

Indigo² IMPACT Video™
Owner's Guide

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About This Guide

This owner's guide describes how to install the Indigo² IMPACT Video™ board and the color space conversion/texture mapping option board into an Indigo² IMPACT workstation. The guide is organized as follows:

- Chapter 1 provides an overview of the features of the Indigo² IMPACT Video board.
- Chapter 2 provides instructions for installing the Indigo² IMPACT Video board.
- Chapter 3 provides instructions for installing the color space conversion/texture mapping board.
- Chapter 4 explains how to connect an analog-to-digital and digital-to-analog converter to the Indigo² IMPACT Video board breakout cable for single-link and dual-link connections. It also describes the options on the Video Control Panel.
- Appendix A provides information on framelocking.
- Appendix B provides regulatory information.
- Appendix C provides illustrations of graphics and option board combinations.
- The Glossary defines terms used in this guide.

Introduction

The 10-bit all-digital Indigo² IMPACT Video I/O option board provides multiple channels of input and output, industry-standard formats, and real-time video processing.

You can send and receive live component digital video from any serial CCIR-601/SMPTE-259M-compliant device. The Indigo² IMPACT Video board is compatible with NTSC (525 line) and PAL (625 line) television standards and supports the following formats:

- 2 channels YUV 4:2:2 (8- or 10-bit)
- 1 channel YUVA 4:2:2:4 (8- or 10-bit)
- 1 channel YUVA 4:4:4:4 (8- or 10-bit)
- 2 channels 8-bit arbitrary data

Other connections provide genlock input, genlock loopthrough, and GPI trigger signals.

The Indigo² IMPACT Video board supports an optional color space conversion/video texture mapping daughter board. This daughter board provides Indigo² IMPACT Video the ability to

- translate between YUVA and RGBA in real-time
- create alpha channels from superblack YUV
- use a video signal as a texture map on any 3D object (texture mapping)

Installing the Indigo² IMPACT Video Board

This chapter lists the components included in the Indigo² IMPACT Video package and describes how to install the board in your Indigo² IMPACT workstation.

Note: If you have also purchased the color space conversion/texture mapping daughter board, you first have to attach the daughter board to the Indigo² IMPACT Video board. Follow the instructions in this chapter on preparing to install the board and then refer to Chapter 3 for information about attaching the daughter board. Refer to Appendix C for a graphical representation of the stacked boards.

Installing an Indigo² IMPACT Video board consists of:

1. Preparing to install the video board.
2. Attaching the video board to the graphics board set.
3. Connecting the cables.
4. Checking the installation.

Indigo² IMPACT Video Package Components

Figure 2-1 shows the components included in the Indigo² IMPACT Video board package.

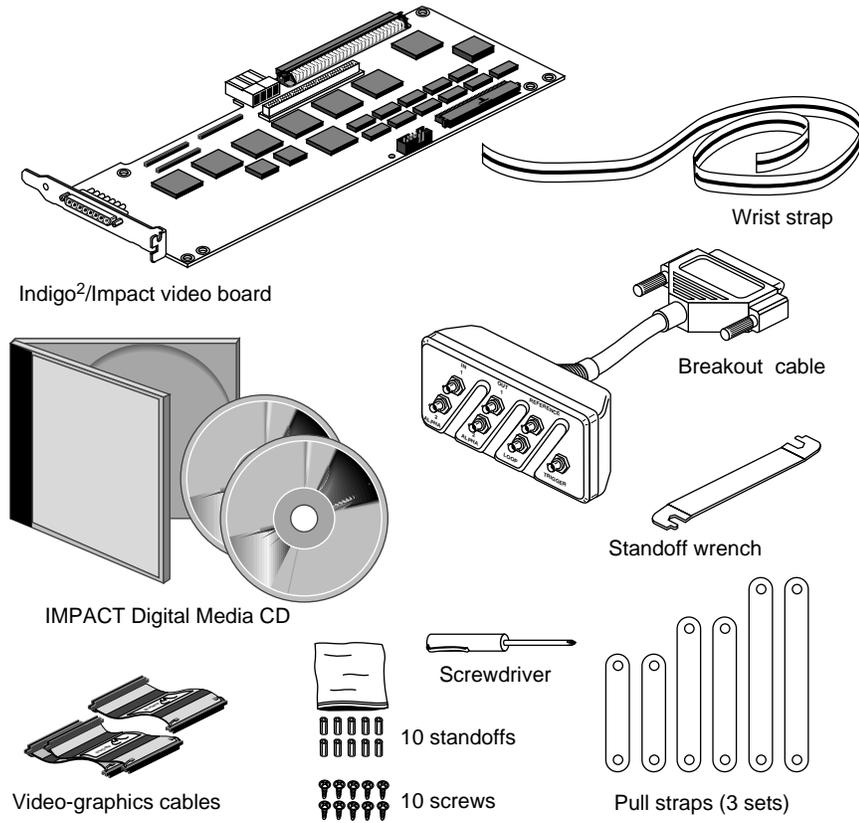


Figure 2-1 Indigo² IMPACT Video Board Package Components

Preparing to Install the Indigo² IMPACT Video Board

Before you can install the Indigo² IMPACT Video board, you have to install system and video software, turn off the power, remove the cover, and remove the graphics board set and any other option boards. You attach the video board to the graphics board set. Depending on your system, the graphics board set in your workstation consists of a Solid IMPACT (single) board, High IMPACT (double) board set, or Maximum IMPACT (triple) board set. The installation procedure is the same regardless of whether you have a graphics board set with a Solid IMPACT, High IMPACT, or Maximum IMPACT graphics board.

Installing System and Video Software

Before shutting down your system and installing the video board, install the appropriate version of the IRIX[™] operating system software, and the IMPACT Digital Media video software.

For information, see the release notes labeled *impactvideo.man.relnotes* on the CD. To view the release notes if you have a graphics display, enter the command

```
cdgrelnotes
```

To display ASCII text, enter

```
cdrelnotes
```

Turning Off the Power

To turn off the system power, follow these steps:

1. Open the front cover (Figure 2-2).
2. Press and release the power button on the front of the system. The power indicator light turns off (Figure 2-2)

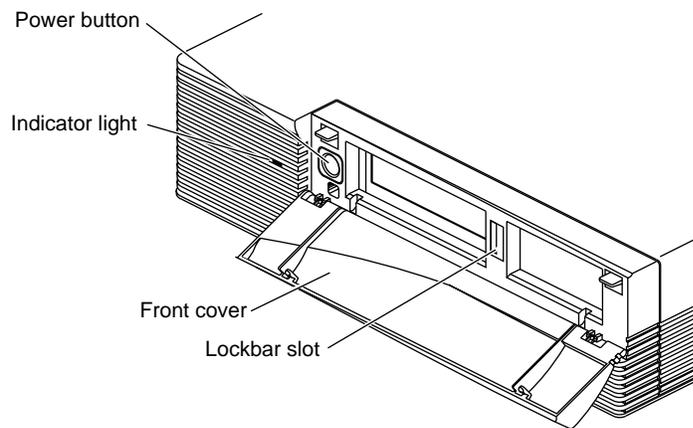


Figure 2-2 Turning Off the Power

3. If you have a lockbar installed, remove it.

Removing the Cover

You have to remove the bezel before you can remove the cover. Follow these steps:

1. Unplug the power cable and the cables that attach to the I/O connectors on the back of the system.
2. Press down on the tabs on each side of the bezel (Figure 2-3).

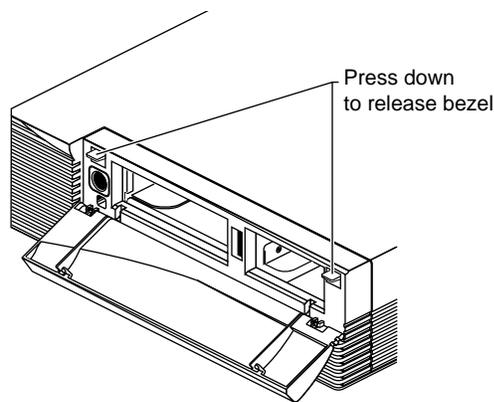


Figure 2-3 Releasing the Bezel

3. Pull the bezel down and away from the chassis (Figure 2-4).

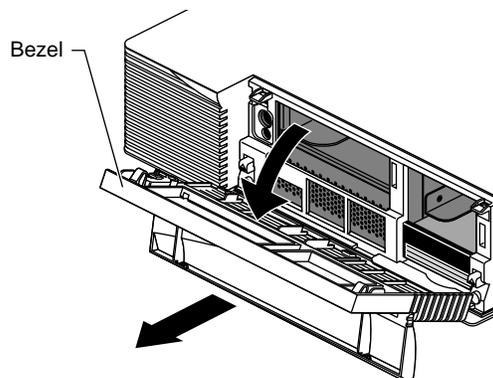


Figure 2-4 Removing the Bezel

4. Press up on the tabs on each side of the drive openings (Figure 2-5).

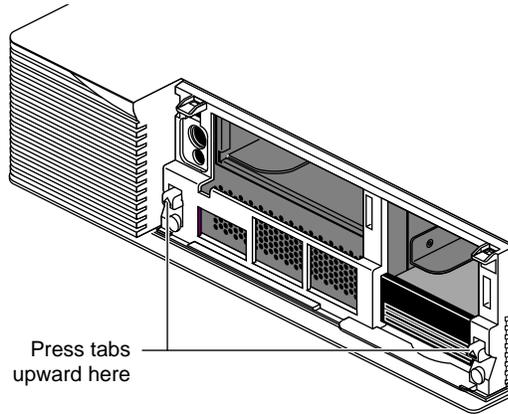


Figure 2-5 Pressing Up the Tabs

5. Pull up on the cover and rotate it back and away from the chassis (Figure 2-6).

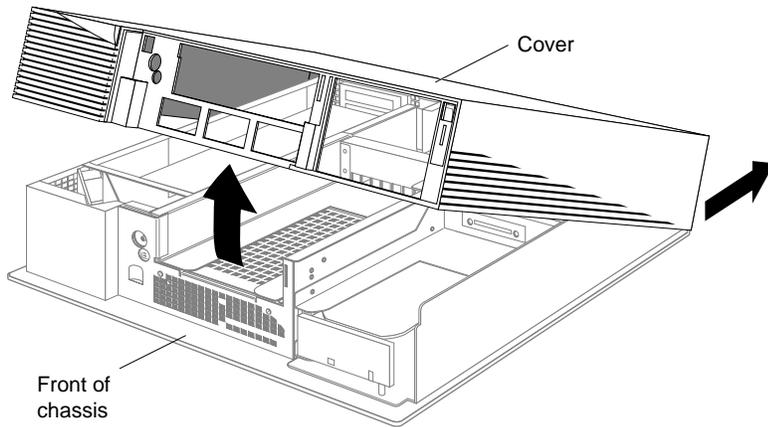


Figure 2-6 Removing the Cover

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

Removing the Graphics Board Set

Before installing the Indigo² IMPACT Video board, you must remove the IMPACT graphics board set and any option boards.

Caution: The graphics and video boards are extremely sensitive to static electricity; you must wear the wrist strap while removing and reinstalling them. The wrist strap prevents the flow of static electricity, which can damage the boards.

To remove the graphics board set, follow these steps:

1. Attach the disposable wrist strap to your wrist and the Indigo² IMPACT chassis, as described in the wrist strap instructions.
2. Open the metal panel by lowering it (Figure 2-7).

Caution: If your workstation has been turned on, the heat sink on the graphics board becomes hot. Wait a few minutes for the heat sink to cool before removing the graphics board set.

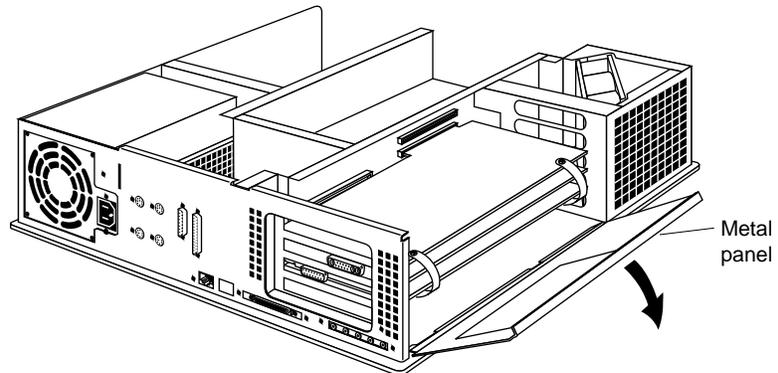


Figure 2-7 Opening the Metal Panel

3. Remove the retention pin that secures the graphics board set as shown in Figure 2-8.

Tip: Notice that the retention pin lies in front of, not beside, the graphics board.

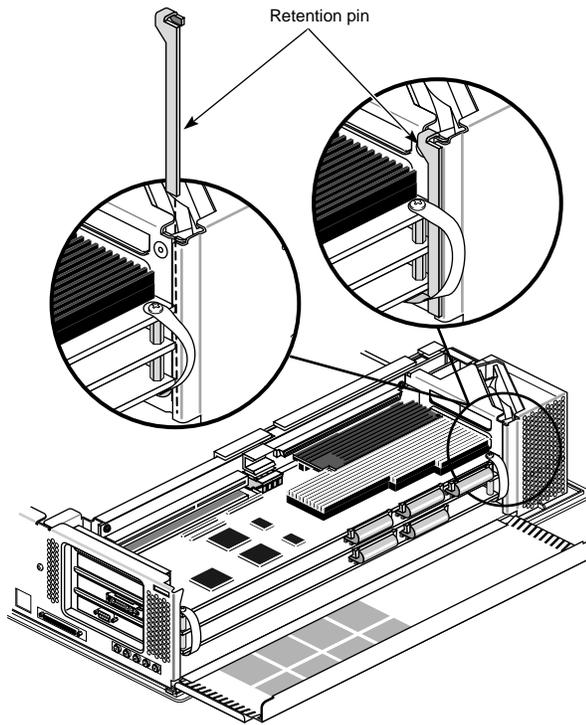


Figure 2-8 Removing the Retention Pin

4. Locate the slot directly above the top graphics board. This is the slot you will use to install the Indigo² IMPACT Video board.
5. Remove the screws that attach the slot cover and the graphics boards to the chassis (Figure 2-9).
6. Remove the slot cover (Figure 2-9).

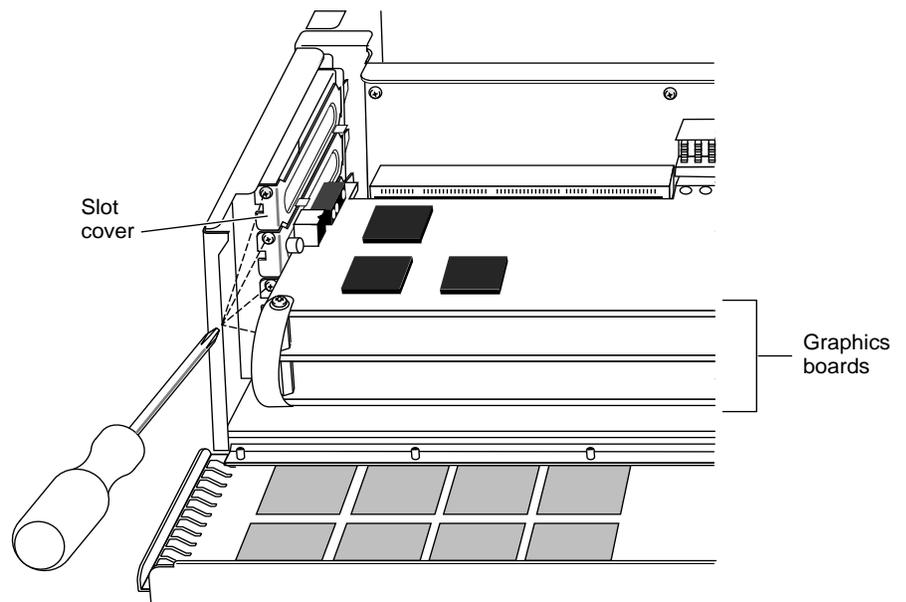


Figure 2-9 Removing the Slot Cover Screws and Slot Cover

7. Pull the straps to remove the graphics board set from the chassis (Figure 2-10).

Tip: It may take some pressure to detach the boards from the midplane connectors. Place your thumbs against the chassis and your index finger against the standoffs for added leverage while you pull.

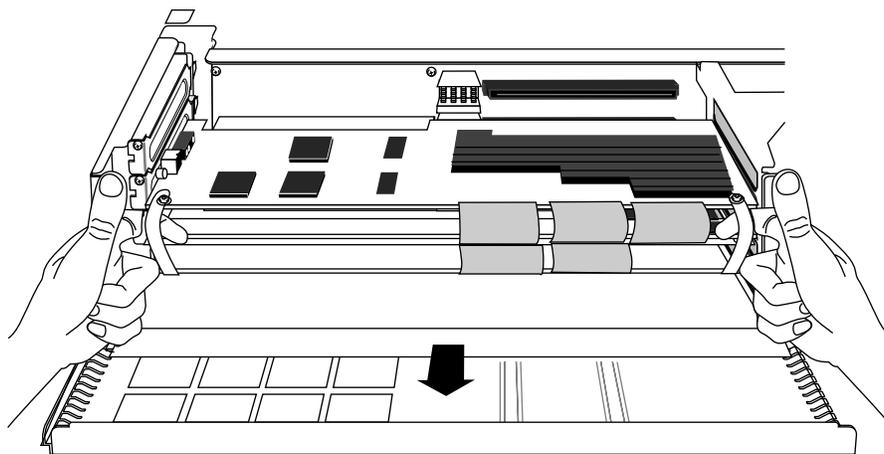


Figure 2-10 Removing the Graphics Board Set

8. Place the board set on a flat, antistatic surface. An empty antistatic bag or a clean, dry desktop works well.

Identifying the Graphics Board Set

Since the Indigo² IMPACT Video board attaches to the graphics board set, you need to make sure that there is no other option board on top of the graphics board or board set.

To identify the Solid IMPACT graphics board, look for the video-graphics board connectors and heat sinks as shown in Figure 2-11.

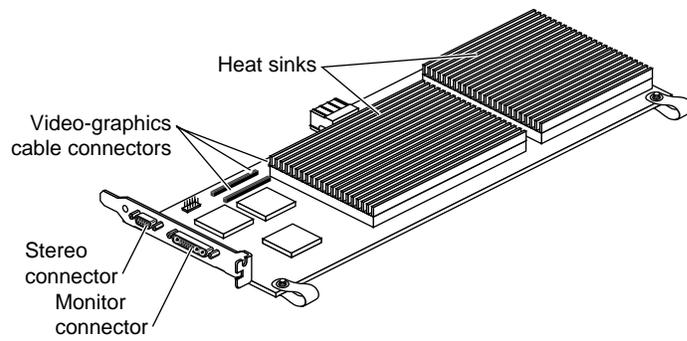


Figure 2-11 Identifying the Solid IMPACT Graphics Board

To identify the top board of the High IMPACT or Maximum IMPACT graphics board set, look for the video-graphics board connectors and heat sinks as shown in Figure 2-12.

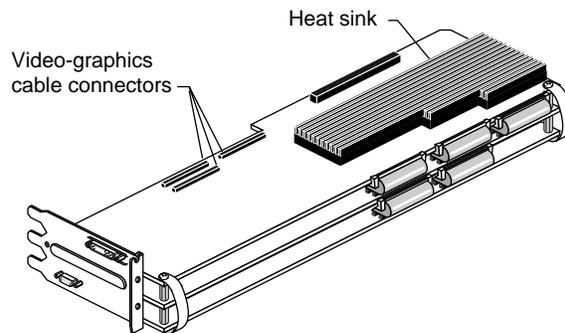


Figure 2-12 Identifying the High IMPACT or Maximum IMPACT Graphics Board Set

If there is another board attached to the graphics board set, remove it by detaching the cables and screws, and then lifting off the board (Figure 2-13).

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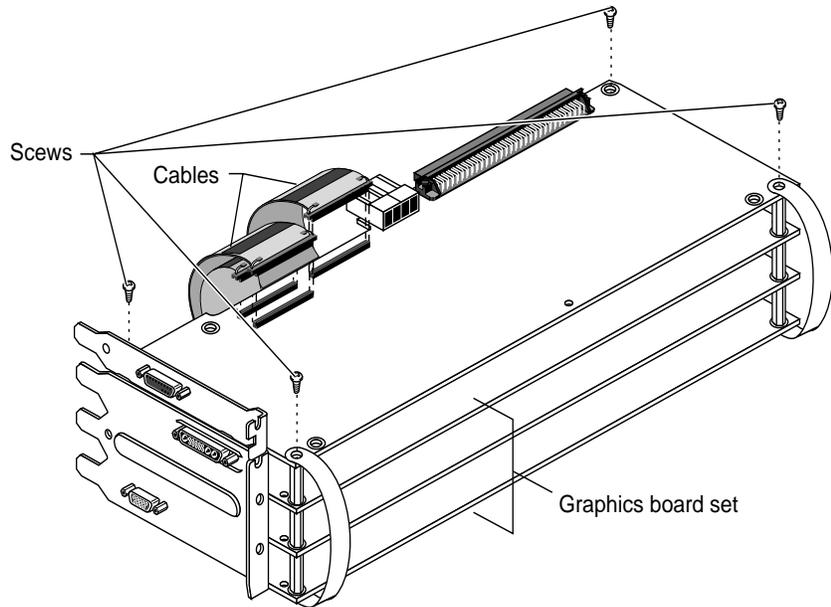


Figure 2-13 Removing an Option Board From the Graphics Boards Set

Tip: If you need to remove an option board and the standoffs spin as you remove the screw, use the standoff wrench that comes with your Indigo² IMPACT Video board to hold the standoffs steady. See Figure 2-14.

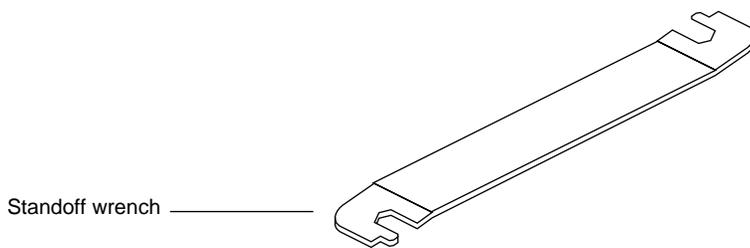


Figure 2-14 Standoff Wrench

Attaching the Indigo² IMPACT Video Board to the Graphics Board Set

If you are also installing the color space conversion/texture mapping daughter board, first attach the daughter board to the video board (refer to the instructions in Chapter 3). Then attach the video board to the graphics board set (refer to the rest of the instructions in this chapter). The procedure for attaching the video board to the graphics board set is the same regardless of whether or not the daughter board is attached to the video board.

1. To attach the Indigo² IMPACT Video board (and the optional daughter board), follow these steps,:
 - If you have a Solid IMPACT graphics board, skip to step 8.
 - If you have a High IMPACT or Maximum IMPACT graphics board set, begin with step 2.
2. Remove the four screws from the corners of the graphics board set (Figure 2-15).
3. Detach the pull straps from the top of the board. They are held in place by adhesive as well as screws.

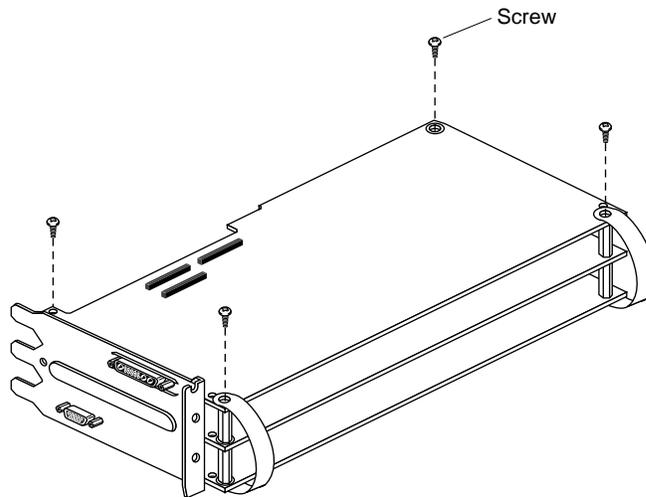


Figure 2-15 Removing Graphics Board Set Screws

- 4. Install the four standoffs (male-female) in the same corner screw holes from which you removed the screws (Figure 2-16)

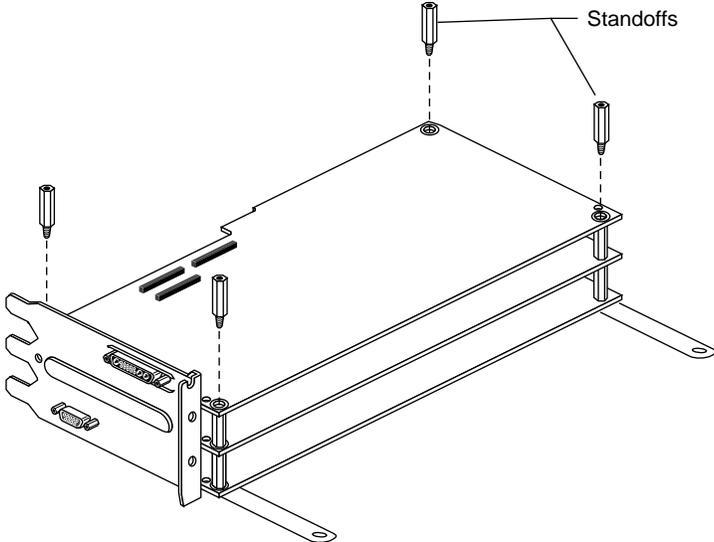


Figure 2-16 Installing the Standoffs

5. Remove the screws that attach the pull straps to the bottom of the graphics board set (Figure 2-17). You can throw away the pull straps.

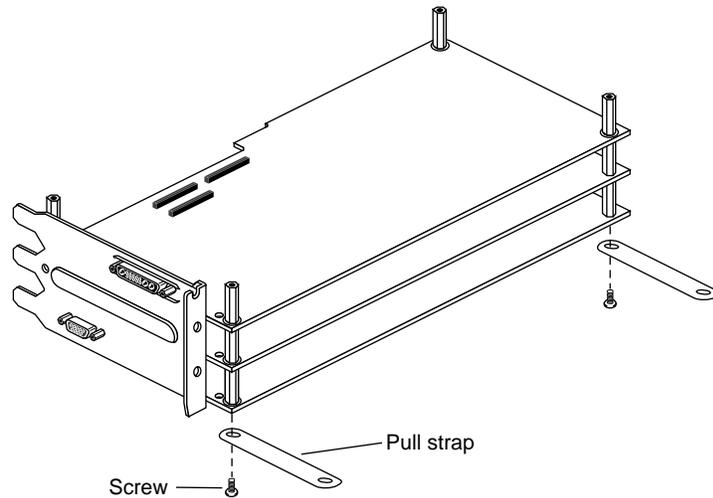


Figure 2-17 Removing the Screws That Attach the Pull Straps

6. Select the pull straps for the graphics board set:
 - If you have a High IMPACT graphics board set, select the pull straps labeled 3-Board.
 - If you have a Maximum IMPACT graphics board set, select the pull straps labeled 4-Board.
7. Peel the adhesive strip covers off both ends of the pull straps. Attach the pull straps to the bottom of the graphics board set using the screws provided (Figure 2-20). (You can turn the board upside down.)

8. If you have a Solid IMPACT graphics board, follow these steps to remove the pull straps. You will need a Phillips screwdriver and tool to remove the hex nuts.
 - Remove the two screws that pass through the pull straps and hex nuts. You can turn the board over.
 - Detach the pull strap from the top of the board.
 - Detach the pull strap from the bottom of the board. You can throw away the pull straps.

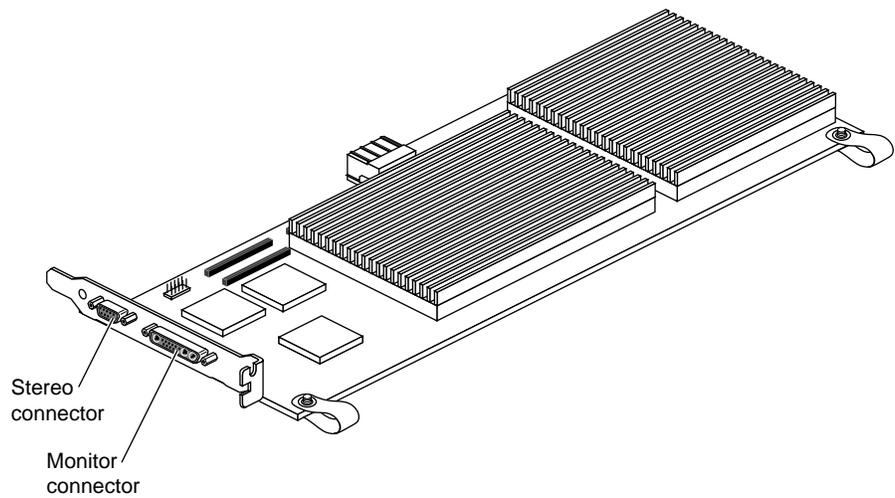


Figure 2-18 Removing the Pull Straps From the Solid IMPACT Board

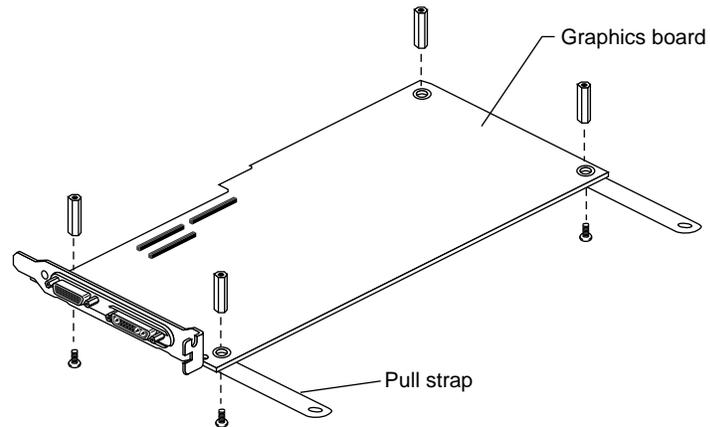


Figure 2-19 Attaching the Pull Straps

9. Select the 3-Board pull straps from the set you were sent.
10. Attach the pull straps to the bottom of the graphics board set.
 - Pull the plastic strip off the adhesive.
 - Line up the hole in the pull strap and the hole in the board and attach the pull strap to the bottom of the board.
 - Replace the screws. See Figure 2-19.
11. Install standoffs (female/female) onto the screws in the same corners from which you removed the nuts.
12. Locate holes on the rear two corners of the board and insert a screw from beneath the board through each hole.
13. Install two standoffs (female/female) onto the screws you just placed through the holes.

Installing the Video-graphics Cables

The following instruction apply to the Solid IMPACT, High IMPACT and Maximum IMPACT graphics board sets. See Appendix C for illustrations of the graphics boards and option boards.

1. Attach the two video-graphics cables to the graphics board connectors (Figure 2-20 and Figure 2-21).

Tip: Attach the cables sticker-side down for easier removal.

- Attach one end of the two-connector cable to the single connector on the graphics board.
- Attach the two connectors from one end of the four-connector cable to the pair of connectors on the graphics board

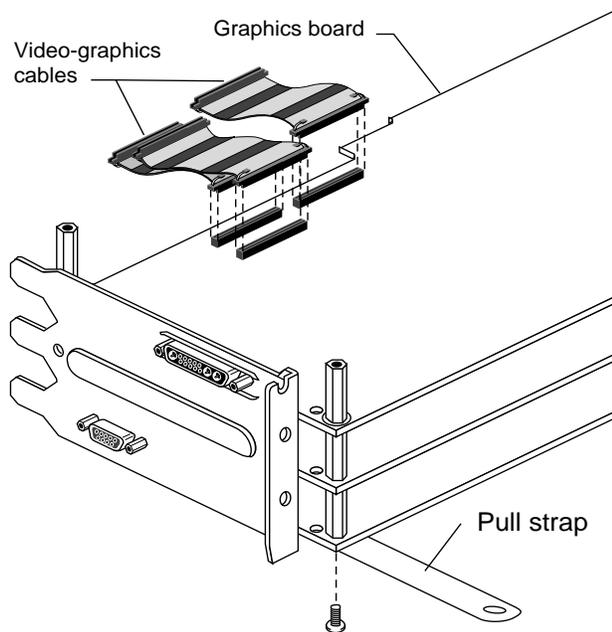


Figure 2-20 Attaching the Video-Graphics Cables to the Graphics Board

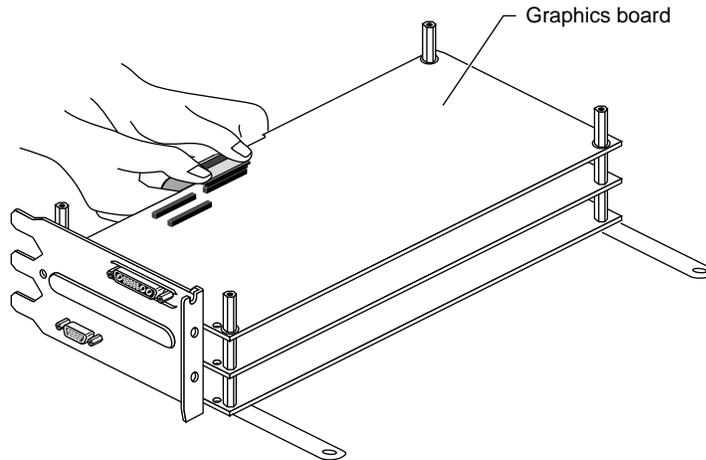


Figure 2-21 Squeezing the Video-Graphics Cables Into the Connector

Tip: Use your thumb and fingers to squeeze the cable connectors into the connectors on the board. (Figure 2-21). Attach connectors one at a time. Figure 2-22 provides a side view of a correctly and incorrectly seated cable connector

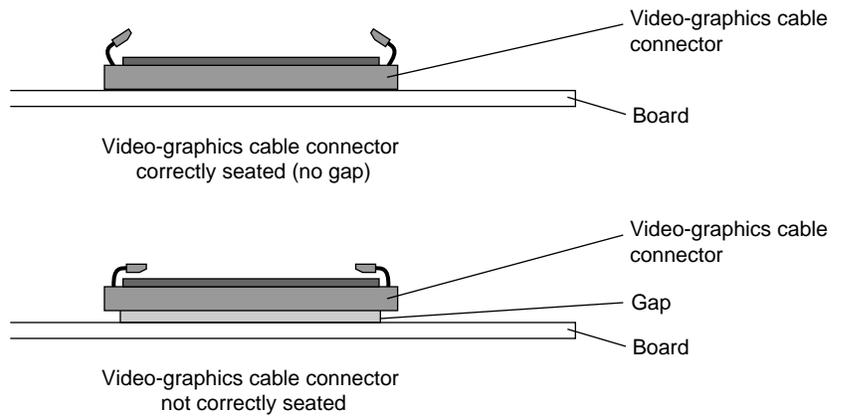


Figure 2-22 Side Views of the Video-Graphics Connector

2. Slip the innermost cable through the outermost cable levers of the two-cable set. See Figure 2-23.

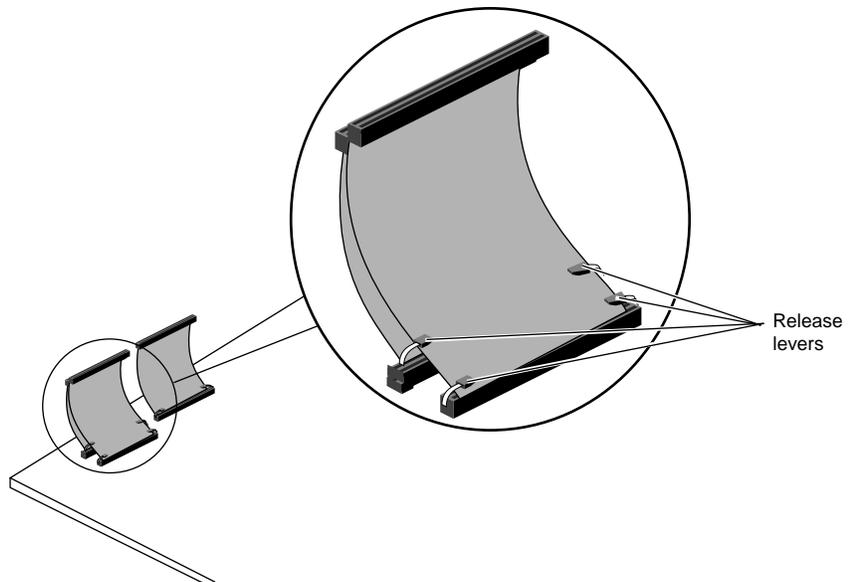


Figure 2-23 Attaching the Video-Graphics Cables to the Graphics Board Connectors

3. Align the Indigo² IMPACT Video board with the graphics board set and place it on the standoffs (Figure 2-24).
4. Insert two screws through the Indigo² IMPACT Video board into the rear standoffs.
5. Attach the pull straps to the top of the Indigo² IMPACT video board.
 - Remove the plastic strip from the adhesive on the end of the pull strap.
 - Align the holes of the pull strap with the holes in the board and press firmly to attach the straps to the board.
6. Insert the remaining two screws through the pull straps and into the standoffs (Figure 2-24).

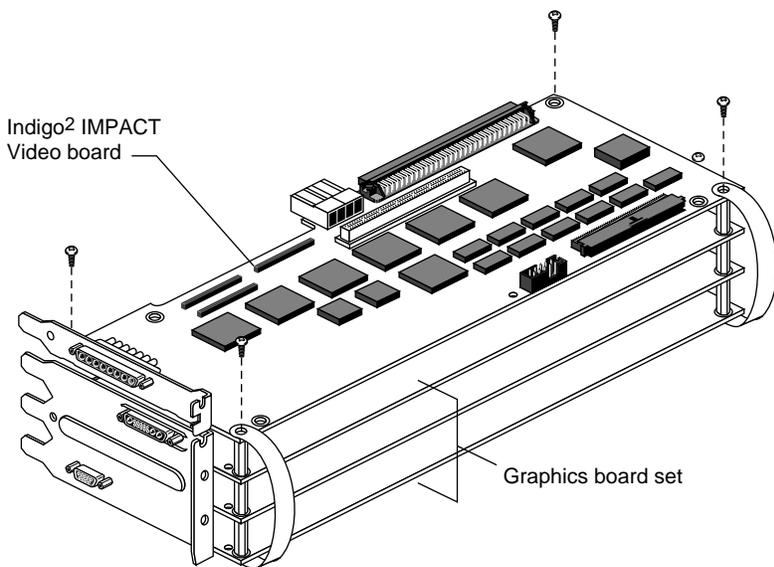


Figure 2-24 Aligning and Attaching the Video Board to the Graphics Board Set

7. Attach the two video-graphics cables to the corresponding connectors on the video board (Figure 2-25).
 - Attach the other end of the two-connector cable to the single connector on the video board.
 - Attach the two connectors from the other end of the four-connector cable to the pair of connectors on the video board.

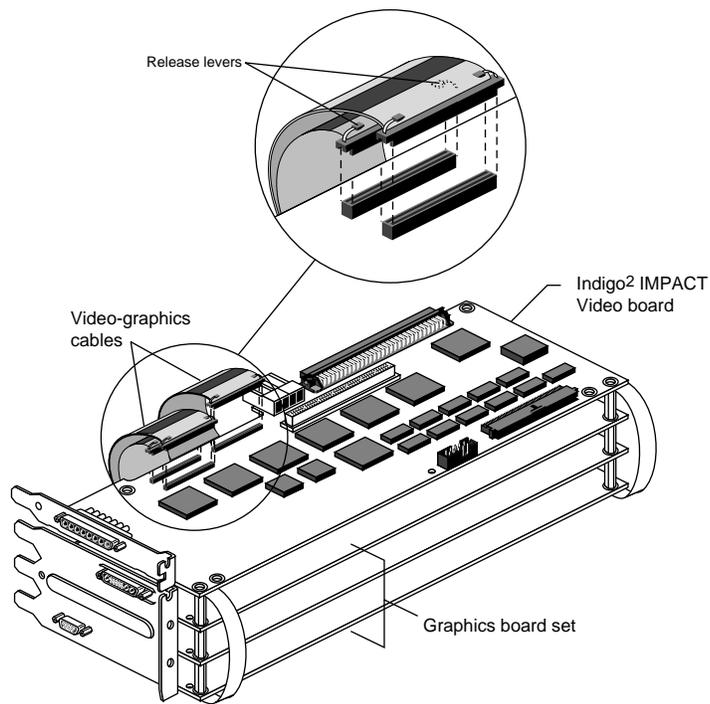


Figure 2-25 Attaching the Video-Graphics Cables to the Video Board

8. Slip the innermost cable through the outermost cable levers of the two-cable set. See Figure 2-25.

Installing the IMPACT Video Board and the IMPACT Graphics Board Set

Replace the graphics and video board set in the same slot from which you removed the graphics board. If you need help determining which slots to use, see the following tables. Otherwise, skip to step 1.

See Figure 2-26 for the locations of the slots. Check your option board manual for any additional information.

Table 2-1 Installing the IMPACT Video/Solid IMPACT Board Set

If you have this combination of boards:	Use these slots:
Solid IMPACT/IMPACT Video	Slots B and C
Solid IMPACT/IMPACT Video and 1 EISA board	Solid IMPACT/IMPACT Video in Slots B and C, and the EISA board in Slot A
Solid IMPACT/IMPACT Video and compression board	Solid IMPACT/IMPACT Video in Slots B and C, and compression board in Slot D

Table 2-2 Installing the IMPACT Video/High IMPACT Board Set

If you have this combination of boards:	Use these slots
High IMPACT/IMPACT Video	Slots A, B, and C <i>or</i> Slots B, C, and D
High IMPACT/IMPACT Video and 1 EISA board	High IMPACT/IMPACT Video in Slots B, C and D and EISA board in Slot A
High IMPACT/IMPACT Video and a compression board	High IMPACT/IMPACT Video in Slots A, B, and C, and compression in Slot D

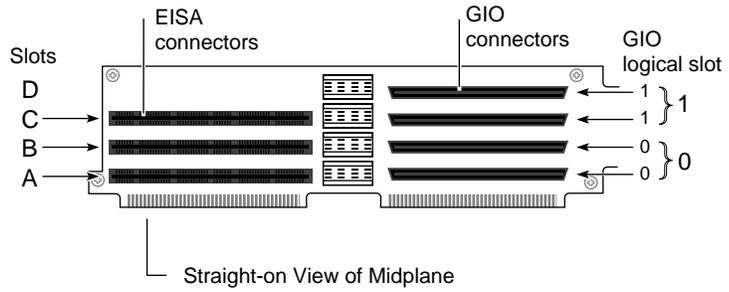


Figure 2-26 Locating the Graphics/Video Board Slots

To reinstall the graphics board set with the attached video board, follow these steps:

1. Align the board set with the slots on the left side of the chassis (Figure 2-27).

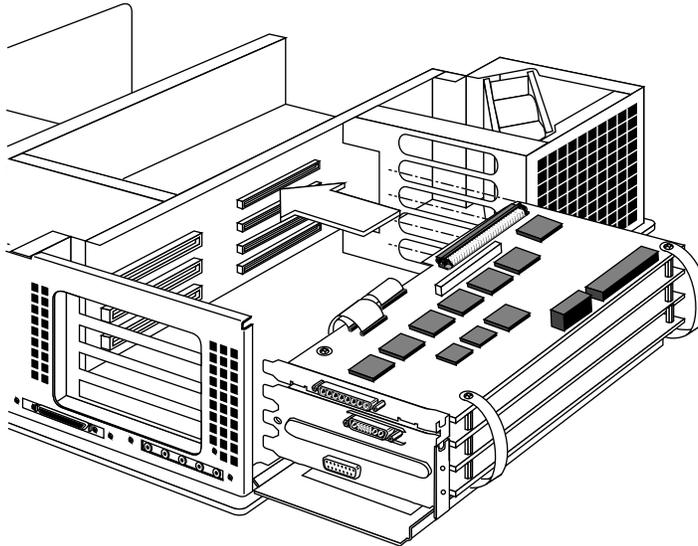


Figure 2-27 Aligning the Board Set With the Chassis

2. Slide the boards into the chassis and push the board connectors into the corresponding midplane connectors (Figure 2-28). Putting pressure on the topmost board of the set helps to seat the boards completely.

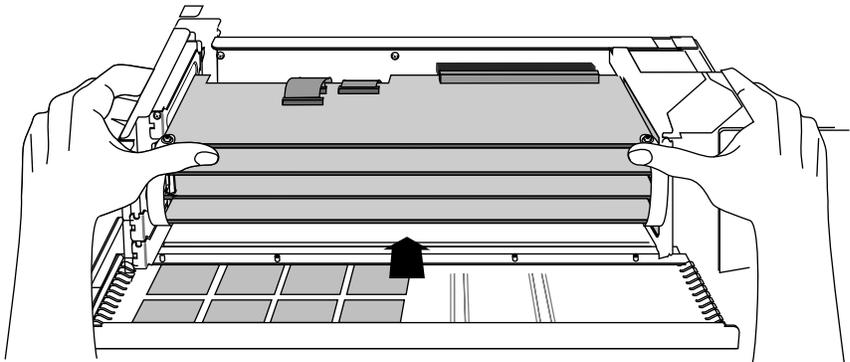


Figure 2-28 Inserting the Board Set into the Chassis

Tip: You have to use a **great deal** of pressure to push the board connectors completely into the midplane connectors. When the connectors are completely seated, the metal panels on the left should be flush with the chassis.

Figure 2-29 provides a top-down view of a GIO connector that is seated correctly and one that is not. A correctly seated connector has no gap between the connector on the video board and the connector on the midplane.

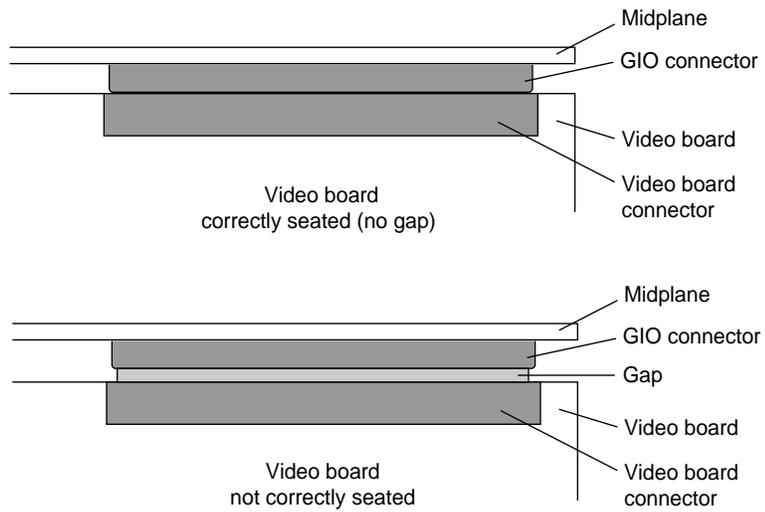


Figure 2-29 Checking the Seating of the GIO Connector

3. Install the screws that secure the graphics boards and video board to the chassis.

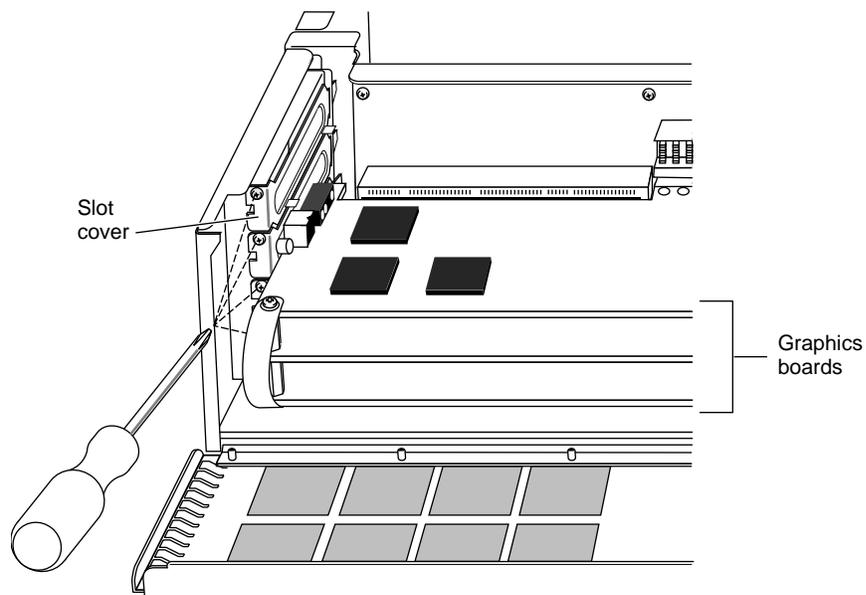


Figure 2-30 Installing the Screws Holding the Graphics Boards to the Chassis

4. Hang the retention pin so that it sits in front of the board set. The retention pin prevents the board set from moving away from the connectors. See Figure 2-31.

Tip: Use the retention pin as a plumb line to determine if the board set is properly seated. If the pin is tilted, push on the board set until it is properly connected.

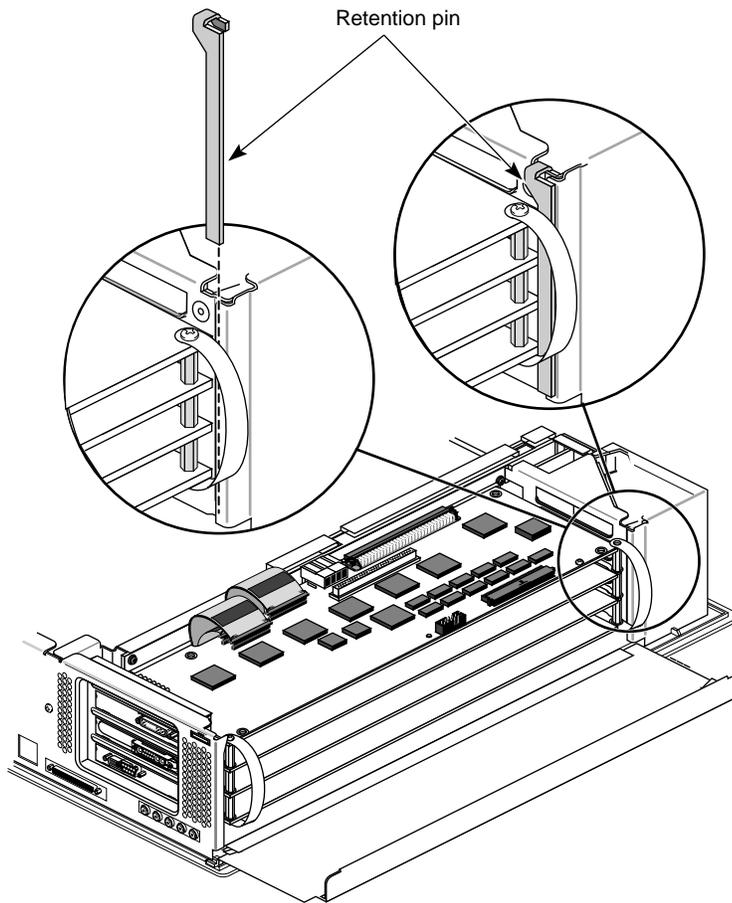


Figure 2-31 Inserting the Retaining Pin

IMPORTANT: If you cannot close the metal panel, the boards are not completely seated in the midplane connectors.

5. Lift the metal panel and snap it down into place (Figure 2-32).

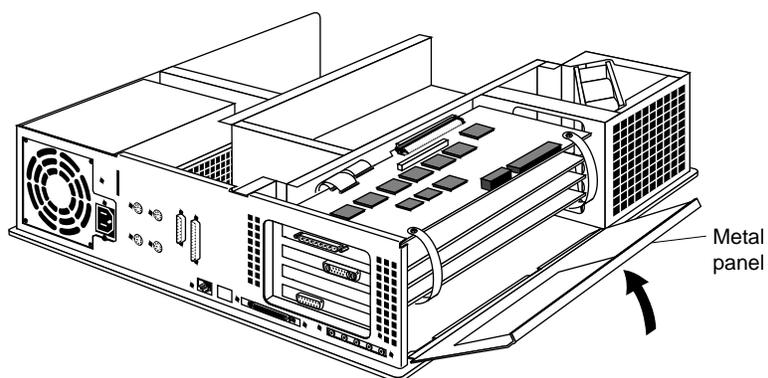


Figure 2-32 Closing the Metal Panel

6. Remove the antistatic wrist strap.

Congratulations! You are finished installing your Indigo² IMPACT Video board.

To replace the cover, see the next section.

Replacing the Cover

To replace the 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 (Figure 2-33).
2. Face the front of the workstation.
 - Look through the holes as you lower the cover to move the tabs into place.

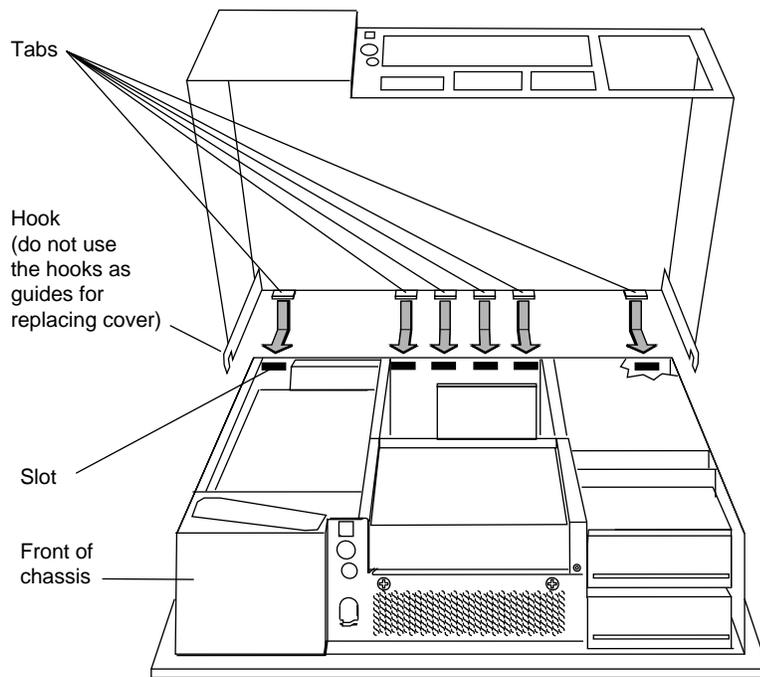


Figure 2-33 Replacing the Cover

- 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 (Figure 2-34).
 - Insert the tabs on the bottom of the bezel into the grooves.
 - Pull up the bezel and snap it into place.
4. Replace the lockbar if you had one installed.
5. Close the front cover of the bezel.

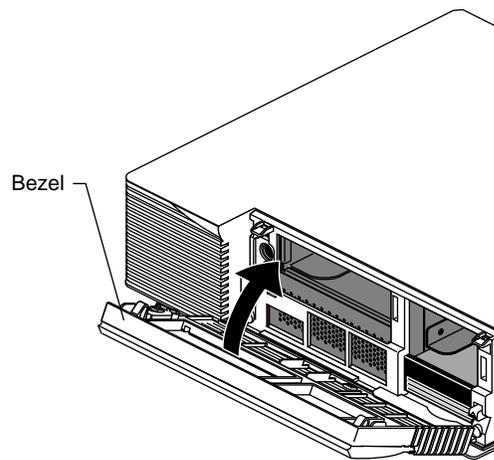


Figure 2-34 Replacing the Bezel

Go to "Connecting the Cables" on page 34 to connect the cables.

Connecting the Cables

To connect the cables, follow these steps:

1. Reattach the graphics monitor cable to the graphics board.
2. Reattach the power cable to the system.
3. Attach the Indigo² IMPACT Video breakout cable to the connectors on the video board, as shown in Figure 2-35.

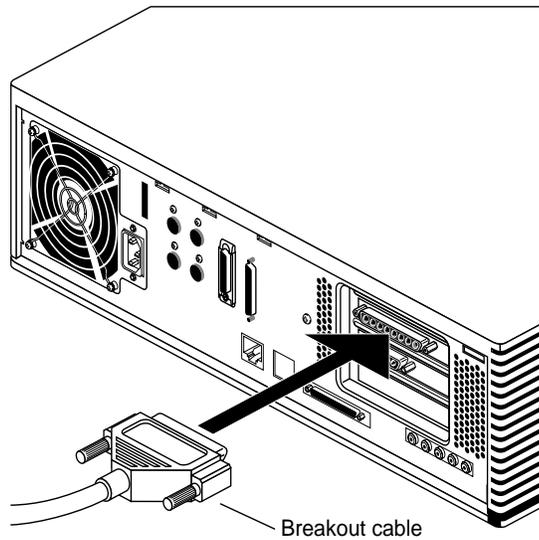


Figure 2-35 Attaching the Indigo² Video Breakout Cable

Checking and Troubleshooting the Installation

To check that your workstation recognizes the video board, first turn on the system power and log in to your system.

Before checking the video board installation, you must first have installed the software on the IMPACT Digital Media CD. Refer to the instructions that came with the CD.

To check the Indigo² Video board installation, follow these steps:

1. Open a shell by clicking the Console icon or choose “Unix Shell” from the Desktop menu in the Toolchest.
2. Type at the prompt:

```
hinv
```

Then press <Enter>.

You see a listing of your system’s hardware devices.

3. Find a line that is similar to:

```
IMPACT Video: unit 0, revision 4
```

If you don’t see a similar line indicating that your system recognizes the video board, perform these checks:

- Make sure that the video board and graphics boards are completely seated into the connectors on the system midplane; otherwise, the system will not start up completely and the screen will be blank.
- Make sure that the video-graphics cables are securely attached to the graphics board connectors and the video board connector.
- Make sure that the connector on the color space conversion/texture mapping daughter board (if you have one) is completely seated to the connector on the video board.

Removing the Indigo² IMPACT Video Board

Removing the Indigo² IMPACT Video board from your system consists of:

1. Shutting down your system.
1. Unplugging the power cable and video-graphics board cables.
2. Removing the cover.
3. Removing the video-graphics board set from the chassis.
4. Removing the video board from the graphics boards.
5. Reinstalling the graphics board set.
6. Replacing the cover.

7. Plugging in the cables and starting up your system.

Refer to the first part of this chapter for detailed steps and illustrations on shutting down the system, removing the cover, and removing board sets from your Indigo² IMPACT workstation. The first part of Chapter 3 describes how to remove the Indigo² IMPACT Video board from the graphics board set.

Installing the Color Space Conversion/Texture Mapping Board

This chapter explains how to attach the color space conversion/texture mapping daughter board to the Indigo² IMPACT Video board.

If you have the Indigo² IMPACT Video board already installed in your workstation you have to remove it in order to install the color space conversion/texture mapping board. Refer to “Preparing to Install the Indigo² IMPACT Video Board” on page 5 for instructions on opening your workstation and removing the graphics and video boards. Then, follow the steps in this chapter describing how to first remove the video board from the graphics board set and then attach the daughter board to the Indigo² IMPACT Video board.

If you do not have the video board already installed, skip to step 4.

Caution: The graphics and video boards are extremely sensitive to static electricity; you must wear the wrist strap while installing and removing boards. The wrist strap prevents the flow of static electricity, which can damage the boards.

To remove the video board from graphics board set and attach the color space conversion/texture daughter board to the Indigo² IMPACT Video board, follow these steps:

1. Detach the three video-graphics cable connectors from the video board by pushing down on the release lever to unlock the connector. See Figure 3-1.

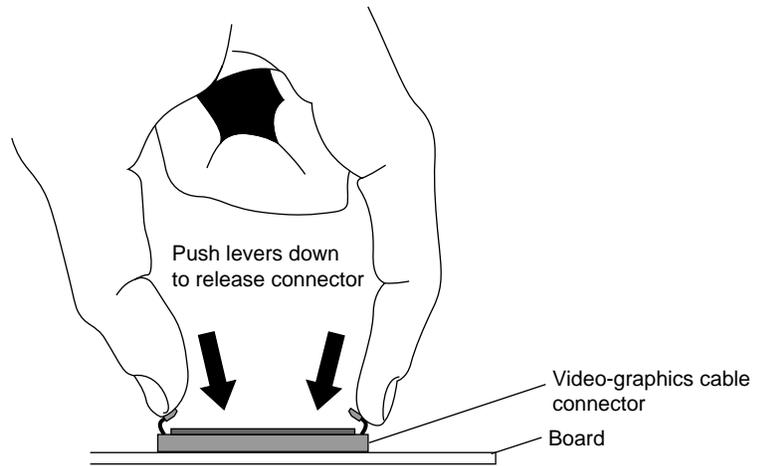


Figure 3-1 Pushing the Release Levers

-
2. After you have released each connector, pull each connector up. See Figure 3-2.

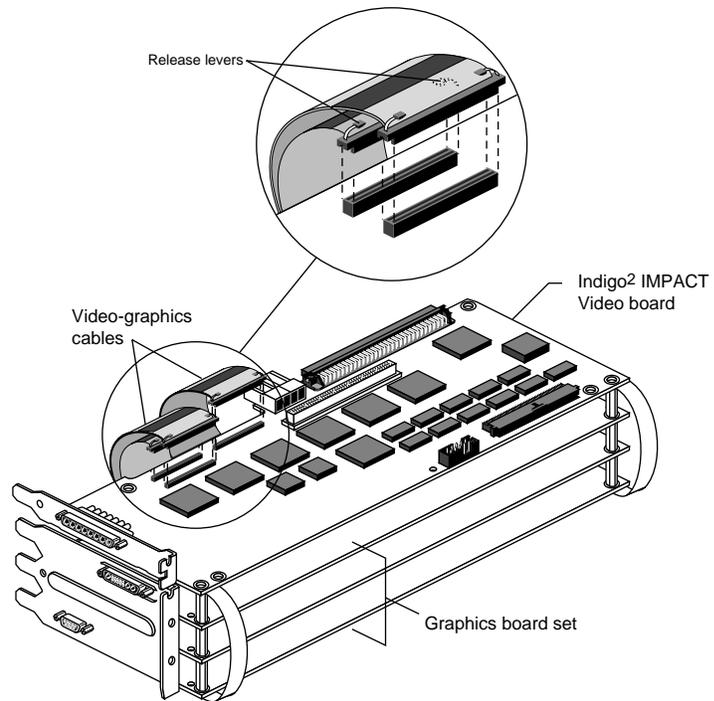


Figure 3-2 Detaching the Video-Graphics Cables From the Video Board

3. Remove the four screws that attach the video board to the graphics board set. See Figure 3-3.

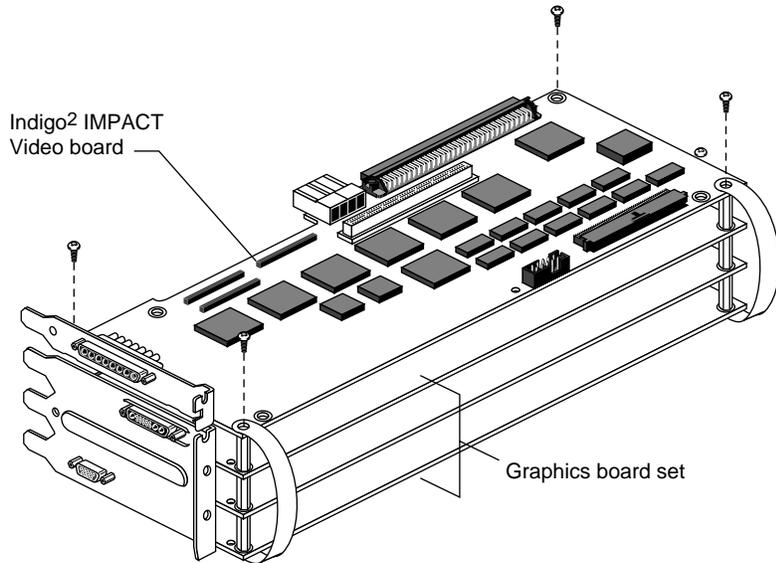


Figure 3-3 Removing the Video Board Screws

4. Lift to remove the video board.

-
5. Attach the four half-size standoffs (female-female) to the video board using the screws provided (Figure 3-4). Note the location of the standoffs. They are not located on the corners.

Caution: Use only half-size standoffs. If you use full size standoffs, damage to both boards will occur when another board is installed above.

Note: The screws are attached at the bottom of the video board

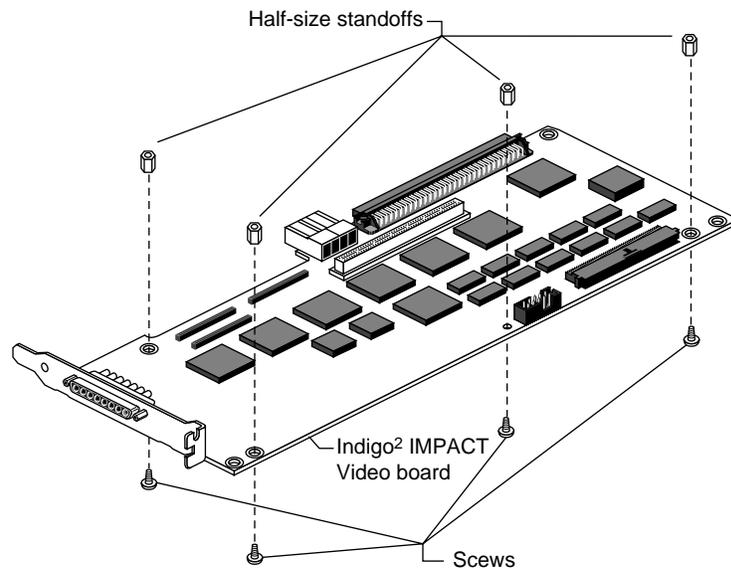


Figure 3-4 Inserting Standoffs on the Video Board

6. Align the daughter board over the video board so that the screw holes are properly aligned with the standoffs (Figure 3-5)

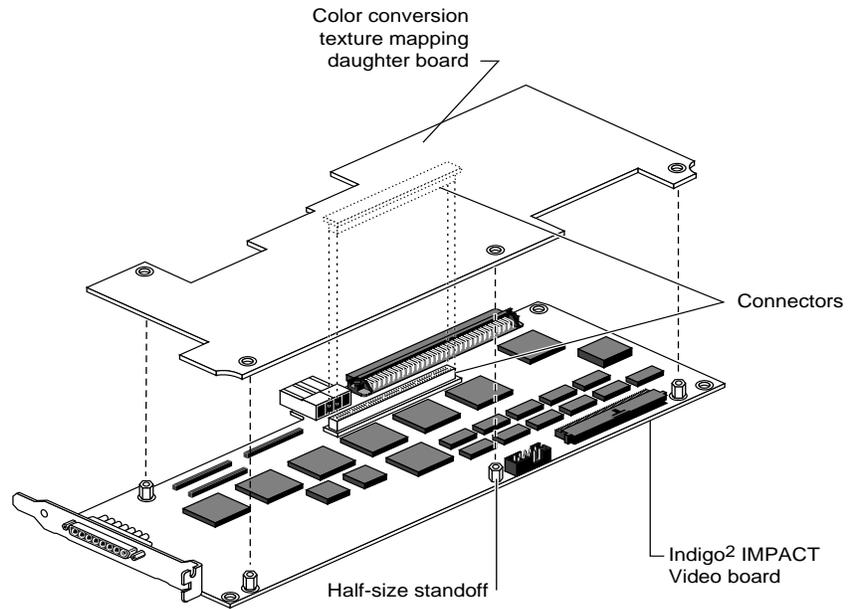


Figure 3-5 Aligning the Video Board and Daughter Board

7. Firmly push the connector in the center of the daughter board into the corresponding video board connector. Make sure the connector is completely seated.

-
8. Insert the four screws that attach the daughter board to the video board. See Figure 3-6.

).

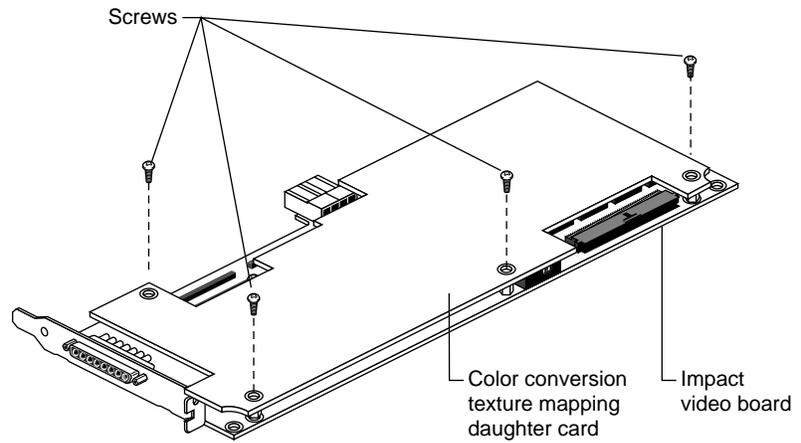


Figure 3-6 Insert the Screws into the Daughter Board

You are now ready to attach the video board (with the attached daughter board) to the graphics board set. To do this and complete the installation, refer to "Attaching the Indigo² IMPACT Video Board to the Graphics Board Set" on page 15.

Setting Up Single-Link and Dual-Link Connections

The Indigo² IMPACT Video board supplies 8- or 10-bit digital video ports that comply with the CCIR-601 and SMPTE-259M standards. These serial ports are located on the breakout cable included in the package.

The ports can be configured for 4:4:4:4 or 4:2:2:4 dual-link mode, or for 4:2:2 single-link mode. Each port consists of two one-direction connections, Link A and Link B.

- In 4:4:4:4 mode, Link A carries Y, with U and V channels from even-numbered sample points. Link B carries alpha, with U and V channels from odd-numbered sample points.
- In 4:2:2:4 mode, Link A carries Y, U, and V channels. Link B carries only the alpha channel.
- In 4:2:2 mode a single link carries Y, U, and V and there is no alpha.

Figure 4-1 and Figure 4-2 show examples of single-link and dual-link connections using digital-to-analog and analog-to-digital converters. After you attach digital source equipment to the breakout cable, you choose the mode you want using the video control panel. Instructions for using the video control panel follow Figure 4-2.

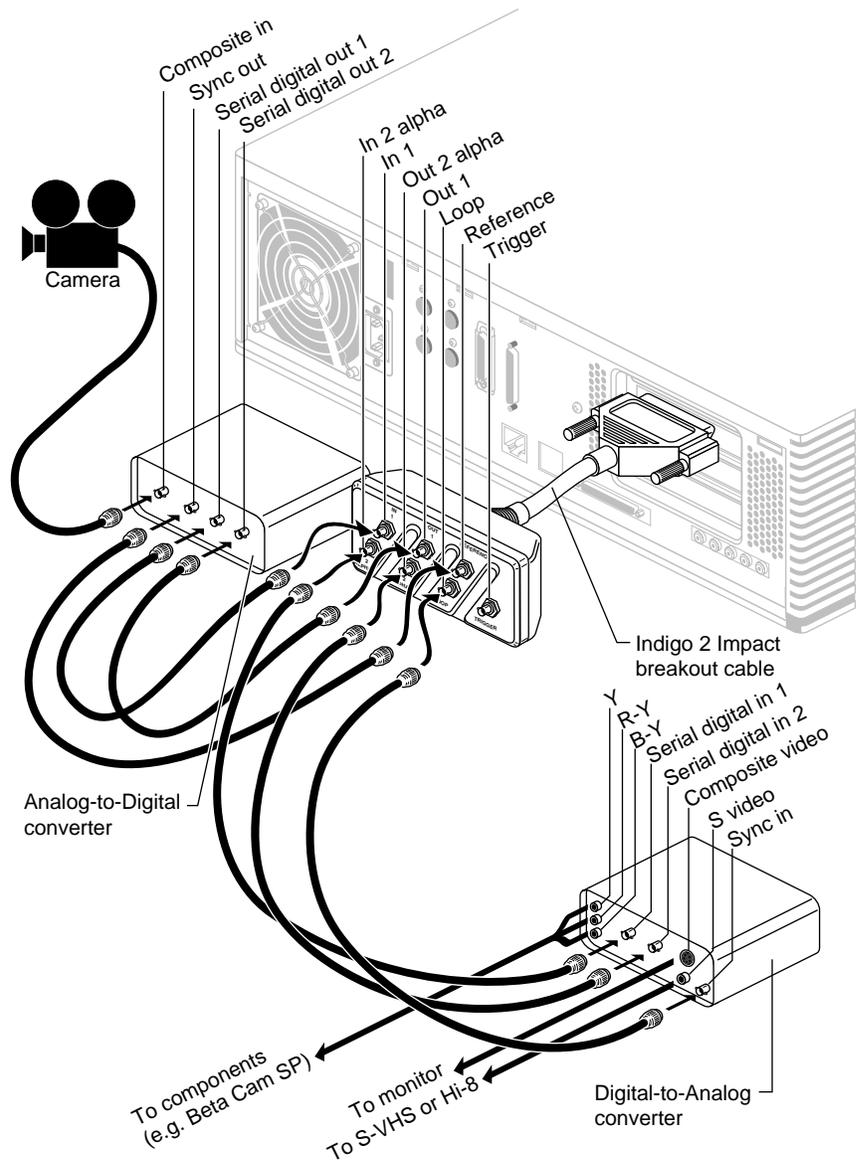


Figure 4-2 Connecting Analog-to-Digital and Digital-to-Analog Converters-Dual Link

To set up for a digital video source, follow these steps:

1. Open a shell by clicking the Console icon or choose “Unix Shell” from the Desktop menu in the Toolchest.
2. Type at the prompt:

`/usr/sbin/vcp`

The Video Panel appears (Figure 4-3)

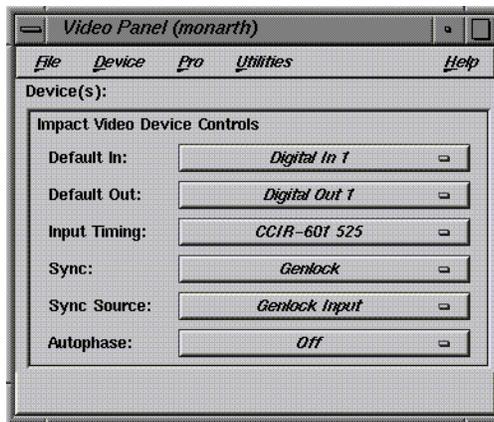


Figure 4-3 Video Panel

3. Select the Default In and Default Out setting that matches your input and output channels.
 - The settings for the Default In controls are Digital In 1, Digital In 2, and Digital In Dual.
 - The settings for the Default Out controls are Digital In 1, Digital In 2, and Digital In Dual.
4. Select the Input Timing setting that matches your equipment. Choose CCIR-601 525 for NTSC, or CCIR-601 625 for PAL.
5. Select the Sync setting. Choose the Internal setting if you don't have a genlock reference; otherwise, choose the Genlock setting

-
6. Select the Sync Source setting.
 - Choose Genlock Input if you have a genlock reference. Make sure that you also choose Genlock in the Sync option.
 - If you don't have a genlock reference but need genlock input, choose the Digital In 1 or Digital In 2 setting.
 7. Select the Autophase setting. Autophasing synchronizes the two input channels with the rest of the system. There are four settings:
 - The Normal setting synchronizes the input signals if the timing is within 1/2 line of the genlock reference signal. This is the most typical setting.
 - The Extended setting synchronizes the input signals when they are within four lines of the genlock reference signal.
 - The Variable settings locks input signals when they are within four lines of each other, but not locked to the genlock reference signal.
 - The Off setting disables autophasing so that the input channels are not synchronized.
 8. Choose Close from the File menu when you have finished changing the settings.

Framelocking

In order to smoothly record graphics from a graphics monitor, the video and graphics signals must be synchronized by framelocking the video and graphics. Framelocking eliminates tearing and motion artifacts that occur if the video and graphics signals are not synchronized.

To lock graphics to video, type the command in the Unix shell for the video standard you are using.

- For the PAL standard, type the command

```
setmon -Fe 1280x1024_49
```

- For the NTSC standard type the command

```
setmon -Fe 1280x1024_59
```

If you are running double-buffered 32-bit RGBA format on Solid IMPACT or High Impact, the timing table values are:

```
/usr/gfx/setmon -x 1280x1024_72_32db for 72Hz
```

```
/usr/gfx/setmon -x 1280x1024_60_32db for 60Hz
```

```
/usr/gfx/setmon -x 1280x1024_50_32db for 50Hz
```

After saving the format, to re-initialize the graphics system with the new mode, type:

```
/usr/gfx/gfxinit
```

To enable framelocked, double-buffered 32-bit RGBA format on High Impact, type:

```
/usr/gfx/setmon -x <timing table>
```

For example,

```
/usr/gfx/setmon -x 1280x1024_59_32db for 60Hz  
/usr/gfx/setmon -x 1280x1024_49_32db for 50Hz
```

To reinitialize the graphics system with the double-buffered mode, type:

```
/usr/gfx/gfxinit
```

Then type the following command for framelocking:

```
/usr/gfx/setmon -Fe 1280x1024_59_32db
```

or

```
/usr/gfx/setmon -Fe 1280x1024_49_32db
```

For framelocking for Solid IMPACT, see the information below.

To select the head with the video connection, which is determined by the pipe number, see the reference (man) pages of setmon for detailed information.

To select the head which has video connected, type:

```
/usr/gfx/setmon -p <pipe number> -Fe <timing table>
```

or

```
/usr/gfx/setmon -p <pipe number> -Fe <timing table>
```

For Example,

```
/usr/gfx/setmon -p 0 -Fe 1280x1024_59_32db for 60Hz  
/usr/gfx/setmon -p 0 -Fe 1280x1024_49_32db for 50Hz
```

Regulatory Information

This appendix contains regulatory information for the Indigo² IMPACT Video board.

Manufacturer's Regulatory Declarations for the Indigo² IMPACT Video Board

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 Indigo² IMPACT Video board conforms 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 the 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 2-1 (Exterior of Workstation) at the end of this chapter for the location of your system label.

To locate the information on the World Wide Web, enter the following in your Web browser location window:

<http://www.sgi.com/Products/compliance/index.html>

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 2-1 for placement of the upgrade regulatory label.

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

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

This device complies with Class A electromagnetic emissions limits of C.I.S.P.R. Publication 22, Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment, Germany's BZT Class A limits for Information Technology Equipment, and with Japan's VCCI Class 1 limits.

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 Indigo² IMPACT workstation is FCC-compliant under test conditions that include the use of shielded cables between Indigo² IMPACT and its peripherals. Your Indigo² IMPACT 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 Indigo² 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

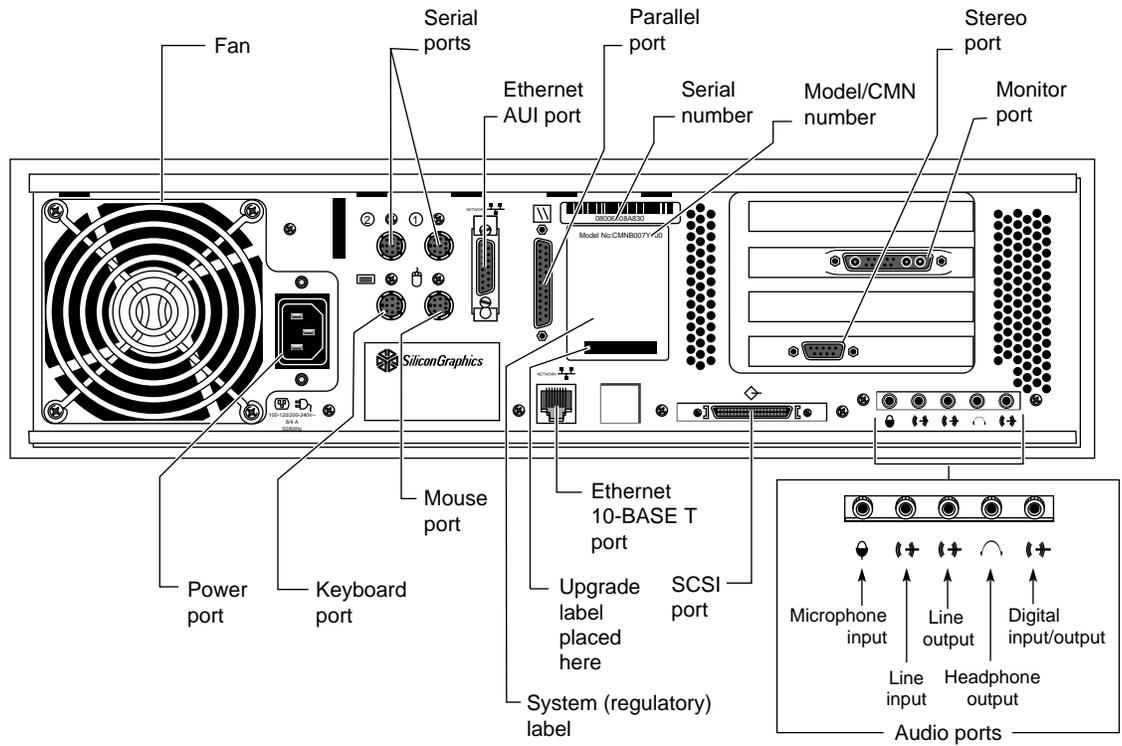


Figure 2-1 Exterior of Workstation

Graphics Boards with Option Boards

This appendix contains illustrations of the Solid IMPACT, High IMPACT and Maximum IMPACT graphics board set with option boards.

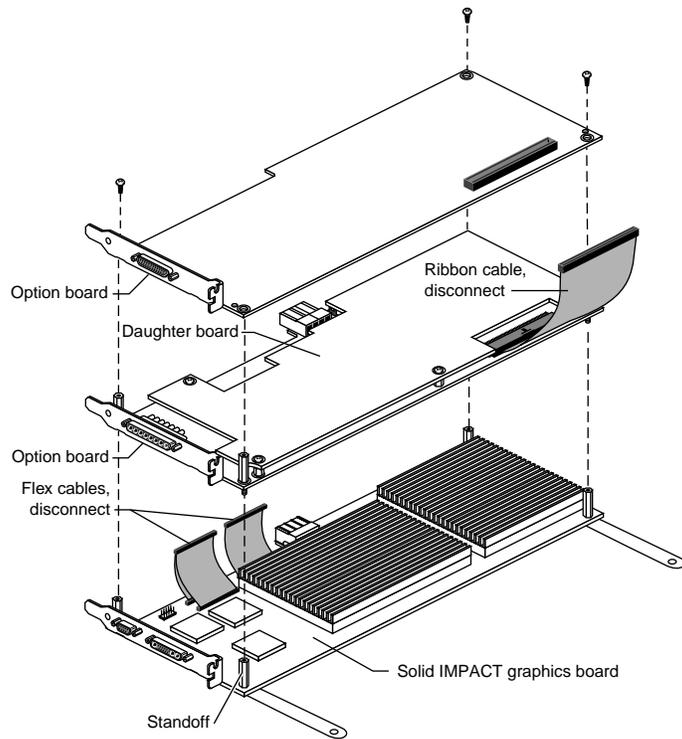


Figure C-1 Solid IMPACT Board With Options

Figure C-1 shows the maximum number of option boards that can be attached to the Solid IMPACT graphics board by standoffs and cables. You may see one option, an option with a daughter board, or two option boards as other possible connected combinations.

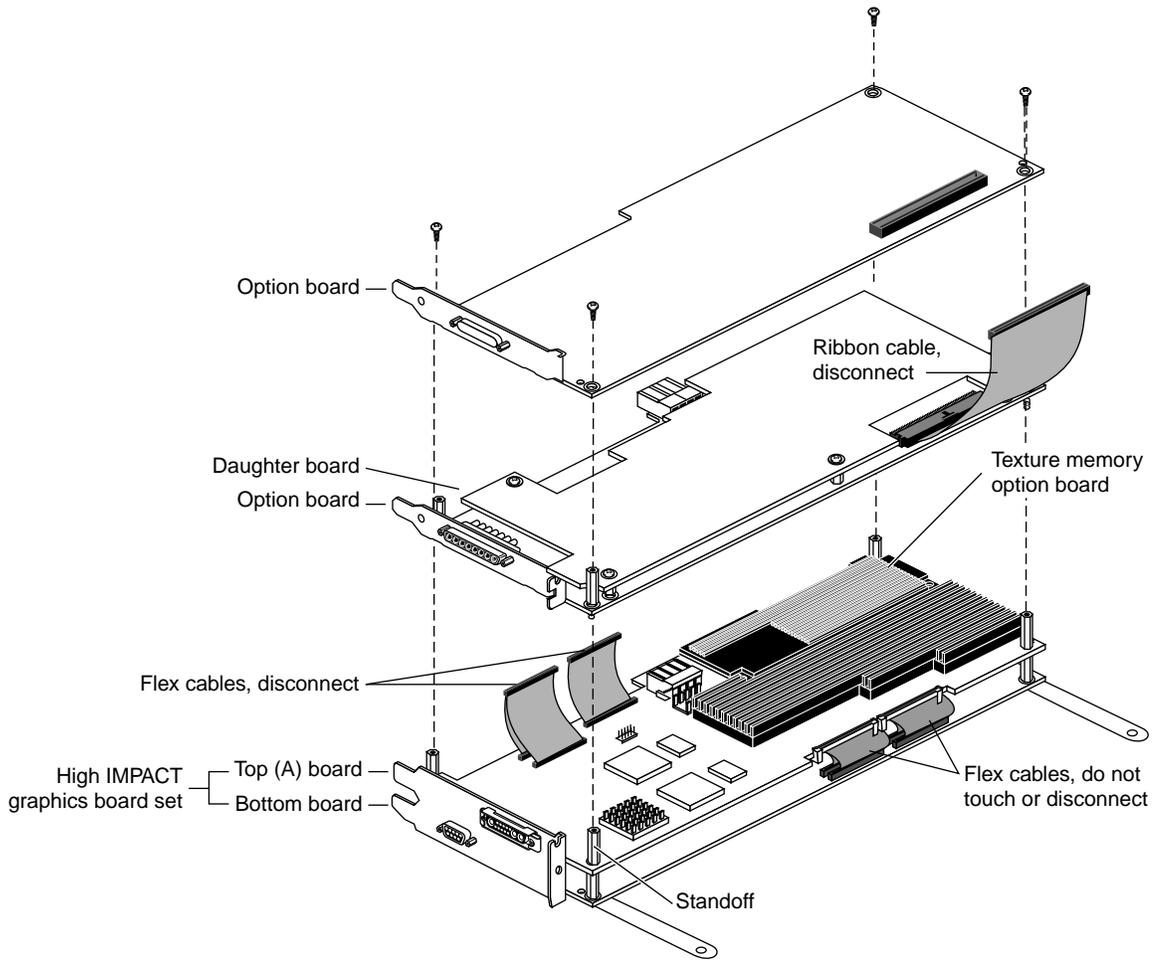


Figure C-2 High IMPACT Graphics Board Set With Option Boards

With a High IMPACT graphics board set, you may see one option, an option with a daughter board, or two option boards as other possible connected combinations.

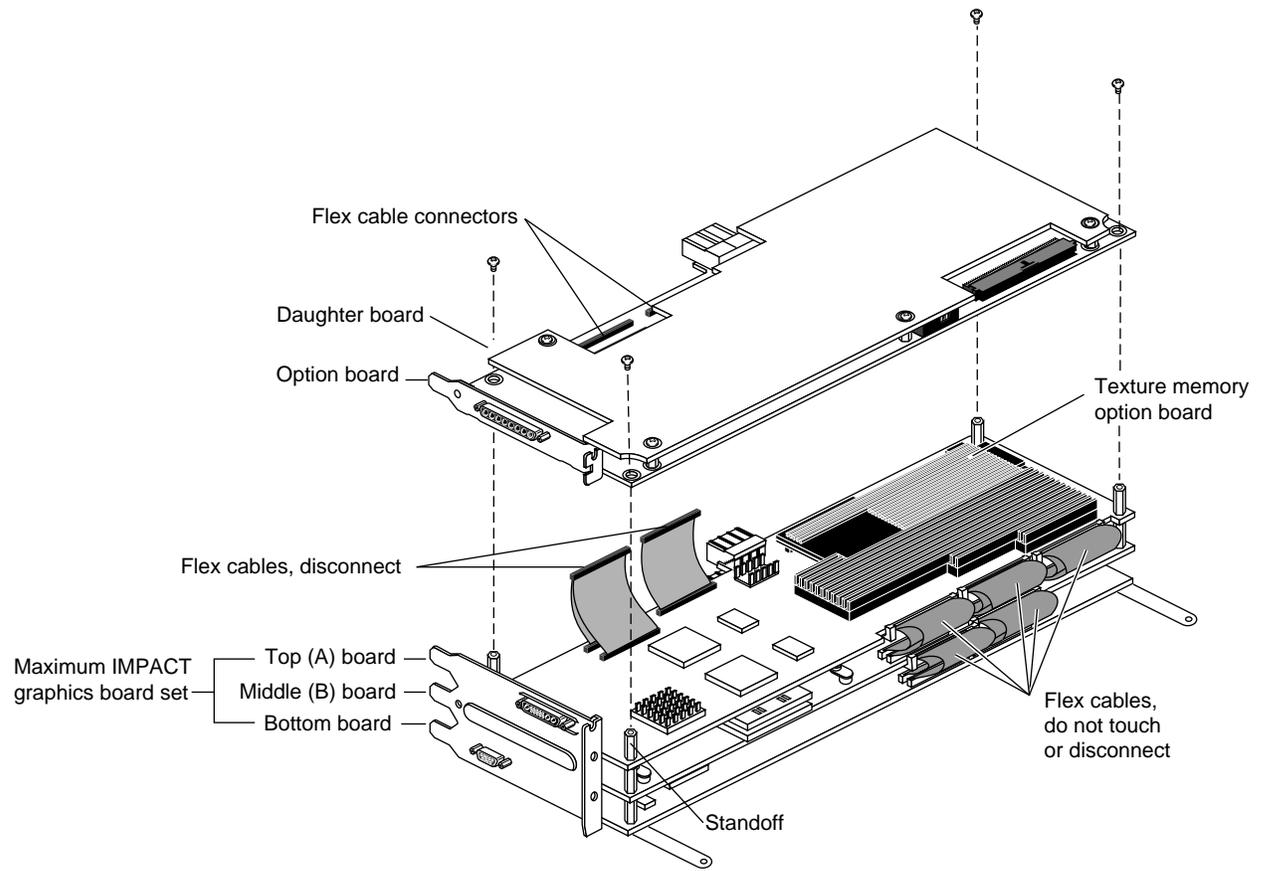


Figure C-3 Maximum IMPACT Graphics Board Set With Option Boards

The Maximum IMPACT graphics board set can be attached by standoffs to one option board, or one option board and daughter board.

Glossary

artifact

In video systems, an unnatural or artificial effect when the system reproduces an image.

bezel

The frame that holds the front cover and attaches to the front of the chassis.

B-Y signal

One of the color difference signals used on the NTSC and PAL systems derived by subtracting luminance (Y) from the blue camera signal (B). The color mixture is close to blue.

chassis

The metal framework of the workstation that contains its working parts.

choose

The action of pressing the left mouse button to bring up a popup menu, then moving the cursor to highlight the command that you want to run, and releasing the button.

composite video

A color encoding method or a video signal that contains all of the color, brightness, and synchronizing information in one signal. The chief composite television standard signals are NTSC, PAL, and SECAM. The Indigo² IMPACT Video board uses the NTSC and PAL standards.

connector

The hardware at the end of a cable that fastens the cable to an outlet, port, or other connector.

console

The window that appears as a stowed icon each time you log in; IRIX reports

all status and error messages to this window.

cover

The molded plastic piece that fits over the chassis. The bezel and front cover attach to the cover.

chrominance signal

The high-frequency portion of the video signal that is the color carrier.

front cover

The pulldown door that allows you to access the power button and drives.

genlock

Synchronizing with another video signal serving as a master timing source. The master timing source can be a composite video signal, a video signal with no active video (only sync information), or, for video studio, a device called a house sync.

luminance

The video signal that describes the amount of light in each pixel.

midplane

In Indigo² IMPACT workstations, a connector board that is located near the middle of the chassis. It is used to connect the graphics board set and GIO and EISA option boards.

NTSC

National Television Systems Committee. A color television standard used in North America and parts of South America and Asia for timing format encoding all color, brightness, and synchronizing information in one signal. The NTSC format uses 525 horizontal lines per frame, with two fields per frame of 262.5 lines each. Each field refreshes at 60 Hz.

PAL

Phase Alternated by Line. A color television timing standard used by most countries in Europe, Australia, and parts of Asia. The PAL standard uses a total of 625 lines per frame, with two fields per frame of 312.5 lines per frame. Each field refreshes at 50 Hz.

pull straps

The straps you pull to remove the graphics board set from the chassis.

R-Y signal

A color difference signal obtained by subtracting the luminance signal from the red camera signal. The color mixture is close to red.

slot cover

The part of an option board that slides into the chassis I/O slots. The slot cover on the Indigo² Video board has two connectors that attach to the Indigo² Video cable and the Indy Cam camera.

standoffs

Spacers that are used to stack and attach the graphics and video boards to each other.

static electricity

Whenever your body comes in contact with metal parts (including printed circuit boards) of computer equipment there is the potential for you to feel an electrical shock (electric-static discharge, or ESD) which could damage the equipment. To prevent this, you must always wear a wrist strap when working with the internal parts of a workstation.

texture mapping

The process of applying an image to a 3-D object to add realism in the rendering.

Video Panel

A software control panel used for selecting video input; adjusting video signal levels and timing characteristics; selecting filtering, processing, and other options

Y signal

The brightness of a video channel.

YUV

A color space (color component encoding format) used by the PAL video standard, in which Y is the luminance signal, and U and V are the chrominance signals. The YUV format derives colors from the RGB format.

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Any information that you provide will be useful. Here is a list of suggested topics:

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