Cosmo Compress™ for Indigo²™ Installation Guide

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Cosmo Compress™ for Indigo2™ Installation Guide
Document Number 007-9226-001

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About This Guide

This manual contains six chapters:

Chapter 1, "Introduction to Cosmo Compress," describes the Cosmo Compress capabilities and contains configuration tables that list the Cosmo configurations supported on an Indigo^2 workstation.

Chapter 2, "Removing the Graphics Boards,"describes how to turn off the system, remove the cover, and remove the graphics board(s).

Chapter 3, "Connecting the Graphics and Video Boards," describes how to put the XL and XZ graphics boards together with either Galileo or Indigo^2 Video™ to make a graphics/video board set.

Chapter 4, "Installing Cosmo," describes how to install the Cosmo board.

Chapter 5, "Replacing the Graphics and Video Boards," describes how to replace the graphics board and how to install the graphics/video boardset. You'll choose one set of directions in this chapter depending on your configuration.

Chapter 6, "Connecting the Cables and Turning on the System," describes how to connect the cables and turn on the system. It also tells you where to look for information on how to hook up any other option you may have purchased.

Conventions

This manual uses these conventions:

- References to documents are in *italics*.

- References to other chapters and sections within this guide are in quotation marks.

- Names of onscreen buttons are in *italics*.

- Commands that users are asked to type in a UNIX shell are shown in **Courier** font.

- Names of menu choices are in quotation marks.

- Steps to perform tasks are in numbered sentences. When a numbered step needs more explanation, the explanation follows the step and is preceded by a square bullet. For example:

    1. Drag the box around the screen to encompass the area of the screen you want to send.

        - To drag the box, place the cursor on one of the sides of the box and press and hold down the left mouse button. The box turns red.

        - Holding down the mouse button, move the cursor to move the box.

        - Release the cursor to place the window.

Checking Option Components

The figure below contains all the parts included with Cosmo Compress for Indigo^2.
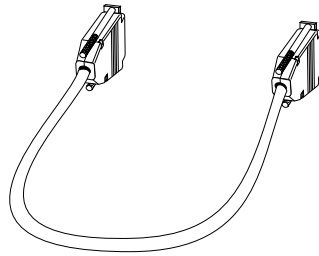
Cable
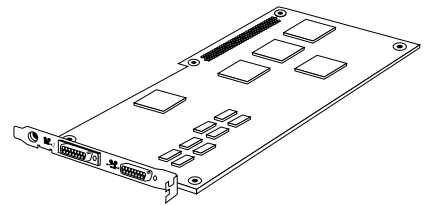
Cosmo board
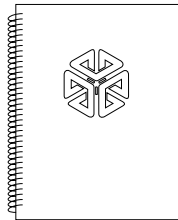
Installation Guide
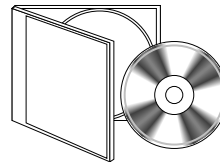
Cosmo CD with software

Wrenches

Screws
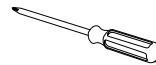
Screwdriver

Wrist strap

Introduction to Cosmo Compress

Congratulations. You have purchased the Cosmo Compress option for the Indigo^2 line of workstations. Cosmo Compress lets you compress video and still image data to as little as 1/100th of its original size. This chapter tells you about the Cosmo capabilities and configurations. It contains these sections:

- "Cosmo Configurations"
- "Installing the Cosmo Software"
- "Programming the Cosmo Board"
- "Using the Media Tools Software"
- "Using Online Help and Documentation"

Cosmo Configurations

The Indigo^2 contains four expansion slots. The graphics boards are always located in the bottom slots when your workstation arrives from the factory. To install Cosmo, you'll have to remove the graphics boards, install the Cosmo board, and then replace the graphics boards. Follow the suggested configurations in Table 1-1 and Table 1-2 for the kind of configuration you are installing. Cosmo works only on R4000, R4400, or R4600-based Indigo^2 workstations.

Video/Graphics Configurations

Cosmo works in conjunction with a graphics board (XL or XZ) and a video (Indigo^2 or Galileo Video) combination. Because of slot constraints, you

cannot use Extreme graphics with a video board and Cosmo. Cosmo and graphics/video configurations are shown in Table 1-1.

Table 1-1   Cosmo configurations with a graphics/video combination

	configuration 1	configuration 2
slot 1(top)	Galileo/Indigo^2	Galileo/Indigo^2
slot 2	XL	XZ
slot 3	empty	XZ
slot 4 (bottom)	Cosmo	Cosmo

Graphics Configurations

Cosmo Compress also works with any of the graphics configurations XL, XZ, or Extreme without a video board. The graphics configurations are shown in Table 1-2.

Note: When you use one of these configurations, only memory to memory compression and decompression is supported at a maximum image resolution of 768 x 576. For information on how to build this capability into your application, see the *IRIS Media Libraries Programming Guide.* See "Programming the Cosmo Board" on page 3.

Table 1-2   Cosmo graphics only configurations

	XL configuration	XZ configuration	Extreme Configuration
slot 1 (top)	empty	XZ	Extreme
slot 2	XL	XZ	Extreme
slot 3	empty	empty	Extreme
slot 4 (bottom)	Cosmo	Cosmo	Cosmo

Installing the Cosmo Software

The Cosmo option requires that your system be running IRIX software release 4D1-5.2 or later.

If you purchased Galileo Video or Indigo[2] Video, install the video driver software (3.0.3 or later) from the CD included with the video option. See the *Galileo Video, Indigo[2] Video, and Indy Video Owner's Guide* for information about those products.

Install the software from the Cosmo CD included with the Cosmo option. See the release notes that came with the software for additional information.

Programming the Cosmo Board

You can program the Cosmo Compress board to compress incoming real-time digital video signals before saving them to disk and to decompress a saved bitstream for real-time video output.

The Cosmo board quickly transforms uncompressed digital video images in the system disk or memory into compressed JPEG image data. It also quickly decompresses these JPEG image files into uncompressed digital video data to be returned to the system memory and disk.

For information on how to build Cosmo Compress capabilities into your software applications, see the *IRIS Media Libraries Programming Guide*. The Programming Guide ships online in IRIS InSight with the IRIS Developer's Option in IRIX software release 4D1-5.3. See "Using Online Help and Documentation" on page 4.

Using the Media Tools Software

Two of the media tools available from Silicon Graphics, Inc. use the Cosmo capabilities to make and play video in a window on your screen:

dmrecord   Records audio and video to a file.

dmplay   Allows you to play what you've recorded.

Note: MoviePlayer uses software to decompress data. It does not send data through the Cosmo board. As a result, movies played back with MoviePlayer are not shown in real time. MovieMaker uses Cosmo to decompress the small thumbnail views but uses software to compress images.

See the manual pages for more information on *dmplay* and *dmrecord*.

Using Online Help and Documentation

The Help toolchest in the upper left-hand corner of your screen contains a collection of online books that describe how to use the software that ships with the system. This is where you'll find information about using the multimedia tools such as Video Panel, Audio Panel, MovieMaker, and Capture.

The "On-line Books" command in the Help toolchest opens the IRIS InSight Document Library. Once the library is open, you can type in a word or phrase and quickly find and open the books that contain the information you need. Once Cosmo is installed, use the Video Panel and Audio Panel to set up and adjust your workstation for video and audio input. These panels are documented in the *Media Control Panels User's Guide*. The media tools, such as MovieMaker and MoviePlayer, are documented in the *Media Tools User's Guide*.

You'll also find helpful information about each tool in the Help menu that appears in the Menu Bar of each tool.

Removing the Graphics Boards

The Indigo^2 workstation ships from the factory with graphics (XL, XZ, or Extreme) installed in the bottom slot. To install Cosmo you must first remove the graphics board(s).

This chapter includes these sections:

- "Shutting Down the System"
- "Removing the Cover"
- "Removing the Graphics Boards"

Shutting Down the System

Note: Before you shut down the system, install the Cosmo software according to the directions included with the Cosmo CD. See the information on installing software in "Installing the Cosmo Software" on page 3.

To use the power switch to shut down the software and power off the system, follow these steps:

1. Open the front cover of the chassis, as shown in Figure 2-1.

   ■ Face the front of the Indigo² chassis.

   ■ Snap the cover away from the top edge of the chassis and tip it down, as shown in Figure 2-1.
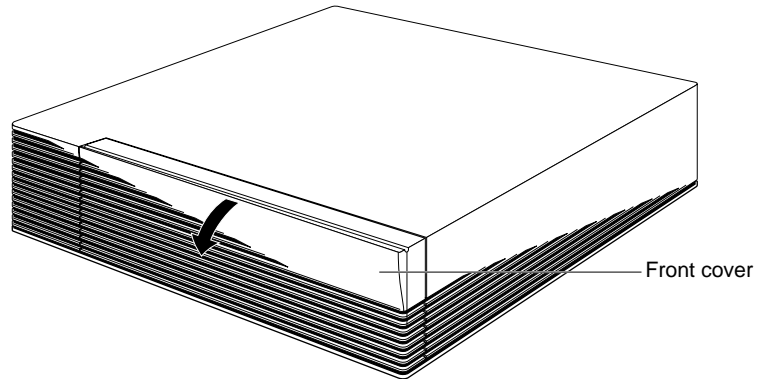
Front cover

Figure 2-1   Opening front cover of the Indigo² chassis

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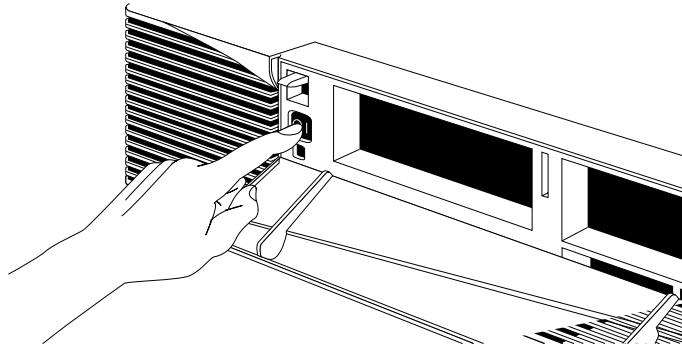
Figure 2-2   Pressing and releasing the power switch

3. The notifier shown in Figure 2-3 will appear on your screen within a few seconds. Then the system will power off automatically within the next minute.
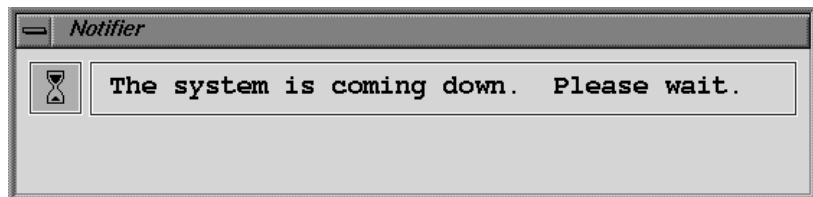
Figure 2-3   System power off notifier

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

5. Disconnect the power and graphics monitor cables and any other cables that may be attached to the back of the Indigo² workstation.

Removing the Cover

Once the system is shut down and the cables are disconnected, follow these steps:

1. Remove the front bezel.

   ■ Press down on the tabs on each side of the bezel, as shown in Figure 2-4.

   ■ Pull the bezel away from the chassis.
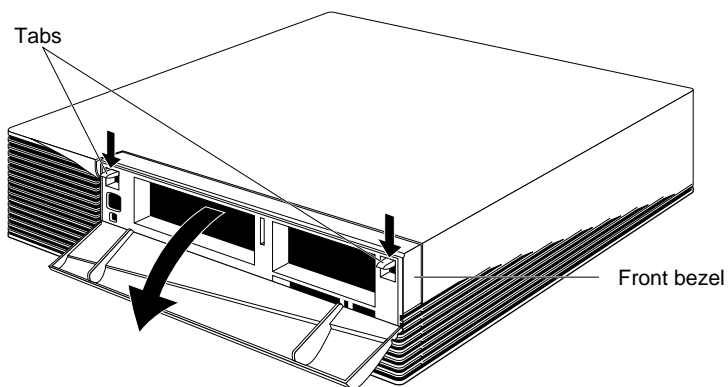
Figure 2-4   Removing the front bezel from the Indigo² chassis

2.   Remove the top cover.

   ■   Press up on the tabs on each side of the drive openings, as shown in
        Figure 2-5.

   ■   Pull up on the cover and rotate it back and away from the chassis.

Tabs
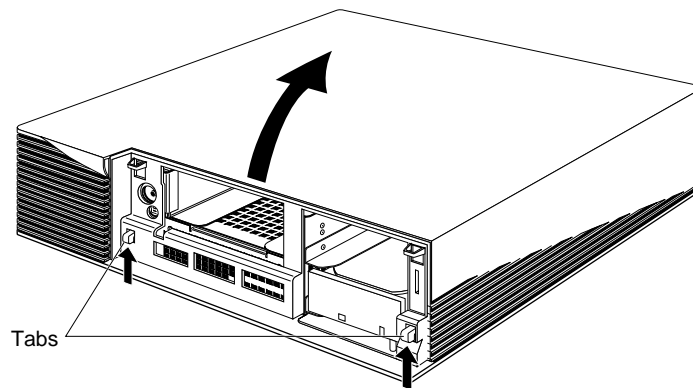
Figure 2-5   Removing the top cover from the Indigo^2 chassis

Removing the Graphics Boards

Caution: The components inside the Indigo^2 workstation are extremely
sensitive to static electricity. Handle all boards carefully, and wear the wrist
strap while replacing parts inside the system. Put the wrist strap over your
wrist, making sure it is tight against your arm. Attach the alligator clip to a
metal part of the workstation.

If you are removing XL graphics, see "Removing XL Graphics" on page 10.

If you are removing XZ or Extreme graphics, see "Removing XZ or Extreme
Graphics" on page 14.

Removing XL Graphics

To remove the XL graphics board, follow these steps:

1. Make sure the wrist strap is attached to a metal part of the system.

2. Move the system or position yourself so that you are facing the expansion slots, as shown in Figure 2-6.

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

Figure 2-6   Lowering the metal panel in front of the expansion slots

4. Remove the screw attaching the board to the system slot as shown in Figure 2-7.

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

    ■ Loosen the screw first with the Phillips screwdriver.

    ■ Unscrew it with your fingers and remove it.

    Note: The screw is very short. If you drop a screw into the chassis, remove it to prevent the possibility of shorting the system.

Figure 2-7   Removing screw from XL graphics metal extension

5. Remove the board from the chassis, using the two open-ended wrenches provided with the upgrade package. Note that if your XL board has handles attached, use them to extract the board instead of the wrenches.

   ■ Grasp the wrenches as shown in Figure 2-8. The orientation of the wrenches is important.
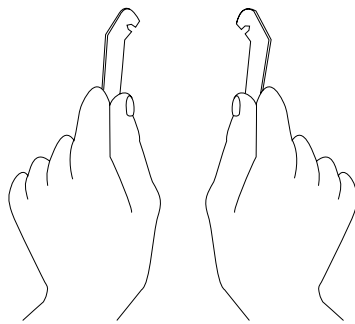
Figure 2-8   Orientation of the wrenches

- Hook the ends of the wrenches in the small holes on each side of the board, as shown in Figure 2-9.

- Brace your index fingers against the chassis and pry the tool outward. The board comes out.
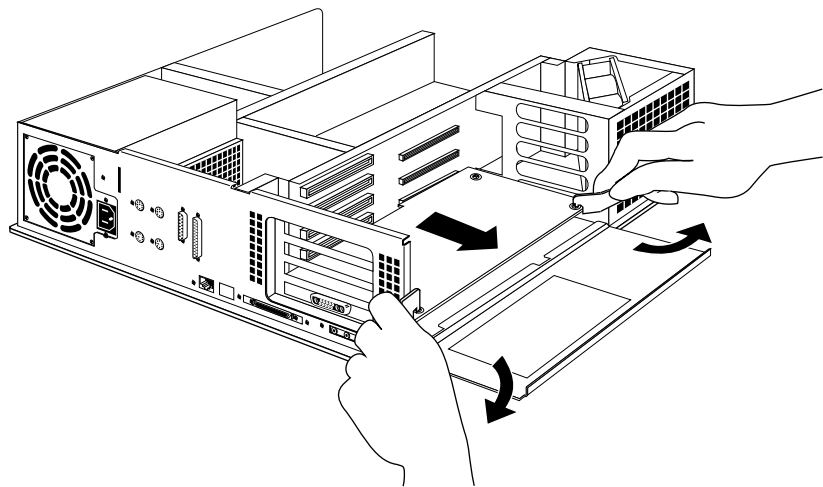
Figure 2-9   Removing XL graphics

- 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.

6. Remove the I/O back plate over slot 2. This is the slot where you'll replace the XL board. If you have a video board, remove the back plates over slots 1 and 2. See Table 2-1.

Table 2-1   XL configurations

SLOTS	XL Configuration	XL and Video
slot 1 (top)	empty	Galileo or Indigo[2] Video
slot 2	XL	XL
slot 3	empty	empty
slot 4 (bottom)	Cosmo	Cosmo

7. You are finished removing XL graphics.

If you purchased a video option, see Chapter 3, "Connecting the Graphics and Video Boards." If you did not purchase a video option, go on to Chapter 4, "Installing Cosmo."

Removing XZ or Extreme Graphics

To remove the XZ or Extreme graphics boards, follow these steps:

1. Attach the wrist strap to a metal part of the system.

2. Position yourself so that you are facing the expansion slots.

3. Open the metal panel in front of the expansion slots by pulling up on the panel and lowering it as shown in Figure 2-6.
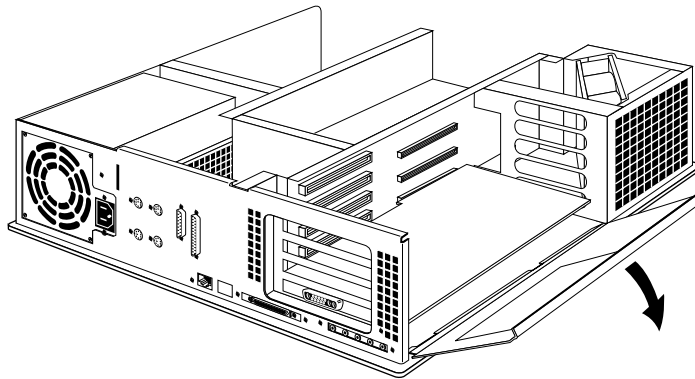
4. Remove the screws that connect the board to the system slots as shown in Figure 2-10.

   Locate the screws on the metal extension on the left side of each board.

   ■ Loosen the screw first with the Phillips screwdriver.

   ■ Unscrew it with your fingers and remove it.

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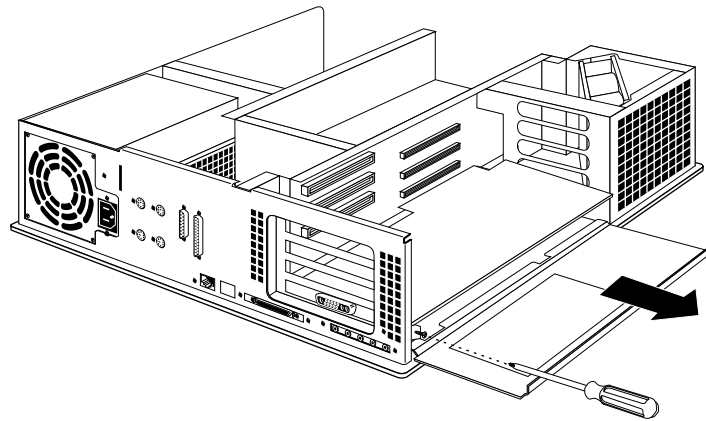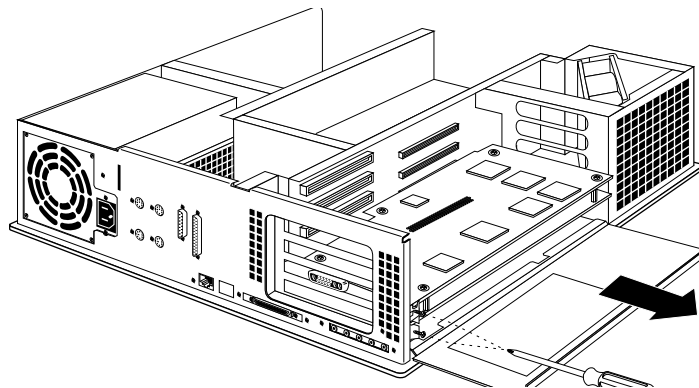

Figure 2-10 Removing screws from XZ graphics metal extension

5. Pull the board set out of the system, as shown in Figure 2-11.

    ■   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.

   ■   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.
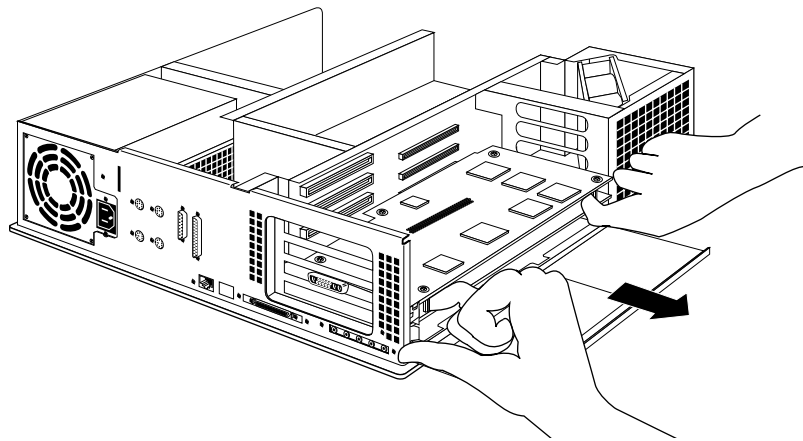
Figure 2-11   Removing XZ graphics

6. Remove the I/O back plates over the slots where you'll replace XZ or Extreme graphics or install the video/graphics board set. See Table 2-2.

Table 2-2   XZ, Extreme, and XZ video configurations

	XZ	XZ and Video	Extreme
slot 1 (top)	XZ	Galileo or Indigo^2 Video	Extreme
slot 2	XZ	XZ	Extreme
slot 3	empty	XZ	Extreme
slot 4 (bottom)	Cosmo	Cosmo	Cosmo

You are finished removing XZ graphics.

If you purchased a video option, go on to Chapter 3, "Connecting the Graphics and Video Boards." If you did not purchase a video option, go on to Chapter 4, "Installing Cosmo."

Connecting the Graphics and Video Boards

If you received a video option at the same time you received Cosmo, remove the graphics board(s) as described in Chapter 2, "Removing the Graphics Boards," and then connect the graphics and video boards as described in this chapter. Go on to Chapter 4, "Installing Cosmo" when you finish. If you are installing graphics without video, skip this chapter and go on to Chapter 4, "Installing Cosmo."

Standoffs and screws are included in the Galileo Video or Indigo[2] Video package to act as spacers between the option board and the topmost graphics board of the set. Installation varies, depending on which graphics board set (XL or XZ) is in the workstation. Both sets of directions are included here.

Connecting XL Graphics to a Video Board

To connect the XL graphics board to a video option, follow these steps:

1. Locate the hole in each of the four corners of the XL graphics board. Figure 3-1 shows where the holes are located.

2. Insert a screw up through the bottom of the board in one of the four holes as shown in Figure 3-1.
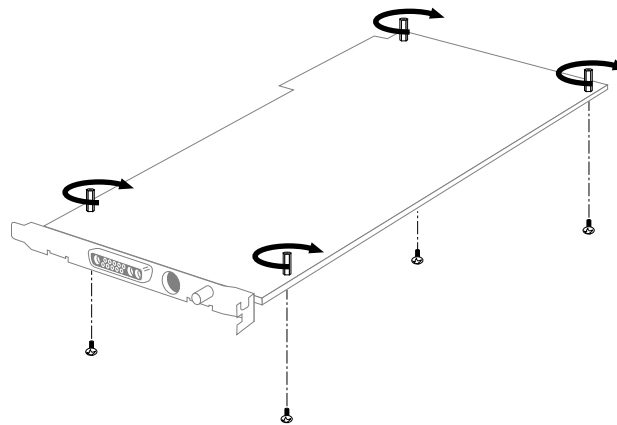
Figure 3-1   Inserting standoffs on XL

3. Place a female-to-female standoff on the screw and tighten.

4. Repeat steps 1 and 2 for the remaining three corners.

5. Align the video board over the graphics board, as shown in Figure 3-2.

Figure 3-2   Aligning the video board over XL graphics

6. Using the nonstatic pad provided, firmly push the connector in the middle of the video board onto the connector on the top of the graphics board.

7. To make sure the connector is seated properly, look through the sides of the board set. No gap should be visible at the bottom of the connector.

   When you are satisfied that the connector is properly seated, you are ready to insert the screws for the standoffs.

8. From the top, insert a screw through the video board into each of the four standoffs as shown in Figure 3-2.

9. Tighten the screws.

Go on to the next chapter to install the Cosmo board.

Connecting XZ Graphics to a Video Board

Note: For this procedure, you'll need a small crescent wrench.   ♦

To install standoffs and the video board on XZ graphics, follow these steps:

1. Use a small crescent wrench to remove the two hex nuts from the corners of the XZ graphics boards. See Figure 3-3.

2. Where hex nuts were removed from the corners of the topmost graphics board, fasten two female-to-female standoffs. See Figure 3-4.

3. Remove the two phillips screws from standoffs in the opposite corners of the board. See Figure 3-3.

4. Where screws were removed from the corners of the topmost graphics board, insert two male-to-female standoffs. See Figure 3-4.
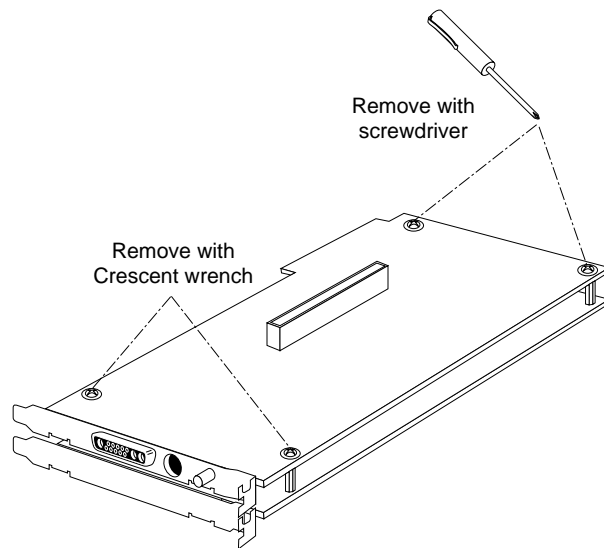
Figure 3-3   Removing screws and hex nuts from XZ graphics
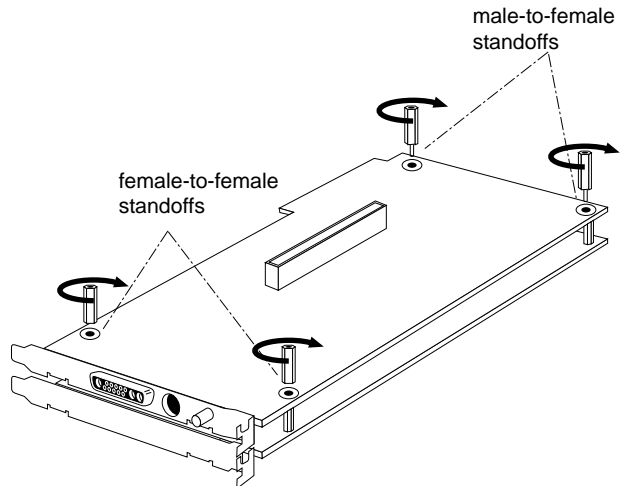
Figure 3-4   Inserting standoffs on XZ graphics

5. Align the Galileo Video or Indigo^2 Video board over the graphics board set, as shown in Figure 3-5.

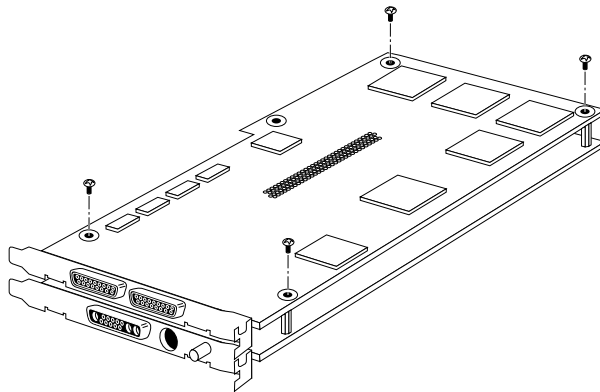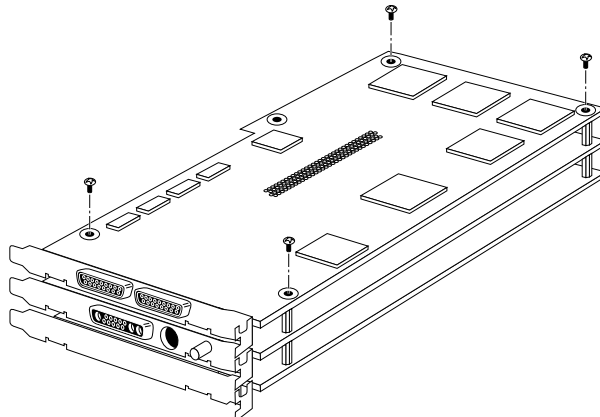**Figure 3-5**   Aligning the video board over the XZ graphics board

6. Using the nonstatic pad provided, firmly push the connector in the middle of the Galileo Video or Indigo^2 Video board into the connector on the top of the graphics board set.

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7. To make sure the connector is seated properly, look through the sides of the board set. No gap should be visible at the bottom of the connector.

    When you are satisfied that the connector is properly seated, you are ready to insert the screws for the standoffs.

8. From the top, insert a screw through the Galileo Video or Indigo^2 Video board into each of the four standoffs; tighten the screws.

Go on to the next chapter to install the Cosmo board.

Installing Cosmo

Follow these steps to install the Cosmo board:

1. Align the metal I/O back plates on the Cosmo board with the slot on the chassis. Align the opposite side of the board with the metal grooves as shown in Figure 4-1.

   - Make sure the EMI fingers are between the Indigo^2 chassis and the Cosmo board I/O back plate.

2. Push the Cosmo board into the bottom slot until the connector on the back of the board is securely connected to the GIObus connector on the backplane.
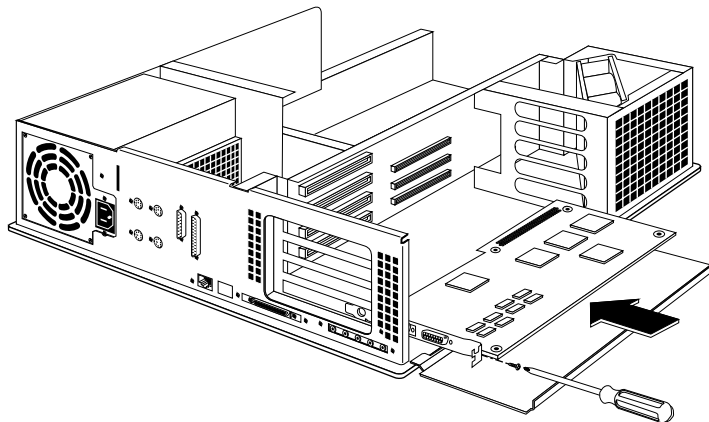
Figure 4-1   Inserting Cosmo into chassis

3. Insert a screw into the back plate to attach the board to the chassis, as shown in Figure 4-1.

Replacing the Graphics and Video Boards

Install the board set in the appropriate slot. Refer to the configuration tables below. The rule of thumb is to have the top slot filled, except in the XL graphics configuration.

Table 5-1   Cosmo and graphics/video configurations

Slot	Cosmo, XL, and video	Cosmo, XZ, and video
slot 1(top)	Galileo/Indigo^2	Galileo/Indigo^2
slot 2	XL	XZ
slot 3	empty	XZ
slot 4 (bottom)	Cosmo	Cosmo

Table 5-2   Cosmo and graphics configurations

	Cosmo and XL	Cosmo and XZ	Cosmo and Extreme
slot 1 (top)	empty	XZ	Extreme
slot 2	XL	XZ	Extreme
slot 3	empty	empty	Extreme
slot 4 (bottom)	Cosmo	Cosmo	Cosmo

For more information on these configurations, see "Cosmo Configurations" on page 1.

Follow these steps to replace the graphics/video board set:

1. Align the metal back plates with the I/O slots on the chassis. Align the opposite edge of the board(s) with the metal grooves as shown in Figure 5-1.

.
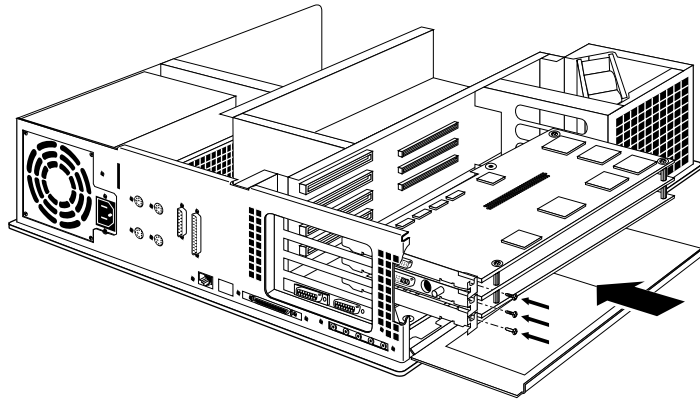
Figure 5-1   Installing XZ graphics/video boards

2. Push the board(s) into the chassis until the connectors on the back of the graphics board(s) are securely joined with the connector on the backplane.

3. Insert and tighten the screws that hold the board set to the chassis. The screw openings are located on the metal extension, as shown in Figure 5-1.

Go on to the next section to replace the cover.

Replacing the Cover

To replace the top cover, follow these steps:

1. Tip the metal panel in front of the slots up until it snaps into place, as shown in Figure 5-2.
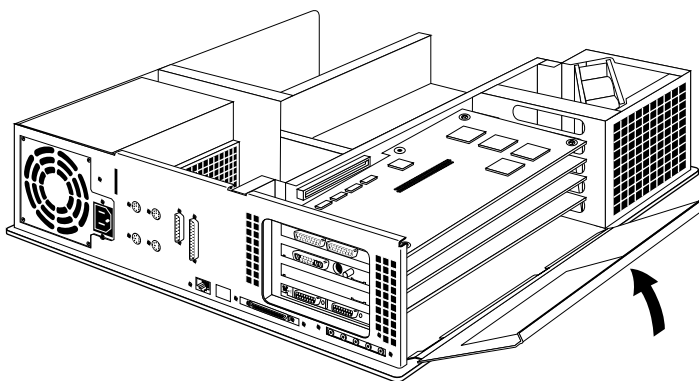
Figure 5-2   Closing the metal panel

2. Place the back of the chassis cover into the grooves in the back of the chassis, as shown in Figure 5-3. Rotate it down into place.
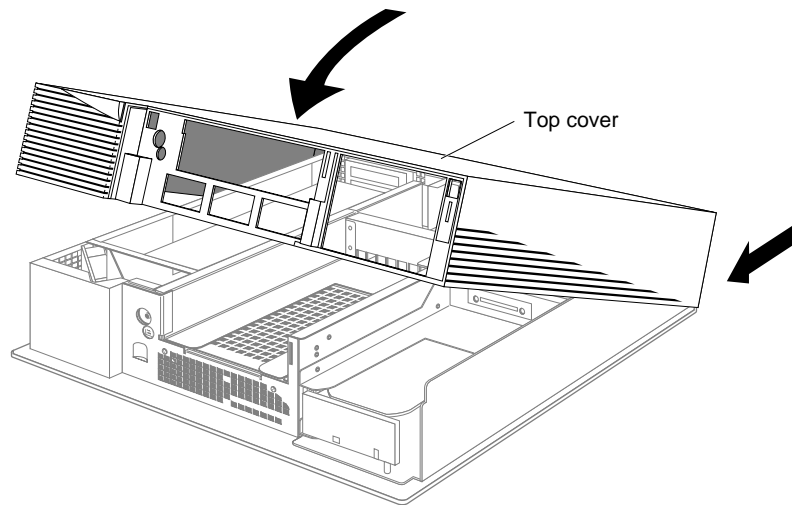
Top cover

Figure 5-3   Replacing the top cover of the Indigo^2 chassis

3. Replace the front bezel and place the tabs on the bottom of the bezel in the grooves in the front of the chassis, as shown in Figure 5-4.

    ■ Tilt the bezel up until it snaps into place.
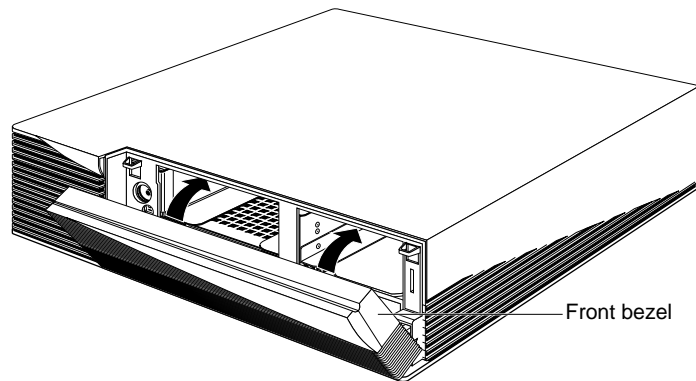
Figure 5-4   Replacing the front bezel on the Indigo^2 chassis

Go on to the next chapter for information on how to connect the cables, test the installation, and hook up the Galileo 601 Option or the Indy Cam™ camera.

Connecting the Cables and Turning on the System

This chapter contains these sections:

- "Connecting the Cables"
- "Connecting Video Options"
- "Checking the Installation"
- "Troubleshooting"

Figure 6-1 shows the ports on the Cosmo board. Notice the icons that identify each port.
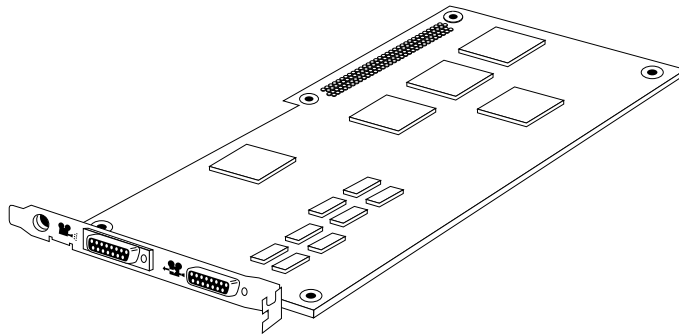
Figure 6-1   Cosmo board ports

The icon that marks the left-most port identifies the video in port. This is where you connect the Indy Cam camera or the Galileo 601 Option if you have a video board. See "Connecting Video Options" on page 34.

The icon that marks the second or right-hand port identifies the video in/out port. This is where you connect the Cosmo board to the video board if you have one. See "Cosmo With Video" on page 33.

Connecting the Cables

If you don't have a video option, see "Cosmo Without Video" on this page. If you have a video option installed, see "Cosmo With Video" on page 33.

Cosmo Without Video

If you are using Cosmo without a video board,

1. Connect the graphics monitor cable to the graphics board as shown in Figure 6-2.

2. Connect the power cord to the workstation and to an AC outlet.

To graphics
monitor
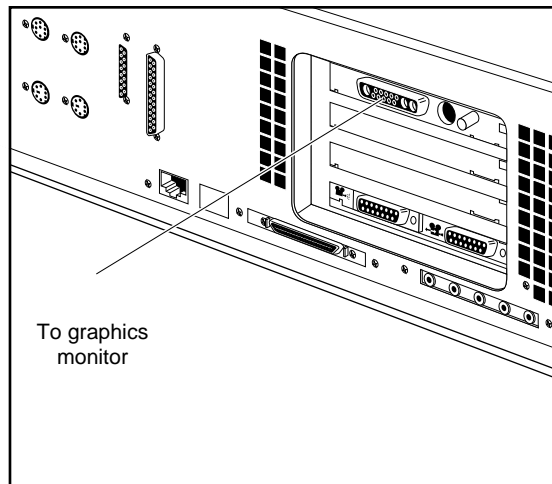
Figure 6-2   Cabling Cosmo to XZ graphics (no video)

Go on to "Checking the Installation" on page 35.

Cosmo With Video

If you are using Cosmo with a video board, follow the steps below to connect the cables. Figure 6-3 shows you where to connect each cable.

1. Use the Cosmo cable to connect the port marked with the video in/out icon on the Cosmo board to the digital port on the video board.

2. Connect the graphics monitor cable to the graphics board.

3. Attach the video cable to the video board.

For Galileo Video

> Connect one end of the analog cable to the analog connector on the Galileo Video breakout box. Connect the other end to the analog connector on the Galileo Video board.

For Indigo^2 Video

> Connect the Indigo^2 Video cable to the analog connector on the Indigo^2 Video board.
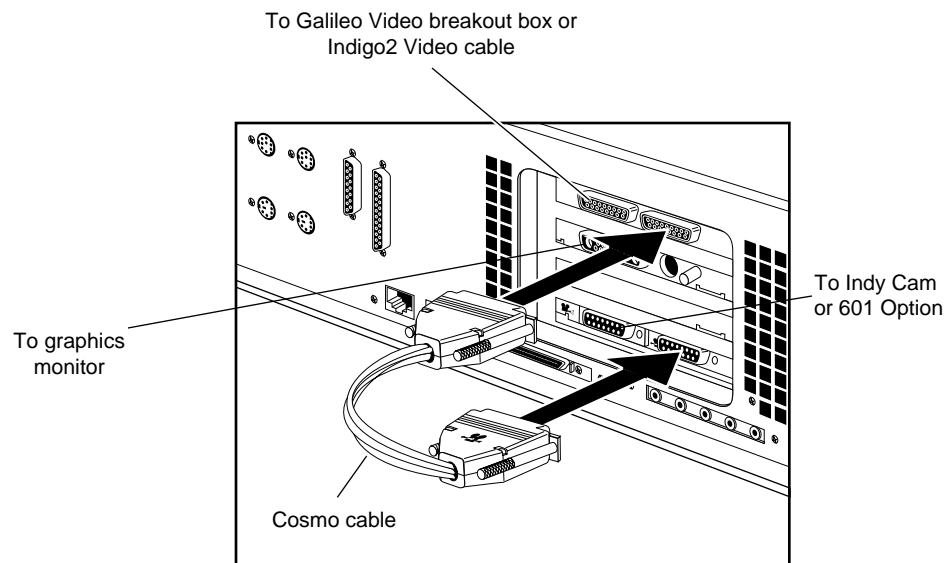
Figure 6-3   Cabling Cosmo with XZ graphics and Galileo installed

4. Attach your video equipment to the breakout box or the Indigo^2 cable as appropriate.

5. Connect the power cord to the workstation and to an AC outlet.

See the *Galileo Video, Indigo2 Video, and Indy Video Owner's Guide* for more information on connecting video equipment.

Connecting Video Options

If you have a video board installed you can connect either the Galileo 601 Option or the Indy Cam to the Cosmo board.

Galileo 601 Option

Plug the Galileo 601 Option system cable into the first digital port on the Cosmo board. The other end of the cable should be connected to the connector labelled **SYSTEM** on the digital breakout box. See the *Galileo 601 Installation Guide* for information on how to set up and use the 601 Option.

Indy Cam

Connect the camera cable to the first digital port on the Cosmo board. See the *Indy Cam Installation Guide for Indigo^2 Workstations* for more information on how to set up, adjust, and use the camera.

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Checking the Installation

Follow these steps to check if the system recognizes the new board:

1. Press and release the power button to turn on the power.

   ■ After the power-on diagnostics run, the system boots up and brings you to the login screen.

2. Log in to your account.

3. At the prompt type:

   cosmohinv

   and press Enter. You see this line:

   ```
   Cosmo Compress is installed.
   ```

If this line doesn't show up, check the cable connections and try typing it again. If it still doesn't appear, see "Troubleshooting" on page 35.

Note: The *hinv* command does not show the Cosmo option.

You are finished installed the Cosmo board. Use some of the media tools described in "Using the Media Tools Software" on page 4 to display and save video.

Troubleshooting

A successful installation depends on three basic steps:

1. Install the Cosmo software before you install the hardware.

2. Make sure the video, graphics, and Cosmo boards are seated firmly in the Indigo^2 chassis.

3. Connect the cables according to the directions in "Connecting the Cables" on page 32.

If you encounter problems after you install Cosmo, consult the following troubleshooting list to pinpoint the reason for the error and the solution to the problem.

Error: The workstation has a kernel panic the first time you start it after the Cosmo board is installed.

Reason: The Cosmo software is not installed.

Solution: Remove the Cosmo board, install the Cosmo software, and replace the Cosmo board.

Error: No compression/decompression using the video board.

Reason: The Cosmo cable is not connected correctly.

Solution: Disconnect the Cosmo cable and try connecting it again according to the directions in "Connecting the Cables" on page 32.

Error: No image appears in the video input window using the Video Input tool or the Capture tool.

Reason: The Indy Cam cable is connected to the wrong Cosmo port.

Solution: Connect the Indy Cam cable to the other port.

Manufacturer's Regulatory Declarations

The following sections provide regulatory information for the IRIS Indigo[2] workstation.

Electromagnetic Emissions

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 equipment does not exceed the Class A limits of Canada's Department of Communications Radio Interference Regulations for radio noise emissions.

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, Germany's BZT Class A limits for Information Technology Equipment, and with Japan's VCCI Class 1 limits.

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Caution: Do not modify this product in any way that is not expressly approved by Silicon Graphics. If you do, you may lose your FCC or other government agency authority to operate this device.

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 system farther away from the radio or television.

• Plug the system 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.)

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