Model 712
Owner's Guide

Workstation Systems Group

Order No. A2615–90616
Edition E1293
Printed in U.S.A.

HP Computer Museum
www.hpmuseum.net

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First Printing: September, 1993

Last Printing: December, 1993

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Preface

Preface

This owner's guide describes how to use your HP Model 712 workstation.

This manual assumes that you have installed your workstation as described in the *Hardware Installation Guide Model 712*.

Audience

This guide is intended for users of HP Model 712 workstations.

Safety and Regulatory Statements

See Appendix A in the back of this manual for the safety and regulatory statements that apply to the HP Model 712 workstations.

Release Document(s)

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

Related Manuals

For more information, refer to the following manuals:

- *Hardware Installation Guide Model 712* (A2615–90600)
- *Using Your HP Workstation* (A2615–90001)
- *Ready–to–Wear User's Guide* (A2557–90011)
- *HP Visual User Environment User's Guide* (B1171–90061)
- *Installing and Updating HP–UX* (B2355–90039)
- *Managing Clusters of HP 9000 Computers: Sharing the HP–UX File System* (B2355–90038)
- *System Administration Tasks HP 9000 Series 700 Computers* (B2355–90040)
- *Using HP–UX* (B2910–90001)

To order manuals, please contact your local sales office.

Revision History

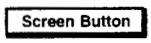
The revision history for each edition of the manual is listed below:

Edition	Revision History
E0993	First printing.
E1293	Minor mechanical revisions to the system.

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.
sample user input	In examples, information that the user enters appears in color.
`output`	Information that the system displays appears in `this typeface`.
Enter	A colored rectangle with rounded corners and a key label denotes a key on your keyboard. (In this manual we refer to the **Enter** key. On your keyboard the key may be labeled either **Enter** or **Return**.)

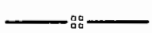


This colored symbol with a label in it denotes an HP VUE screen button. A screen button is a key or button which is drawn on your workstation's graphic display by HP VUE. It works like a keyboard key, except that you must move the mouse cursor over it and press the left mouse button to activate it. The screen button's label describes its function.

This symbol indicates a notice.

This symbol indicates a procedure.

This symbol indicates a caution.

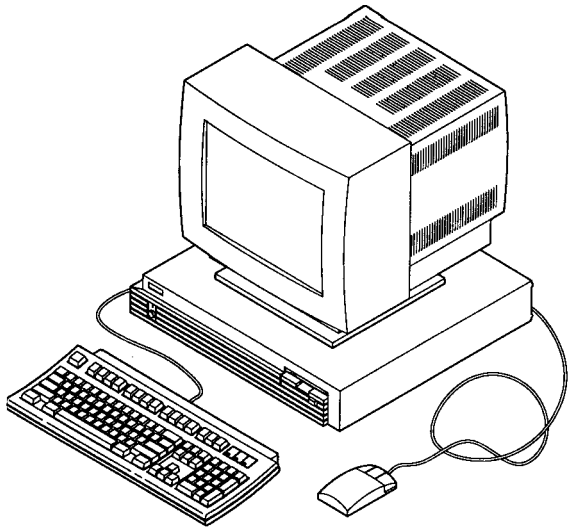


This symbol indicates the end of a chapter or a part of this guide.

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.



Chapter 1

System Overview

- Important information you need to note
- Product description
- System unit front panel controls and LEDs
- System unit rear panel connectors
- Monitor controls, connectors, and indicators
- Keyboard
- Operating system overview

This chapter introduces the HP Model 712 workstation. Its purpose is to familiarize you with your workstation and its controls and indicators.

The instructions in this chapter assume you are using the HP–UX operating system with the HP VUE version 3.0 (or later) interface. If you are not using HP–UX, or you are using a layered product with HP–UX, see the *User's Guide* for your operating system or layered product for instructions on how to perform the tasks in this chapter.

Important Information You Need to Note

Before you begin using your workstation, take a moment to gather the following important information and note it in the appropriate subsection for future use:

- LANIC ID
- SCSI device ID
- Device file used for each SCSI device
- Internet Protocol (IP) address
- Subnetwork mask

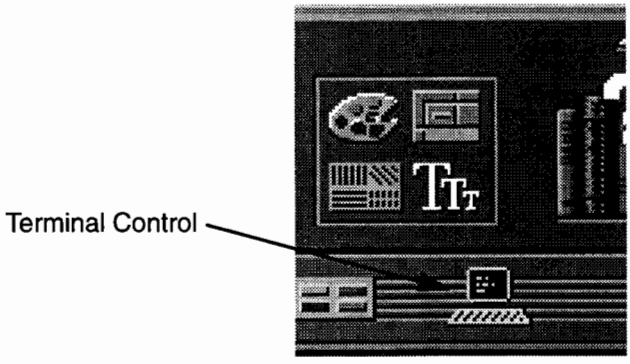
LANIC ID

Locate the contents label that comes with the workstation shipping carton. Find the LANIC ID listed there and write it down in the space provided:

LANIC ID _____

You can also get your LANIC ID by using the the lanscan command in a terminal window. To do this, follow these steps:

1. Move the mouse cursor to the **Terminal Control** on the **Front Panel** of your Workspace and click the left mouse button.



A terminal window opens.

2. Move the mouse cursor into the terminal window and single–click the left mouse button.

3. Enter the following at the prompt:

   /etc/lanscan Enter

   You will see a table similar to the following.

Hardware Path	Station Address	Dev lu	Hardware State	Net–Interface NameUnit	State	NetMgt ID	Encapsulation Methods
2.0.2	0x0800091595EE	0	UP	lan0	UP	4	ETHER IEEE8023

Figure 1–1. lanscan Command Sample Table

The LANIC ID in this example is 0800091595EE.

SCSI ID and Device File Information

Use the following as your device file name. The underlined number in the device file name indicates the SCSI ID number:

Device	Device File Name
Floppy disk drive	/dev/rfloppy/c201d0s0
CD–ROM drive	/dev/dsk/c201d2s0
DDS–format tape drive	/dev/rmt/3m

These device file names assume the SCSI ID of your drive is set to the factory default. If you change the factory-set value, you must create a new device file and substitute the pathname of your device file for the pathname above. See the *System Administration Tasks* manual for information on how to create a device file.

IP Address and Subnetwork Mask Information

Get the IP address and the subnet mask information for your workstation from either your System Administrator or your Network Administrator and note them here:

IP address _____

subnet mask _____

Product Description

The Model 712 workstation contains the following key features:

- Operating System — HP–UX version 9.03 or later
- User Interface — HP VUE graphical user interface
- Compatibility — Source and binary code compatible with the Series 700 product family
- Built–In Graphics — 8–plane graphics with choice of one of the following:
  - 12–inch flat panel 1024x768 color monitor
  - 15–inch 1024x768 color monitor
  - 17–inch 1024x768 color monitor
  - 17–inch 1280x1024 color monitor
  - 19–inch 1280x1024 color monitor with optional frame buffer card
- Main Memory — 16–MB to 128–MB main memory
- Internal Mass Storage* — One 3.5–inch SCSI disk drive:
  - 120–MB
  - 270–MB
  - 525–MB
  - 1–GB

  One 3.5–inch flexible disk drive

* The Model 712 workstation supports a maximum of one hard disk drive and one floppy drive. Both drives are optional.

• External Mass Storage	Optional CD–ROM drive Optional DDS–format 4–mm tape drive Optional 1–GB 3.5–inch SCSI hard disk drive
• Standard Network	ETHERNET IEEE 802.3 LAN AUI and TP (Twisted Pair) ports Autoselecting ports
• Optional Network	Optional IBM token ring 802.5 LAN port
• Standard I/O	One 9–pin RS–232C port One 25–pin HP parallel port 8–bit, single–ended SCSI–2 interface Two PS2 ports for keyboard and mouse Audio microphone in/headphone out CD quality stereo input One monitor port
• Optional I/O	One 9–pin RS–232C port LAN AUI port and one 9–pin RS–232C port X.25 data link (HDLC) and one 9–pin RS–232C port 802.5 IBM token ring port
• TeleShare Communications Board	Dual line analog telephone

System Unit Front Panel Controls and LEDs

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

Figure 1–2 shows the locations of the system unit front panel controls and LEDs.

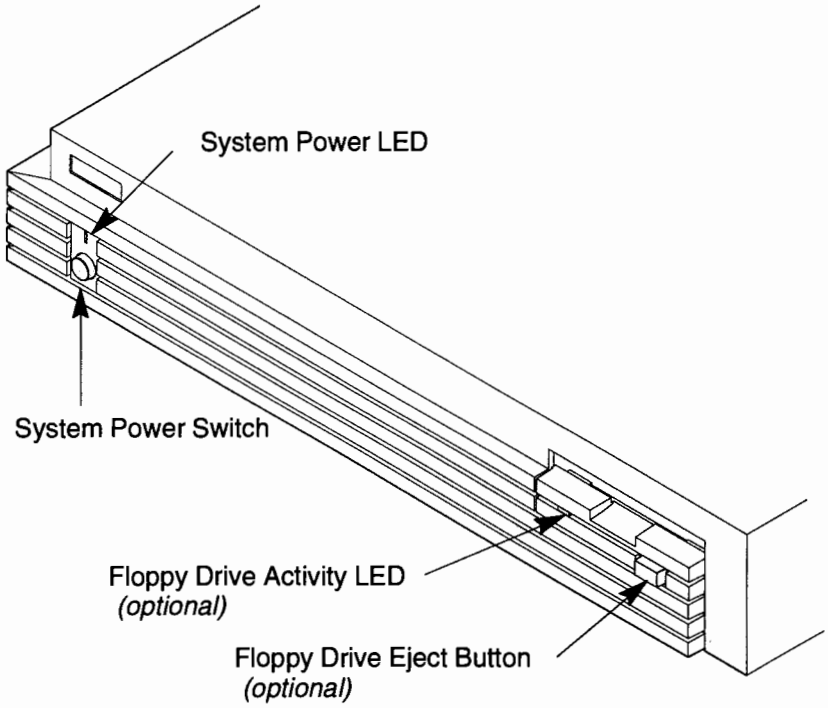


Figure 1–2. System Unit Front Panel Controls and LEDs

System Power Switch

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

System Power LED

There is one Light Emitting Diode (LED) located on the left side of the front panel. This green LED is the Power LED. It lights when the system unit power is on. If this LED is blinking it indicates a problem with the system (see Chapter 8 for more information).

Floppy Drive Eject Button

If a floppy drive is installed in your workstation, an eject button is located on the right side of the front panel. This button removes floppy diskettes from the drive (see Chapter 5 for more information).

Floppy Drive Activity LED

If a floppy drive is installed in your workstation, an activity LED is located on the right side of the front panel. This LED flashes to indicate use (see Chapter 5 for more information).

System Unit Rear Panel Connectors

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

- Power cord connector
- 802.3 AUI LAN connector
- 802.3 TP (Twisted Pair) LAN connector
- RS–232C serial input/output connector
- Monitor connector
- SCSI connector
- PS2 keyboard and mouse connectors
- HP parallel I/O connector
- Audio Mic/IN, Head/OUT, and Line IN connectors
- Optional TeleShare board connector
- Optional network or I/O board connector

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

Figure 1–3 shows the locations of the connectors on the system unit's rear panel. The symbols shown next to the connector descriptions that follow are depicted on the rear panel.

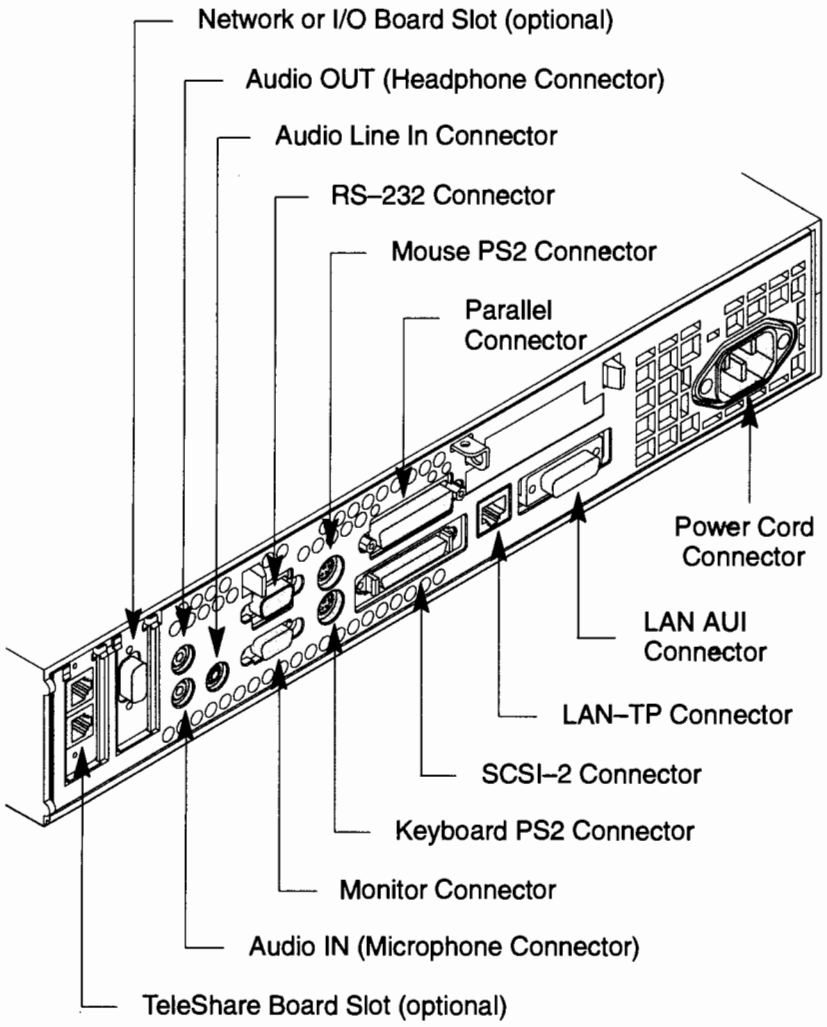


Figure 1–3. System Unit Rear Panel Connectors

Power Cord Connector

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

802.3 Network Connectors

Your workstation has built–in ThickNet LAN AUI and TP (Twisted Pair) connectors for the 802.3 (ETHERNET) network. Connections to ThinLAN networks require an external transceiver. Your workstation will autoselect the correct network setting.

RS–232 Serial Input/Output Connector

You can attach a variety of peripheral devices to the RS–232 Serial Input/Output (SIO) port 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.

The SIO port is programmable. You can set functions such as bit rate, character length, parity, and stop bits. The SIO Port is used as an interface for serial asynchronous devices to the CPU. The port operates at up to a 19.2 K baud rate.

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

Table 1–1. 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

Monitor Connector

Connect the monitor's video cable to the monitor connector on your workstation.

SCSI Connector

Use the SCSI connector to connect external SCSI devices such as DDS–format tape drives and CD–ROM drives. Consult the documentation that accompanies each SCSI device for specific information concerning its use. Refer to Appendix C for information about connecting SCSI devices to your workstation.

NOTICE: When attaching external SCSI devices, be sure to terminate the last device on the external SCSI bus. If no external devices are attached, the SCSI connector does not require a terminator.

PS2 Connectors

The PS2 connectors provide an interface for the system's keyboard and 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 uses Centronics interface protocols to support peripheral devices such as printers and plotters. Consult the documentation that accompanies each peripheral device for specific information concerning its use.

Audio Connectors

Your workstation has audio input and output capability through external input and output connectors on the rear panel and through an internal speaker. The rear panel contains the Audio/Headphone OUT, Audio/Microphone IN, and Line IN connectors.

The Audio/Headphone OUT connector is a stereo headphone output. The Audio/Microphone IN connector is a mono microphone input. The ring connector of the microphone jack supplies +5 volts dc for microphones that require it. (A microphone for audio input is not supplied with your workstation.) The Line IN connector is a standard stereo audio mini–jack and uses audio "line" levels.

Optional TeleShare Board Connectors

Your workstation has a slot for an optional TeleShare board. The external connectors for the TeleShare board are accessible in this location. This board has dual line, FAX, modem, and telephone features, for example, caller ID, call progress decoder, ringback busy, fast busy, and call waiting.

Optional Network or I/O Board Connectors

Your system has an expansion board slot for an additional network or I/O board. External connectors for the optional I/O boards are accessible in this location. HP offers the following I/O expansion boards:

- 802.5 IBM token ring (A1011A) provides an 802.5 IBM token ring port
- RS–232C Serial I/O (A4013A) provides one 9–pin RS–232C port
- X.25 data link (HDLC) (A4015A) provides an X.25 port and one 9–pin RS–232C port
- LAN AUI (A4014A) provides a 15–pin LAN AUI port and one 9–pin RS–232C port

Monitor Controls, Connectors, and Indicators

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

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

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

Refer to the manual that came with your monitor for information on any other controls that may be present on the monitor.

The following figures illustrate the monitors for your workstation.

Figure 1–4 shows the 12–inch flat panel 1024x768 color monitor.

Figure 1–5 shows the 15–inch 1024x768 color monitor.

Figure 1–6 shows the 17–inch 1024x768 color monitor.

Figure 1–7 shows the 19–inch 1280x1024 color monitor.

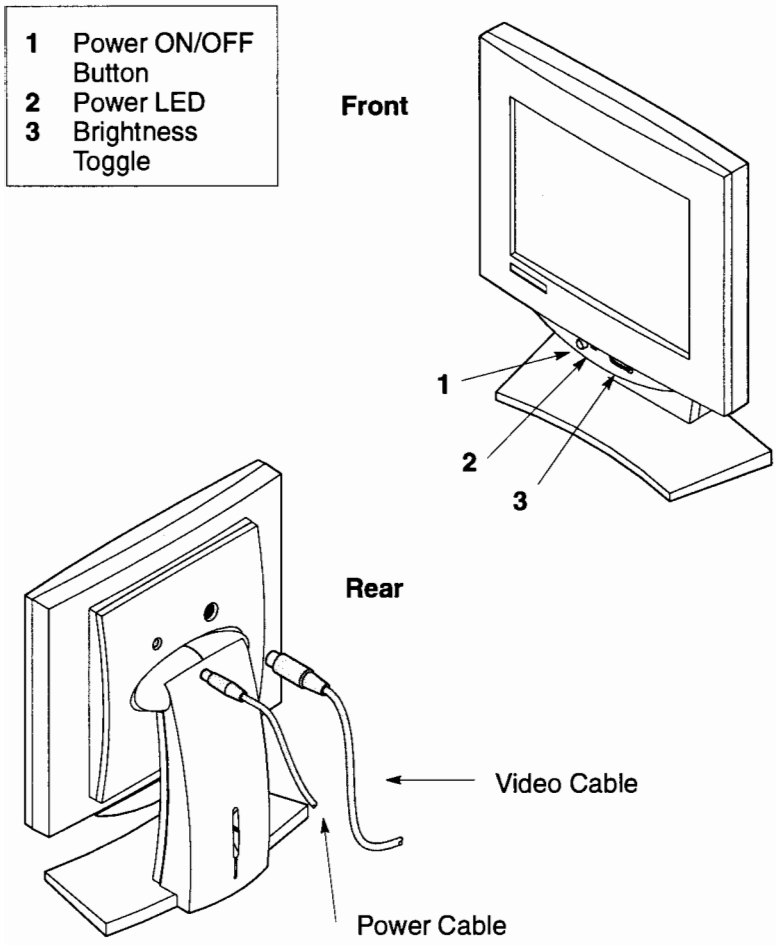


Figure 1–4. 12–Inch Flat Panel 1024x768 Color Monitor (A2882A)

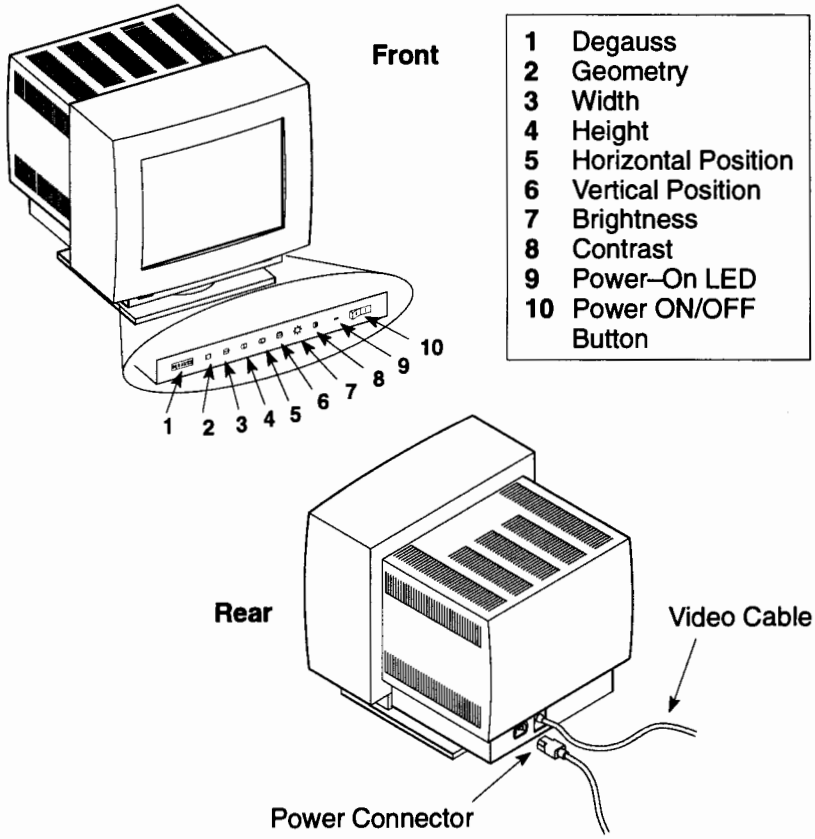


Figure 1–5. 15–Inch 1024x768 Color Monitor (D1196A)

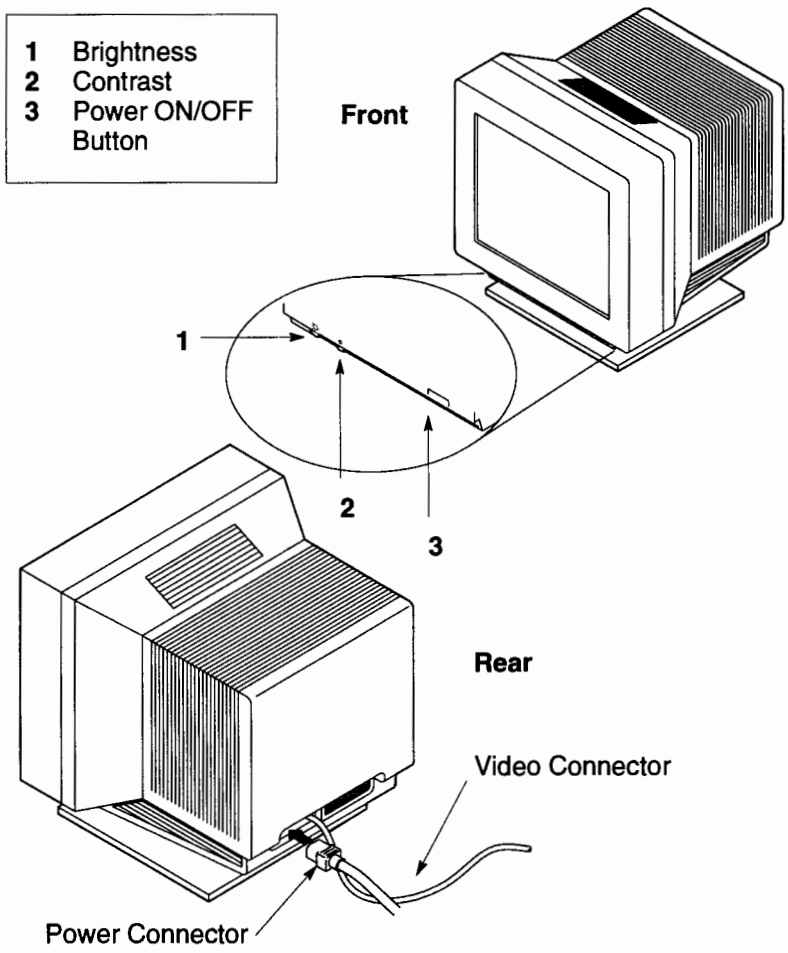


Figure 1–6. 17–Inch 1024x768 Color Monitor (A2287A, A2287B)

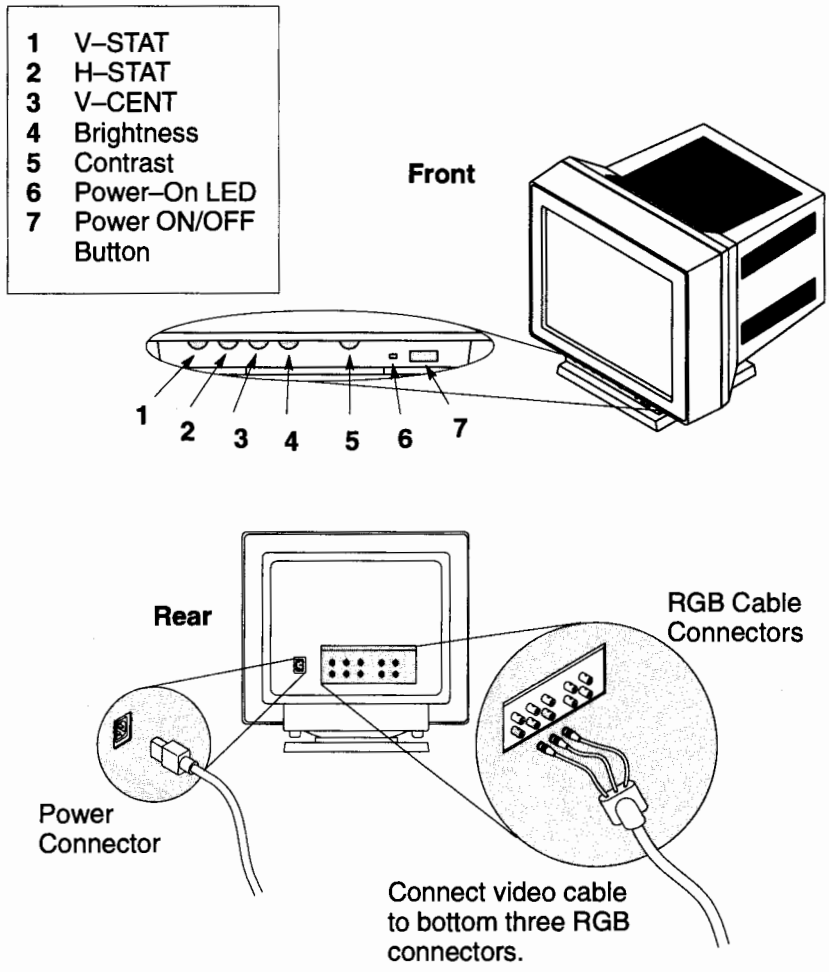


Figure 1–7. 19–Inch 1280x1024 Color Monitor (A2094A, A2094B)

Keyboard

The Model 712 uses a PC keyboard that is different from the HP ITF keyboard. Aside from the 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 the ITF keyboard may not exist on the PC keyboard. These keys generate codes that 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 may expect to use keycodes generated by the ITF keyboard. Since the keys do not exist on the PC keyboard, 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 1–2 compares the equivalent keys on the ITF and PC keyboards.

NOTICE: Keyboard keys not mentioned in Table 1–2 are the same on both keyboards.

Table 1–2. 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 1–2. 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

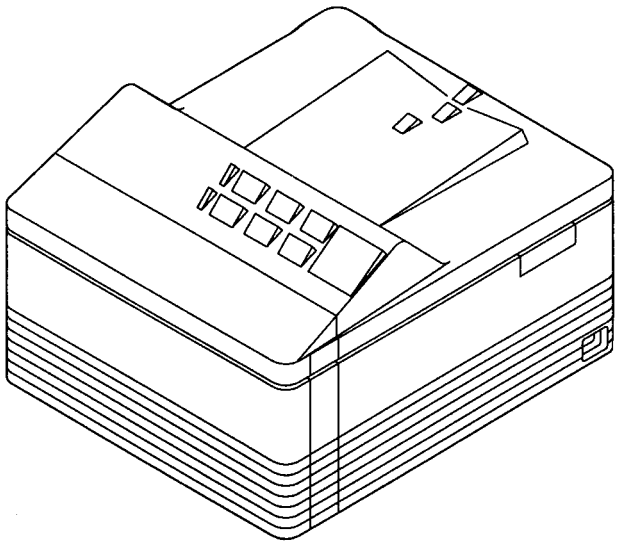
Operating System Overview

Your HP Model 712 workstation uses the HP–UX operating system, version 9.03 or later. Some systems may use a version of HP–UX called "Desktop HP–UX." This version occupies less disk space than the Runtime version because it does not include full HP–UX functionality, such as online manual reference pages (man pages).

Instant Ignition systems (systems with preloaded software) have X–windows and a Hewlett–Packard graphical user interface, HP VUE version 3.0 (or later) or a layered product, installed and configured. See your user's guide for more information.

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.

NOTICE: When you power on your workstation, a self test program runs before the system boots. If an error occurs during self test, refer to the "Self Test Errors" section in Chapter 8.



Chapter 2

Setting Up Your Printer

- Gathering printer information
- Setting up a local printer using SAM
- Setting up your printer for network printing
- Printing a file
- Solving printing problems

This chapter describes how to configure your workstation to use a printer that you have physically attached to either the parallel connector or the serial (RS–232) connector on the rear of your workstation.

The instructions in this chapter assume you are using the HP–UX operating system with the HP VUE version 3.0 (or later) interface. If you are not using HP–UX, or you are using a layered product with HP–UX, see the *User's Guide* for your operating system or layered product for instructions on how to perform the tasks in this chapter.

NOTICES: Make sure you have installed the printer as described in the manufacturer's instructions before following the instructions in this chapter. 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 ☐
  (Integrated system unit connector)

  Serial (RS232) Port 2 ☐
  (Optional I/O board connector)

- 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 Local Printer Using SAM

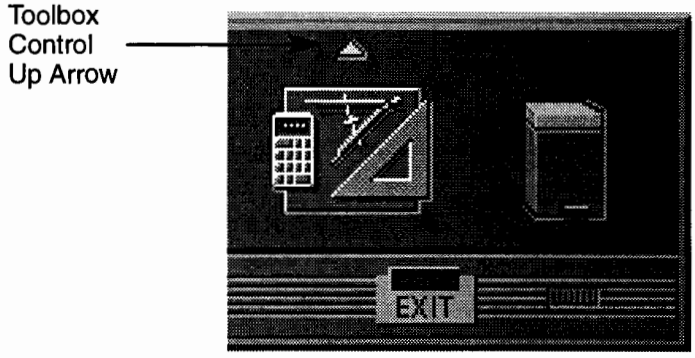
Follow the instructions in this section to set up a printer that is physically attached to your workstation.

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

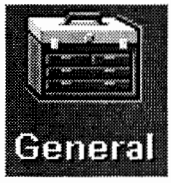
If your workstation is running HP VUE, follow these instructions to set up your printer using SAM.

1. Log in as **root**.

2. Move the mouse pointer to the **up arrow** above the **Toolbox** control and click the left mouse button. (This is called a single click, or simply a click.)



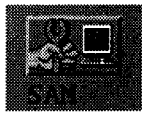
3. The **Toolbox** subpanel opens. Click on the **General** toolbox icon, shown below.



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

SAM (System Administration Manager) is a utility that performs system administration tasks using a windows graphical user interface.

5. Move the mouse cursor to the **SAM** icon shown below (your icon can look like either of these) and double–click the left mouse button.



6. The **System Administration Manager** window opens. Double–click on **Printers and Plotters ->**

7. The **Printers and Plotters** window opens. Double–click on **Printers/Plotters**

   If your workstation doesn't have any printers set up, a message window opens. Click on [OK] to remove it.

8. From the **Actions** menu, click on **Add Local Printer/Plotter**

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

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

   A window opens displaying the available parallel or serial interfaces.

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

    If you chose **Add Serial (RS–232) Printer/Plotter** in the previous step, more than one serial interface may 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 click the left mouse button.

11. Click on [OK]

12. A window opens. Click on the **Printer Name** box. Then enter the printer's name and press [Enter]

13. Click on [Printer/Model Interface]

14. 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.

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

16. Click on [OK]

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

17. 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 click the left mouse button.

18. Click on [OK]

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

20. Another small window opens with a message that asks if you want to restart the workspace manager. With the left mouse button, click on [OK]

21. 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?
```

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.

Click on [OK]

23. 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 click the left mouse button.

25. A menu opens below the word **List**. Click on **Exit**

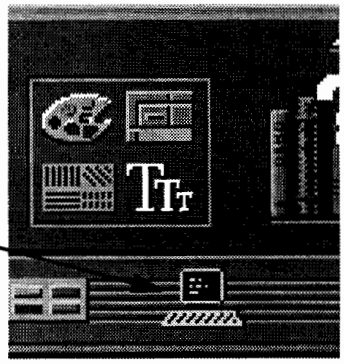
The main **SAM** window becomes visible again.

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

The **SAM** window closes.

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

28. To test the printer, first create a terminal window by clicking the **Terminal Control** on the **Front Panel** as shown.



A terminal window opens.

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

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

lp .vueprofile Enter

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

lp –d *printername* **.vueprofile** Enter

The **lp** command sends files to a printer.

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

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

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

Setting Up Your 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 Text Editor, 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
```

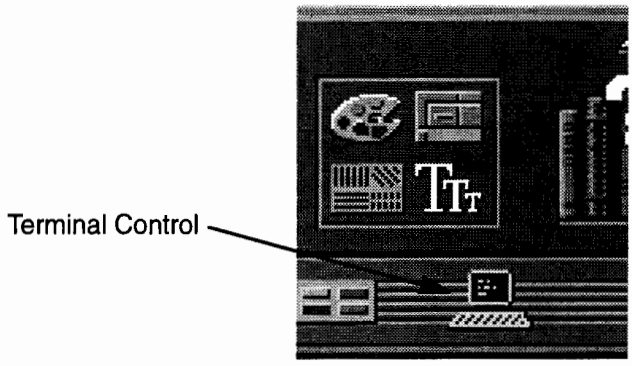
   If the line is present, delete the pound sign (#) from the beginning. If the line is not there, add it without the pound sign (#) at the beginning.

   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. Click on the Terminal Control on the **Front Panel** of your Workspace.



A terminal window opens.

7. Move the mouse cursor into the terminal window and click the left mouse button.

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

```
/etc/reboot Enter
```

Your workstation shuts itself down and then reboots 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 in a terminal window:

lp *filename* Enter

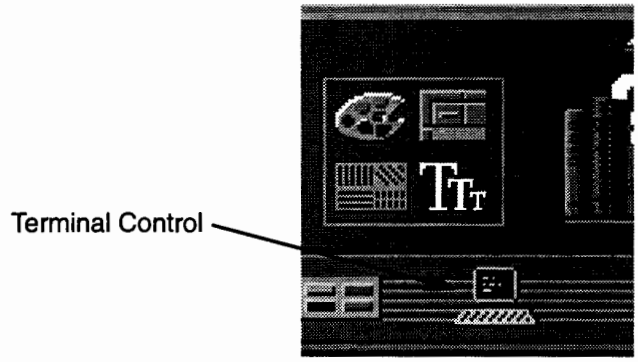
or

lp **–d** *printername filename* Enter

The lp command sends files to a printer.

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.

1. Click on the **Terminal Control** on the **Front Panel** of your Workspace.



A terminal window opens.

2. Move the mouse cursor into the terminal window and click the left mouse button.

3. Enter the **lp** command as described above.

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

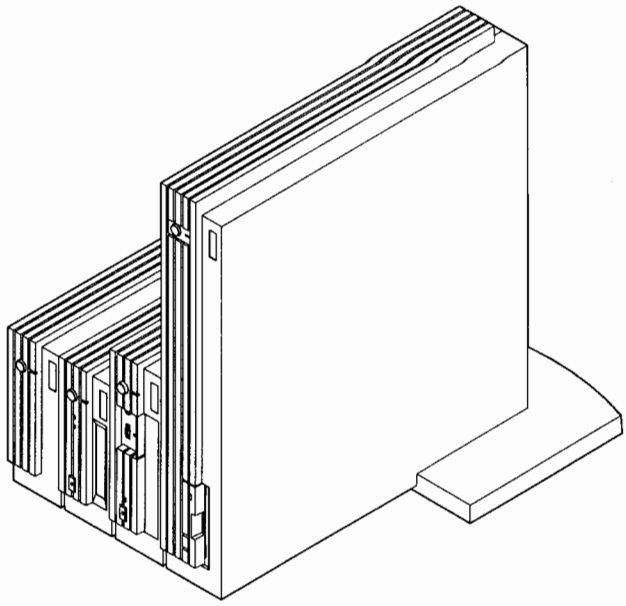
man lp Enter

Also see the *User's Guide* that came with your workstation for information on printing files by dragging and dropping the file icon onto the printer tool.

Solving Printing Problems

If you have problems printing check the following:

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



Chapter 3

Connecting External SCSI Storage Devices

- Checking the SCSI IDs
- Connecting multiple storage devices
- Interconnecting floor stands
- Using your SCSI device

This chapter provides information about connecting the A2655A, A2656A, and A2657A external storage devices to your workstation. Reference the information in this chapter when directed by the installation cards that ship with the external storage devices.

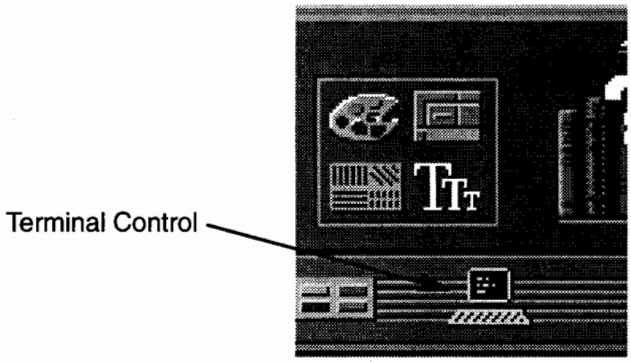
The instructions in this chapter assume you are using the HP–UX operating system with the HP VUE version 3.0 (or later) interface. If you are not using HP–UX, or you are using a layered product with HP–UX, see the *User's Guide* for your operating system or layered product for instructions on how to perform the tasks in this chapter.

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

Checking the SCSI IDs

Determine which SCSI IDs are currently in use on your system by using the **ioscan** command in a terminal window:

1. Click on the **Terminal Control** on the **Front Panel** of your Workspace.



   A terminal window opens.

2. Move the mouse cursor into the terminal window and single–click the left mouse button.

3. Enter the following at the prompt:

   /etc/ioscan Enter

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

H/W Path	Description	Status
0.0.0	graphics	ok(nnnnnn)
2.0.1	scsi	ok(nnnnnn)
2.0.1.3.0	tape_drive	ok(nnnnnn)
2.0.1.5.0	disk	ok(nnnnnn)
2.0.1.6.0	disk	ok(nnnnnn)
2.0.2	lan	ok(nnnnnn)
2.0.3	hil	ok(nnnnnn)
2.0.4	serial	ok(nnnnnn)
2.0.5	serial	ok(nnnnnn)
2.0.6	parallel	ok(nnnnnn)
2.0.8	audio	ok(nnnnnn)

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

NOTICE: Never use SCSI address 7 for any device. Address 7 is reserved for the SCSI controller.

Connecting Multiple Storage Devices

You can connect an external SCSI device directly to your Model 712 workstation or to another SCSI device that is already connected to your workstation (see Figure 3–1).

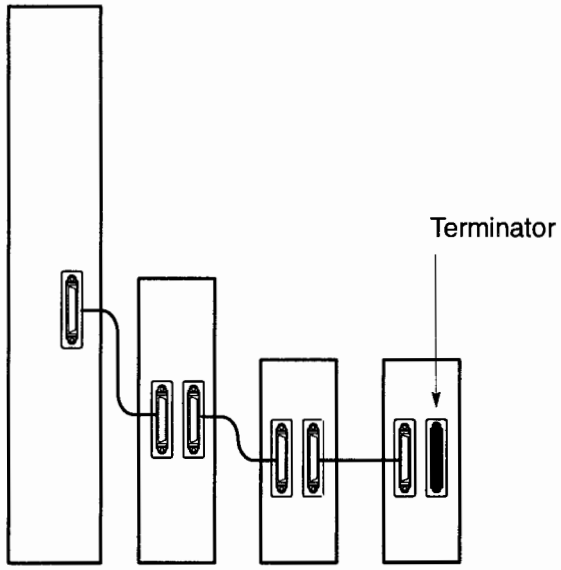


Figure 3–1. Connecting Multiple Devices

Model A2655A, A2656A, and A2657A storage devices and the Model 712 workstation use high–density SCSI connectors. To connect your external storage device directly to the workstation or another storage device with a high–density connector, use the SCSI cable that shipped in the kit. Other HP external storage devices use low–density SCSI connectors. To connect the external storage device to a storage device that has a low–density connector, use one of the SCSI cables recommended in Appendix C, "SCSI–2 Connections."

To connect one or more external storage devices to your workstation, observe the following rules:

- You may connect input and output SCSI cables to either of the two SCSI connectors on an external storage device.
- The unused SCSI connector on the last external storage device must have a SCSI terminator attached.
- The singled–ended SCSI–2 definition limits the total cable length of SCSI–2 cables to 6 meters. Always use the shortest possible cable(s).

For more detailed information about connecting SCSI devices, refer to Appendix C, "SCSI–2 Connections."

Interconnecting Floor Stands

This section describes how to connect the floor stand of an external storage device to the floor stand of your workstation or another storage device. Perform the following steps to connect floor stands:

1. If you are connecting the floor stand to a floor stand that is installed on a workstation or external storage device, tilt up the front of the workstation or device and lift it out of the stand, as shown in Figure B–1.

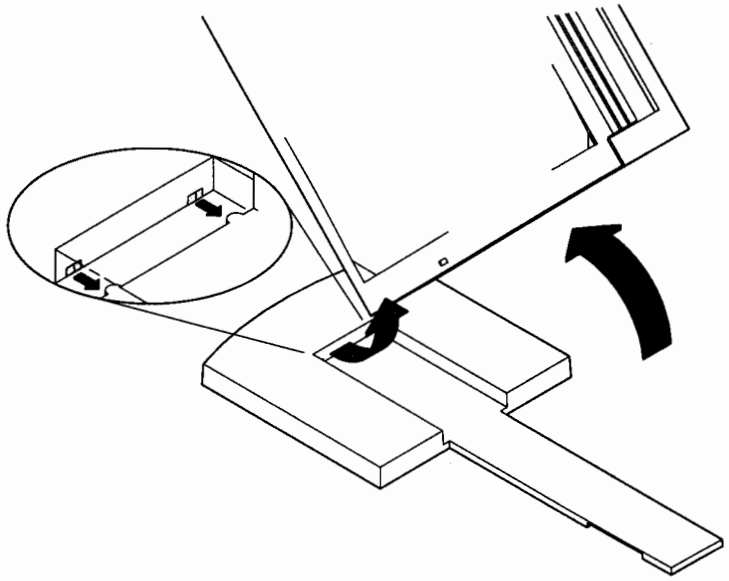


Figure 3–2. Removing a Device from Its Stand

2. Slide the foot of the storage device stand into the slot in the other workstation or storage device stand, as shown in Figure 3–3. Lock the two notches in the storage device stand foot over the pins on the bottom of the other floor stand. Press down on the overlapping floor stands to lock them together. Repeat this process for any other stands that you wish to connect.

NOTICE: Because the interlocking stands support each other, you do not have to use the extra foot that shipped in the kit.

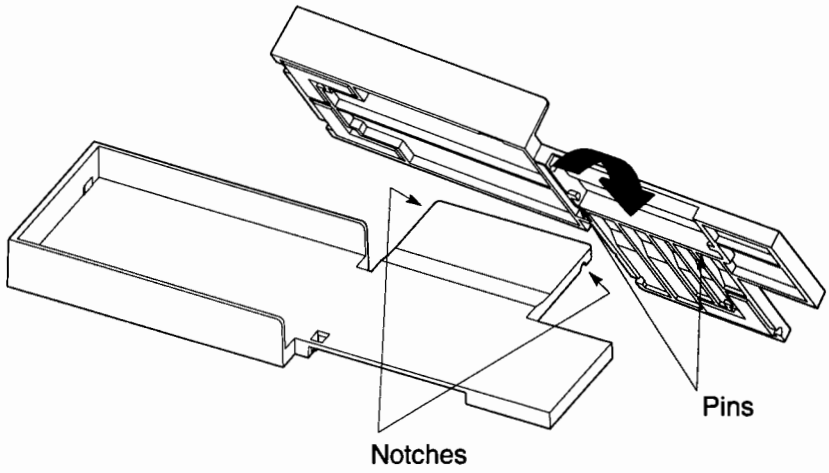


Figure 3–3. Connecting Floor Stands

3. Lock the workstation and storage devices into their respective floor stands so that they stand together, as shown in Figure 3–4.

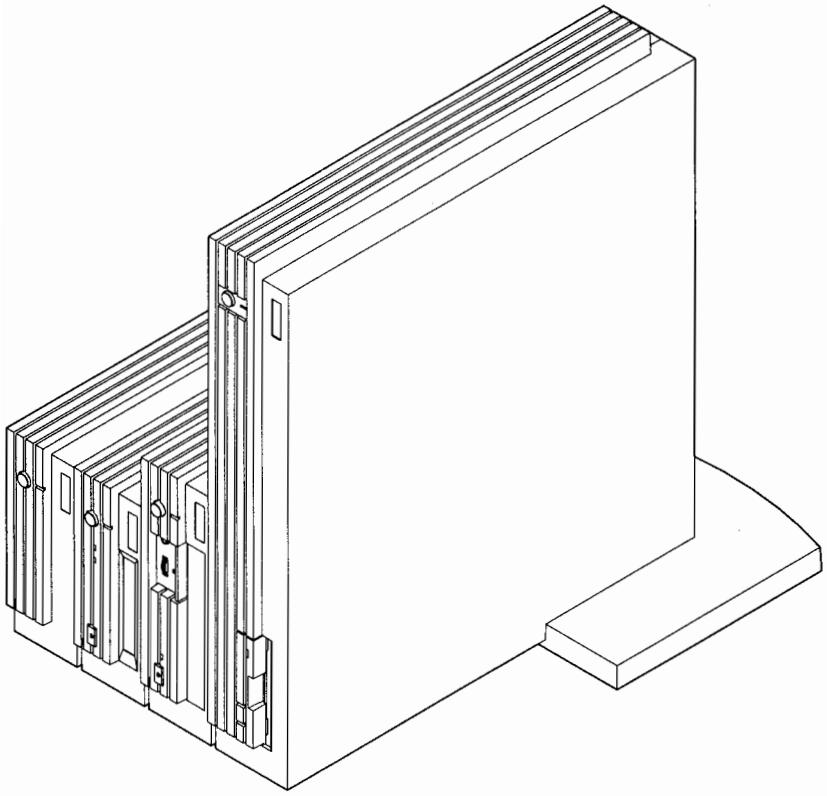
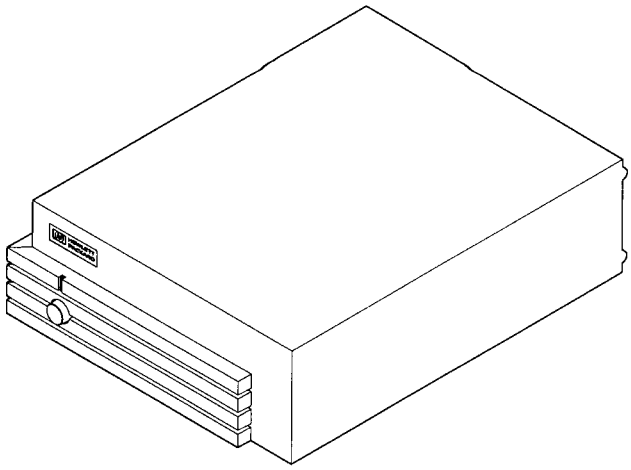


Figure 3–4. Workstation and Storage Devices in Stands

Using Your SCSI Device

Refer to the following chapters for information about using your external storage device:

- Model A2657A Hard Disk Drive Chapter 4
- Model A2655A CD–ROM Chapter 6
- Model A2656A DDS Tape Chapter 7



Chapter 4

Using Your Hard Disk Drive

- Hard drive control and indicator
- Adding a hard drive
- Troubleshooting

This chapter provides an overview of the hard disk drive, and describes how to add the hard disk to your system as a file system.

The instructions in this chapter assume you are using the HP–UX operating system with the HP VUE version 3.0 (or later) interface. If you are not using HP–UX, or you are using a layered product with HP–UX, see the *User's Guide* for your operating system or layered product for instructions on how to perform the tasks in this chapter.

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

Hard Drive Control and Indicator

This section describes the control and indicator for the hard disk drive. They are

- Power LED – The Power LED lights when the power is on to the drive.
- Power Button – Press the Power Button to cycle the power on or off to the drive.

Figure 4–1 shows the power LED and power button on the hard disk drive.

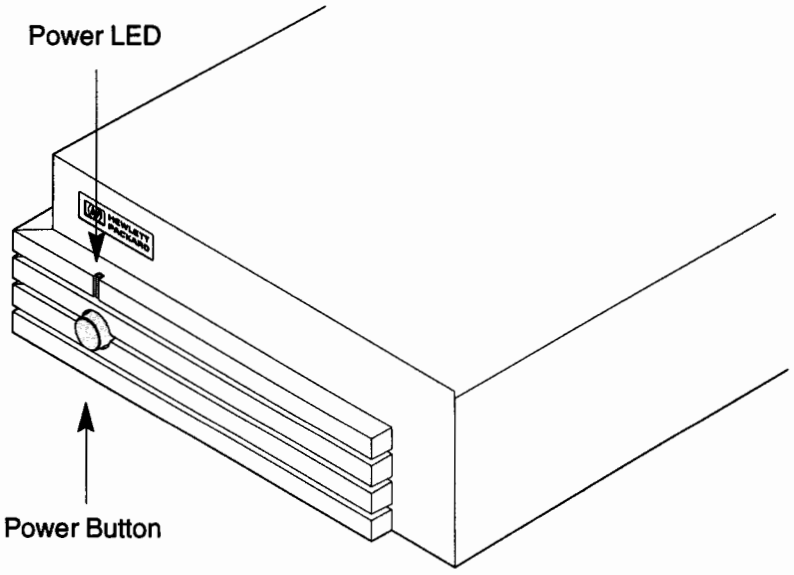


Figure 4–1. Hard Disk Drive Control and Indicator

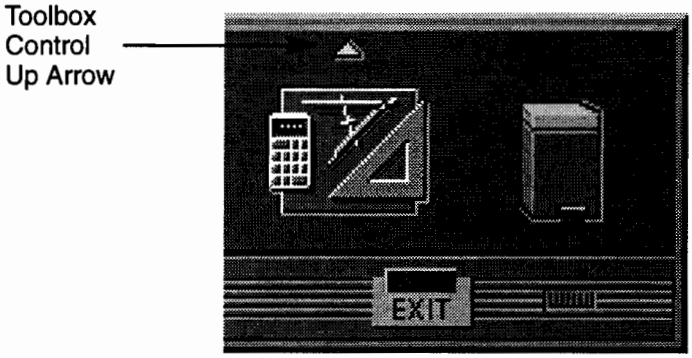
Adding a Hard Drive

This section describes how to add a hard disk drive to your system as a file system using SAM. For more information about configuring a hard disk drive, refer to the *System Administration Tasks* manual.

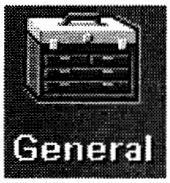
The procedures in this chapter require you to log in as **root**. If you cannot log in as **root**, contact your system administrator.

1. Log in as **root**.

2. Move the mouse pointer to the **up arrow** above the **Toolbox** control and click the left mouse button.



3. The **Toolbox** subpanel opens. Click on the General toolbox icon, shown below.



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

SAM (System Administration Manager) is a utility that performs system administration tasks using a windows graphical user interface.

5. Move the mouse cursor to the SAM icon shown below (your icon can look like either of these) and double–click the left mouse button.

6. The **System Administration Manager** window opens. Double–click on Peripheral Devices ->

7. The **Peripheral Devices** window opens. Double–click on Disks and File Systems ->

8. The **Disks and File Systems** window opens. Double–click on CD–ROM, Floppy, and Hard Disks

The following screen message appears:

```
Scanning the system's hardware...
```

The **CD–ROM, Floppy, and Hard Disks** window opens containing a list of drives currently configured on this system.

9. From the **Actions** menu, click on **Add a Hard Disk Drive**

10. The **Select a Disk to Add...** window opens with a list of unused disks. Highlight the hard disk drive you want to add to your system.

11. Click on OK

12. The **Set Disk Usage and Options...** window opens. Select **File System** and click on OK

13. The following screen messages appear:

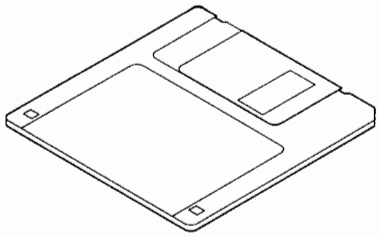
```
Task started.

Creating the device file...
Modifying "/etc/checklist"...
Task completed.
```

Click on OK

Troubleshooting

If you have trouble with any of these procedures for using your hard drive, see Chapter 8 of this book, "Solving Problems."



Chapter 5

Using Your 3.5–Inch Floppy Disk Drive

- Setting the write–protect tab on a diskette
- Inserting and removing a diskette
- Verifying the floppy disk drive configuration
- Floppy disk drive device file
- Formatting a new diskette
- Transferring data to and from a floppy diskette
- Configuring the floppy driver
- Troubleshooting
- Ordering information

This chapter describes how to perform tasks that allow you to archive to or transfer data from your optional 3.5–inch floppy disk drive.

The instructions in this chapter assume you are using the HP–UX operating system. If you are not using HP–UX, see the *User's Guide* for your operating system for instructions on how to perform the tasks in this chapter.

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

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

Setting the Write–Protect Tab on a Diskette

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

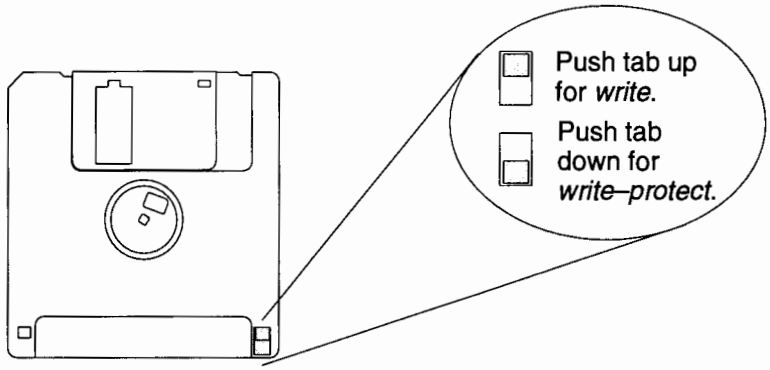


Figure 5–1. Setting the Write–Protect Tab on a Floppy Diskette

To protect files on a diskette from being overwritten, set the write–protect tab to the *write–protect* position, as shown in Figure 5–1.

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

Inserting and Removing a Diskette

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

1. Insert the diskette into the drive, as shown in Figure 5–2.

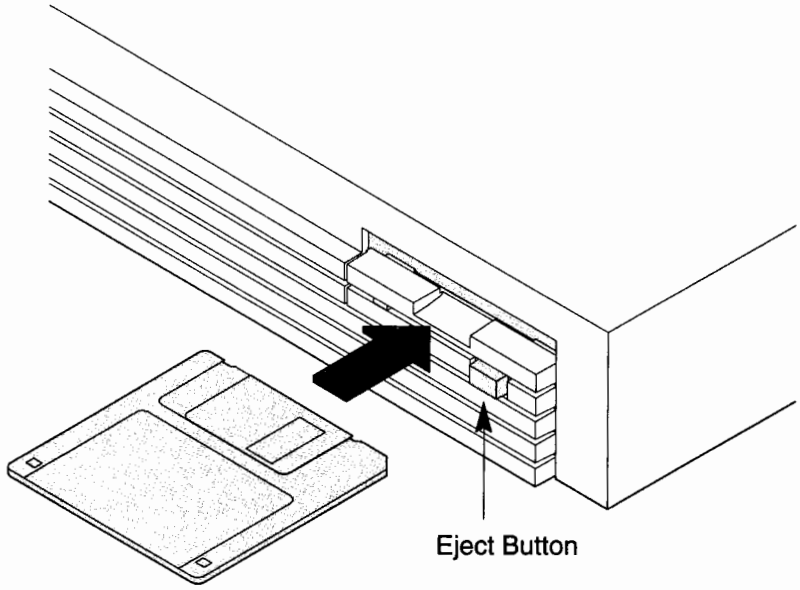


Figure 5–2. Inserting and Removing a Floppy Diskette

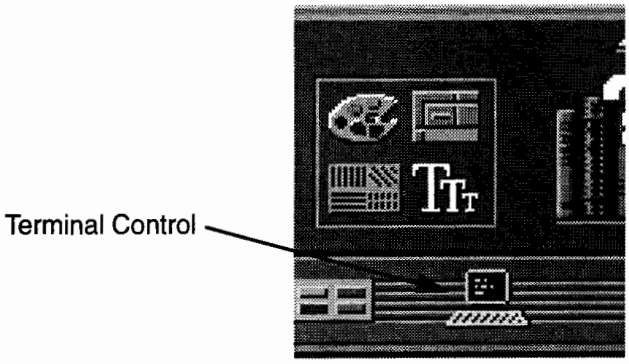
2. Push the diskette into the floppy drive until it clicks into place.

3. To remove the diskette, push the eject button (see Figure 5–2), then take out the diskette.

Verifying the Floppy Disk Drive Configuration

To verify that your workstation can communicate with the floppy drive, use the **ioscan** command in a terminal window to see which devices are currently in use on your system:

1. Click on the Terminal Control on the **Front Panel** of your Workspace.



A terminal window opens.

2. Move the mouse cursor into the terminal window and click the left mouse button.

3. Enter the following at the prompt:

/etc/ioscan Enter

The **ioscan** utility verifies the configuration of all drives.

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

H/W Path	Description	Status
1.0.0	graph3	ok(nnnnnn)
2.0.1	c700	ok(nnnnnn)
2.0.1.6.0	scsi	ok(nnnnnn)
2.0.2	unknown	ok(nnnnnn)
2.0.4	asio0	ok(nnnnnn)
2.0.6	parallel	ok(nnnnnn)
2.0.8	audio	ok(nnnnnn)
2.0.10	floppy	ok(nnnnnn)
2.0.10.1.0	disk	ok(nnnnnn)
2.0.11	ps2	ok(nnnnnn)
2.0.12	ps2	ok(nnnnnn)
2.0.13	asio0	ok(nnnnnn)
2.0.14	asio0	ok(nnnnnn)

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

Floppy Disk Drive Device File

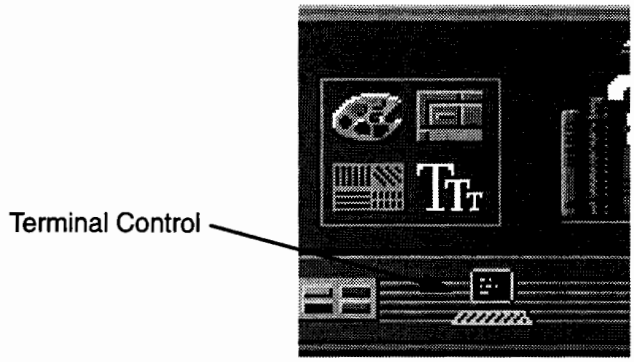
Your workstation uses the following device file to communicate with your floppy drive:

/dev/rfloppy/c20Ad1s0

Formatting a New Diskette

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

1. Log in as **root**.
2. Make sure that the write–protect tab on the floppy diskette is in the *write* position, as shown in Figure 5–1.
3. Insert the diskette into the floppy disk drive.
4. Click on the **Terminal Control** on the **Front Panel** of your Workspace.



A terminal window opens.

5. Move the mouse cursor into the terminal window and click the left mouse button.

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

```
mediainit -i 2 /dev/rfloppy/c20Ad1s0 Enter
```

Transferring Data To and From a Floppy Diskette

The **tar** (tape file archiver) command saves files to a floppy diskette, restores files from a floppy diskette, or lists files on a floppy diskette.

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

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

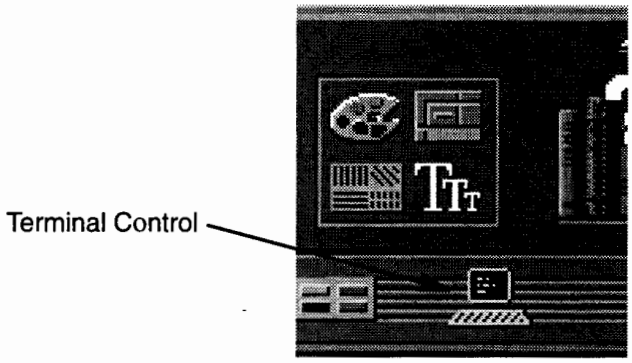
Saving Files to a Floppy Diskette

Use the following instructions to save files to a floppy diskette:

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

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

3. Click on the Terminal Control on the **Front Panel** of your Workspace.



A terminal window opens.

4. Move the mouse cursor into the terminal window and click the left mouse button.

5. Enter the following command line to write to the diskette:

tar –cvf /dev/rfloppy/c20Ad1s0 *pathname* Enter

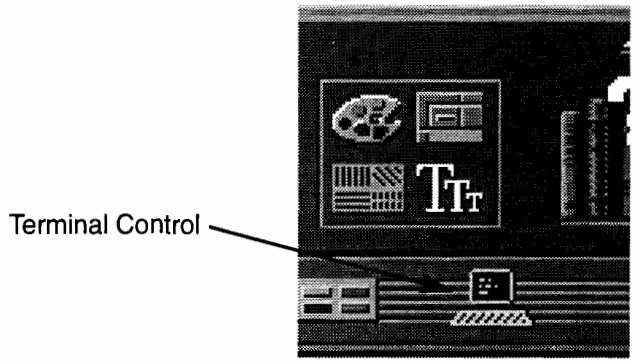
where *pathname* is the pathname of the file or directory containing files that you want to write to the diskette.

Restoring Files from a Floppy Diskette to Your System

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

1. Load the floppy diskette into the disk drive.

2. Click on the **Terminal Control** on the **Front Panel** of your Workspace.



A terminal window opens.

3. Move the mouse cursor into the terminal window and click the left mouse button.

4. Use the **cd** command to change to the directory you want the files to reside in:

cd *directory_path* Enter

where *directory_path* is the pathname of the directory.

5. Enter the following command line:

   tar –xvf /dev/rfloppy/c20Ad1s0 *pathname* Enter

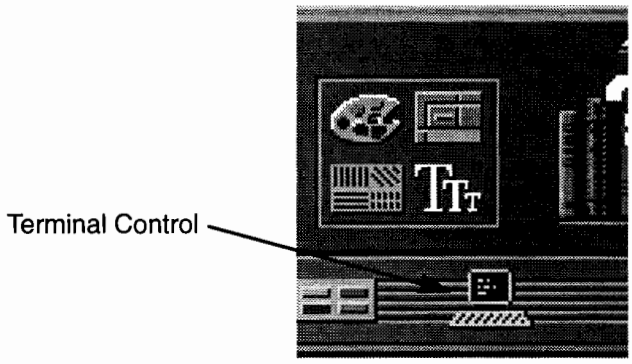
   where *pathname* is the pathname of the file or directory containing files that you want to restore from the diskette. If you don't specify *pathname*, everything on the floppy diskette is restored.

Listing the Files on a Floppy Diskette

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

1. Load the floppy diskette into the disk drive.

2. Click on the **Terminal Control** on the **Front Panel** of your Workspace.



   A terminal window opens.

3. Move the mouse cursor into the terminal window and click the left mouse button.

4. Enter the following command line:

```
tar -tvf /dev/rfloppy/c20Ad1s0 Enter
```

All files on the floppy diskette are listed.

For More Information

The **man** utility looks up man pages on the system.

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

```
man tar Enter
```

You can mount the floppy drive as a file system using the SAM utility. Be sure to unmount the drive before removing it as a file system. For more information about how to mount and unmount the floppy drive, see the manual *Using HP–UX* (B2910–90001).

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

```
man cpio Enter
```

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

```
man floppy Enter
```

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

```
man mediainit Enter
```

Configuring the Floppy Driver

If you reload software or rebuild the Instant Ignition system on your workstation, you will need to reconfigure the HP–UX Kernel to add the floppy driver. Use the SAM utility to add the **disk** driver and build a new HP–UX kernel.

For more information about how to reconfigure the kernel using SAM, see the following manuals:

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

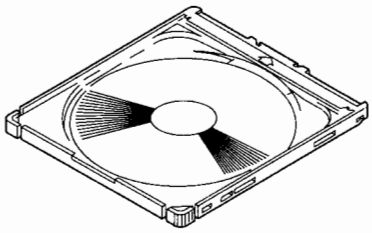
Troubleshooting

If you have trouble with any of these procedures for using your floppy disk drive, see Chapter 8 of this book, "Solving Problems."

Ordering Information

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

HP–92192X	High–Density Micro Flexible Disks (1.44MB Formatted Capacity) – box of ten diskettes



Chapter 6

Using Your CD–ROM Drive

- CD–ROM drive and media descriptions
- Inserting and removing a CD–ROM disc
- Loading and unloading a CD–ROM disc caddy
- Mounting and unmounting a CD–ROM disc
- Reading the busy light
- Troubleshooting
- Ordering information

This chapter provides an overview of the optional CD–ROM drive and media, and describes how to use your CD–ROM drive. The instructions in this chapter assume that your CD–ROM drive is set to the factory default address of SCSI ID 2.

The instructions in this chapter assume you are using the HP–UX operating system with the HP VUE version 3.0 (or later) interface. If you are not using HP–UX, or you are using a layered product with HP–UX, see the *User's Guide* for your operating system or layered product for instructions on how to perform the tasks in this chapter.

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

CD–ROM Drive and Media Descriptions

The CD–ROM drive is a random access read–only mass storage device that uses removable CD–ROM discs.

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

CD–ROM Drive

The CD–ROM drive supports the ISO 9660 and High Sierra format standards. You can access information from the drive like any other disk drive, except that you cannot write to the drive. The drive contains a semiconductor laser for reading data optically, and includes an embedded controller with a SCSI interface.

Figure 6–1 and Table 6–1 describe the operating controls and features of the CD–ROM drive.

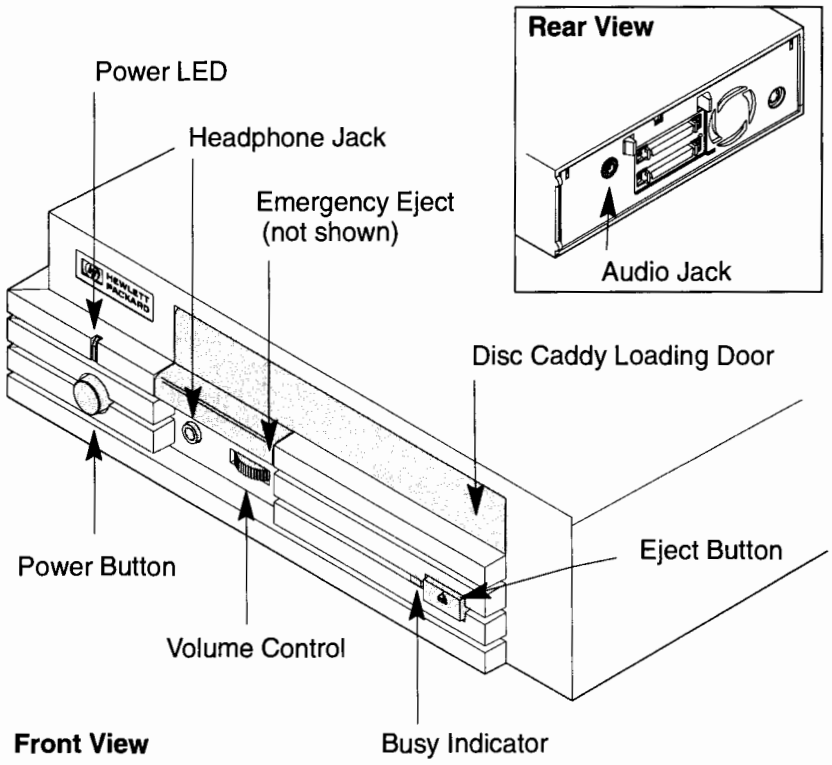


Figure 6–1. CD–ROM Drive Controls and Features

Table 6–1. CD–ROM Drive Operating Controls and Features

Control/Feature	Purpose
Eject Button	Press the Eject Button to eject the disc caddy. When the drive is in use, you must press the eject button for more than one second to eject the caddy.
Busy Indicator	The Busy Indicator lights during a data access operation and blinks during a data transfer. The indictor blinks initially and then stays lit when there is one of the following: • A defective disc • A disc insertion error (for example, an upside–down disc) • No disc present
Disc Caddy Loading Door	Slot for inserting the disc caddy. If you eject the disc caddy and want to reinsert it, you must pull the caddy out more than 5 mm (0.2 in.) from the ejected position before reinserting it. The slot does not accept a disc caddy if the drive's power is off.
Emergency Eject	By removing the Phillips type screw and inserting the end of a paper clip, you can eject the disc caddy if the peripheral does not have power.
Power Button	Press the Power Button to cycle the power on or off to the CD–ROM drive.
Power LED	The Power LED lights when the power is on to the drive.
Audio Jack	Use an audio cable with a 3.5 mm–diameter miniature stereo jack to transmit audio signals from the Audio Jack to the Audio Line In connector on your workstation.
NOTICE:	The Volume Control, Headphone Jack, and Audio Jack features of the CD–ROM drive are supported through applications only.

CD–ROM Media

CD–ROM discs are identical to audio compact discs (CDs), except that they store computer data.

CD–ROM discs are 120 mm (4.7 in.) in diameter, and use one data surface with a capacity of 600 megabytes. The data surface contains pits and flat spots arranged in a continuous spiral track, which is read at a constant speed. You may access files and data stored on a CD–ROM disc, but you may not write files or data to a CD–ROM disc.

A CD–ROM disc mounts into a rigid plastic caddy (see Figure 6–2). The drive accesses data on the CD–ROM disc through a shutter in the bottom of the caddy. When you insert the disc caddy into the drive, the shutter opens automatically to expose the disc surface. When you eject the disc caddy from the drive, the shutter closes to protect the disc surface.

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

Caring for CD–ROM Discs

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

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

Inserting and Removing a CD–ROM Disc

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

To open the CD–ROM disc caddy, press inward on the two cover–locking tabs and lift the cover, as shown in Figure 6–2.

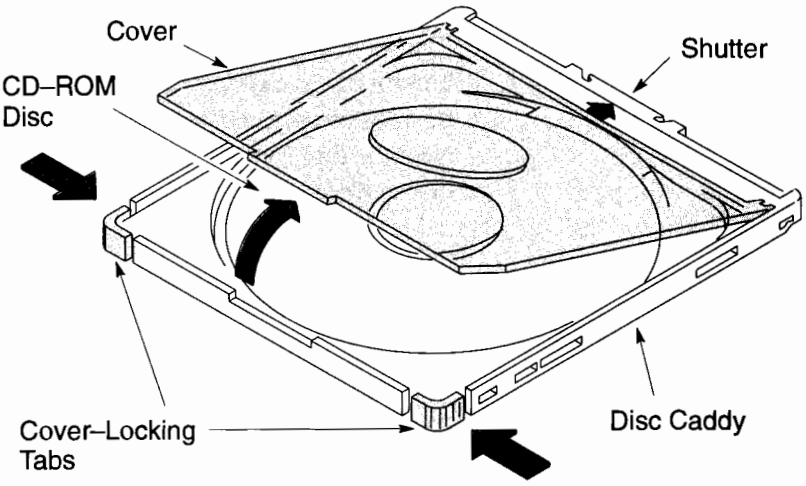


Figure 6–2. CD–ROM Disc and Disc Caddy

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

1. Open the disc caddy by pressing inward on the two cover–locking tabs and lifting the cover, as shown in Figure 6–2.
2. Hold the disc by the edges with the label side up.
3. Center the disc on the tray in the disc caddy.
4. Close the cover on the disc caddy, then push lightly on the cover until the cover–locking tabs click into place.

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

1. Open the disc caddy by pressing inward on the two cover–locking tabs and lifting the cover, as shown in Figure 6–2.

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

Loading and Unloading a CD–ROM Disc Caddy

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

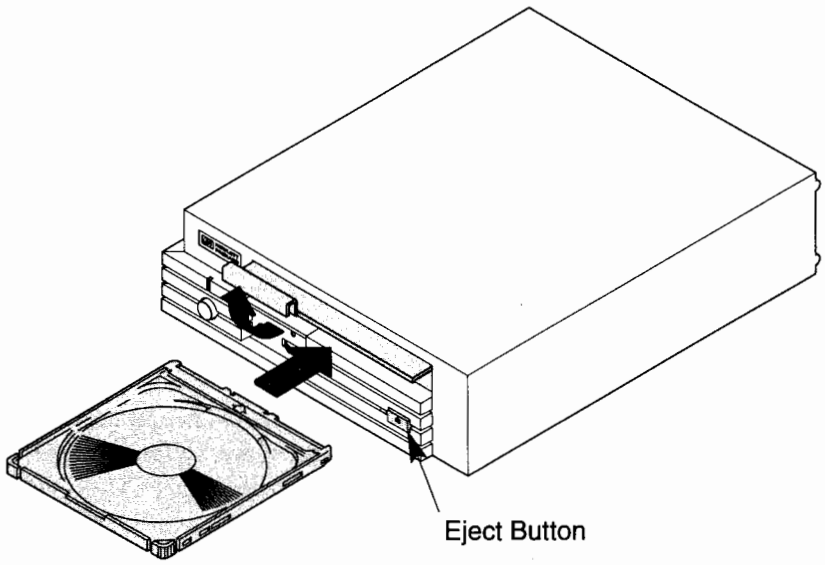


Figure 6–3. Loading and Unloading a CD–ROM Disc Caddy

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

1. Open the door on the front of the CD–ROM drive, as shown in Figure 6–3.

2. Hold the disc caddy with the cover facing up and the arrow on the top of the caddy pointing toward the CD–ROM drive, as shown in Figure 6–3.

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

4. Close the door.

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

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

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

1. Press the eject button on the CD–ROM drive. (See Figure 6–3.)

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

NOTICES: You must unmount the disc before unloading it from the drive. Refer to the section "Mounting and Unmounting a CD–ROM Disc," later in this chapter, for instructions about unmounting a disc.

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

Mounting and Unmounting a CD–ROM Disc

If your workstation is running HP VUE, follow these instructions to mount and unmount a CD–ROM disc as a file system. If you're using a layered product, use the instructions for mounting and unmounting a CD–ROM disc that come with that product. For more information on configuring your CD–ROM drive, see the *System Administration Tasks* manual or online help.

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

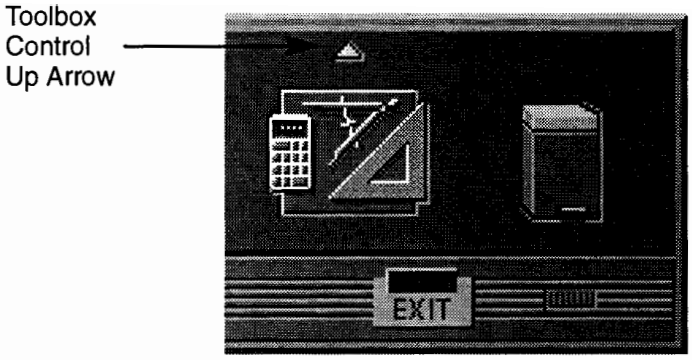
The procedures in this chapter require you to log in as **root**. If you cannot log in as **root**, contact your system administrator.

Mounting a CD–ROM Disc Using SAM

Use the following procedure to mount a CD–ROM disc:

1. Log in as **root**.

2. Move the mouse pointer to the **up arrow** above the **Toolbox** control and click the left mouse button. (This is called a single click, or simply a click.)



3. The **Toolboxes** subpanel opens. Click on the **General** toolbox icon, shown below.

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

SAM (System Administration Manager) is a utility that performs system administration tasks using a windows graphical user interface.

5. Move the mouse cursor to the **SAM** icon shown below (your icon can look like either of these) and double–click the left mouse button.

6. The **System Administration Manager** window opens. Double–click on **Peripheral Devices –>**

7. The **Peripheral Devices** window opens. Double–click on **Disks and File Systems –>**

8. The **Disks and File Systems** window opens. Double–click on **CD–ROM, Floppy, and Hard Disks**

   The following screen message appears:

   ```
   Scanning the system's hardware...
   ```

   The **CD–ROM, Floppy, and Hard Disks** window opens containing a list of drives currently configured on this system. Disks that are unmounted will have the word "unused" in the Use column.

9. From the **Actions** menu, click on **Add a Hard Disk Drive**

10. The **Select a Disk to Add...** window opens with a list of unused disks. Highlight the CD–ROM disc you want to mount.

11. Click on OK

12. The **Set Disk Usage and Options...** window opens. Select **File System** and click on OK

13. The following screen messages appear:

```
Task started.

Creating the device file...
Mounting file system...
Modifying "/etc/checklist"...
Task completed.
```

Click on [OK]

Unmounting a CD–ROM Disc Using SAM

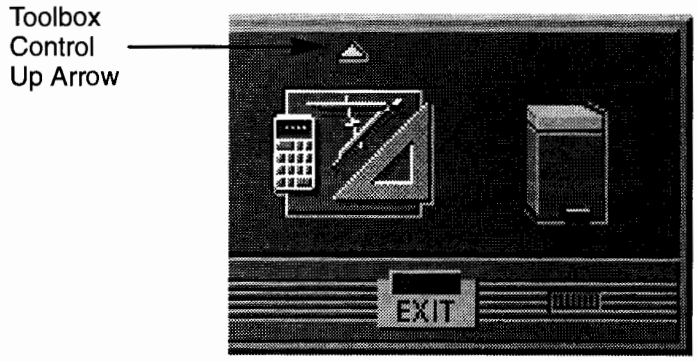
Use the following procedure to unmount a CD–ROM disc:

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

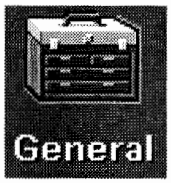
CAUTION: If you wish to use a CD–ROM disc as a mounted file system, you must mount the CD–ROM disc every time you load it into the drive. You must also unmount the CD–ROM disc every time you unload it from the drive. Failure to mount or unmount a disc may cause a system error condition and may also require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

1. Log in as **root**.

2. Move the mouse pointer to the **Toolbox** control and click on the **up arrow** with the left mouse button.



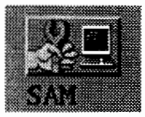
3. The **Toolbox** subpanel opens. Place the mouse cursor on the **General** toolbox icon, shown below, and click the left mouse button.



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

SAM (System Administration Manager) is a utility that performs system administration tasks using a windows graphical user interface.

5. Move the mouse cursor to the **SAM** icon shown below (your icon can look like either of these) and double–click the left mouse button.



6. The **System Administration Manager** window opens. Double–click on **Peripheral Devices –>**

7. The **Peripheral Devices window** opens. Double–click on **Disks and File Systems –>**

8. The **Disks and File Systems** window opens. Double–click on **CD–ROM, Floppy, and Hard Disks**

   The following screen message appears:

   ```
   Scanning the system's hardware...
   ```

   The **CD–ROM, Floppy, and Hard Disks** window opens containing a list of drives currently configured on this system.

9. Highlight the disc you want to unmount and click on **Remove a Hard Disk Drive** from the Actions menu.

10. A window with the following message opens:

    ```
    Do you want to remove the disk?
    ```

    Click on [Yes]. The system reboots.

Reading the Busy Light

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

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

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

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

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

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

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

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

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

The busy light flashes during normal activity with the system.

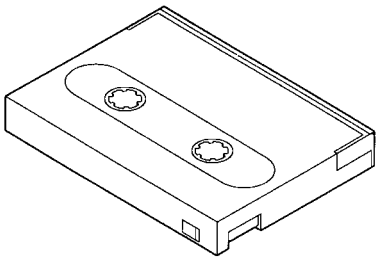
Troubleshooting

If you have trouble with any of these procedures for using your CD–ROM drive, see Chapter 8 of this book, "Solving Problems."

Ordering Information

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

C2293–80001	CD–ROM Disc Caddy



Chapter 7

Using Your DDS–Format Tape Drive

- Setting the write–protect tab on a data cassette
- Loading and unloading a data cassette
- Using device files
- Archiving data
- LED indicators
- LED warning conditions
- Cleaning the tape heads
- Media life
- Media restrictions
- Troubleshooting
- Ordering information

This chapter describes how to perform tasks that archive to and transfer data from your optional DDS–format tape drive and how to maintain and care for your drive. The instructions in this chapter assume that your DDS–format tape drive is set to the factory default address of SCSI ID 3.

The instructions in this chapter assume you are using the HP–UX operating system with the HP VUE version 3.0 (or later) interface. If you are not using HP–UX, or you are using a layered product with HP–UX, see the *User's Guide* for your operating system or layered product for instructions on how to perform the tasks in this chapter.

Setting the Write–Protect Tab on a Data Cassette

You can only store or change information on a data cassette when the write–protect tab is in the *write* position. So, before trying to write to the data cassette, make sure that the write–protect tab is in the *write* position, as shown in Figure 7–1.

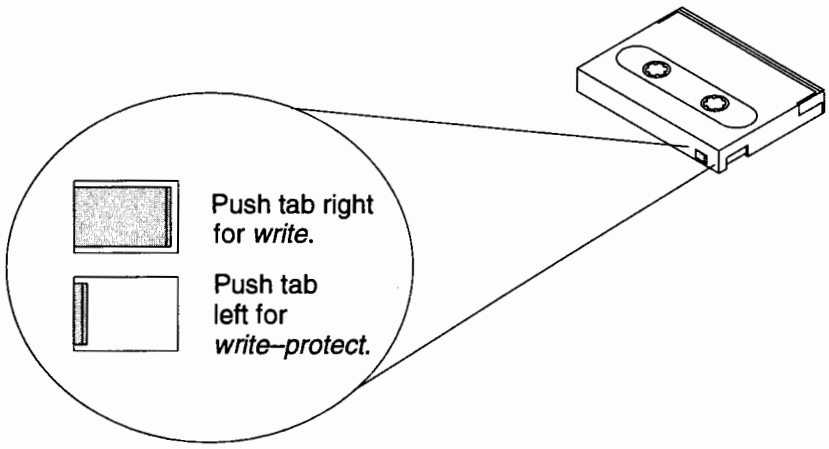


Figure 7–1. Setting the Write–Protect Tab on a DDS–Format Tape

To protect information on a data cassette from being overwritten, set the write–protect tab to the *write–protect* position, as shown in Figure 7–1.

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

Loading and Unloading a Data Cassette

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

1. Insert the data cassette into the drive, as shown in Figure 7–2.

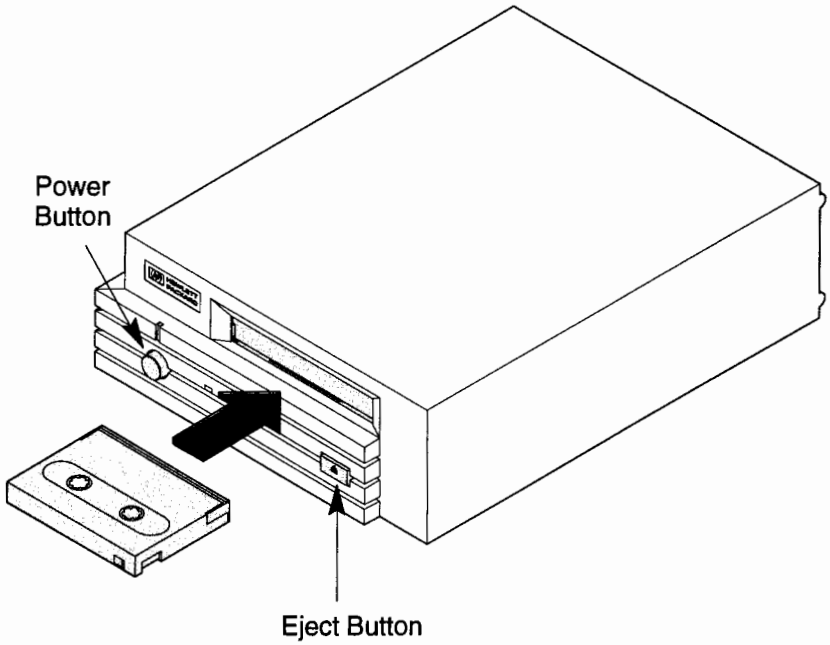


Figure 7–2. Loading and Unloading a Data Cassette

NOTICE: Turn on power before inserting the data cassette.

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

3. To remove the data cassette, press and release the eject button on the front of the drive, as shown in Figure 7–2. The LEDs on the drive flash on and off. Ten to twenty seconds later, the data cassette slides partway out of the drive. Remove the cassette from the drive.

Using Device Files

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

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

If you use the **/dev/rmt/3m** device file, the tape drive rewinds the data cassette every time the system releases the drive from its control. If you use the **/dev/rmt/3mn** device file, the drive does not rewind the data cassette. The tape stays where it was left after the last operation.

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

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

Archiving Data

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

The **tar** (tape file archiver) command saves files to a data cassette, restores files from a data cassette, or lists files on a data cassette.

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

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

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

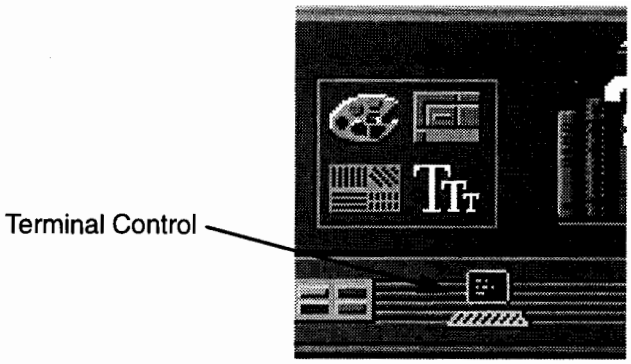
Writing to a Data Cassette

Use the following instructions to save files to a data cassette:

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

2. Load the data cassette into the tape drive.

3. Click on the **Terminal Control** on the **Front Panel** of your Workspace.



A terminal window opens.

4. Move the mouse cursor into the terminal window and click the left mouse button.

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

   tar –cvf /dev/rmt/3m *pathname* Enter

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

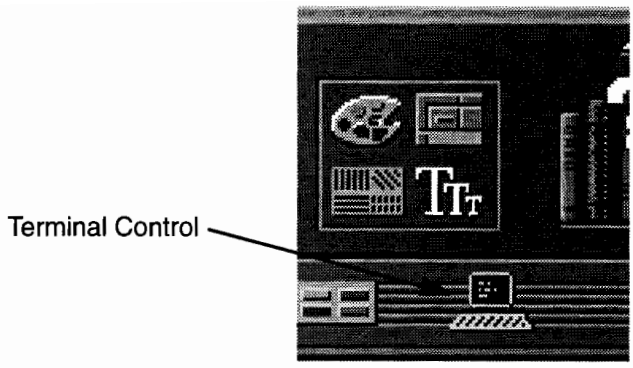
Restoring Files from a Data Cassette to Your System

Use the following instructions to restore files from a data cassette to your system:

1. Load the data cassette into the tape drive.

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

3. Click on the **Terminal Control** on the **Front Panel** of your Workspace.



A terminal window opens.

4. Move the mouse cursor into the terminal window and click the left mouse button.

5. Enter the following command line to restore data:

   tar –xvf /dev/rmt/3m *pathname* Enter

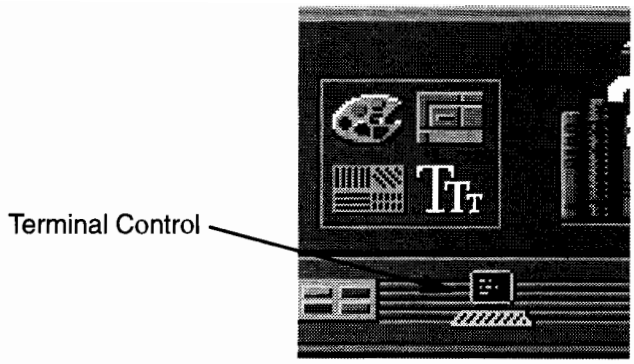
   where *pathname* is the pathname of the file or directory containing files that you want to restore from the tape. If *pathname* is not specified, everything on the data cassette is restored.

Listing the Files on a Data Cassette

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

1. Load the data cassette into the tape drive.

2. Click on the **Terminal Control** on the **Front Panel** of your Workspace.



A terminal window opens.

3. Move the mouse cursor into the terminal window and click the left mouse button.

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

   tar –tvf /dev/rmt/3m Enter

Further Command Information

The **man** utility looks up man pages on the system.

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

man tar Enter

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

man *command* Enter

LED Indicators

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

LEDs (light emitting diodes) indicate different activities or problems that occur with your workstation hardware

The front panel has two colored LEDs: the Cassette LED and the Drive LED. Figure 7–3 shows their location.

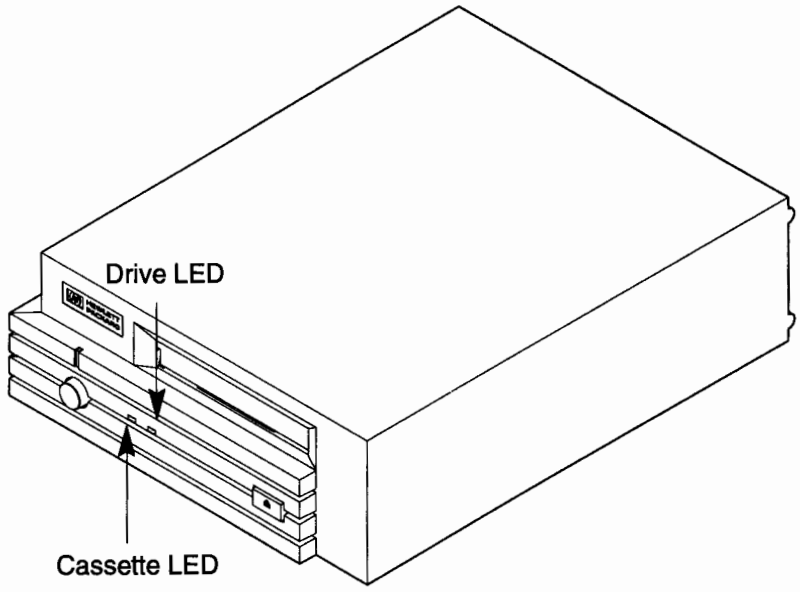


Figure 7–3. DDS–Format Tape Drive LED Indicators

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

If the Cassette Light (left LED) shows steady amber, it indicates that the cassette is write–protected. If the Drive Light (right LED) shows steady amber, this indicates a fault condition. Table 7–1 lists the LED codes and their meanings.

Table 7–1. LED Display Codes

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

Key

 OFF

 Green

 Amber

 Pulsing Green

 Pulsing Amber

 Pulsing Green and Amber

LED Warning Conditions

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

High Humidity

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

Self–Test (Failure)

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

Media Wear (Caution)

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

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

1. Check the system console for any tape error messages. A hard error during a read or write operation may have occurred.

2. Clean the heads with a cleaning cassette (HP92283K) as described in the "Cleaning the Tape Heads" section, later in this chapter.

3. Repeat the operation you performed when the Media Wear (Caution) signal displayed. If the Media Wear (Caution) signal still displays, then the data cassette should be replaced.

4. If you are performing a backup from disk to tape, discard the data cassette and back up your files using a new data cassette.

5. If you are performing a restore from tape to disk, complete the restore, then discard the data cassette and back up the files to a new data cassette.

Cleaning the Tape Heads

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

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

Follow this procedure to clean the tape heads:

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

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

Media Life

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

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

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

Media Restrictions

If you interchange media between other HP workstation DDS–format tape drives, note that data cassettes with compressed data can only be read by tape drives that have data compression capabilities. This includes data cassettes that contain both compressed and noncompressed data.

Some full–height DDS–format tape drives support only 60–meter tapes.

An HP workstation containing a DDS–format tape drive with data compression capability is labeled **DCLZ** on its front panel.

Troubleshooting

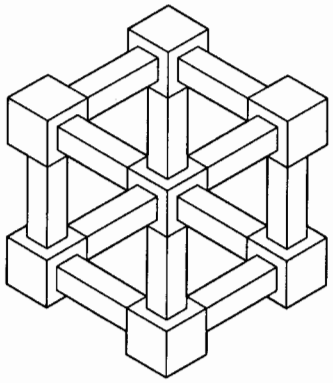
If you have trouble with any of these procedures for using your DDS–format tape drive, see Chapter 8 of this book, "Solving Problems."

Ordering Information

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

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

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



Chapter 8

Solving Problems

- Common problems and solutions
- Dealing with a boot failure
- LED–indicated problems
- Self–test errors
- Running system verification tests

This chapter contains information to help you determine what's wrong with your system when you have problems. 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.

The instructions in this chapter assume you are using the HP–UX operating system with the HP VUE version 3.0 (or later) interface. If you are not using HP–UX, or you are using a layered product with HP–UX, see the *User's Guide* for your operating system or layered product for instructions on how to perform the tasks in this chapter.

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 8–1. 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 is flashing and the monitor is blank.	A 3/4–second flash pattern: CPU board is defective. Call your designated service representative. A three quick flashes, pause, three quick flashes pattern: graphics hardware problem. Check monitor connections before calling your designated service representative.
If problems persist, contact your system administrator or call your designated service representative.	

(Continued)

Table 8–1. Problems Powering Up the System (Cont.)

Problem	Solution
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. Go to the section "Changing Your Monitor Type" in Appendix B for information about displaying and setting your workstation's monitor configuration.
If problems persist, contact your system administrator or call your designated service representative.	

Table 8–2. Problems 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.)
The system stops or hangs while booting.	Follow the instructions in "Dealing With a Boot Failure," later in this chapter.
If problems persist, contact your system administrator or call your designated service representative.	

Table 8–3. Problems with the 802.3 Network

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

Table 8–4. Problems Using a Hard Disk Drive

Problem	Solution
The disk drive is not accessible or does not respond.	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.) Make sure that the system can communicate with the drive as described in "Checking the SCSI IDs" in Appendix B. Follow the instructions in "Dealing With a Boot Failure" later in this chapter.
If problems persist, contact your system administrator or call your designated service representative.	

Table 8–5. Problems Using the Floppy Disk Drive

Problem	Solution
The floppy drive does not respond to commands.	Re–enter the commands and make sure that you have typed them correctly. Make sure that you specified the device file **/dev/rfloppy/c20Ad1s0** 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 8–6. Problems Using the CD–ROM Drive

Problem	Solution
The CD–ROM drive does not respond to commands.	Re–enter the commands and make sure that you have typed them correctly. Make sure that the system can communicate with the drive as described in "Checking the SCSI IDs" in Appendix B. Follow the instructions in the section entitled "Running the System Verification Tests" later in this chapter to verify that the CD–ROM drive is functioning properly.
If problems persist, contact your system administrator or call your designated service representative.	

Table 8–7. Problems Using the DDS–Format Tape Drive

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

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

NOTICE: Your workstation automatically shuts down the operating system before it terminates the power.

2. Turn the power back on.

   The screen displays a box with the HP logo that contains the message:

   ```
   Press <ESCAPE> to stop boot sequence.
   ```

   Press and hold the Esc key as soon as this message appears.

3. Release Esc when the screen displays the boot administration command menu followed by the `BOOT_ADMIN>` prompt.

4. List devices that contain bootable media by typing the following at the `BOOT_ADMIN>` prompt:

   `BOOT_ADMIN>` **search** Enter

The **search** command looks for bootable media on your workstation.

This causes your workstation to search *exhaustively* for bootable media.

5. Boot from one of the listed devices by typing the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> boot device Enter
```

where *device* is the **hardware path** to the device, specified in Mnemonic Style Notation, such as **scsi.5.0**

6. If your workstation still fails to boot, there is either something wrong with the file system or with the hardware. If you suspect a file system failure, see the manual *Using HP–UX* for help on dealing with file system failures. If you think that something is wrong with the hardware, refer to the following sections of this chapter for more troubleshooting information.

LED–Indicated Problems

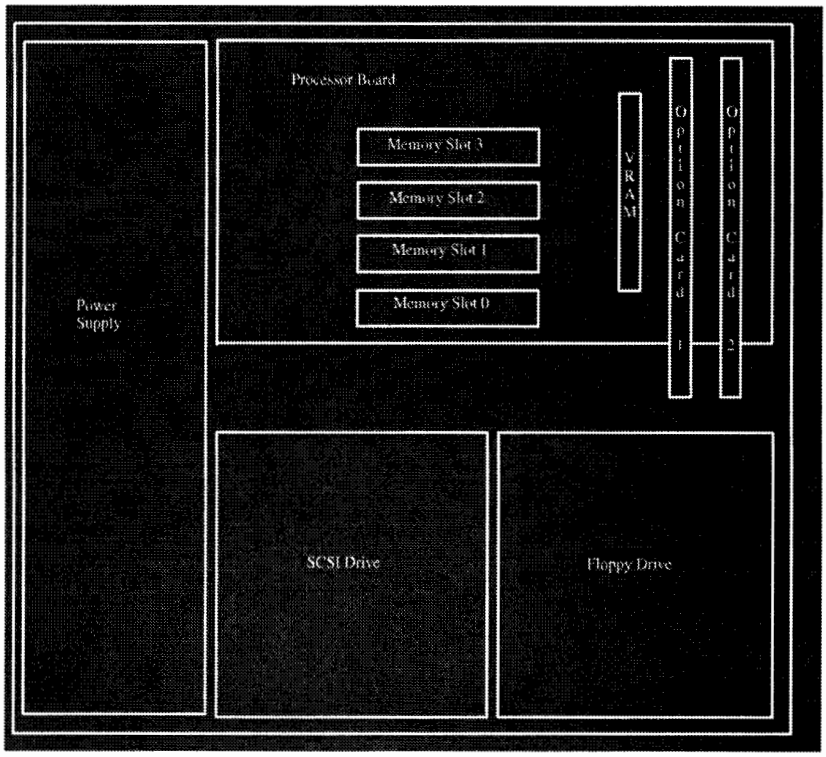
If your monitor remains blank when you power on your workstation, your system unit's power LED may flash to indicate an error condition:

- A 3/4–second flash indicates the CPU board is defective. Contact your designated service representative.
- A three quick flash, pause, three quick flash pattern indicates a problem with the graphics hardware. Check your monitor connections before contacting your designated service representative.

Self Test Errors

When you power on your workstation, your system runs a series of diagnostic tests to check the hardware configuration.

If an error occurs during the self test, you will see a screen depicting an overview of the system unit components, similar to the following:



The defective component is highlighted on the screen. To the right of the diagram, the self test calls out the defective component. Call your designated service representative to replace the defective component.

Running System Verification Tests

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

You can access the Support Tools Manager 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:

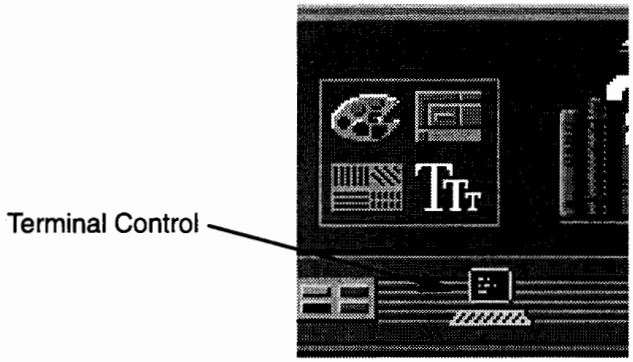
man cstm Enter

man mstm Enter

man xstm Enter

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

1. Click on the **Terminal Control** on the **Front Panel** of your Workspace.



A terminal window opens.

2. Move the mouse cursor into the terminal window and click the left mouse button.

3. Enter the following at the prompt:

cstm Enter

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>
```

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

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

CSTM> **verify all** Enter

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 release 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] >>
```

6. When you see the >> prompt shown above, type r Enter

The following messages and a graphics test window appear:

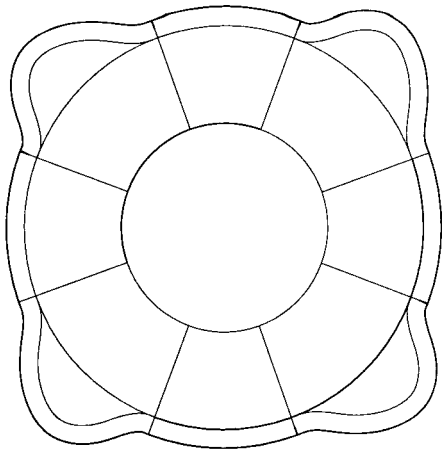
```
Verification of (2/0/1.0.0) has completed. Result status - (Success)
Verification of (2/0/1.5.0) has completed. Result status - (Success)
Verification of (2/0/1.6.0) has completed. Result status - (Success)
Verification of (CPU) has completed. Result status - (Success)
Verification of (FPU) has completed. Result status - (Success)
Verification of (2/0/2) has completed. Result status - (Success)
Verification of (0/0/0) has completed. Result status - (Success).
```

7. Type Enter to return to the CSTM> prompt after all test results are reported.

8. To exit the Support Tools Manager, type the following:

```
CSTM> exit Enter
```

If any tests failed, further diagnosis is necessary by qualified service personnel. Contact your designated service representative.



Appendix A

Safety and Regulatory Statements

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

This appendix contains safety and regulatory statements pertaining to your Model 712 workstation.

DECLARATION OF CONFORMITY

according to ISO/IEC Guide 22 and EN45014

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 / 712
Base Product Number: A2615A

conforms to the following Product Specifications:

SAFETY: IEC 950:1986 + A1, A2 / EN 60950 (1988) + A1, A2
EMC: CISPR22: 1985 / EN 55022 (1988) Class A (1)
IEC 801–2: 1991 / prEN 55101–2 (1990): 3 kV CD, 8 kV AD
IEC 801–3: 1984 / prEN 55024–3 (1991): 3 V/m
IEC 801–4: 1984 / prEN 55024–4 (1992): 1 kV

Supplementary Information:

1 **The product was tested in a typical configuration with Hewlett Packard workstation and test systems.**

The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC.

Exeter 28th June 1993
Date

James Kelly
Quality Productivity Manager

European Contact: Your local Hewlett–Packard Sales and Service Office or Hewlett–Packard GmbH, Department ZQ/Standards Europe, Herrenberger 130, D–7030 Boeblingen (FAX: +49–7031–143143)

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.

DECLARATION D'INSTALLATION ET DE MISE EN EXPLOITATION

d'un matériel de traitement de l'information (ATI), classé A en fonction des niveaux de perturbations radioélectriques émis, définis dans les normes européenne EN 55022 concernant la Compatibilité Electromagnétique.

Cher client,
Conformément à la Réglementation Française en vigueur l'installation, ou le transfert d'installation, et l'exploitation de cet appareil de classe A, doivent faire l'objet d'une déclaration (en deux exemplaires) simultanément auprès des services suivants:

– Comité de Coordination des Télécommunications – 20 Avenue de Ségur – 75700 PARIS
– La Préfecture du département du lieu d'exploitation

Le formulaire à utiliser est disponible auprès des Préfectures.
La déclaration doit être faite dans les 30 jours suivant la mise en exploitation.
Le non–respect de cette obligation peut être sanctionné par les peines prévues au code des Postes et Télécommunications et celles indiquées dans la loi du 31 mai 1933.

Arrêté du 27 Mars 1993, publié au J.O. du 28 Mars – ATI

Emissions Regulations

Federal Communications Commission (FCC)

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

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

Canadian Department of Communications (CDC)

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

VCCI Class 1 ITE

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

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

取扱説明書に従って正しい取り扱いをして下さい。

ＶＣＣＩ基準に適合する為に、シールドされたケーブルをご使用下さい。

Emissions Regulations Compliance

Any third–party I/O device installed in HP 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 Statement (United Kingdom Only)

The HP 9000 Model 712 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.

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

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

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

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

LASERTURVALLISUUS LUOKAN 1 LASERLAITE KLASS 1 LASER APPARAT

HP A2655A CD–ROM–lukulaite sisältää laitteensisäisen CD–ROM–yksikön, joka on laserlaite.

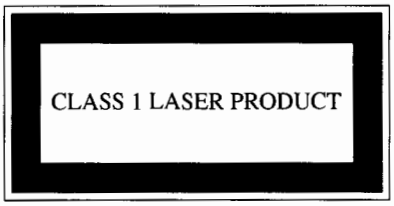
Kyseinen CD–ROM–yksikkö on käyttäjän kannalta turvallinen luokan 1 laserlaite. Normaalissa käytössä yksikön suojakotelo estää lasersäteen pääsyn laitteen ulkopuolelle.

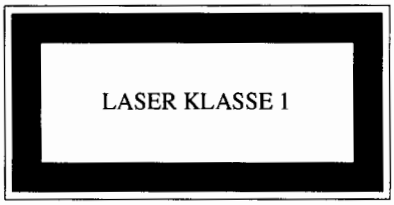
CD–ROM–yksikön on tyyppihyväksynyt Suomessa laserturvallisuuden osalta Työministeriön työsuojeluosasto. Laitteen turvallisuusluokka on määritetty valtioneuvoston päätöksen N:o 472/1985 ja standardin SFS–EN 60825 (1992) mukaisesti.

Tiedot CD–ROM–yksikössä käytettävän laserdiodin säteilyominaisuuksista:

Aallonpituus 790 nm
Teho 1,1 µW
Luokan 1 laser

IEC 825 Class 1 Laser Labels





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.

WARNING:

Lithium batteries may explode if mistreated. Do not put lithium batteries in fires or try to recharge or disassemble them.

Replace battery only with Matsushita Electric BR–2325 three–volt lithium battery (HP part number 1420–0314)! Use of any other battery may cause fire or explosion.

Warnings and Cautions (Cont.)

WARNING:

Use only power supply Model ETYHP127MM with A2656A Tape Drive.

AVERTISSEMENT:

Utiliser seulement le bloc d'alimentation ETHYP127MM pour le dérouleur de bande A2656A.

WARNING:

Use only power supply Model ETYHP127MM with A2655A CD–ROM Drive.

AVERTISSEMENT:

Utiliser seulement le bloc d'alimentation ETHYP127MM pour le lecteur de CD–ROM A2655A.

WARNING:

Use only power supply Model ETYHP127MM with A2657A Hard Disk Drive.

AVERTISSEMENT:

Utiliser seulement le bloc d'alimentation ETHYP127MM pour le disque dur A2657A.

CAUTION:

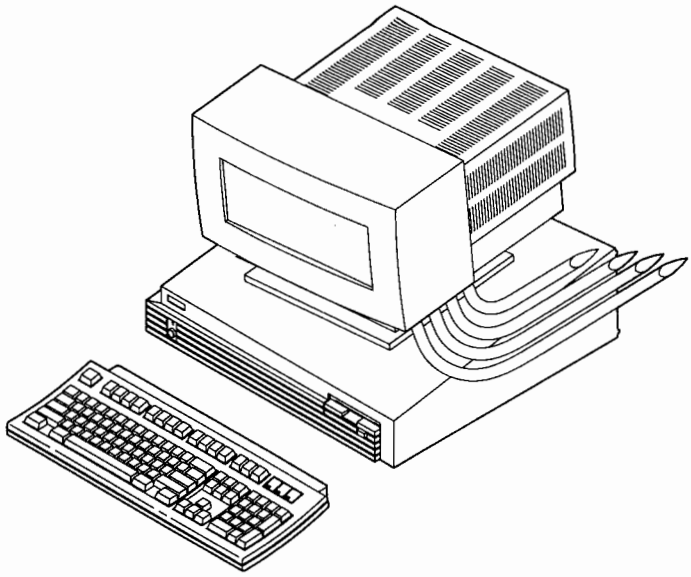
System power cord must be plugged into an accessible dedicated ac mains receptacle.

VORSICHT:

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

ATTENTION:

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



Appendix B

Changing Your Workstation's Hardware Configuration

- Opening the system unit
- Closing the system unit
- Installing internal mass storage devices
- Installing additional memory
- Installing an I/O expansion board
- Installing a TeleShare board
- Installing a VRAM board
- Changing your monitor type

This appendix describes the procedures to change your workstation's hardware configuration.

The instructions in this chapter assume you are using the HP–UX operating system with the HP VUE version 3.0 (or later) interface. If you are not using HP–UX, or you are using a layered product with HP–UX, see the *User's Guide* for your operating system or layered product for instructions on how to perform the tasks in this chapter.

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

Opening the System Unit

Perform the following steps to open the system unit:

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

NOTICE: There is no need to manually shut down the HP–UX operating system on your workstation before powering it off. When you turn off the power switch your workstation automatically shuts down the operating system before terminating the power.

CAUTION: **Do not** attempt to operate the workstation with the top cover removed. The cover is needed for proper air flow for system cooling.

2. If your workstation is installed with its tower stand, tilt up the front of the system unit and lift it out of the stand, as shown in Figure B–1.

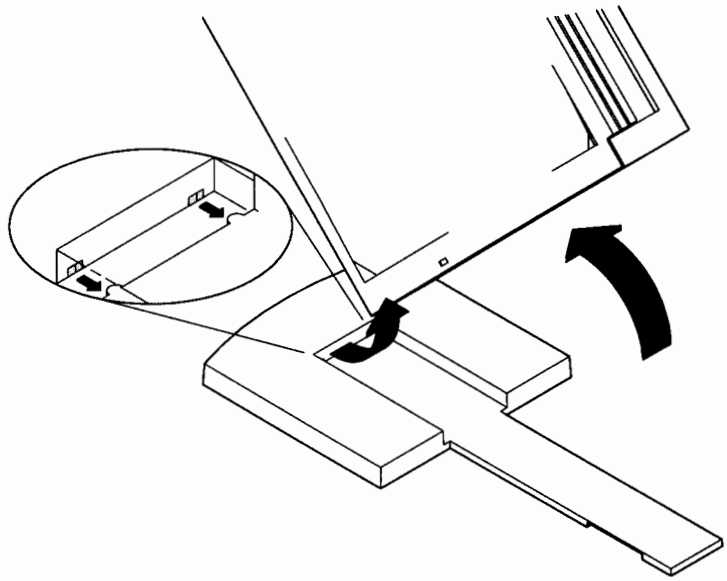


Figure B–1. Removing the System Unit from the Floor Stand

3. Lay the system unit on a flat surface, such as a table top.

4. Attach the static–grounding wrist strap by following the instructions on the package. Attach the the sticky end of the wrist strap to bare metal on the back panel of the system unit.

5. Release the two locking tabs at the rear of the system unit by moving each toward the outside of the system unit, then push them forward until the top cover is released, as shown in Figure B–2.

6. Slide the cover forward an inch or two and then carefully lift it off to open the system unit, as shown in Figure B–2. Set the cover to one side.

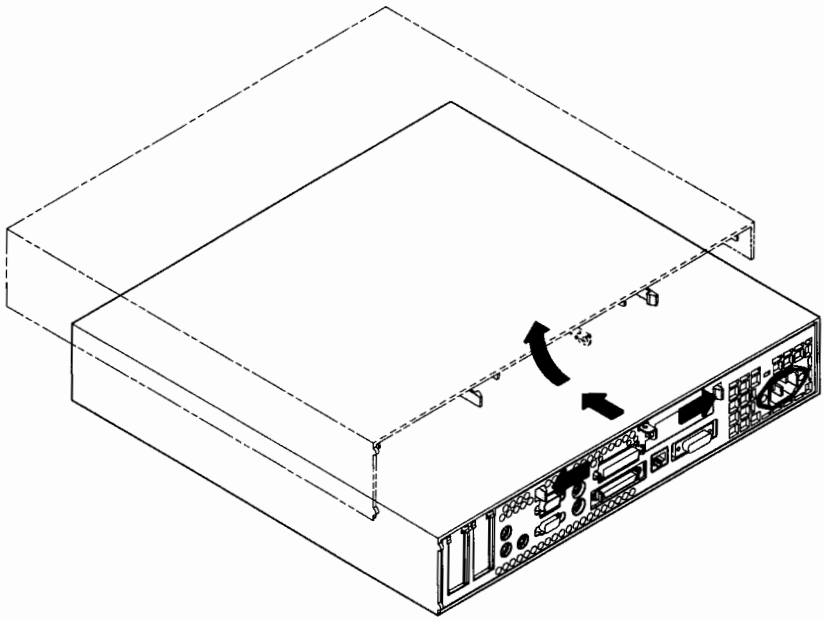


Figure B–2. Opening the System Unit

Closing the System Unit

Perform the following steps to close the system unit:

1. Place the cover assembly on the system unit approximately one inch from the rear.

2. Push down on the center rear edge of the cover and slide it toward the rear of the system unit until the locking tabs engage.

CAUTION: **Do not** attempt to operate the workstation with the top cover removed. The cover is needed for proper air flow for system cooling.

NOTICE: To maintain FCC/EMI compliance, verify that the top cover and base of the system unit are securely joined.

3. Place the system unit in the tower stand, if desired.

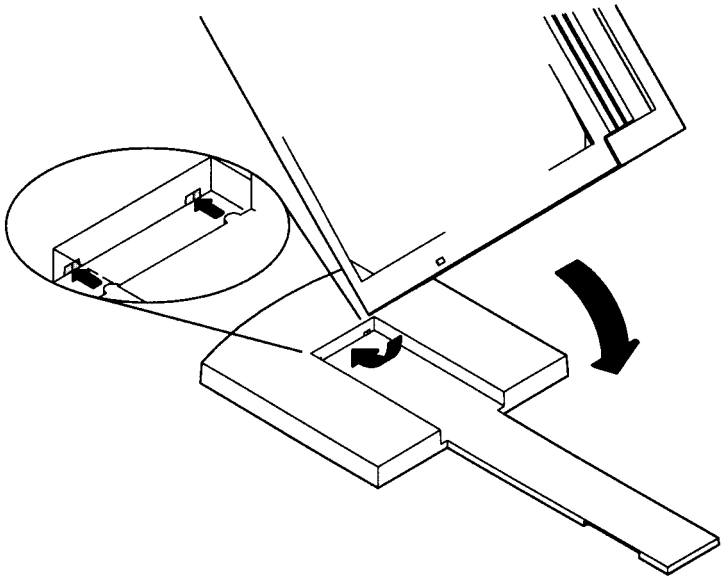


Figure B–3. Installing the Floor Stand

4. Reconnect the power cables and any other cables that you disconnected when opening the workstation, then power on any peripherals, the monitor, and the system unit.

Installing Internal Mass Storage Devices

Follow the information in this section to install a floppy or hard disk drive into your workstation. To install a floppy disk drive, follow the instructions in the "Installing a Floppy Disk Drive" subsection. To install a hard disk drive, follow the instructions in the "Installing a Hard Disk Drive" subsection.

Before you begin the installation, make sure you have the following pieces that shipped with your workstation:

- For a floppy disk drive installation, you need the top and bottom foam brackets, which ship in the workstation's floppy drive bay, and the floppy bezel.
- For a hard disk drive, you need the bottom foam bracket, and either the 1/2–height or full–height top foam bracket, depending on the type of hard drive you will install.

Installing a Floppy Disk Drive

Perform the following steps to install the floppy disk drive:

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

2. Remove the top foam piece from the floppy drive bay, as shown in Figure B–4.

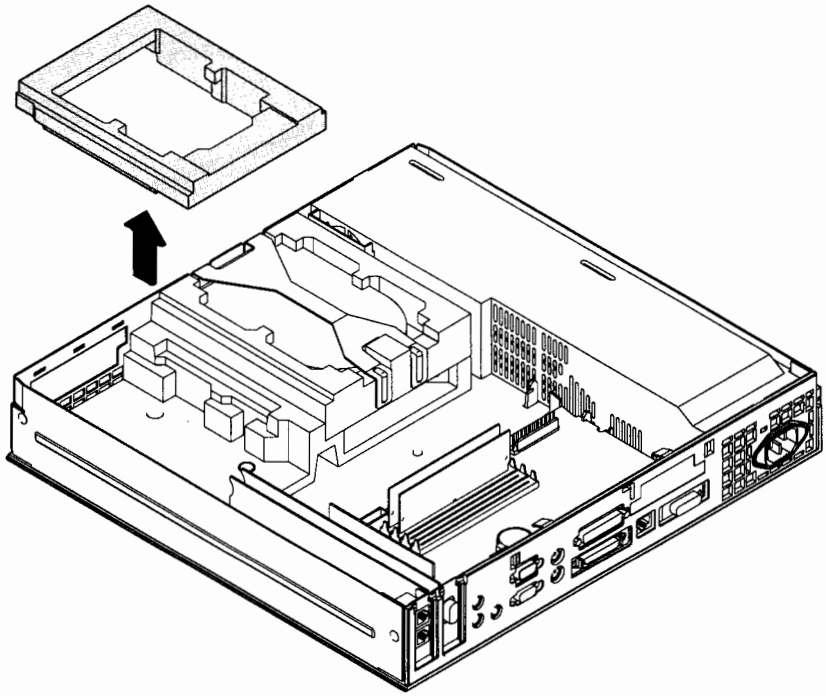


Figure B–4. Removing the Floppy Disk Drive Foam Bracket

3. Remove the blank filler bezel by flexing the front of the system cover as you pull out the bezel as shown in Figure B–5.

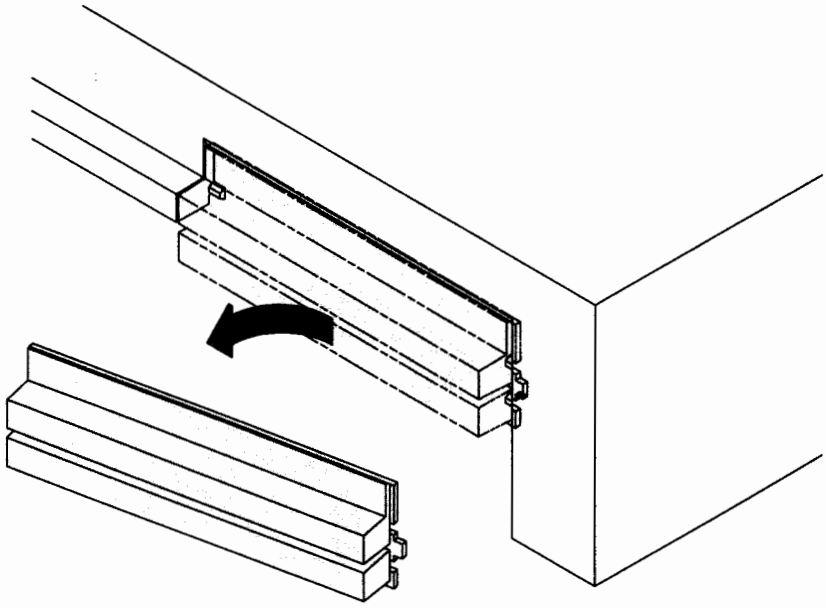


Figure B–5. Removing the Blank Bezel

4. Snap in the floppy bezel that shipped with your workstation, as shown in Figure B–6.

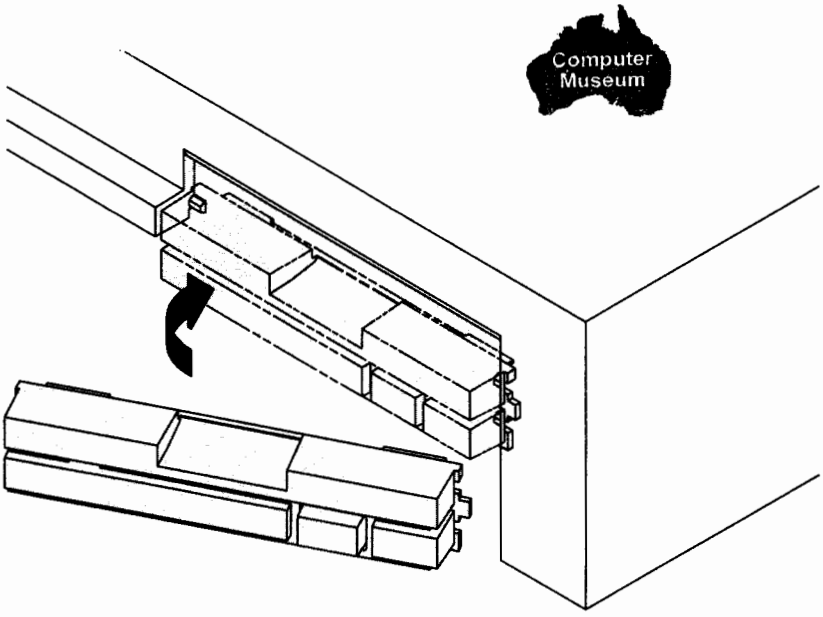


Figure B–6. Installing the Floppy Drive Bezel

5. Check that the jumper on the bottom of the floppy drive is positioned as shown on the information sheet that shipped with the floppy drive.

6. Peel the paper backing from the bracket that shipped with the floppy drive, and stick it to the top of the drive, as shown in Figure B–7.

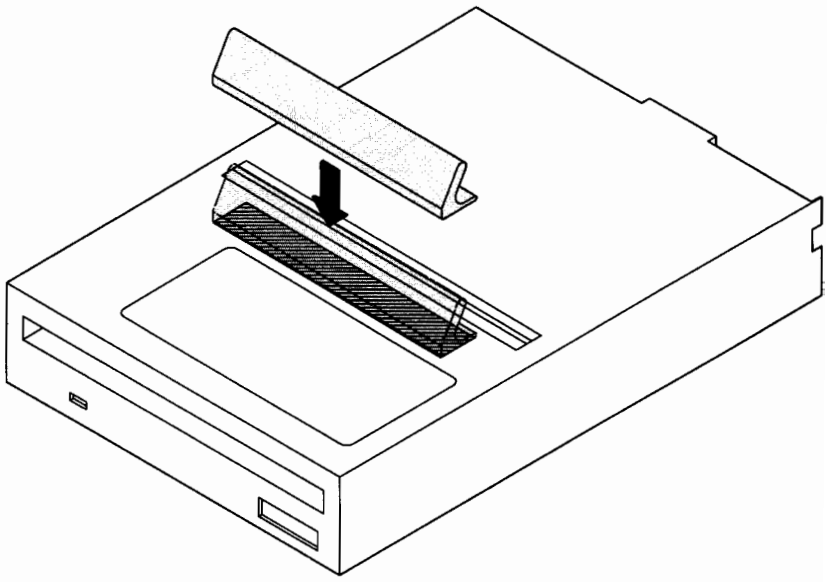


Figure B–7. Installing the Floppy Bracket

7. Place the floppy drive into the foam bracket on the bottom of the floppy drive bay, as shown in Figure B–8.

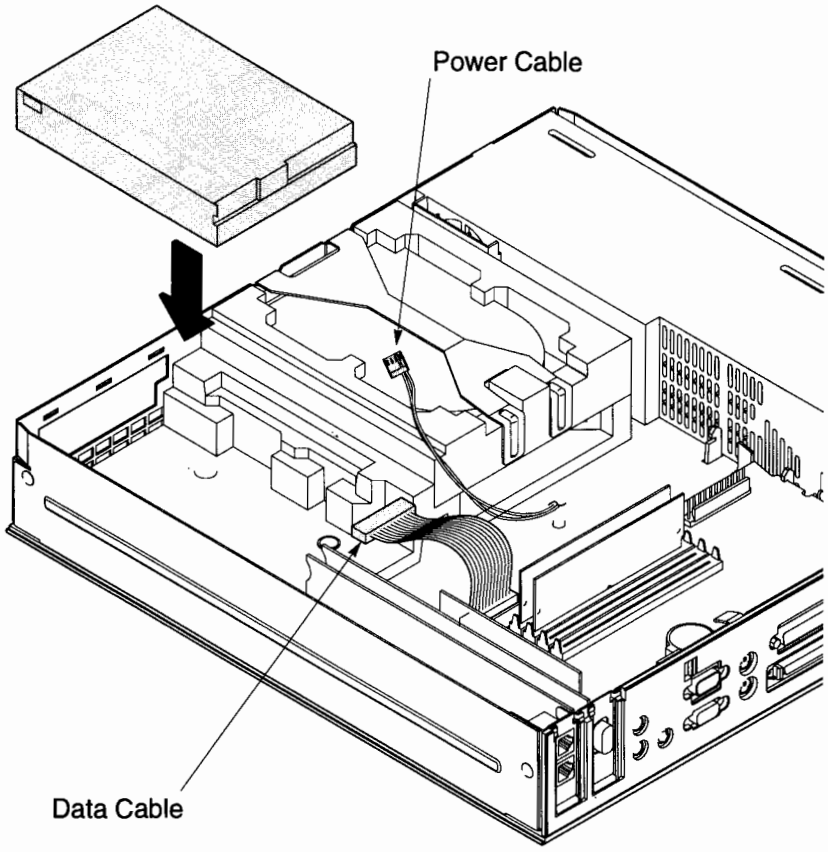


Figure B–8. Installing the Floppy Drive

8. Connect the power and data cables to the floppy drive.

9. Install the top foam bracket that you removed from the drive bay in Step 2.

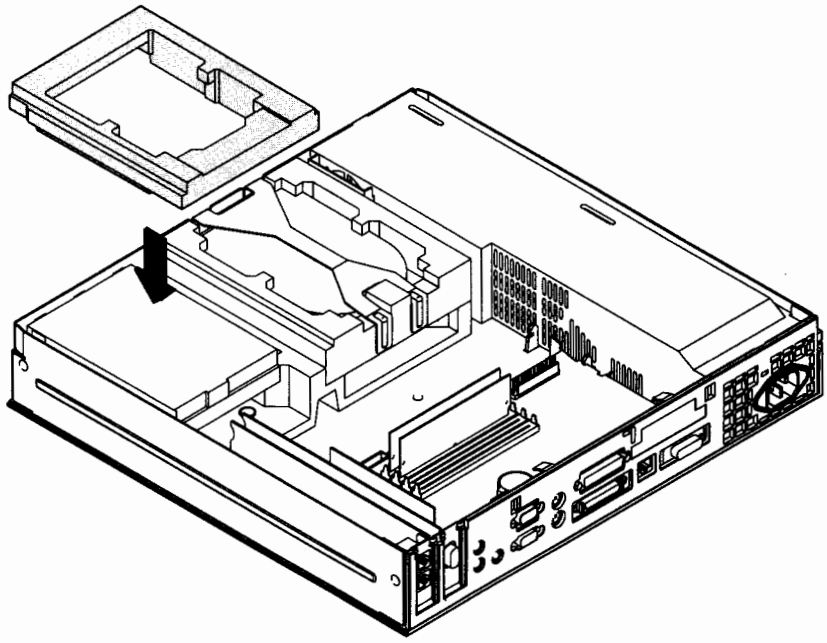


Figure B–9. Installing the Floppy Disk Drive Foam Bracket

10. Close the system unit and reconnect all cables as described in the "Closing the System Unit" section in this appendix.

11. Go to Chapter 5 for information about using your floppy drive.

Installing a Hard Disk Drive

Perform the following steps to install a hard disk drive.

1. Follow the instructions in the "Checking the SCSI IDs" subsection to determine the SCSI IDs in use on your workstation.

2. Your hard disk shipped preset to SCSI ID 6. If another device on your workstation is using SCSI ID 6, change the hard disk's SCSI ID to an unused SCSI ID, as shown on the information sheet that shipped with the hard drive.

3. Remove the disk retaining bracket by lifting the end closest to the system unit rear, and rotating it toward the front of the system unit, as shown in B–10.

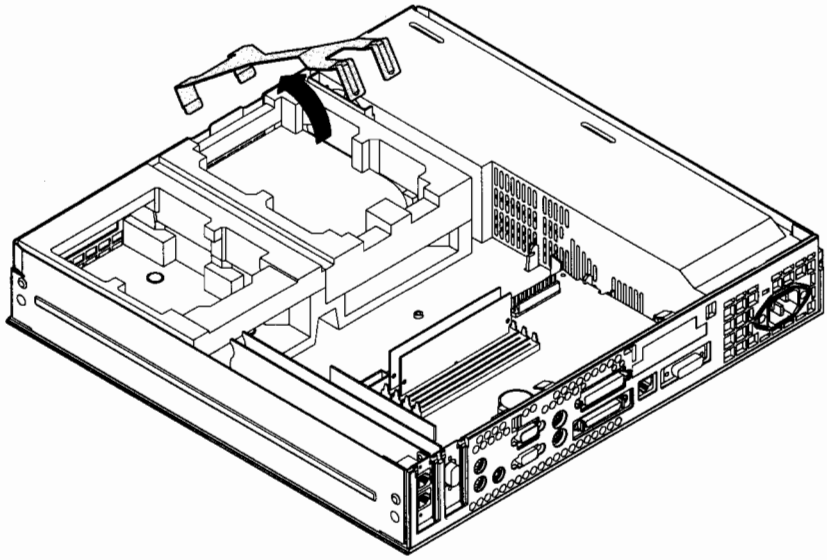


Figure B–10. Removing the Disk Retaining Bracket

4. Lift up the foam bracket, as shown in Figure B–11.

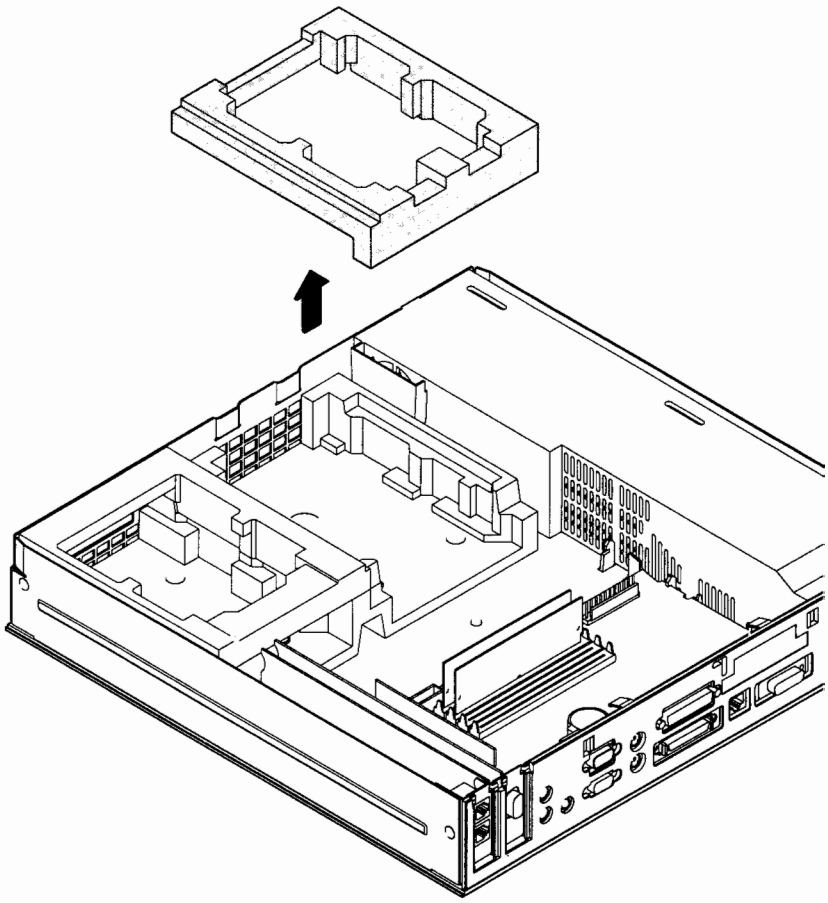


Figure B–11. Removing the Hard Disk Drive Foam Bracket

5. If your workstation has an existing hard disk that you are replacing, go to Step 6. If you are installing a hard disk where there was none, go to Step 8.

6. Disconnect the SCSI and power cables from the hard disk.

7. Lift the existing drive straight up, as shown in Figure B–12.

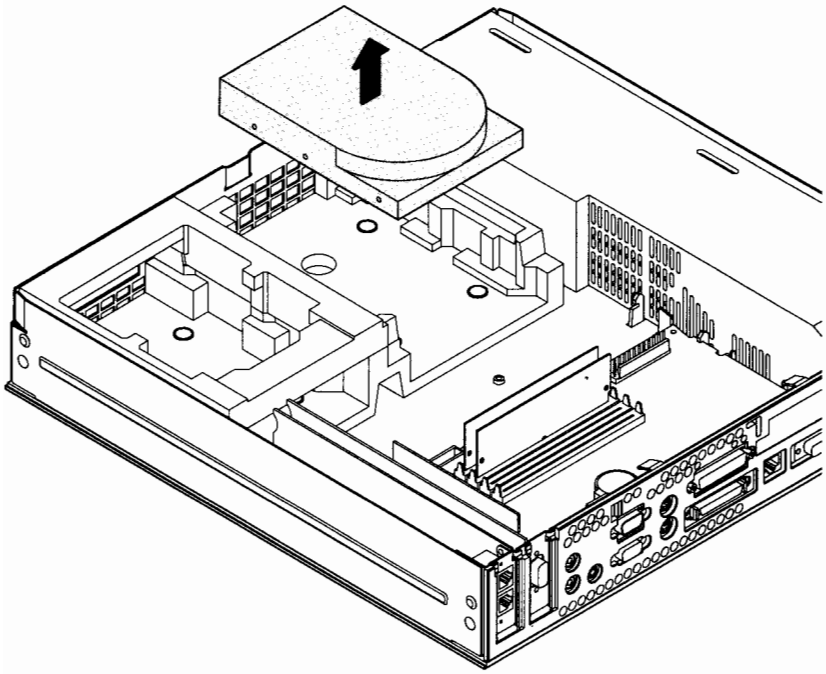


Figure B–12. Removing the Hard Disk Drive

8. Place the new disk drive into the foam bracket on the bottom of the hard drive bay so that the controller board is on the bottom and the cable connectors face the rear of the system unit.

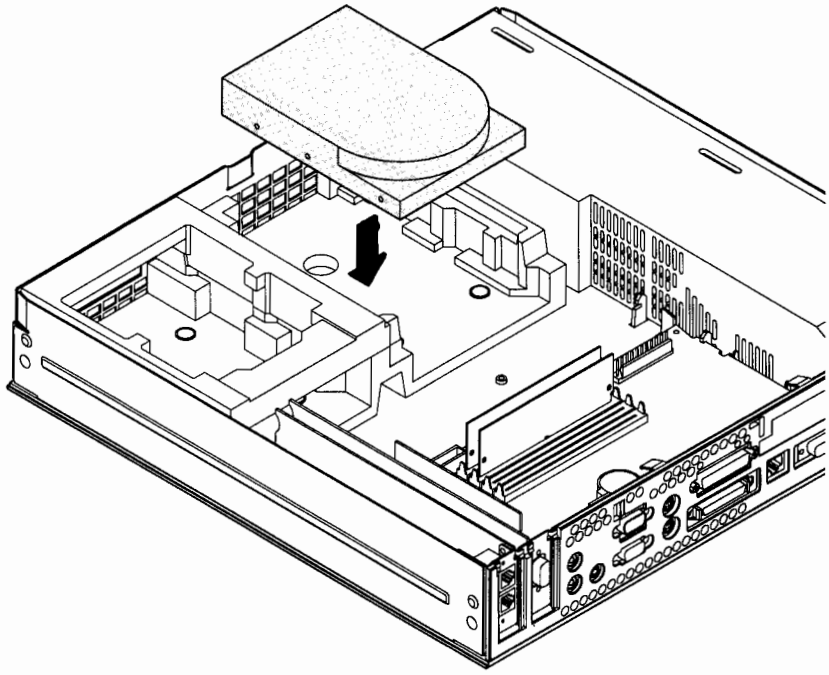


Figure B–13. Installing the Hard Disk Drive

9. Connect the SCSI and power cables to the disk drive connectors. See Figure B–14 for cable locations.

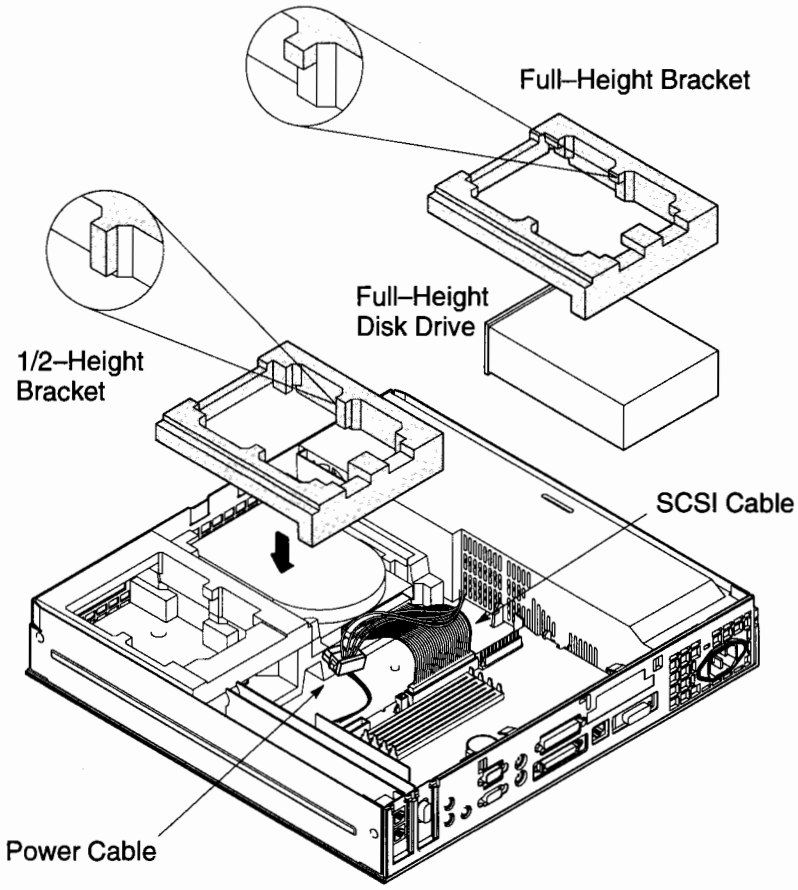


Figure B–14. Installing the Hard Disk Drive Foam Bracket

10. Your workstation shipped with two different top foam brackets to secure a 1/2–height or full–height hard disk drive. Identify the correct foam bracket for the drive that you are installing, and press it into place. See Figure B–14.

11. Install the disk retaining bracket by fitting the tabs into the slots on front of the system unit, then rotating it downward, as shown in Figure B–15.

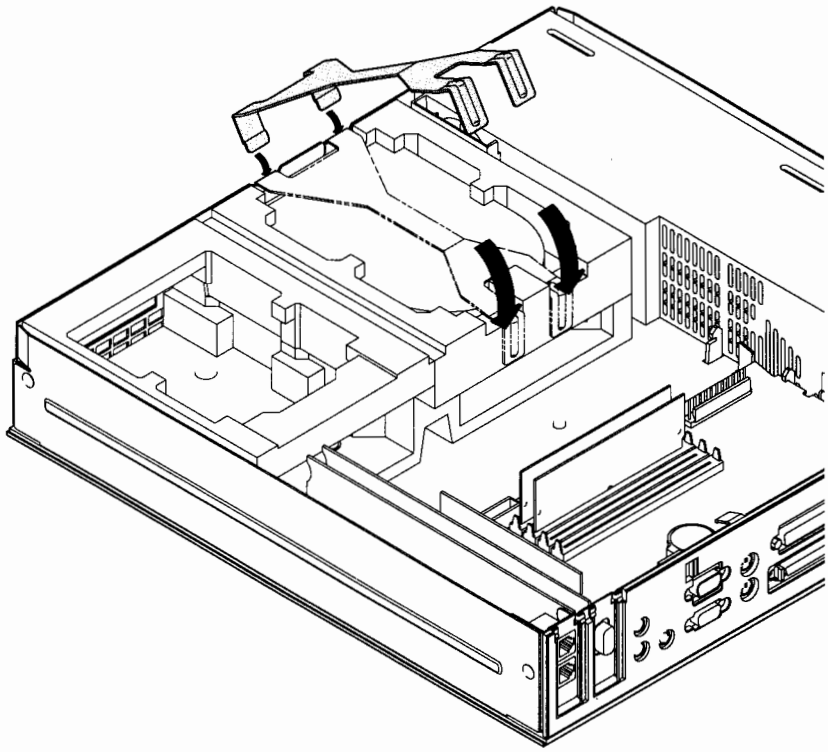


Figure B–15. Installing the Disk Retaining Bracket

12. Close the system unit and reconnect all cables as described in the "Closing the System Unit" section in this appendix.

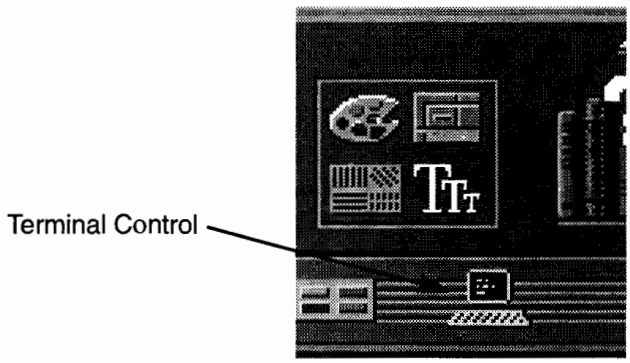
13. Follow the instructions in the "Checking the SCSI IDs" subsection to verify that your workstation can see the hard drive.

14. Go to Chapter 4 for information about using your hard drive.

Checking the SCSI IDs

Determine which SCSI IDs are currently in use on your system by using the **ioscan** command in a terminal window:

1. Click on the **Terminal Control** on the **Front Panel** of your Workspace.



A terminal window opens.

2. Move the mouse cursor into the terminal window and single–click the left mouse button.

3. Enter the following at the prompt:

/etc/ioscan Enter

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

H/W Path	Description	Status
0.0.0	graphics	ok(nnnnnn)
2.0.1	scsi	ok(nnnnnn)
2.0.1.3.0	tape_drive	ok(nnnnnn)
2.0.1.5.0	disk	ok(nnnnnn)
2.0.1.6.0	disk	ok(nnnnnn)
2.0.2	lan	ok(nnnnnn)
2.0.3	hil	ok(nnnnnn)
2.0.4	serial	ok(nnnnnn)
2.0.5	serial	ok(nnnnnn)
2.0.6	parallel	ok(nnnnnn)
2.0.8	audio	ok(nnnnnn)

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

NOTICE: Never use SCSI address 7 for any device. Address 7 is reserved for the SCSI controller.

Installing Additional Memory

The system has two pairs of memory connectors, labeled Slot 0 and Slot 1 for Pair 0, and Slot 2 and Slot 3 for Pair 1, as shown in Figure B–16. Install memory boards according to the following guidelines:

- Install memory boards in pairs of the same memory capacity.
- Board Pair 0 may have a different memory capacity than Board Pair 1. For example, if Pair 0 has 16–MB memory boards, Pair 1 may have 4–MB memory boards.
- Install the first pair of memory boards in the connectors labeled **0** and **1** (Pair 0) and the second pair, which is optional, in the connectors labeled **2** and **3** (Pair 1).

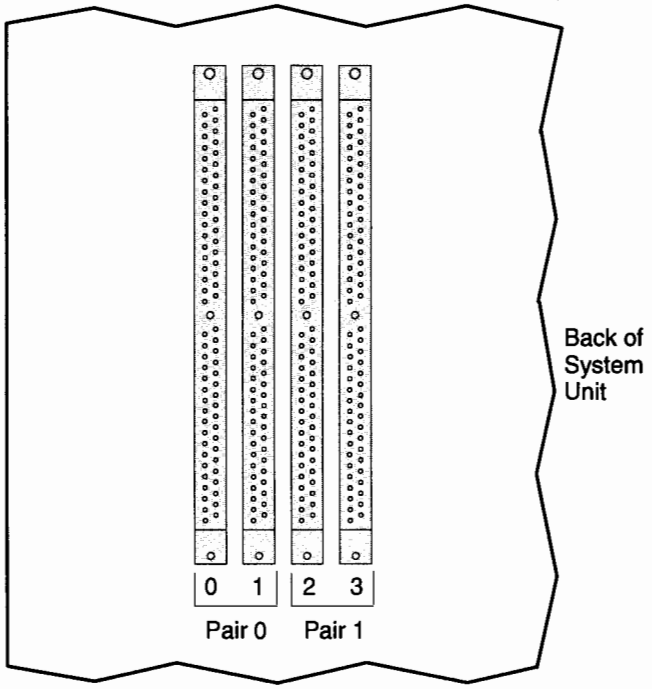


Figure B–16. Memory Connectors

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

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

Locate the memory boards behind the hard disk drive and floppy drive bays, as shown in Figure B–17.

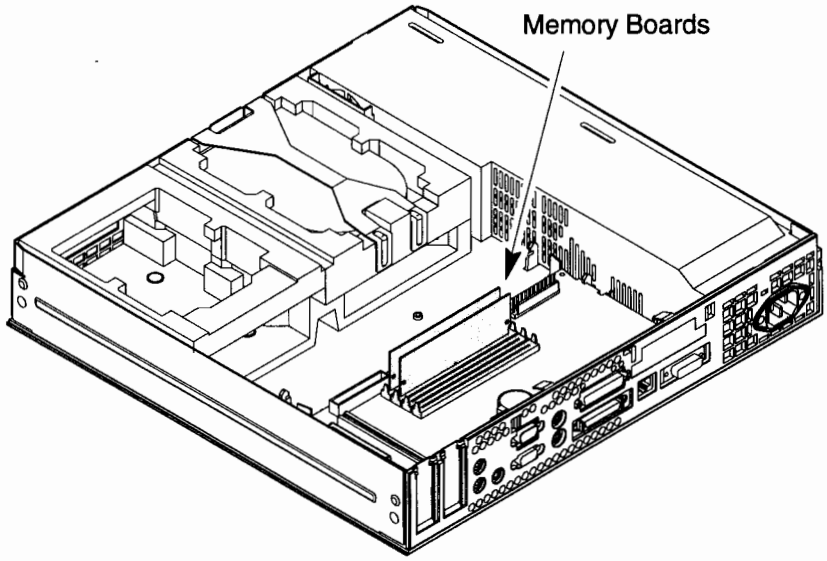


Figure B–17. Memory Board Location

2. If you need to remove or replace memory boards, for example to upgrade to boards with more memory capacity, then perform this step.

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

To remove a memory board, push the two slot clips out and then tilt its top toward the back of the system unit. Lift the memory board up and out of the connector. Place the memory board on a static–free surface. Figure B–18 shows how to remove the memory board.

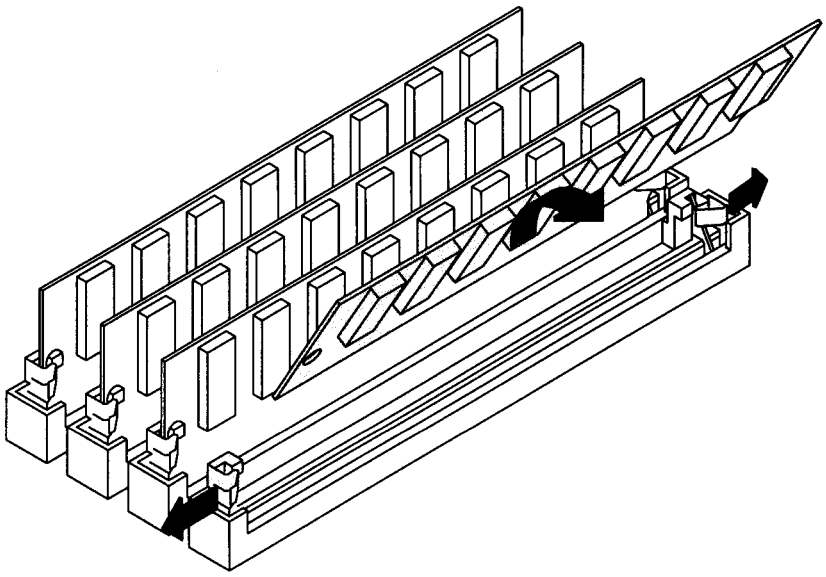


Figure B–18. Removing Memory Boards

3. To install a new memory board, hold the board with its top edge tilted toward the back of the system unit. Note that the memory board is notched on one end to fit the keyed connector. Press firmly on the memory board to ensure that it is fully seated. Snap the board into place by moving it to a vertical position. Its ends snap into the connector's spring clips. If the board is installed properly, the plastic alignment pins on either end of the connector will be aligned with the holes on the memory board. Figure B–19 shows how to install a memory board.

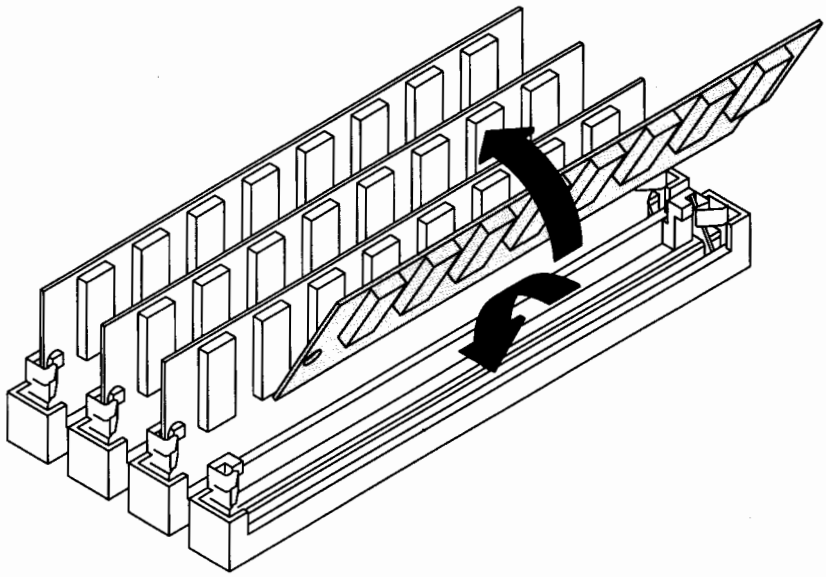


Figure B–19. Installing Memory Boards

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

Installing an I/O Expansion Board

Perform the following steps to add an I/O expansion board to your workstation:

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

   Find the expansion board location, which is situated between the VRAM and TeleShare slots in the right rear corner of the system unit, as shown in Figure B–20.

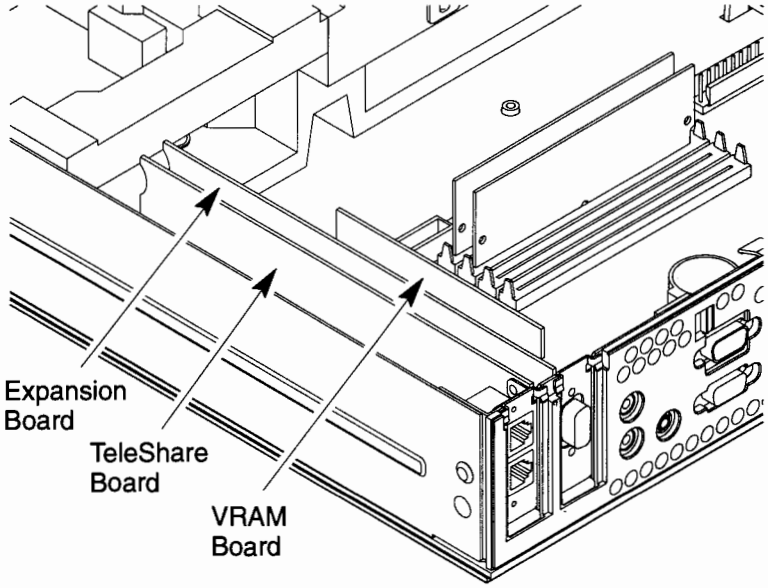


Figure B–20. Expansion Board Location

2. Remove the blank panel from the expansion slot, as shown in Figure B–21.

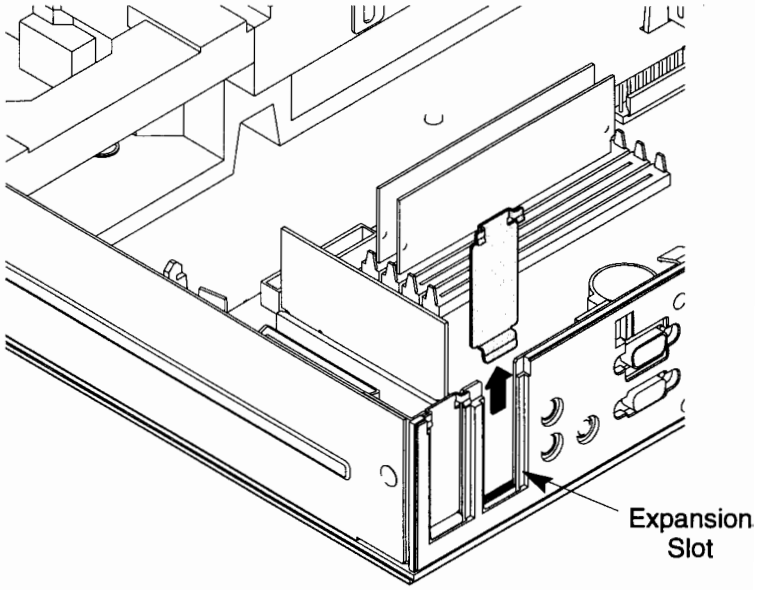


Figure B–21. Removing the Blank Panel from the Expansion Slot

3. Install the expansion board by inserting the board into the expansion board connector, as shown in Figure B–22. Press the board firmly into the connector to make sure it is fully seated.

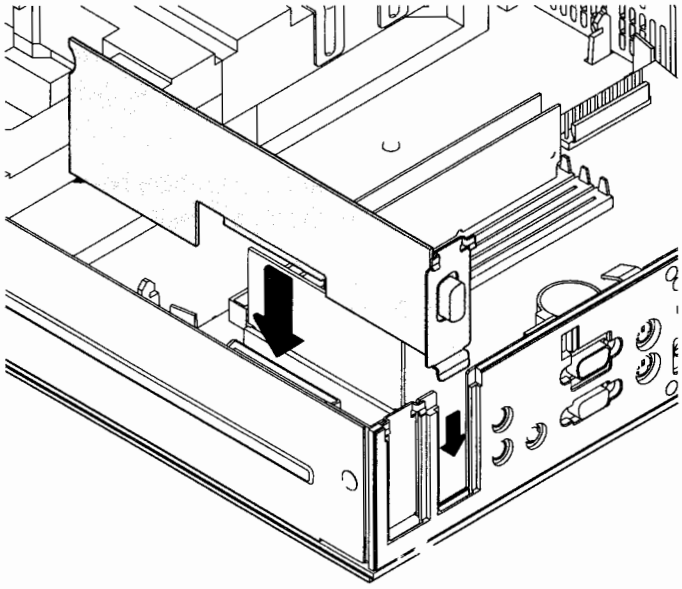


Figure B–22. Installing an Expansion Board

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

Installing a TeleShare Board

Perform the following steps to install a TeleShare board into your workstation:

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

   Find the TeleShare board slot, located at the far right rear corner of the system unit, as shown in Figure B–23.

2. Remove the blank panel from the TeleShare slot, as shown in Figure B–23.

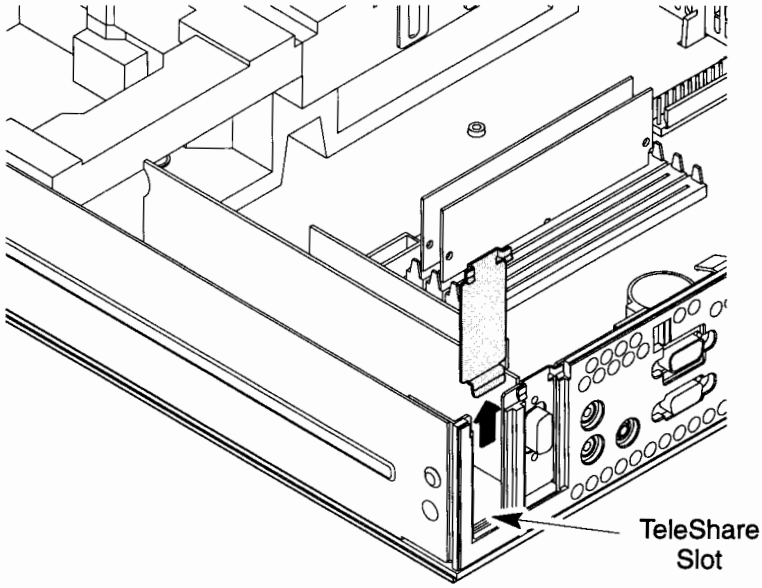


Figure B–23. Removing the Blank Panel from the TeleShare Slot

3. Install the TeleShare board by inserting the board into the TeleShare connector, as shown in Figure B–25. Press the board firmly into the connector to make sure it is fully seated.

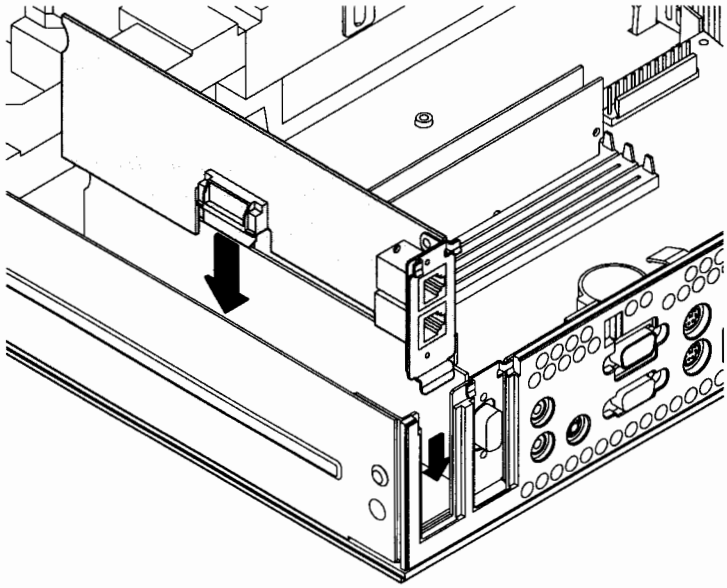


Figure B–24. Installing the TeleShare Board

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

NOTICE: Refer to the *HP TeleShare 1.0 Installation and User's Guide* for information about configuring software and using the board.

Installing a VRAM Board

Perform the following steps to install a VRAM (Video RAM) board into your workstation:

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

2. Align the connector on the VRAM board with the connector on the CPU board. Mate the connectors and press down firmly on the VRAM board to make sure it is fully seated. See Figure B–25.

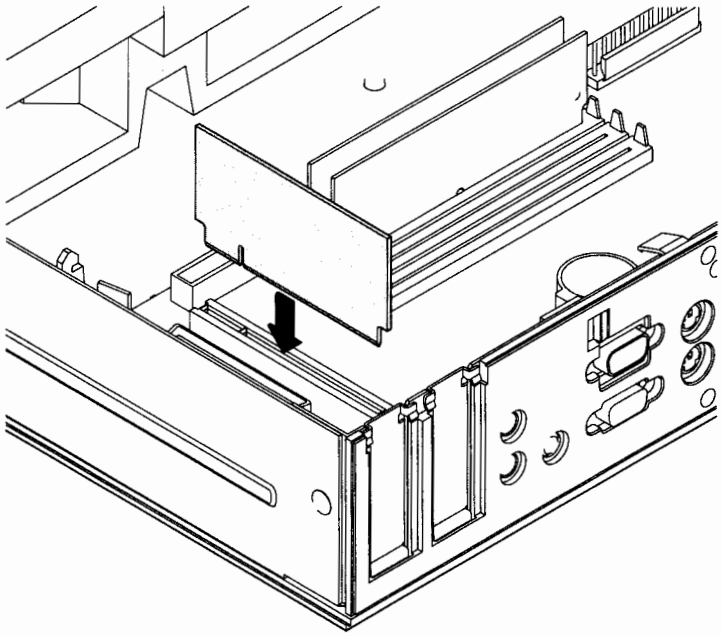


Figure B–25. Installing the VRAM Board

3. Close the system unit and reconnect all cables as described in the "Closing the System Unit" section in this appendix.

4. Configure your workstation for monitor type 1 (1280x1024, 72Hz) as described in the "Changing Your Monitor Type" section in this appendix.

Changing Your Monitor Type

Your system ships from the factory preset to use a monitor with a specific resolution and frequency. If you replace your workstation's monitor with a different type of monitor, you must reconfigure your workstation to support the new monitor.

There are two ways to configure your workstation to support a different monitor type:

Setting the Monitor Type from the Boot Administration Mode

Use this method to change your workstation's graphics parameters *before* you replace your monitor. Enter the following command to display the current monitor configuration for your system:

```
BOOT_ADMIN> monitor Enter
```

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

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

Current Monitor Type is
2         1024x768            72Hz

BOOT_ADMIN>
```

To change the monitor configuration of your system, type the following:

```
BOOT_ADMIN> monitor type Enter
```

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

```
BOOT_ADMIN> monitor 1 Enter
```

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

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

Current Monitor Type is
1        1280x1024           72Hz

BOOT_ADMIN>
```

Setting the Monitor Type at Power On

If you

- replace your workstation's monitor with a different monitor type, and
- *do not* set the workstation's graphics parameters by using the **monitor** command before doing so,

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

Your system will query you for the new monitor type when you turn it on. The query will look similar to the following:

```
Type      Resolution          Frequency
----      ----------          ---------
2         1024x768            70Hz

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

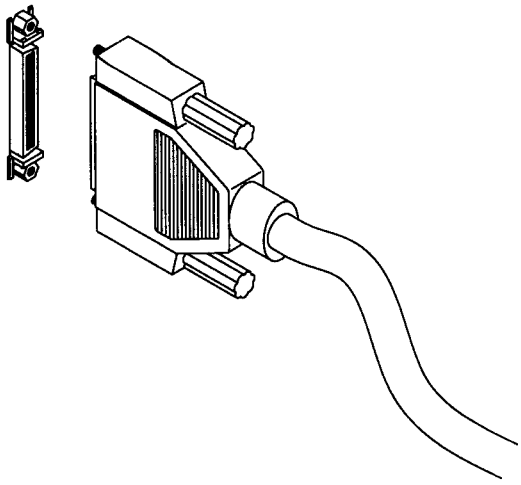
When you press Enter, the system queries you to confirm your selection:

```
Type      Resolution          Frequency
----      ----------          ---------
2         1024x768            70Hz

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

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

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



Appendix C

SCSI–2 Connections

- SCSI–2 restrictions
- Determining SCSI–2 bus length
- Assigning SCSI–2 device IDs

This appendix provides information about connecting Small Computer System Interface 2 (SCSI–2) devices to an HP Model 712 workstation.

The instructions in this chapter assume you are using the HP–UX operating system with the HP VUE version 3.0 (or later) interface. If you are not using HP–UX, or you are using a layered product with HP–UX, see the *User's Guide* for your operating system or layered product for instructions on how to perform the tasks in this chapter.

NOTICE: When attaching external SCSI devices, be sure to terminate the last device on the external SCSI bus. If no external devices are attached, the SCSI connector on the rear of the system must be terminated with the terminator that was shipped with your workstation.

SCSI–2 Restrictions

This section describes the following SCSI–2 restrictions that apply to your Model 712 system:

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

Cables

Some SCSI–2 devices, such as the A2655A, A2656A, and A2657A, ship with a SCSI cable. Other SCSI–2 devices ship without cables.

Only SCSI–2 cables approved by Hewlett–Packard should be used with the Model 712 workstation and with any SCSI–2 devices connected to the system unit.

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

The single–ended SCSI–2 definition limits the total cable length of SCSI–2 cables to 6 meters (19.6 feet). Always use the shortest possible cable(s).

The following table lists your workstation and external storage devices and whether they have 50–pin low–density or 50–pin high–density SCSI–2 connectors:

Table C–1. SCSI–2 Device Connectors

SCSI–2 Device	SCSI–2 Connector Type
Model 712 System Unit	High–Density
C1701A	Low–Density
C1512A	Low–Density
C2213A	Low–Density
C2217T	Low–Density
A2655A	High–Density
A2656A	High–Density
A2657A	High–Density

Hewlett–Packard offers the following SCSI–2 cables for connecting single–ended SCSI–2 devices:

Table C–2. SCSI–2 Cables

SCSI–2 Connection	Cable	Length	
		Meters	Feet
Low Density to Low Density	92222A	0.5	1.6
Low Density to Low Density	92222B	1.0	3.2
Low Density to Low Density	92222C	2.0	6.6
High Density to Low Density	K2296	0.9	3.0
High Density to Low Density	K2297	1.5	5.0
High Density to High Density	C2908A	1.0	3.2

Connectors and Terminators

Any SCSI–2 device connecting to the SCSI–2 system connector must use a cable with a 50–pin high–density thumb screw connector on one end (the end connecting to system connector) and either a 50–pin high–density thumb screw connector or a 50–pin low–density bail lock connector on the other end, depending on what connector the SCSI–2 device uses. If you attach a second SCSI–2 device, the cable must have the correct connectors on each end. See Table C–1 for a list of external HP peripherals and what connectors they use.

If you have configured the workstation with the previously described peripherals (CD–ROM, DDS, or 1–GB drive), use a high–density terminator on the last peripheral.

The last device connected to the SCSI–2 bus must be terminated with a SCSI–2 terminator. Some devices listed ship without terminators. If you do not have a SCSI–2 terminator, you must order the correct terminator from Hewlett–Packard. Order part number C2904A for devices with 50–pin high–density connectors, or K2291 for devices with 50–pin low–density connectors.

If you do not have any external devices connected to the single–ended SCSI–2 connector on the rear of the system unit, a terminator is not required.

SCSI–2 Configuration Constraints

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

For the single–ended standard SCSI–2 bus, HP–UX supports only **one** of each type of removable–media disk drive (i.e., CD–ROM or magneto–optical drives) and two of the same–type tape devices (i.e., 4–mm DDS tape drives or 9–track tape drives) per workstation. Table C–3 shows the configuration constraints for each standard single–ended SCSI–2 device type. If the system has an internal hard disk drive, you must count it as a SCSI–2 device.

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

Table C–3. Single–Ended Standard SCSI–2 Bus Configuration Constraints

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

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

Determining SCSI–2 Bus Length

This section helps you to determine the total length of the single–ended standard SCSI–2 bus.

Using Table C–4, follow these instructions to calculate your total single–ended standard SCSI–2 bus length, which includes the system unit, external SCSI–2 devices, and SCSI–2 interconnect cables:

1. Fill in all of your external SCSI–2 devices in the first column. In the second column, write the internal SCSI–2 bus lengths that correspond to your devices.

NOTICE: In the third column, the length for the Model 712 system unit is already listed. This number must always be used for the system unit whether or not it has internal drives installed.

2. In the third column, write down the lengths of the SCSI–2 interconnect cables you are using for your installation. (Refer to Table C–2 for cable lengths.)

3. Add the numbers in the second column and write the sum on the subtotal line at the bottom of the column. Do the same for the third column.

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

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

If you have problems, call your designated service representative.

Table C–4. SCSI–2 Bus Length Worksheet for Single–Ended Standard SCSI–2 Bus

SCSI–2 Device	Internal SCSI–2 Bus Length Meters (Feet)	Device External Length Meters (Feet)
Model 712 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)	_____
A2655A	0.23 (0.75)	_____
A2656A	0.23 (0.75)	_____
A2657A	0.23 (0.75)	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Subtotals: _____ + _____

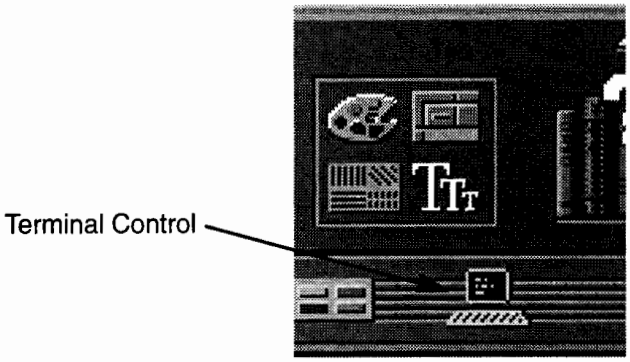
Total SCSI–2 Bus Length = [ ]

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

Assigning SCSI–2 Device IDs

Before assigning a SCSI–2 device ID to your drive, you need to check your existing SCSI–2 device IDs. To determine which SCSI–2 device IDs are available for your device, use the **ioscan** command in a terminal window:

1. Click on the **Terminal Control** on the **Front Panel** of your Workspace.



A terminal window opens.

2. Move the mouse cursor into the terminal window and single–click the left mouse button.

3. Enter the following at the prompt:

/etc/ioscan Enter

The **ioscan** utility verifies the configuration of all drives or a specific drive.

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)
2.0.1.0.0         disk           ok(0x800101)
2.0.1.5.0         disk           ok(0x202)
2.0.1.6.0         disk           ok(0x202)
```

4. 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.

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

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

7. Add your new drive to the table if it is an external device. If it is an internal drive, continue to Step 8.

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

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

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

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

SCSI–2 Device Drives	**Device ID (Address) (Only 0 through 6)** **Internal**	**External**
Internal System Drive:		
Winchester Disk Drive (uses ID No. 6)	_____	N/A
External Device Drives:		
1st External Device _____	N/A	_____
2nd External Device _____	N/A	_____
3rd External Device _____	N/A	_____
4th External Device _____	N/A	_____
5th External Device _____	N/A	_____
6th External Device _____	N/A	_____
7th External Device _____	N/A	_____
NOTICE: You can only have a total of 7 SCSI–2 devices (internal and external) connected to the system.		

```
BOOT_ADMIN>
```

Appendix D

The Boot Console User Interface

- Boot console features
- Accessing the boot console user interface
- Entering the boot administration mode
- Listing the boot console user interface commands
- Booting the workstation
- Searching for bootable media
- Resetting the workstation
- Displaying and setting paths
- Displaying and setting the monitor type
- Setting the autoboot and autosearch flags
- Displaying and setting the secure boot mode
- Displaying and setting the fastboot mode
- Displaying the LAN station address
- Displaying and setting the diagnostic boot flag
- Displaying system information
- Displaying PIM information
- Exiting the boot administration mode

This appendix describes the different features of the boot console and how to use them.

The instructions in this chapter assume you are using the HP–UX operating system. If you are not using HP–UX, see the *User's Guide* for your operating system for instructions on how to perform the tasks in this chapter.

Boot Console Features

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.

The boot console user interface allows you to boot from a different device, search for bootable devices, or enter the boot administration mode.

Here are some of the kinds of information that your system can display:

- A list of the commands you may issue from the boot console user interface
- A list of devices from which to boot
- The primary and alternate boot paths
- Monitor configurations that your system can support
- The status of the configuration flags, including Fastboot, Autoboot, Secure Mode, and Diagnostic
- System configuration information, such as station address for the built–in LAN interface, cache and RAM size, and I/O modules
- The most recent PIM information for HPMC, TOC, or LPMC faults.

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

- The primary boot path
- The Autoboot and Autoselect flags
- The status (on or off) of the secure boot mode
- The status (on or off) of the Fastboot memory test
- The status (on or off) of the Diagnostic boot flag
- The monitor type that your system supports

Accessing the Boot Console User Interface

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

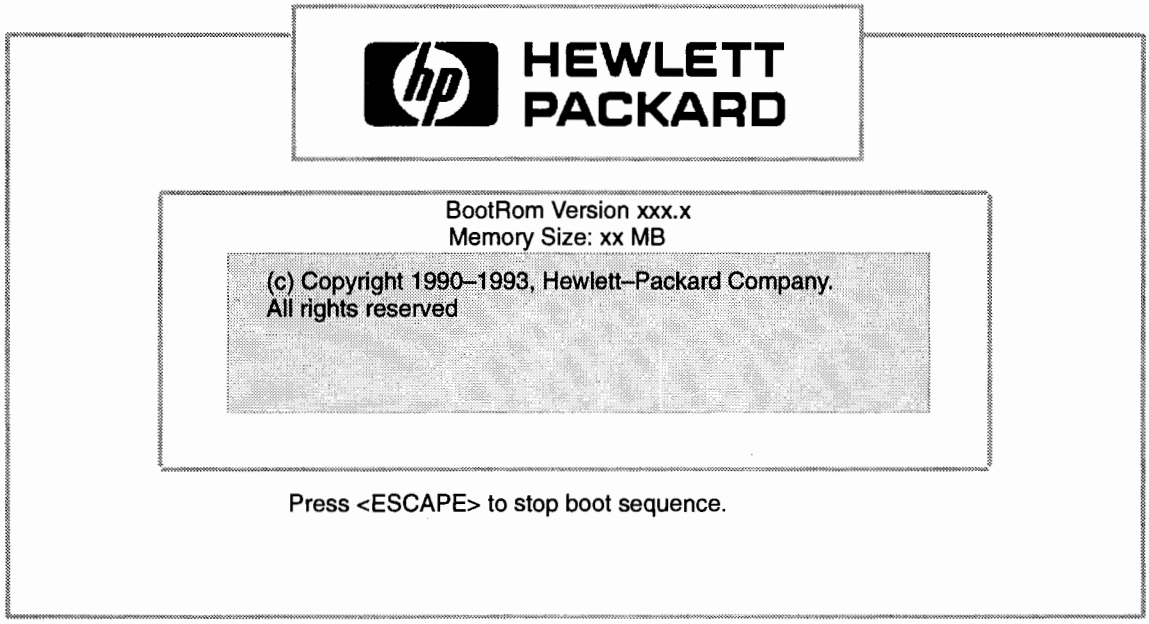
1. Close any files and applications on your workstation.

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

NOTICE: Your workstation automatically shuts down the operating system before it terminates the power.

3. Turn the power back on.

   The monitor displays the following screen:



Press and hold the Esc button as soon as the screen appears.

4. Release Esc when the screen displays the boot administration command menu followed by the BOOT_ADMIN> prompt.

You are now in the boot administration mode of the boot console user interface.

Entering the Boot Administration Mode

The boot administration mode allows you to change the parameters of the system hardware.

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.

You can enter the boot administration mode by performing one of the following steps:

1. Follow the procedure in the section, "Accessing the Boot Console User Interface."
2. Set the autoboot flag to off, as described in the section, "Displaying and Setting the Autoboot Flag."

Listing 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, including formats and functions.

Booting the Workstation

The **boot** command allows you to boot your workstation from a different device.

Usually, you start your workstation by turning it on and waiting for HP–UX to boot automatically. However, you may not always 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* Enter

  where *device* is the **hardware path** to the device, specified in Mnemonic Style Notation (see Table D–2).

  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", type the following command at the `BOOT_ADMIN>` prompt:

  `BOOT_ADMIN>` **boot scsi.1.0** Enter

  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** Enter

  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** Enter

- 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.

Searching for Bootable Media

To list devices that contain bootable media, type the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> search
```

The **search** command looks for bootable media on your workstation.

This causes your workstation to search *exhaustively* for bootable media. It searches all types of I/O devices in the following order:

1. Built–in SCSI
2. Built–in LAN

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.

To search for devices of *just one type* that actually contain bootable media, type the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> search device_type
```

where *device_type* is one of the following:

scsi is the built–in SCSI bus

lan is all connections to the built–in LAN

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 Enter
```

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 sets the system 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)

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

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

```
BOOT_ADMIN> path Enter
```

The paths are displayed in **Mnemonic Style Notation,** as shown in Table D–2.

Table D–2. Mnemonic Style Notation

I/O Type	Specification Format
Built–in SCSI	**scsi**.*scsi_address.logical_unit_number*
Built–in LAN	**lan**.*server_address.init_timeout.io_timeout*

To display the current setting for a particular system path, type the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> path path_type Enter
```

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 Enter
```

To set a system path to a new value, type the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> path path_type path Enter
```

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 boot path to a scsi disk with an ID of 6.0, type the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> path scsi scsi.6.0 Enter
```

Displaying and Setting the Monitor Type

Your system ships from the factory preset to use a monitor with a specific resolution and frequency. If you replace your workstation's monitor with a different type of monitor, you must reconfigure your workstation to support the new monitor.

Use the boot administration mode to change your workstation's graphics configuration *before* you replace your monitor. For information about changing the configuration *after* you replace your monitor, go to the section "Changing Your Monitor Type" in Appendix B.

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

```
BOOT_ADMIN> monitor  Enter
```

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

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

Current Monitor Type is
2         1024x768            72Hz

BOOT_ADMIN>
```

To change the monitor configuration of your system, type the following:

```
BOOT_ADMIN>monitor type [Enter]
```

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

```
BOOT_ADMIN>monitor 1 [Enter]
```

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

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

Current Monitor Type is
1         1280x1024           72Hz

BOOT_ADMIN>
```

Setting the Autoboot and Autosearch Flags

Autoboot boots the operating system whenever your workstation is turned on.

autoboot and **autosearch** are variables stored in your workstation's non–volatile memory. (Non–volatile memory retains its contents even after power is turned off.) If you reset these flags to new value, the change takes effect the next time you reboot the workstation.

To examine the state of the **autoboot** and **autosearch** flags, type the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> auto Enter
```

If **autoboot** is set to **on**, your workstation automatically attempts to boot the operating system when turned on. If **autoboot** is set to **off**, your workstation enters the boot administration mode of the boot console user interface.

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

To change the state of the **autoboot** or **autosearch** flags, type the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> autoboot state Enter
```

or

```
BOOT_ADMIN> autosearch state Enter
```

where *state* is **on** or **off**.

Displaying and Setting the Secure Boot Mode

The **secure** boot mode prevents unauthorized access to the boot console interface.

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 Enter
```

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 Enter
```

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 all boot devices. When you turn on your workstation after isolating it from its boot devices, 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

The **fastboot** mode allows your workstation to boot quickly by performing a less extensive check of the system's memory.

When **fastboot** is enabled (set to **on**), your workstation does a quick check of the memory and skips I/O interface testing 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 and I/O interface testing is performed during the self tests, causing the boot process to take longer.

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

To display the status of **fastboot**, type the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> fastboot Enter
```

To disable **fastboot**, type the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> fastboot off Enter
```

To enable **fastboot**, type the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> fastboot on Enter
```

Displaying the LAN Station Address

A **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 to supply a LAN station address of your workstation 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 addresses, type the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> lanaddress Enter
```

The LAN station addresses are displayed as twelve–digit numbers in hexadecimal notation, similar to the following:

```
LAN Station Addresses: 123456-789abc
                       123456-789abd
```

The first address is for the system's built–in LAN. The second address is for an optional LAN card.

Displaying and Setting the Diagnostic Boot Flag

When the diagnostic boot flag is enabled (set to **on**), HP–UX boots normally with all boot messages appearing on the display. If the flag is disabled (set to **off**), the HP logo and VUE–like box remain on the display, hiding the boot messages.

To display the status of the diagnostic boot flag, type the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> diagnostic Enter
```

To disable the boot flag, type the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> diagnostic off Enter
```

To enable the boot flag, type the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> diagnostic on Enter
```

Displaying System Information

The **information** command allows you to display the system's processor revision and speed, cache size, memory size, flag settings, and the boot and console paths. To display system information, type the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> information Enter
```

Displaying PIM Information

The **pim** command allows you to display the most recent PIM information for the specified fault type. To display PIM information for a specific fault, type the following at the BOOT_ADMIN> prompt:

```
BOOT_ADMIN> pim fault_type Enter
```

where *fault_type* is one of the following:

- hpmc
- toc
- lpmc

Exiting the Boot Administration Mode

To exit the boot administration mode, take one of the following actions, depending on your need:

- Type **reset**. This restarts the workstation.
- Issue a **boot** command. See the section "Booting the Workstation" for details.
- Turn off the workstation.

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 that allow a user or group of users to read, write, or execute files. *See also* **file access permissions**.

active window

The window that 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 that 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 that provides file access, login access, file transfer, printing, and other services across a network to a defined cluster of systems (cluster nodes) connected via a LAN. *See also* **cluster, cluster client, cluster node, host.**

command

An instruction that you enter into the system at a prompt, to execute a program or perform a task. *See also* **shell command.**

command argument

Information you provide on a command line to describe the object (usually a file or directory) to be operated on by the command.

command interpreter

A program that reads lines of text from standard input (typed at the keyboard or read from a file) and interprets them as requests to execute other programs. An HP–UX command interpreter is called a shell. *See also* **shell.**

command option

Information you provide on a command line to indicate any special action you want the command to take. *See also* **default.**

configuration

The arrangement of a workstation or network as defined by the nature, number, and chief characteristics of its functional units. More specifically, the term configuration may refer to a hardware configuration or a software configuration.

console user interface menu

A list of the actions you can perform from the boot console user interface. *See also* **boot console user interface**.

control key sequence

A keystroke combination used as a shorthand way of specifying commands. To enter a control key sequence, you hold down the control key while pressing another key.

cpu

See **Central Processing Unit**.

CRX color graphics

Expanded graphics capability offering 24–plane color, 24–plane Z–buffered color, or 48–plane Z–buffered color capability.

current directory

See **current working directory**.

current session

The work and processes that have been created since you logged into the system (and before you log out again). *See also* **session**.

current working directory

The directory in which a relative path name search begins, as well as the directory in which you are currently working. It is also called the working directory or current directory.

cursor

The small blinking box displayed in whatever screen is active at a particular time. The cursor marks your current typing position on the screen and indicates which program (HP VUE terminal window or shell) will receive your commands.

daisy–chaining

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

DDS–format tape drive

A device that stores data on Digital Data Storage (DDS) cassettes.

default

Most commands give you a choice of one or more options. If you don't specify an option, the command automatically assigns one. This automatic option is called the default. *See also* **command option**.

dialog box

A special type of HP VUE screen that is called by the user from a window. Dialog boxes contain controls and settings. To display an example of a dialog box, click the Style Manager button on the Workspace, then click on Color.

directory

A special type of object that contains information about the objects beneath it in the HP–UX organizational structure. Basically, it is a file that stores names and links to files and other directories. *See also* **file**.

disk

A thin, round plate with a magnetic surface coating on which data is stored by magnetic recording. *See also* **floppy diskette, hard disk, CD–ROM disc**.

disked workstation

A workstation that has its own hard disk drive. *See also* **diskless workstation, node, partner node, workstation.**

diskette

See **floppy diskette.**

diskless booting

Loading the operating system into local memory from the disk of a partner workstation.

diskless workstation

A workstation that has no disk. A diskless workstation can use the disk of its partner workstation or other workstations. If necessary, it can also use the computational services of the partner workstation or other workstations. A diskless workstation boots from its partner workstation. *See also* **disked workstation, node, partner node, workstation.**

double click

To press and release a mouse button twice in rapid succession.

drag

To press and hold down a mouse button while moving the mouse (and the pointer on the screen). *See also* **drop.**

drive

See **CD–ROM drive, DDS–format tape drive, floppy drive, hard disk drive.**

drop

To release an icon that has been "dragged" to a new position. *See also* **drag.**

environment

The conditions under which your commands are executed. These conditions include your workstation characteristics, home directory, and default search paths. *See also* **environment variables**.

environment variables

The set of defined shell variables (some of which are PATH, TERM, SHELL, EXINIT, HOME) that define the conditions under which your commands are executed. These conditions include your workstation characteristics, home directory, and default search paths. *See also* **environment**.

ETHERNET

The LAN developed jointly by Digital Equipment Corporation, Intel, and Xerox Corporation, upon which the IEEE 802.3 network is based.

Extended Industry Standard Architecture (EISA)

An industry standard bus architecture based on and compatible with that used by IBM in their AT series computers.

fast, differential SCSI–2

An 8–bit wide bus with high–power receivers and drivers, which allows a cable length of up to 25 meters and a speed of up to 10 MB per second. *See also* **fast–wide SCSI–2**, **single–ended standard SCSI–2**, **Small Computer System Interface**.

fast–wide SCSI–2

A 16–bit wide bus with high–power receivers and drivers, which allows a cable length of up to 25 meters and a speed of up to 20 MB per second. *See also* **fast, differential SCSI–2**, **single–ended standard SCSI–2**, **Small Computer System Interface**.

file

The basic named unit of data stored on disk. *See also* **directory**, **filename**.

file access permissions

The access rights given to a particular file or directory. Every file and directory has a set of access permissions, a code that determines whether a process can perform a requested operation on the file (such as opening the file or writing to it). *See also* **access permissions**.

File Manager

The HP VUE application that allows you to manage your files and directories, and to set viewing preferences.

filename

The name given to a particular file. *See also* **absolute pathname**, **file**, **pathname**.

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.

floppy diskette

A thin, record–shaped plate that stores data on its magnetic surfaces. The system uses heads (similar to heads in tape recorders) to read and write data on concentric disk tracks.

floppy drive

A device that stores data on a flexible diskette.

hard disk

A type of disk that is rigid as opposed to a floppy diskette, which is flexible.

hard disk drive

A device that 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, cluster server**.

HP Visual User Environment

A user interface that draws a graphical layer over the complexities of the other layers of the system (the hardware, operating system, and X Window system), enabling you to control your workstation by directly manipulating graphical objects instead of by typing commands at a command–line prompt.

HP VUE

See **HP Visual User Environment**.

icon

A small, graphic representation of an object. Objects can be "iconized" (turned into icons) to clear a cluttered workspace. Icons can be restored to their original appearance when needed. Whatever processes are executing in an object continue to execute when the object is iconized.

iconify

See **iconize**.

iconize

To turn a window or shell into an icon. *See also* **icon**.

Initial System Loader

The program that actually controls the loading of the operating system.

input device

Any of several pieces of hardware equipment used to give information to a system. Examples are the keyboard and the mouse. *See also* **output device**.

input window

The window that displays a program's prompt and any commands typed but not yet executed.

internet protocol address (IP address)

A string of characters that uniquely identifies a workstation in a network. Also referred to as the IP address, the system name, and the host name.

invisible filename

A filename in which the first character is a dot (.). Invisible filenames are not displayed by the listing commands such as **ls** and **ll** without add options, such as **–a**.

IP address

See **internet protocol address**.

ISL

See **Initial System Loader**.

kernel

The part of the operating system that is an executable piece of code responsible for managing the computer's resources. The kernel controls the rest of the operating system.

LAN

See **local area network**.

LAN station address

See **local area network station address**.

link

n. A special object that contains the name of another object. When you specify a link as a pathname or part of a pathname, the system substitutes the pathname that the link contains.

v. To join together two or more objects.

local area network (LAN)

A data communications system that allows a number of independent devices to communicate with each other. The systems and clusters that share data, hardware, and software resources via Networking Services software.

local area network station address

The label that uniquely identifies the local area network (LAN) connection for your workstation at the hardware level.

log in

To initially sign on to the system so that you may begin to use it. This creates your first user process. *See also* **username**.

login directory

The directory in which you are placed when you log in, usually your home directory. *See also* **home directory**.

Login Manager

The program that controls the initial startup of HP VUE and accepts the user's username and password.

login script

The shell program that runs at each login, and sets the login environment for your system.

menu bar

An area at the top or bottom of a window that contain the titles of the pull–down or pop–up menus for that application.

minimize button

In HP VUE, a push button on the window frame that turns a screen into an icon. *See also* **icon**, **iconize**.

mouse pointer

See **pointer**.

name

A character string associated with a file, directory, or link. A name can include various alphanumeric characters, but never a slash (/) or null character. *See also* **pathname**.

network

Two or more workstations sharing information. *See also* **cluster**, **workstation**.

network controller

A printed circuit board that passes bit streams between the network and the main memory of the workstation. Coupled with the network transceiver, the controller also handles signal processing, encoding, and network media access.

node

A network computer (workstation). Each node in the network can use the data, programs, and devices of other network nodes. Each node contains main memory and has its own disk or shares one with another node. *See also* **disked workstation, diskless workstation, workstation**.

node name

A unique identifying name given to a workstation in a cluster. *See also* **cluster, node**.

nonvolatile memory

System memory that retains its contents even after workstation power is turned off.

object

Any file, directory, or link in the network. *See also* **directory, file, link, pathname**.

operating system

The program that supervises the execution of other programs on your workstation. For example, the entire HP–UX system, including the kernel and all HP–UX commands. *See also* **kernel**.

option

See **command option**.

output device

Any of several pieces of hardware used for receiving messages from the workstation. Display screens and printers are examples of output devices. *See also* **input device**.

output window

The window that displays a process response to your command.

parent directory

A directory that 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 that allows the user to view information that does not fit within the window.

SCSI–2

See **Small Computer System Interface**.

server

A program that controls all access to input and output devices.

session

The time between when you log in and when you log out. Also called a work session or a login session. *See also* **current session**.

shell

A command–line interpreter program used to invoke utility programs. Some examples of HP–UX shells are the Bourne, Korn, Key, and C shells. Sometimes referred to as a command interpreter. *See also* **command interpreter**.

shell command

An instruction you give the system to execute a utility program or shell script. *See also* **shell script**, **utility program**.

shell script

A file that contains commands that the system can interpret and run in a shell.

shutdown

The process of taking the system from multi–user state to system administration state.

SIMM

See **Single In–line Memory Module**.

single–ended standard SCSI–2

An 8–bit wide SCSI bus with standard receivers and drivers, which limits total cable length to 6 meters. *See also* **fast, differential SCSI–2**, **fast–wide SCSI–2**, **Small Computer System Interface**.

Single In–line Memory Module

A memory board.

slider

One of the components of a scroll bar. The slider is the object that is dragged along the scroll area to cause a change.

Small Computer System Interface (SCSI)

An IEEE standard for interfacing a computer to multiple, disparate high–speed peripherals such as a floppy disk or a CD–ROM, singly or in combination. *See also* **fast, differential SCSI–2**, **fast–wide SCSI–2**, **single–ended standard SCSI–2**.

standalone

A workstation that is not part of a cluster. *See also* **cluster**.

Style Manager

The HP VUE application that provides the ability to customize various aspects of your system, including colors, fonts, the keyboard, the mouse, session startup and termination behavior, and access to other workstations.

subdirectory

A directory that is located in, or anywhere on a path below, another directory. The directory above the subdirectory is called the parent directory. The subdirectory is also referred to as the child directory. *See also* **parent directory**.

superuser

A user with permission to enter the top–level directory and make changes to files and programs that users are not allowed to change. To "become superuser" or "become **root**" means to let the system know that you are now assuming the role of system administrator. You can do this either by logging into the system as **root**, or by typing **su** at a command–line prompt. You must know the **root** password to become **root**.

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, 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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