# OCTANE™ Workstation Owner's Guide

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For regulatory and compliance information, go to Appendix D.

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# Introduction

Welcome to the OCTANE workstation! The *OCTANE Workstation Owner's Guide* is your complete guide to installing, diagnosing, and repairing your OCTANE workstation. Specifically it tells you how to

- set up your OCTANE workstation and turn it on
- access online hardware movies and information in *OCTANE Hardware Central*
- install and remove internal parts
- install and remove peripherals
- install and remove software
- diagnose hardware problems
- order replacement parts

This guide also provides:

- regulatory information
- technical specifications

## Additional Hardware Information

*OCTANE Hardware Central* - This new online resource provides access to hardware movies and other information previously found only in your printed owner's guide, such as movies of installation procedures, port pinout information, user tips, environmental information, and so on. Install and access it from the system hard drive.

To view *OCTANE Hardware Central*, go to Help > Online books, or open Netscape and enter the appropriate URL. Set a bookmark to easily access this document for future use. Access instructions are in the following sections.

- To view *OCTANE Hardware Central* from Netscape, in the location window enter the following URL:

  **`file:/usr/share/Insight/library/SGI_bookshelves/SGI_EndUser/books/Octane_HWCntl/index.html`**

- From the Toolchest > Help > Online Books > SGI End User > choose *OCTANE Hardware Central*.

If *OCTANE Hardware Central* is no longer installed on your system disk, follow these instructions to install it:

Go to the Toolchest > System > Software Manager. Place the IRIX Foundation CD in a CD-ROM or access it over the network. From the Toolchest > System choose Software Manager. Press and hold the Lookup button and select IRIX Foundation CD. Click Custom Installation. Select "IRIX Executive Foundation 6.4 for Origin, Onyx2 and OCTANE." Click on the arrow icon beside the word Product to access this subdirectory. When you locate *OCTANE Hardware Central*, click on the box to the left of the arrow icon. A red check mark appears. Click the *Software Manager Start* button. When the installation is complete, a window appears "Installation and removals were successful. You may continue with installation or quit now." Click the *OK* button in this window. Go to the File menu > Exit, and exit Software Manager.

Use either of the paths described earlier in this section to access *OCTANE Hardware Central*.

## Hardware Configurations

A listing of available configurations (upgrades and options) is available on the Web. In the location window, type **`http://www.sgi.com/Products/hardware/desktop/products/configurator/configurator.html`**.

## Technical Publications Library

A copy of this manual, as well as other Silicon Graphics technical publications, is found in the Technical Publications Library. To access this library, open your Web browser and enter **`http://techpubs.sgi.com/library/`**.

## Software and System Administration Information

For complete information on installing software, see the online *Personal System Administration Guide*. It is located on your desktop in the Toolchest > Help> Online Books. For more advanced information, see the online *IRIX Admin: Software Installation & Licensing Guide*. For system administration information, see the SGI_Admin section of the online bookshelf.

It's always a good idea to back up your system. For instructions on backing up your system, see the online *Personal System Administration Guide*.

## Product Support

The OCTANE workstation is designed so that you may maintain and repair the workstation without the help of a trained technician. Contact your Silicon Graphics subsidiary or authorized distributor for information about product support.

Silicon Graphics, Inc., provides a comprehensive range of product support for its products. If you are in North America and would like support for your Silicon Graphics supported products, contact the Technical Assistance Center at 1-800-800-4SGI or your authorized service provider. If you are outside North America, contact the Silicon Graphics subsidiary or authorized distributor in your country.

*Chapter 1*

# Getting Started

This chapter explains how to set up your OCTANE workstation and attach it to a network, turn the system on, and log in. It also explains how to use the Indigo Magic User Environment.

*Chapter 1*

# Getting Started

This chapter tells you how to set up your OCTANE workstation. The following topics are covered


- "Getting Acquainted" on page 3
- "Lifting the OCTANE Workstation" on page 7
- "Installing Optional Parts" on page 8
- "Setting Up the OCTANE Workstation" on page 9
- "Locking the OCTANE Workstation" on page 20
- "Logging Into the OCTANE Workstation" on page 23
- "Using the Indigo Magic User Environment" on page 24
- "Shutting Down and Powering Off the OCTANE Workstation" on page 27


## Getting Acquainted

To become familiar with the OCTANE workstation, see

- "Front View" on page 4, "Back View" on page 5, and "Checking Your Shipment" on page 6.
- *OCTANE Hardware Central* an online information resource containing movies, user tips, technical information, cable pinouts, human factors guidelines, and so on. Access *OCTANE Hardware Central*:
  - Through Netscape: In the location window enter **`file:/usr/share/Insight/library/SGI_bookshelves/SGI_EndUser/books/Octane_HWCntl/index.html`**
  - From the Toolchest > Help > Online Books > SGI End User choose *OCTANE Hardware Central.*

If this reference guide is no longer installed on your system disk, see the Introduction to this guide for installation instructions.

- "About This System," found in the Toolchest > System > System Manager for your system serial number, IP address, operating system, and so on.
- System Manager > Toolchest > System > System Manager for information on software and hardware installed on the OCTANE workstation.

## Front View

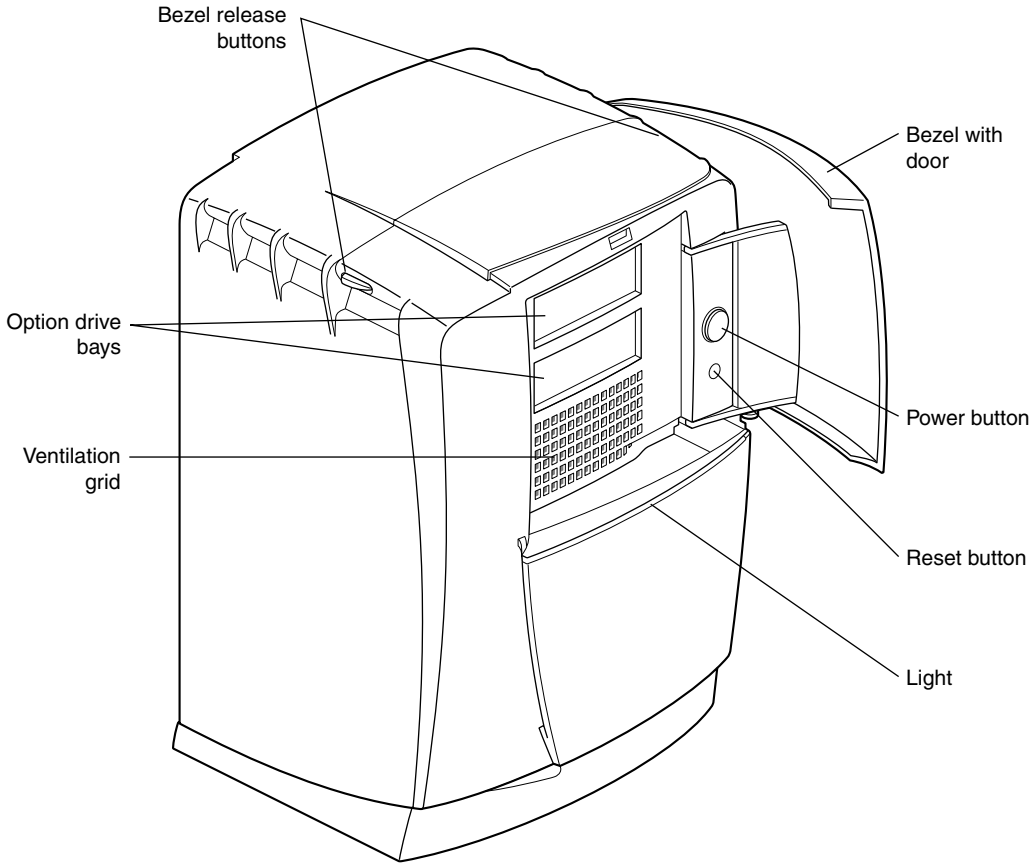



**Figure 1-1** Front View of the OCTANE Workstation

## Back View

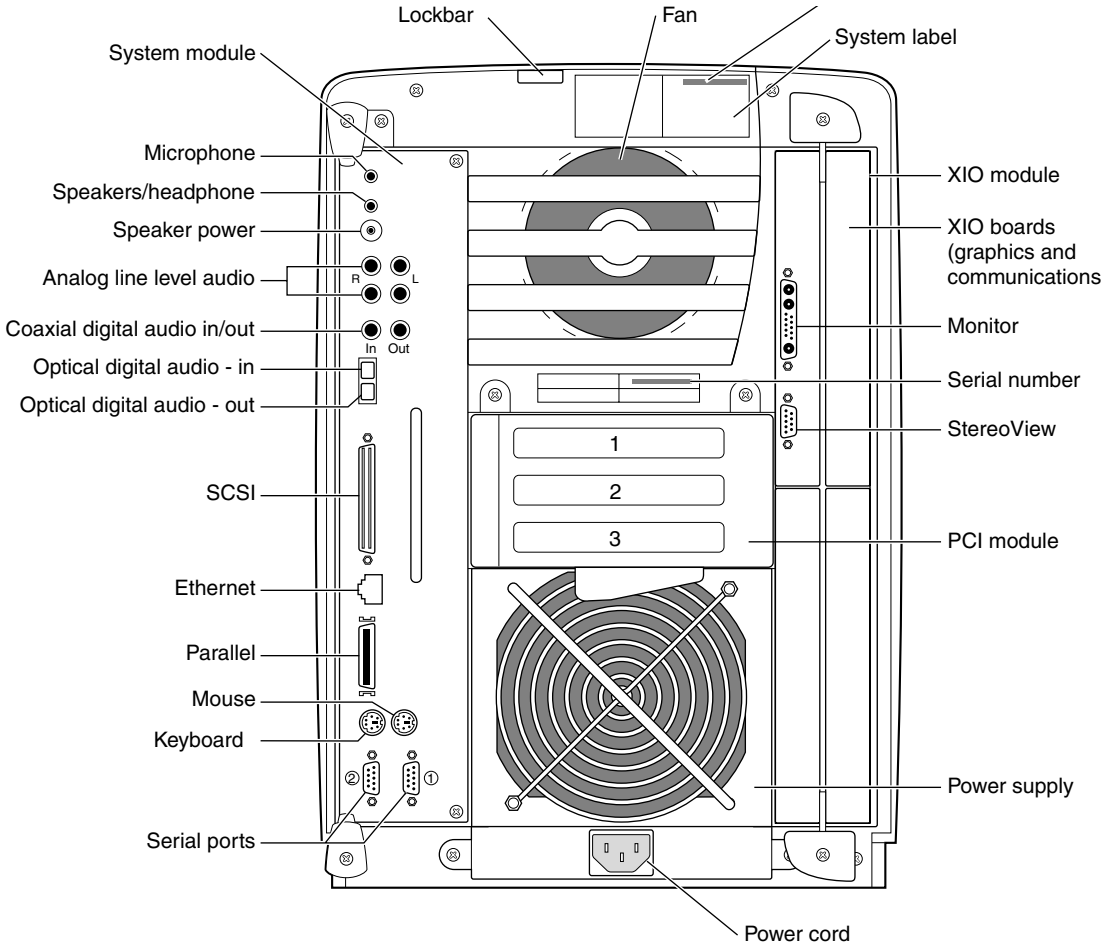



**Figure 1-2** Back View of the OCTANE Workstation

## Checking Your Shipment

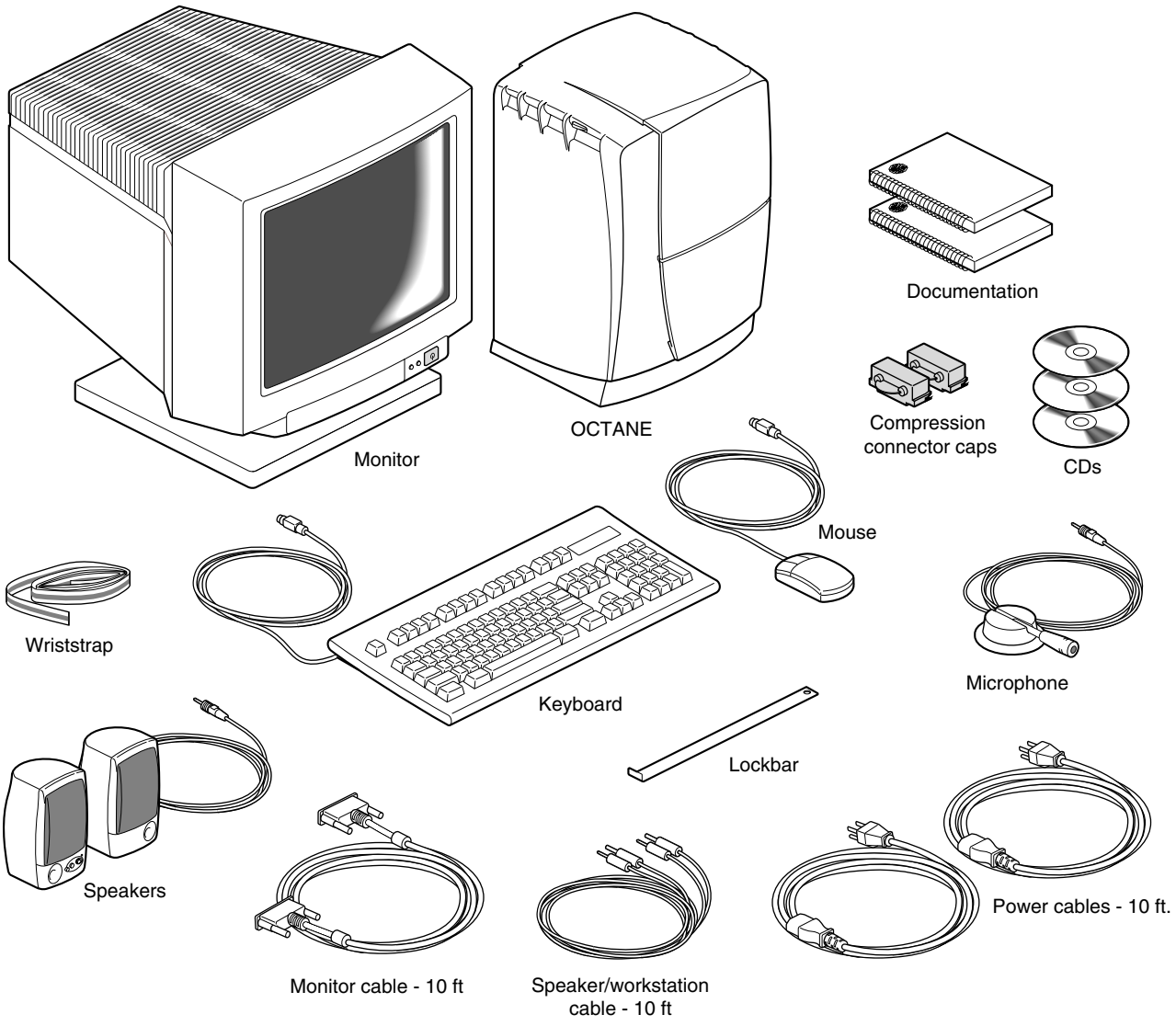



**Figure 1-3** OCTANE Shipment Components

## Lifting the OCTANE Workstation

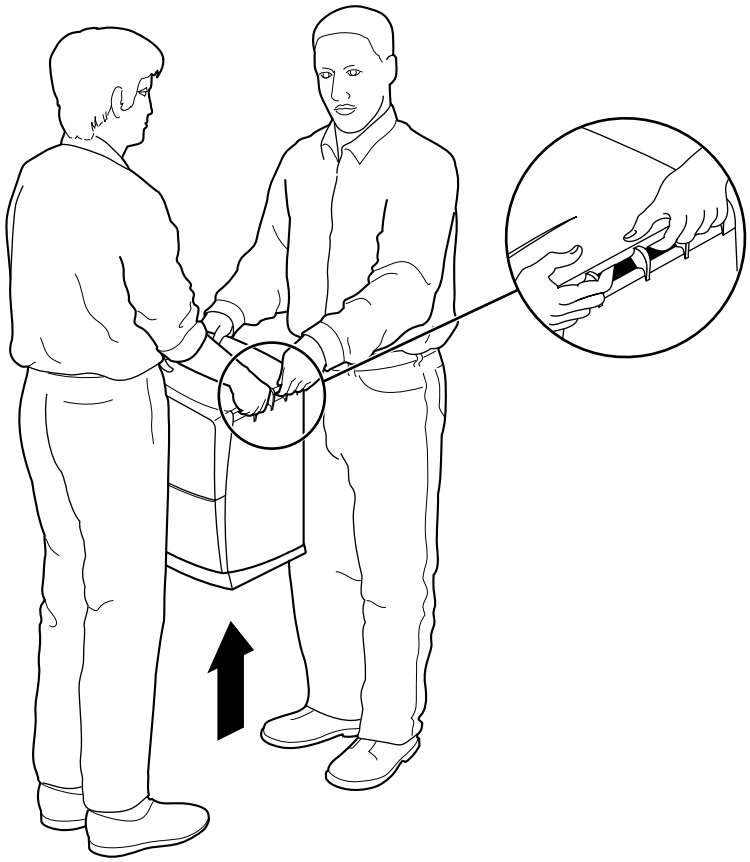


**Figure 1-4** Lifting the OCTANE Workstation

Lifting the OCTANE workstation is a two-person job. Lift the workstation by the air vents at the top of the chassis, as shown in figure Figure 1-4.

## Organizing Your Setup Process

If you have no additional parts, memory, or peripherals to install, use the setup poster or the setup steps in this chapter to set up the OCTANE workstation.

Install optional parts or peripherals before you follow the setup steps so that you will not have to remove and reinstall cables.

## Installing Optional Parts

- To install additional memory, see Chapter 2, “Installing and Removing the CPU and Memory.”
- To install PCI Boards and the PCI module, see Chapter 4, “Installing and Removing PCI Boards.”
- To install XIO Option Boards, see the option board installation manual that ships with the XIO option board, or Chapter 5, “Installing and Removing XIO Graphics and Option Boards.”
- To install external Peripherals or devices, see Chapter 6, “Installing and Removing External Devices,” which includes
  - SCSI devices
  - serial devices
  - audio devices
- To install drives (internal peripherals), see Chapter 7, “Installing and Removing Drives and Front Module Parts.”

Use the setup poster or go to “Setting Up the OCTANE Workstation” on page 9 after you have finished installing optional parts.

## Setting Up the OCTANE Workstation

Human factors guidelines for setting up your OCTANE workstation are in *Octane Hardware Central*, found online through the Toolchest > Help > Online Books > SGI End User.

To set up the OCTANE workstation, follow these steps:

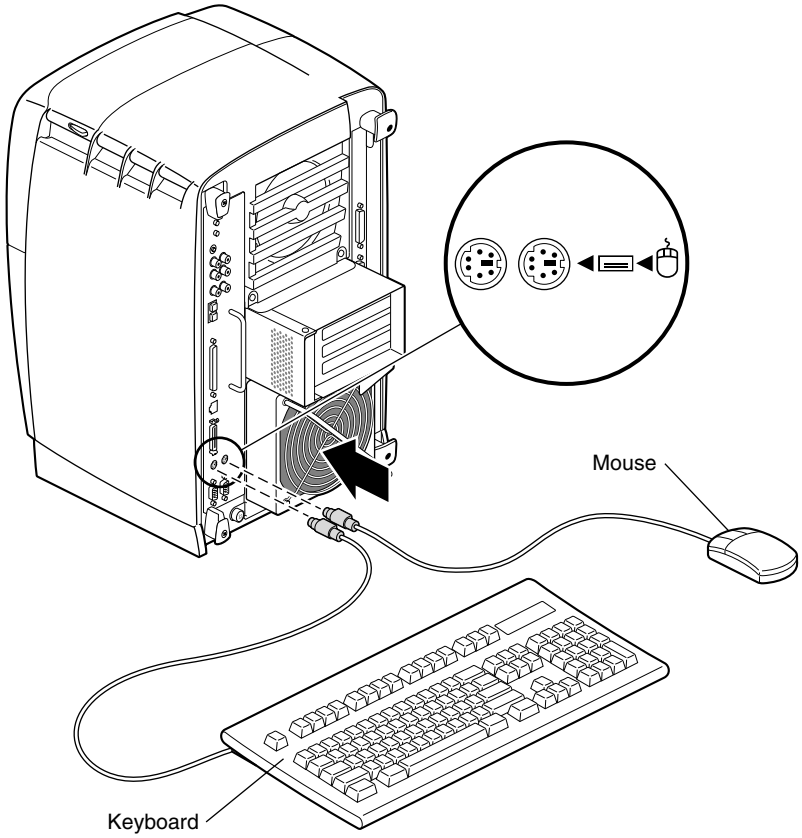



**Figure 1-5** Attaching the Keyboard and Mouse Cables

1. Attach the keyboard and mouse to the OCTANE workstation.

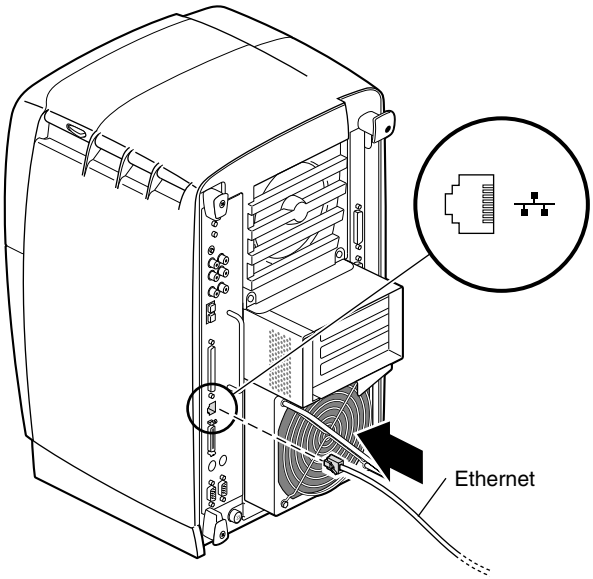



**Figure 1-6** Attaching the Ethernet Cable

2. Attach the Ethernet cable to the Ethernet port on the OCTANE workstation.

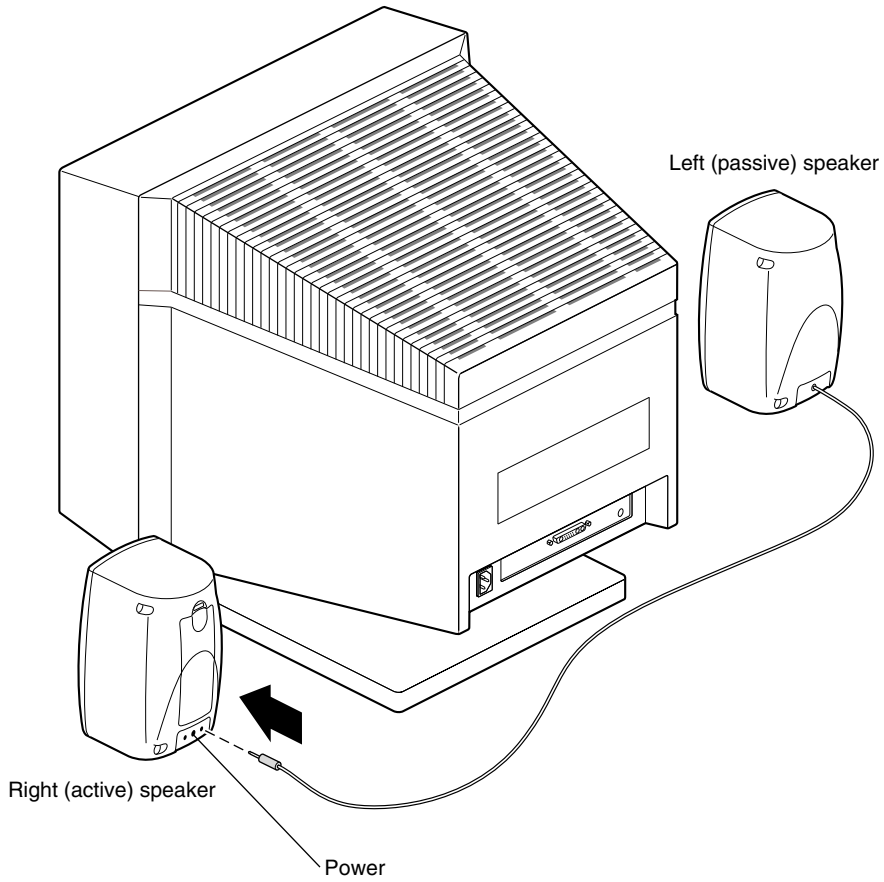



**Figure 1-7** Attaching the Speaker-to-Speaker Cable

3. Place the speakers on either side of the monitor as shown in Figure 1-7.
4. Connect the left (passive) speaker to the right (active) speaker. Use the port labeled L.

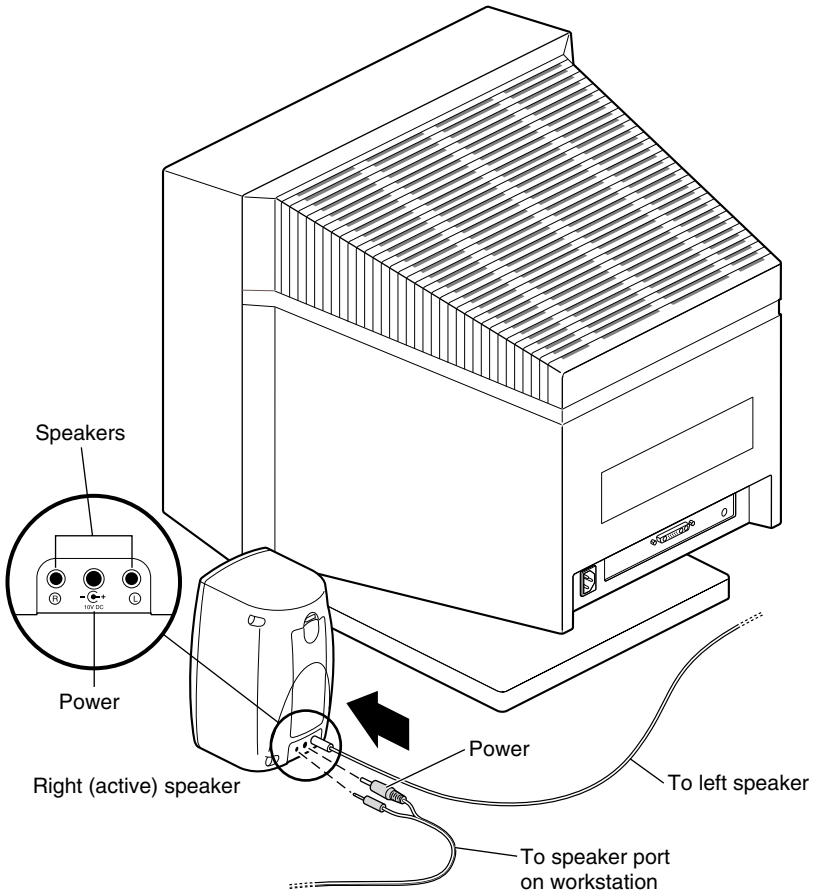



**Figure 1-8** Attaching the Speaker and Power Cable to the Active Speaker

5. Connect the speaker/workstation cables (the cable with two connectors on each end) to the active speaker. The connectors cannot be installed incorrectly because they are different sizes; male/male on one end, female/male on the other.
   - Connect the female connector to the power (middle) port on the back of the right (active) speaker.
   - Connect its paired male connector to the R port on the back of the right (active) speaker.

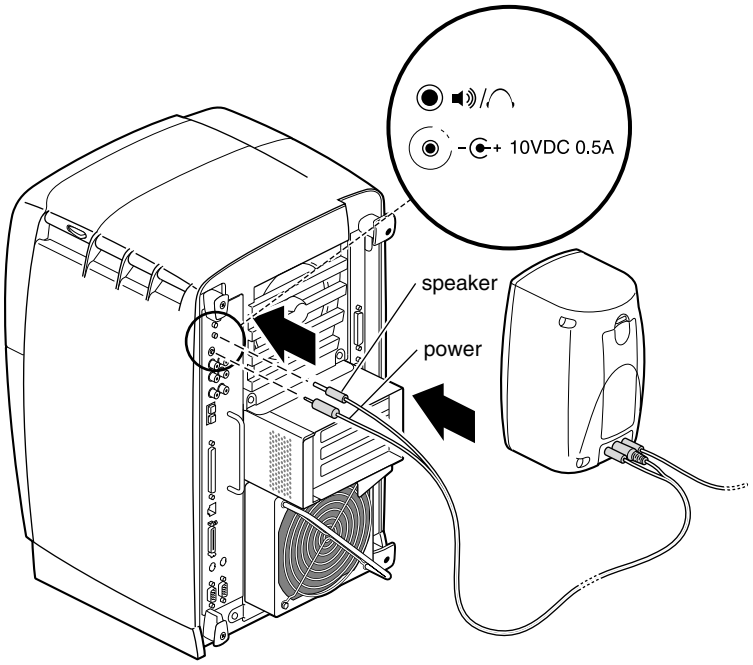



**Figure 1-9** Connecting the Speaker and Power Cables

6. Connect the active speaker to the OCTANE workstation, using the cable with two male connectors on the end.
   - Connect the smaller male connector to the speaker power port.
   - Attach the larger male connector to the speaker port.

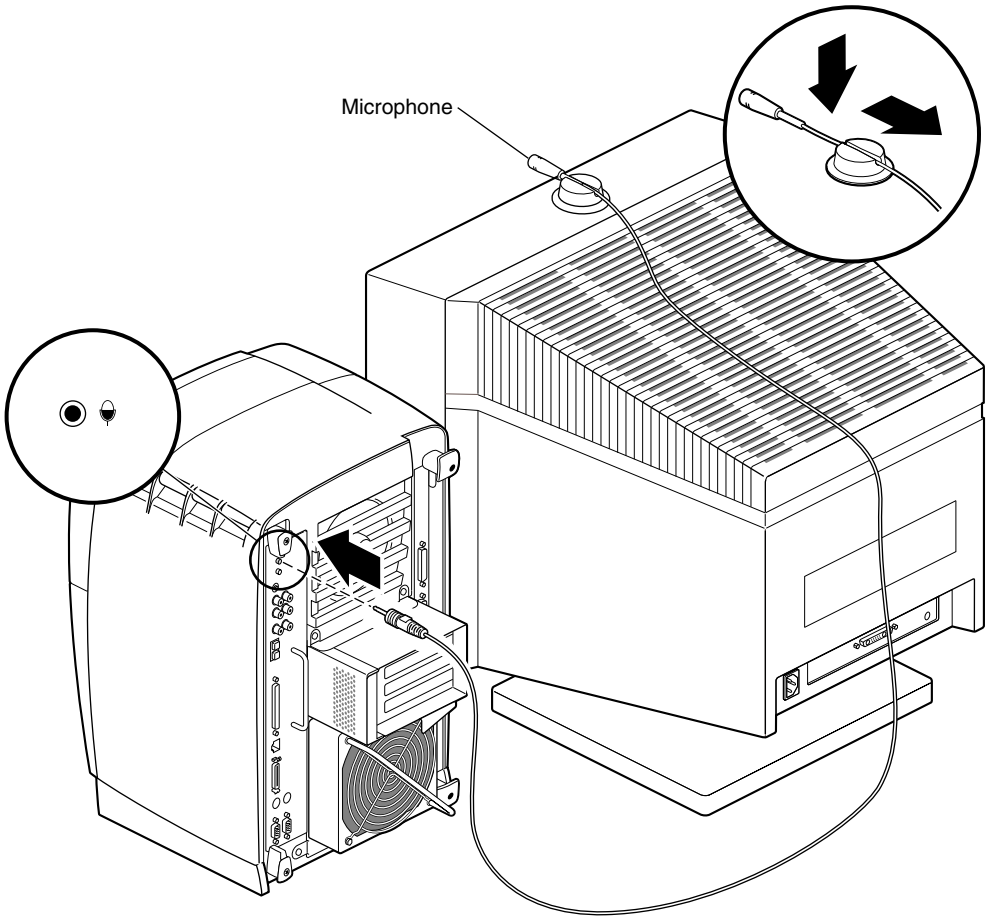



**Figure 1-10** Attaching the Microphone

7. Set up the microphone.
   - Place the microphone cord through the slot in the base.
   - Slide the microphone back until it is firmly connected to the base.
   - Place the microphone in the center of the top of the monitor.
   - Place the cable over the back of the monitor.
   - Attach the cable to the microphone port on the OCTANE workstation.

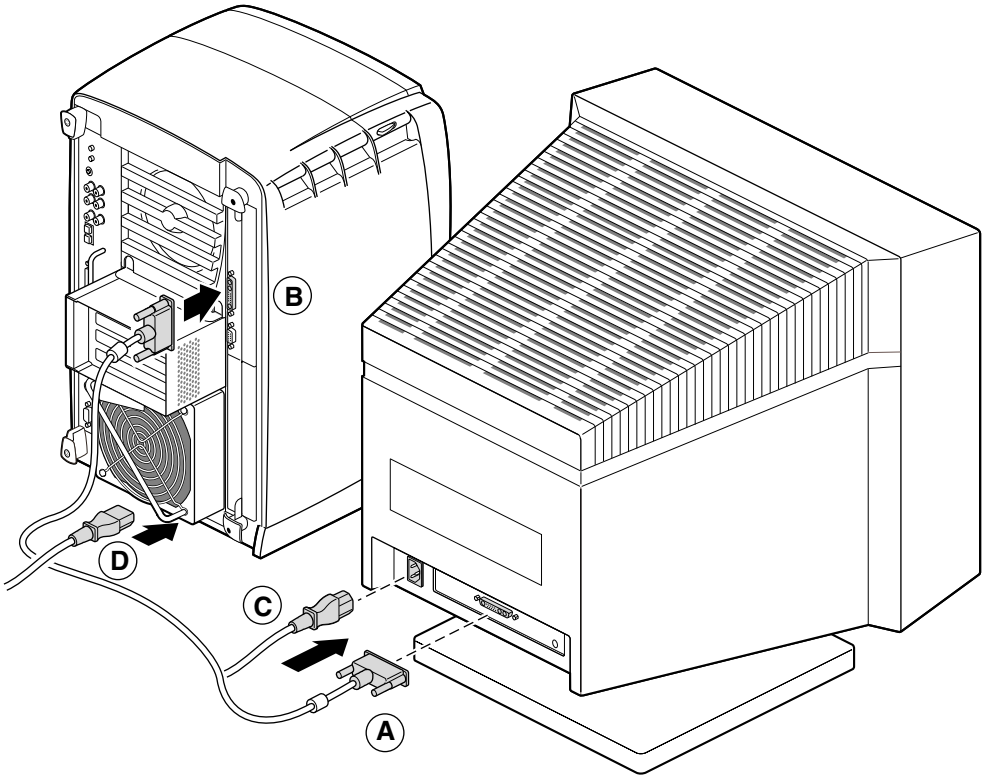



**Figure 1-11** Connecting the Monitor and Power Cables

8. Connect the monitor and power cables.
   - Connect the monitor-to-graphics cable to the monitor. (Step A)
   - Connect the monitor-to-graphics cable to the I/O connector on the back of the OCTANE workstation. (Step B)
   - Connect the monitor power cord to the monitor. (Step C)
   - Connect the OCTANE power cord to the back of the OCTANE workstation. (Step D)

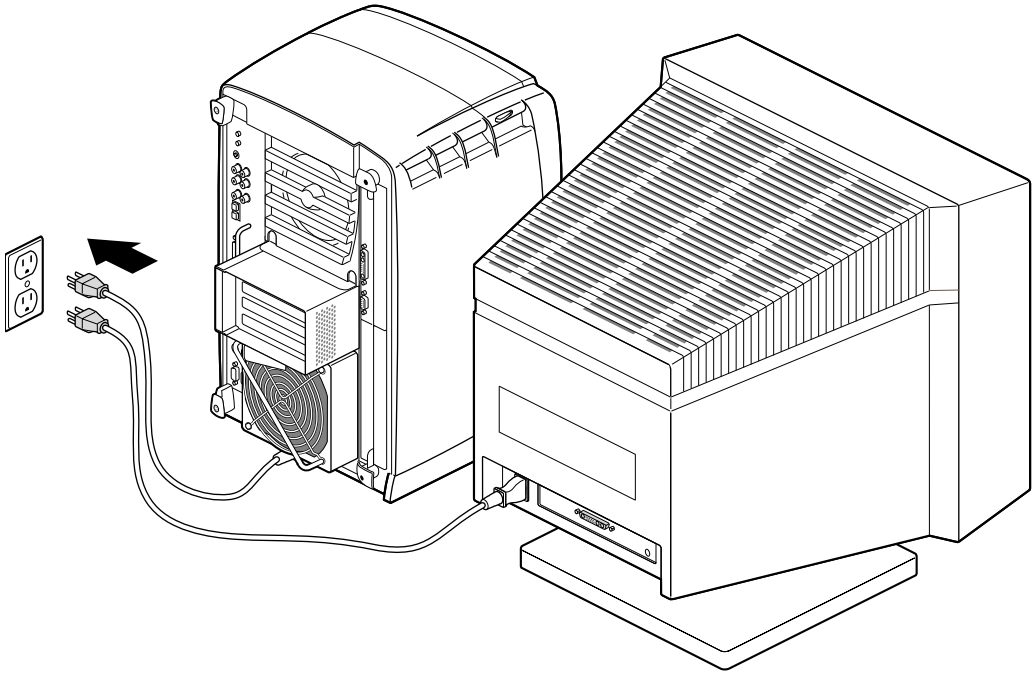


**Figure 1-12** Connecting the Monitor and Power Cables to an Electrical Outlet

9. Connect the power cords from the OCTANE workstation and the monitor to an electrical outlet.

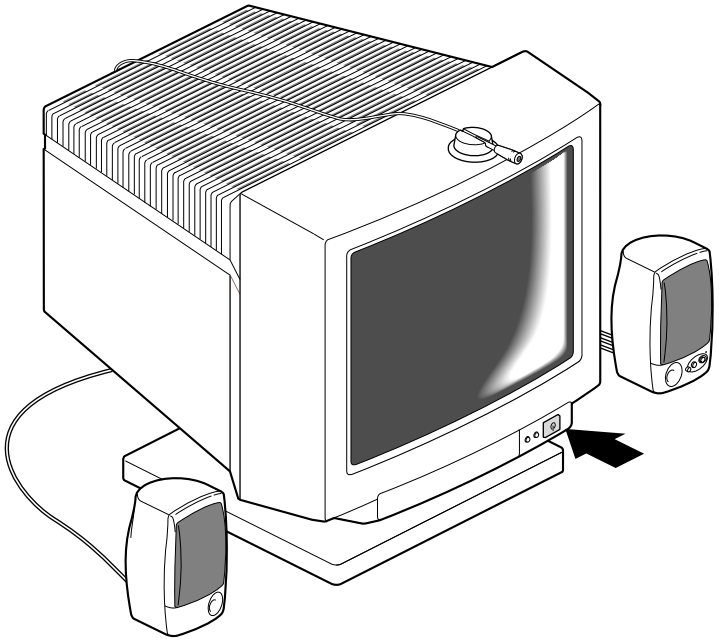


**Figure 1-13** Powering On the Monitor

10. Press the power button on the monitor.

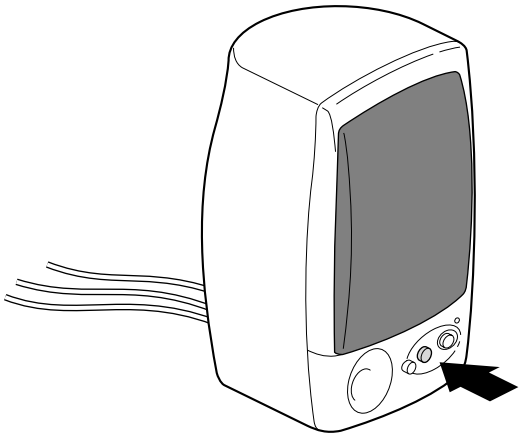


**Figure 1-14** Powering On the Speakers

11. Press the power button on the active speaker.

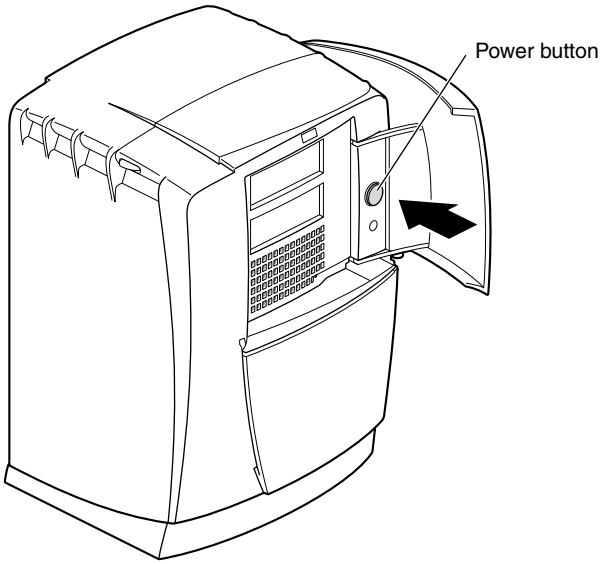



**Figure 1-15** Powering On the OCTANE Workstation

If you are installing the lockbar, go to "Locking the OCTANE Workstation" on page 20.

If you are not installing the lockbar, go to step 12.

12. Press the power button on the OCTANE workstation.

You have just finished setting up the OCTANE workstation and are ready to login. See "Logging Into the OCTANE Workstation" on page 23.

## Locking the OCTANE Workstation

Using the lockbar locks the bezel and system module to the chassis. Locking the bezel prevents the option and system drives from being removed. Locking the system module prevents the memory (DIMMs) and processor (CPU) from being removed.

The lockbar slot is found behind the door on the front of the OCTANE workstation.

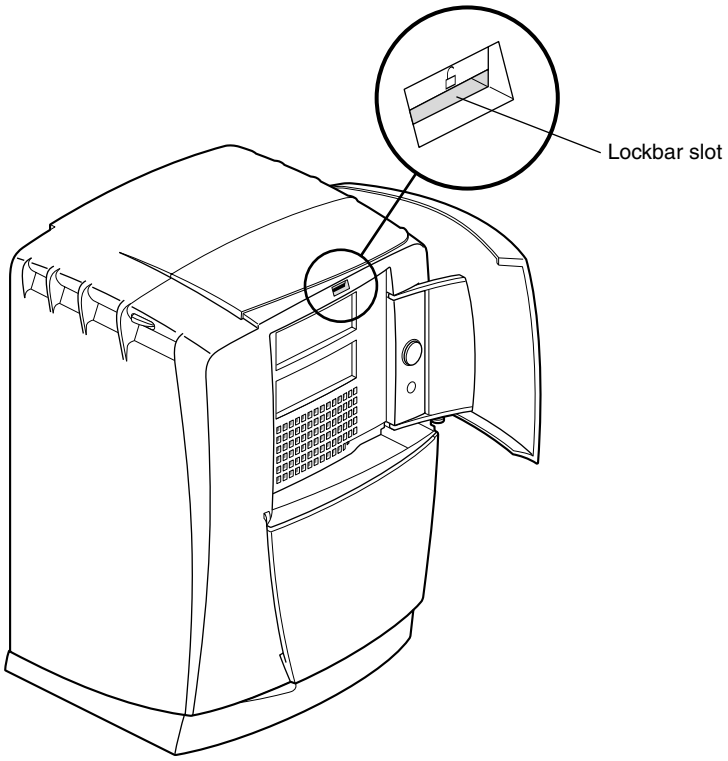



**Figure 1-16** Locating the Lockbar Slot

1. Open the door of the OCTANE workstation.
2. Locate the lockbar slot as shown in Figure 1-16.

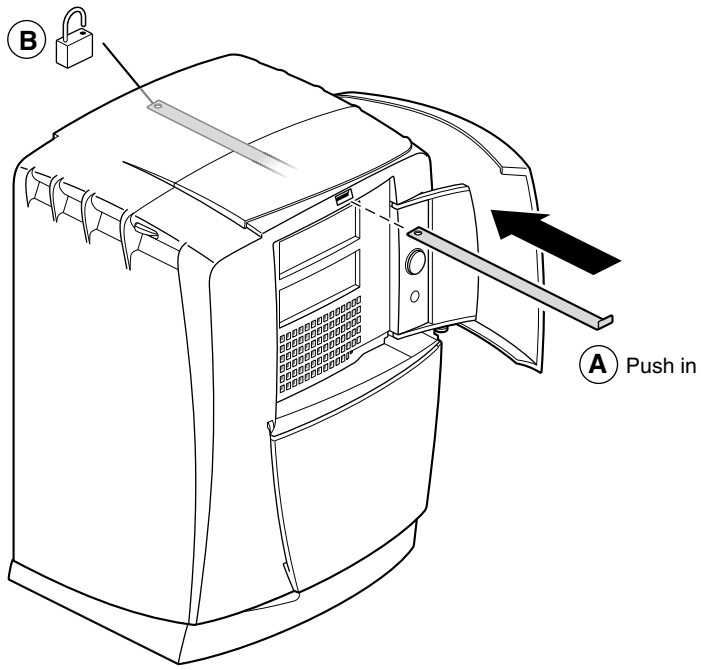



**Figure 1-17** Inserting the Lockbar

3. Slide in the lockbar. (Step A)
4. Secure it with a lock. (Step B)
5. Close the door.

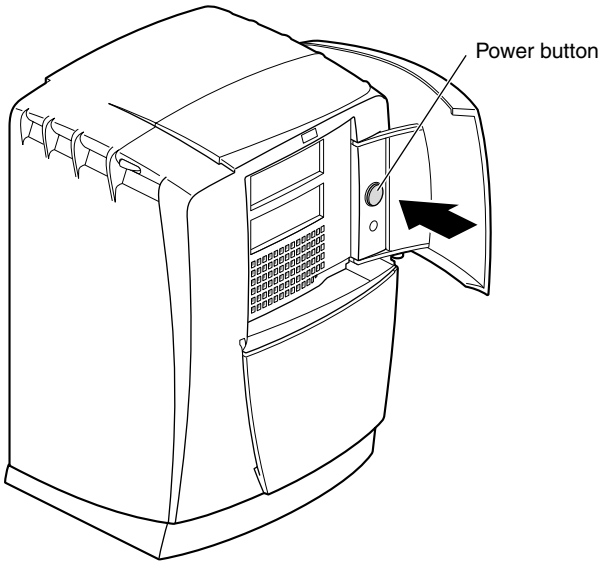



**Figure 1-18** Powering On the OCTANE Workstation

6. Power on the OCTANE workstation.
7. You have finished setting up the OCTANE workstation and are ready to log in.

## Logging Into the OCTANE Workstation

Once you create a user login account for yourself and set up networking software, your system is ready to create a personal work area for you and let you communicate with other systems and people on your network.

If this is the first time your system is being booted, you see a login screen similar to the one shown in Figure 1-19.

**Figure 1-19** Login Screen

If you already have a login account, you see an icon with your login name. Double-click the icon.

If you do not have a login account, double-click *EZsetup* and follow the instructions for setting up your account and networking software.

## Using the Indigo Magic User Environment

Now you are ready to use the desktop management system called the Indigo Magic User Environment.

### The Desktop and Its Icons

By default, several icons appear on the desktop: a folder icon representing your home directory, a dumpster icon, and icons for peripherals you have installed. See Figure 1-20.

The peripheral icons show the current state of the devices they represent. For example, if you place a music CD into the compact disc player, the icon changes. When you double-click the icon, it opens CD Player, a utility that lets you play from a compact disc.

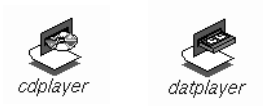



**Figure 1-20** Peripheral Icons

## The Toolchest

The toolchest in the top left-hand corner of the screen (shown in Figure 1-21) provides access to system functions, applications, and documentation.

**Figure 1-21** Toolchest Icon

- Under the Toolchest > System is the System Manager, which provides hardware and software information about your workstation.
- From the Toolchest > Help, you can access the library of online documentation.

  For more information on the Toolchest, see the *Desktop Users Guide*, found in the Toolchest > Help > Online Books > SGI End User.

## Documentation and Information Sources

This printed owner's guide contains all the information you need when your workstation is turned off and you cannot access online documentation. It is also found on the Web in the Technical Publications Library.

*OCTANE Hardware Central*, an online hardware reference guide, is found online through the Toolchest > Selected > File QuickFind. Type **`insight`** in the window that appears. When the InSight bookshelf appears, choose SGI End User > *OCTANE Hardware Central*, or by opening Netscape and entering the following url in the location window:

**`file:/usr/share/Insight/library/SGI_bookshelves/SGI_EndUser/books/Octane_HWCntl/index.html`**

It is also found in the Technical Publications Library through Search and Catalog. See the Introduction to this guide for installation instructions, if this guide is no longer installed on your system disk.

#### IRIS InSight Document Library

From the Toolchest > Selected, select File QuickFind and enter InSight in the window. Also from the Toolchest > Help, select Online Books for Desktop Help, SGI End User, and SGI Administrator documentation. Also from the Toolchest > Help, choose InfoSearch to search online books, man (reference) pages, product release notes, and "How Do I" (task-based help).

#### Technical Publications Library

If you have access to the Internet, you can view most manuals on the Technical Publications Library on the Silicon Graphics home page at

`http://techpubs.sgi.com/library.`

## The Console Window

The small box next to the toolchest is the console window; see Figure 1-22. It looks like a small box because it has been minimized. You can open it to its full size by clicking on it with the left mouse button. Many of the error messages that the system generates appear in this window.

**Figure 1-22** Console Icon

Clicking on the console brings up the IRIX shell in which you can type IRIX commands. For information on IRIX commands, choose the Toolchest > Help > Online Books > SGI_End User. Open the *Desktop Users Guide* and look for "Using IRIX Commands."

## Shutting Down and Powering Off the OCTANE Workstation

There are two ways to shut down and power off your OCTANE workstation:

- Use the power button to shut down the system software and power off.
- Use the Toolchest > System > Shut Down System to shut down the system software and return to the System Maintenance menu or power off.

### Using the Power Button to Shut Down and Power Off the OCTANE Workstation

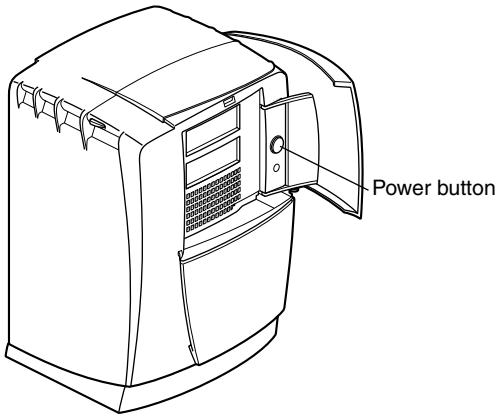



**Figure 1-23** Powering Off the OCTANE Workstation

To use the power button to power off the OCTANE workstation, follow the instructions below.

1. Open the door on the front of the OCTANE workstation.
2. Press the power button.
3. The notifier shown in Figure 1-24 appears on your screen within a few seconds. Then the system powers off automatically within the next minute.

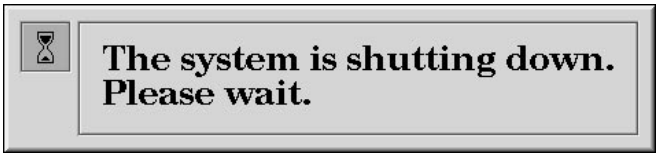



**Figure 1-24** System Shutdown Notifier

4. Turn off the monitor by pressing the monitor power button.

If the system does not power off, either it never came up all the way or the operating system is hung. If you do not see any activity for several minutes, follow the steps below.

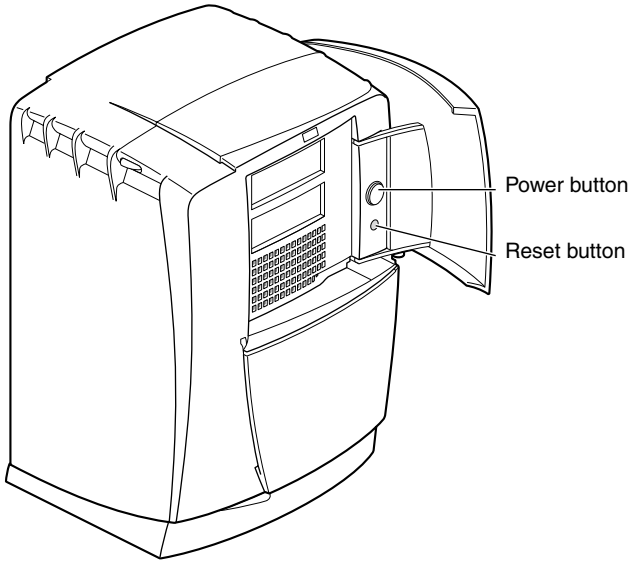



**Figure 1-25** Pressing the Reset Button

1. Press the power button again.

   **Note:** If you press the power button a second time, the system powers off immediately, but it is not a clean shutdown. Avoid using this method unless the system does not respond for several minutes after you press the power button the first time.

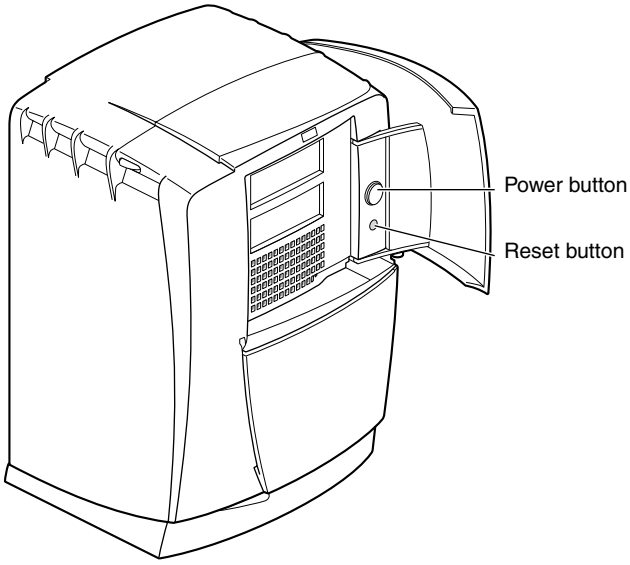



**Figure 1-26** Pressing the Power Button

2. If pressing the power button a second time does not work, use a pencil or pen to press the reset button.
3. If the system still fails to power off, unplug the power cord from the back of the workstation and contact your service provider.

## Using the Toolchest to Shut Down the OCTANE Workstation

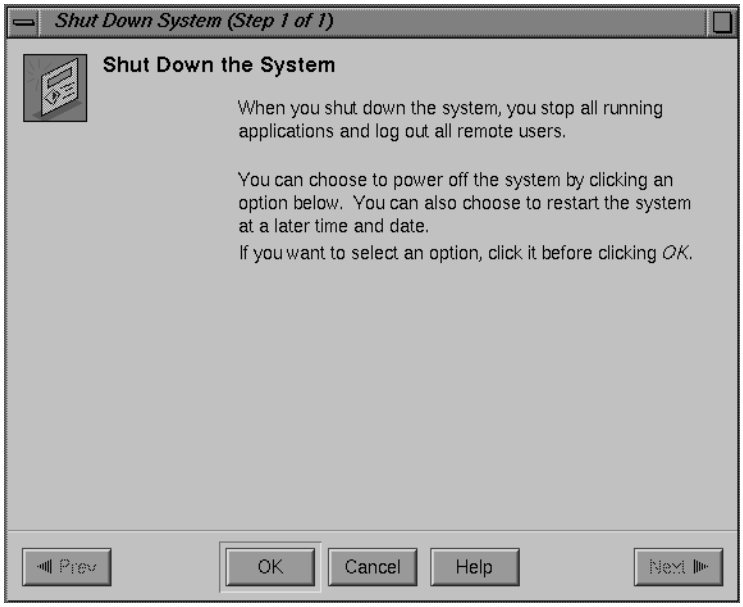



**Figure 1-27** System Shutdown Caution Message

You can use the System menu in the Toolchest to shut down the system. You can also choose to power off the system by pressing the power button.

1. From the Toolchest > System, choose System Shutdown.

   After a few seconds you see the notifier shown in Figure 1-27. At this point you can either power off the system or shut it down and get the System Maintenance Menu, allowing you to restart your system.

2. To power off the system, click *Power Off the System* and then click *OK*. The screen clears and you see the notifier shown in Figure 1-28. After a few seconds, the system powers off.

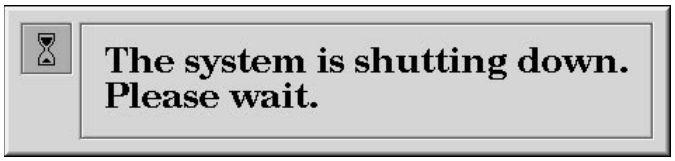



**Figure 1-28** Shutting Down the System Notifier

You can also shut down and restart the system.

1. To shut down the system and get the System Maintenance Menu (allowing you to restart your system), from Toolchest > System, choose System Shutdown.

   After a few seconds you see the notifier shown in Figure 1-29.

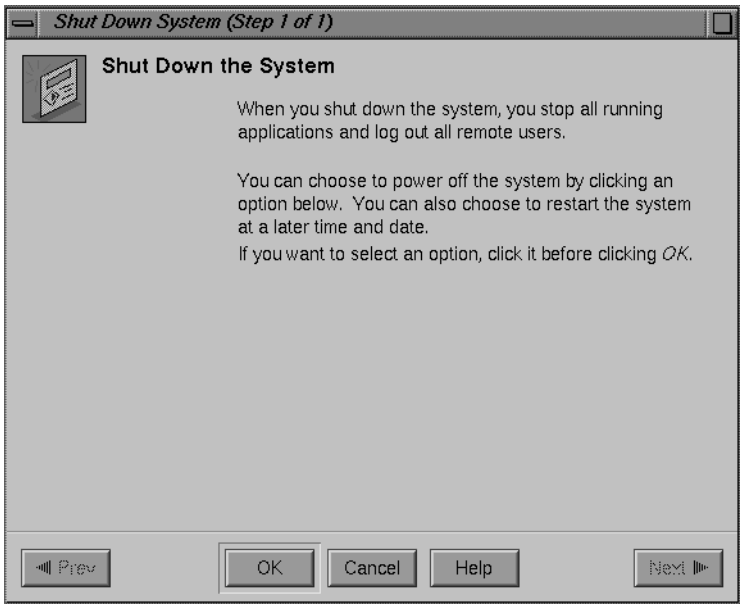



**Figure 1-29** Shutting Down the System Caution Notifier

2. Click *OK* at the notifier shown in Figure 1-29. The screen clears and you see the notifier shown in Figure 1-30.

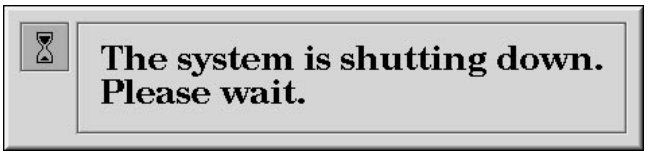



**Figure 1-30** System Shutdown Notifier

Next you see the message shown in Figure 1-31.

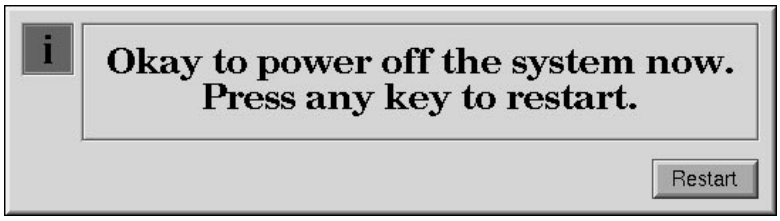



**Figure 1-31** Okay to Power Off Notifier

3. Click *Restart*. You see the system startup message shown in Figure 1-32.

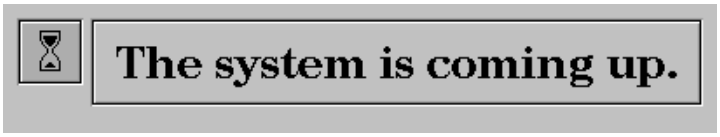



**Figure 1-32** Starting Up the System Notifier

You are finished shutting down, powering off, or restarting your system.

*Chapter 2*

# Installing and Removing the CPU and Memory

This chapter provides information about installing and removing CPUs and memory (DIMM)s in the OCTANE workstation. It also provides information about verification procedures.

*Chapter 2*

# Installing and Removing the CPU and Memory

This chapter provides information on installing and removing a processor (CPU) or memory (DIMMs).

The following topics are covered in this chapter:


- "Preparing the Workstation to Remove and Install a CPU and Memory" on page 36
- "Removing the System Module" on page 40
- "Installing and Removing a CPU/Processor" on page 46
- "Installing and Removing Memory" on page 52
- "About Memory" on page 52
- "Replacing the System Module" on page 57
- "Powering On the OCTANE Workstation" on page 63
- "Verifying Memory Installation" on page 64

## Preparing the Workstation to Remove and Install a CPU and Memory

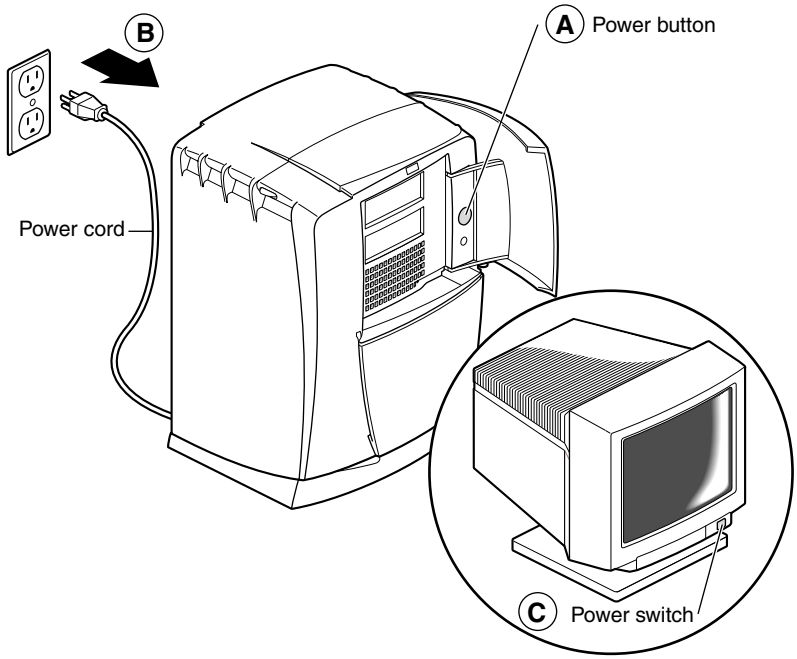



**Figure 2-1** Powering Off the OCTANE Workstation

To prepare the workstation to install or remove a CPU or memory, follow these steps:

1. Open the cover and push the power button to power off the OCTANE workstation. (Step A)
2. Unplug the power cord from the electrical outlet and from the OCTANE workstation. (Step B)
3. Press the power switch on the monitor. (Step C)
4. Wait 5 minutes before removing the system module.

**Warning: The heat sinks on the CPU and system module become very hot. Wait 5 minutes after powering off the OCTANE workstation before you remove the system module. Test before touching the CPU or heat sinks.**

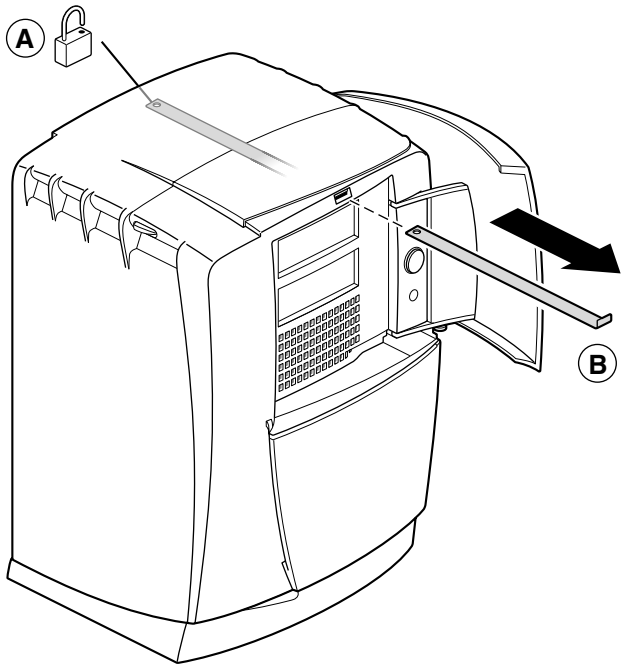



**Figure 2-2** Removing the Lockbar

5. Remove the lockbar which locks the system module and bezel to the chassis.
   - Unlock the lock at the back of the OCTANE workstation. (Step A)
   - Pull the lockbar out of the OCTANE workstation. (Step B)
6. Face the rear of the workstation.

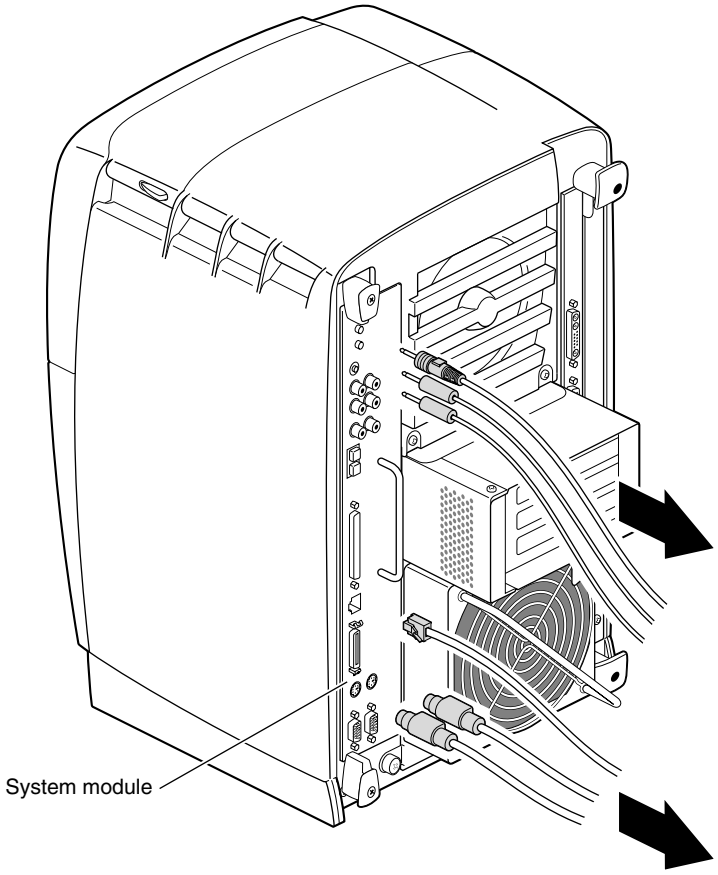



**Figure 2-3** Removing the Cables From the System Module

7. Remove the cables attached to the system module.

## Attaching the Wrist Strap

**Caution:** The components inside the OCTANE workstation are extremely sensitive to static electricity; you must wear the wrist strap while replacing parts inside the workstation.

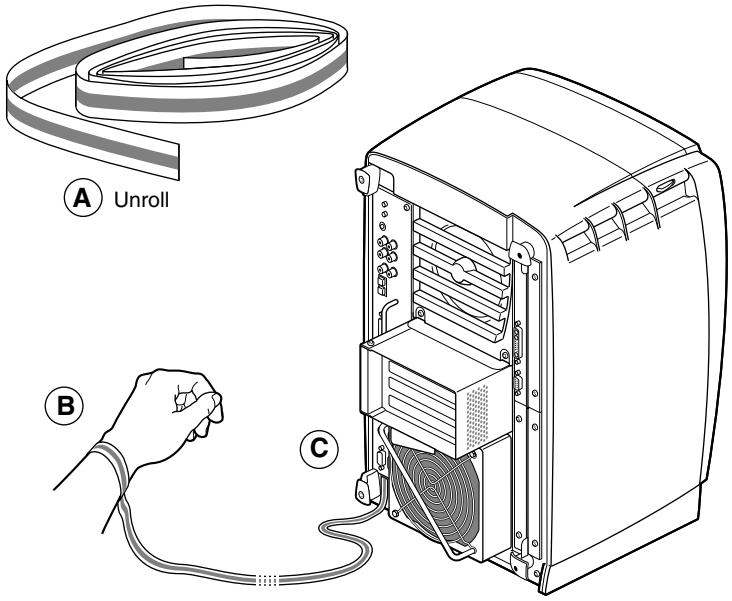



**Figure 2-4** Attaching the Wrist Strap to the Chassis

1. Unwrap the first two folds of the band and wrap the exposed adhesive side firmly around your wrist. (Step A)
2. Unroll the rest of the band and peel the liner from the copper foil at the opposite end. (Step B)
3. Attach the copper foil to the module you are removing: system module, XIO module, frontplane, PCI module. Otherwise, use any convenient and exposed electrical ground, such as a metal part of the OCTANE workstation. (Step C)

## Removing the System Module

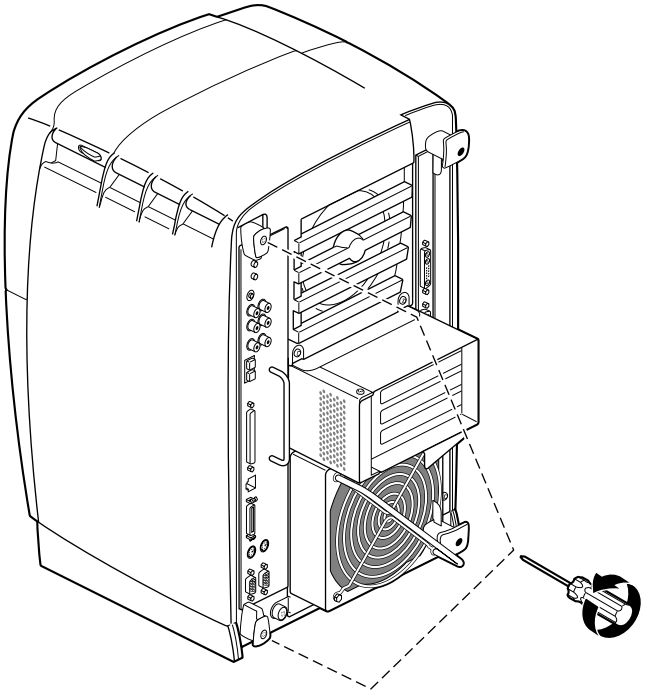


**Figure 2-5** Removing the System Module Screws

**Warning: The heat sinks on the CPU and system module become very hot. Wait 5 minutes after powering off the OCTANE workstation before you remove the system module. Test before touching the CPU or heat sinks.**

1. To remove the system module, you need to power off the system, wait 5 minutes after powering off the workstation to allow the heat sinks to cool, and attach the wrist strap. If you have not already done so, go to "Preparing the Workstation to Remove and Install a CPU and Memory" and follow the instructions through attaching the wrist strap. Then return here and follow the instructions.

   For illustration purposes, the optional PCI module is shown installed.

2. Loosen the captive screws that hold the sliding handles to the OCTANE workstation. See Figure 2-5.

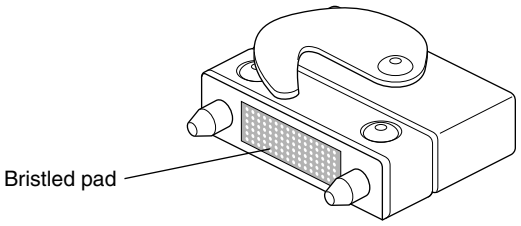



**Figure 2-6** Locating the Compression Connectors

Look for the two compression connectors when you take the system module out of the chassis, and do not touch them. They are on the back of the system module, and connect to the chassis when the system module is installed in the workstation.

**Caution:** The gold bristled pad on the compression connectors on the back of the system module ais very delicate and easily damaged. Before you remove the system module, read Appendix B, “Care and Cleaning of the Compression Connector.”

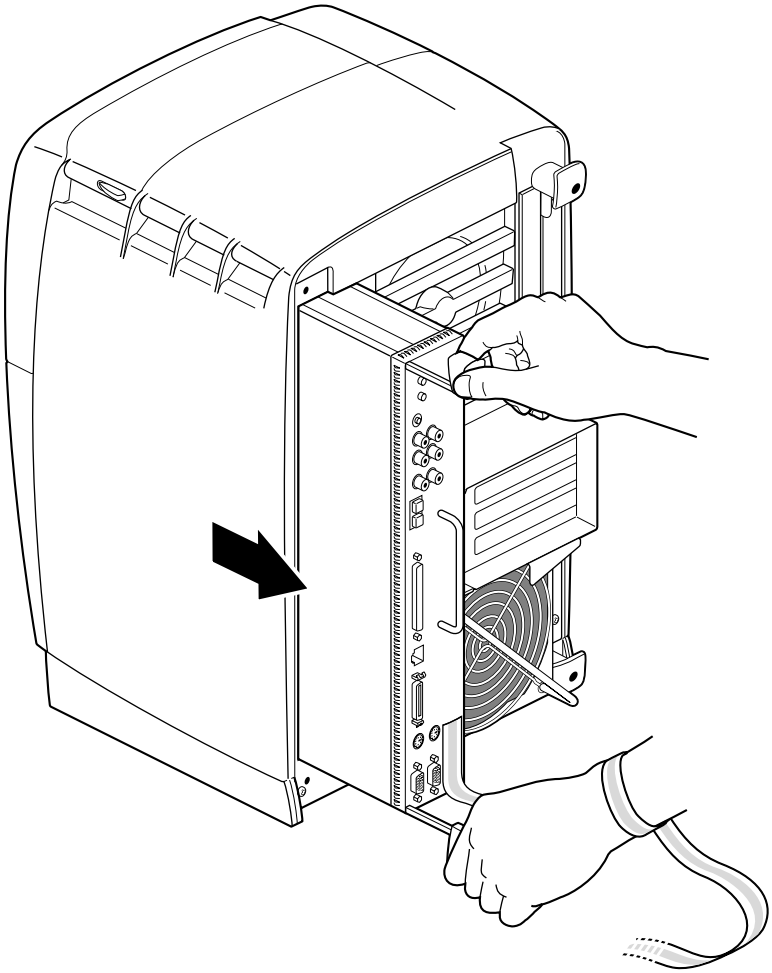


**Figure 2-7** Releasing the System Module From the Frontplane

3. Pull both sliding handles simultaneously until they are completely extended. This action releases the system module from the workstation.

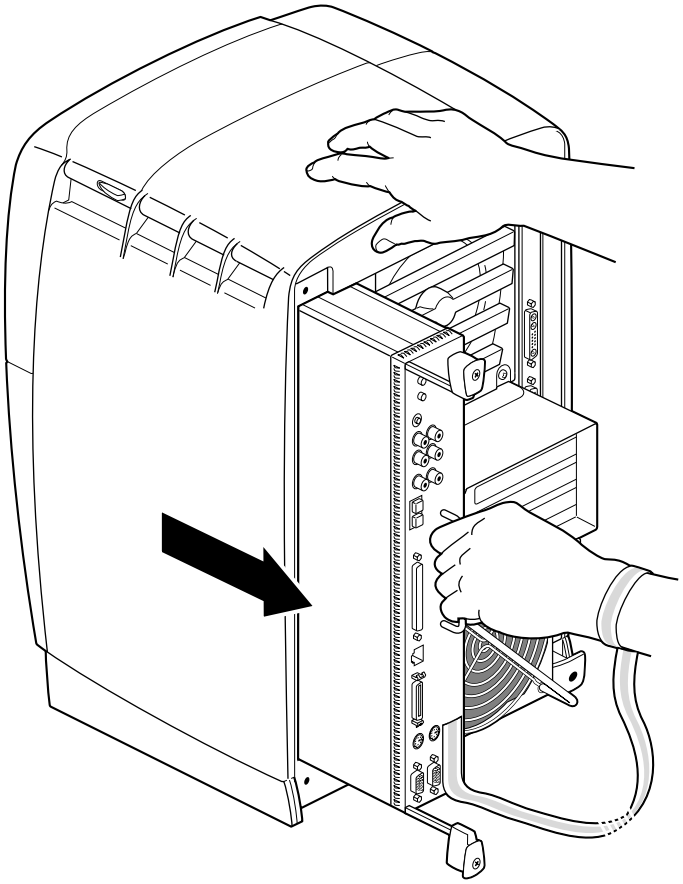


**Figure 2-8** Removing the System Module From the Chassis

4. Pull the system module from the chassis by grasping the module handle with your left hand and bracing your right hand against the top of the workstation.

   Support the bottom of the module as you pull it out.

5. Place it on a dry, antistatic surface with the CPU and DIMMs facing up. Your desktop works well.

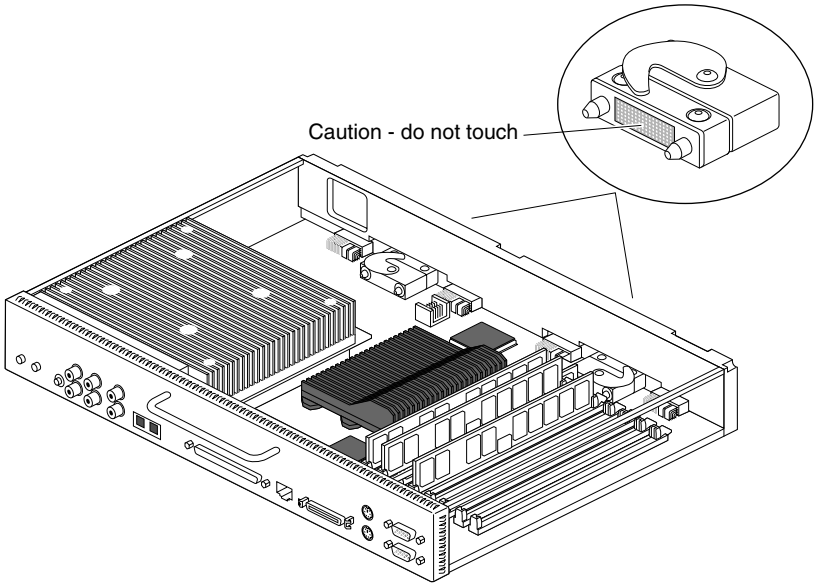



**Figure 2-9** Locating the Compression Connectors

**Caution:** Do not touch the compression connectors as you remove the system module. The side of the compression connector that connects to the workstation is extremely delicate.

See Appendix B for information and care of the compression connectors.

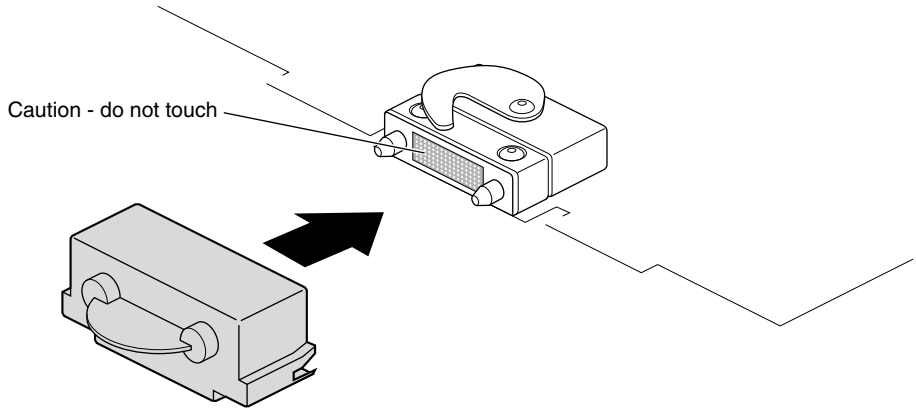



**Figure 2-10** Placing the Compression Cap on the Compression Connector

6. Place a cap on each compression connector on the back of the system module. (Compression connector caps come with the workstation.)

**Warning: The heat sinks on the CPU and system module become very hot. Wait 5 minutes before touching them, and then test before touching them.**

## Installing and Removing a CPU/Processor

Your OCTANE workstation uses either a single or a dual CPU (processor). The installation procedure is the same for a single or dual processor of any speed.

### Removing a CPU

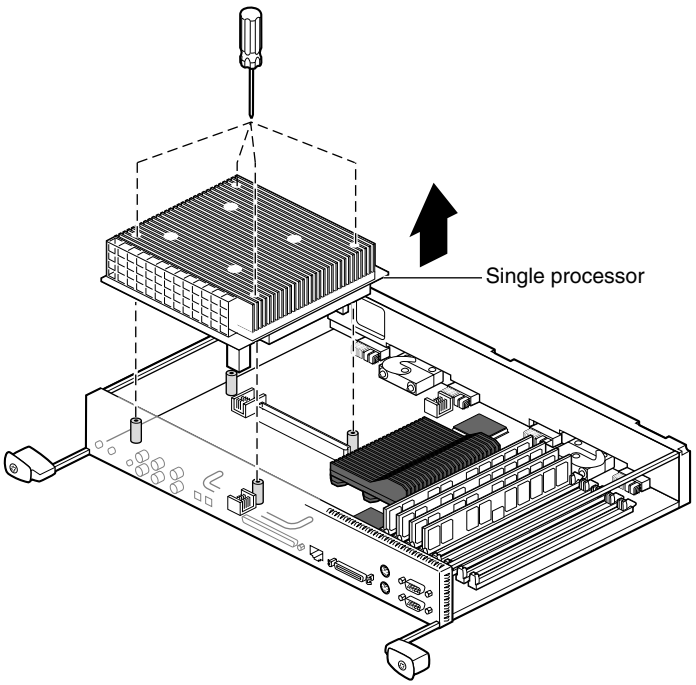



**Figure 2-11** Removing the Single Processor

To remove a CPU, you must first power off the workstation, wait 5 minutes to allow the heat sinks to cool, attach the wriststrap, and remove the system module. If you have not already done so, go to "Preparing the Workstation to Remove and Install a CPU and Memory" on page 36 and follow the instructions through removing the system module. Then return to this section and follow these instructions:

1. Loosen the four captive Phillips screws holding the CPU in place. The dual processor has six screws.

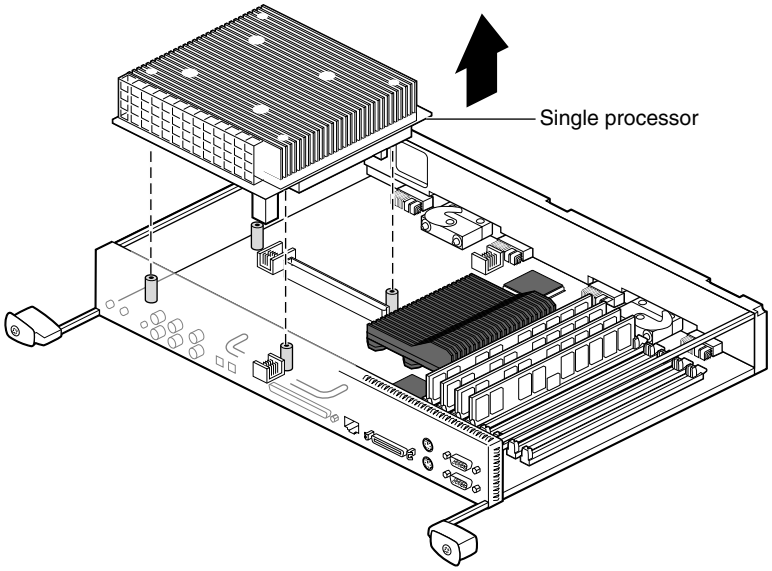



**Figure 2-12** Lifting the Single Processor From the System Module

**Caution:** Do not remove the four inner screws (not Phillips) holding the heatsink to the CPU.

2. Slide your fingers under the edge of the single processor closest to the back of the module, and push up to release it. You may need to use two hands to lift it out.
3. Go to step 4 for instructions on lifting the dual processor from the system module.

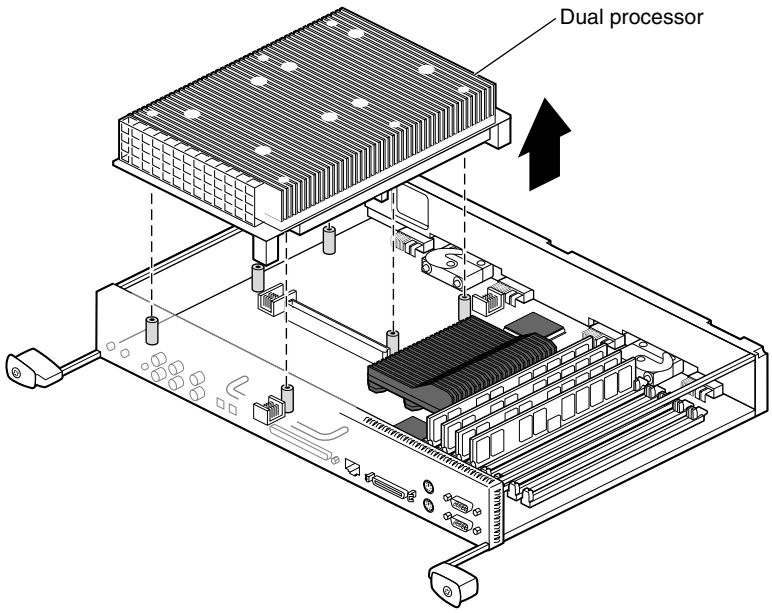



**Figure 2-13** Lifting the Dual Processor From the System Module

4. Slide your fingers under the side bar of the system module and under the dual processor and push up to release it. After releasing it, lift it out of the system module.

## Installing a CPU/Processor

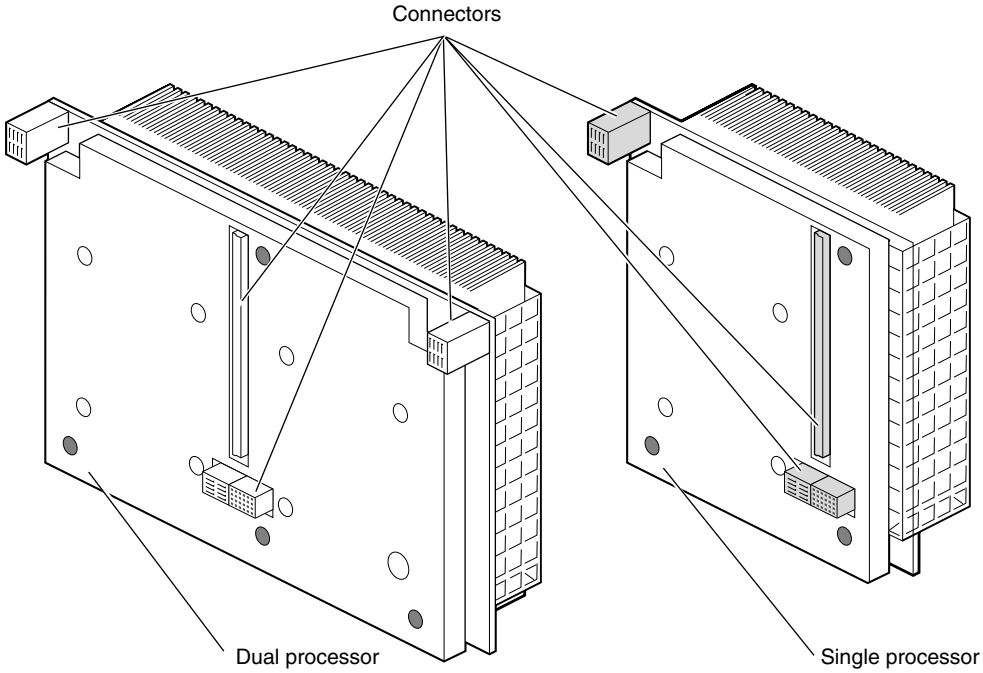



**Figure 2-14** Viewing the Connectors on the Underside of the CPUs

To install a CPU, you must first power off the workstation, wait 5 minutes after powering off the workstation to allow the heat sinks to cool, attach the wriststrap, remove the system module, and remove a CPU. If you have not already done so, go to "Preparing the Workstation to Remove and Install a CPU and Memory" on page 36 and follow the instructions through removing the CPU. Then return to this section and follow these instructions:

1. Turn over the CPU to determine where the connectors are located. Align the connectors on the base of the CPU with the connectors on the system board.
2. If you are installing a single processor, place it on the side of the system module closest to the panel of connectors. See Figure 2-15.

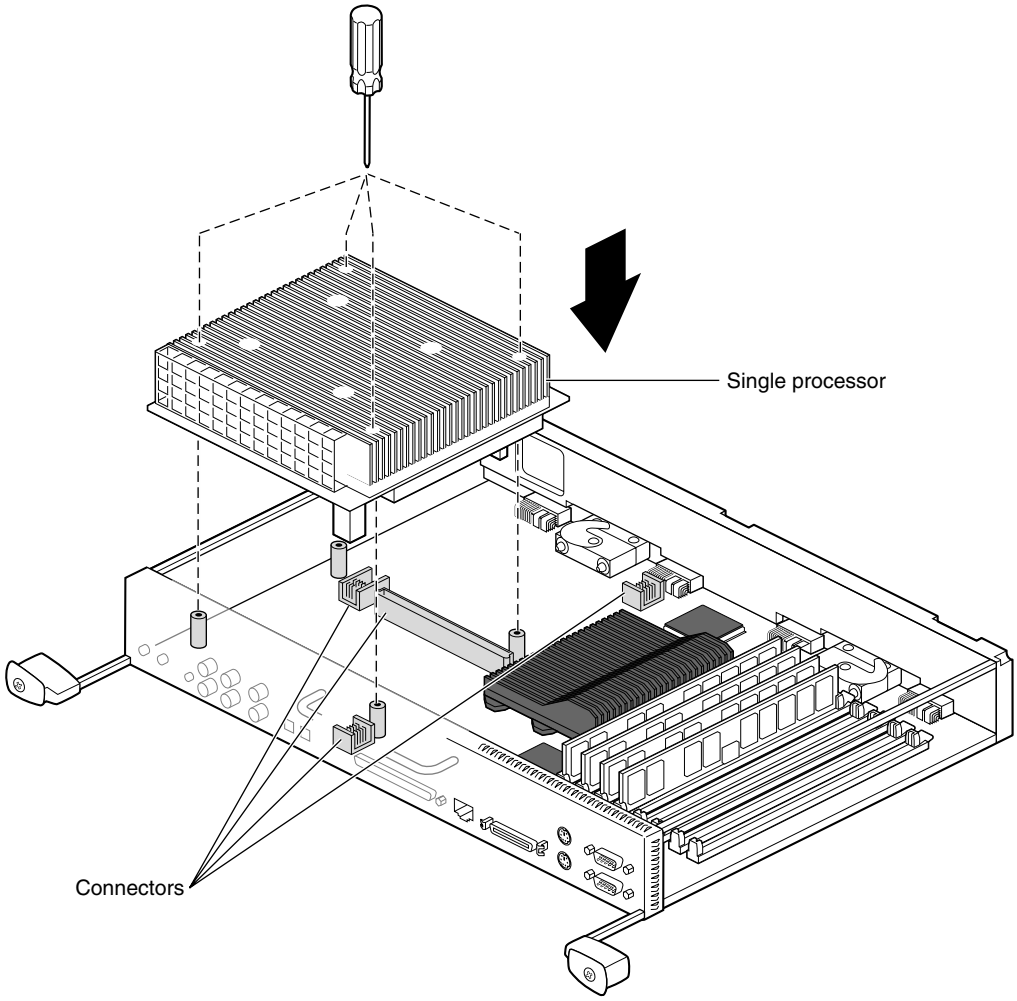



**Figure 2-15** Installing a Single Processor

3. Lower the CPU onto the standoffs and connectors as shown in Figure 2-15. (See Figure 2-16 for an illustration of the dual processor installation.)
4. Tighten the four captive screws to the standoffs. (The dual processor has six captive screws.)

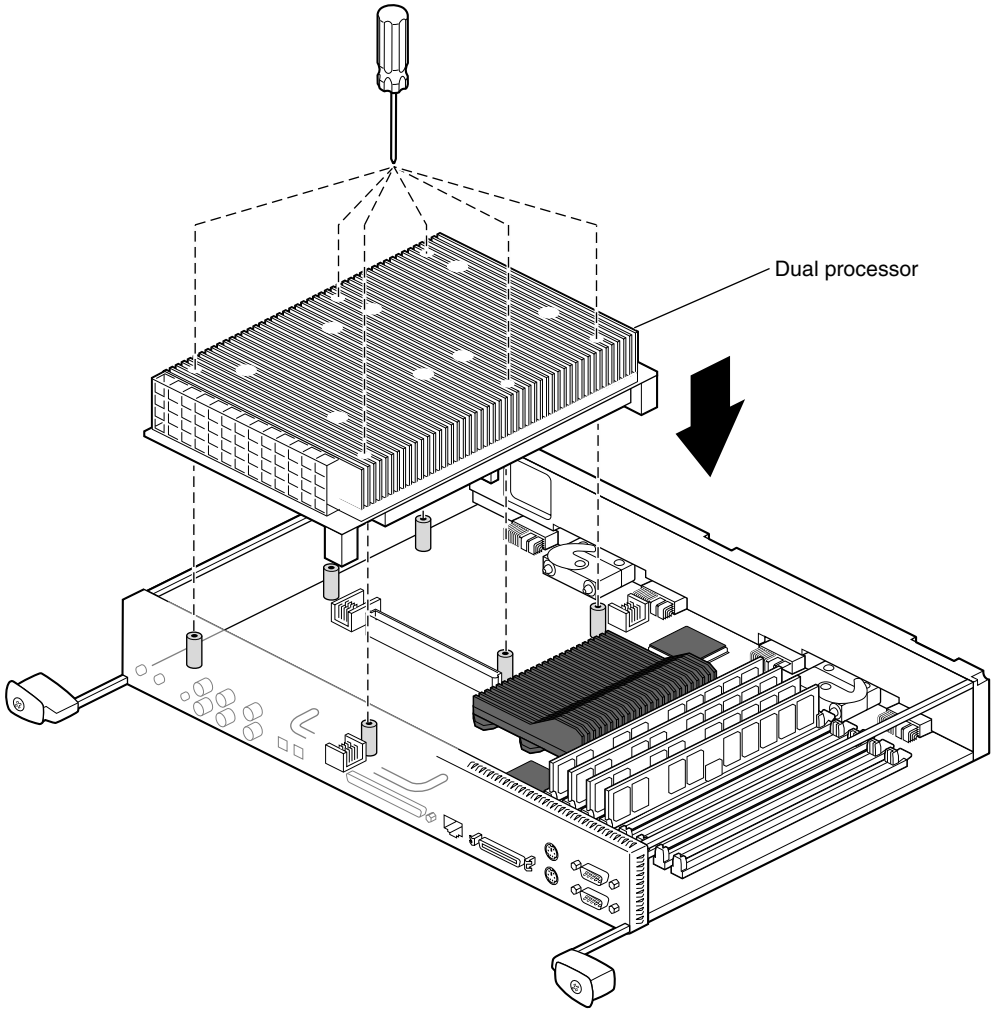



**Figure 2-16** Installing the Dual Processor

You have finished installing the CPU and are ready to replace the system module.

Go to "Replacing the System Module" on page 57.

## Installing and Removing Memory

To install or remove memory, you must power off the workstation, wait 5 minutes after powering off the workstation to allow the heat sinks to cool, attach the wriststrap, and remove the system module. Follow the instructions for preparing the workstation and removing the system module, "Preparing the Workstation to Remove and Install a CPU and Memory" on page 36 through, "Removing the System Module." Then return to this section.

**Caution:** Dual inline memory modules (DIMMs) are extremely sensitive to static electricity. Handle the DIMMs carefully and wear the wrist strap to avoid the flow of static electricity.

### About Memory

Before you install DIMMs in your OCTANE workstation, read the following information.

- Bank 1 (sockets 1 and 2) must always be filled.
  - Minimum memory configuration is 64 MB in a bank. (2 x 32 MB DIMM)
  - Maximum configuration is 512 MB in a bank. (2 x 256 MB DIMM)
- Banks are filled sequentially; when Bank 1 is full, fill Bank 2. Do not skip banks.
- Each bank is either empty, or contains two DIMMs, one in each of the two sockets.
- Each banks of DIMMS must contain two DIMMs of the same capacity or density and of the same type.

  Capacity refers to the number of megabytes in a DIMM: 32, 64, 128, and so on.

  Type refers to the construction of the DIMM. Because DIMM construction cannot be determined visually, it is important to know that two DIMMs are the same type before you begin installation. If you insert two DIMMs of different types, the system does not work. Banked DIMMs and stacked DIMMs are two examples of many different types of memory.
- SGI DIMMs have color coded labels with a part number in the middle of the label:
  - the 32 MB DIMM has a yellow label
  - the 64 MB stacked DIMM has a blue label
  - the 64 MB DIMM (not stacked) has a green label

  - the 128 MB DIMM has a brown label
  - the 256 MB stacked DIMM has a red label
- Minimum memory capacity in the OCTANE workstation is 64 MB. (2 x 32 MB DIMMs)
- Maximum memory capacity in the OCTANE workstation is 2 GB. (8 x 256 MB DIMMs)

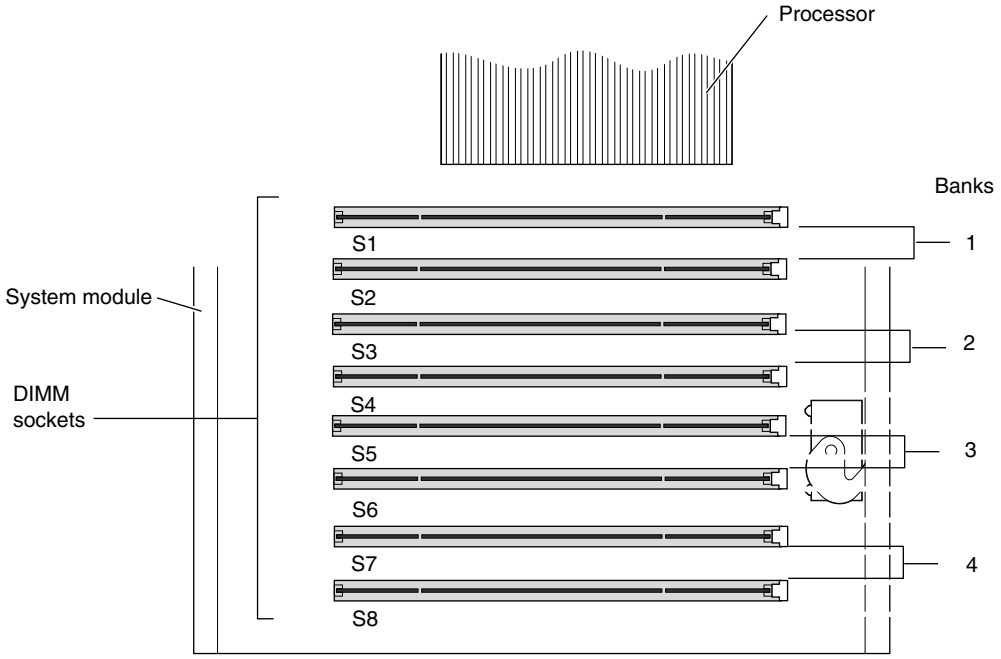



**Figure 2-17** Identifying DIMM Sockets and DIMM Banks

DIMM sockets are labeled between sockets, as shown in Figure 2-17.

## Removing Memory

If you have not already done so, power off the workstation, wait 5 minutes after powering off the workstation to allow the heat sinks to cool, attach the wriststrap, and remove the system module from the chassis. See “Preparing the Workstation to Remove

and Install a CPU and Memory" on page 36 and follow the instructions through removing the system module. Then return to this page.

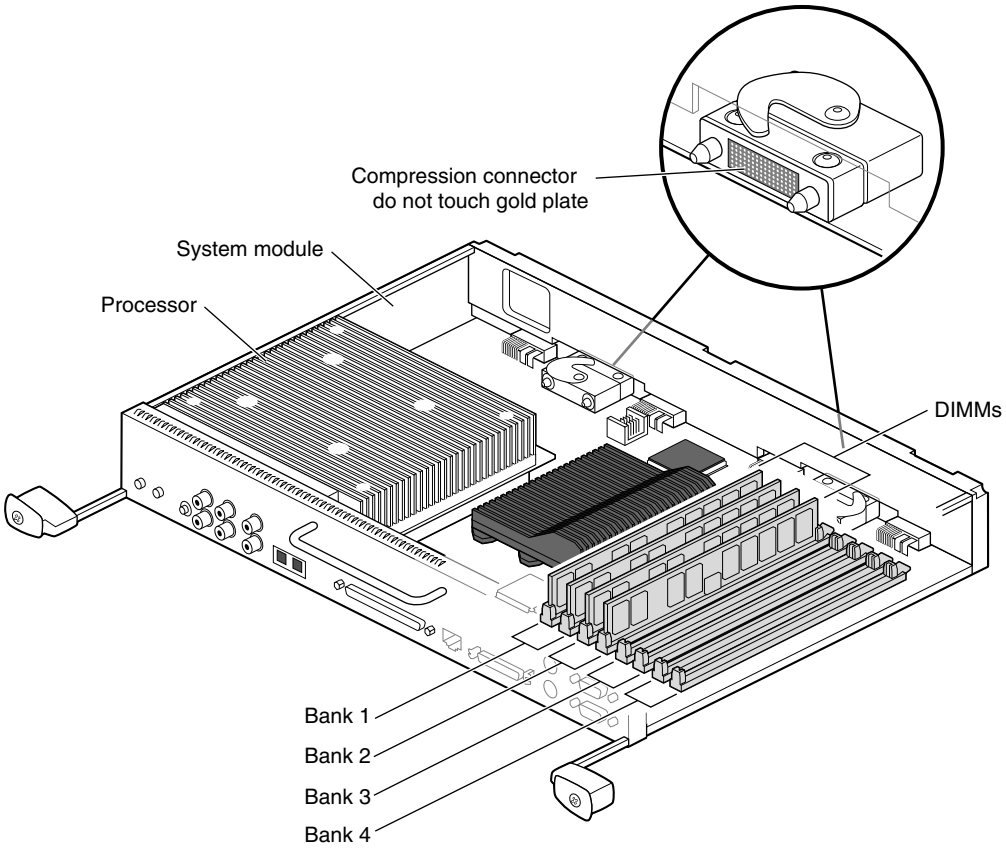



**Figure 2-18** Locating DIMMs on the System Module

1. With the system module lying on a flat, dry, antistatic surface, locate the DIMM banks and sockets as shown in Figure 2-17 and Figure 2-18.
2. Locate the DIMMs you want to remove.

   **Caution:** Do not touch the connector near the DIMM removal levers.

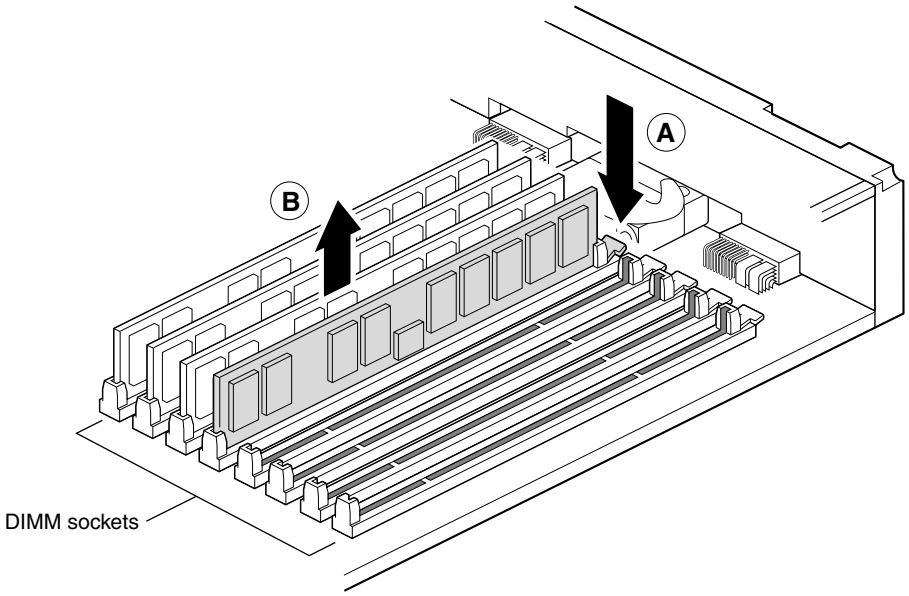



**Figure 2-19** Removing a DIMM

3. Remove the DIMMs.
   - Press down on the latch at the end of the DIMM socket. The DIMM partially ejects from the socket. (Step A)
   - Remove the DIMM. (Step B)

   **Note:** Both sockets in a DIMM bank must be either empty or populated. If you are removing one DIMM and not replacing it immediately, also remove the other DIMM in the bank and replace it when you install a new DIMM.

## Installing Memory

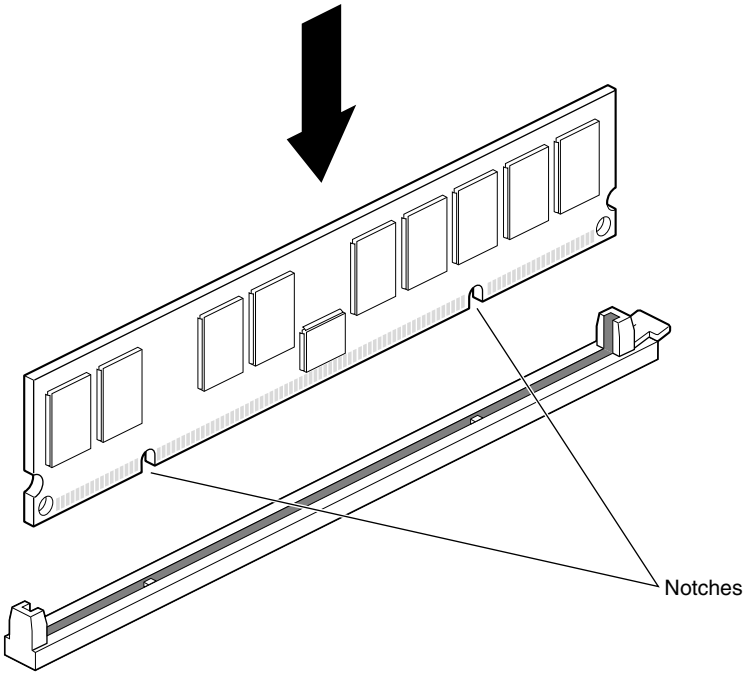



**Figure 2-20** Locating the Notches on a DIMM

Before installing memory, see "About Memory" on page 52. If you have not already done so, power off the workstation, wait 5 minutes after powering off the workstation to allow the heat sinks to cool, attach the wriststrap, and remove the system module to install memory. See "Preparing the Workstation to Remove and Install a CPU and Memory" on page 36 and follow the instructions through removing the system module. Then return to this page.

DIMMs are notched on the bottom so that they cannot be inserted incorrectly.

1. Insert the DIMM into the socket, gently but firmly. You hear a click as it is seated, and the latch on the end of the socket moves up.
2. Check to be sure both sockets in the bank are full. DIMMs must be installed in pairs.

You have finished installing memory and are ready to replace the system module.

## Replacing the System Module

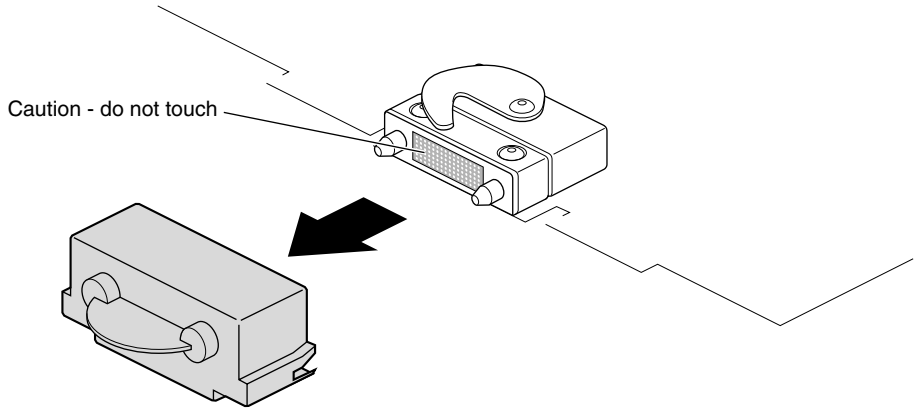



**Figure 2-21** Removing the Compression Connector Cap

1. Remove the caps on the compression connectors on the back of the system module. Do not touch the system module compression connectors as you lift the module into the workstation.

   **Caution:** Do not insert the system module into the workstation unless the power cord is unplugged from the electrical socket. Inserting the system module into an OCTANE workstation with the power cord connected to an electrical socket causes damage to the OCTANE workstation.

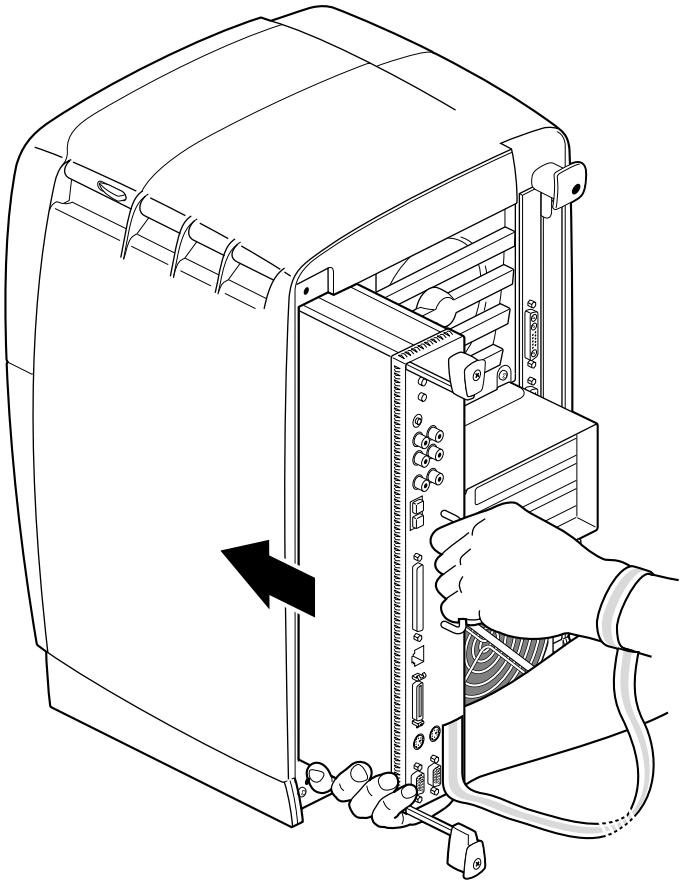


**Figure 2-22** Supporting the System Module

2. Grasp the system module by its immovable handle and support it with one hand as you slide it into the chassis.
3. Push the module completely into the chassis using the immovable handle. (Both sliding handles protrude.) The system module stops when it is slightly out of the chassis.

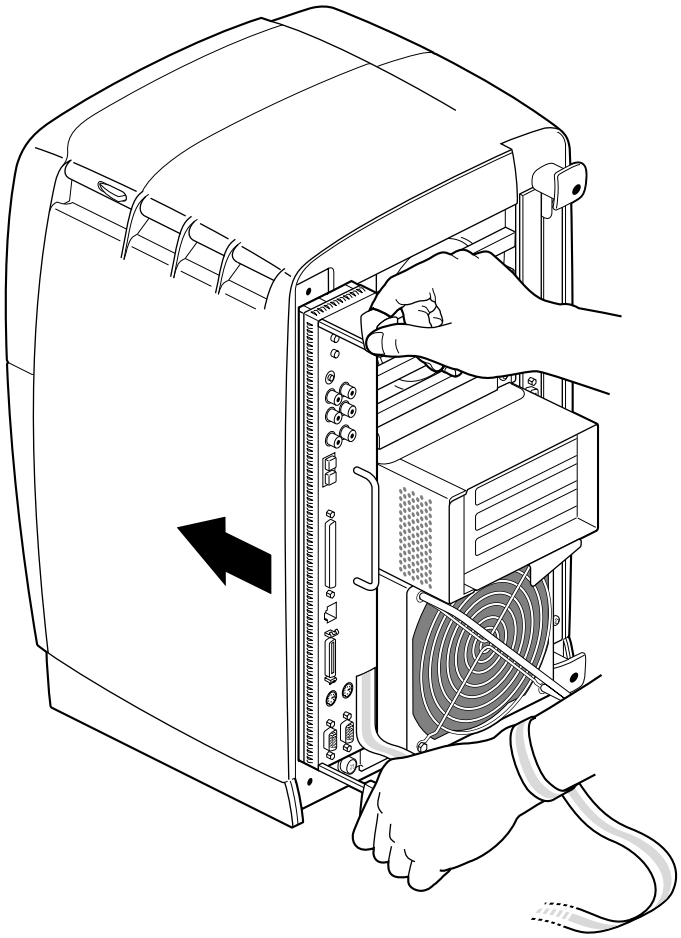


**Figure 2-23** Replacing the System Module in the OCTANE Workstation

4. Push the sliding handles simultaneously to connect the system module to the workstation.

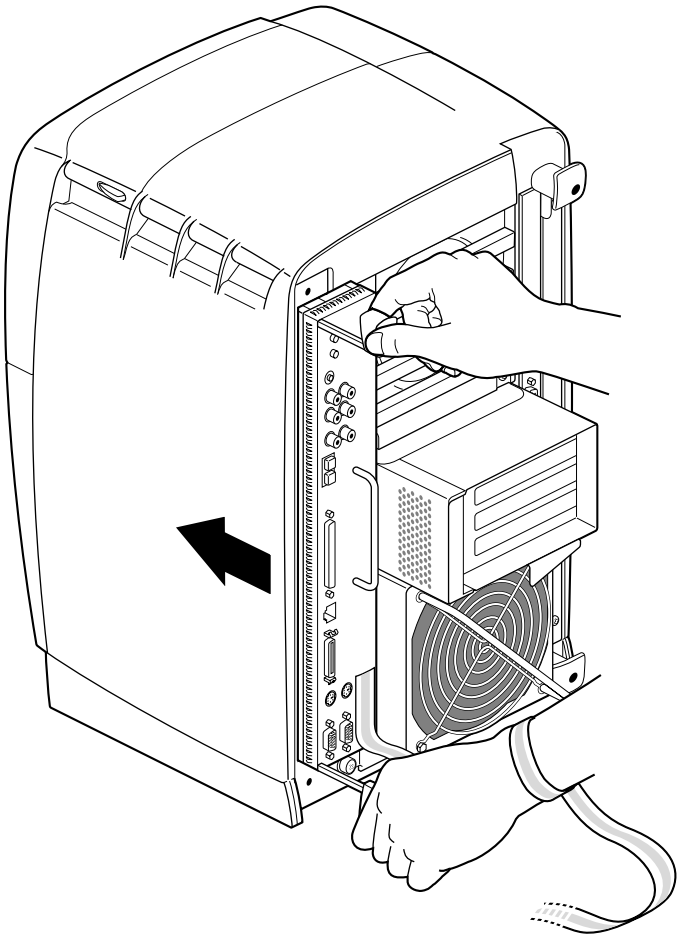


**Figure 2-24** Locking the System Module to the Frontplane

5. Push firmly on the handles to completely lock the system module to the workstation.

   The handles are completely recessed and the system module is flush with the chassis when it is fully seated and locked to the workstation.

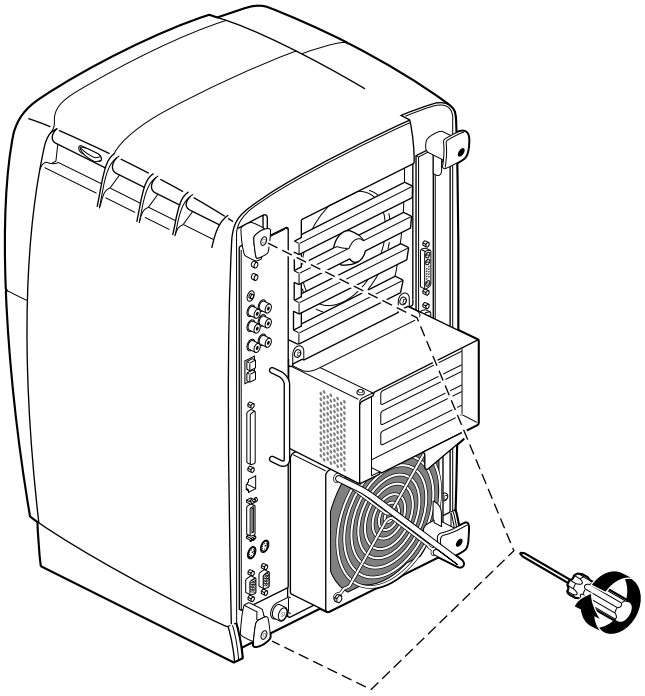


**Figure 2-25** Replacing the System Module Screws

6. Tighten the captive screws in the sliding handles until the system module is attached to the chassis.
7. Remove the wrist strap.

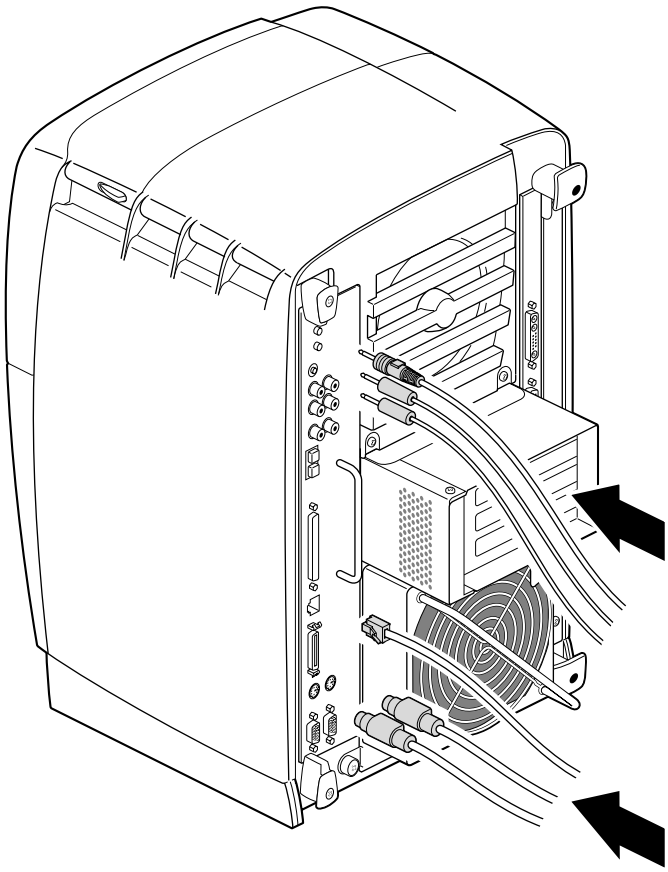


**Figure 2-26** Replacing Cables to the System Module

8. Replace any cables you removed.

## Powering On the OCTANE Workstation

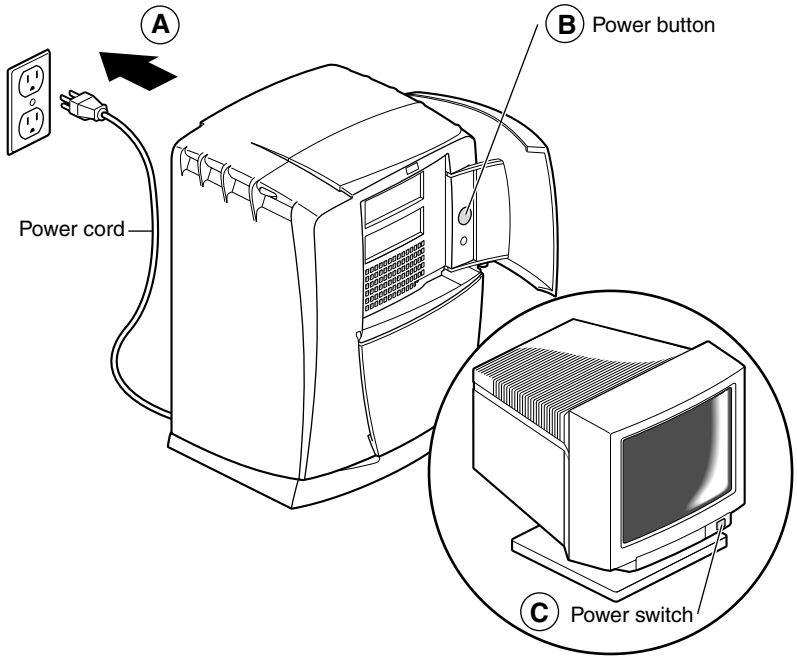



**Figure 2-27** Powering On the OCTANE Workstation

1. Plug in the power cord. (Step A)
2. Push the power button on the workstation. (Step B)
3. Press the power switch on the monitor. (Step C)

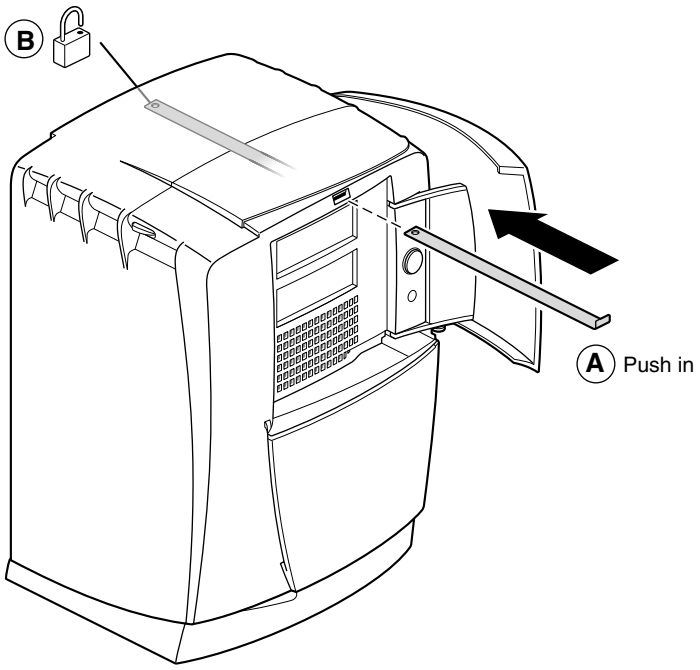



**Figure 2-28** Installing the Lockbar

4. Replace the lockbar.
   - Open the cover on the front of the OCTANE workstation.
   - Slide the lockbar into the lockbar slot. (Step A)
   - Insert the lock through the lockbar at the back of the workstation. (Step B)

## Verifying Memory Installation

1. After you have powered on your system, go to the Toolchest > System Manager > Hardware and Devices > "About This System" and check the amount of memory listed after the "Main Memory" heading.

   The amount of memory shown should equal the amount of memory you removed or installed. For example, if you originally had 256 MB, then removed two 32 MB DIMMs, the System Manager should show that you have 192 MB of memory.

2. If the amount of memory is incorrect, follow the directions at the beginning of this chapter to power off your system and check the installation or removal procedure.
   - Check the angle of the DIMMs. They should be upright and completely seated.
   - Check that each bank is populated with two DIMMS, and that they are the same type. You must have an even number of DIMMS installed.
   - Check the color of the label on the DIMM. Both DIMMs in a bank must be the same with the same colored label.
   - Complete the installation or removal procedure. If, after you have powered on the OCTANE workstation, checked the amount of memory in "About This System," and found that the amount of memory that is registered is still incorrect, see Chapter 9, "Troubleshooting."

*Chapter 3*

# Installing and Removing the Power Supply

This chapter provides information about installing and removing the power supply in the OCTANE workstation.

*Chapter 3*

# Installing and Removing the Power Supply

This chapter provides information on installing or removing a power supply.

The following topics are covered


- "Preparing the Workstation to Remove or Install the Power Supply" on page 70
- "Removing the Power Supply" on page 71
- "Installing the Power Supply" on page 75

## Preparing the Workstation to Remove or Install the Power Supply

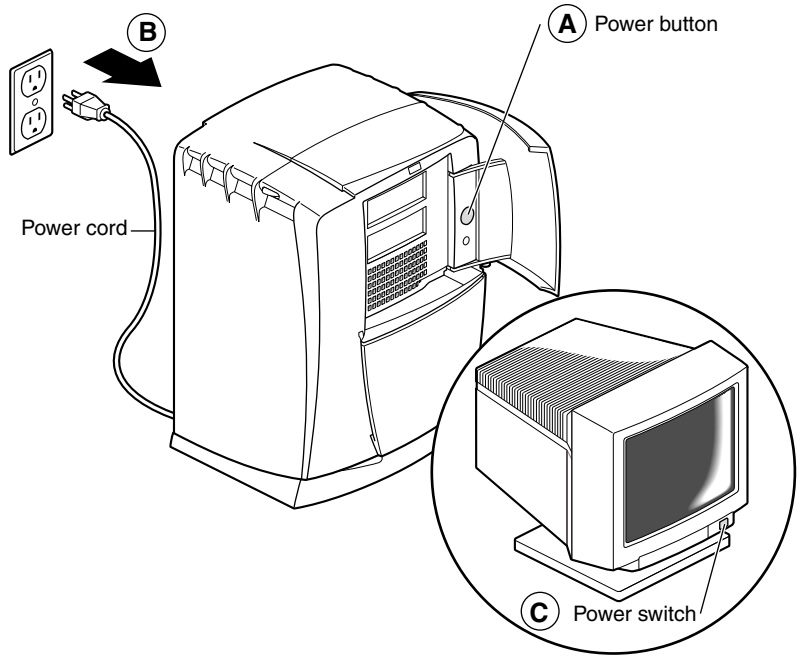



**Figure 3-1** Powering Off the OCTANE Workstation

Before removing the power supply, you must power off the OCTANE workstation.

1. Open the cover and push the power button to power off the OCTANE workstation. (Step A)
2. Unplug the power cable from the electrical socket. (Step B)
3. Press the monitor power switch to power off the monitor. (Step C)
4. Face the back of the workstation.

## Removing the PCI Module

If you do not have a PCI module installed, go to the next section.

If you have a PCI module installed, you need to remove it before removing the power supply. Go to Chapter 4, “Removing the PCI Module” on page 87 for instructions on removing the PCI module. Then return here and follow the instructions below to remove the power supply.

## Removing the Power Supply

If you have not already done so, power off the OCTANE workstation and remove the power cable from the electrical outlet. If it is installed, remove the PCI module as well. See “Preparing the Workstation to Remove or Install the Power Supply” on page 70 and follow the directions for powering off the workstation (and removing the PCI module) if you have not already done so.

You do not need to use the wriststrap when removing the power supply.

**Caution:** Do not remove the power cable from the power supply until the power supply is out of the chassis.

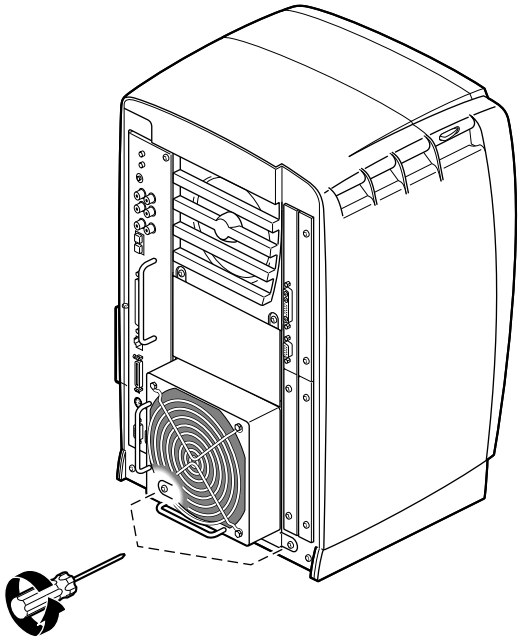


**Figure 3-2** Removing the Screws That Hold the Power Supply to the Chassis

**Warning: Be sure you have removed the power cable from the electrical socket before beginning this procedure.**

1. Locate the two captive screws near the bottom of the power supply that secure it to the chassis.
2. Using a Phillips screwdriver, loosen the captive screws until they release from the chassis.

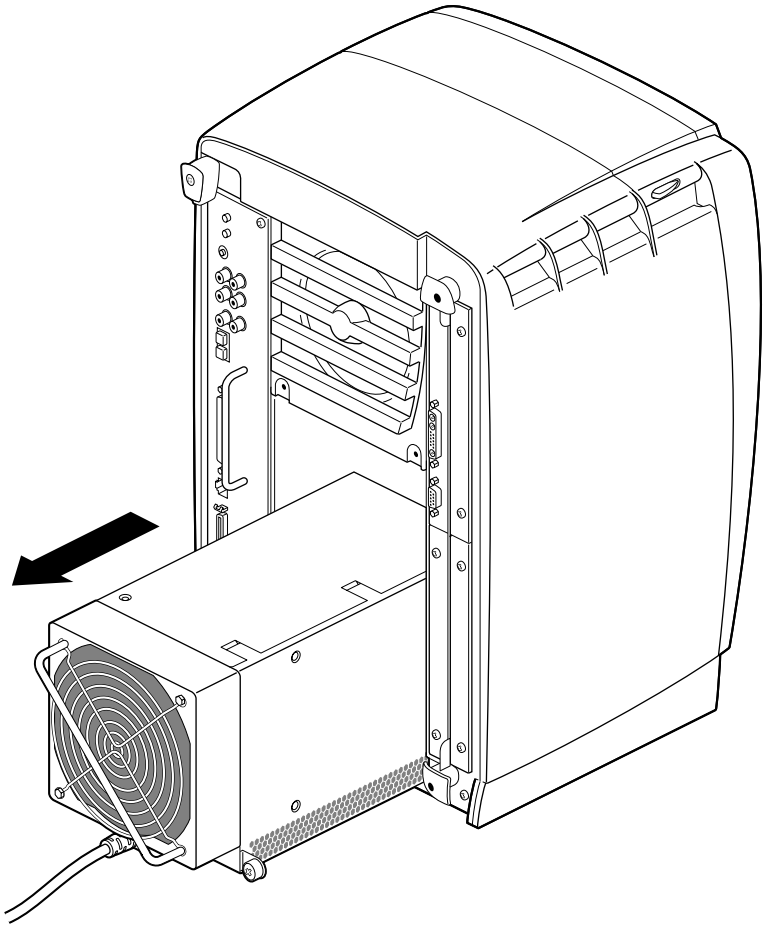


**Figure 3-3** Removing the Power Supply From the OCTANE Workstation

3. Grasp the handle and pull the power supply from the chassis.

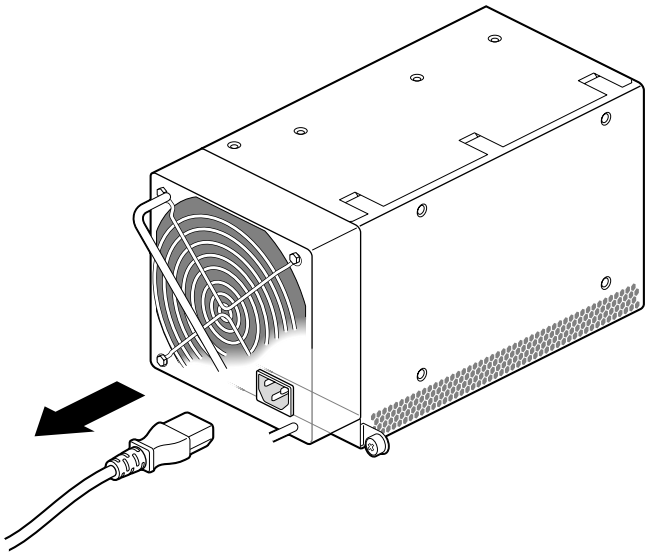


**Figure 3-4** Removing the Power Supply Cable

4. Tilt the power supply up, and unplug the power cable.

## Installing the Power Supply

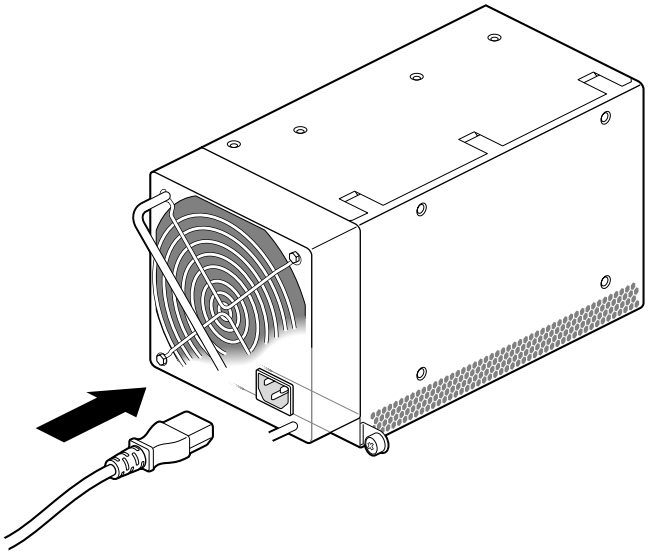


**Figure 3-5** Installing the Power Supply Cable

Follow the steps below to install the power supply.

1. Tilt the power supply upward and plug the power cable in the power supply.

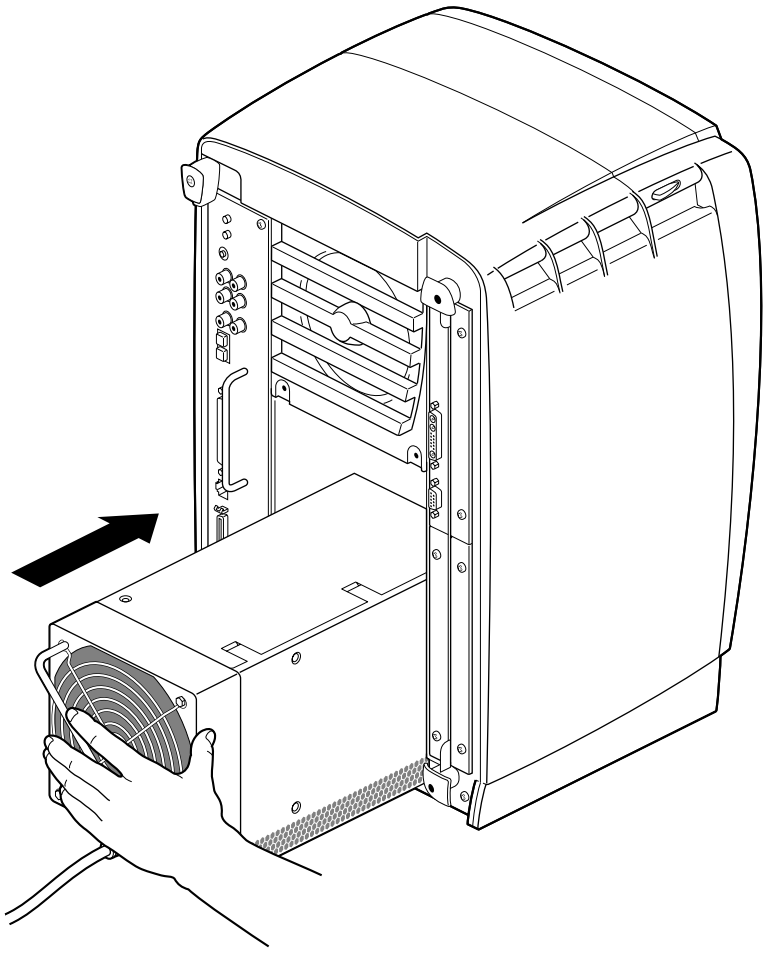


**Figure 3-6** Sliding In the Power Supply

2. Slide in the new power supply.
3. Push on the power supply to firmly connect it to the frontplane.

   **Note:** Be sure the tabs (holding the screws) on the power supply are flush with the chassis.

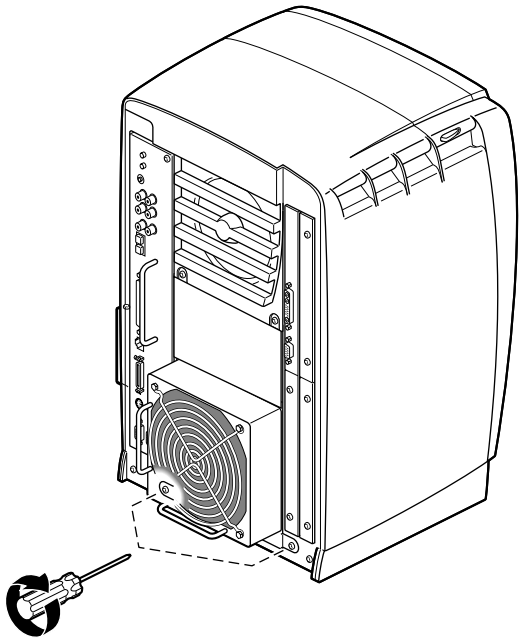


**Figure 3-7** Inserting and Tightening the Screws

4. Tighten the screws that attach the power supply to the workstation.

You have finished installing the power supply.

To reinstall the PCI module, turn to Chapter 4, “Installing the PCI Module” on page 117 and follow the instructions through powering on the OCTANE workstation.

If you are not installing a PCI module, you are ready to power on the OCTANE workstation. Go to the next section.

## Powering On the OCTANE Workstation

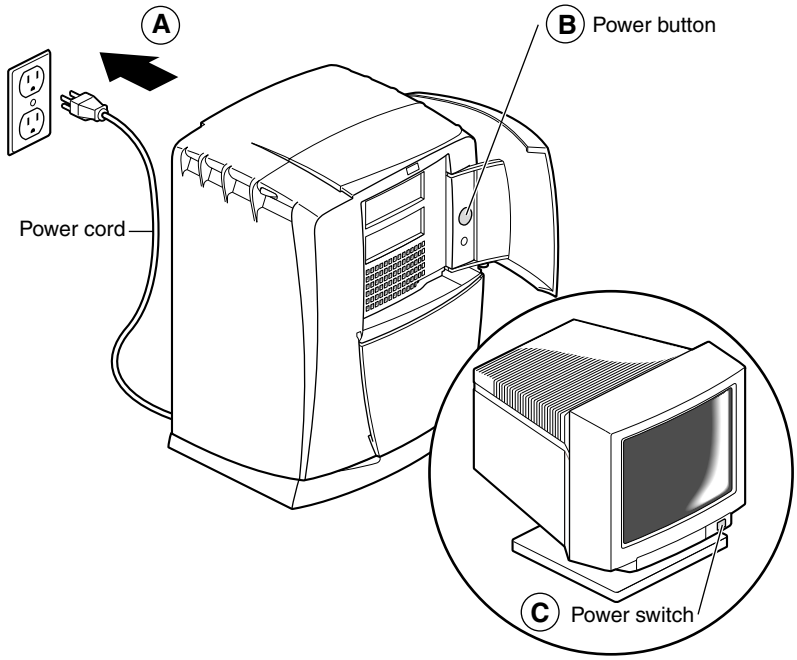



**Figure 3-8** Powering On the OCTANE Workstation

1. Plug the power cable into an electrical outlet. (Step A)
2. Press the power button on the OCTANE workstation. (Step B)
3. Press the power switch on the monitor. (Step C)

*Chapter 4*

# Installing and Removing PCI Boards

This chapter provides information about installing and removing PCI boards and the PCI module in the OCTANE workstation.

*Chapter 4*

# Installing and Removing PCI Boards

This chapter contains information on installing and removing PCI boards and the PCI module.

The following topics are covered in this chapter


- "About the PCI Module and Boards" on page 83
- "Preparing the Workstation to Install or Remove PCI Boards" on page 84
- "Removing the PCI Module" on page 87
- "Opening the PCI Module" on page 92
- "Identifying a PCI Slot" on page 94
- "Installing a PCI Board" on page 94
- "Removing a PCI Board" on page 107
- "Installing the PCI Module" on page 117
- "Verifying the PCI Board Installation" on page 124

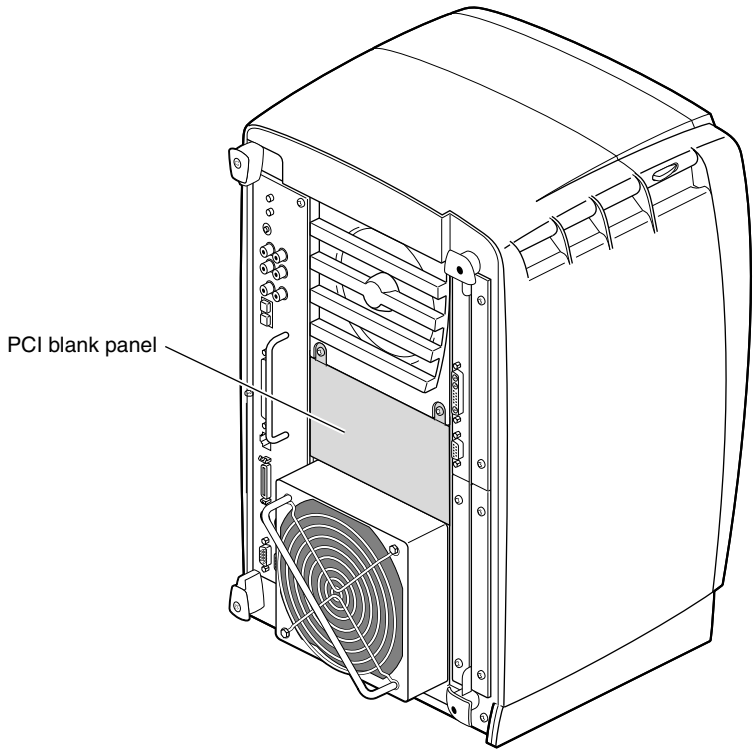



**Figure 4-1** Workstation Without the Optional PCI Module

The PCI module is an optional module of the OCTANE workstation. If your OCTANE workstation does not have a PCI module, a blank panel covers the opening for the PCI module.

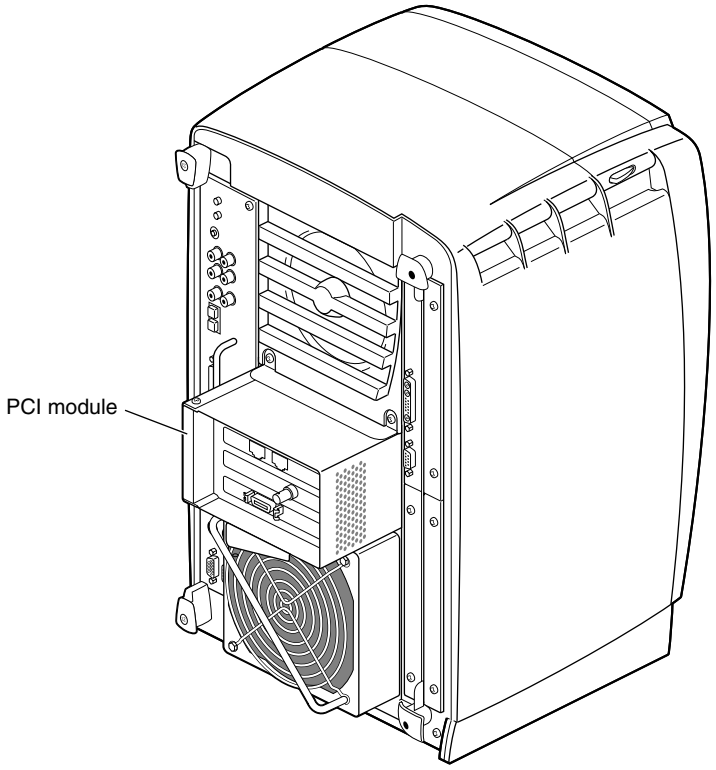



**Figure 4-2** Workstation With the Optional PCI Module

If your OCTANE workstation has a PCI module installed, it protrudes from the rear of the workstation. See Figure 4-2.

## About the PCI Module and Boards

Total power for the PCI module (the sum of power for all boards from all power supply rails) must not exceed 45.0W (average 15.0W per board).

The OCTANE PCI module is a 5V system environment.

See Appendix C, “Technical Specifications,” for more information about power specifications for the PCI module.

The PCI module supports full- or half-size boards. A maximum of three boards can be installed in the PCI module. The PCI module allows installation of PCI boards that have extra long I/O connectors. Possible board combinations are

- two full-size boards and one half-size board.
- one full-size board and two half-size boards.
- three half-size boards.

## Preparing the Workstation to Install or Remove PCI Boards

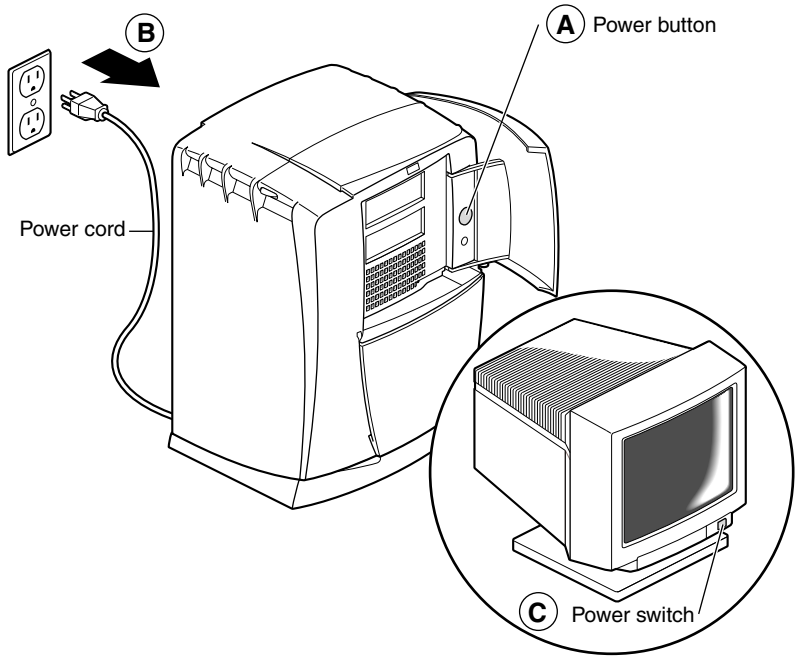



**Figure 4-3** Powering Off the OCTANE Workstation

To install or remove a PCI board, power off the OCTANE workstation, remove any cables attached to the PCI module, and attach a wrist strap.

1. Open the cover and push the power button to power off the OCTANE workstation. (Step A)
2. Unplug the power cord from the electrical outlet. (Step B)
3. Press the monitor power switch to turn off the monitor. (Step C)
4. Face the rear of the workstation.

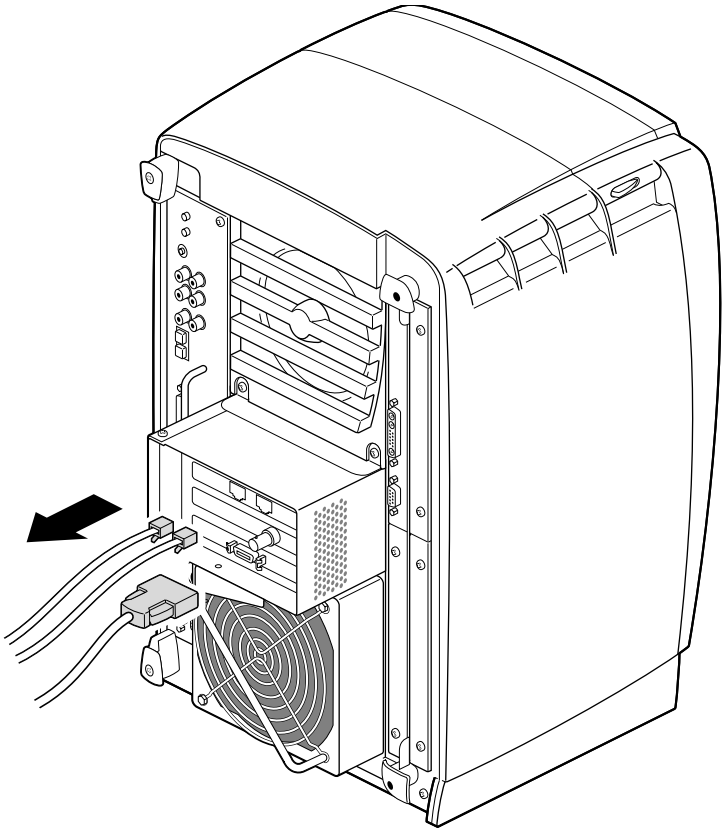


**Figure 4-4** Removing the Cables From the PCI Module

5. Remove any cables from the PCI module.

## Attaching the Wrist Strap

**Caution:** The components inside the OCTANE workstation are extremely sensitive to static electricity; you must wear the wrist strap while replacing parts.

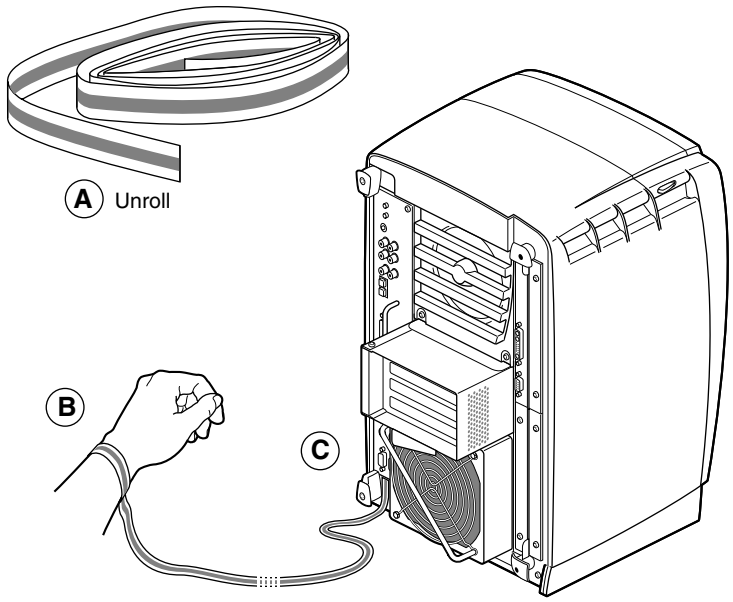



**Figure 4-5** Attaching the Wrist Strap to the Chassis

1. Unwrap the first two folds of the band and wrap the exposed adhesive side firmly around your wrist. (Step A)
2. Unroll the rest of the band and peel the liner from the copper foil at the opposite end. (Step B)
3. Attach the copper foil to the module you are removing: system module, XIO module, frontplane, or PCI module. Otherwise, use any convenient and exposed electrical ground, such as a metal part of the OCTANE workstation. (Step C)

## Removing the PCI Module

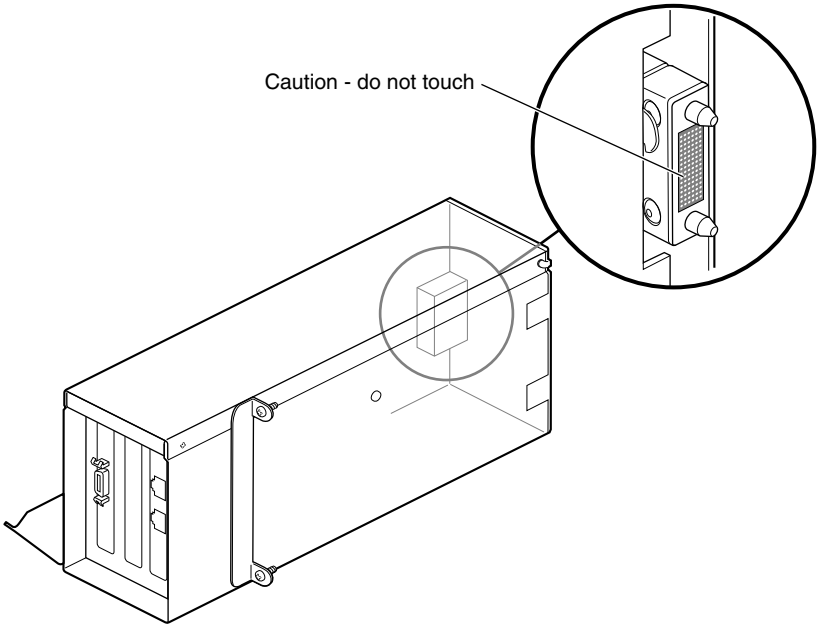



**Figure 4-6** Identifying the Compression Connector on the PCI Module

Installing or removing PCI boards requires removing the PCI module from the workstation.

**Caution:** The compression connector on the back of the PCI module is delicate and easily damaged. Do not touch or bump the gold area of the compression connector.

See Appendix B, for information about and care of the compression connectors.

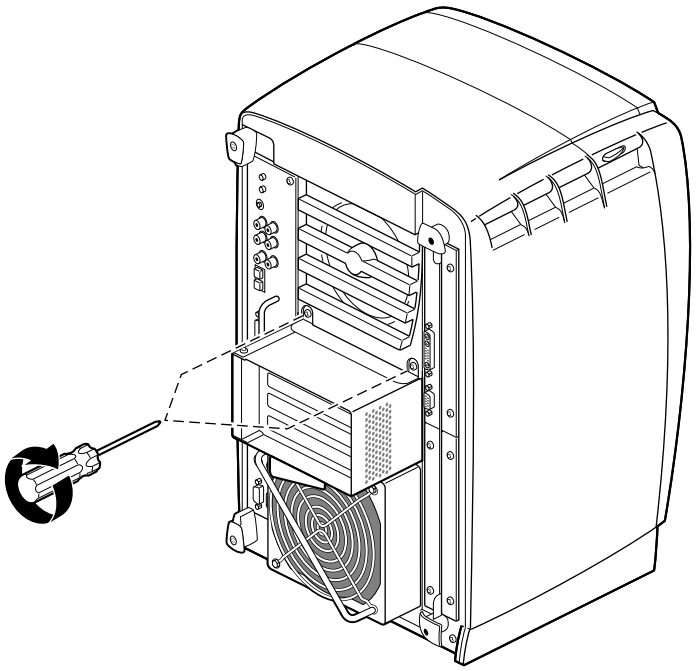


**Figure 4-7** Removing the Screws From the PCI Module

1. Loosen the two captive screws that secure the PCI module to the OCTANE workstation until they are disconnected from the chassis.

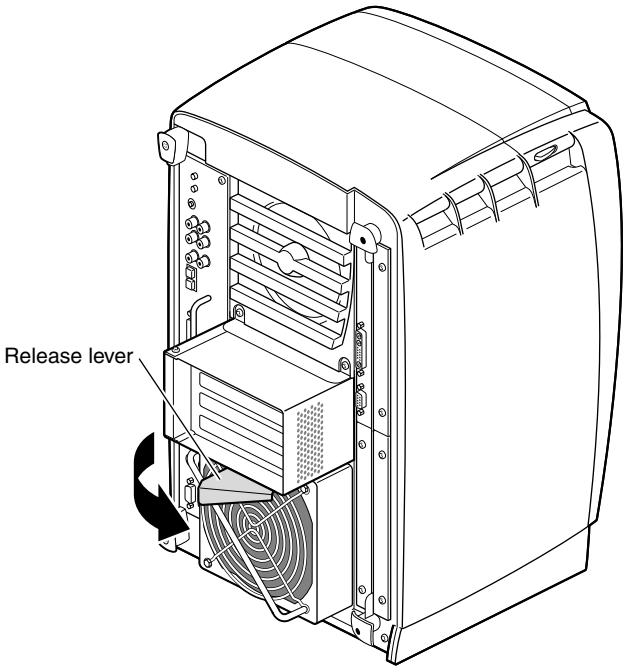



**Figure 4-8** Opening the Release Lever

2. Pull the release lever toward you and to the right.

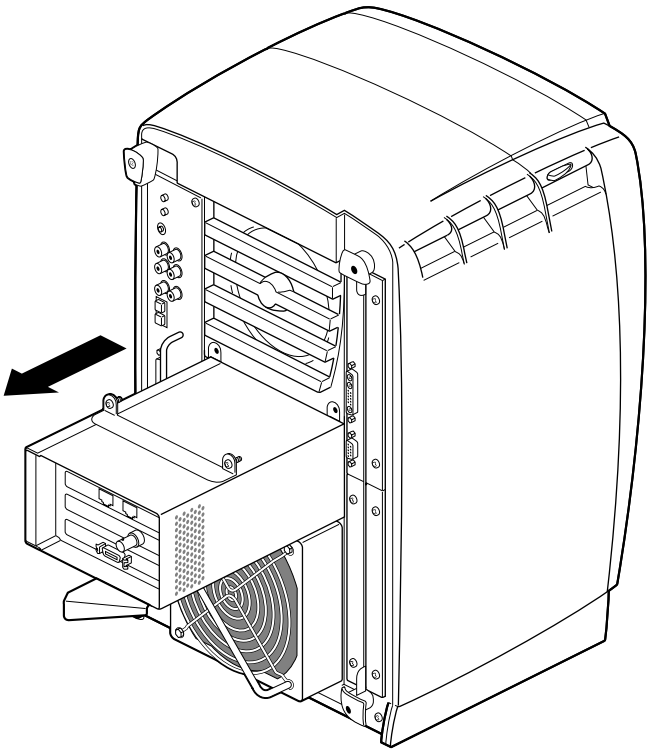


**Figure 4-9** Sliding the PCI Module From the Chassis

3. Slide the PCI module from the chassis. Place it on a dry, antistatic surface. Your desktop works well.

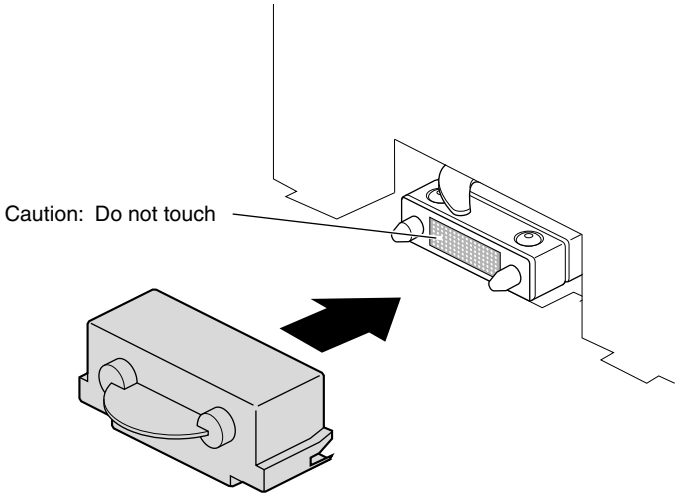



**Figure 4-10** Installing a Cap on the Compression Connector

4. Place a cap on the compression connector on the back of the PCI module. (Extra compression connector caps came with the workstation.)

## Opening the PCI Module

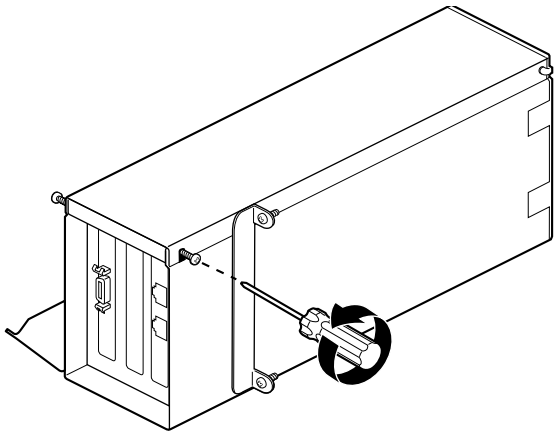


**Figure 4-11** Loosening the Screws on the PCI Module

If the PCI module is out of the workstation, go to step 1. If your PCI module is still in the workstation, go to "Preparing the Workstation to Install or Remove PCI Boards" on page 84 and follow the instructions through removing the PCI module.

1. Turn the PCI module as shown in Figure 4-11.
2. Loosen the screws holding the PCI module door closed, but do not remove them.

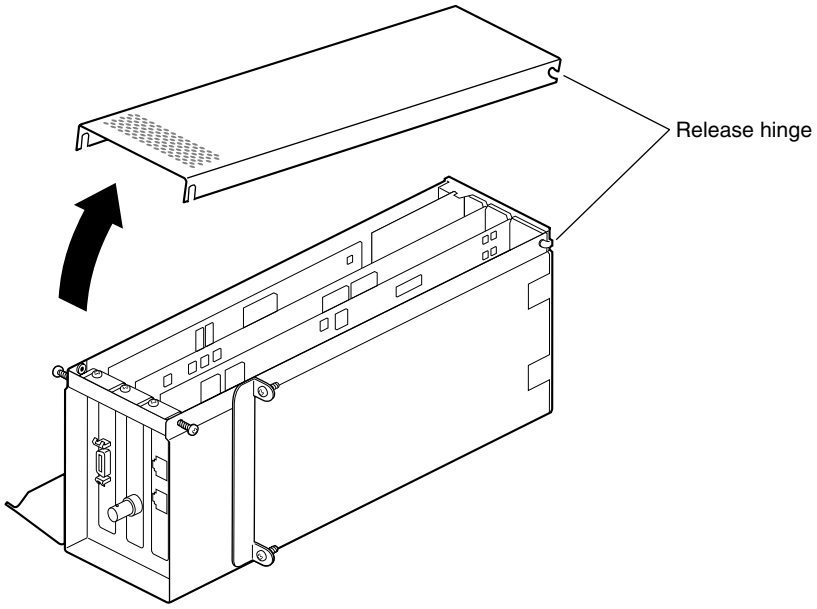



**Figure 4-12** Opening and Removing the PCI Module Door

3. Pull the PCI module door up and off. The release hinge allows the module door to slide up and off.

## Identifying a PCI Slot

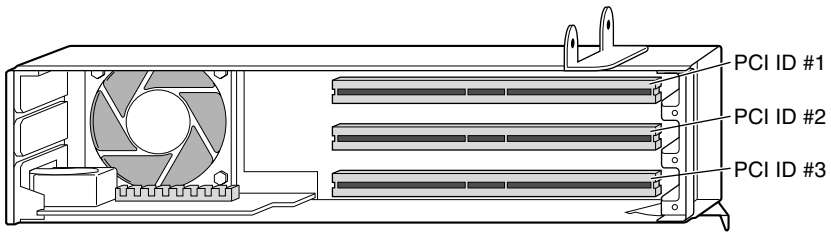



**Figure 4-13** Identifying PCI Slots

PCI physical slots and slots identified in software have the same designation. See Figure 4-13.

- The top slot is PCI ID #1.
- The middle slot is PCI ID #2.
- The bottom (half-sized) slot is PCI ID #3.

## Installing a PCI Board

If you have not already done so, turn to “Preparing the Workstation to Install or Remove PCI Boards” on page 84 for instructions on powering off the OCTANE workstation through removing the PCI module. Then return here for instructions on installing a PCI board.

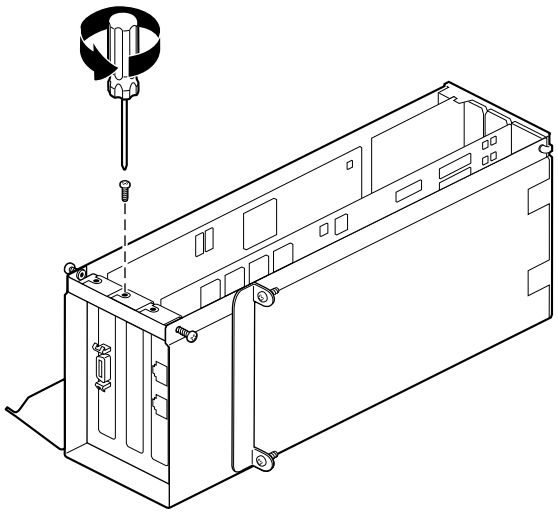


**Figure 4-14** Removing the Blank I/O Panel Screw

**Caution:** PCI boards are extremely sensitive to static electricity: You must wear the wrist strap while removing or installing PCI boards. The wrist strap prevents the flow of static electricity, which could damage the PCI board.

1. Remove the screw from the blank I/O panel that is in the slot in which you wish to install the PCI board.

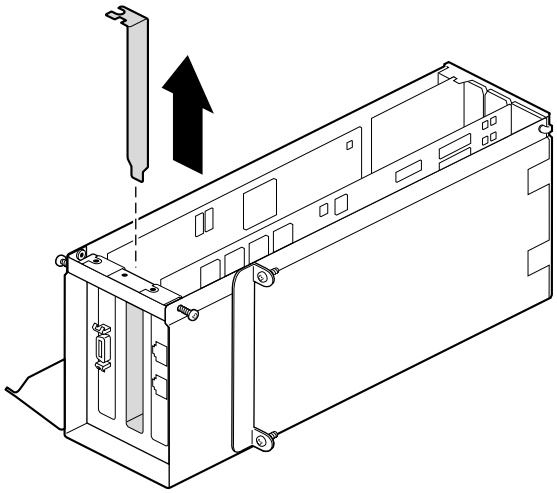


**Figure 4-15** Removing the Blank I/O Panel

2. Remove the blank I/O panel by pulling it up. Use the metal knob on the side of the blank panel to help lift it out of the PCI module.
3. Keep the I/O blank panel. If you later remove a PCI board and do not replace it, you must reinstall the blank panel.

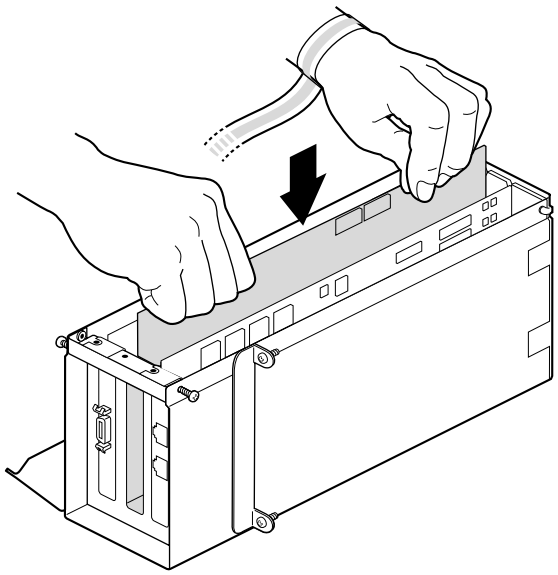


**Figure 4-16** Inserting a PCI Board Into the PCI Module

4. Insert the PCI board into the connector in the PCI module. Push gently but firmly until the PCI board snaps into place. If you have a board with an extra-long connector which prevents you from inserting the board, skip to step 6.

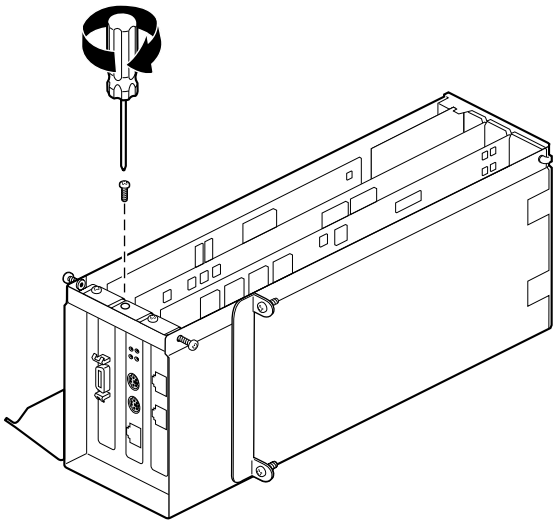


**Figure 4-17** Inserting the Board Screw

5. Insert and tighten the screw that holds the PCI board to the PCI module.

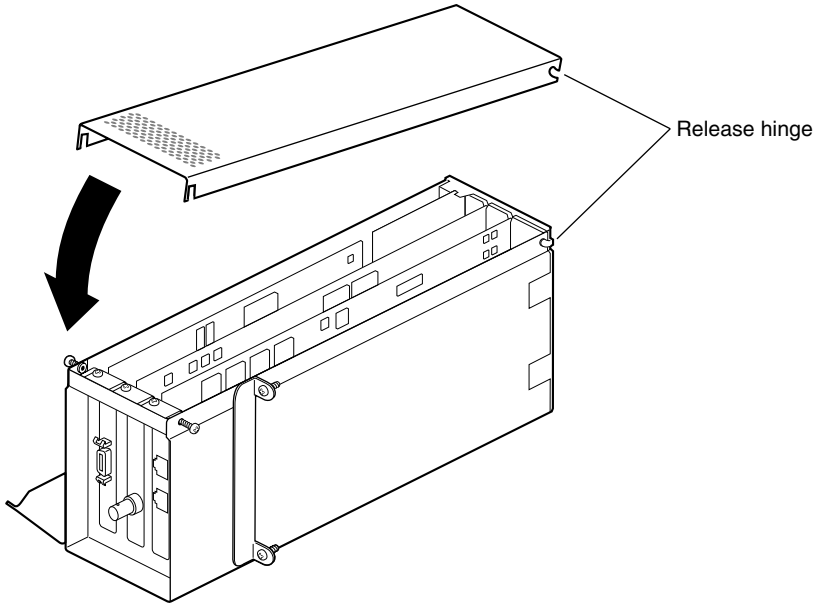



**Figure 4-18** Placing the Door on the PCI Module

6. Fit the hinged door to the PCI module.

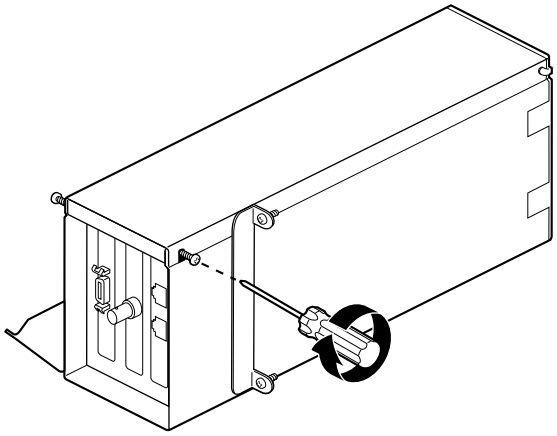


**Figure 4-19** Tightening the PCI Module Door Screws

7. Tighten the I/O door screws.

Go to “Installing the PCI Module” on page 117.

## Opening the I/O Door for Extra-Long Connectors

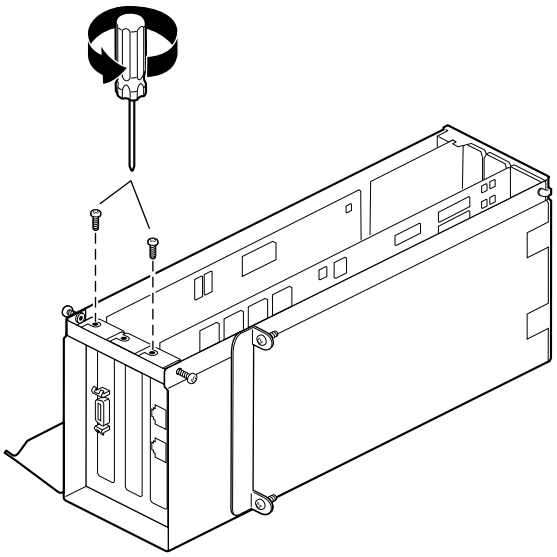


**Figure 4-20** Removing the Screws Holding Other Boards to the I/O Door

1. If there are boards installed in the PCI module, and you want to open the I/O door, remove the screws holding the boards to the I/O to allow the door to open.

   Do not remove any blank I/O panels. They are directly attached to the door and open with it.

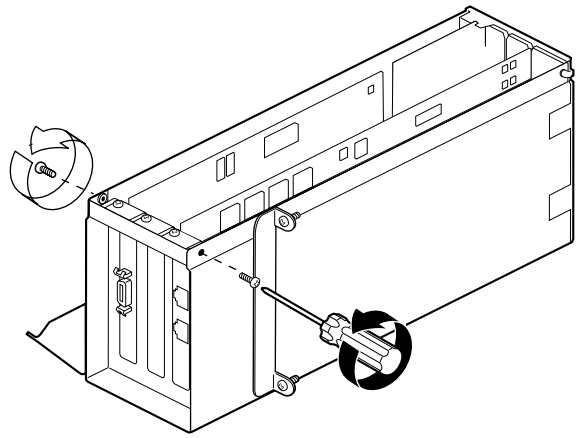


**Figure 4-21** Removing the PCI Module Door Screws

2. If you have a board with an extra-long connector, completely remove the screws that hold the door to the PCI module.

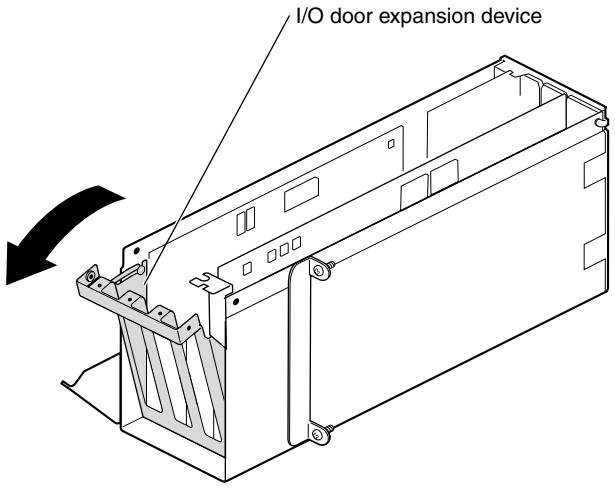



**Figure 4-22** Opening the I/O Door

3. Slide the I/O expansion door open.

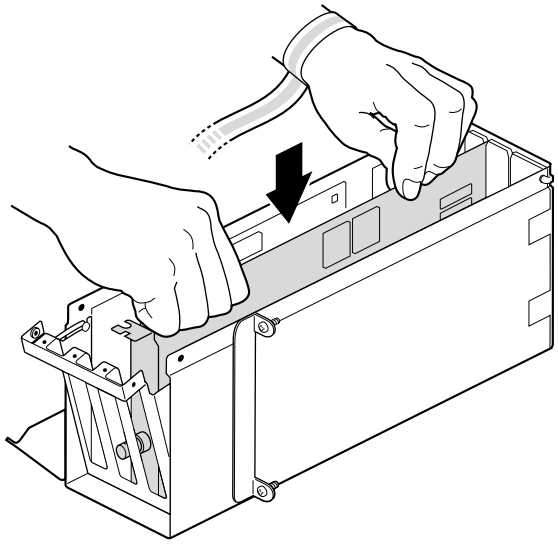


**Figure 4-23** Inserting a PCI Board With an Extra-long Connector

4. Insert the PCI board into the connector in the PCI module. Press gently but firmly until the board snaps into place.

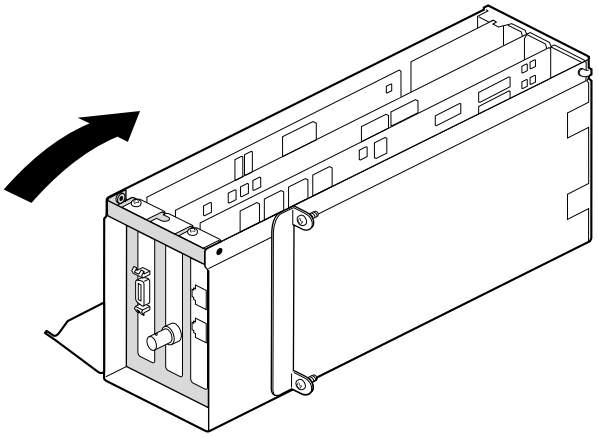


**Figure 4-24** Closing the I/O Door

5. Close the I/O door.

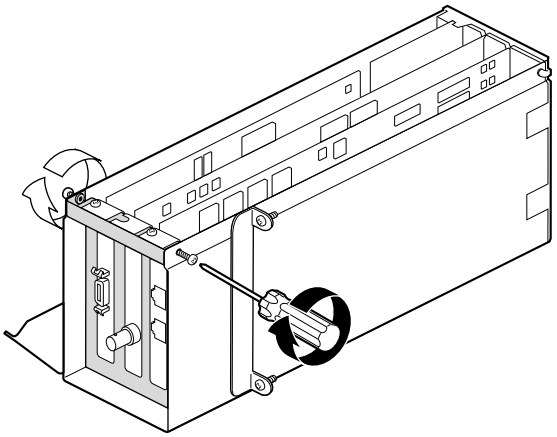


**Figure 4-25** Inserting and Tightening the I/O Door Screws

6. Insert the screws that hold closed the I/O panel door.

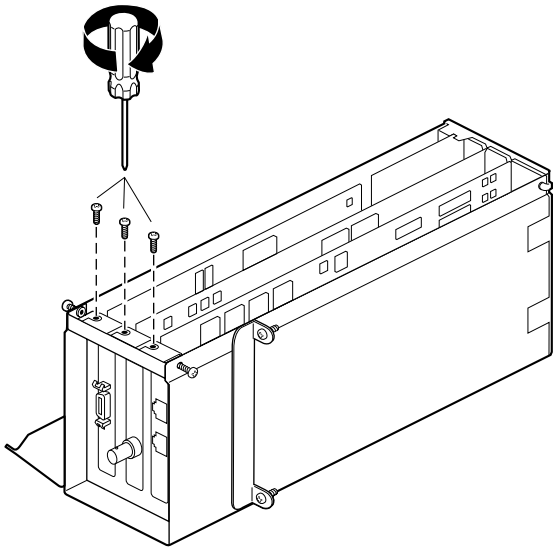


**Figure 4-26** Replacing the I/O Panel Screw

7. Insert the screws that holds all PCI boards to the I/O panel door.

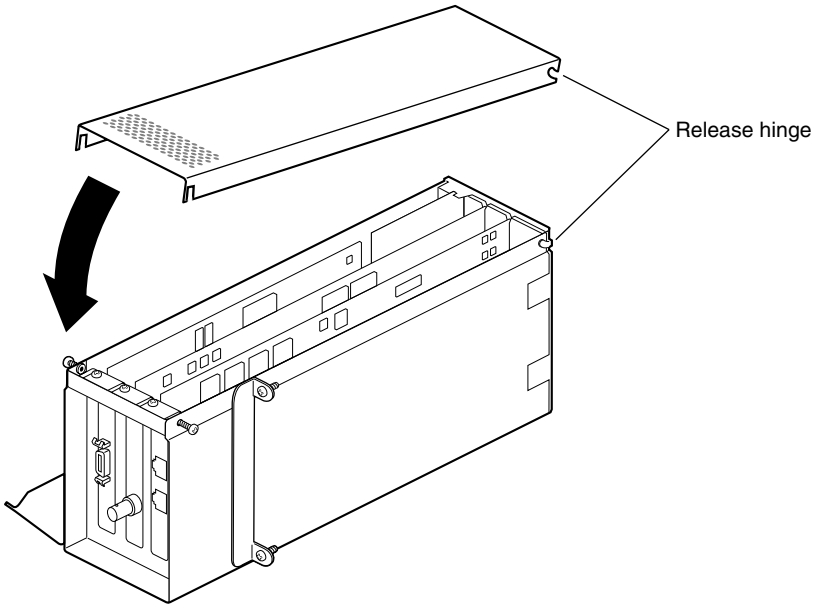



**Figure 4-27** Reconnecting the PCI Module Door

8. Fit the hinged door to the PCI module.

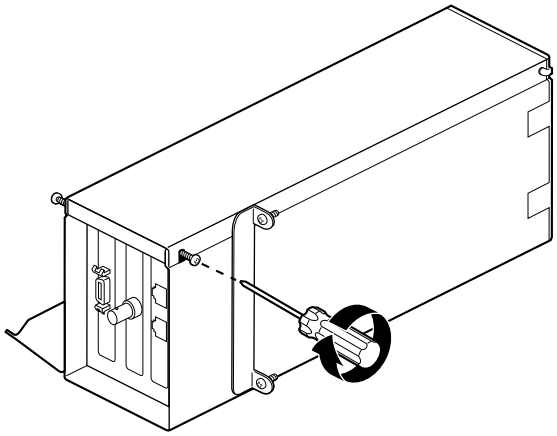


**Figure 4-28** Tightening the Screws of the PCI Module Door

9. Tighten the module door screws.

Go to “Installing the PCI Module” on page 117.

## Removing a PCI Board

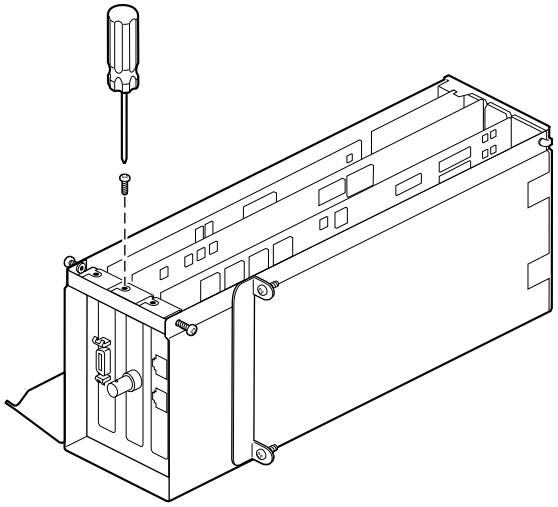


**Figure 4-29** Removing the Screw

If you have not already done so, go to "Preparing the Workstation to Install or Remove PCI Boards" on page 84 and follow the instructions from powering off the workstation through opening the PCI module. Then return here for instructions on removing the PCI board.

1. Remove the screw holding the PCI board to the module.
2. If you have a board with an extra-long connector, skip to step 5. Otherwise, go to step 3.

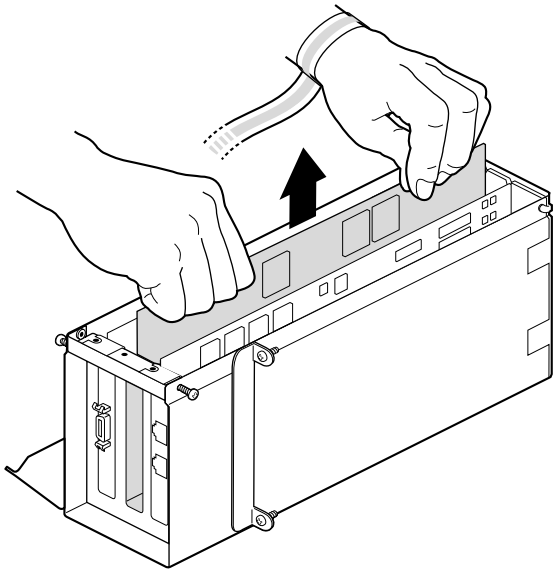


**Figure 4-30** Extracting the PCI Board

3. Grasp the PCI board on the top edge to extract it.
4. Pull up until the board releases. The board may be difficult to remove because it fits snugly into the connector in the PCI module.

   If it is very difficult to remove, go to step 5, open the I/O door expansion device, and grasp the PCI board on the top and edge of the card and pull it up and out.

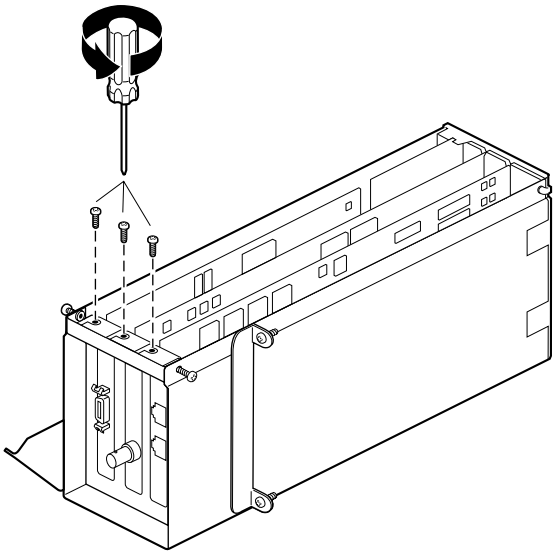


**Figure 4-31** Opening the I/O Door

5. Remove the screws holding any other PCI boards to the module so that the I/O door can swing open.

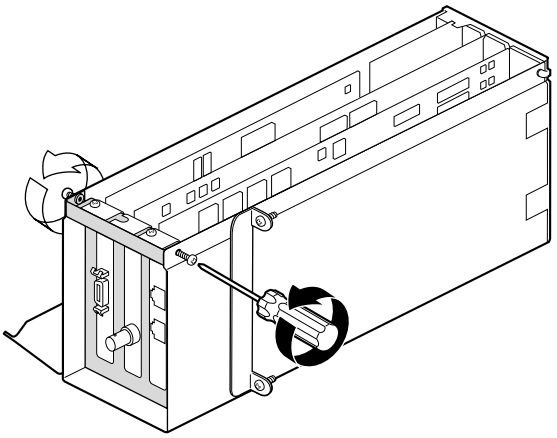


**Figure 4-32** Removing the I/O Door Screws

6. Remove the screws holding the I/O to the PCI module.

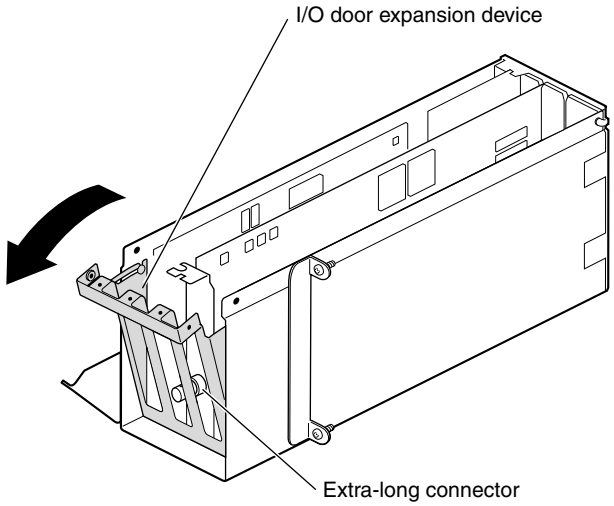



**Figure 4-33** Opening the I/O Door

7. Slide the I/O door open.

   Opening the I/O door allows the I/O connector at the end of the PCI board clearance so that the board can be easily removed and provides space for gripping the edges of the two boards that are close to the sides of the PCI module.

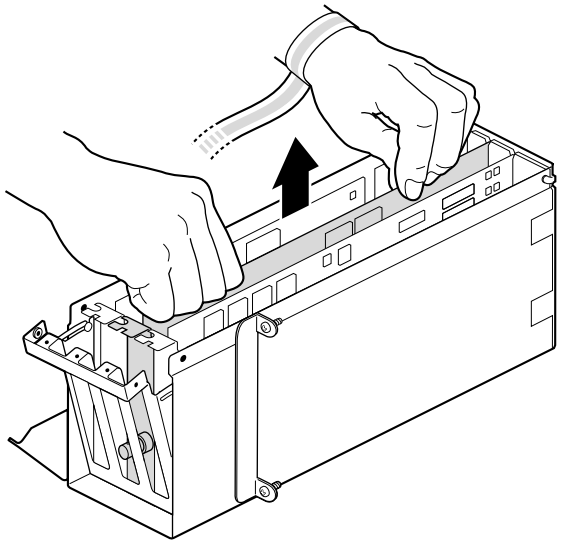


**Figure 4-34** Removing a PCI Board

8. Grasp the PCI board on the top edge to extract it.
9. Pull up until the board releases. The board may be difficult to remove because it fits snugly into the connector in the PCI module.

   To install a PCI board, go to "Installing a PCI Board" on page 94.

   If you are not installing another PCI board in the same slot, insert an I/O blank panel. Go to the next step.

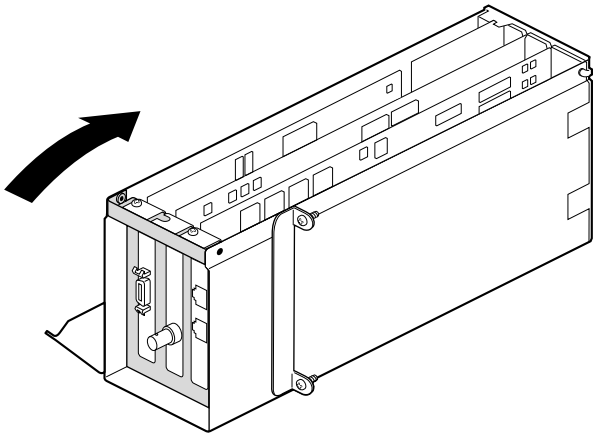


**Figure 4-35** Closing the I/O Door

10. Close the I/O door.

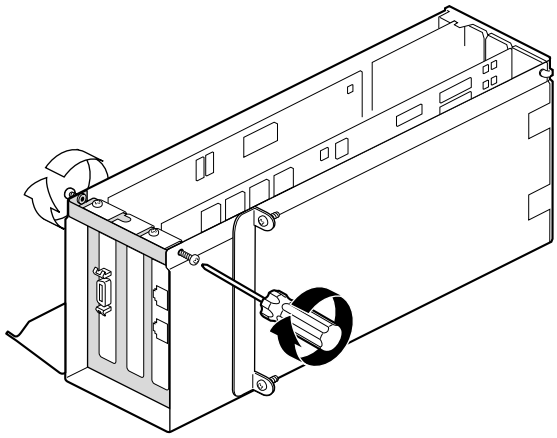


**Figure 4-36** Inserting the I/O Door Screws

11. Insert, but do not tighten, the screws holding the I/O door to the PCI module.

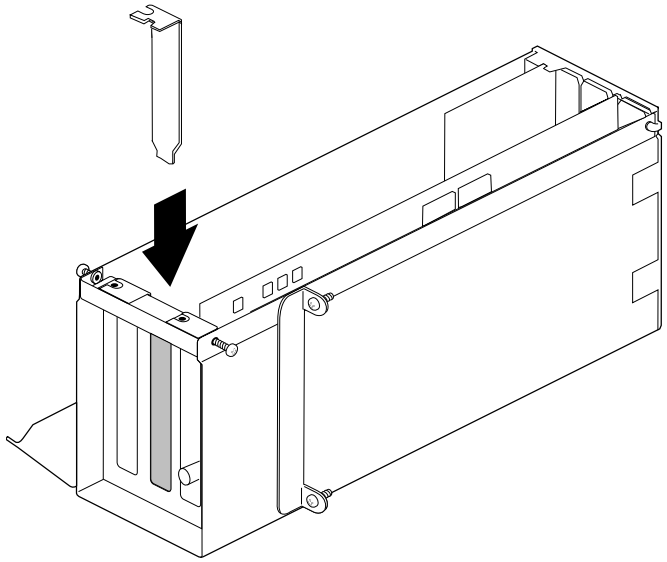


**Figure 4-37** Inserting the I/O Blank Panel

12. Install an I/O blank panel in the I/O door in place of the PCI board. Use the knobs on the back of the blank panel to position it.

    **Note:** Be sure to place the tip of the I/O blank panel inside the groove at the bottom of the PCI module. Do not position the tip outside the groove.

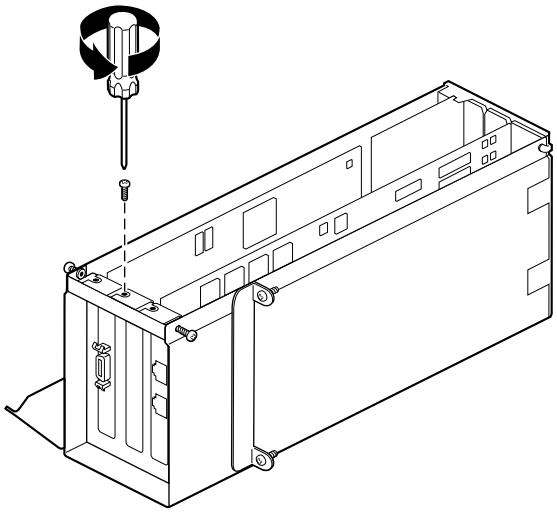


**Figure 4-38** Attaching the Blank Panel to the I/O Door

13. Attach the blank panel to the I/O door with a screw.

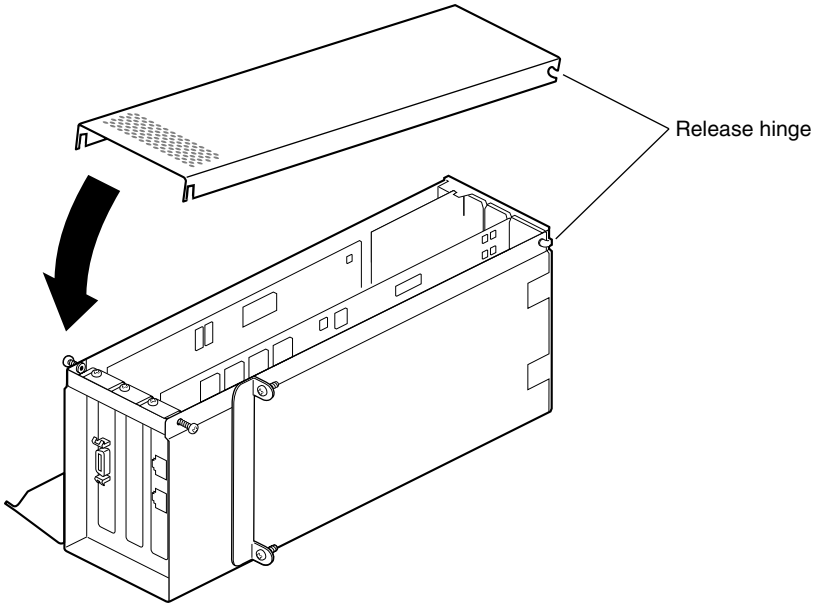



**Figure 4-39** Reconnecting the PCI Module Door

14. Fit the hinged door to the PCI module.

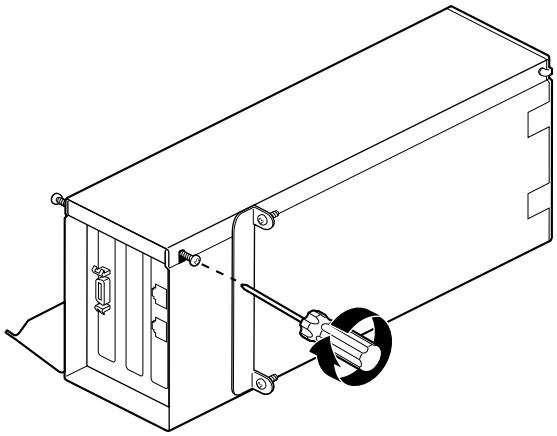


**Figure 4-40** Replacing the Screws of the PCI Module Door

15. Tighten the door screws.

Go to “Installing the PCI Module” on page 117.

## Installing the PCI Module

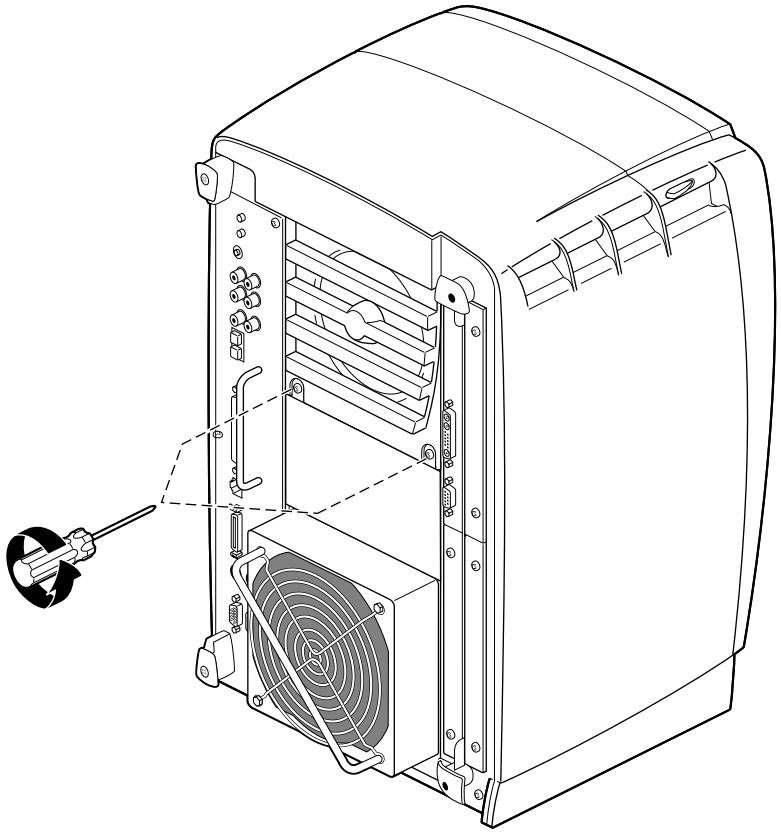


**Figure 4-41** Removing the Screws From the Blank Panel

If you are installing a PCI module for the first time, you need to remove the blank panel.

1. Using a Phillips screwdriver, remove the screws from the blank panel.

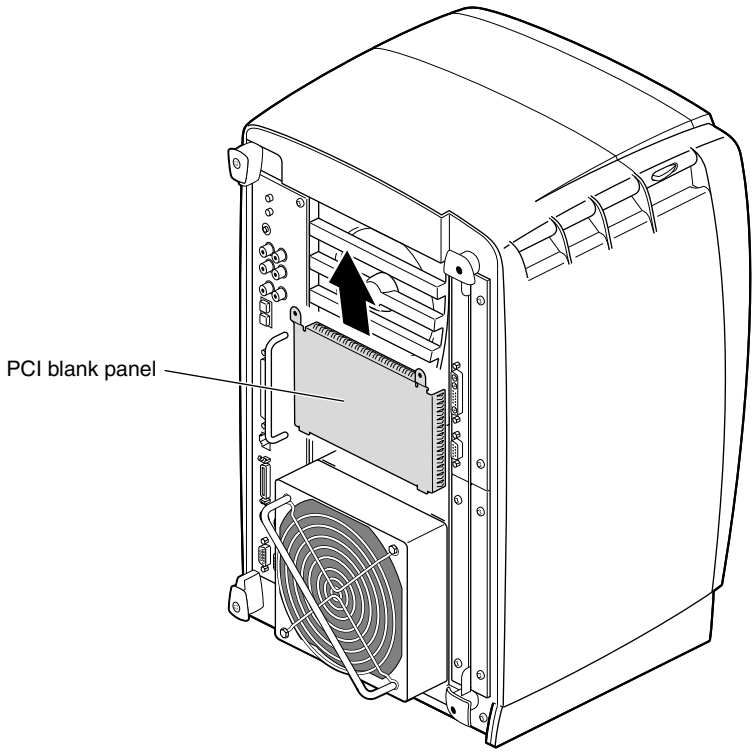



**Figure 4-42** Removing the Blank Panel

2. Using a flathead screwdriver, place the tip of the screwdriver in the slot at the top and middle of the blank panel.
3. Pull the panel outward and lift it up and out.

   **Note:** Save the blank panel for reuse, should you ever need to remove the PCI cage. Either the PCI cage or the blank panel must be in place at all times.

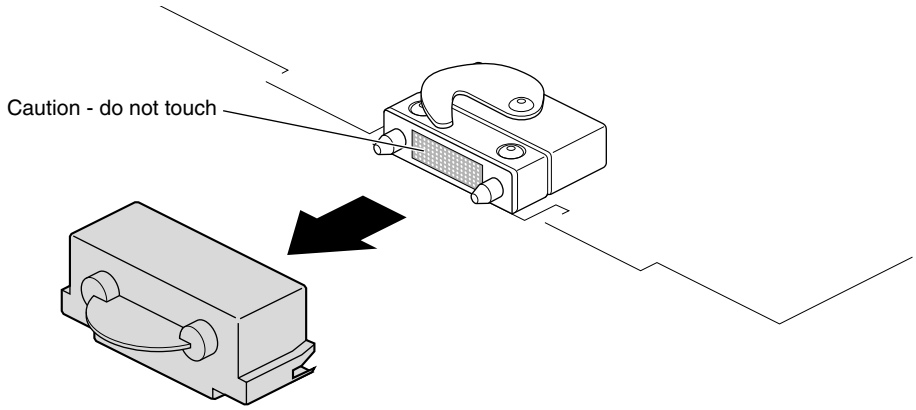



**Figure 4-43** Removing the Cap From the Compression Connector

4. Remove the cap from the compression connector on the back of the PCI module, and save it for future use.

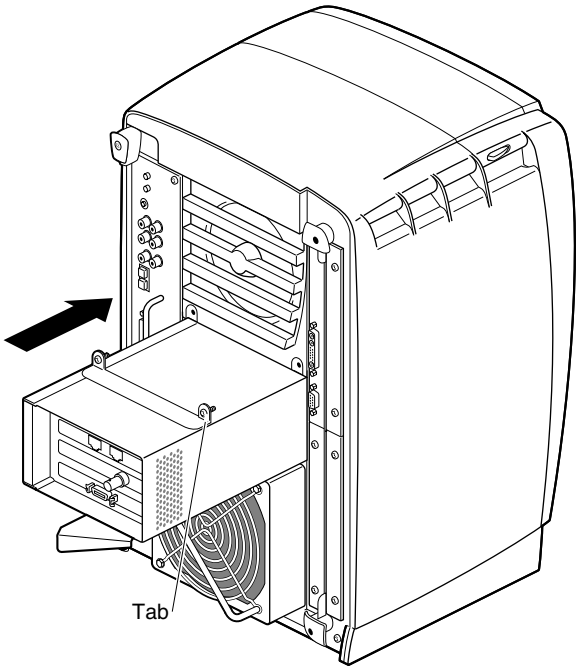



**Figure 4-44** Replacing the PCI Module

5. Place the PCI module in the chassis and push it until the tabs are flush with the chassis.

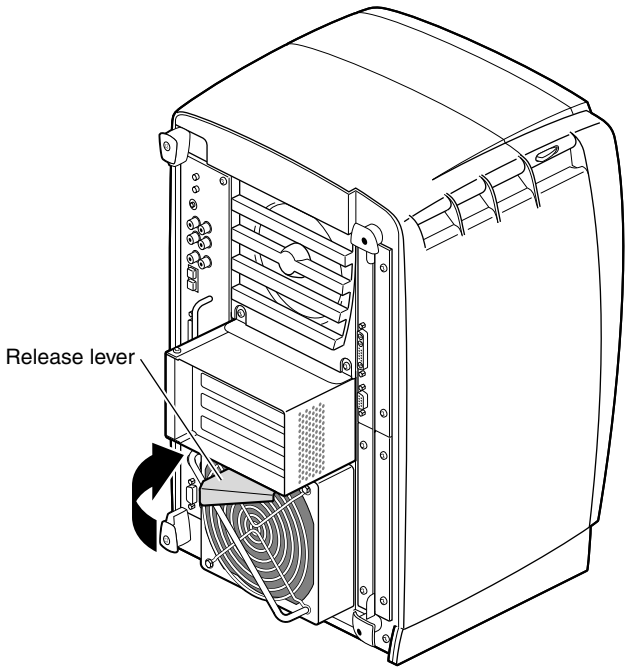



**Figure 4-45** Closing the Release Lever

6. Close the release lever by pushing it to the left until it is parallel with the PCI module.

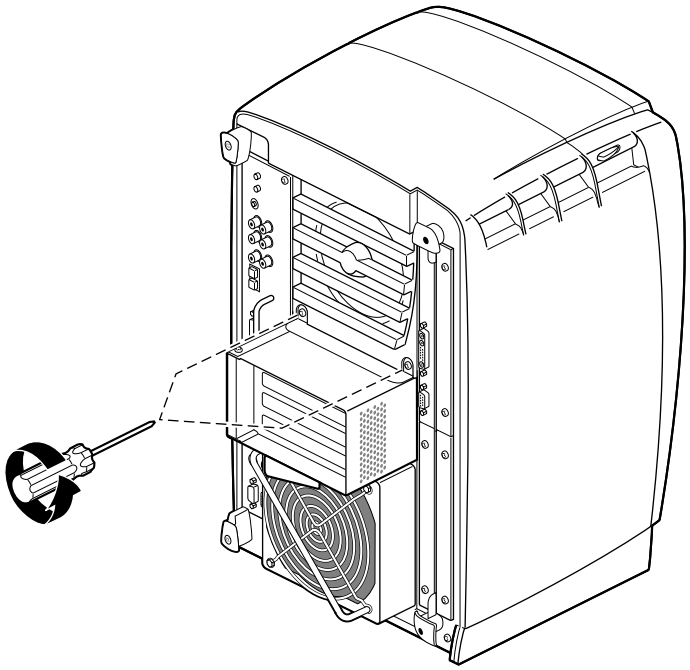


**Figure 4-46** Replacing the PCI Screws

7. Tighten the captive screws that hold the PCI module to the chassis.

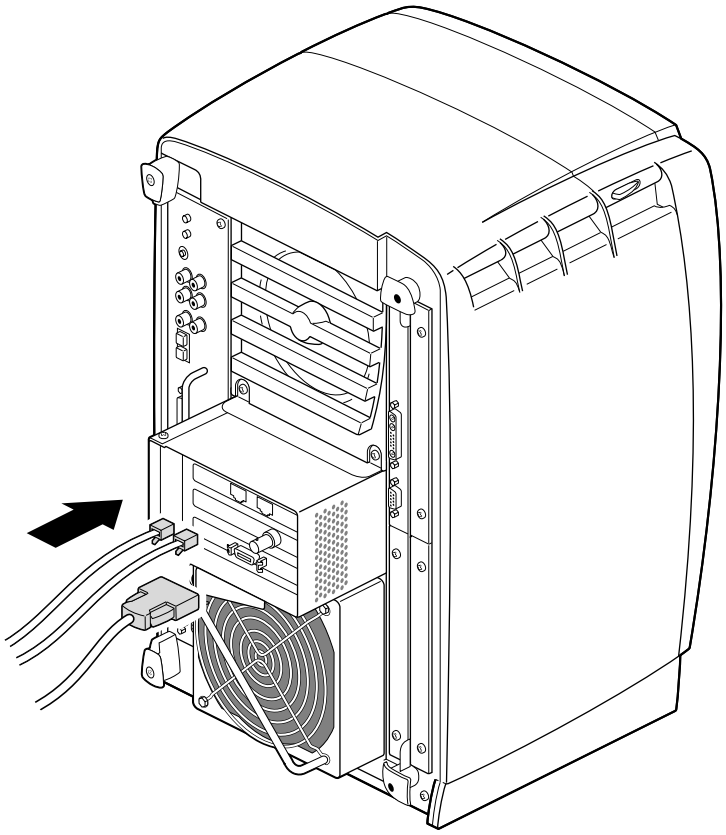


**Figure 4-47** Replacing the PCI Cables

8. Connect any PCI cables to the PCI connectors.
9. Remove the wrist strap.

You have finished replacing the PCI module and are ready to power on the OCTANE workstation.

Go to “Powering On the OCTANE Workstation” on page 124.

## Powering On the OCTANE Workstation

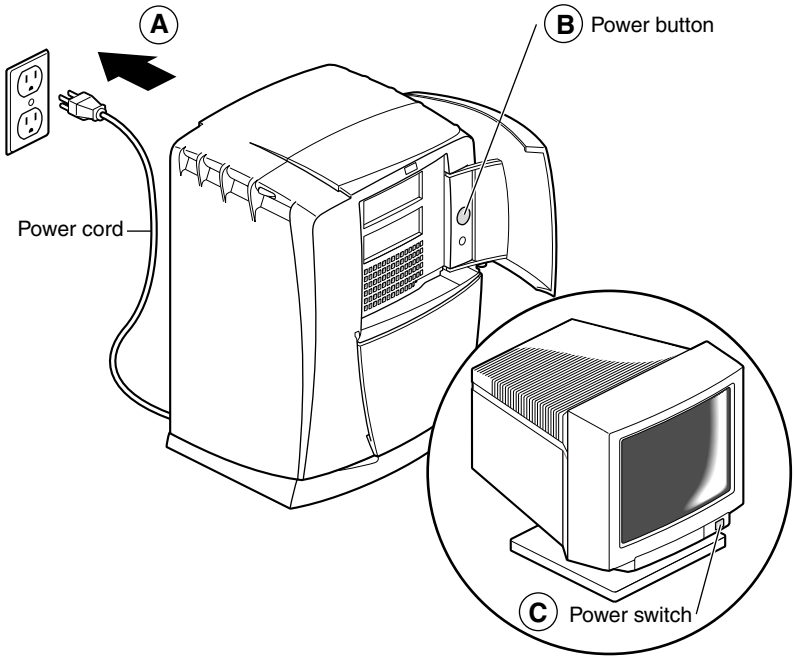



**Figure 4-48** Replacing the Power Cord and Turning On the OCTANE Workstation

1. Face the front of the workstation.
2. Connect the workstation's power cord to an electrical outlet. (Step A)
3. Press the power button to power on the OCTANE workstation. (Step B)
4. Press the monitor power switch to power on the monitor. (Step C)

## Verifying the PCI Board Installation

You can verify your PCI board installation. See the *OCTANE PCI Module Installation Guide* for specific instructions on checking the installation.

1. If your PCI board does not appear to be functioning, repeat the installation procedure.
2. If the PCI board still appears to not function, call your authorized service representative.

*Chapter 5*

# Installing and Removing XIO Boards

This chapter provides information about installing and removing XIO boards in the OCTANE workstation. It also provides information about the XIO module.

*Chapter 5*

# Installing and Removing XIO Graphics and Option Boards

Several XIO graphics and option board configurations are possible in the OCTANE workstation. The boards attach to the XIO module, which slides out of the chassis for board installation.

To see movies of XIO option boards being installed, see *OCTANE Hardware Central*, found through Netscape by entering the following URL in the location window:

**`file:/usr/share/Insight/library/SGI_bookshelves/SGI_EndUser/books/Octane_HWCntl/index.html`**

Or, from the Toolchest > Help > Online Books > SGI EndUser, choose *OCTANE Hardware Central*. (If that reference guide is no longer installed on your system disk, see the Introduction to this guide for installation instructions.)

The following topics are covered in this chapter


- "About the XIO Module and XIO Boards" on page 130
- "Preparing the Workstation to Install or Remove XIO Boards" on page 132
- "Removing the XIO Module" on page 135
- "Removing a Blank Panel With Baffle" on page 151
- "Removing a Graphics Board, Option Board, or Blank Panel With No Baffle" on page 140
- "Installing a Graphics Board, Option Board, or Blank Panel" on page 152
- "Placing a Texture Memory Option Board on the Graphics Board" on page 164
- "Removing a Texture Memory Option Board From the Graphics Board" on page 168
- "Installing the XIO Module" on page 171
- "Powering On the OCTANE Workstation" on page 176
- "Verifying the Graphics or Option Board Installation" on page 176

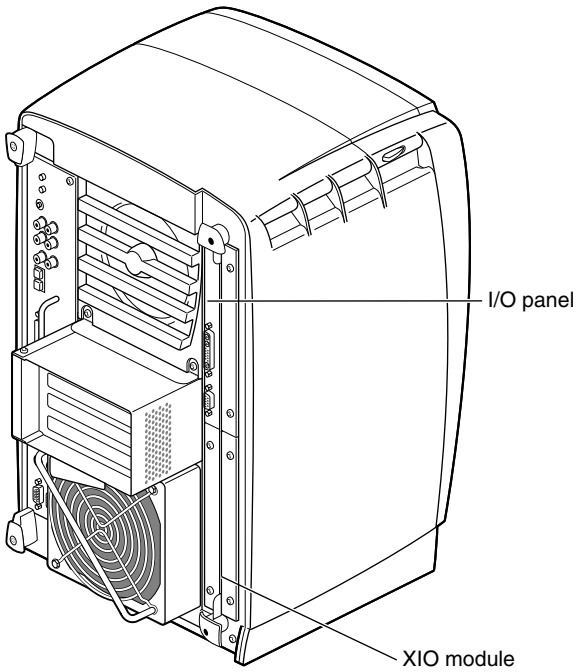



**Figure 5-1** Locating the XIO Module

The XIO module in the OCTANE workstation is on the right side as you face the back of the chassis.

## About the XIO Module and XIO Boards

The XIO module is the holding mechanism for XIO graphics or XIO option boards and holds up to four boards. It can be thought of as a tray to which boards are attached. The four quadrants of the XIO module are Slots A, B, C and D. Slots D and A are on one side, Slots B and C on the other. A graphics board, option boards, or blank panel attaches to each slot on the XIO module. The only exception is the OCTANE/SSI or OCTANE/MXI graphics boards, which occupy two slots, A and D.

- The XIO graphics boards must be placed at the top and right as you insert the XIO module, or they may overheat and be damaged.

- The graphics board must be in slot A or slots A and D. (See the *OCTANE Dual Head Installation Guide* or the *OCTANE Duo Installation Guide* for specific locations of dual graphics boards.)
- Option boards occupy slots B and C and possibly D.
- Graphics and option boards may be linked by flex cables.
- Protective blank panels must be placed in unused slots.
- A baffle must be in place on two side-by-side blank panels.
- Caps for the compression connectors come with the workstation.
- If you lose a screw that holds the graphics boards, single-layer option boards, or blank panels to the XIO module, use M3 x 8 mm size screws. (See your option board manual for the screw size for attaching option boards with daughterboards attached.)

## Preparing the Workstation to Install or Remove XIO Boards

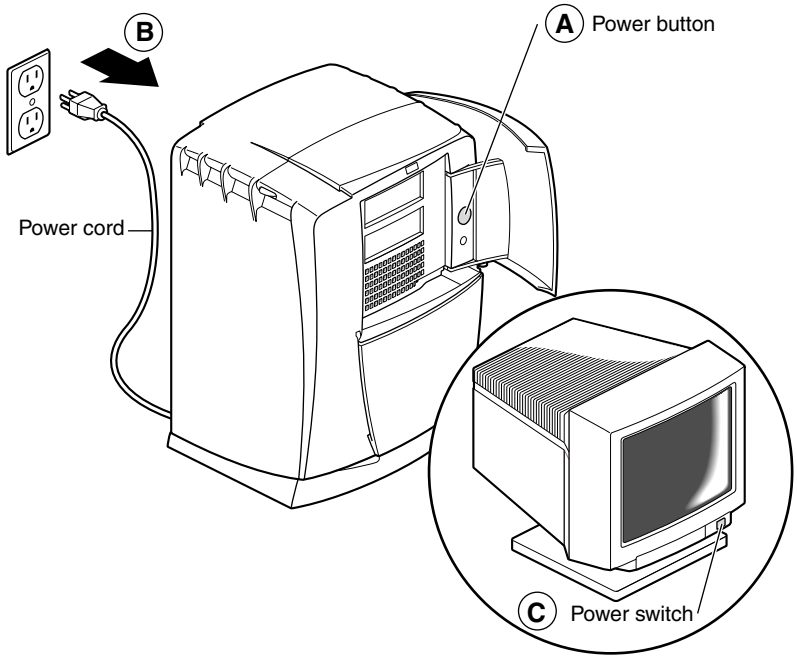



**Figure 5-2** Powering Off the OCTANE Workstation

1. Open the cover and push the power button to power off the OCTANE workstation. (Step A)
2. Unplug the power cord. (Step B)
3. Power off the monitor by pressing the power switch. (Step C)
4. Wait 5 minutes before removing the XIO module.

**Warning: The heat sinks on the XIO boards become very hot. Wait 5 minutes after powering off the OCTANE workstation before you remove the XIO module. Test before touching any of the XIO boards.**

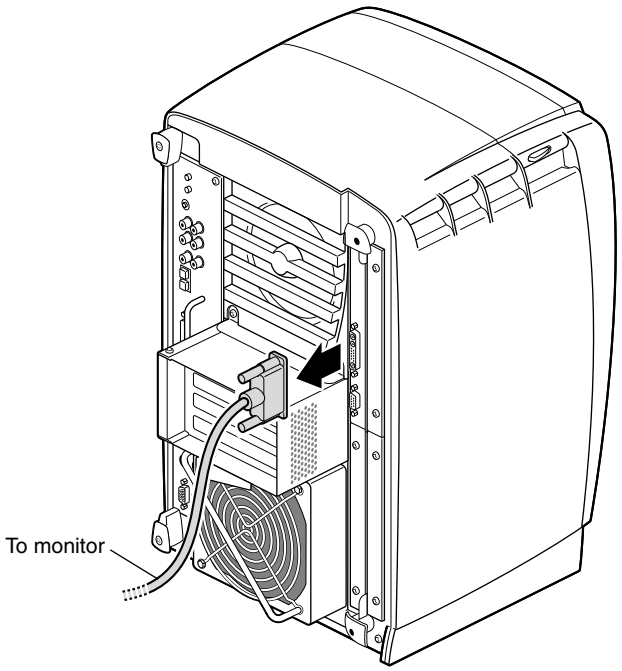



**Figure 5-3** Removing the Monitor Cable

5. Remove all the cables from the XIO module (only one is shown here).

## Attaching the Wrist Strap

**Caution:** The components inside the OCTANE workstation are extremely sensitive to static electricity; you must wear the wrist strap while replacing parts inside the workstation.

To attach the wrist strap, follow these steps:

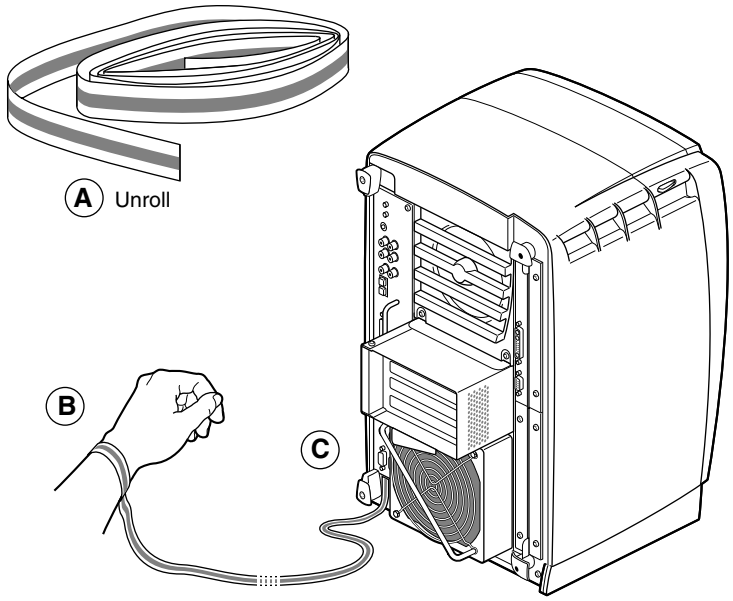



**Figure 5-4** Attaching the Wrist Strap

1. Unwrap the first two folds of the band and wrap the exposed adhesive side firmly around your wrist. (Step A)
2. Unroll the rest of the band and peel the liner from the copper foil at the opposite end. (Step B)
3. Attach the copper foil to the XIO module. Otherwise, use any convenient and exposed electrical ground, such as a metal part of the OCTANE workstation. (Step C)

### Compression Connector Caution

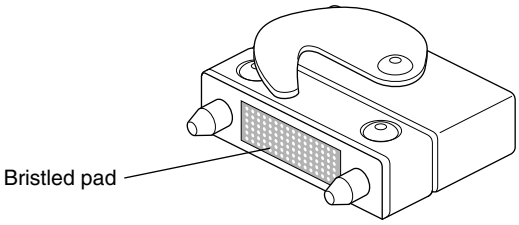



**Figure 5-5** Identifying the Compression Connector

**Caution:** The compression connectors on all XIO graphics boards and most option boards are very delicate and easily damaged. Do not touch or bump the gold bristled pad. The connectors are on the side opposite the handle. Do not grab the back of the XIO module when you remove it, or the compression connectors may be damaged.

Before you remove the XIO module, read Appendix B, “Care and Cleaning of the Compression Connector.”

## Removing the XIO Module

Before removing the XIO module, you must power off the OCTANE workstation, wait 5 minutes to allow the heat sinks to cool, and attach the wrist strap. If you have not already done this, go to “Preparing the Workstation to Install or Remove XIO Boards” on page 132 and follow the instructions through attaching the wrist strap. Then return here and follow the directions.

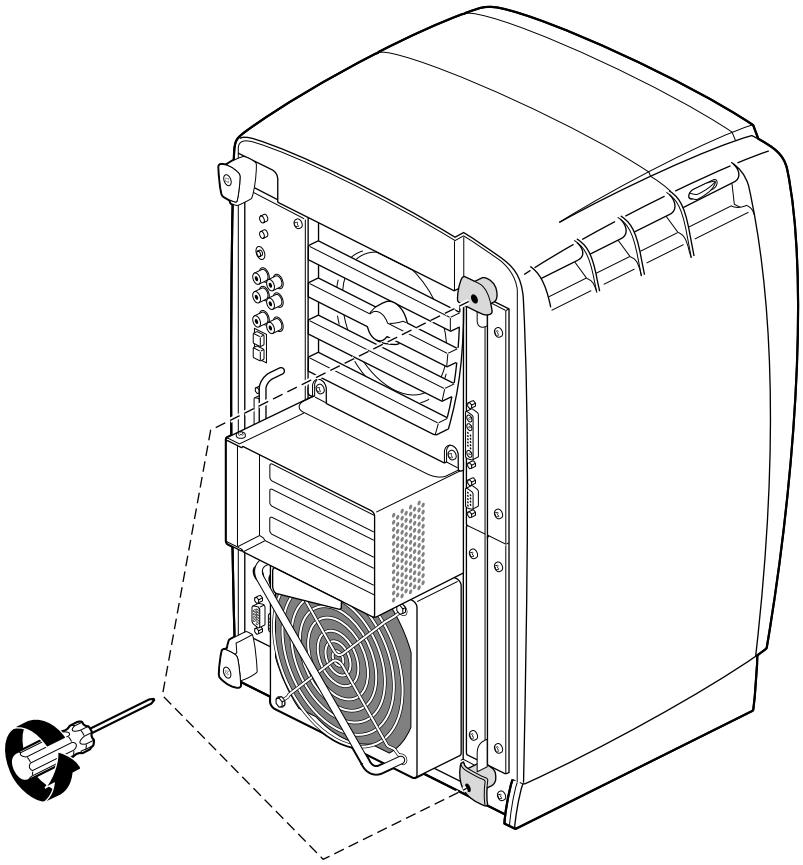


**Figure 5-6** Removing the XIO Module Screws

**Warning: The heat sinks on the XIO boards become very hot. Wait 5 minutes after powering off the OCTANE workstation before you remove the XIO module. Test before touching any of the XIO boards.**

1. Loosen the two captive screws in the XIO module handles with the supplied Phillips screwdriver until the screws are disconnected from the chassis.

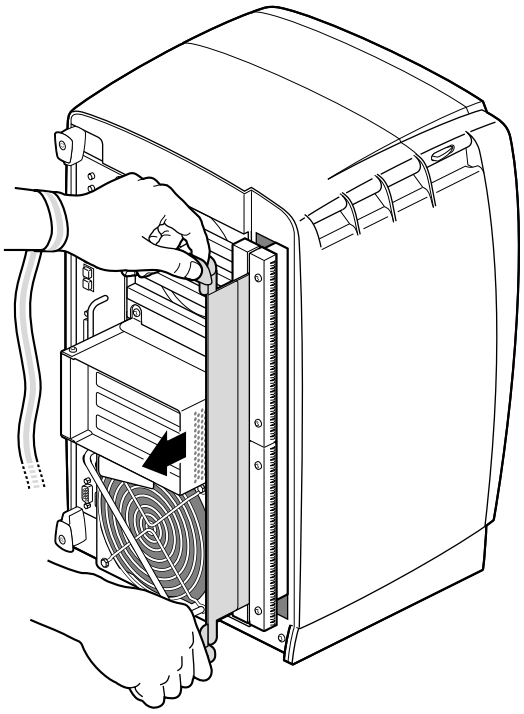


**Figure 5-7** Releasing the XIO Module

2. Grasp the handles and pull until the XIO module protrudes about an inch from the chassis.

   The handles and XIO module move out about one inch before the I/O panels move.

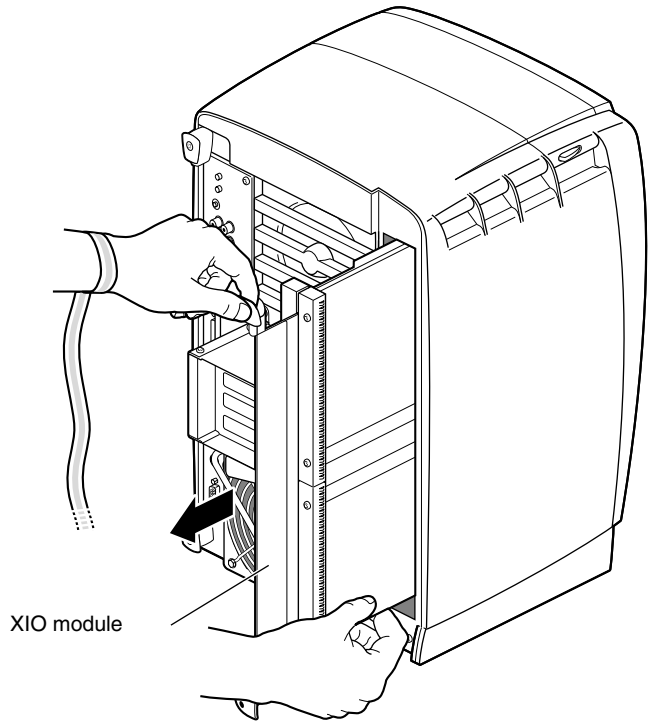



**Figure 5-8** Removing the XIO Module

3. Grasp the XIO module along its length, and support the base of the module as you remove it from the chassis.

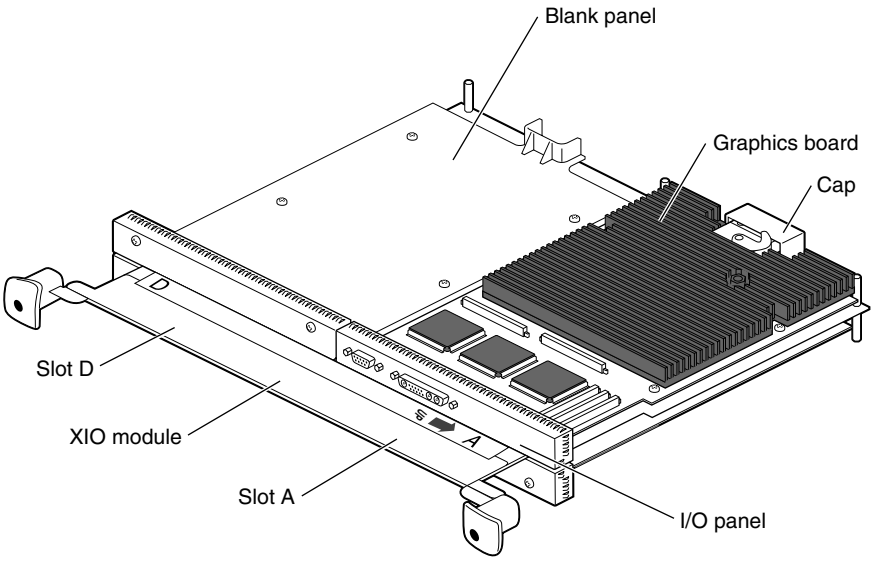



**Figure 5-9** Placing the XIO Module on Its Side

The handle area protrudes when the XIO module is out of the chassis. When the handle protrudes, the identification slots for the XIO boards, (D and A on one side, B and C on the other), are visible. See Figure 5-9.

**Note:** Do not push on the handle area after you have removed the XIO module. The XIO module locks to the workstation only if the handle area is protruding.

4. Place the XIO module on a flat, antistatic surface. An empty antistatic bag on your desk works well.

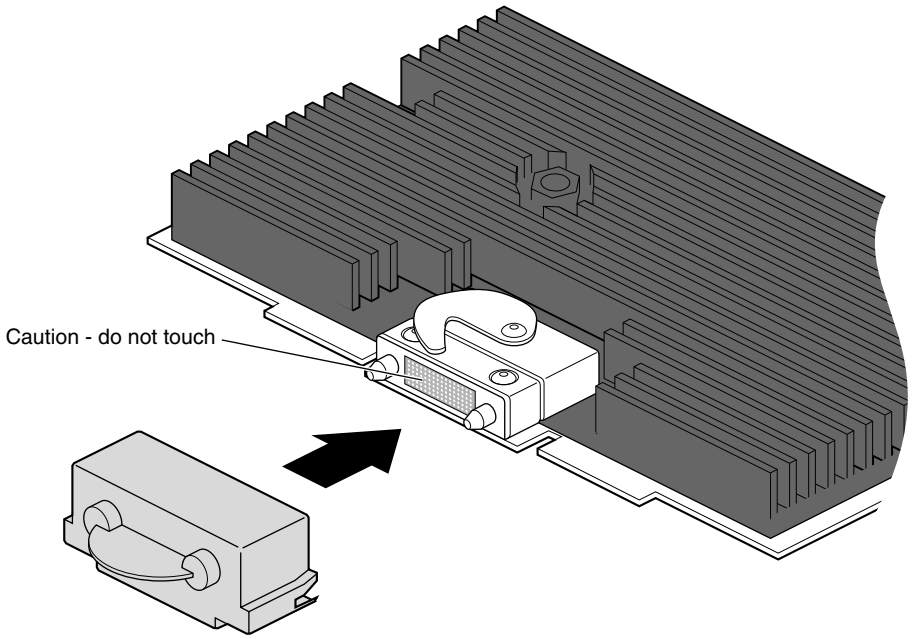



**Figure 5-10** Placing a Cap on the XIO Compression Connector

5. Place a cap on the XIO graphics board compression connector. Spare caps come with the workstation. See Figure 5-10.

   **Caution:** Do not touch or bump the gold (front) surface of the XIO compression connector to prevent damaging the connector. Place a protective cap on XIO compression connector to prevent damage when the XIO boards are removed from OCTANE. See Appendix B, “Care and Cleaning of the Compression Connector,”

## Removing a Graphics Board, Option Board, or Blank Panel With No Baffle

Before removing a graphics board, option board, or blank panel, you must power off the OCTANE workstation, wait 5 minutes, attach a wrist strap, and remove the XIO module. If you have not already done so, see “Preparing the Workstation to Install or Remove XIO Boards” on page 132 and follow the instructions through removing the XIO module. Be sure to also read “About the XIO Module and XIO Boards” before beginning your task.

Before you install a graphics or option board, you need to remove a protective blank panel or other graphics or option board. The processes for removing a standalone graphics board, option board, and blank panel are the same. The process for removing an option board attached by flex cables to the graphics board involves extra steps.

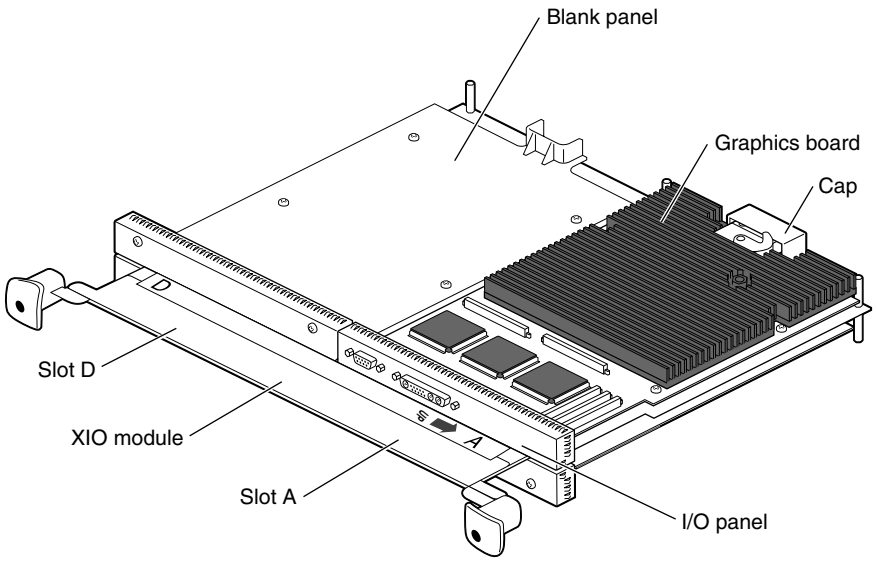



**Figure 5-11** Identifying the Slots Used by an XIO Board

**Warning: The heat sinks on the XIO boards become very hot. Wait 5 minutes after powering off the OCTANE workstation before you remove the XIO module. Test before touching any of the XIO boards.**

Graphics boards may use one slot (A) or two (D and A). Figure 5-11 shows the OCTANE/SI graphics board in Slot A. Graphics boards using two slots have the I/O connector positioned in slot A.

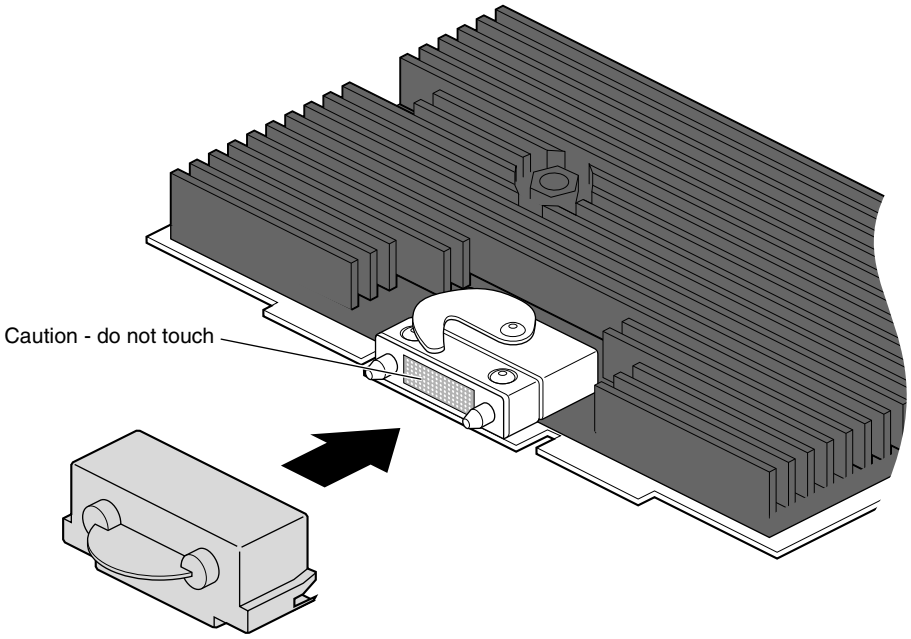



**Figure 5-12** Placing the Cap on the XIO Compression Connector

**Caution:** Do not touch the gold XIO compression connector.

1. Before you remove a graphics board or option board, place a cap on the XIO compression connector to prevent accidental damage when removing the board.

| For this task... | Go to... |
|---|---|
| Removing the cable guard and flex cables from the graphics board. (Flex cables are also attached to an option board). | Step 2 in this section. |
| Removing the graphics or option board; no flex cables or cable guard. | Step 8 in this section. |
| Removing a blank panel with a baffle and adjacent blank panel. | "Removing a Blank Panel With Baffle". |

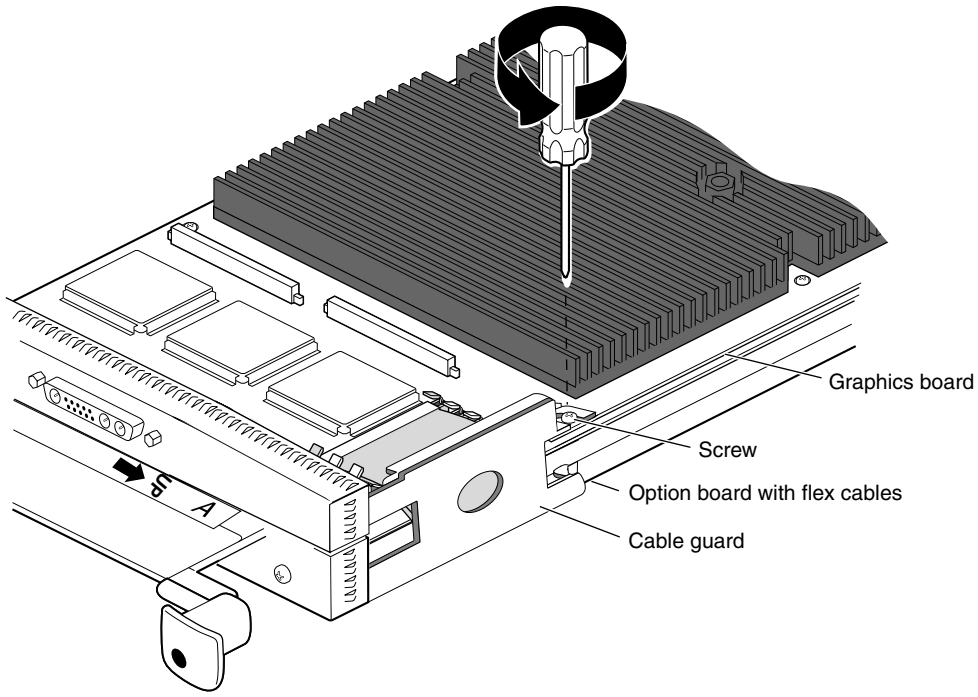



**Figure 5-13** Removing the Standoff Screw

To remove the cable guard and flex cables, follow these steps:

2. Using a Phillips screwdriver, remove the screw from the standoff. See Figure 5-13.

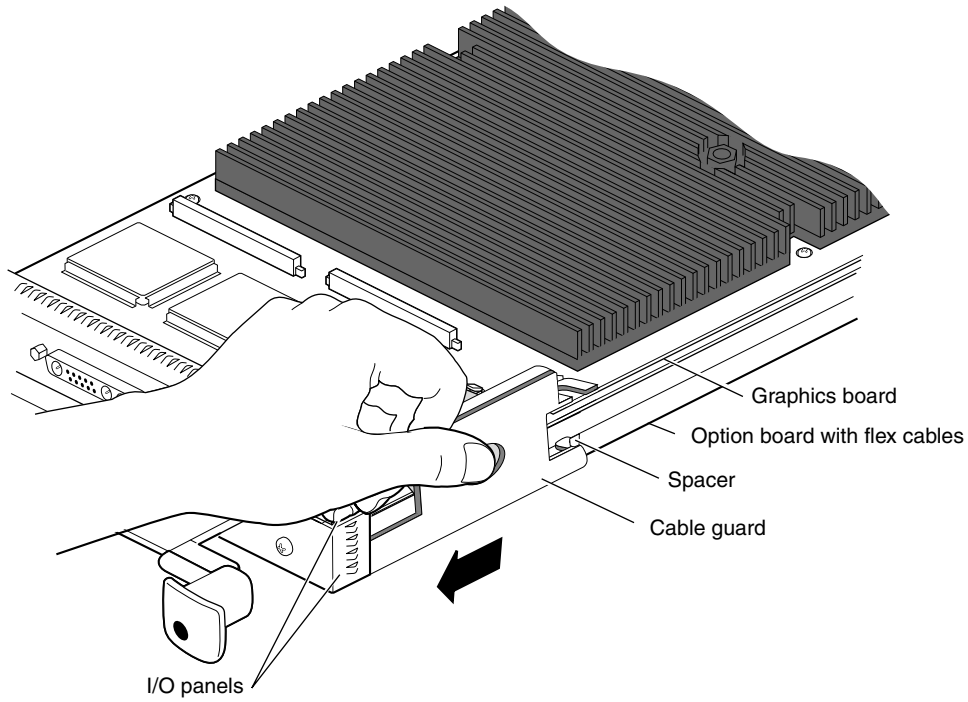



**Figure 5-14** Sliding the Cable Guard Beneath the I/O Panel

3. Slide the cable guard toward the I/O panels. This action releases the cable guard from the option board.

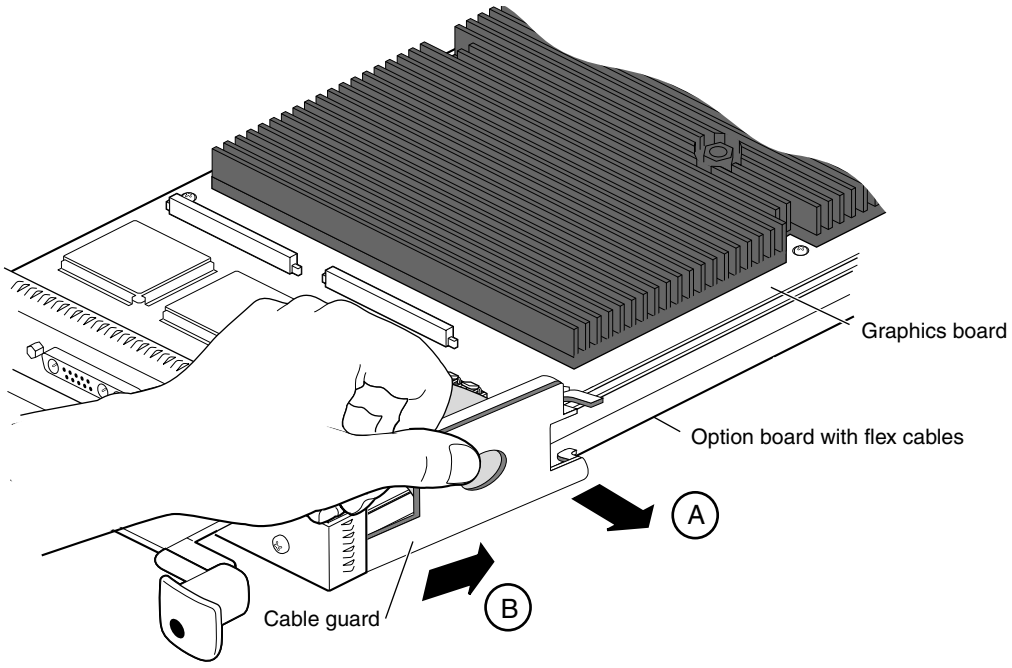



**Figure 5-15** Removing the Cable Guard

4. Swing the cable guard away from the graphics and option board. (Step A)
5. Slide the cable guard from beneath the I/O panels. (Step B)

   You are finished removing the cable guard.

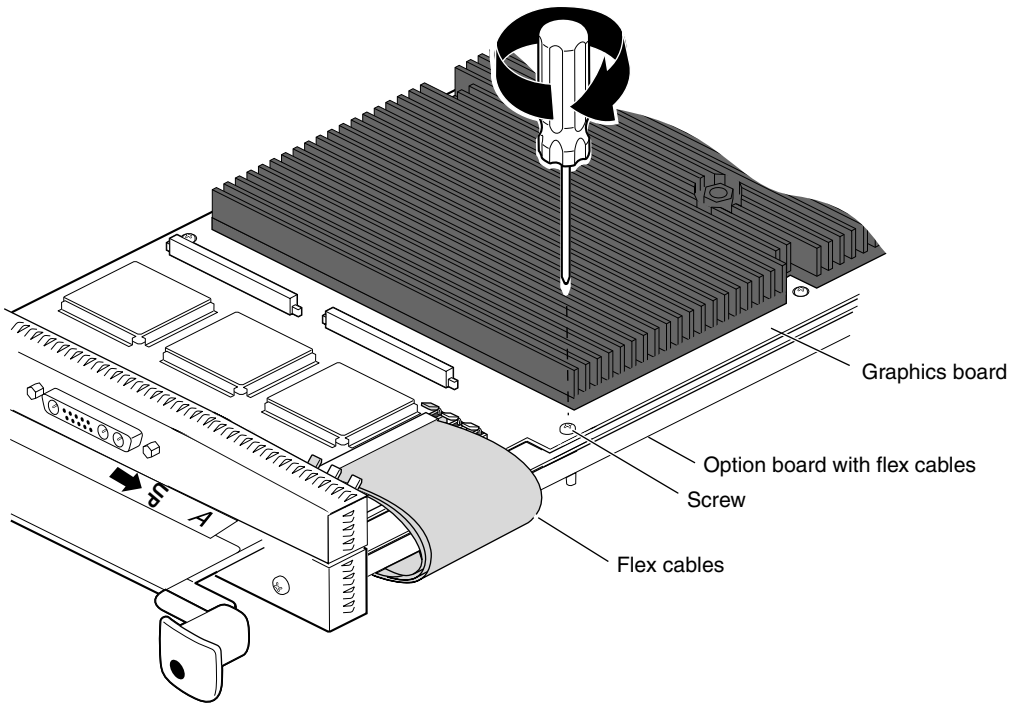



**Figure 5-16** Replacing the Graphics Board Screw

6. Replace the screw in the graphics board standoff.

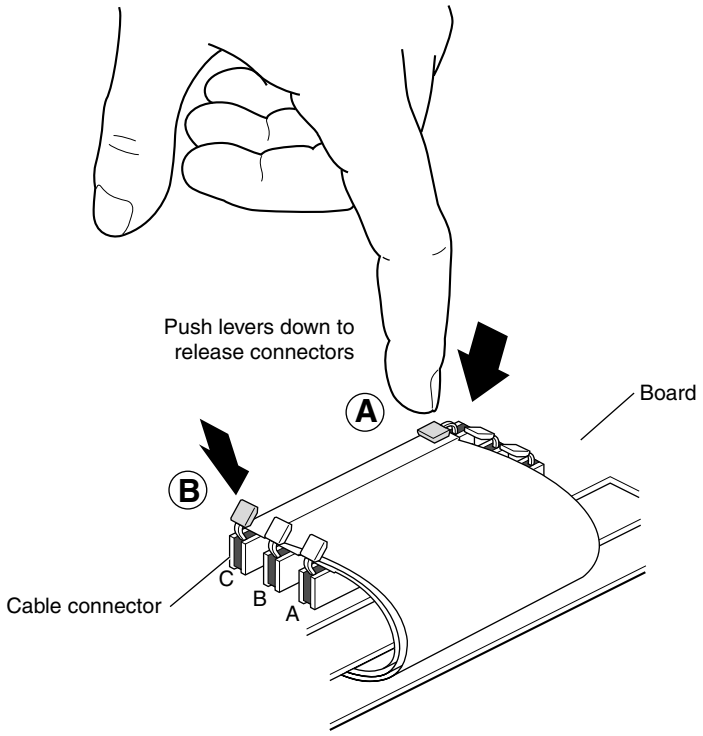



**Figure 5-17** Releasing the Flex Cables From the Graphics Board

7. Detach the flex cables from the graphics board beginning with the cable labeled C.
   - Press down on one release lever on the end of the flex cable (Step A), then on the other (Step B).

     **Note:** Pressing both release levers at the same time usually results in the connector remaining seated.

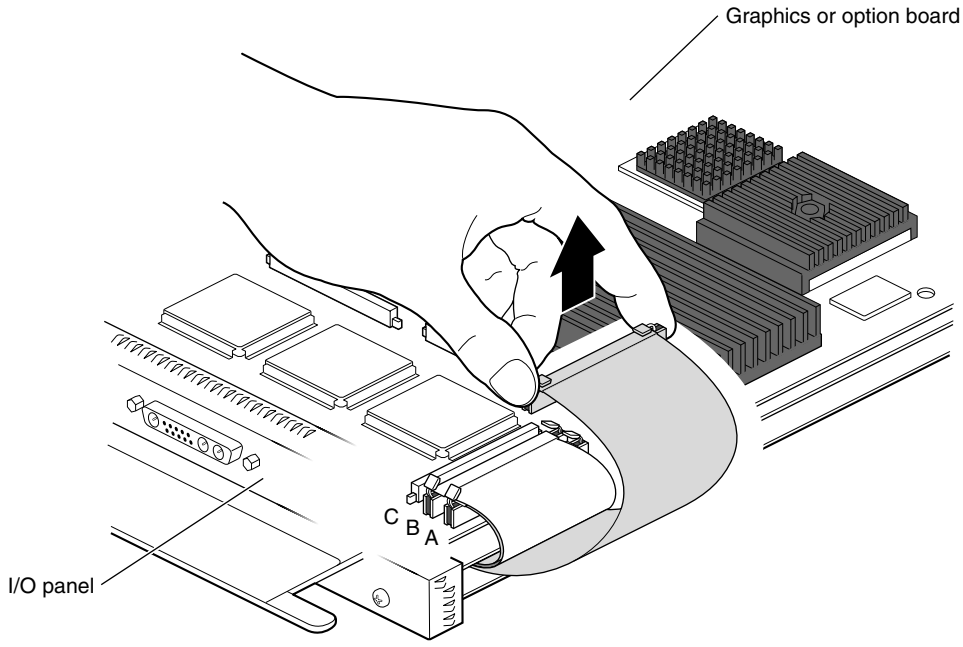



**Figure 5-18** Removing the Flex Cables From the Graphics Board

- Pull up on the connector until it releases.
- Remove flex cable B, then flex cable A, following the procedure for flex cable C.

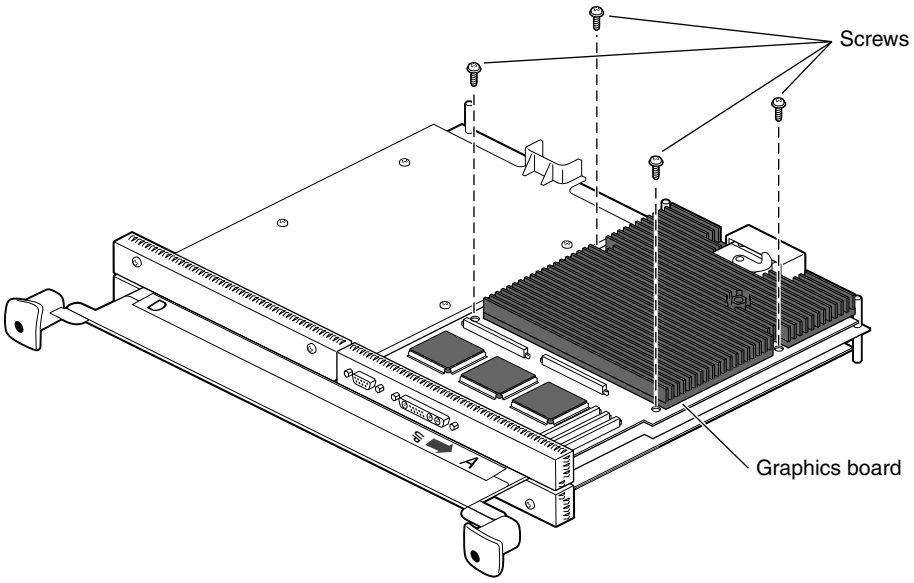



**Figure 5-19** Removing the Screws From the XIO Board

8. Using the supplied Phillips screwdriver, remove the screws from the graphics board, option board, or blank panel. Use the list below to determine the number and type of screws to remove.

   Different board types require different numbers and types of screws.

   - The OCTANE SI graphics board uses four screws
   - The OCTANE/SSI or /MXI graphics board uses six screws
   - Option boards with flex cables may use extra-long screws and a spacer
   - Option boards (or blank panels) without flex cables use four screws

   If you are removing a blank panel next to another blank panel, skip to "Removing a Blank Panel With Baffle" on page 151.

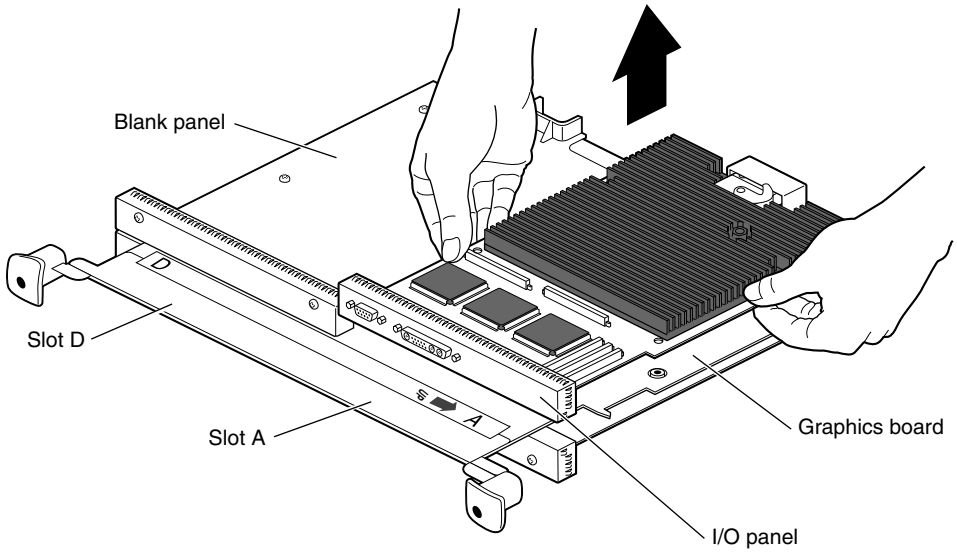



**Figure 5-20** Removing the Graphics Board

9. Grasp the graphics board, blank panel, or option board on the I/O panel and on the side of the board with no connectors and lift.
10. With the same side facing up, place the board on a clean, antistatic surface.

    It is a good idea to save the blank panel to reinstall in the workstation should you need to remove an option board.

    Skip to "Installing a Graphics Board, Option Board, or Blank Panel" on page 152.

## Removing a Blank Panel With Baffle

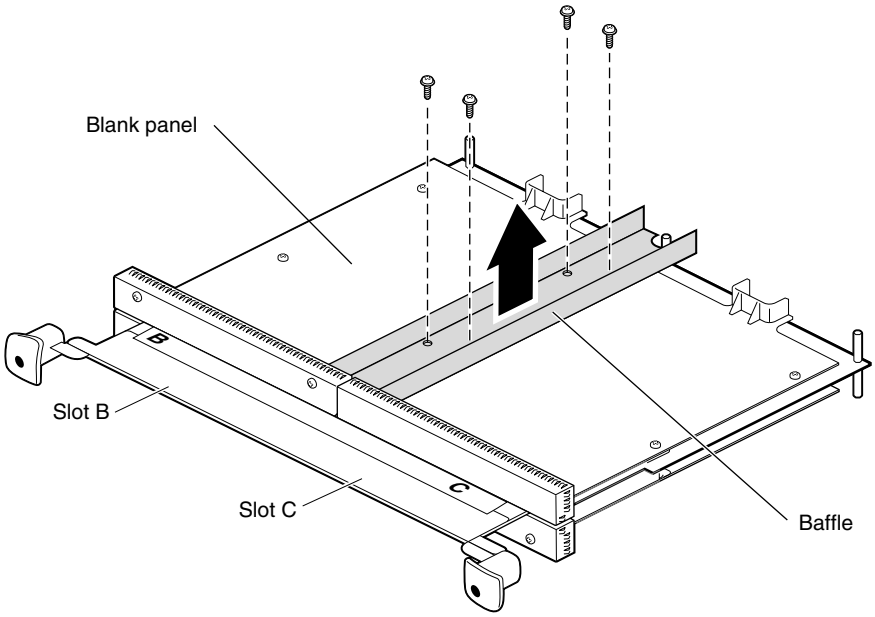



**Figure 5-21** Removing the Baffle

1. If you are removing a blank panel next to another blank panel, first remove the baffle.
   - Remove the four screws from the baffle.
   - Lift the baffle off the blank panels and keep it for possible future use.
   - Replace two screws into the blank panel you are not removing
2. Remove the final two screws from the blank panel you are removing.
3. Lift the blank panel from the XIO module.

Go to "Installing a Graphics Board, Option Board, or Blank Panel" to replace a graphics board, option board, or install a blank panel.

**Note:** It is best to use your option board installation manual when installing an option board.

## Installing a Graphics Board, Option Board, or Blank Panel

Before installing a graphics board, option board, or blank panel, you must power off the OCTANE workstation, wait 5 minutes for the heat sinks to cool, attach a wrist strap, and remove the XIO module. If you have not already done so, see "Preparing the Workstation to Install or Remove XIO Boards" on page 132 and follow the instructions through removing the XIO module. Be sure to also read "About the XIO Module and XIO Boards" before beginning your task.

**Caution:** Do not remove the cap on the XIO compression connector until your installation process is complete.

1. Have the XIO module lying on its side with the handles facing you.
2. Determine which slot or slots you will use to install the graphics board, option board, or blank panel.

   **Note:** The OCTANE/SI graphics board always goes in slot A, and the OCTANE/SSI and OCTANE/MXI boards go in slots D and A. Option boards with three flex cables always go in slot B.

   **Tip:** Orient the board so the thick side is up. The thick side has more depth from components, heat sinks, or daughterboards.

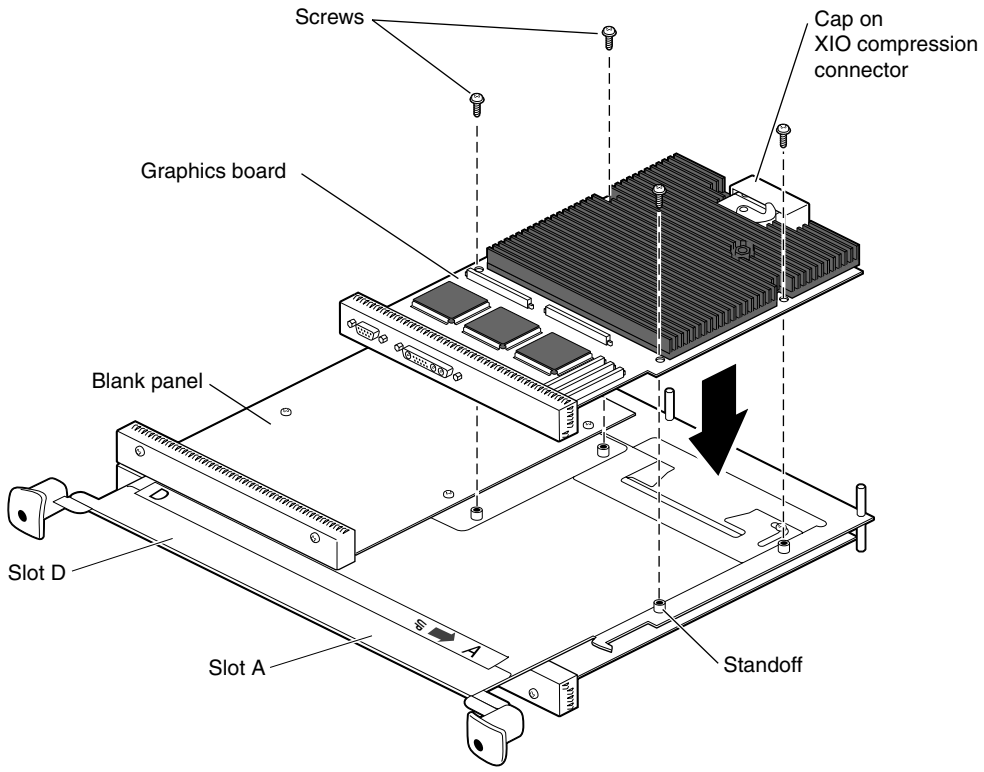



**Figure 5-22** Replacing the Screws

3. Place the graphics board, option board, or blank panel on the standoffs.

   Some option boards must be placed in designated slots. Always check your option board installation manual for information about board placement or other pertinent information.

   **Caution:** Some option boards with three flex cables use extra-long screws and possibly a spacer that fits over the screw closest to the flex cables. Use these extra-long screws only with the option board. Using extra-long screws with a graphics board or blank panel damages the standoffs.

   See step 8 in "Removing a Graphics Board, Option Board, or Blank Panel With No Baffle," for a listing of the number and types of screws used by option boards, graphics boards, and blank panels.

4. Replace the screws, tightening the board or panel to the standoffs.

5. Remove the caps from all XIO compression connectors. Keep the caps to protect the compression connector should you ever remove any XIO board.

   **Note:** Be sure all the slots are filled, with a graphics board, option boards, or blank panels. The system does not cool properly if any of the slots are empty.

| If you are installing | Go To |
|---|---|
| An option board (without flex cables) | "Installing the XIO Module". |
| Option board with flex cables | "Attaching Flex Cables to the Graphics Board". |
| Blank panel next to another blank panel | "Installing the Baffle". |

## Attaching Flex Cables to the Graphics Board

It is always best to use the option board installation manual for information on installing and removing option boards because many option boards have slot dependencies. These instructions provide generic information for attaching flex cables to graphics boards.

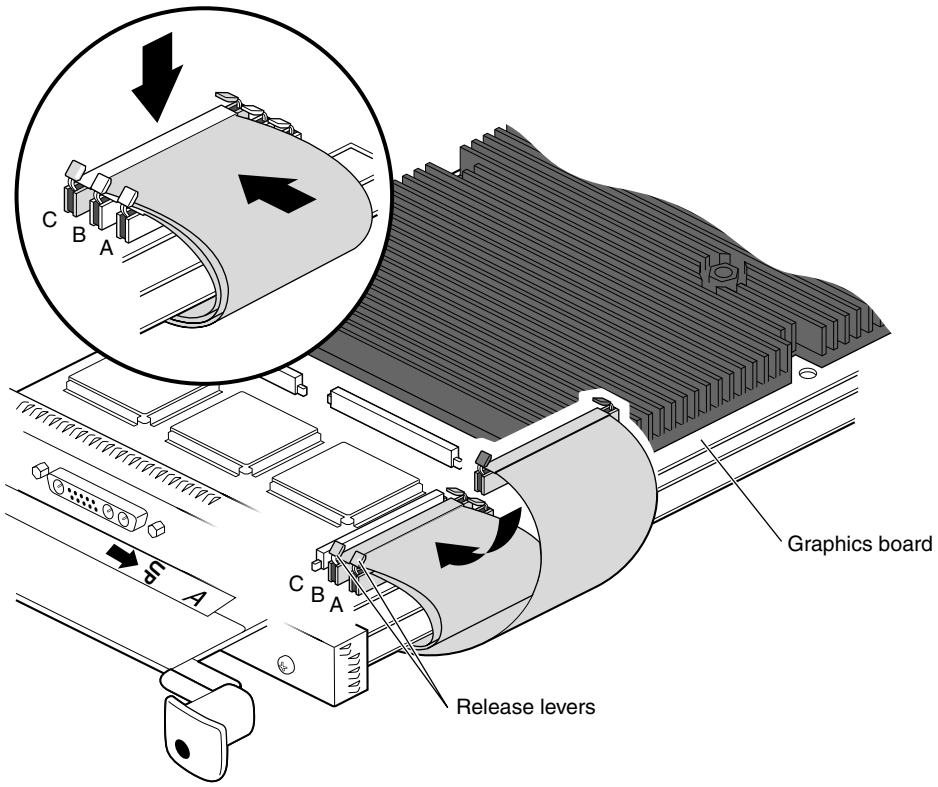



**Figure 5-23** Attaching the Option Board Flex Cables to the Graphics Board

1. Turn the XIO module so that the graphics board in slot A or D and A is facing you.
2. Attach the connector with the shortest flex cables to connector A on the graphics board. Press down on the middle of the connector to ensure proper seating.
3. Lay the middle flex cable through the release levers of connector A, then attach the connector. Press down on the middle of the connector to seat it.

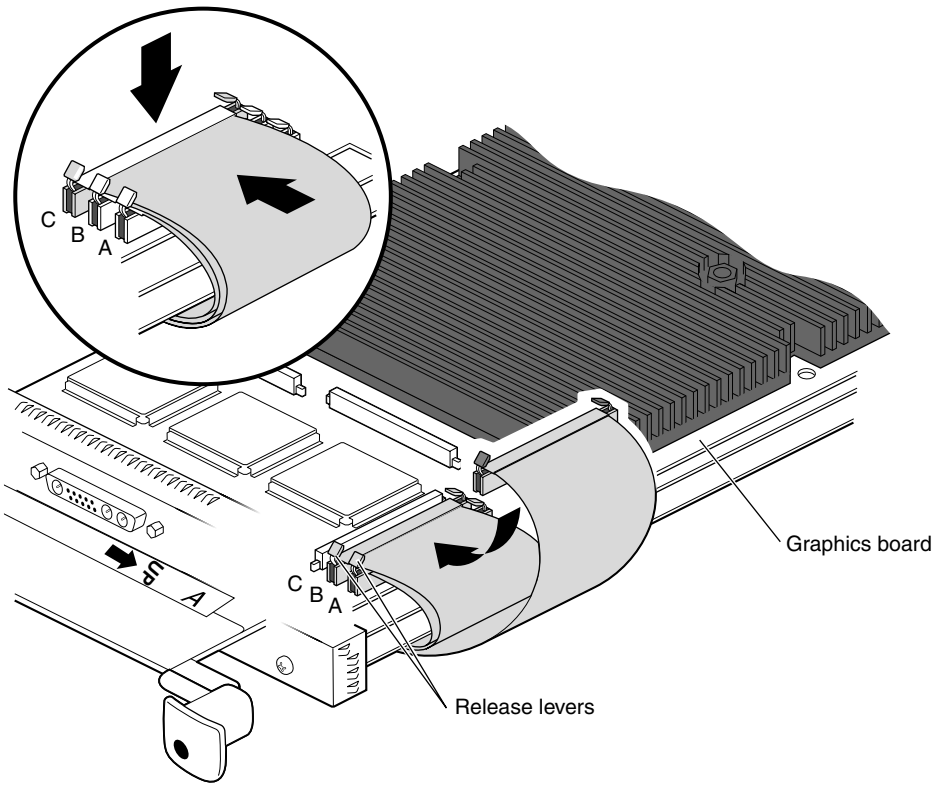



**Figure 5-24** Attaching the Flex Cables to the Graphics Board

4. Lay the longest flex cable through the release levers of connectors A and B. Connect the connector and press down on it to fully seat it.

   Go to the next section, “Installing the Cable Guard” on page 157.

## Installing the Cable Guard

This section describes how to install the cable guard.

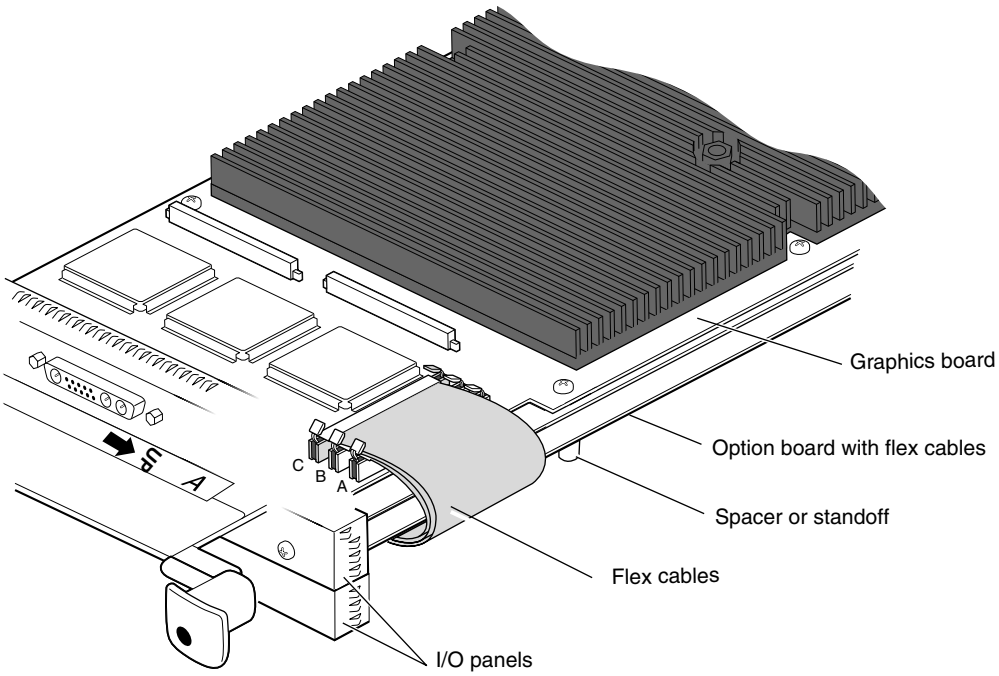



**Figure 5-25** Identifying Parts for the Cable Guard Installation

The cable guard protects the flex cables from being scratched or caught when the XIO module is inserted or removed from the workstation.

The cable guard slides under the I/O panels and attaches beneath the screw on the graphics board and behind the spacer or standoff on the option board.

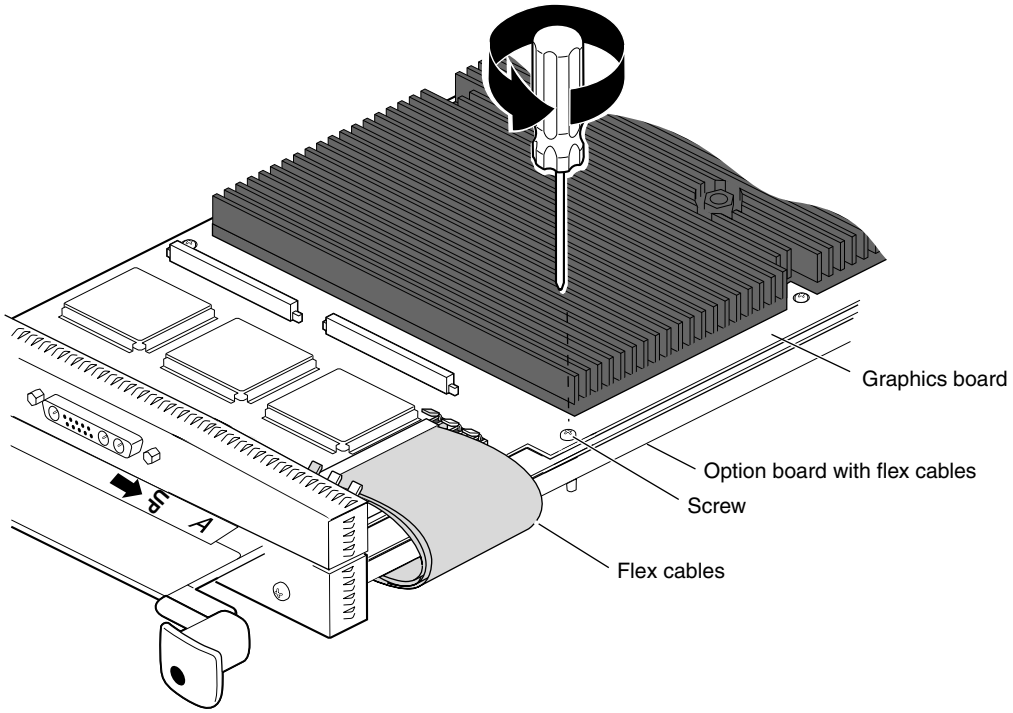



**Figure 5-26** Removing the Screw From the Graphics Board

1. Remove the screw from the graphics board, as shown in Figure 5-26.

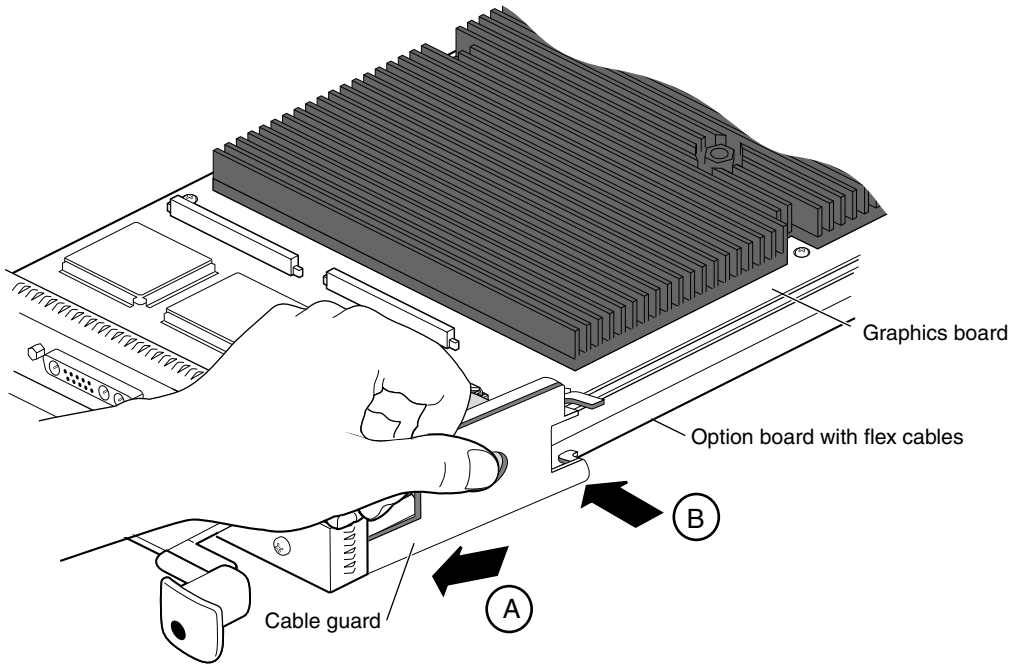



**Figure 5-27** Sliding the Cable Guard Under the I/O Panels

2. Slide the two prongs under the I/O panels. (Step A)
3. Push the cable guard toward the flex cables, laying the top hook on the top of the graphics board. (Step B) Continue placing pressure on the flex cables.

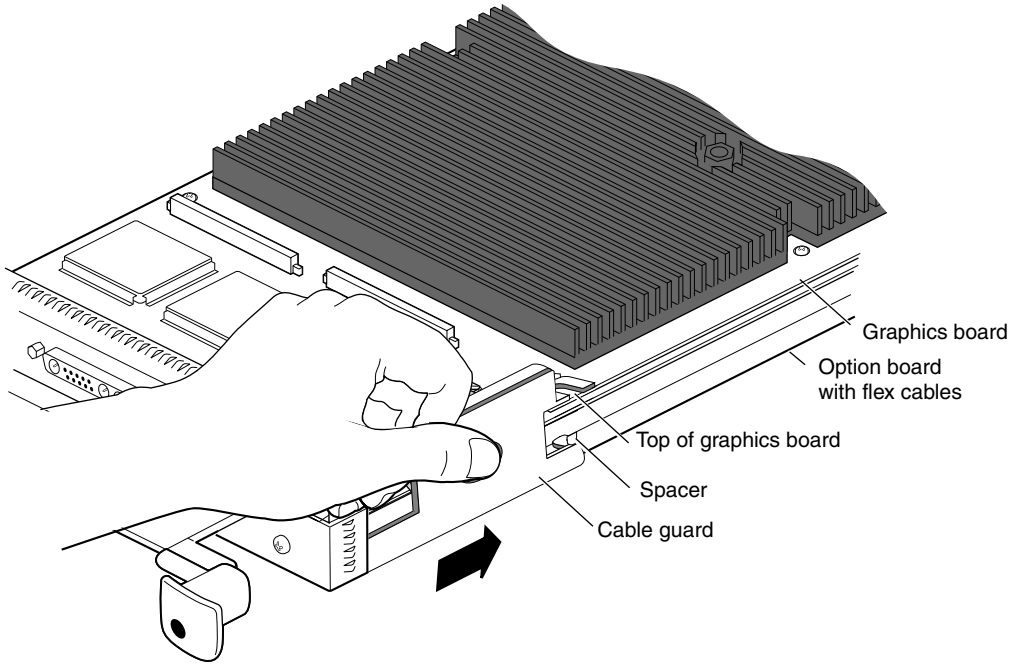



**Figure 5-28** Sliding the Cable Guard Behind the Standoff

4. Press down on the center hole of the cable guard and slide it toward the back of the XIO module until its half-hook rests behind the spacer or standoff on the option board.

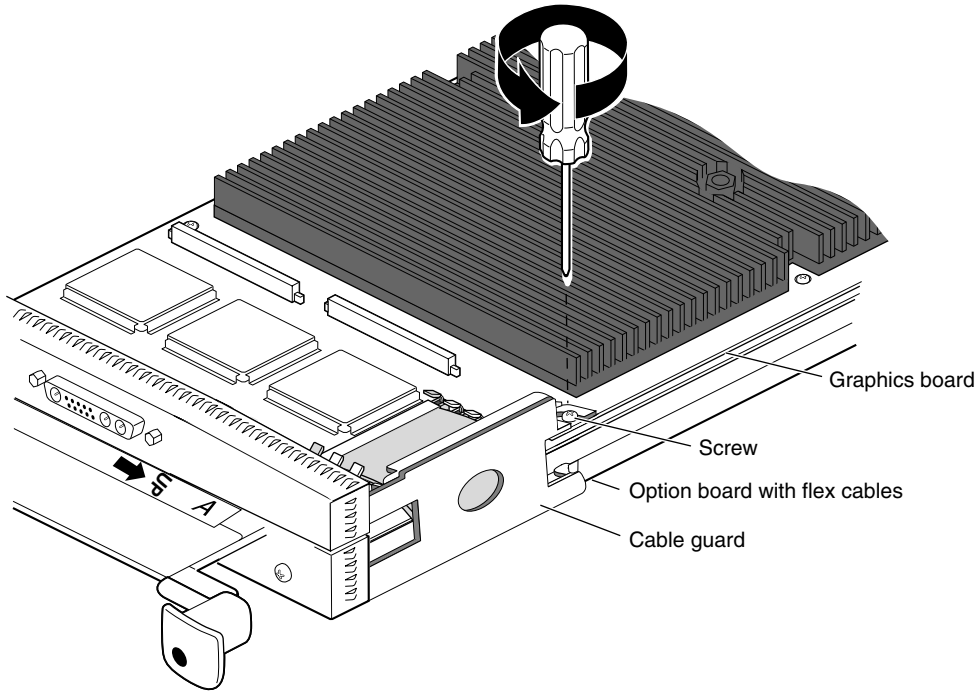



**Figure 5-29** Attaching the Screw to Anchor the Cable Guard

5. Place the screw from the graphics board through the hook on the cable guard and the graphics board, and into the standoff on the XIO module. Then tighten it.

   If you received a screw with the cable guard, use this longer screw instead of the screw you just removed from the graphics board.

6. You have finished installing the flex cables and cable guard.
7. Remove the caps from all XIO compression connectors. Keep the caps to protect the compression connector should you ever remove any XIO board.
8. Go to "Installing the XIO Module" on page 171.

## Installing the Baffle

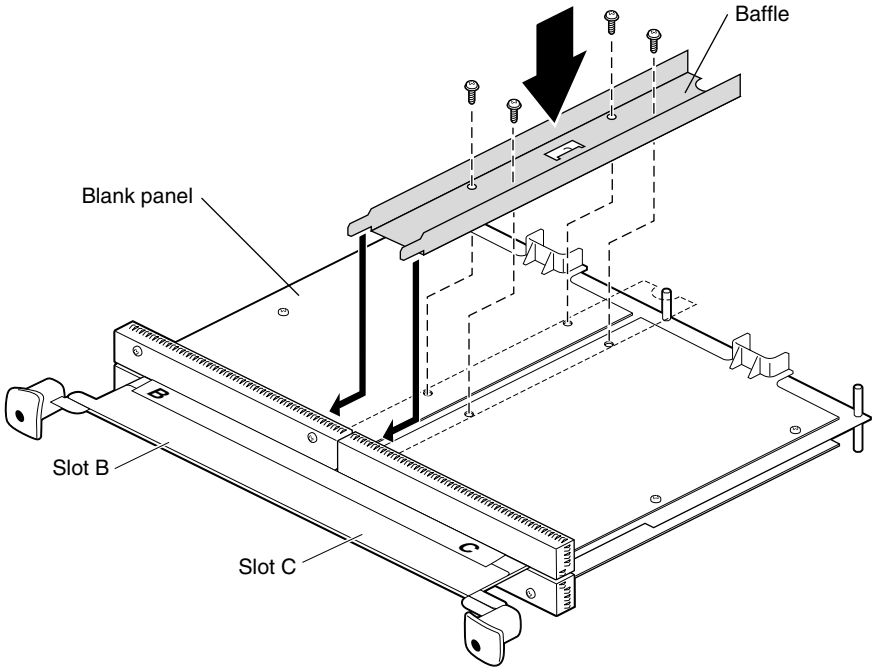



**Figure 5-30** Installing the Baffle on Two Side-by-Side Blank Panels

Install the baffle when you have two side-by-side blank panels.

1. Lay the blank panel over the empty slot.
2. Place the baffle over the two blank panels.
3. Insert and tighten the four screws.
4. Insert the remaining two screws into the remaining holes on the blank panel you are installing.

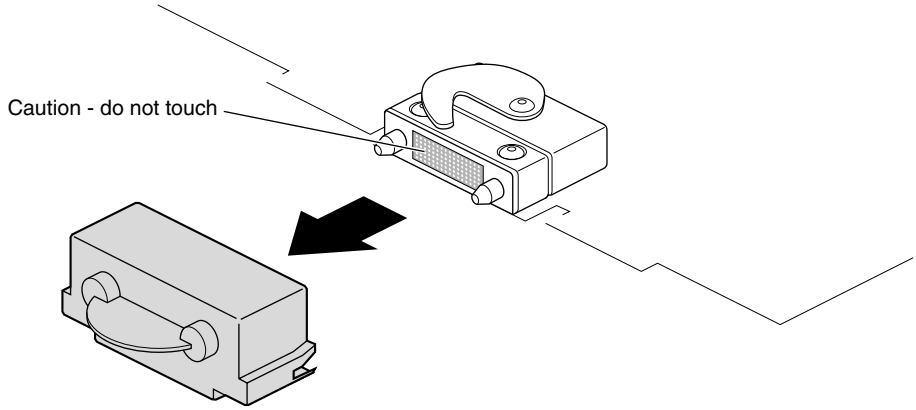



**Figure 5-31** Removing the Cap From the XIO Compression Connector

5. Remove the cap from the XIO compression connector.
6. Keep the caps from the XIO compression connectors to place them on the XIO boards, the system module, or PCI module whenever you remove it from the OCTANE workstation.
7. Go to "Installing the XIO Module" on page 171.

## Placing a Texture Memory Option Board on the Graphics Board

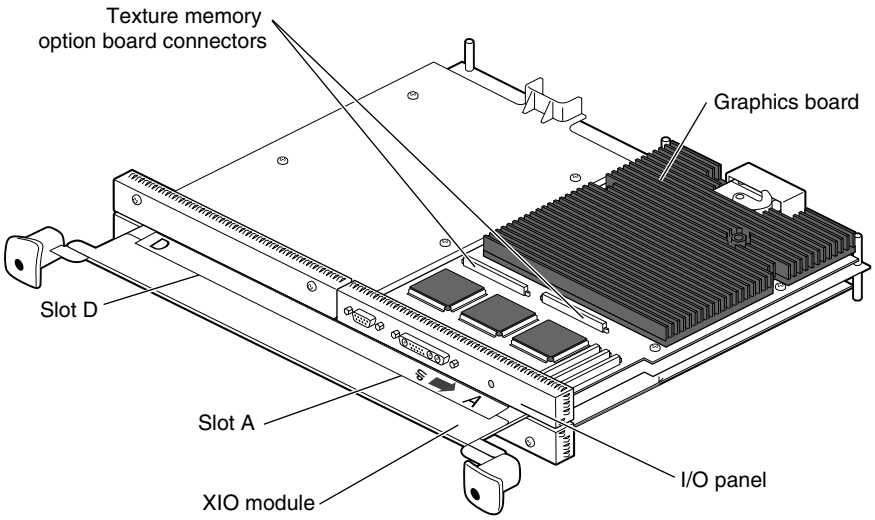



**Figure 5-32** Locating the Connectors for the Texture Memory Option Board

If you have not already done so, see "Preparing the Workstation to Install or Remove XIO Boards" on page 132 and follow the instructions through removing the XIO module.

A single texture memory option board installs on the OCTANE/SI graphics board. See Figure 5-32. See Figure 5-33 for the location of the connectors on the OCTANE/SSI graphics board.

Use the same process to install texture memory option boards on the OCTANE/SI and OCTANE/SSI graphics boards. Locate the texture memory option board connectors on the OCTANE/SI or OCTANE/SSI graphics board.

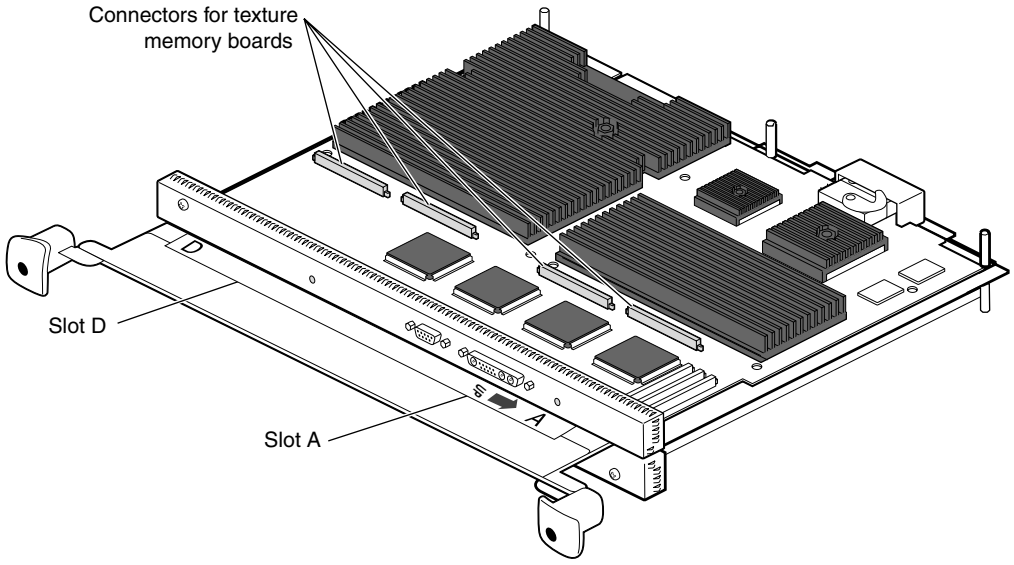



**Figure 5-33** Locating the Connectors for the Texture Memory Option Board on the OCTANE/SSI Graphics Board

Two texture memory option boards install, side by side, on the OCTANE/SSI graphics board. See Figure 5-33.

If you are installing two texture memory option boards on the OCTANE/SSI graphics board, begin with the set of connectors near the D slot designation, as shown in Figure 5-33.

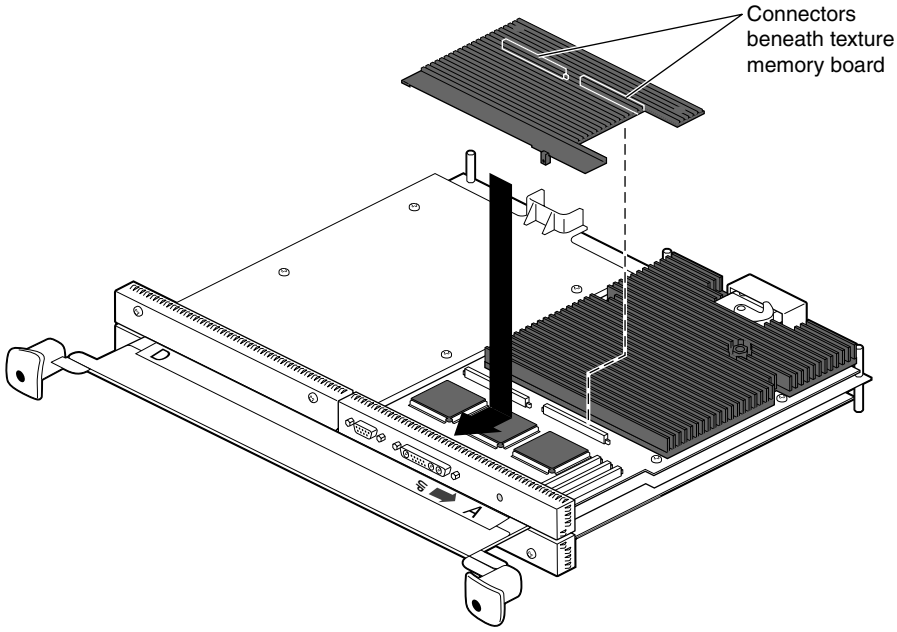



**Figure 5-34** Installing the Texture Memory Option Board on the OCTANE/SI Graphics Board

1. Align the texture memory option board above the graphics board as shown in Figure 5-34.
2. Lower the texture memory option board and slide the front edge under the I/O panel.
3. Align the two long connectors on the underside of the texture memory option board with the two connectors on the graphics board.
4. Press on the top of the texture memory option board above the connectors to seat the connectors.

   **Note:** These connectors must be fully seated for the texture memory board to be recognized.

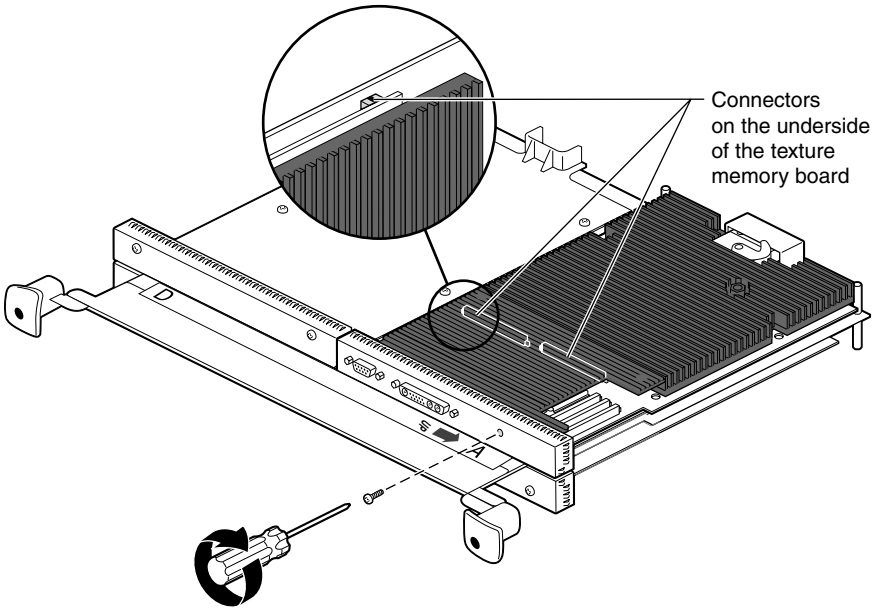



**Figure 5-35** Inserting the Nylon Screw

5. Place and tighten the nylon screw that came with the texture memory board through the hole in the I/O panel and into the hole on the texture memory option board as shown in Figure 5-35.

   **Caution:** Do not use a metal screw; your board does not perform properly. Order another nylon screw from your authorized service provider if this screw is lost or damaged.

If you are installing texture memory boards on the OCTANE/SSI board, repeat the above steps to install the second board. (After the texture memory boards are installed, the OCTANE/SSI graphics board is known as the OCTANE/MXI graphics board.)

You are finished installing the texture memory option board and are ready to install the XIO module. Go to “Installing the XIO Module” on page 171.

## Removing a Texture Memory Option Board From the Graphics Board

If you have not already done so, see "Preparing the Workstation to Install or Remove XIO Boards" on page 132 and follow the instructions through removing the XIO module.

A single texture memory option board is installed on the OCTANE/SI graphics board. Two texture memory option boards are installed on the OCTANE/MXI graphics board. Use the same process to remove texture memory option boards from the OCTANE/SI and OCTANE/MXI graphics board.

If you are removing texture memory option boards from the OCTANE/MXI graphics board, begin with the texture memory option board closest to slot A.

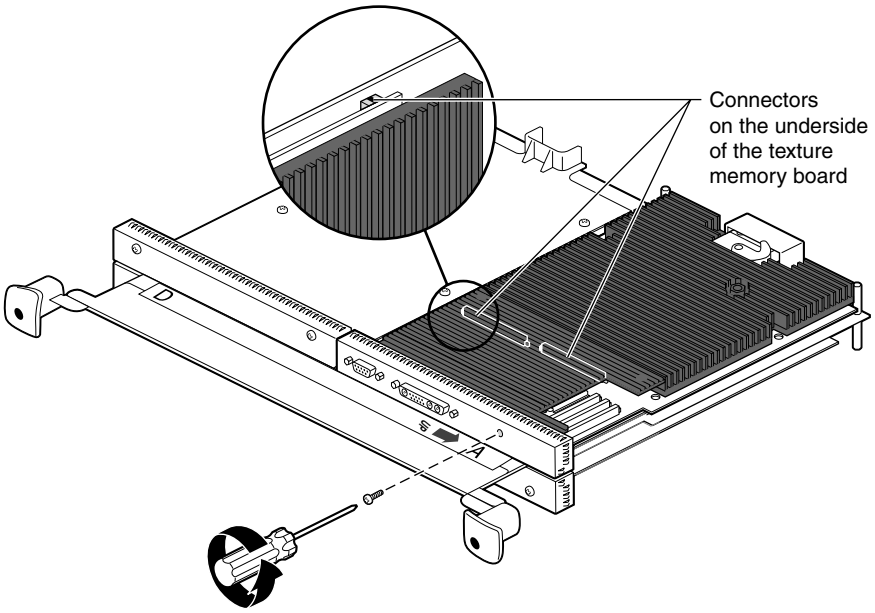



**Figure 5-36** Removing the Screw Holding the Texture Memory Option Board to the I/O Panel

1. Remove the nylon screw from the I/O panel.

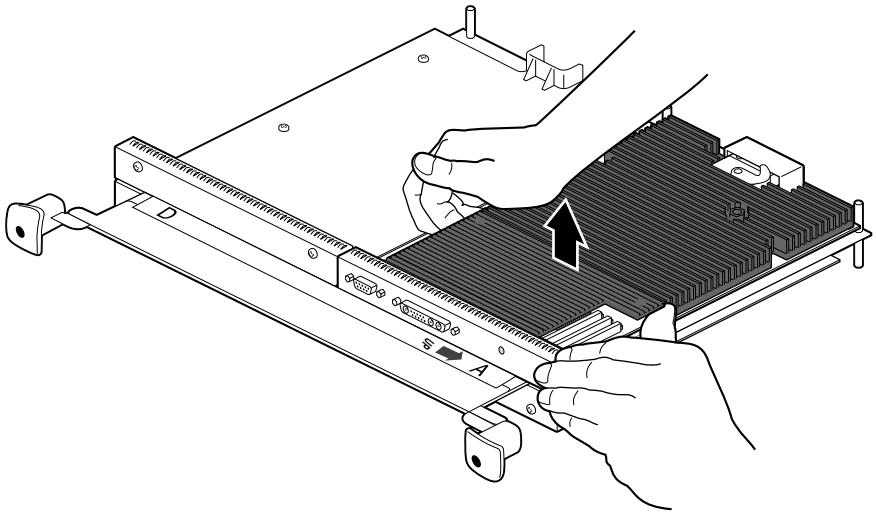



**Figure 5-37** Releasing the Texture Memory Option Board From the Graphics Board

2. Push up on the ends of the texture memory option board farthest from the I/O panel to release the two connectors beneath.

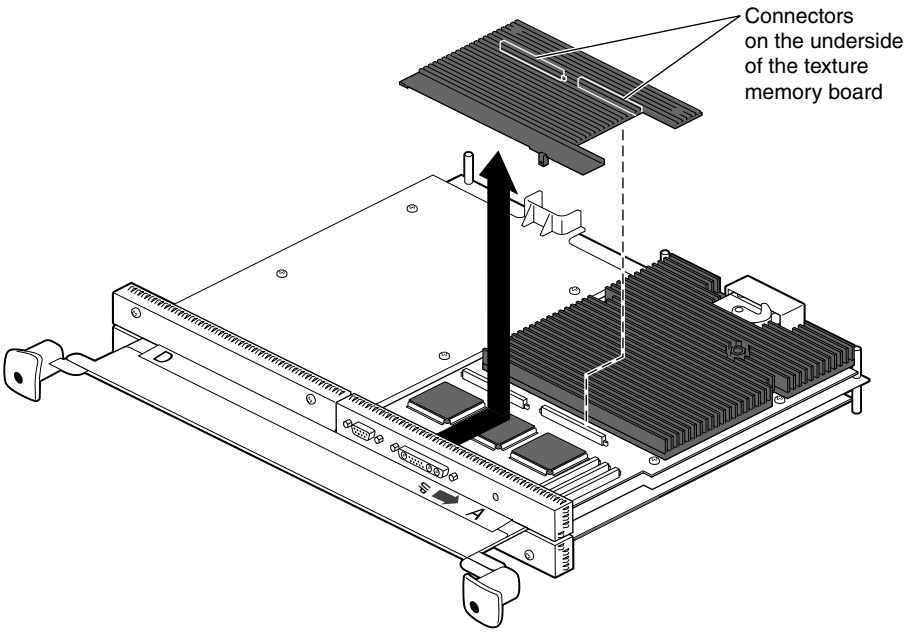



**Figure 5-38** Removing the Texture Memory Option Board

3. Lift up and back to remove the texture memory option board from beneath the edge of the I/O panel.

   **Caution:** If you are removing texture memory option boards from the OCTANE/MXI graphics board, be sure to remove both texture memory option boards. Follow the instructions in this section. Both texture memory boards must be removed for the OCTANE/MXI graphics board to work properly.

   If you are finished removing texture memory option boards, go to the next section, "Installing the XIO Module" on page 171.

## Installing the XIO Module

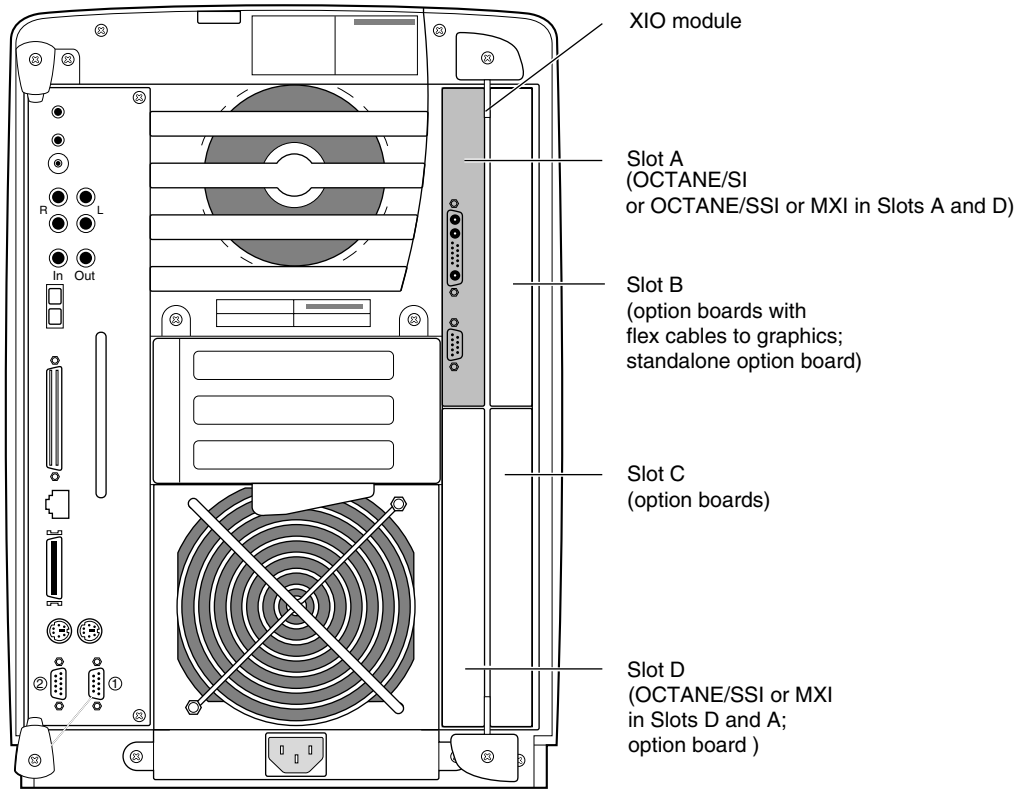



**Figure 5-39** Installing Slots A and D of the XIO Module Toward the Interior of the OCTANE workstation

**Caution:** Replace the XIO module with the graphics boards toward the inside of the workstation. The boards may be damaged if placed toward the exterior of the workstation. If the XIO module is inserted with the OCTANE/SSI or OCTANE/MXI graphics boards toward the exterior of the workstation, a notifier appears during power-on telling you to insert the XIO module with the graphics boards toward the interior of the workstation.

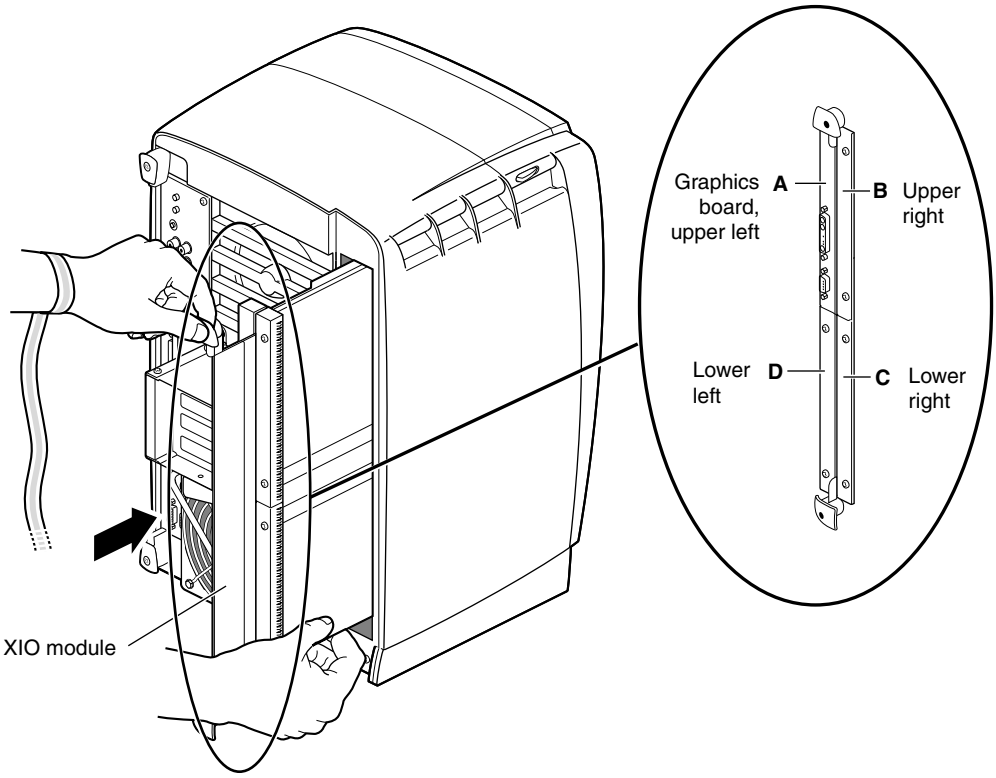



**Figure 5-40** Replacing the XIO Module

Follow these instructions to install the XIO module:

1. Replace the XIO module in the OCTANE workstation by sliding the XIO module into guides on the top and bottom of the workstation.
2. Before you insert the XIO module, make sure the handle portion protrudes in a locked position from the I/O panels, as shown in Figure 5-40.

   If the handles are flush with the I/O panels, the XIO module will stop during insertion. Pull out the handles until the sliding portion of the XIO module looks like Figure 5-40, and then continue inserting the XIO module into the chassis.

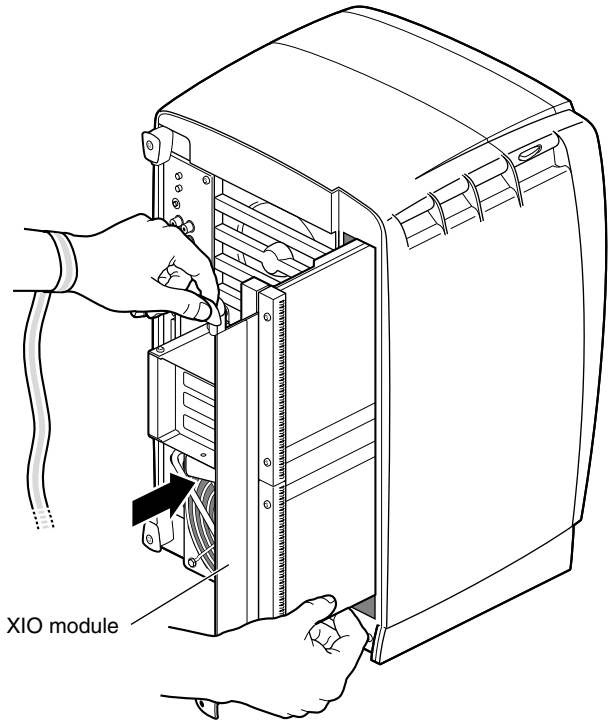



**Figure 5-41** Inserting the XIO Module

3. Grasp the handle area with one hand while supporting the XIO module with the other, and slide the module into the chassis.
4. Use the handles to push the XIO module into a locked position. (The I/O panels are nearly flush with the workstation when properly inserted, however, there is a slight variation in the depth of the boards.)

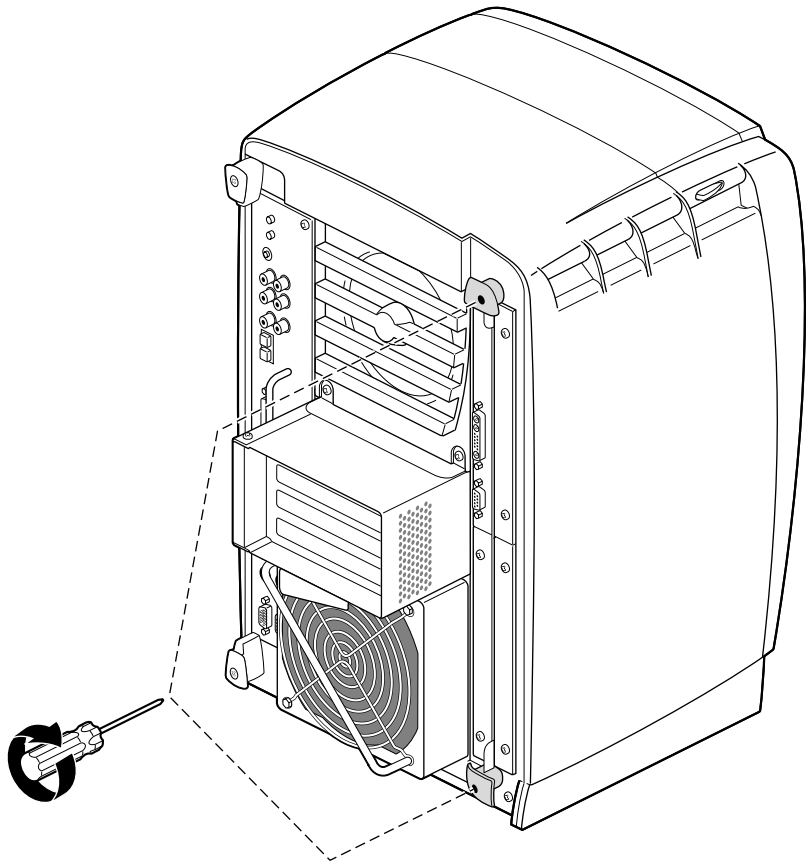


**Figure 5-42** Replacing the XIO Module Screws

5. Tighten the captive screws in the handles.
6. Remove the wrist strap.

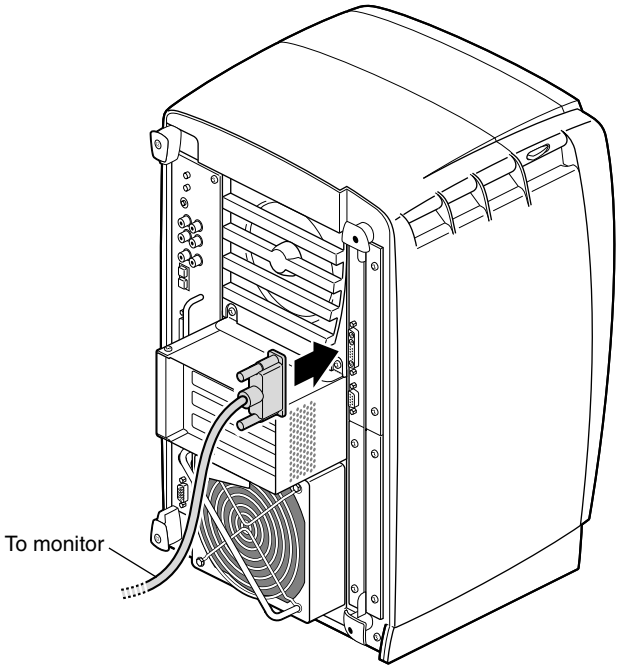



**Figure 5-43** Replacing the Monitor Cable

7. Reconnect all XIO cables to the XIO module.
8. Connect any new cables to the XIO module.

You have finished installing an XIO board.

Go to “Powering On the OCTANE Workstation” on page 176.

## Powering On the OCTANE Workstation

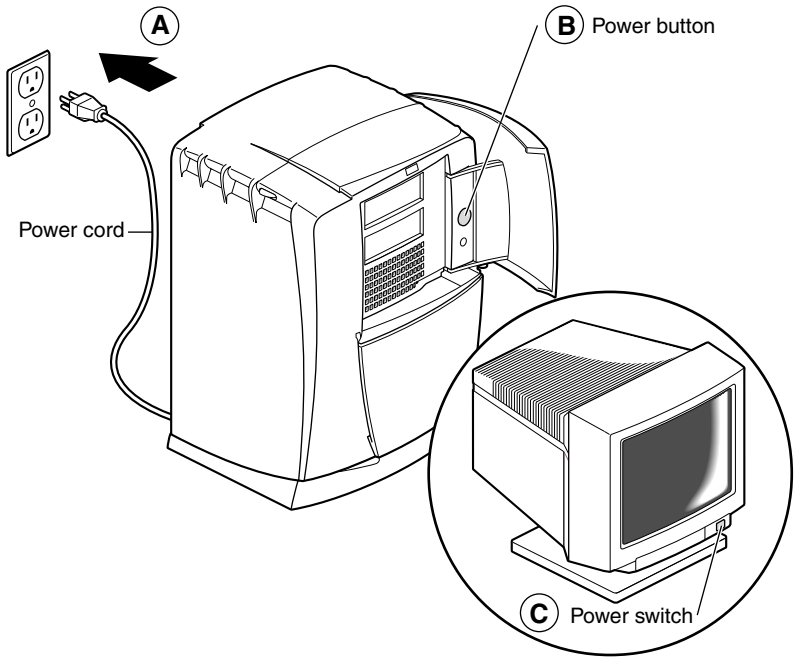



**Figure 5-44** Powering On the OCTANE Workstation

1. Plug the power cord into an electrical outlet. (Step A)
2. Push the power button on the front of the OCTANE workstation. (Step B)
3. Push the power switch on your monitor. (Step C)

## Verifying the Graphics or Option Board Installation

You can verify your graphics or option board installation by using the *hinv* command.

To verify that your graphics or option boards are recognized, follow these instructions:

1. From the Toolchest > Desktop, open a UNIX shell.
2. At the prompt, type: **`hinv.`**

3. Look for a line similar to this:

   `Graphics board: MXI` and `Graphics board: SI` or the name of the option board.

4. If your graphics or option board is not recognized, repeat the installation procedure.
5. If the graphics or option board is still not recognized, see Chapter 9, Troubleshooting, or the option board manual.
6. If the graphics board or option board is still not recognized, contact your authorized service representative.

*Chapter 6*

# Installing and Removing External Devices

This chapter provides information about installing and removing external devices from the OCTANE workstation.

*Chapter 6*

# Installing and Removing External Devices

This chapter covers installing and removing external devices. For information on internal SCSI devices, see Chapter 7, "Installing and Removing Drives and Front Module Parts."

To install a peripheral, first install the hardware, then bring up the system software so that the system can recognize the peripheral.

The following topics are covered in this chapter:


- "About SCSI Buses and Devices" on page 181
- "Installing External SCSI Devices" on page 184
- "About Cables" on page 187
- "Installing Serial Devices" on page 199
- "Installing Audio Devices" on page 202
- "Replacing the Keyboard or Mouse" on page 210


## About SCSI Buses and Devices

SCSI devices continue to evolve with higher bus bandwidths, faster data transfer rates, and channels with longer cables and more devices. The OCTANE workstation contains two wide buses, one for internal devices and one for external devices.

Table 6-1 compares Ultra and Fast, wide and narrow SCSI rates.

**Table 6-1** Comparison of Ultra and Fast, Wide and Narrow SCSI Rates

| | Wide (16 bit) Bus | Narrow (8 bit) Bus |
|---|---|---|
| Ultra SCSI (Fast-20) | 40 MB/s (peak theoretical rate) | 40 MB/s (peak theoretical rate) |
| Fast SCSI | 20 MB/s (peak theoretical rate) | 10 MB/s (peak theoretical rate) |

Ultra SCSI is also referred to as Fast-20.

The data transfer rate is also affected by the media speed of the SCSI peripheral. Fast-20 SCSI is not merely "fast SCSI." The "-20" in the term signifies the maximum number of megatransfers (millions of 8-bit or 16-bit data transfers per second) that can occur during an I/O operation.

Data transfer rates are either slow or fast, and are measured in megabytes per second. An operation is either 8 or 16 bit in size; thus, data transfer rates are dependent on bus width.

By default the Ultra SCSI controller tries to negotiate for wide (16 bit) and for ultra speed. Table 6-2 provides data burst rate information.

**Table 6-2** Bus Rate + Operating Mode = Data Burst Rates

| Existing Bus | Operating Mode | Data Burst Rate |
|---|---|---|
| 8-bit | Fast | 10 MB second |
| 8-bit | Ultra | 20 MB second |
| 16-bit | Fast | 20 MB second |
| 16-bit | Ultra | 40 MB second |

Here are some tips to keep in mind when attaching SCSI devices to the OCTANE workstation.

- You can mix Ultra and Fast devices on the same bus. You can also mix 16-bit and 8-bit devices on the same bus. The overall performance of a mixed bus can vary widely.
- To daisy-chain a mix of wide and narrow devices, place the wide devices (as a group) closest to the OCTANE workstation where the bus is wide, and place the narrow devices (as a group) at the end of the daisy chain.

  **Note:** Be sure to use an adapter or other special cable that terminates the upper half of the SCSI bus when converting from the final wide device to the first narrow device. Silicon Graphics supplied cables have this integrated into the cable, but not all third-party cables have the terminator integrated into the cable.
- Unsupported devices may not work with the OCTANE workstation, and may cause problems with supported devices.

- The length of combined SCSI cables determines how many devices can be daisy-chained.
- Set addresses manually only on external SCSI devices. See the device manual for setting the address on the device. Each device needs to have a unique address.
- Drives can be easily damaged. Handle your drive carefully; do not drop it or handle it roughly.

## Cleaning DAT or DLT Drives

If you use your DAT or DLT drive frequently, magnetic dust or debris can collect on the heads of the drive. This can make your DAT or DLT tapes unreadable or unwriteable.

If the green LED on the front of the DAT drive flashes at about 5-second intervals, clean the DAT drive heads. Clean the drive after about every 30 hours of use. Clean DLT drives more frequently.

Follow these steps to clean your DAT or DLT drive:

1. Insert a DAT or DLT cleaning cassette tape.

   **Note:** Be sure to use a cleaning tape authorized by the DAT drive manufacturer.

   The drive loads the tape and cleans the heads automatically.

   The DAT or DLT drive ejects the cleaning tape when the cleaning is complete.

2. If the green LED on the front of the DAT drive continues to flash at about 5-second intervals after you have cleaned the drive, you may have a problem with your cleaning-tape, or your drive may need cleaning by an authorized service provider.
   - First, try cleaning your drive again with a new DAT or DLT cleaning cassette tape.
   - If the LED continues to flash, take your drive to an authorized service provider for professional cleaning.

## Installing External SCSI Devices

This section explains how to connect external SCSI devices to the OCTANE workstation. External devices include

- DAT or DLT tape drives
- CD-ROM drives
- floppy drives
- other external SCSI devices

See "About SCSI Buses and Devices" on page 181 for information about SCSI bus and device speeds.

Follow the steps in the next few sections to connect an external SCSI device to the OCTANE workstation.

## Assigning a SCSI Address to the External Device

You must shut down your system to install an external device, but before doing so you must assign an address to the device.

**Note:** Set addresses manually only on external SCSI devices. Bus 1 (the external bus) has addresses such as 1-1, 1-2, 1-3. The second number is the number the user sets.

- If you currently do not have any external devices attached to your system, you can assign any number between 1 and 15 (for wide SCSI devices) or 1 and 7 (for narrow devices) to the new device. Do not use address 0, as this is the system SCSI ID. Skip to "Setting the SCSI Address on the External Device."
- If you have at least one external device attached to your system and you are adding another device, you must check which addresses are assigned to the existing external devices and then choose a number between 1 and 15 (for wide SCSI devices) or between 1 and 7 (for narrow SCSI devices) that has not already been assigned.

  **Note:** Although the OCTANE workstation allows up to 15 addresses for SCSI devices, the devices themselves may have dials that allow you to set a number only between 1 and 9.

To check available addresses for external devices, follow these steps:

1. If the OCTANE workstation is powered off, turn on the system power.
   - Open the door on the front of the OCTANE workstation.
   - Press and release the power button to power on the system.
2. Log in to your account. For more information on logging in, refer to "Logging Into the OCTANE Workstation" on page 23.

3. When the system comes up, from the Toolchest > System > System Manager > Hardware and Devices, choose “Removable Media Manager.”

   You see a listing of your system’s hardware devices and their address numbers.

4. Choose a number between 1 and 15 (for a wide SCSI device) or between 1 and 7 (for a narrow SCSI device) that is not assigned to your current devices and then go to the next section, “Setting the SCSI Address on the External Device.”

## Setting the SCSI Address on the External Device

To set the SCSI address on the external device, locate a switch, button, dial, or jumpers and manually set the address. Use the address you chose in step 4 of the previous section.

If the device has a push button, switch, or dial on the back, follow the steps below. If there is no switch or dial on the device, see the instructions included with the device.

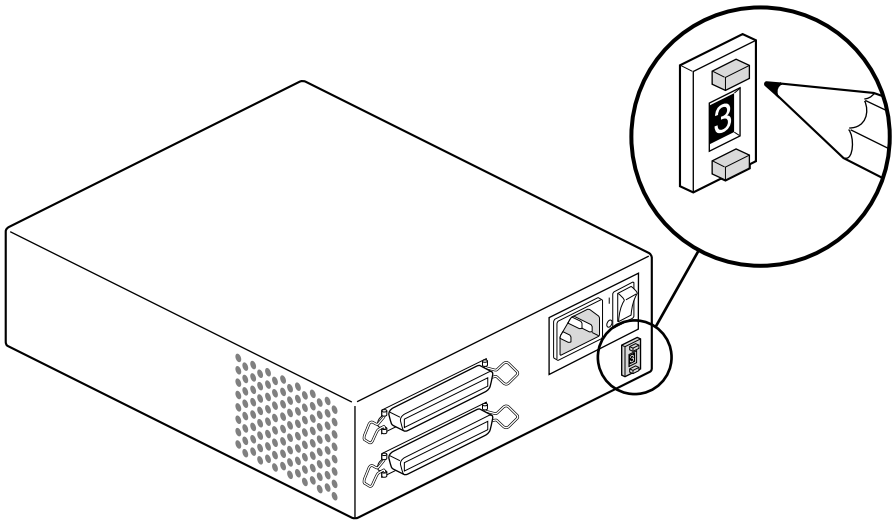



**Figure 6-1** Manually Setting the SCSI Address

1. Take the device out of its box and locate the push-button, switch, or address dial. It may be on the rear or bottom of the device. An example is shown in Figure 6-1.
2. Use a small screwdriver or pencil tip to set the dial or push the buttons to assign the address number you chose in step 5 of the previous section.

   **Caution:** Do not assign number 0. This number is reserved for the SCSI controller.

## About Cables

You can attach one or more external devices to the SCSI port on the back of your workstation. Connecting more than one device is called daisy-chaining. The devices are connected in a chain, with the first device attached to the SCSI port on the workstation.

The combined length of SCSI cables determines the number of devices that can be daisy-chained. See Table 6-3 for information on the types of devices and combined cable lengths you may use.

**Table 6-3** Maximum Combined SCSI Cable Length For Daisy-Chaining Devices

| SCSI type | Maximum cable length: |
|---|---|
| Ultra SCSI | 1.5 meters |
| Fast SCSI 2 | 3 meters |
| Ultra SCSI and Fast SCSI 2 | 1.5 meters |

**Caution:** Using a cable without controlled impedance may cause your device to not function. For any external device, it is extremely important that you use a cable of controlled impedance, and with impedance-matched connectors. Not all cables with the correct connector work. This is particularly important if you have more than one external device.

Use the cables and active terminator that came with the wide device, or purchase an active terminator, if necessary. Use only an active terminator.

**Caution:** Using other types of cables or terminators can result in your system malfunctioning.

If you have a device that you want to attach to your system, but you do not have the appropriate cables, you can order them by contacting your authorized service provider.

To attach an external device, power off the OCTANE workstation and prepare the device for installation. Instructions begin in the next section.

## Shutting Down and Powering Off the System

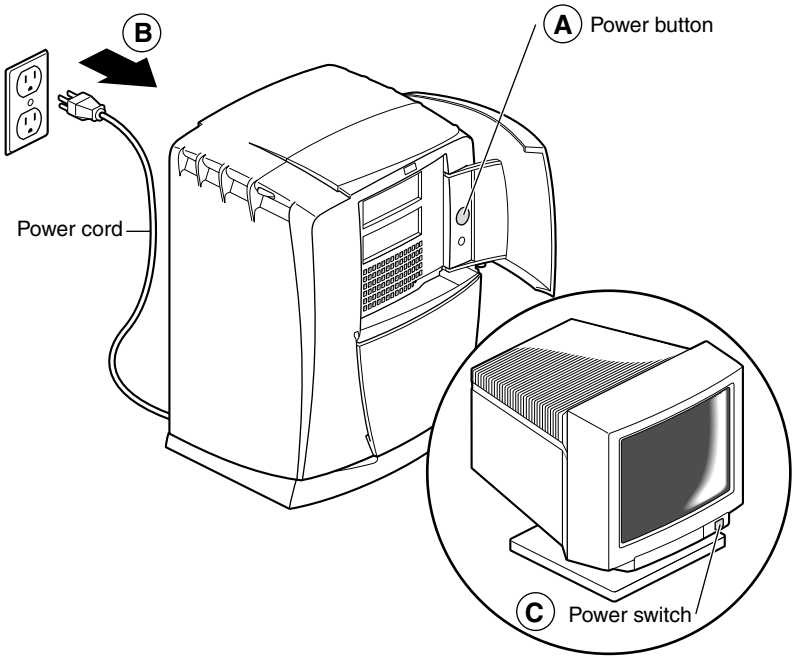



**Figure 6-2** Powering Off the OCTANE Workstation

Shut down and power off the system.

1. Open the door on the front of the OCTANE workstation. (Step A)
2. Press and release the power button to shut down the software and power off the system. (Step B)
3. The system powers off automatically.
4. Press the monitor power switch to turn off your monitor. (Step C)

## Preparing the SCSI Device for Cabling

1. If you are daisy-chaining a new device to a connected device, remove the terminator from the connector on the last device in the current chain by squeezing the clips on both sides of the terminator and pulling it off. See Figure 6-3.
2. If this is the only device to be attached to the OCTANE workstation, leave its terminator in place.

If no SCSI devices are attached to the OCTANE workstation, no terminator is needed on the workstation's SCSI port.

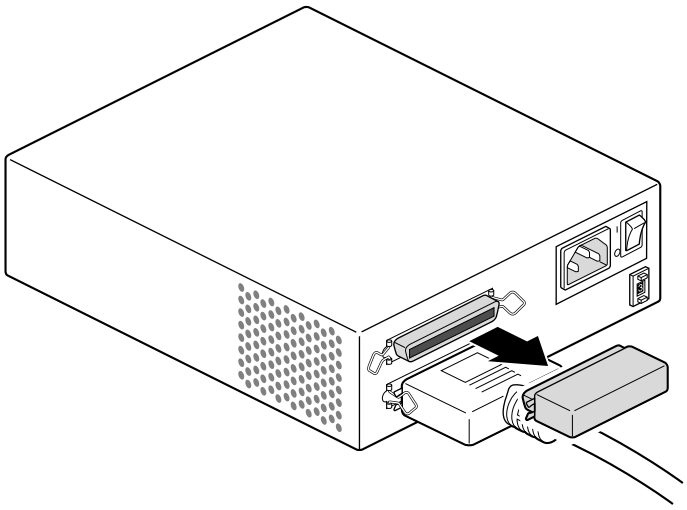


**Figure 6-3** Removing the Terminator From the Last Device on the Daisy Chain

## Cabling the Devices

**Caution:** Ultra and Fast SCSI devices require higher quality cables than earlier SCSI devices. Use the cable and active terminator that came with the device. Using other types of cables or terminators can result in your system malfunctioning.

1. Choose the appropriate SCSI cable to connect the external SCSI device.

   **Caution:** Exceeding the maximum 1.5 or 3 meters combined cable length recommended for your SCSI type can cause your external SCSI devices to operate unreliably. (See Table 6-3 for maximum cable length for each type of device or combination of devices.)

2. Connect the fastest SCSI device or devices to the OCTANE workstation and each other, then connect slower devices at the end of the chain. See Figure 6-4.

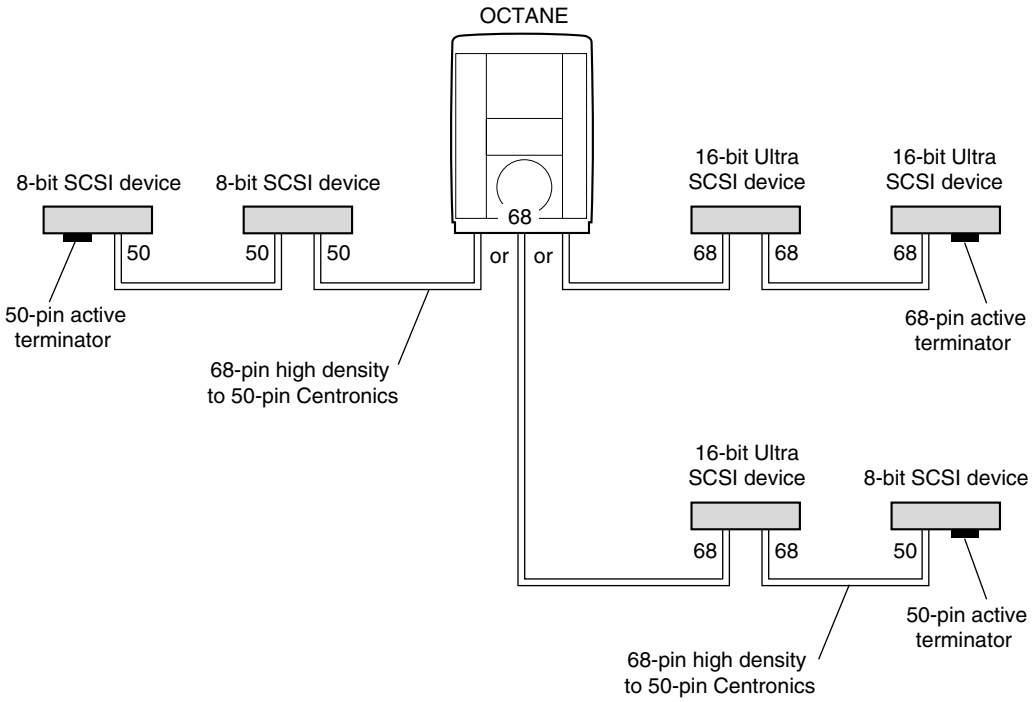



**Figure 6-4** Using the Correct Cables Between Devices and/or the OCTANE Workstation

3. Use the following cables between the OCTANE workstation and the device, or between devices:

   - If you are attaching the device to the workstation, use the high-density 68-pin to Centronics® 50-pin Fast SCSI cable. See Figure 6-4.
   - To daisy-chain an Ultra SCSI device to another Ultra SCSI device, use a 68-pin to 68-pin cable.

- To daisy-chain an Ultra SCSI device to a Fast SCSI device, use a 68-pin to 50-pin Centronics Fast SCSI cable.

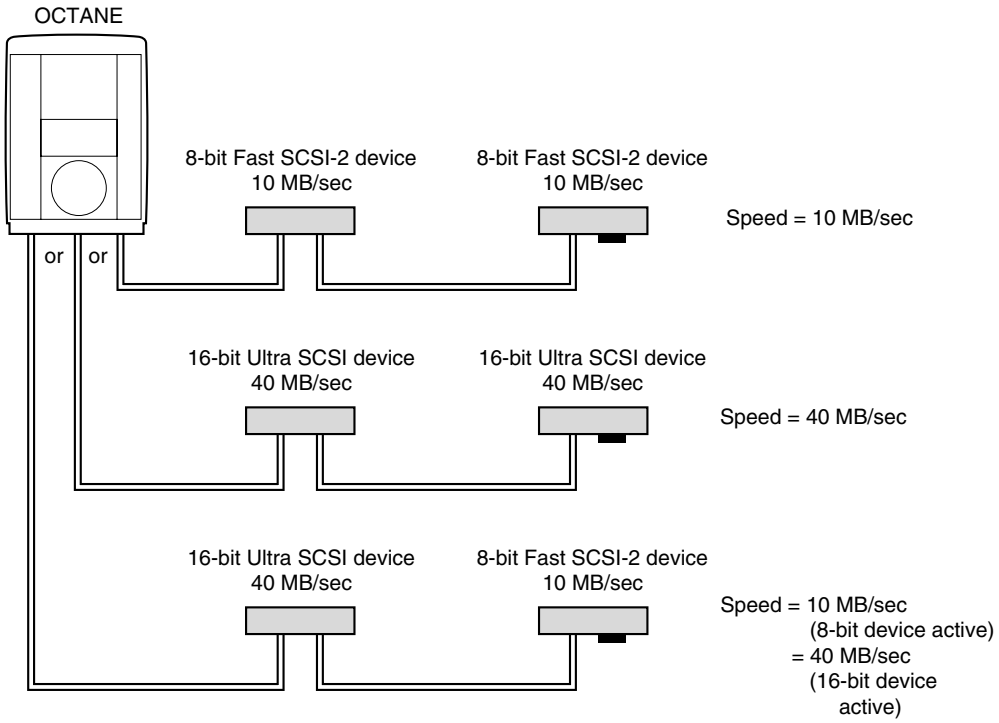



**Figure 6-5** Comparing Speed of Daisy-Chained Devices

The speed of the devices in the daisy chain is determined by the speed of the active device. If a slow device is active, the bus runs at a slow speed; if a high-speed device is active, the bus runs at a high speed.

## Connecting the SCSI Devices

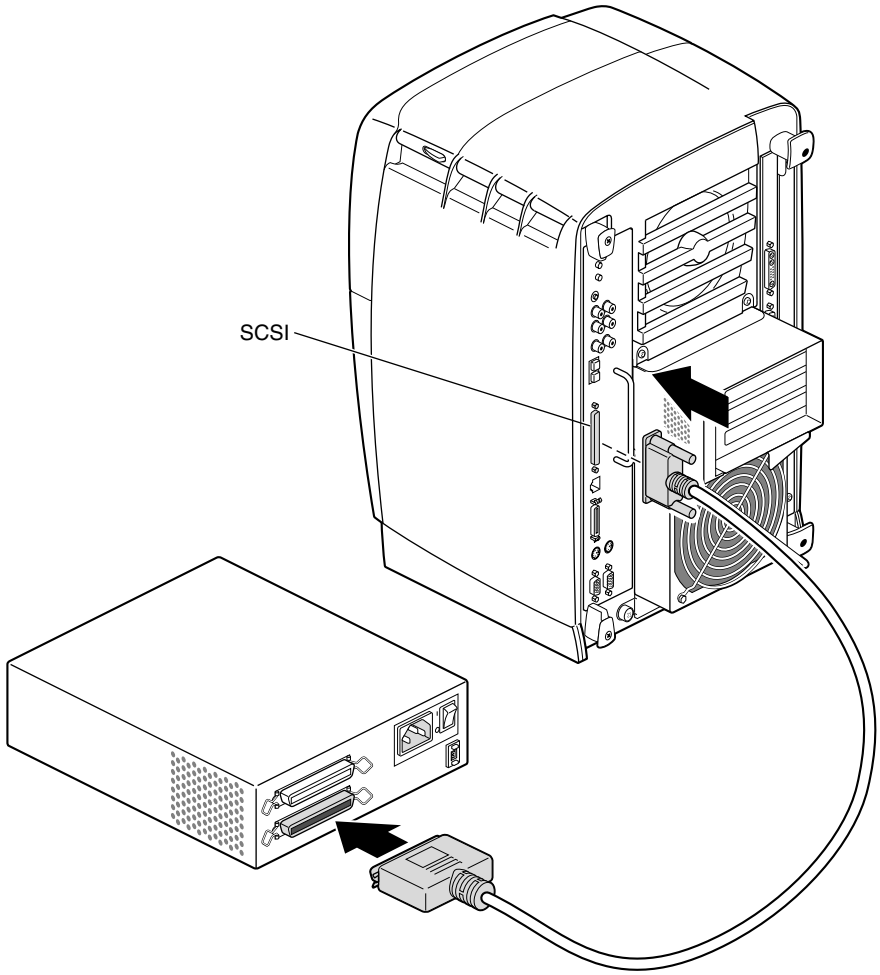



**Figure 6-6** Connecting an External SCSI Device to the OCTANE Workstation

1. Connect the single device, or first of several devices.
   - Connect one end of the cable to the OCTANE workstation or the back of another device.

- Connect the other end of the SCSI cable to one of the SCSI connectors on the back of the device and secure the clips on each side of the connector.

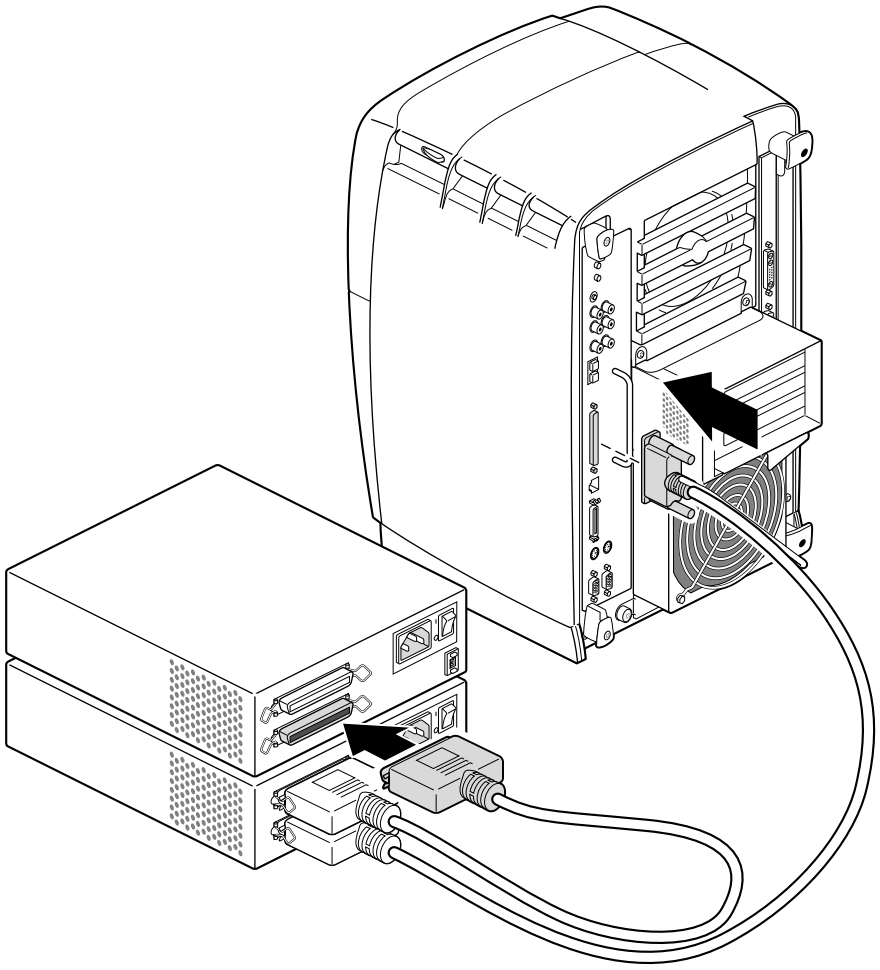


**Figure 6-7** Daisy-Chaining an External SCSI Device to Another External SCSI Device

- Connect one end of the cable to the open connector on the first device, as shown in Figure 6-7.
- Attach the other end to one of the connectors on the device you are adding.

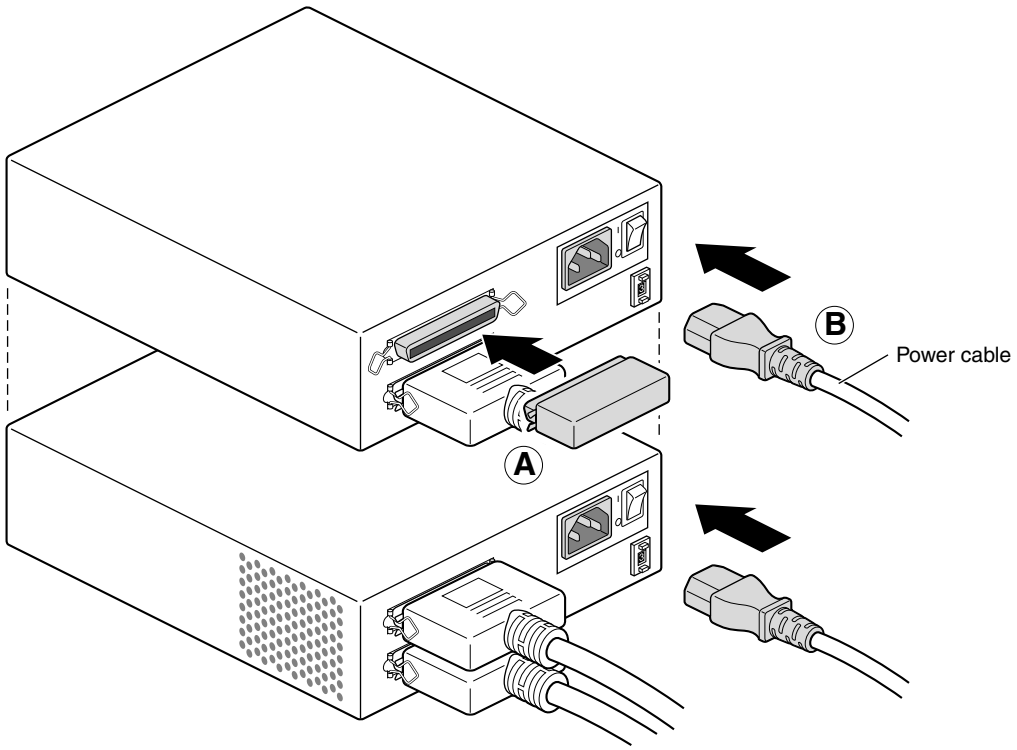



**Figure 6-8** Connecting the Terminator and Power Cable to an External Device

2. Connect the terminator to the last device in the daisy chain. (Step A) Be sure to secure the clips on each side of the terminator. The terminator is designed to fit only one way.
3. Connect power cables to each device and to an electrical outlet.(Step B)

   **Note:** Remember to turn on the external devices first and then your workstation to make sure the devices are recognized.

You are now ready to power on your system and check to make sure that the device is recognized.

## Powering On the OCTANE Workstation

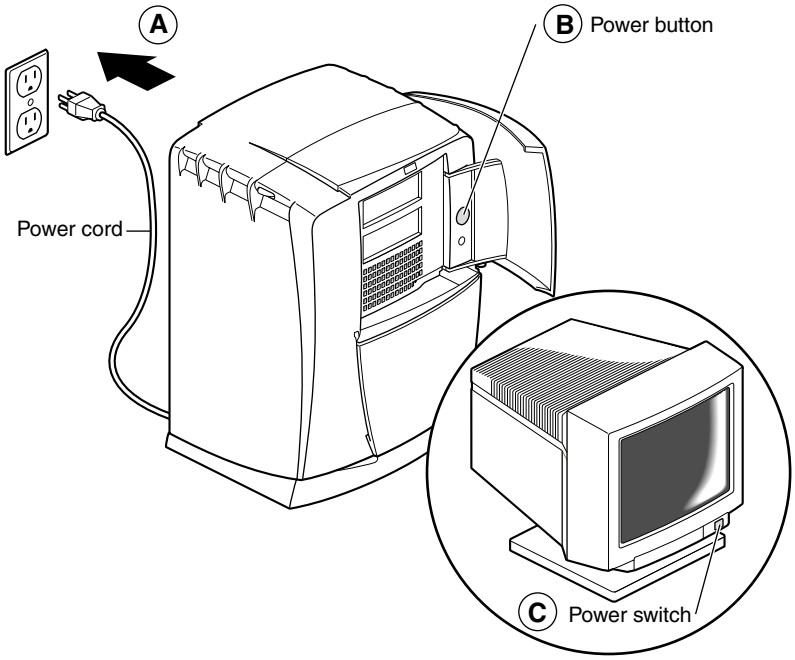



**Figure 6-9** Powering On the OCTANE Workstation

1. Plug in the power cord. (Step A)
2. Replace the lockbar (if one was removed).
   - Open the cover on the front of the OCTANE workstation.
   - Slide the lockbar into the lockbar slot.
   - Insert the lock through the lockbar at the back of the workstation.
3. Push the power button on the workstation. (Step B)
4. Press the power switch on the monitor. (Step C)

## Testing the External Device

After you've attached the device to your workstation, check to make sure your system recognizes the device.

The system automatically sets up the system software for most external devices you install and places an icon on the desktop.

To check the system configuration, follow these steps:

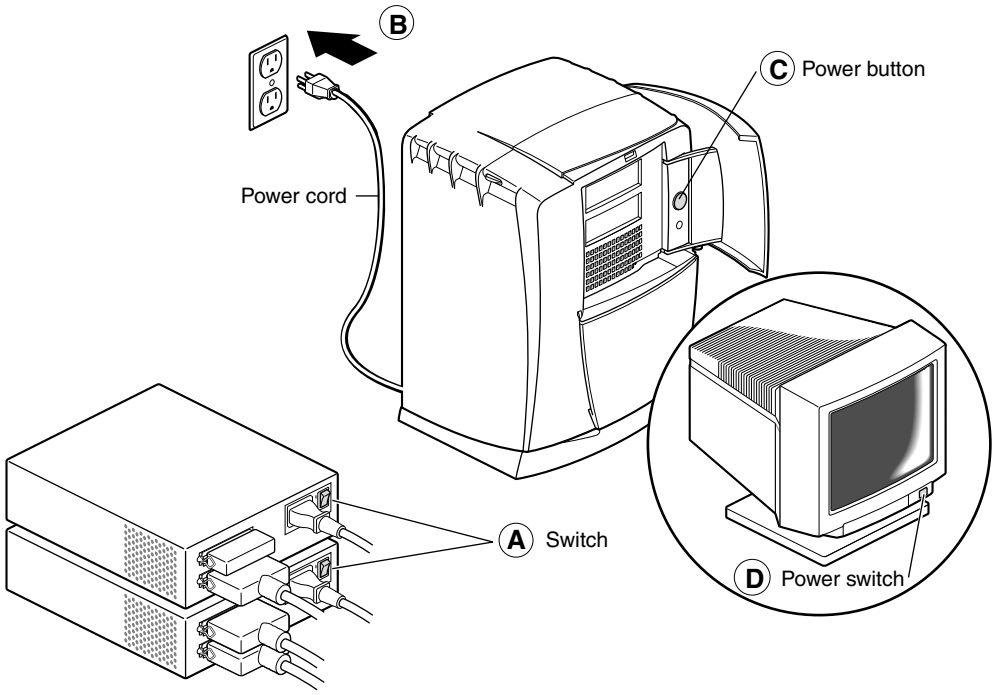



**Figure 6-10** Turning On External Devices and the OCTANE Workstation

1. Turn on the external device first. External devices can be turned on in any order. (Step A)

   **Tip:** Always turn on the external device *before turning on the workstation*; otherwise, the system does not recognize the device.

2. If your workstation is powered off, turn on the system power. (Step B)

- Open the door on the front of the OCTANE workstation.
- Press and release the power button to turn on the system. (Step C)
- Press and release the power switch on your monitor. (Step D)

After a few moments, the system starts up.

3. When you see the login screen, log in to your account. For more information on logging in, go to Chapter 1, "Logging Into the OCTANE Workstation" on page 23.

If the device is installed correctly, you see an icon for it on the desktop. Figure 6-11 shows the icon for a CD-ROM drive.

**Figure 6-11** Identifying the CD-ROM Icon

You can also use the System Manager to check that the external device is shown correctly.

1. From the Toolchest > System > System Manager > Hardware and Devices > choose Removable Media Manager. You see a window showing the installed external devices.
2. Look for the device you installed under Shared Resources. This information is also available by opening an IRIX shell and typing **`hinv`**.

If the device you installed does not appear:

1. Power off the system.
2. Check that you've connected the correct SCSI cable to the device or between devices.
3. To daisy-chain a mix of wide and narrow devices, place the wide devices (as a group) closest to the OCTANE workstation where the bus is wide, and place the narrow devices (as a group) at the end of the daisy chain.
4. If the device is the last SCSI device on the daisy chain, make sure it has a terminator installed on it.
5. Restart the system and check the System Manager listing or *hinv* listing again.

The software automatically recognizes any device you install. Use Table 6-4 for more information on various SCSI external devices.

**Table 6-4** Additional Information on External SCSI Devices

| Installed device: | For Information on: | Go to: |
|---|---|---|
| Floppy drive | Formatting and ejecting a disk | "Formatting an External Floppy Disk Drive" on page 199 |
| CD-ROM drive | Special instructions for setting up a CD-ROM others can access | Toolchest > Help > Online Books> End User bookshelf > *Personal System Administration Guide*, "Setting Up SCSI Peripherals" |
| | Additional information | Toolchest > Help > Online Books > End User bookshelf *IRIX Admin: Peripheral Devices,* and search for "CD-ROM, Floptical, and Floppy Disk Drives" |
| Tape drive | Backing up data onto a tape | Toolchest > Help > Online Books > End User bookshelf > *Personal System Administration Guide* > "Backing Up and Restoring Files" |
| Printer | Setting up a printer | Toolchest > System > System Manager > Hardware and Devices > Printer Manager |
| | | For general information, go to Toolchest > Help > Online Books > End User bookshelf > *Personal System Administration Guide* >"Setting Up Network, Peripheral, and Printer Connections" |

### Formatting an External Floppy Disk Drive

If you are using the drive as an IRIX device, follow these steps to format a floppy disk, if necessary:

1. From the Toolchest choose System > System Manager > Hardware and Devices > Removable Media Manager.

   A window appears with icons of the recognized devices.
2. Select your device by clicking on it.
3. Click the *Format* button.

Floppy disks take about 2 minutes to format.

For more information on formatting disks, choose Online Books from the Help toolchest and search for "Formatting Floppy and Floptical Disks" in *IRIX Admin: Peripheral Devices*.

You are finished formatting the floppy disk.

To eject a floppy disk from an external floppy drive, press the eject button on the floppy device.

## Installing Serial Devices

This section tells you how to install serial devices. Serial devices include

- dials and button boxes
- digitizer tablets
- console terminals
- modems

### About Serial Ports

The OCTANE workstation has two PC-compatible serial ports. Each port can also be configured to operate in other modes and adapter cables are available to simplify

interconnection for those modes. For more information, see Appendix C or *OCTANE Hardware Central.*

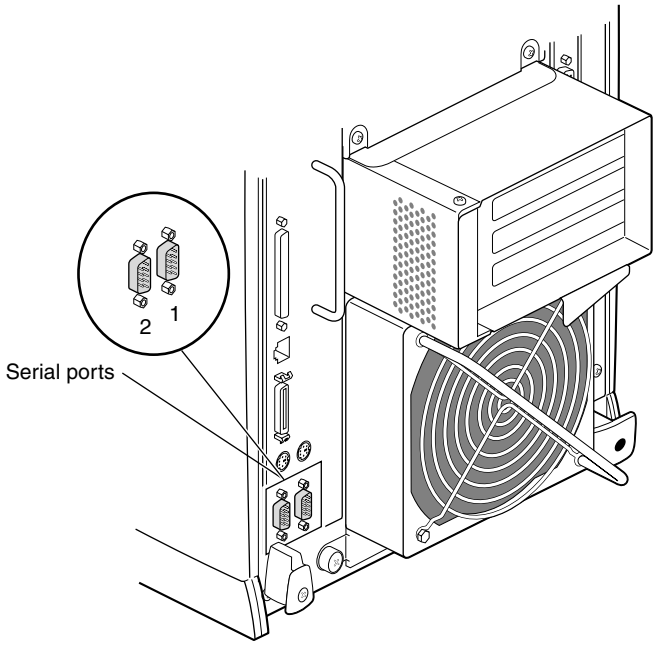



**Figure 6-12** Locating the Serial Ports on the System Module

## Attaching the Device

To install a serial device, follow these steps:

1. Locate the serial ports on the back of the OCTANE workstation, as shown in Figure 6-12.

   Serial ports are labeled **1** and **2** and are DB9 connectors.

2. Unpack the serial device and cables.

**Table 6-5** Serial Port Assignment

| If you are installing: | Use: |
|---|---|
| A console terminal | Serial port 1 |
| Any other serial device | Either serial port |

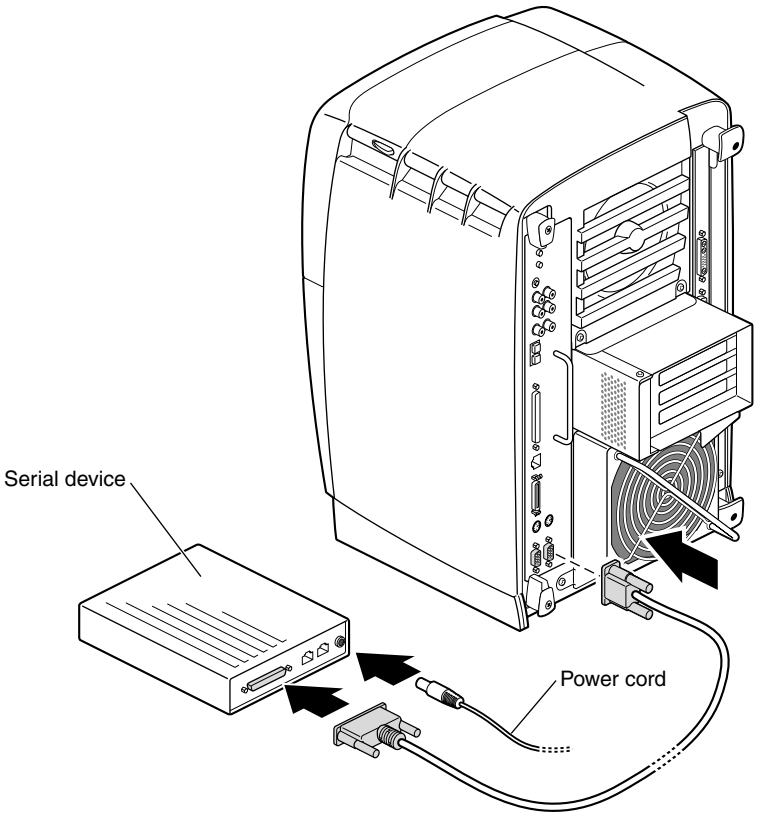



**Figure 6-13** Plugging In the Serial Cable

3. Attach the serial device cable.

- See the instructions that came with the serial device for detailed instructions on how to connect the cable to the device.
- Plug the other end of the cable to the serial connector on the back of the OCTANE workstation.

4. Plug in the serial device's power cable (if any).
   - Plug the socket end of the power cable into the power connector on the back of the serial device.
   - Plug the other end into a grounded three-pronged wall outlet or power strip.

### Configuring the Device

Once the device is connected to the workstation, you need to configure it. Choose Online Books from the Help toolchest. Choose the *Personal System Administration Guide*, and search for "Setting Up Serial Peripherals."

## Installing Audio Devices

All audio ports are located on the upper portion of the system module and include

- Microphone (in)
- Speakers/headphone (out)
- Speaker power (out)
- Analog Line level I/O
- Coaxial Digital I/O
- Optical Digital I/O

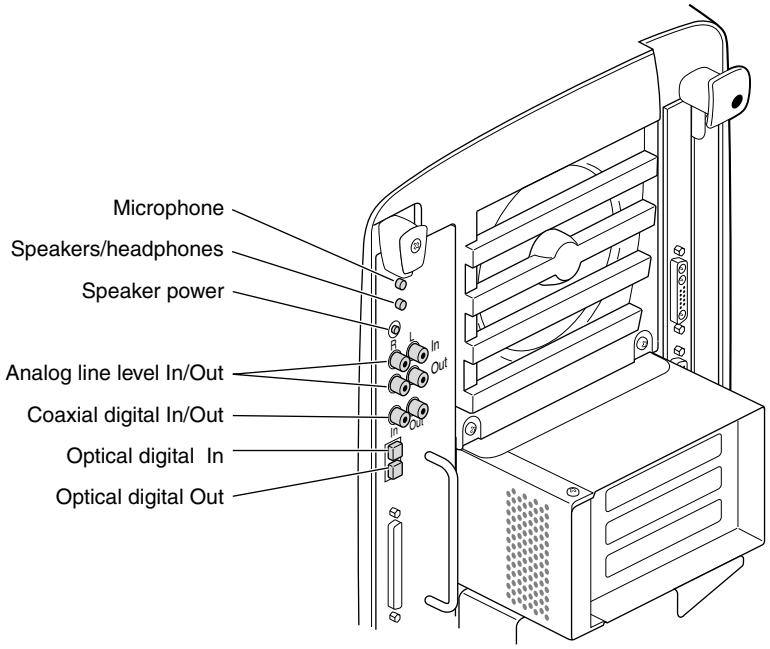



**Figure 6-14** Audio Ports on the System Module

To connect an audio device, plug the device cable into the appropriate port.

Use the Audio Panel found in the Toolchest > Desktop > Control Audio to make adjustments to audio.

For other audio information, from the Toolchest > Help, choose either:

- Online Books > End User > *Media Tools User's Guide.*
- "How Do I," if you have a specific audio task you wish to perform.

## Installing the Microphone

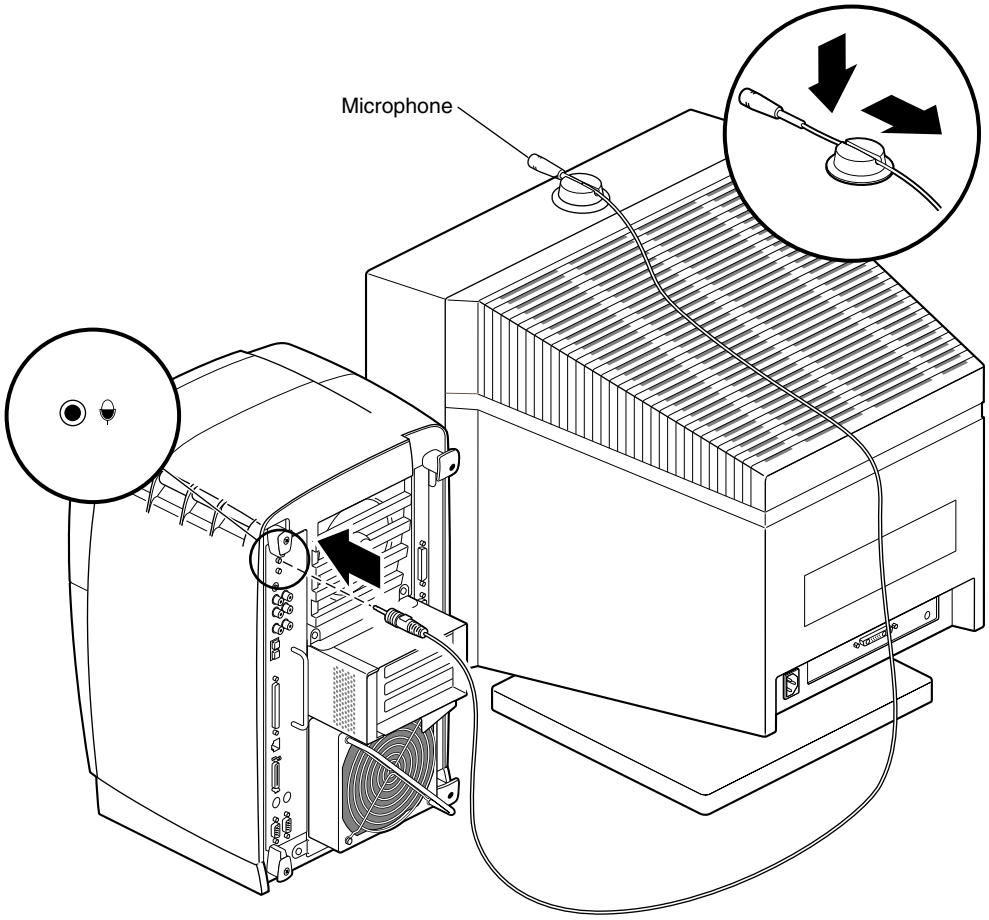



**Figure 6-15** Installing the Microphone

Attach the microphone to the OCTANE workstation.

1. Place the microphone cord through the slot in the microphone base.
2. Slide the microphone into the base. See Figure 6-15.
3. Place the microphone on the monitor in the center and to the front.

4. Drape the cord over the back of the monitor. Draping the cord over the side of the monitor causes the microphone to point away from the user, reducing the quality of the sound.
5. Attach the microphone cable to the microphone port on the OCTANE workstation.

For pinout and technical specification information, see Appendix C.

## Installing the Speakers and Headphones

The speakers connect to the OCTANE workstation on the system module. If you choose to use the headphones without the speakers, plug the headphones directly into the speaker port. Otherwise, insert the headphones into the jack on the front of the right (active) speaker.

Before connecting the speakers to the OCTANE workstation, power it off. For instructions on shutting down and powering off the OCTANE workstation, turn to "Shutting Down and Powering Off the System" on page 188. Then return here for instructions on attaching the speakers.

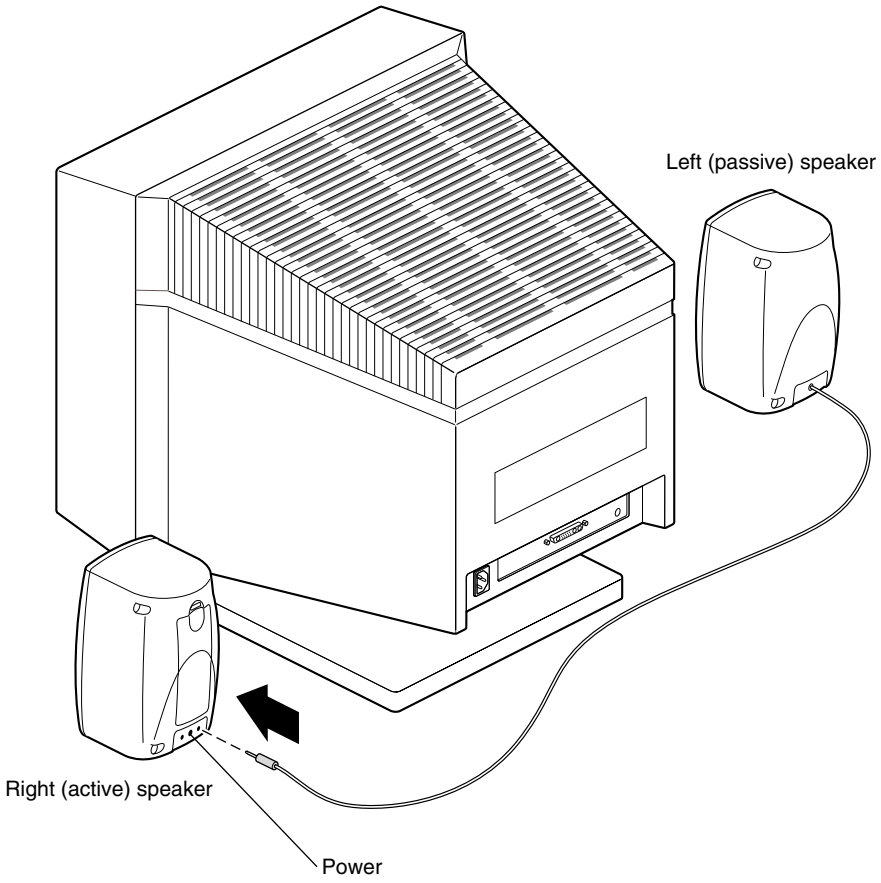



**Figure 6-16** Setting Up the Speakers

1. Place the left (passive) speaker on the left side of the monitor and the right (active) speaker on the right side of the monitor. (The left [passive] speaker has a cord permanently attached to it.)
2. Run the cord from the left (passive) speaker behind the monitor.
3. Attach the left (passive) speaker cord to the right (active) speaker. Use the port marked L. See Figure 6-16.

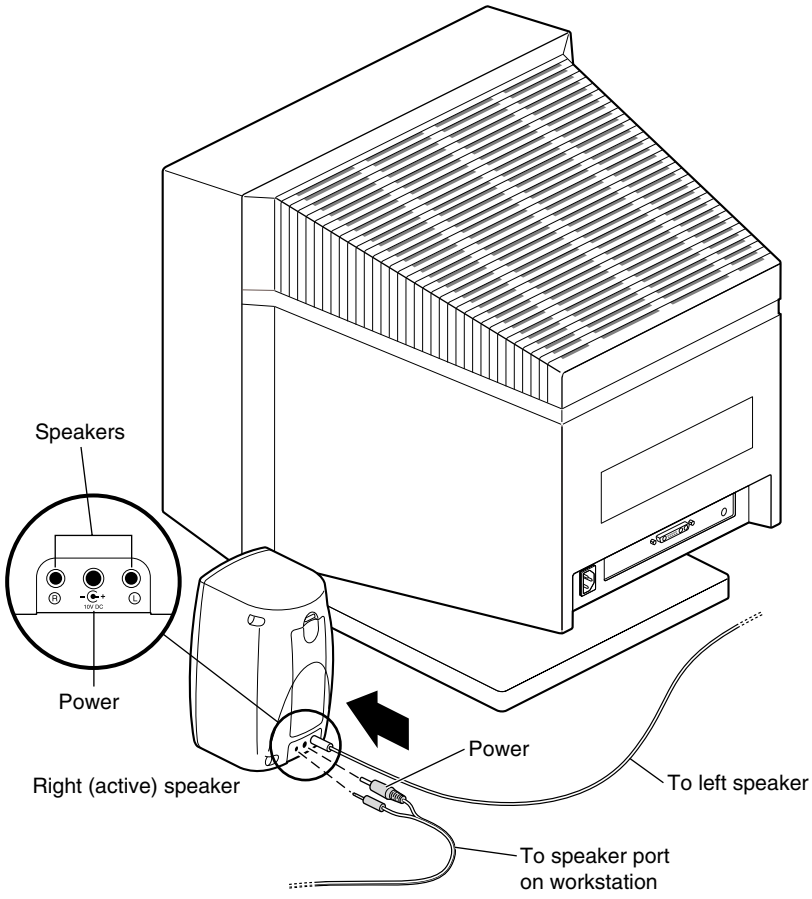



**Figure 6-17** Attaching the Speaker Cables to the Active Speaker

4. On the cable with double connectors on each end, locate the end with one female connector and one male connector.
5. Attach the female power connector to the middle port on the right (active) speaker.
6. Attach the male connector to the port labeled R on the right (active) speaker.

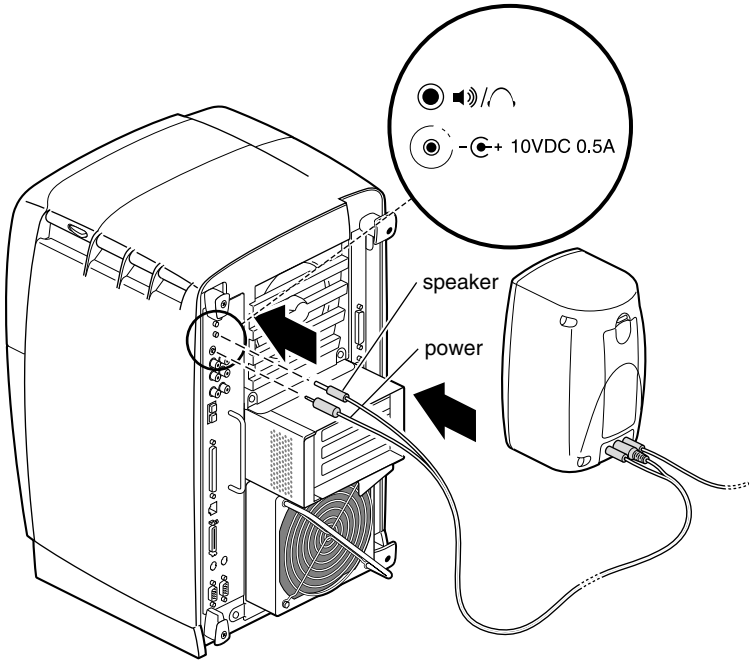



**Figure 6-18** Attaching the Speaker Cables to the OCTANE Workstation

7. Attach the other end of the speaker power and audio cable to the OCTANE workstation.
   - Attach the smaller tipped power connector to the OCTANE speaker power port.
   - Attach the larger tipped connector to the OCTANE speaker port.
8. Press the power button on the front of the active speaker.
9. Power on the OCTANE workstation. Go to "Powering On the OCTANE Workstation" on page 211.

For pinout and technical information, see Appendix C, "Technical Specifications," or *OCTANE Hardware Central*.

## About Analog Line Level Audio

The analog line level audio ports are color-coded. Red is right. White is left. Input is upper. Output is lower. These ports are compatible with consumer devices such as stereo receivers and VCRs, as well as with professional audio equipment.

For more pinout and technical information, see Appendix C, “Technical Specifications.”

## About Coaxial Digital Audio

The coaxial digital audio ports are color-coded. Output is white. Input is red. These ports are compatible with consumer devices with coaxial digital interfaces, CD players, as well as professional audio equipment.

This port is in accordance with AES-3id recommendations for 75 ohm 1 V peak-to-peak coaxial connection of AES3-1992 interfaces.

For pinout and technical information, see Appendix C, “Technical Specifications.”

## About the Optical Digital Port and Cable

A red LED is visible in the optical digital Out port or cable tip when audio is activated. Optical digital In is the upper port. Optical digital Out is the lower port.

These ports are compatible with other equipment displaying the ADAT® optical logo, as well as consumer devices such as CD players with digital optical interfaces.

Cover the optical digital port with a cap when is not in use to keep out dust and debris.

**Note:** Do not touch the tip of the fiber optic cable, or performance may be reduced.

Optical digital cable should be three meters or less. Using a longer cable may cause performance to be reduced.

For pinout and technical information, see Appendix C, “Technical Specifications” or *OCTANE Hardware Central*.

## Replacing the Keyboard or Mouse

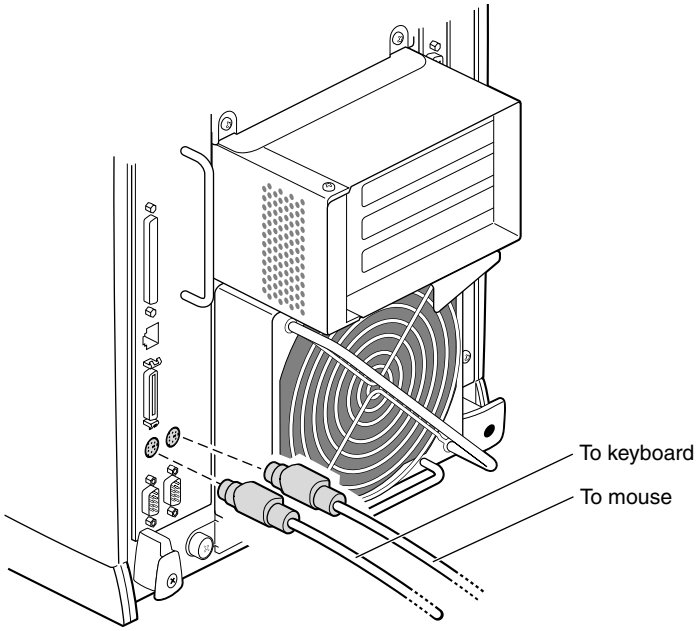



**Figure 6-19** Disconnecting the Mouse and Keyboard

1. See "Shutting Down and Powering Off the System" on page 188 to shut down the system.

   It is recommended that you connect the keyboard to the keyboard port, and the mouse to the mouse port. However, both work in the either port. You must power off the workstation to switch the ports.

   **Note:** While you can disconnect and reconnect it to its port while the system is on, you cannot switch ports while the OCTANE workstation is on.

   For pinout and technical information, see Appendix C, "Technical Specifications."

2. When the workstation is shut down, disconnect the mouse or keyboard from its port on the back of the workstation.
3. Connect the new mouse or keyboard cable to the workstation.
4. Power on the workstation.

## Powering On the OCTANE Workstation

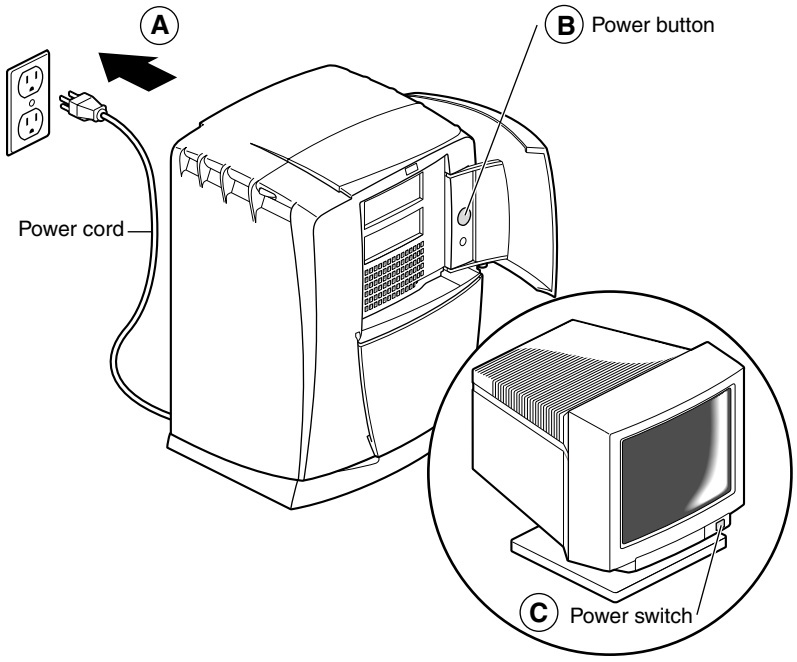



**Figure 6-20** Powering On the OCTANE Workstation

1. Plug in the power cord to an electrical outlet. (Step A)
2. Press the power button on the OCTANE workstation. (Step B)
3. Press the power switch on the monitor. (Step C)

*Chapter 7*

# Installing and Removing Drives and Front Module Parts

This chapter provides instructions on installing and removing system and option drives, the light module, the system fan, frontplane assembly, and plastic cover of the OCTANE workstation.

*Chapter 7*

# Installing and Removing Drives and Front Module Parts

This chapter provides information on installing and removing drives and parts on the front of the OCTANE workstation, behind the bezel.

The following topics are covered in this chapter:


- "Installing and Removing Internal Drives" on page 215
- "Replacing the Light Module" on page 233
- "Removing and Installing the Frontplane Module and System Identification Module" on page 235
- "Removing and Installing the System Fan" on page 243
- "Removing and Installing the Plastics: Top and Base" on page 248


## Installing and Removing Internal Drives

This section tells you how to install internal drives in the OCTANE workstation. Internal drives include the system disk drive, secondary hard disk drives, and DAT and DLT drives.

**Caution:** Drives can be easily damaged. Handle your drive carefully; do not drop it or handle it roughly.

### About Internal Drives

- Unsupported devices may not work with the OCTANE workstation, and may cause problems with supported products.
- All internal devices have a 3.5-inch form factor.

- Set addresses manually only on external SCSI devices; internal SCSI devices (drives) are on a separate bus and are automatically given an address when they are inserted. Each bus has a unique address: Bus 0 (internal devices) has addresses such as 0-1, 0-2, 0-3; the system drive is SCSI ID 0-1, the option drive above it is SCSI ID 0-2, and the option drive at the top of the OCTANE workstation is SCSI ID 0-3. Bus 1 (external devices) has addresses such as 1-1, 1-2, 1-3.

  **Tip:** To determine the total capacity and megabytes available on your disks, go to the Toolchest > System > File System Manager and click the *Get Info* button.

## Shutting Down and Powering Off the System

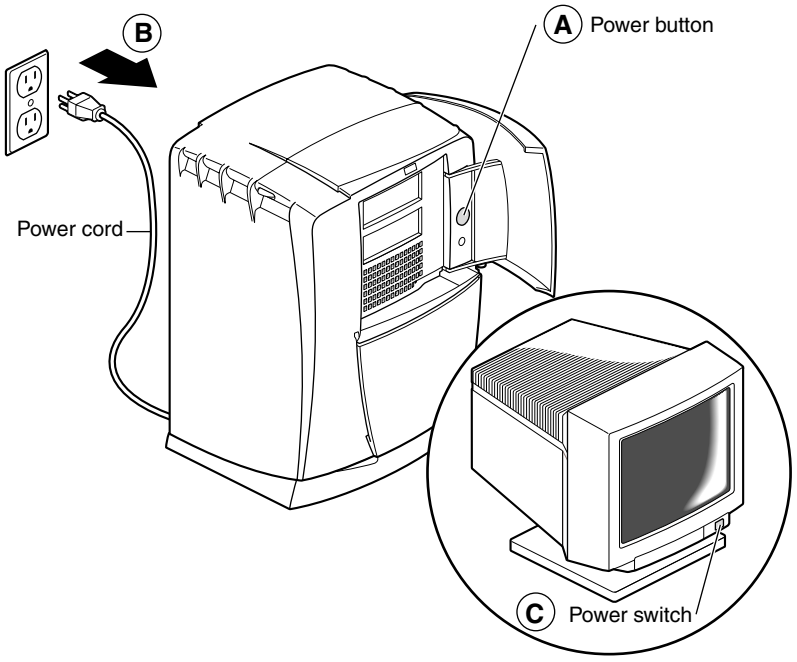



**Figure 7-1** Powering Off the OCTANE Workstation and the Monitor

To shut down and power off the system, follow these steps:

1. Open the front cover.
2. Press and release the power button to shut down the software and power off the system. The system powers off automatically. (Step A)

3. Press the monitor power switch to turn off your monitor. (Step B)
4. Disconnect the power cable from the back of the workstation. (Step C)

## Removing the Bezel

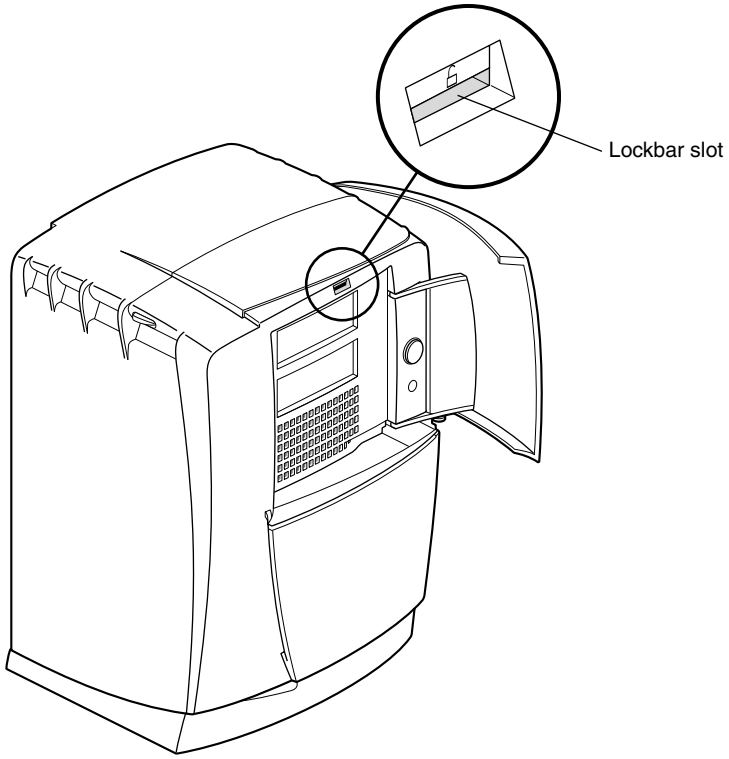



**Figure 7-2** Locating the Lockbar on the Front of the OCTANE Workstation

To remove the bezel, you first shut down and power off the system. If you have not already done so, go to “Shutting Down and Powering Off the System” on page 216. Then return here and follow these steps:

1. Locate the lockbar. If no lockbar is in place, skip to step 4.

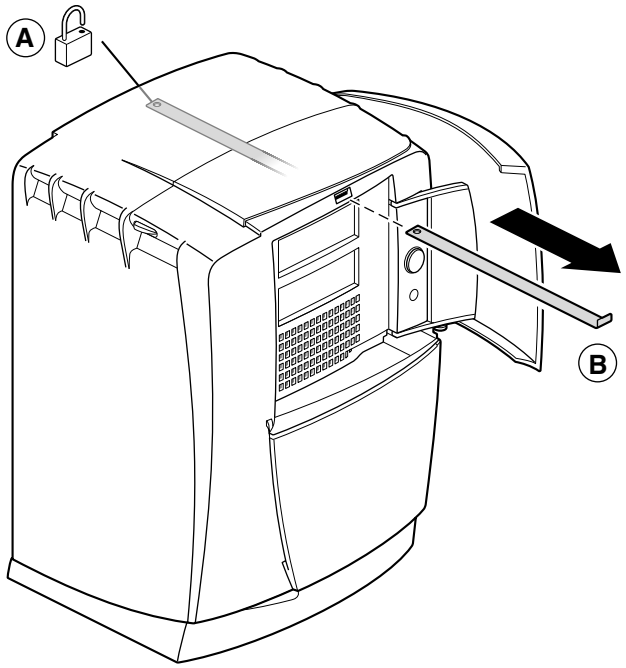



**Figure 7-3** Unlocking and Removing the Lockbar

2. Unlock and remove the lockbar, if it is in place. (Step A)
3. Close the door on the front of the OCTANE workstation. (Step B)

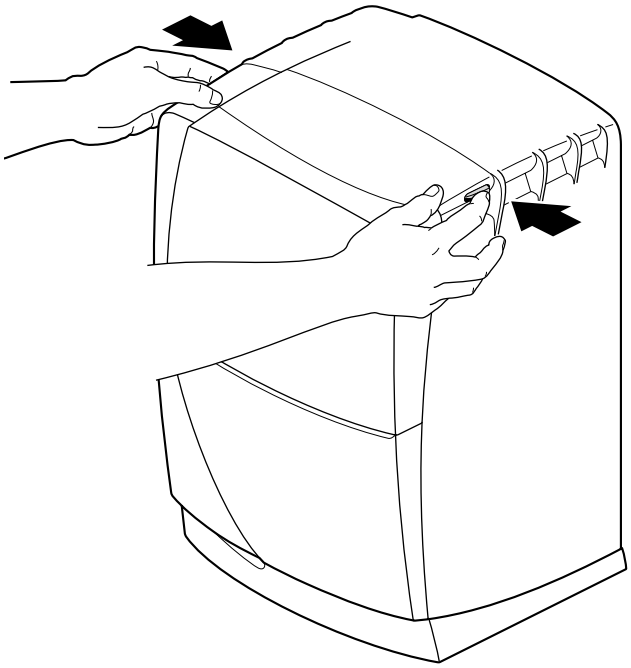


**Figure 7-4** Pressing the Bezel Release Buttons

4. Press both bezel release buttons.

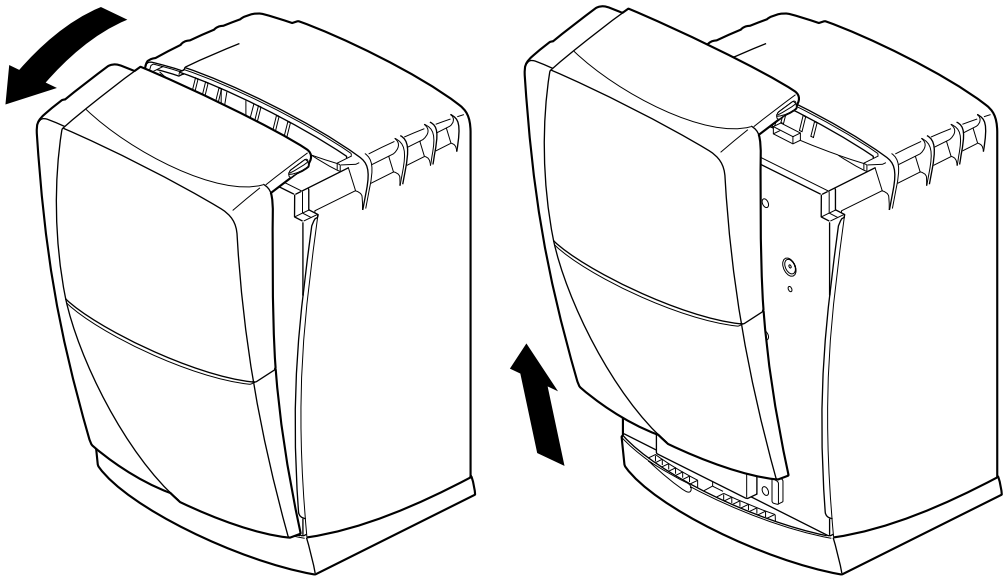


**Figure 7-5** Removing the Bezel

5. Remove the bezel by tilting it forward, then lifting it from its release hooks at the bottom.

## Installing an Internal Option Drive

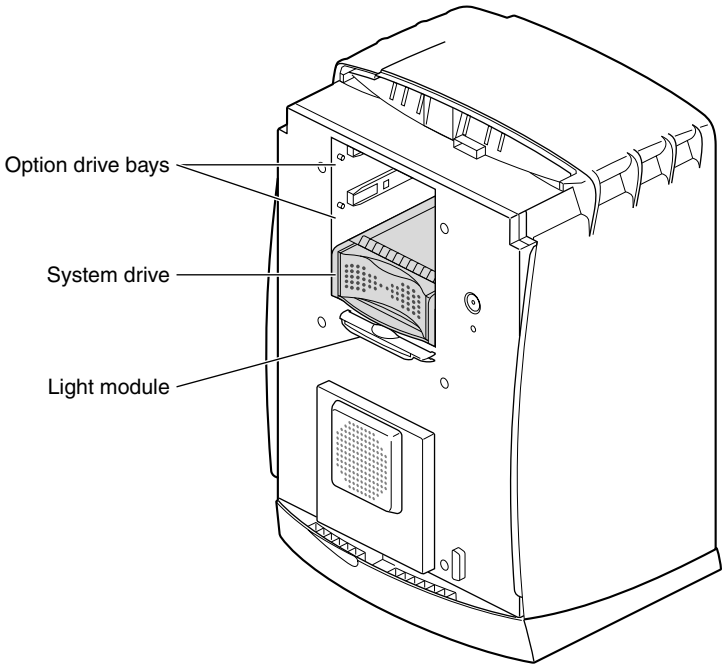



**Figure 7-6** Identifying the Option Drive Bays

To prepare the OCTANE workstation before installing an internal drive, see “Shutting Down and Powering Off the System” on page 216 and follow the directions through removing the bezel.

The option drive bays are the two top drive bays. Install an option drive in either one.

The OCTANE workstation automatically assigns an address to an internal drive. The system drive is SCSI ID 0-1, the drive directly above it is SCSI ID 0-2, and the upper option drive is SCSI ID 0-3.

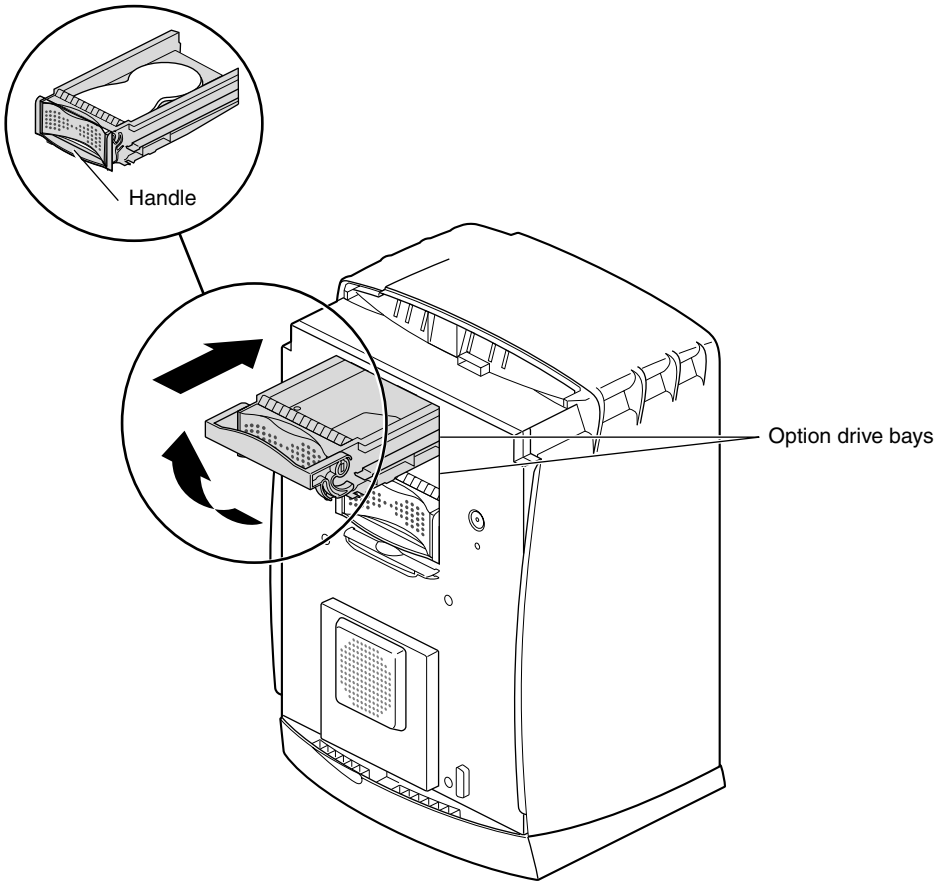



**Figure 7-7** Sliding In an Optional Drive

1. Lift the handle on the drive to a horizontal position, and slide the drive into the drive bay. The drive handle is the same color as the drive. See Figure 7-7.
2. Slide the drive in gently until you feel solid resistance. The drive is connected to the frontplane when the front of the drive is flush with the chassis.

   **Caution:** Pushing the drive into the frontplane with force can damage the drive.

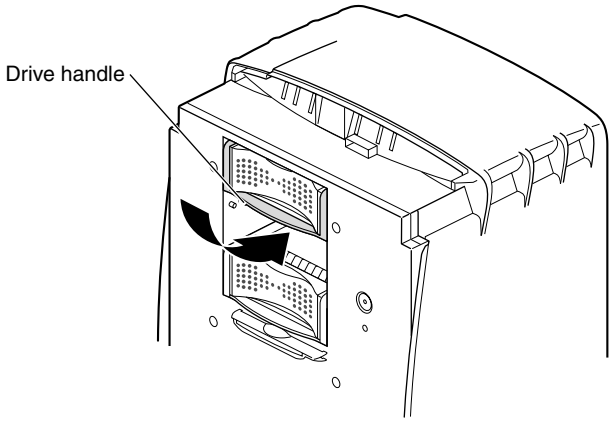



**Figure 7-8** Locking the Drive

3. With the drive completely inserted, rotate the handle downward to lock the drive in the workstation.

You have completed installing an option drive and are ready to remove the blank panel on the bezel.

## Removing the Blank Panel

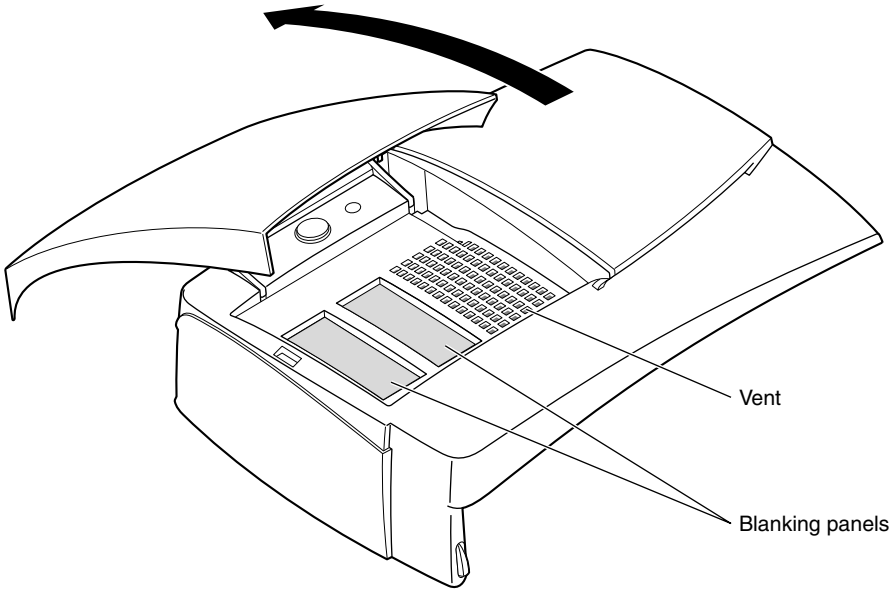



**Figure 7-9** Opening the Door on the Bezel

After installing a new option drive, you remove a blank panel from the bezel before replacing the bezel.

1. Place the bezel on a flat surface so that the door is facing up.
2. Open the door.
3. Locate the blank panel for the drive bay in which you installed the option drive.

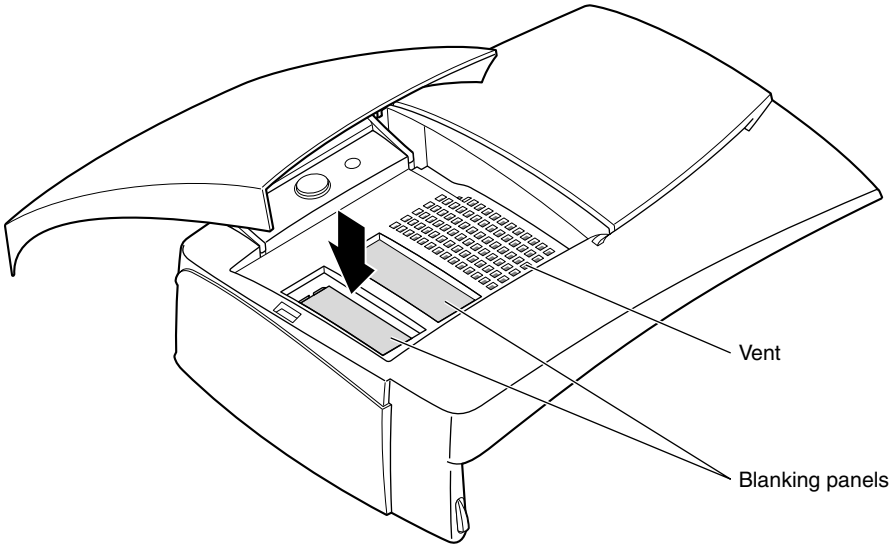



**Figure 7-10** Pushing the Blank Panel Free

4. Press down on the blank panel. It pops out the back of the bezel.
5. Keep the blank panel. You must replace it if you ever remove the drive.

   **Caution:** To prevent damage to your OCTANE workstation, you must place a blank panel in the bezel if you have removed a drive. The blank panel ensures proper airflow through the workstation.
6. Go to "Replacing the Bezel" on page 255.

## Removing Internal Option Drives

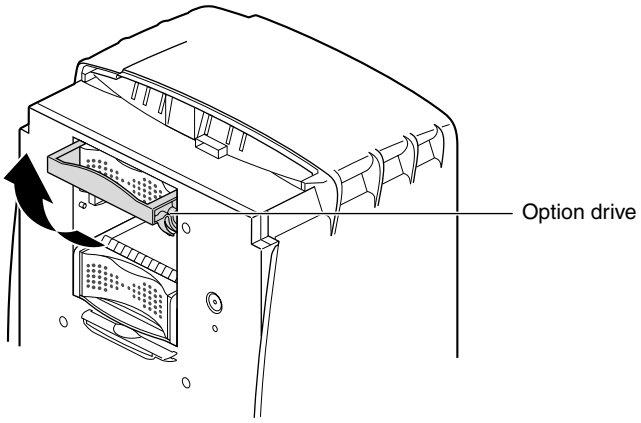



**Figure 7-11** Lifting the Drive Handle to Unlock the Drive

To remove an internal option drive, go to “Shutting Down and Powering Off the System” on page 216 and follow the instructions through removing the bezel. Then return here.

1. Lift the drive handle to unlock the drive.

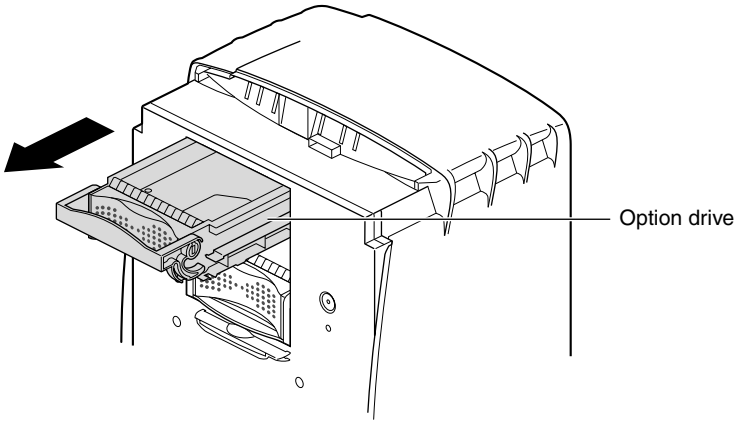



**Figure 7-12** Sliding Out the Option Drive

2. Pull the drive directly toward you to remove it from the drive bay.

To install a drive in the option drive bay, go to "Installing an Internal Option Drive" on page 221.

To leave the drive bay empty, replace the blank panel before replacing the bezel, go to the next section.

## Replacing a Blank Panel

If you removed a secondary drive and do not intend to replace it, you must inform the system that the drive is no longer there and replace the blank panel.

1. Remove the bezel. See "Removing the Bezel" on page 217. Then return here for instructions on replacing the blank panel.
2. Place the bezel face down on the flat surface with the door closed. (Take care to place the bezel on a surface that does not scratch or mar the surface.)
3. Locate the appropriate opening for the blank panel, opposite the empty drive bay, and place the blank panel in it.

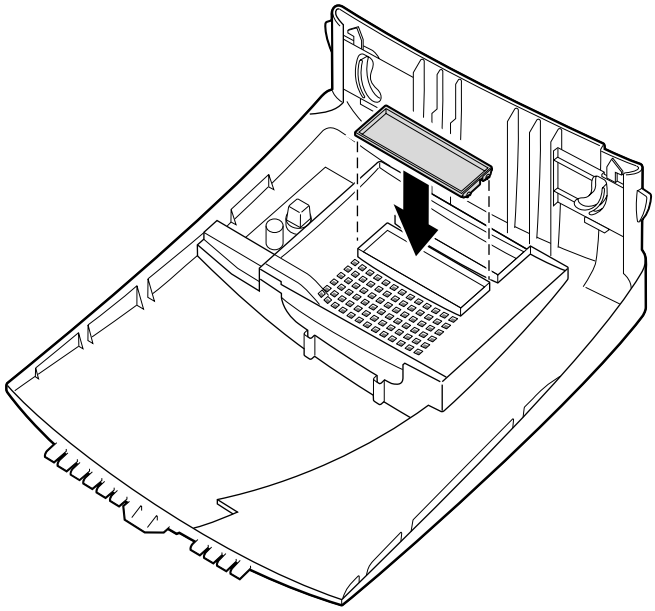


**Figure 7-13** Pushing the Blank Panel Free

4. Press the blank panel until both sides snap firmly into place.

For more information, from the Toolchest > Help > Online Books > End User bookshelf, choose the *Personal System Administration Guide* and search for "Removing a Disk."

## Replacing the System Drive

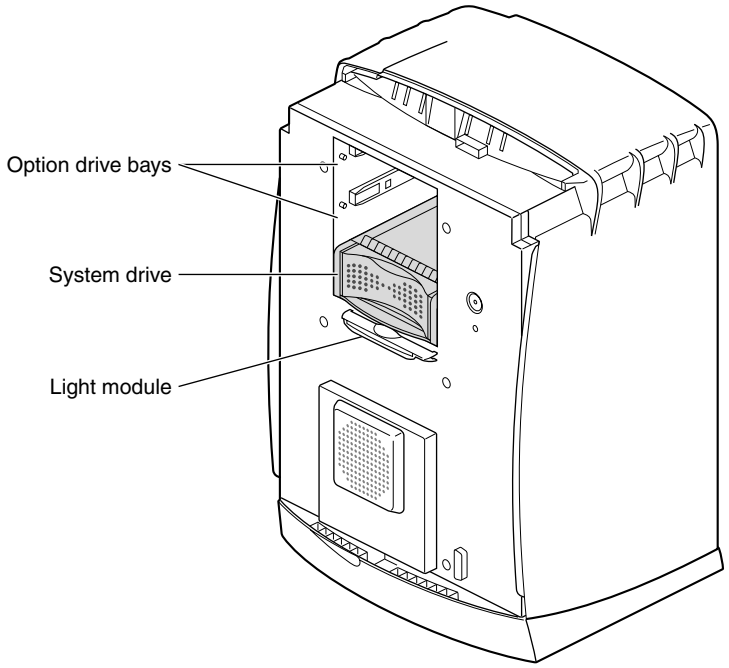



**Figure 7-14** Locating the System Drive

To replace the system drive, you must shut down the OCTANE workstation and remove the bezel. If you have not completed these steps, go to "Shutting Down and Powering Off the System" on page 216 and follow the instructions through removing the bezel.

**Caution:** Do not remove the system drive unless you have a new drive to replace it. The drive needs to remain in place to prevent damage to the OCTANE workstation.

The SCSI ID of the system drive is 0-1.

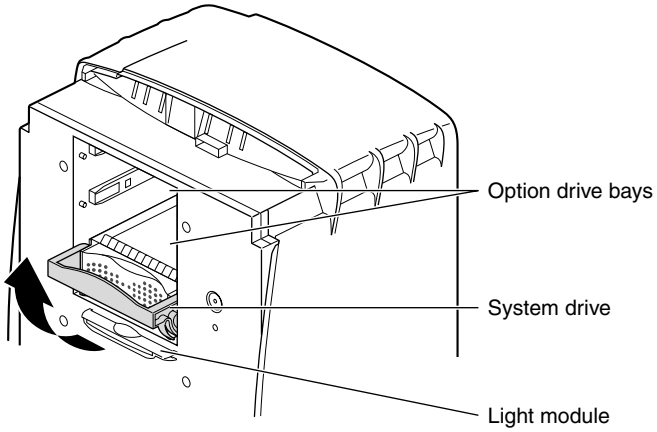



**Figure 7-15** Unlocking the System Drive

1. Locate the system drive.
2. Raise the handle to a horizontal position.

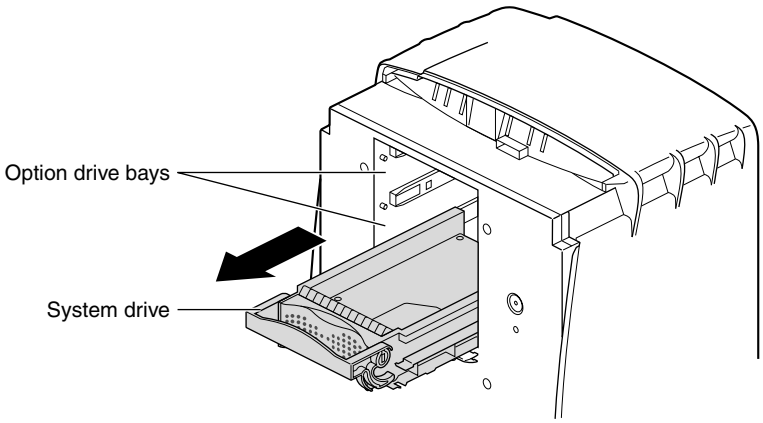



**Figure 7-16** Removing the System Drive

3. Pull the system drive out of the OCTANE workstation.

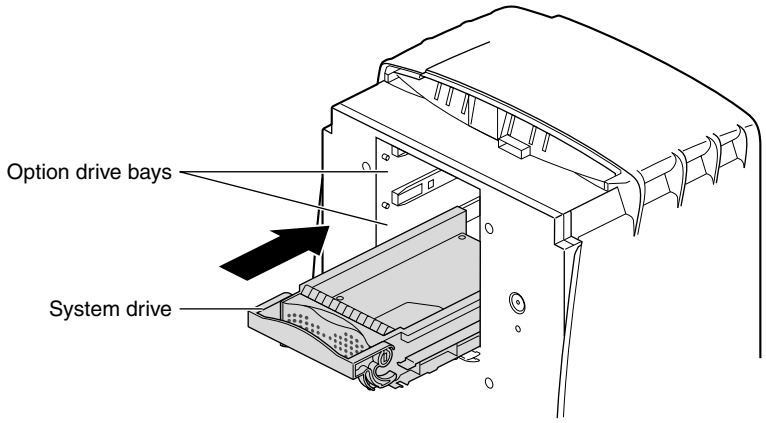



**Figure 7-17** Inserting the New Drive

4. Replace the system drive.
   - Lift the handle.
   - With the handle fully extended, gently slide the drive into the drive bay. The drive is connected to the frontplane when the front edge of the drive is flush with the chassis.

   **Caution:** Pushing the system drive in with force can damage the drive.

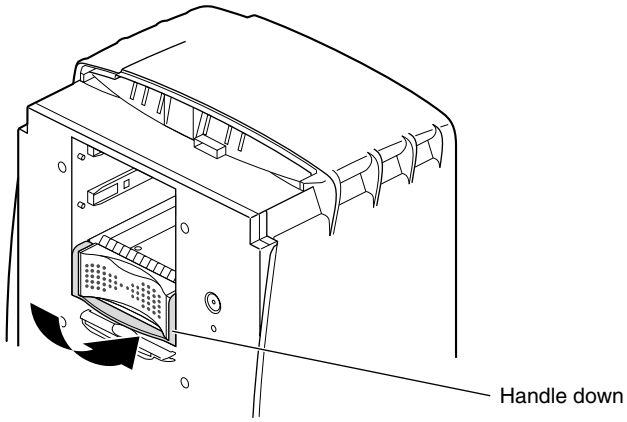



**Figure 7-18** Locking the System Drive

5. Rotate the handle down to lock the system drive to the workstation.

Go to "Replacing the Bezel" on page 255 and follow the instructions through powering on the OCTANE workstation. When you see the login screen, you are ready to log in. Return to this section to test the internal drive.

## Testing an Internal Drive

The workstation automatically sets up the system software for most internal devices you install and places an icon on the desktop.

Once you install the drive, follow these steps to check that the system recognizes the new drive.

1. Log in to your account. For more information on logging in, refer to "Logging Into the OCTANE Workstation" on page 23.
2. If the device is installed correctly, you see an icon for it on the desktop. Double-click the icon to set up the drive.
3. You can also use the System Manager to check that the drive is shown correctly.
   - From the Toolchest > System > System Manager > Hardware and Devices, choose Disk Manager. You see a list of installed drives.

- Choose the drive, and click the Get Info button.

If the drive you installed does not appear, power off the system and make sure the drive is completely seated in the slot. Then restart the system and check the System Manager listing again.

## Replacing the Light Module

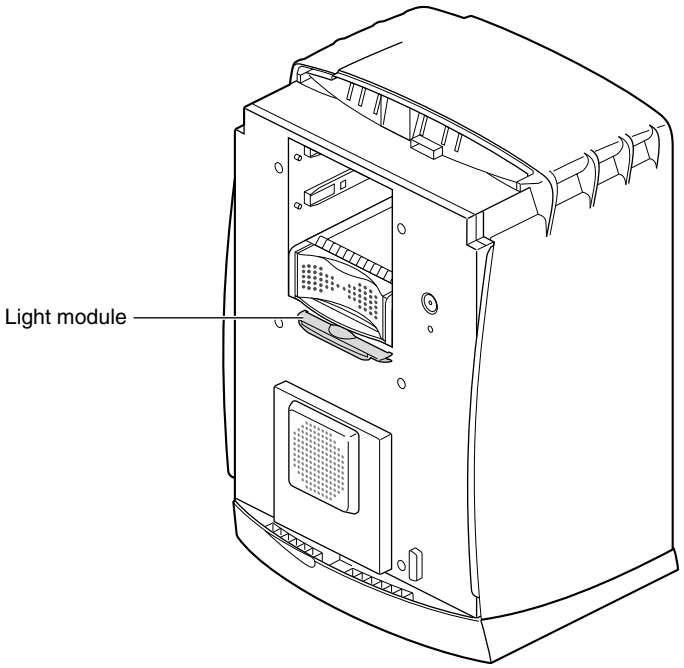



**Figure 7-19** Locating the Light Module

The light module provides the light for the light bar on the front of the OCTANE workstation. The light module is located on the sheet-metal face, behind the bezel.

To replace the light module, go to “Shutting Down and Powering Off the System” on page 216 and follow the instructions through removing the bezel. Then return to this section and follow the instructions below.

The light module is directly under the system drive.

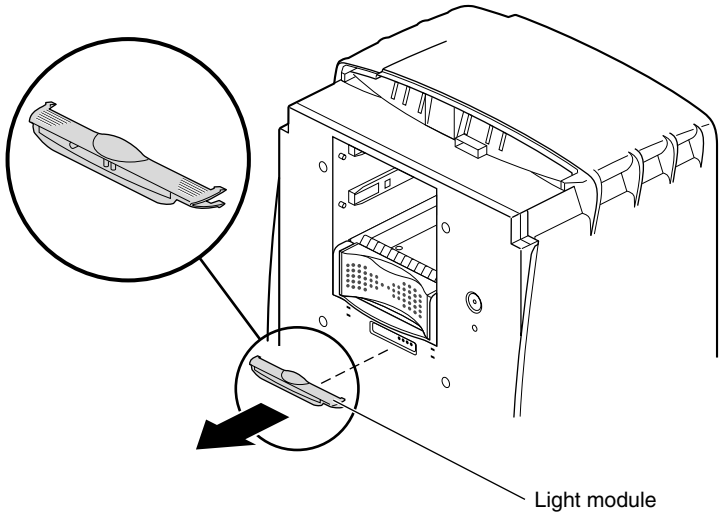



**Figure 7-20** Removing the Light Module

1. Squeeze both top and bottom wings together at both ends of the light module and gently pull straight back.
2. If the light module does not release, squeeze more firmly until it releases from the workstation.
3. Discard the module.

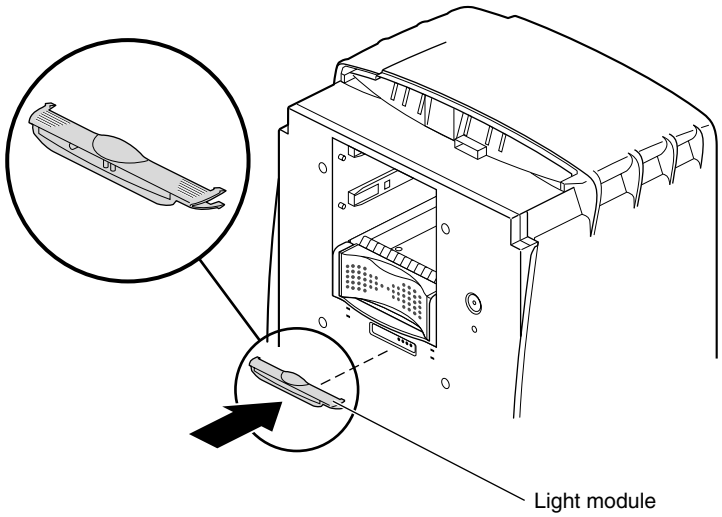



**Figure 7-21** Inserting the Light Module

4. Insert the new light module.
   - Align the two hollow plastic pins on the module with the two solid metal pins on the sheet metal cap.
   - Slide the module onto the sheet-metal face until the module snaps into place. Make sure both sides snap firmly into place.

You have finished the light module installation and are ready to replace the bezel. Go to "Replacing the Bezel" on page 255 and follow the instructions through powering on the OCTANE workstation.

## Removing and Installing the Frontplane Module and System Identification Module

**Caution:** The components on the frontplane module are extremely sensitive to static electricity; you must wear the wrist strap while working with the frontplane module.

## Attaching the Wrist Strap

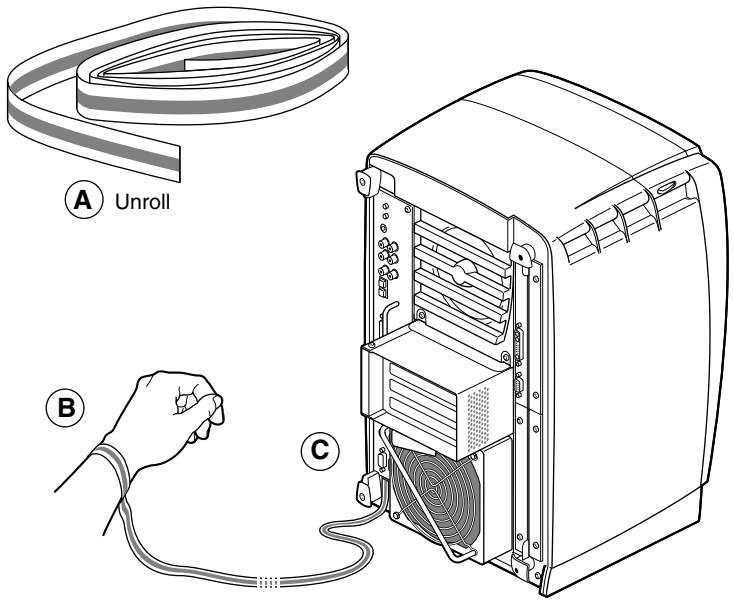



**Figure 7-22** Attaching the Wrist Strap

**Caution:** The components inside the OCTANE workstation are extremely sensitive to static electricity; you must wear the wrist strap while replacing parts inside the workstation.

1. Unwrap the first two folds of the band and wrap the exposed adhesive side firmly around your wrist. (Step A)
2. Unroll the rest of the band and peel the liner from the copper foil at the opposite end. (Step B)
3. Attach the copper foil to the module you are removing: system module, XIO module, frontplane module, PCI module. Otherwise, use any convenient and exposed electrical ground, such as a metal part of the OCTANE workstation. (Step C)

## Task Information

Replacing the frontplane module requires a number of steps from preparing the workstation to removing modules. Before you begin, find some bookmarks to help you organize your task.

Also see the diagrams of the workstation in the front of Chapter 1 of this guide to learn the workstation's part names.

Be sure to have the replacement part beside you before removing the frontplane module.

To replace the system fan you perform the following tasks. Instructions for completing the tasks follow the task list.

- Prepare the workstation: shut down and power off, remove the bezel, and attach the wrist strap.
- Remove the system drive, option drives, and light module.
- Remove all the cables and modules from the back of the workstation.
- Remove the frontplane module.
- Remove and the system fan.
- Reinstall everything and start the system.

## Preparing the Workstation to Remove the Frontplane Module

1. Go to "Shutting Down and Powering Off the System" on page 216 and follow the instructions through removing the bezel. Then return to this section.
2. On the back of the OCTANE workstation:
   - Disconnect the system module from the chassis by unscrewing the captive screws and pulling the system module an inch or two from the chassis, or remove it. (See Chapter 2 for help disconnecting or removing this module.) Then return to this section.
   - Disconnect the PCI module from the chassis by unscrewing the captive screws and pulling the PCI module an inch or two from the chassis, or remove it. (See Chapter 4 for help disconnecting or removing this module.) Then return to this section.

- Disconnect the power supply from the chassis by unscrewing the captive screws and pulling the power supply an inch or two from the chassis, or remove it. (See Chapter 3 for help disconnecting or removing this module.) Then return to this section.
- Disconnect the XIO module from the chassis by unscrewing the captive screws and pulling the XIO module an inch or two from the chassis, or remove it. (See Chapter 5 for help disconnecting or removing this module.) Then return to this section.

3. On the front of the OCTANE workstation:
   - Remove the system drive and any option drives. Go to “Replacing the System Drive” on page 229 and “Removing Internal Option Drives” on page 226 to remove the system drive and any option drives that are installed.Then return to this section.
   - Remove the light module. Go to “Replacing the Light Module” on page 233 for instructions on removing the light module. Then return to this section.

You are ready to begin removing the frontplane module.

## Removing the Frontplane Module

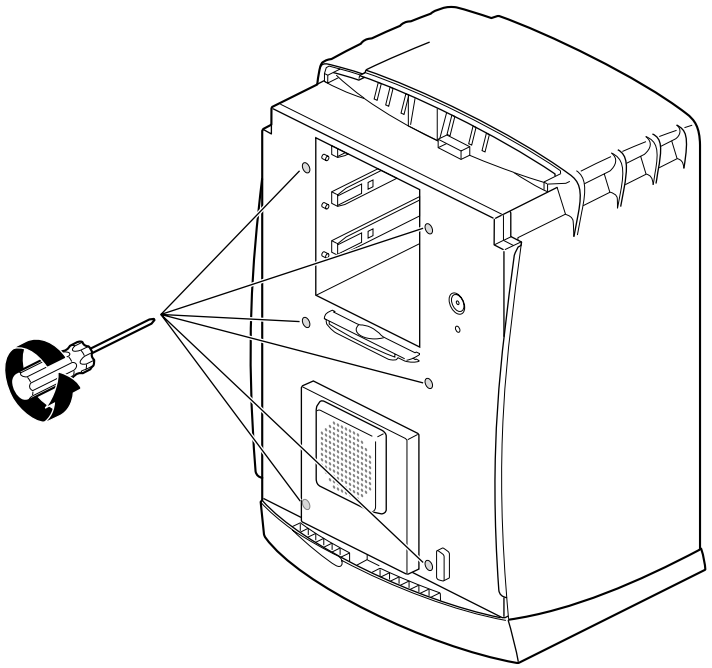


**Figure 7-23** Locating the Screws Holding the Frontplane Module to the Chassis

1. If you have not already done so, go to "Removing and Installing the Frontplane Module and System Identification Module" on page 235 and follow the instructions before you begin with this section.
2. Place an antistatic bag on a clean, antistatic surface. Your desktop works well.
3. Loosen the six captive screws holding the frontplane module to the chassis until the screws are loose in their sockets.
4. Place your hand inside the drive bay, and lift the frontplane module out of the chassis.

   **Caution:** The frontplane module is large and unwieldy. Steady it with you free hand on the edge of the frame as you remove it from the chassis.

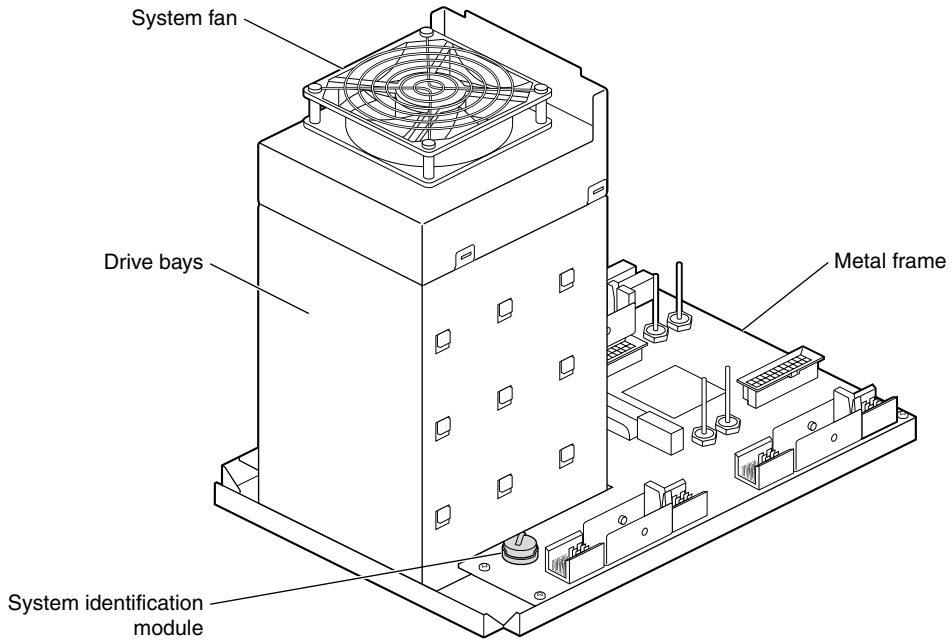



**Figure 7-24** Placing the Frontplane Module Face Down on a Clean Surface

5. Gently place it face down, on a clean, antistatic surface.
6. To adjust the position of the frontplane module, handle it by the metal frame to avoid damaging components.

If you are replacing the frontplane module with a new frontplane module, go to the next section. You must remove the system identification module from the old frontplane module and place it on the new frontplane module.

If you removed the frontplane module as part of the task of replacing the system fan, go to "Removing and Installing the System Fan" on page 243 for further instructions.

## Removing the System Identification Module

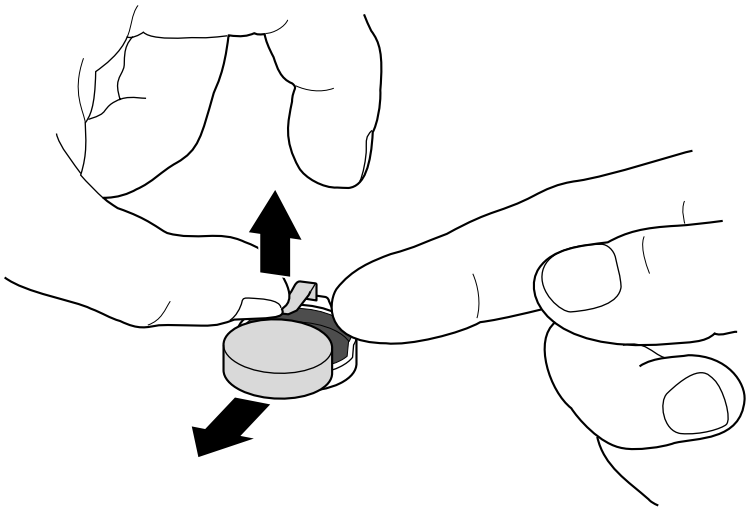


**Figure 7-25** Sliding Out the System Identification Module

Remove the system identification module only when replacing the frontplane module.

1. Remove the system identification module.
   - Lift up on the metal retaining clip.
   - Slide the system identification module to the side and out.
2. Place the system identification module on the new frontplane.
   - Lift up on the retaining clip.
   - Slide the system identification module under the clip.

   You are ready to install the frontplane. Go to the next section for instructions on installing the frontplane.

## Installing the Frontplane Module

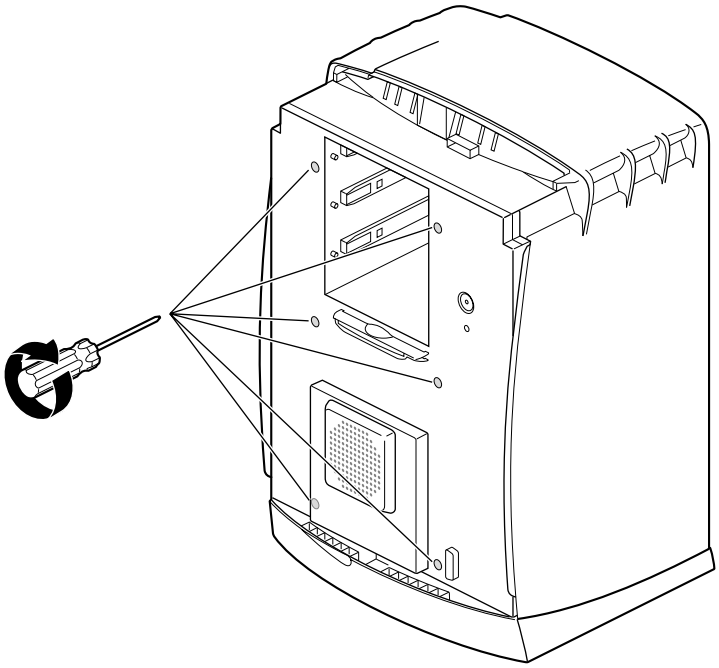


**Figure 7-26** Tightening the Captive Screws on the Frontplane Module

If you have not already done so, go to "Removing and Installing the Frontplane Module and System Identification Module" on page 235 and follow the steps through removing the frontplane module and system identification module. Then return here. You are ready to install the new frontplane module in the OCTANE workstation.

1. Grasp the replacement frontplane module by the metal frame on the edge of the front plane.
2. Lift the frontplane module into place and gently insert it into the OCTANE workstation.
3. Tighten the six captive screws.
4. Replace the system drive and any option drives.
5. Replace the light module.

6. On the back of the OCTANE workstation, insert or connect to the frontplane:
   - the XIO module (see Chapter 5 for help replacing this module)
   - the power supply (see Chapter 3 for help replacing this module)
   - the system module (see Chapter 2 for help replacing this module)
   - the PCI module (see Chapter 4 for help replacing this module)

You have finished replacing the frontplane module and system identification module and are ready to replace the bezel.

Go to "Replacing the Bezel" on page 255 and follow the instructions through powering on the OCTANE workstation.

## Removing and Installing the System Fan

Replacing the system fan requires a number of steps from preparing the workstation to removing modules. Before you begin, find some bookmarks to help you organize your task.

Also see the diagrams of the workstation in the front of Chapter 1 of this guide to learn the workstation's part names.

Have the replacement part beside you before remove the system fan.

## Preparing the Workstation to Replace the System Fan

To replace the system fan you perform the following tasks. Instructions for completing the tasks follow the task list.

- Prepare the workstation: shut down and power off, remove the bezel, and attach the wrist strap.
- Remove the system drive, option drives, and light module.
- Remove all the cables and modules from the back of the workstation.
- Remove the frontplane module.

- Remove and the system fan.
- Reinstall everything and start the system.

Follow the instructions below to replace the system fan.

1. Go to “Shutting Down and Powering Off the System” on page 216 and follow the instructions through removing the bezel. Then return to this section, step 2.
2. Go to “Replacing the System Drive” on page 229 and “Removing Internal Option Drives” on page 226 to remove the system drive and any option drives that are installed. Then return to this section for instructions on removing the frontplane module.
3. Remove the light module. Go to “Replacing the Light Module” on page 233 for instructions on removing the light module. Then return to this section.
4. Go to “Removing and Installing the Frontplane Module and System Identification Module” on page 235 and follow the instructions through step 5. (Do not remove the system identification module.) Then return here for instructions on removing and replacing the fan.

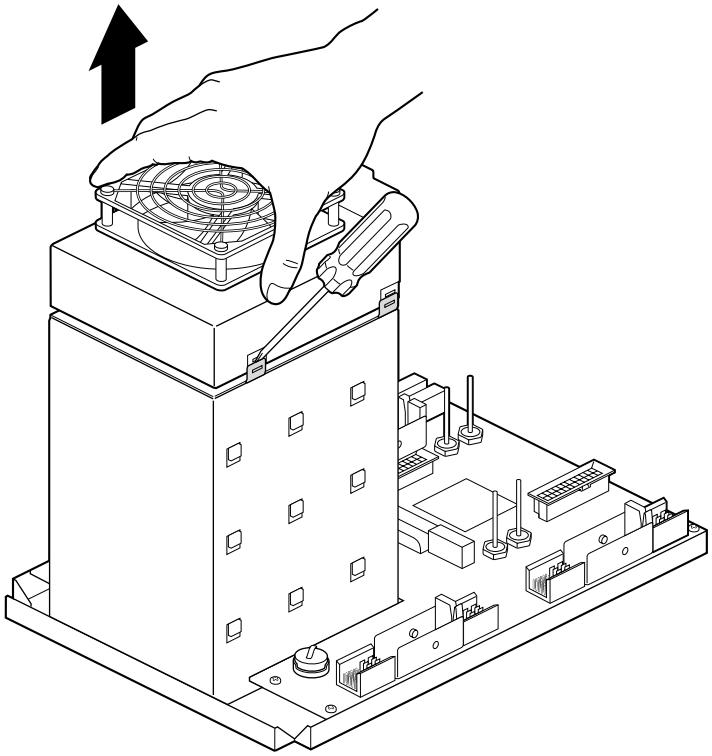


**Figure 7-27** Releasing the System Fan From the Back of the Drive Bay

5. Locate the system fan. It is attached to the back of the drive bay.
6. Using a flatsided screwdriver, slide the tip of the screwdriver between the tab and fan.
7. Tilt the screwdriver to release the fan from the pressure of the tab.
8. Partially lift the fan from the back of the drive bays.

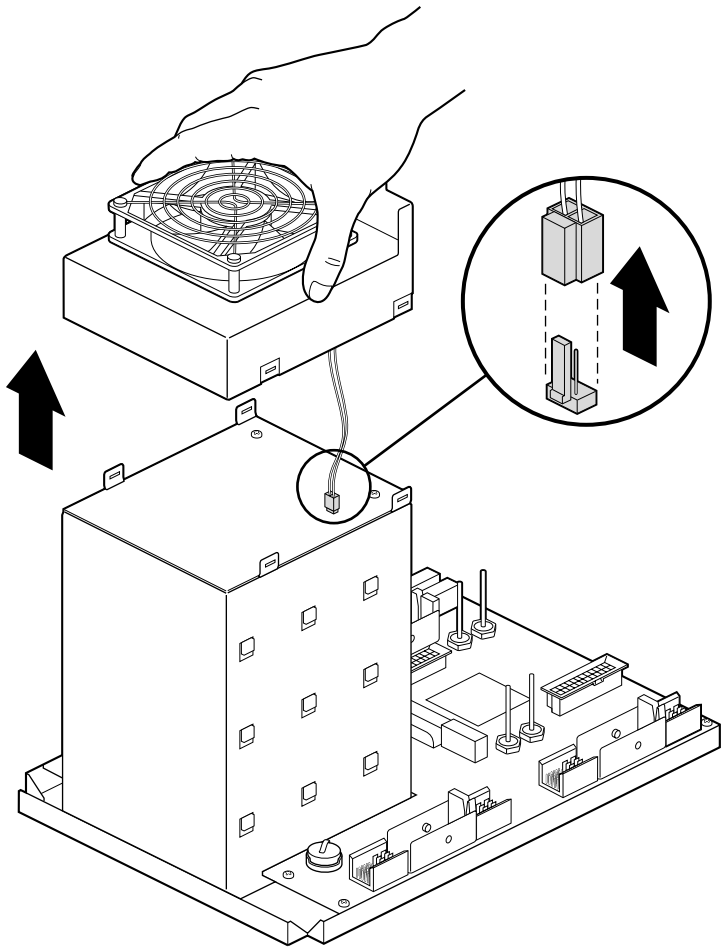


**Figure 7-28** Removing the Fan From the Back of the Drive Bay

9. Gently pull up on the cable connector.
10. Discard the old fan.

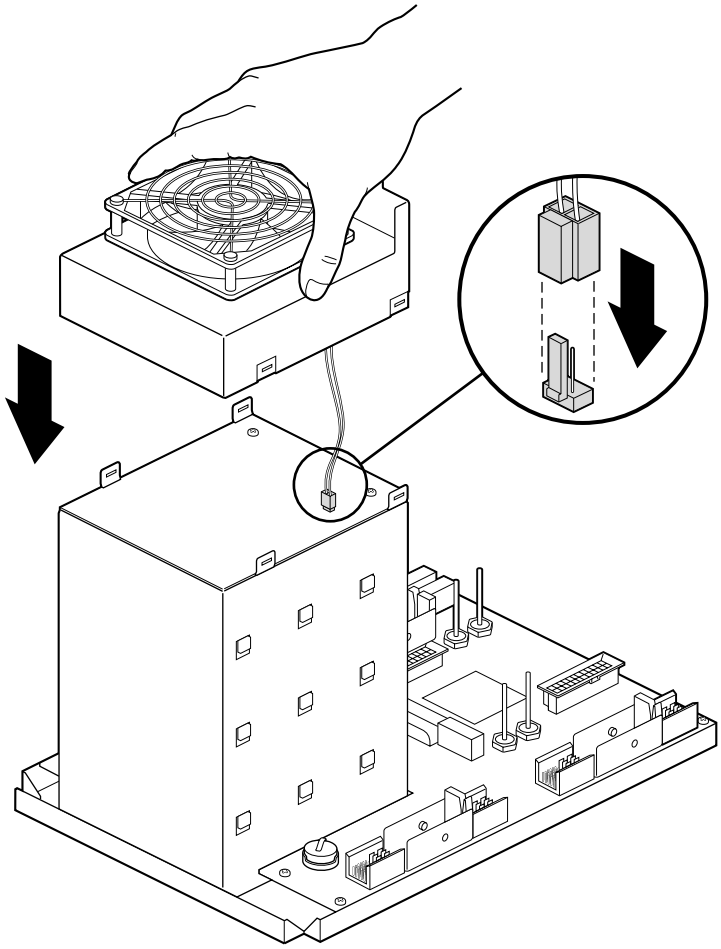


**Figure 7-29** Placing the Fan on the Back of the Drive Bay

11. Gently slide the new cable connector onto the connector on the back of the drive bay.
12. Place the new fan on the back of the drive bay. The fan snaps into place when properly aligned.

13. To replace the frontplane module in the chassis, go to “Installing the Frontplane Module” on page 242. Follow the instructions at the end of that section to replace the bezel and power on the OCTANE workstation.

## Removing and Installing the Plastics: Top and Base

To remove the plastics, top or base, you must shut down the system and remove the bezel. Go to “Shutting Down and Powering Off the System” on page 216 and follow the instructions through removing the bezel. Then return to this section for instructions on removing the plastics.

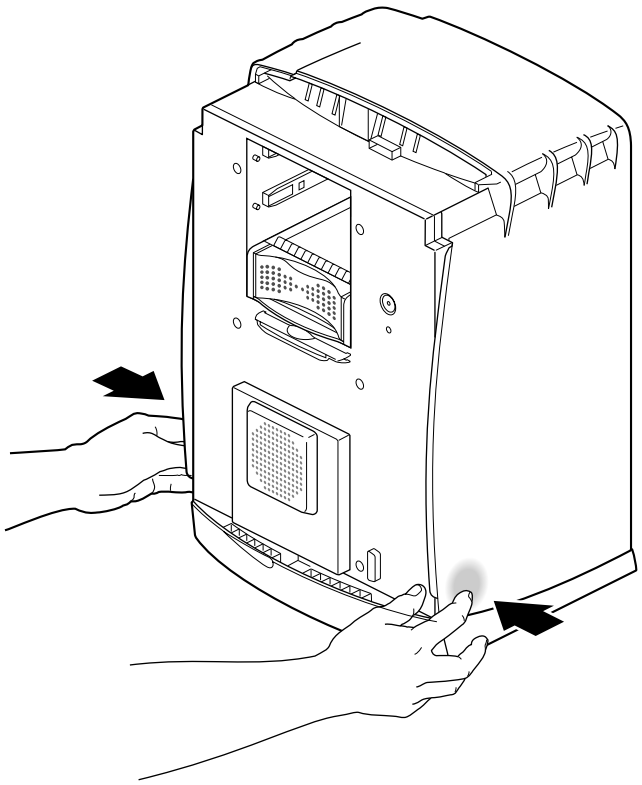


**Figure 7-30** Releasing the Plastic Top Cover

1. Locate the two areas to press to release the top cover.
2. Press on these areas and hold.
3. While pressing inward on both areas, pull the cover toward the front. The cover should slide forward. If the cover does not slide forward, press harder to release the catches, and slide the cover forward.

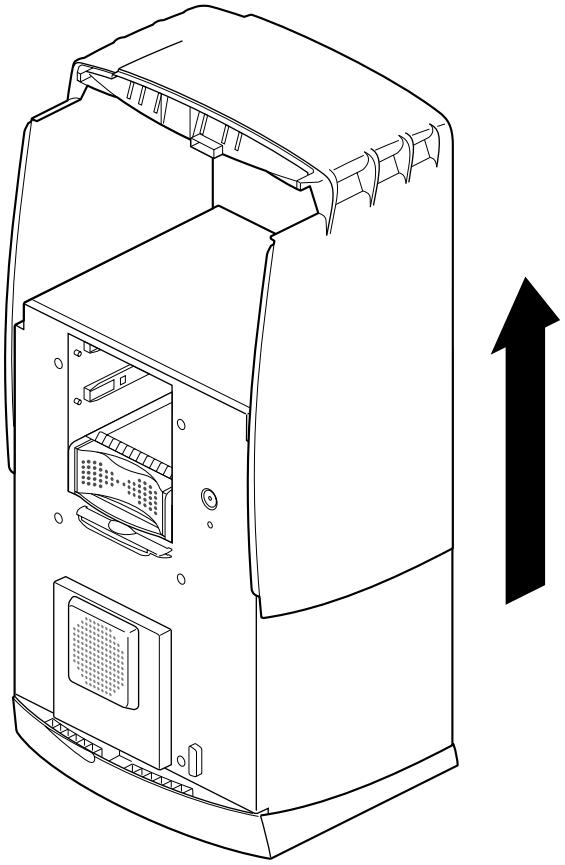


**Figure 7-31** Sliding the Front Cover Forward

4. After the cover is forward, lift it straight up and off the chassis.

5. Replace the new plastic cover.
   - Slide the cover straight down over the chassis.
   - Slide the cover back until it snaps into place.The cover snaps into place when it is correctly aligned.

## Removing and Installing the Plastic Base

To remove the plastic base, you need to shut down the system, remove the bezel, and remove the top plastic cover.

To shut down the system, go to “Shutting Down and Powering Off the System” on page 216 and follow the steps through removing the bezel.

Then go to “Removing and Installing the Plastics: Top and Base” on page 248, the section directly before these instructions, and remove the plastic top cover. Then return to this section and begin with step 1.

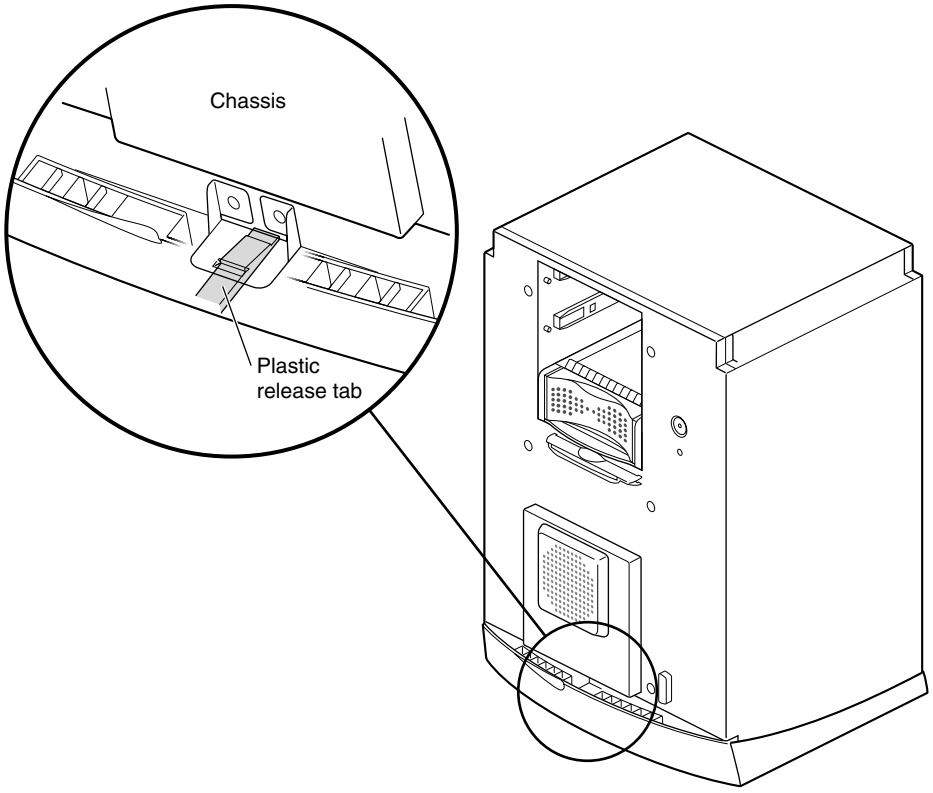



**Figure 7-32** Locating the Release Slots

1. On the base of the workstation, locate the plastic tab located in front of the metal tab with an arrow.

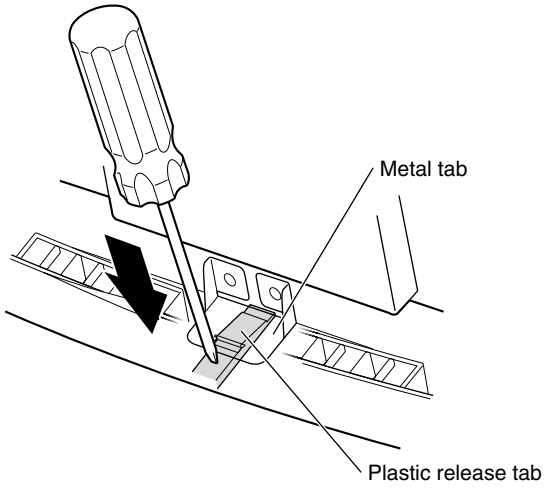



**Figure 7-33** Releasing the Plastic Base

2. Use a flat-sided screwdriver to press down on the plastic release tab.

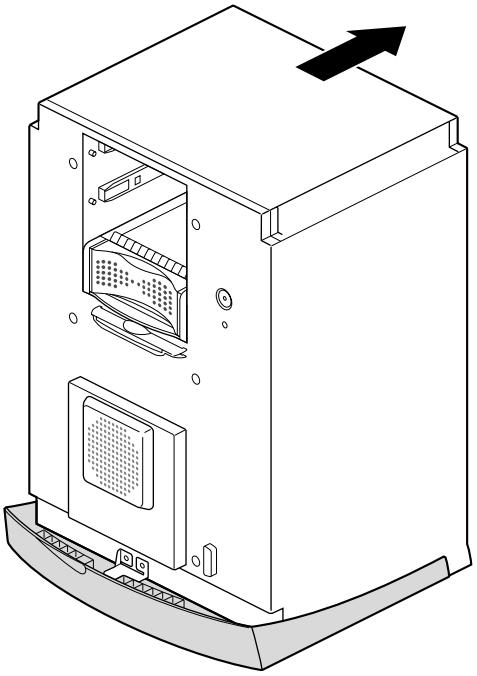


**Figure 7-34** Sliding the Chassis Backward

3. While pressing down on the tab, slide the chassis back about one and one half inches, until it stops. See Figure 7-34.

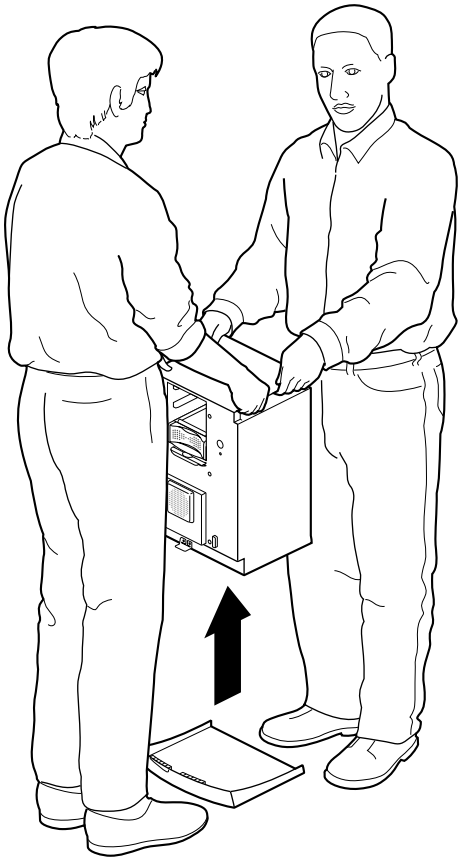


**Figure 7-35** Lifting the OCTANE Workstation off the Plastic Base

**Warning:** **Do not attempt to lift the OCTANE workstation by yourself. It is heavy and requires two people to safely lift.**

4. Lift the chassis straight up and off the plastic base.
5. Place the new plastic base on a clean surface.
6. Align the first four tabs on each side of the chassis with the slots in the base and lower the chassis onto the base.
7. Slide the chassis forward about one and one half inches until it locks to the base.
8. Place the plastic cover over the chassis and snap it into place.

You are finished replacing the plastic base and are ready to replace the bezel.

## Replacing the Bezel

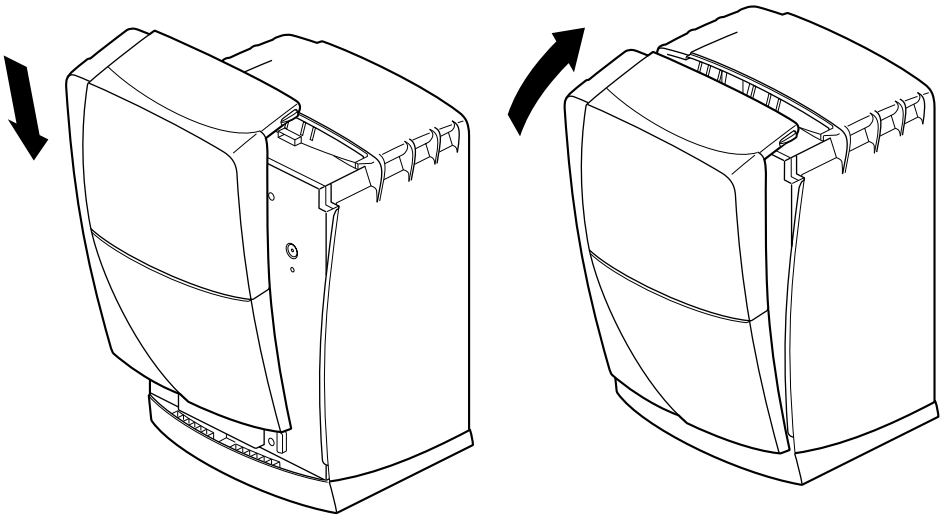


**Figure 7-36** Replacing the Bezel

1. Replace the bezel.
   - Lower the bezel into the lower edge of the chassis.
   - Hook the bezel in place.
   - Rotate the bezel back and into closed position.

   You can hear the latches snap into place when the bezel is fully installed.

   To replace the lockbar, go to the next step. Otherwise, skip to "Powering On the OCTANE Workstation" on page 257.

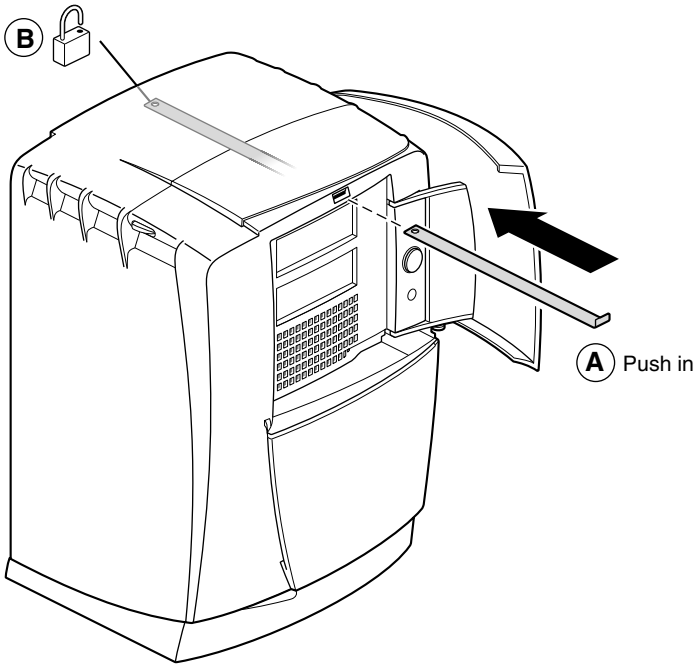



**Figure 7-37** Replacing the Lockbar

2. Open the door on the front of the OCTANE workstation.
3. Insert the lockbar into the front of the workstation with the angled end up. (Step A)
4. Insert and close the lock at the back of the OCTANE workstation. (Step B)

You are now ready to power on the OCTANE workstation.

## Powering On the OCTANE Workstation

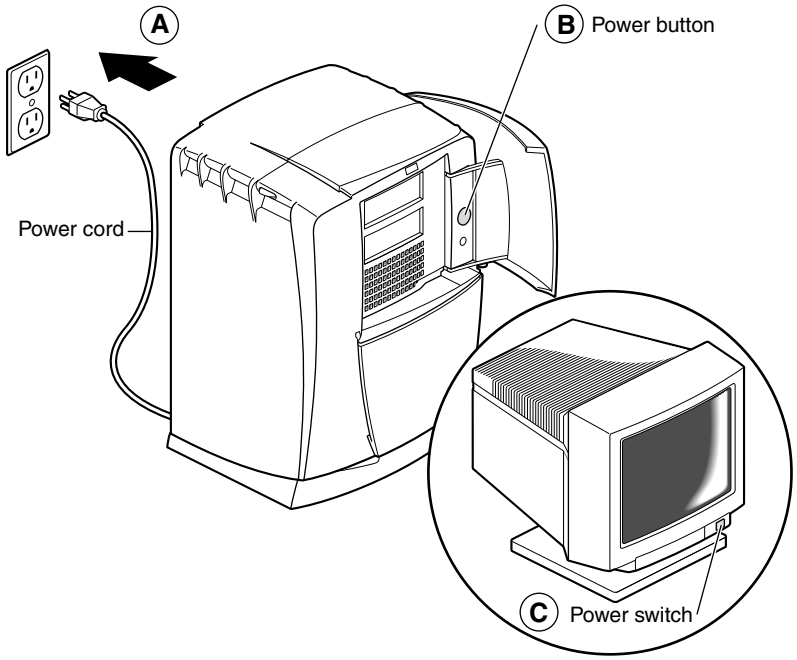



**Figure 7-38** Powering on the OCTANE Workstation

1. Plug the power cord into a wall outlet. (Step A)
2. Power on the OCTANE workstation. (Step B)
   - Press the power button.
   - Close the door.
3. Press the monitor power switch to turn on your monitor. (Step C)

*Chapter 8*

# Installing and Removing Software

This chapter describes how to install and remove Silicon Graphics software products and the operating system on the OCTANE workstation.

*Chapter 8*

# Installing and Removing Software

This chapter describes the software installation tools that you use to install a new version of the operating system, and to install optional software products that you received from Silicon Graphics, Inc. To install products from other vendors, please see the software installation instructions that accompany the products.

The following topics are covered in this chapter:


- "About the Software Installation Tools" on page 261
- "Installing a New Version of the Operating System Software" on page 262
- "Troubleshooting Software Installation" on page 277


You can install software from:

- a CD-ROM drive that's connected either to your own system or to another Silicon Graphics system on your network.
- a remote directory on another Silicon Graphics system or any system that supports *bootp* and *tftp*.

Only the *administrator* can install or remove software if there is a password on the administrator (root) account.

If you need advanced information on software installation or troubleshooting, please see the online *IRIX Admin: Software Installation and Licensing* manual.

## About the Software Installation Tools

Silicon Graphics, Inc., ships two software installation tools:

- Software Manager is a graphical tool for installing software products. This tool works anytime that the system is up and running; you start it from the Toolchest > System > Software Manager.

- *Inst* is a command-line tool that can be used as an alternative to Software Manager. It is the only installation tool available when the system is running a small version of the operating system known as the miniroot. When you use Software Manager to install critical operating system files, the miniroot is automatically invoked to perform the installation. Ordinarily, no user action is needed during this process. However, if an abnormal event occurs (such as a network failure), automatic operations are interrupted. To resume the installation, you need to use *inst*.

If you have problems or questions while using *inst*, try using its extensive online help, by typing **`help`** at the `inst>` prompt.

You can also use *inst* to install optional products that do not require miniroot installation, but Silicon Graphics recommends using the graphical Software Manager.

For more information on installing optional products, see the Software Manager's online help, or choose Online Books > SGI End User from the Help toolchest, and see Chapter 4, "Installing and Removing Software," of the online *Personal System Administration Guide*.

For information on installing a new version of the operating system software, see the next section in this chapter. For detailed information on using *inst*, see the online manual *IRIX Admin: Software Installation and Licensing*.

## Installing a New Version of the Operating System Software

The *administrator* can install a new version of the IRIX operating system and optional software by following these steps:

1. Make a full system backup. For more information, from the Toolchest choose > Help > Online Books > SGI End User and look in the *Personal System Administration Guide*, Chapter 7, "Maintaining the System." Search for the section on backing up and restoring files.
2. If the software is on a CD and you do not have a CD drive connected to your system, you can use a CD drive on your network.
   - Contact the administrator of the system to which the drive is connected, to make sure remote installations are allowed from that CD drive. For more information, from the Toolchest choose Help > Online Books > SGI End User > *Personal System Administration Guide*. Look in Chapter 4, "Installing and

Removing Software," for the section on allowing remote users to install software from a CD drive.

- From the Toolchest, choose Desktop > Shared Resources > On a Remote System. Enter the name of the remote workstation and press **`Enter`**; the resources available on that workstation appear in the window. Drag the CD-ROM drive icon onto your desktop. From the Toolchest, choose System > Software Manager. Drag the CD-ROM drive icon from your desktop into the *Available Software* drop pocket in the System Manager window. Click the *Lookup* button.
- If the software is in a directory that is on another system, from the Toolchest, choose System > Software Manager. In the *Available Software* text area, type in the remote system's hostname, a colon (:), and the full pathname of the directory. Then press **`Enter`** or click the *Lookup* button. For example, to specify a directory named */dist* on a system named mars, enter **`mars:/dist`**. Then click the *Lookup* button.

  **Note:** If (from the Toolchest) you cannot find a device that you know is available, see the troubleshooting chapter of the online *Personal System Administration Guide*. Look for the section on network errors.

3. Insert the operating system CD into the drive you are going to use.
4. Check the full pathname of the drive.
   - If you are using a drive that is connected to your own system, double-click the drive's icon. The title bar shows the full pathname (for example, */CDROM*); write down the full pathname because you will need this in Step 7.
   - If you are using a remote drive, double-click its icon. A window appears in which the field labeled "Open Remote Directory" shows the full pathname of the CD-ROM directory (for example, */CDROM*). Write down the full name, then click the *Cancel* button to close this window.
5. Read and, if you like, print all or part of the online release notes.
   - If you are using a drive that is connected to your own system, double-click the drive's icon. In the directory view window that appears, double-click the CDgrelnotes icon to view the release notes. To print all or part of the release notes, choose Print from the File menu.
   - If you are using a remote drive, double-click its icon. In the Open Remote Directory window, click the *OK* button. In the directory view window that appears, double-click the CDgrelnotes icon to view the release notes. To print all or part of the release notes, choose Print from the File menu.

6. Start the System Manager from the System menu in the Toolchest.
7. Specify the location of the software by entering **/CDROM/dist** in the *Available Software:* text area. Or you can drag and drop the CD icon into the drop pocket beside *Available Software*. Press **Enter** or click the *Lookup* button. Select *Start* to start the installation.

   Software Manager reads the installation history and the contents of the CD. After a while, you see this shutdown notice:

   ```
   This software must be installed from the miniroot. The system is
   about to be shut down and automatically booted to the miniroot
   where the installation will continue automatically. Okay to proceed?
   ```

8. Click *OK* to begin the miniroot installation process.

   After your selection, you see a shutdown message. Then, the system shuts down momentarily before resuming the installation in the miniroot using *inst*.

   During the first phase of the miniroot installation, the installation tools are copied from the CD to your system disk. You see a message about copying the installation tools to disk while the copy is in progress.

   When the miniroot is invoked, you see a screen similar to this:

   ```
   IRIX Release 6.4-miniroot
   Copyright 1987-1996 Silicon Graphics, Inc.
   All Rights Reserved.
   ```

   As the installation progresses, you see messages that explain the actions that the miniroot is taking on various software products.

9. After the upgrade, while the system is booting, you get a message similar to the following:

   ```
   Software installation has installed new configuration files and/or
   saved the previous version in some cases. You may need to update or
   merge old configuration files with the newer versions.
   ```

   See the "Updating Configuration Files" section in the versions (1M) manual page for details.

   The shell command **versions changed** lists the affected files.

   For more information on merging configuration files, see Chapter 4, Managing Configuration Files, of the online *IRIX Admin: Software Installation and Licensing* guide.

   When the installation is complete, the login window is displayed.

10. When the login window appears, log into your account.

11. See your Release Notes by choosing “Release Notes” from the Toolchest > Help > Release Notes then by choosing products from the Products menu.

    The Release Notes for each product list the directories where applications are stored on your disk so you can drag icons onto your desktop or onto a particular page of the Icon Catalog. The Release Notes also cover new features and known problems with the product.

## If the Installation Is Interrupted

Interruptions in automatic miniroot installations rarely occur. However, if an unusual event, such as a network failure or an error installing a file, interrupts the process, the Interrupt menu of the *inst* tool is posted:

```
ERROR: An error occurred while Installing new versions of selected
prod1.sw subsystems

Archive prod1/images/prod1.sw is corrupt
Error/Interrupt Menu
 1. retry            Retry the failed operation
 2. stop             Terminate current command
 3. continue         Continue current command
 4. set[preferences] List all preferences or set/clear a preference
 5. help [topic]     Get help in general or on a specific word
 6. sh [cmd]         Escape to a shell or run a command
 7. shroot [cmd]     Escape to a chrooted shell or run a command
Interrupt>
```

Try to recover from this error by choosing “retry.” Choosing “continue” skips the problem file. If the error occurs again, either call your System Administrator, or if you are an experienced user, look at the “Troubleshooting Installations” section of the online *IRIX Admin: Software Installation and Licensing* guide.

## Choosing Subsystems to Install or Remove

When you are running *inst*, you see the following Main Menu:

```
1. from [source]
2. open [source]
3. close [source]
4. list [keywords] [names]
5. go
6. install [keywords] [names]
7. remove [keywords] [names]
8. keep [keywords] [names]
9. step [keywords] [names]
10. view [args]
11. conflicts [choice...]
12. help [topic]
13. admin
14. quit

inst>
```

You can see all the subsystems that make up the products, and check whether they have been selected for installation by typing:

```
list
```

You see one or more screens of information.

- If you are at the `more?` prompt, press the **spacebar** to see the next screen.
- If you are at the `more?` prompt, press **q** to stop the listing; you see the `inst>` prompt.
- If you are at the `inst>` prompt, press **?** to see the *inst* menu again.
- To see online help, enter **help** at the `inst>` prompt.

**Note:** The remainder of this chapter contains detailed examples of *inst* listings and commands that apply to only the IRIX 6.4 versions of inst. If you are running an earlier or later version of *inst*, use the online help that is available by typing **help** at the `inst>` prompt.

**Note:** *list* displays a key to the listing, followed by the list of available subsystems. The first three columns of the listing show:

- The first column shows whether the available (usually newer) version of a subsystem is selected for installation (i) or is not selected (blank).

  If you have a version of a subsystem already installed and you would like to remove it while other software is being installed, type **`remove`** <*subsystem*> at the `inst>` prompt.

- The second column shows whether the available software is a new product that has never been installed (N), or is an upgrade to (U), is the same version as (S), or is an older version of (O) a product that is already installed. If no character appears in this column, the product has been available for installation before, but has never been installed; it is considered a Not Installed product.

  The third column lists the name of the subsystem. Here are some samples of the first three columns of subsystem listings:

```
i U nfs.sw.nis

   A newer, upgrade version (U) of this subsystem (nfs.sw.nis) is
   available and is selected for installation (i). It is part of
   the NFS product (nfs).
_S pfa.sw.lib

   An identical (same) version (S) of this subsystem (pfa.sw.lib)
   is available, so inst assumes you want to keep (k) the currently
   installed version. It is part of the Power Fortran Accelerator™
   product (pfa).
```

  **Note:** An underscore in the first column designates a blank. If you press the `k` for "keep printed," the "k" no longer appears or prints. However, the subsystem is not overwritten or deleted.

```
_D insight.sw.client

   The version of this subsystem (insight.sw.client) that is
   available is a downgrade (D) to the subsystem that is already
   installed, so inst assumes you want to keep (k) the currently
   installed version. It is part of the IRIS InSight™ product
   (insight).
```

```
i N dmedia_tools.sw.soundtools

    The subsystem (dmedia_tools.sw.soundtools) that is available is
    a new product (N), which means it has never been installed or
    available for installation before. It is selected for
    installation (i) because it is a default subsystem. It is part
    of the Digital Media Tools product (dmedia_tools).
```

- The other columns of the listing show:

  The subsystem is required for system operation (`r`), is selected as a default subsystem by the manufacturer (`d`), or it requires a reboot to complete the installation (`b`).

  **Note:** Most software that is required for system operation, as well as some optional products, must be initially installed from the miniroot. Upgrades to this software may not require miniroot installs. The steps in "Installing a New Version of the Operating System Software" on page 262 detail a miniroot installation.

  – How much additional disk space the subsystem will occupy (a positive number such as +100 shows that it will take an additional 100 KB, while a negative number such as -60 shows that the new version of the subsystem is smaller than the old version and will free 60 KB).

  – A brief description of the subsystem.

At the end of the listing, *inst* shows whether you have enough disk space to install all the subsystems that are selected for installation, including temporary overhead needed for the installation process. For more information on the products and subsystems, see the product release notes.

You can change which subsystems are selected for installation in these ways:

- To select a subsystem for installation, type:

  **`install`** *subsystem*

  For example, when a new version of a product is available and you have an older version installed, *list* shows you this information:

  ```
  U dmedia_tools.sw.soundtools

  U dmedia_tools.sw.movietools

  U dmedia_tools.data.prosonus
  ```

  To select one subsystem for installation, type:

**`install dmedia_tools.sw.soundtools`**

To select all subsystems of the product for installation, type:

**`install dmedia_tools`**

*list* then shows this information:

```
i U dmedia_tools.sw.soundtools
i U dmedia_tools.sw.movietools
i U dmedia_tools.data.prosonus
```

- To prevent a new subsystem or a different version of an existing subsystem from being installed, type:

  **`keep`** *subsystem*

  For example, when a large, new subsystem that you do not want to install is selected for installation, *list* shows this information:

  ```
  i N dmedia_tools.data.prosonus
  ```

  To prevent *inst* from installing it, type:

  **`keep dmedia_tools.data.prosonus`**

  *list* then shows this information:

  ```
  N dmedia_tools.data.prosonus
  ```

- To remove a subsystem that is currently installed, and to prevent a new version from being installed in its place, type:

  **`remove`** *subsystem*

  For example, when a subsystem is already installed and a newer version is available, *list* shows this information:

  ```
  i U dmedia_tools.data.prosonus
  ```

- To remove the current version and prevent *inst* from installing the new version, type:

  **`remove dmedia_tools.data.prosonus`**

  *list* then shows this information:

  ```
  U dmedia_tools.data.prosonus
  ```

When you have made your choices, start the installation. At the `inst>` prompt, type: **go**

## Creating a System Disk From the PROM Monitor

This section describes how to create a system disk from an option disk and install an operating system. It describes how to install a system disk on a system that does not currently have a working system disk. It is used in these situations:

- The new disk has no formatting or partitioning information on it at all or the partitioning is incorrect.
- It is an option disk that you must turn into a system disk.

To turn a disk into a system disk, you must have an IRIX system software release CD available and a CD-ROM drive attached to the system or available on the network. If you are using a CD-ROM drive attached to a system on the network, that system must be set up as an installation server. See the *IRIX Admin: Software Installation and Licensing* guide for instructions.

These instructions assume that the system disk is installed on controller 0 at drive address 1. This is the standard location for workstations; the controller number is system-specific on servers. Follow these steps:

1. Bring the system up into the System Maintenance menu.
2. Bring up the Command Monitor by choosing the item 5 on the System Maintenance menu.
3. Give the *hinv* command and use the CPU type to determine the version of standalone fx that you need to invoke. For example, a system with an IP30 processor is an ARCS processor, so the version of standalone fx needed is stand/fx.64.
4. Determine the controller and drive address of the device that contains the copy of *fx* that you plan to use (a CD-ROM drive attached to the system or a CD-ROM drive on a workstation on the network). For example, for a local CD-ROM drive, if *hinv* reports that the CD-ROM drive on the system is scsi(1), cdrom(4), the controller is 1 and the drive address is 4. The remainder of this example uses that device, although your device may be different or may be located on a different workstation.
5. If you are installing over a network connection, get the IP address and host name of the workstation with the CD-ROM drive, then skip to step 8. If you are not installing over a network connection, go to the next step.

6. Insert the CD containing the IRIX system software release into the CD-ROM drive.
7. Give a Command Monitor command to boot *fx*. For this example the command is:

```
>> boot -f dksc(1,4,8)sash64 dksc(1,4,7)stand/fx.64 --x
72912+9440+3024+331696+23768d+3644+5808 entry: 0x89f9a950
112784+28720+19296+2817088+59600d+7076+10944 entry: 0x89cd74d0
SGI Version6.4 ARCS Jan 31, 1997
```

   **Caution:** The *fx* command is intended for advanced users and should not be used unless you have a definite need for it. Refer to the *fx*(1) man page for complete information on using *fx*.

   Go to step 10.

   **Note:** See "Preliminary PROM Monitor Procedure" for details on how to enter the command monitor on your system.

8. Invoke *fx* from the standalone version on your workstation, or from a local or remote CD-ROM. See the fx(1M) man page for complete instructions on invoking fx, or use the following procedure.

   - To invoke the standalone copy of *fx* on your workstation, enter

     **>> boot stand/fx --x**

   - To invoke fx from a CD with installation tools in a CD-ROM drive on your workstation, enter this command:

     **>> boot -f dksc**(*cntlr,unit,8*)**sash64 dksc**(*cntlr,unit,7*)**stand/fx.64 --x**

     In the previous command, cntlr and unit are the controller and unit numbers of the CD-ROM drive (see "Getting CD-ROM Device Numbers").

   - To invoke *fx* from a CD with installation tools that is mounted on an installation server named server, enter this command:

     **>> boot -f bootp()server**:*CDdir*/**stand/fx.64 --x**

     In the previous command, CDdir is the mount point directory for the CD (for example, /CDROM).

9. After *fx* is invoked, messages, prompts, and menus appear. A sample session is shown. In this sample session, the default system disk device name, controller number, and drive number chosen by *fx* (dksc, 0, and 1, respectively) are used. Unless your workstation is configured in a non-standard way, the defaults chosen by *fx* will be correct and you can respond with **Enter** to the prompts.

10. Respond to the prompts by pressing the **Enter** key. These responses select the system disk:

```
fx: "device-name" = (dksc) <Enter>
fx: ctlr# = (0) <Enter>
fx: drive# = (1) <Enter>
...opening dksc(0,1,)
...drive selftest...OK
Scsi drive type == SGI     SEAGATE ST31200N8640

----- please choose one (? for help, .. to quit this menu)-----
[exi]t              [d]ebug/           [l]abel/           [a]uto
[b]adblock/         [exe]rcise/        [r]epartition/     [f]ormat
```

11. Display the partitioning of the disk by giving the repartition command:

```
fx> repartition

----- partitions-----
part          type         blocks            Megabytes (base+size)
7: efs        4 + 2722     3048 + 2074164
8: volhdr     0 + 4        0 + 3048
10: volume    0 + 2726     0 + 2077212

capacity is 2077833 blocks
```

If what you see looks like the examples in number 11 above, you need to repartition. If the disk doesn't need repartitioning, skip the rest of the procedures.

For a custom installation, use a powered-on Silicon Graphics system to access the Toolchest > Help > Online Books > SGI_Admin > *IRIX Admin: Disks and Filesystems*, or find a printed copy of this guide.

12. Choose a standard system disk partition layout. Follow these directions:

    Choose *rootdrive*.

```
----- please choose one (? for help, .. to quit this menu)-----
[ro]otdrive        [o]ptiondrive       [e]xpert
[u]srrootdrive    [re]size
fx/repartition> rootdrive

fx/repartition/rootdrive: type of data partition = (xfs) <Enter>
```

    You see the following warning message:

**Warning: You will need to re-install all software and restore user data from backups after changing the partition layout. Changing partitions will cause all data on the drive to be lost. Be sure you have the drive backed up if it contains any user data. Continue?**

13. Enter 'Yes' or 'No' after the warning message.

    **Yes** or **No**

    If you choose yes, you see the following:

```
----- partitions-----
part  type        blocks                     Megabytes (base+size)
0: xfs             3024 + 1976184              1 + 965
1: raw             1979208 + 81648             966 + 40
8: volhdr          0 + 3024                    0 + 1
10: volume         0 +2060856                  0 + 1006

capacity is 2061108 blocks

The above numbers vary depending on the size of the drive.

To exit fx and go back to the System Maintenance Menu, enter
'../exit' at the fx prompt as shown below:

----- please choose one (? for help, .. to quit this menu)-----
[ro]otdrive       [o]ptiondrive       [e]xpert
[u]srrootdrive        [r]esize
fx/repartition> ../exit
```

## Installing the Operating System

1. Choose the second option, "Install System Software," from the System Maintenance menu.

   A window appear with the following information:

   ```
   Install System Software


   Remote Directory      or       Local CD-ROM
   ```

2. Click the appropriate icon. Click "Remote Directory" icon if you are installing from a remote directory, or click the "Local CD-ROM" icon if you are installing from a CD-ROM.

3. Click the Install button.

   A window pops up:

   ```
   Insert the Install CD-ROM now?

    Cancel           Continue
   ```

4. Click Continue. A new notifier appears "Obtaining Installation Tool," followed by a second notifier, "Copying Installation Tool to Disk."

   Because there is no filesystem on the root partition, error messages may appear. One example is the following message:

   ```
   Mounting file systems:

   /dev/dsk/dks0d1s0: Invalid argument
   No valid file system found on: /dev/dsk/dks0d1s0
   This is your system disk: without it we have nothing on which to
   install software.
   ```

   Another possible message indicates a problem, but does mount the root partition and bring up *inst*:

   ```
   Mounting file systems:

   mount: /root/dev/usr on /root/usr: No such file or directory
   mount: giving up on:

      /root/usr
   ```

```
Unable to mount all local efs, xfs file systems under /root
Copy of above errors left in /root/etc/fscklogs/miniroot

   /dev/miniroot            on  /
   /dev/dsk/dks0d1s0        on  /root
```

Invoking software installation.

5. If the system offers to make a filesystem, answer **yes** to the prompts, otherwise skip to step 7:

```
Make new file system on /dev/dsk/dks0d1s0 [yes/no/sh/help]: yes

About to remake (mkfs) file system on: /dev/dsk/dks0d1s0
This will destroy all data on disk partition: /dev/dsk/dks0d1s0.

Are you sure? [y/n] (n): yes

Block size of filesystem 512 or 4096 bytes? 4096

Doing: mkfs -b size=4096 /dev/dsk/dks0d1s0
meta-data=/dev/rdsk/dks0d1s0 isize=256  agcount=8,agsize=248166 blks
data =                       bsize=4096    blocks=248165,imaxpct=25
log      =internal log       bsize=4096    blocks=1000
realtime =none               extsz=65536   blocks=0, rtextents=0

Trying to mount /dev/dsk/dks0d1s0 on root.

   /dev/miniroot            on  /
   /dev/dsk/dks0d1s0        on  /root
```

6. If the system offers to put you into a shell, go into the shell and manually make the root and, if appropriate, the usr filesystem. For example:

```
Please manually correct your configuration and try again.

   Press Enter to invoke C Shell csh: Enter

# mkfs /dev/dsk/dks0d1s0

meta-data=/dev/dsk/dks0d1s0      isize=256    agcount=8,
agsize=31021 blks data     =                       bsize=4096
blocks=248165
log =internal log bsize=4096   blocks=1000
realtime =none                   bsize=4096   blocks=0, rtextents=0
```

```
# exit
```

7. If the *inst* main menu comes up and you did not make a Root filesystem in step 5 or step 6, make the root and, if used, the usr filesystems, and mount them. For example:

```
Inst> admin

...


Admin> mkfs /dev/dsk/dks0d1s0
Unmounting device "dev/dsk/dks0d1s0" from directory "root".

Make new file system on /dev/dsk/dks0d1s0 [yes/no/sh/help]: yes
About to remake (mkfs) file system on: /dev/dsk/dks0d1s0
This will destroy all data on disk partition: /dev/dsk/dks0d1s0.

   Are you sure? [y/n] (n): yes

   Block size of filesystem 512 or 4096 bytes? 4096

Doing: mkfs -b size=4096 /dev/dsk/dks0d1s0
meta-data=/dev/rdsk/dks0d1s0  isize=256 agcount=8,agsize=248166 blks
data =                       bsize=4096    blocks=248165,imaxpct=25
log      =internal log       bsize=4096    blocks=1000
realtime =none               extsz=65536   blocks=0, rtextents=0
Mounting file systems:

UX.make:INFO: 'scsi' is up to date.
              /dev/miniroot          on /
              /dev/dsk/dks01ds0      on /root

Reintializing installation history database
```

The following message appears:

```
This is the IRIX 6.4 CD. It contains the base software for the IRIX
6.4 release. This CD is the first of four CDs.

When beginning the installation process, each of the four CDs
should be inserted in turn when prompted so that the distribution
information can be processed by inst. Note that on the Unbundled
Products CD a series of product selections will be shown; simply
```

```
select the optional products you wish to install at this time and
type 'done' when finished.

Only after each of the 4 CDs has been inserted should the actual
software installation process begin (i.e. 'go' can be typed).
Note that if IRIX 6.4 has already been installed, it isn't
necessary to insert all the CDs again.

At different stages during the installation process, you will be
promptedt o switch CDs. In some cases, the prompting for the new CD
may be followed by the "Error/Interrupt Menu". Select option "3.
Continue" after you have inserted the specified CD.

Reading product descriptions.100% Done.

Admin> return
```

8. Install IRIX software from the CD as usual.
9. Install option software and patches from other CDs, if desired.
10. Quit *inst* and bring the system up as usual.

```
Inst> quit
```

## Troubleshooting Software Installation

This section covers the three most common problems that may arise during software installation. See the section that describes the problem you have encountered.


- "System Cannot Find the New Software" on page 277
- "System Cannot Complete an Installation" on page 278
- "System Reports Errors After an Installation" on page 279


For comprehensive troubleshooting information, see the online *IRIX Admin: Software Installation and Licensing* guide.

### System Cannot Find the New Software

The system cannot find the software when:

- There is no CD in a drive that you specified.

- The remote CD drive that you specified is not enabled for remote software installation. Contact the administrator of the system to which the drive is connected, and make sure remote installations are allowed from that CD drive. For more information, choose Online Books from the Help toolchest and search for Chapter 4, Installing and Removing Software, in the online *Personal System Administration Guide*.
- Your system cannot contact the system on the network that has the software. Choose Online Books from the Help toolchest and look at the troubleshooting chapter of the online *Personal System Administration Guide*.
- You entered an incorrect directory name.
- You are installing from a remote CD drive, and the drive is not accessible from (is not mounted at) the */CDROM* directory. Choose Disk Drives from the Find toolchest to find the drive, insert the CD into the drive, then double-click it to see the directory from which you can access it.

Also, be sure to complete the full pathname with *dist*, which is the name of the directory on the CD in which the software is stored. For example, the full pathname for new software on a CD whose pathname is */drives/cdrom* on a system named *mars* typically is *mars:/drives/cdrom/dist*

## System Cannot Complete an Installation

Typically the system cannot complete an installation when:

- There is not enough disk space to install all the products you selected for installation. In this case, you could:
  - Select fewer subsystems to install (see "Choosing Subsystems to Install or Remove" on page 266).
  - Remove subsystems that are already installed (see "Choosing Subsystems to Install or Remove" on page 266).
  - If your system is up and running (that is, if it is not doing a miniroot installation such as installing new system software), quit *inst* and remove or archive files or directories. For more information, choose Online Books from the Help toolchest, and look for the section on freeing up disk space in the online *Personal System Administration Guide*.

- You need to install companion or prerequisite subsystems, or you have chosen to remove subsystems that are prerequisites for subsystems that are already installed or are selected for installation. In this case, you may see this error message:

  ```
  ERROR: Conflicts must be resolved.
  ```

  After this message, *inst* lists each subsystem that is causing a conflict, and presents options for resolving the conflict. Read the description of each conflict and its resolution options, then choose an option using these guidelines:

  – When you have selected an optional product that is incompatible with the rest of the operating system, do not install it.

  – When you have selected incompatible products, choose to install the newer version of a product.

  – When the system is missing a prerequisite product or subsystem, choose to install the prerequisite.

  Each option is numbered; for example, option 1 for the first conflict is numbered 1a; option 2 for the same conflict is 1b. You can choose only one option per conflict. (For more information, or if your system is running IRIX 5.2 or earlier, type **`help conflicts`**.) To choose option 1a, at the `inst>` prompt type:

  ```
  conflicts 1a
  ```

  If you have several conflicts, you can enter your choices all at once. For example, to choose 1a, 2b, and 3b, type:

  ```
  conflicts 1a 2b 3b
  ```

  When all conflicts are resolved, you see this message:

  ```
  No conflicts
  ```

  To resume the installation, type:

  ```
  go
  ```

## System Reports Errors After an Installation

If the system reports errors after an installation is complete, read the error message carefully, and follow its instructions. The message suggests that you type **`help`** <*topic*> for online instructions.

**Warning: If the errors occur after you install new system software, do not power off the system or press the Reset button. This could result in a system that cannot restart.**

If you cannot solve the problem using the online help instructions, contact your local service provider.

## Accessing the System Maintenance Menu

You can access the system maintenance menu by shutting down the system and powering off using the Toolchest, or by pressing the power button.

### Accessing the System Maintenance Menu From the Toolchest

1. To access the System Maintenance menu from the Toolchest > System choose System Shutdown.
2. After a few seconds you see the notifier shown in Figure 8-1.

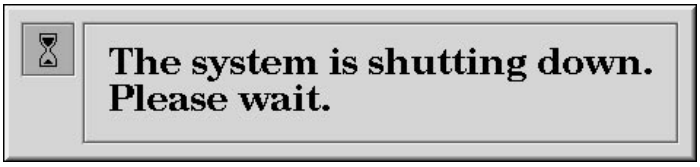



**Figure 8-1** System Shutdown Notifier

3. After a few seconds you see the notifier shown in Figure 8-2. At this point you can power off the system by pressing the power button.

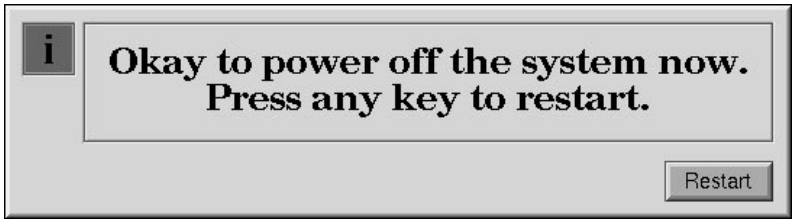



**Figure 8-2** Okay to Power Off Notifier

4. After the system is powered off, press the power button to power on. You see the following notifier:

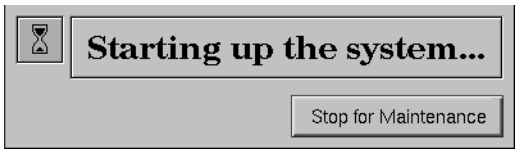



**Figure 8-3** Stop for Maintenance Notifier

5. Click the *Stop for Maintenance* button.
6. Choose the option you wish to complete your task.

## Accessing the System Maintenance Menu Using the Power Button

To access the System Maintenance menu by using the power button, follow these steps.

1. Press the power button on the front of the OCTANE workstation and power off.
2. After a few seconds, press the power button and power on.

3. You see the following notifier:

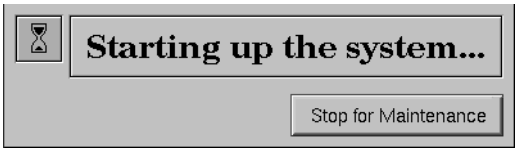



**Figure 8-4** Starting Up the System Notifier

4. Click the *Stop for Maintenance* button.
5. Choose the option you wish to complete your task.

*Chapter 9*

# Troubleshooting

This chapter describes how to diagnose hardware problems on the OCTANE workstation. It also explains how to run diagnostic tests.

*Chapter 9*

# Troubleshooting

This chapter describes how to diagnose hardware problems. It also includes information on running diagnostics.

The following topics are covered in this chapter:


- "Diagnosing the Problem" on page 285
- "Using the LEDs on the Lightbar" on page 286
- "Using the NMI Button" on page 289
- "Recovering From a System Crash" on page 291
- "Disabling the System Maintenance Password" on page 295
- "Returning Parts" on page 300


## Diagnosing the Problem

If you suspect there is a problem with your hardware, use these diagnostics to help isolate and solve the problem:

- Lightbar LEDs - Front of OCTANE, Diagnostic Chart, Figure 9-1.
- Lightbar LEDs - Front of OCTANE, Diagnostic Chart, Figure 9-2.
- Lightbar LEDs - Front of OCTANE, Diagnostic Chart, Figure 9-3.

See also "Using the NMI Button" on page 289.

## Using the LEDs on the Lightbar

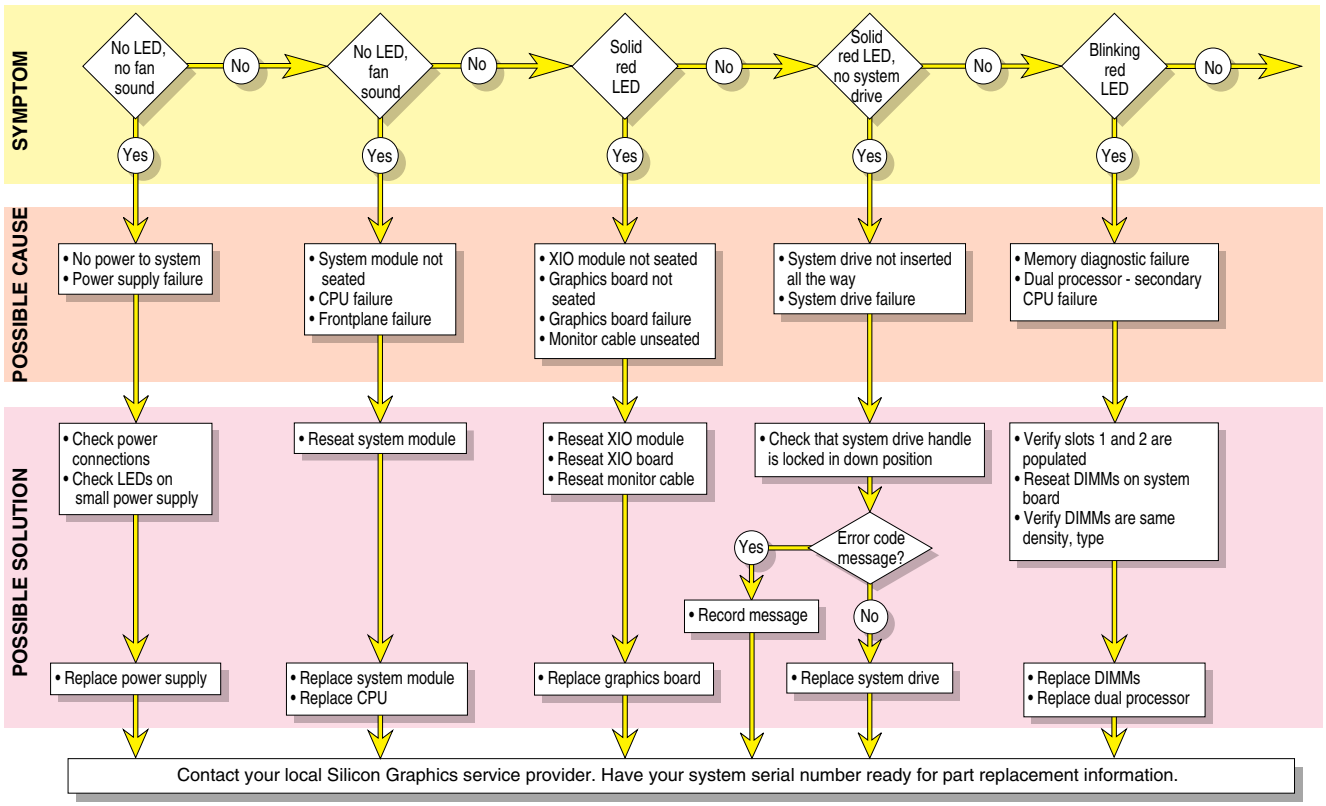



**Figure 9-1** Lightbar LEDs - Front of OCTANE, Diagnostic Chart #1

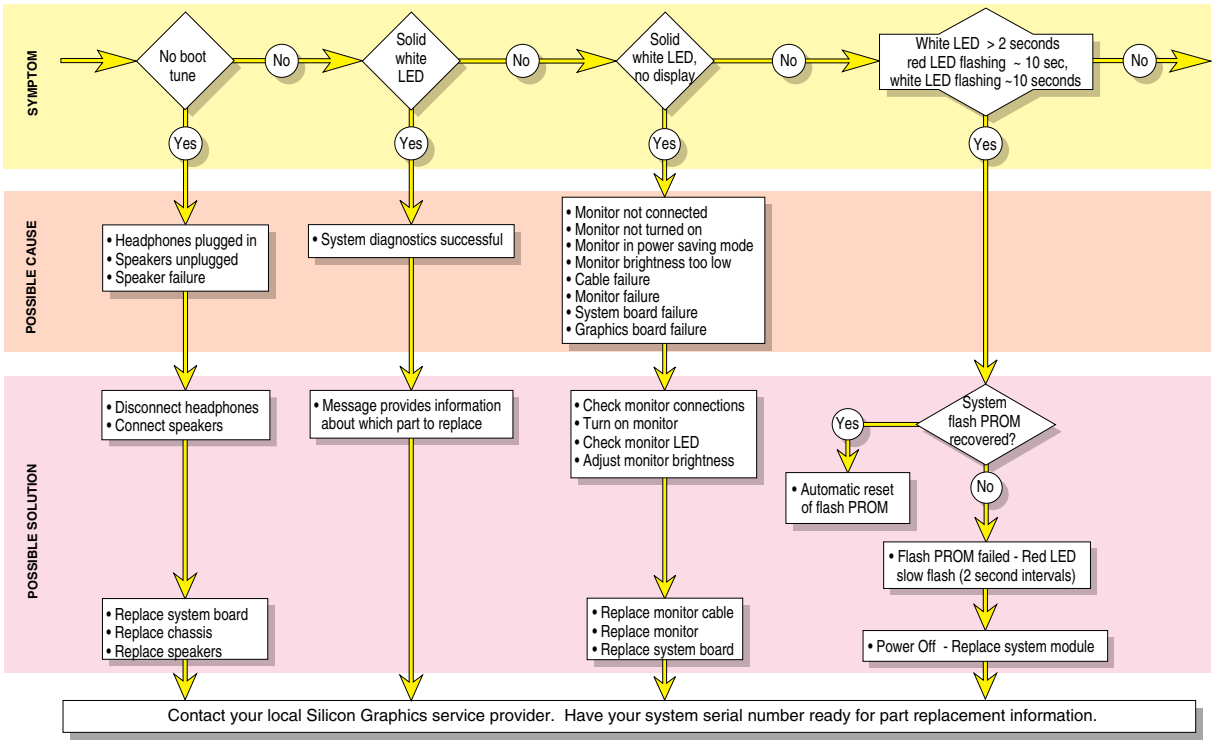



**Figure 9-2** Lightbar LEDs - Front of OCTANE, Diagnostic Chart #2

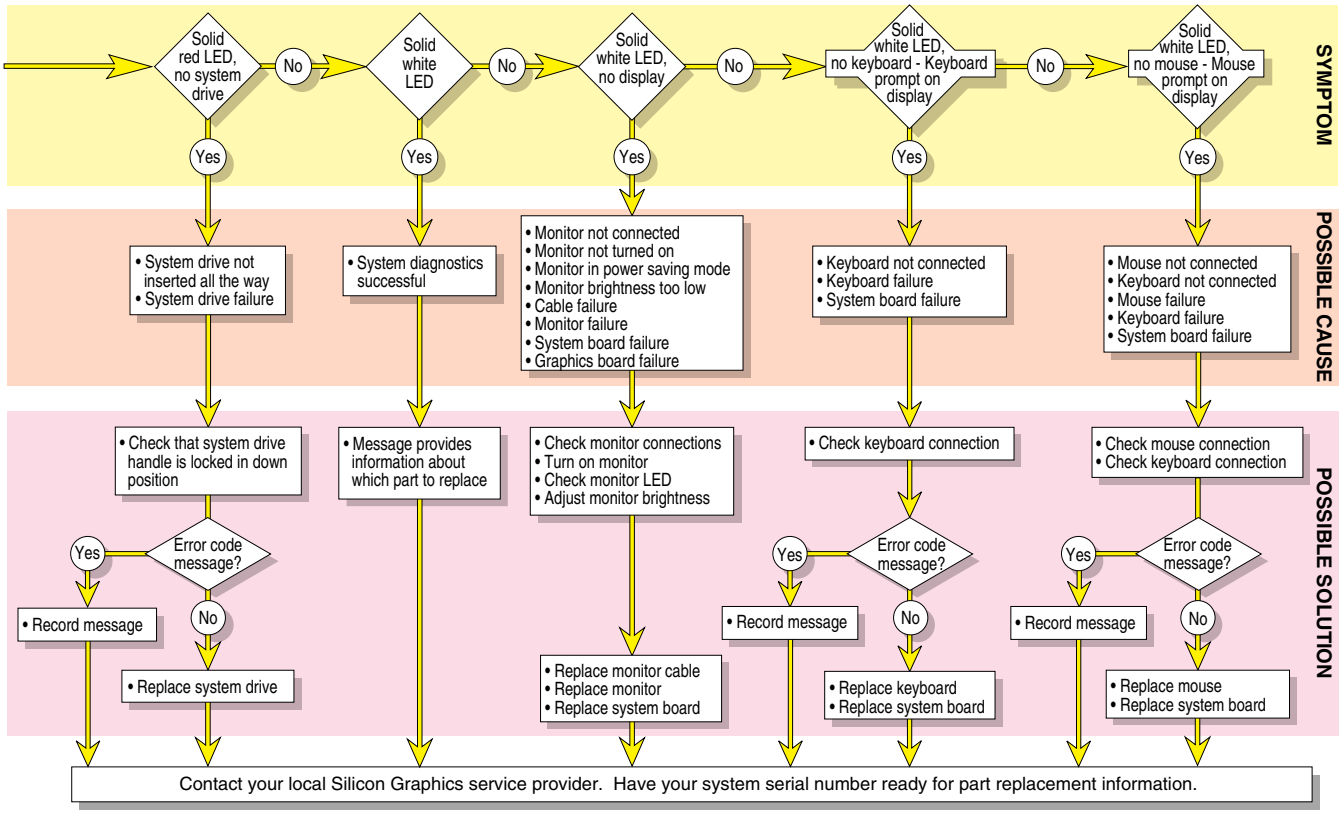



**Figure 9-3** Lightbar LEDs - Front of OCTANE, Diagnostic Chart #3

## Using the NMI Button

The OCTANE workstation has the ability to force a non-maskable interrupt (NMI) to the system. This can be used when the system is experiencing problems that do not report any error information. Using the *NMI* button causes the system to record to a file the activity of the system when the button is pushed and the system powers down.

**Caution:** Use of the *NMI* button results in the loss of any work in progress at the moment the button is pushed.

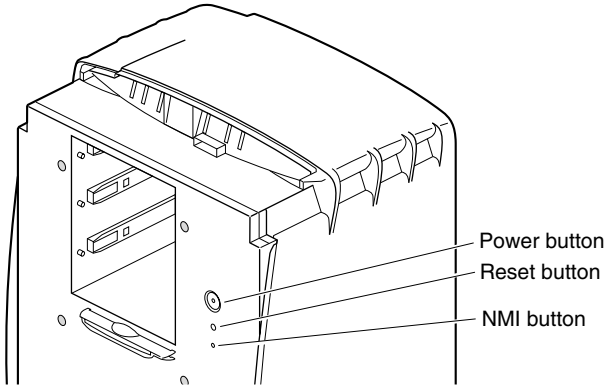



**Figure 9-4** Locating the NMI Button

See Chapter 7 for instructions on removing the bezel. The recessed *NMI* button is located the bezel and beneath the *Power* and *Reset* buttons. Use a straightened paper clip to press the recessed *NMI* button.

The files generated by the *NMI* button are used by Customer Support to help diagnose the specific problem that caused the system to malfunction. The files that are created are placed in the *var/adm/crash* directory. Have these files accessible when you contact Customer Support.

## Running Diagnostic Tests

Three types of software diagnostics tests are provided on the OCTANE workstation. Each is described below:

- "Power-On Tests"
- "Confidence Tests"
- "IDE Tests"

### Power-On Tests

These tests run automatically on the major hardware components of the workstation each time it is turned on. If the tests find a faulty part, the LED in the lightbar on the front of the workstation is red and there will probably be an error message. See also "Diagnosing the Problem."

### Confidence Tests

There are confidence tests for the mouse, keyboard, monitor, audio subsystem, external SCSI devices (excluding hard disks), Presenter, and ISDN connection.

To run the Confidence Tests, from the Toolchest, choose System > Confidence Tests. Double-click the icon for the part you believe is faulty, and follow the online instructions.

### IDE Tests

The Interactive Diagnostic Environment (IDE) tests are more comprehensive than the Confidence Tests, and take longer (as long as 30-45 minutes) to run. Follow these steps:

1. Turn off the workstation, wait a few seconds, and then turn it on again.
2. When you see the System Startup notifier, click *Stop for Maintenance*, or press **`Esc`**.

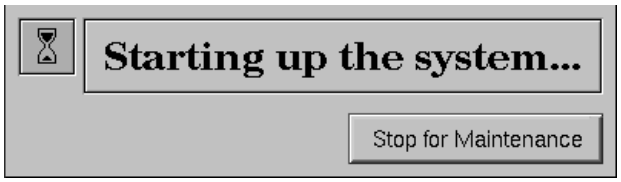



**Figure 9-5** System Startup Notifier

3. When you see the System Maintenance menu, choose `Run Diagnostics`, or type **`3`** on the keyboard.

   **Tip:** You can stop the tests at any time by pressing **`Esc`**.

   **Note:** If you cannot reach the System Maintenance menu, your system is faulty. If you cannot run the diagnostics, you may have a faulty disk drive or other problem. Contact your service provider.

4. At the end of the tests you see a message with the results of the tests. Press **`Enter`** and then **`Esc`** to return to the System Maintenance menu, from where you can restart the system.

## Recovering From a System Crash

In most cases, your system recovers from a system crash automatically if you reboot it. If, however, you have lost data on your system disk, and you cannot communicate with your workstation using the mouse or keyboard, or over the network, follow these instructions. The instructions assume you have a backup tape of your system that has been made using the System Manager backup tool, or with the **`/usr/sbin/Backup`** script. You also need a CD with your current IRIX operating system level. If you are recovering data from a tape on a remote tape device, you need to know the hostname, tape device name, and IP address of the remote system.

1. Use a pen tip or an unwound paper clip to press the **Reset** button located on the front panel.

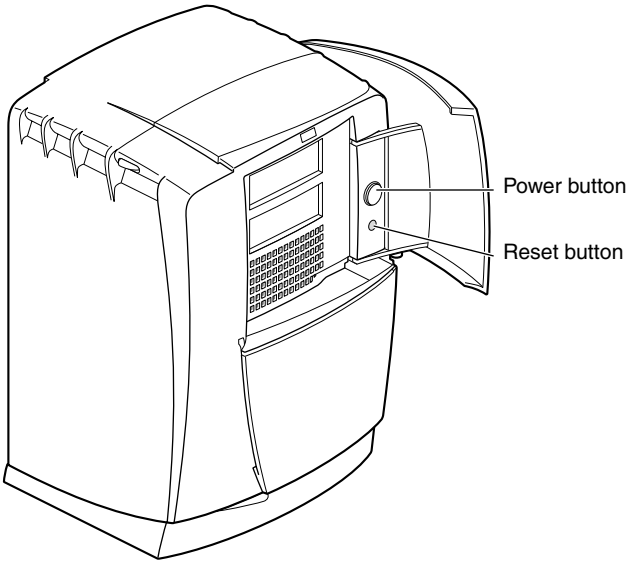



**Figure 9-6** Pressing the Reset Button

2. When you see the System Startup *notifier* (Figure 9-7), click *Stop for Maintenance* or press **`Esc`**.

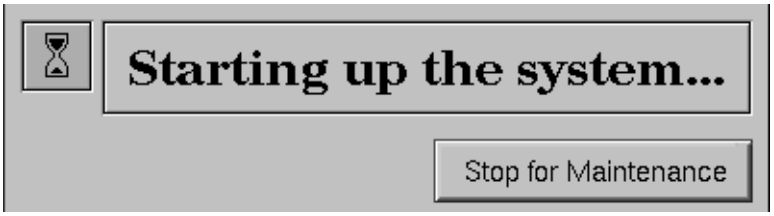



**Figure 9-7** System Startup Notifier

3. From the System Maintenance menu, choose *Recover System*, or type **`4`** on the keyboard.

   The System Recovery Menu appears (Figure 9-8).

**Figure 9-8** System Recovery Menu

4. If you have a CD-ROM drive connected to your system and the IRIX CD, click *Local CD-ROM*. Then click *Accept* to start. Insert the CD when prompted. The system takes five minutes or more to copy the information.

   If you don't have a CD-ROM drive, use a drive that is connected to another system on the network. Click *Remote Directory*.

5. When a notifier appears asking you for the remote hostname, type the system's name, a colon (:), and the full pathname of the CD-ROM drive, followed by **`/dist`**. For example, to access a CD-ROM drive on the system mars, you type

   **`mars:/CDROM/dist`**

   After everything is copied from the CD to the system disk, you can restore your data from a recent full backup tape. The backup must be one that has been made using the System Manager backup tool, or with the **`/usr/sbin/Backup`** script.

   **Tip:** If you need to check something on your system during the restore process, you can get a shell prompt by typing **`sh`** at most question prompts.

6. If you have a local tape device, you see this message:

   ```
   Restore will be from <tapename> OK? ([Y]es, [N]o): [Y]
   ```

   `tapename` is the name of the local tape device.

7. If you have a remote (network) tape device, when no tape device is found, or when you answered "No" to the question in the previous step, you see this message:

   ```
   Remote or local restore ([r]emote, [l]ocal):
   ```

   - If you answer "remote," you have chosen to restore from the network, and you must know the hostname, tape device name, and IP address of the remote system. You also need to know the IP address of your system. The IP address, such as 192.0.2.1, always has four components separated by periods.
   - If you answer "local," you have chosen a tape device that is connected to your system, and you are prompted to enter the name of the tape device.

8. When you see the following message, remove the CD-ROM, insert your most recent full backup tape, then press **Enter**.

   ```
   Insert the first backup tape in the drive, then press <Enter>,
   [q]uit (from recovery), [r]estart:
   ```

   There is a pause while the program retrieves several files from the tape describing the system state at the time the backup was made. Then you see this message:

   ```
   Erase /x filesystem and make new one (y,n)? [n]
   ```

   It prompts you for every filesystem that was known at the time of the backup.

   Read the following to decide whether to answer **y** or **n**.

   - If you answer **n** for no, the system tries to salvage as many files as possible. Then it uses your backup tape to replace the files it could not salvage. Usually you should answer no, especially if your backup tape is not very recent. If the file systems were badly damaged, or the backup was from a different level operating system, you may need to answer yes.
   - If you answer **y** for yes, the system erases the filesystem and copies everything from your backup tape to the disk. The system loses any information on that filesystem that you created between now and when you made your backup tape.

9. You see this message:

   ```
   Starting recovery from tape.
   ```

   After two or three minutes, the names of the files that the system is copying to the disk start scrolling.

   After the first tape is complete, if it is the first in a set, you are prompted for the second tape, and so on.

After the first tape set (full backup) is completed, you are prompted for any incremental or additional tapes to be restored.

When all tapes have been restored, you are asked whether you are ready to restart the system.

When the recovery is complete, you see this message:

```
Recovery complete, restarting system.
```

**Note:** If your backup tapes were old, or you were changing your operating system level, you should reinstall the operating system from the IRIX CD that came with your system after system recovery is complete. When you see the Startup System notifier, press **Esc** or click *Stop for Maintenance*. Then click *Install System Software*. For more information on installing the operating system, see "Installing Software" in the *Personal System Administration Guide* or "Installing and Removing Software" in Chapter 8, of this guide.

## Disabling the System Maintenance Password

If you are in the System Maintenance menu, and you choose *Install System Software, Run Diagnostics, Recover System, or Enter Command Monitor*, you may be prompted for a password.

If you do not know the password, you can disable it by installing a jumper (a small cap that connects two pins) on the system board inside the workstation. The system board is located in the system module. To install the jumper, you must first remove the system module.

Go to Chapter 2, "Preparing the Workstation to Remove and Install a CPU and Memory" on page 36 and follow the instructions through "Removing the System Module." After the system module is removed, return here for instructions on disabling the password.

**Note:** The jumper is a small plastic cap that resides near the CPU. See Figure 9-9. The jumper sits on the right two of three pins.

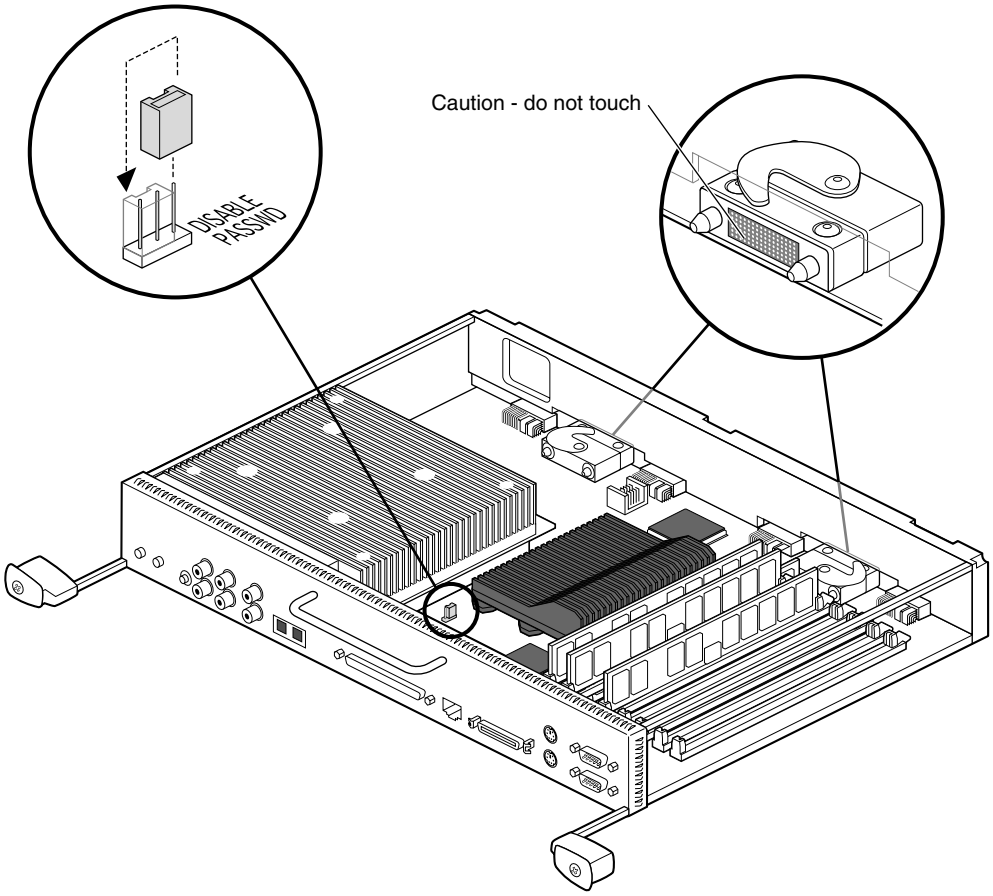



**Figure 9-9** Removing the Jumper for Disabling the Password

Follow these steps:

1. Locate the white rectangle printed on the system board at the base of the jumper. The rectangle has "Disable passwd" beside it. The white rectangle surrounds the jumper and one pin to the left of the jumper. The jumper is on the middle and right pins.
2. Pull up on the jumper and remove it.
3. Place the jumper on the left and middle pins within the rectangle. The password is now disabled.

4. Return to Chapter 2, “Replacing the System Module” on page 57 and follow the instructions through powering on the OCTANE workstation.

## Enabling the System Maintenance Password

After you have powered on the OCTANE workstation, you can choose another system maintenance password.

1. Power on the OCTANE workstation, if you have not already done so.
2. Go to the Toolchest > Help > InfoSearch > Online Books > SGI End User > *Personal System Administration Guide*. Go to the section, “Creating, Changing and Deleting Passwords” in Chapter 5. Follow the instructions for creating or changing a password. Then return here for instructions on moving the jumper.
3. Go to Chapter 2, “Preparing the Workstation to Remove and Install a CPU and Memory” on page 36, and follow the instructions through “Removing the System Module.” After the system module is removed, return here for instructions on enabling the password.

   **Note:** The jumper is a small plastic cap that resides near the CPU. The jumper is on the left side of the 3-pin configuration because the password was disabled by moving the jumper to the left. To enable the password, you must move the jumper to the right. Go to the next step for instructions on moving the jumper to the right.

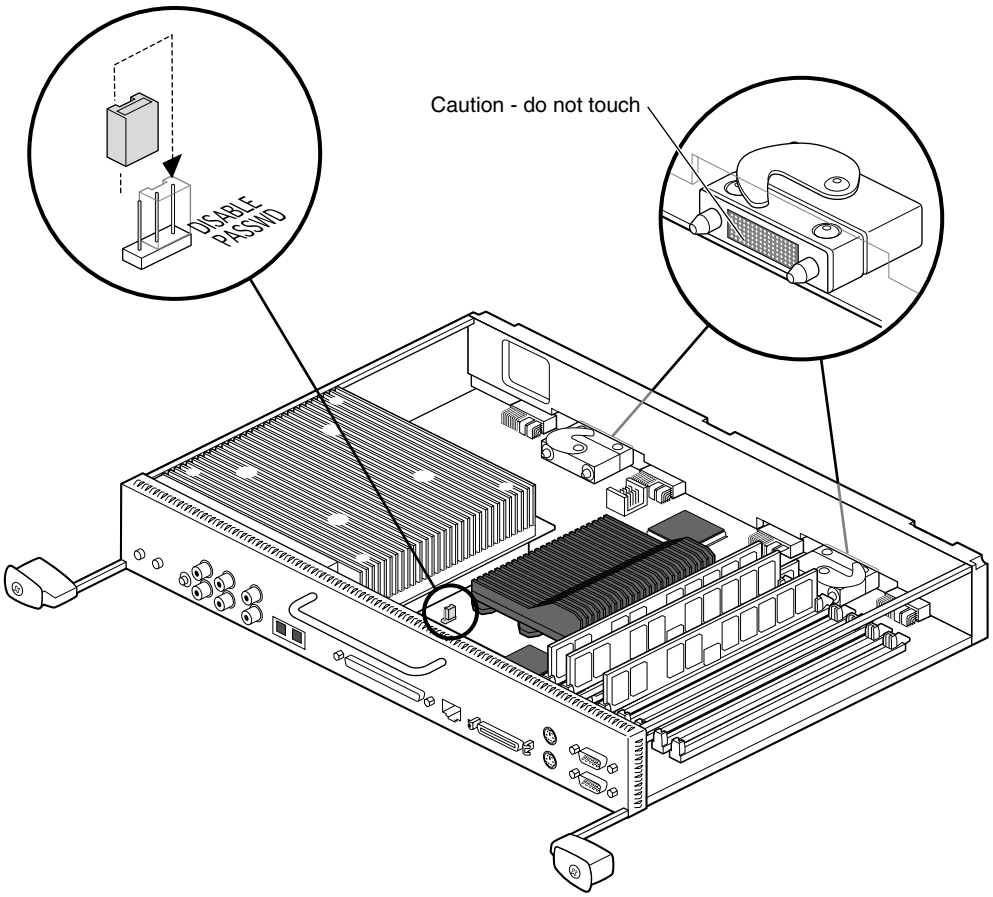



**Figure 9-10** Removing the Jumper to Enable the Password

4. Locate the white rectangle printed on the system board at the base of the jumper. The rectangle has “Disable passwd” beside it. The white rectangle surrounds the jumper and one pin to the left of the jumper. The jumper is now disabled, and sits on the on the left and middle pins.
5. Pull up on the jumper and remove it.
6. Place the jumper on the middle and right pins (within the rectangle). The password is now enabled.

You have finished enabling the password and are ready to replace the system module.

7. Return to Chapter 2, “Replacing the System Module” on page 57 and follow the instructions through powering on the OCTANE workstation.

## System Does Not Power Off

If the system does not power off, either it never came up all the way or the operating system is hung. If you do not see any activity for several minutes, follow the steps below.

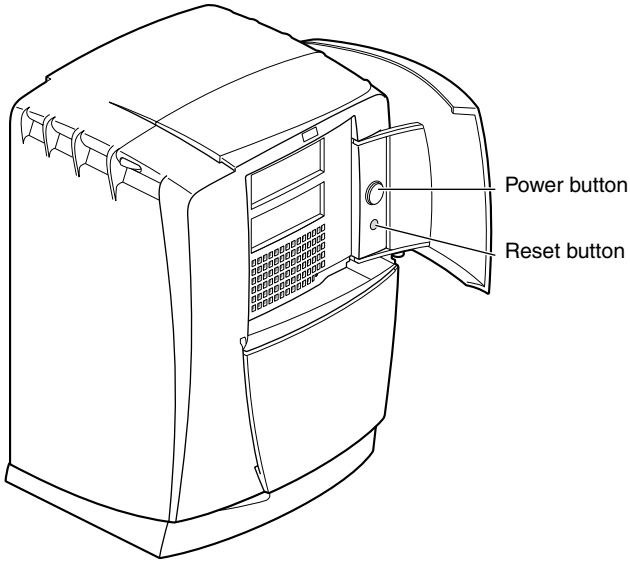



**Figure 9-11** Pressing the Power Button

1. Press the power button again.

   **Note:** If you press the power button a second time, the system powers off immediately, but it is not a clean shutdown. Avoid using this method unless the system does not respond for several minutes after your press the power button the first time.

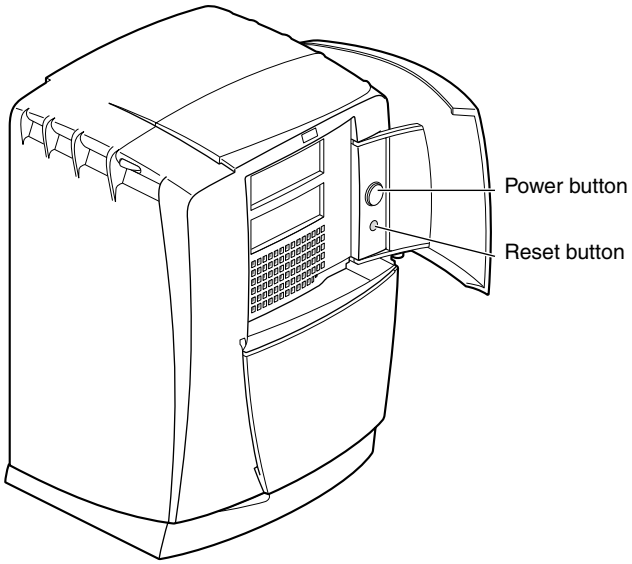



**Figure 9-12** Pressing the Reset Button

2. If pressing the power button a second time does not work, use a pencil or pen to press the reset button.
3. If the system still fails to power off, unplug the power cord from the back of the workstation and contact your service provider.

## Returning Parts

To return any part, use the packaging materials and box that came with your replacement part.

For product support information, see the Introduction of this guide.

*Appendix A*

# Identifying Graphics Boards

This appendix provides illustrations of XIO graphics boards that are available for the OCTANE workstation.

*Appendix A*

# Identifying Graphics Boards

This appendix provides illustrations of the OCTANE/SI graphics board, OCTANE/SI graphics board with texture memory option board, OCTANE/SSI graphics board, and OCTANE/MXI graphics board.


- "OCTANE/SI Graphics Board" on page 303
- "OCTANE/SI Graphics Board With the Texture Memory Option Board" on page 304
- "OCTANE/SSI Graphics Board" on page 305
- "OCTANE/MXI Graphics Board" on page 306


## OCTANE/SI Graphics Board

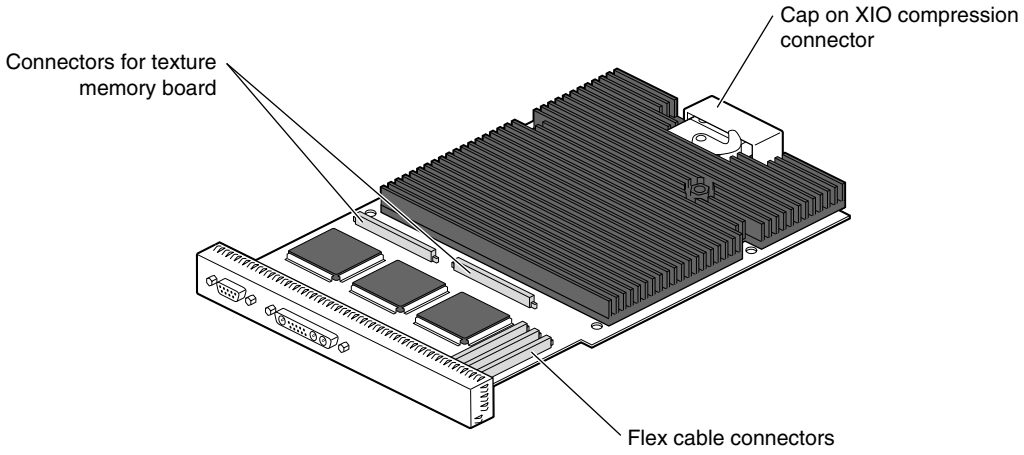



**Figure A-1** OCTANE/SI Graphics Board

## OCTANE/SI Graphics Board With the Texture Memory Option Board

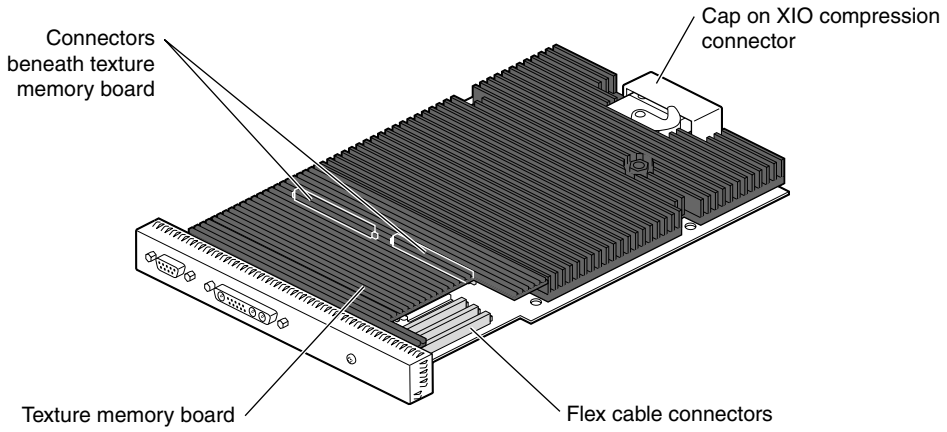



**Figure A-2** OCTANE/SI Board With the Texture Memory Option Board

## OCTANE/SSI Graphics Board

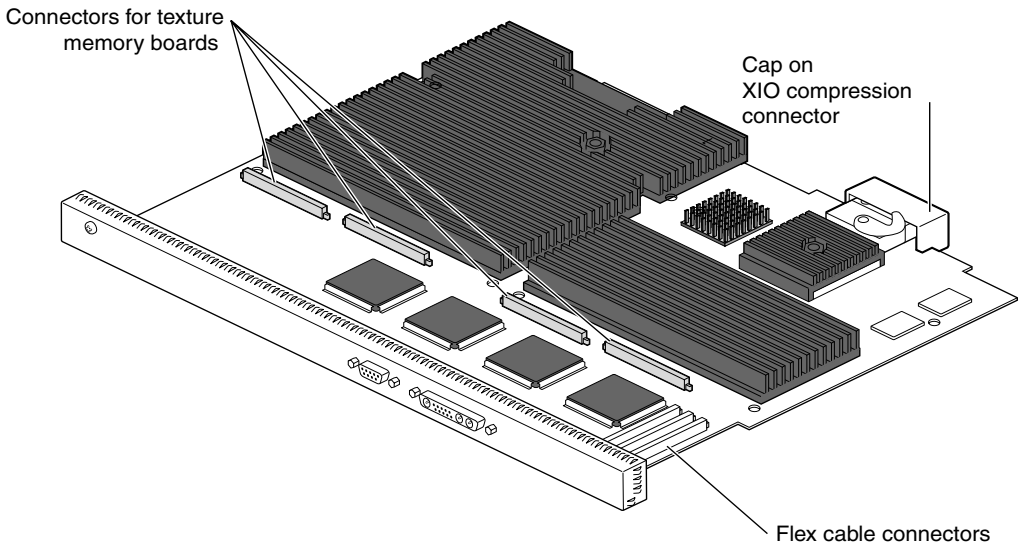



**Figure A-3** OCTANE/SSI Graphics Board

## OCTANE/MXI Graphics Board

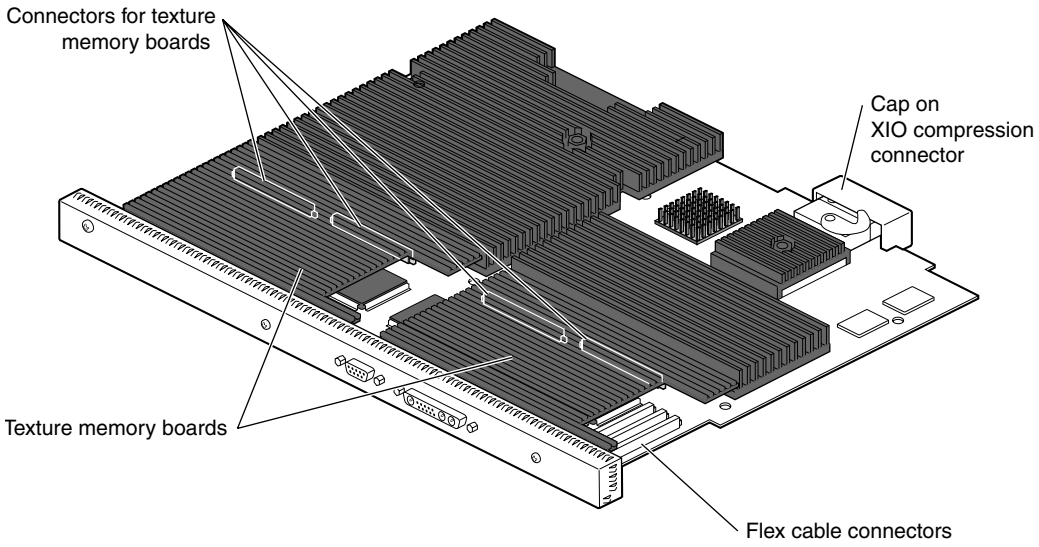



**Figure A-4** OCTANE/MXI Graphics Board

*Appendix B*

# Care and Cleaning of the Compression Connector

This chapter provides information about the care and cleaning of the compression connectors found on the system module, PCI module, all XIO graphics boards, and most XIO option boards.

# Care and Cleaning of the Compression Connector

The OCTANE workstation uses compression connectors to connect several modules and boards to the frontplane.

A single compression connector is used in the OCTANE workstation:

- on the back of the PCI module
- on each XIO board on the XIO module

Two compression connectors are used on the system module.

The compression connector has 96 pads that enable signals to pass between the system (via the frontplane) and the system module, PCI module, or XIO board.

The compression connector has two halves: One half is located on the frontplane of the chassis; the other, on the system module, PCI module, or XIO board. Each pad on a frontplane connector is a flat gold-plated surface. Each pad on the system module, PCI module, or XIO board is composed of hundreds of tiny bristles (dendrites). When a bristled pad is pressed into a gold-plated pad, a connection is created for one signal.

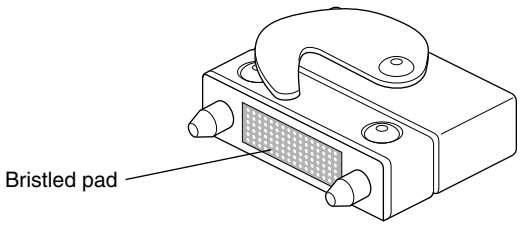



**Figure B-1** Identifying the Bristled Pad of the Compression Connector

The bristled pads may attract and hold dust, lint, grease, powder, and dirt. The presence of these substances clogs or damages the bristles and prevents them from making proper contact with the gold-plated pads on the system's frontplane. It is important to prevent this.

## Guidelines for Storing and Handling the Compression Connector

To avoid damaging a compression connector and to keep it in optimal working condition, follow these guidelines whenever the board is not installed.

**Caution:** Failure to follow these instructions can result in irreparable damage to the surface of the connector's pads, which may result in intermittent or complete failure of the product.

- Do not wipe or touch the pads of the compression connector with anything (no human fingers, no brushes, no cloth, no probes), except as specified in the cleaning instructions. The bristles might be damaged.
- Whenever the module or board is not in the chassis, put the protective cap over the compression connector and put the module or board in an antistatic bag. Make sure to close (fold over) the open end of the bag to minimize exposure to dust and atmospheric gases.
- Do not put anything (not even water) onto the pads, except as specified in the cleaning instructions.
- Before laying the board on a surface, make sure that the surface is free of dust, lint, powder, metal filings, oil, water, and so on.
- Do not blow dust, dirt, or powder anywhere near the board when it is not inside its protective bag.

## Guidelines for Cleaning the Compression Connector

A compression connector should never need to be cleaned if you keep the protective cover on whenever the module or board is not in the chassis. However, if the connector becomes dirty, follow the instructions below for removing pollutants.

**Note:** Some pollutants can irreversibly damage (corrode or chemically alter) the pad surfaces. Although cleaning may remove the pollutant, it does not repair damage incurred by this contact.

To remove pollutants, follow these instructions:

1. Obtain a can of dry compressed air or inert gas. The Envi-ro-tech Duster 1671 product manufactured by TECHSPRAY (In the USA, telephone 806-372-8523) works extremely well for this application.

   **Caution:** Do not use a cleaning product that contains any of the following ingredients: halogenated hydrocarbons, aromatic hydrocarbons, ethers, sulfur, ketones, or solvents of any kind. These substances cause irreparable damage to the connector's surface.

2. Prepare the can for use, as instructed on the can. For example, if a tube is provided, attach it to the can's dispensing mechanism.

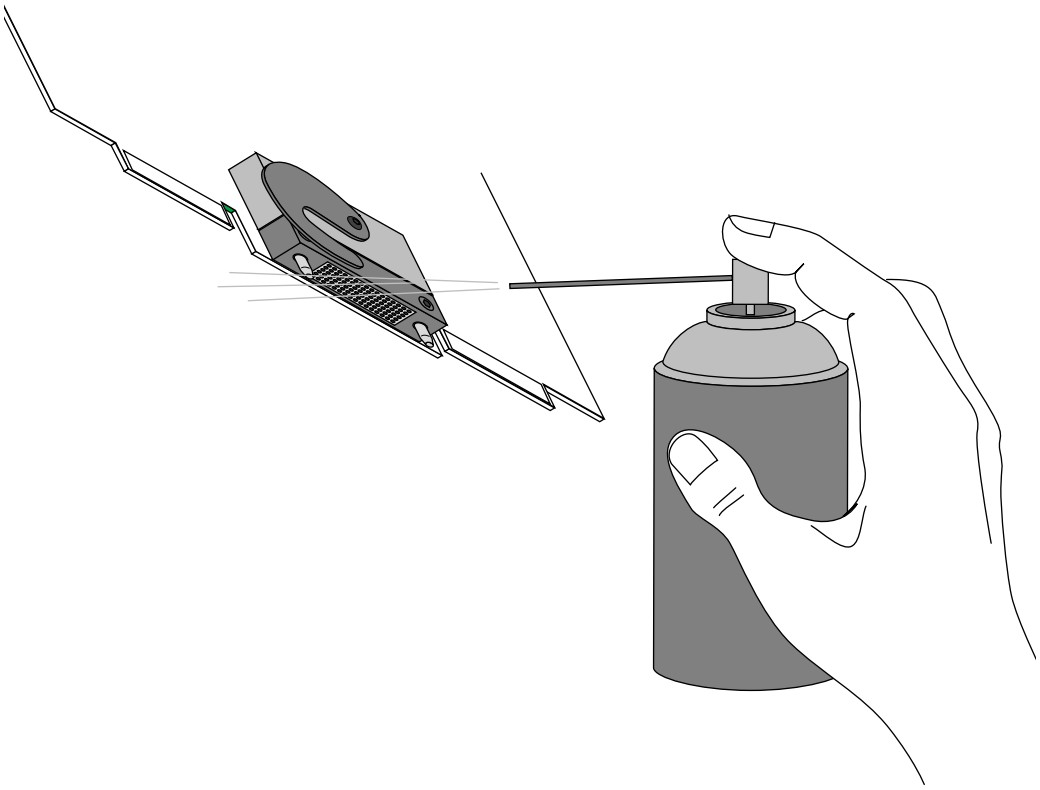


**Figure B-2** Spraying the Compression Connector

3. Hold the can in a vertical position.
4. Place or hold the XIO board so that the rounded edge of the compression connector faces up. Note that the rounded edge is completely closed, so that air cannot flow into the connector, whereas the squared edge has an opening.

   **Caution:** Spraying into the squared (open) edge of the connector can destroy it.
5. Position the XIO board at an angle to the can, so that the tip of the can's applicator is 1 to 2 inches away from the first (topmost) row of pads. Do not allow the applicator to touch the pads. When you spray, the air hits each pad and flows downward.
6. Start spraying. As you spray, move the spray along the length of the connector until the entire length has been sprayed. Move down a few rows and again spray along the entire length.

   **Note:** Do not shake the can. Stop spraying if any visible material (for example, foam) appears. This foam will blow away once you resume spraying just air.
7. Repeat until all the pads have been sprayed.
8. When you finish, cover the compression connector with its cap or immediately install the board in an XIO slot.

*Appendix C*

# Technical Specifications

This chapter provides port pinout assignments for the external ports on the OCTANE workstation. It also provides physical environment specifications for the OCTANE workstation.

*Appendix C*

# Technical Specifications

To see the information in this appendix in a Web browser, enter the following URL in the location window:

**`file:/usr/share/Insight/library/SGI_bookshelves/SGI_EndUser/books/Octane_HWCntl/index.html`**

Or, from the Toolchest, choose Help > Online Books > SGI EndUser > *OCTANE Hardware Central*.

## Port Pinout Assignments

This section contains port pinout information for the following OCTANE ports:

- Audio ports
  - microphone
  - speaker
  - analog line level audio
  - coaxial digital audio
  - optical digital audio
- "SCSI Port"
- "Ethernet 10-Base-T/100-Base-T Port"
- "Parallel Port"
- "Keyboard and Mouse Ports"
- "Serial Ports"
- "Serial Cables and Adapters"
- "Monitor Port"
- "StereoView Port"

## Audio Ports

### Microphone Port

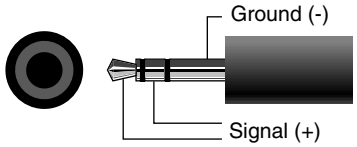
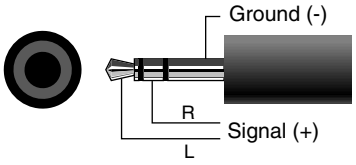



Table C-1 shows the port pinout information for the microphone.

**Table C-1** Microphone Port Pinout

| Microphone | Tip | Ring | Sleeve |
|---|---|---|---|
| Silicon Graphics supplied electret mono microphone | Signal(+) | Signal(+)<br>NC (no connection) | Ground(-) |
| Line level mono microphone | Ground (-) | Signal (+) | Ground (-) |

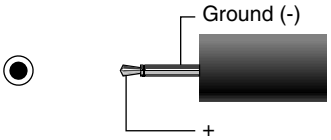
### Speaker Port Pinout




Above is the port and plug pinout for the speaker/headphone port.

**Table C-2** Speaker/Headphone Port Pinout

| Speaker/Headphone Signal | Tip | Ring | Sleeve |
|---|---|---|---|
| | Left | Right | Ground |



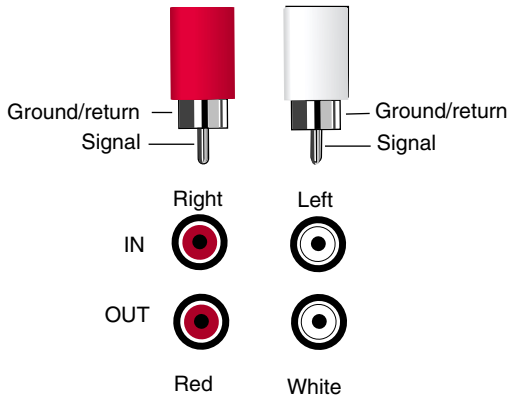

Above is the speaker power port and plug pinout.

Table C-3 shows the port pinout assignments for the speaker power port.

**Table C-3** Speaker Power Port Pinout

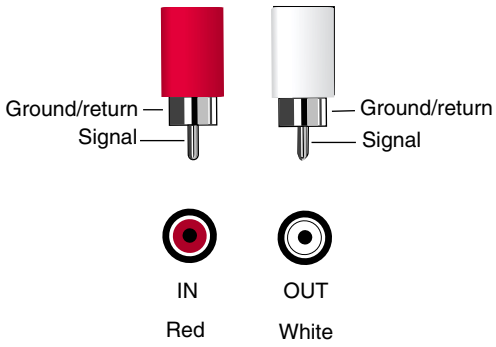
| Speaker | Tip | Sleeve |
|---|---|---|
| 10 Volt DC<br>500 mA | Power (+) | Ground |

### Analog Line Level Port Pinout




The pinouts for the analog audio ports and plugs are shown above.

### Coaxial Digital Port Pinout

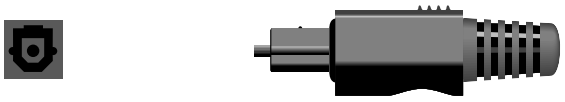



The port (jack) pinout for the coaxial digital ports and plugs are shown above.

Coaxial digital

- Supports the AES3id professional format.
- Compatible with consumer formats including CP340, IEC958, and S/PDIF.

### Optical Digital Port Pinout



An optical digital port is shown above.

- Supports ADAT 8-channel, 24-bit connections.
- Compatible with consumer formats including CP340, IEC958, and S/PDIF.

## SCSI Port

Table C-4 shows the cable pinout assignments for the SCSI port.

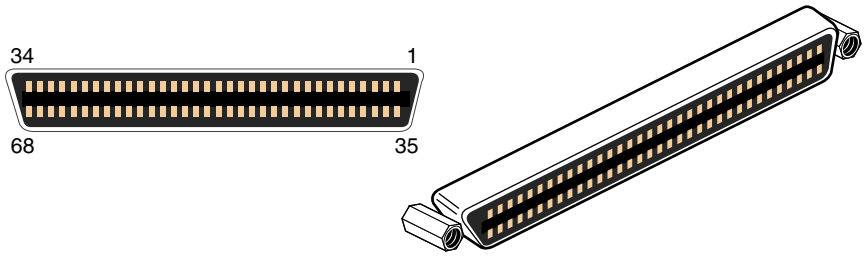


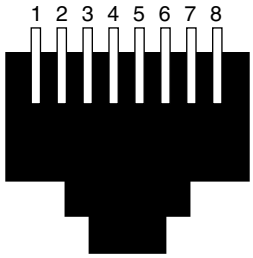

**Table C-4** SCSI Port Pinout

| Pin | Assignment | Pin | Assignment |
|---|---|---|---|
| 1 | Ground | 35 | DB(12) |
| 2 | Ground | 36 | DB(13) |
| 3 | Ground | 37 | DB(14) |
| 4 | Ground | 38 | DB(15) |
| 5 | Ground | 39 | DB(P1) |
| 6 | Ground | 40 | DB(0) |
| 7 | Ground | 41 | DB(1) |
| 8 | Ground | 42 | DB(2) |
| 9 | Ground | 43 | DB(3) |
| 10 | Ground | 44 | DB(4) |
| 11 | Ground | 45 | DB(5) |
| 12 | Ground | 46 | DB(6) |
| 13 | Ground | 47 | DB(7) |
| 14 | Ground | 48 | DB(P) |
| 15 | Ground | 49 | Ground |

**Table C-4 (continued)** SCSI Port Pinout

| Pin | Assignment | Pin | Assignment |
|---|---|---|---|
| 16 | Ground | 50 | Ground |
| 17 | Termpwr | 51 | Termpwr |
| 18 | Termpwr | 52 | Termpwr |
| 19 | Open | 53 | Open |
| 20 | Ground | 54 | Ground |
| 21 | Ground | 55 | ATN |
| 22 | Ground | 56 | Ground |
| 23 | Ground | 57 | BSY |
| 24 | Ground | 58 | ACK |
| 25 | Ground | 59 | RST |
| 26 | Ground | 60 | MSG |
| 27 | Ground | 61 | SEL |
| 28 | Ground | 62 | C/D |
| 29 | Ground | 63 | REQ |
| 30 | Ground | 64 | I/O |
| 31 | Ground | 65 | DB(8) |
| 32 | Ground | 66 | DB(9) |
| 33 | Ground | 67 | DB(10) |
| 34 | Ground | 68 | DB(11) |

## Ethernet 10-Base-T/100-Base-T Port




The OCTANE workstation autoselects the speed and type (duplex vs. half duplex) at bootup, based on what it is connected to.

Table C-5 shows the cable pinout assignments for the Ethernet 10-Base-T/100-Base-T port.

**Table C-5** Ethernet 10-BASE-T/100-BASE-T Port Pinout

| Pin | Assignment |
|---|---|
| 1 | Transmit+ |
| 2 | Transmit– |
| 3 | Receive+ |
| 4 | (Reserved) |
| 5 | (Reserved) |
| 6 | Receive– |
| 7 | (Reserved) |
| 8 | (Reserved) |

## Parallel Port

Table C-6 shows the cable pinout assignments for the IEEE 1284-C parallel port.

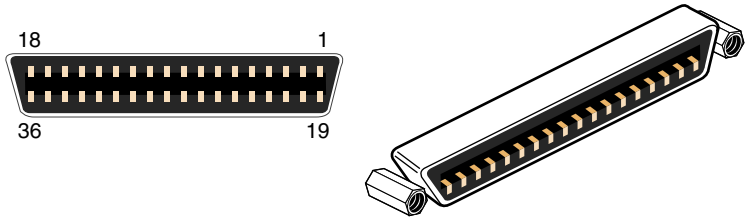


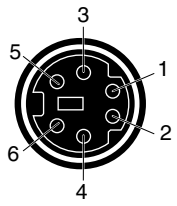

**Table C-6** Parallel Port Pinout

| Pin | Assignment | Pin | Assignment |
|---|---|---|---|
| 1 | BUSY | 19 | Signal Ground (BUSY) |
| 2 | SELECT | 20 | Signal Ground (SELECT) |
| 3 | nACK | 21 | Signal Ground (nACK) |
| 4 | nFAULT | 22 | Signal Ground (nFAULT) |
| 5 | pERROR | 23 | Signal Ground (pERROR) |
| 6 | DATA 1 | 24 | Signal Ground (DATA 1) |
| 7 | DATA 2 | 25 | Signal Ground (DATA 2) |
| 8 | DATA 3 | 26 | Signal Ground (DATA 3) |
| 9 | DATA 4 | 27 | Signal Ground (DATA 4) |
| 10 | DATA 5 | 28 | Signal Ground (DATA 5) |
| 11 | DATA 6 | 29 | Signal Ground (DATA 6) |
| 12 | DATA 7 | 30 | Signal Ground (DATA 7) |
| 13 | DATA 8 | 31 | Signal Ground (DATA 8) |
| 14 | nINIT | 32 | Signal Ground (nINIT) |
| 15 | nSTROBE | 33 | Signal Ground (nSTROBE) |
| 16 | nSELECTIN | 34 | Signal Ground (nSELECTIN) |

**Table C-6 (continued)** Parallel Port Pinout

| Pin | Assignment | Pin | Assignment |
|---|---|---|---|
| 17 | nAUTOFD | 35 | Signal Ground (nAUTOFD) |
| 18 | HOST LOGIC HIGH | 36 view | PERIPHERAL LOGIC HIGH |

## Keyboard and Mouse Ports




This is a standard pinout for PC PS/2 keyboards and mice. The mouse and keyboard are electrically PS/2 compatible. They also use the same protocol as the PC PS/2 keyboards and mice.

Table C-7 shows the cable pinout assignments for the keyboard and mouse ports.

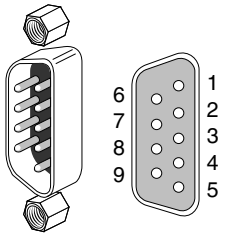
**Table C-7** Keyboard and Mouse Port Pinout

| Pin | Assignment |
|---|---|
| 1 | Keyboard/Mouse Data |
| 2 | (Reserved) |
| 3 | Ground |
| 4 | Keyboard/Mouse Power (+5V) |
| 5 | Keyboard/Mouse Clock |
| 6 | (Reserved) |

## Serial Ports

The OCTANE workstation serial ports can operate in one of several modes:

- RS-232 electrical levels with a standard PC pinout.
- Macintosh style electrical levels and a Macintosh-compatible pinout. (This mode requires an additional adapter cable. See “Serial Port Adapter Cables” on page 329.)
- ANSI/SMPTE 207M electrical levels and pinout. (This mode requires an additional adapter cable. See “Serial Port Adapter Cables” on page 329.)




This the PC-compatible pinout. The range of supported baud rates is 300 baud to 460K baud.

Table C-8 shows cable pinout assignments for the serial ports.

**Table C-8** Serial Port Pinout - PC-Compatible

| Pin | Assignment | Description |
|---|---|---|
| 1 | DCD | Data Carrier Detect |
| 2 | RD | Receive Data |
| 3 | TD | Transmit Data |
| 4 | DTR | Data Terminal Ready |
| 5 | SG | Signal Ground |
| 6 | DSR | Data Set Ready |
| 7 | RTS | Request to Send |

**Table C-8 (continued)** Serial Port Pinout - PC-Compatible

| Pin | Assignment | Description |
|---|---|---|
| 8 | CTS | Clear to Send |
| 9 | RI | Ring Indicator |

This is the Macintosh-compatible pinout.

Table C-9 shows cable pinout assignments for the serial ports.

**Table C-9** Serial Port Pinout - Macintosh-Compatible

| Pin | Assignment | Description |
|---|---|---|
| 1 | GPi | General Purpose Input |
| 2 | RxD- | Receive Data- |
| 3 | TxD- | Transmit Data - |
| 4 | TxD+ | Transmit Data + |
| 5 | SG | Signal Ground |
| 6 | RxD+ | Receive Data + |
| 7 | HSKo | Handshake Out |
| 8 | HSKi | Handshake In |
| 9 | Unused | |

## Serial Cables and Adapters

This section contains cable pinout information for serial cables that you can connect to your OCTANE workstation. It also describes Silicon Graphics serial port converters. The following topics are covered:

- “Printer/Dumb Terminal Serial Cable”
- “PC Modem Serial Cable”
- “Serial Port Adapter Cables”

## Printer/Dumb Terminal Serial Cable

For serial printers and dumb terminals, use a 3-wire standard PC cable. Table C-10 shows the cable connector pinout assignments for this cable.

**Note:** For a 3-wire cable and no hardware flow control modem, you must use the */dev/ttyd** command devices in the configuration files. For more detailed information, see the *serial* man page. To access the man page, from the Toolchest, choose Help > InfoSearch > Man pages. Or place the cursor in the console window and type

```
man serial
```

**Table C-10** Printer/Dumb Terminal Cable Pinout

| Signal Description | Pin Number DB9 Connector (Female) | Pin Number DB-25 Connector (Male) |
|---|---|---|
| | 1 | NOT CONNECTED |
| RXD | 2 | 2 |
| TXD | 3 | 3 |
| | 4 | NOT CONNECTED |
| GND | 5 | 7 |
| | 6 | NOT CONNECTED |
| | 7 | NOT CONNECTED |
| | 8 | NOT CONNECTED |
| | 9 | NOT CONNECTED |

## PC Modem Serial Cable

Use a full-handshake (includes RTS and CTS) PC modem serial cable for a modem with RTS/CTS flow control. Table C-11 shows the cable connector pin assignments for this cable.

You can use this cable for all serial devices except those that do not need RTS flow control. Devices like serial printers and dumb terminals that do not need RTS flow control can still be used with this cable provided that a null modem adapter is added to one end of

the cable. You can purchase the full-handshake PC modem serial cable from Silicon Graphics or your local service provider.

**Note:** If you are attaching a modem with modem signals and RTS/CTS flow control, you must use the */dev/ttyf** command devices in the configuration files. For more detailed information, see the *serial* man page. To access this man page, from the Toolchest, choose Help > InfoSearch > Man pages. Or place the cursor in the console window and type

```
man serial
```

**Table C-11** PC Modem Cable Pinout

| Signal Description | Pin Number DB9 Connector (Female) | Pin Number DB-25 Connector (Male) |
|---|---|---|
| DCD | 1 | 8 |
| RXD | 2 | 3 |
| TXD | 3 | 2 |
| DTR | 4 | 20 |
| GND | 5 | 7 |
| DSR | 6 | 6 |
| RTS | 7 | 4 |
| CTS | 8 | 5 |
| RI | 9 | 22 |

## Serial Port Adapter Cables

The OCTANE workstation's serial ports conform to the PC standard pinout for EIA standard RS-232 signals.

The purpose of the adapter cable is to allow the OCTANE workstation to use standard PC or Macintosh serial devices.

Table C-12 shows the adapter cable pinout for a standard PC or Macintosh serial port.

**Table C-12** Female DB9 to Female MiniDIN8 Adapter Cable Pinout

| From Female DB9 | To MiniDIN8 | PC Signal | Macintosh Signal |
|---|---|---|---|
| 1 | 7 | DCD | GPi |
| 2 | 5 | RD | RxD- |
| 3 | 3 | TD | TxD- |
| 4 | 1 | DTR | TxD+ |
| 5 | 4 | SG | SG |
| 6 | 8 | DSR | RxD+ |
| 7 | 6 | RTS | HSKo |
| 8 | 2 | CTS | HSKi |
| 9 | unused | RI | unused |

The purpose of the following adapter cable is to support ANSI/SMPTE Standard 107M-1992.

Table C-13 shows the pinout for a female DB9 to female DB9 adapter cable.

**Table C-13** Female DB9 to Female DB9 Adapter Cable Pinout

| Female DB9 Connected to OCTANE | Female DB9 Connected to Peripheral |
|---|---|
| 1 | unused |
| 2 | to DB9 -2 (RxD-) |

**Table C-13 (continued)** Female DB9 to Female DB9 Adapter Cable Pinout

| Female DB9 Connected to OCTANE | Female DB9 Connected to Peripheral |
|---|---|
| 3 | to DB9-8 (TxD-) |
| 4 | unused |
| 5 | to DB9-6and DB9-4 (GND) |
| 6 | to DB9-7 (RxD+) |
| 7 | to DB9-3 (TxD+) |
| 8 | unused |
| 9 | unused |

**Note:** For more detailed information, see the serial man page. To access it, place the cursor in an IRIX shell and enter

```
man serial
```

Or, access Man Pages through the Toolchest > Help or in the InfoSearch window, enter

```
man serial
```

## Ports on XIO Graphics Boards

### Monitor Port

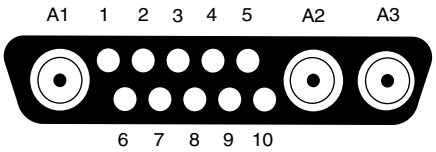



Table C-14 shows the port pinout assignments for the OCTANE 20 inch monitor. Table C-15 shows the port pinout assignments for an OCTANE DDC enabled monitor.

**Table C-14** 20 Inch Monitor Pinout

| Pin | Assignment |
|---|---|
| A1 | Red Signal, Analog |
| A2 | Green Signal, Analog |
| A3 | Blue Signal, analog |
| 1 | Monitor ID Bit 3, TTL |
| 2 | Monitor ID Bit 0, TTL |
| 3 | Composite Sync (Active Low), TTL |
| 4 | Horizontal Drive (Active High), TTL |
| 5 | Vertical Drive (Active High), TTL |
| 6 | Monitor ID Bit 1, TTL |
| 7 | Monitor ID Bit 2, TTL |
| 8 | Ground |
| 9 | Ground |
| 10 | Ground |

**Table C-15** DDC Enabled Monitor Pinout

| Pin | Assignment - DDC Enabled |
|---|---|
| A1 | Red |
| A2 | Green |
| A3 | Blue |
| 1 | Data Clock (SCL) |
| 2 | Bi-directional Data (SDA) |
| 3 | Composite Sync |
| 4 | Horizontal Sync |
| 5 | Vertical Sync |
| 6 | DDC (+5VInput) |
| 7 | DDC Ground |
| 8 | Chassis Ground |
| 9 | Chassis Ground |
| 10 | Chassis Ground |

### StereoView Port

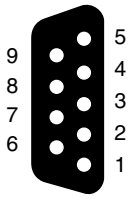


Table C-16 shows the cable pinout assignments for the StereoView port on the graphics boards.

**Table C-16** StereoView Pinout Assignments

| Pin | Assignment |
|---|---|
| 1 | Stereo left/right Eye Signal (1=left, 0=right) (STEREO_LEFT) |
| 2 | Signal Return Ground |
| 3 | Reserved for Future Use |
| 4 | Signal Return Ground (Framelock ground) |
| 5 | Reserved for Future Use (Framelock) |
| 6 | Digital Return Ground |
| 7 | Digital Return Ground for StereoView |
| 8 | +12V DC Output to StereoView Device |
| 9 | Unused |

## Physical Environment Specifications

Table C-17 shows the physical environent specifications for the OCTANE workstation.

**Table C-17** Physical Environment Specifications

| | |
|---|---|
| Workstation dimensions | 16.25″ (41.3 cm) H x 11.0″ (28 cm) W x 13.25″ (33.7 cm) D<br>14.75″ D (37.5 cm) (depth in localized area of power supply)<br>16.25″ D (41.3 cm) (depth in localized area of optional PCI module) |
| Power Requirements | Voltage and frequency: 100-240 VAC, 50-60 Hz, 10-4.2A, 850W |
| Ambient Temperature | +13° C (23.4° F) to +35° C (95° F) (operating)<br>-10° C (14° F) to +65° C (149° F) (non-operating) |

**Table C-17** Physical Environment Specifications

| | |
|---|---|
| Workstation dimensions | 16.25″ (41.3 cm) H x 11.0″ (28 cm) W x 13.25″ (33.7 cm) D<br>14.75″ D (37.5 cm) (depth in localized area of power supply)<br>16.25″ D (41.3 cm) (depth in localized area of optional PCI module) |
| Relative Humidity | 10% to 80% operating (no condensation)<br>10% to 95% non-operating (no condensation) |
| Heat Dissipation | 700 watts, 2400 Btu/hr |
| Altitude | 10,000 ft. (3,049 m) operating;<br>40,000 ft. (12,195 m) non-operating |
| Vibration | 0.02′, 5-19Hz; 0.35 G, 19-500 Hz |
| Voltage and frequency | 100-120/200-240 VAC |

## Microphone Specifications

Table C-18 shows microphone specifications.

**Table C-18** Microphone Specifications

| **Microphone Jack** | |
|---|---|
| Connector | 3.5 mm stereo mini |
| Power | +5 V phantom power on tip |
| Type | Unidirectional electret condenser |

## Speaker Specifications

Table C-19 shows speaker specifications.

**Table C-19** Speaker Specifications

| Speakers | |
|---|---|
| Rated power | 3 W(average) per channel |
| Frequency range | 180 Hz - 15K Hz |
| Magnetic flux leakage | <50 mGauss @2 cm |
| Input impedance | 150 ohms |
| Signal connector | 3.5 mm stereo mini |
| Power connector | 2.5 mm mono micro |

## Headphone Specifications

Table C-20 shows headphone specifications.

**Table C-20** Headphone Specifications

| Headphones | |
|---|---|
| Recommended impedance | 35 ohms |
| Connectors | 3.5 mm stereo mini |

## Analog Line Level Audio Specifications

Table C-21 provides Analog audio line level specifications.

**Table C-21** Analog Line Level Specifications

| Specifications | Line In | Line Out |
|---|---|---|
| Line level | -10dBV | -10dBV |
| 0dBFS Maximum | +10dBV to -22dBV | 6.5dBV ± 0.5dBV |

## PCI Module Power Specification

Total power for the PCI module (the sum of power for all boards from all power supply rails) must not exceed 45.0W (average 15.0W per board).

The OCTANE PCI module is a 5V system environment.

**Table C-22** PCI Module Power Specifications

| Power Supply Rail | Maximum Current | Maximum Power |
|---|---|---|
| 3.3V | 10.0A | 33.0W |
| 5.0V | 9.0A | 45.0W |
| 12.0V | 1.5A | 12.0W |
| -12.0V | 0.3A | 3.6W |

**Note:** For additional information see Section 4.3.4.1, in the chapter called "Power Requirements," in the *PCI Local Bus Specification*, Rev. 2.1, June l995 (PCI Special Interest Group, Portland, OR).

*Appendix D*

# Regulatory Information

This chapter provides regulatory statements, including the FCC Declaration of Conformance, for the OCTANE workstation.

*Appendix D*

# Regulatory Information

## Manufacturer's Regulatory Declarations

The OCTANE workstation conforms to several national and international specifications and European Directives listed on the "Manufacturer's Declaration of Conformity." The CE insignia displayed on each device is an indication of conformity to the European requirements.

**Caution:** Your workstation has several governmental and third-party approvals, licenses, permits. Do not modify this product in any way that is not expressly approved by Silicon Graphics. If you do, you may lose these approvals and your governmental agency authority to operate this device.

### CMN Number

The model number, or CMN number, for the OCTANE workstation is on the system label on the back of the workstation. The system label is located at the top and middle of the workstation. See "Back View" on page 5 for the location of your system label.

You need to know the CMN number for downloading the Manufacturer's Declaration of Conformity from the World Wide Web. You also need to know the CMN number to determine the class of your OCTANE workstation. Match the CMN number on the back of your workstation with the CMN number on the Class A FCC Declaration of Conformance or Class B FCC Declaration of Conformance on the following pages. The model number for Class A begins "CMNB015A" and the model number for Class B begins "CMNB015B."

### Manufacturer's Declaration of Conformity

A "Manufacturer's Declaration of Conformity" is available on the World Wide Web. Look on your system (regulatory) label on the rear of your workstation to determine your

CMN (model) number, which you need to identify your Declaration of Conformity. See “Back View” on page 5 for the location of your system label.

To locate the information on the World Wide Web, enter the following in your Web browser location window:

**`http://www.sgi.com/Products/compliance/index.html`**

## Regulatory Label

Follow the steps below for placement of upgrade regulatory labels.

1. If you received a system upgrade label, place it on the system label.
   - Face the back of the OCTANE workstation. The system label is located at the top center of the back of the workstation. See “Back View” on page 5.
   - Place the system upgrade label over the lower right portion of the system label, over the VCCI and SISPR 22 information.
2. If you received a regulatory label with a processor upgrade, place it on the label between the fan and PCI module, in the middle of the back of the workstation. See “Back View” on page 5.
   - Place the CPU upgrade label over “CPU Upgrade 1,” if it is the first CPU upgrade to the base system.
   - If the CPU upgrade is a second or third upgrade, place the label in the appropriate location; over “CPU Upgrade 2” or “CPU Upgrade 3.”

## Class A

FCC Declaration of Conformance

| | |
|---|---|
| Trade Name | Silicon Graphics, Inc. |
| Product | Computer Graphics Workstation |
| Model Number | CMNB015A |
| Date of Conformance | 1/97 |
| Responsible Party | Silicon Graphics, Inc. |
| Address | 2011 North Shoreline Boulevard<br>Mountain View, California<br>94043-1389 |
| Telephone | (650) 933-1071 |

This equipment 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.

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

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

**Caution:** The user is cautioned that changes or modifications to the equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## Electromagnetic Emissions

The following information applies to the workstation base configuration. Refer to the Manufacturer's Declaration of Conformity for your workstation's specific classification, which may be different from the base configuration. For details, refer to "Manufacturer's Declaration of Conformity" on page 339 of this appendix.

This device complies with the Class A limits of Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

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

Cet appareil numérique német pas de perturbations radioélectriques dépassant les normes applicables aux appareils numériques de Classe A préscrites dans le Règlement sur les interferences radioélectriques établi par le Ministère des Communications du Canada.

This device complies with Class A electromagnetic emissions limits of C.I.S.P.R. Publication 22, Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment; and Japan's VCCI Class A limits.

この装置は、第一種情報装置（商工業地域において使用されるべき情報装置）で商工業地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（VCCI）基準に適合しております。
従って、住宅地域またはその隣接した地域で使用すると、ラジオ、テレビジョン受信機等に受信障害を与えることがあります。
取扱説明書に従って正しい取り扱いをして下さい。

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．

## Radio and Television Interference

The equipment described in this guide generates and uses radio frequency energy. If it is not installed and used in accordance with the instructions in this guide, it can cause radio and television interference.

This equipment has been tested and complies with the limits for a Class A computing device in accordance with the specifications in Part 15 of FCC rules. These specifications are designed to provide reasonable protection against such interference in an industrial or office installation. However, there is no guarantee that the interference will not occur in a particular installation. This system is not certified for home use.

You can determine whether your system is causing interference by turning it off. If the interference stops, it was probably caused by the workstation or one of the peripherals. To tell if the interference is caused by one of the peripherals, try disconnecting one peripheral at a time to see if the interference stops. If it does, that peripheral is the cause of the interference.

If your workstation does cause interference to radio or television reception, try to correct the interference by using one or more of the following suggestions:

- Turn the television or radio antenna until the interference stops.
- Move the workstation to one side or the other of the radio or television.
- Move the workstation farther away from the radio or television.
- Plug the workstation into an outlet that is on a different circuit from the radio or television. (That is, make certain the workstation and the radio or television are on circuits controlled by different circuit breakers or fuses.)
- For additional information you can check the FCC Web site by entering the following address in your Web browser location window:

  **`http://www.fcc.gov/Bureaus/Compliance/WWW/tribook.html`**

## Shielded Cables

The OCTANE workstation is FCC-compliant under test conditions that include the use of shielded cables between OCTANE and its peripherals. Your OCTANE workstation and any peripherals you purchase from Silicon Graphics have shielded cables. Shielded cables reduce the possibility of interference with radio, television, and other devices. If you use any cables that are not from Silicon Graphics, make sure they are shielded. Telephone cables do not need to be shielded.

The monitor cable supplied with your system uses additional filtering molded into the cable jacket to reduce radio frequency interference. Always use the cable supplied with your system. If your monitor cable becomes damaged, a replacement cable should be obtained from Silicon Graphics.

## Electrostatic Discharge

Silicon Graphics designs and tests its products to be immune to the effects of electrostatic discharge (ESD). ESD is a source of electromagnetic interference and can cause problems ranging from data errors and lockups to permanent component damage.

It is important that while you are operating your OCTANE you keep all the covers and doors, including the plastics, in place. The shielded cables that came with the workstation and its peripherals should be installed correctly, with all thumbscrews fastened securely.

An ESD wrist strap is included with some products, such as memory and graphics upgrades. The wrist strap is used when installing these upgrades to prevent the flow of static electricity, and it should protect your system from ESD damage.

## Class B

FCC Declaration of Conformance

| | |
|---|---|
| Trade Name | Silicon Graphics, Inc. |
| Product | Computer Graphics Workstation |
| Model Number | CMNB015B |
| Date of Conformance | 1/97 |
| Responsible Party | Silicon Graphics, Inc. |
| Address | 2011 North Shoreline Boulevard<br>Mountain View, California<br>94043-1389 |
| Telephone | (650) 933-1071 |

This equipment 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.

**Note:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**Caution:** The user is cautioned that changes or modifications to the equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## Electromagnetic Emissions

The following information applies to the workstation base configuration. Refer to the Manufacturer's Declaration of Conformity for your workstation's specific classification, which may be different from the base configuration. For details, refer to "Manufacturer's Declaration of Conformity" on page 339 of this appendix.

This device complies with the Class B limits of Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique német pas de perturbations radioélectriques dépassant les normes applicables aux appareils numériques de Classe A préscrites dans le Règlement sur les interferences radioélectriques établi par le Ministère des Communications du Canada.

This device complies with Class B electromagnetic emissions limits of C.I.S.P.R. Publication 22, Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment; and Japan's VCCI Class B limits.

この装置は、第二種情報装置（住宅地域又はその隣接した地域において使用されるべき情報装置）で住宅地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会(VCCI）基準に適合しております。

しかし、本装置をラジオ、テレビジョン受信機に近接してご使用になると、受信障害の原因となることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

## Shielded Cables

The OCTANE workstation is FCC-compliant under test conditions that include the use of shielded cables between OCTANE and its peripherals. Your OCTANE workstation and any peripherals you purchase from Silicon Graphics have shielded cables. Shielded cables reduce the possibility of interference with radio, television, and other devices. If you use any cables that are not from Silicon Graphics, make sure they are shielded. Telephone cables do not need to be shielded.

The monitor cable supplied with your system uses additional filtering molded into the cable jacket to reduce radio frequency interference. Always use the cable supplied with your system. If your monitor cable becomes damaged, a replacement cable should be obtained from Silicon Graphics.

## Electrostatic Discharge

Silicon Graphics designs and tests its products to be immune to the effects of electrostatic discharge (ESD). ESD is a source of electromagnetic interference and can cause problems ranging from data errors and lockups to permanent component damage.

It is important that while you are operating your OCTANE you keep all the covers and doors, including the plastics, in place. The shielded cables that came with the workstation and its peripherals should be installed correctly, with all thumbscrews fastened securely.

An ESD wrist strap is included with some products, such as memory and graphics upgrades. The wrist strap is used when installing these upgrades to prevent the flow of static electricity, and it should protect your system from ESD damage.

# Glossary

### account

*See* login account.

### active window

The only window that recognizes input (activity) from the keyboard and mouse; only one window is active at a time.

### ADAT optical interface

The ADAT optical interface provides a unidirectional point-to-point connection of 8 tracks of 24-bit digital audio, with subcodes, at professional sampling rates, on a single consumer-grade optical fiber. A typical use is for a data connection between multiple ADAT tape decks, for bouncing tracks between decks.

### address dial

*See* SCSI address dial.

### administrator

*See* system administrator and network administrator.

### AES3

The AES3-1992 specification of transmission format for digital audio data. This specification is also commonly referred to as AES/EBU. See also ANSI S4.4-1992 and IEC958, Audio Engineering Society, Inc., Vol. 40, No. 3, 1992, New York, NY 10165. For more information on this specification, see http://www.aes.org/publications/.

### AES3id

An information document describing implementation of AES3-1992 (see above attribution) using 75-ohm coaxial cable with 1 V peak-to-peak signal levels. See http://www.aes.org/publications/.

### back up

To copy files and directories from your hard disk to a tape.

### backup tape

A tape that contains a copy of files and directories that are on your hard disk. A full backup tape contains a copy of all files and directories, including IRIX, that are on your hard disk.

### baud rate

The speed (calculated as bits per second) at which the computer sends information to a serial device, such as a modem or terminal.

### bezel

The frame that holds the front cover. It attaches to the front of the chassis.

### blank panel

A piece of plastic or metal covering openings in the chassis. A blank panel may be in front of an empty drive bay, an empty graphics board slot, and empty PCI module opening, or an empty PCI slot.

### boot

To start up the system by turning on the workstation and monitor; the system is fully booted when you see the `console login:` prompt or the login screen.

### button

On a mouse, a button is a switch that you press with your finger. In a window on your screen, a button is a labeled rectangle that you click using the cursor and mouse.

### CD-ROM (CD)

A flat metallic disk that contains information that you can view and copy onto your own hard disk; you cannot change or add to its information. CD-ROM is short for *compact disc read-only memory.*

### chassis

The exterior metal framework of the workstation that contains its working parts.

### choose

Press the left mouse button to bring up a popup menu, move the cursor to highlight the command that you want to run, then release the button.

### click

Hold the mouse still, then press and immediately release a mouse button.

### compression connector

A specialized connector with two halves. One half of each connector resides on the frontplane. The other half resides on the module or XIO board to which it is attached: the system module, the PCI module, or the XIO graphics or option boards.The connector on the frontplane has pads, the connector on the module or board side has bristles. The compression connector must always be covered when a board or module is out of the OCTANE workstation. It is easily damaged. See "Guidelines for Cleaning the Compression Connector" in Appendix B.

### compression connector cap

A cap that fits over a compression connector and protects it from being damaged by dust, finger oil, scratches, dents, and so on. The cap must be on a compression connector attached to a module or XIO board whenever the board or module is out of the OCTANE workstation.

### configuration file

A system file that you change to customize the way your system behaves. Such files are sometimes referred to as *customization files*.

### confidence test

A test that you run to make sure a particular device (such as the keyboard, mouse, or drive) is set up and working properly.

### connector

Hardware at the end of a cable that lets you fasten the cable to an outlet, port, or other connector. A connector can also be on a PCI or graphics board and attaches to a connector on the end of a cable.

### console window

The window that appears as a stowed icon each time you log in; IRIX reports all status and error messages to this window.

### CPU board

The printed circuit board within your workstation chassis that contains the central processing unit and its associated cache memory. The processor board plugs into the system module in the OCTANE workstation.

### current working directory

The directory within the filesystem in which you are located when you are working in a shell window.

### cursor

The small arrow or other shape on the screen that follows the movements of the mouse. It may change shape depending on its location on the screen.

### DAT

Digital Audio Tape. A magnetic tape from which you can read and to which you can copy audio and digital media.

### dBV

Decibels relative to $1V_{rms}$. To calculate the dBV value for "x" $V_{rms}$, use $20\log_{10}(x/1V_{rms})$.

### default printer

The printer to which the system directs a print request if you do not specify a printer when you make the request. You set the default printer using the Print Manager.

### defaults

A set of behaviors that Silicon Graphics specifies on every system. You can later change these specifications, which range from how your screen looks to what type of drive you want to use to install new software.

### diagnostics

A series of tests that check the hardware components of your system.

### DIMM

Dual inline memory module (DIMM). A small printed circuit board with DRAM (dynamic random access memory) chips. DIMMs are made in a variety of types and densities. Only one type and density can be used in a DIMM bank.

### DIMM socket

A long thin female connector located on the system board into which you insert a DIMM.

### directory

A special file in the filesystem in which you store other directories and files.

### disk resource

Any disk (hard, tape, CD-ROM, or floppy) that you can access either because it is physically attached to your workstation with a cable or because it is available over the network using NFS.

### disk use

The percentage of space on your disk that contains information.

### double-click

Hold the mouse still, then press and release a button twice, very rapidly. When you double-click an icon, it opens into a window; when you double-click the window Menu button, the window closes.

### drag

Press and hold down a mouse button, then move the mouse. This action drags the cursor to move icons or to highlight menu items.

### drive

A hardware device that lets you access information on various forms of media, such as hard and floppy disks, CD-ROM disks, and magnetic tapes.

### drive address

*See* SCSI address.

### export

To use NFS software to make all or part of your filesystem available to other users and systems on the network.

### external device

Any piece of hardware that is attached to the workstation with a cable.

### female connector

A connector that has indentations or holes into which you plug a male connector. An example of a female connector is an electrical wall outlet that accepts an electrical plug.

### field

An area in a window in which you can enter text.

### file

A set of disk blocks in which you store information such as text, programs, or images that you created using an application.

### filesystem

A hierarchy of directories and files. Directories contain other directories and files; files cannot contain directories. The root (/) directory is at the top of the hierarchy.

### form

A window containing buttons that you must click and/or editable fields in which you must enter text.

### frontplane

The circuit board that connects PCI and XIO boards to the system board.

### GB (gigabyte)

The abbreviation for a standard unit for measuring the information storage capacity of disks and memory; 1,024,000 megabytes make one gigabyte, in most cases.

### graphics board

The printed circuit board within your workstation that contains the graphics processors. Graphics boards reside on the XIO module.

### grounded electrical outlet

An electrical wall outlet that accepts a plug with a grounding prong. In the U.S.A., all three-prong outlets are grounded.

### handshake

The protocol that controls the flow of information between a workstation and a printer.

### highlight

To change the color of an item on the screen by positioning the cursor over it (locate-highlight), or by positioning the cursor over it and pressing a mouse button.

### home directory

The directory into which IRIX places you each time you log in. It is specified in your login account; you own this directory and, typically, all its contents.

**host**

Any system connected to the network.

**hostname**

The name that uniquely identifies each host (system) on the network.

**human factors guidelines**

A set of standards and suggestions for making your physical working environment more comfortable and healthy.

**icon**

A small picture that represents a stowed or closed file, directory, application, or IRIX process.

**InfoSearch**

The Silicon Graphics online search tool that finds information by keyword, topic, or task. InfoSearch seeks information in all information sources: man (reference) pages, online books, application help, release notes, and task cards. InfoSearch is located in the Toolchest.

**internal drive**

A drive that fits inside the workstation and connects to an internal port; it is never connected with a cable to a visible external port. An internal drive is occasionally referred to as a front-loading drive.

**I/O**

Input/output. Used in reference to input/output signals to/from graphics/XIO boards or PCI boards.

**IP address**

A number that uniquely identifies each host (system) on a TCP/IP network.

**IRIX**

The Silicon Graphics version of the UNIX operating system. *See also* system software.

**jot**

A mouse- and window-based text editor that is included as part of the IRIX operating system.

### KB (kilobyte)

The abbreviation for a standard unit for measuring the information storage capacity of disks and memory (RAM and ROM); 1024 bytes make one kilobyte, in most uses.

### launch

To start up an application, often by double-clicking an icon.

### LED

Light-Emitting Diode. A light on a piece of hardware that indicates status or error conditions.

### local workstation

The physical workstation whose keyboard and mouse you are using, all hardware that is connected to that workstation, and all software that resides on that hardware or its removable media.

### lockbar

A long piece of metal with a hole on the end that you slide through the chassis. It allows you to secure the workstation with a lock and locking cable. The drives, frontplane, system module (containing the CPU and DIMMs) are inaccessible when the lockbar is locked in the system.

### log in

To give the system your login name so you can start a session on the workstation.

### log out

To end a session on the workstation.

### login account

A database of information about each user that, at the minimum, consists of the login name, user ID, and home directory.

### login name

A name that uniquely identifies a user to the system.

### login screen

The window that you see after powering on the system, before you can access files and directories. The window contains one icon for each login account on the system.

### male connector

A connector that has raised edges, pins, or other protruding parts that you plug into a female connector. An example of a male connector is an electrical plug that you plug into a wall outlet.

### man (manual) page

An online document that describes how to use a particular IRIX command. Also called reference page.

### MB (megabyte)

The abbreviation for a standard unit for measuring the information storage capacity of disks and memory (RAM and ROM); 1024 kilobytes make one megabyte, in most uses.

### menu

A list of operations or commands that the workstation can carry out on various objects on the screen.

### monitor

A hardware device that displays the images, windows, and text with which you interact to use the system. It is also called a video display terminal (VDT).

### monitor cable

The cable that connects the monitor to the workstation to transmit video signals.

### monitor power cable

The cable that connects the monitor to the workstation to provide power to the monitor. It is thick, with a male connector on one end and a female connector on the other.

### mount

To make a filesystem that is stored on a local or remote disk resource accessible from a specific directory on your workstation.

### mount point

The directory on your workstation from which you access information that is stored on a local or remote disk resource.

**mouse**

A hardware device that you use to communicate with windows and icons. You move the mouse to move the cursor on the screen, and you press its buttons to initiate operations.

**mouse pad**

For an optical mouse, this is the rectangular, metallic surface that reads the movements of the mouse. For a mechanical mouse, this is a clean, smooth, rectangular surface that makes the mouse's track ball roll efficiently.

**NEdit**

NEdit is a graphical user interface (GUI) text editor. NEdit provides all the standard menu, dialog, editing, and mouse support found in modern GUI-based environments.

**network**

A group of computers and other devices (such as printers) that communicate with each other electronically to transfer and share information.

**network administrator**

The individual(s) responsible for setting up, maintaining, and troubleshooting the network, and for supplying setup information to system administrators of each system.

**notifier**

A form that appears on the monitor when the system requires that you confirm an operation that you just requested, or when an error occurs.

**open**

To double-click an icon, or to select an icon, then choose Open from a menu to display a window that contains the information that the icon represents.

**option drive**

Any drive other than the system disk. Option drives include floppy disk drives, secondary hard disk drives, or DAT drives.

**outlets**

Openings in the hardware to which you attach connectors to make an electrical connection.

**parallel port**

An outlet on the workstation to which you connect external printers and similar devices.

**password**

A combination of letters and/or numbers that only you know; it is analogous to a key and prevents unauthorized access to your system. It is an optional element of your login account. If you specify a password for your account, you must type it after you type your login name before the system lets you access files and directories.

**pathname**

The list of directories that leads you from the root (/) directory to a specific file or directory in the filesystem.

**PCI**

Peripheral Component Interconnect—a bus specification. The PCI bus is a high-performance local bus used to connect peripherals to memory and a microprocessor. A wide range of vendors make devices that plug into the PCI bus.

**PCI I/O blank panel**

A metal panel that fits on a slot in the I/O door. It must be in place if a PCI board is not installed in the corresponding slot in the PCI module.

**peripheral**

A hardware device that adds more functionality to the basic workstation, such as a tape drive. *See also* external device and internal drive.

**port**

An outlet to which you attach cable connectors.

**power cable**

The cable that connects the workstation to a grounded electrical outlet.

**power off**

To turn off the power switches on the workstation chassis and the monitor.

**power-on diagnostics**

A series of tests that automatically checks the hardware components of your system each time you turn it on.

### power supply

The piece of hardware in the OCTANE chassis that directs power from an electrical outlet to the chassis, monitor, and internal SCSI devices.

### Printer Manager

A tool that you access through either the System toolchest or the System Manager. Use it to set up printer software and monitor jobs that you send to the printer.

### PROM monitor

The interface that you use to communicate with the system after it is powered on, but before it is booted and running IRIX.

### prompt

A character or word that the system displays in an IRIX shell; it indicates that the system is ready to accept commands. The default prompt for regular user accounts is `%`; the default prompt for the root account is `#`.

### quit

To stop running an application.

### reference page

*See* man (manual) page.

### remote workstation, drive, disk, filesystem, or printer

A hardware device, or the information or media it contains, that you can access across the network; it is not physically connected to your workstation.

### reset button

A button on the workstation that you can press, to cut off power to the workstation and then immediately restores it. Never press this button while IRIX is running unless all attempts to shut down the system using software fail. *See also* shut down.

### restore (files)

To copy files that once resided on your hard disk from another disk or a tape back onto your hard disk.

### root account

The standard IRIX login account reserved for use by the system administrator. This account's home directory is the root (/) directory of the filesystem; the user of the root account has full access to the entire filesystem (that is, that user can change and delete any file or directory). The user of this account is sometimes referred to as the *superuser*.

### root (/) directory

The directory at the top of the filesystem hierarchy.

### screen

The portion of the monitor that displays information.

### SCSI

Small Computer System Interface (pronounced "scuzzy"). SCSI is a high- speed input/output specification for small computers. The OCTANE workstation is SCSI-3 compliant and supports two Ultra fast/wide/single-ended SCSI buses, each capable of transferring data at 40 MB per second.

### SCSI address

A number from one to seven that uniquely identifies a SCSI device to a system. No two SCSI devices that are physically connected to the same SCSI bus can have the same SCSI address.

### SCSI address dial

A small plastic dial connected to some Silicon Graphics external SCSI devices. Click on its small buttons to select a SCSI address for a new SCSI device.

### SCSI bus length

The combined length of all internal and external SCSI cables in a system for each SCSI bus.

### SCSI cable

A cable that connects a SCSI device to a SCSI port on a workstation.

### SCSI device

A hardware device that uses the SCSI protocol to communicate with the system. Hard disk and floppy disks, CD-ROM drives, and tape drives are all SCSI devices. *See also* SCSI.

### SCSI terminator

An electronics device, often an external plug, that is required at the end of each SCSI bus. The OCTANE workstation uses active terminators only on an external SCSI or Ultra-SCSI device, not on the workstation itself.

### select

To position the cursor over an icon, then click the left mouse button. Once an icon is highlighted, it is the object of whatever operation you select from a menu.

### serial device

Any hardware device that requires a serial cable connection to communicate with the workstation.

### serial port

An outlet on the workstation to which you connect external serial devices.

### server

A system that other systems on the network access to use its disk space, software, or services.

### shell

A window into which you type IRIX commands.

### shielded cable

A cable with a protective covering that reduces the possibility of interference with radio, television, and other devices.

### shut down

To safely close all files, log out, and bring the workstation to a state where you can safely power it down. From the Toolchest > System, choose System Shutdown to do this.

### software option

Any software product that you buy from Silicon Graphics other than the standard operating system software that comes on your system disk.

### standalone workstation

A workstation that is not connected to a network.

### static electricity

Whenever your body comes in physical contact with metal parts (including printed circuit boards) of computer equipment, there is the potential for you to feel an electrical shock (electrostatic discharge, or ESD), which could damage the equipment. To prevent this, you must always wear a wrist strap when working with the internal parts of a workstation.

### StereoView

A port on the graphics board to which you attach a cable that attaches to Stereo View (3D) glasses or a Stereo View (3D) headset.

### superuser

A user with root privileges. You become a superuser by logging in as root, by typing `su` at the shell prompt, or by running programs set up to run as root. *See also* system administrator.

### system

All the hardware and software that makes up the workstation.

### system administration

The tasks associated with setting up, maintaining, and troubleshooting a networked or standalone system.

### system administrator

The individual responsible for setting up, maintaining, and troubleshooting a system. The system administrator uses the root login account to perform most administrative tasks.

### system crash

When the IRIX operating system fails and the system does not accept any keyboard or mouse input.

### system disk

The physical disk that contains the standard IRIX operating system software (the software that makes your workstation run).

### System Manager

A set of tools that the administrator uses to set up and manage the Silicon Graphics workstation. You access the System Manager through the System toolchest.

### system software

The standard IRIX operating system software and Silicon Graphics tools. These come on the system disk and on the CD that you use in the event of a system crash.

### System toolchest

The toolchest in the upper left-hand corner of the screen labeled "System." You start system tools, such as System Manager, using this menu.

### TCP/IP

A standard networking protocol that is included in the system software.

### thumbscrew

The ridged knob attached to a screw in a cable connector. You turn it to secure the connector to an outlet.

### unmount

To make a filesystem that is accessible from a specific directory on your workstation temporarily inaccessible.

### upgrade

Hardware or software that you add to the basic workstation to increase performance, such as additional memory (DIMMs), a higher capacity CPU, more powerful graphics boards, and so on.

### user ID (UID)

A number that uniquely identifies a user to the system.

### Watt (average)

Average power in watts $1W_{ave}=1V_{rms} \times 1A_{rms}$. (Watt [average] refers to audio power often quoted as Watts rms.)

### window

A portion of the screen that you can manipulate that contains text or graphics.

### workstation

An assembly of hardware that includes a system board, graphics board, CPU, memory, system disk, and power supply. A workstation can include multiples of these components and optional boards that add functionality. The hardware is enclosed in a chassis with a cover. The addition of a monitor, keyboard, mouse, and software makes it a working system.

### wrist strap

A flat cable that you wrap around your wrist and attach to a metal part of the workstation whenever you work with internal components of the workstation. This prevents electrical shocks to yourself and the components. *See also* static electricity.

### XIO boards

High speed-boards produced by Silicon Graphics such as graphics, networking, disk interface, or video boards. They reside on the XIO module and are directly connected to the frontplane.

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