Dual Channel Display Guide for Silicon Graphics Octane2™ and Silicon Graphics Fuel™ Workstations

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New Features in This Guide

This revision of the *Dual Channel Display Guide for Silicon Graphics Octane2 and Silicon Graphics Fuel Workstations* adds instructions for operating and troubleshooting the Dual Channel Display in a Silicon Graphics Fuel workstation.

Installation information for the Silicon Graphics Fuel workstation is not included because installation must be performed by an SGI-trained technician, therefore the title of the book was changed from *Silicon Graphics Octane2 Workstation Dual Channel Display Installation Guide* to *Dual Channel Display Guide for Silicon Graphics Octane2 and Silicon Graphics Fuel Workstations*.

Chapter 3, “Connecting Monitors to the DCD”, now includes instructions to connect to a Dual Channel Display in a Silicon Graphics Fuel workstation.

Chapter 5, “Troubleshooting and Technical Specifications”, now includes instructions to troubleshoot a Dual Channel Display in a Silicon Graphics Fuel workstation.

Record of Revision

Version	Description
001	October 2000 Initial version
002	November 2001 Added instructions to install the Dual Channel Display in Silicon Graphics Octane2 Dual Head systems.
003	September 2002 Added operating and troubleshooting information for the Dual Channel Display in Silicon Graphics Fuel workstations.

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About This Guide

With the Silicon Graphics Dual Channel Display (hereinafter referred to as "DCD") you can expand your viewing area by displaying graphics and text output from one graphics card to two monitors. You can also use the Dual Channel Display to connect a single monitor.

This guide shows you how to install the Dual Channel Display in Silicon Graphics Octane2 workstations, and how to configure and troubleshoot the DCD board in both Silicon Graphics Octane2 and Silicon Graphics Fuel workstations.

Note: Installation of the Dual Channel Display in a Silicon Graphics Fuel workstation involves procedures that should only be performed by an SGI-trained technician. This guide therefore does not describe installation in a Silicon Graphics Fuel workstation, but does include operating and troubleshooting information for the DCD in a Silicon Graphics Fuel workstation.

The guide is organized as follows:

Chapter 1, "Installing the DCD in a Single Head Octane2," shows you how to install the Octane2 Dual Channel Display in a Single Head Octane2.

Chapter 2, "Installing the DCD in a Dual Head Octane2," shows you how to install the Octane2 Dual Channel Display in a Dual Head Octane2.

Chapter 3, "Connecting Monitors to the DCD," shows you how to connect two monitors to the DCD once it is installed in an Octane2 or Silicon Graphics Fuel workstation.

Chapter 4, "Configuring the DCD," explains how to configure the DCD.

Chapter 5, "Troubleshooting and Technical Specifications," provides troubleshooting information and technical specifications.

Appendix A, “Care and Cleaning of Compression Connectors”, provides information useful to anyone who works with compression connectors.

Related Publications

The following documents contain additional information that may be helpful:

- *Octane2 Workstation Owner’s Guide*
- *Silicon Graphics Fuel Visual Workstation Hardware User’s Guide*
- *Silicon Graphics Octane2 Dual Head Installation Guide*
- *Personal System Administration Guide*

A copy of this guide and other SGI technical publications are accessible in the SGI Technical Publications Library. To access the library, see the following website: http://techpubs.sgi.com/library/.

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Conventions

The following conventions are used throughout this document:

Convention	Meaning
`command`	This fixed-space font denotes literal items such as commands, files, routines, path names, signals, messages, and programming language structures.
variable	Italic typeface denotes variable entries and words or concepts being defined.

Convention	Meaning
`user input`	This bold, fixed-space font denotes literal items that the user enters in interactive sessions. Output is shown in nonbold, fixed-space font.
[]	Brackets enclose optional portions of a command or directive line.
...	Ellipses indicate that a preceding element can be repeated.
GUI	This font denotes the names of graphical user interface (GUI) elements such as windows, screens, dialog boxes, menus, toolbars, icons, buttons, boxes, fields, and lists.

Reader Comments

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Installing the DCD in a Single Head Octane2

This chapter shows you how to install the DCD in your Octane or Octane2 workstation with Single Head VPro graphics. The following topics are covered:

- "Checking Your Shipment" on page 2
- "Checking Your Graphics Board" on page 3
- "Determining Your IRIX Version" on page 4
- "Preparing Your Workstation" on page 5
- "Connecting the DCD" on page 12
- "Reinstalling the XIO Tri-Module" on page 25
- "Removing the DCD" on page 28

Checking Your Shipment

Make sure your shipment contains the items shown in Figure 1-1.

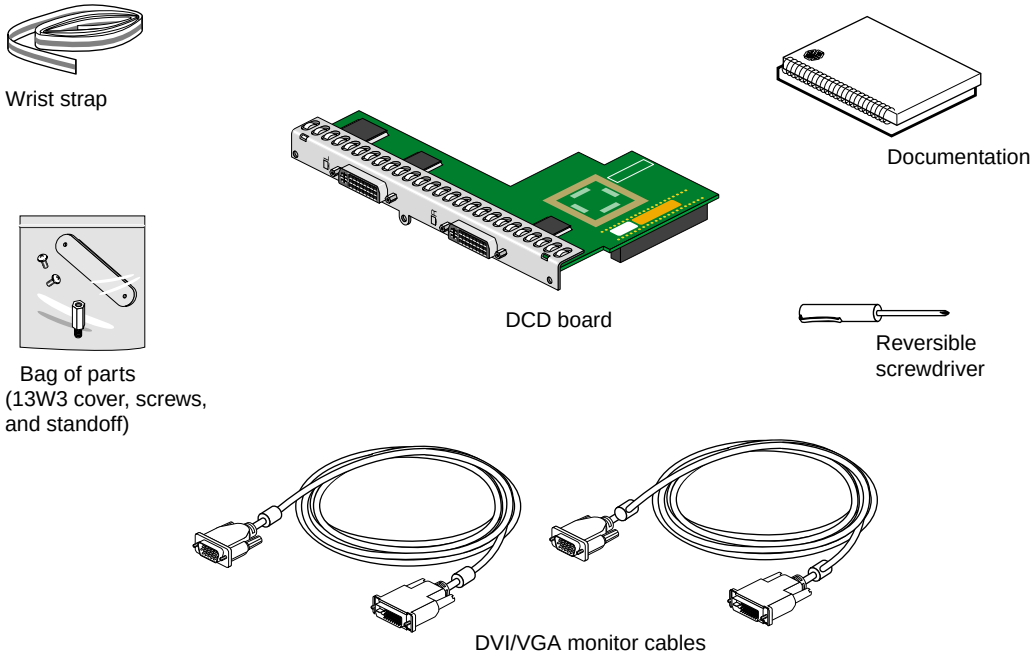


Figure 1-1 DCD Shipment Components

Checking Your Graphics Board

To use the DCD, your workstation must have a VPro V12 graphics board installed. If you have a Dual Head workstation, see Chapter 2, “Installing the DCD in a Dual Head Octane2”.

To verify that your system contains a VPro V12 graphics board, follow these steps:

1. Open a UNIX shell.
2. At the prompt, enter **`hinv`**

   You will see output similar to the following:

   ```
   2 250 MHZ IP30 Processors
   CPU: MIPS R10000 Processor Chip Revision: 3.4
   FPU: MIPS R10010 Floating Point Chip Revision: 0.0
   Main memory size: 512 Mbytes
   Xbow ASIC: Revision 1.4
   Instruction cache size: 32 Kbytes
   Data cache size: 32 Kbytes
   Secondary unified instruction/data cache size: 1 Mbyte
   Integral SCSI controller 0: Version QL1040B (rev. 2), single ended
     Disk drive: unit 1 on SCSI controller 0
   Integral SCSI controller 1: Version QL1040B (rev. 2), single ended
   IOC3 serial port: tty1
   IOC3 serial port: tty2
   IOC3 parallel port: plp-1
   Graphics board: V12
   Integral Fast Ethernet: ef0, version 1, pci 2
   Iris Audio Processor: version RAD revision 12.0, number 1
   ```

3. Look for the following line describing your graphics board:

   ```
   Graphics board: V12
   ```

   If your graphics board is not listed as V12, you cannot use the DCD. For more information, contact your authorized SGI sales representative.

Determining Your IRIX Version

If your Octane or Octane2 workstation has IRIX 6.5.14, you must also have a software patch installed before you can install the DCD.

To determine the version of the IRIX operating system installed on your Octane or Octane2 system, follow the instructions in this section.

From an IRIX command prompt, type:

```
1% uname -R
```

You will see output similar to the following:

```
6.5 6.5.13f
```

If your system is running IRIX version 6.5.14, you need patch 4426 before you install the DCD. To determine if you have patch 4426 installed, type the following at an IRIX command prompt:

```
2% versions patchSG0004426
```

If the output of this command shows nothing under the headings “Name,” “Date,” and “Description,” you do not have patch 4426 installed. You must install this patch (or you must upgrade your system to IRIX 6.5.15 or later, when released) before installing the DCD.

If the output of this command includes items below the Name-Date-Description headings, you do have patch 4426 installed.

Preparing Your Workstation

To install the DCD, you must remove your workstation's XIO Tri-Module. Before you begin this operation, follow these steps:

1. Open the cover and press the power button to power off your workstation (see A in Figure 1-2).
2. Unplug the power cord (B).
3. Press the monitor power switch to power off your monitor (C).
4. Wait 5 minutes before removing the XIO Tri-Module.

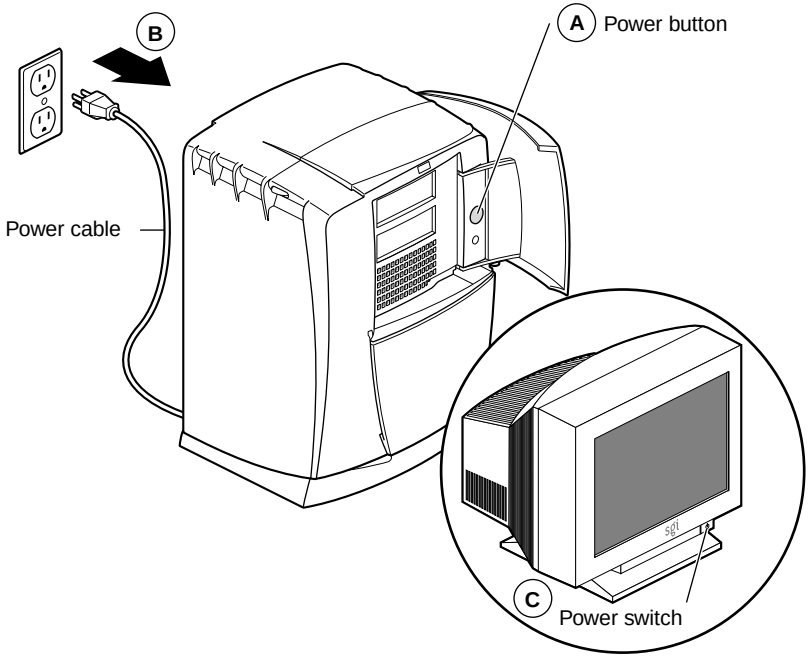


Figure 1-2 Powering Off Your Workstation

Warning: The heat sinks on the XIO boards get very hot. Wait 5 minutes after powering off your workstation before you remove the XIO Tri-Module. Test the temperature of the heatsinks before handling any of the XIO boards.

Removing the Cables from the XIO Tri-Module

1. Remove all the cables from the XIO Tri-Module (only the monitor cable on the VPro graphics board is shown in Figure 1-3).

Note: The following illustrations show a workstation with a PCI module installed. Your workstation may not have a PCI module, but the DCD installation is the same.

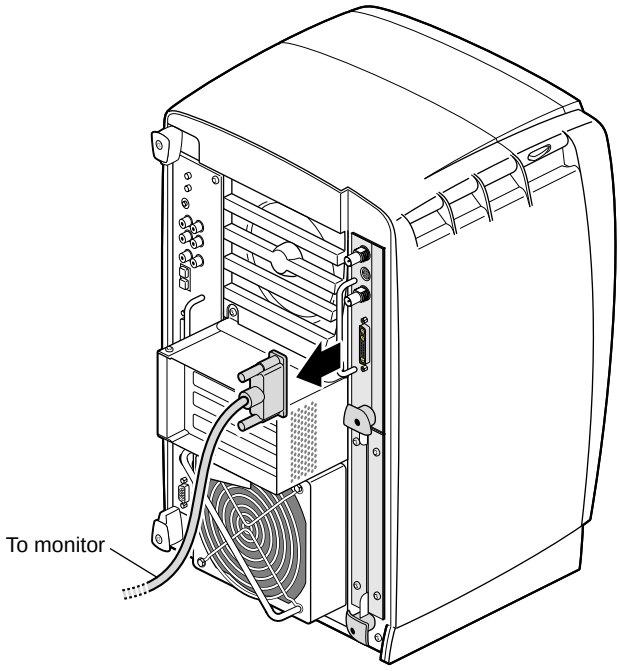


Figure 1-3 Removing the Monitor Cable

Attaching the Wrist Strap

Caution: The internal components are extremely sensitive to static electricity; always wear the wrist strap when you handle parts inside your workstation.

To attach the wrist strap, follow these steps:

1. Unroll the first two folds of the band (see A in Figure 1-4).
2. Wrap the exposed adhesive side firmly around your wrist, unroll the rest of the band, then peel the liner from the copper foil at the opposite end (B).
3. Attach the copper foil to any exposed electrical ground, such as a metal part of the workstation (C).

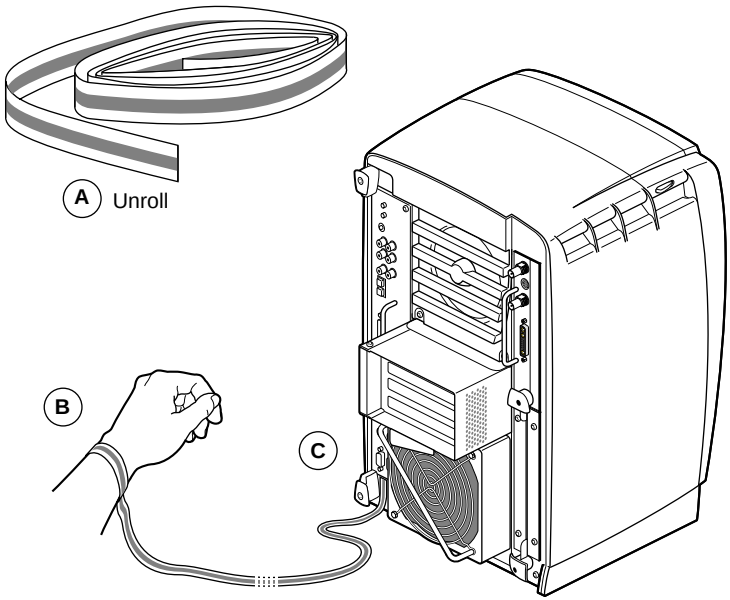


Figure 1-4 Attaching the Wrist Strap

Removing the XIO Tri-Module

You must remove your workstation's XIO Tri-Module so you can connect the DCD to the daughterboard slot on the VPro graphics board. Before removing the XIO Tri-Module, you must power off your workstation, wait 5 minutes to allow the heat sinks to cool, and attach the wrist strap, as described in the previous sections.

To remove the XIO Tri-Module, follow these steps:

1. Loosen the two captive screws in the XIO Tri-Module handles with the supplied Phillips screwdriver until the screws are disconnected from the chassis (see Figure 1-5).

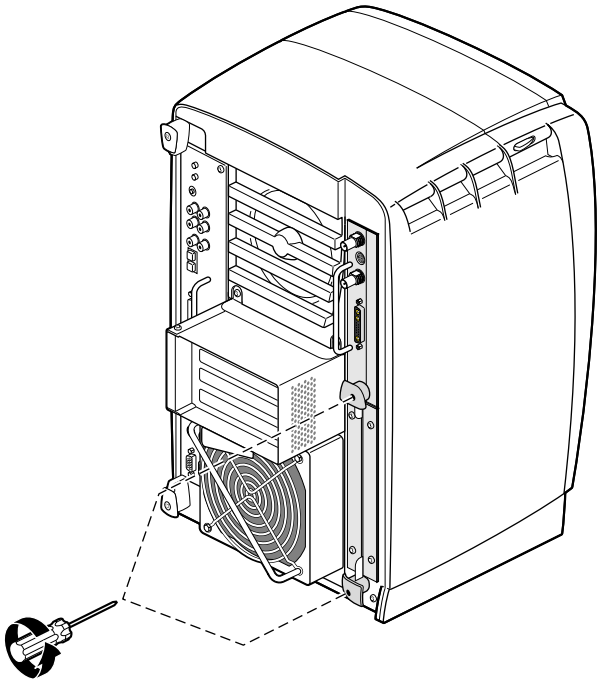


Figure 1-5 Loosening the XIO Tri-Module Screws

Warning: The heat sinks on the XIO boards get very hot. Wait 5 minutes after powering off your workstation before you remove the XIO Tri-Module. Test the temperature of the heatsinks before handling any of the XIO boards.

2. Grasp the sliding handles and pull until the sliding portion of the XIO Tri-Module protrudes about an inch from the chassis, as shown in Figure 1-6.

   The sliding handles and XIO Tri-Module move out about one inch before the I/O panels move.

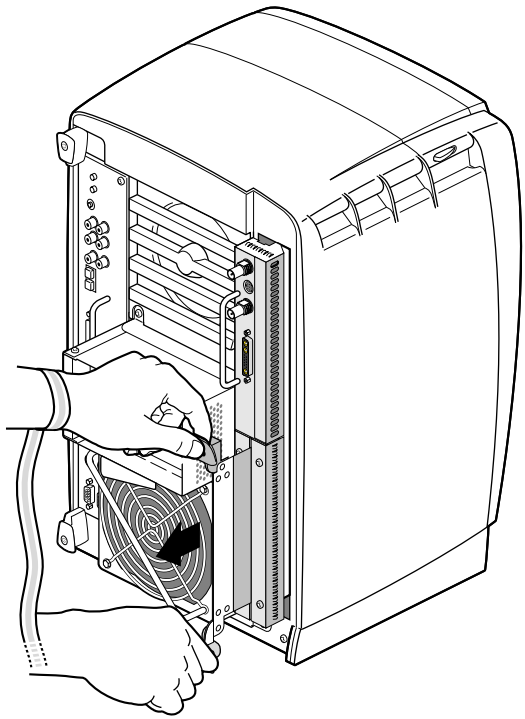


Figure 1-6 Releasing the XIO Tri-Module

3. Grasp the XIO Tri-Module by the immovable handle, and support the base of the module as you remove it from the chassis, as shown in Figure 1-7.

Caution: Do not push on the sliding handles after you remove the XIO Tri-Module. Later when you reinsert the Tri-Module, the sliding handles must protrude.

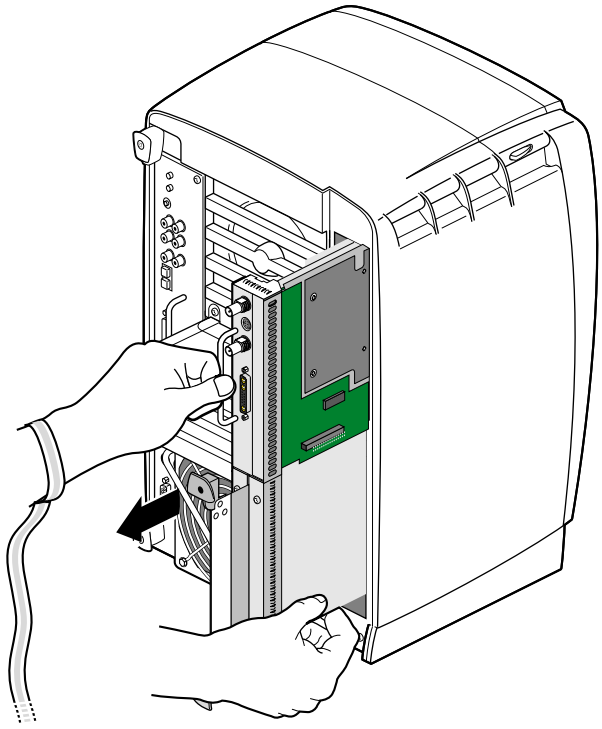


Figure 1-7 Removing the XIO Tri-Module

Compression Connector Caution

Caution: The compression connector on the XIO Tri-Module is very delicate and easily damaged. Do not touch or bump the gold bristled pad (see Figure 1-8). The connector is on the side opposite the handle, as shown in Figure 1-9. Do not grab the back of the XIO Tri-Module when you remove it, or the compression connector may be damaged.

Always place a cap on the compression connector after removing the XIO Tri-Module (caps are included with your workstation). Before reinstalling the XIO Tri-Module in your workstation, remove the cap from the compression connector.

Before you remove the XIO Tri-Module, read "Care and Cleaning of the Compression Connector" in the Appendix section of your owner's guide.

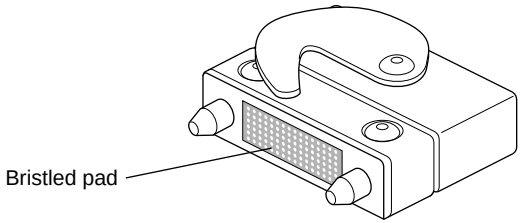


Figure 1-8 Identifying the Compression Connector

Connecting the DCD

The DCD connects to the daughterboard slot on the XIO Tri-Module VPro graphics board.

Caution: The following steps include detailed instructions for aligning the board. You must follow these specific instructions to avoid damaging the connector pins. If you attempt to connect the board before properly aligning it, the connector pins will likely be damaged.

1. Place the XIO Tri-Module on a flat, antistatic surface with the VPro graphics board I/O panel on the left side, as shown in Figure 1-9. An empty antistatic bag on your desk works well.

   When the XIO Tri-Module is out of the chassis, the sliding handles must protrude.

   A label identifies each XIO slot (B on one side, C on the other). Slot B is the daughterboard slot where you connect the DCD, as described later in this chapter.

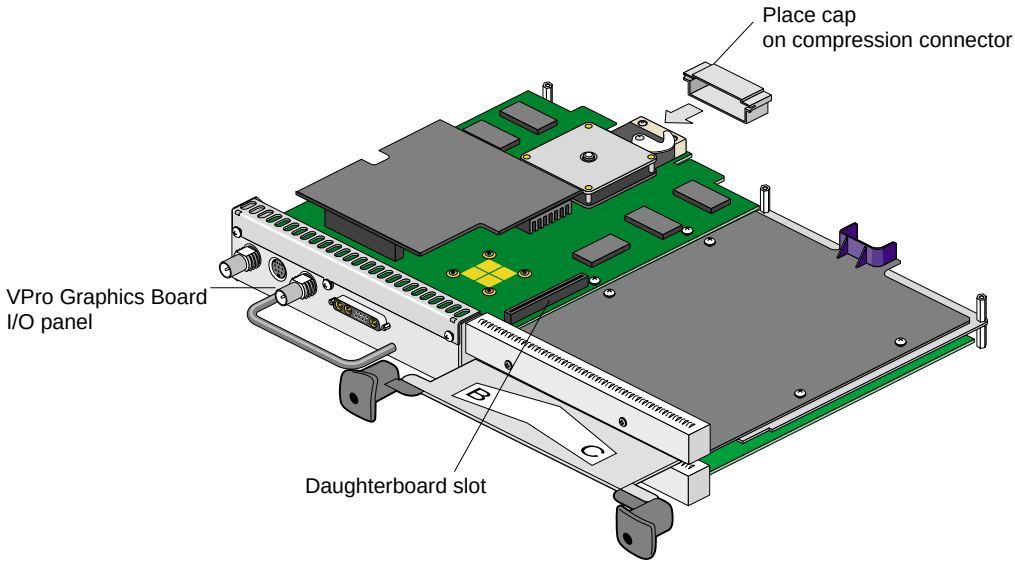


Figure 1-9 Placing the XIO Tri-Module on Its Side

2. Place a cap on the XIO Tri-Module compression connector, as shown in Figure 1-9 and Figure 1-10.

   Caps are included with your workstation.

Caution: To prevent damage to the connector, *do not* touch or bump the gold (front) surface.

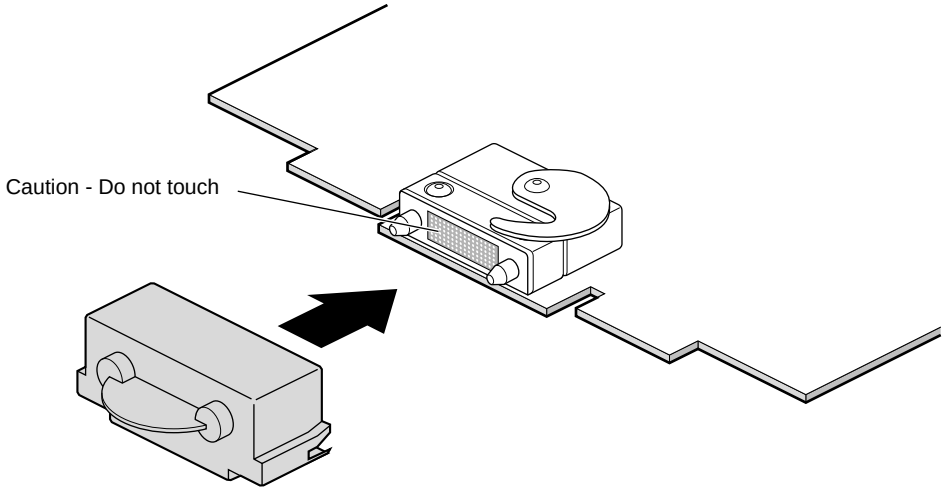


Figure 1-10 Placing a Cap on the XIO Compression Connector

3. Remove the three screws from the VPro graphics board blank panel, as shown in Figure 1-11. Save the screws for later in the installation.

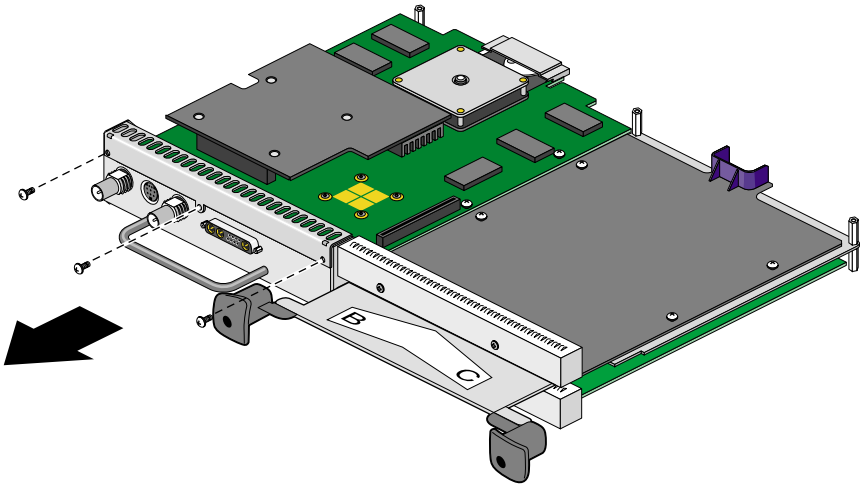


Figure 1-11 Removing the Screws from the VPro Graphics Board Blank Panel

4. Remove the blank panel from the VPro graphics board, as shown in Figure 1-12.

   Store the blank panel in a safe place. If you remove the DCD, you need to reinstall the VPro graphics board blank panel.

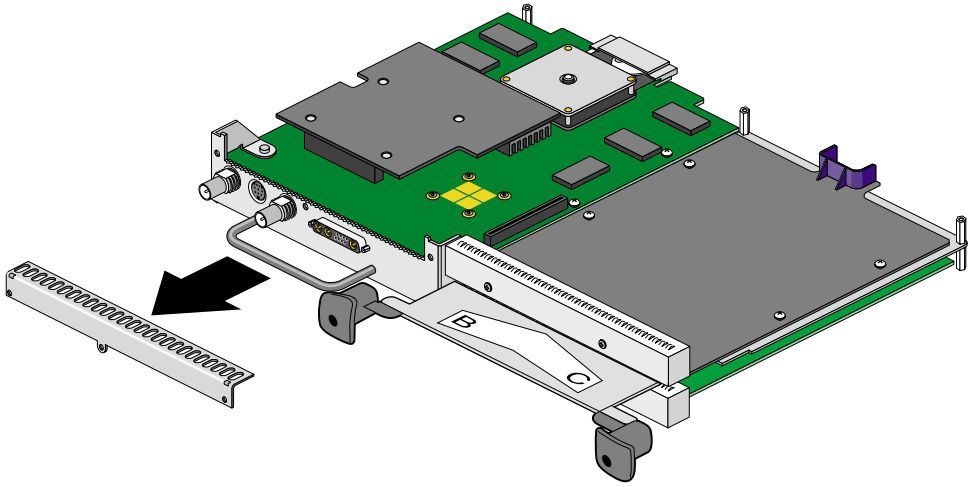


Figure 1-12 Removing the VPro Graphics Board Blank Panel

5. Remove the nylon standoff from the bag of parts and install it as follows:
   - Remove the screw that is located behind the daughterboard connector on the VPro graphics board (see A in Figure 1-13), and save it for later in the installation.
   - Insert the nylon standoff into the hole from which you removed the screw (B).
   - Seat the nylon standoff by turning it clockwise (C), but do not overtighten.

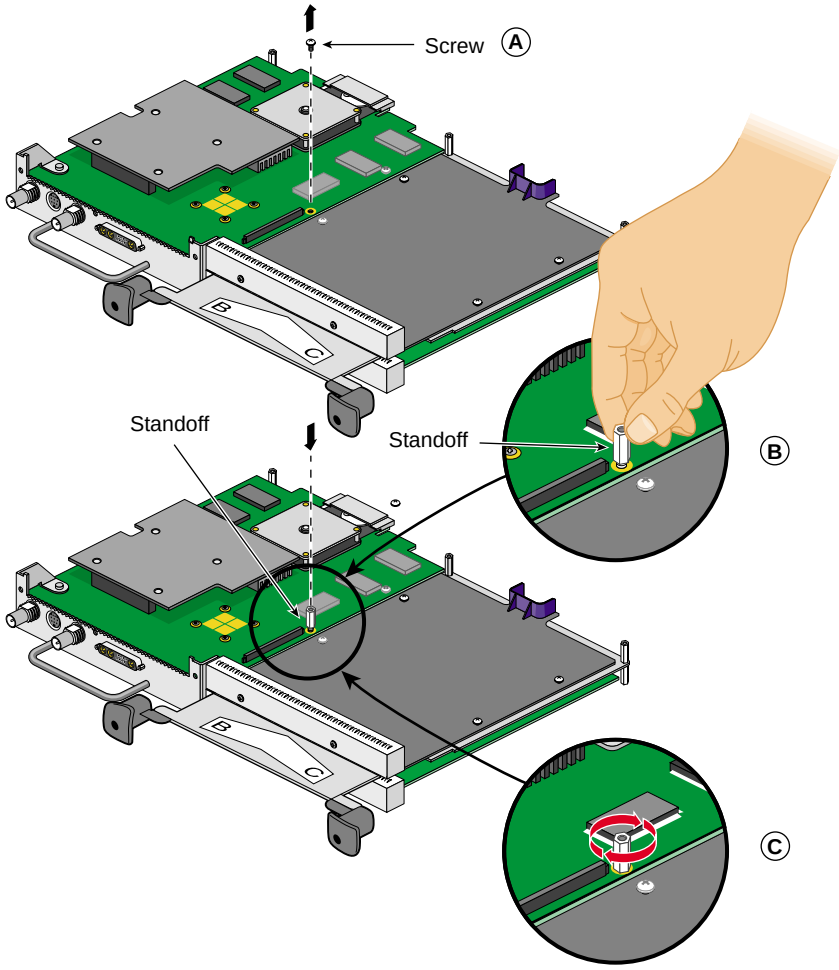


Figure 1-13 Installing the Standoff

6. Remove the DCD from its antistatic bag.

Caution: The following steps include detailed instructions for aligning the board. You must follow these specific instructions to avoid damaging the connector pins. If you attempt to connect the board before properly aligning it, the connector pins will likely be damaged.

7. Align the DCD I/O panel with the VPro graphics board I/O panel as follows:
   - Line up the DCD's two outside holes with the two outside holes on the VPro graphics board (see A in Figure 1-14).
   - Place the DCD on top of the VPro graphics board.
   - Line up the two locator slots on the outside of the DCD with the locator tabs on the outside of the VPro graphics board (B).

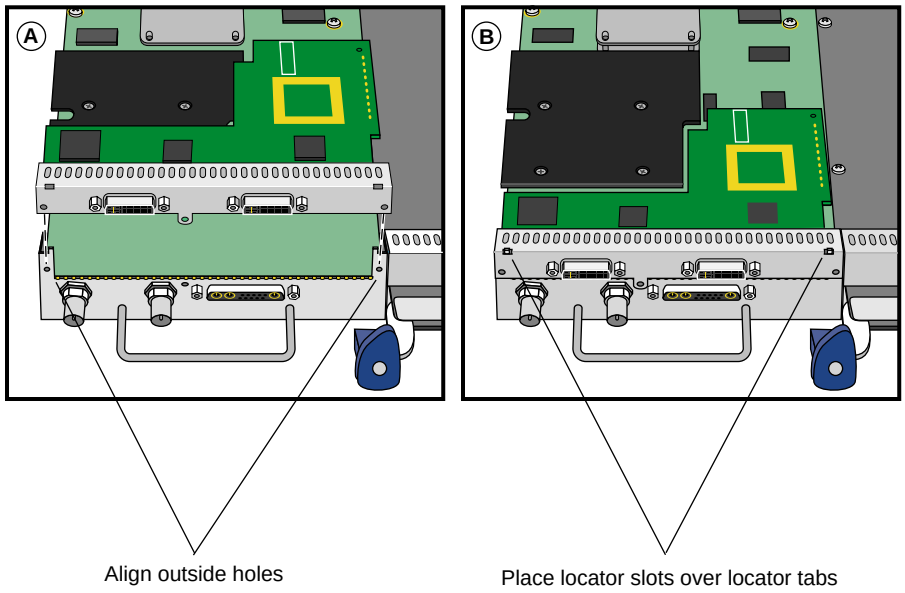


Figure 1-14 Positioning the DCD

8. Seat the DCD connector in the VPro graphics board daughterboard slot, as follows:
   a. Push the top edge of the DCD I/O panel against the VPro graphics board I/O panel (see A in Figure 1-15).

Note: As you push the board forward, the connectors move into alignment and partially seat without the assistance of downward pressure.

b. Press down on the top of the DCD I/O panel to fully seat its locator slots over the VPro graphics board locator tabs (B).

c. Press down gently on the area above the DCD connector to make sure it is fully seated (C). See Figure 1-16 for a side view seating of the board.

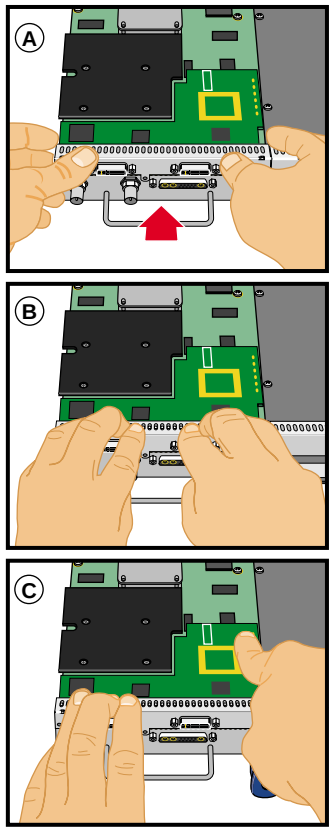


Figure 1-15 Seating the DCD On the VPro Graphics Board (front view)

Figure 1-16 shows a side view seating of the board.

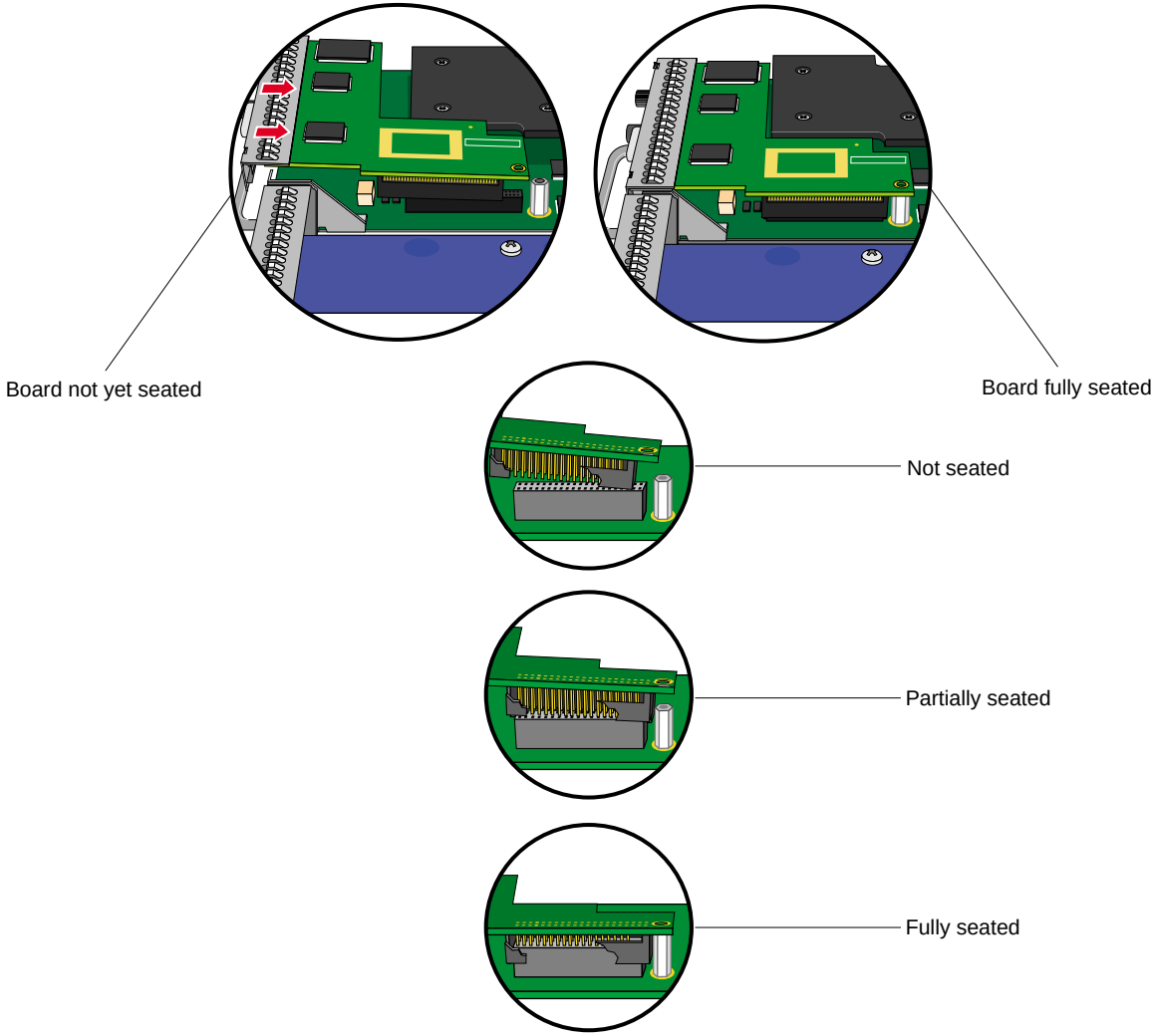


Figure 1-16 Seating the DCD On the VPro Graphics Board (side view)

Note: After you complete step 8, make sure the locator tabs at each end of the VPro graphics board I/O panel protrude through the locator slots on each end of the DCD I/O panel, as shown in Figure 1-17.

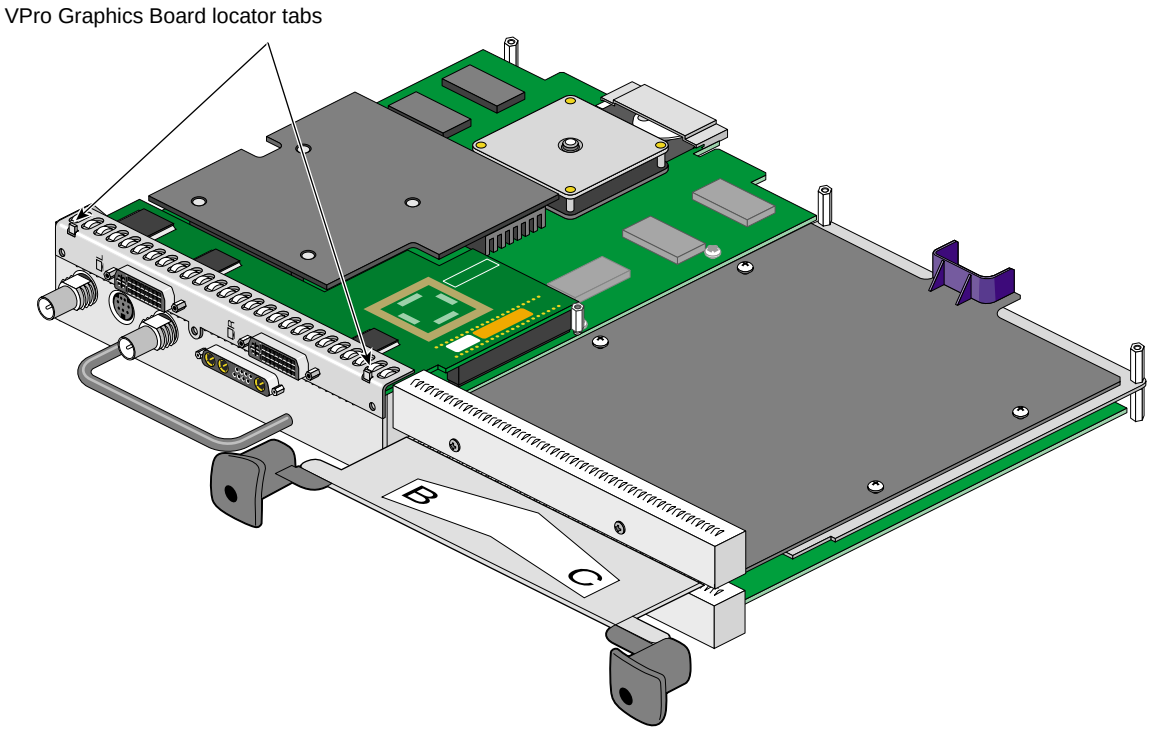


Figure 1-17 VPro Locator Tabs Protrude through DCD Locator Slots

9. Secure the DCD to the VPro graphics board with the three screws you removed from the blank panel, as shown in Figure 1-18.

   Install the two outside screws first, then install the middle screw.

Note: Turn the screws until they are snug, but do not overtighten them.

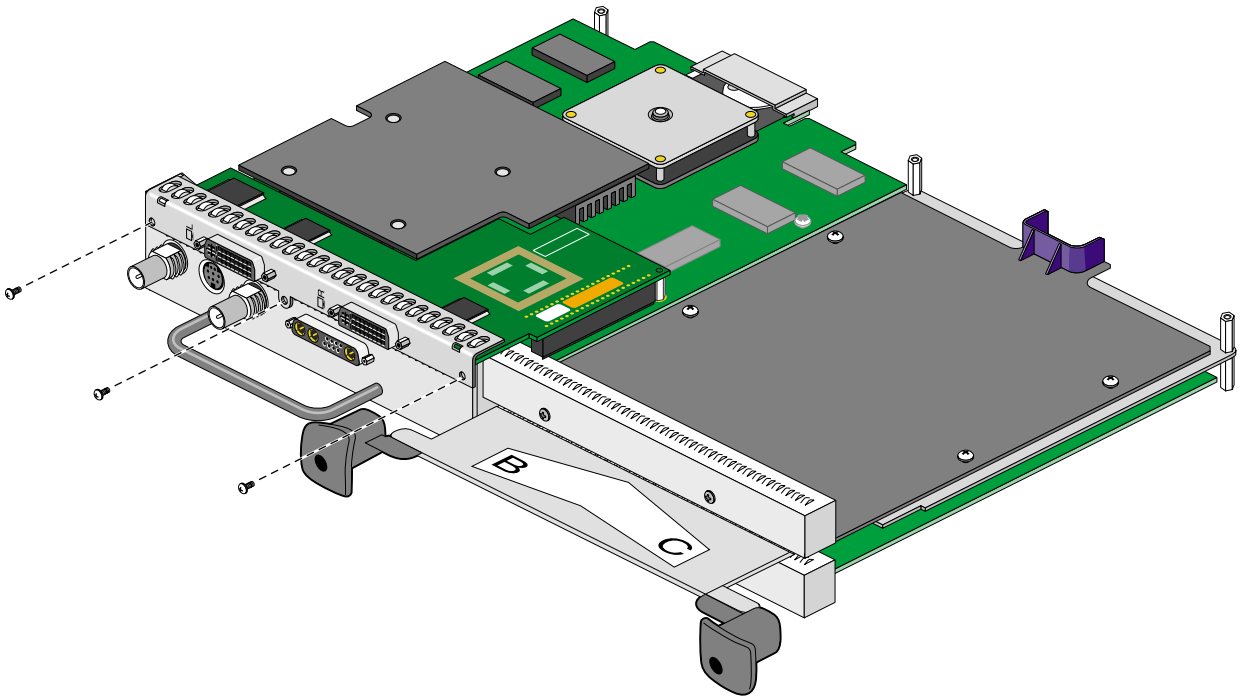


Figure 1-18 Securing the DCD to the VPro Graphics Board

10. Place the screw you removed from the VPro graphics board into the hole behind the DCD connector (above the standoff), then tighten the screw by turning it clockwise, as shown in Figure 1-19.

    The DCD is now securely connected to the VPro graphics board.

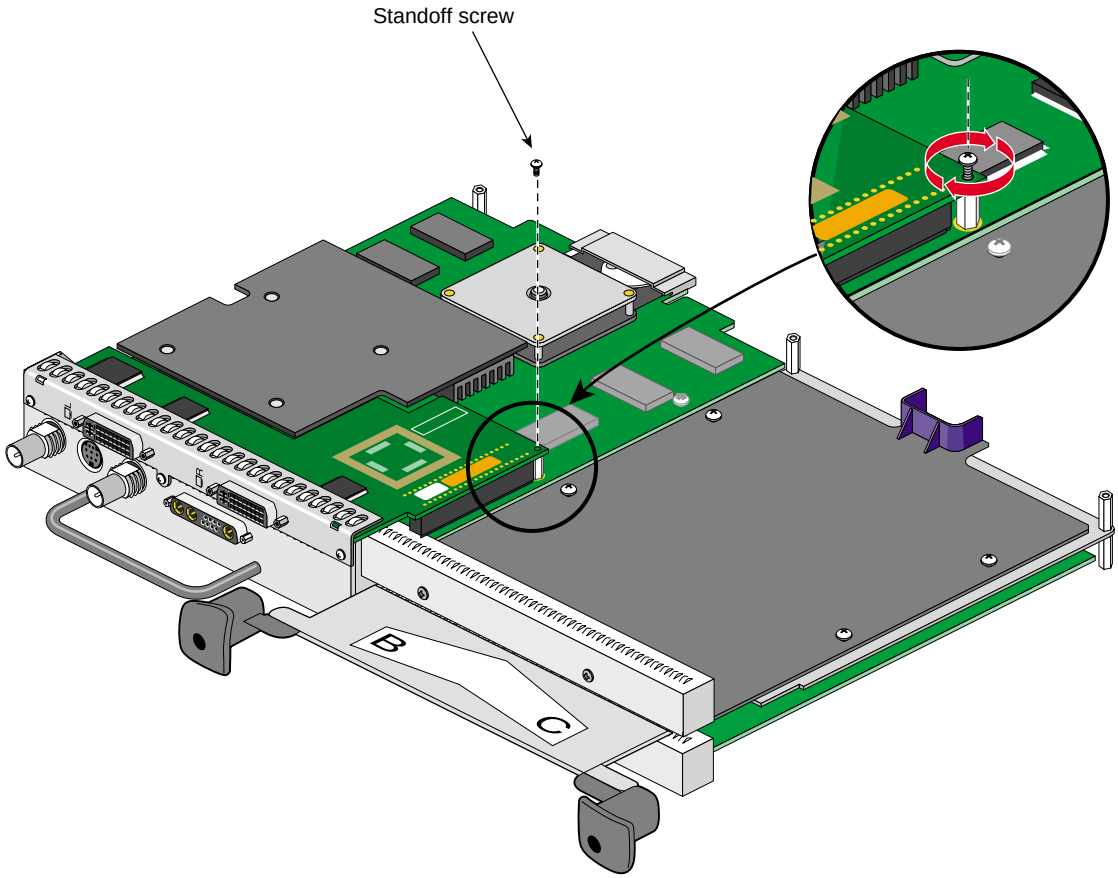


Figure 1-19 Securing the DCD to the Standoff

11. Remove the 13W3 cover and the two screws from the bag of parts.
12. Place the 13W3 cover over the VPro graphics board monitor port, with the padded side of the cover facing the monitor port, as shown in Figure 1-20.

    When a monitor is not connected to the VPro graphics board monitor port, you must install the 13W3 cover to ensure that the system complies with local and international EMC regulations.
13. Align the two outside holes of the 13W3 cover with the two thumbscrew holes on the sides of the VPro graphics board monitor port.

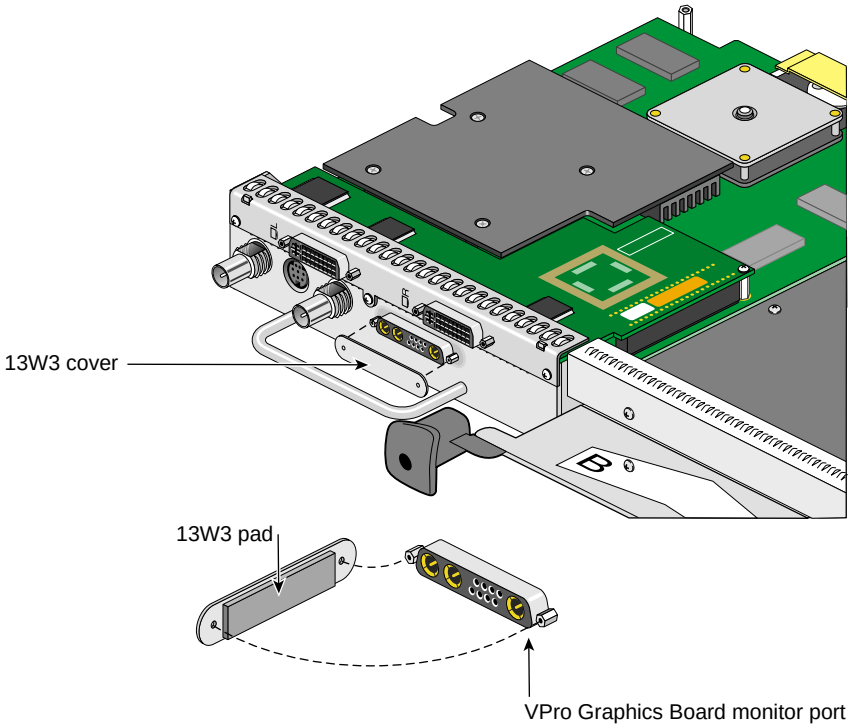


Figure 1-20 Placing the 13W3 Cover over the VPro Graphics Board Monitor Port

14. Insert a screw in each hole of the 13W3 cover, then tighten each screw to secure the cover to the VPro graphics board, as shown in Figure 1-21.

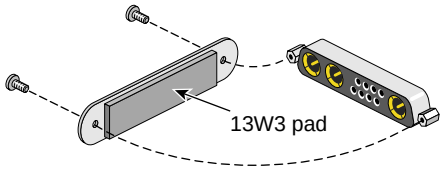


Figure 1-21 Installing the 13W3 Cover

Reinstalling the XIO Tri-Module

Caution: To prevent damage to your workstation, reinstall the XIO Tri-Module with the Graphics Board I/O panel aligned with the top of the workstation.

Follow these steps to reinstall the XIO Tri-Module:

1. Remove the cap from the XIO Tri-Module compression connector.
2. Slide the XIO Tri-Module into the guides on the top and bottom of the workstation.
3. Before you insert the XIO Tri-Module, make sure the sliding handles protrude in a locked position from the I/O panels, as shown in Figure 1-22.

   If the sliding handles are flush with the I/O panels, the XIO Tri-Module will stop during insertion. Pull out the sliding handles until the sliding portion of the XIO Tri-Module looks like Figure 1-22.
4. Grasp the immovable handle area with one hand while supporting the XIO Tri-Module with the other, and slide the module into the chassis.

   Use the immovable handle to push the XIO Tri-Module into a locked position. The I/O panels are nearly flush with the workstation when properly inserted, but there is a slight variation in the depth of the boards.
5. Push the sliding handles until the sliding portion of the module is flush with the workstation.

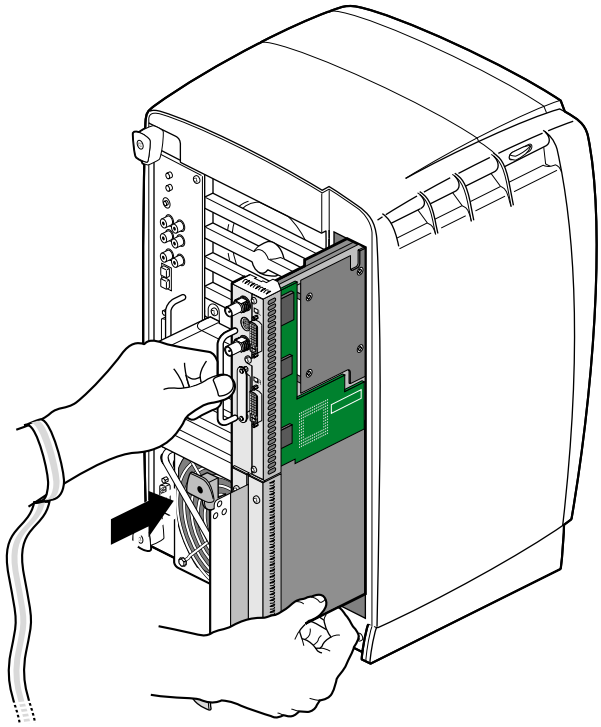


Figure 1-22 Inserting the XIO Tri-Module

6. Tighten the captive screws in the sliding handles, as shown in Figure 1-23.

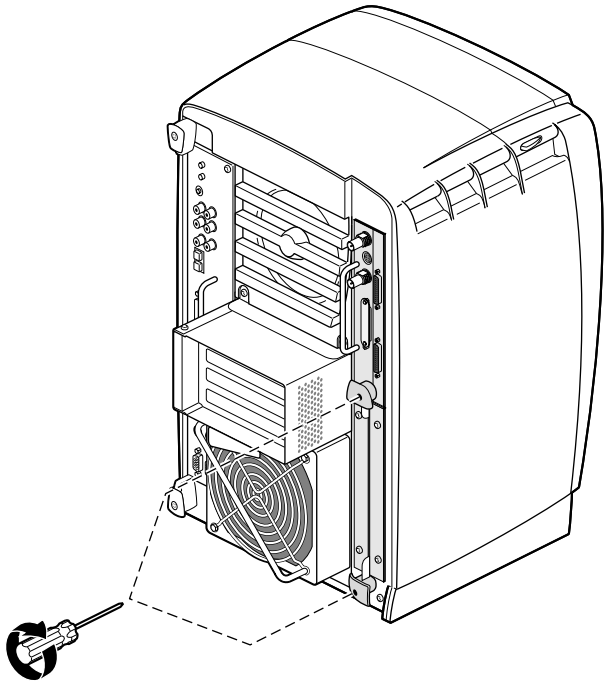


Figure 1-23 Tightening the XIO Tri-Module Screws

7. Remove the wrist strap.
8. Reconnect all cables to the XIO Tri-Module, except for the monitor cable.

   You are finished installing your DCD.

   Now go to Chapter 2 for instructions on connecting two monitors to the DCD.

Removing the DCD

If you want to remove the DCD and connect a monitor to the VPro graphics board monitor port, follow these steps:

1. Power off and prepare your workstation, as described earlier in this chapter.
2. Remove the XIO Tri-Module, as described earlier in this chapter.
3. Remove the DCD as follows (see Figure 1-24):
   a. Remove the three screws that secure the DCD I/O panel to the VPro graphics board I/0 panel.
   b. Remove the standoff screw.
   c. Remove the DCD and store it in an antistatic bag.

Note: As you remove the DCD, make sure its locator slots are completely detached from the VPro graphics board locator tabs.

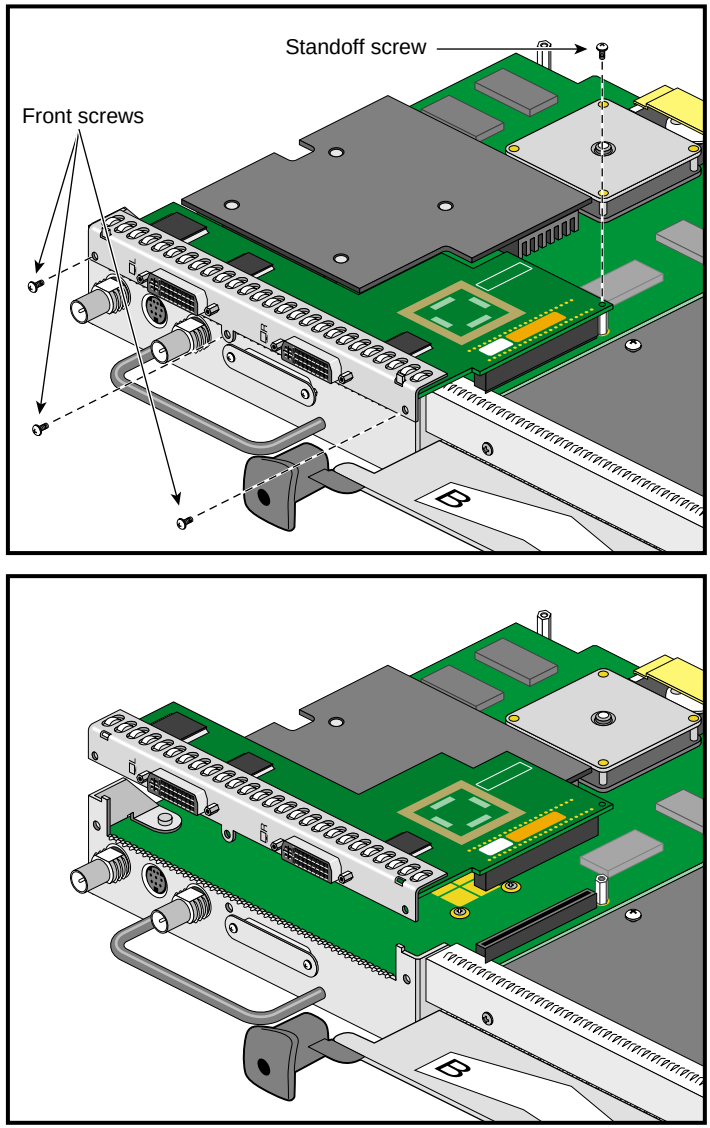


Figure 1-24 Removing the DCD

4. Reinstall the VPro graphics board blank panel, as shown in Figure 1-25.

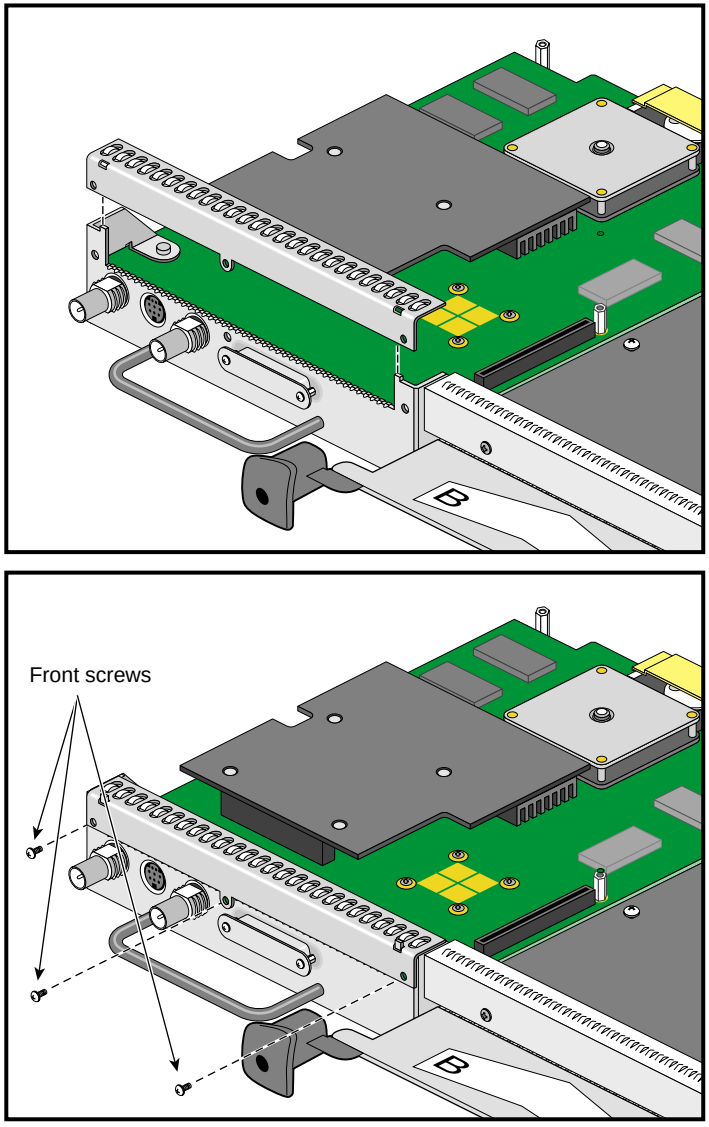


Figure 1-25 Reinstalling the VPro graphics board Blank Panel

5. Remove the two screws securing the 13W3 cover to the VPro graphics board, then remove the cover, as shown in Figure 1-26.

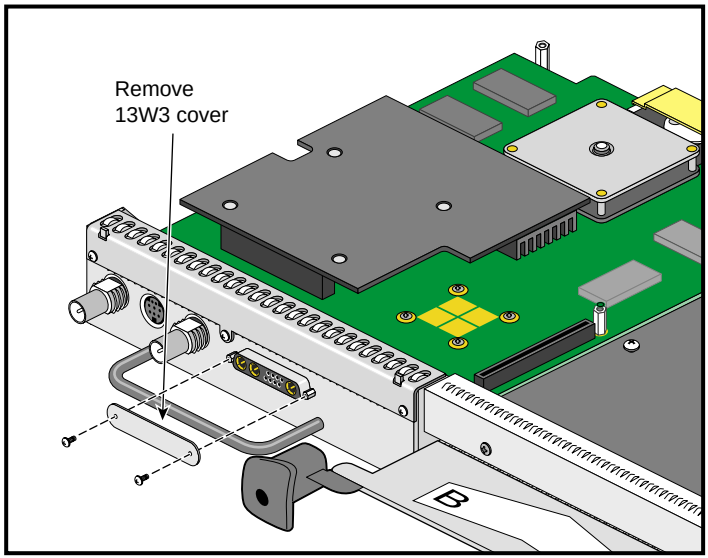


Figure 1-26 Removing the 13W3 Cover

6. Reinstall the XIO Tri-Module, as described earlier in this chapter.
7. Connect a monitor to the VPro graphics board monitor port, as shown in Figure 1-27.
8. Connect one end of the monitor power cable to your workstation and the other end to a 3-prong grounded electrical outlet.
9. Reconnect your workstation's power cable.
10. Power on your workstation and monitor.

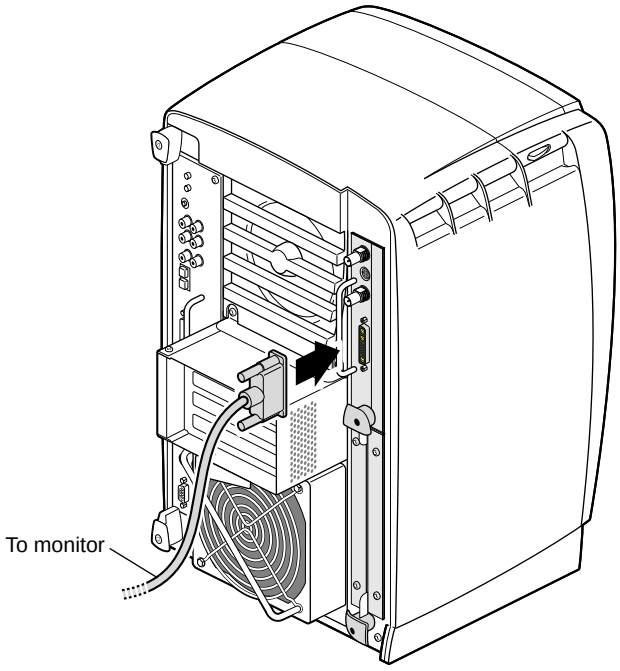


Figure 1-27 Connecting a Monitor to the VPro graphics board

Installing the DCD in a Dual Head Octane2

This chapter shows you how to install the DCD in your Silicon Graphics Octane or Silicon Graphics Octane2 workstation containing Dual Head VPro graphics.

The instructions in this chapter focus on the installation of one DCD. To install a second DCD, see "Installing a Second DCD" on page 64.

The following topics are covered:

- "Checking Your Shipment" on page 34
- "Checking Your Graphics Board" on page 35
- "Preparing Your Workstation" on page 36
- "Removing the Dual Head XIO Module" on page 40
- "Connecting the DCD" on page 44
- "Installing a Second DCD" on page 64
- "Reinstalling the Dual Head XIO Module" on page 66
- "Removing the DCD" on page 71

Checking Your Shipment

Make sure your shipment contains the items shown in Figure 2-1.

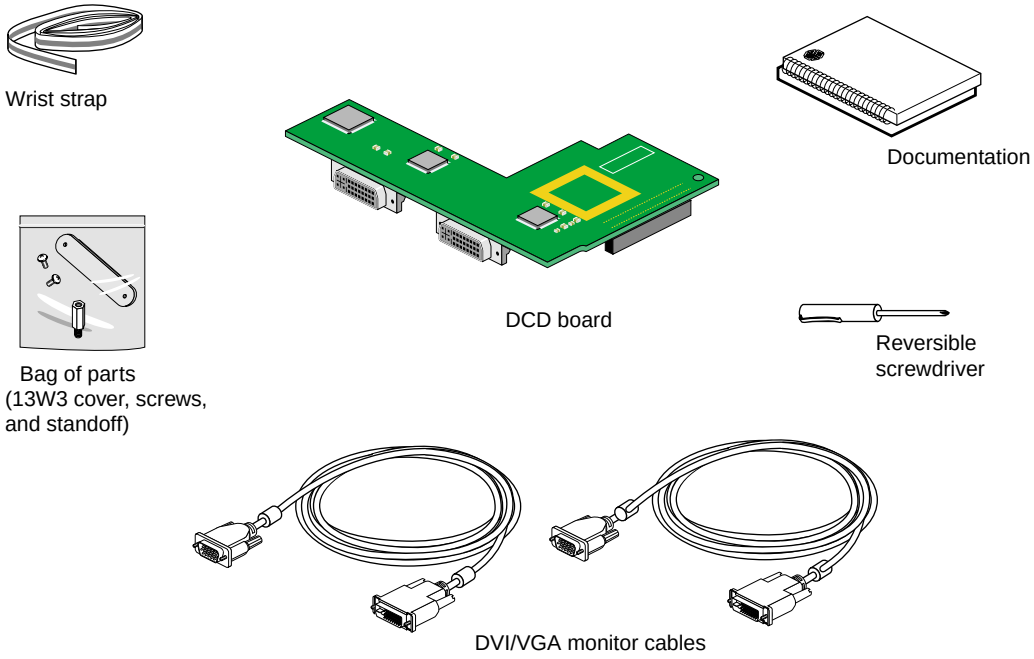


Figure 2-1 DCD Shipment Components

Checking Your Graphics Board

To use the DCD, your Dual Head workstation must have VPro V12 graphics boards installed. If you have a Single Head workstation, see Chapter 1, “Installing the DCD in a Single Head Octane2”. Properly installed VPro V12 graphics boards ensure that you are running the correct version of IRIX.

To verify that your system has VPro V12 graphics boards, follow these steps:

1. Open a UNIX shell.
2. At the prompt, enter **`hinv`**

   You will see output similar to the following:

   ```
   2 250 MHZ IP30 Processors
   CPU: MIPS R10000 Processor Chip Revision: 3.4
   FPU: MIPS R10010 Floating Point Chip Revision: 0.0
   Main memory size: 512 Mbytes
   Xbow ASIC: Revision 1.4
   Instruction cache size: 32 Kbytes
   Data cache size: 32 Kbytes
   Secondary unified instruction/data cache size: 1 Mbyte
   Integral SCSI controller 0: Version QL1040B (rev. 2), single ended
     Disk drive: unit 1 on SCSI controller 0
   Integral SCSI controller 1: Version QL1040B (rev. 2), single ended
   IOC3 serial port: tty1
   IOC3 serial port: tty2
   IOC3 parallel port: plp-1
   Graphics board: V12
   Graphics board: V12
   Integral Fast Ethernet: ef0, version 1, pci 2
   Iris Audio Processor: version RAD revision 12.0, number 1
   ```

3. Look for the following two lines describing your graphics boards:

   ```
   Graphics board: V12
   Graphics board: V12
   ```

   If only one graphics board is listed, you may have a Single Head system. In that case, see Chapter 1, “Installing the DCD in a Single Head Octane2”.

   If two boards are shown, but they are not listed as V12, you cannot use the DCD. For more information, contact your authorized SGI sales representative.

Preparing Your Workstation

This section describes preparing your workstation for the removal of the Dual Head XIO Module. This preparation consists of:

- "Powering Off Your Workstation" on page 37
- "Removing the Cables from the Dual Head XIO Module" on page 38
- "Attaching the Wrist Strap" on page 39

Powering Off Your Workstation

To power off your workstation, follow these steps:

1. Open the cover and press the power button to power off your workstation (see A in Figure 2-2).
2. Unplug the power cable (B).
3. Press the monitor power switch to power off your monitor (C).
4. Wait 5 minutes before removing the Dual Head XIO Module.

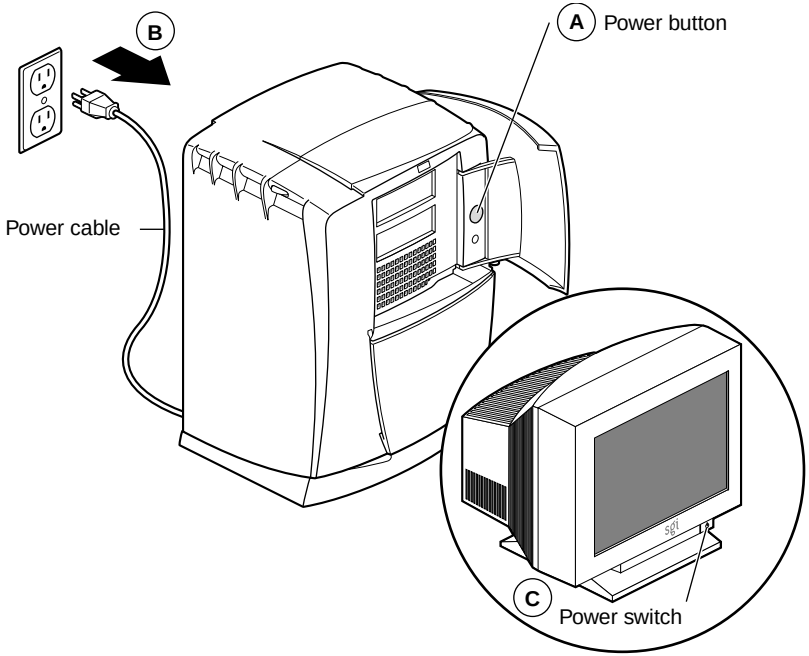


Figure 2-2 Powering Off Your Workstation

Warning: The heat sinks on the XIO boards get very hot. Wait 5 minutes after powering off your workstation before you remove the Dual Head XIO Module. Test the temperature of the heatsinks before handling any of the XIO boards.

Removing the Cables from the Dual Head XIO Module

Remove all the cables from the Dual Head XIO Module. Only the monitor cables on the VPro graphics boards are shown in Figure 2-3.

Note: The following illustrations show a workstation with a PCI module installed. Your workstation may not have a PCI module, but the DCD installation is the same.

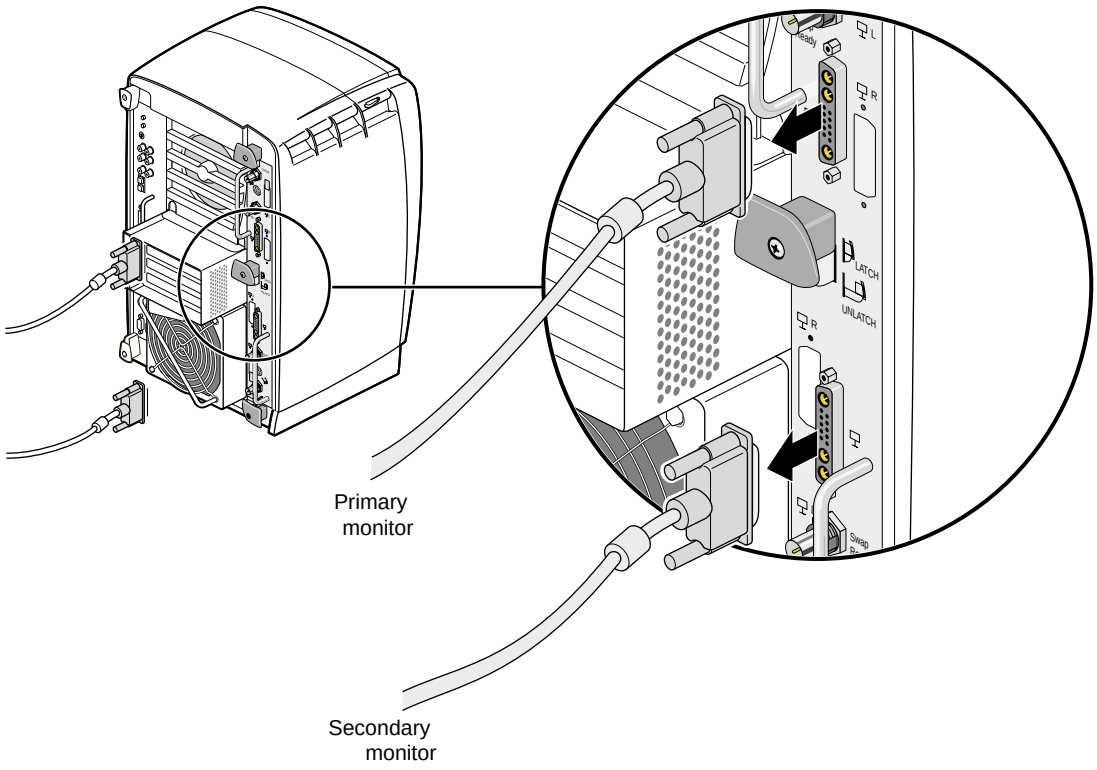


Figure 2-3 Removing the Monitor Cables

Attaching the Wrist Strap

Caution: The internal components are extremely sensitive to static electricity; always wear the wrist strap when you handle parts inside your workstation.

To attach the wrist strap, follow these steps:

1. Unroll the first two folds of the band (see A in Figure 2-4).
2. Wrap the exposed adhesive side firmly around your wrist, unroll the rest of the band, and then peel the liner from the copper foil at the opposite end (B).
3. Attach the copper foil to any exposed electrical ground, such as a metal part of the workstation (C).

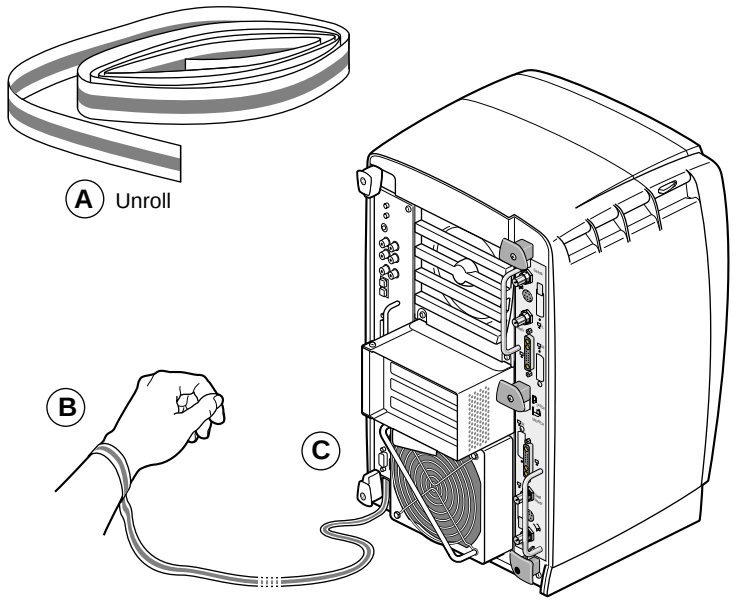


Figure 2-4 Attaching the Wrist Strap

Removing the Dual Head XIO Module

You must remove your workstation's Dual Head XIO Module so you can connect the DCD to the daughterboard slot on the VPro graphics board. Before removing the Dual Head XIO Module, you must power off your workstation, wait 5 minutes to allow the heat sinks to cool, and attach the wrist strap, as described in the previous sections.

To remove the Dual Head XIO Module, follow these steps:

1. Loosen the two captive screws in the Dual Head XIO Module handles with the supplied Phillips screwdriver until the screws are disconnected from the chassis (see Figure 2-5).

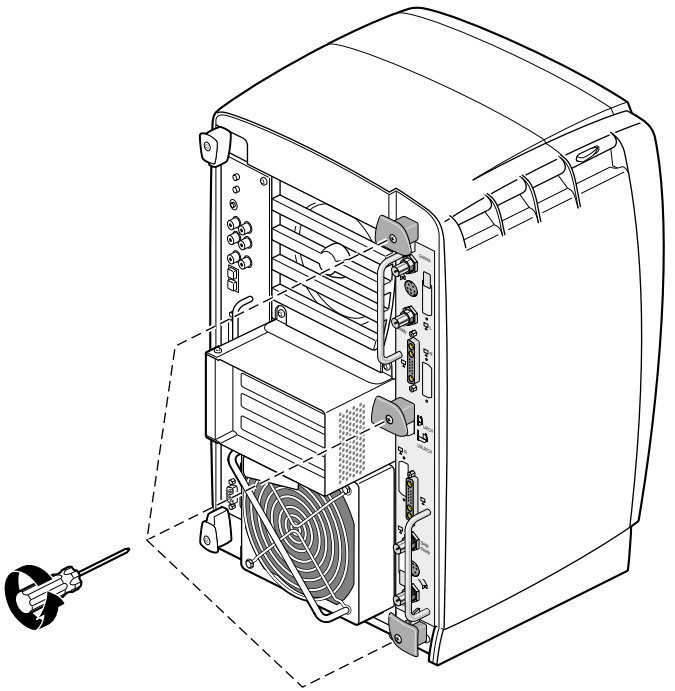


Figure 2-5 Loosening the Dual Head XIO Module Screws

Warning: The heat sinks on the XIO boards get very hot. Wait 5 minutes after powering off your workstation before you remove the Dual Head XIO Module. Test the temperature of the heat sinks before handling any of the XIO boards.

2. Grasp the center plastic knob and pull until the knob protrudes about an inch (2.5 cm) from the chassis, as shown in Figure 2-6.

   The knob moves out about an inch (2.5 cm) before the I/O panel moves.

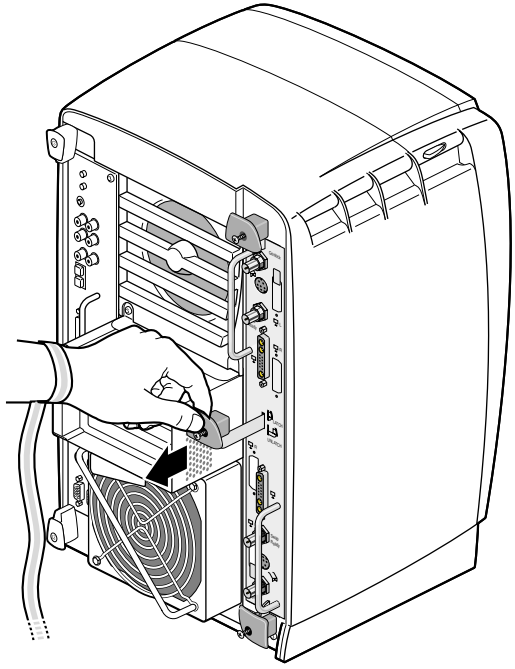


Figure 2-6 Releasing the Dual Head XIO Module

3. Grasp the handles on the Dual Head XIO Module and slide the module out of the chassis, as shown in Figure 2-7. You may also want to support the bottom of the module while sliding it out.

   The center plastic knob protrudes when the Dual Head XIO Module is out of the chassis.

   Note: Do not push on the knob after you have removed the Dual Head XIO Module from the chassis. The module locks to the workstation only if the knob is protruding.

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

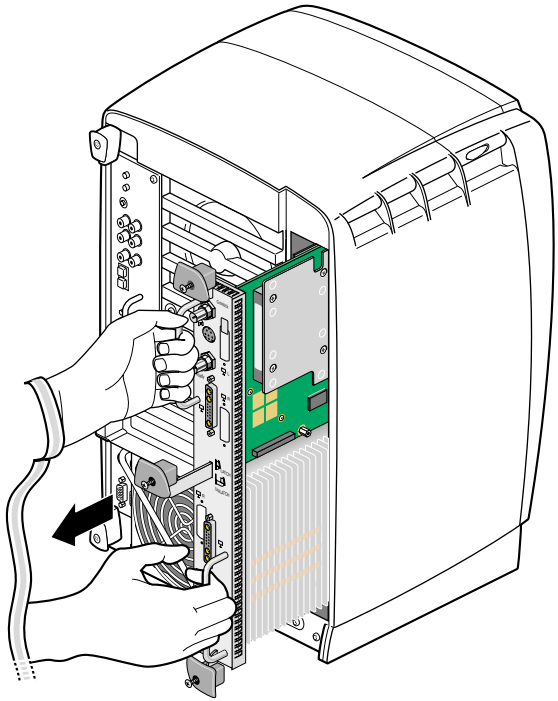


Figure 2-7 Removing the Dual Head XIO Module

Compression Connector Caution

Caution: The compression connector on the Dual Head XIO Module is very delicate and easily damaged. Do not touch or bump the gold bristled pad (see Figure 2-8). The connector is on the side opposite the handle, as shown in Figure 2-9. Do not grab the back of the Dual Head XIO Module when you remove it, or the compression connector may be damaged.

Always place a cap on the compression connector after removing the Dual Head XIO Module. Caps are included with your workstation. Before reinstalling the Dual Head XIO Module in your workstation, remove the cap from the compression connector.

Before you remove the Dual Head XIO Module, read Appendix A, “Care and Cleaning of Compression Connectors”.

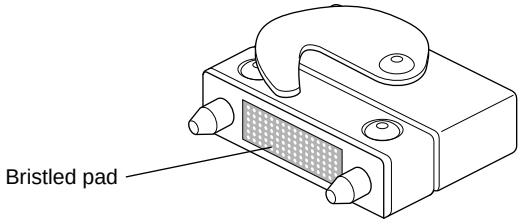


Figure 2-8 Identifying the Compression Connector

Connecting the DCD

The DCD connects to the daughterboard slot on one of the Dual Head XIO Module VPro graphics boards.

1. Place the Dual Head XIO Module on a flat, antistatic surface, as shown in Figure 2-9. An empty antistatic bag on your desk works well.

   When the Dual Head XIO Module is out of the chassis, the center plastic knob must protrude.

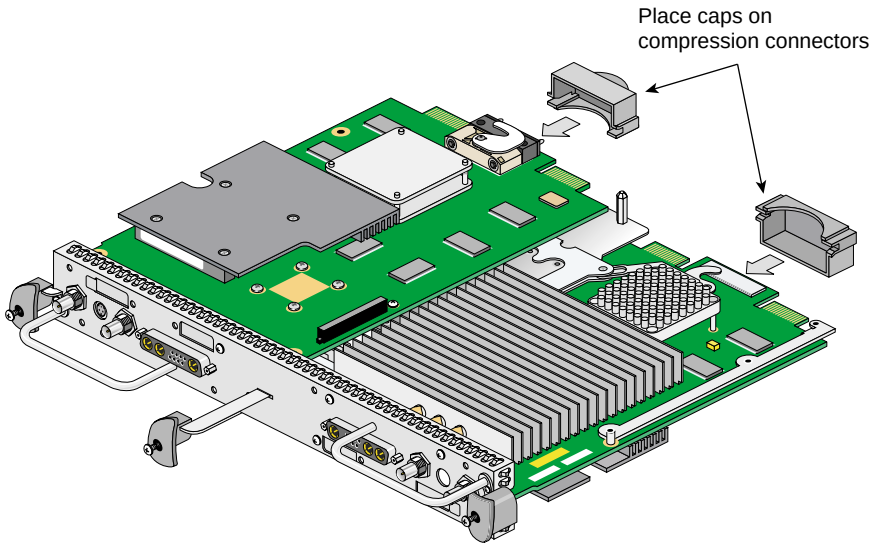


Figure 2-9 Placing the Dual Head XIO Module on Its Side

2. Place caps on the Dual Head XIO Module compression connectors, as shown in Figure 2-9 and Figure 2-10. Spare compression connector caps are included with your workstation.

Caution: To prevent damage to the connector, *do not* touch or bump the gold (front) surface.

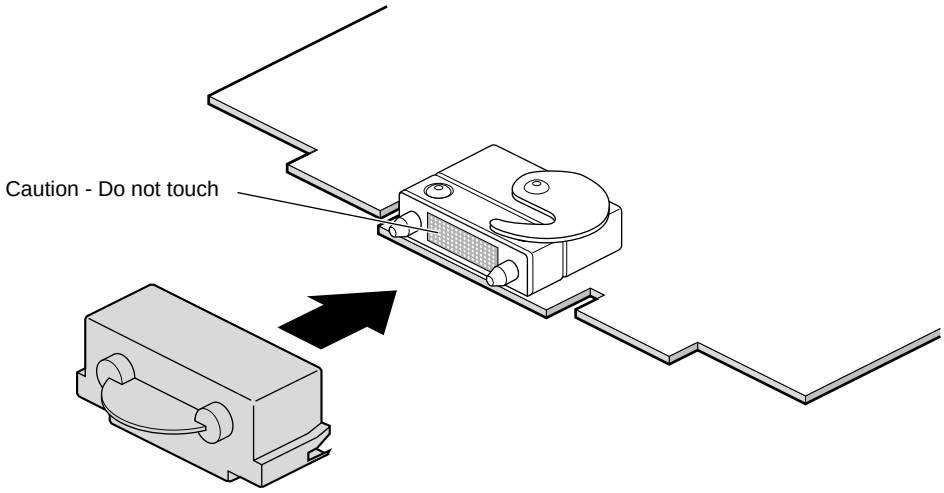


Figure 2-10 Placing a Cap on the XIO Compression Connector

3. Loosen the center plastic knob clamping screw, as shown in Figure 2-11. There is no need to remove this screw—loosening it about one turn is sufficient.

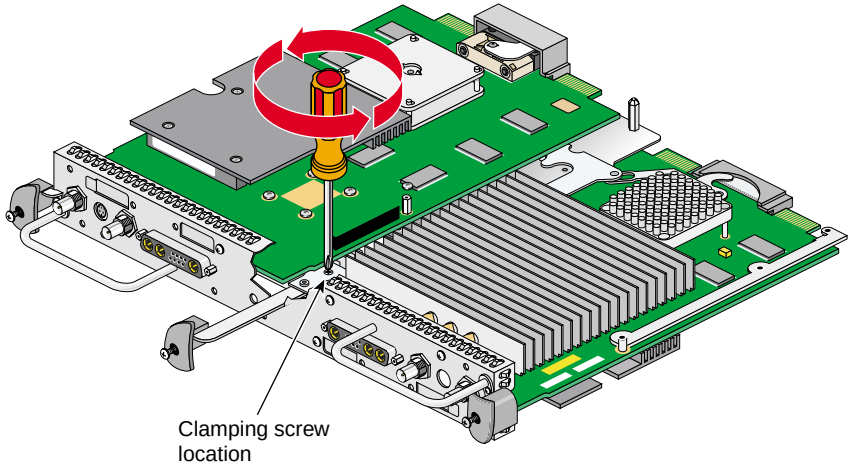


Figure 2-11 Loosening the Center Plastic Knob Clamping Screw

4. Turn the Dual Head XIO Module over and remove the center plastic knob retaining screw, as shown in Figure 2-12. Save the retaining screw for later in the installation.

Note: You may need to push the knob in slightly to be able to reach the screw with the screwdriver.

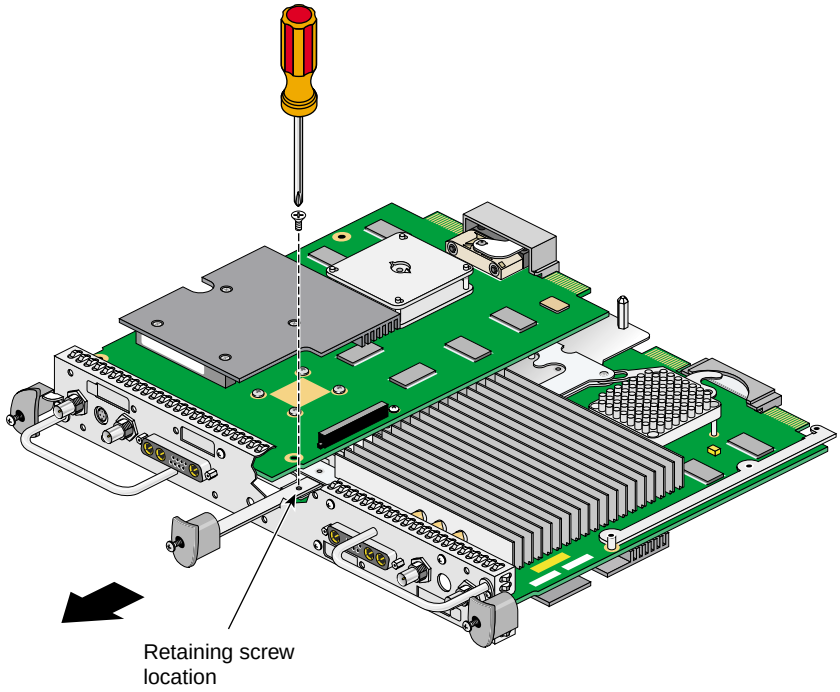


Figure 2-12 Removing the Center Plastic Knob Retaining Screw

5. Turn the Dual Head XIO Module back over, remove the center plastic knob, and save it for later in the installation.

6. Remove the four nuts and lock washers from the BNC connectors, as shown in Figure 2-13. Save the nuts and lock washers for later in the installation.

Note: These nuts are most easily removed using a socket wrench with a deep 9/16-inch socket.

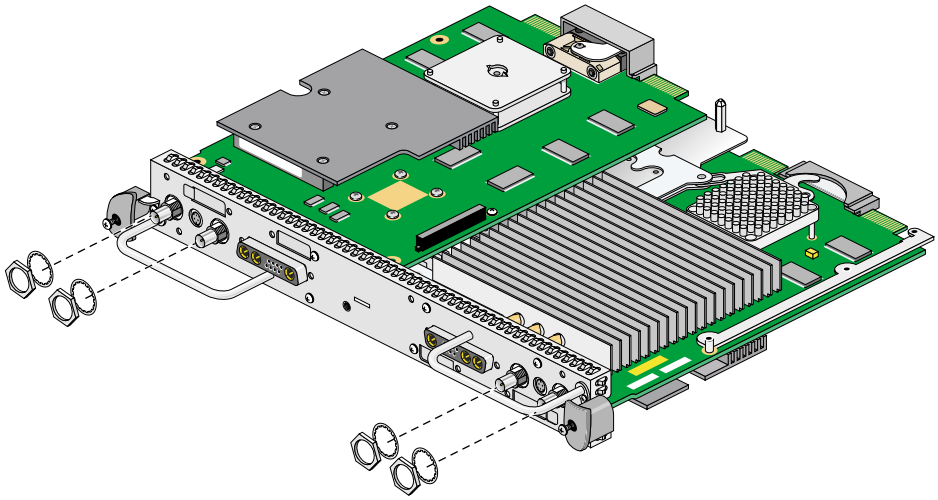


Figure 2-13 Removing the Nuts and Lock Washers from the Graphics Board I/O Panel

7. Using a 3/16-inch wrench, remove the four jackscrews from the 13W3 connectors, as shown in Figure 2-14. Save the jackscrews for later in the installation.

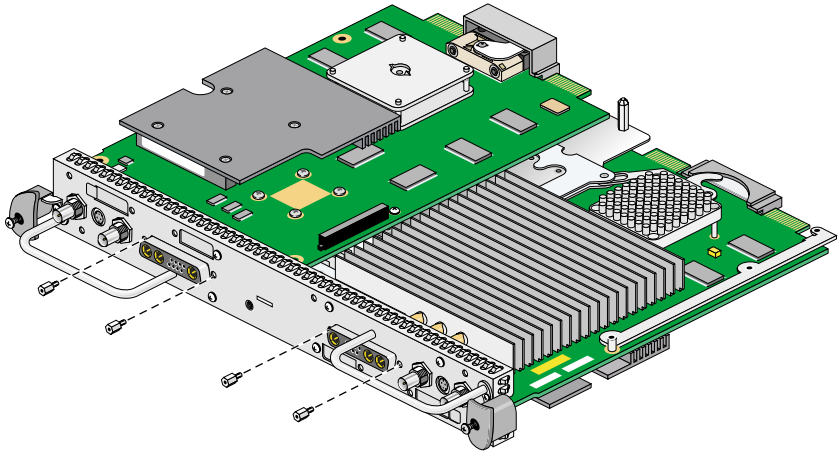


Figure 2-14 Removing the Jackscrews from the Graphics Board I/O Panel

8. Loosen (but do not remove) the four Phillips-head screws (items A, B, C, and D in Figure 2-15) that hold the two plastic heat-sink stabilizer brackets.

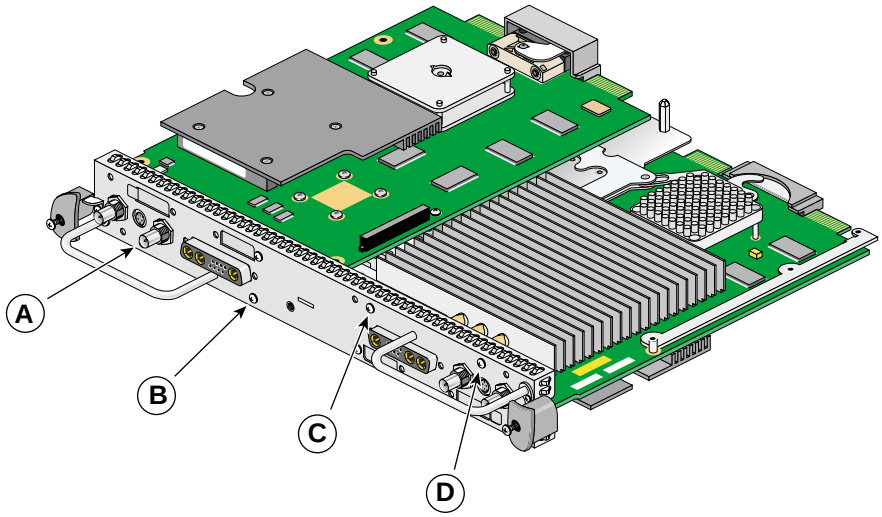


Figure 2-15 Loosening the Heat-Sink Stabilizer Bracket Retaining Screws on the Graphics Board I/O Panel

9. Using your index finger, lift the upper-right plastic heat-sink stabilizing bracket away from the heat sink. This is the bracket held in by screws C and D in Figure 2-15.

10. While holding the bracket up, gently remove the I/O panel from the Dual Head XIO Module, as shown in Figure 2-16.

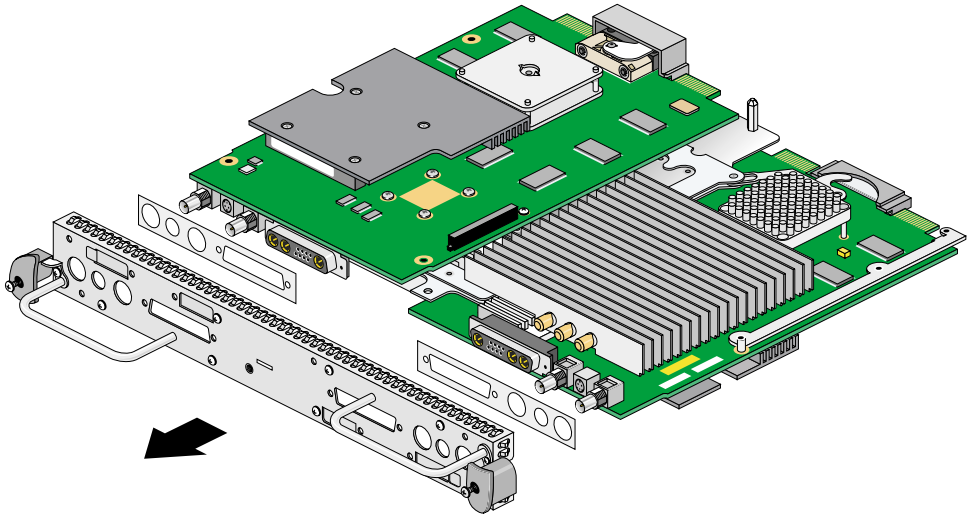


Figure 2-16 Removing the Dual Head XIO Module I/O Panel

11. As you remove the I/O panel, be careful not to lose the rubber gaskets located between the I/O panel and the VPro graphics boards. Save the gaskets for later in the installation.

12. Remove the screw holding the DCD blanking panel to the Dual Head XIO Module I/O panel, as shown in Figure 2-17, and remove the blanking panel.

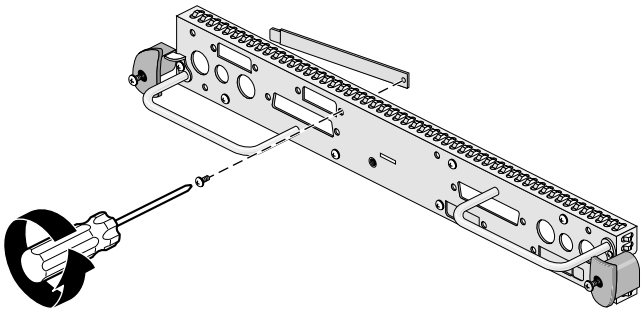


Figure 2-17 Removing the DCD Blanking Panel

13. Remove the male-to-female nylon standoff from the bag of parts. If the kit includes a female-to-female nylon standoff, it will not be used in this installation. Install the standoff as follows:

    a. Remove the screw that is located behind the daughterboard connector on the VPro graphics board (see A in Figure 2-18), and save it for later in the installation.

    b. Insert the nylon standoff into the hole from which you removed the screw (B in Figure 2-18).

    c. Seat the nylon standoff by turning it clockwise (C in Figure 2-18), but do not over-tighten it to avoid stripping the delicate plastic threads.

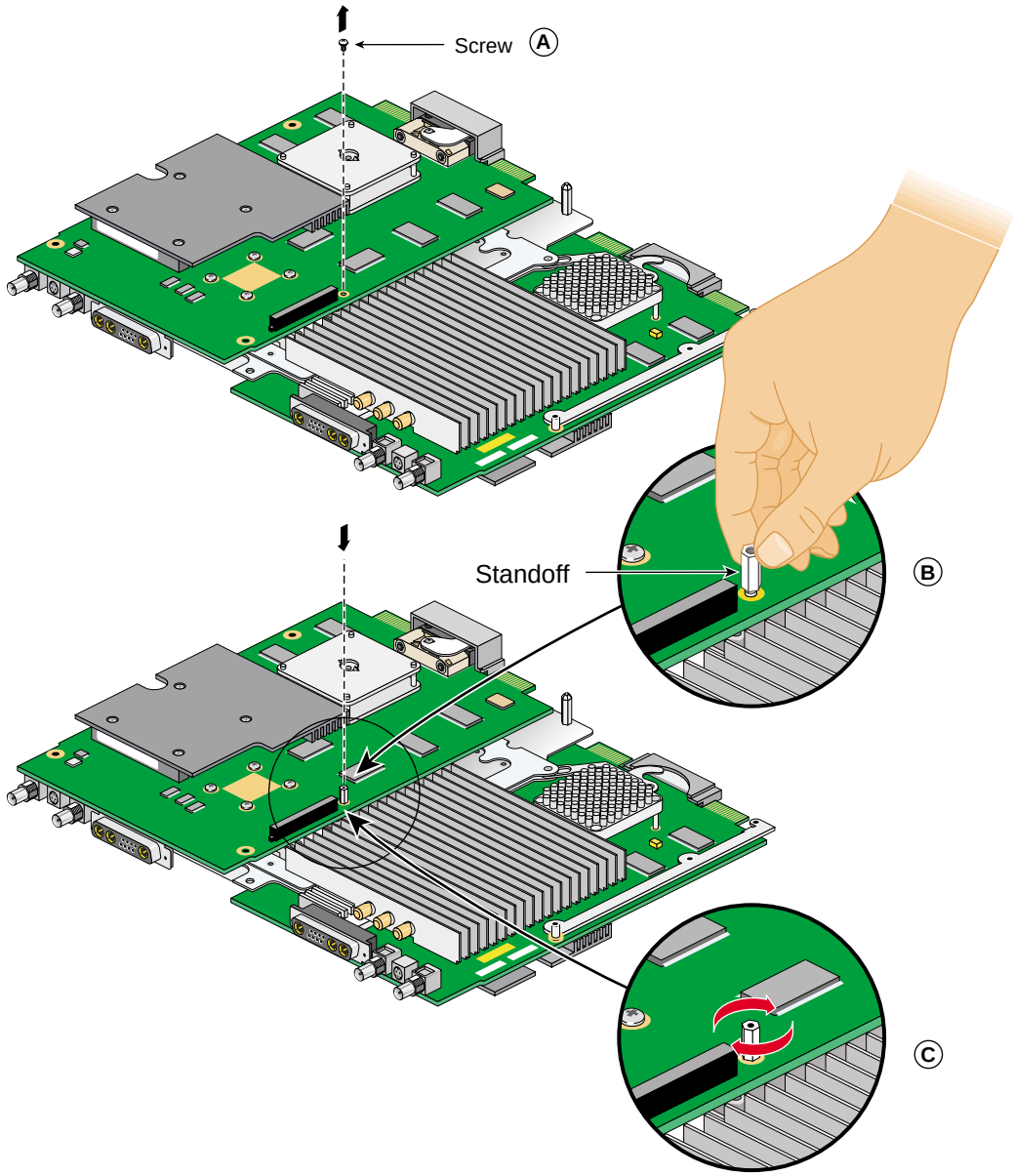


Figure 2-18 Installing the Nylon Standoff

14. Remove the DCD from its antistatic bag.
15. Align the DCD over the VPro graphics board, as shown in Figure 2-19.

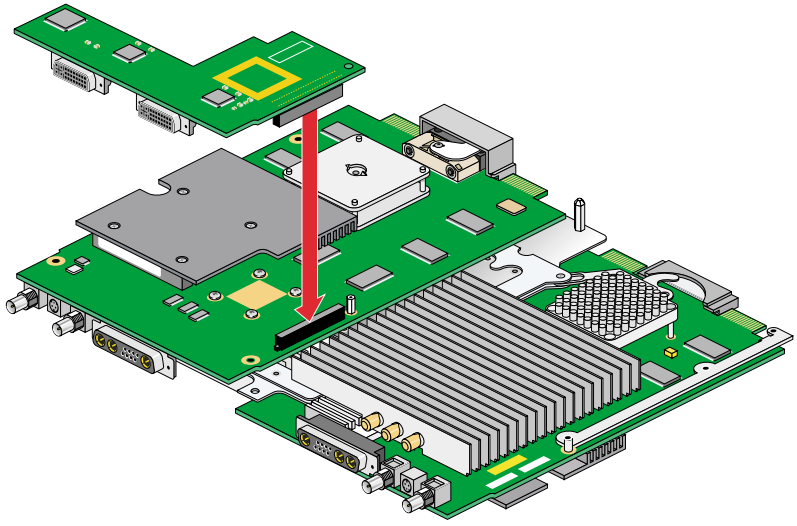


Figure 2-19 Positioning the DCD

16. Making sure that the connectors are properly aligned, gently press the DCD down onto the connector on the VPro graphics board.

17. Place the screw you removed from the VPro graphics board into the hole behind the DCD connector (above the nylon standoff), and then gently tighten the screw by turning it clockwise, as shown in Figure 2-20. When the screw begins to get tight, unscrew it about two turns, leaving the DCD slightly loose (you will tighten it the rest of the way later).

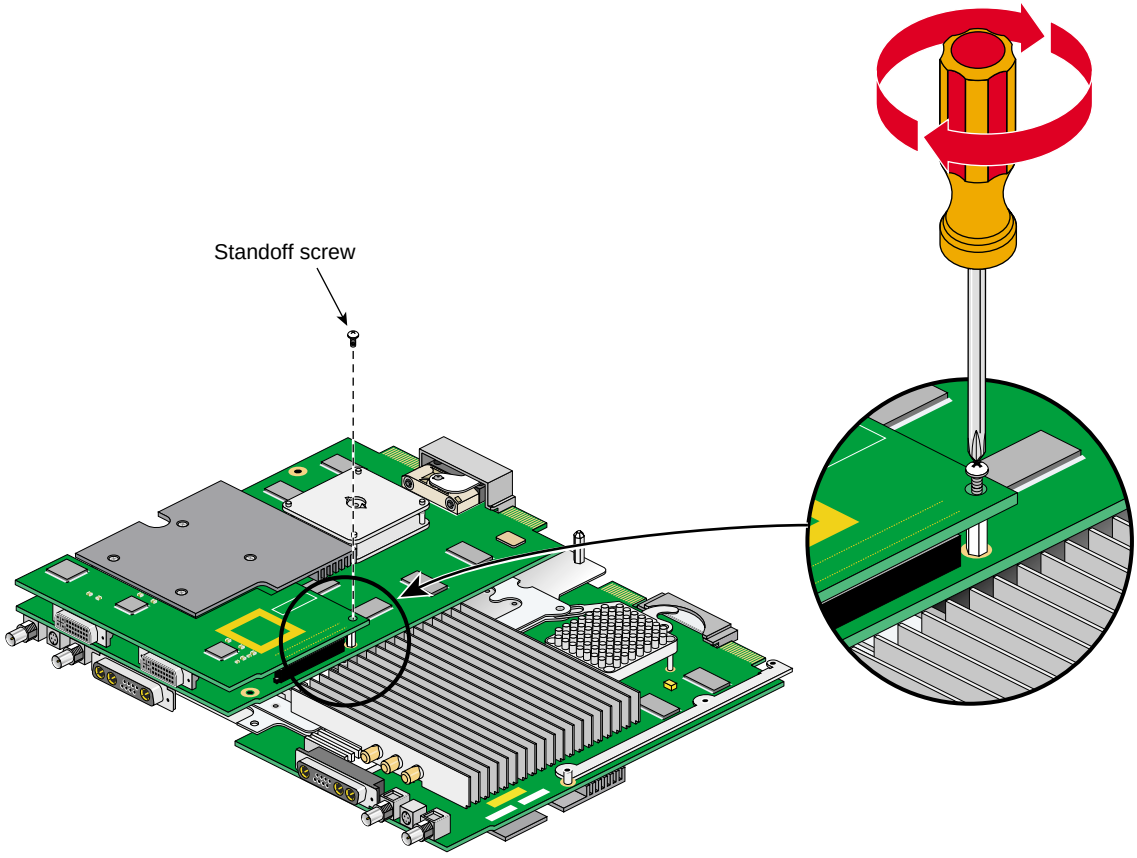


Figure 2-20 Securing the DCD to the Nylon Standoff

18. If you will install a second DCD at this time, skip to the instructions in "Installing a Second DCD" on page 64.

19. Place the two rubber gaskets over the VPro graphics board connectors, as shown in Figure 2-21.
20. Place the two new rubber gaskets over the two DCD connectors, as shown in Figure 2-21.
21. Using your index finger, lift the upper-right plastic heat-sink stabilizing bracket. This is the bracket held in by screws C and D in Figure 2-15.
22. While holding the bracket up, gently install the I/O panel on the Dual Head XIO Module, as shown in Figure 2-21. Make sure that the I/O panel is installed in the correct orientation.

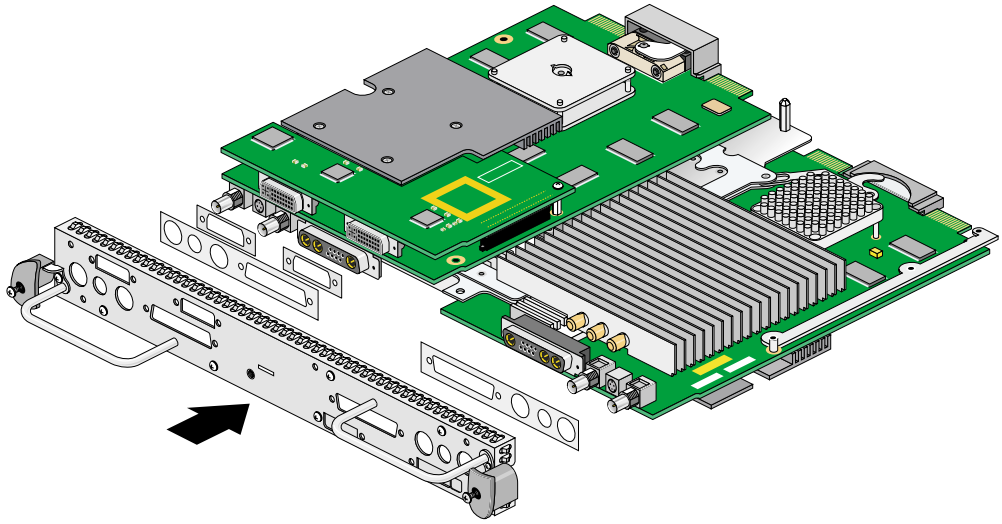


Figure 2-21 Installing the Dual Head XIO Module I/O Panel

23. Install the four nuts and lock washers on the BNC connectors, as shown in Figure 2-22, but do not tighten them yet.

Note: These nuts are most easily installed using a socket wrench with a deep 9/16-inch socket.

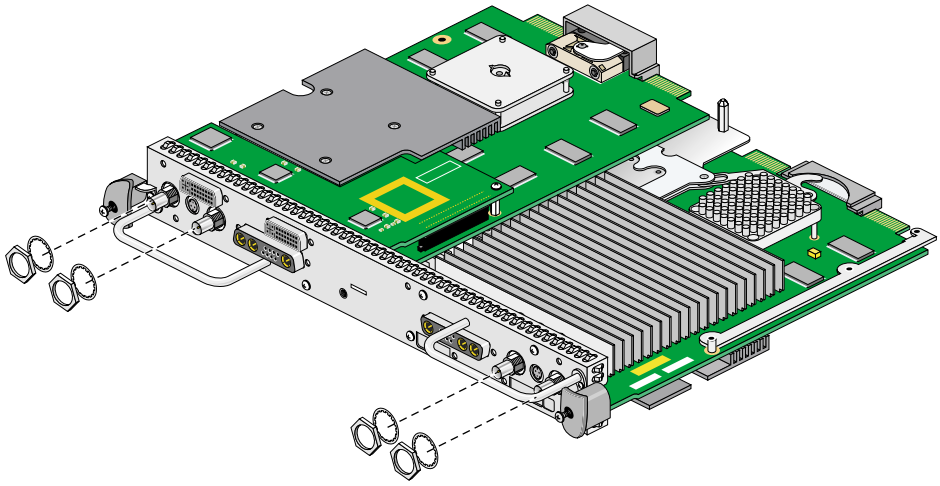


Figure 2-22 Installing the Nuts and Lock Washers on the Graphics Board I/O Panel

24. Install the four jackscrews on the 13W3 connectors, as shown in Figure 2-23, but do not tighten them yet.
25. Install the four new jackscrews on the DCD DVI connectors, as shown in Figure 2-23, but do not tighten them yet.

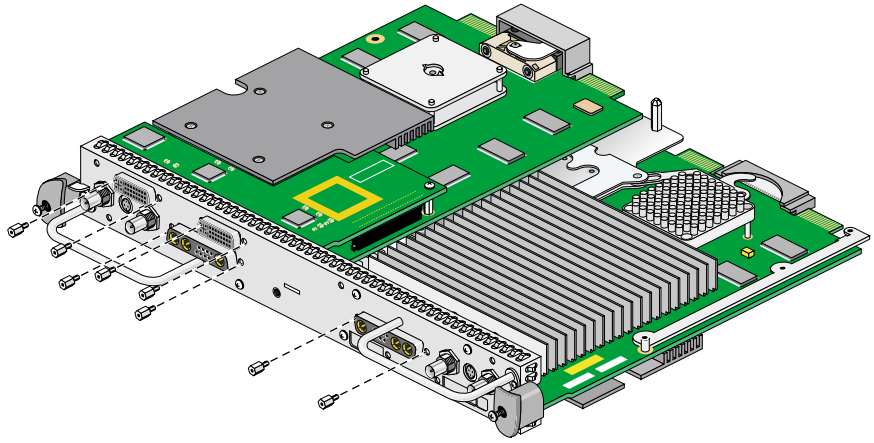


Figure 2-23 Installing the Jackscrews on the Graphics Board I/O Panel

26. Turn the Dual Head Module over and insert the center plastic knob into the I/O panel, as shown in Figure 2-24. Make sure that the knob is installed in the correct orientation. One way of ensuring this is to make sure the spring-loaded screw in the center plastic knob is aligned over the threaded hole in the I/O panel.
27. Install and tighten the center plastic knob retaining screw, as shown in Figure 2-24.

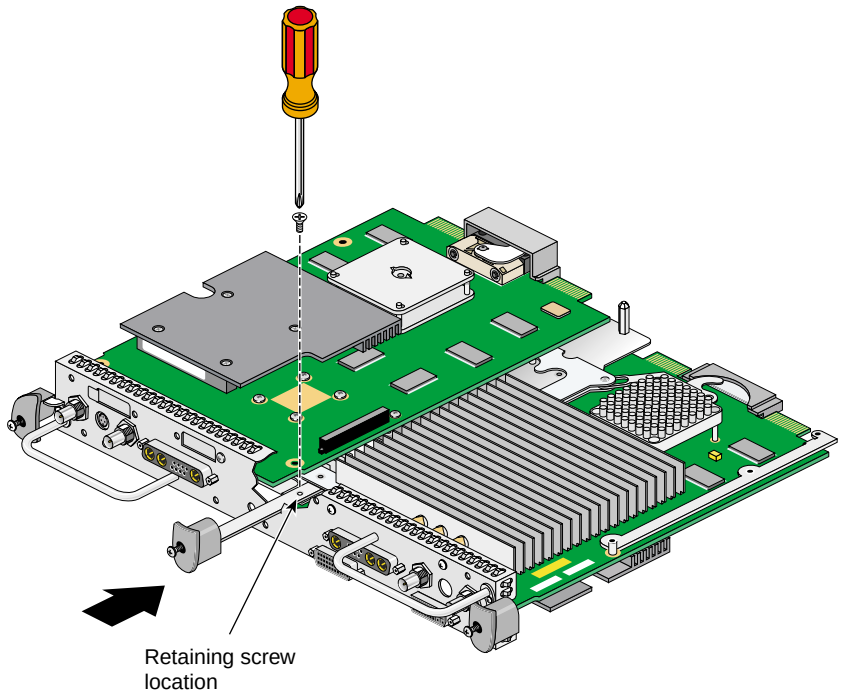


Figure 2-24 Installing the Center Plastic Knob Retaining Screw

28. Turn the Dual Head XIO Module back over and tighten the center plastic knob clamping screw, as shown in Figure 2-25.
29. Pull the center plastic knob to make sure it is fully extended. You may have had to push it in slightly in order to reach the retaining screw, but you should pull it back out now.

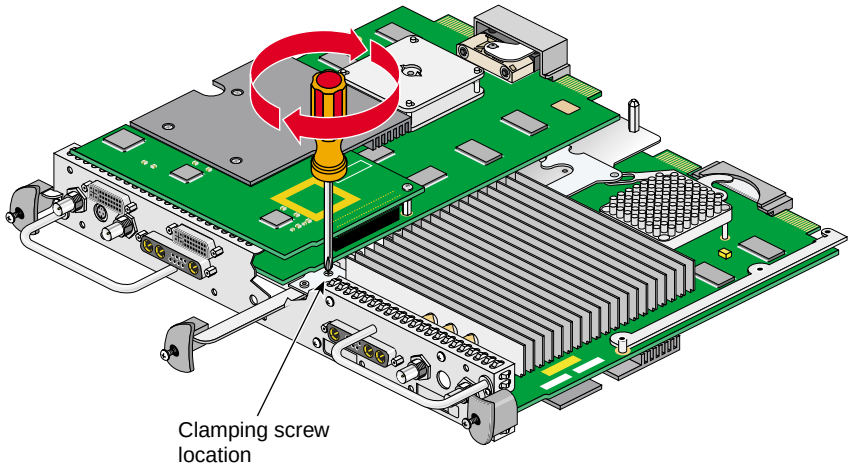


Figure 2-25 Tightening the Center Plastic Knob Clamping Screw

30. Tighten the four Phillips-head screws holding the two plastic heat-sink stabilizer brackets, as shown in Figure 2-15 (items A, B, C, and D).
31. Tighten the four jackscrews on the 13W3 connectors.
32. Tighten the four jackscrews on the DCD DVI connectors.
33. Tighten the four nuts on the BNC connectors.
34. Gently tighten the screw in the hole behind the DCD connector (above the nylon standoff), as shown in Figure 2-20.

35. Remove the 13W3 cover and the two screws from the bag of parts.
36. Place the 13W3 cover over the VPro graphics board monitor port, with the padded side of the cover facing the monitor port, as shown in Figure 2-26.

    When a monitor is not connected to the VPro graphics board monitor port, you must install the 13W3 cover to ensure that the system complies with local and international EMC regulations.
37. Align the two outside holes of the 13W3 cover with the two thumbscrew holes on the sides of the VPro graphics board monitor port.

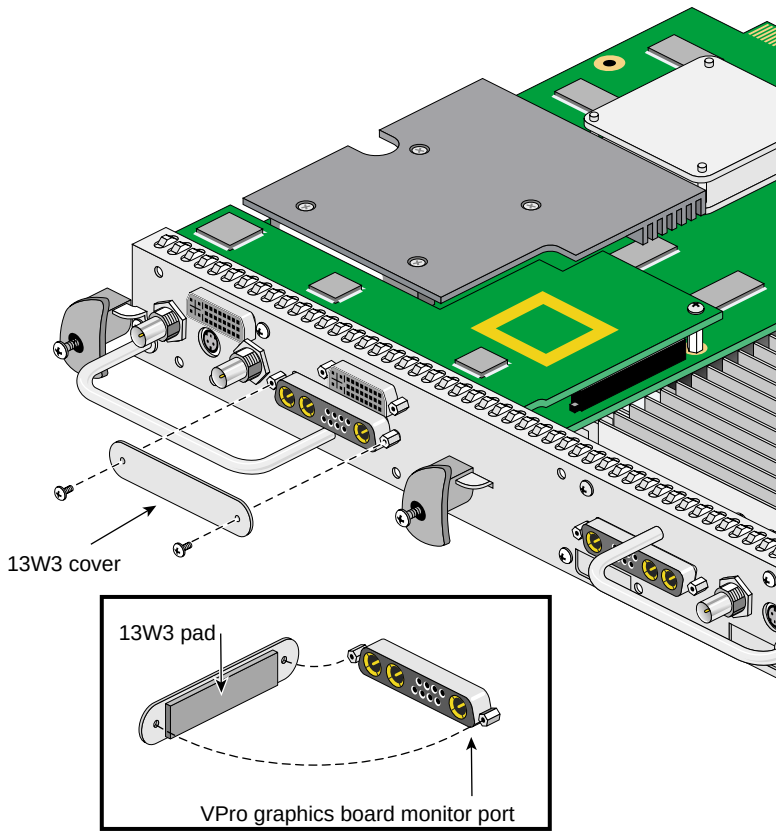


Figure 2-26 Placing the 13W3 Cover over the VPro Graphics Board Monitor Port

38. Insert a screw in each hole of the 13W3 cover, and then tighten each screw to secure the cover to the VPro graphics board, as shown in Figure 2-27.

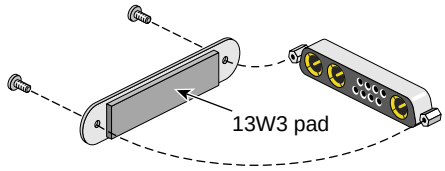


Figure 2-27 Installing the 13W3 Cover

Installing a Second DCD

An Octane2 workstation with Dual Head V12 VPro graphics may be upgraded to contain either one or two DCDs. The installation of the first DCD is described in the preceding sections of this chapter. The installation of a second DCD is described in this section.

A Dual Head system with one DCD allows the connection of a total of three monitors: two on the primary graphics head (the one toward the top of the system), and one on the secondary graphics head (the one toward the bottom of the system).

A Dual Head system with two DCDs allows the connection of a total of four monitors: two on the primary graphics head (the one toward the top of the system), and two on the secondary graphics head (the one toward the bottom of the system).

To install a second DCD, follow these steps:

If you will install a second DCD at the same time as the first DCD, and thus have the Dual Head XIO Module out of the Octane2 chassis and have the I/O panel removed, skip to step 4.

1. Prepare the workstation as described in "Preparing Your Workstation" on page 36.
2. Remove the Dual Head XIO Module, as described in "Removing the Dual Head XIO Module" on page 40.
3. Remove the I/O panel, as described in steps 1 through 11 (on page 44 through page 51).

   Before performing step 7 (on page 49), you will first need to remove the two screws that hold a cover over the 13W3 connector. After performing step 7, you will then also remove the four jackscrews on the first DCD.

   In step 11 (on page 51), also remove the two rubber gaskets on DVI connectors, and save them for later.
4. Turn the Dual Head XIO Module over, exposing the VPro graphics board on which there is not yet a DCD installed.
5. Install the DCD as described in steps 13 through 17 (on page 52 through page 55).
6. Reinstall the I/O panel as described in steps 19 through 34 (on page 56 through page 61).

   Because at this point both VPro graphics boards have DCDs attached, it no longer matters which board ends up at the top, as described in step 21 (on page 56).

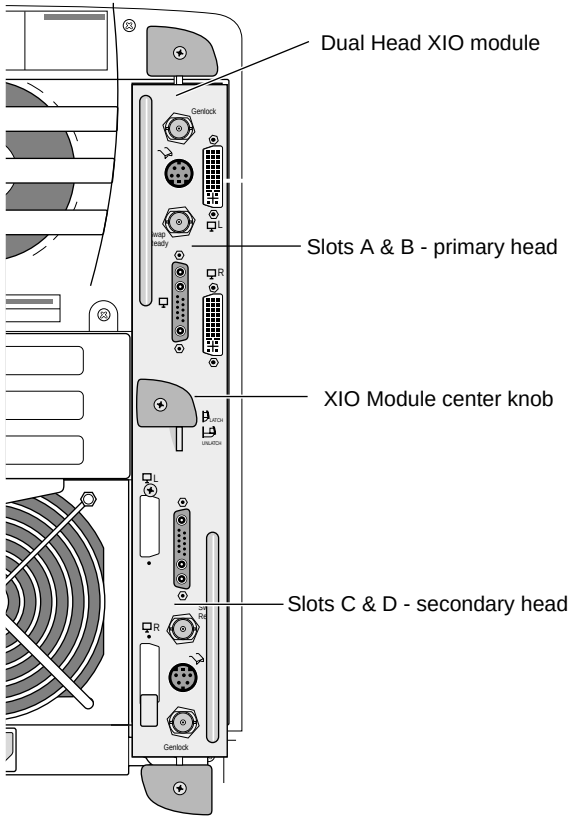
In step 25 (on page 58), you will install eight new jackscrews on the DVI connectors.

Steps 27 and 28 (on page 59 and page 60) will be reversed. Tighten the clamping screw first, and then turn the module over and install and tighten the retaining screw.

7. Install covers over both 13W3 connectors, as described in steps 35 through 38 (on page 62 through page 63).
8. Reinstall the Dual Head XIO Module, as described in "Reinstalling the Dual Head XIO Module" on page 66.

Reinstalling the Dual Head XIO Module

Follow the steps in this section to reinstall the Dual Head XIO Module.



Octane2 Dual Head with Dual Channel

Figure 2-28 Placing the Primary Head Graphics Boards toward the Top of the Workstation

Note: Be sure to install the Dual Head XIO Module in the orientation shown in Figure 2-28. This orientation can be confirmed by ensuring that the silk-screened labels on the I/O panel are right-side up, and that the center plastic knob is in the orientation shown in Figure 2-28.

1. Remove the cap from the Dual Head XIO Module compression connectors.
2. Slide the Dual Head XIO Module into the guides on the top and bottom of the workstation, as shown in Figure 2-29. Be sure the module is oriented correctly, as shown in Figure 2-28.

   Before you insert the Dual Head XIO Module, make sure the center plastic knob protrudes from the I/O panel, as shown in Figure 2-29.

   If the center plastic knob is flush with the I/O panel, the Dual Head XIO Module will stop before it is fully inserted. If this happens, pull the entire assembly out of the slot about an inch (2.5 cm), pull out the center knob, and then continue inserting the Dual Head XIO Module into the chassis.

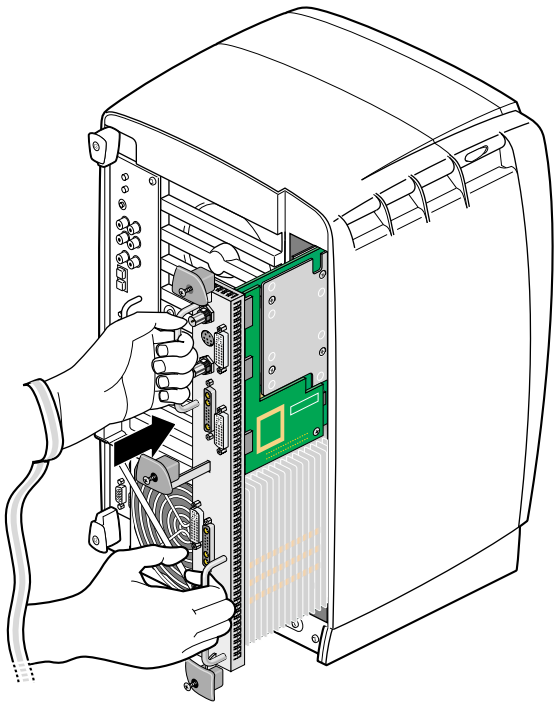


Figure 2-29 Inserting the Dual Head Module with DCD

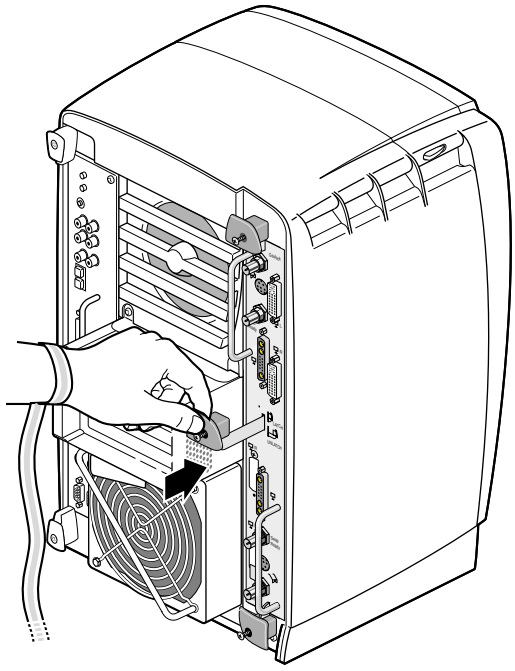


Figure 2-30 Latching the Dual Head XIO Module

3. Grasp the center plastic knob, as shown in Figure 2-30, and push it into place against the I/O panel.

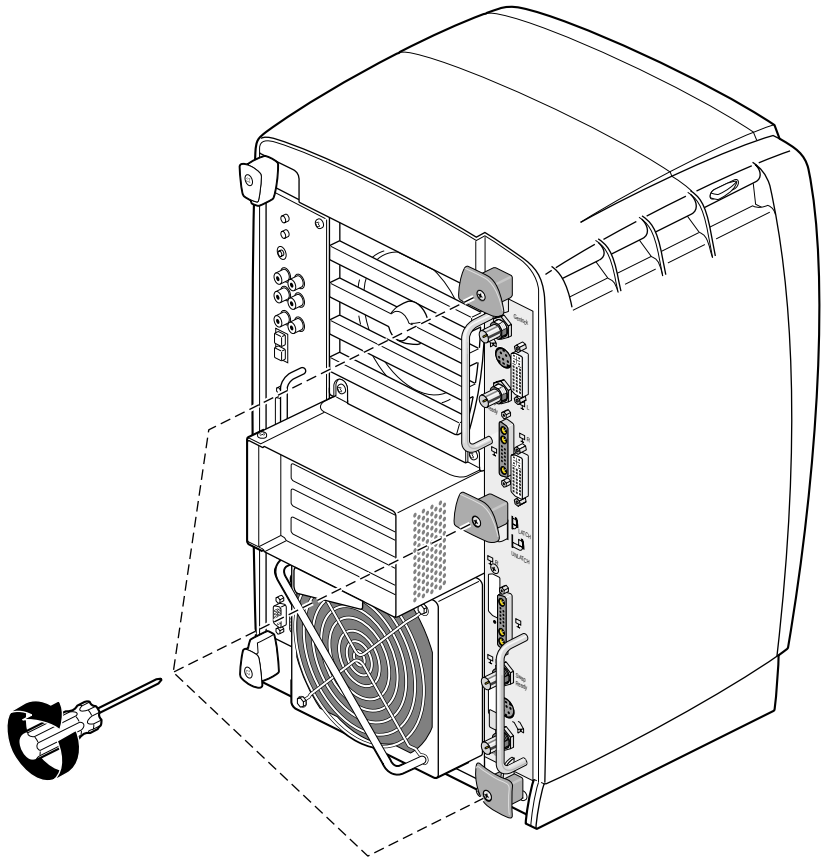


Figure 2-31 Replacing the Dual Head XIO Module Screws

4. Gently tighten each of the three captive screws in the plastic knobs, as shown in Figure 2-31. Be careful not to cross-thread these screws and do not over-tighten them.
5. Remove the wrist strap.

You have finished installing your DCD.

Proceed to Chapter 3, “Connecting Monitors to the DCD,” for instructions on connecting two monitors to the DCD.

Removing the DCD

If you want to remove the DCD and connect a monitor to the VPro graphics board monitor port, follow these steps:

1. Prepare your workstation, as described in “Preparing Your Workstation” on page 36.
2. Remove the Dual Head XIO Module, as described in “Removing the Dual Head XIO Module” on page 40.
3. Remove the two screws securing the 13W3 cover to the VPro graphics board, and then remove the cover, as shown in Figure 2-32.

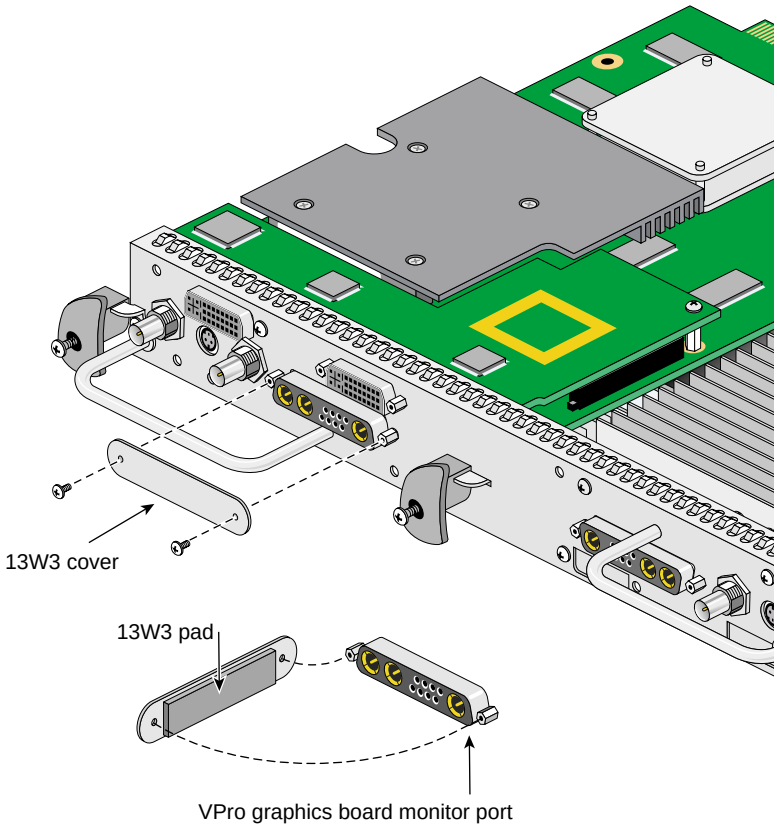


Figure 2-32 Removing the 13W3 Cover

4. Loosen the center plastic knob clamping screw, as shown in Figure 2-33. There is no need to remove this screw—loosening it about one turn is sufficient.

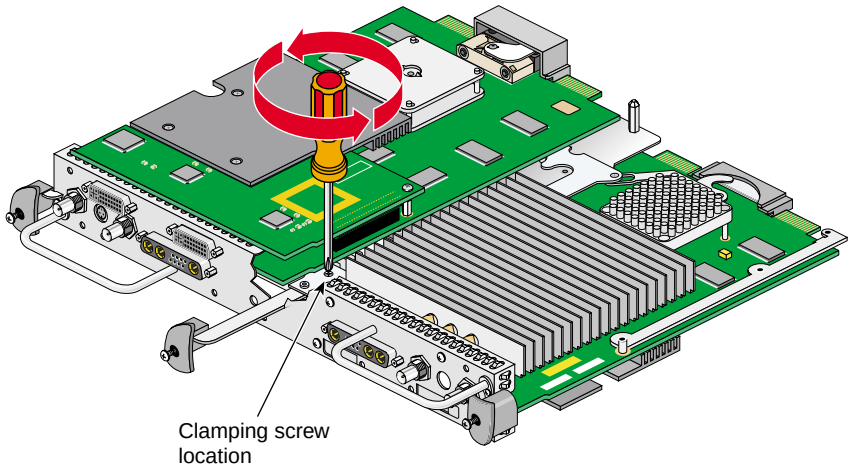


Figure 2-33 Loosening the Center Plastic Knob Clamping Screw

5. Turn the Dual Head XIO Module over and remove the center plastic knob retaining screw, as shown in Figure 2-34. Save the retaining screw for later in the installation.

Note: You may need to push in the knob slightly to be able to reach the screw with the screwdriver.

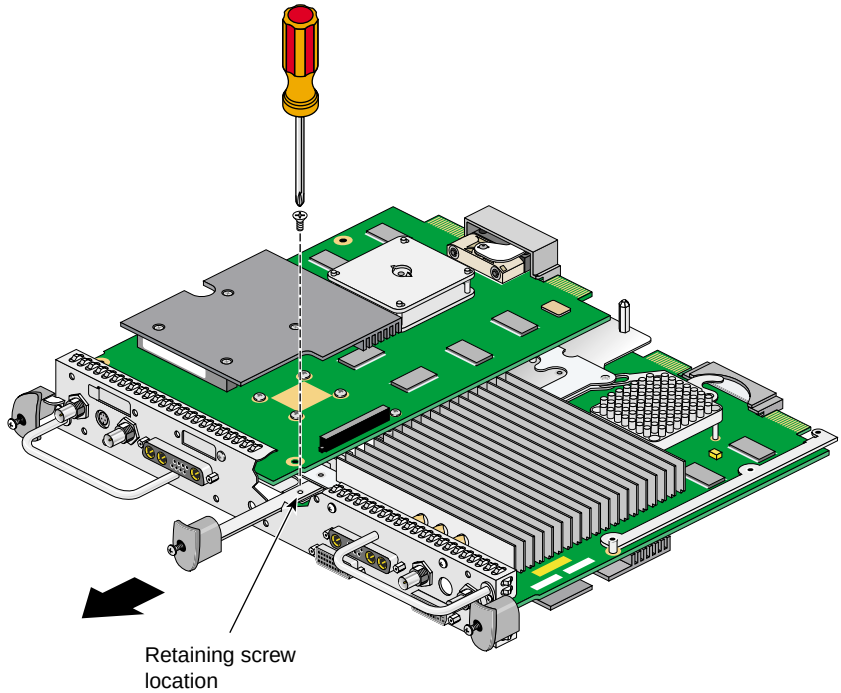


Figure 2-34 Removing the Center Plastic Knob Retaining Screw

6. Turn the Dual Head XIO Module back over, remove the center plastic knob, and save it for later in the installation.

7. Remove the four nuts and lock washers from the BNC connectors, as shown in Figure 2-35. Save the nuts and lock washers for later in the installation.

Note: These nuts are most easily removed using a socket wrench with a deep 9/16-inch socket.

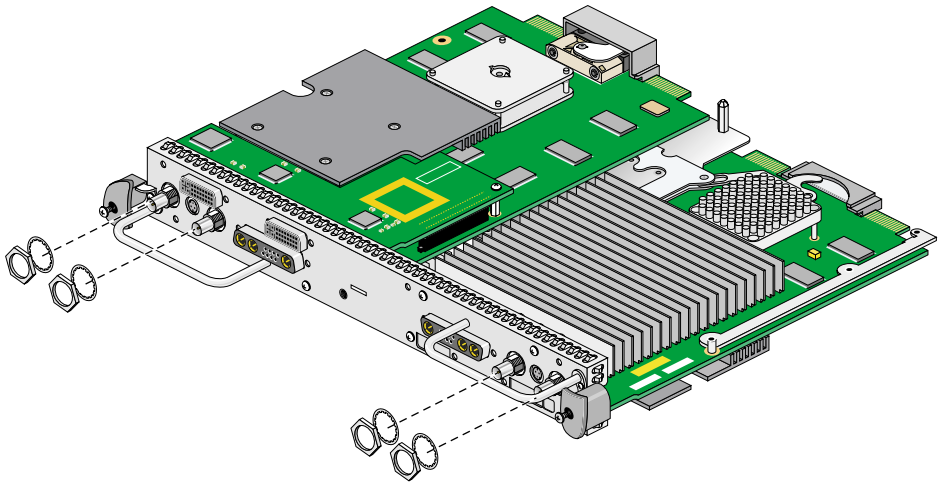


Figure 2-35 Removing the Nuts and Lock Washers from the Graphics Board I/O Panel

8. Remove the four jackscrews from the 13W3 connectors, as shown in Figure 2-36. Save the jackscrews for later in the installation.

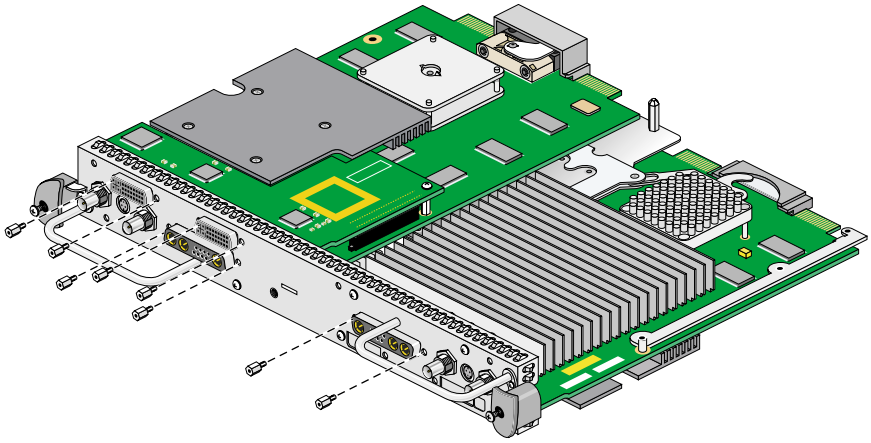


Figure 2-36 Removing the Jackscrews from the Graphics Board I/O Panel

9. Loosen (but do not remove) the four Phillips-head screws (items A, B, C, and D in Figure 2-37) that hold the two plastic heat-sink stabilizer brackets.

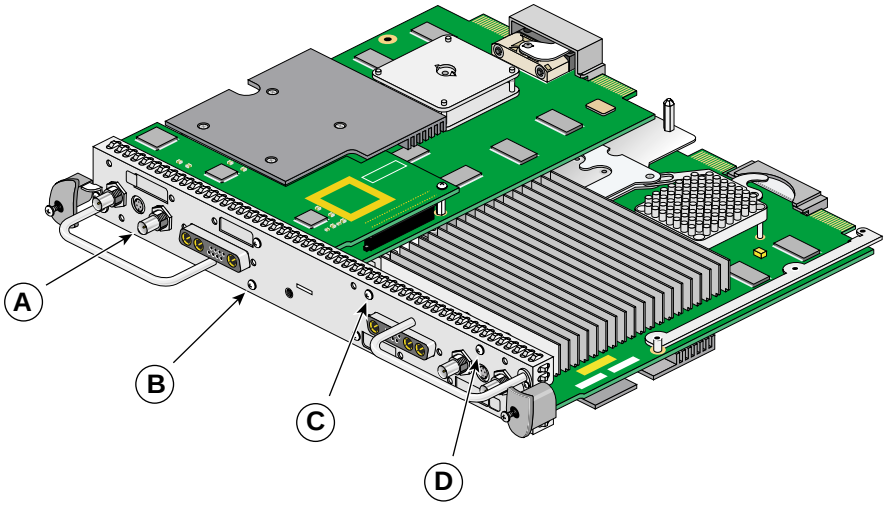


Figure 2-37 Loosening the Heat-Sink Stabilizer Bracket Retaining Screws on the Graphics Board I/O Panel

10. While lifting the plastic heat-sink stabilizing brackets, gently remove the I/O panel from the Dual Head XIO Module, as shown in Figure 2-38.

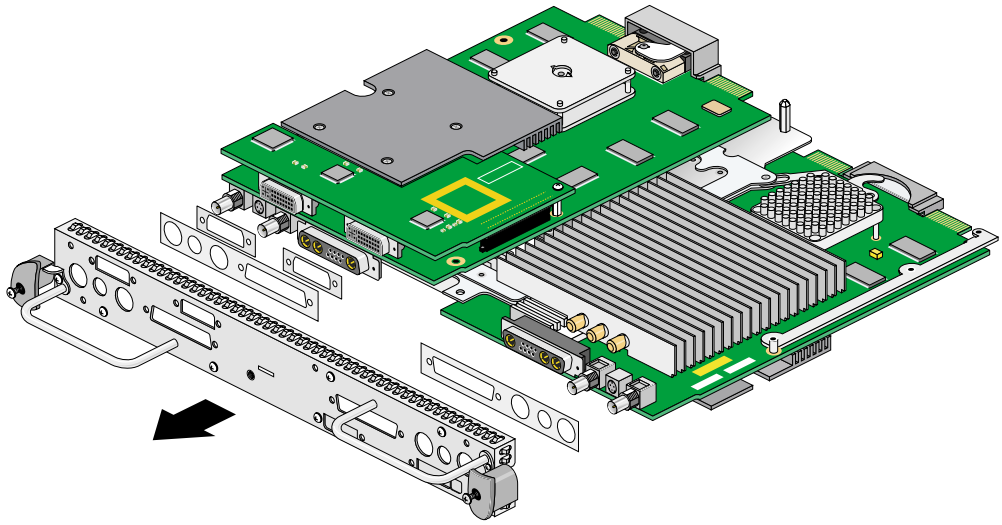


Figure 2-38 Removing the Dual Head XIO Module I/O Panel

11. As you remove the I/O panel, make sure not to lose the rubber gaskets located between the I/O panel and the VPro graphics boards. Save the two large gaskets for later in the installation. Store the two small gaskets in the antistatic bag in which you will be placing the DCD.

12. Remove the screw holding the DCD to the nylon standoff, as shown in Figure 2-39. Save the screw for later in the installation.

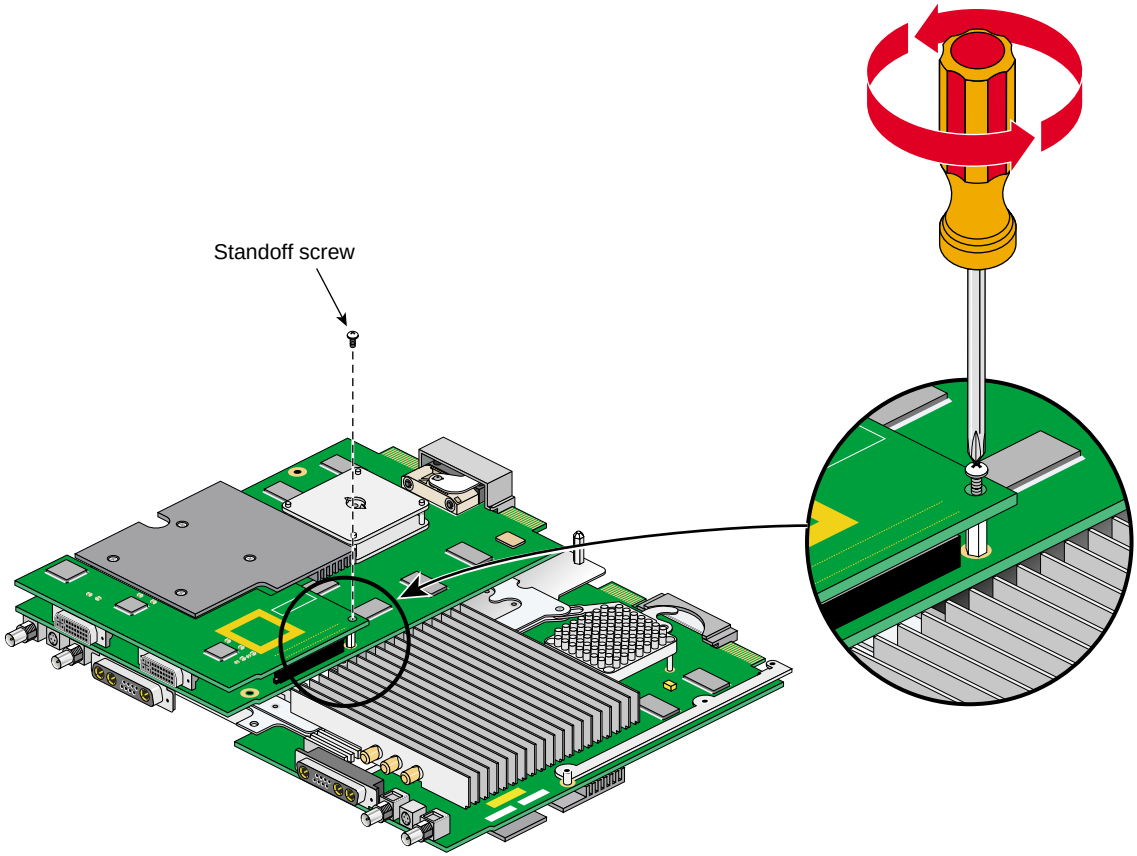


Figure 2-39 Removing the DCD Retaining Screw

13. Lift the DCD straight up from the VPro graphics board, as shown in Figure 2-40.
14. Place the DCD on an antistatic bag.

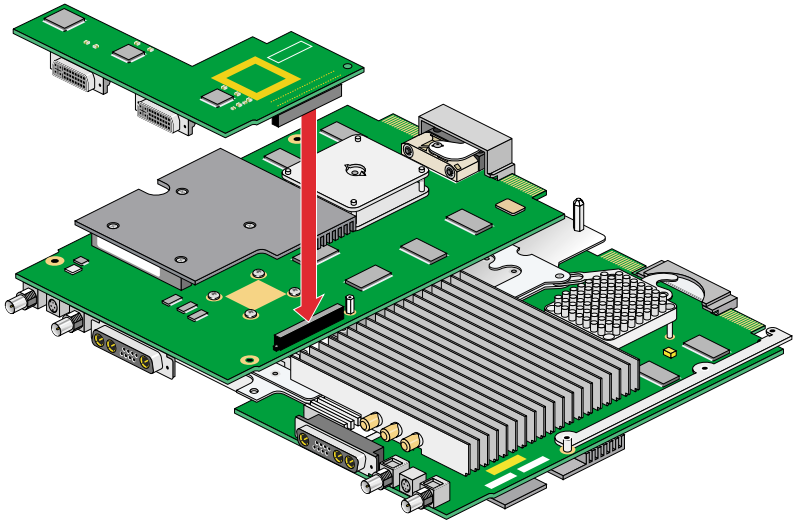


Figure 2-40 Removing the DCD

15. Remove the nylon standoff that is located behind the daughterboard connector on the VPro graphics board (see Figure 2-41), and store it with the DCD.

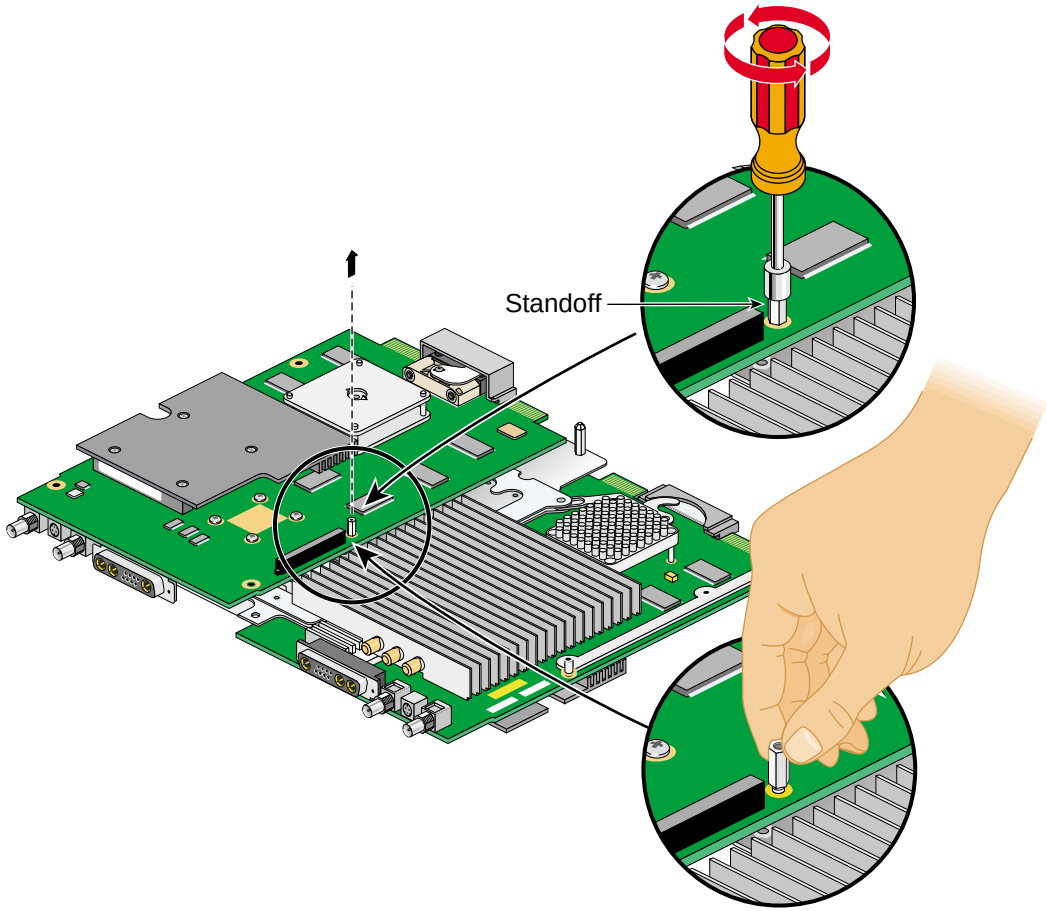


Figure 2-41 Removing the Nylon Standoff

16. Install the screw you removed in step 12 into the hole just vacated by the nylon standoff, as shown in Figure 2-42.

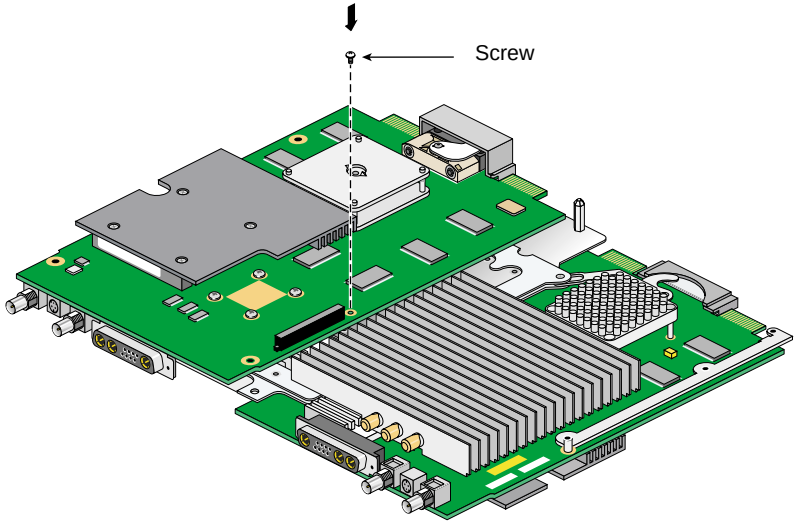


Figure 2-42 Installing the Mounting Screw

17. Retrieve the DCD blanking panel that was removed when the DCD was installed, and place it in the Dual Head XIO Module I/O board, as shown in Figure 2-43.
18. Install the blanking panel retaining screw, as shown in Figure 2-43.

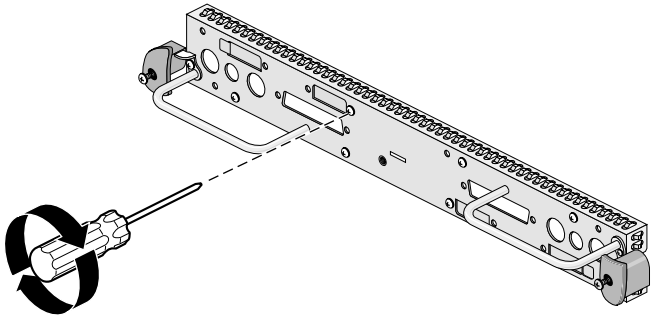


Figure 2-43 Installing the DCD Blanking Panel

19. Place the two large rubber gaskets over the VPro graphics board connectors, as shown in Figure 2-44.
20. While lifting the plastic heat-sink stabilizing brackets, gently install the I/O panel on the Dual Head XIO Module, as shown in Figure 2-44. Make sure that the I/O panel is installed in the correct orientation.

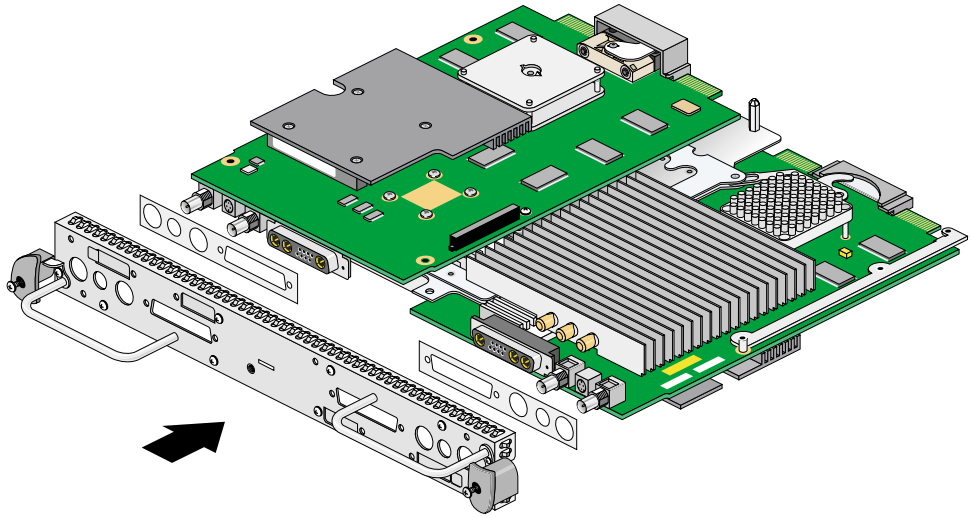


Figure 2-44 Installing the Dual Head XIO Module I/O Panel

21. Install the four nuts and lock washers on the BNC connectors, as shown in Figure 2-45, but do not fully tighten them yet.

Note: These nuts are most easily installed using a socket wrench with a deep 9/16-inch socket.

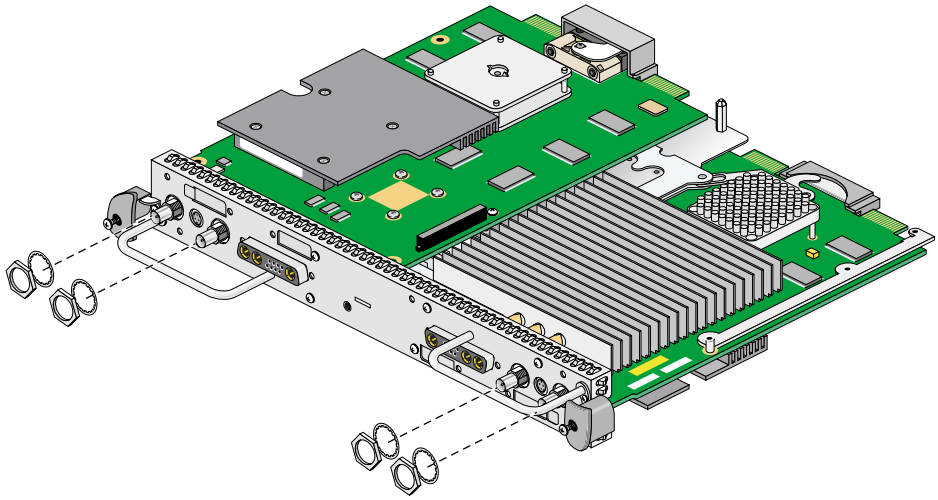


Figure 2-45 Installing the Nuts and Lock Washers on the Graphics Board I/O Panel

22. Install the four jackscrews on the 13W3 connectors, as shown in Figure 2-46, but do not fully tighten them yet.

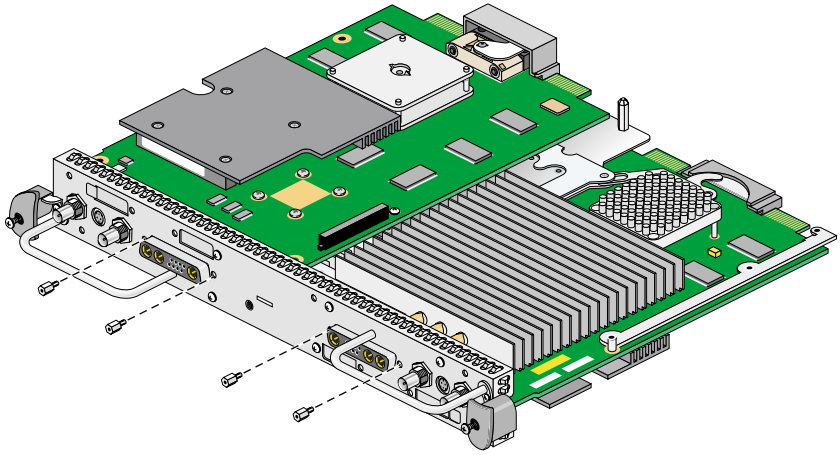


Figure 2-46 Installing the Jackscrews on the Graphics Board I/O Panel

23. Turn the Dual Head Module over and insert the center plastic knob into the I/O panel, as shown in Figure 2-47. Make sure that the knob is installed in the correct orientation. One way of ensuring this is to make sure the spring-loaded screw in the center plastic knob is aligned over the threaded hole in the I/O panel.
24. Install and tighten the center plastic knob retaining screw, as shown in Figure 2-47.

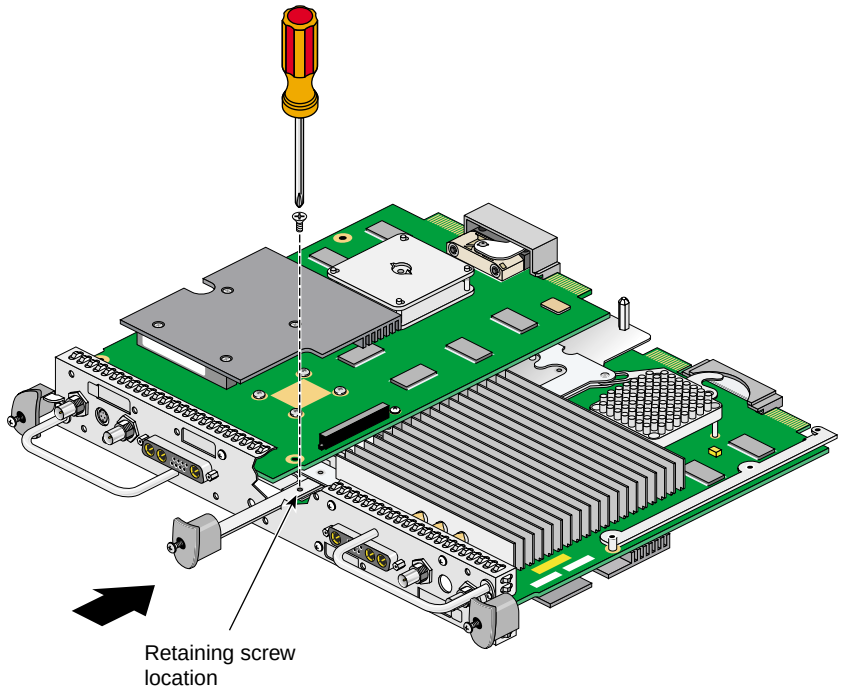


Figure 2-47 Installing the Center Plastic Knob Retaining Screw

25. Turn the Dual Head XIO Module back over and tighten the center plastic knob clamping screw, as shown in Figure 2-48.
26. Pull the center plastic knob to make sure it is fully extended. You may have had to push it in slightly in order to reach the retaining screw, but you should pull it back out now.

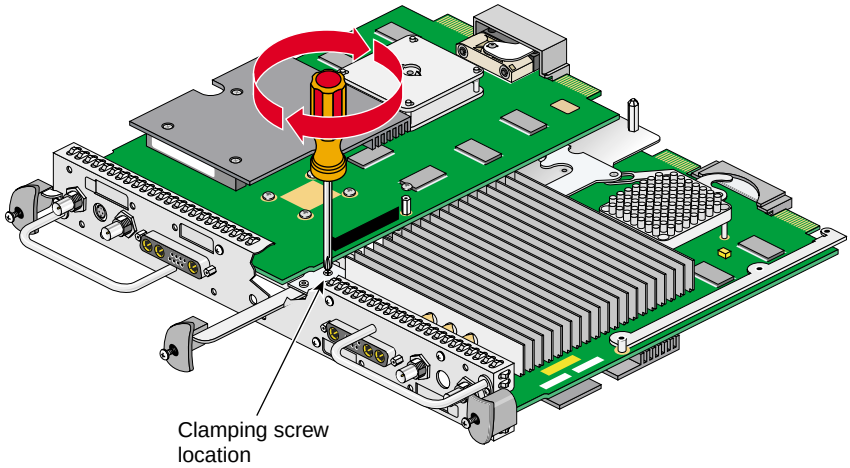


Figure 2-48 Tightening the Center Plastic Knob Clamping Screw

27. Reinstall the Dual Head XIO Module, as described in “Reinstalling the Dual Head XIO Module” on page 66.
28. Connect both monitors to the VPro graphics board monitor ports, as shown in Figure 2-49.
29. Connect one end of the monitor power cable to your monitor and the other end to a three-prong grounded electrical outlet.
30. Reconnect your workstation’s power cable.
31. Power on your workstation and monitor.

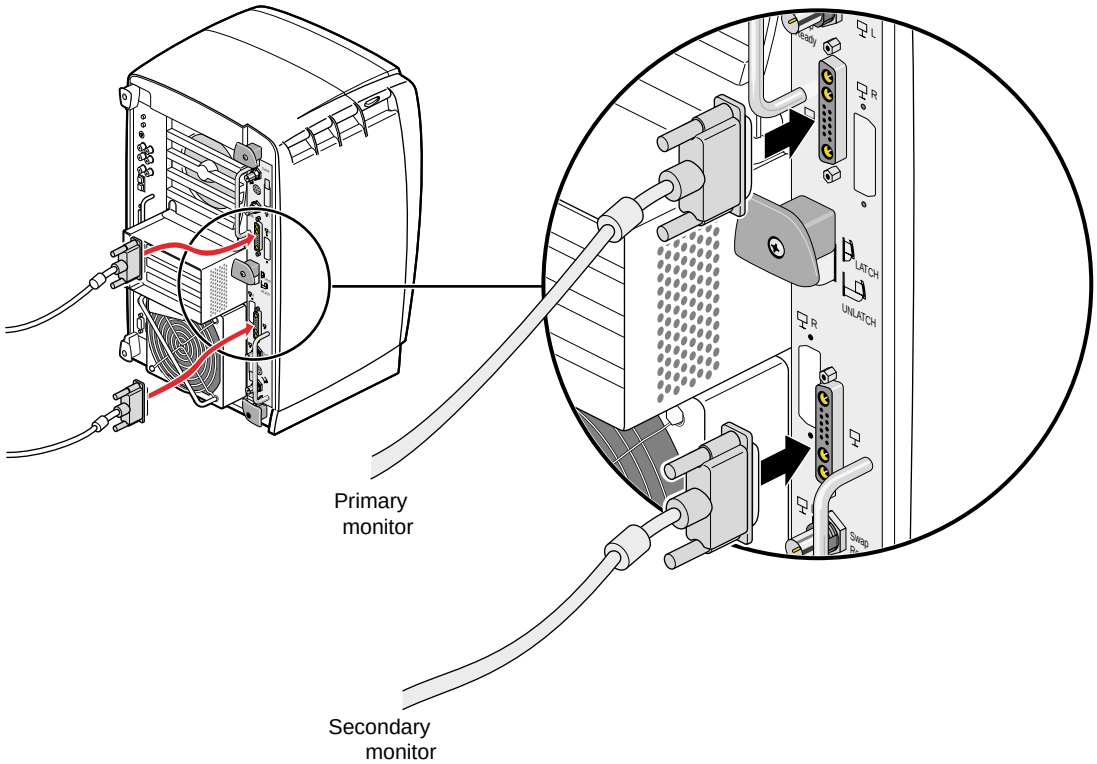


Figure 2-49 Connecting Monitors to the VPro Dual Head Graphics Boards

Connecting Monitors to the DCD

This chapter shows you how to connect two monitors to your DCD.

The following topics are covered:

- "Connecting the Monitor Cables to the Monitors" on page 90
- "Connecting the Monitor Cables to the DCD (Single Head Octane System)" on page 92
- "Connecting the Monitor Cables to the DCD (Dual Head Octane System)" on page 94
- "Connecting the Monitor Cables to the DCD (Silicon Graphics Fuel Workstation)" on page 98
- "Connecting the Monitor Power Cables and Powering On Your Workstation" on page 100
- "Verifying the Installation" on page 101

Caution: Make sure both of the monitors that are connected to the DCD have the same or similar display capabilities.

Connecting the Monitor Cables to the Monitors

Connect the monitor cables as follows:

1. Power off your workstation.
2. Place the monitors side by side.
3. Connect the VGA end of each DVI/VGA cable to the VGA connector on the back of each monitor, and then tighten the thumbscrews on both sides of each connector (see Figure 3-1).
4. Face the front of the monitors and place one monitor on the left and the other monitor on the right.

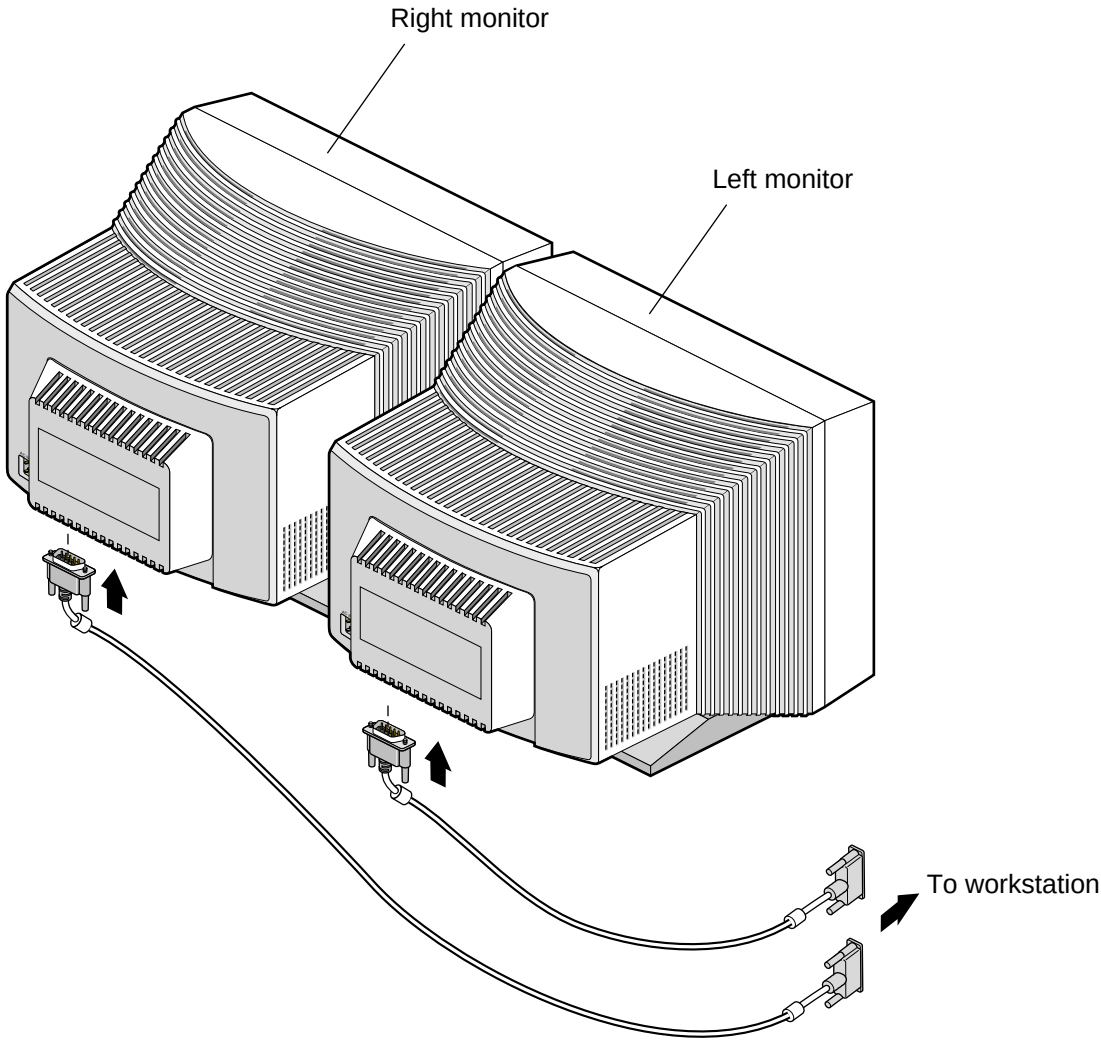


Figure 3-1 Connecting the Monitor Signal Cables to the Monitors

Connecting the Monitor Cables to the DCD (Single Head Octane System)

Follow the instructions in this section to connect the monitors to the DCD on a Single Head Octane system. For a Dual Head Octane system, proceed to "Connecting the Monitor Cables to the DCD (Dual Head Octane System)" on page 94. For a Silicon Graphics Fuel workstation, proceed to "Connecting the Monitor Cables to the DCD (Silicon Graphics Fuel Workstation)" on page 98.

1. Connect the left monitor's DVI/VGA cable to the top video connector (channel 0) on the DCD, as shown in Figure 3-2.

   Channel 0 drives the left monitor with the image from the top of the frame buffer.

2. Connect the right monitor's DVI/VGA cable to the bottom connector (channel 1) on the DCD, as shown in Figure 3-2.

   Channel 1 drives the right monitor with the image from the bottom of the frame buffer.

3. Tighten the thumbscrews on both sides of each video connector.

Caution: To ensure proper cursor movement, make sure you connect the monitor cables to the correct video connectors on the rear of your workstation.

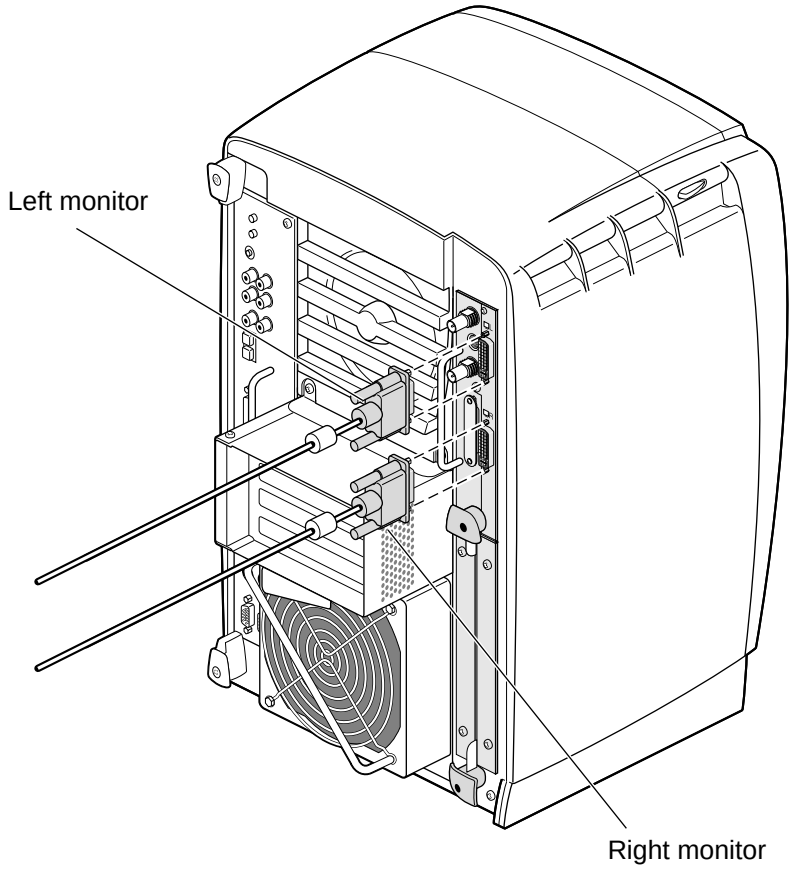


Figure 3-2 Connecting the Monitor Signal Cables to the DCD in a Single Head Octane System

Connecting the Monitor Cables to the DCD (Dual Head Octane System)

Follow the instructions in this section to connect the monitors to the DCD on a Dual Head Octane system. For a Single Head Octane system, refer to "Connecting the Monitor Cables to the DCD (Single Head Octane System)" on page 92. For a Silicon Graphics Fuel workstation, proceed to "Connecting the Monitor Cables to the DCD (Silicon Graphics Fuel Workstation)" on page 98.

If you are connecting the monitors to a DCD on the primary (upper) head, proceed to the following section "Connecting to a DCD on the Primary (Upper) Graphics Head".

If you are connecting the monitors to a DCD on the secondary (lower) head, proceed to "Connecting to a DCD on the Secondary (Lower) Graphics Head" on page 96.

Connecting to a DCD on the Primary (Upper) Graphics Head

To connect the monitors to a DCD on the primary (upper) graphics head in a Dual Head system, follow these steps:

1. Connect the left monitor's DVI/VGA cable to the top video connector (channel 0) on the DCD, as shown in Figure 3-3.

   Channel 0 drives the left monitor with the image from the top of the frame buffer.

2. Connect the right monitor's DVI/VGA cable to the bottom connector (channel 1) on the DCD, as shown in Figure 3-3.

   Channel 1 drives the right monitor with the image from the bottom of the frame buffer.

3. Tighten the thumbscrews on both sides of each video connector.

Caution: To ensure proper cursor movement, make sure you connect the monitor signal cables to the correct video connectors on the rear of your workstation.

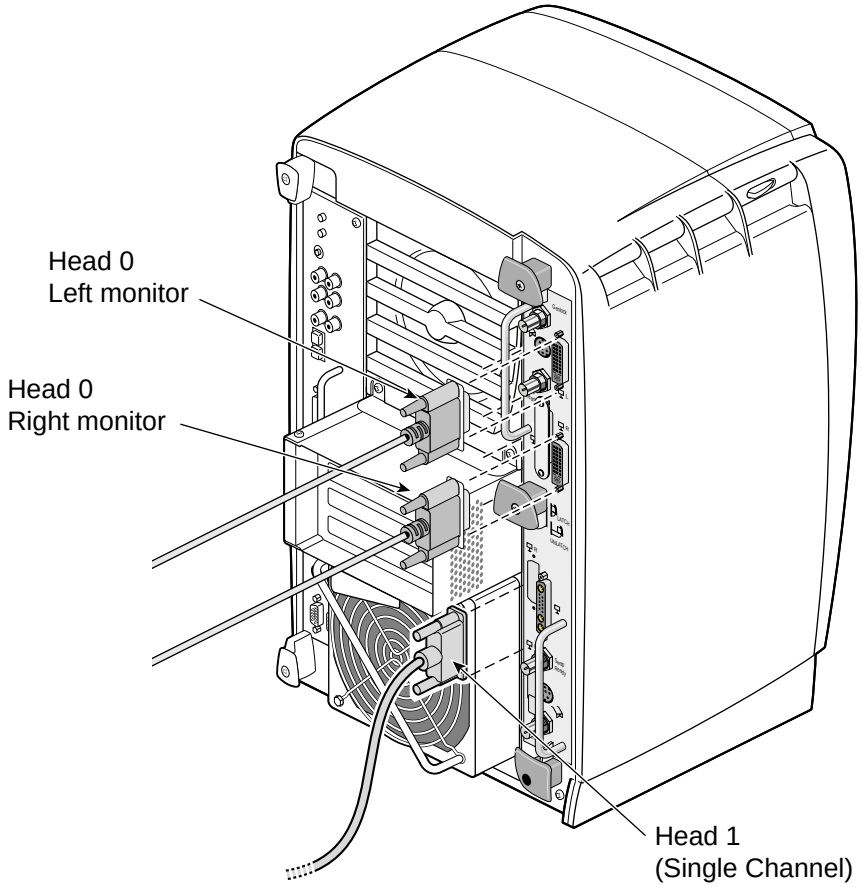


Figure 3-3 Connecting the Monitor Signal Cables to an Upper DCD in a Dual Head Octane System

Connecting to a DCD on the Secondary (Lower) Graphics Head

To connect the monitors to a DCD on the secondary (lower) graphics head in a Dual Head system, follow these steps:

1. Connect the left monitor's DVI/VGA cable to the bottom video connector (channel 0) on the DCD, as shown in Figure 3-4.

   Channel 0 drives the left monitor with the image from the top of the frame buffer.

2. Connect the right monitor's DVI/VGA cable to the top connector (channel 1) on the DCD, as shown in Figure 3-4.

   Channel 1 drives the right monitor with the image from the bottom of the frame buffer.

3. Tighten the thumbscrews on both sides of each video connector.

Caution: To ensure proper cursor movement, make sure you connect the monitor signal cables to the correct video connectors on the rear of your workstation.

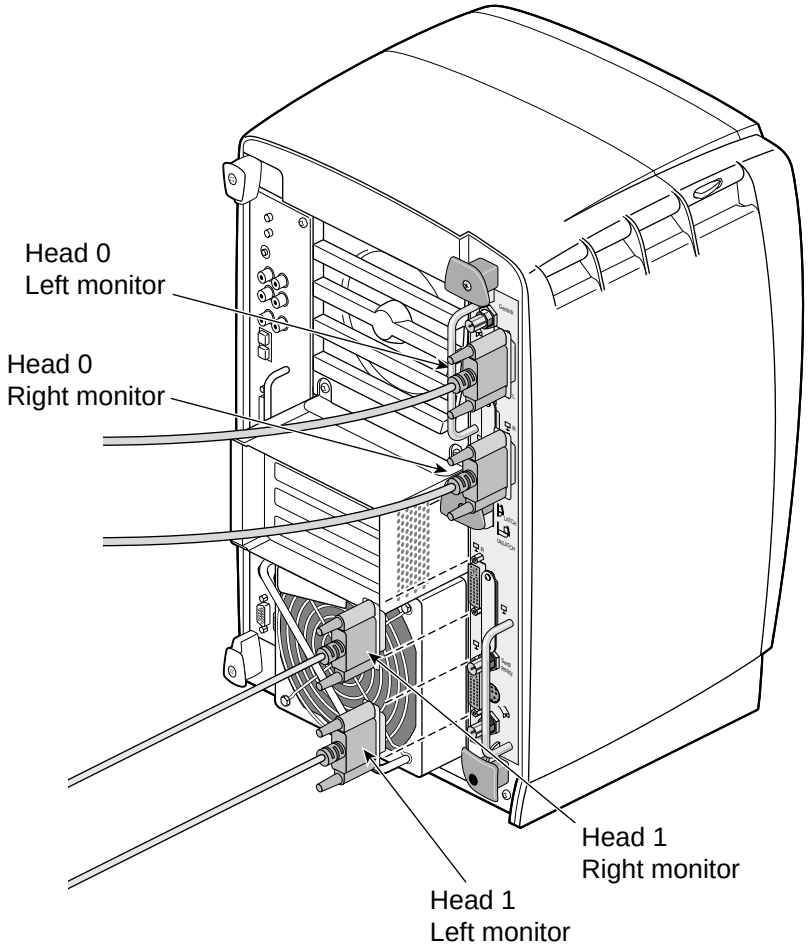


Figure 3-4 Connecting the Monitor Cables to a Lower DCD in a Dual Head Octane System

Connecting the Monitor Cables to the DCD (Silicon Graphics Fuel Workstation)

Follow the instructions in this section to connect the monitors to the DCD on a Silicon Graphics Fuel workstation. For a Single Head Octane system, see "Connecting the Monitor Cables to the DCD (Single Head Octane System)" on page 92. For a Dual Head Octane system, refer to "Connecting the Monitor Cables to the DCD (Dual Head Octane System)" on page 94.

1. Connect the left monitor's DVI/VGA cable to the left video connector (channel 0) on the DCD, as shown in Figure 3-5.

   Channel 0 drives the left monitor with the image from the top of the frame buffer.

2. Connect the right monitor's DVI/VGA cable to the right connector (channel 1) on the DCD, as shown in Figure 3-5.

   Channel 1 drives the right monitor with the image from the bottom of the frame buffer.

3. Tighten the thumbscrews on both sides of each video connector.

Caution: To ensure proper cursor movement, make sure you connect the monitor cables to the correct video connectors on the rear of your workstation.

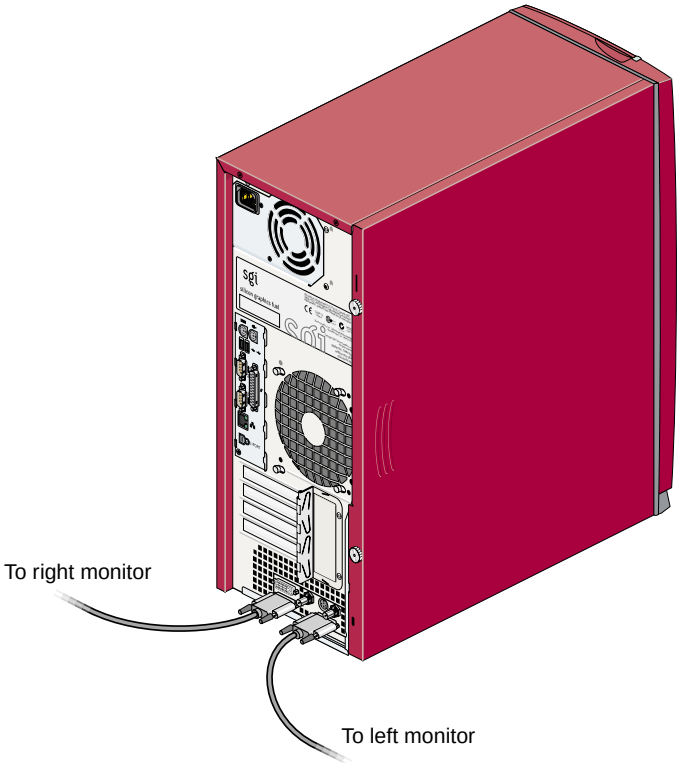


Figure 3-5 Connecting the Monitor Signal Cables to the DCD in a Silicon Graphics Fuel Workstation

Connecting the Monitor Power Cables and Powering On Your Workstation

Connect the power cable for each monitor as follows (see Figure 3-6):

1. Connect the female end of the power cable to the power connector on the back of the monitor.
2. Plug the male end into a three-prong grounded electrical outlet.
3. Plug your workstation's power cord into an electrical outlet.
4. Press the power button on the front of your workstation.
5. Press the power switch on the left monitor, then press the power switch on the right monitor to power on the monitors.

   For information on configuring the DCD, proceed to Chapter 4, "Configuring the DCD".

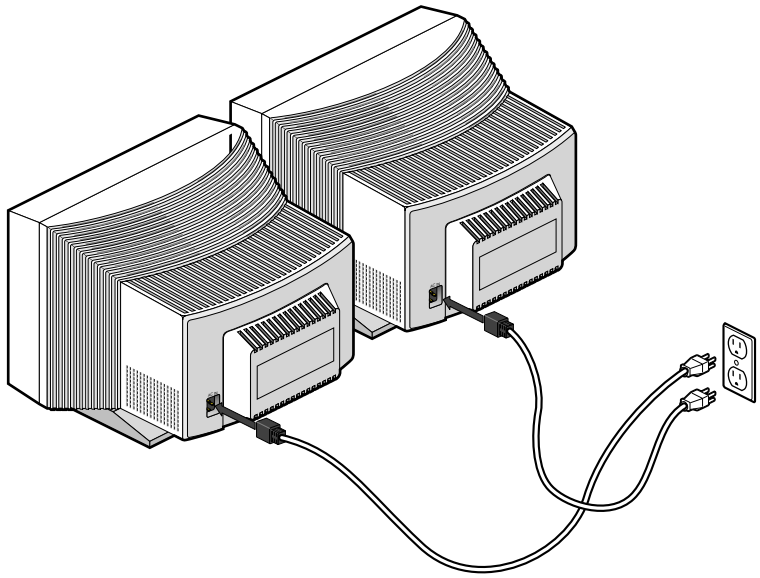


Figure 3-6 Connecting the Power Cables

Verifying the Installation

To verify a successful installation of the DCD, follow these steps:

1. Open a UNIX shell.
2. At the prompt, enter **`hinv`**

   A hardware inventory list will appear, similar to the one shown in Figure 3-7.
3. Look for the following line describing the DCD:

   ```
   DCD
   ```

   If the above line does not appear, proceed to Chapter 5, "Troubleshooting and Technical Specifications."

Note: If a DCD is installed in a Silicon Graphics Fuel workstation, or if one or two DCDs are installed in a Dual Head Octane system, the hardware inventory list will be slightly different than the Single Head Octane inventory shown in Figure 3-7. However, you should still look for a line that says "DCD" (or look for two such lines, if you have two DCDs installed).

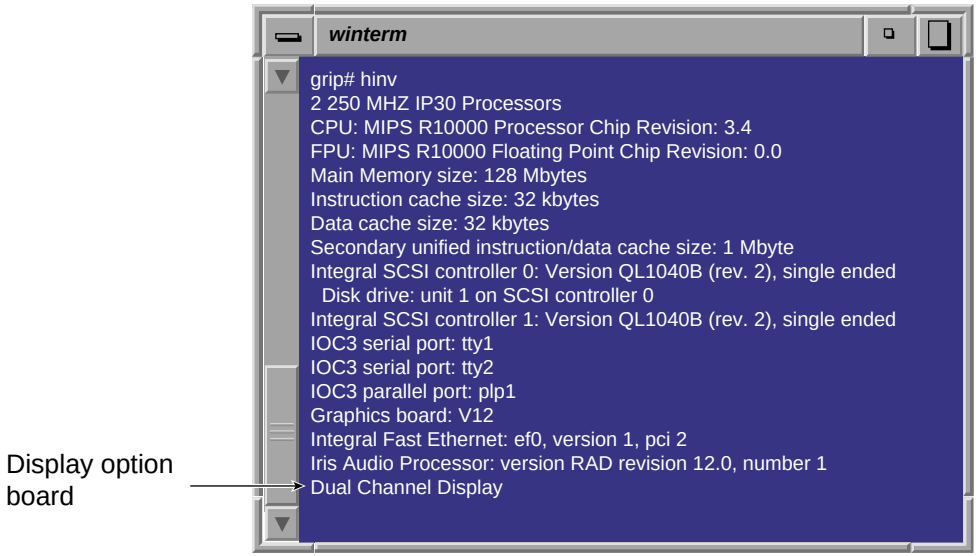


Figure 3-7 Hardware Inventory List after Installing the DCD

Configuring the DCD

This chapter shows you how to configure the DCD.

The following topics are covered:

- "Enabling and Disabling the DCD Setting" on page 104
- "Selecting the Buffer Settings" on page 107
- "Specifying the Maximum Size of a Window" on page 109
- "Resetting Window Positions" on page 110
- "Moving Windows between Monitors" on page 111

Enabling and Disabling the DCD Setting

When the X server starts, it checks the user-defined display setting to ensure that it is valid for the current hardware configuration. If a display setting is not specified or if it is invalid, the X server automatically selects the default setting. If you do not want to use the default setting, follow these steps:

Note: Make sure that both of the monitors that are connected to a single DCD have the same or similar display capabilities.

1. Open a UNIX shell.
2. Start **`xsetmon`**.

   The Graphics Back End Control window appears, as shown in the example in Figure 4-1.

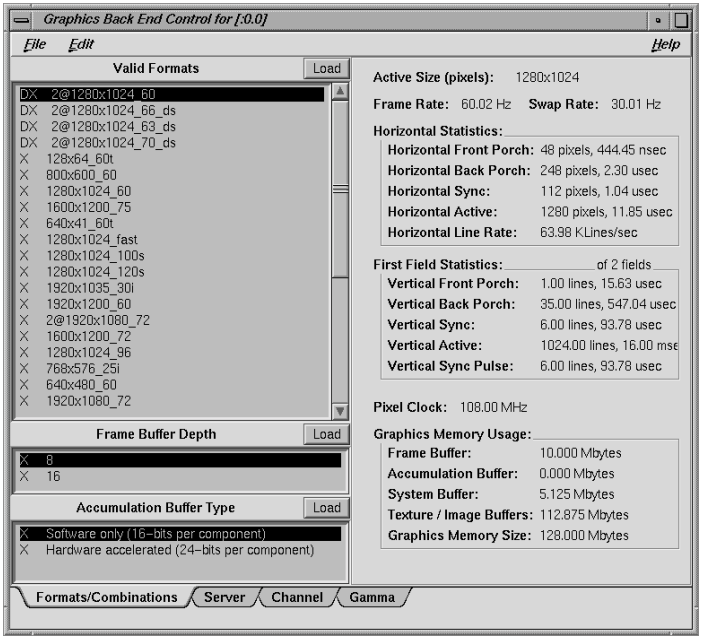


Figure 4-1 Graphics Back End Control Window

3. To enable dual channel mode, select a DCD setting from the **Valid Formats** field. To disable dual channel mode, select a single channel display setting from the **Valid Formats** field.

   Note: DCD settings have a "2@" prefix. Single channel display settings do not have a "2@" prefix.

4. Click the **Load** button next to the **Valid Formats** title bar.

   If your display setting has the character *D* in the first column, a confirmation dialog box will appear, as shown in the example in Figure 4-2.

   Note: If you select a display setting that does not show the character *D* in the first column, you must log out, and then log in again to activate the settings, as explained later in step 6.

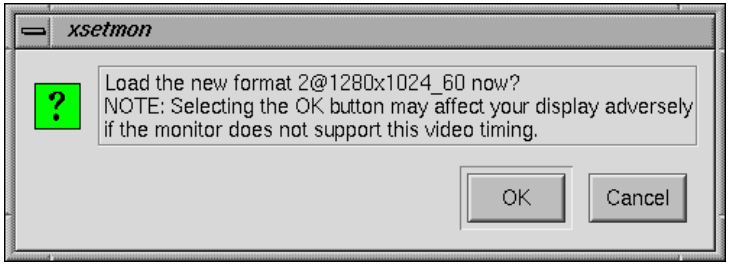


Figure 4-2 Load Confirmation Dialog Box

5. Click the **OK** button to confirm your display setting.

   Another dialog box will appear that asks if you want to use this display setting as the power-on default, as shown in the example in Figure 4-3.

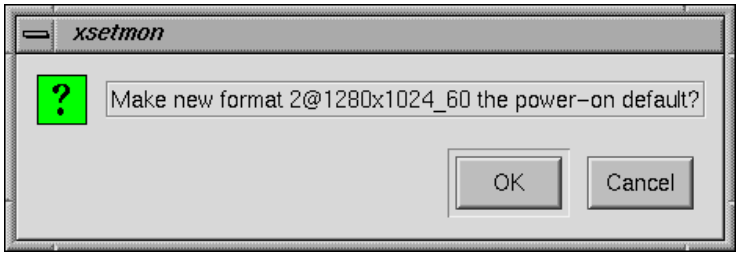


Figure 4-3 Power-On Default Dialog Box

6. Click the **OK** button to use the new display setting as the power-on default, or click the **Cancel** button to retain the current power-on default.

   If you click the **OK** button, the new display setting is immediately activated.

Note: If your specified display setting does not show the character *D* in the first column, a confirmation dialog box asks if you want to use this display setting as the power-on default. Click the **OK** button to confirm. The new display setting is activated the next time you log in.

Selecting the Buffer Settings

1. Select the desired frame buffer depth in the Graphics Back End Control window (see Figure 3-1), and then click the **Load** button.

   A dialog box appears that asks if you want to use this frame buffer depth as the power-on default, as shown in the example in Figure 4-4.

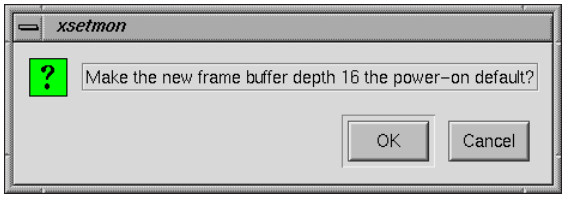


Figure 4-4 Frame Buffer Confirmation Dialog Box

2. Click the **OK** button to use this frame buffer depth as the power-on default, or click the **Cancel** button to retain the current default.

   If you click the **OK** button, another dialog box appears that says you must log out for the new settings to take effect, as shown in Figure 4-5.

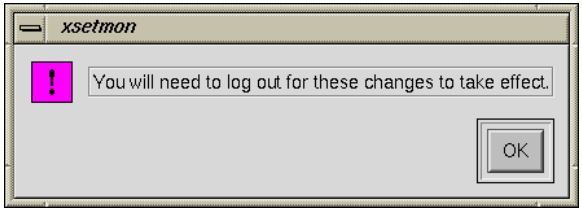


Figure 4-5 Log Out Dialog Box

3. Click the **OK** button in the dialog box.
4. Select the desired Accumulation Buffer Type in the Graphics Back End Control Window (see Figure 4-1), and then click the **Load** button.

   A dialog box appears that asks if you want to use this accumulation buffer type as the power-on default, as shown in the example in Figure 4-6.

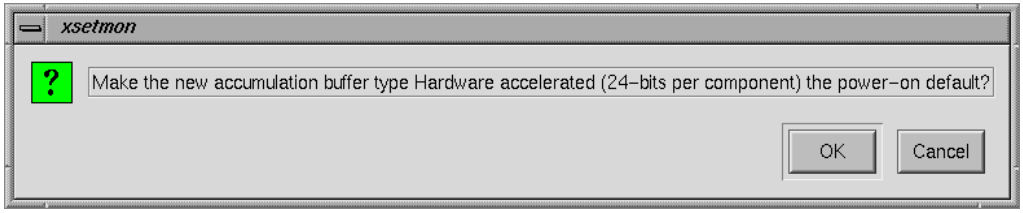


Figure 4-6 Accumulation Buffer Confirmation Dialog Box

5. Click the **OK** button to use this accumulation buffer type as the power-on default, or click the **Cancel** button to retain the current default.

   If you click the **OK** button, a dialog box appears that says you must log out for the new settings to take effect, as shown earlier in Figure 4-5.

6. Click the **OK** button in the dialog box.
7. Exit **`xsetmon`** and close all active applications.
8. Log out and then log in again to activate your new settings.

Specifying the Maximum Size of a Window

Because the DCD provides a large logical display (for example, 2560 x 1024), some applications use all the available space and display a single window across both of your monitors. If this happens, you can specify the maximum size of a window as follows:

1. As root, use an editor such as NEdit to open the file `/usr/lib/X11/app-defaults/4DWm`.
2. Under 4Dwm Specific Appearance and Behavior Resources, enter the following:

   ```
   *maximumMaximumSize: 1280x984
   ```

   This constrains the maximum window size to 1280 x 1024. The 40-pixel vertical difference is for the title bar and the top and bottom window borders.
3. Save the file and exit the editor.
4. Restart Window Manager by logging out and logging back in, or by selecting **Toolchest** > **System** > **Utilities** > **Restart Window Manager** and clicking **OK**.

   The above procedure limits the size of a maximized window, but the entire window may not appear on one of your monitors. To display the window on one of your monitors, click the **Maximize** button, and then move the window to the desired monitor.

Resetting Window Positions

The DCD displays a single logical screen across two monitors. Most applications position their popup windows near their main window, or near the cursor. However, some applications center their popup windows. When such applications are in dual channel mode, one half of the window appears on one monitor, and the other half of the window appears on the other monitor, as shown in Figure 4-7.

To work around this, modify the application's resources, as follows:

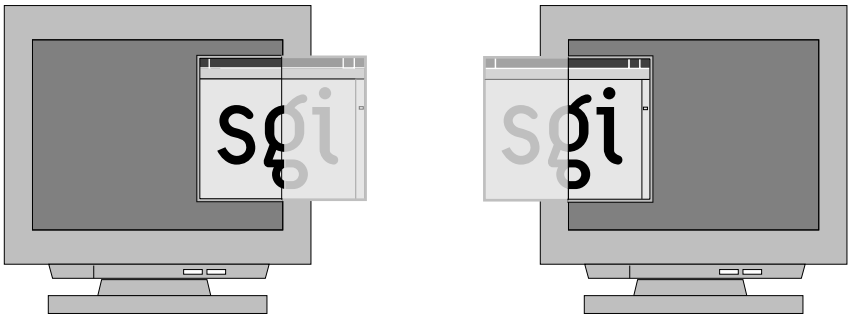


Figure 4-7 Overlapping Windows

To launch an application in a specific location, add the **-geometry** option to the command line. For example, the following command opens a window with the upper left-hand corner of the window 30 pixels from the left of the screen and 200 pixels from the top of the screen.

```
xterm  -geometry +30+200
```

If you are using a resolution of 1280 x 1024 and you want to place a window on the second display, add 1280 to the first number. For example:

```
xterm  -geometry +1310+200
```

You can also set this X resource in **`$HOME/.Xdefaults`**. For example, the following command forces all XWsh windows to open with the upper left-hand corner of the window 30 pixels from the left of the screen and 200 pixels from the top of the screen.

```
XWsh*geometry: +30+200
```

XWsh is the application's Classname.

In addition, you can use the Window Setting control panel to set specific window locations or to specify the window's last (continuous) position before you log out. To do this, choose **Toolchest** > **Desktop** > **Customize** > **Windows**.

Moving Windows between Monitors

When you move a window from one monitor to the other, the window follows the cursor as it jumps between screens. However, as it moves across, a section of the window is clipped. For example, as you move a window from the left monitor to the right monitor, the right edge of the window is clipped to the left edge of the right monitor, as shown in Figure 4-8.

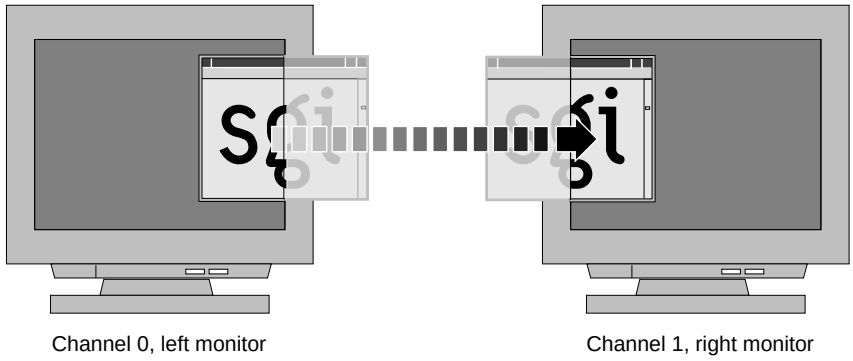


Figure 4-8 Moving a Window between Monitors

Troubleshooting and Technical Specifications

This chapter provides troubleshooting tips and pin assignments for the DCD.

The following topics are covered:

- "Troubleshooting" on page 113
- "Returning Parts" on page 115
- "Technical Specifications" on page 116

Troubleshooting

If you have a problem with your monitors, first verify that the DCD appears in the hardware inventory list by following these steps:

Note: If both monitors are blank, follow the instructions in "If Both Monitors are Blank" on page 114.

---

1. Open a UNIX shell.
2. At the prompt, type:

   ```
   hinv
   ```

3. Look for the following line that describes the DCD:

   ```
   Dual Channel Display
   ```

If the above line does not appear, the troubleshooting tips in Table 5-1 may help you to isolate a problem.

Table 5-1 DCD Troubleshooting Tips

Symptom	Possible Cause
Dual Channel Display does not appear in **`hinv`**.	Either the board is installed incorrectly, or it is defective. If the board is installed in an Octane2, repeat the installation steps again, and make sure you insert the board correctly. If reseating the board does not solve the problem, the board may be defective. If these steps do not help, or if the board is installed in a Silicon Graphics Fuel workstation, call your SGI service representative.
Same image appears on both monitors.	Timing mode is set to single channel. See Chapter 3.
Monitors are blank.	Connect a monitor to the original monitor port and run **`hinv`**, as described in "If Both Monitors are Blank" on page 114.
In single channel modes, one monitor displays the image correctly, but the other monitor's image is bad.	The board is probably defective. Contact your SGI service representative.
The images on both monitors alternate between the correct image and noise, a constant color, or a badly flickering image.	The board is probably defective. Contact your SGI service representative.
In dual channel mode, two superimposed flickering images appear on a monitor connected to the original graphics board monitor port.	Currently, the original graphics board monitor port is not disabled when the board is running in dual channel mode. If you connect a monitor to the original graphics board monitor port in dual channel mode, the monitor displays alternating images from the left and right channels.

If Both Monitors are Blank

If neither of your monitors has an image, follow the steps in the apropriate section below.

If Neither Monitor Has an Image (Silicon Graphics Octane2)

1. Remove the cover from the 13W3 monitor port on the VPro graphics board.
2. Connect a monitor to the 13W3 monitor port.
3. Open a UNIX shell.
4. At the prompt, enter **`hinv`**:

   A hardware inventory list should appear, similar to the one shown in Figure 3-7.
5. Look for the following line that describes the DCD:

   ```
   Dual Channel Display
   ```

   If the above line does not appear, return to Table 5-1.

If Neither Monitor Has an Image (Silicon Graphics Fuel Workstation)

1. Connect a monitor to the original single DVI port on the graphics board.
2. Open a UNIX shell.
3. At the prompt, enter **`hinv`**:

   A hardware inventory list will appear, similar to the one shown in Figure 3-7.
4. Look for the following line describing the DCD:

   ```
   Dual Channel Display
   ```

   If the above line does not appear, see Table 5-1 for additional information.

Returning Parts

To return any part, use the packaging materials and box included with your part.

Technical Specifications

Table 5-2 lists the cable pinout assignments for both connectors on the DCD.

Table 5-2 DCD Pinout Assignment

Pin	Assignment	Pin	Assignment	Pin	Assignment
1	T.M.D.S. Data2-	9	T.M.D.S. Data1-	17	T.M.D.S. Data0-
2	T.M.D.S. Data2+	10	T.M.D.S. Data1+	18	T.M.D.S. Data0+
3	T.M.D.S. Data2/4 Shield	11	T.M.D.S. Data1/3 Shield	19	T.M.D.S. Data0/5 Shield
4	T.M.D.S. Data4-	12	T.M.D.S. Data3-	20	T.M.D.S. Data5-
5	T.M.D.S. Data4+	13	T.M.D.S. Data3+	21	T.M.D.S. Data5+
6	DDC Clock	14	+5V Power	22	T.M.D.S. Clock Shield
7	DDC Data	15	Ground (return for +5V, HSync, and VSync)	23	T.M.D.S. Clock +
8	Analog Vertical Sync	16	Hot Plug Detect	24	T.M.D.S. Clock-
C1	Analog Red	C2	Analog Green	C3	Analog Blue
C4	Analog Horizontal Sync	C5	Analog Ground (analog R, G, and B return)		

Care and Cleaning of Compression Connectors

The Silicon Graphics Octane2 workstation uses compression connectors to connect several modules and boards to the frontplane.

Compression connectors are located in the following places:

- One is located on the back of the PCI module.
- One is located on each XIO board on the XIO module.
- Two are located on the system module.

Each compression connector has 96 pads that enable passage of signals between the system (via the frontplane) and the system module, PCI module, or XIO board.

A compression connector has two halves: one half is located on the frontplane of the chassis; the other half is located on the system module, PCI module, or XIO board. Each pad on a frontplane connector is a flat, gold-plated surface. Each pad on the system module, PCI module, or XIO board is composed of hundreds of tiny bristles (dendrites), as shown in Figure A-1. When a bristled pad is pressed into a gold-plated pad, a connection is created for one signal.

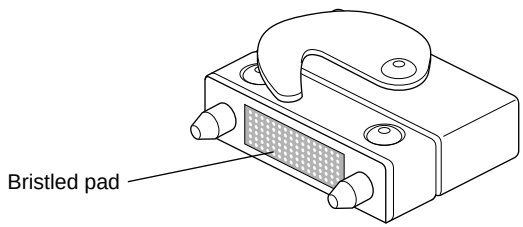


Figure A-1 Identifying the Bristled Pad of the Compression Connector

The bristled pads may attract and hold dust, lint, grease, powder, and dirt. The presence of these substances clogs or damages the bristles and prevents them from making proper

contact with the gold-plated pads on the system's frontplane. It is important to prevent this.

Storing and Handling Compression Connectors

To avoid damaging a compression connector and to keep it in optimal working condition, follow these guidelines whenever the board is not installed in the chassis:

Caution: Failure to follow these instructions can result in irreparable damage to the surface of the connector's pads, which may result in intermittent or complete failure of the product.

- Do not wipe or touch the pads of the compression connector with anything (no human fingers, no brushes, no cloth, no probes), except as specified in the cleaning instructions. The bristles might be damaged.
- Whenever the module or board is not in the chassis, put the protective cap over the compression connector and put the module or board in an antistatic bag. Be sure to close (fold over) the open end of the bag to minimize exposure to dust and atmospheric gases.
- Do not put anything (not even water) onto the pads, except as specified in the cleaning instructions.
- Before laying the board on a surface, make sure that the surface is free of dust, lint, powder, metal filings, oil, water, and so on.
- Do not blow dust, dirt, or powder anywhere near the board when it is not inside its protective bag.

Cleaning Compression Connectors

A compression connector should never need to be cleaned if you keep the protective cover on whenever the module or board is not in the chassis. However, if the connector becomes dirty, follow these steps for removing pollutants:

Note: Some pollutants can irreversibly damage (corrode or chemically alter) the pad surfaces. Although cleaning may remove the pollutant, it does not repair damage incurred by this contact.

---

1. Obtain a can of dry compressed air or inert gas. The Envi-Ro-Tech 1671 Duster product manufactured by Tech Spray, L.P. (telephone +806 372 8523) works extremely well for this application.

Caution: Do not use a cleaning product that contains any of the following ingredients: halogenated hydrocarbons, aromatic hydrocarbons, ethers, sulfur, ketones, or solvents of any kind. These substances cause irreparable damage to the connector's surface.

2. Prepare the can for use, as instructed on the can. For example, if a tube is provided, attach it to the can's dispensing mechanism.

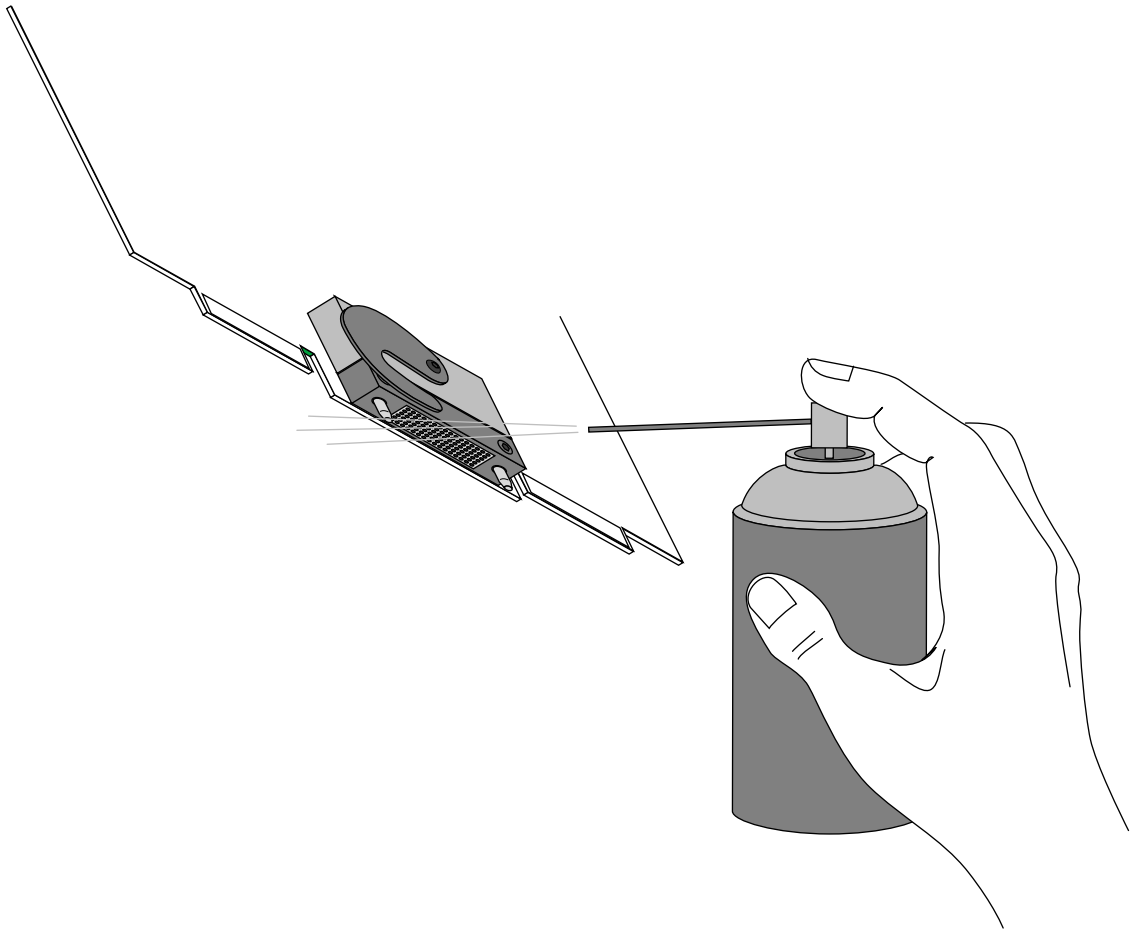


Figure A-2 Spraying the Compression Connector

3. Hold the can in a vertical position.
4. Place or hold the XIO board so that the rounded edge of the compression connector faces up. Note that the rounded edge is completely closed, so that air cannot flow into the connector, whereas the squared edge has an opening (see Figure A-2.)

Caution: Spraying into the squared (open) edge of the connector can destroy it.

5. Position the XIO board at an angle to the can, so that the tip of the can's applicator is one to two inches away from the first (topmost) row of pads. Do not allow the applicator to touch the pads. When you spray, the air hits each pad and flows downward.
6. Start spraying. As you spray, move the spray along the length of the connector until the entire length has been sprayed. Move down a few rows and again spray along the entire length.

   Note: Do not shake the can. Stop spraying if any visible material (for example, foam) appears. This foam will blow away once you resume spraying just air.

7. Repeat until all the pads have been sprayed.
8. When you finish, cover the compression connector with its cap or immediately install the board in an XIO slot.

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