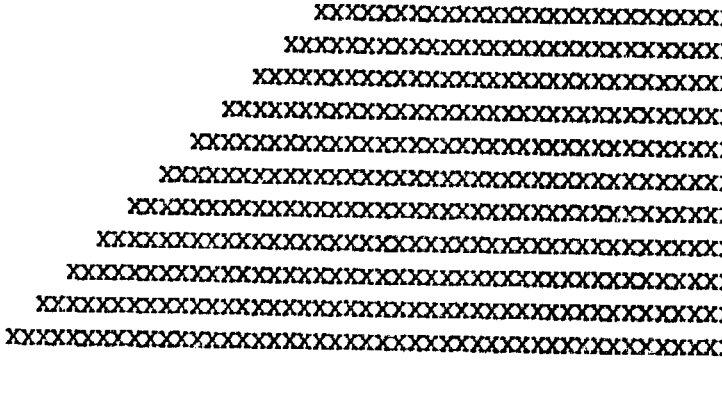
UPGRADE GUIDE



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VS 2000 and VS 3100 Family to VAXstation 4000 VLC Upgrade Guide

Digital Equipment Corporation

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About This Guide

Purpose of this Guide

This guide describes how to upgrade a VAXstation 2000 or a VAXstation 3100 Model 30 or 38, Model 40 or 48, or Model 76 system to a faster, more powerful VAXstation 4000 VLC workstation. This system utilizes the latest System On a Chip (SOC) technology along with 5Kbyte of internal cache memory. It offers 5.5 SPECmarks (6 VUPs) of processing power.

The upgrade is accomplished by removing the Ethernet ROM from the VS 2000 or one of the VS 3100 family of systems and installing it into a VS 4000 VLC system unit. The VS 4000 VLC system enclosure accepts one half height 3.5 inch hard disk drive with the RZ23L form factor. Any additional disk drives must be installed in an expansion box.

Who Should Use This Guide

Only Digital Services or qualified self-maintenance personnel should perform this upgrade. You must have a working knowledge of, and experience working on the internal hardwar devices of the VAXstation 2000 or the VAXstation 3100 family of systems. If you are not qualified to perform this upgrade, cal Digital Services to schedule an upgrade.

Continued on next pag

Note

It is the customer's responsibility to perform all software backups of the system and user disks. All backups should be performed before the Digital Services representative arrives at the site. Backups are mandatory to ensure that data is not lost during the upgrade.

Structure of this Guide

This guide is comprised of four chapters. Chapter 1 describes the upgrade procedure for the VS 2000 workstation. Chapter 2 describes the upgrade procedures for the VS 3100 Models 30 and 38 workstations. Chapter 3 describes the upgrade procedures of the VS 3100 Model 40 and 48 workstations. Chapter 4 describes the upgrade procedure for the VS 3100 Model 76 workstation.

Continued on next page

Structure of this Guide (continued)

Each system has a model code number stamped on the rear of the system unit. Look at the label and refer to the table below to determine which chapter in the Guide to use for the upgrade procedures:

Model Code Number	System Model	Upgrade Information
VS410-xx*	VS 2000	Chapter 1
VS42A-xx*	VS 3100 Model 30	Chapter 2
WS42A-xx*	VS 3100 Model 38	Chapter 2
VS42S-xx*	VS 3100 Model 40	Chapter 3
WS42B-xx*	VS 3100 Model 48	Chapter 3
WS43A-xx*	VS 3100 Model 76	Chapter 4

*The -xx means that there are various extensions for the model code number.

Continued on next page

Related Documentation

The following documents provide additional information relating to the VAXstation 4000 VLC system:

- VAXstation 4000 VLC Owner's Manual, EK-VAXVL-OG
- VAXstation 4000 VLC and Model 60 Operation Installation Guide, EK-PMARI-IG
- VAXstation 4000 VLC Pocket Service Guide, EK-V466H-PS
- VAXstation 4000 VLC Service Information, EK-V48VB-SV-001

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Product Description

The VAXstation 4000 VLC workstation is a desktop product, including a pointing device, keyboard, and a monitor that sits either on top or beside the system enclosure. The CPU board (KA-48) is based on the latest SOC technology.

The main features of the VAXstation 4000 VLC are:

- Up to 24Mbytes of SIMM memory
- Thickwire connection for Ethernet
- SCSI controller–single asynchroncus/synchronous port
- Four serial line controllers for:
  - Keyboard
  - Pointing device
  - Printer
  - Asynchronous communication
- Audio input/output connector
- ROM-based diagnostics for:
  - Power-up self-test
  - User-selected self-test
  - Extended level tests
- Software distribution by:
  - CDROM disk or TK50 tape drive
  - System down line loaded over Ethernet
  - MS–DOS applications are loaded through RX26 diskette drive

Continued on next page

Physical Specification

As a worldwide product, the VS 4000 VLC system will meet all international regulatory standards and is available with country-specific keyboards, power cords, and user documentation.

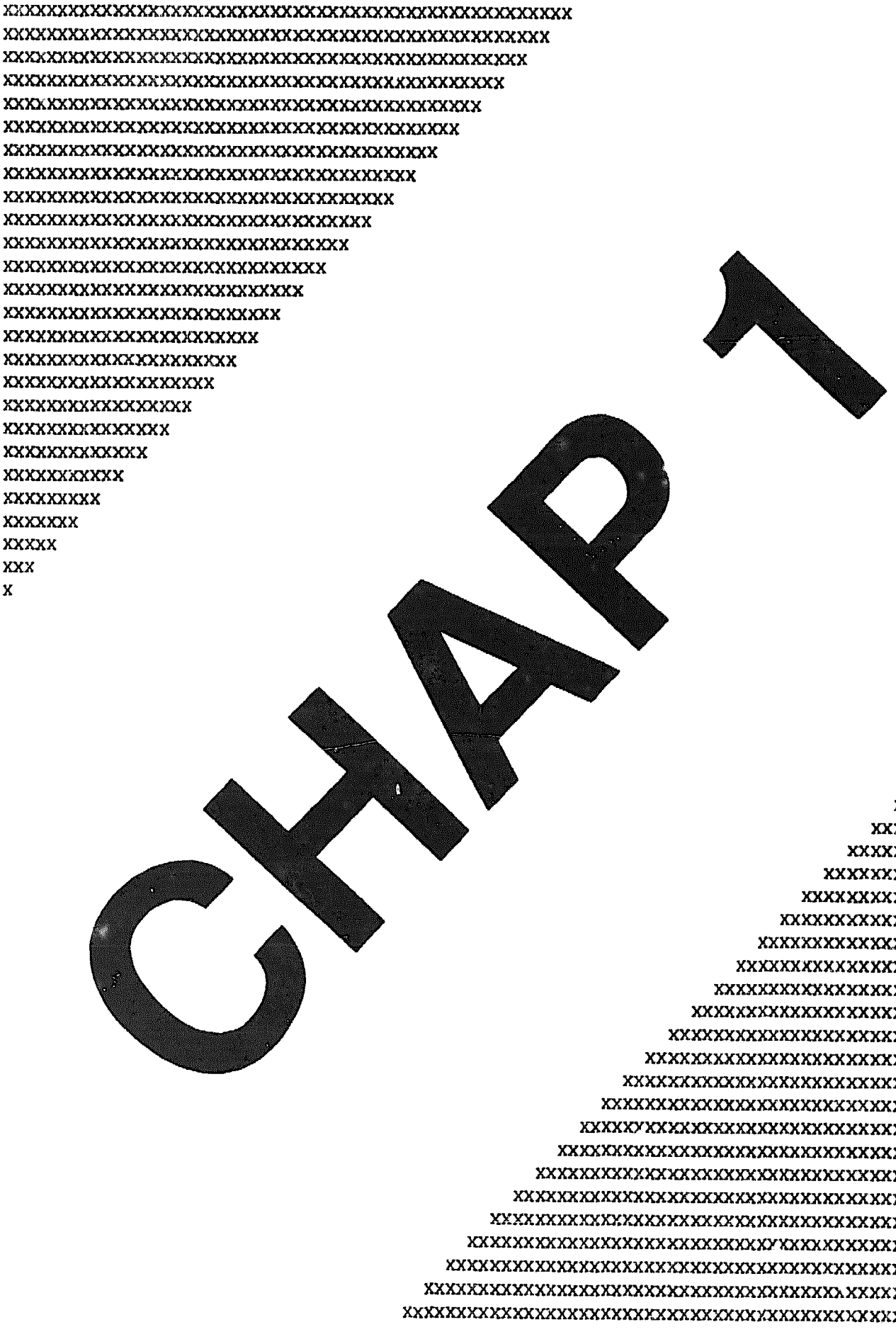
All the system unit modules, CPU, memory, mass storage, graphics, and power supply modules are easily installable and removable.

Conventions

Conventions Used in this Guide

The following conventions are used in this guide:

Convention	Meaning
Return	A name enclosed in a box in interactive examples indicates a key you press on the keyboard.
RZ2x	RZ2x refers to any of the RZ2-series hard disk drives.
WARNING	Warnings contain information to prevent personal injury. Read warnings carefully.
CAUTION	Cautions provide information to prevent damage to equipment or software. Read cautions carefully.
NOTE	Notes provide general information about the current topic.


CHAP 1

Chapter 1
Upgrade of VS 2000 Workstation to a VAXstation 4000 VLC Workstation

Overview

Introduction

By upgrading the VS 2000 workstation to a VAXstation 4000 VLC workstation, the customer is able to leverage his/her initial investment in existing Digital VMS technology to a faster and more powerful computer workstation.

The VAXstation 4000 VLC workstation is a desktop product, including a pointing device, keyboard, and a monitor located either on top or beside the system enclosure. The CPU board (KA-48) is based on the latest SOC technology.

Purpose

The purpose of this chapter is to provide upgrade information so that Digital Services Engineers or knowledgeable Digital customers can upgrade an existing VS 2000 workstation to a VAXstation 4000 VLC workstation.

Caution

Only Digital Services or qualified self-maintenance personnel should perform this upgrade. You must have a working knowledge of and experience working on the internal hardware devices of the VAXstation 2000 system.

Continued on next page

If you are not qualified to perform this upgrade, call Digital Services to schedule an upgrade.

Chapter Content

This chapter describes how to upgrade a VAXstation 2000 workstation, including the proper shut down procedures, and installation procedures for the Ethernet ROM in the VS 4000 VLC workstation. This chapter also describes how to run preliminary console commands to verify that the system is operational.

Continued on next page

Chapter Reference

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Run the Test 50 command	1-4
Shut down the system	1-6
Identify the system	1-8
Use the antistatic wrist strap	1-9
Remove the VS 4000 VLC top cover	1-13
Remove the shield on adapter module on VS 2000	1-16
Remove bottom dress cover on VS 2000	1-18
Remove VS 2000 top cover	1-20
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Run Test 50 Command

To run the Test 50 command, do the following and refer to Example 1–1:

Step	Action
1.	Press the Halt button in the rear of the system unit. Results: The system displays the console prompt (>>>) on the screen.
2.	Type **Test 50** at the console prompt and press Return. Record the Ethernet hardware address. This address will be verified during the completion of the upgrade.

Continued on next page

Screen Display for Test 50 Utility Command

Example 1–1 Typical Screen Display for a TEST 50 Utility Command

```
>>>Test 50

KA410-B V2.1
ID 08-00-2B-07-E3-83

    MONO          0000.0001
    CLK           0000.0001
    NVR           0000.0001
    DZ            0000.0001
       00000001  00B00001  00000001  00000001  00000001...
    MEM           0002.0001
        00200000
    MM            0000.0001
    FP            0000.0001
    IT            0000.0001
    HDC           1110.0001
        000146B8    00028173 00000320
    TCP           0202.0001
       FFFFFF03  01000001  FFFFFF05  FFFFFF05   FFFFFF05..
    SYS           0000.0001
    4PLN          0000.0001 V1.4
    NI            0000.0001 V1.3

>>>
```

Backups and Revisions

Before powering down the system, back up all system and user disks to prevent loss of data. All system backups and VMS software version upgrades are the responsibility of the Digital customer.

Shutting Down Peripherals/Disconnecting Cables

Note

Refer to the *VMS Installation and Operations Manual*, AA-NY74B-TE for the proper shutdown procedures.

Shut Down the System

After shutting down the operating system, turn the system peripherals off in the following order:

1. Expansion boxes
2. Printer, modem, and any other equipment
3. Monitor
4. System unit

Disconnect Cables

Disconnect the following cable connectors from the back of the system unit. Refer to Figure 1–1:

1. System power cord, first from the wall and then from the system unit
2. 15-pin video cable
3. ThinWire Ethernet cable/terminator
4. 25-pin communication cable
5. 9-pin printer cable

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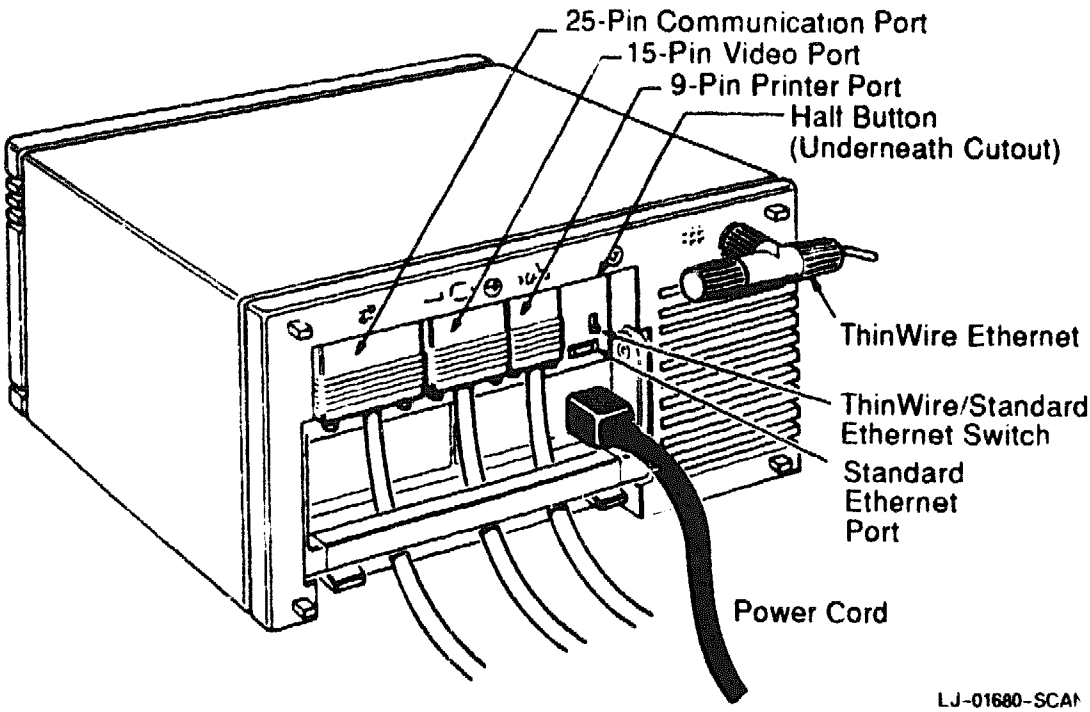
Figure 1–1 Disconnecting the System Unit Cables



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Identify the System

After the cables have been disconnected and before beginning the upgrade, you need to identify the system to be upgraded.

To identify the VS 2000 workstation, do the following:

Step	Action
1.	View the system unit from the rear.
2.	Locate the sticker label with the model code number VS410-xx for a VS 2000 workstation.
3.	Does the system unit have the proper model code number? • If yes, continue with this chapter. • If no, go to another chapter in this guide for that particular model code number. Refer to **About This Guide** in this document to determine the chapter you need to go to.

Protecting Against Static

Caution

To eliminate any static charge that you may have built up, touch your index finger to the top of the power supply in the system unit. This will discharge any static electricity.

Use the Antistatic Wrist Strap

The following rules **must** be adhered to while handling system components:

1. Wear a properly grounded antistatic wrist strap when handling internal system unit components.
2. Any module or device removed from the system unit must be placed on an antistatic mat.

Continued on next page

Use the Antistatic Wrist Strap (continued)

To handle the system components, do the following and refer to Figure 1–2:

Step	Action
1.	Place the VS 2000 system unit and the VS 4000 VLC system unit side by side on an antistatic mat.
2.	Plug the VS 2000 power cord into the ac power port on the back of the VS 2000 system unit.
3.	Plug the other end of the power cord into the ac video monitor port on the back of the VS 4000 VLC system unit. The two system units now have a common ground between them (daisy chained).
4.	Attach the alligator clip of the antistatic wrist strap to the power supply of *any* system unit when installing or removing internal components.

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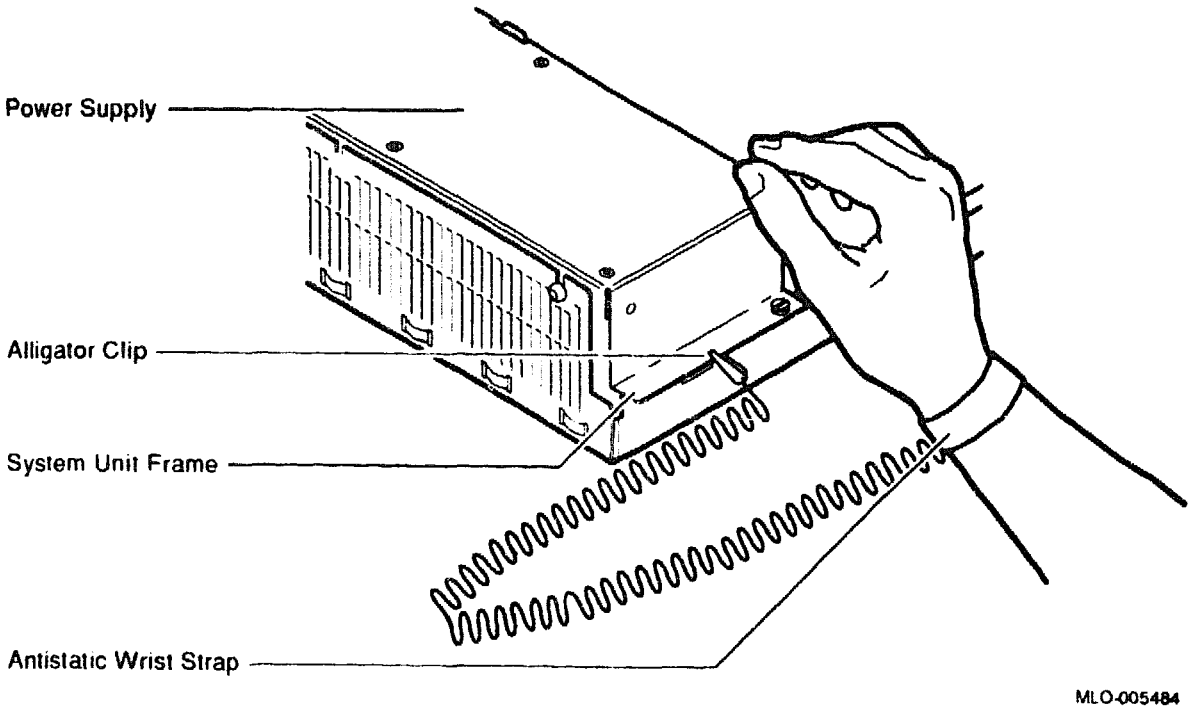
Figure 1–2 Attaching the Antistatic Wrist Strap to the System Unit



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Alternate Static Protection Method

An alternate method of using the antistatic wrist strap is:

Step	Action
1.	Place the antistatic strap on your wrist.
2.	Connect the alligator clip to the chassis frame in front of the VS 2000 power supply. **NOTE This method is the least desirable method because the alligator clip has to be moved from system unit to system unit when exchanging internal components.**

Removing Top Covers of System Units

Remove the Top Cover of the VS 4000 VLC

The top cover of the VS 4000 VLC needs to be removed to gain access to the internal components in the system enclosure.

To remove the top cover of a VS 4000 VLC workstation, do the following and refer to Figure 1–3.

Step	Action
1.	Carefully release the latches on the right side of the system unit.
2.	Pull the cover up and away from the system.
3.	Place the cover aside. It will be used later during repackaging.

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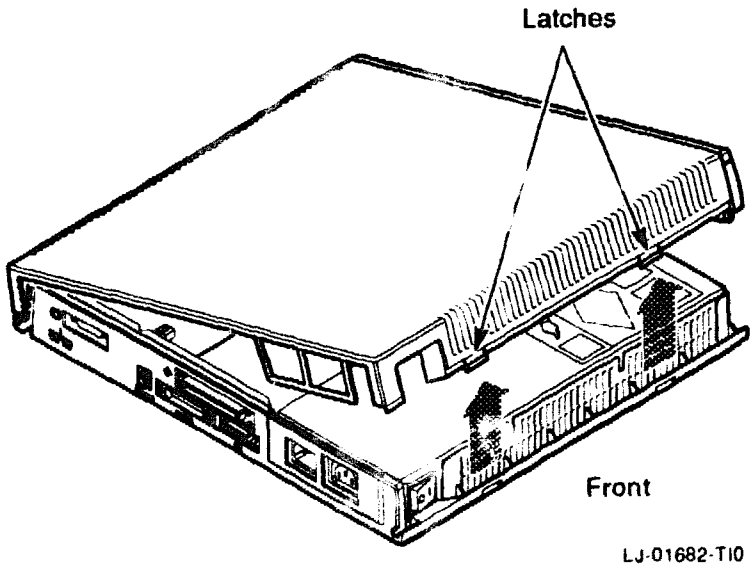
Figure 1–3 Removing Top Cover on The VS 4000 VLC



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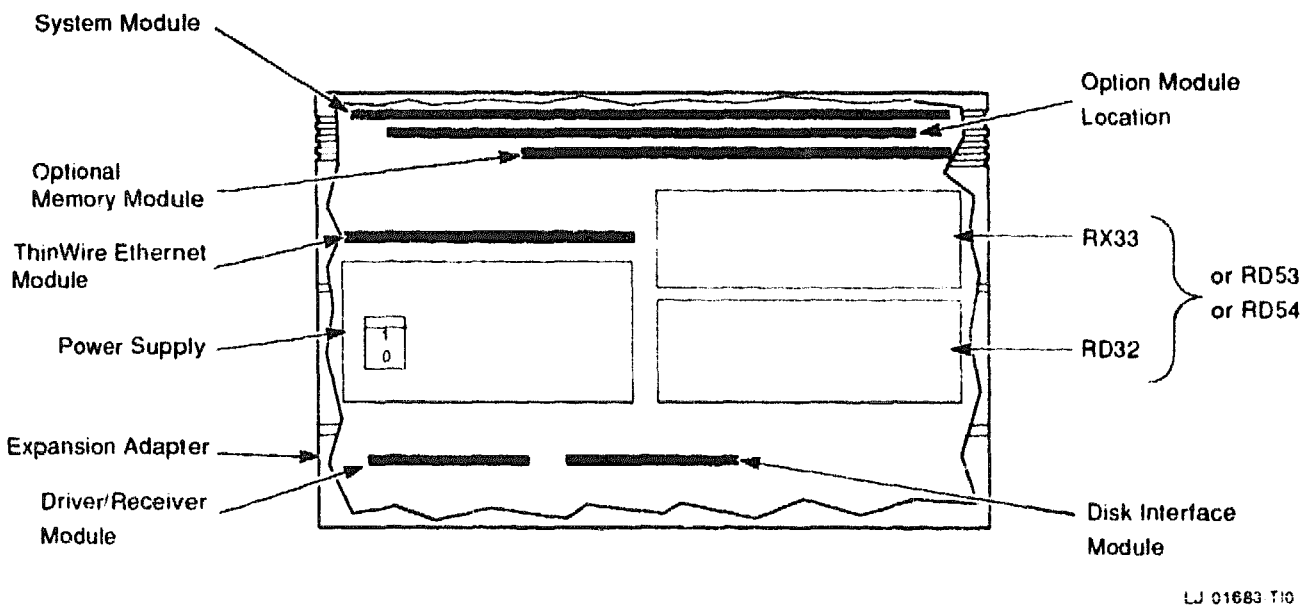
VS 2000 System Unit

Figure 1–4 shows a front view of a VAXstation 2000 system enclosure.

Figure 1–4 Front View VAXstation 2000



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Note

To access the four screws securing the system unit cover on a VS 2000 workstation, you may have to remove the shield on an expansion adapter module or remove a bottom dress cover on the bottom of the system unit on some of the VS 2000 system configurations.

Remove the Shield on Adapter Module

To remove the shield on an expansion adapter, do the following and refer to Figure 1–5.

Step	Action
1.	Place the VS 2000 on its back so the front panel faces upward.
2.	Using a Phillips-head screwdriver, unscrew the two screws holding the shield to the expansion adapter.
3.	Lift the shield up and away from the system box, thus exposing the four screws securing the system box cover.

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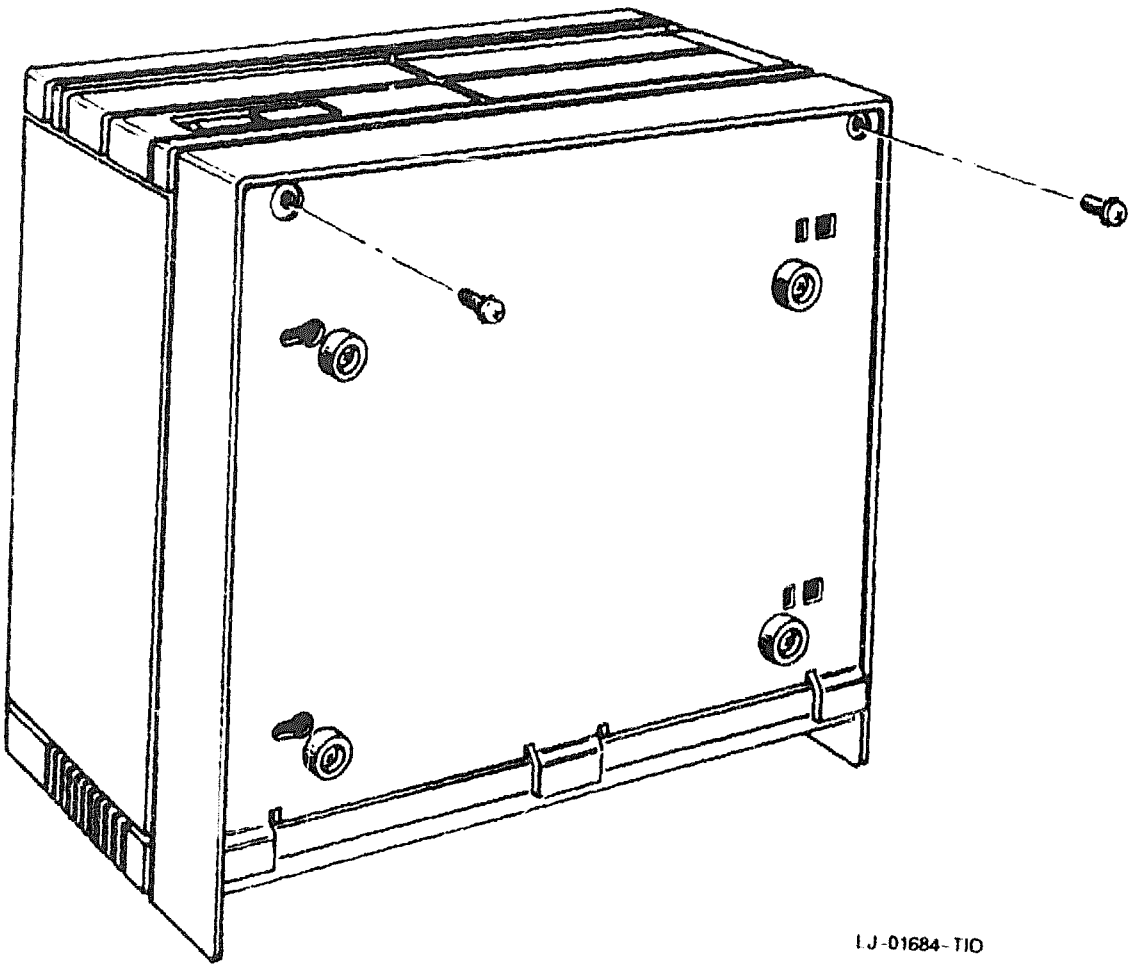
Figure 1–5 Removing Expansion Adapter Shield



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Remove Bottom Dress Cover

To remove the bottom dress cover (if necessary), do the following and refer to Figure 1–6:

Step	Action
1.	Turn the system unit so the bottom dress cover faces upward.
2.	Facing the front of the system unit, slide the dress cover to the left until the latches release.
3.	Lift the dress cover up and away from the system unit, exposing the four screws securing the system unit cover.

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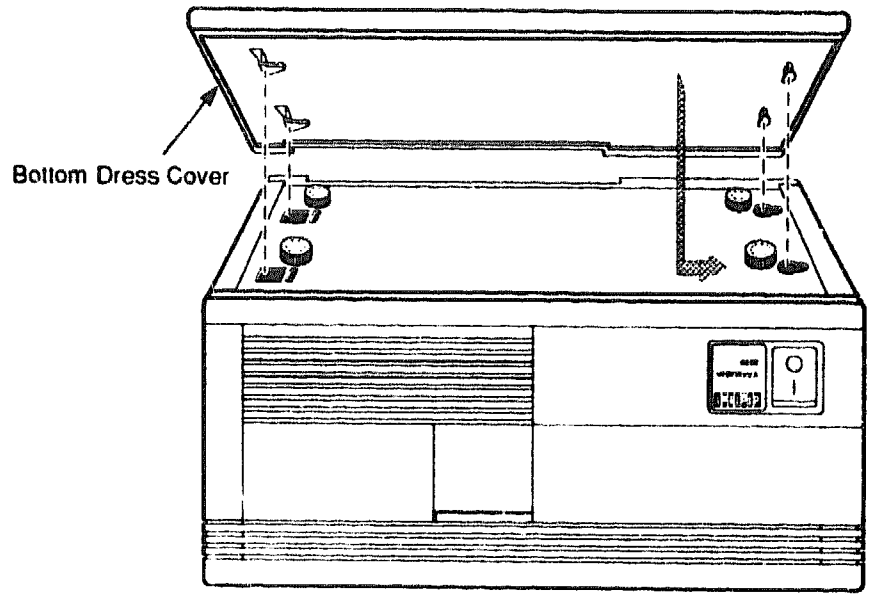
Figure 1–6 Removing the Bottom Dress Cover



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Remove the VS 2000 System Unit Cover

To remove the system unit cover from the VS 2000 system box, do the following and refer to Figure 1–7 and Figure 1–8:

Step	Action
1.	Place the system unit box on its back so the front panel faces upward.
2.	Using a Phillips-head screwdriver, remove the four screws securing the cover to the system unit.

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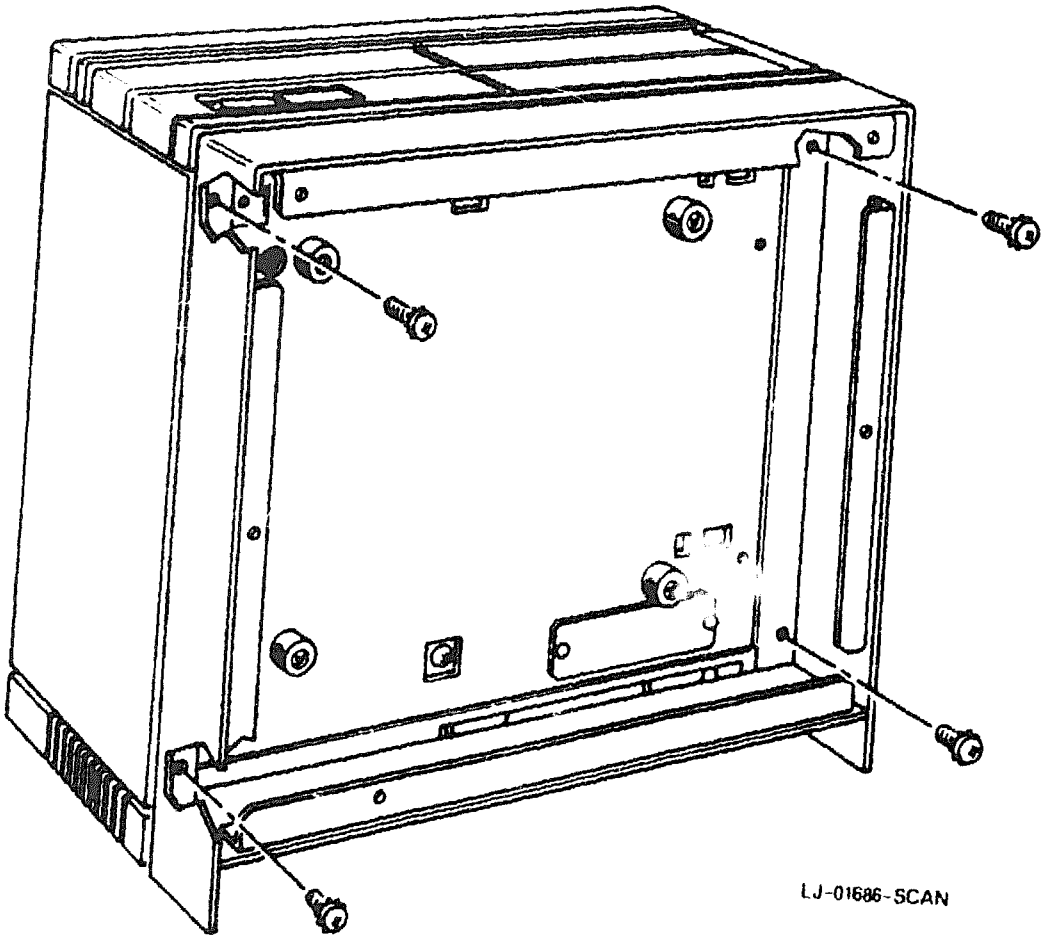
Figure 1–7 Removing System Unit Cover Screws



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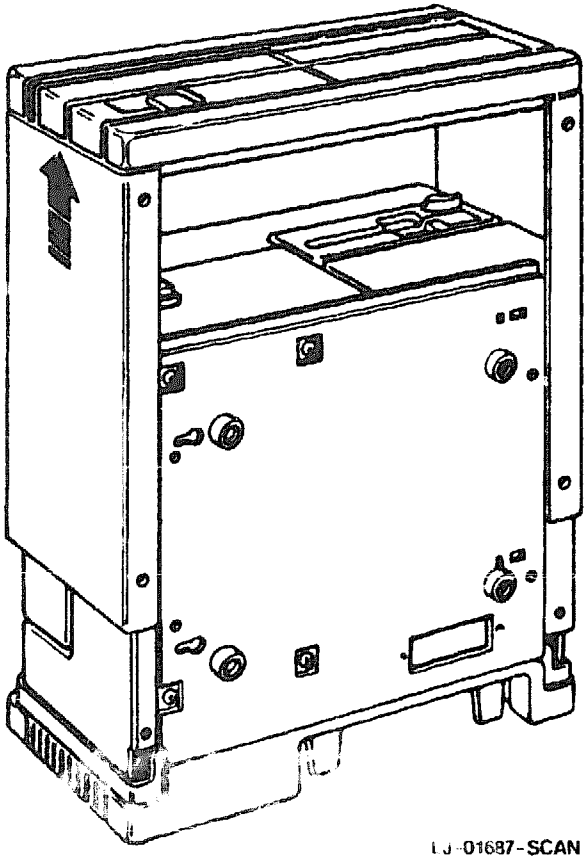
Remove the VS 2000 System Unit Cover (continued)

Step	Action
3.	Slide the cover up and off the system enclosure.

Figure 1–8 Removing System Unit Cover



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Remove the Upper Shield

To gain access to the Ethernet ROM on the CPU module, the VS 2000 upper shield must be removed from the system unit.

To remove the upper shield, do the following and refer to Figure 1–9, Figure 1–10, and Figure 1–11:

Step	Action
1.	Place the system unit so the front is facing you, then remove the five screws that hold the shield to the system base.

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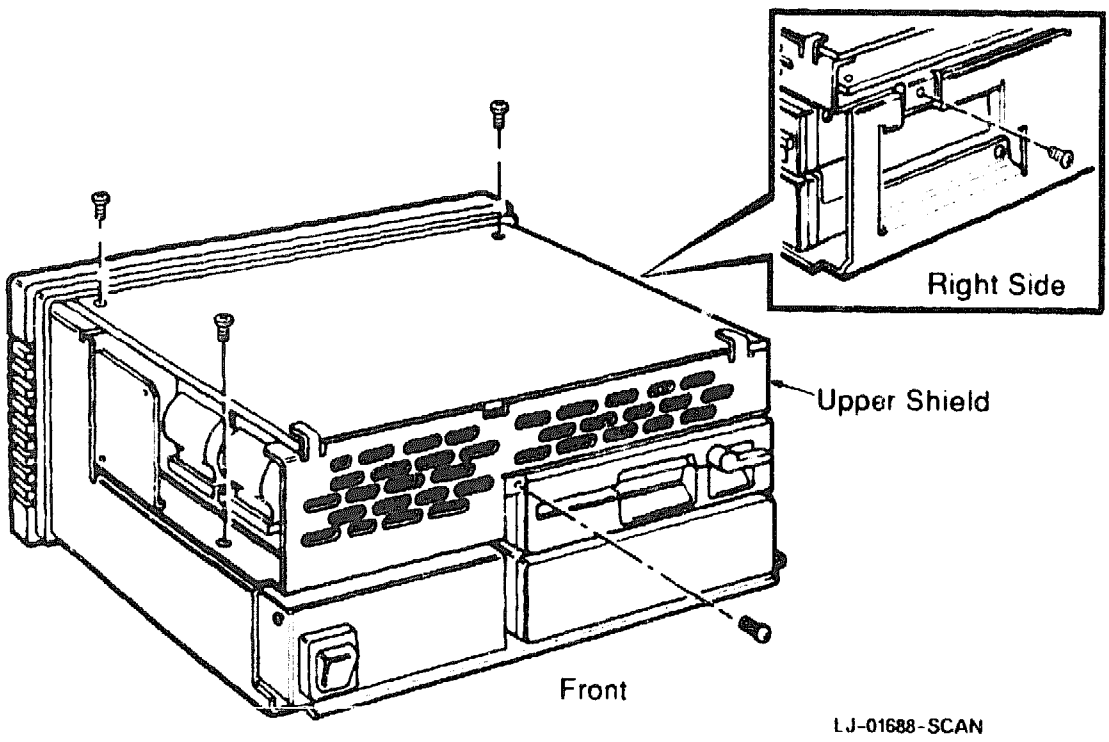
Figure 1–9 Removing the Upper Shield Screws



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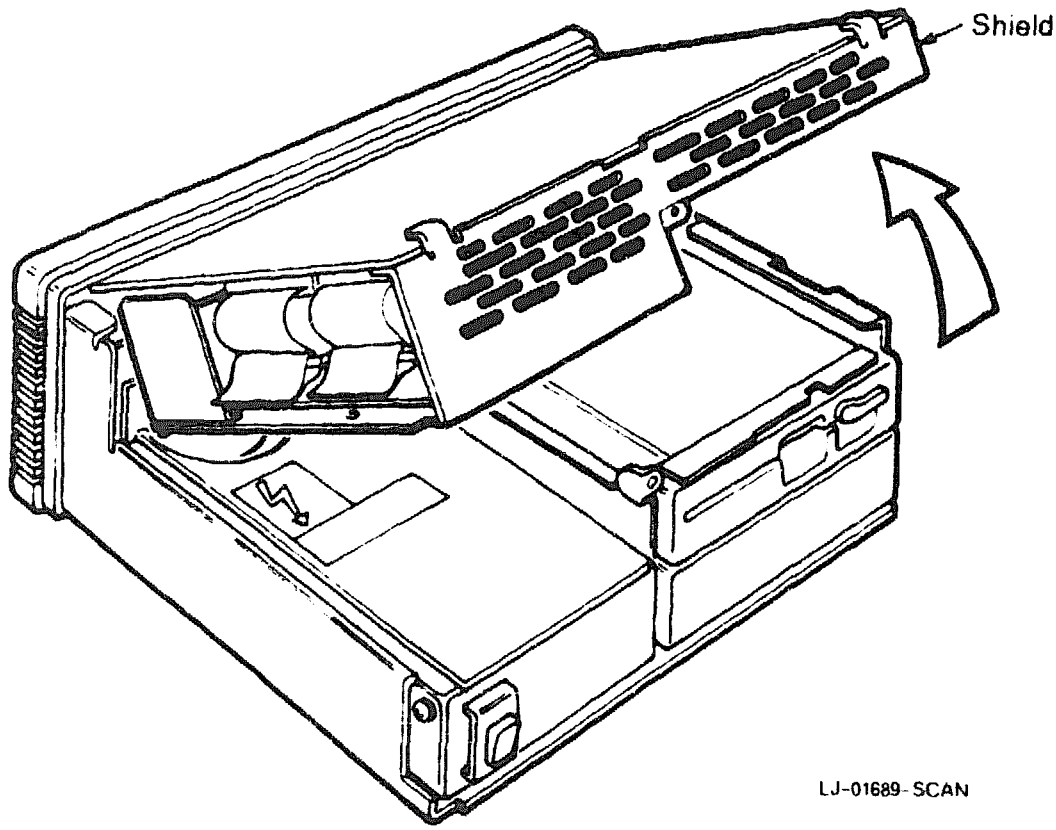
Remove the Upper Shield (continued)

Step	Action
2.	Lift the shield up and rest it against the rear of the system. See Figure 1–10.

Figure 1–10 Lifting the Shield up from the System Unit



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Remove the Upper Shield (continued)

Step	Action
3.	With the shield in position, as shown in Figure 1–11, hold the shield with one hand and disconnect all the internal interconnecting cables with the other hand.
4.	Lift the shield off the system unit and place it on a flat surface on an antistatic mat.

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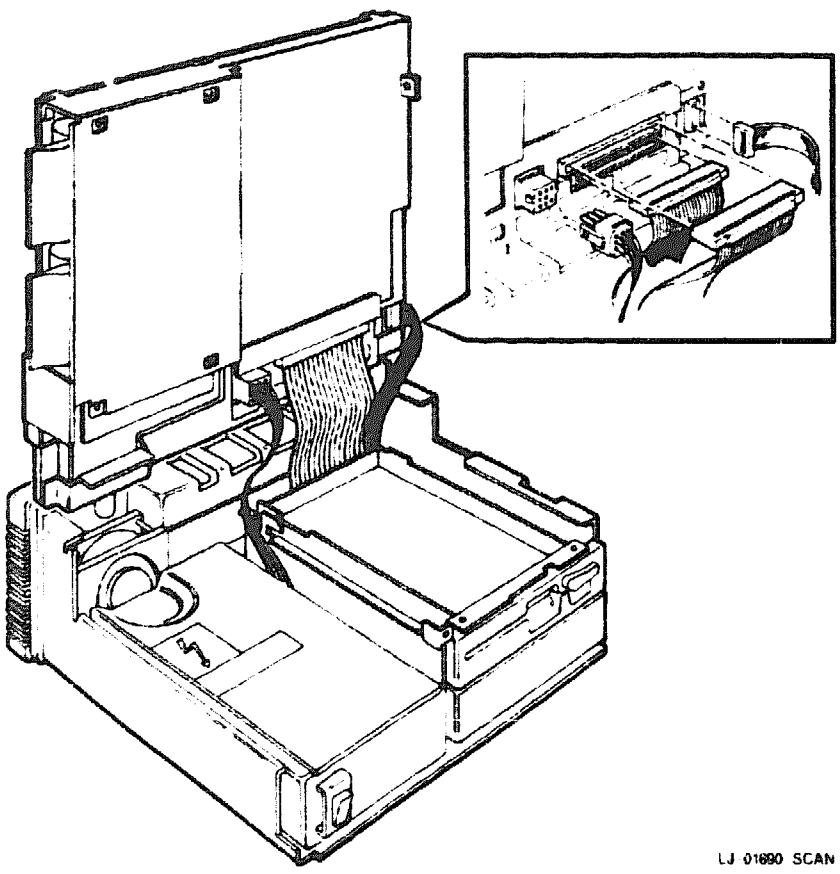
Figure 1–11 Disconnecting Cables from the Shield



Remove System Module

To gain access to the Ethernet ROM on the (KA410-B) system module, do the following and refer to Figure 1–12, Figure 1–13, and Figure 1–14:

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Step	Action
1.	Remove the two screws holding the system module to the shield frame. **CAUTION Static precautions must be adhered to while handling the system CPU module.**

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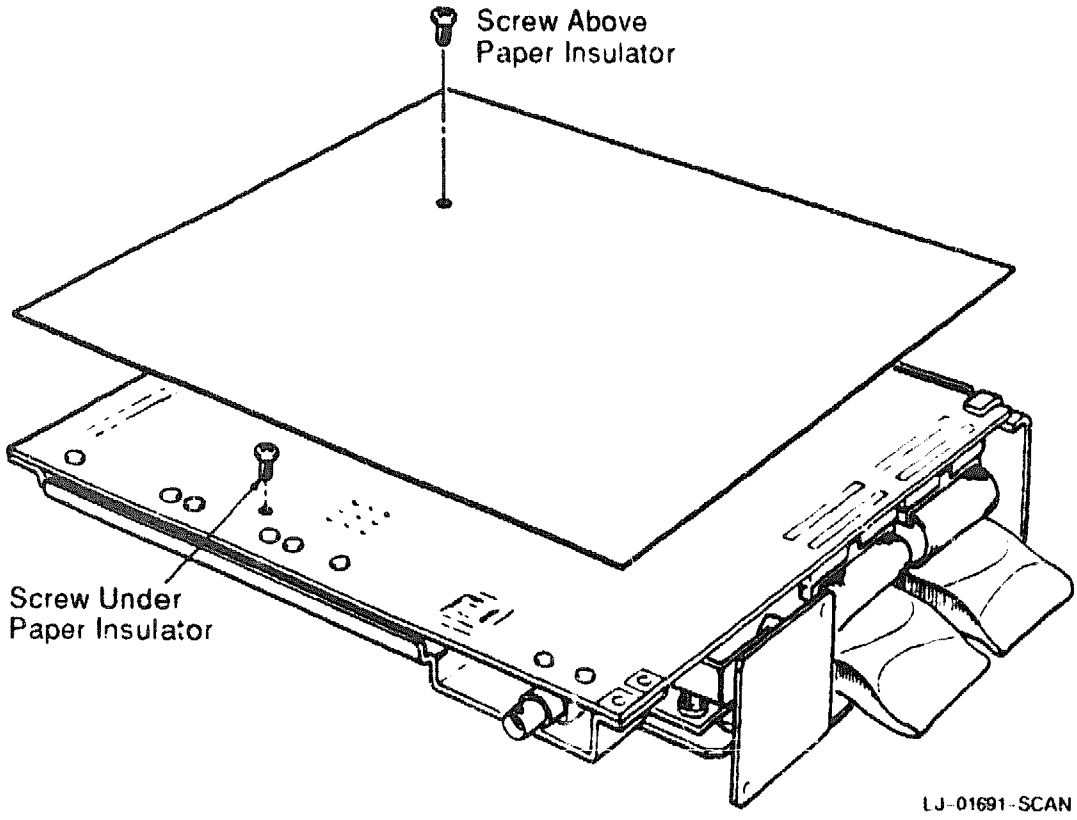
Figure 1–12 Removing the CPU Module Screws



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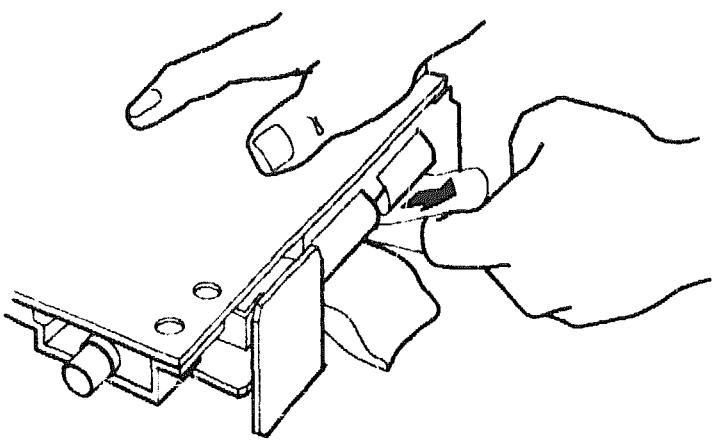
Remove System Module (continued)

Step	Action
2.	Disconnect the two DESVA interconnect cables as shown.

Figure 1–13 Removing the two DESVA Interconnect Cables



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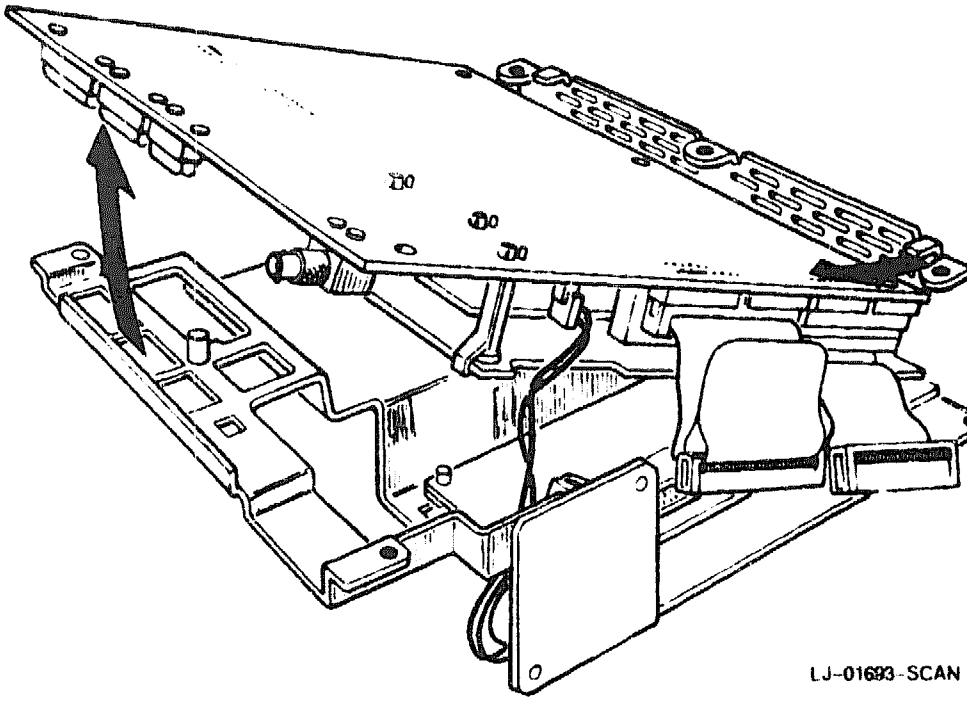
Remove System Module (continued)

Step	Action
3.	Remove the system module as shown in Figure 1–14. Lift the module up and away from the shield frame and lay it beside the shield chassis with the component side facing up.

Figure 1–14 Removing the System Module from the Shield



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Caution

At this time, all the internal components except for the Ethernet ROM have been removed from the VS 2000 system.

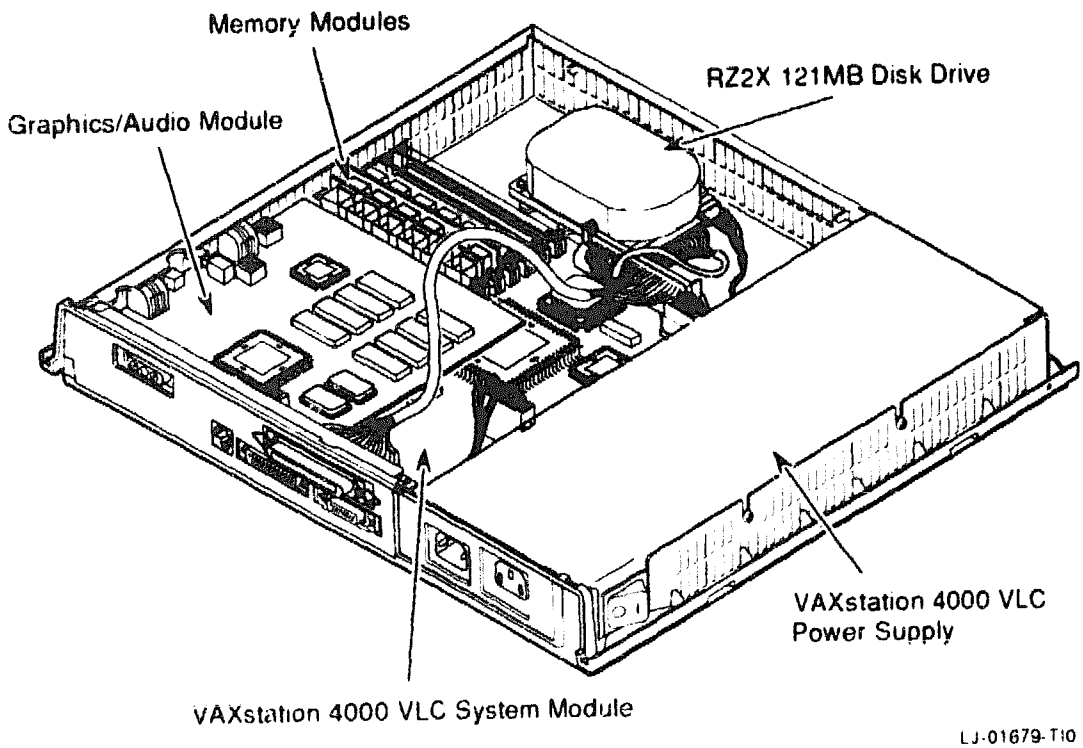
Do not remove the Ethernet ROM from the VS 2000 until you are ready to remove it from the VS 4000 VLC workstation, thus eliminating any chance of damage occurring to the ROM.

Removing Components from VS 4000 VLC

Internal Layout of the VS 4000 VLC

Figure 1–15 shows the location of the internal components of the VS 4000 VLC workstation.

Figure 1–15 VS 4000 VLC Internal Component Locations



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Remove the LCG Graphics Board

To install the Ethernet ROM in the VS 4000 VLC system board, it is necessary to remove the LCG graphics board.

To remove the graphics board from the VS 4000 VLC system, do the following:

Step	Action
1.	Locate the two mounting screws on the LCG module and remove them.
2.	Gently lift the board up and out of the system unit.
3.	Place the LCG board on an antistatic mat. This module will be reinstalled later.

Note

At this time in the upgrade procedure, you are now ready to exchange the two Ethernet ROMs between workstations.

Exchanging Ethernet ROMs

Cautions

1. When removing the ROM from the VS 4000 system board, antistatic precautions must be followed.

2. Before you remove or install the Ethernet ROMs, be sure you note the orientation of the IC chip keyway in relation to the chip IC socket. If you put the Ethernet ROM in backwards, the system will not function.

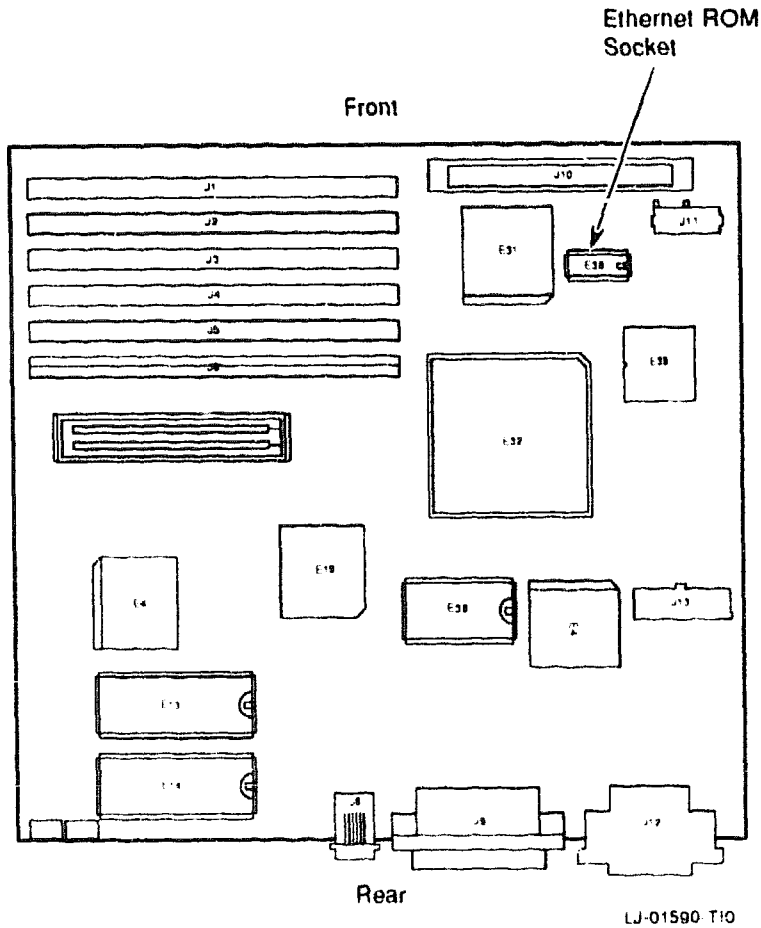
Exchange Ethernet ROMs

To exchange the Ethernet ROM from the VS 4000 VLC system to the VS 2000 system, do the following and refer to Figure 1–16 and Figure 1–17:

Step	Action
1.	Locate the Ethernet ROM on the VS 4000 VLC system board and remove it from the socket by using a chip puller or a small flat-head screwdriver. **NOTE The Ethernet ROM is the only socketed 16-pin chip on the system board. The ROM has "ENET ADDRS" (stands for Ethernet address) written on the top of the ROM.**

Continued on next page

Figure 1–16 Ethernet ROM socket on VS 4000 VLC System Board



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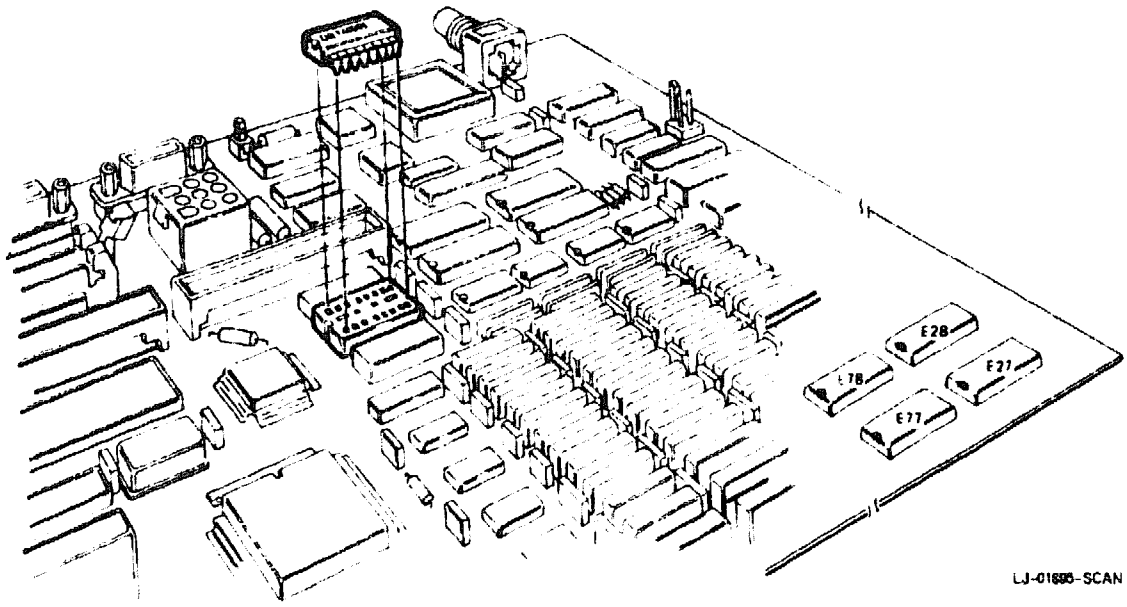
Exchange Ethernet ROMs (continued)

Step	Action
2.	Make sure the pins on the Ethernet ROM are straight. Place the ROM on the antistatic mat.
3.	Remove the ROM from the VS 2000 system board and install it into the VS 4000 VLC system board.

Figure 1–17 Removing the Ethernet ROM from the VS 2000 System Board



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Exchange Ethernet ROMs (continued)

Step	Action
4.	Install the ROM from the VS 4000 VLC into the VS 2000 system.

Note

Now that the Ethernet ROM has been removed and installed into the VS 4000 VLC system board, you can now reinstall all the components that were removed.

Restoring the VS 4000 VLC Workstation

Note

When installing components into the VS 4000 workstation, perform the removal procedures that were previously discussed in reverse order.

Restore System Components

To restore the system components on the VS 4000 VLC, do the following in sequential order:

Step	Action
1.	Install the LCG graphics board.
2.	Check that all the internal cabling in the system enclosure is secure and that the connectors are seated properly.
3.	Install the system unit cover.
4.	Depending on the VS 4000 VLC system configuration, install all the necessary external system unit cables: • System power cord • Monitor power cord • SCSI terminator or cable • Loopback connector and T-connector or communication cables • Mouse cable • Keyboard cable • Monitor video cable

Powering up VS 4000 VLC After Upgrade

Power up Sequence

With all the cables connected, turn **On** the workstation peripherals in the following sequence:

Step	Power On...
1.	Storage expansion box, if you have one
2.	Printer and modem, if you have them
3.	Monitor
4.	System unit

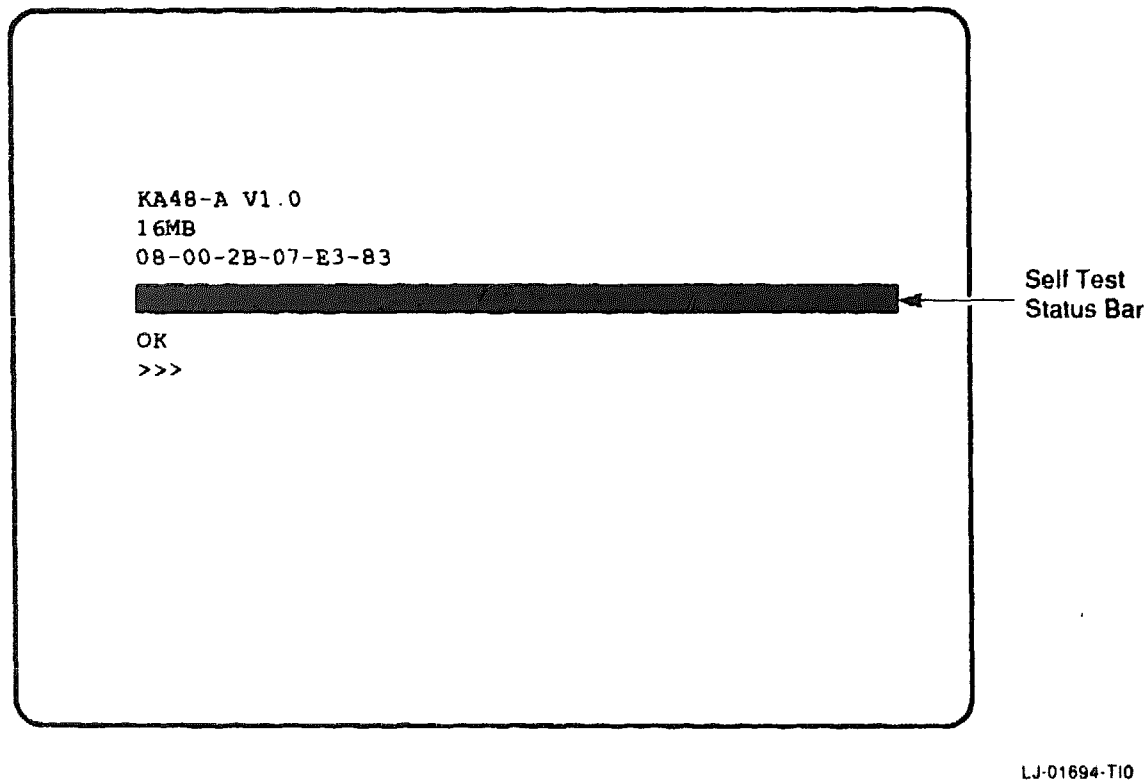
Automatic test Display

When you first turn on the system unit ac power, the following will happen automatically:

- The system will beep to let you know that the system is running self-tests.
- As each test completes, the status bar will start to fill. When all tests have been completed without error, the status bar will be filled completely and audio beeps will be heard. (See Figure 1–18).

Continued on next page

Figure 1–18 Automatic Test Display



Running the Show Config Command

Show Config Command

The following information will be displayed when you run the **Show Config** command at the console prompt:

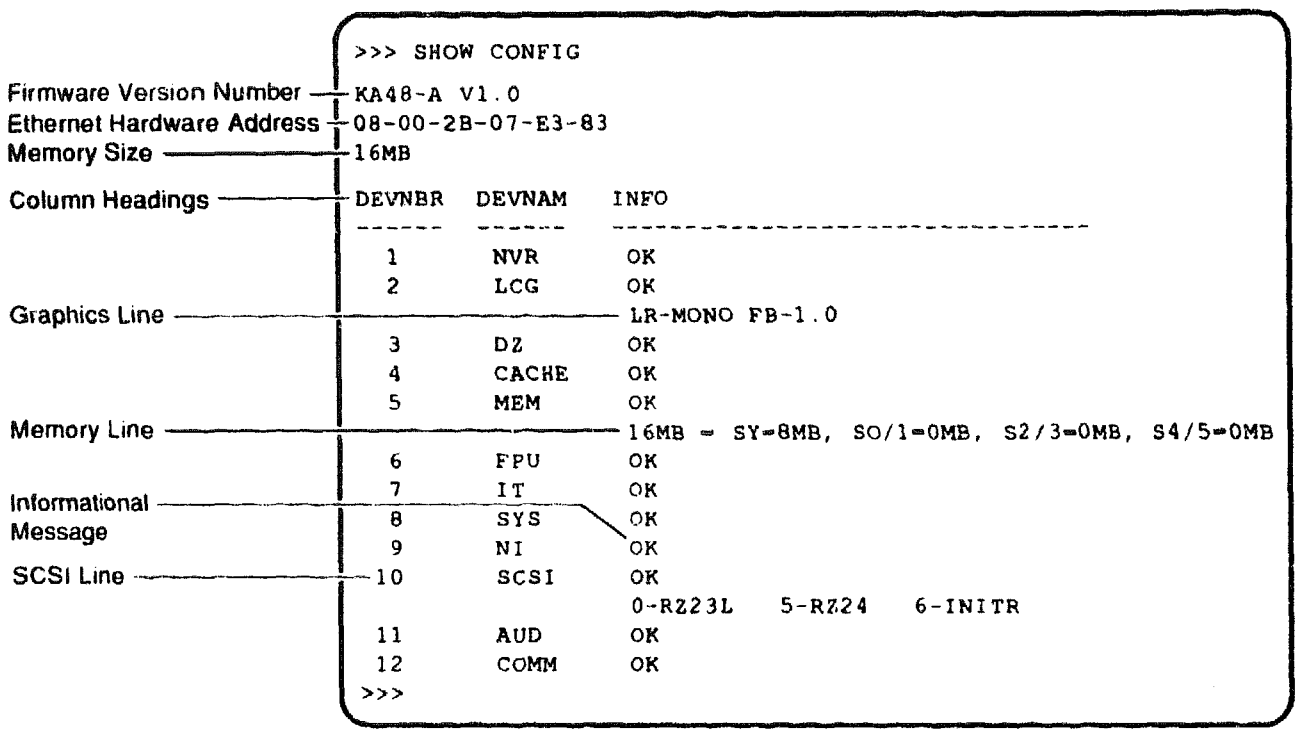
- Ethernet address
- System devices and their status
- Quantity of system memory

To display the **Show Config** command, do the following and refer to Figure 1–19:

Step	Action
1.	Press the Halt button located on the right side of the system unit. The system will display the console prompt (>>>).
2.	At the prompt **>>>**, type **show config** and press Return.

Continued on next page

Figure 1–19 Typical Show Config Command Display



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Examine the Screen Display

Compare the data on the monitor screen with the data you received when you did a **Test 50** command on the VS 2000 workstation before powering down.

Verify that:

- The Ethernet address is the same as it was on the VS 2000 system.
- The SCSI ID numbers are not duplicated.
- All the system devices (1 through 11) have an **OK** beside them under the **INFO** column.

Note

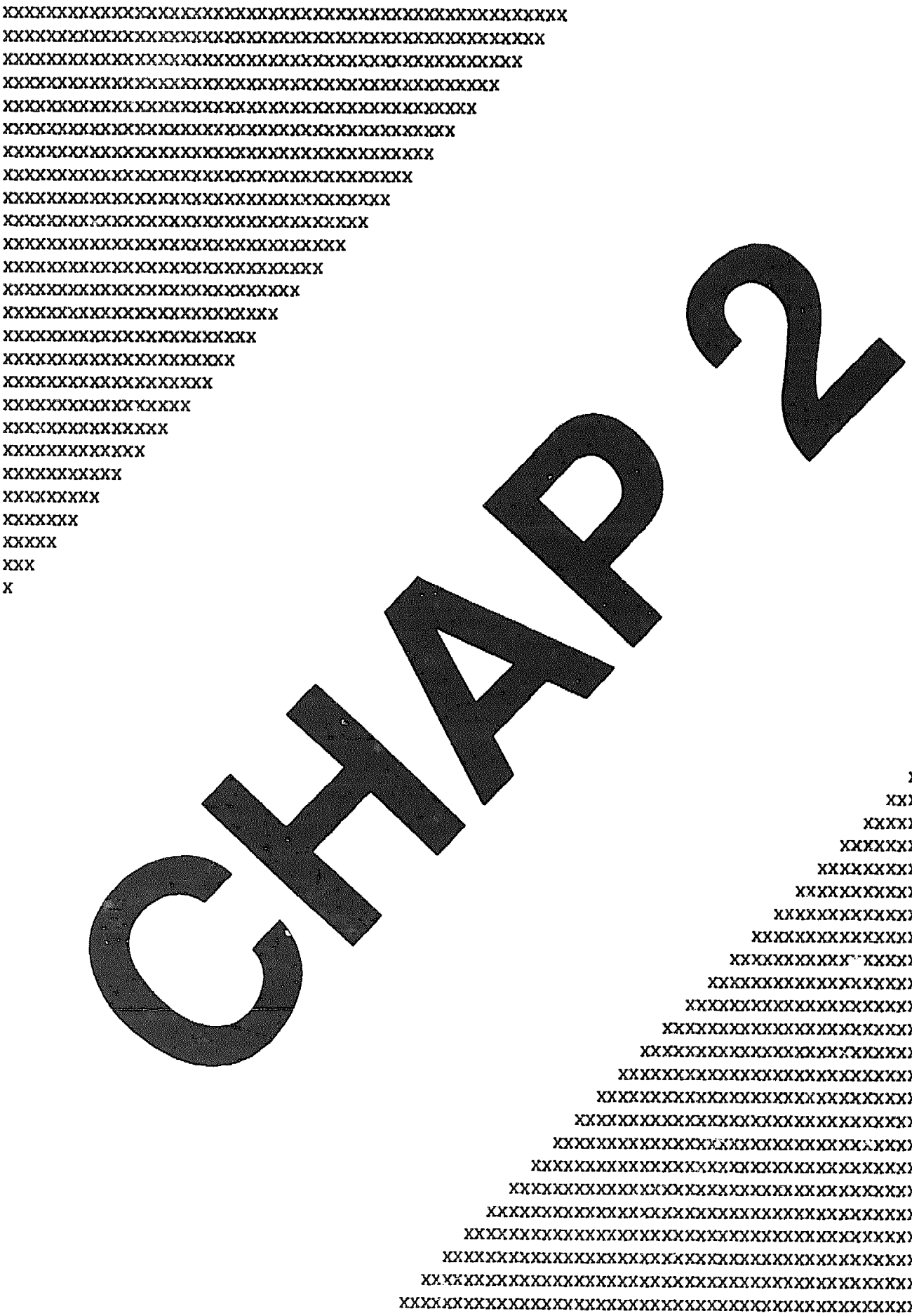
If the screen does not show any error codes, then you have successfully completed the upgrade and you are now ready to boot the system.

If the system shows any error messages or error codes, then refer to the *VAXstation 4000 VLC Service Information*, EK-V48VB-SV-001 for system testing and troubleshooting procedures.

Continued on next page

Note

After completing the VS 2000 upgrade, the system enclosure does not have to be returned to Digital. The customer may want to use the enclosure as a SCSI expansion box to house any disk drives or other peripherals that would be part of the new VS 4000 VLC workstation.


CHAP 2

Chapter 2
Upgrade of VS 3100 Model 30 or 38 Workstation to a VS 4000 VLC Workstation

Overview

Introduction

By upgrading the VS 3100 Model 30 or 38 workstation to a VS 4000 VLC workstation, the customer is able to leverage his/her initial investment in existing Digital VMS technology to a faster and more powerful computer workstation.

The VAXstation 4000 VLC workstation is a desktop product, including a pointing device, keyboard, and a monitor located either on top or beside the system enclosure. The CPU board (KA-48) is based on the latest System On Chip (SOC) technology.

Purpose

The purpose of this chapter is to provide upgrade information so that Digital Services Engineers or knowledgeable Digital customers can upgrade an existing VS 3100 Model 30 or 38 workstation to a VS 4000 VLC workstation.

Continued on next page

Caution

Only Digital Services or qualified self-maintenance personnel should perform this upgrade. You must have a working knowledge of and experience working on the internal hardware devices of a VAXstation 3100 system. If you are not qualified to perform this upgrade, call Digital Services to schedule an upgrade.

Chapter Content

This chapter describes how to upgrade a VAXstation 3100 Model 30 or 38 workstation, including the proper shut down procedures, and procedures to remove the Ethernet ROM from the CPU board on the VS 3100. This chapter also describes how to run preliminary console commands to verify that the system is operational.

Continued on next page

Chapter Reference

Procedure	Found on Page
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Shut down the system	2-6
Identify the system	2-8
Use the antistatic wrist strap	2-9
Remove VS 4000 VLC top cover	2-12
Remove VS 3100 top cover	2-14
Remove RZ2x disk drives	2-17
Remove Mass Storage Controller	2-19
Remove drive plate	2-22
Remove coprocessor module	2-24
Exchange Ethernet ROMs	2-30
Restore VS 4000 VLC	2-34
Run the Show Config command	2-38

Run Show Device Command

To run the Show Device command, do the following and refer to Figure 2–1:

Step	Action
1.	Press the Halt button in the rear of the system unit. Results: The system displays the console prompt on the screen.
2.	Type **Show Device** at the console prompt and press Return. Record the Ethernet hardware address. This address will be verified on the completion of the upgrade.
3.	Verify that no two devices have the same SCSI ID number.

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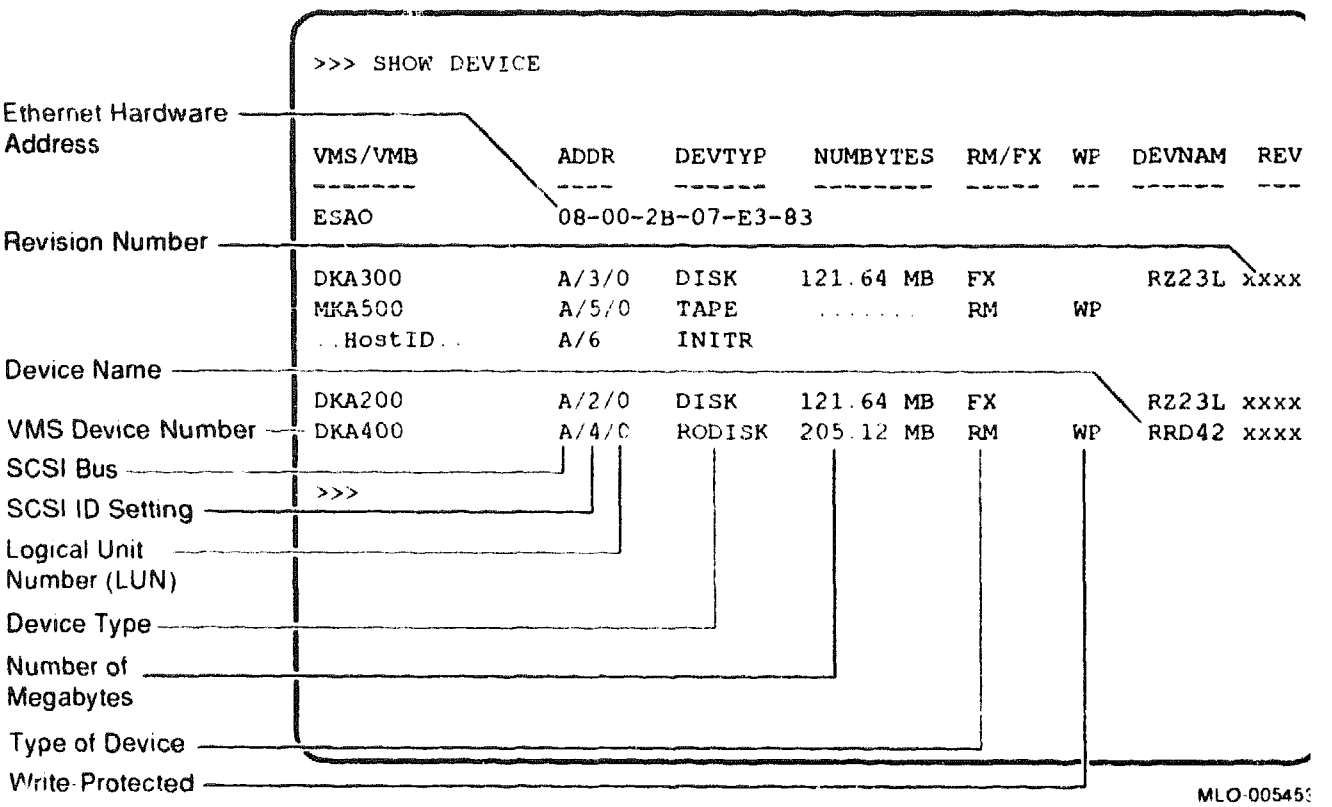
Figure 2–1 Typical Screen Display of a Show Device Command



Backups and Revisions

Before powering down the system, back up the system and user disks to prevent loss of data. All system backups and VMS software version upgrades are the responsibility of the Digital customer.

Shutting Down Peripherals/Disconnecting Cables

Note

Refer to the *VMS Installation and Operations Manual*, AA-NY74B-TE for the proper operating system shutdown procedure.

Shut Down the System

After shutting down the operating system, turn the system peripherals off in the following order:

1. Expansion boxes
2. Printer, modem, and any other equipment
3. Monitor
4. System unit

Disconnect Cables

Disconnect the following cables from the back of the system and refer to Figure 2–2.

1. System power cord, first from the wall and then from the system unit
2. Monitor power cord
3. Keyboard cable
4. Mouse cable
5. ThinWire Ethernet or standard Ethernet connector
6. SCSI terminator or external SCSI cable
7. Monitor video cable
8. Printer and communications cables

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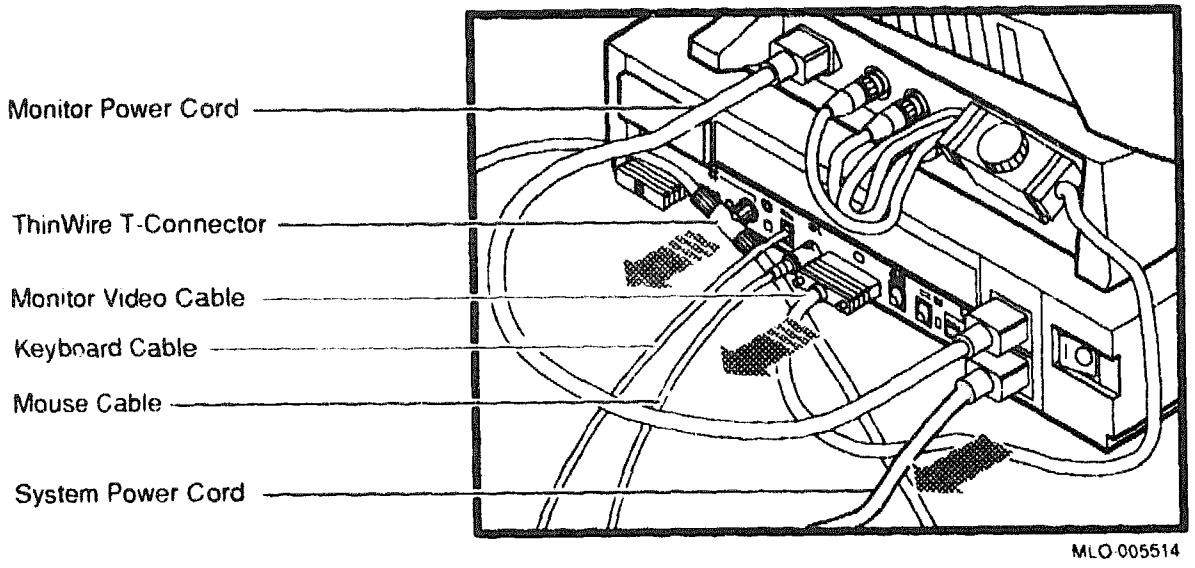
Disconnect Cables (continued)

Remove the monitor from on top of the system unit and set it aside

Figure 2–2 Disconnecting the System Unit Cables



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Identify the System

After the cables have been disconnected and before beginning the upgrade, you need to identify the system.

To identify the Model 30 or 38 system, do the following:

Step	Action
1.	View the system unit from the rear.
2.	Locate the sticker label with either model code number VS42A-xx for a Model 30 or WS42A-xx for a Model 38 system.
3.	Does the system unit have the proper model code number? • If yes, continue with this chapter. • If no, go to another chapter in this guide for that particular model code number. Refer to **About This Guide** in this document to determine which chapter you need to go to.

Protecting Against Static

Caution

To eliminate any static charge that you may have built up, touch your index finger to the top of the power supply in the system unit. This will discharge any static electricity.

Use the Antistatic Wrist Strap

The following rules **must** be adhered to while handling system components:

1. Wear a properly grounded antistatic wrist strap.
2. Any module or device removed from the system unit must be placed on an antistatic mat.

To handle the system components, do the following and refer to Figure 2–3:

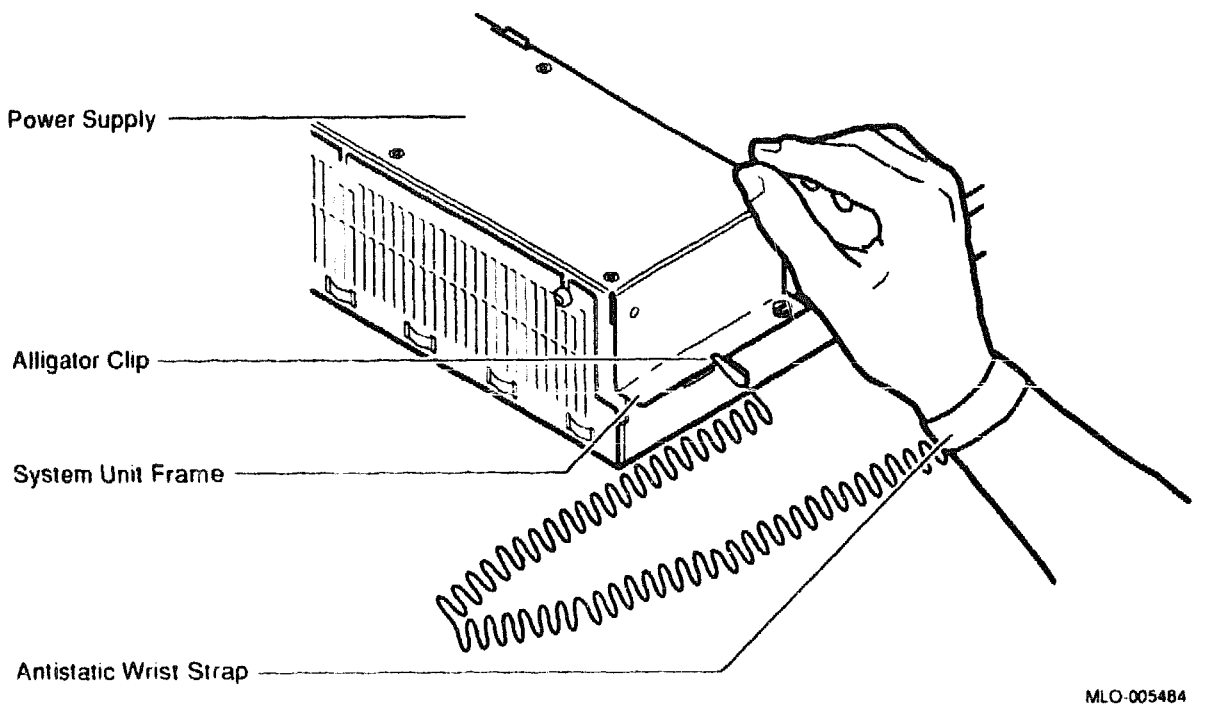
Step	Action
1.	Place the Model 30 or Model 38 system unit and the VLC system units side by side on an antistatic mat.
2.	Plug the Model 30 or Model 38 monitor power cord into the ac power port on the back of the Model 30 or Model 38 system unit.
3.	Plug the other end of the monitor power cord into the system power port on the back of the VS 4000 VLC system unit. The two system units now have a common ground between them (daisy chained).

Continued on next page

Use the Antistatic Wrist Strap (continued)

Step	Action
4.	Attach the alligator clip of the antistatic wrist strap to the power supply of *any* system unit when installing or removing components.

Figure 2–3 Attaching the Antistatic Wrist Strap to the System Unit



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Alternate Static Protection Method

An alternate method of using the antistatic wrist strap is:

Step	Action
1.	Place the antistatic strap on your wrist.
2.	Connect the alligator clip to the chassis frame in fro of the VS 3100 power supply.
	NOTE This method is the least desirable because t alligator clip has to be moved from system unit to system unit when exchanging internal components

Removing Top Covers on the System Units

Remove the Top Cover of VS 4000

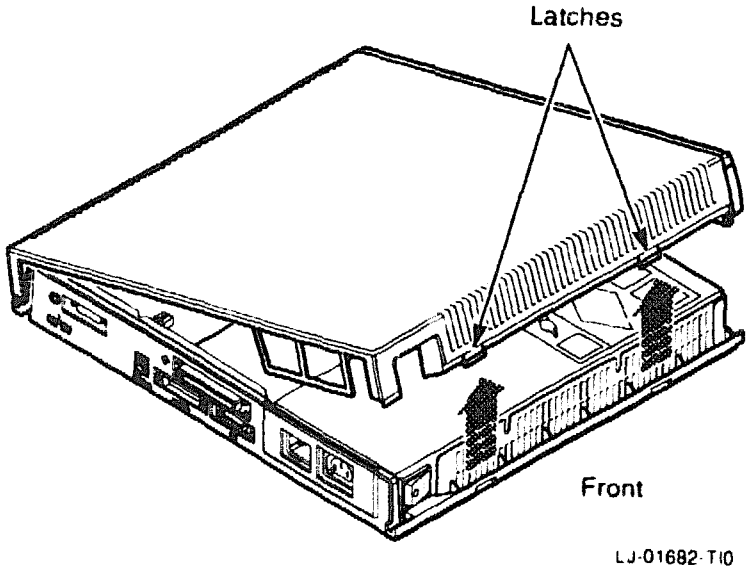
The top cover of the VS 4000 VLC needs to be removed to gain access to the internal components in the system enclosure.

To remove the top cover of the VS 4000 VLC workstation, do the following and refer to Figure 2–4:

Step	Action
1.	Carefully release the latches on the right side of the system unit.
2.	Pull the cover up and away from the system.
3.	Place the cover aside. It will be used later during repackaging.

Continued on next page

Figure 2–4 Removing Top Cover on the VS 4000 VLC



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Remove the Top Cover of VS 3100

To remove the system unit cover on the VS 3100 workstation, do the following and refer to Figure 2–5:

Step	Action
1.	Using a Phillips-head screwdriver, unscrew the two captive screws at the back of the unit on the outside edges. Unscrew these screws until they are loose, do not remove them.
2.	Slide the cover towards the front of the system and lift it up and away from the system unit.
3.	Place the cover aside. It will be used later during repackaging.

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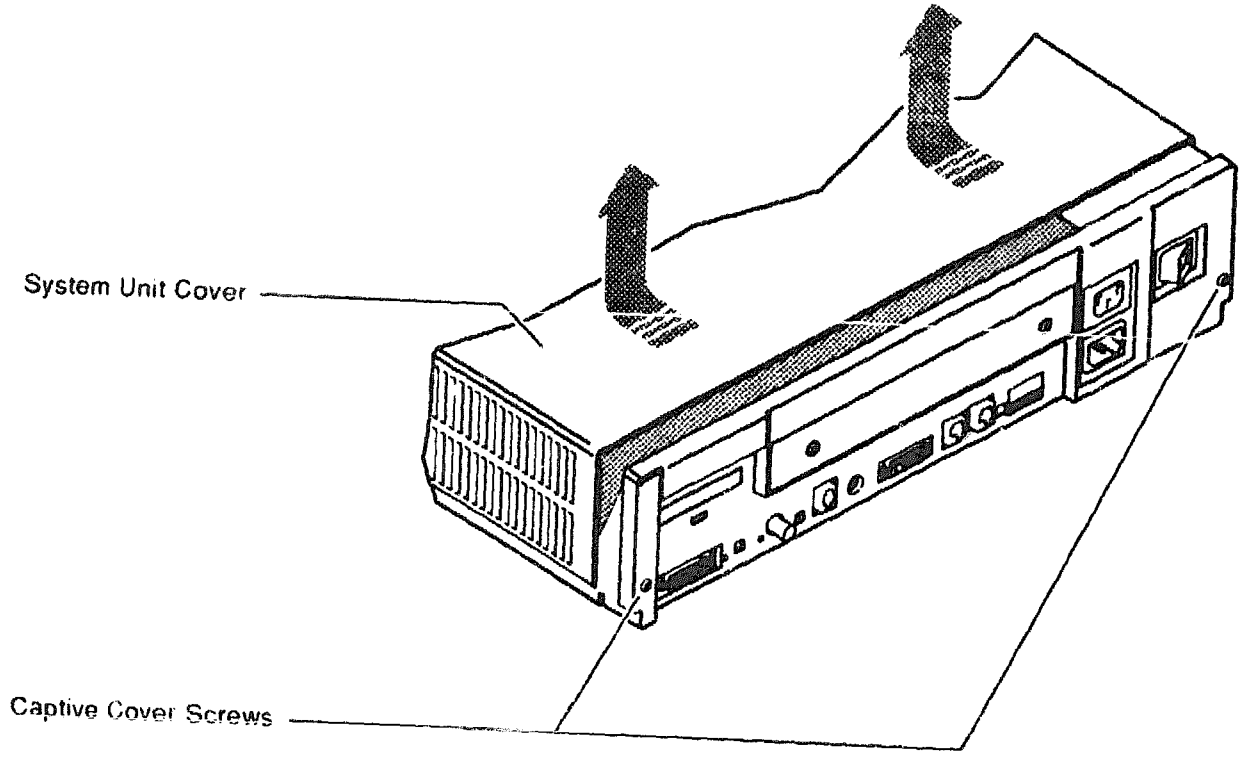
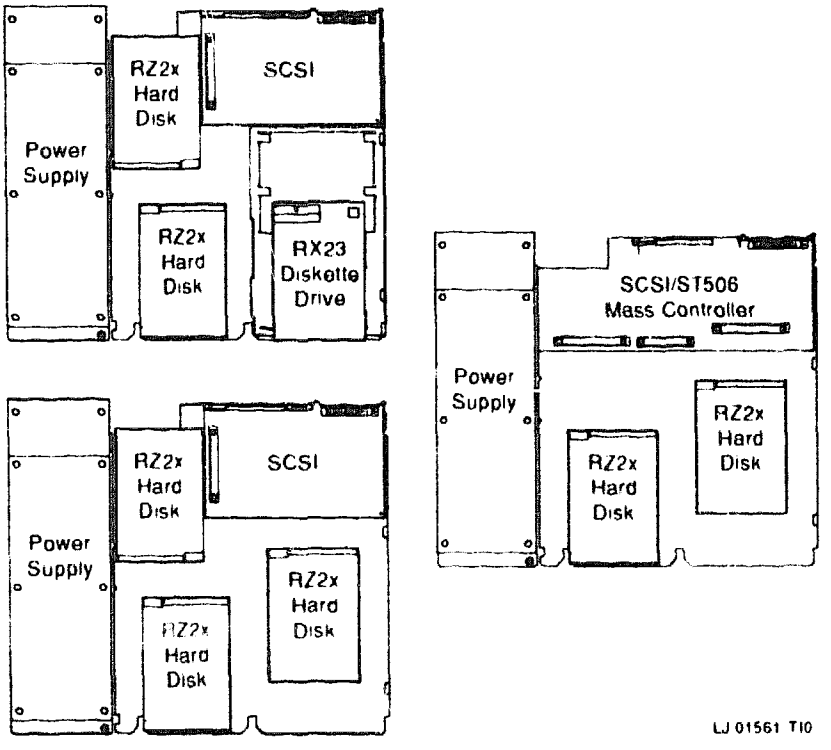
Figure 2–5 Removing The Cover On A VS 3100 Model 30 or 38



Typical Drive Plate Layout

There are numerous possible drive plate configurations for the VS 3100 Model 30 or 38, including two different types of drive plates. There are also different kinds of SCSI mass storage controllers depending on the model being upgraded. Figure 2–6 shows the three most common drive plate configurations of a Model 30 or 38.

Figure 2–6 Common Configurations for a Model 30 or 38 Drive Plate



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Remove RZ2x Disk Drives

Remove the RZ2x disk drives from the drive plate. These drives may be installed into an expansion box with the VS 4000 VLC system unit.

To remove the RZ2x disk drives from the Model 30 or 38, do the following and refer to Figure 2–7:

Step	Action
1.	Disconnect the SCSI signal and power cable from the disk drives.
2.	Push down the drive plate lever and slide the RZ2x disk drive over the lever until the hard disk comes up and out of the key holes on the plate. **NOTE On some of the VS 3100 Model 30 units, it might be necessary to turn the drive plate over after removal from the system unit, and unscrew the four screws holding the RZ2x drives to the plate.**

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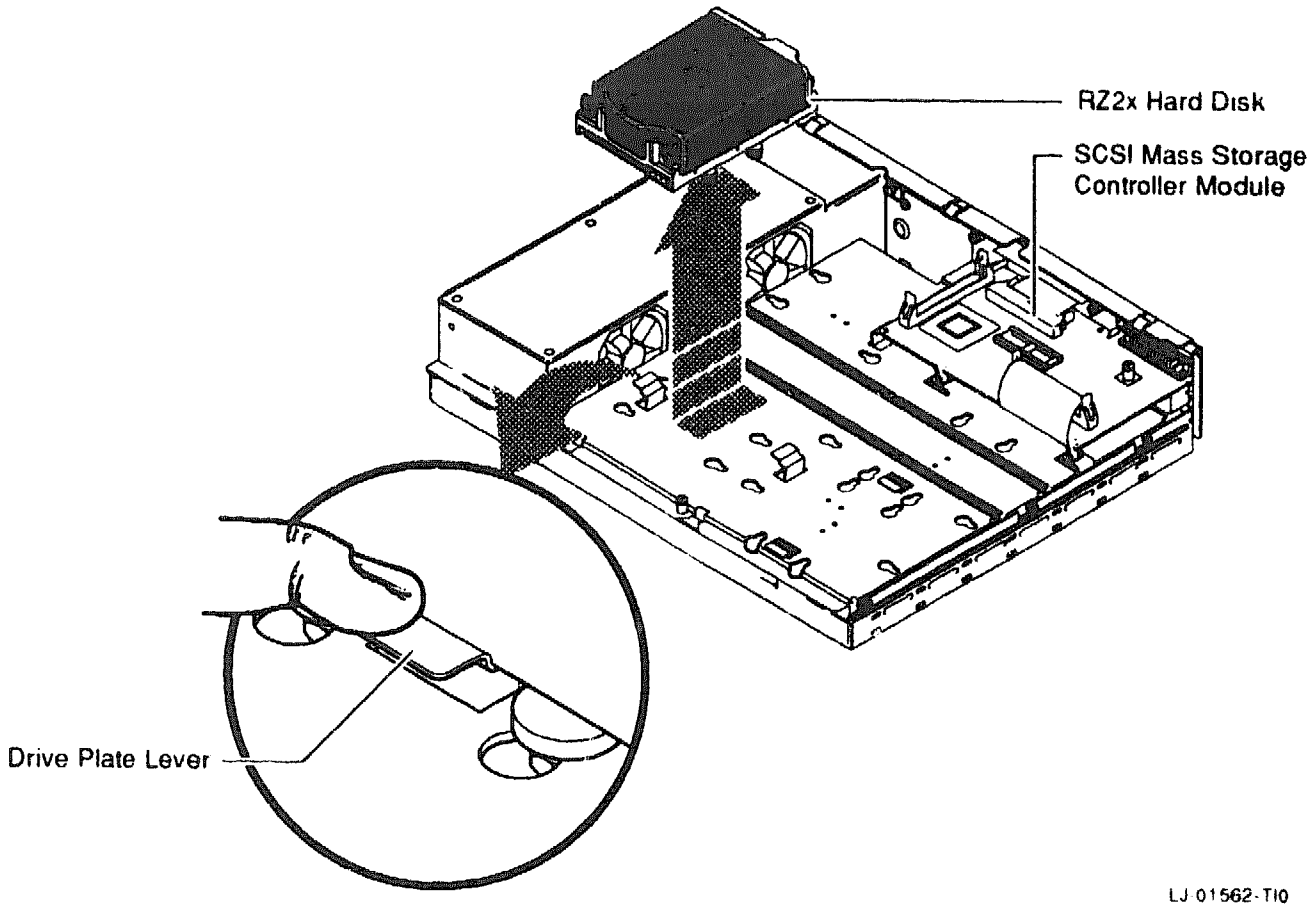
Figure 2–7 Removing RZ2x Hard Disks from the Drive Plate



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Note

If there are three RZ2x disk drives on the drive plate, remove the Mass Storage Controller module from the drive plate first, then remove the third RZ2x disk drive. Otherwise, remove the drive plate from the system unit by disconnecting the cables going to the Mass Storage Controller.

Remove the Mass Storage Controller Module

To remove the Mass Storage Controller Module, do the following and refer to Figure 2–8 and Figure 2–9:

Step	Action
1.	Unscrew the captive screw on the SCSI Mass Storage Controller module.
2.	Pull the post-lock latches under the front edge of the SCSI controller module outward and lift the front of the module up until it is free.
3.	Disconnect the SCSI system cable on the SCSI Mass Storage Controller module by opening the connector latches.
4.	Disconnect the SCSI signal cable from Port A and Port B on the controller module by opening the latches on the SCSI connectors.
5.	Remove the SCSI Mass Storage Controller module from the drive plate by rotating it to the right as shown in Figure 2–9, and slide it forward, away from the back of the drive plate.

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Figure 2–8 SCSI Mass Storage Controller Module Cables

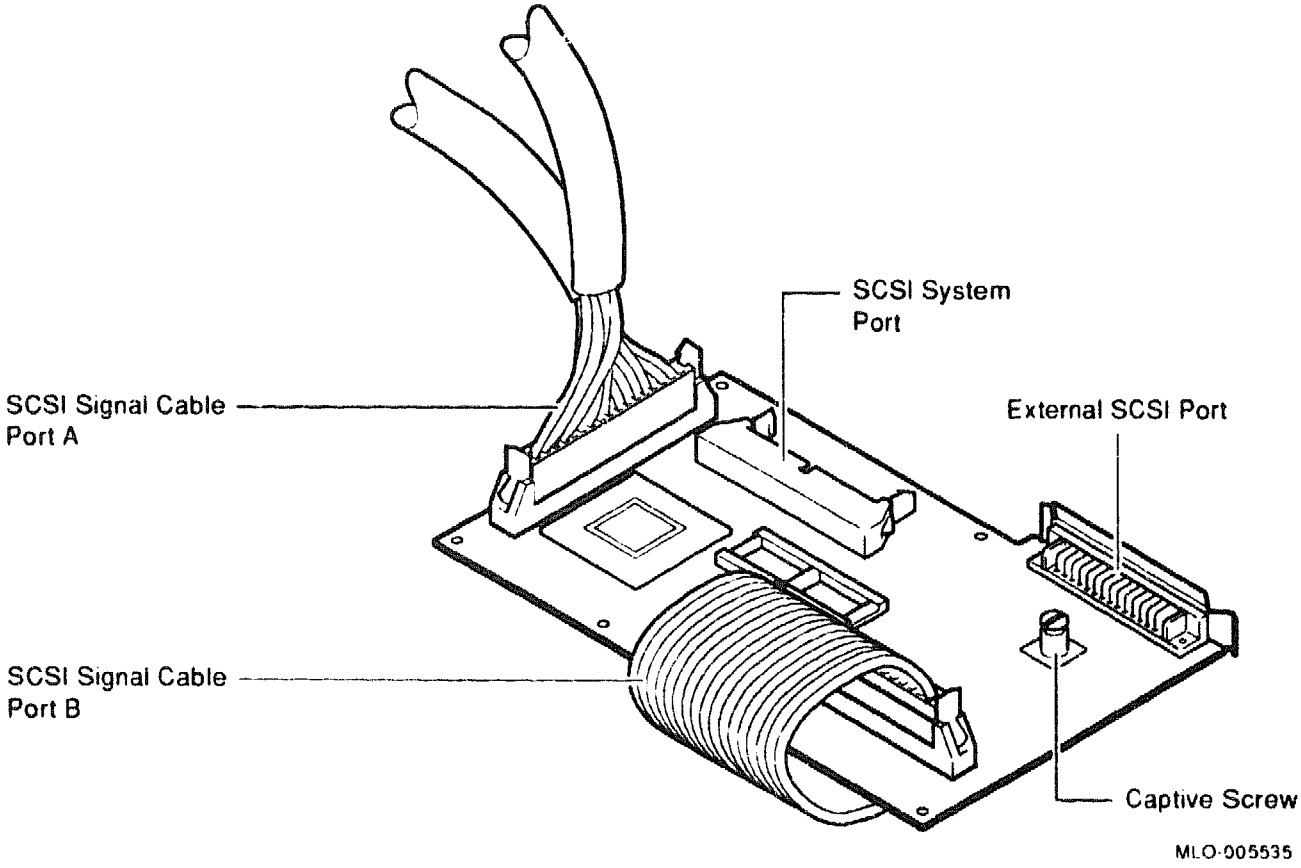

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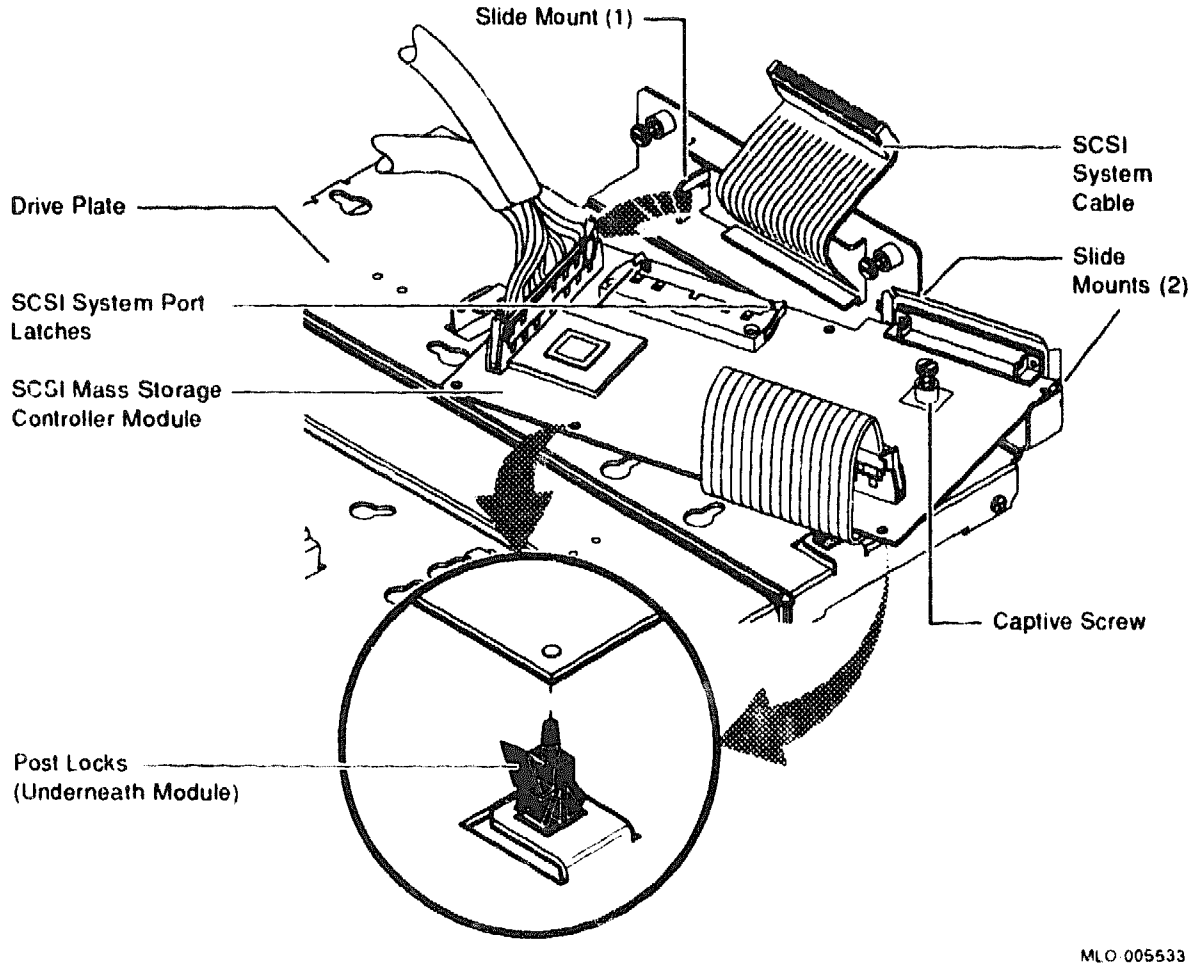
Figure 2–9 Removing the SCSI Mass Storage Controller Module



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Remove the Drive Plate

To remove the drive plate, do the following and refer to Figure 2–10:

Step	Action
1.	Disconnect the power cable from the internal power supply.
2.	Disconnect the SCSI system cable from the SCSI system port (if this has not already been done).
3.	Loosen the five captive screws.
4.	Loosen the three Phillips-head slide mount screws on the side of the drive plate.
5.	Slide the drive plate towards the front of the system unit and lift it up and out.

Caution

When you are removing the drive plate from the system unit, do not make contact with the circuit boards underneath. Contact between the drive plate and the circuit boards could cause the circuit boards irreparable damage.

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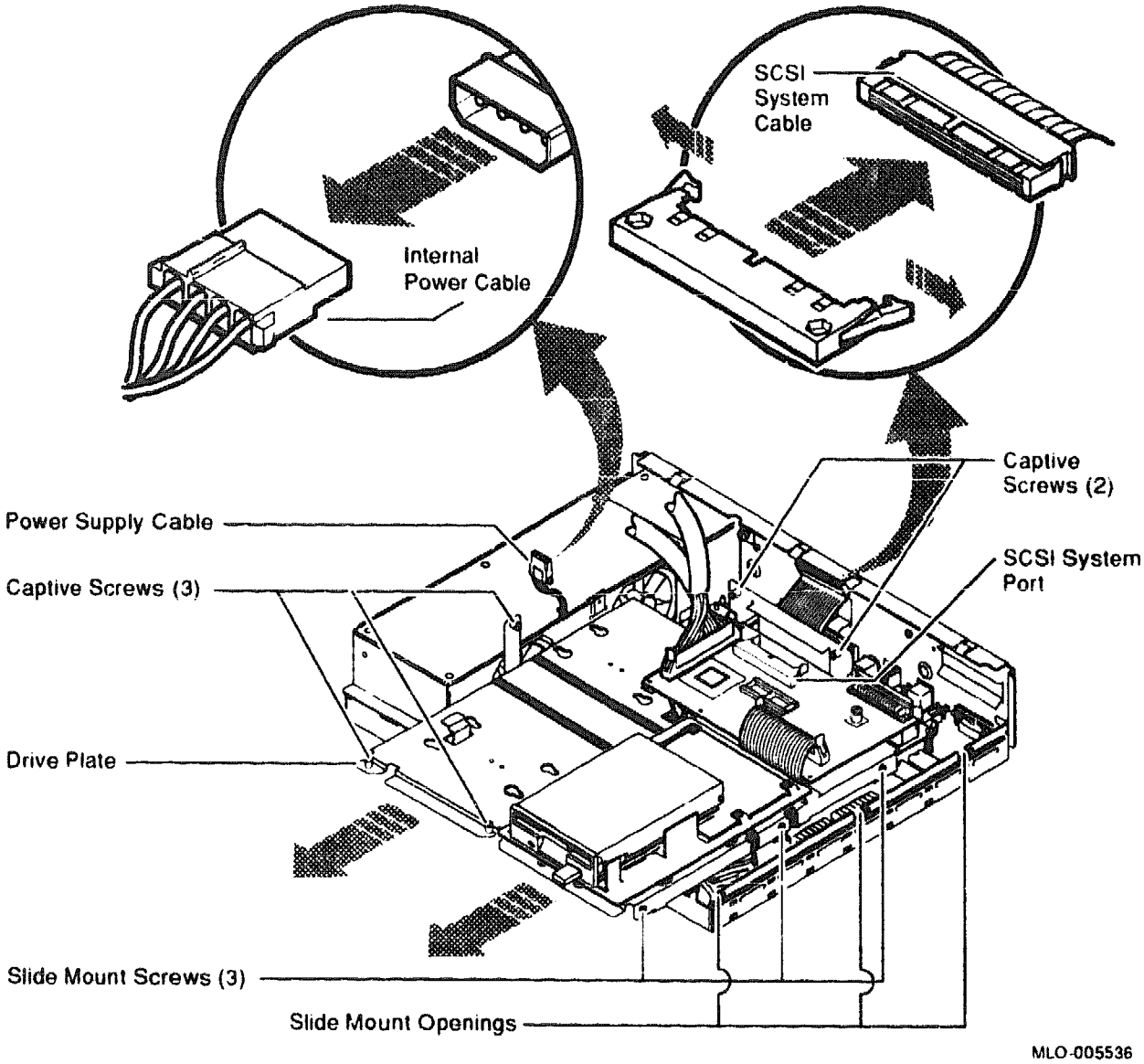
Figure 2–10 Removing the Drive Plate from a Model 30 or 38 System Unit



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Note

Depending on the system configuration, the VS 3100 Model 30 or 38 systems can have two types of coprocessor modules: graphics coprocessor, or the scanline coprocessor module. These two modules are similar except for a couple features. To remove the scanline coprocessor, you must remove three screws from the mounting brackets, then release the tabs from the post locks. The graphics coprocessor module has only four post locks with tabs holding it to the system board.

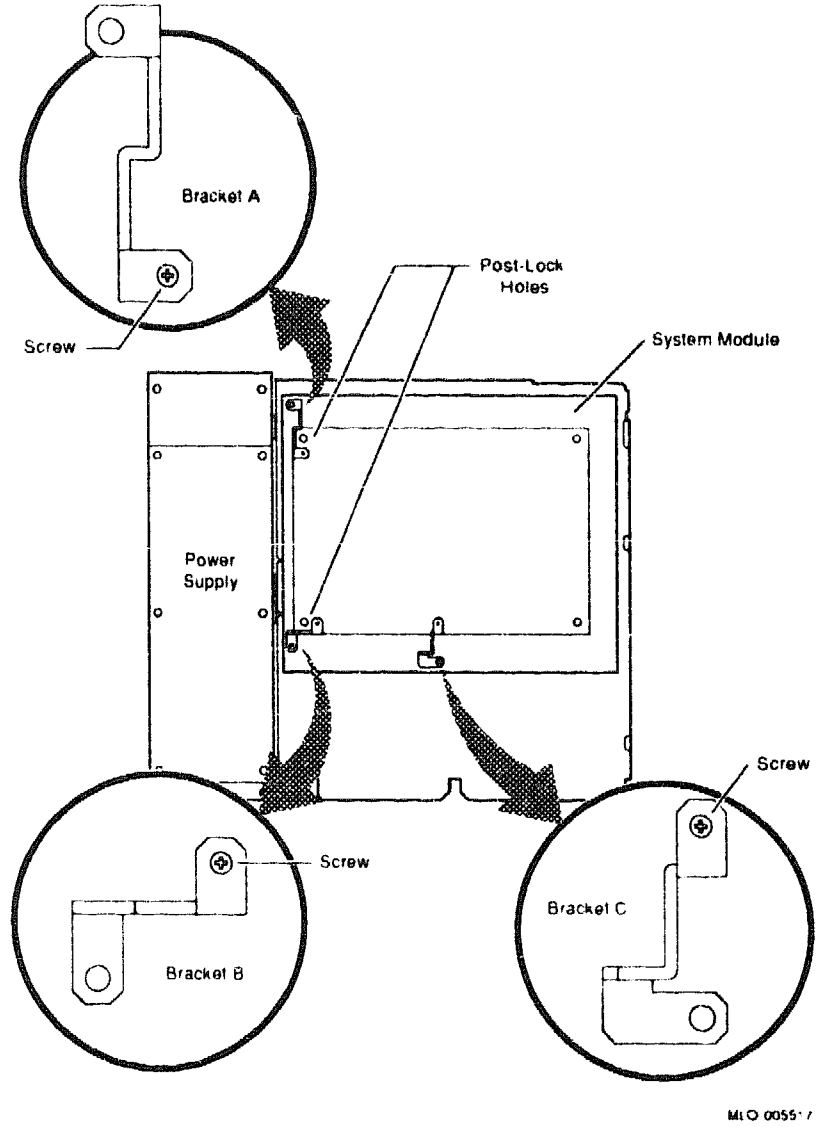
Remove the Scanline Coprocessor

To remove the scanline coprocessor module, do the following and refer to Figure 2–11 and Figure 2–12:

Step	Action
1.	Remove the three screws on the mounting brackets that attach the coprocessor to the system board. The mounting brackets will remain attached to the system board.

Continued on next page

Figure 2–11 Scanline Coprocessor Mounting Brackets



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Remove the Scanline Coprocessor (continued)

Step	Action
2.	Remove the scanline coprocessor from the four post locks by pulling back the post lock tabs and lifting the board straight out.
	CAUTION
	Do not grasp the scanline coprocessor module by the corners when you are lifting it from the system board. The timing buffer chip located underneath the scanline coprocessor module can become easily damaged by any pressure exerted on it.
3.	Grasp the center of the scanline coprocessor module next to the two connectors and lift it up and off the system board.

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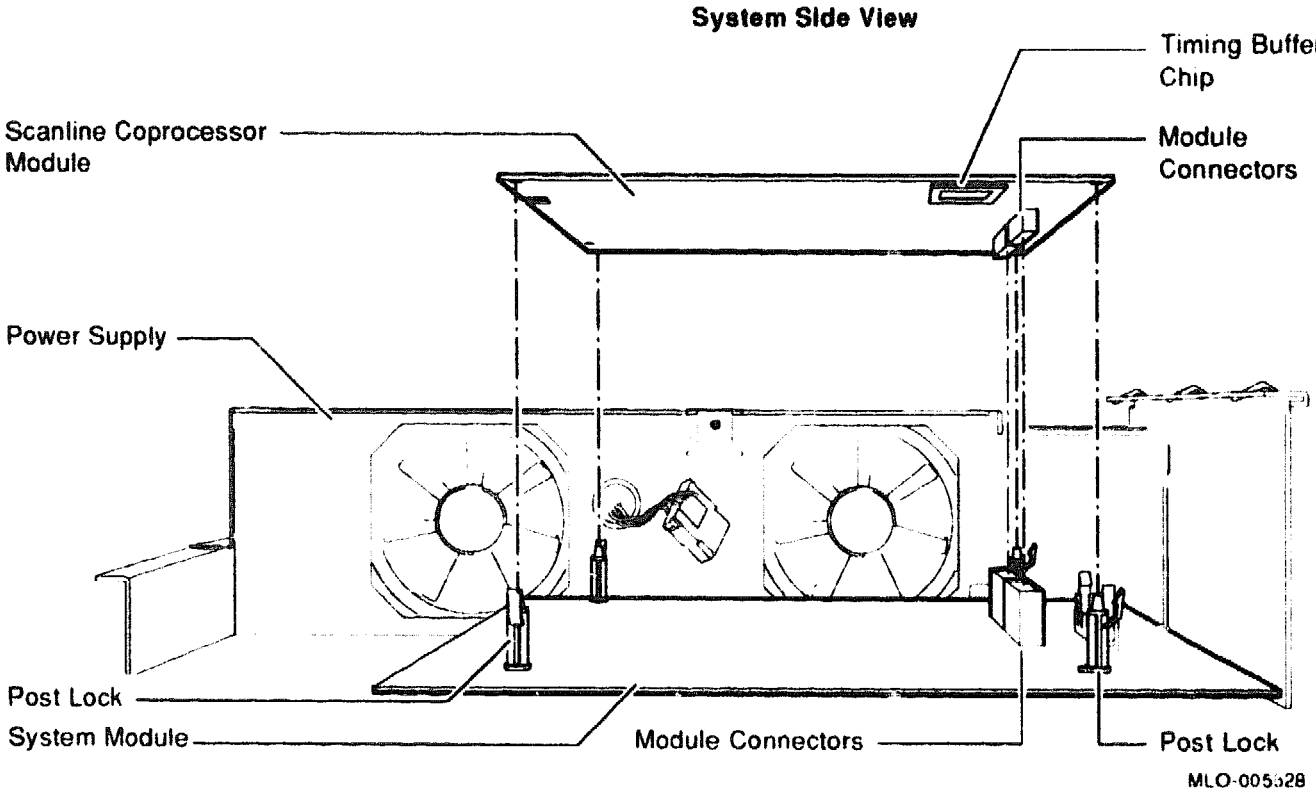
Figure 2–12 Removing the Scanline Coprocessor from the System Board



Caution

At this time, all the internal components except for the Ethernet ROM have been removed from a VS 3100 Model 30 or Model 38.

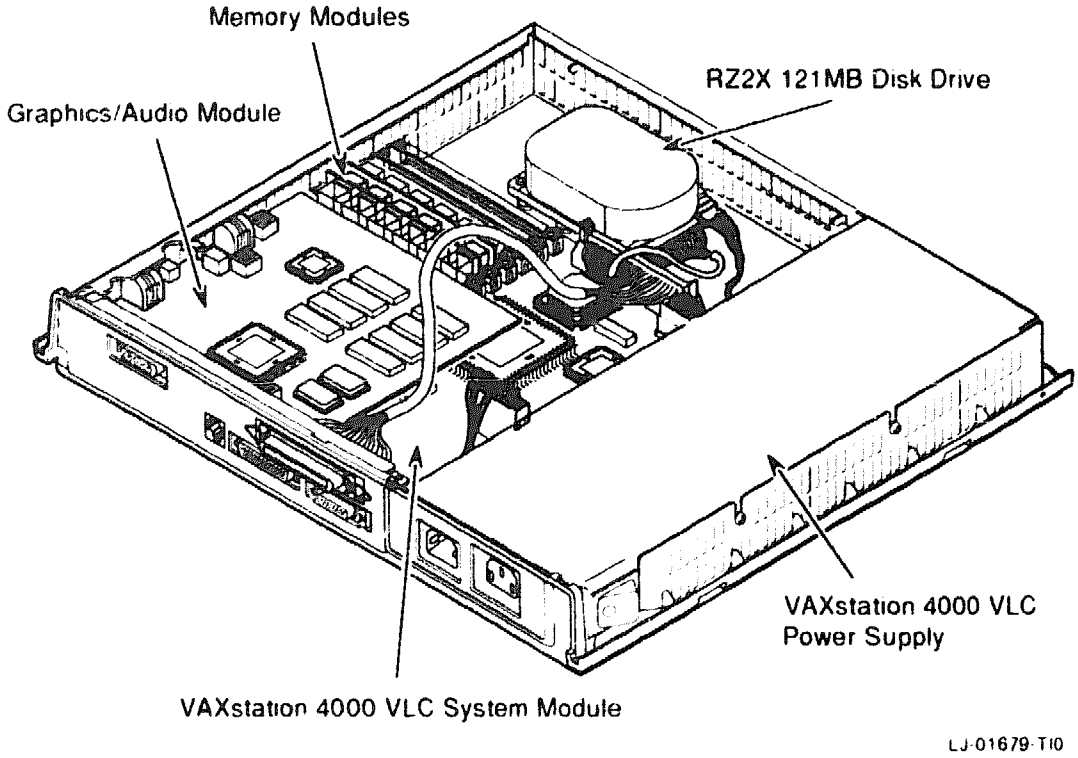
Do not remove the Ethernet ROM from the VS 3100 Model 30 or Model 38 until you are ready to remove it from the VS 4000 VLC workstation, thus eliminating any chance of damage occurring to the ROMs.

Removing Components from the VS 4000 VLC

Internal Layout of the VS 4000 VLC

Figure 2–13 shows the location of the internal components of the VS 4000 VLC workstation.

Figure 2–13 VS 4000 VLC Internal Component Locations



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Remove the LCG Graphics Board

In order to install the Ethernet ROM into the VS 4000 VLC system board, it is first necessary to remove the LCG graphics board.

To remove the graphic board from the VS 4000 VLC, do the following:

Step	Action
1.	Locate and remove the two mounting screws on the LCG graphics board.
2.	Gently lift the board up and out of the system unit.
3.	Place the LCG board on an antistatic map. This module will be reinstalled later.

Note

At this time in the upgrade procedure, you are now ready to exchange the Ethernet ROM from the VS 3100 Model 30 or 38 workstation to the VS 4000 VLC workstation.

Exchanging Ethernet ROMs

Cautions

1. When removing the ROM from the VS 4000 system board, antistatic precaution must be followed.

2. Before removing or installing any of the Ethernet ROMs, be sure you note the orientation of the IC chip keyway in relation to the chip IC socket. If you put the Ethernet ROM in backwards, the system will not function.

Exchange Ethernet ROMs

To remove and install the Ethernet ROMs, do the following and refer to Figure 2–14 and Figure 2–15:

Step	Action
1.	Locate the Ethernet ROM on the VS 4000 VLC system board and remove it from the socket using a chip puller or a small flat-head screwdriver. **NOTE The Ethernet ROM is the only socketed 16-pin chip on the system board. The Ethernet ROM has ENET ADDRS (abbreviation for Ethernet Address) written on the top.**

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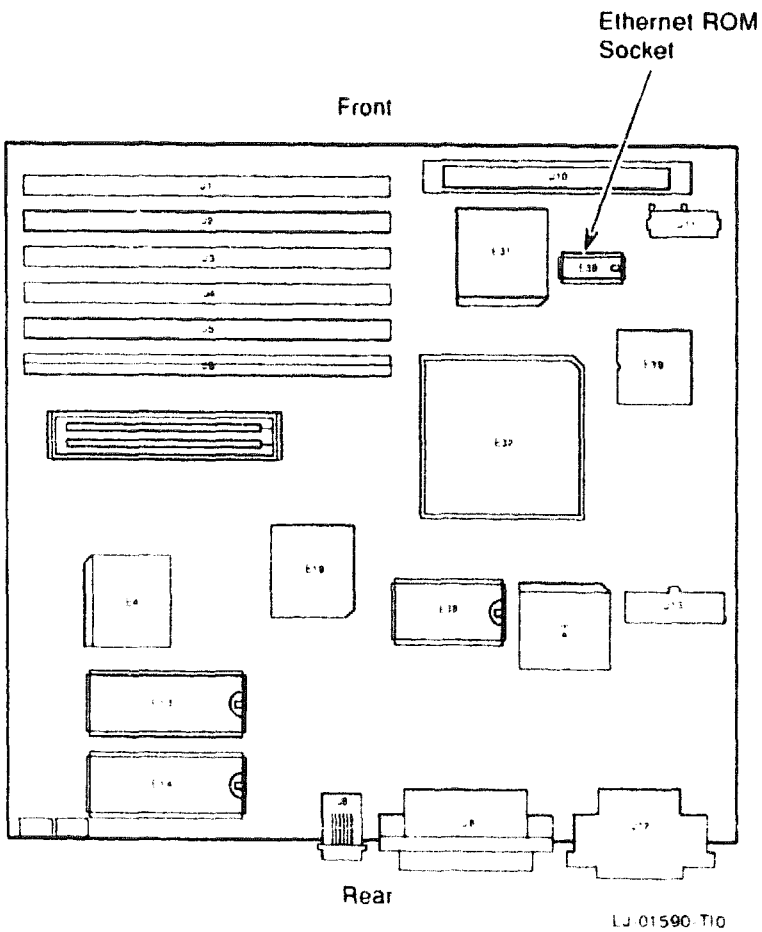
Figure 2–14 Ethernet ROM socket on VS 4000 VLC System Board



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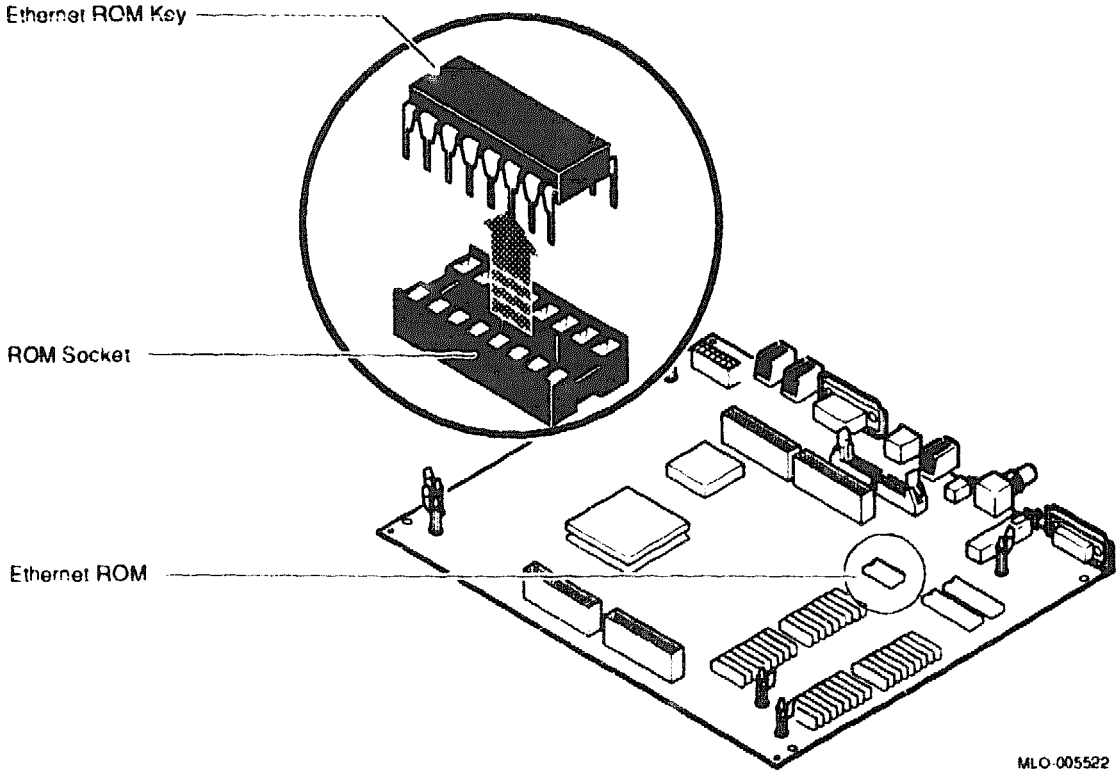
Exchange Ethernet ROMs (continued)

Step	Action
2.	Make sure that the pins on the Ethernet ROM are straight. Place the ROM on the antistatic mat.
3.	Remove the ROM from the VS 3100 system board and install it into the VS 4000 VLC system board.

Figure 2–15 Removing the Ethernet ROM from the VS 3100 System Board



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Exchange Ethernet ROMs (continued)

Step	Action
4.	Install the Ethernet ROM that was removed from the VS 4000 VLC into the VS 3100.

Note

Now that the Ethernet ROMs have been exchanged between system boards, the previously removed components can be reinstalled.

Restoring the VS 4000 VLC Workstation

Note

When installing components into the VS 4000 workstation, reverse the component removal procedures of this chapter.

Summary of Restoration of VS 4000

Follow these steps in the sequence listed below to restore the VS 4000 Model 60 workstation. Detail instructions for *some* of these steps will follow.

Step	Action
1.	Install the LCG graphics board.
2.	Check that all the internal cabling in the system enclosure is secure and that the connectors are seated properly.
3.	Install the system unit cover.

Continued on next page

Summary of Restoration of VS 4000 (continued)

4. Depending on the VS 4000 VLC system configuration, install all the necessary external system unit cables:
   - System power cord
   - Monitor power cord
   - SCSI terminator or cable
   - Loopback connector and T-connector or communication cables
   - Mouse cable
   - Keyboard cable
   - Monitor video cable

Powering up the VS 4000 VLC After Upgrade

Power up Sequence

With all the cables connected, turn **On** the workstation peripherals in the following order:

Step	Power On...
1.	Storage expansion box, if you have any
2.	Printer and modem, if you have them
3.	Monitor
4.	System unit

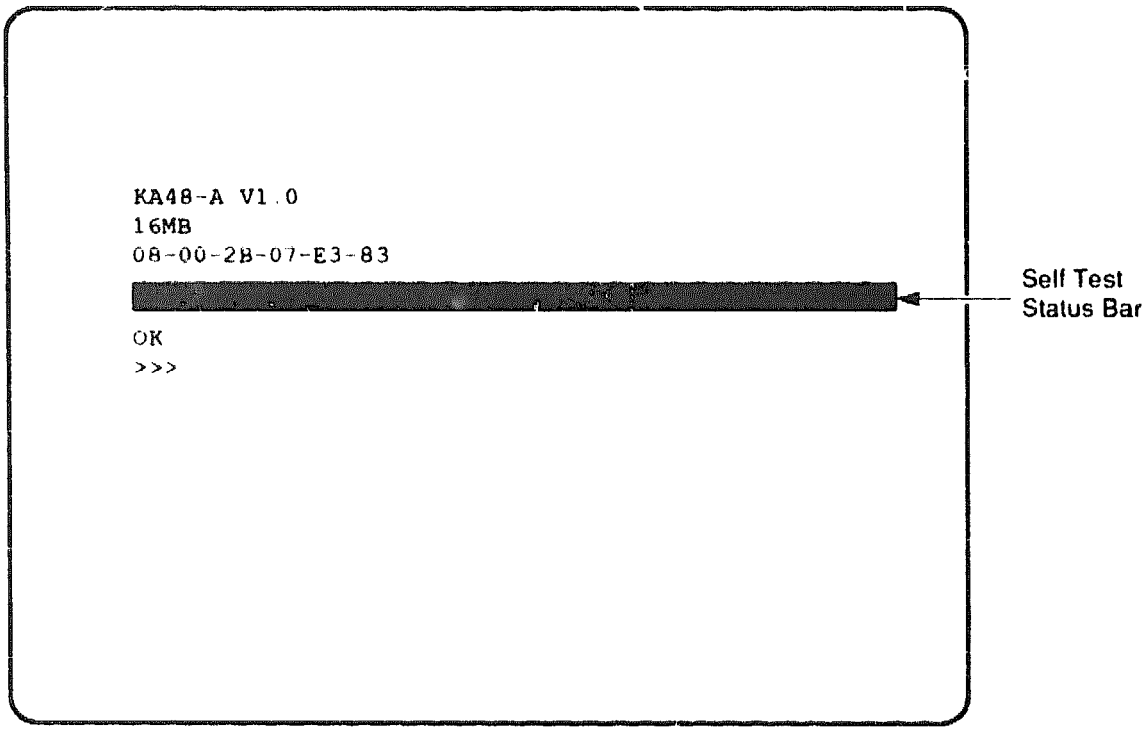
Automatic Test Display

When you first turn on the system unit ac power, the following will happen automatically:

- A series of self-tests will begin to run. As each test completes, the status bar will start to fill and audio beeps will be heard. See Figure 2–16.

Continued on next page

Figure 2–16 Automatic Test Display



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Running the Show Config Command

Show Config Command

The following information will be displayed when you run the **Show Config** command at the console prompt:

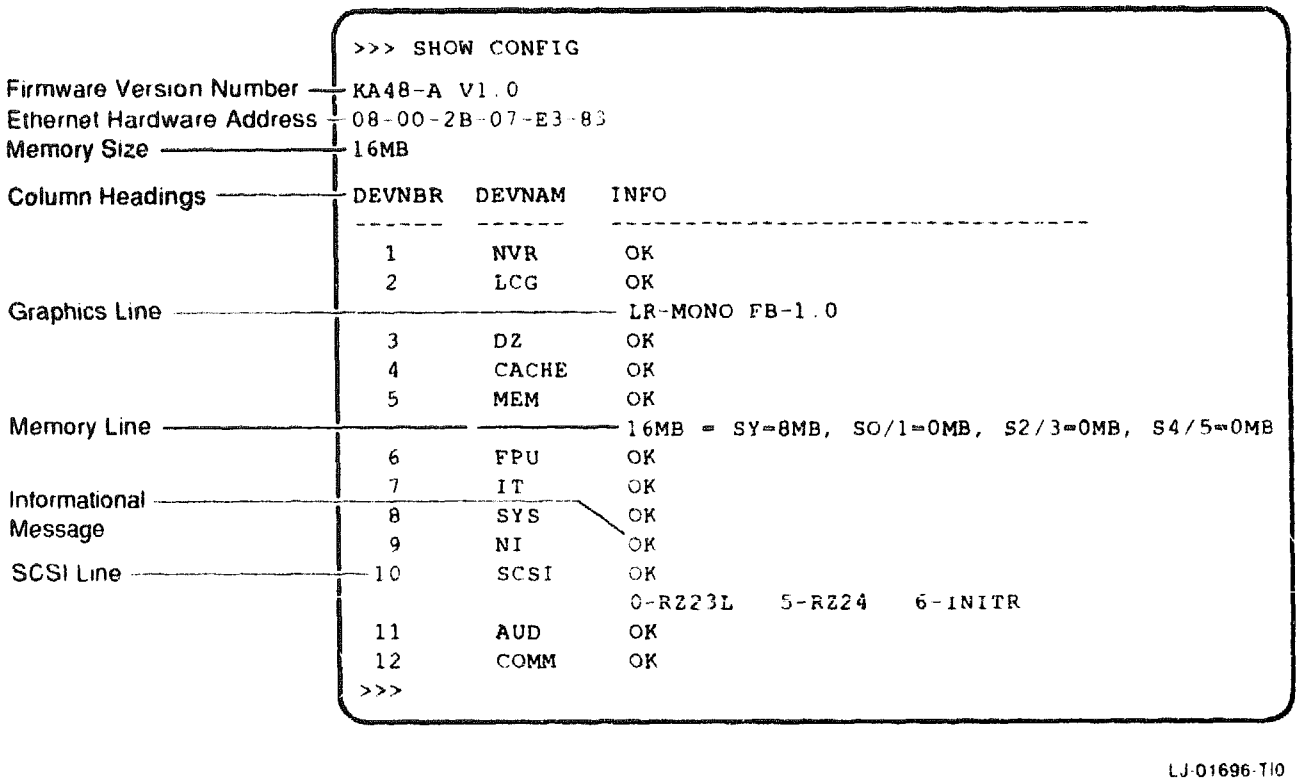
- Ethernet address
- System devices and their status
- Quantity of system memory

To display the **Show Config** command on the screen, do the following and refer to Figure 2–17:

Step	Action
1.	Press the Halt button on the right side of the system unit. The system will display the console prompt (>>>).
2.	At the prompt >>>, type **show config** and press Return.

Continued on next page

Figure 2–17 Typical Show Config Command Display



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Examine the Screen Display

Compare the data on the screen with the data you received when you did a **Show Device** on the VS 3100 Model 30 or 38 workstation before powering down.

Verify that:

- The Ethernet address is the same as it was on the VS 3100 Model 30 or 38.
- The SCSI ID numbers are not duplicated.
- All the system devices (1 through 11) have an **OK** beside them under the **INFO** column.

Note

If the screen does not show any error codes, then you have successfully completed the upgrade and you are ready to boot the system.

If the system shows any error messages or error codes, refer to the *VAXstation 4000 VLC Service Information Kit*, EK-V466B-SV-001 for system testing and troubleshooting procedures.

Continued on next page

Note

After completing the VS 3100 Model 30 or 38 upgrade, the system enclosure does not have to be returned to Digital. The customer may want to use the enclosure as a SCSI expansion box to house any disk drives or other peripherals that would be part of the new VS 4000 VLC workstation.


CHAP 3

Chapter 3
Upgrade of VS 3100 Model 40 or 48 Workstation to a VS 4000 VLC Workstation

Overview

Introduction

By upgrading the VS 3100 Model 40 or 48 workstation to a V 4000 VLC workstation, the customer is able to leverage his/h initial investment in existing Digital VMS technology to a fas and more powerful computer workstation.

The VAXstation 4000 VLC workstation is a desktop product, including a pointing device, keyboard, and a monitor located either on top or beside the system enclosure. The CPU board (KA-48) is based on the latest System On Chip (SOC) technology.

Purpose

The purpose of this chapter is to provide upgrade informatio so that Digital Services Engineers or knowledgeable Digital customers can upgrade an existing VS 3100 Model 40 or 48 workstation to a VS 4000 VLC workstation.

Continued on next p

Caution

Only Digital Services or qualified self-maintenance personnel should perform this upgrade. You must have a working knowledge of and experience working on the internal hardware devices of a VAXstation 3100 system. If you are not qualified to perform this upgrade, call Digital Services to schedule an upgrade.

Chapter Content

This chapter describes how to upgrade a VAXstation 3100 Model 40 or Model 48 workstation, including the proper shut down procedures, and procedures to remove the Ethernet ROM from the CPU board on the VS 3100 system. This chapter also describes how to run preliminary console commands to verify that the system is operational.

Continued on next page

Chapter Reference

Procedure	Found on Page
Run the Show Config command	3-4
Shut down the system	3-6
Identify the system	3-8
Use the antistatic wrist strap	3-9
Remove VS 4000 VLC top cover	3-12
Remove VS 3100 top cover	3-14
Remove upper drive plate	3-18
Remove RZ2x disk drives	3-21
Remove Lower drive plate	3-25
Remove coprocessor module	3-29
Exchange Ethernet ROMs	3-36
Restore VS 4000 VLC	3-40
Run the Show Config command	3-44

Run Show Device Command

To run the **Show Device** command, do the following and refer to Figure 3–1:

Step	Action
1.	Press the Halt button in the rear of the system unit. Results: The system displays the console prompt (>>>) on the screen.
2.	Type **Show Device** at the console prompt and press Return. Record the Ethernet hardware address. This address will be verified on the completion of the upgrade.
3.	Verify that no two devices have the same SCSI ID numbers.

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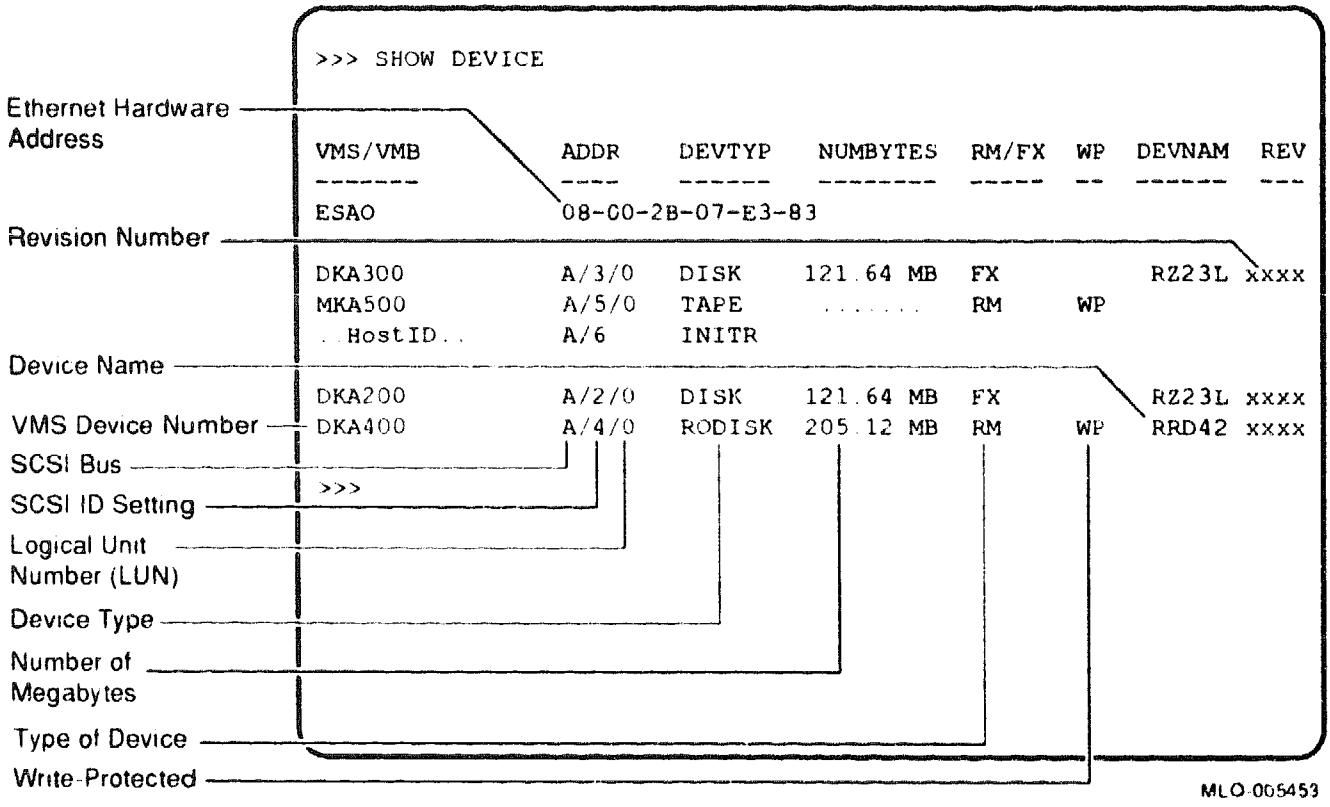
Figure 3–1 Typical Screen Display of a Show Device Command



Backups and Revisions

Before powering down the system, back up the system and user disks to prevent loss of data. All system backups and VMS software version upgrades are the responsibility of the Digital customer.

Shutting Down Peripherals/Disconnecting Cables

Note

Refer to the *VMS Installation and Operations Manual*, AA-NY74B-TE for the proper shutdown procedure.

Shut Down the System

After shutting down the operating system, turn the system peripherals off in the following order:

1. Expansion boxes
2. Printer, modem, and any other equipment
3. Monitor
4. System unit box

Disconnect Cables

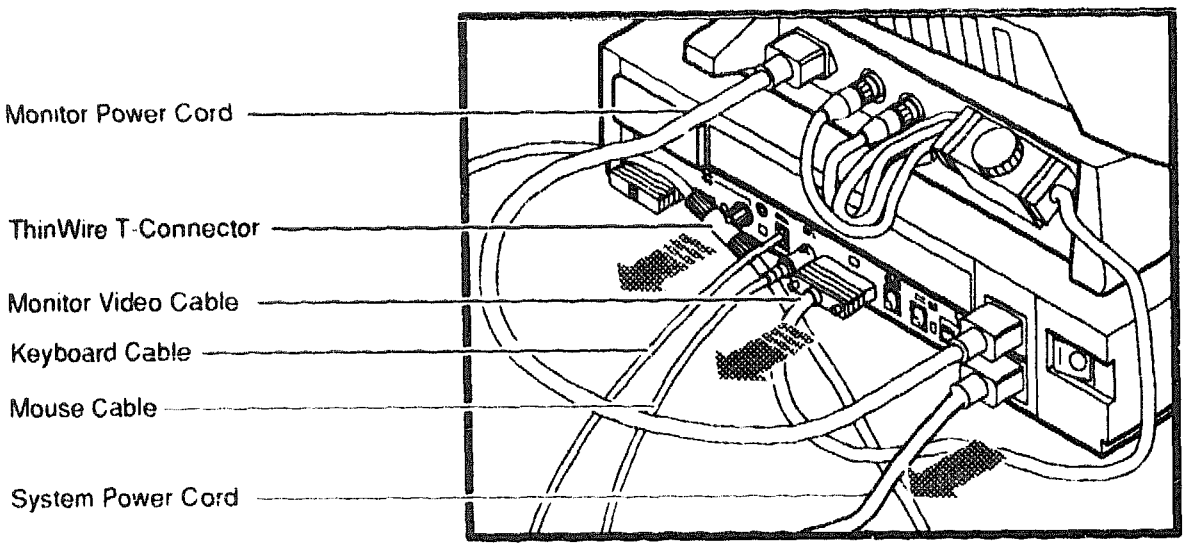
Disconnect the following cables from the back of the system and refer to Figure 3–2:

1. System power cord, first from the wall and then from the system unit
2. Monitor power cord
3. Keyboard cable
4. Mouse cable
5. ThinWire Ethernet or standard Ethernet connector
6. SCSI terminator or external SCSI cable
7. Monitor video cable
8. Printer and communications cables

Remove the monitor from on top of the system unit and set it aside.

Continued on next page

Figure 3–2 Disconnecting the System Unit and Monitor Cables



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Identify the VS 3100 System

After the cables have been disconnected and before beginning the upgrade, you need to identify the system.

To identify the Model 40 or 48 system, do the following:

Step	Action
1.	View the system unit from the rear.
2.	Locate the sticker label with the model code number VS42S-xx for a Model 40 system or WS42S-xx for a Model 48 system.
3.	Does the system unit have the proper model code number? • If yes, continue with this chapter. • If no, go to another chapter in this guide for that particular model code number. Refer to **About This Guide** in this document to determine which chapter you need to go to.

Protecting Against Static

Caution

To eliminate any static charge that you may have built up, touch your index finger to the top of the power supply in the system unit. This will discharge any static electricity.

Use the Antistatic Wrist Strap

The following rules **must** be adhered to while handling system components:

1. Wear a properly grounded antistatic wrist strap.
2. Any module or device removed from the system unit must be placed on an antistatic mat.

Continued on next page

Protect Against Static

To handle system components, do the following and refer to Figure 3–3:

Step	Action
1.	Place the Model 40 or Model 48 system unit and the VLC system units side by side on an antistatic mat.
2.	Plug the Model 40 or Model 48 monitor power cord into the ac power port on the back of the Model 40 or Model 48 system unit.
3.	Plug the other end of the monitor power cord into the system power port on the back of the VS 4000 VLC system unit. The two system units now have a common ground between them (daisy chained).
4.	Attach the alligator clip of the antistatic wrist strap to the power supply of **any** system unit when installing or removing components.

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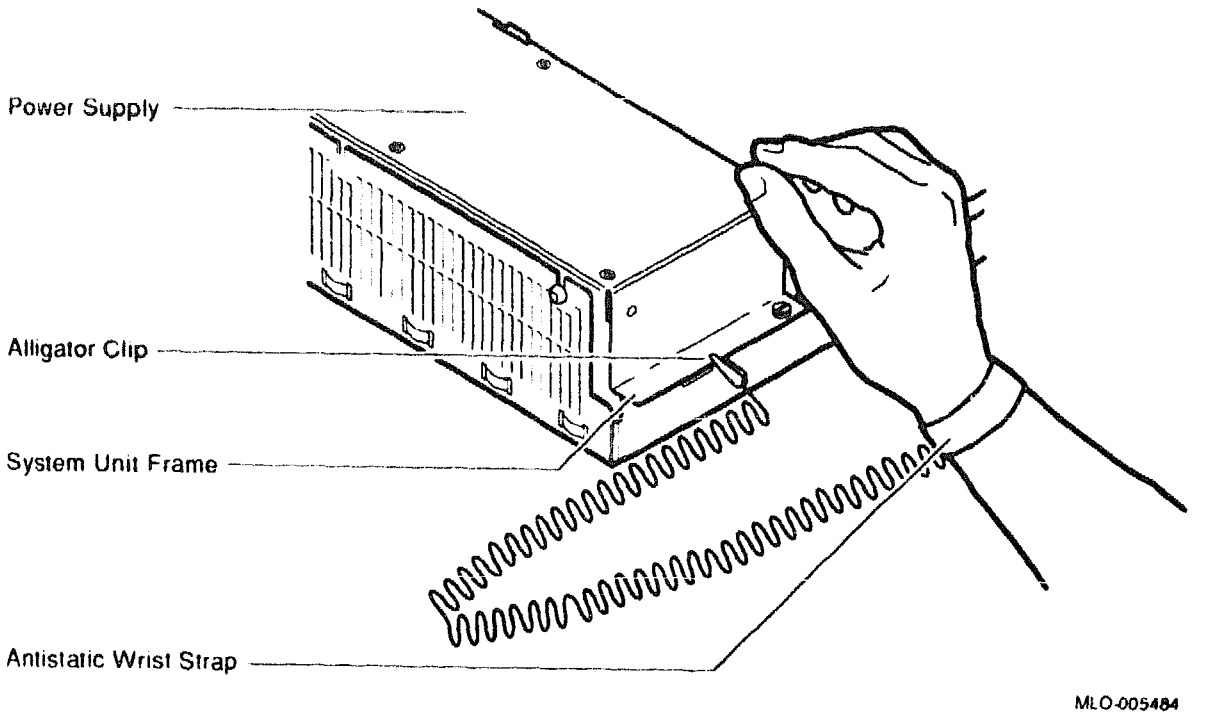
Figure 3–3 Attaching the Antistatic Wrist Strap to the System Unit



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Alternate Static Protection Method

An alternate method of using the antistatic wrist strap is:

Step	Action
1.	Place the antistatic strap on your wrist.
2.	Connect the alligator clip to the chassis frame in front of the power VS 3100 power supply.
	NOTE This method is the least desirable method because the alligator clip has to be moved from system unit to system unit when exchanging internal components.

Removing Top Covers on the System Units

Remove the Top Cover of VS 4000

The top cover of the VS 4000 VLC needs to be removed to obtain access to the internal components in the system enclosure.

To remove the top cover of the VS 4000 VLC, do the following and refer to Figure 3–4:

Step	Action
1.	Carefully release the latches on the right side of the system unit.
2.	Pull the cover up and away from the system.
3.	Place the cover aside. It will be used later during repackaging.

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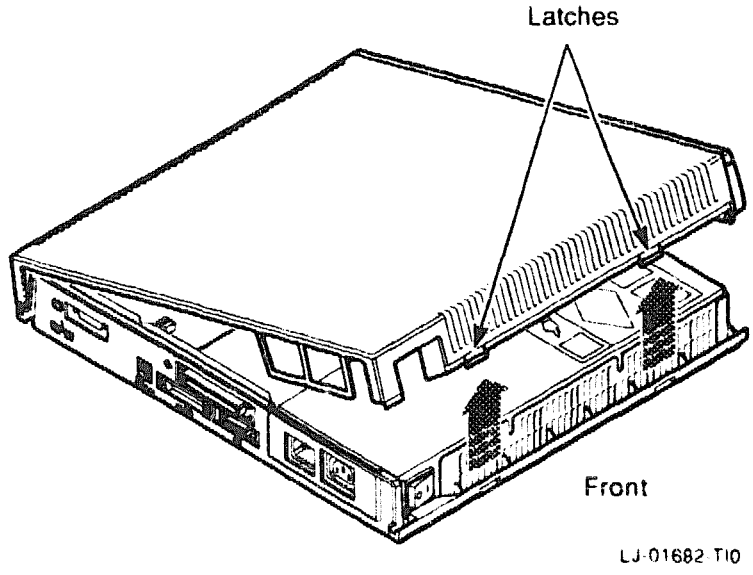
Figure 3–4 Removing Top Cover on the VS 4000 VLC



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Remove the Top Cover of VS 3100 System

To remove the system unit cover on the VS 3100 workstation, do the following and refer to Figure 3–5:

Step	Action
1.	Using a Phillips-head screwdriver, unscrew the two captive screws at the back of the unit on the outside edges. Unscrew these screws until they are loose, do not remove them.
2.	Slide the cover towards the front of the system and lift it up and away from the system unit.
3.	Place the cover aside. It will be used later during repackaging.

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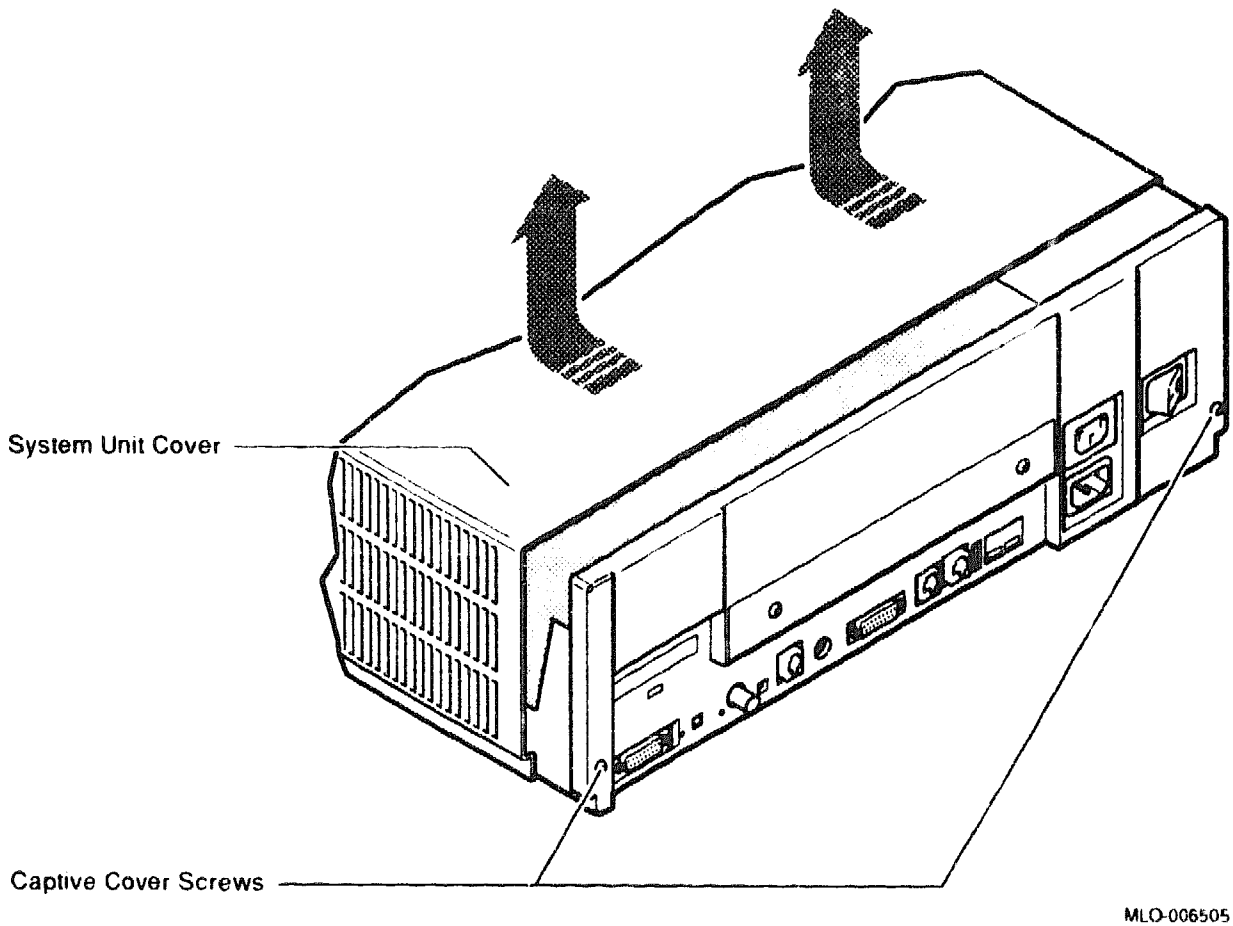
Figure 3–5 Removing the System Unit Cover on the VS 3100 Model 40 or 48



Removing Components on VS 3100 Model 40 and 48

Typical Drive Plate Layout

There are numerous possible drive plate configurations for the VS 3100 Model 40 or 48, including two different types of drive plates. There are also different kinds of SCSI Mass Storage Controllers depending on the model being upgraded. Figure 3–6 shows a common configuration of a Model 40 or 48 drive plate.

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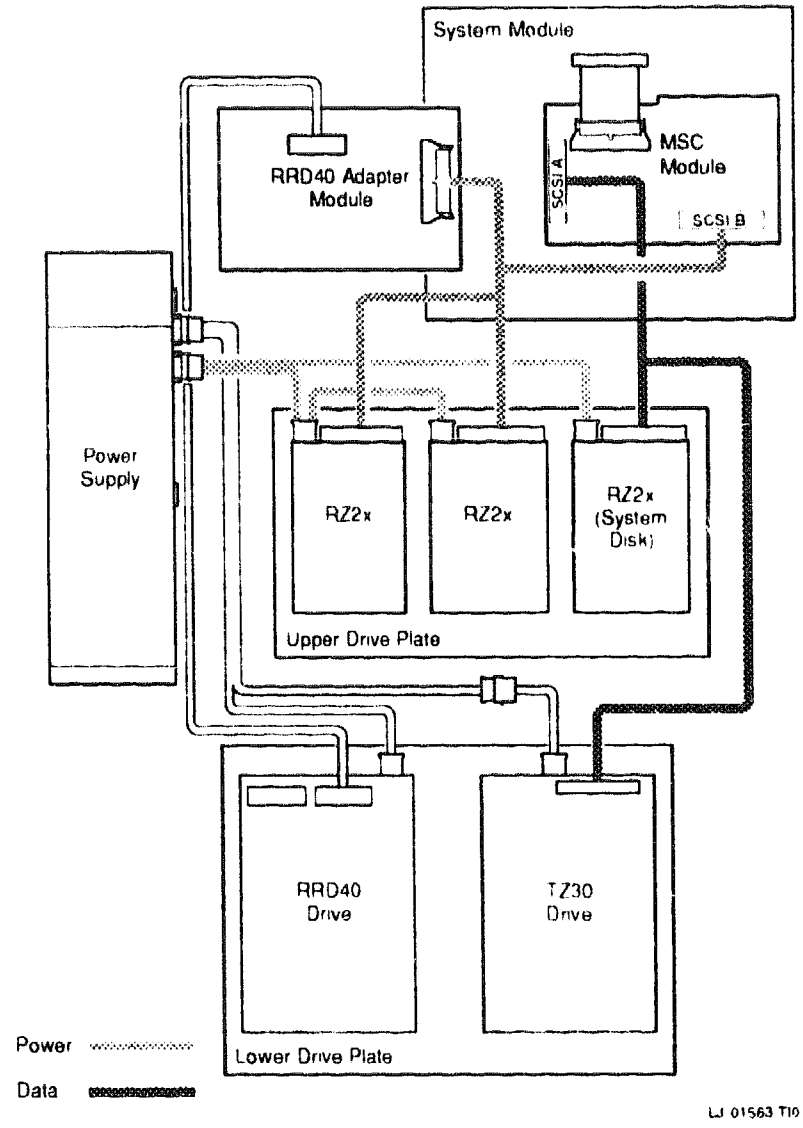
Figure 3–6 A common Configuration of the Model 40 or 48 Drive Plate



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Remove the Upper Drive Plate

To remove the upper drive plate, do the following and refer to Figure 3–7 and Figure 3–8:

Step	Action
1.	Connect the alligator clip from the wrist strap to the system unit.
2.	Disconnect the SCSI signal cables from all the RZ2x disk drives.
3.	Disconnect the internal power cables from all the RZ2x disk drives.
4.	Disconnect the internal power cable from the power supply.

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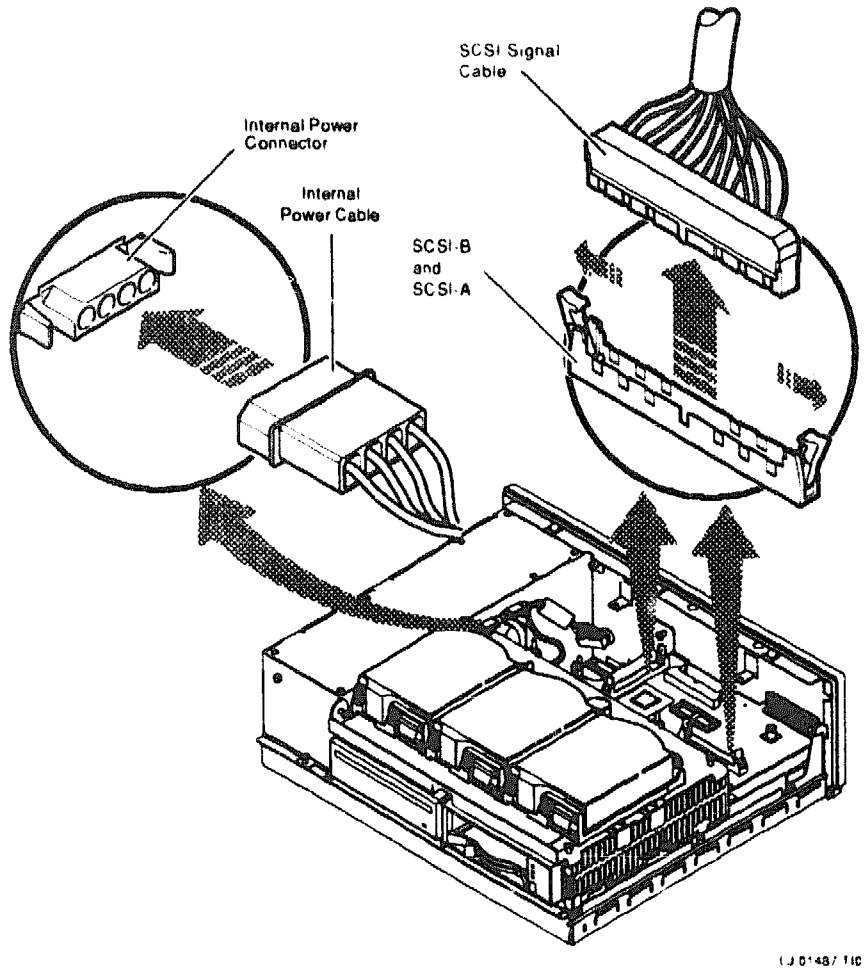
Figure 3–7 Disconnecting the SCSI Signal and Power Cables



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Remove the Upper Drive Plate (continued)

Step	Action
5.	Disconnect the SCSI signal cable from the SCSI or ST506 mass storage module.
6.	Lift the RRD40 adapter module from the four plastic standoffs. Let the module extend over the back of the system unit.
7.	Loosen the five captive screws as shown in Figure 3–8.
8.	Slide the drive plate with attached disk drives forward and lift it off the unit.

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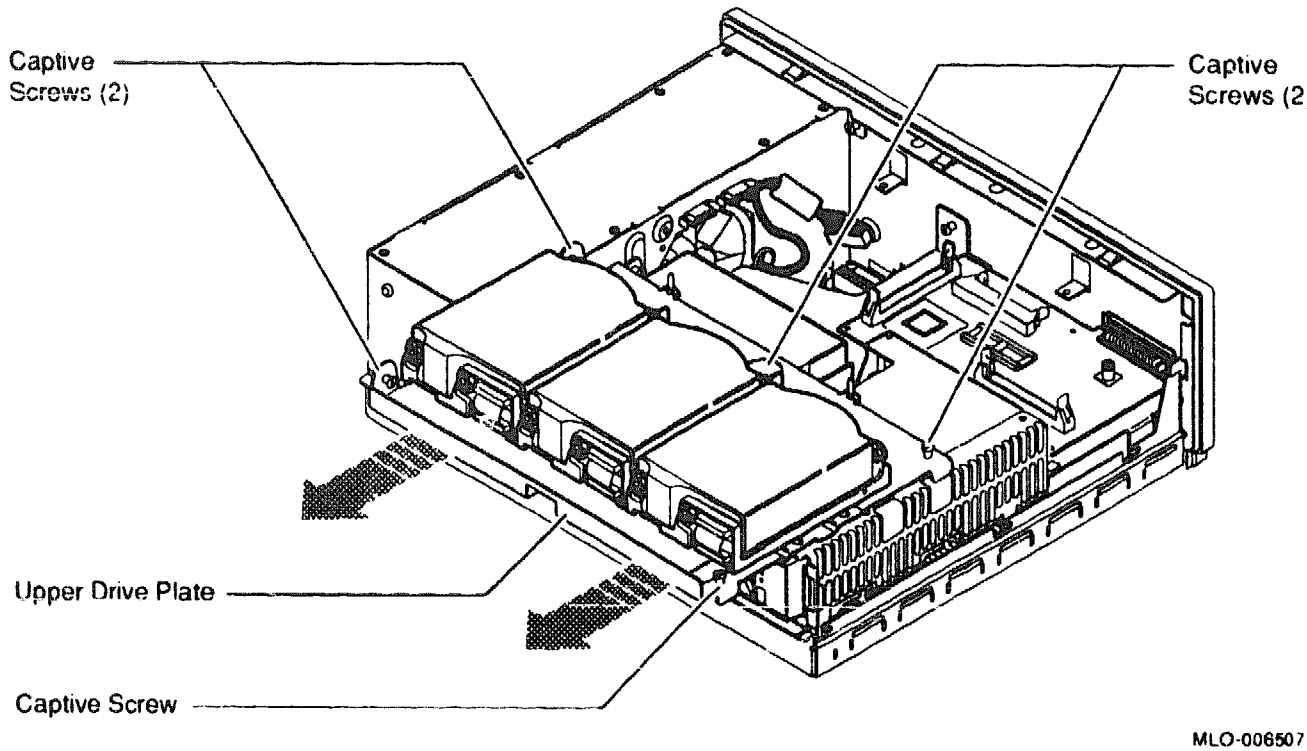
Figure 3–8 Removing the Upper Drive Plate from the System Unit



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Remove RZ2x Disk Drives

Remove the RZ2x disk drives from the upper drive plate. They may be installed into an expansion box with the VS 4000 VLC system unit.

To remove the RZ2x disk drives from the drive plate, do the following and refer to Figure 3–9:

Step	Action
1.	Turn the Model 40 or 48 upper drive plate so the RZ2x drives are face down.
2.	Using a Phillips-head screwdriver, remove the four screws holding each disk drive to the drive plate. Support each drive with one hand while removing the last screw.
3.	Set the drives aside; they may be installed with the VS 4000 VLC system later.

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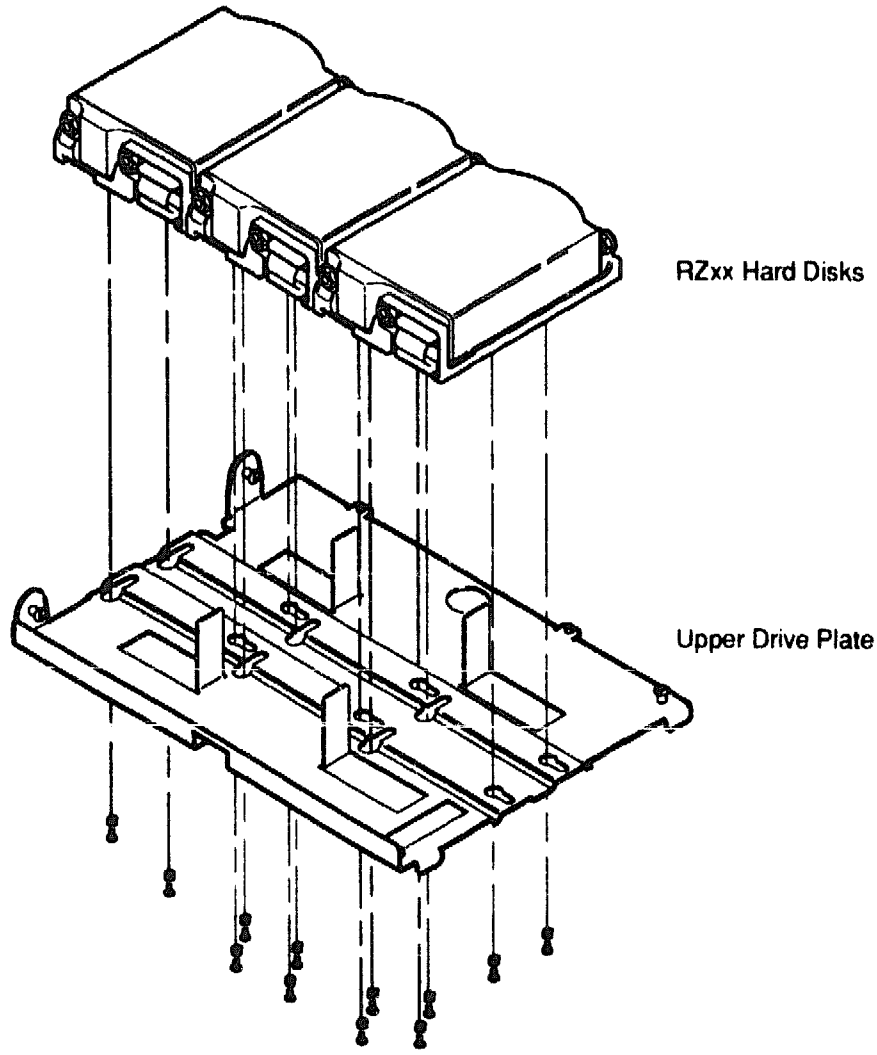
Figure 3–9 Removing RZ2x Hard Disks from the Drive Plate



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Caution

When you are removing the lower drive plate from the system unit, do not make contact with the circuit boards underneath, such as the system board and the memory boards. Contact between the drive plate and the circuit boards could cause the circuit boards irreparable damage.

Remove the Lower Drive Plate

To remove the lower drive plate from the system unit, do the following and refer to Figure 3–10 and Figure 3–11:

Step	Action
1.	Remove the RRD40 adapter module by disconnecting the cable from the SCSI bus and the RRD40 compact disk (CD) drive.
2.	Disconnect the internal power cable from the TZ30 tape drive (if installed).
3.	Disconnect the SCSI signal cable from the TZ30 to the Mass Storage Controller (if installed).
4	Disconnect the internal power cable from the RRD40 compact disk.
5.	Loosen the four captive and the three slide mount screws as shown in Figure 3–11. Do not remove the screws.
6.	Slide the lower drive plate forward, then lift the plate from the system unit.

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Figure 3–10 Lower Drive Plate Configuration

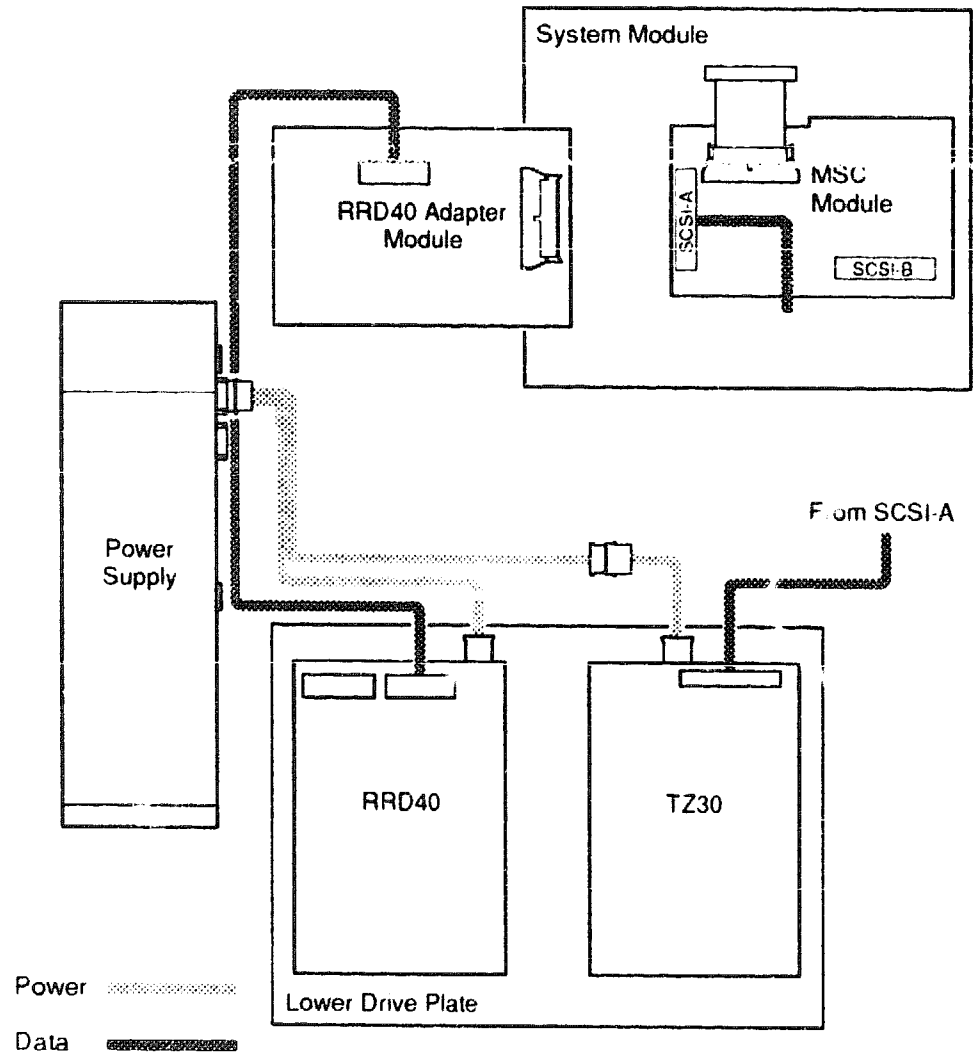

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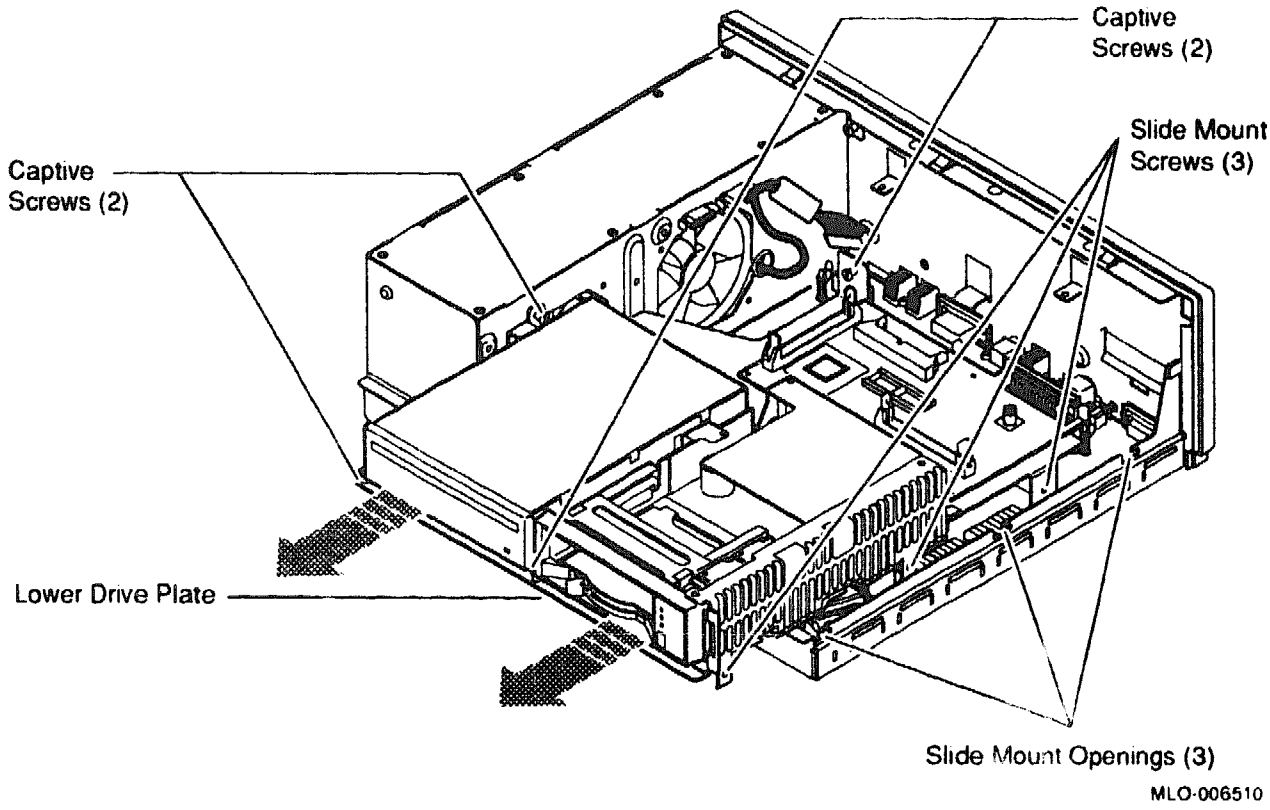
Figure 3–11 Removing the Lower Drive Plate



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Remove the TZ30 and RRD40 from Drive Plate

To remove the TZ30 and RRD40 from the drive plate, do the following and refer to Figure 3–12:

Step	Action
1.	Turn the Model 40 or 48 lower drive plate so the TZ30 and the RRD40 are face down.
2.	Using a Phillips-head screwdriver, remove the four screws holding each module to the lower drive plate. Support each drive with one hand while removing the last screw.
3.	Set the drives aside; they may be installed in an expansion box with the VS 4000 VLC system unit.

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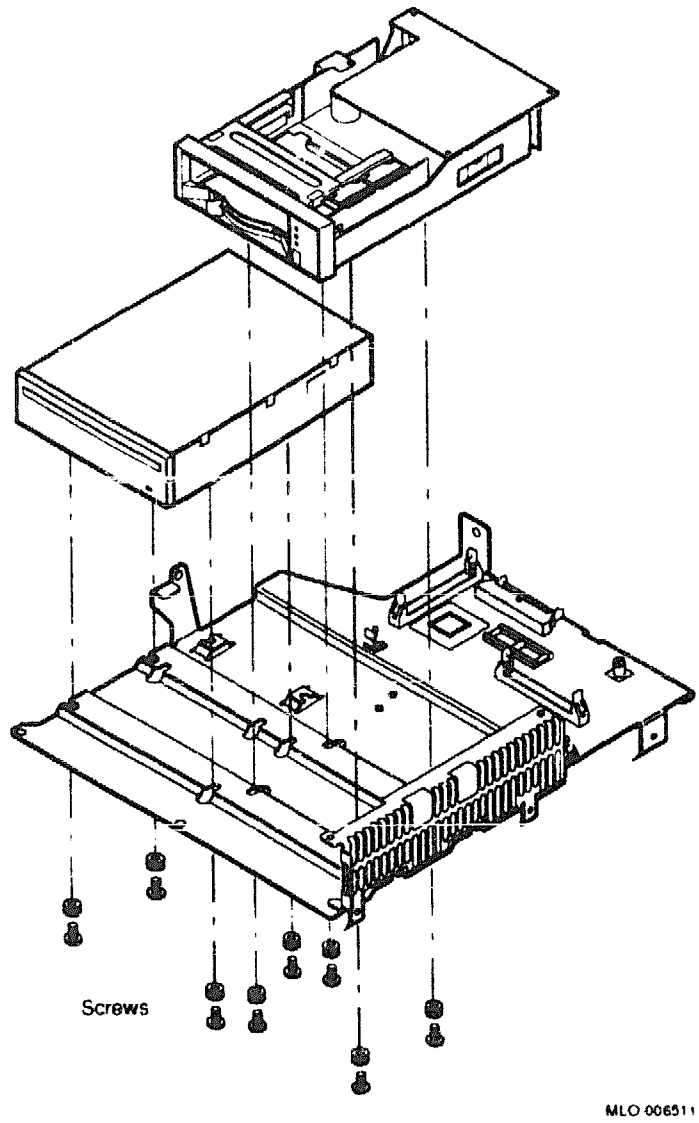
Figure 3–12 Removing the TZ30 and the RRD40 from the Lower Drive Plate



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Note

Depending on the system configuration, the VS 3100 Model 40 or 48 systems can have two types of coprocessor modules: the graphics coprocessor module, and the scanline coprocessor module. These two modules are similar except for a couple features. To remove the scanline coprocessor, you must remove three screws from the mounting brackets, then release the tabs from the post locks. The graphics coprocessor module has only four post locks with tabs holding it to the system board.

Remove the Scanline Coprocessor

To remove the scanline coprocessor module, do the following and refer to Figure 3–13 and Figure 3–14:

Step	Action
1.	Unscrew and remove the three screws on the mounting brackets that attach the coprocessor to the system board. The mounting brackets will remain attached to the system board.

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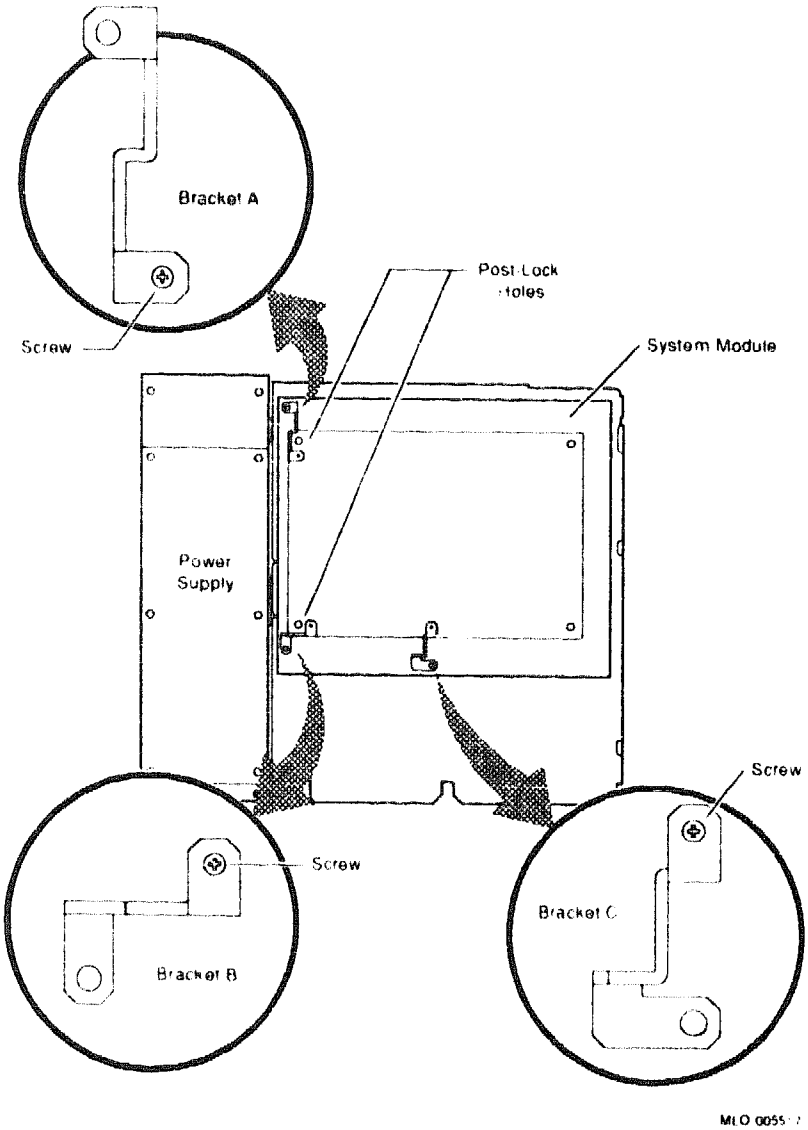
Figure 3–13 Scanline Coprocessor Mounting Brackets



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Remove the Scanline Coprocessor (continued)

Step	Action
2.	Remove the scanline coprocessor from the four post locks by pulling back the post lock tabs.
	CAUTION Do not grasp the scanline coprocessor module by the corners when you are lifting it up to remove it from the system board. The timing buffer chip located underneath the scanline coprocessor module can become easily damaged by any pressure exerted on it.
3.	Grasp the scanline coprocessor module next to the two connectors, and lift it up and off the system board.

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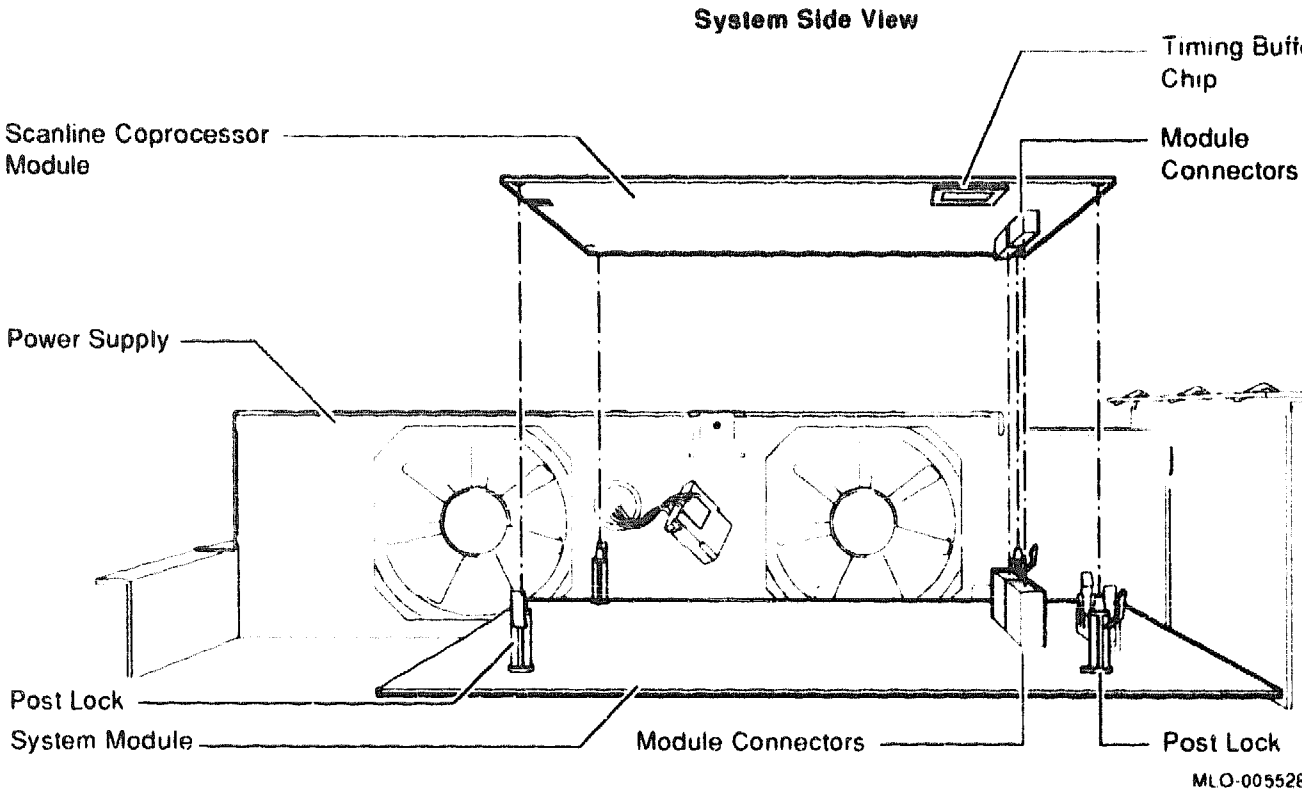
Figure 3–14 Removing the Scanline Coprocessor from the System Board



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Caution

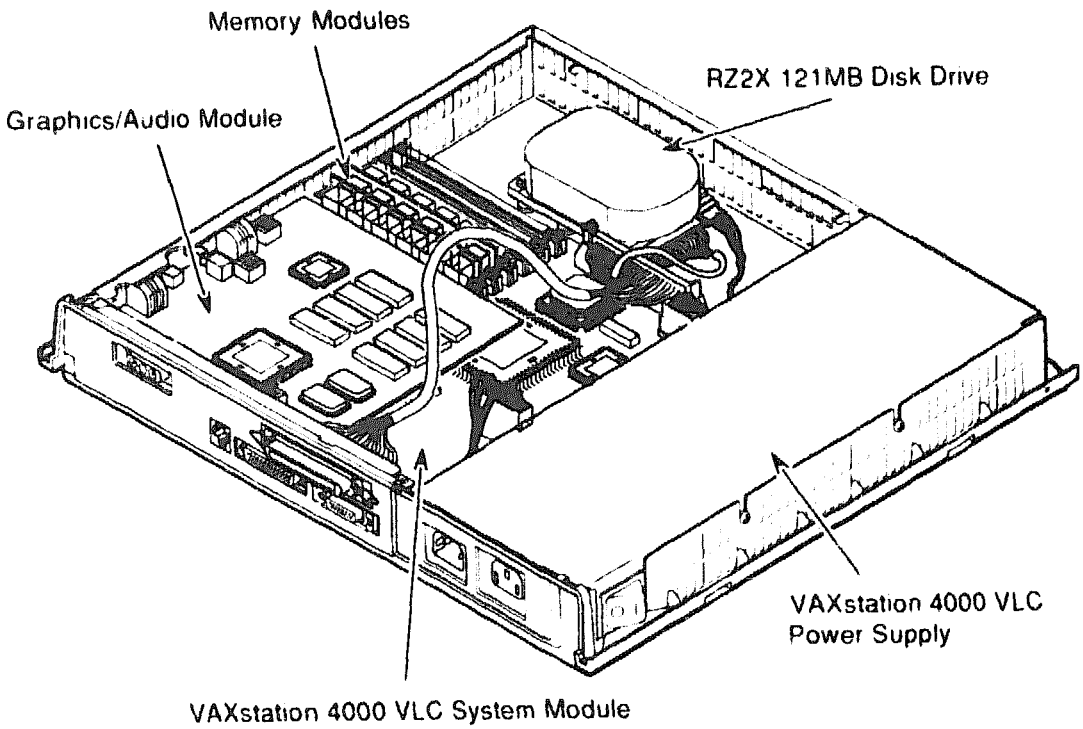
At this time, all the internal components except for the Ethernet ROM have been removed from a VS 3100 Model 40 or Model 48 system.

Do not remove the Ethernet ROM from the VS 3100 system until you are ready to remove it from the VS 4000 VLC, thus eliminating any chance of damage occurring to the ROM. You will be instructed when to perform this procedure.

Internal Layout of the VS 4000 VLC Workstation

Figure 3–15 shows the location of the internal components of the VS 4000 VLC workstation.

Figure 3–15 VS 4000 VLC Internal Component Locations



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Remove the LCG Graphics Board

To remove the Ethernet ROM from the VS 3100 Model 40 or 48, it is necessary to remove the VLC graphics board.

To remove the graphics board, do the following:

Step	Action
1.	Locate the two mounting screws on the LCG board and remove them.
2.	Gently lift the module up and out of the system unit.
3.	Place the LCG board on an antistatic mat. This module will be reinstalled later.

Note

At this time in the upgrade, you are now ready to exchange the two ROMs between systems.

Exchanging Ethernet ROMs between Systems

Cautions

1. When removing the ROM from the VS 4000 system board, antistatic precaution must be followed.

2. Before removing or installing any Ethernet ROM, be sure you note the orientation of the IC chip keyway in relation to the chip IC socket. If you put the Ethernet ROM in backwards, the system will not function.

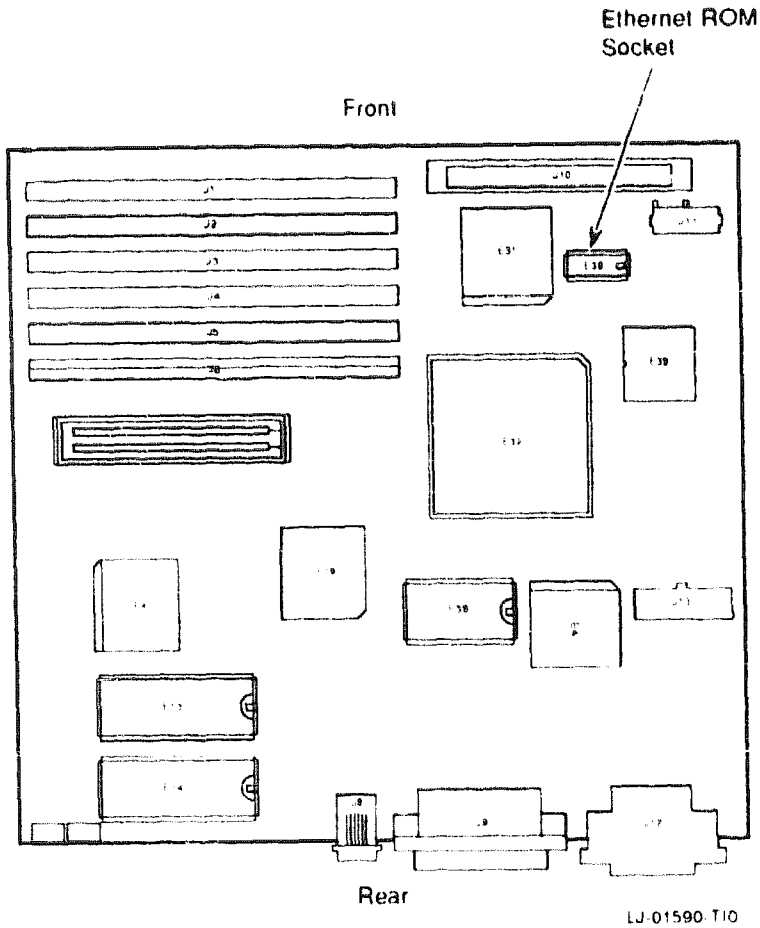
Exchange Ethernet ROMs

To remove and install the ROMs between system units, do the following and refer to Figure 3–16 and Figure 3–17:

Step	Action
1.	Locate the Ethernet ROM on the VS 4000 VLC system board and remove it from the socket using a chip puller or a small flat-head screwdriver. **NOTE The Ethernet ROM is the only socketed 16-pin chip on the system board. The Ethernet ROM has ENET ADDRS (abbreviation for Ethernet Address) written on the top.**

Continued on next page

Figure 3–16 Ethernet ROM socket on VS 4000 VLC System Board



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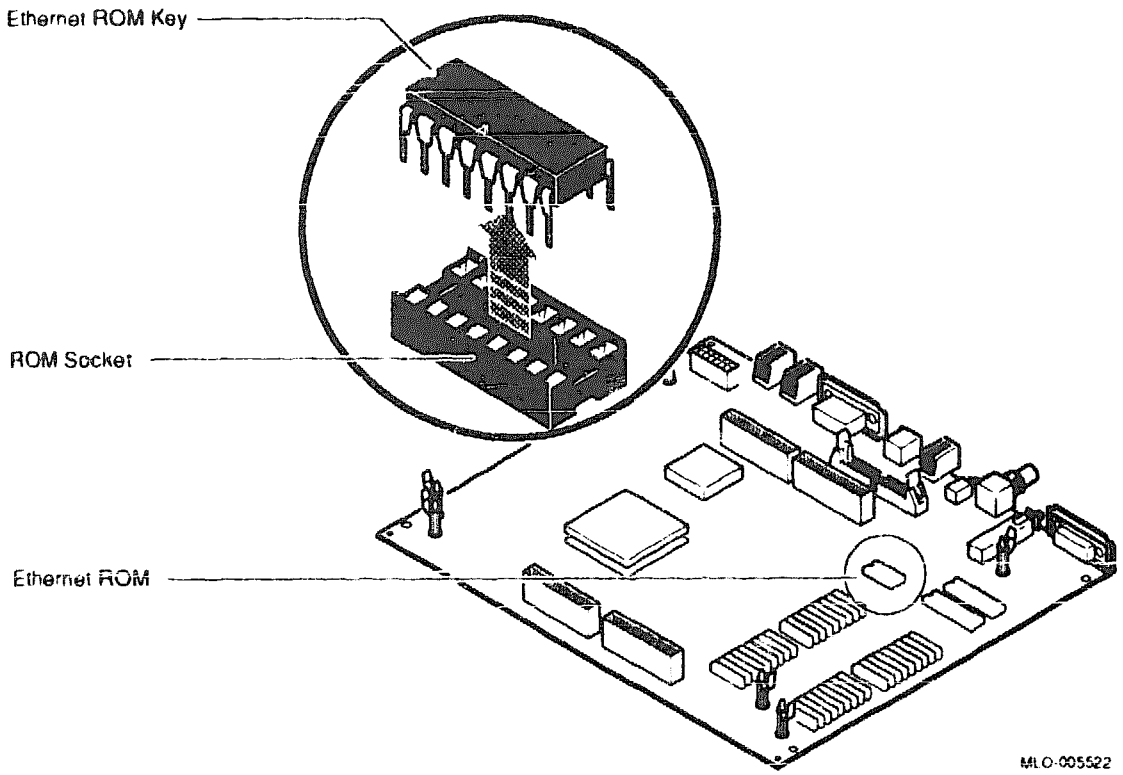
Exchange Ethernet ROMs (continued)

Step	Action
2.	Make sure the pins on the Ethernet ROM are straight. Place the ROM on the antistatic mat.
3.	Remove the ROM from the VS 3100 system board and install it into the VS 4000 VLC system board.
4.	Install the ROM that you removed from the VS 4000 VLC system into the VS 3100 system.

Continued on next page

Figure 3–17 Removing the Ethernet ROM from the VS 3100 System Board



Note

Now that the Ethernet ROM has been installed into the VS 4000 VLC system board, you can now reinstall the previously removed components.

Restoring the VS 4000 VLC Workstation

Note

When installing components into the VS 4000 workstation, perform the procedures that were previously discussed in the component removal sections of this chapter. Use all the procedures in reverse order.

Summary of Restoration of VS 4000

Restore the system components in the following sequence on the VS 4000 VLC system:

Step	Action
1.	Install the LCG graphics board.
2.	Check that all the internal cabling in the system enclosure is secure and that the connectors are seated properly.
3.	Install the system unit cover.

Continued on next page

Summary of Restoration of VS 4000 (continued)

4. Depending on the VS 4000 VLC system configuration, install all the following necessary external system unit cables:
   - System power cord
   - Monitor power cord
   - SCSI terminator or cable
   - Loopback connector and T-connector or communication cables
   - Mouse cable
   - Keyboard cable
   - Monitor video cable

Powering up VS 4000 VLC After Upgrade

Power up Sequence

With all the cables connected, turn **On** the workstation peripherals in the following order:

Step	Power On...
1.	Storage expansion box, if you have one
2.	Printer and modem, if you have them
3	Monitor
4.	System unit

Automatic test Display

When you first turn on the system unit ac power, the following will happen automatically:

- A series of self-tests will begin to run. As each test completes, the status bar will start to fill and audio beeps will be heard. See Figure 3–18.

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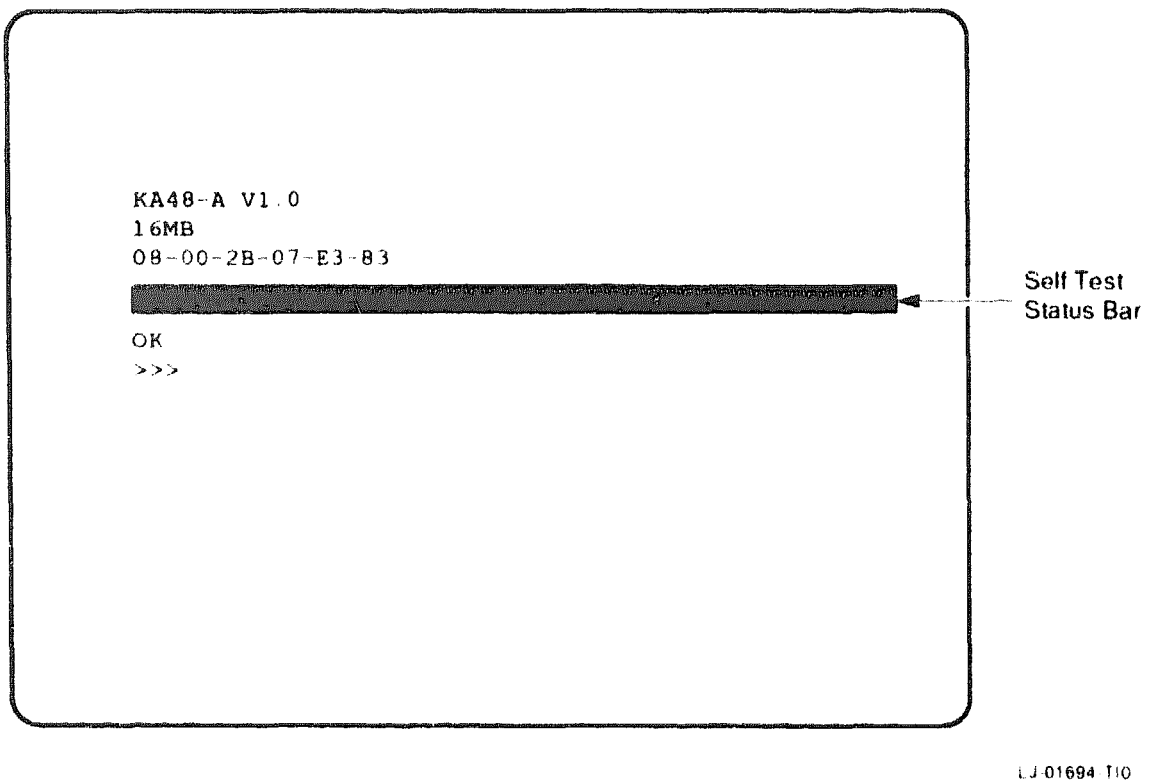
Figure 3–18 Automatic Test Display



Running the Show Config Command

Show Config Command

The following information will be displayed when you run the **Show Config** command at the console prompt:

- Ethernet address
- System devices and their status
- Quantity of system memory

To display the **Show Config** command on the screen, do the following and refer to Figure 3–19:

Step	Action
1.	Press the Halt button on the right side of the system unit. The system will display the console prompt (>>>).
2.	At the prompt >>>, type **Show Config** and press Return.

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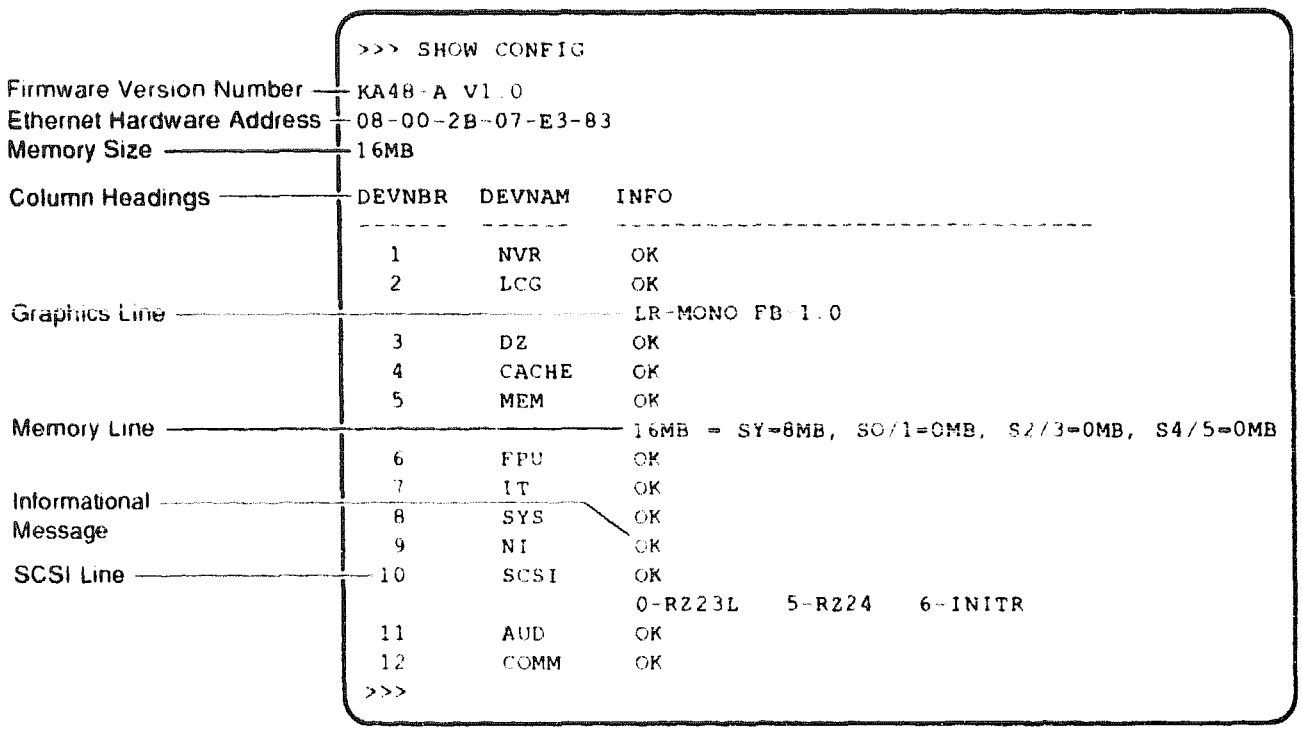
Figure 3–19 Typical Show Config Command Display



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Examine the Screen Display

Compare the data on the screen with the data you received when you did a **Show Device** on the VS 3100 Model 40 or 48 workstation before powering down.

Verify that:

- The Ethernet address is the same as it was on the VS 3100 Model 40 or 48.
- The SCSI ID numbers are not duplicated.
- All the system devices (1 through 11) have an **OK** beside them under the **INFO** column.

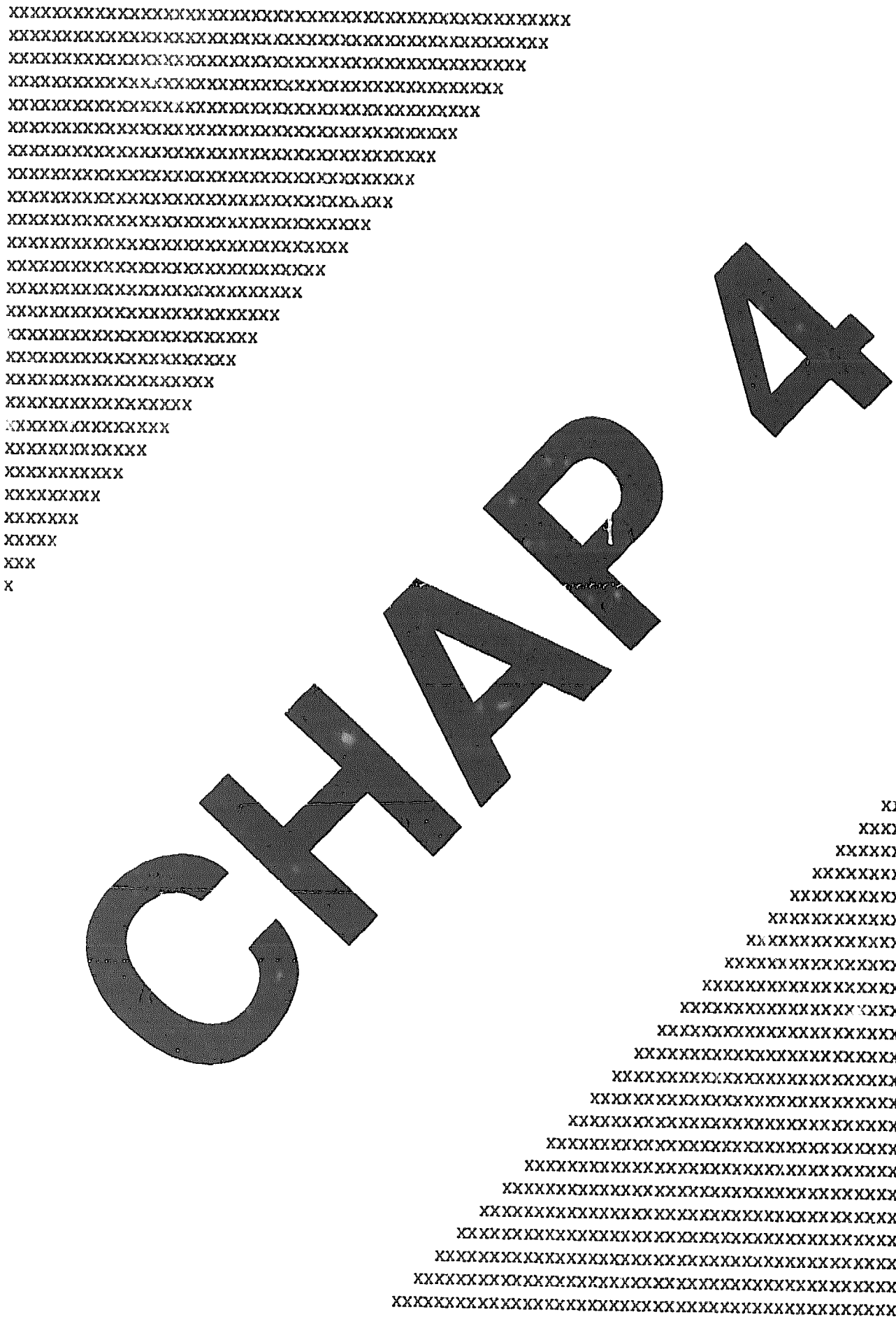
Note

If the screen does not show any error codes, then you have successfully completed the upgrade and you are now ready to boot the system.

If the system shows any error messages or error codes, refer to the *VAXstation 4000 VLC Service Information Kit*, EK-V466B-SV-001 for system testing and troubleshooting procedures.

Note

After completing the VS 3100 Model 40 or 48 upgrade, the system enclosure does not have to be returned to Digital. The customer may want to use the enclosure as a SCSI expansion box to house any disk drives or other peripherals that would be part of the new VS 4000 VLC workstation.


CHAP 4

Chapter 4
Upgrade of VS 3100 Model 76 Workstation to a VS 4000 VLC Workstation

Overview

Introduction

By upgrading the VS 3100 Model 76 workstation to a VS 4000 VLC workstation, the customer is able to leverage his/her initial investment in existing Digital VMS technology to a faster and more powerful computer workstation.

The VAXstation 4000 VLC workstation is a desktop product, including a pointing device, keyboard, and a monitor located either on top or beside the system enclosure. The CPU board (KA-48) is based on the latest System On Chip (SOC) technology.

Purpose

The purpose of this chapter is to provide upgrade information so that Digital Services Engineers or knowledgeable Digital customers can upgrade an existing VS 3100 Model 76 workstation to a VS 4000 VLC workstation.

Continued on next page

Caution

Only Digital Services or qualified self-maintenance personnel should perform this upgrade. You must have a working knowledge of and experience working on the internal hardware devices of a VAXstation 3100 system. If you are not qualified to perform this upgrade, call Digital Services to schedule an upgrade.

Chapter Content

This chapter describes how to upgrade a VAXstation 3100 Model 76 workstation to a VS 4000 VLC workstation, including the shut down procedures, and procedures to remove the Ethernet ROM from the CPU board on the VS 3100 system. This chapter also describes how to run preliminary console commands to verify that the system is operational.

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Run Show Device Command

To run the Show Device command, do the following and refer to Figure 4–1:

Step	Action
1.	Press the Halt button on the rear of the system unit. Results: The system displays the console prompt on the screen.
2.	Type **Show Device** at the console prompt and press Return. Record the Ethernet hardware address. This address will be verified on the completion of the upgrade.
3.	Verify that no two devices have the same SCSI ID numbers.

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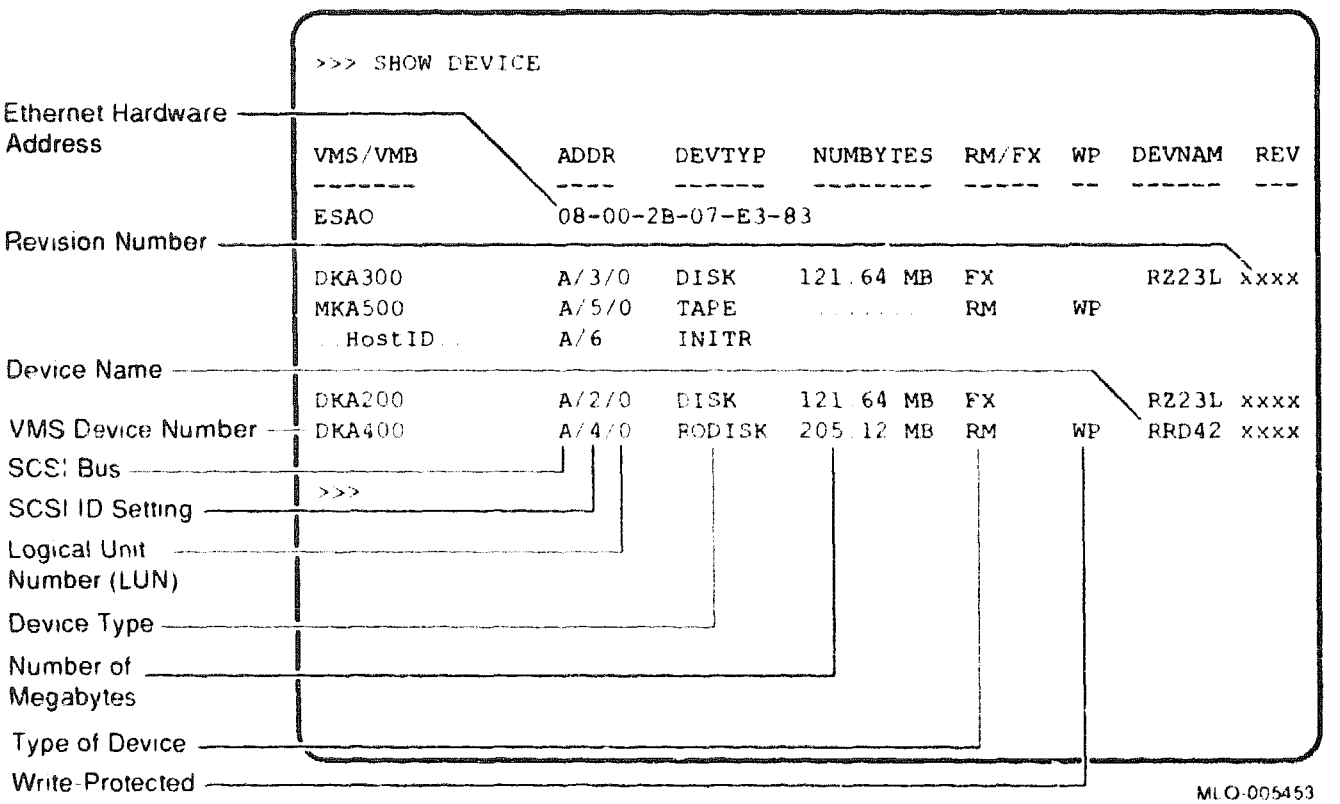
Figure 4–1 Typical Screen Display of a Show Device Command



Backups and Revisions

Before powering down the system, back up the system and user disks to prevent loss of data. All system backups and VMS software version upgrades are the responsibility of the Digital customer.

Shutting Down Peripherals/Disconnecting Cables

Note

Refer to the *VMS Installation and Operations Manual*, AA-NY74B-TE for the proper shutdown procedure.

Shut Down the System

After shutting down the operating system, turn the system peripherals off in the following order:

1. Expansion boxes
2. Printer, modem, and any other equipment
3. Monitor
4. System unit box

Disconnect Cables

Disconnect the following cables from the back of the system and refer to Figure 4–2.

1. System power cord, first from the wall and then from the system unit
2. Monitor power cord
3. Keyboard cable
4. Mouse cable
5. ThinWire Ethernet or standard Ethernet connector
6. SCSI terminator or external SCSI cable
7. Monitor video cable
8. Printer and communications cables

Remove the monitor from on top of the system unit and set it aside.

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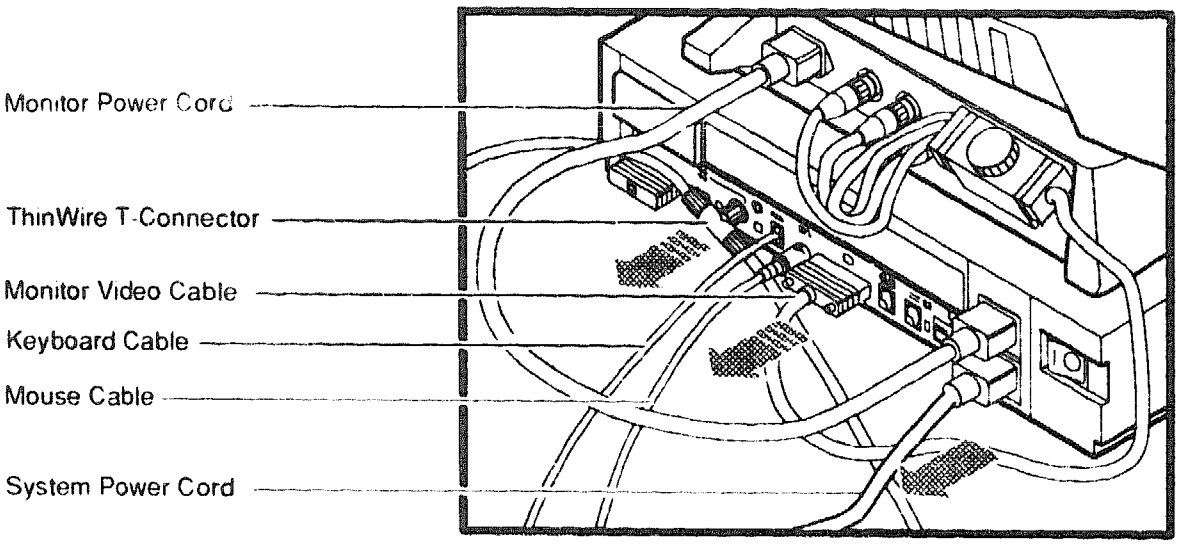
Figure 4–2 Disconnecting the System Unit and Monitor Cables



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Identify the VS 3100 Model 76 System

After the cables have been disconnected and before beginning the upgrade, you need to identify the system to be upgraded.

To identify the VS 3100 Model 76 system, do the following:

Step	Action
1.	View the system unit from the rear.
2.	Locate the sticker label with the model code number WS43A-xx for a Model 76 system.
3.	Does the system unit have the proper model code number? • If yes, continue with this chapter. • If no, go to another chapter in this guide for that particular model code number. Refer to **About This Guide** in this document to determine which chapter you need to go to.

Protecting Against Static

Caution

To eliminate any static charge that you may have built up, touch your index finger to the top of the power supply in the system unit. This will discharge any static electricity.

Use the Antistatic Wrist Strap

The following rules **must** be adhered to while handling system components:

1. Wear a properly grounded antistatic wrist strap.
2. Any module or device removed from the system unit must be placed on an antistatic mat.

To handle the system components, do the following and refer to Figure 4–3:

Step	Action
1.	Place the Model 76 system unit and the VLC system unit side by side on an antistatic mat.
2.	Plug the Model 76 monitor power cord into the ac power port on the back of the Model 76 system unit.
3.	Plug the other end of the monitor power cord into the system power port on the back of the VS 4000 VLC system unit. The two system units now have a common ground between them (daisy chained).
4.	Attach the alligator clip of the antistatic wrist strap to the power supply of *any* system unit when installing or removing components.

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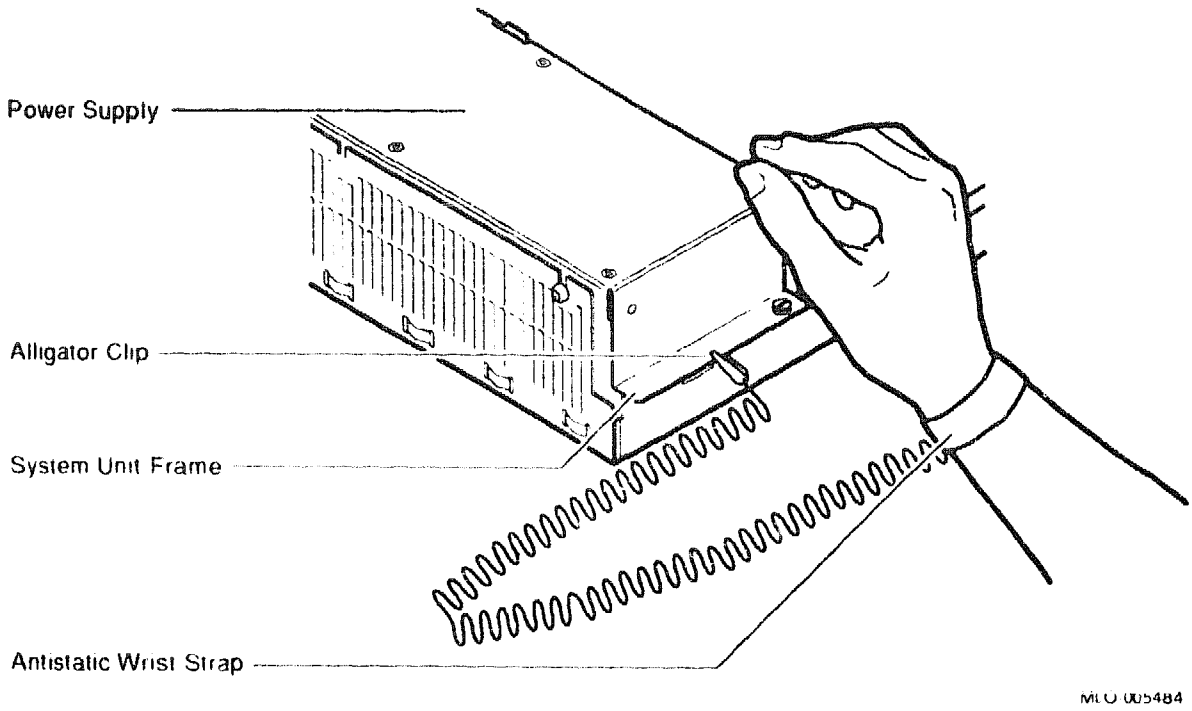
Figure 4–3 Attaching the Antistatic Wrist Strap to the System Unit



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Alternate Static Protection Method

An alternate method of using the antistatic wrist strap is:

Step	Action
1.	Place the antistatic strap on your wrist.
2.	Connect the alligator clip to the chassis frame in front of the VS 3100 power supply. **NOTE This method is the least desirable method because the alligator clip has to be moved from system unit to system unit when exchanging internal components.**

Removing Top Covers of the System Units

Remove the Top Cover of VS 4000 VLC Unit

The top cover of the VS 4000 VLC needs to be removed to gain access to the internal components in the system enclosure.

To remove the top cover on the VS 4000 VLC, do the following and refer to Figure 4–4:

Step	Action
1.	Release the latches on the right side of the system unit.
2.	Pull the cover up and away from the system.
3.	Place the cover aside. It will be used later during repackaging.

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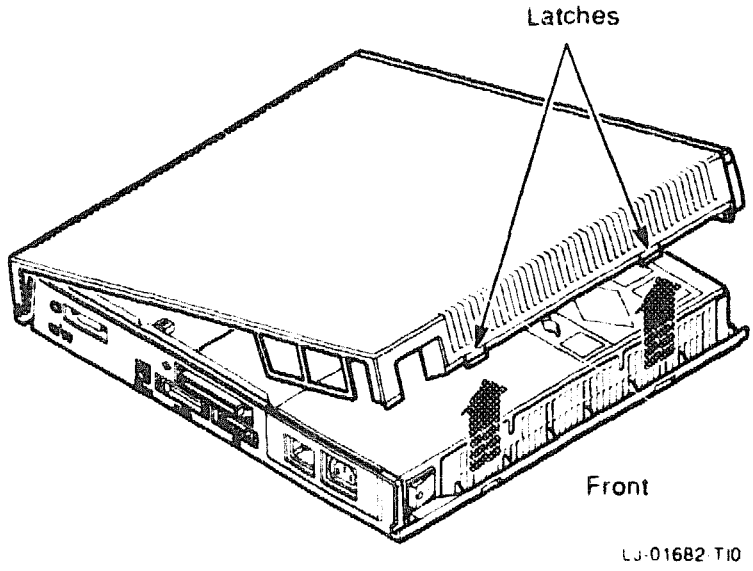
Figure 4–4 Removing the Top Cover on the VS 4000 VLC



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Remove Cover of VS 3100 Model 76 Unit

To remove the system unit cover on the VS 3100 system, do the following and refer to Figure 4–5:

Step	Action
1.	Using a Phillips-head screwdriver, unscrew the two captive screws on the outside edges at the back of the unit. Unscrew these screws until they are loose. Do not remove them.
2.	Slide the cover towards the front of the system and lift it up and away from the system unit.
3.	Place the cover aside. It will be used later during repackaging.

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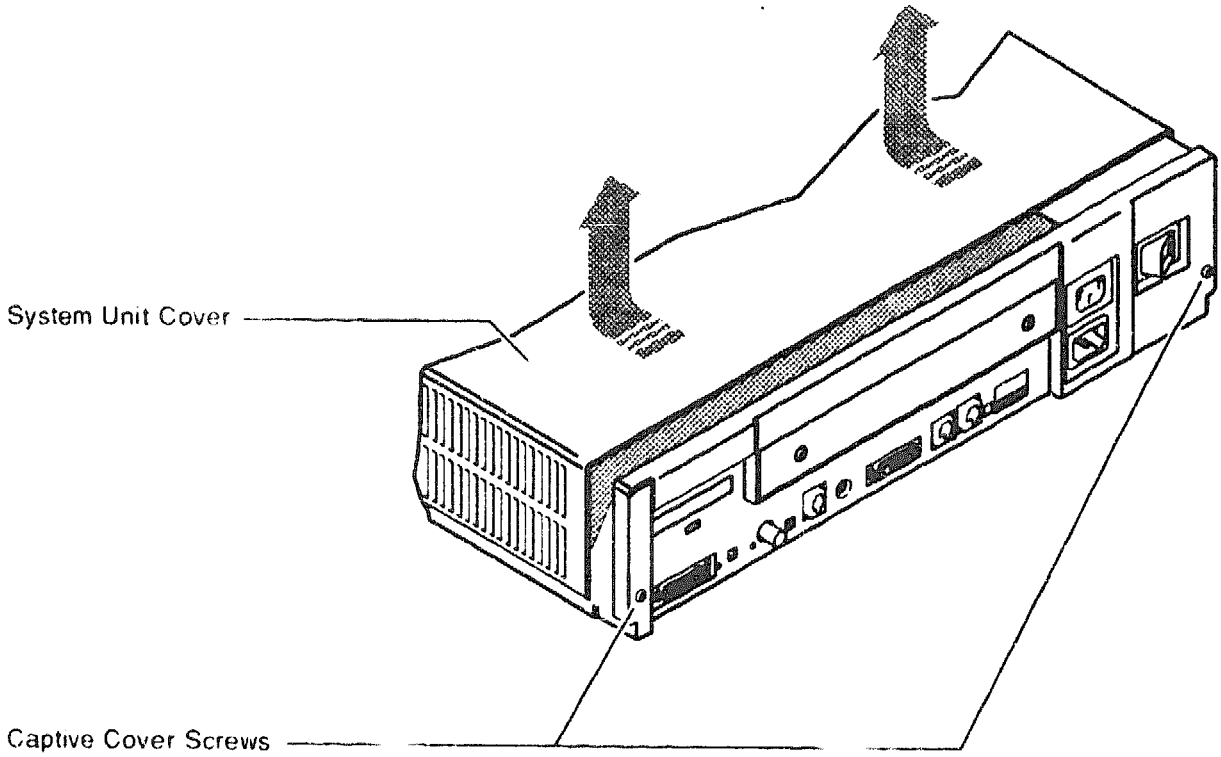
Figure 4–5 Removing the System Unit Cover on the VS 3100 Model 76 System Unit

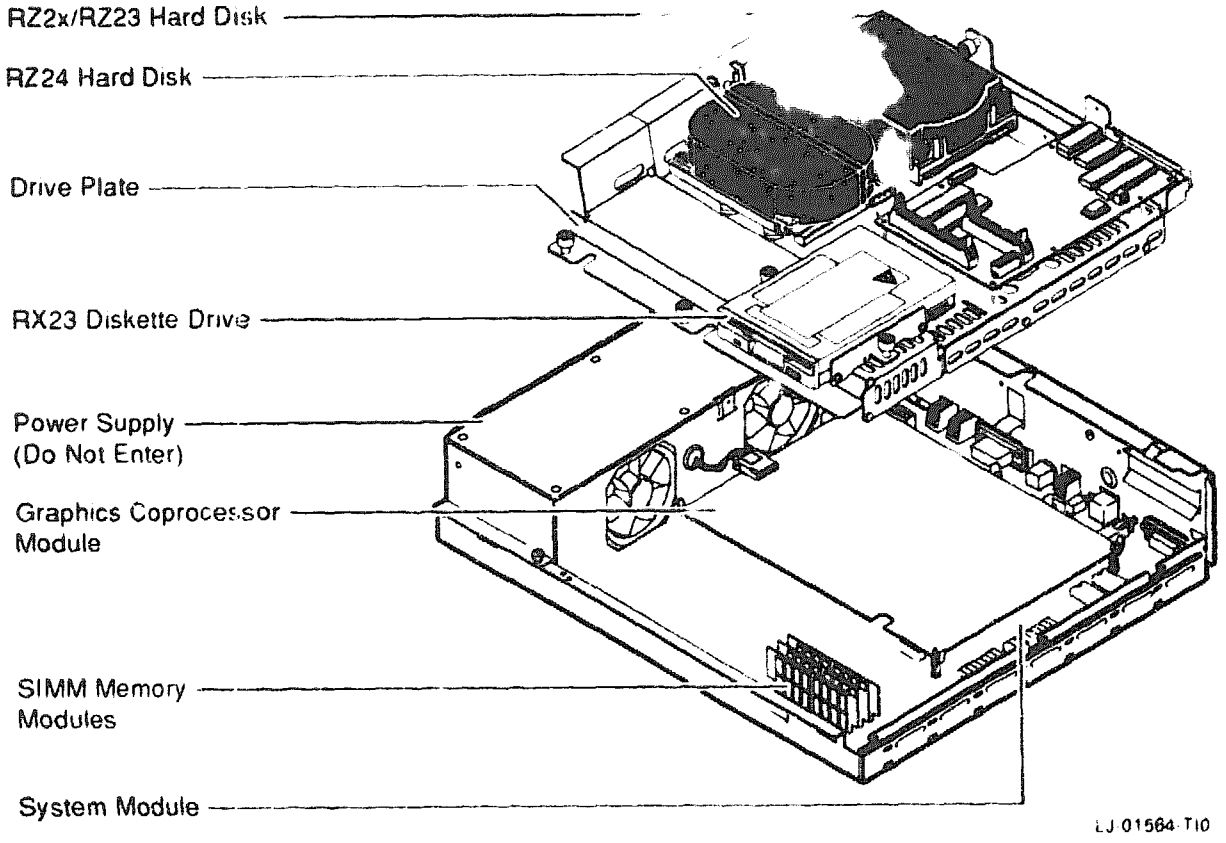


Removing Components from VS 3100 Model 76

Typical Device and Module Location

There are numerous configurations for the VS 3100 Model 76 system unit. Figure 4–6 shows a common configuration for system devices and modules on a Model 76 system.

Figure 4–6 Typical Configuration of the Model 76 System



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Note

Figure 4–6 shows a Model 76 drive plate with an RX23 diskette drive installed. There may or may not be an RX2x diskette drive installed in your system.

Remove the Drive Plate

To remove the VS 3100 Model 76 drive plate, do the following and refer to Figure 4–7:

Step	Action
1.	Connect the alligator clip from the wrist strap to the system unit.
2.	Disconnect the internal SCSI power and signal cables from the RZ2x disk drives and RX2x floppy drive, if present.
3.	Disconnect the internal SCSI power cable from the power supply.

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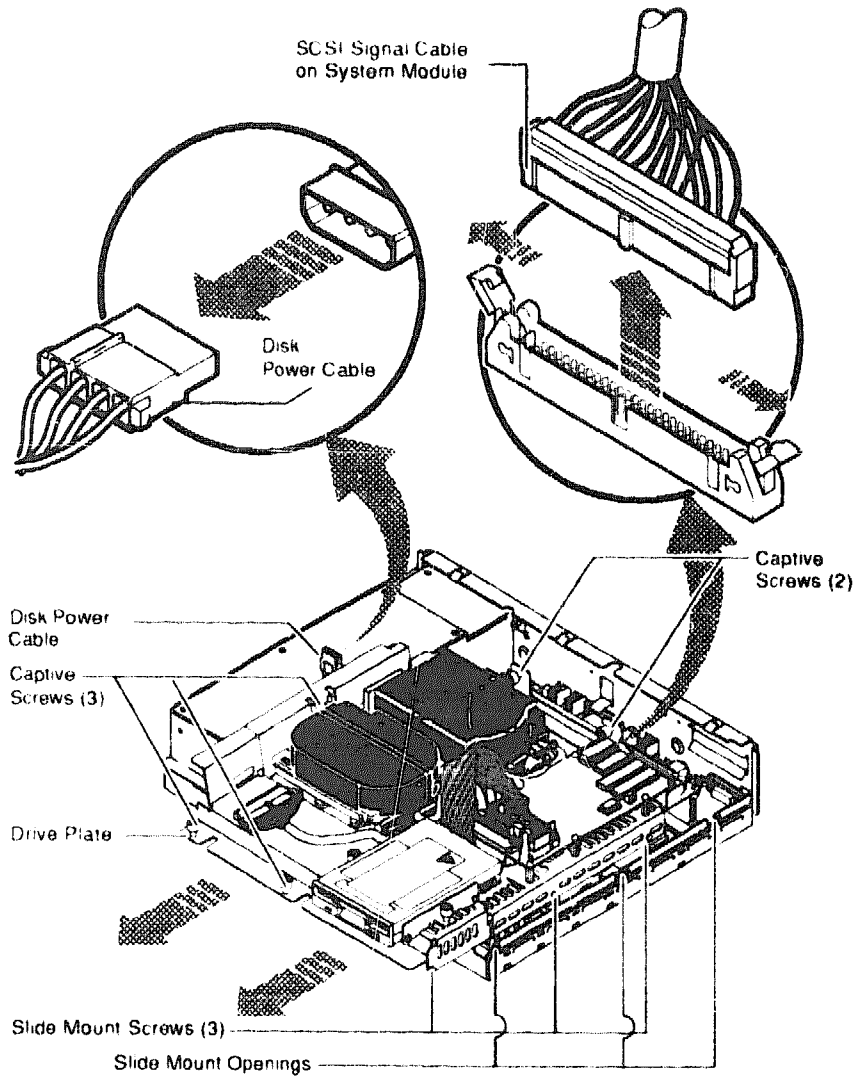
Figure 4–7 Disconnecting the SCSI Signal and Power Cables and Removing the Drive Plate



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Remove the Drive Plate (continued)

Step	Action
4.	Loosen the five captive screws and the three Phillips-head slide mount screws on the drive plate. Do not remove the screws. **CAUTION When you are removing the drive plate from the system unit, do not make contact with the circuit boards underneath, such as the system board and the memory boards. Contact between the drive plate and the circuit boards could cause the circuit boards irreparable damage.**
5.	Remove the SCSI terminator access door and the SCSI terminator from the back of the Model 76 system unit (if present).
6.	Slide the drive plate towards the front of the system and lift it out of the system unit.

Continued on next page

Remove the RZ2x Disk Drives

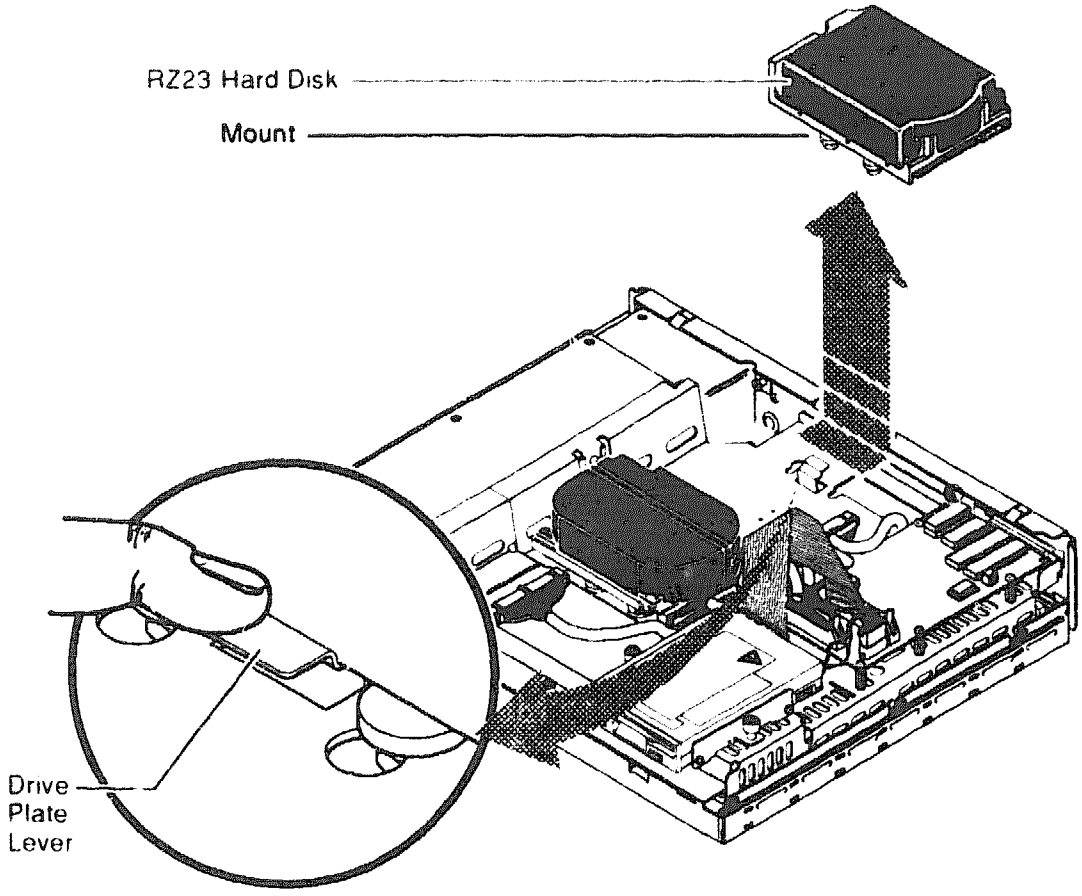
Remove the RZ2x disk drives from the drive plate. These drives may be installed into an expansion box with the VS 4000 VLC system unit.

To remove the RZ2x disk drives from the drive, do the following and refer to Figure 4–8:

Step	Action
1.	Push down on the drive plate lever.
2.	Push down on the RZ2x disk drive and slide it over the drive plate lever.
3.	Lift the disk drive up and off the drive plate. Place the disk drives aside.

Continued on next page

Figure 4–8 Removing RZ2x Disk Drives from the Drive Plate



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Note

Depending on the system configuration, the VS 3100 Model 76 system can have two types of coprocessor modules: the graphics coprocessor module, and the scanline coprocessor module. These two modules are similar except for a couple features. To remove the scanline coprocessor, you must remove three screws from the mounting brackets, then release the tabs from the post locks. The graphics coprocessor module has only four post locks with tabs holding it to the system board.

Remove the Scanline Coprocessor

To remove the scanline coprocessor module from the system board, do the following and refer to Figure 4–9 and Figure 4–10:

Step	Action
1.	Unscrew and remove the three screws on the mounting brackets that attach the coprocessor to the system board. The mounting brackets will remain attached to the system board.

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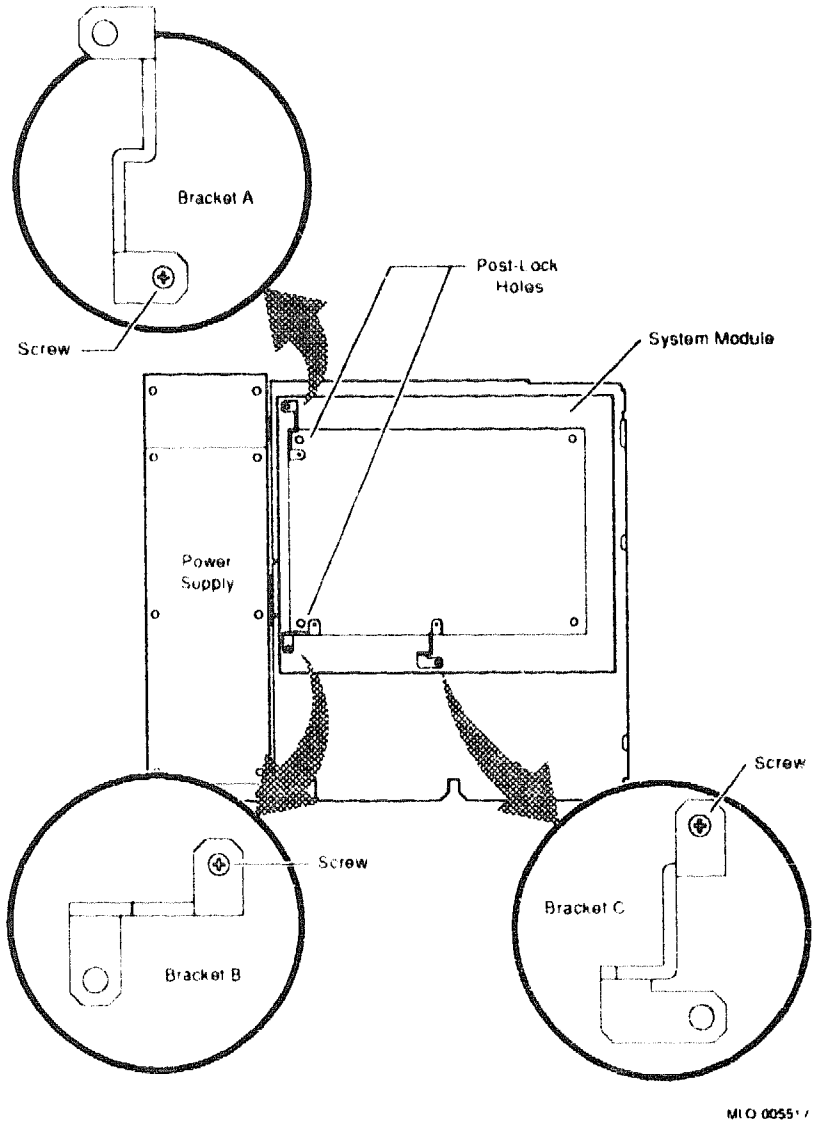
Figure 4–9 Scanline Coprocessor Module Mounting Brackets



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Remove the Scanline Coprocessor (continued)

Step	Action
2.	Remove the scanline coprocessor from the four post locks by pulling back the post lock tabs. **CAUTION Do not grasp the scanline coprocessor module by the corners when you are lifting it up to remove it from the system board. The timing buffer chip located underneath the scanline coprocessor module can easily become damaged by any pressure exerted on it.**

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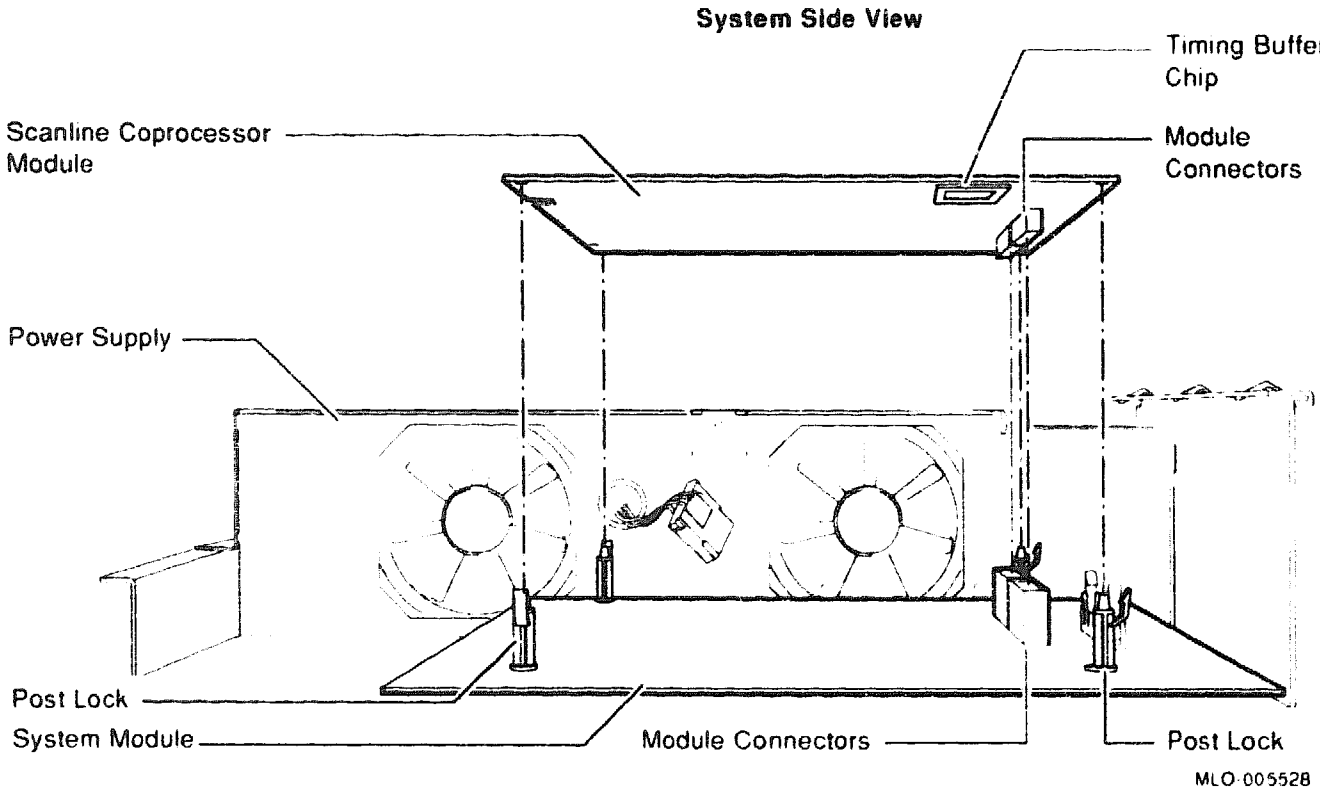
Figure 4–10 Removing the Scanline Coprocessor from the System Board



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Remove the Scanline Coprocessor (continued)

Step	Action
3.	Grasp the center of the scanline coprocessor module next to the two connectors, and lift it up and off the system board.
4.	Set the scanline coprocessor on an antistatic mat. This module will be reinstalled after the Ethernet ROMs are exchanged.

Caution

At this time, all the internal components except for the Ethernet ROM have been removed from the VS 3100 Model 76 unit.

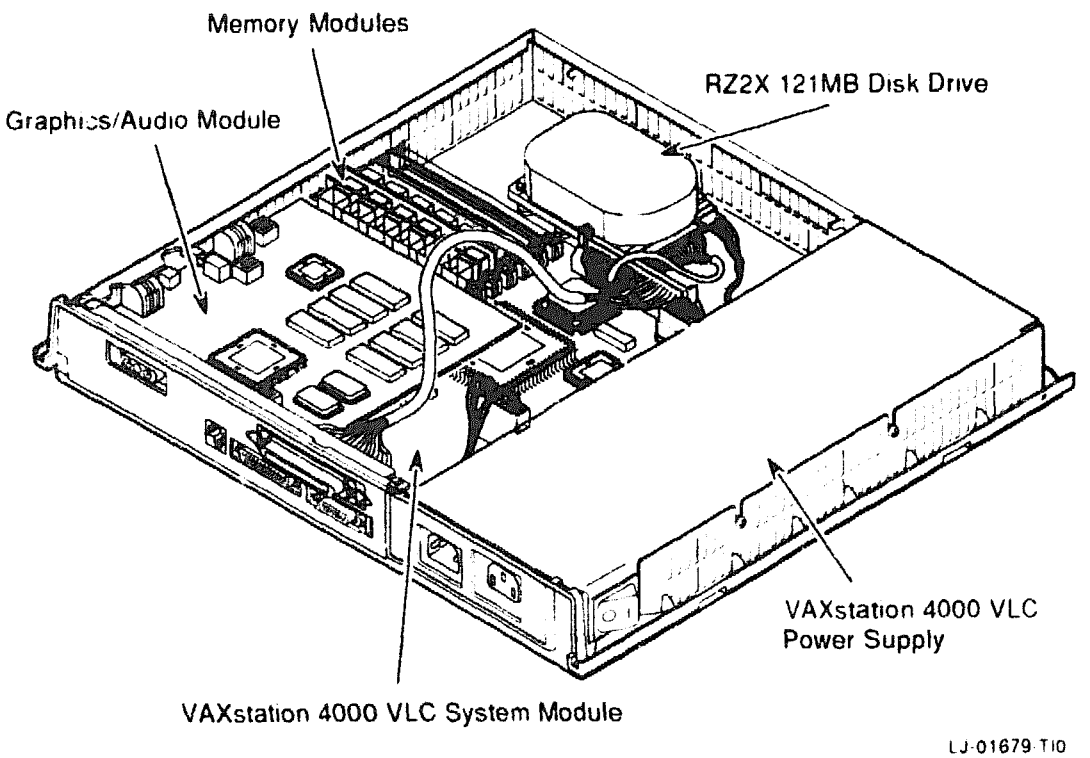
Do not remove the Ethernet ROM from the VS 3100 Model 76 unit until you are ready to remove it from the VS 4000 VLC workstation, thus eliminating any chance of damage occurring to the ROM. You will be instructed when to perform this procedure.

Removing Components on VS 4000 VLC

Internal Layout of the VS 4000 VLC

Figure 4–11 shows the location of the internal components of the VS 4000 VLC workstation.

Figure 4–11 VS 4000 VLC Internal Component Locations



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Remove the LCG Graphics Board

In order to install the Ethernet ROM into the VS 4000 VLC system board, it is first necessary to remove the LCG graphics board.

To remove the graphics board from the VS 4000 VLC, do the following:

Step	Action
1.	Locate the two mounting screws on the LCG board and remove them.
2.	Gently lift the module up and out of the system unit.
3.	Place the LCG board on an antistatic mat. This module will be reinstalled later.

Note

At this time in the upgrade, you are now ready to remove the Ethernet ROM from the VS 3100 Model 76 workstation and install it into the VS 4000 VLC workstation.

Exchanging Ethernet ROMs

Cautions

1. When removing the ROM from the VS 4000 system board, antistatic precautions must be followed.

2. Before removing or installing any Ethernet ROM, be sure you note the orientation of the IC chip keyway in relation to the chip IC socket. If you put the Ethernet ROM in backwards, the system will not function.

Exchange Ethernet ROMs

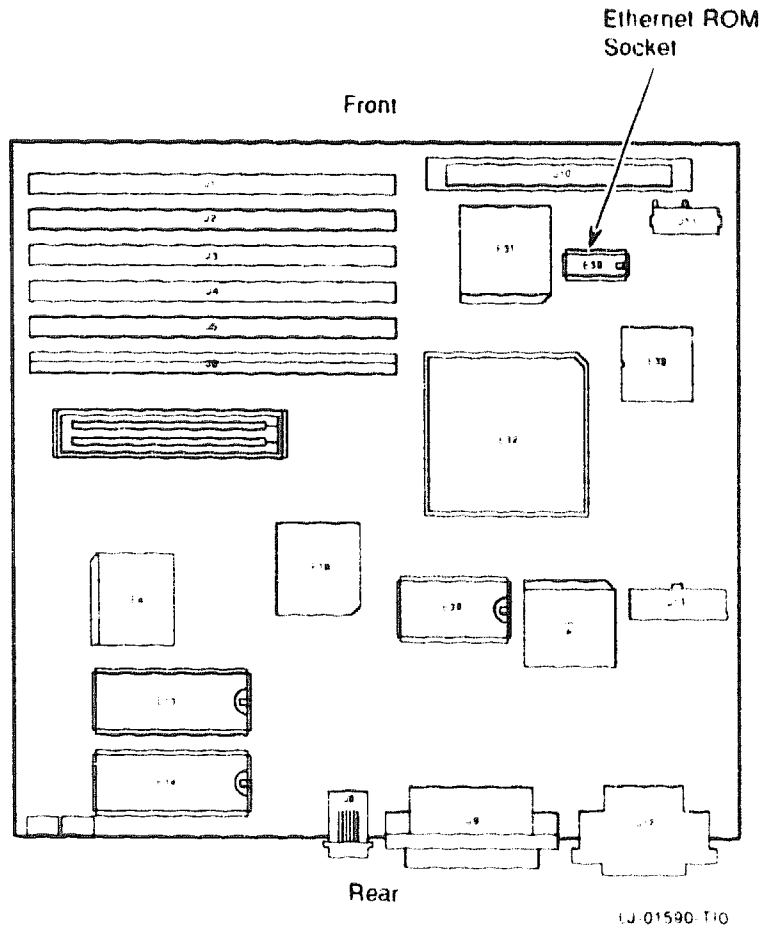
To remove and install the Ethernet ROMs between the system units, do the following and refer to Figure 4–12 and Figure 4–13:

Step	Action
1.	Locate the Ethernet ROM on the VS 4000 VLC system board and remove it from the socket using a chip puller or a small flat-head screwdriver. **NOTE The Ethernet ROM is the only socketed 16-pin chip on the system board The ROM has ENET ADDRS (abbreviation for Ethernet address) written on the top.**

Continued on next page

Exchanging Ethernet ROMs, Continued

Figure 4–12 Ethernet ROM socket on VS 4000 VLC System Board



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Exchange Ethernet ROMs (continued)

Step	Action
2.	Make sure the pins on the Ethernet ROM are straight. Place the ROM on the antistatic mat.
3.	Remove the ROM from the VS 3100 system board and install it into the VS 4000 VLC system board.

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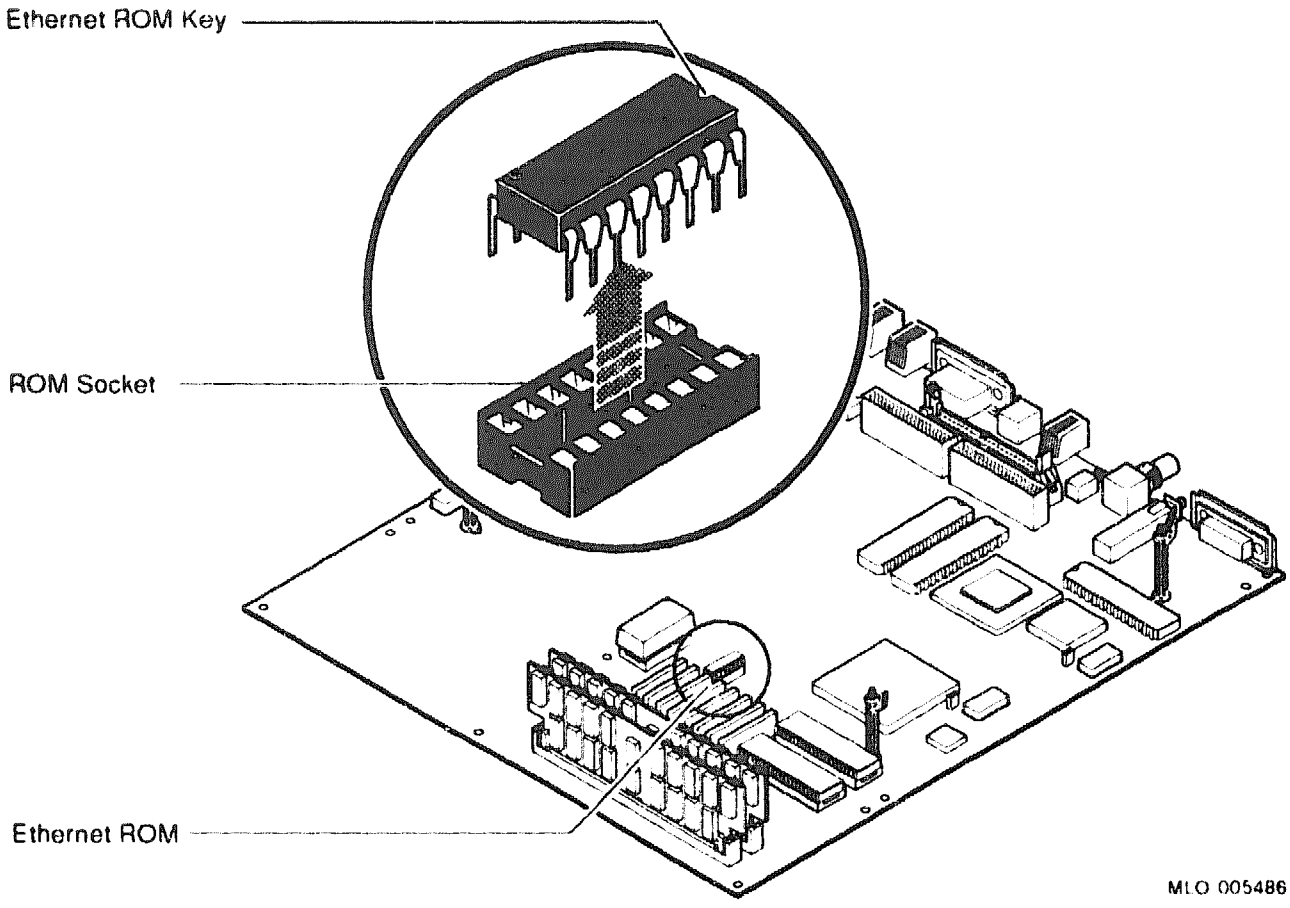
Figure 4–13 Removing the Ethernet ROM from the VS 3100 System Board



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Exchange Ethernet ROMs (continued)

Step	Action
4.	Install the ROM that was removed from the VS 4000 VLC into the VS 3100 system.

Note

Now that the Ethernet ROM has been exchanged, you can now reinstall components into the two system units.

Restoring the VS 4000 VLC Workstation

Note

When installing components into the VS 4000 workstation, perform the procedures that were previously discussed in the component removal sections of this chapter. Perform all the procedures in reverse order.

Summary of Restoration of VS 4000

Follow these steps in the sequence listed below to restore the VS 4000 VLC system.

Step	Action
1.	Install the LCG graphics board.
2.	Check that all the internal cabling in the system enclosure is secure and that the connectors are seated properly.
3.	Install the system unit cover.

Continued on next page

Summary of Restoration of VS 4000 (continued)

4. Depending on the VS 4000 VLC system configuration, install all the necessary external system unit cables:
   - System power cord
   - Monitor power cord
   - SCSI terminator or cable
   - Loopback connector and T-connector or communication cables
   - Mouse cable
   - Keyboard cable
   - Monitor video cable

Powering up VS 4000 VLC After Upgrade

Power up Sequence

With all the cables connected, turn the workstation peripherals **On** in the following sequence:

Step	Power On...
1.	Storage expansion box, if you have one
2.	Printer and modem, if you have them
3.	Monitor
4.	System unit

Automatic test Display

When you first turn on the system unit AC power, the following will happen automatically:

- A series of self tests will begin to run. As each test completes, the status bar will start to fill and audio beeps will be heard. Refer to Figure 4–14.

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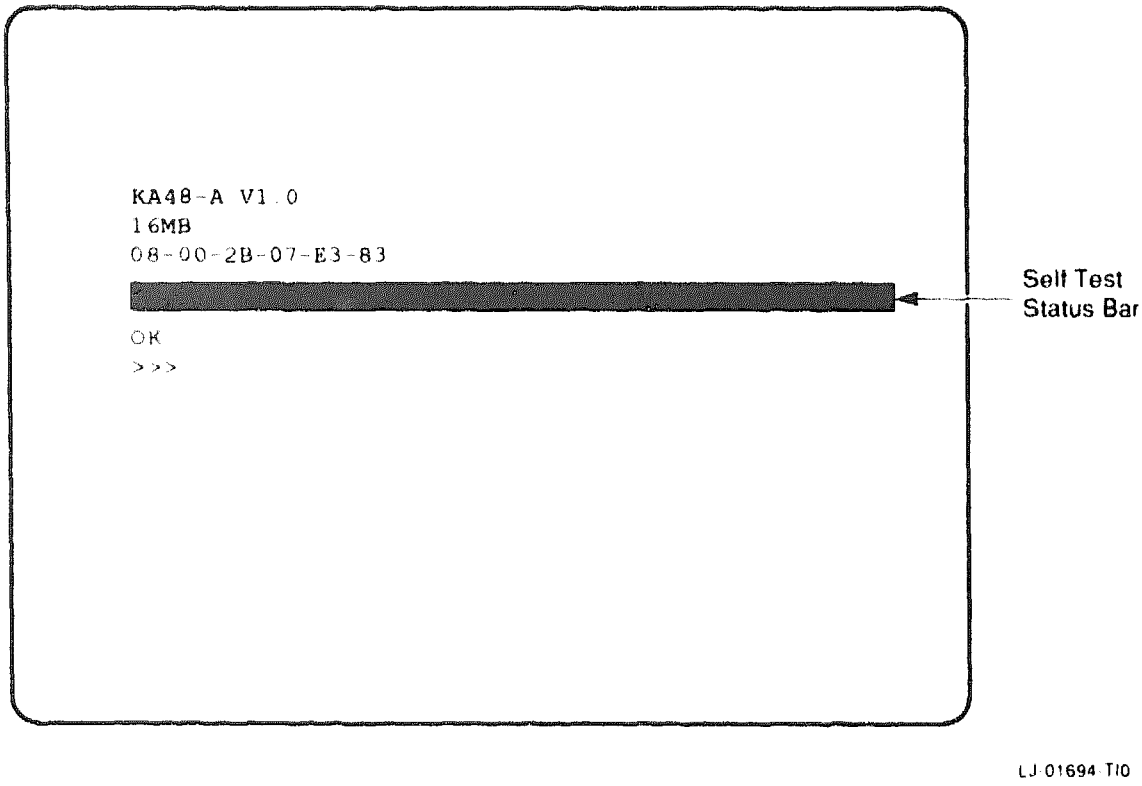
Figure 4–14 Automatic Test Display



Running the Show Config Command

Show Config Command

The following information will be displayed when you run the **Show Config** command at the console prompt:

- Ethernet address
- System devices and their status
- Quantity of system memory

To display the **Show Config** command on the screen, do the following and refer to Figure 4–15:

Step	Action
1.	Press the Halt button on the right side of the system unit. The system will display the console prompt (>>>).
2.	At the prompt **>>>**, type **Show Config** and press Return.

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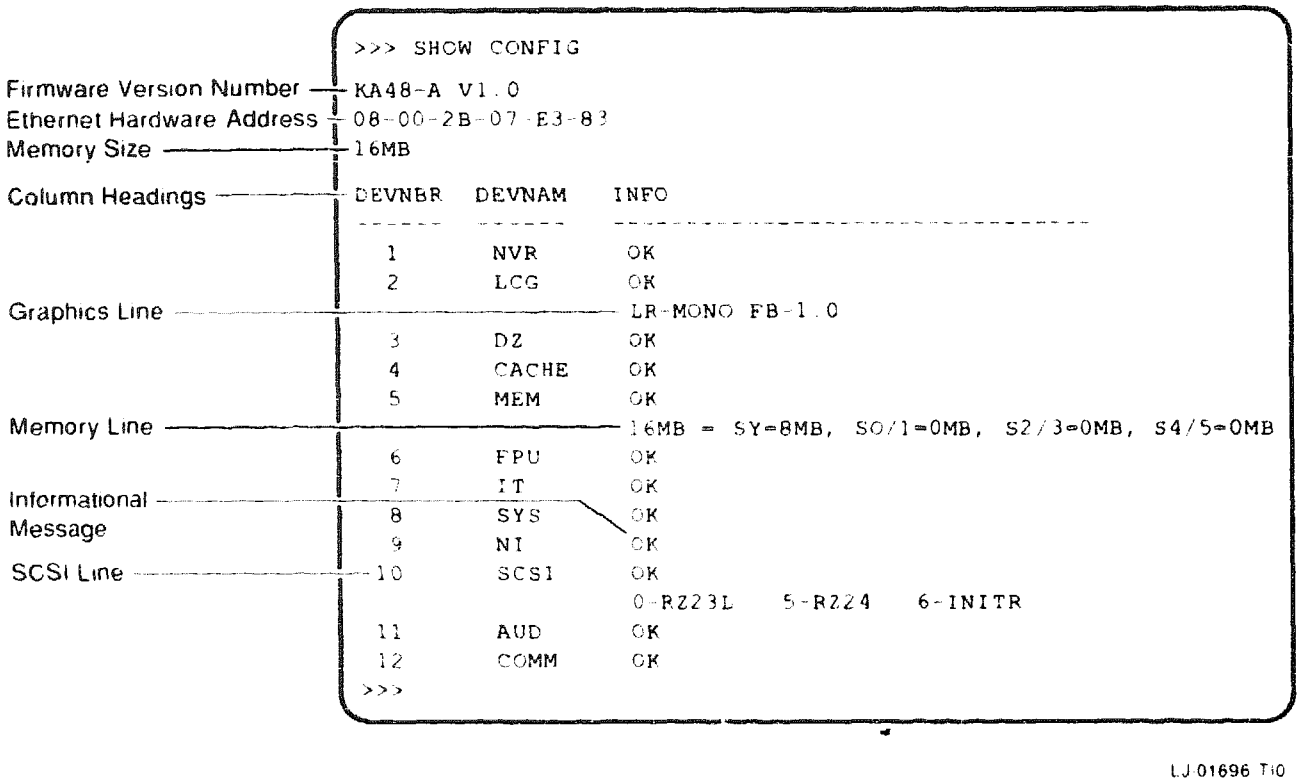
Figure 4–15 Show Config Command Display



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Examine the Screen Display

Compare the data on the screen with the data you received when you did a **Show Device** on the VS 3100 Model 76 workstation before you powered down.

Verify that:

1. The Ethernet address is the same as it was on the VS 3100 Model 76.
2. The SCSI ID numbers are not duplicated.
3. All the system devices (1 through 11) have an **OK** beside them under the **INFO** column.

Note

If the screen does not show any error codes, then you have successfully completed the upgrade and you are now ready to boot the system.

If the system shows any error messages or error codes, refer to the *VAXstation 4000 VLC Service Information Kit*, EK-V466B-SV-001 for system testing and troubleshooting procedures.

Continued on next page

Note

After completing the VS 3100 Model 76 upgrade, the system enclosure does not have to be returned to Digital. The customer may want to use the enclosure as a SCSI expansion box to house any disk drives or other peripherals that would be part of the new VS 4000 VLC workstation.


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