Indigo^{2}™ and Indigo^{2} IMPACT™ Dual Head Installation Guide and Notes for Developers

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Introduction

This guide explains how to install the Dual Head graphics upgrade into your Indigo^{2}™ or Indigo^{2} IMPACT™ workstation. It also includes information on using the Dual Head system and programming notes for developers.

Read this guide once all the way through before you start to work. That way you'll be familiar with the Indigo^{2} system and the parts you'll be working with. If you find a term you haven't seen before, refer to your workstation owner's guide. The glossary contains definitions of many of the terms used in this pamphlet.

It's always a good idea to back up your system. If you have not backed up your system recently, take this opportunity to do so. For instructions on backing up your system, see your *Personal System Administration Guide*.

Product Support

Silicon Graphics®, Inc., provides a comprehensive product support and maintenance program 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

Installing the XL Graphics Board: Indigo^2 XL/XL Configuration

This chapter tells you how to install the hardware for a dual head system in an Indigo^2 workstation with an existing XL board.

To install the hardware, you'll shut down the system, remove the covers, install the XL upgrade board above the existing XL board, and replace the plastic covers of your Indigo^2 workstation.

Shutting Down and Powering Off the System

Follow these steps to shut down the software and power off the system.

1. Remove the front cover.
   - Face the front of the Indigo^2 chassis.

- Open the front cover by snapping it away from the top edge of the chassis and tipping it down, as shown in Figure 1-1.

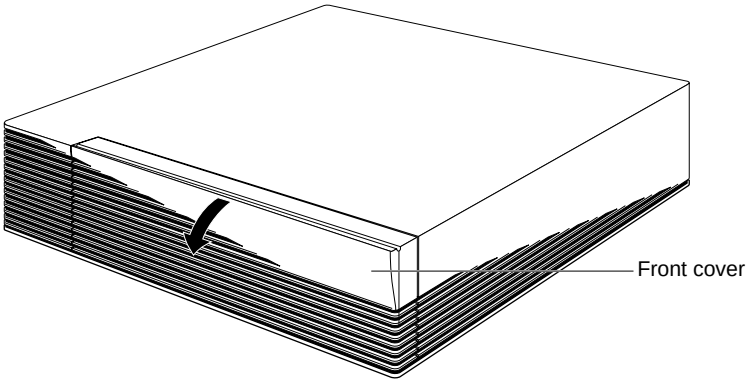

Figure 1-1 Removing the Front Cover

1. Press and release the power switch, as shown in Figure 1-2.

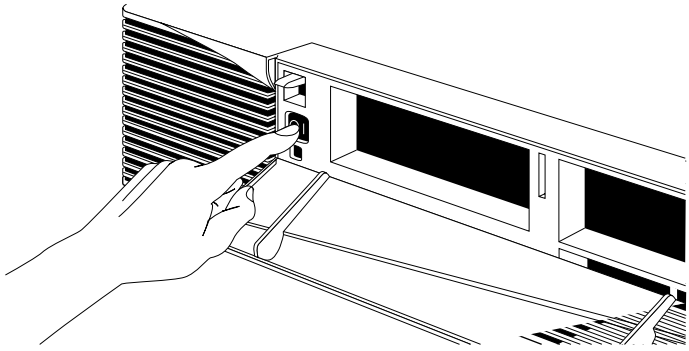

Figure 1-2 Turning off the System Power

The system will power off automatically within the next minute.

Removing the Cover

Follow these steps to disconnect the cables and remove the cover:

1. Disconnect the power cable and the monitor cable from the back of your Indigo^2 workstation.
2. Remove the bezel.
   - Remove the lockbar if you have one installed.
   - Press down on the tabs on each side of the bezel, as shown in Figure 1-3.

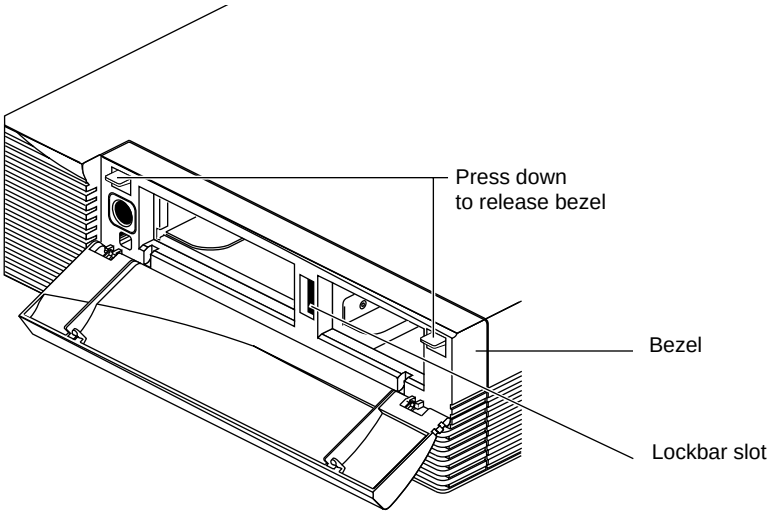

Figure 1-3 Releasing the Bezel

- Pull the bezel away from the chassis.

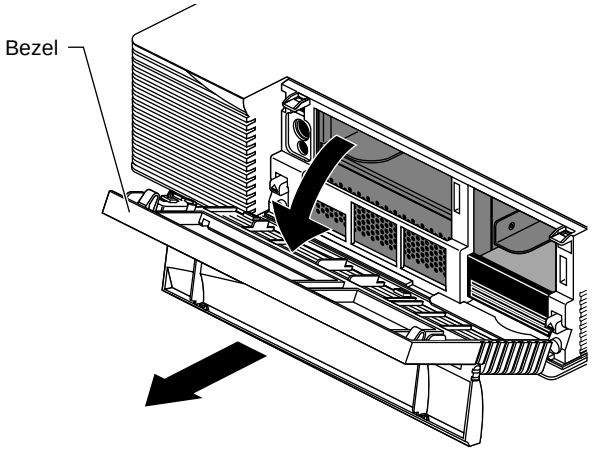

Figure 1-4 Removing the Bezel

3. Remove the top cover.
   - Press up on the tabs on each side of the drive openings as shown in Figure 1-5.

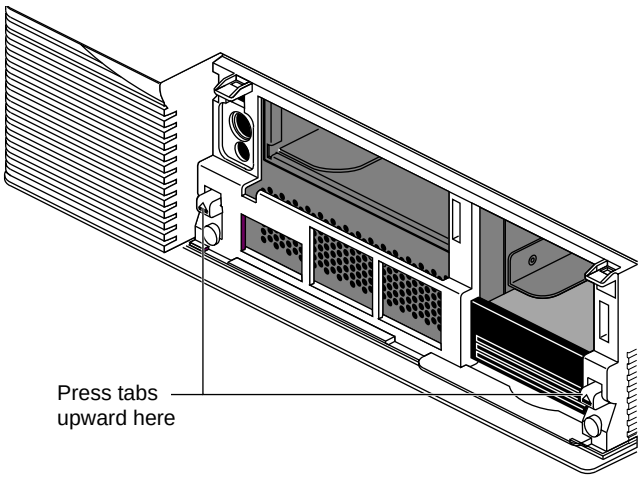

Figure 1-5 Releasing the Top Cover

- Pull up on the cover and rotate it back and away from the chassis, as shown in Figure 1-6.

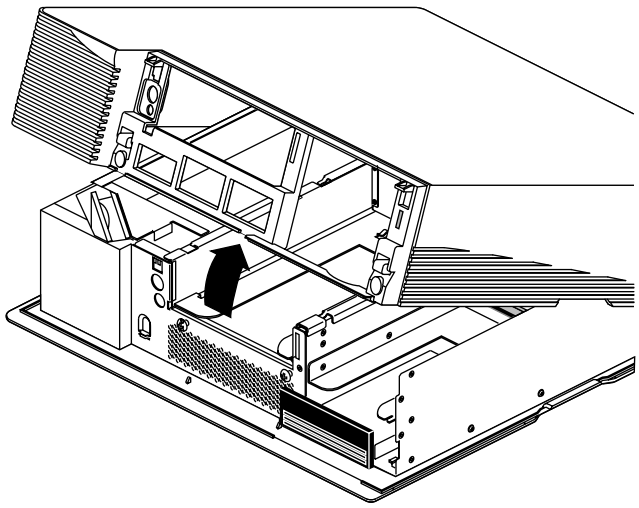

Figure 1-6 Removing the Top Cover

Attaching the Wrist Strap

Wear the wrist strap to prevent the flow of static electricity, which can damage the board.

Caution: The components inside the Indigo^2 are extremely sensitive to static electricity. Handle all boards carefully, and wear the wrist strap shipped with the upgrade board while replacing parts inside the system.

To attach the wrist strap, follow these steps:

1. Unwrap the first two folds of the band and wrap the exposed adhesive side firmly around your wrist.
2. Unroll the rest of the band and peel the liner from the copper foil at the opposite end.
3. Attach the copper foil to a convenient and exposed electrical ground, such as a metal part of the Indigo^2 workstation.

You are now ready to install the board set.

Installing the Board

To install the board, follow these steps:

1. Move the system or position yourself so that you are facing the expansion slots, as shown in Figure 1-7.
2. Open the metal panel in front of the expansion slots by pulling up on the panel and lowering it down.

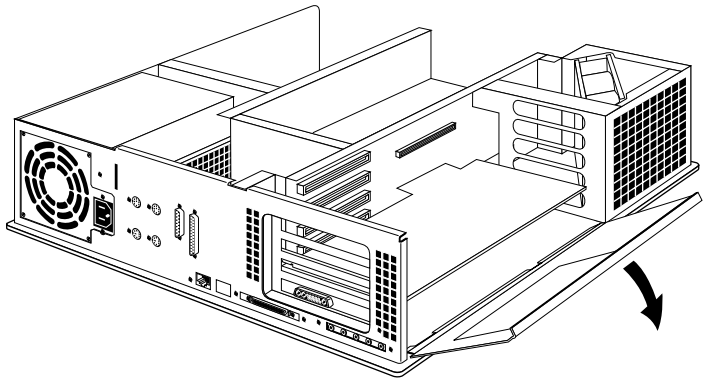

Figure 1-7 Opening the Metal Panel in Front of the Expansion Slots

You'll install the new board above the existing XL board.

1. Remove the screw that attaches the small metal cover to the second board slot from the bottom in the back of the system. The screw is located inside the system at the outer end of the metal cover.

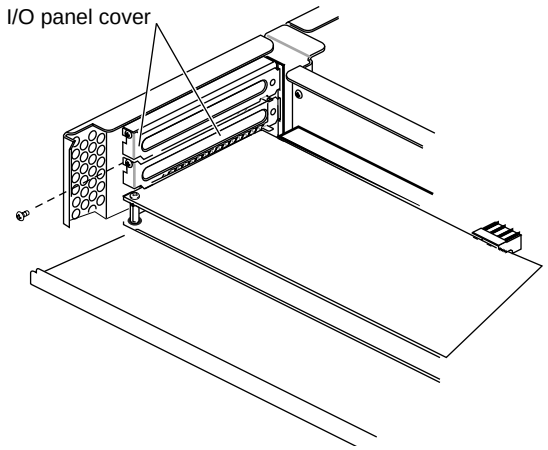

Figure 1-8 Removing the Metal Port Cover

2. Install the board.
   - Grasp the board with its metal extension on the left and the side with the chips facing up.
   - Align the metal extension on the left of the board with the second slot from the bottom on the chassis. At the same time align the right edge of the board with the metal groove on the right of the chassis, as shown in Figure 1-9.

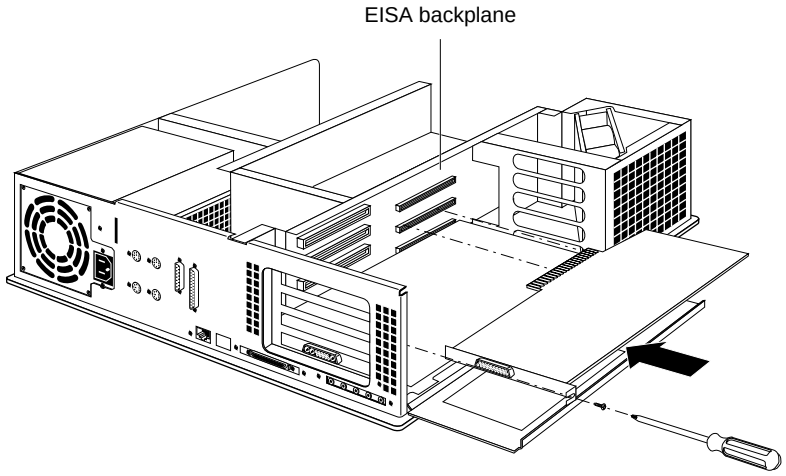

Figure 1-9 Installing the New XL Board in the Indigo^2 Chassis

   - Push the board into the slot until the connector on the back of the board is securely connected to the middle connector on the EISA backplane.

3. Insert and tighten the screw that holds the board to the chassis.

   The screw opening is located on the metal extension on the left side of the board.

4. Tip the metal panel up in front of the boards you just installed until it snaps into place.

Replacing the Cover

To replace the top cover, follow these steps:

1. Locate the tabs on the inside and back of the top cover and the holes on the back of the workstation. See Figure 1-10.
2. Face the front of the workstation.
   - Look through the holes as you lower the cover to move the tabs into place.

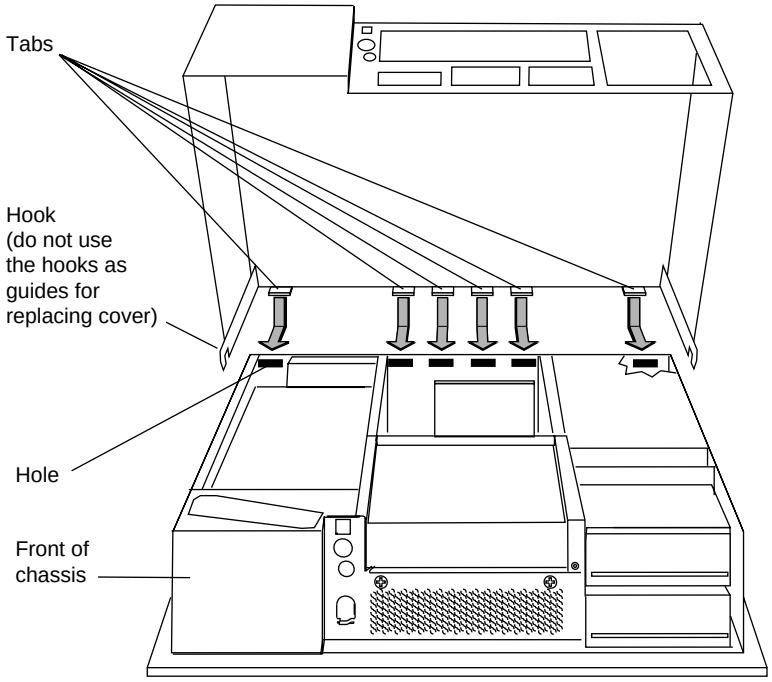

Figure 1-10 Looking Through the Holes to Place the Tabs

   - Slide the tabs into the holes and pull the cover down until it snaps into place. The cover fits tightly over the workstation.

3. Replace the bezel.
   - Place the tabs on the bottom of the bezel in the grooves in the front of the chassis, as shown in Figure 1-11.
   - Tilt the bezel up until it snaps into place.
   - Replace the lockbar, if you removed one.

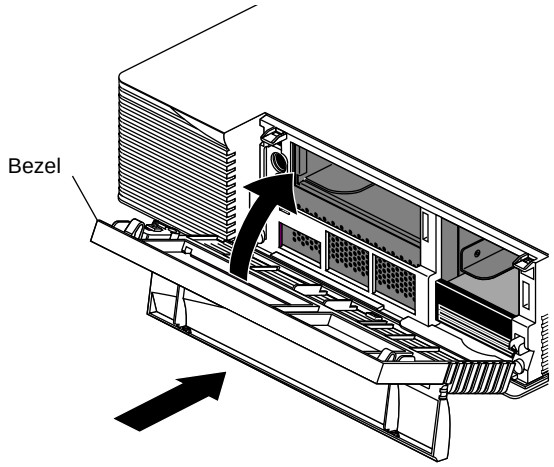

Figure 1-11 Replacing the Bezel

4. Reconnect the power cable to the back of the workstation.

You are now finished installing the hardware and are ready to connect the monitors. Go to Chapter 5, “Connecting the Monitors.”

Chapter 2

Installing the XL Graphics Board: Indigo^2 XL/Extreme Configuration

This chapter tells you how to install the hardware for a dual head system in an Indigo^2 workstation with an existing Extreme graphics board set. If you have an XL graphics board in your workstation, go to Chapter 1, "Installing the XL Graphics Board: Indigo2 XL/XL Configuration."

To install the hardware, you'll first shut down the system and check your version of the PROM chip from the Command Monitor. Next, you'll remove the covers, remove the existing board set, and if necessary replace the PROM chip on the CPU board. Then you'll install the new XL graphics board, reinstall the Extreme board set, and replace the plastic covers of your Indigo^2 workstation.

Shutting Down the System and Checking the PROM Chip

Before installing the XL graphics board, you need to check what version of the PROM chip you have. You can do this while powering down your system.

Follow these steps to check what PROM version you have:

1. Choose “System Shutdown” from the System menu in the Toolchest.
   - Place the cursor over the word “System” in the Toolchest in the upper left corner of your screen.
   - Press the left or right mouse button so that you see the System Menu.
   - Drag the cursor down the menu until “System Shutdown” is highlighted; then click the mouse button.

   After a few seconds you see the notifier shown in Figure 2-1.

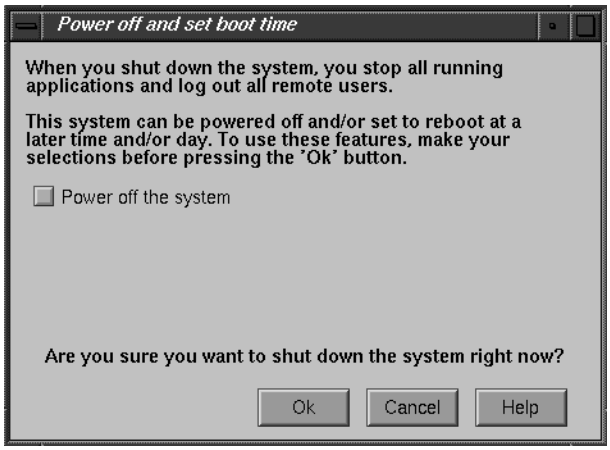

Figure 2-1 System Shutdown Notifier

2. To return to the System Maintenance menu, click *Yes.*
3. Type **5** to Enter Command Monitor, or select the icon with your mouse.
4. See what version of the PROM you have. At the >> prompt, type:

   version

   Then press <**Enter**>.

   You see a line similar to this:

   ```
   PROM Monitor SGI Version 5.1 Rev. B, IP22, Sep 16, 1993
   (BE)
   ```

   The date, “Sep 16, 1993" in the example above, tells you the version of the PROM.

   If the date of your PROM is “Sep 16, 1993" *or later*, you *do not* need to change your PROM. When installing the upgrade, skip “Replacing the PROM Chip” on page 23 and go on to “Replacing the Cover” on page 30.

   If the date of your PROM is *before* “Sep 16, 1993,” you *do* need to change your PROM. Follow all the instructions while installing the upgrade.
5. After you have checked your PROM version, type **exit** to exit the PROM monitor.

   You see the System Maintenance menu again. It is safe to turn off your Indigo^2.

6. Turn off the power by pressing and releasing the power switch on the front of the Indigo^2. The system powers off automatically.
   - Open the front cover by snapping it away from the top edge of the chassis and tipping it down, as shown in Figure 2-2.

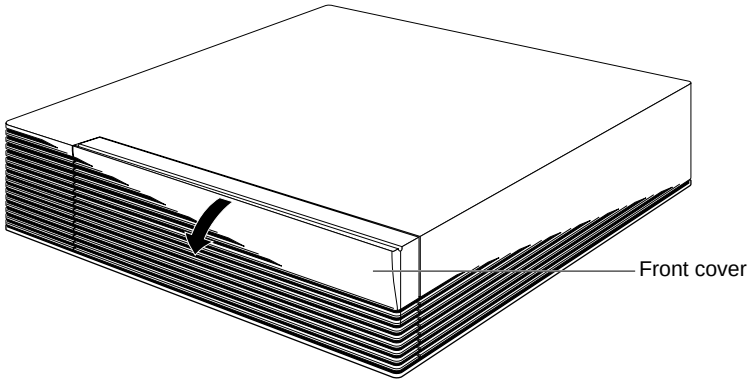

Figure 2-2 Removing the Front Cover

Press and release the power switch, as shown in Figure 2-1.

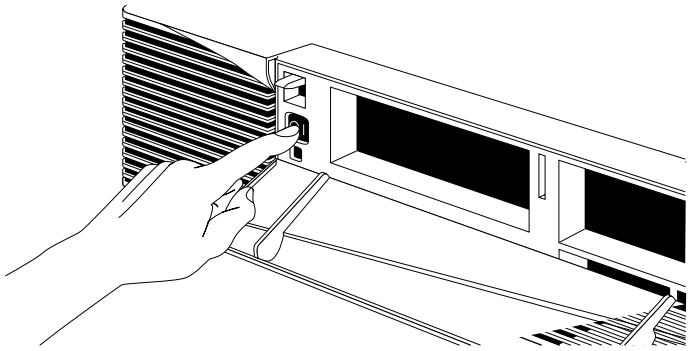

Figure 2-3 Turning Off the Power

The system will power off automatically within the next minute.

Removing the Cover

Follow these steps to disconnect the cables and remove the cover:

1. Disconnect the power cable and the monitor cable from the back of your Indigo^2 workstation.
2. Remove the bezel.
   - Remove the lockbar if you have one installed.
   - Press down on the tabs on each side of the bezel, as shown in Figure 2-4.

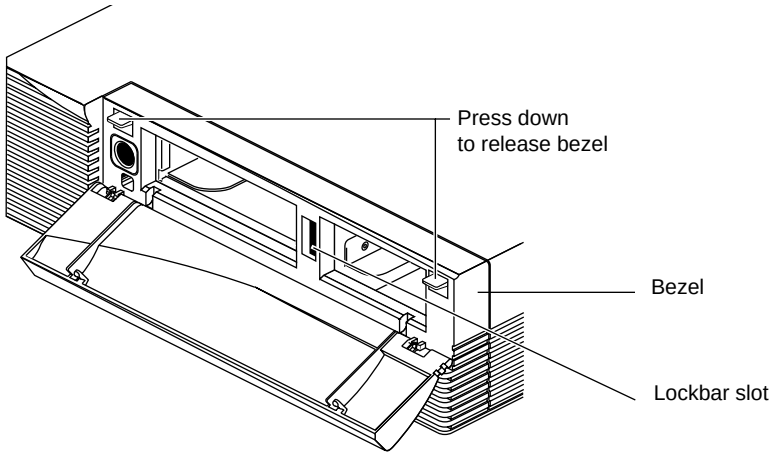

Figure 2-4 Releasing the Bezel

- Pull the bezel away from the chassis.

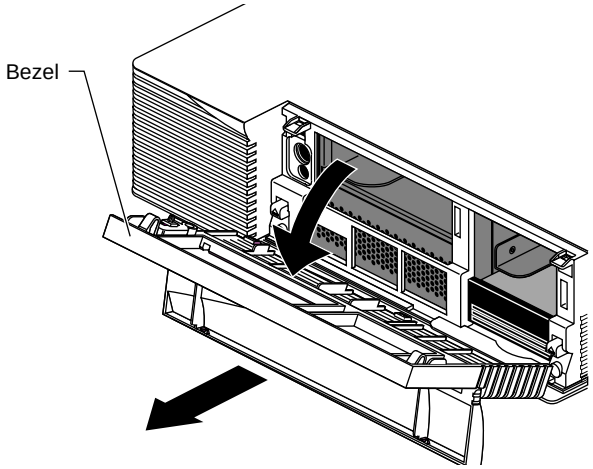

Figure 2-5 Removing the Bezel

3. Remove the top cover.
   - Press up on the tabs on each side of the drive openings as shown in Figure 2-6.

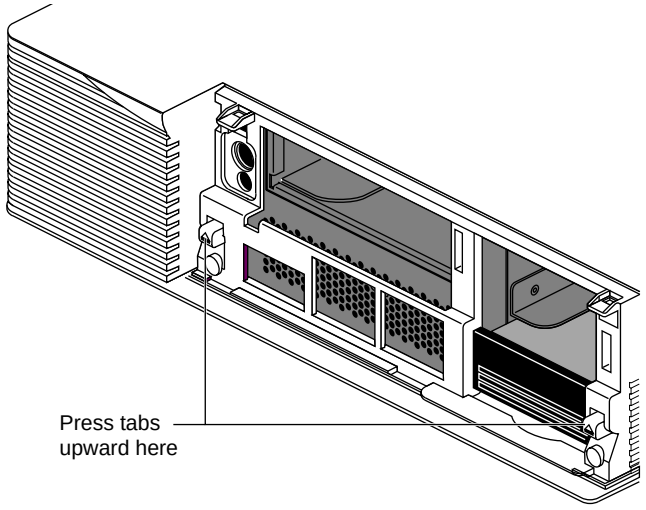

Figure 2-6 Releasing the Top Cover

- Pull up on the cover and rotate it back and away from the chassis, as shown in Figure 2-7.

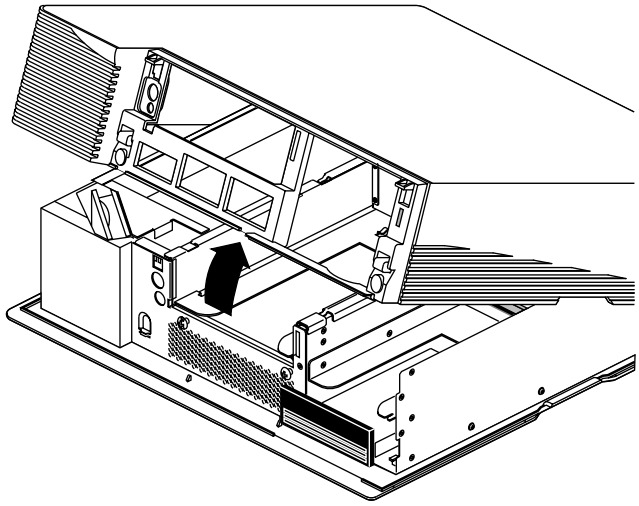

Figure 2-7 Removing the Top Cover

Attaching the Wrist Strap

Wear the wrist strap to prevent the flow of static electricity, which can damage the board.

Caution: The components inside the Indigo^2 are extremely sensitive to static electricity. Handle all boards carefully, and wear the wrist strap shipped with the upgrade board while replacing parts inside the system.

To attach the wrist strap, follow these steps:

1. Unwrap the first two folds of the band and wrap the exposed adhesive side firmly around your wrist.
2. Unroll the rest of the band and peel the liner from the copper foil at the opposite end.

Removing the Existing Board Set

To remove the board set, follow these steps:

1. Move the system or position yourself so that you are facing the expansion slots, as shown in Figure 2-8.
2. Open the metal panel in front of the expansion slots by pulling up on the panel and lowering it down.

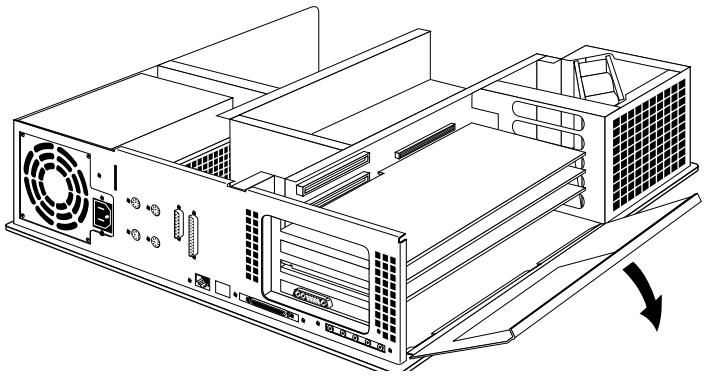

Figure 2-8 Opening the Metal Panel in Front of the Expansion Slots

3. Remove the screws attaching it to the system slots as shown in Figure 2-9.

   The screws are located on the metal extension on the left side of each board. Use the Phillips screwdriver to loosen the screw first and then use your hand to unscrew it all the way and remove it.

   Note: The screws are very small. If you drop a screw into the chassis, remove it to prevent the possibility of shorting the system. If you lose a screw, extra screws are provided in a plastic bag.

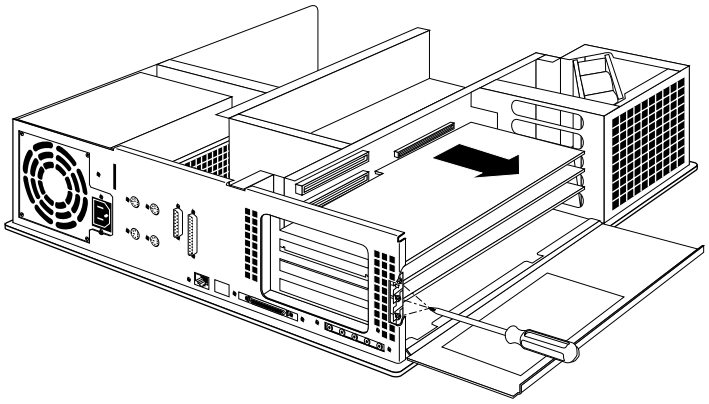

Figure 2-9 Removing the Extreme Board Set Screws

4. Pull the board set out of the system.
   - Turn both hands inward so that your thumbs point to the floor.
   - Place your index fingers behind the small metal posts on each side of the board.

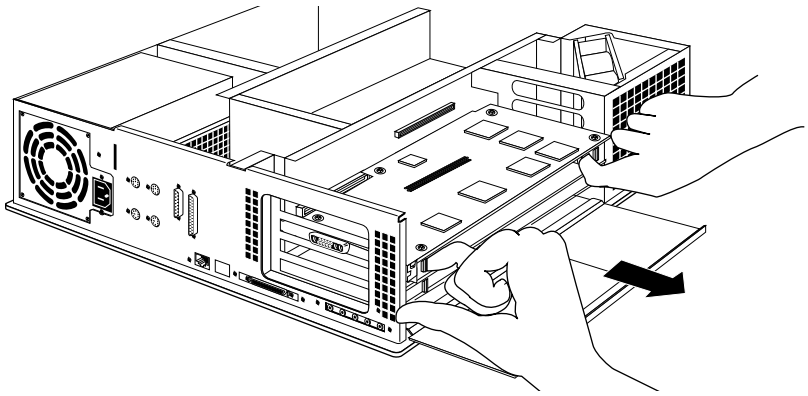

Figure 2-10 Removing the Board Set

   - Brace your thumbs against the chassis, and pull the board out of the slot. You may need to use some force.
   - Place the board set down on a flat, antistatic surface so the side with the chips faces up. An empty antistatic bag or a clean, dry desktop works well.

Replacing the PROM Chip

If your PROM is dated before “Sep 16, 1993,” follow the steps below to replace the PROM chip. (You should have already checked the version of your PROM chip. Refer to “Shutting Down the System and Checking the PROM Chip” on page 14.)

1. Make sure the wrist strap is attached to a metal part of the system.
2. Locate the PROM chip. The PROM chip is located on the CPU board below the slot from which you removed the graphics board, as shown in Figure 2-11.

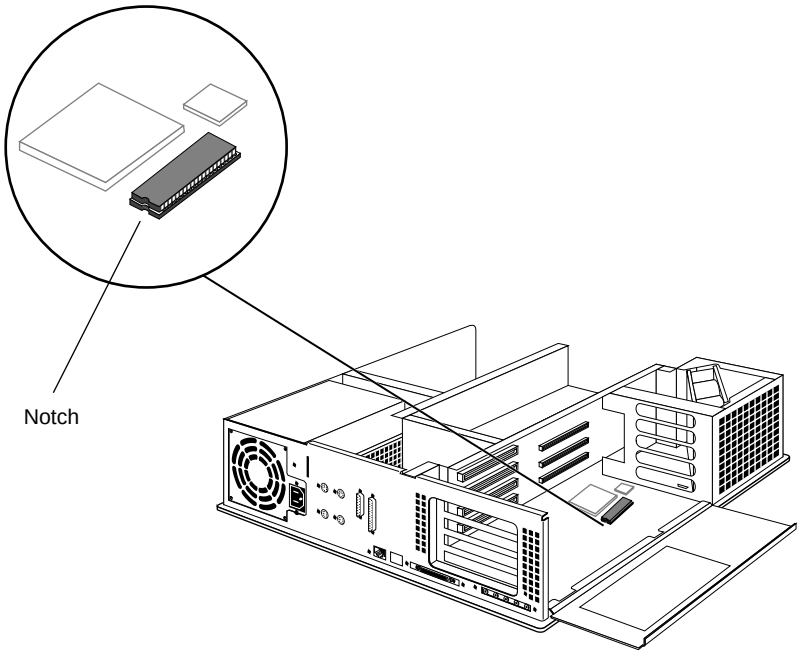

Figure 2-11 Locating the PROM Chip on the CPU Board

3. Familiarize yourself with the PROM chip.

   Note that the PROM chip has a semi-circular notch on one end, as shown in Figure 2-11. You’ll use this notch to orient the PROM.

4. Remove the PROM chip from the CPU board. The PROM chip is seated in a socket that is permanently attached to the CPU board.
   - You received a chip removal tool - it looks like a pair of huge tweezers. Insert the chip removal tool between the PROM chip and the socket on the board, as shown in Figure 2-12. Work the chip away from the socket in a rocking motion, pulling up on one side of the chip and then on the other side.
   - Continue the rocking motion until the PROM chip is all the way out of the socket.

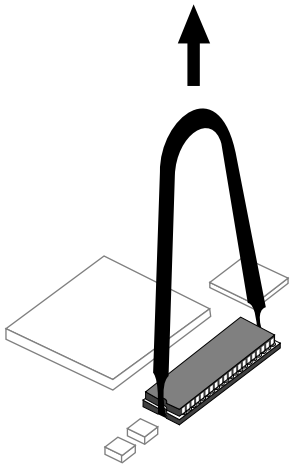

Figure 2-12 Removing the PROM Chip from the Socket

5. Install the new PROM chip.
   - Grasp the new PROM chip. Orient the PROM above the socket on the CPU board so the semi-circular notch on the PROM chip lines up with the notch in the socket, as shown in Figure 2-13.
   - Line up all of the pins on the PROM with the corresponding holes in the socket.

   Caution: Make sure you line up the notch on the PROM chip with the notch in the socket. If you install the PROM chip backwards, the system will not power on.

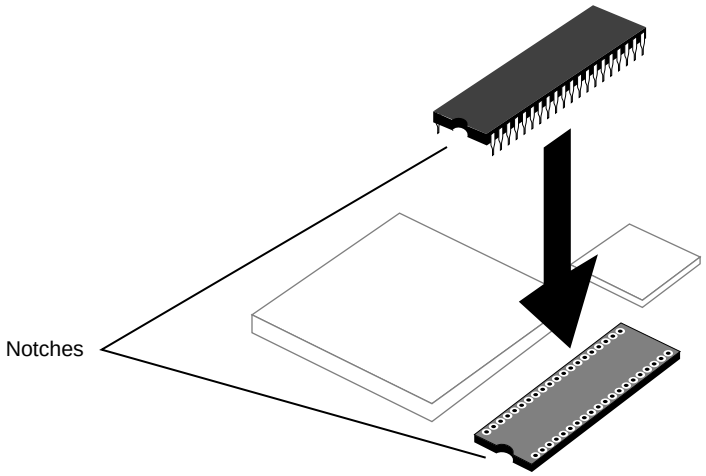

Figure 2-13 Lining Up the PROM Chip

6. Once the pins are lined up, press down firmly on the top of the PROM chip until it is seated in the socket, as shown in Figure 2-14.

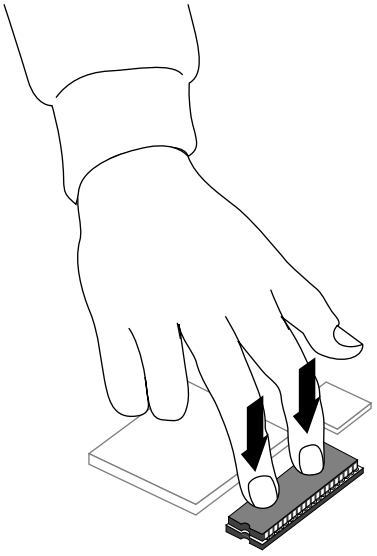

Figure 2-14 Pressing the PROM Chip into the Socket

7. Visually check to make sure all the pins on the PROM are inserted correctly in the holes on the socket and the PROM is seated all the way.

Installing the XL Graphics Board

Follow these steps to install the new XL board in the bottom slot.

1. Install the board.
   - Grasp the board with the side with the chips facing up and the connector on the right side.
   - Align the metal extensions on the left of the board with the bottom board slot on the chassis, as shown in Figure 2-15.
   - Align the right side of the board with the metal grooves on the right of the chassis.
2. Push the board into the slot until the connector on the board is securely connected to the bottom connector on the EISA backplane.

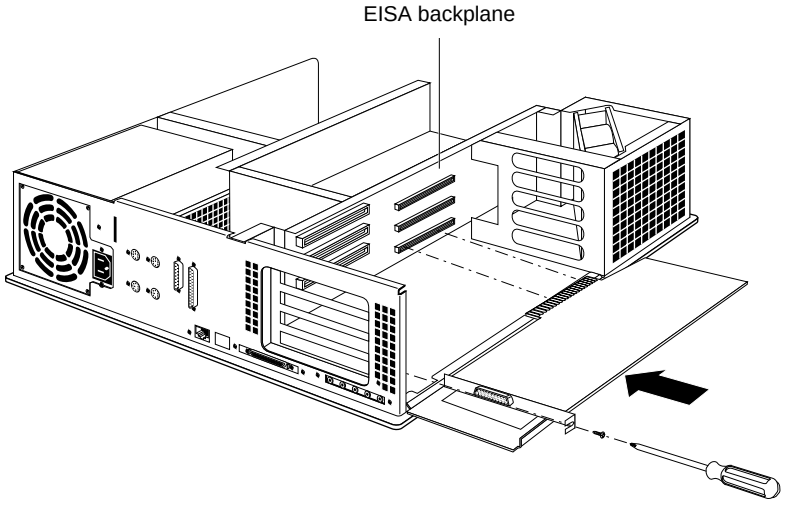

Figure 2-15 Installing the XL Graphics Board

3. Insert and tighten the screw that holds the board to the chassis, as shown in Figure 2-15. The screw opening is located on the metal bracket on the left side of the board.

Replacing the Extreme Board Set

Follow the steps below to install the Extreme board set above the XL graphics board.

1. Remove the screw that attaches the small metal cover to the second board slot from the top in the back of the system. The screw is located inside the system at the outer end of the metal cover.
2. Install the board set.
   - Grasp the board set with metal extensions on the left and the sides with the chips facing up.
   - Align the metal extensions on the left of the board set with the top three slots on the chassis. At the same time align the right edge of the board set with the metal grooves on the right of the chassis, as shown in Figure 2-16.

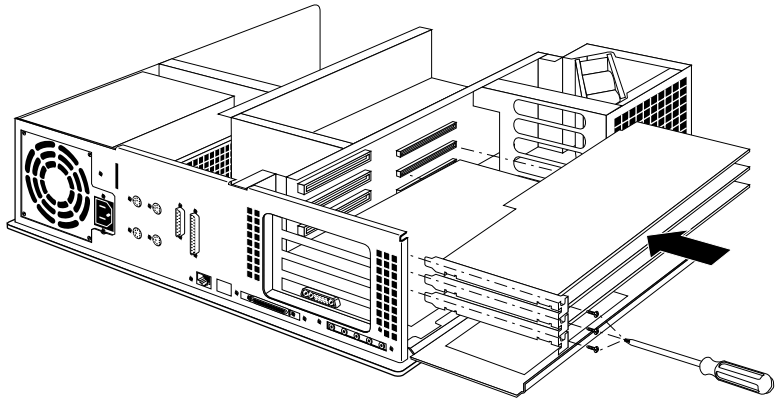

Figure 2-16 Replacing the Graphics Board Set

   - Push the board set into the slot until the connector on the back of the board is securely connected to the middle connector on the EISA backplane.

3. Insert and tighten the screws that hold the board set to the chassis.The screw openings are located on the metal extension on the left side of each board.
4. Tip the metal panel up in front of the boards you just installed until it snaps into place.

You are finished replacing the Extreme board set.

Replacing the Cover

To replace the top cover, follow these steps:

1. Locate the tabs on the inside and back of the top cover and the holes on the back of the workstation. See Figure 2-17.
2. Face the front of the workstation.
   - Look through the holes as you lower the cover to move the tabs into place.

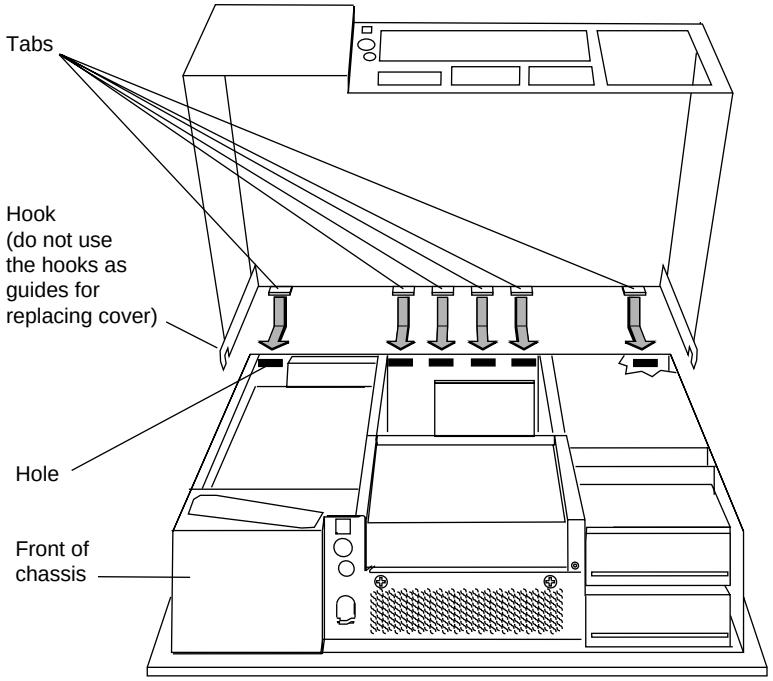

Figure 2-17 Looking Through the Holes to Place the Tabs

   - Slide the tabs into the holes and pull the cover down until it snaps into place. The cover fits tightly over the workstation.

3. Replace the bezel.
   - Place the tabs on the bottom of the bezel in the grooves in the front of the chassis, as shown in Figure 2-18.
   - Replace the lockbar if you removed one.
   - Tilt the bezel up until it snaps into place.

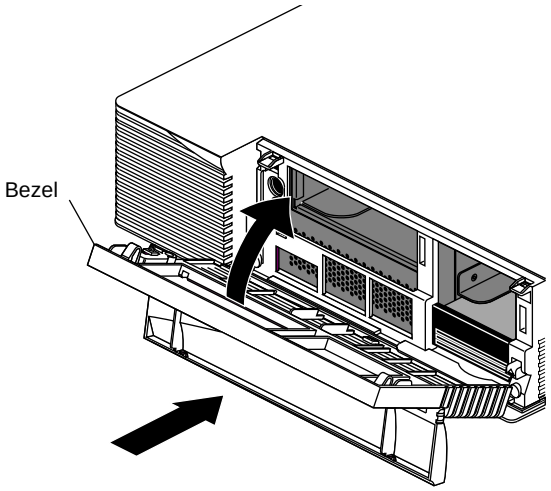

Figure 2-18 Replacing the Bezel

4. Reconnect the power cable to the back of the workstation.

You are now finished installing the hardware and are ready to connect the monitors. Go to Chapter 5, “Connecting the Monitors.”

Chapter 3

Installing the XL and Extreme Graphics Boards in an IMPACT Ready Indigo^2

This chapter tells you how to install the hardware for a dual head system in an Indigo^2 IMPACT Ready workstation with an existing XL or Extreme graphics board set.

To install the hardware, you will shut down the system, remove the cover, remove the existing board set, reinstall the Extreme board set, install the new XL graphics board, and replace the plastic covers of your Indigo^2 IMPACT Ready workstation.

To install the hardware, follow these steps:

1. Turn off the power by pressing and releasing the power switch on the front of the Indigo^2. The system powers off automatically.
   - Open the front cover by snapping it away from the top edge of the chassis and tipping it down, as shown in Figure 3-1.

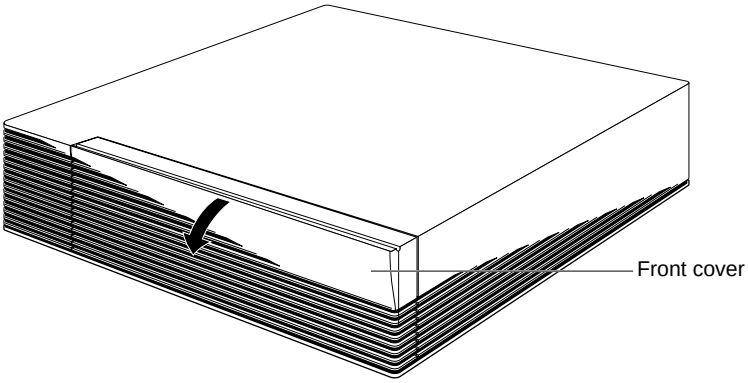

Figure 3-1 Removing the Front Cover

Press and release the power switch, as shown in Figure 3-2.

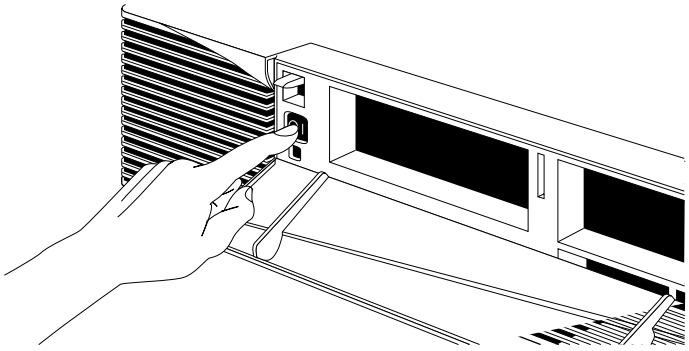

Figure 3-2 Turning Off the Power

The system will power off automatically within the next minute.

Removing the Cover

Follow these steps to disconnect the cables and remove the cover:

1. Disconnect the power cable and the monitor cable from the back of your Indigo^2 workstation.
2. Remove the bezel.
   - Remove the lockbar if you have one installed.
   - Press down on the tabs on each side of the bezel, as shown in Figure 3-3.

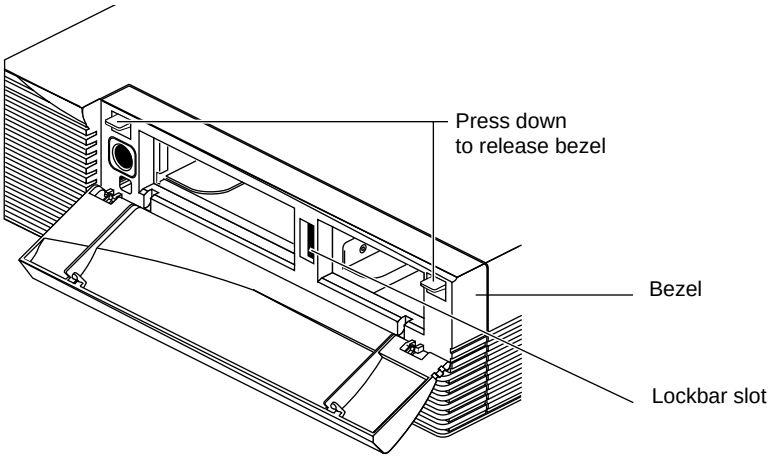

Figure 3-3 Releasing the Bezel

- Pull the bezel away from the chassis.

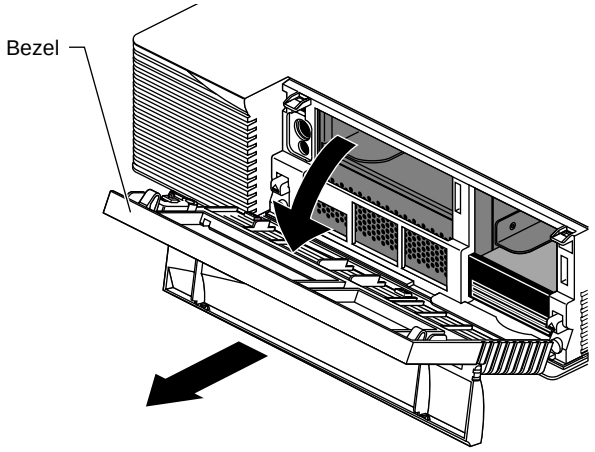

Figure 3-4 Removing the Bezel

3. Remove the top cover.
   - Press up on the tabs on each side of the drive openings as shown in Figure 3-5.

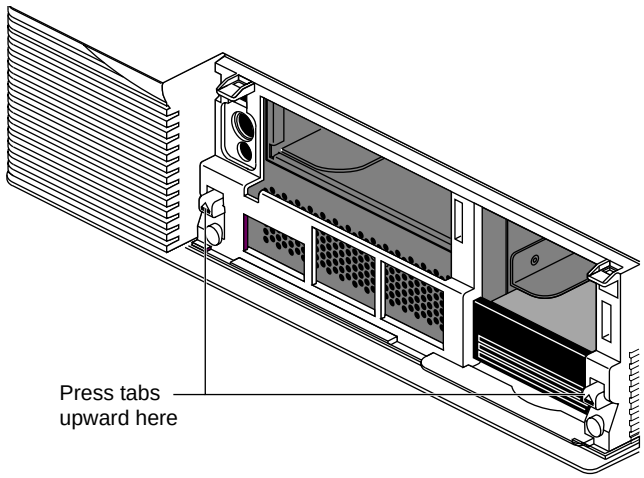

Figure 3-5 Releasing the Top Cover

- Pull up on the cover and rotate it back and away from the chassis, as shown in Figure 3-6.

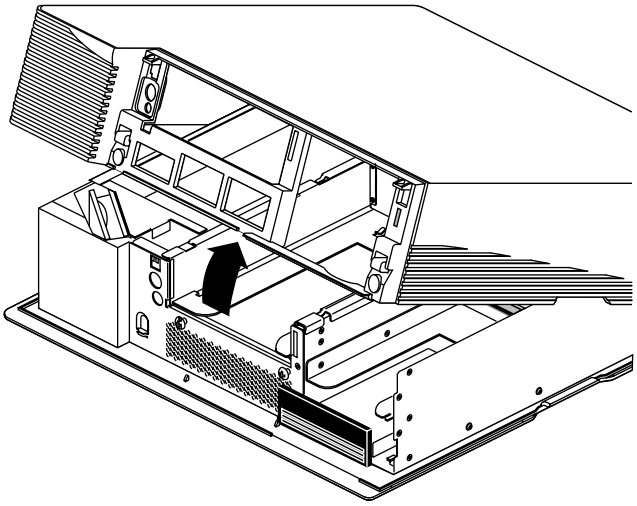

Figure 3-6 Removing the Top Cover

Tip: If the cover is difficult to raise, check the locking levers of your drives to be sure they are fully locked. The levers should be pushed all the way to the right.

Attaching the Wrist Strap

Wear the wrist strap to prevent the flow of static electricity, which can damage the board.

Caution: The components inside the Indigo^2 are extremely sensitive to static electricity. Handle all boards carefully, and wear the wrist strap shipped with the upgrade board while replacing parts inside the system.

To attach the wrist strap, follow these steps:

1. Unwrap the first two folds of the band and wrap the exposed adhesive side firmly around your wrist.

2. Unroll the rest of the band and peel the liner from the copper foil at the opposite end.
3. Attach the copper foil to a convenient and exposed electrical ground, such as a metal part of the Indigo^2 workstation.

Removing the Existing Board Set

See the following table and figure to determine whether or not you need to remove the existing board set.

Table 3-1 Graphics Board Placement: Indigo^2 IMPACT Ready Dual Head Workstation

If you have:	Place:	Place:
XL/XL graphics boards	XL board in Slot A	Second XL board in Slot D
XL/Extreme graphics boards	Extreme board set in Slot A	XL board in Slot D

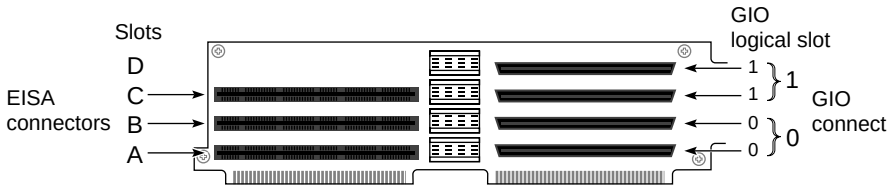

Figure 3-7 Locating Graphics Board Slots

To remove the board set, follow these steps:

1. Move the system or position yourself so that you are facing the expansion slots, as shown in Figure 3-8.
2. Open the metal panel in front of the expansion slots by pulling up on the panel and lowering it down.

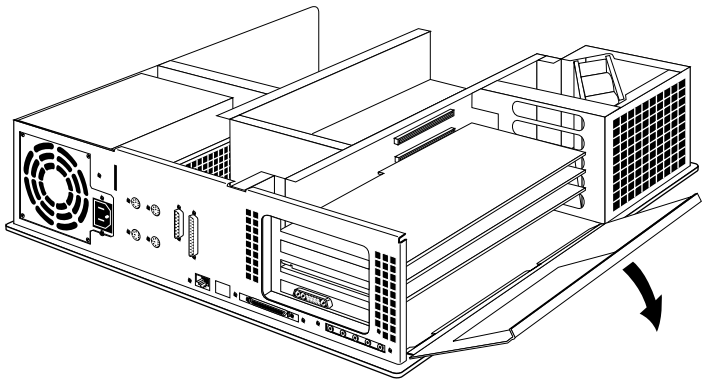

Figure 3-8 Opening the Metal Panel in Front of the Expansion Slots

3. Remove the retention pin. See Figure 3-9.
   - Grasp the retention pin on the right front end of the board set and pull it up and off.

     Note: Check the placement of the retention pin. It hangs in front of the board, not beside it.

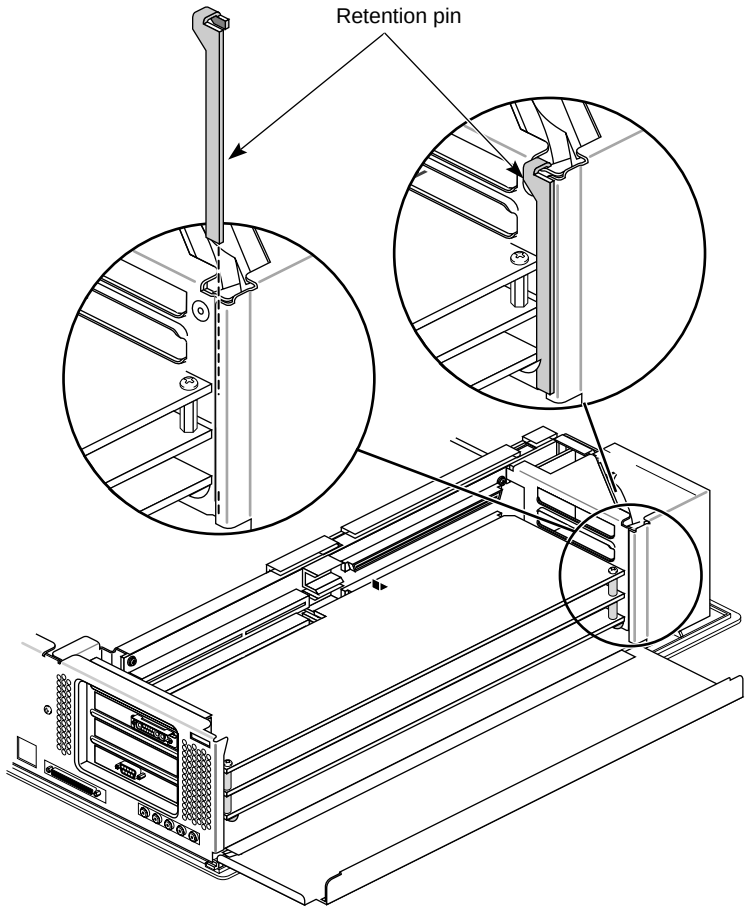

Figure 3-9 Removing the Retention Pin

4. Remove the screws attaching the board set to the system slots as shown in Figure 3-10.

   The screws are located on the metal extension on the left side of each board. Use the Phillips screwdriver to loosen the screw first and then use your hand to unscrew and remove it.

   Note: The screws are very small. If you drop a screw into the chassis, remove it to prevent shorting the system.

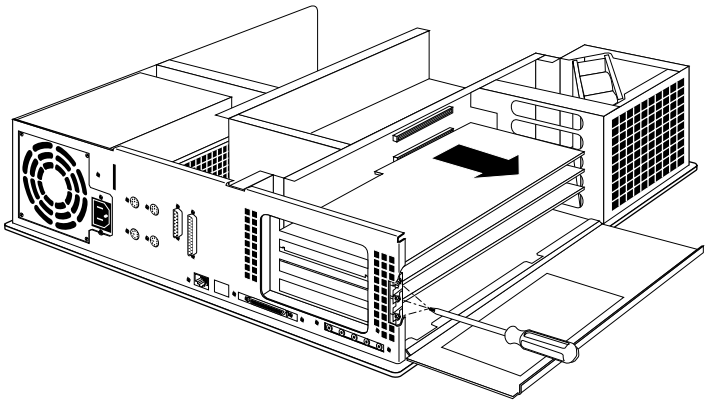

Figure 3-10 Removing the Extreme Board Set

5. Pull the Extreme board set out of the workstation.
   - Turn both hands inward so that your thumbs point to the floor.
   - Place your index fingers behind the small metal posts on each side of the board.

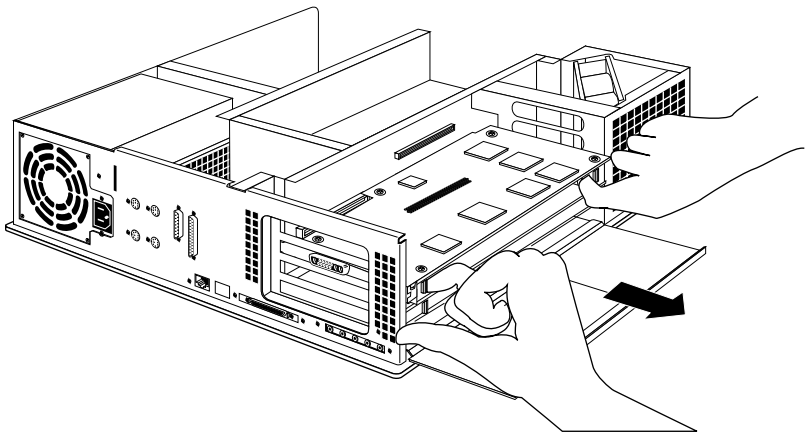

Figure 3-11 Removing the Board Set

   - Brace your thumbs against the chassis, and pull the board out of the slot. You may need to use some force.
6. Pull the XL board out of the workstation by grasping the edges of the board and pulling.
   - Place the board set down on a flat, antistatic surface so the side with the chips faces up. An empty antistatic bag or a clean, dry desktop works well.

Installing the Board Sets

Use the table below and Figure 3-12 to determine where to place the graphics boards.

Table 3-2 Graphics Board Placement: Indigo^2 IMPACT Ready Dual Head Workstation

If you have:	Place:	Place:
XL/XL graphics boards	XL board in Slot A	Second XL board in Slot D
XL/Extreme graphics boards	Extreme board set in Slot A	XL board in Slot D

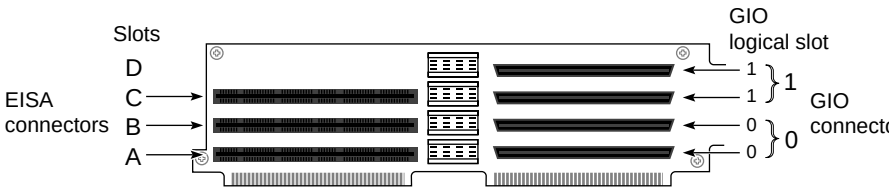

Figure 3-12 Locating Graphic Board Slots

Follow the steps below to install the board sets.

1. Remove the screw that attaches the small I/O panel cover to the slot in which you will install the board. The screw is located at the outer end of the I/O panel cover.

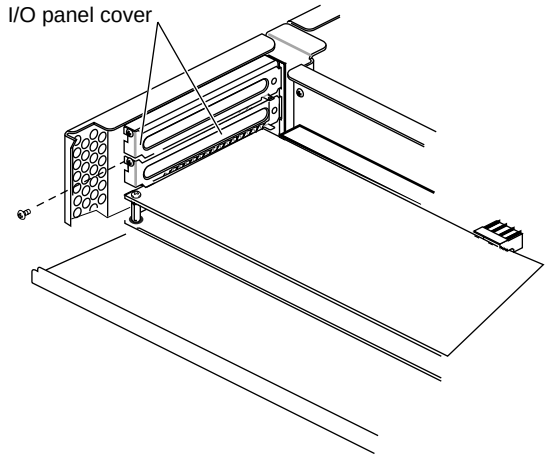

Figure 3-13 Removing the I/O Panel Cover

2. Install the board set.
   - Grasp the board set with metal extensions on the left and the sides with the chips facing up.
   - Align the metal extensions on the left of the board set with the top three slots on the chassis. At the same time align the right edge of the board set with the metal grooves on the right of the chassis, as shown in Figure 3-14.

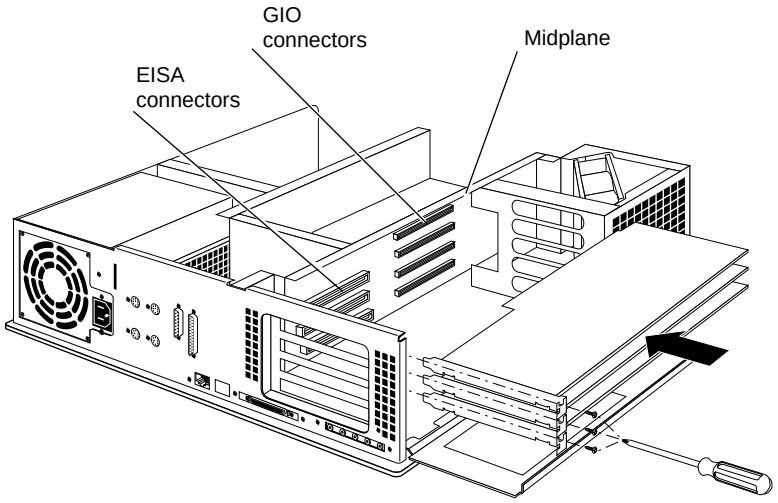

Figure 3-14 Replacing the Graphics Board Set

   - Push the board set into the slot until the connector on the back of the board is securely connected to the middle connector on the midplane.
3. Insert and tighten the screws that hold the board set to the chassis.The screw openings are located on the metal extension on the left side of each board.

4. Replace the retention pin. The pin rests along the front edge of the board.

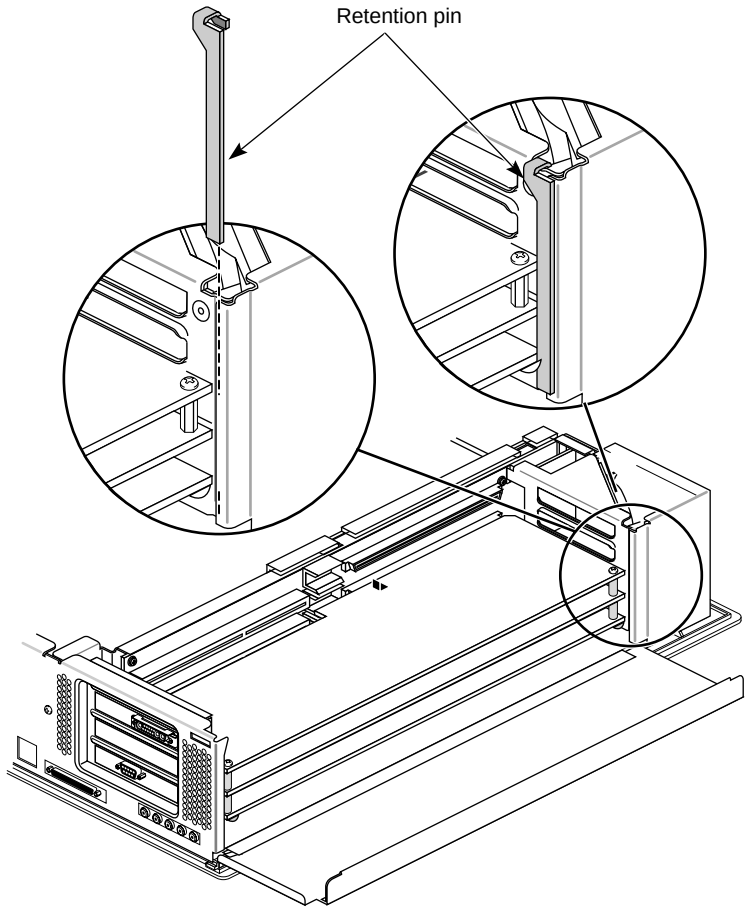

Figure 3-15 Replacing the Retention Pin

5. Tip the metal panel up in front of the boards you just installed until it snaps into place.

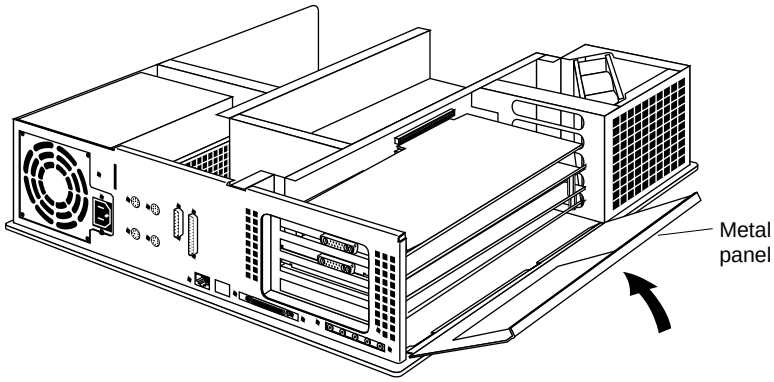

Figure 3-16 Closing the Metal Panel in Front of the Graphics Boards

You are finished replacing the Extreme board set.

Go to “Replacing the Cover” on page 48 to replace the cover.

Replacing the Cover

To replace the top cover, follow these steps:

1. Locate the tabs on the inside and back of the top cover and the holes on the back of the workstation. See Figure 3-17.
2. Face the front of the workstation.
   - Look through the holes as you lower the cover to move the tabs into place.

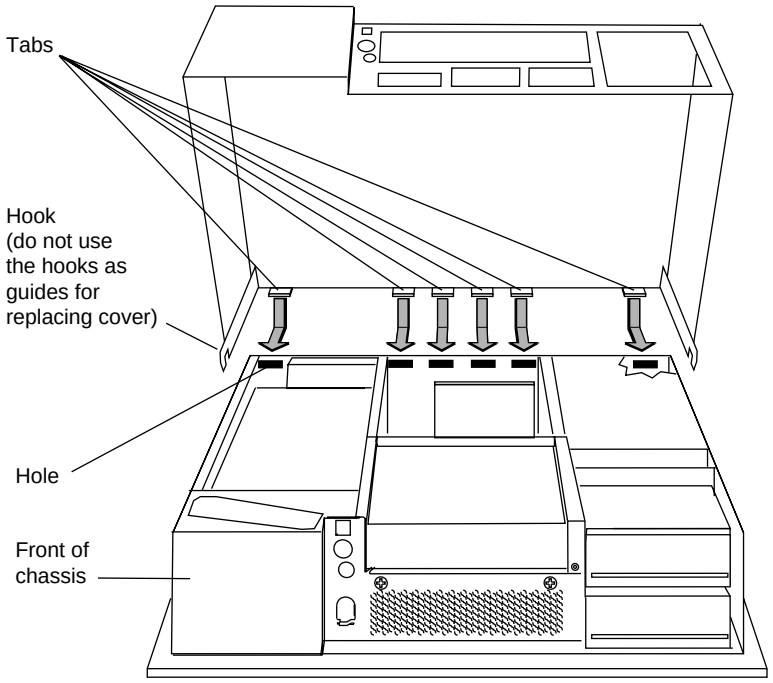

Figure 3-17 Looking Through the Holes to Place the Tabs

   - Slide the tabs into the holes and pull the cover down until it snaps into place. The cover fits tightly over the workstation.

3. Replace the bezel.
   - Place the tabs on the bottom of the bezel in the grooves in the front of the chassis, as shown in Figure 3-18.
   - Tilt the bezel up until it snaps into place.

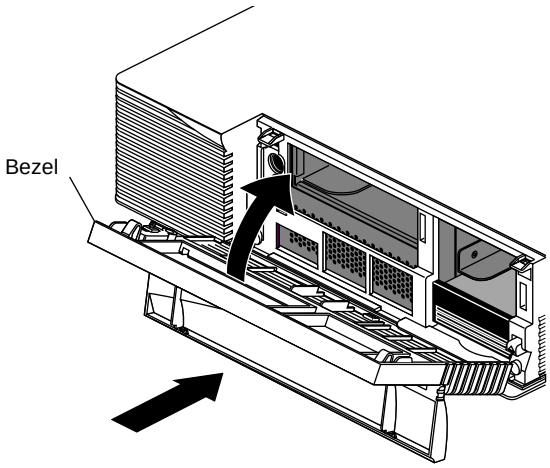

Figure 3-18 Replacing the Bezel

4. Reconnect the power cable to the back of the workstation.

You are now finished installing the hardware and are ready to connect the monitors. Go to Chapter 5, “Connecting the Monitors.”

Chapter 4

Installing the High/2-Slot Graphics Boards in an Indigo^2 IMPACT

This chapter tells you how to install the hardware for a dual head system in an Indigo^2 IMPACT workstation with an existing High IMPACT board set.

To install the hardware, you'll shut down the system, remove the cover, install the IMPACT 2-Slot upgrade board set above the existing High IMPACT board set, and replace the plastic covers of your Indigo^2 IMPACT workstation.

Note: If you add a texture memory option board to your Dual Head system, place the texture memory option board on the existing High IMPACT board set in the bottom two slots.

Shutting Down and Powering Off the System

Follow these steps to shut down the software and power off the system.

- Face the front of the Indigo² chassis.
- Open the front cover by snapping it away from the top edge of the chassis and tipping it down, as shown in Figure 4-1.

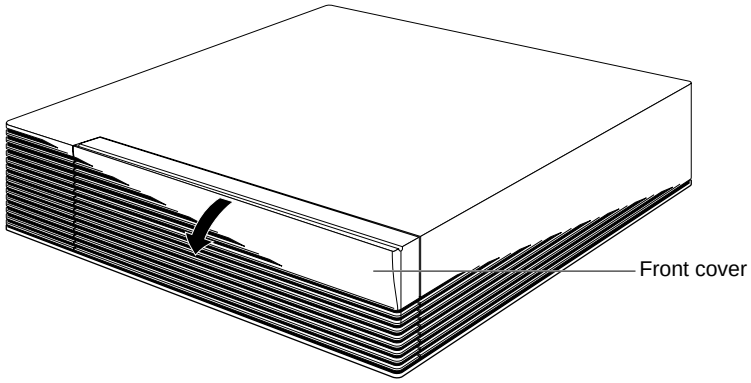

Figure 4-1 Removing the Front Cover

Press and release the power switch, as shown in Figure 4-2.

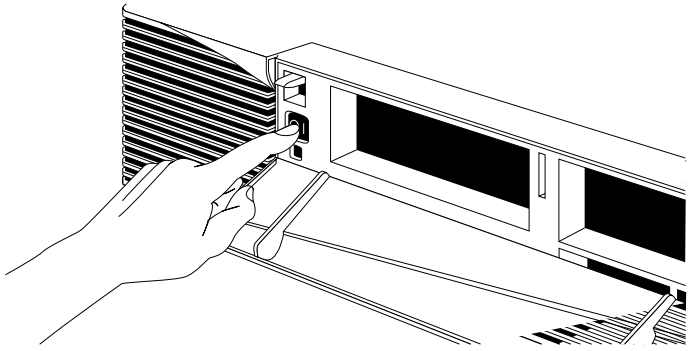

Figure 4-2 Turning Off the Power

The system will power off automatically within the next minute.

Removing the Cover

Once the system is shut down, follow these steps:

1. Remove the bezel.
   - Press down on the tabs on each side of the bezel, as shown in Figure 4-3.

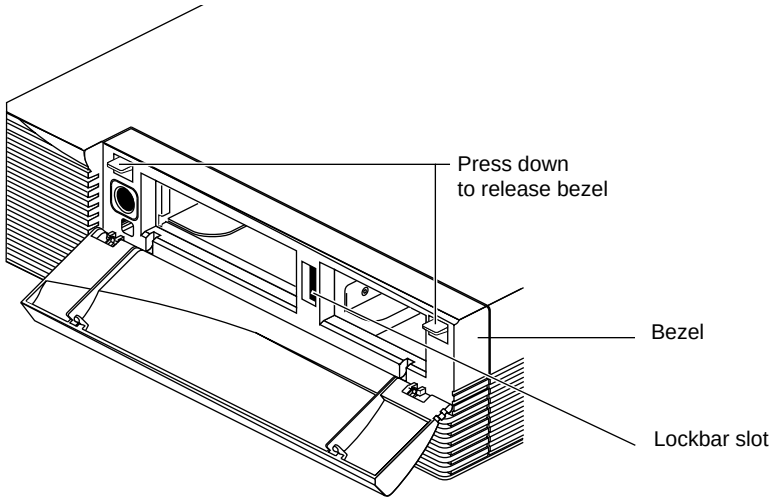

Figure 4-3 Releasing the Bezel

- Pull the bezel away from the chassis.

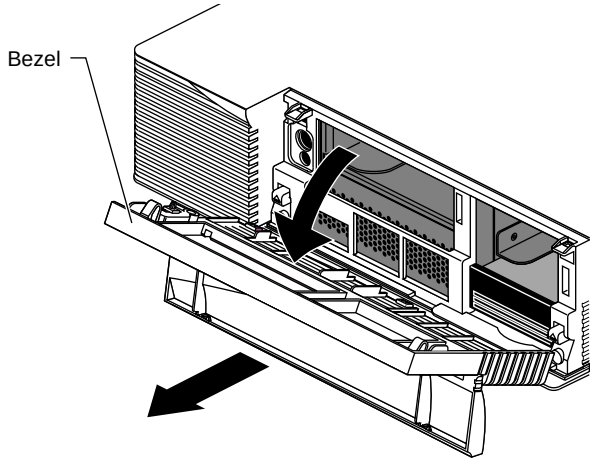

Figure 4-4 Removing the Bezel

2. Remove the top cover.
   - Press up on the tabs on each side of the drive openings as shown in Figure 4-5.

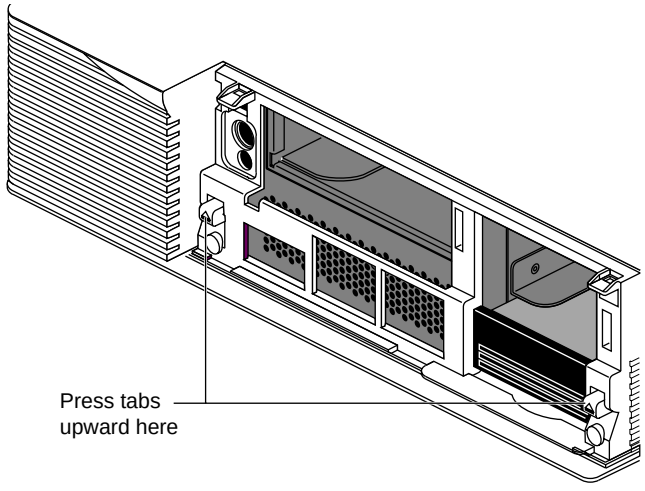

Figure 4-5 Releasing the Top Cover

- Pull up on the cover and rotate it back and away from the chassis, as shown in Figure 4-6.

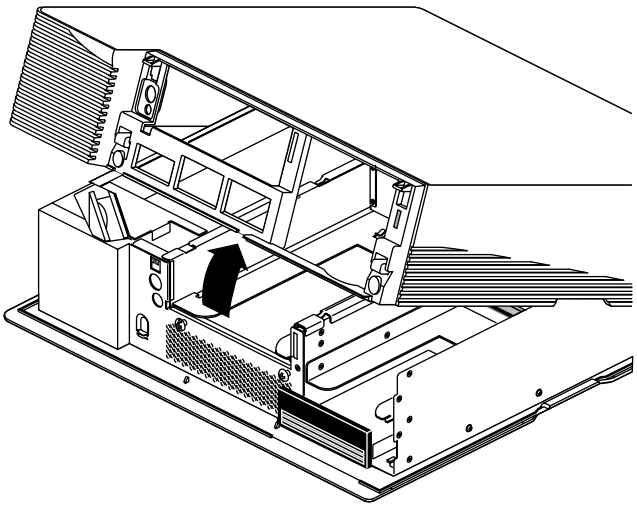

Figure 4-6 Removing the Top Cover

Tip: If the cover is difficult to raise, check the locking levers of your drives to be sure they are fully locked. The levers should be pushed all the way to the right.

Attaching the Wrist Strap

Wear the wrist strap to prevent damage to the electronics from static electricity.

The components inside the Indigo^2 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:

1. Unwrap the first two folds of the band and wrap the exposed adhesive side firmly around your wrist.

2. Unroll the rest of the band and peel the liner from the copper foil at the opposite end.
3. Attach the copper foil to a convenient and exposed electrical ground, such as a metal part of the Indigo^2 IMPACT workstation.

You are now ready to install your 2-Slot upgrade graphics board set.

Installing the Board Set

Install the 2-Slot upgrade board set above the existing High IMPACT board set.

1. Open the metal panel in front of the expansion slots by pulling up on the panel and lowering it.

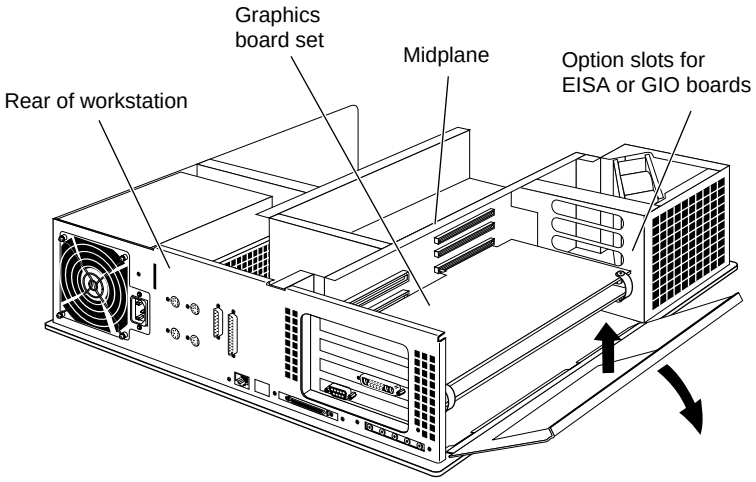

Figure 4-7 Lowering the Metal Panel in Front of the Expansion Slots

Note: If any option boards are installed above or below your Indigo^2 High IMPACT board set, you will need to remove them before proceeding. Follow the procedure for removing the option board as outlined in its installation manual.

Your existing High IMPACT board set must be positioned in the bottom two slots of your workstation. See your owner's guide if you need help re-placing the board set.

Note: If you add a texture memory option board to your Dual Head system, install it on the High IMPACT board set placed in the bottom two slots.

2. Remove the screw that attaches the blank I/O panels to the board slots above your High IMPACT board set. See Figure 4-8.

   The screws are located on the metal extension on the left side of each board.

   - Loosen each screw with the Phillips screwdriver.
   - Remove the screws with your hand.

   The screws are very small. If you drop a screw into the chassis, retrieve it to prevent shorting the system.

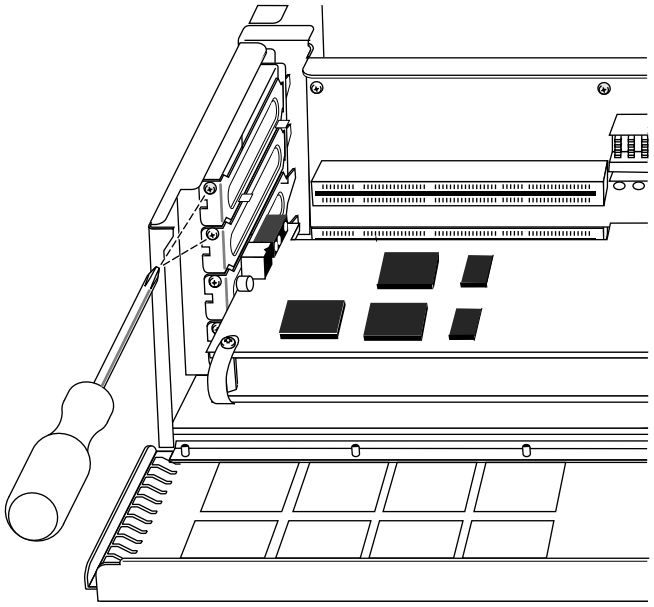

Figure 4-8 Removing the Screws From the Metal Port Covers

3. Remove the retention pin from the workstation.

   - Grasp the retention pin on the right-front end of the board set and pull it up and off. See Figure 4-9.

     Note: Check the placement of the retention pin. It hangs in front of the board, not beside it.

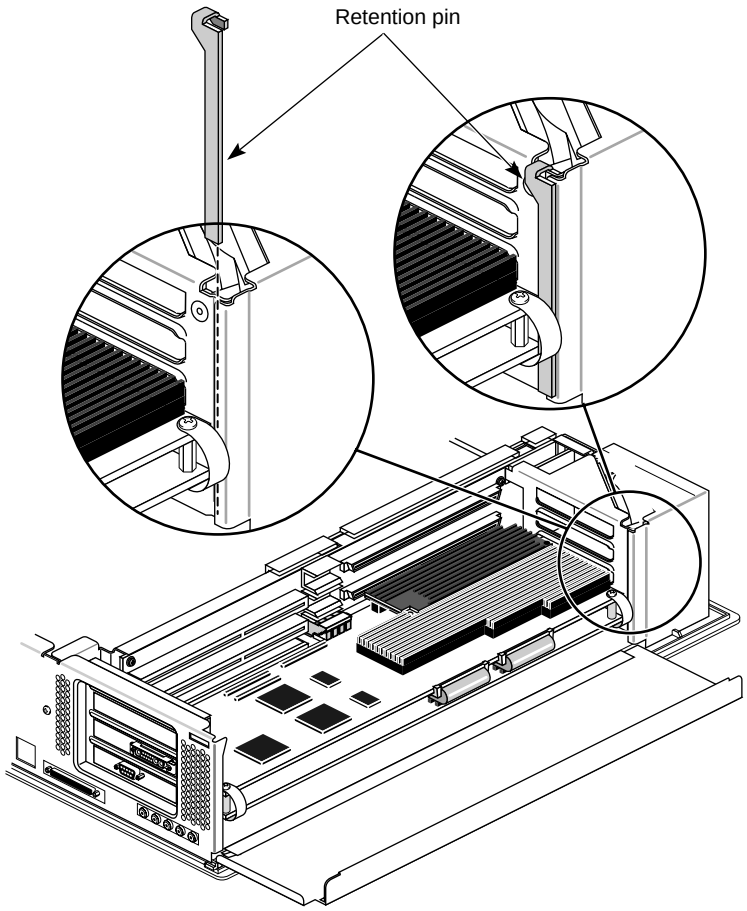

Figure 4-9 Removing the Retention Pin

4. Position your new 2-slot board set in the uppermost slots. See Figure 4-10.
   - Grasp the board set with the metal I/O panels on the left, and with the chips facing up.
   - Align the I/O panels and connectors for the board set with the slots on the chassis. At the same time align the right edge of the board set with the metal grooves on the right of the chassis, as shown in Figure 4-10.

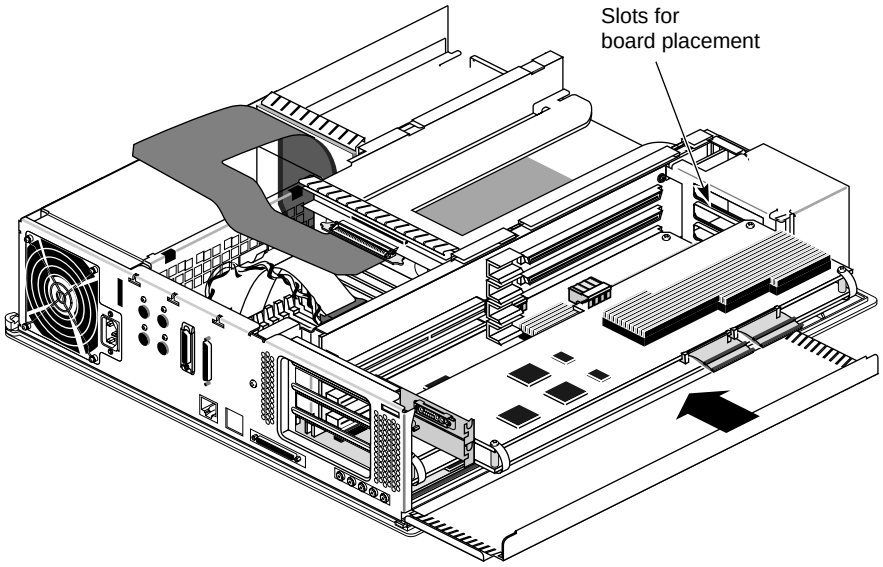

Figure 4-10 Locating the Slots for the Graphic Board Set

Note: Insert the board carefully so that the board edge does not catch on the EMI lining along the inner left cutout area. Make sure the EMI lining is not damaged and remains between the chassis and the graphics board's I/O panels.

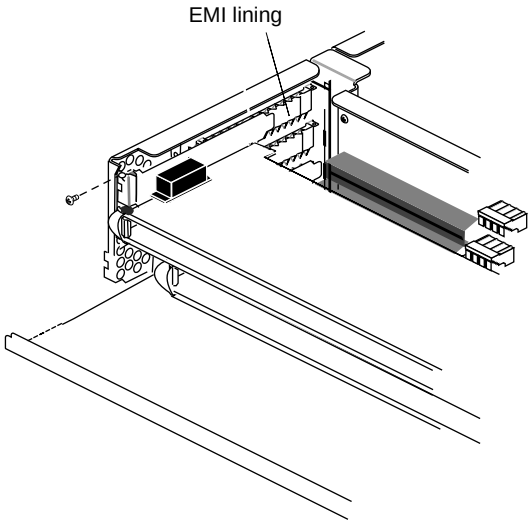

Figure 4-11 Location of EMI Lining

- Grasp the chassis with your fingers and push the board set into place with your thumbs. See Figure 4-12.
- Push the board set into the slot until the connector on the back of the board is securely connected to the connector on the midplane.

  Caution: As you insert the board set, do not press on the flexible cables that vertically connect your Indigo^2 High IMPACT boards.

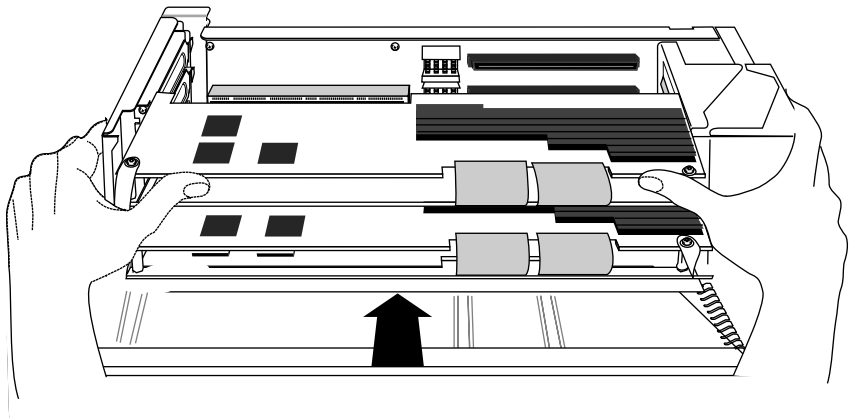

Figure 4-12 Inserting the 2-Slot Graphics Board Set

5. Visually check to be sure the boards are completely seated in their connectors. The board set should not look tilted when viewed from above. See Figure 4-13.

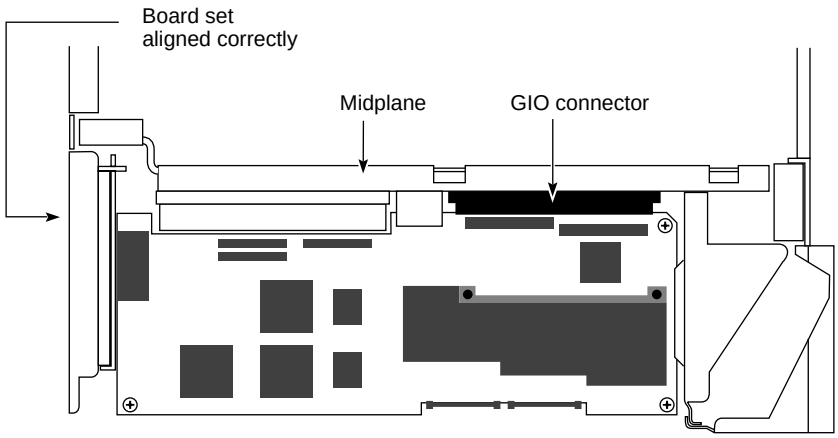

Figure 4-13 Correctly Aligned Board Set, Viewed From Above

6. Insert and tighten the screws that hold the board set to the chassis. The screw openings are located on the metal I/O panels on the left side of each board.

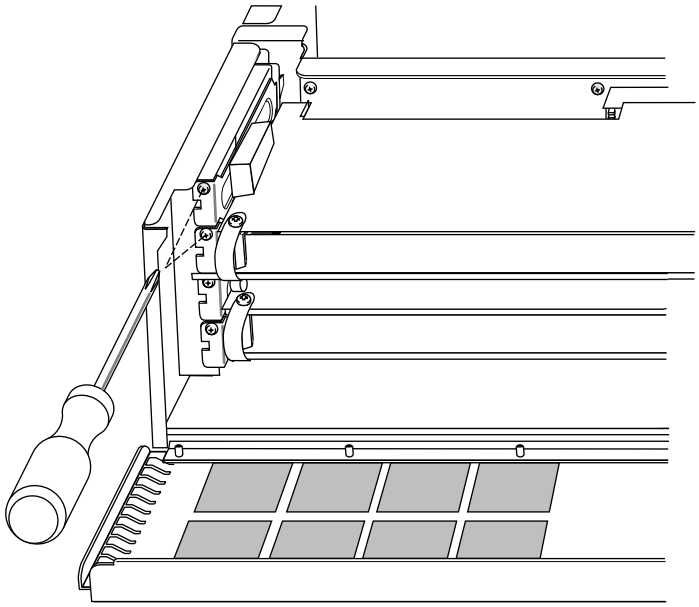

Figure 4-14 Replacing the Screws for the 2-Slot Upgrade Board Set

7. Replace the retention pin on the right side of the board set. See Figure 4-15. The pin rests along the front edge of the board.

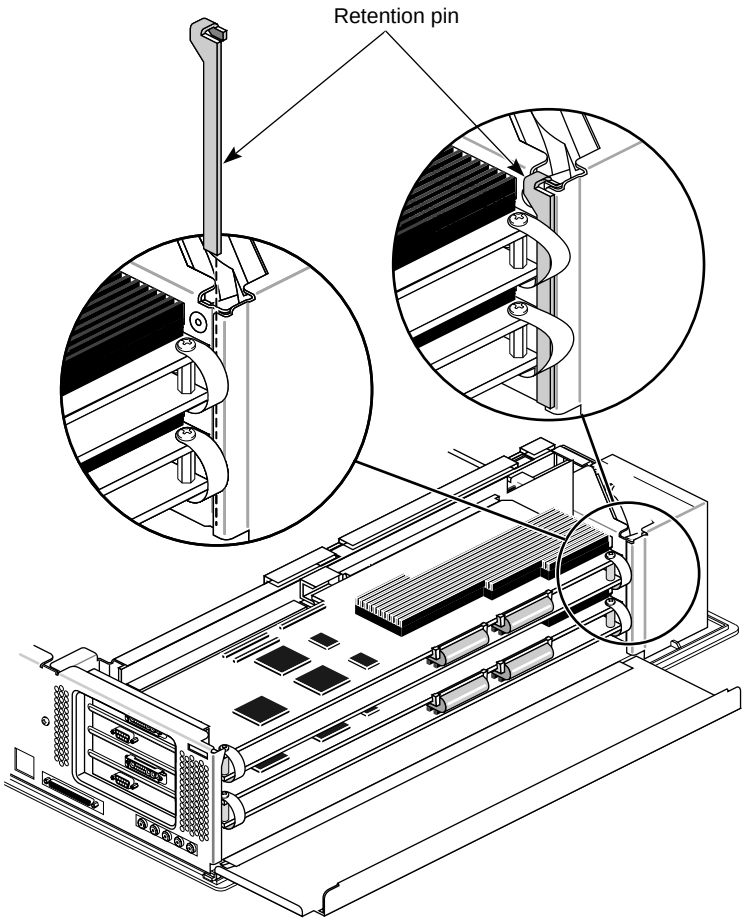

Figure 4-15 Replacing the Retention Pin

8. Tip the metal panel up in front of the boards until it snaps into place.

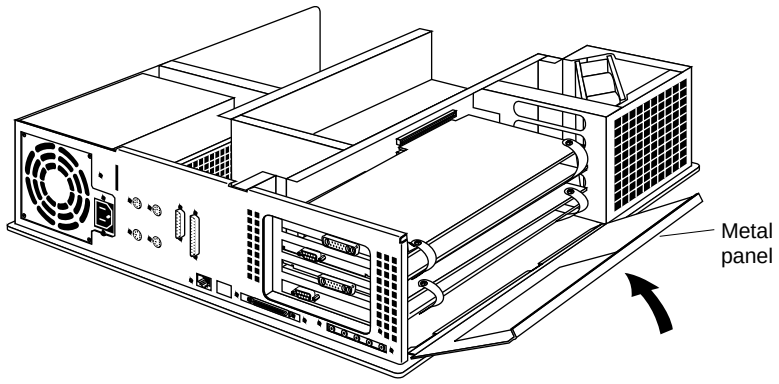

Figure 4-16 Closing the Metal Panel in Front of the Graphics Boards

You are finished installing the Indigo^2 2-Slot graphics board set.

Replacing the Cover

To replace the top cover, follow these steps:

1. Locate the tabs on the inside and back of the top cover and the holes on the back of the workstation. See Figure 4-17.
2. Face the front of the workstation.
   - Look through the holes as you lower the cover to move the tabs into place.

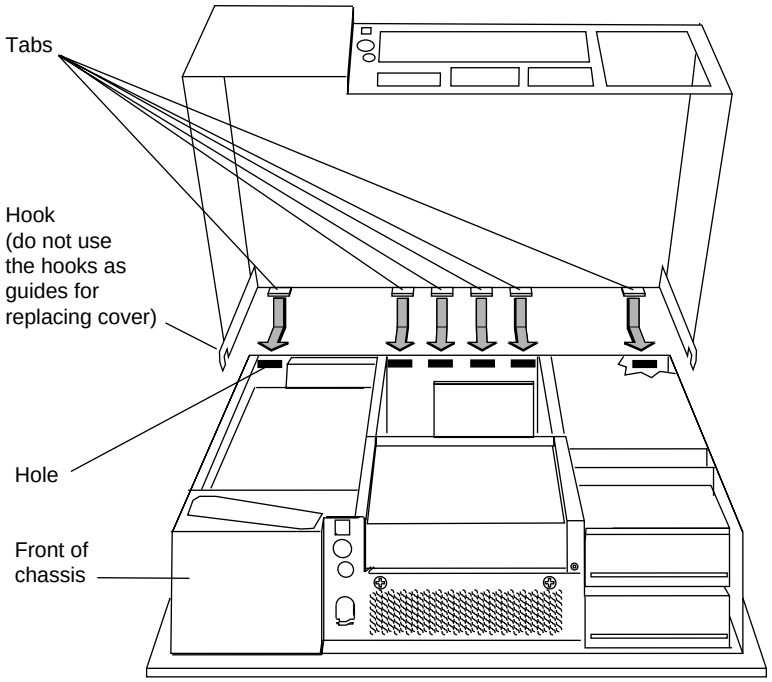

Figure 4-17 Looking Through the Holes to Place the Tabs

   - Slide the tabs into the holes and pull the cover down until it snaps into place. The cover fits tightly over the workstation.

3. Replace the front bezel.
   - Place the tabs on the bottom of the bezel in the grooves in the front of the chassis, as shown in Figure 4-18.
   - Tilt the bezel up until it snaps into place.

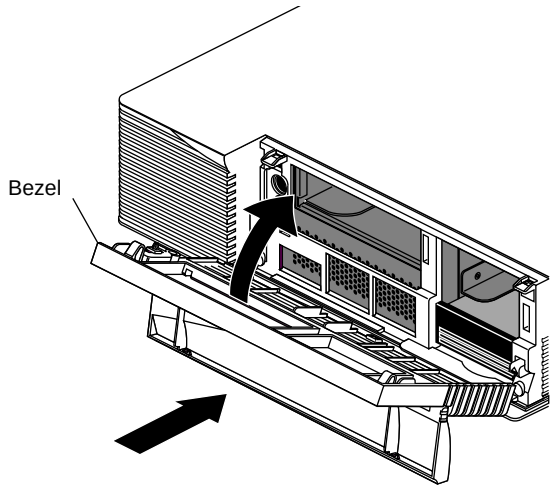

Figure 4-18 Replacing the Bezel

Reconnect the power cable to the back of the system.

You are now finished installing the hardware and are ready to connect the monitors. Go to Chapter 5, “Connecting the Monitors.”

Connecting the Monitors

You can place your monitors side by side, or you can set them up in a stacked configuration. Follow the appropriate instructions for your configuration.

Unpacking the Secondary Monitor

Unpack the secondary monitor from its box.

Caution: The monitor is very heavy. Have someone help you lift it out of the box.

The monitor is shipped with two cables: a monitor chassis cable and a monitor power cable, as shown in Figure 5-1.

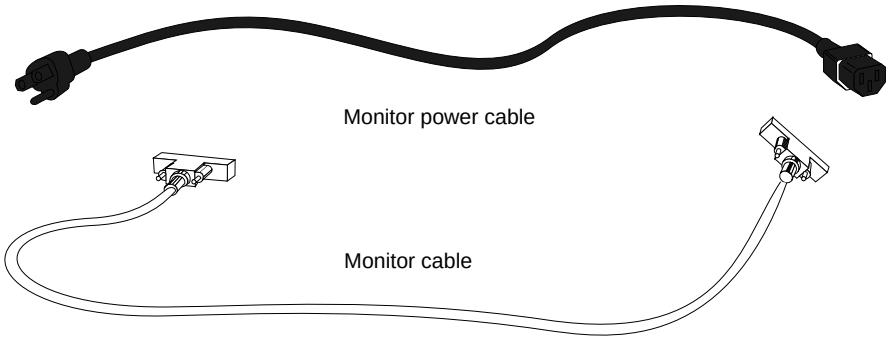

Figure 5-1 Secondary Monitor Chassis Cable and Monitor Power Cable

Connecting the Monitors in a Side by Side Configuration

Depending on whether you have an Indigo^2 XL/XL or XL/Extreme configuration, XL/XL or XL/Extreme in an Indigo^2 IMPACT Ready configuration, or Indigo^2 IMPACT High/2-Slot configuration, connect the monitor cables to different connectors on the chassis.

1. Facing the front, place the primary monitor on the left and the secondary monitor on the right. The secondary monitor is the monitor that is part of the dual head shipment. See Figure 5-2.

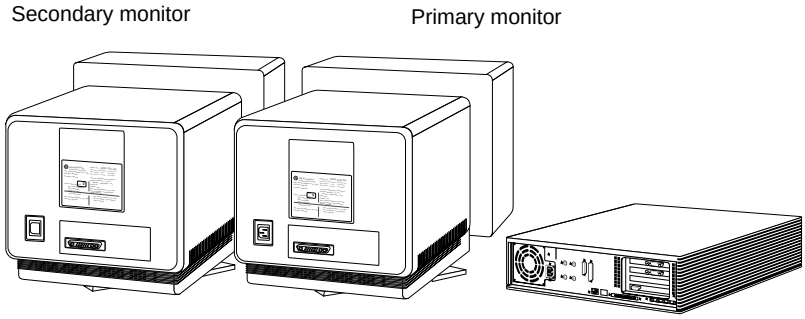

Figure 5-2 Arranging the Monitors in a Side by Side Configuration

2. Connect one end of each monitor cable to the monitor connector on the back of each monitor, as shown in Figure 5-4. Connect and tighten the thumbscrews on both sides of the connector.

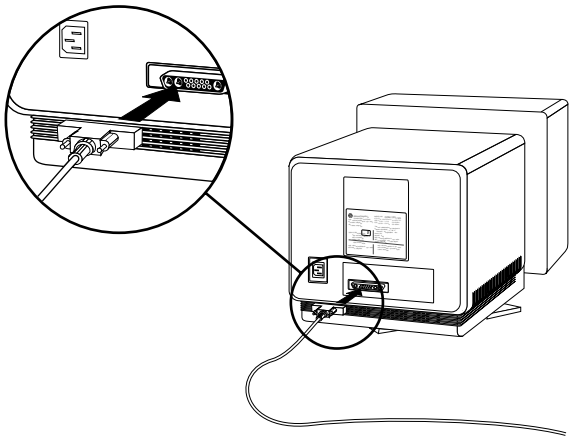

Figure 5-3 Connecting Monitor Cables to the Monitors

3. Connect the other end of the primary and secondary monitor cables to the appropriate connector on the back of the Indigo^2 or Indigo^2 IMPACT Ready chassis. See Figure 5-4 for an overview of this task.

   Note: It's important that you connect the primary monitor cable to the correct monitor connector on the Indigo^2 or Indigo^2 IMPACT Ready chassis. If the monitor cables are not connected correctly, your mouse movements will be incorrect.

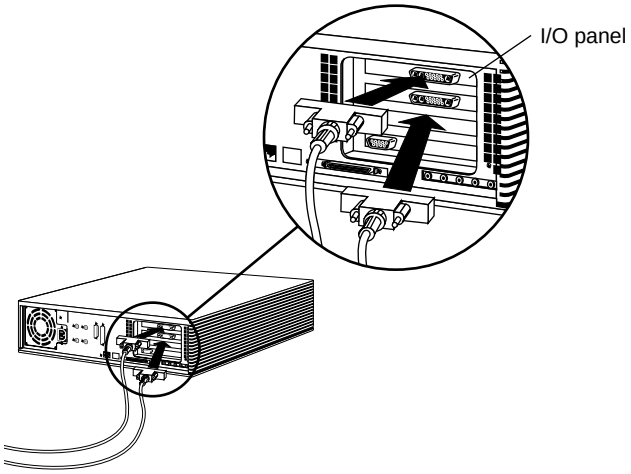

Figure 5-4 Identifying the I/O Panel Connectors

To connect your monitors to the correct monitor connector on the Indigo^2, Indigo^2 IMPACT Ready, or IMPACT chassis (I/O panel), see the following illustrations.

Connecting the Monitors in an Indigo^2 Configuration

Indigo^2 XL/XL Configuration

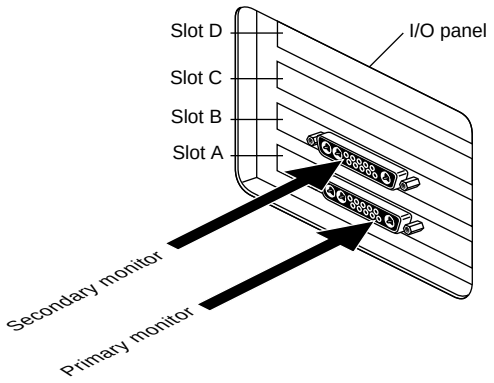

Figure 5-5 Connecting the Monitor Cables to the Chassis in an Indigo^2 XL/XL Configuration

Indigo^2 XL/Extreme Configuration

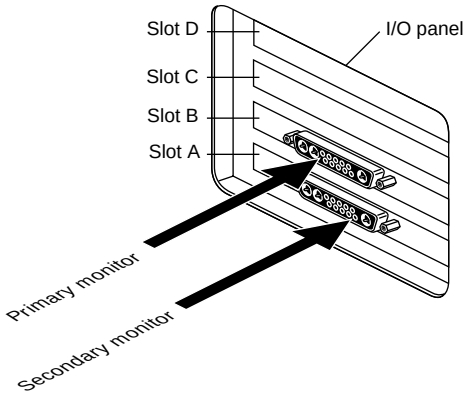

Figure 5-6 Connecting the Monitor Cables to the Chassis in an Indigo^2 XL/Extreme Configuration

Connecting the Monitors in an Indigo^2 IMPACT Ready Configuration

Indigo^2 IMPACT Ready XL/XL Configuration

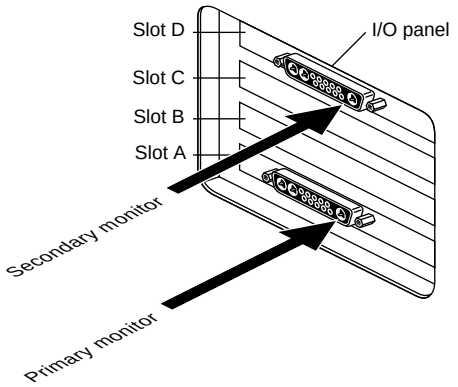

Figure 5-7 Connecting the Monitor Cables to the Chassis in an IMPACT Ready XL/XL Configuration

Indigo^2 IMPACT Ready XL/Extreme Configuration

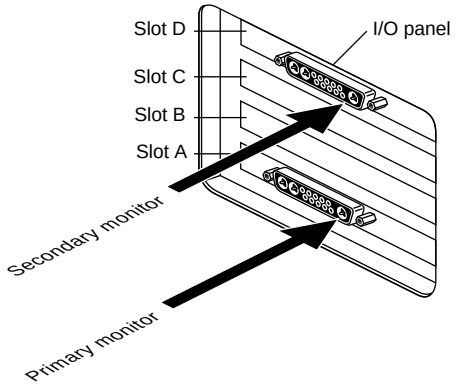

Figure 5-8 Connecting the Monitors in and Indigo^2 IMPACT Ready XL/Extreme Configuration

Connecting the Monitors in an Indigo^2 IMPACT High/2-Slot Configuration

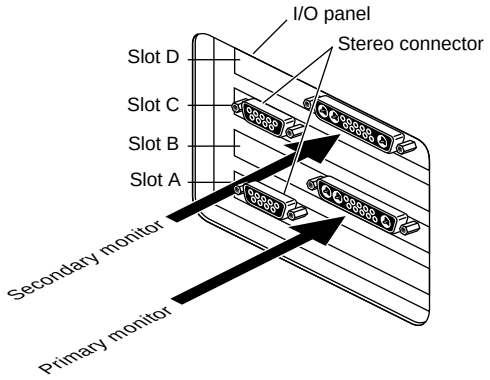

Figure 5-9 Connecting the Monitor Cables to the Chassis in an IMPACT Ready High/2-Slot Configuration

Connect and tighten the thumbscrews on both sides of the connector.

You are finished connecting the monitor cables. Go to "Connecting the Power Cables" on page 82.

Connecting the Monitors in a Stacked Configuration

Depending on whether you have an Indigo2 XL/XL or XL/Extreme configuration, XL/XL or XL/Extreme in an Indigo^2 IMPACT Ready configuration, or Indigo^2 IMPACT High/2-Slot configuration, connect the monitor cables to different connectors on the chassis.

Note: If you use the stacked configuration, you must reconfigure the software, as described in "Reconfiguring the Software for Stacked Monitors" on page 86.

Follow these steps to connect the monitor cables to the monitors and the Indigo^2 or Indigo^{2}IMPACT Ready chassis.

1. Facing the front, place the secondary monitor on a surface above the primary monitor. The secondary monitor is the monitor that is part of the dual head shipment.

   Caution: Do not rest the secondary monitor on the primary monitor. Place it instead on a bookshelf or similar type structure above the primary monitor.

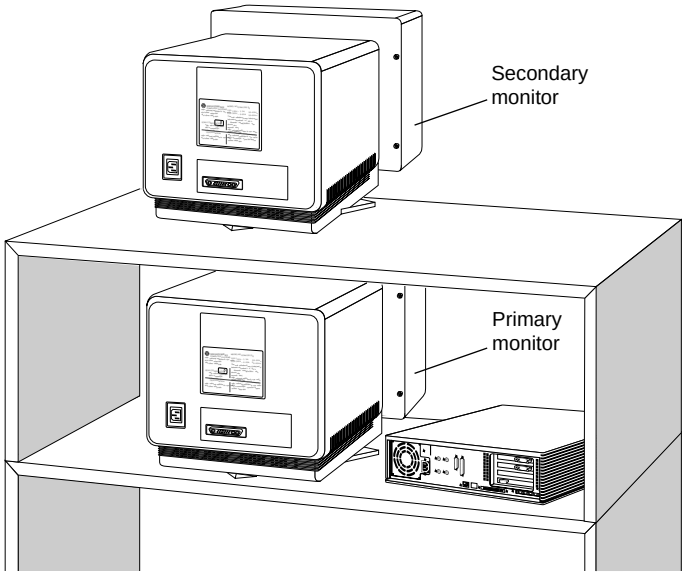

Figure 5-10 Arranging the Monitors in a Stacked Configuration

2. Connect the cables as follows:

   - Connect one end of the each monitor cable to the connector on the back of each monitor, as shown in Figure 5-13. Screw in the thumbscrews on both sides of the connector.

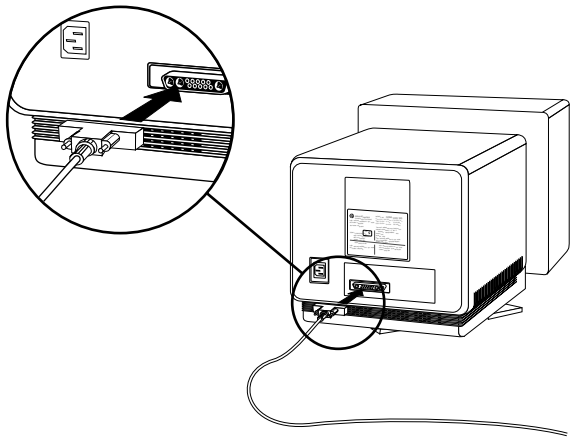

Figure 5-11 Connecting the Stacked Monitor's Cables to the Monitors

3. Connect the other end of the cable monitor connector on the back of the Indigo² chassis, as shown in Figure 5-11. Use the following tables to determine the correct connector on the I/O panel.

   Note: It's important that you connect the primary monitor cable to the correct monitor connector on the Indigo² IMPACT chassis. If the monitor cables are not connected correctly, your mouse movements will be incorrect.

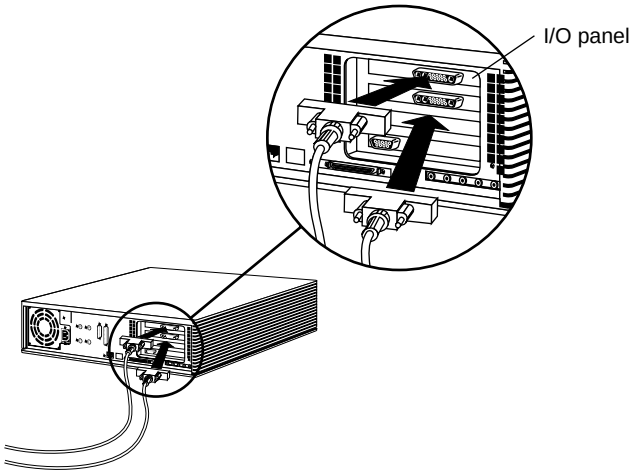

Figure 5-12 Identifying the I/O Panel on the Chassis

To connect your monitors to the correct monitor connector on the Indigo² or Indigo2 IMPACT Ready chassis (I/O panel), see the following illustrations.

Connecting the Monitors in an Indigo^2 Configuration

Indigo^2 XL/XL Stacked Configuration

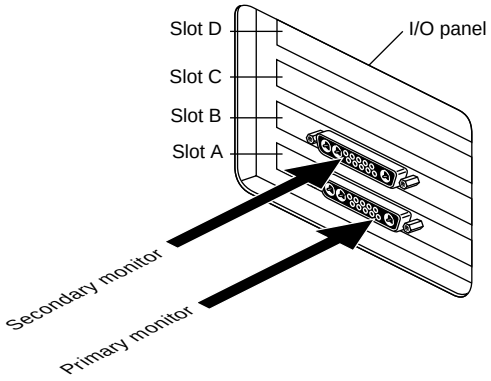

Figure 5-13 Connecting the Monitor Cables to the Chassis in an Indigo^2 XL/XL Stacked Configuration

Indigo^2 XL/Extreme Stacked Configuration

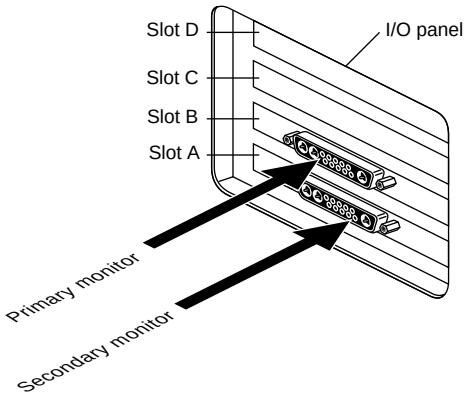

Figure 5-14 Connecting the Monitor Cables to the Chassis in an Indigo^2 XL/Extreme Stacked Configuration

Connecting the Monitors in an Indigo^2 IMPACT Ready Stacked Configuration

Indigo^2 XL/XL Stacked Configuration

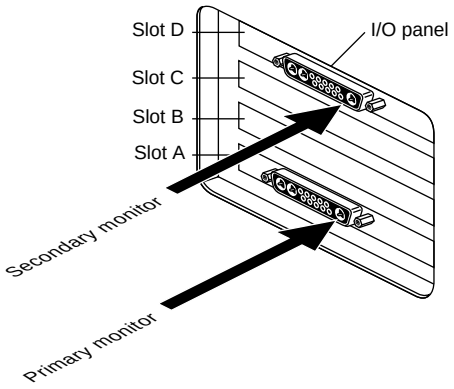

Figure 5-15 Connecting the Monitor Cables to the Chassis in an Indigo^2 IMPACT Ready XL/XL Stacked Configuration

Indigo^2 IMPACT Ready XL/Extreme Stacked Configuration

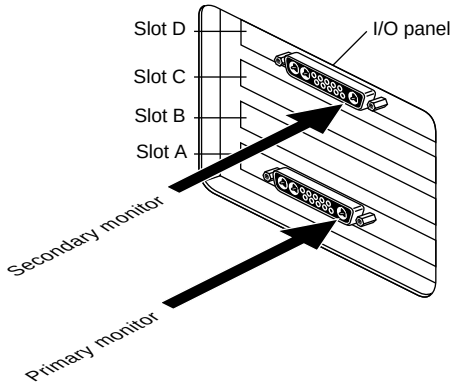

Figure 5-16 Connecting the Monitor Cables to the Chassis in and Indigo^2 IMPACT Ready XL/Extreme Stacked Configuration

Connecting the Monitors in an Indigo^2 IMPACT High/2-Slot Stacked Configuration

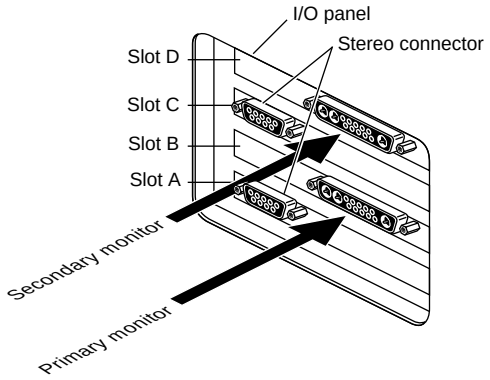

Figure 5-17 Connecting the Monitor Cables to the Chassis in and Indigo^2 IMPACT High/2-Slot Configuration

4. Screw in the thumbscrews on both sides of the primary monitor connector and the secondary monitor connector,

You are finished connecting the monitor cables. Go to "Connecting the Power Cables" on page 82.

Connecting the Power Cables

Connect the power cable for each monitor as follows:

1. Connect the female end of the power cable to the power connector on the back of the monitor, as shown in Figure 5-18.
2. Plug the male end into a three–prong grounded electrical outlet.

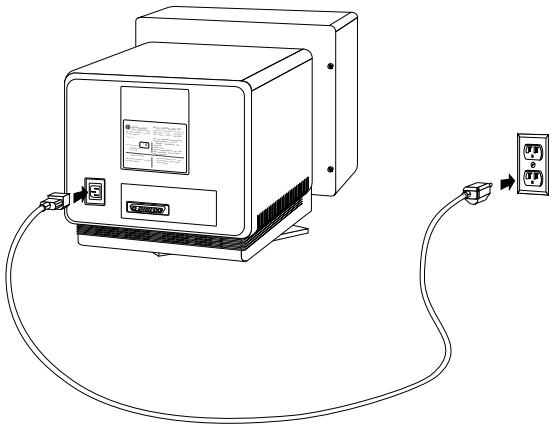

Figure 5-18 Connecting the Secondary Monitor's Power Cable

3. Turn on the primary monitor and the secondary monitor. The power switch is on the front of the monitor in the lower right corner. The LED on the switch lights up.

   Note: Be sure to turn both monitors on *before* turning on your Indigo^2. Indigo^2 IMPACT Ready, or Indigo^2 IMPACT workstation.

You are finished installing the secondary monitor and are ready to install the software.

Chapter 6

Installing the Software and Using the Dual Head System

This chapter explains how to use a dual head configuration.

Installing the Software

If you received a CD with your shipment, read any software release notes on the CD before proceeding.

Note: If you stacked the monitors, be sure to reconfigure the software, as described in "Reconfiguring the Software for Stacked Monitors" on page 86.

Moving the Cursor From One Monitor to the Other

To move the cursor from one monitor to the other, move the cursor off the screen you're on toward the other monitor. The cursor jumps to the other monitor.

The default is for the primary monitor to be located on the left and the secondary monitor on the right. By default, the cursor will move from the primary to the secondary monitor, left to right, and back.

To switch cursor crossover locations, see the following instructions and table.

1. Move your monitors to the chosen position.
2. If your machine is powered off, follow the steps in your system *Indigo*^{2} *IMPACT Owner's Guide* to plug in the system and power it on.
3. In a shell window, log in as super user by typing: **su**
4. Change the directory to access the Xservers file. Enter:
   cd /usr/lib/X11/xdm/Xservers
5. Change the permissions on this file (to be able to write to it) before you begin entering the command: `chmod +rw Xservers`
6. Open a text editor.
7. Add the appropriate command from Table 6-1 to the command line.

   Note: The contents of the file should be on one line. Do not insert carriage returns.

Table 6-1 Changing Cursor Crossover Locations

Primary Head is 0, Secondary Head is 1	
If you want:	**Add this:**
Secondary (1) on the left, Primary (0) on the right	**-hw board=0,left=1 -hw board=1,right=0**
Primary (0) on the left, Secondary (1) on the right (default)	delete any command found in this table from the Xservers file command line
Primary (0) below, Secondary (1) above	**-hw board=0,above=1 -hw board=1,below=0**
Secondary (1) below, Primary (0) above	**-hw board=0,below=1 -hw board=1,above=0**

8. Save, and exit the text editor.

   Caution: Close any open applications before you follow the next step. The following command will close any running applications and any unsaved work will be lost.

9. Restart your server.
   - Stay in super user mode.
   - Type on the command line: `killall Xsgi`
10. After a few seconds the login window appears.
11. Log in to the system.

Selecting the Head on Which a Program Runs

During an interactive session with the Window Manager, you can use the DISPLAY environment variable to control the head on which newly-started graphics programs run. When DISPLAY is set to ":0.0," programs you start will run on head 0; when it is set to ":0.1," programs you start run on head 1.

For convenience, the default start-up files (.login, .profile) for *root* and *guest* shells set DISPLAY to a reasonable initial value, if it is not already set. Each head has a toolchest that can be used to invoke graphics programs. Each toolchest has the DISPLAY variable in its environment set to the correct value for the head on which it appears, so any application you invoke from a toolchest will inherit this DISPLAY value, and thus appear on the same head as the toolchest from which it was invoked.

Similarly, programs started by clicking on an icon appear on the head from which you invoked them.

Once a program has been launched, it is impossible to move it from one head to another from the Window Manager.

Reconfiguring the Software for Stacked Monitors

The dual head software's default is for monitors positioned side-by-side. If your monitors are stacked on top of each other, you need to reconfigure the software.

Follow these steps to reconfigure the software:

1. If your machine is powered off, follow the steps in your system *Owner's Guide* to plug in the system and power it on.
2. Log in to the system.
3. Open a shell window.
4. Place the cursor inside the shell window.
5. Log in as the super user by typing:

   `su`

   Then press <**`Return`**>.
6. Change the directory by typing the following:

   `cd /usr/lib/X11/xdm`

   Then press <**`Return`**>.
7. Change the permissions on this file (to be able to write to it) before you begin entering the command: `chmod +rw Xservers`
8. Use the *vi* editor to edit the *Xservers* file. Once you are in the Xservers file, You see a line that reads:

   ```
   :0 secure /usr/bin/X11/x -bs -c -pseudomap 4sight
   ```
9. Add `-stacked` to the end of the line, so that it now reads:

   ```
   :0 secure /usr/bin/X11/x -bs -c -pseudomap 4sight -stacked
   ```
10. Exit the *Xservers* file.

    Caution: Close any open applications before you follow the next step. The following command will close any running applications and any unsaved work will be lost.

11. Restart *Xsgi*.
    - Stay in super user mode.
    - Type on the command line: **killall Xsgi**
12. After a few seconds the login window appears.
13. Log in to the system.

You are finished reconfiguring the software for stacked monitors.

Swapping Head 0 and Head 1 on an Indigo^2 XL/Extreme System

By default, the Extreme board set is head 0 and the XL board is head 1.You can switch head 0 and head 1 by reconfiguring the kernel. Follow these steps:

1. If your machine is powered off, follow the steps in your system *Owner's Guide* to plug in the system and power it on.
2. Log in to the system.
3. Open a shell window.
4. Place the cursor inside the shell window.
5. Log in as the super user by typing:

   su

   Then press <**Return**>.
6. Change the directory by typing the following:

   cd /var/sysgen/system

   Then press <**Return**>.
7. To make the XL board head 0, you must edit the *gfx.sm* file.

   By default, the file looks like the following:

```
*
* graphics drivers
*
* machine independent
USE: gfx gfxs rrm
```

```
* machine dependent
USE: ng1
USE: gr2
```

To make the `XL board` head 0, use an editor to swap the `ng1` and `gr2` lines, as follows:

```
*
* graphics drivers
*
* machine independent
USE: gfx gfxs rrm
* machine dependent
USE: gr2
USE: ng1
```

8. Reconfigure the kernel by typing:

   `autoconfig`

9. Reboot your system.

Chapter 7

Regulatory Information

Manufacturer's Regulatory Declarations for the Indigo^2 and Indigo^2 IMPACT Graphics Boards

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.

The Indigo^2 XL and Extreme graphics boards and the Indigo^2 IMPACT High and Dual-head upgrade 2-Slot graphics boards conform to several national and international specifications and European Directives listed on the "Manufacturer's Declaration of Conformity." The CE mark insignia displayed on each device is an indication of conformity to the aforementioned European requirements.

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 will need to identify your Declaration of Conformity. See Figure 7-1 (Exterior of Workstation) at the end of this chapter for the location of your system label.

Enter "http://www.sgi.com/Products/compliance/index.html" in your browser location window. Locate and print or save your Declaration of Conformity. Make a note of your CMN number and the date on the Declaration of Conformity here for future reference.

_____

Regulatory Label

If you received a regulatory label with a graphics board upgrade, place the label below the logos and over the lower portion of the regulatory label on the rear of your workstation. See Figure 7-1, for placement of the upgrade regulatory label.

Electromagnetic Emissions

The following information applies to the system base configuration. Refer to the Manufacturer's Declaration of Conformity for your system's specific classification. For details, refer to "Manufacturer's Declaration of Conformity" on page 89 of this chapter.

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 B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur 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 Interferenuce Characteristics of Information Technology Equipment, Germany's BZT Class B limits for Information Technology Equipment, and with Japan's VCCI Class 2 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。

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.)

Shielded Cables

The Indigo^2 workstation is FCC-compliant under test conditions that include the use of shielded cables between Indigo^2 and its peripherals. Your Indigo^2 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.

In Germany, a shielded cable must be used on the Ethernet 10-BASE T port.

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 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 Indigo^2 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.

Exterior of Workstation

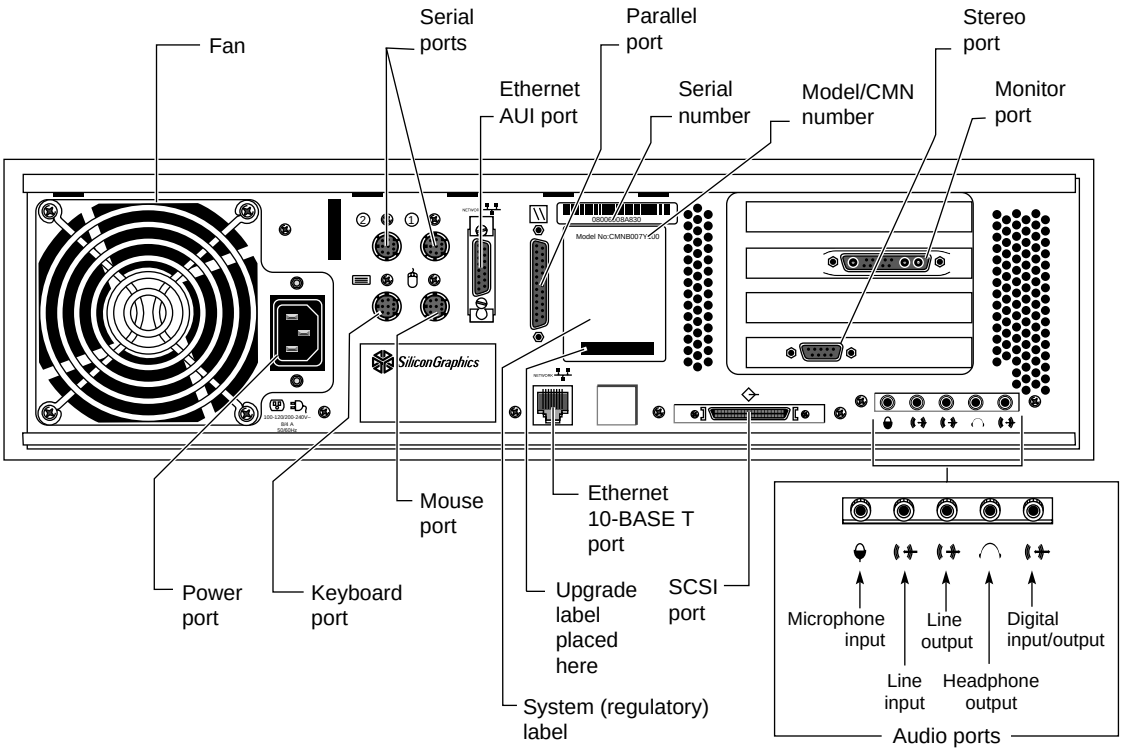

Figure 7-1 Exterior View of Workstation

Appendix A

Choosing a Graphics Head (for Developers)

This chapter provides a brief overview of library routines that developers may need in order to make applications work on a dual-head system. For more information about the routines mentioned, see the appropriate reference pages.

Note that once you open a window on a given head, the user can't move it to the other head via the window manager; if you want users to be able to move windows from one head to another, your program will have to explicitly close the old window and open a new one on the other head.

Using Multiple Graphics Heads Under OpenGL, X, or Mixed-Model GL

X, mixed-model IRIS GL™, and OpenGL™ all use X calls to choose on which screen to display: just pass the name of the desired display as the argument to **XOpenDisplay**(3X11). (Pass NULL as the display name if you want to default to the value of the DISPLAY environment variable.) You can then call **RootWindow**(3X11) with the newly-opened display, specifying whichever screen you want; then call **XCreateWindow**(3X11) to create a window on the specified screen. After that, use the usual OpenGL or X calls, as appropriate, to draw or display in the window.

Here's the syntax for **XOpenDisplay()**:

```
Display *XOpenDisplay(display_name)
    char *display_name;
```

For example, to open a window on each head of a dual-head system:

```
#include <X11/Xlib.h>
#include <X11/Xutil.h>
#include <stdio.h>

void main(argc, argv)
int argc;
char **argv;
{

Display *display;
Window root0, root1, win0, win1;

    /* Open the display specified in the DISPLAY variable. */
    if ( (display = XOpenDisplay("")) == NULL )
        fprintf(stderr, "%s: cannot connect to X server.\n",
                argv[0]);

    /* Set up a root window for each screen. */
    root0 = RootWindow(display, 0);
    root1 = RootWindow(display, 1);

    /* Now create a window on each screen. */
    win0 = XCreateSimpleWindow(display, root0, 0, 0, 100,
                               100, 0, 0, 0);
    win1 = XCreateSimpleWindow(display, root1, 0, 0, 100,
                               100, 0, 0, 0);

    /* Display the windows and flush the output buffer. */
    XMapWindow(display, win0);
    XMapWindow(display, win1);
    XFlush(display);

    /* Leave them up for ten seconds before exiting. */
    sleep(10);
}
```

Note that if you are using the heterogeneous (Extreme/XL) dual-head configuration, the Extreme head is always screen zero, while the XL head is always screen one. It may be worth being careful about which head you choose, if you don't decide to default to the value of DISPLAY; for instance, 3D graphics will run faster when displayed on the Extreme head.

If you are using the heterogeneous (High/2-Slot) dual-head configuration, the texture head is always screen zero, while the non-texture head is always screen one.

Using Multiple Heads Under IRIS GL

Under IRIS GL, select a head on which to run a window by using the **scrnselect**(3G) function. If you don't call **scrnselect()** before opening a window with **winopen**(3G), the window will open on whichever screen the user has specified in the DISPLAY environment variable.

This is the syntax for **scrnselect()**:

```
long scrnselect(gsnr)
    long gsnr;
```

where *gsnr* is the screen number relative to the current server—that is, zero for screen :0.0, or one for :0.1.

If you're using IRIS GL with the heterogeneous dual-head configuration (one XL head and one Extreme head), you can't display on more than one head from a given instantiation of your program. Further, if your program was compiled under a pre-5.0 version of IRIX, you can't display at all on anything other than screen 0.

On a homogeneous (XL/XL) dual-head system, however, even pre-5.0 GL binaries can display to both screens.

Screen Adjacency

If you include system configuration files such as */usr/lib/X11/xdm/Xservers* with your application, you may want to configure the layout of the heads, specifying which is on the left and which on the right. For information on how to specify adjacency, see the Xsgi reference page, under the *–hw* option.

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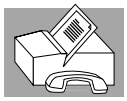

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