Technical Reference

HP B2600 Workstations

Manufacturing Part Number: n.a.
Edition E0501

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Preface

This *Technical Reference* provides instructions for installing and configuring hardware, system specifications and characteristics, instructions for using the Boot Console Handler, error messages and troubleshooting hints for your HP B2600 workstation.

Safety and Regulatory Statements

See Appendix A for the safety and regulatory statements that apply to the B2600 workstation.

Installation Notice

Products designated in the Hewlett-Packard price list as customer installable can be installed using the instructions provided with the product. If you have elected to have the product installed by our field personnel, you will be charged for this service as covered under the standard terms and conditions. For more information, please go to this web site:

```
www.hp.com/workstations/support
```

Related Manuals

The following documents are also a part of your HP B2600 document set:

- *Installation Poster for the HP B2600 Workstation*
- *Getting Started Guide for the HP B2600 Workstation*

For more information, refer to the following documents:

- *Common Desktop Environment (CDE) User's Guide*
- *Configuring HP-UX for Peripherals*
- *HP-UX System Administration Tasks*
- *HP CDE Getting Started Guide*
- *Managing Systems and Workgroups*
- *Using HP-UX*
- *Using Your HP Workstation*
- *Getting Started Guide for the B2600*

Note that the documents listed above can be viewed with a web browser using this URL:

```
http://www.docs.hp.com
```

Revision History

The revision history for each edition of the manual is listed below:

Edition	Revision History
E0501	First Printing

Problems, Questions, and Suggestions

If you have any problems or questions with our hardware, software, or documentation, please contact either your HP Response Center or your local HP representative. If you have access to a web browser, you can get the latest software and hardware patches at the following URL:

```
http://www.hp.com/workstations/support/
```

Electrostatic Discharge (ESD) Precautions

Electrostatic charges can damage the integrated circuits on printed circuit boards. To prevent such damage from occurring, observe the following precautions during board unpacking and installation:

- Work on a static-free mat.
- Wear a static strap to ensure that any accumulated electrostatic charge is discharged from your body to ground.
- Create a common ground for the equipment you are working on by connecting the static-free mat, static strap, and peripheral units to that piece of equipment.
- Keep uninstalled printed circuit boards in their protective antistatic bags.
- Handle printed circuit boards by their edges, once you have removed them from their protective antistatic bags.

1 Product Information

This chapter provides general product information about the HP B2600 workstation. This information is provided to help familiarize you with the main features and components of the workstation.

Instructions in this chapter assume that you are running the Common Desktop Environment (CDE) on the HP-UX 10.20, 11.0 or 11i operating system with the latest additional core enhancements (ACE).

The topics included in this chapter are:

- Hardware System Overview
- Operating System Overview
- Your Workstation's Front Panel
- Your Workstation's Rear Panel Connectors
- Monitors
- Workstation Characteristics
- Internal Components

Hardware System Overview

To help you gain a better understanding of the HP B Class workstation, Table 1-1. provides the workstation's hardware system features.

Table 1-1. HP B2600 Hardware System Features

Workstation Feature	Description
Processor	A PA8600 microprocessor with an operating frequency of 500MHz. This processor has a 0.5 MB instruction cache and a 1.0MB data cache.
Monitors	PC compatible monitors
Optional Graphics	Supported graphics devices: • HP VISUALIZE-*fx*5 • HP VISUALIZE-*fxe* rev. b
Main Memory	Four memory slots (cards can be mixed): • 256MB DIMMs • 512MB DIMMs • 1GB DIMMs
Internal Storage Devices	Two Low-Voltage Differential (LVD) SCSI hard disk drive and one optional ATAPI CD drive.
Standard Network	10/100 Base T LAN connector
Standard I/O Connectors	Standard workstation I/O ports: • Universal Serial Bus (USB) connectors, two • Serial ports 1 and 2 connectors • Parallel connector • LAN connector
PCI slots[1]	Slot 1: 32 Bit, 5.0V, 33MHz (optional audio card) Slot 2: 32 Bit, 5.0V, 33MHz Slot 3: 64 Bit, 5.0V, 33MHz (graphics card) Slot 4: 64 Bit, 5.0V, 33MHz
Remote Power-on	Allows you to turn on your workstation from a remote system.

1. Its is recommended that you install the optional audio card in slot one of the PCI cage, and your graphics card in slot three of the PCI cage.

Operating System Overview

Your workstation uses the HP-UX 10.20, 11.0 or 11i operating system. Instant ignition systems (systems with preloaded software) have X-Windows, and HP CDE, Hewlett-Packard's graphical user interface, installed and configured.

Please refer to the "Instant Ignition System Information" sheet that came with your system for details on configuration.

If your Instant Ignition system does not have the kernel preconfigured with all of the device drivers, you need to refer to the manual *Managing Systems and Workgroups* to configure your kernel.

If you have any questions about Instant Ignition, refer to the document *Using Your HP Workstation* for more information.

Note that both of the documents mentioned in the previous paragraphs can be found on the world-wide web at the following Uniform Resource Locator (URL):

```
http://www.docs.hp.com/
```

Your Workstation's Front Panel

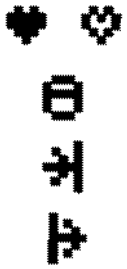
Before powering on your system, you should become familiar with the system unit controls. Figure 1-1. shows the system unit front panel controls.

Figure 1-1. System Unit Front Panel

System LCD

The Liquid Crystal Display (LCD) is located on the front panel. The LCD has two 16-character lines. The LCD displays messages about the state of the system, including chassis codes. The symbols in Figure 1-2. appear in the LCD if you have the HP-UX 10.20, 11.0 or 11i operating system booted on your system. They represent the different system activities shown:

Figure 1-2. LCD Symbols for System Activities



Operating system running (heart beat)

Disk access in progress

Network receive in progress

Network transmit in progress

System Power Button

The power button is used to turn the system unit on and off. When you turn your workstation off, the operating system executes an automatic `shutdown -h` command. This prevents any damage to programs and data on your system disk. Turning the power switch back on again automatically boots up the HP-UX 10.20, 11.0 or 11i operating system if your system has been configured to auto boot.

Your Workstation's Rear Panel Connectors

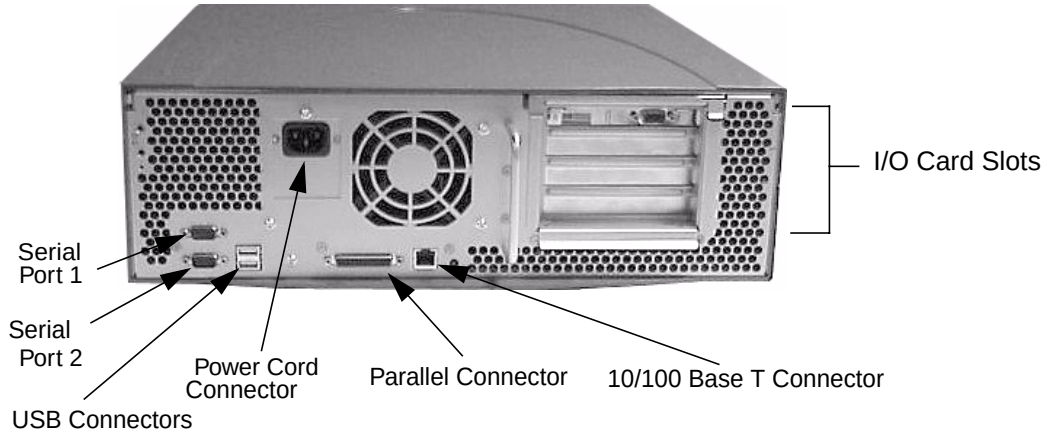
This section describes the following connectors on the system unit's rear panel:

- Serial Ports 1 and 2 Connectors
- USB Connectors
- Power Cord Connector
- Parallel Connector
- Network Connector

NOTE To maintain FCC/EMI compliance, verify that all cables are fully seated and properly fastened.

Figure 1-3. shows the locations of the connectors on the system unit's rear panel.

Figure 1-3. System Unit Rear Panel Connectors



Serial Ports 1 and 2 Connectors

You can attach a variety of pointing devices (such as a mouse or trackball), or peripheral devices (such as printers, plotters, modems, and scanners) to the RS-232C Serial Input/Output (SIO) ports on this workstation. Consult the documentation that accompanies each pointing or peripheral device for specific information concerning its use.

USB Connectors

The two Universal Serial Bus (USB) connectors support only the HP keyboard, mouse and hub (D6804A). You can connect the HP keyboard, mouse and hub in either of the USB connectors.

The mouse and keyboard were shipped with your system unit, and the HP hub can be ordered separately. Note that you should consult the documentation that accompanies each input device for specific information concerning its use.

For more information on the Universal Serial Bus, use your browser and the following URL:

```
http://www.usb.org
```

Keyboard

The USB connector provides an interface for the keyboard to the system. This keyboard provides the standard keys found on most PC keyboards.

HP Mouse

The HP mouse (USB) has left, middle and right buttons that function the same as most mice. For general information on the various cursor shapes and mouse button mappings associated with different areas of HP CDE while using a mouse, see the *Using Your HP Workstation* document.

Power Cord Connector

Plug the workstation's power cord into the power cord connector to provide AC power to the system. For information regarding the DC power supply, see Appendix E in this document.

Parallel Connector

This 25-pin parallel connector allows you to connect printers and disk drives that require a parallel connector. This connector complies with the IEEE 1284 standard.

Network Connector

Your workstation has a built-in 10/100 BaseT network connection. Your workstation will automatically select the correct network setting.

Audio Connectors (optional)

Your workstation does not provide for audio input and output capabilities. If you require these capabilities, please contact your local HP Sales Representative. If you decide to purchase the recommended optional audio card, read the chapter "Remove/Install System Components" in this manual for installation instructions.

Monitors

The HP VISUALIZE fx5 and fxe2 graphics cards support any VESA monitors that are capable of a minimum XGA resolution of 1600×1200.

Before using your monitor, you should become familiar with its controls, connectors and indicators. For information on these controls and indicators and on using your monitor, see the documentation that came with the monitor.

Workstation Conversion Process

If you want to convert your workstation from a desktop system to a rack-mount system or from a rack-mount system to a desktop system, order the appropriate conversion kit listed in the subsequent sections. The instructions can be found in the conversion kits.

Desktop to Rack-Mount Conversion

To convert your desktop system to a rack-mount system, you will need to order the rack-mount kit (HP Part Number: A7228A) from your local HP Sales Representative. You can find the conversion instructions in the chapter “Remove/Install System Components” in this manual.

Rack-Mount to Desktop Conversion

To convert your rack-mount system to a desktop system, you will need to order the desktop kit (HP Part Number: A7227A) from your local HP Sales Representative. You can find the conversion instructions in the chapter “Remove/Install System Components” in this manual.

Workstation Characteristics

Table 1-2. Workstation Characteristics

Characteristic	Description
Weight Rack System (excl. keyboard and display) Weight Desk-side System (excl. keyboard and display)	14.1 kg (31.0 lb.) 15.9 kg (35.0 lb.)
Dimensions Rack System	Depth: 45.77 cm (18.02 inches)[1] Width: 42.50 cm (16.73 inches) Height: 12.70 cm (5.00 inches)
Dimensions Desk-side System	Depth: 47.02 cm (18.51 inches) Width: 43.26 cm (17.03 inches) Height: 13.67 cm (5.38 inches)
Storage temperature	–40˚C to +70˚C (–40˚F to +158˚F)
Storage humidity	8% to 90% (relative)
Operating temperature	+5˚C to +35˚C (+41˚F to +95˚F)
Operating humidity	15% to 80% (relative)
Input Current	3.6 – 3.0 amps (AC at 100 to 120 Vac) 1.8 – 1.5 amps (AC at 200 to 240 Vac)
Input Frequency	50Hz/60Hz
Sound Power Rack System	5.5 Bels LwA max. at 30˚C (88˚F)
Sound Power Desk-side System	5.0 Bels LwA max. at 30˚C (88˚F)

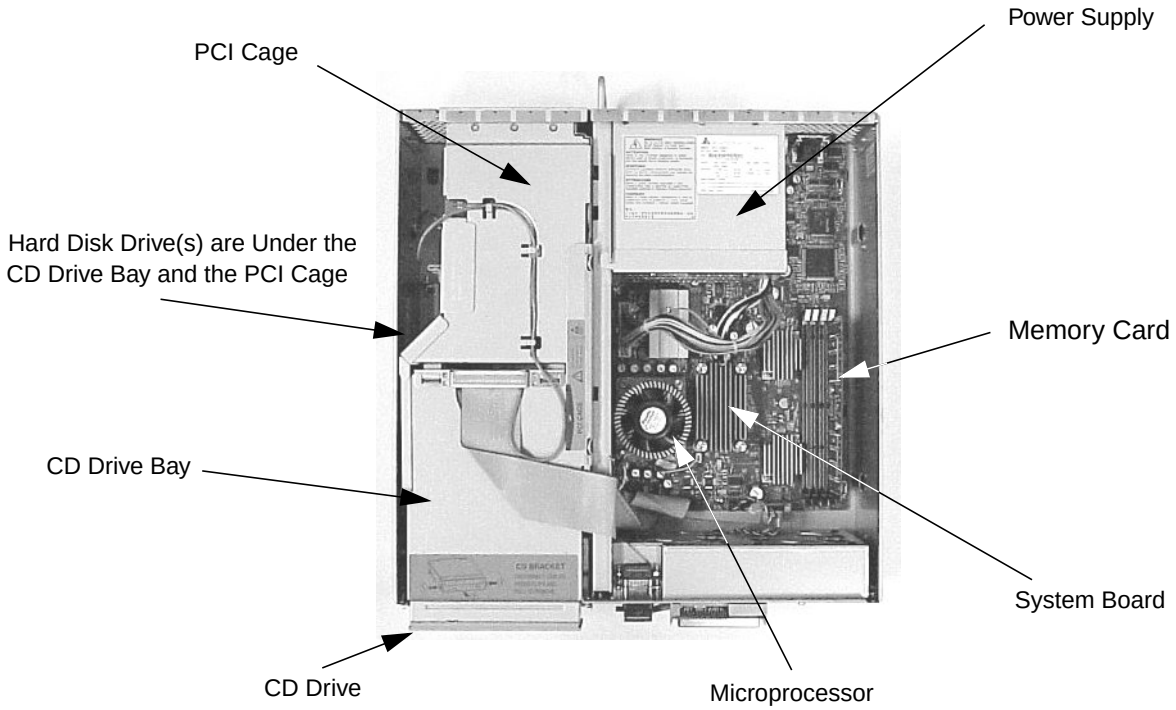
1. The depth given above did not include the rear handle on the system. The depth of the system with a rear handle is 49.50 cm or 19.49 inches.

Internal Components

This section describes the internal components of the B2600 workstations.

For instructions on how to remove and install the workstation's PCI cage, memory cards (DIMMs), removable mass storage devices, system board and power supply, see Chapter 3.

Figure 1-4. Internal Components of the B2600



System Board

The system board in the B2600 contains the PA-RISC microprocessors and memory slots as well as connectors to other components.

Microprocessor

The B2600 has one PA-8600 microprocessor with an operating frequency of 500 MHz. This processor has a 0.5 MB instruction cache and a 1.0 MB data cache. The microprocessor is cooled by a "turbocooler" which consists of a cylindrical heat sink and an integrated fan.

Power Supply

The maximum AC and DC power needed by a fully-configured SPU is 360W input power. The temperature sensor is located at the front of the system board. The AC power supply weighs approximately 5.8 lbs. (2.6 kg.) and the DC power supply weighs approximately 4.2 lbs. (1.9 kg.).

CAUTION HP does not recommend and does not support the use of “ferro-active” or “ferro-resonant” power correction in conjunction with the B2600 workstation. This type of line conditioner represents an older technology that is not compatible with the most recent designs in active Power Factor Correction (PFC) power supplies such as those in the HP B2600 workstations. “Ferro-active” or “ferro-resonant” line conditioners may cause an increase in total harmonic distortion and may produce significant and unpredictable voltage regulation anomalies.

PCI Cage

The PCI (Peripheral Connect Interface) cage is located on the left side of the system board, behind the CD drive bay area. There are two 32-bit, 5.0v, 33MHz slots and two 64-bit, 5.0v, 33MHz slots, which provide I/O expansion capabilities for the workstation. The two 32-bit slots support short PCI cards, and the two 64-bit slots support short and full-length PCI cards.

If you are installing a video card in you workstation, it is recommended that you install it in slot three of the PCI cage. Note that any optional audio card should be installed in slot one of the PCI cage.

CD Drive Bay and Hard Disk Drive Bays

The B2600 supports two Low-Voltage Differential (LVD) SCSI hard disk drives (one standard and one optional) and one optional ATAPI CD drive. If you should install an optional SCSI card in one of the four PCI slots located in you PCI cage, the internal SCSI bus will be independent of the external SCSI bus.

2 Troubleshooting

This chapter provides information about isolating a failing component, known as a Field Replaceable Unit (FRU), in HP B2600 workstations.

Chapter Overview

This chapter contains the following main sections:

- Introduction to Troubleshooting
- Flowcharts for Troubleshooting
- Identifying LCD-Indicated Conditions
- Running System Verification Tests
- Running ODE-Based Diagnostics

Introduction to Troubleshooting

To troubleshoot HP B2600 workstations, you must be familiar with the HP-UX operating system and be able to start and stop processes. You should also be familiar with the boot ROM diagnostics, ISL diagnostics, and the Support Tools Manager online tests, which are described in this chapter.

First note any error or status messages and then run the power-up boot ROM diagnostics, known as Selftest. If the Selftest diagnostics fail, replace the FRU that is indicated. If the tests pass but you still suspect a problem, run the ODE diagnostics and the Support Tools Manager online tests.

For a complete description of using ODE diagnostics and using the Support Tools Manager, see the *Support Media User's Manual* (Part Number B3782-90176).

Flowcharts for Troubleshooting

The following four figures contain troubleshooting flowcharts you can follow to isolate a failing Field Replaceable Unit (FRU). Figure 2-1. on the next page contains the main troubleshooting flowchart. Figure 2-2. through Figure 2-4. the following pages contain the flowcharts for console, bootable device, and HP-UX troubleshooting, respectively.

WARNING **Before removing any FRU, PCI card, DIMM or power supply connectors, you must disconnect the AC power cord from its wall outlet for both the AC power source.**

For DC power, disconnect power from the source before connecting power to the product or before accessing the product's power terminals. For more details, see the "DC Power Supply" appendix.

Figure 2-1. Main Flowchart for Troubleshooting

Figure 2-2. Console Troubleshooting Flowchart

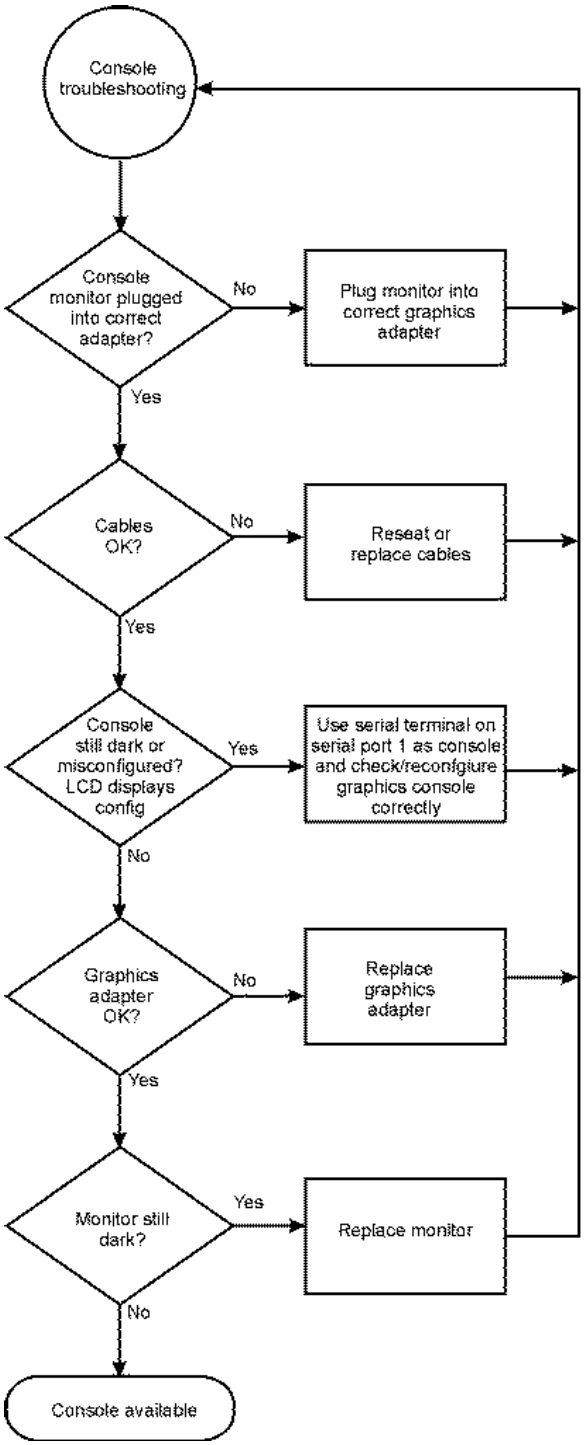


Figure 2-3. Bootable Device Troubleshooting Flowchart

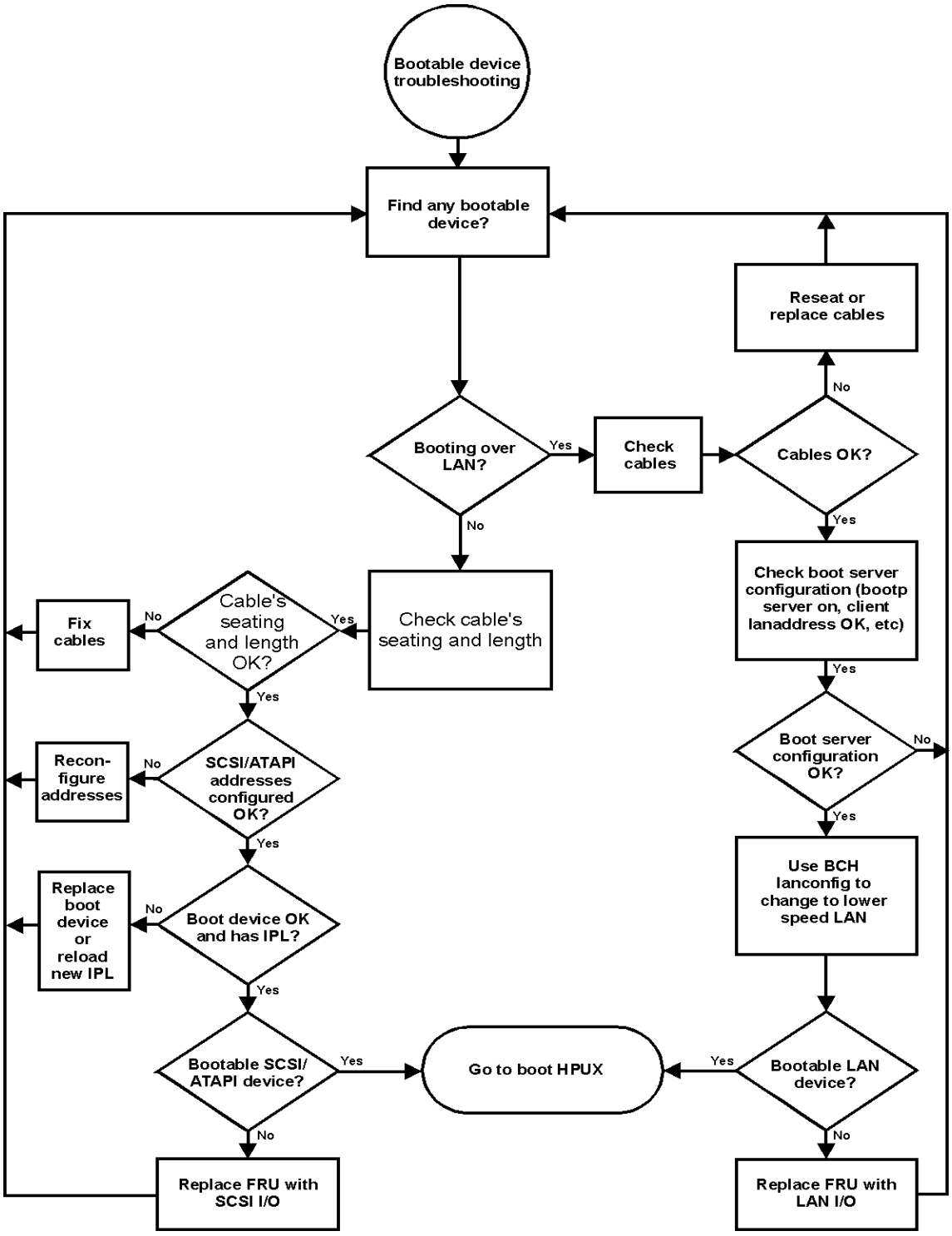
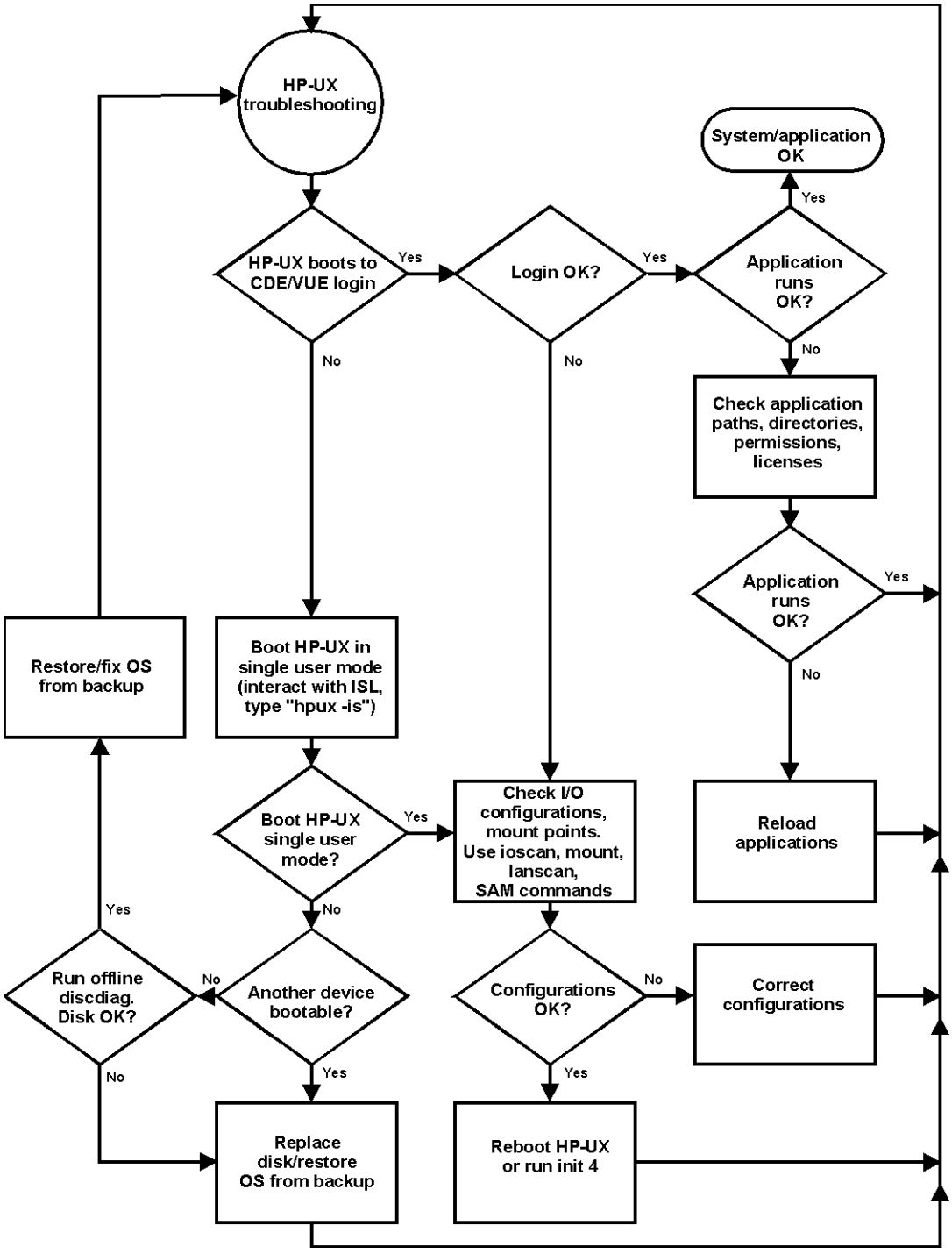


Figure 2-4. HP-UX Troubleshooting Flowchart



Identifying LCD-Indicated Conditions

This workstation uses a 2-line LCD, with up to 16-characters per line, to display firmware/operating system progress codes. These codes are referred to as chassis codes. The information displayed on the LCD has the following format:

```
XXX YYYY: ZZZZZZ        (Line 1)
AAAAAAAAAAAAAAAA        (Line 2)
```

Where:

XXX	Three-character Operating Status
YYYY	Four-digit hex code identifying the code module being executed
ZZZZZZ	Six-digit FRU descriptor
AAAAAAAAAAAAAAAA	Diagnostic message of up to 16 characters

The 3-character operating status can be one of the following:

FLT (fault)	A hardware error has been detected
TST (test)	Hardware being tested
INI (initialize)	Hardware being initialized
SHU (shutdown)	System being shutdown
WRN (warning)	A non-optimal operating condition exists
RUN (running)	The operating system is running

Selftest Failures

Chassis codes are the key to debugging selftest errors. If a failure is found during selftest, chassis codes are displayed in the system LCD. To debug a failure:

1. In Table C-1 of the “HP B2600 Chassis Codes” appendix, find the chassis code listed on the LCD.
2. In the Boot Console Handler, use the Service Menu’s `pim`, `pdt`, and `ChassisCodes` commands to get additional information about the failure.

The FRU column in Table C-1 of the “HP B2600 Chassis Codes” appendix shows messages printed on the LCD that refer to system FRUs. All codes are listed in numeric order.

Memory Failures

The B2600 workstations require special Memory Page Deallocation to be implemented. This feature allows the workstation to provide information to the operating system about memory failures.

HP-UX uses this information to map out failing memory areas and continue normal operation. You can check the Memory Page Deallocation Table (PDT) using the `pdt` command in the Service menu of the Boot Console Handler (refer to Chapter 4). If a failing DIMM is replaced, use the command `pdt clear` in the Service Menu to clear out the PDT.

Running System Verification Tests

HP-UX uses an online diagnostics product called the Support Tools Manager that allows system operation verification.

Three interfaces are available with the Support Tools Manager: a command line interface (accessed through the `cstm` command), a menu-driven interface (accessed through the `mstm` command), and the graphical user interface (accessed through the `xstm` command).

For more information on these user interfaces, see the online man pages by entering the following at a command line prompt:

```
man cstm [Enter]
man mstm [Enter]
man xstm [Enter]
```

For information on the enhanced online diagnostics, see the *Support Media User's Manual* (HP Part Number B3782-90176).

To access the Support Tools Manager, perform the following steps:

1. In a terminal window, type the following at the # prompt to invoke the command line interface:

   ```
   # cstm [Enter]
   ```

2. The following message appears:

   ```
   Support Tool Manager       Version A.01.00
   Type 'help' for a list of available commands.
   CSTM>
   ```

3. To verify the system operation, type the following at the `CSTM>` prompt:

   ```
   CSTM> verify all [Enter]
   ```

   Messages similar to the following appear:

   ```
   Verification has started on device (CPU).
   Verification has started on device (FPU).

   CSTM> Verification of (FPU) has completed.
   CSTM> Verification of (CPU) has completed.
   ```

   The message given above indicates that the central processing unit and the floating point unit are both working.

4. Press `[Enter]` to return to the `CSTM>` prompt after all test results are reported.

5. To exit the Support Tools Manager, enter the following:

   ```
   CSTM> exit [Enter]
   ```

If any tests failed, run Selftest and ISL diagnostics to isolate the problem.

Running ODE-Based Diagnostics

The Offline Diagnostic Environment (ODE) consists of diagnostic modules for testing and verifying system operation. ODE provides all the necessary functions for the user to load specified tests and interact with those tests.

ODE is an ISL utility. To boot ODE:

1. Invoke the ISL environment from the system disk or a CD ROM.
2. Type `ode [Enter]` after the `ISL>` prompt to invoke ODE from the LIF directory on the system disk. The prompt changes to `ODE>`.

Not all of the test modules are available on all systems. To see what test modules are available to run on this system, type `ls` at the `ODE>` prompt. The available modules include the following:

- `astrodiag` – tests and verifies the basic functionality of the Astro memory controller/I/O chip.
- `siodiag` – tests and verifies the basic functionality of the SuperI/O multifunction I/O chip, including serial, parallel, USB, and so forth.
- `wdiag` – tests and verifies the functionality of the PA-RISC chip.
- `memtest` – tests and verifies the memory arrays. If an error is detected, the diagnostic reports the memory card and its slot number that needs replacement. It also provides a map of the memory configuration so that the user can identify the type of memory and its slot location.
- `fupdate` – updates the system's Processor Dependent Code (PDC) firmware in the FEPROM or Flash ROM.
- `mapper` – identifies the configuration of HPPA systems. It displays path, identification, and revision information of I/O components, configuration of memory controllers, processors, co-processors, cache, and TLB, as well as processor board component revisions and values of various HPPA system identifiers, revisions, and capabilities.

For further information on the various ODE commands and a complete listing of the command set, type `help [Enter]` at the `ODE>` prompt or at the prompt of one of the test modules.

3 Remove/Replace System Components

This chapter discusses the removal and replacement of system components for the HP B2600 workstations.

Chapter Overview

This chapter contains the following main sections:

- Tools Required — a list of tools necessary for removing and replacing system components.
- Removing/Replacing System Components — a set of procedures for removing/replacing: front bezel, top cover, liquid crystal display, CD drive, PCI cage, I/O cards, PCI card, hard disk drive, AC and DC power supplies, system board, system fans, memory, and optional audio card.

WARNING **For most of the installation and removal procedures in this chapter, you must power off the workstation and unplug the workstation power cord from the AC power outlet.**

For DC power, disconnect power from the source before connecting power to the product or before accessing the product's power terminals. For more details, see the "DC Power Supply" appendix.

NOTE To maintain FCC/EMI compliance, verify that all covers are replaced and that all screws are properly seated.

Workstation Configurations

Refer to the HP Workstations web site for a complete list of supported accessories, peripherals, and operating system versions for the HP B2600 workstations. The URL for the web site is:

```
http://www.hp.com/workstations
```

Tools Required

Use the following tools to remove or replace system upgrades (for example, hard disk drives):

- Light-duty flat blade screwdriver with 6-inch (150 mm) blade
- Number 2 Phillips screwdriver with 6-inch (150mm) blade
- T-10 and T-15 Torx driver
- ESD equipment (see the “Electrostatic Discharge (ESD) Precautions” section later in this chapter for detailed information)

Removing/Replacing System Components

The procedures in this section describe how to remove/replace the HP B2600 workstation system components. Note that you need to observe the electrostatic discharge (ESD) precautions and the prerequisites for installing and removing system components in the subsequent sections, as well as any NOTEs, CAUTIONs, and WARNINGs in each system upgrade procedure.

NOTE If you need to install a new system component, simply follow the procedures for *replacing* the particular component in this chapter.

Electrostatic Discharge (ESD) Precautions

To prevent damage to the HP B2600 workstation, observe all of the following ESD precautions while performing the system upgrade procedures:

- Work on a static-free mat.
- Wear a static strap to ensure that any accumulated electrostatic charge is discharged from your body to ground.
- Create a common ground for the equipment you are working on by connecting the static-free mat, static strap, and peripheral units to that piece of equipment.
- Keep uninstalled printed circuit boards in their protective antistatic bags.
- Handle printed circuit boards by their edges, once you have removed them from their protective antistatic bags.

Prerequisite for Using the Procedures in this Chapter

You must complete the following steps before performing any of the removal/replacement procedures in this chapter:

1. Power off the workstation (either by executing `shutdown -h` as `root`, or by simply pressing the power switch on the front panel of the workstation, which accomplishes the same thing), as well as the monitor and any attached peripheral devices.
2. Unplug the workstation power cord and all peripheral devices from AC power outlets. If you are using a DC power source, turn off the DC power source and disconnect the input cables from the DC power supply.
3. Attach the static-grounding wrist strap by following the instructions on the package. Attach the sticky end of the wrist strap to bare metal on the rear panel of the workstation.

NOTE To make access to the internal components easier, you may want to place the workstation on a table or workbench instead of leaving it on the floor.

CAUTION This workstation is designated for two-person lifting; it weighs approximately 35.0 pounds (15.89 kg), depending on the configuration. Do not attempt to lift it by yourself, or injury may result.

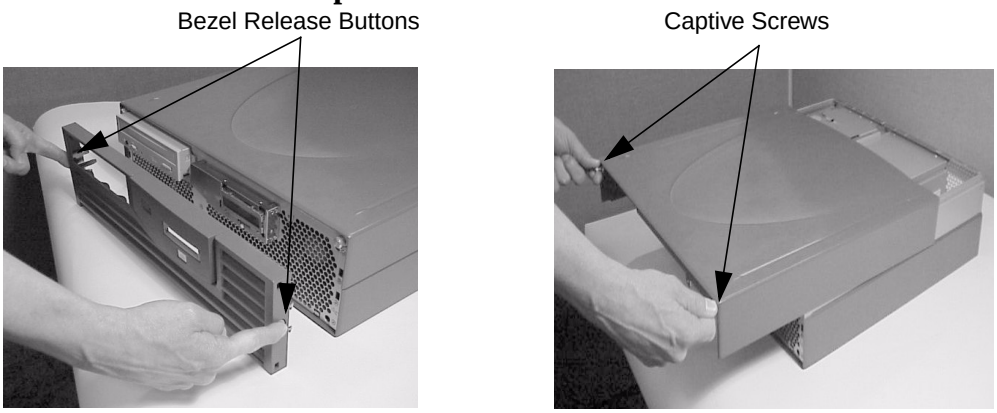
Removing the Front Bezel and Top Cover

This section describes how to remove the HP B2600 workstation's front bezel and top cover. Once you have removed these system components, you will have access to the interior components of your system.

Removing the Front Bezel and Top Cover

1. Turn your workstation off and unplug it.
2. Lay your workstation on a soft anti-static surface with the HP logo text in the upright position.
3. Press in on both release buttons found on the ends of the bezel and pull outward from the workstation to remove it. Next, unscrew the captive screws and pull forward on the cover and lift it off. See Figure 3-1.

Figure 3-1. Front Bezel and Top Cover Removal



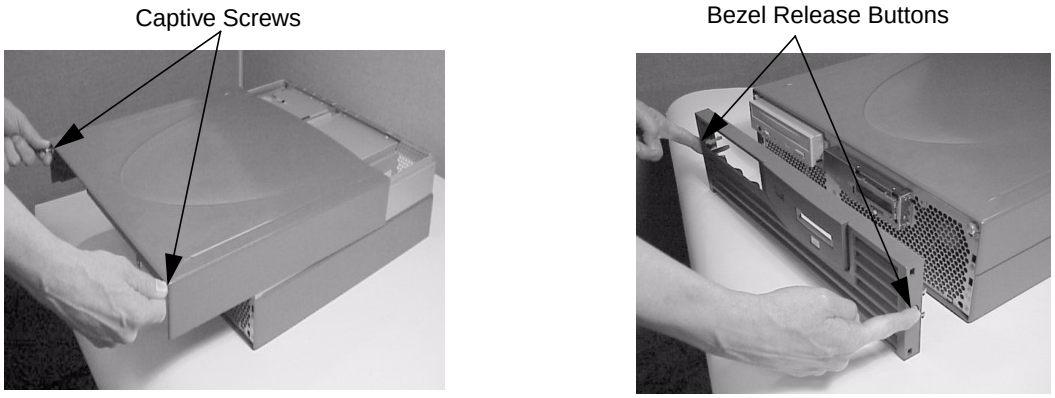
Replacing the Front Bezel and Top Cover

This section describes how to replace the HP B2600 workstation's front bezel and top cover. After you have completed the necessary component upgrades to your workstation, you need to replace the top cover and bezel on you workstation.

Replacing the Front Bezel and Top Cover

1. Slide the top cover back on the workstation and secure it by screwing in the captive screws.
2. Next, push the bezel in place on the front of the workstation. See Figure 3-2.

Figure 3-2. Front Bezel and Top Cover Replacement



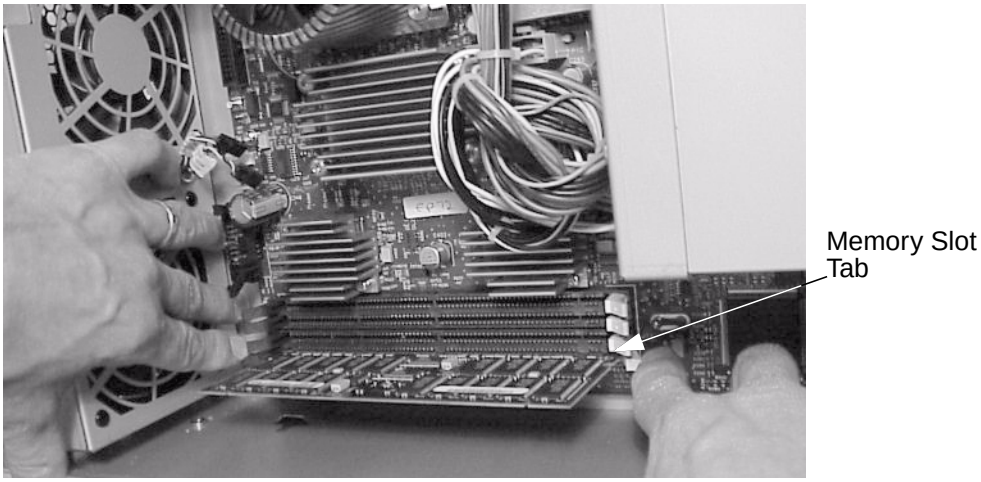
Removing Memory DIMMs

This section explains how to remove DIMM cards from your workstation. Please refer to the subsequent "Memory Configuration" section for the proper sequencing of DIMM cards in the system board's memory slots.

Here is the procedure for removing DIMM cards from your workstation:

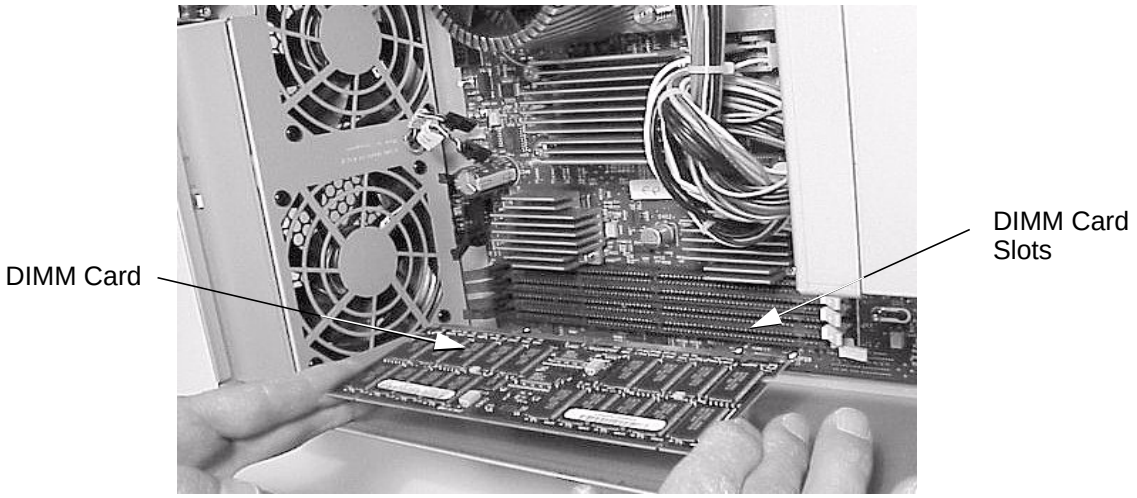
1. Complete the procedure in the section **"Removing the Front Bezel and Top Cover"** found in this chapter.
2. Press downward on the tabs that are located on both ends of the memory card slots. See Figure 3-3.

Figure 3-3. Pressing Down on the Memory Slot Tabs



3. Grasp both edges of the DIMM card and lift it out of the memory slot. See Figure 3-4.

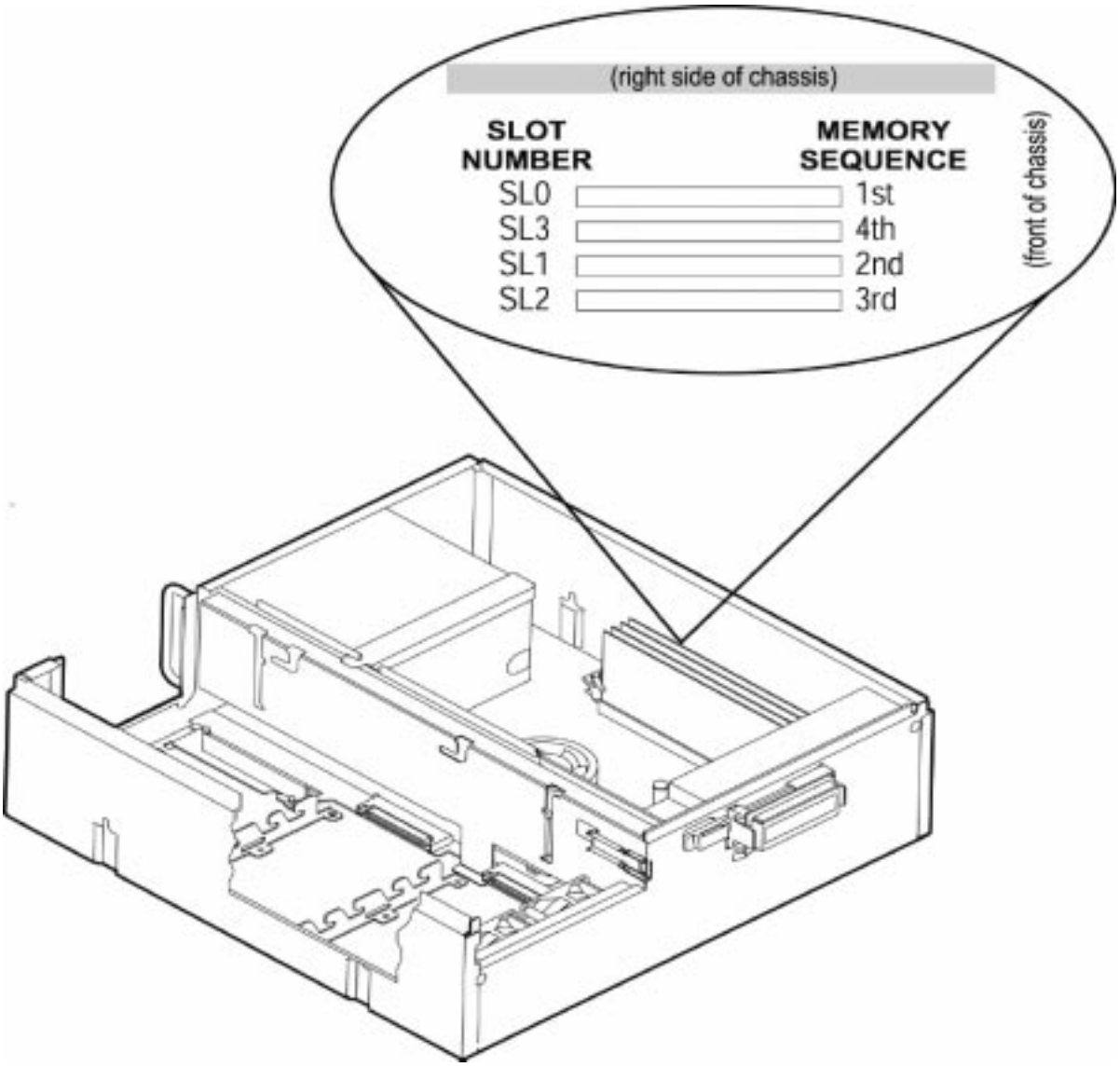
Figure 3-4. Lifting a DIMM Card Out of the Memory Slot



Memory Configuration

The HP B2600 workstation has four memory slots, labeled SL0, SL1, SL2and SL3 (SL0 is the slot closest to the workstation's chassis). You can mix 256MB, 512MB and 1GB memory cards in the memory slots, but you must install them using the memory sequence shown in Figure 3-5.

Figure 3-5. Memory Loading Sequence in the HP B2600



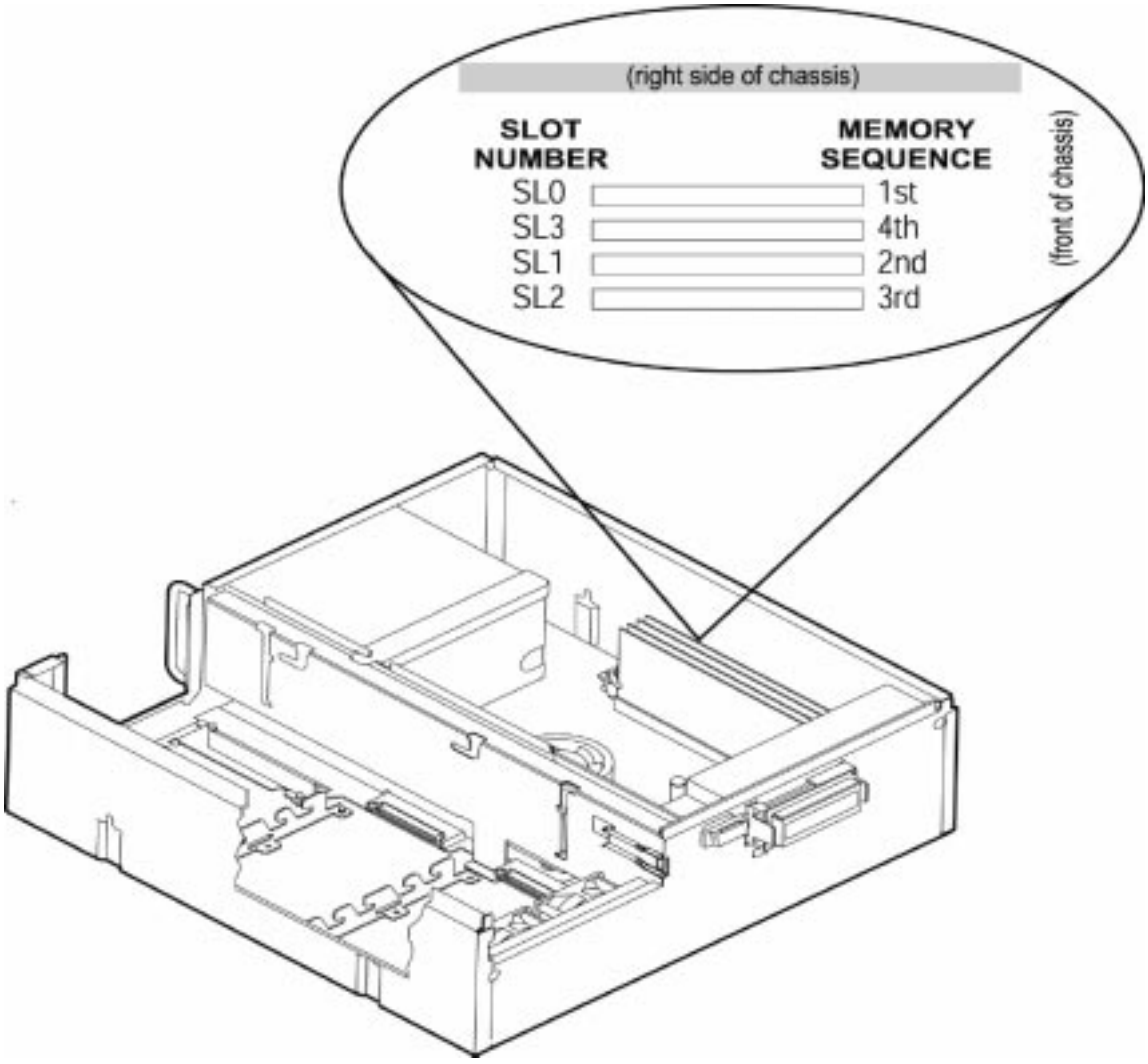
Replacing Memory DIMMs

This section explains how to replace DIMM cards in your workstation. For the proper sequencing of DIMM cards in the system board's memory slots, see Figure 3-6.

Here is the procedure for replacing DIMM cards in your workstation:

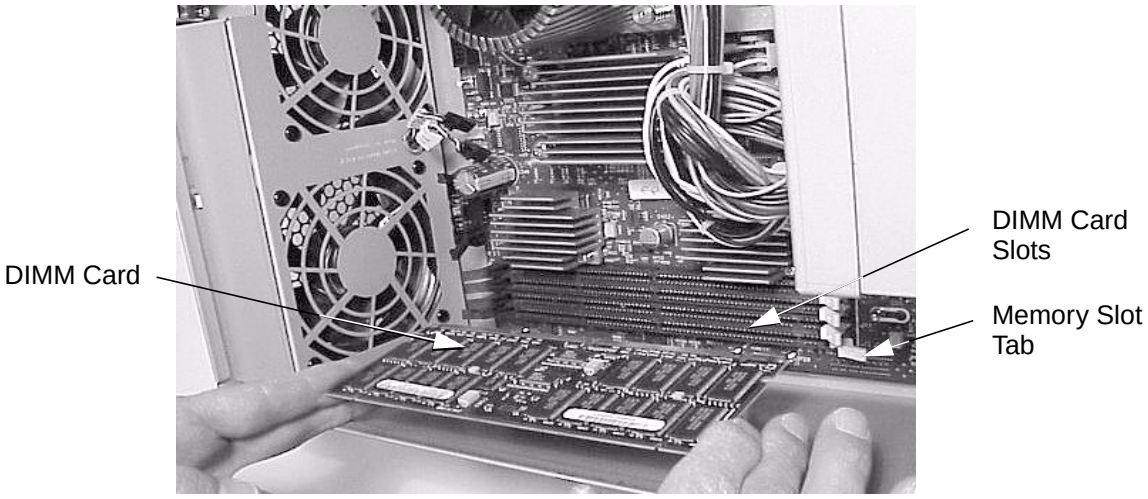
1. Remove the current DIMM(s) if you have not already done this. Otherwise, skip this step. To remove the current DIMM(s), follow the procedure in the section **"Removing Memory DIMMs"** found in this chapter.
2. Determine the appropriate memory slot(s) for your DIMM card(s). See Figure 3-6. You can mix 256MB, 512MB and 1GB memory cards in the memory slots, but you must install them using the memory sequence shown in Figure 3-6.

Figure 3-6. Memory Loading Sequence in the HP B2600



3. Grasp both edges of each DIMM card and insert the card into the appropriate slot. You will need to push firmly downward on the card until the memory slot tabs snap in place. See Figure 3-7.

Figure 3-7. Inserting the DIMM Card into a Memory Slot



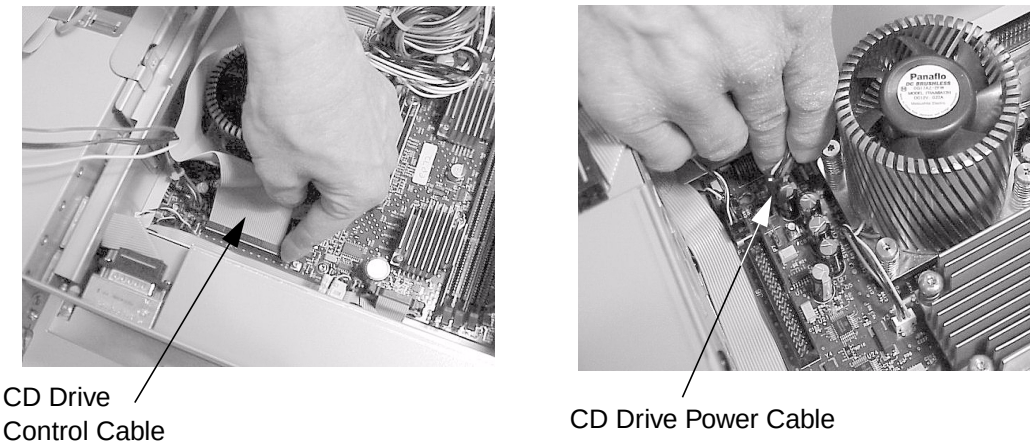
4. Complete the procedure in the section **"Replacing the Front Bezel and Top Cover"** found in this chapter.
5. Connect and turn on the power to your system.
6. Determine that your memory installation was successful by executing the `sam` command as `root`. When the **System Administration Manager** window appears, select the **System Properties** icon. In the new window that appears, select the **Memory** tab. The next window that appears will tell you how much memory you have available. If the amount of memory you were expecting does not appear, repeat this procedure. If the correct amount of memory still does not appear, contact your local HP Support Representative.

Removing the CD Drive

To remove the CD drive, follow this procedure:

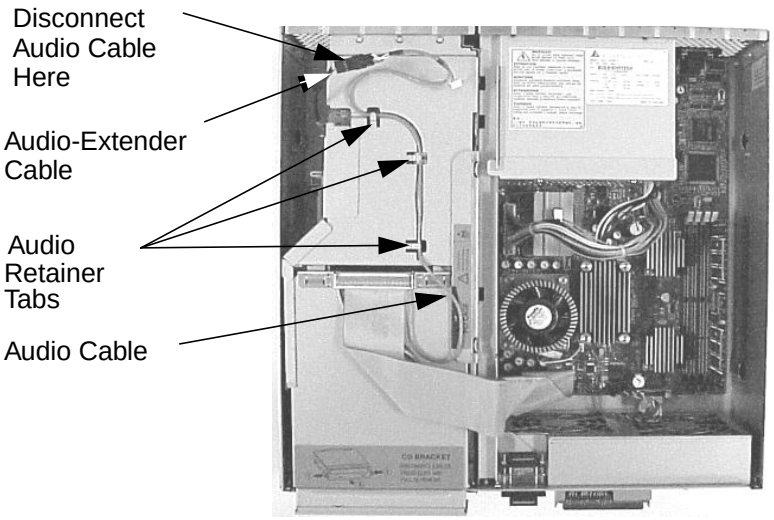
1. Complete the procedure in the section **"Removing the Front Bezel and Top Cover"** found in this chapter.
2. Disconnect the CD drive control cable by pulling up on its pull tab and disconnect the power cable by pressing in on its latch release. See Figure 3-8.

Figure 3-8. Disconnecting the CD Drive Control Cable



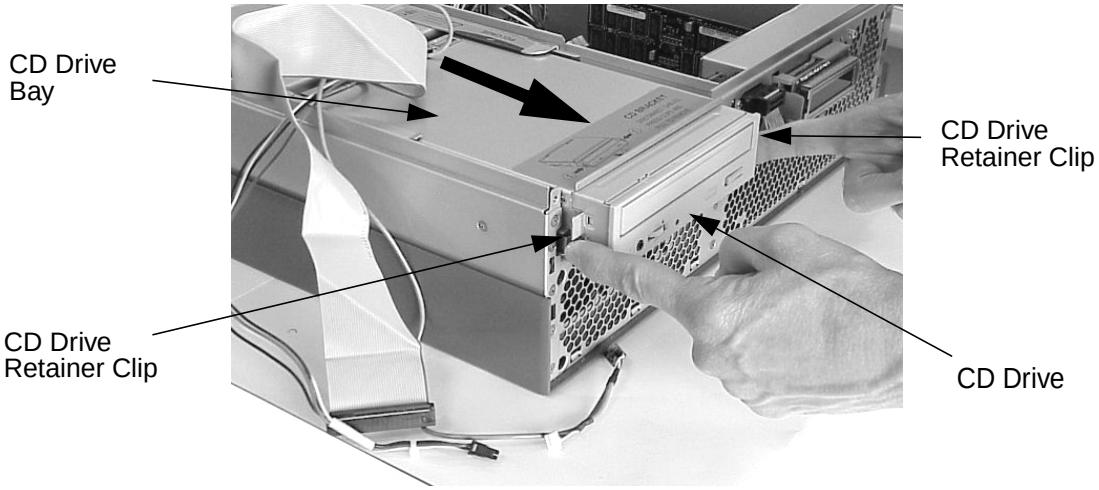
3. Disconnect the audio-extender cable and the CD drive audio cable by pressing in on the audio-extender cable's latch release. See Figure 3-9. Also, lift up on the PCI cage audio retainer tabs to remove the audio cable from the PCI cage. Note that you can skip this section if your workstation does not have an audio card.

Figure 3-9. Disconnecting the Audio-Extender Cable



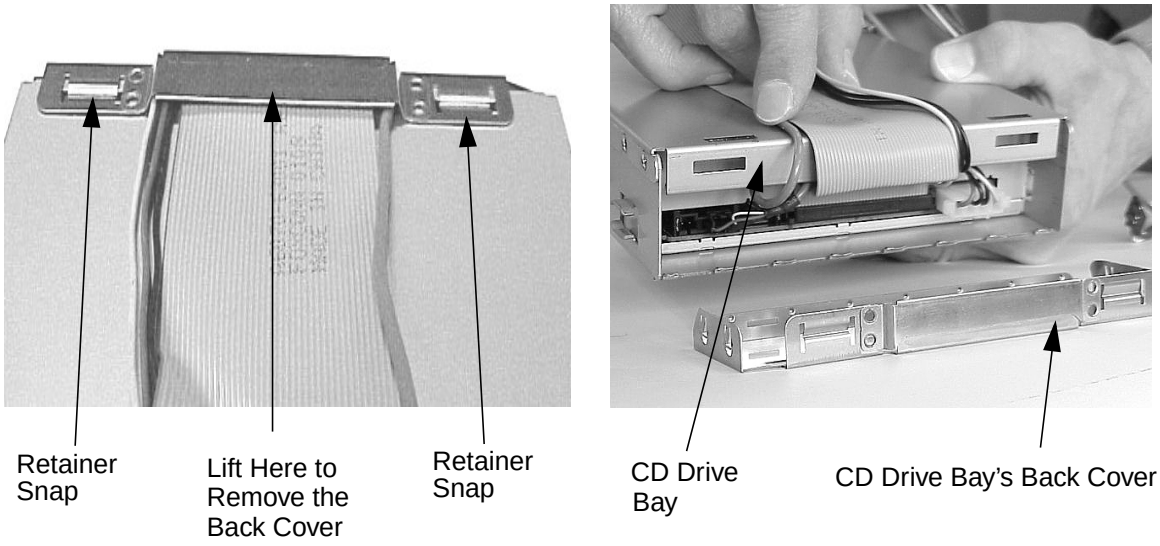
4. Press in on the retainer clips on both sides of the CD drive bay and pull toward you. See Figure 3-10.

Figure 3-10. Removing the CD Drive Bay and CD Drive



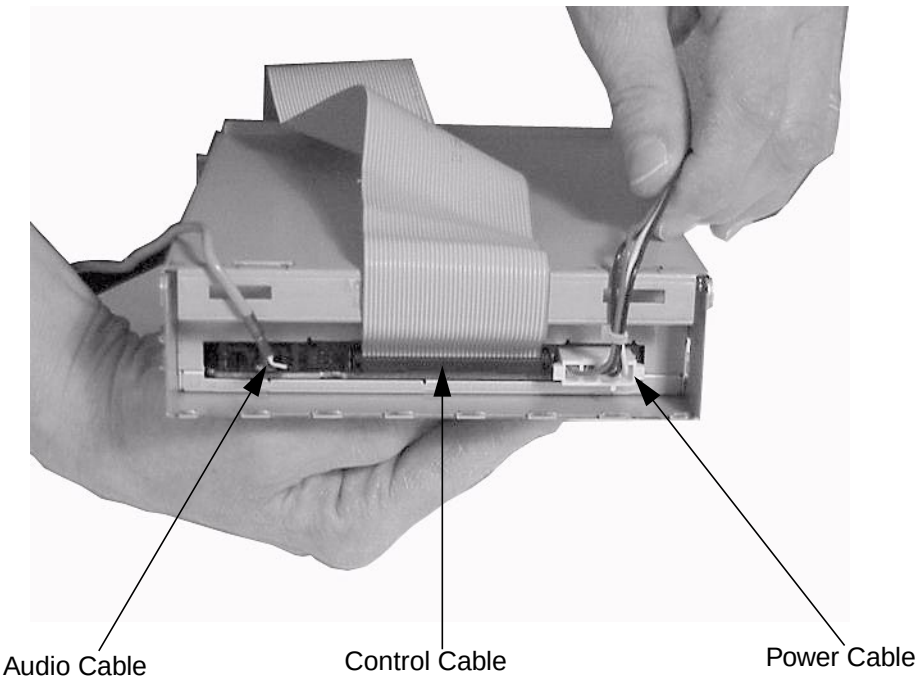
5. Take the back cover off the CD drive bay by lifting up on the raised portion of the back cover. This will cause the retainer snaps to be remove from their slots on the CD drive bay. See Figure 3-11. Also, note the manner in which the audio, power and control cables were neatly fed through the raised opening in the CD drive bay's back cover.

Figure 3-11. Removing the CD Drive Bay's Back Cover



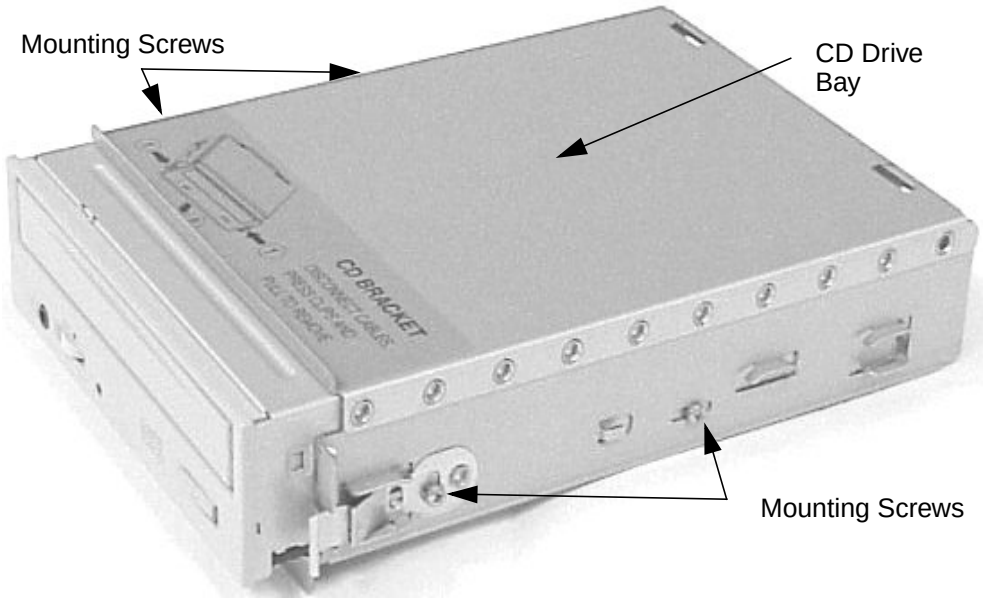
6. Disconnect the CD drive power cable, control cable, and audio cable (if an audio card is present). See Figure 3-12. Note that these cables are keyed for easy replacement.

Figure 3-12. Disconnecting the CD Drive's Cables



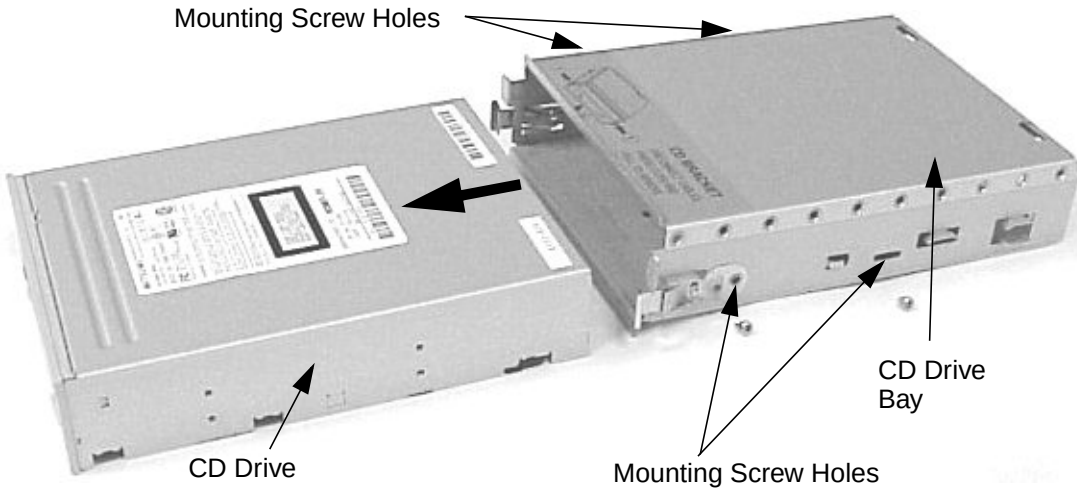
7. Unscrew the four CD drive mounting screws located on both sides of the CD drive bay. See Figure 3-13.

Figure 3-13. Unscrew the Four CD Drive Mounting Screws



8. Slide the CD drive out of the CD drive bay. See Figure 3-14.

Figure 3-14. CD Drive Removed from the CD Drive Bay

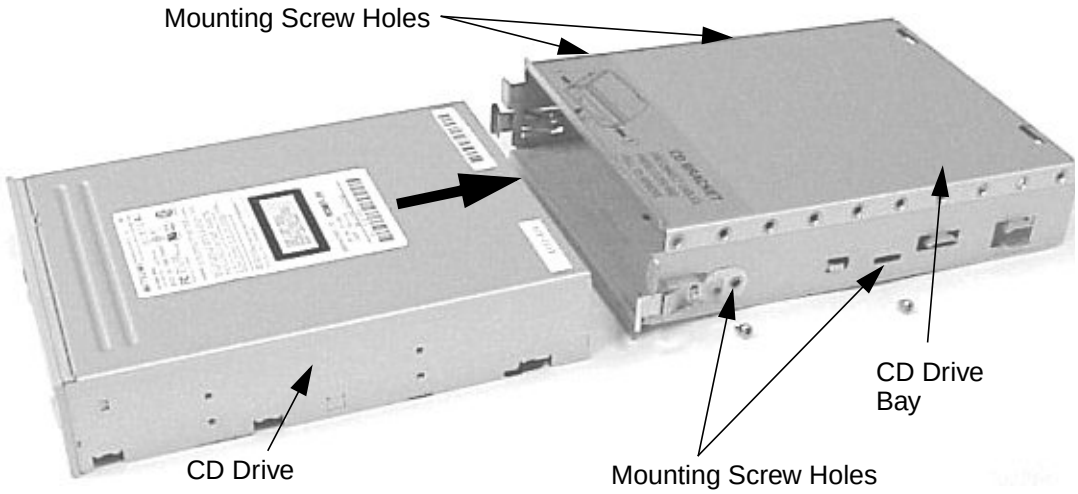


Replacing the CD Drive

To replace the CD drive, follow this procedure:

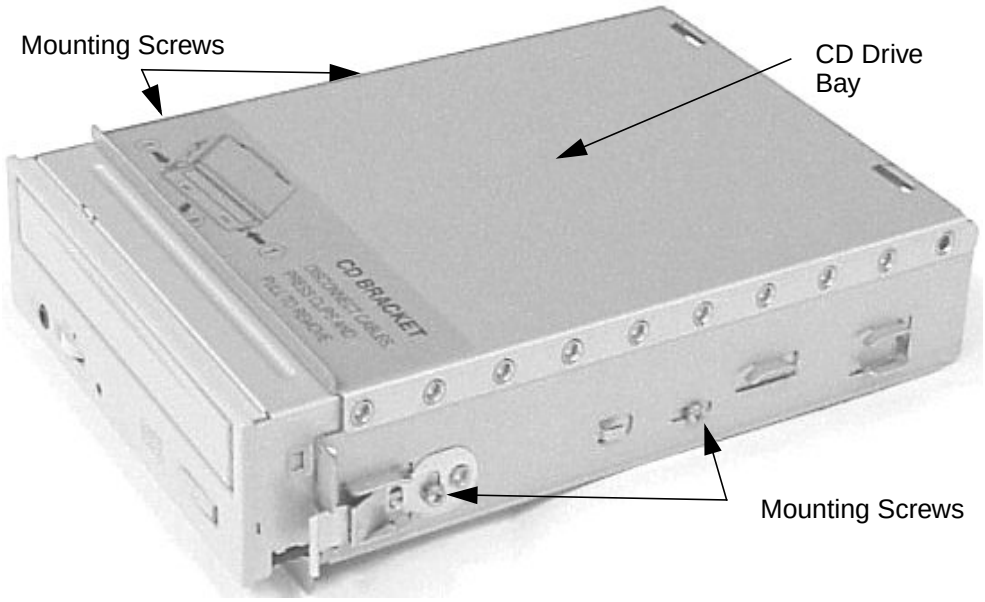
1. Remove the current CD drive if you have not already done this. Otherwise, skip this step. To remove the CD drive, follow the procedure in the section **"Removing the CD Drive"** found in this chapter.
2. Slide the CD drive into the CD drive bay. See Figure 3-15.

Figure 3-15. Slide the CD Drive into the CD Drive Bay



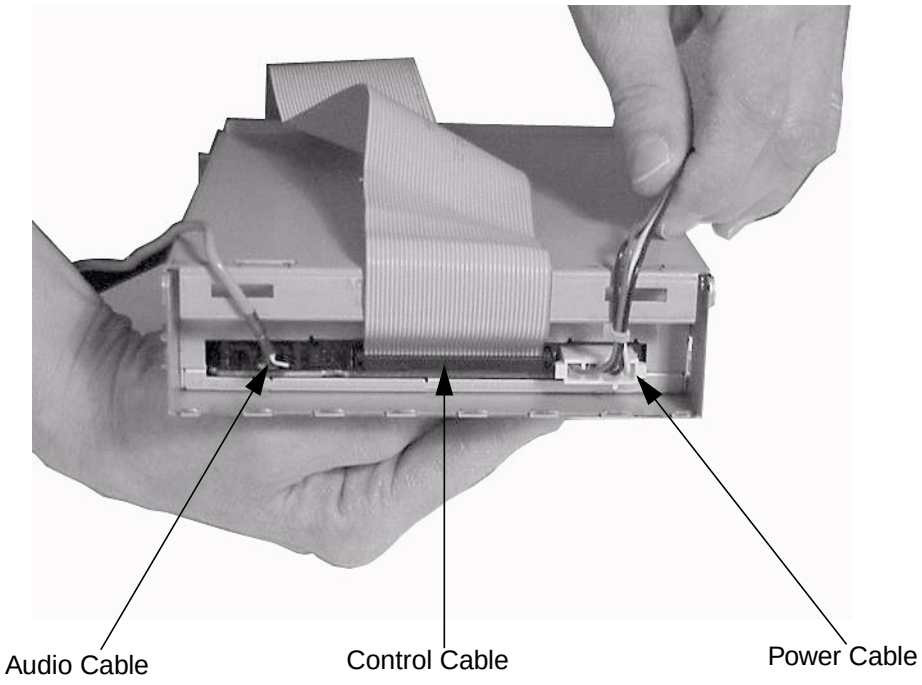
3. Screw the four CD drive mounting screws into their threaded holes located on both sides of the CD drive bay. See Figure 3-16.

Figure 3-16. Screw in the Four CD Drive Mounting Screws



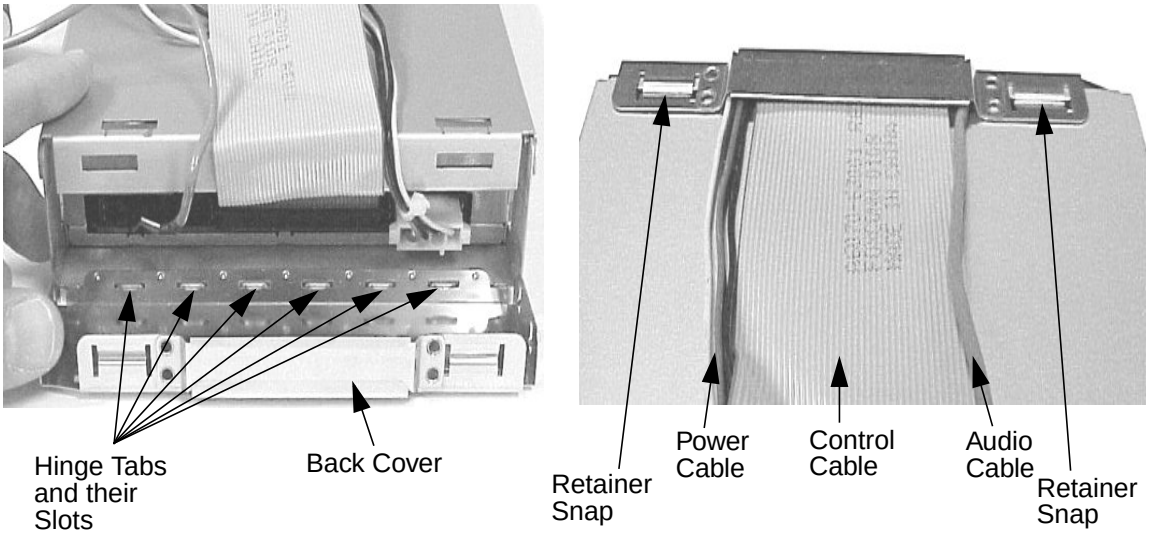
4. Connect the CD drive power cable, control cable, and audio cable (if an audio card is present). See Figure 3-17. Note that these cables are keyed for easy replacement.

Figure 3-17. Connecting the CD Drive's Cables



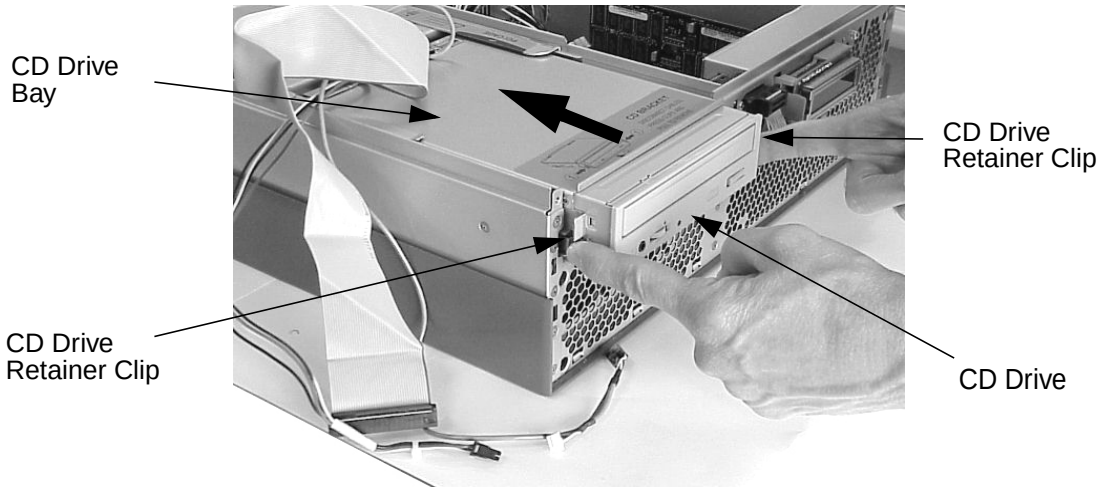
5. Replace the back cover on the CD drive bay by inserting the hinge tabs located on the CD drive bay into their slots on the CD drive bay's back cover. Next, rotate the back cover toward the CD drive bay until the retainer snaps are in place. See Figure 3-18. Also, note the manner in which the audio, power and control cables were neatly fed through the raised opening in the CD drive bay's back cover.

Figure 3-18. Replacing the CD Drive Bay's Back Cover



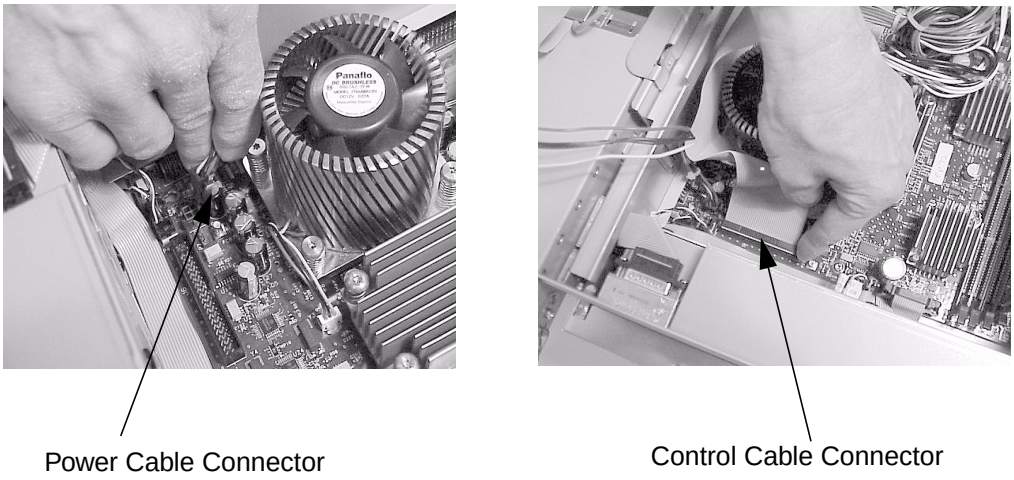
6. Slide the CD drive bay and CD drive back into the workstation. You will hear the retainer clips snap in place when the CD drive bay and CD drive are properly installed. See Figure 3-19.

Figure 3-19. Replacing the CD Drive Bay and CD Drive



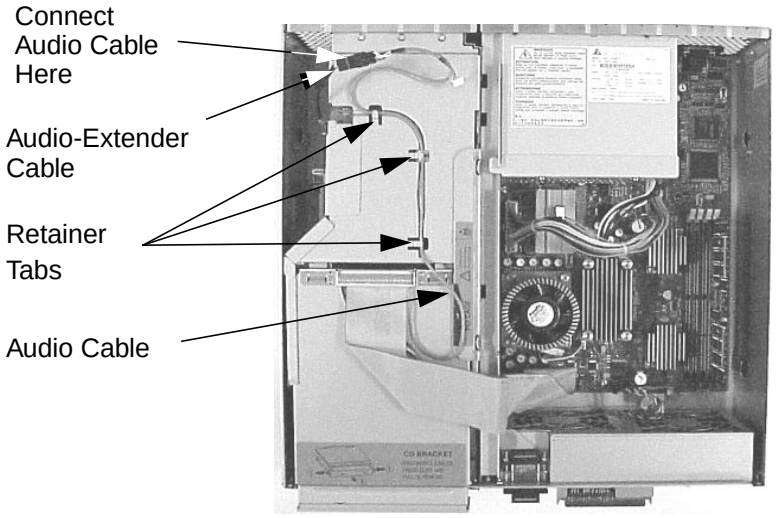
7. Connect the CD drive power cable by pushing it into its connector on the system board and connect the control cable by pushing it into its connector on the system board. See Figure 3-20. Note that the connectors are keyed.

Figure 3-20. Connecting the CD Drive Power and Control Cables



8. Connect the audio-extender cable and the CD drive audio cable. See Figure 3-21. Also, lift up on the audio cable's retainer tabs to replace the audio cable in its groove on the PCI cage. Note that you can skip this step if your workstation does not have an audio card.

Figure 3-21. Connecting the Audio-Extender Cable



9. Complete the procedure in the section **"Replacing the Front Bezel and Top Cover"** found in this chapter.
10. Connect and turn on the power to your system.
11. Determine that your CD drive replacement was successful by executing the `sam` command as `root`. When the **System Administration Manager** window appears, double click the **Disk and File System** icon and in the window that appears double click the **Disk Devices** icon. In the next window that appears, you should see your CD drive listed. If it is not listed, repeat this procedure. If your CD drive is still not listed, contact your local HP Support Representative.

Removing the PCI Cage, I/O Card and PCI Backplane Board

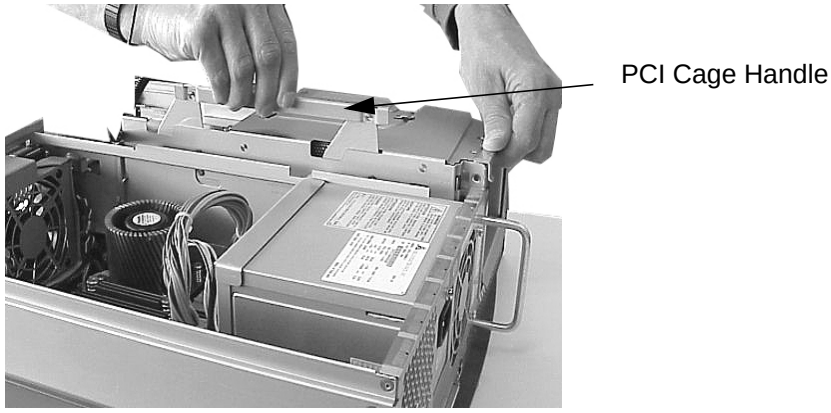
To remove the PCI cage, I/O card and PCI backplane board from the system, you will need to follow the procedures discussed in the subsequent sections.

PCI Cage Removal

To remove the PCI cage, follow this procedure:

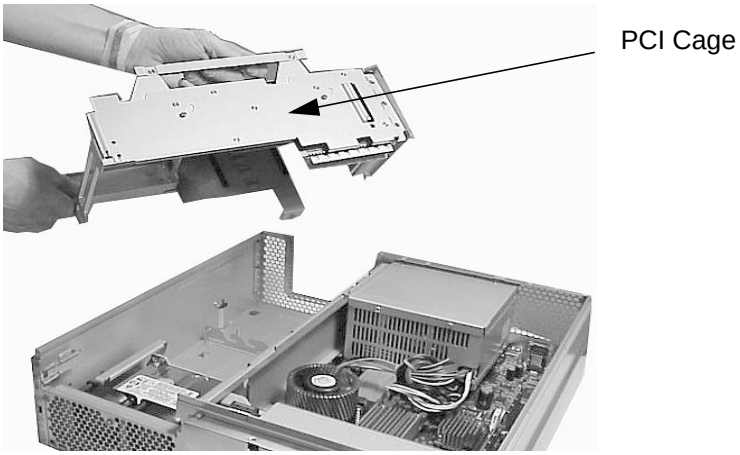
1. Complete the procedure in the section **"Removing the Front Bezel and Top Cover"** found in this chapter.
2. Complete the procedure in the section **"Removing the CD Drive" (steps 1 through 3; in this chapter), "Removing the DAT Drive" (steps 1 through 5; in Appendix F), or "Removing the Flexible Disk Drive" (steps 1 through 5; in Appendix G)**.
3. Lift up on the PCI cage handle (**the CD, DAT or flexible disk drives must be removed**). See Figure 3-22.

Figure 3-22. Lifting Up on the PCI Cage Handle



4. Remove the PCI cage from the system. See Figure 3-23.

Figure 3-23. Removing the PCI Cage from the System

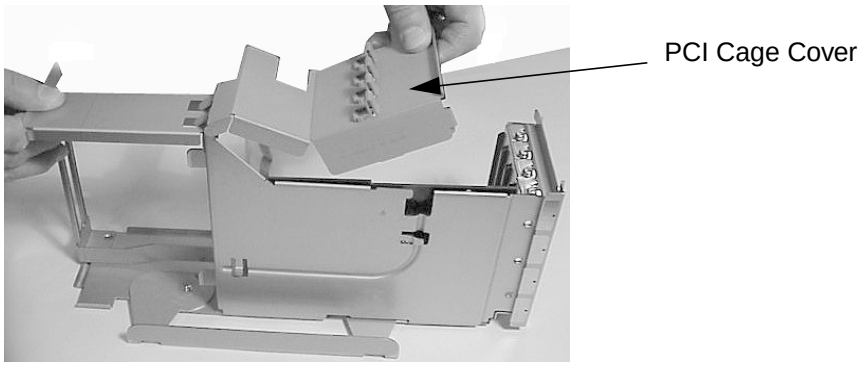


I/O Card Removal

This procedure assumes you have removed the PCI cage from the system.

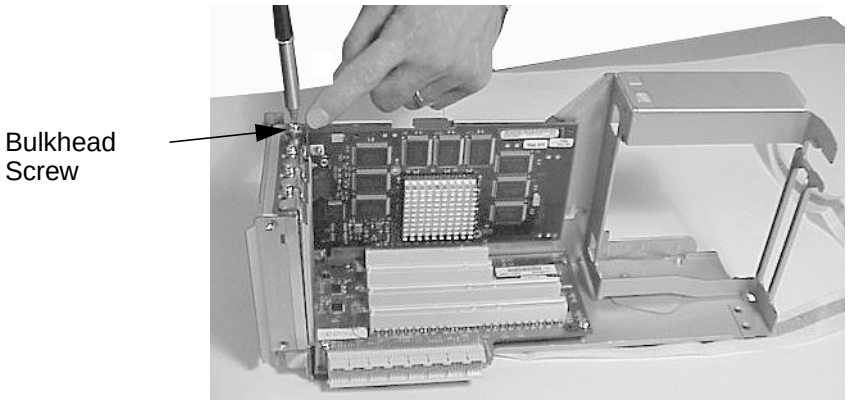
1. Set the PCI cage on an anti-static surface and remove the PCI cage cover. See Figure 3-24.

Figure 3-24. Removing the PCI Cage Cover



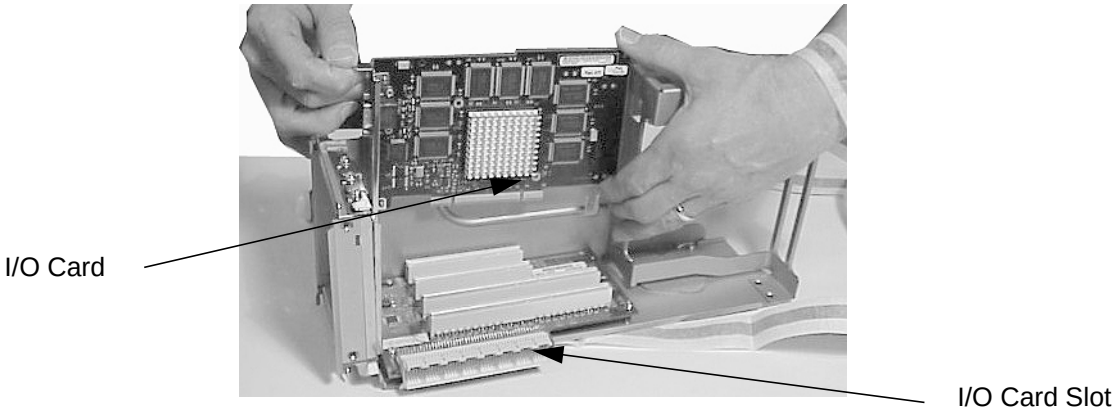
2. Unscrew the I/O card's bulkhead screw (Torx T-15 screw). See Figure 3-25.

Figure 3-25. Unscrewing the I/O Card's Bulkhead Screw



3. Grasp the I/O card's bulkhead and the rear edge and lift it out of its PCI slot. As you lift up on the I/O card, you may need to slightly rock it back and forth. This will loosen the I/O card from its PCI slot. See Figure 3-26.

Figure 3-26. Removing the I/O Card from Its PCI Slot



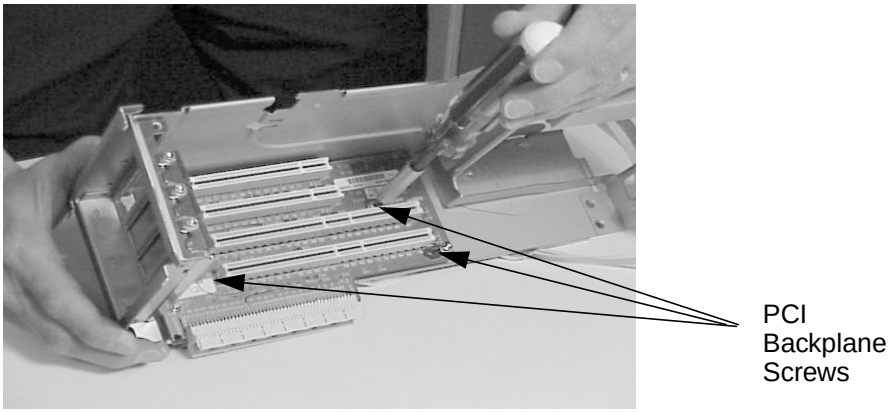
4. Place the I/O card on an anti-static surface to protect it from any possible electro-static discharge.

PCI Backplane Board Removal

Once you have removed the PCI cage from the system and removed all of the I/O cards from the PCI cage, you are ready to remove the PCI backplane board.

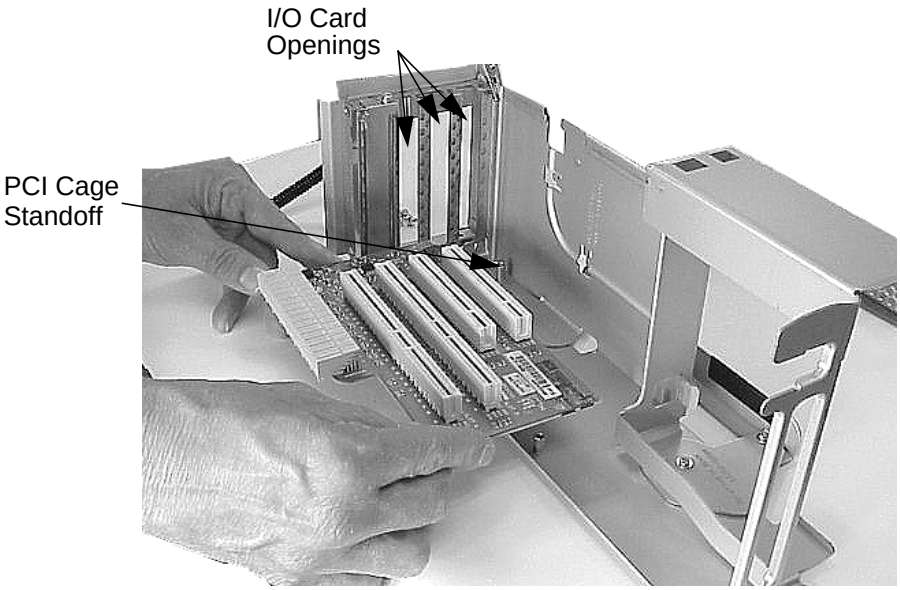
1. Unscrew the three T-15 Torx screws. See Figure 3-27.

Figure 3-27. Unscrew the PCI Backplane's Three T-15 Torx Screws



2. Slide the PCI backplane board away from the PCI cage's I/O card openings and remove it from the PCI cage. See Figure 3-28. Note that the PCI backplane board has two elongated slots cut in it that allow the card to slide in grooves located on the top of two PCI cage standoffs. The PCI backplane board will stop sliding when it reaches the opposite end of the elongated slot. At this point, the slot has been enlarged to allow you to lift the PCI backplane board out of the PCI cage.

Figure 3-28. Removing the PCI Backplane Board

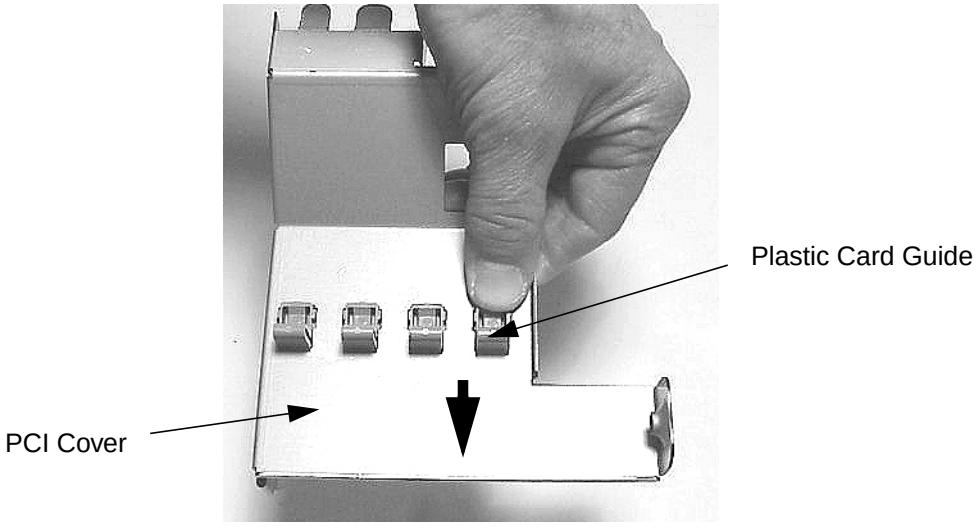


PCI Card Guide Removal

The PCI cover's card guides are made of plastic and can be easily removed to accommodate PCI cards that have components or connectors with which the guide interferes. Therefore, you may need to remove them from the PCI cover. To do this follow the procedure in this section.

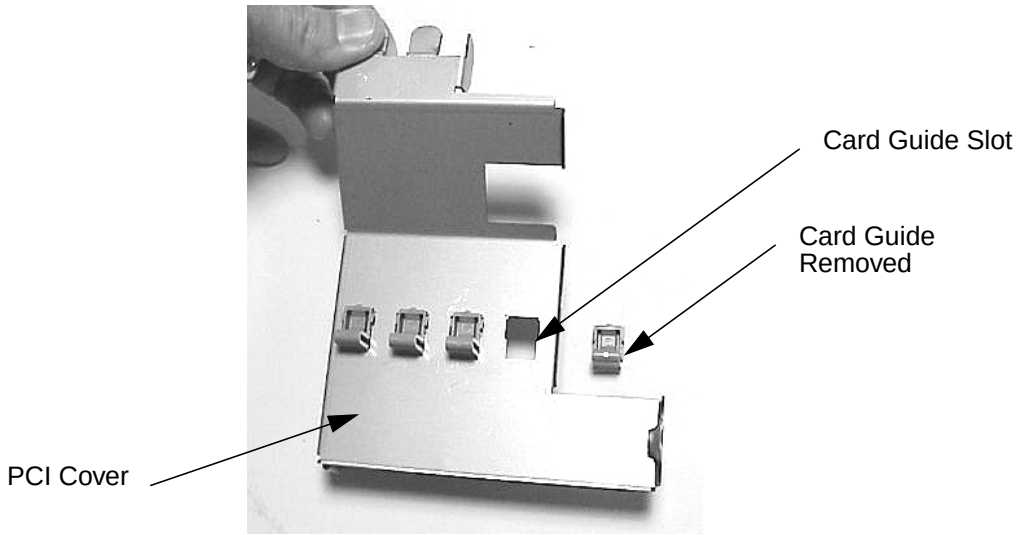
1. Push the card guide forward with your thumb in the direction of the large arrow and at the same time apply downward pressure. See Figure 3-29.

Figure 3-29. Pushing the Card Guide Forward and Down



2. Remove the card guide from the PCI cover. See Figure 3-30. Note that after you have completed step 1, the card guide will fall through the card guide slot.

Figure 3-30. Removing the Card Guide from the PCI Cover



Replacing the PCI Cage, I/O Card and PCI Backplane Board

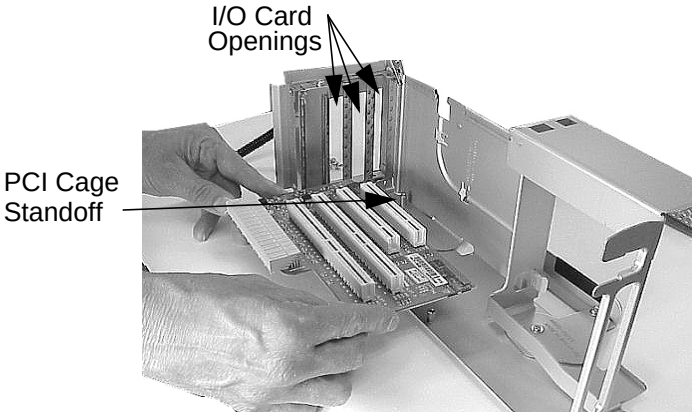
To replace the PCI backplane board, I/O card and PCI cage in the system, you will need to follow the procedures discussed in the subsequent sections.

PCI Backplane Board Replacement

To replace the PCI backplane board, follow this procedure:

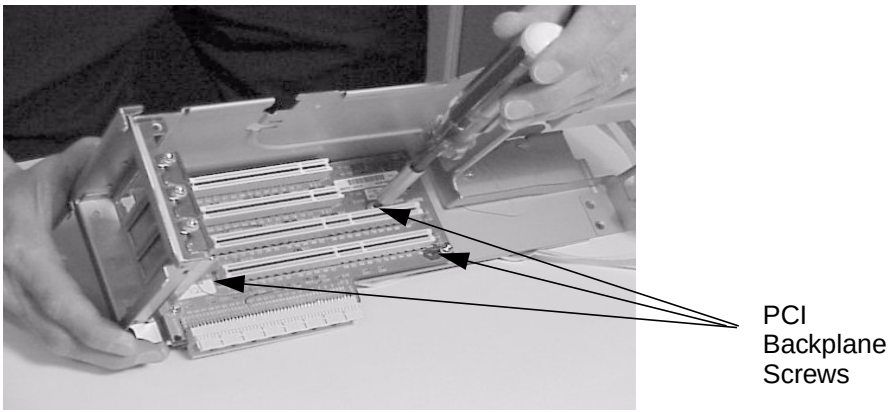
1. Remove the current CD drive, DAT drive or flexible disk drive if you have not already done this. Otherwise, skip this step. To remove the CD drive, DAT drive or flexible disk drive, follow the procedure in the section **"Removing the CD Drive" (steps 1 through 3; in this chapter), "Removing the DAT Drive" (steps 1 through 5; in Appendix F), or "Removing the Flexible Disk Drive" (steps 1 through 5; in Appendix G)**.
2. Slide the PCI backplane board onto the PCI cage's standoffs. See Figure 3-31. Note that the PCI backplane board has two elongated slots cut in it that allow the card to slide in grooves located on the top of two PCI cage standoffs. The PCI backplane board will stop sliding when it reaches the opposite end of the elongated slot.

Figure 3-31. Replacing the PCI Backplane Board



3. Screw in the three PCI backplane board's screws. See Figure 3-32.

Figure 3-32. Screw in the PCI Backplane Board's Three Screws

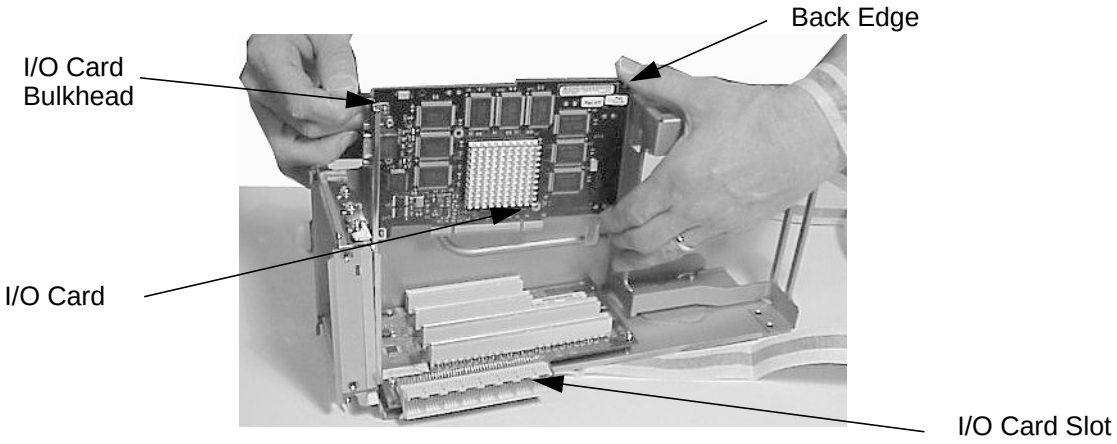


I/O Card Replacement

This procedure assumes you have replaced the PCI cage backplane board in the system.

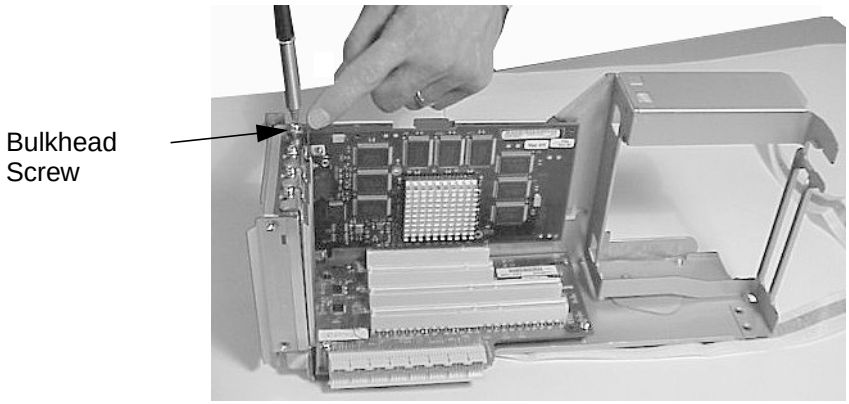
1. Replace the PCI backplane board in the PCI cage if you have not already done this. Otherwise, skip this step. To replace the PCI backplane board, complete the procedure in the section **"PCI Backplane Board Replacement"** found in this chapter.
2. Remove the I/O card from its anti-static bag, which protects it from any possible electro-static discharge.
3. Grasp the I/O card's bulkhead and the back edge and insert it into its PCI slot. See Figure 3-33.

Figure 3-33. Inserting the I/O Card into its PCI Slot



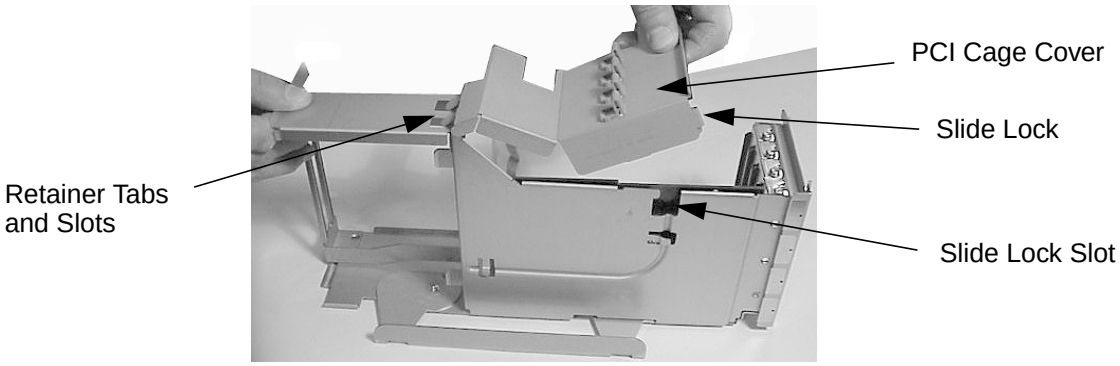
4. Screw in the I/O card's bulkhead screw to secure it in its PCI card slot. See Figure 3-34.

Figure 3-34. Screwing in the I/O Card's Bulkhead Screw



5. Replace the PCI cage cover by inserting its two retainer tabs into the retainer slots and rotating the cover downward until the cover's slide lock snaps into place in the PCI cage's slide lock slot. See Figure 3-35.

Figure 3-35. Replacing the PCI Cage Cover

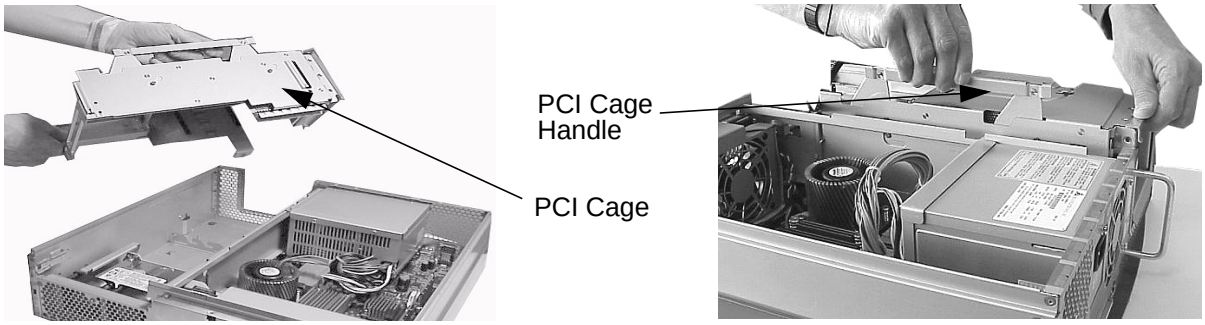


PCI Cage Replacement

To replace the PCI cage, follow this procedure:

1. Replace the I/O card(s) in the PCI cage if you have not already done this. Otherwise, skip this step. To replace the I/O cards, complete the procedure in the section **"I/O Card Replacement"** found in this chapter.
2. Push down on the PCI cage handle and on the back of the PCI cage. Next, rotate the PCI cage handle downward. This will secure the PCI cage in the workstation. See Figure 3-36.

Figure 3-36. Placing the PCI Cage into the Workstation



3. Complete the procedure in the section **"Removing the CD Drive" (steps 1 through 3; in this chapter), "Removing the DAT Drive" (steps 1 through 5; in Appendix F), or "Removing the Flexible Disk Drive" (steps 1 through 5; in Appendix G)**.
4. Complete the procedure in the section **"Replacing the Front Bezel and Top Cover"** found in this chapter.
5. Connect and turn on the power to your system.

6. Determine that your I/O cards were replaced successfully by executing this command as `root`:

   ```
   ioscan -fn
   ```

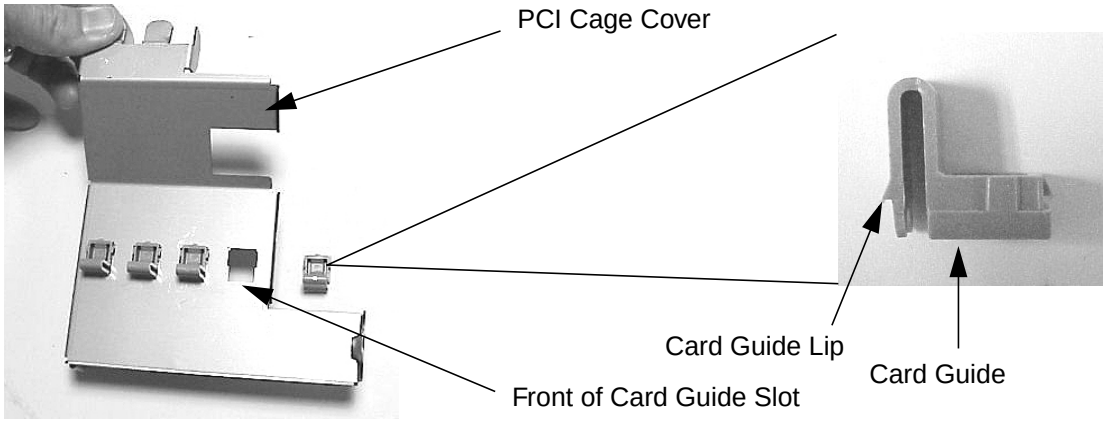
   In the next window that appears, you should see your I/O card listed. If it is not listed, repeat the previous procedures in this section including this one. If your I/O card is still not listed, contact your local HP Support Representative.

PCI Card Guide Replacement

This section explains how to replace a PCI card guide that has been removed from your PCI cage cover. To replace a PCI card guide, follow this procedure:

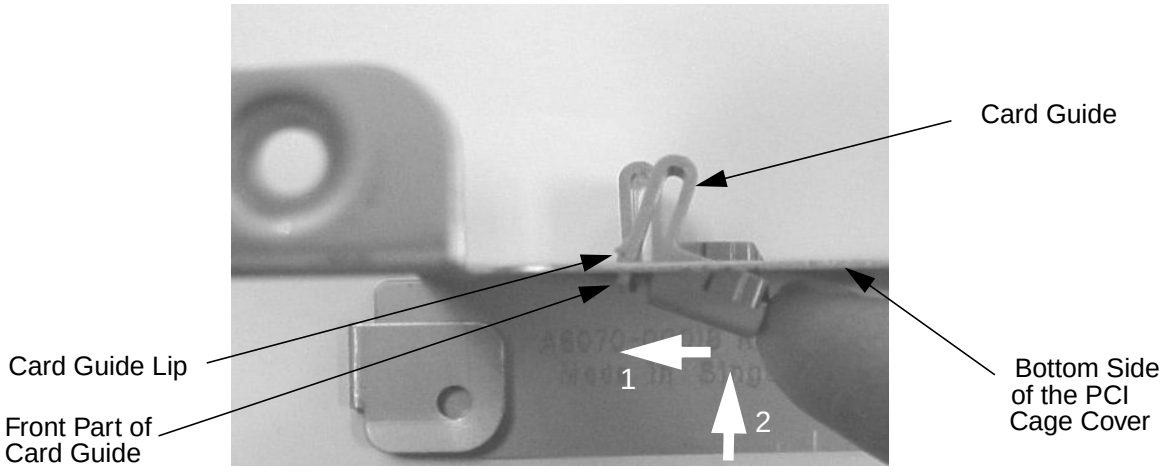
1. Locate the front of the card guide slot and the card guide lip. See Figure 3-37.

Figure 3-37. Pushing the Card Guide Forward and Down



2. Insert the card guide from the bottom side of the PCI cage cover, place the card guide lip against the front part of the card guide slot and push inward. Next, push upward on the card guide. It will snap in place. See Figure 3-38.

Figure 3-38. Replacing the Card Guide into the PCI Cage Cover

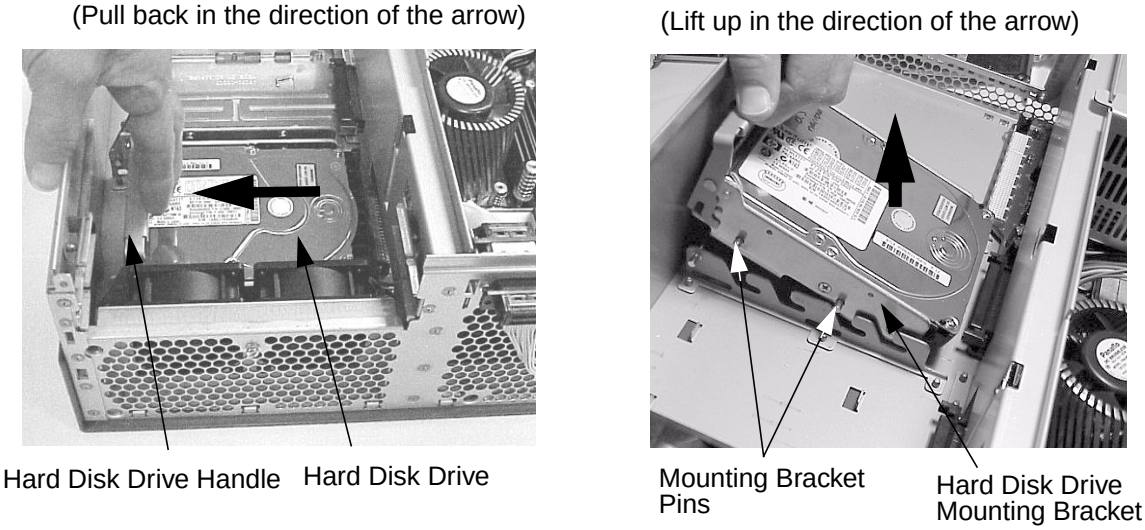


Removing the Hard Disk Drive(s)

To remove the hard disk drive(s), follow this procedure:

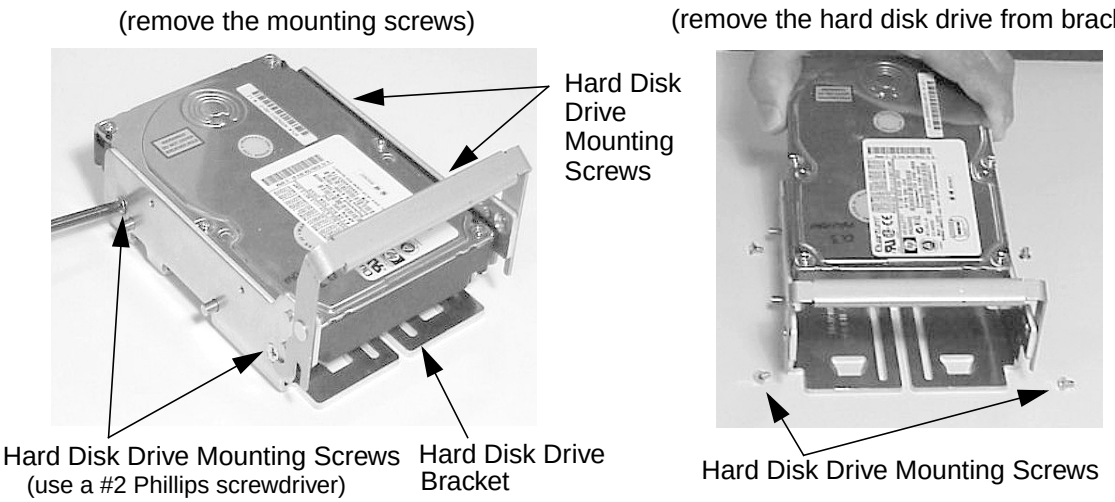
1. Complete the procedure in the section **"Removing the CD Drive" (steps 1 through 3; in this chapter), "Removing the DAT Drive" (steps 1 through 5; in Appendix F), or "Removing the Flexible Disk Drive" (steps 1 through 5; in Appendix G)**.
2. Complete the procedure in the section **"Removing the PCI Cage, I/O Card and PCI Backplane Board" (steps 1 and 2)** found in this chapter.
3. Grasp the hard disk drive handle and pull it back, then lift up on the handle. See Figure 3-39.

Figure 3-39. Removing the Hard Disk Drive and Its Mounting Bracket



4. Unscrew the four hard disk drive mounting screws and pull the hard disk drive out of the hard disk drive bracket. See Figure 3-40. Note that for installation purposes, there are four mounting screws located on the side of the unused hard disk drive bracket.

Figure 3-40. Removing the Hard Disk Drive from the Hard Disk Drive Bracket

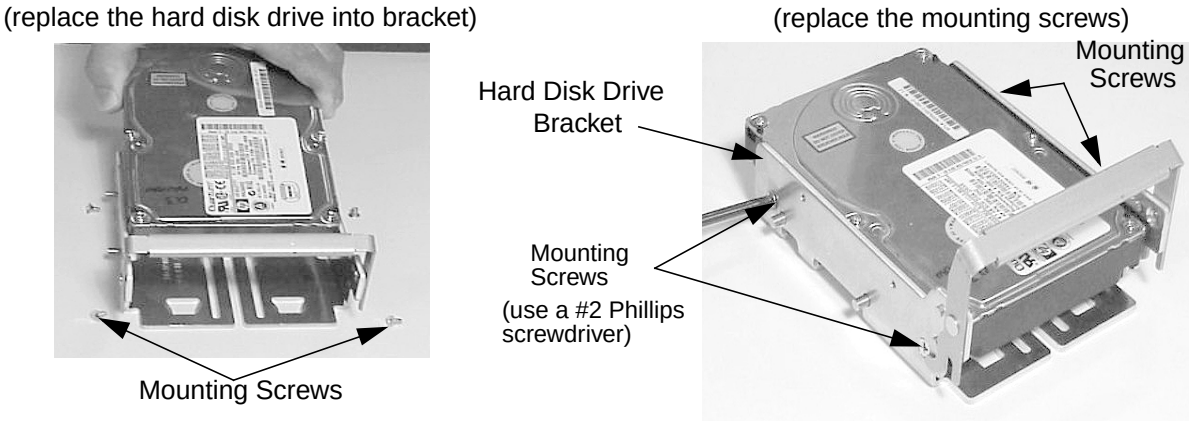


Replacing the Hard Disk Drive(s)

To replace the hard disk drive(s), follow this procedure:

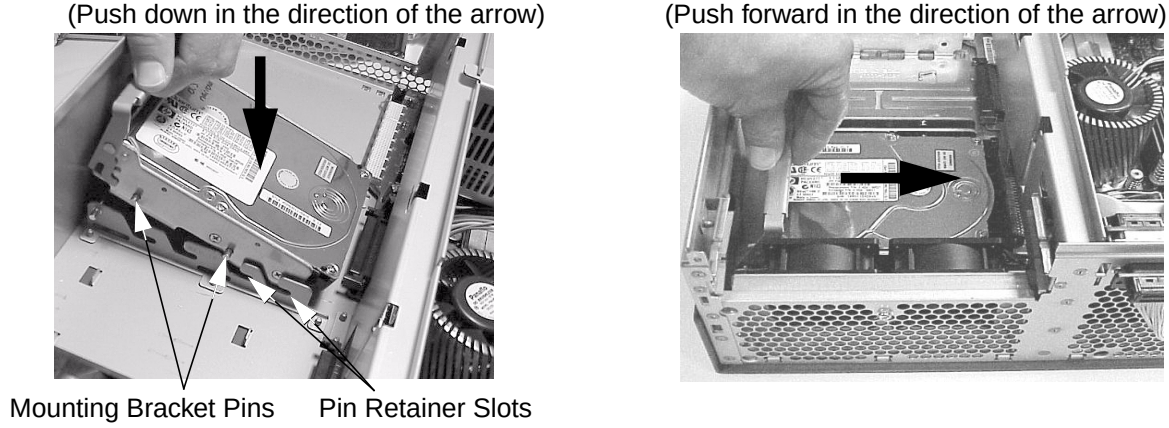
1. Remove the CD drive, DAT drive or flexible disk drive if you have not already done this. Otherwise, skip this step. To remove the CD drive, DAT drive or flexible disk drive, follow the procedure in the section **"Removing the CD Drive" (steps 1 through 3; in this chapter), "Removing the DAT Drive" (steps 1 through 5; in Appendix F), or "Removing the Flexible Disk Drive" (steps 1 through 5; in Appendix G)**.
2. Remove the PCI cage if you have not already done this. Otherwise, skip this step. To remove the PCI cage, follow the procedure in the section **"Removing the PCI Cage, I/O Card and PCI Backplane Board" (steps 1 and 2)** found in this chapter.
3. Insert the hard disk drive into the hard disk drive bracket and align the holes in the disk drive bracket with the threaded holes in the hard disk drive. Next, screw in the four mounting screws. See Figure 3-41. Note that for installation purposes, there are four mounting screws located on the side of the unused hard disk drive bracket.

Figure 3-41. Installing the Hard Disk Drive into the Hard Disk Drive Bracket



4. Grasp the hard disk drive bracket handle and align the hard disk drive connector with the connector on the system board. Push down and forward on the hard disk drive handle to slide the bracket pins into the pin retainer slots. See Figure 3-42.

Figure 3-42. Replacing the Hard Disk Drive and Bracket in the Workstation



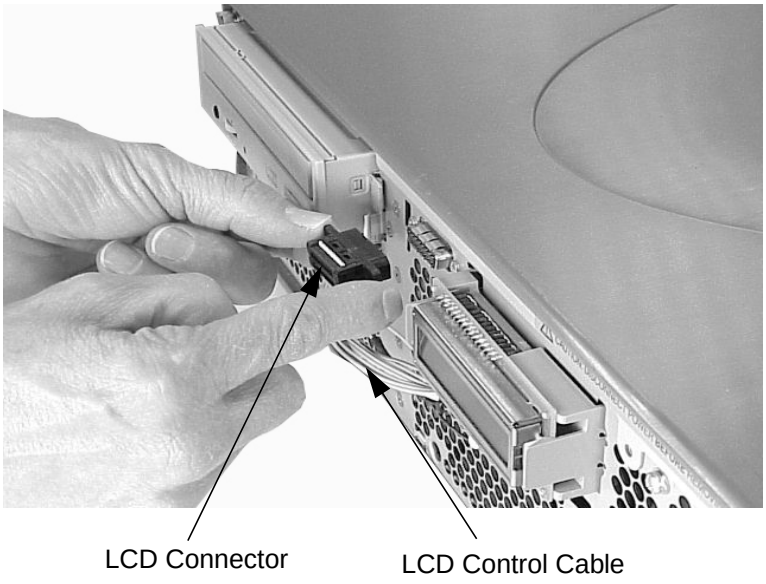
5. Complete the procedure in the section **“Replacing the CD Drive” (steps 1 through 3; in this chapter), “Replacing the DAT Drive” (steps 1 through 5; in Appendix F), or “Replacing the Flexible Disk Drive” (steps 1 through 5; in Appendix G)**.
6. Complete the procedure in the section **“Replacing the PCI Cage, I/O Card and PCI Backplane Board” (steps 1 and 2)** found in this chapter.
7. Complete the procedure in the section **“Replacing the Front Bezel and Top Cover”** found in this chapter.
8. Connect and turn on the power to your system.
9. Determine that your hard disk drive replacement was successful by executing the `sam` command as `root`. When the **System Administration Manager** window appears, double click the **Disk and File System** icon and in the window that appears double click the **Disk Devices** icon. In the next window that appears, you should see your hard disk drive listed. If it is not listed, repeat this procedure. If your hard disk drive is still not listed, contact your local HP Support Representative.

Removing the Liquid Crystal Display (LCD) Module

To remove the liquid crystal display, follow this procedure:

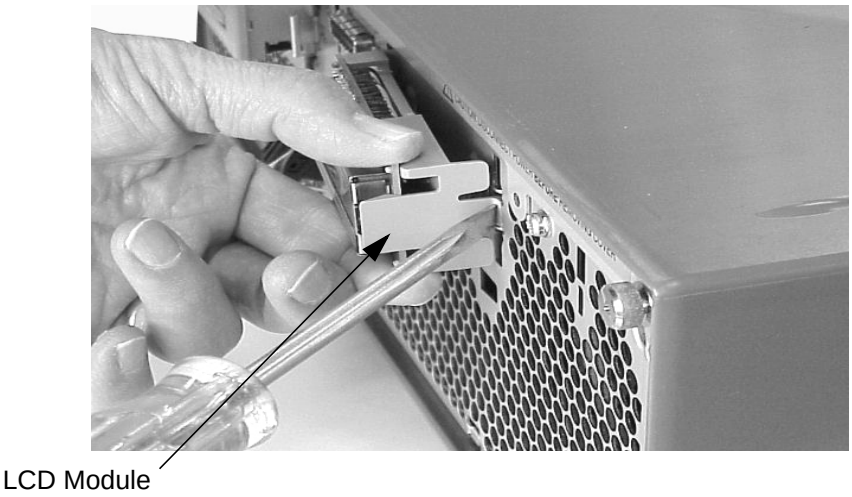
1. Complete the procedure in the section **"Removing the Front Bezel and Top Cover"** found in this chapter.
2. Disconnect the LCD control cable. See Figure 3-43.

Figure 3-43. Disconnecting the LCD Control Cable



3. Press inward on the right side of the LCD's plastic retainer with a screwdriver and pull outward on this same side. See Figure 3-44. This will remove the LCD module.

Figure 3-44. Removing the LCD Module

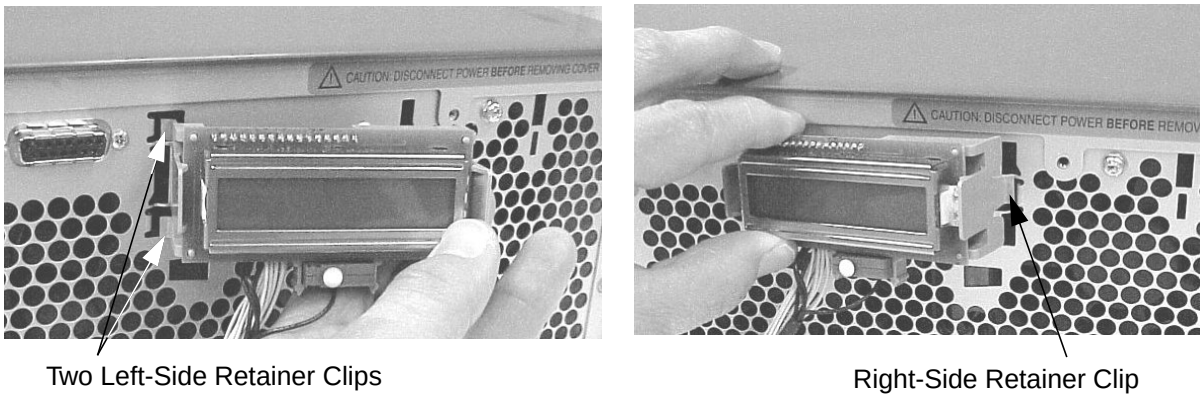


Replacing the Liquid Crystal Display (LCD) Module

To replace the liquid crystal display, follow this procedure:

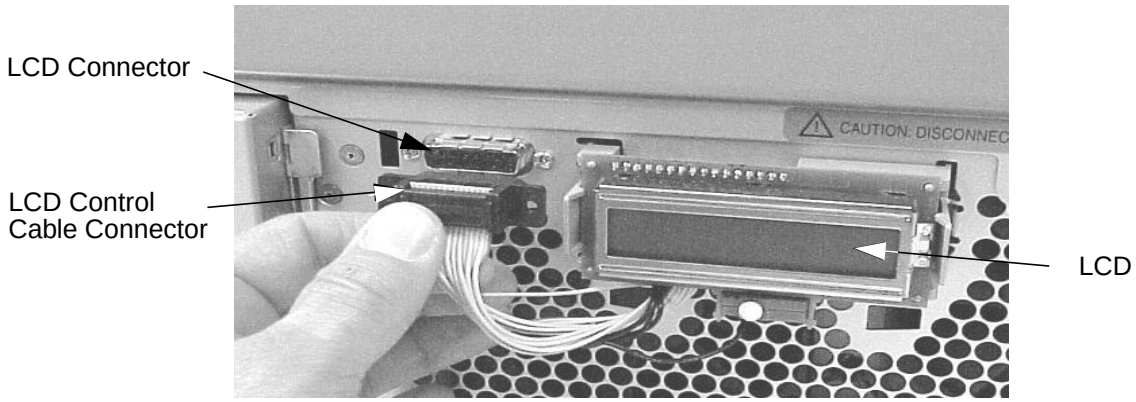
1. Remove the front bezel if you have not already done this. Otherwise, skip this step. To remove the front bezel, follow the procedure in the section **"Removing the Front Bezel and Top Cover"** found in this chapter.
2. Replace the LCD Module by inserting the left-side and right-side retainer clips in their slots and pressing inward to snap them in place. See Figure 3-45.

Figure 3-45. Replacing the LCD Module



3. Connect the LCD control cable connector to the LCD connector. See Figure 3-46.

Figure 3-46. Connection the LCD Control Cable Connector



4. Complete the procedure in the section **"Replacing the Front Bezel and Top Cover"** found in this chapter.
5. Connect and turn on the power to your system.
6. Determine that your LCD Module replacement was successful by looking at the LCD and noticing if the LCD lights up and the heart shaped activity indicator is blinking. If the LCD does not light up and the heart shaped activity indicator is not blinking, repeat this procedure. If your LCD continues to not light up and the heart shaped activity indicator is not blinking, contact your local HP Support Representative.

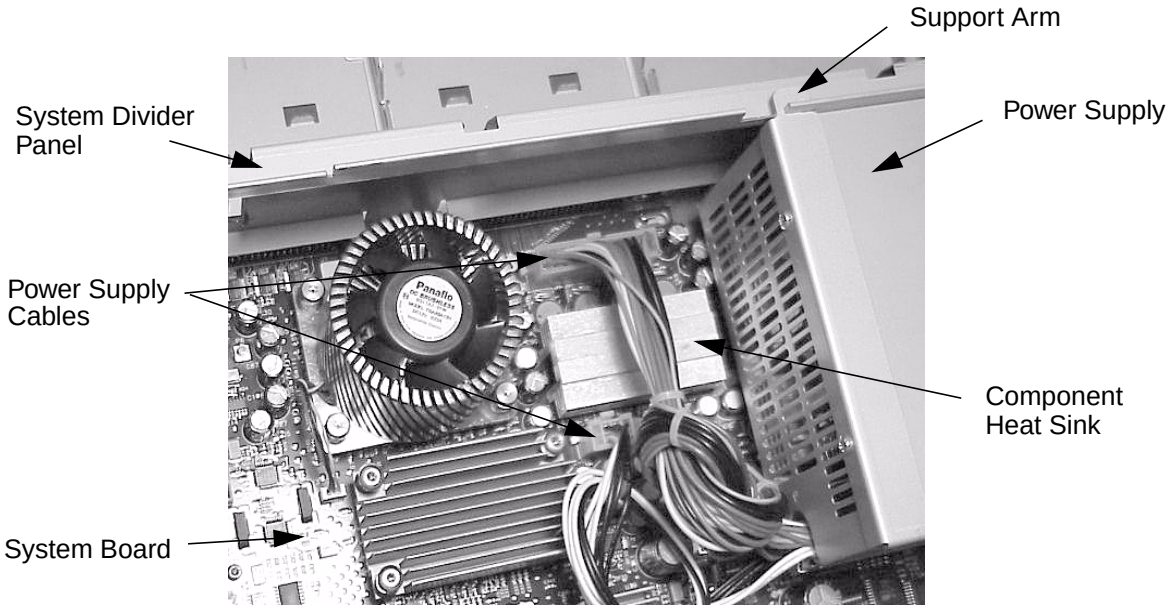
Removing the AC or DC Power Supply

The HP B2600 workstation can be purchased with either an AC or DC power source. This section covers how to remove the AC power supply. To learn how to remove the DC power supply, see Appendix E in this document.

To remove the AC power supply, follow this procedure:

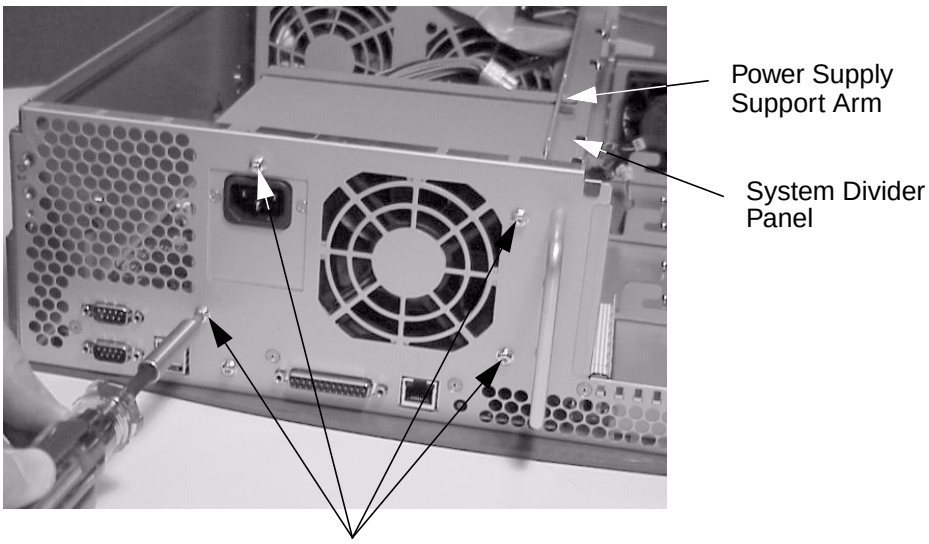
1. Unplug the power cord from the system as stated in the WARNING at the beginning of this chapter.
2. Complete the procedure in the section **"Removing the Front Bezel and Top Cover"** found in this chapter.
3. Disconnect the power supply cables from the system board by pressing in on the latch releases on the connectors and pulling outward. See Figure 3-47.

Figure 3-47. Disconnect the Power Supply Cables



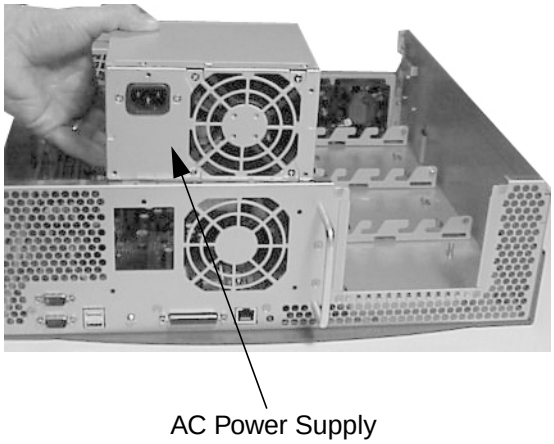
4. Unscrew the four power supply mounting screws located on the back of the system. See Figure 3-48. Note that there is a power supply support arm that fits into a slot on the system divider panel. This support arm prevents the supply from falling onto the system board while you are unscrewing the mounting screws.

Figure 3-48. Unscrewing the Four Power Supply Mounting Screws



5. Remove the AC power supply from the system. To do this, you will have to slide the support arm out of its slot. See Figure 3-49. Note that there is a component heat sink located on the system board near the back of the power supply that can be damaged if you are not careful when removing the power supply. See Figure 3-49.

Figure 3-49. Removing the AC Power Supply



Replacing the AC or DC Power Supply

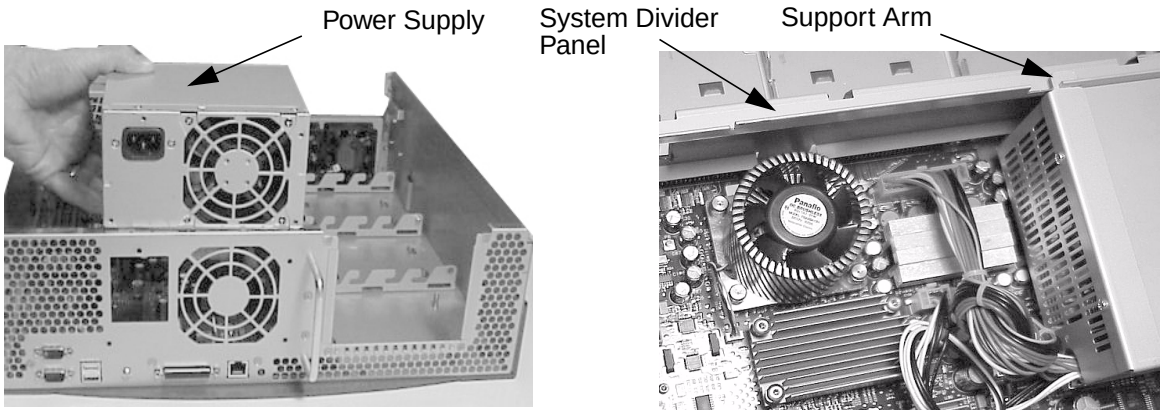
You can choose to have either an AC or DC power source when ordering a HP B2600 workstation. The AC power source is suitable for most of your computing needs.

This section covers how to replace the AC power supply. To learn how to replace the DC power supply, see Appendix E in this document.

To replace the AC power supply, follow this procedure:

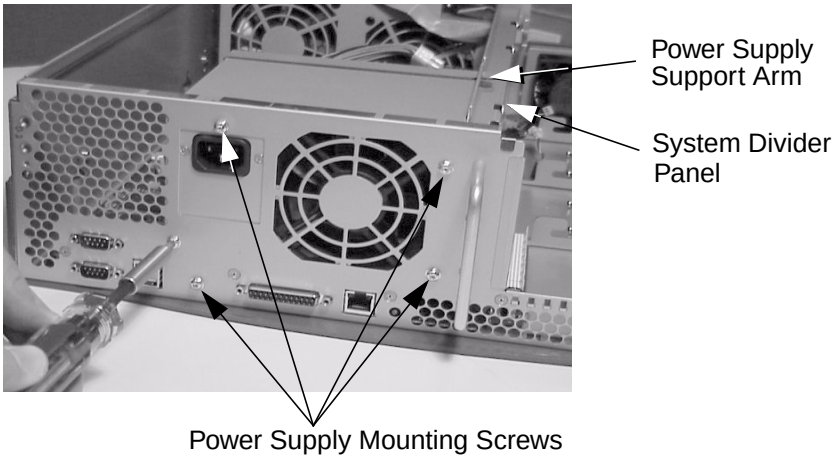
1. Remove the AC power supply if you have not already done this. Otherwise, skip this step. To remove the AC power supply, follow the procedure in the section **"Removing the AC or DC Power Supply"** found in this chapter.
2. Replace the AC power supply in the workstation. To do this, you will have to slide the power supply's support arm into its slot on the system divider panel. See Figure 3-50.

Figure 3-50. Replacing the AC Power Supply



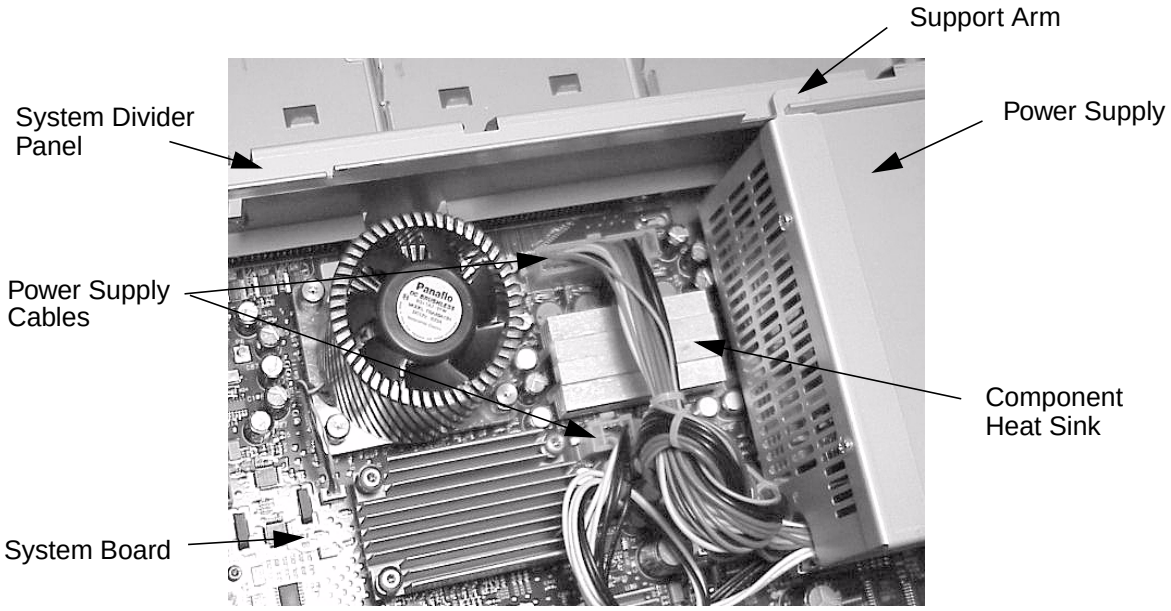
3. Align the four threaded screw holes on the power supply with their screw holes on the workstation's chassis and screw in the four mounting screws. See Figure 3-51.

Figure 3-51. Screwing in the Four Power Supply Mounting Screws



4. Push the power supply cable's connectors into their connectors on the system board. See Figure 3-52.

Figure 3-52. Connect the Power Supply Cables



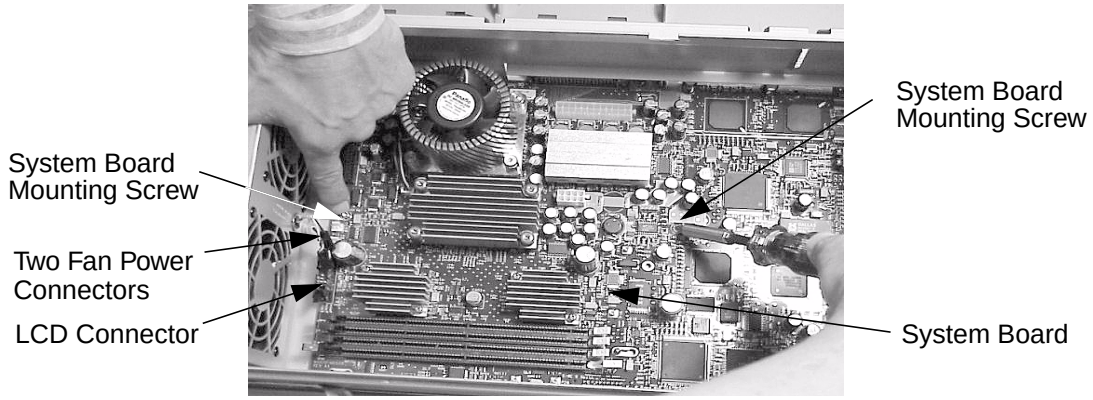
5. Complete the procedure in the section **"Replacing the Front Bezel and Top Cover"** found in this chapter.
6. Connect and turn on the power to your system.
7. Determine that your AC power supply replacement was successful by observing to see if the workstation's LCD lights up and the CDE login screen appears in your workstation's display. If your workstation's LCD does not light up and the CDE login screen does not appear, repeat this procedure. If your workstation's LCD still does not light up and the CDE login screen does not appear, contact your local HP Support Representative.

Removing the System Board

To remove the system board, follow this procedure:

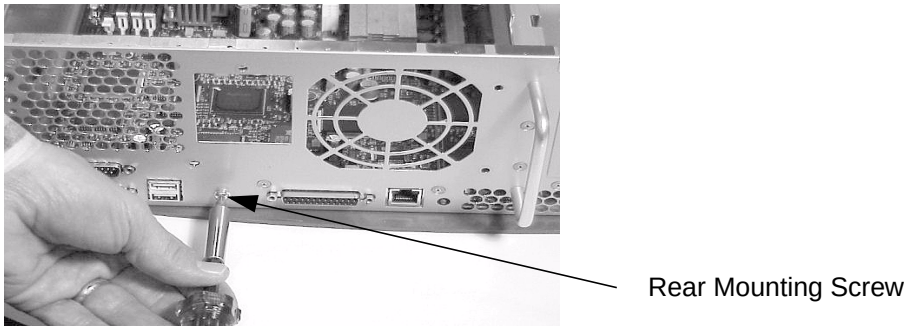
1. Complete the procedure in the section **"Removing the CD Drive" (steps 1 through 3; in this chapter), "Removing the DAT Drive" (steps 1 through 5; in Appendix F), or "Removing the Flexible Disk Drive" (steps 1 through 5; in Appendix G)**.
2. Complete the procedure in the section **"Removing the PCI Cage, I/O Card and PCI Backplane Board"** found in this chapter.
3. Complete the procedure in the section **"Removing the Hard Disk Drive(s)"** found in this chapter.
4. Complete the procedure in the section **"Removing the AC or DC Power Supply"** found in this chapter.
5. Disconnect the two fan power connectors from the system board by pressing in on the latch retainers and pulling outward on the connector. The LCD connector must also be disconnect from the system board by pressing down on its latch retainers and pulling outward on the connector. Next, unscrew the two internal system board mounting screws. See Figure 3-53.

Figure 3-53. Removing the Internal System Board Mounting Screws



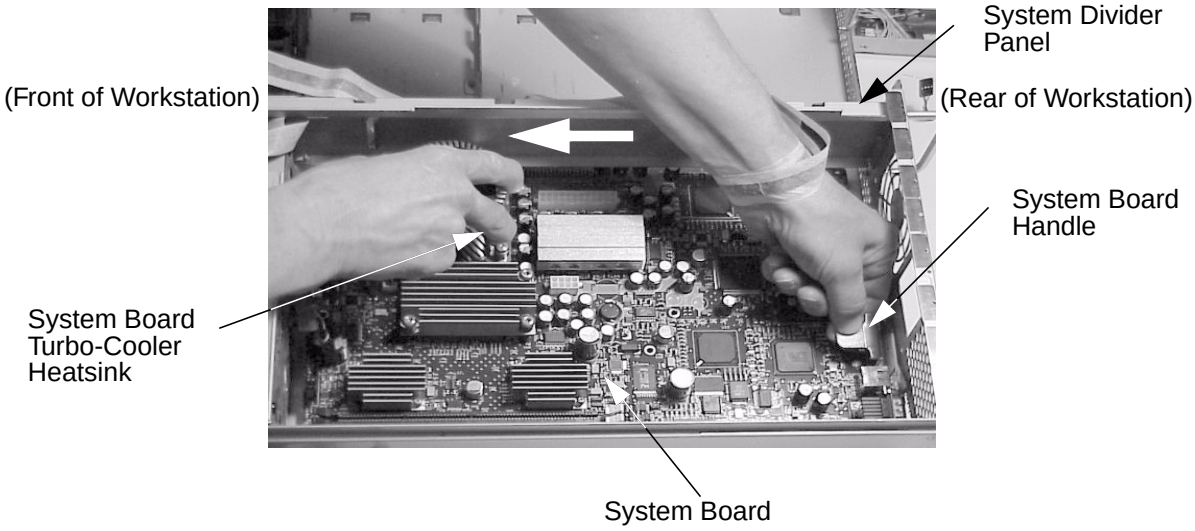
6. Unscrew the rear mounting screw for the system board. See Figure 3-54.

Figure 3-54. Removing the System Boards Rear Mounting Screw



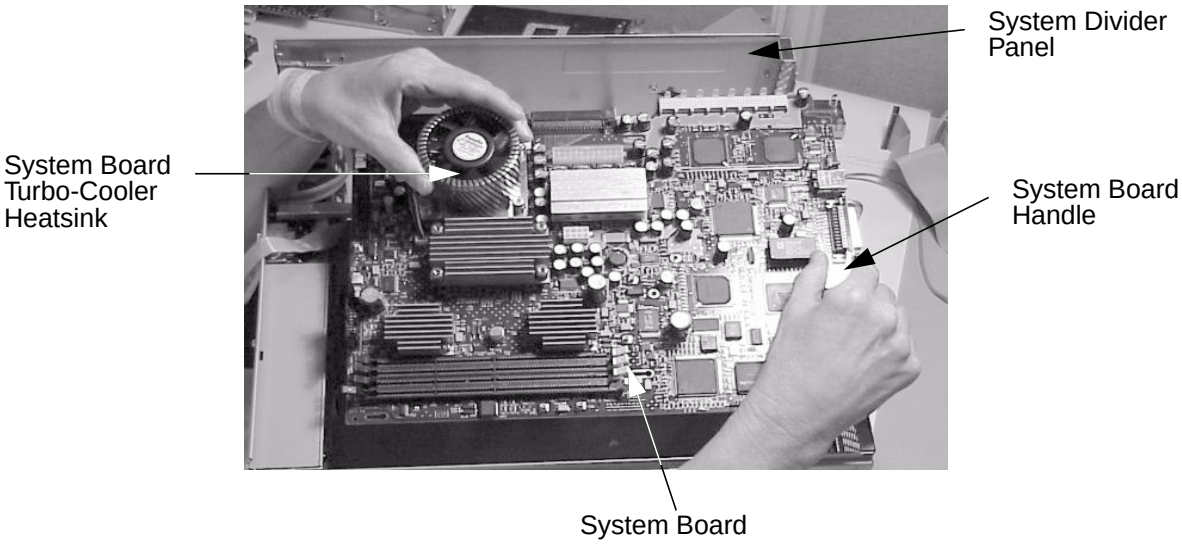
7. Grasp the system board by the microprocessor's turbo-cooler heatsink and the handle located on the back edge of the system board, and slide the system board toward the front of the workstation (in the direction of the arrow). See Figure 3-55. Note that this step unlocks the system board from its standoffs.

Figure 3-55. Slide the System Board Off Its Standoffs



8. Use the system board's turbo-cooler heatsink and handle to lift it out of the workstation. The system board must be angled when removing it from the workstation such that the DIMM edge of the system board is two to three inches higher than the turbo-cooler heatsink edge. This will prevent the system board components from catching on the system divider panel. See Figure 3-56.

Figure 3-56. Lifting the System Board Out of the Workstation

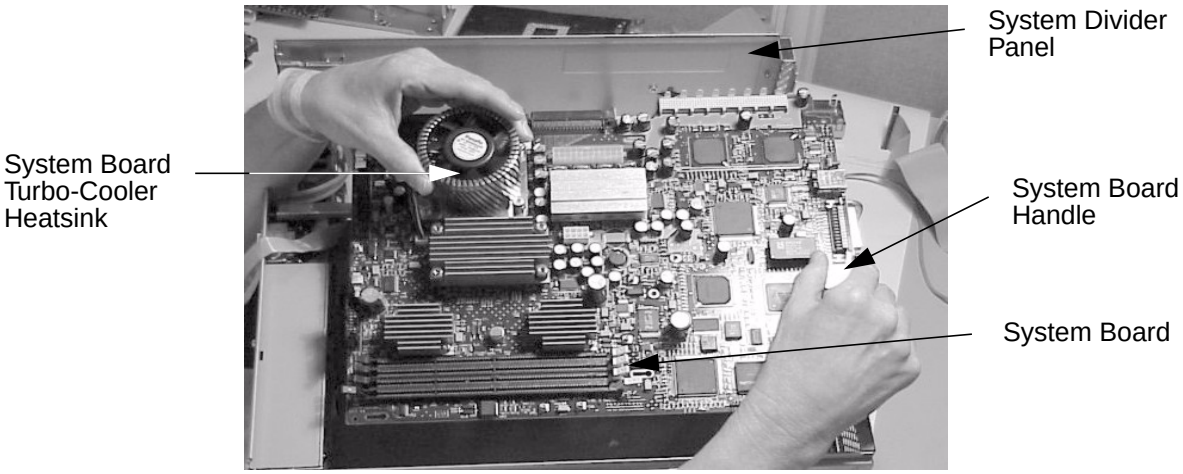


Replacing the System Board

To replace the system board, follow this procedure:

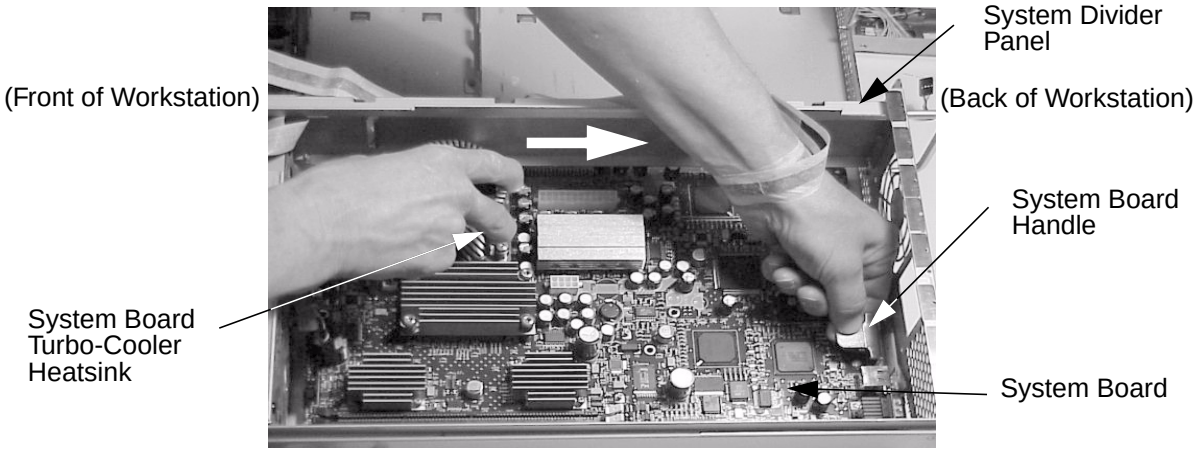
1. Remove the system board if you have not already done this. Otherwise, skip this step. To remove the system board, follow the procedure in the section **"Removing the System Board"** found in this chapter.
2. Use the system board's turbo-cooler heatsink and handle to place it in the workstation. The system board must be angled when replacing it in the workstation such that the DIMM edge of the system board is two to three inches higher than the turbo-cooler heatsink edge. This will prevent the system board components from catching on the system divider panel. See Figure 3-57.

Figure 3-57. Placing the System Board in the Workstation



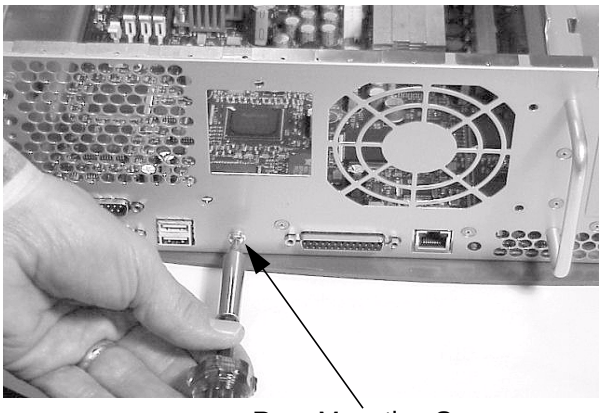
3. Grasp the system board by the microprocessor's turbo-cooler heatsink and the handle located on the back edge of the system board, and slide the system board toward the back of the workstation (in the direction of the arrow). See Figure 3-58. Note that this step locks the system board on its standoffs.

Figure 3-58. Sliding the System Board Onto Its Standoffs



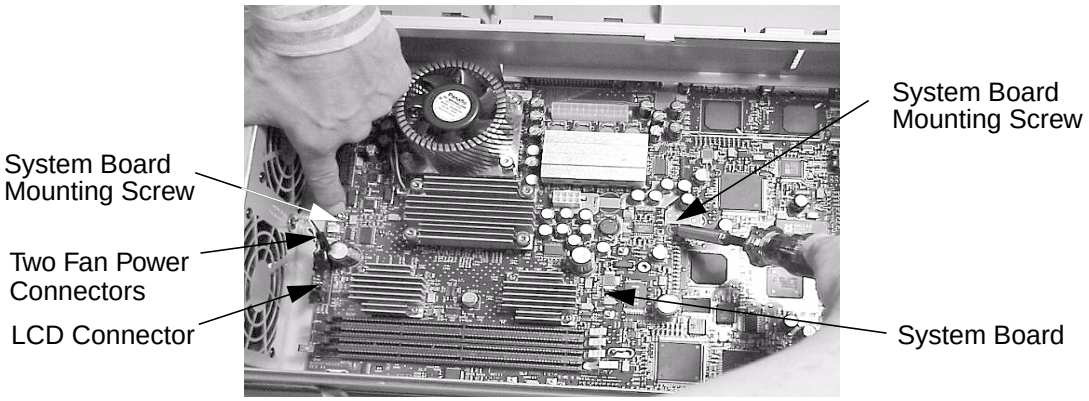
4. Align the system board screw hole that is located on the workstation's chassis with the threaded screw hole on the system board's handle and screw in the system board's rear mounting screw. See Figure 3-59.

Figure 3-59. Screwing in the System Board's Rear Mounting Screw



5. Connect the two fan power connectors into their connectors on the system board. The LCD connector must also be connected into its connector on the system board. Next, screw the two internal system board mounting screws. See Figure 3-60.

Figure 3-60. Replacing the Internal System Board Mounting Screws



6. Complete the procedure in the section **"Replacing the AC or DC Power Supply" (steps 2 through 4)** found in this chapter.
7. Complete the procedure in the section **"Replacing the Hard Disk Drive(s)" (steps 3 through 4)** found in this chapter.
8. Complete the procedure in the section **"PCI Cage Replacement" (step 2)** found in this chapter.
9. Complete the procedure in the section **"Replacing the CD Drive" (steps 2 through 8; in this chapter), "Replacing the DAT Drive" (steps 2 through 7; in Appendix F), or "Replacing the Flexible Disk Drive" (steps 2 through 9; in Appendix G)**.

10. Complete the procedure in the section **“Replacing the Front Bezel and Top Cover”** found in this chapter.
11. Connect and turn on the power to your system.
12. Determine that your system board replacement was successful by observing to see if the workstation's LCD lights up and the CDE login screen appears in your workstation's display. If your workstation's LCD does not light up and the CDE login screen does not appear, repeat this procedure. If your workstation's LCD still does not light up and the CDE login screen does not appear, contact your local HP Support Representative.

Removing the Fan Modules

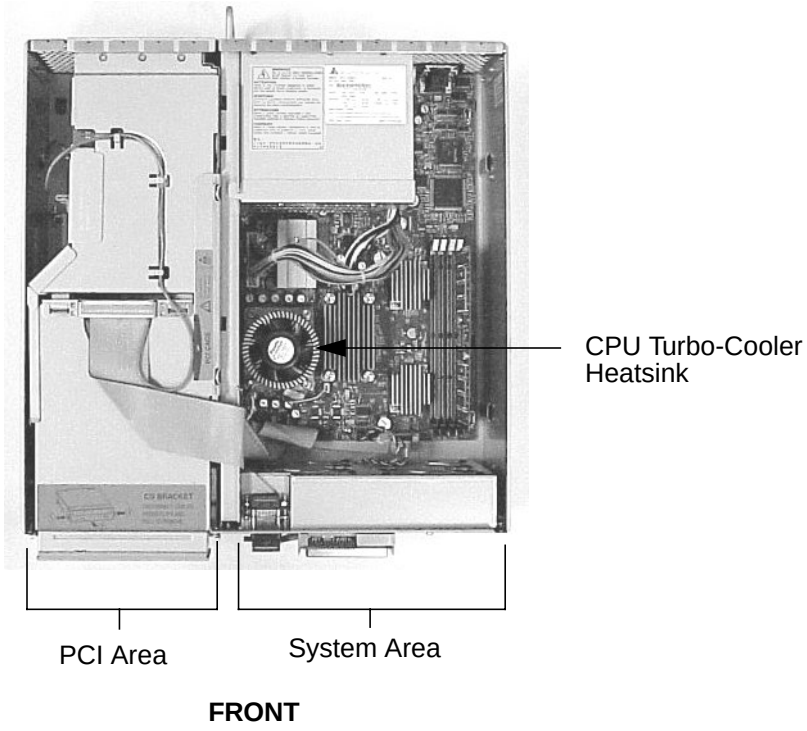
The HP B2600 workstation has two fan modules to keep it cool. There is a fan module located in the system area and one in the PCI area. See Figure 3-61. This section explains how to remove these fan modules.

Note that fan errors will be displayed on the LCD if the fans are running too slow or stopped. The fan error for a stopped fan is `D01`*n* and the fan error for a slow fan is `D02`*n* where *n* is the number of the fan with the error. See Table 3-1.

Table 3-1. System Area and PCI area Fan Numbers

Fan Number	Description
1	Power Supply Fan
2	Right System Area Fan (as you face the system's front)
3	Left System Area Fan (as you face the system's front)
5	Left PCI Area Fan (as you face the system's front)
6	Right PCI Area Fan (as you face the system's front)
7	CPU's Turbo-Cooler Heatsink

Figure 3-61. System and PCI Fan Areas

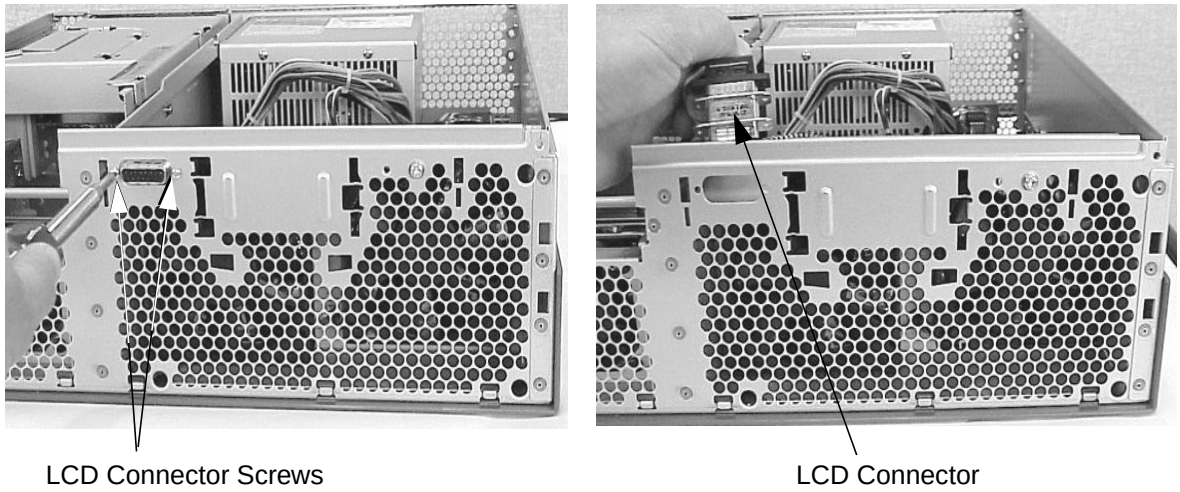


System Area Fan Module Removal

To remove the fan module from the system area, follow this procedure:

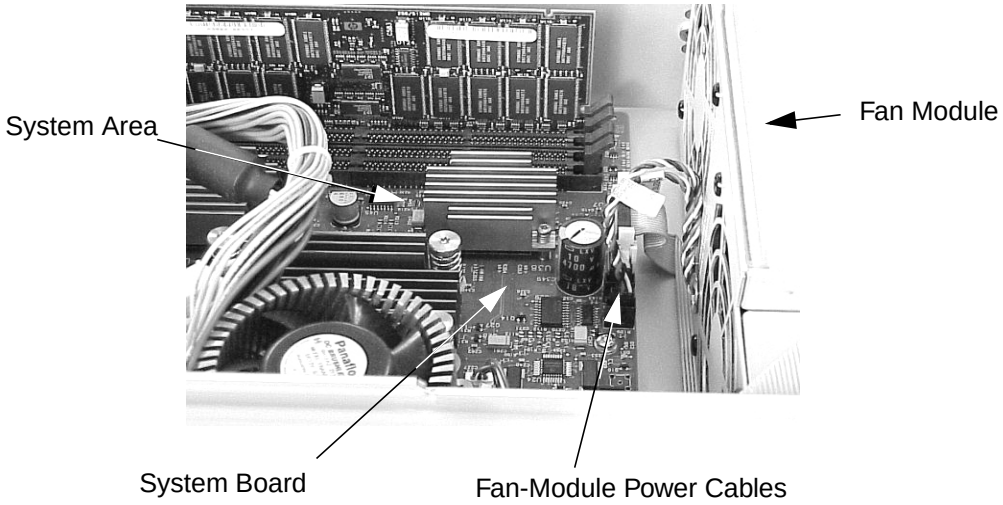
1. Complete the procedure in the section **"Removing the Front Bezel and Top Cover"** found in this chapter.
2. Complete the procedure in the section **"Removing the Liquid Crystal Display"** found in this chapter.
3. Unscrew the two LCD connector screws and remove the LCD connector from its opening in the chassis. See Figure 3-62.

Figure 3-62. Removing the LCD Connector



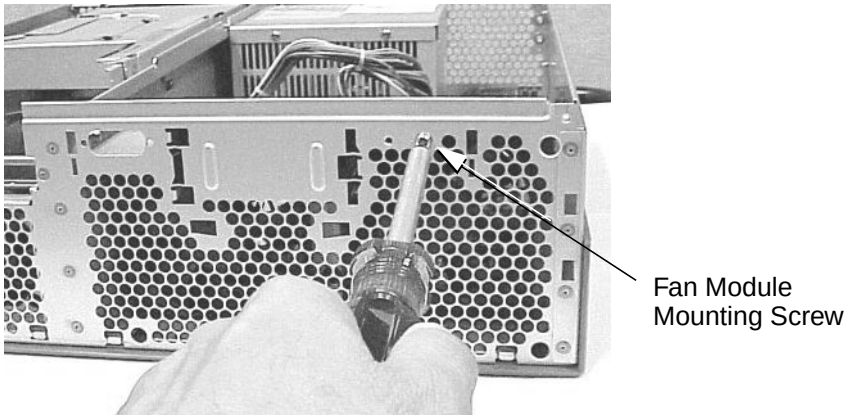
4. Disconnect the two fan-module power cables in the system area from the system board. See Figure 3-63.

Figure 3-63. Disconnecting the Fan-Module Power Cables for the System Area



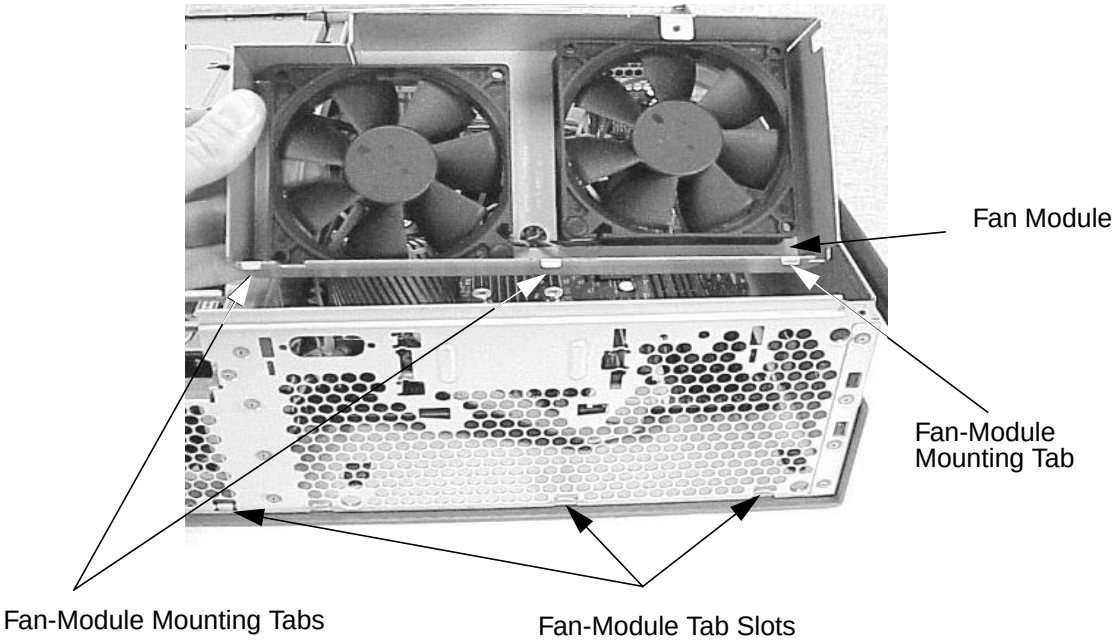
5. Remove the fan-module mounting screw. See Figure 3-64.

Figure 3-64. Removing the Fan-Module Mounting Screw



6. Remove the fan module from the workstation by tilting it back away from the workstation chassis and lifting it out of the three fan-module slots on the front part of the workstation's chassis. See Figure 3-65.

Figure 3-65. Removing the System Area Fan Module

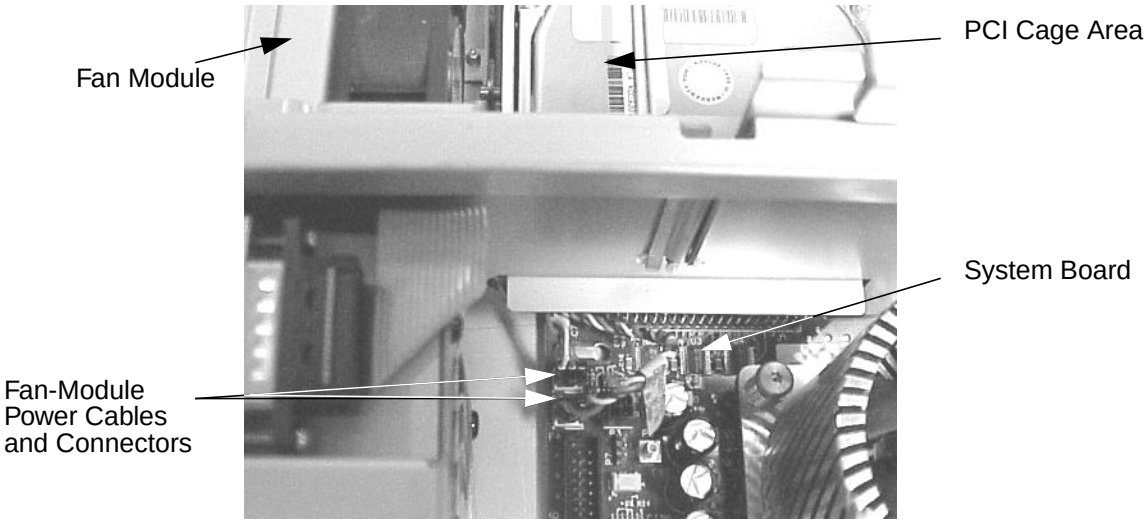


PCI Area Fan Module Removal

To remove the fan module in the PCI area, follow this procedure:

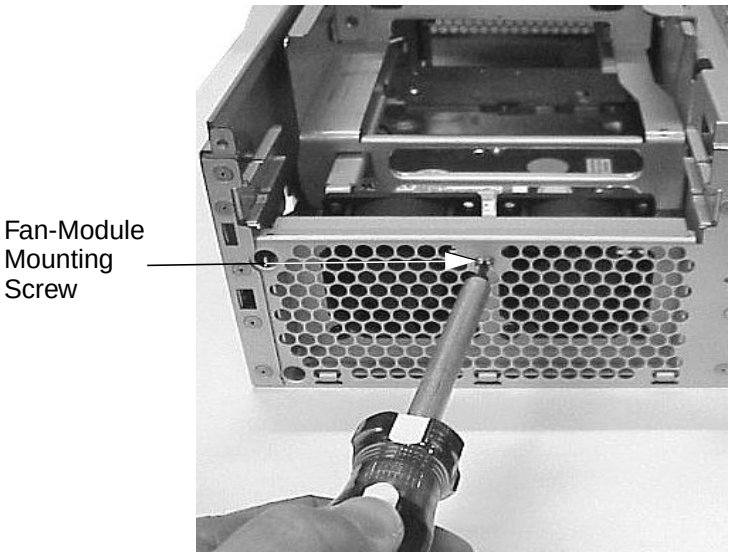
1. Complete the procedure in the section **"Removing the Front Bezel and Top Cover"** found in this chapter.
2. Complete the procedure in the section **"Removing the CD Drive" (steps 1 through 3; in this chapter), "Removing the DAT Drive" (steps 1 through 5; in Appendix F), or "Removing the Flexible Disk Drive" (steps 1 through 5; in Appendix G)**.
3. Disconnect the two fan-module power cables from the system board by pressing in on the latch retainer of each connector and pulling outward on the connector. See Figure 3-66.

Figure 3-66. Disconnecting the Fan-Module Power Cables



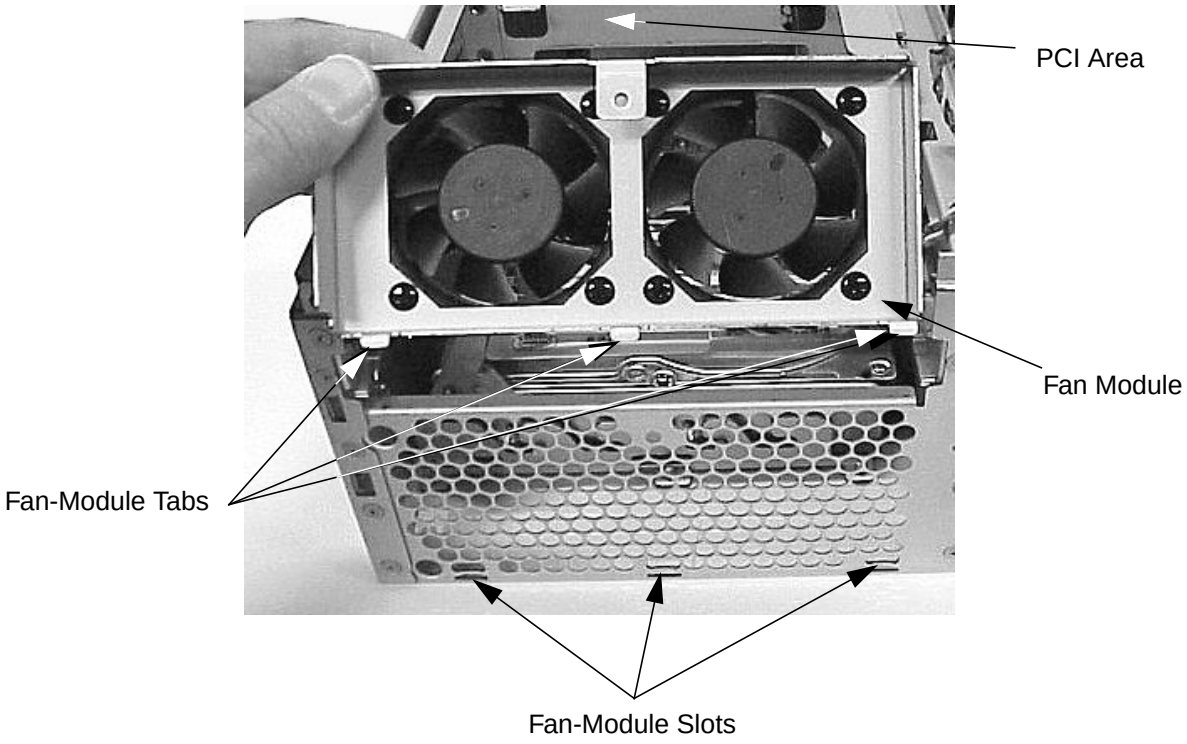
4. Remove the fan-module mounting screw for the PCI area. See Figure 3-67.

Figure 3-67. Remove the Fan-Module Mounting Screw for the PCI Area



5. Remove the fan module from the workstation by tilting it back away from the workstation chassis and lifting it out of the three fan-module slots on the front part of the workstation chassis. See Figure 3-68.

Figure 3-68. Removing the PCI Area Fan Module



Replacing the Fan Modules

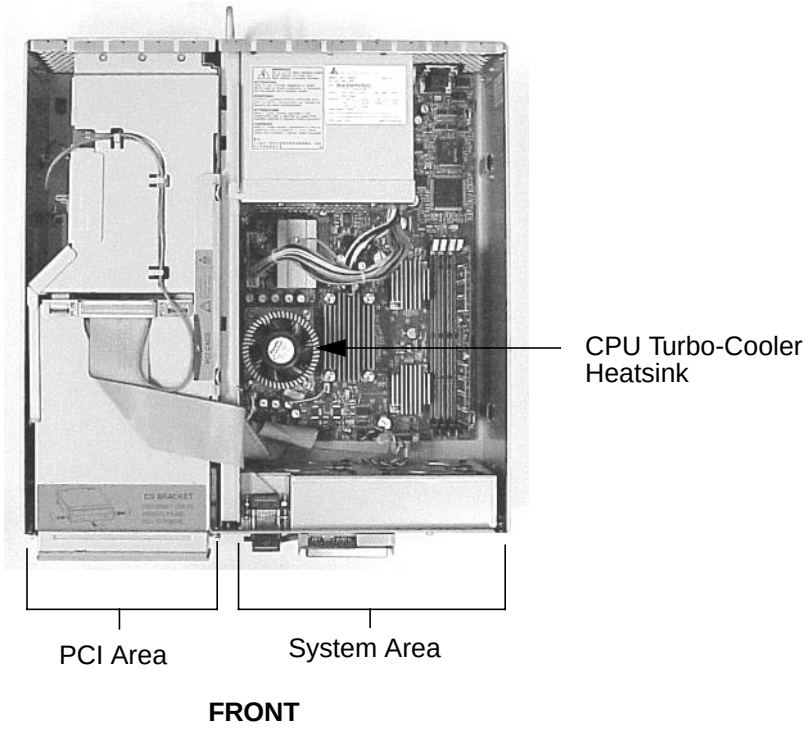
The HP B2600 workstation has two fan modules to keep it cool. There is a fan module located in the system area and one in the PCI area. See Figure 3-69. This section explains how to replace these fan modules.

Note that fan errors will be displayed on the LCD if the fans are running too slow or stopped. The fan error for a stopped fan is `D01`*n* and the fan error for a slow fan is `D02`*n* where *n* is the number of the fan with the error. See Table 3-2.

Table 3-2. System Area and PCI area Fan Numbers

Fan Number	Description
1	Power Supply Fan
2	Right System Area Fan (as you face the system's front)
3	Left System Area Fan (as you face the system's front)
5	Left PCI Area Fan (as you face the system's front)
6	Right PCI Area Fan (as you face the system's front)
7	CPU's Turbo-Cooler Heatsink

Figure 3-69. System and PCI Fan Areas

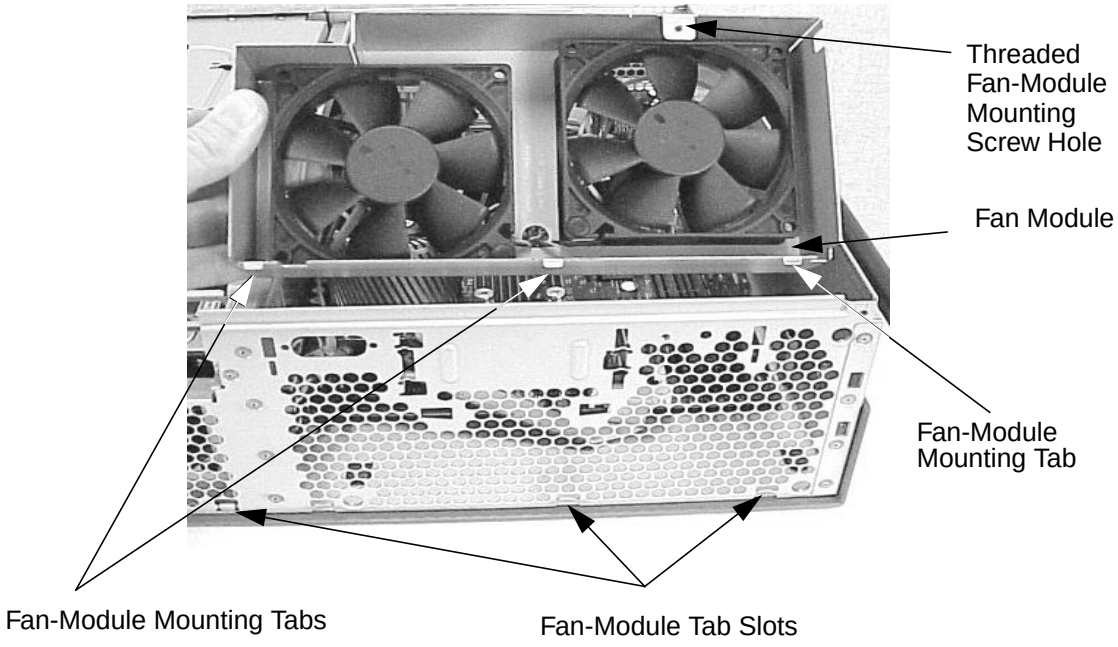


System Area Fan Module Replacement

To replace the fan module in the system area, follow this procedure:

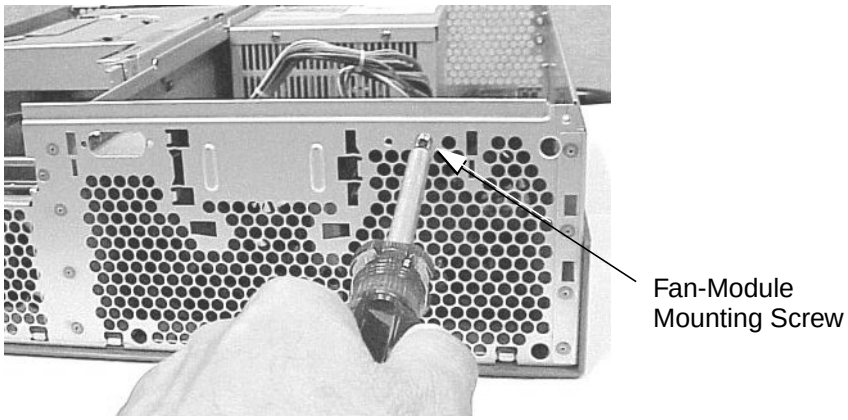
1. Remove the system area fan module if you have not done this. Otherwise, skip this step. To remove the system area fan module, follow the procedure in the section **"System Area Fan Module Removal"** found in this chapter.
2. Replace the fan module in the workstation by tilting it back away from the workstation chassis and inserting the three fan-module mounting tabs into their slots. See Figure 3-70.

Figure 3-70. Replacing the System Area Fan Module



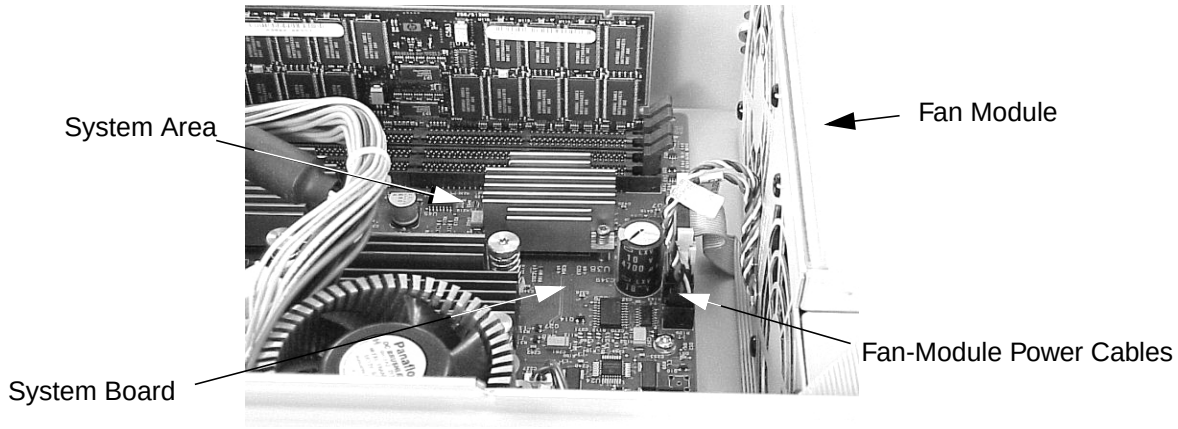
3. Align the fan-module mounting screw hole in the chassis with the threaded fan-module mounting screw hole and screw in the mounting screw. See Figure 3-71.

Figure 3-71. Screwing in the Fan-Module Mounting Screw



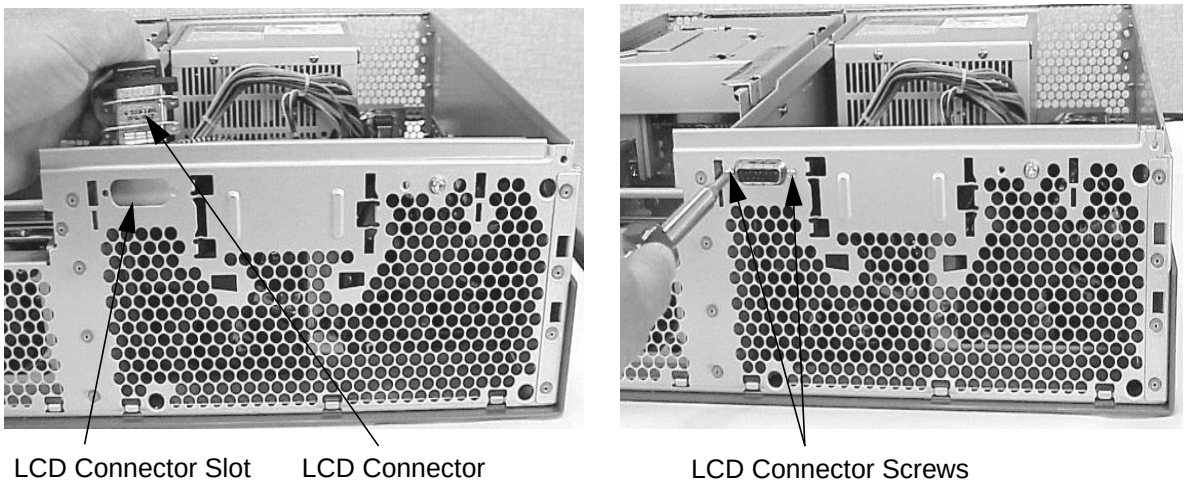
4. Plug the two fan-module power cable's connectors into their connectors on the system board. See Figure 3-72.

Figure 3-72. Plugging the Fan-Module Power Cables into the System Board



5. Insert the LCD connector into its slot on the workstation's chassis and screw in the LCD connector screws. See Figure 3-73.

Figure 3-73. Replacing the LCD Connector



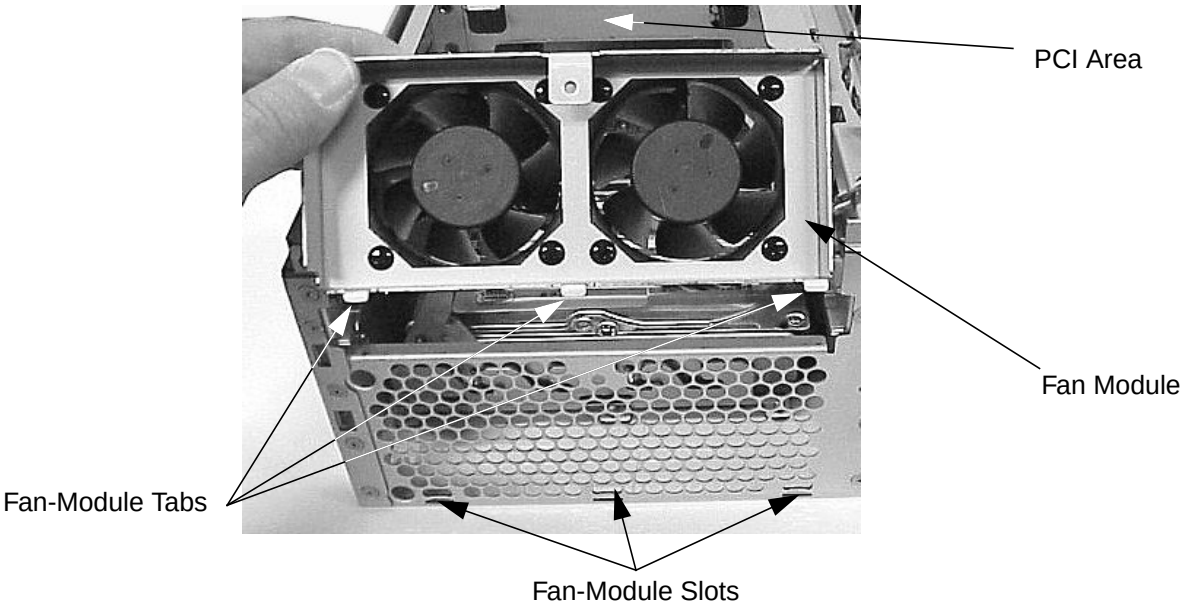
6. Complete the procedure in the section **"Replacing the Liquid Crystal Display"** found in this chapter.
7. Complete the procedure in the section **"Replacing the Front Bezel and Top Cover"** found in this chapter.
8. Connect and turn on the power to your system.
9. Determine that your system area fan-module replacement was successful by checking the workstation's LCD for fan error messages. If LCD fan error messages appear, repeat this procedure. If your LCD still displays fan error messages, contact your local HP Support Representative.

PCI Area Fan Module Replacement

To replace the fan module from the PCI area, follow this procedure:

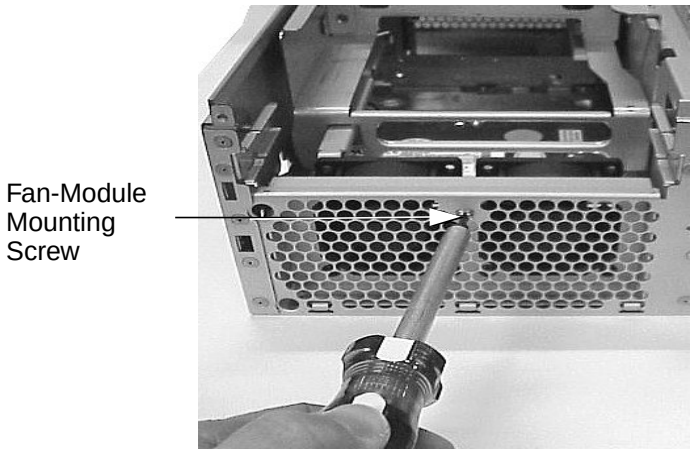
1. Remove the PCI area fan module if you have not done this. Otherwise, skip this step. To remove the PCI area fan module, follow the procedure in the section **"PCI Area Fan Module Removal"** found in this chapter.
2. Replace the fan module in the workstation by tilting it back away from the workstation chassis and inserting the three fan-module tabs into their slots. See Figure 3-74.

Figure 3-74. Replacing the PCI Area Fan Module



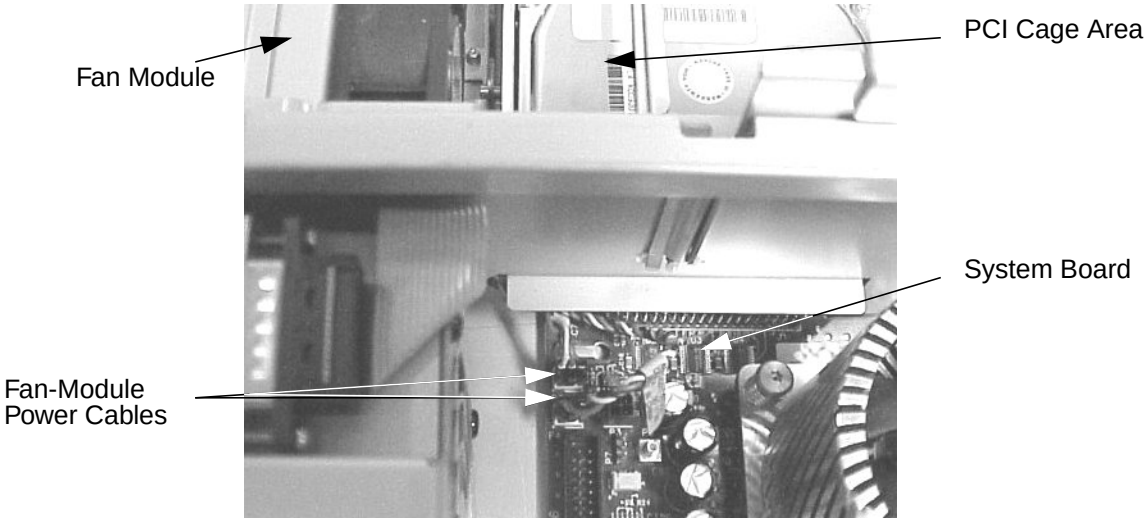
3. Align the fan-module mounting screw hole in the chassis with the threaded fan-module mounting screw hole and screw in the mounting screw. See Figure 3-75.

Figure 3-75. Screw in the Fan-Module Mounting Screw for the PCI Area



4. Plug in the two fan-module power cable's connectors into their connectors on the system board. See Figure 3-76.

Figure 3-76. Plugging in the Fan-Module Power Cables into the System Board



5. Complete the procedure in the section **"Replacing the CD Drive" (steps 2 through 8; in this chapter), "Replacing the DAT Drive" (steps 2 through 7; in Appendix F), or "Replacing the Flexible Disk Drive" (steps 2 through 9; in Appendix G)**.
6. Complete the procedure in the section **"Replacing the Front Bezel and Top Cover"** found in this chapter.
7. Connect and turn on the power to your system.
8. Determine that your PCI area fan-module replacement was successful by checking the workstation's LCD for fan error messages. If LCD fan error messages appear, repeat this procedure. If your LCD still displays fan error messages, contact your local HP Support Representative.

Removing the Audio Card

If you originally installed the audio card and need to remove it, follow the procedure in this section.

NOTE The audio card was originally installed in slot one of the system. This is the recommended PCI card slot to use if you are going to replace this card with a new one.

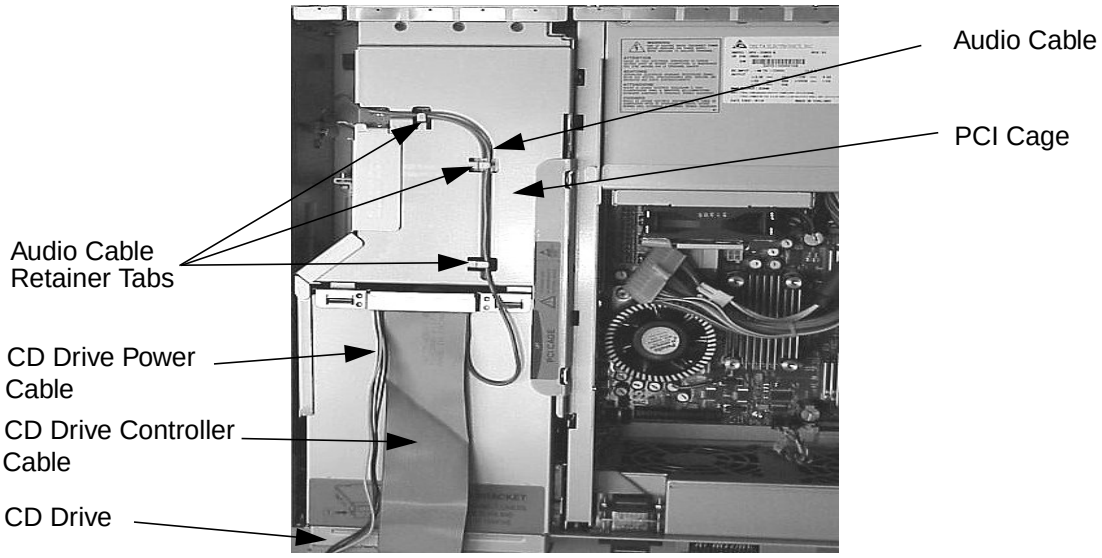
To determine the correct numbering for the PCI card slots, see the PCI card slot openings on the back of the workstation. You will also find PCI card slot numbers on the PCI cage inside of the workstation and on the PCI backplane board.

---

1. Complete the procedure in the section **"Removing the CD Drive" (steps 1 through 3; in this chapter), "Removing the DAT Drive" (steps 1 through 5; in Appendix F), or "Removing the Flexible Disk Drive" (steps 1 through 5; in Appendix G)**.
2. Complete the procedure in the section **"Removing the PCI Cage, I/O Card and PCI Backplane Board"** found in this chapter.
3. Determine that the audio cable has been removed. This step should have been performed when the CD drive was removed. If you have a flexible disk drive or DAT drive you will not have to worry about the audio cable.

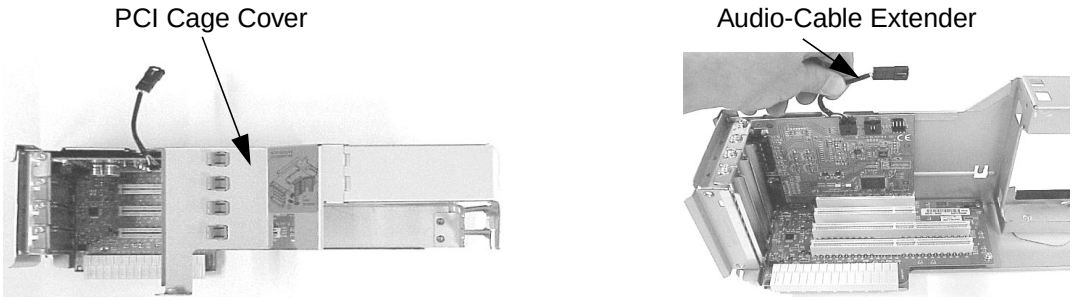
   For a view of what the audio cable looks like when connected to the CD drive see Figure 3-77. Note that this cable must be carefully removed from under its retainer tabs to avoid damaging the audio cable.

Figure 3-77. Audio Cable Routing from the CD Drive to the PCI Cage



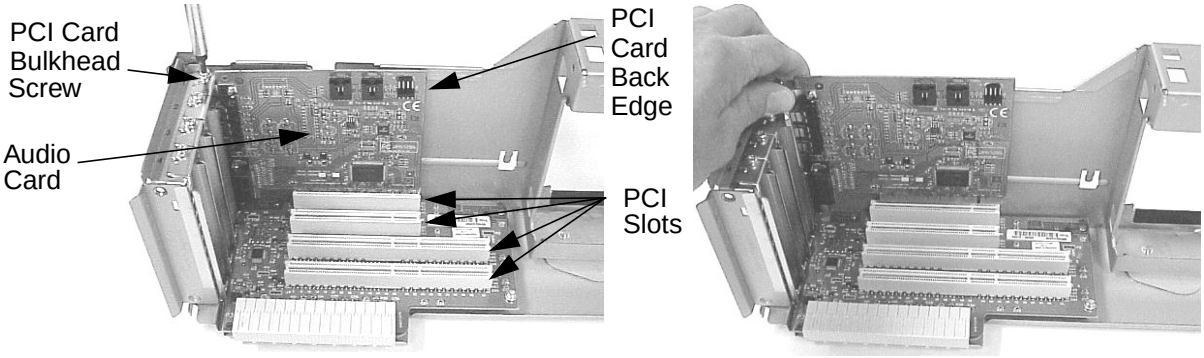
4. Remove the PCI cage cover and disconnect the audio-extender cable from the audio card if you have an audio cable. See Figure 3-78. Note that the audio-extender cable's connector can be remove from the audio card by press in on the connector's latch release and pulling outward on the cable.

Figure 3-78. Remove the PCI Cage Cover and the Audio-Extender Cable



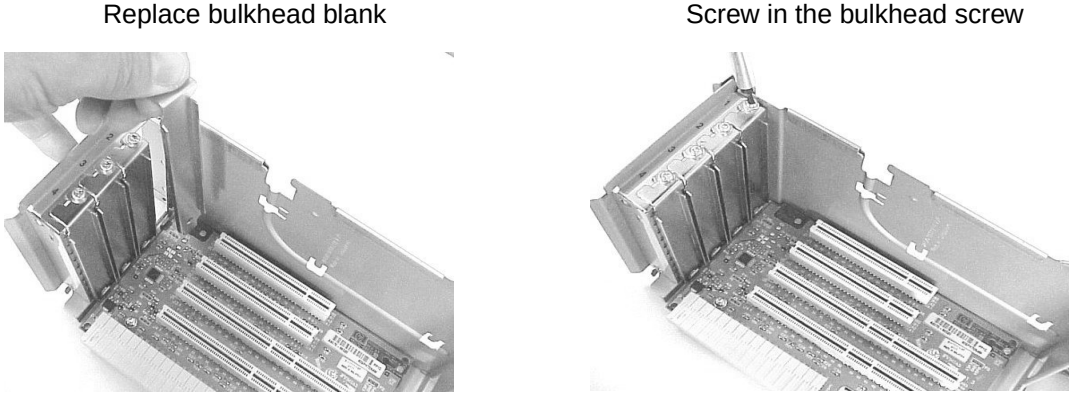
5. Unscrew the bulkhead screw and remove the audio card. See Figure 3-79.

Figure 3-79. Remove the PCI Card Bulkhead Screw and Audio Card



6. Replace the bulkhead blank in the opening for slot one of the PCI cage and screw in the bulkhead screw for the bulkhead blank. See Figure 3-80.

Figure 3-80. Replace the Bulkhead Blank in the PCI Cage



Replacing the Audio Card

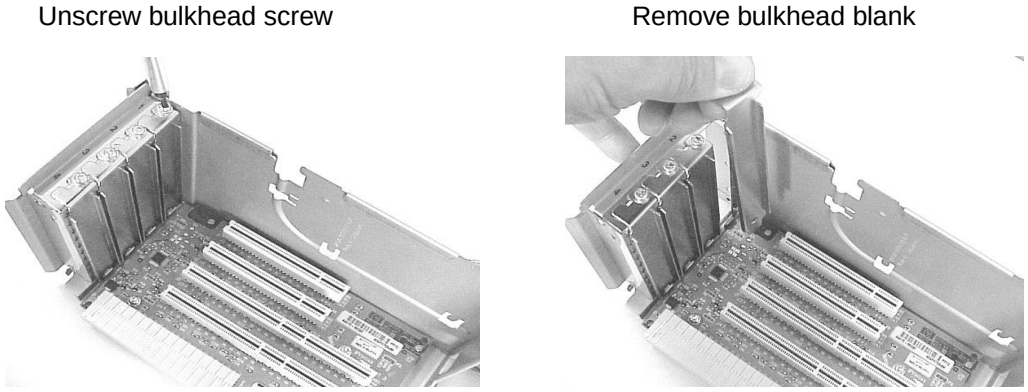
To replace the audio card, follow this procedure:

NOTE PCI slot one is the recommended PCI card slot to use when installing the audio card.

To determine the correct numbering for the PCI card slots, see the PCI card slot openings on the back of the workstation. You will also find PCI card slot numbers on the PCI cage inside of the workstation and on the PCI backplane board.

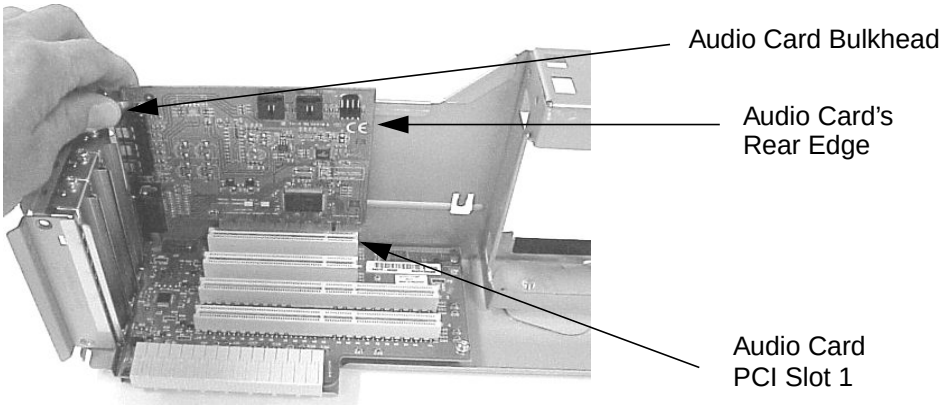
1. Remove the audio card if you have not already done this. Otherwise, skip this step. To remove the audio card, follow the procedure in the section **"Removing the Audio Card"** found in this chapter.
2. Remove the bulkhead blank from slot one of the PCI cage. You will have to unscrew its bulkhead screw to remove it. See Figure 3-81.

Figure 3-81. Remove the Bulkhead Blank from the PCI Cage



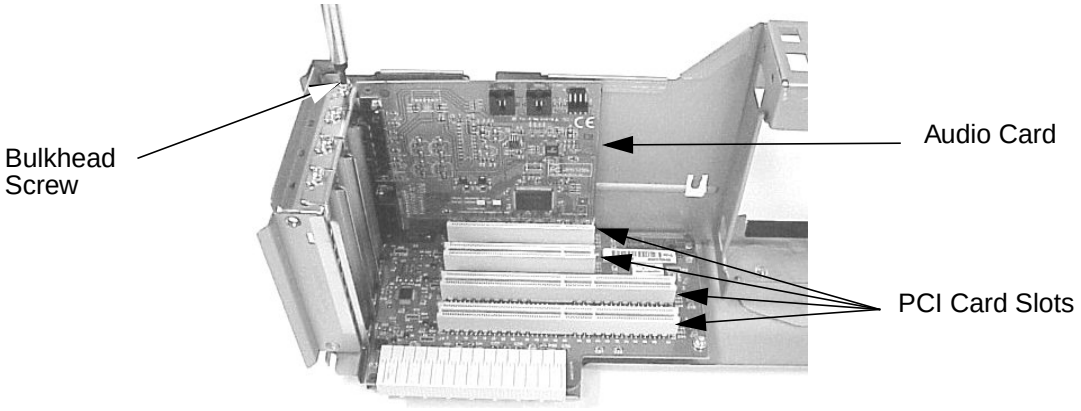
3. Remove the audio card from its anti-static bag and insert it into slot one of the PCI card cage. See Figure 3-82.

Figure 3-82. Insert the Audio Card into Slot One of the PCI Cage



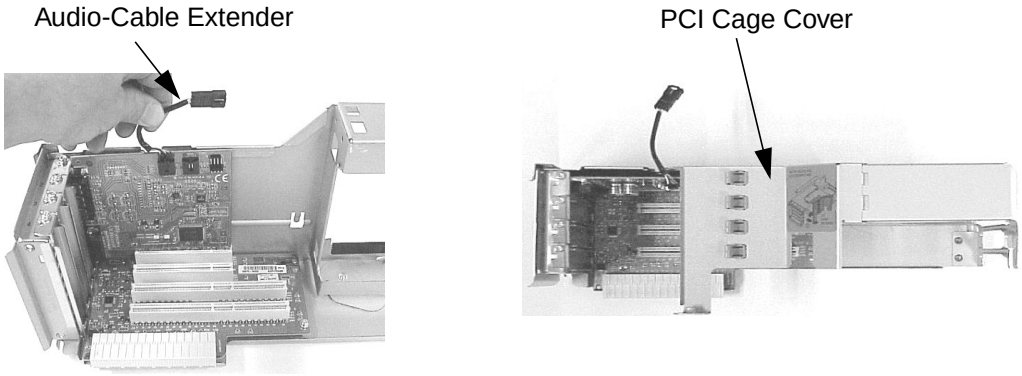
4. Secure the audio card in slot 1 by screwing the audio-card bulkhead screw into the PCI cage. See Figure 3-83.

Figure 3-83. Secure the Audio Card in Slot 1



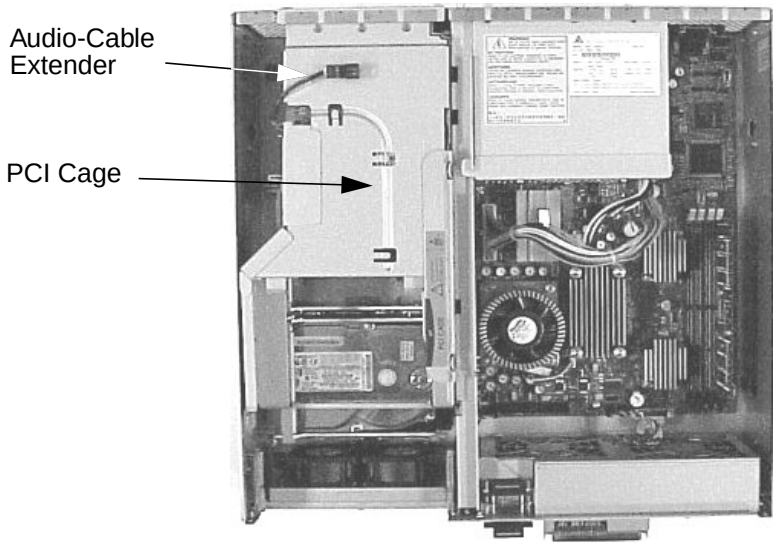
5. Connect the audio-cable extender and replace the PCI cage cover on the PCI cage. See Figure 3-84.

Figure 3-84. Replace the Audio-Extender Cable and the PCI Cage Cover



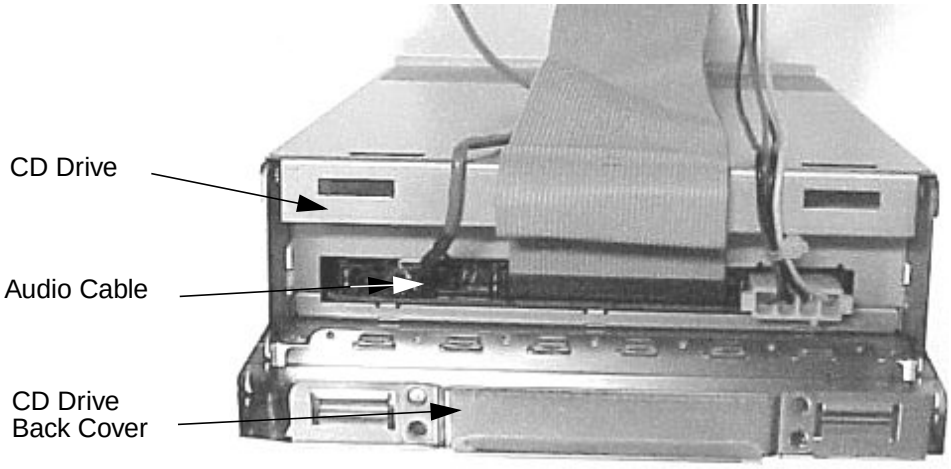
6. Insert the PCI cage into the workstation. See Figure 3-85.

Figure 3-85. Insert the PCI Cage into the Workstation



7. Connect the audio cable (supplied with the audio card) to the CD drive. See Figure 3-86.

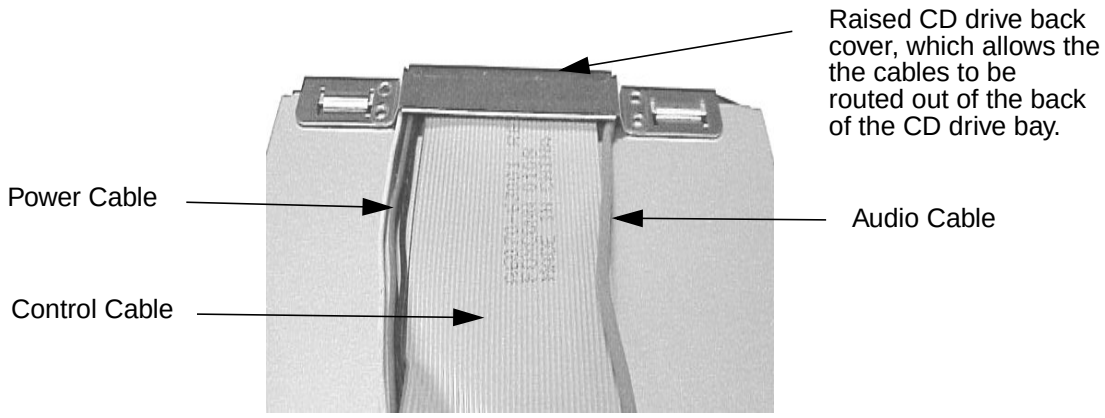
Figure 3-86. Connect the Audio Cable to the CD Drive



8. Dress the cables that run under the back cover of the CD drive bay to avoid pinching

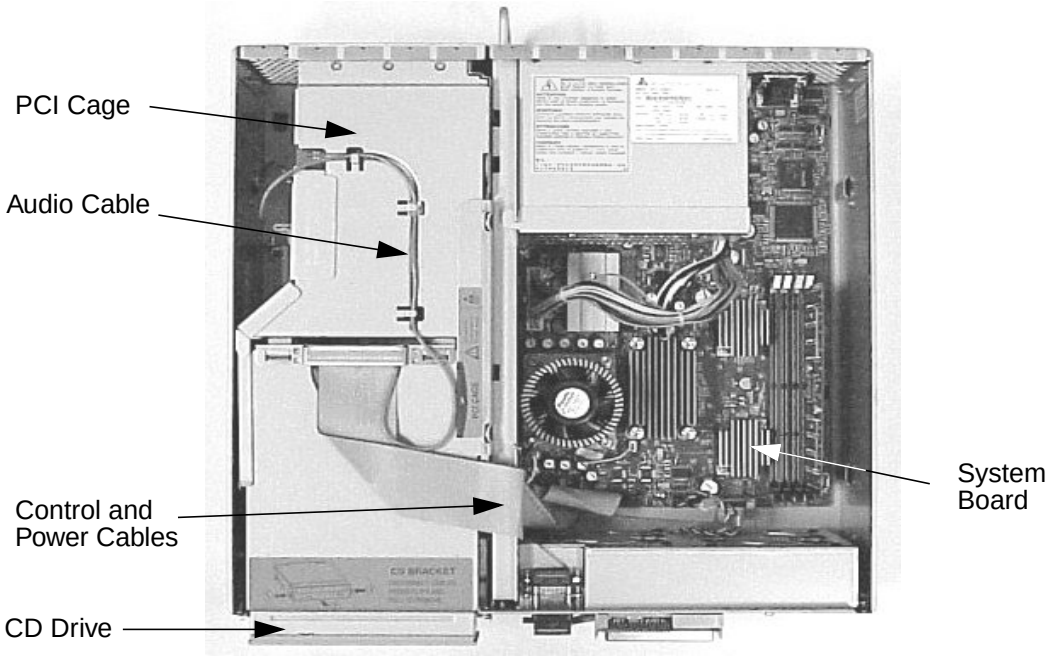
them. See Figure 3-87.

Figure 3-87. Dressing the CD Drive Cables



9. Insert the CD drive into the workstation. Next, reconnect the power and control cables to the system board. The audio-extender cable must be connected to the audio cable and the audio cable must be routed above the PCI cage as shown. See Figure 3-88.

Figure 3-88. Insert the CD Drive into the Workstation and Connect Cables



10. Replace the workstations top cover and front bezel. To do this, read the section **"Replacing the Front Bezel and Top Cover"** found in this chapter.

11. Determine that your audio card replacement was successful. To do this read the section "Using Your Audio Card (Optional)" in Chapter 1 of the *Getting Started Guide* for the HP B2600 workstation.

Converting Your System for Desktop or Rack-Mount Use

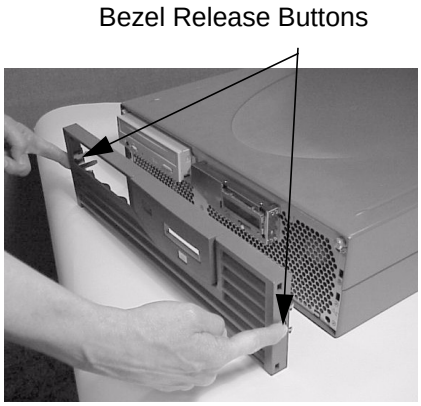
The HP B2600 workstation can be used as a desktop or a rack-mount system. This section covers how to convert your system from a desktop system to a rack-mount system and from a rack-mount system to a desktop system.

Converting Your Desktop System to a Rack-Mount System

To convert your desktop system to a rack-mount system, you will need to order the rack-mount kit (HP Part Number: A7228A) from your local HP Sales Representative. Next, follow this procedure:

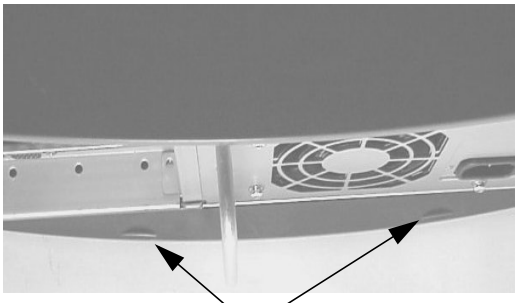
1. Press in on the release buttons located on both ends of the bezel to remove it. See Figure 3-89.

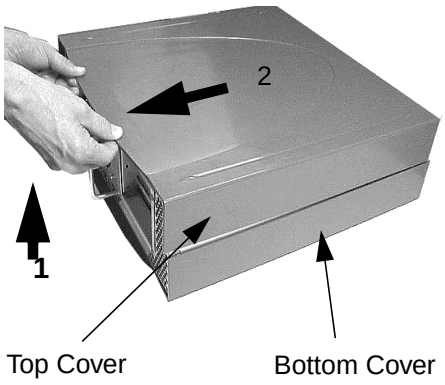
Figure 3-89. Front Bezel Removal



2. Remove the top and bottom plastic covers from the system by lifting up on the rear of the covers and pulling toward you. Note that there are two plastic ridges located beneath the top and bottom covers. These are the points where you should apply your lifting and pulling pressure. Also the system should be placed on a soft surface to avoid scratching the system covers. See Figure 3-90.

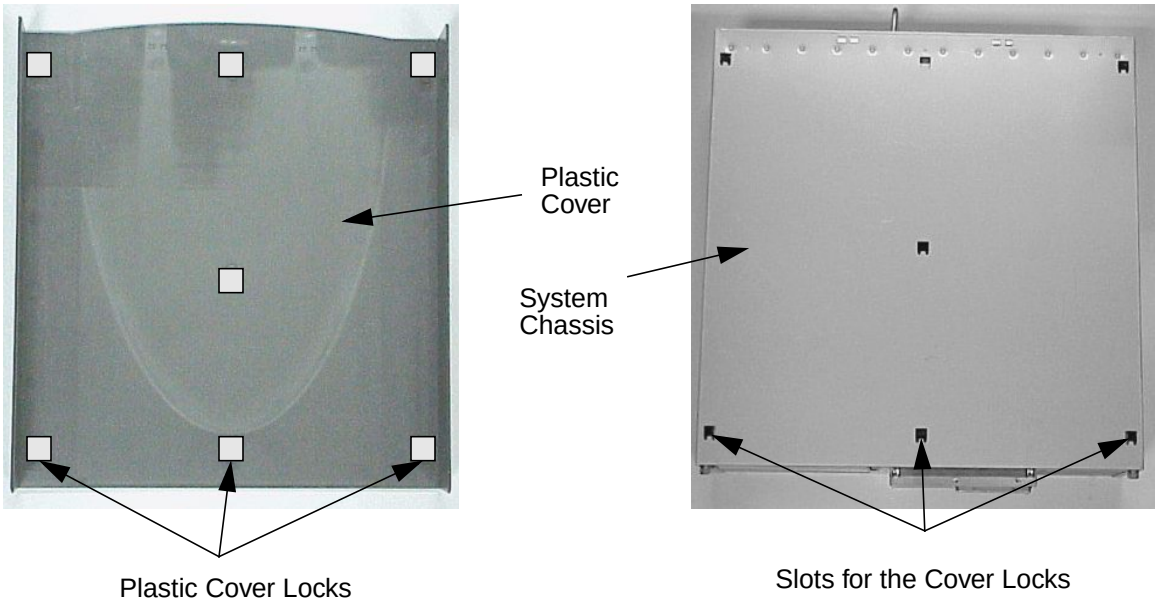
Figure 3-90. Removing the Top and Bottom System Covers





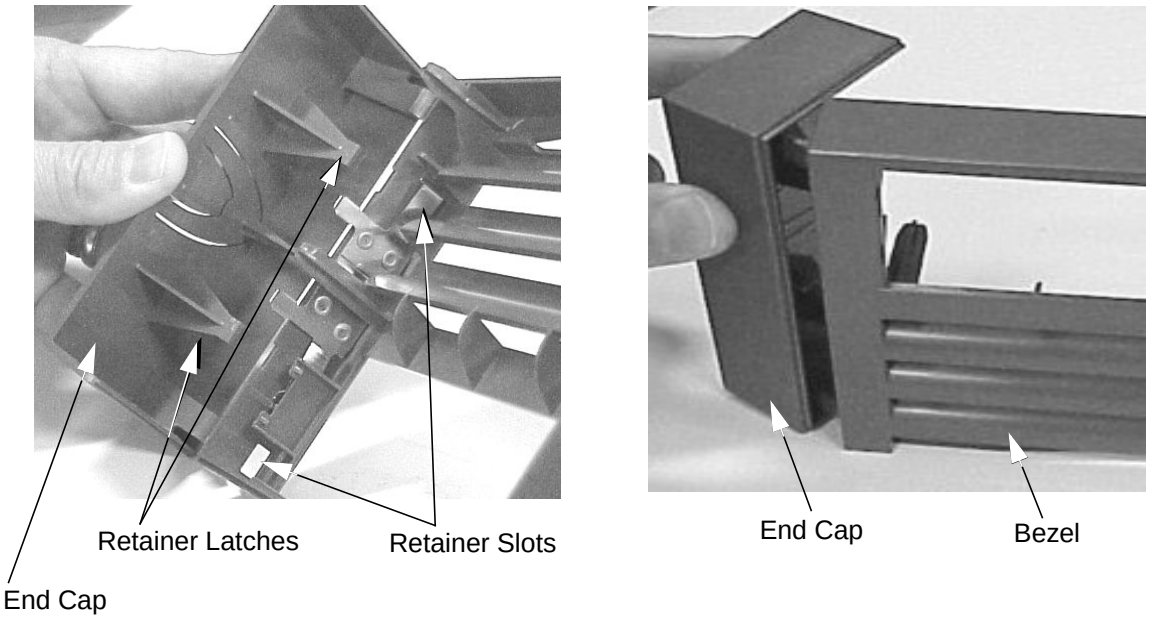
These seven cover locks hold the top and bottom covers to the system chassis. See Figure 3-91.

Figure 3-91. Plastic Cover Locks and their Slots on the System Chassis



3. Connect the end caps onto the front bezel by placing the retainer latches in their appropriate slots and rotating the end caps in place. See Figure 3-92.

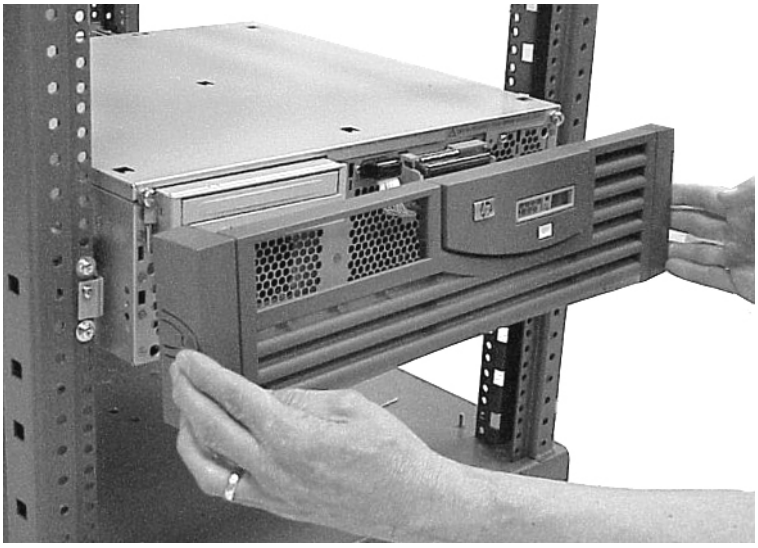
Figure 3-92. Connecting the End Caps Onto the Front Bezel



4. Push the bezel with its end caps onto the front of the system. You will feel it snap in

place. See Figure 3-93. Note that before the bezel and its end caps are placed on the system, the system must be installed in the rack as described in the rack installation instructions provided with your rack-mount kit.

Figure 3-93. Place the Bezel with End Caps on the System



5. Plug-in the workstation that you just rack mounted and set the fan speed. To set the fan speed, use the Boot Console Handler (bch) and follow this procedure.

   A. Turn on the system and press the **Tab** key until the select display message appears. You should select the display frequency and resolution that are best for you.

   B. Stop the boot process by pressing any key before the ten-second limit. This gets you to the bch **Main Menu**. You will only need to do this if you have `autoboot` turned on; otherwise, the system stops at the bch **Main Menu**. When the **Main Menu** prompt appears, type:

      ```
      Main Menu: Enter command > configuration
      ```

   C. Enter the following command at the **Configuration Menu** prompt:

      ```
      Configuration Menu: Enter command > FanChoice RackMount
      ```

   D. Return to the **Main Menu** and enter this command at the prompt to continue booting:

      ```
      Configuration Menu: Enter command > boot
      ```

Converting Your Rack-Mount System to a Desktop System

To convert your rack-mount system to a desktop system, you will need to order the desktop kit (HP Part Number A7227A) from you local HP Sales Representative. Next, follow this procedure:

1. Unplug the workstation and reverse the procedure in the section “Converting Your Desktop System to a Rack-Mount System” in this chapter. You will need to complete steps 4 through 1 (respectively). Note that step 4 requires the use of the rack-mount instructions that came with your desktop kit.
2. Complete step 5 in the section “Converting Your Desktop System to a Rack-Mount System” in this chapter, but at the **Configuration Menu** prompt in step C, type:

```
Configuration Menu: Enter command > FanChoice DeskSide
```

4 Boot Console Handler

This chapter explains how to use the Boot Console Handler, which provides an interactive environment after the power-on sequence in HP B2600 workstations.

Chapter Overview

This chapter contains the following main sections:

- Boot Console Handler Features
- Accessing the Boot Console Handler
- Boot Console Menus
- Booting the Workstation
- Searching for Bootable Media
- Resetting the Workstation
- Displaying and Setting Paths
- Displaying and Setting the Monitor Type
- Displaying the Current Memory Configuration
- Displaying the Status of the I/O Slots
- Setting the Auto Boot and Auto Search Flags
- Displaying and Setting the Security Mode
- Displaying and Setting Fastboot Mode
- Displaying the LAN Station Address
- Displaying System Information
- Displaying PIM Information
- Using Remote Power-On
- Setting the Fan Speed
- Stable Storage
- ISL Environment

Boot Console Handler Features

There are times when you want to interact directly with the B2600 workstation before it boots the operating system. These workstations provide a menu-driven Boot Console Handler that allows you to perform special tasks, display information, and set certain system parameters, even if the operating system is unavailable.

Here are some of the things you can do:

- Boot the workstation
- Search for bootable media
- Reset the workstation
- Display and set boot paths
- Display and set the monitor type
- Display memory configuration information
- Display the status of the I/O slots
- Set Auto Boot, Auto Search, and Auto Start
- Display and set Security mode
- Set Fastboot
- Display LAN information
- Display system information
- Display PIM information
- Use Remote Power-On
- Set the Fan Speed

NOTE All of the tasks in the Boot Console Handler should be performed by a system administrator with superuser (`root`) login permission.

Accessing the Boot Console Handler

To access the Boot Console Handler, follow these steps:

1. Close any files and applications on the workstation.
2. Press the power switch on the front panel of the workstation to power it off.

NOTE There is no need to manually shut down the HP-UX operating system on the workstation before powering it off. When you press the power switch, the workstation automatically shuts down the operating system before terminating the power.

   Make sure you do not unplug the workstation's power cord or otherwise interrupt power to the workstation at this time.

3. Power on the workstation after the system has completely shut down.

   If `auto boot` is turned off, the boot sequence automatically stops at the boot console Main Menu.

   If `auto boot` is turned on, you will see the following message:

   ```
   Processor is starting auto boot process. To discontinue, press any key
   within 10 seconds.
   ```

   If `auto boot` and `auto search` are both turned on, you will see the following message:

   ```
   Processor is booting from first available device. To discontinue, press
   any key within 10 seconds.
   ```

NOTE If you are using a power-saving monitor, you will have less than 10 seconds from the time this message appears to press a key.

4. Press a key. You will then see the following message:

   ```
   Boot terminated
   ```

   The Main Menu of the Boot Console Handler appears.

Boot Console Menus

The boot console menus follow, showing the various tasks you can perform and the available information.

The shortened version of each command is indicated by the uppercase letters.

Help is available for all the menus and commands by using either help, he, or ? and the menu or command for which you want help.

```
------ Main Menu --------------------------------------

Command                              Description

-------                              -----------

BOot [PRI|ALT|<path>]                Boot from specified path
PAth [PRI|ALT|CON|KEY [<path>]]      Display or modify a path
SEArch [DIsplay|[[IPL] [<path>]]]    Search for boot devices

COnfiguration [<command>]            Access Configuration menu/commands
INformation [<command>]              Access Information menu/commands
SERvice [<command>]                  Access Service menu/commands

DIsplay                              Redisplay the current menu
HElp [<menu>|<commands>]             Display help for menu or command
RESET                                Restart the system

Main Menu: Enter command >
```

```
------ Configuration Menu -----------------------------

Command                          Description
-------                          -----------

AUto [BOot|SEArch|STart][ON|OFF]Display or set specified flag
BootID [<proc> [<boot ID>]]      Display or modify processor boot ID
BootINfo                         Display boot-related information
CPUconfig [<proc>[ON|OFF]]       Config/deconfig processor
DEfault                          Set the system to predefined values
FanChoice [DeskSide|RackMount]   Display or set the fan preference

FastBoot [ON|OFF]                Display or set boot tests execution
LanConfig [<config_type>]        Display or set LAN configuration
MOnitor [LIST|[<path> <type>]]   Change the current monitor type
PAth [PRI|ALT|CON|KEY [<path>]]  Display or modify a path
PreviousPower [ON|OFF]           Set previous power state
SEArch [DIsplay|[[IPL][<path>]]  Search for boot devices
SECure [ON|OFF]                  Set/show security mode
TIme [c:y:m:d:h:m:[s]]           Read or set real time clock in GMT

BOot [PRI|ALT|<path>]            Boot from specified path
DIsplay                          Redisplay the current menu
HElp [<menu>|<command>]          Display help for menu or command
RESET                            Restart the system
MAin                             Return to Main Menu
-----
Configuration Menu: Enter command >
```

```
------ Information Menu -------------------------------

Command                  Description
-------                  -----------

ALL                      Display all system information
BootINfo                 Display boot-related information
CAche                    Display cache information
ChipRevisions            Display revisions of VLSI and firmware
COprocessor              Display coprocessor information
FwrVersion               Display firmware version
IO                       Display I/O interface information
LanAddress               Display built-in system LAN address
MEmory                   Display memory information
PRocessor                Display processor information
SysConfig                Display the system configuration
WArnings                 Display selftest warning messages

BOot [PRI|ALT|<path>]    Boot from specified path
DIsplay                  Redisplay the current menu
HElp [<menu>|<command>] Display help for menu or command
RESET                    Restart the system
MAin                     Return to Main Menu
------
Information Menu: Enter command >
```

```
------ Service Menu ---------------------------------

Command                          Description
-------                          -----------

ChassisCodes [<proc>|ON|OFF]     Display/enable/disable chassis codes
CLEARPIM                         Clear (zero) the contents of PIM
EepromRead [<addr> [<len>]]      Read EEPROM locations
MemRead <addr>[<len>] [<type>]   Read memory locations
PciDelay [<value>]               Display or set PCI delay value
PDT [CLEAR]                      Display or clear the Page
                                 Deallocation Table
PIM [<proc>] [HPMC|LPMC|TOC]     Display PIM information

RemotePower [ON|OFF]             Display/enable/disable remote power
ScRoll [ON|OFF]                  Display or change scrolling ability

BOot [PRI|ALT|<path>]            Boot from specified path
DIsplay                          Redisplay the current menu
HElp [<menu>|<command>]          Display help for menu or command
RESET                            Restart the system
MAin                             Return to Main Menu
-----
Service Menu: Enter command >
```

Booting the Workstation

You usually start a workstation by turning it on and waiting for HP-UX to boot automatically. However, you may not always want the usual boot sequence to occur.

For example, you may want to start the workstation from an operating system that is stored on a device that is different from the usual boot device. If the normal operating system kernel or the disk on which it resides becomes damaged or unusable, you may wish to boot from a different disk or perhaps from another type of device, such as a CD ROM drive.

Here are some possible booting scenarios you may encounter:

- If you know which device you want to boot from, and you know that it contains a bootable operating system, follow the directions in "Accessing the Boot Console Handler" on, and then type the following at the prompt:

  ```
  Main Menu: Enter command > boot device [Enter]
  ```

  where device is the hardware path to the device, specified in Mnemonic Style Notation. For example, if you wish to boot an operating system that is stored on an IDE CD ROM drive, you would type the following command at the prompt:

  ```
  Main Menu: Enter command > boot IDE [Enter]
  ```

- If you do not know which device you want to boot from, then type the following at the prompt:

  ```
  Main Menu: Enter command > search [Enter]
  ```

  A message similar to the following will be displayed:

  ```
  Path Number    Device Path      Device Type
  -------------  -------------    ------------

  P0             IDE              TEAC CD-532E-B
  P1             FWSCSI.6.0       SEAGATE ST39102LC
  ```

  At the prompt, you might type the following:

  ```
  Main Menu: Enter command > boot P1 [Enter]
  ```

  Note that the operating system on the specified device (P1) is used to boot the system (also see the next section, "Searching for Bootable Media").

- If you wish to interact with the Initial System Loader (ISL) before booting the workstation, follow the directions in the section "Accessing the Boot Console Interface" found in this chapter, and type the following at the prompt:

  ```
  Main Menu: Enter command > boot device [Enter]
  ```

  The following prompt will appear:

  ```
  Interact with ISL (Y,N,Q)>
  ```

  Answering yes (Y) causes the ISL to be loaded from the specified device. After a short time, the following prompt appears on the screen:

  ```
  ISL>
  ```

  ISL is the program that actually controls the loading of the operating system. By interacting with ISL, you can choose to load an alternate version of the HP-UX operating system. If you do not want to interact with ISL, you must enter no (N).

  For example, if the usual kernel (/stand/vmunix) on the root disk (fwscsi.6.0) has become corrupted, and you wish to boot the workstation from the backup kernel (/stand/vmunix.prev), type the following at the ISL> prompt:

  ```
  ISL> hpux /stand/vmunix.prev [Enter]
  ```

- If you do not know which media in the file systems have bootable operating systems, you can find them with the search ipl command. See the next section, "Searching for Bootable Media."

Searching for Bootable Media

To list all devices that contain bootable media, follow the directions in the section "Accessing the Boot Console Handler" found in this chapter, and type the following at the prompt:

```
Main Menu: Enter command > search ipl [Enter]
```

The `search` command searches all buses. The search may turn up more devices than there are lines on the display. If you are using a text terminal, you can control the progress of the search from the terminal's keyboard by doing any of the following:

- To temporarily suspend the search, press `[Ctrl]-[S]`.
- To continue the search, press `[Ctrl]-[Q]`.
- To halt the search, press any other key.

These flow-control commands do not work with a bit-mapped display, but such a display can show more than forty lines of text, so you are unlikely to need them.

To search for devices of just one type that actually contain bootable media, follow the directions in the section "Accessing the Boot Console Handler" found in this chapter, and then type the following at the prompt:

```
Main Menu: Enter command > search ipl device_type [Enter]
```

where *`device_type`* is one of the following:

- `fwscsi` is the internal, Wide LVD (Low Voltage Differential) SCSI bus.
- `disk` is any non-LAN interface.
- `lan` is all connections to the built-in LAN.
- `ide` is the built-in CD ROM drive.
- `pci`*`n`* is an optional SCSI interface in slot number *n*.

For more information about the `search` command, type the following at the prompt:

```
Main Menu: Enter command > help search [Enter]
```

Resetting the Workstation

To reset the workstation to its predefined values, follow the directions in the section "Accessing the Boot Console Handler" found in this chapter, and type the following at the prompt to access the Configuration Menu:

```
Main Menu: Enter command > co [Enter]
```

When the Configuration Menu appears, type the following at the prompt:

```
Configuration Menu: Enter command > default [Enter]
```

Then type the following at the prompt:

```
Configuration Menu: Enter command > reset [Enter]
```

Displaying and Setting Paths

A path is the hardware address of a device that is attached to the I/O system of a workstation. The `path` command sets the system paths shown in Table 4-1.

The `path` command sets and displays the hardware address of a specified device attached to the I/O bus of the workstation.

Table 4-1. System Paths

Path Type	Device
`primary` or `pri`	The workstation's default boot device (usually the root disk)
`alternate` or `alt`	The workstation's alternate boot device (usually a DDS-format tape device)
`console` or `con`	The workstation's primary display device
`keyboard` or `key`	The workstation's primary ASCII input device

To display the current settings for the system paths, type the following at the prompt:

```
Main Menu: Enter command > path [Enter]
```

The paths are displayed in Mnemonic Style Notation, as shown in Table 4-2.

Table 4-2. Mnemonic Style Notation

I/O Type	Specification Format
Internal LVD SCSI	`fwscsi.scsi_address.logical_unit_number`
Built-in LAN	lan.server_address.init_timeout.io_timeout
Optional SCSI	`pci`*`n`*`.scsi_address.logical_unit_number`
Built-in IDE	`IDE`

To display the current setting for a particular system path, follow the directions in the section "Accessing the Boot Console Handler" found in this chapter, and type the following at the prompt:

```
Main Menu: Enter command > path path_type [Enter]
```

where *`path_type`* is one of the path types listed in Table 4-1.

For example, to get the path to the primary boot device, follow the directions in the section "Accessing the Boot Console Handler" found in this chapter, and type the following at the prompt:

```
Main Menu: Enter command > path primary [Enter]
```

To set a system path to a new value, follow the directions in the section “Accessing the Boot Console Handler” found in this chapter, and type the following at the prompt:

```
Main Menu: Enter command > path path_type path [Enter]
```

where *path_type* is one of the path types listed in Table 4-1. and *path* is the specification of the path in Mnemonic Style Notation (as described in Table 4-2.). For example, to set the primary boot path to a FWSCSI disk with an ID of 6.0, follow the directions in “Accessing the Boot Console Handler” on, and then type the following at the prompt:

```
Main Menu: Enter command > path pri fwscsi.6.0 [Enter]
```

Displaying and Setting the Monitor Type

The workstation ships from the factory preset to use a monitor with a specific resolution and frequency. If the workstation's monitor is replaced with a different type of monitor, you may have to reconfigure the workstation to support the new monitor.

The Monitor Command

The `monitor` command lets you change the workstation's graphics configuration. This command is available in the Configuration Menu of the Boot Console Handler.

NOTE The `monitor` command lets you change a workstation's graphics configuration before you replace the monitor. For information about changing the configuration after you replace the monitor, go to the section "Setting the Monitor Type at Power On" found in this chapter.

To display the current graphics and console information, type the following set of commands:

```
Main Menu: Enter command > configuration [Enter]
Configuration Menu: Enter command > monitor [Enter]
```

The correct usage for setting the graphics configuration is:

```
Configuration Menu: Enter command > monitor graphics_path type [Enter]
```

where valid *graphics_path* parameters are:

- *graphics(1)* - Graphics adapter installed in slot 1
- *graphics(2)* - Graphics adapter installed in slot 2
- *graphics(3)* - Graphics adapter installed in slot 3
- *graphics(4)* - Graphics adapter installed in slot 4

NOTE No blanks or spaces may be used in the *graphics_path*.

type is the numerical monitor type as shown with the monitor list command. See the section "Setting the Monitor Type" found in this chapter for a list of types. For example, a graphics card installed in option slot 1 would be *graphics(1)*.

Displaying the Current Monitor Configuration

To display the current monitor configuration for the workstation from the Configuration Menu of the Boot Console Handler, follow the directions in the section "Accessing the Boot Console Handler" found in this chapter. Once you are in the Boot Console Handler's Main Menu, type:

```
Main Menu: Enter command > configuration [Enter]
```

This places you in the Configuration Menu. From here, type:

```
Configuration Menu: Enter command > monitor [Enter]
```

This displays a list of the current graphics adapters and their monitor types configured for the workstation. For example:

```
MONITOR INFORMATION
 Path         Slot  Head    HPA          Resolution    Freq   Type    Class
----------   ----  ----   ----------   ----------     ----   ----   -------
GRAPHICS(1)   1      1     fffa000000    1600x1200      75Hz     8     PCI
Configuration Menu: Enter command >
```

In this example, only the graphics adapter (located in slot 1) `GRAPHICS(1)` is configured. The monitor type for `GRAPHICS(1)` is set to type 8, which (for this graphics adapter) is a 1600x1200 monitor that uses a frequency of 75 Hz.

Setting the Monitor Type

You can set the monitor type for a graphics adapter by typing the following:

```
Configuration Menu: Enter command > monitor graphics(n) tt [Enter]
```

where *n* is the number of the graphics adapter and *tt* is the monitor type.

To display a list of supported monitors that are used by a graphics card, type the following:

```
Configuration Menu: Enter command > monitor list [Enter]
```

A list of valid monitor types similar to the following is displayed.

NOTE Each graphics adapter will have a different list of valid monitor types. The meaning of any monitor type will therefore differ for each graphics adapter.

```
MONITOR INFORMATION

Path        Slot Head Type    Size     Freq Class
----        ---- ---- ----  --------- ---- -----
GRAPHICS(1)  1    1    1   1280x1024 75Hz PCI
GRAPHICS(1)  1    1    2   1280x1024 75Hz PCI, Double buffered
GRAPHICS(1)  1    1    3   1280x1024 75Hz PCI, Greyscale
GRAPHICS(1)  1    1    4   1280x1024 75Hz PCI, Double buffered, Greyscale
GRAPHICS(1)  1    1    5   1280x768  75Hz PCI
GRAPHICS(1)  1    1    6    800x600  75Hz PCI
GRAPHICS(1)  1    1    7    640x480  75Hz PCI
GRAPHICS(1)  1    1    8   1600x1200 75Hz PCI
GRAPHICS(1)  1    1    9   1600x1200 75Hz PCI, Greyscale
GRAPHICS(1)  1    1   10   1200x1600 75Hz PCI
GRAPHICS(1)  1    1   11   1200x1600 75Hz PCI, Greyscale
GRAPHICS(1)  1    1   12   1280x1024 72Hz
GRAPHICS(1)  1    1   13   1280x1024 72Hz Double buffered
GRAPHICS(1)  1    1   14    640x480  60Hz
GRAPHICS(1)  1    1   15   ---------- user defined -----------

Configuration Menu: Enter command >
```

To set the monitor type for `GRAPHICS(1)` to monitor type 8, type the following:

```
Configuration Menu: Enter command > monitor graphics(1) 8 [Enter]
```

This will take effect on the next reboot or reset of the workstation.

```
MONITOR INFORMATION
Path         Slot  Head   HPA         Resolution  Freq   Type    Class
---------- ----  -----  ---------  ---------  ----   ----   -------
GRAPHICS(1)   1     1    fffa000000   1600x1200  75Hz     8      PCI
```

The new monitor selection will either take effect the next time you reboot the workstation if this is a non-console monitor, or immediately if this is a console monitor. The boot console also displays the new monitor information.

Trying to change the monitor type to a number not listed for that graphics device fails and gives you the following warning message:

```
Value of monitor type n out of range (n - nn)
```

NOTE Changing the monitor type on an empty slot works; the monitor type will be saved for a future graphics card.

Setting the Monitor Type at Power On

If you replace a workstation's monitor with a different monitor type, and do not set the workstation's graphics parameters by using the monitor command before doing so, you may need to perform the following if your screen is blank.

Cycle the power to the workstation. Wait 2 seconds after the Num Lock light flashes near the end of the boot sequence, and then press [Tab] to initiate the automatic monitor selection process. If the screen remains blank after two minutes, however, see the "Troubleshooting Monitor Problems" subsection on the next page.

NOTE It takes approximately one minute after powering on the workstation before the Num Lock light flashes.

The system cycles through the available monitor types one at a time. When you see a message similar to the following, and it is the correct monitor type, select the monitor type by pressing [Enter]:

```
MONITOR INFORMATION
Path          Slot  Head   Type      Size        Freq   Type   Class
----------    ----  ----   -------   ---------   -----  ----   ------
GRAPHICS(1)     1     1      n         nnnnxnnnn   nnHz     8      PCI
Press [RETURN] to select this monitor type (type n of n types)
```

The system queries you to confirm your selection. Press Y (yes) to save this monitor type.

If you press any key other than Y, the following message is displayed:

```
Monitor type not saved.
```

At this point, the new monitor type is active, but not saved. Because you did not save the monitor type, the next time you reboot the workstation the original monitor type will be used.

Next, the following message is displayed:

```
To select a new Graphics Monitor Type press the <TAB> key now, otherwise
EXIT by entering any other key (or will time out in 15 seconds)...
```

To restart the monitor selection process, press [Tab].

Troubleshooting Monitor Problems

In the event that the console stops displaying to the graphics device, use the following procedure to set the console for displaying to an external terminal:

1. Turn off the workstation's power.
2. Disconnect the USB keyboard connector from the rear panel.
3. Connect a serial terminal emulator to the Serial 1 port on the rear panel. Configure the terminal for: 9600 baud, No Stop Bits, No Parity, and 8 Bits.
4. Power on the workstation. The system will now display the console to the terminal connected to Serial 1 port. Note that you can use a 9-pin to 9-pin serial cable (HP Part Number F1044-80002) to connect an HP OmniBook serial port to the workstation.
5. Set the monitor type and path using the Boot Console Handler.

Changing the Console to an External Terminal

In the event that the console stops displaying to the graphics device, use the following procedure to display the console to an external Serial terminal so that you can configure the graphics console:

1. Turn off the workstation's power.
2. Disconnect the USB keyboard connector from the rear panel.
3. Connect a Serial terminal to the Serial 1 port on the rear panel. Configure the terminal for: 9600 baud, No Stop Bits, No Parity, and 8 Bits.
4. Power on the workstation.

The workstation will now display the console to the terminal connected to the Serial 1 port.

Displaying the Current Memory Configuration

The following sample screen output uses the `memory` command to show a memory configuration table with properly-installed and configured memory.

To display the current memory configuration for a workstation, first follow the directions in the section “Accessing the Boot Console Handler” found in this chapter. Once you are in the Boot Console Handler’s Main Menu, type the following:

```
Main Menu: Enter command > information [Enter]
```

This places you in the Information Menu. From here, type the following:

```
Information Menu: Enter command > memory [Enter]
```

The screen displays status and configuration information for the memory DIMMs installed in the workstation. The following sample shows the memory information when memory DIMMs are properly installed and configured.

```
MEMORY INFORMATION


  MEMORY STATUS TABLE


  Slot    Size       Status
  ----   ------      -------------
   0       1GB       Active
   1       1GB       Active
   2       1GB       Active
   3       1GB       Active


  TOTAL MEMORY = 4096MB
```

Displaying the Status of the I/O Slots

The `IO` command lets you identify all built-in I/O devices and optional I/O devices installed in the option slots. It is available in the Information Menu.

To use the `IO` command from the Information Menu of the Boot Console Handler, type the following:

```
Information Menu: Enter command > io [Enter]
```

Information about the built-in and optional I/O devices is displayed. For example:

```
I/O MODULE INFORMATION

                                                              IODC  IODC
Path          Decimal     Type          Location  HVER  SVER  Vers  Dep
----          -------     ----          --------  ----  ----  ----  ---
LAN           10/0/12/0   Ethernet      built-in  0060  a200  0x02  0x00
IDE           10/0/14/0   IDE           built-in  0060  a300  0x00  0x00
SUPERIO MISC 10/0/14/0   Bridge Device built-in
SERIAL_1      10/0/14/1/1 RS232 port    built-in  0060  8c00  0x01  0x00
SERIAL_2      10/0/14/1/2 RS232 port    built-in  0060  8c00  0x01  0x00
PARALLEL      10/0/14/1/3 Parallel Port built-in
USB           10/0/14/2   USB           built-in  0060  a900  0x95  0x00
SCSI          10/0/15/0   SCSI          built-in  0060  a300  0x00  0x00
FWSCSI        10/0/15/1   SCSI          built-in  0060  a300  0x00  0x00
GRAPHICS(2)   10/4/2/0    HPA4982B      slot 2    0070  8500  0x01  0x00

Main Menu: Enter command >
```

Setting the Auto Boot and Auto Search Flags

The auto boot and auto search flags are variables stored in the system's non-volatile memory. (Non-volatile memory retains its contents even after power is turned off.) If you reset these flags to new values, the change takes effect the next time you reboot the workstation.

To examine the state of the auto boot and auto search flags, type the following:

```
Configuration Menu: Enter command > auto [Enter]
```

If auto boot is set to on, the workstation automatically attempts to boot the operating system when powered on. If auto boot is set to off, the workstation enters the boot administration mode of the Boot Console Handler.

The state of the auto search flag determines how the workstation seeks a boot device during autoboot. If auto search is set to on, the workstation will search for other boot devices if the primary boot device is not available. If auto search is off, the workstation will default to the boot administration mode if it can't see the primary boot device.

To change the state of the auto boot or auto search flags, type either:

```
Configuration Menu: Enter command > auto boot state [Enter]
```

OR:

```
Configuration Menu: Enter command > auto search state [Enter]
```

where *state* is on or off.

Note that if the autostart flag is off, autoboot and autosearch will be inhibited in the event system degradation of performance is found.

Displaying and Setting the Security Mode

The secure flag is a variable stored in non-volatile memory. (Non-volatile memory retains its contents even after power is turned off.) If you reset this flag to a new value, the change takes effect the next time you reboot the workstation.

When the secure flag is set to on, auto boot and auto search are enabled and cannot be stopped. The workstation boots from the default boot paths regardless of user intervention.

To display the current setting for the secure flag, type the following:

```
Configuration Menu: Enter command > secure [Enter]
```

To set the secure flag on, type the following:

```
Configuration Menu: Enter command > secure on [Enter]
```

To set the secure flag off, you need to disconnect all possible boot devices to interrupt the boot sequence and force the prompt to the Boot Console Handler. Next, type the following:

```
Configuration Menu: Enter command > secure off [Enter]
```

Displaying and Setting Fastboot Mode

When `fastboot` is enabled (set to `on`), the workstation does a quick check of the memory and skips some processor selftests during its power-on selftests. This enables the workstation to complete its boot process quicker. The default factory setting is for `fastboot` to be enabled (set to `on`).

When `fastboot` is disabled (set to `off`), more extensive memory and processor testing is performed during the selftests, causing the boot process to take longer.

If you are experiencing difficulty in booting the workstation, set `fastboot` to `off` and reboot the system. The more extensive testing may reveal the error condition.

To display the status of `fastboot`, type the following:

```
Configuration Menu: Enter command > fastboot [Enter]
```

To disable `fastboot`, type the following:

```
Configuration Menu: Enter command > fastboot off [Enter]
```

To enable `fastboot`, type the following:

```
Configuration Menu: Enter command > fastboot on [Enter]
```

Displaying the LAN Station Address

It is sometimes necessary to supply the LAN station address of the workstation to other users. For example, if the workstation is to become a member of a cluster, the cluster administrator needs to know the LAN station address in order to add the workstation to the cluster.

A LAN station address is the label that uniquely identifies the LAN connection for the workstation at the link level (the hardware level).

To display the workstation's LAN station address, type the following:

```
Information Menu: Enter command > lanaddress [Enter]
```

The LAN station address is displayed as a twelve-digit number in hexadecimal notation, similar to the following:

```
LAN Station Addresses:       001083-000429
```

The address is for the workstation's built-in LAN interface.

Displaying System Information

The `all` command allows you to display the system's processor revision and speed, cache size, memory size, flag settings, and the boot and console paths. To display system information, from the Information Menu type the following:

```
Information Menu: Enter command > all [Enter]
```

This information is paged to allow you to view it as necessary, unless the `ScRoll` command has been used to disable scrolling.

Displaying PIM Information

The `pim` command allows you to display the most recent Processor Internal Memory (PIM) information for the specified fault type. To display PIM information for a specific fault, from the Service Menu, type the following:

```
Service Menu: Enter command > pim processor_number fault_type [Enter]
```

Using Remote Power-On

The B2600 workstation has a remote power-on feature that allows you to power up and shut down your workstation remotely through the Serial 1 port. The RS232 receive line is monitored by the system board Remote Power Controller (RPC). This controller responds to the following commands:

Press:	Type:	Description
Esc	`rsys^on`	Turns the system on
Esc	`rsys^off`	Turns the system off
Esc	`rsys^ton`	Turns the system off without soft-power down
Esc	`pic^sleep`	Causes RPC to stop responding to commands

If the remote-power jumper is set to the enable position (factory default), the Remote Power Controller will always be able to turn on a system the first time AC power is applied. Once the system is powered up, further command processing will depend on the state of the firmware's "remote power" bit, which is set using the Boot Console Handler. If the remote power bit is set to ON, the Remote Power Controller will continue to process commands only if the Remote Power Controller has not been put into the sleep mode. If the remote power bit is set to OFF, the Remote Power Controller will not respond to commands.

If the Remote Power Controller has been placed in the sleep mode, you can re-enable the Remote Power Controller by following this procedure:

1. Reboot your workstation. If `auto boot` is turned off, the boot sequence automatically stops at the boot console Main Menu. If `auto boot` is turned on, you will see the following message:

   ```
   Processor is starting auto boot process. To
   discontinue, press any key within 10 seconds.
   ```

   If `auto boot` and `auto search` are both turned on, you will see the following message:

   ```
   Processor is booting from first available de-
   vice. To discontinue, press any key within 10
   seconds.
   ```

NOTE If you are using a power-saving monitor, you will have less than 10 seconds from the time this message appears to press a key.

2. Press any key. You will then see the message:

   ```
   Boot terminated
   ```

   The Main Menu of the boot console appears.
3. At the Main Menu prompt, type the following and press **Enter**:

   Main Menu: Enter command > service

4. Turn remote power off by typing the following at the prompt and press **Enter**:

   Service Menu: Enter command > RemotePower OFF

   Next, turn remote power on by typing the following at the prompt and press **Enter**:

   Service Menu: Enter command > RemotePower ON

   The Remote Power Controller is now enabled.
5. Return to the Main Menu by typing the following at the prompt and press **Enter**:

   Service Menu: Enter command > main
6. Continue booting the system by typing the following at the prompt and press **Enter**:

   Main Menu: Enter command > boot
7. Answer "N" to the question, `INTERACT WITH IPL (Y,N,Q)?`

Troubleshooting Hint for an Unresponsive RPC

If the Remote Power Controller (RPC) is enabled and it seems to be unresponsive, press the **Enter** key several (approximately 15 times) times. You need to do this because the Remote Power Controller auto senses the baud rate at the beginning of each command (that is, when you press **Enter**). It does this by measuring the width of the start bit of the first character it sees. Because the Remote Power Controller does not know the difference between the beginning of a command or any other data that may occur on the receive line, the Remote Power Controller can set the baud rate to an incorrect value if the first character it sees has the lowest order bit or bits set. The Remote Power Controller has an input buffer of a fixed size; therefore, pressing the **Enter** key 15 or more times causes the buffer to overflow, resetting the Remote Power Controller. If the baud rate was set to some real extreme value, you may have to try this process several times.

Setting the Fan Speed

There are two fan speed settings available on the B2600 workstation. The `RackMount` fan speed is used for B2600s that are installed in a rack. The `DeskSide` fan speed is used for B2600s that are used as desktop systems. These fan speeds are set using the Boot Console Handler (bch). To set the fan speeds, follow the procedures discussed in this section.

Rack-Mount Fan Speed

If you currently have a desktop workstation that you want to convert to a rack-mount workstation, you need to change the workstation's fan speed. To do this, follow this procedure:

1. Turn on the workstation and press the **Tab** key until a select display message appears. Select the display frequency and resolution that are best for your workstation.
2. Stop the boot process by pressing any key before the ten-second limit. This gets you to the Boot Console Handler's (bch) Main Menu. You will only need to do this if you have `autoboot` turned on; otherwise, the system stops at the bch Main Menu. When the Main Menu prompt appears, type:

   ```
   Main Menu: Enter command > configuration
   ```

3. Enter the following command at the Configuration Menu prompt:

   ```
   Configuration Menu: Enter command > FanChoice RackMount
   ```

4. Return to the Main Menu and enter this command at the prompt to continue booting:

   ```
   Main Menu: Enter command > boot
   ```

Desktop Fan Speed

If you currently have a rack-mount workstation that you want to convert to a desktop workstation, you need to change the workstation's fan speed. To do this, follow this procedure:

1. Turn on the workstation and press the **Tab** key until a select display message appears. Select the display frequency and resolution that are best for your workstation.
2. Stop the boot process by pressing any key before the ten-second limit. This gets you to the Boot Console Handler's (bch) Main Menu. You will only need to do this if you have `autoboot` turned on; otherwise, the system stops at the bch Main Menu. When the Main Menu prompt appears, type:

   ```
   Main Menu: Enter command > configuration
   ```

3. Enter the following command at the Configuration Menu prompt:

```
Configuration Menu: Enter command > FanChoice DeskSide
```

4. Return to the Main Menu and enter this command at the prompt to continue booting:

```
Main Menu: Enter command > boot
```

Initial System Loader (ISL) Environment

The ISL environment provides the means to load the operating system (HP-UX) environment. The ISL environment also provides an offline platform to execute optional diagnostic and utility programs from a boot device when HP-UX does not load.

The ISL program is the first program loaded into main memory from an external medium (LAN, disk, or tape) and launched by the initial program loader (IPL) routine from the Boot Administration environment.

The ISL environment provides the following capabilities:

- Execute user-entered commands to modify boot device paths and boot options in stable storage.
- Run offline diagnostic programs and utilities.
- Provide automatic booting of the HP-UX operating system after power-on or reset.

Invoking ISL from the Boot Console Handler

Perform the following steps to invoke ISL from the Boot Console Handler:

1. Follow the directions in the section “Accessing the Boot Console Handler” found in this chapter, and type the following at the prompt:

   ```
   Main Menu: Enter command > boot device [Enter]
   ```

   You are prompted:

   ```
   Interact with ISL (Y or N) > y [Enter]
   ```

2. Answering yes (y) causes the ISL to be loaded from the specified device. After a short time, the following prompt appears on the screen:

   ```
   ISL>
   ```

   ISL is the program that actually controls the loading of the operating system. By interacting with ISL, you can choose to load an alternate version of the HP-UX operating system.

   For example, if the usual kernel (`/stand/vmunix`) on the root disk has become corrupted, and you wish to boot the workstation from the backup kernel (`/stand/vmunix.prev`), type the following at the `ISL>` prompt:

   ```
   ISL> hpux /stand/vmunix.prev [Enter]
   ```

ISL User Commands

The following commands that are available in the ISL environment allow you to display and modify the boot characteristics of the system.

- `help` - lists ISL command menu and available utilities.
- `display` - displays the boot and console paths in Stable Storage and the current setting of the ISL Boot Flags.
- `primpath` - modifies the primary boot path entry in Stable Storage. The entry in Stable Storage for the primary boot device begins at byte address 0 and ends at 31.
- `altpath` - modifies the alternate boot path entry in Stable Storage. The entry for the alternate boot device begins at byte address 128 and ends at 159.
- `conspath` - modifies the console path entry in Stable Storage. The entry in Stable Storage for the console device begins at byte address 96 and ends at byte address 127. The entry for the keyboard and mouse devices begins at byte address 160 and ends at 191.
- `listautofl` or `lsautofl` - lists the contents of the (HP-UX) autoboot file.
- `support` - boots the Support Tape from the boot device.
- `readss` - displays 4 bytes (one word) from Stable Storage. The `readss` command requires a decimal number between 0 and 255 to address four bytes in Stable Storage.

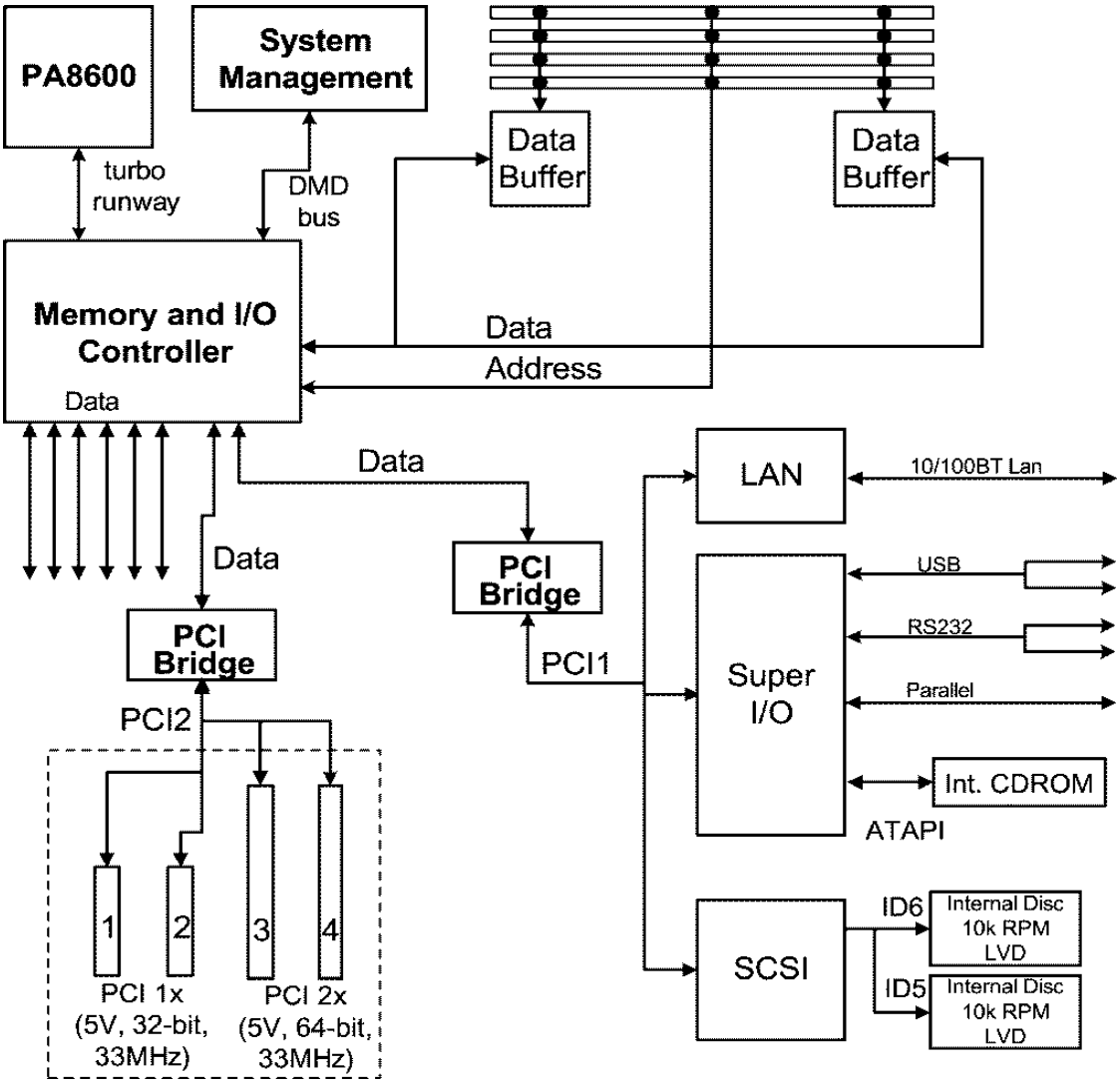
5 Block Diagram

This chapter contains the block diagram for the B2600 workstation's system board and PCI board.

System Board and PCI Board

The B2600 system is designed around a PA8600 processor and a Memory and I/O Controller. This system is segmented into a system board and a PCI backplane board (the area designated in the dotted lines). See Figure 5-1.

Figure 5-1. Block Diagram of the B2600's System Board and PCI Board



System Board

The system board subsystem consist of a processor, system management chip, memory controller and memory card slots, data buffers, address lines, data lines, I/O controller, PCI bridges, LAN chip, Super I/O controller and SCSI controller chip. A few of these system board components are discussed in the subsequent sections.

PA8600 Processor

This workstation uses a PA8600 processor running at 500 MHz. This processor has an on-chip L1 cache and does not have an L2 cache controller. The on-chip cache consists of a 0.5 MB I-cache and a 1 MB D-cache that are both four-way associative. The PA8600 consumes 80 watts (2.0V at 40A)) in a 544-pin LGA. Note that the PA8600 is socketed.

Memory and I/O Controller

The Memory and I/O Controller is a 664-pin ceramic LGA and generates about 20 watts. This chip communicates with the PA8600 processor via the 64-bit turbo runway bus. The Memory and I/O Controller chip transfers data on both edges of the 120 MHz clock giving a maximum peak/sustainable bandwidth of 1.9/1.5 GB per second to the processor.

The Memory and I/O Controller communicates with the I/O subsystem via data lines. A data line, in this context, is a 10-bit (18 total signals), 133 MHz point-to-point bus. The PCI bridge chips can convert one data line to a PCI 1x or PCI 2x bus and it can convert two data lines to a PCI 4x bus. The B2600 uses two data lines and two PCI bridges in its I/O subsystem.

The Memory and I/O Controller chip communicates to the memory using separate address and data buses.

Memory Components

The B2600 uses a 120 MHz synchronous DRAM memory subsystem. This workstation supports four DIMMs using one Memory and I/O Controller and two data buffers. The address bus connects the Memory and I/O Controller directly to the DIMMs. The two data buffer chips split the single high-speed data buses from the Memory and I/O Controller chip into two slower (single edge of 120 MHz clock) data buses that can support up to four DIMMs per bus. The B2600 only uses one of these data buses. The high-speed data bus connects the Memory and I/O Controller chip and the data buffers clocks on both edges and has a maximum peak/sustainable bandwidth of 1.9/1.5 GB per second.

DIMMs need not be installed in pairs. The B2600 will support 256 MB, 512 MB and 1 GB DIMMs. Installing four 256 MB DIMM cards allows the B2600 to reach a maximum memory capacity of 1 GB. Using four 512 MB DIMM cards allows the B2600 to reach a maximum memory capacity of 2 GB, and using four 1 GB DIMM cards allows you to reach a maximum memory capacity of 4 GB.

System Management Component

The System Management chip includes the following functions and internal hardware:

Functions

- Hardware semaphore support
- Software reset control
- Serial Presence Detect (SPD) bus
- Fan control
- Power switch monitoring
- Power supply on/off control
- Remote power on/off control.

Hardware

- ASCI
- Front panel display interface
- Flash memory (2 MB)
- Non-volatile storage (128 KB)
- Scratch RAM (128 KB)
- Miscellaneous Memory and I/O Controller Registers
- LDB port
- PIC for remote power on/off control.

Core I/O Subsystem

The core I/O devices are on a PCI 1x bus (5V, 33 MHz) provided by one PCI bridge chip. Graphics is not be included within the core I/O functionality. Core I/O functions include:

- LAN 10/100 BaseT (DEC programming model)
- Wide Ultra2 SCSI (Low Voltage Differential)
- ATAPI interface for CD-ROM
- Universal Serial Bus (USB). Two ports are supplied, one each for a keyboard and mouse.
- Two serial ports (based on 16550 model). One serial port supports remote power on/off.
- Parallel port (IEEE 1284)
- Real-time clock (compatible with DS1287 and MC176818 models).

A PCI-based Super I/O chip will be used to supply the USB, serial, parallel and real-time clock functions.

A Symbios SCSI controller chip will supply the LVD Ultra2 SCSI bus.

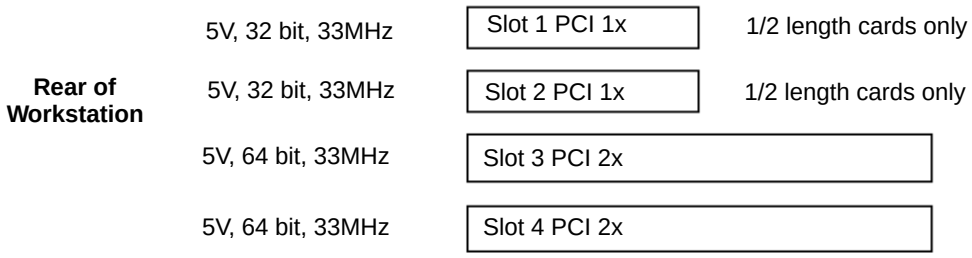
Audio will be provided by an optional add-in PCI card. The audio features supported are based on a simple business class audio model.

The 10/100 BaseT LAN interface is provided via a Digital Semiconductor PCI based MAC chip.

PCI Back-Plane Board

The B2600 includes four I/0 expansion slots that allow functionality beyond the core I/O functions. The four I/O slots are all PCI slots. Two of the slots are 5V, 32-bit, 33MHz, PCI 1x capable slots. The other two slots are 5V, 64-bit, 33MHz, PCI 2x capable slots. The two 32-bit slots will support half-length PCI cards. The two 64-bit slots will support full-length PCI cards. The physical configuration for the add-in slots in the B2600 is shown in Figure 5-2.

Figure 5-2. PCI Slots for the B2600 Workstation



A Regulatory Statements

This Appendix contains electromagnetic compatibility information and optical and acoustical statements.

Declaration of Conformity

according to ISO/IEC Guide 22 and EN 45014

Manufacturer: Hewlett-Packard Company
3404 East Harmony Road
Fort Collins, CO 80528
USA

Declares that the

Product Name: HP Workstation
Model Numbers: A6069A, A6070A, A6071A and A7183A
Base Product Numbers: 5X140
Product Options: all

conforms to the following specifications:

Safety	IEC 950:1991+A1+A2+A3 +A4 / EN 60950:1992+A1+A2+A3+A4
	IEC 60825-1:1993/EN60825-1:1994+A11 Class 1 for LEDs
	USA 21CFR Subpart J - for FC Laser module
	China GB4943-1995
	Russia GOST R 50377-92
EMC	CISPR 22:1997 / EN 55022:1998 Class A
	CISPR 24:1997 / EN 55024:1998
	IEC 1000-3-2:1994 / EN 61000-3-2:1998
	US FCC Part 15, Class A
	Japan VCCI Class A
	Australia/New Zealand AS/NZS 2064:1997, AS/NZS 3548:1995
	China GB9254-1999
	Taiwan CNS 13438:1997 Class A
	Russia GOST R 29216-94

and is certified by:

UL Listed to UL1950, 2nd edition, File E146385
cUL Listed to CSA 22.2 No.950-M93
TÜV Certified to EN60950 2nd edition with A1+A2+A3+A4+A11
HP Fort Collins CCQD HTC

supplementary information:

The product herewith complies with the requirements of the following Directives and carries the CE marking accordingly:
- the EMC directive 89/336/EEC and 92/31/EEC and 93/68/EEC
- the Low Voltage Directive 73/23/EEC and 93/68/EEC

This product was tested in a typical Hewlett Packard workstation configuration.

Original was signed by Ruth Lutes, Site Quality Manager

For Compliance Information ONLY, contact:

European Contact: Your local Hewlett-Packard Sales and Service Office or Hewlett-Packard GmbH, Department HQ-TRE Standards Europe, Herrenberger Straße 130, D-71034 Böblingen (FAX: +49-7031-14-3143)

Americas Contact: Hewlett-Packard, Fort Collins Site Quality Manager, mail stop 64, 3404 E. Harmony Rd., Ft. Collins, CO 80528, USA

Electromagnetic Compatibility

Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules and the Canadian Department of Communications. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Operation of this device is subject to the following conditions:

- This device may not cause harmful interference.
- This device must accept interference received, including interference that may cause undesired operation.
- Cables used with this device must be properly shielded to comply with the requirement of the FCC.
- You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

VCCI Statement for Class A Products

この装置は，情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

Korea RRL Statement for Class A Product

사용시 안내문 (A급 기기)

이 기기는 업무용으로 전자파장해검정을 받은 기기이오니, 만약 잘못 구입하셨을 때에는 구입한 곳에서 비업무용으로 교환하시기 바랍니다.

Taiwan Class A Warning

警告使用者:
這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Optical and Acoustical Statements

Visible LED Statement

The LEDs on this product are classified as “Class 1 LED Product” in accordance with EN 60825-1.

Laser Safety Statement for a Class 1 Laser Product

The CD-ROM mass-storage system is certified as a Class 1 laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968.

This means that the mass-storage system does not product hazardous laser radiation. Because laser light emitted inside the mass-storage system is completely confined within protective housings and external covers, the laser beam cannot escape from the machine during any phase of user operation.

Regulation on Noise Declaration for Machines

Lpa < 70 dB operator position, normal operation, per ISO 7779

Lpa < 70 dB am Arbeitsplatz, normaler Betrieb, nach DIN 45635 T.19

B Specifications

This appendix lists the environmental and electrical specifications for the HP B2600 workstations.

Environmental Specifications

Altitude

Operating:	0–10,000 ft (0–3,000 m) @ +5˚C to +35˚ C
Non-operating:	15,000 ft (0–4,500 m) @ –40 to +70˚ C

DC Magnetic Field Interference

Operating:	<1 Gauss at surface of product
Non-operating:	<2 milli Gauss @ 7 feet

Electromagnetic Interference (EMI)

Emissions:	FCC Class A CISPR A

Electrostatic Discharge

Air discharge:	8kV
Contact discharge:	4kV

Temperature

Operating:	+5˚C to +35˚ C
Non-operating:	–40 to +70˚ C

Humidity (Non-condensing)

Operating:	15 to 80%, 26˚ C max wet bulb for removable media
Non-operating:	8% to 90%

Leakage Current

Less than 3.5 mA

Shock

Operating:	20g at 3ms, 1/2 sine in normal axis with no hard errors
Non-operating:	80g at 3ms, 1/2 sine, all six faces

Vibration

Operating random:	0.21 Grms, 5–500 Hz
Swept sine survival:	0.5 g peak, 5–500 Hz
Random survival:	2.09 Grms, 5–500 Hz

Electrical Specifications

AC Input Power

AC Frequency:	50/60 Hz
Maximum Power Input:	360 Watts
Maximum Current:	3.6–3.0 Amps AC at 100–120VAC 1.8–1.5 Amps AC at 200–240VAC
Typical Power Input:	250 Watts
Typical Current:	2.5–2.1 Amps AC at 100–120VAC 1.25–1.05 Amps AC at 200–240VAC

DC Input Power

Maximum Power Input:	360 Watts
Maximum Current:	7.5 Amps DC at 48V 5.0 Amps DC at 72V
Typical Power Input:	250 Watts
Typical Current:	5.2 Amps DC at 48V 3.5 Amps DC at 72V

C HP B2600 Chassis Codes

This appendix lists the LCD chassis codes for the HP B2600 workstation.

Chassis Codes

Table C-1.lists all of the chassis codes for the B2600 workstations.

Table C-1. Chassis Codes for B2600 Workstations

Ostat	Code	FRU	Message	Description
FLT	1*n*01	SYS BD	HPMC occurred	CPU *n* detected an unexpected HPMC.
FLT	1*n*02	SYS BD	powerfail intrpt	CPU *n* detected an unexpected power fail interrupt.
FLT	1*n*03	SYS BD	recvry cntr trap	CPU *n* detected an unexpected recovery counter trap.
FLT	1*n*04	SYS BD	external intrrpt	CPU *n* detected an unexpected external interrupt.
FLT	1*n*05	SYS BD	LPMC occurred	CPU *n* detected an unexpected LPMC.
FLT	1*n*06	SYS BD	ITLB mis/Ipg flt	CPU *n* detected an unexpected ITLB miss or instruction page fault.
FLT	1*n*07	SYS BD	I mem prot trap	CPU *n* detected an unexpected instruction memory protection trap.
FLT	1*n*08	SYS BD	illegal inst trp	CPU *n* detected an unexpected illegal instruction trap.
FLT	1*n*09	SYS BD	break instr trap	CPU *n* detected an unexpected break instruction trap.
FLT	1*n*0A	SYS BD	privilgd op trap	CPU *n* detected an unexpected privileged operation trap.
FLT	1*n*0B	SYS BD	privlgd reg trap	CPU *n* detected an unexpected privileged register trap.
FLT	1*n*0C	SYS BD	overflow trap	CPU *n* detected an unexpected overflow trap.
FLT	1*n*0D	SYS BD	conditional trap	CPU *n* detected an unexpected conditional trap.
FLT	1*n*0E	SYS BD	assist exep trap	CPU *n* detected an unexpected assist exception trap.
FLT	1*n*0F	SYS BD	DTLB mis/Dpg flt	CPU *n* detected an unexpected DTLB miss or data page fault.
FLT	1*n*10	SYS BD	non-acc ITLB mis	CPU *n* detected an unexpected non-access ITLB miss fault.
FLT	1*n*11	SYS BD	non-acc DTLB mis	CPU *n* detected an unexpected non-access DTLB miss or data page fault.

Table C-1. Chassis Codes for B2600 Workstations

Ostat	Code	FRU	Message	Description
FLT	1*n*12	SYS BD	data mem prot tr	CPU *n* detected an unexpected data memory protection trap.
FLT	1*n*13	SYS BD	data mem brk trp	CPU *n* detected an unexpected data memory break trap.
FLT	1*n*14	SYS BD	TLB dirty bit tr	CPU *n* detected an unexpected TLB dirty bit trap.
FLT	1*n*15	SYS BD	page refrnce trp	CPU *n* detected an unexpected page reference trap.
FLT	1*n*16	SYS BD	assist emul trap	CPU *n* detected an unexpected assist emulation trap.
FLT	1*n*17	SYS BD	hi-priv xfer trp	CPU *n* detected an unexpected higher-privilege transfer trap.
FLT	1*n*18	SYS BD	lo-priv xfer trp	CPU *n* detected an unexpected lower-privilege transfer trap.
FLT	1*n*19	SYS BD	taken branch trp	CPU *n* detected an unexpected taken-branch trap.
FLT	1*n*1A	SYS BD	data mem acc rts	CPU *n* detected an unexpected data memory access rights trap.
FLT	1*n*1B	SYS BD	data mem prot ID	CPU *n* detected an unexpected data memory protection ID trap.
FLT	1*n*1C	SYS BD	unalign data ref	CPU *n* detected an unexpected unaligned data reference trap.
FLT	1*n*1D	SYS BD	perf mon intrrpt	CPU *n* detected an unexpected performance monitor interrupt.
TST	1*n*20	SYS BD	CPU*n* basic test	CPU *n* is starting its basic operations self-test.
TST	1*n*21	SYS BD	CPU*n* alu test	CPU *n* is starting its arithmetic and logical unit self-test.
TST	1*n*22	SYS BD	CPU*n* branch test	CPU *n* is starting its branch instruction self-test.
TST	1*n*23	SYS BD	CPU*n* arith cond	CPU *n* is starting its arithmetic condition self-test.
TST	1*n*24	SYS BD	CPU*n* bit opers	CPU *n* is starting its bit operation instruction self-test.
TST	1*n*25	SYS BD	CPU*n* cntrl regs	CPU *n* is starting its control register self-test.

Table C-1. Chassis Codes for B2600 Workstations

Ostat	Code	FRU	Message	Description
TST	1*n*26	SYS BD	CPU*n* ext intrpt	CPU *n* is starting its external interrupt self-test.
TST	1*n*27	SYS BD	CPU*n* itimer test	CPU *n* is starting its interval timer self-test.
TST	1*n*28	SYS BD	CPU*n* multi-media	CPU *n* is starting its multi-media instructions self-test.
TST	1*n*29	SYS BD	CPU*n* shadow reg	CPU *n* is starting its shadow register self-test.
TST	1*n*2A	SYS BD	CPU*n* diagnse reg	CPU *n* is starting its diagnose register self-test.
TST	1*n*2B	SYS BD	CPU*n* rdr test	CPU *n* is starting its remote diagnose register self-test.
TST	1*n*2C	SYS BD	CPU*n* bypass test	CPU *n* is starting its integer bypass operation self-test.
TST	1*n*30	SYS BD	CPU*n* start est	CPU *n* is starting its early (pre-memory) self-tests.
WRN	1*n*31	SYS BD	CPU*n* skip est	CPU *n* is bypassing its early self-tests to save time.
FLT	1*n*32	SYS BD	CPU*n* bad tst mod	CPU *n* detected an unsupported system mode.
INI	1*n*3C	SYS BD	CPU*n* initialize	CPU *n* is initializing after self-tests.
TST	1*n*3E	SYS BD	CPU*n* exit est	CPU *n* finished its early self-tests.
TST	1*n*A0	SYS BD	CPU*n* fpu tests	CPU *n* is starting its floating-point unit self-tests.
TST	1*n*A1	SYS BD	CPU*n* fpu reg tst	CPU *n* is starting its floating-point register self-test.
TST	1*n*A2	SYS BD	CPU*n* fpu inst	CPU *n* is starting its floating-point instruction self-test.
TST	1*n*A3	SYS BD	CPU*n* fpu traps	CPU *n* is starting its floating-point trap self-test.
TST	1*n*A4	SYS BD	CPU*n* fpu misc	CPU *n* is starting its floating-point miscellaneous operations self-test.
TST	1*n*A5	SYS BD	CPU*n* fpu bypass	CPU *n* is starting its floating-point bypassing self-test.
TST	1*n*B1	SYS BD	CPU*n* TLB RAM tst	CPU *n* is starting its TLB register self-test.

Table C-1. Chassis Codes for B2600 Workstations

Ostat	Code	FRU	Message	Description
TST	1*n*B2	SYS BD	CPU*n* TLB trans	CPU *n* is starting its TLB translation self-test.
FLT	1*n*BA	SYS BD	monarch CPU *fail*	The monarch CPU failed.
FLT	1*n*BB	SYS BD	bad CPU*n* number	The CPU identifier was out of range.
FLT	1*n*BF	SYS BD	CPU*n* halt boot	Bootstrap failure--machine halted.
INI	1*n*CA	SYS BD	CPUn sys bus arb	Monarch CPU is initializing the system bus arbitration.
WRN	1*n*CD	SYS BD	CPU*n* deconfig	CPU *n* deconfigured itself.
WRN	1*n*CE	SYS BD	CPU*n* extinguish	PDC_PROC halted CPU *n*.
FLT	1*n*CF	SYS BD	slave*n* failed	Slave CPU *n* failed self-test.
WRN	1*m*D*s*	SYS BD	slaves deconfig	Monarch CPU *m* deconfigured slave CPU *s*.
WRN	1*n*EF	SYS BD	CPU*n* slftst warn	CPU *n* detected a non-fatal error during its self-tests.
WRN	1*m*F*s*	SYS BD	mon*m* stop slave*s*	Monarch CPU *m* halted slave CPU *s*.
INI	1*n*FC	SYS BD	CPUn sync'ing	CPU *n* is synchronizing with the rest of the system.
INI	1*n*FD	SYS BD	CPU*n* stat wd tst	CPU *n* is testing the system status word.
FLT	1*n*FF	SYS BD	monarch*n* selftst	Monarch CPU *n* failed self-test.
TST	2*n*20	SYS BD	CPU*n* icache RAM	CPU *n* is starting its instruction cache RAM self-test.
FLT	2*n*25	SYS BD	CPU*n* ic ld d err	CPU *n* detected a data error during data cache load.
FLT	2*n*26	SYS BD	CPU*n* ic ld t err	CPU *n* detected a tag error during data cache load.
TST	2*n*30	SYS BD	CPU*n* icache tag	CPU *n* is starting its instruction cache tag self-test.
TST	2*n*40	SYS BD	CPU*n* icache par	CPU *n* is starting its instruction cache parity detection self-test.
TST	2*n*50	SYS BD	CPU*n* dc stor que	CPU *n* is starting its data cache store queue self-test.
FLT	2*n*51	SYS BD	CPU*n* dc st q err	CPU *n* detected an error during its data cache store queue self-test.
TST	2*n*70	SYS BD	CPU*n* dcache RAM	CPU *n* is starting its data cache RAM self-test.

Table C-1. Chassis Codes for B2600 Workstations

Ostat	Code	FRU	Message	Description
TST	2*n*80	SYS BD	CPU*n* dcache tag	CPU *n* is starting its data cache tag self-test.
TST	2*n*90	SYS BD	CPU*n* dcache ECC	CPU *n* is starting its data cache ECC self-test.
FLT	2BAD	SYS BD	assertion fail	A firmware assertion failed.
TST	3*n*00	SYS BD	ROM checksum tst	Monarch CPU *n* is testing the boot ROM integrity.
FLT	3*n*00	SYS BD	ROM checksum BAD	The boot ROM failed checksum.
INI	3*n*00	SYS BD	ROM checksum ok	The boot ROM passed checksum.
TST	3*n*01	SYS BD	PDH control test	Monarch CPU *n* is testing PDH control register.
INI	3*n*01	SYS BD	PDH control init	Monarch CPU *n* is initializing the PDH control register.
FLT	3*n*01	SYS BD	PDH control err	Monarch CPU *n* detected an error in the PDH control register.
TST	3*n*02	SYS BD	scratch RAM test	Monarch CPU *n* is testing scratch RAM.
INI	3*n*02	SYS BD	scratch RAM ok	The scratch RAM test failed.
FLT	3*n*02	SYS BD	scratch RAM bad	The scratch RAM test passed.
WRN	3*n*03	SYS BD	stbl st read err	CPU *n* detected a non-fatal error reading the stable store.
FLT	3*n*03	SYS BD	stbl st read err	CPU *n* detected a non-fatal error reading the stable store.
INI	3*n*C4	SYS BD	clearing EEPROM	Monarch CPU *n* is clearing the EEPROM.
INI	3*n*D4	SYS BD	deflting EEPROM2	Monarch CPU *n* is initializing the EEPROM to system defaults.
WRN	3*n*04	SYS BD	EEPROM write err	CPU *n* detected a non-fatal error writing the EEPROM.
FLT	3*n*04	SYS BD	EEPROM write err	CPU *n* detected a fatal error writing the EEPROM.
FLT	3*n*05	SYS BD	EEPROM wrt limit	CPU *n* detected a fatal error writing the EEPROM.
WRN	3*n*06	SYS BD	EEPROM read err	CPU *n* detected a non-fatal error reading the EEPROM.
FLT	3*n*06	SYS BD	EEPROM read err	CPU *n* detected a fatal error reading the EEPROM.

Table C-1. Chassis Codes for B2600 Workstations

Ostat	Code	FRU	Message	Description
INI	3*n*07	SYS BD	CPU*n* invoke LDB	CPU *n* is starting the low-level debugger.
FLT	3*n*09	SYS BD	bad sys mde byte	CPU *n* detected an unsupported system mode.
WRN	3*n*1A	SYS BD	hversion mismtch	Stable store hardware version doesn't match system.
TST	3*n*1B	SYS BD	chck model strng	Check model string with version in stable store.
WRN	3*n*1B	SYS BD	model str msmtch	Model string doesn't match that in stable store.
FLT	3*n*1B	SYS BD	fatal model str	Error reading model string from stable store.
TST	3*n*1C	SYS BD	test software ID	Check LANIC address.
WRN	3*n*1C	SYS BD	update sw ID	Update LANIC address.
FLT	3*n*1C	SYS BD	update sw ID err	Error updating LANIC address.
INI	3*n*2*s*	SYS BD	Invoke LDB: *s*	CPU *n* is awaiting the low-level debugger for *s* more seconds.
TST	3*n*BC	SYS BD	test sys clocks	CPU *n* is verifying processor clocks with the real-time clock.
INI	3*n*BC	SYS BD	init sys clocks	CPU *n* has initialized the processor clocks.
FLT	3*n*BC	SYS BD	RTC tick timeout	The real-time clock is ticking too slowly or not at all.
TST	3*n*CD	SYS BD	check defaults	CPU *n* is initializing stable store values to system defaults.
INI	3*n*CD	SYS BD	init defaults	CPU *n* finished initializing stable store values.
FLT	3*n*CD	SYS BD	init EEPROM err	CPU *n* detected an error writing to stable store.
FLT	3*n*EC	SYS BD	bad sys config	CPU *n* detected an illegal CPU board configuration.
FLT	3*n*F4	SYS BD	EEPROM boot limt	CPU *n* detected a fatal error writing the EEPROM.
FLT	3*n*FC	SYS BD	bad sys bd id	CPU *n* cannot identify CPU board.
TST	4*n*00	SYS BD	CPU*n* start lst	CPU *n* is starting its late (with memory) self-tests.

Table C-1. Chassis Codes for B2600 Workstations

Ostat	Code	FRU	Message	Description
WRN	4*n*01	SYS BD	CPU*n* skip lst	CPU *n* is bypassing its late self-tests to save time.
TST	4*n*0E	SYS BD	CPU*n* exit lst	CPU *n* finished its late self-tests.
TST	4*n*20	SYS BD	CPU*n* lst erly st	CPU *n* is re-executing some of its early self-tests from system memory.
TST	4*n*21	SYS BD	CPU*n* lst basic	CPU *n* is re-executing its basic operations self-test.
TST	4*n*22	SYS BD	CPU*n* lst alu	CPU *n* is re-executing its arithmetic and logic unit self-test.
TST	4*n*23	SYS BD	CPU*n* lst branch	CPU *n* is re-executing its branch instruction self-test.
TST	4*n*24	SYS BD	CPU*n* lst arth cd	CPU *n* is re-executing its arithmetic conditions self-test.
TST	4*n*25	SYS BD	CPU*n* lst bit ops	CPU *n* is re-executing its bit operations self-test.
TST	4*n*26	SYS BD	CPU*n* lst ctl reg	CPU *n* is re-executing its control register self-test.
TST	4*n*27	SYS BD	CPU*n* lst ext int	CPU *n* is re-executing its external interrupt self-test.
TST	4*n*28	SYS BD	CPU*n* lst itimer	CPU *n* is re-executing its interval timer self-test.
TST	4*n*29	SYS BD	CPU*n* lst mltimed	CPU *n* is re-executing its multi-media instructions self-test.
TST	4*n*2A	SYS BD	CPU*n* lst shadow	CPU n is re-executing its shadow register self-test.
TST	4*n*2B	SYS BD	CPU*n* lst dg regs	CPU *n* is re-executing its diagnose register self-test.
TST	4*n*2C	SYS BD	CPU*n* lst rdrs	CPU *n* is re-executing its remote diagnose register self-test.
TST	4*n*2D	SYS BD	CPU*n* lst bypass	CPU *n* is re-executing its integer bypass operation self-test.
TST	4*n*30	SYS BD	CPU*n* cache byte	CPU *n* is starting its data cache sub-word operations self-test.
TST	4*n*40	SYS BD	CPU*n* cache flush	CPU *n* is starting its cache flush self-test.
TST	4*n*50	SYS BD	CPU*n* icache miss	CPU *n* is starting its instruction cache miss self-test.

Table C-1. Chassis Codes for B2600 Workstations

Ostat	Code	FRU	Message	Description
TST	4*n*60	SYS BD	CPU*n* dcache miss	CPU *n* is starting its data cache miss self-test.
FLT	5*n*00	SYS BD	unknown bus err	CPU *n* detected an unknown error on the system bus (Runway).
FLT	5*n*02	SYS BD	path err assertd	CPU *n* detected a path error on the system bus (Runway).
FLT	5*n*04	SYS BD	data parity err	CPU *n* detected a data, address, or control parity error on the system bus (Runway).
FLT	5*n*07	SYS BD	Runway dir error	CPU *n* detected a directed error on the system bus (Runway).
FLT	5*n*08	SYS BD	Runway broad err	CPU *n* detected a broadcast error on the system bus (Runway).
FLT	5*n*0A	SYS BD	illegal response	CPU *n* received data that did not match any outstanding data request.
FLT	5*n*0B	SYS BD	bus timeout	CPU *n* timed out before receiving requested data. The responder is logged in the system responder address.
FLT	5*n*0C	SYS BD	CPU sync failure	CPU *n*'s synchronizer detected a rule violation on the system bus (Runway).
INI	7000	DIMM	start DIMM scan	Start looking for installed DIMMs.
INI	7002	SYS BD	init mem tables	Initialize memory data structures.
FLT	7004	SYS BD	mem plt upd fail	Error updating memory platform data.
FLT	7005	DIMM	insufficient mem	Insufficient memory detected to continue.
TST	7010	DIMM	check DIMM order	Start memory DIMM order check.
WRN	7011	DIMM	skip DIMM ord ck	Bypass memory DIMM order check.
FLT	7012	DIMM	DIMM order error	Memory DIMMs are not in the proper order.
FLT	7013	DIMM	DIMM order error	Memory DIMMs are not in the proper order. As a result, the system cannot access one or more DIMMs and has deallocated all inaccessible DIMMs.
TST	7016	DIMM	DIMM pair check	Start memory DIMM pair check (DIMMs in a pair (e.g. 0a/0b) must match in B2xxx).
WRN	7017	DIMM	skip mem pair ck	Bypass memory DIMM set check.
FLT	701F	DIMM	no memory found	Memory scan couldn't find any DIMMs.

Table C-1. Chassis Codes for B2600 Workstations

Ostat	Code	FRU	Message	Description
TST	7020	SYS BD	search for IMM	Try to find a single memory bank to use for the initial memory module.
TST	703*s*	DIMM	DIMM *s* IMM vrfy	DIMM *s* was the initial memory module last boot. Verify it still works.
FLT	704*s*	DIMM	DIMM *s* IMM fail	DIMM *s* failed the initial memory module test.
TST	705*s*	DIMM	DIMM *s IMM test*	Test DIMM in slot *s* as the initial memory module.
INI	706*s*	DIMM	DIMM *s* is IMM	DIMM *s* chosen as initial memory module.
INI	70F0	DIMM	DIMM scan done	Memory DIMM scan complete.
TST	7100	SYS BD	mem register tst	Start testing registers in memory controller.
WRN	7101	SYS BD	skip mem reg tst	Bypass the memory controller register test.
FLT	7102	SYS BD	mem addr reg tst	Firmware detected an error in the memory controller address registers.
FLT	7103	SYS BD	mem mbat reg tst	Firmware detected an error in the memory controller bank registers.
FLT	7104	SYS BD	mem reg tst fail	Firmware detected an error in the memory controller memory registers.
FLT	7105	SYS BD	mem err reg test	Firmware detected an error in the memory controller error registers.
FLT	7106	SYS BD	mem err clr fail	Firmware was unable to clear the error registers after testing.
INI	7200	DIMM	strt DIMM detect	Start the Serial Presence Detection (SPD) to search for memory DIMMs.
INI	7201	DIMM	DIMM detect *x*%	SPD is *x*% finished.
WRN	7202	SYS BD	skip DIMM detect	Bypass Serial Presence Detection.
FLT	7203	DIMM	unsupp DIMM type	SPD found an unsupported DIMM type.
FLT	7204	DIMM	SPD fatal error	SPD detected an unexpected, fatal error.
INI	7205	DIMM	add HP DIMM type	New HP manufactured DIMM type added to tables.
INI	7206	DIMM	non-HP DIMM type	New non-HP DIMM type added to tables (use at own risk).

Table C-1. Chassis Codes for B2600 Workstations

Ostat	Code	FRU	Message	Description
FLT	7207	DIMM	DIMM table full	The DIMM table is full--cannot add new type.
FLT	7208	DIMM	no DIMMs found	SPD didn't find any memory DIMMs.
INI	721*s*	DIMM	is DIMM *s* inst?	SPD is checking memory slot *s*.
INI	722*s*	DIMM	???? DIMM in *s*	SPD found a DIMM in slot *s*, but can't determine its size. DIMM will not be used.
INI	723*s*	DIMM	128M DIMM in *s*	SPD found a 128MB DIMM in slot *s*.
INI	724*s*	DIMM	256M DIMM in *s*	SPD found a 256MB DIMM in slot *s*.
INI	725*s*	DIMM	512M DIMM in *s*	SPD found a 512MB DIMM in slot *s*.
FLT	72A*s*	DIMM	DIMM *s* checksum	DIMM in slot *s* failed SPD checksum and will not be used.
FLT	72C*s*	DIMM	DIMM *s* mismatch	DIMM in slot *s* didn't match the other in pair. (B2xxx only--DIMMs must be in matched pairs.)
FLT	72D*s*	DIMM	DIMM *s* load err	Memory DIMMs are not in the proper order. As a result, the system cannot access DIMM *s* and has deallocated it.
INI	7300	SYS BD	mem config start	Starting main memory configuration.
TST	7301	SYS BD	check mem config	Checking for memory configuration change since last boot.
WRN	7302	SYS BD	mem confg changd	Memory physical configuration changed since last boot.
INI	7303	SYS BD	use confg change	Memory physical configuration didn't use saved configuration change. Use stored configuration data.
INI	7304	SYS BD	build mem intrlv	Building memory configuration with all DIMMs interleaved.
INI	7305	SYS BD	save mem config	Saving memory configuration information in non-volatile memory.
WRN	7306	SYS BD	use alt mem conf	Memory will be configured from fixed values, instead of detected DIMMs.
INI	7307	SYS BD	interleve memory	Generating the memory interleave.
FLT	7308	SYS BD	PDT is disabled	Firmware detected bad memory pages, but the Page Deallocation Table is disabled.

Table C-1. Chassis Codes for B2600 Workstations

Ostat	Code	FRU	Message	Description
FLT	7309	DIMM	insufficient mem	Insufficient error-free memory to continue.
FLT	730C	SYS BD	mem intrlv fail	Memory interleave generation failed.
INI	730F	SYS BD	mem config done	Main memory configuration complete.
TST	7400	DIMM	non-dest mem tst	Starting non-destructive memory test.
TST	740F	DIMM	non-dst tst done	Non-destructive memory test complete.
INI	7500	SYS BD	memory reset	Resetting memory system.
WRN	7501	SYS BD	mem log clr warn	Memory error logs didn't clear on first try.
FLT	7502	SYS BD	mem err log fail	Firmware could not clear memory error logs.
TST	7600	DIMM	dest mem test	Starting the destructive memory test.
WRN	7601	DIMM	mem init only	Skip the test, just initialize memory to save time.
TST	7602	DIMM	tst 1st mem page	Starting 3-pass test of first memory page.
TST	7603	DIMM	tst rest of mem	Starting 3-pass test of the rest of memory.
TST	7604	DIMM	start 1st pass	Starting 1st pass of memory test (write pseudorandom sequence).
TST	7605	DIMM	1st pass *x%*	First pass is *x*% complete.
TST	7606	DIMM	start 2nd pass	Starting 2nd pass of memory test (verify pseudorandom sequence, write inverse).
TST	7607	DIMM	2nd pass *x%*	Second pass is *x*% complete.
TST	7608	DIMM	start 3rd pass	Starting 3rd pass of memory test (verify inverse sequence).
TST	7609	DIMM	3rd pass *x%*	Third pass is *x*% complete.
TST	760A	DIMM	start mem init	Starting memory initialization. (Initialize to zero to set ECC.)
TST	760B	DIMM	mem init *x%*	Memory initialization is *x*% complete.
WRN	760C	DIMM	repeat dest test	Re-execute destructive test for hardware troubleshooting.
FLT	760D	DIMM	mem code cpy err	Firmware tried to copy code from ROM to memory, but the copy didn't match the original.
FLT	7610	DIMM	ECC wrt/read err	Writing and reading back good data caused memory ECC error.

Table C-1. Chassis Codes for B2600 Workstations

Ostat	Code	FRU	Message	Description
FLT	7611	DIMM	ECC single data	Memory ECC test failed to detect single-bit data error.
FLT	7612	DIMM	ECC single ECC	Memory ECC test failed to detect single-bit ECC error.
FLT	7613	DIMM	ECC multipl data	Memory ECC test failed to detect multiple-bit data error.
FLT	7614	DIMM	ECC multpl signl	Memory ECC test failed to signal multiple-bit error.
FLT	7800	SYS BD	mem err summary	Printing memory error summary word to RS-232.
FLT	7801	SYS BD	bus ctrl par err	System bus (Runway) control parity error detected.
FLT	7802	SYS BD	bus addr par err	System bus (Runway) address parity error detected.
FLT	7803	SYS BD	bus data par err	System bus (Runway) data parity error detected.
FLT	7804	SYS BD	mem out of range	Memory access outside configured memory space.
FLT	7805	SYS BD	bus broadcst err	System bus (Runway) broadcast error detected.
FLT	7806	SYS BD	mem addr par err	Memory bus address parity error detected.
FLT	7807	SYS BD	mem ctlr stat wd	Printing memory controller status word to RS-232.
FLT	781*s*	DIMM	DIMM *s* uncor err	Uncorrectable ECC error detected in DIMM s.
FLT	782*s*	DIMM	DIMM *s* corr err	DIMM *s* is bad and needs replacing.
FLT	783*s*	DIMM	Replace DIMM *s*	Correctable ECC error detected in DIMM *s*.
FLT	7840	SYS BD	unexpected HPMC	Unexpected HPMC detected.
FLT	7841	SYS BD	mem status invld	Memory error status word is invalid.
FLT	7842	SYS BD	mem summ invalid	Memory summary word is invalid.
FLT	7843	SYS BD	fwd prog invalid	Memory forward progress word is invalid.
FLT	7844	SYS BD	mem HPMC summ wd	Printing memory error summary word to RS-232.

Table C-1. Chassis Codes for B2600 Workstations

Ostat	Code	FRU	Message	Description
FLT	7845	SYS BD	mem ctlr stat wd	Printing memory controller status word to RS-232.
FLT	7846	SYS BD	mem err overflow	Multiple memory errors detected.
FLT	7848	SYS BD	addr not mapped	Memory address outside configured memory space.
FLT	785*s*	DIMM	MBE in DIMM *s*	Destructive memory test detected an uncorrectable memory error in DIMM *s*.
FLT	786*s*	DIMM	SBE&MBE DIMM *s*	Destructive memory test detected both an uncorrectable and a correctable memory error in DIMM *s*.
FLT	787*s*	DIMM	mem err DIMM *s*	Destructive memory test detected a pattern compare error in DIMM *s*.
FLT	788*s*	DIMM	SBE in DIMM *s*	Destructive memory test detected a correctable memory error in DIMM *s*.
FLT	7890	DIMM	MBE overwrt SBE	Firmware replaced a correctable memory error entry in the PDT with an uncorrectable memory error entry at the same address.
FLT	7891	DIMM	dup entry in PDT	The PDT already contains an entry at that address.
FLT	7892	SYS BD	PDT write error	Error adding the entry to the PDT.
FLT	7893	SYS BD	PDT is full	The PDT is full--cannot add new entry.
FLT	7900	SYS BD	no DMT entry	Internal error--cannot find DIMM entry.
FLT	7901	SYS BD	no rank entry	Internal error--cannot find rank entry.
FLT	7902	SYS BD	bad refrsh intvl	Computed refresh interval is invalid.
FLT	7903	SYS BD	mem intrlv fail	Cannot generate memory interleave.
FLT	7904	SYS BD	mem reloc failed	Cannot interleave with relocated range (3.75GB - 4.0GB).
FLT	7905	SYS BD	mem intrlv error	Undefined memory interleave failure.
FLT	79FF	SYS BD	mem firmware err	Internal error--never expected this to happen.
WRN	80F3	SYS BD	err rd IODC byte	Cannot read IODC from ROM or card.
WRN	80F4	EXT IO	boot read error	Cannot load IODC entry_init for boot device.
WRN	80F5	EXT IO	boot exec error	Error initializing boot device.

Table C-1. Chassis Codes for B2600 Workstations

Ostat	Code	FRU	Message	Description
WRN	80F6	EXT IO	boot read error	Cannot load IODC entry_io for boot device.
WRN	80F7	EXT IO	boot IO error	Error detected during boot device I/O.
WRN	80F8	EXT IO	invalid boot dev	Invalid boot device class; bad IODC?
WRN	80FC	EXT IO	invalid boot dev	Unexpected error; bad IODC?
INI	8800	IOCARD	PCI BusWlk start	Starting PCI bus and device discovery.
INI	88*r*1	IOCARD	PCI Rope *r* walk	Starting PCI bus and device discovery on Rope *r*.
INI	8802	IOCARD	PCI BusWalk done	PCI bus and device discovery complete.
INI	8803	SYS BD	PCI alloc done	Done allocating address space for PCI devices.
INI	8804	SYS BD	PCI config done	Done configuring PCI devices.
FLT	881*r*	SYS BD	R2PCI*r* not found	Rope-to-PCI bridge *r* not found.
WRN	882*r*	SYS BD	R2PCI*r* not found	Rope-to-PCI bridge r initialization failed.
FLT	883*r*	SYS BD	Rope*r* config err	Rope *r* configuration failed.
INI	884*r*	EXT IO	Rope*r* debug tggl	Rope *r* debug register toggled.
FLT	884*r*	EXT IO	Rope*r* tgl fail	Rope *r* debug register toggle failed.
INI	8850	SYS BD	early rope0 init	Initializing rope 0 for early RS-232 output.
FLT	8850	SYS BD	rope0 init fail	Couldn't initialize rope 0.
INI	8860	SYS BD	rope0 init done	Rope 0 initialization complete.
INI	8870	SYS BD	early R2PCI init	Initializing Rope-to-PCI bridge 0 for early RS-232 output.
FLT	8870	SYS BD	R2PCI init fail	Couldn't initialize Rope-to-PCI bridge 0.
INI	8880	SYS BD	R2PCI init done	Rope-to-PCI bridge 0 initialization complete.
INI	8890	SYS BD	early Super init	Initializing Super-I/O for early RS-232 output.
FLT	8890	SYS BD	Super init fail	Couldn't initialize Super-I/O.
INI	88A0	SYS BD	Super init done	Super-I/O initialization complete.
WRN	8A03	EXT IO	No graph console	Cannot re-establish communications with the graphics console.

Table C-1. Chassis Codes for B2600 Workstations

Ostat	Code	FRU	Message	Description
WRN	8A04	EXT IO	No USB keyboard	Cannot re-establish communications with the USB keyboard.
TST	8C06	EXT IO	PCI BIST test	Running PCI Built-In Self-Test
WRN	8C07	EXT IO	PCI BIST error	PCI Built-In Self-Test failed.
WRN	8C08	SYS BD	PCI alloc error	PCI address space allocation failed.
WRN	8C09	SYS BD	PCI mem mngr err	Memory allocation for PCI device failed.
WRN	8C0A	EXT IO	PCI mem type err	PCI device requested invalid memory type.
WRN	8C0B	SYS BD	PCI max bus dpth	PCI bus depth exceeded maximum supported depth.
WRN	8C0C	EXT IO	PCI dev not cnfg	Unable to configure PCI device.
WRN	8C0F	SYS BD	dev tree ovrflow	Data space for PCI devices is full.
WRN	8DEC	SYS BD	init LAN SROM	Initializing the core LAN serial EPROM.
SHU	8DEC	SYS BD	resetting system	Restarting system after core LAN initialization.
FLT	8E10	SYS BD	PARALEL port cfg	Parallel port configuration failed.
FLT	8E11	SYS BD	SERIAL1 port cfg	Serial 1 port configuration failed.
FLT	8E12	SYS BD	SERIAL2 port cfg	Serial 2 port configuration failed.
FLT	8E13	SYS BD	FLOPPY drive cfg	Floppy drive configuration failed.
FLT	8E20	SYS BD	bad USB port cfg	USB port configuration failed.
WRN	9001	EXT IO	no console found	Search for console display device failed.
INI	9151	SYS BD	init SERIAL_1	Initializing serial 1 port as console display.
INI	9152	SYS BD	init SERIAL_2	Initializing serial 2 port as console display.
INI	915F	SYS BD	init unknown dev	Initializing unknown device as console display.
INI	916*s*	EXT IO	init PCI slot *s*	Initializing PCI device in slot *s* as console display.
INI	91DB	SYS BD	init SERIAL_LDB	Initializing serial LDB port as console display.
INI	9C51	SYS BD	consol is SER_1	Console display is on serial port 1.

Table C-1. Chassis Codes for B2600 Workstations

Ostat	Code	FRU	Message	Description
WRN	9C51	SYS BD	bad init SERIAL1	Serial port 1 failed to initialize as a console device.
INI	9C52	SYS BD	consol is SER_2	Console display is on serial port 2.
INI	9160	EXT IO	builtin GRAPHICS	Initializing built-in graphics as console display.
INI	9C52	SYS BD	consol is SER_2	Console display is on serial port 2.
WRN	9C52	SYS BD	bad init SERIAL2	Serial port 2 failed to initialize as a console device.
INI	9C6*s*	EXT IO	consol is GRAPH*s*	Console display is on graphics card in PCI slot *s*.
WRN	9C6*s*	EXT IO	bad PCI slot *s*	Graphics in PCI slot *s* failed to initialize as a console device.
INI	9C8*t*	EXT IO	cnfg mon type *t*	Set graphics console to monitor type *t*. (Seen when cycling through types.)
WRN	9C8*t*	EXT IO	mon type *t* fail	Failed to configure console to monitor type *t*.
INI	9CDB	SYS BD	consl is SER_LDB	Console display is on serial LDB port.
WRN	9CDB	SYS BD	bad init SER_LDB	Serial LDB port failed to initialize as a console device.
FLT	A088	SYS BD	consl path fault	Unable to boot--no console device found.
WRN	A008	EXT IO	no boot device	Unable to boot--no bootable device found.
WRN	A0BD	EXT IO	device not ready	Boot device not ready--operation may be retried.
FLT	A0FF	EXT IO	unknown launch	Unable to boot. Explanation may appear on console.
WRN	A50F	EXT IO	init pri pth err	Unable to boot from primary boot device.
WRN	A70F	EXT IO	init otr pth err	Unable to boot from non-primary boot device.
INI	C10*m*	SYS BD	CPU*m* is monarch	CPU *m* was chosen as the monarch processor. (All other CPUs are slaves.)
INI	C30*m*	SYS BD	monarch*m* test	CPU *m* finished the monarch-only tests and system initialization.
INI	C30C	SYS BD	mnrch slv chck	The monarch CPU is checking whether the slaves are in the correct rendezvous.

Table C-1. Chassis Codes for B2600 Workstations

Ostat	Code	FRU	Message	Description
INI	C3FF	SYS BD	late monarch tst	The monarch CPU is starting the late (post-memory) monarch-only tests.
FLT	C3FF	SYS BD	late monarch flt	The late (post-memory) monarch-only tests failed.
INI	C4CC	SYS BD	initialize ccp	Searching for (lab-only) debugger card.
INI	C4CD	SYS BD	no ccp found	Debugger card not found.
INI	C4CE	SYS BD	ccp disabled	Debugger card disabled.
INI	C4CF	SYS BD	ccp found	Debugger card found.
INI	C500	SYS BD	get primary path	Autoboot is reading primary boot path from stable store.
INI	C540	EXT IO	init pri path	Autoboot is trying to boot from primary boot device.
INI	C580	EXT IO	load IPL pri pth	Loading IPL from primary boot device.
WRN	C5F0	EXT IO	err read pri IPL	Error loading IPL from primary boot device.
FLT	C5F0	EXT IO	pri IPL fault	Error loading IPL from primary boot device.
WRN	C5F1	EXT IO	err read pri IPL	Cannot load IPL from primary boot device--load address invalid.
WRN	C5F2	EXT IO	err read pri IPL	Cannot load IPL from primary boot device--file is not IPL image.
WRN	C5F3	EXT IO	err read pri IPL	Cannot load IPL from primary boot device--IPL image size invalid.
WRN	C5F4	EXT IO	err read pri IPL	Cannot load IPL from primary boot device--IPL entry point address invalid.
WRN	C5F8	EXT IO	err read pri IPL	Cannot load IPL from primary boot device--IPL image checksum failed.
INI	C5FF	<blank>	launch pri IPL	Booting from primary boot path.
INI	C642	EXT IO	init kybrd consl	Try to initialize USB keyboard.
FLT	C642	EXT IO	keyboard error	An error was detected trying to access the keyboard.
WRN	C643	EXT IO	keyboard reinit	Keyboard was re-initialized.
WRN	C64F	EXT IO	reset montr type	The console device failed to initialize with the given monitor type. Try again with type 1.

Table C-1. Chassis Codes for B2600 Workstations

Ostat	Code	FRU	Message	Description
TST	C680	SYS BD	builtin graphics	Look for built-in graphics card.
TST	C68*s*	SYS BD	test graph in *s*	Look for graphics card in PCI slot *s*.
INI	C68*s*	SYS BD	init graph in s	Successfully initialized graphics card in PCI slot *s*.
INI	C68*0*	SYS BD	bultin graphics	Successfully initialized built-in graphics card.
WRN	C68*0*	SYS BD	bultin graphics	built-in graphics initialization failed.
WRN	C68*s*	SYS BD	fail graph in *s*	Card in PCI slot *s* failed graphics initialization or is not a graphics card.
INI	C740	EXT IO	init other path	Autoboot is trying to boot from non-primary boot device.
INI	C780	EXT IO	ld IPL othr path	Loading IPL from non-primary boot device.
WRN	C7F0	EXT IO	other IPL fault	Error loading IPL from non-primary boot device.
WRN	C7F1	EXT IO	bad alt IPL read	Cannot load IPL from non-primary boot device--load address invalid.
WRN	C7F2	EXT IO	bad alt IPL read	Cannot load IPL from non-primary boot device--file is not IPL image.
WRN	C7F3	EXT IO	bad alt IPL read	Cannot load IPL from non-primary boot device--IPL image size invalid.
WRN	C7F4	EXT IO	bad alt IPL read	Cannot load IPL from non-primary boot device--IPL entry point address invalid.
WRN	C7F8	EXT IO	bad alt IPL read	Cannot load IPL from non-primary boot device--IPL image checksum failed.
WRN	C7FF	<blank>	launch IPL other	Booting from a device other than the primary boot path.
INI	CB00	SYS BD	TOC initiated	A Transfer of Control entered the firmware TOC handler.
WRN	CB01	SYS BD	no OS TOC vector	There is no TOC vector for the operating system. Firmware will soft boot the system.
WRN	CB02	SYS BD	bad OS TOC addr	The operating system TOC handler vector is invalid. Firmware will soft boot the system.

Table C-1. Chassis Codes for B2600 Workstations

Ostat	Code	FRU	Message	Description
WRN	CB03	SYS BD	bad OS TOC code	The operating system TOC handler is invalid. Firmware will soft boot the system.
WRN	CB04	SYS BD	bad OS TOC len	The size of the operating system TOC handler is invalid. Firmware will soft boot the system.
WRN	CB05	SYS BD	bad OS TOC chksm	The operating system TOC handler failed the checksum test. Firmware will soft boot the system.
WRN	CB0A	SYS BD	prev TOC logged	Firmware detected unread PIM data from a previous TOC and will not overwrite it. (PIM for this TOC is lost.)
INI	CB0B	SYS BD	branch to OS TOC	Branching to the operating system TOC handler.
WRN	CB0C	SYS BD	br OS TOC failed	Branch to the operating system TOC handler failed. Firmware will soft boot the system.
WRN	CB10	SYS BD	LPMC initiated	A Low-Priority Machine Check entered the firmware LPMC handler. The handler should log the error and return to normal operation.
WRN	CB11	SYS BD	icache LPMC err	An instruction cache parity error caused the LPMC.
WRN	CB12	SYS BD	dcache LPMC err	A data cache parity/ECC error caused the LPMC.
WRN	CB13	SYS BD	dcache tag error	The parity error is in the tag portion of the data cache.
WRN	CB14	SYS BD	dcache data err	The parity error is in the data portion of the data cache.
FLT	CB1F	SYS BD	OS LPMC failed	Firmware couldn't branch to the operating system LPMC handler. It will halt the CPU, requiring a power cycle to recover.
WRN	CB71	SYS BD	HPMC occurred	A High-Priority Machine Check caused entry to PDCE_CHECK (the firmware trap handler).
WRN	CB72	SYS BD	LPMC occurred	A Low-Priority Machine Check caused entry to PDCE_CHECK (the firmware trap handler).

Table C-1. Chassis Codes for B2600 Workstations

Ostat	Code	FRU	Message	Description
WRN	CB73	SYS BD	TOC occurred	A Transfer of Control caused entry to PDCE_CHECK (the firmware trap handler).
FLT	CB9*r*	SYS BD	Error on rope*r*	An error was detected on rope *r*.
FLT	CB99	SYS BD	seed IVA handler	PDC_SEED_ERROR triggered an HPMC.
FLT	CB9A	SYS BD	HPMC overwrite	Firmware is overwriting PIM data from a previous HPMC.
OFF	CBA1	SYS BD	AIOC int dat err	I/O controller internal error.
OFF	CBA2	SYS BD	EtoA rope perr	Parity error between I/O controller and Rope-to-PCI bridge.
OFF	CBA3	SYS BD	access invld TLB	An invalid I/O TLB entry was accessed.
OFF	CBA4	SYS BD	EtoA rp cmd perr	Command parity error between I/O controller and Rope-to-PCI bridge.
OFF	CBA5	SYS BD	CDF timeout	Rope Command/Data FIFO is backed up.
OFF	CBA6	SYS BD	R2PCI resp tmout	Rope-to-PCI bridge timed out. Could be a failure of the PCI card, rope, or R2PCI bridge.
OFF	CBA7	SYS BD	Unknown AIOC err	Unknown I/O controller error.
OFF	CBB1	SYS BD	PCI timeout	A PCI card requested the bus but failed to use it.
OFF	CBB2	SYS BD	PCI timeout; OV	More than once aPCI card requested the bus but failed to use it.
OFF	CBB3	SYS BD	R2PCI intrnl err	Rope-to-PCI bridge internal error.
OFF	CBB4	SYS BD	R2PCI int err;OV	Multiple Rope-to-PCI bridge internal errors.
OFF	CBB6	SYS BD	PCI data req err	PCI bus data requestor error: R2PCI detected PERR# assertion.
OFF	CBB8	SYS BD	PCI D req err;OV	Rope-to-PCI bridge detected multiple PERR# assertions.
OFF	CBBA	SYS BD	PCI data par err	PCI bus data parity error.
OFF	CBBC	SYS BD	PCI Dpar err;OV	Multiple PCI bus data parity errors.
OFF	CBBE	SYS BD	R2PCI intrnl err	Error in R2PCI internal data to PCI bus.
OFF	CBC0	SYS BD	R2PCI int err;OV	Multiple R2PCI internal data to PCI bus errors.

Table C-1. Chassis Codes for B2600 Workstations

Ostat	Code	FRU	Message	Description
OFF	CBC2	SYS BD	PCI data parity	PCI data parity error. I/O error log word 3 contains the error address.
OFF	CBC4	SYS BD	PCI data par; OV	Multiple PCI data parity errors. I/O error log word 3 contains the error address.
OFF	CBC6	SYS BD	R2PCI intrnl err	Rope-to-PCI bridge internal data error: R2PCI detected PERR# assertion.
OFF	CBC8	SYS BD	R2PCI int err;OV	Multiple R2PCI internal data errors: R2PCI detected multiple PERR# assertions.
OFF	CBCA	SYS BD	PCI data rs err	PCI bus data responder error: R2PCI detected PERR# assertion.
OFF	CBCC	SYS BD	PCI D rs err; OV	Multiple PCI bus data responder errors: R2PCI detected multiple PERR# assertions.
OFF	CBCE	SYS BD	R2PCI T-Abort	Rope-to-PCI bridge signalled Target Abort.
OFF	CBD0	SYS BD	R2PCI T-Abort;OV	Rope-to-PCI bridge signalled multiple Target Aborts.
OFF	CBD2	SYS BD	PCI parity err	PCI address/command parity error.
OFF	CBD4	SYS BD	PCI par err; OV	Multiple PCI address/command parity errors.
OFF	CBD6	SYS BD	PCI no DEVSEL#	No PCI device selected (DEVSEL# assertion). I/O error log word 3 contains the error address.
OFF	CBD8	SYS BD	PCI no DEVSEL;OV	Multiple DEVSEL# assertions. I/O error log word 3 contains the error address.
OFF	CBDA	SYS BD	PCI target abort	A PCI device signalled Target Abort. I/O error log word 3 contains the error address.
OFF	CBDC	SYS BD	PCI T-Abort; OV	A PCI device signalled multiple Target Aborts. I/O error log word 3 contains the error address.
OFF	CBDD	SYS BD	PCI assrts LOCK#	A PCI device asserted LOCK#.
OFF	CBDE	SYS BD	PCI LOCK#; OV	A PCI device asserted LOCK# multiple times.
OFF	CBE0	SYS BD	PCI assrts SERR#	A PCI device asserted SERR#: address parity error or other system error.

Table C-1. Chassis Codes for B2600 Workstations

Ostat	Code	FRU	Message	Description
OFF	CBE2	SYS BD	PCI SERR#; OV	A PCI device asserted SERR# multiple times.
OFF	CBE3	SYS BD	Unknown PCI err	Unknown PCI error detected.
OFF	CBE6	SYS BD	AtoE rope perr	Parity error between system I/O controller and Rope-to-PCI bridge.
OFF	CBE7	SYS BD	R2PCI intrnl err	Rope-to-PCI bridge internal data error.
OFF	CBE8	SYS BD	AtoE rope perr	Command parity error between system I/O controller and Rope-to-PCI bridge.
OFF	CBE9	SYS BDSYS BD	Unknown Rope err	Unknown rope error occurred.
FLT	CBF0	SYS BD	HPMC initiated	A High-Priority Machine Check entered the firmware HPMC handler.
FLT	CBF1	SYS BD	no OS HPMC IVA	There is no HPMC vector for the operating system. Firmware will halt the CPU, requiring a power cycle to recover.
FLT	CBF2	SYS BD	bad OS HPMC len	The size of the operating system HPMC handler is invalid. Firmware will halt the CPU, requiring a power cycle to recover.
FLT	CBF3	SYS BD	bad OS HPMC addr	The operating system HPMC handler vector is invalid. Firmware will halt the CPU, requiring a power cycle to recover.
FLT	CBF4	SYS BD	bad OS HPMC cksm	The operating system HPMC handler failed the checksum test. Firmware will halt the CPU, requiring a power cycle to recover.
FLT	CBF5	SYS BD	OS HPMC vector 0	The size of the operating system HPMC handler is zero. Firmware will halt the CPU, requiring a power cycle to recover.
WRN	CBFA	SYS BD	prev HPMC logged	Firmware detected unread PIM data from a previous HPMC and will overwrite it.
FLT	CBFB	SYS BD	brnch to OS HPMC	Branching to the operating system HPMC handler.
FLT	CBFC	SYS BD	OS HPMC br err	Branch to the operating system HPMC handler failed. Firmware will halt the CPU, requiring a power cycle to recover.
FLT	CBFD	SYS BD	unknown check	The firmware trap handler didn't detect an HPMC, LPMC, or TOC.

Table C-1. Chassis Codes for B2600 Workstations

Ostat	Code	FRU	Message	Description
FLT	CBFE	SYS BD	HPMC during TOC	A High-Priority Machine Check occurred during Transfer of Control processing.
FLT	CBFF	SYS BD	multiple HPMCs	A High-Priority Machine Check occurred while processing another HPMC.
INI	CC0*n*	SYS BD	CPU*n* OS rendezvs	Slave CPU *n* entering the final rendezvous, waiting for the operating system to awaken it.
INI	CC1*n*	SYS BD	CPU*n* early rend	Slave CPU *n* entering the early rendezvous, waiting for the monarch CPU to initialize scratch RAM and other system state.
INI	CC2*n*	SYS BD	CPU*n* rendezvous	Slave CPU *n* entering rendezvous. Slave CPUs enter this rendezvous numerous times during boot.
INI	CC3*n*	SYS BD	CPU*n* cache rend	Slave CPU *n* entering cached rendezvous, waiting for the monarch CPU to configure the system bus.
INI	CC4*n*	SYS BD	CPU*n* mem rendez	Slave CPU *n* entering memory rendezvous, waiting for the monarch CPU to select a boot device.
TST	D000	SYS BD	micro controller	Firmware is initializing communications with the system controller.
WRN	D004	SYS BD	micro not resp	Firmware detected a communications error with the system controller.
INI	D005	SYS BD	set dom1 fan spd	Firmware is initializing communications with the system controller.
INI	D006	SYS BD	set dom2 fan spd	Firmware is initializing communications with the system controller.
WRN	D007	SYS BD	bad microctl cmd	Firmware detected a communications error with the system controller.
FLT	D01*n*	SYS BD	fan *n*: failure!	Firmware detected system fan *n* stopped. To determine the values for *n*, see the section “Removing Fan Modules” in Chapter 3.
WRN	D02*n*	SYS BD	fan *n*: too slow!	Firmware detected system fan *n* is running too slowly. To determine the values for *n*, see the section “Removing Fan Modules” in Chapter 3.

D Accessories and Replacement Parts

This appendix contains an overview of system accessories, an exploded view of the workstation components and a components parts list.

HP B2600 Accessories

This section provides a list of supported accessories for the B2600 workstation.

B2600 Supported Accessories

Processor

PA8600, 500MHz	A6070A

Memory Upgrades

256MB SDRAM DIMM card	A4997A
512MB SDRAM DIMM card	A4995A
1GB SDRAM DIMM card	A6016A

Mass Storage – Hard Disk Drives

9GB LVD SCSI disk, 10K RPM	A4997A
18GB LVD SCSI disk, 10K RPM	A4998A
36GB LVD SCSI disk, 10K RPM	A6031A

Removable Mass Storage

650MB FAST CD-ROM drive, ATAPI I/F	A5001A

Graphics Cards

HP VISUALIZE fx5	A1292A
HP VISUALIZE fxe rev. b	A4983B

Audio Card

Optional PCI audio card with headphones	A6077A

Parts and Part Numbers

This section provides an exploded view of the HP B2600 parts and a list of its part numbers.

Figure D-1 Exploded View of the B2600 Parts

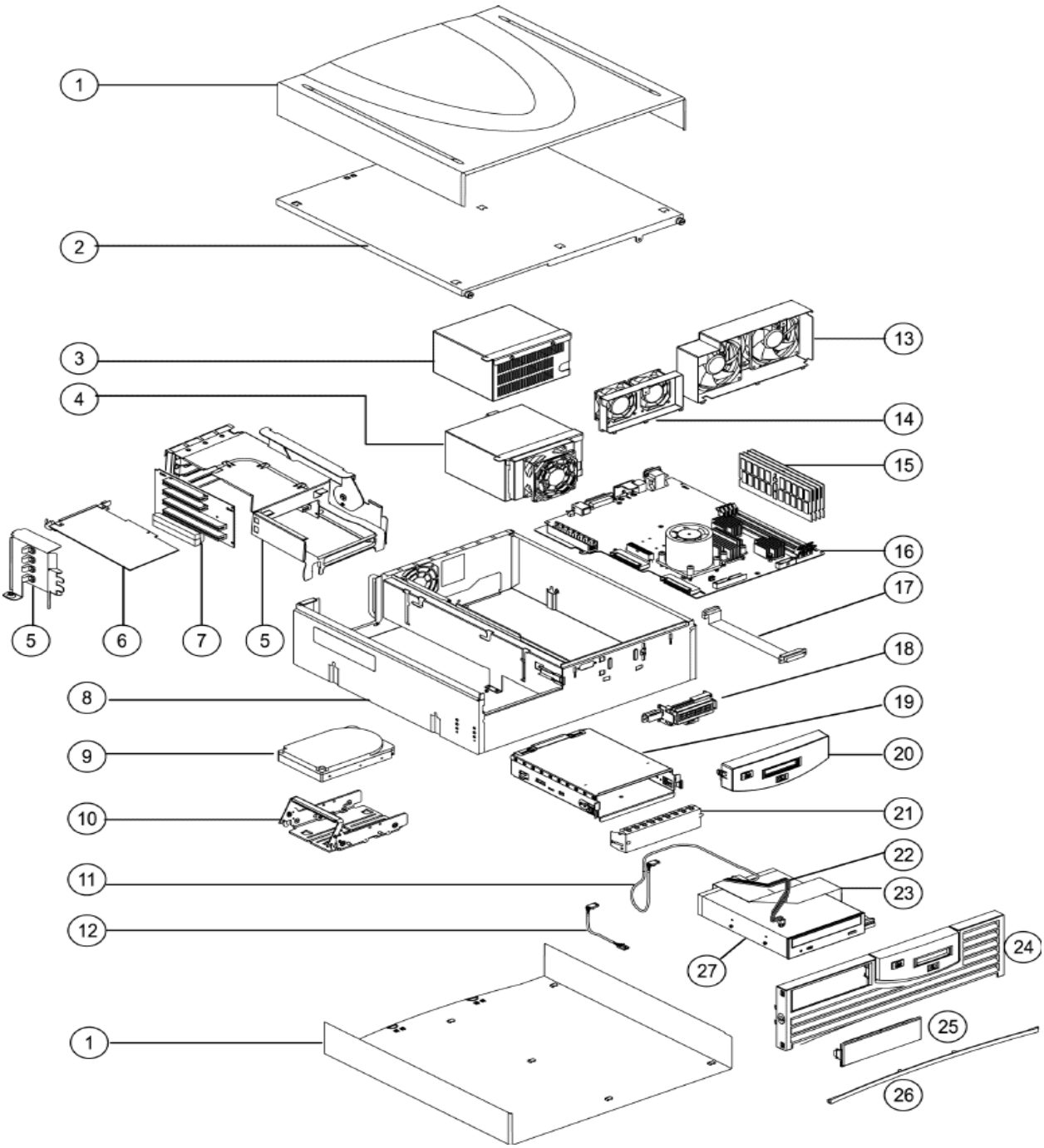


Table D-1 HP 2600 Parts List

Item	Description	Replacement Part Number	Exchange Part Number
System Board			
16	500MHz PA8600 CPU Assembly	A6070-699001	N/A
Hard Disk Drive			
9	9GB, 10K RPM LVD disk	A1658-69027	N/A
9	18GB, 10K RPM LVD disk	A1658-69031	N/A
9	36GB, 10K RPM LVD disk	A1658-69032	N/A
10	Disk drive bracket	A6070-62008	N/A
Memory			
15	256MB SDRAM DIMM	A3862-69001	N/A
15	512MB SDRAM DIMM	A3863-69001	N/A
15	1GB SDRAM DIMM	A3864-69001	N/A
Power Supply			
3	320W Power Supply-AC	0950-4051	N/A
4	320W Power Supply-DC	0950-4052	N/A
PCI Cage			
7	B2600 backplane PCA	A6070-66520	N/A
5	PCI Card Cage	A6070-62004	N/A
Mass Storage			
27	CD-ROM, 48×, ATAPI I/F	A4385-70001	N/A
23	IDE CD cable	A6070-63001	N/A
22	CD power cable	A6070-63002	N/A
19	CD bracket assembly	A6070-62003	N/A
25	CD plastic cover	A6070-40002	N/A
21	CD filler assembly	A6070-62037	N/A
Desktop and Rack-Mount Kits			
N/A	Rack-mount kit with slides	A7228-62010	N/A
1	Desktop kit with covers	A7227-62010	N/A
26	Trim bezel, B2600	A6070-40007	N/A

Table D-1 HP 2600 Parts List

Item	Description	Replacement Part Number	Exchange Part Number
Fans			
13	92mm Fan/bracket assembly	A6070-62033	N/A
14	60mm Fans/bracket assembly	A6070-62034	N/A
Liquid Crystal Display			
17	LCD cable assembly	A6070-63003	N/A
18	LCD bracket assembly	A6070-62009	N/A
Audio			
6	Audio card	5065-5711	N/A
12	Audio-extender cable	A6070-63006	N/A
N/A	Audio headphones	5183-9500	N/A
11	CD-ROM audio cable	8120-8740	N/A
Chassis and Bezels			
2	Chassis top cover-AC	A6070-62007	N/A
N/A	Chassis top cover-DC	A6070-62028	N/A
24	Front Bezel Assembly-AC	A6070-62006	N/A
20	Front Mini Bezel-DC	A6070-62038	N/A
8	Chassis with fans	A6070-62001	N/A

E DC Power Supply

This appendix explains how to remove and replace your DC power supply. Note that the DC power supply allows you to set up your computer so that it is always on and ready for use.

Please keep in mind that this appendix should only be used by service-trained personnel that are familiar with hazards associated with connecting equipment to a centralized DC power source.

DC Power Supply Considerations

There are a few things to consider when connecting your workstation(s) to a DC power source. First you need to have the proper gauge of wire available to make the connection from the DC power source to the workstation(s). Second you need to ensure that your workstation or workstations are properly grounded. Finally, you need to consider where to locate your workstation(s) and their DC power source.

WARNING **Disconnect power from the source before connecting power to the product or before accessing the product's power terminals. The DC source can supply high levels of current capable of causing serious burns and arcing that can produce molten metal.**

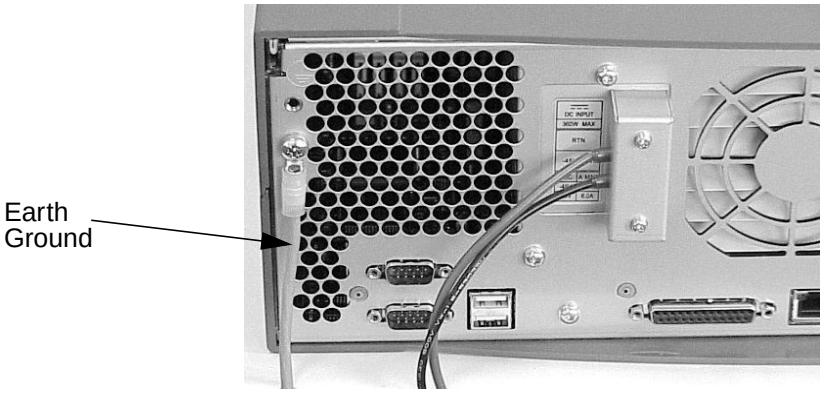
Connecting Wires

The wires used to make all grounding and electrical connections to your workstation(s) should be a minimum of 18 AWG. Note that the electrical-power connectors to the workstation(s) must use insulated crimp-on lugs. This will prevent the connectors from shorting to the chassis.

Grounding Your Workstation

A separate wire is required to properly connect the chassis to earth. This is needed for safety as well as for Electromagnetic Compatibility (EMC). See Figure E-1.

Figure E-1 Physical Ground Connection



Location for Your DC Source and Workstation(s)

The DC power source and workstation(s) that use this DC source should be installed in a location that provides for restricted access. Restricted access means providing locked security and allowing access only by service personnel.

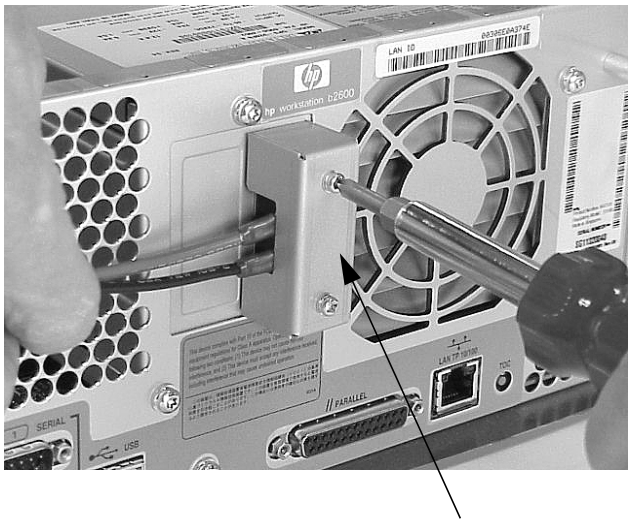
Removing the DC Power Supply

This section explains how to remove your workstation's DC power supply. Please keep in mind that the reverse of the steps given in this section should be used to replace the DC power supply.

The following procedure explains how to remove your DC power supply.

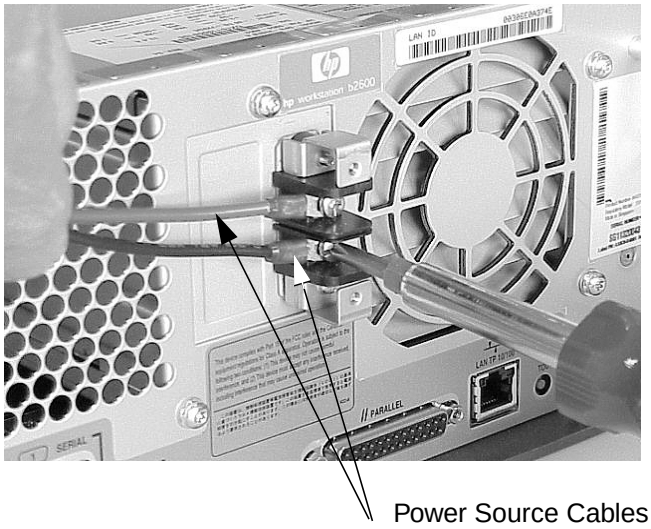
1. Remove the DC connector cap located on the back side of your workstation. See Figure E-2.

Figure E-2 Removing the DC Connector Cap



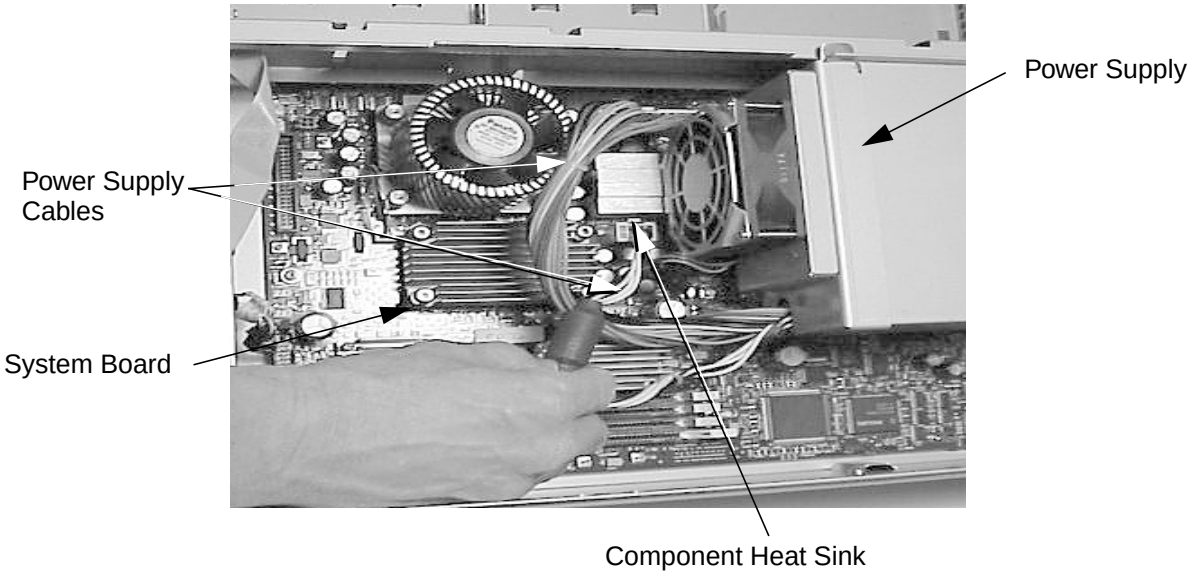
2. Disconnect the power source cables from the system as stated in the WARNING at the beginning of this chapter. See Figure E-3

Figure E-3 Disconnecting the DC Power Source



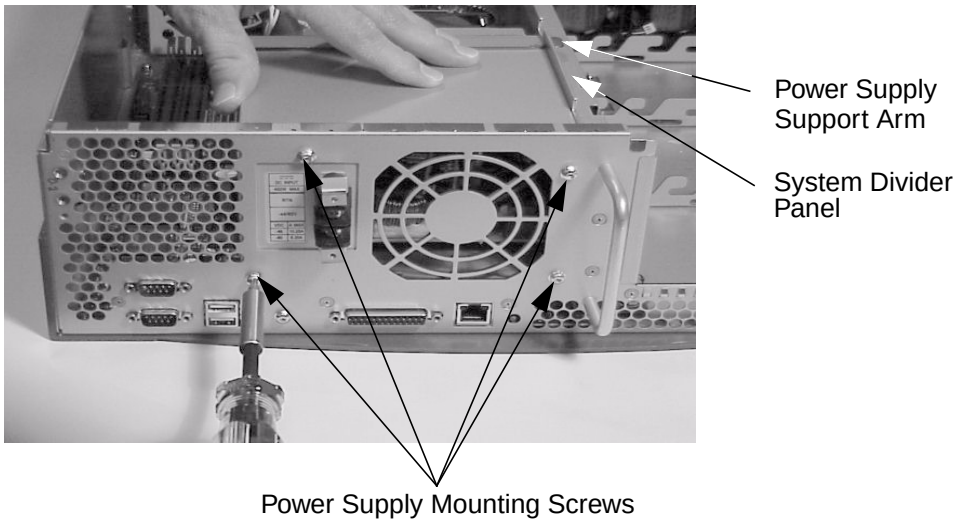
3. Disconnect the power supply cables from the system board by pressing in on the latch retainers and pull the cable connector out of the system board connector. See Figure E-4

Figure E-4 Disconnect the Power Supply Cables



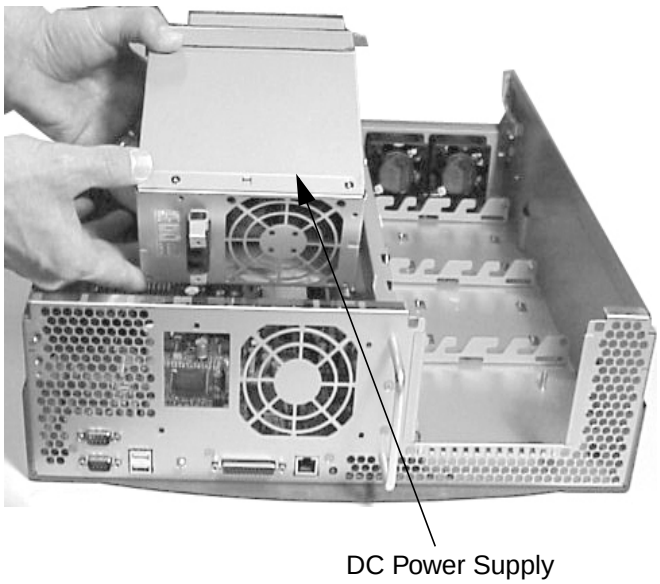
4. Unscrew the four power supply mounting screws located on the back of the system. See Figure E-5 Note that there is a power supply support arm that fits into a slot on the system divider panel. This support arm prevents the supply from falling onto the system board while you are unscrewing the mounting screws

Figure E-5 Unscrewing the Four Power Supply Mounting Screws



5. Remove the DC power supply from the system. To do this, you will have to slide the support arm out of its slot. See Figure E-6 Note that there is a component heat sink located on the system board near the back of the power supply that can be damaged if you are not careful when removing the power supply. See Figure E-4.

Figure E-6 Removing the DC Power Supply



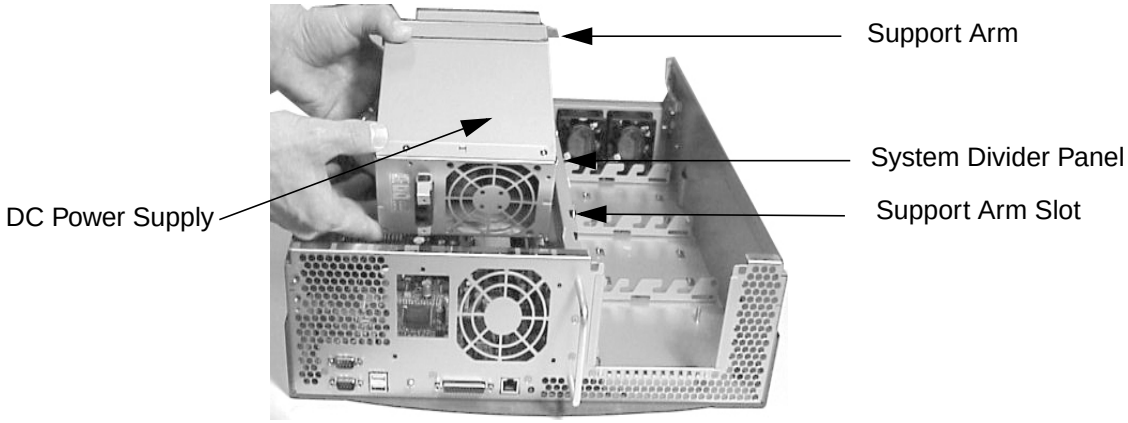
Replacing the DC Power Supply

This section explains how to replace your workstation's DC power supply.

To replace your DC power supply, follow this procedure:

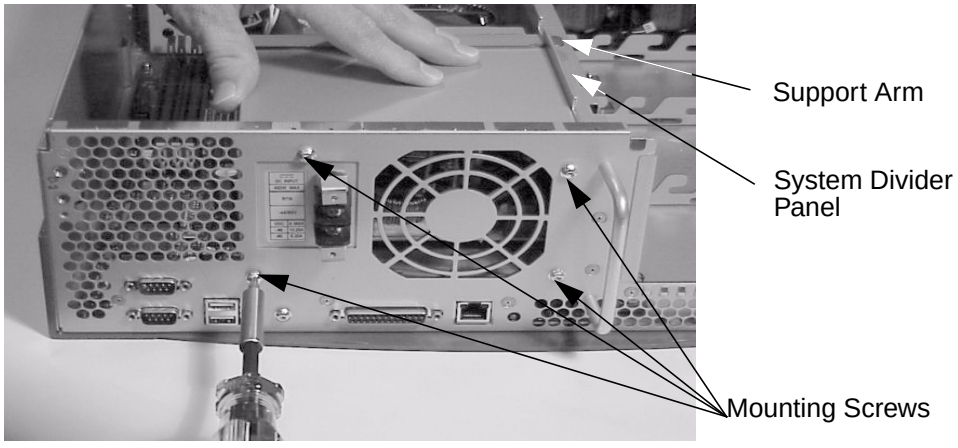
1. Remove the DC power supply if you have not already done this. Otherwise, skip this step. To remove the DC Power supply, follow the procedure in the section **"Removing the DC Power Supply"** found in this appendix.
2. Replace the DC power supply in the workstation. To do this, you will have to slide the support arm into its slot. See Figure E-7. Note that there is a component heat sink located on the system board near the back of the power supply that can be damaged if you are not careful when replacing the power supply. See Figure E-7.

Figure E-7 Replacing the DC Power Supply



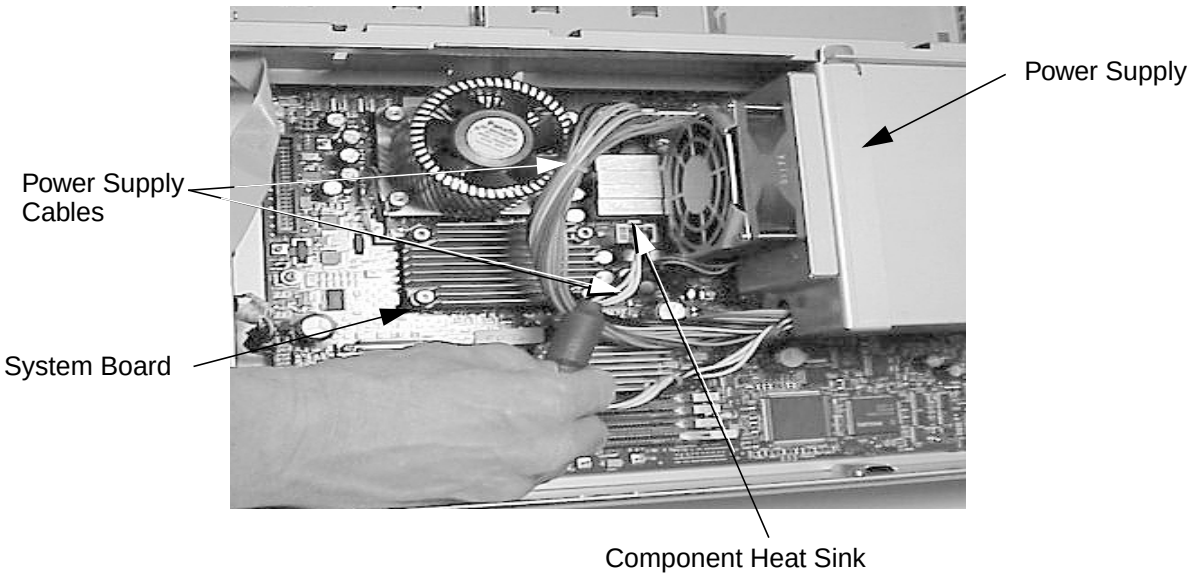
3. Align the four power supply mounting screws holes on the chassis with the four threaded screw holes on the back of the power supply and screw in the four mounting screws. See Figure E-8.

Figure E-8 Screw in the Four Power Supply Mounting Screws



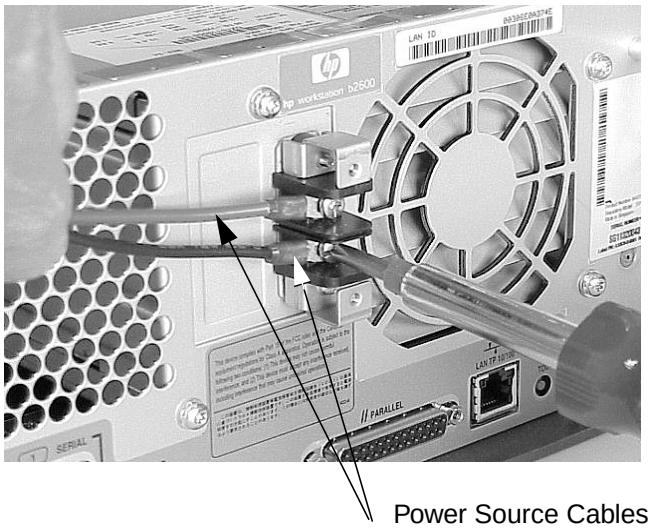
4. Insert the two connectors for the power supply cables into their keyed connectors on the system board. See Figure E-9.

Figure E-9 Connect the Power Supply Cables



5. Connect the power source cables onto their connectors on the back of the workstation's power supply. Please pay attention to the WARNING in the section "DC Power Supply Considerations" found in this appendix. See Figure E-10

Figure E-10 Disconnecting the DC Power Source



6. Replace the DC connector cap located on the back side of your workstation's DC power supply. See Figure E-11.

Figure E-11 Replacing the DC Connector Cap

7. Complete the procedure in the section **"Replacing the Front Bezel and Top Cover"** found in this chapter.
8. Connect and turn on the power to your system.
9. Determine that your DC power supply replacement was successful by observing to see if the workstation's LCD lights up and the CDE login screen appears in your workstation's display. If your workstation's LCD does not light up and the CDE login screen does not appear, repeat this procedure. If your workstation's LCD still does not light up and the CDE login screen does not appear, contact your local HP Support Representative.

F Remove/Replace DAT Drives

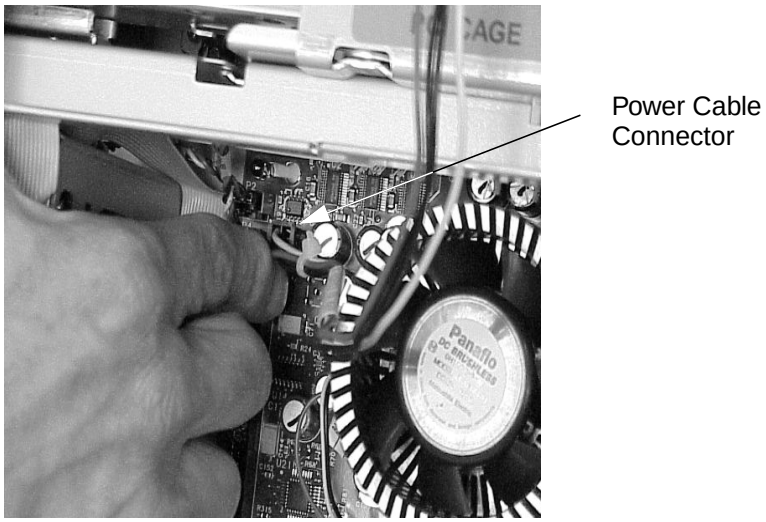
The HP B2600 workstation supports a DAT drive. You will have to check with your local HP Sales Representative if you plan to purchase one. This chapter explains how to remove and replace this DAT drive.

Removing the DAT Drive

To remove the DAT drive, follow the procedure in this section. Note that this procedure assumes you already have a SCSI card and cable installed in your system.

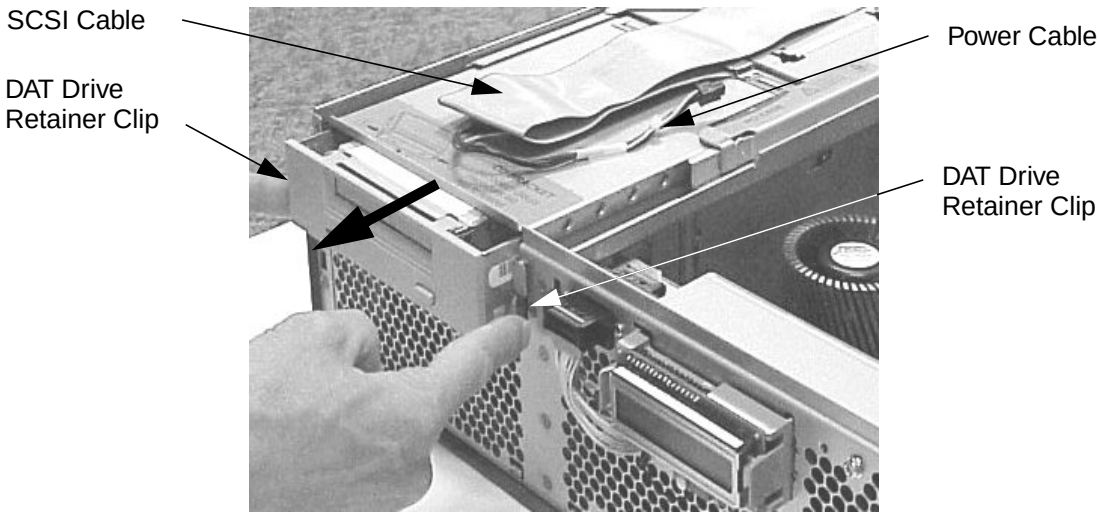
1. Complete the procedure in the section **"Removing the Front Bezel and Top Cover"** found in Chapter 3.
2. Disconnect the DAT drive power cable from the system board by pressing in on the connector's latch release. See Figure F-1.

Figure F-1 Disconnecting the DAT Drive Power Cable



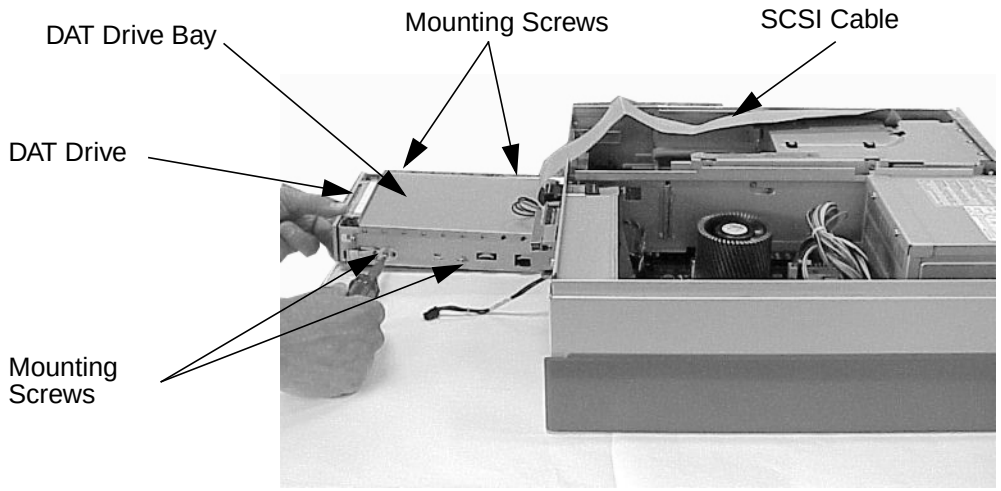
3. Remove the DAT drive and DAT drive bay from the workstation by pressing in on both DAT drive retainer clips and pull outward. See Figure F-2.

Figure F-2 Remove the DAT Drive and DAT Drive Bay Area



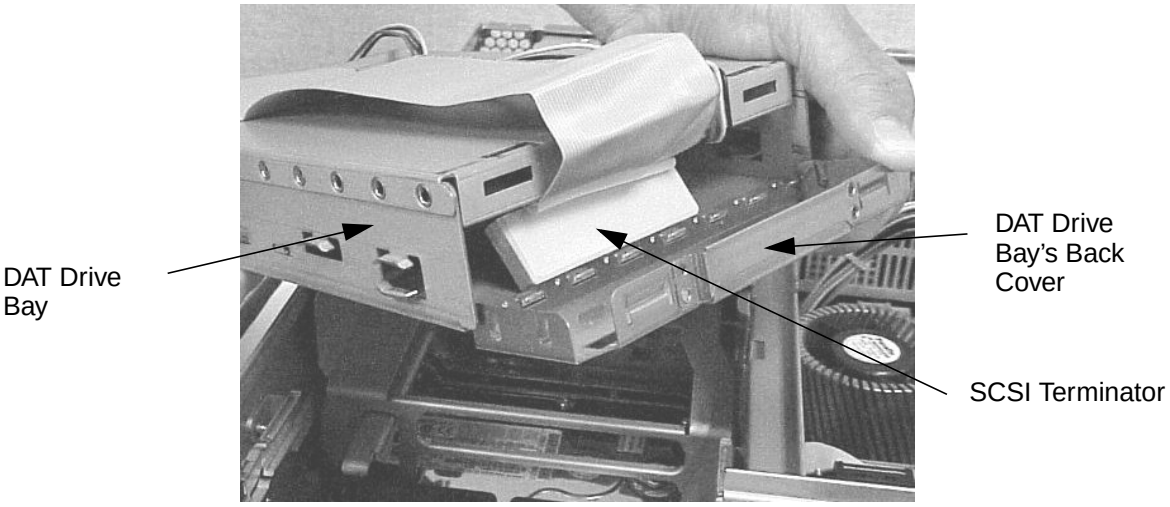
4. Unscrew the four mounting screws that hold the DAT drive in the DAT drive bay. See Figure F-3

Figure F-3 Removing the DAT Drive Bay and DAT Drive



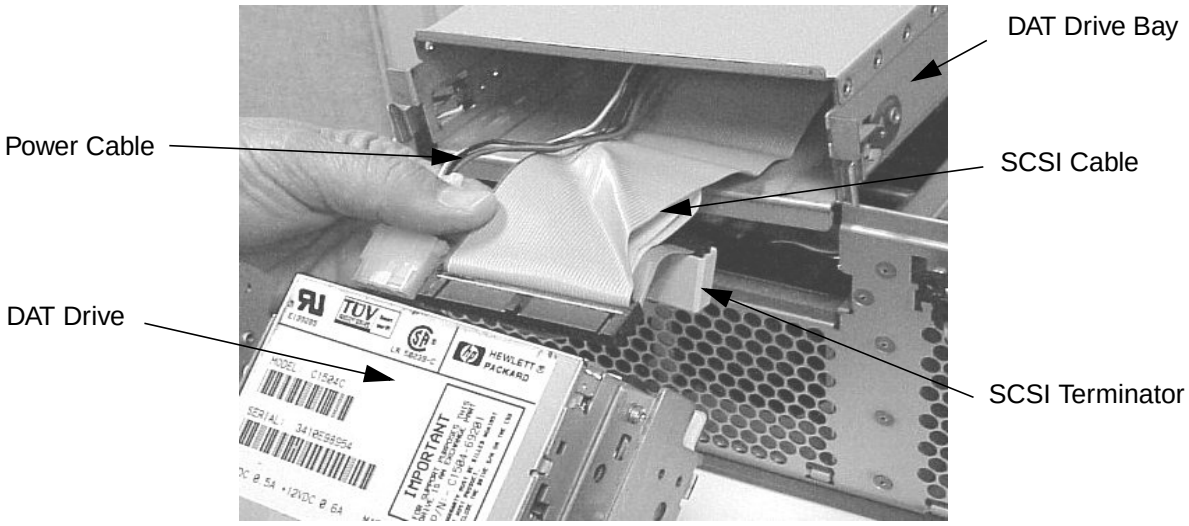
5. Remove the DAT drive bay's back cover. Note that this back cover snaps off of the DAT drive bay. See Figure F-4.

Figure F-4 Removing the DAT Drive Bay's Back Cover



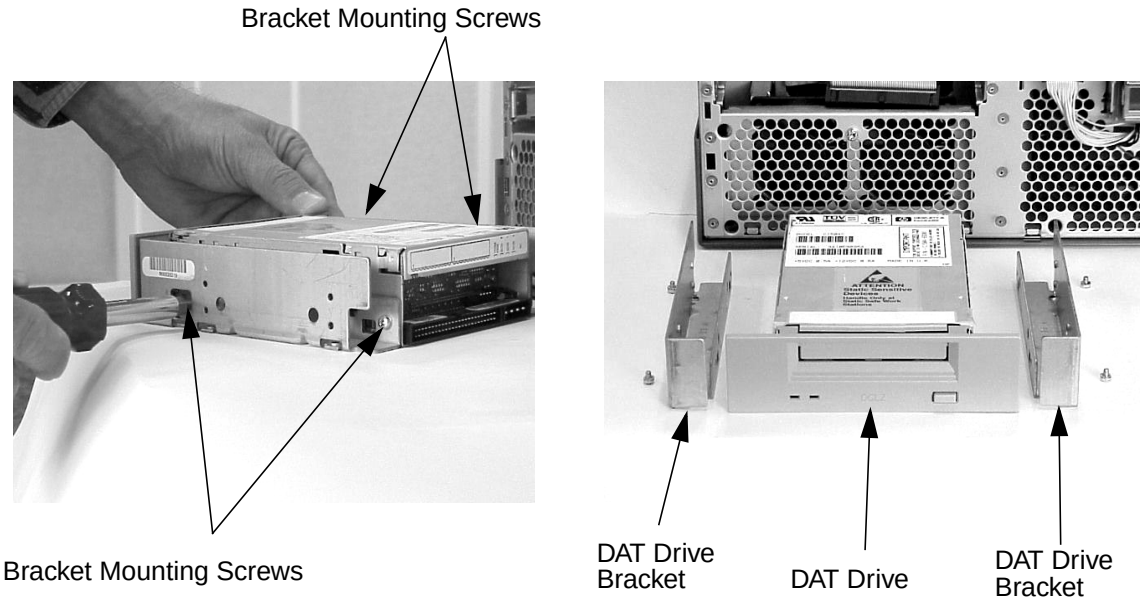
6. Slide the DAT drive out of the DAT drive bay and disconnect the DAT drive power and SCSI cables. See Figure F-5. Note that these cables are keyed for easy replacement.

Figure F-5 Disconnecting the DAT Drive's Cables



7. Unscrew the four bracket mounting screws from the DAT drive and remove the DAT drive's two brackets. See Figure F-6.

Figure F-6 Unscrew the Four DAT Drive Bracket Mounting Screws



Removing the SCSI Cable

Because there are special considerations you should know regarding the removal of the SCSI cable, this section explains some of those considerations. This section also explains how to remove the SCSI cable from your workstation's PCI cage.

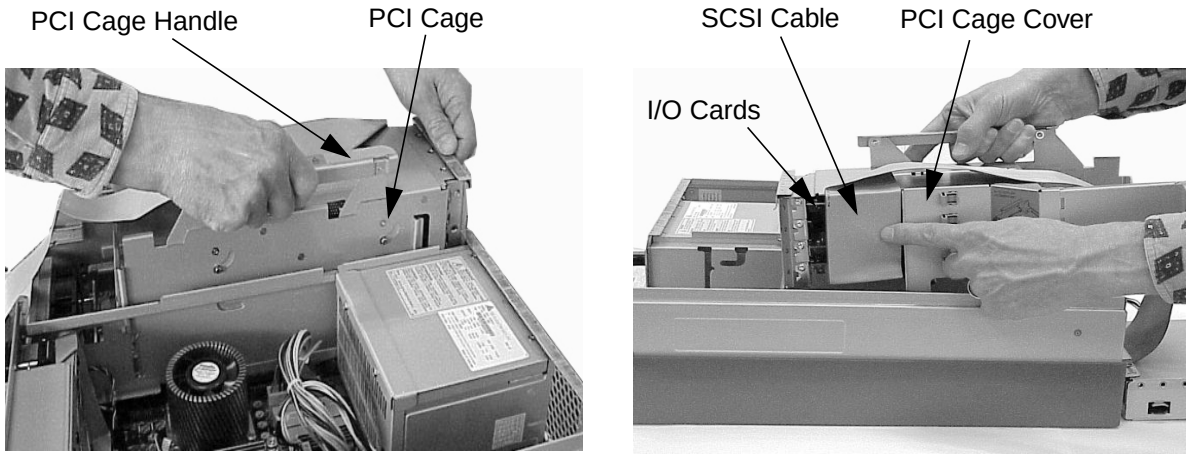
Here are some important points to remember regarding the SCSI card and cable.

- The SCSI card can be installed in any of the unused slots in your workstation's PCI cage; however, for ease of cable routing it is best to install your SCSI card in slot 4 of the PCI cage.
- The SCSI cable is long enough to allow you to run it through the DAT drive bay and out its front. This makes it easy for you to connect your power and SCSI cable connectors to the DAT drive device.
- The connectors on both ends of the SCSI cable are keyed to allow for proper pin connection.

To remove the SCSI card and cable, follow this procedure:

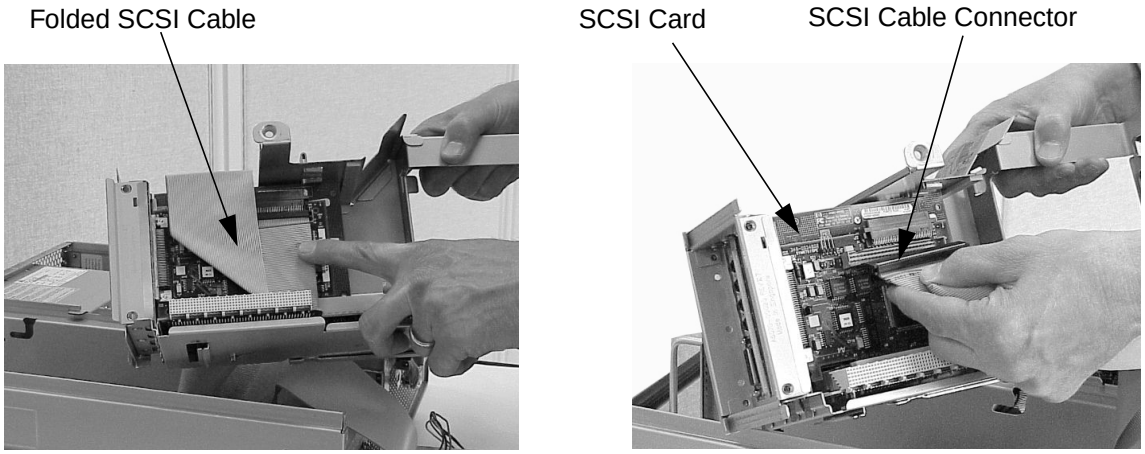
1. Complete the procedure in the section **"Removing the DAT Drive"** found in this appendix.
2. Lift up on the PCI cage handle and remove the PCI cage from the workstation, **but first make sure the DAT drive has been removed**. Notice how the SCSI cable has been routed over the exposed edge of the I/O cards. See Figure F-7.

Figure F-7 Removing the PCI Cage



3. Rotate the PCI cage over so you can see the card(s) inside the PCI cage and observe the SCSI cable and how it is folded. See Figure F-8. Next, disconnect the SCSI cables connector from the SCSI card and note the connection used on the component side of the SCSI card. See Figure F-8.

Figure F-8 Disconnection the SCSI Cable

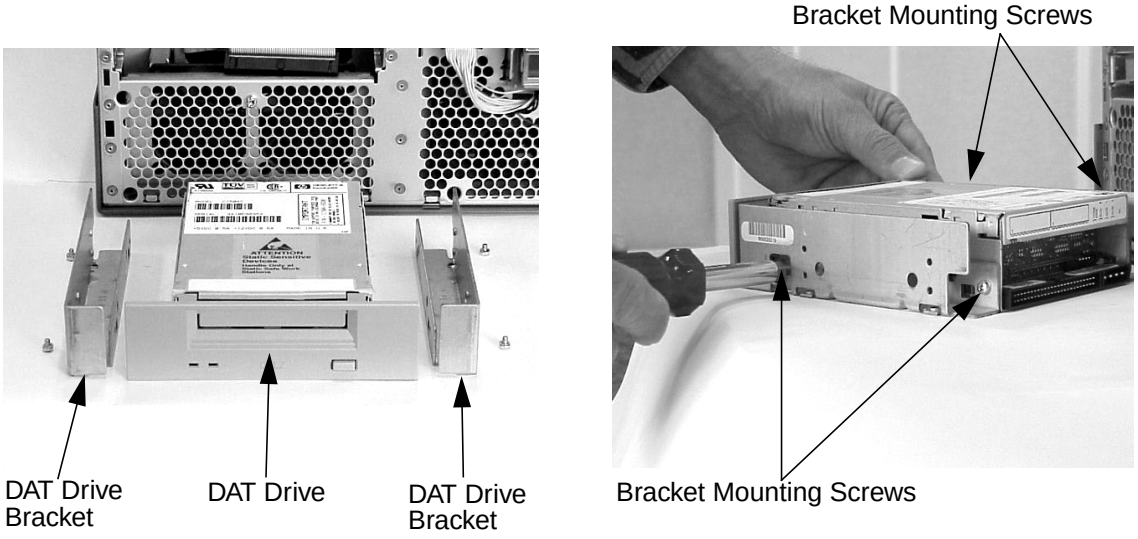


Replacing the DAT Drive

To replace the DAT drive, follow the procedure in this section. Note that this procedure assumes you already have a SCSI card and cable installed in your system.

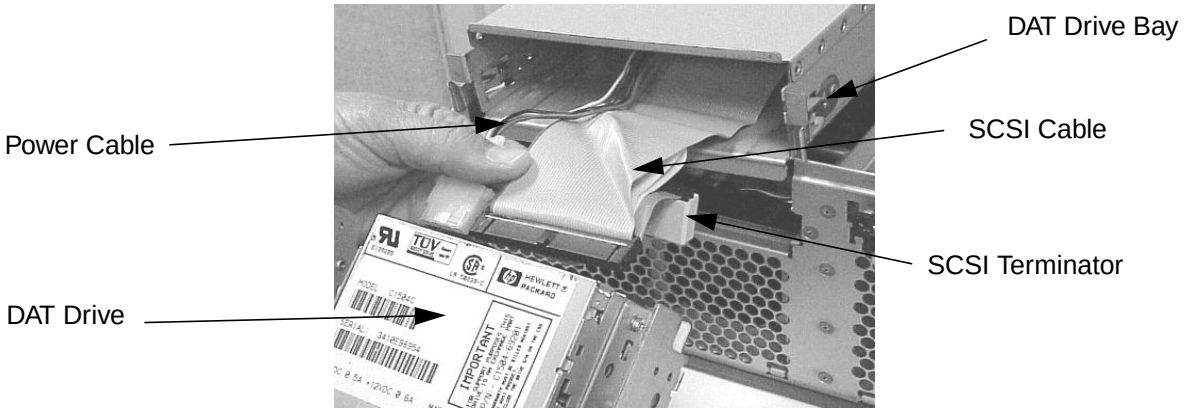
1. Remove the current DAT drive if you have not already done this. Otherwise, skip this step. To remove the DAT drive, follow the procedure in the section **"Removing the DAT Drive"** found in this appendix.
2. Place the DAT drive brackets as shown in Figure F-9. Next, align the brackets and their screw holes with the threaded screw holes of the DAT drive and screw in the four bracket mounting screws as shown in Figure F-9.

Figure F-9 Replace the DAT Drive Bracket on the DAT Drive



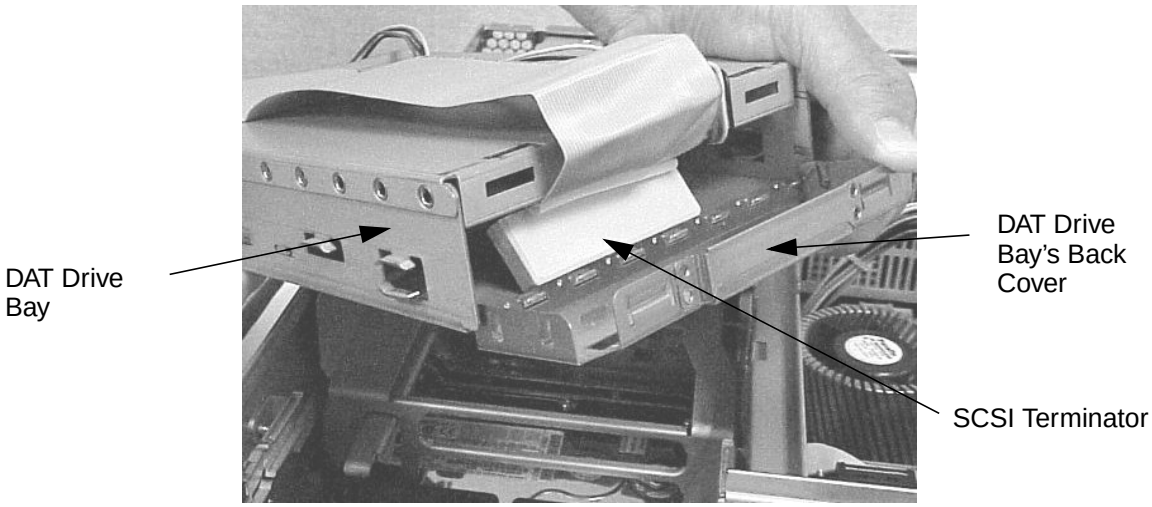
3. Connect the DAT drive power and SCSI cables to their connectors located on the back side of the DAT drive and slide the DAT drive into the DAT drive bay. See Figure F-10. To connect the SCSI and power cables, you will have to run them through the back of the DAT drive bay and out the front. Note that these cables are keyed for easy connection.

Figure F-10 Connect the DAT Drive's Cables



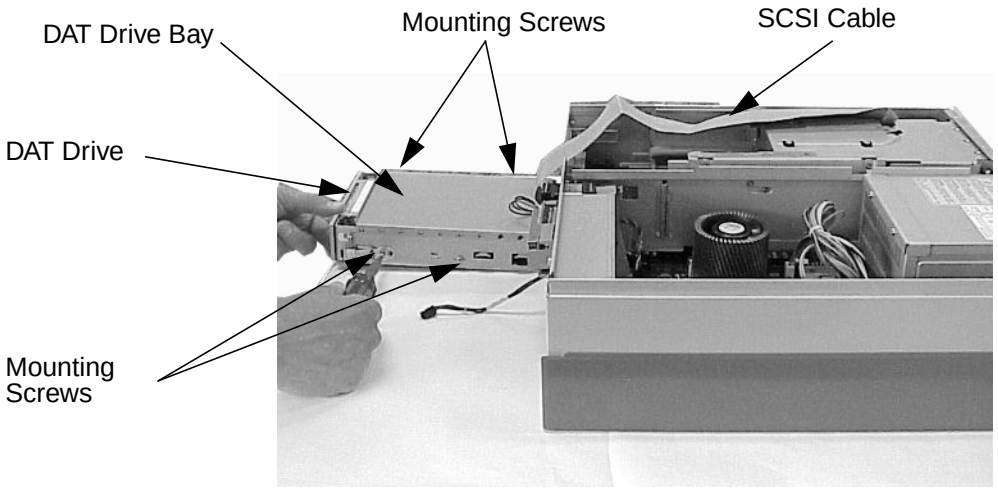
4. Replace the DAT drive bay's back cover. Note that this back cover snaps onto the DAT drive bay. See Figure F-11. Also, note that the audio, power and control cables must be neatly fed through the raised opening in the DAT drive bay's back cover to avoid pinching them.

Figure F-11 Replacing the DAT Drive Bay's Back Cover



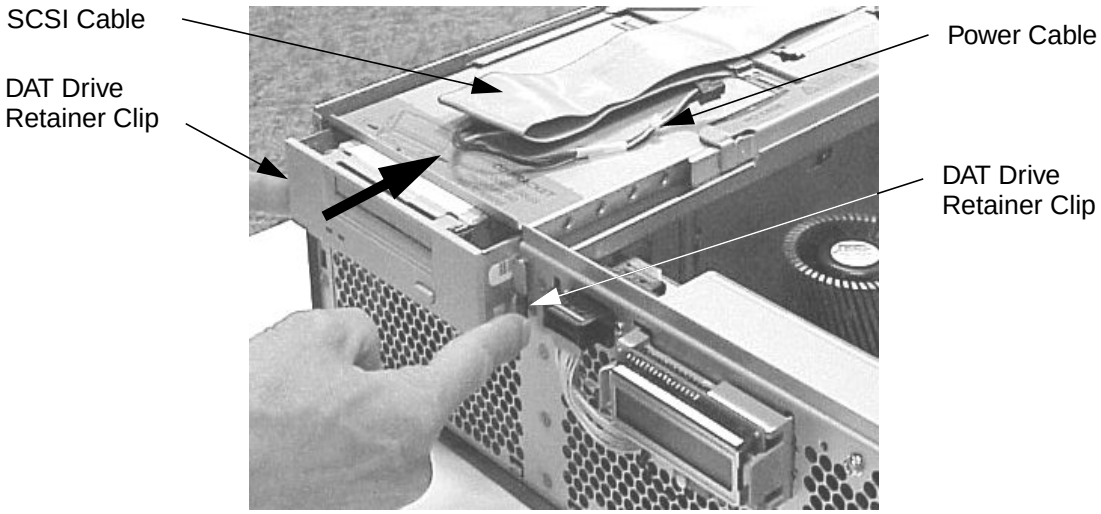
5. Align the DAT drive bay's mounting screw holes with the threaded holes on both sides of the DAT drive and screw in the four mounting screws. See Figure F-12.

Figure F-12 Removing the DAT Drive Bay and DAT Drive



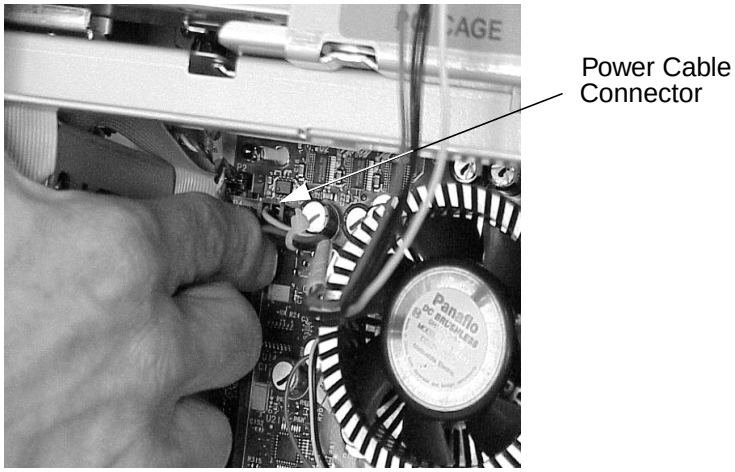
6. Slide the DAT drive bay and DAT drive back into the workstation. You will hear the retainer clips snap in place when the DAT drive bay and DAT drive are properly installed. See Figure F-13.

Figure F-13 Replace the DAT Drive and DAT Drive Bay Area



7. Connect the DAT drive power cable to its connector on the system board. See Figure F-14. This connection is keyed.

Figure F-14 Connecting the DAT Drive Power Cable



8. Complete the procedure in the section **"Replacing the Front Bezel and Top Cover"** found in Chapter 3.
9. Connect and turn on the power to your system.
10. Determine that your DAT drive replacement was successful by executing the `sam` command as `root`. When the **System Administration Manager** window appears, double click the **Disk and File System** icon and in the window that appears double click the **Disk Devices** icon. In the next window that appears, you should see your DAT drive listed. If it is not listed, repeat this procedure. If your DAT drive is still not listed, contact your local HP Support Representative.

Replacing the SCSI Cable

Because there are special considerations you should know regarding the installation of the SCSI cable, this section explains some of those considerations. This section also explains how to replace the SCSI cable in your workstation's PCI cage.

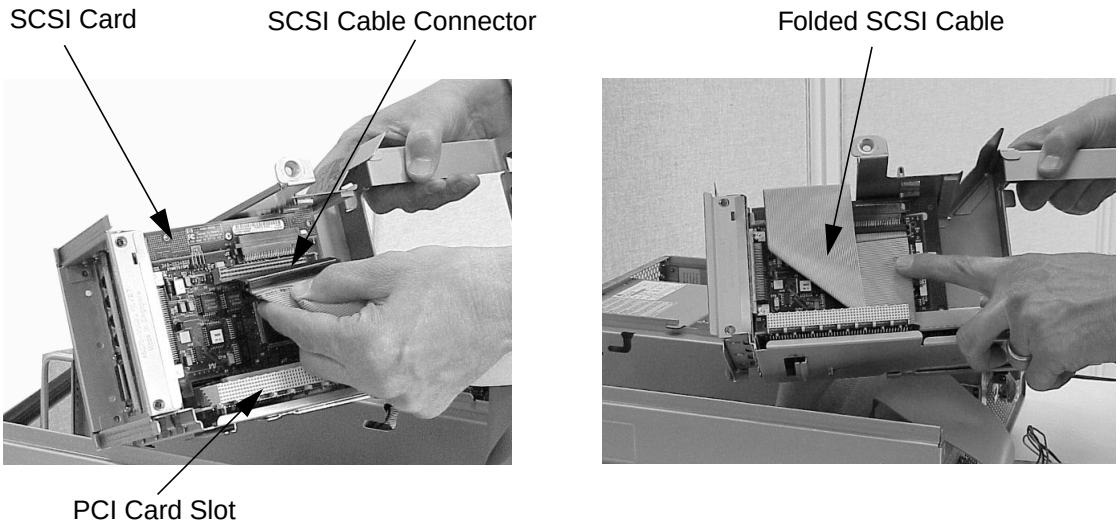
Here are some important points to remember when replacing the SCSI card and routing the SCSI cable.

- The SCSI card can be installed in any of the unused slots in your workstation's PCI cage; however, for ease of cable routing it is best to install your SCSI card in slot 4 of the PCI cage.
- The SCSI cable is long enough to allow you to run it through the DAT drive bay and out its front. This makes it easy for you to connect your power and SCSI cable connectors to the DAT drive device.
- The connectors on both ends of the SCSI cable are keyed to allow for proper pin connection.

To replace the SCSI card and cable, follow this procedure:

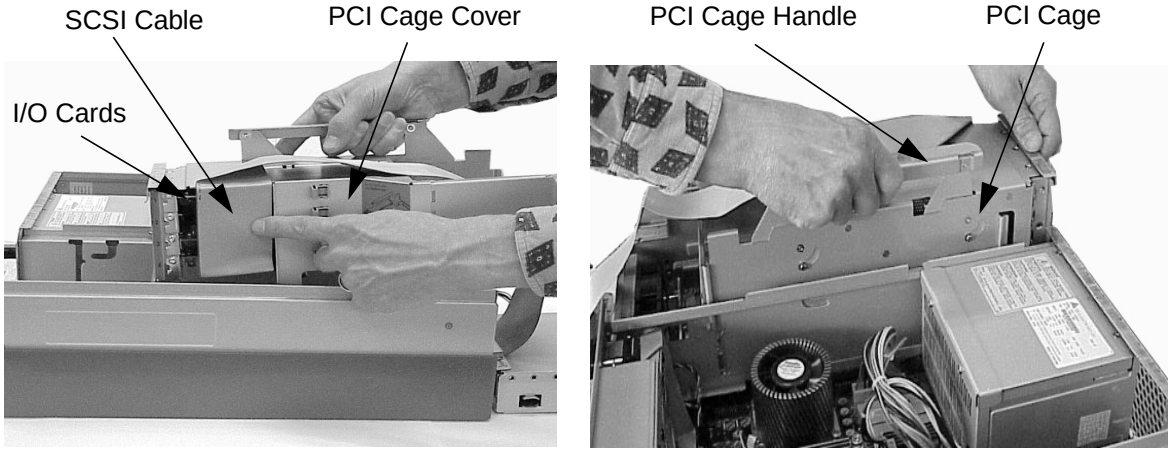
1. Complete the procedures in the section **"Removing the DAT Drive" (steps 1 through 6)** and its subsection **"Removing the SCSI Cable"** found in this appendix.
2. Insert the SCSI card into a PCI card slot (preferably slot 4) and connect the SCSI cable as shown in the picture on the left in Figure F-15. Next make sure the SCSI cable is folded as shown in the picture on the right in Figure F-15.

Figure F-15 Connecting the SCSI Cable and Making Sure it is Folded Properly



3. Route the SCSI cable over the exposed edges of the I/O cards as shown in Figure F-16. Grasp hold of the PCI cage handle and install the PCI cage in the workstation.

Figure F-16 Routing the SCSI Cable and Installing the PCI Cage



G Remove/Replace Flexible Disk Drives

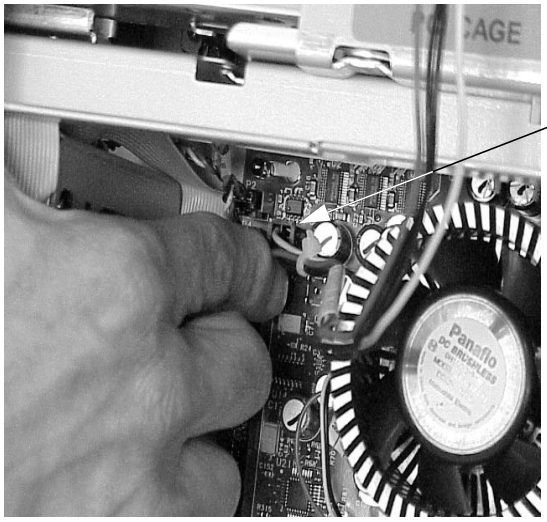
The HP B2600 workstation supports a flexible disk drive. You will have to check with your local HP Sales Representative if you plan to purchase one. This chapter explains how to remove and replace this flexible disk drive.

Removing the Flexible Disk Drive

To remove the flexible disk drive, follow the procedure in this section. Note that this procedure assumes you already have a SCSI card and cable installed in your system.

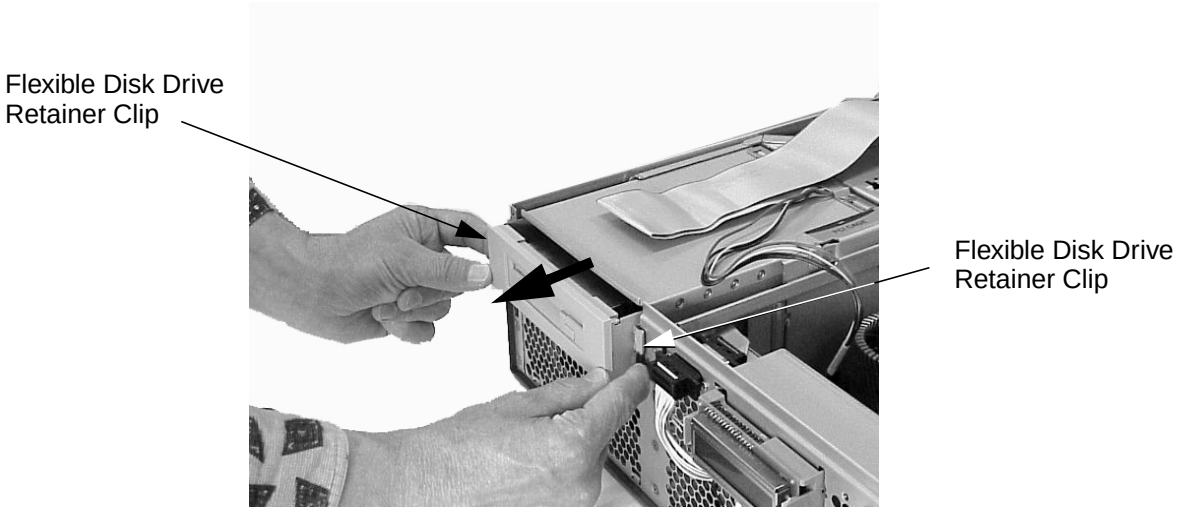
1. Complete the procedure in the section **"Removing the Front Bezel and Top Cover"** found in Chapter 3.
2. Disconnect the flexible disk drive power cable from the system board by pressing in on the power cable connector's latch release. See Figure G-1.

Figure G-1 Disconnecting the Flexible Disk Drive Power Cable



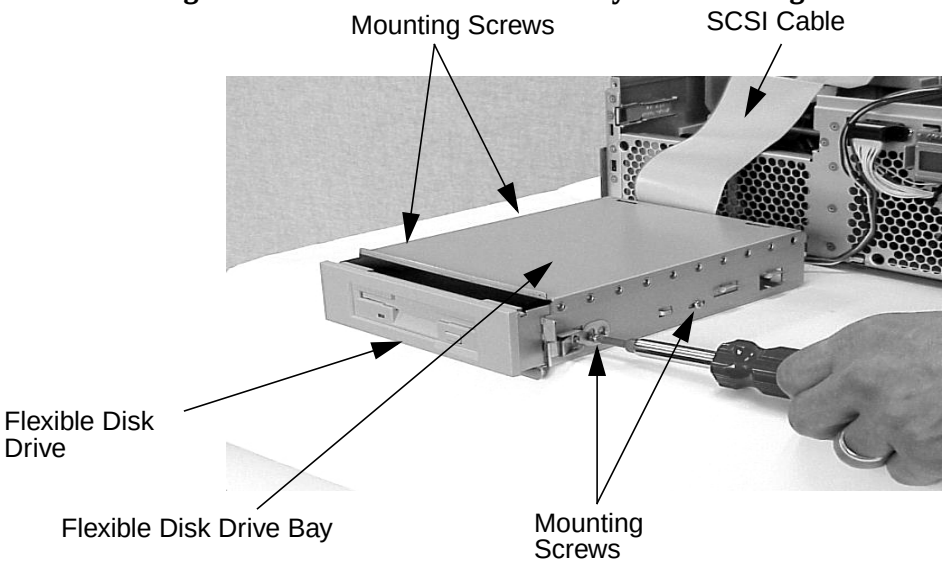
3. Remove the flexible disk drive and flexible disk drive bay area from the workstation by pressing in on both flexible disk drive retainer clips and pull outward. See Figure G-2.

Figure G-2 Remove the Flexible Disk Drive and Flexible Disk Drive Bay



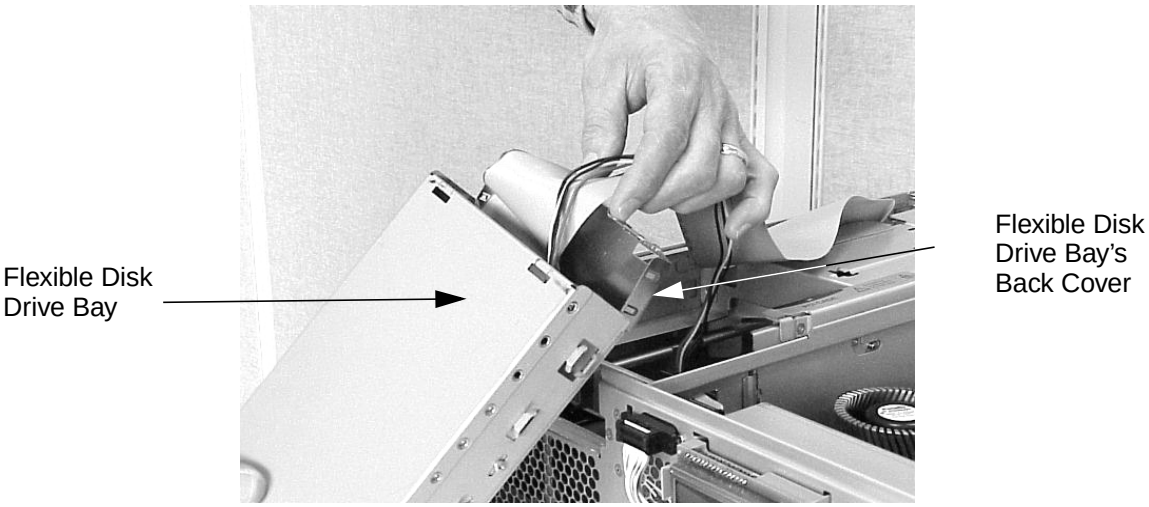
4. Unscrew the four mounting screws that hold the flexible disk drive in the flexible disk drive bay. See Figure G-3.

Figure G-3 Removing the Flexible Disk Drive Bay's Mounting Screws



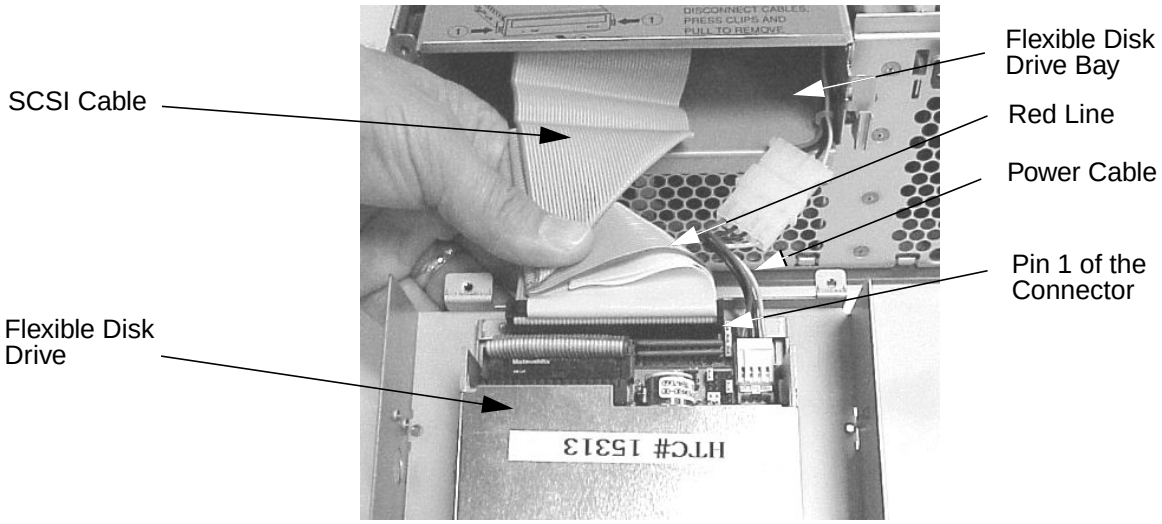
5. Take the back cover off the flexible disk drive bay by lifting up on the raised portion of the back cover. This will cause the retainer snaps to be remove from their slots on the flexible disk drive bay. See Figure G-4. Also, note the manner in which the audio, power and control cables were neatly fed through the raised opening in the flexible disk drive bay's back cover.

Figure G-4 Removing the Flexible Disk Drive Bay's Back Cover



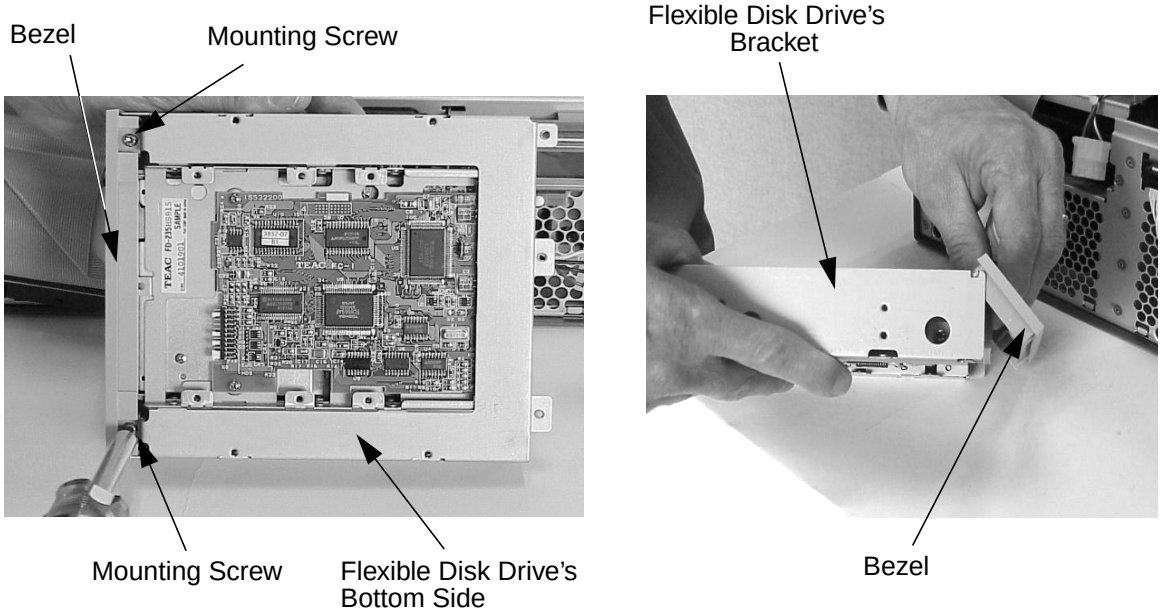
6. Slide the flexible disk drive out of the flexible disk drive bay and disconnect the flexible disk drive power and SCSI cables. See Figure G-5. Note that these cables are not keyed, so when you replace the SCSI cable, you will need to line up the red line on the SCSI cable with the right side of the flexible disk drive's SCSI connector, as viewed in Figure G-5.

Figure G-5 Disconnecting the Flexible Disk Drive's Cables



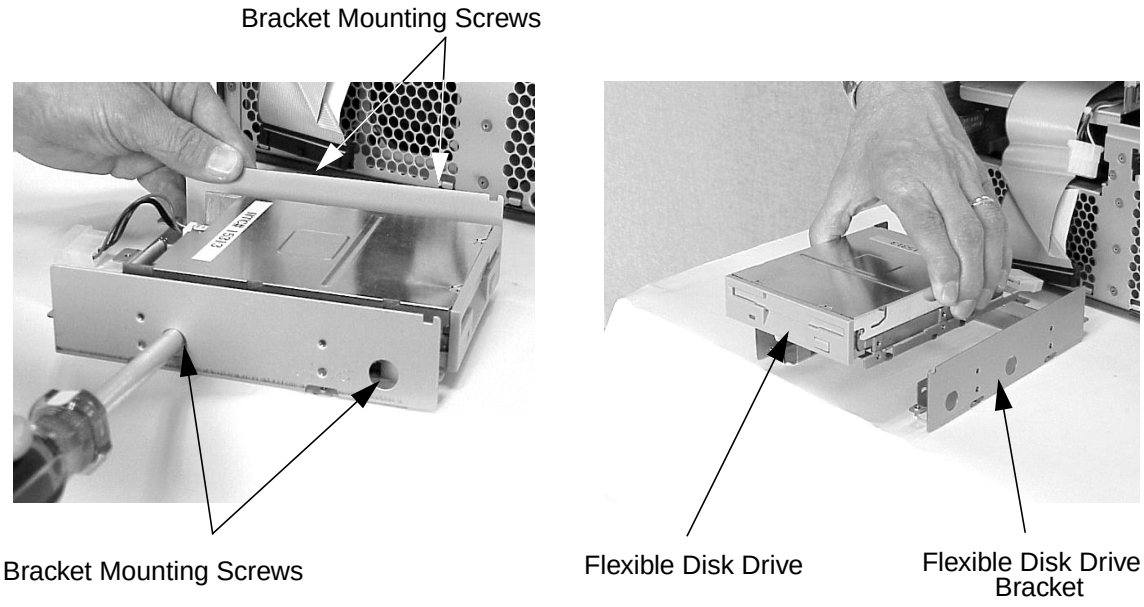
7. Unscrew the flexible disk drive's bezel mounting screws and remove the bezel by rotating it outward from the flexible disk drive's bracket. See Figure G-6.

Figure G-6 Unscrewing the Flexible Disk Drive's Bezel Mounting Screws



8. Unscrew the four bracket mounting screws from the flexible disk drive and remove the flexible disk drive from its bracket. See Figure G-7.

Figure G-7 Unscrew the Four Flexible Disk Drive Mounting Screws



Removing the SCSI Cable

Because there are special considerations you should know regarding the removal of the SCSI cable, this section explains some of those considerations. This section also explains how to remove the SCSI cable from your workstation's PCI cage.

Here are some important points to remember regarding the SCSI card and cable.

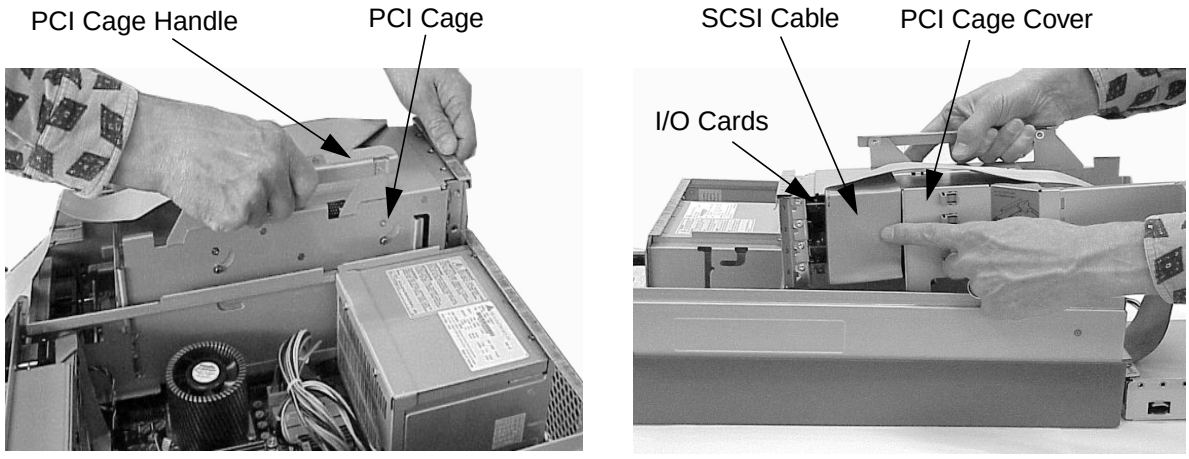
- The SCSI card can be installed in any of the unused slots in your workstation's PCI cage; however, for ease of cable routing it is best to install your SCSI card in slot 4 of the PCI cage.
- The SCSI cable is long enough to allow you to run it through the flexible disk drive bay and out its front. This makes it easy for you to connect your power and SCSI cable connectors to the flexible disk drive.
- The connectors on both ends of the SCSI cable are keyed to allow for proper pin connection. However, the flexible disk drive's connector is **not keyed** and you have to align the red line on the SCSI cable with the left side (as viewed from the back of the flexible disk drive) of the flexible disk drive's SCSI connector.

To remove the SCSI card and cable, follow this procedure:

1. Complete the procedure in the section **"Removing the Flexible Disk Drive"** found in this appendix.

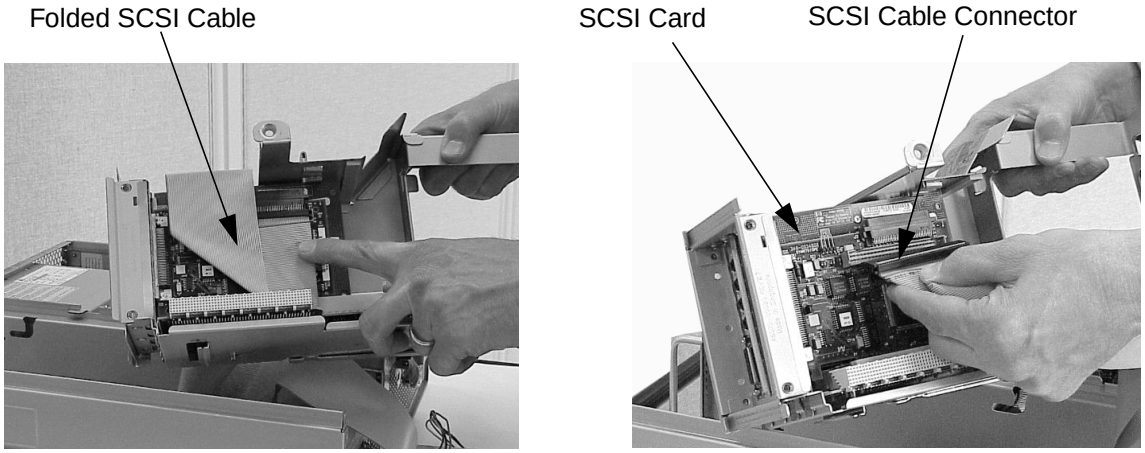
2. Lift up on the PCI cage handle and remove the PCI cage from the workstation, **but first make sure the flexible disk drive has been removed**. Notice how the SCSI cable has been routed over the exposed edge of the I/O cards. See Figure G-8.

Figure G-8 Removing the PCI Cage



3. Rotate the PCI cage over so you can see the card(s) inside the PCI cage and observe the SCSI cable and how it is folded. See Figure G-9. Next, disconnect the SCSI cables connector from the SCSI card and note the connection used. See Figure G-9.

Figure G-9 Disconnection the SCSI Cable

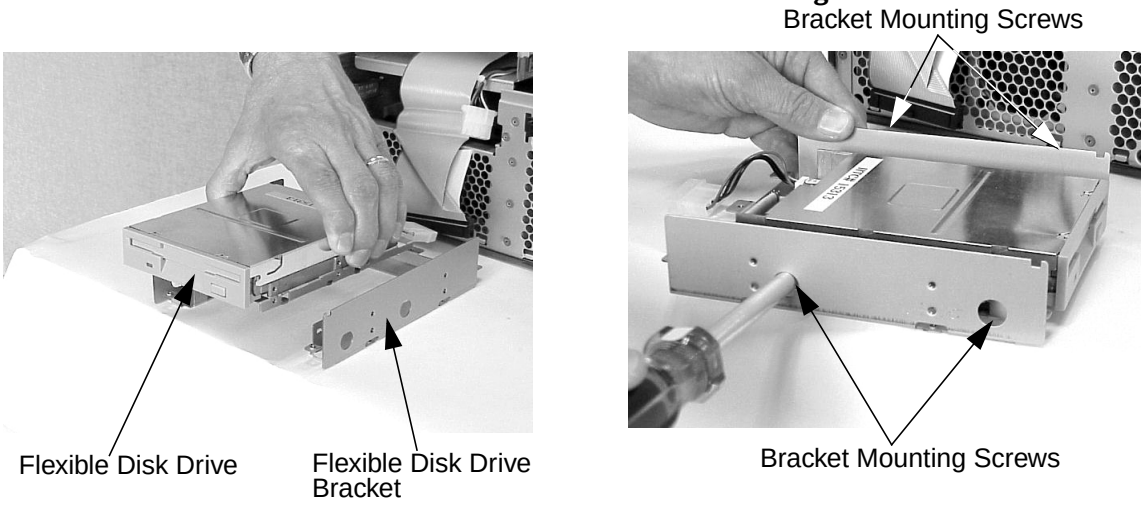


Replacing the Flexible Disk Drive

To replace the flexible disk drive, follow the procedure in this section. Note that this procedure assumes you already have a SCSI card and cable installed in your system.

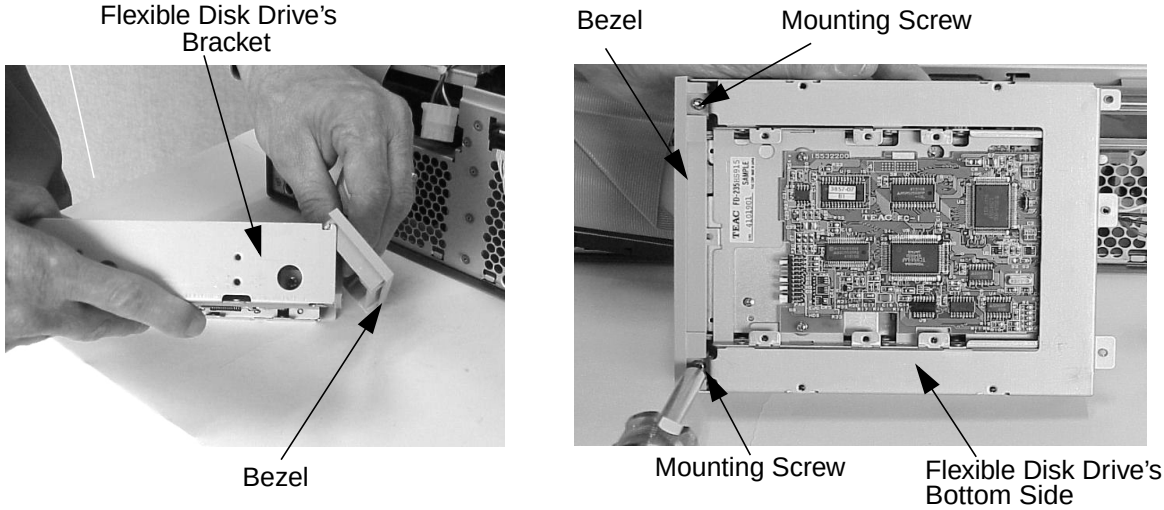
1. Remove the current flexible disk drive if you have not already done this. Otherwise skip this step. To remove the flexible disk drive, follow the procedure in the section **"Removing the Flexible Disk Drive"** found in this appendix.
2. Place the new flexible disk drive in the flexible disk drive bracket and screw the bracket mounting screws into the two threaded holes located on both sides of the disk drive. See Figure G-10.

Figure G-10 Unscrew the Four Flexible Disk Drive Mounting Screws



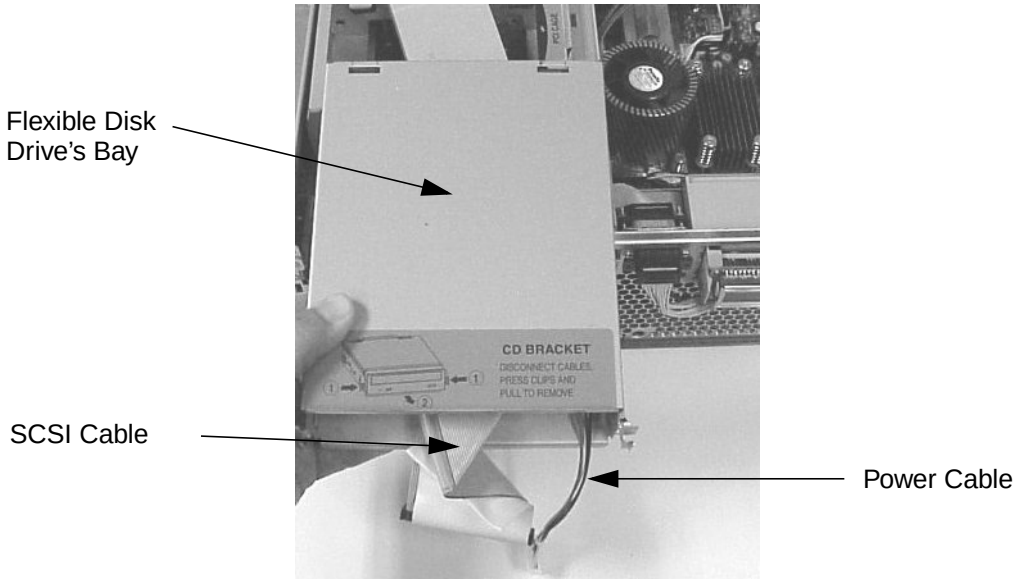
3. Replace the flexible disk drive bezel by rotating it inward toward the disk drive's bracket and screw in the bezel mounting screws. See Figure G-11.

Figure G-11 Screwing in the Flexible Disk Drive Bezel's Mounting Screws



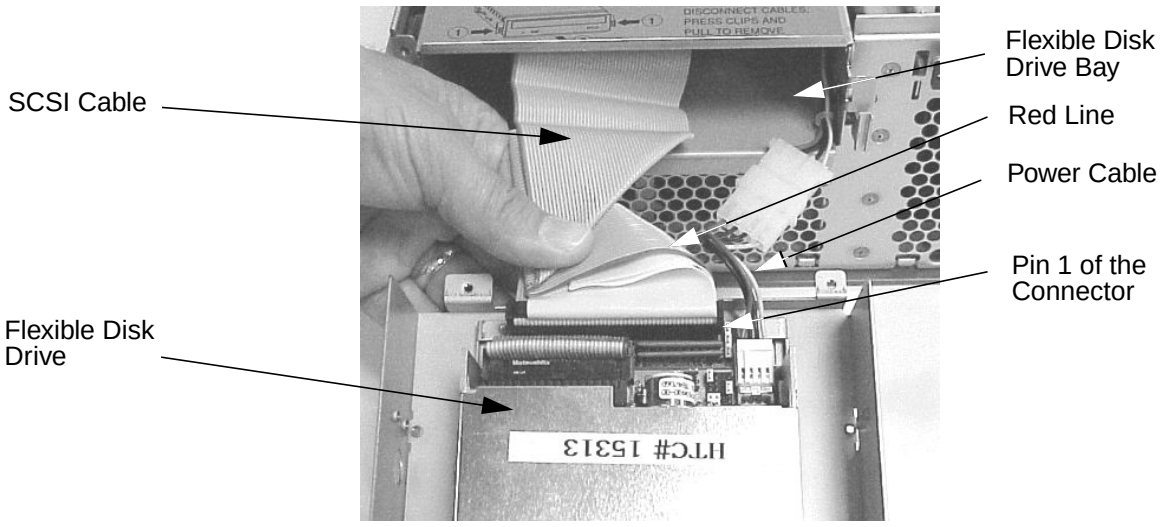
4. Run the power and SCSI cables through the back of the flexible disk drive bay to the front. See Figure G-12.

Figure G-12 Running the SCSI and Power Cables through the Disk Drive's Bay



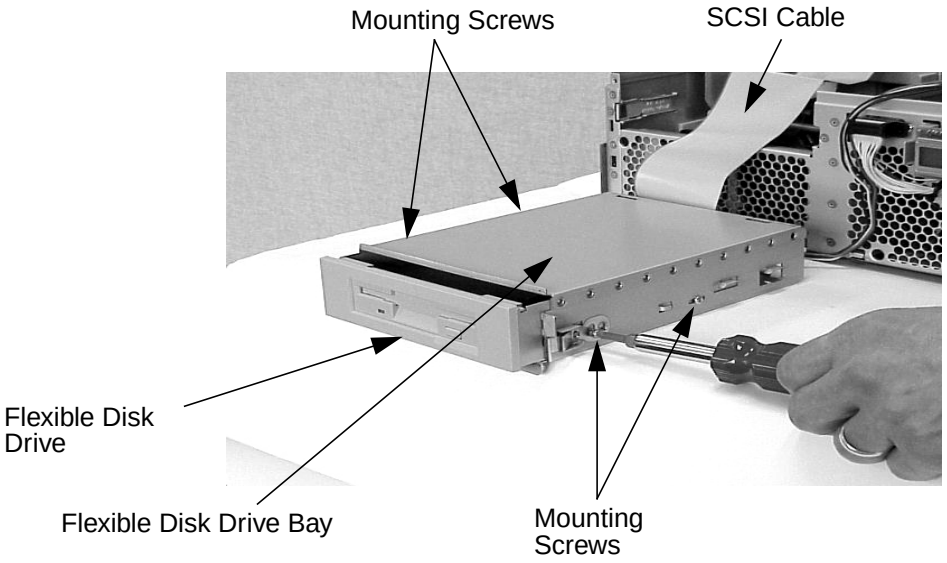
5. Connect the flexible disk drive's power and SCSI cables. See Figure G-13. Note that these cables are not keyed, so when you replace the SCSI cable, you will need to line up the red line on the SCSI cable with the right side of the flexible disk drive's SCSI connector, as viewed in Figure G-13.

Figure G-13 Connecting the Flexible Disk Drive's Cables



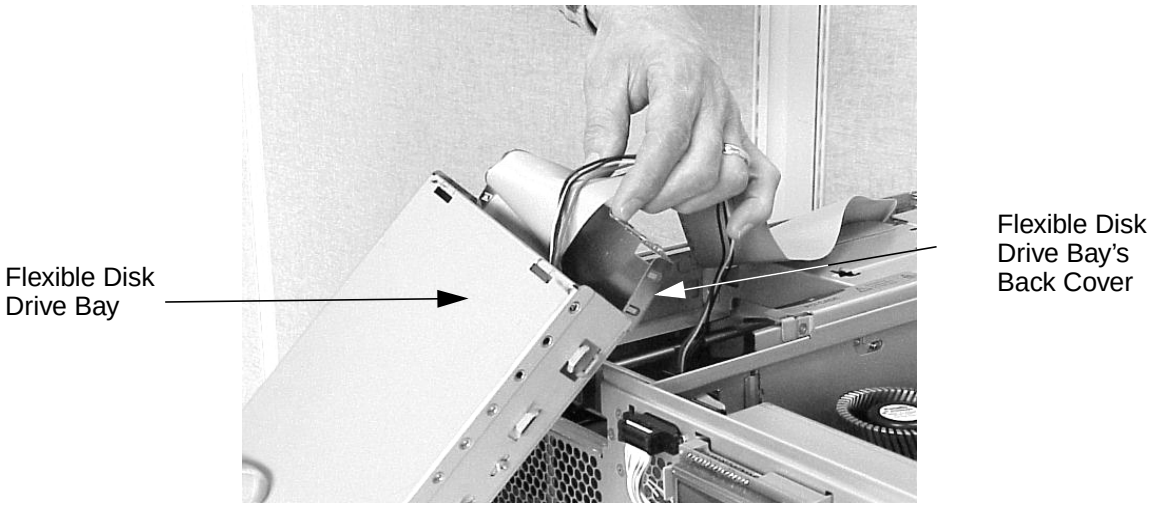
6. Slide the flexible disk drive into the disk drive's bay and align the four mounting screw holes in the flexible disk drive bay with the two threaded holes on both sides of the flexible disk drive. Next, screw the four mounting screws into the threaded holes. See Figure G-14.

Figure G-14 Screwing in the Flexible Disk Drive Bay's Mounting Screws



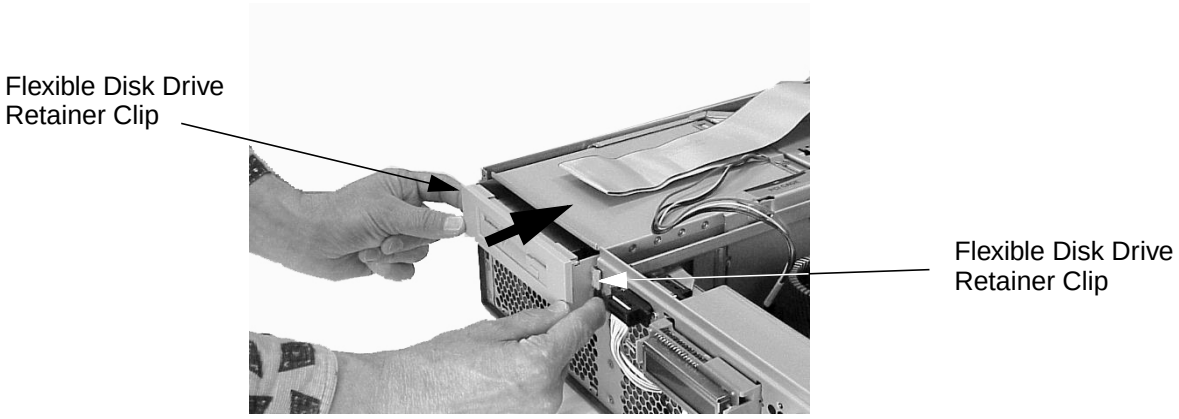
7. Replace the flexible disk drive bay's back cover. Note that this back cover snaps onto the flexible disk drive bay. See Figure G-15. Also, note that the power and SCSI cables must be neatly fed through the raised opening in the DAT drive bay's back cover to avoid pinching them.

Figure G-15 Replacing the Flexible Disk Drive Bay's Back Cover



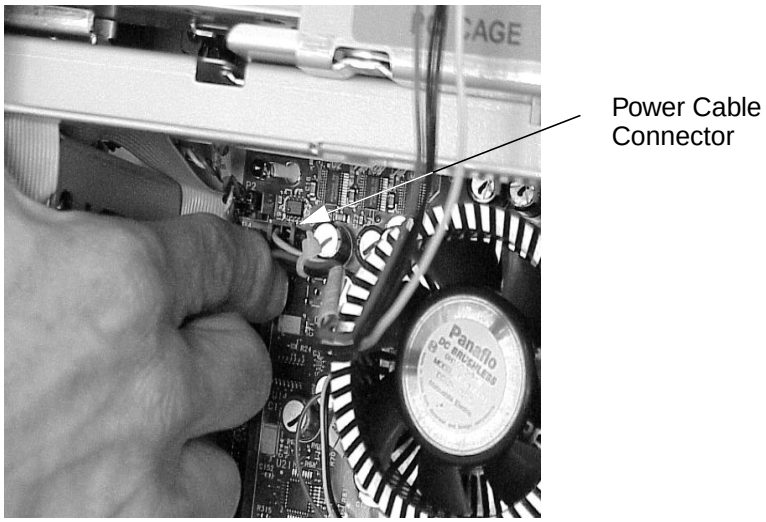
8. Slide the flexible disk drive bay and flexible disk drive back into the workstation. You will hear the retainer clips snap in place when the flexible disk drive bay and flexible disk drive are properly installed. See Figure G-16.

Figure G-16 Replace the Flexible Disk Drive and Flexible Disk Drive Bay



9. Plug the flexible disk drive's power cable connector into its connector on the system board. See Figure G-17.

Figure G-17 Connecting the Flexible Disk Drive Power Cable



10. Complete the procedure in the section **"Replacing the Front Bezel and Top Cover"** found in Chapter 3.
11. Connect and turn on the power to your system.
12. Determine that your DAT drive replacement was successful by executing the `sam` command as `root`. When the **System Administration Manager** window appears, double click the **Disk and File System** icon and in the window that appears double click the **Disk Devices** icon. In the next window that appears, you should see your flexible disk drive listed. If it is not listed, repeat this procedure. If your flexible disk drive is still not listed, contact your local HP Support Representative.

Replacing the SCSI Cable

Because there are special considerations you should know regarding the installation of the SCSI cable, this section explains some of those considerations. This section also explains how to replace the SCSI cable in your workstation's PCI cage.

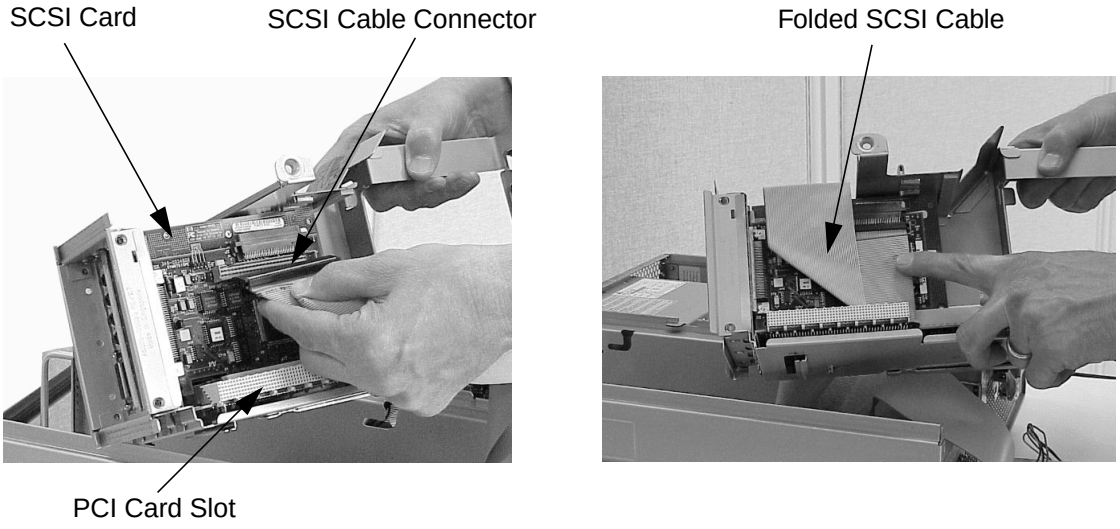
Here are some important points to remember when replacing the SCSI card and routing the SCSI cable.

- The SCSI card can be installed in any of the unused slots in your workstation's PCI cage; however, for ease of cable routing it is best to install your SCSI card in slot 4 of the PCI cage.
- The SCSI cable is long enough to allow you to run it through the flexible disk drive bay and out its front. This makes it easy for you to connect your power and SCSI cable connectors to the flexible disk drive.
- The connectors on both ends of the SCSI cable are keyed to allow for proper pin connection. However, the flexible disk drive's connector is **not keyed** and you have to align the red line on the SCSI cable with the left side (as viewed from the back of the flexible disk drive) of the flexible disk drive's SCSI connector.

To replace the SCSI card and cable, follow this procedure:

1. Complete the procedures in the section **"Removing the Flexible Disk Drive" (steps 1 through 6)** and its subsection **"Removing the SCSI Cable"** found in this appendix.
2. Insert the SCSI card into a PCI card slot (preferably slot 4) and connect the SCSI cable as shown in the picture on the left in Figure G-18. Next make sure the SCSI cable is folded as shown in the picture on the right in Figure G-18.

Figure G-18 Connecting the SCSI Cable and Making Sure it is Folded Properly



3. Route the SCSI cable over the exposed edges of the I/O cards as shown in Figure G-19. Grasp hold of the PCI cage handle and install the PCI cage in the workstation.

Figure G-19 Routing the SCSI Cable and Installing the PCI Cage