

Hardware Maintenance Manual



IBM IntelliStation Z Pro

Model 6894

June 2001

We Want Your Comments!
(Please see page 117)

Hardware Maintenance Manual



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Model 6894

NOTE

Before using this information and the product it supports, be sure to read the general information under “Notices” on page 118.

First edition (June 2001)

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About this manual

This manual contains diagnostic information, a Symptom-to-FRU index, service information, error codes, error messages, and configuration information for the IBM® IntelliStation® Z Pro type 6894.

Important This manual is intended for trained servicers who are familiar with IBM PC products. Before servicing an IBM product, be sure to review “Safety information” on page 79.

Important safety information

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

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

注意和危险声明 (简体中文)

重要事项:

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

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

在按说明执行任何操作前，请务必阅读所有注意和危险声明。

注意及危險聲明 (中文)

重要資訊：

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

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

執行任何指示之前，請詳讀所有「注意」及「危險」的聲明。

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

Lesen Sie alle Sicherheitshinweise, bevor Sie eine Anweisung ausführen.

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

주의 및 위험 경고문(한글)

중요:

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

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

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

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

Online support

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

File download address is:

<http://www.us.pc.ibm.com/files.html>

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General checkout

This general checkout procedure is for a type 6894 computer.

Diagnostic error messages appear when a test program finds a problem with a hardware option. For the test programs to properly determine if a test Passed, Failed or Aborted, the test programs check the error-return code at test completion. See “Diagnostic programs and error messages” on page 9.

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

Notes:

- Type 6849 computers default to come up quiet (no beep and no memory count and checkpoint code display) when no errors are detected by POST.
- To enable beep and memory count and checkpoint code display when a successful POST occurs, do the following:
 1. Select Start Options in the Configuration/Setup Utility program (see “ Using the Configuration Manager program” on page 17).
 2. Set Power-On Self-Test to Enhanced.
- Before replacing any FRUs, ensure that the latest level of BIOS is installed on the system. A down-level BIOS might cause false errors and unnecessary replacement of the system board.
- If multiple error codes are displayed, diagnose the first error code displayed.
- If the computer hangs and no error is displayed, go to “Undetermined problems” on page 74.
- If an installed device is not recognized by the diagnostics program, that device might be defective.

The general checkout procedure consists of the following actions:

001

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

DID YOU RECEIVE THE CORRECT RESPONSE?

If **NO**, continue to **002**.

If **YES**, proceed to **003**.

002

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

1. Start the Configuration/Setup Utility program (see “ Starting the Configuration/Setup Utility program” on page 19.)
2. Select Power Management from the Configuration/Setup Utility program menu.
3. Select APM.
4. Be sure APM BIOS Mode is set to Disabled. If it is not, press Left Arrow (←) or Right Arrow (→) to change the setting.
5. Select Automatic Hardware Power Management.
6. Set Automatic Hardware Power Management to Disabled.
7. If the problem persists, continue to **003**.

003

Run the Diagnostic programs. If necessary, refer to “Diagnostic programs and error messages” on page 9.

- If you receive an error, replace the part that the diagnostic program calls out or go to “Diagnostics” on page 9.
- If the test stops and you cannot continue, replace the last device tested.

General information

The IBM IntelliStation Z Pro type 6894 incorporates many of the latest advances in computing technology and is easy to expand and upgrade as your needs change.

If you have access to the World Wide Web, you can obtain up-to-date information about your computer and other IBM products at the following World Wide Web address:
<http://www.ibm.com/pc/us/intellistation/> The serial and model numbers are located on labels on the rear and the front of the computer.



Before you can use the computer, you must obtain and install an operating system. Refer to the information provided with your operating system for installation instructions.

Features and specifications

The following table provides a summary of the features and specifications for the IntelliStation Z Pro.

Table 1. Features and specifications

<p>Microprocessor:</p> <ul style="list-style-type: none"> • Standard: Two Intel® Itanium® microprocessors • 32KB* of level-1 cache • 96KB* of level-2 cache • 2MB of level-3 cache • 133 MHz front-side bus (FSB) <p>Memory:</p> <ul style="list-style-type: none"> • Maximum: 16 GB* • Type: ECC, SDRAM, registered DIMMs • Slots: 4-way interleaved, 16 slots <p>Drives standard:</p> <ul style="list-style-type: none"> • CD-RW: 12X/8X/32X IDE • Hard disk drive <p>Expansion bays:</p> <ul style="list-style-type: none"> • Three 5.25-in. bays (one CD-RW drive installed) • One 3.5-in. bay • Five 3.5-in. slim-high bays available (one hard disk drive installed) 	<p>PCI expansion slots:</p> <ul style="list-style-type: none"> • Five 66 MHz 64-bit (one SCSI controller installed) • Two 33 MHz 64-bit <p>Power supply: One 800 watt (100-240 V ac)</p> <p>Video:</p> <ul style="list-style-type: none"> • Matrox® or Nvidia® AGP video adapter • Compatible with SVGA and VGA • Matrox has 16 MB* SDRAM video memory • Nvidia has 32 MB* SDRAM video memory <p>Size:</p> <ul style="list-style-type: none"> • Height: 45.72 cm (18 inches) with standard feet • Depth: 64.52 cm (25.4 inches) • Width: 25.4 cm (10 inches) • Weight: 38.18 kg (84 lbs) depending on configuration 	<p>AGP slot:</p> <ul style="list-style-type: none"> • Accelerated graphics port (AGP 4X) • Video adapter installed in AGP slot on system board <p>SCSI controller: One Ultra160 (LVD) dual-channel SCSI controller, two external connectors, three internal connectors</p> <p>Integrated functions:</p> <ul style="list-style-type: none"> • 10BASE-T/100BASE-TX Ethernet controller with an RJ-45 Ethernet port • Mouse port • Keyboard port • Serial port • Two Universal Serial Bus (USB) ports • Audio ports <ul style="list-style-type: none"> – Line out – Line in – Microphone • System controls and indicators • Basic Input/Output System (BIOS), Power on Self Test (POST), and BIOS Setup Utility stored in flash memory
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* KB equals approximately 1000 bytes. MB equals approximately 1000000 bytes. GB equals approximately 1000000000 bytes.

Notices and statements used in this book

This information product contains notices and statements that relate to specific topics. The Caution and Danger statements also appear in the multilingual safety booklet that comes with your IntelliStation product. Each statement is numbered for easy reference to the corresponding statement in the safety booklet.

The notice definitions are as follows:

- **Notes:** These notices provide important tips, guidance, or advice.
- **Important:** These notices provide information or advice that might help you avoid inconvenient or problem situations.
- **Attention:** These notices indicate possible damage to programs, devices, or data. An attention notice is placed just before the instruction or situation in which damage could occur.
- **Caution:** These statements indicate situations that can be potentially hazardous to you. A caution statement is placed just before descriptions of potentially hazardous procedure steps or situations.
- **Danger:** These statements indicate situations that can be potentially lethal or extremely hazardous to you. A danger statement is placed just before descriptions of potentially lethal or extremely hazardous procedures steps or situations.

What the IntelliStation Z Pro offers

The unique design of the computer combines the following features:

- Impressive performance

Your system supports up to two Itanium microprocessors with 2 MB of level-3 cache. The computer comes with two microprocessors installed.

- Large system memory

The memory controller in your computer supports up to 16GB of system memory. The memory controller provides error correcting code (ECC) support for up to 16 PC 100-registered Version 1.2 buffered synchronous dynamic random access memory (SDRAM) dual inline memory modules (DIMMs). DIMM sizes supported are 256 MB, 512 MB, and 1 GB.

- High-performance accelerated graphics port (AGP 4X) graphics

Your computer comes with an AGP graphics adapter installed. This high-performance adapter supports high resolutions and includes many performance-enhancing features for your operating-system environment.

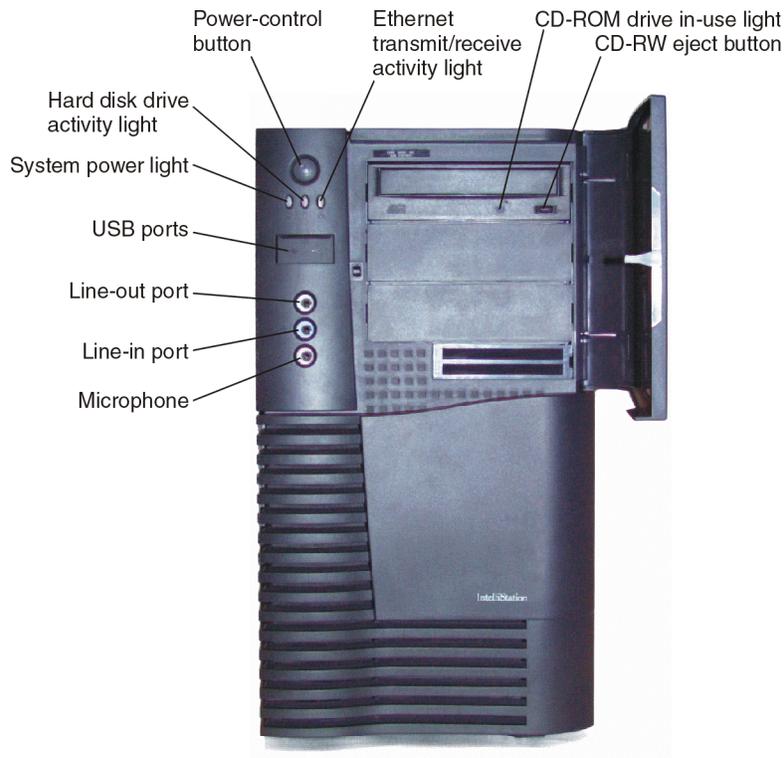
- Integrated network environment support

Your computer comes with an Ethernet controller on the system board. This Ethernet controller has an interface for connecting to 10-Mbps or 100-Mbps networks. The computer automatically selects between 10BASE-T and 100BASE-TX environments. This controller provides full-duplex

(DX) capability, which allows simultaneous transmission and reception of data on the Ethernet local area network (LAN).

Computer controls and indicators

This section identifies the controls and indicators on the front of the computer.



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

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

CD-RW drive in-use light: When this light is on, the CD-RW drive is in use.

Ethernet transmit/receive activity light: When this light is on, there is activity between the computer and the network.

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

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

System power light: This status indicator lights when you turn on your computer.

USB ports: Use the two Universal Serial Bus (USB) connectors to connect USB devices to your computer.

Line-out port: Use this connector to send audio signals to external devices.

Line-in port: Use this connector to accept audio signals into the computer.

Microphone: Use this connector to connect a microphone to your computer.

Starting the computer

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

You can press the power-control button on the front of the computer to start the computer.

If the computer is turned on and a power failure occurs, the computer will start automatically when the power is restored.

If your computer is properly connected and configured to load a startup image from the network, a request is sent and a startup image is loaded into your computer. If the request is unsuccessful or there is no network connection, the operating system and application programs are loaded from the hard disk drive.

Shutting down the computer

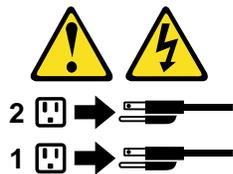
You can turn off your computer as follows:

Statement 5



CAUTION:

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



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

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

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

If you cannot use the power-control button to turn off your computer, disconnect the computer power cords from the electrical outlets.

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

Diagnostics

This section provides basic troubleshooting information to help you resolve some common problems that might occur with your computer.

If you cannot locate and correct the problem using the information in this section, refer to “Symptom-to-FRU index” on page 69.

Diagnostic tools overview

The following tools are available to help you identify and resolve hardware-related problems:

- POST beep codes and message codes

The power-on self-test (POST) generates beep codes and message codes to indicate successful test completion or the detection of a problem. See “POST” on page 9 for more information.

- Diagnostic programs and error messages

Diagnostic programs come with the workstation on the Diagnostics CD. These programs are the primary method of testing the major components of the computer.

See “Diagnostic programs and error messages” on page 9 for more information.

POST

POST generates beep codes to indicate the detection of a problem. For a list of error codes and messages, see “Beep symptoms” on page 69.

Diagnostic programs and error messages

The system diagnostic programs are stored on the Diagnostics CD. These programs provide the primary methods of testing the major components of the workstation.

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

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

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

The error code format is as follows:

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

where:

fff	is the three-digit function code that indicates the function being tested when the error occurred. For example, function code 089 is for the microprocessor.
ttt	is the three-digit failure code that indicates the exact test failure that was encountered.
iii	is the three-digit device ID.
date	is the date that the diagnostic test was run and the error recorded.
cc	is the check value that is used to verify the validity of the information.
text message	is the diagnostic message that indicates the reason for the problem.

Text messages

The diagnostic text message format is as follows:

Function Name: Result (test specific string)

where:

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

Result can be one of the following:

Passed	This result occurs when the diagnostic test completes without any errors.
Failed	This result occurs when the diagnostic test discovers an error.
User Aborted	This result occurs when you stop the diagnostic test before it is complete.
Not Applicable	This result occurs when you specify a diagnostic test for a device that is not present.
Aborted	This result occurs when the test could not proceed because of the system configuration.
Warning	This result occurs when a possible problem is reported during the diagnostic test, such as when a device that is to be tested is not installed.

Test Specific String This is additional information that is used to analyze the problem.

Starting the diagnostic programs

The diagnostics programs will isolate the hardware from software installed on the hard disk drive. The programs run independently of the operating system. This method of testing is generally used when other

methods are not accessible or have not been successful in isolating a problem suspected to be hardware related. A Diagnostics CD comes with the workstation.

Using the diagnostics CD

To start the diagnostics using the CD, do the following:

1. Place the Diagnostics CD in the CD-ROM drive.
2. Power-off the workstation and any peripheral devices. Turn on all attached devices; then, turn on the workstation.
3. When the EFI boot manager starts up choose the option:
EFI Shell [Built-in]
4. When the prompt appears type the command "map".
5. This will give you a list of devices that the shell has recognized.
Example:

```
fs0 : VenHw(Unknown Device:00)/HD(Part1,Sig00112233)
fs1 : VenHw(Unknown Device:FF)/CD-ROM
blk0 : VenHw(Unknown Device:00)
```

6. Locate the entry beginning with the letters "fs", with the word CD-ROM in it. This is the bootable CD-ROM drive letter. In the above example "fs1" is the drive letter of the CD-ROM.
7. To change directories to the CD-ROM boot partition, type the drive letters followed by a colon.
Example:

fs1:
8. Type the command "eli" and then press Enter.
9. This will boot the CD-ROM.
Note: It may take a few minutes for the CD-ROM drive to copy the kernel to RAM. You should see a spinning cursor while the kernel is loading.
10. The diagnostics will load. Follow the instructions on the screen to run the diagnostics.
11. Remove the CD from the CD-ROM drive and turn off the workstation when you finish running the diagnostics.

Command line interface

To start the command line interface environment:

1. On the Diagnostics CD, access the directory /usr/pcdr2000/bin.
2. Start the program by typing "./pcdrcli -s".

Note: On some systems this command may take up to 15 seconds to execute.

To stop the command line interface environment, issue the command "./pcdrcli -q"

Available commands

Each command has two versions. The longer, more descriptive versions begin with two dashes (shown below in parentheses).

Command	Description
-q (--stoppcdr)	Shuts down the PC-Doctor 2000 environment
-s (--startpcdr)	Starts the PC-Doctor 2000 environment
-n (--setlang)	Set default language
-c (--rescan)	Rescans available devices
-m (--modules)	Lists available test modules
-t (--tests)	Lists available diagnostic tests
-d (--devices)	Lists devices detected by a test module
-w (--devsandtestsbyhw)	Lists devices and associated tests by HW locator
-o (--devsandtestsbyos)	Lists devices and associated tests by OS locator
-e (--devsandtestsbydt)	Lists devices and associated tests by device locator
-a (--alldevsandtests)	Lists devices and associated tests
-r (--rundiag)	Run a test
-p (--checkparams)	Validate test parameters
-i (--transids)	List transaction IDs
-g (--diagmessages)	Get the messages stored by a test based on the transaction ID
-u (--diagstatus)	Get the current status of a test based on the transaction ID
-h (--haltdiag)	Stop a test specified by transaction ID (after /nowait)

How to use commands:

Command	Description
./pcdrcli	To list available command-line switches:
./pcdrcli -s	To start PCDR2000 engines
./pcdrcli -m	To display available test modules:
./pcdrcli -t:diaghd	Display available tests for DIAGHD module:
./pcdrcli -d:diaghd	Display enumerated devices for DIAGHD module
./pcdrcli -w:IDE:0:0	Display the devices specified by "IDE:0:0" and associated tests
./pcdrcli -e:HD	Display the devices of type "HD" and associated tests
./pcdrcli -o:/dev/hd0	Display the devices specified by "/dev/hd0" and associated tests
./pcdrcli -a	Display available devices and associated tests
./pcdrcli -r:diaghd:1:0	Run the 2nd test of the DIAGHD module on 1st device detected
./pcdrcli -p:diaghd:1:0 :param=PCDR_DIAGHD_ MAX_SECTORS_TO_ TEST,1000	Validate max sectors to test value of 1000 for the 2nd test of the DIAGHD module on 1st device detected
./pcdrcli -u:xxx	Get the current status of a test
./pcdrcli -g:xxx	Get the log messages and event codes for a test
./pcdrcli -h:xxx	Stop testing that is in progress

Notes:

1. xxx refers to the transaction ID
2. It is acceptable to have multiple command line interfaces talking to the same message broker at the same time. This is the way to demonstrate parallel tests.

Viewing the test log

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

Do the following to view the test log:

1. Insert the Diagnostics CD.
2. Turn on the system and watch the screen.
3. If the system is on, shut down your operating system and restart the system.
4. Run the diagnostic programs and when the Diagnostic Programs screen appears, select **Utility**.
5. Select **View Test Log** from the list that appears; then, follow the instructions on the screen.
6. You can save the test log to a file on a diskette or to your hard disk drive.

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

Diagnostic error message tables

Diagnostic error messages occur when a test finds a problem with the workstation hardware. These error messages are saved in the Test Log. For a list of error codes and messages, see “Symptom-to-FRU index” on page 69.

Error symptoms

Refer to the “Symptom-to-FRU index” on page 69 to find solutions to problems that have definite symptoms.

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

- Remove the software or device that you just added.
- Run the diagnostic tests to determine if your computer is running correctly.
- Reinstall the new software or new device.

Software-generated error messages

These messages appear when a problem or conflict is detected by the application program, the operating system, or both. Error messages for operating system and other software problems are generally text messages, but they also can be numeric codes. For information about these software error messages, see the information supplied with the operating system and application program.

Table 2. Software-generated error messages

Symptom	Suggested action
Suspected software problem	<p>To determine if problems are caused by the software, verify that:</p> <ol style="list-style-type: none"> 1. The computer has the minimum memory needed to use the software. For memory requirements, refer to the information that comes with the software. <p>Note: If you have just installed an adapter or memory, you might have a memory address conflict.</p> <ol style="list-style-type: none"> 2. The software is designed to operate on your system. 3. Other software works on your system. 4. The software that you are using works on another system. <p>If you received any error messages when using the software program, refer to the information that comes with the software for a description of the messages and solutions to the problem.</p> <p>If the items above are correct and the problem remains, contact your place of purchase.</p>

Troubleshooting the Ethernet controller

This section provides troubleshooting information for problems that might occur with the 10/100 Mbps Ethernet controller.

Network connection problems

If the Ethernet controller cannot connect to the network, check the following:

- Make sure that the cable is installed correctly.

The network cable must be securely attached at all connections. If the cable is attached but the problem persists, try a different cable.

If you set the Ethernet controller to operate at 100 Mbps, you must use Category 5 cabling.

If you directly connect two computers (without a hub), or if you are not using a hub with X ports, use a crossover cable.

Note: To determine whether a hub has an X port, check the port label. If the label contains an X, the hub has an X port.

- Determine if the hub supports auto-negotiation. If not, try configuring the integrated Ethernet controller manually to match the speed and duplex mode of the hub.
- Make sure that you are using the correct device drivers.
- Check for operating system-specific causes for the problem.
- Make sure that the device drivers on the client and system are using the same protocol.
- Test the Ethernet controller.

The way you test the Ethernet controller depends on which operating system you are using (see the Ethernet controller device driver README file on the device driver directory or on the media on which the device driver was provided).

Ethernet controller troubleshooting chart

You can use the following troubleshooting chart to find solutions to 10/100 Mbps Ethernet controller problems that have definite symptoms.

Table 3. Ethernet controller troubleshooting chart

Ethernet controller problem	Suggested action
The system stops running when loading device drivers.	<p>The PCI BIOS interrupt settings are incorrect.</p> <p>Check the following:</p> <ul style="list-style-type: none"> • Determine if the IRQ setting assigned to the Ethernet controller is also assigned to another device in the Configuration/Setup Utility program. • Although interrupt sharing is allowed for PCI devices, some devices do not function well when they share an interrupt with a dissimilar PCI device. Try changing the IRQ assigned to the Ethernet controller or the other device. • Make sure that you are using the most recent device driver available from the World Wide Web. • Run the network diagnostic program.
The LAN activity light does not light.	<ul style="list-style-type: none"> • Check the following: • Make sure that you have loaded the network device drivers. • The network might be idle. Run diagnostics on the LEDs. • The function of this LED can be changed by device driver load parameters. If necessary, remove any LED parameter settings when you load the device drivers.
Data is incorrect or sporadic.	<ul style="list-style-type: none"> • Check the following: • Make sure that you are using Category 5 cabling when operating the system at 100 Mbps. • Make sure that the cables do not run close to noise-inducing sources like fluorescent lights.
The Ethernet controller stopped working when another adapter was added to the system.	<ul style="list-style-type: none"> • Check the following: • Make sure that the cable is connected to the Ethernet controller. • Make sure that your system BIOS is current. • Reseat the adapter. • Determine if the IRQ setting assigned to the Ethernet adapter is also assigned to another device in the Configuration/Setup Utility program. <p>Although interrupt sharing is allowed for PCI devices, some devices do not function well when they share an interrupt with a dissimilar PCI device. Try changing the IRQ assigned to the Ethernet adapter or the other device.</p>
The Ethernet controller stopped working without apparent cause.	<ul style="list-style-type: none"> • Check the following: • Run diagnostics for the Ethernet controller. • Try a different connector on the hub. • Reinstall the device drivers. Refer to your operating system documentation.

Configuration

The following configuration utilities are provided with your computer.

- **Configuration Manager program**

The Configuration Manager utility program is part of the basic input/output system (BIOS) code that comes with your computer. You can use this program to configure the primary and secondary IDE channels, set the date and time, and set passwords.

- **SCSI utility program**

The SCSI utility enables you to configure the devices attached to the SCSI controller.

- **Extensible Firmware Interface (EFI) Shell Utility program**

This program is an EFI application that enables you to launch other EFI applications. The EFI firmware and the EFI Shell Utility program provide an environment that can be modified to easily adapt to many different hardware configurations.

Using the Configuration Manager program

The Configuration Manager program is a menu-driven configuration program. To enter the Configuration Manager program, do the following:

1. Turn on the computer.
2. When prompted, click on the choice to access the Configuration Manager program.
3. Follow the instructions that appear on the screen.

The following selections are available from the Configuration Manager program.

- **System Processors**

Select this choice to display processor information and the front side bus (FSB) speed.

- **System Memory**

Select this option to display the amount of memory, the memory speed, the ECC setting, and the type of memory module in each slot.

- **System Event Log**

Select this option to configure the system event log, define the system event log as read-only, and view the system event log.

- **Integrated IDE**

Select this option to enable or disable the IDE controller, define the IDE spin delay, and configure the primary and secondary IDE channels.

- **System BIOS**

Select this option to view the installed versions of BIOS, SMBIOS, PAL (processor abstraction layer), SAL (system abstraction layer), and the boot block.

- **Power Events**

Select this option to enable or disable the S5 wake-up events.

- **Time/Date**

Select this option to view or change the time or date.

- **General**

Select this option to: define the amount of time the introductory screen remains visible; enable or disable the on-board Network Interface Card (NIC); enable or disable the on-board audio device; define if the workstation will restart after an AC power failure; enable or disable Num Lock at power-on; and define the COM port for serial port 1.

- **Security**

Select this option to define the user and administrator passwords.

SCSI utility program

The SCSI utility program is a menu-driven configuration program. To enter the SCSI utility program, do the following:

1. Turn on the computer.
2. When the SCSI utility prompt appears, press Ctrl+NA.
3. Follow the instructions that appear on the screen.

Extensible Firmware Interface (EFI) Shell Utility program

Use the EFI Shell Utility program to start EFI applications, and start (boot) the network operating system. The EFI Utility program also provides a set of basic commands to manage files and the system clock.

EFI Boot Manager

The EFI Boot Manager allows you to control the server's booting environment. Depending on how you have configured the boot options, after the server is powered up the Boot Manager presents you with different ways to bring up the system. For example, you can boot to the EFI Shell, to an operating system located on the network or residing on media in the server, or the Boot Maintenance Menu.

- **EFI Shell:** A simple, interactive environment that allows EFI device drivers to be loaded, EFI applications to be launched, and operating systems to be booted. The EFI shell also provides a set of basic commands used to manage files and the system environment variables. For more information on the EFI Shell, refer to "Extensible Firmware Interface (EFI) Shell" on page 20.
- **Boot Options:** Files that you include as boot options. You add and delete boot options by using the Boot Maintenance Menu. Each boot option specifies an EFI executable with possible options. For information on the Boot Maintenance Menu options, refer to Table 4 on page 19.
- **Boot Maintenance Menu:** A menu of items allowing you configure boot options and other boot environment variables. Table 4 describes each menu item in the Boot Maintenance Menu.

Table 4. Boot Maintenance Menu Options

Option	Description
Boot from a File	<p>Automatically adds EFI applications as boot options or allows you to boot from a specific file.</p> <p>When you choose this option, the system searches for an EFI directory in all EFI System Partitions in the system. For each EFI directory the system finds, it searches through that directory's subdirectories. Within each subdirectory, the system looks for the first file that is an executable EFI Application. Each file that meets this criterion can be automatically added as a boot option. In addition, legacy boot options for A: and C: are also added if those devices are present.</p> <p>Using this option, you can also launch a specific application without adding it as a boot option. In this case the EFI Boot Manager searches the root directories and the \EFI\TOOLS directories of all of the EFI System Partitions present in the system for the specified EFI Application.</p>
Add a Boot Option	<p>Adds a boot option to the EFI Boot Manager. You specify the option by providing the name of the EFI application. Along with the name you can also provide either ASCII or UNICODE arguments the file might use.</p> <p>Given the EFI application name and any options, the EFI Boot Manager searches for the executable file in the same partitions and directories as described in "Boot from a File" option. When the file is found, it is executed.</p>
Delete Boot Options	Allows you to delete a specific boot option or all boot options.
Change Boot Order	Allows you to control the relative order in which the EFI Boot Manager attempts boot options. For help on the control key sequences you need for this option, refer to the help menu.
Manage BootNext Setting	Allows you to select a boot option to use one time (the next boot operation).
Set Automatic Boot Timeout Value	Allows you to define the value in seconds that pass before the system automatically boots without user intervention. Setting this value to zero disables the timeout feature.
Select Active Console Output Devices	Displays the list of available console output devices, as contained in the ConOutDev list volatile variable. The console output devices that have been selected to be active consoles are annotated as such. You can select or deselect additional output consoles from this menu. The Boot Maintenance Manager performs logic checking to ensure that you choose a legal ensemble of devices. For example, the manager does not allow you to choose two different messaging devices, such as PC-ANSI and VT-100, to be active consoles on a given UART. The system should choose a set of defaults in an implementation-specific fashion if the console out variable is empty. This set of defaults could be expected for the first boot of a given system.
Select Active Console Input Devices	Displays the list of available console input devices, as contained in the ConInDev list volatile variable and the subset detailed in the ConIn variable.
Select Active Error Devices	Displays the list of available error devices, as contained in the ErrOutDev

Option	Description
	list volatile variable and the subset detailed in the ErrOut variable. The active error devices are essentially a type of console output device whose only traffic includes error messaging.
Cold Reset	Performs a platform-specific cold reset of the system. A cold reset traditionally means a full platform reset.
Exit	Returns control to the EFI Boot Manager main menu. Selecting this option will display the active boot devices, including a possible integrated shell (if the implementation is so constructed).

Extensible Firmware Interface (EFI) Shell

The EFI Shell is an EFI application that allows other EFI applications to be launched. The combination of the EFI firmware and the EFI Shell provide an environment that can be modified to easily adapt to many different hardware configurations. The EFI shell is a simple, interactive environment that allows EFI device drivers to be loaded, EFI applications to be launched, and operating systems to be booted. Additionally, the shell also provides a set of basic commands used to manage files and the system environment variables.

After booting the server to the EFI Shell, you have all its commands available to you. Table 5 provides a brief description of the commands.

In addition to shell commands made available to you, the EFI environment allows you to create your own shell commands and EFI applications. For detailed information about the EFI Shell, its commands, and the ability to develop within the environment, refer to the *EFI Developer's Guide*. To find this guide, you must download the "EFI sample implementation source code" from the sample implementation download area of the Extensible Firmware Interface Web Site. Go to the following URL and click on the "EFI sample implementation source code". Once you download the sample, locate the Microsoft Word file named "Efi_dg.doc" in the "Notes" folder.

<http://developer.intel.com/technology/efi/downsource.htm>

Table 5. EFI Shell Commands

Command	Description
<drive_name>:	Changes drives. For example, entering a: and pressing the <ENTER> key changes the drive to the LS120 drive.
alias [-bdv] [sname] [value]	Sets or gets alias settings
attrib [-b] [+/- rhs] [file]	Views or sets file attributes
bcfg -?	Configures boot driver & load options
cd [path]	Changes the current directory
cls [background color]	Clears the screen
comp file1 file2	Compares two files
cp file [file] ... [dest]	Copies files and directories
date [mm/dd/yyyy]	Gets or sets the date
dblk device [Lba] [Blocks]	Performs a hex dump of BlkIo Devices
dh [-b] [-p prot_id] [handle]	Dumps handle information
dmpstore	Dumps the variable store
echo [[-on -off] [text]	Echoes text to the standard output device or toggles script echo

Command	Description
Edd30 [On Off]	Enables or disables EDD 3.0 Device Paths
edit [<i>filename</i>]	Edits a file
endfor	Provides a delimiter for loop constructs (scripts only)
endif	Provides a delimiter for IF THEN constructs (scripts only)
err [<i>level</i>]	Sets or displays the error level
for var in <set>	Provides loop constructs (scripts only)
goto label	Jumps to label locations (scripts only)
guid [-b] [<i>sname</i>]	Dumps known guid ids
help [-b] [<i>internal_command</i>]	Displays help information
if [not] condition then	Provides conditional constructs (scripts only)
load <i>driver_name</i>	Loads a driver
ls [-b] [<i>dir</i>] [<i>dir</i>] ...	Obtains directory listings
map [-bdvr] [<i>sname</i> ::] [<i>handle</i>]	Maps <i>sname</i> to device path
mem [<i>address</i>] [<i>size</i>] [:MMIO]	Dumps Memory or Memory Mapped IO
memmap [-b]	Dumps memory map
mkdir <i>dir</i> [<i>dir</i>]	Creates a new directory
mm <i>address</i> [Width] [:Type]	Memory Modify: Mem, MMIO, IO, PCI
mode [<i>col row</i>]	Sets or gets the current text mode
mount <i>BlkDevice</i> [<i>sname</i> ::]	Mounts a file system on a block device
PalProc <i>arg1</i> [<i>arg2</i>] [<i>arg3</i>] [<i>arg4</i>]	Makes a PAL call
pause	Prompts to quit or continue (scripts only)
pci [<i>bus_dev</i>] [<i>func</i>]	Displays PCI device information
reset [/warm] [<i>reset_string</i>]	Performs a cold or warm reset
rm <i>file/dir</i> [<i>file/dir</i>]	Removes files or directories
set [-bdv] [<i>sname</i>] [<i>value</i>]	Sets or gets environment variables
stall <i>microseconds</i>	Delays for the specified number of microseconds
time [<i>hh:mm:ss</i>]	Gets or sets the time
type [-a] [-u] [-b] <i>file</i>	Displays the contents of a file
ver	Displays version information
vol fs [<i>volume_label</i>]	Sets or displays a volume label

BIOS messages

The following table describes run-time messages:

Message	Description
Searching for boot record from [<i>device name</i>] ... OK	BIOS is searching for, and found, a valid boot image. The device name can be LS-120, HDD-0, HDD-1, CD-ROM/CD-RW, SCSI or network.
Searching for boot record from [<i>device name</i>] ... Not Found	BIOS did not find a valid boot image.
Drive Not Ready. Insert BOOT diskette in FS0	The LS-120 drive is not physically connected, or the drive does not have a diskette in the drive.
Invalid Boot Diskette	Diskette in LS-120 drive contains an unformatted diskette.

Message	Description
Non-system disk or disk error. Replace and strike any key when ready.	Diskette in LS-120 drive contains a formatted diskette but not a valid boot diskette. The CD in the CD-RW drive contains a formatted CD, but not a valid boot CD.

The following table describes Configuration Manager messages:

Message	Description
Password is incorrect!	Password entered does not match required password.
Password must be cleared before a new password can be set!	Use Clear User Password or Clear Administrator Password button on Security Tab to clear password before entering a new password.
Password cannot be zero length!	Passwords must contain one or more characters.
Password entries do not match!	Passwords entered in the Password Verification dialog do not match. Enter passwords again.
Altered settings have not been saved! Selecting "Continue" will discard changes.	Configuration settings have been changed but not saved. Press Continue to exit without saving changes, or Clear to return to Configuration Manager.

The following table describes PXE client status and error messages:

Error Message	Description
PXE-E05 Download buffer is smaller than requested file.	Size of the requested file is larger than the allocated download buffer.
PXE-E07 Network device error.	Network device could not be initialized or had some other unexpected failure.
PXE-E09 Could not allocate I/O buffers.	There is not enough system memory to allocate network I/O buffers.
PXE-E12 Could not detect network connection. Check cable.	Cable is not connected to NIC or something is wrong with NIC or cable.
PXE-E16 Valid PXE offer not received.	Client did not receive a valid PXE offer because: <ul style="list-style-type: none"> • There are no DHCP or proxyDHCP servers that can receive the client's DHCP discover packets. • There are no DHCP or proxyDHCP servers that can transmit DHCP offer packets to the client. • The DHCP or proxyDHCP offer packets received by the client do not contain enough information to complete a remote boot.
PXE-E21 Remote boot cancelled.	<ul style="list-style-type: none"> • User pressed <Esc> or <Ctrl+C> or selected "Local Boot" option from remote boot menu. • DHCP/proxyDHCP server sent down a bootstrap program that auto-selects "Local Boot" and when a bootserver sends down a bootstrap program that returns control to the PAXE LoadFile protocol.
PXE-E22 Client received an ICMP error	An ICMP error was sent to the client by a PXE bootserver or M/TFTP server.

Error Message	Description
from server.	
PXE-E23 Client received TFTP error from server.	A TFTP server sent a TFTP error packet to the client.
PXE-E98 <extra information about previous error code>	If available, extra error information will be displayed about the previous error message.
PXE-E99 Unexpected network error: XXh	An EFI status code was returned by the network drivers that was not expected by the PXE LoadFile protocol.

BIOS recovery and update methods

The Iflash64 is an EFI application program used for updating the BIOS. The Iflash64 utility executes under EFI shell version 0.91 or greater. To use the utility:

1. Copy the Iflash64.efi and binary input file (wpgbios.bin) to a CD-R disk.
Note: These files are available on the BIOS CD.
2. Boot to the EFI shell.
3. Enter the following command line:
UNLOCK /L=2
4. Reboot the system.
5. Again, boot to the EFI shell, enter the following command line, and follow screen instructions:
Iflash64 [file name]
6. Reboot the system after the update is completed.

Recovering from a failed update sequence

The following procedure is used when recovering from a failed update sequence:

1. Copy the firmware image to a CD-R disk using a file name of "wpgbios.bin".
Note: This file is available on the BIOS CD.
2. Place the disk into the CD-RW drive.
3. Move the recovery jumper to the Recovery setting (no jumper).
4. Turn on the system power.
5. Listen for the startup beep sequence (3-3-1-0).
6. The CD-RW drive light will come on and in about 2-3 minutes will turn off.
7. At this point the flash is erased and programmed. Losing power at this point will warrant a restart of the recovery process. This stage of the process may take from 1-2 minutes.

8. When programming is complete (with SUCCESS) you will hear a sequence of 3-3-3-0. Otherwise you will hear a beep code specific to the type of failure.
9. Power down the system and restore the recovery jumper to the Normal setting.

Note: In the event of a failure during recovery, the beep sequence indicating the type of failure repeats until the system is powered down.

Installing components

This chapter provides the basic information that is needed to install hardware components in the computer.

Before you begin

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

- Become familiar with the safety and handling guidelines provided in the Safety Information book and the requirements specified in “Related service information” on page 79. These guidelines will help you work safely while working with the computer or options.
- Make sure you have an adequate number of properly grounded electrical outlets for the computer, monitor, and any other options that you intent to install.
- Back up all important data before you make changes to disk drives.

System reliability considerations

To help maintain proper cooling and system reliability, ensure that:

- All air baffles are properly installed.
- The side cover is properly installed.
- Cables for optional adapters are routed according to the instructions that are provided with the adapters.
- A failed fan is replaced within 48 hours.

Statement 1



DANGER:

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

To avoid a shock hazard:

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

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

CAUTION:



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

Do not:

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

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

Note: See “Parts listing” on page 75 to order the correct replacement battery.

Statement 3



CAUTION:

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

Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.

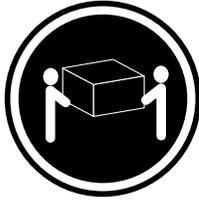
Use of controls or adjustments or performance other than those specified herein might result in hazardous exposure.



DANGER:

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

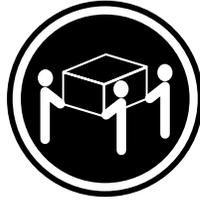
Statement 4



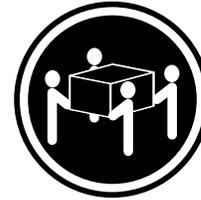
≥18 kg (39.7 lbs)

CAUTION:

Use safe practices when lifting.



≥32 kg (70.5 lbs)



≥55kg (121.2 lbs)

Statement 5



CAUTION:

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



Statement 8



CAUTION:

Never remove the cover on a power supply or any part that has the following label attached.



Hazardous voltage, current, and energy levels are present inside any component that has this label attached. There are no serviceable parts inside these components. If you suspect a problem with one of these parts, contact a service technician

Power and signal cables for internal drives

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

- Four-wire power cables connect the drives to the power supply. At the end of these cables are plastic connectors that attach to different drives; these connectors vary in size. Also, certain power cables attach to the system board.
- Flat signal cables, also called ribbon cables, connect IDE, SCSI, and diskette drives to the system board. There are two sizes of ribbon signal cables that come with your computer.

Remember the following important points when connecting power and signal cables to internal drives:

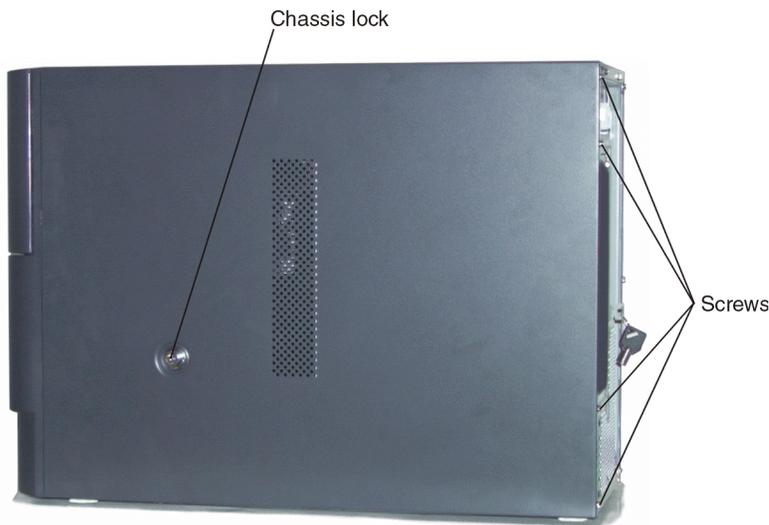
- The drives that are preinstalled in your computer come with power and signal cables attached. If you replace a drive, it is important to remember which cable is attached to which drive.
- When you install a drive, ensure that the cable connector at the end of the signal cable is always connected to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

Removing the side cover and front bezel

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

Side cover removal

Review the information in “Before you begin” on page 25.



To remove the side cover, do the following:

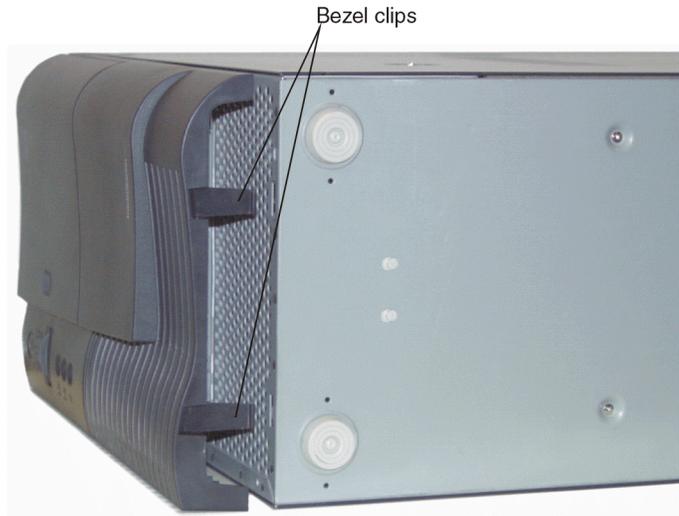
1. Review the safety information in “Before you begin” on page 25.
2. Remove any media (diskettes, CDs, or tapes) from the drives and shut down your operating system.
3. Turn off the computer and all attached devices, and then disconnect all external cables and power cords.
4. If necessary, unlock the side cover chassis lock:
 - a. Turn the lock clockwise; the lock cylinder should spring out.
 - b. Pull out the lock cylinder if it does not spring out.

Note: If the key for the chassis lock is unavailable, see “Opening a chassis cover without keys” on page 30.

5. Loosen the screws at the rear of the chassis, slide the cover toward the rear of the chassis, and remove it.

Front bezel removal

To remove the front bezel, do the following:



1. Locate the bezel clips on the bottom-edge of the front of the computer and press to disengage the bezel from the chassis.
2. Carefully pull the front bezel away from the system.

Opening a chassis cover without keys

If the key for the chassis lock is not available, follow these instructions to remove the cover:

1. Remove the front bezel from the chassis (see “Front bezel” on page 30).
2. Remove the 5 ¼” drive bay from chassis (see “Installing hard disk drives” on page 36).
3. Reach in through the 5 ¼” bay opening and using pliers, grasp the nut securing the lock assembly to the side cover and turn counter-clockwise.
4. Back nut off approximately ¼ -inches.
5. Push lock assembly forward until locking pin disengages from hole.
6. Remove the four screws securing the side cover to the rear of the chassis (see “Side cover” on page 29).
7. Slide the cover to the rear and remove it.

Installing adapters

The computer contains five 66 MHz 64-bit and two 33 MHz 64-bit peripheral component interconnect (PCI) adapter slots. One 66 MHz slot contains the SCSI adapter.

Adapter considerations

Before you begin the adapter-installation procedure, do the following:

- Review the adapter documentation and follow those instructions in addition to the instructions given in this chapter. If you need to change the switch or jumper settings on your adapter, follow the instructions that came with the adapter documentation.
- Determine if device drivers require that interrupts not be shared. For certain device drivers, it might be necessary to alter settings so that interrupts are not shared.
- Install only PCI adapters that use IA-64 device drivers.

Attention: When you handle static-sensitive devices, take precautions to avoid damage from static electricity. For details on handling these devices, see “Handling electrostatic discharge-sensitive devices” on page 82.

To install a PCI adapter, do the following:

1. Review the information in “Before you begin” on page 25.
2. Turn off the computer and all attached devices. Disconnect all power cords and external cables and remove the side cover.
3. Loosen the screws on the system board cover and open the cover.
4. Remove the baseboard air baffle.
5. Determine which expansion slot you will use for the adapter.

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

6. Remove the adapter from the static-protective package.

Attention: Avoid touching the components and gold-edge connectors on the adapter.

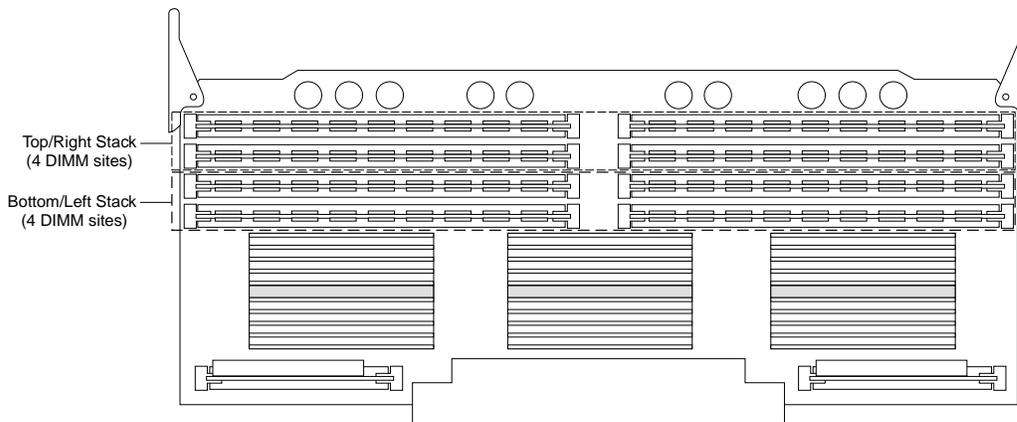
7. If you need to put down the adapter, place the adapter, component-side up, on a flat, static-protective surface.
8. Install the adapter:
 - a. Carefully grasp the adapter by its top edge or upper corners, and align it with the expansion slot on the system board.
 - b. Press the adapter firmly into the expansion slot.
9. Install the baseboard air baffle.
10. Install the system board cover.
11. Install the side cover.
12. Reconnect the external cables and power cords; then, turn on the attached devices and the computer.

Installing memory

Before you continue with the memory-installation procedure, review the following:

- Read the information in “Before you begin” on page 25.
- The computer comes with two memory boards. The system can operate with one or two memory boards installed. However, to gain maximum memory bandwidth, both boards must be installed.
- Each memory board contains eight DIMM connectors and supports 4-way memory interleaving.
- You must install DIMMs in sets of four. All the DIMMs in each set must be the same size memory technology (e.g., 256Mb) and speed, but all the sets do not have to contain DIMMs of the same size and speed.
- Install only PC100 compliant 168-pin (x72) DIMMs. Only 256-MB, 512-MB, and 1-GB SDRAM DIMMs are supported.

The following illustration shows the location of the DIMM connectors on the memory board.

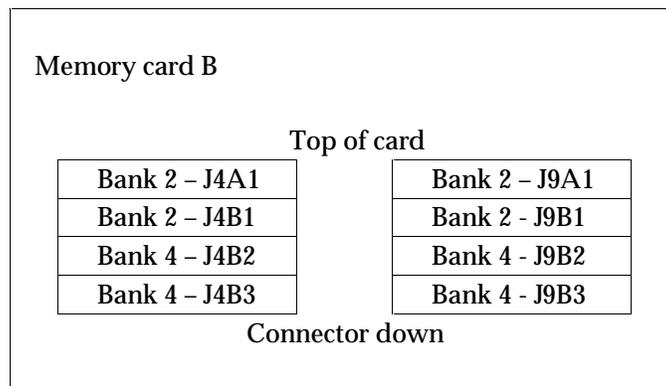
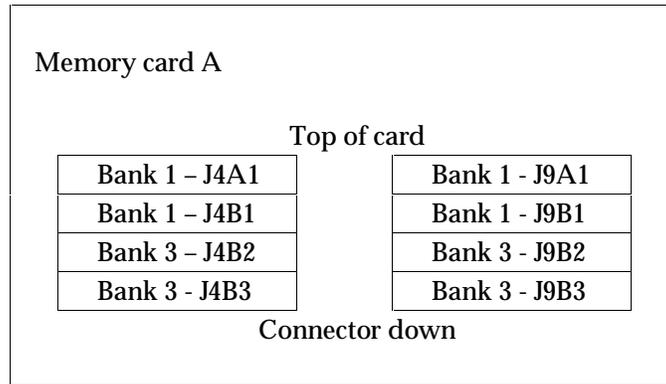


Attention: When you handle static-sensitive devices, take precautions to avoid damage from static electricity. For details on handling these devices, see “Handling electrostatic discharge-sensitive devices” on page 82.

Each memory card is identical and identified by which socket it uses.

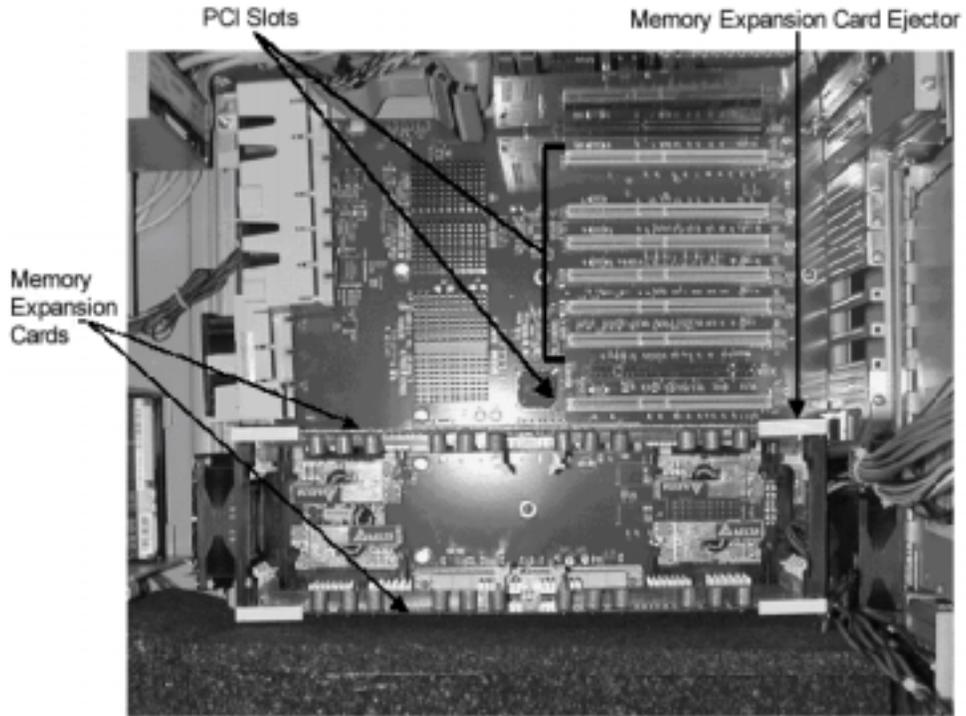
Due to two- and four-way interleaving, all DIMMs installed in each of the two or four banks must be the same size to obtain maximum performance. Each of the four DIMMs installed in a bank must be the same size, and each bank must contain four DIMMs if the bank is populated. DIMMs in other banks can be different sizes but this might affect performance. Install DIMMs in sequence: bank 1 through 4.

Table 6 DIMM installation sequence

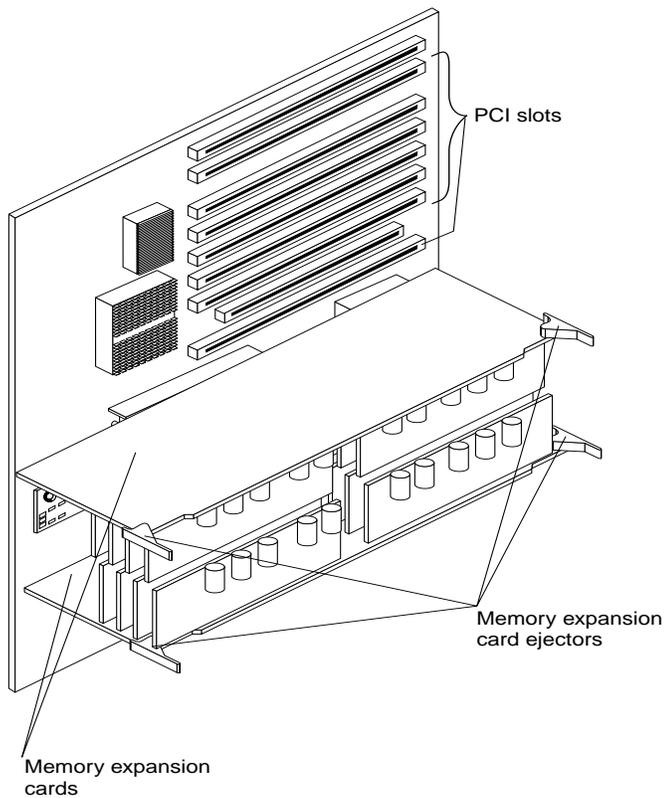


To install additional memory, do the following:

1. Review the information in “Before you begin” on page 25.
2. Turn off the computer and all attached devices. Disconnect all power cords and external cables, and then remove the side cover.
3. Loosen the two screws on the system board cover and open the cover.
4. Remove the baseboard air baffle.
5. Pull up on the ejector clips to remove the memory board.

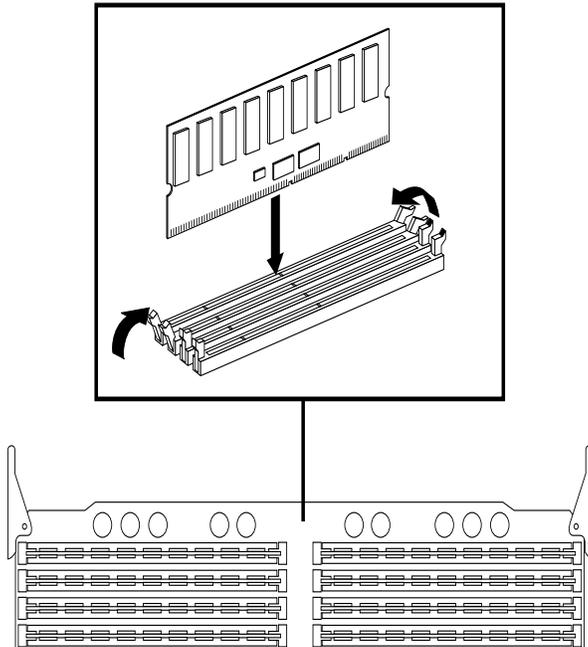


6. Slide the board out of the computer.



7. Place the memory board on a static-protective surface.
8. Hold the DIMM by its edges and remove it from its static-protective package.

9. Position the DIMM above the connector and align the notches in the bottom-edge of the DIMM with the keys in the connector.



10. Insert the DIMM into the connector.
11. When the DIMM is seated, press down on the top-edge of the DIMM until the retaining clips snap into place.
12. Make sure that the clips are firmly in place.
13. Install the memory board:
 - a. Align it with the guides in the retention mechanism and slide it forward.
 - b. Press down on the ejector clips until the memory board is firmly in place.
14. Install the baseboard air baffle.
15. Install the system board cover.
16. Install the side cover.
17. Reconnect the external cables and power cord; then, turn on the attached devices and the computer.

Installing hard disk drives

The computer supports five 1-inch (26 mm) slim, 3.5-inch or three 1.6-inch (42 mm) half-high SCSI or IDE hard disk drives in the hard disk drive cage.

Note: If you install an IDE hard disk drive with an active partition and loaded with an operating system, the system will default to the IDE drive as the boot device even if the SCSI drive also has an operating system loaded.

Attention: When you handle static-sensitive devices, take precautions to avoid damage from static electricity. For details on handling these devices, see “Handling electrostatic discharge-sensitive devices” on page 82.

To install a hard disk drive, do the following:

1. Review the information in “Before you begin” on page 25.
2. Turn off the computer and all attached devices. Disconnect all power cords and external cables, and remove the front bezel.
3. Remove the screws that secure the hard disk drive cage.

Note: Illustrations are for reference only. Your hardware may differ.



4. Slide the hard disk drive cage from the chassis.
5. Touch the static-protective package containing the drive to any unpainted metal surface on the computer; then, remove the drive from the package and place it on a static-protective surface.
6. Follow the manufacturer's directions for setting jumpers and other special requirements.
7. Align the mounting holes of the hard disk drive with the mounting holes on the drive cage and secure it with screws supplied with the hard disk drive.
8. If you are installing a SCSI drive, attach the last connector of the SCSI cable to the SCSI drive.
9. Connect the power cable to the back of the drive.
10. Slide the hard disk drive cage into the chassis and reattach it with the screws.
11. Reconnect the external cables and power cord; then, turn on the attached devices and the computer.

Input/output ports and connectors

This section provides information about the input/output (I/O) ports on the rear of your computer. These ports include the following:

- One video
- One keyboard
- One auxiliary pointing-device (mouse)
- One serial
- Two external SCSI
- One Ethernet
- Two Universal Serial Bus (USB)
- Two audio

Video connector

Your computer contains an SVGA controller that is fully compatible with industry video standards. The amount of video memory in your computer varies by model. You cannot add video memory to this system.

The following table shows the pin-number assignments for the video connector on the system board.

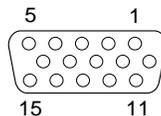


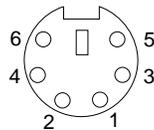
Table 7. Video connector pin-number assignments

Pin	Signal	Pin	Signal
1	Red	9	Not connected
2	Green	10	Ground

3	Blue	11	Not connected
4	Not connected	12	Display data channel data
5	Ground	13	Horizontal synchronization
6	Ground	14	Vertical synchronization
7	Ground	15	Display data channel clock
8	Ground		

Keyboard connector

There is one keyboard port on the system board.



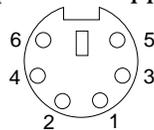
The following table shows the pin-number assignments for the keyboard connector on the system board.

Table 8. Keyboard connector pin-number assignments

Pin	Keyboard signal
1	Data
2	Not connected
3	Ground
4	+5 V DC
5	Keyboard clock
6	Not connected

Auxiliary-device (pointing device) connector

The system board has one auxiliary-device port that supports a mouse or other pointing device.



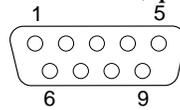
The following table shows the pin-number assignments for the auxiliary-device connector on the system board.

Table 9. Auxiliary-device connector pin-number assignments

Pin	Mouse signal
1	Data
2	Not connected
3	Ground
4	+5 V DC
5	Mouse clock
6	Not connected

Serial connector

The computer has one standard serial (communication) port.



The following table shows the pin-number assignments for the serial-port connector on the system board. These pin-number assignments conform to the industry standard.

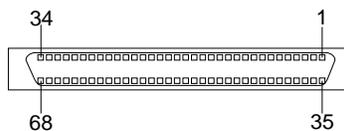
Table 10. Serial port connector pin-number assignments

Pin	Description
1	Data carrier detect signal
2	Receive data
3	Transmit data
4	Data terminal ready
5	Ground
6	Data set ready
7	Request to send
8	Clear to send
9	Ring indication active

SCSI connectors

The computer has two external small computer system interface (SCSI) ports.

The computer has a dual-channel LVD SCSI controller. This controller supports two independent SCSI channels. Each of these channels support up to 15 SCSI devices. You can use the two external LVD SCSI channel connectors on the rear of your computer to connect different types of SCSI devices, such as drives or printers.



The following table shows the pin-number assignments for the 68-pin SCSI connector.

Table 11. Wide SCSI port connector pin-number assignments

Pin	Signal	Pin	Signal
1	+Data 12	35	-Data 12
2	+Data 13	36	-Data 13
3	+Data 14	37	-Data 14
4	+Data 15	38	-Data 15
5	+Data P1	39	-Data P1
6	+Data 0	40	-Data 0
7	+Data 1	41	-Data 1

Pin	Signal	Pin	Signal
8	+Data 2	42	-Data 2
9	+Data 3	43	-Data 3
10	+Data 4	44	-Data 4
11	+Data 5	45	-Data 5
12	+Data 6	46	-Data 6
13	+Data 7	47	-Data 7
14	+Data P	48	-Data P
15	Ground	49	Ground
16	S16 (DIFFSENS)	50	Ground
17	Term power	51	Term power
18	Term power	52	Term power
19	S19 (Reserved)	53	Reserved
20	Ground	54	Ground
21	+Attention	55	-Attention
22	Ground	56	Ground
23	+Busy	57	-Busy
24	+Acknowledge	58	-Acknowledge
25	+Reset	59	-Reset
26	+Message	60	-Message
27	+Select	61	-Select
28	+Control/Data	62	-Control/Data
29	+Request	63	-Request
30	+Input/Output	64	-Input/Output
31	+Data 8	65	-Data 8
32	+Data 9	66	-Data 9
33	+Data 10	67	-Data 10
34	+Data 11	68	-Data 11

Ethernet connector

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

To access the Ethernet controller, attach a Category 3, 4, or 5 unshielded twisted-pair (UTP) cable to the RJ-45 connector on the rear of your computer.

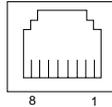
Note: The 100BASE-TX Fast Ethernet standard requires that the cabling in the network be Category 5.

Configuring the Ethernet controller: When you connect your computer to the network, the Ethernet controller automatically detects the data-transfer rate (10 Mbps or 100 Mbps) on the network and then sets the controller to operate at the appropriate rate. In addition, if the Ethernet connector that your computer is connected to supports auto-negotiation, the Ethernet controller will set the appropriate duplex state. That

is, the Ethernet controller will adjust to the network data rate, whether the data rate is standard Ethernet (10BASE-T), Fast Ethernet (100BASE-TX), half duplex (HDX), or full duplex (FDX). The controller supports HDX and FDX modes at both speeds.

The Ethernet controller is integrated on the system board. You do not need to set any jumpers or configure the controller for your operating system before you use the Ethernet controller.

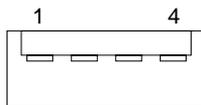
Ethernet connector: There is an RJ-45 connector on the rear of the computer.



Pin	Signal	Pin	Signal
1	+Transmit data	5	Not connected
2	-Transmit data	6	-Receive data
3	+Receive data	7	Not connected
4	Not connected	8	Not connected

Universal Serial Bus connectors

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



Pin	Signal
1	VCC
2	-Data
3	+Data
4	Ground

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

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

Audio connectors

The audio connectors are used to connect external audio equipment to your computer.

Line out

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

Line in

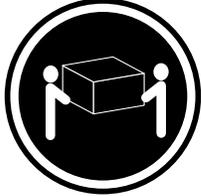
This connector is used to accept audio signals into the computer from external devices, such as line output from a stereo, television, or musical instrument.

FRU information (service only)

The following information describes procedures for removing and installing most components inside the system. Only a qualified service technician is authorized to access the components described in this chapter.

Note: Due to the excessive weight of the workstation system (approximately 90 lbs.), care must be taken when maneuvering the system during assembly and disassembly.

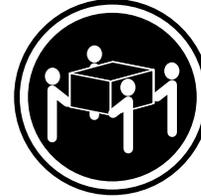
Statement 4



≥18 kg (39.7 lbs)



≥32 kg (70.5 lbs)



≥55kg (121.2 lbs)

CAUTION:

Use safe practices when lifting.

Preparing to add or replace components

If replacing components such as hard drives or CD-ROM drives, the front bezel (large plastic section on the front of the system) must be removed for access to the bays, as well as side access within the system. In cases not involving the peripherals or front panel ports, the bezel can remain in place. Use the following steps to access or open the system:

1. If necessary, remove the side cover and front bezel (see “Removing the side cover and front bezel” on page 29).

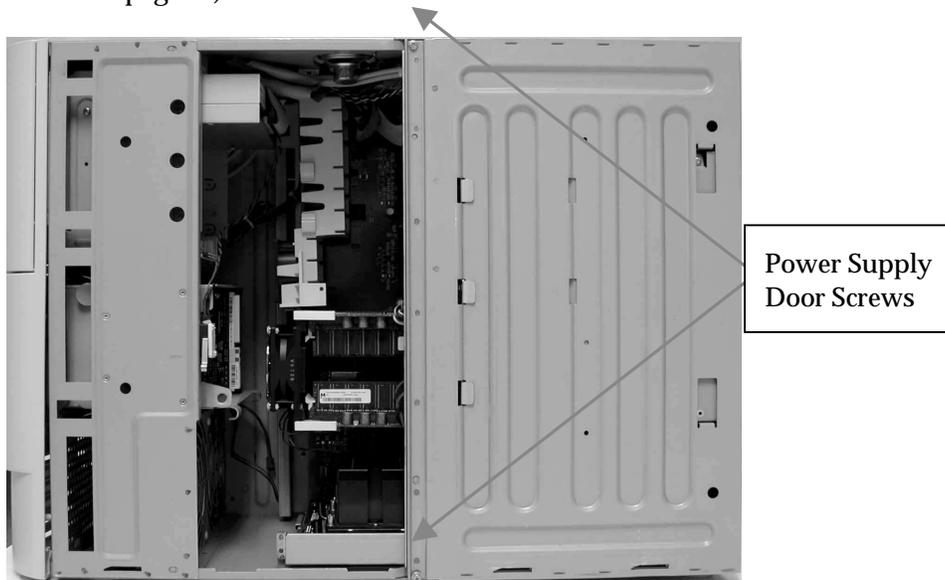


Figure 1 Internal system view after side door removal

2. Remove the two Phillips screws securing the power supply door.
3. Pull the power supply door upwards and allow the door to swing outwards until it clicks into place.

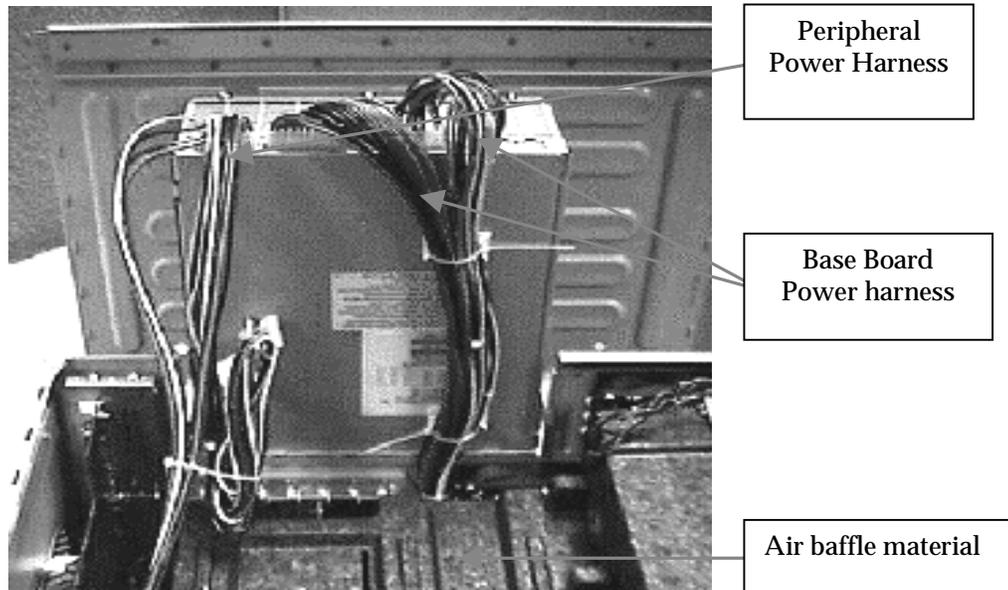


Figure 2 Power supply door in open position

4. Remove the air baffle material (EPAC).

Attention: The air baffle material is required for proper operation of the system and must be replaced back into the same position before closing the system after servicing.

Disconnecting and removing internal components

The following steps are required to disconnect and remove internal components.

1. Remove the peripheral power supply harness from the main power supply and lay the harness out of the way. *This step does not require the power harness to be disconnected from any internal peripherals or to be completely removed from the system chassis.*



Figure 3 Peripheral power harness

2. Remove the processor Power Pod's power harness from the main power supply.

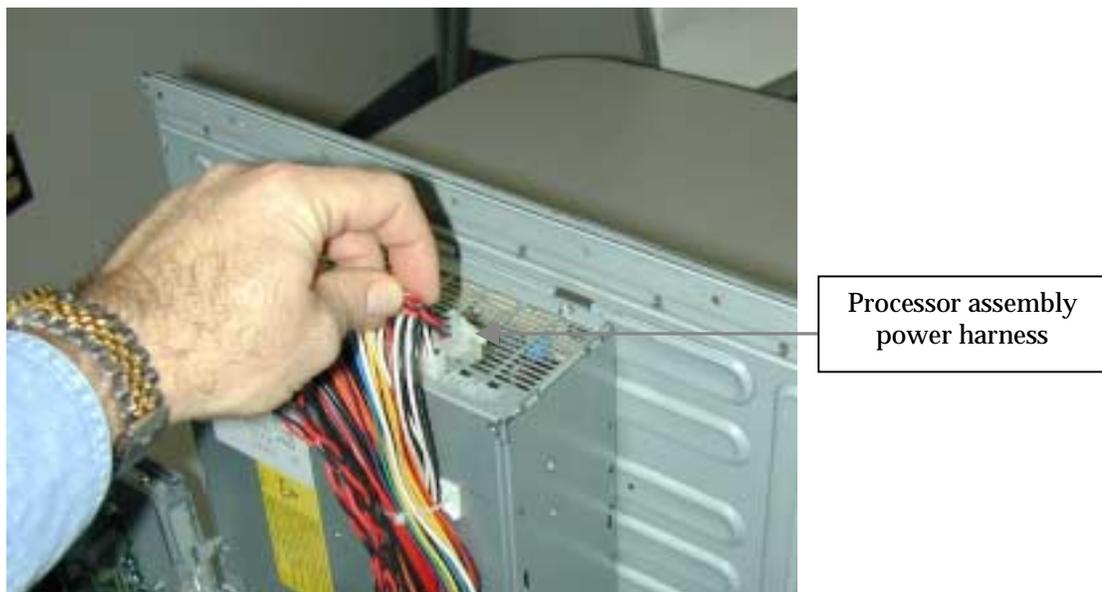


Figure 4 Processor power harness

3. Remove the two (2) screws securing the processor assembly to the system chassis and remove the processor assembly from the system chassis as demonstrated in the following illustration.



Figure 5 Processor assembly

4. Using the white ejector tabs mounted on the top edges of the memory cards, locate and remove both memory cards from the system as demonstrated in the following illustration.



Figure 6 Memory cards

Removing adapter cards

Complete the following actions to remove adapter cards from the system:

1. Remove all remaining PCI or AGP based adapter cards from the system.
2. Remove the network interface card's retaining screw and "L" bracket (see following illustration).
3. Remove the Network interface card from Slot S2 on the baseboard.
4. Remove the two (2) screws at the top of the I/O bracket located inside the system.
5. Remove the screw holding the I/O bracket to the rear of the system (see following illustration).
6. Remove the screw fastening the plastic retaining foot at the front of the I/O board from the baseboard (Figure 7).
7. If so equipped, remove the filler panel mounted reset switch from the system (Figure 7).

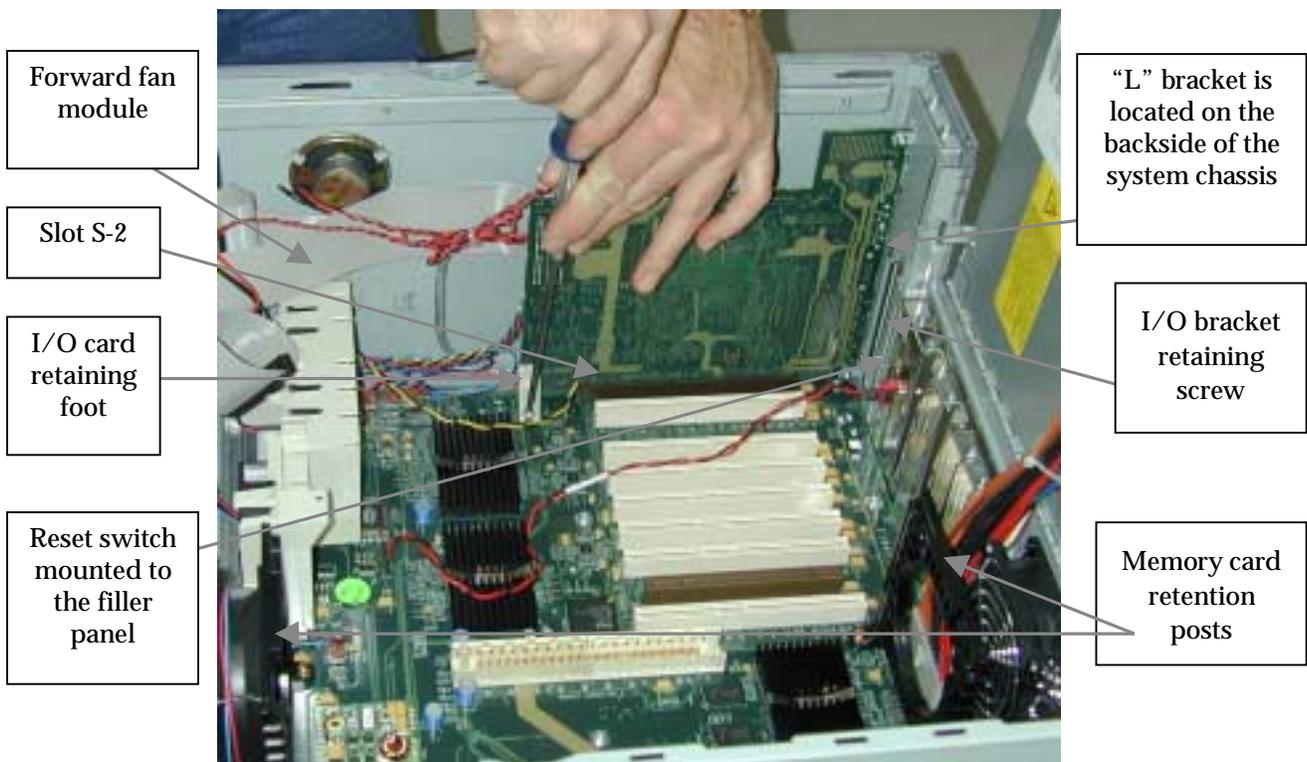


Figure 7 Internal component locations

8. Always handle the board from the edges and/or the bracket attached to it to minimize static issues and contamination. Remove the I/O assembly by disengaging the board's edge from the I/O connector on the baseboard.
9. Before disconnecting cables from the board, note location, function and port connections.
10. The board may now be removed from the system and placed on an anti-static mat.
11. Remove all fan power connectors from the Baseboard.
12. Locate and remove the four (4) screws (2-each) from the black memory card retention posts.

13. Referring to Figure 7 and Figure 9, note that the forward retention post has a fan mounted to it. There is no need to remove this the fan from the retention post.

14. Locate the forward fan module (refer to Figure 7) and remove the two (2) screws securing the module to the chassis. Then by applying pressure inward towards the center of the module, disengage the mounting two (2) mounting clips located at each end of the lower portion of the module (Refer to Figure 8).

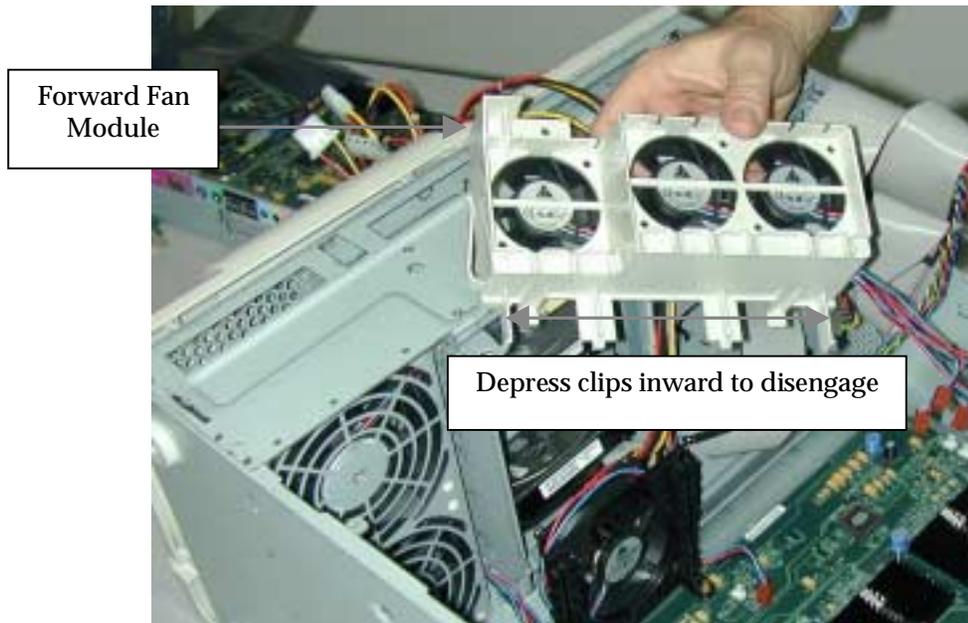


Figure 8 Forward fan module

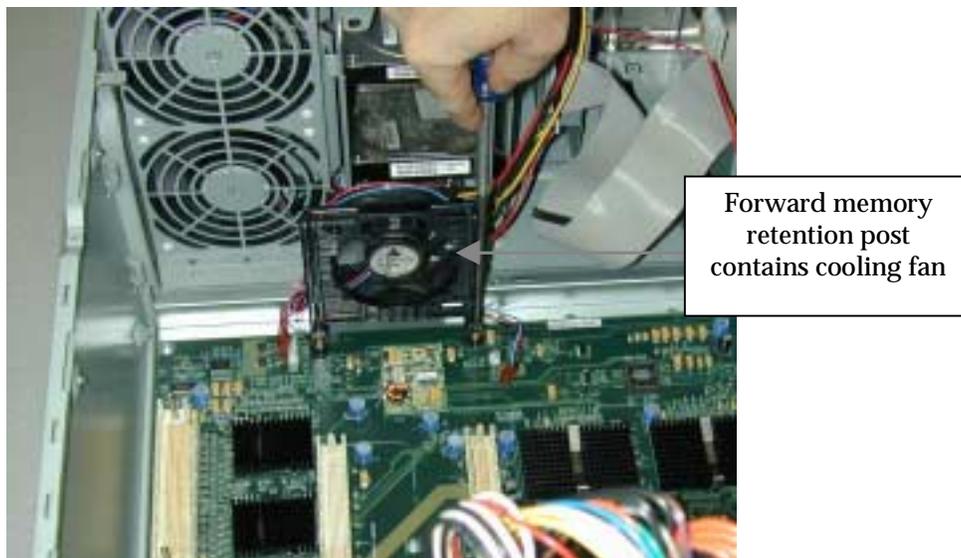


Figure 9 Memory card retention post (front)

15. Remove the remaining three (3) main power supply connectors from the rear of the baseboard (refer to Figure 10).



Figure 10 Main-power connection to baseboard (rear)

16. Remove the six (6) remaining screws securing the Baseboard to the chassis and then remove the Baseboard from the system chassis. (Refer to Figure 11 for mounting screw locations).

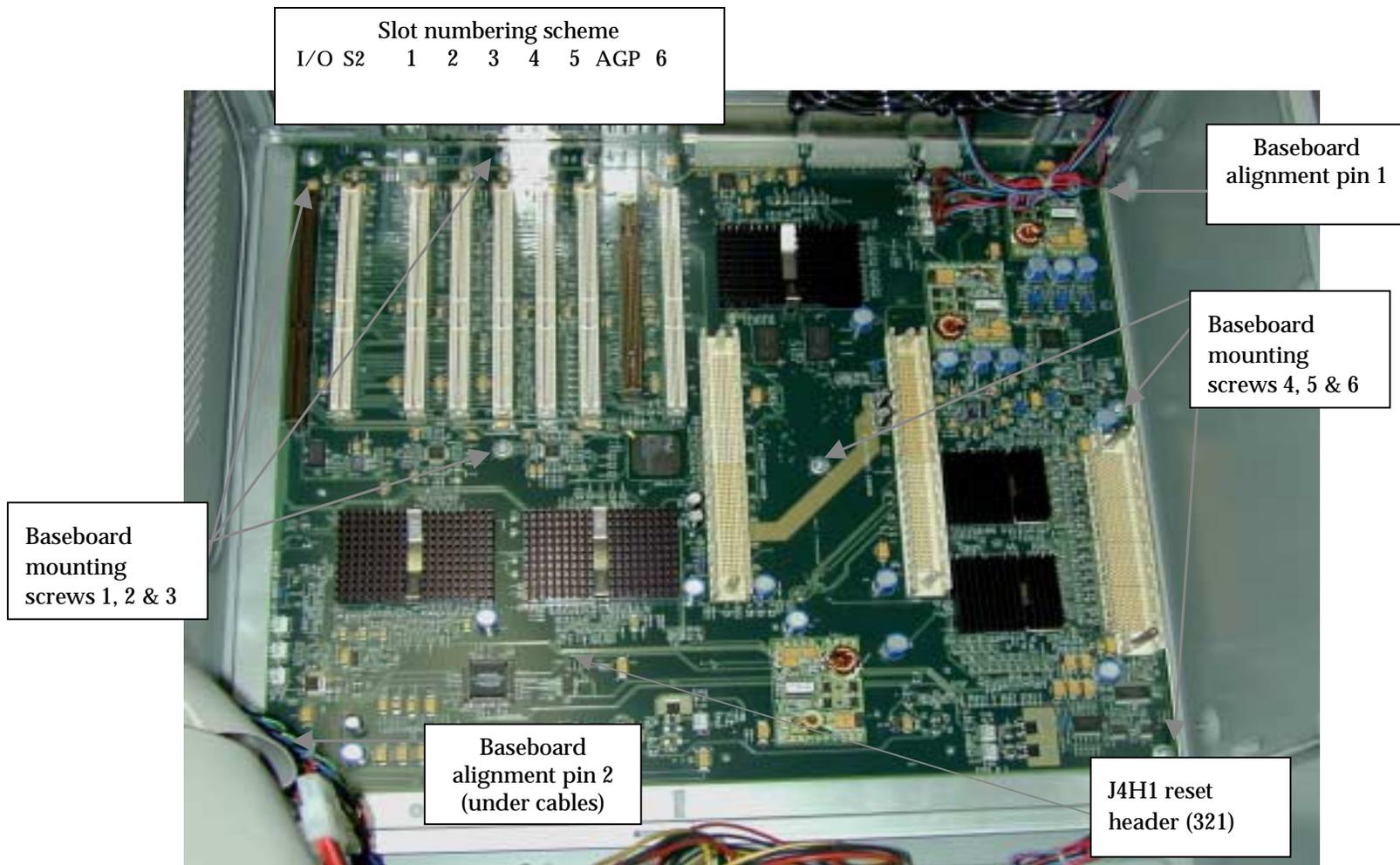


Figure 11 Baseboard mounting screw locations

Installing internal components

The following section describes how to install internal components. Only qualified service technicians may install these components.

Jumper settings

The following diagram and tables describe jumper settings.

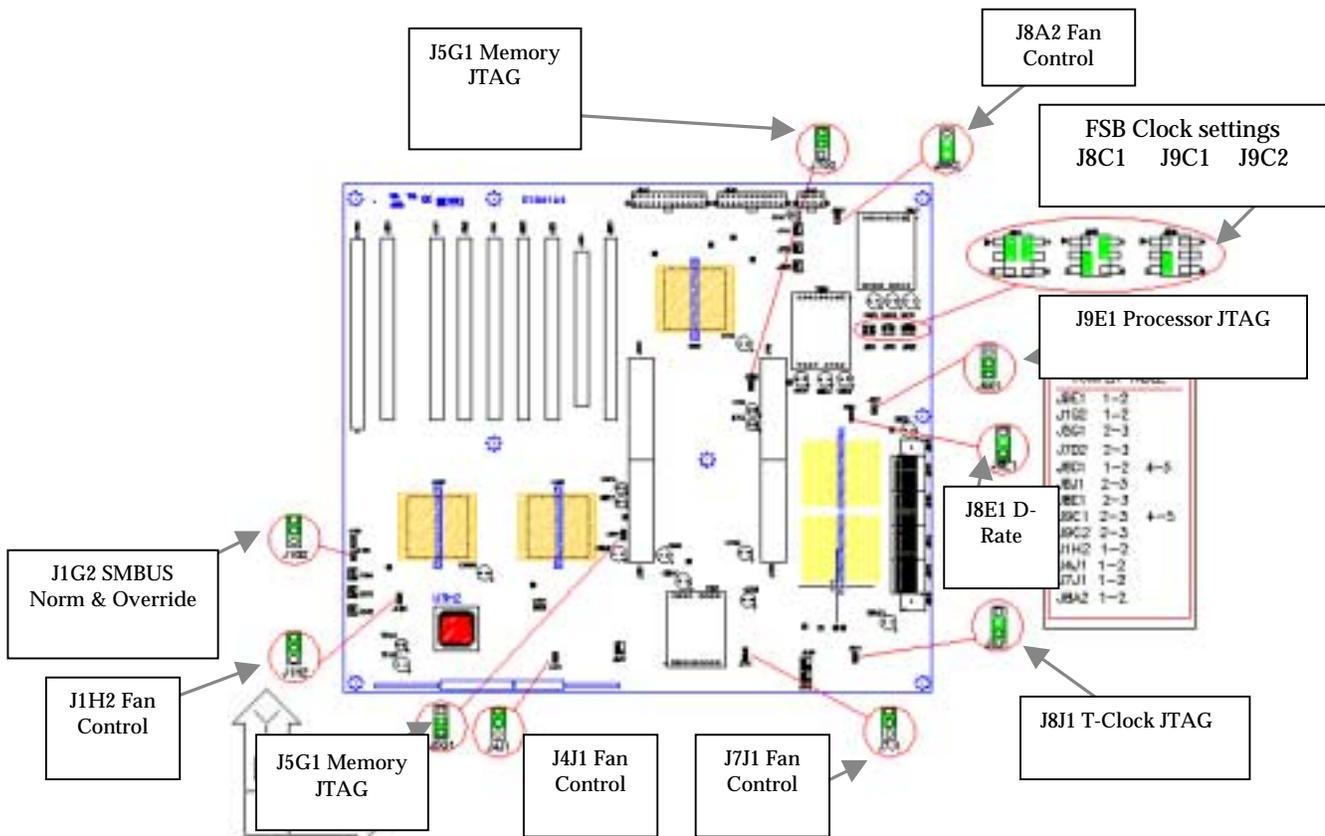


Figure 12 Jumper configuration settings

<i>Table 12. Clock Jumper Selection</i>								
FSB FREQ MHz	JUMPER SELECTION					CLK GEN SELECTS		
	J8C1		J9C1		J9C2	M<8..0>	N<1..0>	
66.666	1-2	4-5	2-3	4-5	1-2	100000000	0	1
75	2-3	4-5	2-3	4-5	1-2	100100000	0	1
100*	1-2	4-5	2-3	4-5	2-3	110000000	0	1
125	2-3	5-6	2-3	4-5	2-3	111100000	0	1
133.333	1-2	4-5	1-2	4-5	1-2	100000000	0	0

<i>Table 13. JTAG Header (J9E1 - FSB Connector)</i>	
JTAG LOOP	
Processor LOOP	1-2*
SYSTEM	2-3

<i>Table 14. Boot Jumper Header (J1G2)</i>	
NORM	1-2*
OVRD/CLRCMOS	2-3
RECOVERY	No jumper

<i>Table 15. JTAG MEMA (J5-G1-MEMA)</i>	
BYPASS	1-2*
MEMA	2-3

<i>Table 16. JTAG MEMB (J7-D1-MEMB)</i>	
BYPASS	1-2*
MEMB	2-3

<i>Table 17. CACHE Enable (J6C1-IO Card)</i>	
CACHE on	1-2*
CACHE off	2-3

<i>Table 7. FAN Thermal Control (J4J1, J7J1, J8J2, J1H2)</i>	
Variable Speed	1-2*
Full speed	No jumper

* Default.

Baseboard installation

Note: When replacing the baseboard, battery or I/O board, it is necessary to run the BIOS CD to ensure that CMOS settings and BIOS are correct.

After verifying that the jumpers on the Baseboard and the I/O board are correctly set, insert the new baseboard into the system chassis and center the board utilizing the baseboard alignment pins 1 and 2 as shown in Figure 11. Now, using the following steps:

1. Apply a small amount of downward pressure to “press fit” the baseboard onto the alignment pins. The remaining six (6) baseboard mounting holes must now be aligned properly. Insert the six- (6) baseboard mounting screws and secure the baseboard to the chassis. (Refer to the locations in Figure 11).
2. Replace the three (3) main power supply connectors at the rear of the baseboard (Refer to Figure 10).

Fan installation

1. Replace the forward fan module by snapping it into place and replacing the two (2) mounting screws. Attach the forward fan module’s power connectors to the baseboard.
2. Replace the two (2) black memory card retention posts and secure them to the baseboard using four (4) screws (2 each). Be sure to place the retention post, which contains the fan, at the front of the baseboard adjacent to the FWD Fan Module. (Refer to Figure 7 and Figure 9).

Reset switch

1. Locate the reset switch (the switch may be mounted to a filler panel).
2. To install the reset switch, position the switch in an unused slot, such as Slot #1 (refer to Figure 11 for location of Slot #1).
3. Secure the filler panel with a Phillips-head screw.
4. Orient the connector so that the *red lead wire* connects to pin #1 and the *black lead wire* connects to pin #2 on the Baseboard header J4H1 (refer to Figure 11).

Note: A reset switch may have been previously installed in the system. Only one (1) switch is required.

I/O board installation

Attention: After installing the I/O board and the operating system, the boot record used to start the operating system should be saved to the hard drive or an external medium.

Note: When replacing the baseboard, battery or I/O board, it is necessary to run the BIOS CD to ensure that CMOS settings and BIOS are correct.

Locate the original I/O board previously installed in the system. The I/O mounting bracket is attached to the I/O board and must be removed from the original I/O board and reinstalled on the upgrade I/O board in this step.

1. To remove the I/O mounting bracket from the I/O board and remove the two (2) Phillips-head screws securing the board to the bracket.
2. Remove (unsnap) the plastic retaining foot from the I/O PCB.
3. Reverse the procedure by placing the bracket on the Upgrade I/O board.
4. Install (snap) on the new PCB.
5. Replace and tighten the two (2) screws securing the bracket to the board.

Adding the I/O label to the I/O bracket

An I/O bracket label denotes what function each port on the workstation performs. To install the I/O label refer to the following steps:

1. Remove the I/O label from the plastic bag.
2. Remove the pre-punched port cut outs from the label.
3. Remove the adhesive backing from the label and align the label over the appropriate ports on the I/O bracket and apply the label. The serial port end of the label should be flush against the top of the bracket, while the keyboard and mouse ports should be centered in the label.

Reinstalling the I/O board and Network Interface Card

1. Align the I/O bracket to the chassis, and the card edge connector into the system baseboard ensuring that the I/O card is completely seated into the I/O slot.
2. Replace the I/O bracket retaining screw that holds the I/O bracket to the rear of the system. Refer to Figure 7.
3. Replace the two (2) screws at the top of the I/O bracket mounting it to the inside of the system.
4. Replace the Network interface card into Slot S2 on the baseboard.
5. Replace the network interface card's "L" bracket and retaining screw.
6. Replace all cables and connectors previously removed from the I/O board.

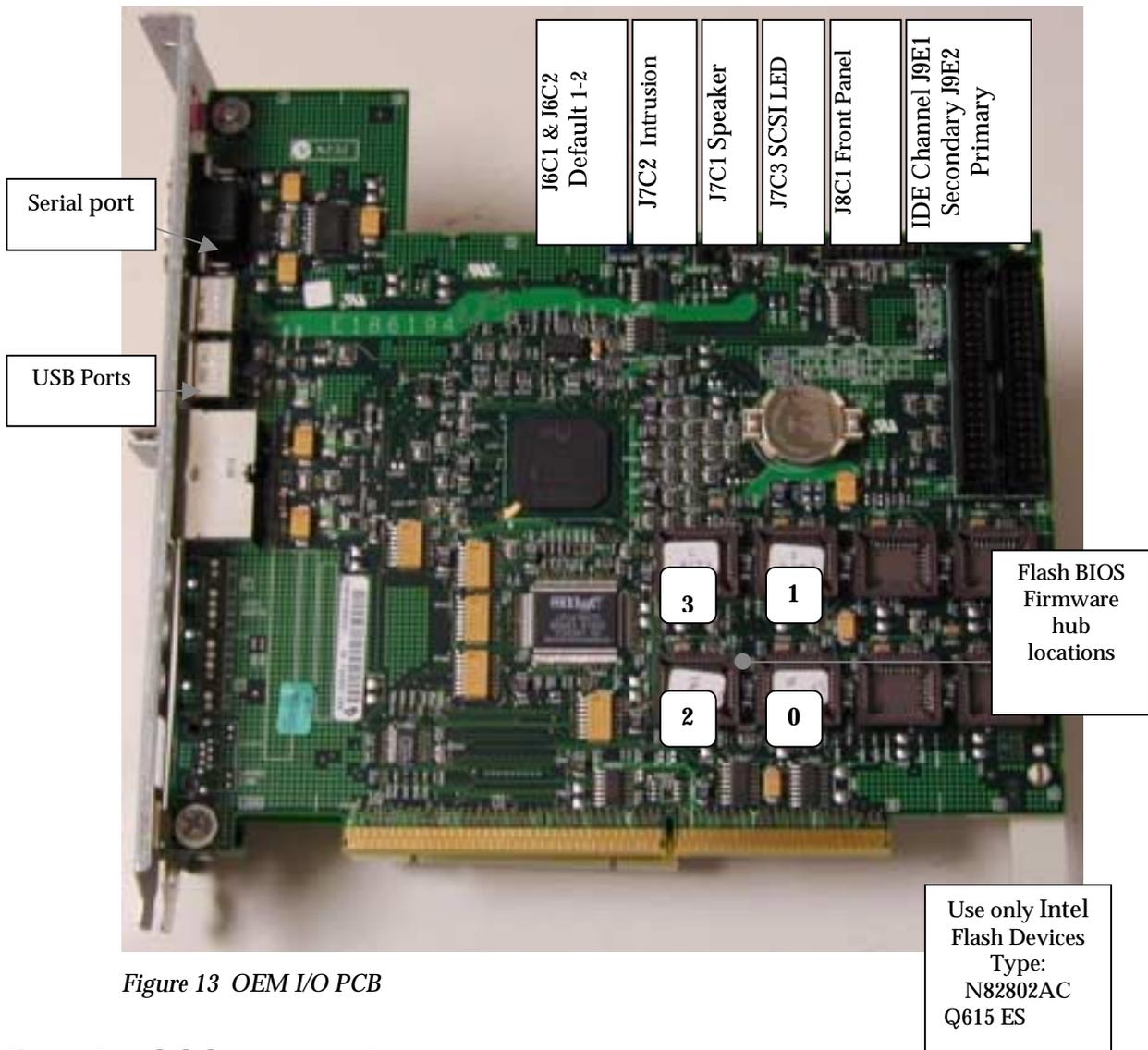


Figure 13 OEM I/O PCB

Adding the SCSI controller

Use the following steps to add the SCSI controller to the OEM system.

1. Locate PCI Slot #3 J3B1 on the baseboard. (Refer to Figure 11 for location).
2. Remove the Phillips-head screw and filler panel, for Slot #3.
3. Locate the Adaptec 39160 SCSI controller and cable assembly in the upgrade kit.
4. Insert the Adaptec 39160 SCSI controller into Slot #3 making sure that the controller is completely seated in the PCI slot.
5. Attach the 68-pin SCSI cable connector (labeled P1) to the top connector of the Adaptec controller (labeled J3).

6. Route the SCSI cable toward the front of the system (to the hard drive bay), making sure not to obstruct the cooling fans.
7. Attach the drive Activity Indication cable (black & yellow) from the Adaptec adapter to J7C3 on the OEM I/O Board. Refer to Figure 13 and Figure 14.

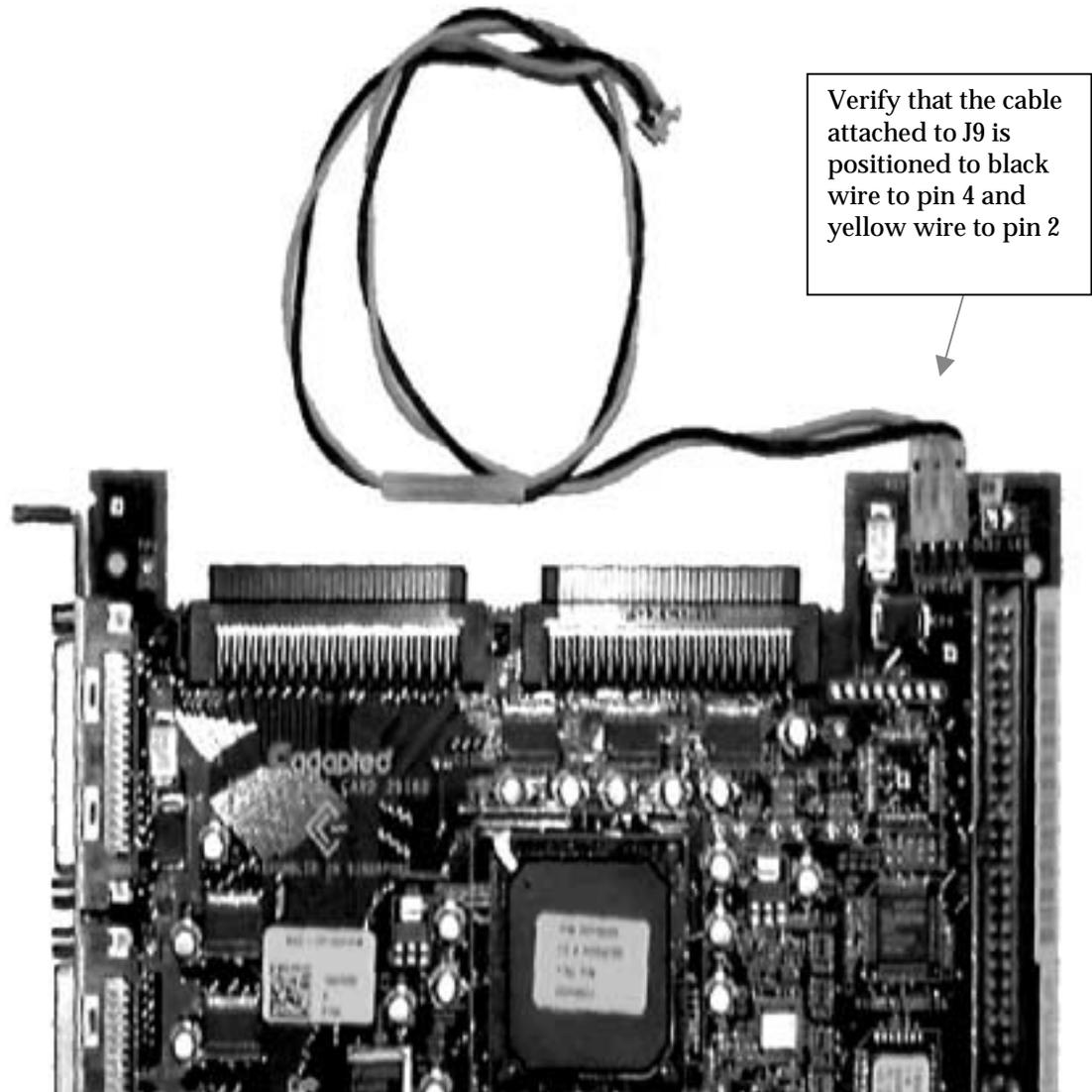


Figure 14 Adaptec SCSI adapter

Reinstalling the adapter cards

Locate and reinstall all remaining PCI or AGP based adapter cards previously removed from the system.

Reinstalling the memory cards

1. Locate the original memory cards previously removed from the system in Step 4 of “Disconnecting and removing internal components” on page 44. Insert the memory cards into the Baseboard Memory Connectors by aligning the edges of the cards with the slots in the memory card retention posts.
2. Ensure that the card is seated firmly into the connector.
3. Repeat the process with the second memory board.

Preparing the processor for upgrade

1. Locate the processor assembly previously removed in Step 3 of “Disconnecting and removing internal components” on page 44. Remove the processor air baffle from the processor assembly.
Note: The air baffle is also known as the EPAC baffle.
2. Remove the four (4) Phillips-head screws securing the processor Power Pod to the retention device (refer to Figure 15).

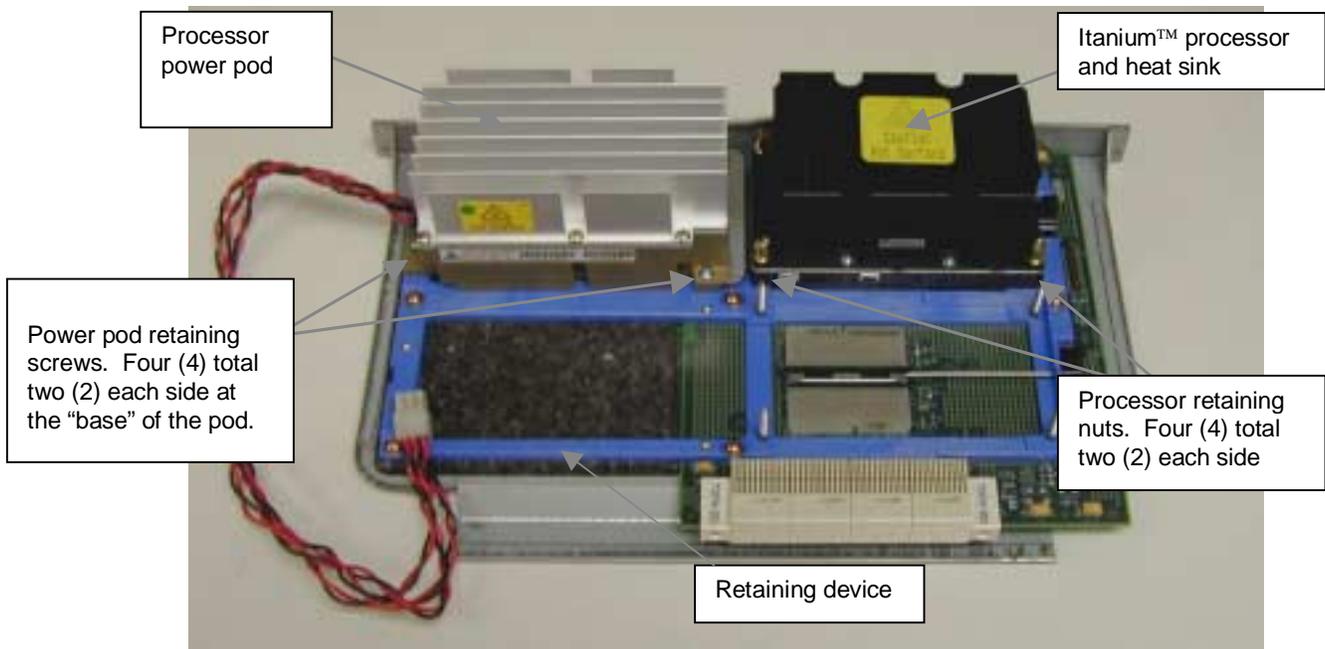


Figure 15 Preparing the system for upgrade

3. After removing the four (4) retaining screws from the base of the Power Pod, set the screws safely aside.
4. Disengage the Power Pod from the processor by sliding it outward and away from the processor (as shown in Figure 16).

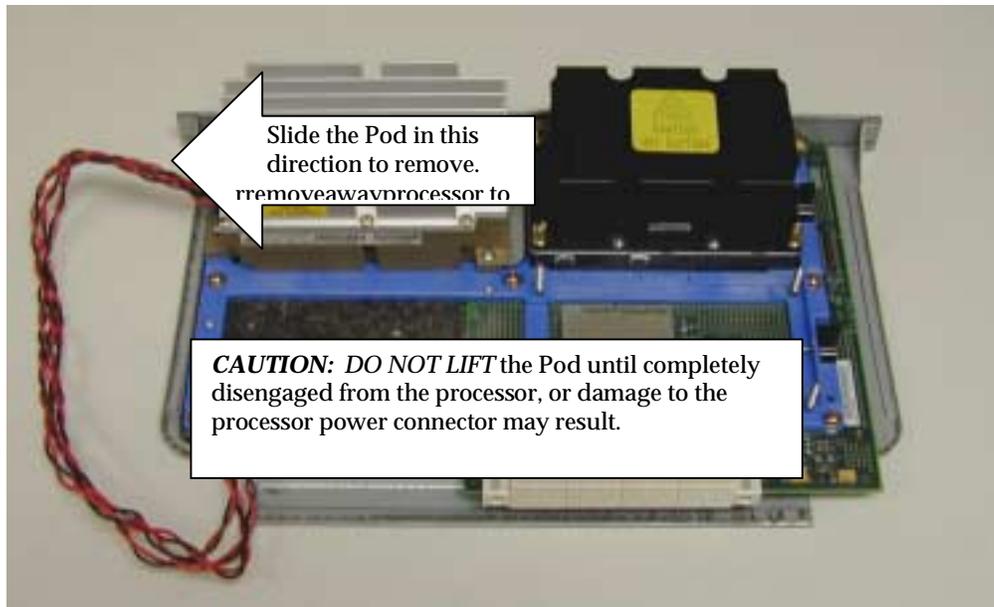


Figure 16 Removing the power pod

5. After the Power Pod has been completely removed, remove the four (4) processor retaining nuts from the retaining studs at the base of the Itanium processor and set them safely aside.
6. Grasping the heat sink on the processor (while depressing firmly on the black processor ejector tab), gently rock the processor side-to-side until freed from the LIF socket (refer to Figure 17).

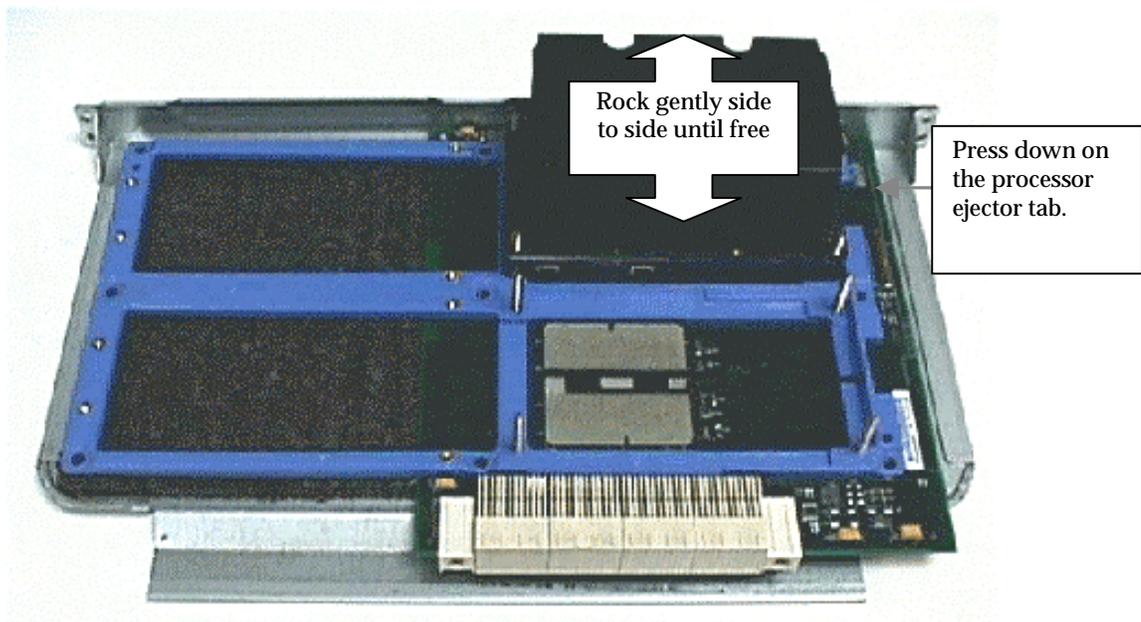


Figure 17 Removing the heat sink

7. Upon removal of the Itanium processor, next remove the nine (9) Phillips-head screws securing the blue retaining device to the processor backing plate (refer to Figure 18).

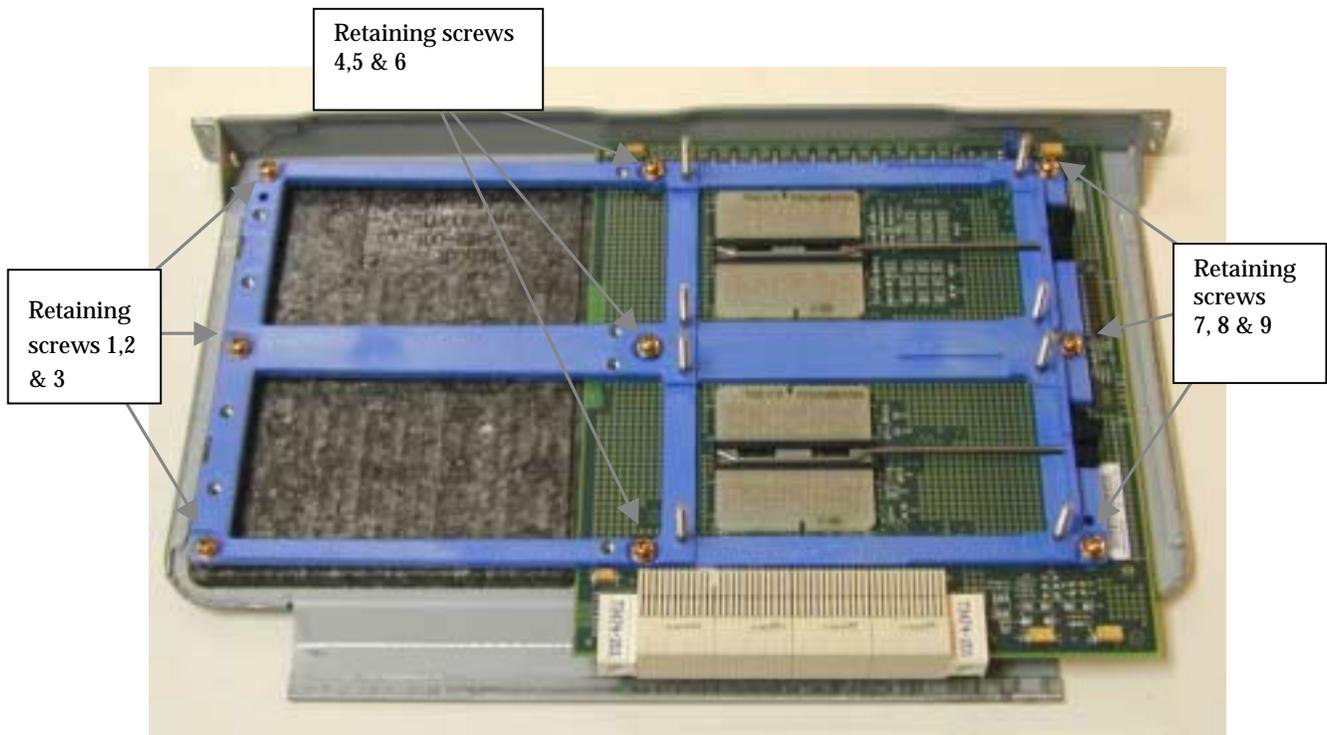


Figure 18 Retention device screw locations

8. Once the retaining device has been removed, the processor board can be easily disengaged from the processor backing plate alignment pins, by applying a small amount of leverage with a screwdriver to each corner (refer to Figure 19).

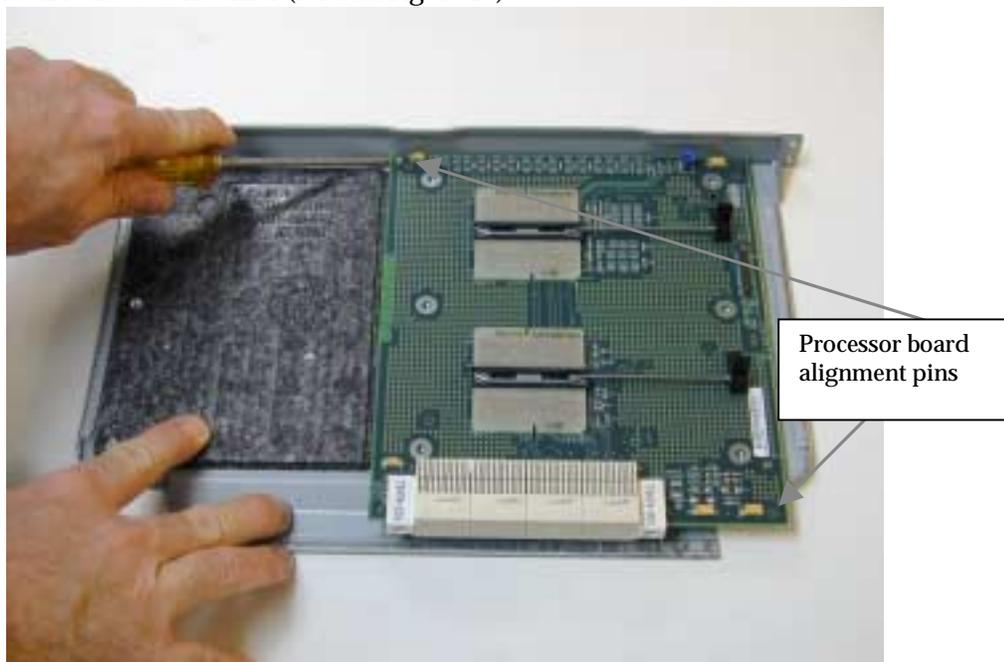


Figure 19 Processor board with retention device removed

9. With the original processor board removed, the processor backing plate should have a thin air baffle material in place. *Do not remove this material.*

10. Mount the new upgrade processor board onto the backing plate alignment pins, and firmly press fit the board into place.
11. Check the jumper setting at position J1 for the proper setting. A jumper should be in position on pins 1-2 and in position on pins 5-6 for single processor mode. (Refer to Figure 20).

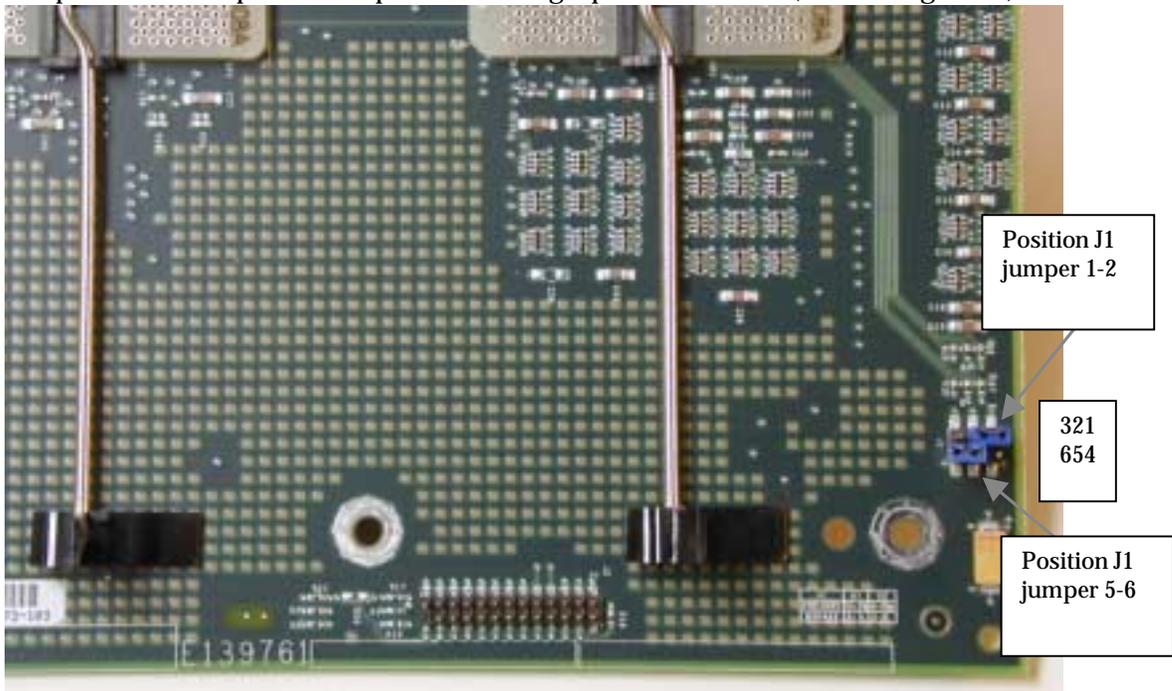


Figure 20 Processor board jumper settings

12. Position the *blue retention device* back in place on top of the processor board, and replace the nine (9) Phillips-head screws. Tighten the screws, securing the retention device to the processor backing plate (refer to Figure 17 for placement).

Processor replacement

Once the retention device has been installed:

1. Position the processor over the four (4) processor retention studs.
2. Gently lower into place onto the LIF socket #1 (refer to Figure 21).

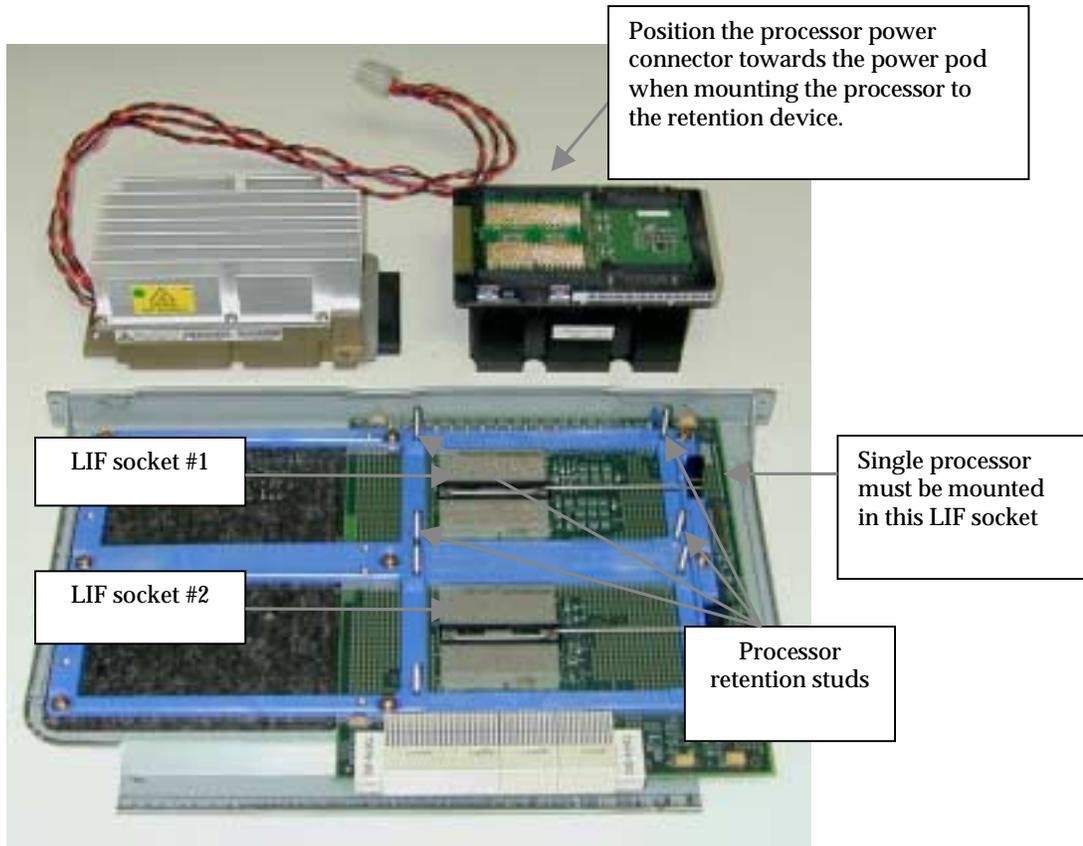


Figure 21 Replacing the processor

3. Once the Itanium processor has been lowered into position onto the retention studs, there will be a slight amount of play, which enables the installer to line up the processor pins in the LIF socket and “feel” the processor seat.
4. Ensure that the processor case aligns properly and seats flush within the retention mechanism.



Figure 22 Properly seating the processor

5. Place the processor assembly on a sturdy surface such as a bench or desktop, with the processor backing plate down.
6. Using the heel of the hand apply firm pressure to the heat sink to seat the processor into the LIF socket (refer to Figure 22).
7. Locate the four (4) brass, Castle-head nuts and fasten the nuts to the four (4) threaded retention studs. Utilize the cross torque pattern referenced in Figure 21.
8. If available use a torque driver (torque screwdriver, P/N 16F1661; Phillips head #2 bit for torque screwdriver, P/N 16F1664) and tighten the screws to 10 inch pounds. (Refer to Figure 23).



Top view of Itanium™ processor and cross torque pattern.

Figure 23 Securing the Itanium processor

Power pod replacement

1. Locate the processor power pod and four (4) (6-32 .5 inch) Phillips-head screws.
2. Place the processor power pod onto the retention device.
3. Next, firmly mate the Itanium™ processor card edge power connector to the power pod's card edge socket.
4. Fasten the power pod to the retention device with four (4) Phillips-head screws. Refer to Figure 24.

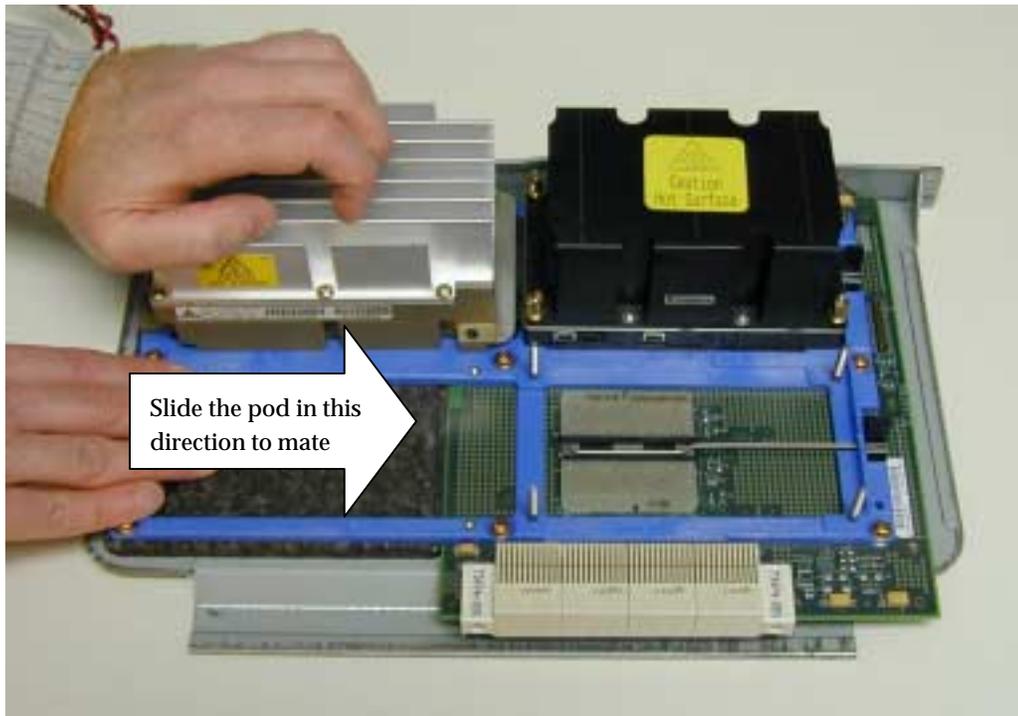


Figure 24 Replacing the power pod

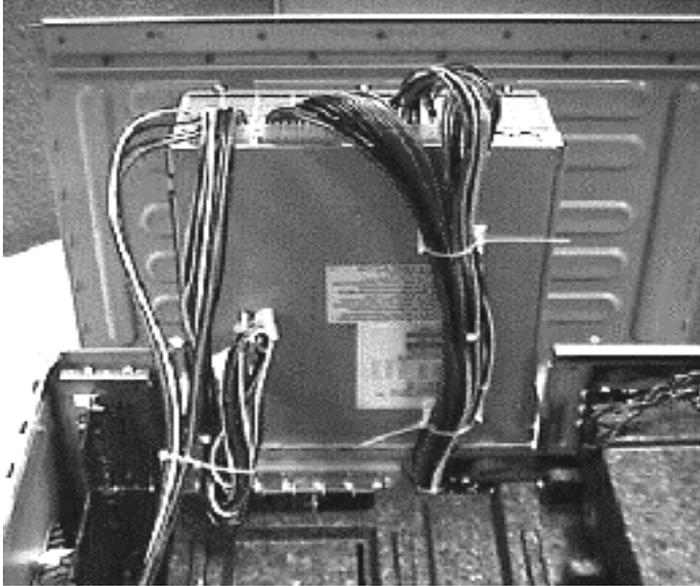
Processor board replacement

1. Replace the processor EPAC baffle previously removed in Step 1 in “Preparing the processor for upgrade” on page 57, and route the power pod's power cable(s) through the opening in the air baffle material.
2. Grasping the processor board by the backing plate, align the edges of the backing plate with the processor's guide plate and firmly insert this assembly into the chassis.
3. Secure the processor board backing plate to the chassis by replacing the two (2) Phillips-head screws previously removed.
4. Attach the power pod's power cables to the main power supply.

Power supply

To replace the power supply:

1. Review the information in “Before you begin” on page 25.
2. Turn off the computer and all attached devices. Disconnect all power cords and external cables, and then remove the side cover.
3. Unscrew power supply door.



4. Swing the power supply door to the open position.
5. Disconnect all connectors (6 total) from the power supply.
6. Remove the four screws securing the power supply to the bottom of the power supply door and lift the power supply away from the chassis.
7. Attach the new brace to the new power supply.
8. Replace the four screws that secure the power supply to the power supply door.
9. Reconnect the six connectors that were disconnected in step 5.
10. Close power supply door and replace screws.

Hard drive bay assembly

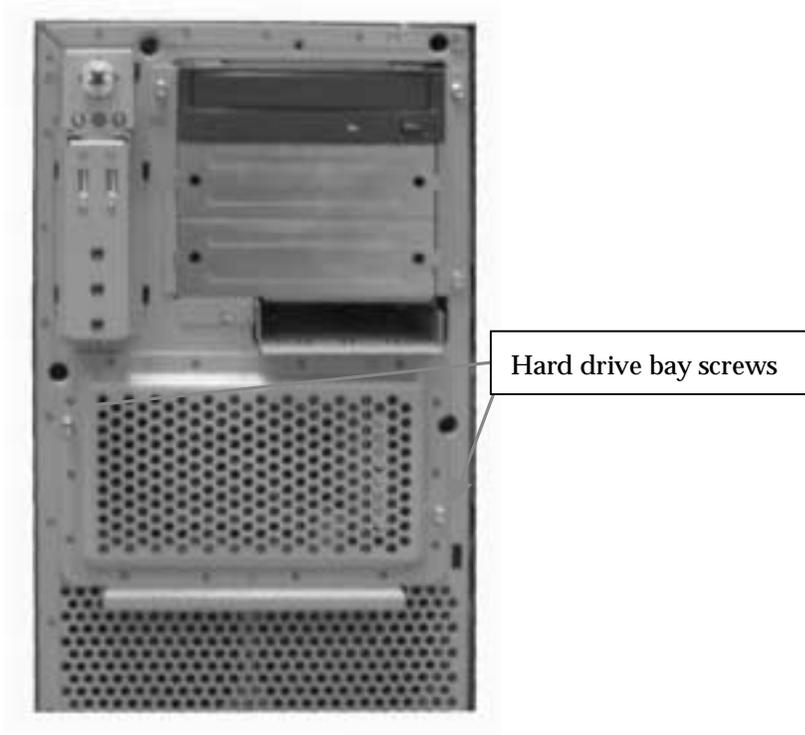
The hard drive bay is designed to house five (5), one-inch standard profile 3.5” hard drives, or three (3) half-high (1.6”) profile 3.5” hard drives. The hard drive bay can be removed from the system and devices added or removed without opening the side of the system. To remove the IDE hard drive and install the SCSI hard disk to the workstation system use the following steps:

Note: For those who plan to run IDE and SCSI drives concurrently, be advised. If the IDE hard drive remains installed and has an active partition with an operating system, the system will default to the IDE drive as the boot device even if the SCSI drive has an operating system loaded.

IDE drive removal

If you have not removed the bezel, refer to “Removing the side cover and front bezel” on page 29 and then proceed with the following steps:

1. Remove the two (2) Phillips-head hard drive bay screws on the front side of the chassis.



2. Slide the assembly outward keeping it in a horizontally position, by pulling hard on the drive bay. It should emerge with the cables still attached to the system.
3. Remove the signal and power cables from the IDE hard drive.
4. Remove the four (4) Phillips-head screws securing the IDE hard drive to the bay and remove the device from the bay.

Adding the SCSI hard drive

Complete the following actions to add the SCSI hard drive.

1. Remove the new drive device from its packaging. Follow the manufacturer’s directions for setting up the jumpers and other special requirements. For specific information regarding the Atlas IV jumper settings, locations and options, please refer to the manufacturer’s web site: http://www.quantum.com/support/HOD/Atlasivw_scsi/support.html.
2. To mount the SCSI drive to the drive bay, align the mounting holes into the drive to the mounting holes of the desired slot (in the drive bay), and refasten the four (4) Phillips-head screws supplied with the drive.

3. Now, attach the last connector (labeled P6) of the SCSI cable (routed to the hard drive bay from Step 6 of “Adding the SCSI controller” on page 55) to the SCSI drive.

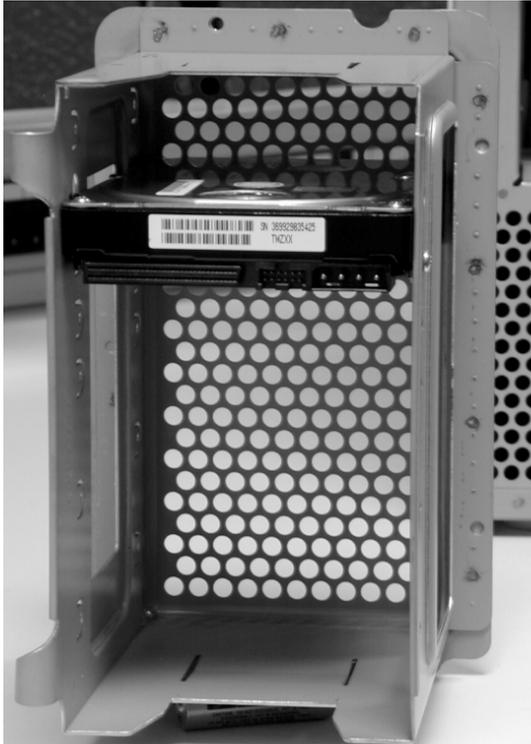


Figure 25 Correct SCSI drive installation

Reassembling the hard drive bay

1. Once the peripheral device is mounted in the bay, and the cables have been attached, slide the bay back into the system being careful not to crush the ribbon cables into the PCI cards, or block the airflow of the fans in the system.
2. Refasten the two (2) screws back into the drive bay to secure it to the system.

Reassembling the system

When reassembling the system, be sure to adhere to proper grounding techniques. Refer to “Safety information” on page 79.

1. Ensure that the processor assembly is properly seated into the baseboard assembly and that the EPAC baffle is reinstalled over the processors (refer to Figure 26).

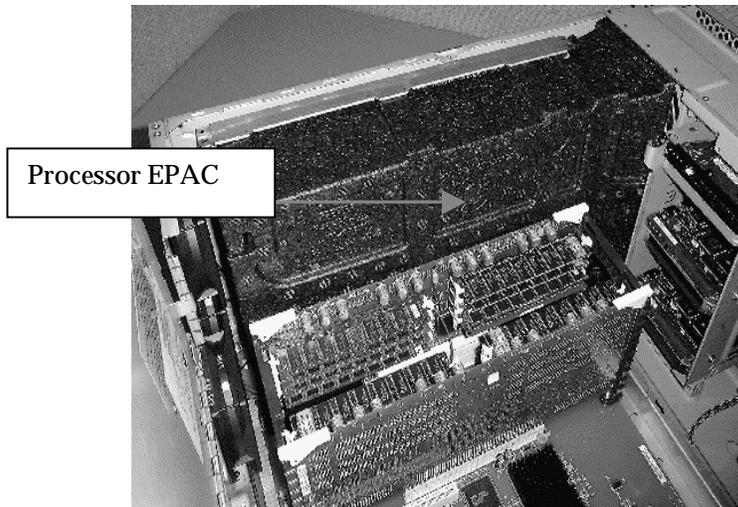


Figure 26 Correct reinstallation of air baffle

2. Verify that the memory cards are properly seated into the baseboard assembly.
3. Check that all cables are properly plugged in and not blocking fans or interfering with fan movement.
4. Ensure that all drives are fastened to the drive bays and the drive bays to the chassis.
5. Now, place the baseboard air baffle over the memory cards as shown in Figure 26. The center tab should align with the air baffle of the processor assembly. Then position your fingers over the air baffle as shown in Figure 28 and push down. The air baffle should “pop” into place.

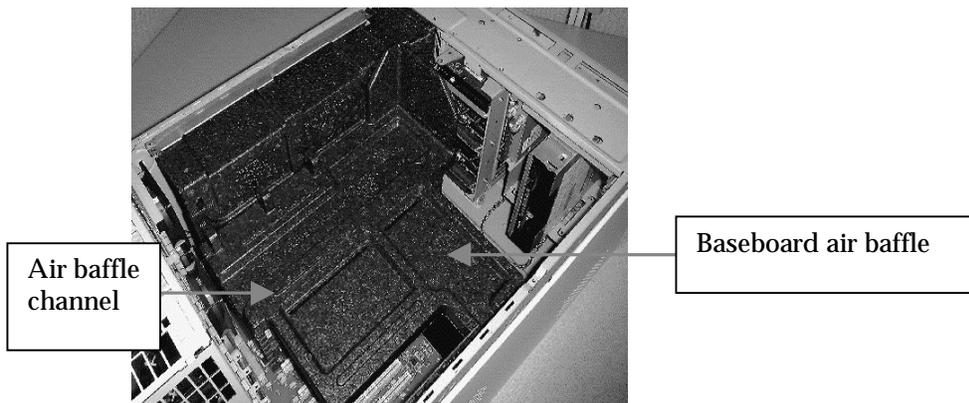


Figure 27 Air baffle inserted over memory cards

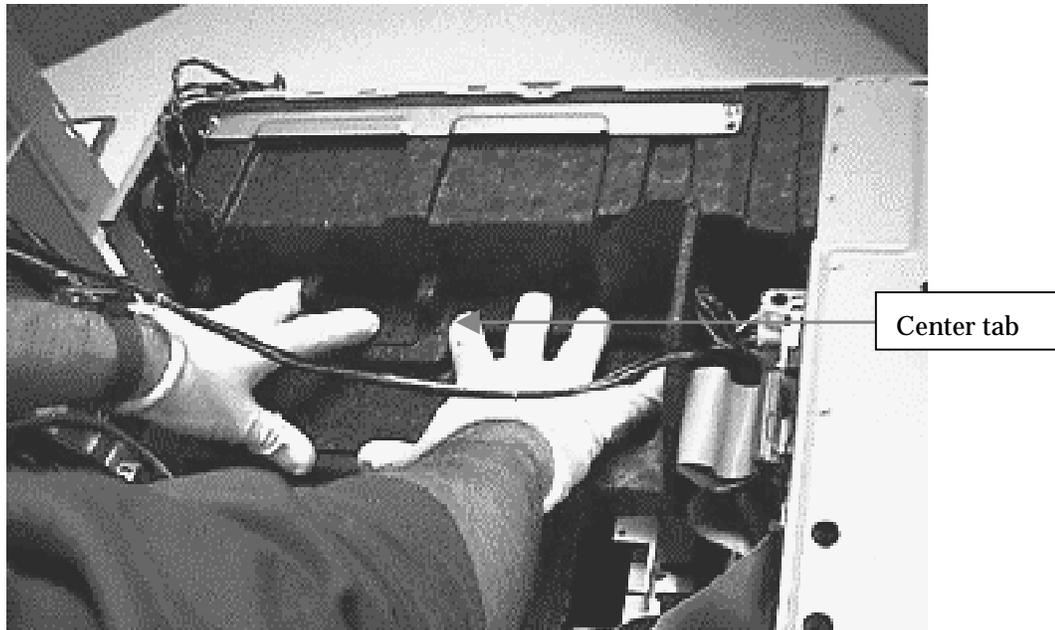


Figure 28 Air baffle installation

6. Once the air baffle is in place close the power supply door by disengaging the power supply door “*locking tab*” located near the I/O board. The supply closes in a downward motion into the system. While closing, keep the cables of the power supply in the channel of the air baffle as much as possible. Ensure that no power cables are being cut or pinched and ***DO NOT FORCE*** the door closed.
7. If the system will not close easily, then the cables of the power supply need to be rerouted back into the air baffle channel.
8. Reattach the two (2) power supply door screws.
9. Reattach the side panel by placing the tabs of the sheet metal into the slots of the system at the top. Then slide the side panel towards the front of the system. When properly in place, the lock can be depressed into the system and secured.
10. Reattach the bezel by aligning the top of the bezel to the top of the system. Then by aligning the interlock clips with their respective slots push the clips into the slots starting with the top two down to the bottom clips.
11. Reattach all external devices such as the keyboard, mouse, video monitor and AC power into their respective ports.
12. The system is now ready to power on.

Symptom-to-FRU index

This index supports IntelliStation Z Pro Model 6894 workstations.

Notes:

1. Check the configuration before you replace a FRU. Configuration problems can cause false errors and symptoms.
2. For IBM devices not supported by this index, refer to the manual for that device.
3. Always start with “General checkout” on page 1.

The Symptom-to-FRU lists symptoms, errors, and the possible causes. The most likely cause is listed first. Use this Symptom-to-FRU index to help you decide which FRUs to have available when servicing the computer. The POST BIOS displays PSOT error codes and messages on the screen.

Beep symptoms

Beep symptoms are short tones or a series of short tones separated by pauses *intervals without sound). See the following examples.

Note: One beep after successfully completing POST indicates the system is functioning properly.

Beeps	Description
1-2-3	One beep A pause (or break) Two beeps A pause (or break) Three beeps
4	Four continuous beeps

Beep code	FRU/Action
1-1-5 (memory failure; all four rows have mismatched SPD data)	<ol style="list-style-type: none">1. Verify that all four DIMMs in each row match2. Replace DIMM(s)3. Memory board4. VRM on memory board
2-1-1 (system cannot recognize file system on media)	<ol style="list-style-type: none">1. Check CD2. CD-RW drive3. IDE cable4. I/O board
2-1-2 (file not present on disk)	<ol style="list-style-type: none">1. Check CD2. CD-RW drive3. IDE cable4. I/O board

2-1-3 (recovery device not found)	<ol style="list-style-type: none"> 1. Check CD 2. CD-RW drive 3. IDE cable 4. I/O board
2-1-4 (flash device initialization failure)	<ol style="list-style-type: none"> 1. Check CD 2. CD-RW drive 3. IDE cable 4. I/O board
3-1-1 (flash device initialization failure)	<ol style="list-style-type: none"> 1. I.O board
3-1-2 (flash update operation failed)	<ol style="list-style-type: none"> 1. I.O board
3-1-3 (recovery device failed during read operation)	<ol style="list-style-type: none"> 1. Check CD 2. CD-RW drive 3. IDE cable 4. I/O board
3-1-4 (flash device erase failure)	<ol style="list-style-type: none"> 1. I.O board
3-1-5 (flash device programming failure)	<ol style="list-style-type: none"> 1. I.O board
3-1-6 (file verify operation (checksum) failed)	<ol style="list-style-type: none"> 1. I.O board
3-1-7 (processor patch installation failed)	<ol style="list-style-type: none"> 1. I.O board
3-2-1 (invalid BIOS)	<ol style="list-style-type: none"> 1. I.O board
3-2-2 (mismatched platform BIOS)	<ol style="list-style-type: none"> 1. I.O board
3-2-3 (boot block incompatible with BIOS)	<ol style="list-style-type: none"> 1. Reflash BIOS 2. I/O board
3-2-4 (flash verify after write failed)	<ol style="list-style-type: none"> 1. I.O board
3-3-1 (recovery started)	<ol style="list-style-type: none"> 1. No action necessary
3-3-3 (recovery completed successfully)	<ol style="list-style-type: none"> 1. No action necessary

Error symptoms

Symptom	Suggested action
Power light does not light	Verify that: <ul style="list-style-type: none"> • The system is connected to a 110-240 V ac source. • The system is functioning properly. • The front panel cable is properly connected.
System boots very slowly	Make sure that the Cache Enable jumper (J6C1) is set to Cache On (see “Jumper settings” on page 51). Note: Booting to the ERI prompt takes approximately 45 seconds.
No characters appear on the screen	Verify that: <ul style="list-style-type: none"> • The Num Lock light is functioning properly. • The video monitor is plugged in and turned on. Many modern video monitors shut down when inactive and may require a moment to warm up when activated. • The brightness and contrast controls on the video monitor are properly adjusted. • The video monitor switch settings are correct. • The video monitor signal cable is properly installed.
Characters are distorted or incorrect	Verify that: <ul style="list-style-type: none"> • The brightness and contrast controls are properly adjusted on the video monitor. Refer to the documentation that came with the monitor. • The video monitor signal and power cables are properly installed. • If the problem persists, the video monitor may be faulty or it may be an incorrect type. Refer to the documentation that came with the monitor.
System cooling fans do not rotate properly	Verify that: <ul style="list-style-type: none"> • AC power is available at the wall outlet. • The power cord is properly connected to the computer and the wall outlet. • The power-on light is lit. • The fan power connectors are properly connected to the system board. • There are no shorted or open wires caused by pinched cables or power connector plugs forced incorrectly into connectors.
Hard disk drive activity light does not light	Verify that: <ul style="list-style-type: none"> • The power and signal cables are properly installed. • All switches and jumpers are set correctly. Refer to the information that is provided with the option. • The integrated IDE controller is enabled (IDE hard drives only). • The hard disk drive is properly configured. Note: The hard disk drive activity light on the front panel lights when either an IDE hard disk drive or a SCSI device is in use.
CD-RW drive activity light does not light	Verify that: <ul style="list-style-type: none"> • The power and signal cables to the CD-RW drive are properly installed. • The drive is properly configured as the primary device. • The integrated IDE controller is enabled.

Symptom	Suggested action
Bootable CD-ROM is not detected	Verify that: <ul style="list-style-type: none"> The BIOS is set to allow the CD-RW to be the first startable device in the Configuration Manager program. A bootable CD-ROM is in the CD-RW drive on system startup. The CD-RW is properly seated.
Not all drives are recognized by fixed disk diagnostic.	<ol style="list-style-type: none"> Remove first drive that does not show up and rerun diagnostic. If remaining drives show up, replace the one that was removed. If remaining drives do not show up, remove successive drives one at a time and rerun diagnostic.
System hangs during fixed disk diagnostic.	Remove hard drive being tested at the time of the hang and rerun the diagnostic. If successful, replace drive that was removed.

Miscellaneous error messages

Message/Symptom	FRU/Action
CMOS Backup Battery inaccurate	<ol style="list-style-type: none"> CMOS Backup Battery (see "Safety information" on page 79) I/O Board
Changing colors	<ol style="list-style-type: none"> Display Connection to display
Computer will not power-off.	<ol style="list-style-type: none"> Power Switch I/O Board System Board CPU Board
Computer will not RPL from server	<ol style="list-style-type: none"> Ensure that network is in startup sequence as first device or first device after diskette Ensure that network adapter is enabled for RPL Network adapter (Advise network administrator of new MAC address)
Computer will not Wake On LAN (if applicable)	<ol style="list-style-type: none"> Check power supply and signal cable connections to network adapter Ensure that the operating system settings are set to enable Wake on LAN Ensure Wake On LAN feature is enabled in Setup/Configuration (see "Using the Configuration Manager program" on page 17) Ensure network administrator is using correct MAC address Ensure no interrupt or I/O address conflicts Network adapter (advise network administrator of new MAC address)
Dead computer.	<ol style="list-style-type: none"> Power Supply I/O Board System Board CPU Board
CD drive in-use light remains on or does not light when drive is active.	<ol style="list-style-type: none"> CD Drive IDE Cable I/O Board

Flashing cursor with an otherwise blank display.	<ol style="list-style-type: none"> 1. System Board 2. Hard Disk Drive Cable 3. Primary Hard Disk Drive
Incorrect memory size during POST	<ol style="list-style-type: none"> 1. Run the Memory tests 2. Memory Module 3. Memory Board
Intensity or color varies from left to right of characters and color bars	<ol style="list-style-type: none"> 1. Display 2. Cable connection 3. Display adapter
No power or fan not running	<ol style="list-style-type: none"> 1. Check cables 2. Check power supply
Non-system disk or disk error-type message with a known-good diagnostic CD.	<ol style="list-style-type: none"> 1. IDE cable 2. CD Drive
Other display symptoms not listed above (including blank or illegible display)	<ol style="list-style-type: none"> 1. Display 2. Display adapter
Power-on indicator or hard disk drive in-use light not on, but computer works correctly	<ol style="list-style-type: none"> 1. Power Supply 2. I/O Board 3. LED Cables
Printer problems	<ol style="list-style-type: none"> 1. Printer
RPL computer cannot access programs from its own hard disk	<ol style="list-style-type: none"> 1. If network administrator is using LCCM Hybrid RPL, check startup sequence: <ol style="list-style-type: none"> a. First device - network b. Second device - hard disk 2. Hard disk drive
RPL computer does not RPL from server	<ol style="list-style-type: none"> 1. Check startup sequence 2. Check the network adapter LED status
Serial port device failure (system board port)	<ol style="list-style-type: none"> 1. External Device Self-Test OK? 2. External Device 3. Cable 4. I/O Board
Serial port device failure (adapter port)	<ol style="list-style-type: none"> 1. External Device Self-Test OK? 2. External Device 3. Cable 4. I/O Board
Some or all keys on the keyboard do not work	<ol style="list-style-type: none"> 1. Keyboard 2. Keyboard Cable 3. I/O Board

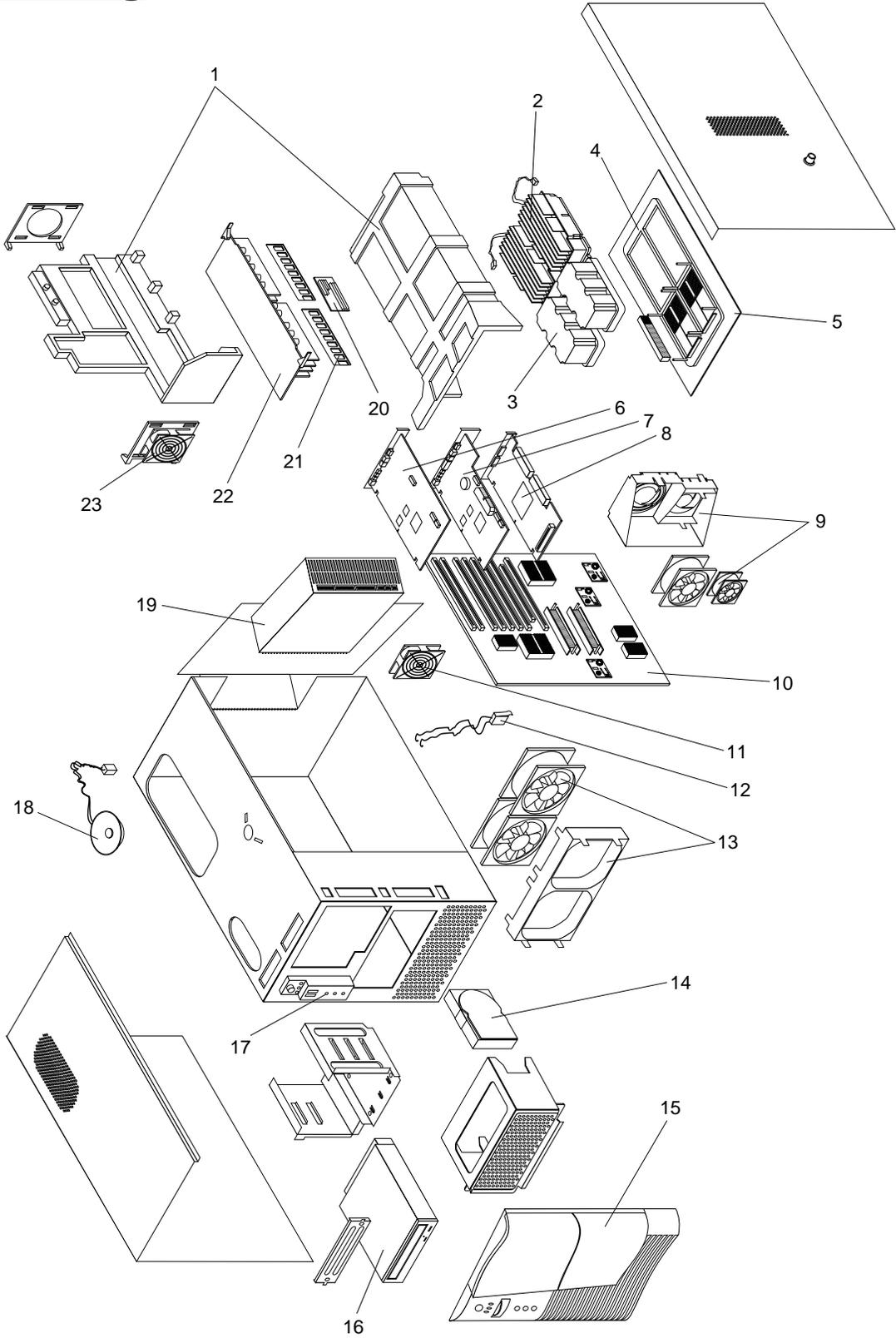
Undetermined problems

You are here because the diagnostic tests did not identify the failure, the Devices List is incorrect, or the system is inoperative.

Note: A corrupt CMOS can cause undetermined problems.

1. Power-off the computer.
2. Be sure the system is cabled correctly.
3. Remove or disconnect the following (if installed) one at a time until you find the failure (power-on the computer and reconfigure each time):
 - a. Non-IBM devices
 - b. External devices (modem, printer, mouse)
 - c. Any adapters
 - d. Memory-modules
 - e. Extended video memory
 - f. Hard disk drive
 - g. CD drive
4. If all devices and adapters have been removed and the problem persists, replace the system board.

Parts listing



Index	IntelliStation Z Pro Type 6894 (Models 10U, 12U)	FRU No.
1	EPAC baffle set (All models)	22P1942
2	Itanium 800 processor 2MB w/h (2) (All models)	22P1927
2	Itanium 800 processor 4MB w/h (2) (All models)	22P1926
3	Processor power pod (All models)	22P1941
4	Processor retainer (All models)	22P1940
5	Processor board A (All models)	22P1920
6	I/O Board assembly (All models)	22P1921
7	PCI SCSI Adaptec (All models)	22P0637
8	Nvidia Quadro2 Pro Video (Model 10X)	25P6324
8	G450 Video (Model 12X)	09N9237
9	PCI Slot fan assembly (All models)	22P1934
10	Baseboard assembly (All models)	22P1919
11	Rear panel fan assembly (All models)	22P1933
12	Chassis intrusion switch (All models)	22P1937
13	Processor board fan assembly (All models)	22P1935
14	Hard disk drive, 18.2 SCSI (Model 10X)	19K1485
14	Hard disk drive, 36.4 SCSI (Model 12X)	19K1487
15	Bezel (All models)	22P1931
16	CD-RW drive, 12x/8x/32x (All models)	06P5161
17	Control panel assembly	22P1949
18	Speaker (All models)	22P1938
19	800 watt power supply (All models)	22P1929
20	Memory board voltage regulator (All models)	22P1939
21	1GB 100 MHz ECC (2) (All models)	33L3263
21	256 MB 100 MHz ECC (All models)	33L3259
21	512 MB 100 MHz ECC (All models)	33L3261
22	Memory board (All models)	22P1922
23	Memory board fan assembly (All models)	22P1932
	Chassis EMI (All models)	22P1936
	Drive & board screw (All models)	22P1928
	Mouse assembly, Stealth Gray (All models)	10L6149
	Keyboard US English -103p (All models)	37L2551
	BIOS CD	22P1973
	Lithium battery (All models)	04G5389
	Cable, IDE de UDMA-33 (All models)	22P1925
	Cable, power supply (All models)	22P1930
	Cable, SCSI (All models)	22P1924
	Cable, SCSI LED (All models)	22P1923
	Power cord (All models)	93F2364

Power cords

IBM power cord part number **Used in these countries and/or regions**

13F9940 Argentina, Australia, China (PRC), New Zealand, Papua New Guinea, Paraguay, Uruguay, Western Samoa

13F9979	Afghanistan, Algeria, Andorra, Angola, Austria, Belgium, Benin, Bulgaria, Burkina Faso, Burundi, Cameroon, Central African Rep., Chad, China (Macau S.A.R.), Czech Republic, Egypt, Finland, France, French Guiana, Germany, Greece, Guinea, Hungary, Iceland, Indonesia, Iran, Ivory Coast, Jordan, Lebanon, Luxembourg, Malagasy, Mali, Martinique, Mauritania, Mauritius, Monaco, Morocco, Mozambique, Netherlands, New Caledonia, Niger, Norway, Poland, Portugal, Romania, Senegal, Slovakia, Spain, Sudan, Sweden, Syria, Togo, Tunisia, Turkey, former USSR, Vietnam, former Yugoslavia, Zaire, Zimbabwe
13F9997	Denmark
14F0015	Bangladesh, Burma, Pakistan, South Africa, Sri Lanka
14F0033	Antigua, Bahrain, Brunei, Channel Islands, China (Hong Kong S.A.R.), Cyprus, Dubai, Fiji, Ghana, India, Iraq, Ireland, Kenya, Kuwait, Malawi, Malaysia, Malta, Nepal, Nigeria, Polynesia, Qatar, Sierra Leone, Singapore, Tanzania, Uganda, United Kingdom, Yemen, Zambia
14F0051	Liechtenstein, Switzerland
14F0069	Chile, Ethiopia, Italy, Libya, Somalia
14F0087	Israel
1838574	Thailand
6952301	Bahamas, Barbados, Bermuda, Bolivia, Brazil, Canada, Cayman Islands, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Korea (South), Liberia, Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Saudi Arabia, Suriname, Taiwan, Trinidad (West Indies), United States of America, Venezuela

Keyboards

	Keyboard	FRU No.
US English		37L2551

Related service information

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

Safety information

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

General safety

Follow these rules to ensure general safety:

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

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

Electrical safety

Statement 1



DANGER

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

To avoid a shock hazard:

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

To Connect	To Disconnect
1. Turn everything OFF.	1. Turn everything OFF.
2. First, attach all cables to devices.	2. First, remove power cords from outlet.
3. Attach signal cables to connectors.	3. Remove signal cables from connectors.
4. Attach power cords to outlet.	4. Remove all cables from devices.
5. Turn device ON.	

Observe the following rules when working on electrical equipment.

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

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

- Find the room emergency power-off (EPO) switch, disconnecting switch, or electrical outlet. If an electrical accident occurs, you can then operate the switch or unplug the power cord quickly.
- Do not work alone under hazardous conditions or near equipment that has hazardous voltages.
- Disconnect all power before:
 - Performing a mechanical inspection
 - Working near power supplies

- Removing or installing main units
- Before you start to work on the machine, unplug the power cord. If you cannot unplug it, ask the customer to power-off the wall box that supplies power to the machine and to lock the wall box in the off position.
- If you need to work on a machine that has exposed electrical circuits, observe the following precautions:
 - Ensure that another person, familiar with the power-off controls, is near you.

Remember: Another person must be there to switch off the power, if necessary.
 - Use only one hand when working with powered-on electrical equipment; keep the other hand in your pocket or behind your back.

Remember: There must be a complete circuit to cause electrical shock. By observing the above rule, you may prevent a current from passing through your body.
 - When using testers, set the controls correctly and use the approved probe leads and accessories for that tester.
 - Stand on suitable rubber mats (obtained locally, if necessary) to insulate you from grounds such as metal floor strips and machine frames.

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

- Regularly inspect and maintain your electrical hand tools for safe operational condition.
- Do not use worn or broken tools and testers.
- Never assume that power has been disconnected from a circuit. First, check that it has been powered-off.

Always look carefully for possible hazards in your work area. Examples of these hazards are moist floors, nongrounded power extension cables, power surges, and missing safety grounds.

- Do not touch live electrical circuits with the reflective surface of a plastic dental mirror. The surface is conductive; such touching can cause personal injury and machine damage.
- Do not service the following parts with the power on when they are removed from their normal operating places in a machine:
 - Power supply units
 - Pumps
 - Blowers and fans
 - Motor generators
 and similar units. (This practice ensures correct grounding of the units.)
- If an electrical accident occurs:
 - Use caution; do not become a victim yourself.
 - Switch off power.
 - Send another person to get medical aid.

Safety inspection guide

The intent of this inspection guide is to assist you in identifying potentially unsafe conditions on these products. Each machine, as it was designed and built, had required safety items installed to protect users and service personnel from injury. This guide addresses only those items. However, good judgment

should be used to identify potential safety hazards due to attachment of non-IBM features or options not covered by this inspection guide.

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

Consider these conditions and the safety hazards they present:

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

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

Checklist:

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

Handling electrostatic discharge-sensitive devices

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

Notes:

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

When handling ESD-sensitive parts:

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

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

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

Grounding requirements

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

Safety notices (multi-lingual translations)

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

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

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

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

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

Statement 1



DANGER

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

To avoid a shock hazard:

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

To Connect	To Disconnect
6. Turn everything OFF.	5. Turn everything OFF.
7. First, attach all cables to devices.	6. First, remove power cords from outlet.
8. Attach signal cables to connectors.	7. Remove signal cables from connectors.
9. Attach power cords to outlet.	8. Remove all cables from devices.
10. Turn device ON.	

Statement 2



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

Do not:

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

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

Note: See “Parts listing” on page 75 to order the correct replacement battery.

Statement 3



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

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



DANGER

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

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

Statement 4



CAUTION:



≥18 kg
(37 lbs)



≥32 kg
(70.5 lbs)



≥55 kg
(121.2 lbs)

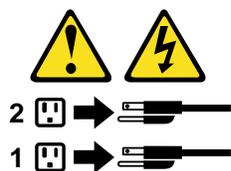
Use safe practices when lifting.

Statement 5



CAUTION: The power control button on the device and the power switch on the power supply do not turn off the

electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.



Statement 10



CAUTION:

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



Importante:

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

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

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

Instrução 1



PERIGO

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

Para evitar risco de choque:

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

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

Instrução 2



CUIDADO:

Ao substituir a bateria de lítio, utilize apenas uma bateria IBM, Número de Peça 04G5389 ou uma bateria de tipo equivalente, recomendada pelo fabricante. Se o seu sistema possui um módulo com uma bateria de lítio, substitua-o apenas pelo mesmo tipo de módulo, do mesmo fabricante. A bateria contém lítio e pode explodir se não for utilizada, manuseada e descartada de maneira correta.

Não:

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

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

Instrução 3



PRECAUCIÓN:

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

Não remova as tampas. A remoção das tampas de um produto a laser pode resultar em exposição prejudicial à radiação de laser. Nenhuma peça localizada no interior do dispositivo pode ser consertada.

A utilização de controles ou ajustes ou a execução de procedimentos diferentes dos especificados aqui pode resultar em exposição prejudicial à radiação.



PERIGO

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

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

Instrução 4



≥18 kg
(37 lbs)



≥32 kg
(70.5 lbs)



≥55 kg
(121.2 lbs)

CUIDADO:

Ao levantar a máquina, faça-o com segurança.

Instrução 5



CUIDADO:

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



Instrução 10



CUIDADO:

Quando o suporte do cabo de alimentação estiver instalado no cabo de alimentação, o servidor deve estar conectado a uma fonte de energia de fácil acesso.



Não coloque nenhum objeto com peso superior a 50 kg (110 lbs.) sobre dispositivos montados em rack.

重要:

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

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

在执行任何指示的操作之前, 请确保您已经阅读了全部提醒和危险条款。

声明 1



危险

电源、电话和通信电缆中带有危险电流。

为避免电击:

雷电期间不要拆接电缆或安装、维修及重新配置本产品。

将所有电源线连接至正确布线并已安全接地的电源插座上。

将与本产品连接的所有设备连接至正确布线的插座上。

尽量只使用单手拆接信号电缆。

有水、火及结构损坏迹象时, 请勿打开任何设备。

除非在安装配置过程中有明确指示, 否则, 打开设备机盖前应先断开与电源线、远程通信系统、网络和调制解调器的所有连接。

安装、移动或打开本产品及其附带设备的机盖时, 应按下表所述连接和断开电缆。

连接时:

1. 关闭所有设备。
2. 首先将所有电缆连接至设备。
3. 将信号电缆连接至接口。
4. 将电源线连接至插座。

断开连接时:

1. 关闭所有设备。
2. 首先从插座中拔出电源线。
3. 从接口上拔下信号电缆。

声明 2



警告:

更换锂电池时，只能使用 IBM 产品号 04G5389 或者是厂商推荐的等同类型的电池。

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

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

声明 3



警告:

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

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

非此处指定的其它控制、调整或与性能有关的操作都有可能导致激光辐射的危险。



危险

某些激光产品中包含内嵌的 3A 级或 3B 级激光二极管。请注意以下事项。

打开时会产生激光辐射。不要直视光束，不要使用光学仪器直接观看光束，避免直接暴露于光束之下。

声明 4



≥18 kg (37 磅)



≥32 kg (70.5 磅)



≥55 kg (121.2 磅)

警告:

抬起时请采用安全操作方法。

声明 5



警告:

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



声明 6



警告:

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

声明 7



警告:

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

声明 8



警告:

不要拆除电源外盖或贴有下列标签的任何部件。



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

声明 9



警告:

为避免人员伤害，拆除设备上的风扇前应拔下热插拔风扇电缆。

声明 10



警告:

机柜安装的设备上面不能放置重于 82kg (180 磅) 的物品。



> 82 kg (180 磅)

声明 11



警告：

下面的标签表明附近有锋利的边、角或接头。



声明 12



警告：

下面的标签表明附近有高热表面。



重要資訊：

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

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

執行任何指示之前，請詳讀所有「注意」及「危險」的聲明。

聲明 1



危險

電氣 - 電氣系統可能產生危險的電氣觸電危險。

必須注意事項

- 在開始前，請先瞭解說明書中所有的工作步驟。為安全，請務必遵照說明書中指示。
- 瞭解電氣線路已接線正確且無任何電氣危險。
- 請將本處本節目的說明書或產品說明書讀完。
- 儘可能使用專手專機或加裝作業保護。
- 當執行有火或電池的工作時，請務必穿戴防護服。請穿戴防護服時，請穿戴防護服。
- 在每項工作前，請先穿戴好，在開始前請先穿戴好。請穿戴防護服，並穿戴好。請穿戴防護服。
- 在工作 - 即多不在此處及此處，請先穿戴好時，請先穿戴好「保護」或「防護」電氣線路的正確位置。

備註：

1. 關閉所有電源。
2. 將所有電氣線路上的電源。
3. 將所有電氣線路上的電源。
4. 在每項工作前，請先穿戴好。
5. 將所有電氣線路。

步驟：

1. 關閉所有電源。
2. 將所有電氣線路上的電源。
3. 將所有電氣線路上的電源。
4. 在每項工作前，請先穿戴好。

聲明 2



注意：

更換鋰電池時，只可使用 IBM 零件編號 04G5389 的電池，或製造商建議之相當類型的電池。若系統中具有包含鋰電池的模組，在更換此模組時，請使用相同廠商製造的相同模組類型。如未正確使用、處理或丟棄含有鋰的電池時，可能會引發爆炸。

請勿將電池：

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

請遵照當地法令規章處理廢棄電池。

標明 3



注意：

存放有物品 (如 CD-ROM、DVD、光碟機、光碟機蓋或碟片) 時，有如下列事項：

- 切勿移動蓋子。移動蓋子時，蓋子可能會基於或隨其後而翻倒之下，造成中或嚴重受傷的條件。
- 不要或處於蓋子的後面，搬運或處理碟片，否則可能會基於或隨其後而翻倒之下。



危險

有蓋密封蓋符合其為 Class 5A 或 Class 5B 雷射二級機，有照準下列事項。

切勿射擊或直擊眼睛，切勿射擊皮膚，不要使用光學儀器攝錄儀器，上照準光直接照在地球上。

標明 4



重 110 磅 (50 磅) 重 22 磅 (10 磅) 重 20 磅 (9 磅)

注意：

務必正確安裝，請注意安全說明。

標明 6



注意：

若您在電源線或裝置地墊的一處安裝了懸架托板避用如圖，您必須將電源線的另一端接至不具備上或扶桿的電源上。

標明 10



注意 -

請勿將任何重量超過 52 公斤 (130 磅) 的物品置於已安裝過架的裝置上方。



52 公斤 (130 磅)

Important:

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

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

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

Notice n° 1



DANGER

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

Pour éviter tout risque de choc électrique:

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

Connexion	Déconnexion
<ol style="list-style-type: none"> 1. Mettez les unités hors tension. 2. Commencez par brancher tous les cordons sur les unités. 3. Branchez les câbles d'interface sur des connecteurs. 4. Branchez les cordons d'alimentation sur des prises. 5. Mettez les unités sous tension. 	<ol style="list-style-type: none"> 1. Mettez les unités hors tension. 2. Débranchez les cordons d'alimentation des prises. 3. Débranchez les câbles d'interface des connecteurs. 4. Débranchez tous les câbles des unités.

Notice n° 2



ATTENTION:

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

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

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

Notice n° 3



ATTENTION:

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

N'ouvrez pas ces produits pour éviter une exposition directe au rayon laser. Vous ne pouvez effectuer aucune opération de maintenance à l'intérieur.

Pour éviter tout risque d'exposition au rayon laser, respectez les consignes de réglage et d'utilisation des commandes, ainsi que les procédures décrites dans le présent document.



DANGER

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

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

Notice n° 4



ATTENTION:



≥18 kg
(37 lbs)



≥32 kg
(70.5 lbs)



≥55 kg
(121.2 lbs)

Faites-vous aider pour soulever ce produit.

Notice n° 5



ATTENTION:

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



Notice n° 10



ATTENTION:

Ne posez pas d'objet dont le poids dépasse 50 kg sur les modèles tiroir de serveur.



Wichtig:

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

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

Lesen Sie alle Sicherheitshinweise, bevor Sie eine Anweisung ausführen.

Hinweis 1



VORSICHT

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

Aus Sicherheitsgründen:

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

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

Hinweis 2



ACHTUNG:

Eine verbrauchte Batterie nur durch eine Batterie mit der IBM Teilenummer 04G5389 oder durch eine vom Hersteller empfohlene Batterie ersetzen. Wenn Ihr System ein Modul mit einer Lithium-Batterie enthält, ersetzen Sie es immer mit dem selben Modultyp vom selben Hersteller. Die Batterie enthält Lithium und kann bei unsachgemäßer Verwendung, Handhabung oder Entsorgung explodieren.

Die Batterie nicht:

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

Die örtlichen Bestimmungen für die Entsorgung von Sondermüll beachten.

Hinweis 3



ACHTUNG:

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

Das Entfernen der Abdeckungen des CD-ROM-Laufwerks kann zu gefährlicher Laserstrahlung führen. Es befinden sich keine Teile innerhalb des CD-ROM- Laufwerks, die vom Benutzer gewartet werden müssen. Die Verkleidung des CD- ROM-Laufwerks nicht öffnen.

Steuer- und Einstellelemente sowie Verfahren nur entsprechend den Anweisungen im vorliegenden Handbuch einsetzen. Andernfalls kann gefährliche Laserstrahlung auftreten.



VORSICHT

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

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

Hinweis 4



≥18 kg



≥32 kg



≥55 kg

ACHTUNG:

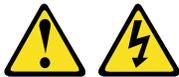
Beim Anheben der Maschine die vorgeschriebenen Sicherheitsbestimmungen beachten.

Hinweis 5



ACHTUNG:

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



Hinweis 10



ACHTUNG:

Legen Sie keine Gegenstände, die mehr als 50 kg wiegen, auf das Einschubmodell des Servers.



Importante:

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

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

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

Avviso 1



PERICOLO

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

Per evitare il pericolo di scosse elettriche:

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

Per collegare:	Per scollegare:
<ol style="list-style-type: none"> 1. SPEGNERE tutti i dispositivi. 2. Collegare prima tutti i cavi alle unità. 3. Collegare i cavi di segnale ai connettori. 4. Collegare i cavi di alimentazione alle prese elettriche. 5. ACCENDERE le unità. 	<ol style="list-style-type: none"> 1. SPEGNERE tutti i dispositivi. 2. Rimuovere prima i cavi di alimentazione dalle prese elettriche. 3. Rimuovere i cavi di segnale dai connettori. 4. Rimuovere tutti i cavi dalle unità.

Avviso 2



ATTENZIONE:

Quando si sostituisce la batteria al litio, utilizzare solo una batteria IBM con numero parte 04G5389 o batterie dello stesso tipo o di tipo equivalente consigliate dal produttore. Se il sistema di cui si dispone è provvisto di un modulo contenente una batteria al litio, sostituire tale batteria solo con un tipo di modulo uguale a quello fornito dal produttore. La batteria contiene litio e può esplodere se utilizzata, maneggiata o smaltita impropriamente.

Evitare di:

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

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

Avviso 3



ATTENZIONE:

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

Non rimuovere i coperchi. L'apertura dei coperchi di prodotti laser può determinare l'esposizione a radiazioni laser pericolose. All'interno delle unità non vi sono parti su cui effettuare l'assistenza tecnica.

L'utilizzo di controlli, regolazioni o l'esecuzione di procedure non descritti nel presente manuale possono provocare l'esposizione a radiazioni pericolose.



PERICOLO

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

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

Avviso 4



≥18 kg



≥32 kg



≥55 kg

ATTENZIONE:

Durante il sollevamento della macchina seguire delle norme di sicurezza.

Avviso 5



ATTENZIONE:

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



Avviso 10



ATTENZIONE:

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



중요:

본 *Server Library*에 있는 모든 주의 및 위험 경고문은 번호로 시작합니다. 이 번호는 영문 주의 혹은 위험 경고문과 이 절에 나오는 번역된 버전의 주의 혹은 위험 경고문을 상호 참조하는 데 사용됩니다.

예를 들어, 주의 경고문이 번호 1로 시작하면, 번역된 해당 주의 경고문을 본 절의 경고문 1에서 찾아볼 수 있습니다.

모든 지시사항을 수행하기 전에 반드시 모든 주의 및 위험 경고문을 읽으십시오.

경고문 1



위험

전원, 위험 및 통신 케이블로부터 분리 나오는 전류는 위험합니다.

전기 충격을 피하려면:

- 케이블 중단을 하는 케이블의 연결이나 실수, 이 과정의 실시, 유지보수 또는 재구성을 금지하십시오.
- 모든 전선 단단을 적절히 테이프 및 감지하여 합니다.
- 이 재료가 연결해 모든 장비를 적절하게 테이프 연결해 연결하십시오.
- 가능한 한 신호 케이블을 손 코드로 연결하거나 사용하지 마십시오.
- 화재, 수침 또는 구조상의 손상에 의해 경우 장비를 제거하십시오.
- 설치 및 구상 프로젝트에 다른 사람이 오는 것, 장치 일부를 설치 전에 연결된 전원 코드, 용어인 통신 시스템, 테러위스 및 모뎀을 제거하십시오.
- 화재 또는 전속성 일치를 설치, 이동 및 일부를 알 및 다른 부분에 따라 케이블을 연결하거나 장도록 하십시오.

영문 경고문	영문 설명
1. 모든 전선 단락을 합니다.	1. 모든 전선 단락을 합니다.
2. 전기 모든 케이블을 감지해 연결합니다.	2. 전기 안전하여 모든 케이블을 합니다.
3. 모든 케이블을 적절하게 테이프 연결합니다.	3. 모든 케이블을 적절하게 테이프 연결합니다.
4. 가능한 한 신호 케이블을 손 코드로 연결하십시오.	4. 가능한 한 신호 케이블을 손 코드로 연결하십시오.
5. 화재, 수침 또는 구조상의 손상에 의해 경우 장비를 제거하십시오.	5. 화재, 수침 또는 구조상의 손상에 의해 경우 장비를 제거하십시오.
6. 설치 및 구상 프로젝트에 다른 사람이 오는 것, 장치 일부를 설치 전에 연결된 전원 코드, 용어인 통신 시스템, 테러위스 및 모뎀을 제거하십시오.	6. 설치 및 구상 프로젝트에 다른 사람이 오는 것, 장치 일부를 설치 전에 연결된 전원 코드, 용어인 통신 시스템, 테러위스 및 모뎀을 제거하십시오.

경고문 2



주의:

리튬 배터리를 교체할 때는 IBM 부품 번호 04G5389 또는 제조업체에서 권장하는 동등한 유형의 배터리를 사용하십시오. 시스템에 리튬 배터리를 갖고 있는 모듈이 있으면 동일한 제조업체에서 생산된 동일한 모듈 유형으로 교체하십시오. 배터리에 리튬이 있을 경우 제대로 사용, 처리 또는 처분하지 않으면 폭발할 수 있습니다.

다음은 주의하십시오.

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

지역 법령이나 규정의 요구에 따라 배터리를 처분하십시오.

경고문 3



주의:

컴퓨터 캐시(CD-ROMs, DVD 드라이브, 광 장치 또는 브랜스비드 등과 같은)에 설치되어 있을 경우 다음을 주의하십시오.

- 덮개를 제거하지 마십시오. 액세서리의 덮개를 제거했을 경우 위험한 열이 발생할 수 있습니다. 이 경우 안에는 서버스를 받을 수 있는 부분이 있습니다.
- 여기에서 지정하지 않은 방식의 열, 충격 또는 진동으로 인해 위험한 상태가 발생할 수 있습니다.



위험

열은 레이저 광선에 흡수되어 3A 또는 클래스 3B 레이저 다이오드가 열이 있습니다. 다음을 주의하십시오.

열은 레이저 광선에 노출됩니다. 광선을 주시하거나 광화 기계를 직접 쳐다보지 않도록 하고 광선에 노출되지 않도록 하십시오.

경고문 4



≥ 18 kg (37 lbs)



≥ 32 kg (70.5 lbs)



≥ 55 kg (121.2 lbs)

주의:

기계를 들 때는 안전하게 들어 올리십시오.

경고문 5



주의:

장치의 전원 케이블을 변경할 때 전원 공급기의 전원 스위치는 장치에 연결되는 전류를 차단하지 않습니다. 장치에 또 이상의 전원 코드가 연결되어 있을 수도 있습니다. 장치에서 모든 전류를 차단하려면 모든 전원 코드가 전원에서부터 차단되어 있는지 확인하십시오.



경고문 10



주의:

시운전 코일의 잠자 상태에서 62 kg(130 lbs.)이 넘는 물체를 올려 놓지 마십시오.



> 62 kg (130 lbs)

Importante:

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

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

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

Declaración 1



PELIGRO

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

Para evitar una descarga eléctrica:

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

Para la conexin	Para la desconexin
<ol style="list-style-type: none"> 1. APÁGUELO todo. 2. En primer lugar, conecte los cables a los dispositivos. 3. Conecte los cables de señal a los conectores. 4. Conecte cada cable de alimentaci3n a la toma de alimentaci3n. 5. ENCIENDA el dispositivo. 	<ol style="list-style-type: none"> 1. APÁGUELO todo. 2. En primer lugar, retire cada cable de alimentaci3n de la toma de alimentaci3n. 3. Retire los cables de se1al de los conectores. 4. Retire los cables de los dispositivos.

Declaraci3n 2



PRECAUCI3N:

Cuando desee sustituir la bater3a de litio, utilice 3nicamente el n3mero de pieza 04G5389 de IBM o cualquier tipo de bater3a equivalente que recomiende el fabricante. Si el sistema tiene un m3dulo que contiene una bater3a de litio, sustit3yalo 3nicamente por el mismo tipo de m3dulo, que ha de estar creado por el mismo fabricante. La bater3a contiene litio y puede explotar si el usuario no la utiliza ni la maneja de forma adecuada o si no se desprende de la misma como corresponde.

No realice las acciones siguientes:

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

Despr3ndase de la bater3a siguiendo los requisitos que exija el reglamento o la legislaci3n local.

Declaraci3n 3



PRECAUCI3N:

Cuando instale productos l3aser (como, por ejemplo, CD-ROM, unidades DVD, dispositivos de fibra 3ptica o transmisores), tenga en cuenta las advertencias siguientes:

- No retire las cubiertas. Si retira las cubiertas del producto l3aser, puede quedar expuesto a radiaci3n l3aser perjudicial. Dentro del dispositivo no existe ninguna pieza que requiera mantenimiento.
- El uso de controles o ajustes o la realizaci3n de procedimientos que no sean los que se han especificado aqu3 pueden dar como resultado una exposici3n perjudicial a las radiaciones.



PELIGRO

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

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

Declaración 4



PRECAUCIÓN:



≥18 kg
(37 libras)



≥32 kg
(70.5 libras)



≥55 kg
(121.2 libras)

Tome medidas de seguridad al levantar el producto.

Declaración 5



PRECAUCIÓN:

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



Declaración 10



PRECAUCIÓN:



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

Send us your comments!

We want to know your opinion about this manual (part number 24P2920). Your input will help us to improve our publications.

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

Name: _____

Phone number: _____

1. Do you like this manual?

Yes No

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

3. What is your service experience level?

Less than five years

More than five years

4. Which servers do you service most?

Thank you for your response!

Problem determination tips

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

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

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

- Are the exact machine type and models
- Have the same BIOS level
- Have the same adapters/attachments in the same locations
- Have the same address jumpers/terminators/cabling
- Have the same software versions and levels
- Have the same Reference/Diagnostics Diskette (version)
- Have the same configuration options set in the system
- Have the same setup for the operation system control files

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

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