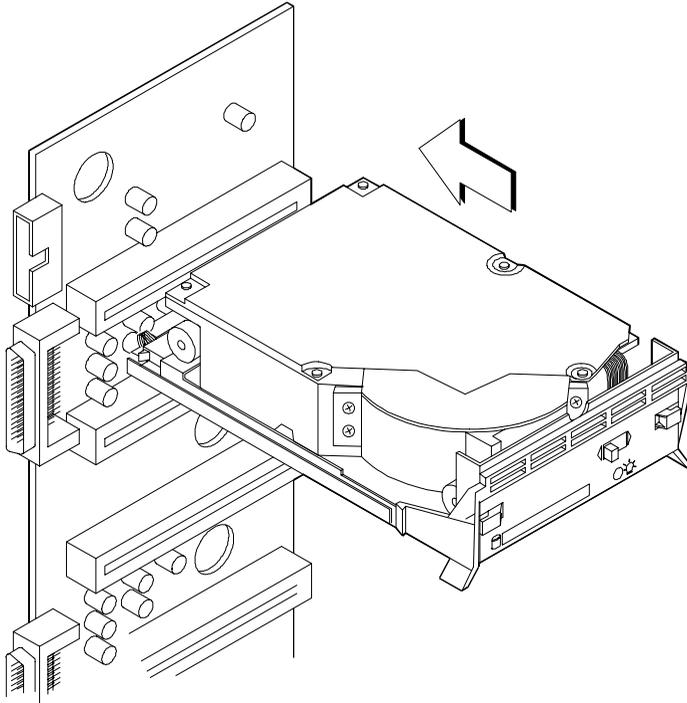
Figure D-11. Securing the Drive to the Hop Plug Tray



9. Install the drive tray into the backplane board.

Note: Make sure that the power switch on the drive tray is set to the Unlock/Power Off position before you plug it to the board.

Figure D-12. Installing the Hot Plug Drive Tray



10. Power on the system.
11. Slide the power switch of the drive tray to the Lock/Power On position.
The power LED lights up.

Using an Add-on SCSI Controller Board

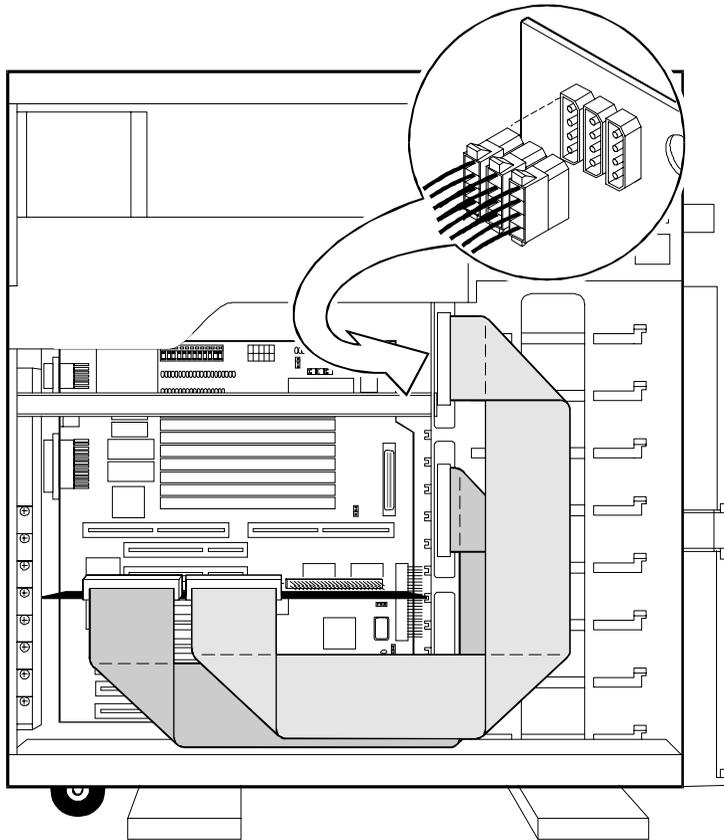
To install the backplane board when you are using an add-on SCSI controller board, follow these steps:

1. Set the terminator switches on the backplane according to your planned SCSI channel configuration. Refer to the “SCSI Channel Configuration” section of this appendix for the channel configurations.
2. Remove all the old hard disk drives from the system, if any.

Note: Make sure that you have already installed the Adaptec 2940UW controller board before you proceed. Refer to the controller board documentation for installation instructions. If you are not using the Adaptec 2940UW board, you can use the Mylex DAC960 disk array controller that supports the RAID technology.

3. Install the backplane and secure it with eight screws. Refer to Figure D-9.
4. Connect three power cables into the connectors at the back of the backplane board.
5. Connect one end of the SCSI cable to the channel on the Adaptec 2940UW board (or to your disk array controller board) and the other end to the corresponding channel on the backplane. The figure below shows how to connect the cables properly.

Figure D-13. Connecting the Power and SCSI Cables to the RAID Adapter Board



6. Follow steps 6 to 11 in the “Using the System Board SCSI Connectors” section of this appendix to complete the installation.

Using the Hot Plug Feature

The faulty drive indicator on the hot plug drive tray lights up whenever the drive that it carries becomes bad or defective. When this happens, you can replace the defective drive without shutting off the system or quitting any running application by using the hot plug feature.

To use the hot plug feature, follow these steps:

1. Set the hot plug drive tray power switch to the Unlock/Power Off position.
2. Pull out the drive tray.
3. Take out the defective drive from the tray.
4. Configure the new hard disk. Make sure that the new drive ID is the same as the old drive ID.
5. Install the new disk according to the installation steps in the “Installation” section of this appendix.

Note: Make sure that the power switch on the drive tray is set to the Unlock/Power Off position before you plug it to the backplane board.

System Support Log

Introduction

This chapter provides a place for recording server identification information and describes how to contact NCR support services.

The following items are included in this chapter:

- A place to record your class/model number, serial number, and system ID number
- An overview of NCR on-site hardware support services
- A page to record NCR support phone numbers
- The procedure for placing a hardware support call
- The procedure for placing a software support call
- A list of NCR support telephone numbers
- A place for attaching your customer support agreement

System Identification

The following numbers may be requested by a support associate if you have to contact NCR support services. Please fill in the spaces below to identify your particular server.

Enter Class/Model Number

Enter Serial Number

Enter System ID Number

NCR Hardware Support Services

NCR On-Site Hardware Support Services

NCR offers on-site system hardware support. Check with your local office for detailed coverage hours.

NCR Technical Support Web Site

Additional technical information for this server is available to authorized users on the World Wide Web at the following URL:

<http://www.columbiasc.ncr.com/techinfo>

NCR Support Phone Numbers

A list of NCR support telephone numbers is located in this chapter. Enter the NCR support phone numbers that you will use in the spaces provided below.

Enter Hardware Support Number _____

Enter Software Support Number _____

Enter After Hours Support Number _____

Before Placing a Hardware Support Call

Before placing a hardware support call, follow these steps:

1. Consult the system *User Guide*.
2. Understand the Failure Mode.
3. Consult your in-house help desk.
4. Run the system diagnostics.
5. Record any error codes or error messages.
6. Eliminate any third-party integrated components (hardware or software).
7. If the problem is related to a third-party component, contact the third-party technical support.

Placing a Hardware Support Call

To place a hardware support call, follow these steps:

1. Call the hardware support number you recorded on the previous page. Note that after-hours calls are subject to an extended coverage charge.
2. Provide the following information to the support associate:
 - Model/serial number
 - Brief description of symptoms, including any error messages or numbers displayed

- Your NCR Customer Support Agreement number
 - Your company name and address
 - Name and telephone number of the person NCR should contact about the problem
 - Purchase order number
 - Billing address
3. Ask the support associate for the Support Call Incident number assigned to your support call. Use this number if you have questions regarding the support problem.
 4. The support associate will direct your call to a system analyst, depending on availability, or NCR will return your call. Be prepared to provide the following information:
 - Record any failure or error information displayed. If appropriate, record the entire screen.
 - Perform a memory dump of the system, if possible.
 - Be prepared to answer these questions:
 - Is this an initial or recurring problem?
 - Under what circumstances did the failure or error occur?
 - Is any non-NCR equipment in use?
 - Did you perform a memory dump?
 - Have you made any recent changes to the system?
 - What operating system and version are you using?
 - What is the dial-up telephone number for direct modem access into your server system?
 5. Depending on the kind of failure or error, the system analyst may ask you to perform a system backup.

Placing a Software Support Call

Software support contract agreements are available to support your local operating system environment. Ask about these service products at the support center.

To place a software support call, follow these steps:

1. Call the software support number you recorded under the heading “NCR Support Phone Numbers” earlier in this chapter. Note that after-hours calls are subject to an extended coverage charge.
2. Provide the following information to the support associate:
 - System/network handle
 - Brief description of symptoms, including any error messages or numbers displayed
 - Your company name and address
 - Name and telephone number of the person NCR should contact about the problem
 - The dial-up telephone number for direct modem access into your server system
3. A system analyst will return your call. Be prepared to provide the following information:
 - Operating system version
 - Any patches or service packs to the Operating System or application software
 - Application module
 - Application/program version
 - The exact wording of the error message, including the number, if applicable

List of NCR Support Telephone Numbers

This section contains support telephone numbers for the United States and other areas of the world.

NCR Faxback System

Call the NCR Faxback system at 1-803-939-2082 to receive a free faxed list of the latest information available. The information you need may be available through this fax system.

United States Support

In the United States, call the NCR General Purpose Global Support Center.

AT&T UNIX SVR4 MP-RAS Support	1-800-543-9935
Microsoft Windows NT Support	1-800-GOWINNT
Computer Hardware Support	1-800-262-7782

Other Areas Support

The table below contains a list of support telephone numbers for specific countries.

Table E-1. Support Telephone Numbers for Specific Countries

Country	Toll-free number	Toll number
Australia	131 447	612 9935 3983
Austria	06-605722	31-35-687-6018
Belgium-FRA	0800-71252	31-35-687-6008
Belgium-NED	0800-71253	31-35-687-6007
Cyprus	080-92252	31-35-687-6019
Denmark	800-18422	31-35-687-6002
Dubai	N/A	31-35-687-6032
Egypt	N/A	31-35-687-6033
Finland	TBD	31-35-687-6022
France	05-917938	31-35-687-6004
Germany	0130-815252	31-35-687-6003
Greece	00800-311252	31-35-687-6024
Hong Kong	800-3353	N/A
India	N/A	*61 2 935 3992
Indonesia	001 800 61 850	N/A
Ireland	1-800-553110	31-35-687-6025
Israel	177-3103708	31-35-687-6011
Korea	0078 61 1 0483	N/A
Lebanon	N/A	31-35-687-6034
Luxembourg-FR	0800-2998	31-35-687-6016
Luxembourg-GE	0800-5242	31-35-687-6015
Malaysia	800 5067	N/A

NCR Support Phone Numbers

Netherlands	06-0225121	31-35-687-6000
New Zealand	0 800 445 337	N/A
Norway	800-11351	31-35-687-6005
Philippines	1 800 611-0037	N/A
Poland	N/A	31-35-687-6023
Portugal	05-05313334	31-35-687-6017
PRC	10 800 3571	N/A
Russia	N/A	31-35-687-6026
Saudi Arabia	N/A	31-35-687-6031
Singapore	800 616 1271	N/A
South Africa	800-995009	31-35-687-6041
Spain	900-983152	31-35-687-6009
Sweden	020-795830	31-35-687-6006
Switzerland	155-7703	31-35-687-6012
Taiwan	0080 611 196	N/A
Thailand	001 800 6115 071	N/A
United Kingdom	0800-963969	31-35-687-6001
United States	S46 with UNIX O/S: 800-543-9935	N/A
United States	S46 with all other O/S: 800-469-4668	N/A
Zimbabwe	N/A	31-35-687-6042

Customer Support Agreement

Attach a copy of your current customer support agreement here.

Overview

This appendix includes the forms to enter complete records for the NCR S26 Hot Plug Server. You should keep complete and accurate records.

This appendix includes the following sections:

- **Support Services** - information about NCR support services
- **Hardware Records** - logs to enter the hardware performance and service records
- **Software Records** - logs to enter the software records
- **Current System Configuration** - logs to identify system components and peripherals
- **Preventive Maintenance** - logs to enter preventive maintenance activities
- **Installation Records** - a place to file records of the original parts and configuration of the system as it was shipped from the factory
- **Customer Support Agreement** - a place to file a copy of your current support agreement.
- **List of NCR Support Telephone Numbers** - a list of support telephone numbers for the United States and other areas of the world

Support Services

This section is for recording and maintaining information about NCR support services.

The following items are included in this section:

- A place to record your class/model number, serial number, and system ID number
- An overview of NCR on-site hardware support services
- A page to record NCR support phone numbers
- The procedure for placing a hardware support call
- The procedure for placing a software support call

System Numbers

This system support log is for the following:

Enter Class/Model Number

Enter Serial Number

Enter System ID Number

NCR On-Site Hardware Support Services

NCR offers on-site system hardware support. Check with your local office for detailed coverage hours. Three support levels are available, as listed below.

	Priority Plus	Priority	Next Day
Coverage Hours	24 hours 7 days	8 a.m. - 9 p.m. Mon-Fri	8 a.m. - 5 p.m. Mon-Fri
Response Time*	Best response; not to exceed 4 hours	Best response; not to exceed 4 hours	Next working day
Usage Environment	Highly Critical	Urgent	Less critical

* Response time to locations beyond 160 km may be longer.

NCR Support Phone Numbers

A list of NCR support telephone numbers is located at the end of this appendix. Enter the NCR support phone numbers that you will use.

Enter Hardware Support Number

Enter Software Support Number

Enter After Hours Support Number

Placing a Hardware Support Call

To place a hardware support call, follow these steps:

4. Call the hardware support number you recorded on the previous page. Note that after-hours calls are subject to an extended coverage charge.
5. Provide the following information to the support associate:
 - Model/serial number
 - Brief description of symptoms, including any error messages or numbers displayed
 - Your NCR Customer Support Agreement number
 - Your company name and address
 - Name and telephone number of the person NCR should contact about the problem
 - Purchase order number
 - Billing address
6. Ask the support associate for the Support Call Incident number assigned to your support call. Use this number if you have questions regarding the support problem.
7. The support associate will direct your call to a system analyst, depending on availability, or NCR will return your call. Be prepared to provide the following information:
 - Record any failure or error information displayed. If appropriate, record the entire screen.
 - Perform a memory dump of the system, if possible.
 - Be prepared to answer these questions:
 - Is this an initial or recurring problem?
 - Under what circumstances did the failure or error occur?
 - Is any non-NCR equipment in use?
 - Did you perform a memory dump?
 - Have you made any recent changes to the system?

- What operating system and version are you using?
8. Depending on the kind of failure or error, the system analyst may ask you to perform a system backup.

Placing a Software Support Call

Software support contract agreements are available to support your local operating system environment. Ask about these service products at the support center.

To place a software support call, follow these steps:

1. Call the software support number you recorded under the heading “NCR Support Phone Numbers” earlier in this appendix. Note that after-hours calls are subject to an extended coverage charge.
2. Provide the following information to the support associate:
 - System/network handle
 - Brief description of symptoms, including any error messages or numbers displayed
 - Your company name and address
 - Name and telephone number of the person NCR should contact about the problem
3. A system analyst will return your call. Be prepared to provide the following information:
 - Operating system version
 - Application module
 - Application/program version
 - The exact wording of the error message, including the number, if applicable

Hardware Records

This section is for recording and maintaining hardware performance and service records. These records allow the system user and support associates to get important information to ensure successful operation of the system.

Note: To maintain accurate records, it is essential that you complete all customer entry portions of the appropriate log when placing a support call.

Different Types of Logs

There are different ways to maintain hardware records. Discuss these different types of logs with your account support associate. Then, set up the logs according to your company's needs. The descriptions below give examples of several recording methods.

One Log for All Service

Maintain one Hardware Log for all service performed on the system, including the CPU, hard drives, peripheral drives, plotters, printers, other components, and peripherals. Record all preventive maintenance, service notes, and updates in this log.

One Log for The System and a Separate Log for Each Peripheral Device

Maintain one Hardware Log for repair service, preventive maintenance, support notes, and updates that apply only to the CPU and the entire system.

Maintain separate Hardware Logs for the repair service, preventive maintenance, support notes, and updates for system peripherals. For example, use a separate form for each hard drive, peripheral drive, plotter, and printer on the system.

Use another Hardware Log to record support information on all the miscellaneous devices such as terminals, distributed terminal controllers, small printers, and PCs.

This method is useful when you have large systems with many peripherals. Then whenever a peripheral is moved to a different system, the Hardware Log can stay with the equipment.

One Log for the System and Separate Logs for Each Peripheral Category

Maintain one Hardware Log for repair service, preventive maintenance, support notes, and updates that apply only to the CPU and the entire system.

Maintain separate Hardware Logs for system peripherals. Maintain one log for all the hard drives on the system, another for all the printers, and so on. Maintain an additional log for miscellaneous devices such as terminals, small printers, and PCs.

Hardware Log

Page _____

Customer Entry	NCR Entry			
	<input type="checkbox"/> Service Note	<input type="checkbox"/> PM	<input type="checkbox"/> Repair	<input type="checkbox"/> Upgrade
Date/Time NCR Notified	Date Start Time		Incident #	
Operator	Class/Model#		Serial#	
NCR Contact	Completion Time			
PO#/Signature (if required)	Action (including follow-up commitments)			
Problem				
	Parts P/N	P/N	P/N	P/N
	P/N	P/N	P/N	P/N

Hardware Log

Page _____

Customer Entry	NCR Entry			
	<input type="checkbox"/> Service Note	<input type="checkbox"/> PM	<input type="checkbox"/> Repair	<input type="checkbox"/> Upgrade
Date/Time NCR Notified	Date Start Time		Incident #	
Operator	Class/Model#		Serial#	
NCR Contact	Completion Time			
PO#/Signature (if required)	Action (including follow-up commitments)			
Problem				
	Parts P/N	P/N	P/N	P/N
	P/N	P/N	P/N	P/N

Hardware Log

Page _____

Customer Entry	NCR Entry			
	<input type="checkbox"/> Service Note	<input type="checkbox"/> PM	<input type="checkbox"/> Repair	<input type="checkbox"/> Upgrade
Date/Time NCR Notified	Date Start Time		Incident #	
Operator	Class/Model#		Serial#	
NCR Contact	Completion Time			
PO#/Signature (if required)	Action (including follow-up commitments)			
Problem				
	Parts P/N	P/N	P/N	P/N
	P/N	P/N	P/N	P/N

Hardware Log

Page _____

Customer Entry	NCR Entry			
	<input type="checkbox"/> Service Note	<input type="checkbox"/> PM	<input type="checkbox"/> Repair	<input type="checkbox"/> Upgrade
Date/Time NCR Notified	Date Start Time		Incident #	
Operator	Class/Model#		Serial#	
NCR Contact	Completion Time			
PO#/Signature (if required)	Action (including follow-up commitments)			
Problem				
	Parts P/N	P/N	P/N	P/N
	P/N	P/N	P/N	P/N

Hardware Log

Page _____

Customer Entry	NCR Entry			
	<input type="checkbox"/> Service Note	<input type="checkbox"/> PM	<input type="checkbox"/> Repair	<input type="checkbox"/> Upgrade
Date/Time NCR Notified	Date Start Time		Incident #	
Operator	Class/Model#		Serial#	
NCR Contact	Completion Time			
PO#/Signature (if required)	Action (including follow-up commitments)			
Problem				
	Parts P/N	P/N	P/N	P/N
	P/N	P/N	P/N	P/N

Hardware Log

Page _____

Customer Entry	NCR Entry			
	<input type="checkbox"/> Service Note	<input type="checkbox"/> PM	<input type="checkbox"/> Repair	<input type="checkbox"/> Upgrade
Date/Time NCR Notified	Date Start Time		Incident #	
Operator	Class/Model#		Serial#	
NCR Contact	Completion Time			
PO#/Signature (if required)	Action (including follow-up commitments)			
Problem				
	Parts P/N	P/N	P/N	P/N
	P/N	P/N	P/N	P/N

Hardware Log

Page _____

Customer Entry	NCR Entry			
	<input type="checkbox"/> Service Note	<input type="checkbox"/> PM	<input type="checkbox"/> Repair	<input type="checkbox"/> Upgrade
Date/Time NCR Notified	Date Start Time		Incident #	
Operator	Class/Model#		Serial#	
NCR Contact	Completion Time			
PO#/Signature (if required)	Action (including follow-up commitments)			
Problem				
	Parts P/N	P/N	P/N	P/N
	P/N	P/N	P/N	P/N

Hardware Log

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Customer Entry	NCR Entry			
	<input type="checkbox"/> Service Note	<input type="checkbox"/> PM	<input type="checkbox"/> Repair	<input type="checkbox"/> Upgrade
Date/Time NCR Notified	Date Start Time		Incident #	
Operator	Class/Model#		Serial#	
NCR Contact	Completion Time			
PO#/Signature (if required)	Action (including follow-up commitments)			
Problem				
	Parts P/N	P/N	P/N	P/N
	P/N	P/N	P/N	P/N

Software Records

This section is for recording and maintaining software performance and service records. These records allow the system user and support associates to get important information to ensure successful operation of the system.

Note: To maintain accurate records, it is essential that the customer complete all customer entry portions of the Software Product Log or the System Software Log when placing a support call.

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System Software Log

Page _____

Customer Entry	NCR Entry			
Date/Time NCR Notified	Date Start Time		NCR Contact	
Operator	Resolution			
Software Version				
Nickname				
PICS ID#				
Problem (symptom, failure#, error#)				

System Software Log

Page _____

Customer Entry	NCR Entry			
Date/Time NCR Notified	Date Start Time		NCR Contact	
Operator	Resolution			
Software Version				
Nickname				
PICS ID#				
Problem (symptom, failure#, error#)				

System Software Log

Page _____

Customer Entry	NCR Entry			
Date/Time NCR Notified	Date Start Time		NCR Contact	
Operator	Resolution			
Software Version				
Nickname				
PICS ID#				
Problem (symptom, failure#, error#)				

System Software Log

Page _____

Customer Entry	NCR Entry			
Date/Time NCR Notified	Date Start Time		NCR Contact	
Operator	Resolution			
Software Version				
Nickname				
PICS ID#				
Problem (symptom, failure#, error#)				

System Software Log

Page _____

Customer Entry	NCR Entry			
Date/Time NCR Notified	Date Start Time		NCR Contact	
Operator	Resolution			
Software Version				
Nickname				
PICS ID#				
Problem (symptom, failure#, error#)				

System Software Log

Page _____

Customer Entry	NCR Entry			
Date/Time NCR Notified	Date Start Time		NCR Contact	
Operator	Resolution			
Software Version				
Nickname				
PICS ID#				
Problem (symptom, failure#, error#)				

System Software Log

Page _____

Customer Entry	NCR Entry			
Date/Time NCR Notified	Date Start Time		NCR Contact	
Operator	Resolution			
Software Version				
Nickname				
PICS ID#				
Problem (symptom, failure#, error#)				

System Software Log

Page _____

Customer Entry	NCR Entry			
Date/Time NCR Notified	Date Start Time		NCR Contact	
Operator	Resolution			
Software Version				
Nickname				
PICS ID#				
Problem (symptom, failure#, error#)				

Current System Configuration

This section is for recording and maintaining information about system components and peripherals.

Complete the following on the forms provided in this section:

- Adapter board locations
- System equipment list
- Hardware configuration report (a printout of current system I/O configuration)

Adapter Board Locations

Record the physical location of each adapter board installed in the CPU.

System Equipment List

This list provides a convenient location to record the serial numbers, class/model numbers, and location of system equipment.

Hardware Configuration Report

As you make changes in the system, make a listing of the system's current I/O configuration in this section.

Adapter Board Locations

Record information about each adapter board installed in your system.

PCI Slot 1

PCI Slot 2

PCI Slot 3

PCI Slot 4

PCI Slot 5 Shared

EISA Slot 3 Shared

EISA Slot 2

EISA Slot 1

Hardware Configuration

As you make changes in the system, make a listing of the system's current I/O configuration in this section.

Preventive Maintenance

This section is for entering preventive maintenance activities.

The primary purpose of preventive maintenance is to keep unscheduled interruptions to a minimum. Following a well-planned preventive maintenance program can help you maintain a high level of system performance at a minimum cost.

This section provides the following information and forms:

- General customer preventive maintenance guidelines
- General customer preventive maintenance procedures
- Preventive Timetable Worksheets
- Forms for recording preventive maintenance reference manuals and procedures

It is important for you to perform preventive maintenance on a regular basis. This section includes a form for listing the materials and equipment required to perform preventive maintenance on each piece of equipment and a brief description of the procedure.

You should establish a preventive maintenance schedule when the system is installed. Take the environment into consideration. For example, if you have an extremely dusty environment, the system will require more frequent cleaning. Use the Preventive Timetable Worksheets provided to record the schedule.

General Customer Preventive Maintenance Guidelines

General customer preventive maintenance guidelines are as follows:

Central Processor Unit (CPU)

Clean CPUs on a regular basis to prevent heat build-up due to dust on electronic components. Use a high quality cleaner prescribed for computer equipment.

Disk Drives

Check the preventive maintenance procedures listed in the documentation that came with your disk drive.

Tape Drives

Clean the magnetic tape path at regular intervals to remove oxide build-up, especially on the read/write head. Use only the prescribed cleaning fluids to clean the tape path. Improper use of non-prescribed cleaners can leave residue that can increase tape read/write errors and damage the tape drive and tapes.

Use only high quality tapes. Use of poor quality tapes can lead to loss of data and damage to the tape drive.

Plotters

Clean plotters on a regular basis. Check the preventive maintenance procedures listed in the documentation that came with your plotter.

Terminals and PCs

Clean terminals and PCs and replace batteries on a regular basis. If battery replacement is necessary, follow the procedures in the documentation that came with your terminal or PC.

General Customer Preventive Maintenance Procedures

Use this list as a guide only. Refer to the documentation that came with individual devices for specific procedures.

- Review and investigate any problems logged in the Hardware Log since the past preventive maintenance.
- Review the System Software Log files.
- Inspect the equipment. Check all lamps, indicators, switches, controls, fans, blowers, and air filters. Replace worn parts if necessary.
- Observe the operation of the equipment.
- Run the self-test diagnostic.

Preventive Maintenance

- Clean device exterior surfaces.
- Check only those adjustments known to require periodic attention.
- Provide users with feedback about overall system performance.
- Record the preventive maintenance information on the appropriate Hardware Log.

Preventive Maintenance Reference Sheet

Device Name	Special Tools, Equipment, and Materials	Preventive Maintenance Procedure	Reference Manual (Title, Part #, and Page #)

Preventive Maintenance Reference Sheet

Device Name	Special Tools, Equipment, and Materials	Preventive Maintenance Procedure	Reference Manual (Title, Part #, and Page #)

Installation Records

This section is for attaching information about the parts and configuration of the system as it was shipped from the factory.

Attach documents here such as packing lists, hardware configuration records, and software installation records.

Note: After the system is installed, complete the “Current System Configuration” section earlier in this appendix.

Customer Support Agreement

Attach a copy of your current customer support agreement here.

List of NCR Support Telephone Numbers

This section contains support telephone numbers for the United States and other areas of the world.

NCR Faxback System

Call the NCR Faxback system at 1-803-939-2082 to receive a free faxed list of the latest information available. The information you need may be available through this fax system.

United States Support

In the United States, call the NCR General Purpose Global Support Center.

NCR UNIX SVR4 MP-RAS	1-800-543-9935
Other Supported Network Operating Systems	1-800-469-4668

Other Areas Support

Toll numbers are marked with an asterisk (*). Toll-free numbers are unavailable in those areas.

Country	Number	Country	Number
Australia	1-800-069-238	Luxembourg-FR	0800-2998
Austria	06-605722	Malaysia	800-5067
Belgium-FRA	0800-71252	Netherlands	06-0225121
Belgium-NED	0800-71253	New Zealand	0-800-445-337
Canada	1-800-387-7557	Norway	800-11351
Cyprus	080-92252	Philippines	1-800-611-0037
Denmark	800-18422	Poland	31-35-687-6023*
Dubai	31-35-687-6032*	Portugal	05-05313334
Egypt	31-35-687-6033*	PRC	10-800-3571
Finland	31-35-687-6022*	Russia	31-35-687-6026*
France	05-917938	Saudi Arabia	31-35-687-6031*
Germany	0130-815252	Singapore	800-616-1271
Greece	00800-311252	South Africa	800-995009
Hong Kong	800-3353	Spain	900-983152
India	61-2-935-3992*	Sweden	020-795830
Indonesia	001-800-61-850	Switzerland	155-7703
Ireland	1-800-553110	Taiwan	0080-611-196
Israel	177-3103708	Thailand	001-800-6115-071
Korea	0078-61-1-0483	United Kingdom	0800-963969
Lebanon	31-35-687-6034*	United States	1-800-774-7406
Luxembourg-GE	0800-5242	Zimbabwe	31-35-687-6042*

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