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HP 9000
Series 700

Model 735 Owner's Guide

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HP 9000 Series 700
Model 735
Owner's Guide

HEWLETT
PACKARD

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Preface

This owner's guide describes how to use your HP 9000 Series 700 Model 735 workstation.

This manual assumes that you have installed your workstation as described in the *HP Apollo 9000 Series 700 Model 735 Hardware Installation Guide.*

Audience

This guide is intended for use by users of HP 9000 Series 700 Model 735 workstations.

Safety and Regulatory Statements

See Appendix A in the back of this manual for the safety and regulatory statements that apply to HP 9000 Series 700 Model 735 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.

Revision History

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

Edition	Revision History
E1192	Original Release.
E0394	Added information on the Model 735/125.

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.

Related Manuals

For more information, refer to the following manuals:

- *HP Apollo 9000 Series 700 Model 735 Hardware Installation Guide* (A2095–90600)
- *HP Visual User Environment User's Guide* (B1171–90061)
- *HP VUE Quick Start Guide* (B1171–90062)
- *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)

To order manuals, please contact your local sales office.

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 735 workstation. Its purpose is to familiarize you with your workstation and 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
- Understanding the LEDs
- System unit rear panel connectors
- Monitor controls, connectors, and indicators
- Operating system overview
- Networking overview

Product Description

The Model 735 is a high–performance, PA-RISC–based workstation that is designed to run the HP–UX operating system.

The Model 735 workstation houses up to two internal mass storage devices connected to one of two internal SCSI interfaces: *single–ended* or *fast/wide*. With the single–ended interface, the workstations have their hard disk drive bay fitted with either a 525–MB or 1–GB hard disk drive. The second disk bay may be fitted with either a 3.5–inch floppy drive or a 525–MB or 1–GB hard disk drive. With the fast/wide interface, the workstations have their hard disk drive bay fitted with either one or two 1–GB hard disk drives. Hard disk drives are pre–formatted.

The Model 735 workstations contain the following key features:

- Operating System — Native HP–UX
- User Interface — HP VUE graphical user interface
- Compatibility — Source and binary code compatible with Series 700 product family
- Graphics Options — 19–inch 1280 x 1024 8–plane color
19–inch 1280 x 1024 24–plane color
Dual 19–inch 1280 x 1024 24–plane color
19–inch 1280 x 1024 24–plane Z–buffered color
19–inch 1280 x 1024 48–plane Z–buffered color
19–inch 1280 x 1024 8–bit grayscale
- Main Memory — 32 MB (16 MB on–board CPU, non–removable)
Up to 400 MB, removable memory cards
- Mass Storage — 3.5–inch SCSI hard disk drive
Optional second hard disk drive
Optional 3.5–inch flexible disk drive (single–ended)

- Network
  Thin LAN, or
  LAN AUI, or
  FDDI
- I/O
  Two 9–pin RS–232 ports
  One 25–pin HP parallel port
  8–bit, single–ended SCSI–2 interface
  16–bit, fast/wide SCSI–2 interface
  HP–HIL port for HP–UX keyboards and other HP–HIL devices
  CD–quality audio and speaker output
  CD–quality microphone or audio input
- Audio Features
  Programmable sample rates:
  8 kHz, 16 kHz, 32 kHz, 48 kHz,
  11.025 kHz, 22.05 kHz, 44.1 kHz
  Programmable output attenuation
  0 to –96 dB in –1.5 dB steps
  Programmable input gain
  0 to 22.5 dB in 1.5 dB steps
  Input monitoring
  16–bit linear, 8–bit μ–law or A–law coding
- Audio Inputs
  Line–in
  Mono microphone with 1.5 V phantom supply
- Audio Outputs
  Line–out
  Headphone
  Mono speaker jacks
  Built–in mono speaker
- Audio CODEC
  Crystal CS4215

System Unit Controls

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

Figure 1–1 shows the Power switch and the Power LED.

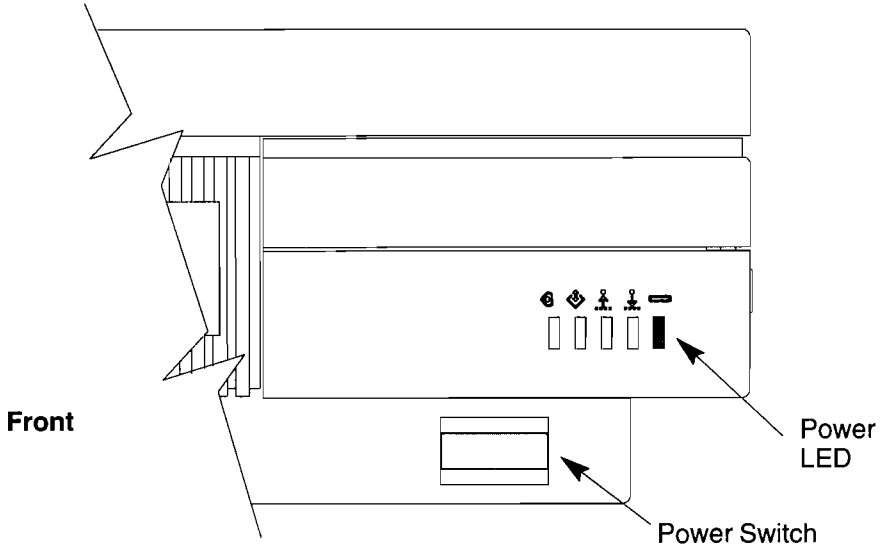


Figure 1–1. Power Switch Location

Power Switch

Use the power switch to power the system unit on and off.

Power LED

The power LED lights green when the system unit is powered on.

Figure 1–2 shows the location of the TOC (Transfer Of Control) and Service/Normal Mode switches. These switches are located behind a hinged cover on the front of the system unit.

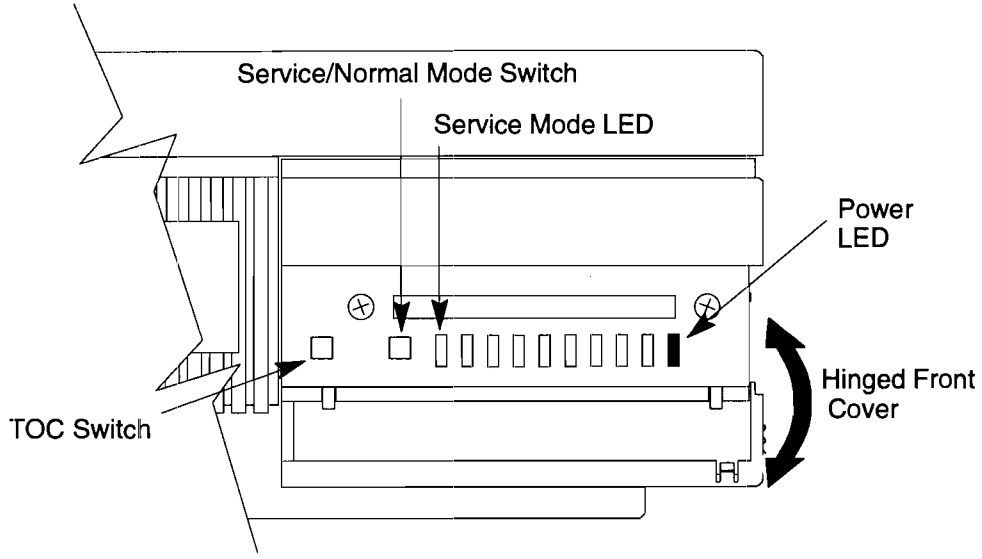


Figure 1–2. TOC and Service/Normal Mode Switch Locations

TOC Switch

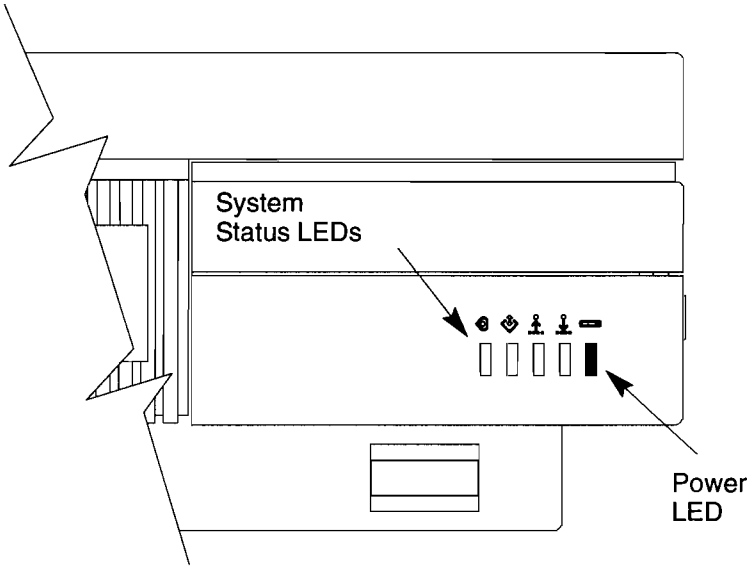
Use the TOC switch to reset the operating system. Do not push the TOC switch unless you have first shutdown your system, as described in Chapter 2 or Chapter 3.

Service/Normal Mode Switch

The default position for the Service/Normal mode switch is the Normal position. Service mode is used only during manufacturing.

Understanding the LEDs

There are nine Light–Emitting Diodes (LEDs) on the system. Five are visible from the front of the system unit when the hinged door is closed, as shown in Figure 1–3. The green LED on the far right is the Power LED. It lights when the system unit power is on. The remaining four amber LEDs show that the system is running the operating system and communicating over the network.



Front (Hinged Door Closed)

Figure 1–3. System LEDs

If you open the hinged door, there are four additional amber LEDs (as shown in Figure 1–4). These LEDs help you to troubleshoot the workstation by coming on in certain patterns during system failures (see Chapter 6).

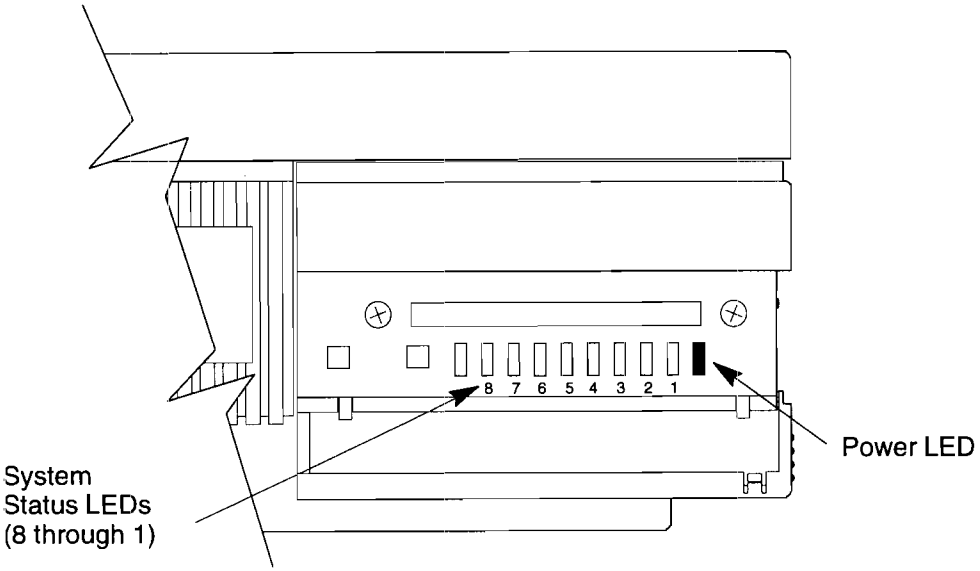
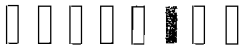


Figure 1–4. Troubleshooting System LEDs

Table 1–1 lists how the four system 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	Symbol	Meaning
8 7 6 5 4 3 2 1		
		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 four main I/O subsystems on the system unit's rear panel:

- System I/O Connectors
- Graphics I/O Connectors
- SCSI I/O Connectors
- EISA I/O Connectors

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

Figure 1–5 shows all the connectors on the system unit's rear panel.

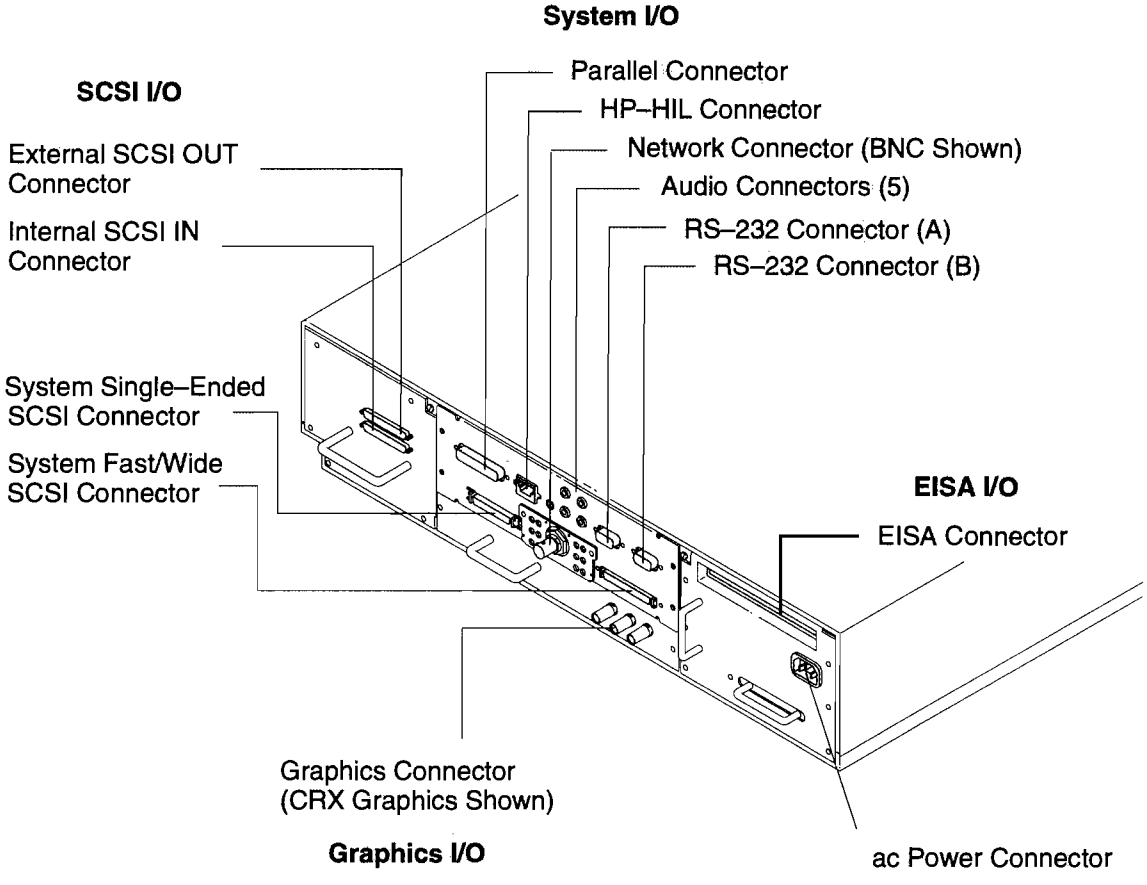


Figure 1–5. Rear Panel Connectors

System I/O Connectors

- HP–HIL connector
- HP parallel I/O connector
- 802.3 network connectors
- RS–232 serial input/output connectors
- Audio connectors

HP–HIL Connector

The onboard Hewlett–Packard Human Interface Link (HP–HIL) port provides support for 2 standard and 5 optional HP–HIL devices. The (two–dot) HP–HIL connector on the bulkhead supports the standard HP–HIL keyboard. The keyboard provides an HP–HIL connector for the standard HP–HIL 3–button mouse. Consult the documentation that accompanies each input device for specific information concerning its use.

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. The HP Parallel connector is covered with an EMI shield that must be removed to use the connector. Pry the shield off with a small flat–blade screwdriver.

Network Connectors

The system provides a connector for LAN through a removable daughter card of the system I/O board. Three LAN options are available: an AUI BNC connector for a ThinLAN IEEE 802.3 network, an AUI external connector for a MAU to an IEEE 802.3 network, or a connector for an FDDI network.

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, modems, 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 A and B are used as interfaces for serial asynchronous devices to the CPU. Both ports operate at up to a 19.2 K baud rate. The interface to SIO A and B is by way of RS–232 drivers and receivers.

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

Audio Connectors

Your workstation has audio input and output capability through external input and output connectors and an internal speaker. A microphone for audio input is not supplied with your workstation. The audio connectors are standard audio mini–jacks. 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.

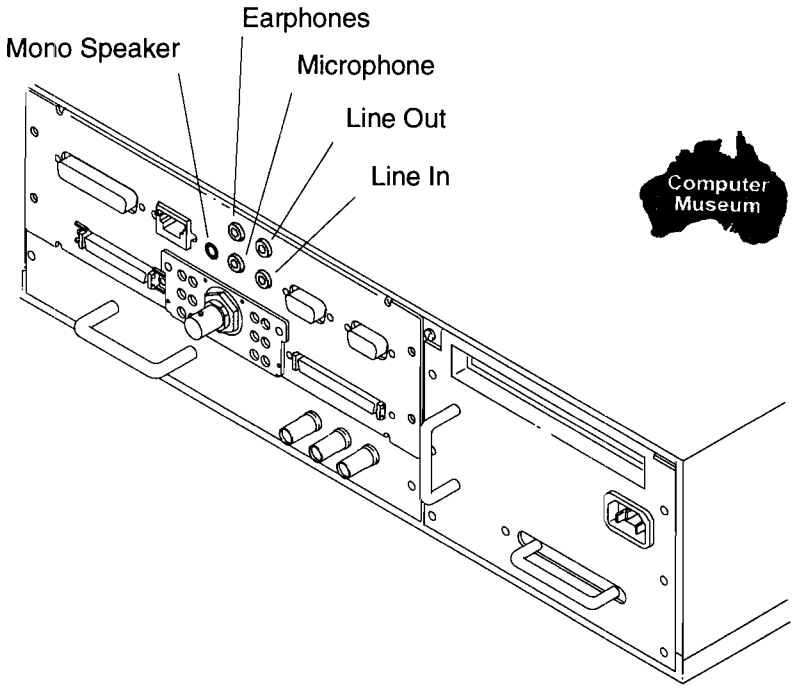


Figure 1–6. Audio Connectors

SCSI I/O Connectors

The system contains four (4) SCSI connectors:

- External SCSI OUT Connector
- Internal SCSI IN Connector
- System Single–Ended SCSI Connector
- System Fast/Wide SCSI Connector

See Appendix C for more information about connecting SCSI devices to these connectors.

The SCSI connector that is not used for internal disk drives is covered with an EMI shield that must be removed to use the connector. Pry the shield off with a small flat–blade screwdriver.

NOTICES: When attaching external SCSI devices, be sure to terminate the last device on the external SCSI bus. If no external SCSI devices are attached, the SCSI terminators that shipped with the workstation should be connected to the external SCSI connectors.

HP does not provide maintenance for SCSI devices not sold by HP. For a list of SCSI devices that are sold by HP, contact your sales representative.

Graphics I/O Connector

If your computer system includes a bitmapped display, you will find the bulkhead for a graphics device just below the I/O bulkhead. If your system is a server, it will not have a graphics device at this location.

Your system has one of the following three types of graphics devices:

- Color graphics card — This type of device has three BNC connectors (one each for red, blue, and green). These are connected by a cable to three similar connectors on the color monitor.
- Grayscale graphics card — This type of device has one BNC connector. This is connected by a cable to a similar connector on a grayscale monitor.
- Graphics interface card — This type of device has a special connector. It is connected to an external graphics processor, which in turn is connected to a video display monitor.

EISA I/O Connector

The workstation has a one–slot EISA (Extended Industry Standard Architecture) I/O port on the rear panel. EISA 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. Consult the documentation that accompanies each device for specific information concerning its use.

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 V–STAT control adjusts the vertical color convergence on the Model A2094.
- The H–STAT control adjusts the horizontal color convergence on the Model A2094.
- The V–CENT control adjusts vertical centering of the display on the Model A2094.
- 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.

The following figures illustrate the monitors for your workstation.

Figure 1–7 shows the 19–inch color monitor.

Figure 1–8 shows the 19–inch grayscale monitor.

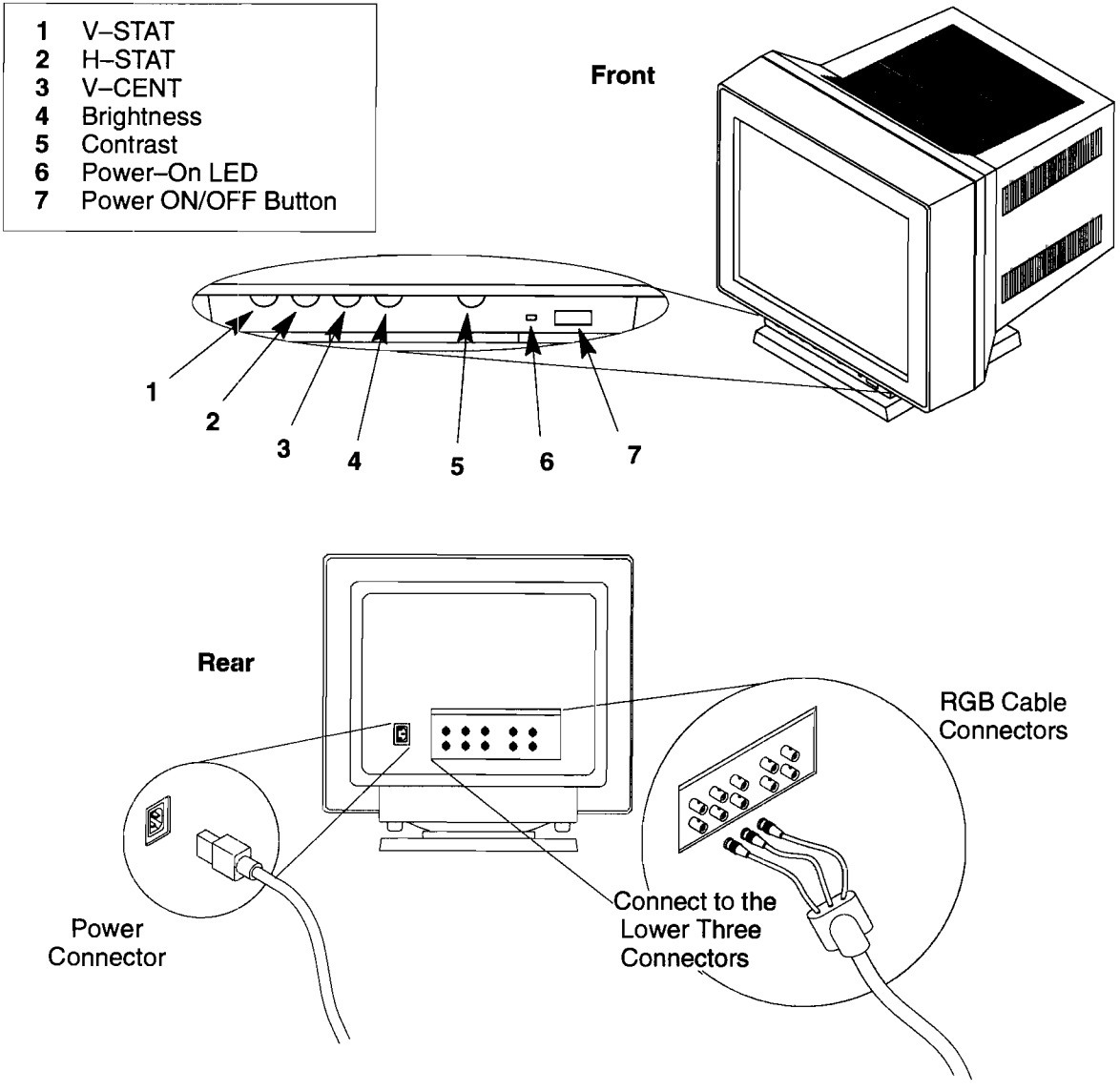


Figure 1–7. 19–Inch Color Monitor (Model A2094)

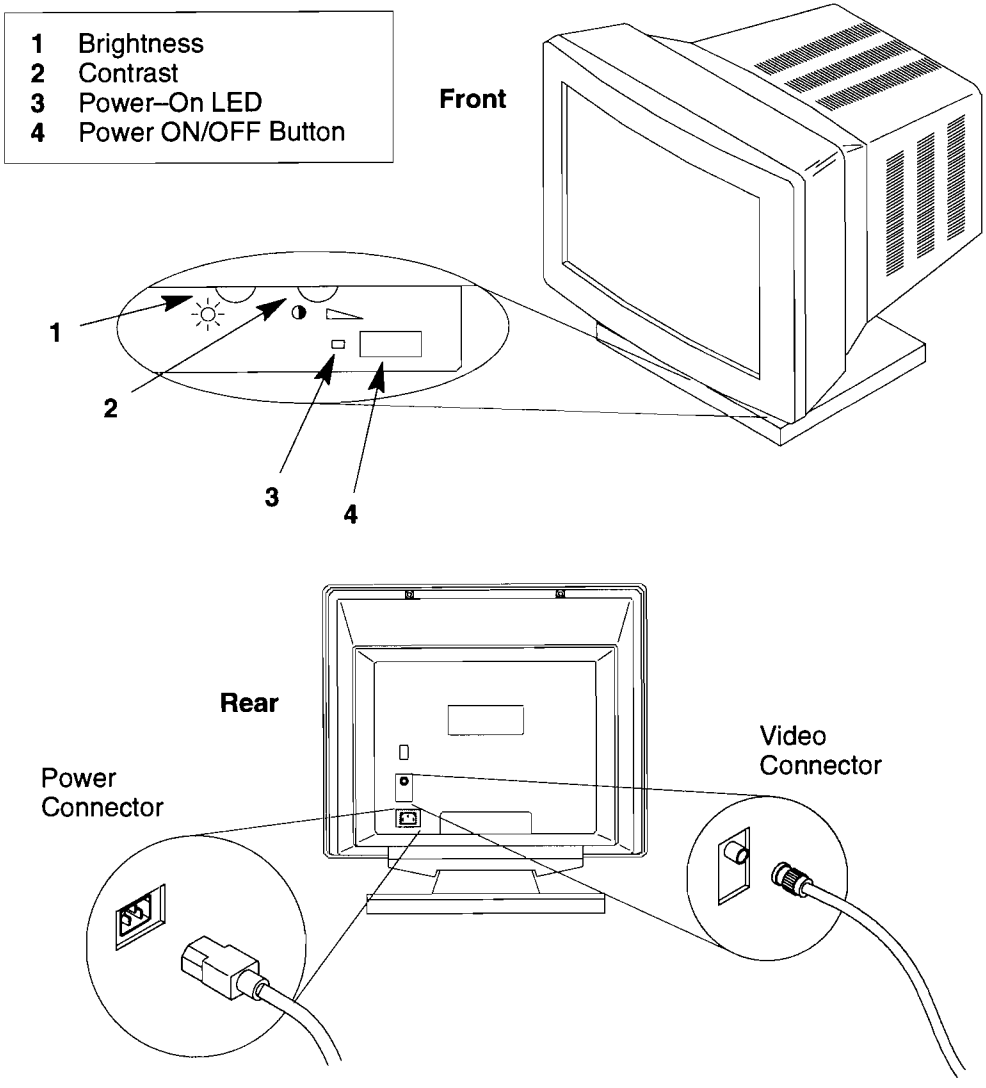


Figure 1–8. 19–Inch Grayscale Monitor (Model A2088A)

Keyboards

There are two types of Hewlett–Packard 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)

CAUTION: Use only devices that conform to the HP–HIL specification with Hewlett–Packard computer systems. Devices that are not HP–HIL compatible but have similar connectors may appear to be compatible, but will damage your system.

Keyboard Differences

Aside from the obvious difference in the appearance of the ITF and PC 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 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 two keyboards. Table 1–3 compares the equivalent keys of the ITF and PC keyboards.

NOTICE: Keyboard keys not mentioned in Table 1–3 are the same on both keyboards.

Table 1–3. PC Keyboard to ITF Keyboard Equivalent Keys

PC 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**
No Equivalent	**Print / Enter**
No Equivalent	, (number pad)
No Equivalent	**Tab** (number pad)

(Continued)

Table 1–3. PC Keyboard to ITF Keyboard Equivalent Keys (cont.)

PC Keycap Symbol	ITF Keycap Symbol
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 735 workstation uses the HP–UX operating system, version 9.01 or later, or version 9.03 or later for Model 735/125. 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.

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).

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

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

Networking Overview

Your 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 source 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 HP–UX HP 9000 Workstations* 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 HP–UX HP 9000 Workstations* 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 HP–UX HP 9000 Workstations* 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 HP–UX HP 9000 Workstations* 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 the *Using HP–UX HP 9000 Workstations* manual that came with your workstation.

Chapter 2
Getting Started Using HP VUE

This chapter introduces you to your workstation, HP–UX and the Hewlett–Packard Visual User Environment (HP VUE) by explaining the following tasks:

- Starting up your workstation for the first time
- Starting up your workstation
- Logging in to your workstation
- The HP VUE workspace
- Creating a new user account
- Changing your password
- Logging out from your workstation
- Shutting down your workstation

NOTICES: Use this chapter if your workstation is running HP VUE.

If your system does not have HP VUE installed, go to the next chapter entitled "Getting Started Using the HP–UX Command Line Shell."

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

Starting Up Your Workstation for the First Time

This section describes the procedure for starting up your workstation for the first time after the initial hardware installation. If this is not the first time your workstation has been started up, go to the "Starting Up Your Workstation" section later in this chapter.

If your workstation has preloaded software (the HP–UX operating system is loaded on the hard disk at the factory), it is shipped with a yellow sticker covering the system's power switch. Follow the instructions in this section to start up a workstation with preloaded software for the first time after the initial hardware installation.

If your workstation does not have preloaded software and you ordered the HP–UX software separately, refer to the manual *Installing and Updating HP–UX* for instructions.

If your system does not have a hard disk installed, or if it has a hard disk installed and you want your workstation to be a cluster client node (cnode), refer to the *Managing Clusters of HP 9000 Computers: Sharing the HP–UX File System* manual for instructions on setting up clusters and cnodes.

When you turn on your workstation for the first time, you are asked for some information about your system. If you do not have the information, you may press the Return key. HP–UX uses its default value for that question.

Before you start, you should know the following information:

- The *system name* of your computer. (This is sometimes called the *host name*.) The system name cannot exceed eight characters in length. Obtain a system name from your system administrator.
- If you are connecting your system to a local area network, you also need to know the *Internet Protocol address* (*IP address*) of your computer. This is a four–element code that uniquely identifies your computer among all those located on your network (or any other network). Obtain this address from your system administrator.
- The *time zone* where your computer is located.

Use the following instructions to start up your workstation:

1. Push in the power switch on the monitor. The power LED lights up to indicate that the power is on.

2. Turn on the power to any external peripherals.

3. Push in the power switch on your workstation. The power LED lights up to indicate that the power is on.

4. You are prompted for information about your workstation. Enter this information as it is requested. If you do not have the information when prompted for it, press the Return key:

   You can provide the information later by executing the following command from a terminal window:

   /etc/set_parms Return

   The system will also ask if you want to set a root password. You should set a password for the root account at this time. If you choose not to select a root password, you may do so later as described in the "Changing Your Password" section later in this chapter.

   When you have finished answering the questions, the system finishes its boot sequence and the login window opens. See the section entitled "Logging In to Your Workstation" later in this chapter for instructions on logging in.

Starting Up Your Workstation

This section describes the procedure for starting up your workstation. If this is the first time that your workstation has been started up since the initial hardware installation, go to the "Starting Up Your Workstation for the First Time" section earlier in this chapter.

Use the following instructions to start up your workstation:

1. Push in the power switch on the monitor. The power LED lights up to indicate that the power is on.

2. Turn on the power to any external peripherals.

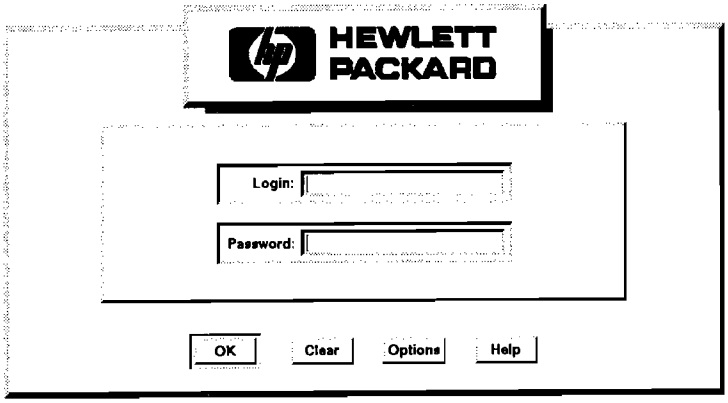
3. Push in the power switch on your workstation. The power LED lights up to indicate that the power is on.

   After two or three minutes, many messages appear on your screen. These messages convey information about the various hardware and software subsystems that are being activated by the boot process. Unless something is wrong with your system, you are not asked to respond to any of these messages.

   The login window opens. See the next section entitled "Logging In to Your Workstation" for instructions on logging in.

Logging In to Your Workstation

After your workstation has successfully booted HP–UX and started HP VUE, the following **Login** window opens:



If this window does not appear, see Chapter 6, "Solving Problems."

1. The first time you log in, you must log in as **root**. To log in as **root**, type the following in the **Login:** box:

   root Return

   If this is not the first time you have logged in, type your username in the **Login:** box.

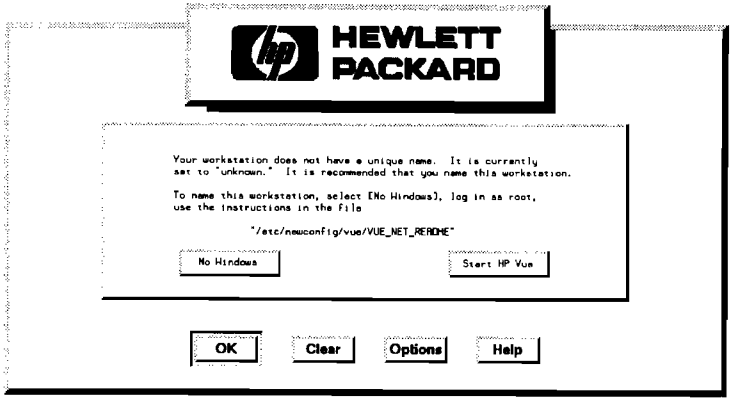
   If you don't have a username yet, ask your system administrator to assign you a personal username account or follow the instructions in the section entitled "Creating a New User Account," later in this chapter. Until you get a username account, you may log in as **root**.

2. If a password has been set for **root**, or if you are logging in with your own username, you must enter the correct password in the **Password:** box at this time. The password is secret and does not appear on the screen.

If the copyright notice appears on your screen followed by the HP VUE workspace, you are now logged in. Skip Step 3.

If a window opens over your login window cautioning you about your workstation's hostname being **unknown**, start HP VUE as described in Step 3.

3. If the following window opened over your login window:



Move your mouse pointer to Start HP VUE and click the left mouse button.

NOTICE: If your system's hostname is unknown, at some later time you should run the program **/etc/set_parms** or contact your system administrator to set a hostname.

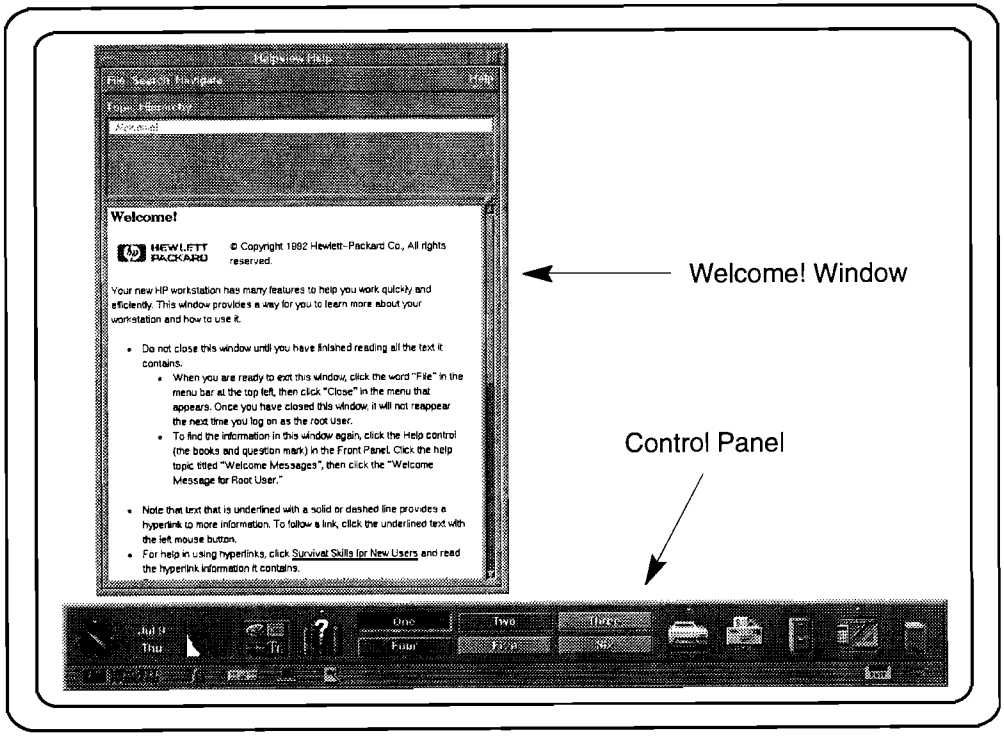
The copyright notice appears on your screen followed by the HP VUE workspace. You are now logged in.

The HP VUE Workspace

This section gives an overview of the HP VUE environment. For more information on using HP VUE, refer to the *HP Visual User Environment User's Guide*.

After you log in, an HP VUE workspace, similar to the following, opens. There is a **Welcome!** window and the **control panel**.

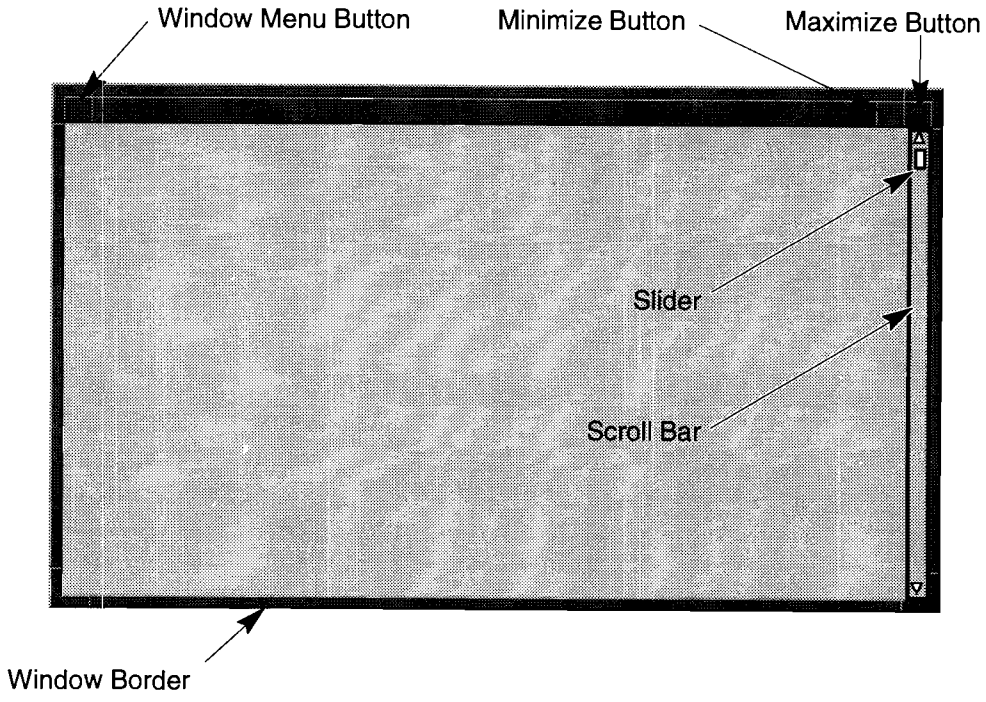
NOTICE: Your initial HP VUE workspace may look slightly different from the one shown.



Understanding HP VUE Windows

This subsection describes some features of windows in the HP VUE environment.

All windows in HP VUE have some characteristics in common. All windows have a **Window Menu Button**, a **Minimize Button**, a **Maximize Button**, and a **Window Border**. Some windows may also have a **scroll bar** on the side or along the bottom. The following illustration shows where each of these window features is located.



Window Menu Button — The **Window Menu Button** creates a menu list from which you can choose a window control action. If you move the mouse pointer to the **Window Menu Button** and press and release the left mouse button once (*single–click*), a **Window Menu** opens with a list of choices. To select a choice from the menu, move the mouse pointer to the desired menu selection and single–click the left mouse button. To close the **Window Menu** without making a selection, move the mouse pointer outside of the window and single–click the left mouse button.

Minimize Button — The **Minimize Button** changes a window into an **icon**. (An **icon** is a small picture.) When you minimize a window, whatever process is running in that window keeps running, even though you can't see its progress.

To minimize a window, move the mouse pointer to the window's minimize button and single–click the left mouse button. The window closes and a small icon opens on your HP VUE workspace. To get the window back from an icon, place the mouse pointer on the icon, then quickly press and release the left mouse button twice. (This is called *double–clicking*.) The icon closes and the window reopens.

Maximize Button — The **Maximize Button** changes the size of the window so that it fills the entire workspace. To maximize a window, move the mouse pointer to the window's maximize button and single–click the left mouse button. The window grows. Single–clicking on the maximize button again restores the window to its original size.

Window Border — The **Window Border** has two purposes: to size the window and indicate whether or not the window is the active window.

- To **size a window**, move the mouse pointer to a spot on the window border. The mouse pointer changes to an arrow that points either up, down, left, right or in one of the four possible diagonal directions, depending upon where on the window border the mouse pointer is placed. Press and hold the left mouse button. Move the mouse in the direction of the arrow. An outline appears. Move the mouse until the outline is the appropriate size. Release the mouse button and the window grows or shrinks to the selected size.

- In the HP VUE environment, one window is always the **active window**. The active window is the one which is receiving input from the keyboard at the present time. When a window is the **active window**, it has a different border color than the other windows on the display.

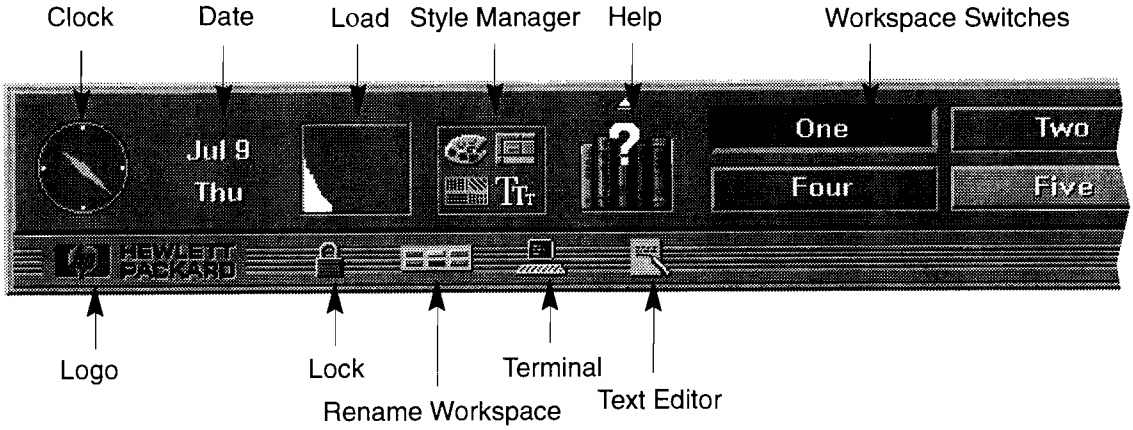
  To make a window the **active window**, place the mouse pointer anywhere inside of the window and single–click the left mouse button.

Scroll Bar — A **scroll bar** appears on a window that contains more information than will fit in the window. If there is a vertical scroll bar on the right side of a window, there is more information either above or below the information that is currently displayed in the window. If there is a horizontal scroll bar along the bottom of the window, there is more information either to the left or the right of the information that is currently displayed in the window.

Use the **scroll bar** to view the rest of the window's information by moving the mouse cursor to the **scroll bar slider**. Press and hold the left mouse button and move the mouse until more information scrolls into the window. When the information you wish to view is visible, release the left mouse button.

Understanding the HP VUE Control Panel

This section describes the HP VUE **control panel** buttons and their features.



Clock — The **clock** display shows the current workstation time.

Date — The **date** display shows the current workstation date.

Load — The **load** display shows workstation activity. This is actually an application displaying a window in the **control panel**.

Style Manager — The **style manager** button starts up the **style manager** which allows you to change your display's appearance, and allows you to change the system device behavior (the speed necessary to double–click your mouse, for example).

Help — The **help** control starts up the **help manager** which provides online help.

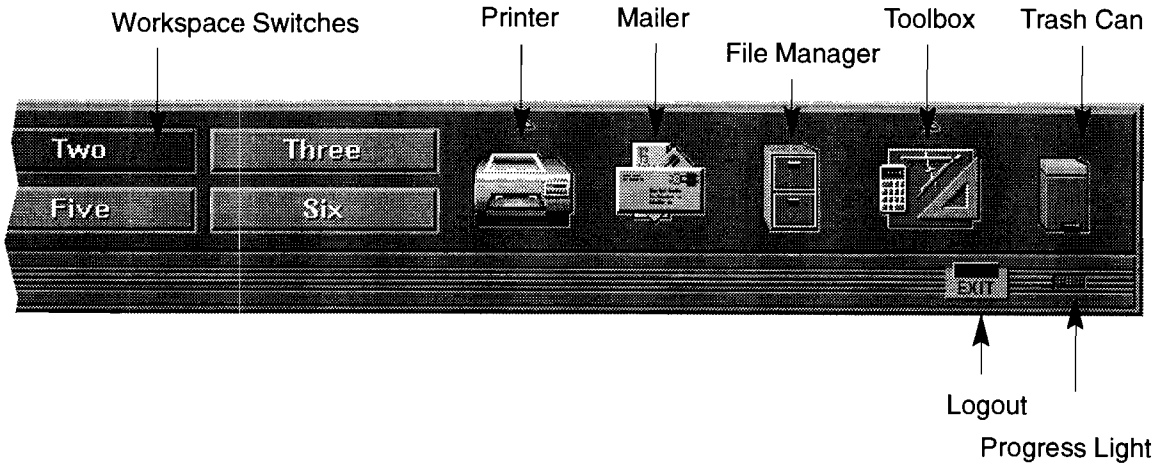
Logo — The **logo** control allows you to see HP VUE version information.

Lock — The **lock** control allows you to lock your workstation, preventing unauthorized input.

Rename Workspace — The **rename workspace** button displays a dialog box that allows you to rename a workspace.

Terminal — The **terminal** control starts up a terminal window, providing access to a command–line prompt.

Text Editor — The **text editor** control starts up the **text editor**. This button is also a drop zone that accepts a file icon dragged from a file manager window.



Workspace Switches — The **workspace switches** allow you to select another workspace.

Printer — The **printer** control allows you to display printer job status on the system default printer. This button is also a drop zone that accepts a file icon. The **printer** sub panel can be configured for printers other than the default.

Mailer — The **mailer** control starts up your electronic mail application. This button is also a drop zone that accepts a file icon.

File Manager — The **file manager** control starts up a **file manager** window showing your home directory.

Toolbox — The **toolbox** control opens your **personal toolbox**. The **toolbox** sub panel opens other toolboxes that contain actions and utilities.

Trash Can — The **trash can** control allows you to display the contents of the trash can. This button is also a drop zone that accepts a file icon.

Logout — Clicking on the **logout** control begins the logout process.

Progress Light — The **progress light** blinks to indicate an activity in progress, such as a new window opening.

Using the HP VUE Workspace

This subsection describes how to perform a few basic tasks in the HP VUE Workspace.

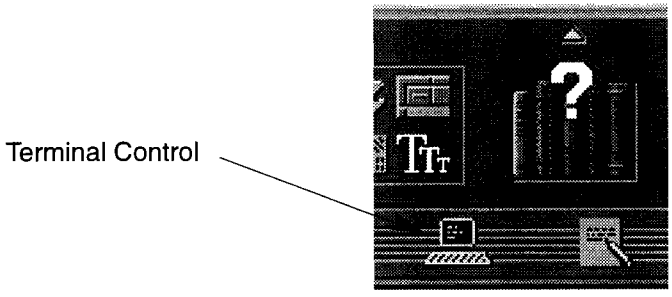
1. Read and explore the information in the **Welcome!** window, then continue with Step 2 below.

2. Close the **Welcome!** window by placing the mouse cursor on the window's **menu button** and double–clicking the left mouse button.

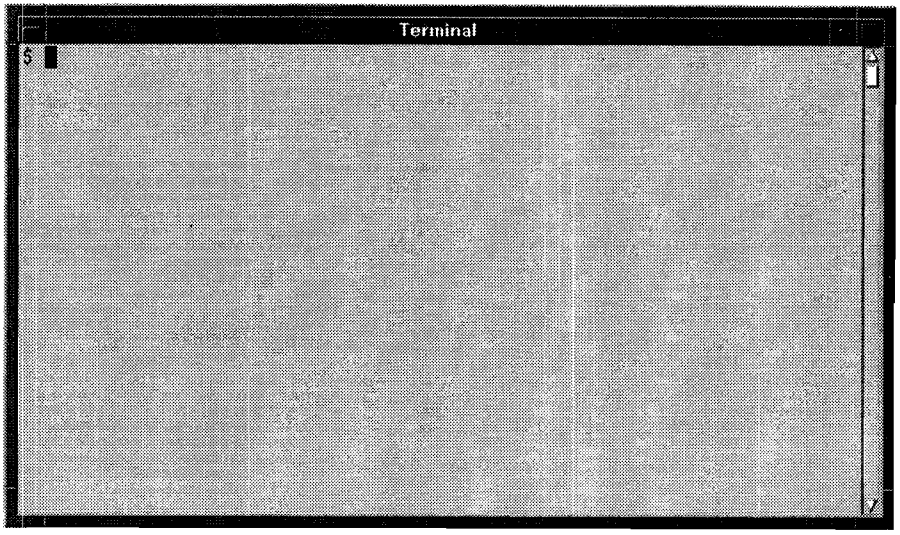
3. **Terminal windows** are like user terminals connected to your system. Enter keyboard commands to execute programs and control your workstation in a **terminal window**.

   Always use a terminal window to enter commands from the keyboard. You may have several terminal windows open at the same time and execute commands in each terminal window separately.

   To create a terminal window, move the mouse pointer to the **terminal control**. (The **terminal control** is the icon on the control panel that looks like a computer terminal, as shown in the following illustration.) Click the left mouse button once. A terminal window opens.



4. Place the mouse pointer anywhere in the new terminal window and single–click the left mouse button to make it the active window. The border of the window changes color to indicate that it is now the active window. Enter your commands from the keyboard.



5. To display the revision level of HP–UX your system is running, enter the following in your terminal window:

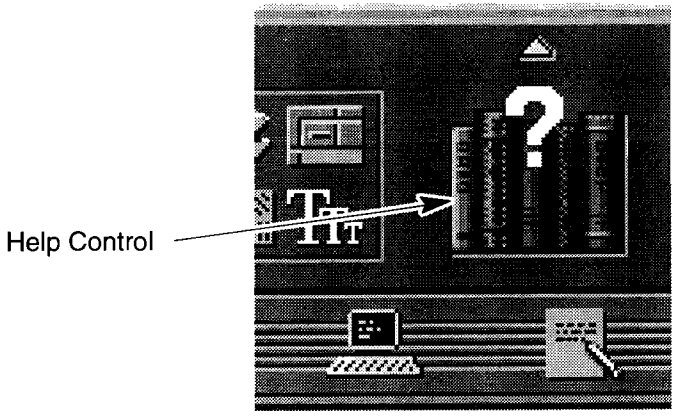
```
uname -r Return
```

6. Close the terminal window by double–clicking its window menu button.

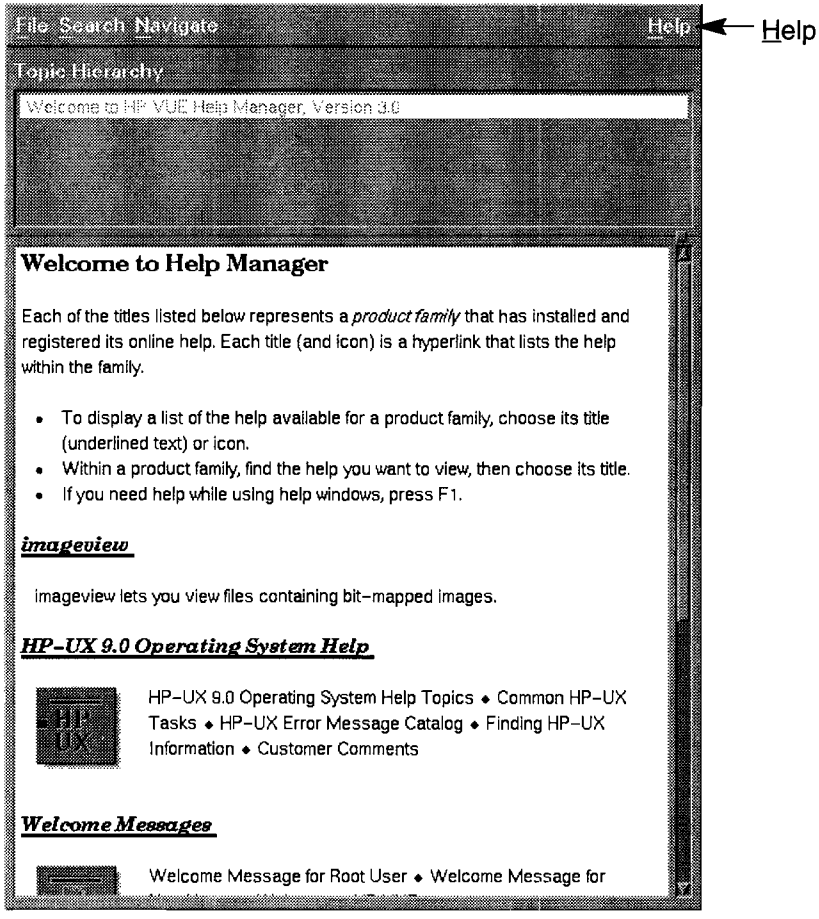
Using the HP VUE Online Help

This subsection describes how to get to the help system.

1. Move the pointer to the **help control**, which is the icon on the control panel with a question mark (?). Single–click the left mouse button once.



2. The **Help** window opens. Click on **Help** in the upper right hand corner of the window for help on using the help system.



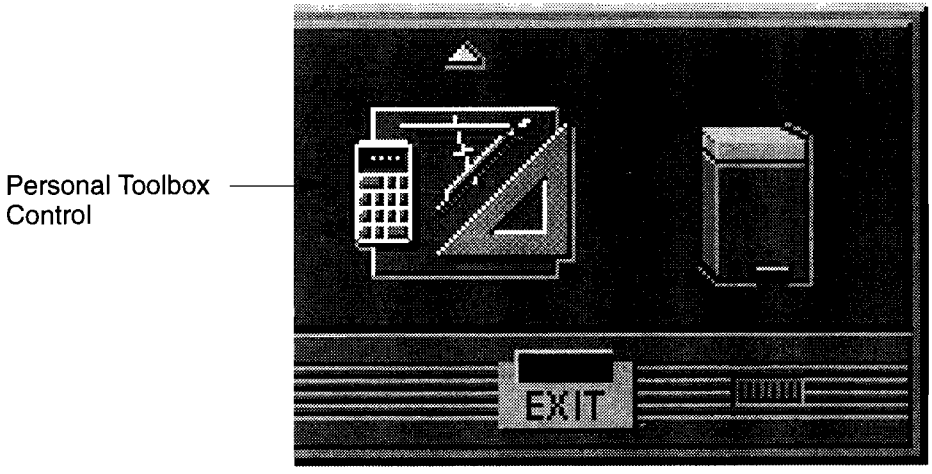
3. To close the help window, place the mouse cursor on its window menu button and double–click the left mouse button. The window closes.

Creating a New User Account

A new user account is created with a system utility called SAM (System Administration Manager). Follow the instructions in this section to create a new user account.

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 your mouse pointer 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 **Users and Groups** –>

5. The **Users and Groups** window opens. Double–click on the line labeled **Users**

6. The **Users** window opens. At the top of the window is a list. Single–click on **Actions**

7. A menu opens below the word **Actions**. Single–click on **Add...**

8. A window opens. Single–click on the box labeled **Login Name:** Then type the name for the new user account and press Return

9. Single–click on OK

10. A password window opens. Single–click the box labeled **Password:**, then type the login password for the new user account and press Return

NOTICE: A password must contain at least six characters. One of those characters must be a number, a dash (–), or an underline (_).

CAUTION: Make sure you do not forget the password you use. If you forget a user account password, log in as **root** and set a new password with the SAM utility or contact your system administrator.

11. Single–click on OK

12. You are requested to re–enter the password. Single–click the box labeled **Password:**, then re–enter the password **exactly** as you entered it the first time.

13. Single–click on OK

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

```
Task Completed
```

Single–click on OK

15. At the top of the window is a list. Single–click on **List**

16. A menu opens below the word **List**. Single–click on **Exit**

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

17. In the main **SAM** window, single–click on Exit SAM

The **SAM** window closes.

18. Double–click the window menu button in the upper left corner of the **PersonalToolbox** window. The window closes.

Changing Your Password

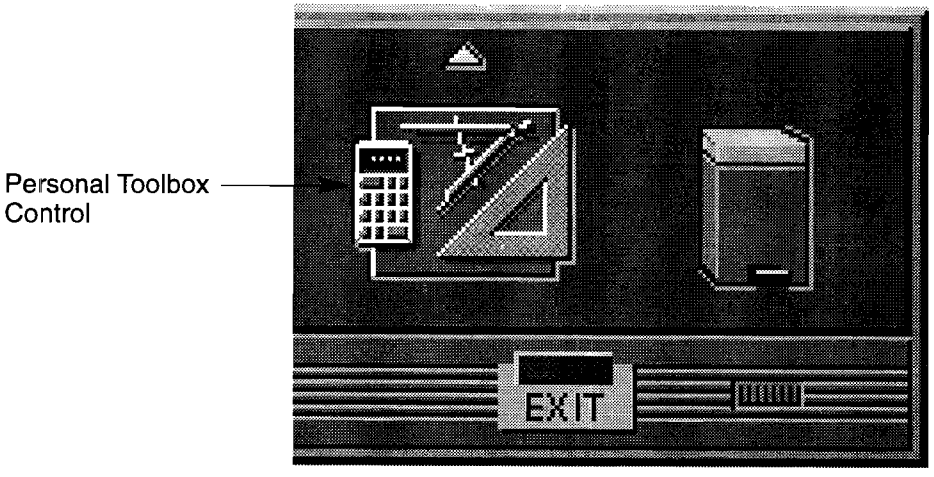
This section describes how to change your password from HP VUE.

NOTICE: When you log in for the first time, you should add a password for the **root** account to ensure system security.

CAUTION: If you are changing the password for **root**, make sure you do not forget the password you use. If you forget the password for **root**, you cannot log in as **root**; therefore you cannot set a new password for **root**.

1. Log in as the user whose password you want to change.

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



3. The **PersonalToolbox** window appears. Move your mouse pointer onto the **ChangePassword** icon shown below and double–click the left mouse button.

4. A window opens. Enter the password information when prompted.

NOTICE: A password must contain at least six characters. One of those characters must be a number, a dash (–), or an underline (_).

The process completes and the window closes.

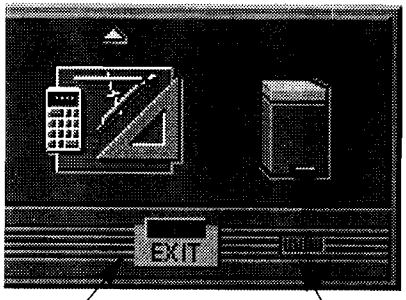
5. Double–click the window menu button in the upper left corner of the **PersonalToolbox** window. The window closes.

Logging Out from Your Workstation

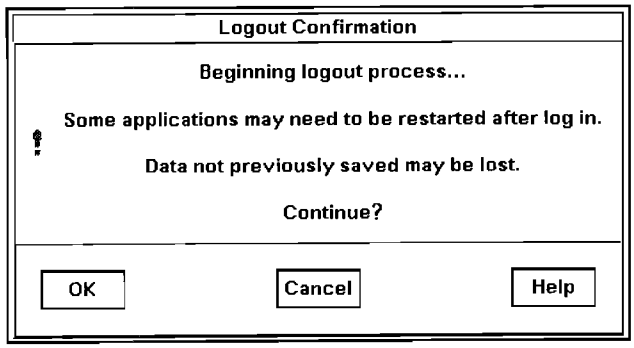
Follow the instructions in this section to log out of your workstation through HP VUE.

1. To log out, move your pointer onto the EXIT icon on the control panel. This icon is called the **logout control**. Single–click the left mouse button.

   Notice that the **progress light** beside the **logout control** begins to blink. This indicates that the logout process has begun.



2. The following confirmation box opens:



To confirm your logout, click on OK

A short time later, the login window reopens.

CAUTION: After you log out, **do not** turn off the power to your workstation. You must first perform the shutdown procedure described later in this chapter. If you do not shut down your workstation properly, you may damage the programs and data on your disk.

Shutting Down Your Workstation

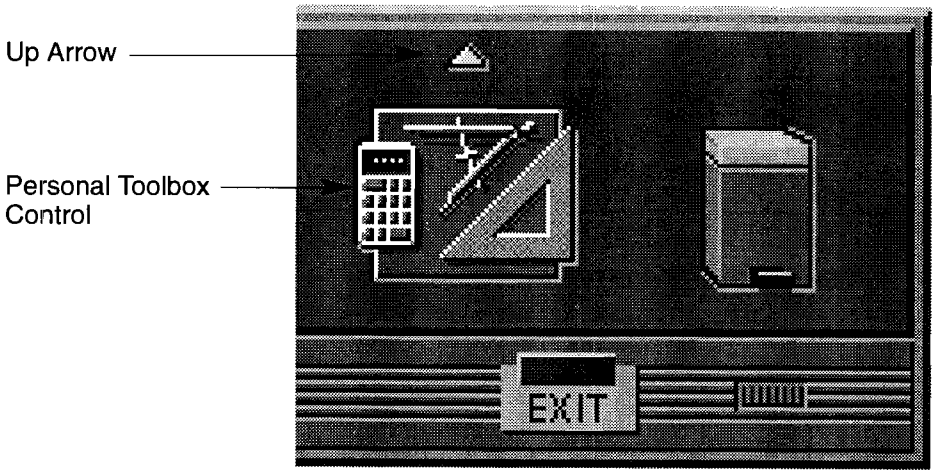
This section describes how to shut down your workstation using HP VUE.

CAUTION: **Do not** turn off the power to your workstation without first performing this shutdown procedure. If you do not shut down your workstation properly, you may damage the programs and data on your disk.

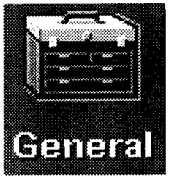
When you need to shut down HP–UX so that your workstation can be powered off, follow these steps. Doing this ensures that your file system remains intact and that you can power up and log in correctly.

1. Log in as **root.**

2. Move the mouse pointer to the **up arrow** above the **personal toolbox control**, shown below, and click the left mouse button once.



3. The **Toolboxes** subpanel opens. Place the mouse cursor on the General toolbox icon, shown below, and single–click the left mouse button.



4. A file manager window appears with a number of icons in it. Double–click the left mouse button on the System_Admin toolbox icon.

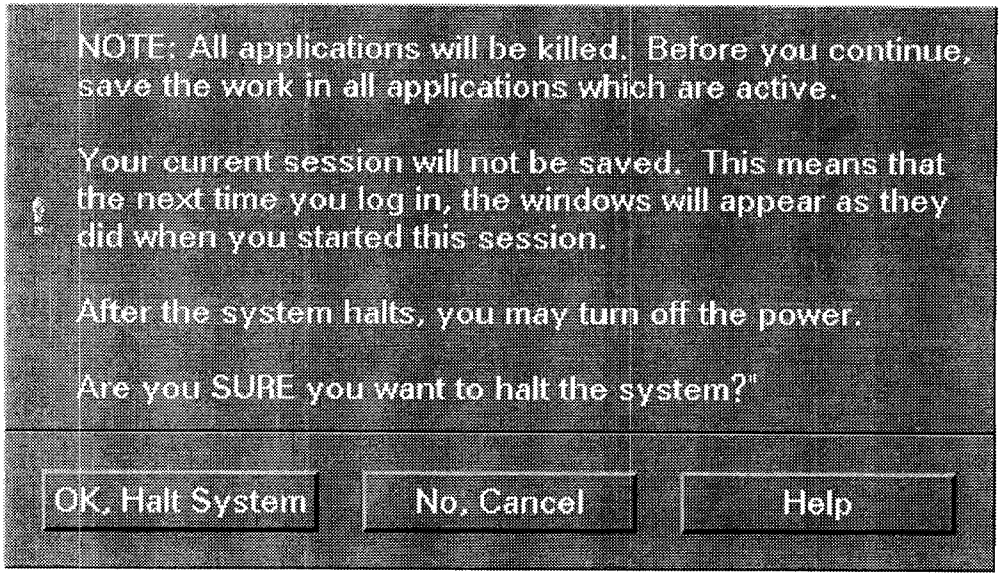
5. The **System_Admin** window appears. Move the mouse cursor onto the scroll bar slider at the side of the window. Press and hold the left mouse button while moving the mouse toward you. When the **HaltSystem** icon shown below appears, release the left mouse button.

6. Double–click on the HaltSystem icon.

7. When the window shown below opens, click on OK, Halt System

NOTICE: The message displayed in your **Halt System** window may be different than shown. This does not affect the shutdown procedure.

Any other users who are logged onto your workstation get a warning that the workstation is soon to be unavailable. One minute later, the system begins its shutdown process.



NOTICE: When the **Halt System** window opens, if you do not want to shut down your system, click on No, Cancel

8. The shutdown process takes about one minute.

The following message appears in the lower left–hand corner of your screen:

```
Halted, you may now cycle power.
```

When the message appears, push the power switch on the front of the system to turn off your workstation, then push it again to restart your workstation.

Creating a Recovery System Tape and Backing Up Your Files

If you have a tape drive attached to your workstation, you should make a recovery system tape and make periodic backups of your personal files.

For information on creating a recovery system tape and backing up files, see the manual *Using HP–UX HP 9000 Workstations* that came with your workstation.

For More Information

To learn more about HP VUE and HP–UX, refer to the manual *HP Visual User Environment User's Guide* and *Using HP–UX HP 9000 Workstations* that came with your workstation.

Chapter 3
Getting Started Using the HP–UX Command Line Shell

This chapter introduces you to your workstation, HP–UX, and the Hewlett–Packard Command–Line Environment by explaining the following tasks:

- Starting up your workstation for the first time
- Starting up your workstation
- Logging in to your workstation
- Creating a new user account
- Changing your password
- Logging out from your workstation
- Shutting down your workstation

NOTICES: Use this chapter if your workstation does not have HP VUE installed.

If your system is running HP VUE, go to the previous chapter entitled "Getting Started Using HP VUE."

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

Starting Up Your Workstation for the First Time

This section describes the procedure for starting up your workstation for the first time after the initial hardware installation. If this is not the first time your workstation has been started up, go to the "Starting Up Your Workstation" section later in this chapter.

If your workstation has preloaded software (the HP–UX operating system is loaded on the hard disk at the factory), it is shipped with a yellow sticker covering the system's power switch. Follow the instructions in this section to start up a workstation with preloaded software for the first time after the initial hardware installation.

If your workstation does not have preloaded software and you ordered the HP–UX software separately, refer to the manual *Installing and Updating HP–UX* for instructions.

If your system does not have a hard disk installed, or if it has a hard disk installed and you want your workstation to be a cluster client node (cnode), refer to the *Managing Clusters of HP 9000 Computers: Sharing the HP–UX File System* manual for instructions on setting up clusters and cnodes.

When you turn on your workstation for the first time, you are asked for some information about your system. If you do not have the information, you may press the Return key: HP–UX uses its default value for that question.

Before you start, you should know the following information:

- The *system name* of your computer. (This is sometimes called the *host name*.) The system name cannot exceed eight characters in length. Obtain a system name from your system administrator.
- If you are connecting your system to a local area network, you also need to know the *Internet Protocol address* (*IP address*) of your computer. This is a four–element code that uniquely identifies your computer among all those located on your network (or any other network). Obtain this address from your system administrator.
- The *time zone* where your computer is located.

Use the following instructions to start up your workstation:

1. Push in the power switch on the monitor. The power LED lights up to indicate that the power is on.

2. Turn on the power to any external peripherals.

3. Push in the power switch on your workstation. The power LED lights up to indicate that the power is on.

4. You are prompted for information about your workstation. Enter this information as it is requested. If you do not have the information when prompted for it, press the Return key:

You can provide the information later by executing the following command:

```
/etc/set_parms Return
```

The system will also ask if you want to set a root password. You should set a password for the root account at this time. If you choose not to select a root password, you may do so later as described in the "Changing Your Password" section later in this chapter.

When you have finished answering the questions, the system finishes its boot sequence and the login prompt appears at the bottom of your screen. See the section entitled "Logging In to Your Workstation" for instructions on logging in. If the HP VUE login window appears in the center of your screen, follow the instructions in Chapter 2, "Getting Started Using HP VUE."

Starting Up Your Workstation

This section describes the procedure for starting up your workstation. If this is the first time that your workstation has been started up since the initial hardware installation, go to the "Starting Up Your Workstation for the First Time" section earlier in this chapter.

Use the following instructions to start up your workstation:

1. Push in the power switch on the monitor. The power LED lights up to indicate that the power is on.

2. Turn on the power to any external peripherals.

3. Push in the power switch on your workstation. The power LED lights up to indicate that the power is on.

   After two or three minutes, many messages appear on your screen. These messages convey information about the various hardware and software subsystems that are being activated by the boot process. Unless something is wrong with your system, you are not asked to respond to any of these messages.

   The login prompt appears at the bottom of your screen. See the next section entitled "Logging In to Your Workstation" for instructions on logging in. If the HP VUE login window appears in the center of your screen, follow the instructions in Chapter 2, "Getting Started Using HP VUE."

Logging In to Your Workstation

Follow the instructions in this section to log in if your workstation does not have HP VUE installed, or if you selected **No Windows** or **Fail–Safe** from the options menu of the HP VUE login window.

1. The first time you log in, you must log in as **root**. To log in as **root**, type the following at the **Login:** prompt:

root Return

If this is not the first time you have logged in, type your username at the **Login:** prompt.

If you don't have a username yet, ask your system administrator to assign you a personal user account or follow the instructions in the section entitled "Creating a New User Account," later in this chapter. Until you get a user account, you may log in as **root**.

2. If a password has been set for **root**, or if you are logging in with your own username, you must enter the correct password at the **Password:** prompt at this time. The password is secret and does not appear on the screen.

The copyright notice appears briefly, followed by this line:

```
Is your console one of the following: a 2392A, 2393A,
2397A or 700/92? [y/n]:
```

3. Enter the following:

y Return

The following lines then appear:

```
Value of TERM has been set to "hp".
#
```

If you have logged in as **root**, the following lines appear:

```
Value of TERM has been set to "hp".
WARNING: YOU ARE SUPERUSER !!
#
```

You are now logged in.

Creating a New User Account

A new user account is created with a system utility called SAM (System Administration Manager). Follow the instructions in this section to create a new user account.

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 Users and Groups –>

   Press Return

4. The **Users and Groups** window opens. Use the arrow keys to select Users

   Press Return

5. The **Users** window opens. At the top of the window is a list. Press F4 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...

Press Return

8. A window opens. Enter a name for the new user account. Then press Return

9. Press F5

10. A password window opens. Type the login password for the new user account. Then press Return

NOTICE: A password must contain at least six characters. One of those characters must be a number, a dash (–), or an underline (_).

CAUTION: Make sure you do not forget the password you use. If you forget a user account password, log in as **root** and set a new password with the SAM utility or contact your system administrator.

Press Tab once.

Then press Return

11. You are requested to re–enter the password. Re–enter the password **exactly** as you entered it the first time. Then press Tab once.

Press Return

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

```
Task Completed
```

Press Return

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

14. Use the arrow keys on your keyboard to select **List**

Then press Return

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

Then press Return

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

16. Press Tab until Exit SAM is selected.

Then press Return

The SAM utility closes and the command line prompt appears.

Changing Your Password

This section describes how to change your password from an HP–UX command line.

NOTICE: When you log in for the first time, you should add a password for the **root** account to ensure system security.

CAUTION: If you are changing the password for **root**, make sure you do not forget the password you use. If you forget the password for **root**, you cannot log in as **root**; therefore you cannot set a new password for **root**.

1. Log in as the user whose password you want to change.

2. Enter the following:

   passwd Return

3. A window opens. Enter the password information when prompted.

NOTICE: A password must contain at least six characters. One of those characters must be a number, a dash (–), or an underline (_).

The process completes and the window closes.

Follow the instructions in this section to log out from your workstation using an HP–UX command line.

Enter the following at the shell prompt:

The system closes your login session and in a few moments responds with the login prompt.

After you log out, **do not** turn off the power to your workstation. You must first perform the shutdown procedure described later in this chapter. If you do not shut down your workstation properly, you may damage the programs and data on your disk.

Shutting Down Your Workstation

This section describes how to shut down your workstation using an HP–UX command line.

CAUTION: **Do not** turn off the power to your workstation without first performing this shutdown procedure. If you do not shut down your workstation properly, you may damage the programs and data on your disk.

When you need to shut down HP–UX so that your workstation can be powered off, follow these steps. Doing this ensures that your file system remains intact and that you can power up and log in correctly.

1. Log in as **root**.

2. Set your working directory to the root (/) directory by entering the following on the command line:

   cd / Return

3. Execute the following shutdown command:

   /etc/shutdown –h 0 Return

   Any other users who are logged onto your workstation get a warning that the workstation is soon to be unavailable. One minute later, the system begins its shutdown process.

4. The shutdown process takes about one minute. When it is complete the following message appears in the lower left–hand corner of your screen:

```
Halted, you may now cycle power.
```

When the message appears, push the power switch on the front of the system unit to turn off your workstation, and then push it again to restart your workstation.

Creating a Recovery System Tape and Backing Up Your Files

If you have a tape drive attached to your workstation, you should make a recovery system tape and make periodic backups of your personal files.

For information on creating a recovery system tape and backing up files, see the manual *Using HP–UX HP 9000 Workstations* that came with your workstation.

For More Information

To learn more about HP–UX, refer to the manual *Using HP–UX HP 9000 Workstations* that came with your workstation.

Chapter 4
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 system 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 (RS232) Port 1 ☐

  Serial (RS232) 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.

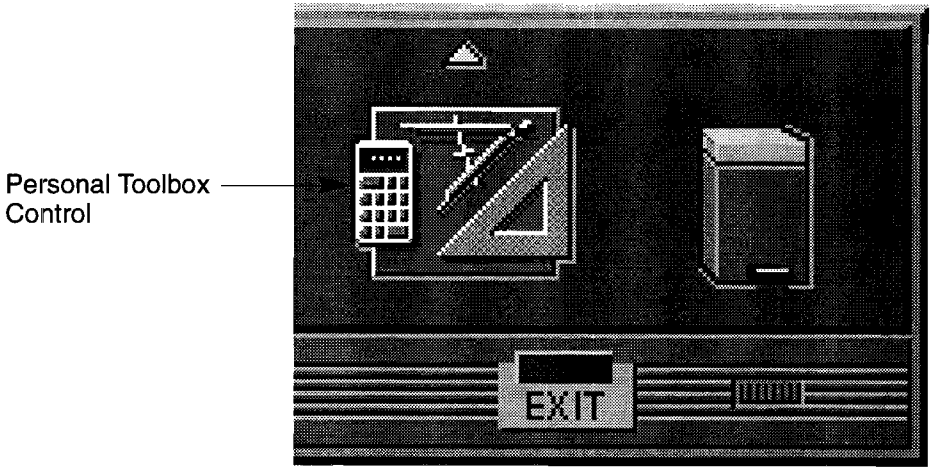
The procedures in this chapter require you to log in as **root**. If you cannot log in as **root**, contact your system administrator.

Setting Up a Printer with HP VUE

If you are using HP VUE, follow these instructions to set up your printer. If your system does not have HP VUE installed, go to the next subsection entitled "Setting Up a Printer From the HP–UX Command Line Shell" for instructions on setting up a printer.

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

5. Another screen opens. Double–click on the line labeled

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

6. Move the cursor to the word 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

8. Another menu opens. If your printer is connected to the parallel port on your workstation, single–click on

   If your printer is connected to one of the serial connectors on your workstation, single–click on

   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**

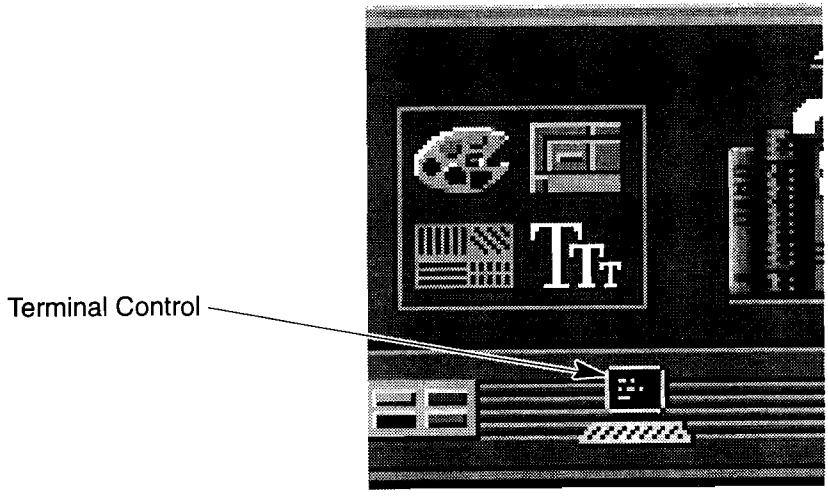
The main **SAM** window becomes visible again.

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

The **SAM** window closes.

27. Double–click 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 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 "Solving 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 **SAM** window opens. Use your 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 (Return) to remove the message window.

5. At the top of the **Printers/Plotters** window is a list. Press (↓) 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 Tab 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 your keyboard arrow keys to select the serial interface that corresponds to the connector to which you have connected your printer.

Press Tab 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 Select.

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 Tab until Make this the system default printer is selected:

Then press Return.

14. Press Tab 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 Y.

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 F4 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 Tab 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
```

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

```
lp -d printername .profile
```

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 "Solving 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:

   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.

If the file doesn't print, see the next section, "Solving Printing Problems."

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 5
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 and tells you how to order diskettes:

- Setting the write–protect tab on a diskette
- Inserting and removing a diskette
- Formatting a new diskette
- Transferring data to and from a floppy diskette

NOTICE: User input examples given in this chapter should be entered at the command–line prompt in an HP VUE terminal window or an HP–UX shell.

All instructions in this chapter assume your floppy drive SCSI ID is set to 0 – the default ID set by the factory.

Setting the Write–Protect Tab on a Diskette

You can store or change information on a diskette only when the write–protect tab is in the *write* position, as shown in Figure 5–1.

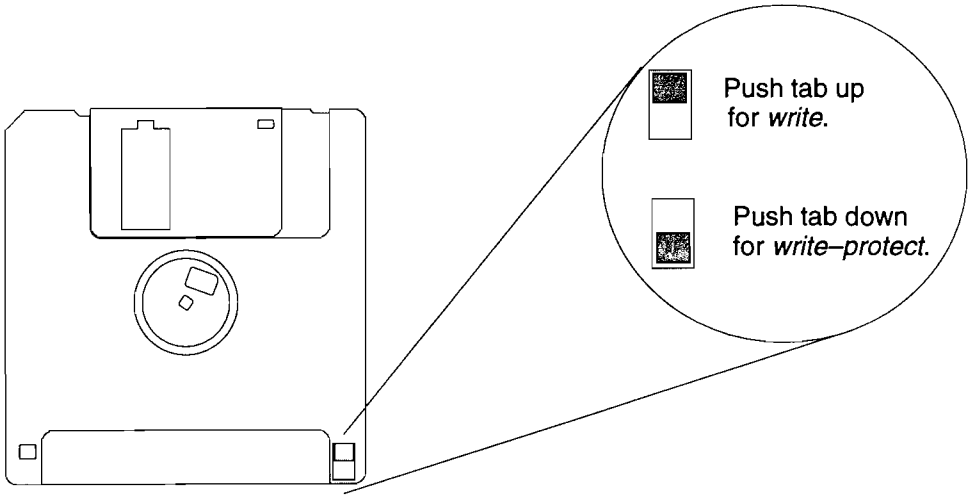


Figure 5–1. Setting the Floppy Diskette Write–Protect Tab

To protect files on a diskette from being overwritten, set the write–protect tab to the *write–protect* position (see Figure 5–1).

NOTICE: The write–protect tab should always be in the *write* position for formatting a new diskette and transferring data to and from 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 5–2.

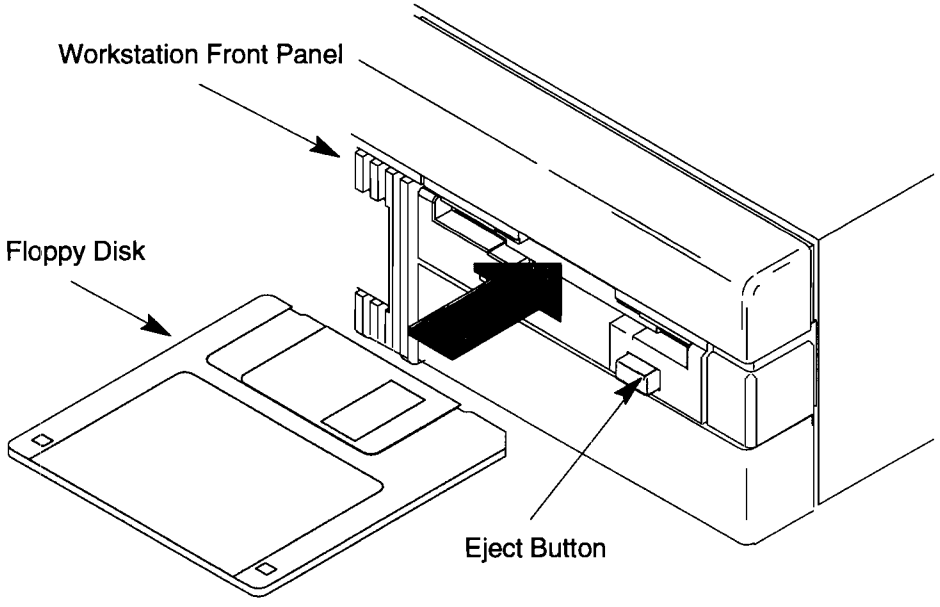


Figure 5–2. Inserting and Removing the Diskette

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 5–2), then take out the diskette.

Formatting a New Diskette

This section describes how to use a device file to format a new floppy diskette.

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 floppy drive uses the device file **/dev/rfloppy/c201d0s0**.

To format a new floppy diskette using this device file, follow these steps:

1. Log in as **root**.

2. Insert the diskette into the floppy disk drive.

3. Execute **mediainit** with an interleave of 2 by entering the following:

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

NOTICE: Always format a new unformatted diskette with **mediainit** before using it.

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.

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 floppy drive uses the device file **/dev/rfloppy/c201d0s0**.

You will need to set the write protect tab to *write* and load the floppy diskette into the disk drive to transfer data. Refer to the "Setting the Write–Protect Tab on a Diskette" and "Inserting and Removing a Diskette" sections earlier in this chapter.

Saving Files to a Floppy Diskette

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

1. Load a formatted floppy diskette into the disk drive. See "Formatting a New Diskette" earlier in this chapter for information on formatting diskettes.

2. Enter the command line:

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

   where *pathname* is the pathname to individual files or a directory containing files.

Restoring Files From a Floppy Diskette to Your System

To restore files from a floppy diskette to your system, use the following steps:

1. Load a formatted floppy diskette into the disk drive. See "Formatting a New Diskette" earlier in this chapter for information on formatting diskettes.

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

3. Enter the command line:

   tar -xvf /dev/rfloppy *pathname*

   where *pathname* is the pathname of individual files or a directory containing files.

Listing Files on a Floppy Diskette

To list the files on your floppy diskette, use the following steps:

1. Load a formatted floppy diskette into the disk drive. See "Formatting a New Diskette" earlier in this chapter for information on formatting diskettes.

2. Enter the command line:

   tar -tvf /dev/rfloppy

   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:

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:

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:

man floppy Return

Configuring the SCSI 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 SCSI floppy driver. Use the SAM utility to add the SCSI Flexible Disk Driver and build a new HP–UX Kernel.

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 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
- Dealing with a boot failure
- Running 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. 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 cable is fastened securely to the appropriate connector.
If problems persist, contact your system administrator or call your designated service representative.	

Table 6–4. 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 device file **/dev/rfloppy/c201d0s0** for commands that require a device file name. 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 6–5. 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.)
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 (FRU).

Figure 6–1 shows the location of the system unit's front panel LEDs. There are ten 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.

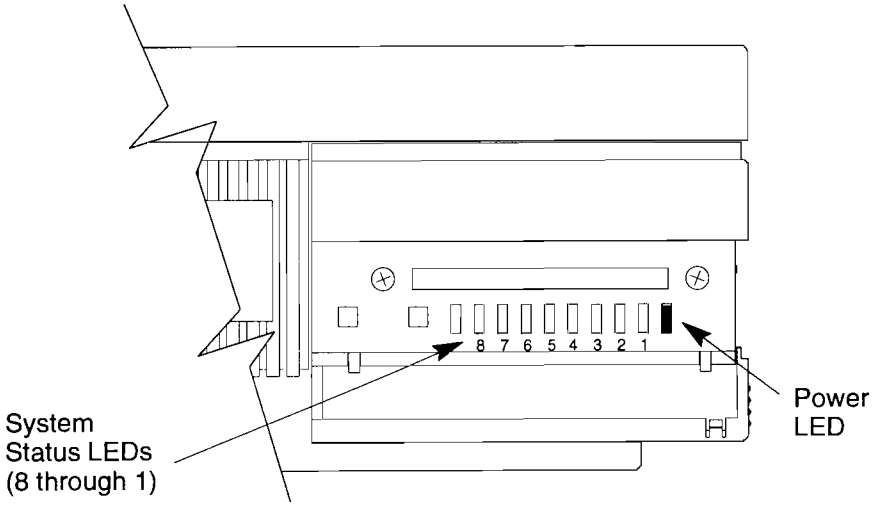


Figure 6–1. Front Panel LEDs

Table 6–6 shows the LED error codes as they appear on the front panel display. Use these LED codes to determine the failing component.

Table 6–6. Selftest LED Codes

LED Display								FRU	Error
8	7	6	5	4	3	2	1		
			■				■	Processor Board	CPU Diagnose Register
			■			■			CPU Basic Functions
			■			■	■		CPU ALU & Branch
			■		■				CPU Bit Operations
			■		■		■		CPU Arithmetic Conditions
			■		■	■			CPU Arithmetic Side Effects
			■		■	■	■		CPU Control Registers
			■	■					CPU External Interrupts
			■	■			■		CPU Shadow Registers
			■	■		■	■		TLB Initialization
		■					■		Cache Data Line
		■				■			Cache Address Line
		■				■	■		Instruction Cache RAM
		■			■				Data Cache RAM
		■			■		■		Cache Tag Compare
		■			■	■			Cache Errors
		■			■	■	■		Cache Configuration
		■		■					Cache Flush
		■		■			■		Cache Byte Transaction
		■		■		■			Instruction Cache Miss

■ = LED On or Flashing

(Continued)

Table 6–6. Selftest LED Codes (Continued)

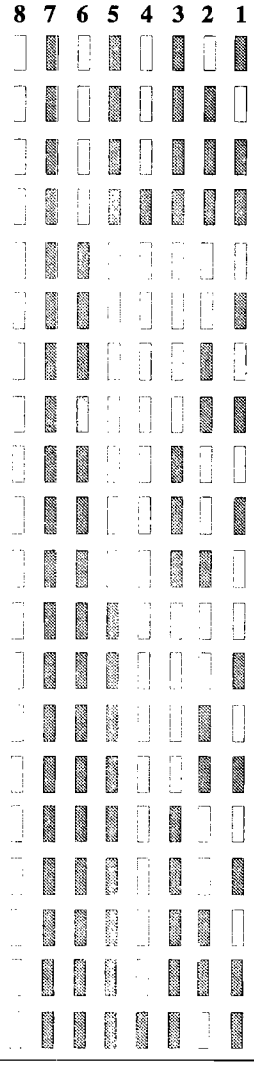
LED Display								FRU	Error
8	7	6	5	4	3	2	1		
								Processor Board	Data Cache Miss
									Cache Done
									Cache Address Line – Open Test
									Memory Interface EIR
									Memory Interface HPMC
									Memory Interface
									Memory Interface Invalid Address
									Memory Interface Single Bit Error
									Memory Interface Double Bit Error
									Memory Interface Diagnose Register
									Floating Point Registers
									Floating Point Instructions
									Floating Point Traps
									Floating Point Registers (735/125)*
									Floating Point Instructions (735/125)*
									Floating Point Traps (735/125)*
								EISA Interface Controller	EISA Init
									EISA ADDR Test
									ADDR Test Failure
									EISA Pattern Test

= LED On or Flashing

* Loops until passes. Possible PCX–T FRU error.

(Continued)

Table 6–6. Selftest LED Codes (Continued)

LED Display	FRU	Error
	EISA Interface Controller	EISA Pattern Test Failure
		EISA Jumper Incorrect
		SCSI Jumper Incorrect
		PDC ROM Checksum Failure
	Memory	Onboard RAM (0H) Error
		RAM Slot 1H Error
		RAM Slot 2H Error
		RAM Slot 3H Error
		RAM Slot 4H Error
		RAM Slot 5H Error
		RAM Slot 6H Error
		Onboard RAM (0L) Error
		RAM Slot 1L Error
		RAM Slot 2L Error
		RAM Slot 3L Error
		RAM Slot 4L Error
		RAM Slot 5L Error
		RAM Slot 6L Error
		RAM Configuration & Test In Progress
		No RAM Found

8 7 6 5 4 3 2 1

= LED On or Flashing

(Continued)

Table 6–6. Selftest LED Codes (Continued)

LED Display								FRU	Error
8	7	6	5	4	3	2	1		
								Memory	Non–Destructive RAM Test
									RAM Configuration & Test
								System I/O	Unknown I/O Device
									On–board SCSI
									On–board LAN
									On–board HIL
									On–boardRS232 Port A
									On–board RS232 Port B
									On–board Parallel Port
									On–board Graphics #1
									On–board Graphics #2
									EISA Slot #1
									EISA Slot #2*
									EISA Slot #3*
									EISA Slot #4*
									EISA Slot #5*
									EISA Slot #6*
									EISA Slot #7*
									On–board FDDI
									On–board Fast Wide SCSI

* EISA slots 2–7 in EISA Expander Box

= LED On or Flashing

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. Shutdown your system as described in Chapter 2 or Chapter 3.

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

CAUTION: **Do not** power off your 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 PD210S
P1          scsi.5.0              QUANTUM PDS210S
P2          scsi.2.0              TOSHIBA CD-ROM DRIVE:XM
P3          lan.123456-789abc     homebase
```

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 HP 9000 Workstations* 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.

As a superuser (logged in as **root**), 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 (Select)
```

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

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 (ESD) precautions
- Warnings and cautions

DECLARATION OF CONFORMITY
according to ISO/IEC Guide 22 and EN 45014

Manufacturer's Name: **Hewlett Packard**

Manufacturer's Address: **100 Domain Drive**
Exeter, N.H.
USA

declares that the product

Product Name: Computer Workstation
Model Number: HP 9000/735
Base Product Number: A1946X

conforms to the following Product Specifications:

SAFETY:	**IEC 950:1986 + A1 / EN60950 (1988) + A1**
ERGONOMICS:	**ZH1 / 618 (1980)**
EMC:	**CISPR 22:1985 / EN 55022 (1988) Class A (1)**
	IEC 801–2:1991 / pr EN55024–2 (1992): 3 kV CD, 8kV AD
	IEC 801–3:1984 / pr EN55024–3 (1991): 3 V/m
	IEC 801–4:1984 / pr EN55024–4 (1992): 1 kV Power Lines
	0.5 kV Signal Lines

Supplementary Information:

1 The product was tested in a typical Hewlett Packard workstation configuration. The procuct herewith complies with the requirements of the Low Voltage directive 73/23/EEC and the EMC Directive 89/336/EEC.

Exeter Date: **November 12, 1992**

James Kelly
Quality Productivity Manager

European Contact: Your local Hewlett–Packard Sales and Service Office or Hewlett–Packard GmbH, ZQ/Standards Europe, Herrenberger Str. 130, D–71034 Boeblingen (FAX: +49–7031–14–3143)

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 Apollo 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 I 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 HP Apollo system(s) 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 Statements (United Kingdom Only)

The HP 9000 Series 700 Model 735 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.

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.

Warnings and Cautions

WARNING:

Lifting the 19–inch monitor requires more than one person because the unit weighs more than 40 pounds (18 kilograms).

WARNUNG:

Der 19–inch (48–cm) Bildschirm muß von mehreren Personen angehoben werden, da die Einheit über 40 Pfund (18 kilogramm) wiegt.

AVERTISSEMENT:

Il faut plus d'une personne pour soulever le moniteur de 48 cm (19 pouces) étant donné qu'il pèse plus de 18 kg.

CAUTION:

Monitor output voltage must be the same as the system's input voltage.

VORSICHT:

Die Bildschirm–Ausgangsspannung muß genauso groß sein wie die Eingangsspannung des Systems.

ATTENTION:

La tension de sortie du moniteur doit être la même que la tension d'entrée du système.

CAUTION:

Do not unplug the monitor video cable while the system unit is powered on.

VORSICHT:

Ziehen Sie nicht das Stromzuführungskabel zum Bildschirm aus der Steckdose, solange das Gerät eingeschaltet ist.

ATTENTION:

Ne pas débrancher le câble vidéo du moniteur pendant que l'unité est alimentée.

CAUTION:

Monitor screen damage will occur if the monitor is left on for extended periods of time with the same image on the screen at high intensity.

VORSICHT:

Bildschirmschaden ist unvermeidlich, falls der Bildschirm über längere Zeit und mit demselben Bild auf dem Schirm bei hoher Intensität angeschaltet bleibt.

ATTENTION:

L' écran du moniteur sera endommagé si le moniteur est laissé pendant une période prolongée avec la même image sur l' écran à haute intensité.

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:

- Installing additional memory
- Installing an EISA card
- Installing a floppy disk drive
- Installing a hard disk drive

CAUTION: Always wear a properly grounded wrist strap when reconfiguring your workstation.

Installing Additional Memory

This section describes how to add additional memory to your system.

1. Shut down your system by performing the procedure described in Chapter 2 (if you are using HP VUE) or Chapter 3 (if you are using the HP–UX command line shell) of this manual.

2. Power off your workstation.

CAUTION: **Do not** power off your 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. Disconnect all cables from the rear of the core I/O board as well as the ac power cord from the power supply and the ac power source. Figure B–1 shows the locations of the various connectors on the rear of the board.

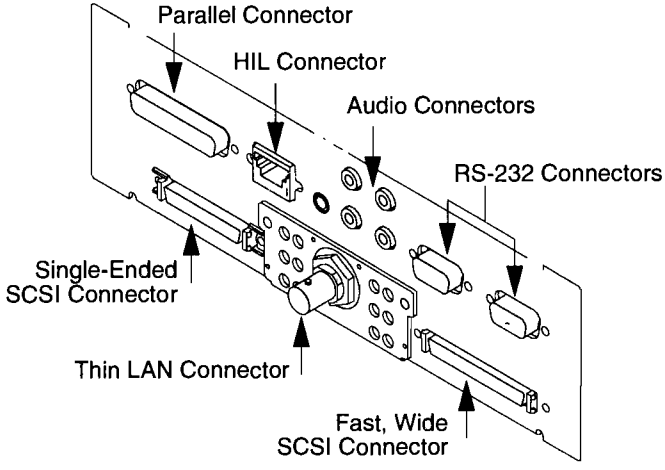


Figure B–1. Core I/O Board Cable Connections

4. Remove the core I/O board, as shown in Figure B–2.

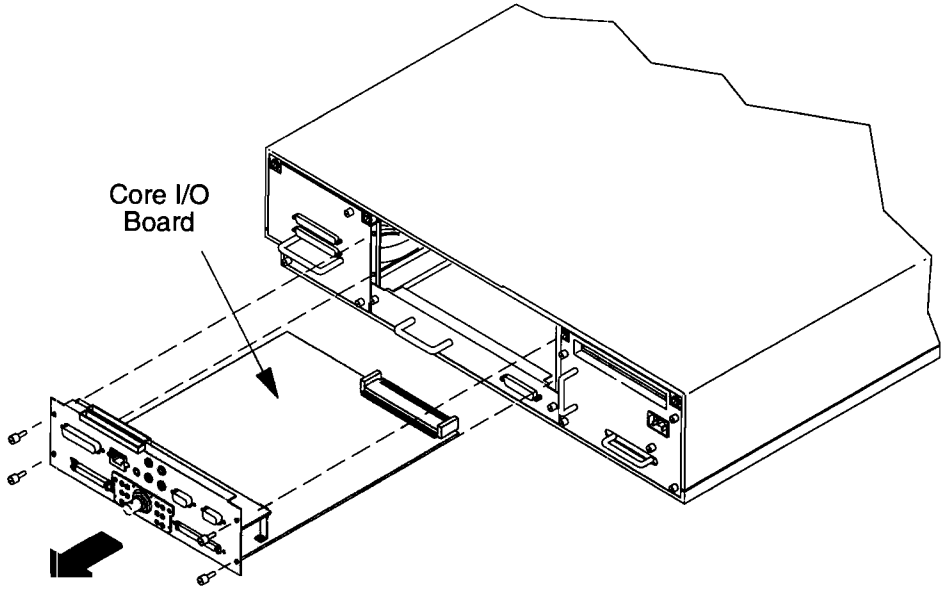


Figure B–2. Removing the Core I/O Board

5. Remove the processor board using the ejectors, as shown in Figure B–3.

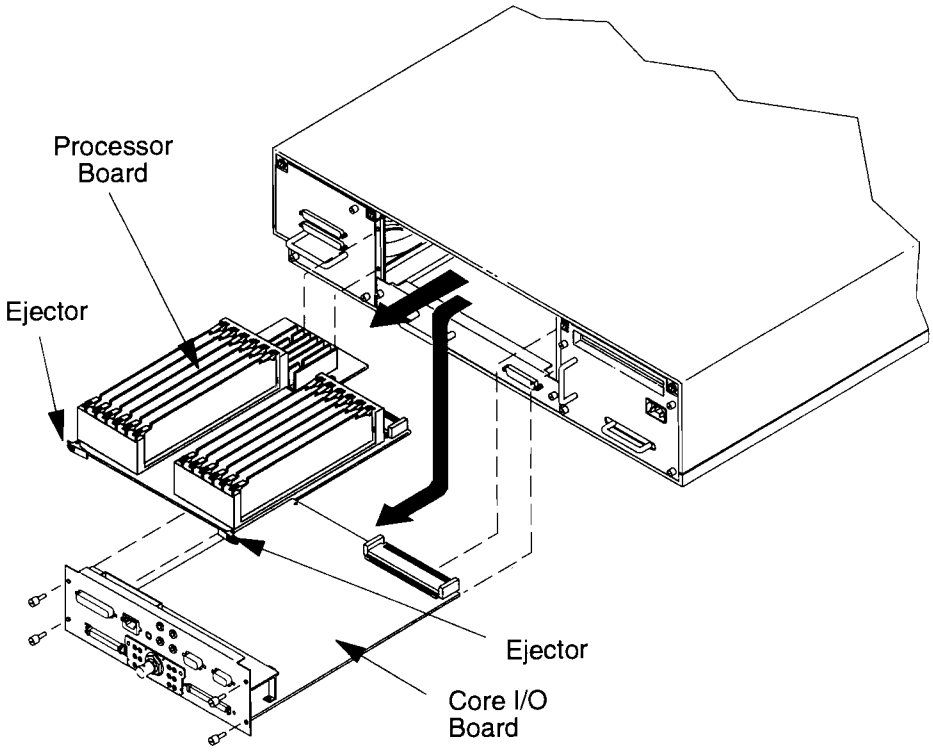


Figure B–3. Removing the Processor Board

6. Install the memory cards. Figure B–4 shows the memory SIMM locations. Be sure to follow these guidelines:

- The processor board has 16 MB main memory resident (unremovable).
- The SIMMs must be installed as pairs (two cards of the same capacity).
- The processor board has six pairs of slots (numbered 1 through 6).
- The slot pairs on the processor board are arranged in two connector blocks, labeled **H**(igh) and **L**(ow). ***The pair numbering starts in the middle of the board, one in each connector block.***
- Load the cards left to right when the board is positioned as shown in Figure B–4. Start with the highest numbered **H** slot ***that will be occupied*** when installing the memory cards in the new processor board. (For example, if you are installing four pairs of cards, slot **4H** is the highest numbered **H** slot). You must then fill the lower numbered slots in the **H** block. Then fill the lower numbered slots in the **L** block, working toward the highest numbered **L** slot that will be filled.
- If you need to add SIMM cards to existing SIMMs, you will need to remove the cards (see Figure B–5) already installed in the **H** block, and start installing the cards at the highest numbered slot to be used. The cards already installed in the **L** block may remain installed; just add the new cards to the higher numbered slots. Be sure that the SIMMs remain paired properly (two cards of the same capacity occupying the same slot number in the **H** and **L** blocks) when you add new cards.

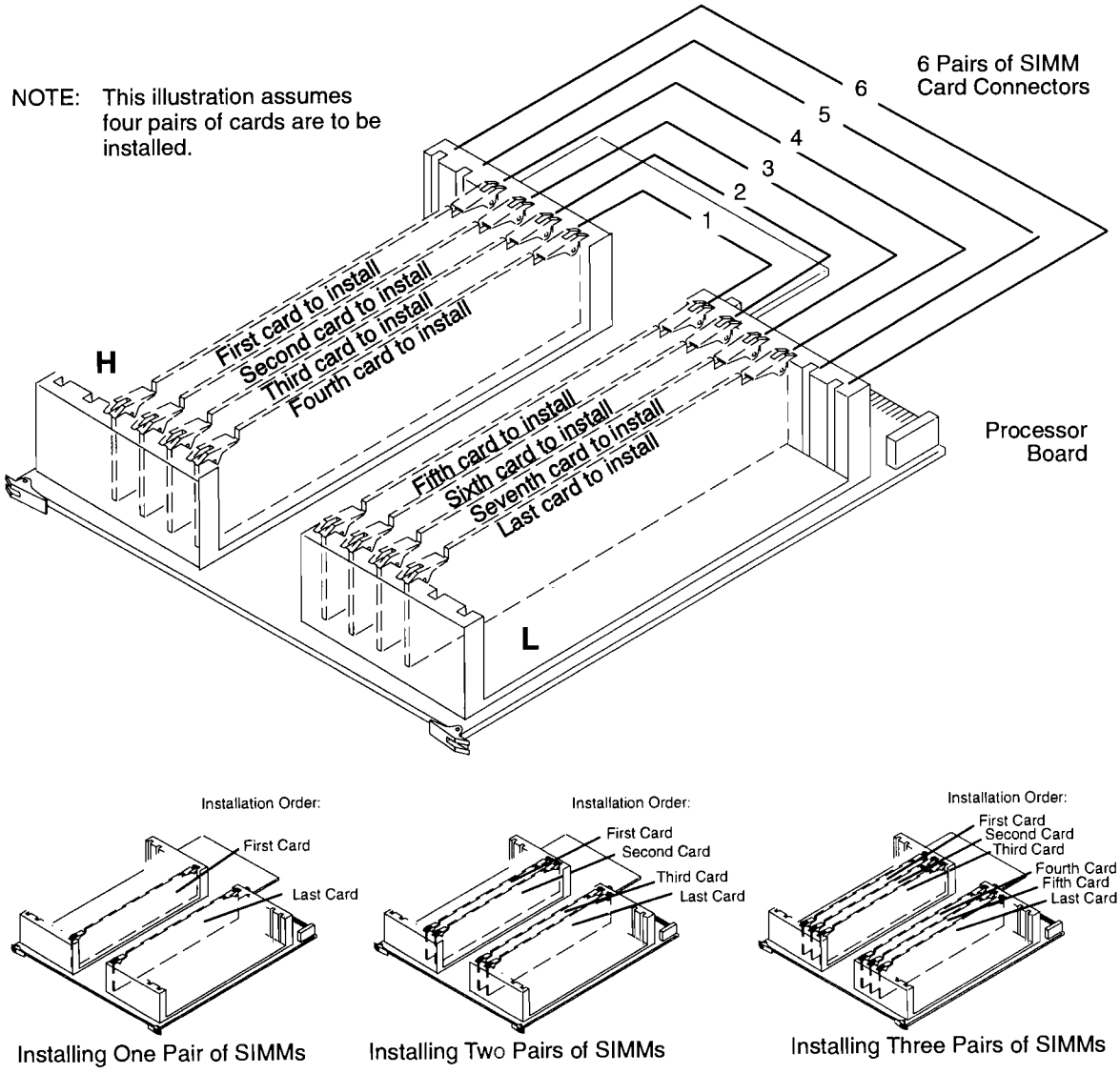


Figure B–4. Installing Memory Cards

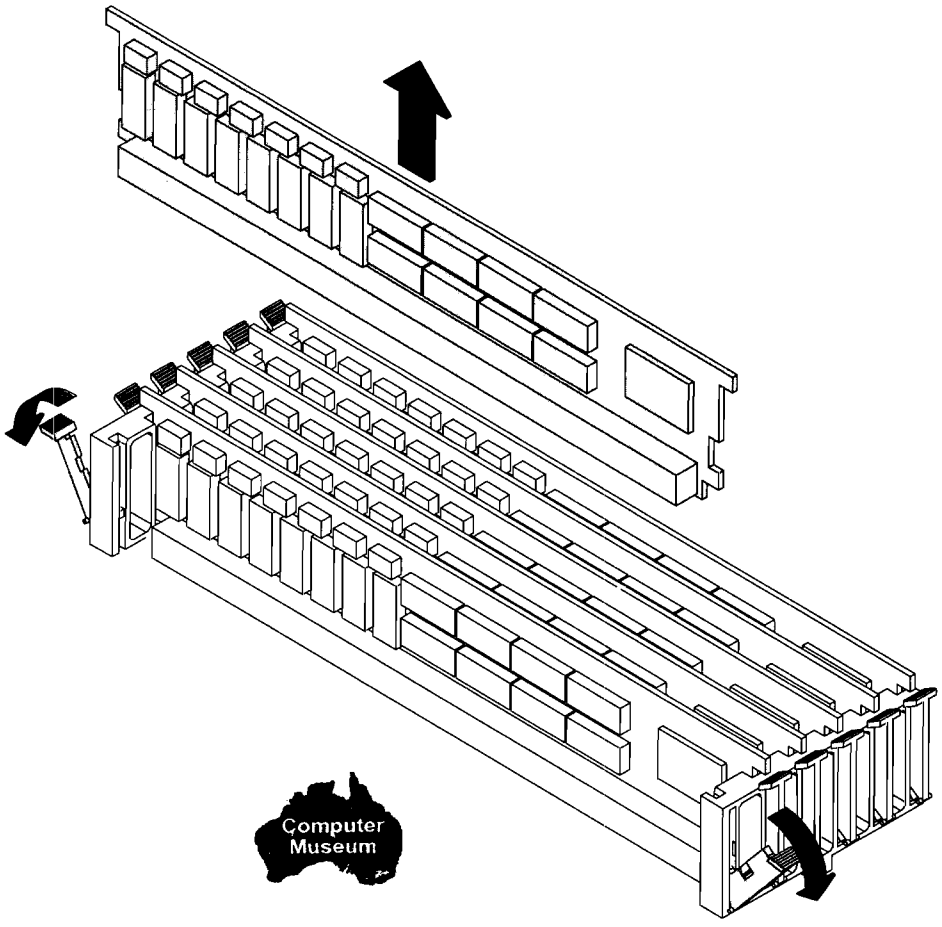


Figure B–5. Removing a Memory Card

7. Install the processor board into the top slot of the system unit cabinet.

8. Install the core I/O board into the middle slot of the system unit cabinet.

9. Reconnect the cables to the core I/O board and power supply. Plug the system's power cord into the ac power source.

10. Power on the system.

Installing an EISA Card

Perform the following steps to access the EISA slot.

1. Shut down your system by performing the procedure described in Chapter 2 (if you are using HP VUE) or Chapter 3 (if you are using the HP–UX command line shell) of this manual.

2. Power off your workstation.

CAUTION: **Do not** power off your 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. Disconnect the ac power cord from the ac power source and from the system unit.

4. Remove the power supply cover plate, as shown in Figure B–6.

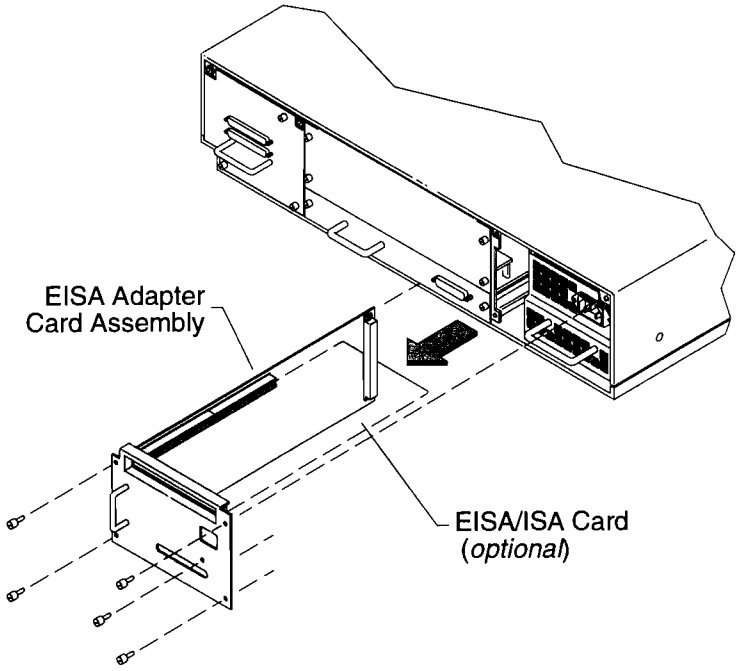


Figure B–6. Removing the Power Supply Cover Plate

5. Prepare the adapter to accept the EISA card by removing and saving the single screw that secures the blank EISA slot cover in place on the adapter cover plate, as shown in Figure B–7. Remove the blank EISA slot cover from the adapter cover plate.

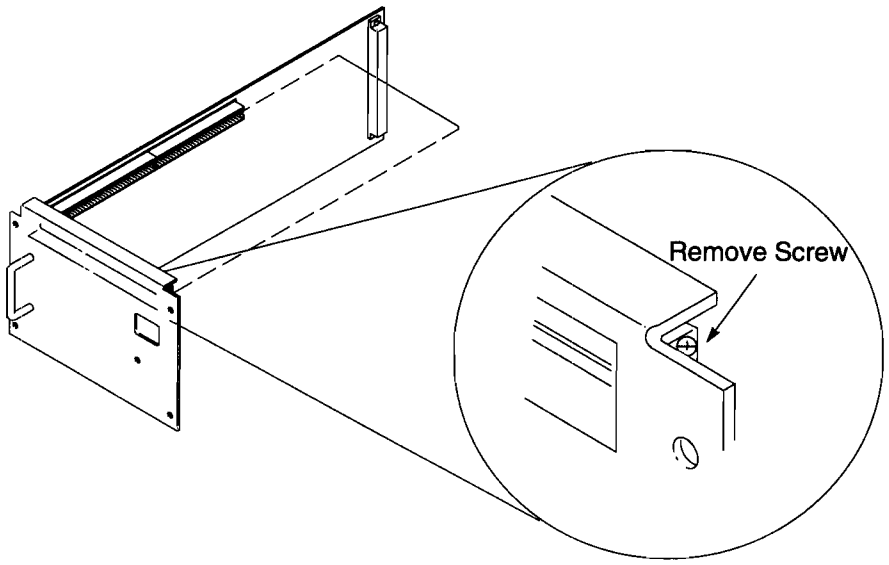


Figure B–7. Preparing the Adapter for the EISA Card

6. Refer to the documentation that shipped with the card for instructions on any jumper or switch settings that you need to perform.

7. Slide the EISA card into the adapter assembly. Make sure that the EISA card is securely placed into the connector on the adapter card assembly, as shown in Figure B–8.

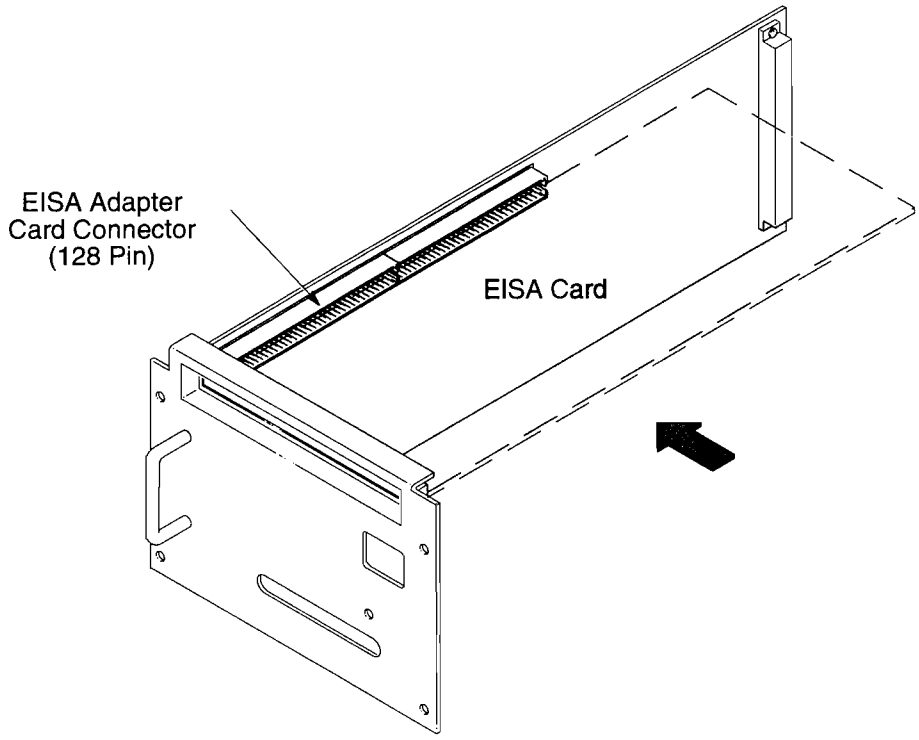


Figure B–8. Installing the EISA Card

8. Install the single screw (which you removed in Step 4) to secure the EISA card to the adapter card cover plate.

9. Install the power supply cover plate into the system.

10. Connect the cable for the EISA device and reconnect the cable to the power supply on the system unit. Plug the system's power cord into the ac power source.

11. Power on the system.

Installing a Floppy Disk Drive

This section describes how to install your floppy drive to your system.

Determining the SCSI IDs

Before installing the floppy disk drive, determine which SCSI ID settings are already being used on your system by completing the following steps:

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

   /etc/ioscan Return

   After a few moments the **ioscan** utility lists all 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)
2.0.1.6.0           disk             ok(0x202)
```

2. To find out the SCSI–2 IDs 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 ID for that device. For example, the listing **2.0.1.6.0** in the sample device list tells you that there is a SCSI device (a disk) currently using ID 6 on the SCSI–2 bus.

   You can't use the same address settings for your floppy disk drive, unless you wish to change the address setting on one of the SCSI devices currently in use.

Checking the SCSI ID Jumper Settings on the Floppy Drive

Perform the following steps to set the SCSI ID jumpers:

1. Attach the static-grounding wrist strap by following the instructions on the package that contains the strap. Attach one end of the strap to the system chassis.

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

2. Determine which version of the floppy drive came with your kit.

   There are two different versions of the floppy drive, version 709 and version 309. See Figure B–9 to determine which version of the floppy drive you have.

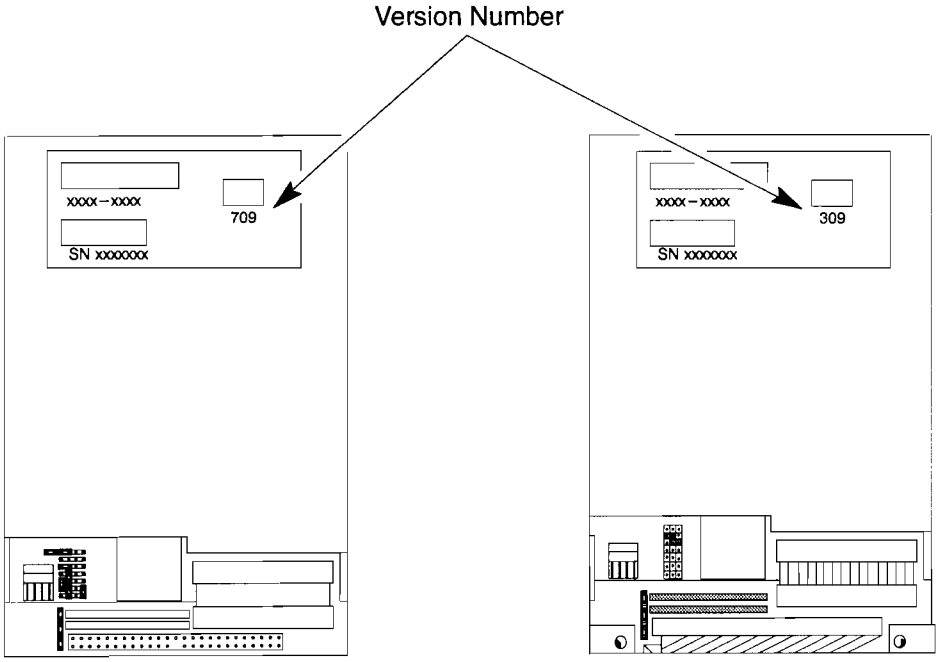


Figure B–9. Floppy Drive Version Numbers

3. Check that the jumpers are set to the correct SCSI ID for your system.

The SCSI ID jumpers are located on the top of the floppy board, as shown in Figure B–10. The floppy disk drive normally ships with the SCSI ID jumpers set to SCSI ID 0, as shown in Figure B–10. You can leave them at 0 unless you are already using that setting for another SCSI device (see "Determine the SCSI IDs," earlier in this chapter). For instructions on resetting the SCSI ID jumpers, proceed to Step 4 of this task.

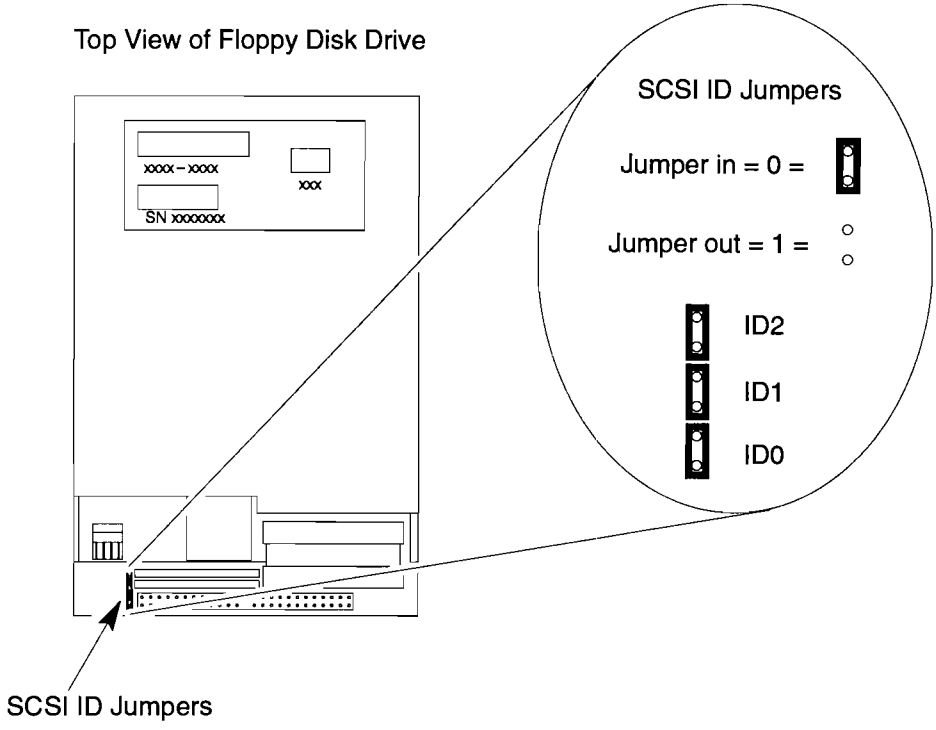


Figure B–10. SCSI ID Jumpers (Version 709 and Version 309)

4. You may need to reset the SCSI ID jumpers, either because the jumpers were not set at 0 when the drive shipped or because you are already using SCSI ID 0 for another SCSI device.

To reset the jumpers to 0, see Figure B–10 or B–11.

To reset the jumpers to a SCSI ID other than 0, see Figure B–11.

NOTICE: **Do not** use SCSI ID 7; by default the host SCSI controller uses SCSI ID 7. We also advise you not to use SCSI ID 6; address 6 is normally reserved for the root disk drive.

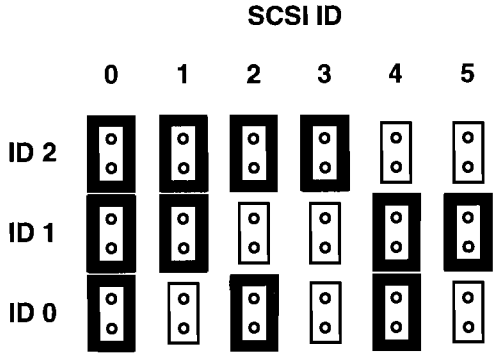


Figure B–11. SCSI ID Jumper Settings

Checking All Other Jumper Settings

Check all other jumpers on the floppy drive. The other jumpers are located on the top rear and bottom front of the floppy board. They should always be set as shown in Figure B–12 or Figure B–13. Reset the jumpers only if they are not set as shown in Figure B–12 or Figure B–13.

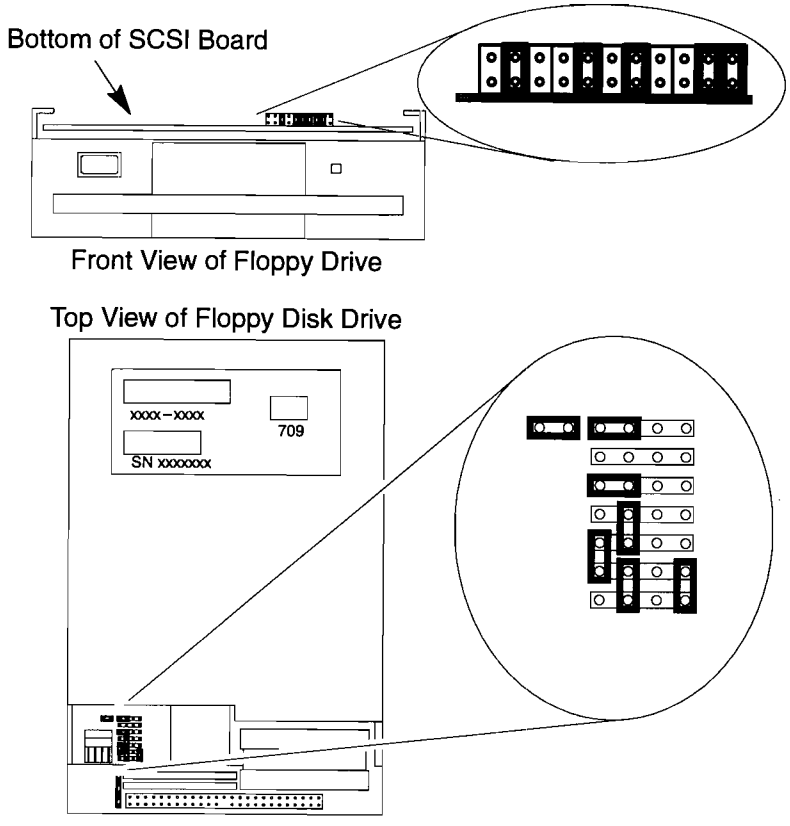


Figure B–12. Jumper Settings (Version 709)

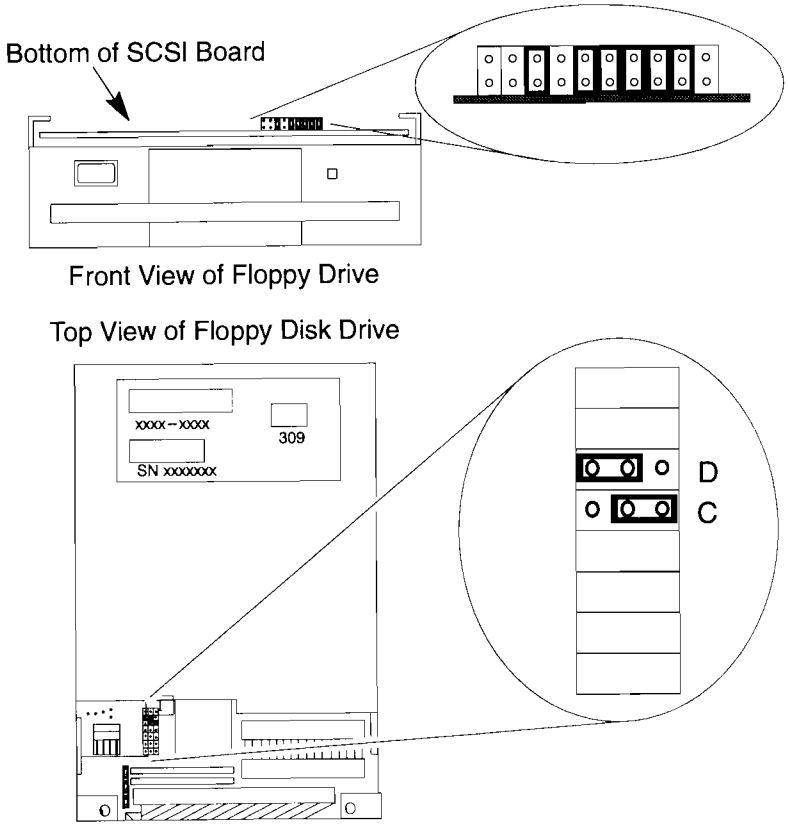


Figure B–13. Jumper Settings (Version 309)

Checking the SCSI Terminators

Check that the SCSI terminators have been removed, as shown in Figure B–14. If they have not yet been removed, remove them by pulling straight up with a pair of needle–nose pliers.

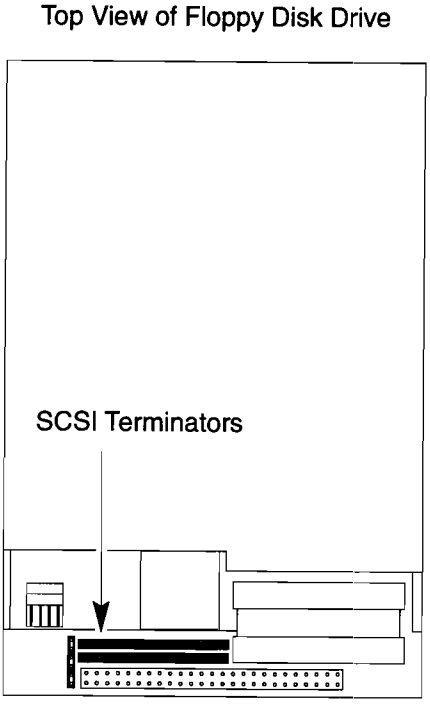


Figure B–14. SCSI Terminators (Version 709 and Version 309)

Powering Off the Workstation and any Peripherals

1. Shut down your system by performing the procedure described in Chapter 2 (if you are using HP VUE) or Chapter 3 (if you are using the HP–UX command line shell) of this manual.

2. Power off your workstation.

   Do not power off your 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. Disconnect the power cord from the rear of the workstation and the wall outlet.

4. Power off any external peripherals attached to your workstation, and unplug their power cables from the wall outlet.

Removing the Disk Tray Assembly

1. Remove the existing bezel from the front panel of the workstation.

Flip the door down and remove the two screws, using a small Pozidrive screwdriver (see Figure B–15). Set aside the two screws for use in Step 4 of "Reinstall the Disk-Tray Assembly" at the end of this section. Store the bezel in a safe place.

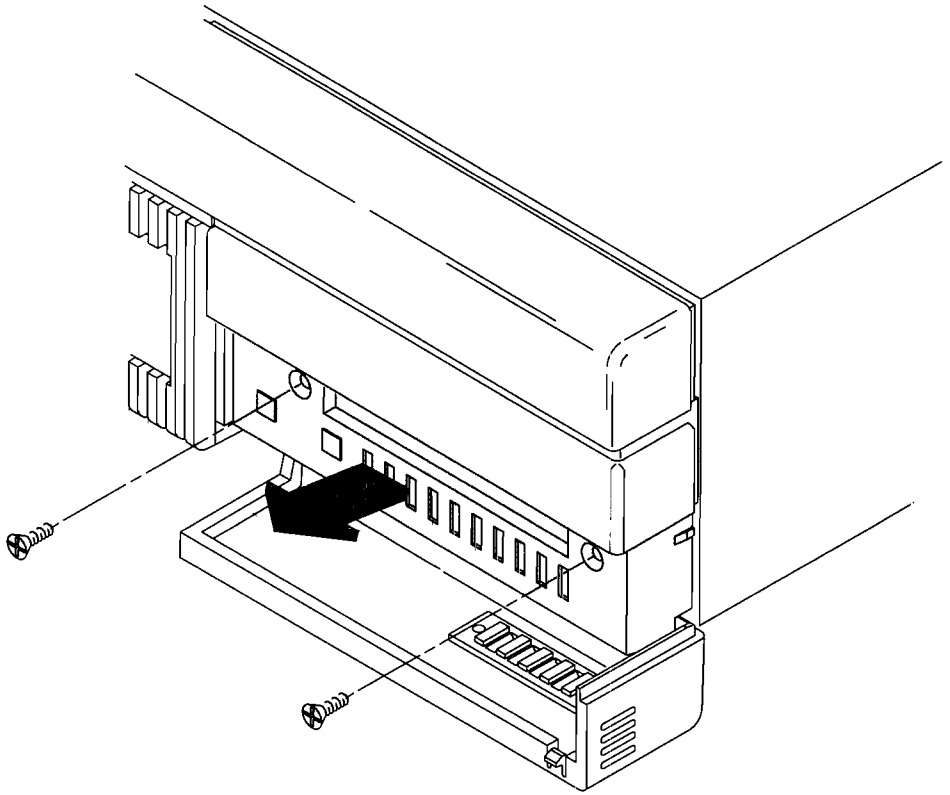


Figure B–15. Removing the Existing Bezel

2. Disconnect the external SCSI cable.

Disconnect both ends of the external SCSI cable by squeezing the clips on either side of each connector and pulling out the connector (see Figure B–16).

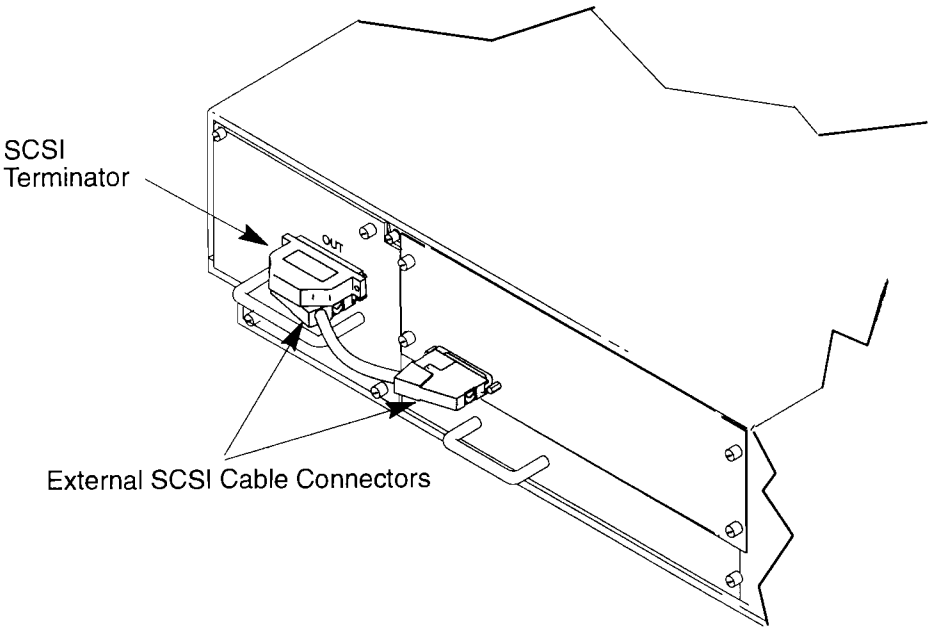


Figure B–16. Disconnecting the External SCSI Cable

3. Disconnect the SCSI terminator, if there is one, or any external SCSI device cable that may be connected in the position of the terminator (see Figure B–16).

4. Remove the disk tray assembly from the workstation chassis.

Use a medium flatblade screwdriver to remove the four screws that hold the bulkhead panel in place. Use the handle on the bulkhead panel to remove the disk tray assembly from the system chassis (see Figure B–17). Save the four screws for use in reinstalling the tray assembly.

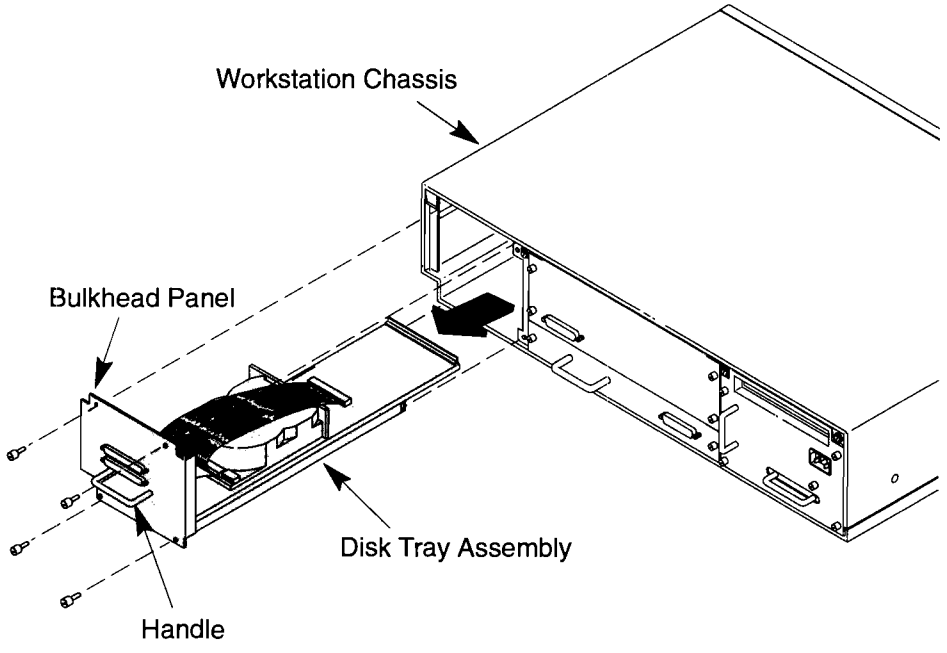


Figure B–17. Removing the Disk Tray Assembly

5. Pull the 2–wire power cable out from the channel in the bottom of the tray, and tuck the 4–wire power cable into the bottom of the disk tray assembly (see Figure B–18).

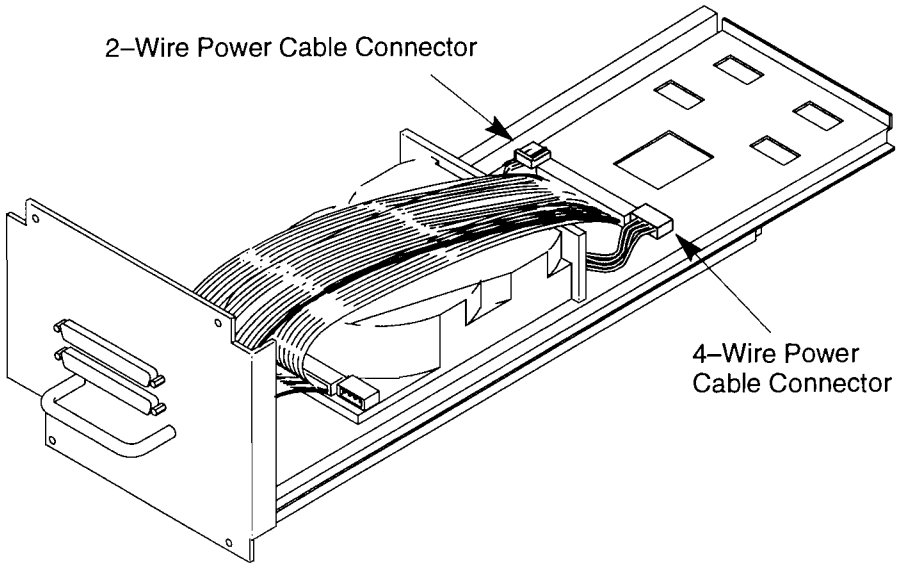


Figure B–18. Rearranging the Cables

Mounting the Floppy Disk Drive Assembly

1. Mount the floppy drive assembly on the disk tray.

Slide the floppy drive assembly into the first set of slots in the front of the disk tray. Secure the floppy assembly to the tray with the mounting screw that came in the kit, using a medium Pozidrive screwdriver. (See Figure B–19.)

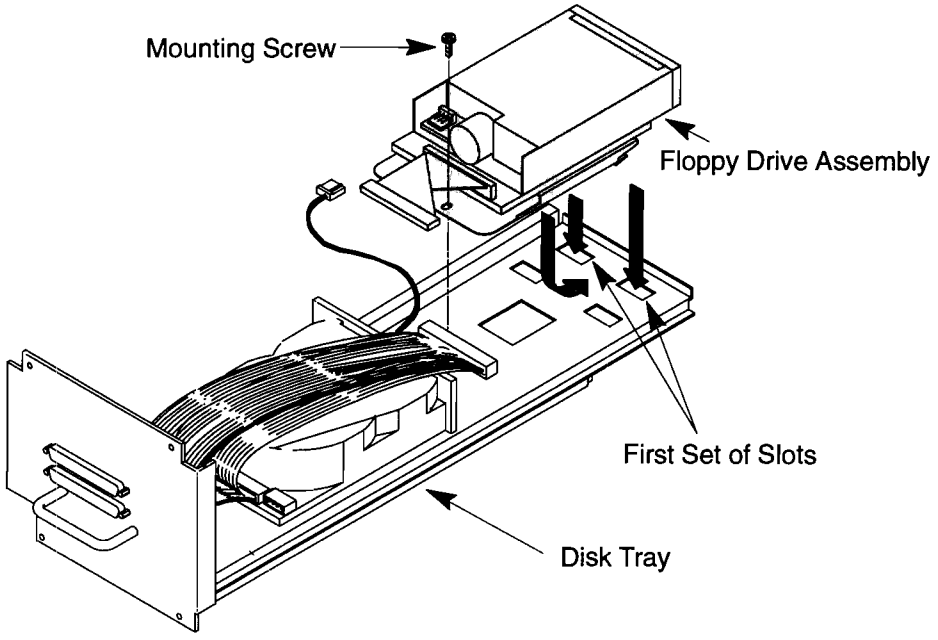


Figure B–19. Mounting the Floppy Disk Drive Assembly

2. Plug the **2–wire** power cable connector into the floppy power connector (see Figure B–20). Line up the pins on the connectors and press firmly until you hear a click.

3. Plug the SCSI cable connector into the SCSI cable extension (see Figure B–20). Line up the pins on the connectors and press firmly until you hear a click.

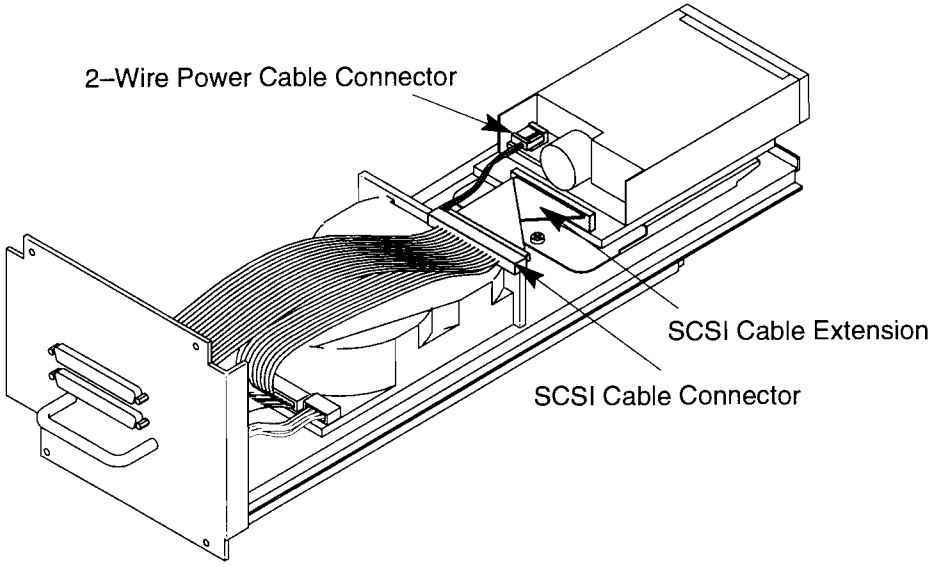


Figure B–20. Connecting Cables to the Floppy Disk

Reinstalling the Disk Tray Assembly

1. Slide the disk tray assembly into the workstation chassis.

Make sure the bulkhead panel is tight against the chassis. Secure the bulkhead panel to the chassis with the four screws that you removed from the bulkhead panel when you removed the disk tray assembly. See Figure B–21.

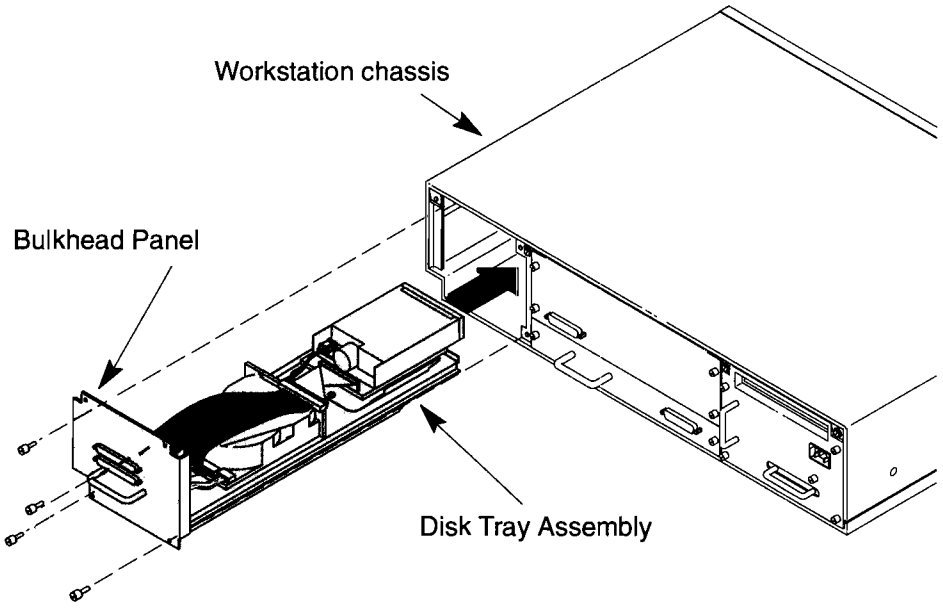


Figure B–21. Reinstalling the Disk Tray Assembly

2. Reconnect the external SCSI cable(s).

Connect the external SCSI cable to the single–ended SCSI connector and to the SCSI connector marked "IN" on the bulkhead panel (see Figure B–22). When connecting SCSI connectors, line up the pins on the connectors and press firmly until you hear a click.

3. Reconnect the SCSI terminator (see Figure B–22), or whatever external SCSI device cable you disconnected in Step 3 of "Remove the Disk Tray Assembly."

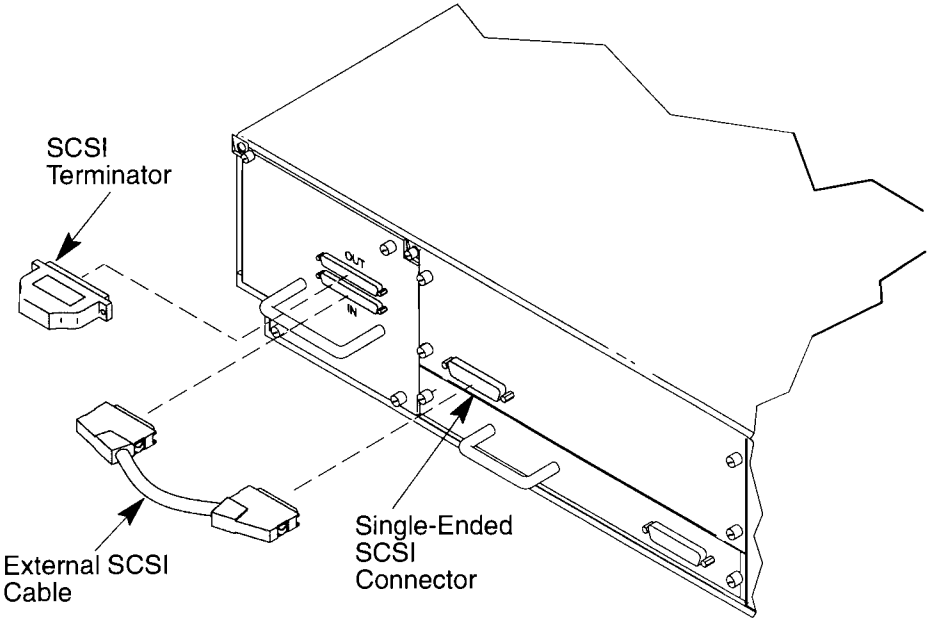


Figure B–22. Connecting the External SCSI Cable and SCSI Terminator

4. Mount the floppy bezel to the front panel of the workstation (see Figure B–23). Use a small Pozidrive screwdriver and the two screws you set aside when you removed the original bezel in Step 1 of "Remove the Disk Tray Assembly."

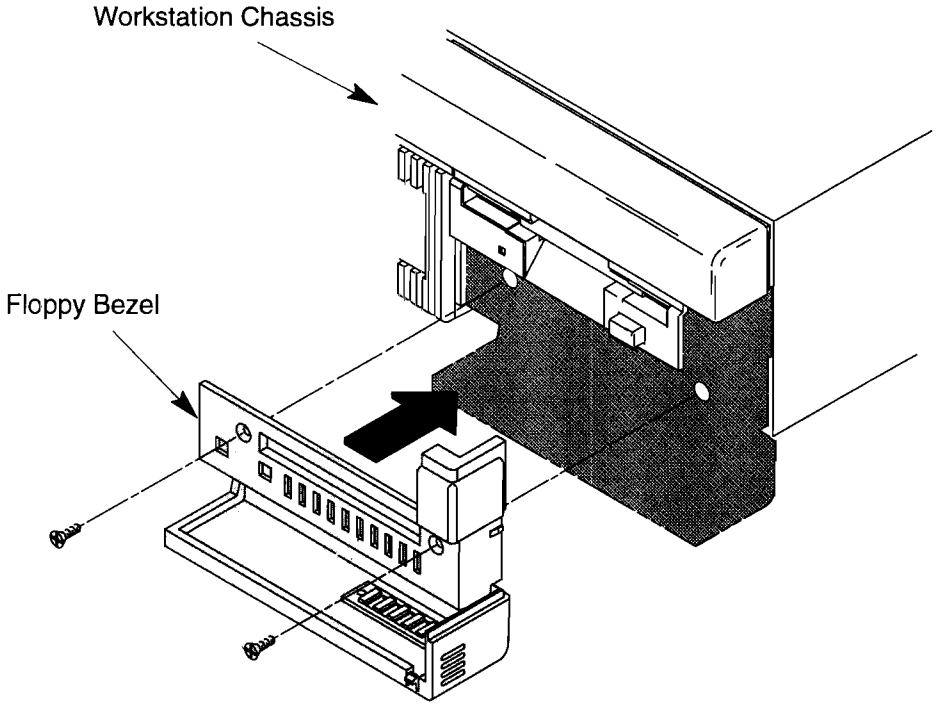


Figure B–23. Mounting the Floppy Bezel

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

Configuring the SCSI Floppy Driver

Perform the following steps to add the **scsifloppy** driver to the HP–UX kernel configuration, generate a new HP–UX kernel, and reboot your system from the new HP–UX kernel:

1. Log in as **root**.

2. Check **/etc/conf/dfile** to see if the scsifloppy driver is already configured in the current HP–UX kernel by entering the following command:

   ```
   cat /etc/conf/dfile
   ```

   The contents of **/etc/conf/dfile** are listed. Each line is the name of a driver. If **scsifloppy** is listed, then it is already configured in your current HP–UX kernel and you may skip the rest of this section If **scsifloppy** is not listed, continue with Step 3.

3. Use an editor, such as **vuepad**, to edit **/etc/conf/dfile**. Add the following line to **/etc/conf/dfile**, then save the file and close it:

   scsifloppy

4. Enter the following line to change your working directory to the root directory:

   ```
   cd /
   ```

5. Enter the following command to put your workstation in single–user mode:

   ```
   shutdown 0
   ```

6. Back up the existing HP–UX kernel by entering the following command:

   cp /hp–ux SYSBCKUP Return

7. Change your working directory to **/etc/conf** by entering the following command:

   cd /etc/conf Return

8. Enter the following command to run **config** on **/etc/dfile**:

   /etc/config dfile Return

9. Create the new hp–ux kernel by entering the following command:

   make –f config.mk Return

10. Enter the following command to copy the new kernel to the root direcxtory:

    cp hp–ux /hp–ux Return

11. Enter the following command to reboot your workstation with the new kernel:

    /etc/reboot Return

The system reboots and the login prompt appears.

NOTICE: If you reload software or rebuild the Instant Ignition system on your workstation, you will need to redo the steps in this section to reconfigure the **scsifloppy** driver.

If the Kernel Won't Boot

If the newly configured kernel won't boot, follow the instructions in this section to restore the backed up kernel.

1. Log in as **root**.

2. Enter the following command:

   ```
   shutdown -r now
   ```

3. The system shuts down and starts to reboot. Press and hold Esc when the following message is displayed:

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

   In a few seconds, the following message appears:

   ```
   Terminating selection process.
   ```

   A short time later, the following message appears:

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

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:

```
Device Selection     Device Path      Device Type and Utilities
------------------------------------------------------------------

        P0             scsi.6.0          disk_drive_identifier
        P1             scsi.5.0          disk_drive_identifier
        P2             scsi.4.0          DDS-format_tape_drive_id
        P3             scsi.3.0          CD_ROM_drive_identifier
```

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:
```

4. You now must start the ISL interface from the default boot device. In the following steps we assume that your boot device is the system default which is a disk at SCSI ID 6. To start the ISL from the disk at SCSI ID 6, enter the following command:

Select from menu: **b scsi.6.0 isl** Return

The following prompt is displayed:

```
ISL>
```

5. To boot the backup copy of your kernel, enter the following command at the `ISL>` prompt:

```
ISL> hpux boot disk(scsi.6;0)/SYSBCKUP Return
```

Your workstation boots from the backup kernel.

6. When the login screen appears, log in as **root**.

7. Enter the following command to copy the backed up kernel:

```
cp /SYSBCKUP /hp-ux Return
```

8. Enter the following command to reboot your workstation:

```
/etc/reboot Return
```

9. Contact your system administrator or designated service representative for help on reconfiguring your HP–UX kernel.

Installing a Hard Disk Drive

This section describes how to install a hard disk drive to your system.

Contents of SCSI Disk Drive Kits

Verify that you have the correct kit, and that it contains all the parts needed to complete the disk drive installation, as shown in Table B–1.

Table B–1. Contents of Disk Drive Kits

Order Number	Description of Kit Contents
A2563A	1 1.0–GB single–ended disk drive assembly 1 static strap
A2565A	1 525–MB single–ended disk drive assembly 1 static strap
A2566A	1 1.0–GB fast, wide disk drive assembly 1 static strap

Checking the SCSI ID Jumper Settings and Terminators on the Hard Drive

Perform the following steps to set the SCSI ID jumpers and check the terminators:

1. Attach the static-grounding wrist strap by following the instructions on the package that contains the strap. Attach one end of the strap to the system chassis.

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

2. Set the SCSI ID jumpers on the new drive, and check that the other jumpers are set correctly. This disk drive must be set to SCSI ID 5.

If your new disk drive is a Hewlett–Packard or Micropolis drive, you can access the jumpers without removing the drive from the mounting bracket. Skip substeps 1 and 3; perform substep 2 only.

If your new disk drive is a Quantum or Seagate drive, you must remove the drive from the mounting bracket to access the jumpers. Perform the following three steps:

1. Using a flatblade screwdriver, remove the four screws from the bottom of the disk drive assembly to remove the disk drive mounting bracket, as illustrated in Figure B–24.

2. Set the SCSI ID jumpers to SCSI ID 5 and check that the other jumpers are set correctly.

   If the SCSI terminators are installed on the disk drive, use a pair of small needle–nose pliers to remove them. See Figures B–25 through B–29.

3. Replace the disk drive mounting bracket on the disk drive. See Figure B–24.

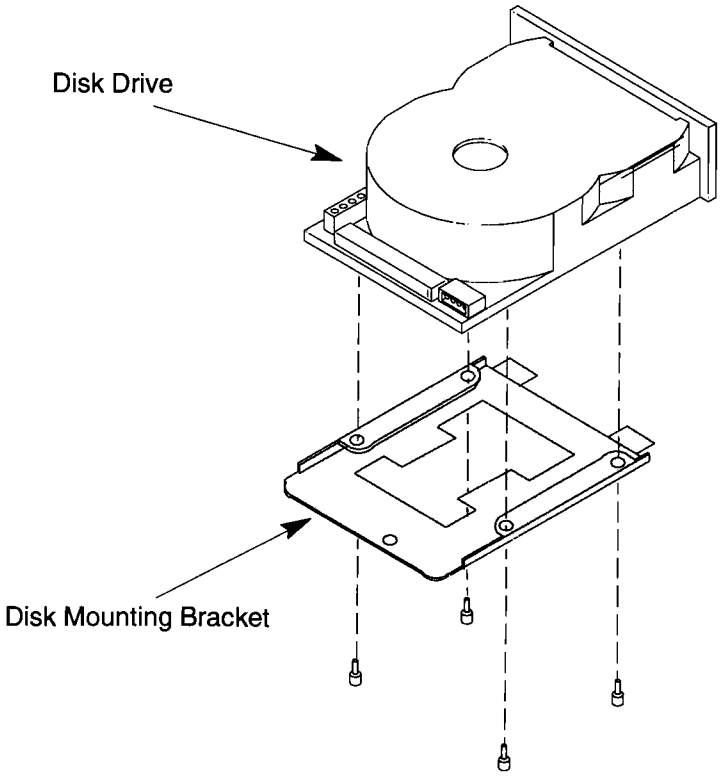


Figure B–24. Removing the Disk Drive Mounting Bracket on Quantum and Seagate Drives

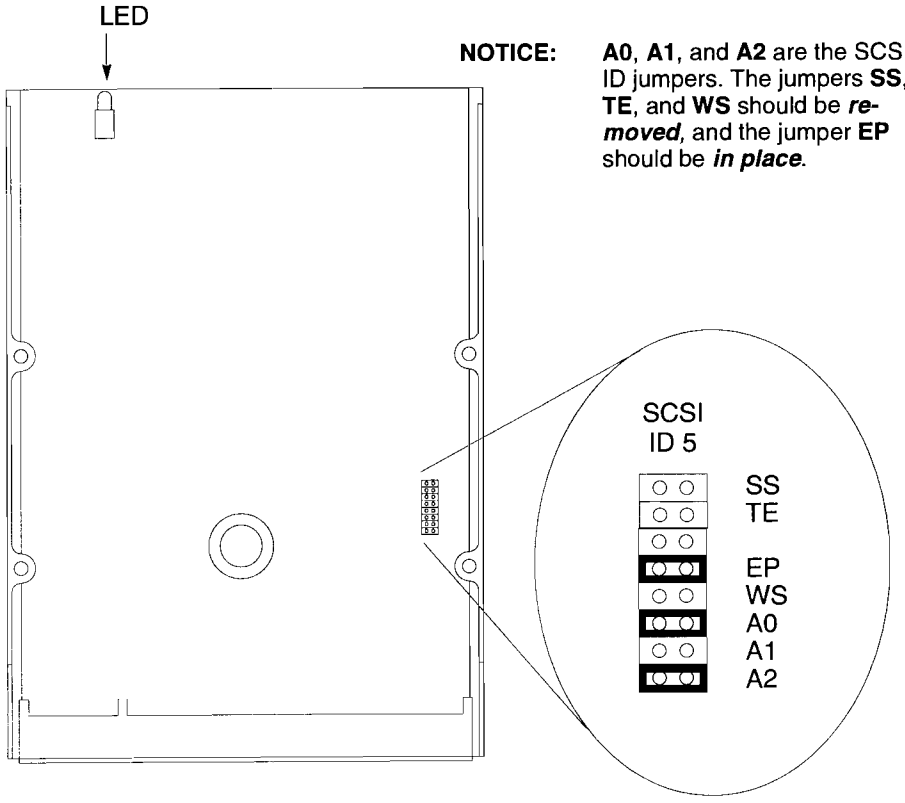


Figure B–25. Quantum 525–MB Winchester Drive Jumpers

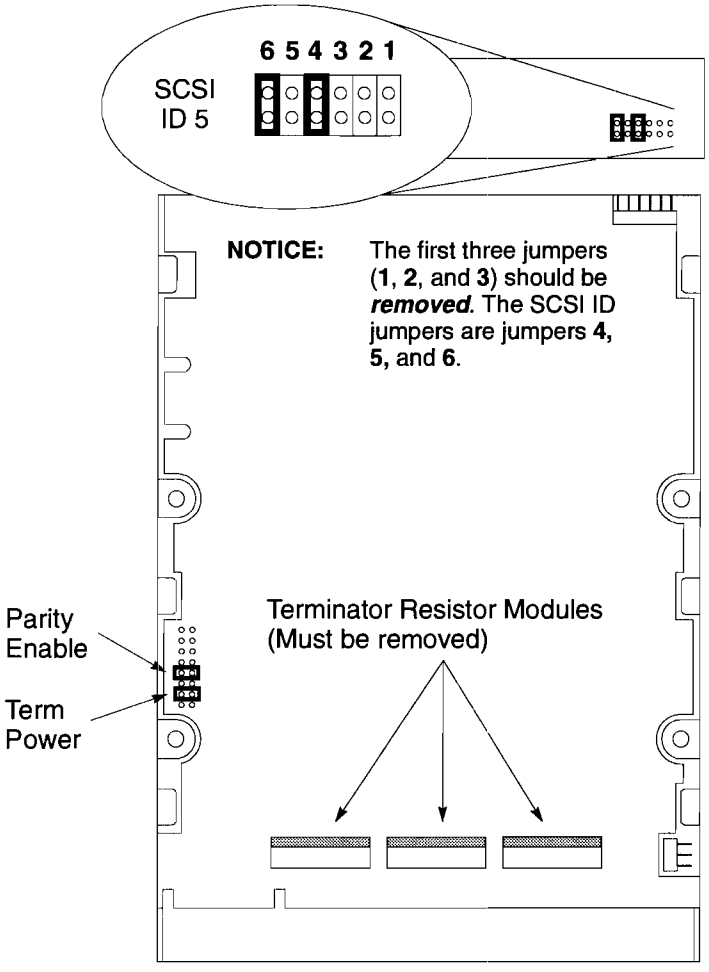


Figure B–26. Seagate 525–MB and 1–GB Winchester Drive Jumpers

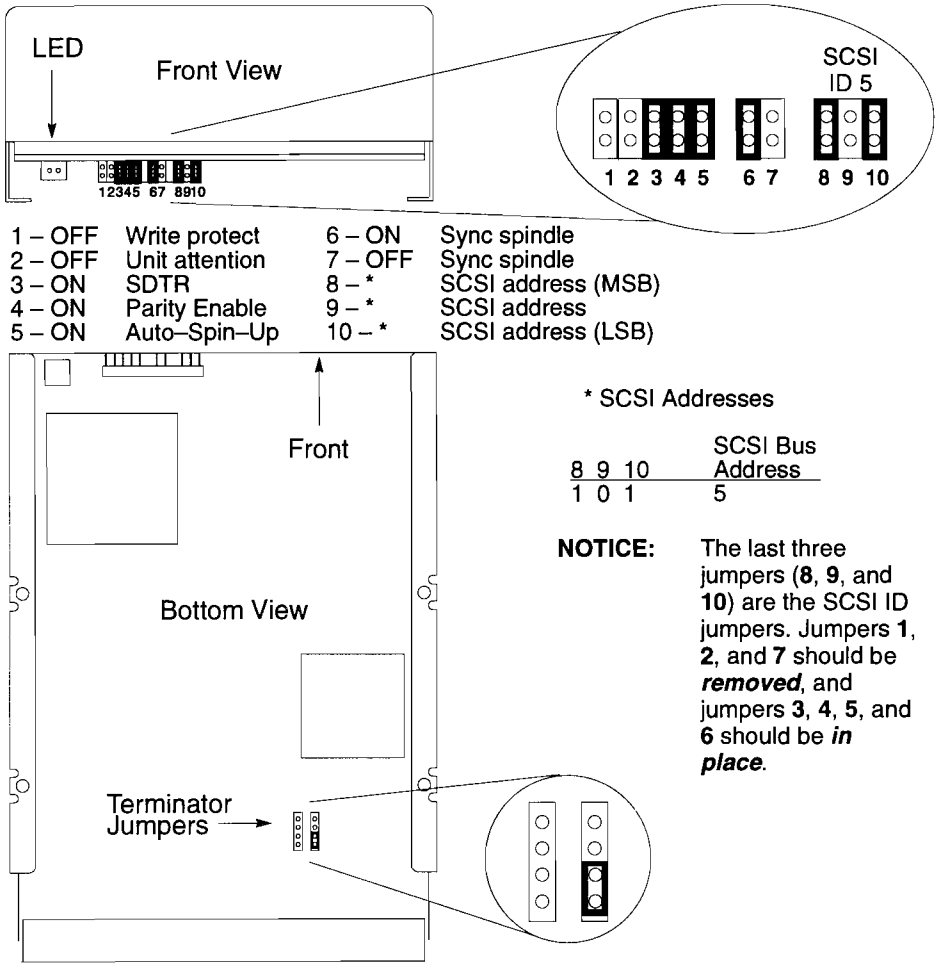


Figure B–27. Hewlett–Packard 1–GB Winchesters Drive Jumpers (Single–Ended)

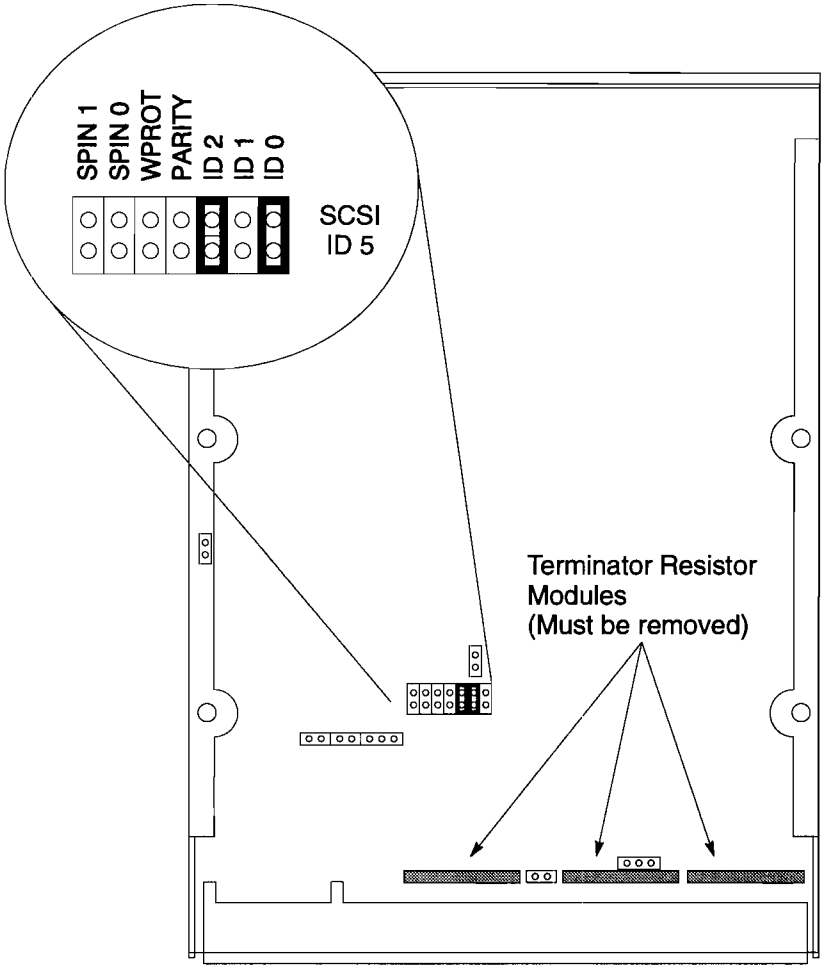
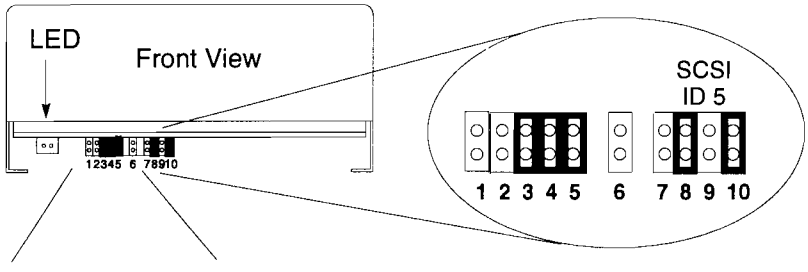
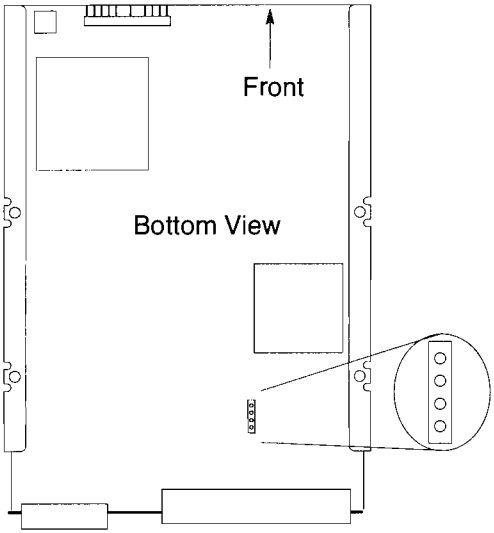


Figure B–28. Micropolis 1–GB Winchester Drive Jumpers (Single–Ended)



1 – OFF	Write protect	6 – OFF	Sync spindle
2 – OFF	Unit attention	7 – *	SCSI address (MSB)
3 – ON	SDTR	8 – *	SCSI address
4 – ON	Parity Enable	9 – *	SCSI address
5 – ON	Auto–Spin–Up	10 – *	SCSI address (LSB)



* SCSI Addresses

7	8	9	10	SCSI Bus Address
0	1	0	1	5

NOTICE: **7**, **8**, **9**, and **10** are the SCSI ID jumpers.

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

Figure B–29. Hewlett–Packard 1–GB Winchester Drive Jumpers (Fast, Wide)

Powering Off the Workstation and any Peripherals

1. Before you shut down the node and install any SCSI disk drives, perform a full backup of your HP–UX file system. For more information on system backups, see the *System Administration Tasks Manual: HP 9000 Series 700 Computers.*

2. Shut down your system by performing the procedure described in Chapter 2 (if you are using HP VUE) or Chapter 3 (if you are using the HP–UX command line shell) of this manual.

3. Power off your workstation.

CAUTION: **Do not** power off your 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.

4. Disconnect the power cord from the rear of the workstation and the wall outlet.

5. Power off any external peripherals attached to your workstation, and unplug their power cables from the wall outlet.

Removing the Disk Tray Assembly

1. Disconnect the external SCSI cable.

Disconnect both ends of the external SCSI cable by squeezing the clips on either side of each connector and pulling out the connector (see Figure B–30 or B–31).

2. Disconnect the SCSI terminator, if there is one, or any external SCSI device cable that may be connected in the position of the terminator (see Figure B–30 or B–31).

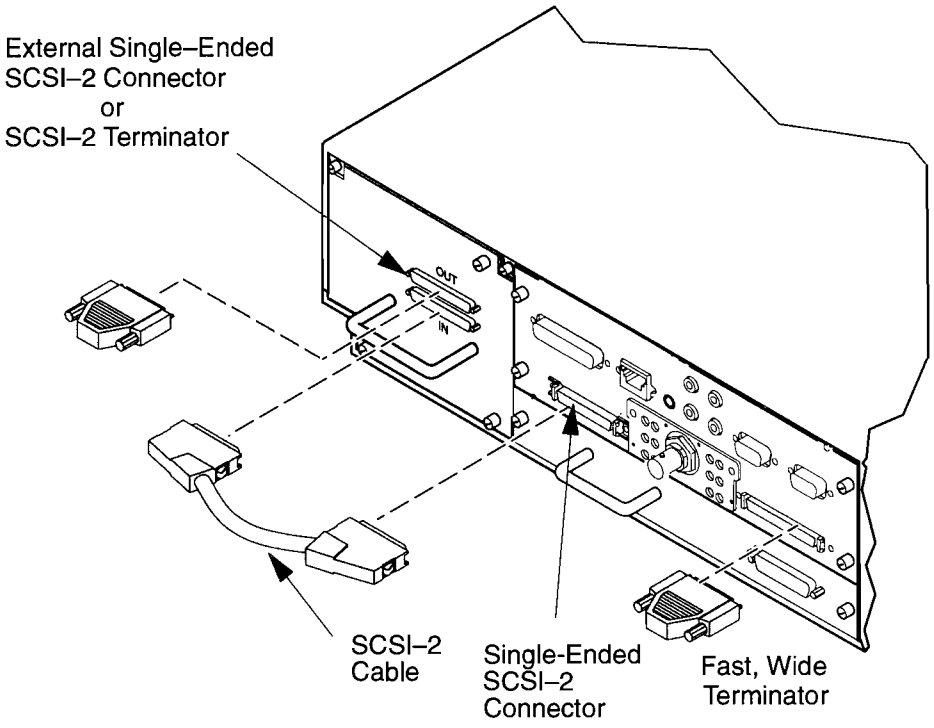


Figure B–30. Disconnecting the External Single–Ended SCSI Cable

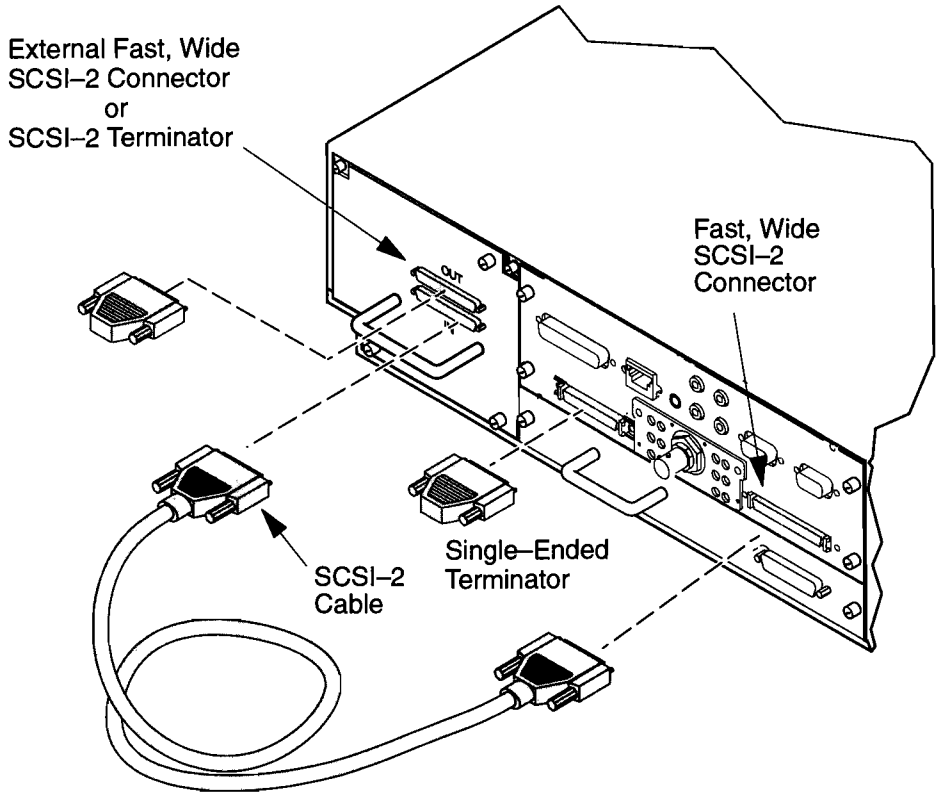


Figure B–31. Disconnecting the External Fast, Wide SCSI Cable

3. Remove the disk tray assembly from the workstation chassis.

Use a medium flatblade screwdriver to remove the four screws that hold the bulkhead panel in place. Use the handle on the bulkhead panel to remove the disk tray assembly from the system chassis (see Figure B–32). Save the four screws for use in reinstalling the tray assembly.

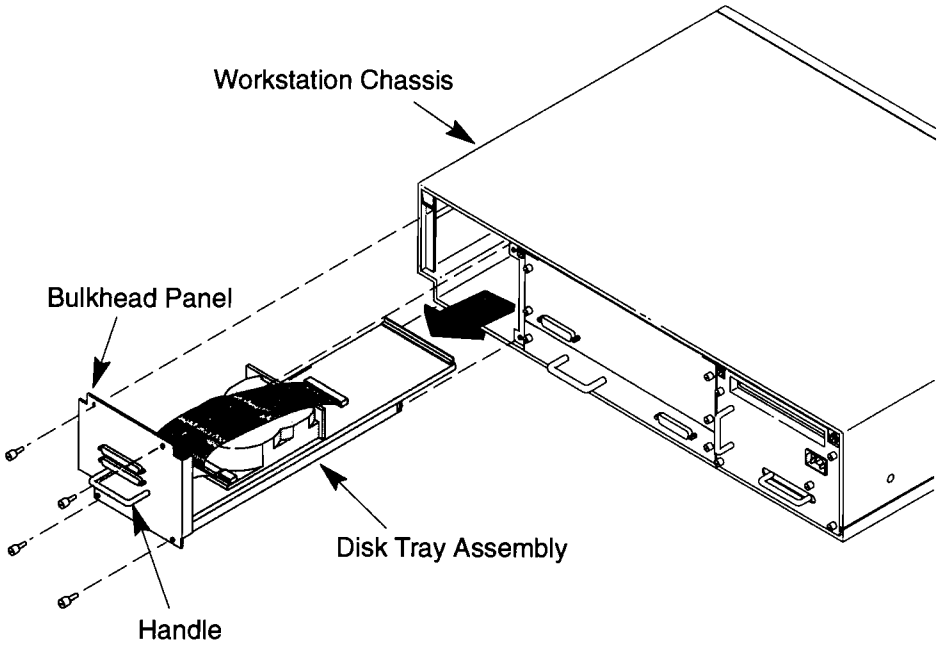


Figure B–32. Removing the Disk Tray Assembly

4. Pull the 4–wire power cable out from the channel in the bottom of the tray, and tuck the 2–wire power cable into the bottom of the disk tray assembly (see Figure B–33).

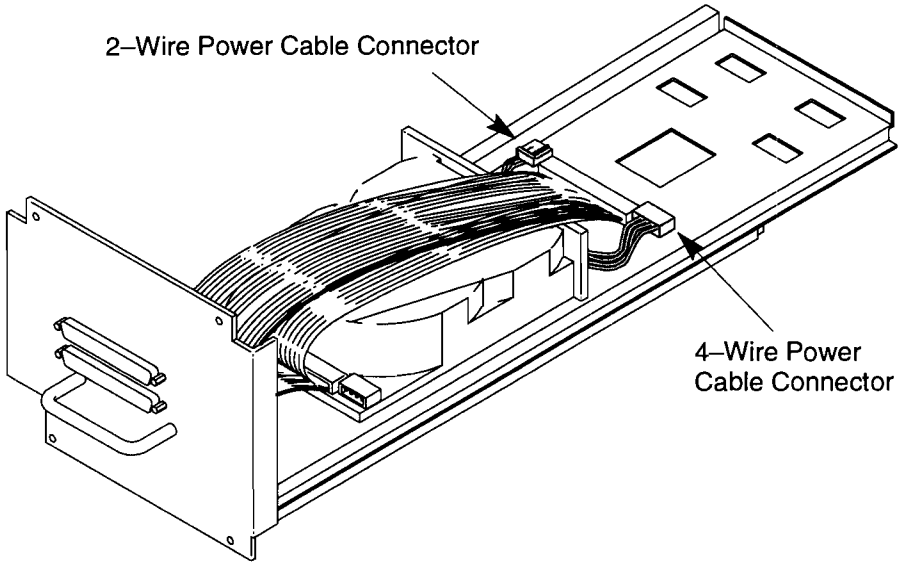


Figure B–33. Rearranging the Cables

Mounting the Hard Disk Drive Assembly

1. Slide the disk drive assembly into the second set of slots in the front of the disk tray. Use the mounting screw that came in the kit and a Posidrive screwdriver to secure the disk drive mounting bracket to the disk tray. (See Figure B–34.)

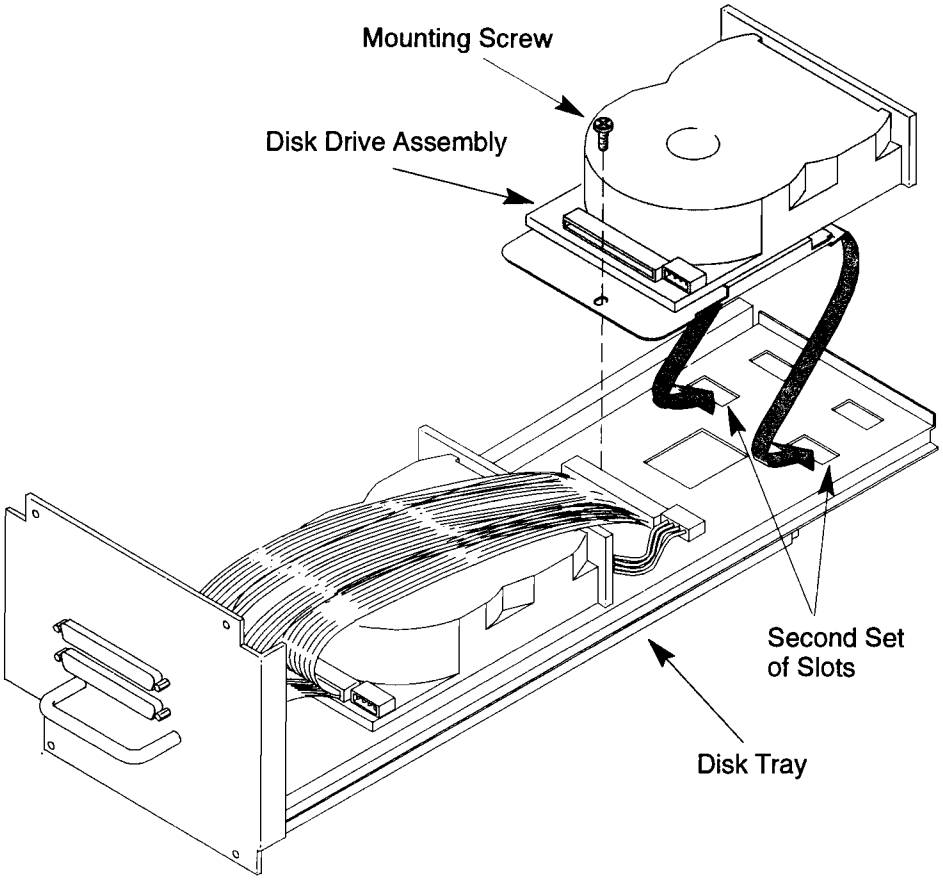


Figure B–34. Mounting the Disk Drive Assembly on the Disk Tray

2. Plug the **4–wire** power cable connector into the disk drive power connector. Line up the pins on the connectors and press firmly until you hear a click. (See Figure B–35.)

3. Plug the SCSI cable connector into the disk drive SCSI connector. Line up the pins on the connectors and press firmly until you hear a click. (See Figure B–35.)

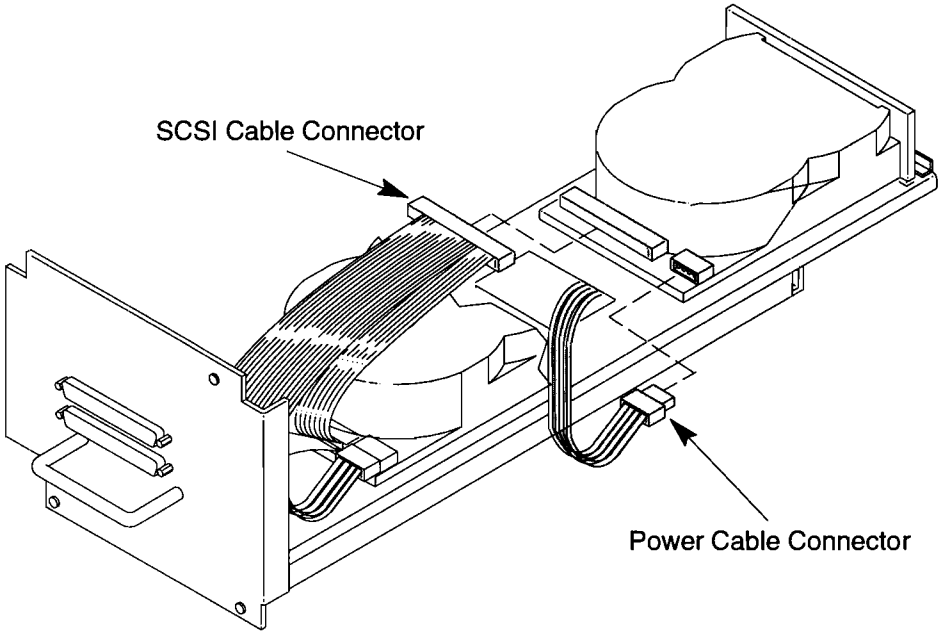


Figure B–35. Connecting Cables to the Hard Disk

Reinstalling the Disk Tray Assembly

1. Slide the disk tray assembly into the workstation chassis.

Make sure the bulkhead panel is tight against the chassis. Secure the bulkhead panel to the chassis with the four screws that you removed from the bulkhead panel when you removed the disk tray assembly. See Figure B–36.

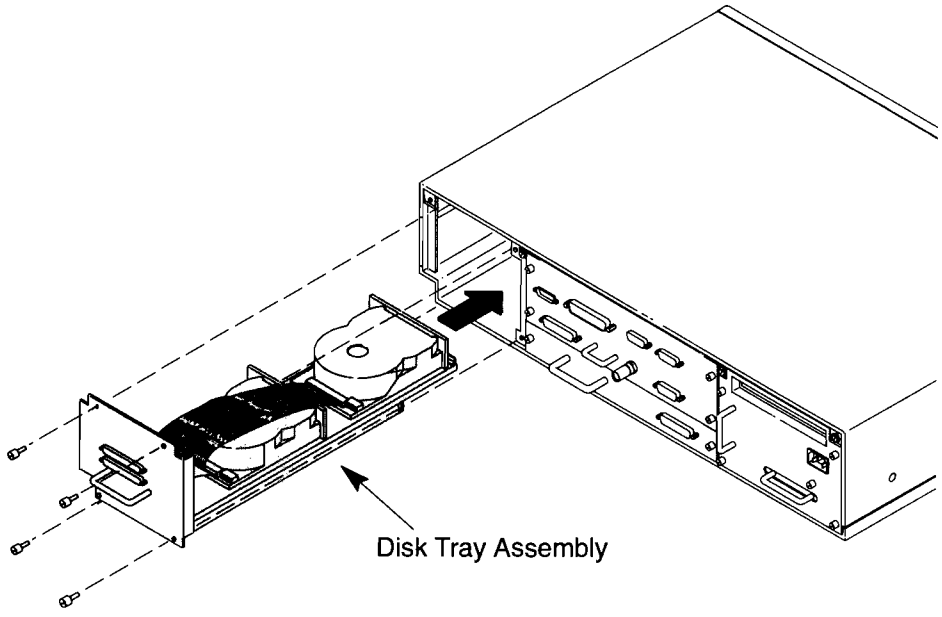


Figure B–36. Installing the Disk Tray Assembly

2. Reconnect the external SCSI cable(s).

Connect the external SCSI cable to the SCSI connector marked "IN" on the bulkhead panel. When connecting SCSI connectors, line up the pins on the connectors and press firmly until you hear a click.

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

Configuring the SCSI Disk Drive

The following sections describe each of the several possible ways that you can configure your system to utilize the new disk drive. Decide which method is right for your particular application.

For information on all of these options, and an example of adding a disk drive to a client, refer to *Managing Clusters of HP 9000 Computers*. Pay special attention to the sections on disk drives and local disks.

If you are not sure how you should configure your system, contact your system administrator for help.

If you have problems booting HP–UX or mounting your new drive, see Chapter 6. Once you have reconfigured your system, run the system verification tests.

Attaching the Disk Drive to a Cluster Client

If you plan to attach the disk drive to a client computer in an HP–UX cluster (a group of computers linked by a local area network and sharing a file system and peripherals), there are several ways you can use the drive:

- As a local swap (the disk is used by its client only)
- As a shared swap (the disk is used by its client and other clients)
- As a file system (the disk is shared with all members of the cluster)
- As a file system and a local or shared swap

Configuring the Disk Drive as a Boot Disk and Install HP–UX

To configure the disk drive as a boot disk and install the HP–UX operating system software, refer to the following manuals:

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

Configuring the Second Disk Drive as a File System or Swap Area

To configure a second disk drive as a file system or swap area, refer to the following manuals:

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

Appendix C
SCSI–2 Connections

This appendix provides the following information about connecting SCSI–2 devices to your system:

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

NOTICE: If there are no external SCSI–2 devices attached to the system, you must terminate the SCSI–2 bus. Connect the terminator that was shipped with your workstation to the external SCSI–2 connector on the rear of the system unit.

SCSI–2 Restrictions

This section describes the SCSI–2 restrictions for the workstation in the following areas:

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

Cables

All SCSI–2 devices ship without cables. Only SCSI–2 cables approved by HP can be used to connect your workstation and any SCSI–2 devices for the system card, or EISA SCSI–2 option boards. HP offers the following SCSI–2 cables for single–ended standard SCSI–2 (located on the system board) 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

HP offers the following SCSI–2 cables for fast, wide SCSI–2 devices (located on the system board):

- C2911A cable with 0.9 meter (3 feet) length
- C2915A cable with 1.0 meter (3.3 feet) length (used to connect fast, wide devices to fast, differential devices)

CAUTION: SCSI–2 cables approved by HP are designed to function within the SCSI–2 tolerances for HP devices. Use of other cables can result in significant problems with system operation.

Single–ended standard SCSI–2 definition limits the total cable length of SCSI–2 cables to 6 meters (19.6 feet).

Fast, differential SCSI–2 and fast, wide SCSI–2 definition limits the total cable length to 25 meters (82 feet). Always use the shortest possible cable(s) for your configuration.

If you are daisy–chaining single–ended standard or fast, differential 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

If you are daisy–chaining fast, wide SCSI–2 devices together, use the following cables:

- C2911A cable with 0.9 meter (3 feet) length
- C2915A cable with 1.0 meter (3.3 feet) length (used to connect fast, wide devices to fast, differential devices)

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

Connectors and Terminators

Any single–ended standard or fast, differential SCSI–2 device connecting to the system board or the EISA SCSI–2 bus must use a 50–pin high–density thumb screw connector on the end connecting to the system board or EISA bus, and a 50–pin 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.

Any fast, wide SCSI–2 device connecting to the system board must use a 68–pin high–density thumb screw connector on both ends.

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 (for 50–pin connectors) or C2905A (for 68–pin connectors) from Hewlett–Packard.

SCSI–2 Configuration Constraints

You are limited to the number of same–type SCSI–2 devices per system. Before adding another SCSI–2 device, determine if the system can support the additional device.

The Model 735 workstation offers the following three types of SCSI–2 bus, each with its own configuration constraints:

- Single–ended standard SCSI–2 bus
- Fast, differential SCSI–2 bus (EISA option)
- Fast, wide, differential SCSI–2 bus

Single–Ended SCSI–2 Bus Configuration Constraints

For the single–ended standard SCSI–2 bus, HP–UX supports only **one** of each type of removable disk drive and **two** of the same type tape devices per system. Table C–1 shows configuration constraints for each single–ended standard SCSI–2 device type. If the system has internal hard disk drives or a floppy disk drive, you must count them as SCSI–2 devices.

Table C–1. Single–Ended SCSI–2 Bus Configuration Constraints

Single–Ended SCSI–2 Devices	**Maximum Number of Each Type of Device Allowed**
Hard Disk Drives (internal and external)	7
Floppy Disk Drives	1
CD–ROM Drives	1
4–mm DDS Tape Drives	2
9–track Tape Drives	2
650–MB Magneto–Optical Drives	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.

CAUTION: **Do not** mix single–ended standard and fast, differential SCSI–2 peripherals.

EISA Fast, Differential SCSI–2 Configuration Constraints

Fast, differential SCSI–2 does not work with the single–ended standard SCSI–2. Table C–2 shows the configuration constraints for each fast, differential SCSI–2 device type. If the EISA slot contains a networking board, do not count this as a SCSI–2 device.

Table C–2. 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

CAUTION: **Do not** mix single–ended standard and fast, differential SCSI–2 peripherals.

Fast, Wide SCSI–2 Bus Configuration Constraints

Fast, wide SCSI–2 does not work with the single–ended standard SCSI–2. Fast, wide SCSI–2 does work with the fast, differential SCSI–2, if you use the correct cabling (C2915A). Table C–3 shows the configuration constraints for each fast, wide, differential SCSI–2 device type.

Table C–3. Fast, Wide SCSI–2 Bus Configuration Constraints

External Fast, Wide, Differential SCSI–2 Devices	Maximum Number of Each Type of Device Allowed
SCSI–2 Drive (fast, wide or fast, differential)	15
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, the fast, differential SCSI–2 bus (EISA option), and the fast, wide SCSI–2 bus.

Single–Ended SCSI–2 Bus Length

Follow these instructions to calculate your total single–ended standard SCSI–2 bus length (including the system unit, external SCSI–2 devices, and SCSI–2 interconnect cables) using Table C–4:

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 735 system unit is already listed. This number must always be used for the system unit.

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" in 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 standard 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, 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 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 735 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	_____	_____
C1705A	0	_____	_____
A1999A	0.3 (1.0)	_____	_____
C1700A	1.1 (3.6)	_____	_____
C1520B	0.2 (0.7)	_____	_____
C1521A	0.2 (0.7)	_____	_____
7980S	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 the EISA SCSI–2 bus on your system using Table C–5:

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.

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" in 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, try configuring your installation with shorter cables.

If you have problems, call your designated service representative.

Table C–5. 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)	_____	_____
C1521A	1.3 (4.3)	_____	_____

Subtotals: _____ + _____

Total SCSI–2 Bus Length = _____

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

Fast, Wide SCSI–2 Bus Length

Follow these instructions to calculate your total fast, wide SCSI–2 bus length for the fast, wide SCSI–2 bus on your system using Table C–6:

1. List all of your external SCSI–2 devices in the first column.

2. In the second column, write the lengths of the internal SCSI–2 bus that correspond to your devices.

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

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

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

NOTICE: The total length of the fast, wide 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, try configuring your installation with shorter cables.

If you have problems, call your designated service representative.

Table C–6. SCSI–2 Bus Length Worksheet for Fast, Wide SCSI–2 Bus

SCSI–2 Device	Device Internal Length meters (feet)	External Cable Length meters (feet)
Model 735 System Unit with internal fast, wide devices	0.6 (2.0)	0.9 (3.0)
C3034T	_____	_____
C3035T	_____	_____
C3036T	_____	_____
Other	_____	_____
Other	_____	_____
Subtotals:	_____ +	_____

Total SCSI–2 Bus Length = [ ]

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

Determining Exisiting SCSI Address Settings

Before installing any additional SCSI devices, you need to determine the existing SCSI address settings currently in use on your system. Perform the following steps:

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. Determine the SCSI–2 device ID of any internal drives.

4. Determine the SCSI–2 device ID for each type of external single–ended drive currently connected to your workstation.

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.

Assigning SCSI–2 Device IDs

The workstation has three different SCSI–2 buses available: a single–ended standard standard SCSI–2 bus, a fast, differential SCSI–2 bus (EISA option), and a fast, wide SCSI–2 bus.

Single–Ended Standard System SCSI–2 Device IDs

Before assigning a SCSI–2 device ID to your drive, you need to check your 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–7:

1. Write in the SCSI–2 device ID of any internal drives in Table C–7.

2. Write in the type of external drives (single–ended standard, EISA, or fast, wide devices) currently connected to your system under the heading "External Device Drives" and each drive's SCSI–2 device ID under the heading "Device ID."

3. Add your new drive to the table if it is an external device. If it is an internal drive, continue to Step 4.

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.

4. Check to see which SCSI–2 device IDs are not used. You can use ID numbers 0 through 5 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. See the drive installation documentation for information on changing the device ID.

CAUTION: **Do not** use SCSI–2 device ID 7 for any device except the system card.

Table C–7. System 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 (uses ID No. 6)	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
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 have no more than 7 SCSI–2 devices (internal and external) connected to the system.

EISA Fast, Differential Option SCSI–2 IDs

Before assigning a SCSI–2 device ID to your drive, you need to check your SCSI–2 device IDs. To check which SCSI–2 device IDs are available and assign an ID to your device, follow these instructions which use Table C–8:

1. Write in the type of external drives currently connected to your system under the heading "EISA Option SCSI–2 Device Drives" and each drive's SCSI–2 device ID under the heading "Device ID."

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 5 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 except the system card.

Table C–8. EISA SCSI–2 Device IDs

EISA Option SCSI–2 Device Drives		Device ID (Address) Number (Only 0 through 5 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 have no more than 7 SCSI–2 devices connected to an EISA bus.

Fast, Wide Option SCSI–2 IDs

Before assigning a SCSI–2 device ID to your drive, you need to check your SCSI–2 device IDs. To check which SCSI–2 device IDs are available and assign an ID to your device, follow these instructions which use Table C–9:

1. Write in the type of external drives currently connected to your system under the heading "Fast, Wide Option SCSI–2 Device Drives" and each drive's SCSI–2 device ID under the heading "Device ID."

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 14 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 15 for any device except the system card.

Table C–9. Fast, Wide SCSI–2 Device IDs

Fast, Wide Option SCSI–2 Device Drives	**Device ID (Address) Number (Only 0 through 14 available)**
1st Internal Device _____	_____
2nd Internal Device _____	_____
1st External Device _____	_____
2nd External Device _____	_____
3rd External Device _____	_____
4th External Device _____	_____
5th External Device _____	_____
6th External Device _____	_____
7th External Device _____	_____
8th External Device _____	_____
9th External Device _____	_____
10th External Device _____	_____
11th External Device _____	_____
12th External Device _____	_____
13th External Device _____	_____
14th External Device _____	_____
15th External Device _____	_____

NOTICE: You can have no more than 15 SCSI–2 devices connected to a fast, wide option bus.

Connecting to the SCSI–2 Port

This section describes how to connect to the system SCSI–2 port (single–ended standard or fast, wide) and any EISA SCSI–2 ports.

System SCSI–2 Port Connection

The system contains up to five (5) SCSI–2 connectors:

- System Single–Ended SCSI–2 Connector
- System Fast, Wide SCSI–2 Connector
- Internal SCSI–2 IN Connector
- External SCSI–2 OUT Connector
- EISA Fast, Differential SCSI–2 Connector – (optional)

Figure C–1 shows the possible SCSI–2 connectors on the workstation's rear panel. SCSI–2 cables connect to these ports with a high–density thumb screw connector.

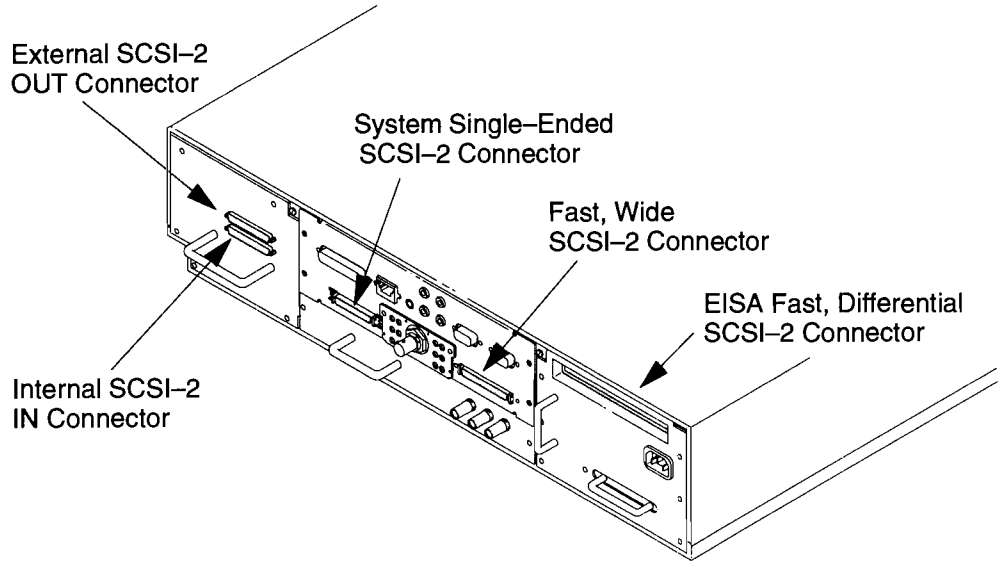


Figure C–1. Rear Panel Connectors

System Single–Ended SCSI–2 Connector (external devices)

This port supports the Small Computer Systems Interface (SCSI–2) protocol and supports up to 7 single–ended standard SCSI devices such as DDS–Format tape drives and CD–ROM drives. This port uses a high–density 50–pin SCSI connector.

Internal SCSI–2 IN Connector

Signals and data to/from the SCSI controller on the system (core I/O) card to internal disk(s) are routed through an external cable connected between the Internal SCSI–2 IN connector and either the system single–ended standard SCSI connector or the fast, wide SCSI connector. Figure C–2 shows the cabling scheme for single–ended standard systems, and Figure C–3 shows the cabling scheme for fast, wide systems.

External SCSI–2 OUT Connector

Additional external SCSI devices are connected to the External SCSI OUT connector as shown in Figures C–2 and C–3. If you do not have additional SCSI devices, the terminator must be connected to this connector. This port is identical to either the system single–ended standard SCSI port or the fast, wide SCSI port, depending on the type of disks within the disk tray.

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.

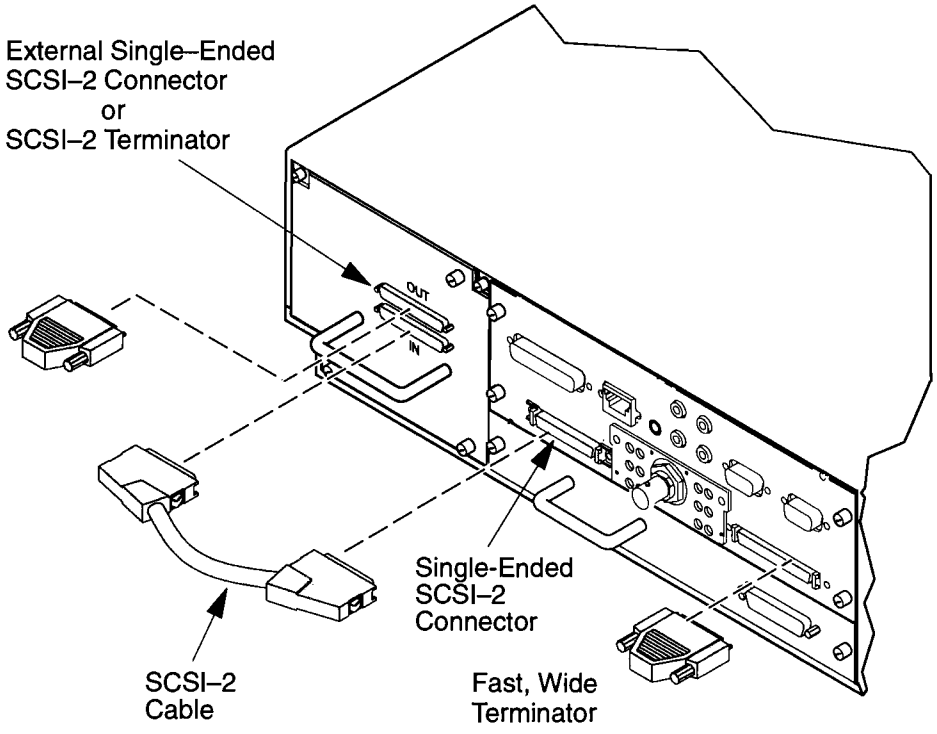


Figure C–2. Single–Ended SCSI–2 Port Cabling for Systems with Internal Single–Ended Disks

Fast, Wide SCSI–2 Port Connection

The external fast, wide SCSI–2 port is shown in Figure C–3.

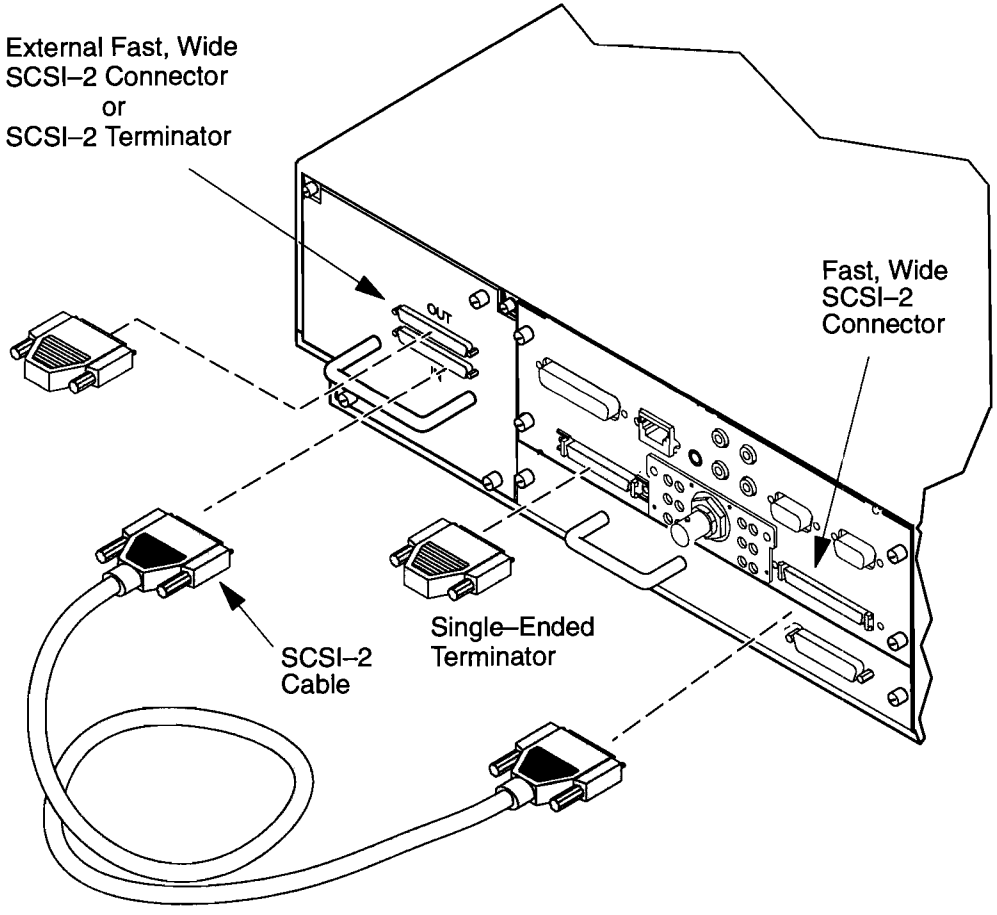


Figure C–3. Fast, Wide SCSI–2 Port Cabling for Systems with Internal Fast, Wide Disks

EISA Fast, Differential SCSI–2 Port Connection

The external EISA SCSI–2 port is located as shown in Figure C–4. A SCSI–2 cable connects to this port with a high–density thumb screw connector.

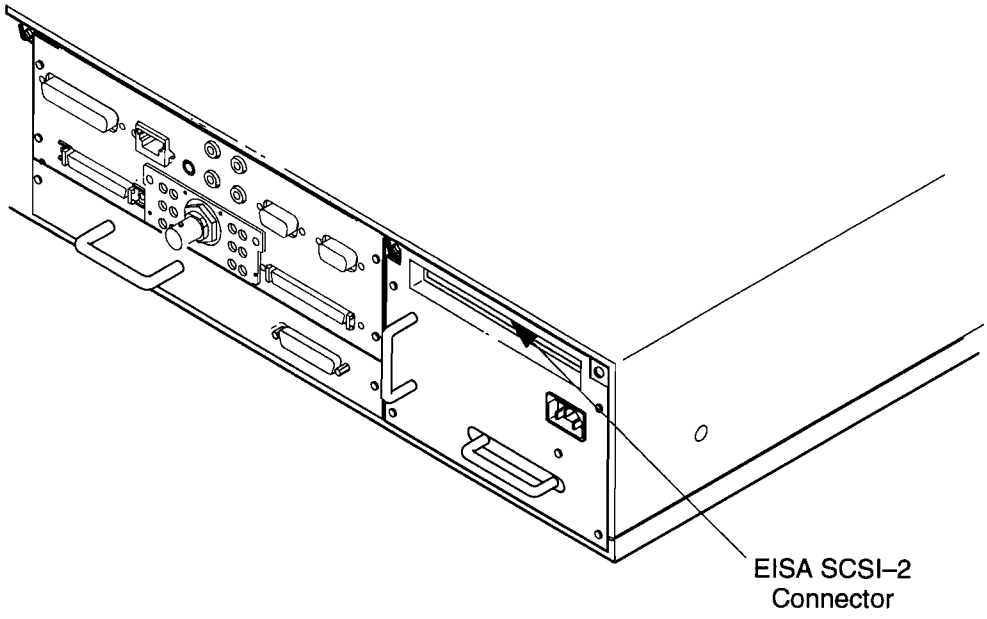


Figure C–4. Connecting to the EISA SCSI–2 Port

NOTICE: The last device connected to the SCSI–2 bus must be terminated with a SCSI–2 terminator. All devices listed ship without terminators. If you do not already have a SCSI–2 terminator, you must order terminator K2291 from Hewlett–Packard.

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
- The settings 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 and FDDI interfaces

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
- 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 use the boot console user interface, follow these steps:

1. Shut down your workstation as described in Chapter 2 or Chapter 3.

2. Turn off the power to your workstation for a few seconds. Then turn it back on.

CAUTION: **Do not** power off your 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. 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 FWSCSI
3. Built–in LAN
4. 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 single–ended SCSI bus

fwscsi is the built–in fast/wide SCSI bus

lan is all connections to the built–in LAN

eisa is an optional EISA device

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, fwscsi, lan,** or **eisa**) for which you wish to search.

Redisplaying the Results of a Search

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.

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 FWSCSI	**fwscsi**.fw*scsi_address.logical_unit_number*
Built–in LAN	**lan**.*server_address.init_retry.io_retry*
Built–in HIL	**hil**
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**
EISA	**eisa**.*eisa_slot.scsi_address* (for EISA SCSI)

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 from within the boot administration mode.

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, 1991, 2:44:05 PM, GMT, type the following at the `BOOT_ADMIN>` prompt:

`BOOT_ADMIN>` **date 19:91:7:1:14:44:5** 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
```

Displaying the FDDI Station Address

The **FDDI station address** of your workstation is the label that uniquely identifies the FDDI 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 FDDI station address in order to add your workstation to the cluster.

To display your workstation's FDDI station address, type the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> fddi_addr (Return)
```

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

```
FDDI Station Address:  cba987-654321
```

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," earlier in this appendix, for details.
- Turn off the workstation. There is no need to shut down the workstation with the special procedure described in Chapter 2 or Chapter 3, 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

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.**

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.**

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

Method of connecting devices where the signal passes from one device to the next in serial fashion along a bus.

DDS–format tape drive

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

Pressing and releasing a mouse button twice in rapid succession.

drag

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

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 differential SCSI–2, single–ended standard SCSI–2, Small Computer System Interface**.

fast wide differential SCSI–2

A 16–bit wide bus with high–power receivers and drivers, which allows cable length of up to 25 meters and a speed of up to 10 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

Device which stores data on a flexible diskette.

hard disk

Type of disk which is rigid as opposed to floppy diskette which is flexible.

hard disk drive

Device which stores data on a hard disk. The hard disk is a permanent part of the drive and cannot be removed.

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. It 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. 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

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, accepts the user's username and password, and then starts the Session Manager.

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 differential 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 differential SCSI–2, 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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Reader's Response

Please take a few minutes to give us the information we need to revise and improve our manuals from your point of view.

Document Title: *HP 9000 Series 700 Model 735 Owner's Guide*
Order No.: A2095–90608
Date Code: E0394

User Profile

Your Name _____ Title _____

Company _____

Address _____

Telephone number (_____) _____ Date _____

When you use the HP/Apollo system, what **job(s)** do you perform?

___Programming ___Application End User
___Hardware Engineering ___System Administration
___Other (describe)_____

Characterize your level of **experience** in using the HP/Apollo system:

___Experienced user (2+ yrs.) ___New user (6 mos. or less)
___Moderately experienced user (6 mos.–2 yrs.)

What programming **languages** do you use with the HP/Apollo system?

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