
VAXstation
3100

VAXstation 3100 Model 76

Upgrade Guide

EK-VX31M-CG-002

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About This Guide

Purpose of This Manual

This manual describes how to convert a VAXstation 3100 Model 30, Model 38, Model 40 or Model 48 system into a VAXstation 3100 Model 76 system by removing system devices from the Model 30, Model 38, Model 40 or Model 48 system unit and installing them in the Model 76 system unit. This manual includes information on how to remove and install disks; exchange the Ethernet ROM; change the scanline coprocessor module ROM, if necessary; remove and install graphics modules, if present; and start up a Model 76 system. After you have completed the upgrade to a Model 76 system, this manual explains how to complete a Digital Parts Return Form, pack up the Model 30, Model 38, Model 40 or Model 48 system, and return the form and the parts to Digital, per the upgrade agreement.

Who Should Use This Manual

Only Digital Service representatives or qualified service personnel should perform the Model 76 upgrade procedure. It is important that you 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 procedure, call Digital Service to schedule an upgrade.

It is the customer's responsibility to perform a software backup of the system and user disks before the Digital Service representative arrives at the site. This step is important to ensure that data is not lost during the upgrade procedure.

Structure of This Manual

This manual contains seven chapters, two appendixes, and an index.

- Chapter 1 contains three upgrade tables, one that lists the steps for upgrading a Model 30 to a Model 76 system, one that lists the steps for upgrading a Model 38 to a Model 76 system, and one that lists the steps for upgrading a Model 40 or Model 48 to a Model 76 system.
- Chapter 2 helps you identify the system you are going to upgrade and describes two Model 76 upgrade configurations. It includes information on what you must do before you can begin the upgrade procedure, including updating the operating system and windowing system, if necessary, to the most current version and backing up the system and user disks. It also describes the contents of the Model 76 upgrade kit and how to use an antistatic wrist strap to protect system devices during the upgrade procedure. Finally, it instructs you on how to begin the upgrade by preparing the Model 76 system unit.
- Chapter 3 describes how to remove any RZxx disks, a graphics coprocessor module or scanline coprocessor module, if present, and the Ethernet ROM from the Model 30 system and add them directly to the Model 76 system.
- Chapter 4 describes how to remove any RZxx disks, a graphics coprocessor module or scanline coprocessor module, if present, and the Ethernet ROM from the Model 38 system and add them directly to the Model 76 system.
- Chapter 5 describes how to remove any RZxx disks, a graphics coprocessor module or scanline coprocessor module, if present, and the Ethernet ROM from the Model 40 or Model 48 system and add them directly to the Model 76 system.
- Chapter 6 describes how to install RZxx disks in the Model 76 system unit. It also describes how to start up the Model 76 system and run preliminary diagnostics on it.
- Chapter 7 tells you how to complete the appropriate Digital return forms and pack up the Model 30, Model 38, Model 40 or Model 48 system for return to Digital.
- Appendix A provides basic troubleshooting information.
- Appendix B lists additional documents to help you get acquainted with the Model 76 system.

- **The index refers you to specific topics covered in the manual.**

Ordering Additional Copies

You can order additional copies of this documentation set from DECdirect as described in the ordering information section at the end of this document. The order numbers for the VAXstation 3100 Model 76 documents follow:

Table 1 VAXstation 3100 Model 76 Documentation Kits

Kit Number	Contents
EK-VX31A-KT	Owner's Guide/Upgrade Guide/Cover Letter/Binder
EK-VX31B-KT	Owner's Guide/Cover Letter/Binder
EK-VX31C-KT	Upgrade Guide/Binder

Conventions

Ctrl/x	A sequence such as Ctrl/x indicates that you must hold down the key labeled Ctrl while you press another key or a pointing device button.
Return	A name enclosed in a box in interactive examples indicates a key you press on the keyboard.
red ink	Red in interactive examples indicates information you must enter from the keyboard. In the online version of the book, this user input is bold.
UPPERCASE	Uppercase letters in a command indicate that you must enter the command exactly as shown. For example: Enter SHOW.
lowercase	Lowercase letters in a command indicate that you must provide a value. For example: Enter SET PASSWORD new_password.
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.

Icon Descriptions

Throughout this manual, icons (symbols) identify important switches, buttons, and procedures. The meanings of these icons are briefly described here.

Refer to another manual or another chapter in this guide for more information, and then return to where you were to continue the procedure.

The on/off switch is shown in the on (|) position. Turn on one or more devices, as described in the text.

The on/off switch is shown in the off (O) position. Turn off one or more devices, as described in the text.

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


CHAPTER 1

1

Model 76 Upgrade Tables

This chapter contains tables that list the steps for upgrading the four different systems to a Model 76 system. Table 1–1 lists the steps for upgrading a Model 30 to a Model 76 system. Table 1–2 lists the steps for upgrading a Model 38 to a Model 76 system. Table 1–3 lists the steps for upgrading a Model 40 or Model 48 to a Model 76 system.

1.1 Model 30 to Model 76 Quick Upgrade Table

Table 1–1 lists the steps necessary to upgrade a Model 30 system to a Model 76 system and the section to reference for more information on how to complete each step.

If you are not familiar with the upgrade procedure, and need more information on how to perform the individual steps, go to Chapter 2 and follow the detailed explanation of the upgrade procedure.

Table 1–1 Upgrading a Model 30 System

Procedure	Section to Reference
Preparing for the Upgrade	
Perform a TEST 50	Section 2.3
Record the Ethernet hardware address of the Model 30 system	Section 2.3
Compare the SCSI IDs of devices on the SCSI-A and SCSI-B buses	Section 2.3
Determine the type of graphics module in the Model 30 system	Section 2.3
Record the console command settings on the Model 30 system	Section 2.4
Back up the system and user disks	Section 2.5
Update to VMS Version 5.4 or higher	Section 2.6
Update to VWS Version 4.3 or higher	Section 2.7
Preparing the Model 76 System Unit	
Unpack the Model 76 upgrade kit	Section 2.8
Remove the Model 76 system unit cover	Section 2.9
Use an antistatic wrist strap	Section 2.10
Remove the Model 76 drive plate	Section 2.9
Remove the Model 76 Ethernet ROM	Section 2.9

(continued on next page)

Table 1–1 (Cont.) Upgrading a Model 30 System

Procedure	Section to Reference
Preparing the Model 30 System Unit	
Connect the Model 30 system to the Model 76 system using the monitor power cord	Section 2.10
Shut down the Model 30 operating system	Section 3.1
Shut off the monitor and any expansion boxes	Section 3.1
Shut off the Model 30 system	Section 3.1
Remove the cables from the rear of the Model 30 system unit	Section 3.1
Remove the monitor from the top of the Model 30 system unit	Section 3.1
Remove the Model 30 system unit cover	Section 3.1
Disconnect the internal power cable and the SCSI signal cable	Section 3.3.1
Remove the Model 30 drive plate	Section 3.3.1
Remove the RZxx hard disks from the Model 30 drive plate	Section 3.3.2
Remove the graphics module from the Model 30 system unit	Section 3.3.3 or Section 3.3.4
Remove the Ethernet ROM from the Model 30 system board	Section 3.3.5
Install the Model 30 Ethernet ROM in the Model 76 system board	Section 3.3.5
Install the Model 76 Ethernet ROM in the Model 30 system board	Section 3.3.5
Mount the post locks on the Model 76 system board	Section 3.3.6 or Section 3.3.8
Change the ROM on the scanline coprocessor module, if present	Section 3.3.7
Add the graphics module to the Model 76 system unit	Section 3.3.6 or Section 3.3.8
Replace the Model 30 drive plate	Section 3.3.9
Reconnect the internal power cable and the SCSI signal cable	Section 3.3.9
Replace the Model 30 system unit cover	Section 3.3.10

(continued on next page)

Table 1–1 (Cont.) Upgrading a Model 30 System

Procedure	Section to Reference
Completing the Upgrade to a Model 76	
Replace the Model 76 drive plate	Section 6.2
Add screw mounts and metal drive frame supports to the RZxx hard disks	Section 6.3
Connect the internal power supply cable and the SCSI signal cable to the RZxx hard disks	Section 6.4
Install the RZxx hard disks on the Model 76 drive plate	Section 6.4
Replace the Model 76 system unit cover	Section 6.5
Connect the cables from the Model 30 system to the back of the Model 76 system	Section 6.5
Start the Model 76 system	Section 6.6
Perform diagnostics on the Model 76 system	Section 6.6
Perform a TEST 50 on the Model 76 system	Section 6.7
Compare the current Ethernet hardware address with the Ethernet hardware address before the upgrade procedure	Section 6.7
What to Do Next	
Pack up the Model 30 system	Section 7.1
Fill out the Digital return forms	Section 7.2

1.2 Model 38 to Model 76 Quick Upgrade Table

Table 1–2 lists the steps necessary to upgrade a Model 38 system to a Model 76 system and the section to reference for more information on how to complete each step.

If you are not familiar with the upgrade procedure, and need more information on how to perform the individual steps, go to Chapter 2 and follow the detailed explanation of the upgrade procedure.

Table 1–2 Upgrading a Model 38 System

Procedure	Section to Reference
Preparing for the Upgrade	
Perform a TEST 50	Section 2.3
Record the Ethernet hardware address of the Model 38 system	Section 2.3
Compare the SCSI IDs of devices on the SCSI-A and SCSI-B buses	Section 2.3
Determine the type of graphics module in the Model 38 system	Section 2.3
Record the console command settings on the Model 38 system	Section 2.4
Back up the system and user disks	Section 2.5
Update to VMS Version 5.4 or higher	Section 2.6
Update to VWS Version 4.3 or higher	Section 2.7
Preparing the Model 76 System Unit	
Unpack the Model 76 upgrade kit	Section 2.8
Remove the Model 76 system unit cover	Section 2.9
Use an antistatic wrist strap	Section 2.10
Remove the Model 76 drive plate	Section 2.9
Remove the Model 76 Ethernet ROM	Section 2.9

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Table 1-2 (Cont.) Upgrading a Model 38 System

Procedure	Section to Reference
Preparing the Model 38 System Unit	
Connect the Model 38 system to the Model 76 system using the monitor power cord	Section 2.10
Shut down the Model 38 operating system	Section 4.1
Shut off the monitor and any expansion boxes	Section 4.1
Shut off the Model 38 system	Section 4.1
Remove the cables from the rear of the Model 38 system unit	Section 4.1
Remove the monitor from the top of the Model 38 system unit	Section 4.1
Remove the Model 38 system unit cover	Section 4.1
Disconnect the internal power cable and the SCSI signal cable	Section 4.3.1
Remove the RZxx hard disks from the Model 38 drive plate	Section 4.3.1
Remove the Model 38 drive plate	Section 4.3.4
Remove the graphics module from the Model 38 system unit	Section 4.3.5 or Section 4.3.6
Remove the Ethernet ROM from the Model 38 system board	Section 4.3.7
Install the Model 38 Ethernet ROM in the Model 76 system board	Section 4.3.7
Install the Model 76 Ethernet ROM in the Model 38 system board	Section 4.3.7
Mount the post locks on the Model 76 system board	Section 4.3.8 or Section 4.3.10
Change the ROM on the scanline coprocessor module, if present	Section 4.3.9
Add the graphics module to the Model 76 system unit	Section 4.3.8 or Section 4.3.10
Replace the Model 38 drive plate	Section 4.3.11
Reconnect the internal power cable and the SCSI signal cable	Section 4.3.11
Replace the Model 38 system unit cover	Section 4.3.12

(continued on next page)

Table 1–2 (Cont.) Upgrading a Model 38 System

Procedure	Section to Reference
Completing the Upgrade to a Model 76	
Replace the Model 76 drive plate	Section 6.2
Add screw mounts and metal drive frame supports to the RZxx hard disks	Section 6.3
Connect the internal power supply cable and the SCSI signal cable to RZxx hard disks	Section 6.4
Install the RZxx hard disks on the Model 76 drive plate	Section 6.4
Replace the Model 76 system unit cover	Section 6.5
Connect the cables from the Model 38 system to the back of the Model 76 system	Section 6.5
Start the Model 76 system	Section 6.6
Perform diagnostics on the Model 76 system	Section 6.6
Perform a TEST 50 on the Model 76 system	Section 6.7
Compare the current Ethernet hardware address with the Ethernet hardware address before the upgrade procedure	Section 6.7
What to Do Next	
Pack up the Model 38 system	Section 7.1
Fill out the Digital return forms	Section 7.2

1.3 Model 40 or Model 48 to Model 76 Quick Upgrade Table

Table 1–3 lists the steps necessary to upgrade a Model 40 or Model 48 system to a Model 76 system and the section to reference for more information on how to complete each step.

If you are not familiar with the upgrade procedure, and need more information on how to perform the individual steps, go to Chapter 2 and follow the detailed explanation of the upgrade procedure.

Table 1–3 Upgrading a Model 40 or Model 48 System

Procedure	Section to Reference
Preparing for the Upgrade	
Perform a TEST 50	Section 2.3
Record the Ethernet hardware address of the Model 40 or Model 48 system	Section 2.3
Compare the SCSI IDs of devices on the SCSI-A and SCSI-B buses	Section 2.3
Determine the type of graphics module in the Model 40 or Model 48 system	Section 2.3
Record the console command settings on the Model 40 or Model 48 system	Section 2.4
Back up the system and user disks	Section 2.5
Update to VMS Version 5.4 or higher	Section 2.6
Update to VWS Version 4.3 or higher	Section 2.7
Preparing the Model 76 System Unit	
Unpack the Model 76 upgrade kit	Section 2.8
Remove the Model 76 system unit cover	Section 2.9
Use an antistatic wrist strap	Section 2.10
Remove the Model 76 drive plate	Section 2.9
Remove the Model 76 Ethernet ROM	Section 2.9
Connect the Model 40 or Model 48 system to the Model 76 system using the monitor power cord	Section 2.10

(continued on next page)

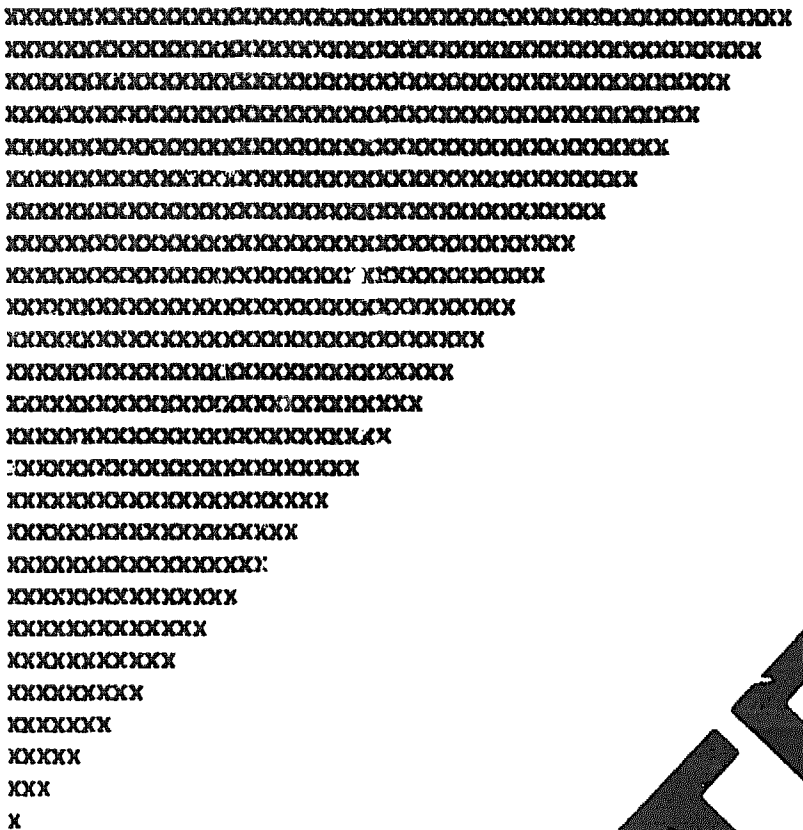
Table 1–3 (Cont.) Upgrading a Model 40 or Model 48 System

Procedure	Section to Reference
Preparing the Model 40 or Model 48 System Unit	
Shut down the Model 40 or Model 48 operating system	Section 5.1
Shut off any expansion boxes and the monitor	Section 5.1
Shut off the Model 40 or Model 48 system	Section 5.1
Remove the cables from the rear of the Model 40 or Model 48 system unit	Section 5.1
Remove the monitor from the top of the Model 40 or Model 48 system unit	Section 5.1
Remove the Model 40 or Model 48 system unit cover	Section 5.1
Disconnect the internal power cable and the SCSI signal cable	Section 5.3.3
Remove the RZxx hard disks from the Model 40 or Model 48 drive plate	Section 5.3.3
Remove the Model 40 or Model 48 drive plate	Section 5.3.2
Remove the graphics module from the Model 40 or Model 48 system unit	Section 4.3.5
Remove the Ethernet ROM from the Model 40 or Model 48 system board	Section 5.3.8
Install the Model 40 or Model 48 Ethernet ROM in the Model 76 system board	Section 5.3.8
Install the Model 76 Ethernet ROM in the Model 40 or Model 48 system board	Section 5.3.8
Mount the post locks on the Model 76 system board	Section 5.3.9 or Section 5.3.11
Change the ROM on the scanline coprocessor module, if present	Section 5.3.10
Add the graphics module to the Model 76 system unit	Section 5.3.9 or Section 5.3.11
Replace the Model 40 or Model 48 drive plate	Section 5.3.12
Reconnect the internal power cable and the SCSI signal cable	Section 5.3.11
Replace the Model 40 or Model 48 system unit cover	Section 5.3.14

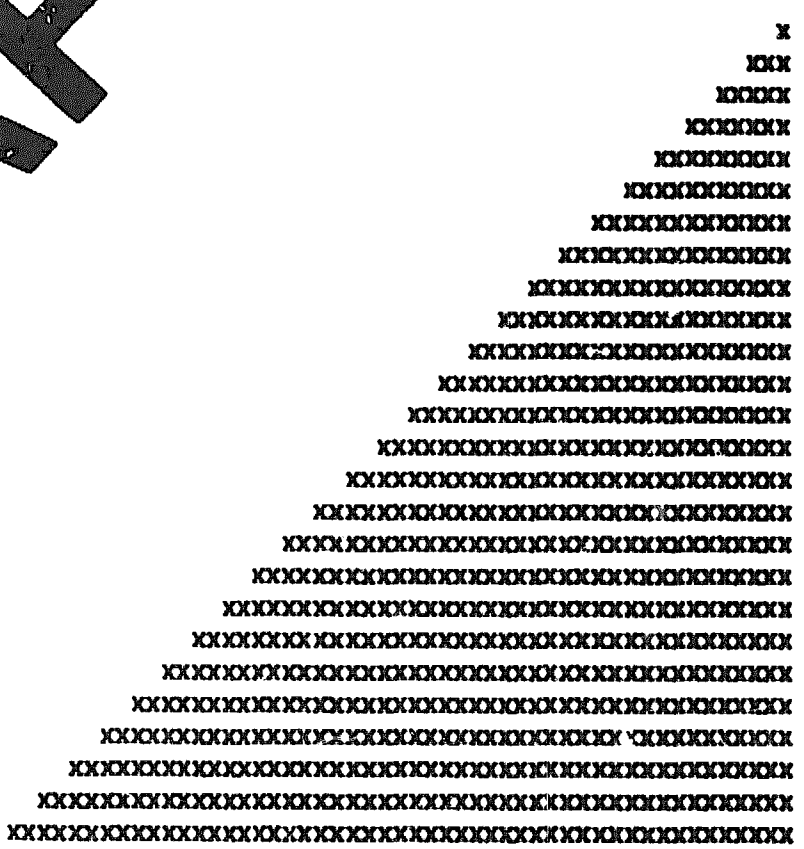
(continued on next page)

Table 1–3 (Cont.) Upgrading a Model 40 or Model 48 System

Procedure	Section to Reference
Completing the Upgrade to a Model 76	
Replace the Model 76 drive plate	Section 6.2
Add screw mounts and metal drive frame supports to the RZxx hard disks	Section 6.3
Connect the internal power supply cable and the SCSI signal cable to RZxx hard disks	Section 6.4
Install the RZxx hard disks on the Model 76 drive plate	Section 6.4
Replace the Model 76 system unit cover	Section 6.5
Connect the cables from the Model 40 or Model 48 system to the back of the Model 76 system	Section 6.5
Start the Model 76 system	Section 6.6
Perform diagnostics on the Model 76 system	Section 6.6
Perform a TEST 50 on the Model 76 system	Section 6.7
Compare the current Ethernet hardware address with the Ethernet hardware address before the upgrade procedure	Section 6.7
What to Do Next	
Pack up the Model 40 or Model 48 system	Section 7.1
Fill out the Digital return forms	Section 7.2



CHAPTER 2



2

Start Here

This chapter describes how to begin the upgrade from a VAXstation 3100 Model 30, Model 38, Model 40, or Model 48 system to a Model 76 system. It includes:

- How to identify the system (Section 2.1)
- The two Model 76 upgrade configurations available (Section 2.2)
- How to perform a TEST 50 on the Model 30, Model 38, Model 40, or Model 48 system (Section 2.3)
- How to check the setting of the Model 30, Model 38, Model 40, or Model 48 console commands (Section 2.4)
- How to back up the system and user disks (Section 2.5)
- How to update the VMS operating system to Version 5.4 (Section 2.6)
- How to update the VWS windowing system to Version 4.3, if necessary (Section 2.7)
- How to open the Model 76 upgrade kit and identify the contents (Section 2.8)
- How to begin the Model 76 upgrade (Section 2.9)
- How to use an antistatic wrist strap (Section 2.10)
- What to do next (Section 2.11)

2.1 Identifying the System

Before you begin the upgrade to a Model 76 system, you need to identify whether the VAXstation 3100 system you are upgrading is a Model 30, Model 38, Model 40, or Model 48 system.

There is a sticker label with information about the system located on the back of the system unit.

Table 2–1 gives the model numbers found on sticker labels on the Model 30, Model 38, Model 40, and Model 48 systems and identifies the chapter to refer to in order to upgrade the VAXstation 3100 system to a Model 76 system.

Table 2–1 VAXstation 3100 Sticker Label Information

Model Number	System Name	Upgrade Information
VS42A-	VAXstation 3100 Model 30	Chapter 3
WS42A-	VAXstation 3100 Model 38	Chapter 4
VS42S-	VAXstation 3100 Model 40	Chapter 5
WS42B-	VAXstation 3100 Model 48	Chapter 5

2.2 Two Model 76 Upgrade Configurations

There are two VAXstation 3100 Model 76 upgrade configurations:

- Customers who already have an RX23 diskette drive, or who have ordered an RX23 diskette drive, will receive a Model 76 upgrade kit with a new RX23 diskette drive already installed on the drive plate. These customers will be required to return their previous RX23 diskette drive and any other unused parts to Digital.
- Customers who do not have an RX23 diskette drive, and who did not order an RX23 diskette drive for their Model 76 system, will receive a Model 76 upgrade kit without a new RX23 installed. These customers will be required to return any unused parts to Digital.

2.3 Performing TEST 50 on the Model 30, Model 38, Model 40, or Model 48 System

It is important that you run a diagnostic test on your current system before you turn it off and begin the upgrade to a Model 76 system. After you have completed the upgrade, you will run the same diagnostic test on the Model 76 system to verify that you have successfully transferred the Ethernet ROM from your current system to the Model 76 system, and to verify that no two devices are set to the same SCSI ID.

To run this test, perform the following steps:

1 Put your current system into console mode by pressing the halt button on the rear of the system. For more information on how to halt the system, see Section 3.1 for a Model 30 system, see Section 4.1 for a Model 38 system, or see Section 5.1 for a Model 40 or Model 48 system.

2 Enter the TEST 50 command at the console prompt. An example of this command and the resulting configuration display follows:

```
>>> TEST 50 Return

KA42-B  V1.3
ID 08-00-2B-07-E3-83 ❶

   MONO          0000.0001
   CLK           0000.0001
   NVR           0000.0001
   DZ            0000.0001
         00000001 00000001 00000001 00000001 00000001 000012A0
   MEM           0010.0001
         01000000
   MM            0000.0001
   FP            0000.0001
   IT            0000.0001

   SCSI-A        2828.0001  V1.58
      FFFFFF05 FFFFFF05 FFFFFF05 00000001 FFFFFF05 01000001 FFFFFF03 FFFFFF05 ❷

   SCSI-B        1C1C.0001  V1.58
      FFFFFF05 FFFFFF05 00000001 00000001 05000001 FFFFFF05 FFFFFF03 FFFFFF05 ❸

   SYS           0000.0001
   8PLN ❹ 0000.0001  V1.3
   NI            0000.0001
   >>>
```

3 Record and save the Ethernet hardware address (indicated by callout ❶ in the preceding example). You will need this information later in the upgrade process.

Write your Ethernet hardware address here:

```
Ethernet hardware address _____________________________
```

4 Compare the SCSI ID device addresses on the SCSI-A bus (indicated by callout ❸ in the preceding example) and on the SCSI-B bus (indicated by callout ❺ in the preceding example) to make sure that no two devices have the same SCSI ID. There is only one internal SCSI bus inside the Model 76 system unit; if two devices with the same SCSI ID are to be added to the Model 76 system, the SCSI ID on one of those devices must be changed. Refer to Appendix B of the *VAXstation 3100 Model 76 Owner's Guide* for information on SCSI IDs.

5 Callout ❹ indicates whether the system has a graphics coprocessor module (8PLN) or a scanline coprocessor module (SPGFX). If this line is not displayed when you run TEST 50 on the system you are upgrading, there is no graphics module in the system. You may skip the sections dealing with graphics modules.

Table 2–2 tells you where to find detailed information about removing the graphics module from your current system.

Table 2–2 TEST 50 Graphics Module Information

TEST 50 Display	Type of Graphics Module	Model 30 Information	Model 38 Information	Model 40/48 Information
8PLN	Graphics coprocessor module	Section 3.3.3	Section 4.3.5	Section 5.3.7
SPGFX	Scanline coprocessor module	Section 3.3.4	Section 4.3.6	Section 5.3.6

2.4 Checking the Setting of Model 30, Model 38, Model 40, or Model 48 Console Commands

Before you turn off your current system, you should check and record the setting of the console commands in the dynamic memory of the system. After you have performed the upgrade, you will need to set these console commands on the Model 76 system.

For information on the different console commands, refer to the Running Diagnostics chapter and the Startup Procedures appendix in the *VAXstation 3100 Model 76 Owner's Guide*.

2.5 Backing Up System and User Disks

Before you upgrade your current system to a Model 76, it is important that you back up the system and user disks. For information on how to perform this procedure, refer to the *VMS Backup Utility Manual*.

2.6 Updating to VMS Version 5.4 or Higher

Before you can upgrade your current system to a Model 76, you must update the VMS operating system software to Version 5.4 or higher. For information on how to do this, consult the *VMS Installation and Operations Manual: VAXstation 3100, Microvax Series*.

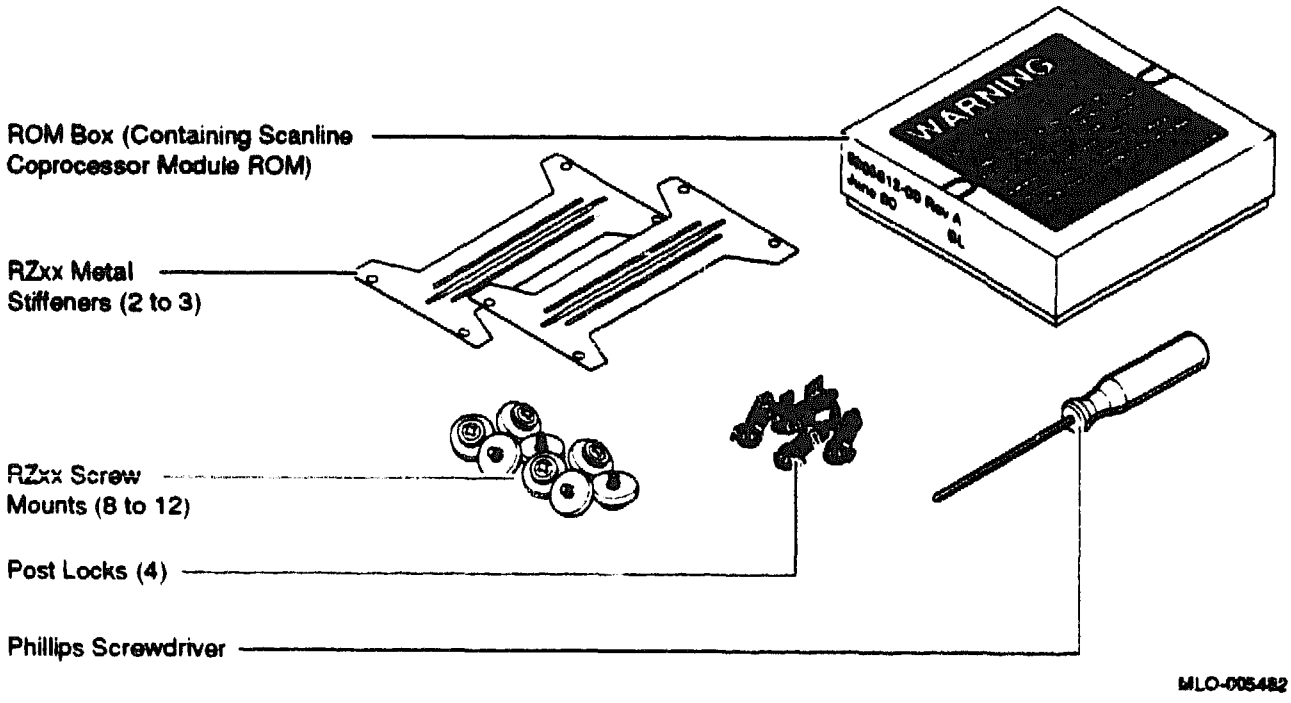
2.7 Updating to VWS Version 4.3 or Higher

If you are running the VWS windowing system, you must update the VWS windowing system software to Version 4.3 or higher before you can upgrade your current system to a Model 76. For information on how to do this, consult the *Installation Guide for VMS Workstations Software and Migration Tools*.

2.8 Unpacking the Model 76 Upgrade Kit

When you open the Model 76 upgrade kit and take the contents out, check that you have all the parts shown in Figure 2–1.

Figure 2–1 Unpacking the Model 76 Upgrade Kit



2.8.1 Parts Bag

The parts bag should contain the following tools and parts:

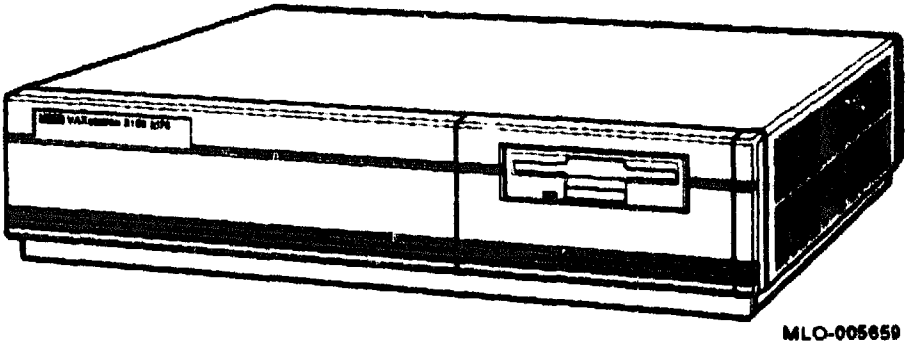
- Two to three RZ24 metal stiffeners
- Eight to twelve RZxx screw mounts
- Four post locks
- Phillips-head screwdriver
- Scanline coprocessor ROM in a ROM box

After you perform the upgrade, you may find that you have extra parts. Digital ships the maximum number of parts needed for every possible upgrade; the particular system configuration you are working on may not require all of the parts shipped. It is not necessary to return extra pieces shipped in the parts bag as part of the Model 76 upgrade return procedure.

2.8.2 The Model 76 System Unit

The Model 76 system unit is shown in Figure 2–2.

Figure 2–2 The Model 76 System Unit



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2.9 Preparing the Model 76 System Unit for Upgrade

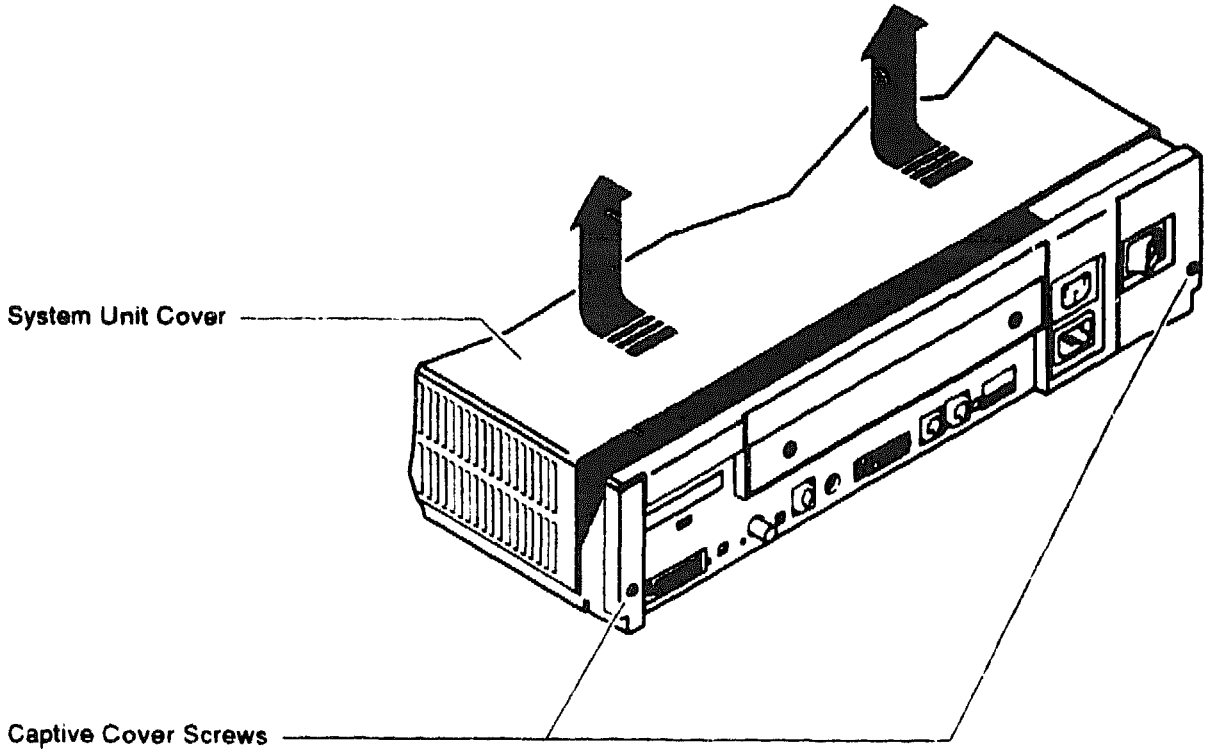
To prepare to upgrade your current system, you first must prepare the Model 76 system unit. In order to do this, perform the following steps:

1 Select a surface that is large enough to hold both the Model 76 system unit and your current system unit. This will help with the upgrade process. Set the Model 76 system unit on this surface.

2 **Remove the Model 76 system unit cover as follows:**

- **Locate the two captive cover screws at the back and on the outside edges of the system unit. Unscrew these screws, using a Phillips-head screwdriver, until they are very loose; do not remove them. Figure 2–3 shows the location of the captive cover screws.**
- **Slide the system unit cover forward toward the front of the system unit and then lift it up and away from the system unit.**

Figure 2–3 Removing the System Unit Cover



Warning *Only authorized Digital customer service representatives should attempt to open the power supply located inside the system unit. There are dangerous voltages inside the power supply, and there are no user-serviceable parts.*

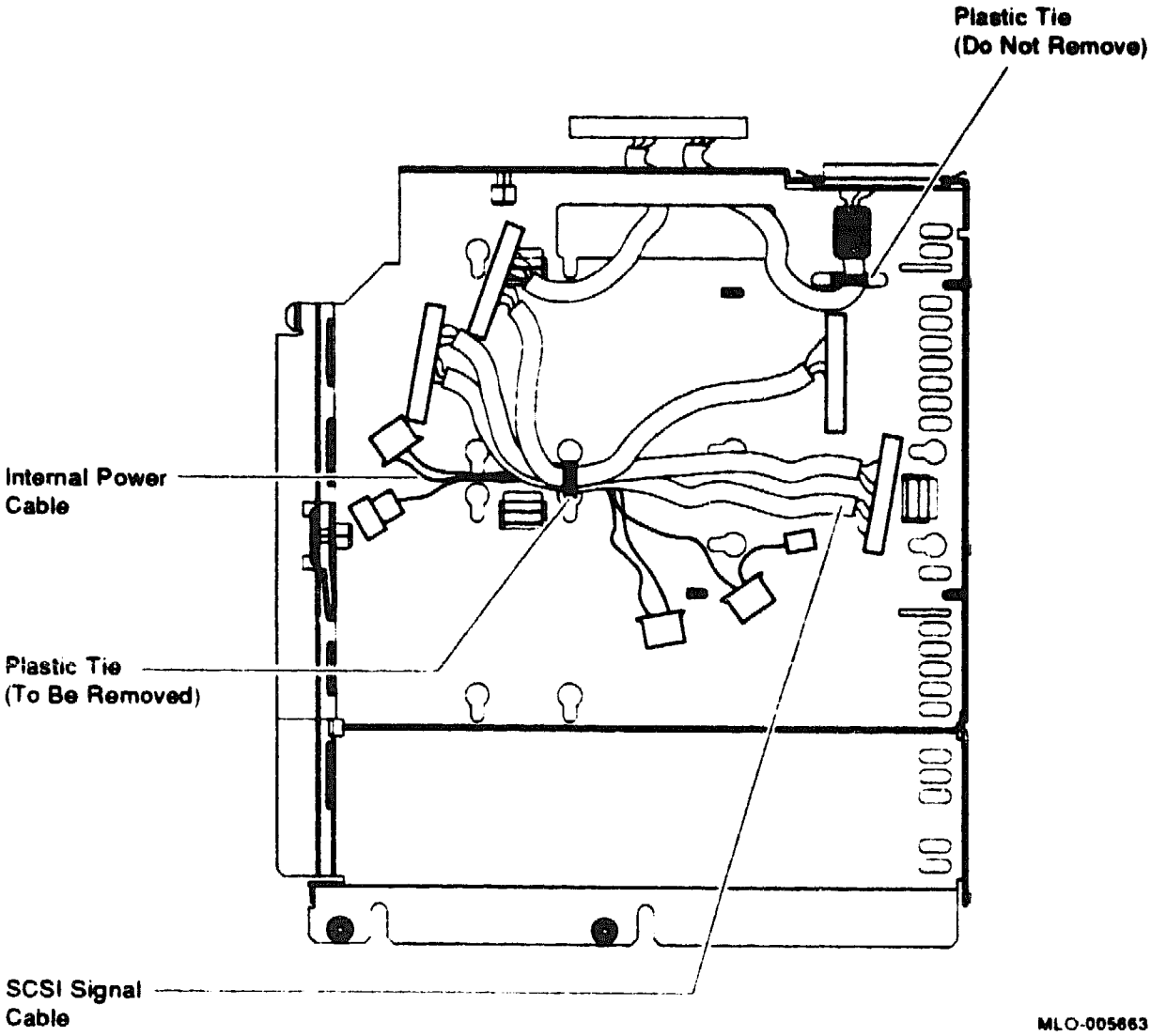
3 At this point, Digital recommends that you wear an antistatic wrist strap to protect the devices and modules inside the system unit from damage due to static electricity. See Section 2.10 for information on how to use an antistatic wrist strap before proceeding with the upgrade procedure.

4 Remove the drive plate by performing the following steps:

- Disconnect the SCSI cable from the drive plate by carefully cutting the plastic tie in the middle of the drive plate that is holding it in place. Do not cut the other plastic tie that holds the SCSI cable to the drive plate at the back of the system unit near the SCSI-B connector. (See Figure 2–4.)

Caution *When cutting the plastic tie, be careful not to cut any of the colored wires of the SCSI cable.*

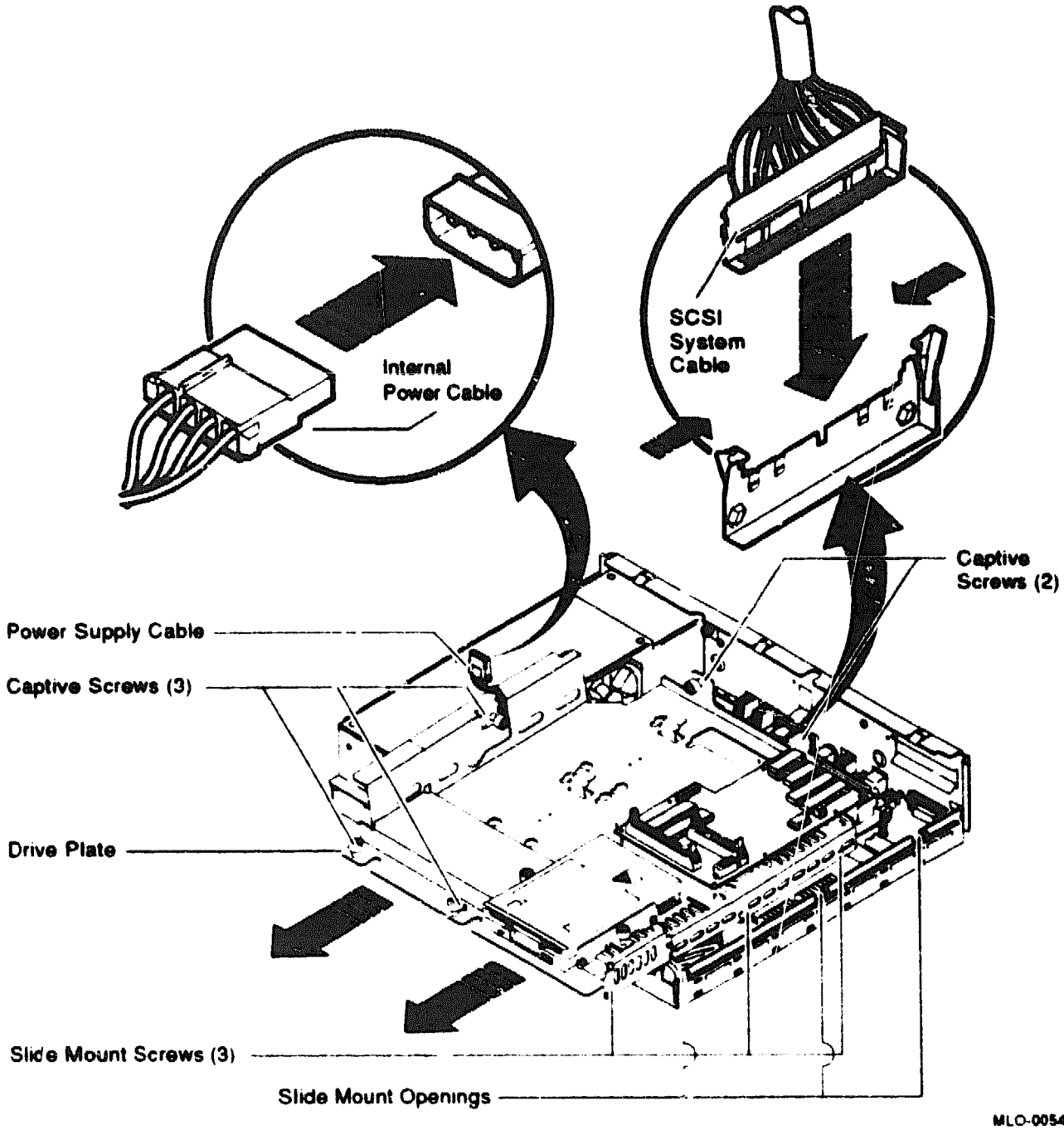
Figure 2–4 Location of SCSI Cable Plastic Ties



- Disconnect the internal power cable from the internal power supply. (See Figure 2–5.)
- Disconnect the SCSI system cable from the SCSI system port. (See Figure 2–5.)

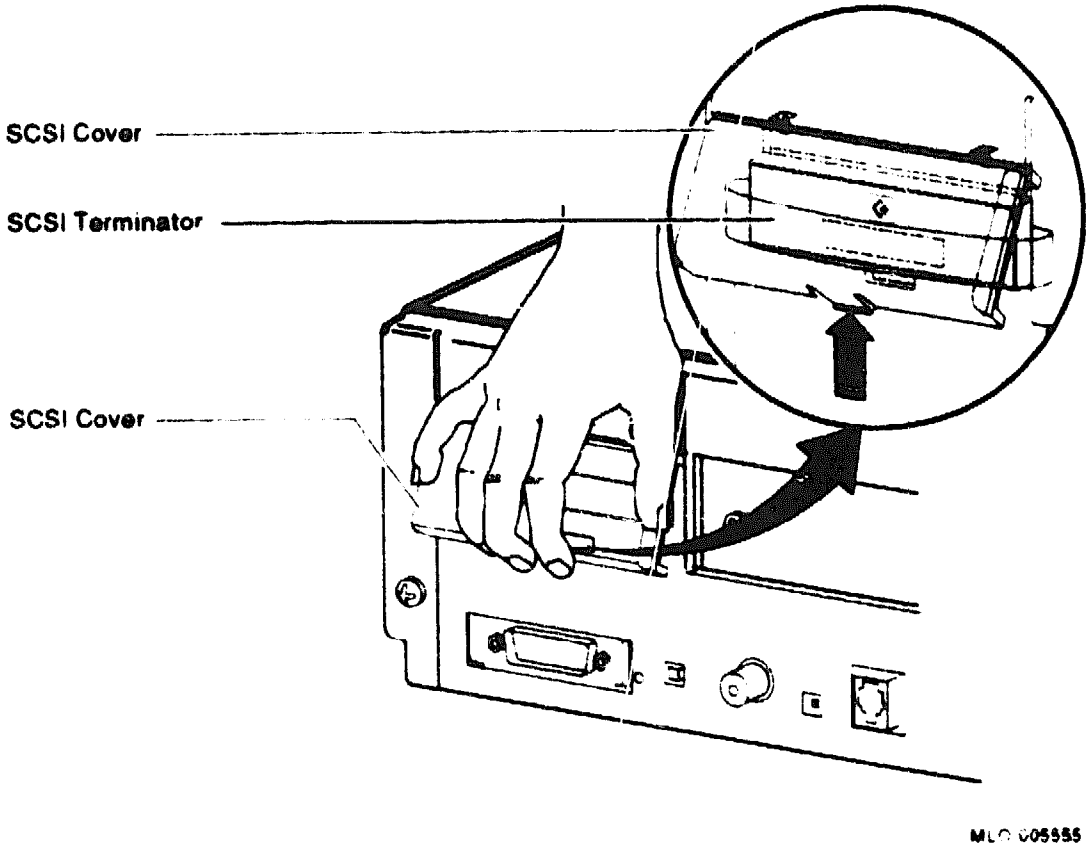
Note *Figure 2–5 shows a Model 76 system with an RX23 diskette drive installed on the drive plate. There may or may not be an RX23 diskette drive installed on the Model 76 drive plate, depending on the configuration that was ordered.*

Figure 2-5 Removing the Drive Plate from the System Unit



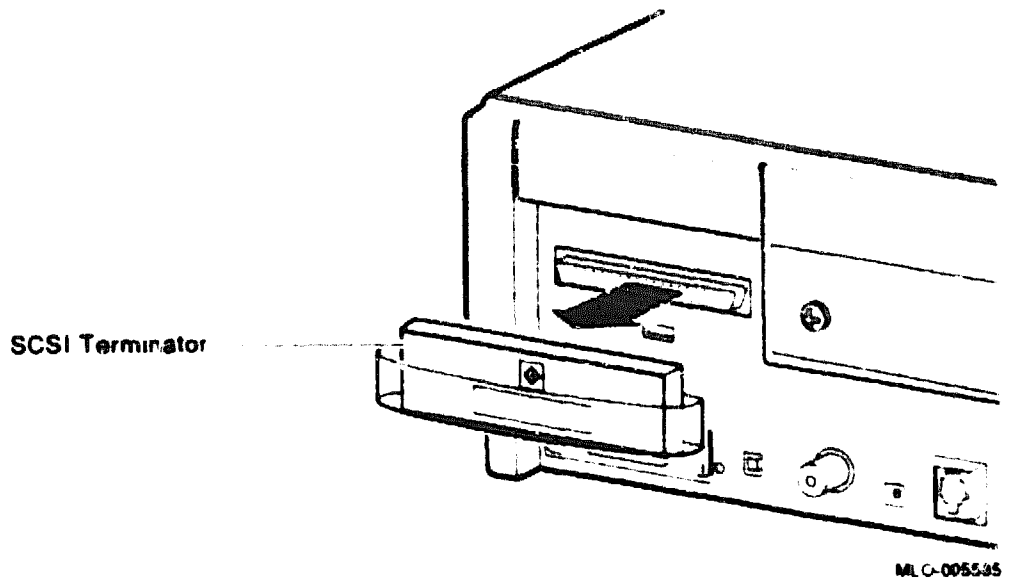
- Remove the SCSI terminator access door from the back of the Model 76 system unit. See Figure 2–6.

Figure 2–6 Removing the SCSI Terminator Access Door



- Disconnect the SCSI terminator from the SCSI port. (See Figure 2–7.)

Figure 2–7 Removing the SCSI Terminator



- Loosen the five captive screws. (See Figure 2–5.)
- Loosen the three Phillips-head slide mount screws on the side of the drive plate. Do not remove the screws. (See Figure 2–5.)

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.*

- Slide the drive plate toward the front of the system unit and lift up. (See Figure 2–5.)

5 **Remove the Ethernet ROM from the Model 76 system board by performing the following steps:**

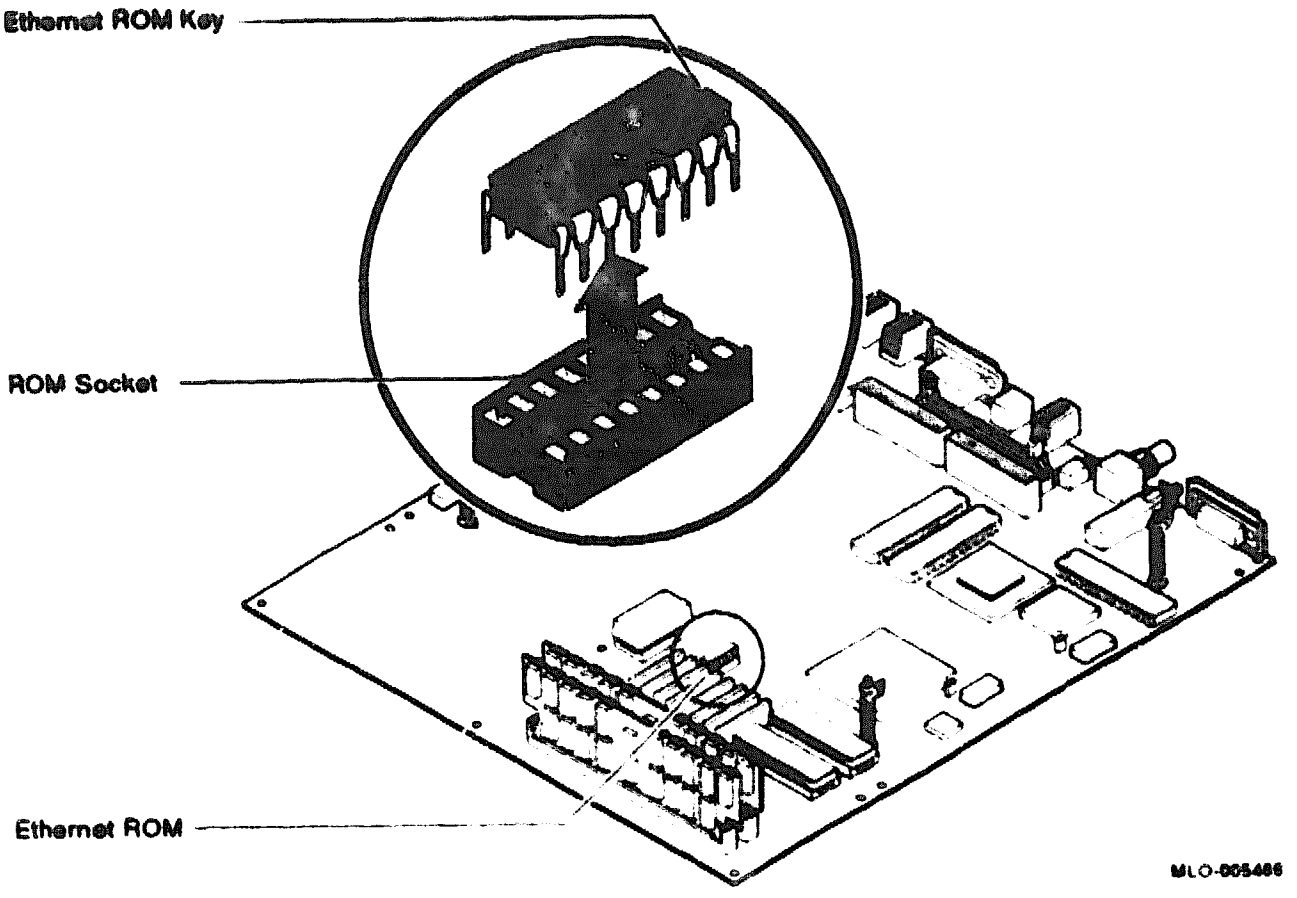
Caution *To protect system devices from damage due to static charge, wear an antistatic wrist strap when removing devices from and adding devices to the system units. (See Section 2.10.)*

- Locate the Ethernet ROM on the Model 76 system board. There are a number of ways to identify the Ethernet ROM. It is the only socketed 16-pin chip on the system board; it has distinct manufacturer's markings on top; and written on it is ENET ADRS, an abbreviation for "Ethernet Address." Figure 2–8 shows the location of the Ethernet ROM on the Model 76 system board.
- Open the scanline coprocessor ROM box that comes with the Model 76 upgrade kit. Once you have removed the Model 76 Ethernet ROM from the Model 76 system board, you will place it in the antistatic foam of the scanline coprocessor ROM box. (See Figure 2–1.)

Caution *When you remove the Ethernet ROM, be very careful not to bend the pins on the chip. These pins are fragile and must be intact for you to add the Ethernet chip to your current system unit for return to Digital.*

- Remove the Ethernet ROM from the Model 76 system board using a chip puller or a flat-head screwdriver. (See Figure 2–8.)
- Make sure the pins on the Ethernet ROM are straight after you have removed it from the system board. If the pins are bent, carefully straighten them.
- Take the Ethernet ROM and place it in the antistatic foam that is inside the scanline coprocessor module ROM box. (See Figure 2–1.)

Figure 2–8 Removing the Ethernet ROM from the Model 76 System Board



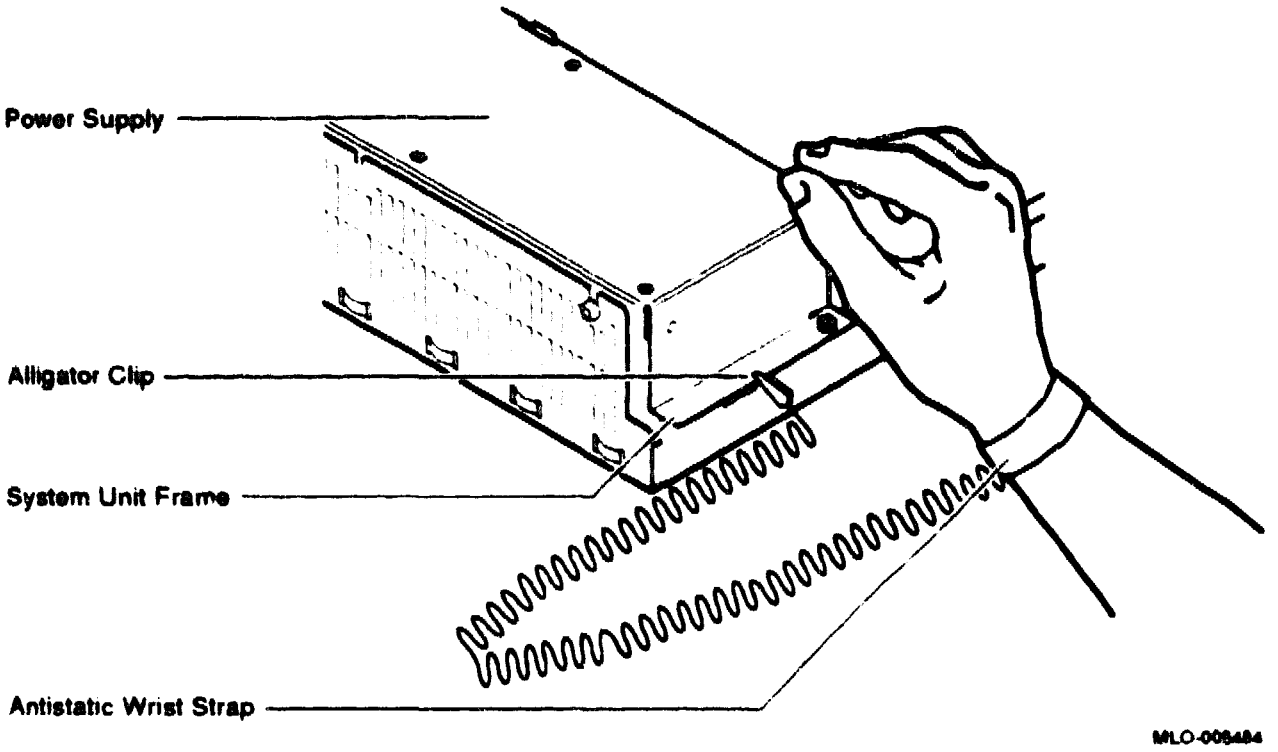
2.10 Using the Antistatic Wrist Strap

Digital recommends that you wear an antistatic wrist strap while performing the Model 76 upgrade procedure. It is also recommended that you not perform the upgrade while standing on a carpeted surface; static electricity from contact with this surface can cause damage to system devices.

After you have removed the system unit cover of the system you will be working on, follow these steps:

1 **Place the antistatic strap on your wrist and attach the alligator clip on the end to the system unit frame in front of the power supply of the system unit that you are working on. Figure 2–9 shows how the antistatic wrist strap should be attached to the system unit.**

Figure 2–9 Attaching the Antistatic Wrist Strap to the System Unit



Caution *Make sure you transfer the alligator clip to the system unit frame of the system unit you are working on, or use the alternative method described in step 4. As you take a device from one system unit, the connector should be attached to that system unit; when you add a device to the other unit, the connector should be attached to that system.*

2 Whenever you remove a system device from one system unit and cannot add it directly to the other system unit, place the system device on an antistatic mat to make sure that no electrical static charge will be transferred to it and damage it.

3 **As a safeguard to ensure that you have eliminated any static charge that may have built up, touch your index finger to the top of the power supply in one of the system units. This will discharge all static electricity.**

4 **An alternative method of using the antistatic wrist strap does not require that you transfer the alligator clip between the frames of the different system units. To use this method, perform the following steps:**

a **Make sure your current system unit and the Model 76 system unit are side by side, with the front of both units facing you.**

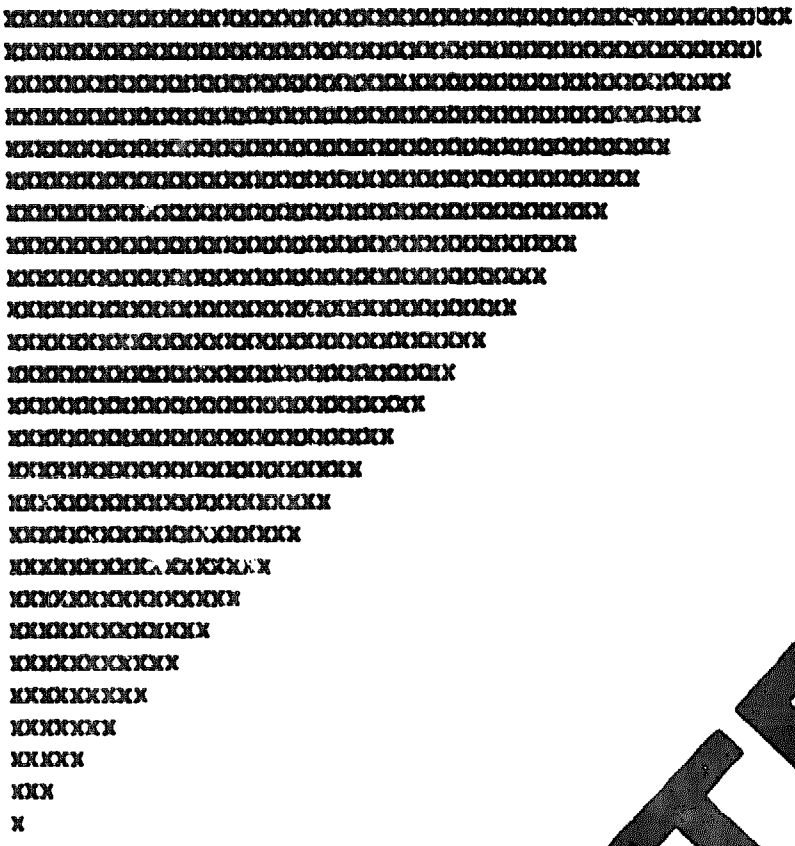
b **Plug the Model 30, Model 38, Model 40, or Model 48 monitor power cord into the monitor power port on the back of the system unit.**

c **Plug the other end of the monitor power cord into the system power port on the back of the Model 76 system unit. The two system units are now connected by the monitor power cord and have a common ground between them.**

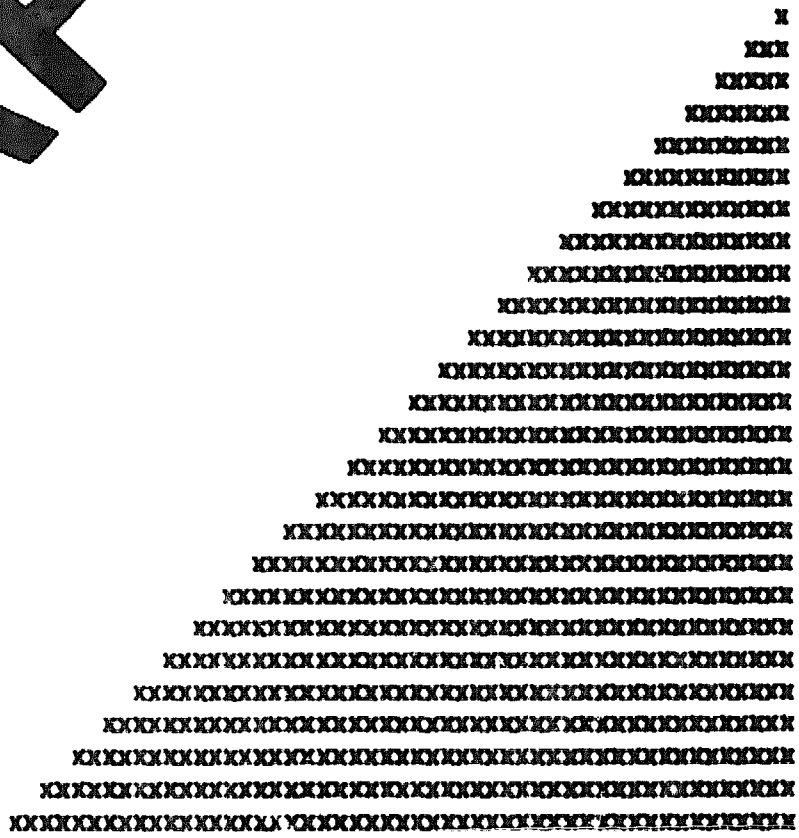
d **Attach the alligator clip of the antistatic wrist strap to the power supply of the Model 76 system unit.**

2.11 What to Do Next

At this point, you are ready to begin the upgrade of your current system. Leave the Model 76 system unit with the drive plate removed and the system unit cover off. If you are upgrading a Model 30 system, go to Chapter 3. If you are upgrading a Model 38 unit, go to Chapter 4. If you are upgrading a Model 40 or Model 48 unit, go to Chapter 5.



CHAPTER 3



3

Upgrading a VAXstation 3100 Model 30 System

This chapter explains how to do the following:

- Prepare the Model 30 system (Section 3.1)
- Identify the configuration of the drive plate (Section 3.2)
- Begin the upgrade to a Model 76 system (Section 3.3)

3.1 Preparing the Model 30 System

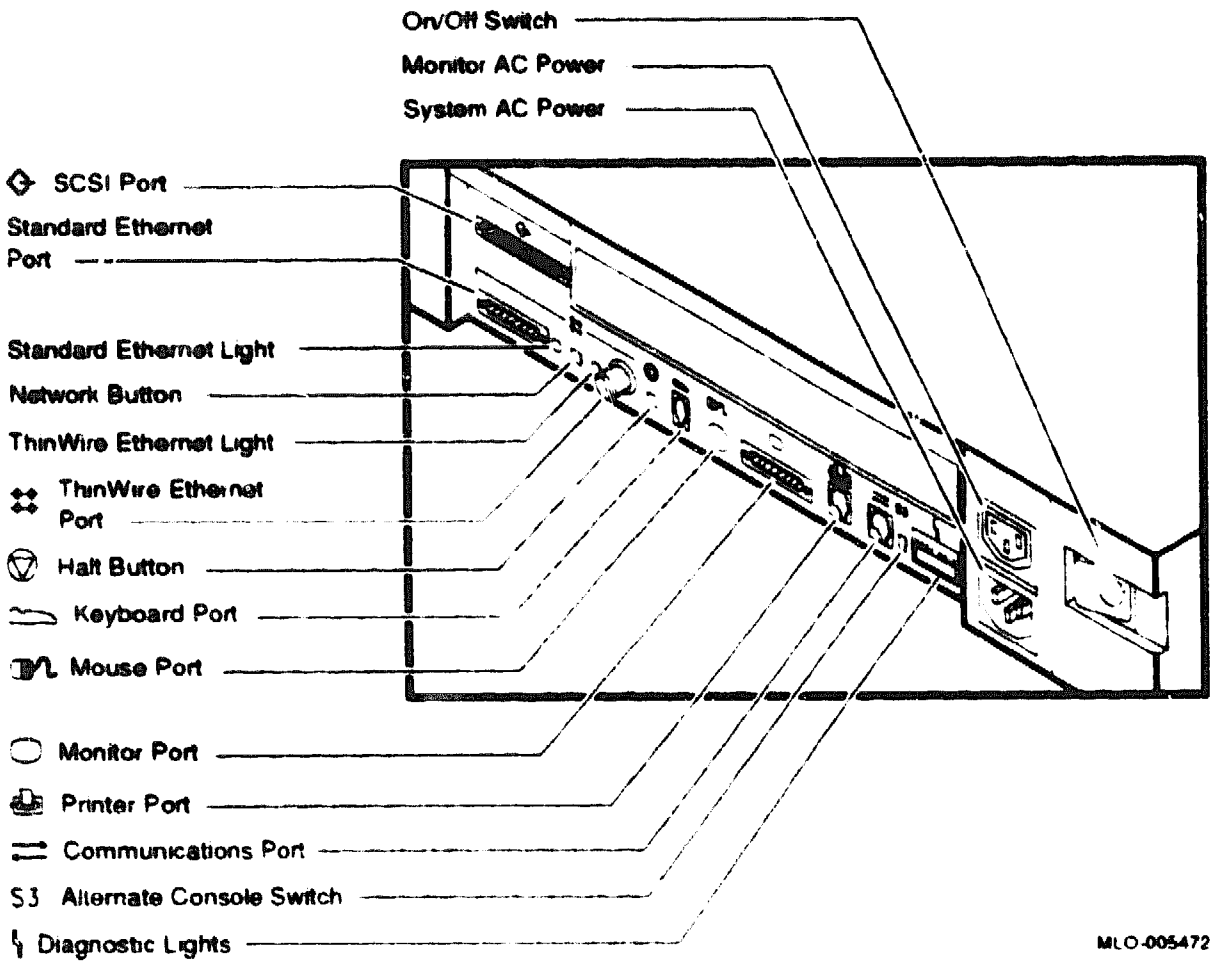
Follow these steps to prepare the Model 30 system unit:

1 If there are files stored on a system disk, make a backup copy following the instructions in the software documentation.

Note *Before turning the system off, see the operating system documentation for shutdown procedures.*

2 Put the Model 30 system into console mode by pressing the halt button on the rear of the system. See Figure 3–1 for the location of the halt button on the back of the Model 30 system unit.

Figure 3–1 Model 30 System Unit Ports and Icons



3 Run the TEST 50 diagnostic test as described in Section 2.3 to determine the Ethernet hardware address, determine the type of graphics module in the Model 30 system, if present, and compare SCSI IDs of the system devices.

4 After shutting down the operating system, turn your system components off (O) in the following order:

1 Expansion boxes

2 Printer, modem, and other equipment

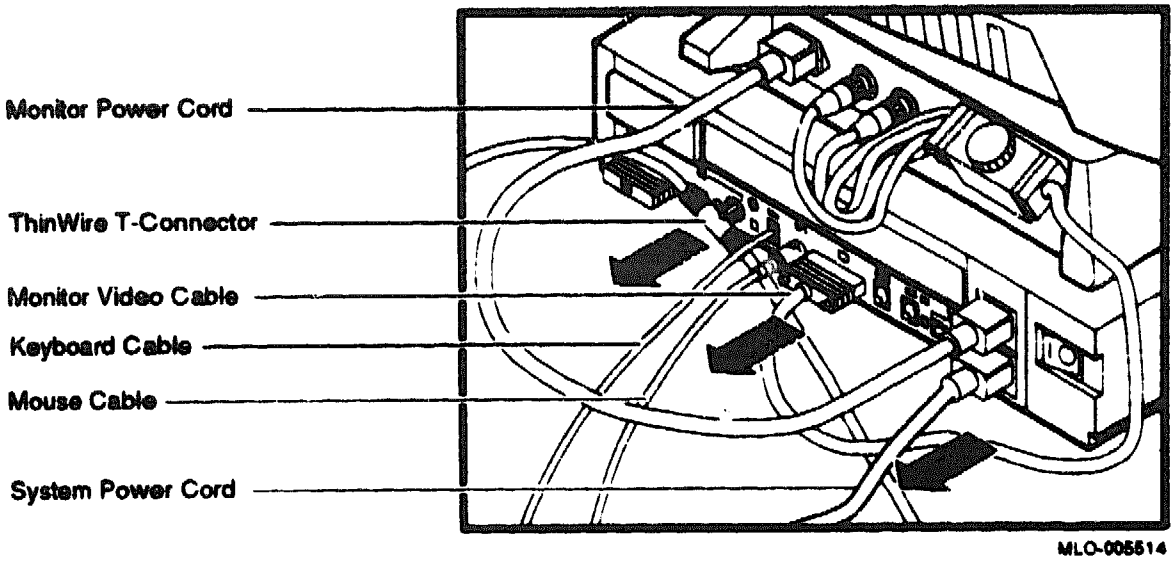
3 System unit and monitor

5 Disconnect the system power cord first from the wall and then from the system unit. Save the power cord for use with the Model 76 system later.

6 Before removing the system unit cover, disconnect the following cables from the system unit in the order given (see Figure 3–2):

- Monitor power cord
- Keyboard cable
- Mouse cable
- ThinWire Ethernet or standard Ethernet cable
- SCSI terminator or external SCSI cable

Figure 3–2 Disconnecting the System Unit and Monitor Cables



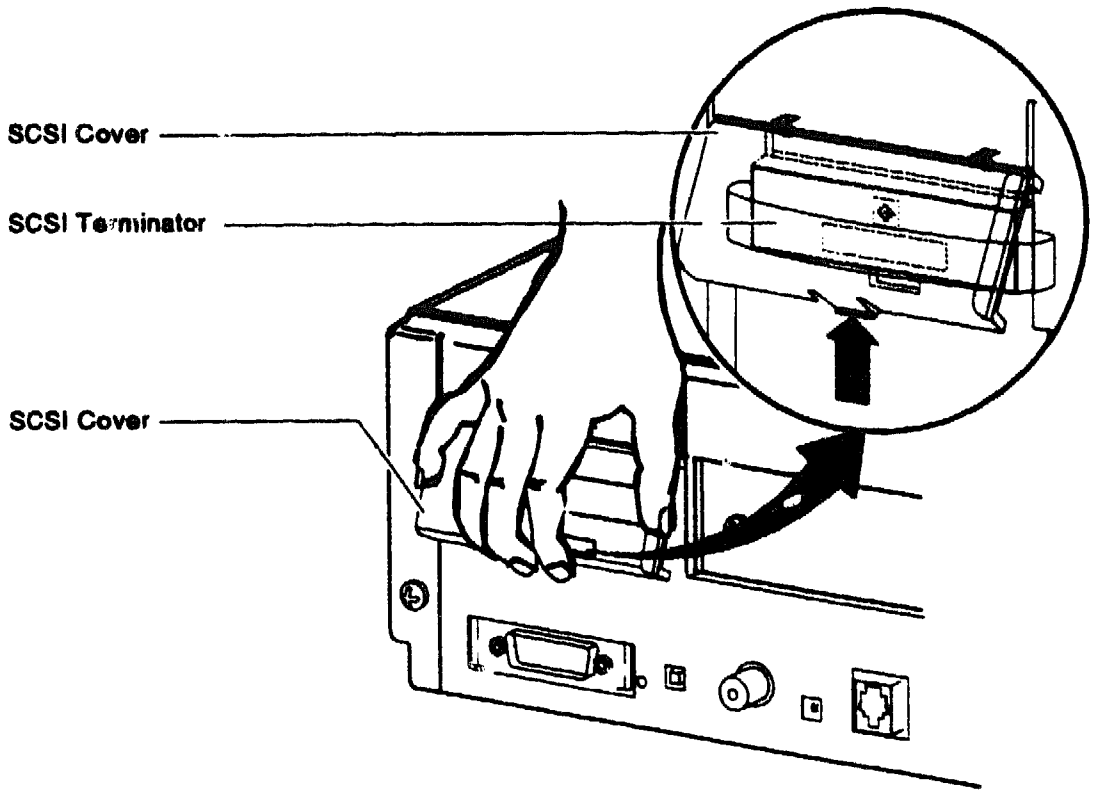
7 Disconnect the monitor video cable by turning the connector thumbscrews to the left and then removing the cable from the system unit.

8 Remove the monitor from the top of the system unit and set it aside. The monitor is heavy; you may require the assistance of a second person to lift it.

9 Disconnect the Ethernet cable from the system unit.

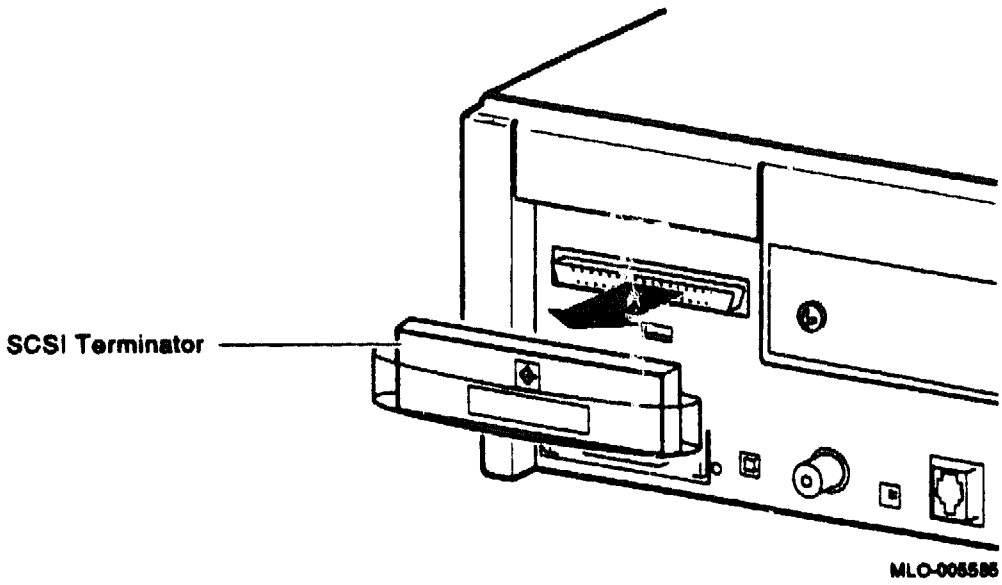
10 Remove the SCSI terminator access door, if present, from the back of the Model 30 system unit. (See Figure 3–3.)

Figure 3–3 Removing the SCSI Terminator Access Door



11 Disconnect either the SCSI terminator or the external SCSI cable from the SCSI port on the back of the system unit. Figure 3–4 shows how to remove the SCSI terminator.

Figure 3–4 Removing the SCSI Terminator

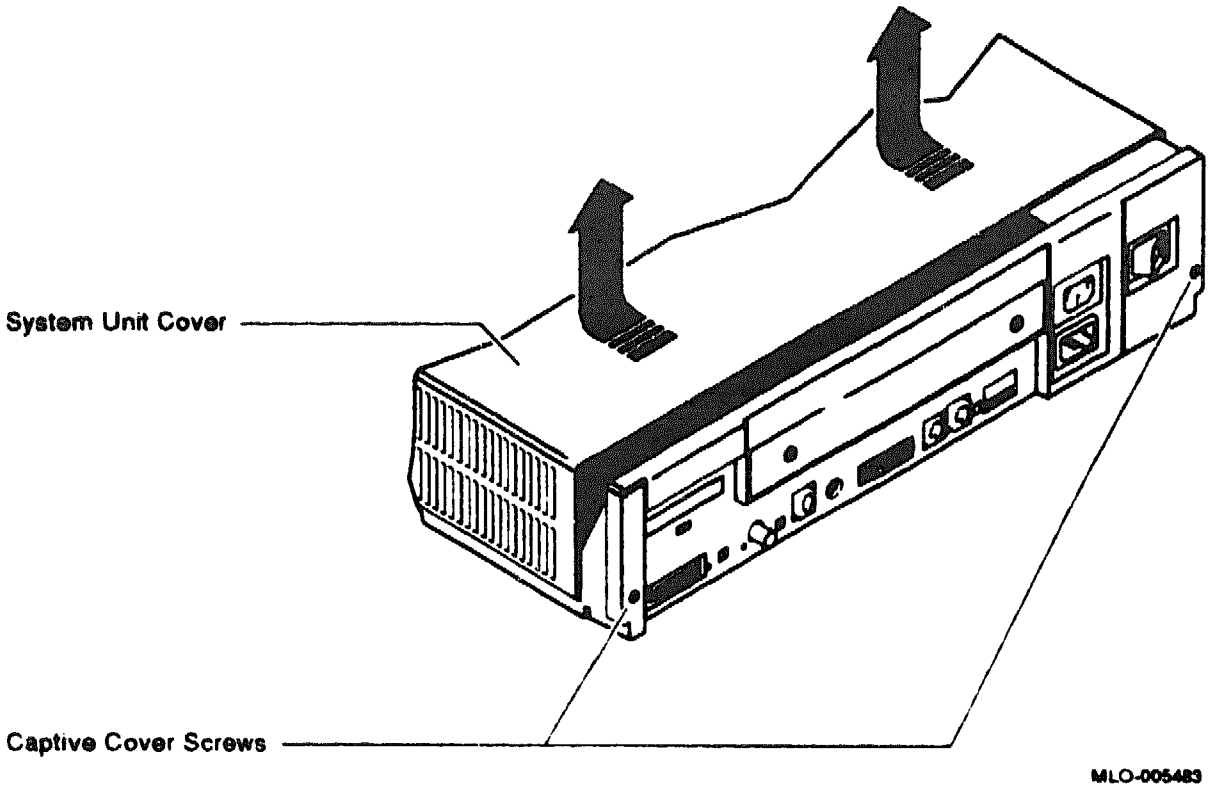


Caution *To protect system devices from damage due to static charge, wear an antistatic wrist strap when removing devices from and adding devices to the system units. (See Section 2.10.)*

12 Remove the system unit cover as follows:

- Locate the two captive cover screws at the back and on the outside edges of the system unit. Unscrew these screws, using a Phillips-head screwdriver, until they are very loose; do not remove them. Figure 3–5 shows the location of the captive cover screws.
- Slide the system unit cover forward toward the front of the system unit and then lift it up and away from the system unit.

Figure 3–5 Removing the System Unit Cover

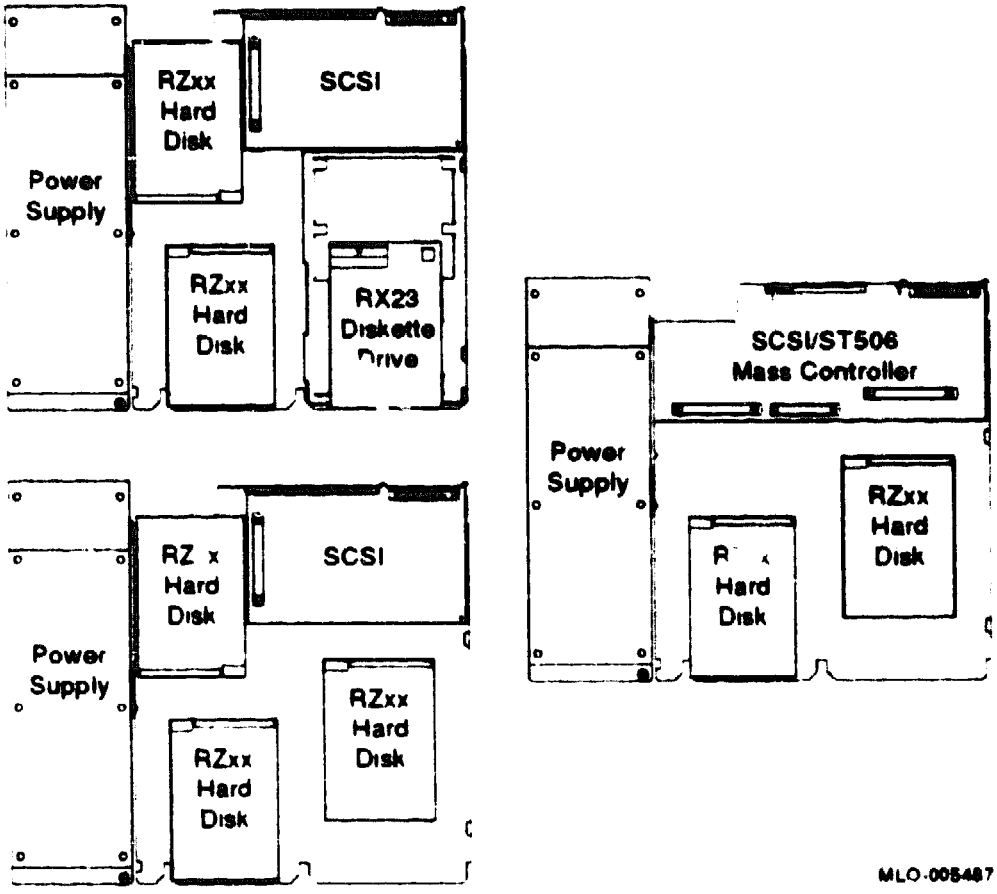


Warning *Only authorized Digital Service representatives should attempt to open the power supply located inside the system unit. There are dangerous voltages inside the power supply, and there are no user-serviceable parts.*

3.2 Common Configurations of the VAXstation 3100 Model 30 Drive Plate

There are numerous possible configurations for the VAXstation 3100 Model 30 drive plate, including two different drive plates with two different kinds of SCSI mass storage controllers. Figure 3–6 shows the three most common configurations of the Model 30 drive plate.

Figure 3–6 Common Configurations of the Model 30 Drive Plate



3.3 Beginning the Upgrade of the Model 30 System to a Model 76 System

This section tells you how to remove the following components from the Model 30 system and install them in the Model 76 system unit. It is important that you remove these devices in the order in which they are discussed. At the end of this chapter, you will proceed to Chapter 6 to complete the upgrade procedure.

- **Drive plate (Section 3.3.1)**
- **RZxx hard disks (Section 3.3.2)**
- **Graphics coprocessor module, if present (Section 3.3.3)**
- **Scanline coprocessor module (also known as the SPX color graphics accelerator), if present (Section 3.3.4)**
- **Scanline coprocessor module ROM (Section 3.3.7)**
- Ethernet ROM (Section 3.3.5)

The following parts must be returned with the Model 30 system box, as per the customer's upgrade agreement with Digital. These devices are not supported by, and will not function in, the Model 76 system.

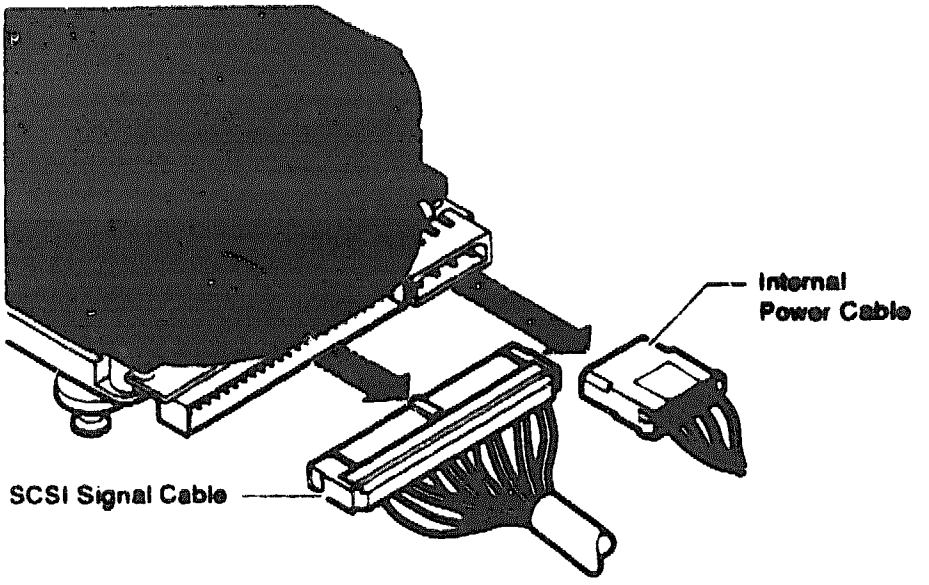
- System unit with power supply and cover
- System board (with central processing unit (CPU))
- SCSI mass storage controller module or SCSI/ST506 mass storage controller module
- Memory boards
- RX23 diskette drive, if present
- Drive plate
- SCSI signal cable and internal power supply cable

3.3.1 Removing the Model 30 Drive Plate

Remove the drive plate from the Model 30 system unit by completing the following steps:

1. Transfer the alligator clip of the antistatic wrist strap from the Model 76 system unit to the Model 30 system unit. (See Section 2.10.)
2. Disconnect the SCSI signal cable from all RZxx hard disks. (See Figure 3–7.)
3. Disconnect the internal power cable from all RZxx hard disks. (See Figure 3–7.)

Figure 3–7 Disconnecting the SCSI Cable and the Power Cable from RZxx Hard Disks



4 Disconnect the internal power cable from the internal power supply. (See Figure 3–8.)

5 Disconnect the SCSI system cable from the SCSI system port. (See Figure 3–8.)

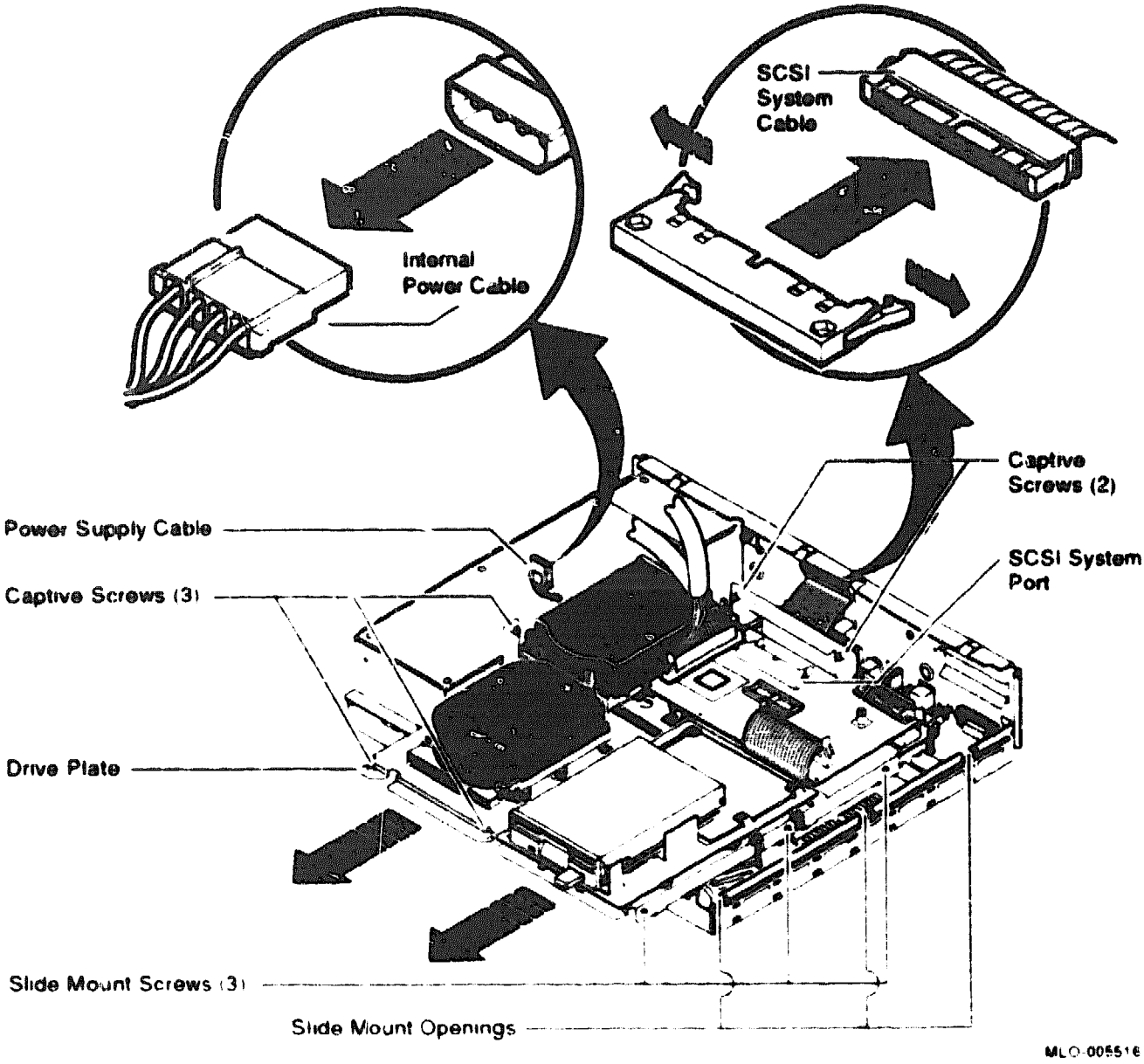
6 Loosen all captive screws. There will be four or five captive screws, depending on which kind of drive plate is inside the Model 30 system. (See Figure 3–8.)

7 Loosen the three Phillips-head slide mount screws on the side of the drive plate. (See Figure 3–8.)

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.*

8 Slide the drive plate toward the front of the system unit and lift it up. (See Figure 3–8.)

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



3.3.2 Removing RZxx Hard Disks from the Model 30 Drive Plate

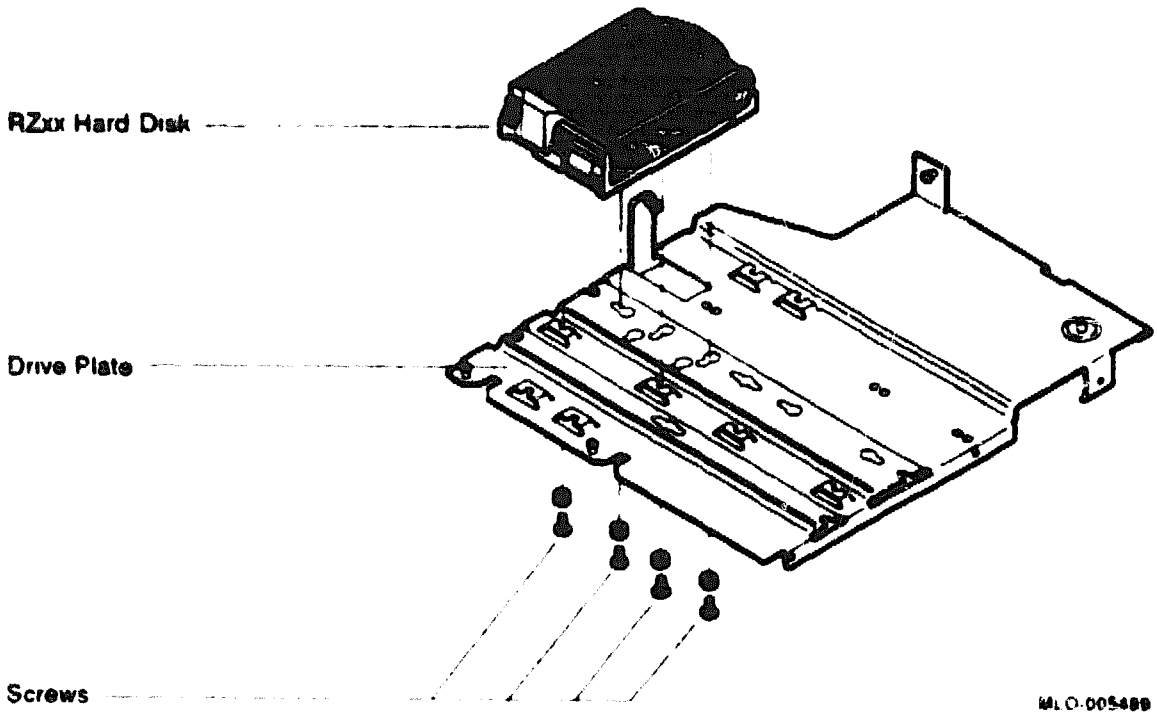
It is necessary for you to remove any RZxx hard disks from the Model 30 drive plate. If there is an RX23 diskette drive on the Model 30 system, you will leave it in place on the Model 30 drive plate for return to Digital, per the upgrade agreement.

To remove the RZxx hard disks from the Model 30 drive plate, follow these steps:

1. **Turn over the Model 30 drive plate with the RZxx hard disks attached so that the hard disks are facedown.**
2. **Using a flat-head screwdriver, unscrew the four screws that attach each RZxx hard disk to the drive plate.**

   Figure 3–9 shows how an RZxx hard disk is mounted on the Model 30 drive plate.

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



3. Set each RZxx hard disk aside

Note *You may dispose of the flat-head screws and grommets you unscrew in the process of removing the hard disks. They are not necessary for the completion of the upgrade process. The Model 76 upgrade kit includes replacement screws for you to add to the RZxx hard disks later.*

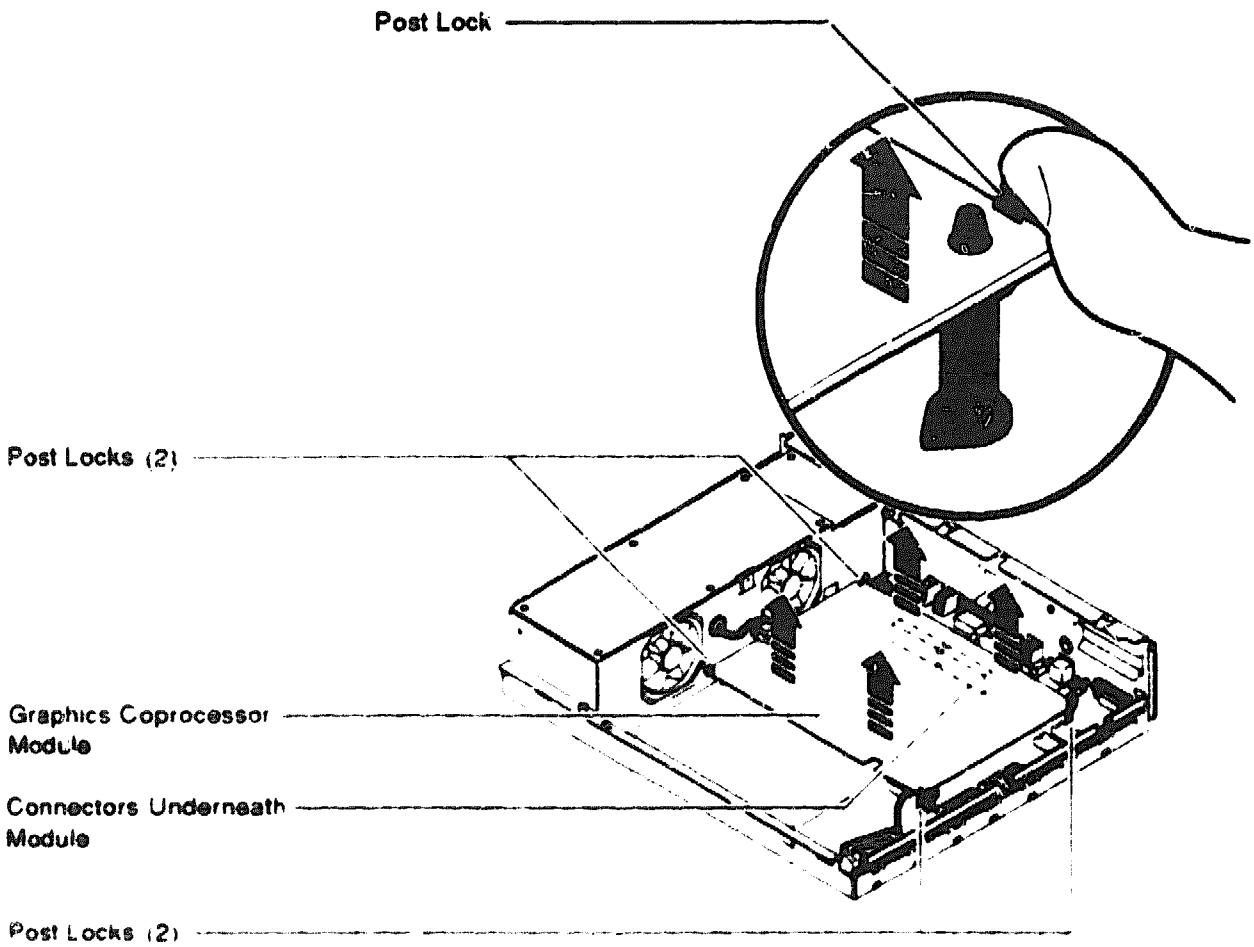
3.3.3 Removing the Graphics Coprocessor Module from the Model 30 System Unit

In Section 2.3 you determined what type of graphics module is in the Model 30 system. If it is a graphics coprocessor module, read this section for instructions on how to remove it. If it is a scanline coprocessor module, proceed to Section 3.3.4. If the Model 30 system has no graphics module, proceed directly to Section 3.3.5.

To remove the graphics coprocessor module from the Model 30 system, follow these steps:

1. To protect the graphics coprocessor module from damage due to static charge, it is important that you discharge any electrical static charge that may have built up and that you use an antistatic wrist strap while handling the graphics coprocessor module. See Section 2.10 for information on this procedure.
2. Lay an antistatic mat on a flat, level surface. You will place the graphics coprocessor module on the mat once you have removed it from the Model 30 system.
3. Remove the graphics coprocessor module from the four post locks by pulling back the tabs and then lifting the graphics coprocessor module up and off of the system board. Two connectors will disconnect as you lift the graphics coprocessor module. (See Figure 3–10.)

Figure 3–10 Removing a Graphics Coprocessor Module from the System Unit



4 Set the graphics coprocessor module on the antistatic mat
You will add the graphics coprocessor module to the Model 76 system unit after you have exchanged the Ethernet ROMs in the Model 30 and Model 76 systems

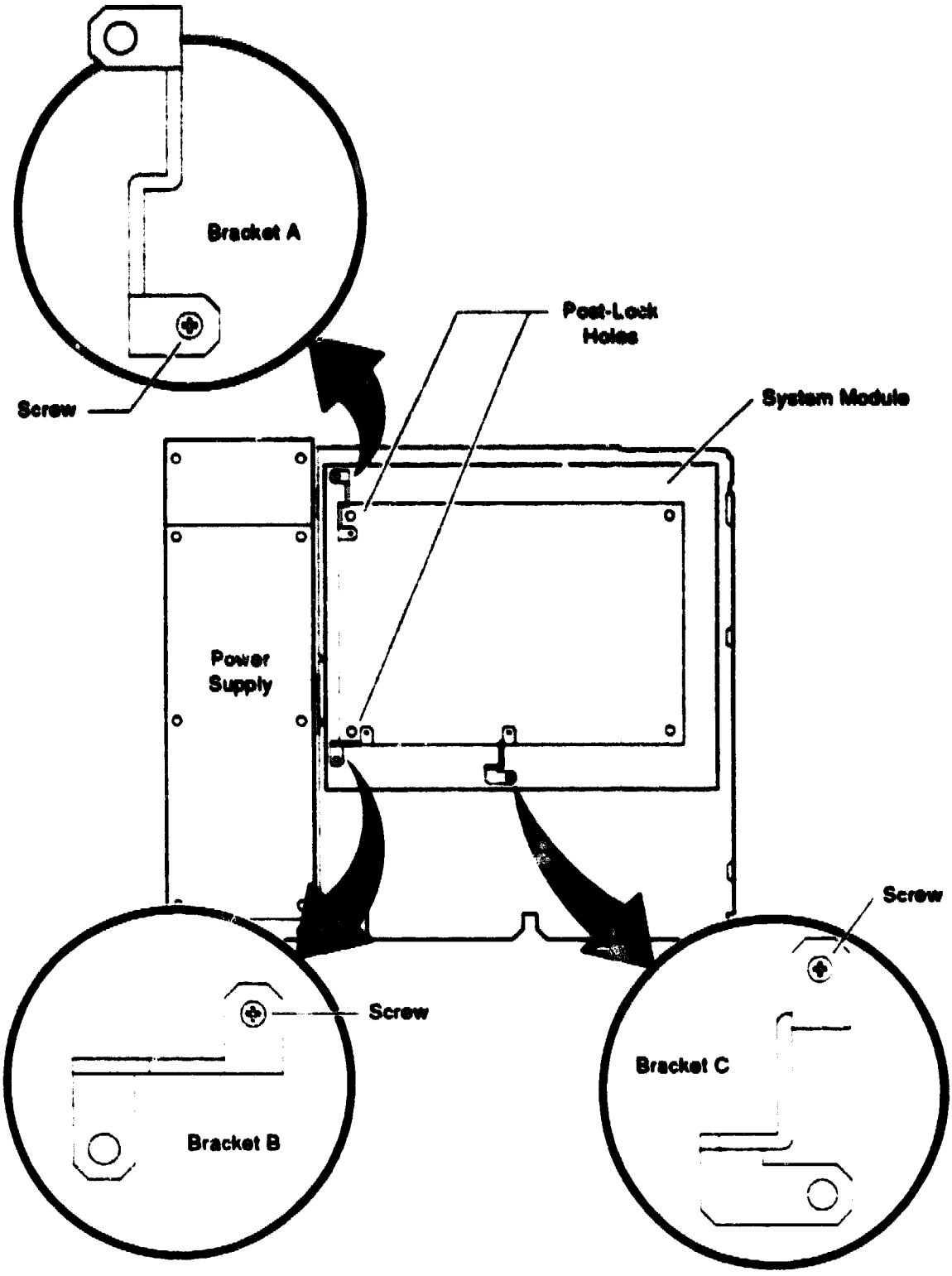
3.3.4 Removing the Scanline Coprocessor Module from the Model 30 System Unit

In Section 2.3 you determined what type of graphics module is in the Model 30 system. If it is a scanline coprocessor module, read this section for instructions on how to remove it. If it is a graphics coprocessor module, go back to Section 3.3.3. If the Model 30 system has no graphics module, proceed directly to Section 3.3.5.

To remove the scanline coprocessor module from the Model 30 system, follow these steps:

1. To protect the scanline coprocessor module from damage due to static charge, it is important that you discharge any static charge that may have built up and that you use an antistatic wrist strap while handling the scanline coprocessor module. See Section 2.10 for information on this procedure.
2. Lay an antistatic mat on a flat, level surface. You will place the scanline coprocessor module on the mat once you have removed it from the Model 30 system.
3. Unscrew and remove the three screws of the mounting brackets that attach the scanline coprocessor module to the system board. (See Figure 3–11.) The mounting brackets will remain attached to the system board.

Figure 3–11 Scanline Coprocessor Module Mounting Bracket Locations

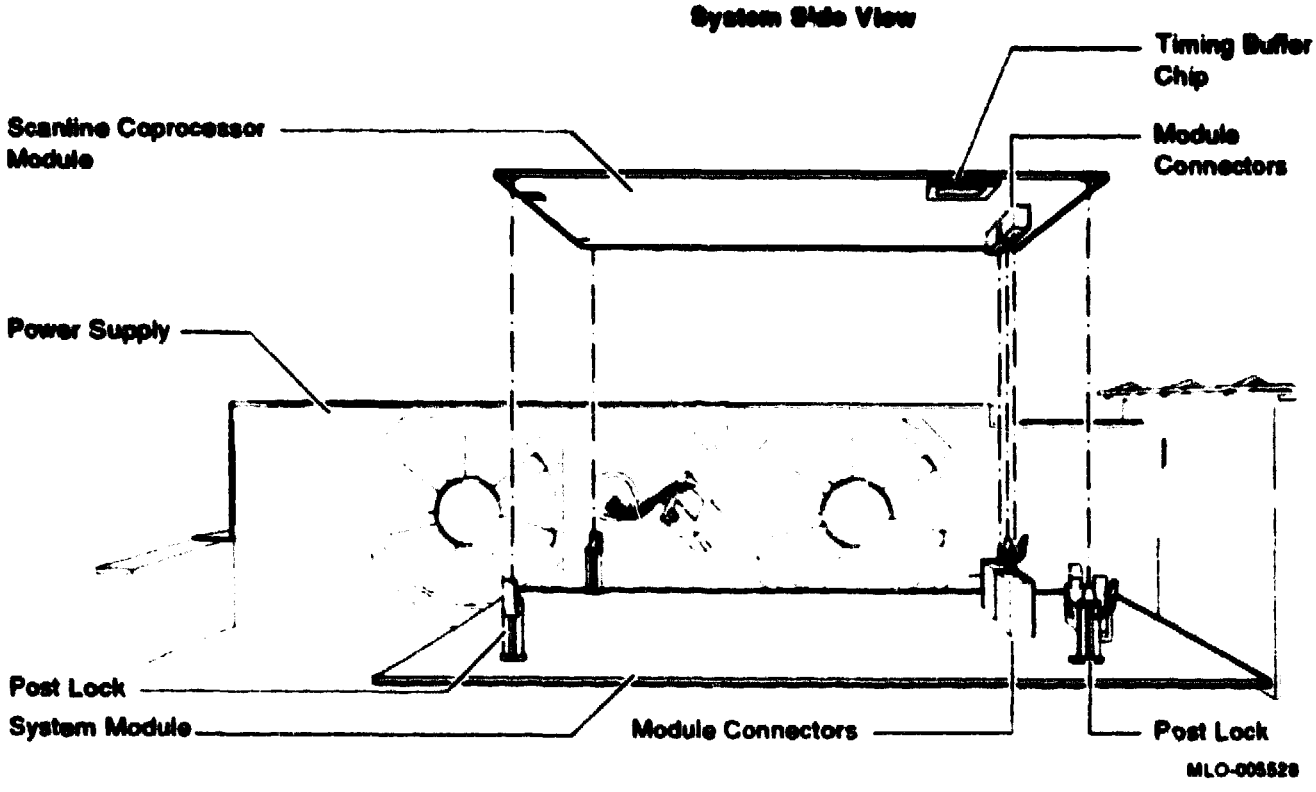


4 Remove the scanline coprocessor module from the four post locks by pulling back the post-lock tabs. (See Figure 3–12.)

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 be easily damaged by any pressure exerted on it. (See Figure 3–12.)*

5 Grasp the scanline coprocessor module in the center, next to the two connectors, and lift it up and off of the system board. The two connectors will disconnect as you lift the scanline coprocessor module. (See Figure 3–12.)

Figure 3–12 Removing a Scanline Coprocessor Module from the System Unit



6 Set the scanline coprocessor module on the antistatic mat. You will add the scanline coprocessor module to the Model 76 system unit after you have exchanged the Ethernet ROMs in the Model 30 and Model 76 systems.

3.3.5 Removing the Ethernet ROM from the Model 30 System Board

To remove the Ethernet ROM from the Model 30 system board, follow these steps:

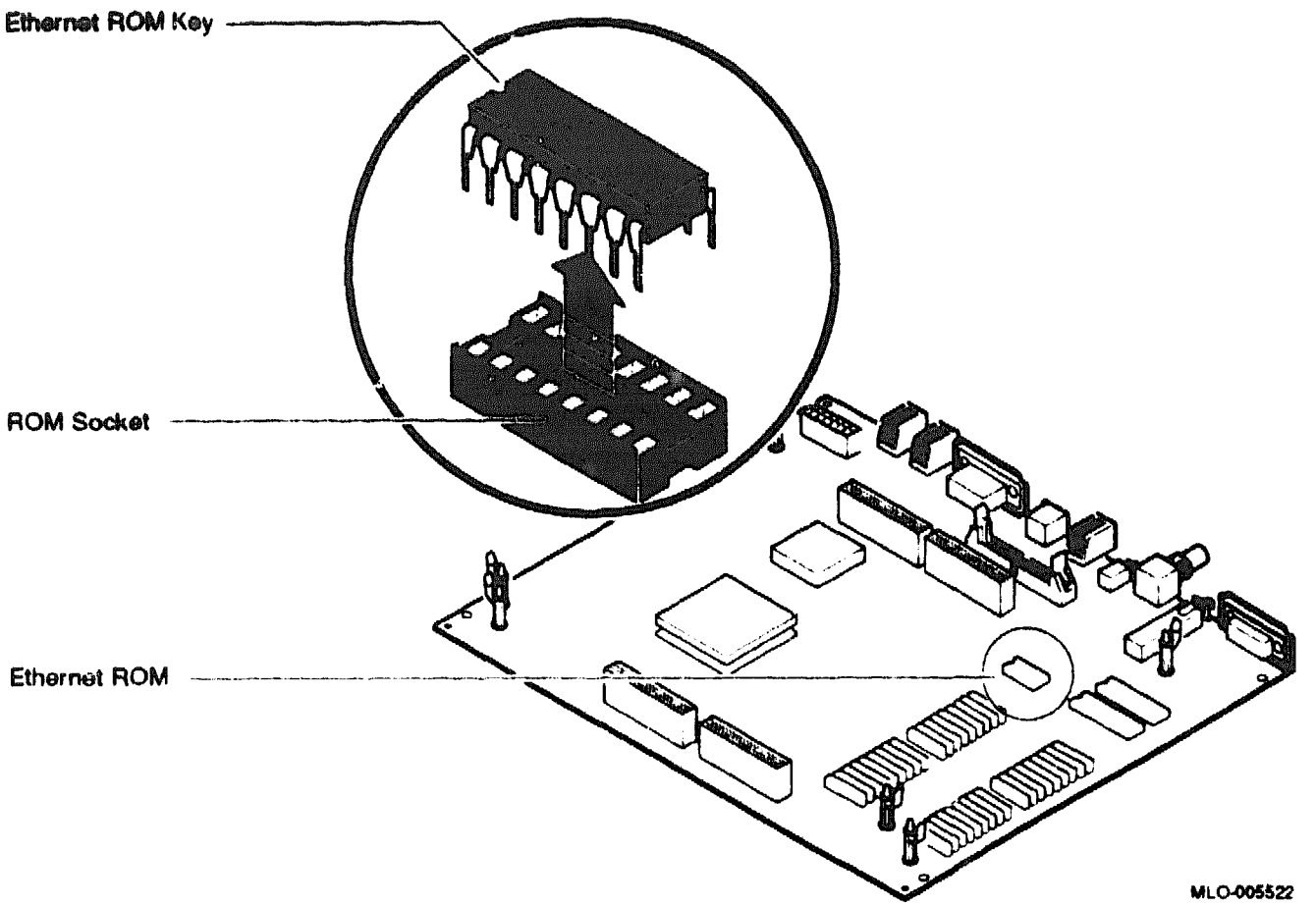
1 Locate the Ethernet ROM on the Model 30 system board. There are a number of ways to identify the Ethernet ROM. It is the only socketed 16-pin chip on the system board; it has distinct manufacturer's markings on top; and written on it is ENET ADRS, an abbreviation for "Ethernet Address." Figure 3–13 shows the location of the Ethernet ROM on the Model 30 system board.

Caution *When you remove the Ethernet ROM, be very careful not to bend the pins on the chip. These pins are fragile and must be intact for you to add this Ethernet ROM to the Model 76 system unit.*

2 Remove the Ethernet ROM from the Model 30 system board using a chip puller or a flat-head screwdriver. (See Figure 3–13.)

3 Make sure the pins on the Ethernet ROM are straight after you have removed it from the system board. If the pins are bent, carefully straighten them.

Figure 3–13 Removing the Model 30 Ethernet ROM

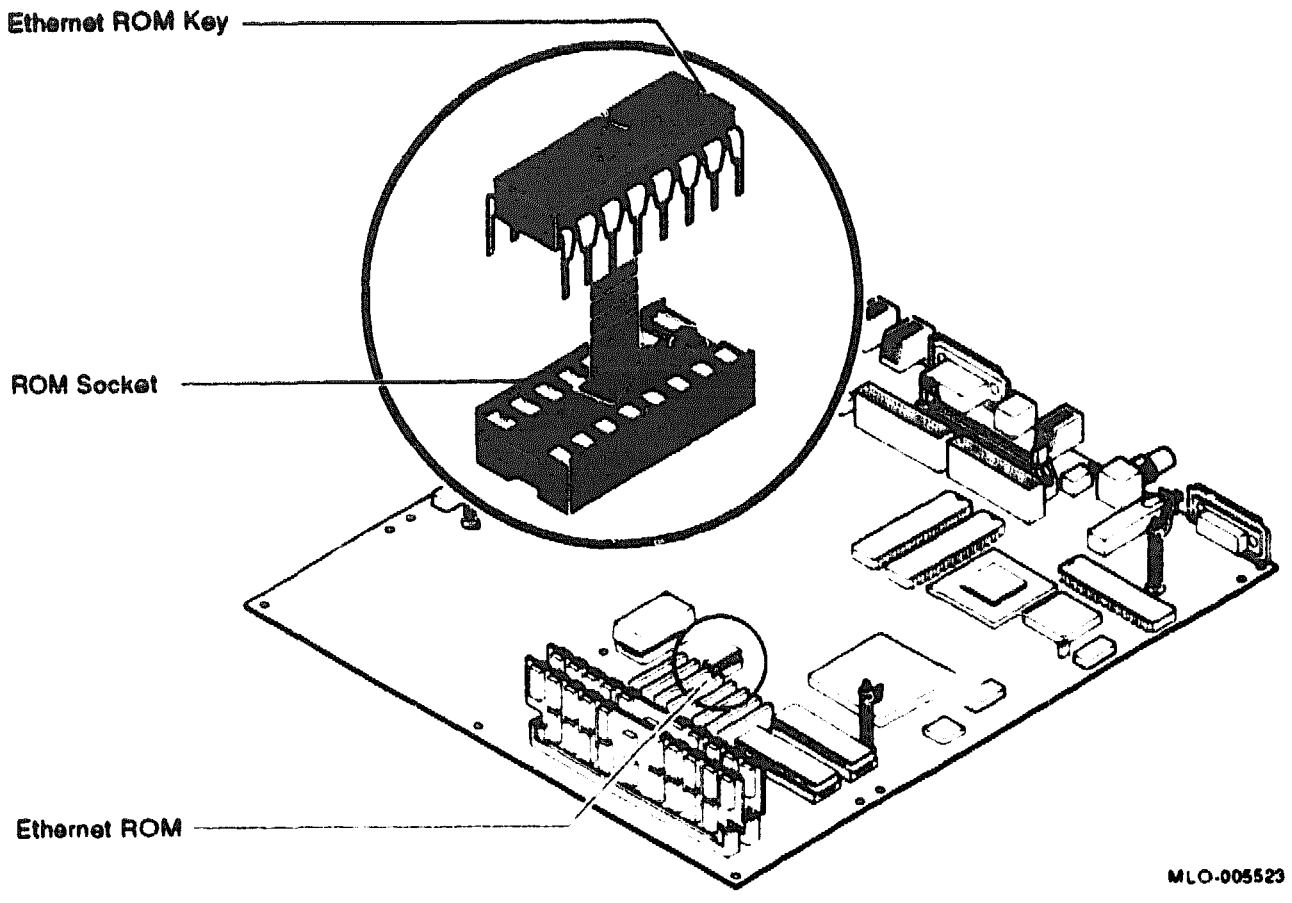


4 Transfer the alligator clip of the antistatic wrist strap from the Model 30 system unit to the Model 76 system unit. (See Section 2.10.)

5 Take the Ethernet ROM you have just removed from the Model 30 system board and add it to the Model 76 system board, installing it in the vacant Ethernet ROM socket from which you removed the Model 76 Ethernet ROM. (See Figure 3–14.) Make sure that the pins on the Ethernet ROM are properly aligned in the Ethernet ROM socket before pushing the ROM into place.

Caution *The Ethernet ROM key must face the back of the Model 76 system unit. If you put the Ethernet ROM in backward, the system will not function properly. See Figure 3–14 for the orientation of the Ethernet ROM key and the location of the Ethernet ROM socket on the Model 76 system board.*

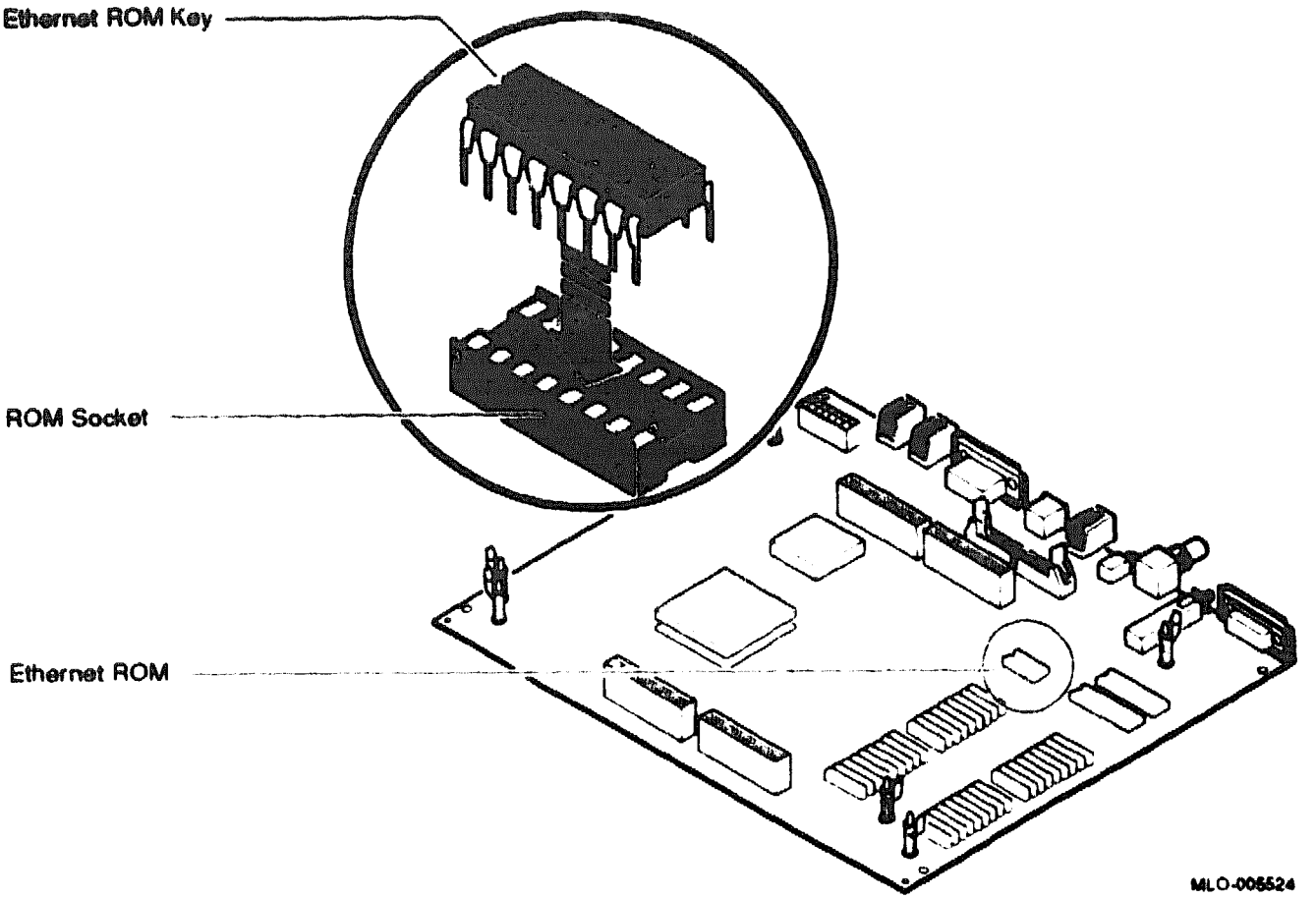
Figure 3–14 Installing the Model 30 Ethernet ROM in the Model 76 System Board



6 Transfer the alligator clip of the antistatic wrist strap from the Model 76 system unit to the Model 30 system unit. (See Section 2.10.)

7 Take the Ethernet ROM you removed from the Model 76 system board and install it in the Ethernet ROM socket on the Model 30 system board. Make sure that the pins on the Ethernet ROM are straight before you attempt to install it. The Ethernet ROM key should face the Model 30 system's power supply. (See Figure 3–15.)

Figure 3–15 Installing the Model 76 Ethernet ROM in the Model 30 System Board



3.3.6 Adding the Graphics Coprocessor Module to the Model 76 System Unit

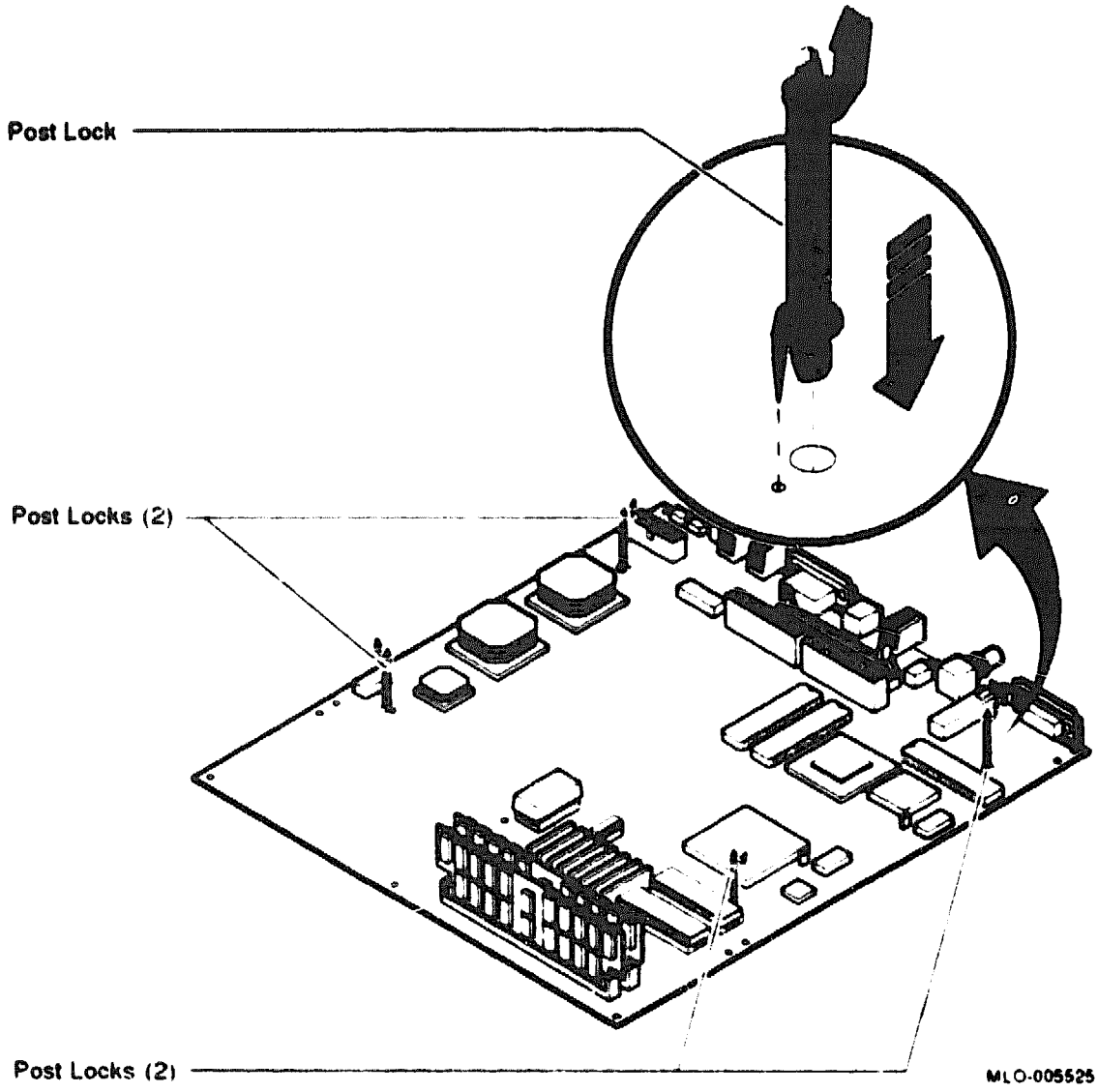
If you are not adding a graphics coprocessor module to the Model 76 system unit, proceed to the next section.

Take the graphics coprocessor module you removed from the Model 30 and install it in the Model 76 system unit by completing the following steps:

1 Transfer the alligator clip of the antistatic wrist strap from the Model 30 system unit to the Model 76 system unit. (See Section 2.10.)

2 Take the four post locks from the Model 76 upgrade kit parts bag and snap them into place in the mounting holes on the Model 76 system board, as shown in Figure 3–16. Do not use the post locks from the Model 30 system board.

Figure 3–16 Mounting Post Locks on the Model 76 System Board



3 Align the set of connectors on the underside of the graphics coprocessor module with the set of connectors on the system board. The components side of the graphics coprocessor module should be facedown. Figure 3–17 shows the top view of the graphics coprocessor module being installed in the system unit. Figure 3–18 shows the side view of the graphics coprocessor module in relation to the post locks and connectors.

Figure 3–17 Adding a Graphics Coprocessor Module—Top View

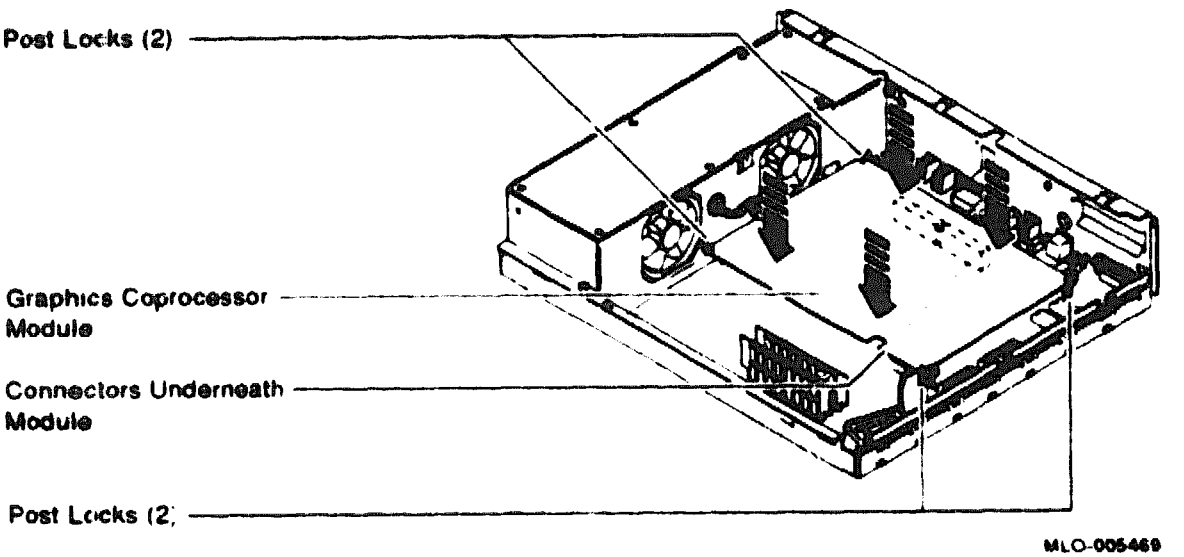
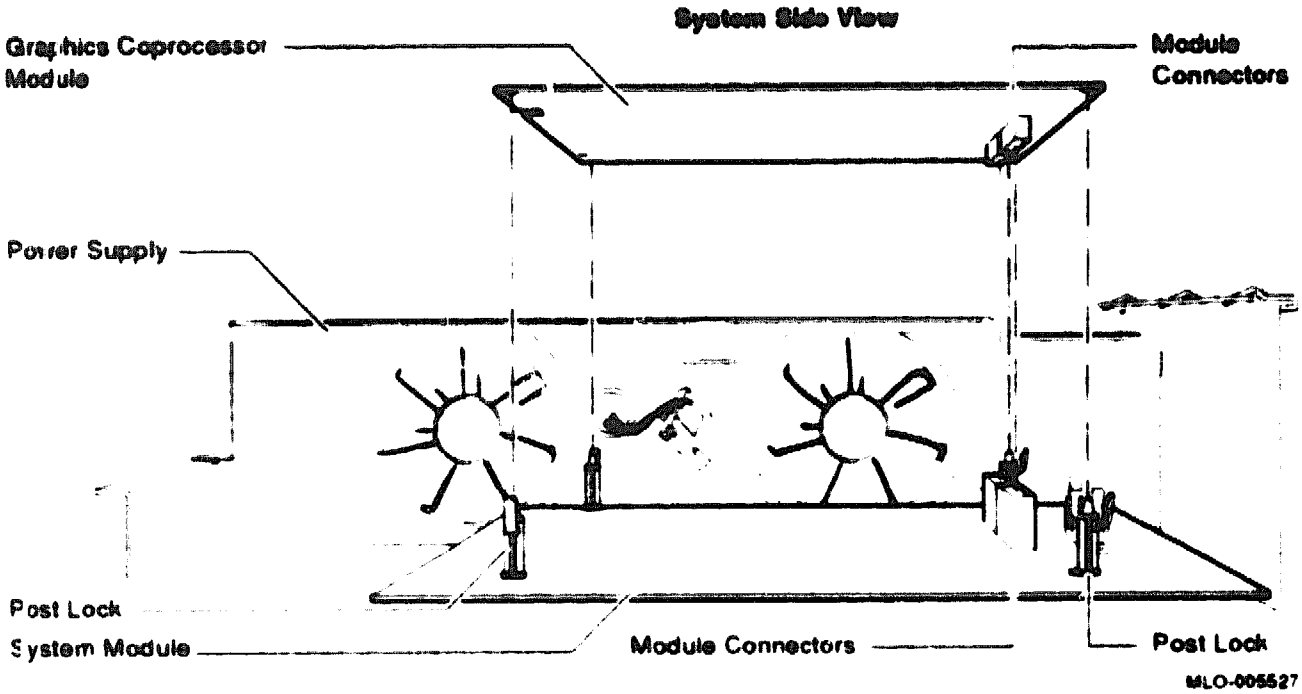


Figure 3–18 Adding a Graphics Coprocessor Module—Side View



4 Press the graphics coprocessor module firmly downward until it locks onto the four system board post locks. The arrows in Figure 3–17 show where to press on the graphics coprocessor module to ensure a good connection.

3.3.7 Changing the ROM in the Scanline Coprocessor Module

If you are not adding a scanline coprocessor module to the Model 76 system unit, proceed to Section 3.3.9.

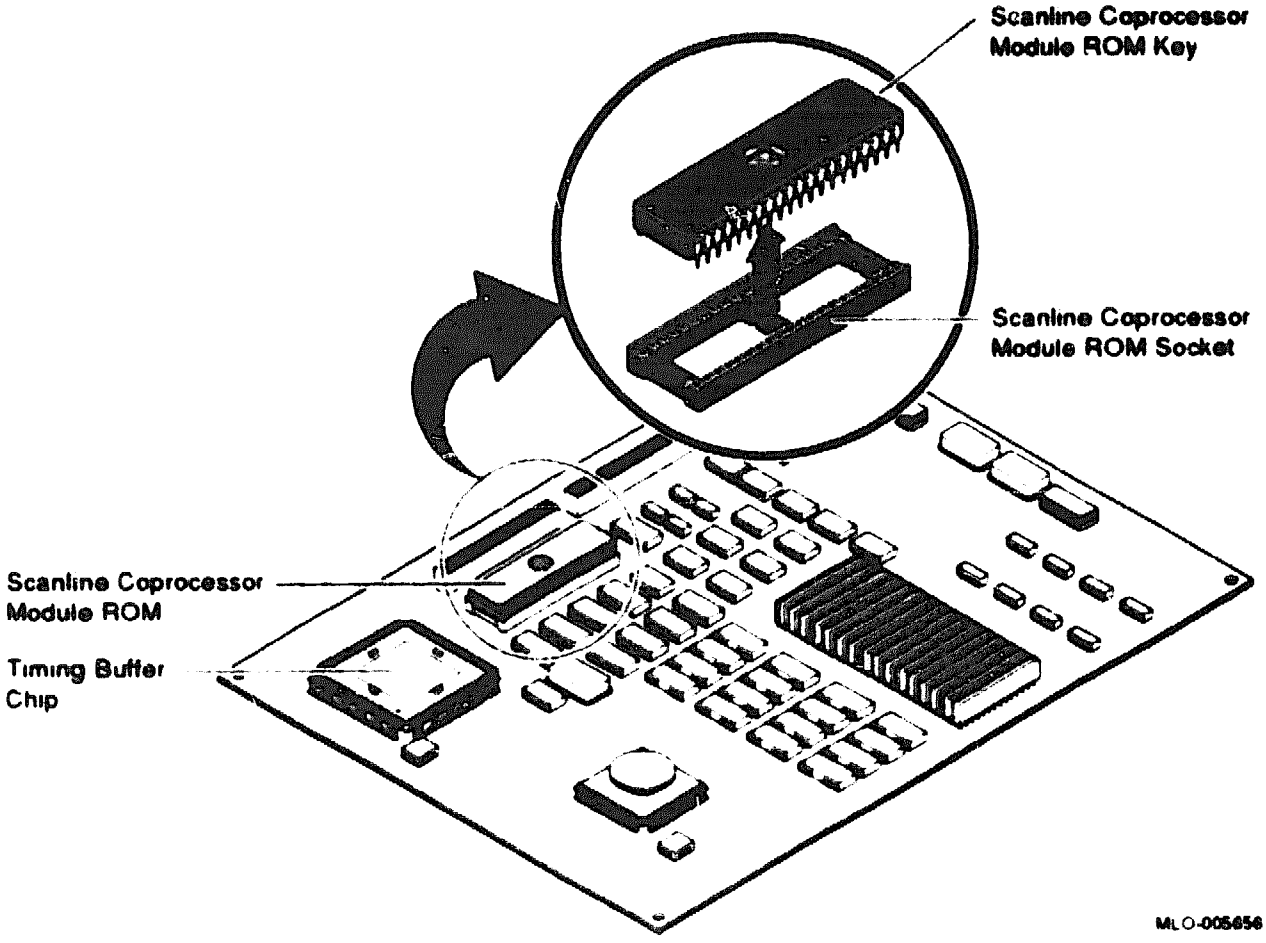
Before you can add the scanline coprocessor module you removed from the Model 30 system to the Model 76 system, you must change the ROM on the scanline coprocessor module. The Model 76 upgrade kit parts bag contains a ROM box with a replacement scanline coprocessor module ROM. Change the ROM on the scanline coprocessor module by completing the following steps:

1 Place the scanline coprocessor module on the antistatic parts mat. The components side of the scanline coprocessor module should be faceup. (See Figure 3–19.)

2 **Remove the ROM from the scanline coprocessor module using a chip puller or a flat-head screwdriver. (See Figure 3–19.)**

Note *You may dispose of the scanline coprocessor module ROM once you have removed it. It is not necessary for completion of the upgrade procedure.*

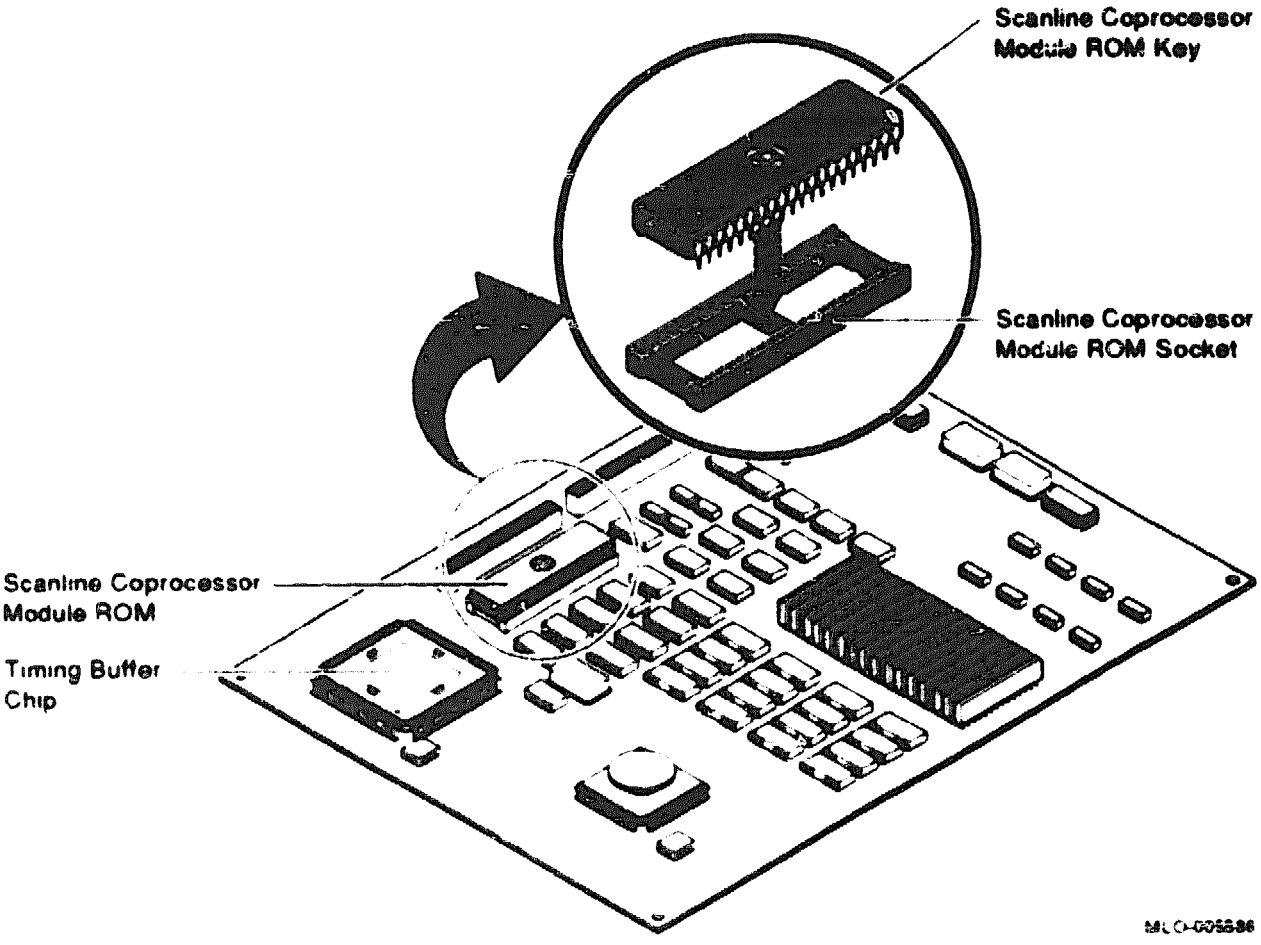
Figure 3–19 Removing the Scanline Coprocessor Module ROM



3 Take the scanline coprocessor module ROM that was shipped with the Model 76 upgrade kit and install it in the vacant ROM socket on the scanline coprocessor module. Make sure that the pins on the scanline coprocessor module ROM that was shipped with the Model 76 upgrade kit are straight before you attempt to install it. The scanline coprocessor module ROM key should face away from the timing buffer chip. (See Figure 3–20.)

Caution *It is important that the scanline coprocessor module ROM be in the correct position on the module, with the ROM key facing away from the timing buffer chip. If the scanline coprocessor ROM is mounted incorrectly, the scanline coprocessor module will not operate, and the Model 76 system may not function correctly.*

Figure 3–20 Installing the Scanline Coprocessor Module ROM



4 **Once you have added the new scanline coprocessor module ROM to the scanline coprocessor module, you can add the scanline coprocessor module to the Model 76 system.**

3.3.8 Adding the Scanline Coprocessor Module to the Model 76 System Unit

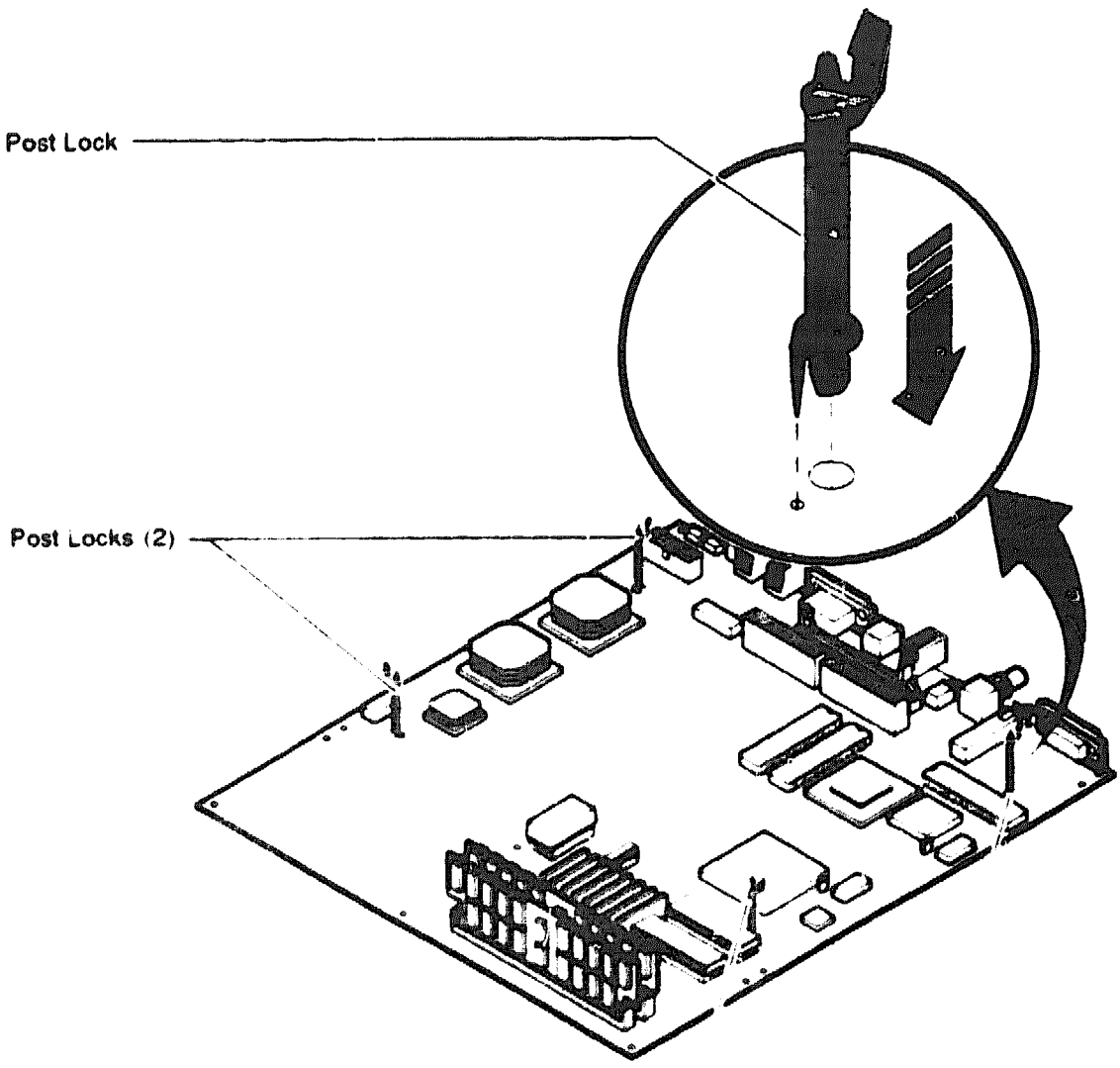
Take the scanline coprocessor module you removed from the Model 30 and install it in the Model 76 system unit by completing the following steps:

1 **Transfer the alligator clip of the antistatic wrist strap from the Model 30 system unit to the Model 76 system unit. (See Section 2.10.)**

2 **Take the four post locks from the Model 76 upgrade kit parts bag and snap them into place in the mounting holes on the system board, as shown in Figure 3–21.**

Caution *Do not grasp the scanline coprocessor module by the corners when you are adding it to the system unit. The timing buffer chip located underneath the scanline coprocessor module can be easily damaged by any pressure exerted on it. (See Figure 3–12.)*

Figure 3–21 Mounting Post Locks on the Model 76 System Board



3 Align the set of connectors on the underside of the scanline coprocessor module with the set of connectors on the system board. The components side of the scanline coprocessor module should be facedown.

Figure 3–22 shows the top view of the scanline coprocessor module being installed in the system unit. Figure 3–23 shows the side view of the scanline coprocessor module in relation to the post locks and connectors.

4 **Press the scanline coprocessor module firmly downward until it locks onto the four system board post locks. Figure 3–22 shows where to press on the scanline coprocessor module to ensure a good connection.**

Figure 3–22 Adding a Scanline Coprocessor Module—Top View

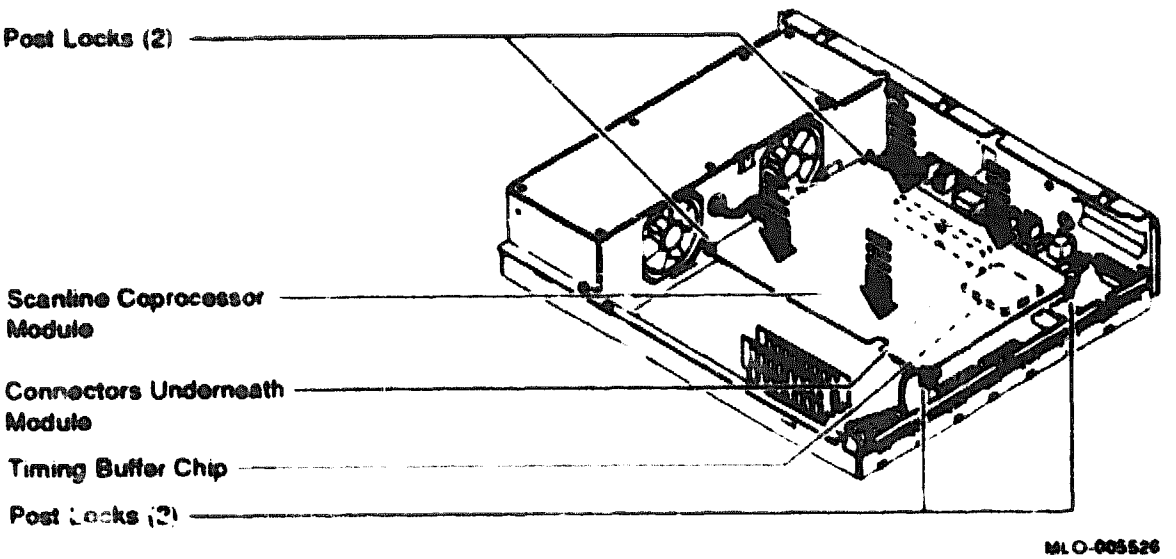
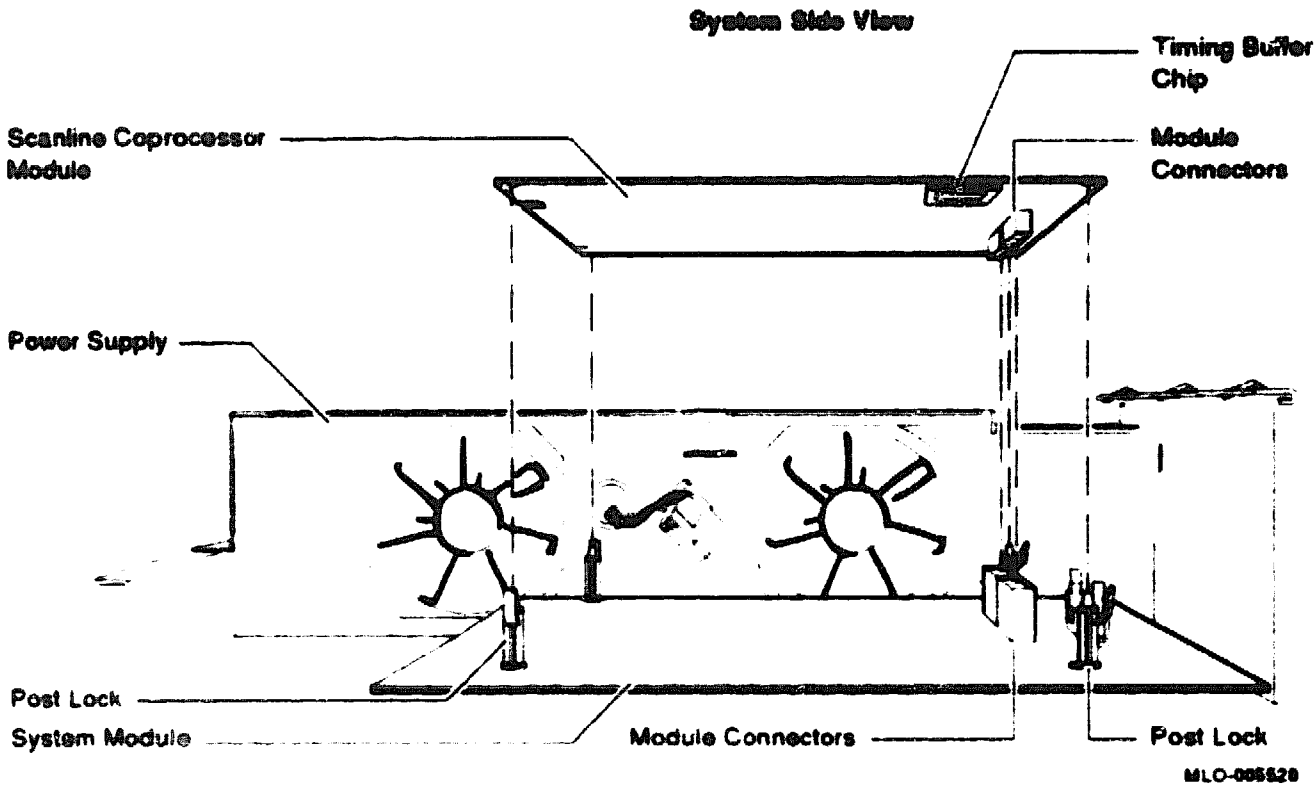


Figure 3–23 Adding a Scanline Coprocessor Module—Side View



3.3.9 Replacing the Model 30 Drive Plate

At this point you should restore the Model 30 system unit before proceeding with the upgrade to the Model 76 system.

To replace the drive plate in the Model 30 system unit, follow these steps.

Caution *When you are replacing 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.*

1. Slide the drive plate toward the back of the system, as shown in Figure 3–24. Make sure that the three screws on the right side of the drive plate go inside the slide mount openings on the side of the system unit and the SCSI system cable goes through the drive plate handle. Make sure that the power supply cable remains above the drive plate.

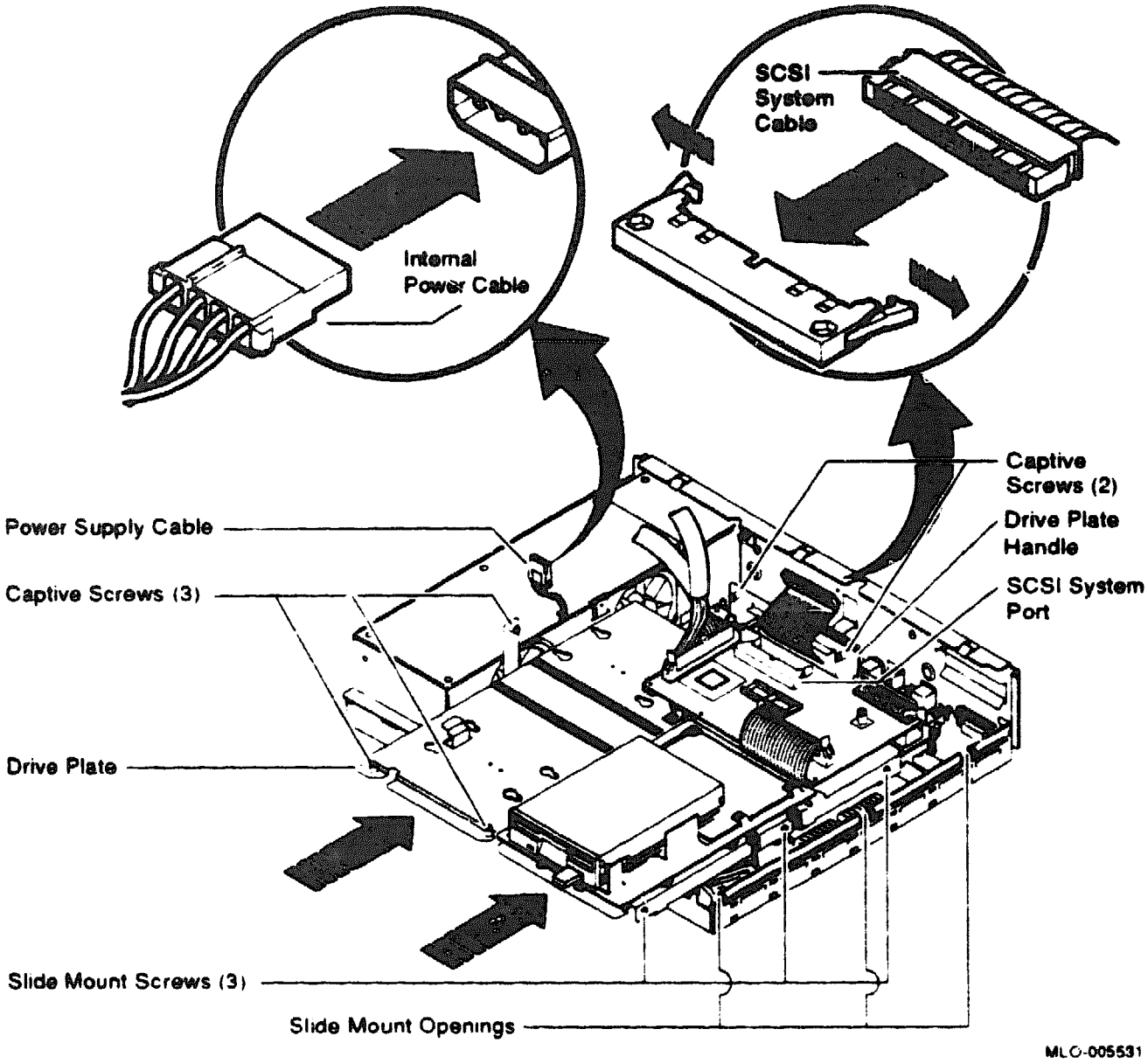
2 Tighten the captive screws on the drive plate. (See Figure 3–24.)

3 Tighten the three Phillips-head slide mount screws. (See Figure 3–24.)

4 Reconnect the internal power cable to the internal power supply. (See Figure 3–24.)

5 Reconnect the SCSI system cable that goes from the system board to the SCSI system port. (See Figure 3–24.)

Figure 3–24 Replacing the Drive Plate



3.3.10 Replacing the Model 30 System Unit Cover

To prepare the Model 30 system for return to Digital, follow these steps:

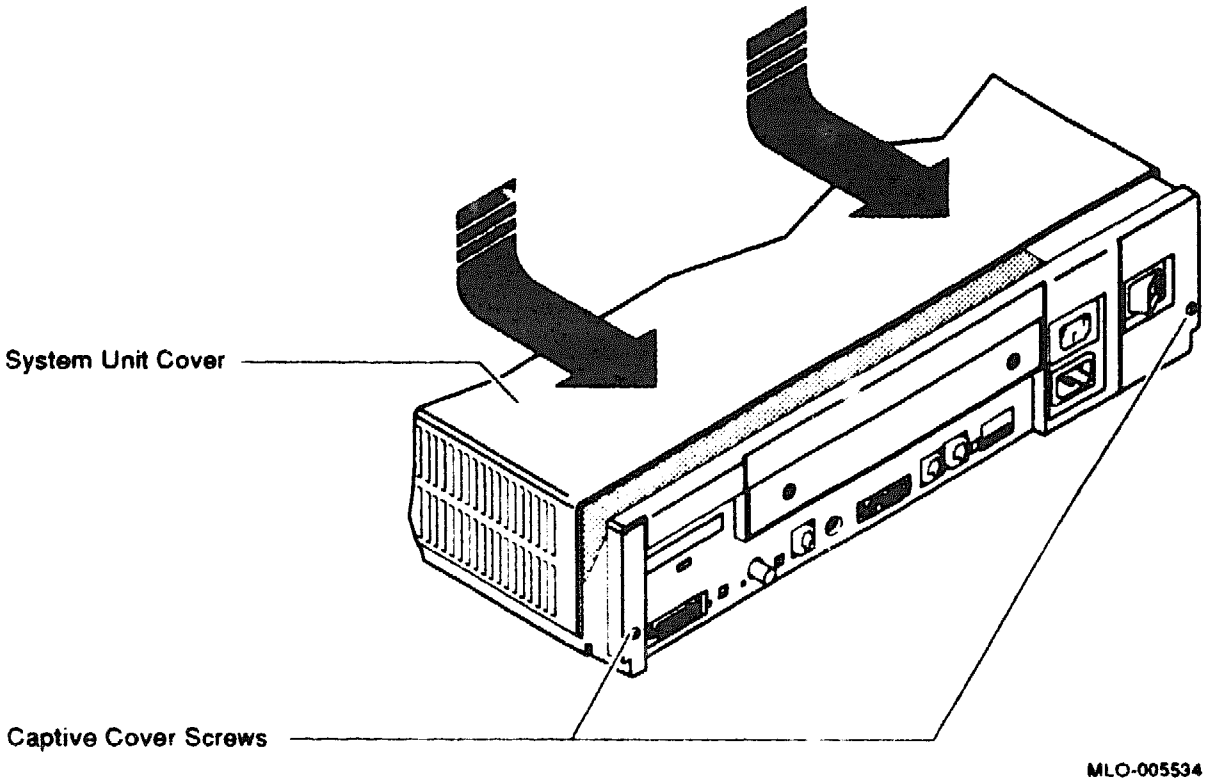
1 Before replacing the system unit cover, check that you have left the following components inside the Model 30 unit. These devices are not supported by, and will not function in, the Model 76 system.

- System board (with CPU)
- SCSI mass storage controller module or SCSI/ST506 mass storage controller module
- Memory boards
- RX23 diskette drive, if present
- Drive plate
- SCSI signal cable and internal power supply cable

2 Make sure that the FCC metal fingers on the inside top of the system unit cover are properly aligned before replacing the system unit cover.

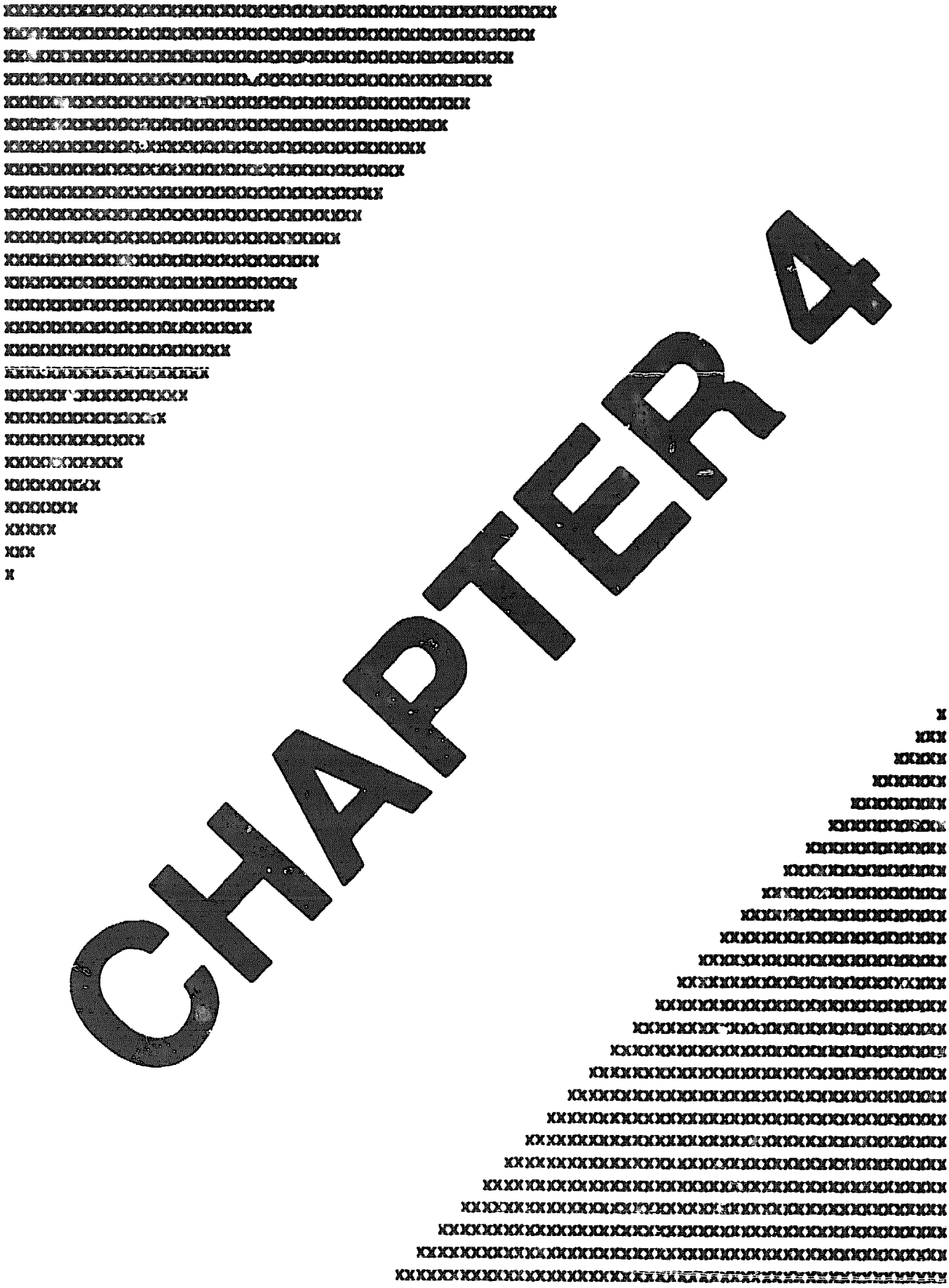
3 Replace the system unit cover and tighten the two cover screws, as shown in Figure 3–25.

Figure 3–25 Replacing the System Unit Cover



3.4 Completing the Model 76 Upgrade

At this point you are ready to complete the upgrade from a Model 30 system to a Model 76 system. Refer to Chapter 6 for information on how to complete the upgrade procedure.


CHAPTER 4

4

Upgrading a VAXstation 3100 Model 38 System

This chapter explains how to perform the following tasks:

- Prepare the Model 38 system (Section 4.1)
- Identify the configuration of the Model 38 drive plate (Section 4.2)
- Begin the upgrade to a Model 76 system (Section 4.3)

4.1 Preparing the Model 38 System

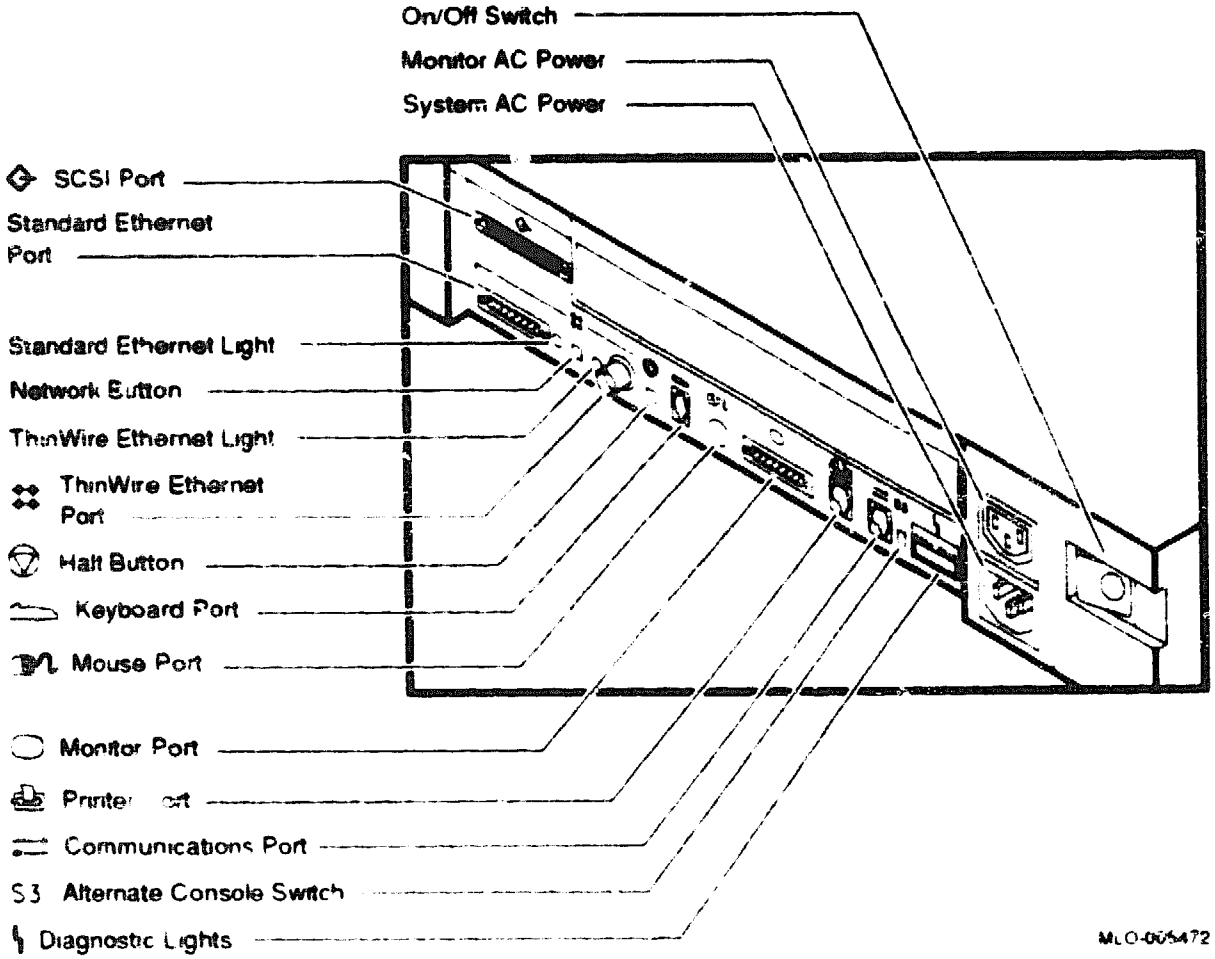
Follow these steps to prepare the Model 38 system unit:

1 **If there are files stored on a system disk, make a backup copy following the instructions in the software documentation.**

Note *Before turning the system off, see the operating system documentation for shutdown procedures.*

2 **Put the Model 38 system into console mode by pressing the halt button on the rear of the system. See Figure 4–1 for the location of the halt button on the back of the Model 38 system unit.**

Figure 4–1 Model 38 System Unit Ports and Icons



3 **Run the TEST 50 diagnostic test as described in Section 2.3 to determine the Ethernet hardware address, determine the type of graphics module in the Model 38 system, if present, and compare SCSI IDs of the system devices.**

4 **After shutting down the operating system, turn your system components off (O) in the following order:**

1 **Expansion boxes**

2 **Printer, modem, and other equipment**

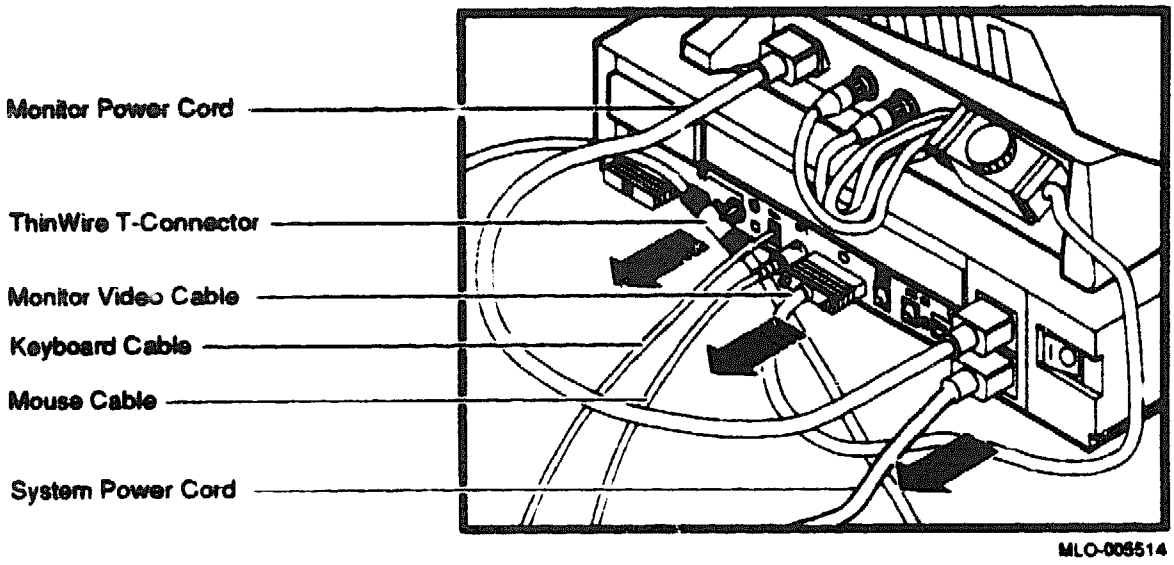
3 **System unit and monitor**

5 **Disconnect the system power cord first from the wall and then from the system unit. Save the power cord for use with the Model 76 system later.**

6 **Before removing the system cover, disconnect the following cables from the system unit in the order given (see Figure 4–2):**

- **Monitor power cord**
- **Keyboard cable**
- **Mouse cable**
- **ThinWire Ethernet or standard Ethernet cable**
- **SCSI terminator or external SCSI cable**

Figure 4–2 Disconnecting the System Unit and Monitor Cables



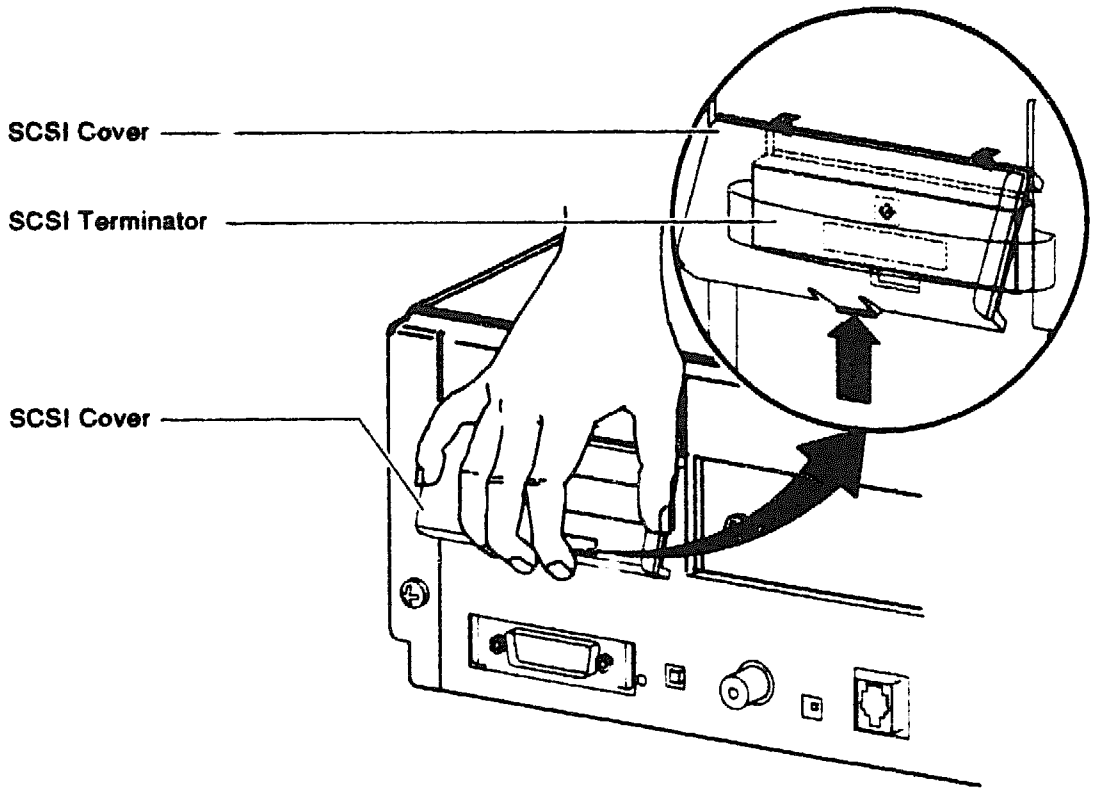
7 Disconnect the monitor video cable by turning the connector thumbscrews to the left and then removing the cable from the system unit.

8 Remove the monitor from the top of the system unit and set it aside. The monitor is heavy; you may require the assistance of a second person to lift it.

9 Disconnect the Ethernet cable from the system unit.

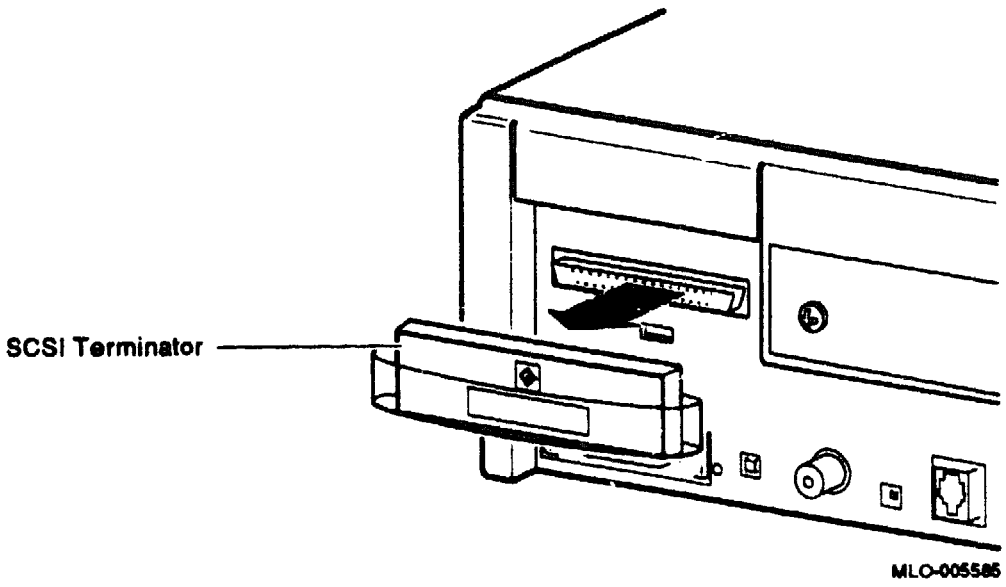
10 Remove the SCSI terminator access door, if present, from the back of the Model 38 system unit. (See Figure 4–3.)

Figure 4–3 Removing the SCSI Terminator Access Door



11 Disconnect either the SCSI terminator or the external SCSI cable from the SCSI port on the back of the system unit. Figure 4–4 shows how to remove the SCSI terminator.

Figure 4–4 Removing the SCSI Terminator

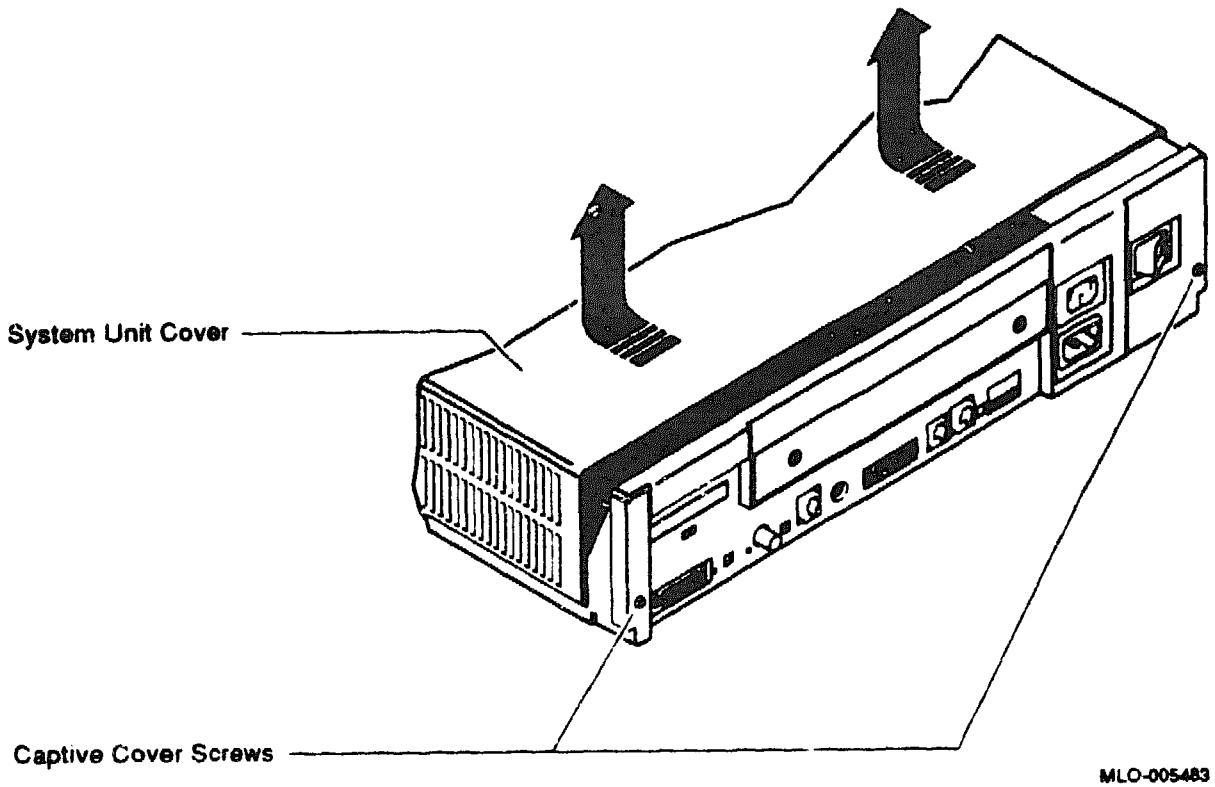


Caution *To protect system devices from damage due to static charge, wear an antistatic wrist strap when removing devices from and adding devices to the system units. (See Section 2.10.)*

12 Remove the system cover as follows:

- Locate the two captive cover screws at the back and on the outside edges of the system unit. Unscrew these screws, using a Phillips-head screwdriver, until they are very loose; do not remove them. Figure 4–5 shows the location of the captive cover screws.
- Slide the system unit cover forward toward the front of the system unit and then lift it up and away from the system unit.

Figure 4–5 Removing the System Unit Cover

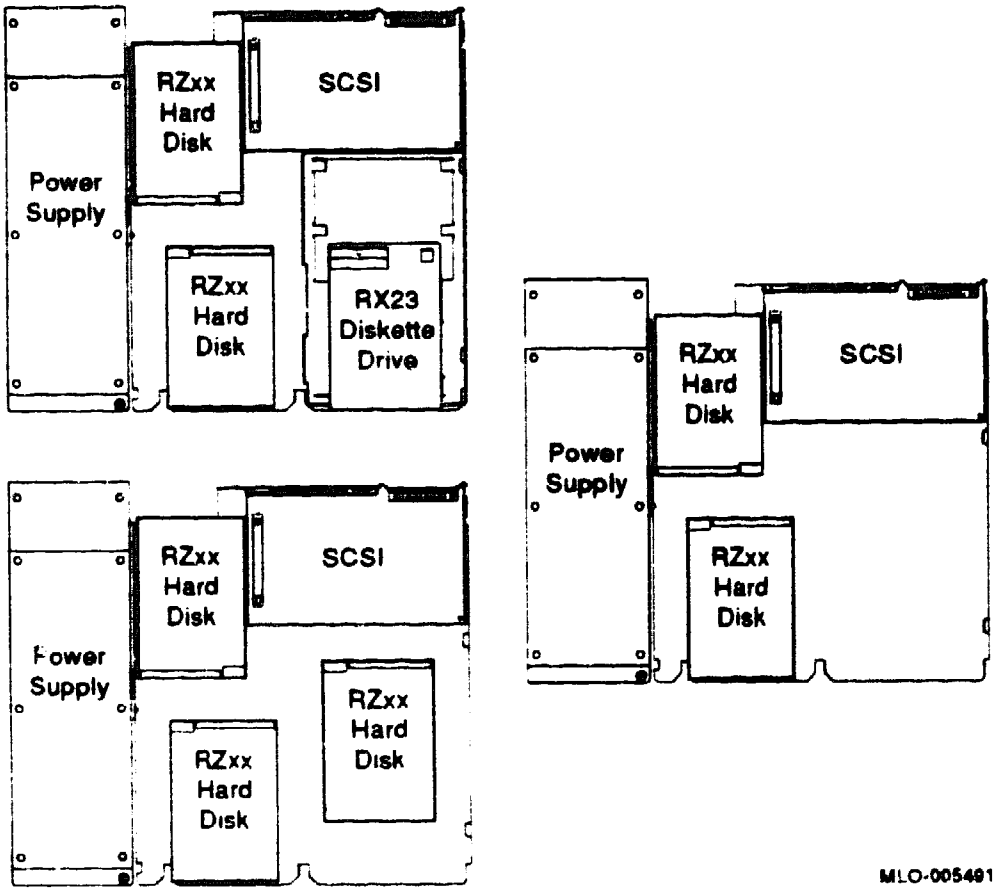


Warning *Only authorized Digital Service representatives should attempt to open the power supply located inside the system unit. There are dangerous voltages inside the power supply, and there are no user-serviceable parts.*

4.2 Common Configurations of the VAXstation 3100 Model 38 Drive Plate

There are numerous possible configurations for the VAXstation 3100 Model 38 drive plate. The Model 38 system can have up to three RZxx hard disks, or an RX23 diskette drive and two RZxx hard disks. Figure 4–6 shows the three most common configurations of the Model 38 drive plate.

Figure 4–6 Common Configurations of the Model 38 Drive Plate



4.3 Beginning the Upgrade of the Model 38 System to a Model 76 System

This section tells you how to remove the following components from the Model 38 system and install them in the Model 76 system unit. It is important that you remove these devices in the order in which they are discussed. At the end of this chapter, you will proceed to Chapter 6 to complete the upgrade procedure.

- **RZxx hard disks (Section 4.3.1)**
- **SCSI mass storage controller module (Section 4.3.2)**
- **Drive plate (Section 4.3.4)**
- **Graphics coprocessor module, if present (Section 4.3.5)**
- **Scanline coprocessor module (also known as the SPX color graphics accelerator), if present (Section 4.3.6)**
- **Ethernet ROM (Section 4.3.7)**
- **Scanline coprocessor module ROM (Section 4.3.9)**

The following parts must be returned with the Model 38 system, as per the customer's upgrade agreement with Digital. These devices are not supported by, and will not function in, the Model 76 system.

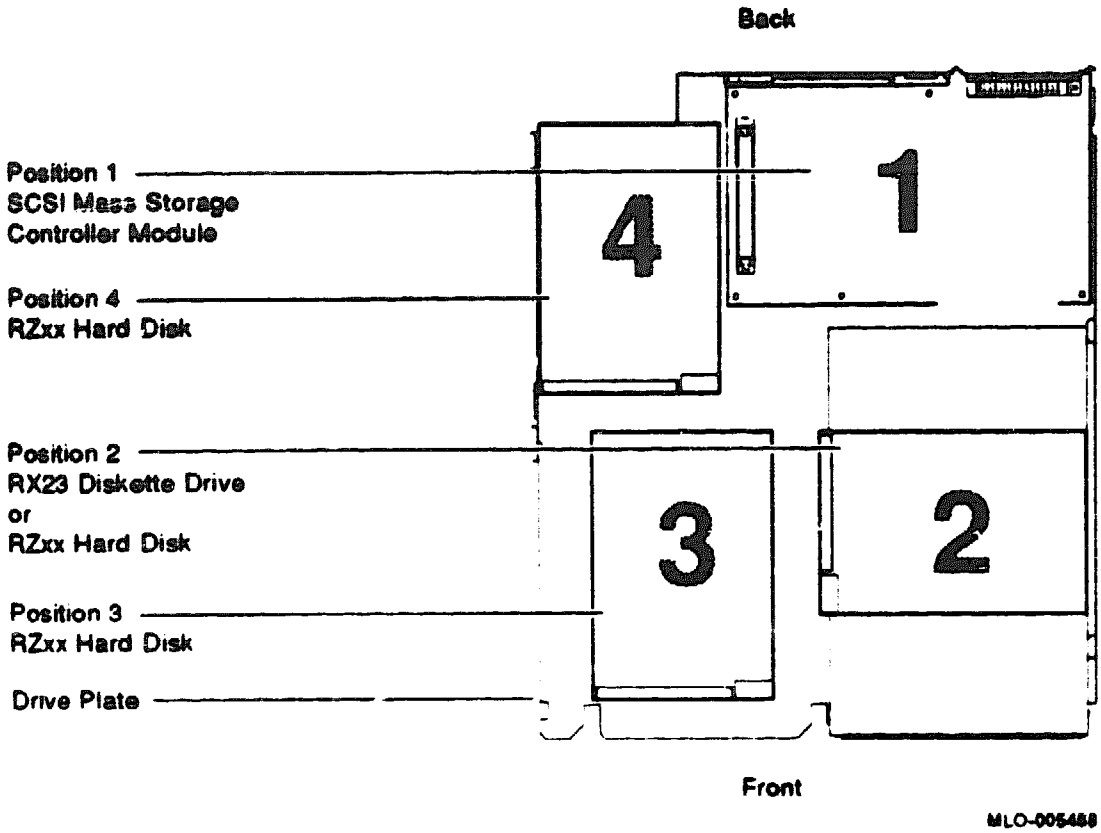
- System unit with power supply and cover
- System board (with central processing unit (CPU))
- SCSI mass storage controller module
- Memory boards
- RX23 diskette drive, if present
- Drive plate
- SCSI signal cable and internal power supply cable

4.3.1 Removing the RZxx Hard Disks from the Model 38 Drive Plate

It is necessary for you to remove any RZxx hard disks from the Model 38 drive plate. If there is an RX23 diskette drive on the Model 38 system, you will leave it in place on the Model 38 drive plate for return to Digital, per the upgrade agreement.

On the Model 38 system, there are four positions on the drive plate where hard disks, diskette drives, and a SCSI mass storage controller will be located. (See Figure 4–7.)

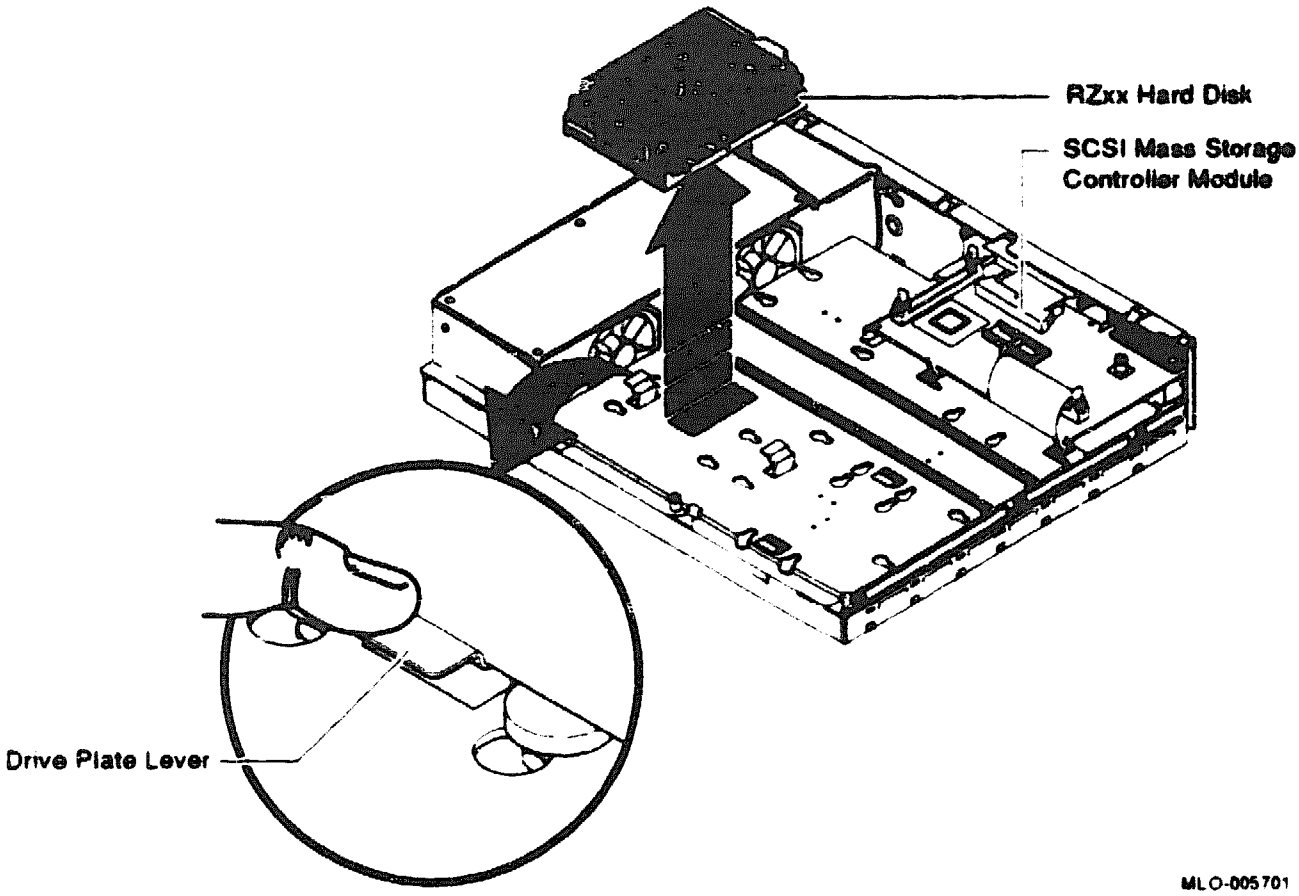
Figure 4–7 Model 38 Drive Plate Positions



To remove RZxx hard disks from positions 2 and 3 on the Model 38 drive plate, follow these steps:

1 Push down the drive plate lever and slide the RZxx hard disk over the lever until the hard disk comes up out of the keyhole slide mounts. (See Figure 4–8.)

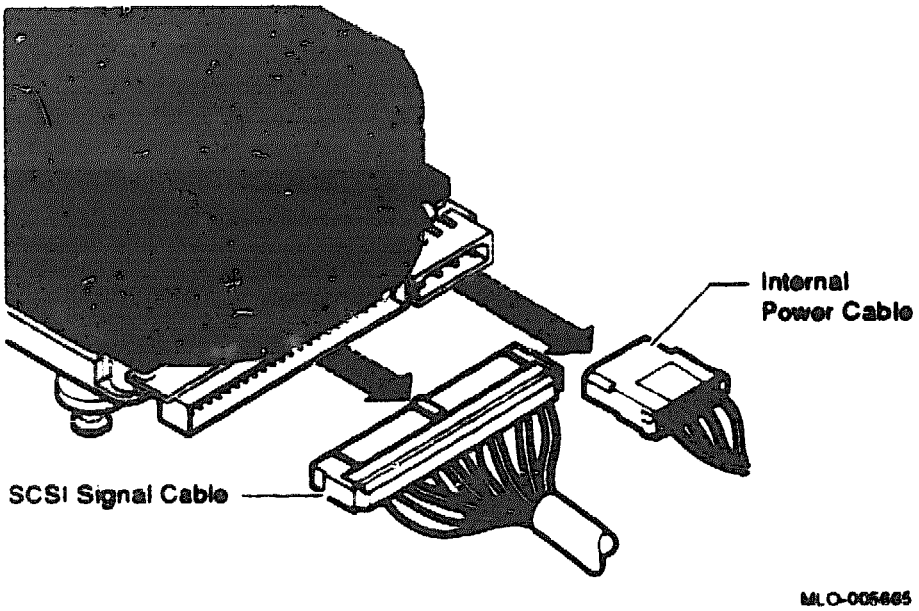
Figure 4–8 Removing RZxx Hard Disks from the Drive Plate



2 Disconnect the SCSI signal cable from all RZxx hard disks. (See Figure 4–9.)

3 Disconnect the internal power cable from all RZxx hard disks. (See Figure 4–9.)

Figure 4–9 Disconnecting the SCSI Cable and the Power Cable from RZxx Hard Disks



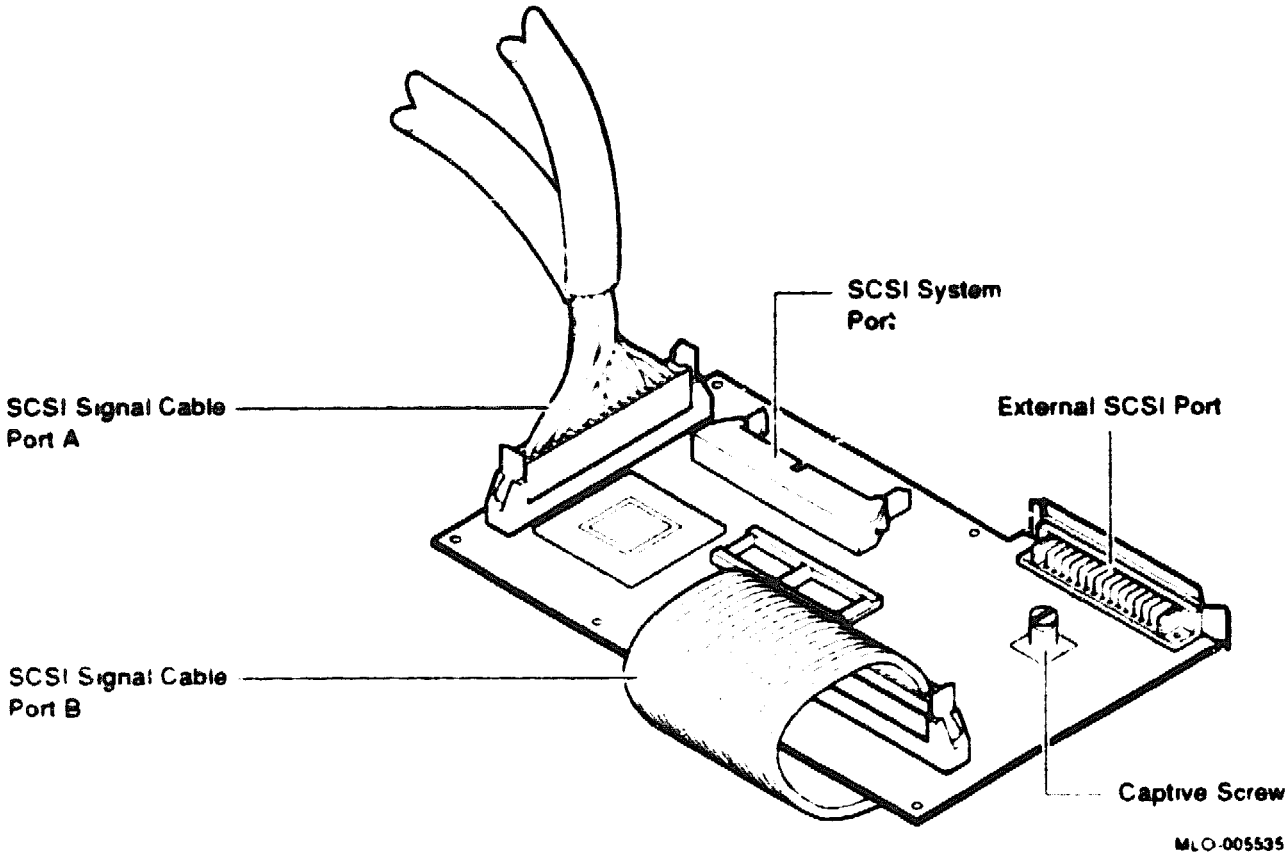
4 Set the RZxx hard disk aside.

5 If there is an RZxx hard disk in position 4 on the drive plate (see Figure 4–7), you must remove the SCSI mass storage controller module from the drive plate before you can remove the RZxx hard disk. See Section 4.3.2 for instructions on how to remove the SCSI mass storage controller module; then remove the RZxx hard disk drive from position 4, following the same procedure you used to remove hard disks from positions 2 and 3.

4.3.2 Removing the SCSI Mass Storage Controller Module from the Model 38

If there is an RZxx hard disk in position 4 on the Model 38 drive plate, you need to remove the SCSI mass storage controller module (Figure 4–10) from the drive plate before you can remove the RZxx hard disk from position 4.

Figure 4–10 SCSI Mass Storage Controller Module



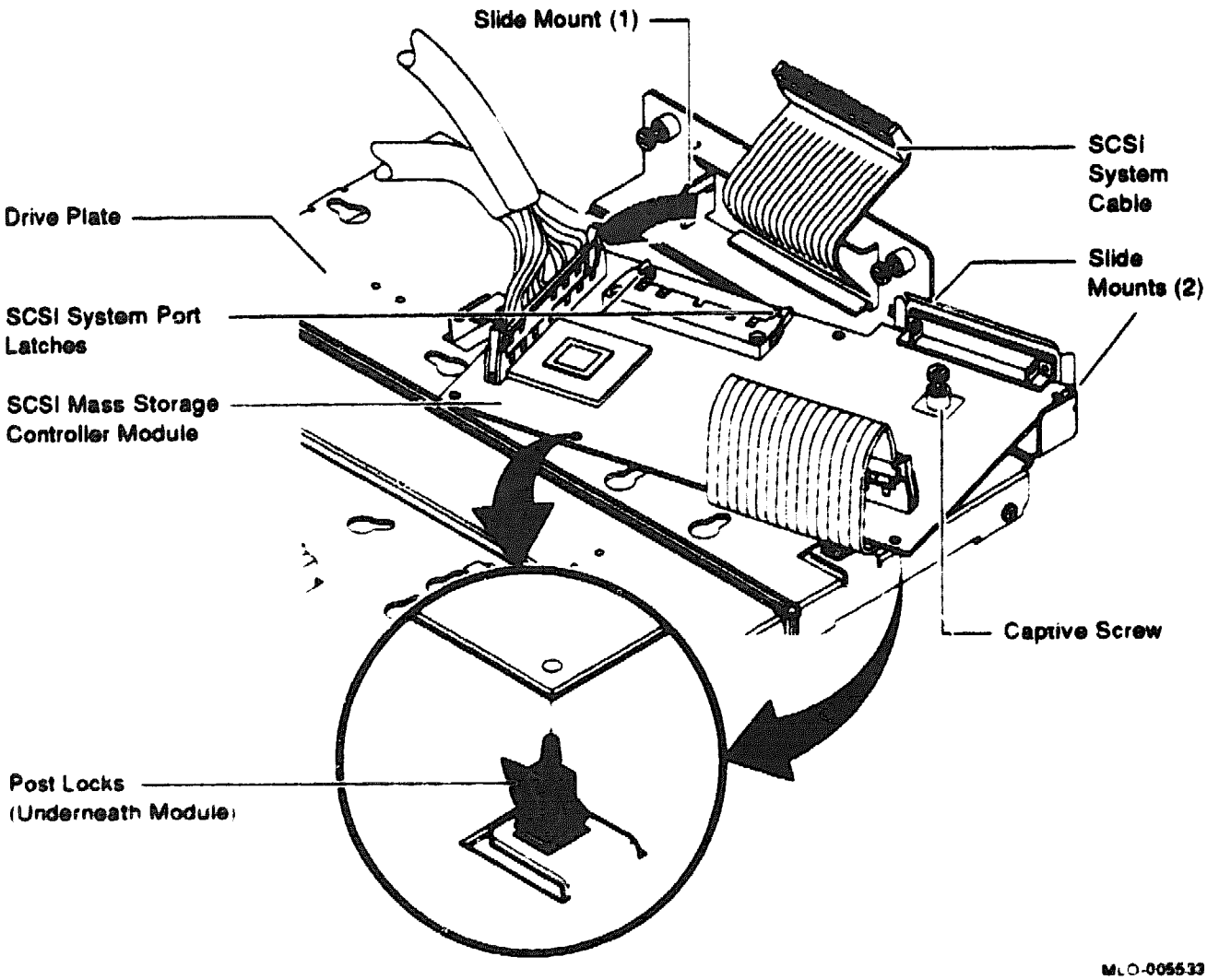
To remove the SCSI mass storage controller module, follow these steps:

1 Unscrew the captive screw on the SCSI mass storage controller module.

2 Locate the post locks under the front edge of the SCSI mass storage controller module. Pull the post-lock latches outward and lift the front of the SCSI mass storage controller module up until it is free.

3 Locate the SCSI system port on the SCSI mass storage controller module. (See Figure 4–10.)

Figure 4–11 Removing the SCSI Mass Storage Controller Module



4 Disconnect the SCSI system cable from the SCSI mass storage controller module by opening the latches on the SCSI system port outward and removing the SCSI system cable (Figure 4–11).

5 Remove the SCSI mass storage controller module from the drive plate by rotating it to the right (as shown in Figure 4–11) and sliding it forward, away from the back of the drive plate. Set the SCSI mass storage controller module aside.

6 **Remove the RZxx hard disk from position 4, as described in Section 4.3.1. Then follow the steps in Section 4.3.3 to replace the SCSI mass storage controller on the Model 38 drive plate for return to Digital.**

4.3.3 Replacing the SCSI Mass Storage Controller Module in the Model 38

To replace the SCSI mass storage controller module, follow these steps:

1 Locate the three slide mounts at the back of the drive plate, as shown in Figure 4–11. Slide the SCSI mass storage controller module inside the slide mounts so that the module's right corner goes inside the right slide mount first. Two holes in the side of the module opposite the slide mounts should be directly above the two post locks on the drive plate.

2 Press the SCSI mass storage controller module downward into the locked position.

3 Tighten the captive screw on the SCSI mass storage controller module.

4 Tuck the unused connector on the SCSI Port B signal cable under the SCSI mass storage controller module, as shown in Figure 4–10.

4.3.4 Removing the Model 38 Drive Plate

Remove the drive plate from the Model 38 system unit by completing the following steps:

1 Transfer the alligator clip of the antistatic wrist strap from the Model 76 system unit to the Model 38 system unit.

2 Disconnect the internal power cable from the internal power supply. (See Figure 4–12.)

3 Disconnect the SCSI system cable from the SCSI system port. (See Figure 4–12.)

4 Loosen the five captive screws. (See Figure 4–12.)

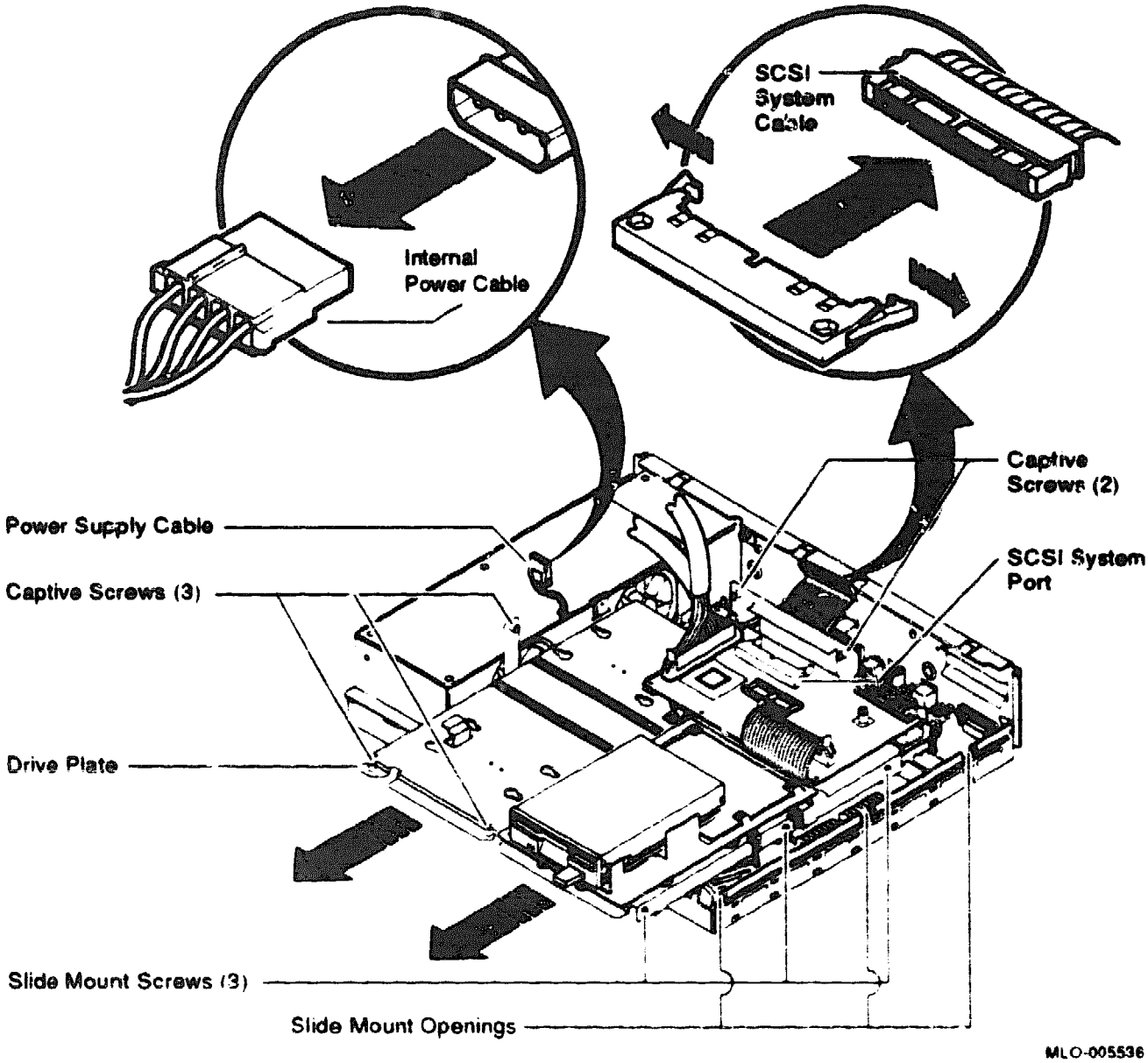
5 Loosen the three Phillips-head slide mount screws on the side of the drive plate. (See Figure 4–12.)

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.

6 **Slide the drive plate toward the front of the system unit and lift it up. (See Figure 4–12.)**

Figure 4–12 Removing the Drive Plate



4.3.5 Removing the Graphics Coprocessor Module from the Model 38 System Unit

In Section 2.3 you determined what type of graphics module is in the Model 38 system. If it is a graphics coprocessor module, read this section for instructions on how to remove it. If it is a scanline coprocessor module, proceed to Section 4.3.6. If the Model 38 system has no graphics module, proceed directly to Section 4.3.7.

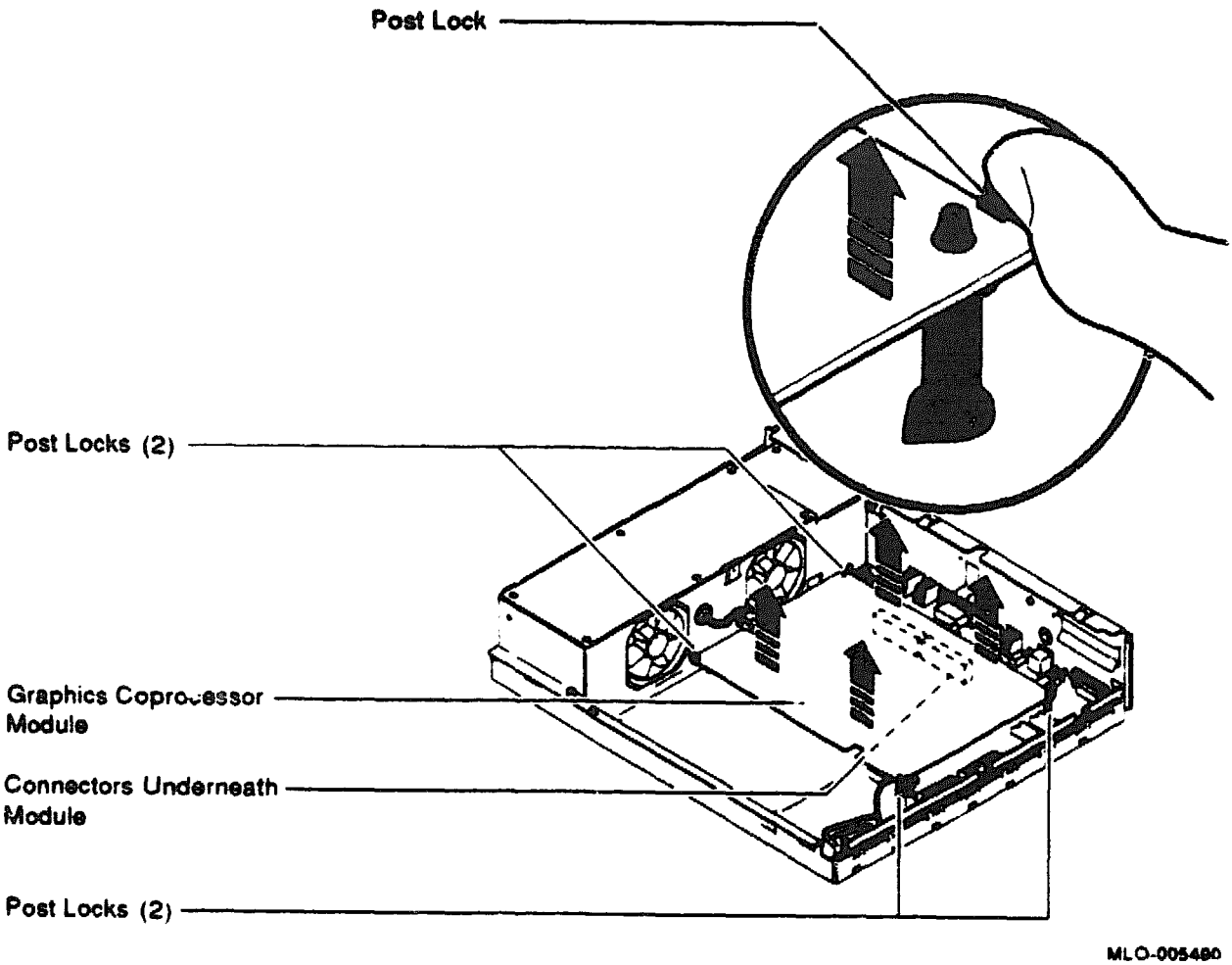
To remove the graphics coprocessor module from the Model 38 system, follow these steps:

1 To protect the graphics coprocessor module from damage due to static charge, it is important that you discharge any electrical static charge that may have built up and that you use an antistatic wrist strap while handling the graphics coprocessor module. See Section 2.10 for information on this procedure.

2 Lay an antistatic mat on a flat, level surface. You will place the graphics coprocessor module on the mat once you have removed it from the Model 38 system.

3 Remove the graphics coprocessor module from the four post locks by pulling back the tabs and then lifting the graphics coprocessor module up and off of the system board. Two connectors will disconnect as you lift the graphics coprocessor module. (See Figure 4–13.)

Figure 4–13 Removing a Graphics Coprocessor Module from the System Unit



4 Set the graphics coprocessor module on the antistatic mat. You will add the graphics coprocessor module to the Model 76 system unit after you have exchanged the Ethernet ROMs in the Model 38 and Model 76 systems.

4.3.6 Removing the Scanline Coprocessor Module from the Model 38 System Unit

In Section 2.3 you determined what type of graphics module is in the Model 38 system. If it is a scanline coprocessor module, read this section for instructions on how to remove it. If it is a graphics coprocessor module, go back to Section 4.3.5. If the Model 38 system has no graphics module, proceed directly to Section 4.3.7.

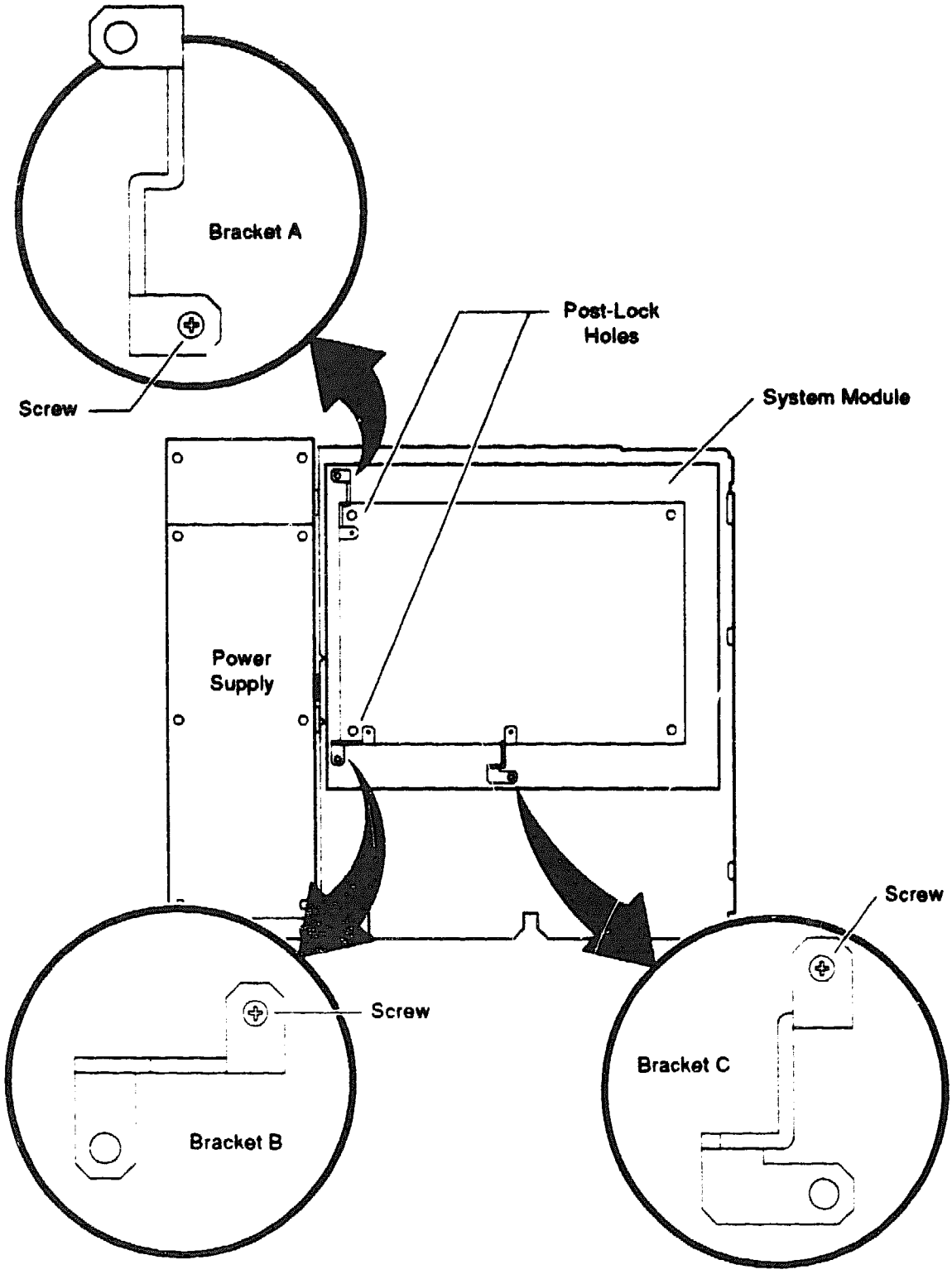
To remove the scanline coprocessor module from the Model 38 system, follow these steps:

1 To protect the scanline coprocessor module from damage due to static charge, it is important that you discharge any static charge that may have built up and that you use an antistatic wrist strap while handling the scanline coprocessor module. See Section 2.10 for information on this procedure.

2 Lay an antistatic mat on a flat, level surface. You will place the scanline coprocessor module on the mat once you have removed it from the Model 38 system.

3 Unscrew and remove the three screws of the mounting brackets that attach the scanline coprocessor to the system board. (See Figure 4–14.) The mounting brackets will remain attached to the system board.

Figure 4–14 Scanline Coprocessor Module Mounting Bracket Locations

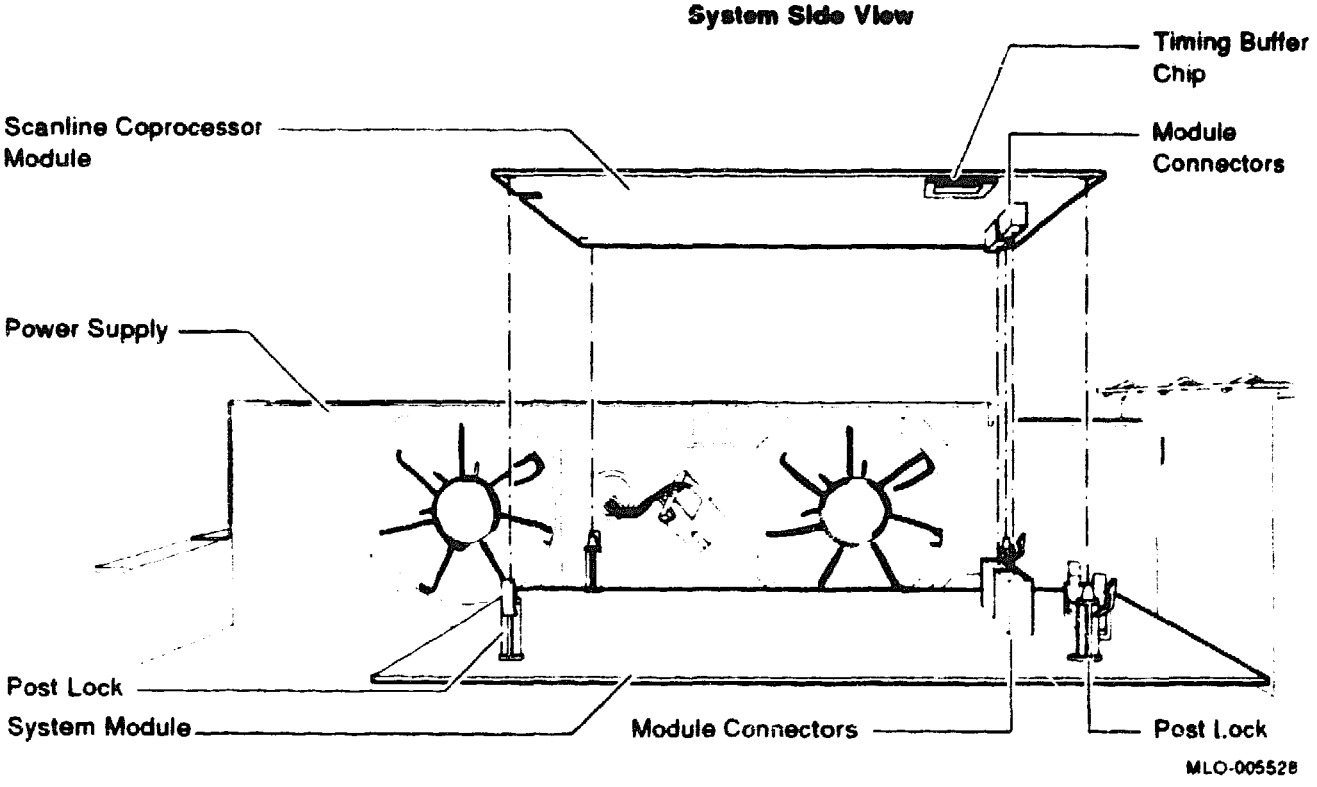


4 **Remove the scanline coprocessor module from the four post locks by pulling back the post-lock tabs. (See Figure 4–15.)**

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 be easily damaged by any pressure exerted on it. (See Figure 4–15.)***

5 **Grasp the scanline coprocessor module in the center, next to the two connectors, and lift it up and off the system board. The two connectors will disconnect as you lift the scanline coprocessor module. (See Figure 4–15.)**

Figure 4–15 Removing a Scanline Coprocessor Module from the System Unit



6 Set the scanline coprocessor module on the antistatic mat. You will add the scanline coprocessor module to the Model 76 system unit after you have exchanged the Ethernet ROMs in the Model 38 and Model 76 systems.

4.3.7 Removing the Ethernet ROM from the Model 38 System Board

To remove the Ethernet ROM from the Model 38 system board, follow these steps:

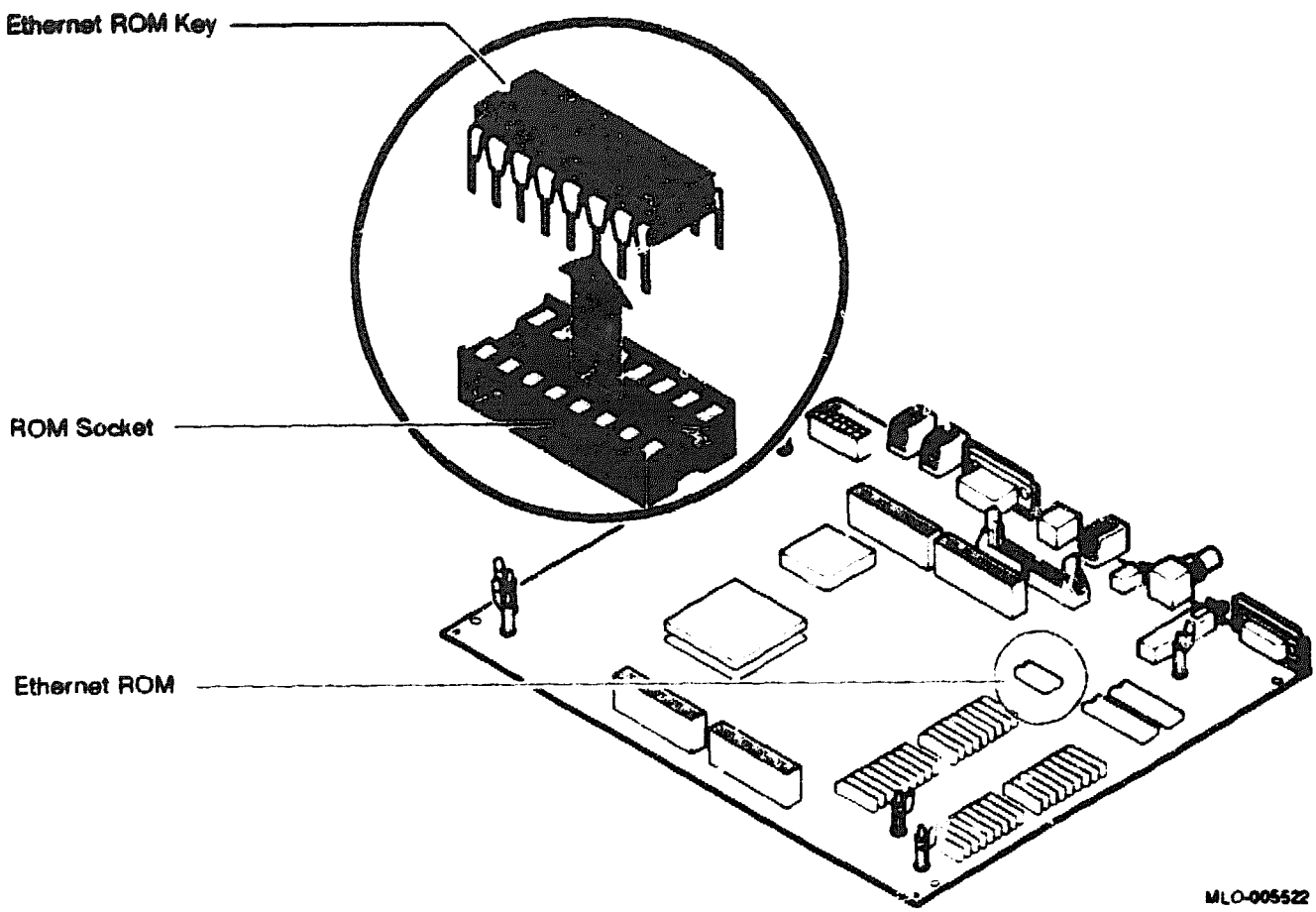
1. Locate the Ethernet ROM on the Model 38 system board. There are a number of ways to identify the Ethernet ROM. It is the only socketed 16-pin chip on the system board; it has distinct manufacturer's markings on top; and written on it is ENET ADRS, an abbreviation for "Ethernet Address." Figure 4–16 shows the location of the Ethernet ROM on the Model 38 system board.

Caution *When you remove the Ethernet ROM, be very careful not to bend the pins on the chip. These pins are fragile and must be intact for you to add the Ethernet chip to the Model 76 system unit.*

2. Remove the Ethernet ROM from the Model 38 system board using a chip puller or a flat-head screwdriver. (See Figure 4–16.)

3. Make sure the pins on the Ethernet ROM are straight after you have removed it from the system board. If the pins are bent, carefully straighten them.

Figure 4–16 Removing the Model 38 Ethernet ROM

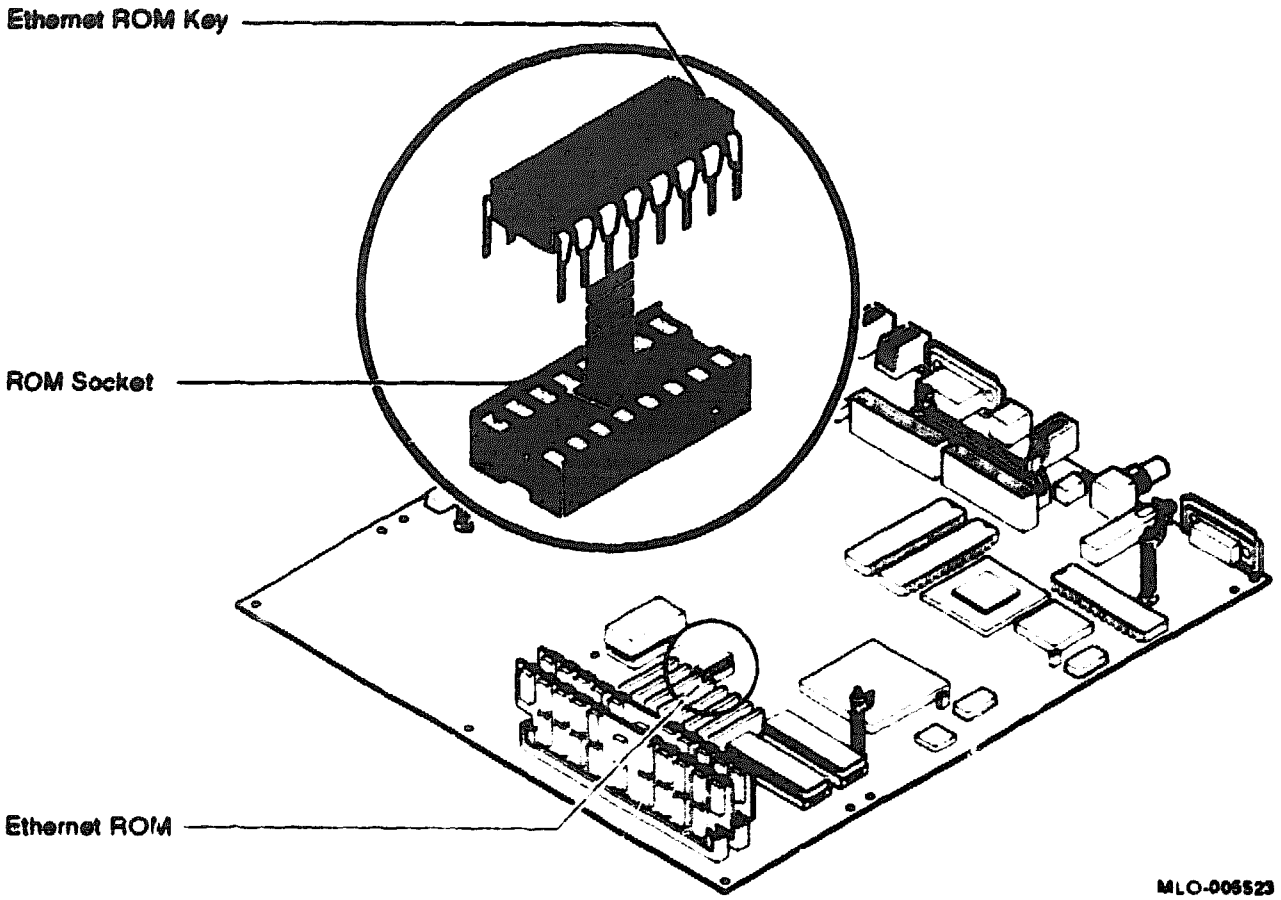


4 5665Transfer the alligator clip of the antistatic wrist strap from the Model 38 system unit to the Model 76 system unit. (See Section 2.10.)

5 Take the Ethernet ROM you have just removed from the Model 38 system board and add it to the Model 76 system board, installing it in the vacant Ethernet ROM socket from which you removed the Model 76 Ethernet ROM. (See Figure 4–17.) Make sure that the pins on the Ethernet ROM are properly aligned in the Ethernet ROM socket before pushing the ROM into place.

Caution *The Ethernet ROM key must face the back of the Model 76 system unit. If you put the Ethernet ROM in backward, the system will not function properly. See Figure 4–17 for the orientation of the Ethernet ROM key and the location of the Ethernet ROM socket on the Model 76 system board.*

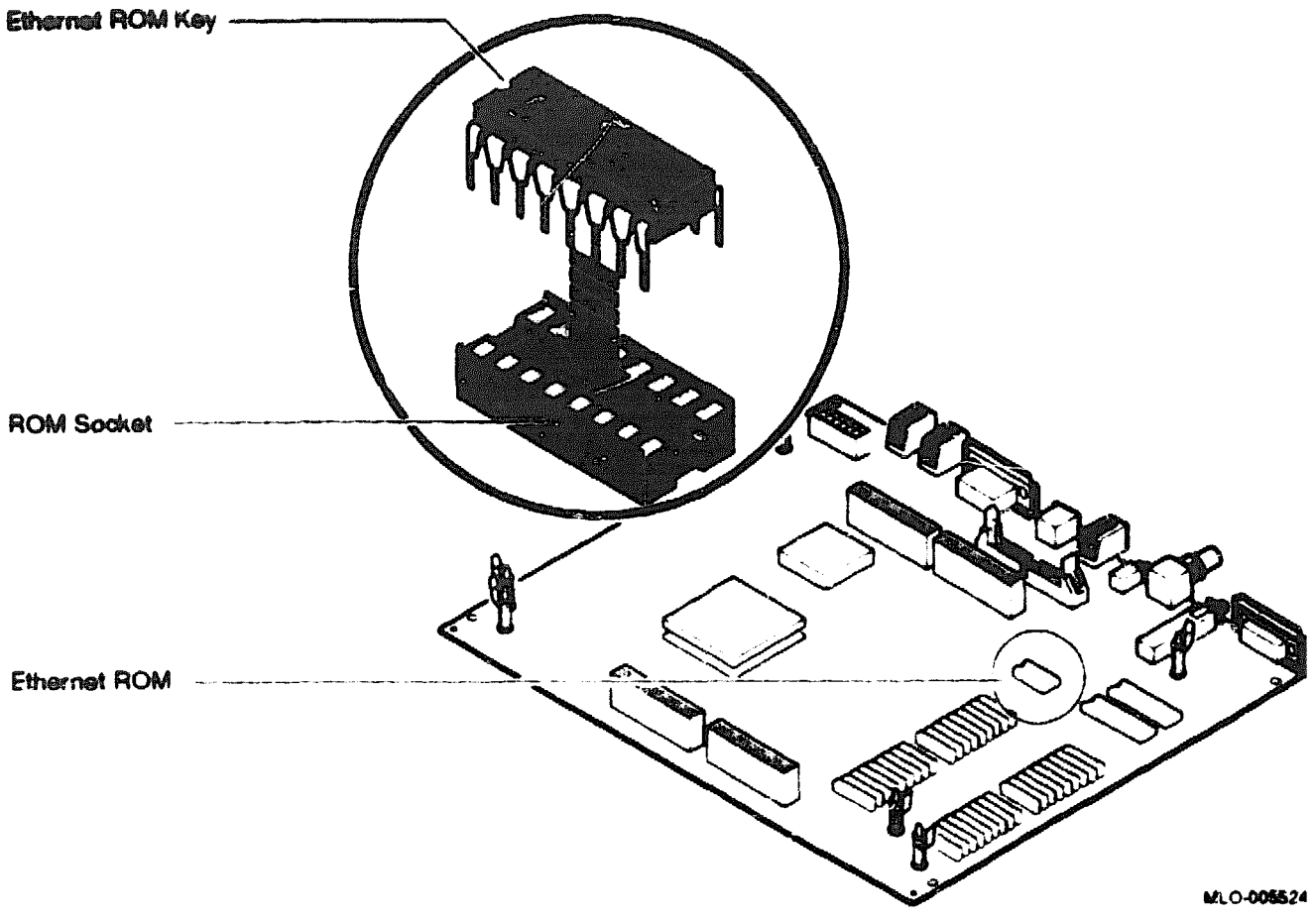
Figure 4–17 Installing the Model 38 Ethernet ROM in the Model 76 System Board



6 Transfer the alligator clip of the antistatic wrist strap from the Model 76 system unit to the Model 38 system unit. (See Section 2.10.)

7 Take the Ethernet ROM you removed from the Model 76 system board and install it in the Ethernet ROM socket on the Model 38 system board. Make sure that the pins on the Ethernet ROM are straight before you attempt to install it. The Ethernet ROM key should face the Model 38 system's power supply. (See Figure 4–18.)

Figure 4–18 Installing the Model 76 Ethernet ROM in the Model 38 System Board



4.3.8 Adding the Graphics Coprocessor Module to the Model 76 System Unit

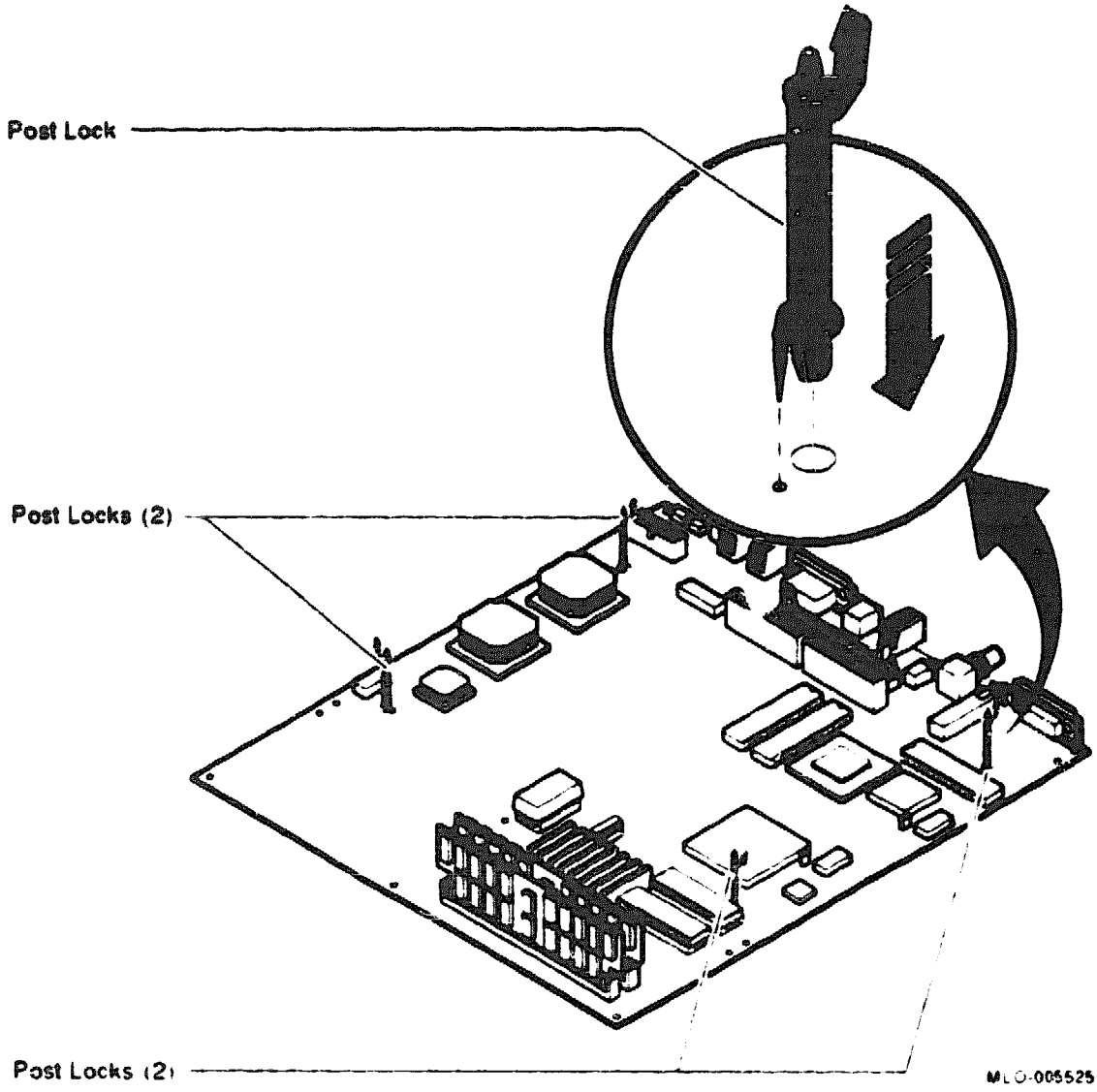
If you are not adding a graphics coprocessor module to the Model 76 system unit, proceed to the next section.

Take the graphics coprocessor module you removed from the Model 38 and install it in the Model 76 system unit by completing the following steps:

1. Transfer the alligator clip of the antistatic wrist strap from the Model 38 system unit to the Model 76 system unit. (See Section 2.10.)

2 **Take the four post locks from the Model 76 upgrade kit parts bag and snap them into place in the mounting holes on the Model 76 system board, as shown in Figure 4–19. Do not use the post locks from the Model 38 system board.**

Figure 4–19 Mounting Post Locks on the Model 76 System Board



3 **Align the set of connectors on the underside of the graphics coprocessor module with the set of connectors on the system board. The components side of the graphics coprocessor module should be face down. Figure 4–20 shows the top view of the graphics coprocessor module being installed in the system unit. Figure 4–21 shows the side view of the graphics coprocessor module in relation to the post locks and connectors.**

Figure 4–20 Adding a Graphics Coprocessor Module—Top View

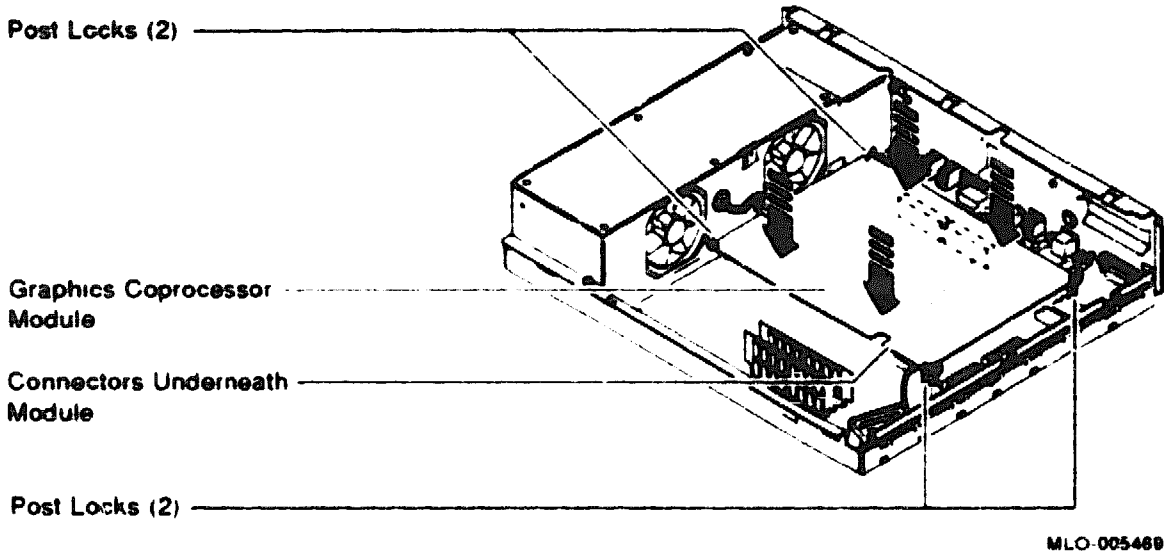
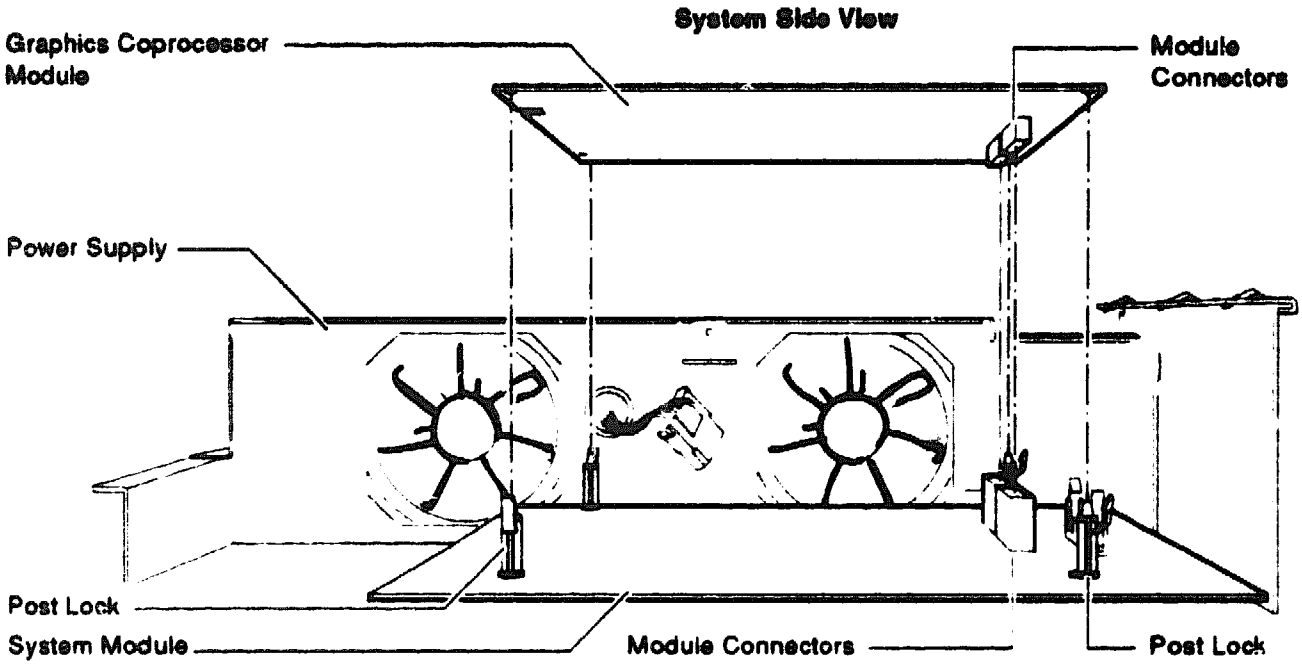


Figure 4–21 Adding a Graphics Coprocessor Module—Side View



4 Press the graphics coprocessor module firmly downward until it locks onto the four system board post locks. The arrows in Figure 4–20 show where to press on the graphics coprocessor module to ensure a good connection.

4.3.9 Changing the ROM in the Scanline Coprocessor Module

If you are not adding a scanline coprocessor module to the Model 76 system unit, proceed to Section 4.3.11.

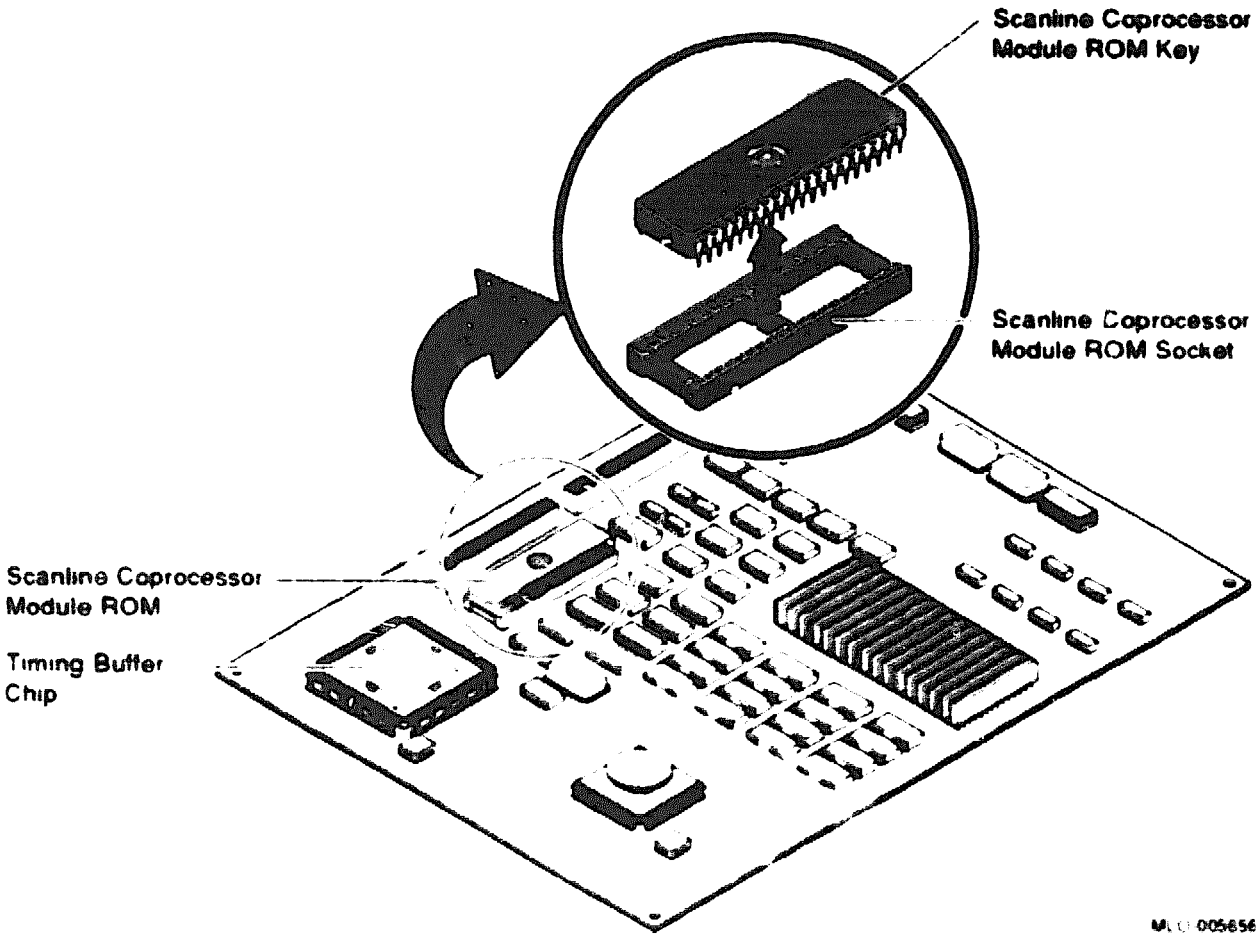
Before you can add the scanline coprocessor module you removed from the Model 38 system to the Model 76 system, you must change the ROM on the scanline coprocessor module. The Model 76 upgrade kit parts bag contains a ROM box with a replacement scanline coprocessor module ROM. Change the ROM on the scanline coprocessor module by completing the following steps:

1 Place the scanline coprocessor module on the antistatic parts mat. The components side of the scanline coprocessor module should be face up. (See Figure 4–22.)

2 **Remove the ROM from the scanline coprocessor module using a chip puller or a flat-head screwdriver. (See Figure 4–22.)**

Note *You may dispose of the scanline coprocessor ROM once you have removed it. It is not necessary for completion of the upgrade procedure.*

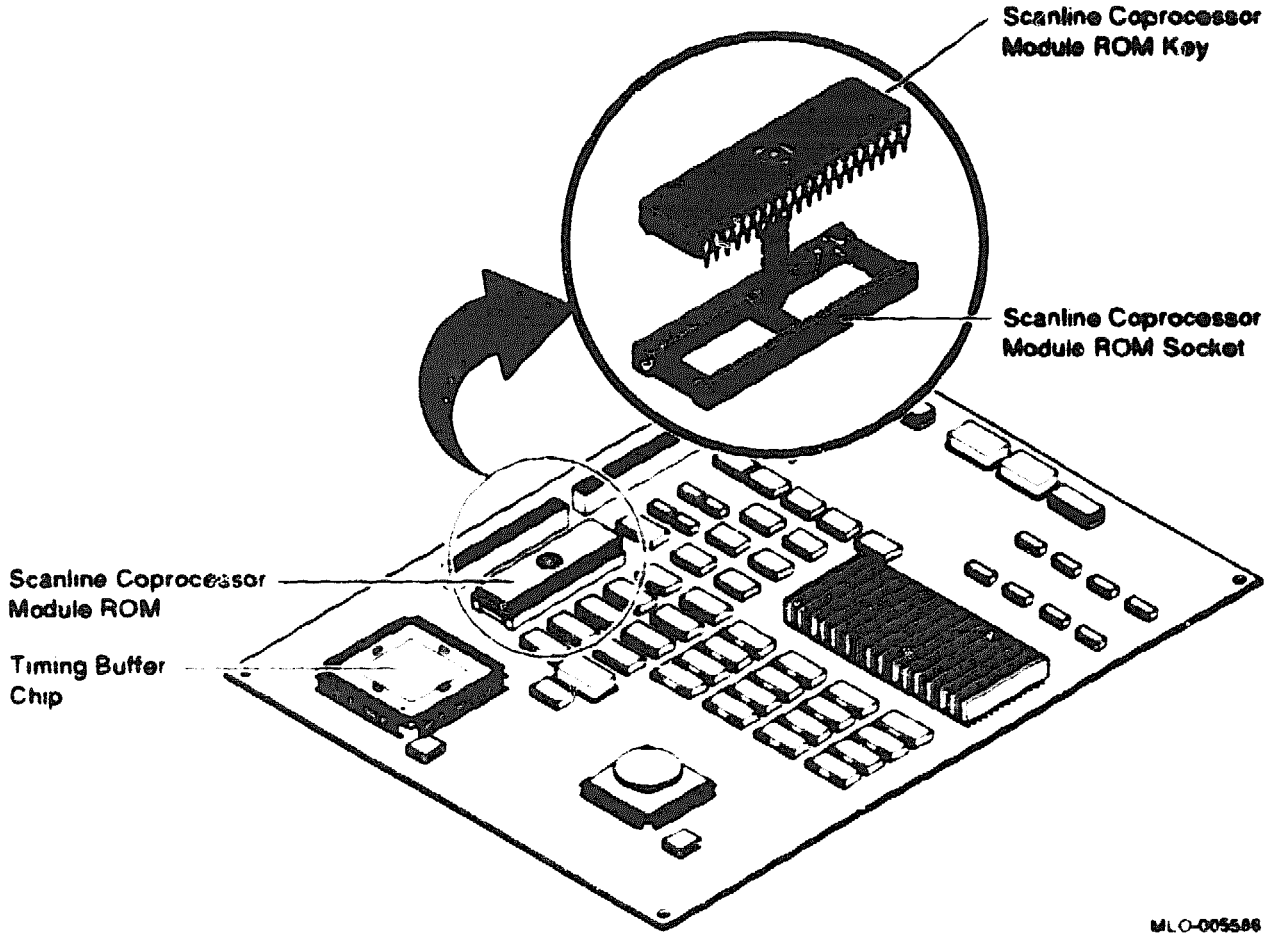
Figure 4–22 Removing the Scanline Coprocessor Module ROM



3 Take the scanline coprocessor module ROM that was shipped with the Model 76 upgrade kit and install it in the vacant ROM socket on the scanline coprocessor module. Make sure that the pins on the scanline coprocessor module ROM that was shipped with the Model 76 upgrade kit are straight before you attempt to install it. The scanline coprocessor module ROM key should face away from the timing buffer chip. (See Figure 4–23.)

Caution *It is important that the scanline coprocessor module ROM be in the correct position on the module, with the ROM key facing away from the timing buffer chip. If the scanline coprocessor ROM is mounted incorrectly, the scanline coprocessor module will not operate, and the Model 76 system may not function correctly.*

Figure 4–23 Installing the Scanline Coprocessor Module ROM



4 Once you have added the new scanline coprocessor module ROM to the scanline coprocessor module, you can add the scanline coprocessor module to the Model 76 system.

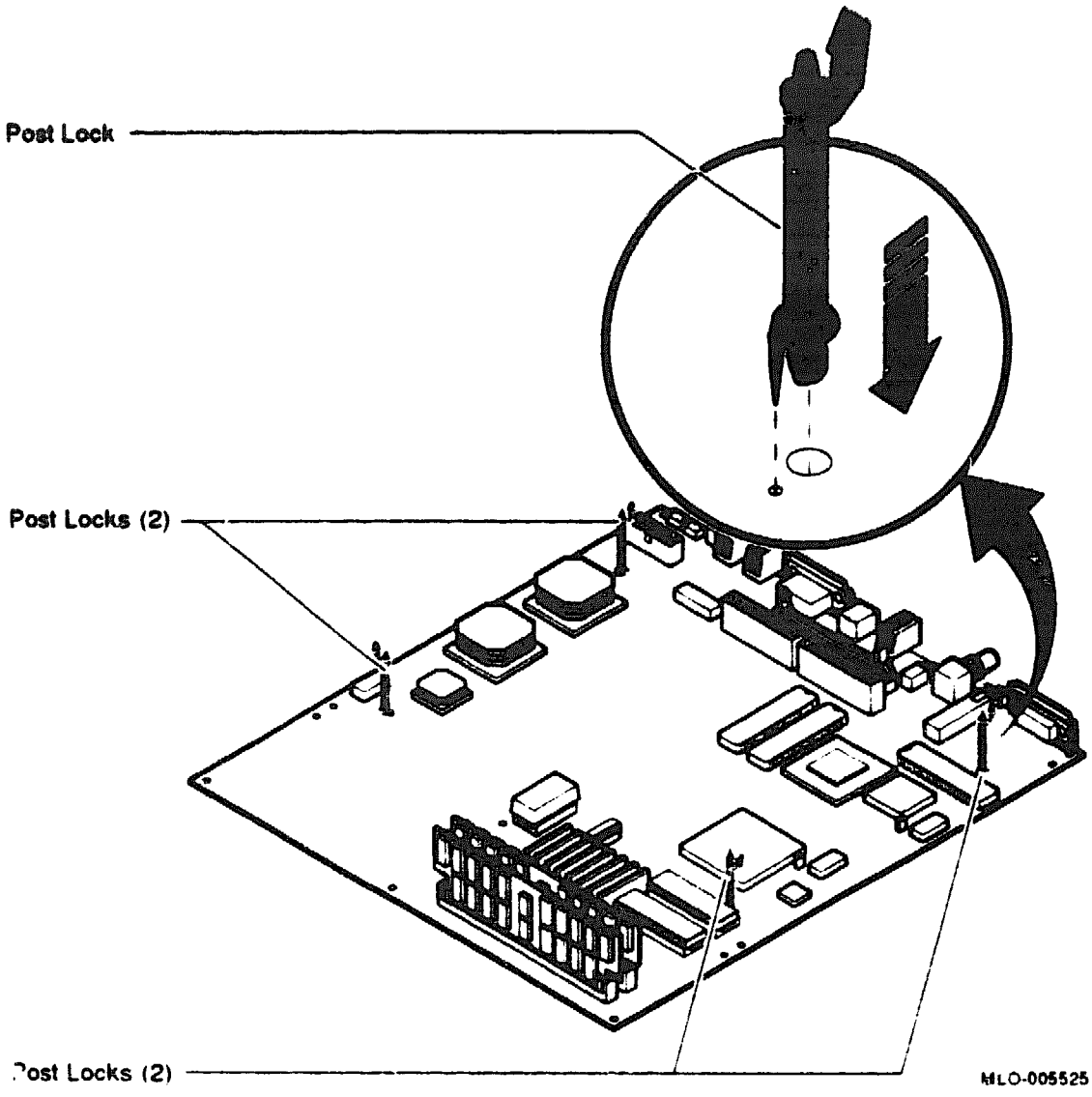
4.3.10 Adding the Scanline Coprocessor Module to the Model 76 System Unit

Install the scanline coprocessor module you removed from the Model 38 in the Model 76 system unit by completing the following steps:

1 Transfer the alligator clip of the antistatic wrist strap from the Model 38 system unit to the Model 76 system unit (See Section 2.10.)

2 Take the four post locks from the Model 76 upgrade kit parts bag and snap them into place in the mounting holes on the system board, as shown in Figure 4–24.

Figure 4–24 Mounting Post Locks on the Model 76 System Board



Caution *Do not grasp the scanline coprocessor module by the corners when you are adding it to the system unit. The timing buffer chip located underneath the scanline coprocessor module can be easily damaged by any pressure exerted on it. (See Figure 4–15.)*

3 Align the set of connectors on the underside of the scanline coprocessor module with the set of connectors on the system board. The components side of the scanline coprocessor module should be face down.

Figure 4–25 shows the top view of the scanline coprocessor module being installed in the system unit. Figure 4–26 shows the side view of the scanline coprocessor module in relation to the post locks and connectors.

4 Press the scanline coprocessor module firmly downward until it locks onto the four system board post locks. The arrows in Figure 4–25 show where to press on the scanline coprocessor module to ensure a good connection.

Figure 4–25 Adding a Scanline Coprocessor Module—Top View

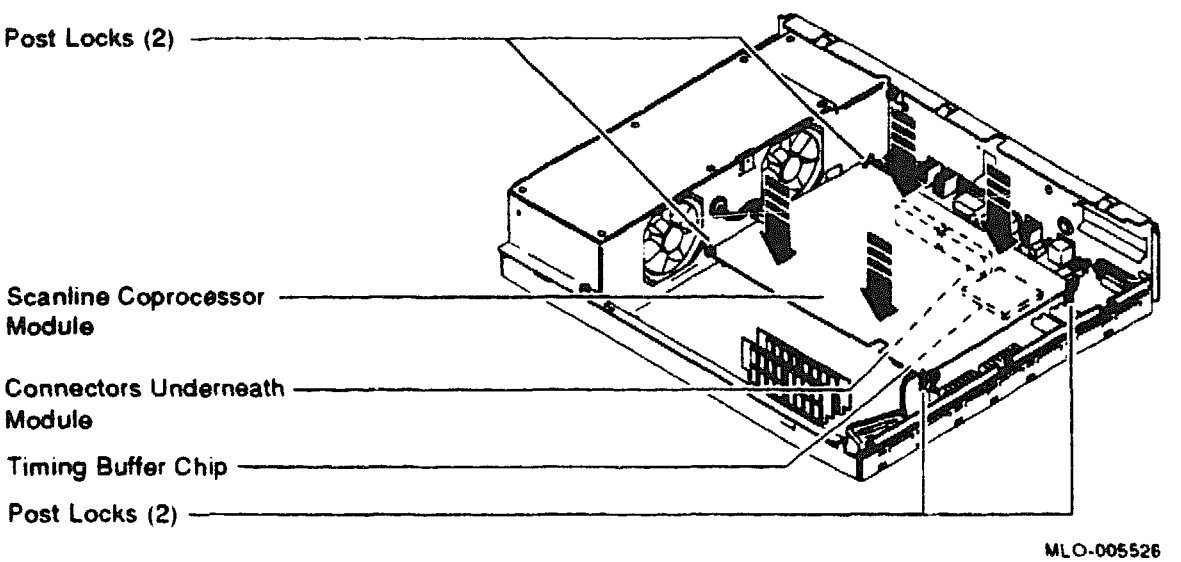
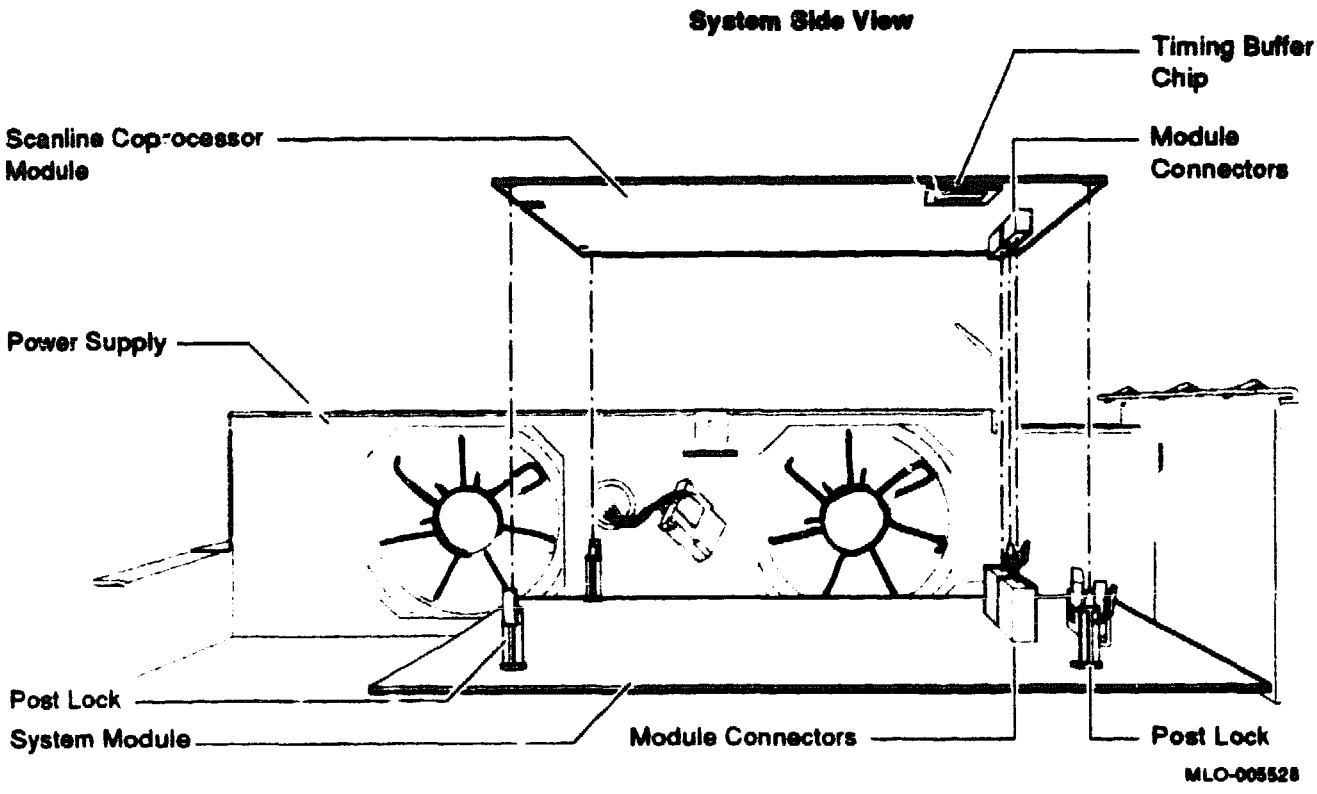


Figure 4–26 Adding a Scanline Coprocessor Module—Side View



4.3.11 Replacing the Model 38 Drive Plate

At this point you should restore the Model 38 system unit before proceeding with the upgrade to the Model 76 system.

To replace the drive plate in the Model 38 system unit, follow these steps:

Caution *When you are replacing 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.*

1 Slide the drive plate toward the back of the system, as shown in Figure 4–27. Make sure that the three screws on the right side of the drive plate go inside the slide mount openings on the side of the system unit and the SCSI system cable goes through the drive plate handle. Make sure that the power supply cable remains above the drive plate.

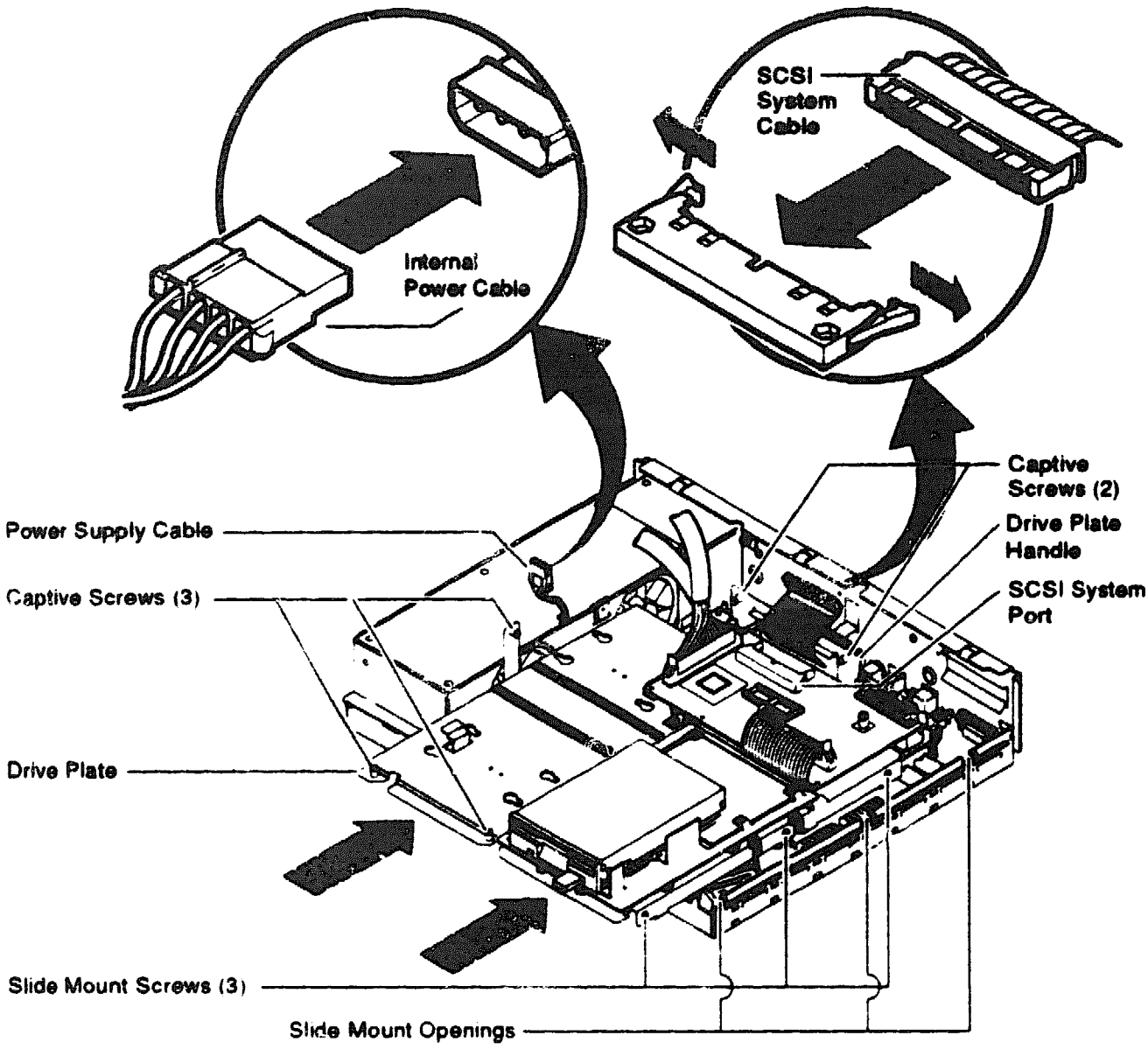
2 Tighten the captive screws on the drive plate. (See Figure 4–27.)

3 Tighten the three Phillips-head slide mount screws. (See Figure 4–27.)

4 Reconnect the internal power cable to the internal power supply. (See Figure 4–27.)

5 Reconnect the SCSI system cable that goes from the system board to the SCSI system port. (See Figure 4–27.)

Figure 4–27 Replacing the Drive Plate



4.3.12 Replacing the Model 38 System Unit Cover

To prepare the Model 38 system for return to Digital, follow these steps:

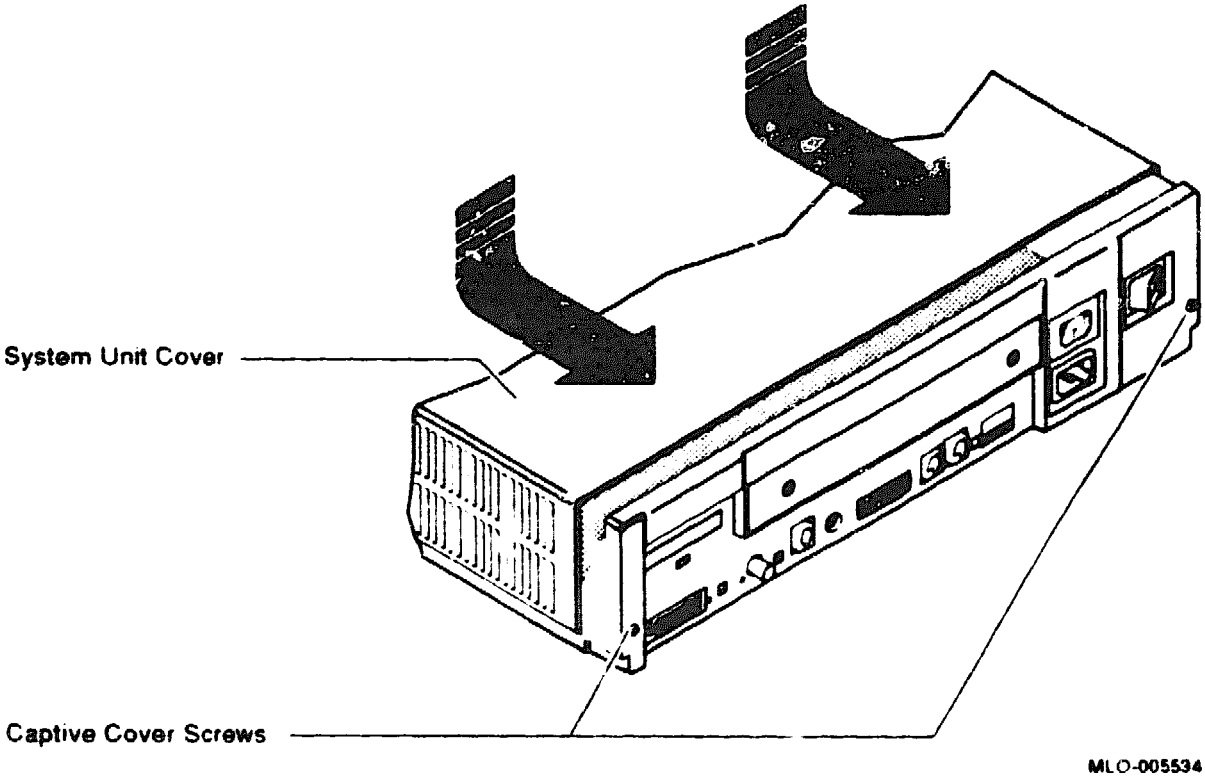
1 Before replacing the system unit cover, check that you have left the following components inside the Model 38 unit. These devices are not supported by, and will not function in, the Model 76 system.

- System board (with CPU)
- SCSI mass storage controller module
- Memory boards
- RX23 diskette drive, if present
- Drive plate
- SCSI signal cable and internal power supply cable

2 Make sure that the FCC metal fingers on the inside top of the system unit cover are properly aligned before replacing the system unit cover.

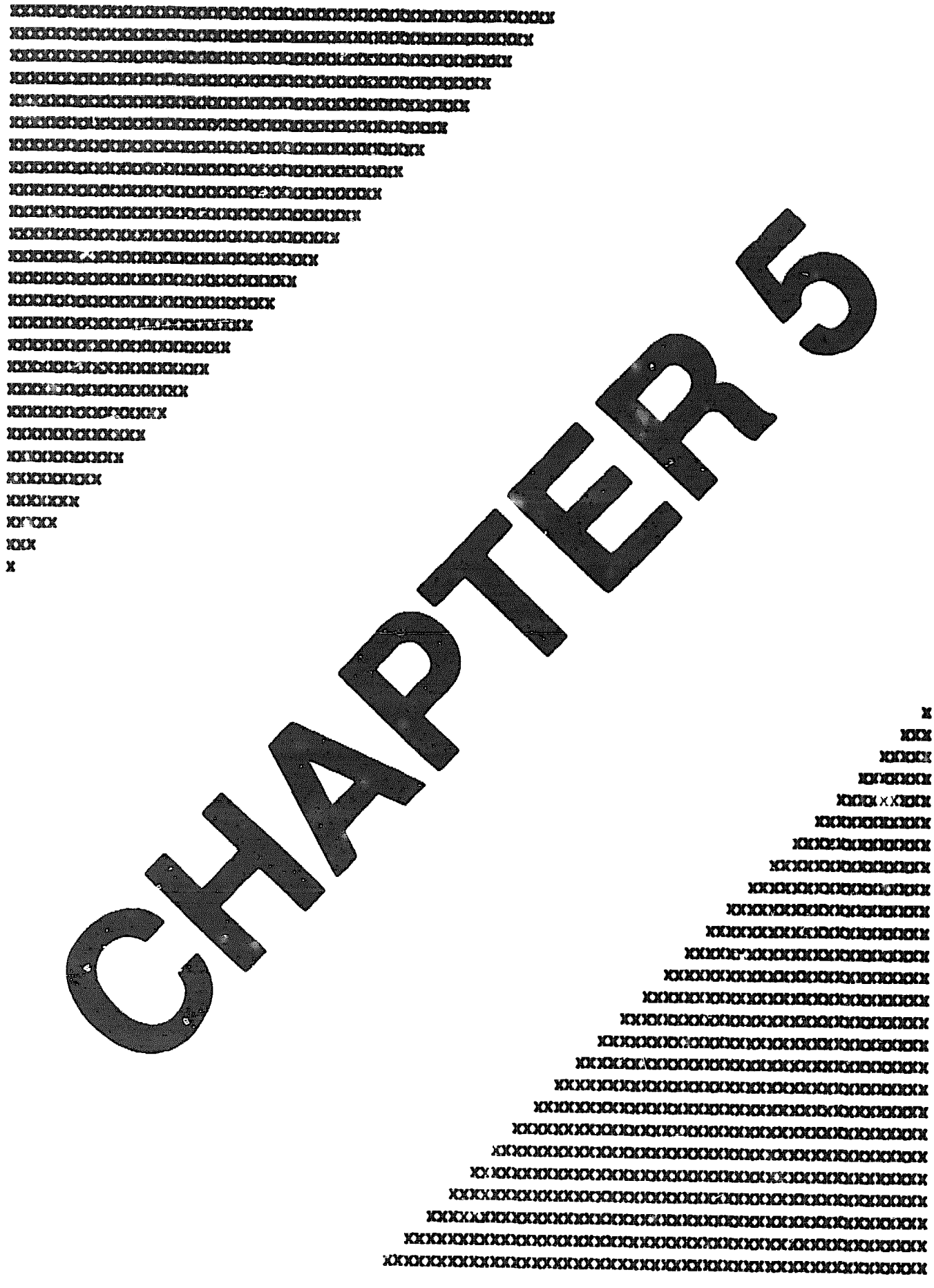
3 Replace the system unit cover and tighten the two cover screws, as shown in Figure 4–28.

Figure 4–28 Replacing the System Unit Cover



4.4 Completing the Model 76 Upgrade

At this point you are ready to complete the upgrade from a Model 38 system to a Model 76 system. Refer to Chapter 6 for information on how to complete the upgrade procedure.


CHAPTER 5

5

Upgrading a VAXstation 3100 Model 40 or Model 48 System

This chapter explains how to do the following:

- Prepare the Model 40 or Model 48 system (Section 5.1)
- Identify the configuration of the drive plate (Section 5.2)
- Begin the upgrade to a Model 76 system (Section 5.3)

5.1 Preparing the Model 40 or Model 48 System

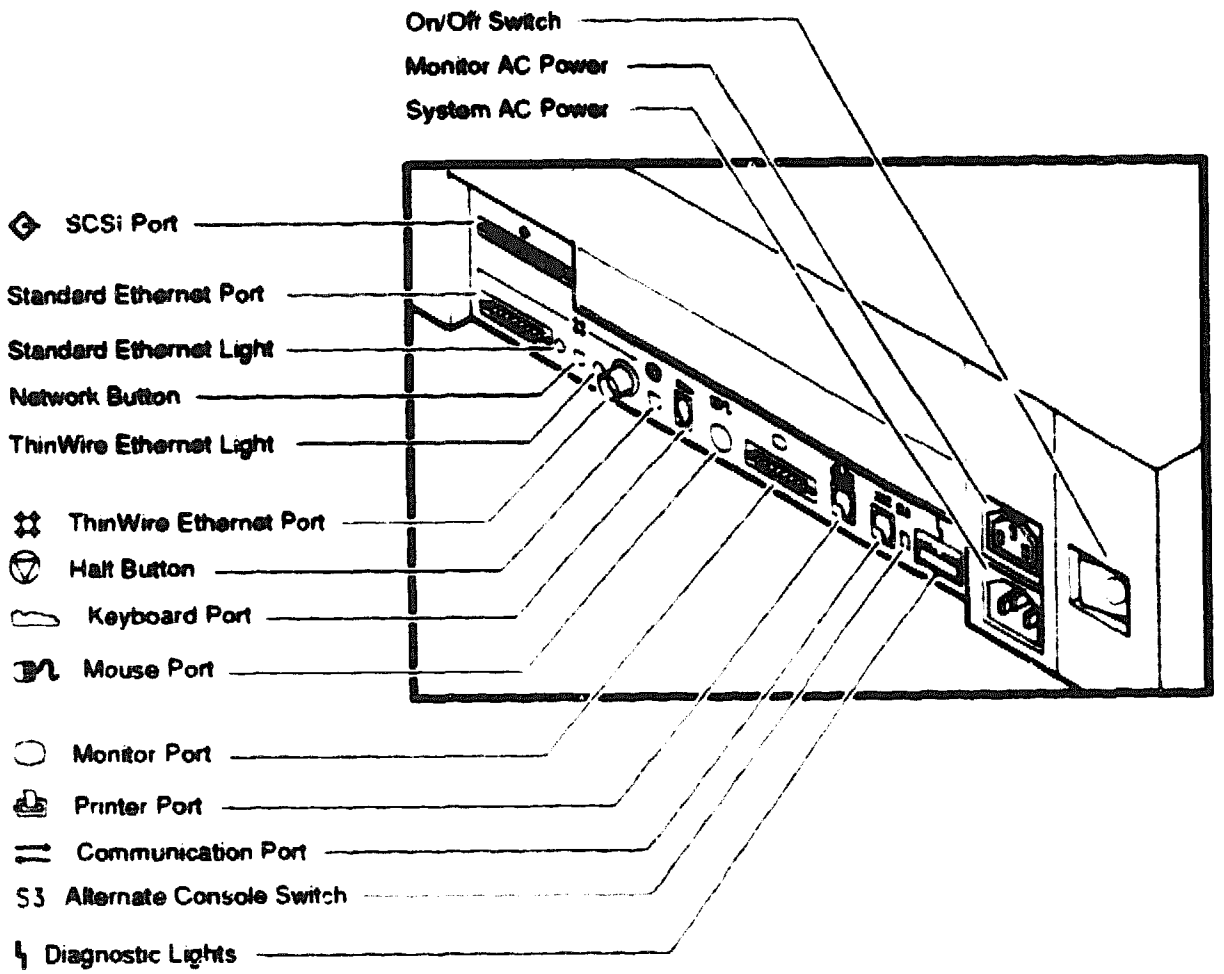
To prepare the Model 40 or Model 48 system unit:

1 If there are files stored on a system disk, make a backup copy following the instructions in the software documentation.

Note *Before turning the system off, see the operating system documentation for shutdown procedures.*

2 Put the Model 40 or Model 48 system into console mode by pressing the halt button on the rear of the system. Figure 5–1 shows the location of the halt button.

Figure 5–1 Model 40 or Model 48 System Unit Ports and Icons



3 **Run the TEST 50 diagnostic test as described in Section 2.3 to determine the Ethernet hardware address, determine the type of graphics module in the Model 40 or Model 48 system, if present, and compare SCSI IDs of the system devices.**

4 **After shutting down the operating system, turn your system components off (O) in the following order:**

1 **Expansion boxes**

2 **Printer, modem, and other equipment**

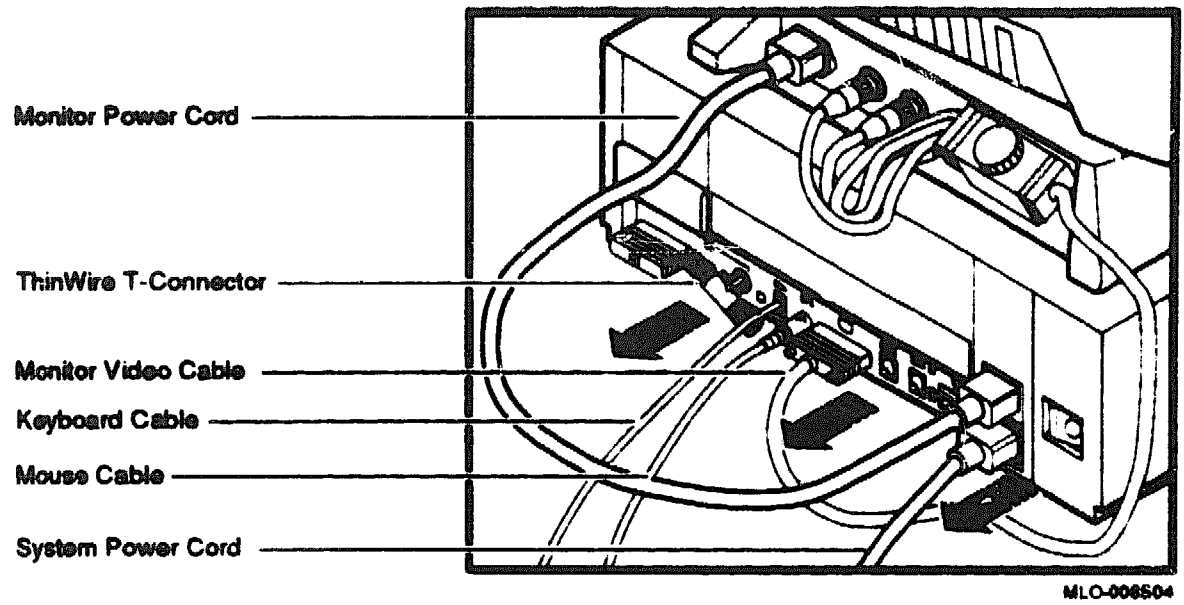
3 **System unit and monitor**

5 **Disconnect the system power cord first from the wall and then from the system unit. Save the power cord for use with the Model 76 system later.**

6 **Before removing the system unit cover, disconnect the following cables from the system unit in the following order (see Figure 5–2):**

- **Monitor power cord**
- **Keyboard cable**
- **Mouse cable**
- **ThinWire Ethernet or standard Ethernet cable or terminator**
- **SCSI terminator or external SCSI cable (if present)**
- **Printer cable**
- **Communications cable**

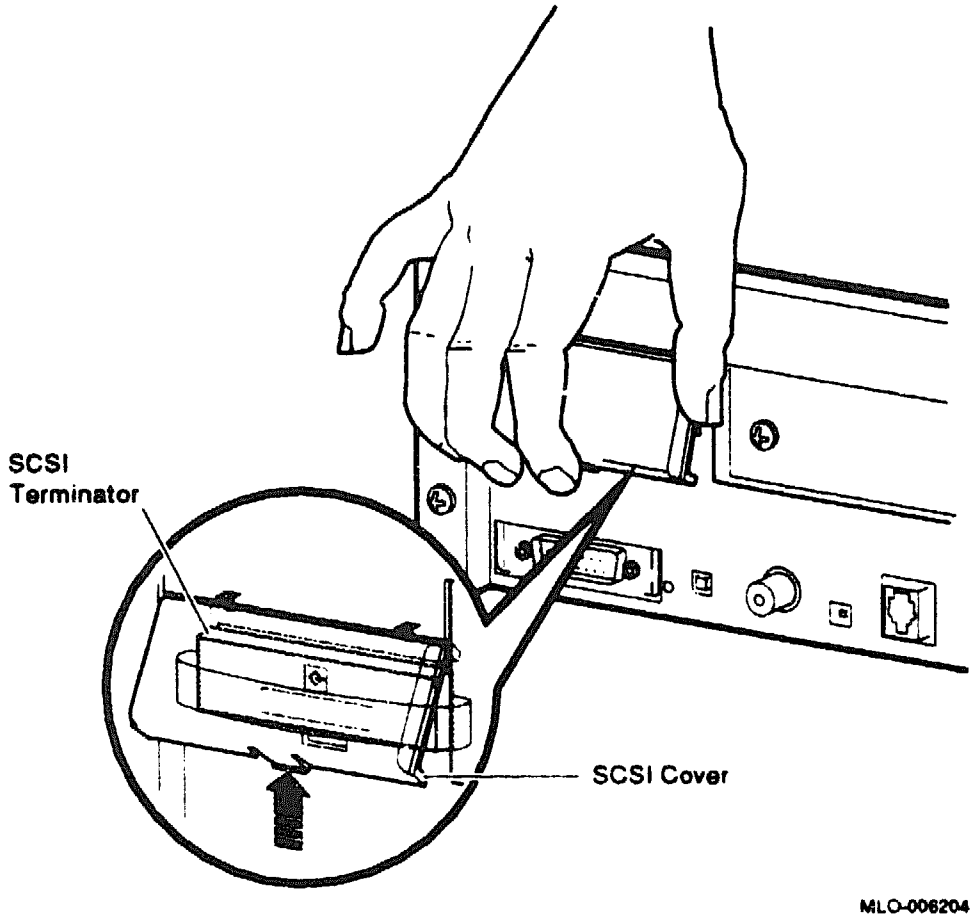
Figure 5–2 Disconnecting the System Unit and Monitor Cables



7 Disconnect the monitor video cable by turning the connector thumbscrews to the left and then removing the cable from the system unit.

8 Remove the monitor from the top of the system unit and set it aside. The monitor is heavy; you may need a second person to help.

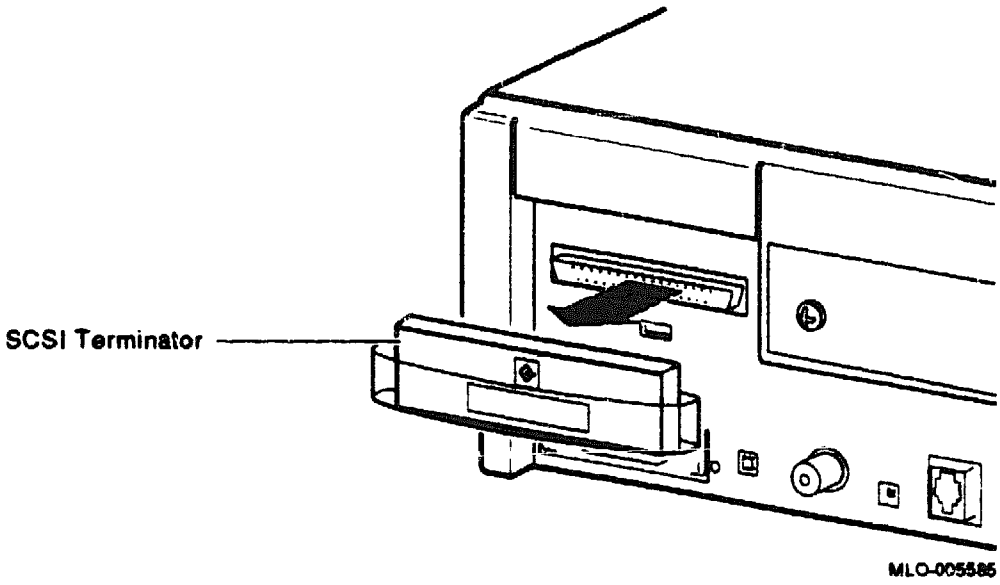
Figure 5–3 Removing the SCSI Terminator Access Door



9 Remove the SCSI terminator access door, if present, from the back of the Model 40 or Model 48 system unit. See Figure 5–3.

10 **Disconnect either the SCSI terminator or the external SCSI cable from the SCSI port on the back of the system unit. Figure 5–4 shows how to remove the SCSI terminator.**

Figure 5–4 Removing the SCSI Terminator

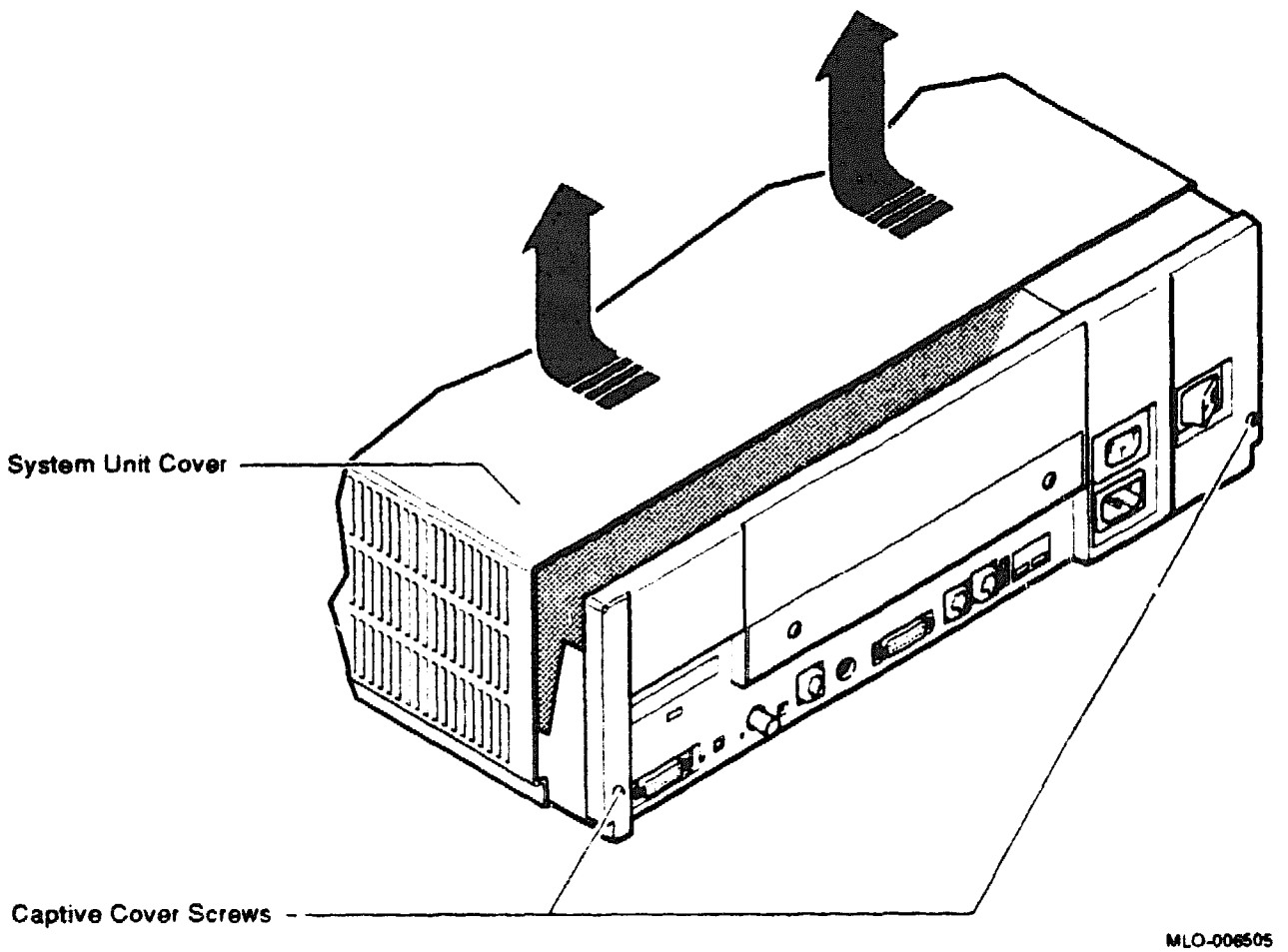


Caution *To protect system devices from damage due to static charge, wear an antistatic wrist strap when removing devices from and adding devices to the system units. (See Section 2.10.)*

11 Remove the system unit cover:

- Locate the two captive cover screws shown in Figure 5–5. Loosen these screws, using a Phillips-head screwdriver; do not remove them.
- Slide the system unit cover forward toward the front of the system unit and then lift it up and away from the system unit.

Figure 5–5 Removing the System Unit Cover

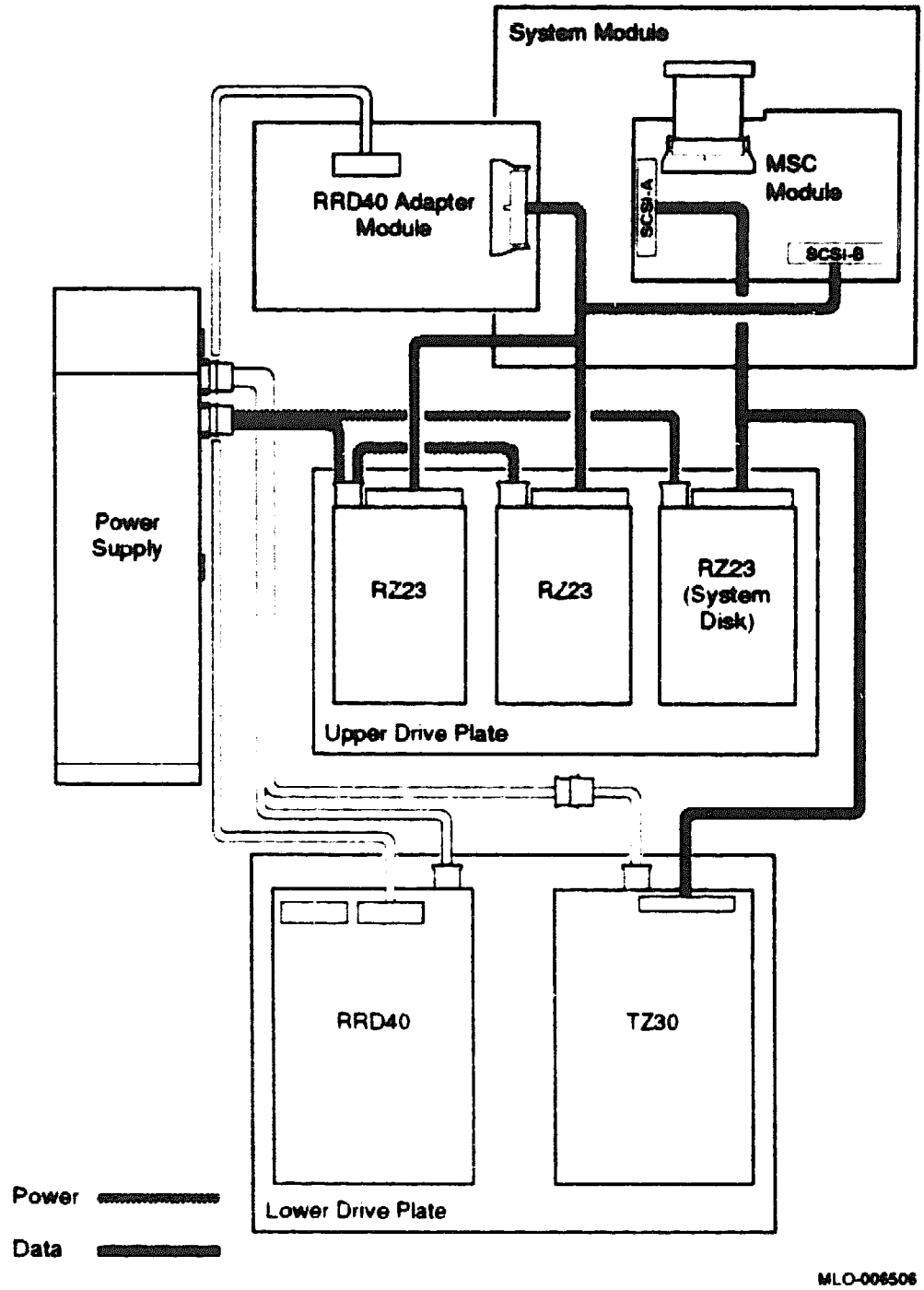


Warning *Only authorized Digital Service representatives should attempt to open the power supply located inside the system unit. There are dangerous voltages inside the power supply, and there are no user-serviceable parts.*

5.2 A Common Configuration of the VAXstation 3100 Model 40 or Model 48 Drive Plate

There are numerous possible configurations for the VAXstation 3100 Model 40 or Model 48 drive plate, including two different drive plates with two different kinds of SCSI mass storage controllers. Figure 5–6 shows a common configuration of the Model 40 or Model 48 drive plate.

Figure 5–6 A Common Configuration of the Model 40 or Model 48 Drive Plate



5.3 Beginning the Upgrade of the Model 40 or Model 48 System to a Model 76 System

This section tells how to remove components from the Model 40 or Model 48 system and install them in the Model 76 system unit. At the end of this chapter, go to Chapter 6 to complete the upgrade procedure.

5.3.1 Removing Components

The following sections explain how to remove these components from your system:

- Upper drive plate (Section 5.3.2)
- RZxx hard disk drives (Section 5.3.3)
- Lower drive plate (Section 5.3.4 and Section 5.3.5)
- TZ30 tape drive (Section 5.3.5)
- RRD40 compact disc drive (Section 5.3.5)
- Scanline coprocessor module (also known as the SPX color graphics accelerator), if present (Section 5.3.6)
- Graphics coprocessor module, if present (Section 5.3.7)
- Ethernet ROM (Section 5.3.8)
- Scanline coprocessor module ROM (Section 5.3.10)

It is important to remove these components in the order given above.

Note *You may wish to put the TZ30 tape drive and the RRD40 compact disc drive into another system or into a BA42 expansion box. You cannot put them in your Model 76 system.*

The following parts must be returned with the Model 40 or Model 48 system box, as per the customer's upgrade agreement with Digital. These devices are not supported by, and will not function in, the Model 76 system.

- System unit with power supply and cover
- System board (with central processing unit (CPU))
- SCSI mass storage controller module or SCSI/ST506 mass storage controller module
- Memory boards
- Drive plates

- SCSI signal cable and internal power supply cable

5.3.2 Removing the Model 40 or Model 48 Upper Drive Plate

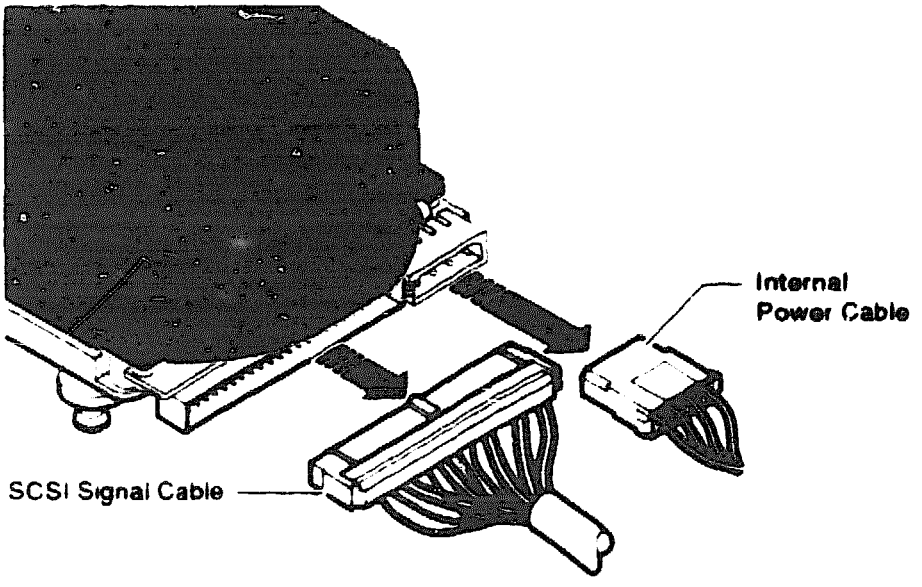
Remove the upper drive plate from the Model 40 or Model 48 system unit.

1 Transfer the alligator clip on the antistatic wrist strap from the Model 76 system unit to the Model 40 or Model 48 system unit. (See Section 2.10.)

2 Disconnect the SCSI signal cable from all RZxx hard disks. (See Figure 5–7.)

3 Disconnect the internal power cable from all RZxx hard disk drives. (See Figure 5–7.)

Figure 5–7 Disconnecting the SCSI Cable and the Power Cable from RZxx Hard Disk Drives

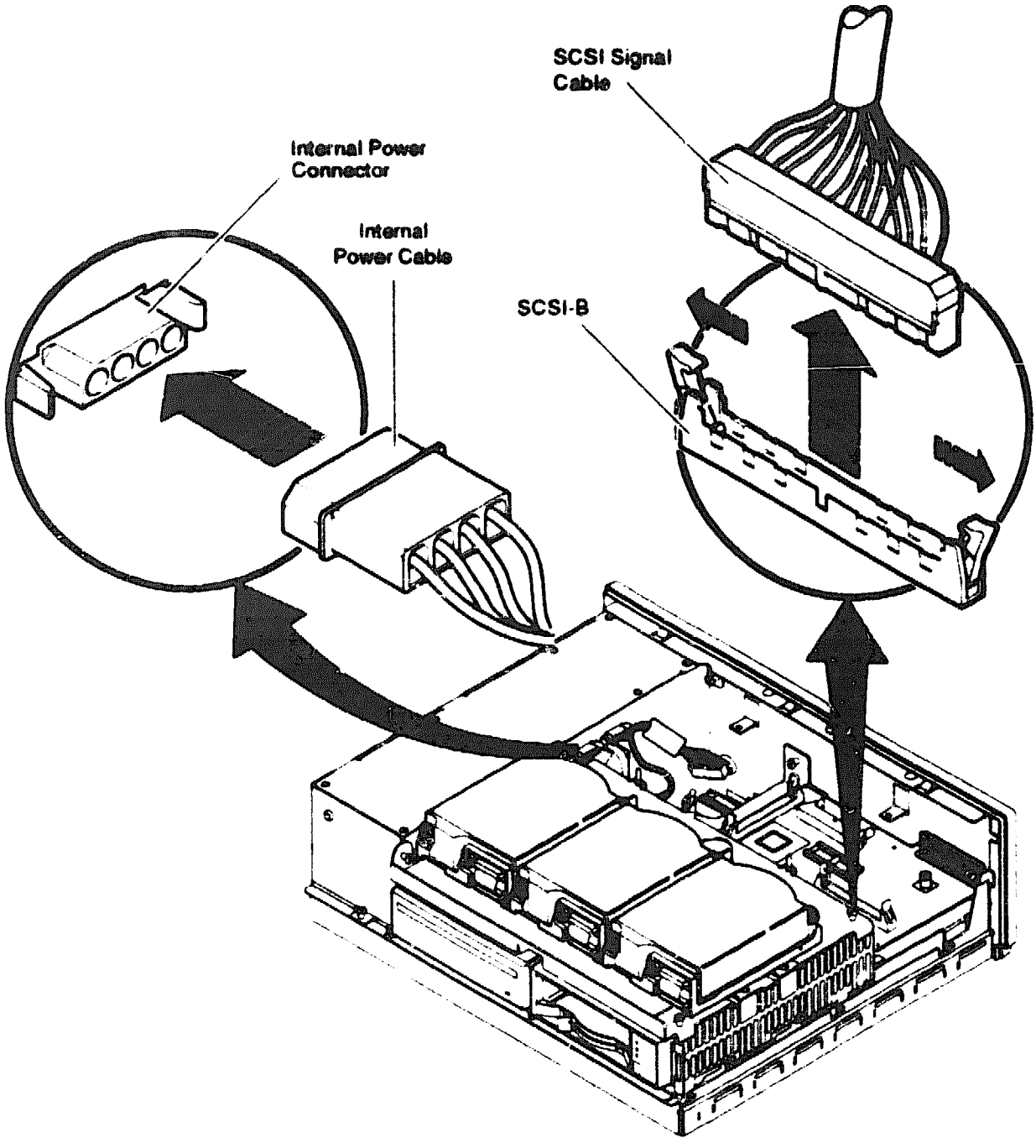


4 Disconnect the internal power cable from the internal power connector. (See Figure 5–8.)

5 Disconnect the SCSI signal cable from the SCSI/SCSI or SCSI /ST506 mass storage module. (See Figure 5–8.)

6 Lift the RRD40 adapter module from the four plastic standoffs. Let the module extend over the back of the system unit.

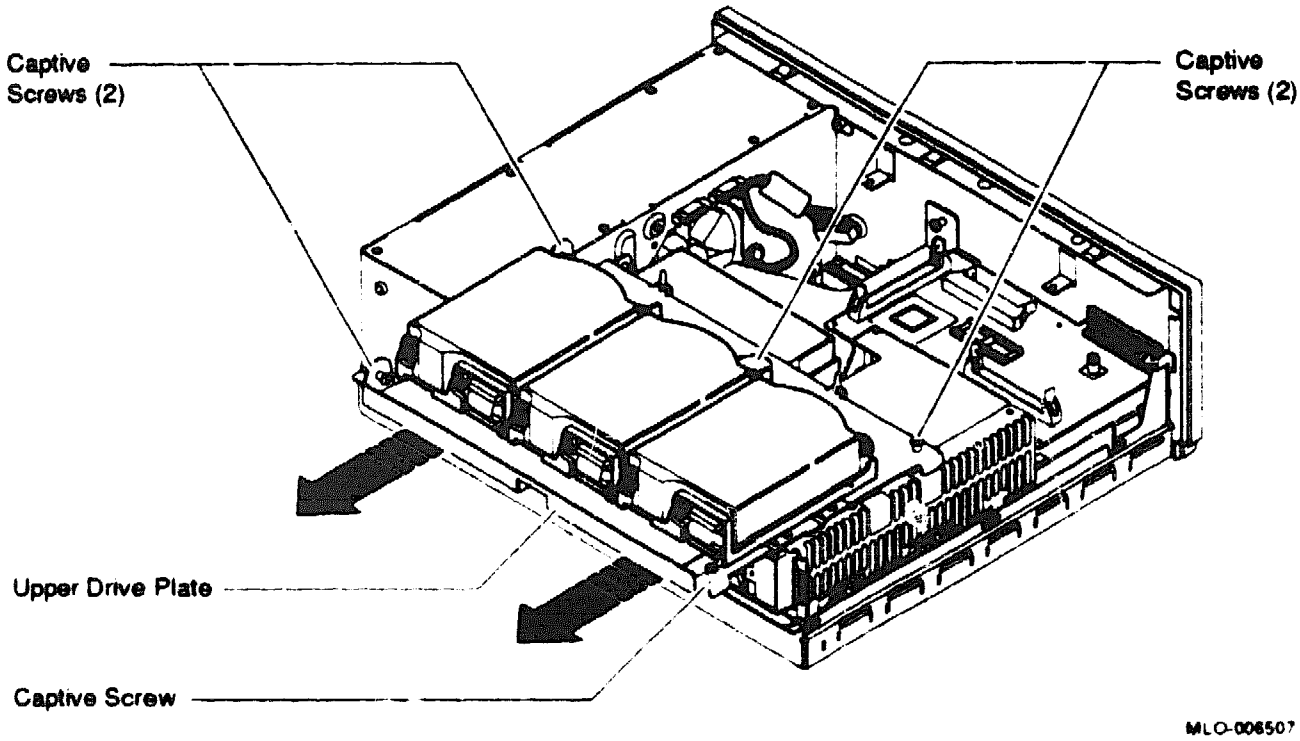
Figure 5–8 Disconnecting the SCSI Signal Cable and the Power Cable



7 Loosen the four captive screws shown in Figure 5–9.

8 Slide the drive plate with attached drives forward and lift it off the unit. (See Figure 5–9.)

Figure 5–9 Removing the Upper Drive Plate from the System Unit



5.3.3 Removing RZxx Hard Disk Drives from the Model 40 or Model 48 Upper Drive Plate

You must remove any RZxx hard disk drives from the Model 40 or Model 48 drive plate

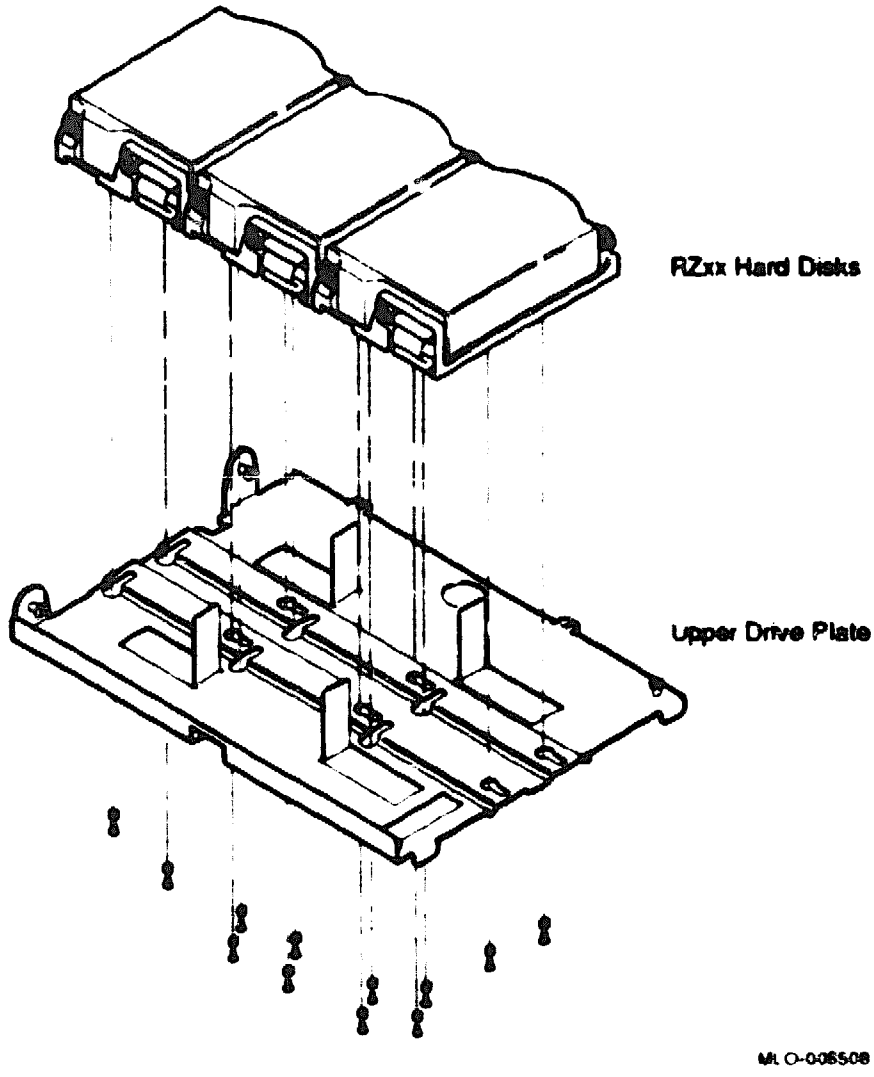
1 Turn over the Model 40 or Model 48 upper drive plate with the RZxx hard disk drives attached so that the drives are face down

2 Using a Phillips screwdriver, unscrew the four screws that attach each RZxx drive to the drive plate

3 Set each RZxx drive aside

Figure 5–10 shows how the RZxx hard disk drives are mounted on the Model 40 or Model 48 drive plate.

Figure 5–10 Removing RZxx Hard Disks from the Upper Drive Plate



Note *The screws and grommets you unscrew to remove the hard disk drives are not needed. The Model 76 upgrade kit includes replacement screws and grommets for the RZxx hard disk drives.*

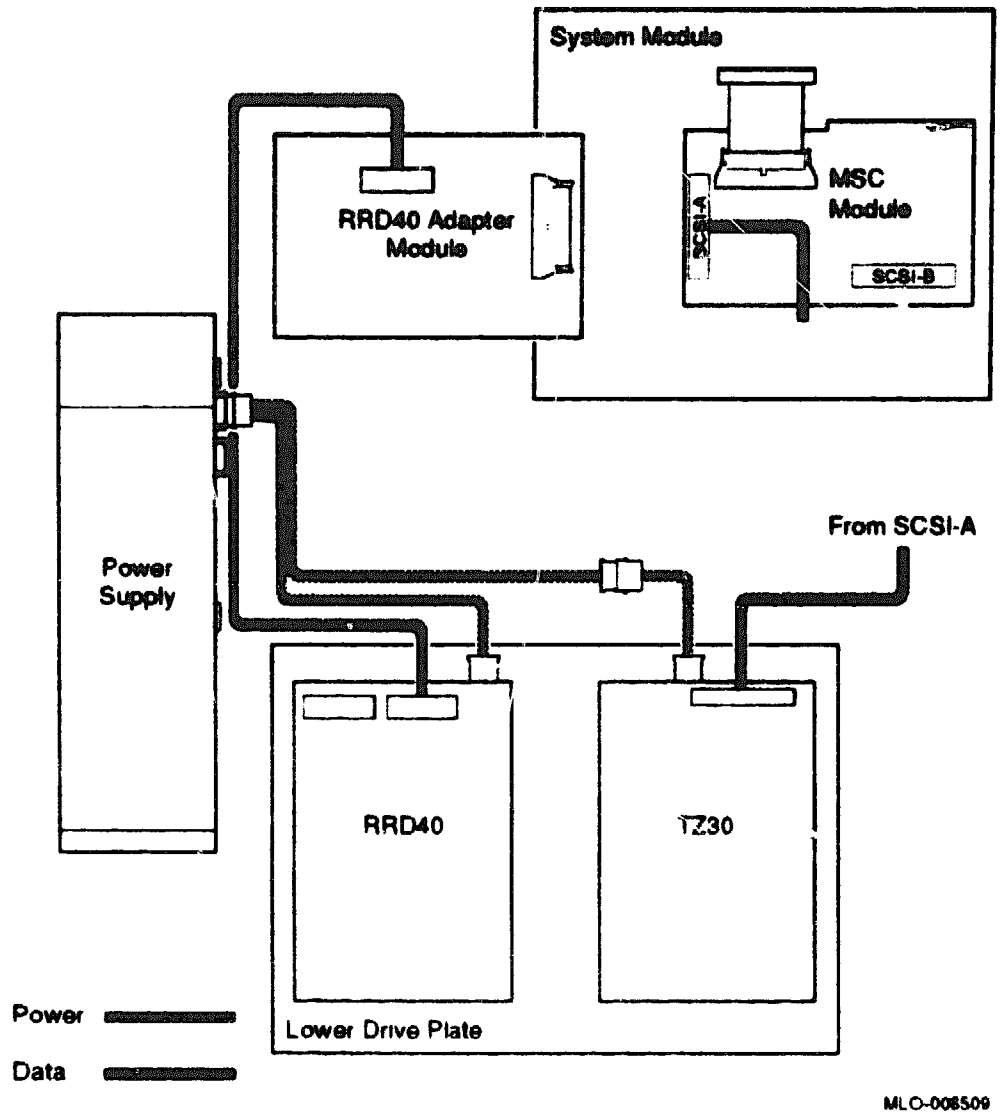
5.3.4 Removing the Lower Drive Plate

To remove the lower drive plate:

1 Remove the RRD40 adapter module cable from the back of the RRD40 drive, if present.

The RRD40 drive and adapter module make up the drive subsystem. The RRD40 adapter module connects to the SCSI bus and a signal cable connects the RRD40 drive to the adapter module. See Figure 5–11 to locate the RRD40 adapter module and RRD40 drive.

Figure 5–11 Common Lower Drive Plate Configuration

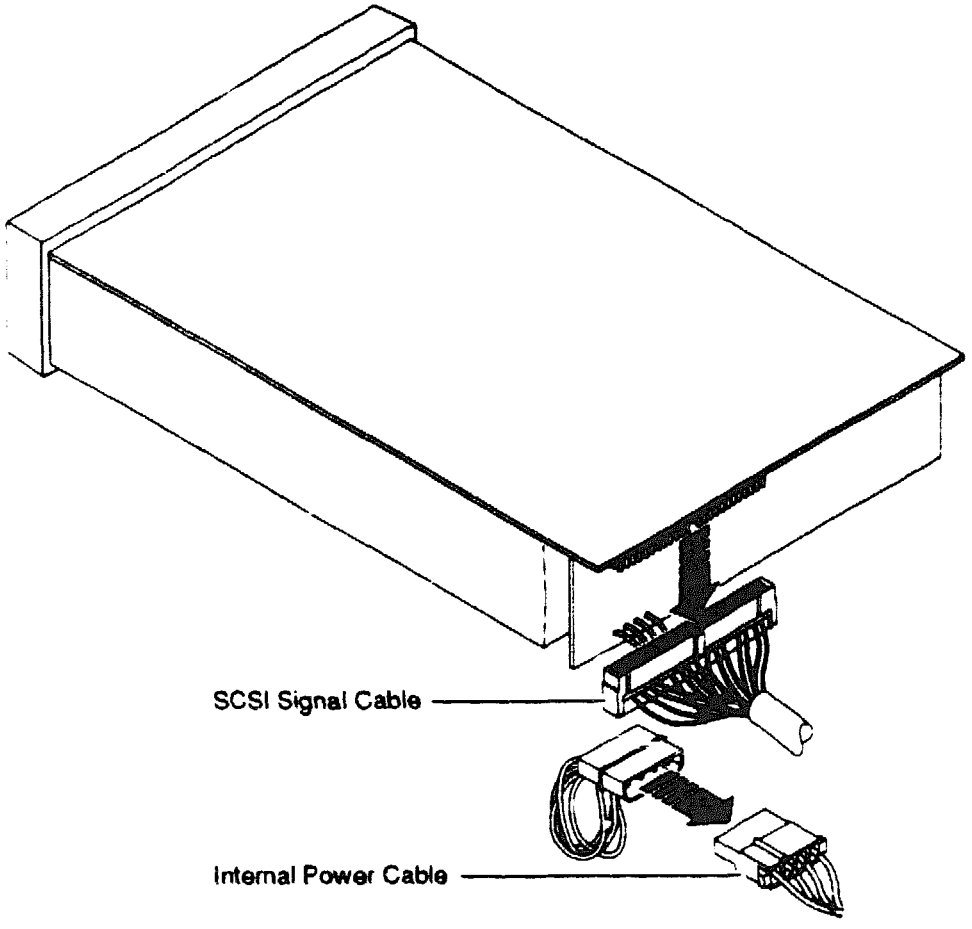


2 Disconnect the internal power cable from the TZ30 tape drive (if installed). (See Figure 5–12.)

3 Disconnect the mass storage controller (MSC) cable from the mass storage module. See Figure 5–11 to locate the MSC cable and module.

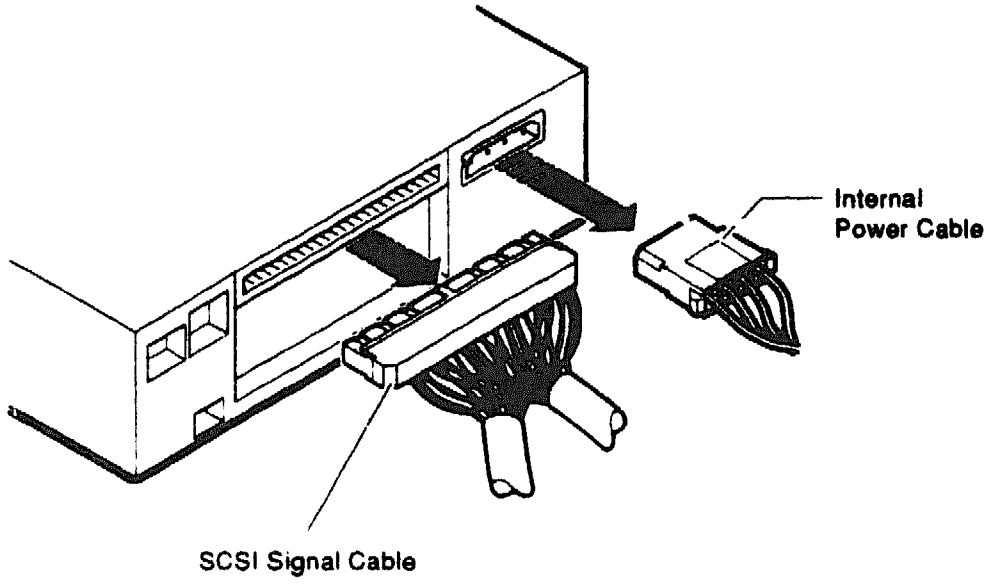
4 Disconnect the SCSI signal cable from the back of the TZ30 drive by pushing down on the cable. (See Figure 5–12.)

Figure 5–12 Disconnecting the SCSI Signal Cable and Power Cable from the TZ30 Tape Drive



5 Disconnect the SCSI signal cable and the internal power cable from the back of the RRD40 compact disc drive, as shown in Figure 5–13.

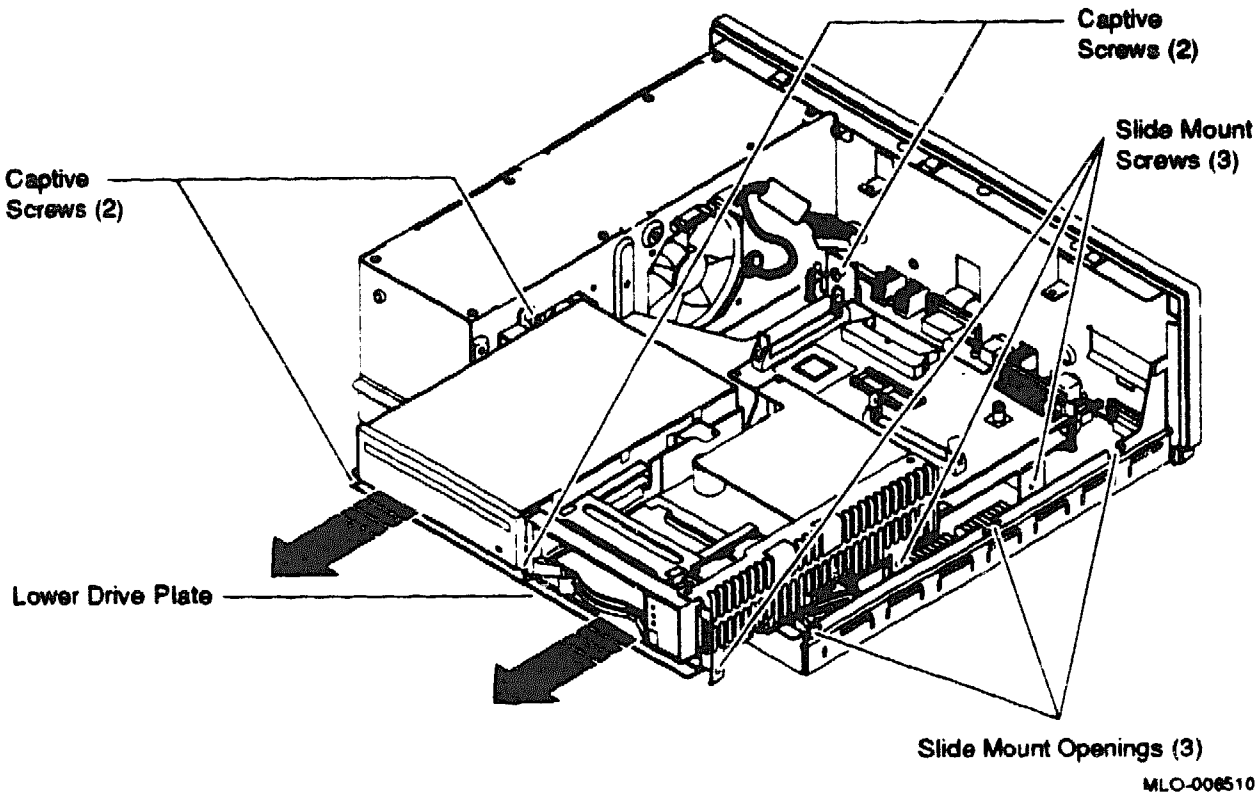
Figure 5–13 Disconnecting the SCSI Signal Cable and the Power Cable from the RRD40 Compact Disk Drive



6 Loosen the four captive and three slide-mount screws shown in Figure 5-14.

7 Slide the plate forward, then lift the plate from the system box. (See Figure 5–14.)

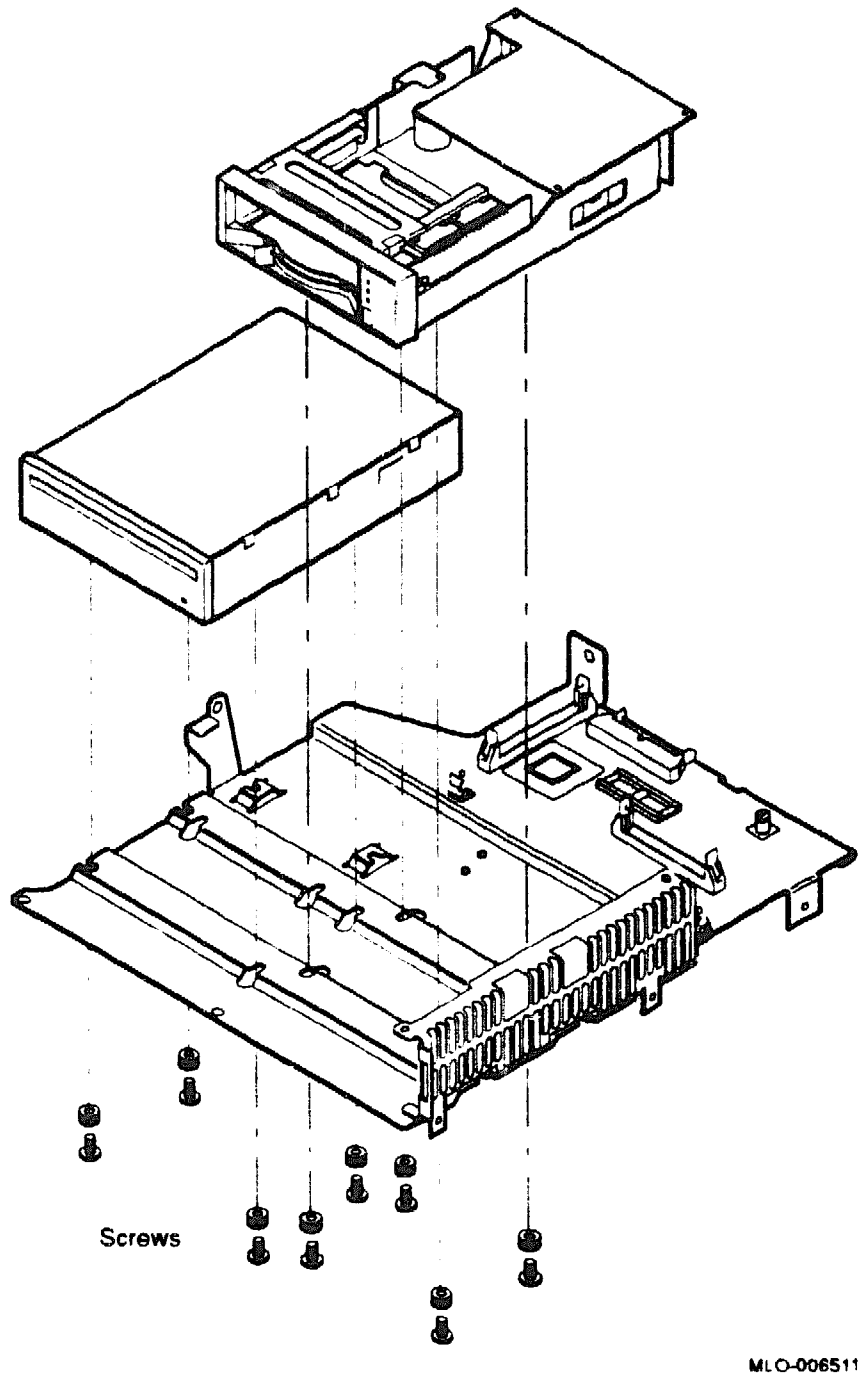
Figure 5–14 Removing the Lower Drive Plate



5.3.5 Removing the RRD40 and TZ30 Drives from the Lower Drive Plate

To remove the RRD40 and the TZ30 drives from the lower drive plate, turn the lower drive plate over and remove the four screws from each drive. Support each drive with one hand when removing the last screw. Figure 5–15 shows how the drives are mounted on the drive plate.

Figure 5–15 Removing the RRD40 and the TZ30 Drives from the Lower Drive Plate



5.3.6 Removing the Scanline Coprocessor Module from the Model 40 or Model 48 System Unit

In Section 2.3 you determined what type of graphics module is in the Model 40 or Model 48 system.

If you have...	Then...
a scanline coprocessor module	read this section.
a graphics coprocessor module	go to Section 5.3.7.
no graphics module	go to Section 5.3.8.

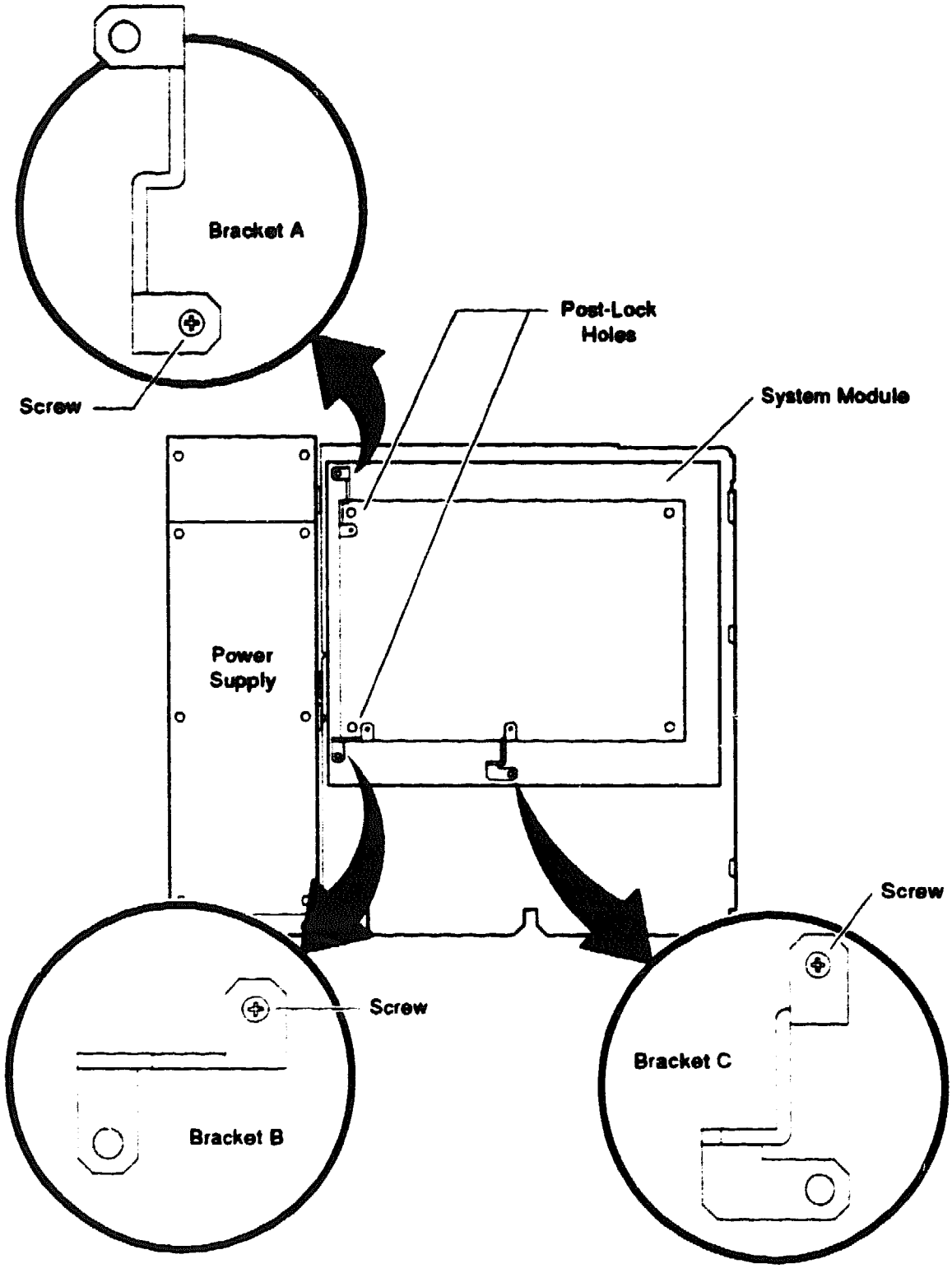
To remove the scanline coprocessor module from the Model 40 or Model 48 system:

1 Use an antistatic wrist strap while handling the scanline coprocessor module. This strap protects the coprocessor from static charge damage. See Section 2.10 for more information.

2 Lay an antistatic mat on a flat, level surface. Place the module on the mat after you remove it from the Model 40 or Model 48 system.

3 Unscrew and remove the three screws of the mounting brackets that attach the scanline coprocessor module to the mounting brackets. (See Figure 5–16.) The mounting brackets remain attached to the system board.

Figure 5–16 Scanline Coprocessor Module Mounting Bracket Locations

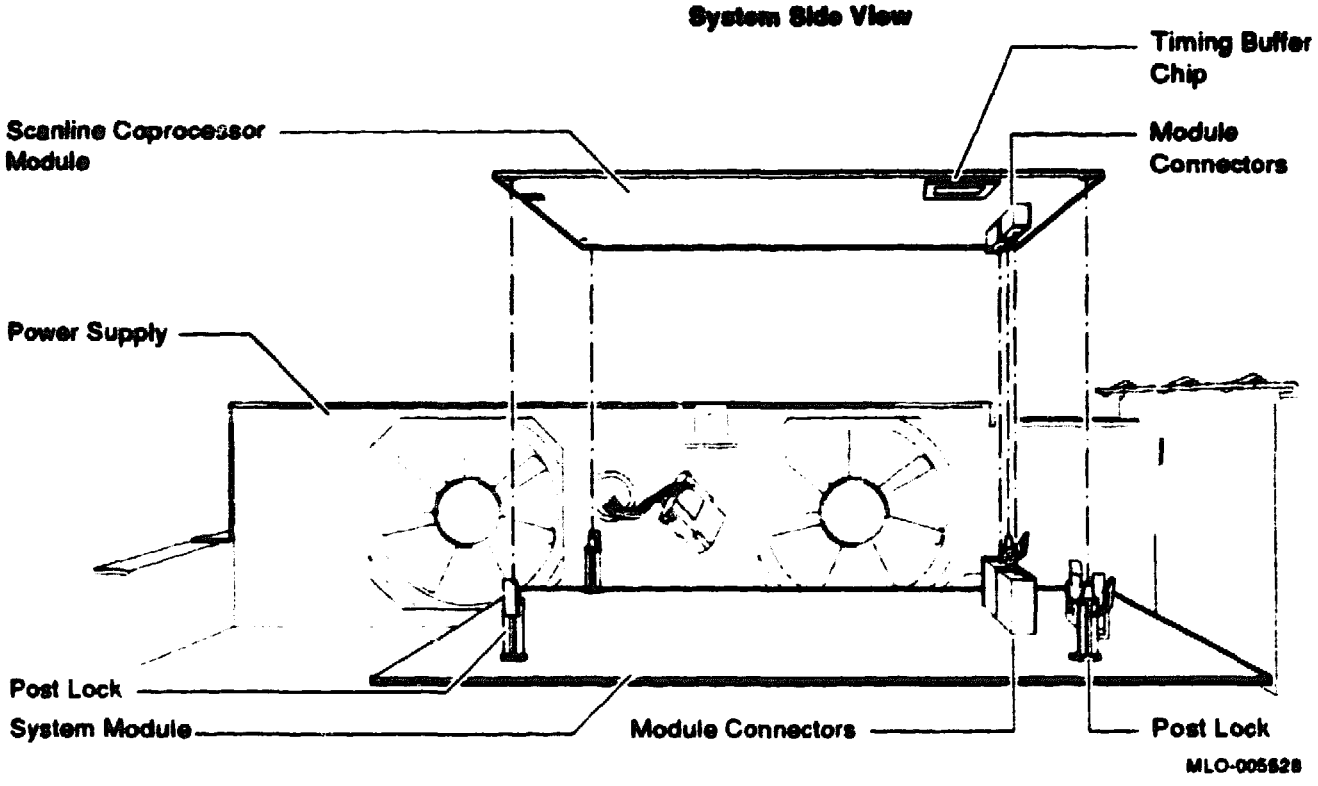


4 **Remove the module from the four post locks by pulling back the post-lock tabs. (See Figure 5–17.)**

Caution ***Do not grasp the scanline coprocessor module by the corners when you lift it from the system board. The timing buffer chip located underneath the module is easily damaged. (See Figure 5–17.)***

5 **Grasp the coprocessor module in the center, next to the two connectors, and lift it off the system board. The two connectors disconnect as you lift the module. (See Figure 5–17.)**

Figure 5–17 Removing a Scanline Coprocessor Module from the System Unit



6 Set the module on the antistatic mat. You add the scanline coprocessor module to the Model 76 system unit after you have exchanged the Ethernet ROM in the Model 40 or Model 48 with the one in the Model 76 system.

5.3.7 Removing the Graphics Coprocessor Module from the Model 40 or Model 48 System Unit

In Section 2.3 you determined what type of graphics module is in the Model 40 or Model 48 system.

If you have...	Then...
a graphics coprocessor module	read this section.
a scanline coprocessor module	go to Section 5.3.6.
no graphics module	go to Section 5.3.8.

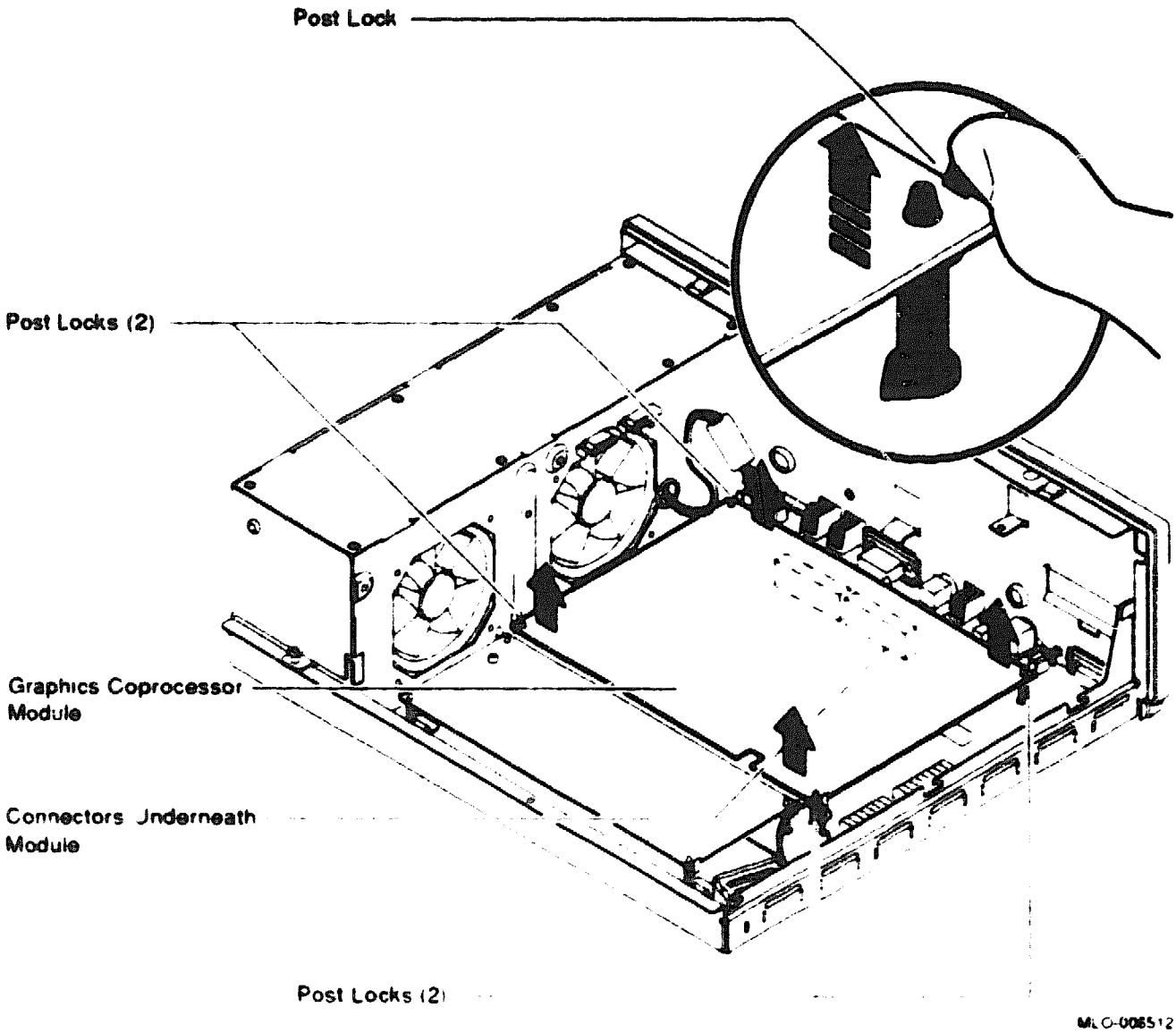
To remove the graphics coprocessor module from the Model 40 or Model 48 system:

1 Use an antistatic wrist strap while handling the graphics coprocessor module. This strap protects the coprocessor from static charge damage. See Section 2.10 for information on this procedure.

2 Lay an antistatic mat on a flat, level surface. Place the module on the mat after you remove it from the Model 40 or Model 48 system.

3 **Remove the module from the four post locks by pulling back the tabs, then lifting the module up and off of the system board. Two connectors will disconnect as you lift the module. (See Figure 5–18.)**

Figure 5–18 Removing a Graphics Coprocessor Module from the System Unit



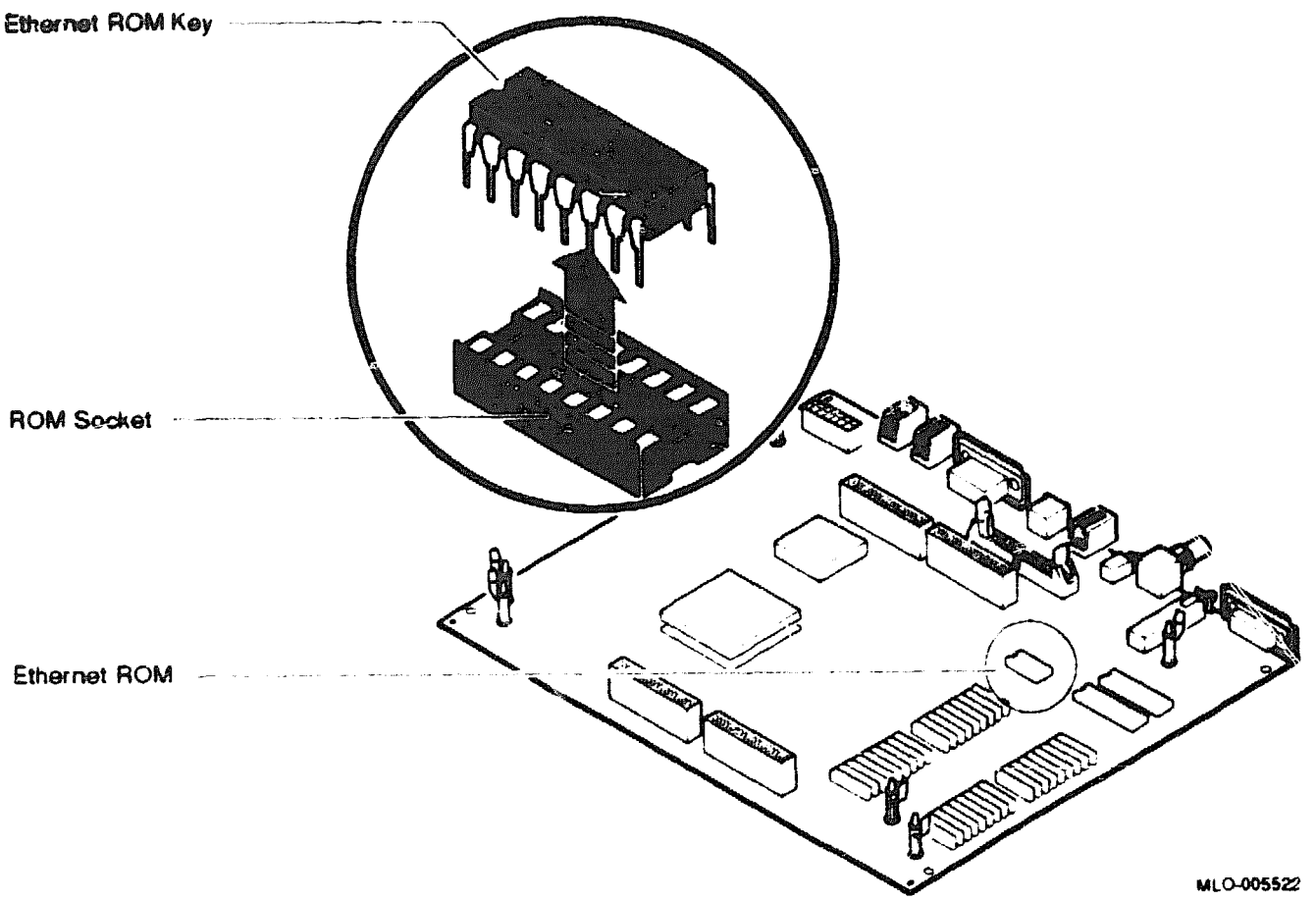
4 Set the module on the antistatic mat. You will add the graphics coprocessor module to the Model 76 system unit after exchanging the Ethernet ROM in the Model 40 or Model 48 system with the Model 76 system.

5.3.8 Removing the Ethernet ROM from the Model 40 or Model 48 System Board

To remove the Ethernet ROM from the Model 40 or Model 48 system board:

1. **Locate the Ethernet ROM on the Model 40 or Model 48 system board shown in Figure 5–19. To help identify the Ethernet ROM:**
   - **It is the only socketed 16-pin chip on the system board.**
   - **It has distinct manufacturer's markings on top.**
   - **Written on it is ENET ADRS.**

Figure 5–19 Removing the Model 40 or Model 48 Ethernet ROM



Caution *When you remove the Ethernet ROM, do not bend the pins on the chip. These pins are fragile and must be intact to add this Ethernet ROM to the Model 46 system unit.*

2 **Remove the Ethernet ROM from the Model 40 or Model 48 system board using a chip puller or a flat-head screwdriver. (See Figure 5–19.)**

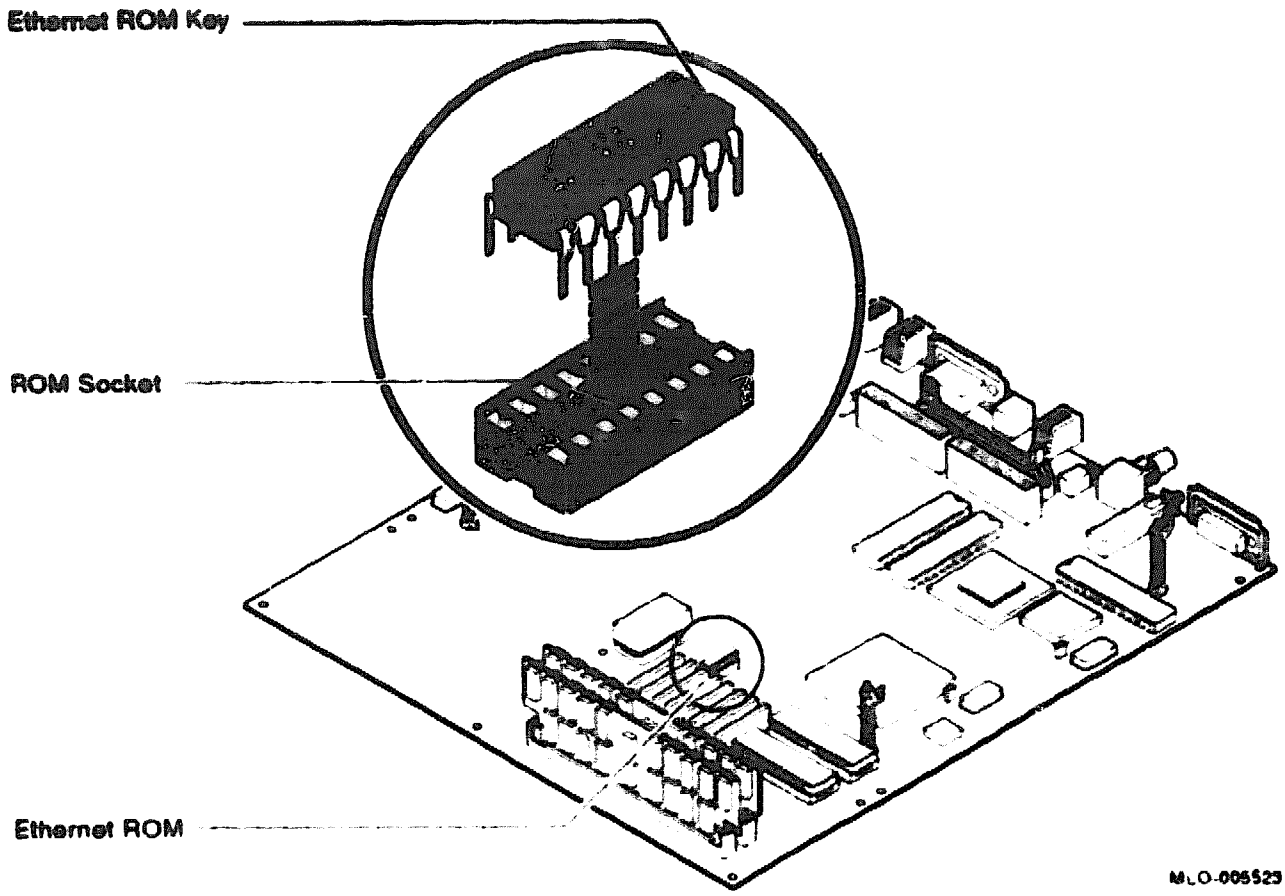
3 **Make sure the pins are straight. If the pins are bent, carefully straighten them.**

4 **Transfer the alligator clip of the antistatic wrist strap from the Model 40 or Model 48 system unit to the Model 76 system unit. (See Section 2.10.)**

5 **Take the Ethernet ROM from the Model 40 or Model 48 system board and add it to the Model 76 system board, installing it in the vacant Ethernet ROM socket. (See Figure 5–20.) Make sure the pins are properly aligned in the socket before pushing it into place.**

Caution *The Ethernet ROM key must face the back of the Model 76 system unit. If you put the Ethernet ROM in backward, the system will not function properly. See Figure 5–20.*

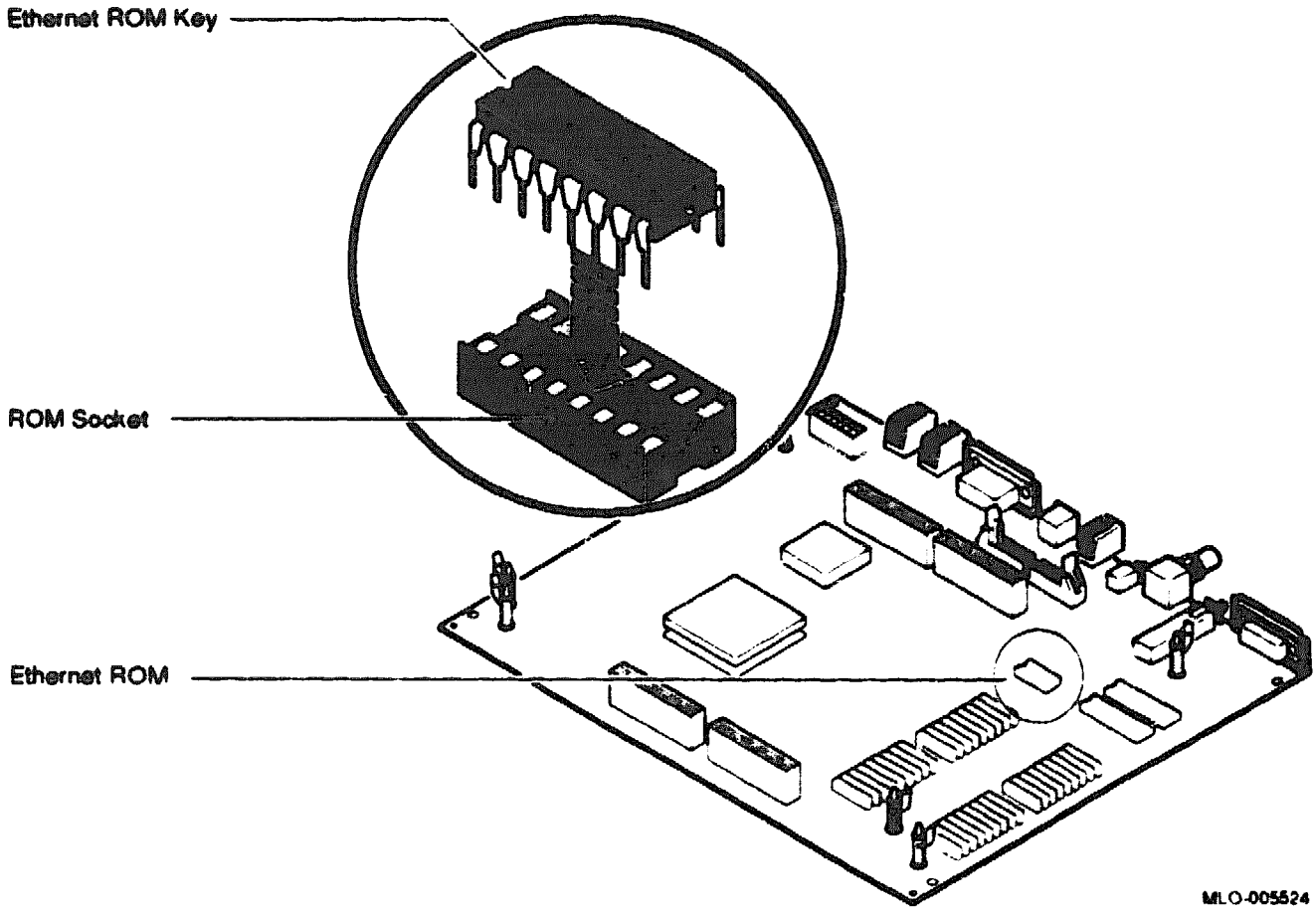
Figure 5–20 Installing the Model 40 or Model 48 Ethernet ROM in the Model 76 System Board



6 **Transfer the alligator clip of the antistatic wrist strap from the Model 76 system unit to the Model 40 or Model 48 system unit. (See Section 2.10.)**

7 **Take the Ethernet ROM from the Model 76 system board and install it in the Ethernet ROM socket on the Model 40 or Model 48 system board. Make sure that the pins on the Ethernet ROM are straight before you install it. The Ethernet ROM key should face the Model 40 or Model 48 system's power supply. (See Figure 5–21.)**

Figure 5–21 Installing the Model 76 Ethernet ROM in the Model 40 or Model 48 System Board



5.3.9 Adding the Graphics Coprocessor Module to the Model 76 System Unit

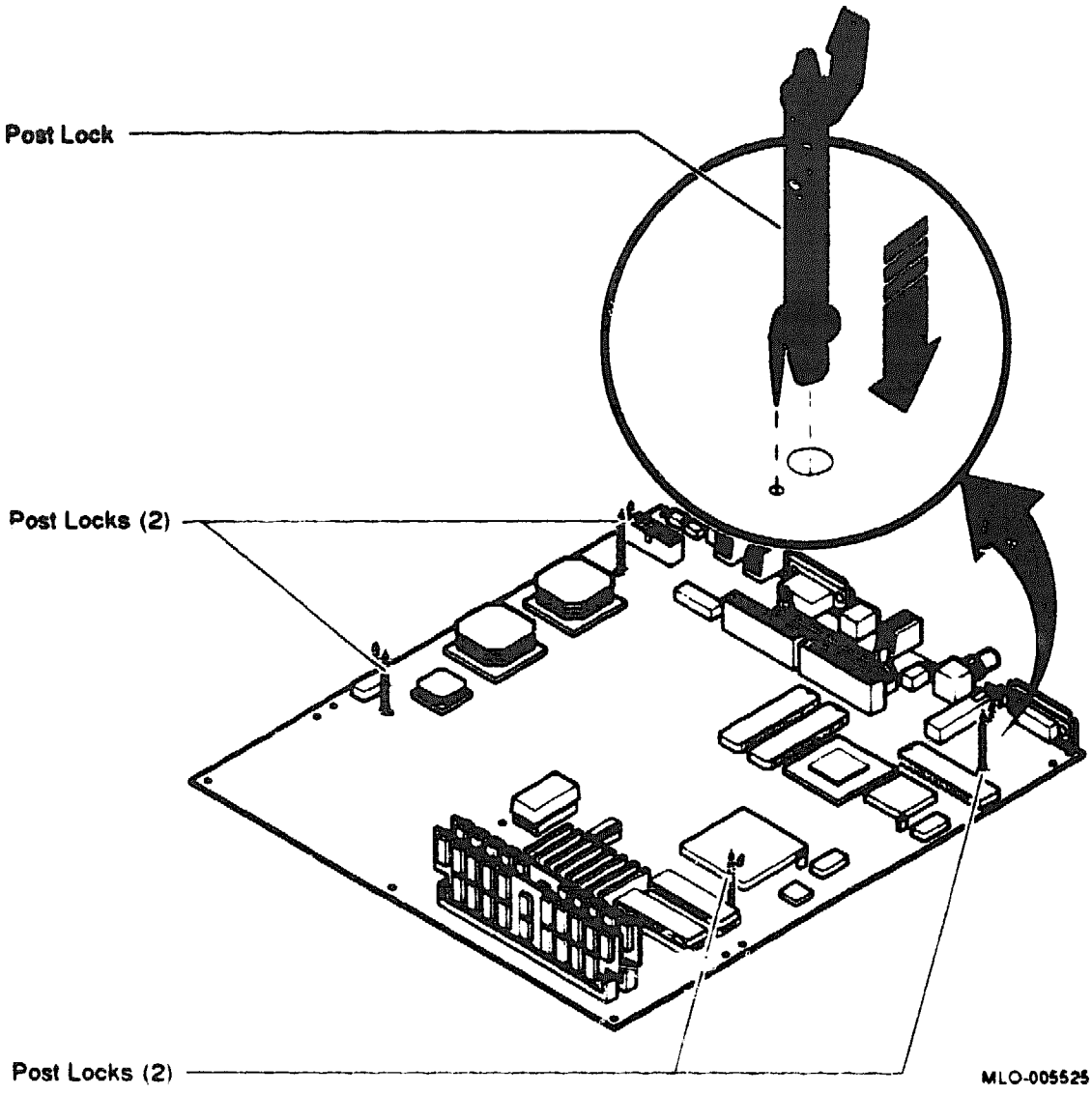
If you are not adding the graphics coprocessor module to the Model 76 system unit or are adding a scanline coprocessor module, go to Section 5.3.10.

Take the graphics coprocessor module you removed from the Model 40 or Model 48 and install it in the Model 76 system unit:

1 Transfer the alligator clip of the antistatic wrist strap from the Model 40 or Model 48 system unit to the Model 76 system unit. (See Section 2.10.)

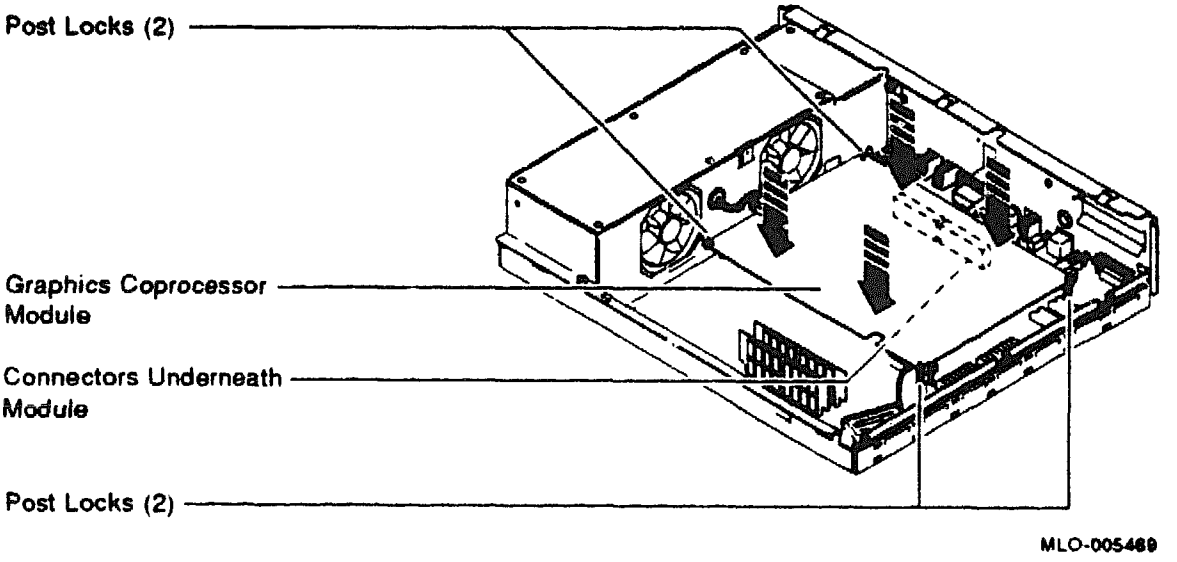
2 Take the four post locks from the upgrade kit parts bag and snap them into place in the mounting holes on the Model 76 system board, as shown in Figure 5–22. Do not use the post locks from the Model 40 or Model 48 system board.

Figure 5–22 Mounting Post Locks on the Model 76 System Board



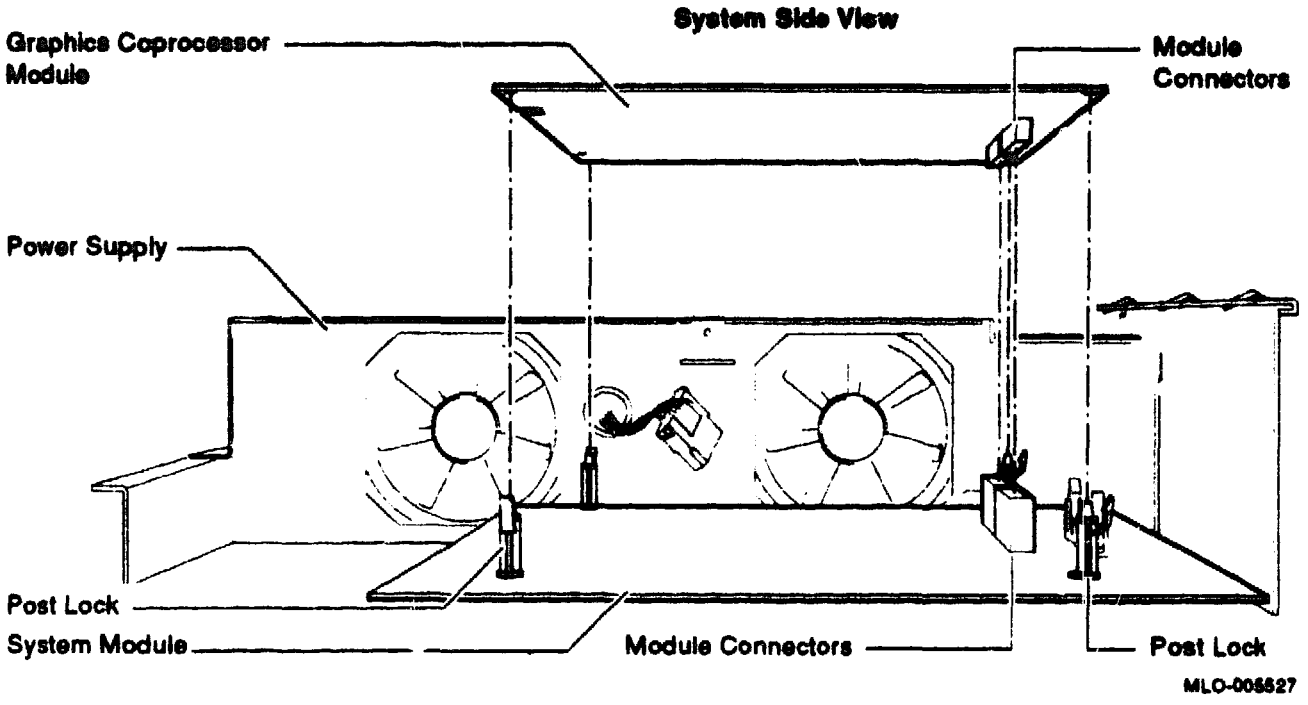
3 **Align the connectors on the underside of the graphics coprocessor module with the connectors on the system board. The components side of the graphics coprocessor module should be face down. Figure 5–23 shows the top view of the graphics coprocessor module being installed in the system unit. Figure 5–24 shows the side view of the graphics coprocessor module in relation to the post locks and connectors.**

Figure 5–23 Adding a Graphics Coprocessor Module—Top View



4 Press the graphics coprocessor module firmly downward until it locks onto the four system board post locks. The arrows in Figure 5–23 show where to press on the module.

Figure 5–24 Adding a Graphics Coprocessor Module—Side View



5.3.10 Changing the ROM in the Scanline Coprocessor Module

If you are not adding a scanline coprocessor module to the Model 76 system unit, go to Section 5.3.12.

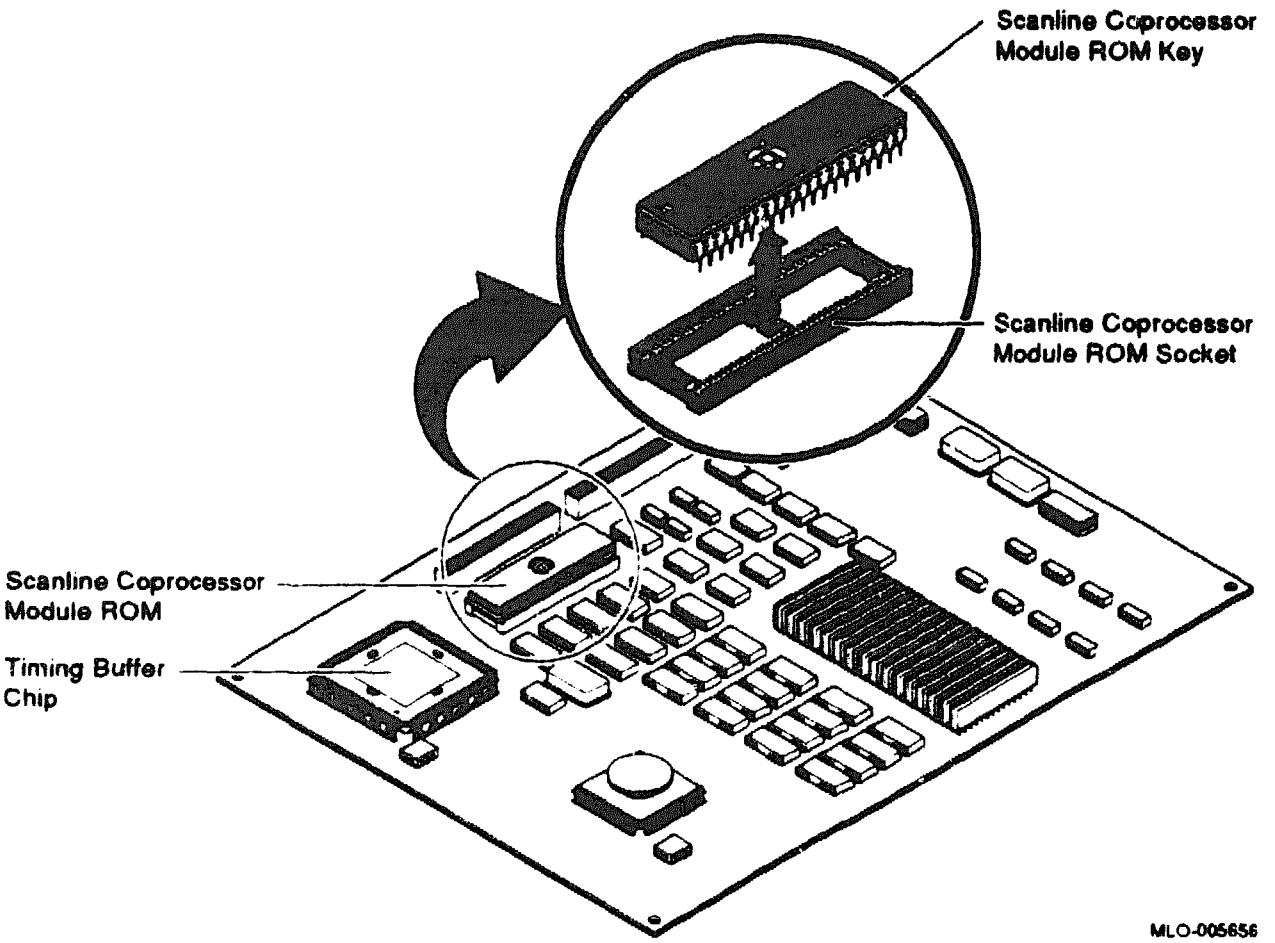
Before you can add the scanline coprocessor module from the Model 40 or Model 48 system to the Model 76 system, you must change the ROM on the scanline coprocessor module. The Model 76 upgrade kit parts bag contains a ROM box with a replacement scanline coprocessor module ROM. To change the ROM on the scanline coprocessor module:

1 Place the scanline coprocessor module on the antistatic parts mat. The components side of the module should be face up. (See Figure 5–25.)

2 Remove the ROM from the module using a chip puller or a flat-head screwdriver. (See Figure 5–25.)

Note *You may dispose of the scanline coprocessor module ROM once you have removed it. You do not need it to complete the upgrade.*

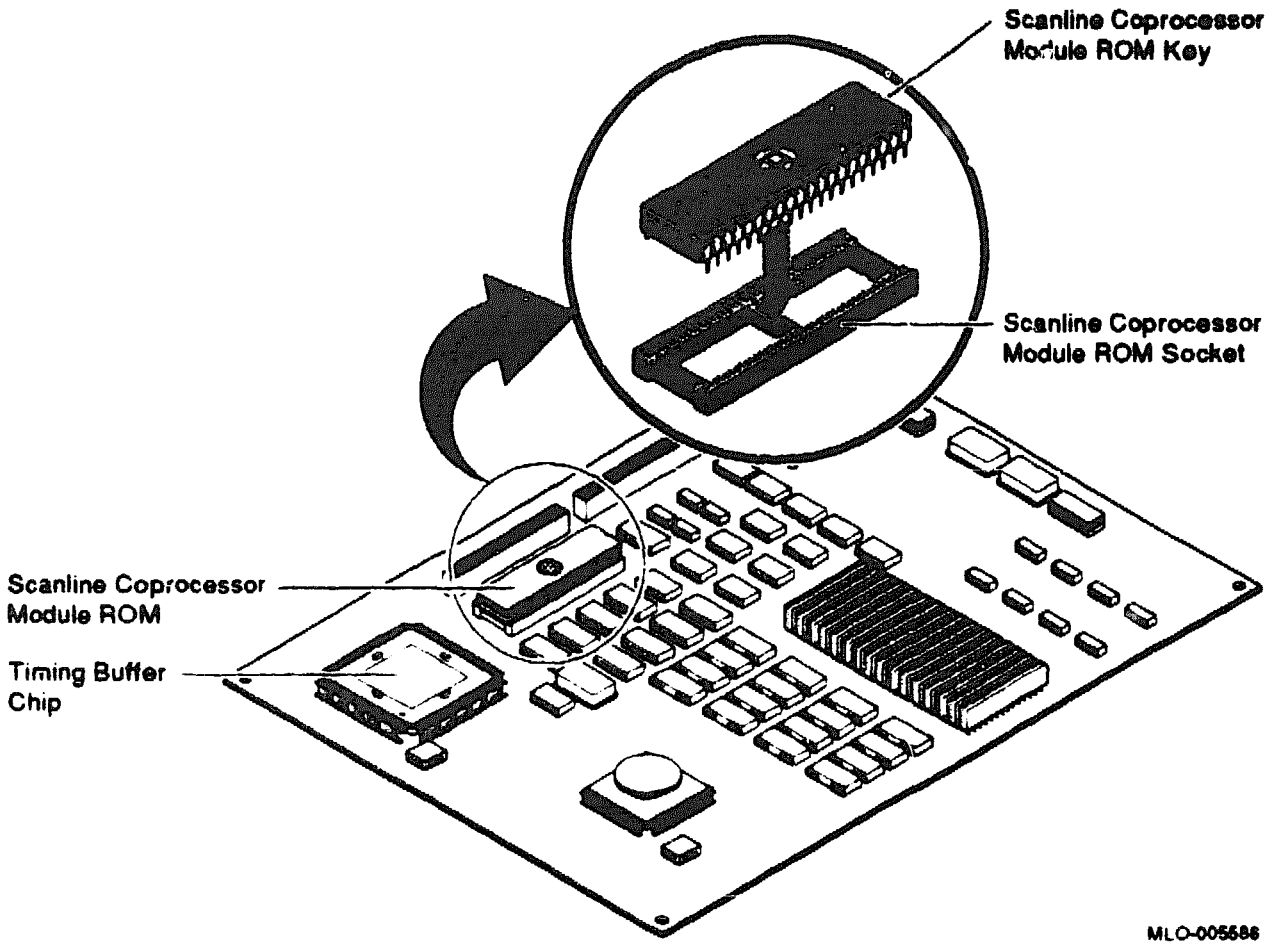
Figure 5–25 Removing the Scanline Coprocessor Module ROM



3 Take the scanline coprocessor module ROM from the Model 76 upgrade kit and install it in the vacant ROM socket on the scanline coprocessor module. Before you install it, make sure that the pins on the module ROM are straight. The scanline coprocessor module ROM key should face away from the timing buffer chip. (See Figure 5–26.)

Caution *It is important that the scanline coprocessor module ROM be in the correct position on the module, with the ROM key facing away from the timing buffer chip. Otherwise, the Model 76 system may not function correctly.*

Figure 5–26 Installing the Scanline Coprocessor Module ROM



4 Once you have added the new scanline coprocessor module ROM to the scanline coprocessor module, you can add the scanline coprocessor module to the Model 76 system.

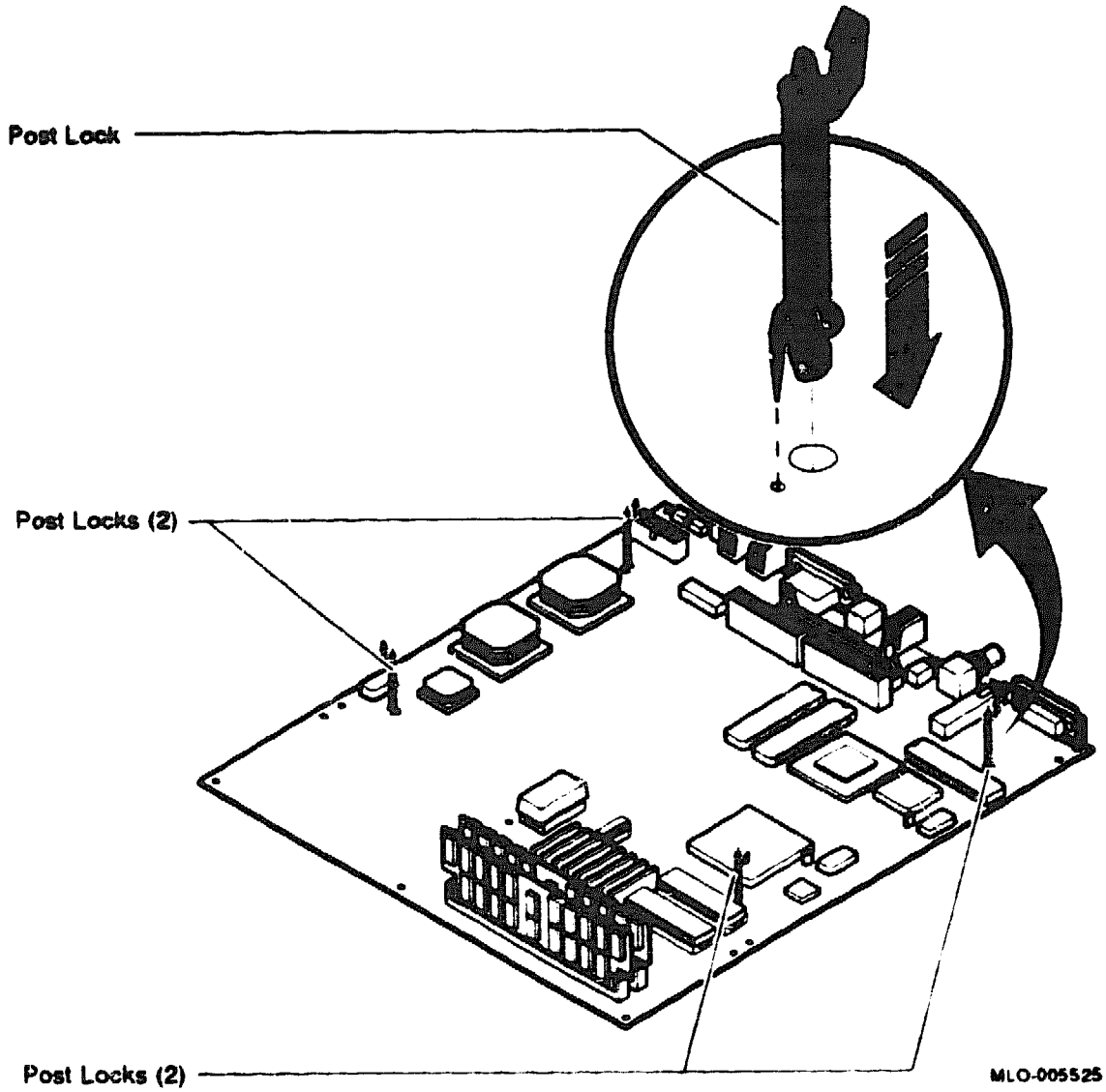
5.3.11 Adding the Scanline Coprocessor Module to the Model 76 System Unit

Take the scanline coprocessor module you removed from the Model 40 or Model 48 and install it in the Model 76 system unit:

1 Transfer the alligator clip of the antistatic wrist strap from the Model 40 or Model 48 system unit to the Model 76 system unit. (See Section 2.10.)

2 **Take the four post locks from the Model 76 upgrade kit parts bag and snap them into place in the mounting holes on the system board, as shown in Figure 5–27.**

Figure 5–27 Mounting Post Locks on the Model 76 System Board



Caution *Do not grasp the scanline coprocessor module by the corners when you add it to the system unit. The timing buffer chip located underneath the module is easily damaged. (See Figure 5–17.)*

3 **Align the connectors on the underside of the scanline coprocessor module with the connectors on the system board. The components side of the module should be face down.**

Figure 5–28 shows the top view of the scanline coprocessor module being installed in the system unit. Figure 5–29 shows the side view of the scanline coprocessor module in relation to the post locks and connectors.

4 **Press the scanline coprocessor module firmly downward until it locks onto the four system board post locks. The arrows in Figure 5–28 show where to press on the module.**

Figure 5–28 Adding a Scanline Coprocessor Module—Top View

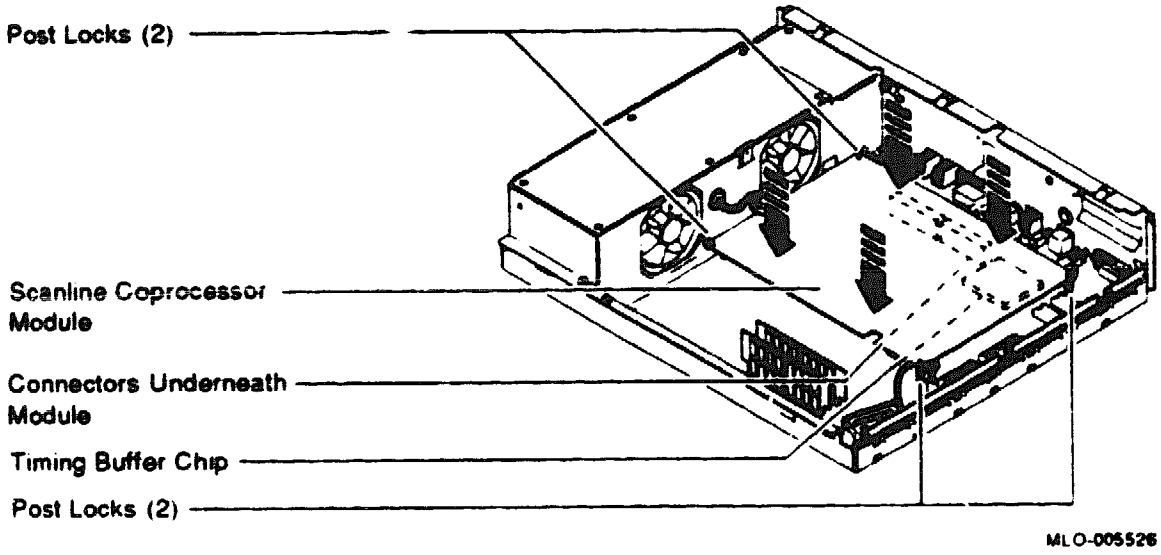
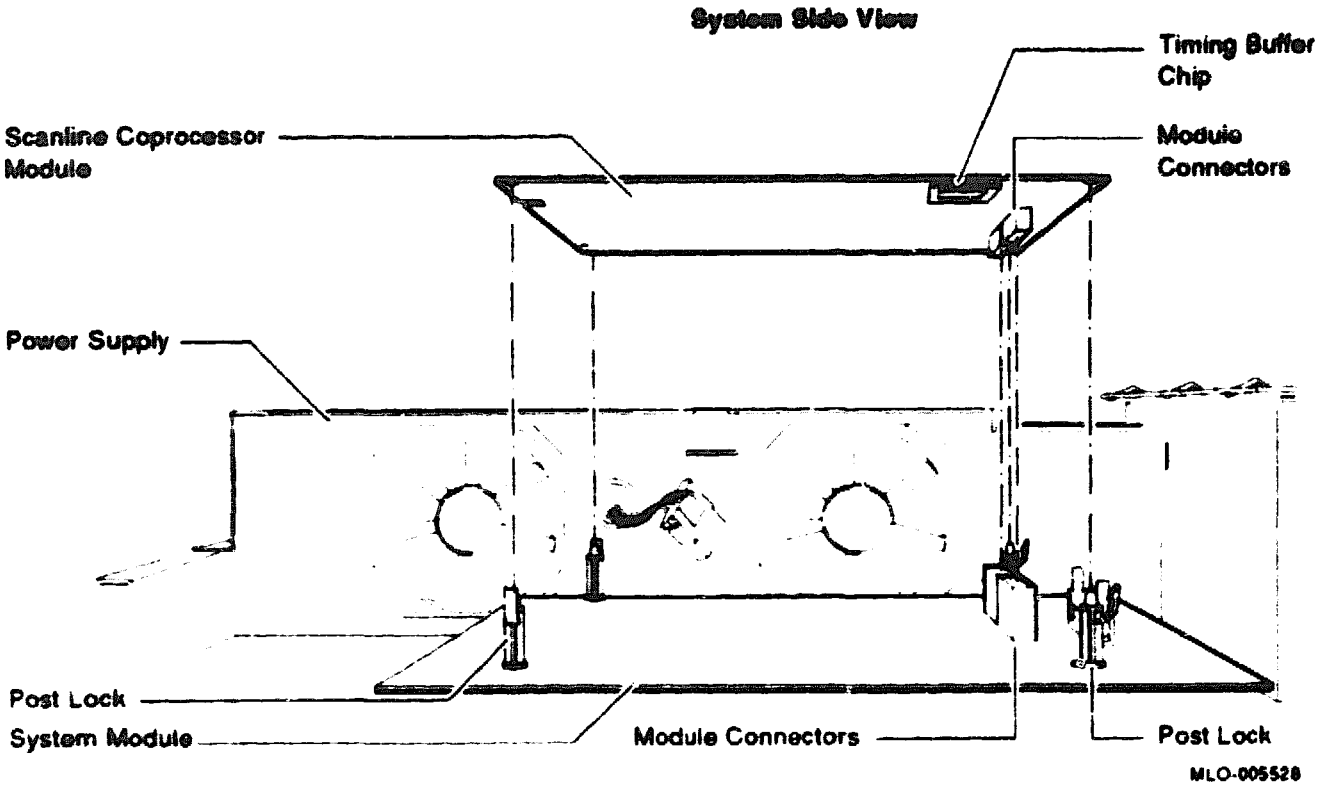


Figure 5–29 Adding a Scanline Coprocessor Module—Side View



5.3.12 Replacing the Model 40 or Model 48 Lower Drive Plate

Next, restore the Model 40 or Model 48 system unit before proceeding with the upgrade.

Caution *When you are replacing the drive plate into 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 irreparable damage.*

To replace the lower drive plate in the Model 40 or Model 48 system unit:

1 Slide the drive plate toward the back of the system. (See Figure 5–30). Make sure that:

- The three Phillips-head screws on the right side of the drive plate go inside the slide mount openings on the side of the system unit.
- The SCSI system cable stays above the drive plate.

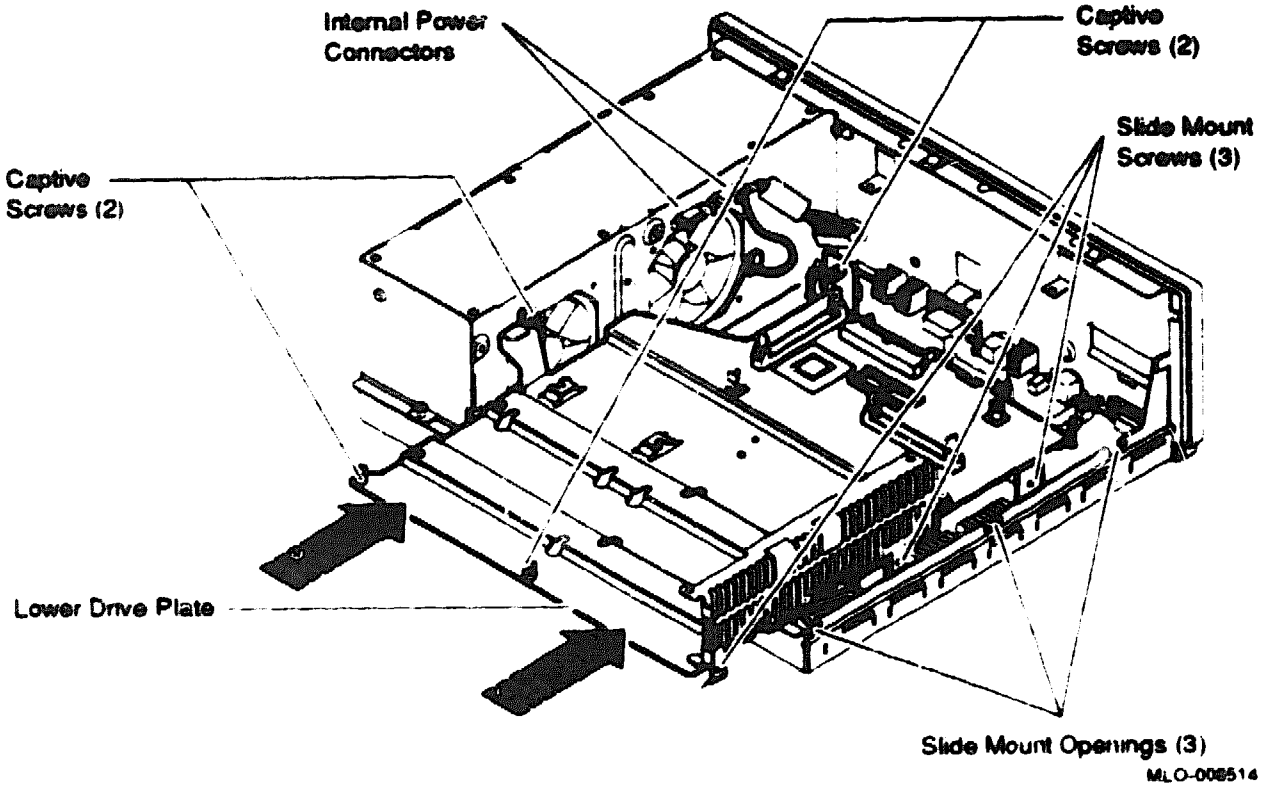
2 Tighten the captive screws on the drive plate. (See Figure 5–30).

3 Tighten the three Phillips-head slide mount screws.

4 Reconnect the internal power cables to the internal power supply connectors shown in Figure 5–30.

5 Reconnect the SCSI system cable that goes from the system board to the SCSI system port.

Figure 5–30 Replacing the Lower Drive Plate

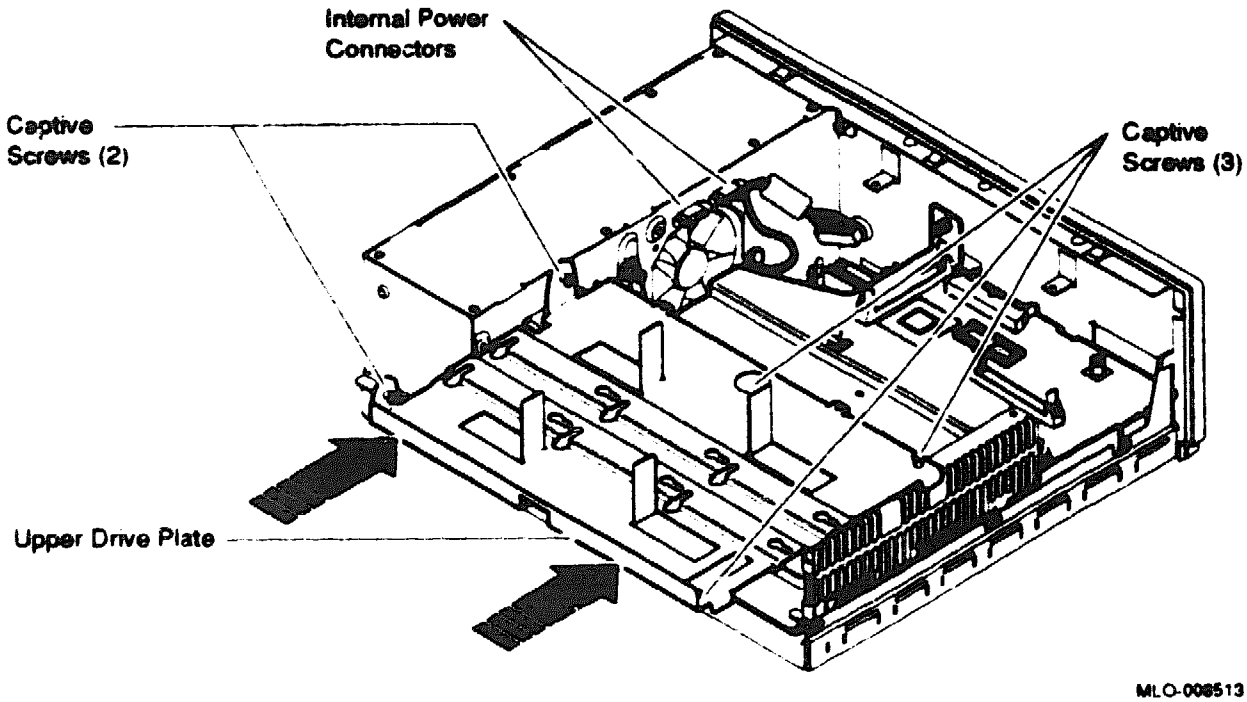


5.3.13 Replacing the Model 40 or Model 48 Upper Drive Plate

To replace the upper drive plate:

- Place the drive plate on top of the lower drive plate and tighten the captive screws. (See Figure 5–31).

Figure 5–31 Replacing the Upper Drive Plate

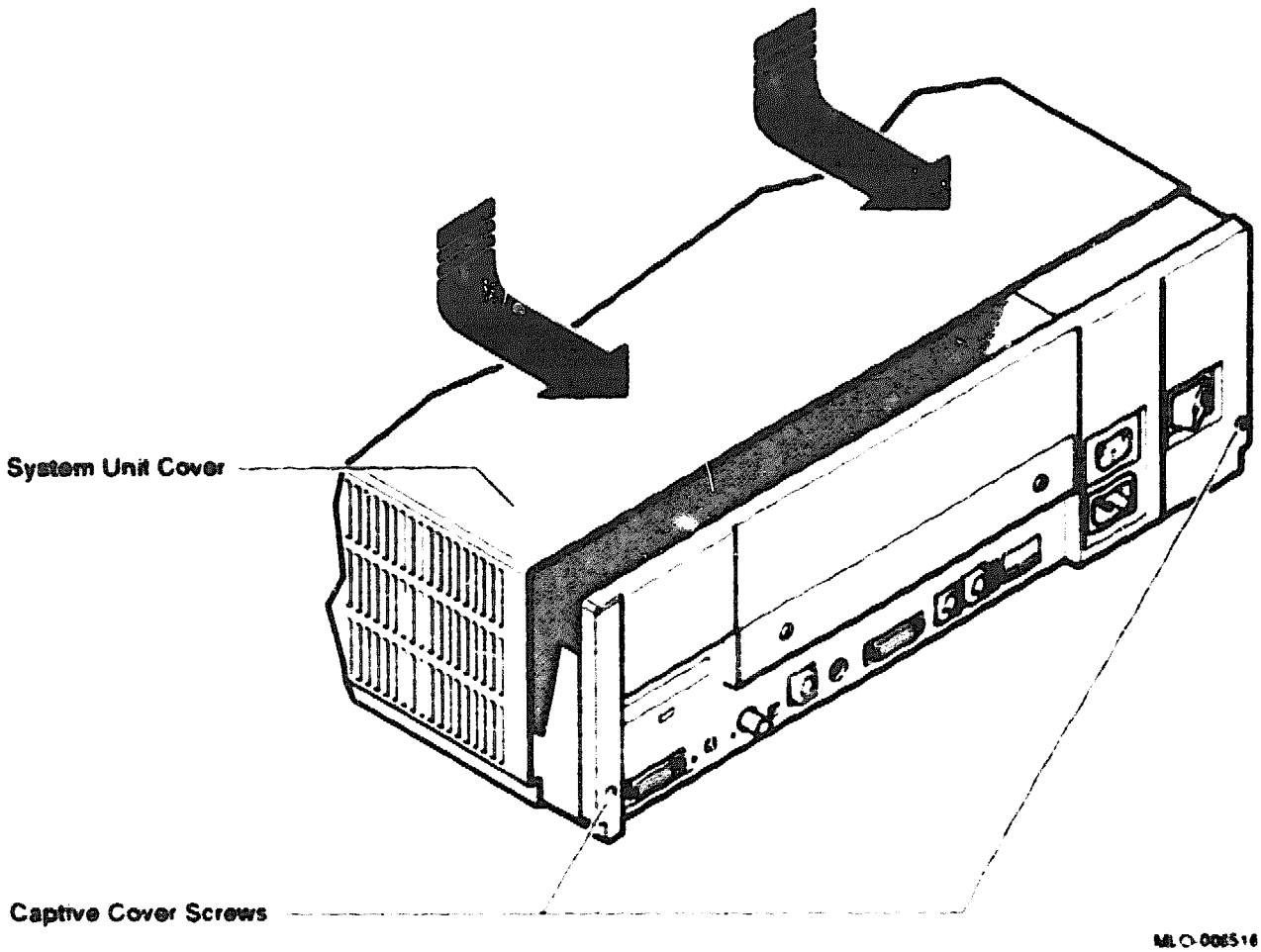


5.3.14 Replacing the Model 40 or Model 48 System Unit Cover

To prepare the Model 40 or Model 48 system for return to Digital:

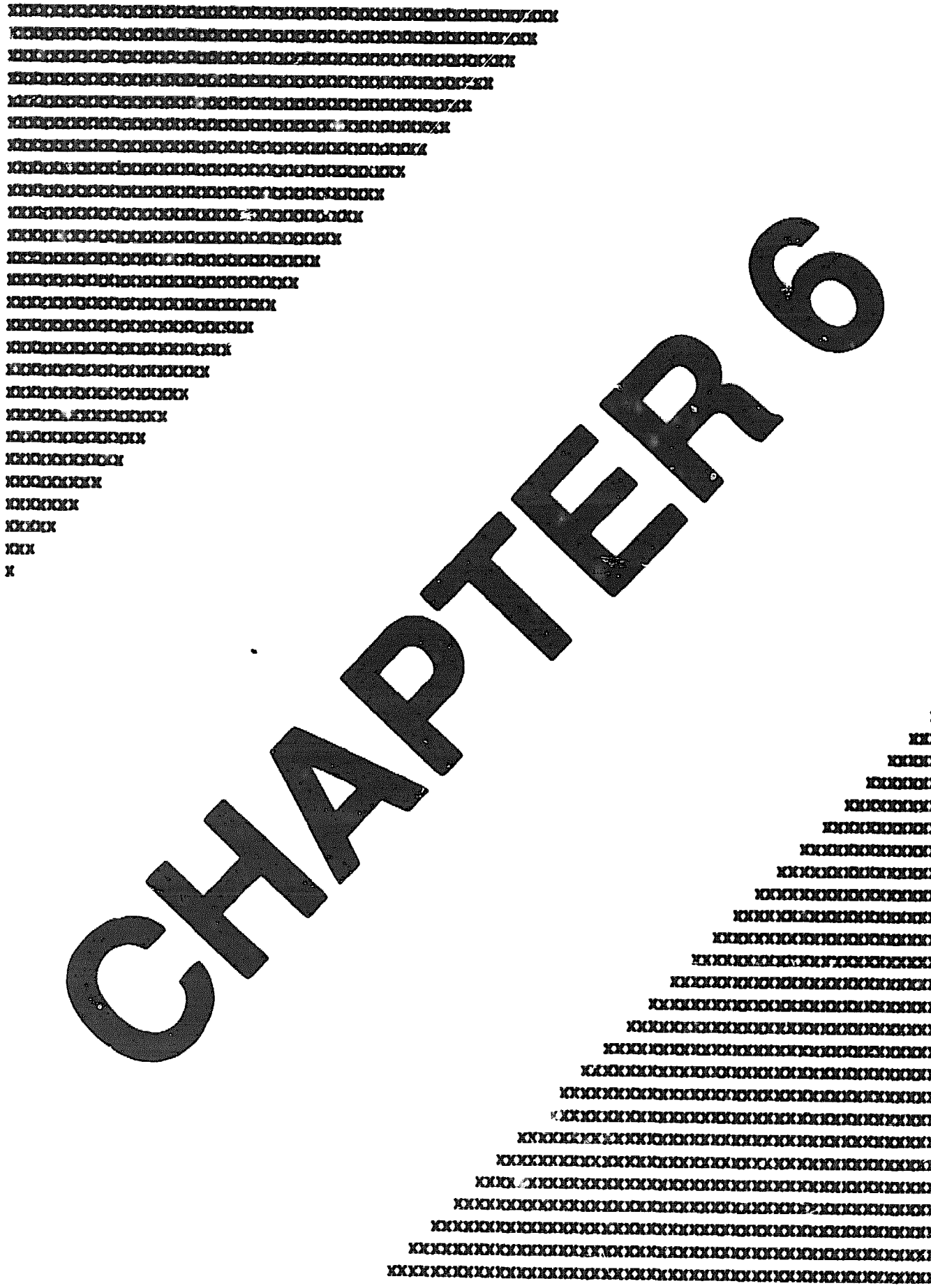
1. Before replacing the system unit cover, check that you have left the following components inside the Model 40 or Model 48 unit. These devices are not supported by, and will not function in, the Model 76 system.
   - System board
   - SCSI mass storage controller module or SCSI/ST506 mass storage controller module
   - Memory boards
   - Drive plates
   - SCSI signal cable and internal power supply cables
2. Make sure that the FCC metal fingers on the inside top of the system unit cover are properly aligned before replacing the system unit cover.
3. Replace the system unit cover and tighten the two cover screws, as shown in Figure 5–32.

Figure 5–32 Replacing the System Unit Cover



5.4 Completing the Model 76 Upgrade

You are now ready to complete the upgrade from a Model 40 or Model 48 system to a Model 76 system. Chapter 6 has information on how to complete the upgrade.


CHAPTER 6

6

Completing the VAXstation 3100 Model 76 Upgrade

This chapter describes how to complete the VAXstation 3100 Model 76 upgrade from the Model 30, Model 38, Model 40, or Model 48 system by performing the following tasks:

- Locating and identifying Model 76 modules and devices (Section 6.1)
- Restoring and connecting the drive plate to the Model 76 system unit (Section 6.2)
- Adding screw mounts and metal drive frame supports to RZxx hard disks (Section 6.3)
- Installing RZxx hard disks on the Model 76 drive plate (Section 6.4)
- Replacing the system unit cover (Section 6.5)
- Starting the system (Section 6.6)
- Running TEST 50 (Section 6.7)
- Performing basic troubleshooting (Section 6.8)
- Running diagnostics (Section 6.9)

This chapter assumes you have already done the following:

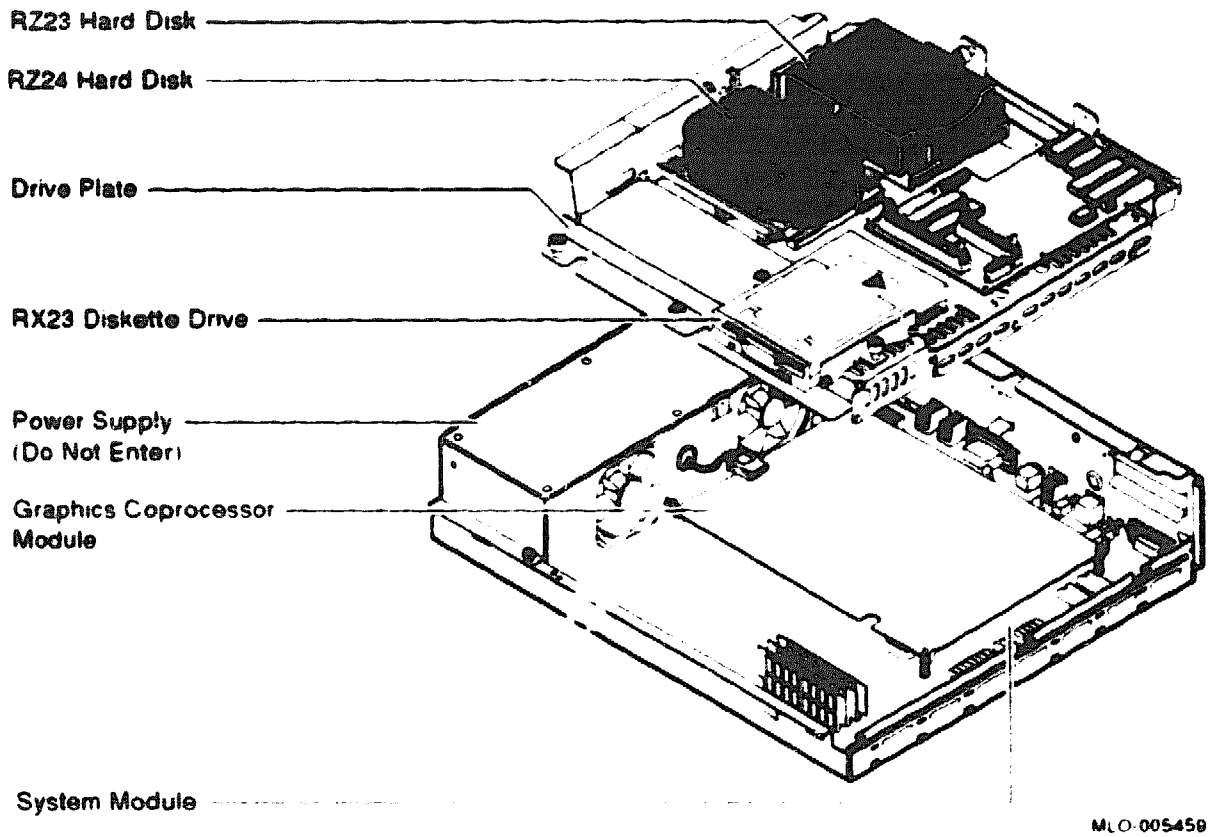
- Prepared the Model 76 system unit (as described in Chapter 2)
- Removed the Ethernet ROM and graphics coprocessor module or scanline coprocessor module (if present) from the Model 30 system (Chapter 3) the Model 38 system (Chapter 4), or the Model 40 or 48 system Chapter 5) and added them to the Model 76 system unit

Now you must complete the upgrade to a Model 76 by performing the tasks outlined in this chapter.

6.1 Location of Model 76 System Device and Modules

Figure 6–1 shows the locations of various devices and modules inside the Model 76 system unit. Depending on the configuration of the Model 76 system, these devices may or may not be in the system unit.

Figure 6–1 Model 76 Device and Module Locations



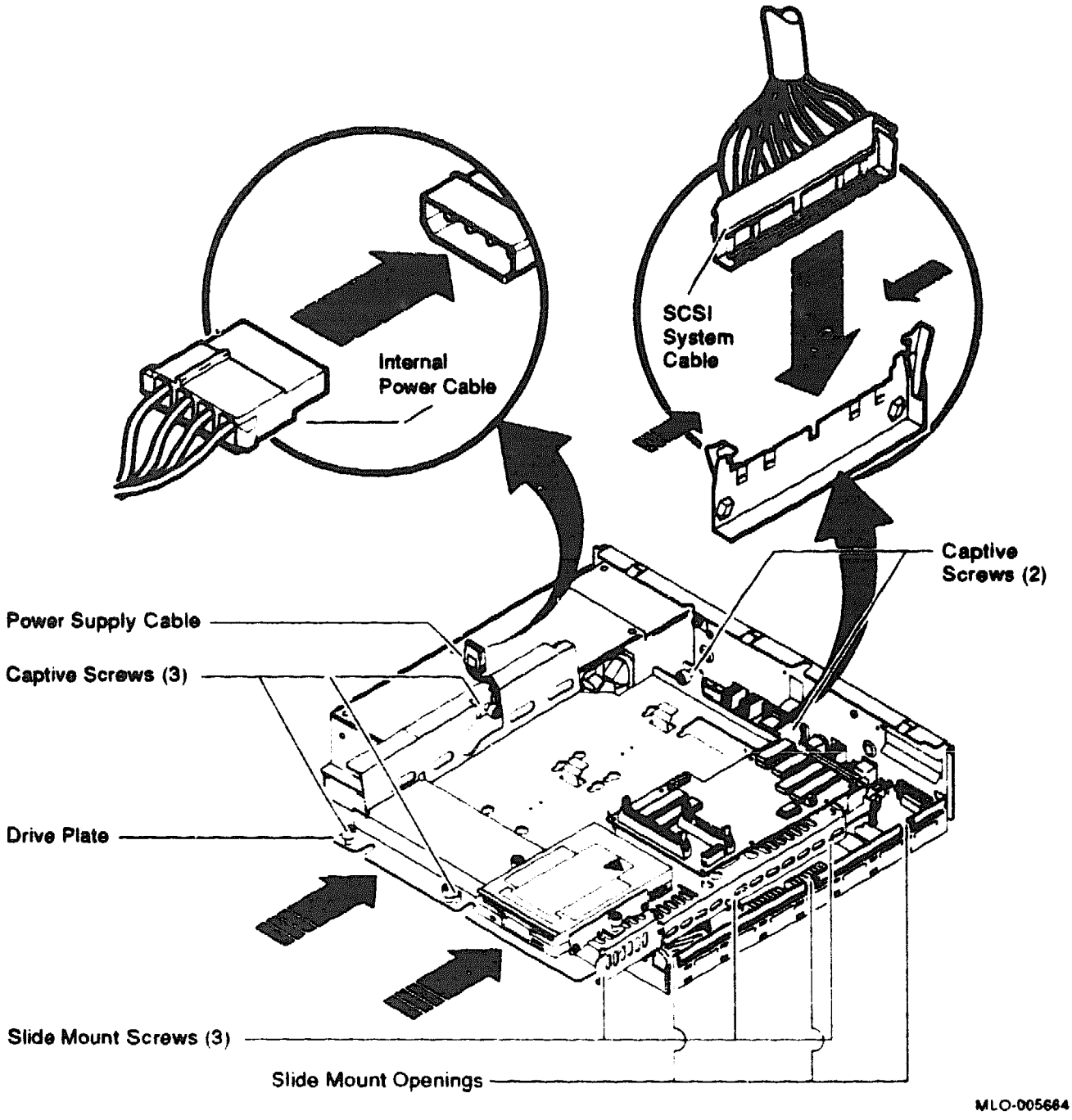
6.2 Replacing the Drive Plate in the Model 76 System Unit

To replace the drive plate, follow these steps:

Caution *When you are replacing 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.*

1. Slide the drive plate toward the back of the system, as shown in Figure 6–2. Make sure that the three screws on the right side of the drive plate go inside the slide mount openings on the side of the system unit. Make sure you pull the internal power cable through the slot in the drive plate so that it is above the drive plate.
2. Tighten the five captive screws on the drive plate. (See Figure 6–2.)
3. Tighten the three slide mount screws. (See Figure 6–2.)
4. Reconnect the internal power cable to the internal power supply. (See Figure 6–2.)
5. Connect the SCSI system cable that goes through the slot in the drive plate to the SCSI system port on the system board, beneath the drive plate.

Figure 6–2 Replacing the Drive Plate



6.3 Adding Screw Mounts and Metal Drive Frame Supports to RZxx Hard Disks

When you removed RZxx hard disks from the Model 30, Model 40, or Model 48 system, you had to unscrew the flat-head mounts that attached the hard disks to the drive plate. In order to add the RZxx hard disks to the Model 76 drive plate, you will need to add a metal drive frame support and new screw mounts to the hard disks. The Model 76 upgrade kit parts bag contains screw mounts and metal drive frame supports. (See Figure 6–3.)

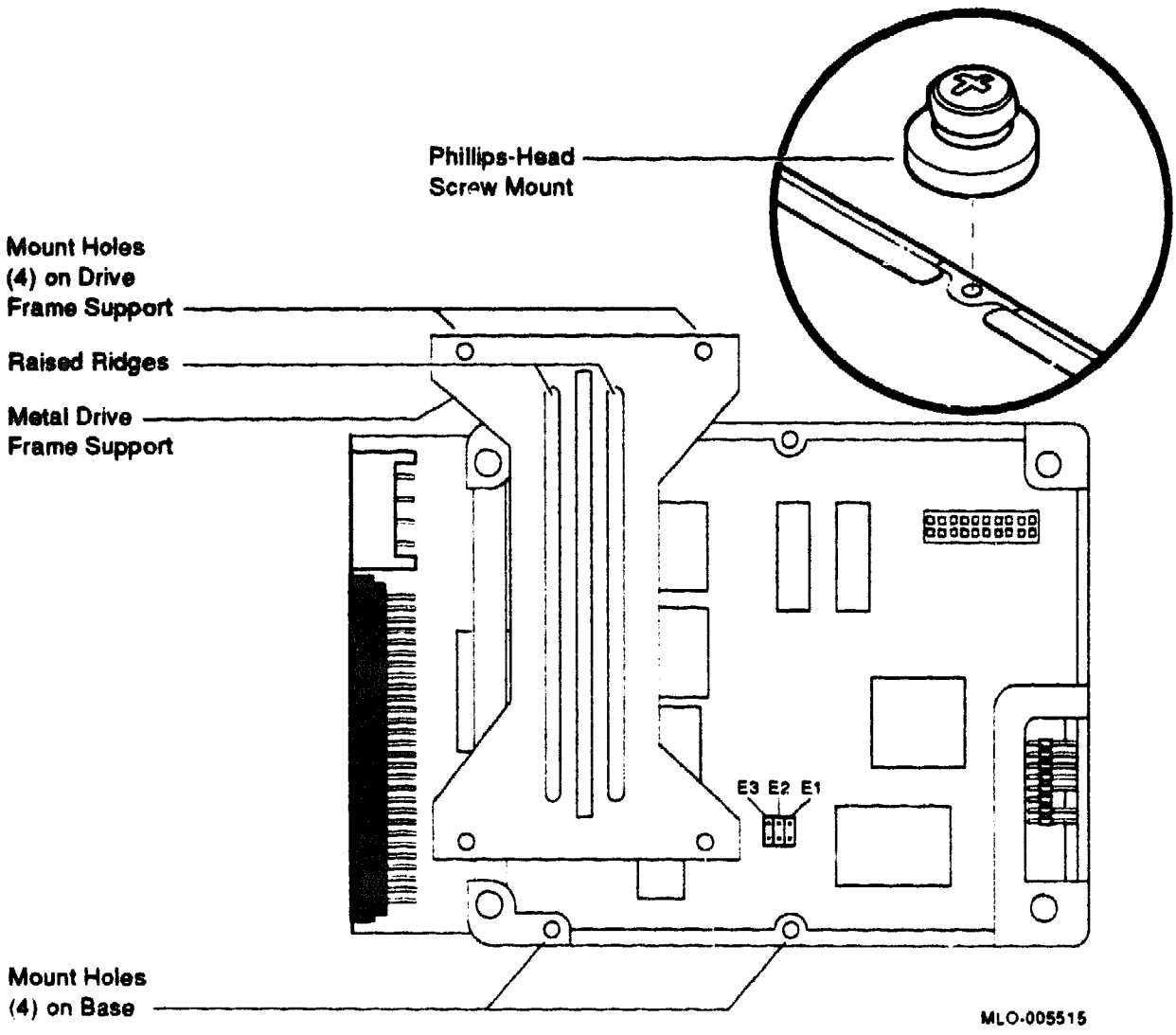
For each RZxx hard disk you removed from the Model 30, Model 40, or Model 48 system, you must perform the following tasks:

1 Take the RZxx hard disk and place it on a flat surface with the module side face up, as shown in Figure 6–3.

2 Take a metal drive frame support and place it on the bottom of the disk, aligning the holes in the drive frame support with the four mount holes on the bottom of the hard disk.

3 Take four screw mounts from the parts bag and screw them into the mount holes, thereby firmly attaching the metal drive frame support to the RZxx hard disk, as shown in Figure 6–3.

Figure 6–3 Attaching the Screw Mounts and the Metal Drive Frame Support to an RZxx Hard Disk



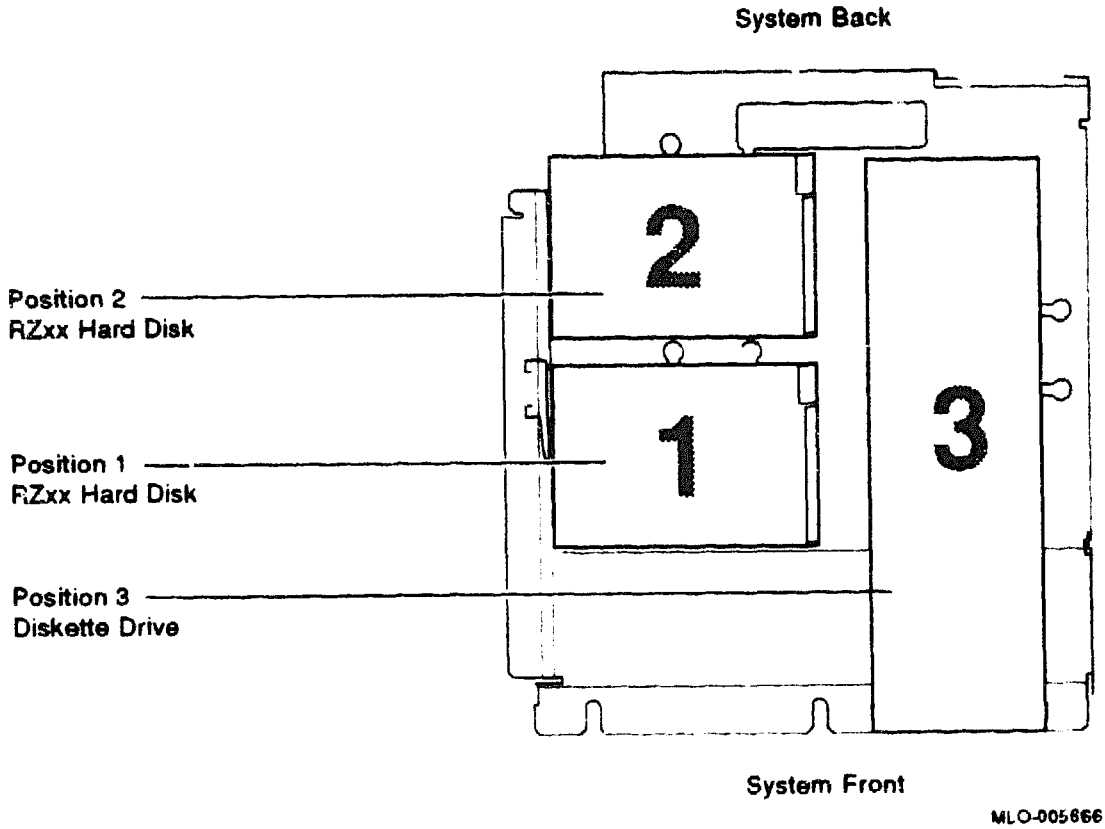
6.4 Adding RZxx Hard Disks to the Model 76 Drive Plate

Add the RZxx hard disks to the Model 76 system by completing the following steps:

1 Locate the positions on the drive plate where hard disks can be added:

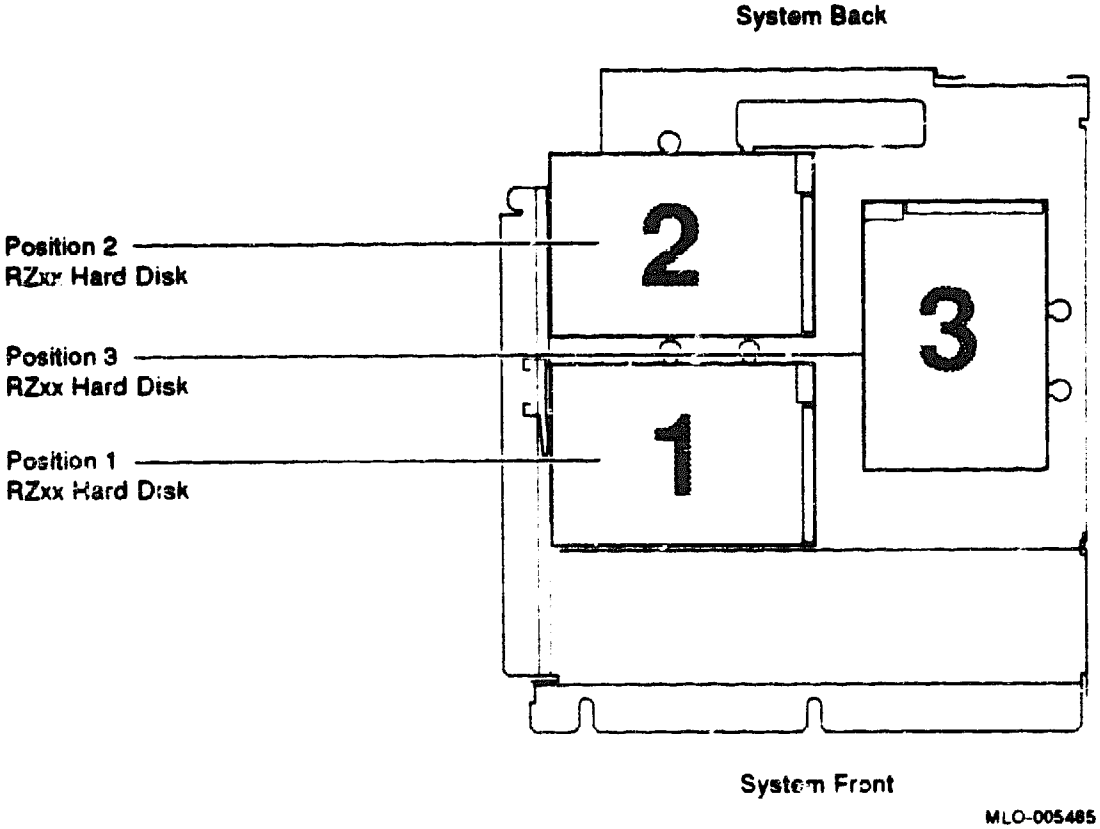
   a If the Model 76 upgrade kit came with an RX23 diskette drive already installed, you will add RZxx hard disks to positions 1 and 2 on the drive plate, as shown in Figure 6–4.

Figure 6–4 Two RZxx Hard Disks with an RX23 Diskette Drive



- **If the Model 76 upgrade kit did not come with an RX23 diskette drive, you can add RZxx hard disks to positions 1, 2, and 3 on the drive plate, as shown in Figure 6–5.**

Figure 6–5 Three RZxx Hard Disks

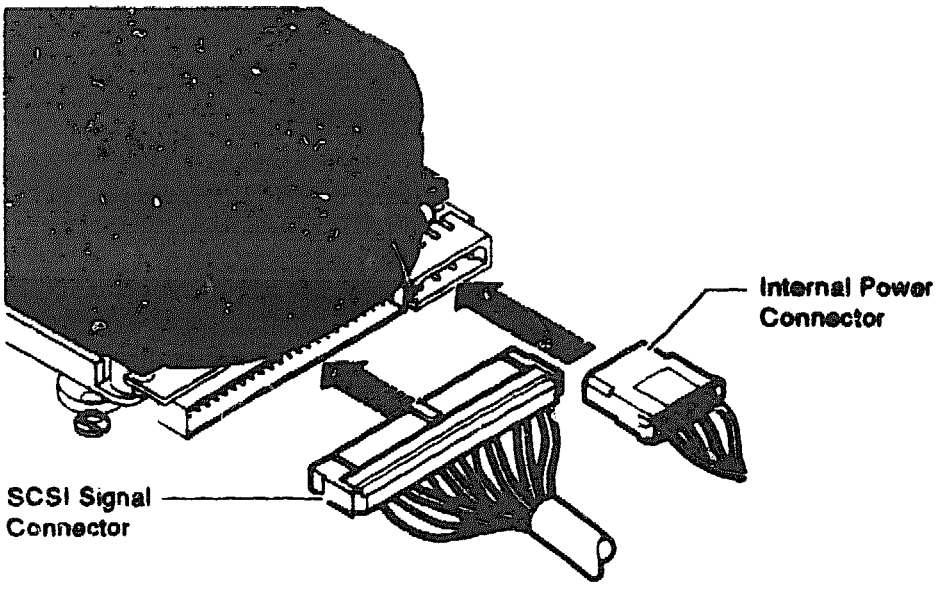


2 Connect one of the power connectors of the internal power cable into the front of the RZxx hard disks you are going to add to the drive plate, as shown in Figure 6–6. Some connectors may remain unconnected, depending on the system configuration.

3 Locate the SCSI system cable that you earlier plugged into the SCSI system port on the system board (see Figure 6–2). The SCSI system cable has four additional SCSI signal connectors for attaching to RZxx hard disks. Some connectors may remain unconnected, depending on the system configuration.

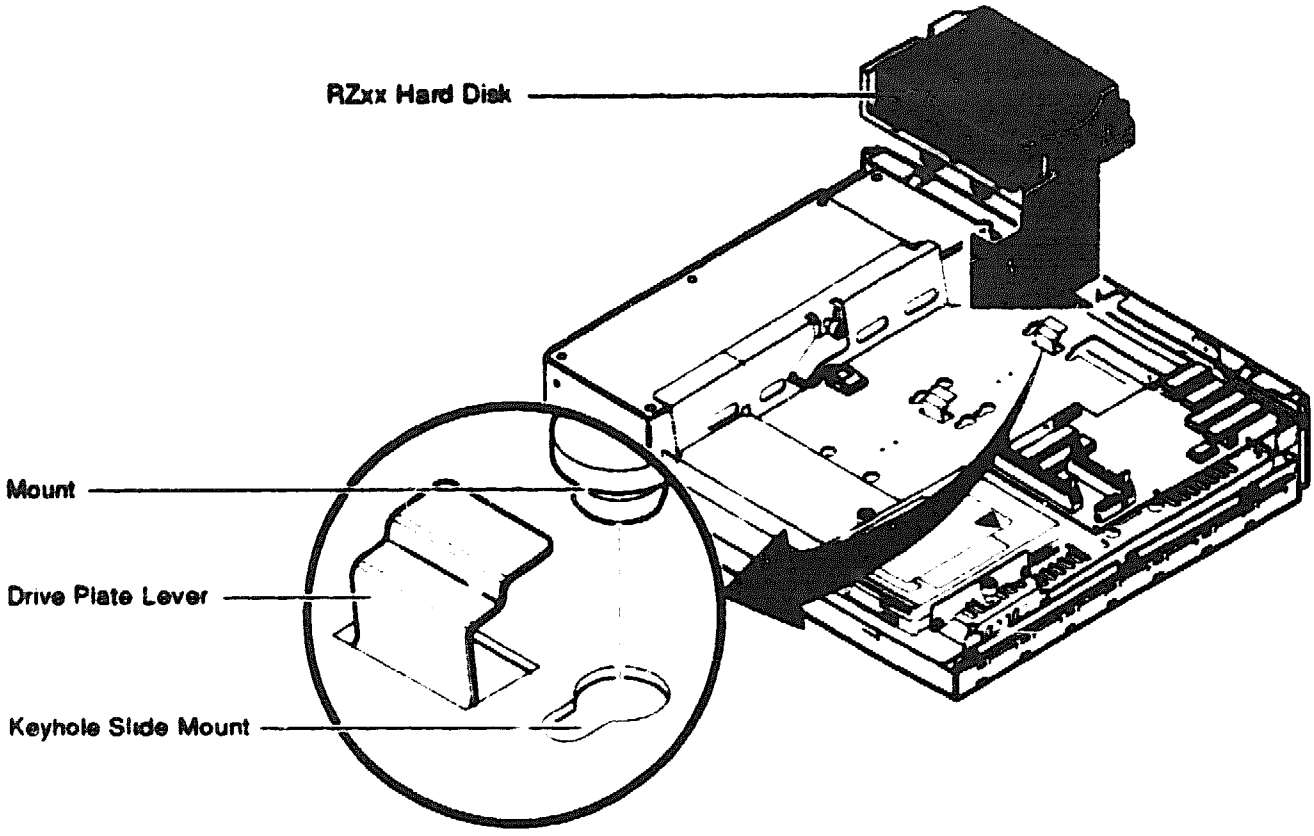
4 Connect a free SCSI signal connector into the front of each hard disk that you are going to add to the drive plate, as shown in Figure 6–6. Make sure that the keyed side of the SCSI signal connector faces upward, away from the drive plate.

Figure 6–6 Attaching Power and SCSI Connectors to RZxx Hard Disks



5 Locate the position at which you want to add an RZxx hard disk, and insert the four screw mounts on the bottom of the hard disk inside the four keyhole slide mount openings in the drive plate, as shown in Figure 6–7.

Figure 6–7 Mounting an RZxx Hard Disk on the Drive Plate



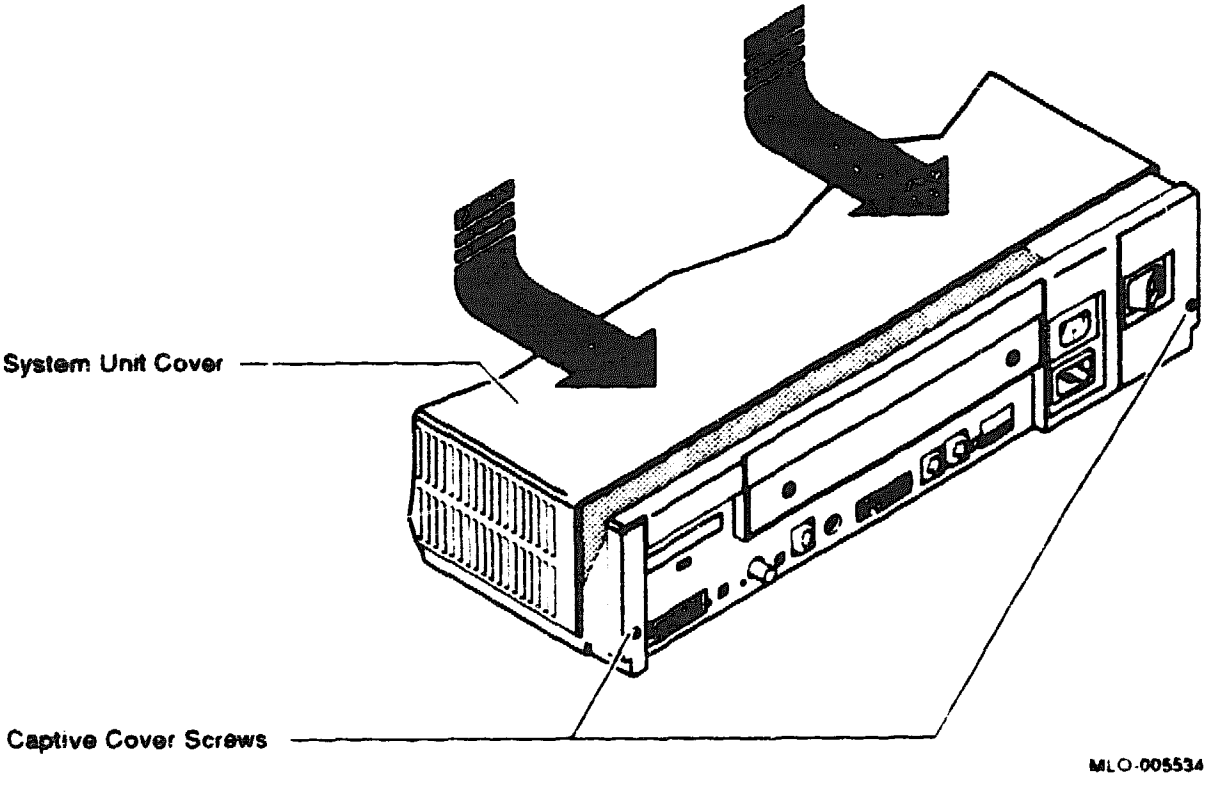
6 Press the RZxx hard disk down and slide it forward in the grooves of the drive plate until the drive plate lever pops up, locking the hard disk in place. When the hard disk is correctly mounted, the drive plate lever will make firm contact with the side of the hard disk, and the hard disk will not move on the drive plate.

6.5 Restoring the Model 76 System Unit

To restore the system unit, follow these steps:

1. Make sure that the FCC metal fingers on the inside top of the system unit cover are properly aligned before replacing the system unit cover.
2. Replace the system unit cover and tighten the two cover screws, as shown in Figure 6–8.

Figure 6–8 Replacing the System Unit Cover



3. Connect the following cables from the Model 30, Model 38, Model 40, or Model 48 system to the Model 76 system unit:
   - Keyboard cable
   - Mouse cable
   - Monitor video cable

Note *You cannot plug the keyboard cable and mouse cable into a long monitor cable. The keyboard cable and mouse cable must*

be attached directly to the ports on the back of the Model 76 system unit.

- **Thinwire Ethernet T-connector, Thinwire cable, standard Ethernet terminator, or standard Ethernet cable, depending on the system network configuration**
- **SCSI terminator or expansion box cable, depending on the system network configuration**
- **Monitor power cord**
- **System power cord**

6.6 Starting the Model 76 System

To start the system, turn the equipment on (|) in the order given.

1. **Turn expansion boxes on (|) in the following order:**
   - **BA42 expansion box**
   - **Hard disk expansion boxes**
   - **Compact disc expansion box**
2. **Turn the printer and modem on (|), if you have this equipment.**
3. **Turn the monitor on (|).**

Note *If there is a scanline coprocessor module inside the Model 76 system, it requires a long time to power up. It will be somewhere between 1 to 2 minutes before there is a screen display.*

4. **Turn the system unit on (|).**

5. **Refer to the Connecting to a Network chapter of the *VAXstation 3100 Model 76 Owner's Guide* to verify that the network switch is in the correct position.**
6. **Refer to the Running Diagnostics chapter of the *VAXstation 3100 Model 76 Owner's Guide* to verify that you added and replaced devices correctly.**

6.7 Testing the Model 76 Ethernet Hardware Address

In Chapter 2, you were instructed to run a TEST 50 on the Model 30, Model 38, Model 40, or Model 48 system and record the Ethernet hardware address of that system. At this point, with the Model 76 upgrade complete and the system running, you should repeat the TEST 50 process and compare the Ethernet hardware address from before the upgrade with the Ethernet hardware address currently on the Model 76 system.

To run this test, perform the following steps:

1 **Enter the TEST 50 command. An example of this command and the resulting configuration display follows:**

```
>>> TEST 50 Return

KA43-A  V1.0
ID 08-00-2B-07-E3-83 ❶

   MONO          0000.0001
   CLK           0000.0001
   NVR           0000.0001
   DZ            0000.0001
         00000001 00000001 00000001 00000001 00000001 000012A0
   MEM           0010.0001
         01000000
   MM            0000.0001
   FP            0000.0001
   IT            0000.0001

   SCSI-A        2828.0001  V1.59
      FFFFFF05 FFFFFF05 FFFFFF05 00000001 FFFFFF05 01000001 FFFFFF03 FFFFFF05 ❷

   SCSI-B        1C1C.0001  V1.59
      FFFFFF05 FFFFFF05 00000001 00000001 05000001 FFFFFF05 FFFFFF03 FFFFFF05 ❸

   SYS           0000.0001
   8PLN          0000.0001  V1.3
   NI            0000.0001
   >>>
```

2 **Compare the Ethernet hardware address (indicated by callout ❶ in the preceding example) with the Ethernet hardware address you recorded in Chapter 2. If they are identical, you have successfully transferred the Ethernet ROM. If the addresses before and after the upgrade do not match, you should refer to the Running Diagnostics chapter of the *VAXstation 3100 Model 76 Owner's Guide*.**

3 Check the devices listed on the SCSI-A bus (indicated by callout ❻ in the preceding example) and on the SCSI-B bus (indicated by callout ❼ in the preceding example) to make sure that all the devices you connected, either internally to the SCSI-A bus or externally to the SCSI-B bus, are being recognized by the system. Refer to the SCSI IDs appendix of the *VAXstation 3100 Model 76 Owner's Guide* for information on SCSI IDs.

6.8 Troubleshooting

If there is a problem with the Model 76 system after you have finished the upgrade, you should refer to the Troubleshooting chapter in the *VAXstation 3100 Model 76 Owner's Guide*. That chapter describes procedures for identifying a problem with the system and suggests solutions if you know the source of the problem. Appendix A of this manual also includes the troubleshooting table listing suggested solutions to problems that might occur with the Model 76 system.

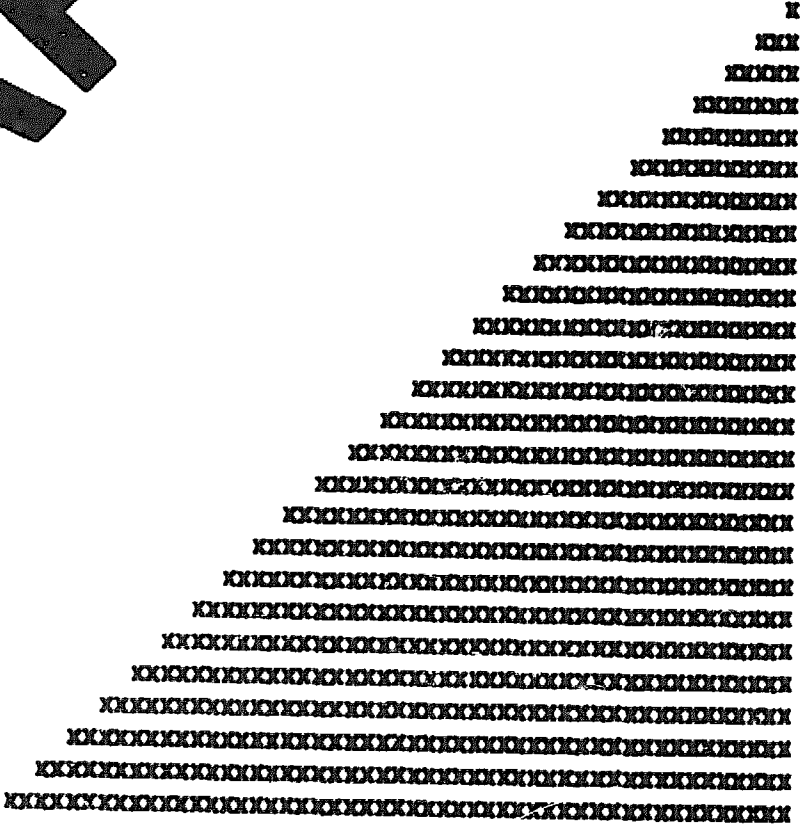
6.9 Running Diagnostics

If you want to verify that all the devices have been correctly installed in the Model 76 system unit and that the Model 76 system is functioning correctly, refer to the Running Diagnostics chapter in the *VAXstation 3100 Model 76 Owner's Guide*. That chapter tells you how to perform a series of diagnostics tests on the Model 76 system. It also describes messages that are commonly displayed during the power-up of the system.

6.10 Setting Console Commands

If you want to set the console commands on the Model 76 system, including the boot flag, the boot device, the default action, and the password feature, refer to the Running Diagnostics chapter and the Startup Procedures appendix in the *VAXstation 3100 Model 76 Owner's Guide*. Those sections tell you how to set the console commands to the same value they had on the Model 30, Model 38, Model 40, or Model 48 system.

CHAPTER 7



7

What to Do Next

This chapter explains how to do the following:

- Pack up the system for return to Digital (Section 7.1)
- Fill out the necessary return forms (Section 7.2)

Follow the instructions in this chapter and the Return Authorization procedure explained when the customer placed the order. If you need further assistance, contact the Digital Service Administration office with which the customer originally placed the order.

7.1 Packing Up the Model 30, Model 38, Model 40, or Model 48 System

The Digital Service representative must work together with the customer to ensure that the hardware is packaged properly for return to Digital and that the proper return forms in this appendix are filled out.

Use the packing material the Model 76 upgrade kit was shipped in to pack the Model 30, Model 38, Model 40, or Model 48 system unit for shipment back to Digital.

7.2 Filling Out Digital Return Forms

The Digital Service representative who performs the upgrade must complete the Digital Service Upgrade Worksheet and the Digital Service Installation Receipt. The Digital Service representative and the customer must work together to complete the Returns Material Checklist. Instructions for how to fill out the Digital return forms are given below. The Digital return forms are on the following pages.

1 The Digital Service representative must return the Digital Service Upgrade Worksheet to the their district Digital Administrative Services office or to DECdirect, depending on where the customer ordered the upgrade kit from.

2 The Digital Service representative must give one copy of the Digital Service Installation Receipt to the customer and one copy to the district CAS office or to DECdirect, depending on where the customer ordered the upgrade kit from.

3 To keep from being billed, the customer must include one copy of the Returns Material Checklist with all modules and hardware being returned.

4 The customer must contact the CAS or DECdirect office from which the upgrade was originally ordered to verify the Return Authorization (RA) number and to notify CAS or DECdirect that equipment is ready to be returned.

5 The customer should record the RA number and the DEC order number wherever noted on the return forms. The DEC order number should be written on the same line as the RA number.

6 CAS or DECdirect will then give the customer instructions on how and where to return the equipment. The return status will be monitored by Sales and CAS on a regular basis. Sales/District Operations will authorize an additional charge in the event of a nonreturn (if equipment is not returned within 60 days after completion of the upgrade).

7.3 Labor Activity Reporting

Use the labor code **VS43A-xx** for all Digital Service representative labor activity reporting.

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CUSTOMER SERVICE UPGRADE WORKSHEET

This form acts as a verification of the work performed on the system and as a check on the procedures used. It can also be used for repricing the customer's service contract. Return this form to your local contracts administration office for processing.

CUSTOMER: _____

OLD SYSTEM TYPE: _____ NEW SYSTEM TYPE: _____

SERIAL NUMBER: _____ SERIAL NUMBER: _____

MODULES/HARDWARE SWAPPED:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

PAGE 7-6 INTENTIONALLY LEFT BLANK

CUSTOMER SERVICE INSTALLATION RECEIPT

This document acts as a customer receipt and as verification for Customer Service that the upgrade kit installation has been completed.

CUSTOMER SERVICE: Complete both copies of this form and give a copy to the customer and a copy to local organization for filing with the customer documents.

CUSTOMER: Digital will contact you within the next few days. Keep this copy as your record of installation by DIGITAL.

RETURN AUTHORIZATION NUMBER: _____

NAME OF ORDER CONTACT: _____

CUSTOMER SERVICE CONTACT: _____

ORGANIZATION ORDER PLACED WITH: (check one) CAS ____ DEC-Direct ____

CUSTOMER SERVICE PHONE NUMBER: _____

CUSTOMER DEC NUMBER: _____

CUSTOMER CONTACT: _____

CUSTOMER ADDRESS: _____

CUSTOMER PHONE NUMBER: _____

SYSTEM UPGRADED: (check one) VAXstation 3100 Model 30 ____ VAXstation 3100 Model 38 ____

DATE INSTALLATION PERFORMED: _____

SYSTEM PACKAGED FOR RETURN: (fill in appropriate lines)

	SYSTEM	SERIAL NUMBER
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____

_____ (Customer Signature)

_____ (Customer Service Signature)

PAGE 7-8 INTENTIONALLY LEFT BLANK

CUSTOMER SERVICE INSTALLATION RECEIPT

This document acts as a customer receipt and as verification for Customer Service that the upgrade kit installation has been completed.

CUSTOMER SERVICE: Complete both copies of this form and give a copy to the customer and a copy to local organization to remain with the customer documents.

CUSTOMER: Digital will contact you within the next few days. Keep this copy as your record of installation by DIGITAL.

RETURN AUTHORIZATION NUMBER: _____

NAME OF ORDER CONTACT: _____

CUSTOMER SERVICE CONTACT: _____

ORGANIZATION ORDER PLACED WITH: (check one) CAS ____ DEC-Direct ____

CUSTOMER SERVICE PHONE NUMBER: _____

CUSTOMER DEC NUMBER _____

CUSTOMER CONTACT _____

CUSTOMER ADDRESS _____

CUSTOMER PHONE NUMBER: _____

SYSTEM UPGRADED (check one) VAXstation 3100 Model 30 ____ VAXstation 3100 Model 38 ____

DATE INSTALLATION PERFORMED _____

SYSTEM PACKAGED FOR RETURN (fill in appropriate lines)

	SYSTEM	SERIAL NUMBER
1	_____	_____
2	_____	_____
3	_____	_____
4	_____	_____
5	_____	_____

_____ _____

(Customer Signature) (Customer Service Signature)

PAGE 7-10 INTENTIONALLY LEFT BLANK

RETURNS MATERIAL CHECKLIST

This form must be filled out and returned with the old hardware in order to clear the customer's account.

DATE _____

RETURN AUTHORIZATION NUMBER: _____

CUSTOMER DEC NUMBER: _____

CUSTOMER (COMPANY) NAME: _____

CUSTOMER ADDRESS: _____

_____ _____

_____ _____

_____ _____

CUSTOMER CONTACT: _____

CUSTOMER TELEPHONE NUMBER _____

Include This Form With the Modules/Hardware Returned

HARDWARE BEING RETURNED

1	_____	9	_____
2	_____	10	_____
3	_____	11	_____
4	_____	12	_____
5	_____	13	_____
6	_____	14	_____
7	_____	15	_____
8	_____	16	_____

_____ _____

(system number from rear of system) (serial number)

PAGE 7-12 INTENTIONALLY LEFT BLANK

RETURNS MATERIAL CHECKLIST

This form must be filled out and returned with the old hardware in order to clear the customer's account.

DATE _____

RETURN AUTHORIZATION NUMBER _____

CUSTOMER DEC NUMBER _____

CUSTOMER (COMPANY) NAME _____

CUSTOMER ADDRESS _____

_____ _____

_____ _____

_____ _____

CUSTOMER CONTACT _____

CUSTOMER TELEPHONE NUMBER _____

Include This Form With the Modules/Hardware Returned

HARDWARE BEING RETURNED

1.	_____	9.	_____
2.	_____	10.	_____
3.	_____	11.	_____
4.	_____	12.	_____
5.	_____	13.	_____
6.	_____	14.	_____
7.	_____	15.	_____
8.	_____	16.	_____

_____ _____

(system number from rear of system) (serial number)

PAGE 7-14 INTENTIONALLY LEFT BLANK

RETURNS MATERIAL CHECKLIST

This form must be filled out and returned with the old hardware in order to clear the customer's account.

DATE _____

RETURN AUTHORIZATION NUMBER _____

CUSTOMER DEC NUMBER _____

CUSTOMER (COMPANY) NAME _____

CUSTOMER ADDRESS _____

_____ _____

_____ _____

_____ _____

CUSTOMER CONTACT _____

CUSTOMER TELEPHONE NUMBER _____

Include This Form With the Modules/Hardware Returned

HARDWARE BEING RETURNED

1	_____	9	_____
2	_____	10	_____
3	_____	11	_____
4	_____	12	_____
5	_____	13	_____
6	_____	14	_____
7	_____	15	_____
8	_____	16	_____

_____ _____

(system number from rear of system) (serial number)


APPENDIX A

A

Troubleshooting

This chapter provides information on the following:

- Problems you may encounter after completing a Model 76 upgrade
- Identifying a problem with the system
- Using the troubleshooting table

If you know the source of the problem, see Table A–1 for suggested solutions.

A.1 Problems You May Encounter After a Model 76 Upgrade

Following is a list of the problems most commonly encountered after a Model 76 upgrade and what you should do about them:

- Bent and touching pins on the timing buffer chip on the scanline coprocessor module: You may attempt to separate or straighten the pins using a pen knife or a similar tool. If you are unsuccessful at separating or straightening the pins, the scanline coprocessor module must be replaced.
- Bent ROM pins on the Ethernet ROM: You may attempt to straighten the pins, using a pair of pliers or a similar tool, so that the Ethernet ROM pins will fit in the Ethernet ROM socket. If you are unsuccessful at straightening the pins on the Ethernet ROM, use the Ethernet ROM that was shipped with the Model 76 upgrade kit. You must then refer to the system software documentation for Ethernet hardware address information.
- Bent ROM pins on the scanline coprocessor module ROM: You may attempt to straighten the pins, using a pair of pliers or a similar tool, so that the ROM pins will fit in the scanline coprocessor module ROM socket. If you are unsuccessful at straightening the pins on the scanline coprocessor module ROM, you must order a new scanline coprocessor module ROM.
- Incorrectly mounted Ethernet ROM or scanline coprocessor module ROM with the ROM key facing in the wrong direction: Make sure you have correctly installed the Ethernet ROM or scanline coprocessor module ROM.

- Damaged or unseated SIMM memory modules: Refer to the Running Diagnostics chapter and Adding Optional Devices Inside Your System Unit chapter of the *VAXstation 3100 Model 76 Owner's Guide*.
- Bad connections on internal power cables or SCSI system cables: Make sure all of the cables are plugged in correctly and completely.

A.2 Identifying a Problem

To determine where the problem is, follow these steps:

1 Refer to the operating system documentation for shutdown procedures before turning off the VAXstation 3100 Model 76 system and SCSI devices. Devices may not be added to the SCSI bus, removed from the SCSI bus, or recabled while the operating system is running.

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

2 Turn all expansion boxes off (O).

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

4 Turn the system unit off (O).

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

- Monitor video cable
- Monitor power cord
- System power cord
- Expansion box connector cable
- Expansion box power cord
- Keyboard cable
- Mouse/tablet cable
- Network cables

At this point, all components should be off.

6 Now, turn your equipment on (|) in the following order:

- BA42 storage expansion boxes
- Compact disc expansion box
- Printer
- Monitor
- System unit

7 Adjust the brightness and contrast on your monitor.

If you still have a problem, refer to Table A–1.

If you have not found a solution to your problem after checking the troubleshooting tables, run system diagnostic programs, as described in the Running Diagnostics chapter of your *VAXstation 3100 Model 76 Owner's Guide*.

A.3 Using the Troubleshooting Table

After you have determined the source of your problem, follow these steps:

- For monitor problems, see your monitor guide.
- For network problems, see Connecting to a Network in your *VAXstation 3100 Model 76 Owner's Guide*.
- For problems with a compact disc drive, see the diagnostic information in the compact disc drive owner's manual and in the Running Diagnostics chapter of the *VAXstation 3100 Model 76 Owner's Guide*.
- For other problems, do the following:

  1 Note the symptoms of the problem.

  2 Locate a description of the symptom in the Symptom column of Table A–1.

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

  4 Follow the advice in the Suggested Solution column.

  5 Run system diagnostics, as described in the Running Diagnostics chapter of your *VAXstation 3100 Model 76 Owner's Guide*.

  6 If the problem persists, call your Digital Service representative.

Table A–1 Troubleshooting

Symptom	Possible Cause	Suggested Solution
System Unit Problems		
System unit fan is off.	Power cable not connected.	Check the power cable connections at both ends.
	Power supply or system unit fan failure.	Contact your Digital Service representative.
Power light is off.	Power cable not connected.	Check the power cable connections at both ends.
	Wall socket may not be working.	Try a different wall socket, or try an electrical device that you know works in the wall socket.
		Contact your Digital Service representative.
		Turn the system off for 10 seconds and then turn it back on. Turn the system off. Unplug the video cable, communications cable, and printer. Then plug all cables back in and turn the system on.
Power-up display does not show after 2 minutes.	Monitor cable or video cable not connected.	Check that the monitor cable and video cable are plugged in at both ends.
	Alternate console switch in wrong position.	Change alternate console switch to correct position. See Appendix A of your *VAXstation 3100 Model 76 Owner's Guide*.
	Monitor brightness and contrast controls are too dark to see the screen display.	Adjust monitor brightness and contrast controls. Verify that monitor power switch is on (	).
	Keyboard cable is not connected.	Check keyboard cable connection.
	Monitor fuse is blown.	See your monitor guide for fuse replacement instructions.
	Wall socket may not be working.	Try a different wall socket, or try an electrical device that you know works in the wall socket.
		If the problem persists, contact your Digital Service representative.
Power-up display contains question marks or asterisks.	Possible system error. Can be a soft error or a hard error.	If question marks or asterisks appear with any numbers in the power-up display, see the Running Diagnostics chapter of your *VAXstation 3100 Model 76 Owner's Guide* for further test instructions.

(continued on next page)

Table A–1 (Cont.) Troubleshooting

Symptom	Possible Cause	Suggested Solution
System Unit Problems		
Window display does not appear on the screen. (System does not boot.)	Your software is not installed.	See your software documentation for installation instructions. See the Running Diagnostics chapter of your *VAXstation 3100 Model 76 Owner's Guide*.
	Video option failure	See the Running Diagnostics chapter of your *VAXstation 3100 Model 76 Owner's Guide* for more information.
	Software problem	Call your Digital Service representative.
	Default recovery action is set to halt.	Change the default recovery action to boot system from system disk. See Appendix A of your *VAXstation 3100 Model 76 Owner's Guide*.
	Incorrect boot device specified.	Change the default recovery action to boot system from system disk. See Appendix A of your *VAXstation 3100 Model 76 Owner's Guide*.
Mouse/Tablet Problems		
Pointing device (mouse or optional tablet) pointer does not appear on screen, or monitor does not respond to pointing device commands.	Pointing device cable is installed incorrectly or is loose.	Turn off system. Unplug and then replug the cable to reset the device.
	The system is in console mode; no pointer appears on the screen.	Install your windowing software.
	Pointing device is faulty.	Replace with another pointing device, or call your Digital Service representative.
Keyboard Problems		
Keys do not work.	Hold Screen key is active.	Press Hold Screen key to release hold on screen.
	Keyboard cable loose or not connected.	Check keyboard cable at both ends.
	Keyboard failure	Replace with another keyboard. If problem persists, contact your Digital Service representative.

(continued on next page)

Table A–1 (Cont.) Troubleshooting

Symptom	Possible Cause	Suggested Solution
RRD40 Compact Disc Drive Problems		
Refer to the *RRD40 Disc Drive Owner's Manual*		
See the Running Diagnostics chapter of your *VAXstation 3100 Model 76 Owner's Guide* for additional information.		
BA42 Storage Expansion Box Problems		
Refer to the *BA42 Storage Expansion Box Installation Guide*		
Disk and Diskette Problems		
Software does not boot from hard disk drive.	A problem exists with the hard disk.	See the Running Diagnostics chapter of your *VAXstation 3100 Model 76 Owner's Guide*.
	Default boot device is set incorrectly.	See the Installing System Hardware chapter of your *VAXstation 3100 Model 76 Owner's Guide* to set or change the default boot device.
	Recovery action may be set to halt.	See Appendix A of your *VAXstation 3100 Model 76 Owner's Guide* to change the default recovery action.
	A problem exists with the software (if installed) on the hard disk.	Refer to your software documentation for help.
Software does not boot from diskette drive, or diskette read or write error message is displayed.	No diskette in the diskette drive.	Insert a diskette with bootable software. Use instructions in software documentation.
	Diskette was inserted incorrectly.	Check that the write-protect notch on the diskette is to your left when you insert the diskette and that the label is up.
	Diskette is damaged or does not contain bootable software.	Try another diskette that contains bootable software.

APPENDIX B

B

Related Documents

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

Not all of the documents listed in Table B–1 are available in every country. Check with your Digital sales representative for availability.

Table B–1 Associated Documents

Titles	Order Numbers
VAXstation 3100 Family	
VAXstation 3100 Maintenance Guide	EK-285AA-MG
VAXstation 3100 Maintenance Guide Addendum	EK-344AA-AD
VAXstation 3100 Illustrated Parts Breakdown	EK-M3150-IP
VAXstation 3100 Model 38 Owner's Manual	EK-VSM30-OM
VAXstation 3100 Model 48 Owner's Manual	EK-VSM40-OM
VAXstation 3100 Model 76 Owner's Guide	EK-VX31M-UG
BA42 Storage Expansion Box Installation Guide	EK-BA42A-IN
Dual Monitor Adapter Installation Guide	EK-DUALM-IN
VAXstation Model 30 Desktop-VMS Basic System Guide	EK-259AA-UG
VAXstation Model 30 Desktop-VMS Advanced System Guide	EK-260AA-OM

(continued on next page)

Table B–1 (Cont.) Associated Documents

Titles	Order Numbers
VAXstation 3100 Family	
VAXstation Model 40 Desktop-VMS Management Guide	EK–261AA–OM
Handbook Series	
Technical Summary of Digital's Workstation Family with Application Listing	EB–32975–51
RRD40 Compact Disc Drive	
RRD40 Disc Drive Owner's Manual	EK–RRD40–OM
DECconnect System	
DECconnect System General Description	EK–DECSY–GD
DECconnect System Requirements Evaluation Workbook	EK–DECSY–EG
DECconnect System Installation and Verification Guide	EK–DECSY–VG
DECconnect System Stand-alone ThinWire Networks: Planning and Installation Guide	EK–DECSY–TG
DECconnect System Planning and Configuration Guide	EK–DECSY–CG
Printers	
System Management Volume 1A, Guide to Setting Up a VMS System	AA–LA25A–TE
General User Volume 4, DCL Dictionary	AA–LA12A–TE
System Manager Binder 3A, System Environment Setup	AA–KS85A–TE

(continued on next page)

Table B–1 (Cont.) Associated Documents

Titles	Order Numbers
Modems	
System Management Volume 1A, Guide to Setting Up a VMS System	AA–LA25A–TE
System Management Volume 5A, Networking: Guide to DECNet VAX Networking	AA–LA47A–TE
System Management Binder 3A, System Environment Setup	AA–KS85A–TE
SCSI	
Small Computer System Interface: An Overview and a Developer's Guide	EK–SCSIS–DK
System Software	
VMS License Management Utility Manual	AA–LA33B–TE
VMS Installation and Operations Manual: VAXstation 3100, Microvax Series	AA–NY74B–TE
Installation Guide for VMS Workstations Software and Migration Tools	AA–HX11J–TE
VMS Backup Utility Manual	AA–LA35A–TE
VMS VAXcluster Manual	AA–LA27B–TE


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