VAXstation 4000 VLC

Owner's Guide

Order Number: EK–VAXVL–OG. B01

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Contents

Turning Your Workstation On and Off

Connecting Your Workstation to a Network

Getting Started with DECwindows

Taking Care of Your VLC Workstation

Part II Options

7 Available Options

8 Attaching a SCSI Device

9 Preparing the System for Internal Options

10 Adding Memory Boards

11 Adding an Internal Disk Drive

12 Reconnecting the System

13 Connecting Printers and Modems

Part III Advanced Operations

14 Halting the System

15 Using Console Commands

16 Changing the Default Startup Procedures

17 Using the Password Security Feature

18 Using the Alternate Console

19 Dealing with Power-Up Errors

20 Testing Your System

21 Handling Problems

A Hardware Specifications

B Port Pin-Outs

C Associated Documents

D Error Messages

Glossary

Index

Figures

Tables

Page xii is a blank page

Preface

Purpose of This Guide

This guide describes how to use and diagnose problems with the VAXstation 4000 VLC system, including information on how to configure a VLC workstation as a standalone system or to connect a system to an Ethernet network.

Who Should Use This Guide

This guide is for all VAXstation 4000 VLC workstation users and owners.

Structure of This Guide

This guide contains 21 chapters, 4 appendixes, a glossary of technical terms, and an index. It is organized as follows:

- Part I describes basic operations for using your VLC, including connecting and starting your workstation, and taking care of your system. These chapters are for all VLC workstation users.

- Part II describes the available options for the VAXstation 4000 VLC system and how to install or connect them. This section is for users who are comfortable opening the system unit and adding components or attaching external devices.

- Part III explains some advanced operations, including testing your system, using console commands, and using the alternate console feature. These chapters are for users who understand or need to know about advanced system operations.

- Appendixes provide miscellaneous and technical information such as the hardware specifications, a list of related documentation, error messages, and the port pin-out information to add peripheral devices.

Conventions

The following conventions are used in this guide:

Return	A key name is shown enclosed to indicate that you press a named key on the keyboard.
Ctrl/x	A sequence such as Ctrl/x indicates that you must hold down the key labeled Ctrl while you press another key or a pointing device button.
purple type	In the printed book, purple type in examples indicates commands and other system instructions that you must enter at the keyboard.
bold	In the online book (Bookreader), bold type in examples indicates information that you must enter at the keyboard.
UPPERCASE	Uppercase letters indicate a command that you must enter exactly as shown. For example,

```
>>> SHOW CONFIG [Return]
```

lowercase	Lowercase letters in commands indicate a variable value that you must provide. For example, enter SET PSWD and a new password.

```
>>> SET PSWD [Return]
PSWD1>>> new_password
```

Warning	Warnings contain information to prevent personal injury. Read these carefully.
Caution	Cautions provide information to prevent damage to equipment or software. Read these carefully.
Note	Notes provide general information about the current topic.
DECwindows	In this guide, all references to DECwindows refer to VMS DECwindows Motif software.

Icon and Symbol Descriptions

Certain symbols, called icons, appear throughout this guide in the margins to signal the use of specific switches, connectors, or indicators on the system or the use of important procedures. The meanings of the margin icons are briefly explained here. Many of these icons appear as labels on the system itself. Figure 1–2 and Figure 1–3 in Chapter 1 show the switches, connectors, or indicators on the system.

Cross-Reference
Refer to another manual, then return to where you were to continue the procedure.

On/Off Switch (On)
Turn on (I) one or more devices, as described in the text.

On/Off Switch (Off)
Turn off (O) one or more devices, as described in the text.

SCSI Port
Attach a SCSI cable or SCSI terminator to this port.

Halt Button
Press the halt button to put the system into console mode.

Headset Jack
Insert the telephone-style modified modular plug attached to your headset into the modified modular jack on the system unit. With a headset, you can use the audio input and output features of the system.

Communications/Printer Port
Attach a communications device, such as a modem, to this port. You can also connect a printer or hardcopy terminal to this port.
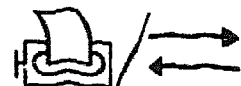
Printer/Communications Port
Connect a printer or hardcopy terminal cable to this port. You can also connect a communications device, such as a modem or the alternate console, to this port.

Keyboard Port
Insert the keyboard cable in this port.

Mouse Port
Insert a mouse, tablet, or other pointer cable in this port.

Monitor Video Port
Insert the monitor video cable in this port.

Alternate Console Switch
Adjust this switch to the UP position, to use a terminal as an alternate console.

Diagnostic Lights
Note the status of these lights when you are reporting problems to your Customer Service Center.

Ethernet Icon
Identifies the Ethernet connectors.

Standard Ethernet Connection
Follow instructions regarding the standard Ethernet port.

ThinWire Ethernet Connection
Follow instructions for connecting a ThinWire Ethernet cable, via a DESTA connector, to your workstation.

DECwindows Help
Refers to a DECwindows Help screen or function.

Part I

Basic Operations

Part I describes how to use the VAXstation 4000 VLC system. The chapters in this part are for all VLC workstation users. Chapters in this section describe:

- System highlights, Chapter 1

- Connecting your system, Chapter 2

- Turning your system on and off, Chapter 3

- Setting up a networked VLC workstation, Chapter 4

- Getting started with windows, Chapter 5

- Taking care of your workstation, Chapter 6

1

Your VAXstation 4000 VLC Workstation

Congratulations! The VAXstation 4000 VLC system that you now have is a compact, advanced, desktop system designed to help you in all aspects of your computing and business needs.

Based on Digital Equipment Corporation's VAX architecture, your VLC workstation provides the following:

- An integrated desktop computing environment
- Industry-standard user interface
- Transparent access to distributed applications and resources

The sections in this chapter discuss the following topics:

- System Highlights, Section 1.1
- Available Options, Section 1.2

Figure 1–1 shows a configured VLC workstation.

Figure 1–1   Your System
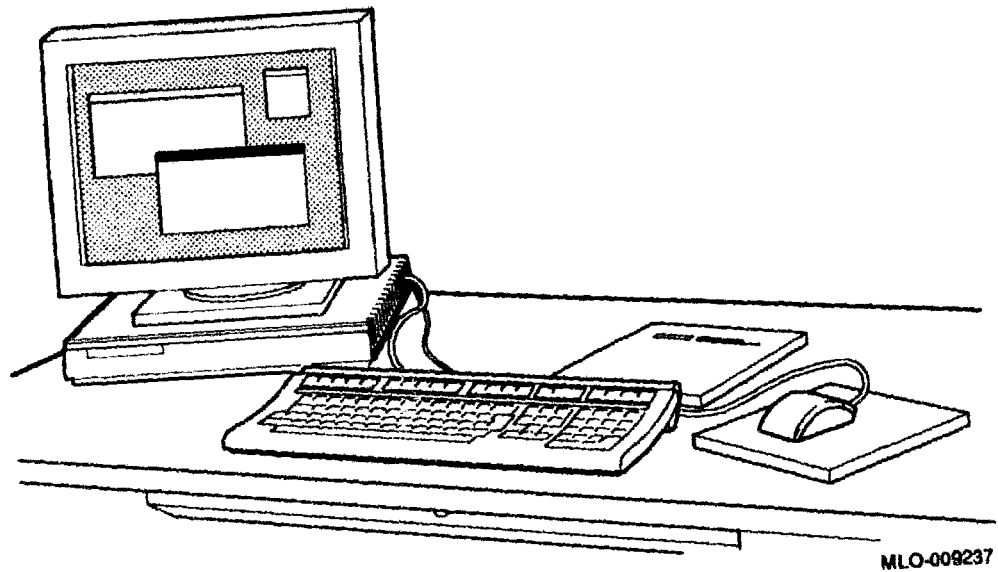
MLO-009237

1.1 System Highlights

The VAXstation 4000 VLC system consists of four components: a system unit, a monitor, a keyboard, and a mouse. This workstation provides the following special features:

- Access to a time-shared environment, with the ability to use local or distributed applications.

- The VMS DECwindows Motif™ software, providing an industry-standard, windows-style user interface to multiple applications.

- Up to 24 megabytes of memory.

- A variety of options for increasing storage capacity, as well as adding communications and other capabilities to your system.

- A standard Ethernet port for connecting to a DECnet network.

- A password security feature for additional system security in console mode.

- Audio capabilities.

Take a minute to familiarize yourself with the ports, switches, and indicators on the side and rear of the system unit, shown in Figure 1–2 and Figure 1–3. Table 1–1 and Table 1–2 explain the functions of these features.

The icons that identify the ports, switches, and indicators on the system unit are defined in the preface.

Figure 1–2 Side of System Unit

Keyboard Port
Alternate Console Switch
Mouse Port
Halt Button
Headset Jack
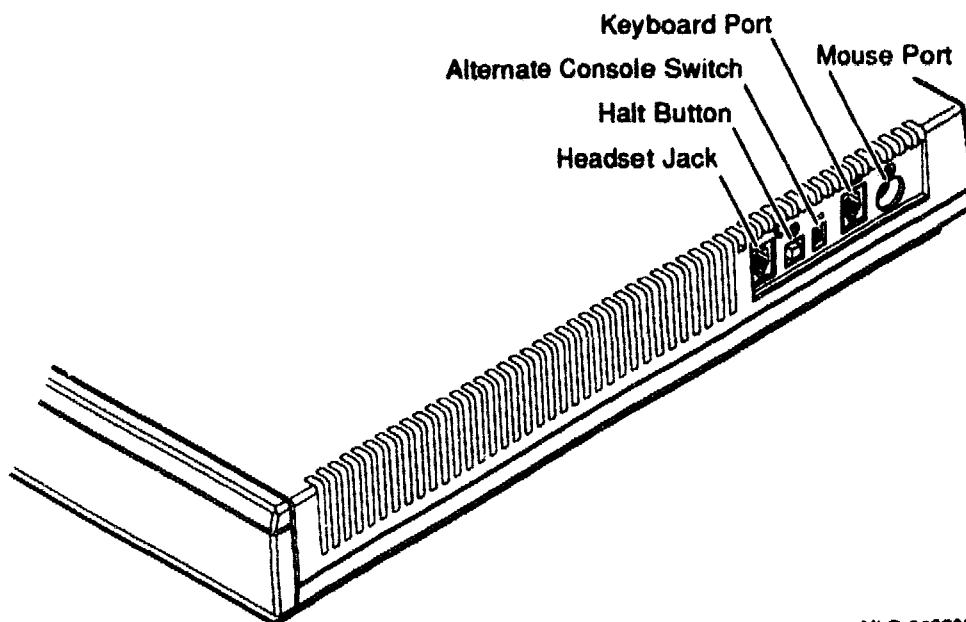
MLO-009238

Table 1–1 Side Panel

Feature	Function
Headset jack	To connect a headset so that you may use the audio input and output functionality of your new workstation.
Halt button	To put the system in console mode.
Alternate console switch	To connect a terminal as an alternate display device for testing purposes.
Keyboard port	To connect the keyboard cable.
Mouse port	To connect the mouse or an alternate pointing device.

Figure 1-3 Rear of System Unit
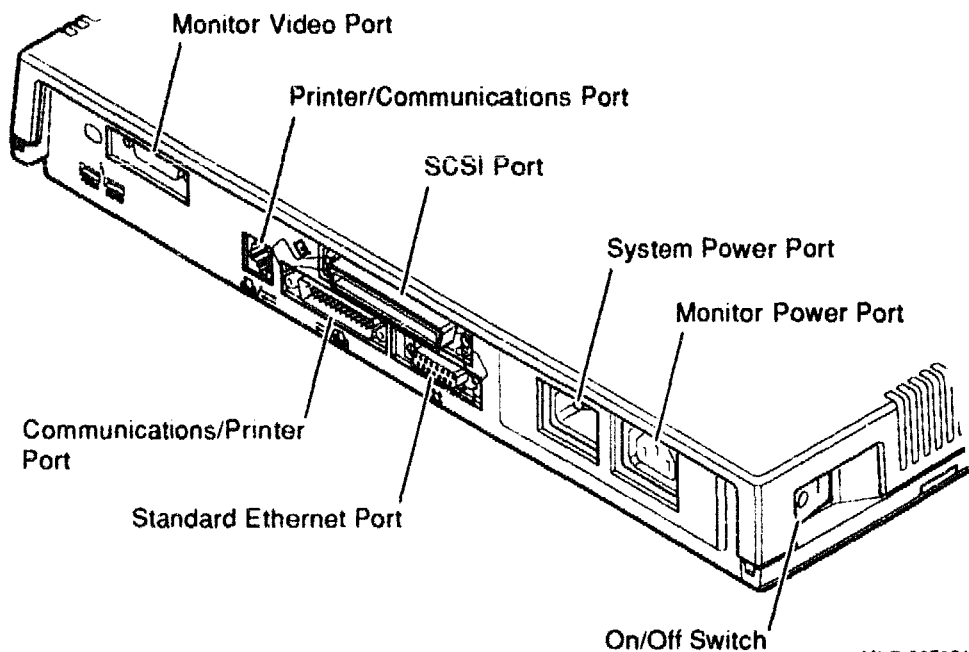
MLO-007021

Table 1-2 Rear Panel

Feature	Function
Monitor video port	To connect the monitor video cable.
Printer/communications port (TTA3)	Primarily to connect a DEC423 (DECconnect) cable-compatible printer or hardcopy terminal. Also to connect a communications device.
Communications/printer port (TTA2)	Primarily to connect an asynchronous communications device such as a modem. Also to attach a printer or hardcopy terminal.
SCSI port	To connect Small Computer System Interface (SCSI) peripheral devices.
Standard Ethernet port	To connect to a standard Ethernet network.
Monitor power port	To connect the monitor power cord.
System power port	To connect the system power cord.
On/Off switch	To turn the system on (I) and off (O).

1.2 Available Options

You can install the following options inside the VAXstation 4000 VLC system unit:

- One RZxx-family, low-profile L series internal disk drive

- Up to 16 megabytes of additional memory, for a total of 24 megabytes of memory

You can add one or more of the following peripheral options to your system.

- A printer, including color, or PostScript laser

- A modem

- A puck or stylus tablet

- A TLZ06 4.0-gigabyte, 4-mm DAT (Digital Audio Tape) SCSI tape drive

- An RRD42 compact disc drive

- An RX26 floppy disk drive (in an SZ03 Storage Expansion Box)

- A TZK10 525-megabyte QIC (Quarter-Inch Cartridge) tape drive (in a BA46 Storage Expansion Box)

- A VSXXX-JA audio headset

- A BA10X wall mount kit

For more information about internal and external options and how to add them to your VLC workstation, see Part II.

If you need an external fixed disk drive or diskette drive, you can add the SZ03 Storage Expansion Box described in the *SZ03 Storage Expansion Box Owner's Card*, which is shipped with the expansion box.

If you need additional large-capacity storage drives for your system, the RZ5x series of fixed disk drives is available in the BA46 Storage Expansion Box. For more information, refer to the *BA46 Storage Expansion Box Owner's Guide*, which is shipped with the expansion box.

Contact your Digital sales representative for more information about ordering VAXstation 4000 VLC system options.

2

Connecting Your System

This chapter provides step-by-step instructions on how to connect
your system components and set up your VAXstation 4000 VLC
system for use. It includes the follow sections:

- Choosing a location, Section 2.1

- Ergonomic considerations, Section 2.2

- Unpacking the system, Section 2.3

- Connecting the mouse and keyboard, Section 2.4

- Connecting the SCSI terminator, Section 2.5

- Attaching the Ethernet loopback connector, Section 2.6

- Connecting the monitor video cable and power cord,
  Section 2.7

- Attaching the strain relief strap, Section 2.8

- Connecting the monitor, Section 2.9

- Attaching the system power cord to the system, Section 2.10

If you already installed your system using the *Setting Up Your
Workstation* card, you may wish to read Section 2.2 and then go
directly to Chapter 3.

2.1 Choosing a Location

To keep your workstation functioning efficiently, choose a location that meets the following requirements:

- Connect your VLC workstation to a dedicated power source with an isolated ground. The power source must be 110–120 VAC or 220–240 VAC.

- Keep the room temperature between 15°C and 32°C (59°F and 90°F) and the relative humidity between 20 percent and 80 percent.

- Allow air to circulate around the workstation to prevent excess heat and to keep the system air vents clean. Provide a minimum three inches of clearance to the workstation.

- Do not place food or liquid on or near your equipment, and do not place your system directly on the floor. Dust and dirt damage system components.

- Keep your equipment away from heaters, photocopiers, direct sunlight, and dust particles.

- Let the equipment stabilize to room temperature before you turn it on.

- Leave enough room for your mouse pad and any papers and materials that you may need.

2.2 Ergonomic Considerations

Working long hours at a video terminal may be physically tiring. To help you perform your job as comfortably as possible, this section describes some things to consider while using your VLC workstation.

2.2.1 Maintaining a Moderate Environment

A comfortable working environment can help you to maintain concentration and avoid fatigue. With regard to the location of your VAXstation 4000 VLC workstation:

- Maintain an office temperature between 20°C and 23°C (68°F and 74°F), with a relative humidity of 30 to 70 percent.

- Provide adequate ventilation for your equipment and yourself.

- Control static electricity as much as possible. Some sources of static electricity in your office are clothing and carpeting materials (such as wool and nylon), furniture with metal frames, and poor grounding such as two-pronged plugs.

2.2.2 Avoiding Eye Strain

There is no evidence that working at video terminals causes any damage to your eyes. Eye fatigue, however, is quite common. Causes of eye fatigue include glare, the quality of the video display, an incorrectly positioned video terminal, and uncorrected visual problems.

If you cannot read the screen easily at your working position, you may need special glasses to focus. Use the tilt and swivel capabilities of your monitor to place it in the most comfortable position for your own use.

To avoid eye fatigue, try relaxing your eyes periodically by looking at distant objects.

2.2.3 Adjusting Your Working Position

Working for prolonged periods at your workstation can cause neck, shoulder, back, and arm discomfort. Normally, such problems are caused by poor posture and improperly positioned furniture, rather than by the workstation design.

Taking periodic work breaks can help you to avoid physical discomfort. Morning, lunch, and afternoon breaks meet most recommendations. Take advantage of work breaks to move around and do simple muscle-relaxing exercises.

To avoid fatigue caused by poor posture, always use a chair that promotes proper posture, with adjustments for seat height and lower back support.

Try to follow these guidelines while working at your VAXstation 4000 VLC system:

- Keep your upper body erect and support your lower back with a backrest if necessary.

- Place your feet flat on the floor or footrest, with your lower legs approximately vertical and your thighs approximately horizontal.

- Place your weight on the buttocks, not thighs.

- Avoid compressing the area behind the knees, since this can restrict blood flow.

- Let your arms hang comfortably from your shoulder joints and straight down at the sides.

- Place your forearms within a 70- to 90-degree angle, so that your elbows support your arm weight.

- Do not flex or extend your wrists more than 15 degrees.

- Incline your head downward, but not more than 15 to 20 degrees.

- Keep things that you use frequently within easy reach.

2.3 Unpacking the System

Before connecting your system, check to see that you have all of the parts shown in Figure 2–1. You can also check to see that you have all parts listed on the packing slip. If you are missing parts, contact your Digital sales representative.

Figure 2–1 System Parts

System Unit

System Power Cord

Monitor Power Cord

Loopback Connector

Monitor Video Cable

Monitor

Universal Strain Relief Strap

Keyboard

SCSI Terminator

Mouse with Mousepad

1 Owner's Manual
3 Quick Cards

Screwdriver
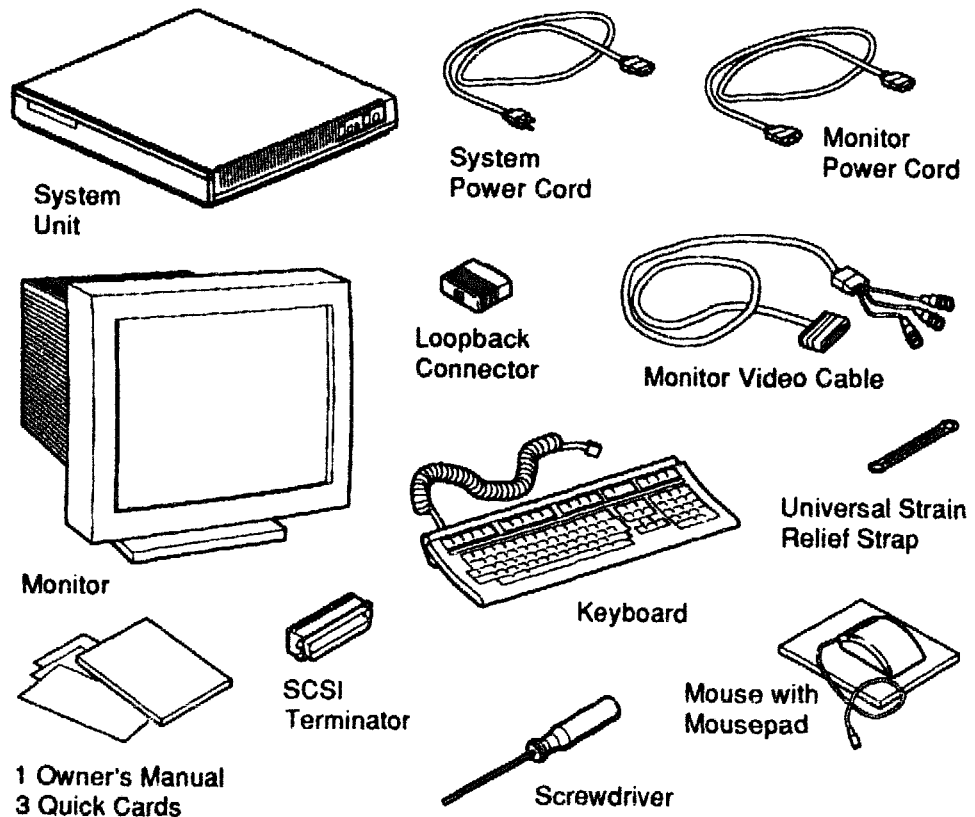
MLO-009239

_____ **Note** _____

The contents of your shipment may differ from those shown, depending on what options you ordered.

2.4 Connecting the Mouse and Keyboard

Plug the mouse and keyboard cables into the ports on the side of the system unit as shown in Figure 2–2.

Figure 2–2 Connecting the Mouse and Keyboard
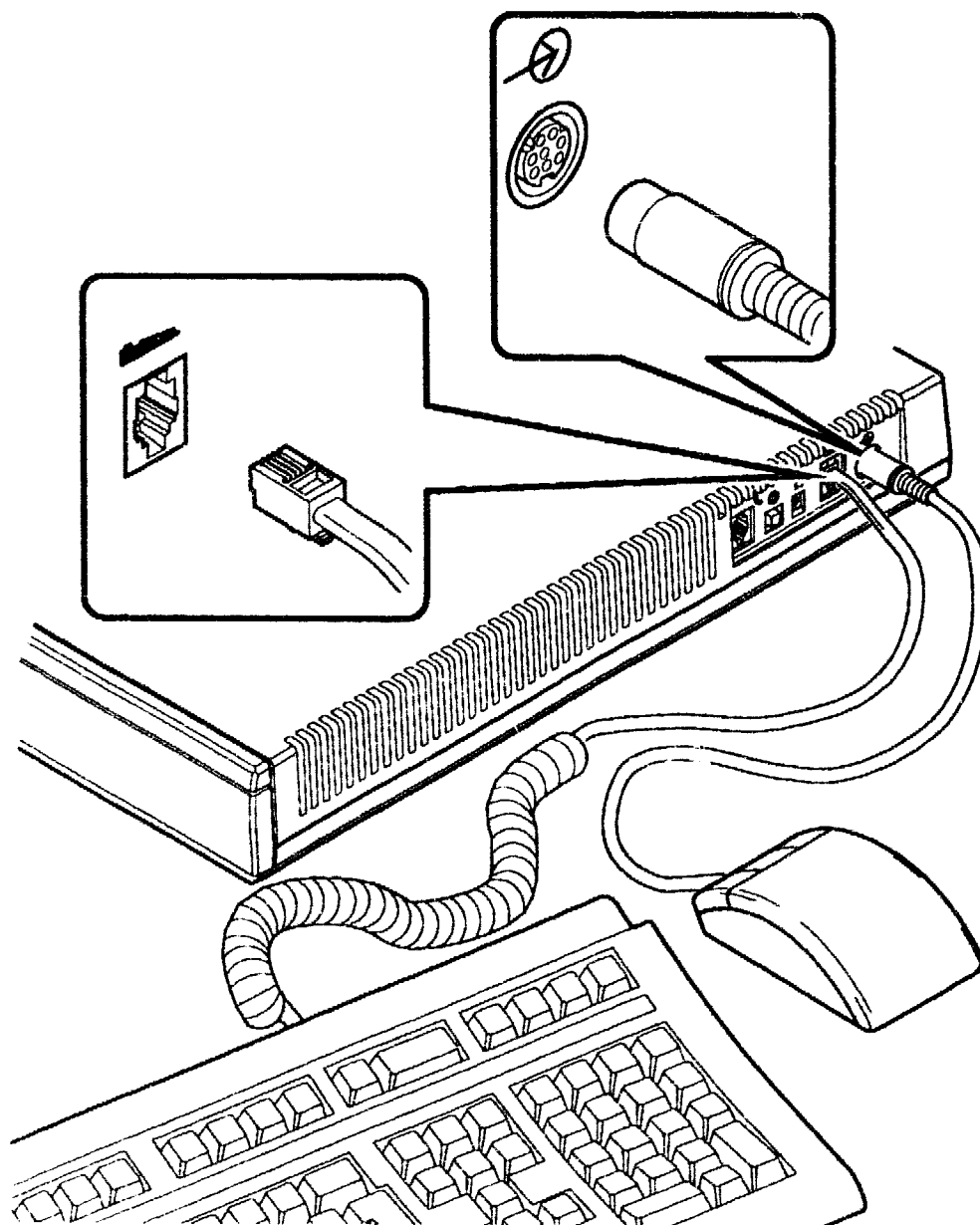
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2.5 Attaching the SCSI Terminator

Connect the SCSI terminator securely to the SCSI port on the rear panel of the system unit, as shown in Figure 2–3. To secure the terminator, snap the bail lock loops in place.

Figure 2–3 Connecting the SCSI Terminator
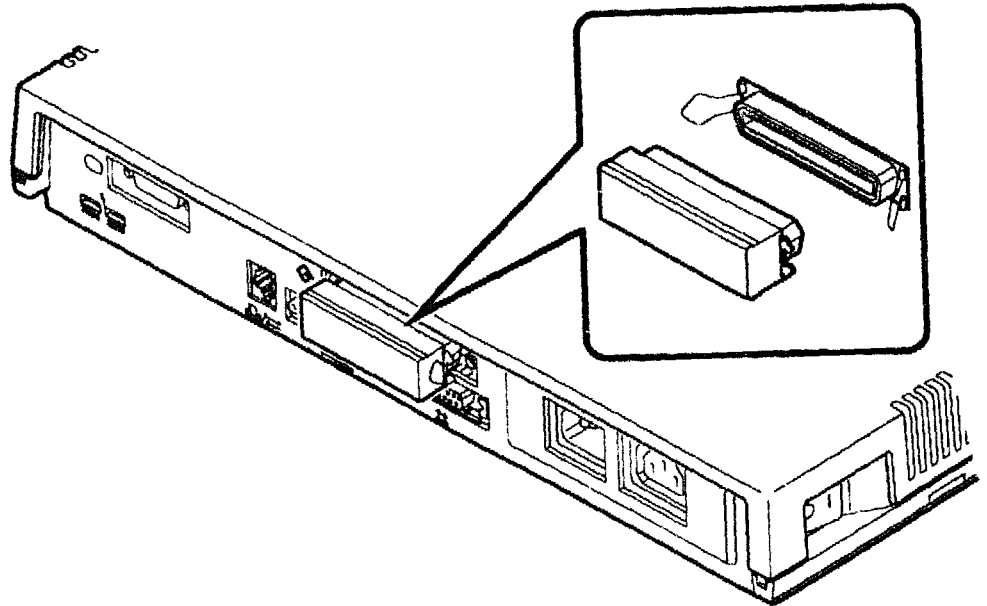
MLO-009240

2.6 Attaching the Ethernet Loopback Connector

Connect the loopback connector securely to the standard Ethernet port on the rear of the system unit, as shown in Figure 2–4.

Figure 2–4 Connecting the Loopback Connector
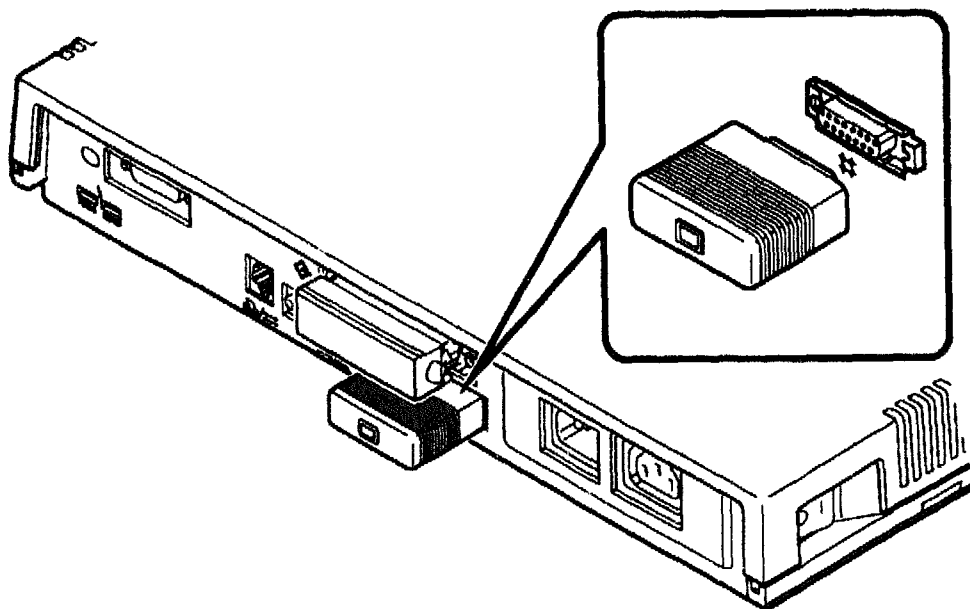
MLO-007023

2.7 Connecting the Monitor Video Cable and Power Cord

Connect the monitor video cable and the monitor power cord to the rear of the system unit as shown. Turn the thumbscrews on either side of the monitor video cable connector to secure the cable, as shown in Figure 2–5.

―――――――――――――――― **Note** ――――――――――――――――

On some systems (VS48J-BA and VS48J-BB) the monitor video cable connector differs from what is shown in Figure 2–5. These systems use a 15-pin monitor video cable.

―――

Figure 2–5 Connecting the Monitor Power and Video Cables

Monitor Video
Cable

Monitor Power
Cord

MLO-007024
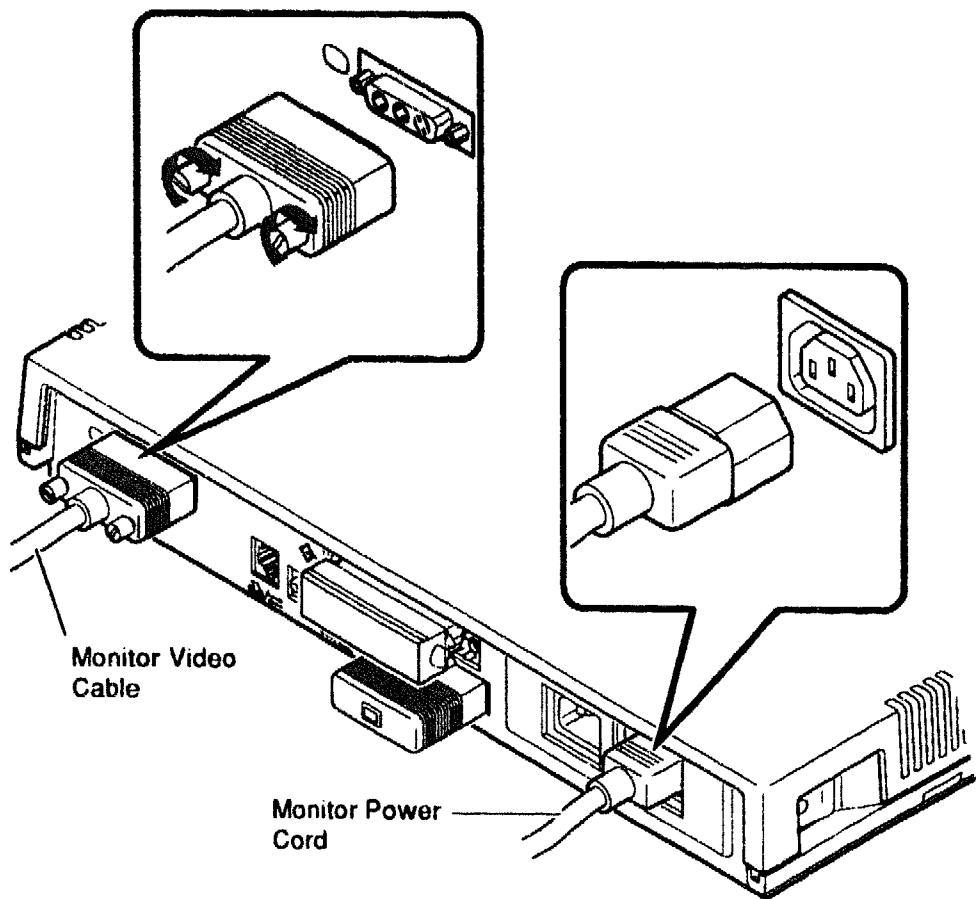
2.8 Attaching the Strain Relief Strap

Your monitor comes equipped with a universal strain relief strap (USRS). This strap reduces strain on the video cables.

Figure 2–6 shows the monitor video cable with the strap attached.

Figure 2–6 Attaching the Universal Strain Relief Strap
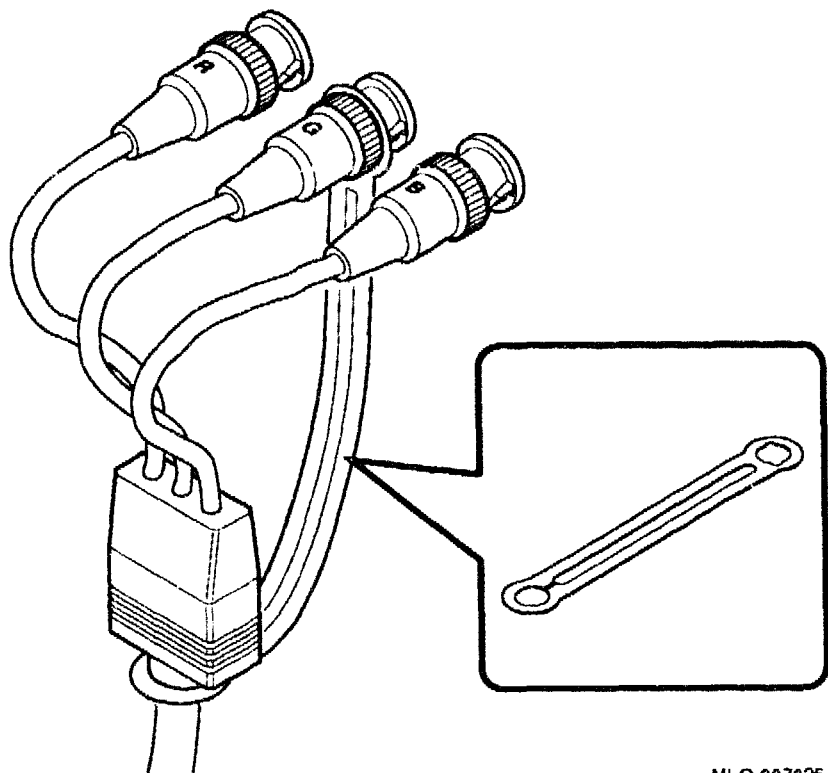
MLO-007025

To attach the strap, follow these steps:

a. Insert the end of the cable with the three BNC connectors and cable junction block through the center slot of the strap. (The BNC connectors are the connectors that you twist to connect the monitor cables to the monitor.)

b. Pull the video cable through the slotted hole at the bottom end of the strap. Bring the end of the strap flush with the cable junction block.

c. Snap the hole end of the relief strap over the green (G) BNC connector of the monitor video cable.

_____ **Note** _____

Make sure the strap is under the cable junction block, as shown in Figure 2–6.

_____

2.9 Connecting the Monitor

1. Connect the monitor video cable to the back of the monitor as follows:

    — *If your monitor has three or more connectors,* attach all three connectors, matching the Red (R), Green (G), and Blue (B) on the cables to the corresponding connectors on the monitor, as shown.

    — *If your monitor has one connector,* connect the cable connector marked Green (G) to the monitor, as shown.

    Figure 2–7 shows how to connect the video cable to the monitor.

Figure 2–7 Connecting the Video Cable to the Monitor

Monochrome
Monitor

Color
Monitor
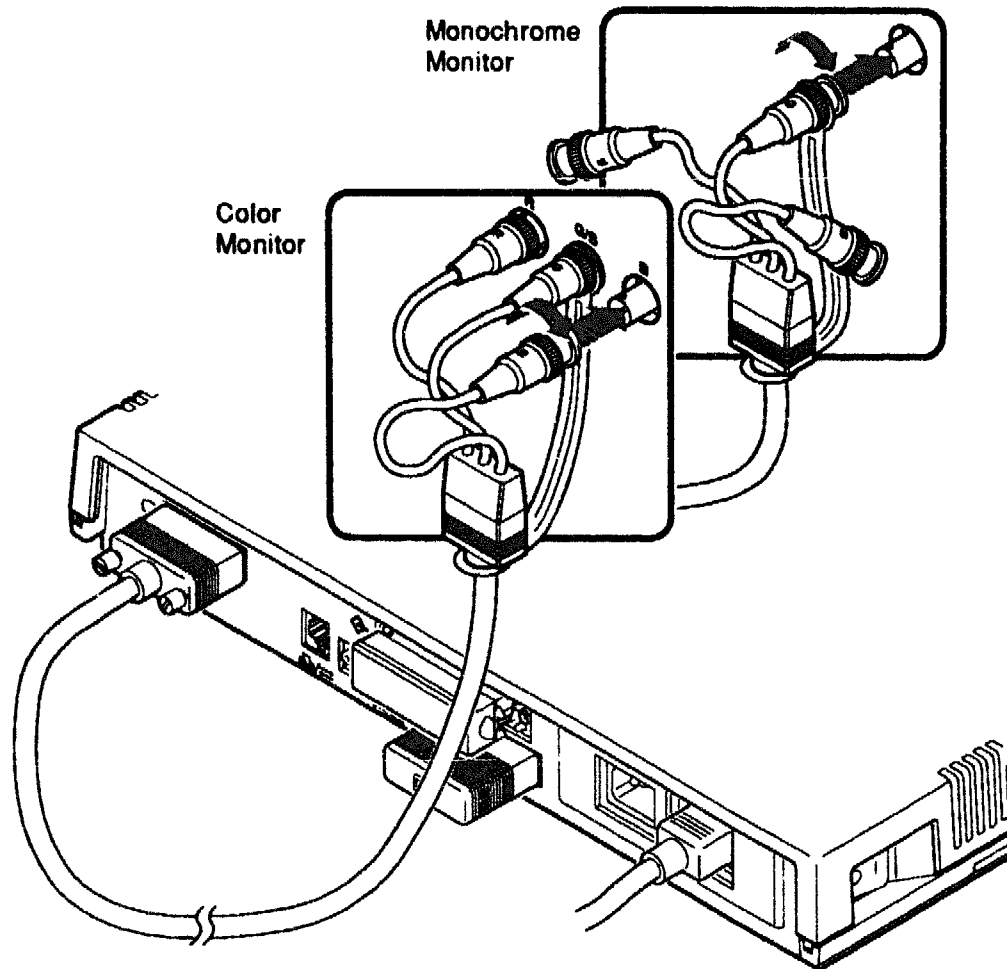
MLO-00702

_____ **Note** _____

If your monitor has Video In and Video Out connectors,
connect the cable to the Video In connectors.

2. Connect the other end of the monitor power cord to the power
    connector on the monitor.

Figure 2–8 shows how to connect the power cord to the monitor.

Figure 2–8 Connecting the Power Cord to the Monitor
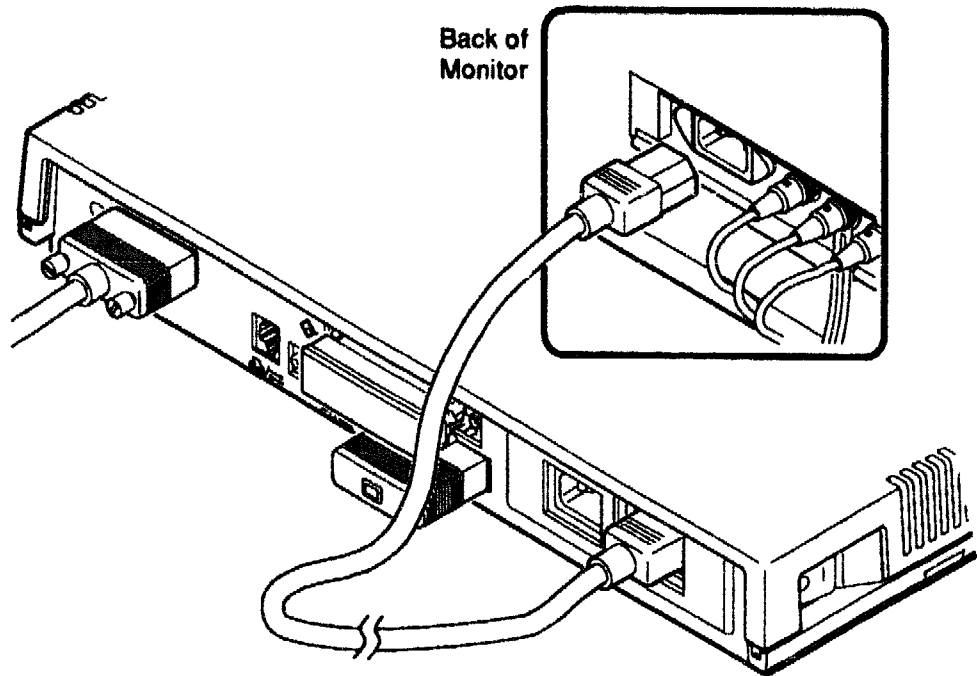
MLO-007027

2.10 Attaching the System Power Cord

Attach the system power cord to the rear of the system unit as shown in Figure 2–9. Plug the other end of the system power cord into a power outlet.

Figure 2–9 Connecting the System Power Cord

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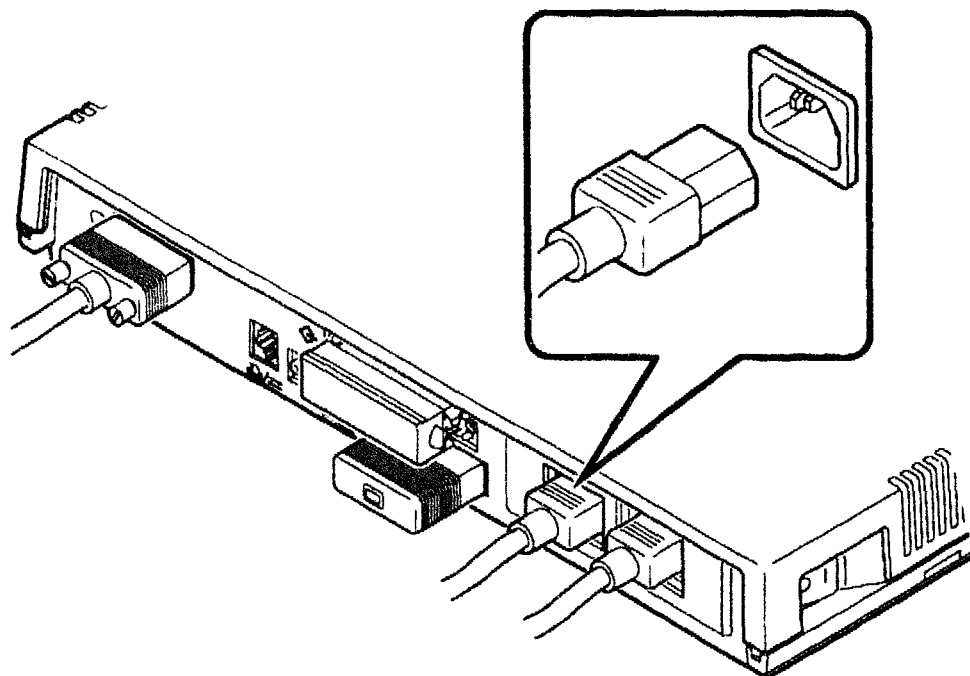
_____ **Note** _____

If your system comes with VMS factory-installed software, there is a bright yellow sticker covering the power cord connection on the back of the system unit when your system is delivered, like the one shown in Figure 2–10.

Figure 2–10 VMS Factory Installed Software Sticker

Attention:	If this system contains a hard disk with preinstalled software, see installation guide before booting system.
Attention:	Si ce système est équipé d'un disque dur contenant des logiciels pré-installés, se référer au manuel d'installation avant de lancer le système.
Achtung:	Wenn dieses System mit einer Festplatte mit vorinstallierter Software ausgerüstet ist, dann lesen Sie die Installationsanleitung, bevor Sie das System laden.
Attenzione:	Se questo sistema contiene un disco rigido con software preinstallato, consultare il manuale di installazione prima di avviare il sistema.
Atención:	Si este sistema contiene un disco duro con software preinstalado, véase el manual de instalación antes de arrancar el sistema. 36-28979-01-B01

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For more information about the VMS factory-installed software, see Section 3.4.1.

If you have the SZ03 or BA46 Expansion Boxes, refer to the *SZ03 Storage Expansion Box Owner's Card* or the *BA46 Storage Expansion Box Owner's Guide* and then return here.

Before turning on the monitor, see the monitor installation guide. Then return here to finish setting up your system.

2.11 What to Do Next

After your system and, optionally, an expansion box are connected, turn to Chapter 3 to start your VLC workstation.

3

Turning Your Workstation On and Off

This chapter explains how to turn your system on and off, and what to do after you first start your system, including information about:

- Turning your workstation on, Section 3.1

- Checking the power-up display, Section 3.2

- Turning your workstation off, Section 3.3

- What to do next, Section 3.4

3.1 Turning Your Workstation On (|)

The power on/off switch of your workstation is on the side of the
system unit as shown in Figure 3-1.

Figure 3-1 System Unit On/Off Switch

MLO-007029
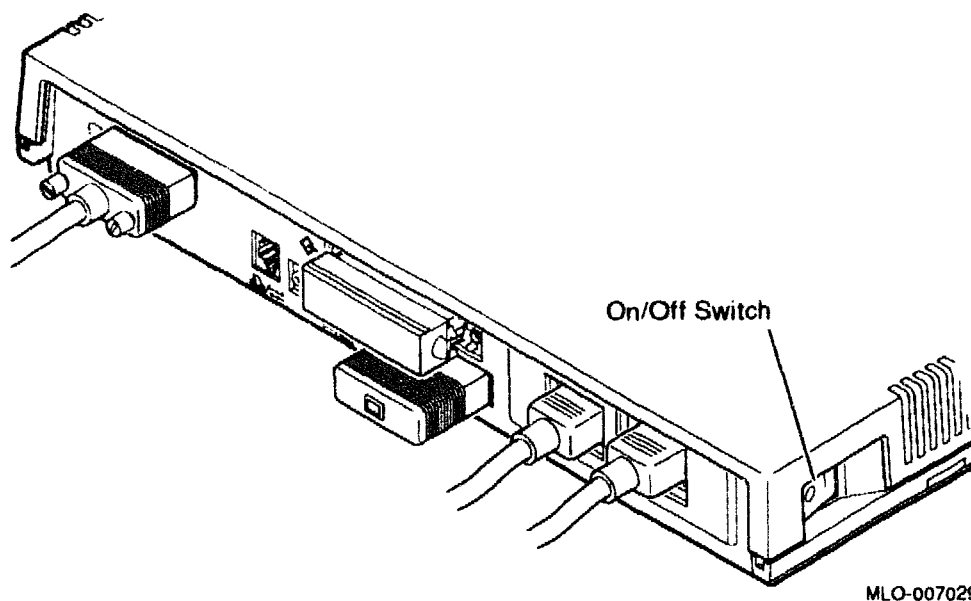
If none of your equipment is powered up, turn on the monitor and
any peripheral devices, such as the SZ03 Storage Expansion Box,
before turning on your system unit. Otherwise, your VAXstation
4000 VLC system may be unable to detect the devices that are
attached to it. Turn on (|) your equipment in the following order:

1. Monitor

2. Printer and modem, if you have these

3. Expansion boxes, such as the BA46 Storage Expansion Box or
   the SZ03 Storage Expansion Box if you have them

4. System unit

3.2 Checking the Power-Up Display

When you turn on your system, it runs through a series of tests and then displays the console command prompt (>>>), as shown in Figure 3–2.

Figure 3–2 Successful Power-up Display

```
Firmware Version Number ——— KA48-A V1.3-343-V4.0
Ethernet Hardware Address —— 08-00-2B-1D-28-6C
Memory Size ——————————————— 8MB

Status Bar ————————————————

Console Prompt ———————————— >>>
```
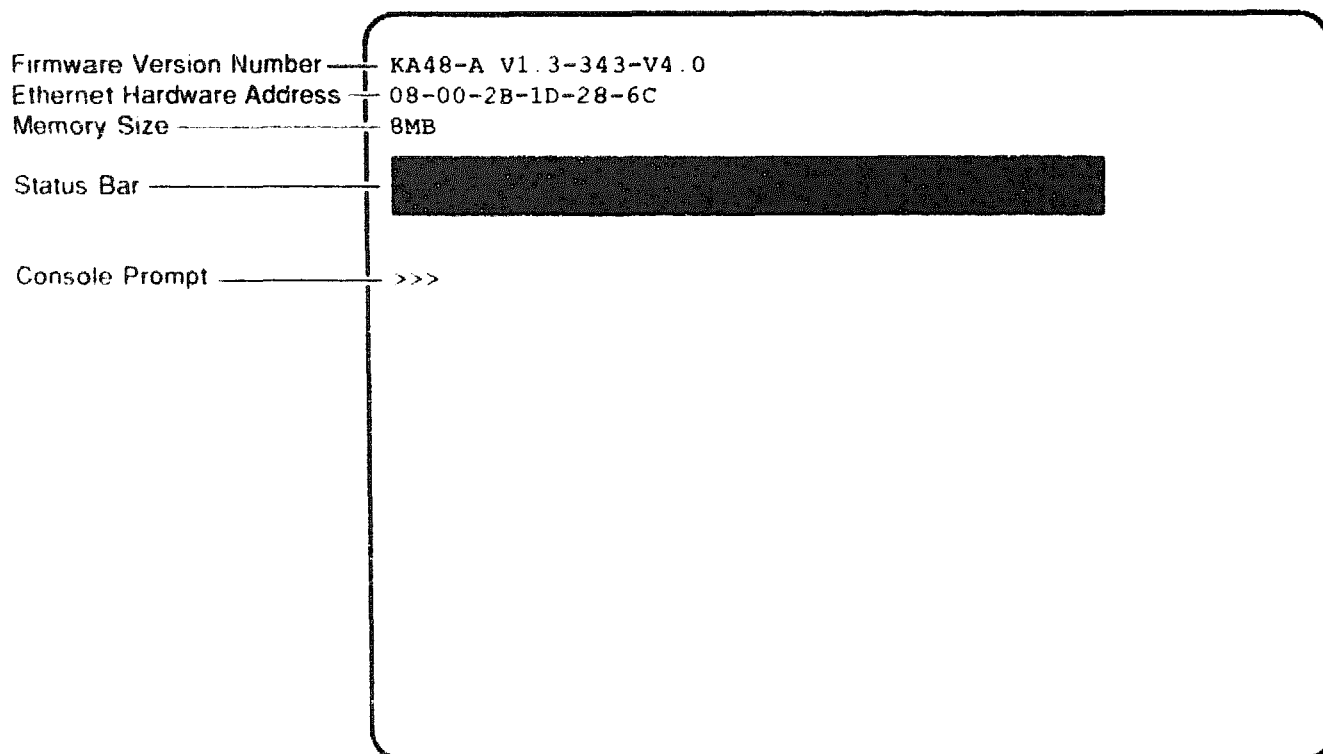
MLO-009241

While the power-up screen is displayed, make a note of the system information listed in Table 3–1 for future reference.

Table 3–1 Your VLC Workstation System Information

Subject	Write Information Here	Where to Find It
Date of installation	___ ___ ___ ___ ___ ___	Not applicable
Firmware version number	___ ___ ___ ___ ___ ___	First row of startup display, see Figure 3–2
Ethernet hardware address	___ ___ ___ ___ ___ ___	Second row of startup display, see Figure 3–2
Memory size	___ ___ ___ ___ ___ ___	Third row of startup display, see Figure 3–2
Serial number	___ ___ ___ ___ ___ ___ ___	Back of system unit
Model number	___ ___ ___ ___ ___ ___	Front of system unit

Below the three lines of system information on the power-up display is the outline of a status bar. The status bar fills as each power-up test completes. When all tests complete without errors, the status bar is filled completely.

If the system detects an error during the power-up tests, the system will display an error code, which begins with two question marks (??). For example, if the Ethernet loopback connector is not connected, the power-up display will contain the following error line:

```
??001  9  NI  0172
```

You should connect the loopback connector and restart your system to correct this error message.

See Chapter 19 for information about dealing with power-up errors.

3.3 Turning Your Workstation Off (O)

Before you turn off (O) your workstation, you should:

1. Shut down the operating system.

2. Halt the system by pressing the halt button on the side of the system unit.

_____ **Note** _____

Before halting or turning off your system, check with your system manager for the appropriate shutdown procedures.

_____

3. Turn off the equipment in the following order:

   • Turn off (O) the expansion box if you have one.

   • Turn off (O) all peripheral devices such as printers and modems.

   • Turn off (O) the monitor.

     If the monitor power cord is plugged into the system unit, turn off (O) the monitor with the monitor on/off switch. The monitor power port on the system unit does not turn off when the system unit is turned off.

_____ **WARNING** _____

If you need to unplug the monitor power cord to move the equipment or for any other reason, you must first turn off the monitor, then wait 3 minutes before unplugging the monitor power cord.

_____

   • Turn off (O) the system unit.

3.4 What to Do Next

Once you are familiar with the procedures for turning your system on and off, you can go on to the next step.

If your workstation had the VMS factory-installed software sticker covering the system power cord connector, your workstation has an internal disk drive installed. See Section 3.4.1.

If you are connecting your system to a network, you should make those connections (see Chapter 4), and then contact your network manager.

Table 3–2 describes the other steps you can now perform.

Table 3–2 Deciding What to Do Next

If you want to...	See...
Learn more about DECwindows	Chapter 5
Read about caring for your workstation	Chapter 6
Add more memory to your workstation	Chapter 10
Install a disk drive	Chapter 11
Connect a printer or a modem	Chapter 13
Change the default startup procedures	Chapter 16

3.4.1 Starting the VMS Factory Installed Software

If your workstation has an internal disk drive, you should start the VMS factory-installed software. Enter the following command at the console prompt (>>>):

```
>>> B [RETURN]
```

The VMS factory-installed software asks you to confirm the system time and date, and to enter password information. Follow the remaining instructions on the screen.

4

Connecting Your Workstation to a Network

In many cases, you will need to connect your VLC workstation to a network. In this case, you will find that this chapter provides information on the following topics:

- Preparing for a networked system, Section 4.1
- Connecting to a standard Ethernet network, Section 4.2
- Connecting to a ThinWire Ethernet network, Section 4.3
- Connecting to a twisted pair network, Section 4.4
- Verifying the Ethernet connection, Section 4.5
- Troubleshooting network problems, Section 4.6
- Removing a system from a ThinWire Ethernet network, Section 4.7

―――――――――――――― **Note** ――――――――――――――

Before you connect your system to either a Standard or ThinWire Ethernet network, you must first purchase the networking cables and connectors.

Additionally, if you are connecting to a ThinWire Ethernet network, you will need a DESTA unit with an extension cable.

To connect to a twisted pair network, you need an H3350 adapter and an extension cable.

―――――――――――――――――――――――――――――――――――

4.1 Preparing for a Networked System

Before connecting your system to a network, you must obtain the following information from your network manager. When you have this information, write it down in the space provided for reference:

- DECnet node name _____
- DECnet node number _____
- Ethernet hardware address _____

Your network manager needs this information for system identification during software installation and VAXcluster configuration.

4.1.1 Obtaining a DECnet Node Name and Number

Your network manager may provide you with a unique DECnet node name. If you are not given a name, you can request a node name of your choice, up to six characters long.

Your network manager should also provide you with a DECnet node number. When both the DECnet node name and number are available, your network manager will register the information so that your node is recognized in your network.

The process of registering a DECnet node name and number can take a few days and should be done before you want to start using your workstation on the network. You cannot use your workstation in a network environment without first registering your DECnet node name and number.

_____ Note _____

Remove the Ethernet loopback connector before connecting your network cables. Keep the loopback connector in a safe place. You may need it for testing purposes later.

_____

4.1.2 Obtaining Your Ethernet Hardware Address

The Ethernet hardware address of your system is displayed as part of the power-up display each time you start your system.

To see the Ethernet address, turn on (I) your VLC workstation. The light at the end of the Ethernet loopback connector should come on and the power-up display similar to the one shown in Figure 4–1 should appear on the screen.

Figure 4–1 Power-Up Display with Ethernet Hardware Address

```
                          KA48-A  V1.3-343-V4.0
Ethernet Hardware Address ─┬─08-00-2B-1D-28-6C
                          │ 8MB


                          >>>
```
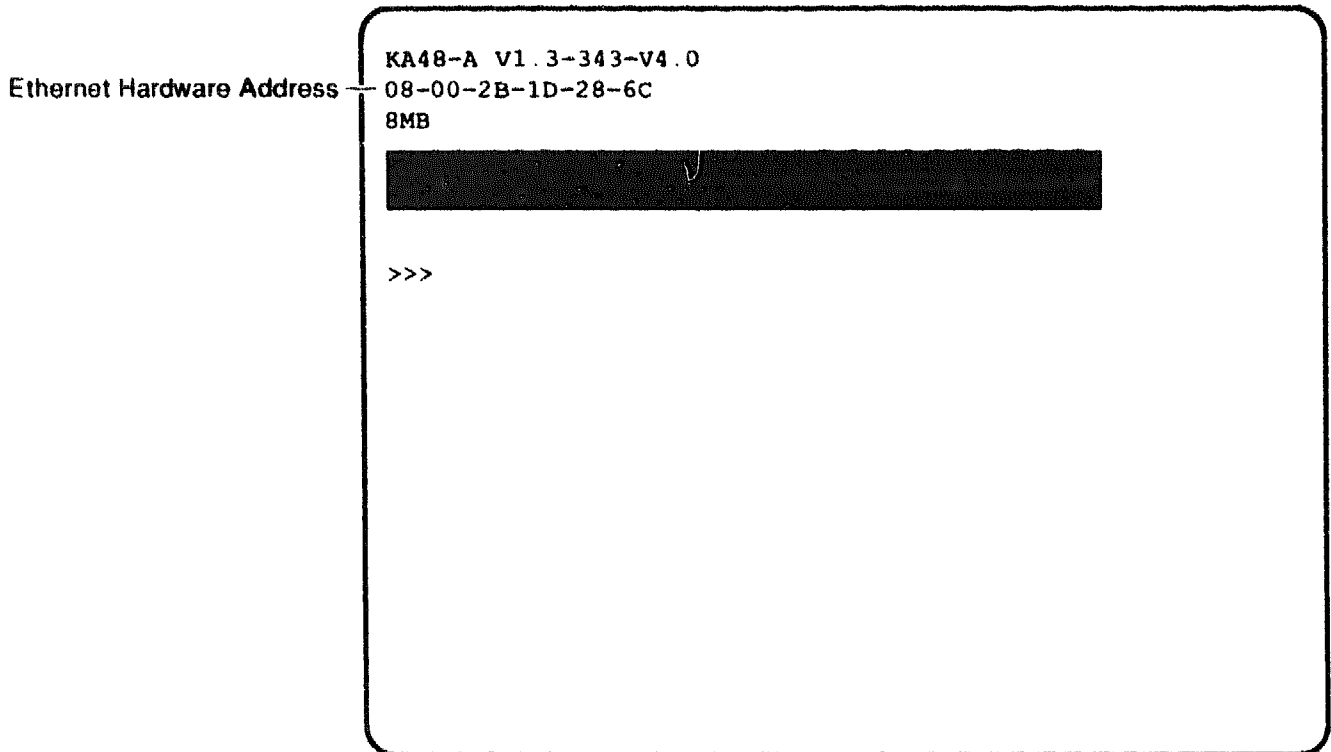
MLO-009242

Or, at the console prompt (>>>), enter SHOW CONFIG or SHOW DEVICE and press [Return] to display the Ethernet hardware address of your system on your screen.

4.2 Connecting to a Standard Ethernet Network

To connect your VLC workstation to a standard Ethernet network, complete the following tasks:

* Remove the loopback connector and store it safely for future diagnostic testing.

* Connect the standard Ethernet cable to the standard Ethernet port on the back of the system unit as shown in Figure 4–2.

Figure 4–2 Connecting Standard Ethernet Cable to Standard Ethernet Port
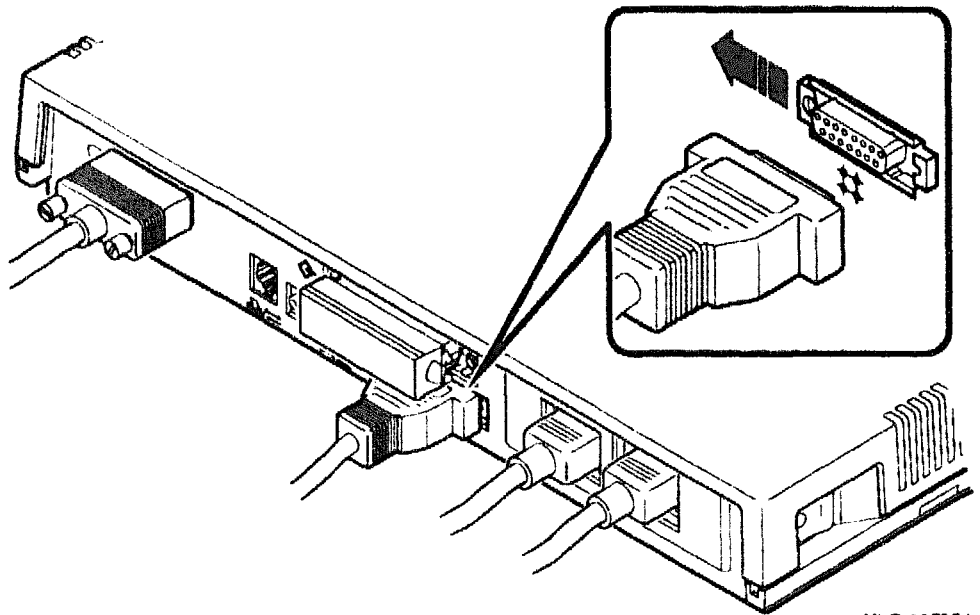
MLO-007031

* Use the screwdriver provided with your system to push the sliding lock to the left after the cable is securely in place. The sliding lock prevents the cable from becoming disconnected.

4.3 Connecting to a ThinWire Ethernet Network

You can connect your VLC workstation to a ThinWire Ethernet network by attaching a DESTA unit with an extension cable.

To connect your VLC workstation to a ThinWire Ethernet network, perform the following steps:

1. Attach the extension cable to the DESTA unit as shown in Figure 4–3

2. Attach the other end of the extension cable to the standard Ethernet port on the back of the system unit, as shown in Figure 4–2.

Figure 4–3 Attaching the Extension Cable to the DESTA Unit
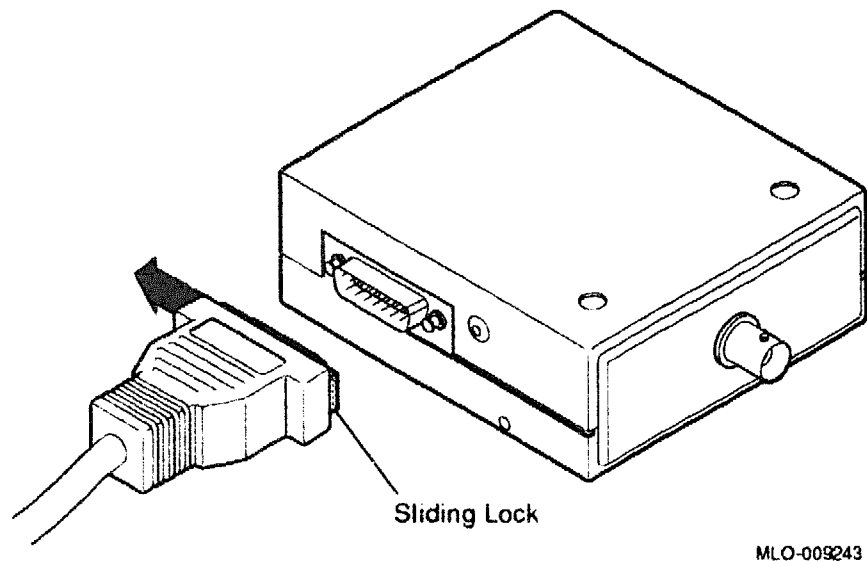
Sliding Lock

MLO-009243

3. Use the screwdriver provided with your system to push the sliding locks to the left after the cables are securely in place. The sliding lock prevents a cable from becoming disconnected.

4. Connect the ThinWire network cables to a T-connector as
    shown in Figure 4–4.

Figure 4–4 Connecting the ThinWire Cables to a T-connector

ThinWire   T-Connector
Cable

MLO-005144
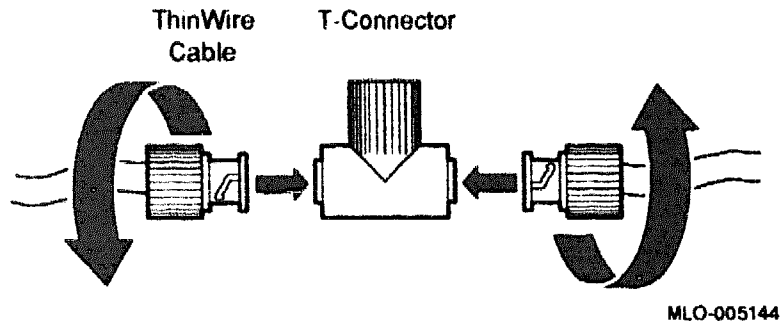
5. Connect the T-connector with the ThinWire cables to the
    DESTA unit as shown in Figure 4–5.

Figure 4–5 Connecting the T-connector to the DESTA Unit

MLO-007055
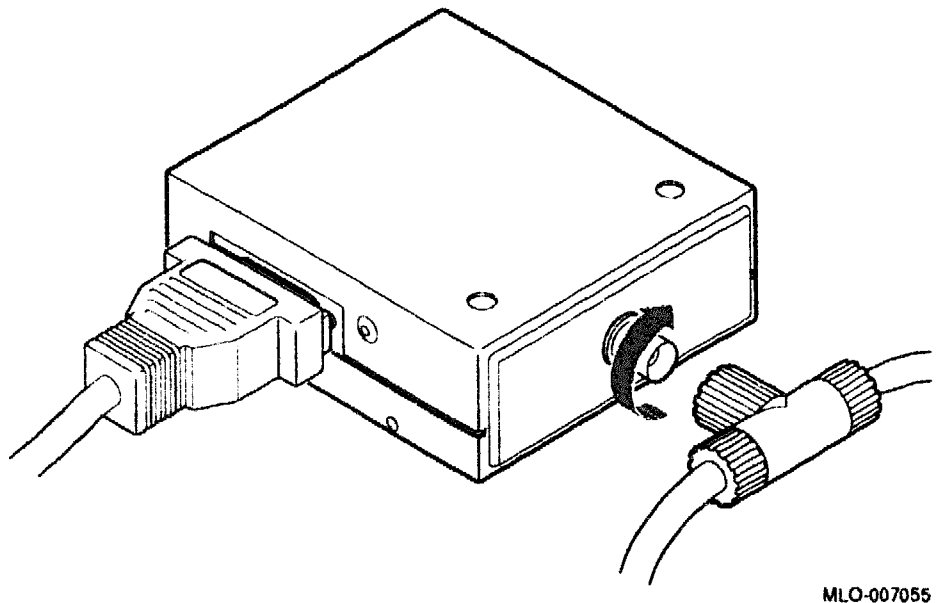
_____ **Note** _____

If your workstation is the last one on a ThinWire Ethernet
network cable, you need to terminate the network
connection. Do this by connecting a terminator, rather
than a ThinWire cable, to one side of the T-connector, as
shown in Figure 4–6.

_____

Figure 4–6 Terminating the ThinWire Ethernet Connection on the DESTA Unit
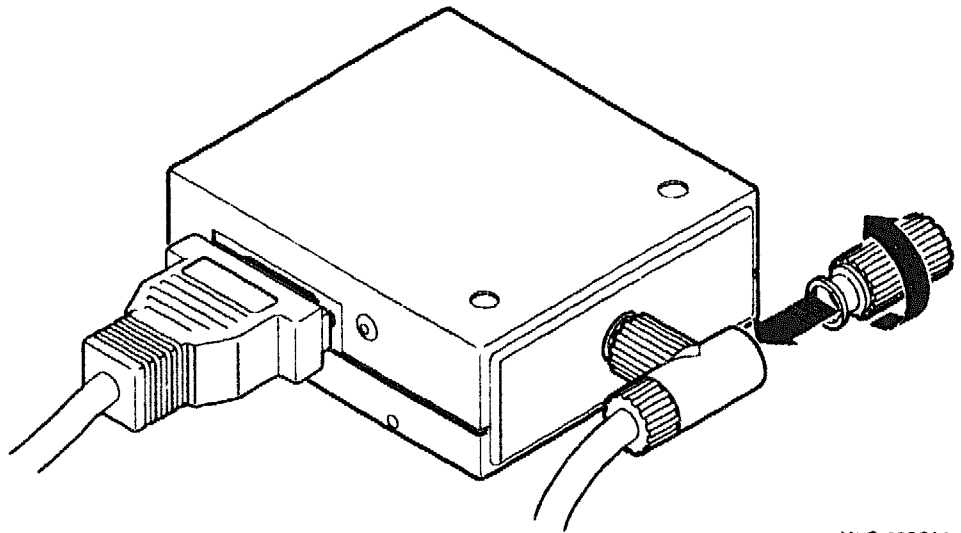
MLO-009244

4.4 Connecting to a Twisted Pair Network

You can connect your VLC workstation to a twisted pair network by using the Digital H3350 adapter and an extension cable.

To connect to a twisted pair network, perform the following steps:

1. Attach the extension cable to the standard Ethernet port on the back of the system unit.

   Use the screwdriver provided with your system to push the sliding lock to the left after the cable is securely in place. The sliding lock prevents the cable from becoming disconnected. The extension cable has the same connector as a standard Ethernet cable. See Figure 4–2.

2. Connect the other end of the extension cable to the H3350 adapter as shown in Figure 4–7. Use the screwdriver provided with your system to push the sliding lock to the left after the cable is securely in place.

Figure 4–7 Connecting the Extension Cable to the H3350 Adapter

Sliding Lock
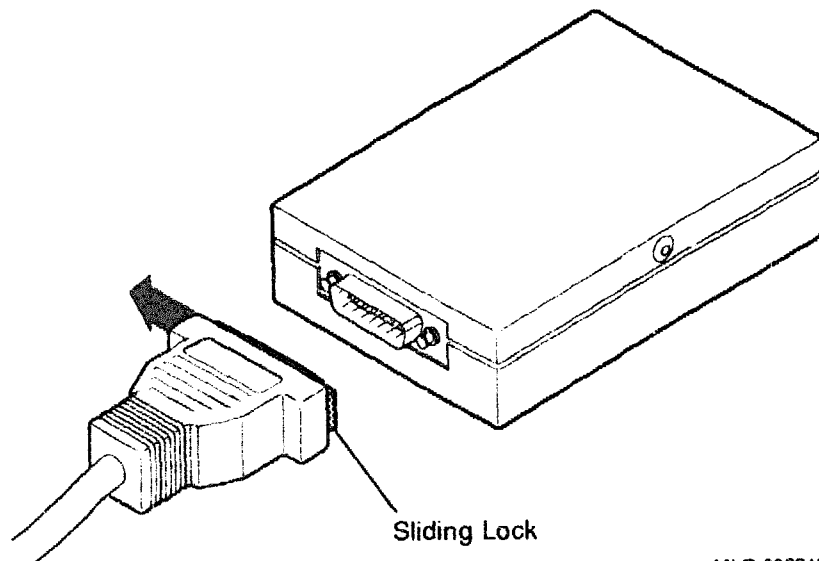
MLO-009245

3. Connect the twisted pair network cable to the H3350 adapter as shown in Figure 4–8.

Figure 4–8 Connecting the Twisted Pair Cable to the H3350 Adapter

MLO-007066
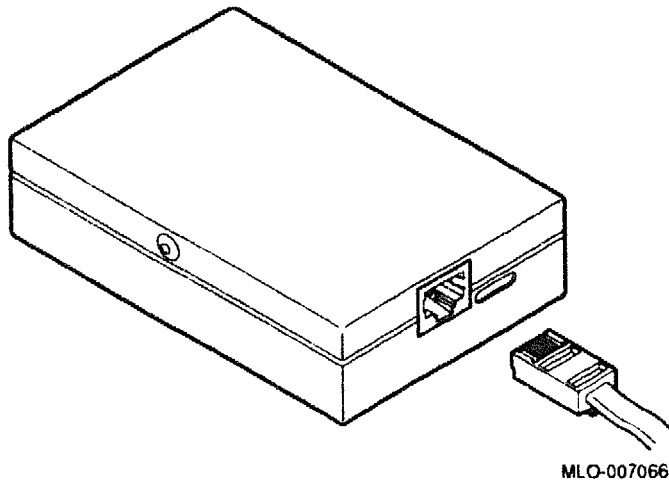
4. Connect the other end of the twisted pair network cable to the network connection.

4.5 Verifying the Network Connection

Once you have connected your system to the network in any of the three ways described here, test to verify that the connection is successful.

1. Turn on (|) your system.

2. If the console prompt (>>>) does not appear on your monitor screen, press the halt button on the side of the system unit as shown in Figure 4-9. You can use an unfolded paper clip to press the halt button.

Figure 4-9 Halt Button
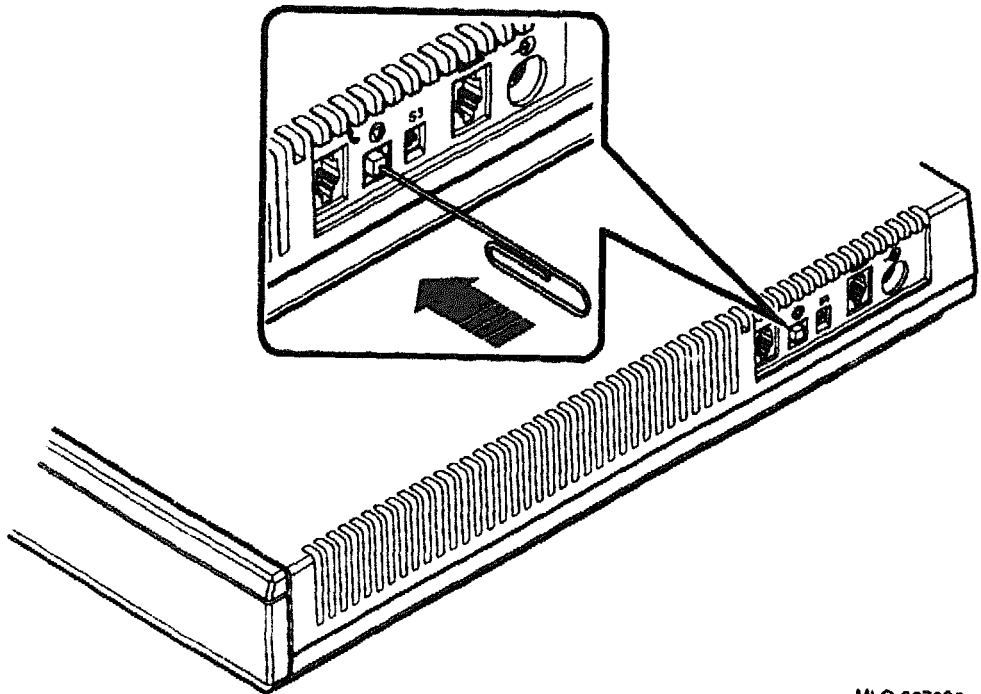
MLO-007030

3. When the console prompt displays, enter the following command:

```
>>> TEST NI  [Return]
```

The TEST NI command runs a test that checks only the Ethernet subsystem. If the test is successful, a screen similar to the one shown in Figure 4–10 is displayed.

Figure 4–10 Successful NI Test

```
>>> TEST NI

■

OK

>>>
```
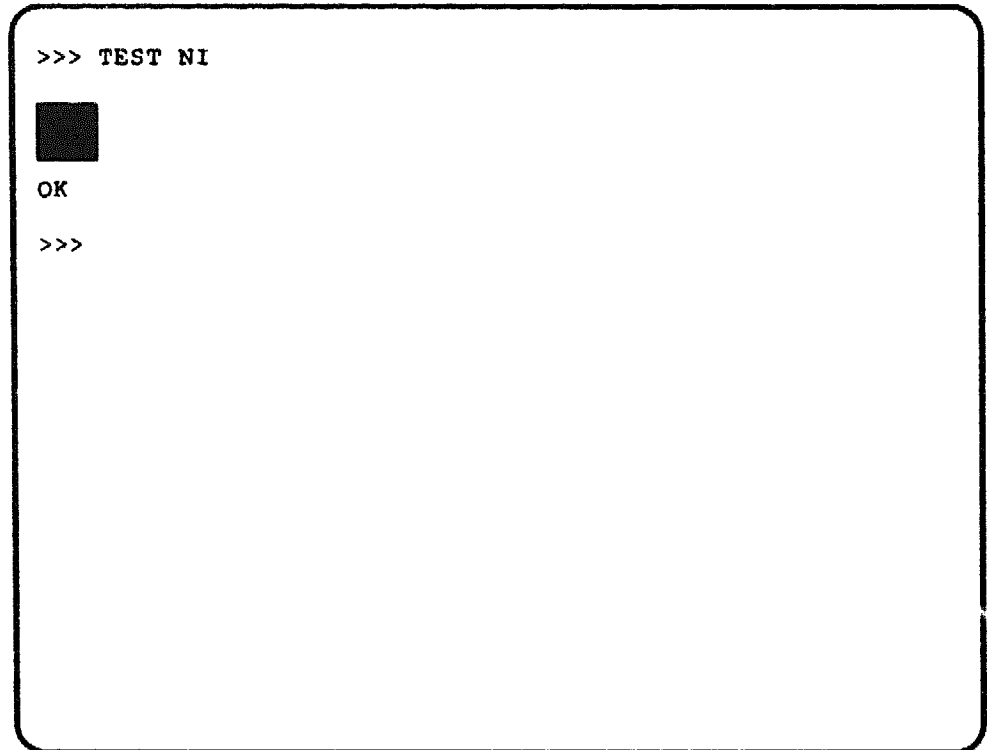
MLO-005477

If TEST NI is successful, you can continue using your system. Contact your network manager about setting up your workstation on the network.

4.6 Troubleshooting the Network Connections

If TEST NI fails, a screen similar to Figure 4–11 is displayed.

Figure 4–11 Ethernet Subsystem Failure

```
>>> TEST NI

[■ ]

?? 001 9 NI 0172

   84 FAIL
>>>
```

Error Line

MLO-005450
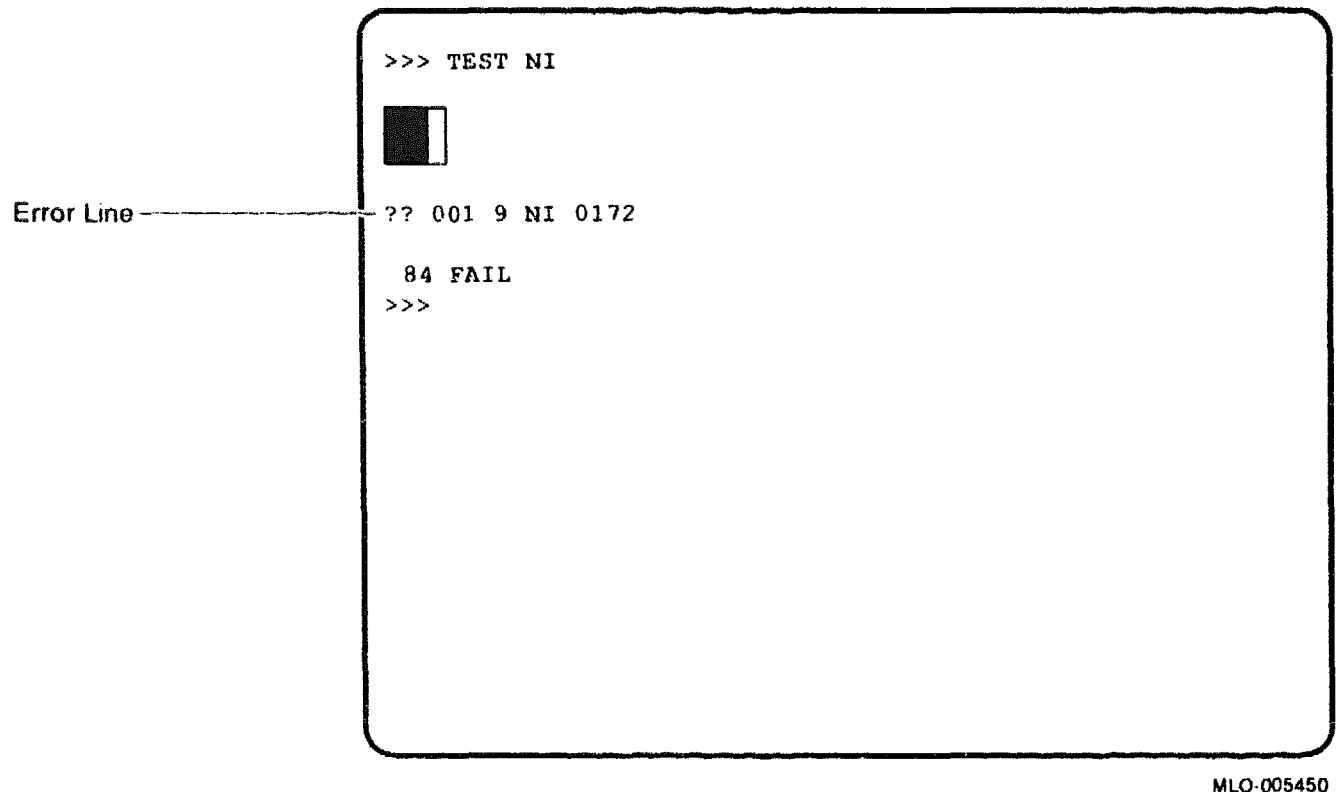
If TEST NI results in an error line, or if you are connected to an Ethernet network and are having problems, check the following connections:

4.6.1 Standard Ethernet Checklist

1. Make sure the standard Ethernet cable is securely connected to the system unit.

2. Make sure the sliding lock on the standard Ethernet port is pushed toward the left so that it holds the cable firmly in place.

4.6.2 ThinWire Ethernet Checklist

1. Check that the T-connector has not been disconnected from an active ThinWire Ethernet segment.

2. Check that you have not disconnected a terminator from either end of an active ThinWire network cable. This action disrupts network operation.

3. Check that all connections on the ThinWire Ethernet network cable are secure.

4.6.3 Twisted Pair Checklist

1. Check that the extension cable is securely connected to the H3350 adapter and the other end to the system unit.

2. Check that the network cable is connected properly to the twisted pair network outlet.

After securing all connections, repeat the TEST NI command to see if you have resolved the problem. If TEST NI is successful, you can continue.

If TEST NI fails again, you may have an internal hardware problem and need to call your Digital service representative (see Chapter 21). A connection cannot be established in this case.

Make a note of the error line displayed by the TEST NI command, and provide this information to your Digital service representative.

Error Line _____

For a list of the most common error messages, see Appendix D. To get a complete list of error messages and their meanings, order the *VAXstation 4000 VLC Hardware Information Kit* from DECdirect. For help in dealing with specific problems, see Section 21.2.

4.7 Removing a System from ThinWire Ethernet

If you need to remove a workstation from a ThinWire Ethernet network, consult your network or system manager first.

Take the following steps to remove a VLC workstation from the network:

1. Before halting or turning off your system, see the operating system documentation for shutdown procedures.

2. Turn off (O) the system unit.

3. Disconnect the DESTA extension cord from the rear of the system unit.

4. Disconnect the T-connector directly from the DESTA unit. Figure 4–12 shows the correct way to remove a T-connector from an inactive ThinWire segment connected to a DESTA unit.

Figure 4–12 Removing a T-connector from the DESTA Unit

MLO-007056

5
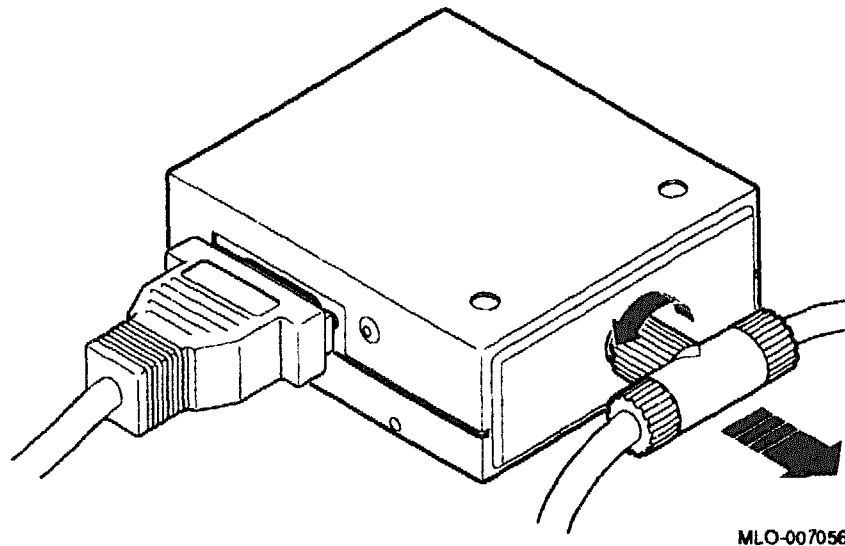
Getting Started with DECwindows

If you have not used DECwindows before, this chapter provides the basic information about using a windows-based workstation. For a detailed description of DECwindows, see the *VMS DECwindows Motif Quick Reference Card*. This chapter covers the following topics:

- Understanding DECwindows, Section 5.1

- Interacting with DECwindows, Section 5.2

- Starting a DECwindows session, Section 5.3

- Ending a DECwindows session, Section 5.4

- Getting help, Section 5.5

5.1 Understanding DECwindows

DECwindows is an interface to the VMS operating system that lets you divide your workstation screen into windows and design a working environment to suit your needs. Application programs displayed in windows are easy to use because DECwindows takes advantage of your workstation's graphics.

With DECwindows, you can run multiple applications concurrently on a single screen and switch between them. This means that you can run a program in one window, read a mail message in a second window, and compose a memo in a third.

The screen for a typical DECwindows session looks like Figure 5-1.

5.1.1 What Are Windows?

Think of your workstation screen as a desktop with overlapping sheets of paper on it. You can shuffle the sheets of paper to place some in front of or behind other papers.

In DECwindows, these sheets of paper are called windows. A window is an area on your workstation screen that represents all or part of an application. For example, you can open one window that displays Bookreader. In this window, you can read online documentation. Other windows can display applications like Mail, which allows you to send and receive electronic mail, and DECterm, which looks and functions like a VT300-series terminal.

For more information about how to move, size, and arrange windows, see the *VMS DECwindows Motif User's Guide*.

5.2 Interacting with DECwindows

DECwindows is an environment in which all applications look and respond in a similar way. This means that you use the same techniques to interact with each application. You can use the mouse, or a hand-held pointing device attached to your workstation monitor, or the keyboard to work with DECwindows applications. Some tasks are easier to perform with the mouse, and some are easier with the keyboard.

The mouse is used to point to and select menu choices and other screen elements after installing windowing software on your system. To learn how to use your mouse, see your windowing software documentation.

5.2.1 DECwindows Components

DECwindows contains different components for performing specialized tasks. This section defines and illustrates the main components of DECwindows.

Figure 5-1 Screen for Typical DECwindows Session
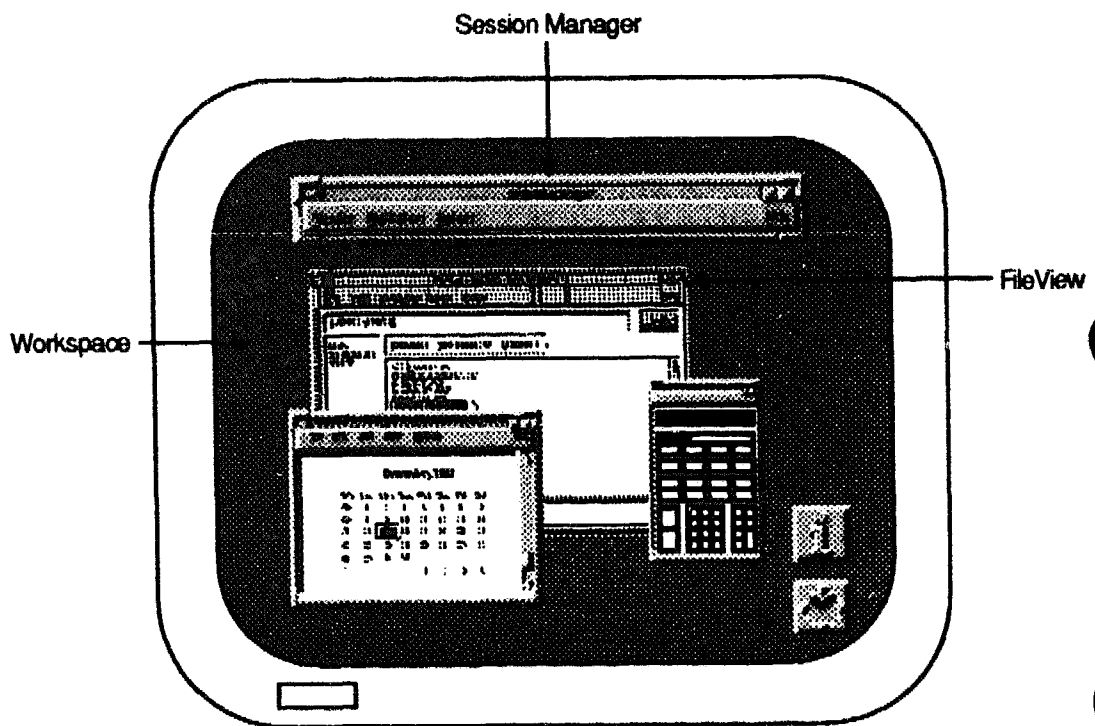
ZK-3492A-GE

- The **Workspace** is the screen on your workstation and is the background of your DECwindows environment. All windows and objects appear on the Workspace.

- The **Window Manager** is a program that controls the size, placement, and operation of windows on the workspace. The Window Manager provides menus that appear in the workspace or the windows to let you manage your windows.

- **Session Manager** helps control the look and feel of your DECwindows session. Use it to start DECwindows applications and to adjust workstation settings, such as keyboard features and pointer shape.

- **FileView** is a graphic interface to the VMS operating system, which provides commands for you to work with your files and directories.

5.3 Starting a DECwindows Session

If your system startup procedure is successful, either after starting with the VMS factory-installed software as explained in Section 3.4.1, or after connecting to a network (Chapter 4), DECwindows displays the Session Manager's Start Session screen, shown in Figure 5–2.

Figure 5–2 Start Session Screen

ZK -3620A- GE
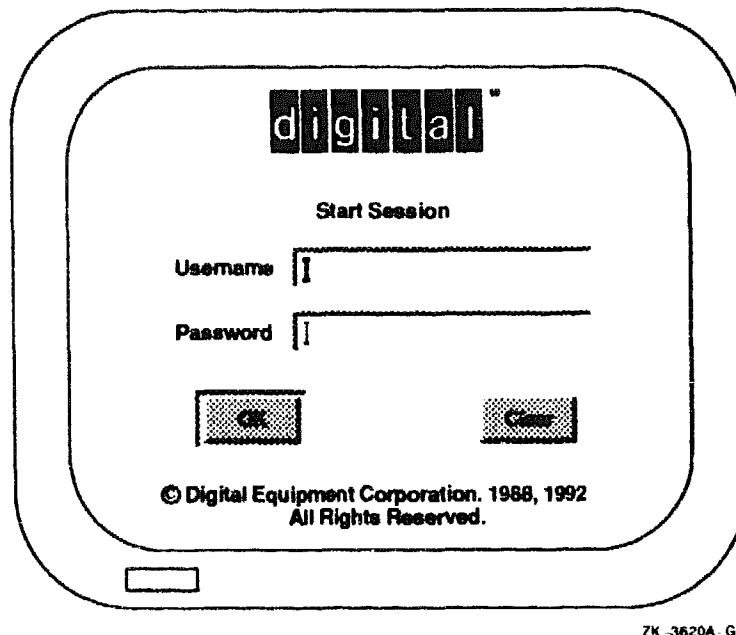
When you see the Start Session screen, you can enter the username and password that you normally use to access your system, or the SYSTEM username and password you entered when you ran the VMS factory-installed software procedure. To start a session:

1. Type your username.

2. Select the Password entry box by pressing [Return], or [Tab], or pointing to the Password entry box and clicking mouse button 1 (MB1).

3. Type your password. To keep the password secret, the letters you type are not displayed.

4. Press [Return] after you enter your user name and password correctly, or click on the OK button.

If you make a typing mistake and do not correct it, your system will not let you start a session. Instead, it displays a warning that some information is incorrect.

Press [Return] or click on the OK button to acknowledge the message. Then retype your information and press [Return].

If your user information is correct, your session begins and DECwindows displays the Session Manager's menu bar.

_____ **Note** _____

The DECwindows screen has a timeout feature that causes the screen to go blank if you do not type something for a certain amount of time. To restore the screen display, move the mouse in any direction or press any key on the keyboard.

_____

5.4 Ending a DECwindows Session

To end your current DECwindows session, choose End Session from Session Manager's Session menu. Once you choose End Session, you can still return to your session if you change your mind. Session Manager displays a dialog box asking you to confirm that you want to end your session, as shown in Figure 5–3.

Figure 5–3 Ending a DECwindows Session
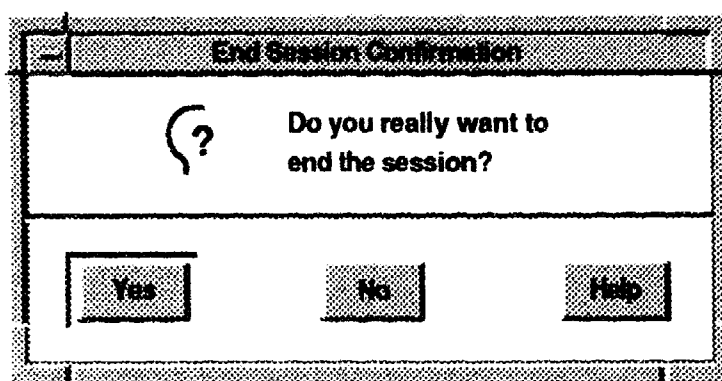
ZK-3622A-GE

To return to your session, click on the No button. To end your
session, click on Yes or press Return. Ending your session closes
all windows and clears the entire screen. DECwindows then
displays the DIGITAL logo and the Start Session screen.

5.5 Getting Help

Every DECwindows application contains a Help menu, which
provides information about screen objects, concepts, system
messages, or tasks you can perform in applications. Some
applications also let you get help on specific screen objects—for
example, scroll bars and menu items—by using the Help key and
MB1.

Help uses the Bookreader to display general information about an
application.

6

Taking Care of Your VLC Workstation

While your VAXstation 4000 VLC system is designed to function in a range of environmental conditions, it remains an electrical device that should be treated with care, just like your television or stereo unit.

This chapter describes the following things you can do to care for your VLC workstation:

*   Taking care of the system unit, Section 6.1

*   Cleaning the monitor, Section 6.2

*   Cleaning the mouse, Section 6.3

This chapter does not cover the maintenance that your Digital service representative can perform. Always make sure that your system is turned off (O) before cleaning its components. See Chapter 3 for instructions on how to turn off your system.

6.1 Taking Care of the System Unit

The VLC workstation system unit requires adequate ventilation, as described in Section 2.1. Never put your system unit on the floor where it can collect too much dust, or in direct sunlight, where it may become too hot.

Clean your system by wiping dust and particles from the system unit and the keyboard.

Take care not to spill any food or liquid on the keyboard. If you spill water on the keyboard:

1. Unplug the keyboard from the system unit.

2. Wipe up the excess water immediately.

3. Turn your keyboard over to drain out any remaining water.

4. Leave the keyboard to dry on its own for several hours before connecting it to your system again. (See Section 2.4.)

5. If the keyboard does not work properly when you reconnect it, contact your Digital service representative as described in Chapter 21.

If you spill something like a carbonated drink, tea, or coffee on the keyboard, disconnect the keyboard from the system unit and call your service representative immediately.

6.2 Cleaning the Monitor

To clean the screen, make sure that your monitor is turned off (O). Then, using any reputable household glass cleaner, spray the cleaner onto a soft cloth and wipe the screen. Do not spray cleaner on the monitor screen directly.

Use a soft, dry cloth to remove dust and lint from the monitor casing.

6.3 Cleaning the Mouse

Since the mouse is one of the main contacts between you and your VLC workstation, the buttons and the top of the mouse tend to get dirty. You can clean the mouse with a soft damp cloth.

If your cursor does not move as freely as you direct it with the mouse, you may need to clean the rubber ball inside the mouse by performing the following steps:

1. Turn the mouse upside down and remove the cover plate on the bottom of the mouse as shown in Figure 6-1.

Figure 6-1 Removing the Mouse Cover Plate
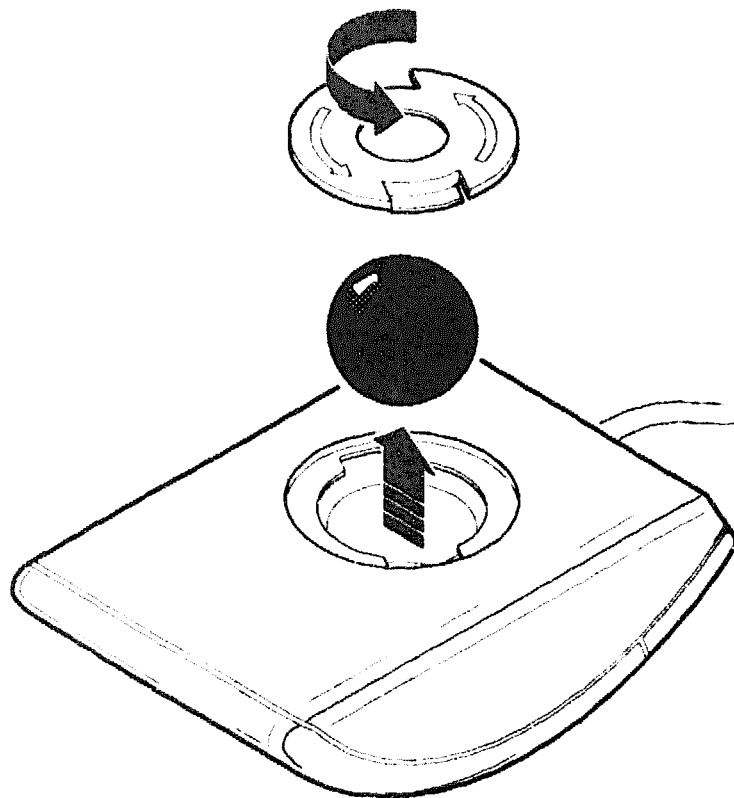
MLO-007047

2. Remove the rubber ball inside of the mouse.

3. Clean the ball with lukewarm water and, if necessary, a mild soap.

--- **Caution** ---

Do not use organic solvents to clean the rubber ball. These may damage the rubber coating.

---

4. Dry the rubber ball.

5. Return the ball to the mouse unit and replace the cover plate.

6. Make sure the cover plate is locked into position so that the rubber ball cannot fall out, as shown in Figure 6–2.

Figure 6–2 Replacing the Mouse Cover Plate
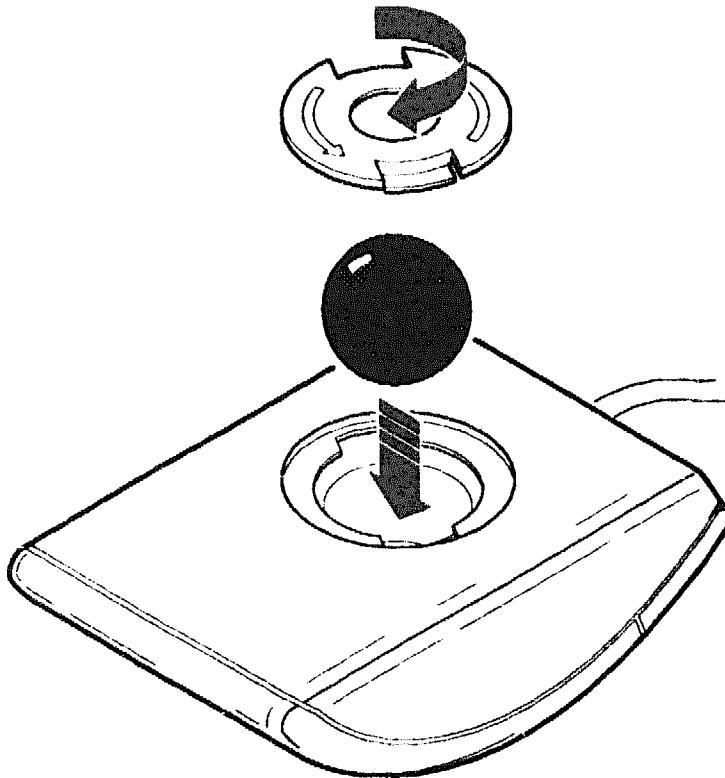
MLO-007048

Part II

Options

The chapters in this part of the manual describe the internal and external options available for the VAXstation 4000 VLC system.

The chapters describe:

* Available options, Chapter 7

* Attaching a SCSI device, Chapter 8

* Preparing your system for internal options, Chapter 9

* Adding memory, Chapter 10

* Adding a fixed disk drive, Chapter 11

* Restoring your system, Chapter 12

* Connecting printers and modems, Chapter 13

If someone at your site normally handles adding internal options or connecting external options, you may not have to read this part of the manual.

7

Available Options

This chapter describes the options that are available for the VAXstation 4000 VLC system. The options that you add to your system differ from country to country.

Instructions for connecting the options can be found in Chapter 8, Chapter 10, Chapter 11, and Chapter 13.

7.1 Internal Options

Figure 7–1 shows the RZ23L disk drive, the RZ24L disk drive, and memory boards, which you can add to your VLC system.

- One RZ23L or one RZ24L disk drive may be added to your system to provide disk storage for software applications and user files. The disk drives have the following storage capacity:

  RZ23L has a 121-megabyte storage capacity.
  RZ24L has a 245-megabyte storage capacity.

  See Chapter 11 for additional information.

- Up to 16 megabytes of additional memory, for a total of 24 megabytes of memory can be added to your system. See Chapter 10 for additional information.

Figure 7–1   Internal Options You Can Add

RZ23L Fixed
Disk Drive

RZ24L Fixed
Disk Drive

Memory Boards
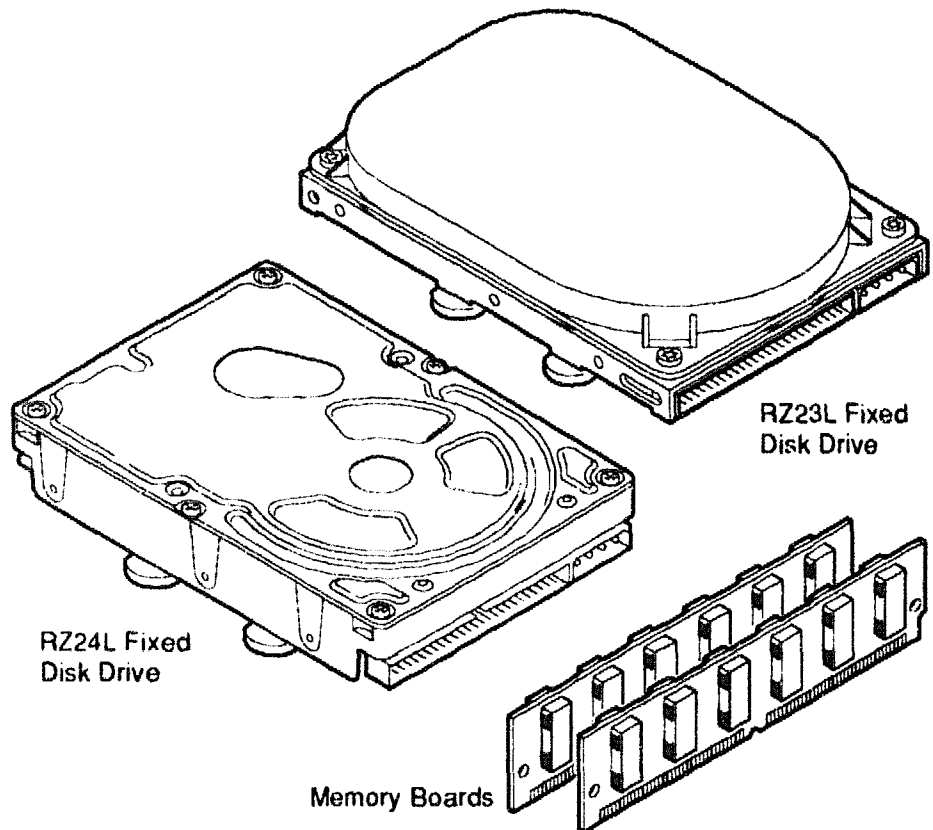
MLO-009246

Contact your Digital sales representative for more information about ordering VAXstation 4000 VLC system options.

_____ **Note** _____

Be sure to read Chapter 8 for general information about SCSI devices before you install an internal fixed disk drive, or before you add an external SCSI device.

7.2 External Options

You can connect the following external options to your VLC workstation:

* A puck or stylus tablet, Section 7.2.1

* A TLZ06 4.0-gigabyte, 4-mm DAT SCSI tape drive, Section 7.2.2

- An RRD42 compact disc drive, Section 7.2.3

- A BA10X Wall Mount Kit, Section 7.2.4

- A VSXXX-JA audio headset, Section 7.2.5

- An RX26 floppy disk drive (in an SZ03 Storage Expansion Box), Section 7.2.6

The following sections describe the external options.

Chapter 13 describes how to connect a printer and a modem to your system.

7.2.1 Puck or Stylus Tablet

With the VAXstation 4000 VLC workstation you can use either the standard mouse or an 11-inch by 11-inch tablet with a puck or a pen pointer. The tablet is connected to the DIN serial port (the mouse port) on the side of the system unit, in place of a mouse.

7.2.2 TLZ06 DAT SCSI Tape Drive

The TLZ06 DAT SCSI tape drive provides fast, highly reliable unattended backup for your workstation application and data files. The table-top model TLZ06 is a 4.0-gigabyte, 4-mm tape drive that connects to the SCSI port on the rear of the VAXstation 4000 VLC system. See Chapter 8.

For more information about the TLZ06 Cassette Tape Drive, refer to *Installing the TLZ06 Cassette Tape Drive* manual.

7.2.3 RRD42 Compact Disc Drive

The RRD42 compact disc drive is a 600-megabyte storage device. The drive, capable of audio playback, has audio outputs and a headphone jack.

You can connect an RRD42 drive to your workstation (in a BA46 Storage Expansion Box) using the SCSI port. See Chapter 8 for information about attaching a SCSI device.

For more information about the RRD42 drive, see the *RRD42 Compact Disc Drive Owner's Manual*.

7.2.4 BA10X Wall Mount Kit

Your VLC workstation can be attached to a wall or office partition using the BA10X wall mount kit. Installation instructions are attached to the wall mounting plate.

7.2.5 VSXXX-JA Audio Headset

The VSXXX-JA audio headset is an alternative to the telephone handset; it is a single earmuff, headband headset for long-term listening comfort. The headset contains an integral, adjustable microphone for voice input. A clothing clip and an 8-foot cord with a quick-disconnect connector at one end, provides for an easy disconnect from the workstation. A 4-pin MJ connector at the other end plugs into the audio port on the VLC workstation.

The audio headset is used with DECsound software, an application that lets you record, save, store, and playback audio images.

7.2.6 SZ03 Storage Expansion Box

You may connect the SZ03 Storage Expansion Box to your VLC workstation. The SZ03 storage expansion box contains either an RZ23L or RZ24L disk drive, or an RX26 diskette drive. You use the disks for loading application software, backing up small files, and transporting files between standalone systems.

For a listing of other devices that may be used with a VLC workstation, refer to Section 1.2.

8

Attaching a SCSI Device

You can connect one or more Small Computer Systems Interface (SCSI) devices to your VLC workstation. This chapter includes the following information:

- Understanding SCSI devices, Section 8.1

- Default SCSI device settings, Section 8.2

- Listing SCSI ID numbers, Section 8.3

- Changing SCSI ID numbers, Section 8.4

- Connecting a SCSI device to your VAXstation 4000 VLC system, Section 8.5

8.1 Understanding SCSI Devices

The Small Computer Systems Interface, or SCSI, is an interface designed for connecting disk drives and other peripheral devices to computer systems. SCSI is defined by an American National Standards Institute (ANSI) standard and is used by many computer and peripheral vendors throughout the industry.

Your workstation has a SCSI bus inside the system unit. You can connect one device (an RZ23L or an RZ24L fixed disk drive) to that bus internally. (See Chapter 11.) Your system unit also has a SCSI port on the rear of the system, to which you can connect another SCSI device, such as a BA46 Storage Expansion Box or an SZ03 Storage Expansion Box. In turn, those devices have SCSI connections, to which you can connect other devices. Connecting one SCSI device to another in this way is referred to as "daisy-chaining" SCSI devices.

A total of eight SCSI devices, including the controller (which itself counts as one SCSI device), can share the SCSI bus.

Once one or more SCSI devices are connected to your system, data is transferred between your VLC workstation and the other SCSI devices on the bus.

8.2 SCSI ID Default Settings

Each SCSI device that you connect to your VLC workstation must be assigned a unique identification number, called a SCSI ID. The SCSI ID number is used like an address for each device. As data is transferred over the SCSI bus, each device looks at the SCSI address attached to the data, and takes only that data addressed to itself. SCSI ID numbers on your VAXstation 4000 VLC workstation range from 0–7.

If your workstation arrives from the factory with a SCSI device, such as an RZ23L or RZ24L disk drive already installed, that device has a default SCSI ID. Digital sets the default SCSI IDs before the equipment leaves the factory. Table 8–1 lists the default SCSI IDs and the devices to which each is assigned.

Table 8–1 Digital Default SCSI ID Numbers

ID	Device
0	RZ23L or RZ24L fixed disk drive
1	Reserved for the SZ03 Storage Expansion Box with an RZ23L or an RZ24L fixed disk drive
2	RZ23L or RZ24L fixed disk drive
3	Reserved for an RZ23L or RZ24L fixed disk drive installed at the factory
4	RRD42 compact disc drive
5	Reserved for the SZ03 Storage Expansion Box with an RX26 diskette drive
6	Reserved for the VAXstation 4000 VLC system SCSI Controller ID
7	Available for an additional disk or tape drive

————————————— **Note** —————————————

While some devices (such as the RZ25 fixed disk drive
and TLZ06 tape drive) are not available to install inside
your VAXstation 4000 VLC system, such devices may be
available to your system with an SZ03 Storage Expansion
Box, or mounted in a table-top enclosure (TLZ06).

_____

If you purchase a separate SCSI device (one that is not shipped
with your system), its SCSI ID number may duplicate a number
already in use on your system. You can see which SCSI ID
numbers are currently used on your system with the SHOW
CONFIG command (see Section 8.3).

You need to change the SCSI ID settings of the devices you are
adding *only* if the number of the device you are adding is a SCSI
ID number already in use.

8.3 Listing SCSI ID Numbers

To list ID numbers currently in use, use the SHOW CONFIG
command at the console prompt to display information about each
SCSI ID on your system, as follows:

```
>>>  SHOW CONFIG  [Return]
```

Your system configuration appears on the screen in a display
similar to the one in Figure 8–1.

Figure 8-1 Status Information on SCSI IDs

```
>>> SHOW CONFIG

KA48-A V1.3-343-V4.0
08-00-2B-1D-28-6C
8MB

DEVNBR   DEVNAM   INFO
------   ------   ----------------------------------------
  1      NVR      OK
  2      LCG      OK
                    LR - 8 PLN FB - 5.2
  3      DZ       OK
  4      CACHE    OK
  5      MEM      OK
                    8MB = S0/1=0MB, S2/3=0MB, S4/5=0MB
  6      FPU      OK
  7      IT       OK
  8      SYS      OK
  9      NI       OK
 10      SCSI     OK
                    5-RX26      6-INITR
 11      AUD      OK
>>>
```

SCSI Line —————— 10

SCSI ID Numbers —————

MLO-009247

All of the SCSI devices connected to your workstation, including the system unit itself, are displayed on the SCSI line of the system configuration display. In Figure 8-1, the default SCSI ID number for the RX26 device is 5 (see Table 8-1).

If a SCSI device installed on your system is not listed on the SCSI line of the SHOW CONFIG display, the device may not be connected properly, or there may be a problem with that device.

8.4 Changing SCSI ID Numbers

Depending on the SCSI device, a SCSI ID number can be set using three different methods:

- Switches

- Jumpers (removable electrical connectors)

- Dials

Since the way to set SCSI ID numbers varies with the device, do not try to change a SCSI ID number without first knowing which method to use. For instance, the RZ23L and the RZ24L internal disk drive SCSI ID number is set by adding and removing tiny jumpers on the SCSI switches, while the SZ03 Storage Expansion Box has a small numeric dial that you simply turn to the correct ID number.

See Chapter 11 for instructions about changing the SCSI ID of an RZ23L and RZ24L disk drive.

To set SCSI switches or jumpers for storage devices installed in the BA46 Storage Expansion Box, see the *BA46 Storage Expansion Box Owner's Guide*. To set the SCSI ID number of the SZ03 Storage Expansion Box, see the *SZ03 Storage Expansion Box Owner's Card*.

Keep the following things in mind when changing a SCSI ID number:

- You can connect up to seven devices on one bus.

- For most applications, you can use any available ID number on the SCSI bus when you set SCSI ID switches for a particular device. Remember that each device must have a unique identification number (SCSI ID).

- The length of the Digital SCSI bus cannot be more than 4 meters (13 ft).

- You are responsible for the SCSI ID settings on your system.

_____ **Note** _____

Proper operation of the SCSI bus requires that you use high-quality cables and connectors to connect all devices. Digital recommends that you use Digital-supplied cables intended for interconnecting SCSI devices. This ensures that the impedance characteristics, signal propagation velocity, inductance, capacitance, cross-talk, grounding, conductor pairing, and shielding meet the requirements for proper operation of the bus.

Digital also recommends that you power all units on the SCSI bus from a common AC power source. Digital does not guarantee the proper operation of any SCSI bus that uses cable not supplied by Digital, or that is not configured in accordance with Digital's recommendations.

8.5 Connecting External SCSI Devices

To connect an external SCSI device to your VAXstation 4000 VLC system, complete the following steps:

1. Follow the procedure described in Section 3.3 to shut down your operating system and software, and turn off (O) the system.

2. Make sure the power is off (O) on the SCSI device you are connecting.

3. Remove the SCSI terminator from the SCSI port. The terminator is installed on your system when it is shipped.

4. Connect the SCSI cable of the device to the SCSI port on the rear of the system unit. See Figure 1–3 to see where the SCSI port is located.

5. Turn on (I) your equipment, as described in Chapter 3, making sure that you turn on the monitor and any peripheral devices *before* turning on the system unit.

6. Use the SHOW CONFIG display, as Section 8.3 describes, to see if the connection was successful.

7. Follow the instructions in the documentation accompanying the SCSI device on how to use the equipment.

9

Preparing the System for Internal Options

This chapter describes what to do before installing an internal option. If you are installing an RZ23L or RZ24L disk drive, you should also read Chapter 8. This chapter describes the following topics:

- Stopping applications and shutting down the operating system, Section 9.2

- Recording your current system configuration, Section 9.3

- Turning off your equipment, Section 9.4

- Opening the system unit, Section 9.5

- Locating the option position inside the system unit, Section 9.6

9.1 Adding Internal Options

You can choose one of two ways to add options inside your system unit. You can either add the options yourself, or you can have a Digital service representative add them for you. If you choose to add the options yourself, note the following:

- Additions typically take about 15 to 30 minutes per option.

- The instructions in this guide assume that you are familiar with the VAXstation 4000 VLC system and the following test displays:

  - System power-up messages

  - Configuration display resulting from the SHOW CONFIG console command

- Adding a device or board improperly can cause damage and failure of that device or board. The VLC workstation warranty may not cover such a failure.

9.2 Software Preparation

Before turning off your system, you must stop the applications you are currently running, and place your workstation in console mode as follows:

1. If you have files stored on an internal fixed disk drive, back them up following the instructions in your software documentation.

2. Shut down all software following the instructions in your software documentation.

3. If you are a member of a cluster, see your system manager for shutdown procedures.

4. When your system and application software is no longer running, put your system into console mode by pressing the halt button on the side of the system as shown in Figure 9–1.

Figure 9–1 Halt Button
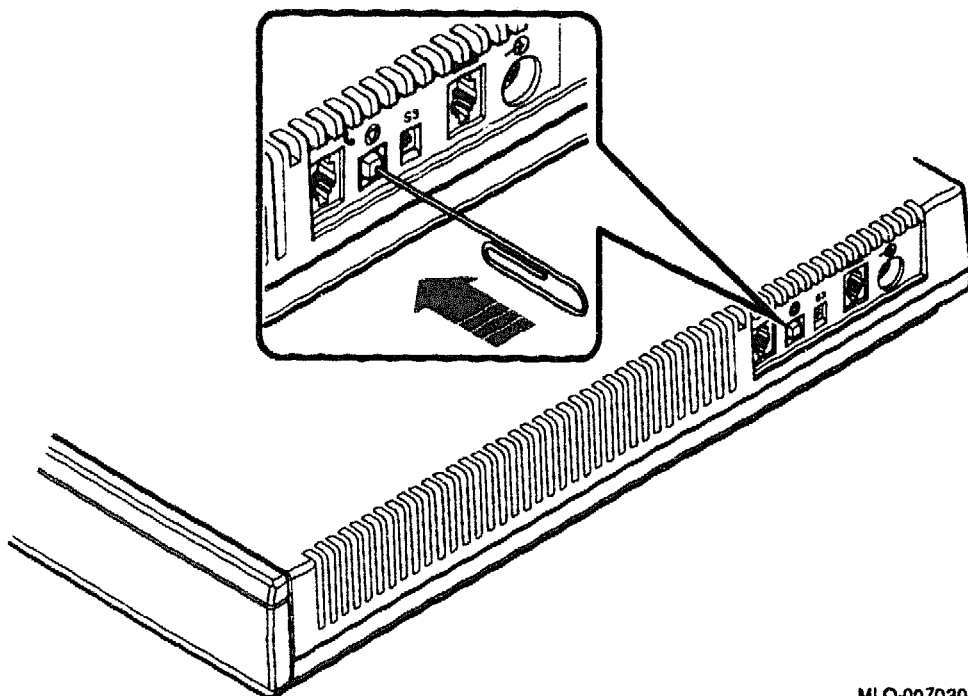
MLO-007030

9.3 Recording the Current System Configuration

Before adding an option to your VLC workstation, use the SHOW CONFIG command to see which devices are currently installed on your system. Make a note of your current system status and configuration. After adding an option, you can compare the new system configuration with the previous one to help verify that all additions to your system are present and functioning correctly.

1. To show the devices currently installed in your system and their status, enter the following command:

   >>> SHOW CONFIG [Return]

   Information similar to that shown in Figure 9–2 is displayed.

Figure 9–2 Configuration Display

```
>>> SHOW CONFIG
KA48-A v1.3-343-V4.0
08-00-2B-1D-28-6C
8MB

DEVNBR   DEVNAM     INFO
------   ------     ------------------------------------------
  1      NVR        OK
  2      LCG        OK
                      LR - 8 PLN FB - 5.2
  3      DZ         OK
  4      CACHE      OK
  5      MEM        OK
                      8MB = S0/1=0MB,  S2/3=0MB,  S4/5=0MB
  6      FPU        OK
  7      IT         OK
  8      SYS        OK
  9      NI         OK
 10      SCSI       OK
                      5-RX26    6-INITR
 11      AUD        OK
>>>
```

Memory Size — 8MB

SCSI ID Numbers
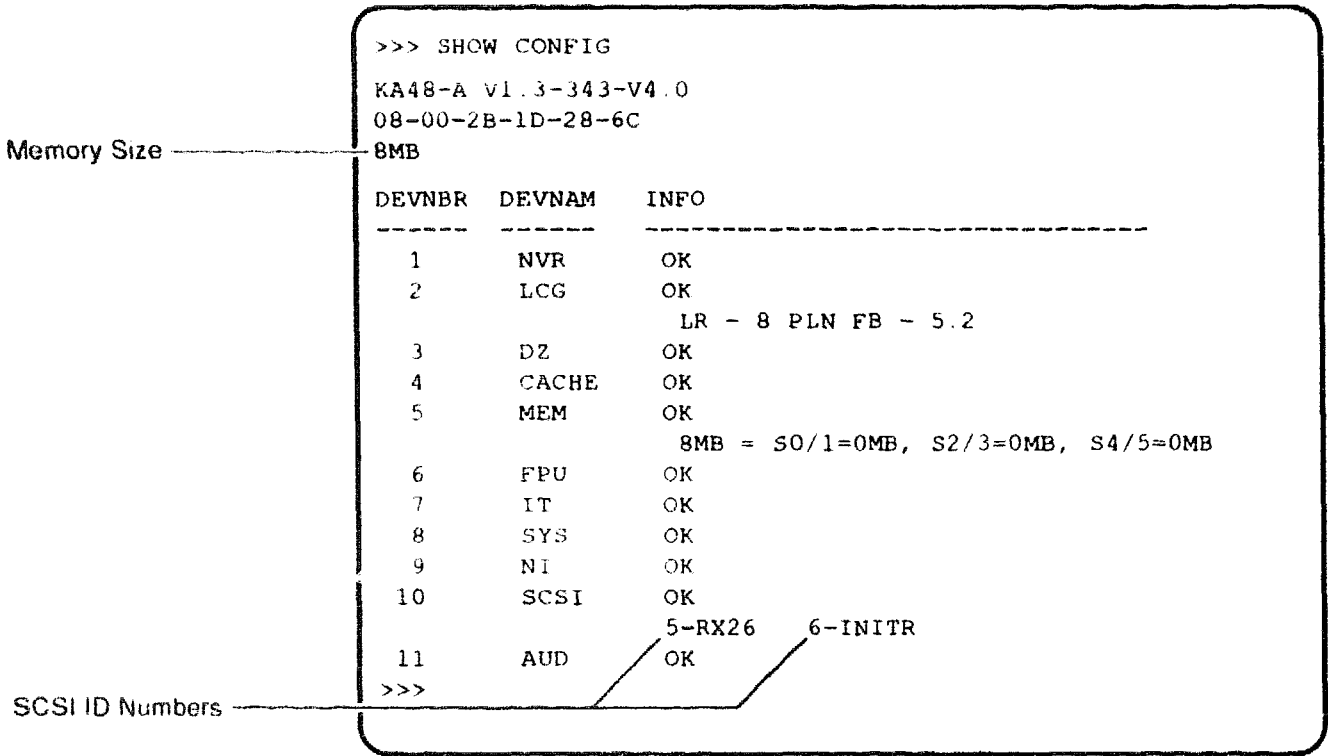
MLO-009248

You should see the message OK next to each device name. Two question marks next to a device name indicates an error. If you see an error indicator next to any device name, see Chapter 20.

2. Make a note of the total memory shown in line 3 of the SHOW CONFIG display _ _ _ _ MB.

3. Make a note of the SCSI devices on your system next to their ID numbers in Table 9–1:

Table 9–1   Your SCSI Device Information

SCSI ID Number	Device
SCSI ID 0	_ _ _ _ _ _ _ _ _
SCSI ID 1	_ _ _ _ _ _ _ _ _
SCSI ID 2	_ _ _ _ _ _ _ _ _
SCSI ID 3	_ _ _ _ _ _ _ _ _
SCSI ID 4	_ _ _ _ _ _ _ _ _
SCSI ID 5	_ _ _ _ _ _ _ _ _
SCSI ID 6	_ _ _ _ _ _ _ _ _
SCSI ID 7	_ _ _ _ _ _ _ _ _

9.4 Turning Off Your Equipment

Turn off your equipment in the following order:

1. Turn off (O) all expansion boxes.

2. Turn off (O) all peripheral devices such as printers and modems.

3. Turn off (O) the monitor.

4. Turn off (O) the system unit.

9.5 Opening the System Unit

Open the workstation system unit as follows:

1. If the monitor is on top of your VLC workstation, move it aside so that you can open the system unit. Two people are usually needed to lift the monitor.

_____ **Caution** _____

Allow at least 5 minutes from the time the system unit power is turned off until you remove the system unit cover. This gives the power supply capacitors time to discharge safely.

To avoid damage from static discharge, as soon as you remove the cover, and before touching anything inside the system unit, touch the square marked TOUCH HERE on the top of the power supply.

---

2. Disconnect the monitor and the system power cords from the rear of the system unit.

3. Disconnect the mouse and keyboard cables from the side of the system unit.

4. Disconnect the headset cable if one is attached.

5. Press firmly on the cover latches, pushing the latches in and then upwards to open the system unit. The cover latches are on the same side of the system as the on/off switch.

6. Pull the cover up and away, as shown in Figure 9–3, until it releases from the system unit.

Figure 9–3 Removing the System Unit Cover

Latch
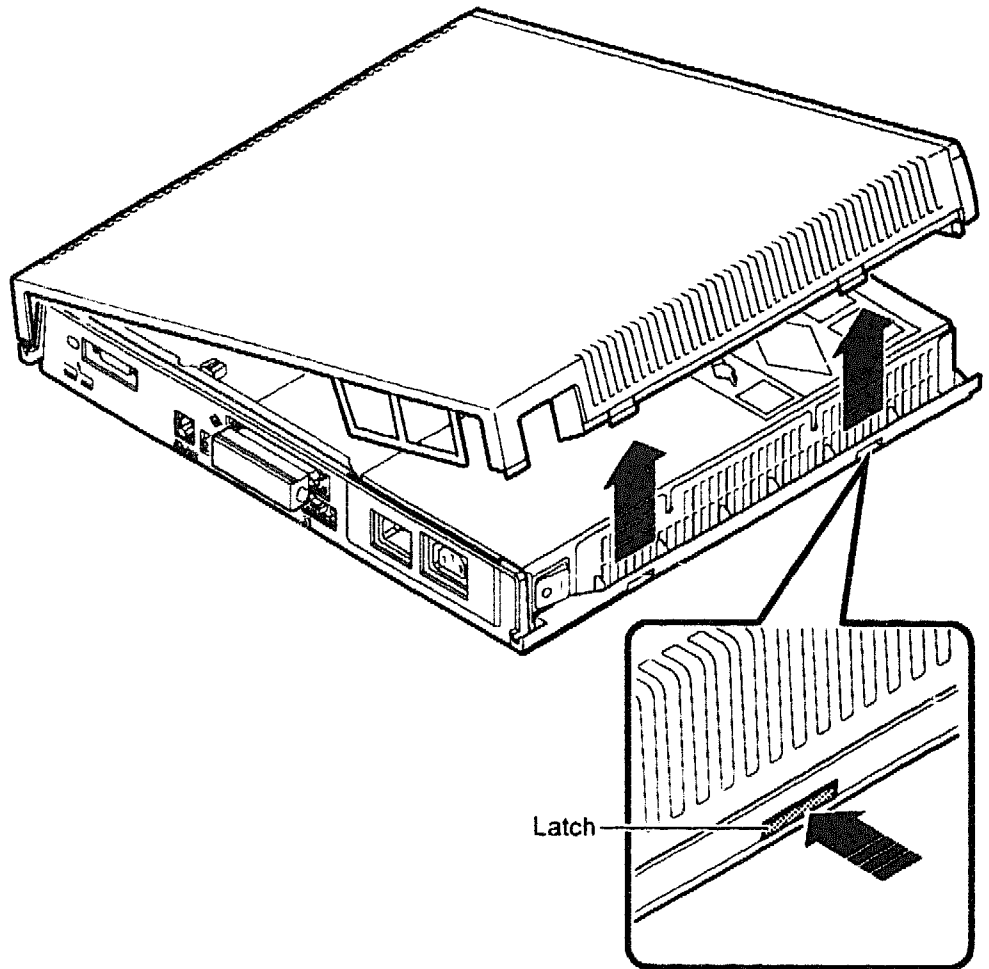
MLO-007033

7. Place the system unit cover aside for later.

9.6 Locating the Option Position

Locate the position for the option you are adding as shown in Figure 9–4.

Figure 9–4 Option Locations

Memory Boards

RZ23L/RZ24L Fixed Disk Drive
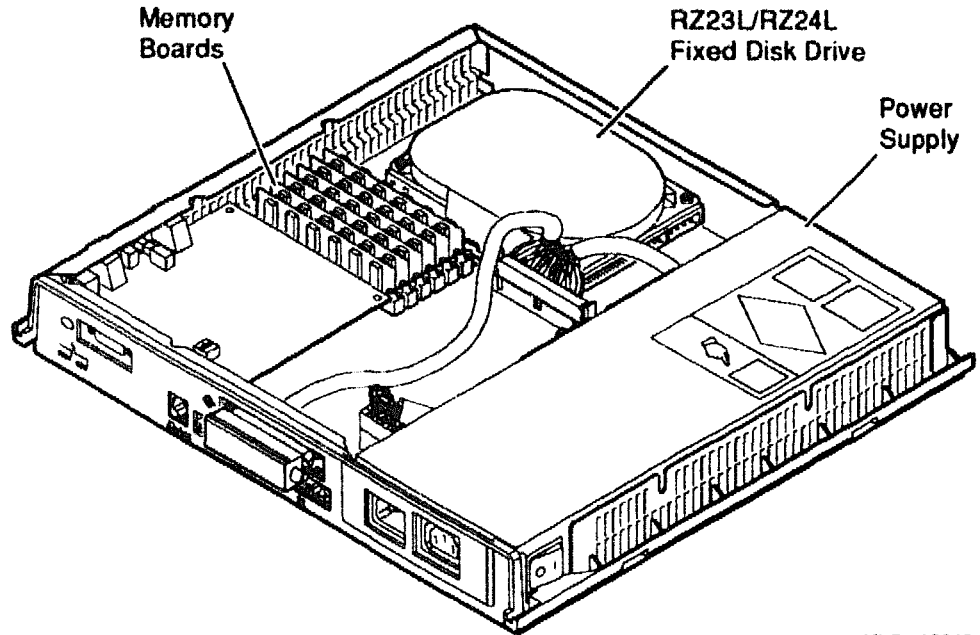
Power Supply

MLO-009249

_____ WARNING _____

Do not open the power supply (shown in Figure 9–4). There are dangerous voltages inside the power supply, and there are no user-serviceable parts.

_____

You are now ready to install internal options in the VLC system unit.

10

Adding Memory Boards

This chapter tells you how to add two or more memory boards to your VLC workstation.

_____ **Important** _____

Before installing additional memory boards in your VAXstation 4000 VLC workstation, make sure that you prepare your system as Chapter 9 explains.

_____

This chapter contains the following topics:

* Adding memory boards, Section 10.1

* Removing memory boards, Section 10.2

10.1 Adding Memory Boards

―――――――――――――――― **Caution** ――――――――――――――――

To avoid damage from static discharge, after removing the cover and before touching anything inside of your system, touch the TOUCH HERE label on the top of the power supply. Figure 10–1 shows the position of the "Touch Here" label.

Digital also recommends that you use an antistatic wrist strap and antistatic mat when adding memory boards inside the system unit.

―――――――――――――――――――――――――――――――――――――――

Figure 10–1 shows the location of memory boards in the system unit.

Figure 10–1 Location of Memory Boards
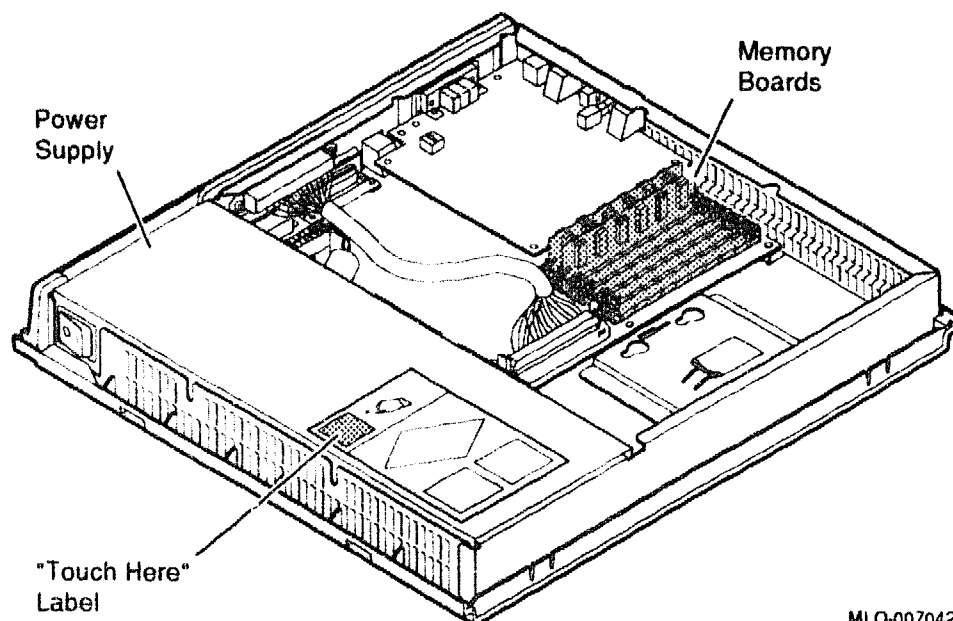
MLO-007042

Memory boards are available in one 4-megabyte size, and *must be added in pairs.* See Figure 10–2.

_____ **Caution** _____

Do not try to use memory boards from other Digital
systems in the VLC workstation. While your workstation
uses industry-standard single-inline memory modules
(SIMM) memory boards, they are not the same as those
used in other Digital workstations.

Figure 10–2 4-MB SIMM Memory Boards
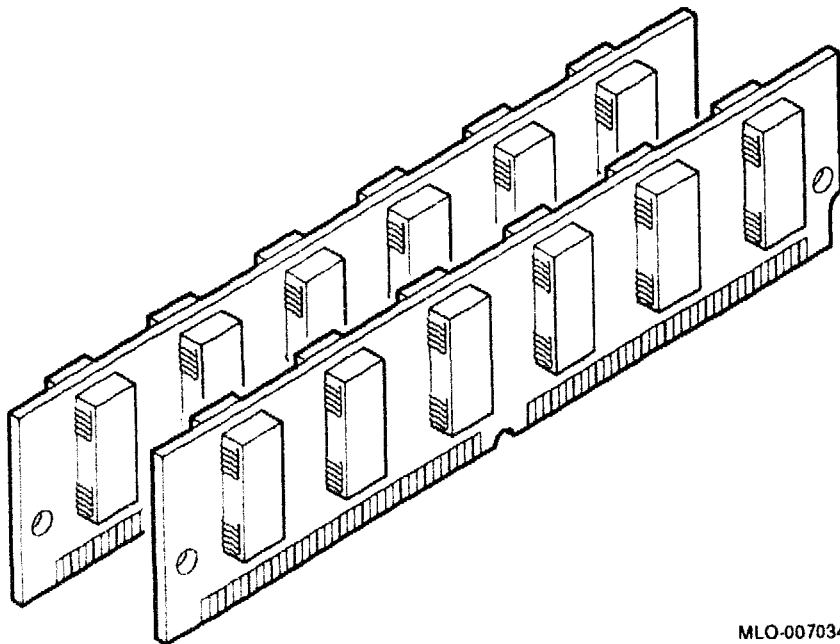
MLO-007034

Your VLC workstation system comes equipped with 8 megabytes
of memory. To increase the memory capacity of your VLC
workstation to 16 or 24 megabytes, use the appropriate
configuration as shown in Table 10–1. There are six slots for
memory boards.

Table 10–1 Memory Configurations

Desired Memory	Boards in System Unit
8 MB	Two 4-MB boards
16 MB	Four 4-MB boards
24 MB	Six 4-MB boards

Take the following steps to add a memory board:

1. If you have not already done so, prepare the system unit by following the steps in Chapter 9.

   _____ **Caution** _____

   Handle memory boards by their edges to avoid damaging and contaminating the board pins and connectors.

   _____

2. To add the memory board, hold it at an angle with the notch end away from the power supply. (Note the orientation of the boards already installed.) Place it in the slot closest to the first two memory boards as shown in Figure 10–3.

3. Push the board down firmly (1), and then upright so that it stands vertically (2). Make sure that the memory board snaps into the metal retainers at each end of the board (3).

Figure 10–3 Adding a Memory Board

1.

2.

3.

Metal Retainer

MLO-007014
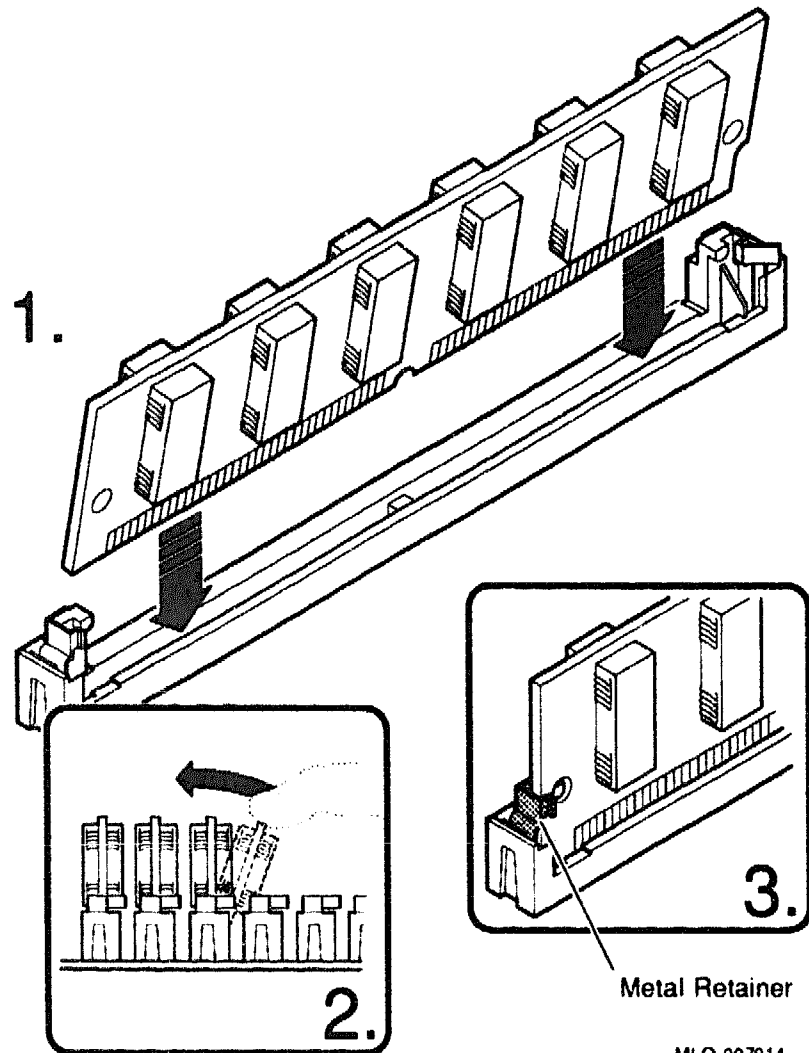
4. Continue adding boards in open slots until your VLC
   workstation contains the desired amount of memory.
   Remember that *memory boards must be added in pairs*.

10.2 Removing Memory Boards

If you need to remove one or more memory boards, release the metal retainers at each end of the board, as shown in Figure 10–4. Start with the board nearest the front of the system unit and work toward the rear of the system unit.

Figure 10–4 Removing a Memory Board
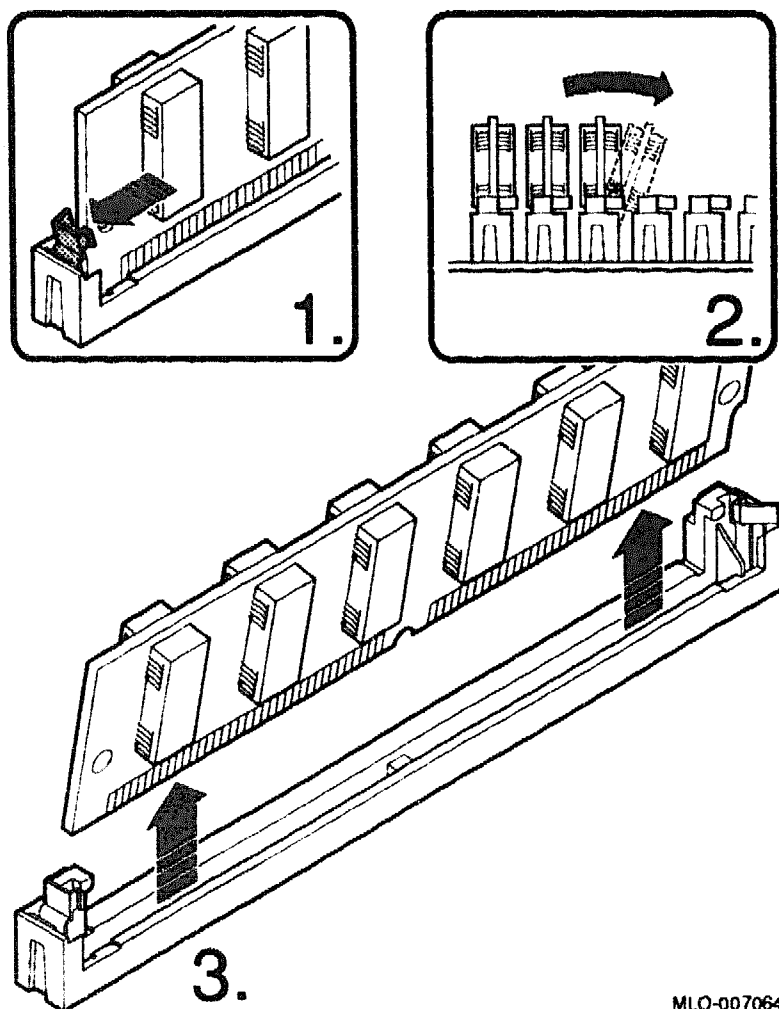
MLO-007064

This completes installation of the memory boards.

- If you are adding an internal fixed disk drive, turn to Chapter 11.

- If you have no further additions to make inside the system unit, refer to Chapter 12 to reconnect and check your system.

11

Adding an Internal Disk Drive

This chapter explains how to install an RZ23L and RZ24L disk drive inside your VAXstation 4000 VLC workstation.

_____ **Important** _____

Before installing your disk drive, make sure that you prepare your system as explained in Chapter 9. You will also need a Phillips screwdriver to install an internal disk drive.

This chapter covers the following topics:

- Overview of RZ23L and an RZ24L drives, Section 11.1

- Changing SCSI IDs on the disk drives, Section 11.2

- Preparing the disk drives, Section 11.3

- Connecting the cables, Section 11.4

- Mounting the disk drives, Section 11.5

11.1 The RZ23L and RZ24L Disk Drives

The RZ23L and RZ24L fixed disk drives provide disk storage for software applications and user files. The disk drives shown in Figure 11–1 have the following storage capacity:

- RZ23L has a 121-megabyte storage capacity

- RZ24L has a 245-megabyte storage capacity

You can store approximately 500 pages of information on one megabyte of a hard disk. For drive specifications, see Table A–5 and Table A–6.

Figure 11-1 RZ23L and RZ24L Fixed Disk Drives

RZ23L Fixed
Disk Drive

RZ24L Fixed
Disk Drive
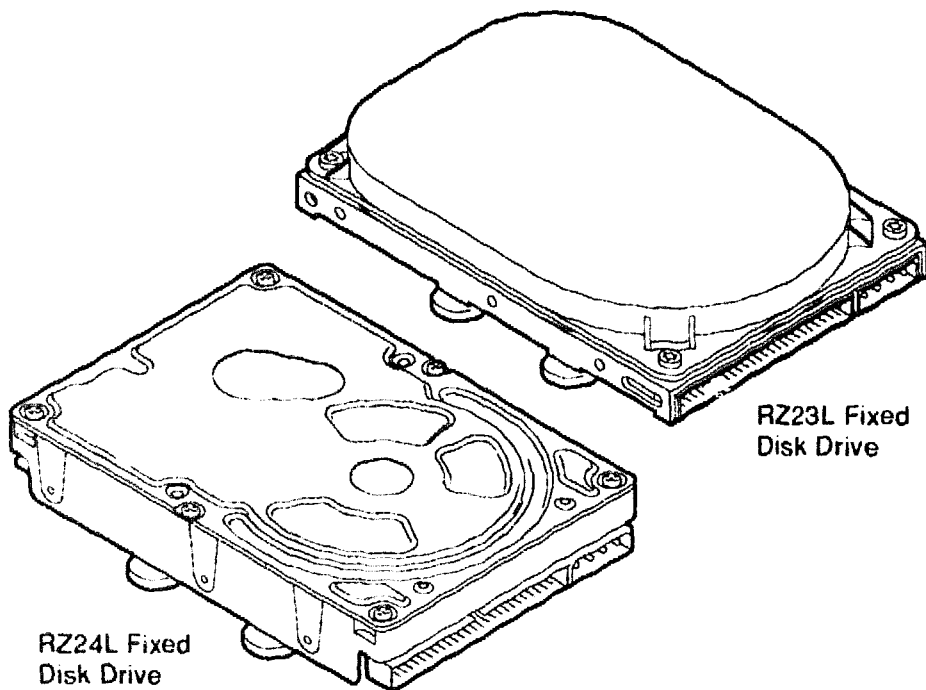
MLO-009250

_____ **Caution** _____

To avoid damage from static discharge, after removing the
cover and before touching anything inside of your system,
touch the TOUCH HERE label on the top of the power
supply. Figure 11-2 shows the position of the "Touch
Here" label.

Digital also recommends that you use an antistatic wrist
strap and antistatic mat when adding disk drives inside
the system unit.

Your disk drive mounts inside the VLC workstation system unit on the metal disk mount, shown in Figure 11-2.

Figure 11-2 Disk Mount Location
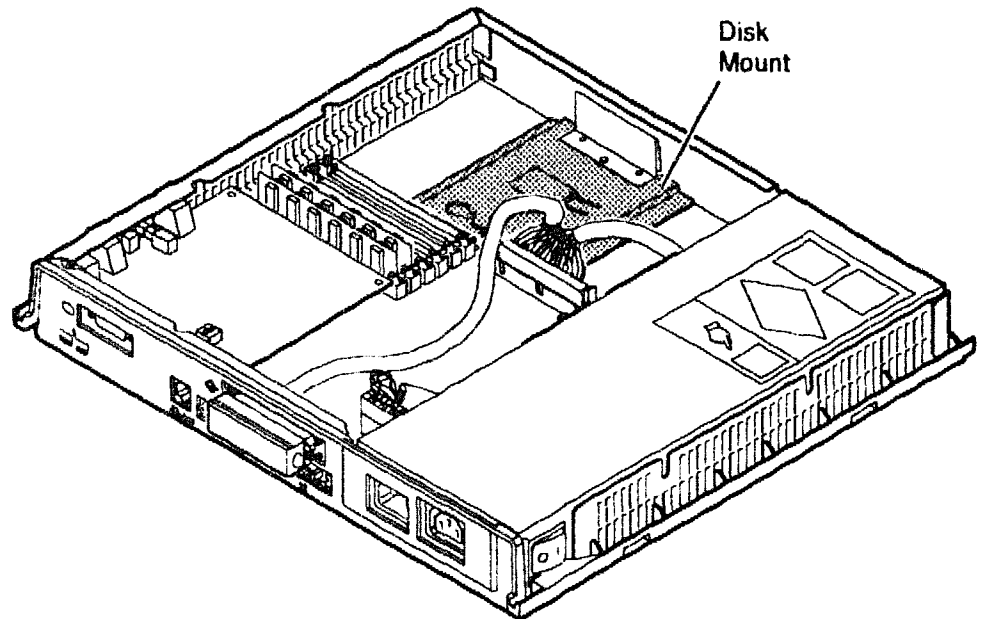
MLO-007043

11.2 Changing SCSI IDs on the Disk Drive

The SCSI ID on the drive you are adding will probably need changing. Since the drive was not factory installed in your workstation, it may have been shipped with all jumpers in place (set for position 7).

Before installing the disk drive in your VAXstation 4000 VLC system, check the SCSI ID number:

1. Check to see which SCSI ID numbers are currently in use on your system, as Section 9.3 describes. If you made a note of your current SCSI ID numbers when you prepared your system, see Table 9-1.

2. For an RZ23L disk drive, locate the SCSI ID jumper positions
   E1, E2, and E3, on the bottom of the drive, as shown
   in Figure 11–3. Jumpers are small removable electrical
   connectors that let you set the SCSI ID number for a device.
   The jumpers shown here are set to a SCSI ID of 3.

Figure 11–3   Location of SCSI ID Jumpers on an RZ23L Disk Drive
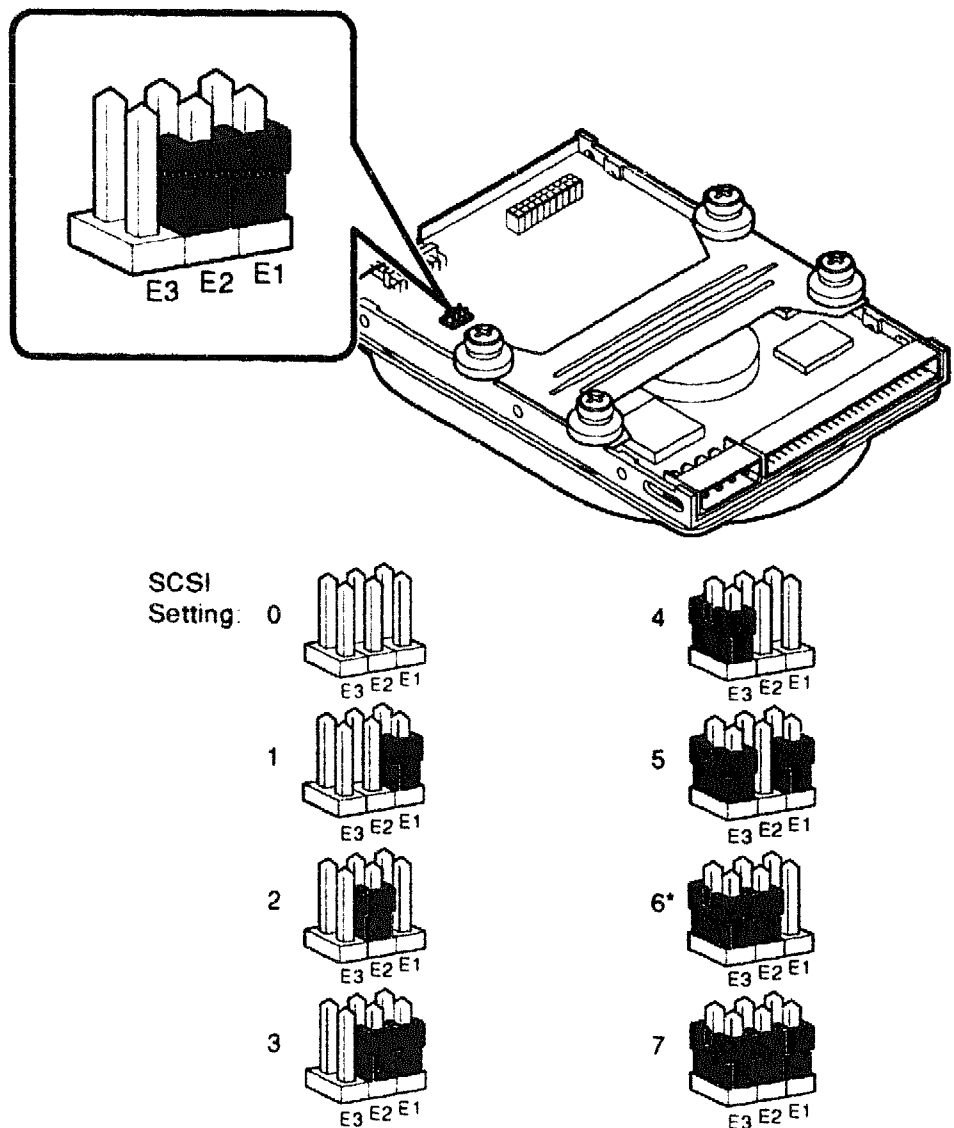
*Reserved for host   MLO-009251

3. For an RZ24L disk drive, locate the SCSI ID jumper positions
    A0, A1, and A2, on the bottom of the disk drive, as shown
    in Figure 11–4. Jumpers are small removable electrical
    connectors that let you set the SCSI ID number for a device.
    The jumpers shown here are set to a SCSI ID of 3.

Figure 11–4   Location of SCSI ID Jumpers on RZ24L Disk Drive

*Reserved for host

MLO-009400

4. Make sure that the jumpers are set to a SCSI ID number that
    is not currently in use on your system.

Table 11-1 lists the jumper positions for the SCSI ID numbers recommended for specific devices. For instance, if you have no other disk drives connected to your system in an expansion box, such as an SZ03 Storage Expansion Box, you can se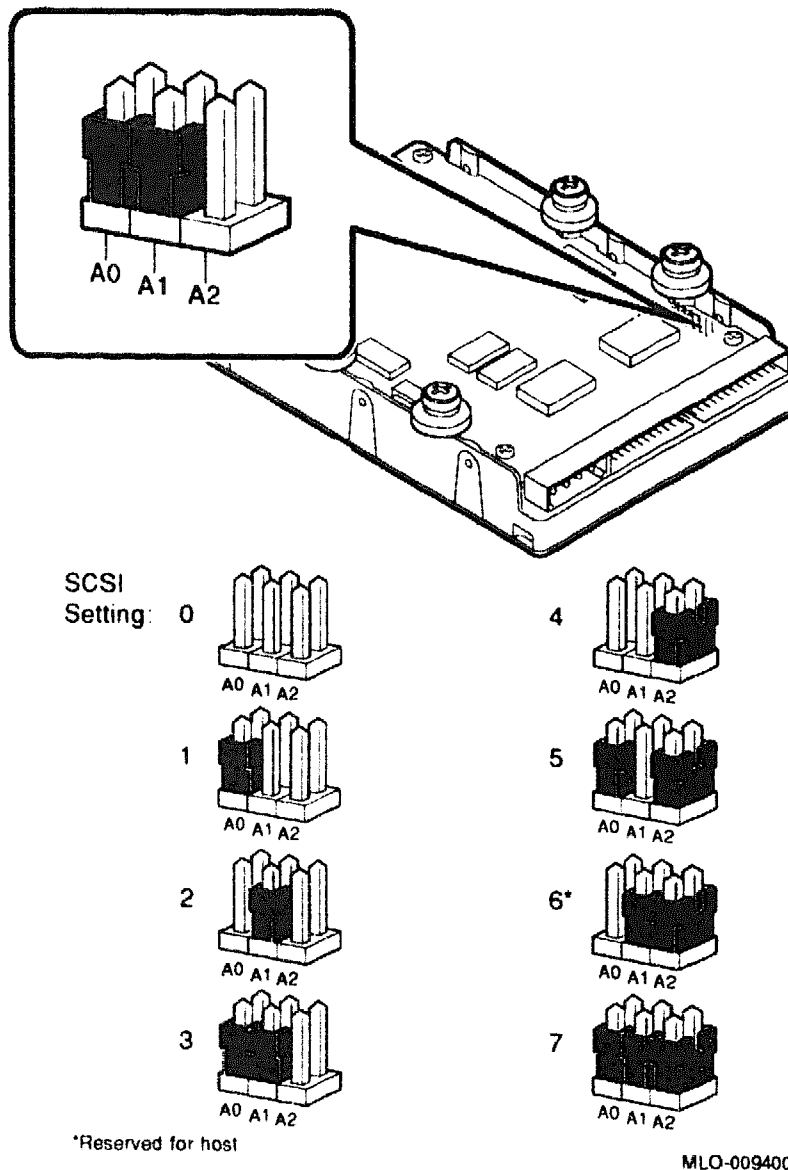t the SCSI ID of the disk drive to 3 (or any other available number). For more information about SCSI ID numbers, see Chapter 8.

To change the SCSI ID of your disk drive, choose a new ID from Table 11-1, and carefully remove or replace the jumpers accordingly.

Table 11-1 Recommended SCSI Jumper Settings

Recommended Device for this Setting	SCSI ID
RZ23L or RZ24L[1]	0
SZ03 Storage Expansion Box (with an RZ-series drive)	1
RZ23L or RZ24L	2
Factory-installed RZ23L or RZ24L	3
RRD42	4
SZ03 Storage Expansion Box (with an RX26 drive)	5
SCSI controller	6
(High-priority device)	7

[1]The RZ23L and RZ24L are the only disk drives that you can install inside of the system unit. If you have an expansion box such as the BA46 Storage Expansion Box or the SZ03 Storage Expansion Box, it may contain other RZ-series disk drives or even a TLZ06 tape drive.

_____ **Note** _____

Save any SCSI jumpers you remove. You may need them later.

Caution _____

Each device connected to your system must have its own
SCSI ID number. Never set two or more devices to the
same SCSI ID. Your system will be unable to communicate
with the devices.

_____

11.3 Preparing the Disk Drive

The drive mounting area in the system unit is marked with a
symbol indicating how to orient the drive. You need a Phillips
screwdriver to prepare the disk drive.

A small metal clip is attached to the drive mount.

1. Release the metal clip from the drive mount by pulling out the
   plastic rivet with your fingers, as shown in Figure 11–5.

Figure 11–5 Removing the Metal Clip from the System Unit
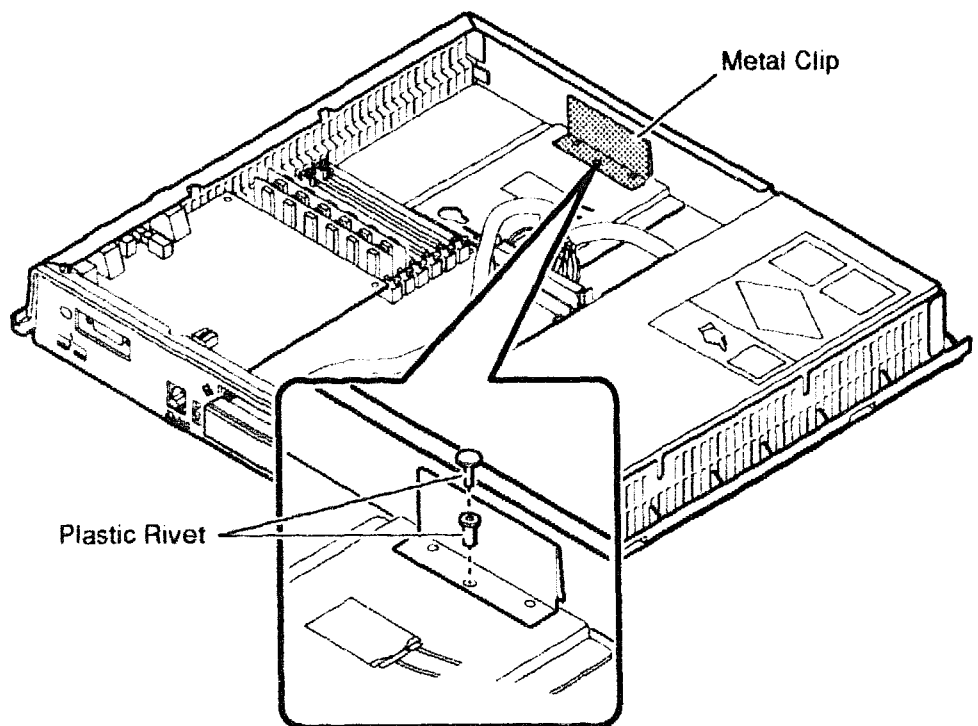
MLO-007044

2. Put the plastic rivet in a safe place in case you need it later.

3. With a Phillips screwdriver, remove two screw mounts from the bottom of the disk drive on the side shown in Figure 11–6.

4. Place the metal clip into position over the two screw mount holes as shown.

5. Replace the screw mounts to secure the metal clip in place on the disk drive as shown in Figure 11–6.

Figure 11–6 Attaching the Metal Clip to the Disk Drive
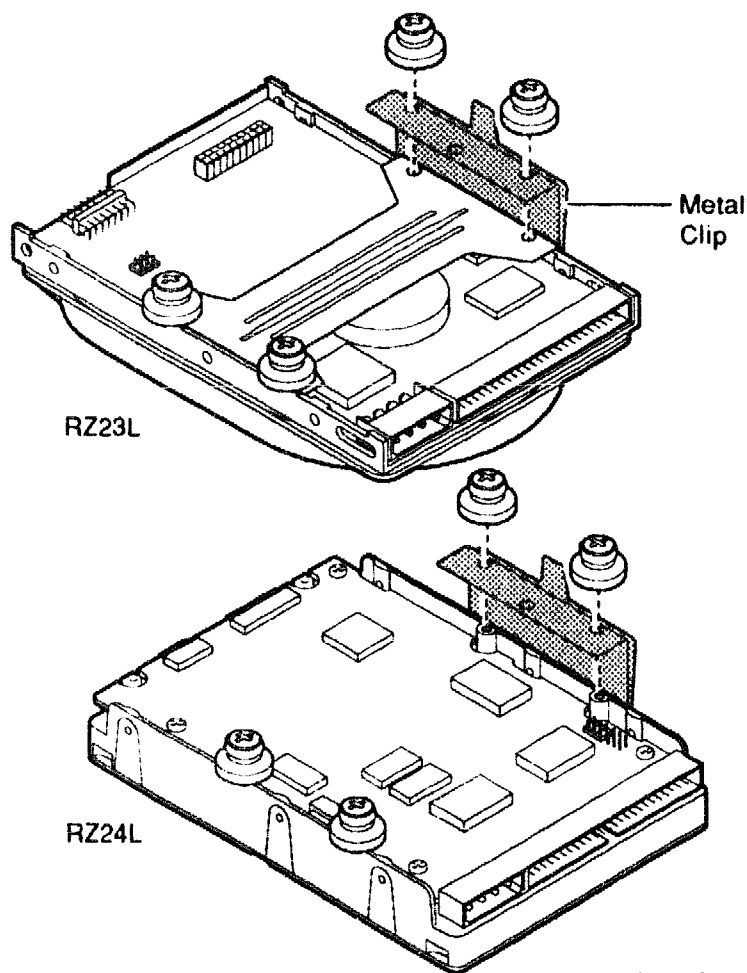
11.4 Connecting the Cables

Find the SCSI and power cables that are attached to the central processing unit (CPU) board and connect them to the disk drive as follows:

1. Connect the SCSI cable connector to the disk drive, as shown in Figure 11–7 and Figure 11–8.

2. Connect the power cable connector to the disk drive as shown in Figure 11–7 and Figure 11–8. The power cable connector can only be inserted with the raised area up.

Figure 11–7 Connecting the SCSI and Power Cables to an RZ23L Disk Drive

MLO-007018
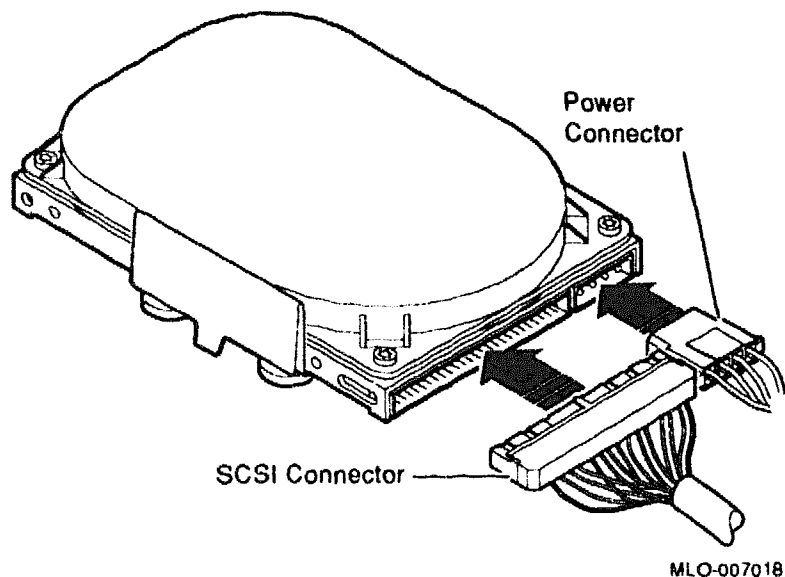
Figure 11–8 Connecting the SCSI and Power Cables to an RZ24L Disk Drive

Power Connector

SCSI Connector

MLO-009253
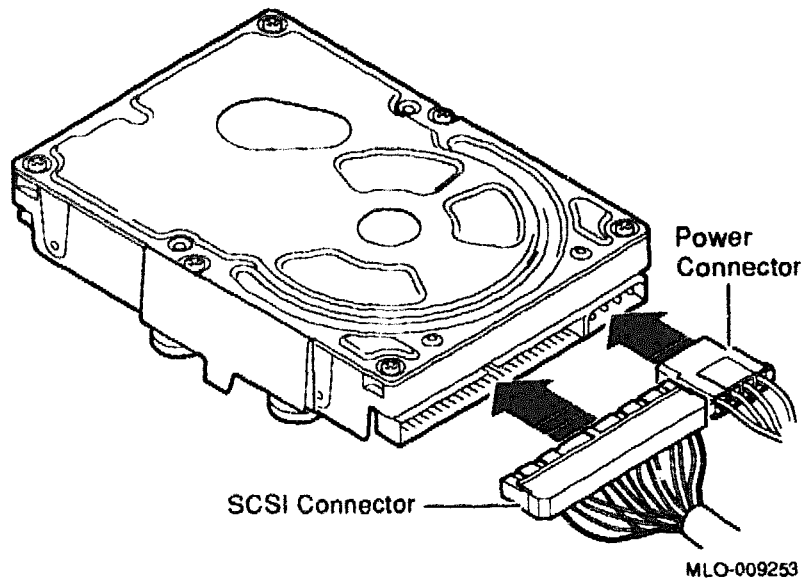
11.5 Mounting the Disk Drive into the System Unit

To mount the disk drive into the system unit, follow these steps:

1. Place the screw mounts on the bottom of the disk drive into the keyhole openings on the drive mount.

2. Align the extension of the metal clip on the disk drive with the slit in the drive mount. This part of the metal clip is flexible so that you can push it into the slit with your finger.

3. Pressing down firmly, slide the drive towards the power supply until the screw mounts are securely in place. The metal clip will snap into position. See Figure 11–9.

4. Be sure to route the SCSI cable away from the power supply.

Figure 11-9 Mounting the Disk Drive

Clip Extension

Slit
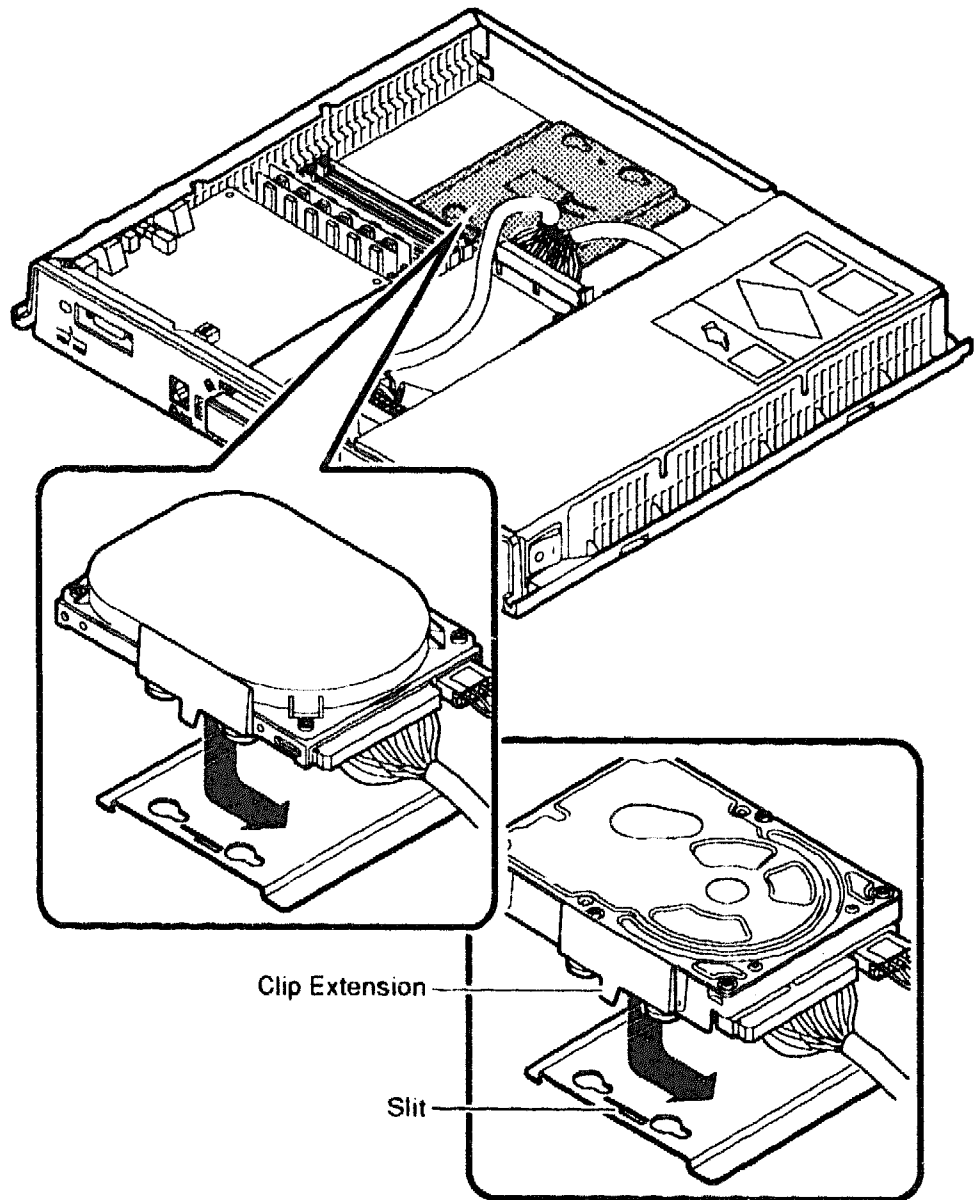
MLO-009254

This completes installation of the RZ23L and RZ24L internal fixed disk drives.

If you have no further additions to make inside the system unit, refer to Chapter 12 to reconnect and check your system.

12

Reconnecting the System

This chapter describes how to reconnect and check your system after you have finished installing internal options. This chapter covers the following topics:

- Closing the system unit, Section 12.1

- Reconnecting your system, Section 12.3

- Restarting your system, Section 12.3

- Testing the system, Section 12.4

12.1 Closing the System Unit

Before replacing the system unit cover, check that all SCSI and power cables are connected properly and securely.

_____ **Caution** _____

Failure to replace the system unit cover before turning on your workstation may result in the components overheating.

_____

Leave your monitor away from the system until you ensure that the internal options are installed correctly.

To close the system unit:

1. Align the three tabs on the cover with the slots on the side of the system as shown in Figure 12–1.

2. Lower the cover carefully. Make sure that the plastic extension tab on the back of the cover goes inside the system unit. The extension tab lines up with the monitor and system power ports on the rear of the system unit.

3. Press down firmly on the system cover until you hear the top click shut.

Figure 12–1   Replacing the System Unit Cover

Slot

Tab

Tabs

Extension
Tab
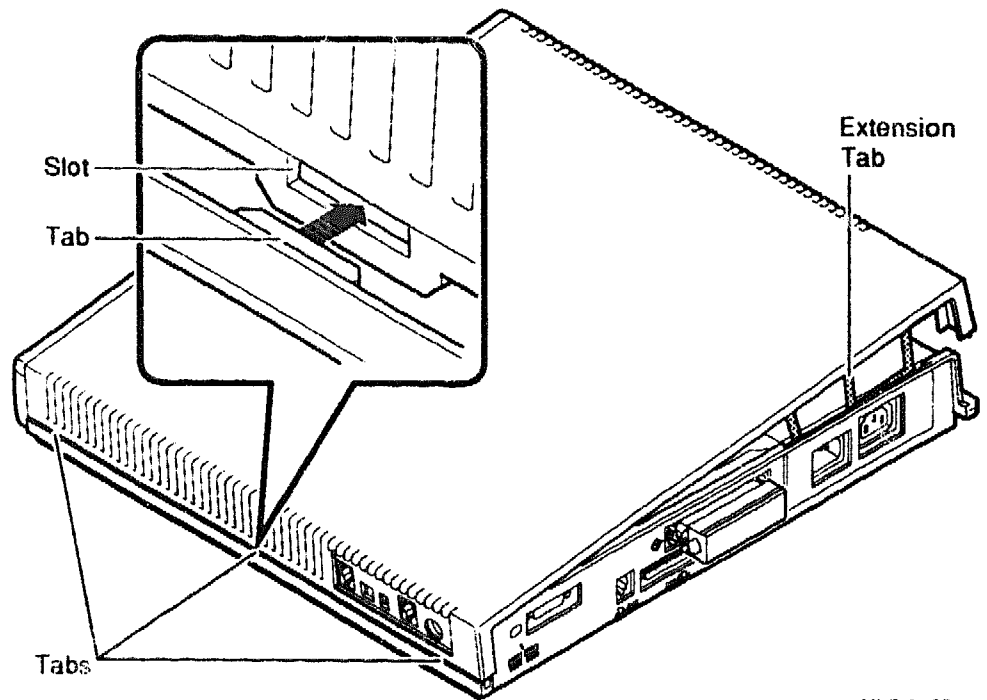
MLO-009255

12.2 Reconnecting Your VLC Workstation

Once the system unit cover is replaced, you can reconnect the cables that were disconnected when you began to install internal options.

1. Connect the system and monitor power cords to the rear of the system unit as shown in Figure 12–2.

Figure 12–2   Reconnecting the System and Monitor Power Cords

System Power Cord

Monitor Power Cord
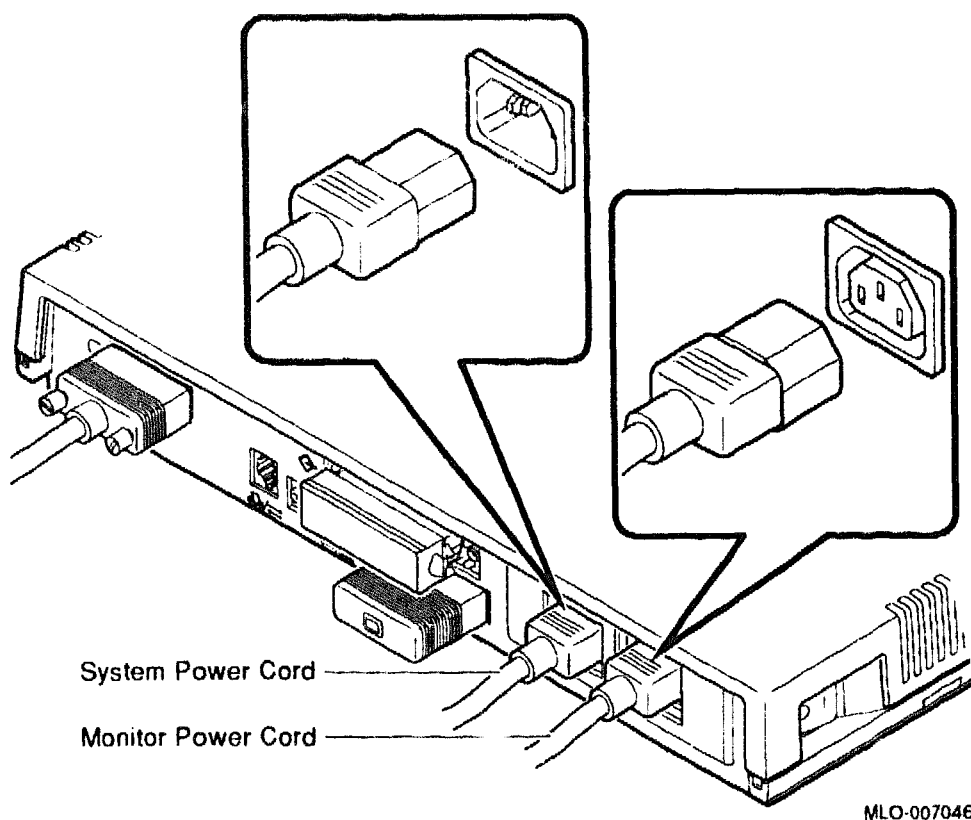
MLO-007046

2. Connect the mouse and keyboard cables to the side of the system unit as shown in Figure 12–3.

3. Connect any other cables you may have disconnected earlier. See Chapter 2 for more information.

Figure 12-3 Reconnecting the Mouse and Keyboard Cables
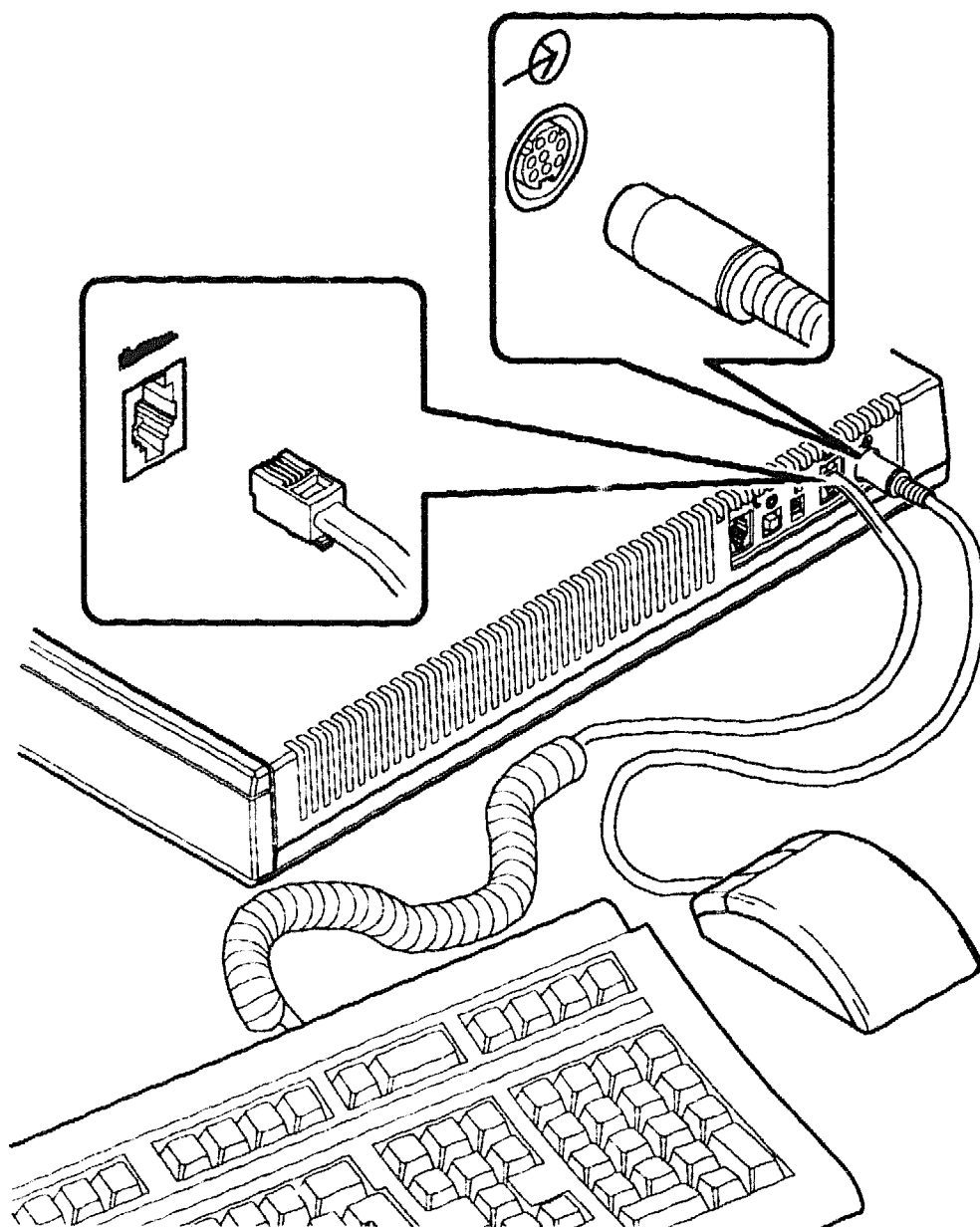
MLO-007022

4. Plug the VLC power cord into a grounded outlet.

12.3 Restarting the System

To start your system, turn your equipment on (I) in the following order:

1. Expansion boxes

2. Printer and modem

3. Monitor

4. System unit

—————————————— **Note** ——————————————

Your system will not give a console prompt when you first turn it on. Press the halt button to get the console prompt (>>>).

_____

12.4 Testing the System After Adding a Device

To confirm that the devices are connected correctly, do the following:

1. Note any power-up error or status messages and write these down.

   Refer to Appendix D for an explanation of common error messages.

2. Display the system device configuration by using the SHOW CONFIG command as explained in Chapter 9.

   Compare the new configuration display with the one you saw when you prepared the system before adding a device. You should see the new device and all the devices present in the system before you made the addition.

   If the new device is not in the list, it has not been installed properly.

3. If any error message is displayed for a SCSI device, check the following:

- Make sure that all external cables are properly connected.

- Open the system unit as Chapter 9 describes.

- Check to make sure that all cables inside the system unit are properly connected.

- Make sure that all boards are fully seated in their connectors.

- Check all SCSI ID settings. Be sure that no two devices have the same SCSI ID.

4. Make sure that all external cables are reconnected properly.

5. If you continue to have problems, refer to the troubleshooting table in Chapter 21 or contact your Digital service representative.

13

Connecting Printers and Modems

This chapter describes how to connect and use the printer and modem options with your VAXstation 4000 VLC workstation.

13.1 Printers

The printers available for the VLC workstation system are shown in Table 13–1.

Table 13–1   Printers

Printer	Description
LN03	Desktop nonimpact laser printer that produces letter-quality text at a rate of 8 pages per minute.
LN03 PLUS	Enhanced LN03. This printer prints documents with both text and graphics.
LN03R ScriptPrinter	Nonimpact page printer that uses laser recording technology to produce high-quality PostScript output, text, graphics, and images.
LA75 Companion Printer	Desktop dot-matrix printer that produces sixel graphics.
LA210 Printer	Desktop dot-matrix printer that produces high-speed drafts, near letter-quality drafts, and bitmap graphics.
LJ250/252 Companion/ Color Printer	Desktop dot-matrix color printer, serial (LJ250) or parallel (LJ252).

The VAXstation 4000 VLC system also supports serial third-party plotters and printers.

When you order a printer, you also need to order the following parts:

- A DEC 423 (DECconnect) serial line cable.

- The appropriate adapter to connect the printer to the cable. Consult your Digital sales representative to determine which adapter you need for your printer.

13.1.1 Connecting a Printer

To attach your printer:

1. Consult the documentation that came with the printer, and:

   - Unpack and set up the printer.

   - Set the baud rate on the printer.

2. Make sure that the printer and all equipment, including expansion boxes and the VLC workstation system unit, are turned off (O). See Chapter 3 for instructions.

   See your software documentation for shutdown procedures before turning your system off. If you are a member of a cluster, see your system manager for shutdown procedures.

3. Attach one end of the printer cable to the back of the printer. (Consult the printer documentation for instructions.)
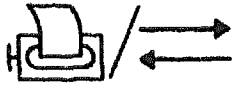
4. Attach the other end of the printer cable to one end of the serial line cable.

5. Attach the free end of the serial line cable to the printer port on the back of the system unit, as shown in Figure 13–1.

6. See your system manager about configuring your printer correctly on your workstation.

Figure 13–1 Connecting a Printer Cable to the System Unit
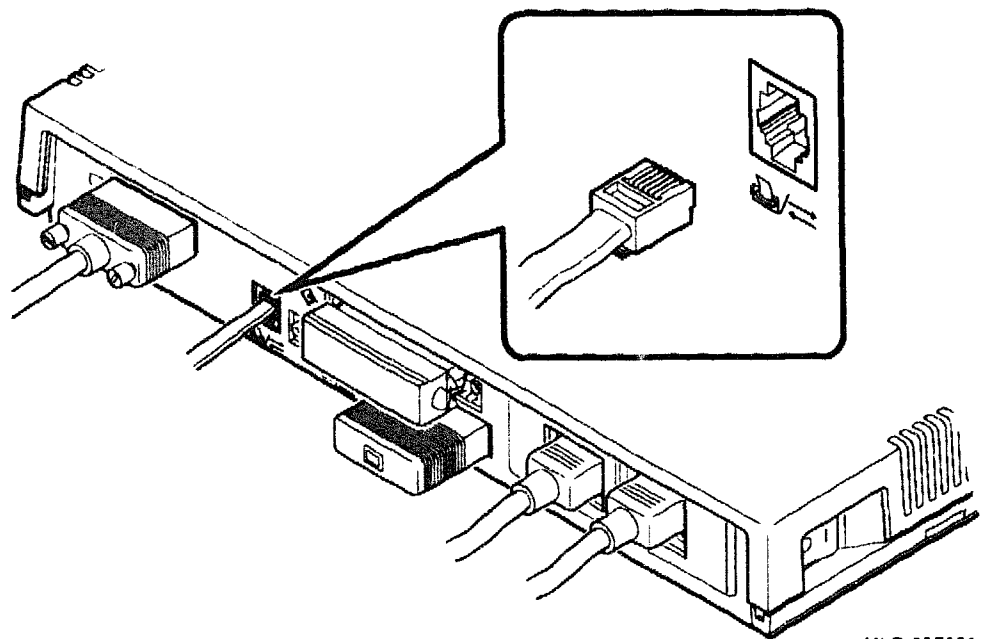
MLO-007060

13.2 Modems

A modem is a device that converts computer signals to signals that can be sent over a telephone line. Typically, you will use a modem for communications in large networks, such as wide area networks (WANs).

The communications/printer (TTA2) port on the back of the VAXstation 4000 VLC system unit has full modem control, including autoanswer, and supports several transfer rates, the maximum being 19.2 kilobytes per second.

Refer to your modem documentation for instructions on setting the modem baud rate.

When you order a modem, you also need to order the following parts:

- A DEC 423 (DECconnect) serial line cable.

- A 25-pin D-sub adapter/DECconnect passive adapter.

13.2.1 Connecting a Modem

To connect your modem:

1. Make sure that the modem is off (O).

2. Turn off (O) other equipment, including expansion boxes and printers, as described in Chapter 3.

   See your software documentation for shutdown procedures before turning your system off. If you are a member of a cluster, see your system manager for shutdown procedures.

3. Follow the setup directions that came with your modem.

4. Consult your modem documentation to clear the Force DSR attribute on your modem. (With this attribute cleared, your system will recognize the loss of the modem connection, should it occur.)

5. Attach the 25-pin D-sub adapter/DECconnect passive adapter to the back of the modem.

6. Attach one end of the DEC 423 serial line cable to the 25-pin D-sub/DECconnect adapter.
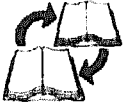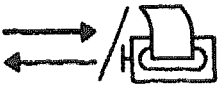
7. Attach the free end of the serial line cable to the 25-pin communications/printer port (TTA2) on the back of the system unit, as shown in Figure 13–2. Tighten the thumbscrews on either side of the connector.

8. Refer to your modem documentation for proper settings and operation of the modem.

9. Restart your system as Chapter 12 explains.

Figure 13–2   Connecting a Modem Cable to the System Unit
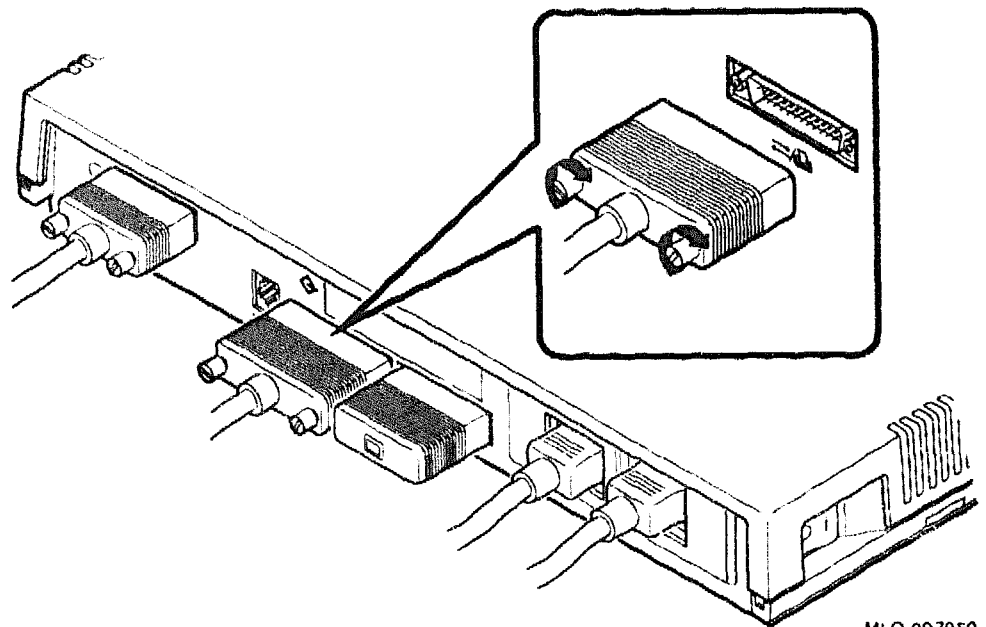
MLO-007059

Part III

Advanced Operations

The ch pters in this part of the manual describe how to perform some advanced operations on your VAXstation 4000 VLC system, including how to perform tests and troubleshoot problems. The chapters cover the following subjects:

• Halting the system, Chapter 14

• Using console commands, Chapter 15

• Changing the startup procedures, Chapter 16

• Using the password security feature, Chapter 17

• Using the alternate console, Chapter 18

• Dealing with power-up errors, Chapter 19

• Testing the system, Chapter 20

• Handling problems, Chapter 21

If your system manager normally handles these kinds of operations, you may not need to read Part III.

14

Halting the System

Before you perform any of the advanced operations, you must halt
your workstation so that it displays the console prompt (>>>).

—————————— **Note** ——————————

Before halting or turning off your system, see the
operating system documentation for shutdown procedures.
If your system is connected to a network, see your network
or system manager for instructions.

1. Press the Halt button on the side of your system, as shown in Figure 14–1.

Figure 14–1 Pressing the Halt Button
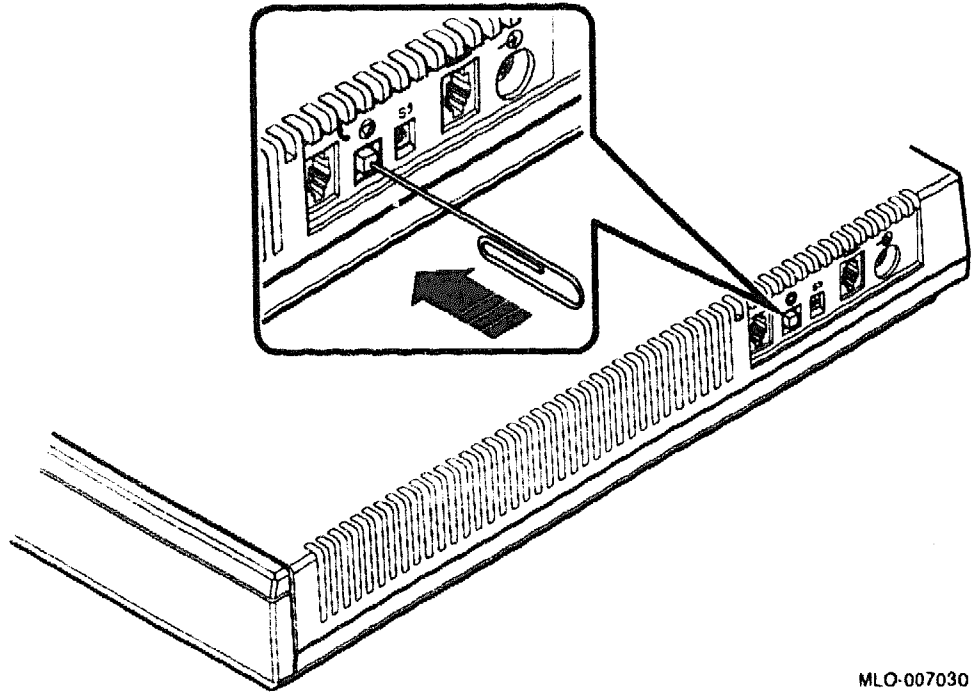
MLO-007030

2. Follow the instructions in the next chapters about performing advanced operations.

15

Using Console Commands

The commands that you enter at the console prompt (>>>) let you display information about your system, as well as set parameters.

This chapter describes the following:

* Console commands, Section 15.1

* SHOW commands, Section 15.2

* SET commands, Section 15.3

_____ **Caution** _____ _____

Do not use console commands without understanding the effect they can have on your VAXstation 4000 VI C workstation. If you are not sure about a console command, ask your system manager for help.
_____

15.1 Console Commands

To use console commands, halt your system as Chapter 14 describes.

To see a list of console commands, enter HELP at the console prompt and press ⌐Return⌐ as follows:

```
>>> HELP  ⌐Return⌐
```

The following sections describe the SHOW and SET console commands. The TEST console commands are described in Chapter 20 along with the tests or utility programs they execute.

15.2 SHOW Commands

The SHOW commands are for informational purposes only. They display your current system parameter settings and other information about your system. Table 15-1 lists the SHOW commands you can enter and describes the information each provides.

Table 15–1 SHOW Commands

Command	Information Displayed
HELP	All commands
SHOW BFLG	Default boot flag (see Section 16.2)
SHOW BOOT	Default boot device (see Section 16.4)
SHOW CONFIG	Configuration display (see Section 20.2) and hardware Ethernet address
SHOW DEVICE	Boot devices available (see Section 16.2)
SHOW DIAGENV	Default diagnostic environment
SHOW ETHER	Hardware Ethernet address
SHOW ERROR	Extended error information
SHOW FBOOT	Default startup tests to perform
SHOW HALT	Default action after your system halts (see Section 16.3)
SHOW KBD	Keyboard language selected (see Section 16.1)
SHOW MEM	Memory installed in your system
SHOW MOP	For remote diagnostic purposes, indicates whether the NI listener is on (1) or off (0)
SHOW PSE	Indicates whether the password security feature is on (00000001), or off (00000000)
SHOW SCSI	SCSI bus host ID number

15.3 SET Commands

The SET commands let you change the current system parameters. Table 15–2 provides a list of the available SET commands, while Section 15.3.1 describes what each is used for.

—————————————— **Caution** ——————————————

Do not issue SET commands without fully understanding the impact each can have on your system.

_____

Table 15–2 SET Commands

Command	System Default Affected
SET BFLG	Default boot flags
SET BOOT	Default boot device
SET DIAGENV	Default diagnostic environment
SET FBOOT	Default startup tests
SET HALT	Default recovery action
SET KBD	Keyboard language
SET MOP	Remote diagnostic purposes
SET PSE	Password enable bit
SET PSWD	Password security feature
SET SCSI	System unit SCSI ID number

15.3.1 Using the SET Commands

There are ten SET commands available from console mode. The following sections describe six of the most common SET commands:

- SET BFLG, Chapter 16

- SET BOOT, Chapter 16

- SET HALT, Chapter 16

- SET KBD, Chapter 16

- SET PSE, Section 17.1

- SET PSWD, Section 17.1

Table 15–3 provides a brief description of the remaining four SET commands.

Table 15–3 Using SET Commands

Command	Settings	Function
SET DIAGENV	1–3	Determines the default diagnostic environment for your system. The default setting is 1 for customer. Setting DIAGENV to 2 sets the diagnostic environment to Digital Services, and 3 sets it to Manufacturing.
SET FBOOT	0–1	Defines which system tests to run at startup. The default setting is 0, indicating that all components will be tested during startup. Setting FBOOT to 1 tests all system components except for memory. Excluding the memory component test can reduce startup time.
SET MOP	0–1	Determines whether the NI listener is on (1). The NI listener is used by Digital Services as a means to access the console mode remotely, if necessary, for diagnosing system problems. The default setting is 1. Setting MOP to 0 turns off the NI listener.
SET SCSI	0–7	Sets the default SCSI ID number of the VLC system. The default SCSI setting for VLC is 6. You can change this default number to any other SCSI ID that is not currently in use on the system. See Chapter 8 for more information about SCSI devices and changing SCSI ID numbers.

16

Changing the Default Startup Procedures

Using the commands described in this chapter, you can change the startup procedures that were set at the factory when your system was shipped. This chapter describes how to:

- Change the keyboard language, Section 16.1

- Set the system to boot from a particular device automatically, Section 16.2

- Change the default recovery action, Section 16.3

- Change the default boot flags, Section 16.4

16.1 Changing the Keyboard Language (SET KBD)

Your system supports 15 different languages. You can change the language your system was shipped with by using the SET KBD command as follows.

1. Halt your system as Chapter 14 describes.

2. At the console prompt (>>>), enter SET KBD and press [Return] to display the Keyboard Language Menu as shown in Figure 16-1.

3. Enter the number of the keyboard language you need and press [Return].

In Figure 16-1, the keyboard language is changed from English (3) to Italiano (9).

Figure 16-1 Changing the Keyboard Language

```
>>> SET KBD

0) Dansk                      8) Francais (Suisse Romande)
1) Deutsch                    9) Italiano
2) Deutsch (Schweiz)         10) Nederlands
3) English                   11) Norsk
4) English (British/Irish)   12) Portugues
5) Espanol                   13) Suomi
6) Francais                  14) Svenska
7) Francais (Canadien)       15) Vlaams


   3 >>> 9


KBD=9
>>>
```

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16.2 Setting the Default Boot Device (SET BOOT)

Upon arrival from the factory, your workstation is set to load the operating system software and start from a particular disk drive. The process of loading the operating system software to start your system is called booting. The disk on which the operating system resides is called the default boot device.

If your system is equipped with an internal fixed disk drive, the default boot device is set to that drive. If not, your VLC workstation is set to boot over an Ethernet network.

_____ **Note** _____

The HALT parameter, described in Section 16.3, directly affects the default boot device setting. For instance, your workstation has the HALT parameter set to 3 at the factory. This causes your system to stop at the console prompt (>>>) after the power-up tests, regardless of how the default boot device is set.

_____

You may wish to change the default boot device in the following instances:

* Your system was delivered with an internal fixed disk drive, and you connect your system to a network.

* You added an internal fixed disk drive and you want to use your workstation as a standalone system.

You can change the default boot device to any of the following devices, as long as the operating system software resides on that device:

* A fixed disk drive (RZ23L or RZ24L) in the system unit or another kind of drive in an expansion box, see Chapter 7

* A compact disc drive (RRD42) in an expansion box

* A remote system (ESA0) that you access through the Ethernet

Table 16–1 shows the VMS device names assigned to each of the possible boot devices.

Table 16-1 SCSI Boot Device Names

Device and Location	VMS Device Name
Fixed disk device in system unit (SCSI bus at ID 0–7)	DKAx00[1]
Mass storage device on remote system	ESA0
Tape drive (SCSI bus at ID 0–7)	MKAx00[1]

[1]X stands for the SCSI ID for a particular device.

To reset the default boot device, follow these steps.

1. Halt your system as Chapter 14 describes.

2. At the console prompt, enter the SET BOOT command and the VMS device name of the boot device. Press ⃞Return⃞.

    ```
    >>> SET BOOT DKA300 Return

    BOOT = DKA300
    >>>
    ```

3. Enter a new default recovery value at the system prompt from those listed in Table 16–2. In this example, the new default recovery value is 2, which automatically reboots the operating system software after a system failure:

```
>>>SET HALT 2 [Return]

HALT = 00000002
>>>
```

16.4 Setting the Default Boot Flags (SET BFLG)

The SET BFLG command lets you define specific parameters that the system will use each time it boots. For instance, setting the BFLG to 2 (>>> SET BFLG 2) will invoke the XDELTA debugger as part of the boot process.

_____ Caution _____

The SET BFLG should be used with discretion by developers and other technical users who need and understand its capabilities. Most VLC workstation application users will not need to change the BFLG setting.

_____

To set the default boot flag:

1. Prepare your system for advanced operations as Chapter 14 describes.

2. Enter the SET BFLG command at the console prompt as follows:

```
>>> SET BFLG bootflag_number [Return]
```

In this example, *bootflag_number* indicates the number that you enter, and what the system then displays. See your software documentation for more information.

17

Using the Password Security Feature

The VAXstation 4000 VLC workstation password security feature is available from the console mode on your system. This chapter describes the following topics:

- Using the password security feature, Section 17.1
- Disabling the password, Section 17.2
- Changing the password, Section 17.3
- Accessing privileged console commands, Section 17.4

17.1 Using the Password Security Feature

Normally, whenever you enter console mode, the system lets you use all of the console operator privileges, such as HALT, SET, DEPOSIT, and EXAMINE. You can restrict access to these key console mode functions by using the password security feature to prevent unauthorized access.

The password security feature requires three steps:

- Setting the password feature, and entering your password.

- Enabling the password.

- Using the LOGIN command to use the password. (This command is different from the VMS LOGIN command.)

17.1.1 Setting the Password

Your system arrives from the factory with the password security feature disabled.

To set the password security feature on your system:

1. Prepare your system for advanced operations as Chapter 14 describes.

2. At the console prompt, enter the SET PSWD command. The system prompts you to enter a password as follows:

```
>>> SET PSWD [Return]
PSWD1>>> new_password [Return]
```

where *new_password* is the password you enter. Press [Return].

_____ **Note** _____

A password must be a character string of exactly 16 hexadecimal characters (0 through 9, A through F). Be sure to make a note of your password and store it in a secure place. If you forget your console mode password, you must call your Digital Services representative to regain access to the privileged console mode.

_____

As you enter the password, what you type does not display, or echo, on the screen. The console responds with the following prompt:

```
PSWD2>>>
```

3. Enter your password a second time for verification and press ⌊Return⌋. Again, as you enter the password, it does not echo on the screen.

   If the two passwords you entered match, your password is preserved in nonvolatile memory, which means that the system saves your password value even if power is removed from the system unit.

   If the two passwords you enter do not match, then the console aborts the command and displays the following error message:

```
?34 ILL PSWD
```

   Enter your password again.

17.1.2 Enabling the Password

Once you have entered and confirmed the password, you still need to enable the password security feature. Follow these steps:

1. To see the current password security feature status, enter the SHOW PSE command at the console prompt. The console responds with an answer as follows:

```
>>> SHOW PSE
PSE = 00000000
```

   This response indicates that the password security feature is not enabled.

2. To enable the password security feature, enter SET PSE 1 as follows:

```
>>> SET PSE 1
PSE = 00000001
```

Enabling the password means that you can no longer use the privileged console commands without first entering the password at the console prompt.

17.1.3 Using the LOGIN Command

To start using the password feature, enter the LOGIN command. The console responds with the following prompt:

```
>>> LOGIN
PSWD0 >>>
```

Enter your 16-character password at the PSWD0 prompt and press [Return].

If the system accepts your password, you can now use privileged commands. You need the password to perform any of the privileged commands listed in Table 17–1 once you return to the console mode.

If the password you enter is incorrect, the console responds with the following message:

```
?34 ILL PSWD
```

Enter your password again.

17.2 Disabling the Password

To disable the password feature, enter the following command at the console prompt (>>>):

```
>>> SET PSE 0
PSE = 00000000
```

17.3 Changing the Password

To change the password, you must be in the privileged mode, and use the SET PSWD command. To change your password:

1. Enter the SET PSWD command at the console prompt and press [Return]. The console responds with the following prompt:

```
>>> SET PSWD [Return]
PSWD0 >>> old_password [Return]
```

2. Enter your old password and press [Return]. As you enter the password, it does not echo on the screen. If you enter your old password correctly, the console responds with the PSWD1 prompt as follows:

```
PSWD1 >>> new_password [Return]
```

3. Enter your new password and press ⌈Return⌉. Again, as you enter the password, it is not echoed on the screen. When the console responds with the PSWD2 console prompt, enter your new password for verification and press ⌈Return⌉. Again, as you enter the password, it is not echoed on the screen.

```
PSWD2 >>> new_password ⌈Return⌉
```

If the two passwords you enter do not match, then the console aborts the command and the following error message is displayed:

```
?34 ILL PSWD
```

Enter your password again.

If the two passwords you enter match, your new password is saved, even if power is removed from the system unit.

If you forget your password, call your Digital service representative.

17.4 Accessing Privileged Console Commands

Once you invoke the password security feature, certain console commands become privileged—you can only issue these commands by first entering the correct password. Table 17–1 lists both privileged and unprivileged console commands.

Table 17–1 Console Command Access

Privileged Commands	Unprivileged Commands
BOOT (with parameters)	BOOT (with no parameters)
DEPOSIT	LOGIN (to allow password entry to the privileged state)
EXAMINE	CONTINUE (if you inadvertently push the HALT button, this command lets you continue operations in a nonprivileged mode)
FIND	! (to enter comment text that the system does not act upon)
HALT	
INITIALIZE	
LOAD	
MICROSTEP	
NEXT	
REPEAT	
SET	
SHOW	
START	
UNJAM	
X	
@	

_____ **Note** _____

Any commands that modify memory and registers, or that transfer CPU control from the console monitor to another program such as BOOT or START are also privileged console commands.

_____

Access to the privileged console commands continues until you leave the console mode by using the BOOT, CONTINUE, HALT, or START commands. You can then enter the privileged mode only by using the 16-character password.

18

Using the Alternate Console

If you have a problem with your monitor, you can use the alternate console feature to run tests on your workstation.

This chapter describes the alternate console feature, and how to use it.

18.1 Accessing the Alternate Console

By connecting a terminal to the printer/communications port on your VLC workstation, you can run tests on the graphics board in your system to determine the cause of any monitor problem that you may be having. To connect a terminal as an alternate console, follow these steps:

1. Prepare your system for advanced operations as Chapter 14 describes.

2. Turn off (O) the monitor and all peripheral devices such as printers and modems.

_____ **Note** _____

If the monitor power cord is plugged into the system unit,
turn off the monitor (O) using the monitor switch. The
auxiliary outlet on the system unit does not turn off when
the system unit is turned off.

_____

3. Turn the system unit off (O).

4. Move the alternate console switch on the side of the system
   unit to the up (on) position as shown in Figure 18–1.

S3

Figure 18–1 Changing the Alternate Console Switch
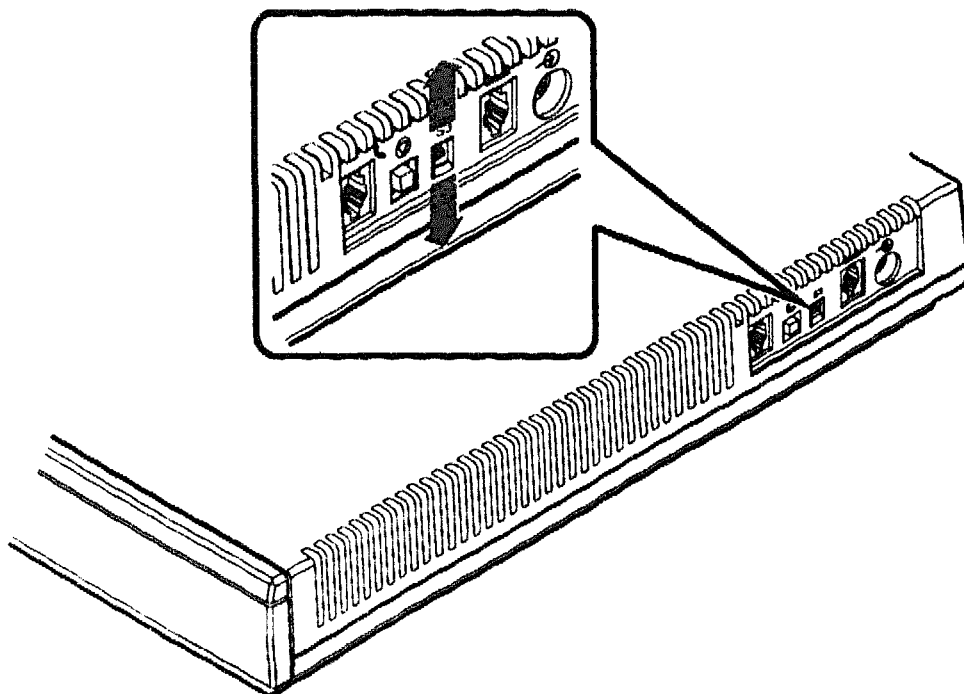
MLO-007039

Use a small pointed object to change the switch. Do not use a
pencil since graphite will damage the switch.

When the switch is in the up position, the printer
/communications port on the back of the system unit is
now a terminal port.
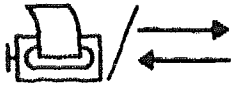
5. Attach one end of a DEC 423 serial cable to the printer/ communications port on the system unit and the other end of the serial cable to the serial port on the alternate console terminal.

6. Turn on (I) the terminal.

7. Check the baud rate of the terminal. The baud rate should be set to 9600. See your terminal documentation for additional information on adjusting the baud rate.

8. Turn on (I) your equipment in the following order:

   a. Any storage expansion box

   b. Printer

   c. Terminal

   d. System unit

9. Adjust the brightness and contrast on your terminal.

10. If the console prompt (>>>) does not appear on the terminal screen, press the Break key on the terminal keyboard.

   While the alternate console (S3) switch is in the up position, the system always uses the printer port.

19

Dealing with Power-Up Errors

If an error occurs during the power-up process, you can help determine the problem by understanding the power-up error line. This chapter describes:

- What happens during power-up tests, Section 19.1

- Understanding a power-up error line, Section 19.2

- Taking action on a power-up error, Section 19.3

- Using the diagnostic lights, Section 19.4

19.1 What Happens During Power-Up Tests?

Every time you turn on (|) your system, it runs power-up tests that display important information. These tests check each component in your system and display a status bar on the monitor screen. When the status bar is filled completely, the system tests are complete. Figure 19–1 shows a successful power-up display.

Figure 19–1 Successful Power-up Display

Firmware Version Number —— KA48-A V1.3-343-V4.0
Ethernet Hardware Address —— 08-00-2B-1D-28-6C
Memory Size —— 8MB

Status Bar

Console Prompt —— >>>
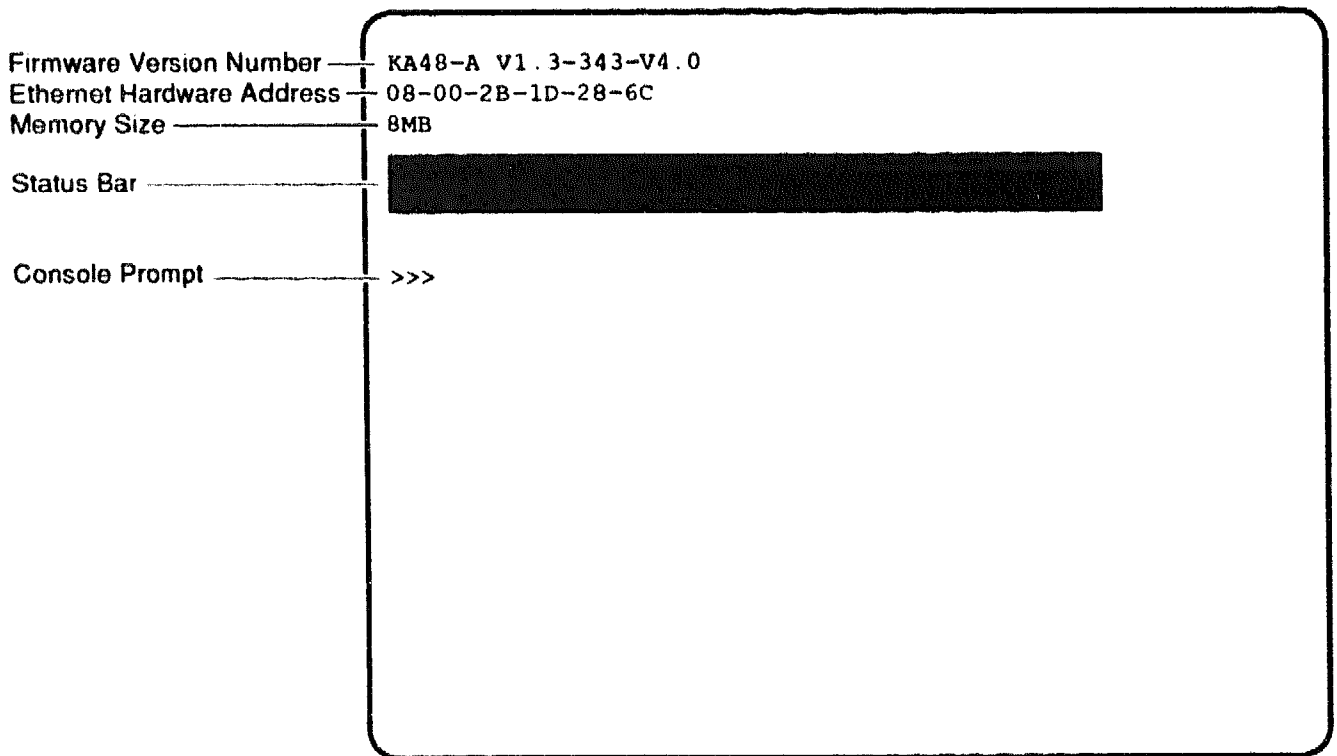
MLO-009241

Diagnostic lights on the rear panel of the system unit indicate the status of the system during power up. See Section 19.4.

_____ **Note** _____

If your monitor screen does not display any information, you may have a monitor, video, or system board failure. Check Table 21–1 for solutions to monitor problems, then check your monitor guide for more information.

_____

19.2 Understanding a Power-Up Error Line

If one of the startup tests fails, an error line is displayed.
Depending on the severity of the error, the status bar may or
may not be filled completely. Figure 19–2 shows an error line in a
power-up display.

Figure 19–2 Power-up Display with Error Message

MLO-009256
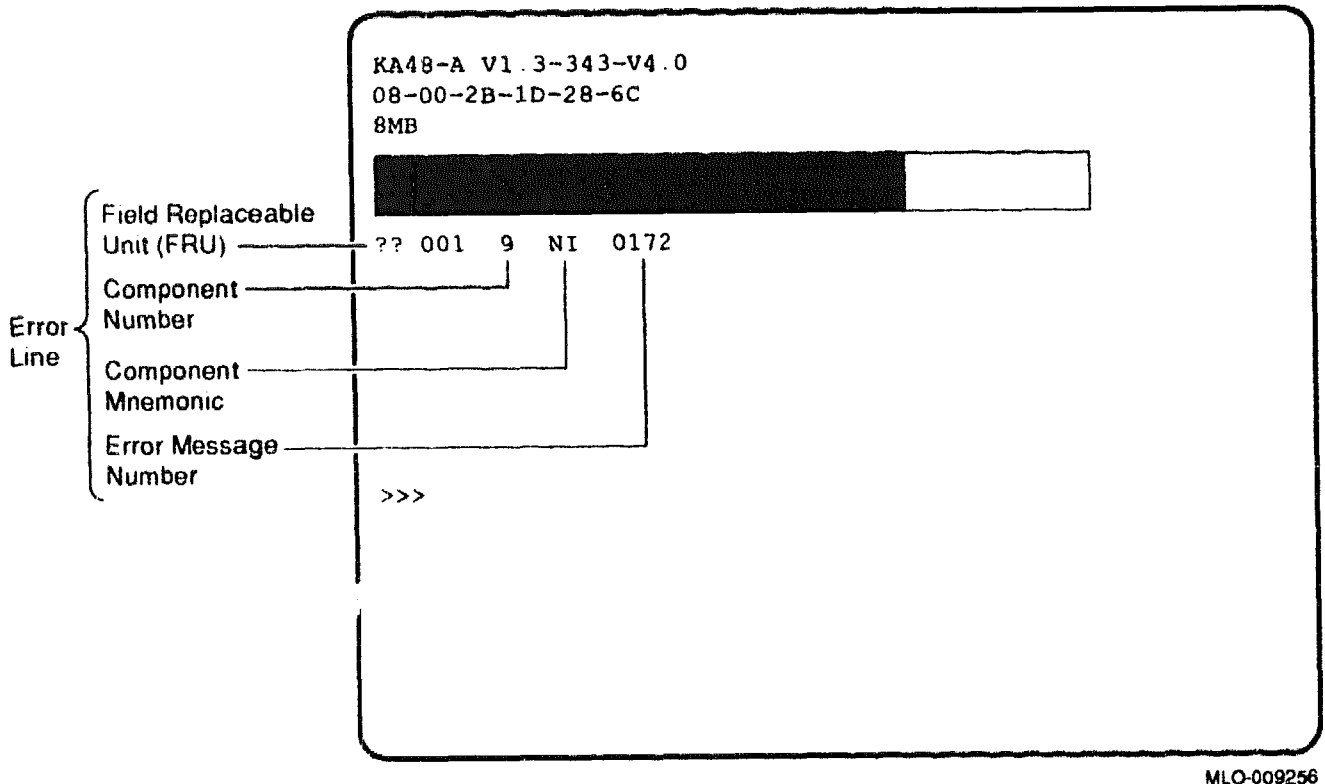
Each of the error line components has a specific meaning. By
understanding the error line components, you may be able to
determine the system error and correct it. For example, consider
the following error line:

```
??001   9   NI   0172
```

The error line components have the following meanings:

* FRU 001, system unit

* Component number 9, network component

* Component mnemonic NI, network interface

- Error message 0172, loopback connector not connected

Since this error line indicates that the Ethernet loopback connector is not connected, attaching the connector and restarting your system should alleviate the error.

Table 19-1 defines each FRU.

Table 19-1 Field-Replaceable Unit Numbers and Definitions

FRU Number	Definition
001	System board
002	Keyboard
003	Mouse
004	Monitor #1
010-019	Reserved for graphics boards where graphics board #1 is FRU 010
040-049	Reserved for memory boards where memory board #1 is FRU 040
100-199	Reserved for SCSI controller
400-499	Reserved for future use

Table 19-2 defines the component numbers and mnemonics displayed in power-up and self-tests for components and devices in the system unit, the BA46 Storage Expansion Box, or the SZ03 Storage Expansion Box.

Table 19–2 Component Numbers and Mnemonics in Power-Up and Self-Tests

Component Number	Component Mnemonic	Component
1	NVR	Nonvolatile random access memory (RAM)
2	LCG	Low-cost graphics coprocessor
3	DZ	Serial line controller
4	CACHE	Cache test
5	MEM	Memory
6	FPU	Floating point unit
7	IT	Interval timer
8	SYS	Miscellaneous system board hardware
9	NI	Network interface
10	SCSI	SCSI controller
11	AUD	Sound chip
12–99		Reserved for future components

Appendix D describes the VLC workstation error messages.

19.3 Taking Action on a Power-Up Error

If an error occurs during the power-up tests, you should:

1. Record the error line here. If you do call Digital Services, you will need to provide the entire error line.

   Error line_____

2. See Table 19–1 to identify the field-replaceable unit for your Digital service representative.

3. Refer to Table 19–2 to identify the faulty device or component.

4. Turn off (O) the system unit.

5. Check all cables and connections to make sure everything is attached properly.

6. Turn on (I) the workstation again.

7. If the problem occurs again, refer to Chapter 20 to test your system, or to the troubleshooting information in Chapter 21, or contact your Digital service representative.

19.4 Using the Diagnostic Lights

There are eight recessed amber lights on the back of the system unit. These lights are used for informational purposes to help diagnose errors on the system. The amber lights come on during the startup tests when you turn on the system (Figure 19–3).

If the system detects an error during the startup tests, the diagnostic lights remain lit. When the system is running, all the diagnostic lights are off.

Figure 19–3   Diagnostic Lights
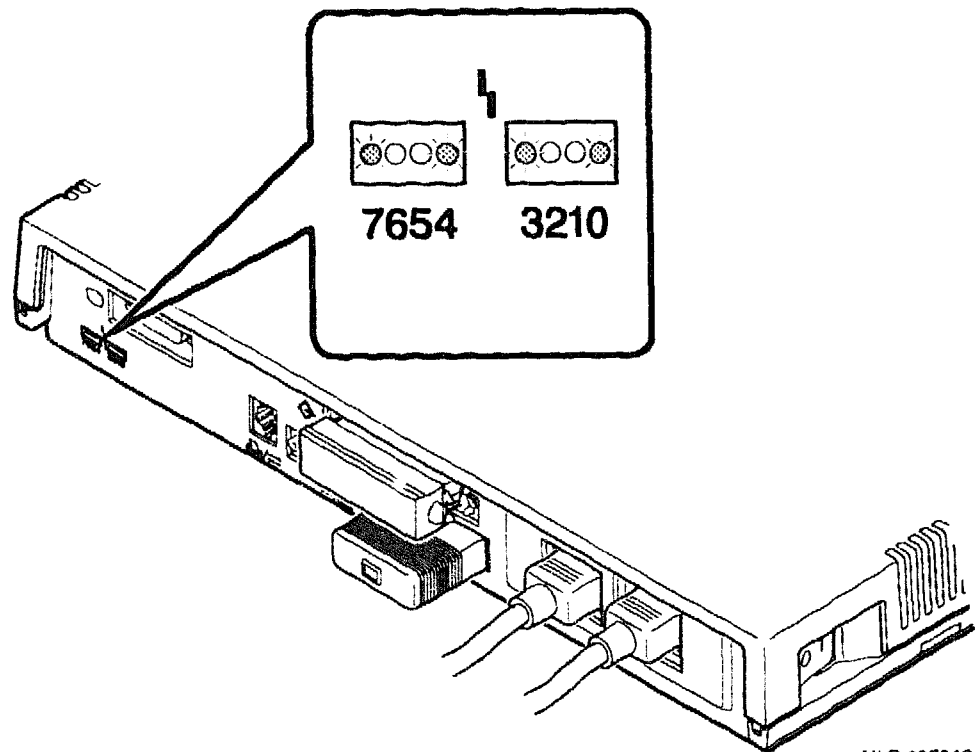
MLO-007049

19.4.1 Recording the Diagnostic Lights

If an error occurs during the startup tests, make a note of which diagnostic lights are lit.

The diagnostic lights are arranged in two sets of four lights, one set numbered from 7–4, the other from 3–0. If your system detects an error, the lights numbered 7–4 indicate the component in which the error was found. The lights numbered 3–0 indicate the specific problem with that component.

For example, in Figure 19–3 diagnostic lights 7, 4, 3, and 0 are on. This means that the Ethernet loopback connector is not properly connected. This is a common error. Check that the loopback connector is firmly connected to the Ethernet port when you turn on your system. Use Table 19–3 to determine which system component has an error.

_____ **Note** _____

In the following tables, an X indicates that a diagnostic light is on, while a 0 means it is off.

_____

Table 19–3 Determining a System Component Error

Diagnostic Lights 7–4	System Component
000X	Time of year (TOY) and nonvolatile random access memory (NVR)
00X0	Low cost graphics (LCG)
00XX	Serial line controller (abbreviated to DZ)
0X00	Cache
0X0X	System memory boards
X000	Network interface (NI) (standard Ethernet)
X0X0	SCSI devices
X0XX	Audio

Write down the status of the diagnostic lights. Your Digital services representative may ask you which lights are on.

Table 19–4 lists the diagnostic lights for some common errors that you may be able to resolve. See Chapter 21.

Table 19–4 Diagnostic Lights for Common Errors

Component (Lights 7–4)	Lights 3–0	Meaning
DZ (00XX)	00X0	Modem test has failed
	0XX0	Mouse test has failed
	0X0X	Keyboard test has failed
NI (X00X)	X00X	Ethernet loopback test has failed
SCSI (X0X0)	0X0X	SCSI device test has failed

20

Testing Your System

If you want to check the status of a system device or component,
you can run tests on your system. This chapter describes:

*   Running self-tests, Section 20.1

*   Displaying the system configuration, Section 20.2, and a list of
    installed devices, Section 20.3

*   Rebooting your system, Section 20.4

20.1 Running Self-Tests

By running self-tests, you can test most of the system components yourself, either to ensure that a component is working properly or to locate any problems. This section describes how to run self-tests.

Self-tests are used to display the status of system components or devices installed on your system, in the BA46 Storage Expansion Box, or in the SZ03 Storage Expansion Box. You cannot remove the self-test diagnostic programs from your system. They reside permanently in the read-only memory (ROM) of your system.

Table 20–1 lists the TEST commands you can run from the console mode.

Table 20–1 TEST Commands

Command	Test or Utility Program
TEST AUD	Self-test on sound chip
TEST CACHE	Self-test on cache
TEST DZ	Self-test on serial line controller
TEST FPU	Self-test on floating point unit
TEST IT	Self-test on interval timer
TEST LCG	Self-test on low-cost graphics coprocessor option
TEST MEM	Self-test on system memory
TEST NI	Self-test on network interface
TEST NVR	Self-test on nonvolatile RAM
TEST SCSI	Self-test on device controller
TEST SYS	Self-test on interrupt controller and Ethernet ID ROM
TEST 12–99	Reserved for future use

To test a device or component in your system, follow these steps:

1. Use Table 19–2 to find the number or mnemonic for the device or component you want to test.

2. Prepare your system for advanced operations as Chapter 14 describes.

3. At the console prompt (>>>) enter TEST and the number or mnemonic of the device or component to be tested and press ⌜Return⌝. For example:

    ```
    >>> TEST NVR  ⌜Return⌝
    ```

    In this example, the system tests the nonvolatile random access memory (RAM).

    The system displays an unfilled status bar for the device or component. As the test runs, the status bar fills up. If the self-test is successful, the status bar fills up completely and the console prompt is displayed, as shown in Figure 20–1.

Figure 20–1 Running the NVR Self-Test
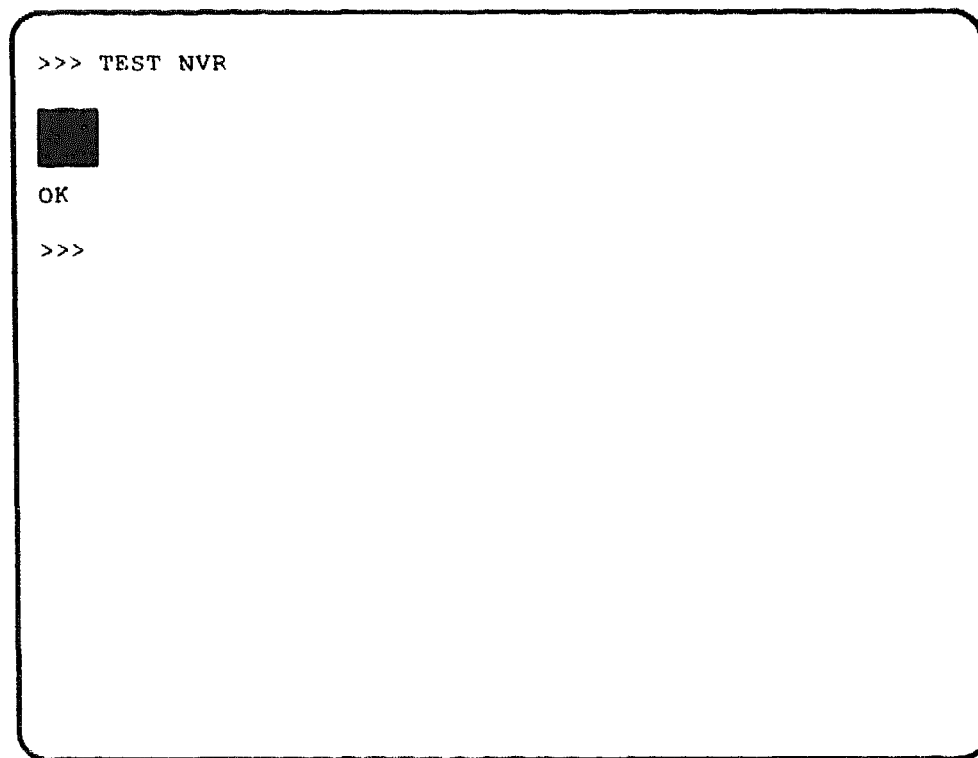
MLO-005451
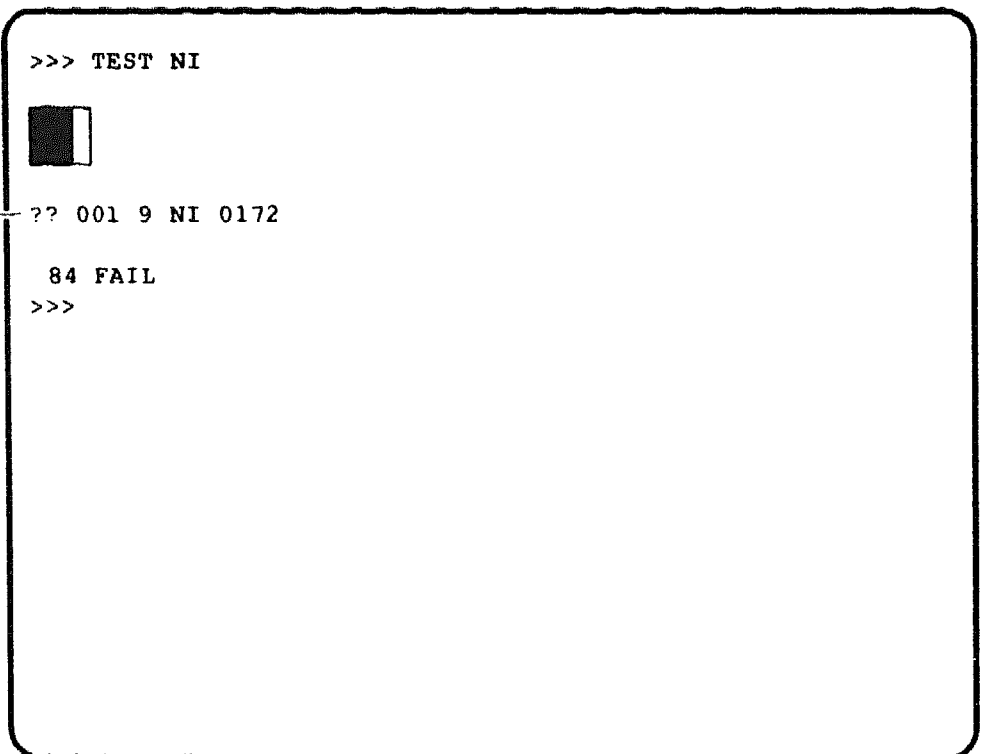
To test a consecutive series of devices or components, enter TEST followed by the first and last numbers or mnemonics of the series separated by a colon, and press ⌜Return⌝.

```
>>> TEST NVR:MEM  ⌜Return⌝
```

If you enter this command, the system tests the first five components listed in Table 19–2. A single long empty bar is displayed, which fills in as each test is run.

If a device or component fails the self-test, an error line is displayed with the console prompt, as shown in Figure 20–2.

Figure 20–2 Self-Test with Error Line

```
>>> TEST NI

[█ ]

Error Line ──────────────── ?? 001 9 NI 0172

 84 FAIL
>>>
```

If you are testing multiple components or devices and the test results in a failure, enter the SHOW CONFIG command to display your system configuration. The SHOW CONFIG display provides further information about which devices or components are failing as explained in Section 20.2.

20.2 Understanding the SHOW CONFIG Display

The SHOW CONFIG command displays a configuration table that lists the status of each device or component installed on your system. This table holds the results of the self-tests and power-up tests. Each time a self-test is run, the system updates the configuration table. Error information in the configuration display is valuable to your Digital service representative.

To display your system configuration, similar to the information shown in Figure 20–3, perform the following steps:

1. Prepare your system for advanced operations as Chapter 14 describes.

2. Enter the SHOW CONFIG command as follows:

```
>>>SHOW CONFIG  Return
```

Figure 20–3 Configuration Display with Error

```
>>> SHOW CONFIG
KA48-A V1.3-343-V4.0
08-00-2B-1D-28-6C
8MB

DEVNBR   DEVNAM   INFO
------   ------   ----------------------------------
  1       NVR      OK
  2       LCG      OK
                    LR - 8 PLN FB - 5.2
  3       DZ       OK
  4       CACHE    OK
  5       MEM      OK
                    8MB = S0/1=0MB, S2/3=0MB, S4/5=0MB
  6       FPU      OK
  7       IT       OK
  8       SYS      OK
  9       NI       ?? 001 0172
 10       SCSI     OK
                    5-RX26        6-INITR
 11       AUD      OK
>>>
```

Error Indicator

FRU of
Failed Device

Error Number
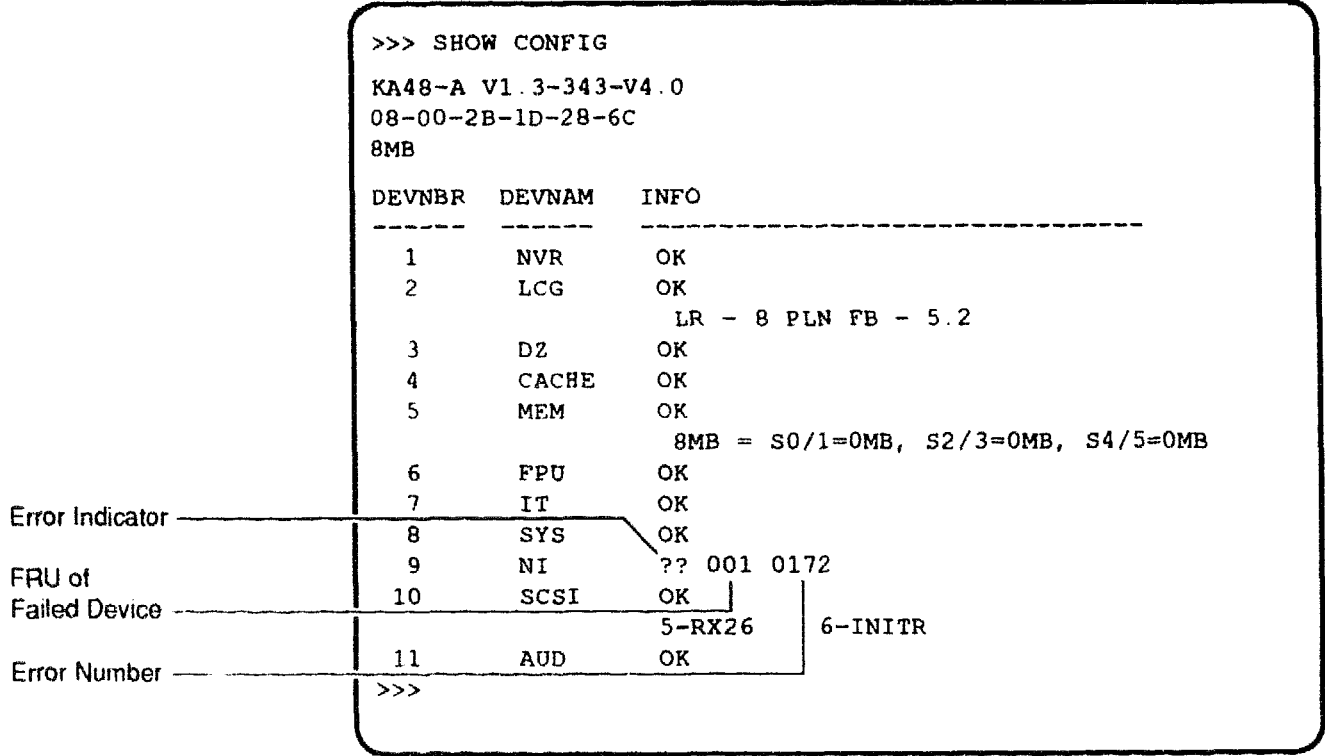
MLO-009257

The first three lines of the SHOW CONFIG screen provide the following information:

1. Firmware version number

2. The Ethernet hardware address, which is different for every system, and is shown here for illustrative purposes. This number is needed for setting up a system on a network.

3. Memory size

The next part of the SHOW CONFIG display consists of three columns of information. The numbers and names of the system components and subsystems are listed under the column headings DEVNBR and DEVNAM, respectively. The third column, INFO, provides the status.

Following are some items to note in the SHOW CONFIG display:

1. The LCG graphics line, LR-MONO FB-1.0 (low-resolution monochrome), shows the type of graphics board, also called a frame buffer, in the system unit. The 1.0 in this line means that your system has version 1.0 of the frame buffer. Table 20-2 explains the other mnemonics on the LCG (low-cost graphics) line.

Table 20-2 LCG Graphics Board Mnemonics for the SHOW CONFIG Command

Mnemonic	Meaning
LR	Low resolution
HR	High resolution
FB	Frame buffer

2. There are six memory slots inside the VLC workstation system unit, numbered 0-5. All systems have at least 8 megabytes of memory. Memory consists of 4-megabyte memory boards installed in pairs in the system unit, beginning in slots 0-1. The memory line displays the total megabytes of memory as explained in Table 20-3.

Table 20–3 Memory Information

Abbreviation	Memory Location	Total MB
S0/1	In memory slots 0 and 1	8
S2/3	In memory slots 2 and 3	16
S4/5	In memory slots 4 and 5	24

3. A component or device error is indicated by two question marks (??) in the INFO column next to the device or component mnemonic. Two sets of numbers follow the ?? error indicator:

   — The field-replaceable unit (FRU) number identifies the failed device or component. In this example, the failed FRU number identifies the system board (the Ethernet subsystem resides on the system board).

   — The error number indicates a specific device failure. In this example, the error number means that there is no loopback connector on the system. To solve the problem in this case, add the loopback connector and then turn the system on again.

4. The SCSI status information, which appears under the SCSI line in the INFO column, includes the SCSI ID numbers and the mnemonics for all SCSI devices connected to the system.

_____ **Note** _____

For an explanation of common error messages, see Appendix D. To get a complete list of error messages and their meanings, order the *VAXstation 4000 VLC Hardware Information Kit* from DECdirect.

20.2.1 Updating the SHOW CONFIG Display

To update the information in the configuration display:

1. Turn on (I) the system.

2. Enter one of the following commands, which test all devices and components:

   ```
   >>>   TEST 1:11

   >>>   TEST NVR:AUD
   ```

Re-enter the SHOW CONFIG command to view the updated configuration status.

20.3 Displaying Installed Devices

Use the SHOW DEVICE command to display a list of the devices installed on your system and their locations on the SCSI bus. A sample SHOW DEVICE display is shown in Figure 20–4. You can check this display to verify that you have installed an option correctly. If the option appears in the display, installation was successful. See Figure 20–4.

Figure 20-4 SHOW DEVICE Display

```
>>> SHOW DEVICE

VMS/VMB          ADDR    DEVTYP    NUMBYTES   RM/FX   WP   DEVNAM  REV
--------         ----    ------    --------   -----   --   ------  ---
ESAO             08-00-2B-1D-28-6C
DKA500           A/5/0   DISK      ......     RM      WP   RX26    0068
..HostID..       A/6     INITR

>>>
```

VMS Device Number — DKA500
SCSI Bus
SCSI ID Setting
Logical Unit Number (LUN)
Device Type
Number of Megabytes
Type of Device
Write-Protected
Device Name
Revision Number
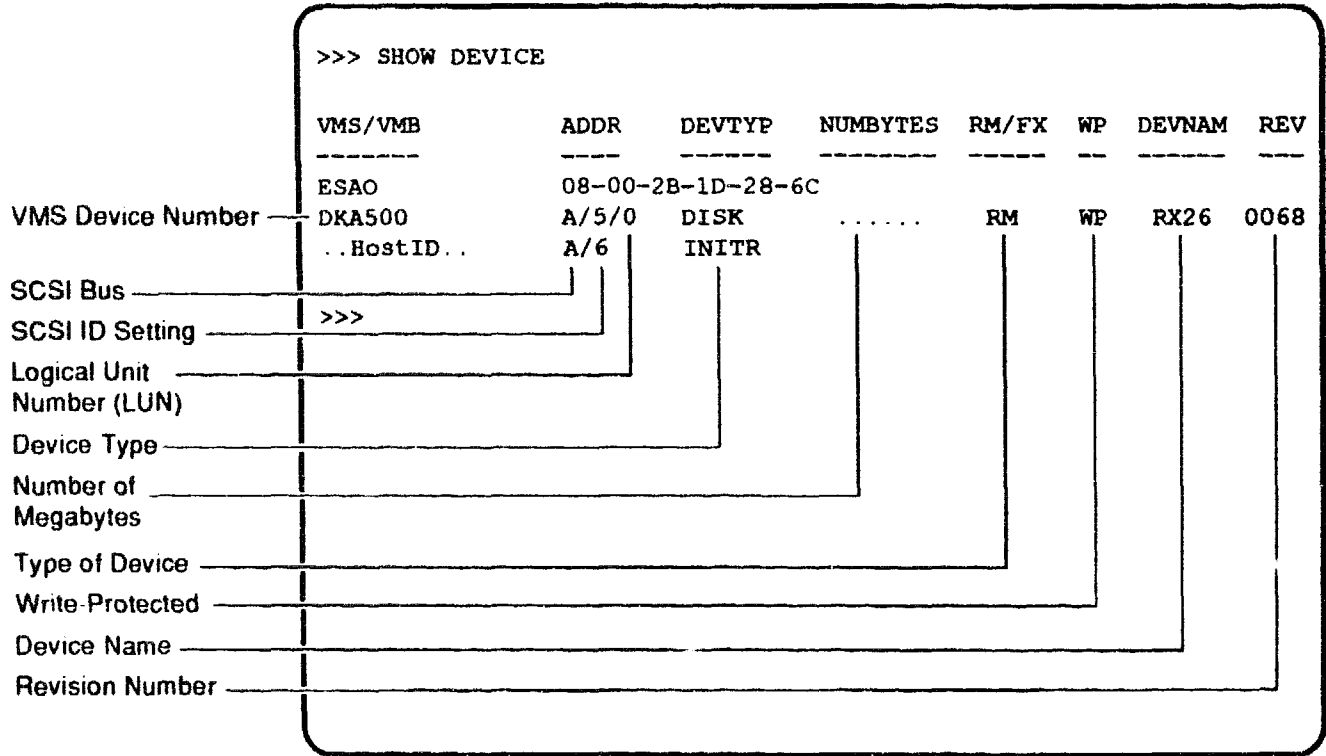
MLO-007097

Table 20-4 explains the mnemonics used in the SHOW DEVICE display. Consider, for example, the following line from the previous example:

```
DKA500    A/5/0    DISK    ......    WP       RX26    0068
```

This line indicates that an RX26 disk drive is located at address ID 5 on the SCSI bus. The RX26 is a diskette drive, available for a VAXstation 4000 VLC workstation in a SZ03 Storage Expansion Box. 0068 represents the firmware revision number.

Table 20-4 explains the mnemonics used in the SHOW DEVICE display.

Table 20-4 Meaning of SHOW DEVICE Display

Column Head	Definition
VMS/VMB	VMS name for device or component
ADDR	Address
DEVTYP	Type of device or component
NUMBYTES	Number of megabytes
RM/FX	Removable or fixed device
WP	Write-protected
DEVNAM	Name of device or component
REV	Firmware revision number

20.4 Rebooting the System After Running Tests

While you are running any of the tests or procedures in this chapter, you are in console mode. To resume normal operation of the system, you must re-enter program mode. There are two ways to enter program mode:

1. Enter BOOT at the console prompt and press [Return]. The system then searches each device in turn for the operating system software. (If you set the boot device using the SET BOOT command as described in Section 16.2, the system goes directly to the device set as the default boot device.)

2. Enter BOOT followed by a space and the VMS device name (shown in Table 16–1) for the device that contains your software. For example:

```
>>> BOOT DKA300 [Return]
```

This procedure lets the system boot the software immediately, without searching for the boot device.

```
>>> BOOT ESA0 [Return]
```

This procedure boots from a device on another system across the network.

See Chapter 16 for more information on setting your system startup parameters.

21

Handling Problems

This chapter explains how to:

- Identify a problem with your system, Section 21.1

- Use the troubleshooting table, Section 21.2

- Report problems to Digital Services, Section 21.3

If you know the source of your problem, see Section 21.2 for suggested solutions. Otherwise, begin with Section 21.1.

21.1 Identifying a Problem

To determine where your problem is, follow these steps:

1. Refer to your operating system documentation for shutdown procedures *before* turning off your system and peripheral devices.

   ―――――――――――――― **Caution** ――――――――――――――

   Failure to meet this requirement may cause loss of user data or system failure.

   ――――――――――――――――――――――――――――――――――――

2. Turn off (O) all expansion boxes.

3. Turn off (O) the monitor and all peripheral devices such as printers and modems.

   ―――――――――――――― **Note** ――――――――――――――

   If the monitor power cord is connected to the system unit, turn off (O) the monitor using the monitor on/off switch. The auxiliary outlet on the system unit does not turn off when the system unit is turned off.

   ――――――――――――――――――――――――――――――――――――

4. Turn off (O) the system unit.

5. Check that the following cables are correctly connected at both ends:

   - Monitor cable
   - Monitor power cord
   - System unit power cord
   - Expansion box connector cable
   - Expansion box power cord
   - Keyboard cable (the end at the system unit only)
   - Mouse/tablet cable
   - Network cables

   At this point, all equipment should be off.

6. Turn the equipment back on (I) in the following order:

- Any storage expansion box

- Printer

- Monitor

- System unit

7. Adjust the brightness and contrast on your monitor.

   If you still have a problem, refer to Section 21.2.

21.2 Using the Troubleshooting Table

If the information in Section 21.1 has not helped you locate the source of your problem, take the following steps:

- For monitor problems, see your monitor guide.

- For other problems:

  1. Note the symptoms of the problem.

  2. Check the Symptom column in Table 21-1 for a match.

  3. Check the conditions for that symptom in the Possible Cause column. If more than one possible cause is given, check the possible causes and their suggested solutions in the order listed.

  4. Follow the advice in the Suggested Solution column.

  5. If the problem persists, call your Customer Service Center, as described in Section 21.3.

––––––––––––––––––– **Note** –––––––––––––––––––

For problems with the BA46 Storage Expansion Box or the SZ03 Storage Expansion Box, see the *BA46 Storage Expansion Box Owner's Guide* or the *SZ03 Storage Expansion Box Owner's Card*, respectively, which are each supplied with the expansion boxes.

––

Table 21-1 Troubleshooting

Symptom	Possible Cause	Suggested Solution
System Unit Problems		
Power-up display contains an error message.	Possible system error.	If an error message appears in the power-up display, see Section 19.1, and Section 20.1 for further test instructions.
Window display does not appear on the screen. (System does not boot.)	Your software is not installed.	See your software documentation for installation instructions. See Section 20.1, and Section 20.2 for further test instructions.
	Video option has failed.	See Section 20.1 for more information.
	Default recovery action is set to halt.	Change the default recovery action to boot the system from the system disk. See Chapter 16.
	Incorrect boot device was specified.	Change the default recovery action to boot the system from the system disk. See Chapter 16.
	Software problem.	Call your Digital Services representative, described in Section 21.3.

Table 21-1 (Cont.) Troubleshooting

Symptom	Possible Cause	Suggested Solution
Monitor Problems		
Power-up display does not appear after 2 minutes.	Monitor is not turned on.	Check the monitor on/off switch; be sure it is on. Check that the monitor power cord is connected at both ends.
	Monitor power cord or video cable is not connected.	Check that the monitor power cord and video cable are connected at both ends.
	Monitor brightness and contrast controls are set too low for the screen display to be seen.	Adjust the monitor brightness and contrast controls. Verify that the monitor power switch is on (I). If necessary, refer to your monitor guide for more information.
	Alternate console switch is in the wrong position.	Turn off the power. Change the alternate console switch to the down (off) position. Use a small pointed object to set the switch, but do not use a pencil; the graphite will damage the switch. See Chapter 18 for more information. Turn the power back on.
	Monitor fuse is blown.	See your monitor guide for fuse replacement instructions.
	Wall socket may not be working.	Try a different wall socket, or try an electrical device that you know works in the wall socket. If the problem persists, contact your Digital Services representative.

Table 21-1 (Cont.) Troubleshooting

Symptom	Possible Cause	Suggested Solution
Mouse/Tablet Problems		
Mouse or optional tablet pointer does not appear on screen, or monitor does not respond to pointing device commands.	CTRL F3 was pressed by mistake, and system pointer mode is off.	Press CTRL F3 again to restart the pointer mode.
	Pointing device cable is installed incorrectly or is loose.	Turn off the system. Disconnect and then reconnect the cable to reset the device.
	The system is in console mode; no pointer appears on the screen.	Change the system to program mode by entering BOOT at the console prompt (>>>). (See Section 20.4.)
	Pointing device is faulty.	Replace the pointing device, or call your Digital Services representative. See Section 21.3.
Keyboard Problems		
Keys do not work.	Hold Screen key is active (the Hold Screen light is on).	Press the Hold Screen key to release the hold on the screen.
	Keyboard cable is loose or not connected.	Check the keyboard cable connection to the system unit.
	Keyboard has failed.	Replace the keyboard. If the problem persists, contact your Digital Services representative.
SCSI Device Problems		
An installed drive does not work.	Two SCSI identifiers are set to the same number.	Reset each SCSI ID to a unique number. (See Chapter 8.)
	Each device added to the system on the SCSI bus must have a unique identifier. For example, the SZ03 Storage Expansion Box has a SCSI ID of 1.	

For other problems, refer to the *BA46 Storage Expansion Box Owner's Guide* that comes with your BA46 Storage Expansion Box or to the *SZ03 Storage Expansion Box Owner's Card* that comes with the SZ03 Storage Expansion Box.

Table 21-1 (Cont.) Troubleshooting

Symptom	Possible Cause	Suggested Solution
Disk and Diskette Problems		
Software does not boot from the RZ23L or RZ24L fixed disk drive.	A problem exists with the fixed disk.	See Section 20.2.
	Default boot device is set incorrectly.	See Chapter 16 to set or change the default boot device.
	Recovery action may be set to halt.	See Chapter 16 to change the default recovery action.
	A problem exists with the software (if installed) on the fixed disk.	Refer to your software documentation for help.
	Two SCSI identifiers are set to the same number.	Reset each SCSI ID to a unique number. (See Chapter 8.)
Application software installed on the diskette drive does not work, or a diskette read or write error message is displayed.	No diskette is in the diskette drive.	Insert a software diskette. Use the instructions in your software documentation.
	Diskette was inserted incorrectly.	Check that the write-protect notch on the diskette is to your left when you insert the diskette and that the label is up.
	Diskette is damaged or does not contain software.	Try another diskette that contains software.
	Two SCSI identifiers are set to the same number.	Reset each SCSI ID to a unique number. (See Chapter 8.)
Network Problems[1]		
NI error message is displayed when verifying Ethernet.	No standard Ethernet loopback connector was installed.	Attach a standard Ethernet loopback connector.
	No Ethernet cable was connected.	Connect a cable.
	Cable connection is loose.	Check that all connections on the Ethernet segment are secure.

[1]After you solve an NI problem, type **TEST NI** Return. This either clears the error or displays a message to let you know the problem still exists.

21.3 Reporting Problems to Digital Services

If you followed the corrective actions described in this chapter yet continue to have problems with your system, call Digital Services. Before you call:

1. Write down the serial number of your system. You will find the serial number on the underside of the system unit. Your Digital service representative will need this number when you call.

2. Make notes based on Table 21–1. This information helps your Digital services representative know the state of your system when the problem occurred.

3. Be prepared to read information from the screen and to enter commands at the keyboard while you talk to your Digital service representative on the telephone.

A
Hardware Specifications

This appendix gives the following specifications:

- System dimensions, Table A-1.

- System specifications, Table A-2.

- System electrical specifications, Table A-3.

- System environmental conditions, Table A-4.

- RZ23L fixed disk drive specifications, Table A-5.

- RZ24L fixed disk drive specifications, Table A-6.

Table A–1 System Unit Dimensions (Diskless System)

Weight	Height	Width	Depth
3.6 kg	5.08 cm	39.37 cm	36.83 cm
(8 lb)	(2.3 in)	(15.5 in)	(14.5 in)

Table A–2 System Specifications

Topic	Description
Processor	KA48-A SOC CPU with a minimum of 5 KB cache
SIMM memory	8 MB minimum
Optional SIMM	24 MB max for system
ROM memory	256 KB
Optional fixed disk	One 121-MB 3½-inch fixed disk, or one 245-MB 3½-inch fixed disk
Optional expansion box	BA46 Storage Expansion Box
Optional expansion box	SZ03 Storage Expansion Box
Interfaces	1 SCSI port (supports both synchronous and asynchronous devices), 1 standard Ethernet port, and serial ports such as printer /communications and communications/printer

Table A–3 System Electrical Specifications

Topic	Description
Input voltage	Automatically adjusting AC input from 100–120 VAC to 220–240 VAC
Frequency range	47 to 63 Hz
Power	86 watts input max, system only, power factor 0.6 max

Table A-4 System Environmental Specifications

Storage Conditions

Temperature range	5°C to 50°C (41°F to 122°F)
Relative humidity	10% to 95% (noncondensing)
Altitude	0 to 2400 m (0 to 8000 ft)
Maximum wet bulb temperature	32°C (90°F)
Minimum dew point	2°C (36°F)

Operating Conditions

Temperature range	15°C to 32°C (59°F to 90°F)
Temperature change rate	11°C/hr (52°F/hr) max
Relative humidity	20%–80% (noncondensing)
Altitude	2400 m (8000 ft)
Maximum wet bulb temperature	28°C (82°F)
Minimum dew point	2°C (36°F)

Nonoperating Conditions

Temperature range	–40°C to 66°C (–40°F to 151°F)
Relative humidity	95% @ 66°C (150°F) (may condense)
Altitude	4900 m (16,000 ft)
Maximum wet bulb temperature	28°C (82°F)
Minimum dew point	2°C (36°F)

Table A-5 RZ23L Fixed Disk Drive Specifications

Formatted Storage Capacity

Per drive	121 MB
Per surface	13 MB
Bytes per track	16,896
Bytes per block	512

Table A-5 (Cont.) RZ23L Fixed Disk Drive Specifications

Formatted Storage Capacity

Blocks per track	33
Blocks per drive	204,864
Spare blocks per track	1
Spare blocks per drive	6208

Performance

Data transfer rate to/from media	1.25 MB/s
Data transfer rate to/from buffer	1.25 MB/s
Seek time track to track	$\leq$ 8 ms
Seek time average	$\leq$ 25 ms
Seek time maximum (full stroke)	$\leq$ 45 ms
Average latency	8.4 ms
Rotational speed ±0.1%	3575 r/min
Start time	20 s max
Stop time	20 s max
Interleave	1:1

Operating Conditions

Ambient temperature	10°C to 60°C (50°F to 110°F)
Relative humidity	8%–80%
Altitude	–304 m to 3048 m (–1000 ft to 10,000 ft)
Maximum wet bulb (noncondensing)	25.6°C (78°F)
Heat dissipation	8 W (typical) (27.36 Btu/hr) 9 W max (30.8 Btu/hr)
Temperature gradient	11°C/hr (52°F/hr)

Table A–5 (Cont.) RZ23L Fixed Disk Drive Specifications

Nonoperating Conditions

Ambient temperature	–40°C to 66°C (–40°F to 150°F)
Relative humidity	8%–95% (packaged)
Altitude	–304 m to 12,192 m (–1000 ft to 40,000 ft)
Maximum wet bulb (noncondensing)	46°C (115°F)
Temperature gradient	20°C/hr (68°F/hr)

Table A–6 RZ24L Fixed Disk Drive Specifications

Formatted Storage Capacity

Per drive	245.4 MB
Per surface	61.35 MB
Bytes per block	512
Blocks per track	44 to 87
Blocks per drive	479,350
Spare blocks per drive	1818
Spare tracks	0
Buffer size	256K bytes

Performance

Data transfer rate to/from media	1.87 MB/s (min) 3.75 MB/s (max)
Bus asynchronous mode	4.0 MB/s
Bus synchronous mode	5.0 MB/s
Seek time track to track	2.5 ms
Seek time average	16 ms
Seek time max (full stroke)	<=30 ms
Rotational speed ±0.5%	4306 r/min

Table A–6 (Cont.)   RZ24L Fixed Disk Drive Specifications

Performance

Start time	16 sec nominal 20 sec maximum
Stop time	16 sec nominal 20 sec maximum
Interleave	1:1

Operating Conditions

Ambient temperature	10°C to 55°C
Relative humidity	8% to 80%
Altitude	–304 m to 3048 m (–1000 ft to 10,000 ft)
Maximum wet bulb	25.6°C (78°F)
Heat dissipation	5.7 watts (seeking) 3.7 watts (idle mode)
Temperature gradient	20°C/hr (20°F/hr)

Nonoperating Conditions

Ambient temperature	–40°C to 66°C (–40°F to –150°F)
Relative humidity	8% to 95% (noncondensing)
Altitude	–304 m to 12,192 m (–1000 ft to 40,000 ft)
Maximum wet bulb (noncondensing)	46°C (115°F)
Temperature gradient	30°C/hr (36°F/hr)

B

Port Pin-Outs

This appendix is for users who want to connect communications devices to their system. The following tables explain the functions of the pins on the ports on the back of the system unit:

- Printer/communications port pin-outs, Table B–1

- Asynchronous communications port pin-outs, Table B–2

- Audio connector port pin-outs, Table B–3

Table B–1   Printer/Communications Port (TTA3) Pin-Outs

Pin Number	Meaning
1	DTR
2	Transmit
3	Ground
4	Ground
5	Receive
6	DSR

Table B–2 Asynchronous Communications Port Pin-Outs

Pin Number	Meaning
1	Protective ground optional
2	Transmit data
3	Receive data
4	Request to send
5	Clear to send
6	Data set ready
7	Ground
8	Carrier detect
9	Not used
10	Not used
11	Not used
12	Speed detect
13	Not used
14	Not used
15	Not used
16	Not used
17	Not used
18	Receiver signal element timing
19	Not used
20	Data terminal ready
21	Not used
22	Calling indicator
23	Data signal rate selector
24	Not used
25	Test

Table B-3 Audio Port Pin-Outs

Pin Number	Meaning
1	Audio in
2	Audio out
3	Audio out return
4	Audio in return (ground)

The audio port is pin-compatible with a telephone headset.

C

Associated Documents

For option and system hardware part numbers, consult your Digital sales representative.

Not all the following documents are available in every country. Check with your Digital sales representative for availability.

Table C–1 lists the VAXstation 4000 online documents available on compact disc (Bookreader). Table C–2 lists the associated documents available in printed form.

Table C–1   VAXstation 4000 Bookreader Documents

Titles
VAXstation 4000 VLC Owner's Guide
BA46 Storage Expansion Box Owner's Guide

Table C–2   Associated Printed Documents

Titles	Order Numbers
VAXstation 4000 Family	
VAXstation 4000 VLC Setting Up Your Workstation Card	EK–INTRE–QC
VAXstation 4000 VLC Adding Memory Card	EK–INTNA–QC
VAXstation 4000 VLC Adding an Internal Disk Drive Card	EK–PERDE–QC
BA46 Storage Expansion Box Owner's Guide	EK–STEXP–IG

Table C–2 (Cont.) Associated Printed Documents

Titles	Order Numbers
Service Documentation	
VAXstation 4000 VLC Service Information	EK–V48VB–SV
VAXstation 4000 VLC and Model 60 Pocket Service Information	EK–V466H–PS
BA46 Expansion Service Information	EK–VBA46–SV
Drives	
Installing TLZ06 Cassette Tape Drive	EK–STEXP–AD
TLZ06 Cassette Tape Drive Owner's Manual	EK–TLZ06–OM
RRD42 Compact Disc Drive Owner's Manual	EK–RRD42–OM
RX26 Owner's Reference Card	EK–RX26D–RC
TZK10 Cartridge Tape Drive Owner's Guide	EK–TZK10–OG
RZ Series Disk Drive Subsystem	EK–RZXXD–PS
SCSI	
Small Computer System Interface: An Overview	EK–SCSIS–OV
Small Computer System Interface: A Developer's Guide	EK–SCSIS–SP
Other Helpful Documentation	
VMS Factory Installed Software for VAXstation 4000 Workstations Questions and Answers for Users	EK–VMSFI–RC
VMS DECwindows Motif Quick Reference Card	AV–PGZ4A–TE

Table C–2 (Cont.) Associated Printed Documents

Titles	Order Numbers
VMS Software Documentation Kits	
Base Set	QA–09SAA–GZ
VMS User's Manual *VMS System Manager's Manual* *VMS License Management Utility Manual* VMS DECwindows User Kit (2 manuals)	
General User Subkit	QA–001A1–GZ
General Information (3 manuals) Using VMS (6 manuals) Using DCL (2 manuals) DCL Dictionary (2 manuals) Processing Text (4 manuals) System Messages (2 manuals)	
System Management Subkit	QA–001A2–GZ
Setup (10 manuals) Maintenance (6 manuals) Security (4 manuals) Performance (4 manuals) Networking (4 manuals)	
Programming Subkit	QA–001A3–GZ
Introduction (3 manuals) Programming Utilities (7 manuals) System Routines (2 manuals) System Services (2 manuals) Run-Time Library (8 manuals) File System (6 manuals) System Programming (4 manuals) Device Support (2 manuals) VAX MACRO VAX TPU (2 manuals)	

For additional information, refer to:

Open Software Foundation, *OSF/Motif User's Guide*, (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1990) ISBN 0–13–64059–6.

D

Error Messages

Table D–1 describes some common error messages that you may see when turning on your system or running a self-test. If you see other messages that you do not understand, call Digital Services.

Table D–1 Error Messages

Error Message	Meaning	Solution
166	Terminator is not secure.	Secure terminator and check all network cables.
172	Loopback connector is not secure.	Secure loopback connector and check all network cables.
180	SCSI device number entered by user is same as controller.	Set the SCSI ID to a different number than the system.
183	SCSI device is not a disk.	Check the media.
184	SCSI device is not a tape.	Check the media.
185	SCSI media is not removable.	Your drive is fixed.

Glossary

alternate console feature

A feature that allows you to receive system messages and direct system activities from an alternate terminal, if necessary, to diagnose problems with the system.

ANSI

American National Standards Institute.

applications

Programs, such as DECwrite and DECdecision, that perform end-user tasks.

architecture

The internal configuration of a computer including its registers, instruction set, and input/output structure.

backup

A copy of files or software made for safekeeping. Also, the process of making copies of the data stored on your disk so that you can recover that data after an accidental loss. You make backup copies on tape cartridges, or over a network using the Remote System Manager.

baud rate

The speed at which signals are serially transmitted along a communications line. One baud equals 1 bit per second.

bezel

The removable molded panel on the front and back of the system unit. Certain bezels shipped with particular devices, such as the TLZ06 or RRD42 drives, are designed to provide access to the front of the device after it is installed.

bit

A binary digit; the smallest unit of information in a binary system of notation, designated as a 0 or a 1.

boot

To bring a device or system to a defined state where it can operate on its own.

boot device

The device on which the operating system software is loaded.

boot flag

A setting that determines from where the system will boot. Default boot flags should already be set when you receive your system.

bus

A channel (a set of wires) along which communication signals in a computer system travel.

byte

A group of 8 binary digits (bits). A byte is one-quarter of a VAX system word. See also **kilobyte** and **megabyte**.

cable

A sheathed group of electrical conductors.

caddy

The holder for the compact disc.

CD

See **compact disc**.

cluster

A group of networked computers that share disk storage, application programs, and other computer resources. Also called a VAXcluster.

command

A request you make to the operating system to perform a specific function, for example, a request to run a program or show the configuration of a system.

communication

The flow of information from one point (the source) to another (the receiver).

compact disc

A flat circular plate on which read-only optical data is stored. A laser optical reader retrieves this information.

component

A basic part, or element, of your system that can be either internal or external. Compare to **device**.

configuration

See **system configuration**.

connector

Hardware that connects directly to a port on the system.

console

A device through which an operator communicates with the computer.

console commands

Commands entered when the system is in console mode.

console mode

The state in which the computer is controlled directly by user commands from the console terminal rather than indirectly through the operating system. Put your system in console mode by pressing the halt button on the system unit. Console mode is indicated by the console prompt (>>>) on the monitor screen. Compare to **program mode**.

console prompt

The prompt that appears on the screen when the system is in console mode.

controller

A system component, usually a printed circuit board, that regulates the operation of one or more peripheral devices.

cursor

A blinking symbol on the screen that indicates where the next character the user types will appear.

daisy-chain

To link a number of computers or expansion boxes sequentially.

DAT

Digital Audio Tape: high-quality audio tape used for file storage.

data

A formal representation of information suitable for communication, interpretation, and processing by computers.

database

A collection of interrelated data on one or more mass storage devices. The collection is organized to facilitate efficient and accurate inquiry and update.

DECwindows

An interface to the VMS operating system that allows a workstation screen to be divided into windows where several application programs can appear simultaneously and commands can be executed using menus and a mouse. See also **window**.

default

A value or setting that is in effect unless another value or setting is specified.

default recovery action

The action that the system takes after a power or system failure.

device

The general name for any hardware unit connected to the system and capable of receiving, storing, or transmitting data. Examples of devices are drives and other units that you can install in an expansion box.

diagnostics

Programs, located in read-only memory, that detect and identify abnormal system hardware operation.

disc

See **compact disc**.

disk

A flat circular plate with a coating on which data is magnetically stored in concentric circles (tracks). A fixed disk resides permanently inside a disk drive, whereas a diskette is removable.

disk drive

A device that holds several disks. The drive contains mechanical components that spin the disks and move the read and write heads that store and read the information on the surface of the disks.

diskette

A flexible disk contained in a square jacket. Diskettes can be inserted and removed from diskette drives.

diskette drive

A disk drive that reads from or writes to removable diskettes. This system uses the RX26.

dismount

A command to delete a device from the list of recognized devices on the system.

distributed application

An application in which part of the application functions are distributed to other systems over the network for processing. This distribution provides more efficient use of system resources.

drive leader

A plastic leader inside a tape drive. The cartridge leader on the magnetic tape and the drive leader on the tape drive mate. The drive leader draws the magnetic tape out of the tape cartridge and onto a take-up reel inside the drive. As the tape is wound onto the take-up reel, it passes the magnetic read and write heads.

error line

A line of information that appears if a self-test or a power-up test fails. The following information appears on the error line:

Field-replaceable unit number, component number, component mnemonic, and error message number. For example:

```
001  9  NI  172
```

error message number

A number that appears on the error line representing a particular system or component problem.

Ethernet

A type of local area network based on Carrier Sense Multiple Access with Collision Detection (CSMA/CD); a communications concept for local communication networks that use coaxial cable.

Ethernet hardware address

The unique Ethernet physical address associated with a particular Ethernet communications controller.

Ethernet subsystem

Refers to the Ethernet controller chip built into the system board.

expansion box

A box that holds additional system devices.

fatal error

An error from which a process cannot recover. Fatal errors are either those that cause the CPU to stop, or disk write errors other than those caused by the disk drive being powered down or write-locked.

field-replaceable unit (FRU)

A part of the system that can be replaced by your Digital service representative.

file

A collection of related information treated by the system as a unit.

fixed disk

A disk that resides permanently inside a disk drive. Compare to **diskette**.

fixed disk drive

The disk drive that reads from or writes to fixed disks.

gigabyte (GB)

The measure used when referring to memory or secondary storage capacity, equal to 1000 megabytes or 1,048,576,000 bytes.

ground

A large conducting body used as a common return for an electrical circuit and as an arbitrary zero voltage of potential.

hardware

The physical equipment, mechanical and electrical, that makes up a system. Compare to **software**.

housing

The plastic case in which a compact disc sits. See also **caddy**.

icon

A symbol on the back or front of the system unit that identifies a switch, an indicator, or a port to which a cable or power cord can be connected.

input/output (I/O) device

A piece of equipment that transmits data to (input) and from (output) the system. For example, a terminal or a mouse. See **mouse**.

interface

An electronic circuit board that links an external device to a computer. Also, a device or piece of software that allows a user to communicate with the system or allows the components of the system to communicate with each other.

jumpers

Small removable electrical connectors with which to set the SCSI ID number for a device.

kilobyte (KB)

When referring to memory or secondary storage capacity, 1024 bytes.

local

In close proximity to the computer. Compare to **remote**.

local area network (LAN)

A high-speed communications network that covers a limited geographical area, such as a section of a building, an entire building, or a cluster of buildings. It is a privately owned communication network whose speed is upward of one megabit per second.

local console mode

Allows the user to interact directly with the system without requiring the password security feature. Compare to **privileged console mode**.

local device

A disk drive, tape drive, or other device that is only available to the computer to which it is connected.

log in

To identify yourself to the operating system. When you log in, you type an account name and password. If the name and password match an account on the system, you are allowed access to that account.

magnetic tape

A tape, made of plastic and coated with magnetic oxide, that is used to store data. Also called magtape.

media

The physical material on which data is recorded, for example, magnetic disks, diskettes, and compact discs.

megabyte (MB)

A unit of measure equal to 1000 kilobytes or 1,048,576 bytes.

memory

The area of the system that electrically stores instructions and data, often temporarily.

mnemonic

The abbreviation used by the system to identify a device or controller in the system.

modem

A device that converts computer signals to signals that can be sent over a telephone line.

module

A printed circuit board that contains electrical components and electrically conductive pathways between components. A module stores data or memory or controls the functions of a device.

monitor

A video device that displays data.

mouse

A hand-held input device that is moved across the desktop to move the pointer or cursor on the monitor screen and to select menu options and draw graphics. The mouse is palm-sized and contains three buttons (function keys).

network

Two or more computers linked by communication lines to share information and resources.

network manager

The person who manages the network, assigns unique node names and addresses for each system on the network, and provides administrative assistance to network users.

node

A computer, workstation, or peripheral device that is connected to a network and that can communicate with other members of the network.

node name

A unique name that identifies a node.

node number

A unique number, associated with a node name, that identifies a node.

nonvolatile memory

Type of memory in which values are not lost when the system is turned off.

online documentation

Documents that can be read directly on your monitor screen. Online documentation is stored on a compact disc and includes all text and illustrations found in the printed manuals. Fast access time and cross-referencing are two advantages of online documentation.

operating system

An integrated collection of programs that controls the operation of the system and allows users access to data files, input/output devices, and application programs.

password

A unique string of characters or numbers, or both, that identifies you to the computer.

password security feature

The password security feature restricts access to certain console commands. To use all console commands, users must enter a password.

peripheral device

A device that provides the central processing unit (CPU) with additional memory storage or communication capability. Examples are disk and diskette drives, video terminals, and printers.

pointing device

A terminal input device that allows you to make a selection from a menu or to draw graphics. See **mouse** and **tablet**.

port

A socket on the front or back of the computer to which a terminal, printer, modem, or other device is connected.

power-up

A series of ordered events that occur when you supply power by turning on the system.

privileged console commands

The commands allowed by the password security feature. See **password security feature**.

privileged console mode

The state the system is in when the password security feature is enabled. See **password security feature**.

process

A program currently using memory and running on the system.

program

The sequence of instructions the system uses to perform a task. See **software**.

program mode

The state in which the computer is controlled by the operating system. After the operating system is installed, the system will always operate in program mode, unless you put it into console mode. Compare to **console mode**.

prompt

A symbol displayed by a program or an operating system, indicating that you are to provide input.

puck

A palm-sized device that slides on a tablet's surface. The puck and tablet together function as a pointing device. See **pointing device** and **tablet**.

RAM

See **random access memory**.

random access memory (RAM)

Memory that can be both read and written to and that can randomly access any one location during normal operations. The type of memory the system uses to store the instructions of programs currently being run.

read-only memory (ROM)

Memory that cannot be modified. The system can use (read) the data contained in ROM but cannot change it.

register

A storage location in hardware logic other than main memory.

remote

Physically distant from a computer, but linked to a computer by communication lines. Compare to **local**.

removable media device

A device such as the RRD42, TZK10, TLZ06, or RX26 from which the storage medium is removable.

ROM

See **read-only memory (ROM)**.

SCSI

See **Small Computer System Interface**.

section

A single length of ThinWire Ethernet cable terminated at each end with a connector.

segment

A length of ThinWire Ethernet cable made up of one or more sections connected with barrel connectors or T-connectors.

serial port

A port dedicated to hookups with serial line devices such as terminals or printers. Serial devices transmit data one word after another (serially) along a single pair of lines from a sending device to a receiving device.

single-inline memory module (SIMM)

Industry-standard memory board.

Small Computer System Interface (SCSI)

An interface designed for connecting disks and other peripheral devices to computer systems. SCSI, pronounced "skuh-zee," is defined by an ANSI standard and is used by many computer and peripheral vendors throughout the industry.

software

Instructions executed by the system to perform a chosen or required function. Compare to **hardware**.

standalone workstation

A workstation that starts and operates alone without being connected to another computer.

standard Ethernet network

An Ethernet network connected with standard Ethernet cable (also known as Thickwire Ethernet). Compare to **ThinWire Ethernet network**.

storage device

A device, such as a diskette or tape, capable of recording information.

strain relief strap

See **universal strain relief strap**.

stylus

A penlike device that draws on the surface of a tablet and functions as a pointing device.

system

A combination of hardware, software, and peripheral devices that together perform specific processing operations.

system configuration

The combination of hardware and software that makes up a usable computer system.

system disk

The disk that stores the operating system and that starts the system and allows it to run properly.

system unit

The part of the system that contains the drives, memory, power supply, and the computer itself.

tablet

An absolute-positioning input device composed of a flat-surfaced digitizing tablet and a puck or stylus. The tablet is a drawing surface. The puck and stylus are pointing devices that move the cursor on the monitor screen, draw graphics, and make selections from the menu.

tape cartridge

Housing for magnetic tape. The cartridge contains a reel of tape and a take-up reel. A cartridge is similar to a cassette, but of slightly different design.

tape drive

A device that contains mechanical components and holds, turns, reads, and writes on magnetic tape.

T-connector

A connector used to join ThinWire Ethernet cable sections.

terminal

A device for entering information into a computer system and displaying it on a screen. A typewriter-like keyboard, mouse, tablet, or other pointing devices are used to enter information.

terminator

A connector used on one or both ends of an Ethernet segment that provides the 50-ohm termination resistance needed for the cable. Also used on both sides of a T-connector.

ThinWire Ethernet network

A Digital trademark used to describe its 10base2 (IEEE standard 802.3 compliant) Ethernet products used for local distribution of data.

timesharing

A system in which two or more programs are allotted, in turn, equal time or use of a computer or computer device.

universal strain relief strap

A plastic strap used when connecting the monitor video cable to the back of the monitor. The strap prevents the weight of the cable junction box from pulling the connectors out of the monitor.

user interface

The style of interaction between the computer and the user of that computer.

VAXcluster configuration

A group of two or more computers connected by an Ethernet cable. In a VAXcluster, one computer (the server) serves the other computers: it is required to start the other computers, and it manages the resources that they share.

VMS device name

The name that the VMS operating system uses for a storage device to access that particular device.

VMS operating system

Digital Equipment Corporation's proprietary operating system.

volatile memory

Type of memory in which values are lost when the system is turned off.

wide area network

A public or private data communications system in which transmissions are carried primarily over telephone lines.

window

An area on your monitor screen in which you can start, run, and view a separate process. Windowing capability is supported by both VMS and ULTRIX workstation software.

workstation

A single-user system, such as your VLC workstation, that offers high-performance, high-resolution graphics, and that can function in a network environment.

write-protect switch

The switch that you move on a tape cartridge or an RX26 diskette to prevent loss of data by accidental overwriting.

Index