HP 9000 Series 700
Model 715
Owner's Guide

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Preface

This owner's guide describes how to use your HP 9000 Series 700 Model 715 workstation.

This manual assumes that you have installed your workstation as described in the *HP 9000 Series 700 Model 715 Hardware Installation Guide.*

Audience

This guide is intended for users of HP 9000 Series 700 Model 715 workstations.

Safety and Regulatory Statements

See Appendix A in the back of this manual for the safety and regulatory statements that apply to the HP 9000 Series 700 Model 715 workstations.

Release Document(s)

Please refer to the *Release Document(s)* you received with your system or system software for additional information that we may not have been able to include in this guide at the time of its publication.

Related Manuals

For more information, refer to the following manuals:

- *HP 9000 Series 700 Model 715 Hardware Installation Guide* (A2084-90628)
- *HP Visual User Environment User's Guide* (B1171-90061)
- *Installing and Updating HP-UX* (B2355-90039)
- *Managing Clusters of HP 9000 Computers: Sharing the HP-UX File System* (B2355-90038)
- *System Administration Tasks HP 9000 Series 700 Computers* (B2355-90040)
- *Using HP-UX* (B2910-90001)
- *Using Your HP Workstation* (A2615-90001)

To order manuals, please contact your local sales office.

Revision History

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

Edition	Revision History
E1092	First Printing.
E0193	Added information on the CRX–24, CRX–24Z, and CRX–48Z graphics options, and the 15–inch color monitor.
E0793	Added information on the Model 715/75. Also documented hardware changes to the system handle and the EISA option board installation procedure.
E0494	Added information on the Model 715/64, Model 715/80, and Model 715/100. Also added information about installing additional hardware and removed all references distinguishing between 'earlier' and 'later' systems.

Problems, Questions, and Suggestions

If you have any questions or problems with our hardware, software, or documentation, please contact either your HP Response Center or your local HP representative.

You may also use the Reader's Response Form at the back of this manual to submit comments about our documentation.

Documentation Conventions

Unless otherwise noted in the text, this guide uses the following symbolic conventions.

literal values	Bold words or characters in formats and command descriptions represent commands or keywords that you must use literally. Pathnames are also in bold.
user-supplied values	Italic words or characters in formats and command descriptions represent values that you must supply. Italics are also used in text for emphasis.
sample user input	In examples, information that the user enters appears in color.
`screen display`	Information that the system displays appears in `this typeface`.
Return	A colored rectangle with rounded corners and a key label denotes a key on your keyboard. (In this manual we refer to the **Return** key. On your keyboard the key may be labeled either **Return** or **Enter**.)
Screen Button	This colored symbol with a label in it denotes an HP VUE screen button. A screen button is a key or button which is drawn on your workstation's graphic display by HP VUE. It works like a keyboard key, except that you must move the mouse cursor over it and press the left mouse button to activate it. The screen button's label describes its function.
——— ▫▫ ———	This symbol indicates the end of a chapter or part of this guide.

Chapter 1
System Overview

This chapter introduces the HP 9000 Series 700 Model 715 workstation. Its purpose is to familiarize you with your workstation, its controls and indicators, and give an overview of some of the system's networking capabilities.

Included in this chapter are the following topics:

- Product description
- System unit controls and front panel connectors
- Understanding the LEDs
- System unit rear panel connectors
- Keyboards
- Networking overview
- Operating system overview

Product Description

The Model 715 workstations house up to three internal mass storage devices connected to the internal SCSI interface. The first and second disk bays may be fitted with a 525-MB, 1-GB, or 2-GB hard disk drive. The third disk bay may be fitted with either a 3.5-inch floppy drive, a CD-ROM drive or a DDS-format tape drive. Hard disk drives are pre-formatted.

The Model 715 workstations contain the following key features:

- Operating System — HP-UX
- User Interface — HP VUE graphical user interface
- Compatibility — Source and binary code compatible with the Series 700 product family
- Built-In Graphics — 8-plane graphics with choice of one of the following:

Models 715/33, 715/50, 715/75	19-inch 1280 x 1024 color monitor 19-inch 1280 x 1024 grayscale monitor 17-inch 1024 x 768 color monitor (715/33 and 715/50 only) 15-inch 1024 x 768 color monitor (715/33 only)
Models 715/64, 715/80, 715/100	19-inch 1280 x 1024 color monitor 17-inch 1280 x 1024 color monitor

- Graphics Options — 19-inch color monitor with choice of one of the following:

Models 715/33, 715/50, 715/75	24-plane CRX color graphics 24-plane CRX Z-buffered color graphics 48-plane CRX Z-buffered color graphics
Models 715/64, 715/80, 715/100	8-plane HCRX color graphics 8-plane HCRX Z-buffered color graphics 24-plane HCRX color graphics 24-plane HCRX Z-buffered color graphics 48-plane CRX Z-buffered color graphics

- Main Memory
  - 8 MB to 192 MB main memory in the Model 715/33
  - 16 MB to 256 MB main memory in the Model 715/50 and 715/64
  - 32 MB to 256 MB main memory in the Model 715/75, 715/80, and 715/100

- Mass Storage
  - Up to two 3.5-inch SCSI disk drives (525-MB, 1-GB, 2-GB)
  - Optional 3.5-inch flexible disk drive, CD-ROM drive, or DDS-format 4-mm tape drive

NOTICE: Model 715 workstations that have been upgraded from a Model 425e, 705, or 710 workstation may contain 210-MB and 420-MB hard disk drives in addition to the 525-MB and 1-GB hard disks.

- Network
  - ETHERNET IEEE 802.3 LAN port

- I/O
  - Two 9-pin RS-232 Ports
  - One 25-pin HP parallel port
  - 8-bit, single-ended SCSI-2 interface
  - HP-HIL port for the keyboard and other HP-HIL devices on Model 715/33, 715/50, and 715/100 workstations
  - 10-pin modular jack for the Keyboard Adapter Module on Model 715/64, 715/80, and 715/100 workstations*
  - CD quality stereo input and output
  - EISA-bus adapter (optional on the 715/33)

*The Keyboard Adapter Module attaches to the 10-pin (RJ-type) modular jack on the system unit and provides two mini-DIN ports for an AT-style keyboard and mouse. It also includes an HP-HIL port for connecting an HP keyboard or other HP-HIL device.

System Unit Controls and Front Panel Connectors

Before powering on your system, you should become familiar with the system unit controls.

Figure 1-1 shows the locations of the system unit controls and front panel connectors.

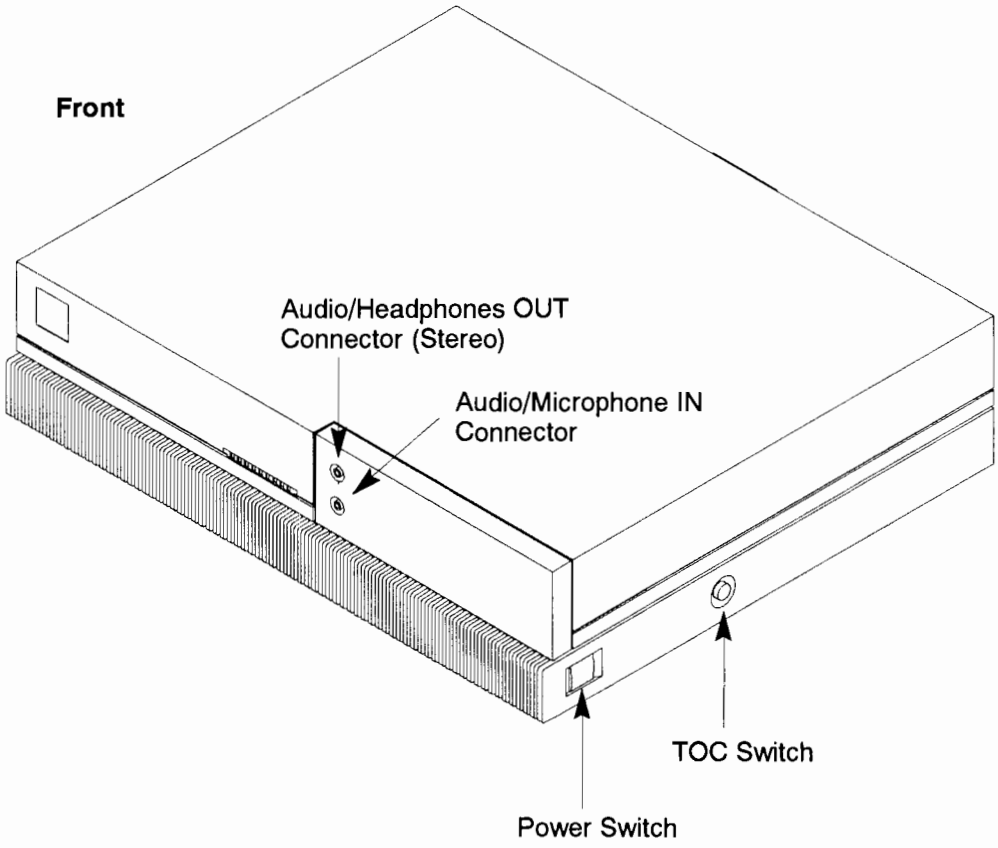


Figure 1-1. System Unit Controls and Front Panel Connectors

Power Switch

Use the Power switch to power the system unit on and off. The power LED lights green when the system unit is powered on.

NOTICE: Model 715/64, 715/80, and 715/100 workstations are equipped with a soft shutdown feature. These systems shut down the file system automatically when you power the system off.

TOC Switch

Use the TOC switch to reset the system. Do not push the TOC switch unless you have first shut down your operating system.

Audio/Headphone OUT and Audio/Microphone IN Connectors

Your workstation has audio input and output capability through external input and output connectors on the front and rear panels and through an internal speaker. The audio connectors are standard stereo audio mini-jacks.

The line in and line out connectors are located on the rear panel and are described later in this chapter. The front panel contains the Audio/Headphone OUT and Audio/Microphone IN connectors.

The Audio/Microphone IN connector is a mono microphone input. The ring connector of the microphone jack supplies +1.5 volts dc for microphones that require it. (A microphone for audio input is not supplied with your workstation.)

The Audio/Headphone OUT connector is a stereo headphone/line-out output.

NOTICE: Hewlett-Packard recommends that, for best quality recording and playback of audio through the external connectors, you use gold-plated plugs available through audio retailers.

The audio features of the Model 715 workstations are summarized below:

- Operating features
  Programmable sample rates:
  8kHZ, 16kHZ, 32kHZ, 48kHZ, 11.025kHZ, 22.05kHZ, 44.1kHZ
  Programmable output attenuation:
  0–96dB in –1.5dB steps
  Programmable input gain:
  0–22.5dB in 1.5dB steps
  Input monitoring
  16–bit linear, 8–bit μ–law, or A–law coding
- Audio Inputs
  Line–in
  Mono microphone with 1.5V phantom supply
  CDROM audio (if internal CDROM is installed)
- Audio Outputs
  Line–out
  Headphone
  Built–in mono speaker
- Audio CODEC
  Crystal OS4215

The Front Panel LEDs

There are 9 Light Emitting Diodes (LEDs) located on the front panel, as shown in Figure 1–2. The green LED on the far right is the Power LED. It lights when the system unit power is on. The other eight LEDs are amber colored and are labeled 8 through 1, left to right. The rightmost four LEDs (labeled 4, 3, 2, and 1) show that the system is running and communicating over the network. Along with the leftmost four LEDs (8, 7, 6, and 5), they light in certain patterns during system failures (see Chapter 6).

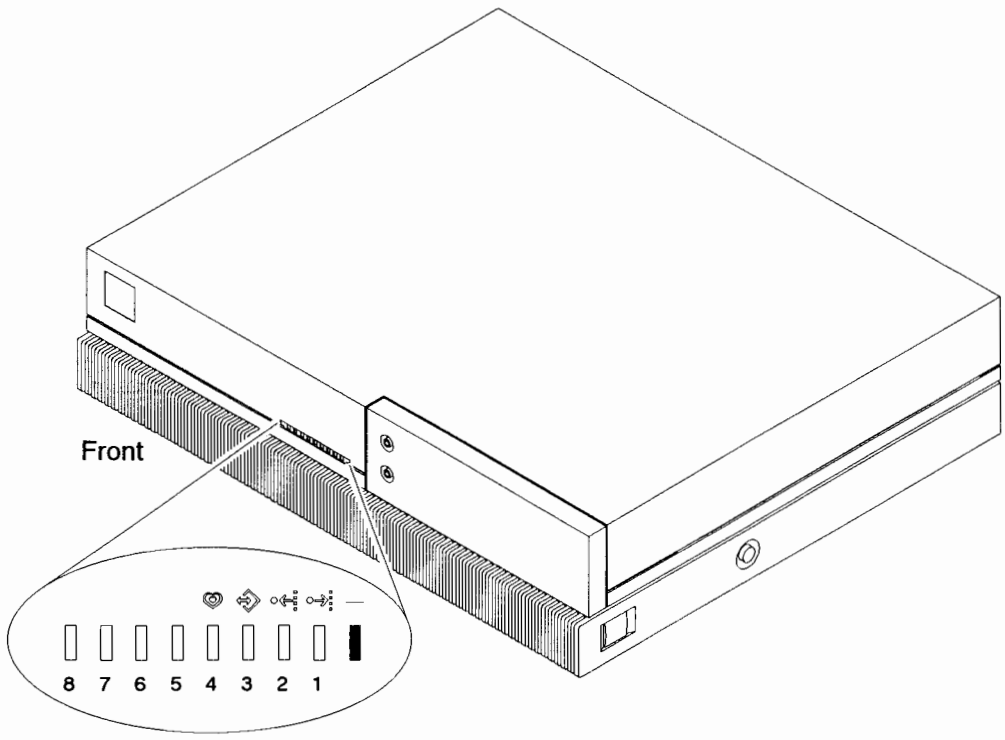
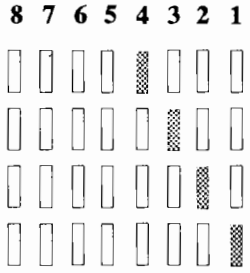


Figure 1-2. Front Panel LEDs

Table 1-1 lists how the LEDs report during normal HP-UX system activity. The green Power LED remains lit while the system is powered on.

Table 1-1. LED Display During Normal System Activity

LED Display	Meaning
	Operating System Running Disk Access In Progress Network Receive In Progress Network Transmit In Progress
= LED On or Flashing	

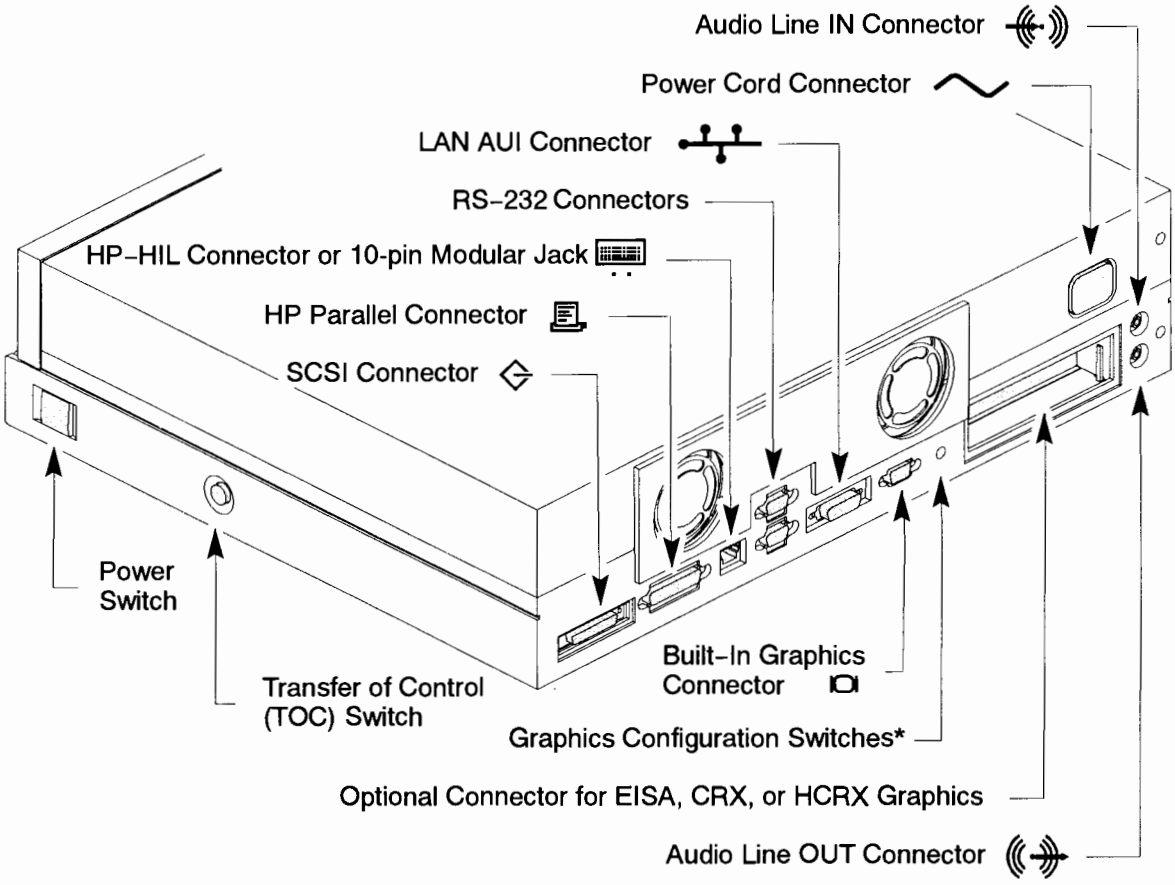
System Unit Rear Panel Connectors

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

- SCSI connector
- HP parallel I/O connector
- HP-HIL connector or 10-pin modular jack
- RS-232 serial input/output connectors
- 802.3 network connector
- Built-in graphics connector
- Optional connector for EISA, CRX, and HCRX graphics
- Power cord connector
- Audio connectors

NOTICE: 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. The symbols shown are depicted on the rear panel.



*These switches are not present on Model 715/64, 715/80, and 715/100 workstations. Model 715/64, 715/80, and 715/100 workstations are autoconfiguring.

Figure 1-3. System Unit Rear Panel Connectors

SCSI Connector

Use the SCSI connector to connect external SCSI devices such as DDS-format tape drives and CD-ROM drives. Consult the documentation that accompanies each SCSI device for specific information concerning its use.

NOTICE: When attaching external SCSI devices, be sure to terminate the last device on the external SCSI bus.

HP Parallel I/O Connector

The 25-pin HP Parallel I/O interface port is provided for use with peripheral devices using the Centronics interface protocols such as printers and plotters. Consult the documentation that accompanies each peripheral device for specific information concerning its use.

HP-HIL Connector or 10-pin Modular Jack

Model 715/33, 715/50, and 715/75 workstations are equipped with an HP-HIL connector, which provides an interface for the system's keyboard, mouse, and other optional HIL input devices. Consult the documentation that accompanies each input device for specific information concerning its use.

Model 715/64, 715/80, and 715/100 workstations are equipped with a 10-pin modular jack. A Keyboard Adapter Module attaches to this connector by means of a special cable shipped with the unit. The Keyboard Adapter Module includes two mini-DIN connectors and an HP-HIL connector. The mini-DIN connectors provide an interface for a AT-style keyboard and other mini-DIN input devices. The HP-HIL connector provides an interface for an HP keyboard, mouse, or other optional HIL input devices. Consult the documentation that accompanies each input device for specific information concerning its use.

RS-232 Serial Input/Output Connectors

You can attach a variety of peripheral devices to the two RS-232 Serial Input/Output (SIO) ports on the workstation. These peripheral devices include printers, plotters, mo-

dems, and scanners. Consult the documentation that accompanies each peripheral device for specific information concerning its use.

Both SIO ports are programmable. You can set functions such as bit rate, character length, parity, and stop bits. SIO Ports 1 and 2 are used as interfaces for serial asynchronous devices to the CPU. Both ports operate at up to a 19.2 K baud rate.

Table 1-2 shows the SIO connector pin listings. The serial connectors are 9-pin D-sub connectors. Signal names are those specified in the EIA RS-232 standard.

Table 1-2. Serial I/O Pins

Pin No.	Signal	Description
1	DCD	Data Carrier Detect
2	RXD	Receive Data
3	TXD	Transmit Data
4	DTR	Data Terminal Ready
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicator

802.3 Network Connector

Figure 1-3 shows the location of the connector for the 802.3 (ETHERNET) network. Connect your ETHERNET transceiver to this connector for communicating with a network.

Built-In Graphics Connector

If your system does not have the optional CRX or HCRX graphics, use the built-in graphics connector to connect the monitor's video cable to your system If you do have

the CRX or HCRX graphics option, connect your monitor or external graphics unit to the optional graphics connector (refer to Figure 1–4). If you are setting up a dual monitor system, connect one monitor to the built–in graphics connector and the other monitor to the optional graphics connector.

Built–In Graphics Switches (Model 715/33, 715/50, 715/75 only)

Your system's built–in graphics is preconfigured to use a specific type of monitor, which is identified by the label covering the graphics switch access hole on the rear of the workstation. Use the graphics switches to reconfigure your workstation if you change monitors. See Appendix B in this manual for information on setting the built–in graphics configuration switches.

NOTICE: The 715/64, 715/80, and 715/100 models are autoconfiguring and are not equipped with graphics switches.

Connector for Optional Graphics

Your system has a slot for an optional EISA (Extended Industry Standard Architecture) board, CRX graphics board, or HCRX graphics board.

EISA

The one–slot EISA I/O port is a superset of ISA (Industry Standard Architecture). It extends the capabilities of that standard while maintaining compatibility with ISA expansion boards. EISA provides 32–bit memory addressing and 32–bit data transfers. The EISA slot allows quick and easy integration in heterogeneous networks as well as simple connections of high–speed, low–cost disks and other peripherals. Some EISA option boards have external connectors for connecting these devices. Consult the documentation that accompanies each device for specific information concerning its use.

CRX and HCRX Graphics

If your system has an optional CRX or HCRX graphics board installed, you will have one of the following graphics connectors:

- Color graphics card (CRX-24, CRX-24Z, HCRX-8, HCRX-8Z, HCRX-24, or HCRX-24Z graphics) — This device has a D-sub miniature connector which is connected to the monitor by a cable, as shown in Figure 1-4.
- Graphics interface card (CRX-48Z graphics) — This device is connected by a cable to an external graphics processor, which in turn is connected to a video monitor, as shown in Figure 1-5.

Figure 1-4 shows the location of the CRX and HCRX graphics connector on the system unit's rear panel.

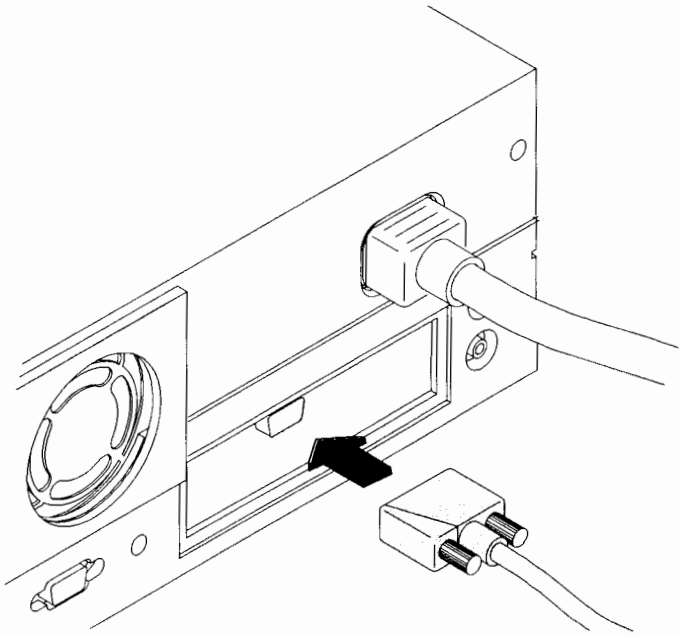


Figure 1-4. CRX and HCRX Graphics Connector

Figure 1–5 shows the locations of the CRX–48Z graphics connections on the system unit's rear panel and on the rear panel of the external graphics processor.

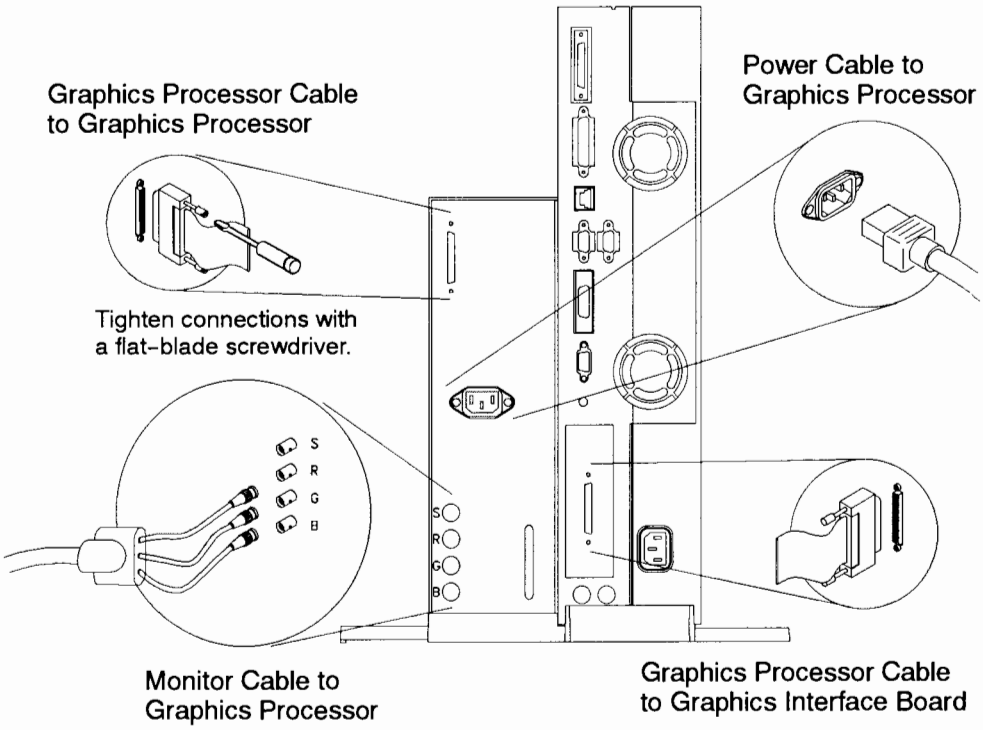


Figure 1–5. CRX–48Z Graphics Connections

Power Cord Connector

Plug the workstation's power cord into the power cord connector to provide ac power to the system.

Audio Line IN and Audio Line OUT Connectors

Your workstation has CD quality stereo audio input and output capability through external input and output connectors on the front and rear panels and an internal speaker.

The rear panel connectors are standard stereo audio mini-jacks and use audio "line" levels. Use the connectors on the front of the system unit for headphone and microphone connections.

Monitor Controls, Connectors, and Indicators

Before using your monitor, you should become familiar with its controls, connectors, and indicators.

The Power-On LED, when lit, indicates that the monitor has ac power applied. Use the following controls to adjust your monitor:

- The Power-on button turns the monitor's power on and off.
- The Brightness control adjusts the brightness of the display.
- The Contrast control adjusts the light-to-dark and dark-to-light contrast of the display.
- The Degauss control demagnetizes the color monitor. Degaussing disperses any accumulated magnetic charge from the face of the monitor. Magnetic disturbances such as picture distortion or color impurity can be caused by either moving the monitor from one place to another or swiveling the monitor on its base.

Refer to the manual that came with your monitor for detailed information about your monitor's controls, connectors, and indicators.

Keyboards

There are three types of keyboards available for use with your workstation. They are the following:

ITF Keyboard	(Also known as the HP 46201A/B Keyboard)
PC Keyboard	(Also known as the PC-101 (HIL) Keyboard, the "Enhanced Vectra" Keyboard, and the C1429A/B Keyboard)
AT Keyboard	(Industry-standard AT-style keyboard that uses a mini-DIN, PS/2-style, connector)

CAUTION: Devices that are not HP-HIL compatible but have similar connectors may appear to be compatible, but will damage your system. If you are attaching a keyboard or other device to your workstation's HP-HIL connector, ensure that the device conforms to the HP-HIL specification.

Keyboard Differences

Aside from the obvious difference in the appearance of the ITF and PC/AT keyboards due to the arrangement of the keys, there is also a difference in the keys and their output codes. Some keys on one keyboard (the ITF keyboard for example) may not exist on the other keyboard. These keys generate codes which also may not exist as output from the other keyboard (or may be generated by a different key). Codes that are generated when a key is pressed are called *keycodes*.

Some applications expect to use keycodes generated by keys existing on one of the keyboards (the ITF keyboard for example). Since the keys do not exist on the other keyboard (the PC keyboard for example), an accommodation must be made if the PC or AT-style keyboard is to be used. In most cases, it is still possible to use some other key that is

equivalent (generates the same keycode from a different keycap). To do this, it is necessary to know which keys are equivalent on the different keyboards. Table 1-3 compares the equivalent keys of the ITF and PC/AT keyboards.

NOTICE: Keyboard keys not mentioned in Table 1-3 are the same on all three types of keyboards.

Table 1-3. PC/AT Keyboard to ITF Keyboard Equivalent Keys

PC/AT Keycap Symbol	ITF Keycap Symbol
F9	blank1 (left)
F10	blank2
F11	blank3
F12	blank4 (right)
PrintScreen / SysReq	**Menu**
Scroll Lock	**Stop**
Pause / Break	**Break / Reset**
Page Up	**Prev**
Num Lock	**System / User**
End	**Select**
Page Down	**Next**
Enter	**Return**
Alt (left)	**Extend Char** (left)
Alt (right)	**Extend Char** (right)
No Equivalent	**Clear Line**
No Equivalent	**Clear Display**
No Equivalent	**Insert Line**
No Equivalent	**Delete Line**

(Continued)

Table 1-3. PC/AT Keyboard to ITF Keyboard Equivalent Keys (cont.)

PC/AT Keycap Symbol	ITF Keycap Symbol
No Equivalent	**Print / Enter**
No Equivalent	, (number pad)
No Equivalent	**Tab** (number pad)
Esc	**Esc / Del**
Insert	**Insert Char**
Home	
Delete	**Delete Char**
Caps Lock	**Caps**
Esc Shifted	**Esc / Del** Shifted
Pause / Break Shifted	**Break / Reset** Shifted
Num Lock Shifted	**System / User** Shifted
0 / Ins (number pad)	**0** (number pad)
1 / End (number pad)	**1** (number pad)
2 / ▼ (number pad)	**2** (number pad)
3 / Pg Dn (number pad)	**3** (number pad)
4 / ◀ (number pad)	**4** (number pad)
6 / ▶ (number pad	**6** (number pad)
7 / Home (number pad)	**7** (number pad)
8 / ▲ (number pad)	**8** (number pad)
9 / Pg Up (number pad)	**9** (number pad)
. / Del (number pad)	. (number pad)
Ctrl (left)	**Ctrl**
Ctrl (right)	No Equivalent

Operating System Overview

Your HP 9000 Series 700 Model 715 workstation uses one of the following versions of the HP-UX operating system:

- Model 715/33 and 715/50 workstations use version 9.01 or later
- Model 715/75 workstations use version 9.03 or later
- Model 715/64, 715/80, and 715/100 workstations use version 9.05 or later

Some systems may use a version of HP-UX called "Desktop HP-UX." This version occupies less disk space than the Runtime version because it does not include full HP-UX functionality, such as online manual reference pages (man pages).

Instant Ignition systems, (systems with preloaded software), have X-windows and Hewlett-Packard's graphical user interface, HP VUE version 3.0 (or later), installed and configured. For configuration information for Instant Ignition systems, refer to the *Instant Ignition System Configuration Information* sheet that shipped with your system.

If your Instant Ignition system does not have the kernel preconfigured with all of the device drivers you need, refer to the manual *System Administration Tasks HP 9000 Series 700 Computers* to reconfigure your kernel.

Networking Overview

Your Model 715 workstation is capable of many more tasks than are described in this owner's guide. This section gives an overview of some of the networking capabilities of your system and directs you to the appropriate manuals for more information.

Mail

With electronic mail you can send and receive mail messages on your workstation. For information on setting up and using electronic mail on your workstation, contact your system administrator and also see the *Using Your HP Workstation* or *Using HP-UX* manual that came with your workstation.

telnet

The **telnet** application uses the TELNET protocol to communicate with another computer system on the network. The **telnet** application allows you to log on to the remote system from your workstation. For more information on **telnet** read the online man page by entering the following at a command-line prompt:

man telnet Return

rlogin

The **rlogin** application also allows you to log on to another computer system on the network from your workstation. For more information on **rlogin** see the *Using Your HP Workstation* or *Using HP-UX* manual that came with your workstation and read the online man page by entering the following at a command-line prompt:

man rlogin Return

ftp

The **ftp** application is a user interface to the File Transfer Protocol. Use **ftp** to copy files between your workstation and another computer system on the network. For more information see the *Using Your HP Workstation* or *Using HP-UX* manual that came with your workstation and read the online man page by entering the following at a command-line prompt:

man ftp Return

rcp

The **rcp** application allows you to remotely copy files from another computer system on a network to your workstation. For more information see the *Using Your HP Workstation* or *Using HP-UX* manual that came with your workstation and read the online man page by entering the following at a command-line prompt:

man rcp Return

NFS

The Network File System (NFS) allows your workstation to access files on remote computer systems as if they were on your local system. The file system on the remote computer system does not have to be compatible with your workstation's file system. For more information see *Installing and Administering NFS Services* an the HP-UX *System Administration Tasks* manuals.

Chapter 2
Setting Up Your Printer

This chapter describes how to configure your workstation to use a printer that you have physically attached to either the parallel connector or one of the serial (RS-232) connectors on the rear of your workstation by explaining the following tasks:

- Gathering printer information
- Setting up a printer attached to your workstation
- Setting up a printer for network printing
- Printing a file
- Solving printing problems

NOTICES: Before following the instructions in this chapter make sure you have installed the printer as described in the manufacturer's instructions. Also ensure that the printer is powered on, connected to your workstation, has paper loaded, and is online.

Some procedures in this chapter require you to log in as **root**. If you cannot log in as **root**, contact your system administrator.

Gathering Printer Information

Fill in the following list with the requested information and refer to it during the printer setup procedure:

- Printer Interface (check one):

  Parallel ☐

  Serial (RS-232) Port 1 ☐

  Serial (RS-232) Port 2 ☐

- Printer Name: _____
  (The printer name is a name the system uses to identify the printer. The printer name can be any name that you wish.)

- Printer Model Number: _____
  (On Hewlett Packard printers the model number is located on a label on the back of the printer.)

Setting Up a Printer Attached to Your Workstation

Follow the instructions in this section to set up a printer that is physically attached to your workstation.

The procedures in this chapter require you to log in as **root**. If you cannot log in as **root**, contact your system administrator.

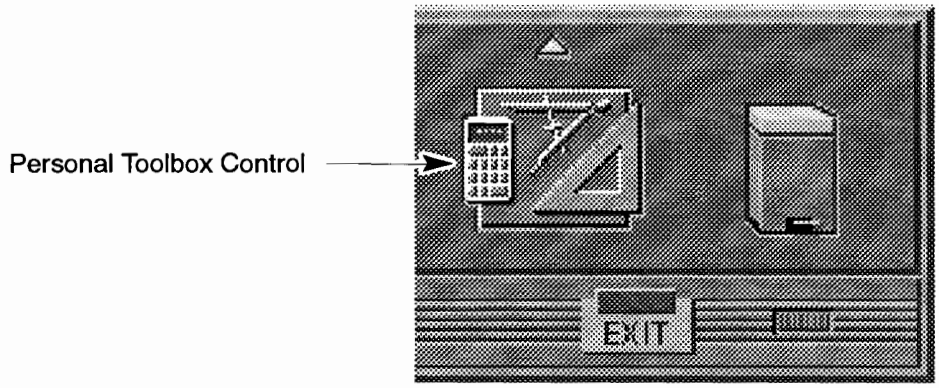
Setting Up a Printer with HP VUE

If your workstation is running HP VUE, follow these instructions to set up your printer.

NOTICE: If your workstation does not have HP VUE installed, go to the next subsection entitled "Setting Up a Printer from the HP-UX Command Line Shell."

1. Log in as **root**.

2. Move the mouse pointer to the **personal toolbox control**, shown below, and single-click the left mouse button.



3. The **PersonalToolbox** window opens. Move the mouse cursor onto the **SAM** icon shown below and double-click the left mouse button.

4. The initial **SAM** window opens. Double-click on the line labeled **Printers and Plotters ->**

5. Another screen opens. Double-click on the line labeled **Printers/Plotters**

If your workstation doesn't have any printers set up, a message window opens. Single-click on [OK] to remove the message window.

6. Move the cursor to the word **Actions** at the top of the **Printers/Plotters** window and single-click the left mouse button.

7. A menu opens below the word **Actions**. Single-click on **Add Local Printer/Plotter**

8. Another menu opens. If your printer is connected to the parallel port on your workstation, single-click on **Add Parallel Printer/Plotter**

If your printer is connected to one of the serial connectors on your workstation, single-click on **Add Serial (RS-232) Printer/Plotter**

A window opens and displays the available parallel or serial interfaces.

9. If you chose **Add Parallel Printer/Plotter** in the previous step, only one parallel interface should be listed. Place the mouse cursor on the listed parallel interface and single-click the left mouse button.

If you chose **Add Serial (RS-232) Printer/Plotter** in the previous step, more than one serial interface could be listed. The serial interfaces are listed in ascending order. The lowest numbered serial interface corresponds to the lowest numbered serial connector on your workstation. Choose the serial interface that corresponds to the connector to which you have connected your printer. Place the mouse cursor on the selected serial interface and single-click the left mouse button.

10. Single-click on [OK]

11. A window opens. Single-click on the box labeled **Printer Name**
Then enter a name for the system to use for the printer and press [Return]

12. Single-click on [Printer/Model Interface]

13. A window opens. Move the mouse cursor onto the scroll bar slider at the side of the new window. Press and hold the left mouse button while moving the mouse. When the model name of your printer appears, release the left mouse button.

14. Move the mouse cursor to your printer's model name and single-click the left mouse button.

15. Single-click on [OK]

The window closes and the **Add Local Printer/Plotter** window becomes visible again.

16. If you want your printer to be set as the system default printer, move the mouse cursor to the small box labeled **Make this the system default printer** and single-click the left mouse button.

17. Single-click on [OK]

18. A small window opens with a message that asks if you want to add your printer to the "Printers" subpanel. Single-click on [Yes]

19. Another small window opens with a message that asks if you want to restart the workspace manager. Single-click on [OK]

20. If the print spooler was not previously running, a window will open with the following question:

```
Do you want to start the print spooler now?
```

21. Single-click on [Yes]

22. A window appears asking if your printer is powered on, has paper, is connected to your workstation, and is online. Check your printer to make sure it meets these requirements.

Single-click on [OK]

23. Single-click on [OK] at the bottom of the **Messages** window.

The **Printer/Plotter Manager** window now lists your printer.

24. Move the cursor to the word List at the top of the **Printer/Plotter Manager** window and single-click the left mouse button.

25. A menu opens below the word **List**. Single-click on Exit

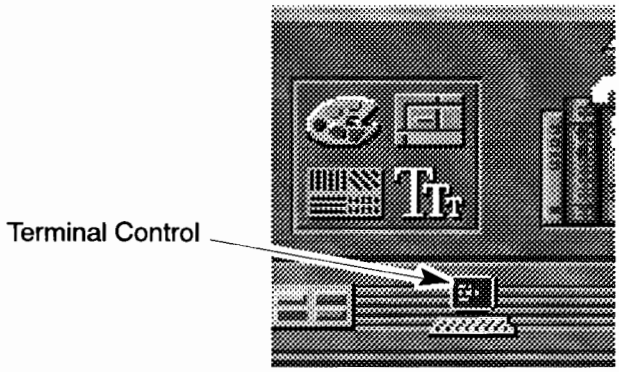
The main **SAM** window becomes visible again.

26. In the main **SAM** window, single-click on [Exit SAM]

The **SAM** window closes.

27. Double-click on the window menu button in the upper left corner of the **PersonalToolbox** window. The window closes.

28. To test the printer, first create a terminal window by single-clicking on the **terminal control** on the **control panel** as shown.



A terminal window opens.

29. Move the mouse cursor into the terminal window and single-click the left mouse button.

30. If you made your printer the default system printer, enter the following command to test your printer:

lp .profile Return

If your printer isn't the default system printer, enter the following command to test your printer:

lp -d *printername* **.profile** Return

where *printername* is the name you chose when setting up your printer.

The file named **.profile** prints out on the printer.

If the file doesn't print, see the section entitled "Printing Problems" later in this chapter.

Setting Up a Printer from the HP-UX Command Line Shell

Follow the instructions in this section to set up a printer if your system does not have HP VUE installed.

If your workstation is running HP VUE, refer to the previous subsection, "Setting Up a Printer with HP VUE," for instructions on setting up a printer.

1. Log in as **root**.

2. Enter the following:

   sam Return

3. The initial **SAM** window opens. Use the arrow keys on your keyboard to select the line labeled **Printers and Plotters**

   Press Return

4. Use the arrow keys to select **Printers/Plotters**

   Press Return

   If your workstation doesn't have any printers set up, a message window opens. Press the Return key to remove the message window.

5. At the top of the **Printers/Plotters** window is a list. Press the F4 key to activate the list.

6. Use the arrow keys to select **Actions**

   Press Return

7. A menu opens below the word **Actions**. Use the arrow keys to select **Add Local Printer/Plotter ->**

   Press Return

8. Another menu opens. If your printer is connected to the parallel port on your workstation, use the arrow keys to select **Add Parallel Printer/Plotter**

   If your printer is connected to one of the serial connectors on your workstation, use the arrow keys to select **Add Serial (RS-232) Printer/Plotter**

   Press Return

   A window opens and displays the available parallel or serial interfaces.

9. If you chose **Add Parallel Printer/Plotter** in the previous step, only one parallel interface should be listed. Use the arrow keys to select the listed parallel interface.

Press the Tab key until OK is selected.

Then press Return

If you chose **Add Serial (RS-232) Printer/Plotter** in the previous step, more than one serial interface could be listed. The serial interfaces are listed in ascending order. The lowest numbered serial interface corresponds to the lowest numbered serial connector on your workstation. Use the arrow keys to select the serial interface that corresponds to the connector to which you have connected your printer.

Press the Tab key until OK is selected.

Then press Return

10. A window opens. Enter a name for the system to use for the printer and then press Return

11. Press Return

The **Valid Models/Interfaces** list opens.

12. Use the arrow keys to select the model number of your printer from the menu.

Then press Return

13. If you want your printer to be set as the system default printer, press the Tab key until **Make this the system default printer** is selected.

Then press Return

14. Press the Tab key until **OK** is selected.

Then press Return

15. If the print spooler was not previously running, a window will open with the following question:

```
Do you want to start the print spooler now?
```

Press Return

16. A window opens asking if your printer is powered on, is connected to your workstation, and is online. Check your printer to make sure it meets these requirements.

Press Return

17. In a few moments a window opens with the following message:

```
Task Completed
```

Press Return

The **Printer/Plotter Manager** window now lists your printer.

18. At the top of the window is a list. Press the F4 key to activate the list.

19. Use the arrow keys to select **List**

Then press Return

20. A menu opens below the word **List**. Use the arrow keys to select **Exit**

Then press Return

The main **SAM** window becomes visible again.

21. Press the Tab key until **Exit SAM** is selected.

Then press Return

The **SAM** utility closes and the command line prompt appears.

22. If you made your printer the default system printer, enter the following command to test your printer:

lp .profile Return

If your printer isn't the default system printer, enter the following command to test your printer:

lp -d *printername* **.profile** Return

where *printername* is the name you chose when setting up your printer.

The file named **.profile** prints out on the printer.

If the file doesn't print, see the section entitled "Printing Problems" later in this chapter.

Setting Up a Printer for Network Printing

If you have a printer physically attached to your workstation, you can set it up to receive print requests from other computers on your network. To do this, you must start up the remote line printer daemon.

Follow the instructions in this section to set up your workstation to accept print requests from other computers on your network.

1. Log in as **root**.

2. Use a text editor, such as vi or vuepad, to edit the following file:

   /etc/inetd.conf

3. Find the following section in the file:

```
##
#
#  Other HP-UX network services
#
##
```

4. The following line should be directly below `Other HP-UX network services:`

   # printer stream tcp nowait root /usr/lib/rlpdaemon rlpdaemon -i

   If the line is there, delete the pound sign (**#**) from the beginning. If the line is not there, add it without the pound sign (**#**) at the beginning.

   The line should look like the following:

   printer stream tcp nowait root /usr/lib/rlpdaemon rlpdaemon -i

5. Save the file and close it.

6. Enter the following command line to reboot your workstation:

   /etc/reboot Return

   Your workstation will shut itself down and then reboot automatically. This may take a few minutes. When the login prompt returns, your system is ready to accept printer requests from other computers on your network.

Printing a File

To print a file, use one of the following command lines:

lp *filename* Return

or

lp -d *printername filename* Return

where *filename* is the name of the file that you want to print, and *printername* is the name of the printer on which you wish to print the file.

For more information on the **lp** command, enter the following:

man lp Return

Also see the *HP Visual User Environment User's Guide* manual, which came with your workstation, for information on printing files by dragging and dropping the file icon onto the printer tool.

Solving Printing Problems

If you have problems printing check the following:

- Printer's power cord is plugged in.
- Printer is powered on.
- Printer is online.
- Printer has paper loaded.
- Printer is set up for the correct interface type.
- Printer cable is connected to the correct interface port on your printer.
- Printer cable is connected to the correct interface port on your workstation.

Chapter 3
Using Your 3.5-Inch Floppy Disk Drive

This chapter describes how to perform the following tasks with your 3.5-inch floppy disk drive:

- Setting the write-protect tab on a diskette
- Inserting and removing a diskette
- Verifying the floppy disk drive operation
- Formatting a new diskette
- Transferring data to and from a floppy diskette
- Configuring the floppy driver

For Models 715/33, 715/50, and 715/75, the instructions in this chapter assume that your 3.5-inch floppy disk drive is set to the factory default address of SCSI ID 0.

NOTICE: When examples of user input are given in this chapter, enter them at the command-line prompt in an HP VUE terminal window or HP-UX shell.

Some procedures in this chapter require you to log in as **root**. If you cannot log in as **root**, contact your system administrator.

Setting the Write-Protect Tab on a Diskette

You can only store or change information on a diskette when the write-protect tab is in the *write* position. So, before trying to write to the diskette, make sure that the write-protect tab is in the *write* position, as shown in Figure 3-1.

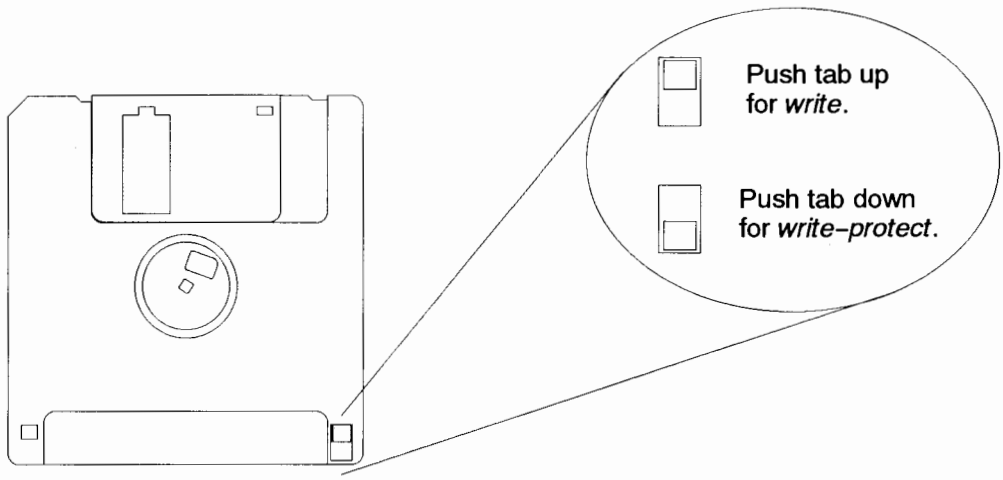


Figure 3-1. Setting the Write-Protect Tab on a Floppy Diskette

To protect files on a diskette from being overwritten, set the write-protect tab to the *write-protect* position, as shown in Figure 3-1.

NOTICE: The write-protect tab should always be in the *write* position for formatting a new diskette and transferring data to a diskette.

Inserting and Removing a Diskette

Follow these steps to insert and remove a diskette from the floppy disk drive:

1. Insert the diskette into the drive, as shown in Figure 3-2.

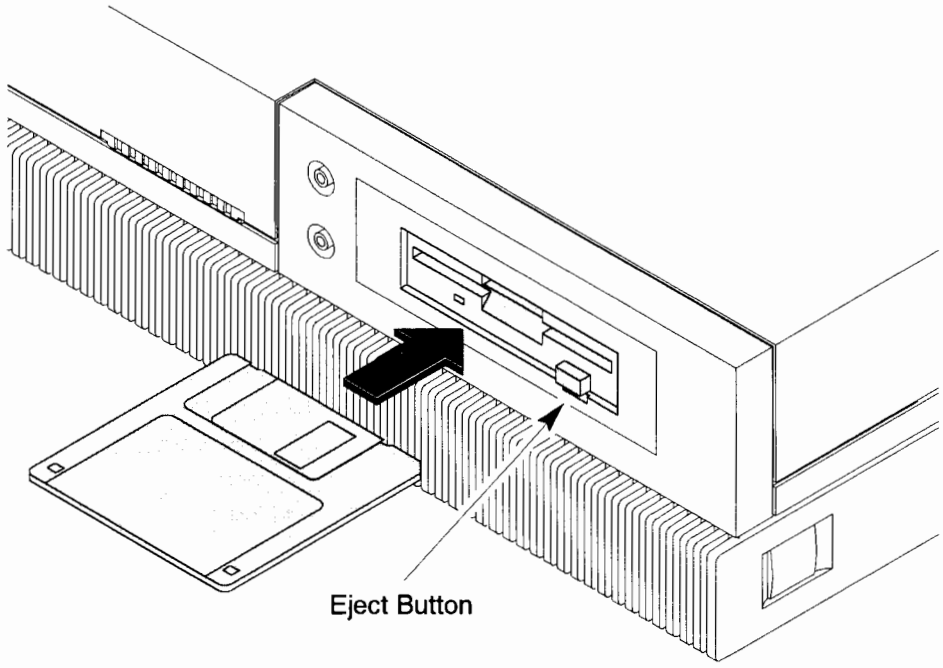


Figure 3-2. Inserting and Removing a Floppy Diskette

2. Push the diskette into the floppy drive until it clicks into place.

3. To remove the diskette, push the eject button on the front of the floppy drive (see Figure 3-2), then take out the diskette.

Verifying the Floppy Disk Drive Configuration

To verify that your workstation can communicate with the floppy drive, use the **ioscan** command as described in this section.

Model 715/33, 715/50, and 715/75 Workstations

Enter the following command line to see which SCSI IDs are currently in use on your system:

/etc/ioscan Return

After a few moments the **ioscan** utility lists all of the input and output devices it could find. The list includes lines similar to the following:

```
H/W Path   Description      Status
=======================================
0.0.0      graphics         ok(0xnnn)
2.0.1      scsi             ok(0xnnnn)
2.0.1.0.0  disk             ok(0xnnnnnnn)
2.0.1.5.0  disk             ok(0xnnn)
2.0.1.6.0  disk             ok(0xnnn)
```

Check to see if your floppy drive is listed. The listing **2.0.1 scsi** under the **H/W Path** heading is the SCSI bus controller. All devices connected to the SCSI bus begin with this number The fourth number is the SCSI ID for that device. For example, the listing **2.0.1.0.0** in the sample listing tells us that there is a SCSI device (a floppy drive) currently using address 0 on the SCSI bus.

If the floppy driver is not configured, go to the section "Configuring the Floppy Driver" later in this chapter, for information on adding the **scsifloppy** driver to the HP-UX Kernel configuration.

If the floppy driver has been configured and **ioscan** does not see your floppy drive, go to Chapter 6, "Solving Problems."

Model 715/64, 715/80, and 715/100 Workstations

Enter the following command line to see which devices are currently in use on your system:

/etc/ioscan Return

After a few moments the **ioscan** utility lists all of the input and output devices it could find. The list appears similar to the following:

```
H/W Path    Description     Status
=======================================
1.0.0       grap3           ok(nnnnnn)
2.0.1       c700            ok(nnnnnn)
2.0.1.6.0   scsi            ok(nnnnnn)
2.0.2       unknown         ok(nnnnnn)
2.0.4       asio0           ok(nnnnnn)
2.0.6       parallel        ok(nnnnnn)
2.0.8       audio           ok(nnnnnn)
2.0.10      floppy          ok(nnnnnn)
2.0.10.1.0  disk            ok(nnnnnn)
2.0.11      ps2             ok(nnnnnn)
2.0.12      ps2             ok(nnnnnn)
```

Check to see if your floppy drive is listed. The listing **2.0.10 floppy** is the floppy controller. The listing **2.0.10.1.0** is the floppy drive.

If the floppy driver is not configured, go to the section "Configuring the Floppy Driver" later in this chapter.

If the floppy driver has been configured and **ioscan** does not see your floppy drive, go to Chapter 6, "Solving Problems."

Using Device Files

Device files are special files that tell your system which pathway to use through the system hardware when communicating with a specific device and what kind of device it is.

Model 715/33, 715/50, and 715/75 workstations use the device file **/dev/rfloppy/c201d0s0**. The underlined 0 indicates the SCSI ID number. The SCSI ID of the floppy drive on the Model 715/33, 715/50, and 715/100 workstations is set to the factory default of SCSI ID 0. If you set the SCSI address of your floppy drive to a value other than 0, you must create a device file for it, then substitute the pathname of your device file in the examples that follow. Refer to the *System Administration Tasks* manual for information on how to create a device file.

Model 715/64, 715/80, and 715/100 workstations use the device file **/dev/rfloppy/c20Ad1s0** to communicate with your floppy drive. The floppy drive in these workstations is a PC-style floppy drive and does not have a SCSI address.

Formatting a New Diskette

You must always format a new floppy diskette with the **mediainit** utility before using it. To format a new floppy diskette follow these steps:

1. Log in as **root**.

2. Make sure that the write-protect tab on the floppy diskette is in the *write* position, as shown in Figure 3-1.

3. Insert the diskette into the floppy disk drive.

4. Execute **mediainit** with an interleave of 2. The following example shows how to execute the **mediainit** command on a Model 715/33, 715/50, or 715/75 workstation.

```
mediainit -i 2 /dev/rfloppy/c201d0s0 Return
```

To enter the **mediainit** command on a Model 715/64, 715/80, or 715/100 workstation, replace **c201d0s0** with **c20Ad1s0**, as follows:

mediainit -i 2 /dev/rfloppy/c20Ad1s0 Return

Transferring Data To and From a Floppy Diskette

This section describes how to transfer data to and from (saving and restoring) your floppy diskette using the HP-UX **tar** command and your floppy drive's device file.

The **tar** (tape file archiver) command allows you to save files to a floppy diskette, restore files from a floppy to your system, or list the files on your floppy diskette.

You need to set the write protect tab to the *write* position to transfer data to the diskette. The write-protect tab can be in either position when restoring data from a diskette or listing the files on a diskette.

Saving Files to a Floppy Diskette

To save files to a floppy diskette, use the following steps:

1. Check that the write-protect tab on the floppy diskette is in the *write* position.

2. Load the formatted floppy diskette into the disk drive.

3. Enter one of the following command lines depending on which Model 715 workstation you are using:

   - For Model 715/33, 715/50, and 715/75 workstations, enter the following:

     tar -cvf /dev/rfloppy/c201d0s0 *pathname* Return

   - For Model 715/64, 715/80, and 715/100 workstations, enter the following:

     tar -cvf /dev/rfloppy/c20Ad1s0 *pathname* Return

   where *pathname* is the pathname of the file or directory containing files that you want to write to the diskette.

Restoring Files from a Floppy Diskette to Your System

Use the following instructions to restore files from a floppy diskette to your system:

1. Load the floppy diskette into the disk drive.

2. Use **cd** to change to the directory you want the files to reside in.

3. Enter one of the following command lines depending on which Model 715 workstation you are using:

   - For Model 715/33, 715/50, and 715/75 workstations, enter the following:

     tar -xvf /dev/rfloppy/c201d0s0 *pathname* Return

   - For Model 715/64, 715/80, and 715/100 workstations, enter the following:

     tar -xvf /dev/rfloppy/c20Ad1s0 *pathname* Return

   where *pathname* is the pathname of the file or directory containing files that you want to restore from the diskette. If *pathname* is not specified, everything on the floppy diskette is restored.

Listing Files on a Floppy Diskette

Use the following instructions to list the files on a floppy diskette:

1. Load the floppy diskette into the disk drive.

2. Enter one of the following command lines depending on which Model 715 workstation you are using:

   - For Model 715/33, 715/50, and 715/75 workstations, enter the following:

     tar -tvf /dev/rfloppy/c201d0s0 Return

   - For Model 715/64, 715/80, and 715/100 workstations, enter the following:

     tar -tvf /dev/rfloppy/c20Ad1s0 Return

   All files on the floppy diskette are listed.

For More Information

For more information on using **tar** and a complete list of the command arguments, refer to the **tar** man page by typing the following in a terminal window:

man tar Return

For more information on copying data to or from your system to other media, including your floppy diskette, refer to the **cpio** man page by typing the following in a terminal window:

man cpio Return

For more information on using your floppy disk drive and floppy diskettes, refer to the **floppy** man page by typing the following in a terminal window:

man floppy Return

For more information on using the **mediainit** command, refer to the **mediainit** man page by typing the following in a terminal window:

man mediainit Return

Configuring the Floppy Driver

If you reload software or rebuild the Instant Ignition system on your workstation, you will need to reconfigure the HP-UX Kernel to add the floppy driver.

For Model 715/33, 715/50, and 715/75 workstations, use the SAM utility to add the SCSI Flexible Disk Driver and build a new HP-UX Kernel.

For Model 715/64, 715/80, and 715/100 workstations, use the SAM utility to add the **disk** driver and build a new HP-UX Kernel.

For more information see the following manuals:

- *System Administration Tasks HP 9000 Series 700 Computers* (B2355-90040)
- *Using HP-UX* (B2910-90001)

Ordering Information

To order Hewlett-Packard micro flexible diskettes for use in your 3.5-inch floppy disk drive, use the following order numbers:

- HP-92192X — High-Density Micro Flexible Disks (1.44 MB Formatted Capacity) - box of ten diskettes
- HP-92192A — Double-Sided Micro Flexible Disks (720 KB Formatted Capacity) - box of ten diskettes

Chapter 4
Using Your CD-ROM Drive

This chapter provides an overview of the CD-ROM drive and media, and describes how to perform the following tasks

- Inserting and removing a CD-ROM disc
- Loading and unloading a CD-ROM disc caddy
- Verifying the CD-ROM drive operation
- Mounting and unmounting a CD-ROM disc
- Reading the busy light

The instructions in this chapter assume that your CD-ROM drive is set to the factory default address of SCSI ID 2.

NOTICES: When examples of user input are given in this chapter, enter them at the command-line prompt in an HP VUE terminal window or HP-UX shell.

Some procedures in this chapter require you to log in as **root**. If you cannot log in as root, contact your system administrator.

Your CD-ROM drive is a read-only device. This means that you may access files and data stored on a CD-ROM disc, but you may not write files or data to a CD-ROM disc.

CD-ROM Drive and Media Descriptions

This section describes the CD-ROM drive and CD-ROM discs.

CD-ROM Drive

The CD-ROM drive is a random access read-only mass storage device that uses removable CD-ROM discs. The drive contains a semiconductor laser for reading data optically, and includes an embedded controller with a SCSI interface.

The CD-ROM drive supports the ISO 9660 and High Sierra format standards. You can access information from the drive like any other disk drive, except that you cannot write to the drive.

Figure 4-1 and Table 4-1 describe the operating controls and features of the CD-ROM drive.

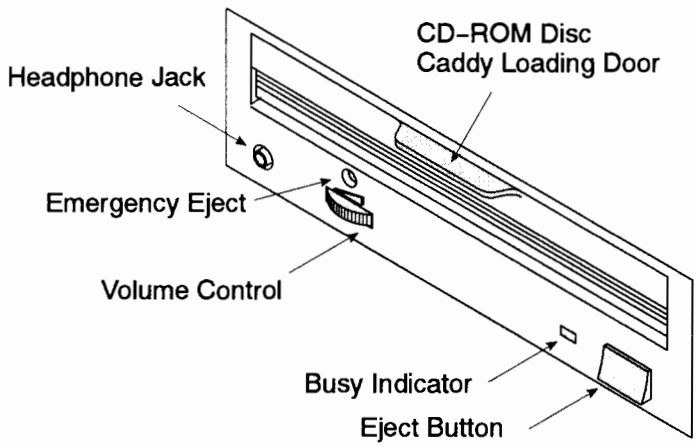


Figure 4-1. CD-ROM Drive Controls and Features

Table 4-1. CD-ROM Drive Operating Controls and Features

Control/Feature	Purpose
Eject Button	Press the Eject Button to eject the disc caddy. When the drive is in use, you must press the eject button for more than one second to eject the caddy.
Busy Indicator	The Busy Indicator lights during a data access operation and blinks during a data transfer. The indicator blinks initially and then stays lit when there is one of the following: • A defective disc • A disc insertion error (for example, an upside-down disc) • No disc present
Disc Caddy Loading Door	Slot for inserting the disc caddy. If you eject the disc caddy and want to reinsert it, you must pull the caddy out more than 5 mm (0.2 in.) from the ejected position before reinserting it. The slot does not accept a disc caddy if the drive's power is off.
Emergency Eject	By removing the Phillips type screw and inserting the end of a paper clip, you can eject the disc caddy if the workstation does not have power.
NOTICE:	The Volume Control and Headphone Jack features of the CD-ROM drive are supported through applications only.

CD-ROM Media

CD-ROM discs are identical to audio compact discs (CDs), except that they store computer data. CD-ROM discs are 120 mm (4.7 in.) in diameter, and use one data surface with a capacity of 600 megabytes. The data surface contains pits and flat spots arranged in a continuous spiral track, which is read at a constant speed.

A CD-ROM disc mounts into a rigid plastic caddy, similar to a 3.5-inch floppy disk (see Figure 4–2). The drive accesses data on the CD-ROM disc through a shutter in the bottom of the caddy. When you insert the disc caddy into the drive, the shutter opens automatically to expose the disc surface. When you eject the disc caddy from the drive, the shutter closes to protect the disc surface.

CAUTION: **Do not** open the shutter manually, as this exposes the disc surface to dust. Over time, dust reduces the reliability of the read head in the CD-ROM drive.

Caring for CD-ROM Discs

Observe the following guidelines to help prevent data loss and prolong the life of your CD-ROM discs and drive:

- Use CD-ROM discs in a clean environment to prevent dust particles from scratching disc surfaces.
- Store CD-ROM discs in a cool, dry place to prevent moisture and heat damage.
- Don't try to clean the surface of a CD-ROM disc with cleaning solvents, as some cleaning solvents may damage the disc.

Inserting and Removing a CD-ROM Disc

This section describes how to open the disc caddy and insert or remove a CD-ROM disc.

To open the CD-ROM disc caddy, press inward on the two cover-locking tabs and lift the cover, as shown in Figure 4-2.

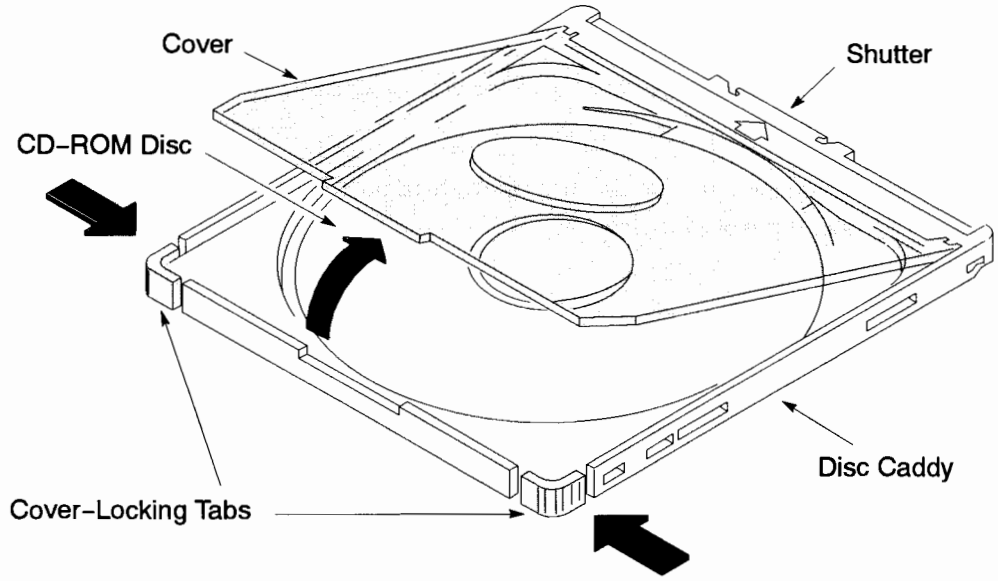


Figure 4-2. CD-ROM Disc and Disc Caddy

To insert a disc in the disc caddy, perform the following steps:

1. Open the disc caddy by pressing inward on the two cover-locking tabs and lifting the cover, as shown in Figure 4-2.

2. Hold the disc by the edges with the label side up.

3. Center the disc on the tray in the disc caddy.

4. Close the cover on the disc caddy, then push lightly on the cover until the cover-locking tabs click into place.

To remove a disc from the disc caddy, perform the following steps:

1. Open the disc caddy by pressing inward on the two cover-locking tabs and lifting the cover, as shown in Figure 4-2.

2. Lift the disc out of the disc caddy. Be careful to touch only the edges of the disc.

Loading and Unloading a CD-ROM Disc Caddy

This section describes how to insert the disc caddy into the CD-ROM drive and how to remove it from the drive.

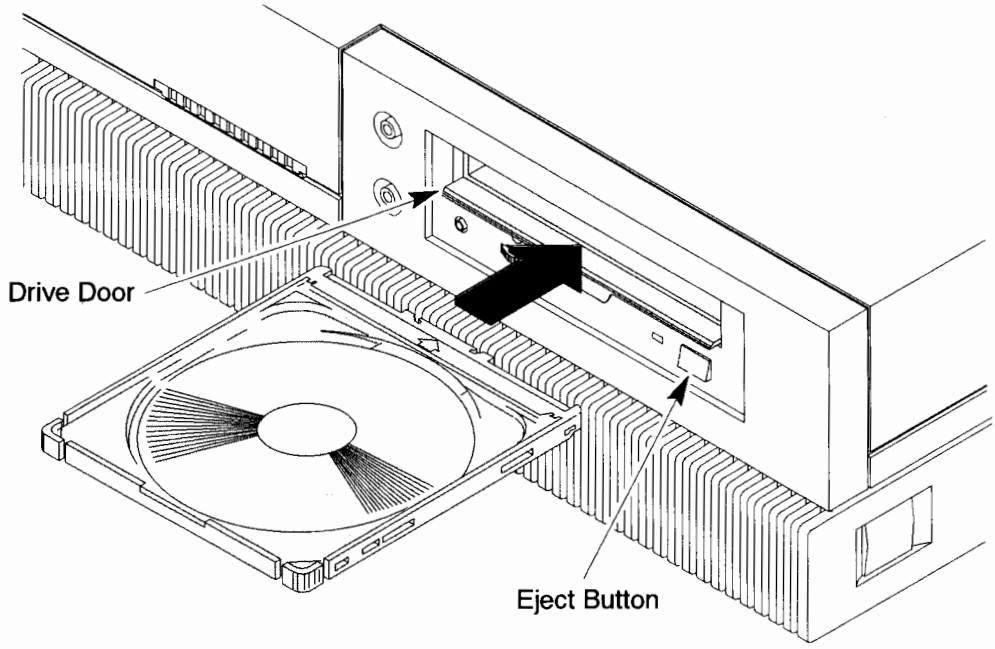


Figure 4-3. Loading and Unloading a CD-ROM Disc Caddy

Perform the following steps to load a disc caddy into the CD-ROM drive:

1. Manually open the door on the front before loading a CD-ROM disc caddy. Always keep the door closed when not loading or unloading a disc caddy. (See Figure 4-3.)

2. Hold the disc caddy with the cover facing up and the arrow on the top of the caddy pointing toward the CD-ROM drive, as shown in Figure 4-3.

3. Push the disc caddy about one third of the way into the loading slot until you hear a click. The drive automatically pulls the disc caddy the rest of the way into the slot.

CAUTION: **Do not** force the disc caddy into the drive's loading slot, as this may damage the drive's loading mechanism.

NOTICE: You must mount the disc after loading it into the drive. Refer to the subsection "Mounting a CD-ROM Disc," later in this chapter, for instructions about mounting a disc.

Perform the following steps to unload a disc caddy from the CD-ROM drive:

1. Press the eject button on the CD-ROM drive. (See Figure 4-3.)

2. Wait until the drive has fully ejected the disc caddy, and then slide it all the way out.

NOTICE: You must unmount the disc before unloading it from the drive. Refer to the subsection "Unmounting a CD-ROM Disc," later in this chapter, for instructions about unmounting a disc.

If you eject the disc caddy and want to reload it, you must pull the caddy out more than 5 mm (0.2 in.) from the ejected position before reloading it.

Verifying the CD-ROM Drive Configuration

To verify that your workstation can communicate with the CD-ROM drive, use the following command line to see which SCSI IDs are currently in use on your system:

/etc/ioscan Return

After a few moments the **ioscan** utility lists all of the input and output devices it could find. The list includes lines similiar to the following:

```
H/W Path    Description      Status
=======================================
0.0.0       graphics         ok(0xnnn)
2.0.1       scsi             ok(0xnnnn)
2.0.1.2.0   disk             ok(0xnnnnnnn)
2.0.1.5.0   disk             ok(0xnnn)
2.0.1.6.0   disk             ok(0xnnn)
```

Check to see if your CD-ROM drive is listed. The listing **2.0.1 scsi** under the **H/W Path** heading is the SCSI bus controller. All devices connected to the SCSI bus begin with this number. The fourth number is the SCSI ID for that device. For example, the listing **2.0.1.2.0** in the sample listing tells us that there is a SCSI device (a CD-ROM drive) currently using address 2 on the SCSI bus.

If **ioscan** does not see your CD-ROM drive, go to Chapter 6, "Solving Problems."

Using Device Files

Device files are special files that tell your system which pathway to use through the system hardware when communicating with a specific device and what kind of device it is.

The examples in this section assume that the SCSI ID of your CD-ROM drive is set to the factory default of SCSI ID 2, using the device file **/dev/dsk/c201d2s0**. (The underlined 2 indicates the SCSI ID number.)

If you set the SCSI address of your CD-ROM drive to a value other than 2, you must create a device file for it, then substitute the pathname of your device file in the examples that follow. Refer to the *System Administration Tasks* manual for information on how to create a device file.

Mounting a CD-ROM Disc

This subsection describes how to mount a CD-ROM disc as a file system.

CAUTION: If you wish to use a CD-ROM disc as a mounted file system, you must mount the CD-ROM disc every time you load it into the drive. You must also unmount the CD-ROM disc every time you unload it from the drive. Failure to mount or unmount a disc may cause a system error condition and may also require rebooting the system.

Use the following procedure to mount a CD-ROM disc as a file system:

1. Log in as **root.**

2. Insert the CD-ROM into the disc caddy.

3. Load the disc caddy into the drive.

4. You must mount the disc under a pre-existing directory name. If the directory name does not exist, you must create it with the **mkdir** command. To create a directory named **/cdrom** to use as a mount point for your CD-ROM disc, enter the following:

   mkdir /cdrom Return

5. To mount the disc as a file system, enter the following:

   /etc/mount /dev/dsk/c201d2s0 /cdrom Return

   The **mount** command lets the system know that a removable file system that is described by the device file **/dev/dsk/c201d2s0** is to be attached at the directory **/cdrom**. This directory becomes the name of the root of the newly-mounted file system.

6. Now you can access the CD-ROM disc as you would any other mounted file system. Enter the following command to change your working directory to the CD-ROM disc:

   cd /cdrom Return

Unmounting a CD-ROM Disc

This section describes how to unmount a CD-ROM disc.

NOTICE: Before you unmount a CD-ROM disc, make sure that your working directory is set to some directory other than the one under which the disc was mounted.

CAUTION: If you wish to use a CD-ROM disc as a mounted file system, you must mount the CD-ROM disc every time you load it into the drive. You must also unmount the CD-ROM disc every time you unload it from the drive. Failure to mount or unmount a disc may cause a system error condition and may also require rebooting the system.

Use the following procedure to unmount a CD-ROM disc:

1. Log in as **root**.

2. Unmount the disc by entering the following:

   /etc/umount /dev/dsk/c201d2s0 Return

3. Press the eject button on the CD-ROM drive. (See Figure 4-3.)

4. Remove the disc caddy from the drive.

Further Command Information

For more information on using the **mount** command, refer to the **mount** man page by typing the following in a terminal window:

man mount Return

For more information on using the **umount** command, refer to the **umount** man page by typing the following in a terminal window:

man umount Return

For more information on using the **mkdir** command, refer to the **mkdir** man page by typing the following in a terminal window:

man mkdir Return

Reading the Busy Light

The CD-ROM busy light shows the status of the drive during the self test and during activity with the host system.

The CD-ROM drive performs the self test when one of the following happens:

- You insert a disc caddy into the drive's loading slot.
- You turn on the drive with a disc caddy already loaded.

For the self test, the busy light operates in the following sequence:

1. Light On
   The busy light goes on when the disc loads into the drive.
2. Light Flashing
   The light flashes six times while a read test is performed on the disc.
3. Light Off
   The light goes off when the self test is complete.

The busy light stays on after the self test when one of the following conditions exist:

- A defective disc
- A disc insertion error (for example, an upside-down disc)
- No disc present

The busy light goes off when one of the following conditions exist:

- A CD-ROM drive power failure exists.
- The drive is idle on the SCSI bus.

The busy light flashes during normal activity with the system.

Ordering Information

To order additional disc caddies for use with your CD-ROM drive, use the following order number:

C2293-80001	CD-ROM Disc Caddy

Chapter 5
Using Your DDS-Format Tape Drive

This chapter describes how to perform the following tasks with your DDS-format tape drive:

- Setting the write-protect tab on a data cassette
- Loading and unloading a data cassette
- Verifying the DDS-format tape drive operation
- Archiving data in compressed and noncompressed mode
- LED indicators
- LED warning conditions
- Cleaning the tape heads
- Media life
- Media interchangeability restrictions

The instructions in this chapter assume that your DDS-format tape drive is set to the factory default address of SCSI ID 3.

NOTICE: When examples of user input are given in this chapter, enter them at the command-line prompt in an HP VUE terminal window or HP-UX shell.

Setting the Write-Protect Tab on a Data Cassette

You can only store information on a data cassette when the write-protect tab is in the *write* position. So, before trying to write to the data cassette, make sure that the write-protect tab is in the *write* position, as shown in Figure 5-1.

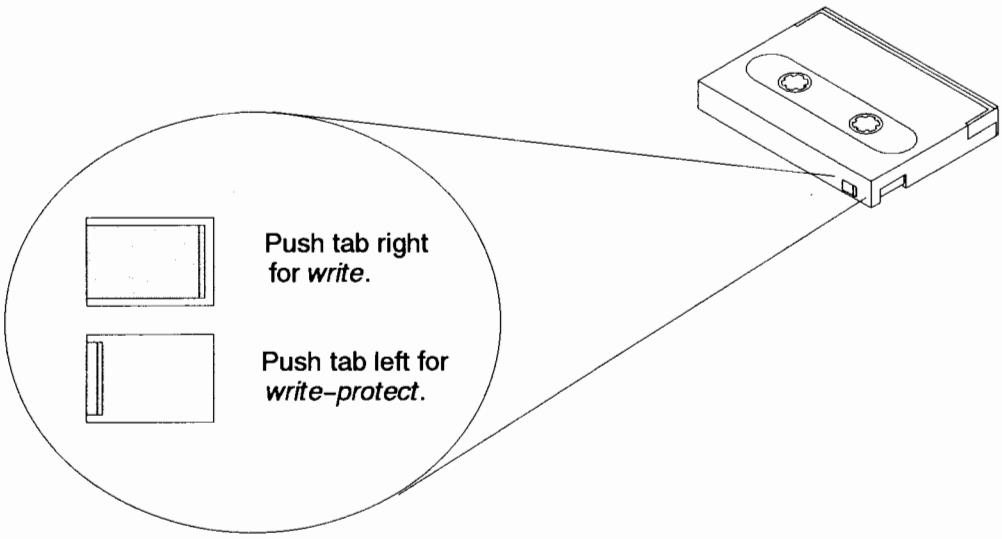


Figure 5-1. Setting the Write-Protect Tab on a DDS-Format Tape

To protect information on a data cassette from being overwritten, set the write-protect tab to the *write-protect* position, as shown in Figure 5-1.

NOTICE: The write-protect tab should always be in the *write* position for transferring data to a cassette.

Loading and Unloading a Data Cassette

Follow these steps to load and unload a data cassette from the DDS-format tape drive:

1. Insert the data cassette into the drive, as shown in Figure 5-2.

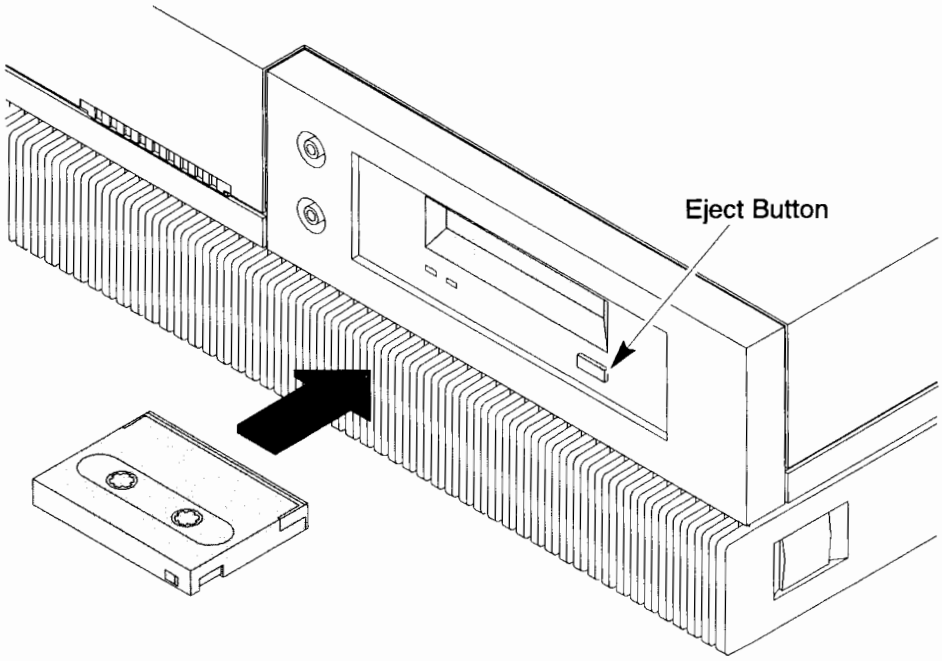


Figure 5-2. Loading and Unloading a Data Cassette

2. Push the data cassette about three quarters of the way into the drive. The drive automatically pulls the data cassette the rest of the way in. When the LEDs on the front of the drive stop flashing, the drive has loaded the data cassette.

3. To remove the data cassette, press and release the eject button on the front of the drive, as shown in Figure 5–2. The LEDs on the drive flash on and off. Ten to twenty seconds later, the data cassette slides partway out of the drive. Remove the cassette from the drive.

Verifying the DDS-Format Tape Drive Configuration

To verify that your workstation can communicate with the DDS-format tape drive, use the following command line to see which SCSI IDs are currently in use on your system:

/etc/ioscan Return

After a few moments the **ioscan** utility lists all of the input and output devices it could find. The list includes lines similar to the following:

```
H/W Path    Description      Status
=======================================
0.0.0       graphics         ok(0xnnn)
2.0.1       scsi             ok(0xnnnn)
2.0.1.3.0   disk             ok(0xnnnnnnn)
2.0.1.5.0   disk             ok(0xnnn)
2.0.1.6.0   disk             ok(0xnnn)
```

Check to see if your tape drive is listed. The listing **2.0.1 scsi** under the **H/W Path** heading is the SCSI bus controller. All devices connected to the SCSI bus begin with this number The fourth number is the SCSI ID for that device. For example, the listing **2.0.1.3.0** in the sample listing tells us that there is a SCSI device (a tape drive) currently using address 3 on the SCSI bus.

If **ioscan** does not see your tape drive, go to Chapter 6, "Solving Problems."

Using Device Files

Device files are special files that tell your system which pathway to use through the system hardware when communicating with a specific device and what kind of device it is.

Your system has four default device files for use with your tape drive: two device files for noncompressed mode and two device files for compressed mode. If you use these device files, you do not need to create any device files.

If the SCSI address of your tape drive is not set to the factory default of SCSI ID 3, you must create a device file, then substitute the pathname of your device file in the examples that follow. Refer to the *System Administration Tasks* manual for information on how to create a device file.

Device Files — No Data Compression

Your system has two device files for using your tape drive with data compression turned off. The device files are named **/dev/rmt/3m** and **/dev/rmt/3mn**, and are set for SCSI ID 3.

If you use the **/dev/rmt/3m** device file, the tape drive rewinds the data cassette every time the system releases the drive from its control.

If you use the **/dev/rmt/3mn** device file, the drive does not rewind the data cassette. The tape stays where it was left after the last operation.

If you use these device files, you do not need to create any device files.

Device Files — Data Compression

If your tape drive is labeled **DCLZ** on its faceplate it is capable of performing data compression. If you wish to use the data compression feature, use the device files **/dev/rmt/3hc** and **/dev/rmt/3hcn**, which are set for SCSI ID 3.

If you use the **/dev/rmt/3hc** device file, the tape drive compresses the data and rewinds the data cassette every time the system releases the drive from its control.

If you use the **/dev/rmt/3hcn** device file, the drive compresses the data, but does not rewind the data cassette. The tape stays where it was left after the last operation.

If you use these device files, you do not need to create any device files.

Archiving Data in Compressed and Noncompressed Mode

This section describes how to transfer data to and from a DDS- format data cassette (saving and restoring) using the HP-UX **tar** command and your tape drive's device file.

NOTICE: Before using your DDS-format tape drive to back up your file system, make sure you read the "Media Interchangeability Restrictions" section later in this chapter.

The **tar** (tape file archiver) command allows you to save files to a data cassette, restore files from a data cassette to your system, or list the files on your data cassette.

The examples in this chapter use the device file **/dev/rmt/3m**, which archives the data in noncompressed mode and causes the drive to rewind the data cassette. To use data compression, substitute **/dev/rmt/3hc** for **/dev/rmt/3m**. If you named your device files differently, substitute the correct file name where appropriate.

NOTICE: A DDS-format tape drive with data compression capability is labeled **DCLZ** on its front panel.

Writing to a Data Cassette

Use the following instructions to copy data to the tape drive:

1. Check that the write-protect tab on a data cassette is in the *write* position.

2. Load the data cassette into the tape drive.

3. Enter the following command line to write to the tape:

   tar -cvf /dev/rmt/3m *pathname* Return

   where *pathname* is the pathname of the file or directory containing files that you want to write to the tape. To use the data compression mode, substitute **/dev/rmt/3hc** for **/dev/rmt/3m**.

Restoring Files from a Data Cassette

Use the following instructions to restore data from a data cassette:

1. Load the data cassette into the tape drive.

2. Use **cd** to change to the directory you want the files to reside in.

3. Enter the following command line to restore data:

   tar -xvf /dev/rmt/3m *pathname* Return

   where *pathname* is the pathname of the file or directory containing files that you want to restore from the tape. If ***pathname*** is not specified, everything on the data cassette is restored. To use the data compression mode, substitute **/dev/rmt/3hc** for **/dev/rmt/3m**.

Listing the Files on a Data Cassette

Use the following instructions to list the files on a data cassette:

1. Load the data cassette into the tape drive.

2. Enter the following command line to receive a file listing of the data cassette:

   tar -tvf /dev/rmt/3m Return

   To use the data compression mode, substitute **/dev/rmt/3hc** for **/dev/rmt/3m**.

Further Command Information

For additional information on using **tar** and a complete list of the command arguments, refer to the **tar** man page by typing the following:

man tar Return

You may also communicate with the tape drive with the **cpio, ftio, mt,** and **fbackup** commands. For more information on these commands, enter the following:

man *command* Return

LED Indicators

This section shows the location of the LED indicators and describes the codes which are displayed.

The front panel has two colored LEDs, the Cassette LED and the Drive LED. Figure 5-3 shows their location.

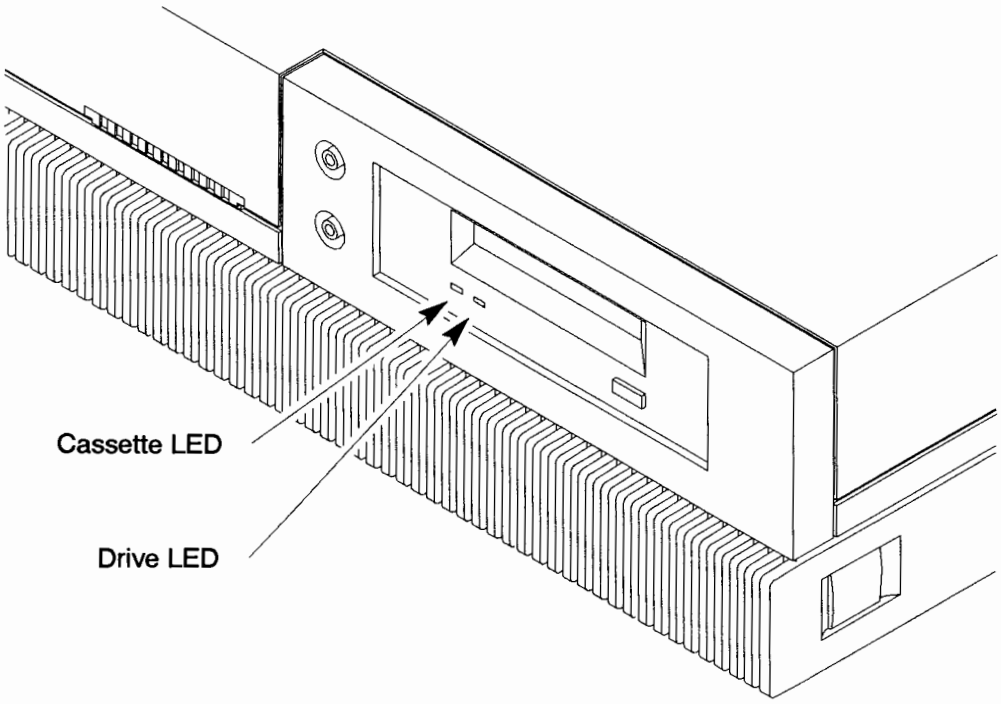


Figure 5-3. DDS-Format Tape Drive LED Indicators

On the LEDs, green indicates normal operation, and amber indicates a warning condition. Pulsing shows activity between the drive and the SCSI bus.

If the Cassette Light (left LED) shows steady amber, this indicates that the cassette is write-protected. If the Drive Light (right LED) shows steady amber, this indicates a fault condition. Table 5-1 lists the LED codes and their meanings.

Table 5-1. DDS-Format Tape Drive LED Display Codes

Cassette	Drive	Meaning
Read/Write States		
		Cassette (un)loading
		Cassette loaded/online
		Cassette loaded/activity
		Cassette loaded/offline
Write-Protect States		
		Cassette (un)loading
		Cassette loaded/online
		Cassette loaded/activity
		Cassette loaded/offline
Error States		
		Media wear (caution)
		High humidity
		Self-test (normal)
		Self-test (failure)

Key

- OFF
- Green
- Amber
- Pulsing Green
- Pulsing Amber
- Pulsing Green and Amber

LED Warning Conditions

This section describes actions to take if the LEDs indicate a warning condition.

High Humidity

If the LEDs display the high humidity signal, the humidity is too high and the drive does not perform any operations until the humidity drops.

Self-Test (Failure)

If the LEDs display the self-test (failure) signal, a fault was diagnosed during the self tests. Note the pattern of the pulses and contact your local service representative.

Media Wear (Caution)

Hewlett-Packard DDS drives continually monitor the number of errors they have to correct when reading and writing to a tape to determine tape wear and tape head cleanliness. If excessive tape wear or dirty tape heads are suspected, the drive warns you by displaying the Media Wear (Caution) signal on the LED indicators.

If the LED indicators on your DDS-format drive display the Media Wear (Caution) condition, follow this procedure:

1. Check the system console for any tape error messages. A hard error during a read or write operation may have occurred.
2. Clean the heads with a cleaning cassette (HP92283K) as described in the "Cleaning the Tape Heads" section, later in this chapter.
3. Repeat the operation you performed when the Media Wear (Caution) signal displayed. If the Media Wear (Caution) signal still displays, then the data cassette should be replaced.
4. If you are performing a backup from disk to tape, discard the data cassette and back up your files using a new data cassette.
5. If you are performing a restore from tape to disk, complete the restore, then discard the data cassette and back up the files to a new data cassette.

Cleaning the Tape Heads

You should clean the heads of your tape drive after every 25 hours of tape drive use or if the Media Wear (Caution) signal is displayed on the LED indicators.

NOTICE: Only use HP Cleaning Cassettes (HP92283K) to clean the tape heads. Do not use swabs or other means of cleaning the tape heads.

Follow this procedure to clean the tape heads:

1. Insert the cleaning cassette into the drive. The tape automatically loads the cassette and cleans the heads. At the end of the cleaning cycle, the drive ejects the cassette.

2. Write the current date on the label on the cleaning cassette so that you know how many times you have used it. Discard the cleaning cassette after you have used it 25 times.

Media Life

Hewlett-Packard DDS data cassettes are currently specified to 2000 passes over any part of the tape under optimal environmental conditions (50% Relative Humidity, 22 degrees C). Taking into account the fact that during a tape operation any one area of the tape may have multiple passes over the heads, this translates into approximately 200 to 300 backups or restores.

Under certain conditions, the life of your data cassette is less. Replace your data cassettes after 100 backups or restores if your operating conditions meet any of the following criteria:

- The relative humidity in your operating environment is consistently less than 50%.
- You know that the backup software you are using makes multiple passes over sections of the tape during backups or restores.
- You notice that when you do backups and restores the tape stops and starts frequently.

Media Interchangeability Restrictions

If you interchange media between DDS-format tape drives, note that data cassettes with compressed data can only be read by tape drives which have data compression capabilities. This includes data cassettes that contain both compressed and noncompressed data. A DDS-format tape drive with data compression capability is labeled **DCLZ** on its front panel.

Ordering Information

To order Hewlett-Packard data cassettes and cleaning cassettes for use in your DDS-format tape drive, use the following order numbers:

- HP92283A - Box of five 60-meter DDS data cassettes
- HP92283B - Box of five 90-meter DDS data cassettes
- HP92283K - Package of two cleaning cassettes

CAUTION: Only use data cassettes labeled as DDS (Digital Data Storage) cassettes. Never use audio cassettes labeled DAT (Digital Audio Tape) in your DDS-format drive.

Chapter 6
Solving Problems

This chapter contains information to help you determine what's wrong with your system when you have problems. It contains information about the following:

- Common problems and solutions
- LED error codes
- Problems with the optional CRX or HCRX graphics
- Dealing with a boot failure
- Running the system verification tests

If you have a problem that isn't listed in this chapter, or if your problem persists, contact your designated service representative. When calling for service, always have your system's model number and serial number ready.

Common Problems and Solutions

The tables in this section list common problems you may encounter with your workstation. The tables also tell you what to do to help solve the problems.

Table 6-1. Problems Powering Up the System

Problem	Solution
The power LED doesn't light.	Make sure all ac power cables are connected securely to the system. Make sure the power cord is plugged into a working ac outlet. Make sure the power switch is set to the 1 (ON) position.
The power LED lights, but the screen is blank or flickers.	Turn the brightness control on the monitor clockwise. If the screen is still blank, turn off the system and monitor power switches. When the system is completely powered off, check the video cable connections. Power on the system again, pressing the <ESC> key after the keyboard LEDs light. Note the pattern of the LEDs on the front panel of the system unit. Check the LED error codes in "LED Error Codes," later in this chapter.
If problems persist, contact your system administrator or call your designated service representative.	

Table 6-2. Problems with Loading and Booting the Operating System

Problem	Solution
The power LED is lit, and text appears on the screen, but more than two minutes have passed with no sign of system activity.	Make sure that all SCSI devices are set to the proper SCSI ID. (See Appendix C for default SCSI ID settings.) Check that all SCSI devices are correctly cabled. Check that the SCSI bus is correctly terminated. (See Appendix C for information on SCSI cabling and termination.) Note the pattern of the LEDs on the front panel of the system unit. Check the LED error codes in "LED Error Codes," later in this chapter.
The system stops or hangs while booting.	Follow the instructions in "Dealing With a Boot Failure," later in this chapter. Note the pattern of the LEDs on the front panel of the system unit. Check the LED error codes in "LED Error Codes," later in this chapter.
If problems persist, contact your system administrator or call your designated service representative.	

Table 6-3. Problems with the 802.3 Network

Problem	Solution
Can't reach other systems on the network. Applications that rely on the network won't run.	Check the network connector on the back of the system unit. Make sure that the network transceiver is fastened securely to the connector.
If problems persist, contact your system administrator or call your designated service representative.	

Table 6-4. Problems Using the CD-ROM Drive

Problem	Solution
The CD-ROM drive does not respond to commands.	Re-enter the commands and make sure that you have typed them correctly. Make sure that you specified the device file **/dev/dsk/c201d2s0** for commands that require a device file name. Follow the instructions in the section entitled "Running the System Verification Tests," later in this chapter, to verify that the CD-ROM drive is functioning properly.
If problems persist, contact your system administrator or call your designated service representative.	

Table 6-5. Problems Using the Floppy Disk Drive

Problem	Solution
The floppy drive does not respond to commands.	Re-enter the commands and make sure that you have typed them correctly. Make sure that you specified the correct device file for commands that require a device file name. For Model 715/33, 715/50, and 715/75 workstations, use **/dev/rfloppy/c201d0s0**. For Model 715/64, 715/80, and 715/100 workstations, use **/dev/rfloppy/c20Ad1s0**. Make sure that the write-protect tab is set to *write* if you are trying to copy data to a floppy diskette. Follow the instructions in the section entitled "Running the System Verification Tests," later in this chapter, to verify that the floppy drive is functioning properly.
If problems persist, contact your system administrator or call your designated service representative.	

Table 6-6. Problems Using the DDS-Format Tape Drive

Problem	**Solution**
The DDS-format tape drive does not respond to commands.	Re-enter the commands and make sure that you have typed them correctly. Make sure that you specified the correct device file name for commands that require a device file name. Make sure the write-protect tab is set to *write* if you are trying to copy data to a data cassette. Follow the instructions in the section entitled "Running the System Verification Tests," later in this chapter, to verify that the tape drive is functioning properly.
If problems persist, contact your system administrator or call your designated service representative.	

Table 6-7. Problems with System Memory

Problem	Solution
When booting the system, LED error codes that indicate memory errors are displayed on the front panel LEDs.	Check that the memory slots are configured correctly. (See "Installing Additional Memory" in Appendix B.) By default, your workstation does a quick memory test on power-up. See "Displaying and Setting the Fastboot Mode" in Appendix D for instructions on how to make your workstation perform more intensive memory testing.
If problems persist, contact your system administrator or call your designated service representative.	

LED Error Codes

This section contains information about the error codes displayed by the LEDs on the system's front panel.

If an error occurs during the power-up diagnostics tests, the diagnostics use the front panel LEDs to display a code for the failing component.

Figure 6-1 shows the location of the system unit's front panel LEDs. There are nine LEDs on the front panel. The green Power LED indicates that the system is powered up. The amber LEDs labeled 1 through 8, right to left, indicate system status and error codes.

Table 6-8 shows the LED error codes for Model 715/33, 715/50, and 715/75 systems. Table 6-9 shows the LED error codes for Model 715/64, 715/80, and 715/100 systems. Use these LED error code tables to determine the failing component.

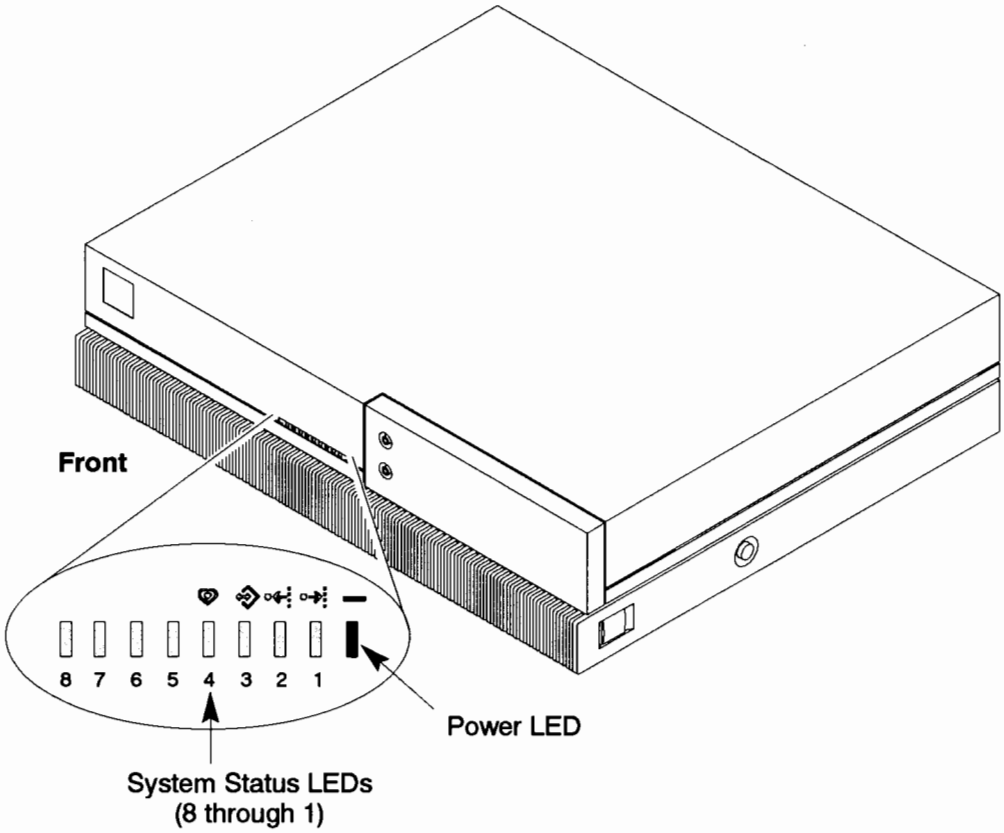
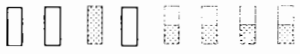


Figure 6-1. Front Panel LEDs

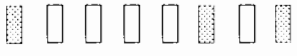
Table 6-8. Model 715/33, 715/50, and 715/75 LED Error Codes

LED Display	Error Message
8 7 6 5 4 3 2 1	
	CPU Error - Model 715/33 and 50. PCX-T FRU Error - Model 715/75.
	CPU Error - Model 715/33 and 50. PCX-T FRU Error - Model 715/75.
	CPU Error-Model 715/33 and 50. Motherboard Error - Model 715/75.
	CPU Error-Model 715/33 and 50. PCX-T FRU Error - Model 715/75.
	FP Register Test Failure. Loops Until Passes. Possible PCX-T Error *
	FP Register Test Failure. Loops Until Passes. Possible PCX-T Error *
	FP Register Test Failure. Loops Until Passes. Possible PCX-T Error *
	EISA Interface Error.
	EISA Interface Error.
	EISA Interface Error.
	EISA Interface Error.
	EISA Interface Error.
	PDC ROM Checksum Error.
 = LED On or Flashing	 = LED Either On or Off

* If you see this error code and it continues to appear, power the system down and reboot. If you see the error code again, replace the PCX-T card.

(Continued)

Table 6-8. Model 715/33, 715/50, and 715/75 LED Error Codes (Cont.)

LED Display	Error Message
8 7 6 5 4 3 2 1	
	Memory Pair 0, Slot B Error.
	Memory Pair 0, Slot A Error.
	Memory Pair 1, Slot B Error.
	Memory Pair 1, Slot A Error.
	Memory Pair 2, Slot B Error.
	Memory Pair 2, Slot A Error.
	Memory Pair 3, Slot B Error.
	Memory Pair 3, Slot A Error.
	No memory found.
	Unknown I/O device.
	Error while trying to boot from SCSI Device.
	Error while trying to boot from LAN.
	Error trying to access Console Keyboard.
	Error while trying to access Serial Console Device, Port A.
	Error while trying to access Serial Console Device, Port B.

(Continued)

Table 6-8. Model 715/33, 715/50, and 715/75 LED Error Codes (Cont.)

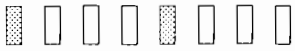
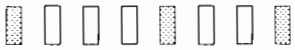
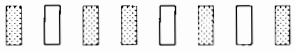
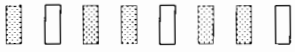
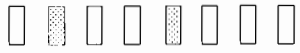
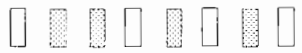
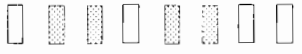
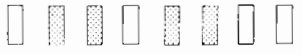
LED Display	Error Message
8 7 6 5 4 3 2 1	
	Error while trying to access Parallel Port.
	Error on SGC Slot 1 (Built-in Graphics).
	Error on SGC Slot 2 (Optional Graphics).
	Unable to initialize EISA Slot.
	Error reading from Stable Storage.
	Unexpected interrupt during PDC execution.
	No working console found.
	HPMC handling initiated.
	HPMC due to Cache Error.
	HPMC due to Memory Error.
	HPMC due to Bus Error.
	Nested HPMC occurred.
	Error while writing to EEPROM.

Table 6-9. Model 715/64, 715/80, and 715/100 LED Error Codes

LED Display	Error Message
8 7 6 5 4 3 2 1	
	CPU Error
	Fatal Error
	RAM Test Error
	Cache Error
	FP Co-processor Error
	Fatal FP Co-processor Error
	I/O Device Error
	ROM Checksum Error
	HPMC Error
	HPMC due to Cache Error
	HPMC due to Bus Error
	HPMC due to Memory Error
	Console Initialization Error
	No working console found, unable to boot
= LED On	= LED Off

(Continued)

Table 6-9. Model 715/64, 715/80, and 715/100 LED Error Codes (Cont.)

LED Display	Error Message
8 7 6 5 4 3 2 1	
	No bootable device found
	Memory Error
	Initialization Error

Problems with the Optional CRX or HCRX Graphics

If your workstation has one of the CRX or HCRX graphics options installed, and you power on your workstation, and after a few minutes, there is no output on your monitor, use the following procedure to troubleshoot the problem:

1. Power off your workstation and your monitor.

2. Make sure that all connectors and cables are fully seated and that your monitor is connected to the correct connector for your CRX or HCRX graphics option. See Chapter 1 of this manual for monitor connections.

3. Power on your monitor and your workstation.

   If, after a few minutes, there is still no output on your monitor, continue to Step 4.

4. Power off your workstation and your monitor.

5. Disconnect your monitor and connect it to the built-in graphics connector as shown in Chapter 1 of this manual.

6. Check your workstation's graphics configuration switches, as shown in Appendix B of this manual, to ensure that the graphics switches are set correctly for your monitor.

NOTICE: Model 715/64, 715/80, and 715/100 workstations are autoconfiguring and do not have any graphics configuration switches.

7. Power on your monitor and your workstation. Observe the LED codes as they are displayed on the front of the system unit.

8. When LED indicators number 8 and 4 are lit (and all other amber LEDs are off), press the TOC switch on the front of the system unit. (See Chapter 1 of this manual for the TOC switch location.) This LED pattern indicates that the system is checking the CRX or HCRX graphics for errors. See Figure 6–2.

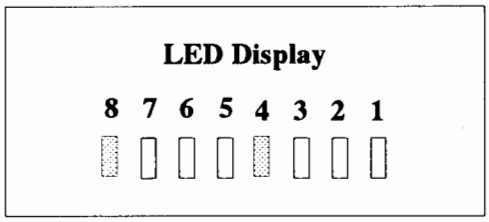


Figure 6–2. LED Display for CRX and HCRX Graphics Check

9. After you press the TOC switch, power off your workstation. Wait a few seconds, then power it back on.

   If, after a few minutes, you still have nothing displayed on your monitor, call your designated service representative.

Dealing with a Boot Failure

If your usual boot device (typically a disk) is not responding as it should, you must attempt to boot from the disk (or another boot device) by selecting it manually.

To boot a device manually, follow these steps:

1. For a Model 715/33, 715/50, or 715/75 workstation, shutdown your operating system by logging in as user **root** or superuser, and enter the **/etc/shutdown** command in a terminal window. Wait for the system to shut down.

2. Turn off the power to your workstation for a few seconds.

CAUTION: **Do not** power off a Model 715/33, 715/50, or 715/75 workstation without first shutting down HP-UX. Powering off with HP-UX still running could damage the data on the disks associated with your workstation.

3. Turn the power back on.

   The system self-test runs automatically. Within a few minutes a message displays. Press and hold the Esc key as soon as this message appears:

```
Selecting a system to boot.
To stop selection process, press and hold the ESCAPE
key.
```

4. Release Esc as soon as the following message displays:

```
Selection process stopped.
```

A short time later, this message appears:

```
Searching for potential boot devices. To terminate
search, press and hold the ESCAPE key.

Device Selection   Device Path    Device Type
-------------------------------------------------
```

Your workstation is now searching for devices that may hold file systems from which it can boot HP-UX. As they are found, they appear in a list, similar to the following example:

```
P0                 scsi.6.0       QUANTUM LPS525S
P1                 scsi.5.0       QUANTUM LPS525S
P2                 scsi.2.0       TOSHIBA CD-ROM DRIVE:XM
```

This process may take several minutes. You can terminate the search at any time by pressing Esc

If two devices are set to the same SCSI ID, the search terminates when it finds the duplicate SCSI ID. If this happens you must change the SCSI ID of one of the devices.

If no disk devices are listed, then your workstation is failing to communicate with its disks. Recheck the SCSI connections and try again. If there are still no devices listed, there is a serious problem. Contact your designated service representative for assistance.

When the search ends, the following list of actions appears:

```
b)  Boot from specified device
s)  Search for bootable devices
a)  Enter boot administration mode
x)  Exit and continue boot sequence
?)  Help

Select from menu:
```

5. If the search locates a disk, attempt to boot from it by entering the **b** (boot) command and a device selection number from the list. For example, if a SCSI disk is listed as item **P0** (as in the previous example list), enter the following:

```
Select from menu: b P0 Return
```

It may be several seconds before the boot messages begin to appear on the screen. You may hear sounds coming from the disk drive and see a sequence of changing patterns on the LED display.

6. If your workstation still fails to boot, there is either something wrong with the file system or with the hardware. If you suspect a file system failure, see the manual, *Using HP-UX* for help on dealing with file system failures. If you think that something is wrong with the hardware, contact your designated service representative.

Running System Verification Tests

HP-UX uses a diagnostics product called SupportWave. SupportWave contains the Support Tools Manager so that you can verify your system operation.

You can access the Support Tools Manager while in a terminal window. If you are using HP VUE as your interface, you can also access the Support Tools Manager through the **sys_admin** directory.

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 SupportWave user interfaces, see the online man pages by entering the following at a command line prompt:

man cstm Return

man mstm Return

man xstm Return

To run SupportWave from either HP VUE or the HP–UX command line shell, perform the following steps:

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

   # cstm Return

   The following screen appears:

```
**************************************************************************
******                                                              ******
******                    SUPPORT TOOLS MANAGER                     ******
******                                                              ******
******                   Command Line Interface                     ******
******                                                              ******
******                      Version  x.xx.xx                        ******
******                                                              ******
******                   Part Number  xxxxx-xxxxx                   ******
******                                                              ******
******           (C) Copyright Hewlett Packard Co. xxxx             ******
******                    All Rights Reserved                       ******
******                                                              ******
**************************************************************************
Please Wait. System mapping in progress . . .
Please type HELP or ? to list available commands.

CSTM>
```

2. At the CSTM> prompt, you can enter several commands. To see what commands are available, type the **help** command.

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

```
CSTM> verify all [Return]
```

The following messages appear:

```
Verification has started on device (CPU).
Verification has started on device (FPU).
Verification has started on device (0/0/0).
Verification has started on device (2/0/1.0.0).
Verification has started on device (2/0/1.5.0).
Verification has started on device (2/0/1.6.0).
Verification has started on device (2/0/2).

CSTM>Message from (0/0/0):
This graphics test displays a number of graphics images on the screen of
the graphics device being tested. If an X server is not currently running on
that display, X Windows will be started and run for the duration of the
test. The Starbase shared library (/usr/lib/libsbisl) should be present to
run this test.

CAUTION: This test will fail if any portion of the test window is modified
         or overlaid in any way.

NOTE: If a VUE login screen is currently displayed on the monitor, the test
will wait until someone logs in the HP VUE on the graphics monitor to re-
lease the lock. The test stops if the Screen Saver times out, it runs again
once the Screen is activated.

WARNING: Do not run this exercise with any other option.
(Type 'R' for Ready, Type 'S' for Skip) [R] >>
```

4. When you see the >> prompt shown above, type **r** [Return]

The following messages and a graphics test window appear:

```
Verification of (2/0/1.3.0) has completed.  Result status - (Success).
Verification of (2/0/1.5.0) has completed.  Result status - (Success).
Verification of (2/0/1.6.0) has completed.  Result status - (Success).
Verification of (CPU) has completed.  Result status - (Success).
Verification of (FPU) has completed.  Result status - (Success).
Verification of (2/0/2) has completed.  Result status - (Success).
Verification of (0/0/0) has completed.  Result status - (Success).
```

5. Type Return to return to the CSTM> prompt after all test results are reported.

6. To exit the Support Tools Manager enter the following:

```
CSTM> exit Return
```

If any tests failed, further diagnosis is necessary by qualified service personnel.

Appendix A
Safety and Regulatory Statements

This appendix contains the following safety and regulatory statements:

- Declaration of conformity
- Emissions regulations
- Emissions regulations compliance
- Datacom users statements
- Acoustics
- Electrostatic discharge precautions
- Laser safety statements
- Warnings and cautions

DECLARATION OF CONFORMITY

according to ISO/IEC Guide 22 and EN 45014

Manufacturer's Names:
Manufacturer's Addresses:

Hewlett-Packard
100 Domain Drive
Exeter, N.H. U.S.A.

declares, that the product

Product: Computer Workstation

Model Number: 715

Product Number: A2084A

conforms to the following Product Specifications:

Safety: IEC 950:1986 / EN60950 (1988)

EMC: CISPR 22:1985 / EN 55022 (1988) Class A
IEC 801-2:1991 / pr EN55101-2 (1990): 3 kV CD, 8 kV AD
IEC 801-3:1984 / pr EN55024-3 (1991): 3 V/m

Supplementary Information: The product was tested in a typical Hewlett-Packard Workstation configuration.

Exeter, Date November 4, 1992

Division Quality Manager

European Contact: Your local Hewlett-Packard Sales and Service Office or Hewlett-Packard GmbH, Department ZQ/Standards Europe, Herrenberger 130, D-7030 Boeblingen (FAX:+49-7031-141623)

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Emissions Regulations

Federal Communications Commission (FCC)

The Federal Communications Commission of the U.S. government regulates the radio frequency energy emanated by computing devices through published regulations. These regulations specify the limits of radio frequency emission to protect radio and television reception. All HP nodes and peripherals have been tested and comply with these limits. The FCC regulations also require that computing devices used in the U.S. display the agency's label and that the related documentation include the following statement:

NOTICE: 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. 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.

Canadian Department of Communications (CDC)

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the Radio Interference Requirements of the Canadian Department of Communications.

Korean Regulations on EMI, 1991·3

Please note that this device has been approved for business purposes with regard to electromagnetic interference.

VCCI Class 1 ITE

この装置は，第一種情報装置（商工業地域において使用されるべき情報装置）で商工業地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）基準に適合しております。

従って，住宅地域またはその隣接した地域で使用すると，ラジオ，テレビジョン受信機等に受信障害を与えることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

ＶＣＣＩ基準に適合する為に、シールドされたケーブルをご使用下さい。

Emissions Regulations Compliance

Any third-party I/O device installed in an HP system must be in accordance with the requirements set forth in the preceding Emissions Regulations statements. In the event that a third-party noncompliant I/O device is installed, the customer assumes all responsibility and liability arising therefrom.

Datacom Users Statement (United Kingdom Only)

The HP 9000 Series 700 Model 715 is approved under Approval Number NS/G/1234/J/100003 for indirect connection to Public Telecommunications systems within the United Kingdom.

Acoustics

Regulation On Noise Declaration For Machines -3. GSGV

Lpa <70dB	Lpa <70dB
operator position	am Arbeitsplatz
normal operation	normaler Betrieb
per ISO 7779	nach DIN 45635 T.19

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:

- Stand on a static–free mat.
- Wear a static strap to ensure that any accumulated electrostatic charge is discharged from your body to ground.
- Connect all equipment together, including the static–free mat, static strap, routing nodes, and peripheral units.
- 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.

Follow these rules when told to do so in this manual.

Laser Safety Statement (For U.S.A. Only)

(For workstations that have a CD ROM drive installed.)

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 produce 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.

Warnings and Cautions

WARNING:

Removing device cover may expose sharp edges in equipment chassis. To avoid injury, use care when installing customer add-on devices.

WARNUNG:

Das Entfernen der Geräteabdeckung legt die scharfen Kanten im Inneren des Gerätes frei. Um Verietzungen zu vermeiden, seien Sie vorsichtig beim Einbau von zusätzlichen Bauteilen, die vom Kunden selber eingebaut werden können.

AVERTISSEMENT:

Des bords tranchants du châssis de l'équipement peuvent être exposés quand le cache de l'unité n'est pas en place. Pour éviter des blessures, faire très attention lors de l'installation de modules supplémentaires par le client.

WARNING:

Disconnect power plug from wall outlet or source power before moving or removing the device, or installing add-on components.

WARNUNG:

Entfernen Sie die Stromzuführung von der Steckdose oder der Stromquelle bevor Sie das Gerät bewegen, abbauen, oder zusätzliche Bauteile installieren.

AVERTISSEMENT:

Débrancher la fiche de la prise de courant ou de la source d'alimentation électrique avant de déplacer ou de retirer l'unité, ou avant d'installer des modules supplémentaires.

CAUTION:

System power cord must be plugged into an accessible dedicated ac mains receptacle.

VORSICHT:

Das System-Netzanschlußkabel muß an eine zugängliche spezielle Wechselstrom-Hauptzuführungssteckdose angeschlossen werden.

ATTENTION:

Le fil d'alimentation électrique du système doit être branché dans une prise de courant c.a. spécialisée accessible.

Appendix B
Changing Your Workstation's Hardware Configuration

This appendix tells you how to change your workstation's hardware configuration by performing the following procedures:

- Preparing to install a SCSI device
- Opening the system unit
- Installing a floppy drive
- Installing a CD-ROM
- Installing a DDS-format tape drive
- Installing a SCSI disk drive
- Installing additional memory
- Setting the graphics configuration switches
- Setting the monitor type
- Installing an EISA Option Board
- Closing the system unit
- Connecting to the EISA Board

NOTICE: Some procedures in this appendix require you to log in as **root**. If you cannot log in as **root**, contact your system administrator.

CAUTION: The internal components of your workstation are susceptible to mechanical and electrostatic shock. To prevent such damage from occurring, observe the following precautions during unpacking and installation:

- Stand on a static-free mat.
- Wear a static-grounding wrist strap to ensure that any accumulated electrostatic charge discharges from your body to ground. Attach the static-grounding wrist strap by following the instructions on the package that contains the strap. Be sure to attach one end of the strap to the system chassis.
- Keep uninstalled disk drives in their protective antistatic bags.

Depending on the device you are installing, the following tools may be needed to complete the installation procedures described in this appendix:

- #2 Phillips screwdriver
- Medium flatblade screwdriver
- Small needlenose pliers
- #1 Posi-Drive driver

Preparing to Install a SCSI Device

If you are installing a SCSI device, perform the following steps prior to opening the system unit:

1. Determine which SCSI IDs are currently in use on your system by entering the following command line:

/etc/ioscan Return

After a few moments the **ioscan** utility lists all of the input and output devices it could find. The list appears similar to the following:

```
H/W Path    Description      Status
=======================================
0.0.0       graphics         ok(0x577)
2.0.1       scsi             ok(0x7071)
2.0.1.5.0   disk             ok(0x202)
2.0.1.6.0   disk             ok(0x202)
2.0.2       lan              ok(0x7072)
2.0.3       hil              ok(0x7073)
2.0.4       serial           ok(0x7075)
2.0.5       serial           ok(0x7075)
2.0.6       parallel         ok(0x7074)
2.0.8       audio            ok(0x7a)
```

To find out which SCSI IDs are currently in use, look under the **H/W Path** heading. The listing **2.0.1 scsi** is the SCSI bus controller. For devices connected to the SCSI bus, the fourth number is the SCSI ID for that device. For example, the listing **2.0.1.6.0** in the sample listing tells us that there is a SCSI device (a disk) currently using address 6 on the SCSI bus.

2. Make note of the SCSI-2 device IDs already in use, and the IDs available for use. In general, you may use SCSI IDs 0 through 6 for SCSI devices such as a SCSI floppy disk drive, CD-ROM, DDS-format tape drive, or hard disk. However, you may not use the same SCSI ID number for any two devices connected to the system.

NOTICE: **Do not** use SCSI address 7 for any device. Address 7 is reserved for the SCSI controller.

Opening the System Unit

No special tools are required for opening the system unit

CAUTION: **Do not** attempt to operate the workstation while it is open. The unit must be closed for proper air flow for system cooling.

Perform the following steps to open the system unit:

1. Power off the system and any peripheral devices. Unplug the system unit power cord and the power cord of any peripheral devices from ac wall outlets.

2. Disconnect any cables from the system unit connectors.

3. Disconnect and remove the optional graphics processor (if installed). If your workstation is installed in the deskside (standing) configuration, remove the graphics processor from the floor stand. Lift the rear of the system unit slightly while sliding the graphics processor back as shown in Figure B–1.

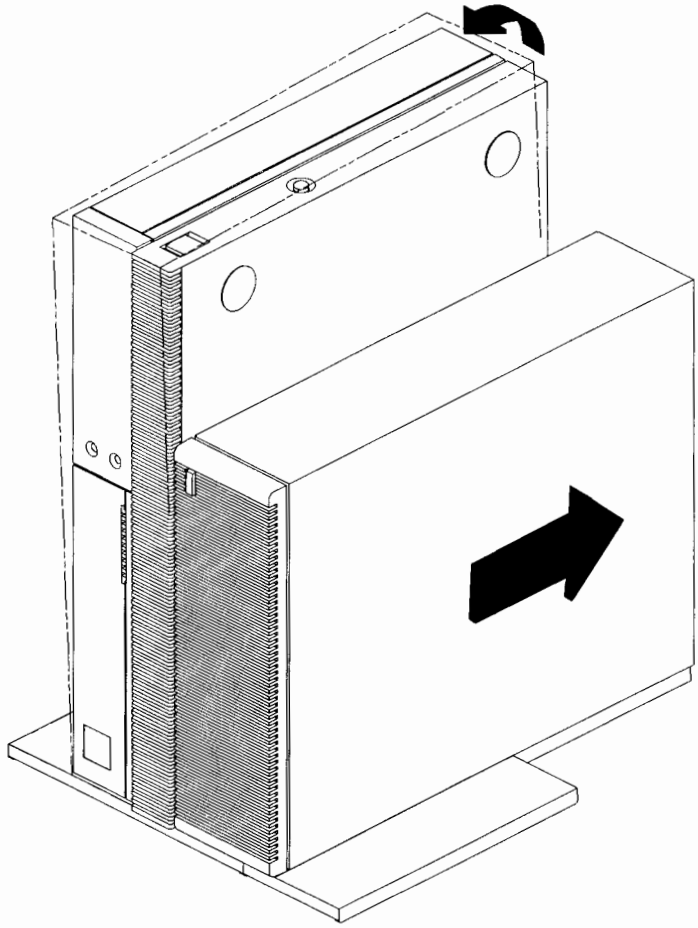


Figure B-1. Disconnecting the Optional External Graphics Processor

If your workstation is installed in the deskside configuration, you must remove the floor stand prior to opening the system unit. If your workstation does not have the floor stand installed, go to step 7.

4. Lay the system unit on a flat surface, such as a table top, with the floor stand hanging over the edge. See Figure B–2.

5. On the bottom of the floor stand, slide the latch to unlock the floor stand. See Figure B–2.

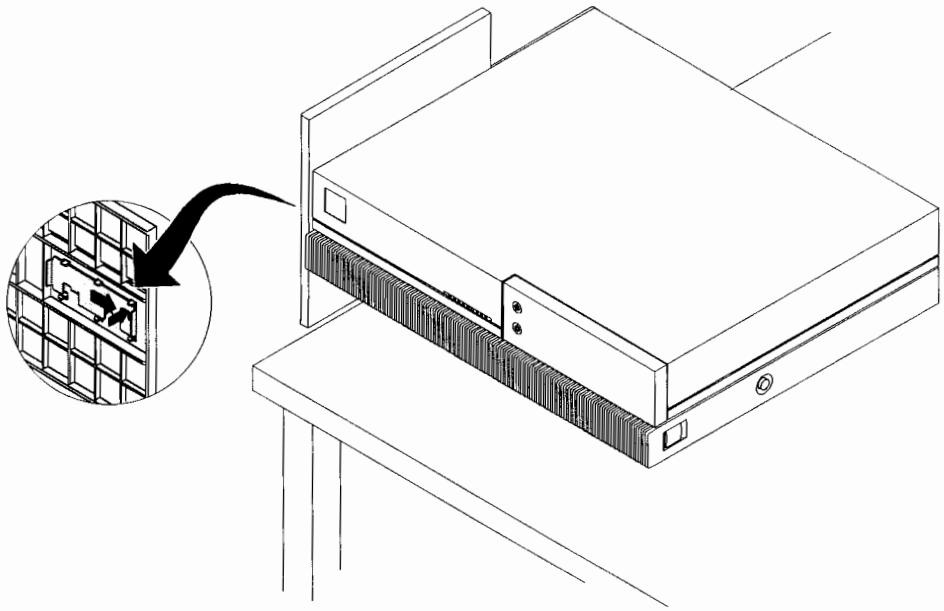


Figure B–2. Laying the System Unit Flat

6. Swing the end of the floor stand away from the system unit and remove it from the system unit. See Figure B–3.

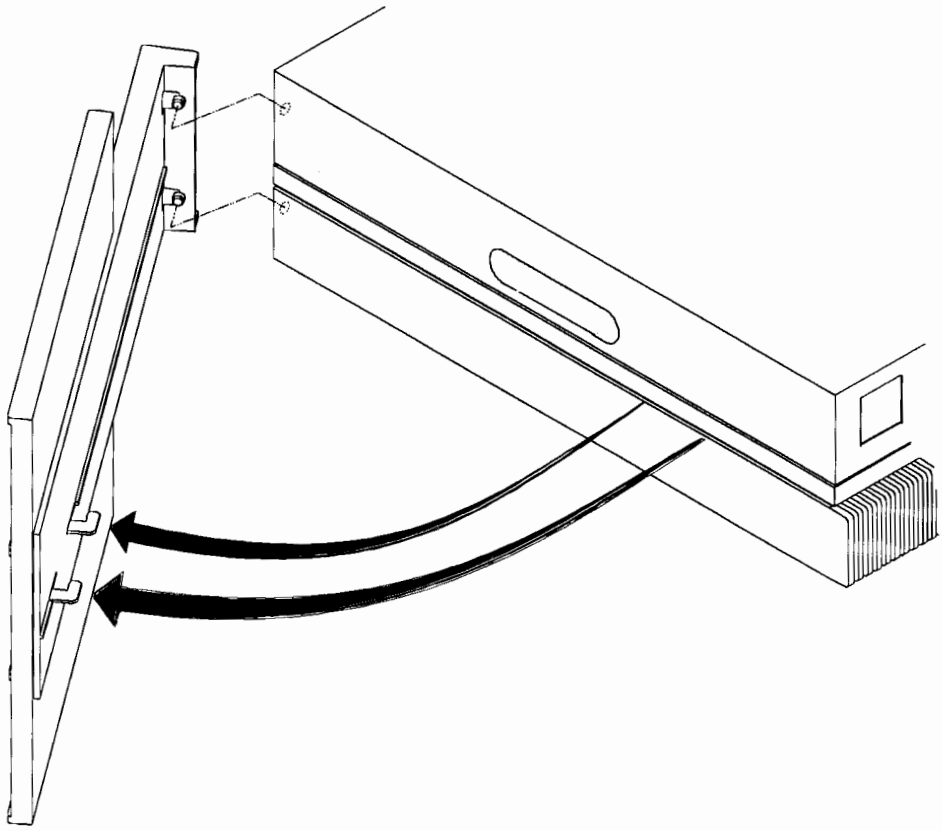


Figure B–3. Removing the Floor Stand

7. If there is a label covering the handle on the side of the system unit, remove and discard it.

CAUTION: Never lift the system unit by the handle. Always lift the system unit from the bottom using two hands.

8. Slide the handle latch to the open position and carefully lift the top cover to fully open the system unit. See Figure B–4.

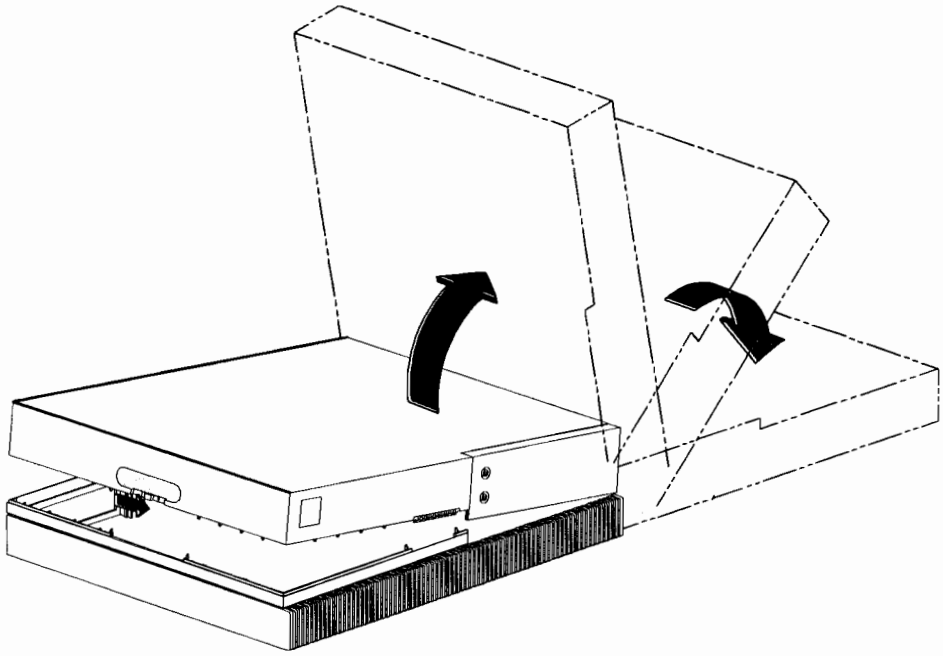


Figure B–4. Opening the System Unit

NOTICE: When closing the system, slide the handle latch to the lock position, as shown on the handle label.

Installing a Floppy Drive

There are two types of floppy disk drives used with the Model 715 workstations:

- Model 715/33, 715/50, and 715/75 workstations use a SCSI floppy disk drive
- Model 715/64, 715/80, and 715/100 workstations use a PC-style floppy disk drive

The SCSI floppy disk drive is shipped with the drive's SCSI address set to 0. HP recommends keeping the address setting at 0 unless it is used by another device. If you need to change the drive's address, start with Step 1 to change the SCSI ID jumpers; otherwise, go directly to Step 3.

If you are installing a floppy disk drive in a Model 715/64, 715/80, or 715/100 workstation, perform Step 1 and then skip to Step 3.

CAUTION: Floppy tape drives are susceptible to mechanical and electrostatic shock. When handling the drive, always wear the static-grounding wrist strap that came in the floppy tape drive kit. Always handle the drive carefully.

1. Locate the jumper(s) on the top of the floppy drive. Refer to Figure B-5 for the SCSI ID jumpers on a Model 715/33, 715/50, or 715/75 floppy drive. Refer to Figure B-6 for the location of the jumper on a Model 715/64, 715/80, or 715/100 floppy drive.

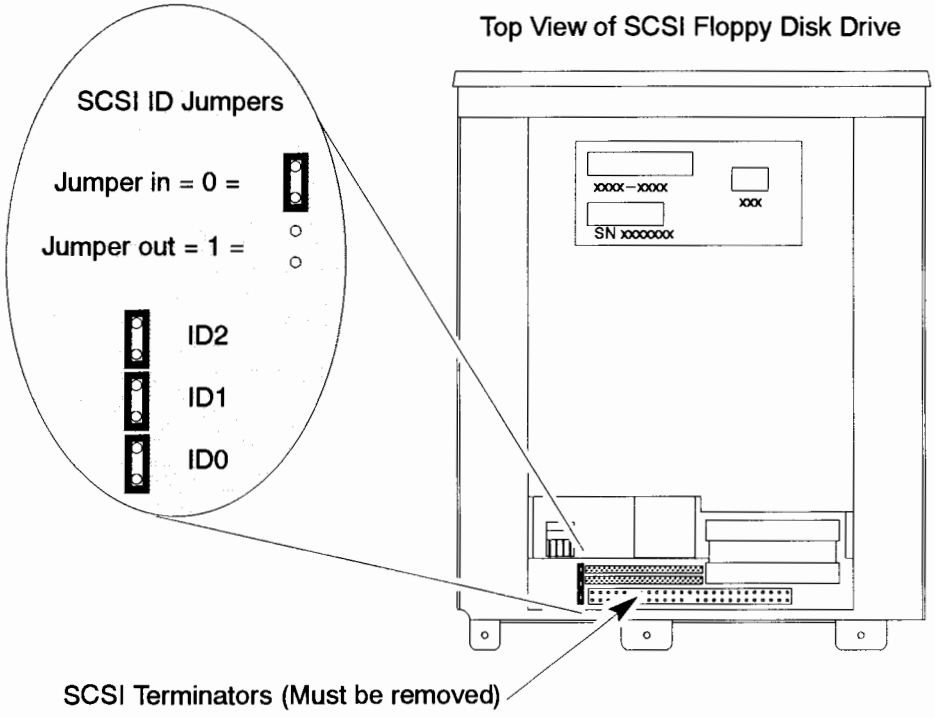


Figure B-5. Floppy Drive SCSI ID Jumpers

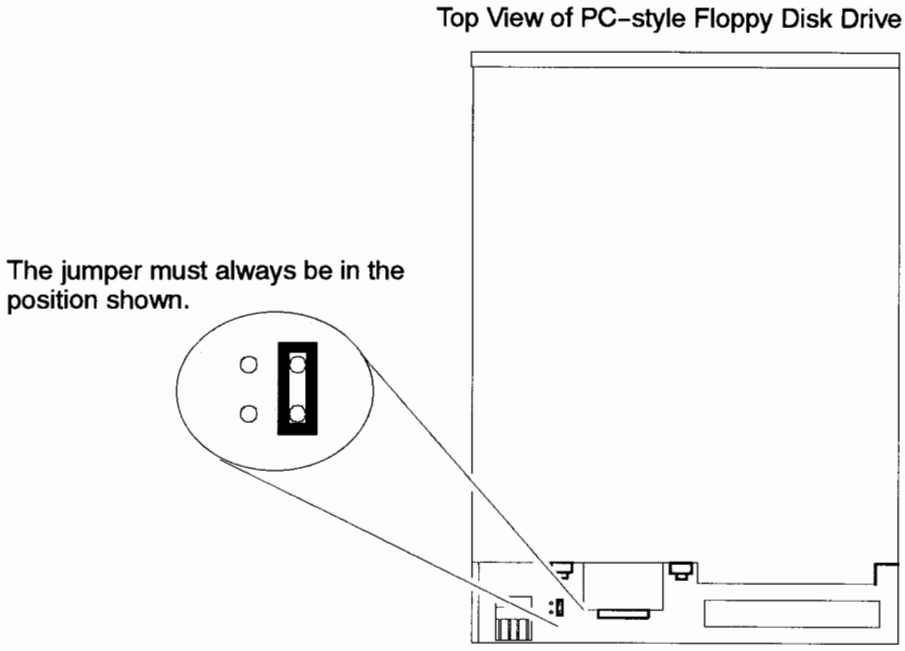
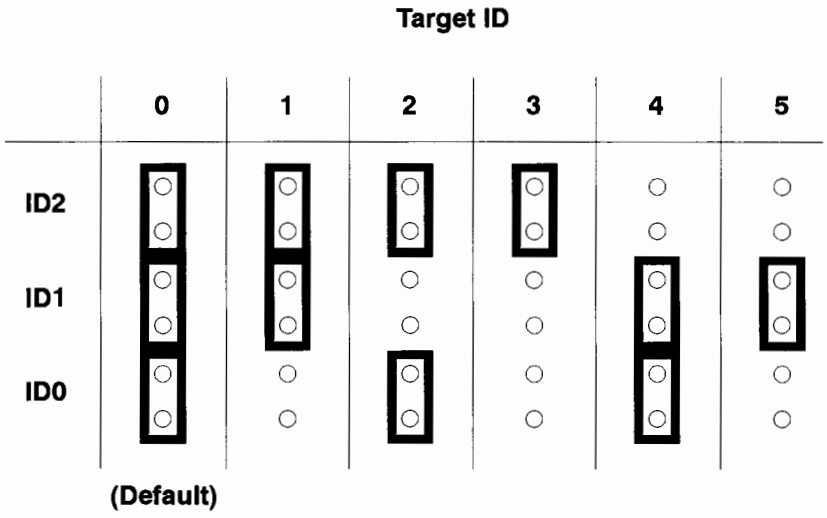


Figure B-6. Model 715/64, 715/80, and 715/100 Floppy Drive Jumper

2. To change the SCSI jumper setting on a Model 715/33, 715/50, or 715/75 floppy drive, use needlenose pliers to set the drive's SCSI ID to an address that's not used by another SCSI device. See Table B-1 for the SCSI ID jumper settings.

NOTICE: **Do not** use SCSI ID 7 for your floppy drive's SCSI address. The host SCSI controller uses SCSI ID 7. We also advise you not to use SCSI ID 6 which is normally reserved for the boot disk drive.

Table B-1. SCSI ID Jumper Settings



Use needlenose pliers to move or remove the SCSI terminators, as necessary, to set the SCSI ID to the desired setting.

3. Remove the empty bracket from the chassis by removing the two screws, sliding the bracket back, and lifting it up, as shown in Figure B–7.

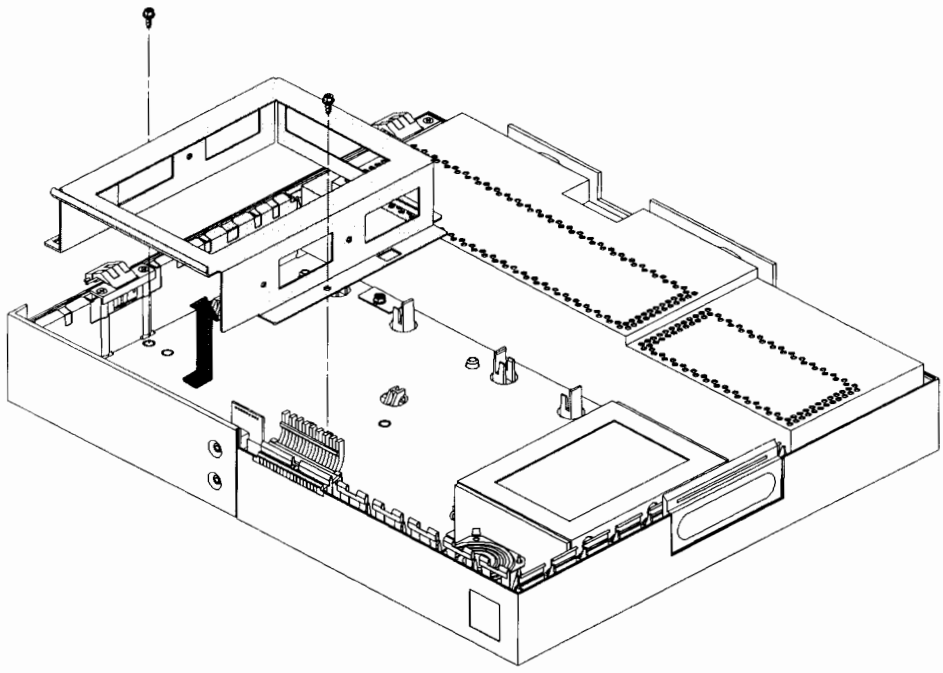


Figure B–7. Removing the Empty Bracket

4. Remove the blank bezel plate. Depress the snap tab on one end of the blank bezel plate to remove the metal liner. Then press on the blank bezel until it pops out of the system unit, as shown in Figure B–8. Discard the metal liner plate and the blank bezel plate.

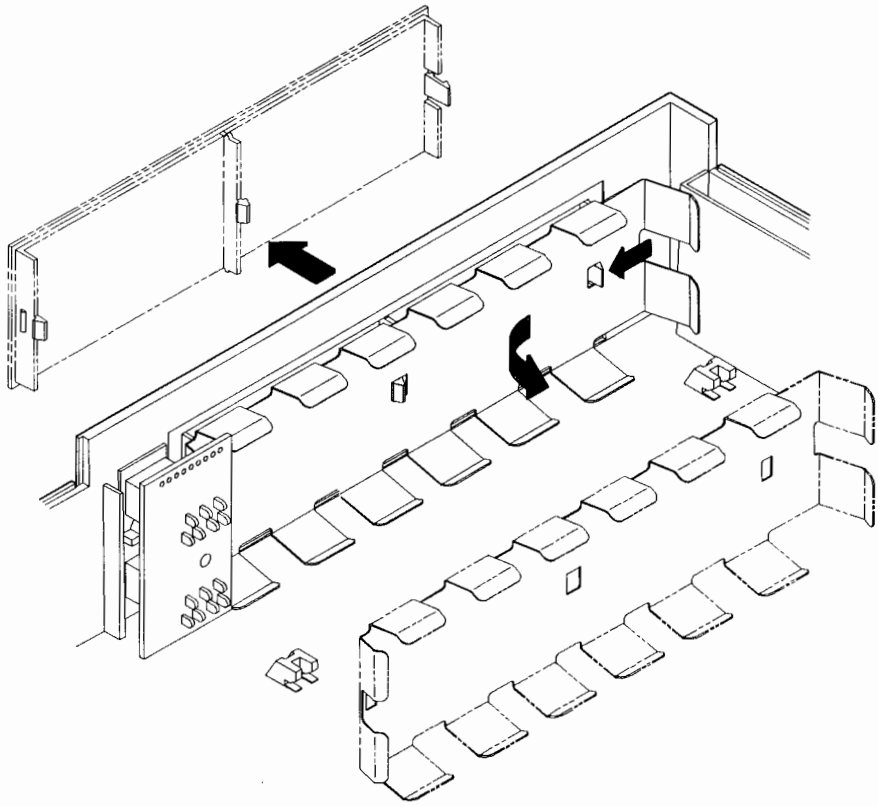


Figure B–8. Removing the Blank Cover Plate

5. Install the floppy drive bezel assembly that came in the kit, as shown in Figure B–9. Make sure that you orient the front of the floppy drive bezel so that the indentation on the front of the bezel corresponds to the eject button on the floppy drive.

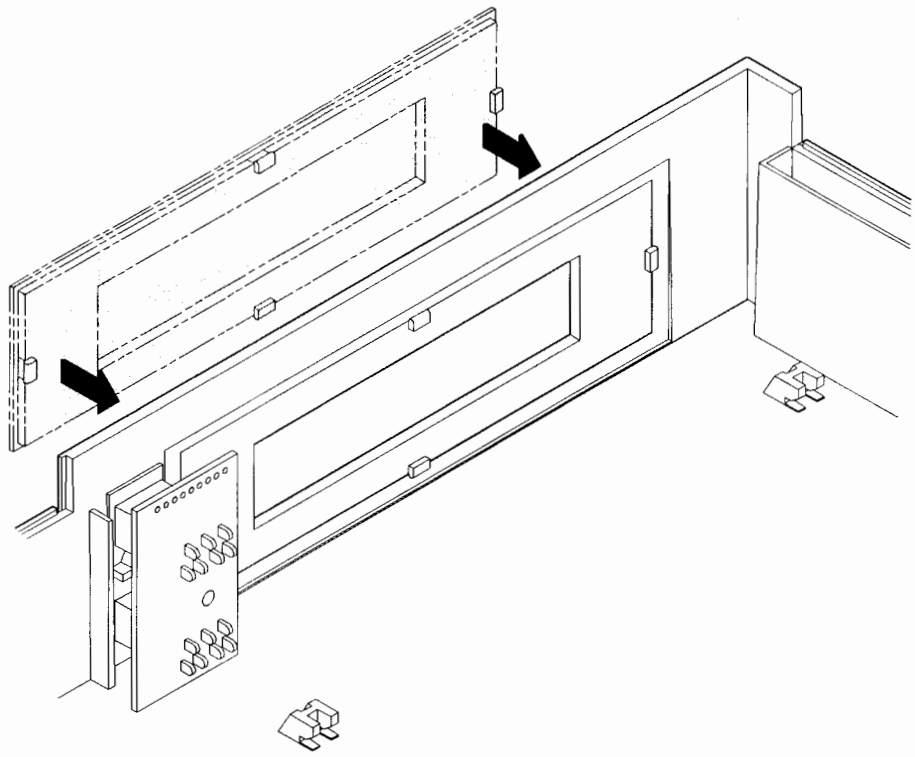


Figure B–9. Installing the Floppy Bezel Assembly

6. If not already connected, plug the small end of the 2-wire power adapter cable into the floppy power connector, as shown in Figure B–10. Line up the pins on the connectors and press in firmly until you hear a click.

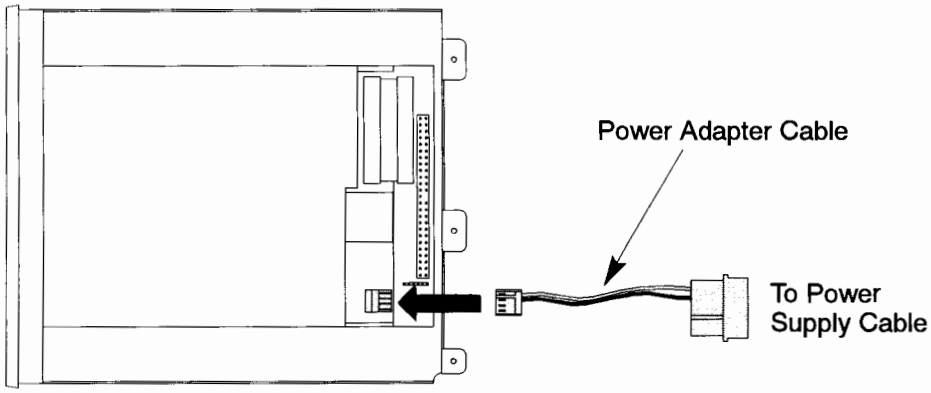


Figure B–10. Power Adapter Cable

7. Place the floppy drive assembly into the system unit so that the mounting posts line up with the cutouts in the floppy drive's mounting bracket. Slide the floppy drive assembly forward. Secure the floppy drive assembly with the two mounting screws that came in the kit using a #2 Phillips screwdriver, as shown in Figure B–11.

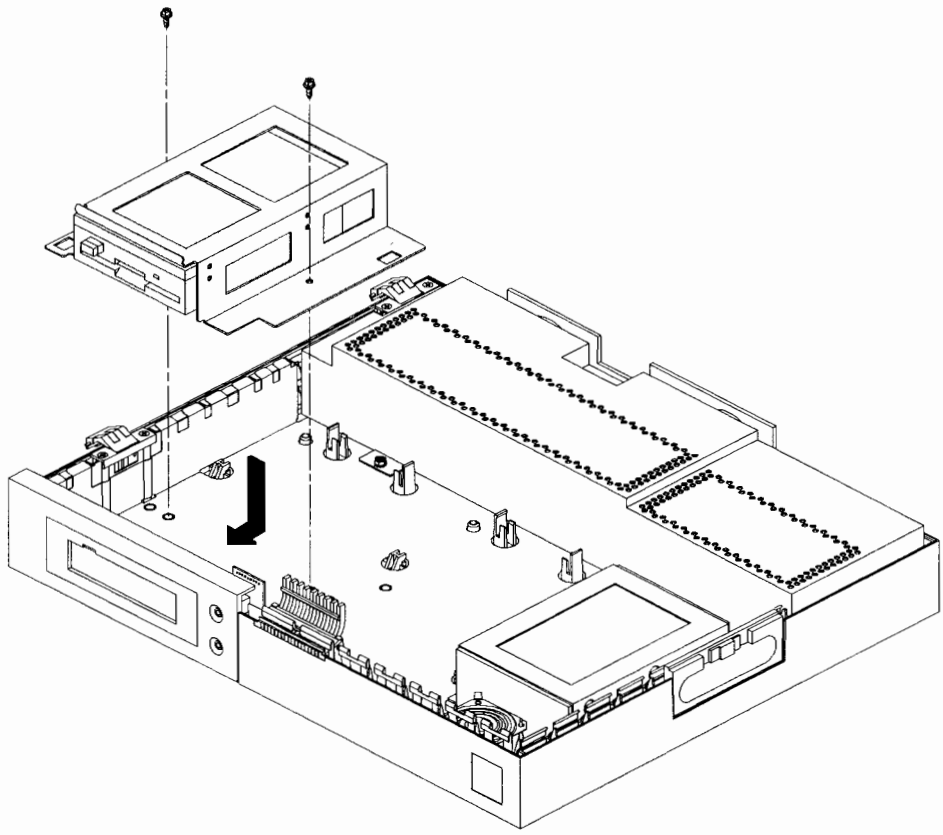


Figure B–11. Mounting the Floppy Disk Drive Assembly

8. Remove the power supply connector from the cable clip on the power supply, as shown in Figure B–12. Plug it into the large end of the 2–wire power adapter cable on the floppy drive, as shown earlier in Figure B–10.

If you are installing a floppy drive in a Model 715/64, 715/80, or 715/100 workstation, go to Step 11; otherwise, continue with the next step.

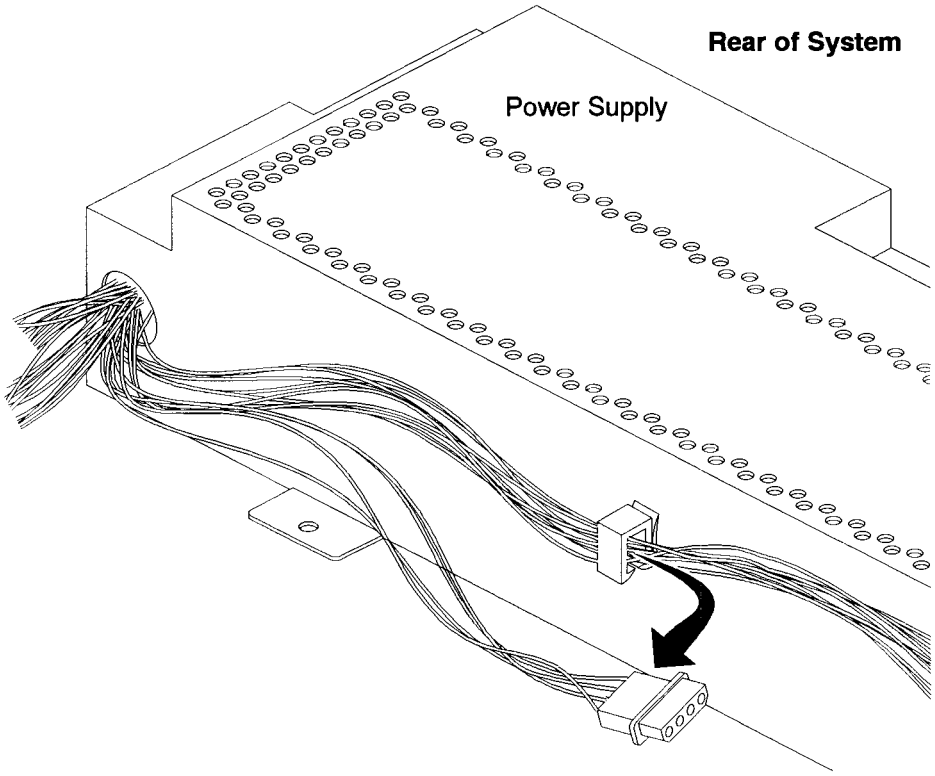


Figure B–12. Power Supply Connector

9. For Model 715/33, 715/50, and 715/75 workstations, find the SCSI cable connector that is closest to the floppy drive and remove it from its keeper. (See Figure B–13.)

10. For Model 715/33, 715/50, and 715/75 workstations, plug the SCSI cable connector into the SCSI connector on the floppy drive as shown in Figure B–13. After completing this step, go to Step 12.

CAUTION: The side of the SCSI cable with the red line (pin #1) **MUST** be positioned as shown in Figure B–13. Be certain that you properly align the connector with the pins, and that the connector seats firmly in place.

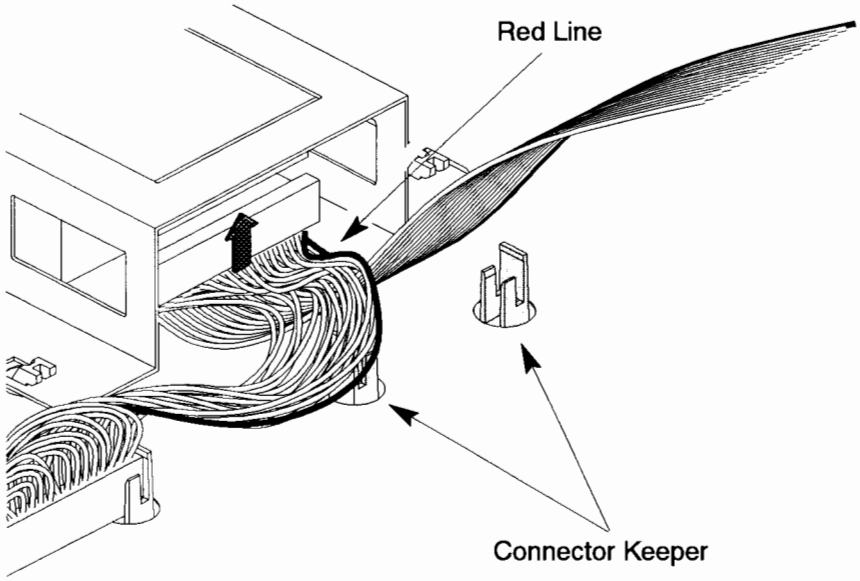


Figure B–13. Connecting the SCSI Ribbon Cable

11. If you are installing a floppy drive in a Model 715/64, 715/80, or 715/100 workstation, connect the floppy drive cable from the rear of the floppy drive to the floppy drive connector located in the bottom half of the system unit, as shown in Figure B–14.

CAUTION: The side of the SCSI cable with the red line (pin #1) **MUST** be positioned as shown in Figure B–14. Be certain that you properly align the connector with the pins, and that the connector seats firmly in place.

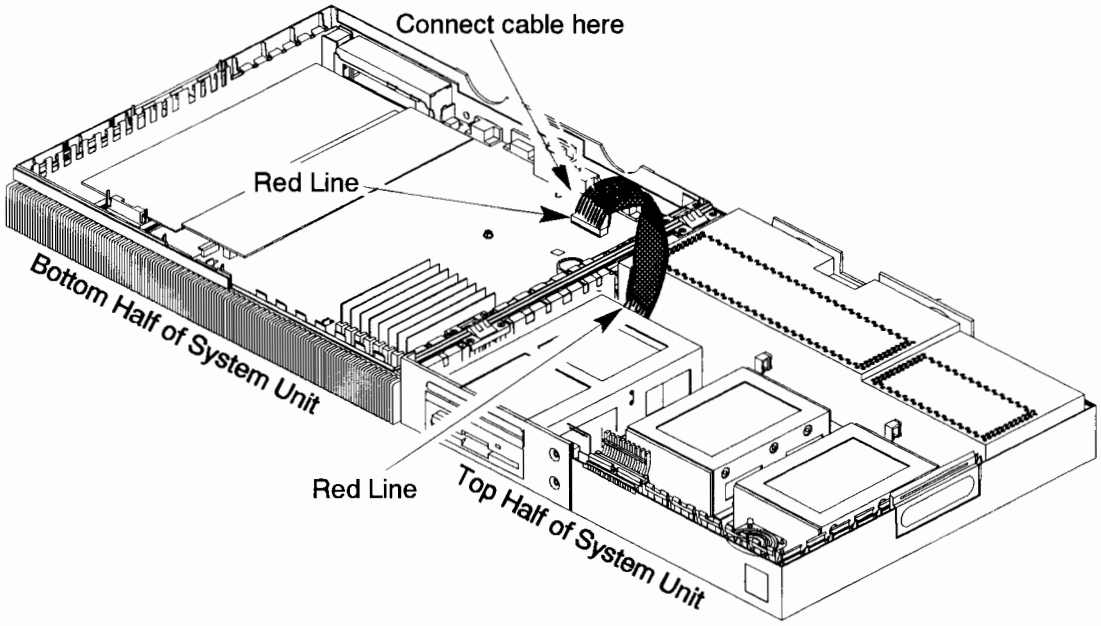


Figure B–14. Connecting the PC-Style Floppy Drive Ribbon Cable (Model 715/64, 715/80, and 715/100 Systems)

12. Refer to the section "Closing the System Unit" located near the end of this appendix, and perform the procedure to close the system unit.

CAUTION: **Do not** attempt to operate the workstation while it is open. The unit must be closed for proper air flow for system cooling.

13. Configure the floppy driver as described in Chapter 3.

Installing a CD-ROM Drive

The CD-ROM drive is shipped with the drive set to SCSI ID address 2. We recommend keeping the address setting at 2 unless it is used by another device.

If you need to change the drive's address, start with Step 1 to change the SCSI ID jumpers. If you don't need to change the SCSI ID address, start with Step 2.

CAUTION: CD-ROM drives are susceptible to mechanical and electrostatic shock. When handling the drive, always wear the static-grounding wrist strap that came in the CD-ROM drive kit. Always handle the drive carefully.

1. Locate the SCSI ID jumpers on the rear of the CD-ROM drive, as shown in Figure B-15.

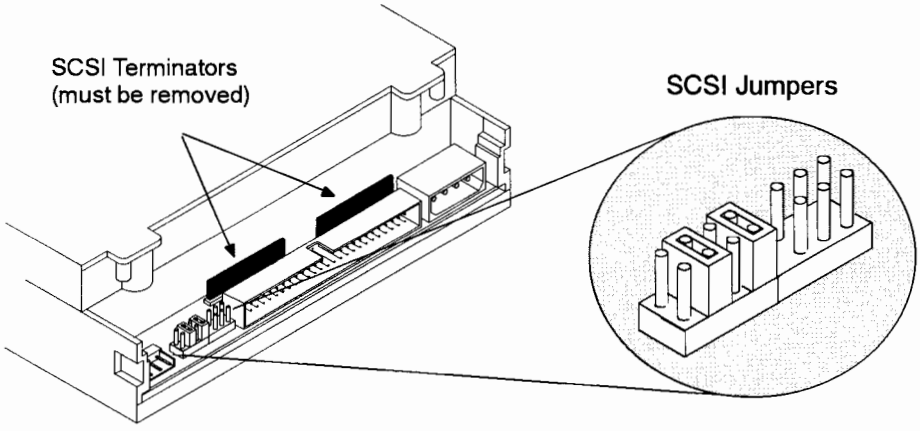


Figure B-15. Location of SCSI ID Jumpers

2. To change the jumper setting, use needlenose pliers to set the drive's SCSI ID to an address that's not used by another SCSI device. See Figure B–15 for the SCSI ID jumper settings.

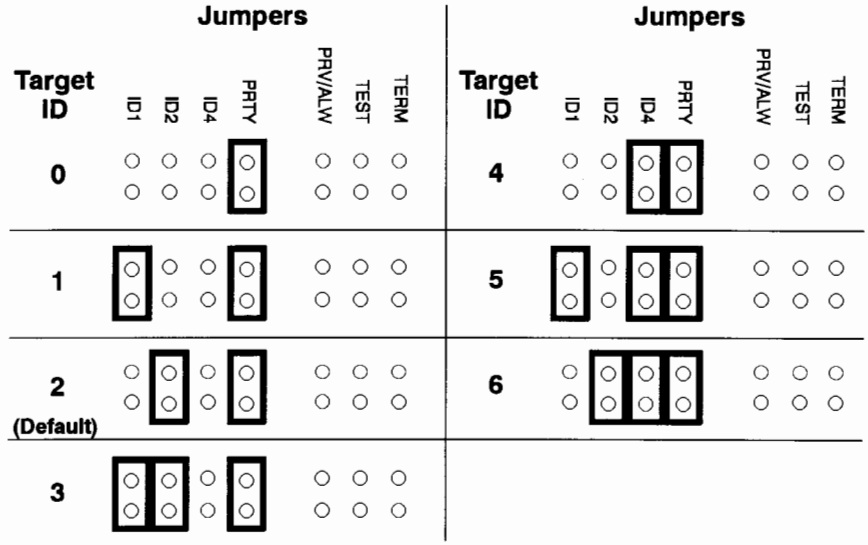


Figure B–16. SCSI ID Settings

NOTICE: **Do not** use SCSI ID 7 for your CD–ROM drive's SCSI address. The host SCSI controller uses SCSI ID 7. We also advise you not to use SCSI ID 6 which is normally reserved for the boot disk drive.

3. Use needlenose pliers to remove the SCSI terminators, if still attached to the drive (refer to Figure B–15).

4. Remove the empty bracket from the system chassis by removing the two screws, sliding the bracket back, and lifting it up, as shown in Figure B–17.

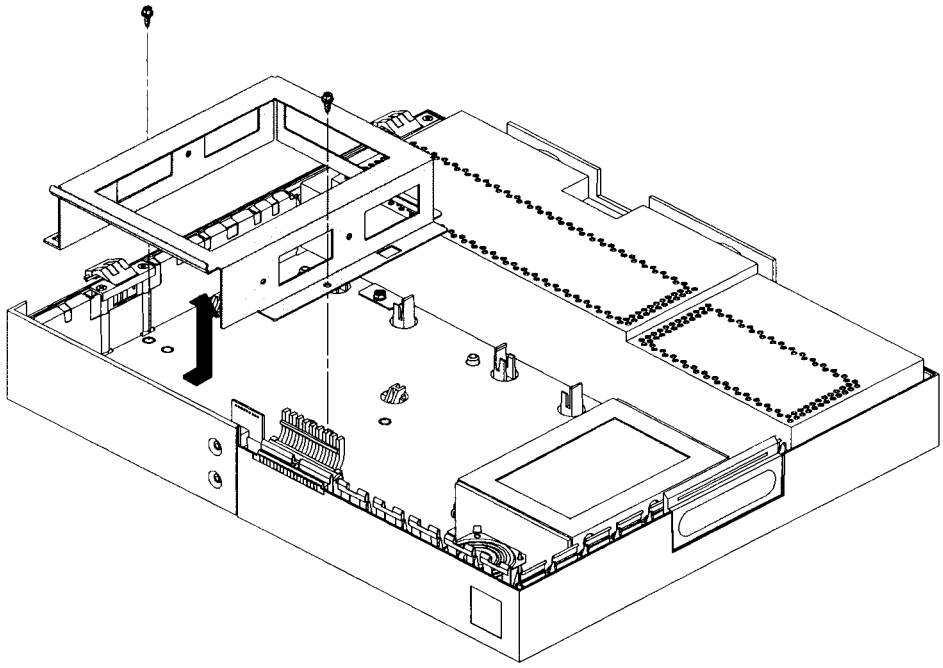


Figure B–17. Removing the Empty Bracket

5. Remove the blank bezel plate. Depress the snap tab on one end of the blank bezel plate to remove the metal liner. Then press on the blank bezel until it pops out of the system unit, as shown in Figure B–18. Discard the metal liner plate and the blank bezel plate.

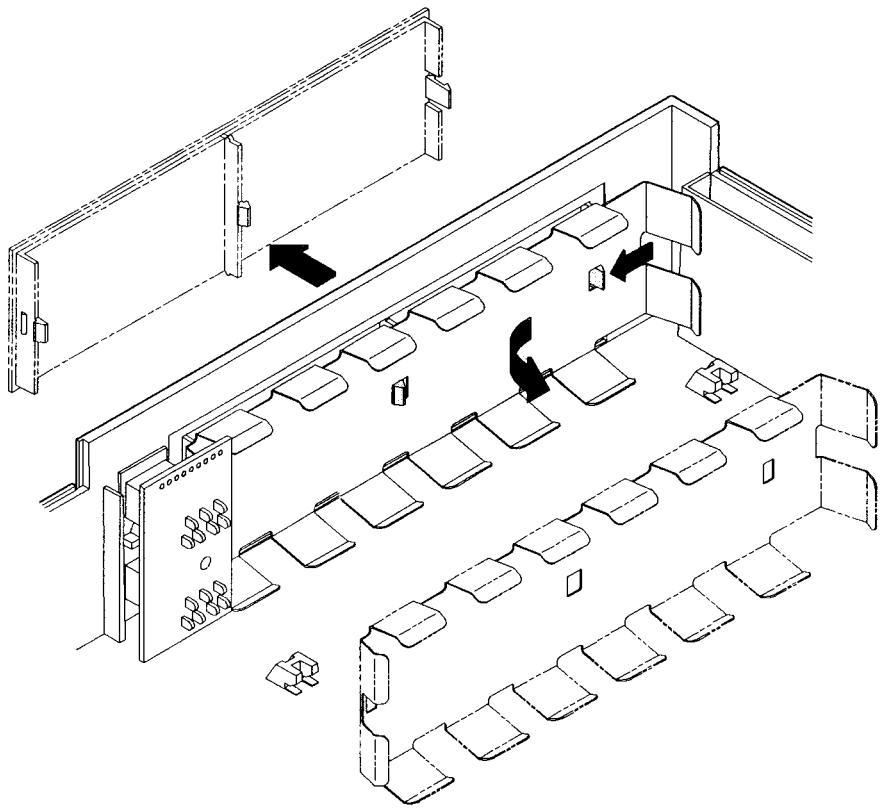


Figure B–18. Removing the Blank Cover Plate

6. Place the CD-ROM drive assembly into the system unit so that the mounting posts line up with the cutouts in the CD-ROM drive's mounting bracket. Slide the CD-ROM drive assembly forward. Secure the CD-ROM drive assembly with the two mounting screws that came in the kit by using a #2 Phillips screwdriver, as shown in Figure B-19.

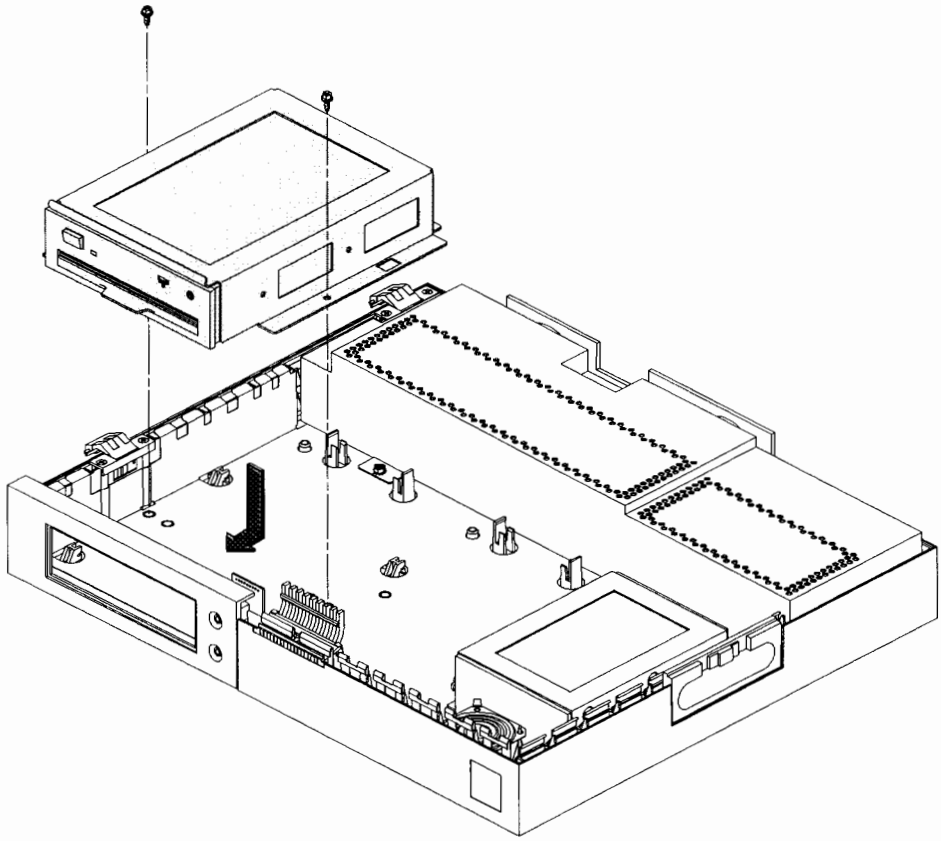


Figure B-19. Mounting the CD-ROM Drive

7. Remove the power supply connector from the cable clip on the power supply, as shown in Figure B–20, and plug it into the rear of the CD–ROM drive.

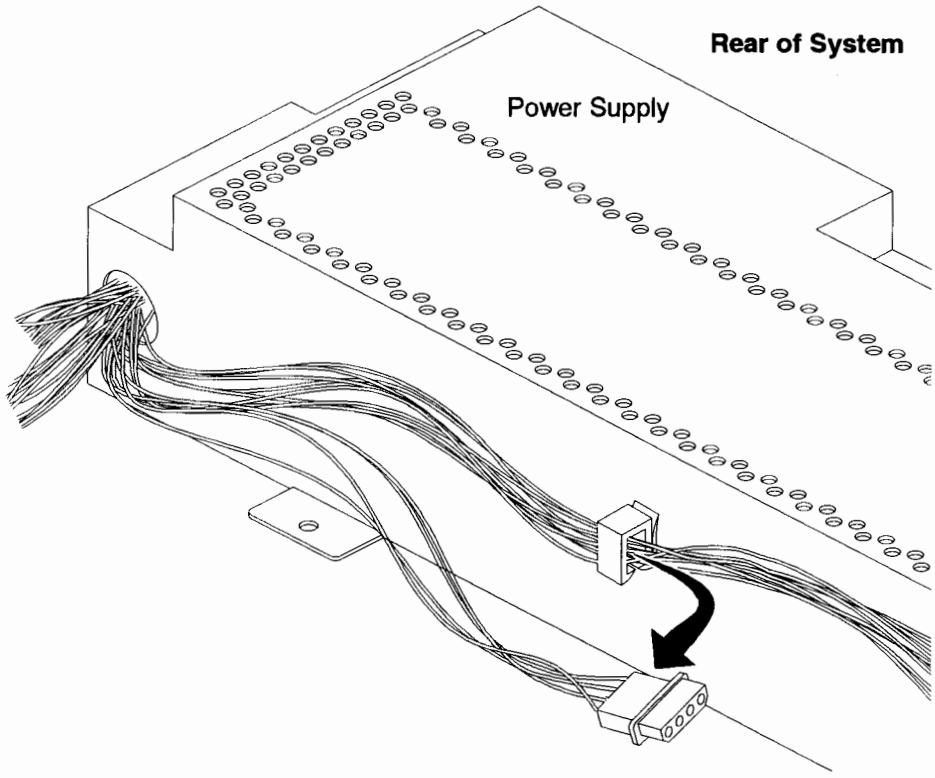


Figure B–20. Power Supply Connector

8. Find the SCSI cable connector that is closest to the CD-ROM drive and remove it from its keeper. (See Figure B-21.)

9. Plug the SCSI cable connector into the SCSI connector on the CD-ROM drive as shown in Figure B-21.

CAUTION: The SCSI cable connector and the connector on the CD-ROM drive are keyed. Align the key on the SCSI cable connector with the keying slot on the CD-ROM connector before attempting to plug it in.

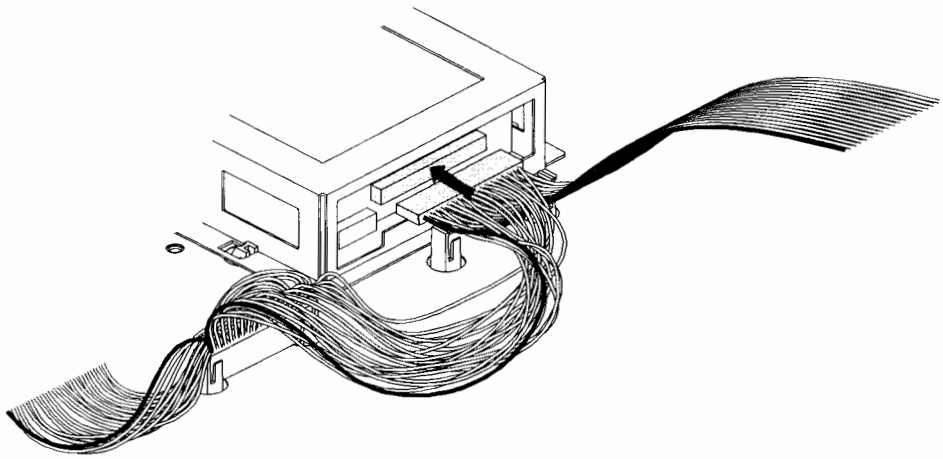


Figure B-21. Connecting the SCSI Ribbon Cable

10. Locate the 3-pin audio cable that came in the CD-ROM drive kit. Plug the smaller connector on the cable into the audio connector on the back of the CD-ROM drive. Plug the large connector on this cable into connector P5 on the CPU board, as shown in Figure B-22.

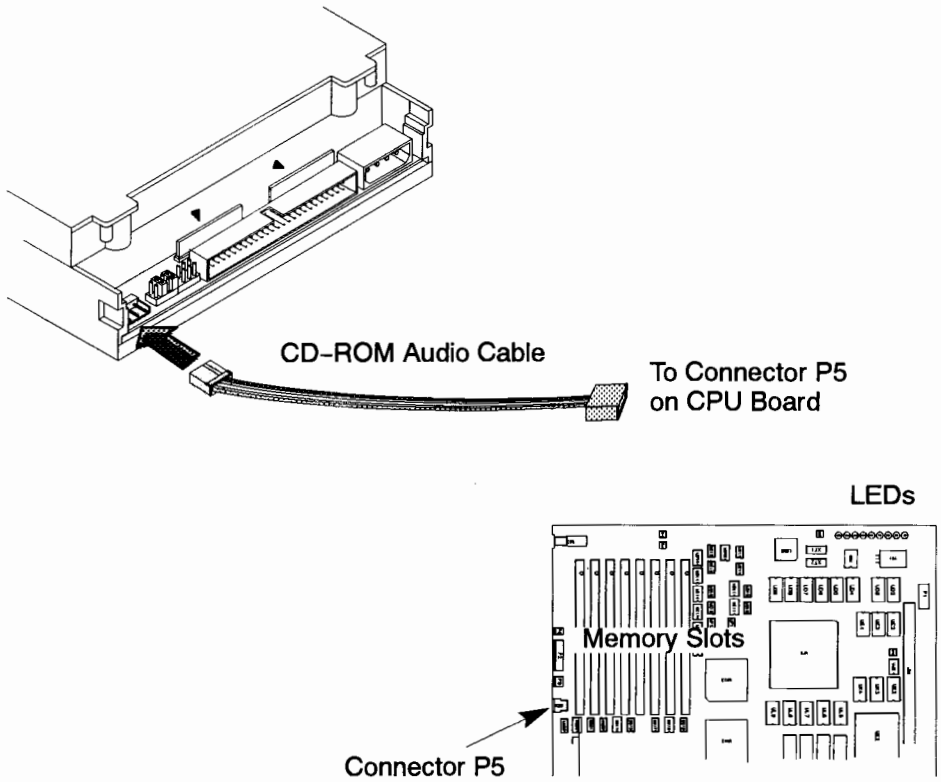


Figure B-22. Connecting the CD-ROM Audio Cable

11. Refer to the section "Closing the System Unit" located near the end of this appendix, and perform the procedure to close the system unit.

CAUTION: **Do not** attempt to operate the workstation while it is open. The unit must be closed for proper air flow for system cooling.

12. Verify your CD-ROM configuration by performing the procedure described in Chapter 4.

Installing a DDS-Format Tape Drive

The DDS-format tape drive is shipped with the drive set to SCSI ID address 3 and the Operation Mode switches set for correct drive operation. We recommend keeping the address setting at 3 unless it is used by another device.

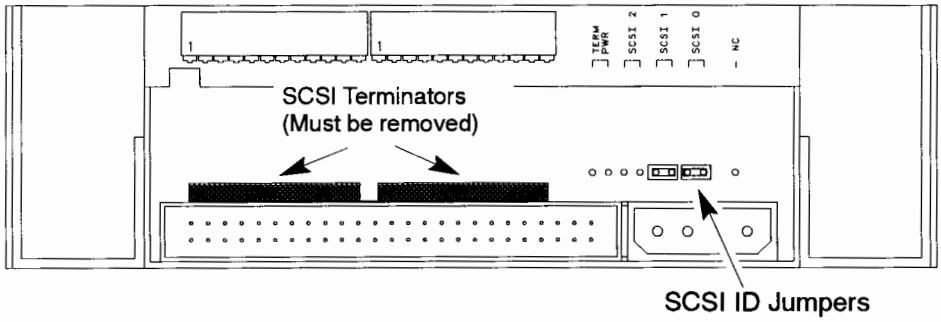
If you need to change the drive's address, start with Step 1 to change the SCSI ID jumpers. To change the drive's Operation Mode switches, continue with Step 4 after completing Steps 1 through 3; otherwise, skip to Step 6.

If you don't need to change the SCSI ID address, but you need to change the drive's Operation Mode switches, start with Step 4.

If you don't need to change either the SCSI ID address or the drive's Operation Mode switches, go directly to Step 6.

CAUTION: SCSI tape drives are susceptible to mechanical and electrostatic shock. When handling the drive, always wear the static-grounding wrist strap that came in the DDS-format tape drive kit. Always handle the drive carefully.

1. Locate the SCSI ID jumpers on the rear of the DDS-format tape drive, as shown in Figure B-23.



Target ID	Jumpers: TERM PWR	SCSI 2	SCSI 1	SCSI 0	NC
0	○ ○	○ ○	○ ○	○ ○	○
1	○ ○	○ ○	○ ○	■ ○	○
2	○ ○	○ ○	■ ○	○ ○	○
3 Default	○ ○	○ ○	■ ○	■ ○	○
4	○ ○	■ ○	○ ○	○ ○	○
5	○ ○	■ ○	○ ○	■ ○	○
6	○ ○	■ ○	■ ○	○ ○	○

Figure B-23. SCSI ID Settings

2. To change the jumper setting, use needlenose pliers to set the drive's SCSI ID to an address that's not used by another SCSI device. See Figure B–23 for the SCSI ID jumper settings.

NOTICE: **Do not** use SCSI ID 7 for your tape drive's SCSI address. The host SCSI controller uses SCSI ID 7. We also advise you not to use SCSI ID 6 which is normally reserved for the boot disk drive.

3. Use needlenose pliers to remove the SCSI terminators, if still attached to the drive, as shown in Figure B–23.

   If you need to change the tape drive's Operation Mode switches, continue with Step 4; otherwise, skip to Step 6.

NOTICE: The tape drive's Operation Mode switches are set for correct operation at the factory. Perform Steps 4 and 5 only if you need to change the switches.

4. Use a #1 Posi–Drive driver to remove the screws that hold the tape drive's mounting bracket to the underside of the tape drive. Set the mounting bracket and screws aside.

   Figure B–24 shows the location of the Operation Mode switches. Switches 1 and 2 are used to configure the data compression operation mode. If your drive does not perform data compression, these switches are disabled. (A drive that is able to perform data compression is labeled **DCLZ** on its faceplate.) Switches 3 to 8 are used to specify drive connectivity and functionality according to host or customer requirements. The default setting is all switches *on*. Figure B–25 shows the available options.

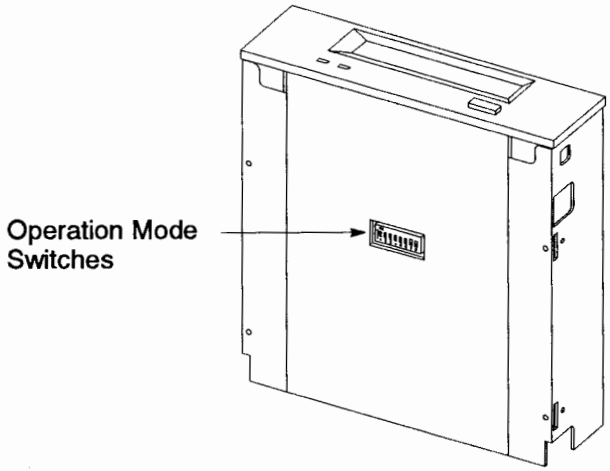


Figure B-24. Location of Operation Mode Switches

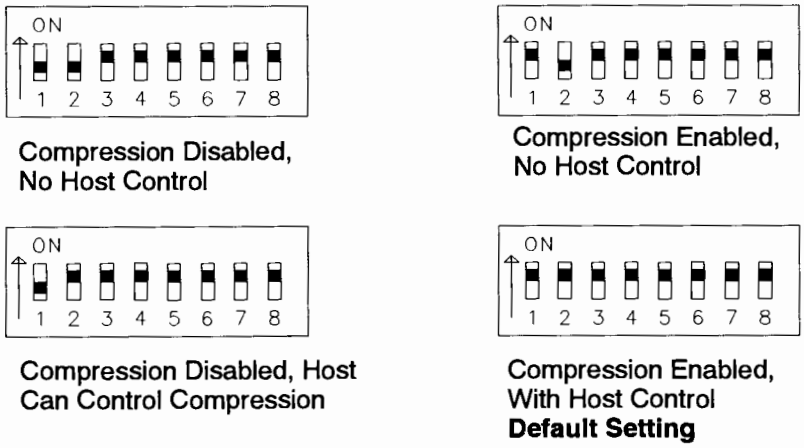


Figure B-25. Switch Settings for Data Compression Operation Mode

5. Replace the drive's mounting bracket after adjusting the switches.

6. Remove the empty bracket from the system chassis by removing the two screws, sliding the bracket back, and lifting it up, as shown in Figure B–26.

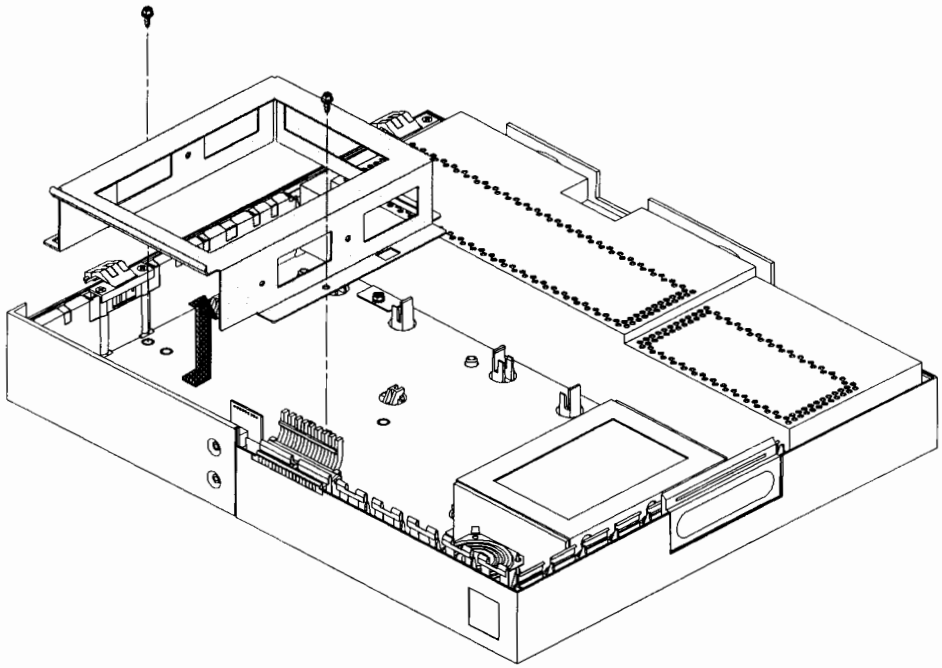


Figure B–26. Removing the Empty Bracket

7. Remove the blank bezel plate. Depress the snap tab on one end of the blank bezel plate to remove the metal liner. Then press on the blank bezel until it pops out of the system unit, as shown in Figure B–27. Discard the metal liner plate and the blank bezel plate.

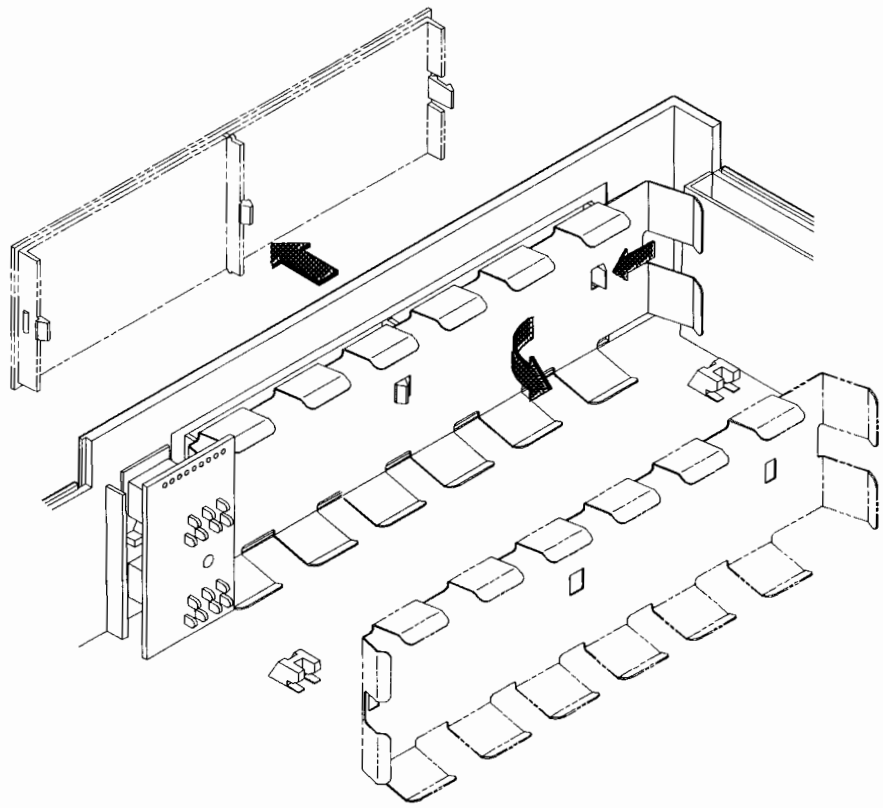


Figure B–27. Removing the Blank Cover Plate

8. Place the DDS-format tape drive assembly into the system unit so that the mounting posts line up with the cutouts in the tape drive's mounting bracket. Slide the tape drive assembly forward. Secure the tape drive assembly with the two mounting screws that came in the kit by using a #2 Phillips screwdriver, as shown in Figure B-28.

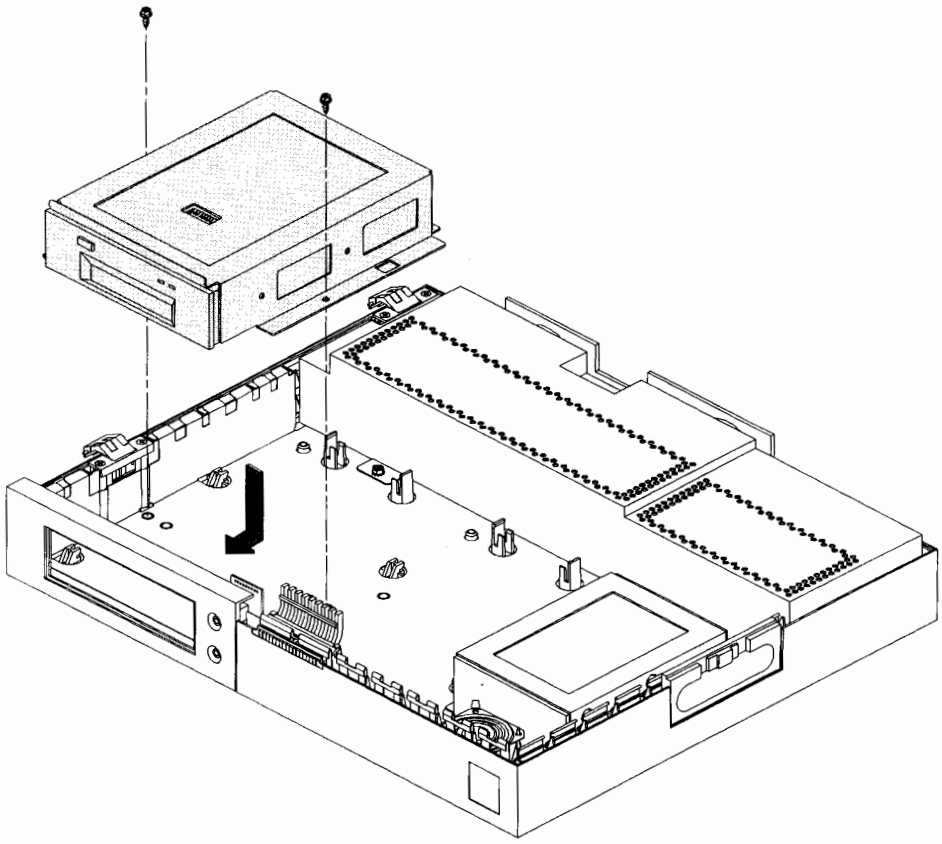


Figure B-28. Mounting the DDS-Format Tape Assembly

9. Remove the power supply connector from the cable clip on the power supply, as shown in Figure B–29, and plug it into the rear of the DDS–format tape drive.

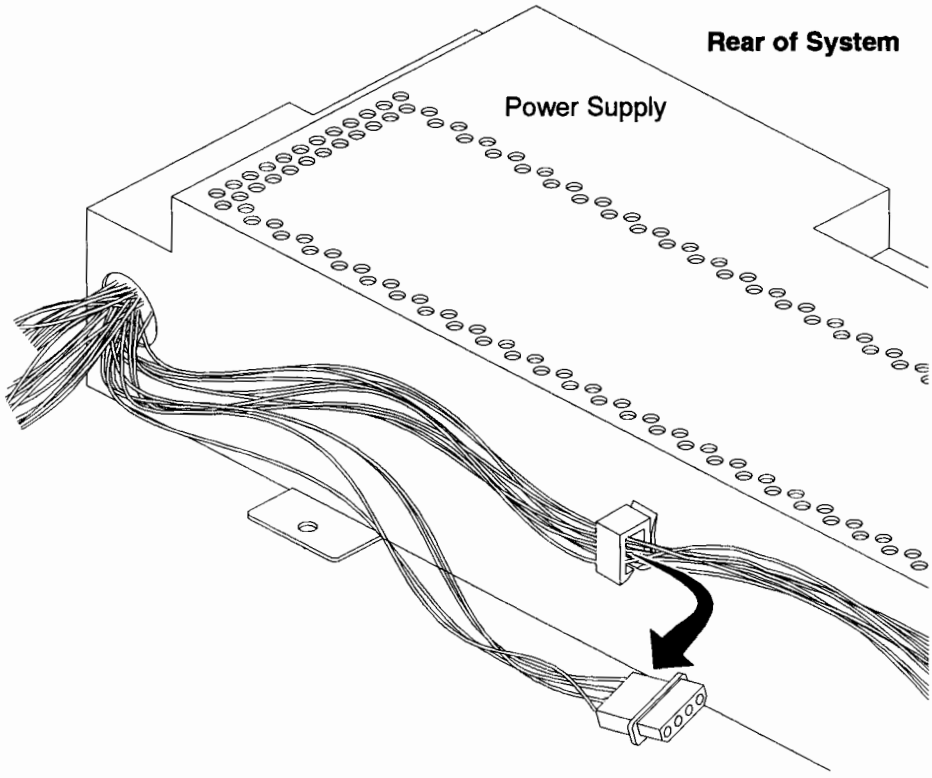


Figure B–29. Power Supply Connector

10. Find the SCSI cable connector that is closest to the DDS–format tape drive and remove it from its keeper. (See Figure B–30.)

11. Plug the SCSI cable connector into the SCSI connector on the tape drive as shown in Figure B–30.

CAUTION: The SCSI cable connector and the connector on the tape drive are keyed. Align the key on the SCSI cable connector with the keying slot on the tape drive connector before attempting to plug it in.

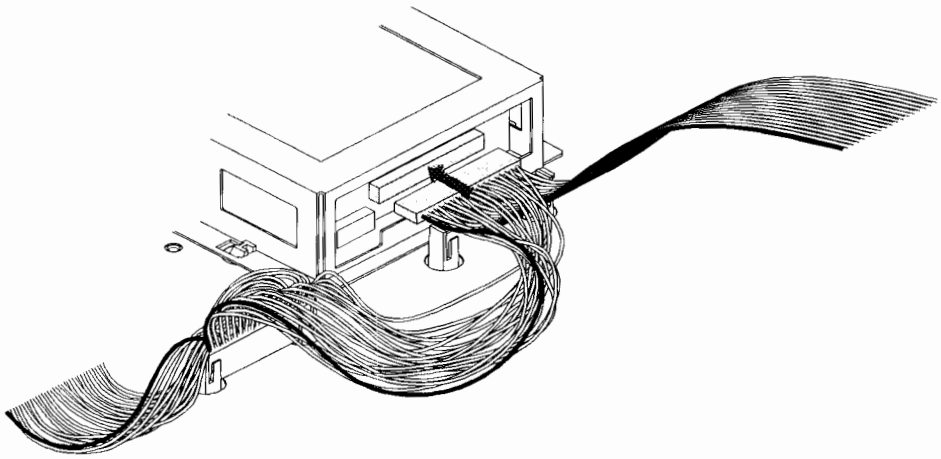


Figure B–30. Connecting the SCSI Ribbon Cable

12. Refer to the section "Closing the System Unit" located near the end of this appendix, and perform the procedure to close the system unit.

CAUTION: **Do not** attempt to operate the workstation while it is open. The unit must be closed for proper air flow for system cooling.

13. Verify the configuration of DDS–format tape drive by performing the procedure described in Chapter 5.

Installing a SCSI Disk Drive

A new SCSI disk drive must use SCSI ID 5. If an existing SCSI device is using SCSI ID 5, you must change the SCSI ID on that device to an unused SCSI ID. To determine which SCSI IDs are currently in use on your system, refer to the section "Preparing to Install a SCSI Device" located near the beginning of this appendix.

NOTICE: **Do not** use SCSI address 7 or 6 for your new disk drive's SCSI address. SCSI addresses 7 and 6 are reserved for the SCSI controller and the boot disk drive, respectively.

CAUTION: SCSI disk drives are susceptible to mechanical and electrostatic shock. When handling the drive, always wear the static-grounding wrist strap that came in the SCSI disk drive kit. Always handle the drive carefully.

To install the drive you need to first determine how many SCSI hard disk drives are currently installed in your workstation. The system can use up to two internal SCSI hard disk drives. Check the disk drive bay in the top half of the system unit to verify how many SCSI disk drives are present, as shown in Figure B-31.

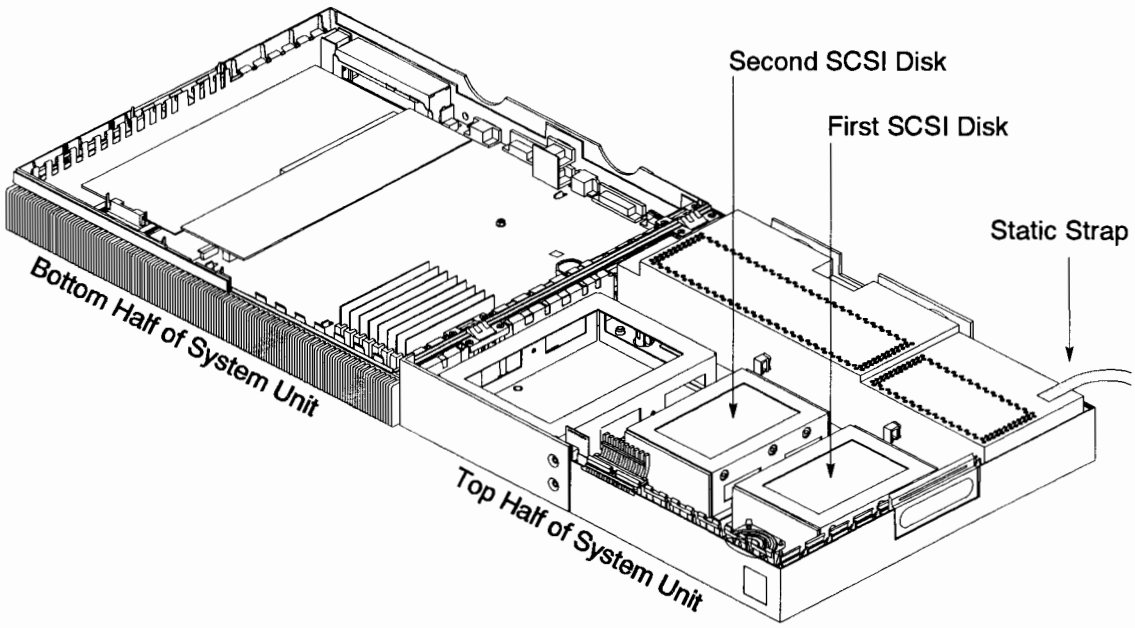


Figure B–31. Checking for Installed SCSI Disk Drives

If your system has only one disk installed, you can install a second disk as illustrated in Figure B–31. To install a second disk, perform the following procedure:

CAUTION: The SCSI disk drive is susceptible to mechanical and electrostatic shock. When handling the disk drive, always wear the static strap that came with the SCSI disk drive kit. Always handle the disk drive carefully.

1. Check the jumper configurations on your disk drive:

- For a Quantum 525-MB drive, refer to Figure B-33.
- For a Hewlett Packard 1-GB drive, refer to Figure B-34.
- For a Seagate 525-MB, 1-GB, or 2-GB drive, refer to Figure B-35.
- For a Micropolis 1-GB drive, refer to Figure B-36.
- For a DEC 1-GB or 2-GB drive, refer to Figure B-37.

If you have difficulty viewing or accessing the jumpers on your disk drive, remove the drive's mounting bracket by using a #2 Phillips screwdriver, as shown in Figure B-32.

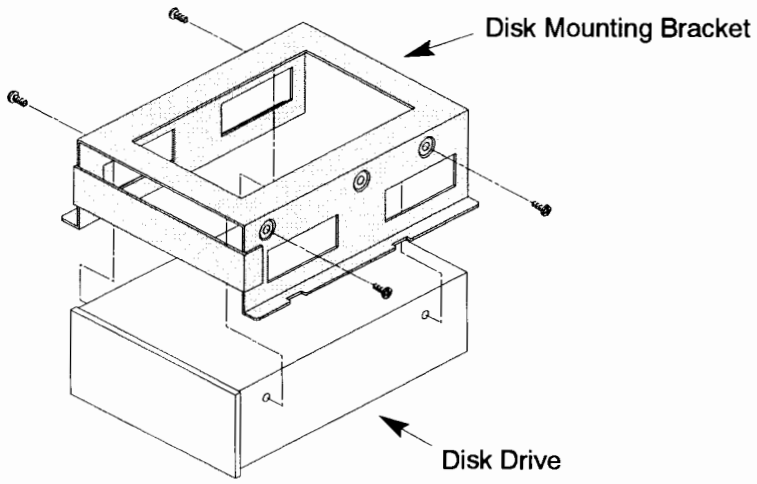


Figure B-32. Removing the Disk Drive Mounting Bracket

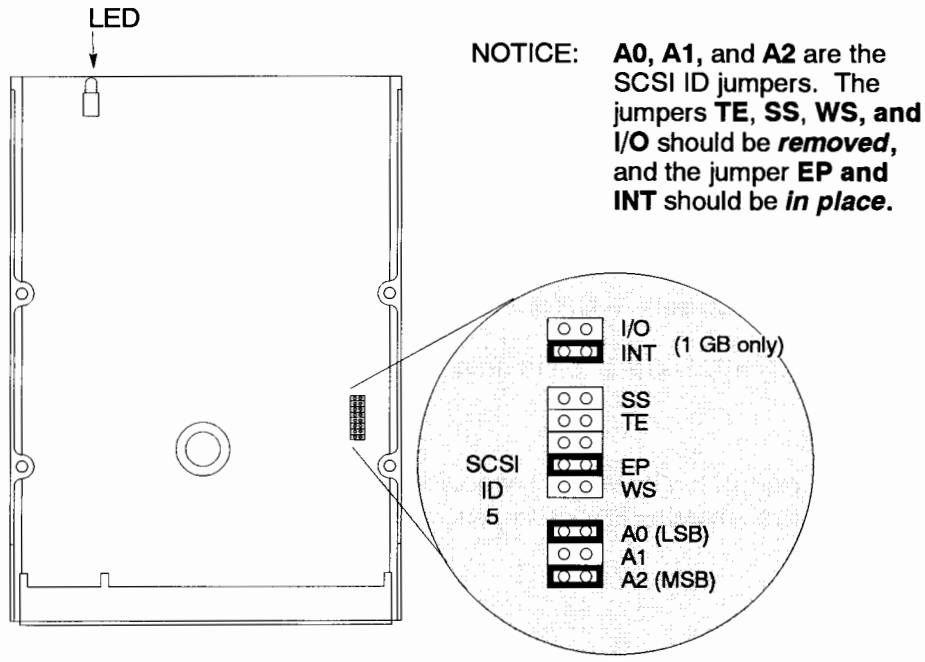
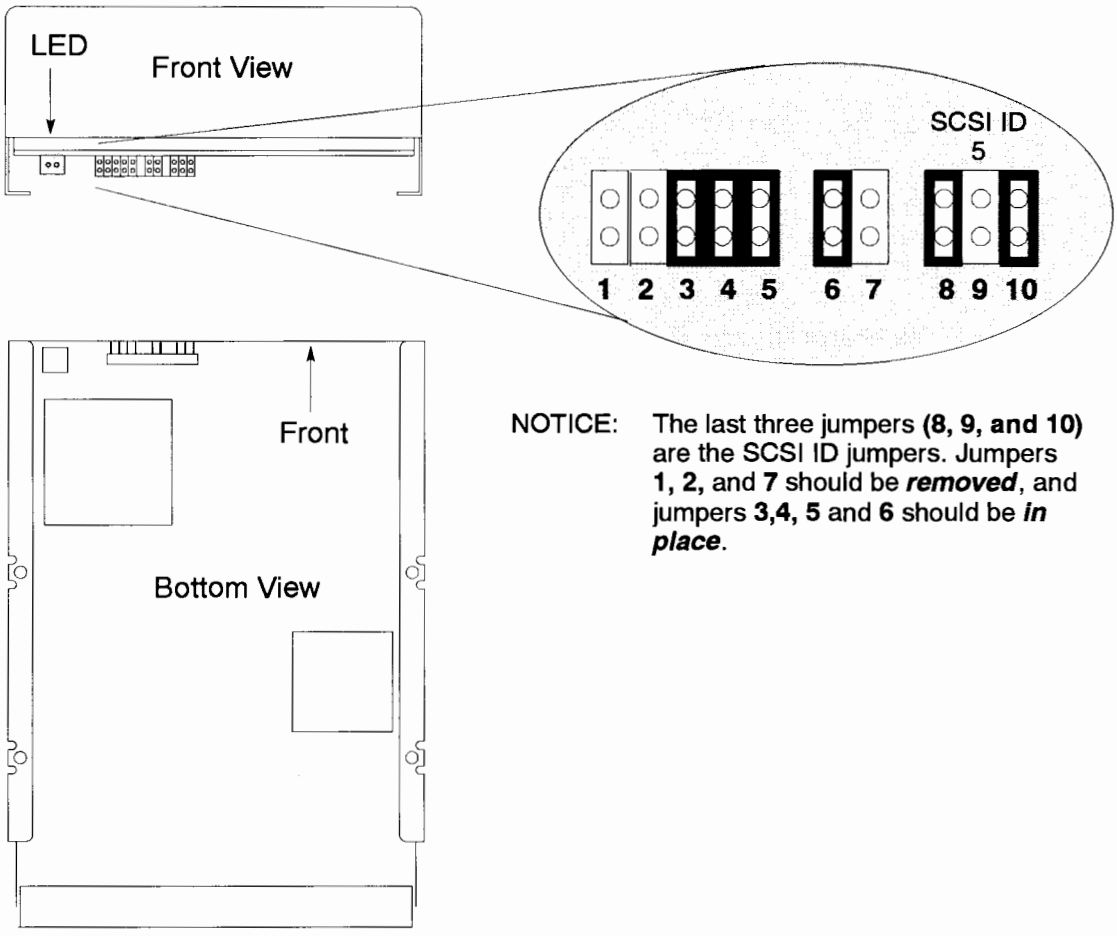


Figure B-33. Quantum 525-MB and 1-GB Disk Drive Jumpers



NOTICE: The last three jumpers **(8, 9, and 10)** are the SCSI ID jumpers. Jumpers **1, 2,** and **7** should be ***removed***, and jumpers **3,4, 5** and **6** should be ***in place***.

Figure B-34. Hewlett Packard 1-GB Disk Drive Jumpers

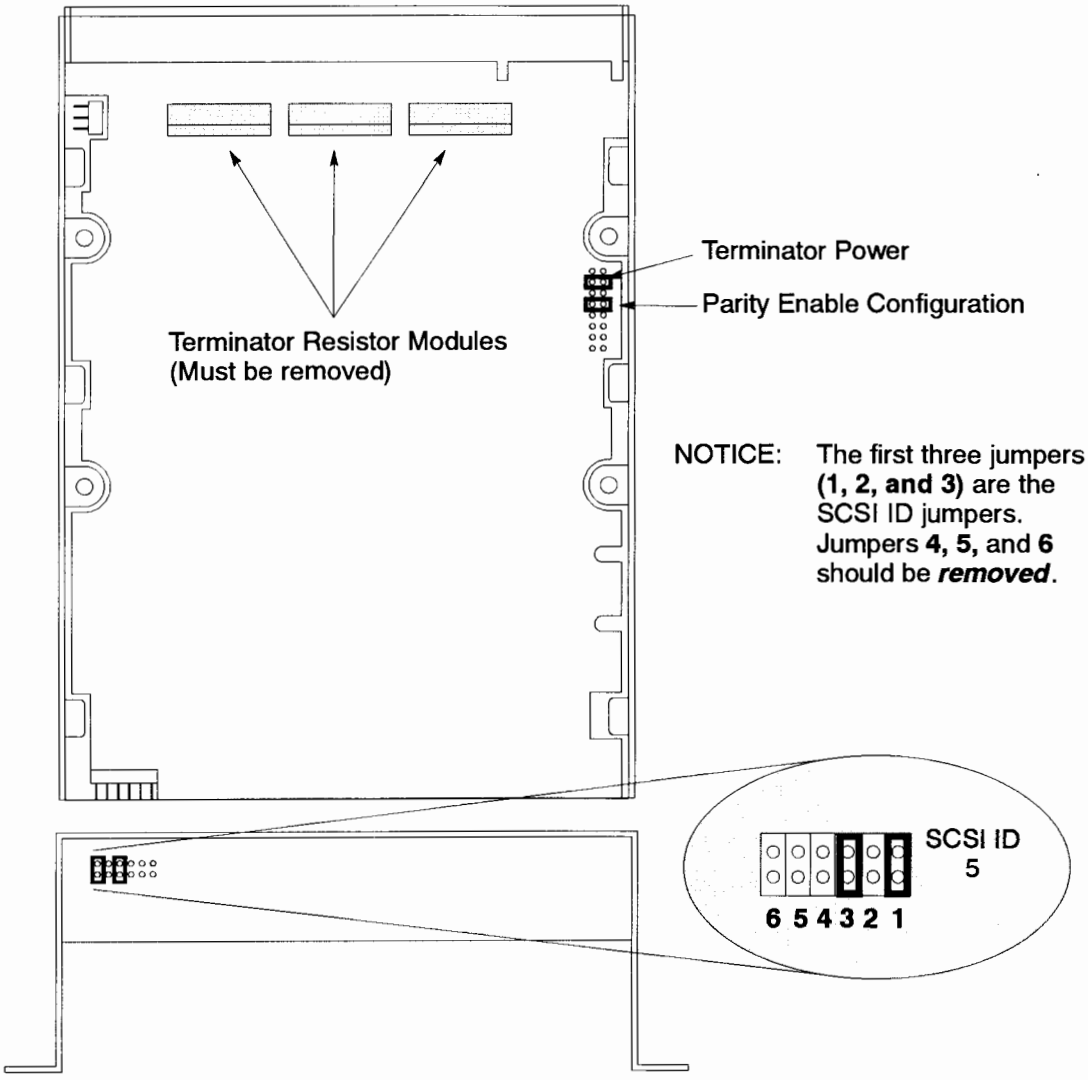
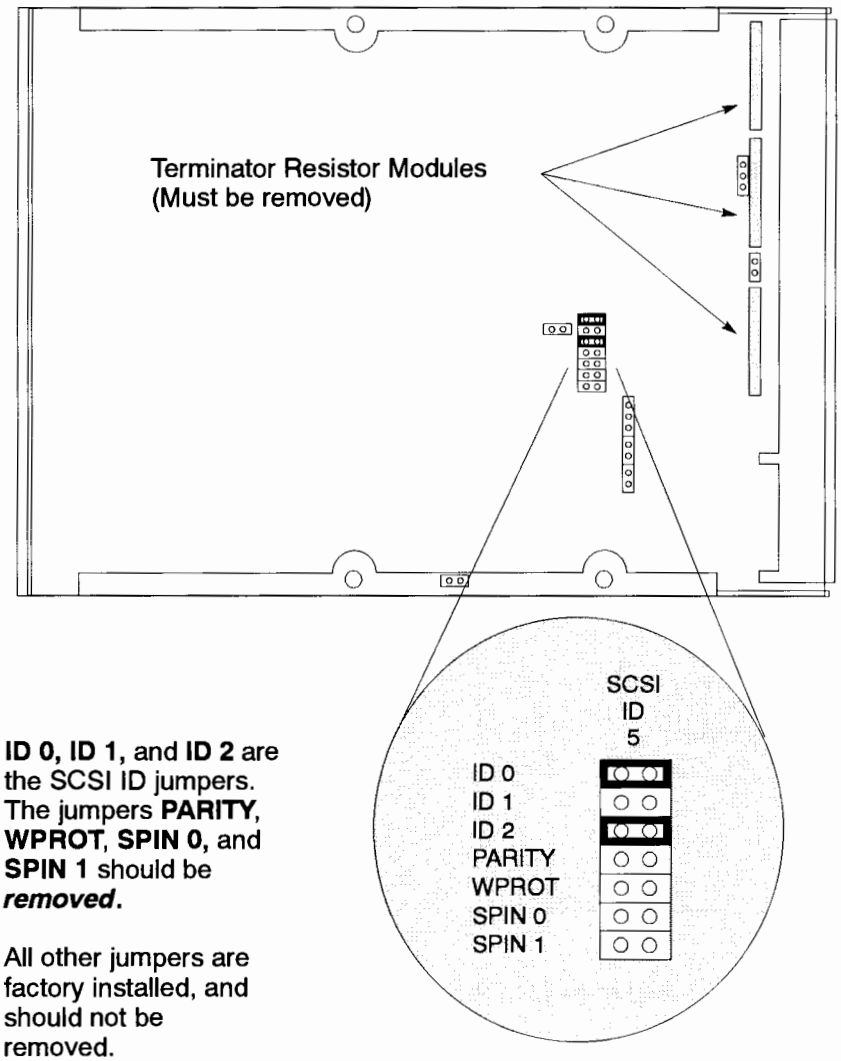


Figure B-35. Seagate 525-MB, 1-GB, and 2-GB Disk Drive Jumpers



NOTICE: **ID 0, ID 1,** and **ID 2** are the SCSI ID jumpers. The jumpers **PARITY, WPROT, SPIN 0,** and **SPIN 1** should be ***removed***.

All other jumpers are factory installed, and should not be removed.

Figure B-36. Micropolis 1-GB Disk Drive Jumpers

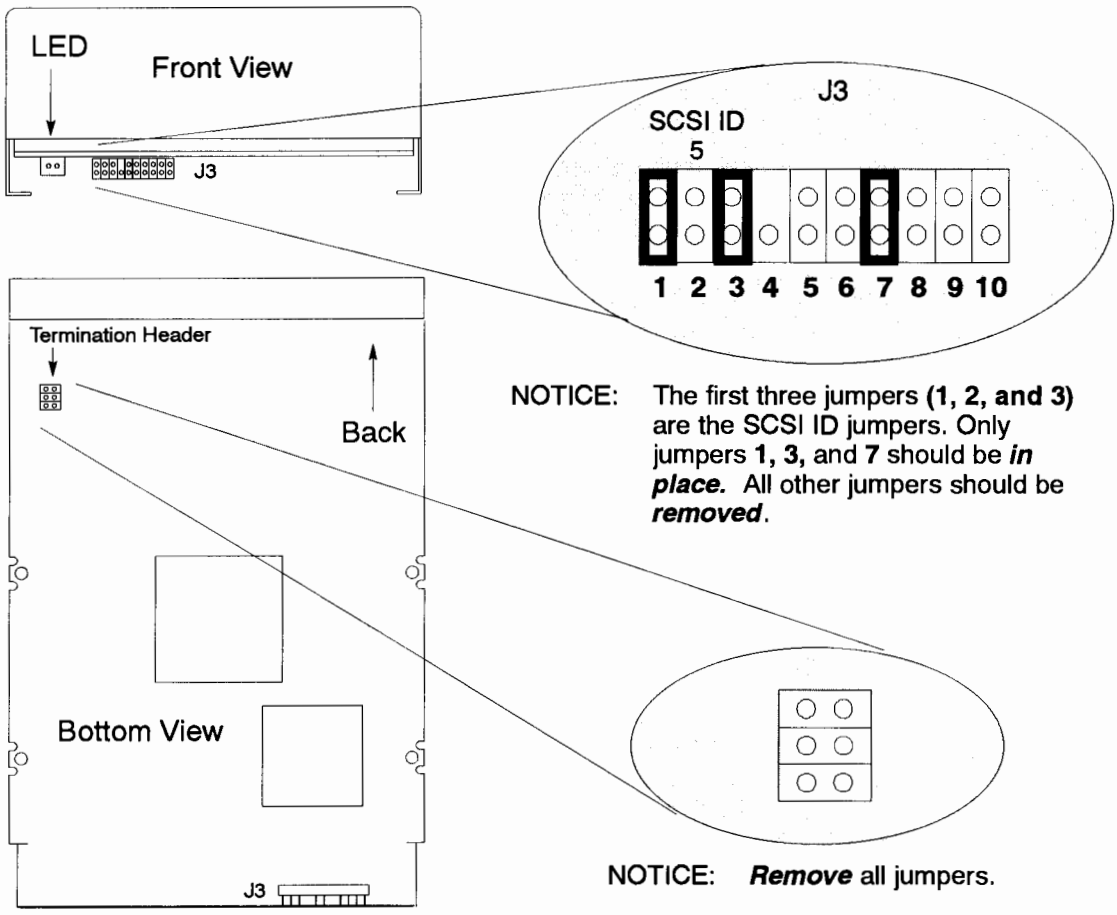


Figure B-37. DEC 1-GB and 2-GB Disk Drive Jumpers

2. If necessary, use a pair of small needle-nose pliers to set the SCSI ID jumpers to SCSI ID 5. Check that the other jumpers are set correctly.

NOTICE: If an existing SCSI device is using SCSI ID 5, you must change the SCSI ID on that device to an unused SCSI ID.

3. If you removed the disk drive mounting bracket from the disk drive, replace it now.

4. Mount the disk drive assembly to the chassis. Use the screw that came in the kit and a #2 Phillips screwdriver to secure the disk drive mounting bracket to the chassis, as shown in Figure B-38.

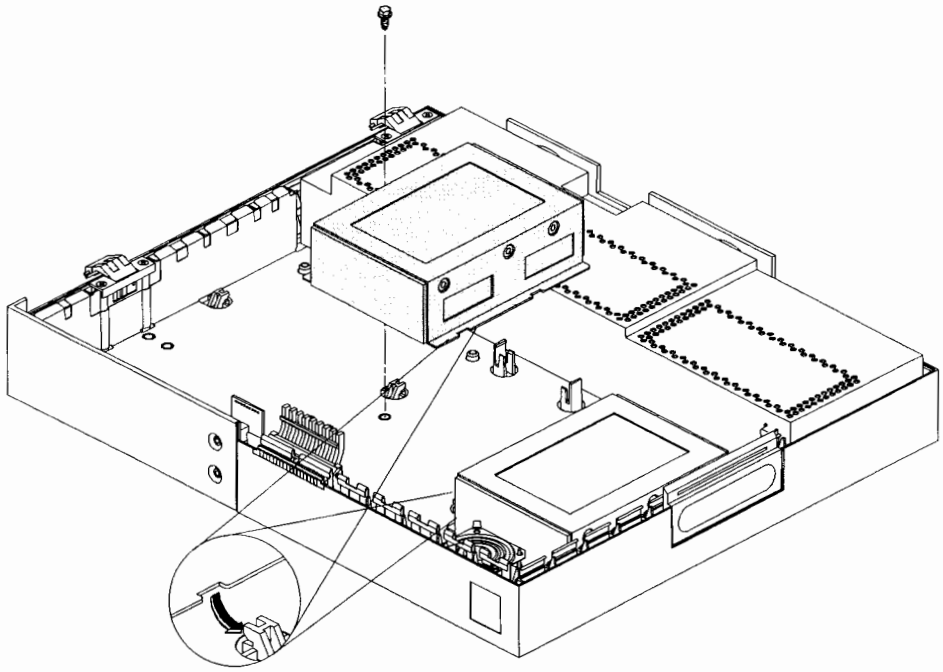


Figure B-38. Installing the Disk Drive

5. Remove the power cable from the center clip on the power supply, as shown in Figure B–39. Plug the power cable into the power connector on the drive, which is shown in Figure B–40.

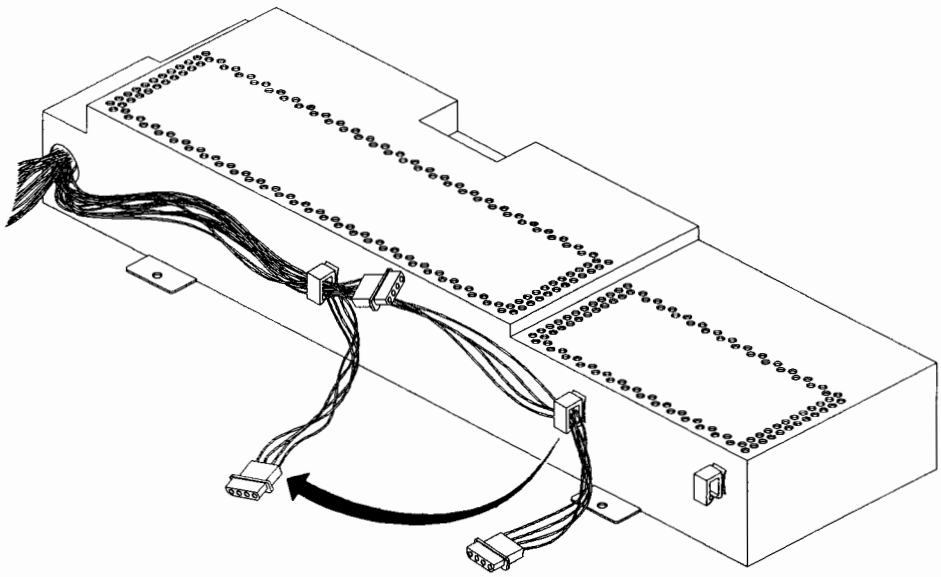


Figure B–39. Removing the Power Cable

6. Remove the SCSI cable connector from its holder and plug it into the SCSI connector on the drive. The side of the SCSI cable with the red line (pin #1) **MUST** be positioned as shown in Figure B-40. Make certain that all connectors are fully seated.

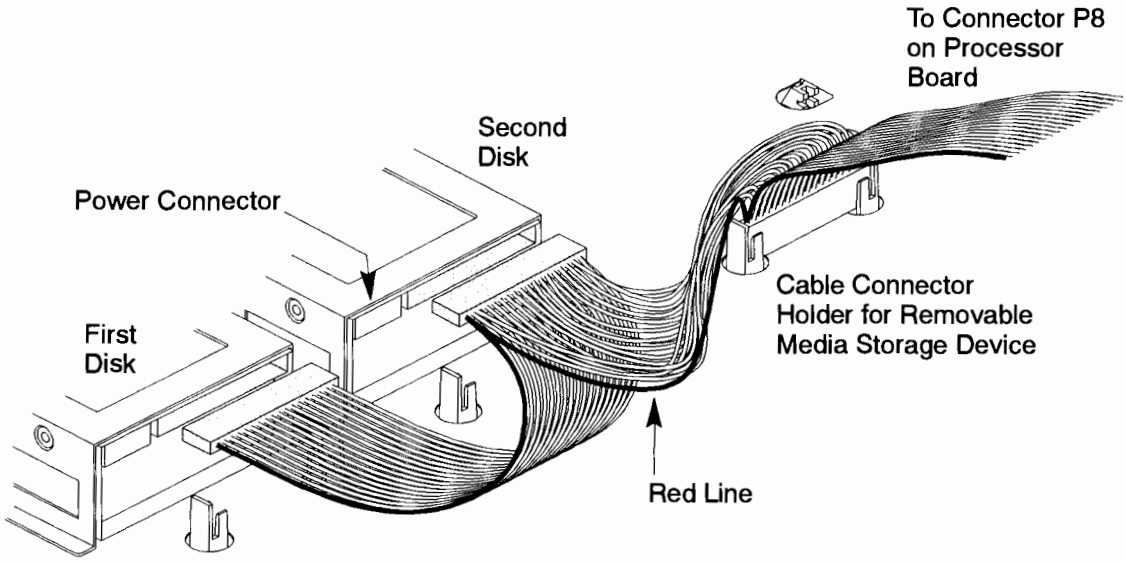


Figure B-40. Connecting the SCSI Ribbon Cable to the Drive

7. Refer to the section "Closing the System Unit" located near the end of this appendix, and perform the procedure to close the system unit.

CAUTION: **Do not** attempt to operate the workstation while it is open. The unit must be closed for proper air flow for system cooling.

8. Refer to *Managing Clusters of HP 9000 Computers: Sharing the HP-UX File System* for instructions on mounting and configuring the new disk.

For more information about configuring and using the new disk, refer to the following manuals:

- *Installing and Updating HP-UX 9.0: HP 9000 Series 700*
- *HP-UX Installing Peripherals, HP 9000 Series 700*
- *System Administration Tasks Manual: HP 9000 Series 700 Computers*

Installing Additional Memory

Figure B–41 shows the location of the memory boards within the system unit.

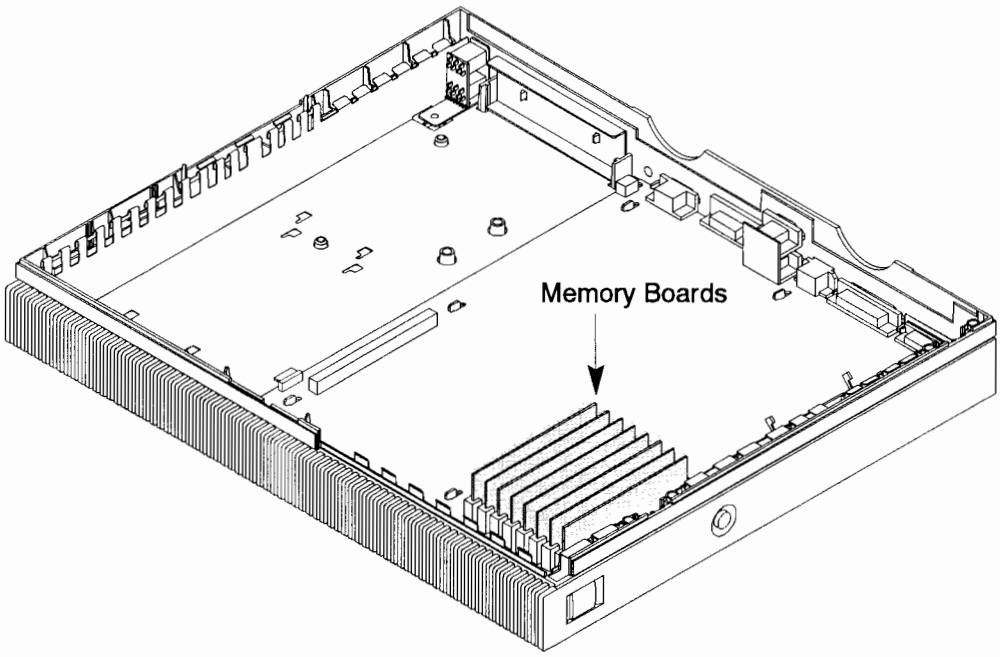


Figure B–41. Memory Board Locations

Memory boards must be installed in pairs of the same memory capacity. You may install up to four pairs of memory boards. (Up to three pairs of boards in the Model 715/33.)

The memory connectors are labeled Pair 0 through Pair 3. Install memory boards in the lowest numbered empty connector pair first. For example, if you have two pairs of memory boards, install the first pair in the connectors labeled **Pair 0** and the second pair in the connectors labeled **Pair 1**. (See Figure B–42.)

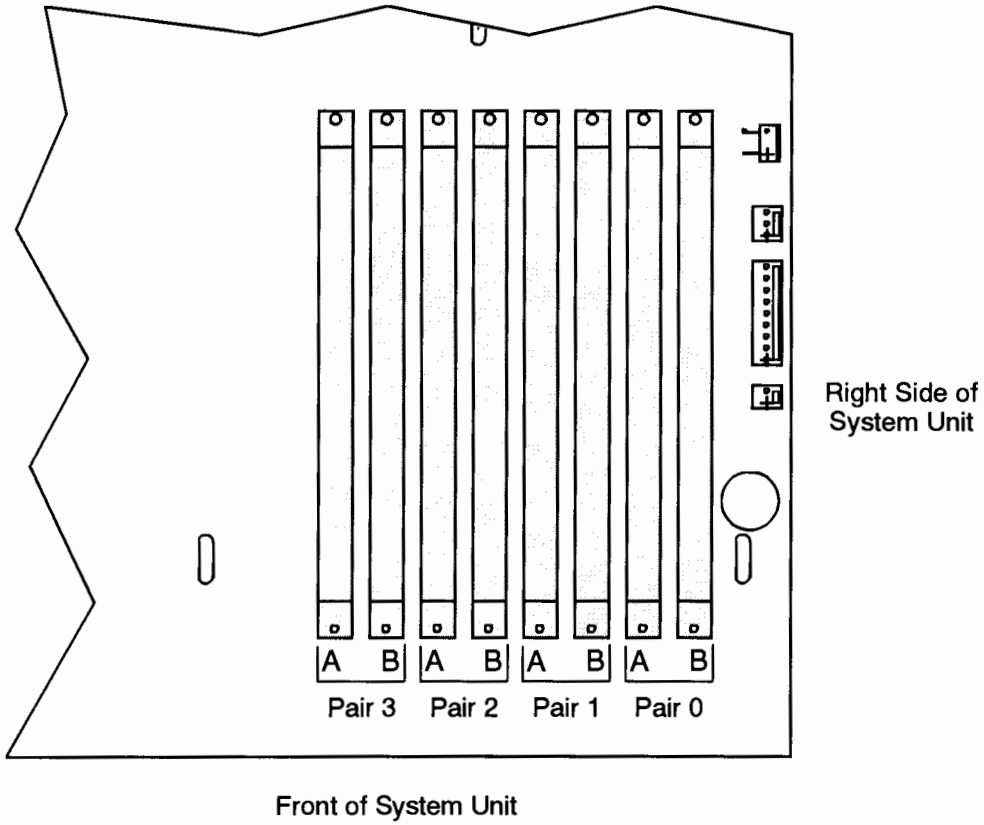


Figure B-42. Memory Connectors

Perform the following steps to add memory boards to your workstation:

1. Open the system unit according to the directions in the "Opening the System Unit" section earlier in this appendix.

2. If you do not need to remove any memory boards, skip this step and go directly to Step 3.

   To remove a memory board, push the two slot clips out and then tilt its top toward the left side of the system unit. Lift the memory board up and out of the connector. Place the memory board on a static-free surface. Figure B-43 shows how to remove the memory board.

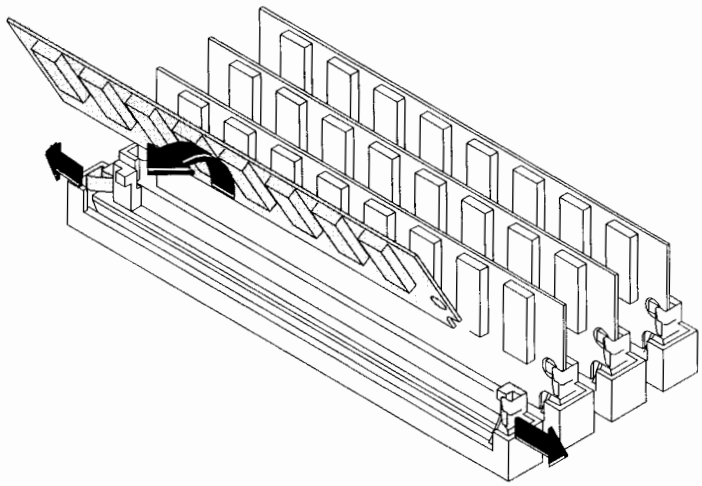


Figure B-43. Removing Memory Boards

3. Install a new memory board with its top edge tilted toward the left side of the system unit. Note that the memory board is notched on one end to fit the keyed connector. Press firmly on the memory board to ensure that it is fully seated. Snap the board into place by moving it to a vertical position. Its ends snap into the connector's spring clips. Figure B–44 shows how to install a memory board.

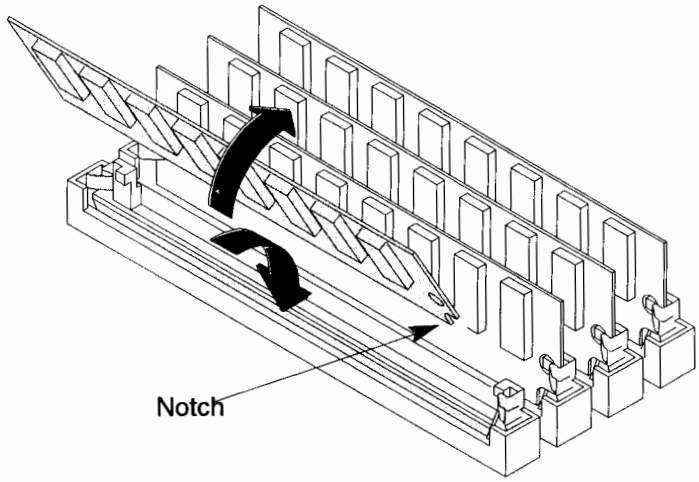


Figure B–44. Installing Memory Boards

4. Close the system unit and reconnect all cables as described in the "Closing the System Unit" section, located near the end of this appendix.

Setting the Built-In Graphics Configuration Switches (Model 715/33, 715/50, and 715/75 Workstations)

Model 715/33, 715/50, and 715/75 workstations are preconfigured to use a specific type of monitor, which is identified on the rear of the system unit by one of the two labels shown in Figure B-45.

NOTICE: Model 715/64, 715/80, and 715/100 workstations are autoconfiguring. These workstations are not equipped with graphics configuration switches or labels.

To change the built-in graphics configuration for your system, remove the graphics configuration sticker that is located on the back panel of the system unit to access the graphics configuration switches access hole.

Figure B-46 shows the settings for the built-in graphics configuration switches. Use a small probe, such as a jeweler's screwdriver, to set the switches through the access hole, according to the type of monitor that is connected to your workstation. (To determine which monitor you have, refer to your monitor documentation.)

Replace the graphics configuration sticker on the back panel of the system unit so that the label over the access hole is positioned to indicate your new graphics configuration. See Figures B-45 and B-46.

NOTICE: The built-in graphics configuration switches have no affect on the operation of the optional CRX graphics unit (if installed).

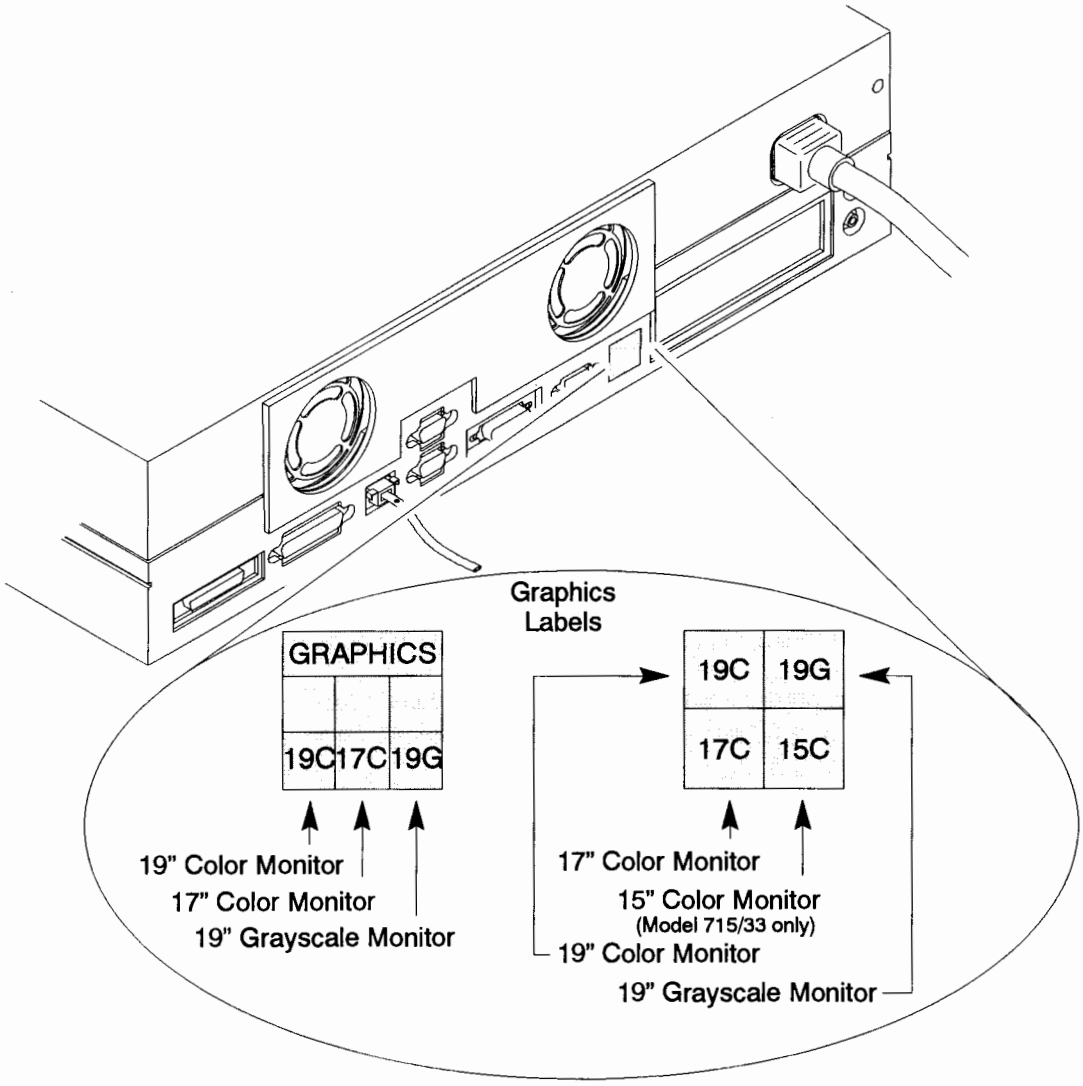


Figure B-45. Graphics Configuration Sticker

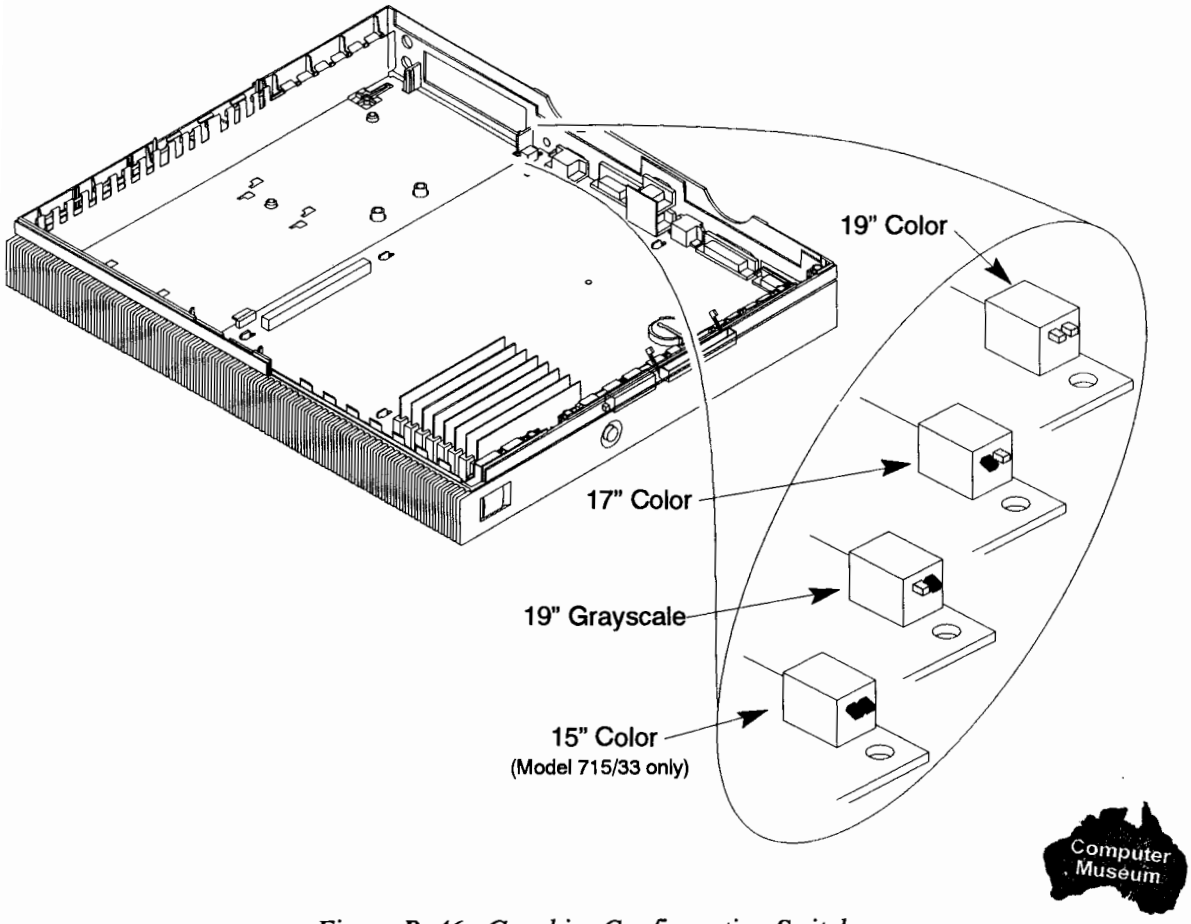


Figure B-46. Graphics Configuration Switches

Setting Monitor Type (Model 715/64, 715/80, and 715/100 Workstations)

Model 715/64, 715/80, and 715/100 workstations are preconfigured to use a monitor with a specific resolution and frequency. If you replace the workstation's monitor with a different type of monitor, you must reconfigure the workstation to support the new monitor. You can specify the type of monitor from the Boot Administration Mode or at power up, as described in this section.

Setting the Monitor Type from the Boot Administration Mode

Use this method to change the workstation's graphics parameters *before* you replace the monitor.

1. Enter the Boot Administration Mode as described in Appendix D.

2. Enter the following command to display the current monitor configuration for the system:

```
BOOT_ADMIN> monitor [Return]
```

The screen displays the available options and the current monitor configuration, similar to the following:

```
          Monitor Choices
Type        Resolution                Frequency
----        ----------                ---------
1           1280x1024                 72Hz
2           1024x768                  75Hz
3           1024x768                  70Hz
4           1024x768                  75Hz      Flat Panel
5           1280x1024                 60Hz
6           1024x768                  60Hz
7           640x480                   60Hz
8           1280x1024                 75Hz      VESA
9           1024x768                  75Hz      VESA
10          800x600                   75Hz      VESA
11          640x480                   75Hz      VESA

Current Monitor Type is
2           1024x768                  75Hz

BOOT_ADMIN>
```

3. To change the monitor configuration of the system, type the following:

```
BOOT_ADMIN> monitor type  Return
```

where *type* is the number in the `Type` column. For example, to select monitor **Type 1 Resolution 1280x1024 Frequency 72Hz**, type the following:

```
BOOT_ADMIN> monitor 1  Return
```

The screen displays your new monitor selection, similar to the following:

```
        Monitor Choices
Type      Resolution              Frequency
----      ----------              ---------
1         1280x1024               72Hz
2         1024x768                75Hz
3         1024x768                70Hz
4         1024x768                75Hz      Flat Panel
5         1280x1024               60Hz
6         1024x768                60Hz
7         640x480                 60Hz
8         1280x1024               75Hz      VESA
9         1024x768                75Hz      VESA
10        800x600                 75Hz      VESA
11        640x480                 75Hz      VESA

Current Monitor Type is
1         1280x1024               72Hz

BOOT_ADMIN>
```

Setting the Monitor Type at Power On

You must set the workstation's graphics parameters for either of the following circumstances:

- You have replaced the system's CPU board
- You have replaced the workstation's monitor with a different monitor type, and you have *not* set the workstation's graphics parameters by using the **monitor** command before doing so.

Press Tab after the keyboard's lights flash during the boot process to initiate the automatic monitor selection process.

NOTICE: On some PS2 keyboards, the LEDs flash when power is first applied, then flash again when the keyboard is initialized. Press the Tab key after the LEDs flash the second time.

The system will query you for the new monitor type, similar to the following:

```
Type        Resolution              Frequency
----        ----------              ---------
2           1024x768                75Hz

Press <Enter> to select this monitor type.
```

When you press Return, the system queries you to confirm your selection:

```
Type        Resolution              Frequency
----        ----------              ---------
2           1024x768                75Hz

Press <y> to save this monitor type.
```

If you don't select the monitor type that's displayed, the system will cycle through the other monitor types, some of which the monitor won't display. Wait for the workstation to display the correct monitor type again, then select it.

NOTICE: The A2287A 1024x768 multisync monitor will "lock up" if you do not select the monitor type on the first cycle. In this case, power cycle the monitor to resume the selection process.

Unsupported monitors may "lock up" if they can not sync to a scan rate.

Installing an EISA Option Board

Perform the following steps to install an EISA option board in the EISA adapter that was shipped with your workstation:

NOTICE: If you have an optional CRX or HCRX graphics board installed in your workstation, you may not install an EISA option board.

1. Power off the system and any peripheral devices. Unplug the system unit power cord and the power cord of any peripheral devices from ac wall outlets.

2. Open the system unit as described in the "Opening the System Unit" section earlier in this appendix.

3. Remove the EISA adapter board, EISA ThinLAN adapter, and connector bucket from the system unit, as shown in Figure B–47.

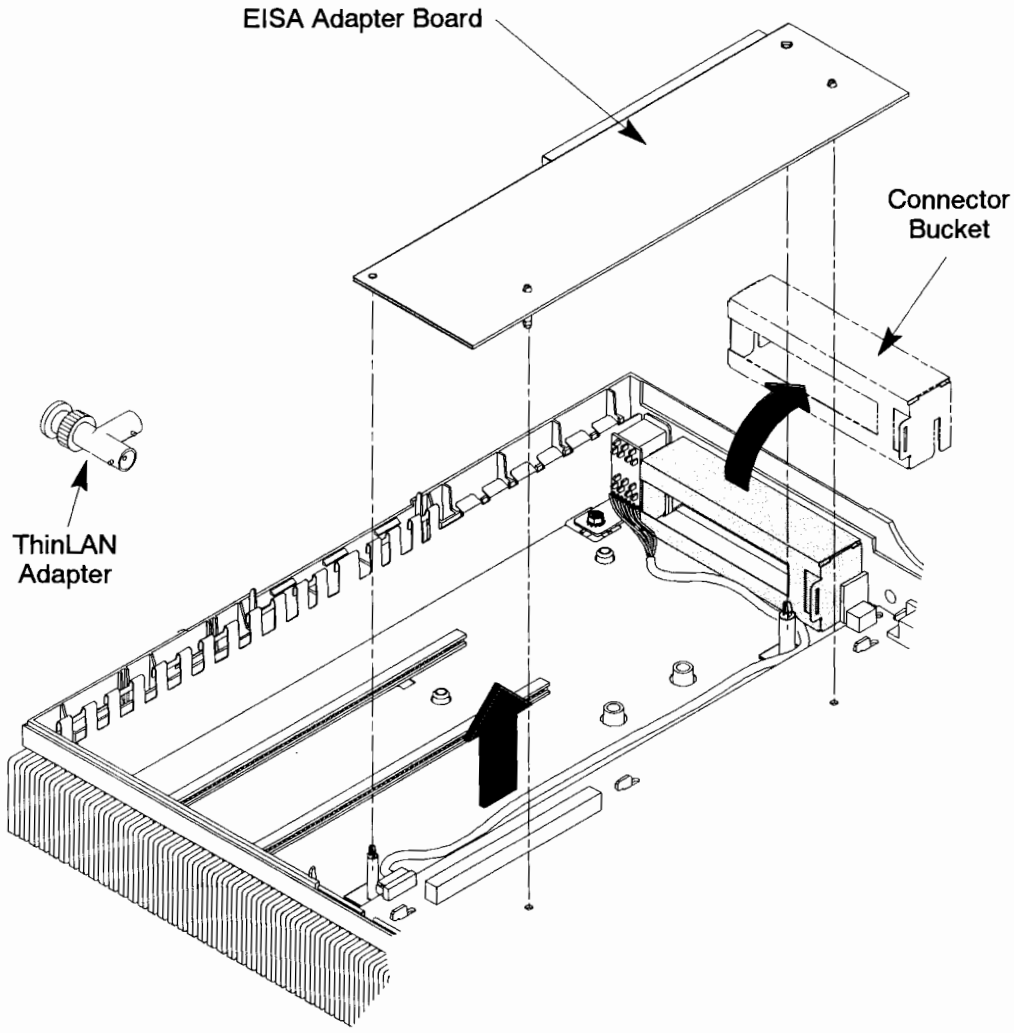


Figure B-47. Removing EISA Option Components

4. Remove the EISA filler panel assembly as shown in Figure B–48.

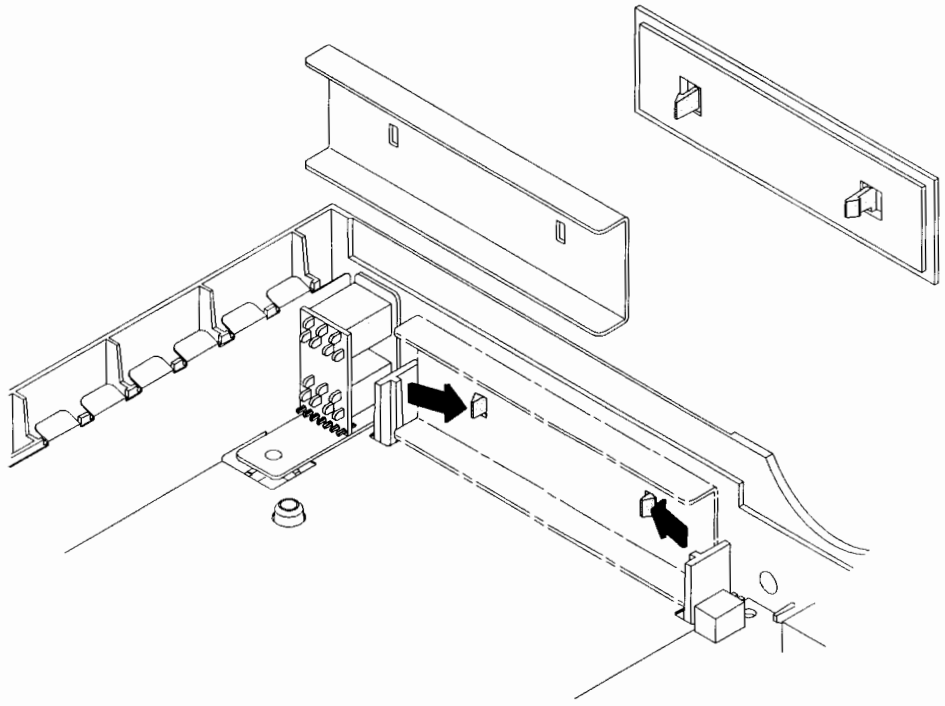


Figure B–48. Removing the EISA Filler Panel Assembly

5. Locate the EISA board you wish to install. Slide the connector bucket onto the EISA board connector bracket as shown in Figure B–49. Insert the tab at the bottom of the connector bracket into the slot on the connector bucket. Then use the screw provided on the bucket to attach the connector bracket.

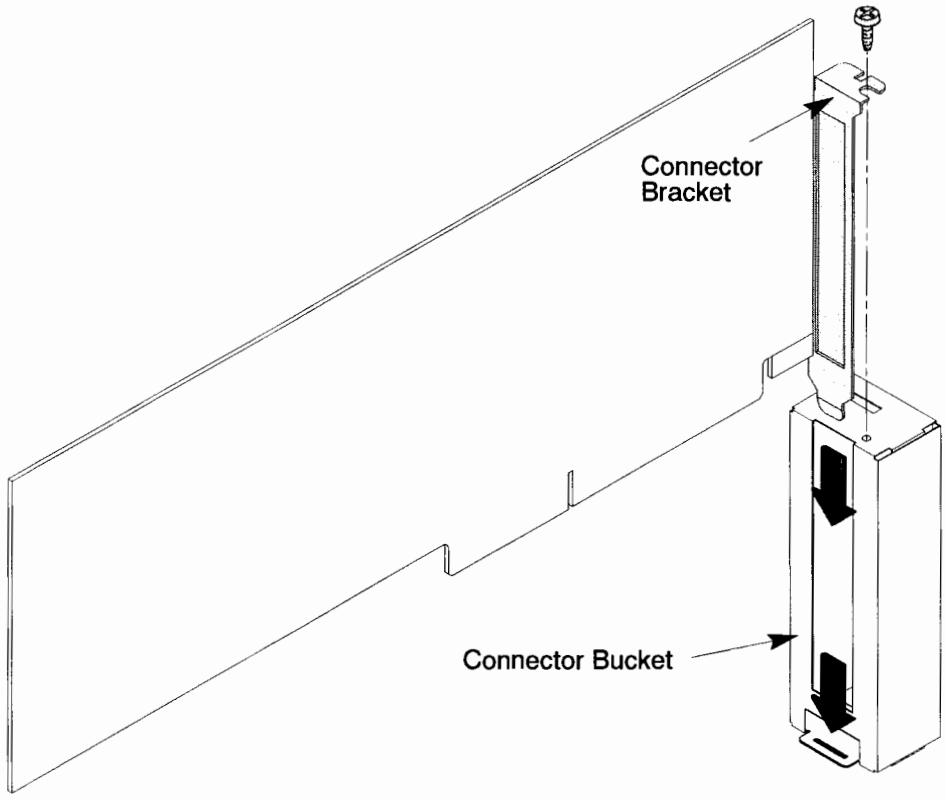


Figure B–49. Installing the Connector Bucket

6. Insert the EISA board into the connector on the adapter board. Push firmly to ensure a secure connection, as shown in Figure B–50.

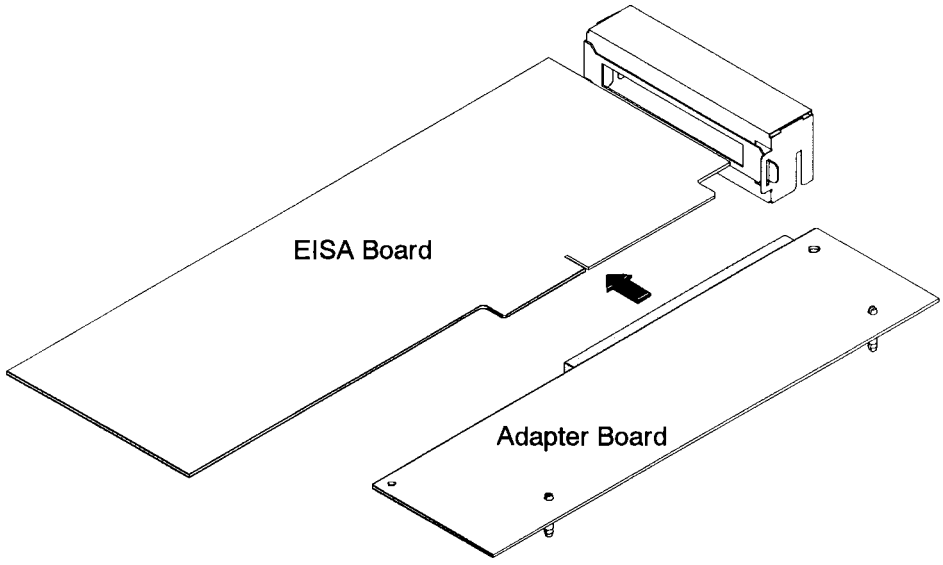


Figure B–50. Connecting the EISA Board to the Adapter Board

7. Check that the audio cable is routed as shown in Figure B–51, so it will not be pinched under the EISA board or the connector bucket.

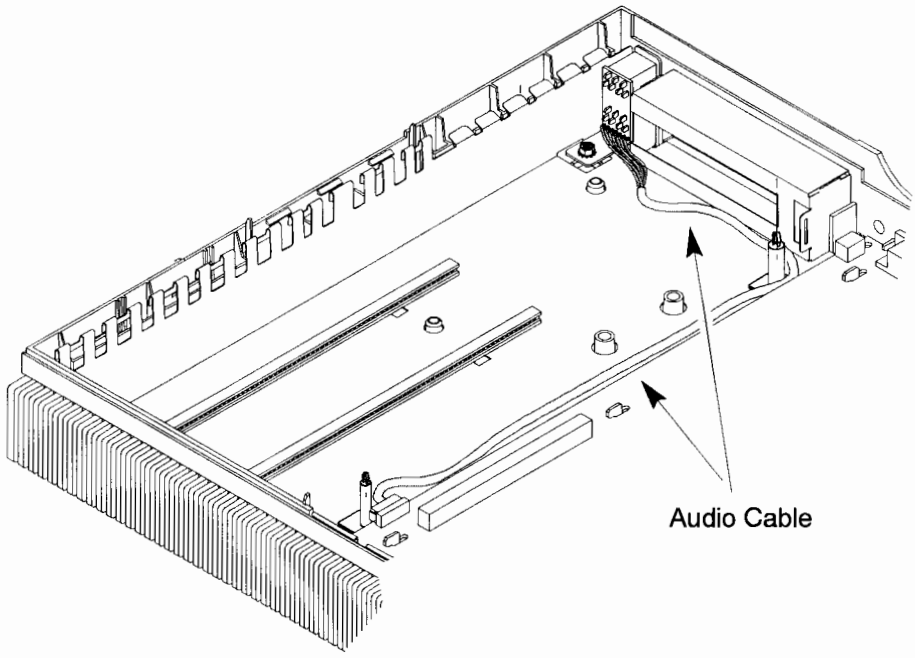


Figure B–51. Routing the Audio Cable

8. Slide the connector bucket, which you attached to the EISA board, *partway* into the channels of the connector slot on the rear of the system unit (see Figure B-52). Align the connector on the adapter board with the connector on the processor board, and carefully press the two connectors together. Ensure that the standoffs are aligned with the standoffs in the CPU board. Press on both the connector bucket and the adapter board to secure the assembly to the system unit.

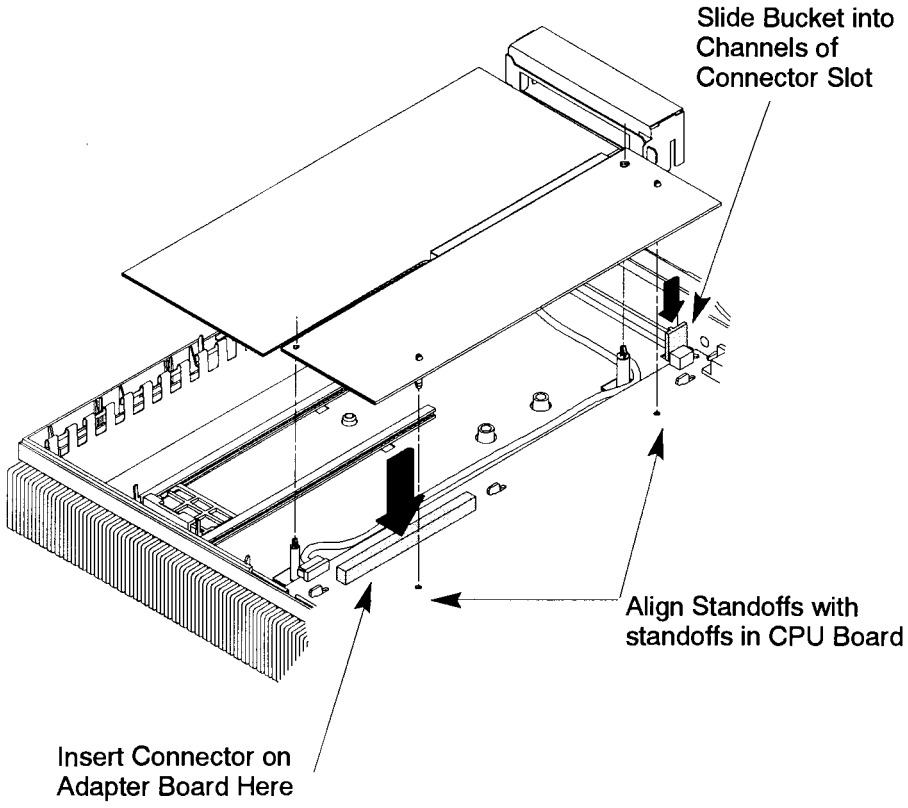


Figure B-52. Inserting the EISA Assembly into the System Unit

9. Pinch the sides of the end cap and slide it to the EISA board (see Figure B–53). Fit the edge of the EISA board into the slot of the end cap to secure the board.

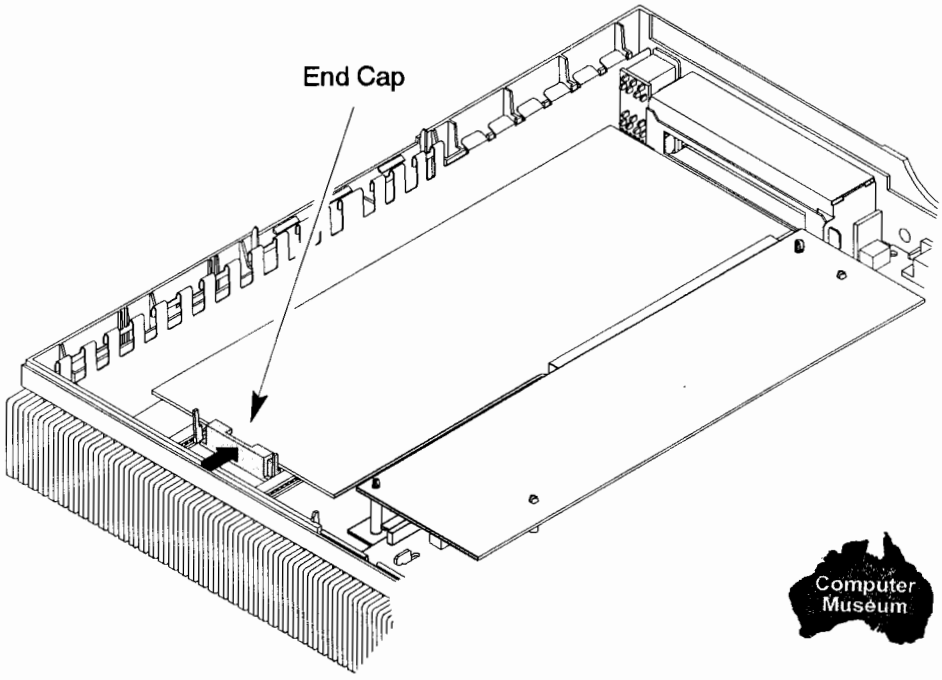


Figure B–53. Securing the EISA Board with the End Cap

10. Close the system unit as described in the following section, "Closing the System Unit."

Closing the System Unit

Close the system unit by reversing the steps in the "Opening the System Unit" section earlier in this appendix. Take care that you do not bend the EMI shields where the bottom and top covers join.

If your workstation is installed in the deskside (standing) configuration, replace the optional graphics processor (if installed) into the floor stand and connect it as shown in Figure B–54. Lift the rear of the system unit slightly while sliding the graphics processor forward. Make sure that the front of the graphics processor is flush with the front of the system unit.

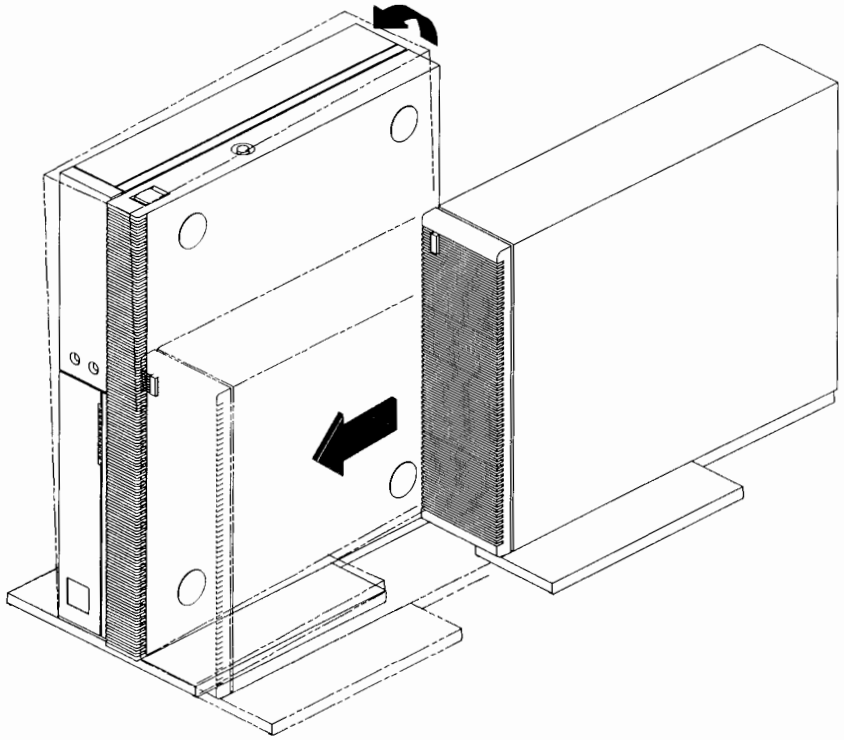


Figure B–54. Connecting the Optional Graphics Processor

Connecting to the EISA Board

If you installed the EISA LAN/9000-802.3 option board, use the EISA ThinLAN adapter (1250-2405), which was supplied with the EISA Adapter option, to connect to the board as shown in Figure B-55.

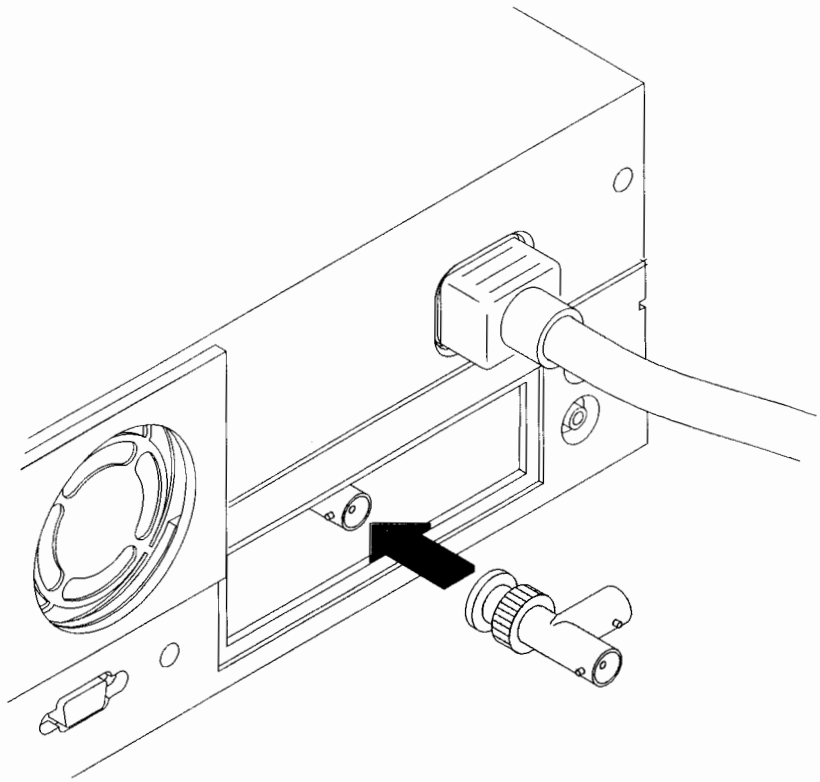


Figure B-55. Connecting to the EISA LAN/9000-802.3 Option Board

If you installed the EISA HPIB Host Adapter, use an HPIB extender connector (10834A) to connect to the board as shown in Figure B-56.

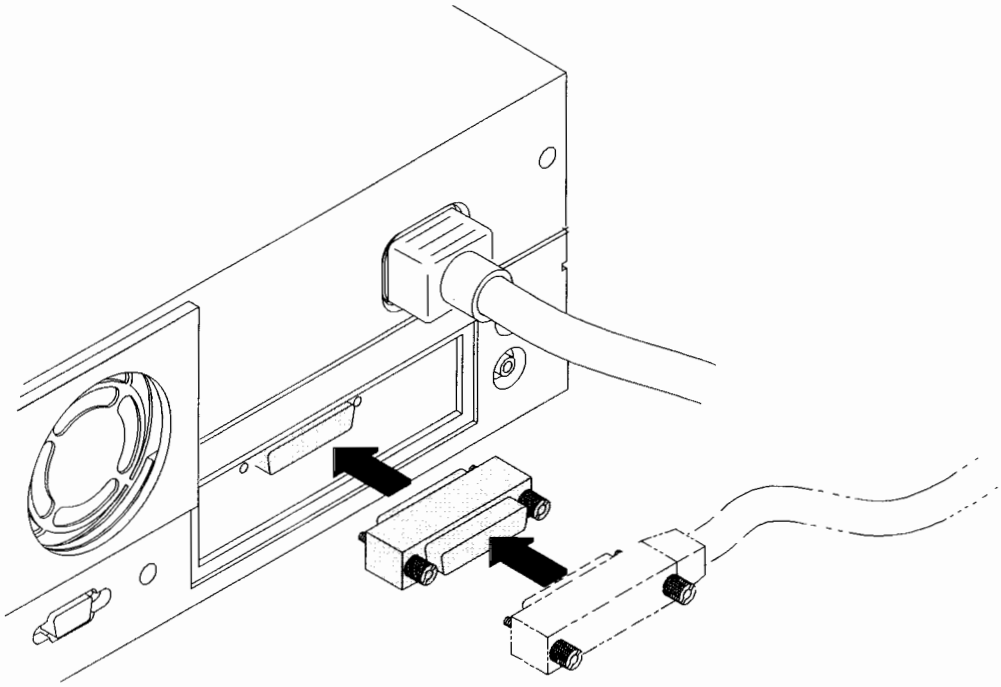


Figure B-56. Connecting to the EISA HPIB Host Adapter

Appendix C
SCSI–2 Connections

This appendix provides the following information about connecting Small Computer System Interface 2 (SCSI–2) devices to a Hewlett–Packard 9000 Series 700 Model 715 workstation:

- SCSI–2 restrictions
- Determining SCSI–2 bus length
- Assigning SCSI–2 device IDs
- Connecting to the SCSI–2 port

NOTICE: When attaching external SCSI devices, be sure to terminate the last device on the external SCSI bus. If no external devices are attached, the SCSI connector on the rear of the system unit does not need to be terminated.

SCSI-2 Restrictions

This section describes the SCSI-2 restrictions that apply to use of the following with a Hewlett-Packard 9000 Series 700 Model 715 systems:

- Cables
- Connectors and terminator
- SCSI-2 configuration constraints

Cables

All SCSI-2 devices ship without cables. Only SCSI-2 cables approved by Hewlett-Packard should be used with the Model 715 and any SCSI-2 devices connecting to the system card or to any EISA SCSI-2 option boards. Hewlett-Packard offers the following SCSI-2 cables for both single-ended standard SCSI-2 (located on the system card) and fast, differential SCSI-2 (EISA option) devices:

- K2296 cable with 0.9 meter (3 feet) length
- K2297 cable with 1.5 meter (5 feet) length

CAUTION: SCSI-2 cables approved by Hewlett-Packard are designed to function within the SCSI-2 tolerances for Hewlett-Packard devices. Use of other cables may result in significant problems with system operation.

Single-ended SCSI-2 definition limits the total cable length of SCSI-2 cables to 6 meters and fast, differential SCSI-2 (EISA option) definition limits the total cable length to 25 meters. Always use the shortest possible cable(s) for your configuration.

If you are daisy-chaining SCSI-2 devices together, use the following cables:

- 92222A cable with 0.5 meter (1.6 feet) length
- 92222B cable with 1.0 meter (3.2 feet) length
- 92222C cable with 2.0 meter (6.6 feet) length

NOTICE: See the "Determining SCSI-2 Bus Length" section of this Appendix to determine the total length of your cables.

Connectors and Terminator

Any SCSI-2 device connecting to the SCSI-2 system connector or an EISA SCSI-2 bus must use a high-density thumb screw connector on one end (end connecting to system connector or EISA bus) and a low-density bail lock connector on the other end. If you attach a second SCSI-2 device, the cable must have low-density connectors on each end.

The last device connected to the SCSI-2 bus must be terminated with a SCSI-2 terminator. All of the devices listed ship without terminators. If you do not already have a SCSI-2 terminator, you must order terminator K2291 from Hewlett-Packard for terminating the SCSI-2 System Bus. Use the 50-pin low-density terminator that came with your EISA SCSI-2 option card to terminate the last device connected to it.

If you do not have any external devices connected to either the single-ended or fast, differential SCSI-2 bus, no terminator is required.

SCSI-2 Configuration Constraints

You are limited in the number of same type SCSI-2 devices per system. Before adding another SCSI-2 device, you should determine if the workstation can support the additional device. The Model 715 offers both the single-ended standard SCSI-2 bus (system card port) and the fast, differential SCSI-2 bus (EISA option). Each bus has different configuration constraints.

NOTICE: Hewlett-Packard does not support disk drives supplied by other vendors. Use of other drives may result in significant problems with system operation.

Single-Ended Standard SCSI-2 Bus Configuration Constraints

For the single-ended standard SCSI-2 bus, HP-UX supports only **one** of each type of removable-media disk drive (i.e., floppy disk, CD-ROM, or magneto-optical drives) and two of the same type tape devices (i.e., 4-mm DDS tape drives or 9-track tape drives), per workstation. Table C-1 shows the configuration constraints for each standard single-ended SCSI-2 device type. If the system has internal hard disk drives and/or a floppy disk drive you must count them as SCSI-2 devices.

CAUTION: **Do not** connect single-ended SCSI-2 devices to a fast, differential SCSI-2 bus or fast, differential SCSI-2 devices to a single-ended SCSI-2 bus. Connecting a SCSI-2 device to the wrong SCSI-2 bus can cause system failure.

Table C-1. Single-Ended Standard SCSI-2 Bus Configuration Constraints

Single-Ended Standard SCSI-2 Devices	**Maximum Number of Each Type of Device Allowed**
Hard Disk Drives (internal and external)	7
Floppy Disk Drives (internal and external)	1
CD-ROM Drives (internal and external)	1
4-mm DDS Tape Drives (internal and external)	2
9-Track Tape Drives (external)	2
650-MB Magneto-Optical Drives (external)	1
Magneto-Optical Autochangers (see notice below)	1
Maximum Number of SCSI-2 Devices	**7**

NOTICE: Magneto-Optical Autochangers use more than one SCSI-2 drive address. Each address must be accounted for in the maximum number of SCSI-2 devices allowed.

EISA Fast, Differential SCSI-2 Bus Configuration Constraints

Fast, differential SCSI-2 devices do not work with the standard SCSI-2 bus. Table C-2 shows the configuration constraints for each fast, differential SCSI-2 device type. If any of the EISA slots contain networking boards, do not count these as SCSI-2 devices or buses.

CAUTION: **Do not** connect single-ended SCSI-2 devices to a fast, differential SCSI-2 bus or fast, differential SCSI-2 devices to a single-ended SCSI-2 bus. Connecting a SCSI-2 device to the wrong SCSI-2 bus can cause system failure.

Table C-2. EISA Fast, Differential SCSI-2 Bus Configuration Constraints

External Fast, Differential SCSI-2 Devices	Maximum Number of Each Type of Device Allowed
SCSI-2 Drive (fast, differential disk drives only)	7
SCSI-2 Disk Arrays (addressed as single drive)	7

Determining SCSI-2 Bus Length

This section helps you to determine the total length of the single-ended standard SCSI-2 bus and the fast, differential SCSI-2 bus (EISA option).

Single-Ended Standard SCSI-2 Bus Length

Follow these instructions to calculate your total single-ended standard SCSI-2 bus length, which includes the system unit, external SCSI-2 devices, and SCSI-2 interconnect cables, using Table C-3:

1. Find all of your external SCSI-2 devices in the first column. In the third column, write the SCSI-2 bus lengths (from the second column) that correspond to your devices.

NOTICE: In the third column, the length for the Model 715 System Unit is already listed. This number must always be used for the system unit whether or not it has internal drives installed.

2. In the fourth column, write down the lengths of the SCSI-2 interconnect cables you are using for your installation. (Cable lengths are listed in subsection "Cables" within the section on "SCSI-2 Restrictions.")

3. Add up all of the numbers in the third column and write that number on the subtotal line at the bottom of the column. Do the same for the fourth column.

4. Add the subtotals together and write the total in the *Total SCSI-2 Bus Length* box.

NOTICE: The total length of the single-ended SCSI-2 bus must not exceed 6 meters (19.6 feet). If the number you write for *Total SCSI-2 Bus Length* is greater than 6 meters (19.6 feet), try configuring your installation with shorter cables.

If you have problems, call your designated service representative.

Table C-3. SCSI-2 Bus Length Worksheet for Single-Ended Standard SCSI-2 Bus

SCSI-2 Device	Internal SCSI-2 Bus Length meters (feet)	Device Internal Length meters (feet)	External Cable Length meters (feet)
Model 715 System Unit	0.6 (2.0)	0.6 (2.0)	
C1701A	0.3 (1.0)	_____	_____
C1512A	0.9 (3.0)	_____	_____
C2213A	1.5 (4.9)	_____	_____
C2217T	1.3 (4.3)	_____	_____
C1704A	0 (0.0)	_____	_____
C1705A	0 (0.0)	_____	_____
A1999A	0.3 (1.0)	_____	_____
C1700A	1.1 (3.6)	_____	_____
C1520B	0.2 (0.7)	_____	_____
C1521A	0.2 (0.7)	_____	_____
7980S	0 (0.0)	_____	_____
		Subtotals: _____ +	_____

Total SCSI-2 Bus Length = ☐

(Total SCSI-2 bus length not to exceed total of 6 meters [19.6 feet])

EISA Fast, Differential SCSI-2 Bus Length

Follow these instructions to calculate your total fast, differential SCSI-2 bus length for each EISA SCSI-2 bus on your system, using Table C-4:

1. Find all of your external fast, differential SCSI-2 devices in the first column. In the third column, write the SCSI-2 bus lengths (from the second column) that correspond to your devices.

2. In the fourth column, write down the lengths of the SCSI-2 interconnect cables you are using for your installation. (Cable lengths are listed in subsection "Cables" within the section on "SCSI-2 Restrictions.")

3. Add up all of the numbers in the third column and write that number on the subtotal line at the bottom of the column. Do the same for the fourth column.

4. Add the subtotals together and write the total in the *Total SCSI-2 Bus Length* box.

NOTICE: The total length of the fast, differential SCSI-2 bus must not exceed 25 meters (82 feet). If the number you write for *Total SCSI-2 Bus Length* is greater than 25 meters (82 feet), try configuring your installation with shorter cables.

If you have problems, call your designated service representative.

Table C-4. SCSI-2 Bus Length Worksheet for EISA Fast, Differential SCSI-2 Bus

SCSI-2 Device	Internal SCSI-2 Bus Length meters (feet)	Device Internal Length meters (feet)	External Cable Length meters (feet)
C2427JK	0.7 (2.3)	_____	_____
C2425JK	0.7 (2.3)	_____	_____
C2482A	1.3 (4.3)	_____	_____

Subtotals: _____ + _____

Total SCSI-2 Bus Length = [ ]

(Total SCSI-2 bus length not to exceed total of 25 meters [82 feet])

Assigning SCSI-2 Device IDs

The Model 715 has two different SCSI-2 buses available: a single-ended standard SCSI-2 bus (system card SCSI-2 port) and a fast, differential SCSI-2 bus (EISA bus option card). Each bus has its own separate set of device IDs.

Single-Ended Standard SCSI-2 Device IDs

Before assigning a SCSI-2 device ID to your drive, you need to check your existing SCSI-2 device IDs. To check what SCSI-2 device IDs are available and assign an ID to your device, follow these instructions which use Table C-5:

1. Type the following in a terminal window or at the command line:

ioscan Return

After a few moments the **ioscan** utility lists all of the input and output devices it could find. The list should appear similar to the following:

```
H/W Path          Description       Status
-------------------------------------------------
0.0.0             graphics          ok(0x577)
2.0.1             scsi              ok(0x7071)
2.0.1.0.0         disk              ok(0x800101)
2.0.1.5.0         disk              ok(0x202)
2.0.1.6.0         disk              ok(0x202)
```

2. To find out which SCSI-2 address settings are currently in use, look under the **H/W Path** heading. The listing **2.0.1 scsi** is the built-in SCSI-2 bus controller. For devices connected to the built-in SCSI-2 bus, such as disks, the fourth number is the SCSI-2 address setting for that device. For example, the listing **2.0.1.6.0** in the sample device list tells us that there is a SCSI device (a disk) currently using address 6 on the built-in SCSI-2 bus.

3. Write in the SCSI-2 device ID of any internal drives in Table C-5.

4. Write in the type of external single-ended drives currently connected to your workstation under the heading "External Device Drives" and each drive's SCSI-2 device ID under the heading "Device ID."

5. Add your new drive to the table if it is an external device. If it is an internal drive, continue to Step 6.

NOTICE: The C1700A Magneto-Optical Autochanger uses three SCSI-2 addresses, and accounts for three of the seven devices allowed on the SCSI-2 bus.

6. Check to see what SCSI-2 device IDs are not used. You may use ID numbers 0 through 6 if they are not already in use. If the default ID on your drive does not conflict with any existing drive IDs, use that ID. If your default address conflicts with an existing drive ID, you need to assign a new SCSI-2 device ID to your drive. Refer to the drive's installation documentation for information on changing the device ID.

CAUTION: **Do not** use SCSI-2 device ID 7 for any device. It is reserved for the system bus controller.

Table C-5. Single-Ended Standard SCSI-2 Device IDs

SCSI-2 Device Drives	Device ID (Address) Number (Only 0 through 6 Available) Internal	External
Internal System Drives:		
System SCSI-2 Drive(s):		
1st Winchester Drive (if present, uses ID No. 6)	_____	N/A
2nd Winchester Drive (if present, uses ID No. 5)	_____	N/A
Floppy Disk Drive (if present, uses ID No. 0)	_____	N/A
CD-ROM Drive (if present, uses ID No. 2)	_____	N/A
4-mm DDS Tape Drive (if present, uses ID No. 3)	_____	N/A
External Device Drives:		
1st External Device _____	N/A	_____
2nd External Device_____	N/A	_____
3rd External Device _____	N/A	_____
4th External Device _____	N/A	_____
5th External Device _____	N/A	_____
6th External Device _____	N/A	_____
7th External Device _____	N/A	_____

NOTICE: You can only have a total of 7 SCSI-2 devices (internal and external) connected to the system.

EISA Fast, Differential SCSI-2 Device IDs

Before assigning a fast, differential SCSI-2 device ID to your drive, you need to check your existing SCSI-2 device IDs. To check what SCSI-2 device IDs are available and assign an ID to your device, follow these instructions which use Table C-6:

1. Write in the type of external fast, differential drives currently connected to your system under the heading "Fast, Differential EISA Option SCSI-2 Devices" and each drive's SCSI-2 device ID under the heading "Device ID."

NOTICES: If you don't know the device ID(s) of your drive(s), check the address jumpers or switches on each device for its address setting.

If the EISA slot contains a networking board, do not count this as a SCSI-2 device.

2. Add your new drive to the table.

3. Check to see what SCSI-2 device IDs are not used. You may use ID numbers 0 through 6 if they are not already in use. If the default ID on your drive does not conflict with any existing drive IDs, use that ID. If your default address conflicts with an existing drive ID, you need to assign a new SCSI-2 device ID to your drive. Refer to the drive's installation documentation for information on changing the device ID.

CAUTION: **Do not** use SCSI-2 device ID 7 for any device. It is reserved for the EISA option SCSI-2 card.

Table C-6. EISA Fast, Differential SCSI-2 Device IDs

EISA Fast, Differential SCSI-2 Devices	**Device ID (Address) Number (Only 0 through 6 Available)**
1st External Device _____	_____
2nd External Device _____	_____
3rd External Device _____	_____
4th External Device _____	_____
5th External Device _____	_____
6th External Device _____	_____
7th External Device _____	_____
NOTICE: You can only have a total of 7 SCSI-2 devices connected to the EISA bus.	

Connecting to the SCSI-2 Port

This section describes how to connect to the single-ended system SCSI-2 port and an EISA SCSI-2 port.

Single-Ended System SCSI-2 Port Connection

The external single-ended system SCSI-2 port is the left-most connector on the rear panel of the system unit. A SCSI-2 cable connects to this port with a high-density 50-pin thumb-screw connector, as shown in Figure C-1. This port supports up to 7 single-ended SCSI devices such as DDS-format tape drives and CD-ROM drives.

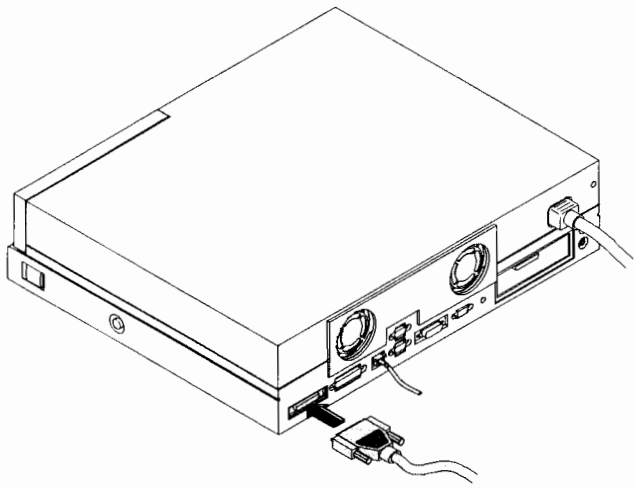


Figure C-1. Connecting to the Single-Ended System SCSI-2 Port

NOTICE: The last device connected to the SCSI-2 bus must be terminated with a SCSI-2 terminator. All of the devices listed ship without terminators. If you do not already have a SCSI-2 terminator, you must order terminator K2291 from Hewlett-Packard. See "Connectors and Terminators" earlier in this appendix for more information.

EISA Fast, Differential SCSI-2 Port Connection

The external EISA fast, differential SCSI-2 port is located on the optional EISA board in the EISA slot. A SCSI-2 cable connects to this port with a high-density thumb-screw connector, as shown in Figure C-2.

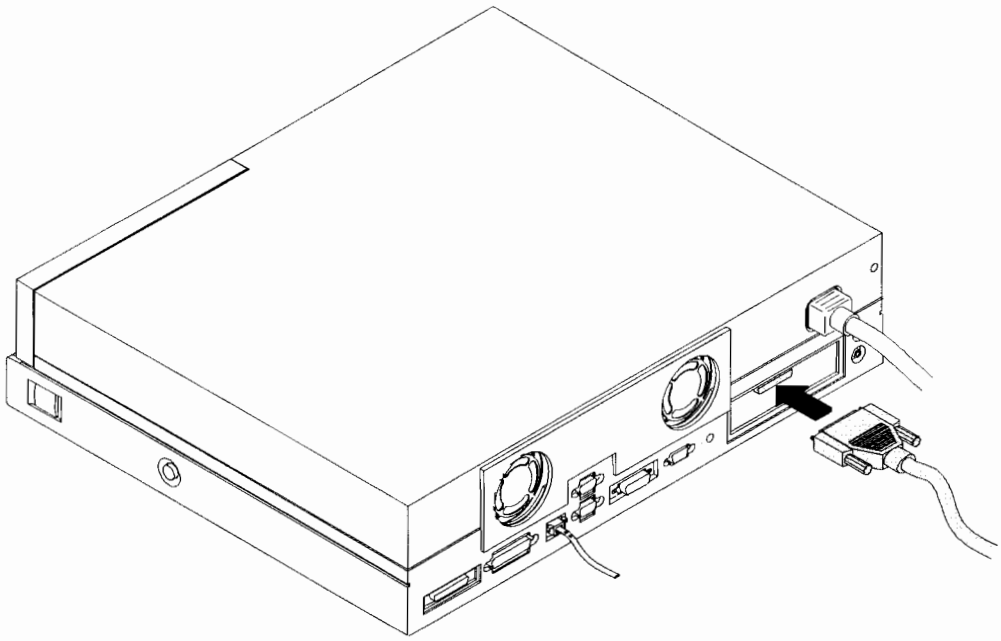


Figure C-2. Connecting to the EISA Fast, Differential SCSI-2 Port

NOTICE: The last device connected to the SCSI-2 bus must be terminated with a SCSI-2 terminator. All of the devices listed ship without terminators. If you do not already have a SCSI-2 terminator, you must order terminator K2291 from Hewlett-Packard. See "Connectors and Terminators" earlier in this appendix for more information.

Appendix D
The Boot Console User Interface

There are times when you want to interact directly with the hardware of your workstation **before** it boots the operating system. Your workstation provides a **boot console user interface** to allow you to perform special tasks, display information, and set certain system parameters, even if the operating system is unavailable.

Here are the special tasks that you can perform:

- Boot your workstation from any specified hardware device.
- Search for hardware devices that contain media from which your workstation can be booted.
- Reset the workstation.

Here are some of the kinds of information that your system displays:

- A list of the commands you may issue from the boot console user interface
- The primary boot path
- The console path
- The real-time clock's time and date (Model 715/33, 715/50, and 715/75 systems only)
- The setting of the Autoselect flag
- The status (on or off) of the secure boot mode
- The status (on or off) of the **fastboot** memory test
- The station address for the built-in LAN interface

Here are some of the system parameters that you can set:

- The primary boot path
- The console path
- The real-time clock's time and date (Model 715/33, 715/50, and 715/75 systems only)
- The Autoselect flag
- The status (on or off) of the secure boot mode
- The status (on or off) of the **fastboot** memory test

Accessing the Boot Console User Interface

To access the boot console user interface, follow these steps:

1. For a Model 715/33, 715/50, or 715/75 workstation, shutdown your operating system by logging in as user **root** or superuser, and enter the **/etc/shutdown** command in a terminal window. Wait for the system to shut down.

2. Turn off the power to your workstation for a few seconds.

CAUTION: **Do not** power off a Model 715/33, 715/50, or 715/75 workstation without first shutting down HP-UX. Powering off these workstations with HP-UX still running could damage the data on your disks.

3. Turn the power back on.

   The system self-test runs automatically. Within a few minutes a message displays. Press and hold the Esc key as soon as this message appears:

```
Selecting a system to boot.
To stop selection process, press and hold the ESCAPE
key.
```

4. Release Esc as soon as the following message displays:

```
Selection process stopped.
```

   A short time later, this message appears:

```
Searching for potential boot devices. To terminate
search, press and hold the ESCAPE key.

Device Selection   Device Path    Device Type
-----------------------------------------------
```

Your workstation is now searching for devices that may hold file systems from which it can boot HP-UX. As they are found, they appear in a list similar to the following example:

```
P0          scsi.6.0          QUANTUM LPS525S
P1          scsi.5.0          QUANTUM LPS525S
P2          scsi.2.0          TOSHIBA CD-ROM DRIVE:XM
```

This process may take several minutes. When the search ends, this list of actions appears:

```
b)  Boot from specified device
s)  Search for bootable devices
a)  Enter boot administration mode
x)  Exit and continue boot sequence
?)  Help

Select from menu:
```

This is the **boot console user interface menu**.

If your workstation is a member of a **cluster** (a group of computers that share the file system of a **host** by means of a network connection), there may be no disks listed because your workstation has no disks directly attached to it.

Entering the Boot Administration Mode

To change system hardware parameters, you must enter the boot administration mode. From within this mode, you may enter any of the commands used in the task descriptions that follow.

To enter the boot administration mode, type **a** at the menu prompt as shown:

```
Select from menu: a Return
```

The following prompt is displayed:

```
BOOT_ADMIN>
```


Getting Help for the Boot Console User Interface Commands

You may issue many different commands in the boot administration mode. For a complete listing, at the BOOT_ADMIN> prompt type **h**, **help**, or **?** and a summary of all of the commands is listed.

To get help for a particular command, type the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> help command_name Return
```

where *command_name* is the name of one of the listed commands.

The displayed help information usually includes a description of the command, its options, and the format for parameters.

Booting the Workstation

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

For example, you may want to start your workstation from an operating system that is stored on a device that is different from your usual boot device. If your 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 another type of device, such as a DDS-format tape drive.

Here are some situations and examples:

- If you know which device you want to boot from, and you know that it contains a bootable operating system, type the following at the `BOOT_ADMIN>` prompt:

  `BOOT_ADMIN>` **boot** *device* Return

  where *device* is one of the following:

  - The **hardware path** to the device, specified in Mnemonic Style Notation (see Table D-2 on page D-12)
  - The **P***n* designation of the device, as listed in the device search

  For example, if you wish to boot an operating system that is stored on a DDS-format tape in a drive that is located at "scsi.1.0" and is designated by the search as device "P2", type one of the following commands at the `BOOT_ADMIN>` prompt:

  `BOOT_ADMIN>` **boot scsi.1.0** Return

  or

  `BOOT_ADMIN>` **boot P2** Return

  The operating system on the specified device is used to start your workstation.

- If you wish to interact with the **Initial System Loader (ISL)** before booting your workstation, type the following at the `BOOT_ADMIN>` prompt:

  `BOOT_ADMIN>` **boot** *device* **isl** Return

  This causes the ISL to be loaded from the specified device. After a short time, the following prompt appears on your 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 (**/hp-ux**) on your root disk (**scsi.6.0**) has become corrupted, and you wish to boot your workstation from the backup kernel (**/SYSBCKUP**), type the following at the `ISL>` prompt:

  `ISL>` **hpux boot disk(scsi.6;0)/SYSBCKUP** Return

- If you do not know the locations of the bootable operating systems on the various media in your file system, you can find them with the **search** command.

NOTICE: You may also boot the workstation from the main menu of the Boot Console User Interface by using a command in this form:

`Select from menu:` **b** *device_path* Return

where *device_path* is a designator for the path to the device that contains a bootable file system.

Searching for Bootable Media

The initial search conducted by the boot console user interface locates devices that *might* contain bootable media. This search might find a DDS–format tape drive which actually does not contain a bootable tape. To check to see which devices actually contain bootable media, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> search Return
```

This causes your workstation to search *exhaustively* for bootable media. It searches all types of I/O devices in the following order:

1. Built–in SCSI
2. Built–in LAN
3. EISA (if installed)

The search may turn up more devices than there are lines on your display. If you are using a text terminal, you may control the progress of the search from your terminal's keyboard by performing the following steps:

- To hold the display temporarily, press Ctrl S
- To continue the display, press Ctrl Q
- To halt the search, press Esc

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

NOTICE: If the search discovers ten devices, the label in the **Device Selection** column for the tenth entry is labeled **P9**. Any subsequent entries are labeled **P***.

P* cannot be used as a device designator for boot administration commands because it is ambiguous. To refer to a device labeled **P*** in a search, specify it by means of the entry in the **Device Path** column.

To search to see which devices of *just one type* actually contain bootable media, type the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> search device_type Return
```

where *device_type* is one of the following:

scsi is the built-in SCSI bus

lan is all connections to the built-in LAN

eisa is the EISA bus

NOTICE: You may also search for bootable media from the main menu of the Boot Console User Interface by using a command in one of the following forms:

```
Select from menu: s Return

Select from menu: s device_type Return
```

where *device_type* is the type of device (**scsi**, **lan** or **eisa**) for which you wish to search.

Redisplaying the Results of a Search

On Model 715/33, 715/50, and 715/75 workstations, the list of bootable devices is stored until you conduct another search or you reboot your system. To see the list of devices again, type the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> show Return
```

It is much faster to redisplay the list with **show** than it is to conduct the search again.

NOTICE: This command is not implemented on Model 715/64, 715/80, and 715/100 workstations.

Resetting the Workstation

The act of resetting your workstation causes it to restart completely. It's similar to turning the workstation off and then back on again. To reset your workstation, type the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> reset Return
```

Displaying and Setting Paths

A **path** is the hardware address of a device that is attached to the I/O system of your workstation. The **path** command can set any of the paths shown in Table D–1:

Table D–1. System Paths

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

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

```
BOOT_ADMIN> path Return
```

The paths are displayed in **Mnemonic Style Notation** as shown in Table D–2.

Table D–2. Mnemonic Style Notation

I/O Type	Specification Format
Built–in SCSI	**scsi**.*scsi_address.logical_unit_number*
Built–in LAN	**lan**.*server_address.init_timeout.io_timeout*
Built–in HIL (715/33, 715/50, and 715/75)	**hil**
Keyboard (715/64, 715/80, and 715/100)	**ps2**
RS–232 Port A	**rs232_a**.*baud_rate.word_length.parity_option*
RS–232 Port B	**rs232_b**.*baud_rate.word_length.parity_option*
Graphics Slot	**graphics**
Built–in Parallel Port	**parallel**
Optional EISA SCSI	**eisa**.*eisa_slot.scsi_address*

To display the current setting for a particular system path, type the following at the `BOOT_ADMIN>` prompt:

`BOOT_ADMIN>` **path** *path_type* Return

where *path_type* is one of the path types listed in Table D–1.

For example, to get the path to the primary boot device, type the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> path primary Return
```

To set a system path to a new value, type the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> path path_type path Return
```

where *path_type* is one of the path types listed in Table D–1 and *path* is the specification of the path in Mnemonic Style Notation (as described in Table D–2). For example, to set the console path to RS–232 Port A with a baud rate of 4800, a word length of 7, and even parity, type the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> path console rs232_a.4800.7.even Return
```

For help in using the **path** command, type one of the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> help path Return
```

```
BOOT_ADMIN> help path_type Return
```

where *path_type* is one of the path types listed in D–1. The help screens offer complete descriptions of all path options.

Displaying and Setting the Real-Time Clock

It is usually a good idea to set the real-time clock in your workstation with the HP-UX **date** command, since that command contains special safeguards that can help you to avoid disruption of time-related processes (like those controlled by the **cron** command). But you may also set the clock using the Boot Admin **date** command.

NOTICE: The Boot Admin **date** command is not implemented on Model 715/64, 715/80, and 715/100 workstations.

To display the current setting of the real-time clock, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> date Return
```

Your workstation reports the information in this form:

```
Mon Jul 1 14:55:05 GMT (19:91:7:1:14:44:5)
```

To set the real-time clock, type the following at the `BOOT_ADMIN>` prompt:

`BOOT_ADMIN>` **date** *century*:*year*:*month*:*day*:*hour*:*minute*:*second* Return

For example, to set the clock to July 1, 1993, 2:44:05 PM, GMT, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> date 19:93:7:1:14:44:5 Return
```

NOTICE: The boot administration mode's **date** command only understands Greenwich Mean Time (GMT). You must compute GMT relative to your own time zone to get the correct value for *hours* (and, in some time zones, *minutes*).

Displaying and Setting the Autoselect Flag

Autoselect is a variable stored in your workstation's 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.

To examine the state of the **Autoselect** flag, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> auto Return
```

If **Autoselect** is set to **on**, when your workstation is turned on, it automatically attempts to boot the operating system. If it is set to **off**, your workstation enters the boot console user interface and a search for all potential bootable devices takes place.

To change the state of the **Autoselect** flag, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> autoselect state Return
```

where *state* is **on** or **off**.

Displaying and Setting the Secure Boot Mode

There may be circumstances in which you would not wish to allow anyone to attempt to boot your workstation from a device other than the device you have specified, nor to control the system from any console other than the one you have designated. This can be an important consideration in secure installations.

If you set up your system in such a way that it is physically impossible for unauthorized persons to disconnect it from its designated boot device, you can guarantee that the boot console user interface cannot be used to boot the system from an unauthorized device or to change the console path. If the secure boot mode is set to **on**, the boot console interface cannot be activated; thus, you are assured that your system's security cannot be compromised through interaction with that interface.

To check the status of the secure boot mode, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> secure Return
```

The value **on** or **off** is displayed.

To change the value of the secure boot mode, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> secure state Return
```

where *state* is **on** or **off**.

CAUTION: Once the secure boot mode is set to **on**, the only way to turn it off is to disconnect the boot device. When you turn on your workstation after isolating it from its boot device, the boot console interface reappears. You can then turn the secure boot mode **off**, turn off your workstation, reconnect the boot device, and turn the system back on.

Displaying and Setting the Fastboot Mode

When **fastboot** is enabled (set to **on**), your workstation does a quick check of the memory during its power-on self tests. This enables your workstation to complete its boot process quicker. The default factory setting is for **fastboot** to be enabled (**on**).

When **fastboot** is disabled (set to **off**), more extensive memory testing is performed during the self tests, causing the boot process to take significantly longer.

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

If your workstation has a large amount of memory installed, the power-on tests may take several minutes to complete with **fastboot** set to **off**.

To display the status of **fastboot**, type the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> fastboot Return
```

To disable **fastboot**, type the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> fastboot off Return
```

To enable **fastboot**, type the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> fastboot on Return
```

Displaying the LAN Station Address

The **LAN station address** of your workstation is the label that uniquely identifies the LAN connection for your workstation at the **link level** (the hardware level). It is sometimes necessary for you to supply this address to other users. For example, if your workstation is to become a member of a cluster, the cluster administrator needs to know your LAN station address in order to add your workstation to the cluster.

To display your workstation's LAN station address, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> lan_addr Return
```

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

```
LAN Station Address: 123456-789abc
```

Exiting the Boot Administration Mode

To exit the boot administration mode, take one of the following actions, depending on your need:

- Type **exit** at the `BOOT_ADMIN>` prompt. This returns you to the boot console user interface menu.
- Type **reset**. This restarts the workstation.
- Issue a **boot** command. See the section "Booting the Workstation" for details.
- Turn off the workstation. There is no need to shut down the operating system, since the workstation has not yet been booted, and the file system has not been activated.

Glossary

absolute pathname

The full pathname of a file, including all the directories leading to it, starting with the root directory ("/") and ending with the filename itself. *See also* **file, filename, pathname**.

access permissions

Settings which allow a user or group of users to read, write, or execute files. *See also* **file access permissions**.

active window

The window which is receiving input from the keyboard at the present time. If there is no active window, anything you type is lost. Only one window can be active at a time. The active window is said to have the "keyboard focus."

ANSI

The American National Standards Institute, a non-profit organization, made up of various expert committees, that publishes standards for use by national industries. ANSI has adopted the IEEE standards for local area networks.

argument

The part of a command line which identifies the file or directory to be acted on.

attachment unit interface (AUI)

A transceiver cable that conforms to IEEE 802.3 specifications.

back up

v. To make a copy of the file system on a tape or disk that can be stored separately from the original files. Also called "backing up the system" or simply "system backup."

bitmap

Generally speaking, an array of data bits used for graphic images. Strictly speaking, a pixmap of depth one, capable of representing 2-color images.

boot

Short for bootstrap service. A service provided by a short program, stored in the read-only memory of your workstation, that loads the operating system (or any complex program) into main memory. Partner workstations provide bootstrap service to diskless workstations. *See also* **boot ROM**.

boot console user interface

The interactive program that enables you to interact with the hardware of your workstation before the workstation boots the operating system. The boot console user interface allows you to perform special tasks, display information, and set certain system parameters.

boot ROM

A read-only memory that is incorporated into a workstation for the purpose of starting the operating system, testing the terminal, and producing a standard display.

bootstrap service

See **boot**.

byte

A fundamental character-code unit, usually consisting of 8 bits.

CD-ROM

Compact Disc Read-Only Memory. *See also* **CD-ROM disc**, **CD-ROM drive**.

CD-ROM disc

CD-ROM discs are identical to the audio compact discs (CDs) used to record stereo music, except that they store data. CD-ROM discs are 120 mm (4.7 inches) in diameter, and use one data surface with a capacity of 600 MB. The data surface contains pits and flat spots arranged in a continuous spiral track, which is read at a constant speed.

CD-ROM drive

A random-access, read-only, mass-storage device that uses removable CD-ROM discs. The drive contains a semiconductor laser for reading data optically and an embedded controller with a SCSI interface.

Central Processing Unit (CPU)

The part of a workstation that interprets and executes instructions.

child directory

See **subdirectory**.

click

To press *and release* a mouse button. The term comes from the fact that pressing and releasing most mouse buttons makes a clicking sound.

cluster

A group of workstations connected via a Local Area Network (LAN). One workstation, the cluster server, performs as a file-system server for the cluster clients. *See also* **cluster client, cluster node, cluster server**.

cluster client

A cluster node that does not have a local HP-UX file system. Its file system resides on the cluster server. *See also* **cluster, cluster node, cluster server**.

cluster node

A member of a group of workstations connected via a Local Area Network (LAN). One workstation, the cluster server, performs as a server to the cluster. *See also* **cluster, cluster client, cluster server**.

cluster server

A workstation which provides file access, login access, file transfer, printing, and other services across a network to a defined cluster of systems (cluster nodes) connected via a LAN. *See also* **cluster, cluster client, cluster node, host**.

command

An instruction that you enter into the system at a prompt, to execute a program or perform a task. *See also* **shell command**.

command argument

Information you provide on a command line to describe the object (usually a file or directory) to be operated on by the command.

command interpreter

A program which reads lines of text from standard input (typed at the keyboard or read from a file) and interprets them as requests to execute other programs. An HP-UX command interpreter is called a shell. *See also* **shell**.

command option

Information you provide on a command line to indicate any special action you want the command to take. *See also* **default**.

configuration

The arrangement of a workstation or network as defined by the nature, number, and chief characteristics of its functional units. More specifically, the term configuration may refer to a hardware configuration or a software configuration.

console user interface menu

A list of the actions you can perform from the boot console user interface. *See also* **boot console user interface**.

control key sequence

A keystroke combination used as a shorthand way of specifying commands. To enter a control key sequence, you hold down the control key while pressing another key.

cpu

See **Central Processing Unit.**

CRX color graphics

Expanded graphics capability offering 24-plane color, 24-plane Z-buffered color, or 48-plane Z-buffered color capability.

current directory

See **current working directory**.

current session

The work and processes that have been created since you logged into the system (and before you log out again). *See also* **session**.

current working directory

The directory in which a relative path name search begins, as well as the directory in which you are currently working. It is also called the working directory or current directory.

cursor

The small blinking box displayed in whatever screen is active at a particular time. The cursor marks your current typing position on the screen and indicates which program (HP VUE terminal window or shell) will receive your commands.

daisy-chaining

A method of connecting devices where the signal passes from one device to the next in serial fashion along a bus.

DDS-format tape drive

A device which stores data on Digital Data Storage (DDS) cassettes.

default

Most commands give you a choice of one or more options. If you don't specify an option, the command automatically assigns one. This automatic option is called the default. *See also* **command option**.

dialog box

A special type of HP VUE screen that is called by the user from a window. Dialog boxes contain controls and settings. To display an example of a dialog box, click the Style Manager button on the Workspace, then click on Color.

directory

A special type of object that contains information about the objects beneath it in the HP-UX organizational structure. Basically, it is a file that stores names and links to files and other directories. *See also* **file**.

disk

A thin, round plate with a magnetic surface coating on which data is stored by magnetic recording. *See also* **floppy diskette, hard disk, CD-ROM disc**.

disked workstation

A workstation that has its own hard disk drive. *See also* **diskless workstation, node, partner node, workstation**.

diskette

See **floppy diskette**.

diskless booting

Loading the operating system into local memory from the disk of a partner workstation.

diskless workstation

A workstation that has no disk. A diskless workstation can use the disk of its partner workstation or other workstations. If necessary, it can also use the computational services of the partner workstation or other workstations. A diskless workstation boots from its partner workstation. *See also* **disked workstation, node, partner node, workstation**.

double click

To press and release a mouse button twice in rapid succession.

drag

To press and hold down a mouse button while moving the mouse (and the pointer on the screen). *See also* **drop**.

drive

See **CD-ROM drive, DDS-format tape drive, floppy drive, hard disk drive**.

drop

To release an icon that has been "dragged" to a new position. *See also* **drag**.

environment

The conditions under which your commands are executed. These conditions include your workstation characteristics, home directory, and default search paths. *See also* **environment variables**.

environment variables

The set of defined shell variables (some of which are PATH, TERM, SHELL, EXINIT, HOME) that define the conditions under which your commands are executed. These conditions include your workstation characteristics, home directory, and default search paths. *See also* **environment**.

ETHERNET

The LAN developed jointly by Digital Equipment Corporation, Intel, and Xerox Corporation, upon which the IEEE 802.3 network is based.

Extended Industry Standard Architecture (EISA)

An industry standard bus architecture based on and compatible with that used by IBM in their AT series computers.

fast, differential SCSI-2

An 8-bit wide bus with high-power receivers and drivers, which allows a cable length of up to 25 meters and a speed of up to 10 MB per second. *See also* **fast-wide SCSI-2, single-ended standard SCSI-2, Small Computer System Interface**.

fast-wide SCSI-2

A 16-bit wide bus with high-power receivers and drivers, which allows a cable length of up to 25 meters and a speed of up to 20 MB per second. *See also* **fast, differential SCSI-2, single-ended standard SCSI-2, Small Computer System Interface**.

file

The basic named unit of data stored on disk. *See also* **directory, filename**.

file access permissions

The access rights given to a particular file or directory. Every file and directory has a set of access permissions, a code that determines whether a process can perform a requested operation on the file (such as opening the file or writing to it). *See also* **access permissions**.

File Manager

The HP VUE application that allows you to manage your files and directories, and to set viewing preferences.

file server

A workstation whose primary task is to control the storage and retrieval of data from hard disks. Any number of other workstations can be linked to the file server in order to use it to access data.

file system

The organized set of files and directories on a hard disk.

filename

The name given to a particular file. *See also* **absolute pathname, file, pathname**.

floppy diskette

A thin, record-shaped plate that stores data on its magnetic surfaces. The system uses heads (similar to heads in tape recorders) to read and write data on concentric disk tracks.

floppy drive

A device which stores data on a flexible diskette.

hard disk

A type of disk which is rigid as opposed to a floppy diskette which is flexible.

hard disk drive

A device which stores data on a hard disk. The hard disk is a permanent part of the drive and cannot be removed.

HCRX color graphics

Expanded graphics capability offering 8-plane color, 8-plane Z-buffered, 24-plane color or 24-plane Z-buffered color capability for Model 715/64 and 715/100 workstations.

Help Manager

The HP VUE application that provides online help.

$HOME

The environment variable representing the home directory. This is the directory in which you are placed after you log in. Typically, this is `/users/`*login*, where *login* is your username. *See also* **home directory**.

home directory

A shorthand way of referring to a frequently used directory, almost always the login directory.

host

See **cluster server**.

host name

See **internet protocol address**.

HP-UX cluster

See **cluster node** and **cluster server**.

HP Visual User Environment

A user interface which draws a graphical layer over the complexities of the other layers of the system (the hardware, operating system, and X Window system), enabling you to control your workstation by directly manipulating graphical objects instead of by typing commands at a command-line prompt.

HP VUE

See **HP Visual User Environment**.

icon

A small, graphic representation of an object. Objects can be "iconized" (turned into icons) to clear a cluttered workspace. Icons can be restored to their original appearance when needed. Whatever processes are executing in an object continue to execute when the object is iconized.

iconify

See **iconize**.

iconize

To turn a window or shell into an icon. *See also* **icon**.

Initial System Loader

The program that actually controls the loading of the operating system.

input device

Any of several pieces of hardware equipment used to give information to a system. Examples are the keyboard and the mouse. *See also* **output device**.

input window

The window that displays a program's prompt and any commands typed but not yet executed.

internet protocol address (IP address)

A string of characters that uniquely identifies a workstation in a network. Also referred to as the IP address, the system name, and the host name.

invisible filename

A filename in which the first character is a dot (.). Invisible filenames are not displayed by the listing commands such as **ls** and **ll** without add options, such as **-a**.

IP address

See **internet protocol address**.

ISL

See **Initial System Loader**.

kernel

The part of the operating system that is an executable piece of code responsible for managing the computer's resources. The kernel controls the rest of the operating system.

LAN

See **local area network**.

LAN station address

See **local area network station address**.

link

n. A special object that contains the name of another object. When you specify a link as a pathname or part of a pathname, the system substitutes the pathname that the link contains.

v. To join together two or more objects.

local area network (LAN)

A data communications system that allows a number of independent devices to communicate with each other. The systems and clusters which share data, hardware, and software resources via Networking Services software.

local area network station address

The label that uniquely identifies the local area network (LAN) connection for your workstation at the hardware level.

log in

To initially sign on to the system so that you may begin to use it. This creates your first user process. *See also* **username**.

login directory

The directory in which you are placed when you log in, usually your home directory. *See also* **home directory**.

Login Manager

The program that controls the initial startup of HP VUE and accepts the user's username and password.

login script

The shell program that runs at each login, and sets the login environment for your system.

menu bar

An area at the top or bottom of a window that contain the titles of the pull-down or pop-up menus for that application.

minimize button

In HP VUE, a push button on the window frame that turns a screen into an icon. *See also* **icon, iconize**.

mouse pointer

See **pointer**.

name

A character string associated with a file, directory, or link. A name can include various alphanumeric characters, but never a slash (/) or null character. *See also* **pathname**.

network

Two or more workstations sharing information. *See also* **cluster, workstation**.

network controller

A printed circuit board that passes bit streams between the network and the main memory of the workstation. Coupled with the network transceiver, the controller also handles signal processing, encoding, and network media access.

node

A network computer (workstation). Each node in the network can use the data, programs, and devices of other network nodes. Each node contains main memory and has its own disk or shares one with another node. *See also* **disked workstation, diskless workstation, workstation**.

node name

A unique identifying name given to a workstation in a cluster. *See also* **cluster, node**.

nonvolatile memory

System memory that retains its contents even after workstation power is turned off.

object

Any file, directory, or link in the network. *See also* **directory, file, link, pathname**.

operating system

The program that supervises the execution of other programs on your workstation. For example, the entire HP-UX system, including the kernel and all HP-UX commands. *See also* **kernel**.

option

See **command option**.

output device

Any of several pieces of hardware used for receiving messages from the workstation. Display screens and printers are examples of output devices. *See also* **input device**.

output window

The window that displays a process response to your command.

parent directory

A directory which contains other directories, each of which is then called a subdirectory. *See also* **subdirectory**.

partner node

A workstation that shares its disk with a diskless node. *See also* **diskless workstation**.

password

The word you enter next to the password prompt at login time. Keep your password secret and change it occasionally in order to protect your account from unauthorized use. *See also* **user account**.

path

The hardware address of a device that is attached to the I/O system of your workstation.

pathname

A series of names separated by slashes that describe the path of the operating system from some starting point in the network to a destination object. Pathnames begin with the name of the starting point, and include every directory name between the starting point and the destination object. A pathname ends with the name of the destination object. *See also* **name, object**.

permissions

A set of rights (read, write, execute) associated with an object in the file system. Determines who may use the object.

PID

Process Identification. Also referred to as a process ID. *See also* **process ID**.

pointer

Sometimes called the "mouse pointer," the pointer shows the mouse location on the screen. The pointer's shape depends on its location. In the HP VUE Workspace, the pointer is an X. On a window frame, the pointer is an arrow.

process

A computing environment in which you may execute programs; a program currently running in the system.

process ID

A unique identification number assigned to all processes by the operating system. Also referred to as a PID. *See also* **PID**.

program

A unit of executable code, in binary or "source" form. Most HP-UX commands and routines consist of programs.

prompt

A message or symbol displayed by the system to let you know that it is ready for your input.

push button

A graphic control that simulates a real-life push button. Use the pointer and mouse to push the button and immediately start an action.

RAM

Random access memory.

ROM

Read-only memory.

root

See **superuser**.

scroll bar

A vertical or horizontal bar located on the side or bottom of a window which allows the user to view information which does not fit within the window.

SCSI-2

See **Small Computer System Interface**.

server

A program that controls all access to input and output devices.

session

The time between when you log in and when you log out. Also called a work session or a login session. *See also* **current session**.

shell

A command-line interpreter program used to invoke utility programs. Some examples of HP-UX shells are the Bourne, Korn, Key, and C shells. Sometimes referred to as a command interpreter. See also **command interpreter**.

shell command

An instruction you give the system to execute a utility program or shell script. *See also* **shell script, utility program**.

shell script

A file that contains commands that the system can interpret and run in a shell.

shutdown

The process of taking the system from multi-user state to system administration state.

SIMM

See **Single In-line Memory Module**

single-ended standard SCSI-2

An 8-bit wide SCSI bus with standard receivers and drivers, which limits total cable length to 6 meters. *See also* **fast, differential SCSI-2, fast-wide SCSI-2, Small Computer System Interface**.

Single In-line Memory Module

A memory board.

slider

One of the components of a scroll bar. The slider is the object that is dragged along the scroll area to cause a change.

Small Computer System Interface (SCSI)

An IEEE standard for interfacing a computer to multiple, disparate high-speed peripherals such as a floppy disk or a CD-ROM, singly or in combination. *See also* **fast, differential SCSI-2**, **fast-wide SCSI-2, single-ended standard SCSI-2**.

standalone

A workstation that is not part of a cluster. *See also* **cluster**.

Style Manager

The HP VUE application that provides the ability to customize various aspects of your system, including colors, fonts, the keyboard, the mouse, session startup and termination behavior, and access to other workstations.

subdirectory

A directory that is located in, or anywhere on a path below, another directory. The directory above the subdirectory is called the parent directory. The subdirectory is also referred to as the child directory. *See also* **parent directory**.

superuser

A user with permission to enter the top-level directory and make changes to files and programs that users are not allowed to change. To "become superuser" or "become **root**" means to let the system know that you are now assuming the role of system administrator. You can do this either by logging into the system as **root**, or by typing **su** at a command-line prompt.

system administrator

The person responsible for system and network installation, updating, maintenance, and security at your site.

system call

Invocation of a kernel process by a user program.

system name

See **internet protocol address**.

terminal window

A terminal window is a type of HP VUE window that emulates a complete display terminal. Terminal windows are typically used to fool non-client programs into believing they are running in their favorite terminal. When not running programs or executing operating system commands, terminal windows display the command-line prompt. *See also* **HP Visual User Environment**.

title bar

The rectangular area between the top of the window and the window frame, that contains the title of the window object.

transceiver

A device that transmits and receives signals.

user account

The system administrator defines a user account for every person authorized to use the system. Each user account contains the name the computer uses to identify the person (user ID), and the person's password. User accounts also contain project and organization names, to help the system determine who can use the system and what resources each person or organization can use. *See also* **user ID** and **password**.

user ID

The name the computer uses to identify you. Your system administrator assigns you a user ID. Enter your user ID during the login procedure when the system displays the login prompt. *See also* **user account**.

username

The name that the system recognizes as uniquely yours. Also known as your login name. The username is also the name that identifies you to the mail system and other software requiring secure entry.

utility

See **utility program**.

utility program

A program provided with the operating system to perform a frequently required task, such as printing a file or displaying the contents of a directory. *See also* **command, shell command**.

window

A rectangular area of the screen for viewing information. HP VUE allows you to create several types of windows on the screen. Each window is a separate computing environment in which you may execute programs, edit text, or read text. *See also* **Workspace Manager**.

Window Manager

The HP VUE program that controls the size, placement, and operation of windows.

working directory

See **current working directory**.

Workspace

What the screen becomes when you start HP VUE. Although you can hide the workspace under terminal windows or other graphic objects, you can never position anything behind the workspace. All windows and graphic objects appear stacked on the workspace. *See also* **HP Visual User Environment, terminal window**.

Workspace Manager

The program that controls the size, placement, and operation of windows on the HP VUE Workspace. The Workspace Manager is a special Window Manager. *See also* **Window Manager**.

workstation

A compact, graphics-oriented computer having high speed and high memory capacity. A workstation usually includes a keyboard, a monitor, and a system unit. *See also* **node, disked workstation, diskless workstation**.

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