RS/6000 Enterprise Server Model F80
@server pSeries 620 Models 6F0 and 6F1



Installation Guide

SA38-0569-03

Fourth Edition (June 2001)

Before using this information and the product it supports, read the information in “Safety Notices” on page vii, “Appendix B. Environmental Notices” on page 101, and “Appendix C. Notices” on page 103.

A reader’s comment form is provided at the back of this publication. If the form has been removed, address comments to Publications Department, Internal Zip 9561, 11400 Burnet Road, Austin, Texas 78758-3493. To send comments electronically, use this commercial internet address: aix6kpub@austin.ibm.com. Any information that you supply may be used without incurring any obligation to you.

© **International Business Machines Corporation, 2000, 2001. All rights reserved.** Note to U.S. Government Users -- Documentation related to restricted rights -- Use, duplication or disclosure is subject to restrictions set forth is GSA ADP Schedule Contract with IBM Corp.

Contents

Safety Notices vii
Electrical Safety viii
Laser Safety Information ix
Laser Compliance ix

Data Integrity and Verification xi

About This Book xiii
ISO 9000 xiii
Online Publications xiii
Related Publications xiii
Ergonomic Information xiii
Trademarks xiv

Chapter 1. Setting Up the System 1
Step 1. Are all of the Internal Options Installed? 1
Step 2. Check Your Inventory 1
Step 3. Need Help? 2
Step 4. Read the Safety Notices 2
Step 5. Position the System Unit and Display 3
Step 6. Remove the Rear System Unit Cover 4
Step 7. Connect the Keyboard and Mouse 5
Step 8. Connect the External SSA or SCSI Cables 7
Step 9. Connect the Serial and Parallel Devices 8
Step 10. Connect the First External SCSI Device 9
Step 11. Connect Any Additional External SCSI Devices 10
Step 12. Check Your Display Type 11
Step 13. Connect the Graphics Display 12
Step 14. Attach the Display Cable Toroid 13
Step 15. Connect the Adapter Cables 13
Step 16. Are You Using an Ethernet Connection? 14
Step 17. Plug in the Power Cables 15
Step 18. Your System Unit Is Now Set Up 17
Step 19. Start the Operating System 18
Step 20. Verify the Hardware Operation 19

Chapter 2. Verifying the Hardware Operation 21
Step 1. Considerations Before Running This Procedure 21
Step 2. Loading the Diagnostics 21
Step 3. Running System Verification 22
Step 4. Performing Additional System Verification 22
Step 5. Stopping the Diagnostics 23

Chapter 3. Installing Options 25
Safety Considerations 25
Handling Static-Sensitive Devices 26
Hot-Pluggable Options 27

Stopping the System Unit 27
Option List 28
Covers 29
Removing the Covers 29
Replacing Covers 32
Processor and Memory Card Cover 33
Removing Processor and Memory Card Cover 33
Replacing Processor and Memory Card Cover 34
PCI Adapter Options 35
PCI Slot LED Definitions 35
Installing Adapter Cards 36
Installing a Non-Hot-Pluggable PCI Adapter 36
Installing a Hot-Pluggable PCI Adapter 38
Removing Adapter Cards 40
Removing a Non-Hot-Pluggable PCI Adapter 40
Removing/Replacing a Hot-Pluggable PCI Adapter 42
PCI Hot-Plug Manager Access 44
Accessing Hot-Plug Management Functions 44
PCI Hot-Plug Manager Menu 45
System Memory Options 47
Memory Placement with a One-Way Processor Card 48
Memory Placement for a Memory Riser Card 49
Installing Memory DIMMs 50
Removing Memory DIMMs 52
Installing a Memory Card or a One-Way Processor Card 53
Removing a Memory Card or One-Way Processor Card 55
Disk Drive Options 56
Preinstallation Considerations 57
Installing a SCSI Disk Drive in the Two-Position Disk Drive Bay 58
Removing a SCSI Disk Drive from the Two-Position Disk Drive Bay 60
Installing Hot-Plug SCSI Disk Drives. 62
Removing Hot-Plug SCSI Disk Drives 64
Configuring and Deconfiguring SCSI Hot-Swap Disk Drives 66
Installing Hot-Plug SSA Disk Drives 68
Removing Hot-Plug SSA Disk Drives 70
Configuring and Deconfiguring SSA Hot-Swap Disk Drives 72
Installing Internal Disk Drive Bays 73
Installing a Two-Position SCSI Disk Drive Bay 74
Installing Six-Position SCSI or SSA Disk Drive Bays 76
SCSI and SSA Cabling Configurations 80
Two-Position SCSI Disk Drive Bay Cabling 80
First Six-Position SCSI Disk Drive Bay Cabling 81
Second Six-Position SCSI Disk Drive Bay Cabling 82
Two Six-Position SCSI RAID Bays Connected to a Single RAID Adapter. 82
One Six-Position SCSI RAID Bay and One Six-Position SSA Bay 83
Two Six-Position SSA Bays Connected to the Same SSA Loop 83
Installing Non-Hot-Plug Media Drives 84
Installing a Drive in the Optional Media Position 84
Installing the Redundant Power and Cooling Option 86
Installing a Fan. 86

Installing a Redundant Power Supply 87
Replacing the Battery 90
System Firmware Updates 92
General Information on System Firmware Updates 92
Determining the Level of Firmware on the System 93
System Firmware Update Using a Locally Available Image 93
Updating System Firmware From the Service Processor Menus 94
Updating System Firmware from the AIX Service Aids 94
Updating System Firmware from the AIX Command Line 94
Recovery Mode 94

Appendix A. Communications Statements 97
Federal Communications Commission (FCC) Statement 97
European Union (EU) Statement 97
International Electrotechnical Commission (IEC) Statement 98
United Kingdom Telecommunications Safety Requirements 98
Avis de conformité aux normes du ministère des Communications du Canada . . . 98
Canadian Department of Communications Compliance Statement 98
VCCI Statement 98
Electromagnetic Interference (EMI) Statement - Taiwan 99
Radio Protection for Germany 99

Appendix B. Environmental Notices 101
Product Recycling and Disposal 101
Environmental Design 101
Unit Emissions 101

Appendix C. Notices 103

Appendix D. System Records 105
Record the Identification Numbers 105
Device Records 106
Memory Records 106

Appendix E. General Attributes Required When Using a TTY Terminal . . . 111
Additional Communication Attributes 112
Additional Keyboard Attributes 113
Additional Printer Attributes 114

Index 115

Safety Notices

A *danger* notice indicates the presence of a hazard that has the potential of causing death or serious personal injury. Danger notices appear on the following pages:

- viii
- 2
- 5

A *caution* notice indicates the presence of a hazard that has the potential of causing moderate or minor personal injury. Caution notices appear on the following pages:

- viii
- ix
- 2
- 15
- 25
- 90

For a translation of the safety notices contained in this book, see the *System Unit Safety Information* manual, order number SA23-2652.

Electrical Safety

Observe the following safety instructions anytime you are connecting or disconnecting devices attached to the system.

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

Before installing or removing signal cables, ensure that the power cables for the system unit and all attached devices are unplugged.

When adding or removing any additional devices to or from the system, ensure that the power cables for those devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.

Use one hand, when possible, to connect or disconnect signal cables to prevent a possible shock from touching two surfaces with different electrical potentials.

During an electrical storm, do not connect cables for display stations, printers, telephones, or station protectors for communications lines.

CAUTION:
This product is equipped with a three-wire power cable and plug for the user's safety. Use this power cable in conjunction with a properly grounded electrical outlet to avoid electrical shock.

DANGER

To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.

Laser Safety Information

CAUTION:
This product may contain a CD-ROM which is a class 1 laser product.

Laser Compliance

All lasers are certified in the U.S. to conform to the requirements of DHHS 21 CFR Subchapter J for class 1 laser products. Outside the U.S., they are certified to be in compliance with the IEC 825 (first edition 1984) as a class 1 laser product. Consult the label on each part for laser certification numbers and approval information.

CAUTION:
All IBM laser modules are designed so that there is never any human access to laser radiation above a class 1 level during normal operation, user maintenance, or prescribed service conditions. Data processing environments can contain equipment transmitting on system links with laser modules that operate at greater than class 1 power levels. For this reason, never look into the end of an optical fiber cable or open receptacle. Only trained service personnel should perform the inspection or repair of optical fiber cable assemblies and receptacles.

Data Integrity and Verification

IBM computer systems contain mechanisms designed to reduce the possibility of undetected data corruption or loss. This risk, however, cannot be eliminated. Users who experience unplanned outages, system failures, power fluctuations or outages, or component failures must verify the accuracy of operations performed and data saved or transmitted by the system at or near the time of the outage or failure. In addition, users must establish procedures to ensure that there is independent data verification before relying on such data in sensitive or critical operations. Users should periodically check the IBM support websites for updated information and fixes applicable to the system and related software.

About This Book

This book provides information about the Enterprise Server Model F80 and @server pSeries 620 Models 6F0 and 6F1, specifically how to install and remove options, use the system, use diagnostics and service aids, and verify system operation. In this book, the Enterprise Server Model F80 and @server pSeries 620 Models 6F0 and 6F1 are hereafter referred to as the ″system.″

ISO 9000

ISO 9000 registered quality systems were used in the development and manufacturing of this product.

Online Publications

RS/6000 and pSeries publications are available online. To access the online books, visit our Web site at: http://www.rs6000.ibm.com/resource/hardware_docs/

Related Publications

The following publications provide additional information about your system unit:

- The *RS/6000 Enterprise Server Model F80, @server pSeries 620 Models 6F0 and 6F1 User's Guide*, order number SA38-0567, contains information to help you use the system unit and options that you may have installed.
- The *RS/6000 Enterprise Server Model F80, @server pSeries 620 Models 6F0 and 6F1 Service Guide*, order number SA38-0568, contains reference information, maintenance analysis procedures (MAPs), error codes, removal and replacement procedures, and a parts catalog.
- The *RS/6000 Enterprise Server and @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509, contains diagnostic information, service request numbers (SRNs), and failing function codes (FFCs).
- The *RS/6000 Enterprise Server and @server pSeries Adapters, Devices, and Cable Information for Multiple Bus Systems*, order number SA38-0516, contains information about adapters, devices, and cables for your system. This manual is intended to supplement the service information found in the *RS/6000 Enterprise Server and @server pSeries Diagnostic Information for Multiple Bus Systems*, order number SA38-0509.
- The *Site and Hardware Planning Guide*, order number SA38-0508, contains information to help you plan your installation.

Ergonomic Information

After you have set up your system, we encourage you to visit the Healthy Computing Web site. Good ergonomic practice is important to get the most from your workstation and to avoid discomfort. This means that the equipment and the workplace should be arranged to suit your individual needs and the kind of work you do.

The Healthy Computing Web site gives ergonomic guidelines to help you understand the ergonomic considerations that you should know when working at a computer workstation. The address is:
http://www.us.pc.ibm.com/healthycomputing

Trademarks

The following terms are trademarks of International Business Machines Corporation in the United States, other countries, or both:

- AIX
- RS/6000
- pSeries
- e (logo)

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

Chapter 1. Setting Up the System

Follow the procedures in this chapter to set up your Enterprise Server Model F80 or @server pSeries 620 Models 6F0 or 6F1.

Step 1. Are all of the Internal Options Installed?

These instructions are for systems that have internal options (such as adapters, disk drives, or memory upgrades) already installed.

If you have internal options that are not installed, install them now. Refer to “Chapter 3. Installing Options” on page 25, and then return here.

Step 2. Check Your Inventory

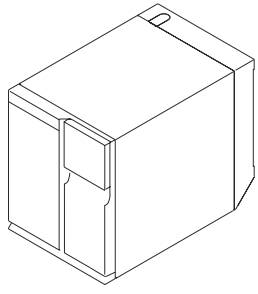
☐ Books



☐ ″About Your Machine″ document



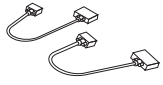
☐ System unit



☐ Display and system unit power cables (2)



☐9-pin to 25-pin serial converters (2)



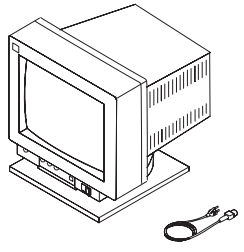
☐Display cable toroid (with some units)



☐Keyboard (optional) Wrist/palm rest (optional)



☐Display and cable (optional)



☐Mouse (optional)



Step 3. Need Help?

If you encounter difficulties while setting up your system unit, contact your sales representative for assistance.

Step 4. Read the Safety Notices

Before continuing, read the following safety information. Do not plug any cables into the system unit, adapters, or electrical outlets until you have reviewed this information. Make sure none of the power cords are connected before continuing to the next step.

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

Before installing or removing signal cables, ensure that the power cables for the system unit and all attached devices are unplugged.

When adding or removing any additional devices to or from the system, ensure that the power cables for those devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.

Use one hand, when possible, to connect or disconnect signal cables to prevent a possible shock from touching two surfaces with different electrical potentials.

During an electrical storm, do not connect cables for display stations, printers, telephones, or station protectors for communications lines.

CAUTION:
This product is equipped with a three-wire power cable and plug for the user's safety. Use this power cable in conjunction with a properly grounded electrical outlet to avoid electrical shock.

DANGER

To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.

Step 5. Position the System Unit and Display

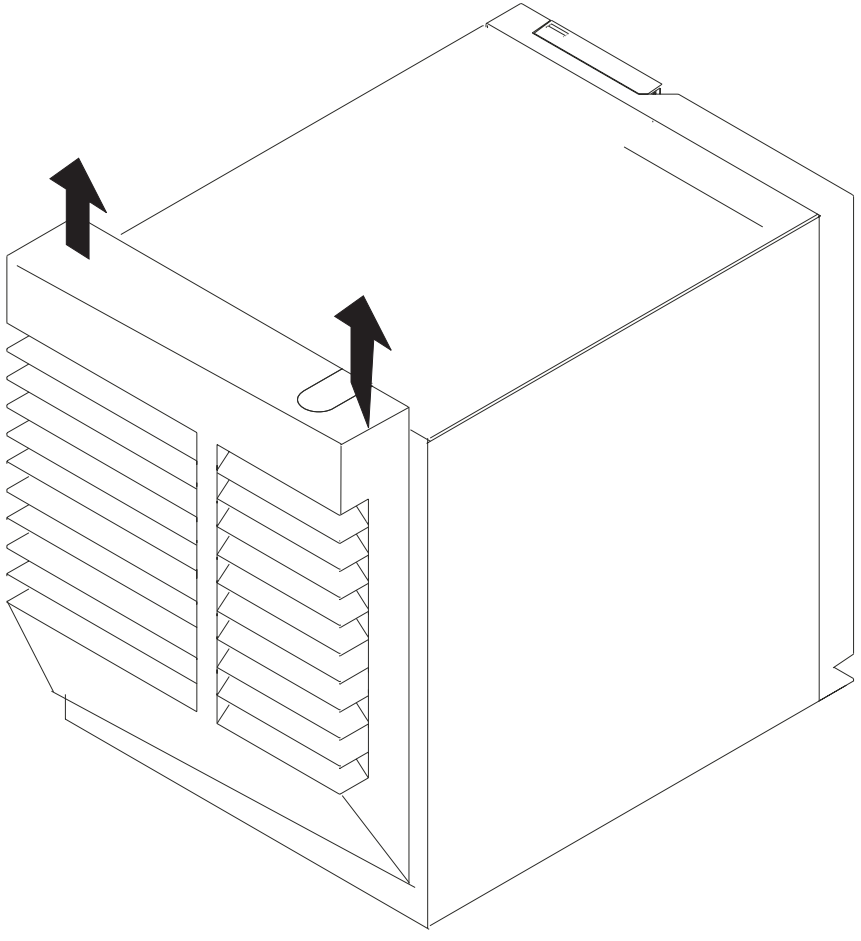
Position the system unit and display (optional) at or near their installed location.

Observe the following guidelines when you are positioning the system unit:

- The system unit weighs between 30 kg (65 pounds) and 95 kg (209 pounds). The unit is not intended to be lifted or handled except by trained personnel. Do not try to lift the system unit by yourself.
- Displays or ASCII terminals can weigh as much as 35 kg (77 pounds). Use caution when lifting or moving the display or ASCII terminal.
- Leave enough space around the system unit to safely and easily complete the setup procedures.
- Observe standard ergonomic guidelines while arranging your system unit so that you can work comfortably and safely. For more information on arranging your workstation, visit the Healthy Computing Web address at: http://www.pc.ibm.com/us/healthycomputing.
- Be sure to maintain at least 51 mm (2 inches) of space on the sides of the system unit and 152 mm (6 inches) at the rear of the system unit to allow the system unit to cool properly. The front of the system requires a minimum of 76 mm (3 inches) of space. Blocking the air vents can cause overheating, which might result in a malfunction or permanent damage to the system unit.
- Place the system unit in a location where it can safely and easily reach any necessary power outlets and network connections.
- Place the display or ASCII terminal in a stable and sturdy location.

Step 6. Remove the Rear System Unit Cover

If you have not already done so, remove any packing material from the system unit. Remove the rear cover from the system unit by pulling it straight up.



Step 7. Connect the Keyboard and Mouse

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

Before installing or removing signal cables, ensure that the power cables for the system unit and all attached devices are unplugged.

When adding or removing any additional devices to or from the system, ensure that the power cables for those devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.

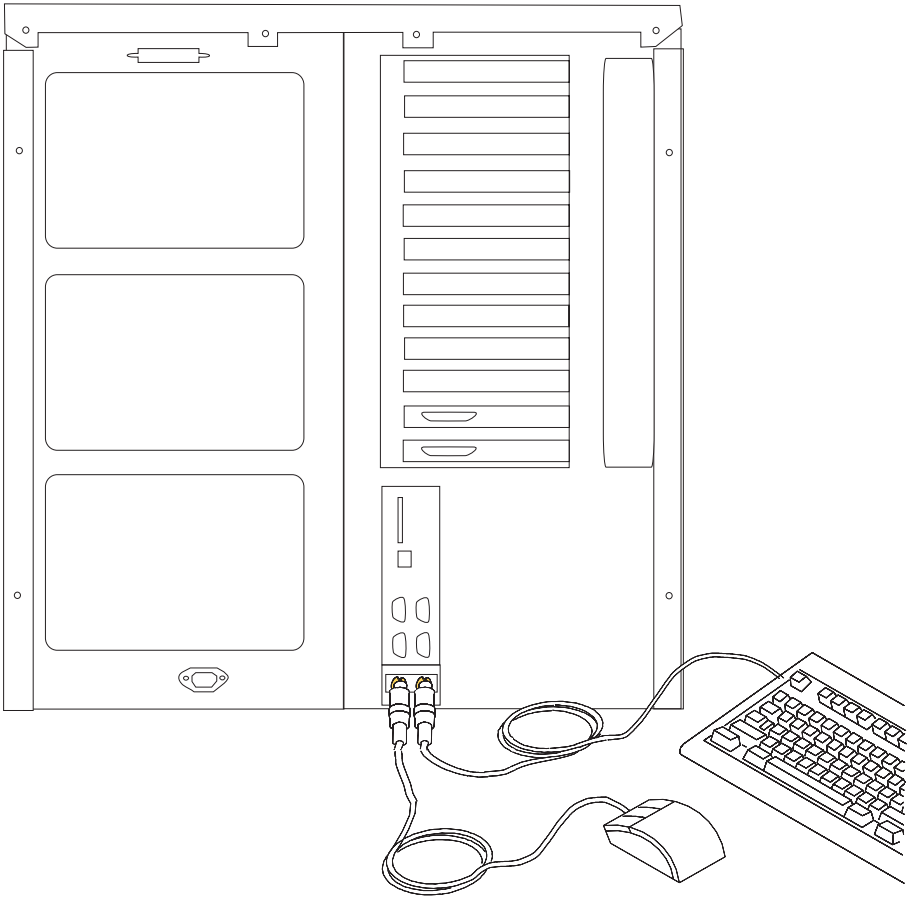
Use one hand, when possible, to connect or disconnect signal cables to prevent a possible shock from touching two surfaces with different electrical potentials.

During an electrical storm, do not connect cables for display stations, printers, telephones, or station protectors for communications lines.

Note: If you are using an ASCII terminal as the console for this system, and do not have a keyboard or mouse to connect, continue with the next step.

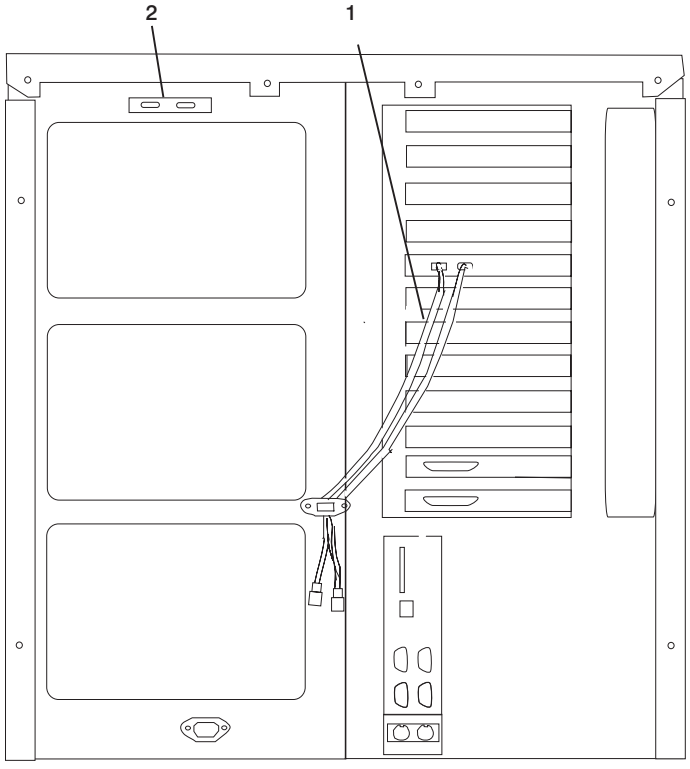
If a wrist/palm rest was included with your keyboard and you want to attach it, refer to the keyboard documentation for installation instructions.

As in the following figure, connect the keyboard and mouse to the connectors on the rear of the system unit.



Step 8. Connect the External SSA or SCSI Cables

If the system has external SSA or SCSI cables **(1)** that need to be attached to the bulkhead connector **(2)**, connect them now.



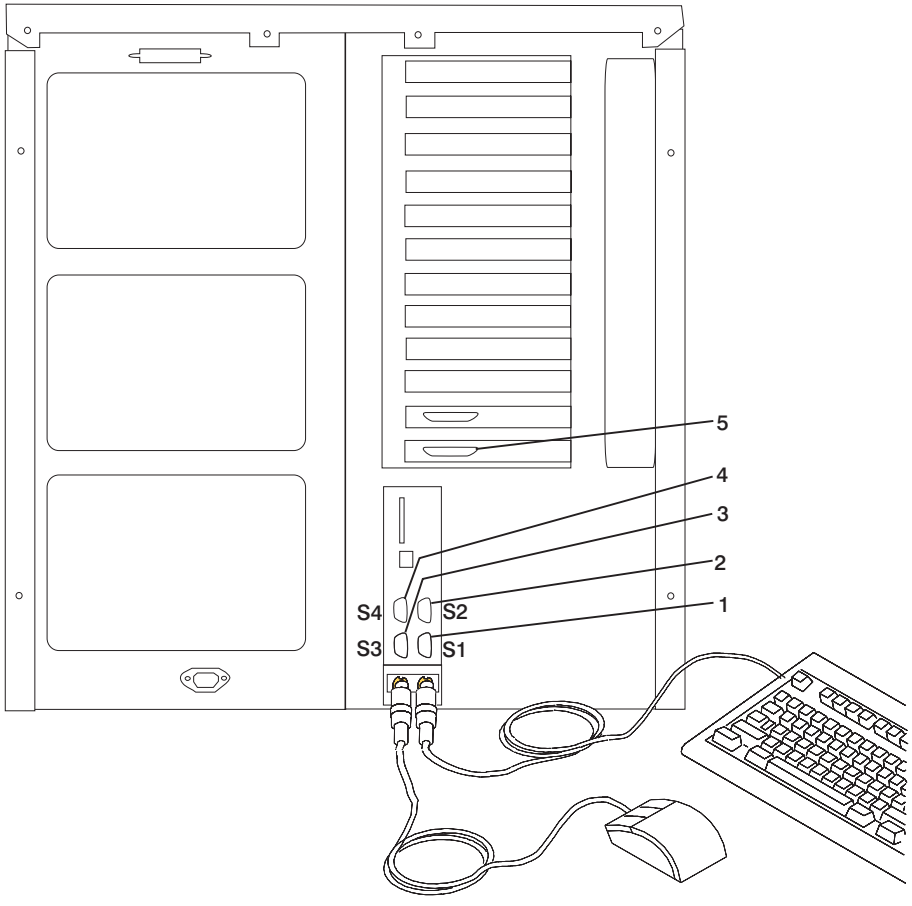
Step 9. Connect the Serial and Parallel Devices

If you have a local ASCII terminal or a single serial device, connect it to the serial connector S1 **(1)**.

Note: If you have a remote ASCII terminal, connect it through an external modem to serial connector S1, and connect a local ASCII terminal to serial connector S2 **(2)**.

Connect any additional serial devices to the S2, S3, and 4 connectors if they are not already in use. Two 9-to-25-pin serial converters are provided with your system unit to increase serial device compatibility. An uninterruptible power source (UPS), if connected, should be connected to S4 **(4)**.

If you have a parallel device (such as a printer), connect it to the parallel connector **(5)**.

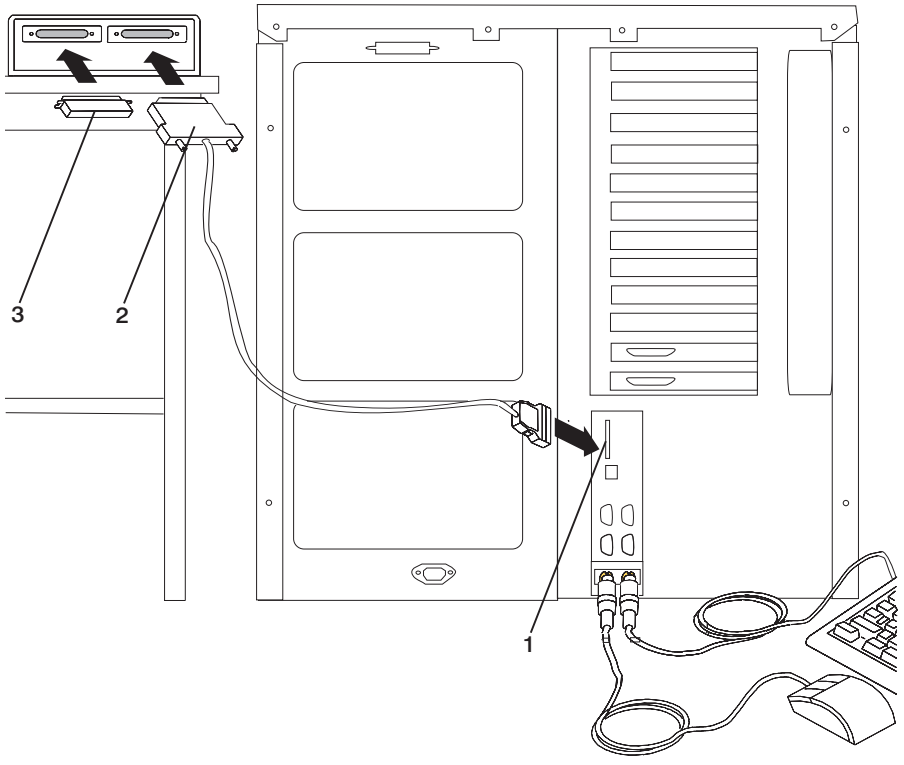


Step 10. Connect the First External SCSI Device

Note: If you have no SCSI devices to attach, continue with “Step 12. Check Your Display Type” on page 11.

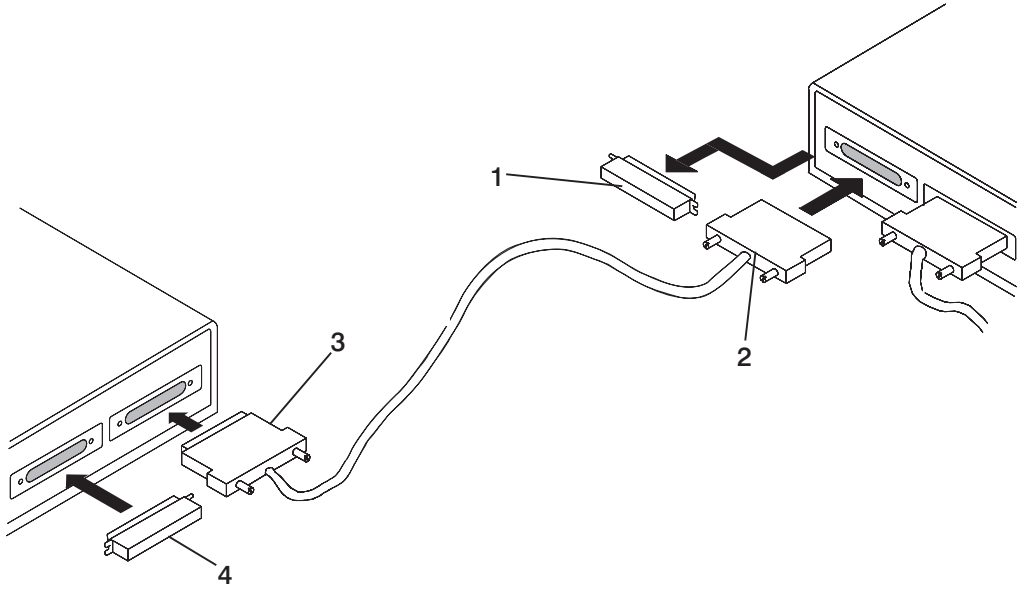
1. Connect the SCSI cable to the Ultra 2 SCSI LVD SCSI connector **(1)**.
2. Connect the other end of the SCSI cable **(2)** to the SCSI device.
3. If this is the last SCSI device on this SCSI cable, connect the SCSI bus terminator **(3)**.

   Note: The built-in SCSI interface is Ultra2 SCSI. When a cable is not attached to the SCSI connector on the system unit, the connector is automatically terminated.
4. Refer to the SCSI device documentation to set the SCSI device address. For future reference, you can record the address in “Appendix D. System Records” on page 105.



Step 11. Connect Any Additional External SCSI Devices

1. Locate the last SCSI device in the chain from the system unit. If a SCSI bus terminator **(1)** is installed, remove it.
2. Connect the new SCSI cable **(2)** where you just removed the SCSI bus terminator.
3. Connect the other end of the SCSI cable **(3)** to the new SCSI device.
4. Connect the SCSI bus terminator **(4)**.
5. Refer to the SCSI device documentation to set the SCSI device address. For future reference, you can record the address in “Appendix D. System Records” on page 105.
6. Repeat this step for each additional external SCSI device you attach.



Step 12. Check Your Display Type

Note: If you are using an ASCII terminal as the console for this system, and do not have a graphics display to connect, continue with “Step 15. Connect the Adapter Cables” on page 13.

If you ordered a graphics display with your system unit, the system unit has been set to use the highest display resolution and refresh rate available for that display. If you want to:

- Attach a different display to your system unit

OR

- Change the default display resolution or refresh rate

then, after completing the installation steps, refer to the *Customer Installable Options Library* CD-ROM for the documentation for your graphics adapter.

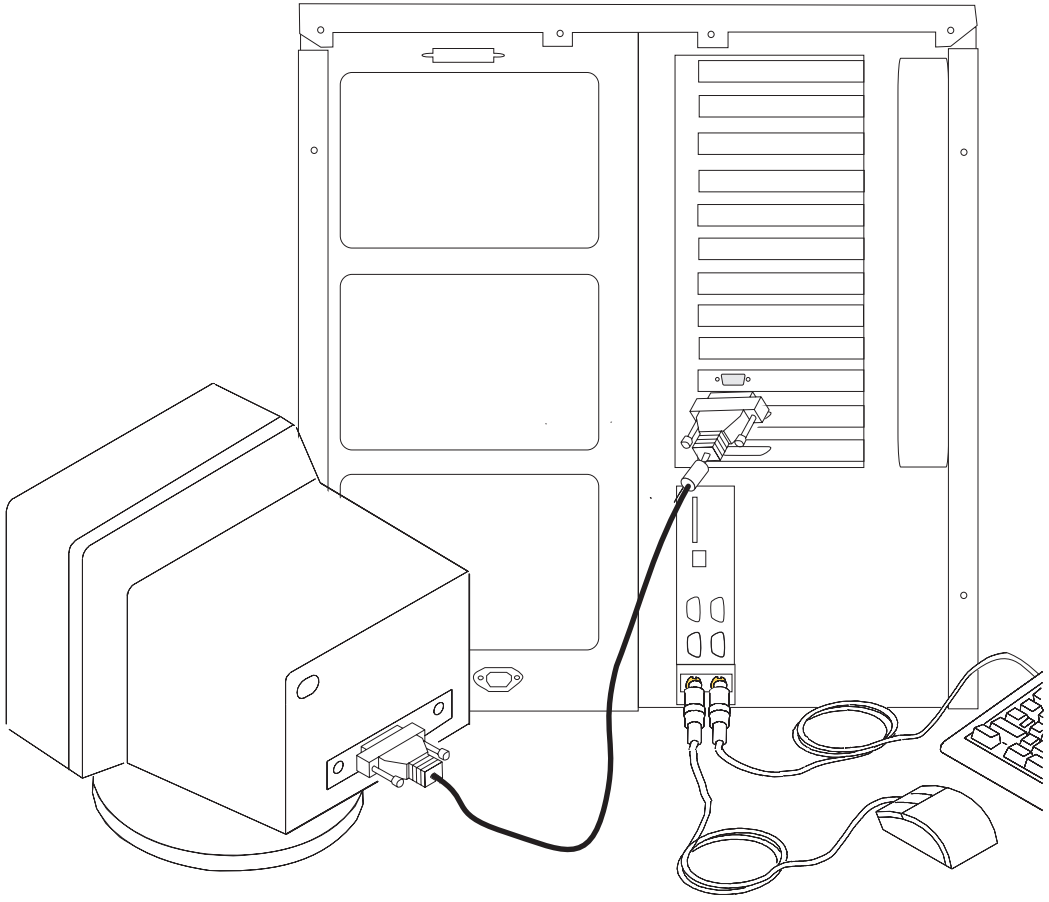
Step 13. Connect the Graphics Display

Note: If you are using an ASCII terminal as the console for this system, and do not have a graphics display to connect, continue with “Step 15. Connect the Adapter Cables” on page 13.

As shown in the following figure, connect the graphics display cable to the back of the display and to the graphics adapter connector. Consult the ″About Your Machine″ document for the locations of installed adapters.

For more information about your display, refer to the documentation included with the display.

Note: Some displays require an additional cable.



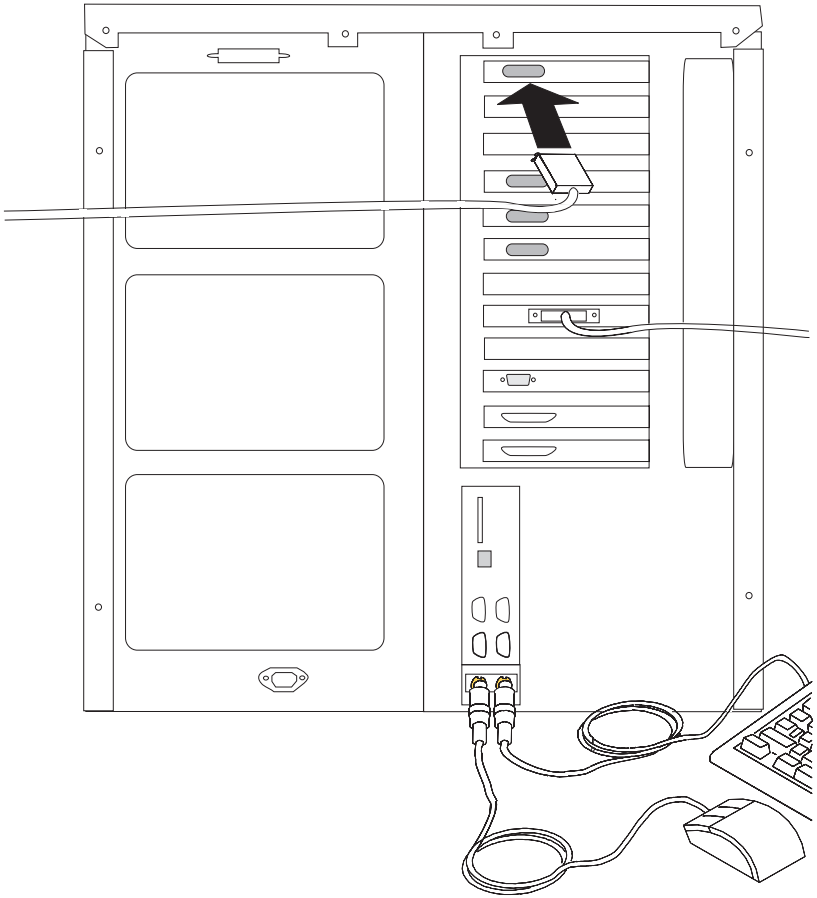
Step 14. Attach the Display Cable Toroid

If the cable for your display does not include a toroid, locate the toroid shipped with your system unit and follow the installation instructions included with the toroid.



Step 15. Connect the Adapter Cables

If you are using any optional adapters (such as token-ring or 8-port EIA-232), connect the cables to the appropriate adapter connectors in the PCI slots of your machine. Consult the ″About Your Machine″ document for the locations of installed adapters.

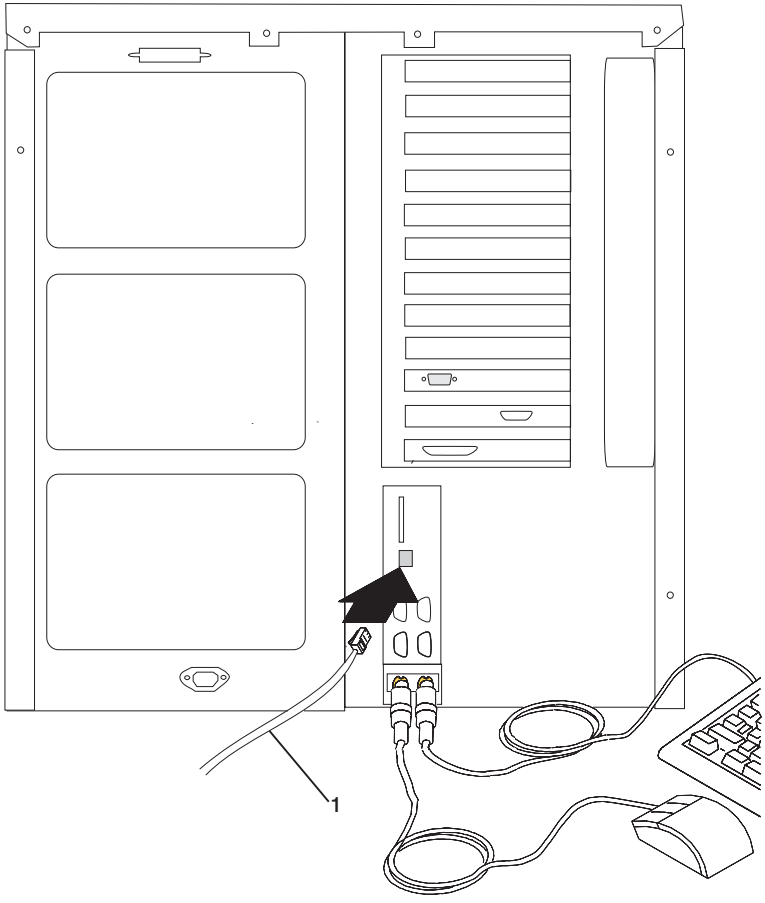


Step 16. Are You Using an Ethernet Connection?

Ask your system administrator if you are not sure. If you are not using Ethernet or you have already connected your Ethernet to an adapter, continue with “Step 17. Plug in the Power Cables” on page 15. To connect the Ethernet cable:

Note: The twisted-pair connector is compatible with the IEEE 802.3 Ethernet network 10/100 Base T link.

1. Connect the twisted-pair cable to the twisted-pair connector **(1)**.
2. The twisted-pair Ethernet cable is now installed. Continue with “Step 17. Plug in the Power Cables” on page 15.



Step 17. Plug in the Power Cables

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

Before installing or removing signal cables, ensure that the power cables for the system unit and all attached devices are unplugged.

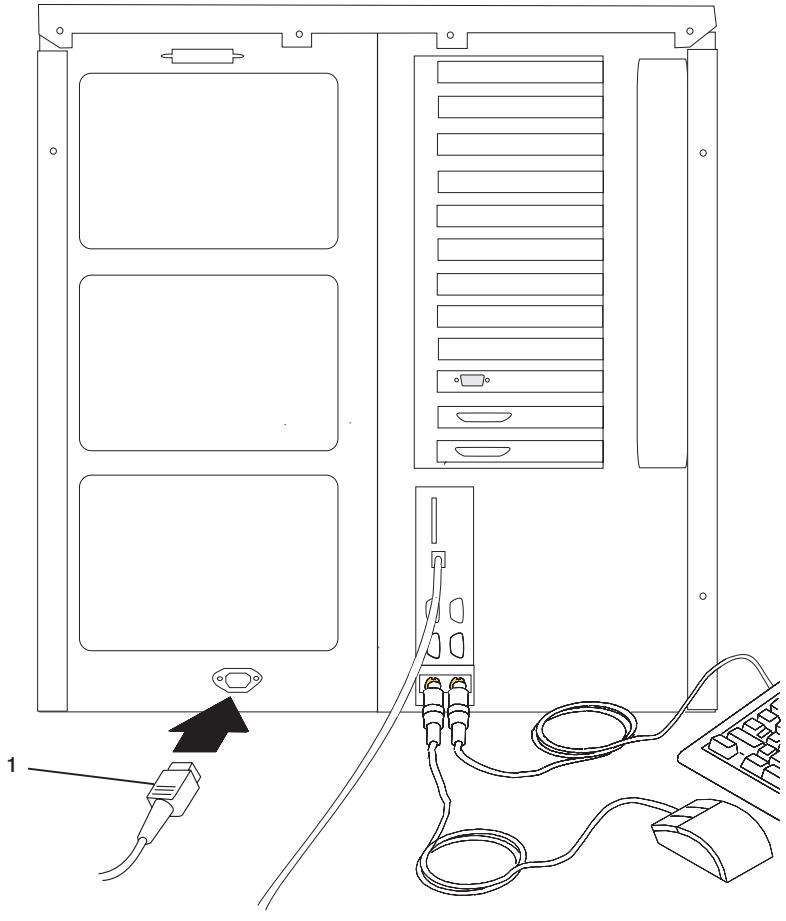
When adding or removing any additional devices to or from the system, ensure that the power cables for those devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.

Use one hand, when possible, to connect or disconnect signal cables to prevent a possible shock from touching two surfaces with different electrical potentials.

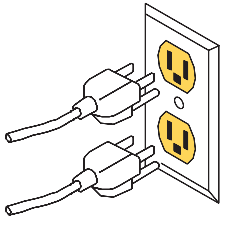
During an electrical storm, do not connect cables for display stations, printers, telephones, or station protectors for communications lines.

CAUTION:
This product is equipped with a three-wire power cable and plug for the user's safety. Use this power cable in conjunction with a properly grounded electrical outlet to avoid electrical shock.

1. Plug the power cables **(1)** into the system unit, display, and attached devices.

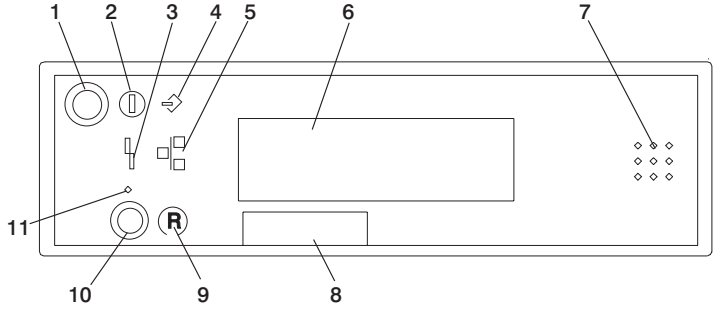


2. Plug these power cables into electrical outlets.



When the power cables are plugged into the electrical outlet, the following occurs:

- The fans in the system unit start spinning.
- A scrolling ball, moving from left to right, may be seen in the operator panel display **(6)** for a very short time. Four-character checkpoints in the format 8xxx and 9xxx will then be displayed.
- The operator panel displays `0K`, and the green power LED **(2)** is slowly blinking. When this occurs, your system is in standby mode. The following figure shows the operator panel and the locations of operator panel components that are referred to in this procedure.



1	Power On/Off Button	7	Speaker
2	Power-On LED (Green)	8	Serial Number Plate
3	System Attention LED (Yellow)	9	Reset Icon
4	SCSI Activity LED (Green)	10	Reset Button
5	LAN Activity LED (Green)	11	For Service Use Only
6	Operator Panel Display		

If your system does not stop in standby mode, check all cables for good connection. If you cannot find a problem, call your support center for assistance.

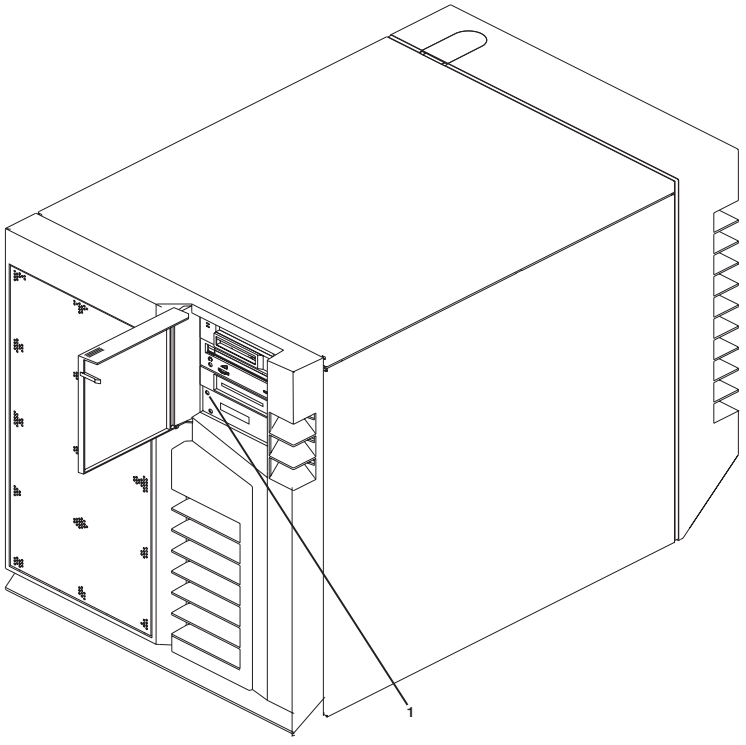
Step 18. Your System Unit Is Now Set Up

Arrange your system unit and attached devices so that you can use them comfortably.

If the AIX operating system is not preinstalled on your system and you want to install the AIX operating system now, refer to the *AIX Installation Guide*, order number SC23-4112. Return here to continue after your operating system is installed.

Step 19. Start the Operating System

To start the installed AIX operating system, open the door to the operator panel and locate the power on/off button **(1)**.



1. Press the power on/off button on the operator panel.
   - The power LED on the operator panel starts blinking at a fast rate.
   - Checkpoint codes (9xxx) appear in the operator panel display.
   - When the power-on sequence is complete, the power LED stops blinking and stays on.
   - The AIX operating system loads and you are ready to use your system.

The AIX Documentation library is available at the following web address: http://www-1.ibm.com/servers/aix/library/. Select **Technical Publications**. AIX documentation is also contained on the *AIX Documentation* CD. The documentation information is made accessible by loading the documentation CD files onto the hard disk or by mounting the CD in the CD-ROM drive.

Step 20. Verify the Hardware Operation

If your system did not load the AIX operating system successfully, or you would like to test your hardware, go to “Chapter 2. Verifying the Hardware Operation” on page 21.

Chapter 2. Verifying the Hardware Operation

The system verification procedure checks the system for correct hardware operation. Use this procedure to verify that your system is set up correctly. If you have a problem with your system in the future, use this procedure to test the system hardware to help you determine if you have a hardware problem. Run the system verification procedure as described in the following steps.

Step 1. Considerations Before Running This Procedure

Read the following before using this procedure:

- The AIX operating system must be installed on your system before you attempt to perform this procedure.
- If this system unit is directly attached to another system unit or attached to a network, be sure communications with the other systems are stopped.
- This procedure requires use of all of the system resources. No other activity can be running on the system while you are performing this procedure.
- This procedure requires a display connected to a graphics adapter, or an ASCII terminal attached to the S1 port or the S2 port.
- This procedure runs the AIX online diagnostics in service mode. If the system console is an ASCII terminal, see the documentation for your type of ASCII terminal to find the key sequences you need in order to respond to the diagnositcs.
- If a console display is not selected, the diagnostics stop. The instructions for selecting a console display are displayed on all of the graphics displays or a terminal attached to the S1 port. Follow the displayed instructions to select a console display.

Step 2. Loading the Diagnostics

Note: If the system is in standby mode (light-emitting diode (LED) on the operator panel is slowly blinking and the operator panel displays `OK`), skip the first three steps of this procedure. If the system is running, and you do not want to shut it down, begin with substep 6.

1. Stop all application programs running on the operating system.
2. Stop the operating system by logging in as root user and typing `shutdown`.
3. Wait for the system to go into standby mode. The power-on LED on the operator panel starts to slowly blink, and the operator panel displays `OK`, indicating that the system is in standby mode.
4. If you are loading the diagnostics and running them from an ASCII terminal, you might need to change your terminal settings. Record the normal settings, and be sure the terminal attributes are set to work with the diagnostics. If needed, see the documentation for your terminal hardware for terminal attributes.
5. Turn on the system by pressing the power on/off button once.
6. After the AIX operating system loads, log in as root user.
7. Type `diag` at the command prompt.

8. Follow the instructions that appear on the display to select a console.
9. When the Diagnostic Operating Instructions display, go to “Step 3. Running System Verification”.

Note: If you are unable to load the diagnostics to the point when the Diagnostic Operating Instructions display, call your support center for assistance.

Step 3. Running System Verification

When the Diagnostic Operating Instructions display, do the following to run system verification:

1. Press Enter.
2. If the terminal type has not been defined, you must use the **Initialize Terminal** option on the Function Selection menu to initialize the operating system environment before you can continue with the diagnostics.
3. If you want to do a general checkout with minimal operator action, select the **Diagnostic Routines** option on the Function Selection menu.

   If you want to do a more complete checkout including the use of wrap plugs, select the **Advanced Diagnostics** option on the Function Selection menu. The advanced diagnostics are primarily for the service representative; the advanced diagnostics may instruct you to install wrap plugs to better isolate a problem.
4. Select the **System Verification** option on the Diagnostic Mode Selection menu.
5. If you want to run a general checkout of all installed resources, select the **All Resource** option on the Diagnostic Selection menu. Follow the instructions on the screen to complete the checkout procedure.

   If you want to check one particular resource, select that resource on the Diagnostic Selection menu.

The checkout program ends with either of the following results:

- The Testing Complete menu displays with a message stating `No trouble was found`.
- The A Problem Was Detected On (Time Stamp) menu displays, with either a service request number (SRN) or an error code. Make a note of any codes displayed on the display or operator panel.

Step 4. Performing Additional System Verification

To perform additional system verification, do the following:

1. Press Enter to return to the Diagnostic Selection menu.
2. If you want to check other resources, select the resource. When you have checked all of the resources you need to check, go to “Step 5. Stopping the Diagnostics” on page 23.

Step 5. Stopping the Diagnostics

To stop the diagnostics, do the following:

1. Press F10 to exit the diagnostics.
2. If you changed any attributes on your ASCII terminal to run the diagnostics, change the settings back to normal.
3. This completes the system verification. If the system failed any of the diagnostics tests, call your service representative. If you received an error code, record the code and report it to the service organization.

If the system passed all the diagnostic tests, the verification process is complete and your system is ready to use.

Chapter 3. Installing Options

This chapter provides instructions to help you add options to your system. Some option removal instructions are provided, in case you need to remove one option to install another. If you have several internal options to install, these instructions enable you to add them all at one time.

Safety Considerations

Observe the following safety precautions anytime you work with this system unit.

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

Before installing or removing signal cables, ensure that the power cables for the system unit and all attached devices are unplugged.

When adding or removing any additional devices to or from the system, ensure that the power cables for those devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.

Use one hand, when possible, to connect or disconnect signal cables to prevent a possible shock from touching two surfaces with different electrical potentials.

During an electrical storm, do not connect cables for display stations, printers, telephones, or station protectors for communications lines.

CAUTION:
This product is equipped with a three-wire power cable and plug for the user's safety. Use this power cable in conjunction with a properly grounded electrical outlet to avoid electrical shock.

Handling Static-Sensitive Devices

Attention: Adapters and disk drives are sensitive to static electricity discharge. These devices are wrapped in antistatic bags to prevent this damage.

Take the following precautions:

- If you have an antistatic wrist strap available, use it while handling the device.
- Do not remove the device from the antistatic bag until you are ready to install the device in the system unit.
- With the device still in its antistatic bag, touch it to a metal frame of the system.
- Grasp cards by the edges. Hold drives by the frame. Avoid touching the solder joints or pins.
- If you need to lay the device down while it is out of the antistatic bag, lay it on the antistatic bag. Before picking it up again, touch the antistatic bag and the metal frame of the system unit at the same time.
- Handle the devices carefully in order to prevent permanent damage.

Hot-Pluggable Options

Attention: You do not have to stop the system to install a hot-pluggable option.

The following options are hot-pluggable:

- Hot-pluggable PCI adapters (see the *PCI Adapter Placement Reference*, order number SA38-0538).
- Hot-pluggable disk drives, also known as *hot-swap* disk drives.

Stopping the System Unit

Attention: When shutting down your system to install options, shut down all applications first and then shut down the operating system. The system power turns off and the system goes into standby mode when the operating system is shut down. Before removing power from the system unit, ensure that the shut down process is complete. Failure to do so can result in the loss of data. Some option installation procedures do not require the system to be stopped for installation. If necessary, the option installation procedures in this section will direct you here if stopping the system is required.

1. Log in to the system as root user.
2. Stop any applications that are running on the system.
3. At a command line, type `shutdown` to stop the operating system.
4. After you shut down the operating system, set the power switches of any attached devices to Off.
5. The shutdown procedure stops the operating system, removes power from parts of the system, and puts the system into standby mode.

Option List

Choose an option from the list below and go to the installation procedures for the option you are installing.

- PCI Adapter Options, see page 35.
  - Installing Adapter Cards, see page 36.
  - Removing Adapter Cards, see page 40.
- System Memory Options, see page 47.
  - Installing Memory Cards or Processor Cards, see page 53.
  - Removing Memory Cards or Processor Cards, see page 55.
  - Installing Memory DIMMs, see page 50.
  - Removing Memory DIMMs, see page 52.
- Disk Drive Options, see page 56.
  - Installing Disk Drives, see page 62.
  - Removing Disk Drives, see page 64.
- Installing Internal Disk Drive Bays, see page 73.
- Installing a CD-ROM Drive or Tape Drive, see page 84.
- Configuring or Deconfiguring Disk and Media Drives, see page 66.
- Installing the Redundant Power and Cooling Option, see page 86.
  - Installing a Fan, see page 86.
  - Installing a Power Supply, see page 87.
- Replacing the Battery, see page 90.

Covers

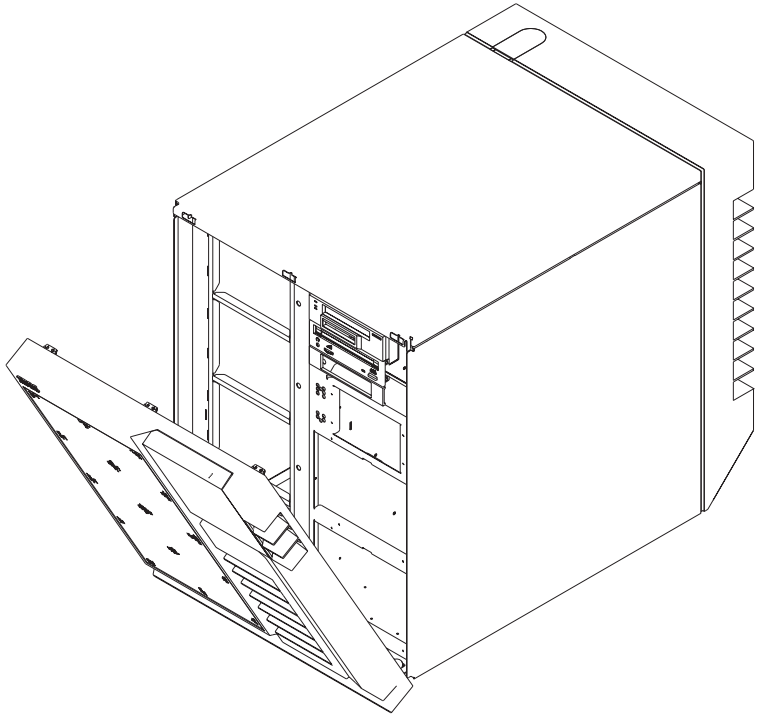
Removing the Covers

Note: Some procedures can be performed while the system power is on. Refer to “Hot-Pluggable Options” on page 27 to determine if the device you are installing is hot-pluggable.

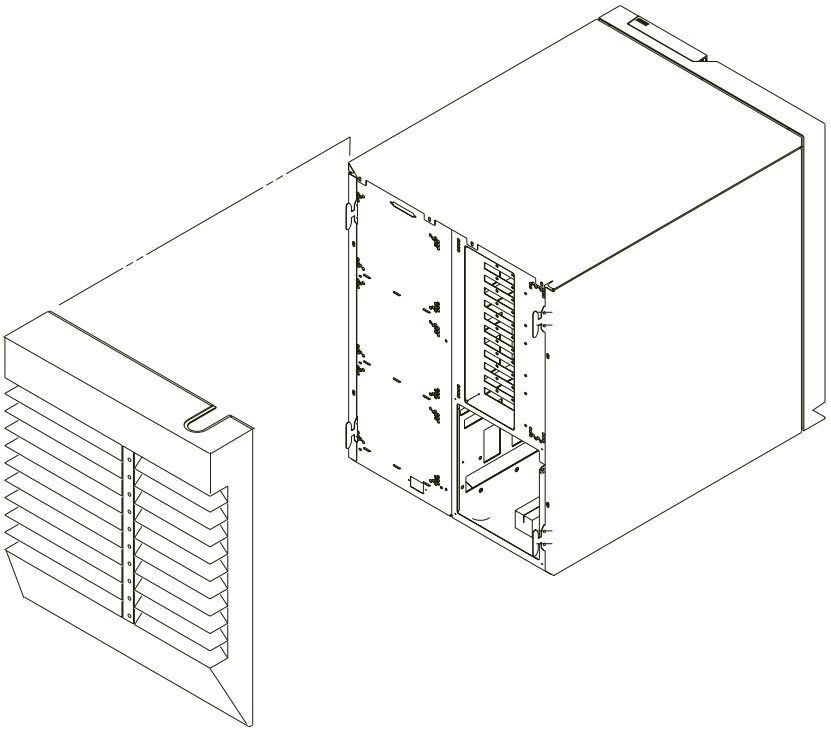
If the option you are installing is:

- A hot-pluggable device, then you can proceed to the next step.
- Not a hot-pluggable device, then shut down the system as described in “Stopping the System Unit” on page 27.

1. To remove the front cover, grasp the cover at the top and pull the top out far enough to clear the front of the system.
2. Lift up the front cover to disengage the tabs on the bottom.

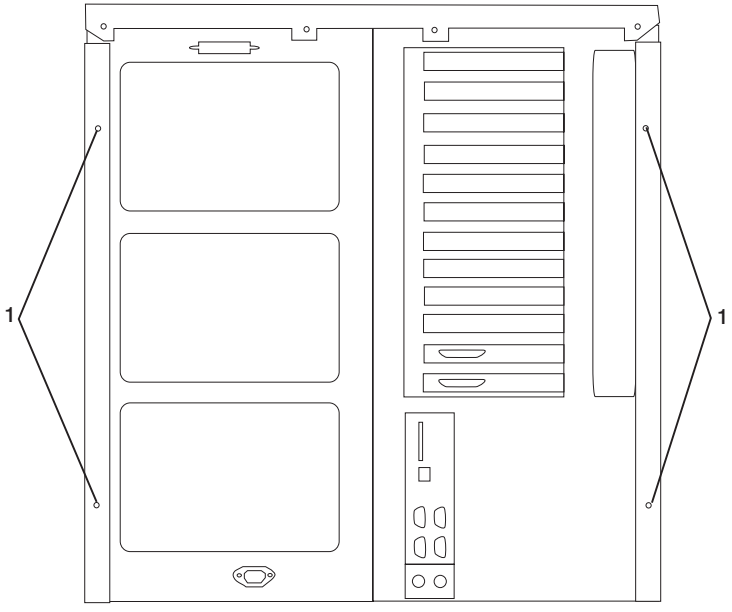


3. To remove the rear cover, lift the cover up and out.
4. Store the cover in a safe place.



5. To remove the side covers, remove the screws **(1)** that hold the side covers to the rear frame.

   Attention: Do not remove the right side cover unless the system is shut down and the power is disconnected from the power outlet.



6. Slide the covers to the rear and remove.

Replacing Covers

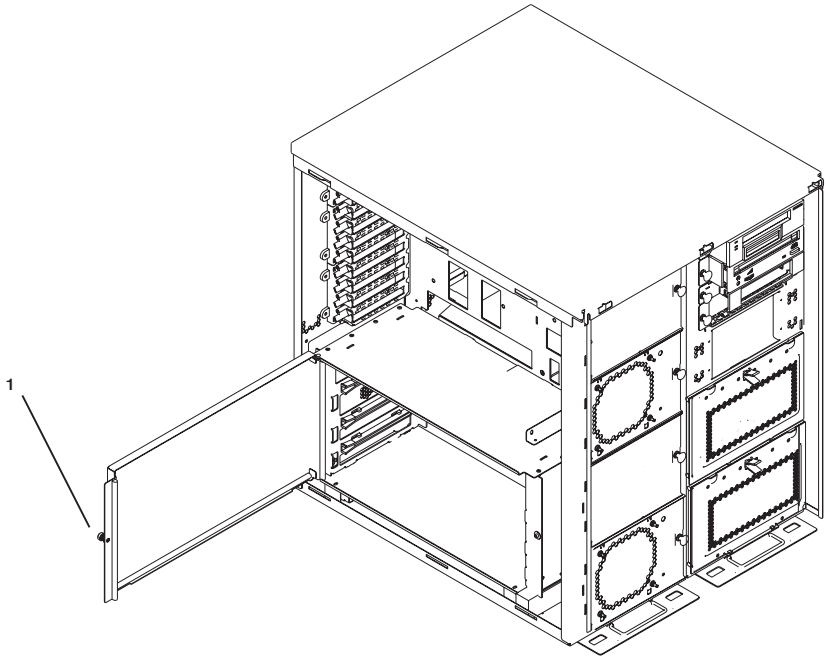
1. To replace the side covers, do the following:
   a. Insert the tabs on the side cover into the slots on the system unit.
   b. Slide the cover toward the front of the system unit until the rear corner of the cover contacts the rear of the system unit.
   c. Secure the rear of the cover with the screws removed earlier.
2. To replace the front cover, align the tabs on the front cover with the slots of the extension on the bottom of the system unit. Push in the front cover at the top until it is secure.
3. To replace the rear cover, align the tabs on the side covers with the slots on the rear cover, and slide the cover down until it latches into place.
4. If the power cord is not plugged into the wall outlet, plug it in now.
5. If the system is not operating, wait until **OK** appears on the operator panel. Then press the power button on the operator panel once to start the system.

If you have installed new adapters or devices, you might need to refer to the *AIX System Management Guide: Operating System and Devices* to configure the new adapter or device. This publication is available at the following Web address: http://www-1.ibm.com/servers/aix/library/. Select **Technical Publications**. This publication is also contained on the *AIX Documentation* CD. The documentation is made accessible by loading the documentation CD files onto the hard disk or by mounting the CD in the CD-ROM drive.

Processor and Memory Card Cover

Removing Processor and Memory Card Cover

1. If you have not already done so, shut down the system as described in “Stopping the System Unit” on page 27.
2. If you have not already done so, unplug the system unit power cable from the electrical outlet.
3. If you have not already done so, remove the covers as described in “Removing the Covers” on page 29.
4. Loosen the thumbscrew **(1)** on the right side of the processor and memory card cover and open the cover. If the cover is opened far enough, you can remove it from the frame.

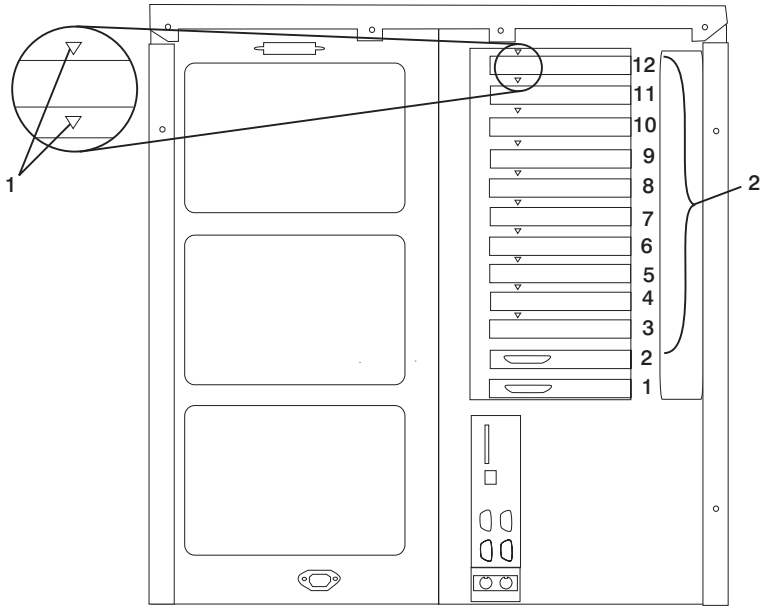


Replacing Processor and Memory Card Cover

To replace the processor and memory card cover, perform the removal steps in the reverse order.

PCI Adapter Options

Your system has ten PCI adapter slots in which you can install adapters. When you install or remove adapters, refer to the procedures in this section. Some adapters can be installed while the system power is on. These adapters are referred to as *hot-pluggable* PCI adapters. The system has light emitting diodes (LEDs), which are visible from the rear of the system, to identify the state of a PCI slot during hot-plug procedures. One LED **(1)** is associated with each PCI slot **(2)**, as shown in the following figure. The slot LEDs are also visible from inside the system unit when the left cover is removed.



PCI Slot LED Definitions

The following table describes the possible states of the LEDs associated with the PCI slots. These LEDs are visible from the rear or from inside of the system unit.

LED Indication	PCI Slot State	Definition
Off	Off	Slot power is off. It is safe to remove or replace an adapter.
On (not flashing)	On	Slot power is on. Do not remove or replace an adapter.
Flashing slowly (one flash per second)	Identify	Indicates slot has been identified by the software; do not remove or replace an adapter at this time.
Flashing rapidly (six to eight flashes per second)	Action	Indicates slot is ready for removing or replacing an adapter.

Installing Adapter Cards

Note: If you are installing external devices that connect to an adapter, install the devices and cables before you install the adapter.

If the adapter you are installing requires device driver software, see the documentation for the adapter and load the software before installing the adapter.

With this system, you can install some PCI adapters with the power on. These adapters are referred to as *hot-pluggable* PCI adapters. Some adapters are not hot-pluggable, and power must be removed from the system before adapter installation.

Before you install an adapter, determine if the PCI adapter you are installing is hot-pluggable. See the *PCI Adapter Placement Reference*, order number SA38-0538. Also, review the information in "PCI Adapter Options" on page 35.

If you are installing a PCI adapter that is:

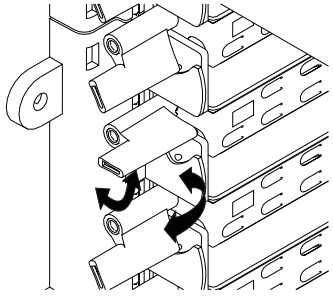
- Not hot-pluggable, continue with "Installing a Non-Hot-Pluggable PCI Adapter".
- Hot-pluggable, go to "Installing a Hot-Pluggable PCI Adapter" on page 38.

Installing a Non-Hot-Pluggable PCI Adapter

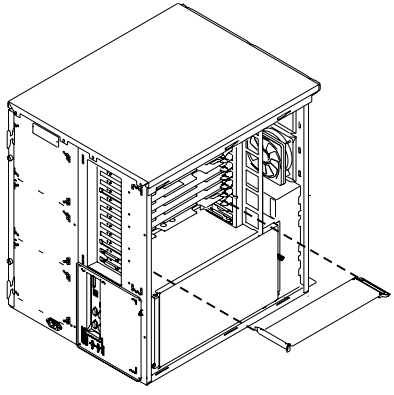
Perform the following steps to install the adapter:

1. If you have not already done so, install any required device driver software as described in the documentation provided with the adapter. Then return here to continue.
2. If you have not already done so, shut down the system as described in "Stopping the System Unit" on page 27.
3. If you have not already done so, unplug the system unit power cable from the electrical outlet.
4. If you have not already done so, remove the front, rear, and left covers as described in "Removing the Covers" on page 29.
5. See the *PCI Adapter Placement Reference*, order number SA38-0538, for adapter placement information. Then select an empty PCI slot for the adapter.

6. Turn the locking latch, lift the plastic stop, and remove the blank cover from the slot where you are installing the adapter.



7. Carefully grasp the adapter by the edges and align the adapter in the slot guides. Insert the adapter fully into the adapter slot connector. If you are installing a full-length adapter, ensure that both ends of the adapter engage the card guides.

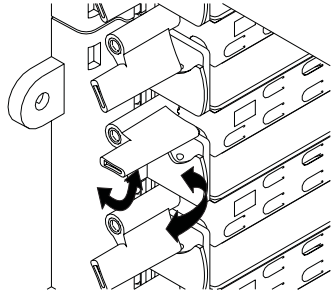


8. Lower the plastic stop over the adapter bracket and rotate the locking latch clockwise until it clicks into the locked position.
9. Connect appropriate cables to the adapter.
10. If you have other options to install, refer to “Option List” on page 28.
11. If you do not have other options to install, replace the system unit covers as described in “Replacing Covers” on page 32.

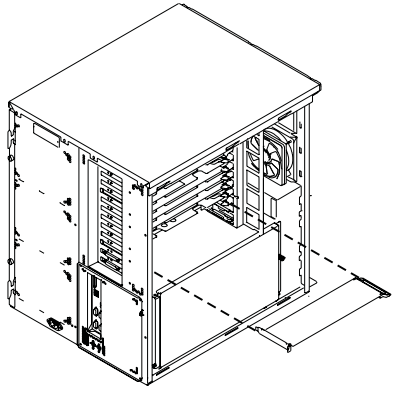
Installing a Hot-Pluggable PCI Adapter

Perform the following steps to install the adapter:

1. If you have not already done so, remove the front, rear, and left covers as described in “Removing the Covers” on page 29. Then return here to continue.
2. Refer to “PCI Hot-Plug Manager Access” on page 44 and follow the steps in the access procedure to select **PCI Hot-Plug Manager**. Then return here to continue.
3. From the PCI Hot-Plug Manager menu, select **Add a PCI Hot-Plug Adapter** and press Enter. The Add a Hot-Plug Adapter window displays.
4. See the *PCI Adapter Placement Reference*, order number SA38-0538, for adapter placement information. Then choose an empty PCI slot for the new adapter.
5. Select the appropriate empty PCI slot from the ones listed on the screen, and press Enter.
6. Turn the locking latch, lift the plastic stop, and remove the blank cover from the slot where you are installing the adapter.



7. Follow the instructions on the screen to install the adapter.
8. When you are instructed to install the adapter in the adapter slot, carefully grasp the adapter by the edges and align the adapter in the slot guides. Insert the adapter fully into the adapter slot connector. If you are installing a full-length adapter, ensure that both ends of the adapter engage the card guides.



9. Lower the plastic stop over the adapter bracket and rotate the locking latch clockwise until it clicks into the locked position. Some full-length adapter cards can be supported by rotating the blue adapter latch on the right end of the adapter divider counterclockwise.
10. Connect appropriate cables and devices to the adapter.
11. Continue to follow the screen instructions until you receive a message that the installation is successful. Successful installation is indicated by the OK message displayed next to the **Command** field at the top of the screen.
12. Press the F3 key to return to the PCI Hot-Plug Manager menu.
13. Select **Install/Configure Devices Added After IPL** and press Enter. Then follow the instructions on the screen.
14. Press F10 to exit the Hot-Plug Manager.

    If you have added, removed, or replaced any adapters, run the **diag -a** command. If the system responds with a menu or prompt, follow the instructions to complete the device configuration.
15. If you have other options to install, refer to “Option List” on page 28.
16. If you do not have other options to install, replace the system unit covers as described in “Replacing Covers” on page 32.

Removing Adapter Cards

With this system, you can remove PCI adapters with the power on. These adapters are referred to as *hot-pluggable* PCI adapters. Some adapters are not hot-pluggable and power must be removed from the system for adapter removal.

Before you remove an adapter, determine if the PCI adapter you are installing is hot-pluggable. See the *PCI Adapter Placement Reference*, order number SA38-0538. Also, review the information in "PCI Adapter Options" on page 35.

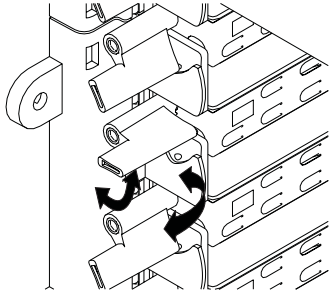
If you are removing a PCI adapter that is:

- Not hot-pluggable, continue with "Removing a Non-Hot-Pluggable PCI Adapter".
- Hot-pluggable, go to "Removing/Replacing a Hot-Pluggable PCI Adapter" on page 42.

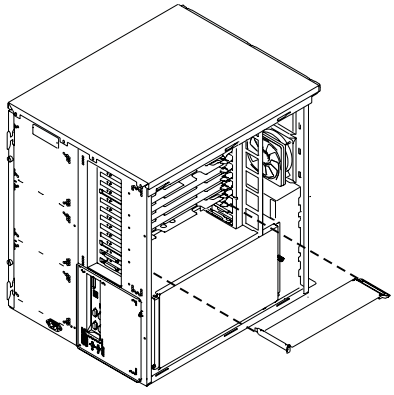
Removing a Non-Hot-Pluggable PCI Adapter

Perform the following steps to remove a non-hot-pluggable adapter:

1. If you have not already done so, shut down the system as described in "Stopping the System Unit" on page 27.
2. If you have not already done so, unplug the system unit power cable from the electrical outlet.
3. If you have not already done so, remove the front, rear, and left covers as described in "Removing the Covers" on page 29.
4. Determine the slot from which you are removing the adapter.
5. Disconnect any cables that are connected to the adapter being removed.
6. Turn the locking latch and lift the plastic stop for the adapter. Some full-length adapter cards can be removed by rotating the blue adapter latch on the right end of the adapter divider clockwise



7. Carefully grasp the adapter by the edges and pull it straight out from the system board. Store the adapter in a safe place.



8. Place a blank slot cover in the adapter slot and then lower the plastic stop over the adapter bracket. Rotate the locking latch clockwise until it clicks into the locked position.
9. If you have options to install, refer to “Option List” on page 28.
10. If you do not have options to install, replace the system unit covers as described in “Replacing Covers” on page 32.

Removing/Replacing a Hot-Pluggable PCI Adapter

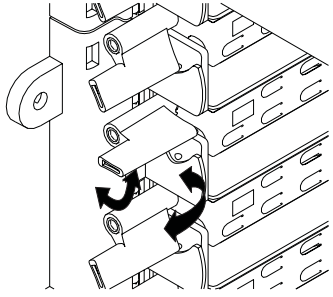
Perform the following steps to remove a hot-pluggable adapter:

1. If you have not already done so, remove the front, rear, and left covers as described in “Removing the Covers” on page 29.
2. Determine the slot from which you are removing the adapter.
3. Ensure that any processes or applications that might use the adapter are stopped.

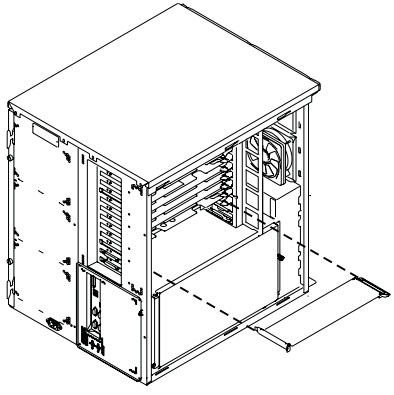
   Note: Removing a hot-pluggable PCI adapter requires the system administrator to take the PCI adapter offline before performing any PCI adapter hot-plug procedures. Before taking an adapter offline, the devices attached to the adapter must be taken offline as well. This action prevents a service representative or user from causing an unexpected outage for system users.

   For additional information about taking an adapter offline or removing it from the system configuration, see the *AIX System Management Guide: Operating System and Devices*. This publication is available at the following Web address: http://www-1.ibm.com/servers/aix/library/. Select **Technical Publications**. The documentation information is made accessible by loading the documentation CD onto the hard disk or by mounting the CD in the CD-ROM drive.
4. Refer to “PCI Hot-Plug Manager Access” on page 44, and follow the steps in the access procedure to select **PCI Hot-Plug Manager**. Then return here to continue.
5. Select **Unconfigure a Device** and press Enter.
6. Press F4 to display the Device Names menu.
7. Select the adapter you are removing from the menu.
8. If you are replacing an adapter with an identical one, answer YES to **Keep Definition**. If you are removing an adapter permanently, answer NO to **Keep Definition**.
9. Press Enter.
10. Press F3 to return to the PCI Hot-Plug Manager.
11. Select **Replace/Remove a PCI Hot-Plug Adapter** and press Enter. The Replace/Remove a PCI Hot-Plug Adapter menu displays.
12. Move the cursor to select the adapter that you are removing and press Enter.
13. Press the Tab key until the entry field displays the desired operation and then press the Enter key. Follow the instructions that display on the screen until you are instructed to remove the adapter.
14. When you are instructed to remove the adapter from the adapter slot, disconnect any cables that are connected to the adapter being removed.

15. Turn the locking latch and lift the plastic stop for the adapter. Some full-length adapter cards can be removed by rotating the blue adapter latch on the right end of the adapter divider clockwise.



16. Carefully grasp the adapter by the edges and pull it straight out from the system board. Store the adapter in a safe place.



17. If you are not replacing the adapter with an identical adapter, place a blank slot cover in the adapter slot and then lower the plastic stop over the adapter bracket. Otherwise, insert the new adapter and rotate the locking latch clockwise until it clicks into the locked position.
18. Continue to follow the screen instructions until you receive a message that the adapter removal is successful. Successful removal is indicated by the `OK` message displayed next to the **Command** field at the top of the screen.
19. Press F10 to exit the Hot-Plug Manager.
20. If you have added, removed, or replaced any adapters, run the **diag -a** command. If the system responds with a menu or prompt, follow the instructions to complete the device configuration.
21. If you have options to install, refer to “Option List” on page 28.
22. If you do not have options to install, replace the system unit covers as described in “Replacing Covers” on page 32.

PCI Hot-Plug Manager Access

The installation instructions for hot-pluggable PCI adapters refer you to these procedures when it is appropriate to perform them.

Note: A PCI adapter is only hot-pluggable if the PCI adapter supports hot-plug applications. See the *PCI Adapter Placement Reference*, order number SA38-0538.

Accessing Hot-Plug Management Functions

Note: Removing a hot-pluggable PCI adapter requires the system administrator to take the PCI adapter offline before performing any PCI adapter hot-plug procedures. Before taking an adapter offline, the devices attached to the adapter must be taken offline as well. This action prevents a service representative or user from causing an unexpected outage for system users.

For additional information about taking an adapter offline or removing it from the system configuration, see the *AIX System Management Guide: Operating System and Devices*. This publication is available at the following Web address: http://www-1.ibm.com/servers/aix/library/. Select **Technical Publications**. This publication is also contained on the *AIX Documentation* CD. The documentation is made accessible by loading the documentation CD files onto the hard disk or by mounting the CD in the CD-ROM drive.

Use the following procedure to access the hot-plug management menus:

1. Log in as root user.
2. At the command line, type `smitty`.
3. Select Devices.
4. Select PCI Hot Plug Manager and press Enter.

Note: The PCI Hot-Plug Manager menu displays. See the following section for descriptions of the menu options. Then return to the procedure that directed you here.

PCI Hot-Plug Manager Menu

The following options are available from the PCI Hot-Plug Manager menu:

Note: For information about the PCI slot LED states, see “PCI Slot LED Definitions” on page 35.

List PCI Hot-Plug Slots

Provides a descriptive list of all slots that support PCI hot-plug capability. If the listing for a slot indicates it holds an “Unknown” device, select the **Install/Configure Devices Added after IPL** to configure the adapter in that slot.

Add a PCI Hot-Plug Adapter

Allows the user to add a new PCI hot-plug-capable adapter to a slot with the system turned on. You will be asked to identify the PCI slot that you have selected prior to the actual operation. The selected PCI slot will go into the action state and finally into the on state.

Note: The system will indicate the slot holds an “Unknown” device until you perform the **Install/Configure Devices Added After IPL** option to configure the adapter.

Replace/Remove a PCI Hot-Plug Adapter

Allows the user to remove an existing adapter, or replace an existing adapter with an identical one. For this option to work, the adapter must be in the defined state (see “Unconfigure a Device” option below).

You will be asked to identify the PCI slot prior to the actual operation. The selected PCI slot will go into the action state.

Identify a PCI Hot-Plug Slot

Allows the user to identify a PCI slot. The selected PCI slot will go into the identify state.

Unconfigure a Device

Allows the user to put an existing PCI adapter into the Defined state if the device is no longer in use.

This step must be completed successfully before starting a removal or replacement operation. If this step fails, the customer must take action to release the device.

Configure a Defined Device

Allows a new PCI adapter to be configured into the system if software support is already available for the adapter. The selected PCI slot will go into the on state.

Install/Configure Devices Added After IPL

The system attempts to configure any new devices and tries to find and install any required software from a user-selected source.

The add, remove, and replace functions return information to the user indicating whether the operation was successful. If additional instructions are provided on the screen, complete the recommended actions. If the instructions do not resolve the problem, see the following:

- If the adapter is listed as unknown, perform the **Install/Configure Devices Added After IPL** option to configure the adapter.
- If you receive a warning indicating that the required device packages are not installed, the system administrator must install the specified packages before you can configure or diagnose the adapter.
- If you receive a failure message indicating a hardware error, the problem might be either the adapter or the PCI slot. Isolate the problem by retrying the operation in another PCI slot, or trying another adapter in the slot. If you determine that you have failing hardware, call your service representative.

System Memory Options

System memory is pluggable in reserved slots on memory riser cards. Several sizes of dual inline memory modules (DIMMs) can be used to increase system memory.

Two slots are available for system memory riser cards, and both slots are located for easy access in the system unit. Systems that contain a processor card that has a single processor, also known as a one-way processor card, can have memory DIMMs installed on the processor card, or on a memory riser card if present.

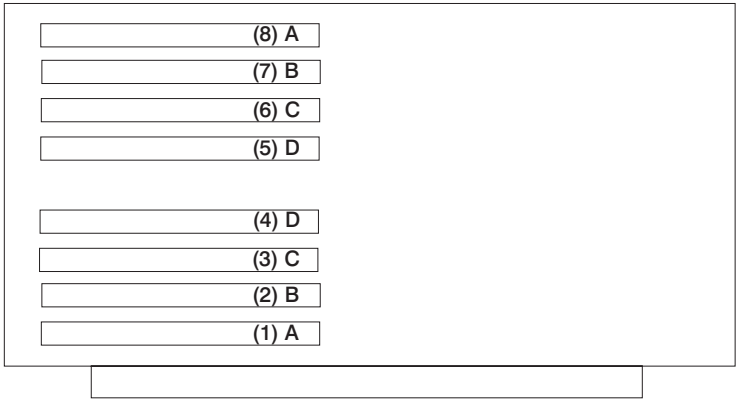
Each of the empty memory riser card slots must have a memory filler card installed.

To upgrade your system memory, you can:

- Install additional DIMMs
- Install an additional populated memory card
- Replace existing DIMMs with DIMMs of a larger size

Memory Placement with a One-Way Processor Card

- Each memory pair must contain two DIMMs of equal memory size.
- Pair memory size may be mixed on the one-way processor card.
- The minimum memory is one pair of DIMMs in slots 1 and 8. This is labeled pair A in the following figure:

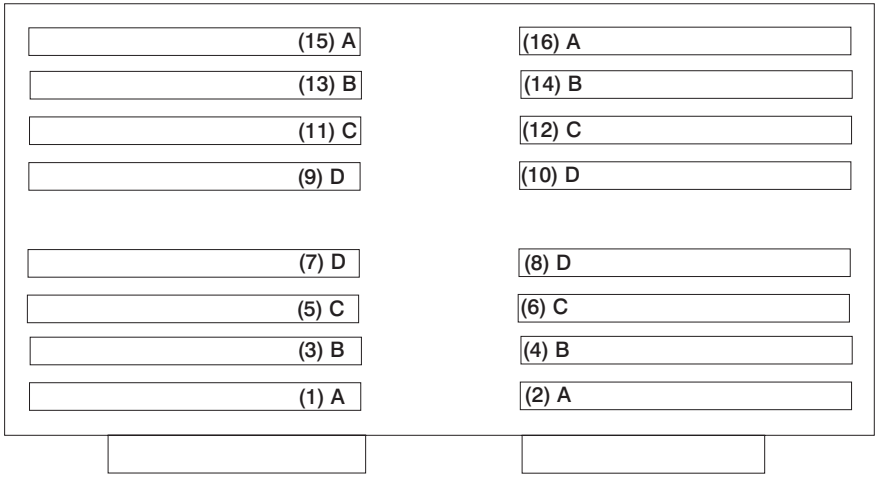


- The maximum memory is four DIMM pairs in slots 1 through 8. These are pairs A, B, C, and D. DIMM pairs must be installed in order, beginning with pair A and then progressing to B, C, and D.
- To increase memory on a one-way processor card, add more DIMM pairs or replace the DIMM pairs with pairs of a larger size.
- If a memory riser card is installed in the system with a one-way processor card:
  - Memory DIMMs must be moved from the one-way processor card to the memory riser card.
  - The memory riser card must have a minimum of four DIMMs. (See “Memory Placement for a Memory Riser Card” on page 49.)

Memory Placement for a Memory Riser Card

Memory riser cards can be populated with up to four *quads*. Each quad is a group of four DIMMs; the quads are labeled A, B, C, and D. The following rules apply to DIMM placement on a memory riser card:

- Each memory quad must contain four DIMMs of equal memory size.
- Quad memory size may be mixed on a memory riser card.
- The minimum memory is four DIMMs installed in quad A.

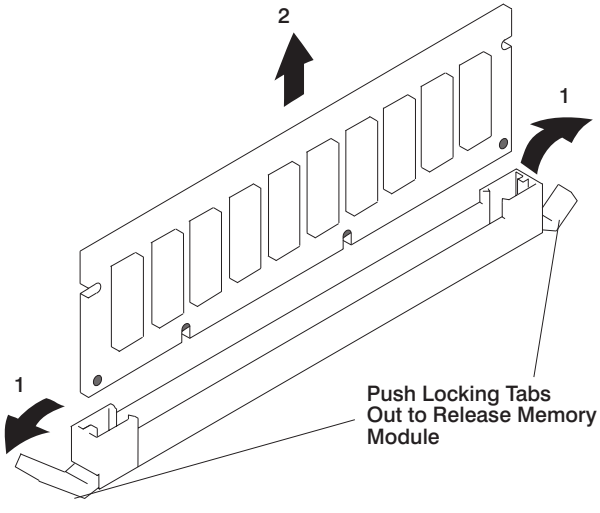


- To increase memory, add more quads to a memory riser card or replace the DIMMs in a quad with DIMMs of a larger size.
- Populate the memory riser card starting with quad A and continuing with quads B, C, and D as shown above.

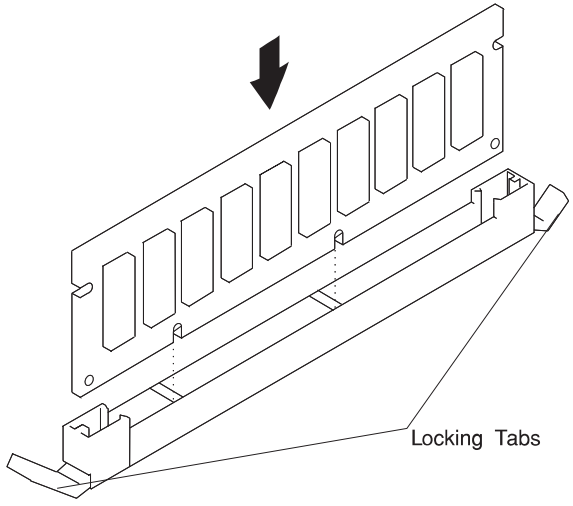
Installing Memory DIMMs

1. If you have not already done so, shut down the system as described in “Stopping the System Unit” on page 27.
2. If you have not already done so, unplug the system unit power cable from the electrical outlet.
3. If you have not already done so, remove the covers as described in “Removing the Covers” on page 29.
4. If you have not already done so, remove the processor and memory card cover as described in “Removing Processor and Memory Card Cover” on page 33.
5. If you have not already done so, remove the memory card as described in “Removing a Memory Card or One-Way Processor Card” on page 55.

   Note: If your system has a one-way processor card installed, the memory may be installed on this card. Remove the processor card to upgrade the memory. See “Removing a Memory Card or One-Way Processor Card” on page 55.
6. With one hand, touch any metal surface of the chassis to minimize static electrical charges, and then pick up the memory DIMM.
7. Locate the memory DIMM connector on the card, and remove the DIMM or dummy memory DIMM from the connector by pushing the locking tabs out on the memory connector.



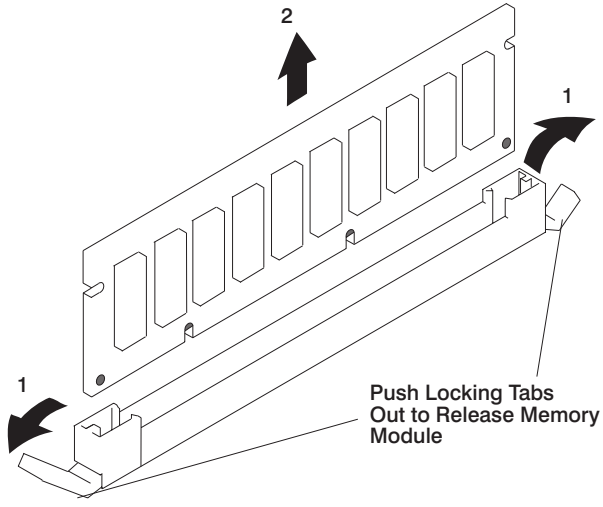
8. Align the slots in the memory DIMM with the tabs on the connector. (The DIMM will go only in one direction.) Insert the memory DIMM by firmly pressing the DIMM into the connector. The locking tabs on each end of the connector should secure the DIMM into position.



9. Install the memory card in the system unit. See “Installing a Memory Card or a One-Way Processor Card” on page 53 for more information.
10. If you have other options to install, refer to “Option List” on page 28.
11. If you do not have other options to install, replace the processor and memory card cover as described in “Replacing Processor and Memory Card Cover” on page 34.
12. Replace the system unit covers as described in “Replacing Covers” on page 32.

Removing Memory DIMMs

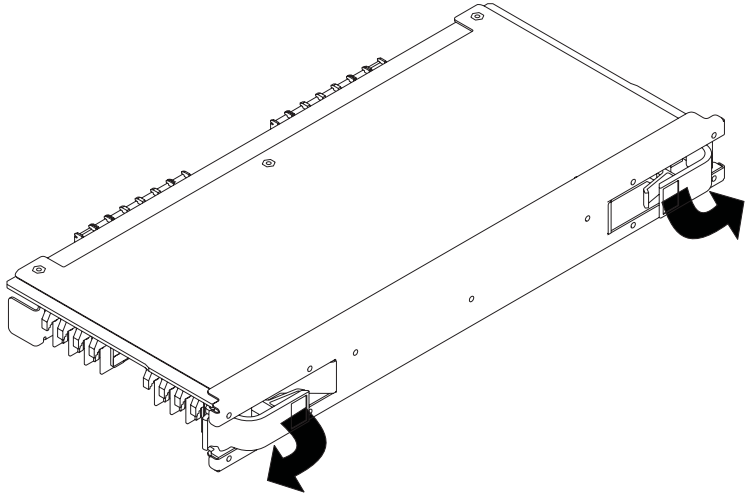
1. If you have not already done so, shut down the system as described in “Stopping the System Unit” on page 27.
2. If you have not already done so, unplug the system unit power cable from the electrical outlet.
3. If you have not already done so, remove the covers as described in “Removing the Covers” on page 29.
4. If you have not already done so, remove the processor and memory card cover as described in “Removing Processor and Memory Card Cover” on page 33.
5. If you have not already done so, remove the memory card as described in “Removing a Memory Card or One-Way Processor Card” on page 55.
6. Locate the memory DIMM connectors and determine which DIMMs you want to remove. For memory placement, see “Memory Placement with a One-Way Processor Card” on page 48 or “Memory Placement for a Memory Riser Card” on page 49
7. Remove the memory DIMMs by pushing the locking tabs out on the memory connectors. You must remove all four DIMMs in a quad.



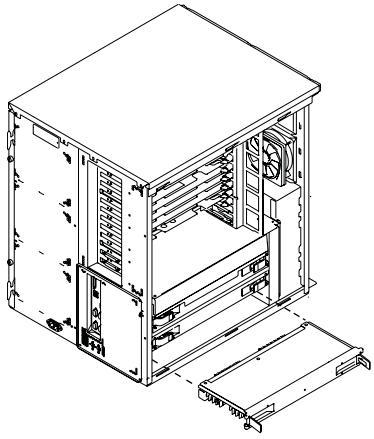
8. Align the slots in the blank DIMM cover with the tabs on the connector. Install blank DIMM covers in the memory connector.
9. Install the memory card in the system unit. See “Installing a Memory Card or a One-Way Processor Card” on page 53 for more information.
10. If you have other options to install, refer to “Option List” on page 28.
11. If you do not have other options to install, replace the processor and memory card cover as described in “Replacing Processor and Memory Card Cover” on page 34.
12. Replace the system unit covers as described in “Replacing Covers” on page 32.

Installing a Memory Card or a One-Way Processor Card

1. If you have not already done so, shut down the system as described in “Stopping the System Unit” on page 27.
2. If you have not already done so, unplug the system unit power cable from the electrical outlet.
3. If you have not already done so, remove the covers as described in “Removing the Covers” on page 29.
4. Remove the processor and memory card cover as described in “Removing Processor and Memory Card Cover” on page 33.
5. If you are adding a memory card, remove the blank card from the memory slot.
6. With one hand, touch any metal surface of the chassis to minimize static electrical charges, and then pick up the memory or processor card.
7. Open the camming latches.



8. Place the card onto the card guide rails. The memory DIMMs, if present, should face down.



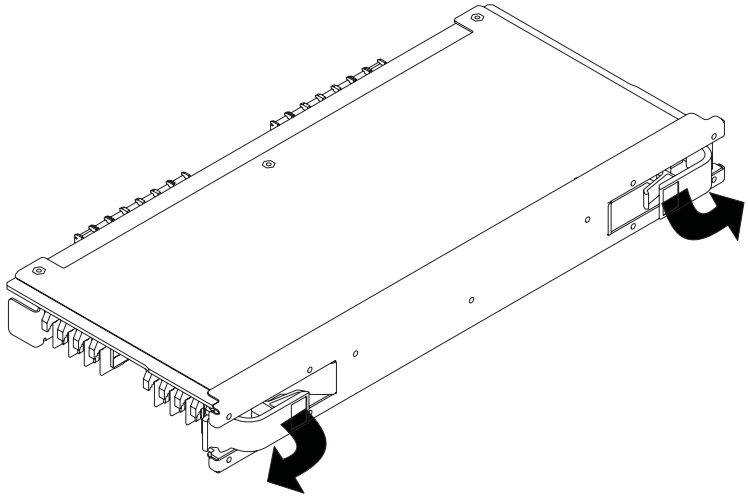
9. Push the card into the system unit until you feel it stop. The card should be far enough into the system unit so that the camming latches engage.
10. Close the camming latches to secure the card into the connector.

    Attention: To prevent damage to the card and to the card connectors, close both camming latches at the same time.
11. If you have other options to install, refer to “Option List” on page 28.
12. If you do not have other options to install, replace the processor and memory card cover as described in “Replacing Processor and Memory Card Cover” on page 34.
13. Replace the system unit covers as described in “Replacing Covers” on page 32.

Removing a Memory Card or One-Way Processor Card

1. If you have not already done so, shut down the system as described in “Stopping the System Unit” on page 27.
2. If you have not already done so, unplug the system unit power cable from the electrical outlet.
3. If you have not already done so, remove the covers as described in “Removing the Covers” on page 29.
4. Remove the processor and memory card cover as described in “Removing Processor and Memory Card Cover” on page 33.
5. The card is secured in place with camming latches at each end. Open the card latches by rotating them out until the card is pulled out of the connector on the system board.

   Attention: To prevent damage to the card and to the card connectors, open the latches at the same time. You must install either a memory card or a blank memory card in each memory card slot. Do not operate the system with any empty memory card slots.



6. If you have other options to install, refer to “Option List” on page 28.
7. If you do not have other options to install, replace the processor and memory card cover as described in “Replacing Processor and Memory Card Cover” on page 34.
8. Replace the system unit covers as described in “Replacing Covers” on page 32.

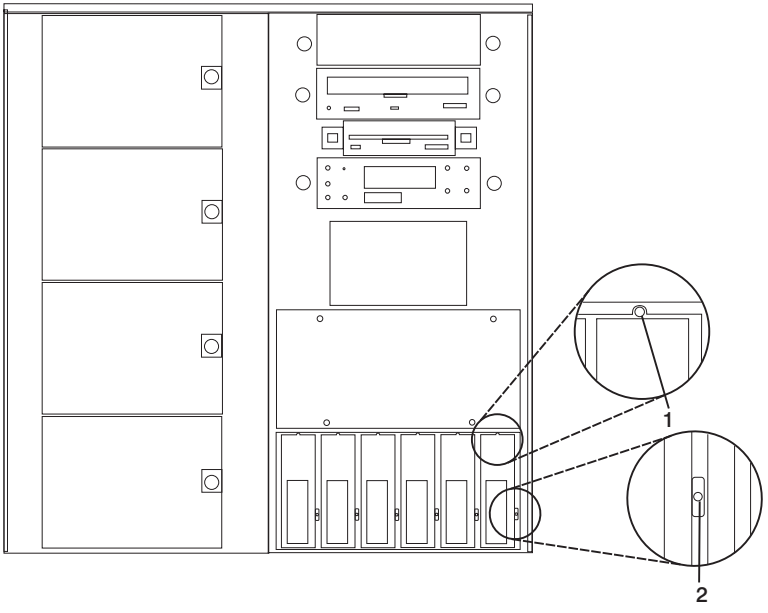
Disk Drive Options

Your system can have up to 14 disk drives installed: twelve disk drives installed in two six-position hot-plug disk drive bays and two disk drives in a two-position bay, which is not hot-pluggable. The disk drives are mounted in special carriers that allow the disk drives to plug into the bay slots. When you install or remove disk drives, refer to the procedures in this section.

Disk drives that are installed in either of the two six-position bays are referred to as *hot-pluggable* disk drives.

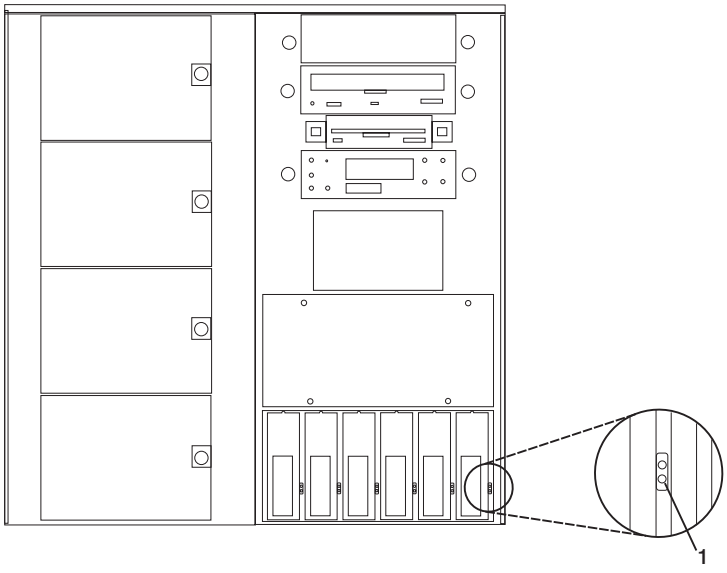
The SCSI disk drive bays have light emitting diodes (LEDs) to identify the state of the disk drive slot **(1)** shown in the figure below. The disk drive carriers also have status lights **(2)**, which are used to determine if the drive is active.

Note: The SCSI disk may have an optional second LED. If so, the bottom one is not used.



LED	Identifies	Status
1	Disk drive slot status	Light is on when slot is active.
2	Disk drive status	Light is on when drive is active.

The SSA disk drives have light emitting diodes (LEDs) to identify the state of the disk drive **(1)** shown in the following figure. Slot LEDs and drive LEDs are visible when the front cover and the disk drive bay cover have been removed.



LED Color	Identifies	Status
Amber	Disk drive slot status	Light is on when slot is active.
Green	Disk drive status	Light is on when drive is to be removed.

Preinstallation Considerations

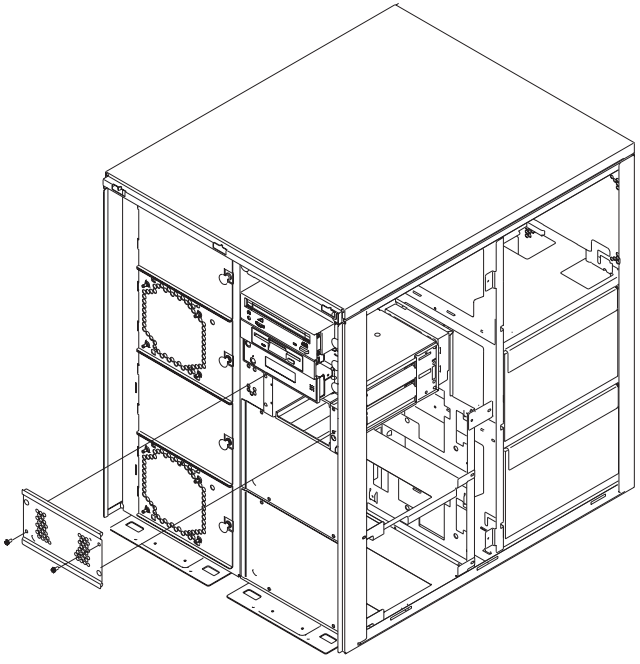
Consider the following when installing disk drives into your system unit:

- Use caution when you are handling all disk drives. Disk drives are more likely to be damaged during installation and service than at any other time. A fall of as little as .25 inch, bumping, or rough handling can all cause latent failures.
- Media drives are particularly sensitive to electrostatic discharge. Follow all electrostatic handling procedures prior to handling the media drive.
- You must install the appropriate disk drive bay hardware before proceeding.

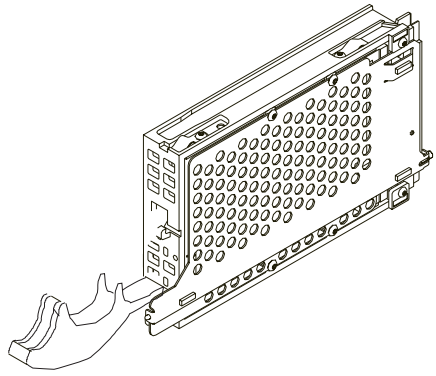
Installing a SCSI Disk Drive in the Two-Position Disk Drive Bay

This section helps you install non-hot-plug drives in the two-position SCSI disk drive bay. Refer to the “Preinstallation Considerations” on page 57 before proceeding.

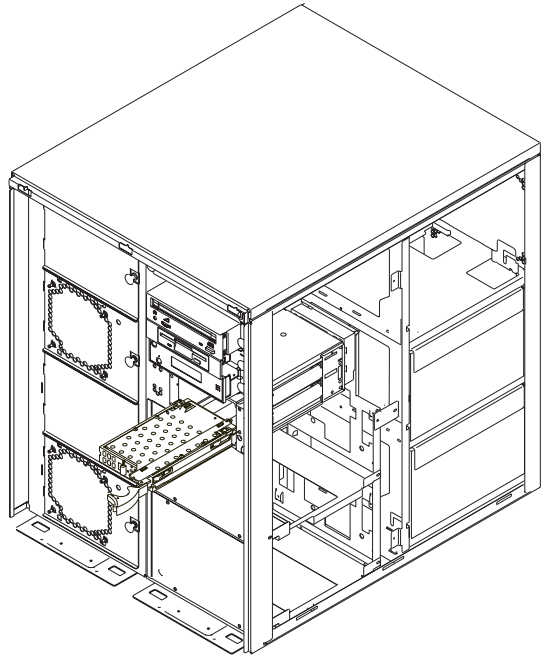
1. If you have not already done so, shut down the system as described in “Stopping the System Unit” on page 27.
2. If you have not already done so, unplug the system unit power cable from the electrical outlet.
3. If you have not already done so, remove the front cover as described in “Removing the Covers” on page 29.
4. Remove the two screws (lower left and upper right) that hold the cover onto the two-position SCSI drive bay and remove the cover.



5. Remove the disk drive from its protective packaging and open the drive latch handle.



6. Slide the disk drive into the bay as shown in the following figure.

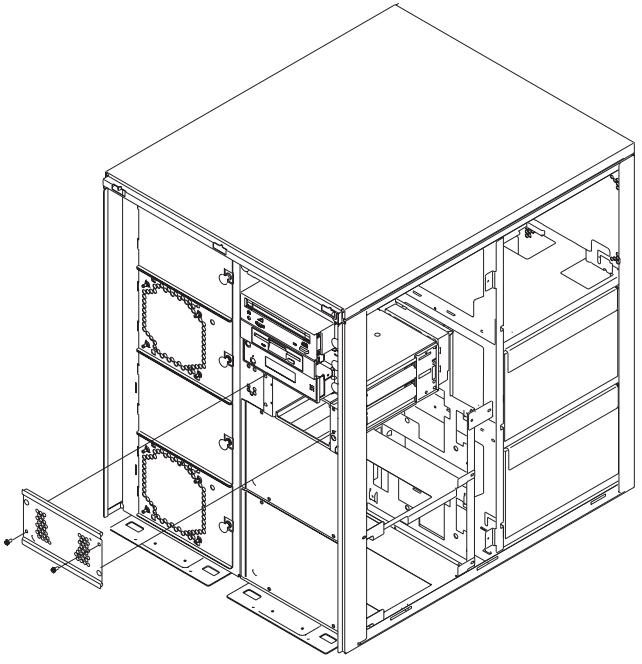


7. If you have other options to install, refer to “Option List” on page 28.
8. If you do not have other options to install, replace the two-position SCSI disk drive bay cover.
9. Replace the system unit covers as described in “Replacing Covers” on page 32.

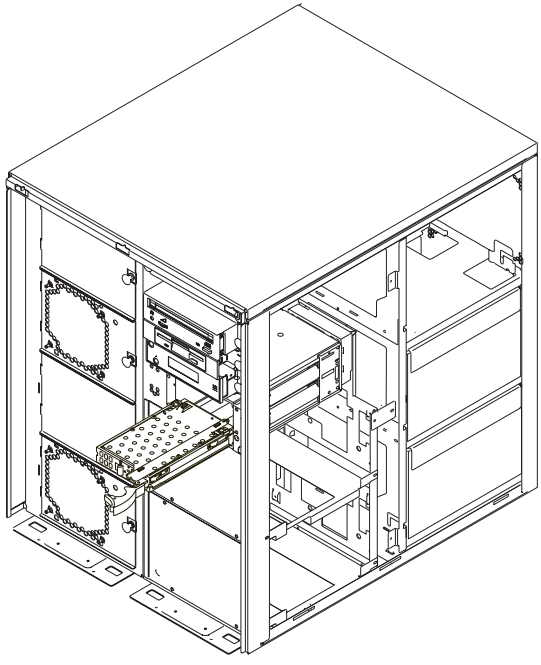
Removing a SCSI Disk Drive from the Two-Position Disk Drive Bay

This section helps you remove non hot-plug drives from the two-position SCSI disk drive bay. Refer to the “Preinstallation Considerations” on page 57 before proceeding.

1. If you have not already done so, shut down the system as described in “Stopping the System Unit” on page 27.
2. If you have not already done so, unplug the system unit power cable from the electrical outlet.
3. If you have not already done so, remove the front cover as described in “Removing the Covers” on page 29.
4. Remove the two screws that hold the cover onto the two-position SCSI drive bay and remove the cover.



5. Remove the disk drive by pulling the disk drive lever toward you until it is completely open. Then pull the drive out of the slot.



6. Replace the system unit covers as described in “Replacing Covers” on page 32.

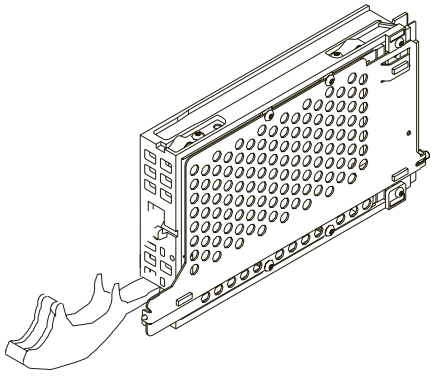
Installing Hot-Plug SCSI Disk Drives

Notes:

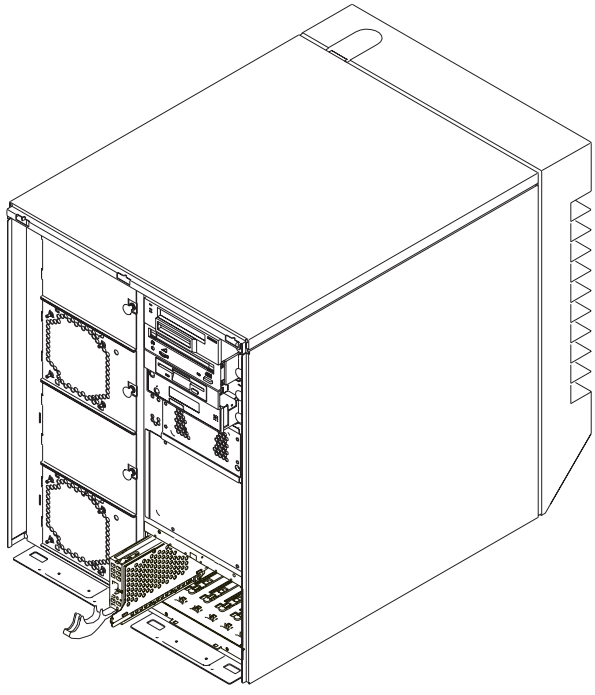
1. A six-position disk drive bay is required for hot-plugging of disk drives.
2. Disk drives for the two-position drive bay cannot be installed with the power on. See “Installing Non-Hot-Plug Media Drives” on page 84.

Review the information in “Disk Drive Options” on page 56 before installing a disk drive.

1. If you have not already done so, remove the front cover as described in “Removing the Covers” on page 29.
2. If a six-position disk drive bay is not installed, see “Installing Internal Disk Drive Bays” on page 73.
3. Determine the bay in which you are installing the new disk drive. Then remove the cover from the bay.
4. Remove the disk drive from its protective packaging and open the drive latch handle.



5. Install the disk drive in the drive slot. Align the disk drive with the drive slot rails, and slide the disk drive into the slot until it contacts the backplane at the rear of the drive bay. The drive should be in far enough for the latch handle to engage the latch.



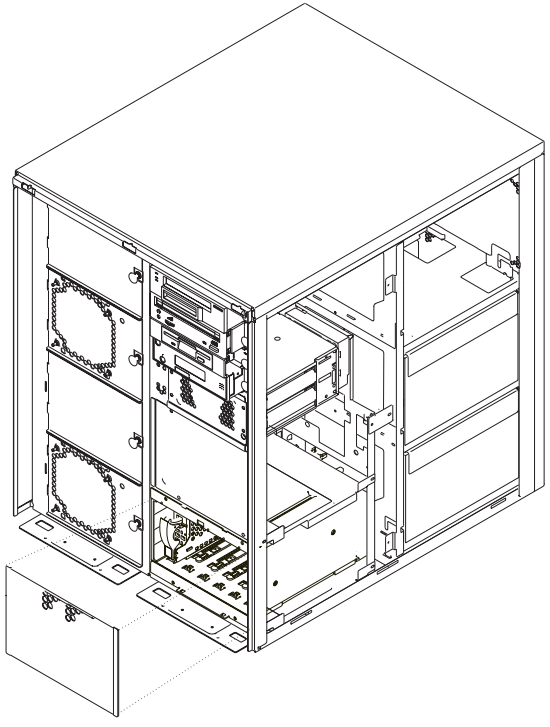
6. Push the disk drive lever up and to the rear to lock the disk drive.
7. Repeat this process for all the drives you are installing in this bay. Then replace the cover on the bay.
8. Log in as root user.
9. At the command line, type `smitty`.
10. Select **Devices**.
11. Select **Install/Configure Devices Added After IPL** and press Enter. Follow the instructions on the screen. Successful configuration is indicated by the `OK` message displayed next to the **Command** field at the top of the screen.
12. Press F10 to exit smitty.
13. If you have other options to install, refer to “Option List” on page 28.
14. If you do not have other options to install, replace the front cover as described in “Replacing Covers” on page 32.
15. Go to “Configuring and Deconfiguring SCSI Hot-Swap Disk Drives” on page 66 to configure the drive for use with your operating system.

Removing Hot-Plug SCSI Disk Drives

Note: Disk drives in the two-position drive bay cannot be removed with the power on. See “Removing a SCSI Disk Drive from the Two-Position Disk Drive Bay” on page 60.

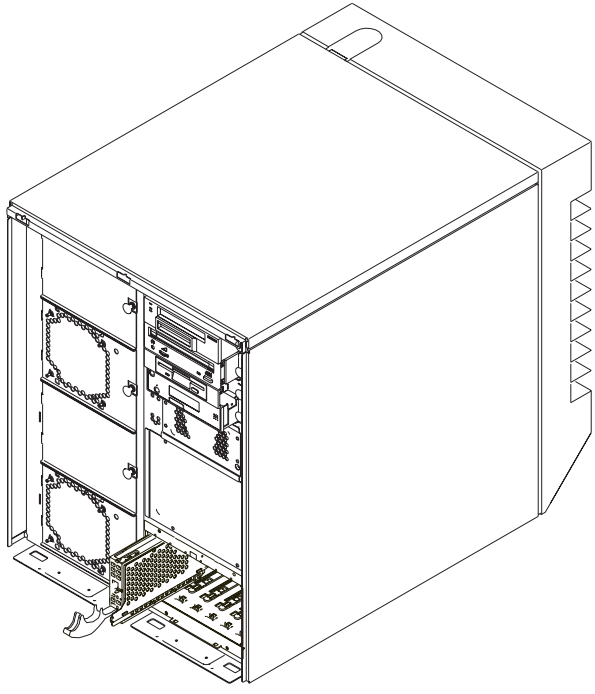
Review the information in “Disk Drive Options” on page 56 before removing a disk drive.

1. Back up the information from the disk drive to another drive.
2. Deconfigure the drive you are removing from the system. See “Deconfiguring Drives” on page 67.
3. If you have not already done so, remove the front cover as described in “Removing the Covers” on page 29.
4. Remove the disk drive bay cover from the disk drive bay.



5. Log in as root user.
6. At the command line, type `smitty`.
7. Select **System Storage Management (Physical and Logical Storage)**.
8. Select **Removable Disk Management**.

9. Select **Remove a Disk**.
10. Select the desired disk from the list on the screen and press Enter.
11. Follow the instructions on the screen to remove the drive.
12. When you are asked ″Are you sure?″ answer “Yes” and press Enter. The power LED on the drive that you selected turns off.
13. Remove the disk drive by pulling the disk drive lever toward you until it is completely open. Then remove the disk drive from the slot. The LED on the top of the slot will turn off when the disk drive is removed.



14. Repeat this process for all the drives you are removing from this bay. Then replace the cover on the bay.
15. Press F10 to exit **smitty**.
16. If you have other options to install, refer to “Option List” on page 28.
17. If you do not have other options to install, replace the front cover as described in “Replacing Covers” on page 32.

Configuring and Deconfiguring SCSI Hot-Swap Disk Drives

If you need to configure or deconfigure a drive, use the following procedures:

Configuring Drives

1. Log in as root user.
2. At the command line, type `smitty`.
3. Select **System Storage Management (Physical and Logical Storage)** and press Enter.
4. Select **Logical Volume Manager** and press Enter.
5. Select **Volume Groups** and press Enter.
6. Select **Set Characteristics of a Volume Group** and press Enter.
7. Select **Add a Physical Volume to a Volume Group**
8. Fill in the fields for the drive you are adding to the system. Press F4 for a list of selections.

   See the *AIX System Management Guide: Operating System and Devices* to finish the drive configuration. This publication is available at the following Web address: http://www-1.ibm.com/servers/aix/library/. Select **Technical Publications**. This publication is also contained on the *AIX Documentation* CD. The documentation is made accessible by loading the documentation CD files onto the hard disk or by mounting the CD in the CD-ROM drive.
9. Press F10 to exit **smitty**.

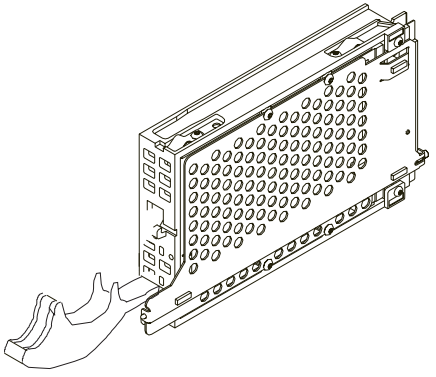
Deconfiguring Drives

1. Log in as root user.
2. At the command line, type `smitty`.
3. Select **System Storage Manager (Physical and Logical Storage)** and press Enter.
4. Select **Logical Volume Manager** and press Enter.
5. Select **Volume Groups** and press Enter.
6. Select **Set Characteristics of a Volume Group**. and press Enter.
7. Select **Remove a Physical Volume from a Volume Group**.
8. Press F4 to list the available volume groups, then select the volume group name and press Enter.
9. Press F4 to select a physical volume and follow the instructions on the screen to select the physical volume. Then press Enter.
10. Return to the procedure that directed you here.

Installing Hot-Plug SSA Disk Drives

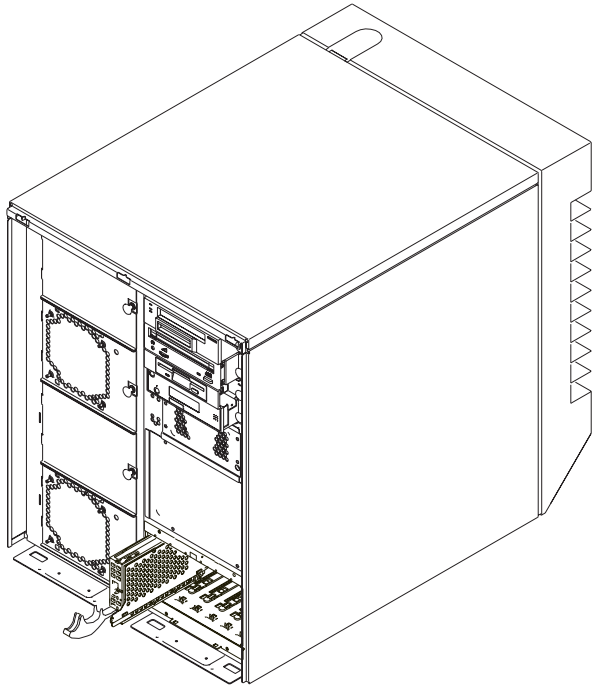
Review the information in “Disk Drive Options” on page 56 and refer to the “Preinstallation Considerations” on page 57 before installing a disk drive.

1. If you have not already done so, remove the front cover as described in “Removing the Covers” on page 29.
2. Determine the bay in which you are installing the new disk drive. Then remove the cover from the bay.
3. Remove the disk drive from its protective packaging and open the drive latch handle.



4. Remove the blank SSA filler card from the slot.

5. Install the disk drive in the drive slot. Align the disk drive with the drive slot rails, and slide the disk drive into the slot until it contacts the backplane at the rear of the drive bay.

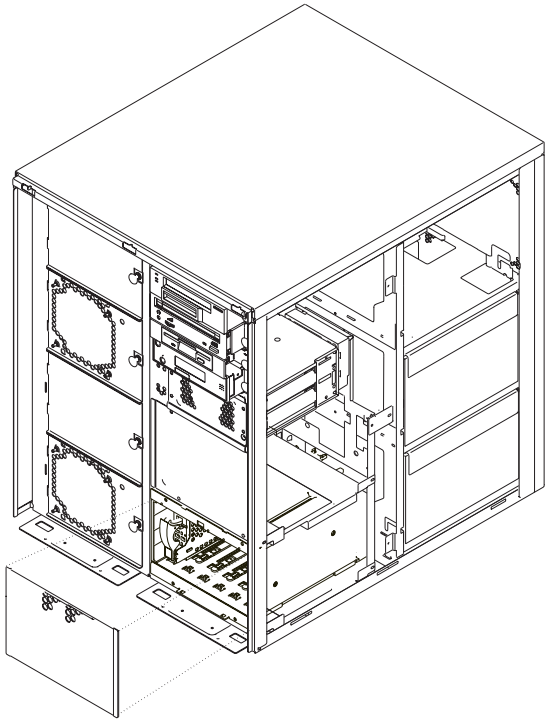


6. Push the disk drive lever up and to the rear to lock the disk drive.
7. Repeat this process for all the drives you are installing in this bay. Then replace the cover on the bay.
8. Log in as root user.
9. At the command line, type `smitty`.
10. Select **Devices**.
11. Select **Install/Configure Devices Added After IPL** and press Enter. Follow the instructions on the screen. Successful configuration is indicated by the `OK` message displayed next to the **Command** field at the top of the screen.
12. Press F10 to exit **smitty**.
13. If you have other options to install, refer to “Option List” on page 28.
14. If you do not have other options to install, replace the front cover as described in “Replacing Covers” on page 32.
15. Go to “Configuring and Deconfiguring SSA Hot-Swap Disk Drives” on page 72 to configure the drive for use with your operating system.

Removing Hot-Plug SSA Disk Drives

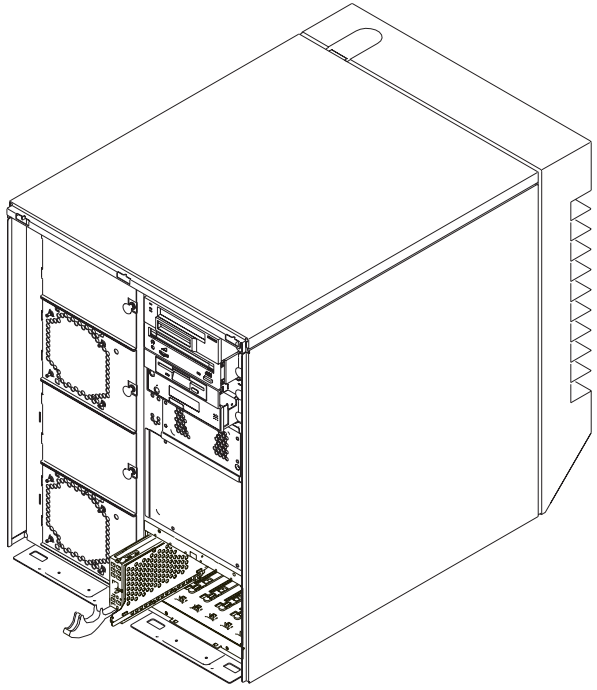
Review the information in “Disk Drive Options” on page 56 before removing a disk drive.

1. Back up the information from the disk drive to another drive.
2. Deconfigure the drive you are removing from the system. Go to “Configuring and Deconfiguring SSA Hot-Swap Disk Drives” on page 72 to deconfigure the drive from your operating system.
3. If you have not already done so, remove the front cover as described in “Removing the Covers” on page 29.
4. Remove the disk drive bay cover from the disk drive bay.



5. Log in as root user.
6. At the command line, type `smitty`.
7. Select **Devices**.

8. Select **SSA Disks**.
9. Select **SSA Physical Disks**.
10. Select **Identify an SSA Physical Disk**.
11. Select the disk you want to remove from the list.
12. Select **Flash Disk Identification Light**. Check the disk drives for the one with the flashing amber LED.
13. Press F3 to return to the **SSA Physical Disks** menu.
14. Select **Remove an SSA Physical Disk**.
15. Select the desired disk from the list on the screen and press Enter.
16. Follow the instructions on the screen to remove the drive.
17. When you are asked ″Are you sure?″ answer “Yes” and press Enter.
18. Remove the disk drive by pulling the disk drive lever toward you until it is completely open. Then remove the disk drive.
19. Insert a blank SSA disk drive filler in the empty disk drive slot.
20. Repeat this process for all the drives you are removing from this bay. Then replace the cover on the bay.



21. Press F10 to exit **smitty**.
22. If you have other options to install, refer to “Option List” on page 28.
23. If you do not have other options to install, replace the front cover as described in “Replacing Covers” on page 32.
24. If you have other options to install, refer to “Option List” on page 28.
25. If you do not have other options to install, replace the disk drive cover, and replace the front cover as described in “Replacing Covers” on page 32.

Configuring and Deconfiguring SSA Hot-Swap Disk Drives

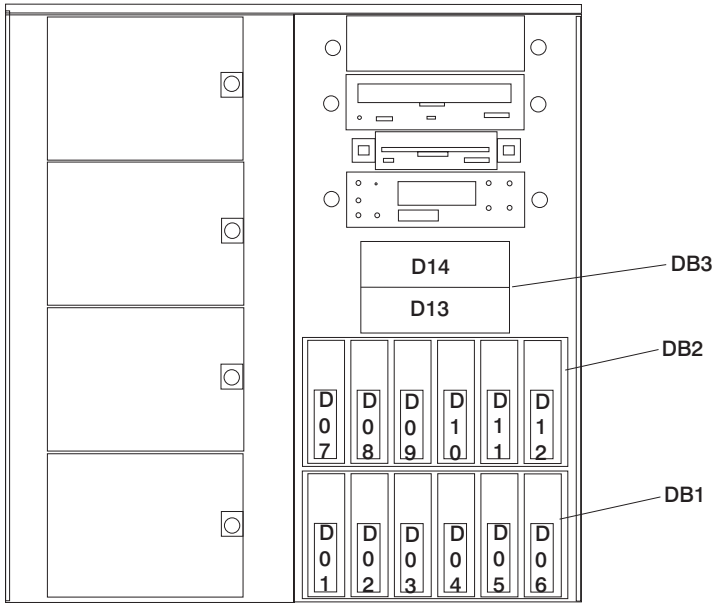
After you have installed or removed an SSA disk drive, you must configure or deconfigure the drive to function correctly in the SSA environment for your system. Refer to the SSA documentation provided with your SSA adapter.

In addition, see the *AIX System Management Guide: Operating System and Devices*. This publication is available at the following Web address: http://www-1.ibm.com/servers/aix/library/. Select **Technical Publications**. This publication is also contained on the *AIX Documentation* CD. The documentation is made accessible by loading the documentation CD files onto the hard disk or by mounting the CD in the CD-ROM drive.

Installing Internal Disk Drive Bays

The system has positions for three disk drive bays, which are available for installing additional disk drives. Because many configurations are possible for each system, this procedure instructs you how to install the disk drive bay hardware and then refers you to cabling diagrams when appropriate for the type of bay you are installing. The following figure shows the system with the front cover removed and with the disk drive bays identified.

Note: All disk drive slots must have a disk drive or filler installed.



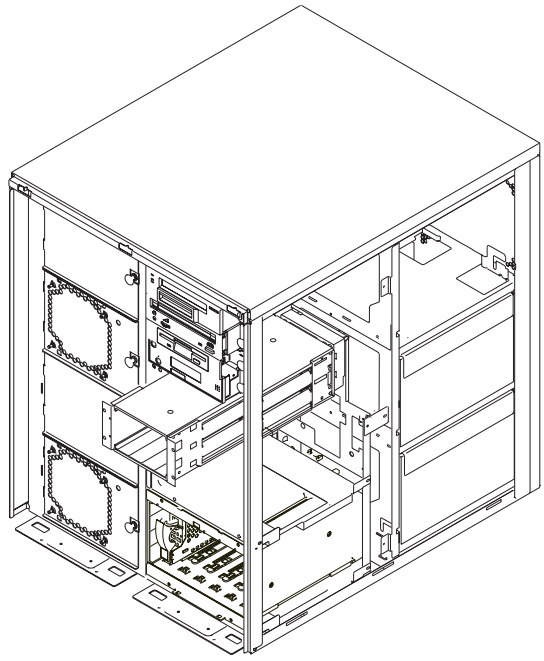
If you are installing:

- A two-position SCSI disk drive bay, continue with “Installing a Two-Position SCSI Disk Drive Bay” on page 74.
- A six-position SCSI or SSA hot-plug disk drive bay, go to “Installing Six-Position SCSI or SSA Disk Drive Bays” on page 76.

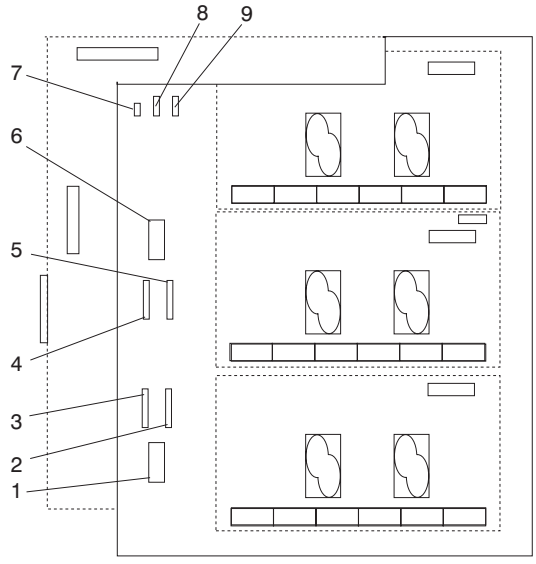
Installing a Two-Position SCSI Disk Drive Bay

Use this following procedure to install a two-position SCSI disk drive bay:

1. If you have not already done so, shut down the system as described in “Stopping the System Unit” on page 27.
2. Unplug the power cord from the electrical outlet.
3. If you have not already done so, remove the front, rear, and right side covers as described in “Removing the Covers” on page 29.
4. Remove the cover from the position for the disk drive bay.
5. Slide the disk drive bay cage into the system as shown in the following figure.



6. Connect the two-position SCSI disk drive power cable to the backplane and to the system board. Be sure to route the cables through the bulkhead from the rear to allow the drive bay to fully slide into the system unit. Refer to the following figure, which shows the system board from the right side of the machine with the right cover removed.

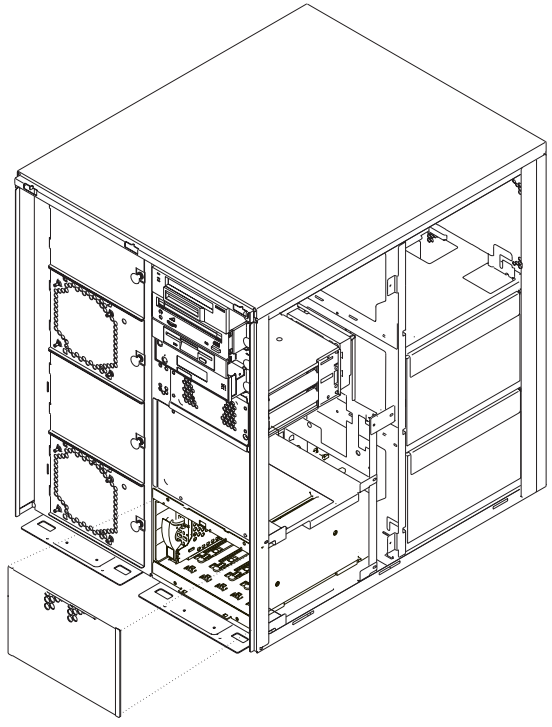


1	I^2C to Six-Position Disk Drive Bay 1 (DB1)	6	I^2C to Six-Position Disk Drive Bay 2 (DB2)
2	Power 2 to Six-Position Disk Drive Bay 1 (DB1)	7	Power to Diskette Drive
3	Power 1 to Six-Position Disk Drive Bay 1 (DB1)	8	Power to Media Drive Bay
4	Power 1 to Six-Position Disk Drive Bay 2 (DB2)	9	Power 1 to Two-Position Disk Drive Bay 3 (DB3)
5	Power 2 to Six-Position Disk Drive Bay 2 (DB2)		

7. Connect the SCSI cable connectors to the backplane. See “SCSI and SSA Cabling Configurations” on page 80 for cable routing. Be sure to route the cables through the bulkhead from the rear to allow the drive bay to fully slide into the system unit.
8. Install the screws to hold the two-position cage in position.
   a. Install two screws in the inside rear of the cage.
   b. Install two screws in the front of the cage (upper left and lower right).
9. Install the disk drives. See “Installing a SCSI Disk Drive in the Two-Position Disk Drive Bay” on page 58.
10. Install the bay cover with the two remaining screws.
11. If you have other options to install, refer to “Option List” on page 28.
12. If you do not have other options to install, replace the system unit covers as described in “Replacing Covers” on page 32.
13. Turn on the power.

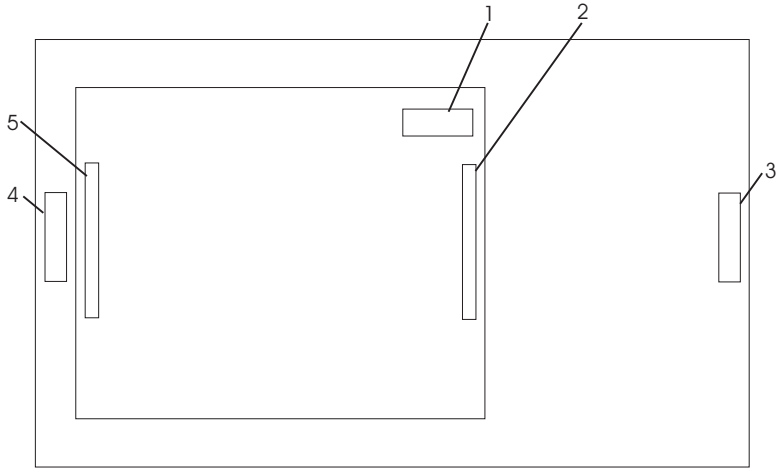
Installing Six-Position SCSI or SSA Disk Drive Bays

1. If you have not already done so, shut down the system as described in “Stopping the System Unit” on page 27.
2. If you have not already done so, unplug the system unit power cable from the electrical outlet.
3. If you have not already done so, remove the covers, as described in “Removing the Covers” on page 29.
4. Locate the position where you are installing the disk drive bay, and remove the screws to remove the blank cover from that position.



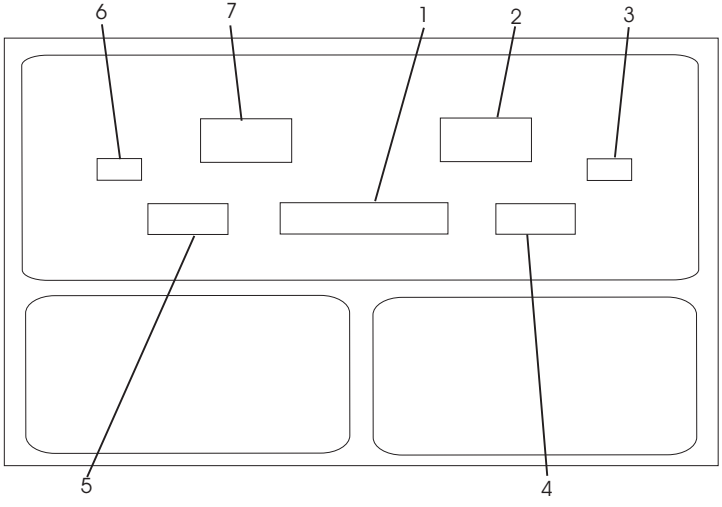
5. If you are installing a second disk drive bay, and an adapter to connect the disk drive bay to the system, install the adapter first. Refer to “Installing Adapter Cards” on page 36.
6. Locate the new disk drive bay cage and connect the power cables. Then connect the signal cables and the I^2 cables to the backplane. See the following figures for cable positions.

SCSI Drive Bay Cables



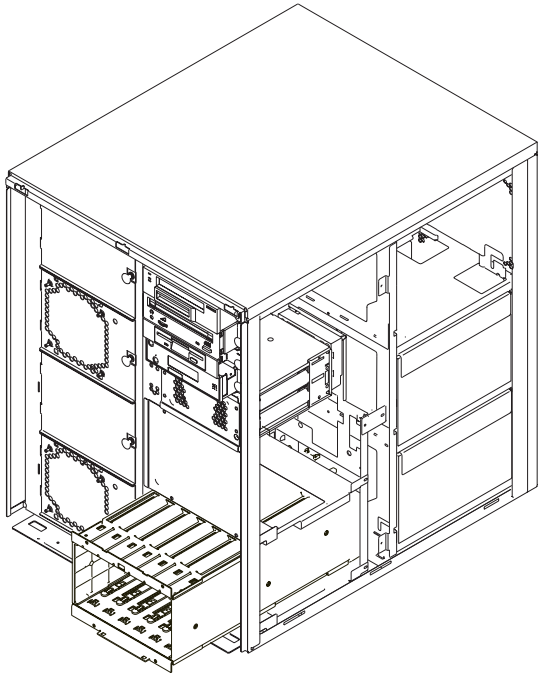
1	I^2C Connector	4	Power Connector
2	SCSI Connector	5	SCSI Connector
3	Power Connector		

SSA Drive Bay Cables

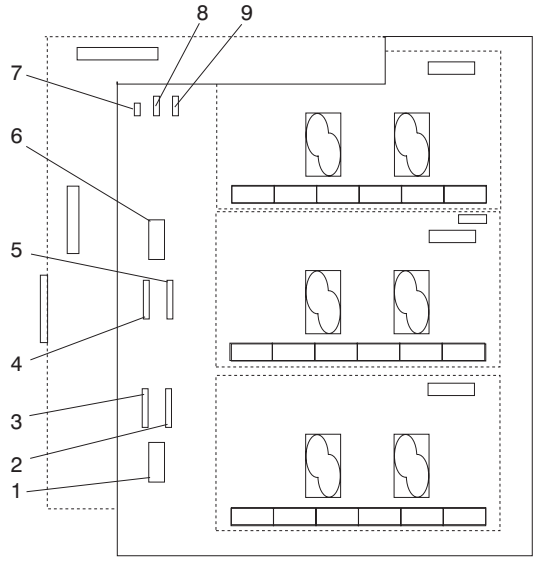


1	I^2C Connector	5	SSA Connector
2	Power Connector	6	SSA Connector
3	SSA Connector	7	Power Connector
4	SSA Connector		

7. Position the cables so they can be guided through the holes in the rear of the system unit bay and slide the disk drive cage halfway into the system unit.



8. Connect the power cables to the power connectors, which are located on the system board behind the enclosure. Refer to the following figure, which shows the system board from the right side of the machine with the right cover removed.



1	I^2C to Six-Position Disk Drive Bay 1 (DB1)	6	I^2C to Six-Position Disk Drive Bay 2 (DB2)
2	Power 2 to Six-Position Disk Drive Bay 1 (DB1)	7	Power to Diskette Drive
3	Power 1 to Six-Position Disk Drive Bay 1 (DB1)	8	Power to Media Drive Bay
4	Power 1 to Six-Position Disk Drive Bay 2 (DB2)	9	Power 1 to Two-Position Disk Drive Bay 3 (DB3)
5	Power 2 to Six-Position Disk Drive Bay 2 (DB2)		

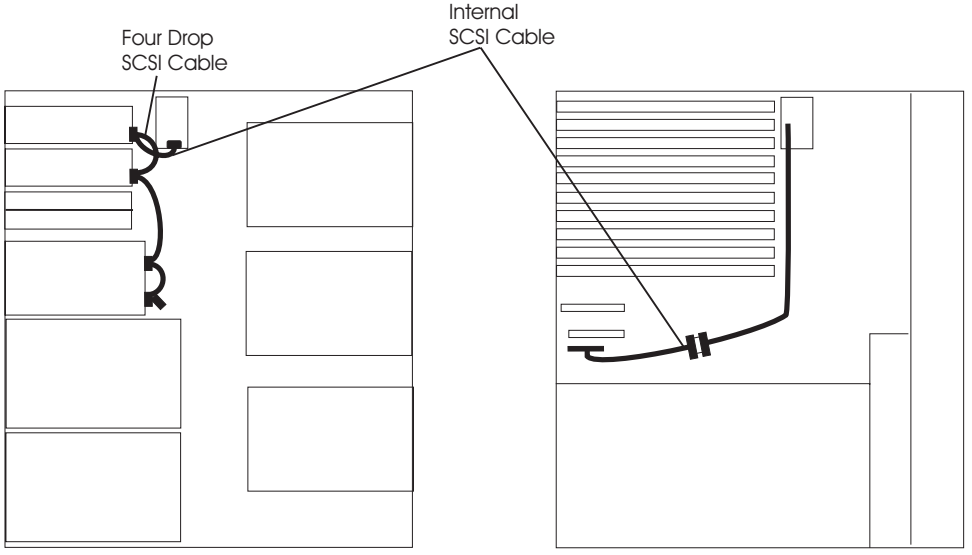
9. Connect the signal cables. Refer to “SCSI and SSA Cabling Configurations” on page 80 and follow the cabling diagram for your system configuration.
10. Slide the disk drive cage all the way into the system unit until it contacts the front frame.
11. Install six screws to hold the disk drive cage in the system unit. There are four screws in the front of the unit and two inside the back (one at the upper left, one at the lower right). Use the long nut driver provided with the disk drive cage to install the screws.
12. Install the disk drives in the disk drive cage you just installed. Refer to “Installing Hot-Plug SCSI Disk Drives” on page 62.
13. If you have other options to install, refer to “Option List” on page 28.
14. If you do not have other options to install, replace the covers as described in “Replacing Covers” on page 32.

SCSI and SSA Cabling Configurations

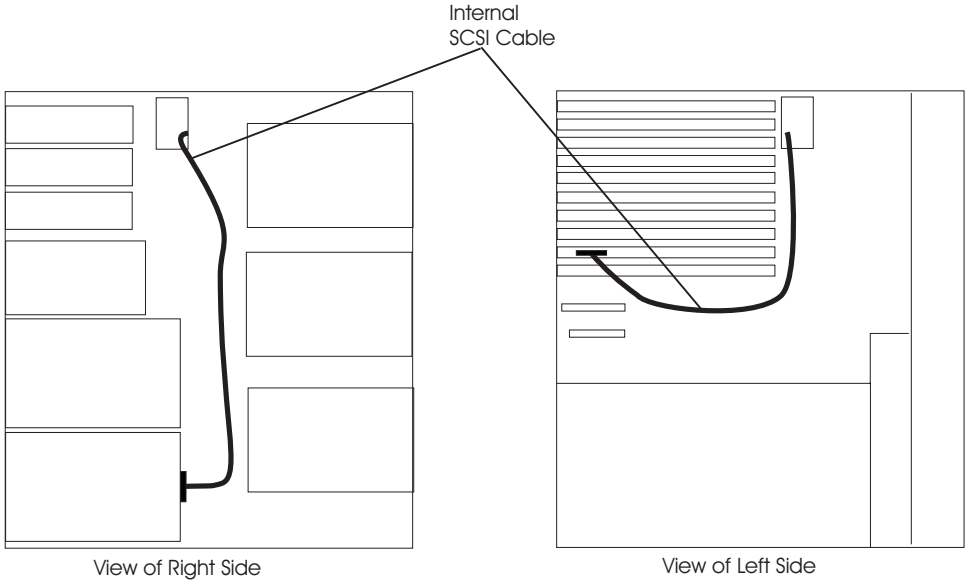
The figures in this section show the cabling for many of the configurations available on this system. Locate the figure here that most closely matches your system's drive configuration, and connect your cables to match the figure.

Note: The two six-position SCSI disk drive bays must be connected to separate SCSI buses.

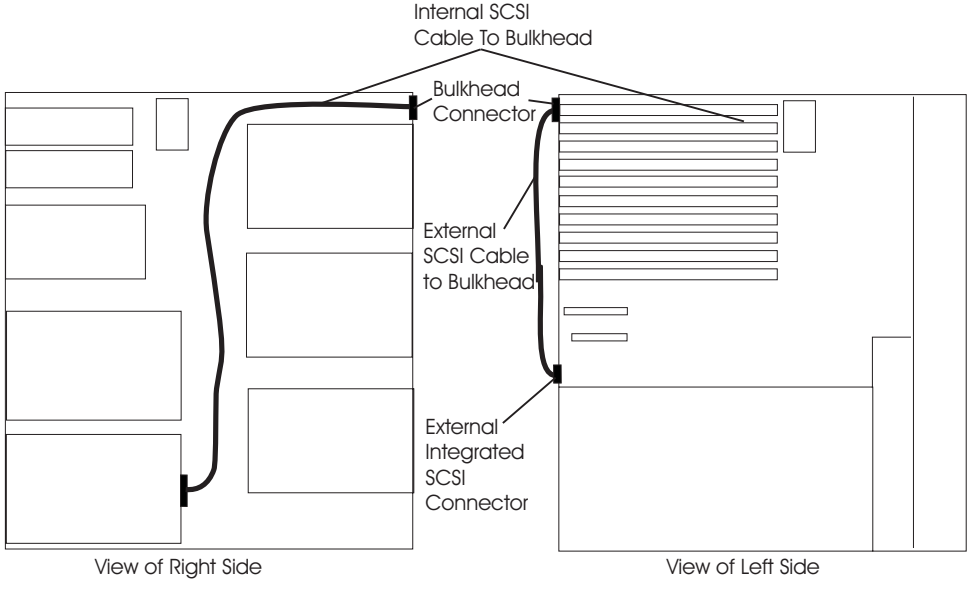
Two-Position SCSI Disk Drive Bay Cabling



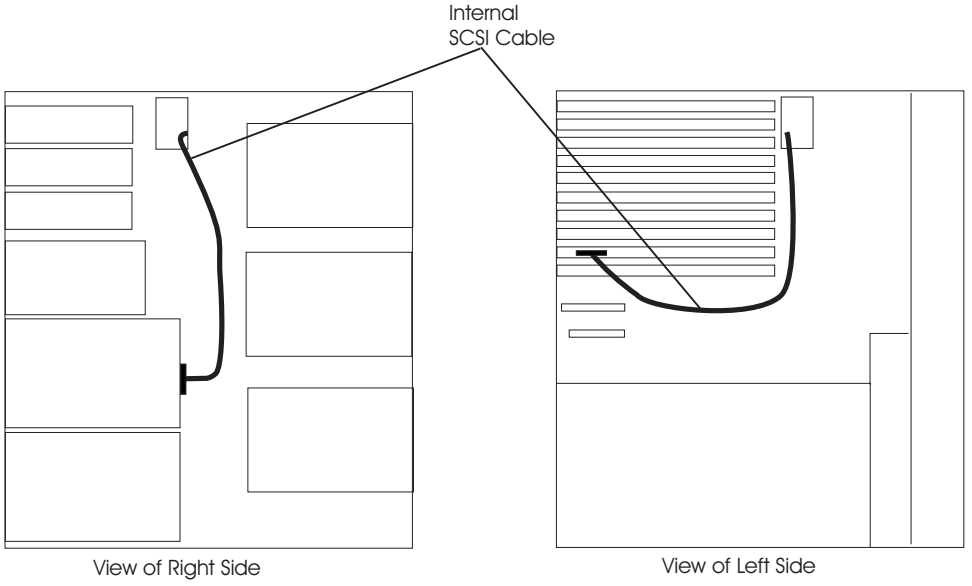
First Six-Position SCSI Disk Drive Bay Cabling



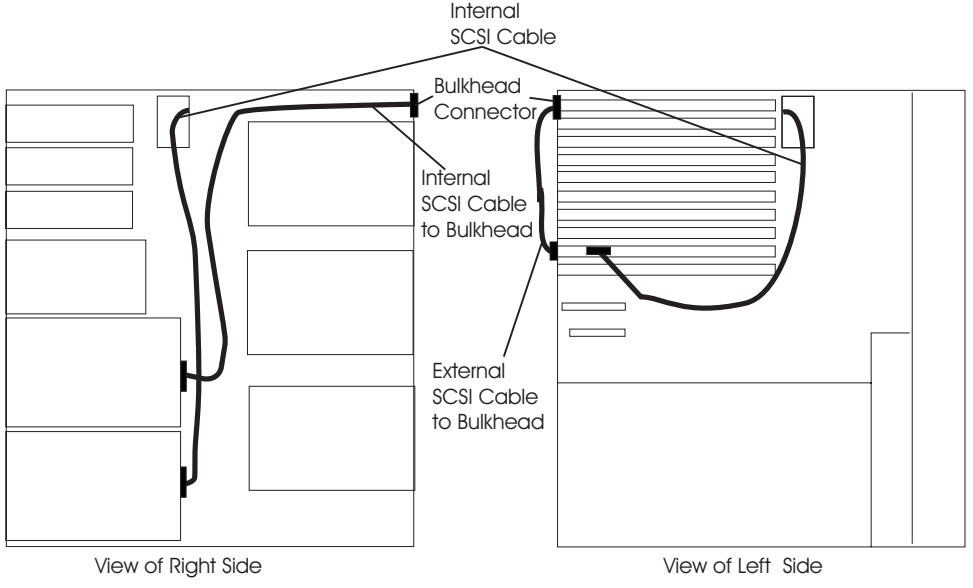
OR



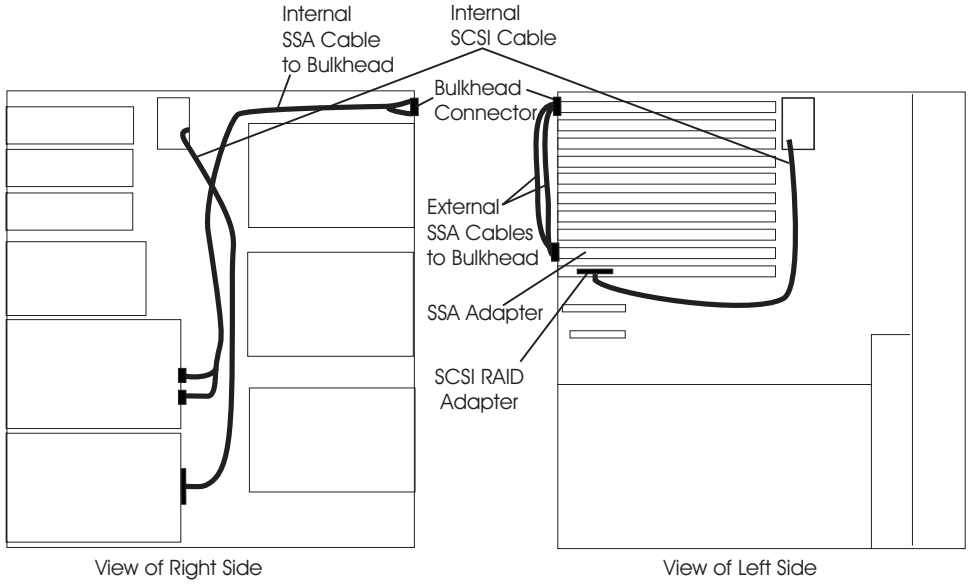
Second Six-Position SCSI Disk Drive Bay Cabling



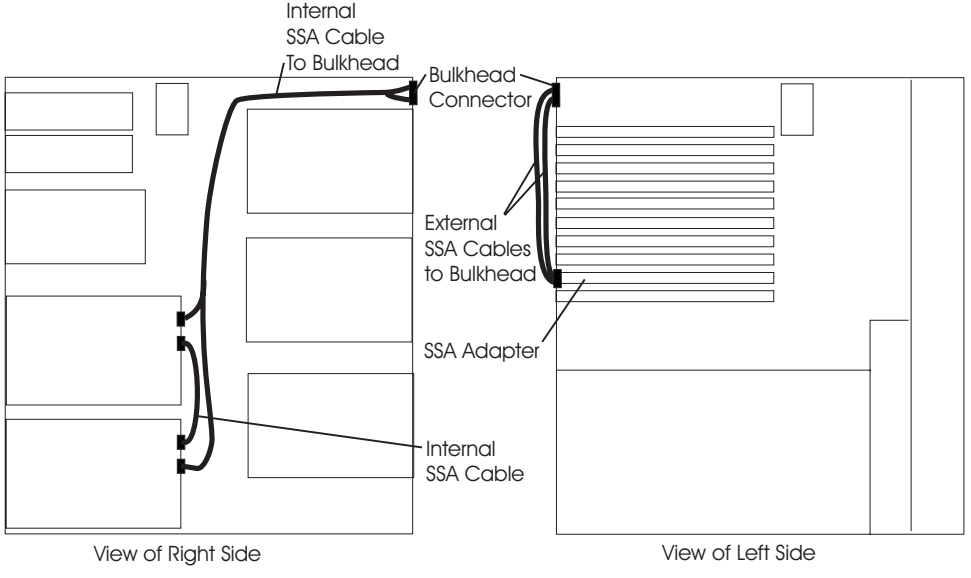
Two Six-Position SCSI RAID Bays Connected to a Single RAID Adapter



One Six-Position SCSI RAID Bay and One Six-Position SSA Bay



Two Six-Position SSA Bays Connected to the Same SSA Loop



Installing Non-Hot-Plug Media Drives

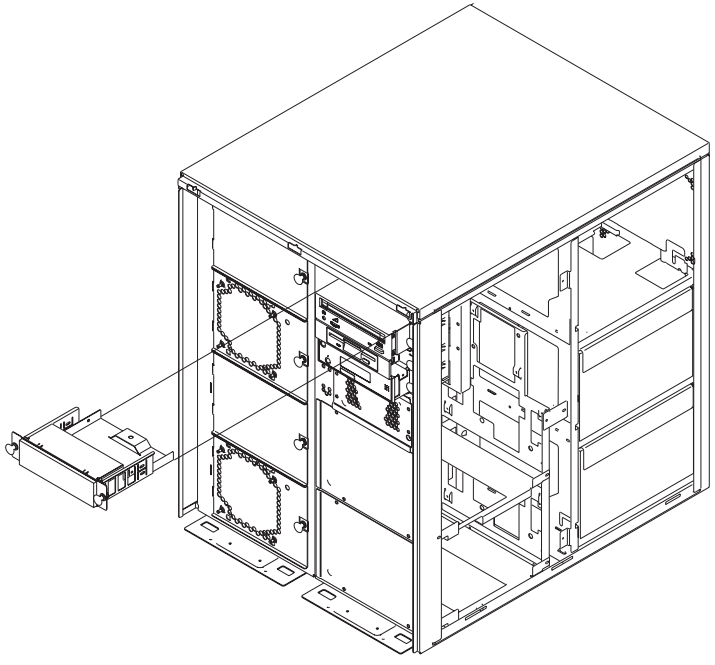
This section helps you install non-hot-plug drives in the optional media position of the system.

Installing a Drive in the Optional Media Position

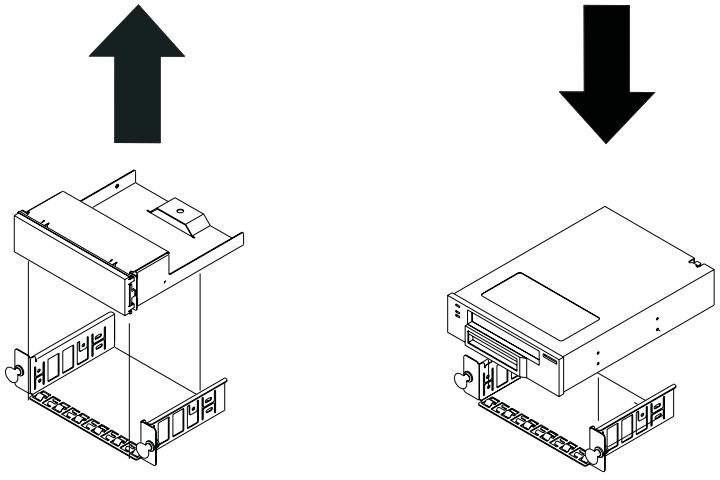
1. If you have not already done so, shut down the system as described in “Stopping the System Unit” on page 27.

   Note: Before proceeding, review the safety information in “Safety Notices” on page vii.

2. If you have not already done so, unplug the system unit power cable from the electrical outlet.
3. If you have not already done so, remove the front and right covers as described in “Removing the Covers” on page 29.
4. Pull the locking knob on the media bay blank cover bracket and remove it by pulling it straight out from the system unit.



5. The drive you are installing attaches to the same blank cover bracket that you removed in the previous step. Perform the following steps to remove the blank cover from the bracket and install the bracket onto the new drive.
   a. Remove the three screws from the side of the blank cover bracket.
   b. Separate the blank cover from the bracket.
   c. Install the new drive into the bracket as shown in the following figure. To secure the drive, use the three screws that you removed earlier.



6. Set the SCSI address jumpers at the rear of the drive to the correct address. See 107 for available SCSI addresses. Refer to the documentation provided with your drive for details on setting the SCSI address.
7. Look into the media bay and locate the two SCSI and power cables used to attach the drive to the system unit. Connect the cables from the system to the rear of the drive.
8. Ensure that the locking knobs are pulled to the out position, and install the drive in the system unit by sliding it into the optional media bay until the locking knobs contact the frame of the system unit.
9. Push each locking knob until you feel it lock into position.
10. If you have other options to install, refer to “Option List” on page 28.
11. If you do not have other options to install, replace the system unit covers as described in “Replacing Covers” on page 32.

Installing the Redundant Power and Cooling Option

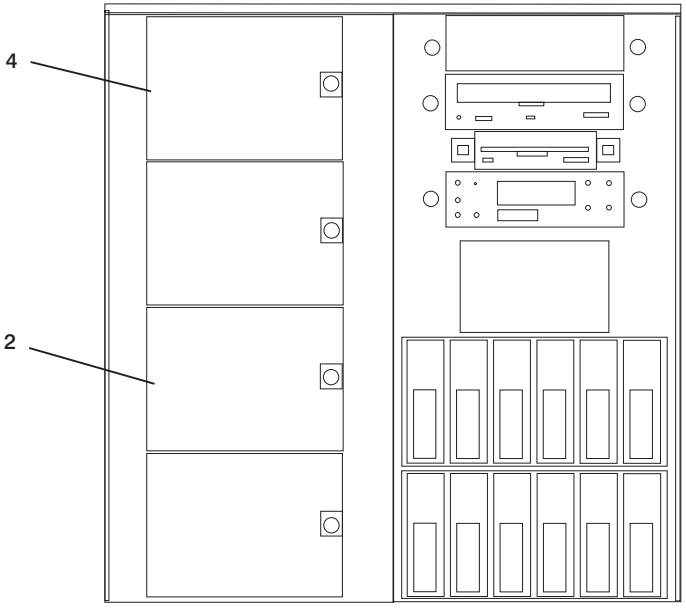
The redundant power and cooling option consists of two fans and an extra power supply in addition to the base fans and power supplies that are already installed in your system.

Installing a Fan

Use the following procedure to install redundant fans in your system:

1. If you have not already done so, shut down the system as described in “Stopping the System Unit” on page 27.
2. If you have not already done so, unplug the system unit power cable from the electrical outlet.

   Note: Unplugging the system unit power cable from the electrical out is necessary in order for the system to recognize the new cooling configuration.
3. If you have not already done so, remove the front cover as described in “Removing the Covers” on page 29.
4. Locate the next available fan position.
5. Pull the locking knob on the fan bay blank cover and remove it by pulling it straight out from the system unit.
6. Store the blank cover in a safe place.



2 Fan bay blank cover 2

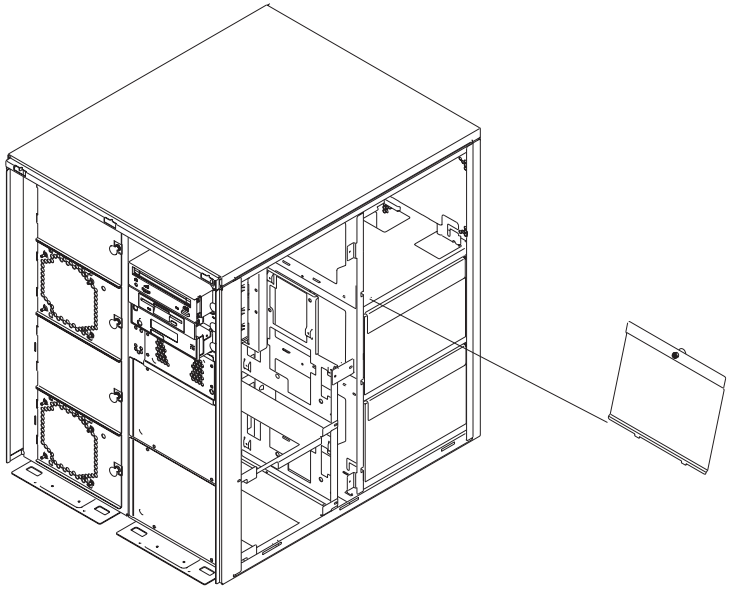
4 Fan bay blank cover 4

7. Install the new fan by pulling the locking knob out and then inserting the tabs on the left side of the fan into the frame opening.
8. Install the other fan by repeating steps 4 through 8.
9. Swing the right side of the fan inward until the locking knob contacts the frame.
10. Push the locking knob until you feel it lock into position.
11. If you have other options to install, refer to “Option List” on page 28.
12. If you do not have other options to install, replace the system unit covers as described in “Replacing Covers” on page 32.

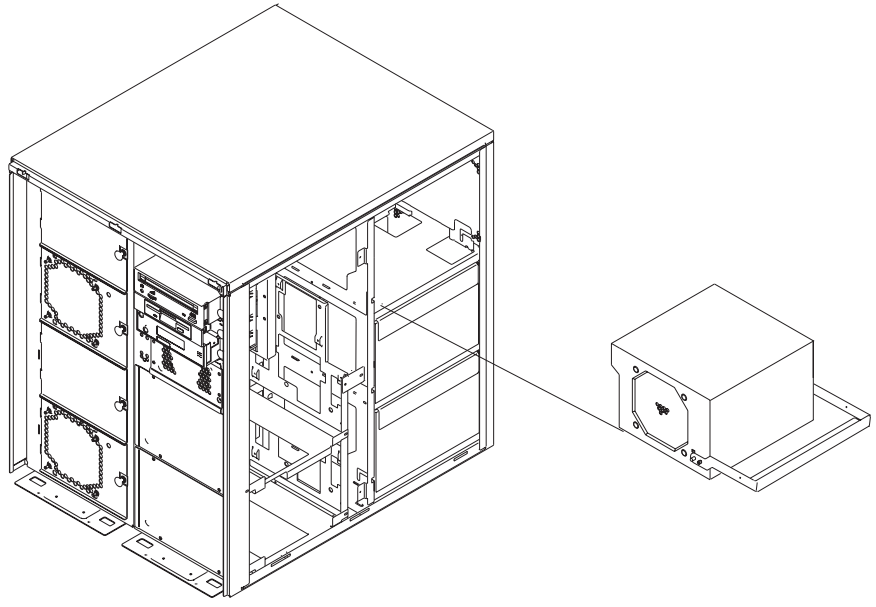
Installing a Redundant Power Supply

Use the following procedure to install a redundant power supply in your system:

1. If you have not already done so, shut down the system as described in “Stopping the System Unit” on page 27.
2. If you have not already done so, unplug the system unit power cable from the electrical outlet.
3. If you have not already done so, remove the front, rear, and right side covers as described in “Removing the Covers” on page 29.
4. Locate the position where the redundant power supply is to be installed. The redundant power supply is installed in the top power supply position.
5. Remove the air baffle from the redundant power supply by pulling out the button and tilting the baffle out from the system.
6. The baffle is not needed after the redundant power supply is installed. Store the baffle in a safe place.

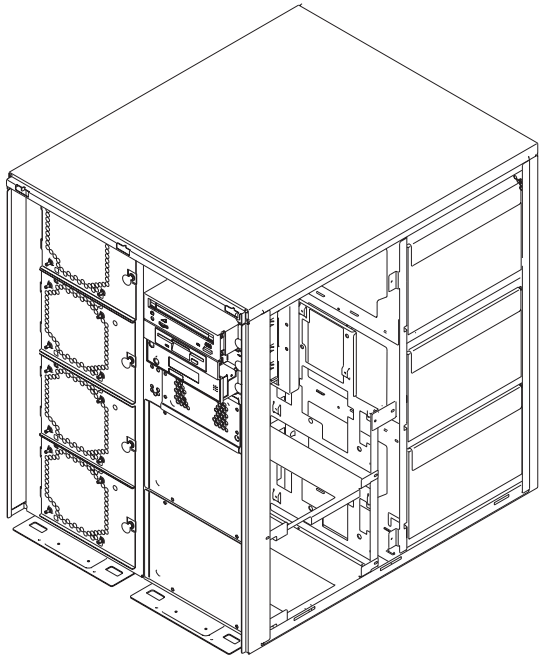


7. Pull the locking handle on the new power supply out and down so that it is completely open.



8. Install the new power supply, sliding it into the frame until the locking handle contacts the frame.

9. Lift the locking handle and push it in at the top of the power supply until it locks the power supply into position.



10. If you have other options to install, refer to “Option List” on page 28.
11. If you do not have other options to install, replace the system unit covers as described in “Replacing Covers” on page 32.

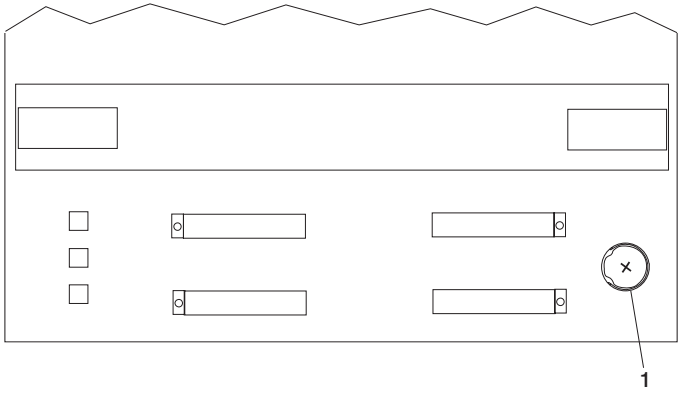
Replacing the Battery

CAUTION:
A lithium battery can cause fire, explosion, or a severe burn. Do not recharge, disassemble, heat above 100 degrees C (212 degrees F), solder directly to the cell, incinerate, or expose cell contents to water. Keep away from children. Replace only with the part number specified for your system. Use of another battery may represent a risk of fire or explosion.

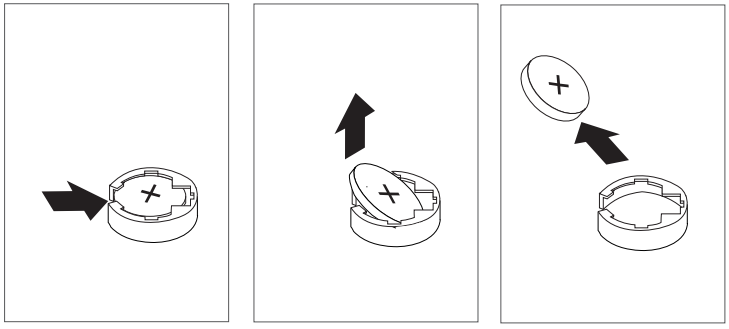
The battery connector is polarized; do not attempt to reverse the polarity.

Dispose of the battery according to local regulations.

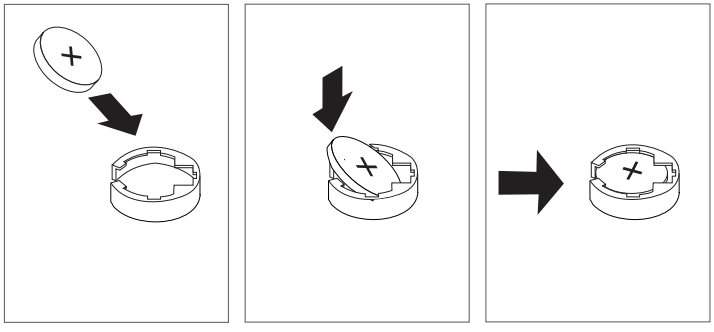
1. Shut down the system. See “Stopping the System Unit” on page 27.
2. Unplug the power cord from the wall outlet.
3. If you have not already done so, remove the covers as described in “Removing the Covers” on page 29.
4. Remove the processor and memory card cover as described in “Removing Processor and Memory Card Cover” on page 33.
5. Remove both memory riser cards or blank memory cards. See “Removing a Memory Card or One-Way Processor Card” on page 55.
6. Locate the battery **(1)** on the system board.



7. Pry the battery out of its mount using your fingernail or small blunt object. After the top of the battery has cleared the mount, pull it up and out of the system unit.



8. Ensure that the battery polarity is correct. With the positive side of the battery facing out, insert the battery between the front and rear battery mounts and gently push it down into the socket.



Note: Be sure to reset the time and date, as well as other system options that might have been lost when the battery was removed.

If you are running AIX, you might have to run the **bootlist** command from AIX while you are logged in as root user. This action restores the custom boot list and allows the option of Select Software under multiboot to start the operating system. In addition, the IP parameters might also have to be rebuilt.

9. Install the memory riser cards or blank memory cards removed earlier. See “Removing a Memory Card or One-Way Processor Card” on page 55.
10. Replace the processor and memory card cover.
11. If you have options to install, refer to “Option List” on page 28.
12. If you do not have other options to install, replace the covers as described in “Replacing Covers” on page 32.

System Firmware Updates

This section provides information and instructions for updating the system firmware. You may need to perform these steps if you are installing an option or if your support representative has instructed you to update your firmware.

Always check the pSeries & RS/6000 Support Web site for the latest firmware images and update instructions. The Web address is: http://www.rs6000.ibm.com/support/micro

Downloading the firmware update image and update instructions from the Web is preferred.

If the system is running, but access to the Web is not available, see “System Firmware Update Using a Locally Available Image” on page 93.

If the system cannot be powered on, but the service processor menus are available, see “Updating System Firmware From the Service Processor Menus” on page 94.

If the service processor programming has been corrupted, the service processor will automatically enter recovery mode when power is applied to the system. Recovery mode is described later in this section.

To check the level of firmware that is currently on the system, see “Determining the Level of Firmware on the System” on page 93.

General Information on System Firmware Updates

All the types of system firmware that can be reprogrammed are updated at the same time. They are:

- System power control network programming
- Service processor programming
- IPL programming
- Run-time abstraction services

It is strongly recommended that you create a set of firmware update diskettes from the pSeries & RS/6000 Support Web site as soon as possible after a system is installed. As noted below, the diskette images can be downloaded to any personal computer, pSeries, or RS/6000 system with Internet access. This method is the only way to acquire a set of firmware update diskettes; they cannot be created by using the service processor menus or by using AIX.

Retain and store the latest firmware diskettes each time the firmware gets updated in the event that the firmware becomes corrupted and must be reloaded.

Download the detailed instructions, as well as the latest flash images, from this Web site. Before doing a system firmware update, check the Web site for the latest code and images. Do not attempt a firmware update if you are unsure of the image you have, or of the procedure required for the update.

The images are available on the Web site in either DOS format or AIX (backup) format:

- If downloading to a PC, download the DOS image and follow the instructions. The diskettes that are created will be in AIX (backup) format.
- If downloading to a pSeries or RS/6000 system, follow the instructions to create an image on a disk drive or on diskettes.

Determining the Level of Firmware on the System

Note: This information may be superseded by the information that is available on the pSeries & RS/6000 Support Web site shown below. Always check the Web site for the latest images and instructions for checking the firmware level. The Web address is: http://www.rs6000.ibm.com/support/micro

The firmware level is denoted by XXYYMMDD, where XX = model designation, YY = year, MM = month, and DD = day of the release.

The firmware level can be determined by either of two methods:

- On the AIX command line, typing:

  ```
  lscfg -vp|grep -F .CL
  ```

  A line that begins with ″ROM level (alterable)..″ displays the firmware level that is currently on the system.
- Looking at the top of the service processor main menu.

System Firmware Update Using a Locally Available Image

To update the system firmware using a locally available image, perform the following steps:

1. Log in as root user.
2. If the directory /tmp/fwupdate does not exist, create it by issuing the following command: `mkdir /tmp/fwupdate`
3. The firmware update file must be written into the /tmp/fwupdate directory on the system. This can be done by using the **ftp** command to get the image from an ftp server or NFS-mounting the directory on the host server, for example.

   The firmware update file can also be transferred to the target system by backing up the image onto diskette from another server and restoring it into the /tmp/fwupdate directory.

   After the firmware update file has been written into the /tmp/fwupdate directory, verify its existence by entering the following command: `ls /tmp/fwupdate/CL*.img`

   The update file will have the format CLyymmdd.img. The CL indicates that this is an update image for a system: yy is the year, mm is the month, and dd is the day of the update file.
4. After the update file has been written to the /tmp/fwupdate directory, enter the following commands:

   ```
   cd /usr/lpp/diagnostics/bin

   ./update_flash -f /tmp/fwupdate/CLyymmdd.img
   ```

Attention: Do not overlook the periods (.) in the commands shown above. AIX commands are case-sensitive. Type them exactly as shown.

You will be asked for confirmation to proceed with the firmware update and the required reboot. If you confirm, the system will apply the new firmware, reboot, and return to the AIX prompt. This may take up to ten minutes depending on the configuration of the system.

Attention: On some systems, the message `Wait for rebooting before stopping` may display on the system console. Do not turn off the system until the system has fully rebooted to the AIX login prompt. If a shutdown is necessary at that time, log in as root user and issue the **shutdown** command.

While the update is in progress, you will see `Rebooting...` on the display for several minutes.

The firmware update is complete.

Updating System Firmware From the Service Processor Menus

This procedure requires a set of firmware update diskettes in backup format.

The service processor menus are available while the system is powered off. As a privileged user, from the service processor main menu, select **Service Processor Setup**, then select **Reprogram Flash EPROM Menu**. The update process requests update diskettes as needed.

Updating System Firmware from the AIX Service Aids

Note: This service aid is supported only in online diagnostics.

Refer to the detailed instructions that are provided on the Web site with the latest image.

Updating System Firmware from the AIX Command Line

Refer to the detailed instructions that are provided on the Web site with the latest image.

Note: The update process can take up to sixty minutes, and the system will always reboot itself during the update process.

Recovery Mode

If the service processor detects that its programming has been corrupted when it is powering up to standby mode, it will enter recovery mode. In recovery mode, it will ask for the firmware update diskettes by putting eight-digit codes on the operator panel.

The eight-digit codes are as follows:

Code	Action
A1FD 0000	System firmware has been corrupted and must be reflashed.
A1FD 0001	Insert update diskette 1.
A1FD 0002	Insert update diskette 2.
A1FD 0003	Insert update diskette 3.

Notes:

1. If the wrong diskette is inserted at any time, or if the diskette is left in the drive after it has been read, `B1FD 001F` is displayed, indicating that the wrong diskette is in the drive.
2. If `B1FD 001A` is displayed at any time during the process, the service processor must be reset by activating the pinhole reset switch on the operator panel.

After the update process is complete, the service processor resets itself and goes through a complete reboot.

Appendix A. Communications Statements

The following statement applies to this product. The statement for other products intended for use with this product appears in their accompanying documentation.

Federal Communications Commission (FCC) Statement

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

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Neither the provider nor the manufacturer is responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

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

European Union (EU) Statement

This product is in conformity with the protection requirements of EU Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. The manufacturer cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of option cards supplied by third parties. Consult with your dealer or sales representative for details on your specific hardware.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to CISPR 22 / European Standard EN 55022. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

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

International Electrotechnical Commission (IEC) Statement

This product has been designed and built to comply with IEC Standard 950.

United Kingdom Telecommunications Safety Requirements

This equipment is manufactured to the International Safety Standard EN60950 and as such is approved in the UK under the General Approval Number NS/G/1234/J/100003 for indirect connection to the public telecommunication network.

The network adapter interfaces housed within this equipment are approved separately, each one having its own independent approval number. These interface adapters, supplied by the manufacturer, do not use or contain excessive voltages. An excessive voltage is one which exceeds 70.7 V peak ac or 120 V dc. They interface with this equipment using Safe Extra Low Voltages only. In order to maintain the separate (independent) approval of the manufacturer's adapters, it is essential that other optional cards, not supplied by the manufacturer, do not use main voltages or any other excessive voltages. Seek advice from a competent engineer before installing other adapters not supplied by the manufacturer.

Avis de conformité aux normes du ministère des Communications du Canada

Cet appareil numérique de la classe A respecte toutes les exigences du Réglement sur le matériel brouilleur du Canada.

Canadian Department of Communications Compliance Statement

This Class A digital apparatus meets the requirements of the Canadian Interference–Causing Equipment Regulations.

VCCI Statement

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

The following is a summary of the VCCI Japanese statement in the box above.

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

Electromagnetic Interference (EMI) Statement - Taiwan

警告使用者:
這是甲類的資訊產品，在居住的環境中使用
時，可能會造成射頻干擾，在這種情況下，
使用者會被要求採取某些適當的對策。

The following is a summary of the EMI Taiwan statement above.

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

Radio Protection for Germany

Dieses Gerät ist berechtigt in Übereinstimmung mit Dem deutschen EMVG vom 9.Nov.92 das EG–Konformitätszeichen zu führen.

Der Aussteller der Konformitätserklärung ist die IBM Germany.

Dieses Gerät erfüllt die Bedingungen der EN 55022 Klasse A. Für diese von Geräten gilt folgende Bestimmung nach dem EMVG:

Geräte dürfen an Orten, für die sie nicht ausreichend entstört sind, nur mit besonderer Genehmigung des Bundesministers für Post und Telekommunikation oder des Bundesamtes für Post und Telekommunikation betrieben werden. Die Genehmigung wird erteilt, wenn keine elektromagnetischen Störungen zu erwarten sind.

(Auszug aus dem EMVG vom 9.Nov.92, Para.3, Abs.4)

Hinweis

Dieses Genehmigungsverfahren ist von der Deutschen Bundespost noch nicht veröffentlicht worden.

Appendix B. Environmental Notices

Product Recycling and Disposal

This unit contains materials such as circuit boards and connectors with lead that require special handling and disposal at end of life. Before this unit is disposed of, these materials must be removed and recycled or discarded according to applicable regulations. This manual contains specific information on batteries where applicable. This product may contain nickel-cadmium and/or lithium batteries. The battery(s) must be recycled or disposed of properly. Recycling facilities may not be available in your area. In the United States, IBM has established a collection process for reuse, recycling, or proper disposal of used sealed lead acid, nickel cadmium and nickel metal hydride batteries and battery packs from IBM equipment. For information on proper disposal of the nickel cadmium batteries in this product, please contact IBM at 1-800-426-4333. For information on battery disposal outside the United States, contact your local waste disposal facility.

Environmental Design

The environmental efforts that have gone into the design of this system signify IBM's commitment to improve the quality of its products and processes. Some of these accomplishments include the elimination of the use of Class 1 ozone-depleting chemicals in the manufacturing process and reductions in manufacturing wastes. For more information, contact an IBM account representative.

Unit Emissions

The unit-related emission value is equal to or lower than 70dB(A).

Der Geräuschpegel der Einheit ist kleiner oder gleich 70 db(A).

Appendix C. Notices

This information was developed for products and services offered in the U.S.A.

The manufacturer may not offer the products, services, or features discussed in this document in other countries. Consult the manufacturer's representative for information on the products and services currently available in your area. Any reference to the manufacturer's product, program, or service is not intended to state or imply that only that product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any intellectual property right of the manufacturer may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any product, program, or service.

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

The following paragraph does not apply to the United Kingdom or any country where such provisions are inconsistent with local law: THIS MANUAL IS PROVIDED ″AS IS″ WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions; therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. The manufacturer may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Information concerning products made by other than the manufacturer was obtained from the suppliers of those products, their published announcements, or other publicly available sources. The manufacturer has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to products made by other than the manufacturer. Questions on the capabilities of products made by other than the manufacturer should be addressed to the suppliers of those products.

Appendix D. System Records

Record the Identification Numbers

Record and retain the following information.

Product Name:	_____
CPU Type/Speed:	_____
Serial Number:	_____

The machine type and serial number of the system are located on the front of the system on the operator panel. Open the operator panel door to see the machine type and serial number.

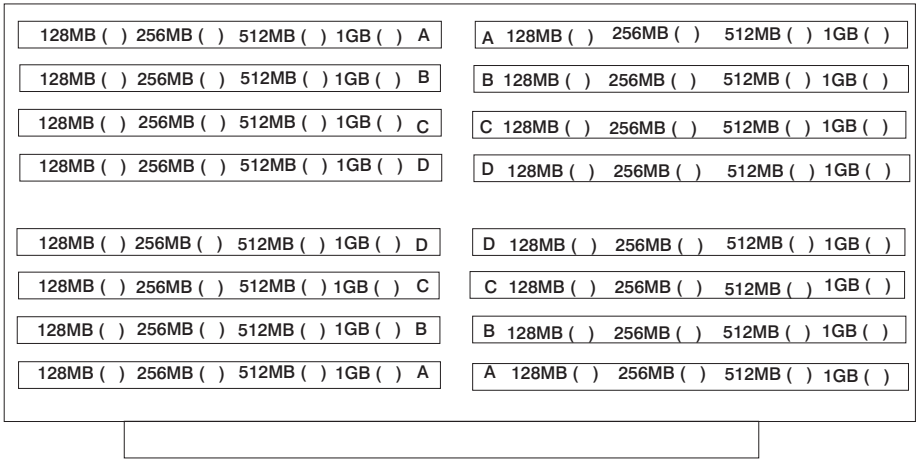
Device Records

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

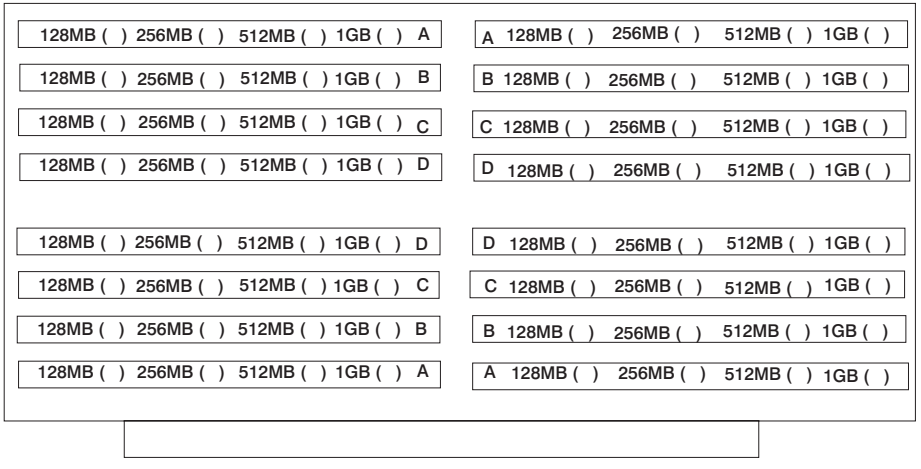
Memory Records

Memory Riser Card 1 or One-Way Processor Card

Note: If your system has memory on a processor card, use only the left side of this figure.



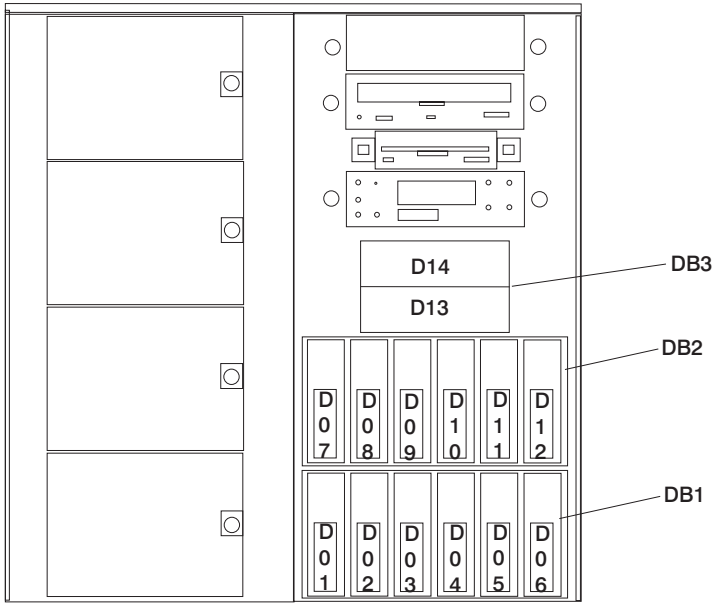
Memory Riser Card 2



Internal and External Options

Location	Option Description
Mouse Connector	IBM Mouse ☐ Other:_____
Keyboard Connector	Space Saving ☐ Enhanced ☐ Other:_____
Expansion Slot 12	_____
Expansion Slot 11	_____
Expansion Slot 10	_____
Expansion Slot 9	_____
Expansion Slot 8	_____
Expansion Slot 7	_____
Expansion Slot 6	_____
Expansion Slot 5	_____
Expansion Slot 4	_____
Expansion Slot 3	_____
Parallel Port (slot 1)	_____
Serial Port 1	_____
Serial Port 2	_____
Serial Port 3	_____
Serial Port 4	_____

Refer to the following diagram of your system's bays when completing the previous table.



Note: Your model might have more preinstalled drives than shown in this table.

Internal Drives and Devices

Drive	Location	SCSI ID	Drive Description
SCSI	Media Bay	0, 3, 5, or 6	Optional Media Drive
SCSI	Media Bay	1	CD-ROM Drive
Integrated	Diskette Bay	Non-SCSI	3.5-Inch 1.44MB Diskette Drive
SCSI	Disk Bay 3, D14	2	
SCSI	Disk Bay 3, D13	4	
Hot-Plug	Disk Bay 2, D12	8	
Hot-Plug	Disk Bay 2, D11	9	
Hot-Plug	Disk Bay 2, D10	10	
Hot-Plug	Disk Bay 2, D09	11	
Hot-Plug	Disk Bay 2, D08	12	
Hot-Plug	Disk Bay 2, D07	13	
Hot-Plug	Disk Bay 1, D01	8	
Hot-Plug	Disk Bay 1, D02	9	
Hot-Plug	Disk Bay 1, D03	10	
Hot-Plug	Disk Bay 1, D04	11	
Hot-Plug	Disk Bay 1, D05	12	
Hot-Plug	Disk Bay 1, D06	13	

Appendix E. General Attributes Required When Using a TTY Terminal

The following general attributes are the default settings for the diagnostic programs. Be sure your terminal is set to these attributes.

Note: Set these attributes before the diagnostic programs are loaded.

General Setup Attributes	3151 /11/31/41 Settings	3151 /51/61 Settings	3161 /3164 Settings	Description
Machine mode	3151	3151 PC	3161 or 3164	The diagnostic programs are set to emulate use of the 3161 ASCII Display Terminal. If your terminal can emulate a 5085, 3161 or 3164 terminal, use these attribute settings. Otherwise, refer to your operator's manual, compare the attribute descriptions with those of your terminal, and set your attributes accordingly.
Generated Code Set		ASCII		
Screen	Normal	Normal		Uses the EIA-232 interface protocol.
Row and Column	24 x 80	24 x 80		Uses the EIA-232 interface protocol.
Scroll	Jump	Jump	Jump	When the last character on the bottom line is entered, the screen moves down one line.
Auto LF	Off	Off	Off	For the ″On″ setting, pressing the Return key moves the cursor to the first character position of the next line. For the ″Off″ setting, pressing the Return key moves the cursor to the first character position of the current line. The CR and LF characters are generated by the New line setting.
CRT saver	Off	Off	10	The ″10″ setting causes the display screen to go blank if there is no activity for 10 minutes. When the system unit sends data or a key is pressed, the screen contents display again.

General Setup Attributes	3151 /11/31/41 Settings	3151 /51/61 Settings	3161 /3164 Settings	Description
Line wrap	On	On	On	The cursor moves to the first character position of the next line in the page after it reaches the last character position of the current line in the page.
Forcing insert	Off	Off		
Tab	Field	Field	Field	The column tab stops are ignored, and the tab operation depends on the field attribute character positions.
Trace			All	Both inbound data (data to the system unit) and outbound data (data from the system unit) to and from the main port can be transferred to the auxiliary port without disturbing communications with the system unit when the Trace key is pressed.

Additional Communication Attributes

The following communication attributes are for the 3151, 3161, and 3164 terminals.

Communication Setup Attributes	3151/11 /31/41) Settings	3151 /51/61, Settings	3161 /3164 Settings	Description
Operating mode	Echo	Echo	Echo	Data entered from the keyboard on the terminal is sent to the system unit for translation and then sent back to the display screen. Sometimes called *conversational mode.*
Line speed	9600 bps	9600 bps	9600 bps	Uses the 9600 bps (bits per second) line speed to communicate with the system unit.
Word length (bits)	8	8	8	Selects eight bits as a data word length (byte).
Parity	No	No	No	Does not add a parity bit and is used together with the word length attribute to form the 8-bit data word (byte).
Stop bit	1	1	1	Places a bit after a data word (byte).

Communication Setup Attributes	3151/11 /31/41) Settings	3151 /51/61, Settings	3161 /3164 Settings	Description
Turnaround character	CR	CR	CR	Selects the carriage return (CR) character as the line turnaround character.
Interface	EIA-232	EIA-232	EIA-232	Uses the EIA-232 interface protocol.
Line control	IPRTS	IPRTS	IPRTS	Uses the 'permanent request to send' (IPRTS) signal to communicate with system unit.
Break signal (ms)	500	500	500	The terminal sends a break signal to the system unit within 500 ms after the Break key is pressed.
Send null suppress	On	On		Trailing null characters are not sent to the system unit.
Send null			On	Trailing null characters are sent to the system unit.
Response delay (ms)	100	100	100	The terminal waits for 100 ms for the system unit to respond.

Additional Keyboard Attributes

The following keyboard attributes are for the keyboard attached to the 3151, 3161, and 3164 terminals.

Keyboard Setup Attributes	3151/11 /31/41 Settings	3151 /51/61 Settings	3161 /3164 Settings	Description
Enter	Return	Return	Return	The Enter key functions as the Return key.
Return	New line	New line	New line	The cursor moves to the next line when the Return key is pressed.
New line	CR	CR	CR	The Return key generates the carriage return (CR) and the line feed (LF) characters. The line turnaround occurs after the CR and LF characters are generated.
Send	Page	Page	Page	The contents of the current page are sent to the system unit when the Send key is pressed.
Insert character	Space	Space	Space	A blank character is inserted when the Insert key is pressed.

Additional Printer Attributes

The following printer attributes are for a printer attached to the 3151, 3161, and 3164 terminals.

Printer Setup Attributes	3151/11 /31/41 Settings	3151 /51/61 Settings	3161 /3164 Settings	Description
Line speed	9600	9600	9600	Uses 19200 or 9600 bps (bits per second) line speed to communicate with the system unit.
Word length (bits)	8	8	8	Selects eight bits as a data word length (byte).
Parity	Even	Even	No	
Stop bit	1	1	1	Places a bit after a data word (byte).
Characters	ALL	ALL		
Line end			CR-LF	
Print			View port	
Print EOL			Off	
Print null			Off	

Index

A

about this book xiii
adapter
  install 36
  removing 40
AIX operating system documentation 17, 18, 32, 42, 44, 66, 72
attributes required for TTY terminal
  TTY terminal attributes 111

B

battery
  disposal, recycling 101
  removal and replacement 90

C

cable
  safety vii
cabling, SCSI 80
cabling, SSA 80
configuration, SSA and SCSI cabling 80
connect
  cables vii
connector, SSA backplane 77
covers
  removing 29
  replacing 32

D

device records 106
  internal drives and devices 109
  internal options 106
devices, handling static-sensitive 26
devices, hot-pluggable 27
diagnostics
  loading 21
disconnect
  cables vii
disk drive
  internal 73
disk drive bay, power 75, 79
disk drive slot LED 56
disk drives
  configuration 66, 72
  deconfiguration 67
  install 76
  installing SCSI hot-plug 62
  installing SSA hot-plug 68
  removing 70
  removing disk 64
  two-position SCSI bay, installing 74

E

ergonomic information xiii

F

firmware 93
  level 93
  update 93
firmware updates
  system 92

H

handling static-sensitive devices 26
hot-pluggable devices 27
hot-pluggable PCI adapter procedures 44

I

i2c connector 77
installation, system 1
installing
  adapter cards 36
  adapters 36
  disk drive bay, two position 74
  disk drive bays 76
  disk drives (non hot-plug) 84
  fans 86
  hot-plug disk drives, SCSI 62
  hot-plug disk drives, SSA 68
  media drives 84
  memory card 53
  memory DIMMs 50

L

LAN activity LED 17
laser compliance statement ix
laser safety information ix
LED, disk drive 56

M

media drives
  install 84
memory, description 47
memory card
  install 53
  removing 55
memory module
  install 50
  removing 52

N

notice
  safety notices vii

O

online publications xiii
operating system documentation, AIX 17, 18, 32, 42, 44, 66, 72
operator panel display 17
option list 28
options 28

P

power, disk drive bay 75, 79
power connector, SCSI backplane 77
power connector, SSA backplane 77
power-on LED 17
power on/off button 17
power supply
  redundant power supply 87
procedures, hot-pluggable PCI adapter 44
processor and memory card cover
  removing 33
  replace 34
product disposal 101
publications, online xiii

R

records, device 106
recycling 101
related publications xiii
removal procedures
  adapters 40
  battery 90
  covers 29
  disk drives 64, 70
  memory card 55
  memory DIMMs 52
  processor and memory card cover 33
  processor card 55
remove and replace
  PCI adapters 36, 40
replace
  battery 90
  covers 32
  processor and memory card cover 34
reset button 17
reset icon 17

S

safety
  considerations 25
  electrical safety vii
  laser compliance statement ix
SCSI activity LED 17
SCSI cabling 80
SCSI connector 77
serial number plate 17
speaker 17
SSA cabling 80
stopping the system unit 27
system attention LED 17
system firmware updates 92
system installation 1
system memory 47
system records 105
  key serial number 105
  machine type/model 105
  serial number 105
system unit
  stopping 27
system verification
  verification, system 19
system verification procedure 21

T

telephone line requirements for the United Kingdom vii
trademarks xiv
TTY terminal attributes required for diagnostics
  general 111

U

United Kingdom's telephone line requirements vii

W

web sites
  ergonomic information xiii
Web sites
  aix library 18, 32, 42, 44, 66, 72
  firmware updates 92, 93
  healthy computing 3
  microcode updates 92, 93
  RS/6000 and pSeries publications xiii

Readers' Comments — We'd Like to Hear from You

RS/6000 Enterprise Server Model F80
@server pSeries 620 Models 6F0 and 6F1
Installation Guide

Publication No. SA38-0569-03

Overall, how satisfied are you with the information in this book?

	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Overall satisfaction	☐	☐	☐	☐	☐

How satisfied are you that the information in this book is:

	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Accurate	☐	☐	☐	☐	☐
Complete	☐	☐	☐	☐	☐
Easy to find	☐	☐	☐	☐	☐
Easy to understand	☐	☐	☐	☐	☐
Well organized	☐	☐	☐	☐	☐
Applicable to your tasks	☐	☐	☐	☐	☐

Please tell us how we can improve this book:

Thank you for your responses. May we contact you? ☐ Yes ☐ No

When you send comments to IBM, you grant IBM a nonexclusive right to use or distribute your comments in any way it believes appropriate without incurring any obligation to you.

Name

Address

Company or Organization

Phone No.

Readers' Comments — We'd Like to Hear from You
SA38-0569-03

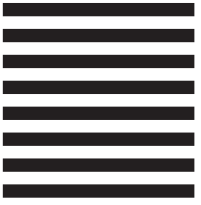


Cut or Fold
Along Line

Fold and Tape **Please do not staple** Fold and Tape



NO POSTAGE
NECESSARY
IF MAILED IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 40 ARMONK, NEW YORK

POSTAGE WILL BE PAID BY ADDRESSEE

Information Development
Department H6DS-9561
11400 Burnet Road
Austin, TX 78758-3493



Fold and Tape **Please do not staple** Fold and Tape

SA38-0569-03

Cut or Fold
Along Line



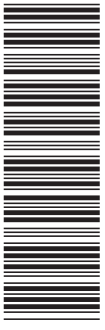
Part Number: 09P4057



Printed in the United States of America
on recycled paper containing 10%
recovered post-consumer fiber.

June 2001

(1P) P/N: 09P4057



SA38-0569-03

