

VAX 4000

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Model 100/100A Upgrade  
to Model 105A

Order Number: EK-V411A-CG. A01

**May 1994**

**Digital Equipment Corporation  
Maynard, Massachusetts**

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**May 1994**

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## Preface

This manual describes how to upgrade a VAX 4000 Model 100 or a VAX 4000 Model 100A system to a VAX 4000 Model 105A by replacing the KA52 CPU module with a KA53 Module.

### Intended Audience

This document is intended for Digital Services personnel and licensed self-maintenance customers.

### Customer Responsibilities

Only qualified maintenance personnel (Digital Services representatives or qualified self-maintenance customers) should perform the installation procedure.

If you are not a qualified self-maintenance customer, call Digital Services to schedule a system conversion. It is your responsibility to perform a software backup before a Digital Services representative arrives at your site.

When the conversion is complete, return the original CPU module to Digital. Appendix A contains forms that need to be completed by the Digital Services representative and signed by both you and the Digital Services representative.

### Digital Services Responsibilities

Before arriving at the site, contact the customer to ensure that the customer's software is backed up before arriving at the site.

After installation of the upgrade kit, the you must complete the forms in Appendix A and remove them from this document. The forms must be signed by both you and the customer.

The following forms are in Appendix A:

- Digital Services Worksheet
- Installation Receipt–Customer Copy
- Installation Receipt–Digital Services Copy
- Returned Material Checklist

You should give the customer the signed Installation Receipt–Customer Copy. Include the signed Installation Receipt–Digital Services Copy with the CPU module that is being returned to Digital to ensure that the customer receives credit.

## Organization

This document contains three chapters and one appendix:

- Chapter 1 contains an overview of the upgrade process.
- Chapter 2 provides detailed upgrade conversion procedures for a VAX 4000 Model 100.
- Chapter 3 provides detailed upgrade conversion procedures for a VAX 4000 Model 100A.
- Appendix A contains forms for the return of the original CPU module.

## Conventions

The following conventions are used in this guide:

<b>Convention</b>	<b>Description</b>
<i>x</i>	A lowercase italic <i>x</i> indicates the generic use of a letter. For example, <i>xxx</i> indicates any combination of three alphabetic characters.
<i>italic type</i>	Italic type emphasizes important information or indicates variables. It is also used for the titles of manuals.
<b>Note</b>	A note contains information that is of special importance to the user.
<b>Caution</b>	A caution contains information to prevent damage to the equipment.

## Related Documents

The following list contains related documents:

<b>Documentation</b>	<b>Order Number</b>
<i>VAX 4000 Model 105A Installation Information</i>	EK-512AA-IN
<i>VAX 4000 Model 105A Operator Information</i>	EK-513AA-OP
<i>VAX 4000 Model 105A Customer Technical Information</i>	EK-514AA-TI
<i>VAX 4000 Model 105A Troubleshooting and Diagnostics Information</i>	EK-515AA-TS



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# Overview of the Conversion Process

## 1.1 In This Chapter

This chapter describes the general process for upgrading a VAX 4000 Model 100 or Model 100A to a VAX 4000 Model 105A system by replacing the KA52 CPU module with a KA53 CPU module.

## 1.2 Overview of the Conversion Processes

Tasks required to upgrade VAX 4000 models are summarized below. To begin the actual conversion, turn to Chapter 2 for the conversion of a VAX 4000 Model 100, or Chapter 3 for the conversion of a VAX 4000 Model 100A.

The VAX 4000 Model 100A is identical to the VAX 4000 Model 100, except that the port cover is designed to accommodate a dual DSSI port.

The conversion of a VAX 4000 Model 100A to Model 105A involves replacing the CPU module and the system medallion. These procedures are described in detail in Chapter 3.

The conversion of a VAX 4000 Model 100 to Model 105A includes upgrading with a new port cover (as if it were being converted first to a Model 100A), then replacing the CPU module and the system medallion. These procedures are described in detail in Chapter 2.



# 2

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## Upgrading the VAX 4000 Model 100 System

### 2.1 In This Chapter

This chapter lists detailed step-by-step procedures for upgrading a VAX 4000 Model 100 system to a Model 105A.

### 2.2 Procedure Overview

The conversion procedure is summarized next. To begin the actual conversion, turn to Section 2.3.

1. Have the customer back up the system software.
2. Unpack and verify the conversion kit.
3. Upgrade the VMS disk 5.5-2H4 (VMS 6.1 is acceptable).
4. Shut down the operating system.
5. Turn off the system power and remove the power cord.
6. Disconnect all external cables.
7. Remove the enclosure cover.
8. Remove the memory SIMMs (memory modules).
9. Remove the upper and lower drive mounting shelves.
10. Disconnect and remove the DSSI daughter card.
11. Disconnect all internal cables from the port cover to the CPU module, daughter cards and the drives.
12. Remove the present port cover with attached cables.
13. Remove all attached cables from the present port cover for use on the new one.

## Upgrading the VAX 4000 Model 100 System

### 2.2 Procedure Overview

14. Install the alignment pins with washers on the new port cover.
15. Install the internal cables on the new port cover.
16. Install the new port cover with its connectors onto the rear of the system box, feeding the cables through the cutouts in the system box.
17. Remove the CPU module.
18. Install the new CPU module.
19. Connect all cables to the CPU module and daughter cards.
20. Reinstall the upper and lower drive mounting shelves in the system box, and connect the internal SCSI cable to the CPU module.
21. Reinstall the SIMMs.
22. Reinstall the enclosure cover.
23. Connect the power cable, signal cables, and terminators to the system as desired.
24. Remove the system medallion and install the new one.
25. Have the customer reinstall system data (if necessary).
26. Fill out the forms in Appendix A.
27. Return the original CPU module as instructed (see Appendix A).

### 2.3 Unpacking the Kit

Unpack the kit as follows:

1. Make sure there is no external damage to the shipping container, such as dents, holes, or crushed corners.
2. Unpack the conversion kit and check its contents against the shipping invoice. Table 2-1 lists the kit contents for the Model 100/100A to Model 105A upgrade, 53XR-AA. Other items may be present, but are not required for this conversion.

## Upgrading the VAX 4000 Model 100 System

### 2.3 Unpacking the Kit

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#### CAUTION

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Static discharge can damage modules. Use an antistatic wrist strap and antistatic mat during handling. The wrist strap and mat are in the antistatic kit in the Digital Services toolkit.

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3. Unpack the KA53 CPU module and place it on a grounded antistatic mat.
4. Save the packing material, and use it to return the original CPU module.
5. If any item is missing or damaged:
  - Contact the customer's sales representative.
  - Contact the customer's delivery agent.

**Table 2-1 Contents of the 53XR-AA Upgrade Kit**

Description	Part Number	Quantity
Wire harness assy	17-03615-001	1
Product conversion label	36-15946-00	1
Regulatory label	36-30382-23(24)	1
NVAX CPU	54-21797-02	1
Medallion	74-37642-32	1
DSSI blank panel	74-46956-01	2
Expansion port cover	74-46957-01	1
Machine screw, 8mm	90-10917-01	4
VAX 4000 Model 100/100A Upgrade to Model 105A	EK-V411A-CG	1
VMS multimedia Viking	QA-001AA-UW	1
Model 105A doc set	QZ-K04AB-GZ	1

## 2.4 Upgrading the VMS Operating System

If you do not have VMS operating system version 6.1 on your system, it is necessary to upgrade it before installing the hardware by following these steps:

1. Have the customer back up the system software before the Digital Services representative arrives. It is the customer's responsibility to back up the system software.
2. Power up the system and run diagnostics to verify system operation.

## Upgrading the VAX 4000 Model 100 System

### 2.4 Upgrading the VMS Operating System

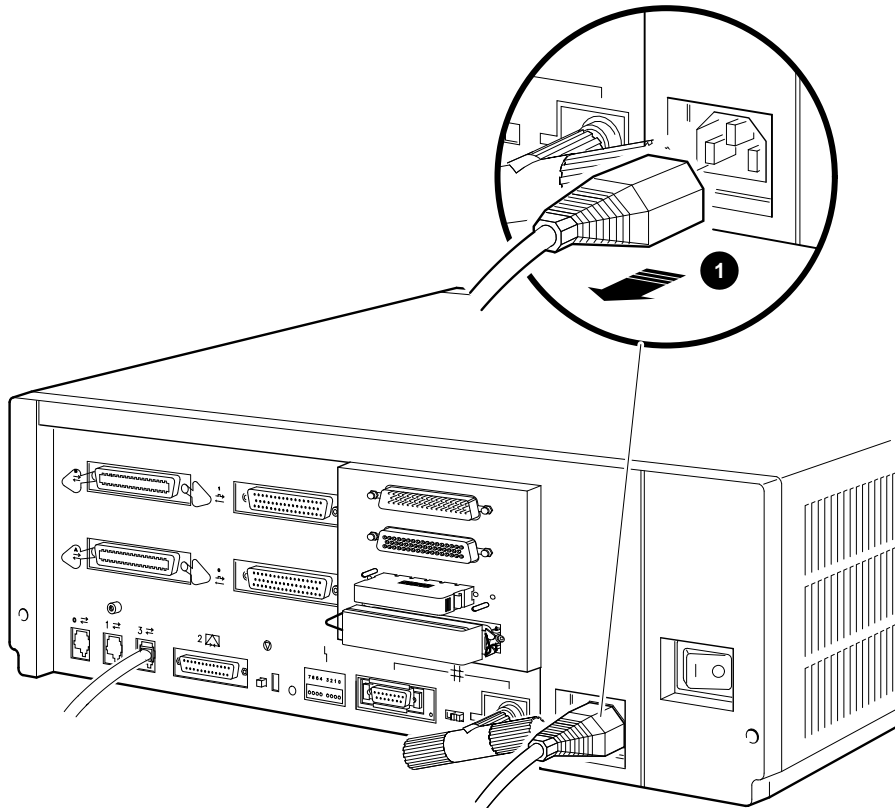
3. Upgrade the VMS disk 5.5-2H4.
4. Shut down the operating system in the proper manner.
5. Turn off the system power before installing the kit.

### 2.5 Replacing the CPU Module

To replace the CPU module:

1. Disconnect the power cord from the wall outlet, then from the system (see Figure 2-1).

Figure 2-1 Disconnecting the Power Cord



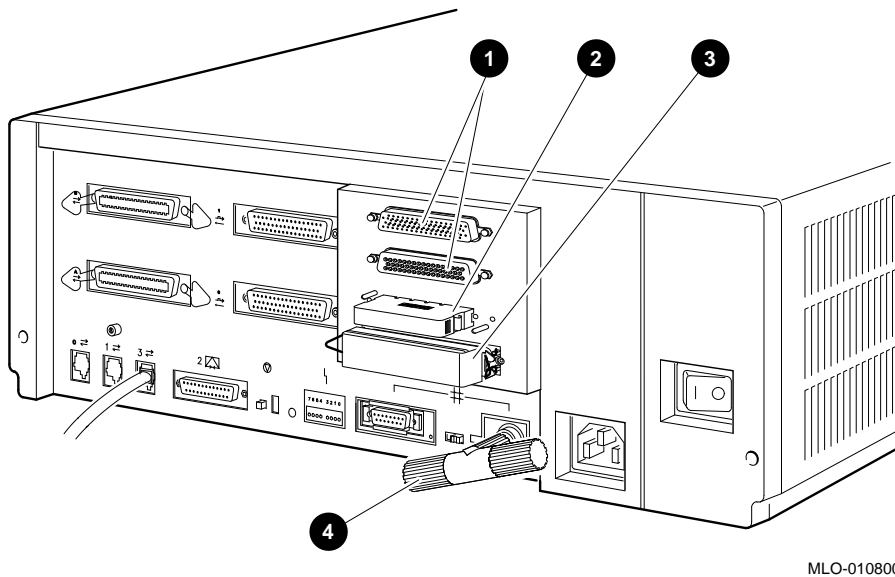
MLO-010799

① Power cord

## Upgrading the VAX 4000 Model 100 System 2.5 Replacing the CPU Module

2. Disconnect all the external cables or terminators from the present port cover, and save the screws (see Figure 2-2).

**Figure 2-2 Disconnecting the External Cables/Terminators from the Port Cover**



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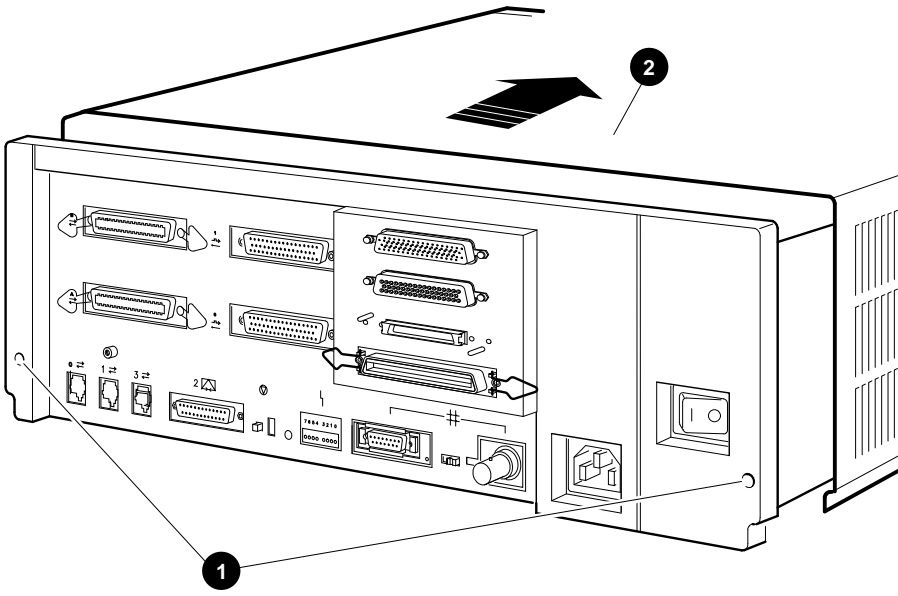
- 1 Q-bus ports (Q-bus cables may be attached)
- 2 DSSI terminator or cable
- 3 SCSI terminator or cable
- 4 Ethernet connector

## Upgrading the VAX 4000 Model 100 System

### 2.5 Replacing the CPU Module

3. Remove the enclosure cover by removing the two screws at the rear of the system box and sliding it forward (see Figure 2-3).

Figure 2-3 Removing the Enclosure Cover



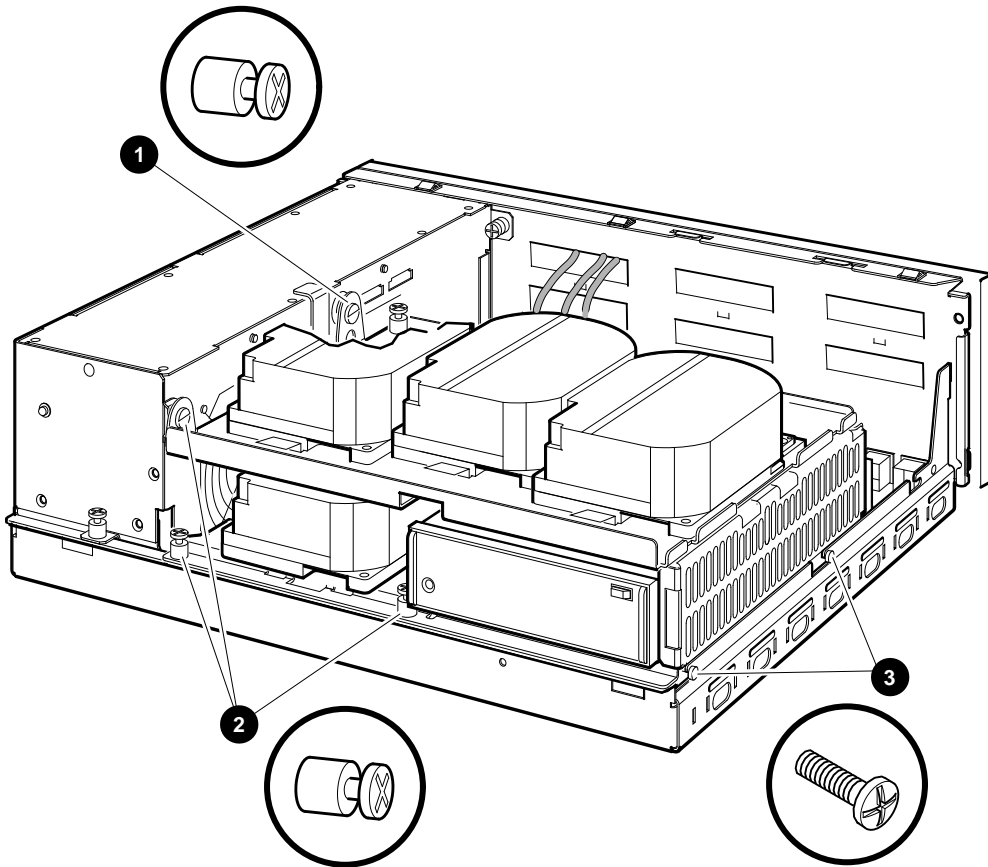
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- ❶ Screws
- ❷ Enclosure cover

## Upgrading the VAX 4000 Model 100 System 2.5 Replacing the CPU Module

4. Remove the upper and lower drive mounting shelves together as a single unit (it is not necessary to disassemble the shelves themselves). Unscrew all six screws from the shelves, leaving the topmost captive screw until last for support. Leave the captive screws in position and save the Phillips screws for reinstallation of the shelves (see Figure 2-4).

Figure 2-4 Unscrewing the Drive Shelves



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- 1 Topmost captive screw
- 2 Other captive screws
- 3 Phillips screws

## Upgrading the VAX 4000 Model 100 System

### 2.5 Replacing the CPU Module

5. Disconnect the internal power cables from the power supply (Figure 2-5).
6. Disconnect the pigtailed, 2-pin DSSI power cable from the CPU module. (Figure 2-5).

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**Note**

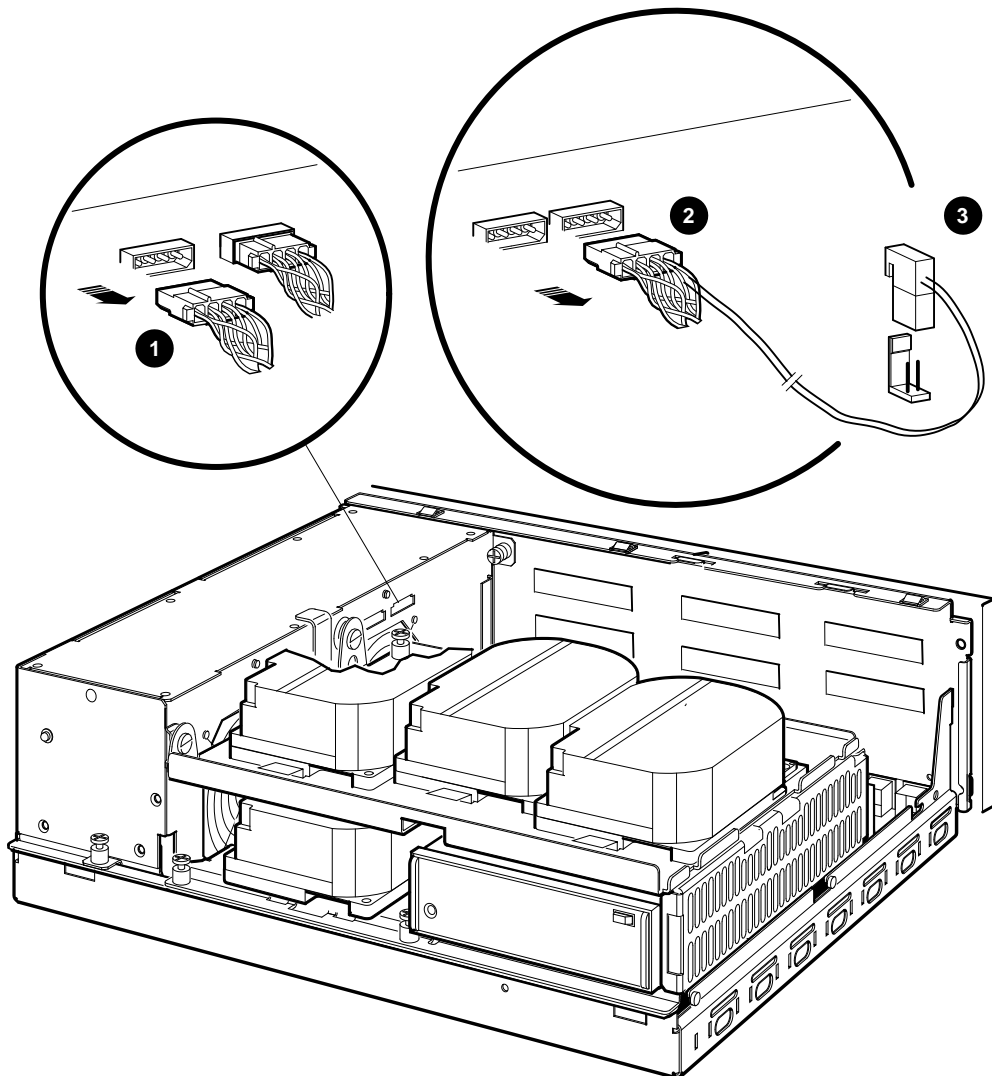
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Some VAX 4000 Model 100s do not have the pigtailed power cable, and you may skip this step in that case.

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## Upgrading the VAX 4000 Model 100 System 2.5 Replacing the CPU Module

Figure 2-5 Disconnecting the Internal Power Cables



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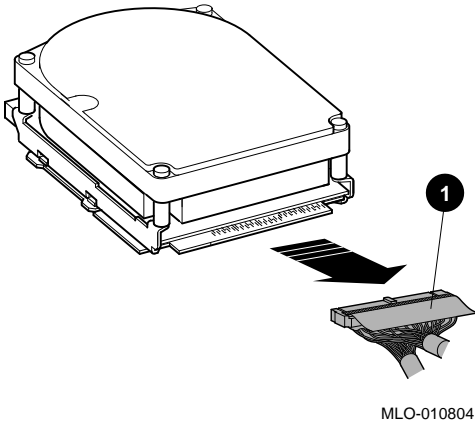
- ❶ Internal power cable
- ❷ Internal power cable with pigtailed DSSI power cable
- ❸ CPU module DSSI power cable connector

## Upgrading the VAX 4000 Model 100 System

### 2.5 Replacing the CPU Module

7. Disconnect the internal DSSI connectors from all drives mounted on the shelves. It is not necessary to disconnect the power cable from each drive. Figure 2-6 shows one drive as an example.

**Figure 2-6** Disconnecting Internal DSSI Connectors



- 1 Internal DSSI connectors

8. Remove all SIMMs from the CPU module. (See Figure 2-7).

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#### Caution

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Static electricity can damage integrated circuits. Wear a wrist strap and place an antistatic mat under the system unit when working with the internal parts of the system unit.

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#### Note

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Note carefully the position of each SIMM you remove; they must be reinstalled later into the same slots.

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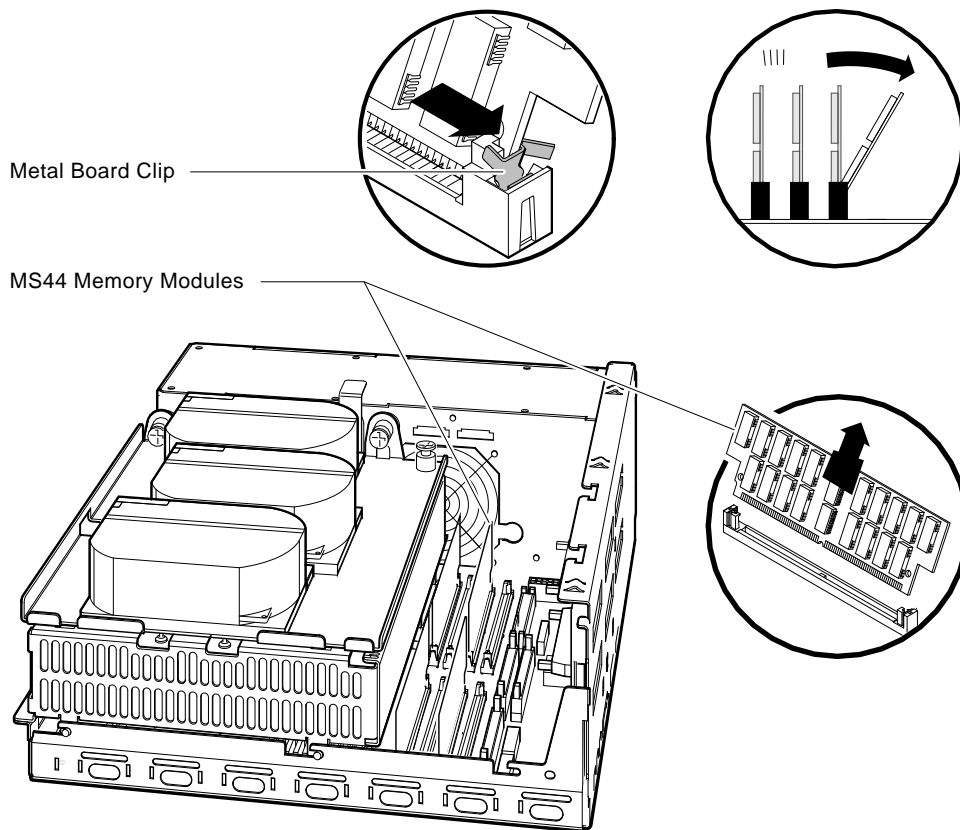
Beginning with the SIMMs closest to the front of the enclosure remove each as follows:

1. Release the memory module by pressing the metal board clips on the memory module connector away from the center.
2. Tip the memory module rearward.

## Upgrading the VAX 4000 Model 100 System 2.5 Replacing the CPU Module

3. Lift the memory module up and out of the enclosure, and place it on an anti-static mat.

Figure 2-7 Removing a SIMM

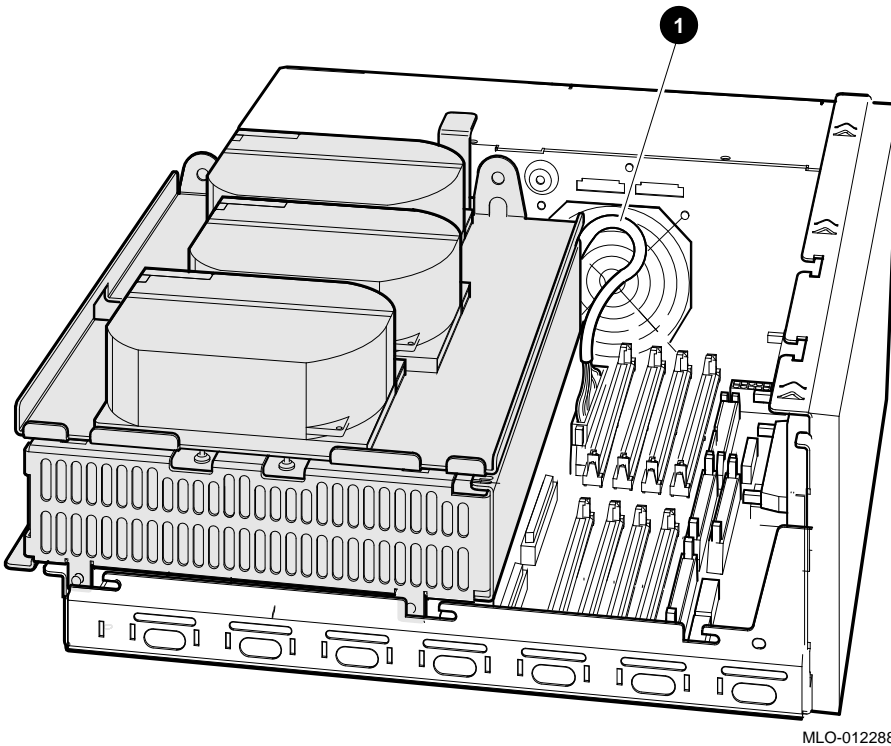


## Upgrading the VAX 4000 Model 100 System

### 2.5 Replacing the CPU Module

9. Disconnect the internal SCSI cable from the CPU module (see Figure 2–8).

**Figure 2–8** Disconnecting the Internal SCSI Cable from the CPU Module



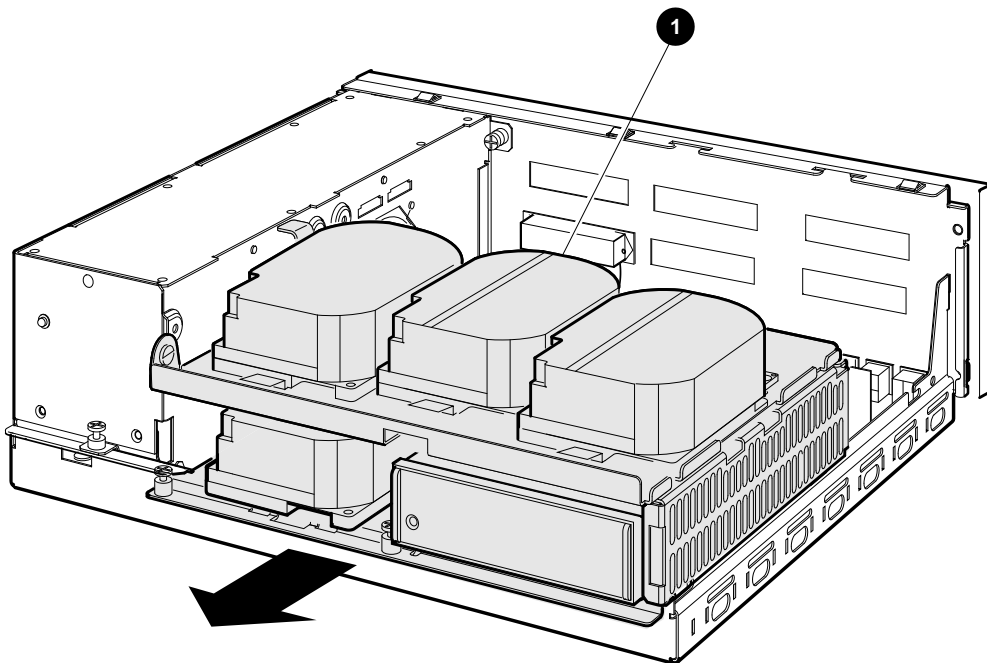
MLO-012288

- 1 Internal SCSI cable

## Upgrading the VAX 4000 Model 100 System 2.5 Replacing the CPU Module

10. Remove the shelves by sliding them forward (see Figure 2-9) and lifting them up from the enclosure (see Figure 2-10).

**Figure 2-9 Sliding the Drive Mounting Shelves Forward**

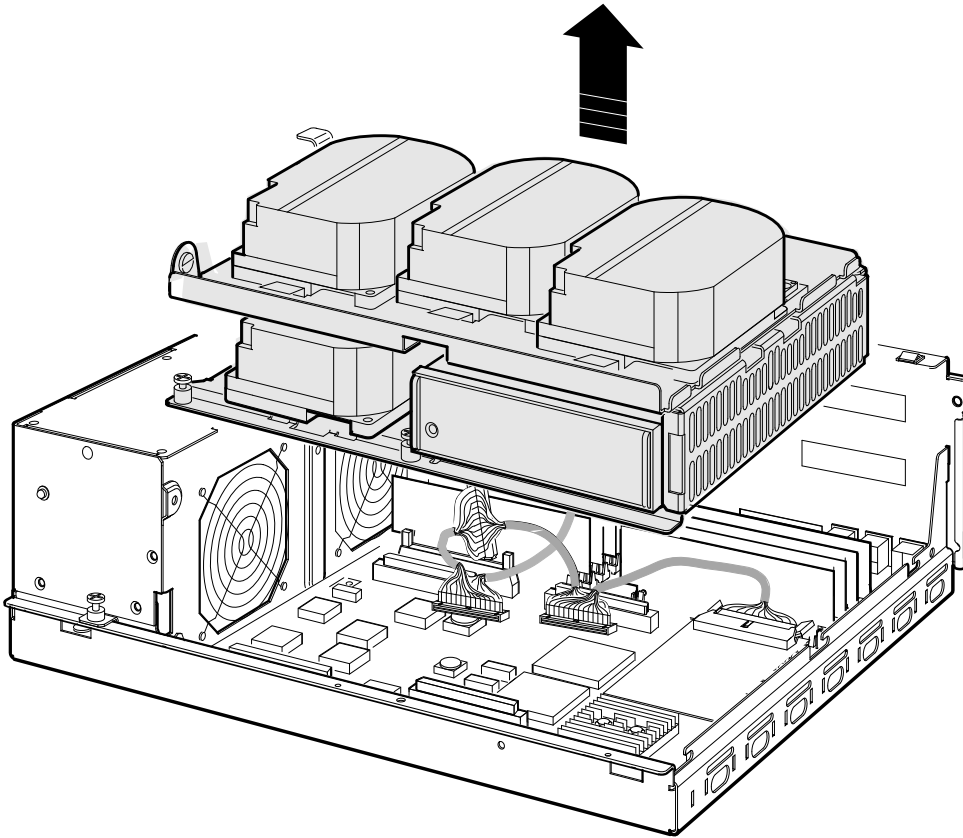


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- 1 Drive mounting shelves

**Upgrading the VAX 4000 Model 100 System**  
**2.5 Replacing the CPU Module**

**Figure 2-10 Lifting the Drive Mounting Shelves Upward**

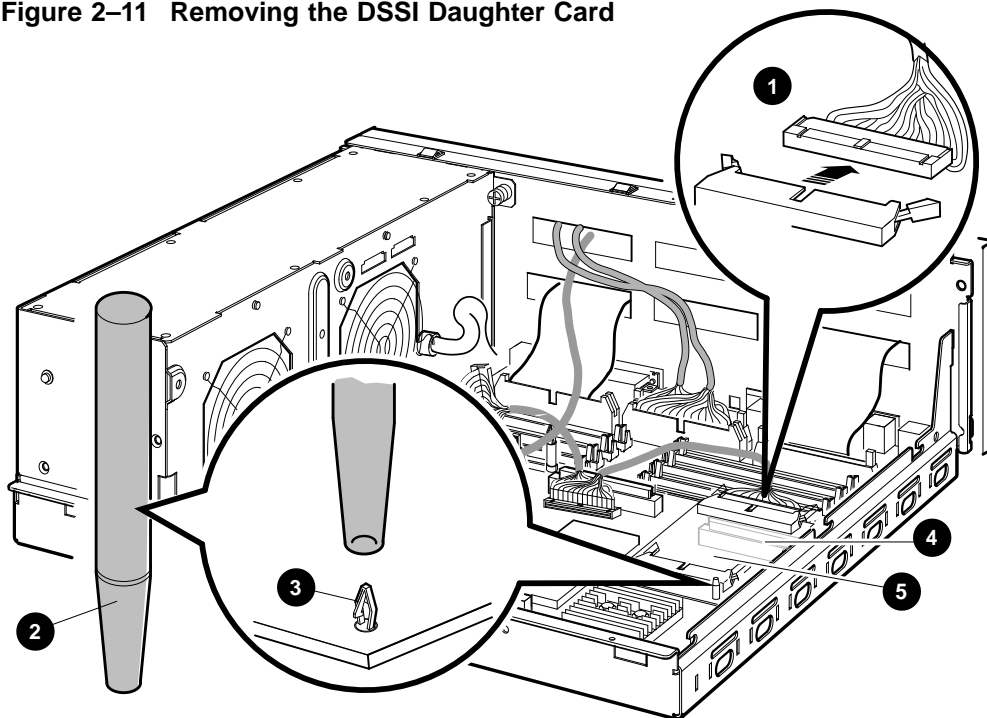


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## Upgrading the VAX 4000 Model 100 System 2.5 Replacing the CPU Module

11. Disconnect the DSSI cable(s) from the DSSI daughter card (see Figure 2–11).
12. Remove the DSSI daughter card by gently prying it loose from its connector on the CPU module, and use a standoff removal tool to compress the posts so that each corner of the card can be lifted off individually (Figure 2–11). When all four corners are loose, lift the card out and place it on an anti-static mat.

Figure 2–11 Removing the DSSI Daughter Card



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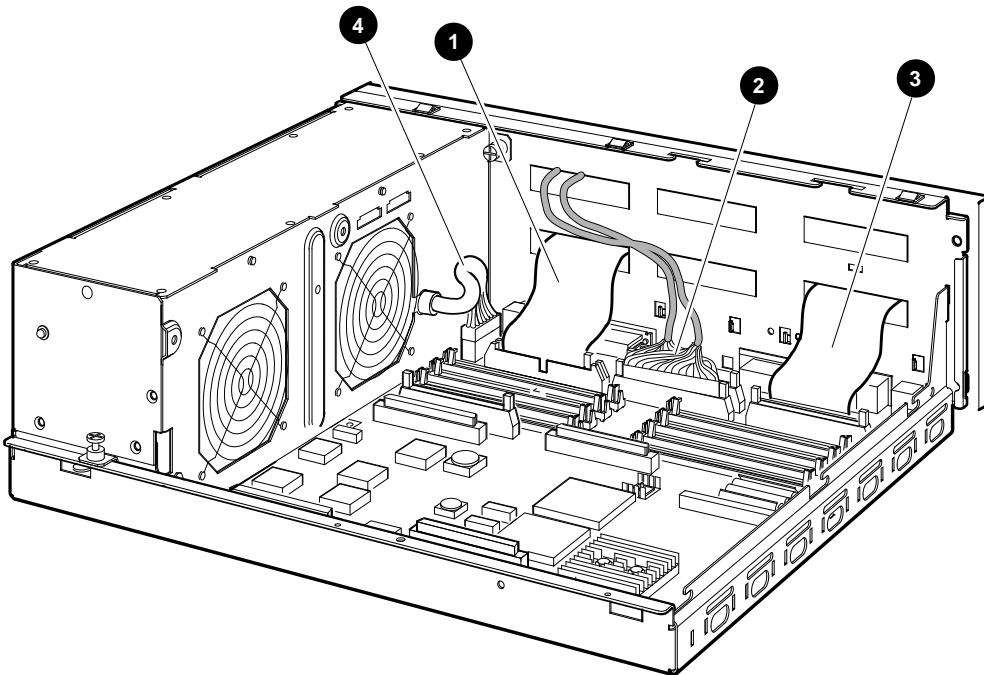
- 1 DSSI connector
- 2 Standoff removal tool
- 3 Standoff
- 4 Daughter card connector on the CPU module
- 5 DSSI daughter card

## Upgrading the VAX 4000 Model 100 System

### 2.5 Replacing the CPU Module

13. Remove all cables from the CPU module (Figure 2–12).
  - a. Disconnect the external SCSI cable, which runs from the port cover to the CPU module, at the connector on the CPU module.
  - b. Disconnect the Q–bus cable.
  - c. Disconnect any internal communications options cables that are present in your system from the CPU module.
  - d. Disconnect the CPU power cable from the CPU module.

**Figure 2–12** Disconnecting the Q–bus and external SCSI Cables



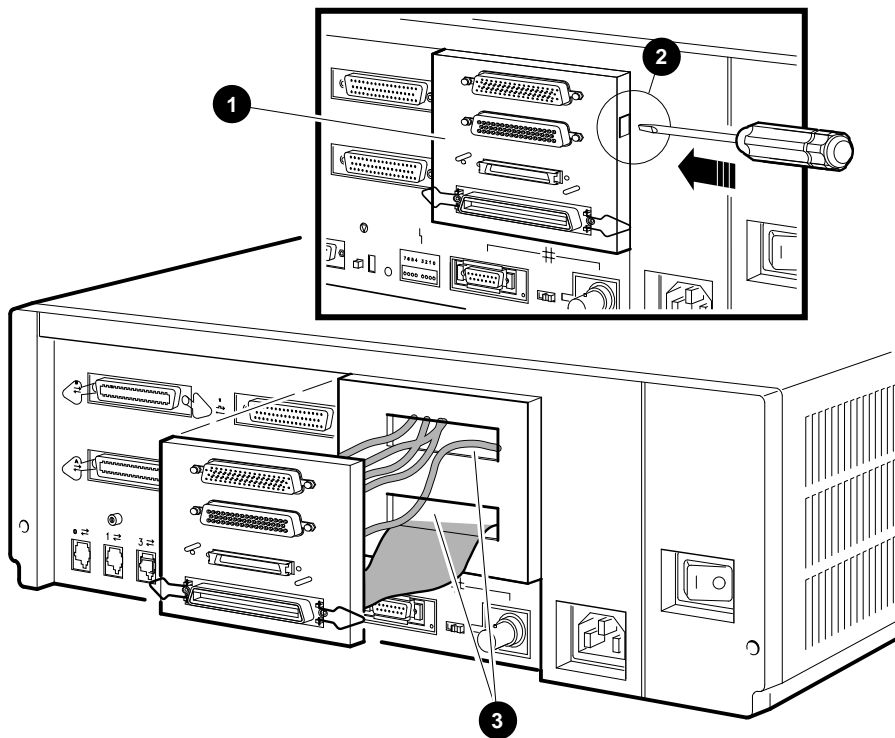
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- ❶ External SCSI cable
- ❷ Q–bus cable
- ❸ Internal communications option cable(s)
- ❹ CPU power cable

## Upgrading the VAX 4000 Model 100 System 2.5 Replacing the CPU Module

14. Remove the present port cover by pushing the tabs on each side (see Figure 2-13). The tabs are accessed through the tab cutouts on the port cover. Slide the cover off, pulling all cables carefully through the cable slots on the rear of the system box.

Figure 2-13 Removing the Port Cover



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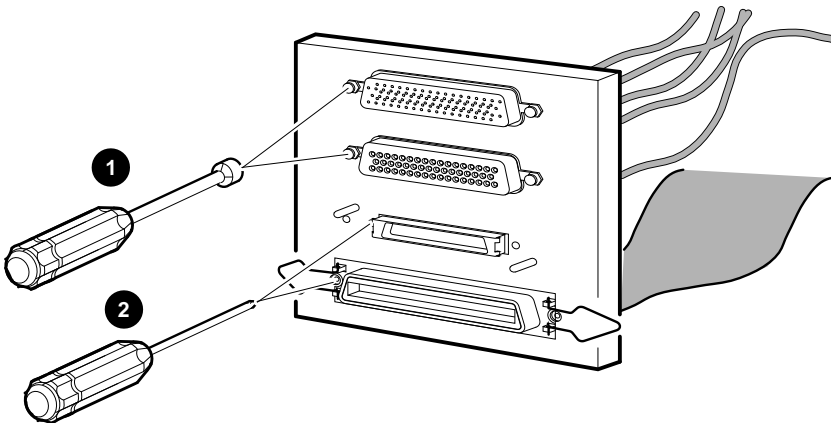
- ❶ Port cover
- ❷ Tab cutout
- ❸ Cable slots on rear of the system box

## Upgrading the VAX 4000 Model 100 System

### 2.5 Replacing the CPU Module

15. Remove all connectors from the original port cover (see Figure 2–14). Save the screws, nuts, and washers for use in connecting the new port cover.

**Figure 2–14 Removing Connectors from the Port Cover**



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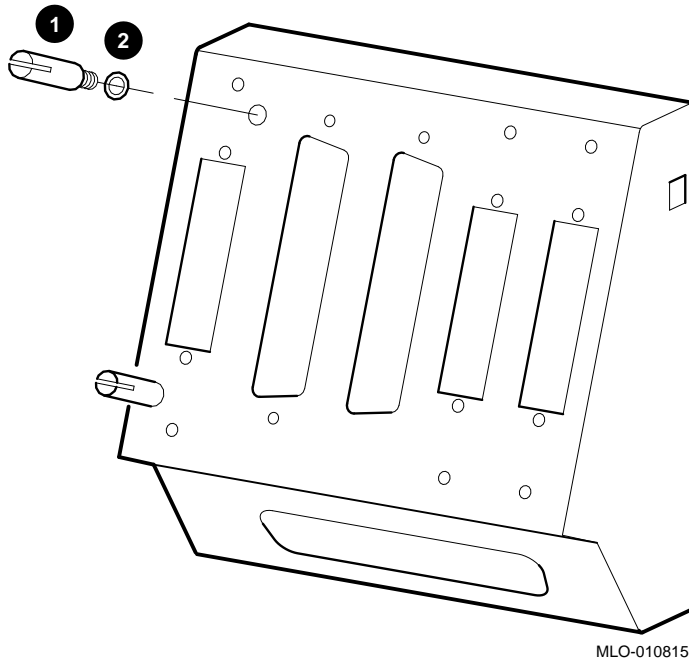
- 1 Nut driver used for bolts on the Q-bus connectors
- 2 Phillips screwdriver used on the DSSI and SCSI connectors

## Upgrading the VAX 4000 Model 100 System

### 2.5 Replacing the CPU Module

16. Install two alignment pins with washers on the new port cover for the original DSSI connector (see Figure 2-15).

**Figure 2-15** Installing the Alignment Pins on the Port Cover



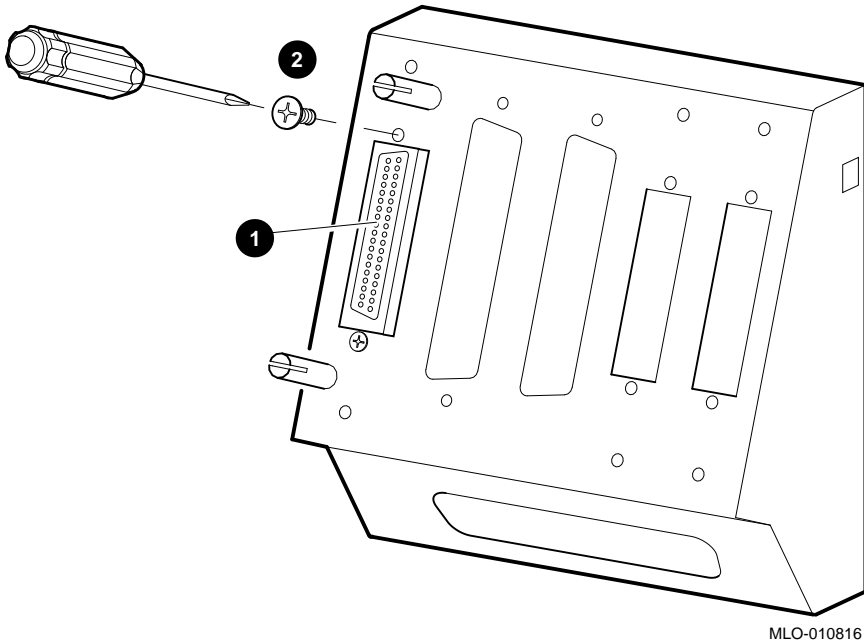
- 1 Alignment pin
- 2 Washer

## Upgrading the VAX 4000 Model 100 System

### 2.5 Replacing the CPU Module

17. Install the single DSSI cable (17-03544-01) into the left DSSI port cutout (see Figure 2-16).

**Figure 2-16** Installing the Original DSSI Cable on the Port Cover

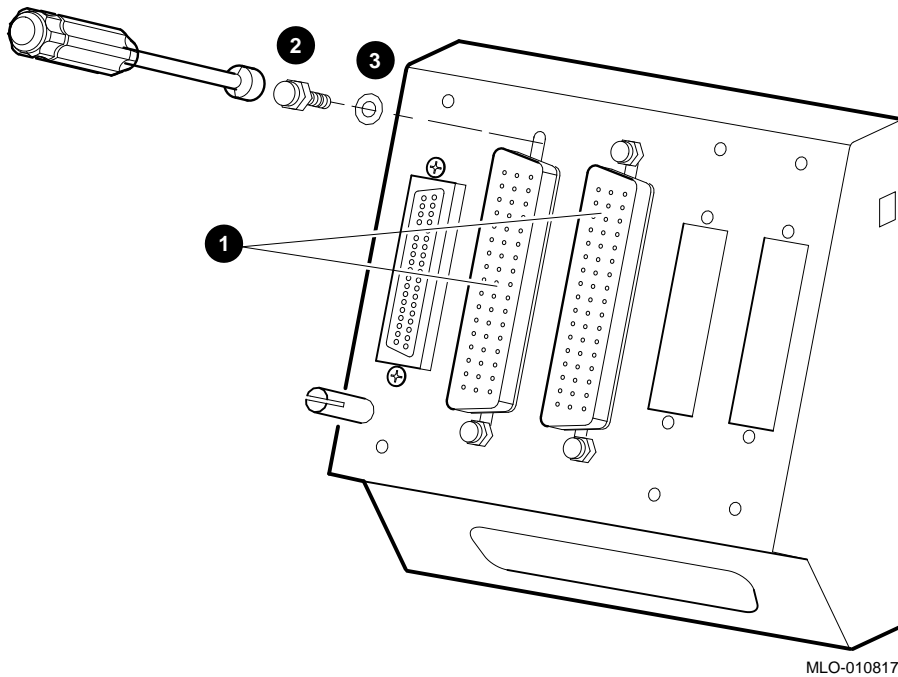


- 1 Original DSSI cable connector
- 2 Phillips screwdriver

## Upgrading the VAX 4000 Model 100 System 2.5 Replacing the CPU Module

18. Install the Q-bus cable (17-03545-01) into the Q-bus cutouts on the port cover (see Figure 2-17).

**Figure 2-17** Installing the Q-bus Cable on the Port Cover



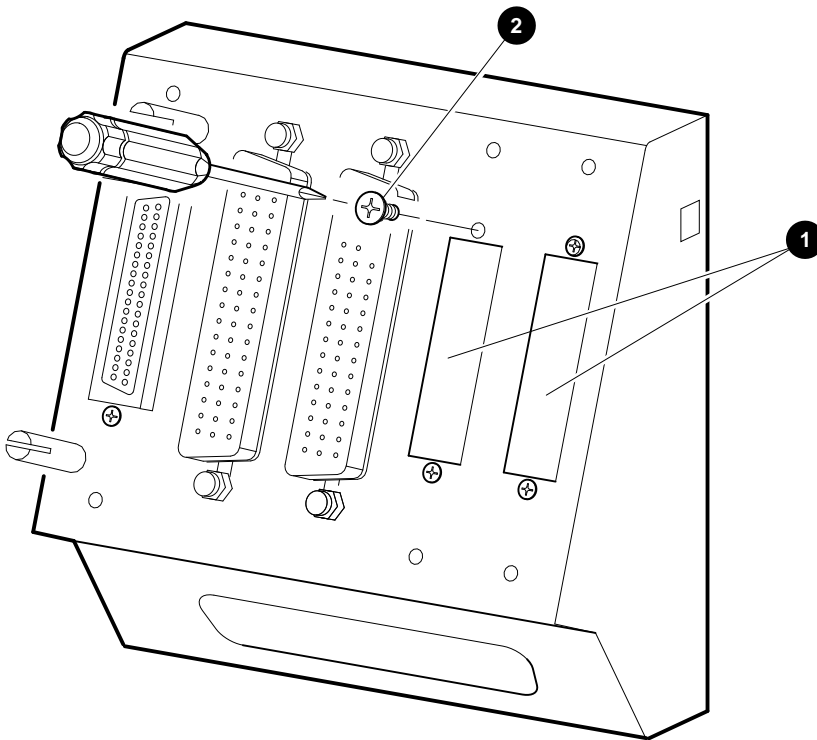
- 1 Q-bus cable connectors
- 2 Nutdriver and bolt
- 3 Washer

## Upgrading the VAX 4000 Model 100 System

### 2.5 Replacing the CPU Module

19. Install the blank covers into the two right DSSI external cutouts on the new port cover (see Figure 2-18).

**Figure 2-18** Installing the Blank Covers on the Port Cover



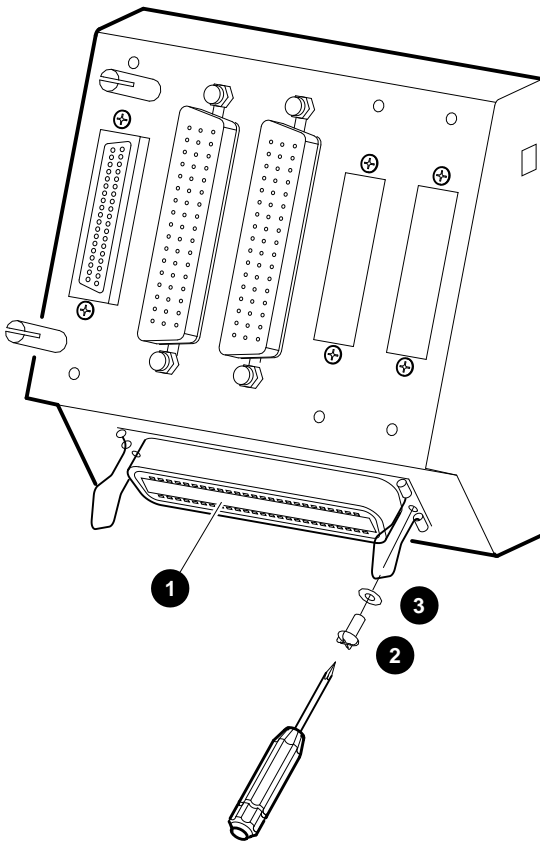
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- 1 Blank covers
- 2 Phillips screwdriver and screw.

## Upgrading the VAX 4000 Model 100 System 2.5 Replacing the CPU Module

20. Install the SCSI cable (17-2944-01) into the SCSI cutout on the bottom of the port cover (see Figure 2-19).

**Figure 2-19** Installing the SCSI Cable on the Port Cover



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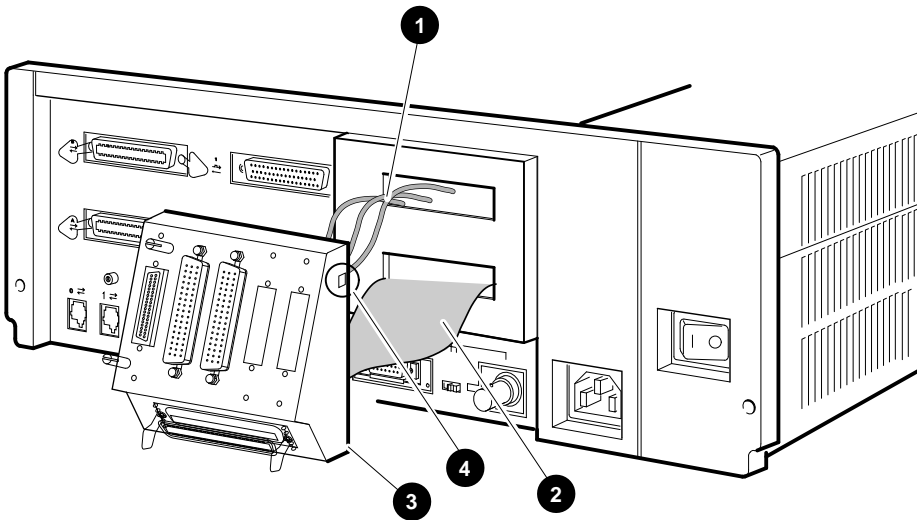
- 1 SCSI cable connector
- 2 Phillips screwdriver and screw
- 3 Washer

## Upgrading the VAX 4000 Model 100 System

### 2.5 Replacing the CPU Module

21. Install the new port cover with its connectors onto the rear of the system box, feeding the cables through the cable cutouts in the system box (see Figure 2-20).
  - a. Feed the single DSSI cable and the Q-bus cables through the top cable cutout on the system box.
  - b. Feed the SCSI cable through the bottom cable cutout on the system box.
  - c. Hook the bottom flange of the cover plate onto the system box.
  - d. Push the port cover forward until the two tabs click into place.

**Figure 2-20** Installing the Port Cover and Cables



MLO-012294

- ❶ DSSI and Q-bus cables in top cutout
- ❷ SCSI cable in bottom cutout
- ❸ Bottom flange
- ❹ Tab cutout

## Upgrading the VAX 4000 Model 100 System

### 2.5 Replacing the CPU Module

22. To remove the CPU module, follow these steps.

---

#### Caution

---

Ensure that you do not damage any of the CPU module components by exerting too much force on them.

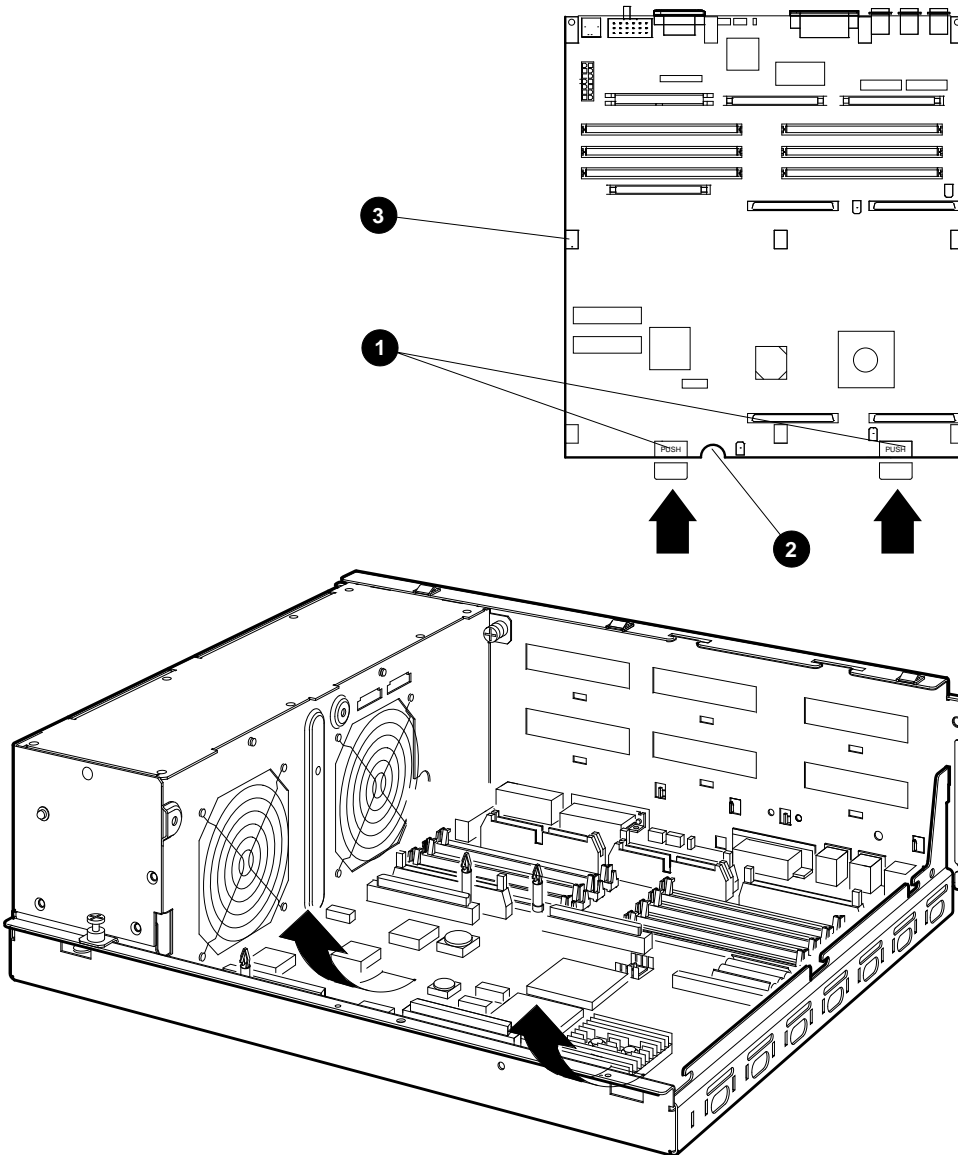
---

- a. Press the two spring clips (marked by arrows in Figure 2–21) that secure the CPU module in position. The CPU module moves forward under the tension of the connector gaskets. If necessary, slide the CPU module back until it disengages from the ten keyhole cutouts (refer to Figure 2–21).
- b. Use your finger, in the semicircular cutout on the front edge of the CPU module, to lift up the front edge of the CPU module (refer to Figure 2–21).
- c. While supporting the front of the CPU module with one hand, guide the connectors on the back of the CPU module out of the corresponding cutouts on the back of the enclosure.
- d. Remove the CPU module from the enclosure.

## Upgrading the VAX 4000 Model 100 System

### 2.5 Replacing the CPU Module

Figure 2-21 Removing the CPU Module



MLO-012295

- ❶ Spring clips
- ❷ Semicircular cutout
- ❸ Keyhole cutouts (10)

## Upgrading the VAX 4000 Model 100 System

### 2.5 Replacing the CPU Module

23. To install the new CPU module, follow these steps:
  - a. Place the CPU module in the enclosure so that the connectors on the CPU module align with the corresponding cutouts in the back panel of the enclosure. Use the ThinWire Ethernet port as an anchor point to adjust the position of the CPU module correctly.
  - b. Align the keyhole cutouts in the CPU module with the corresponding standoff pillars in the base of the enclosure.

---

#### Caution

---

Ensure that you do not damage any of the CPU module components by exerting pressure on them.

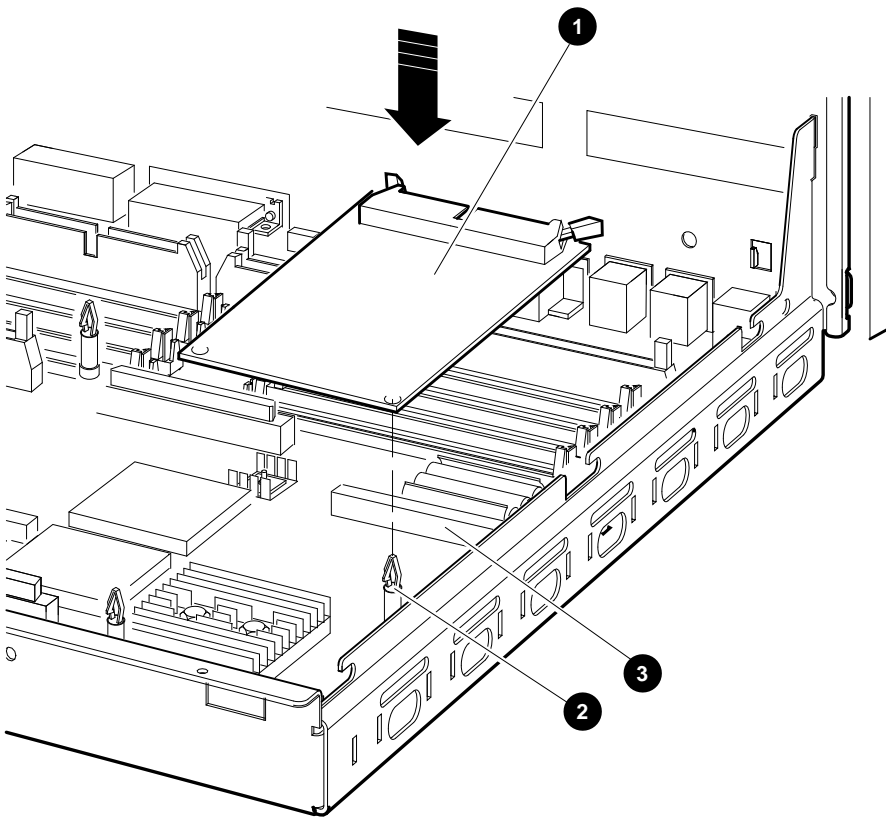
---

- c. Press the CPU module at the two positions marked *push*. The spring clips push the standoff pillars into the keyhole cutouts that secure the CPU module in position. See Figure 2–21.
24. Install the DSSI daughter card onto the CPU module (see Figure 2–22). Align the card on the standoffs so that it is positioned above the CPU module connector, then gently seat it onto the connector and the standoffs.

## Upgrading the VAX 4000 Model 100 System

### 2.5 Replacing the CPU Module

Figure 2-22 Installing the DSSI Daughter Card



MLO-012296

- ❶ Daughter card
- ❷ Standoff
- ❸ CPU module connector

---

**Note**

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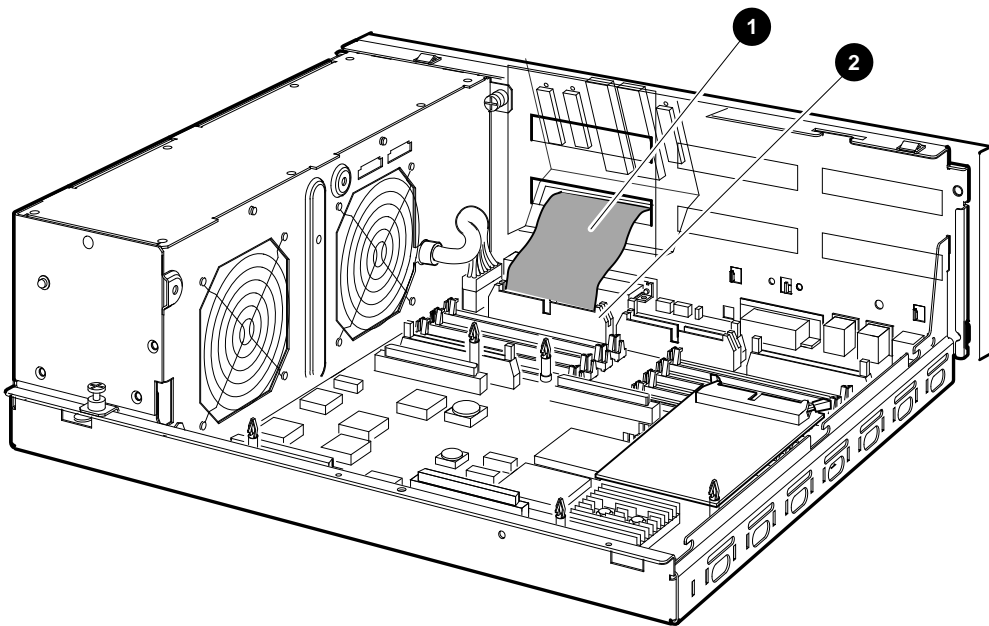
For clarity, cables not applicable to a particular step are omitted from some of the following illustrations.

---

## Upgrading the VAX 4000 Model 100 System 2.5 Replacing the CPU Module

25. Connect the external SCSI cable (17-2944-01) to the CPU module (see Figure 2-23).

**Figure 2-23 Connecting the External SCSI Cable to the CPU Module**



MLO-012297

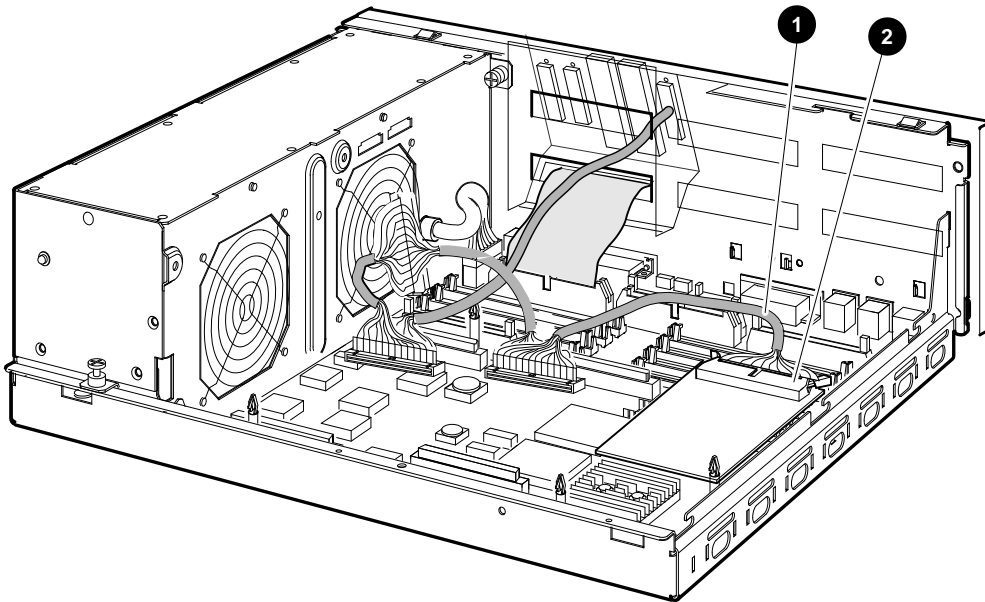
- 1 External SCSI cable
- 2 External SCSI connector on the CPU module

## Upgrading the VAX 4000 Model 100 System

### 2.5 Replacing the CPU Module

26. Connect the DSSI cable (17-03544-01) to the connector slot on the DSSI daughter card (see Figure 2-24).

**Figure 2-24 Connecting the Single DSSI Cable to the Daughter Card**



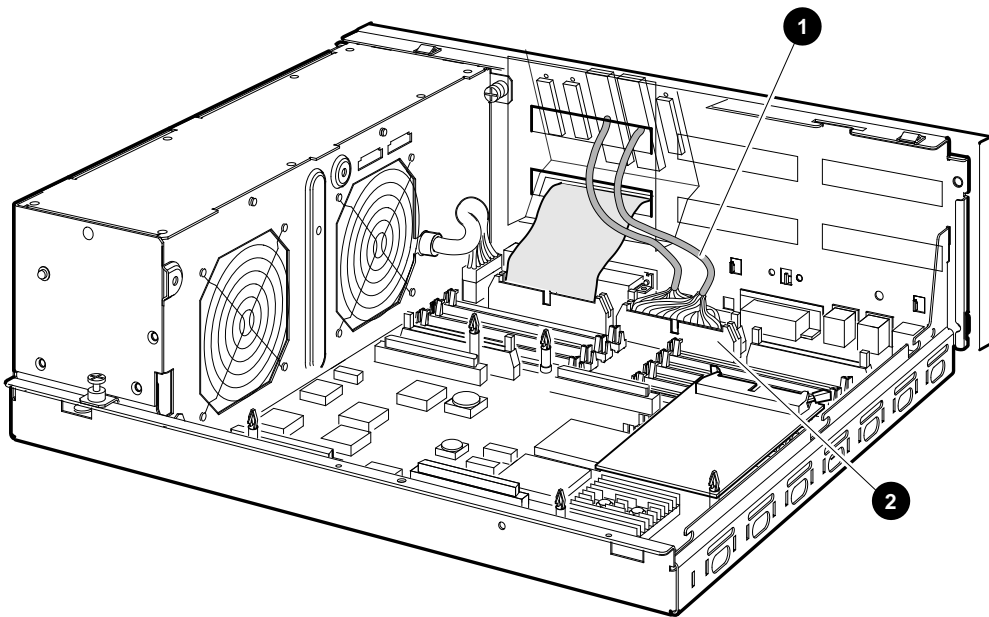
MLO-012298

- 1 Single DSSI cable
- 2 Rear connector slot on the daughter card

## Upgrading the VAX 4000 Model 100 System 2.5 Replacing the CPU Module

27. Connect the Q-bus cable (17-3545-01) to the Q-bus slot on the CPU module (see Figure 2-25).

**Figure 2-25** Connecting the Q-bus Cable to the CPU Module



MLO-012299

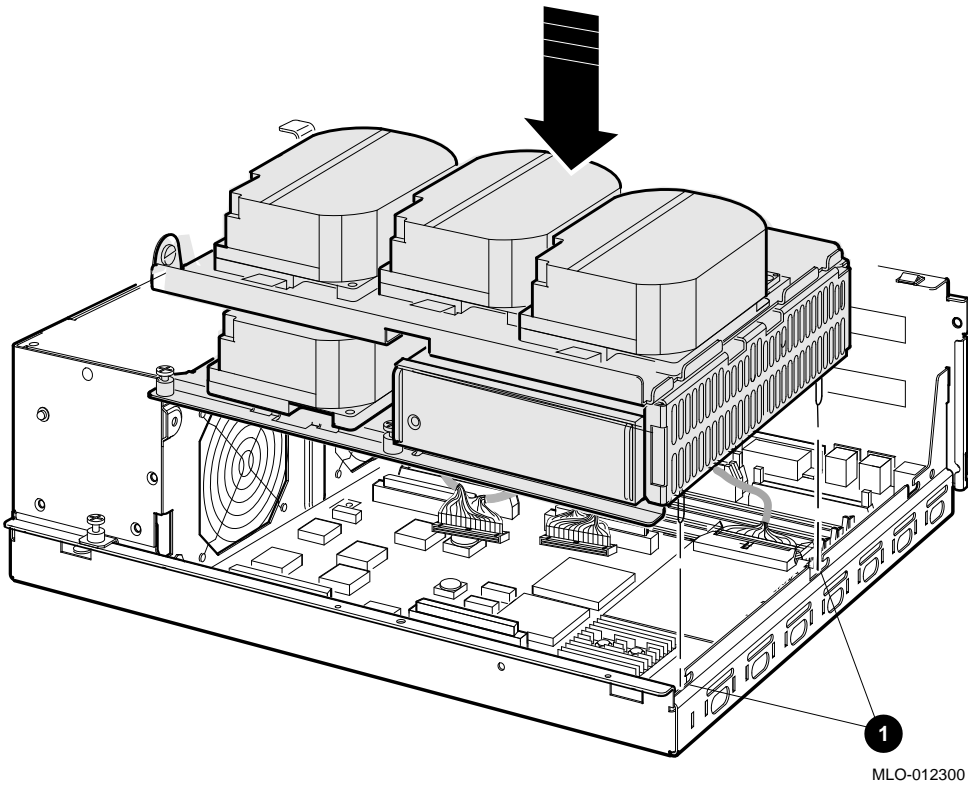
- ❶ Q-bus cable
- ❷ Q-bus connector on the CPU module

## Upgrading the VAX 4000 Model 100 System

### 2.5 Replacing the CPU Module

28. Reinstall the upper and lower drive mounting shelves in the system box, and connect the internal SCSI cable (17-03587-01) to the CPU module.
  - a. Position the shelves by lining up the bracket tabs, but do not slide them rearward yet (see Figure 2-26).

**Figure 2-26** Aligning the Drive Mounting Shelves

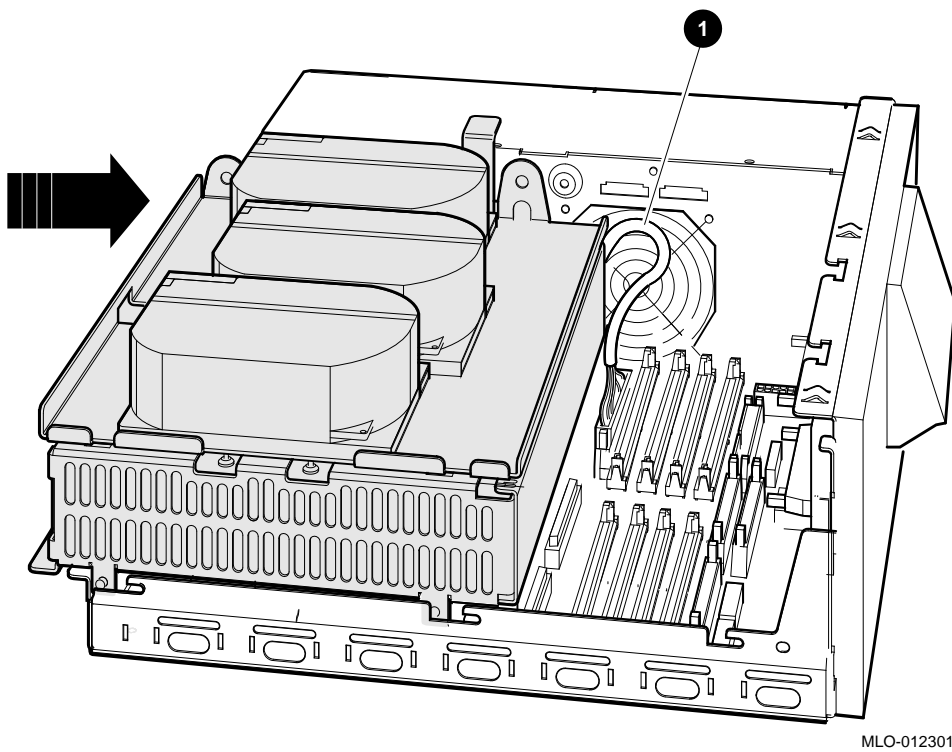


**1** Bracket tabs

## Upgrading the VAX 4000 Model 100 System 2.5 Replacing the CPU Module

- b. Connect the internal SCSI cable to its connector on the CPU module.  
(see Figure 2–27).
- c. Slide the shelves down and rearward into place so that the holes on the bracket tabs line up with their cutouts.

**Figure 2–27 Reinstalling the Drive Mounting Shelves**



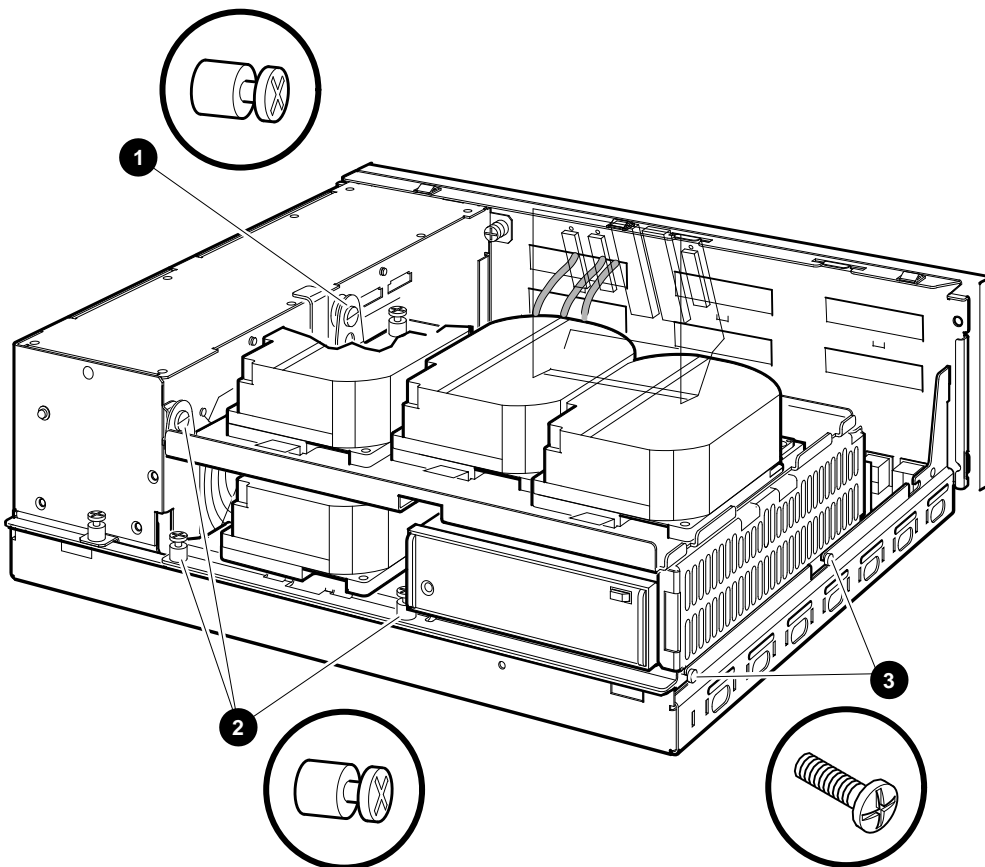
- 1 Internal SCSI cable

## Upgrading the VAX 4000 Model 100 System

### 2.5 Replacing the CPU Module

- d. Tighten the shelves in place using the six screws that held them in originally (see Figure 2–28).
  1. Tighten the topmost captive screw first so that the shelves do not fall and damage components underneath.
  2. Tighten the remaining captive screws.
  3. Replace and tighten the Phillips screws.

**Figure 2–28 Securing the Drive Mounting Shelves**



MLO-012302

- |                         |                   |
|-------------------------|-------------------|
| ❶ Topmost captive screw | ❸ Phillips screws |
| ❷ Other captive screws  |                   |

## Upgrading the VAX 4000 Model 100 System

### 2.5 Replacing the CPU Module

29. Reinstall the SIMMs as follows, beginning with the module closest to the front of the enclosure (Figure 2–29).

---

#### Caution

---

When installing a SIMM, note that the connectors on the CPU module are keyed so that you cannot install the module with an incorrect orientation. Do not try to force a module into a connector with an incorrect orientation.

---

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#### Note

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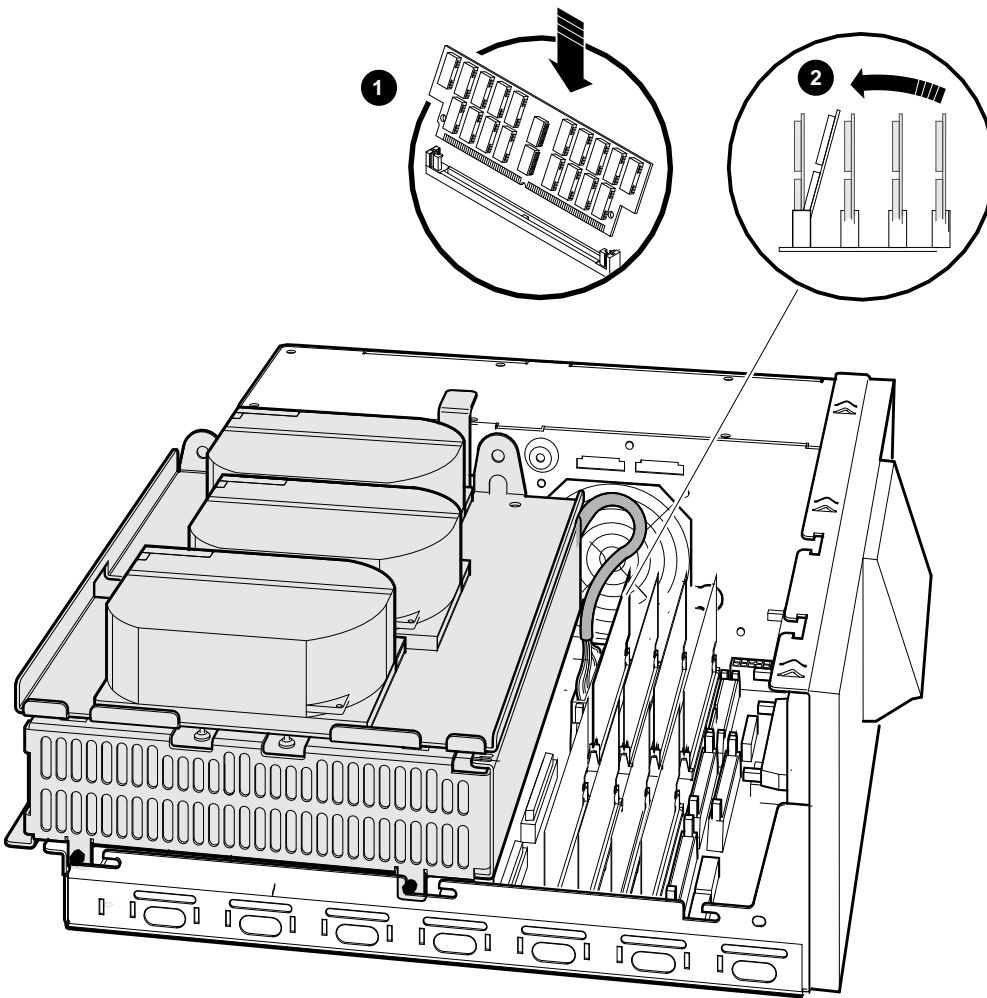
The SIMMs must be reinstalled into the same slots they came from.

---

1. Tip the memory module rearward.
2. Slide the module into its connector while still tipped rearward, and tip it back upright.

**Upgrading the VAX 4000 Model 100 System**  
**2.5 Replacing the CPU Module**

**Figure 2-29 Installing a SIMM**



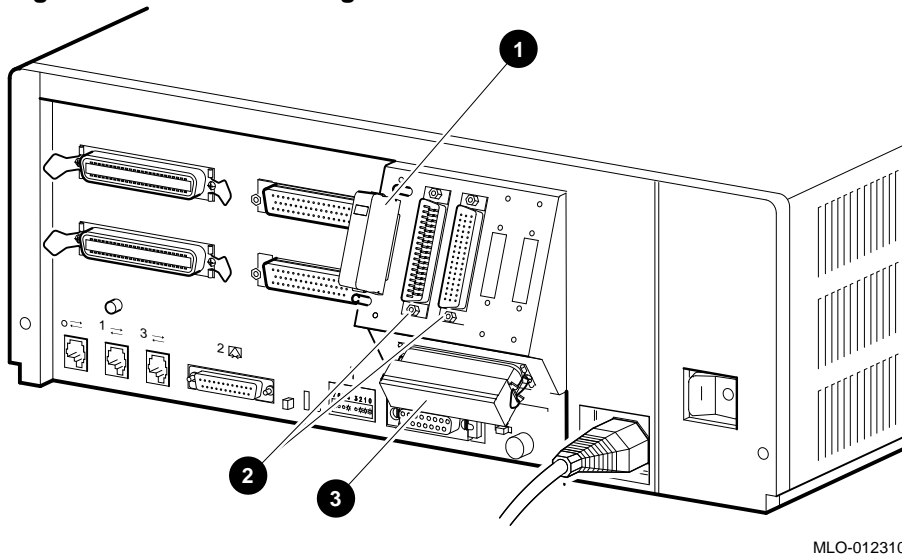
MLO-012303

- 1** Sliding the module in      **2** Tipping it upright

## Upgrading the VAX 4000 Model 100 System 2.5 Replacing the CPU Module

30. Reconnect the DSSI connectors to the drives (see Figure 2-6).
31. Reconnect the internal power cables (see Figure 2-5).
32. Reinstall the enclosure cover (see Figure 2-3).
33. Reconnect cables and terminators to the DSSI, Q-bus, and SCSI connectors on the port cover as desired (see Figure 2-30).

**Figure 2-30 Reconnecting Cables and Terminators**



MLO-012310

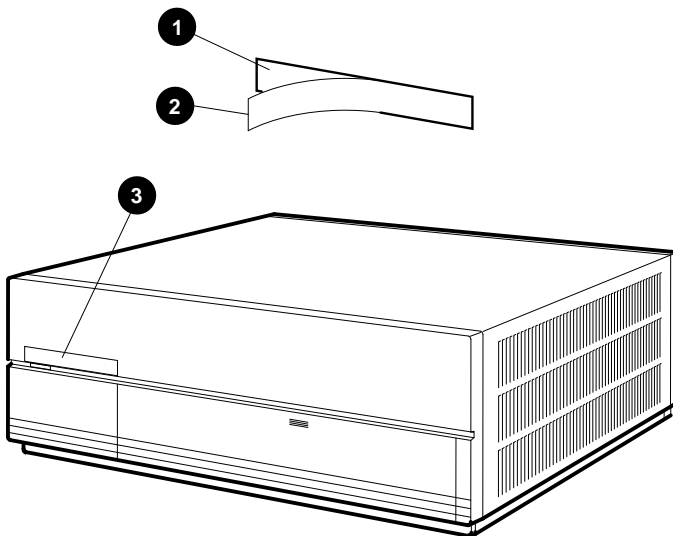
- ❶ DSSI connector/terminator
- ❷ Q-bus connectors
- ❸ SCSI connector/terminator

## Upgrading the VAX 4000 Model 100 System

### 2.5 Replacing the CPU Module

34. Replace the Ethernet connector, if any (see Figure 2-2).
35. Place the new label, 36-30382-23 (24), whichever is appropriate for your country, over the existing label.
36. Remove the system medallion and install the new one, 74-37642-32. See Figure 2-31.
  - a. Peel the backing off the new medallion.
  - b. Apply the new medallion in place of the original one.

**Figure 2-31 Applying the New Medallion**



MLO-010951

- ❶ Backing
  - ❷ New medallion
  - ❸ Medallion location
37. Apply the conversion label (36-15946-00) in any spot on the system box you wish.
  38. Have the customer reinstall system data (if necessary).
  39. Fill out the forms in Appendix A.
  40. Return the original CPU module as instructed (see Appendix A).

# 3

---

## Upgrading the VAX 4000 Model 100A System

### 3.1 In This Chapter

This chapter lists detailed step-by-step procedures for upgrading a VAX Model 100A system to a VAX Model 105A system.

### 3.2 Procedure Overview

The conversion procedure is summarized next. To begin the actual conversion, turn to Section 3.3.

1. Have the customer back up the system software.
2. Unpack and verify the conversion kit.
3. Shut down the operating system and run the power up diagnostics.
4. Turn off the system power and remove the power cord.
5. Remove the enclosure cover.
6. Remove the SIMMs (memory modules).
7. Remove the upper and lower drive mounting shelves.
8. Disconnect and remove the DSSI daughter card.
9. Disconnect all internal cables from the port cover to the CPU module, daughter cards and the drives.
10. Remove the CPU module.
11. Install the new CPU module.
12. Reinstall the SIMMs.
13. Reconnect all cables and daughter cards to the CPU module.
14. Reinstall the upper and lower drive mounting shelves in the system box, and reconnect all cables.

## Upgrading the VAX 4000 Model 100A System

### 3.2 Procedure Overview

15. Reinstall the enclosure cover.
16. Connect the power cable, signal cables, and terminators to the system as desired.
17. Turn on the system.
18. Have the customer reinstall system data (if necessary).
19. Fill out the forms in Appendix A.
20. Return the CPU module as instructed (see Appendix A).

---

**Note**

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Firmware and VMS upgrades are not required; appropriate versions were installed on VAX 4000 Model 100A systems at the factory.

---

### 3.3 Unpacking the Kit

Unpack the kit as follows:

1. Make sure there is no external damage to the shipping container, such as dents, holes, or crushed corners.
2. Unpack the conversion kit and check its contents against the shipping invoice. Table 3-1 lists the kit contents for the Model 100/100A upgrade to Model 105A, 53XR-AA. Other items may be present, but are not required for this conversion.

---

**CAUTION**

---

Static discharge can damage modules. Use an antistatic wrist strap and antistatic mat during handling. The wrist strap and mat are in the antistatic kit in the Digital Services toolkit.

---

3. Unpack the CPU module and place it on a grounded antistatic mat.
4. Save the packing material, and use it to return the original CPU module.

## Upgrading the VAX 4000 Model 100A System

### 3.3 Unpacking the Kit

5. If any item is missing or damaged:
  - Contact the customer's sales representative.
  - Contact the customer's delivery agent.

**Table 3–1 Contents of the 53XR–AA Upgrade Kit**

Description	Part Number	Quantity
Wire harness assy	17–03615–001	1
Product conversion label	36–15946–00	1
Regulatory label	36–30382–23(24)	1
NVAX CPU	54–21797–02	1
Medallion	74–37642–32	1
DSSI blank panel	74–46956–01	2
Expansion port cover	74–46957–01	1
Machine screw, 8mm	90–10917–01	4
VAX 4000 100/100A Upgrade to Model 105A	EK–V411A–CG	1
VMS multimedia Viking	QA–001AA–UW	1
Model 105A doc set	QZ–K04AB–GZ	1

## 3.4 Before Installing the Kit

Before installing the kit:

1. Have the customer back up the system software before the Digital Services representative arrives. It is the customer's responsibility to back up the system software.
2. Shut down the operating system in the proper manner.
3. Power up the system and run diagnostics to verify system operation.
4. Turn off the system power before installing the kit.

## Upgrading the VAX 4000 Model 100A System

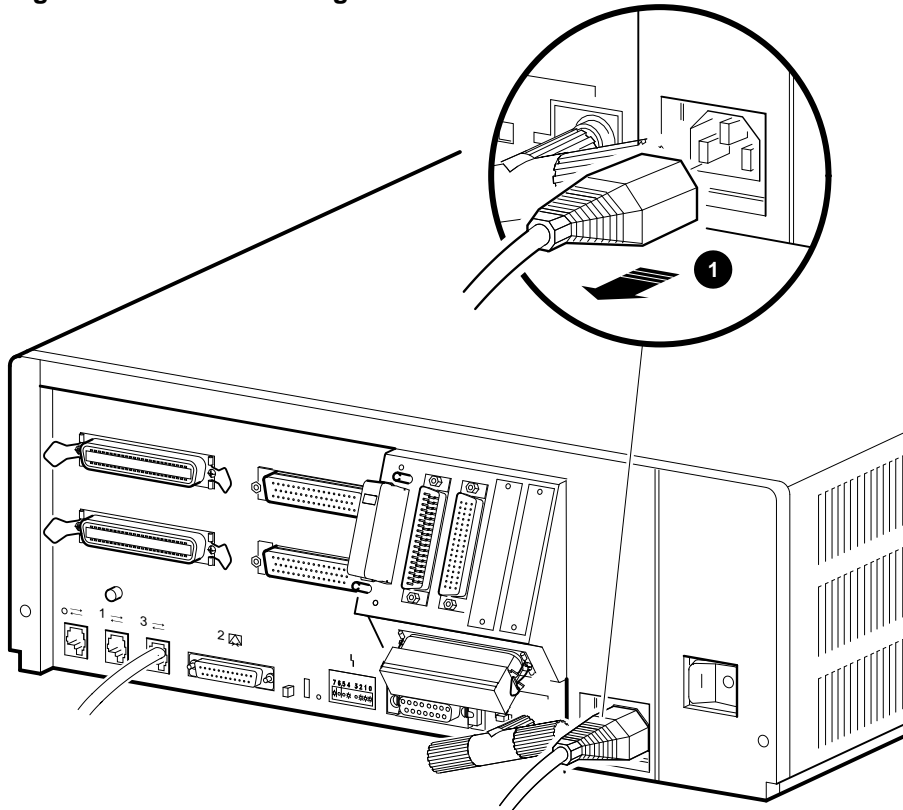
### 3.5 Installing the CPU Module

### 3.5 Installing the CPU Module

To install the new CPU module (convert to a VAX 4000 Model 105A):

1. Disconnect the power cord from the wall outlet, then from the system (see Figure 3-1).

Figure 3-1 Disconnecting the Power Cord



MLO-010952

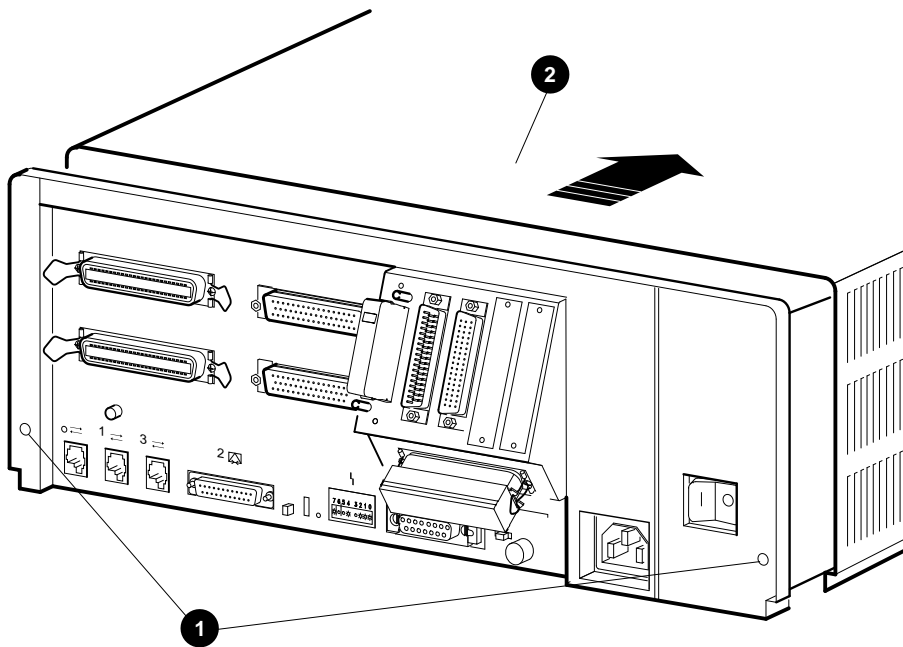
❶ Power cord

## Upgrading the VAX 4000 Model 100A System

### 3.5 Installing the CPU Module

2. Remove the enclosure cover by removing the two screws at the rear of the system box and sliding it forward (see Figure 3-2).

Figure 3-2 Removing the Enclosure Cover



MLO-010953

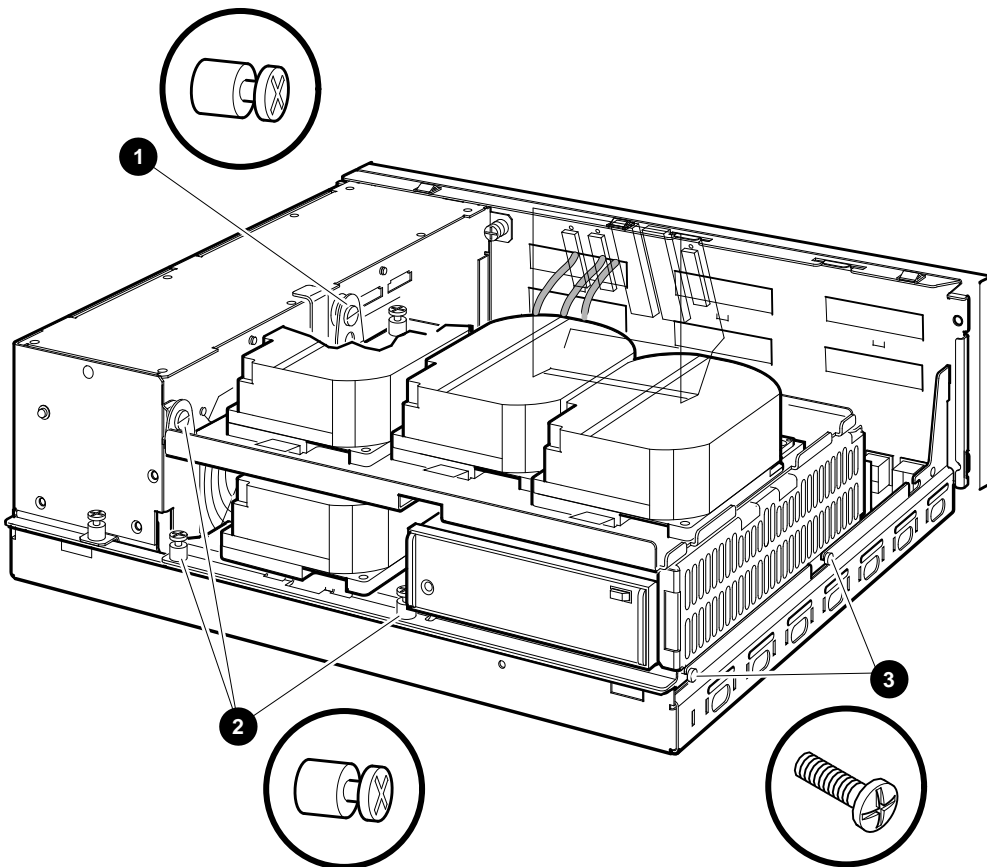
- ① Screws
- ② Enclosure cover

## Upgrading the VAX 4000 Model 100A System

### 3.5 Installing the CPU Module

3. Remove the upper and lower drive mounting shelves together as a single unit (it is not necessary to disassemble the shelves themselves). Unscrew all six screws from the shelves, leaving the topmost captive screw until last for support. Leave the captive screws in position and save the Phillips screws for reinstallation of the shelves (see Figure 3-3).

Figure 3-3 Unscrewing the Drive Shelves



MLO-012302

- 1 Topmost captive screw
- 2 Other captive screws
- 3 Phillips screws

## **Upgrading the VAX 4000 Model 100A System**

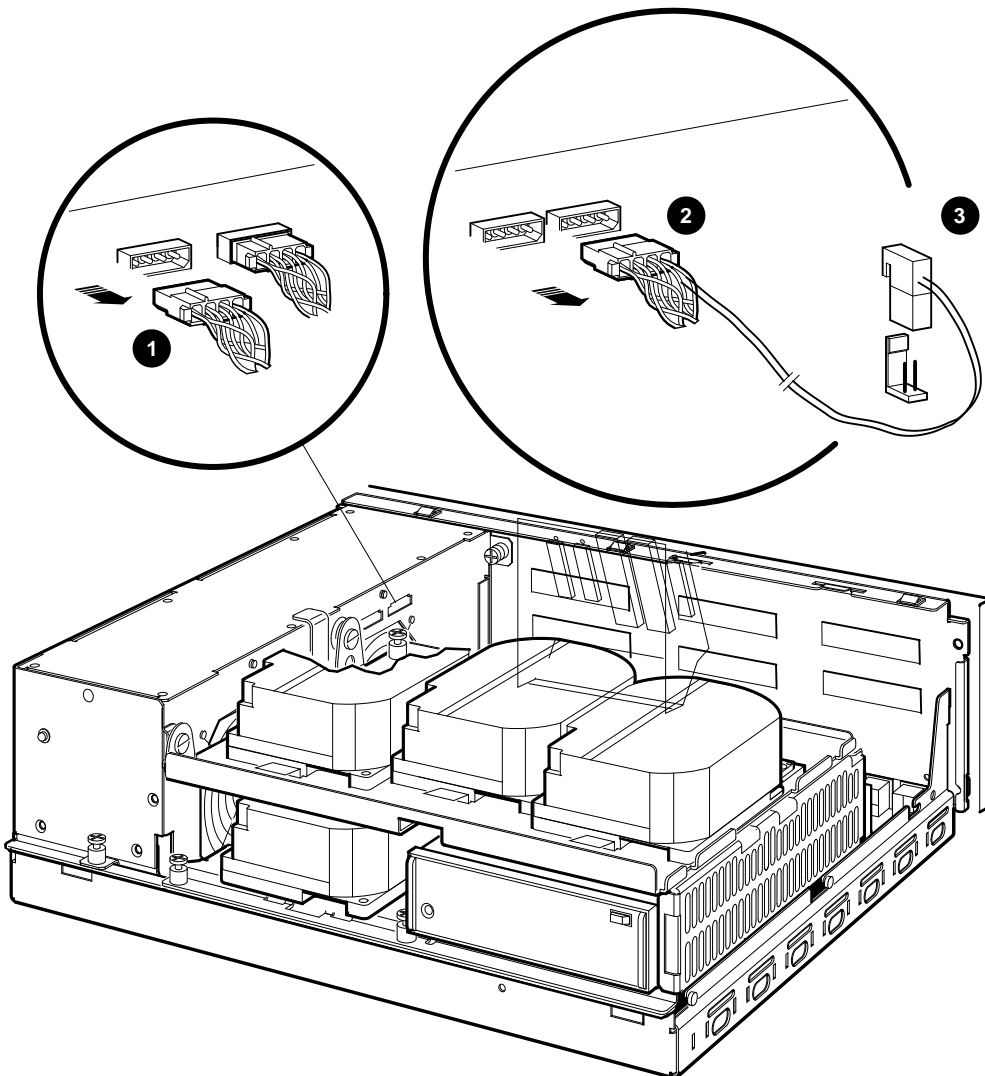
### **3.5 Installing the CPU Module**

4. Disconnect the internal power cables from the power supply (Figure 3-4).
5. Disconnect the pigtailed, 2-pin DSSI power cable from the CPU module. (Figure 3-4).

## Upgrading the VAX 4000 Model 100A System

### 3.5 Installing the CPU Module

Figure 3-4 Disconnecting the Internal Power Cables



MLO-012306

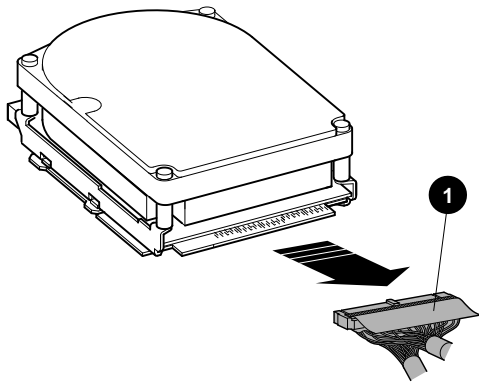
- ❶ Internal power cable
- ❷ Internal power cable with pigtailed DSSI power cable
- ❸ CPU module DSSI power cable connector

## Upgrading the VAX 4000 Model 100A System

### 3.5 Installing the CPU Module

6. Disconnect the internal DSSI connectors from all drives mounted on the shelves. Figure 3-5 shows one drive as an example.

**Figure 3-5** Disconnecting Internal DSSI Connectors



MLO-010804

**1** Internal DSSI connectors

7. Remove all SIMMs from the CPU module. (See Figure 3-6).

---

**Caution**

---

Static electricity can damage integrated circuits. Wear a wrist strap and place an antistatic mat under the system unit when working with the internal parts of the system unit.

---

---

**Note**

---

Note carefully the position of each memory module you remove; they must be reinstalled later into the same slots.

---

Beginning with the SIMMs closest to the front of the enclosure remove each as follows:

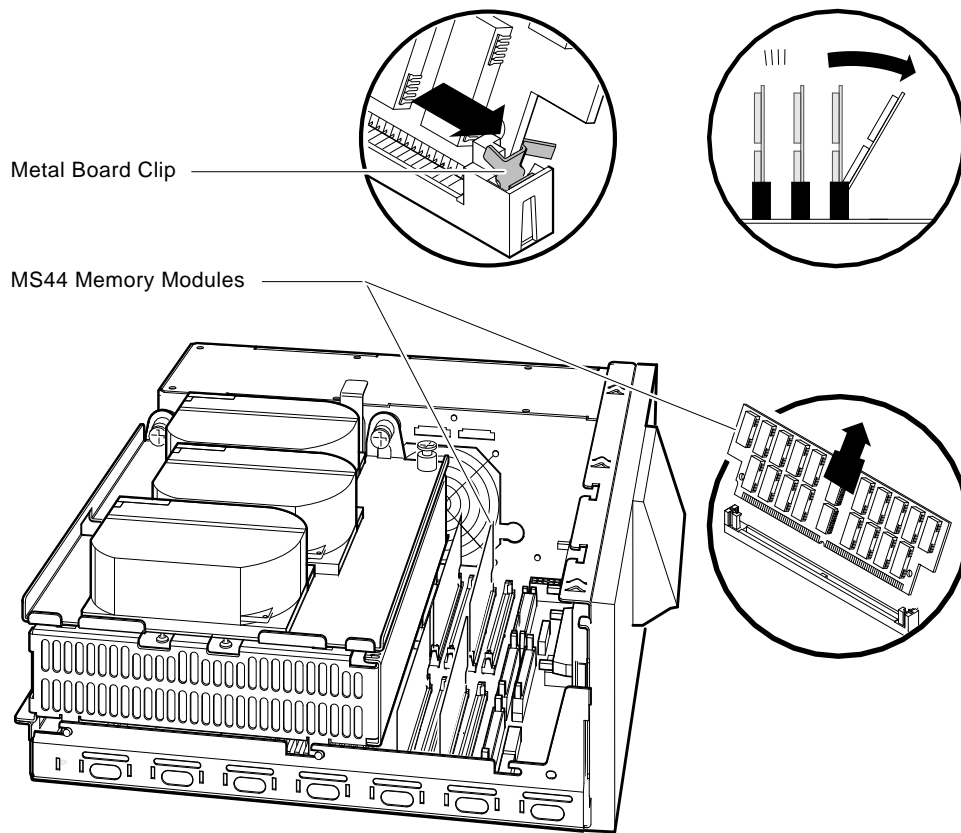
1. Release the memory module by pressing the metal board clips on the memory module connector away from the center.
2. Tip the memory module rearward.

## Upgrading the VAX 4000 Model 100A System

### 3.5 Installing the CPU Module

3. Lift the memory module up and out of the enclosure, and place it on an anti-static mat.

Figure 3–6 Removing a SIMM

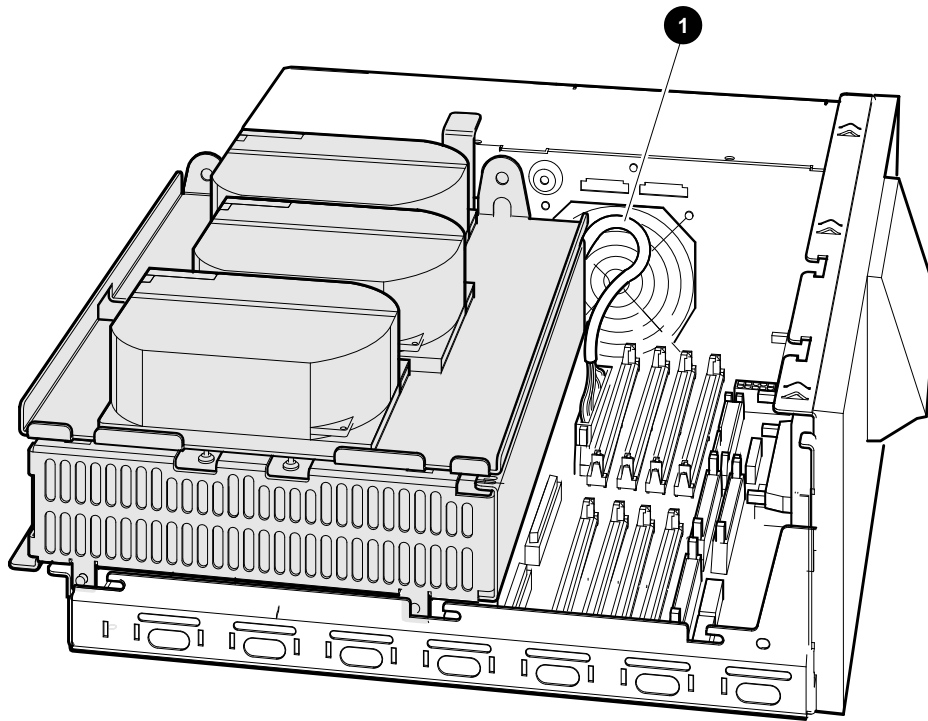


## Upgrading the VAX 4000 Model 100A System

### 3.5 Installing the CPU Module

8. Disconnect the internal SCSI cable from the CPU module (see Figure 3-7).

**Figure 3-7** Disconnecting the Internal SCSI Cable from the CPU Module



MLO-012305

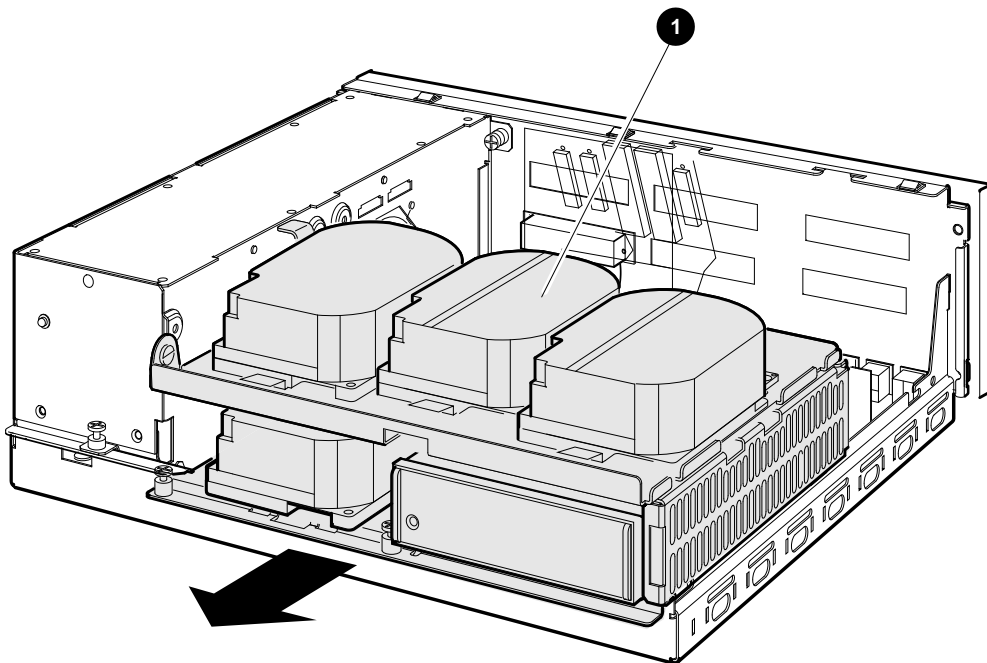
- 1 Internal SCSI cable

## Upgrading the VAX 4000 Model 100A System

### 3.5 Installing the CPU Module

9. Remove the shelves by sliding them forward (see Figure 3–8) and lifting them forward and up from the enclosure (see Figure 3–9).

**Figure 3–8 Sliding the Drive Mounting Shelves Forward**

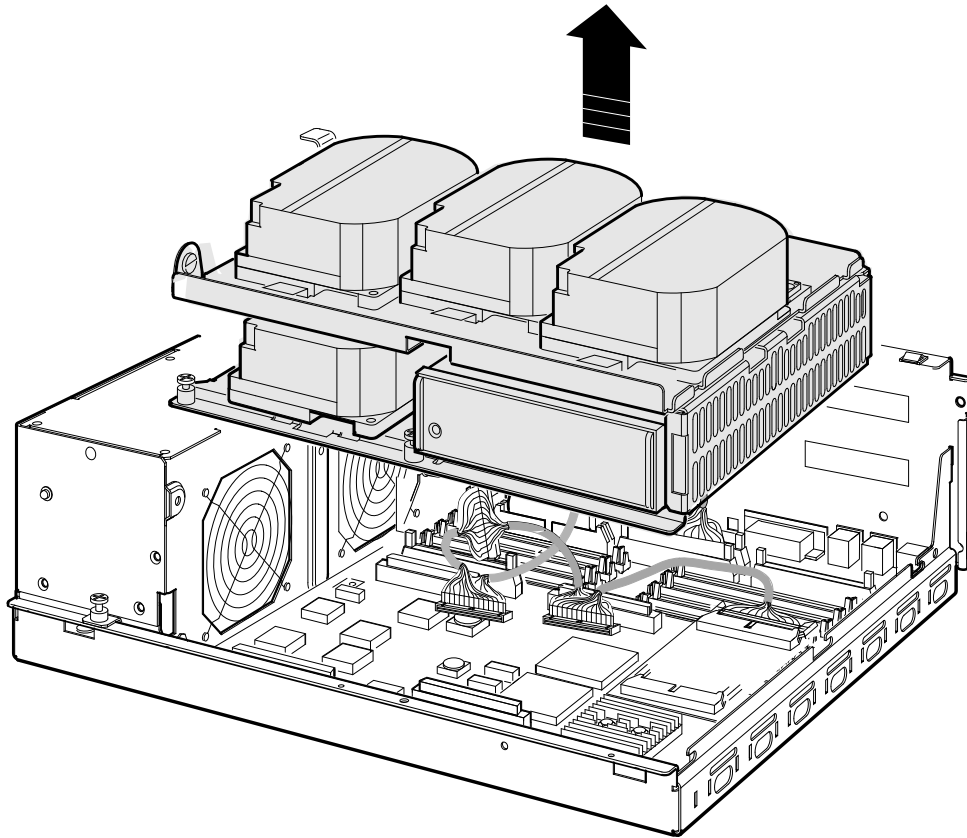


MLO-012307

- 1 Drive mounting shelves

**Upgrading the VAX 4000 Model 100A System  
3.5 Installing the CPU Module**

**Figure 3-9 Lifting the Drive Mounting Shelves Upward**



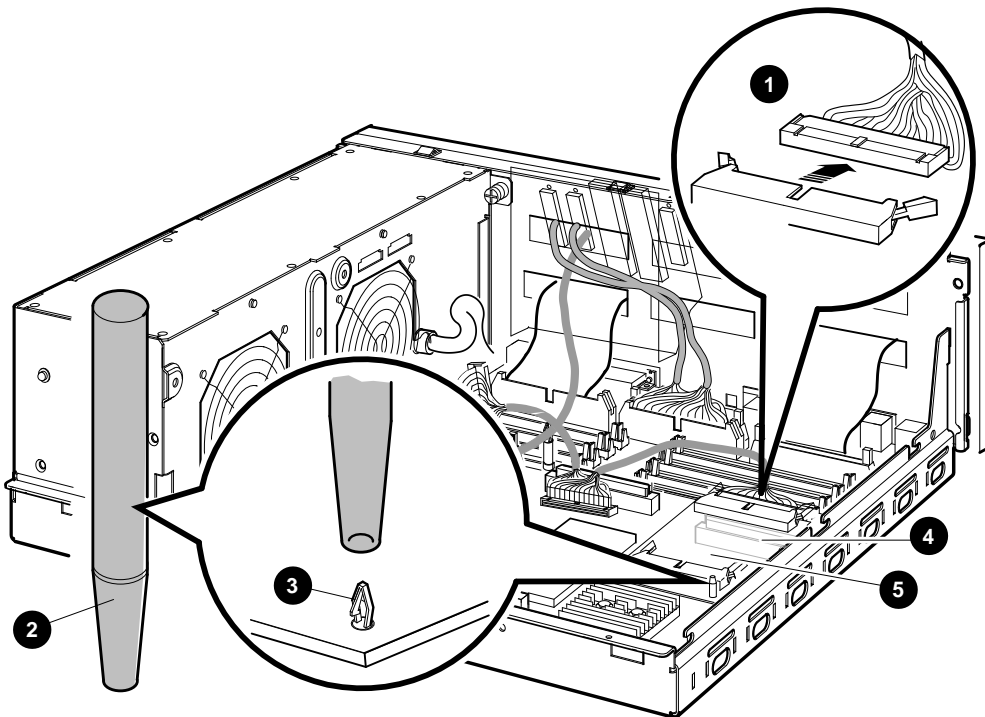
MLO-012289

## Upgrading the VAX 4000 Model 100A System

### 3.5 Installing the CPU Module

10. Disconnect the DSSI cable from the DSSI daughter card (see Figure 3–10).
11. Remove the DSSI daughter card by gently prying it loose from its connector on the CPU module, and use a standoff removal tool to compress the posts so that each corner of the card can be lifted off individually (Figure 3–10). When all four corners are loose, lift the card out and place it on an anti-static mat.

Figure 3–10 Removing the DSSI Daughter Card



MLO-012311

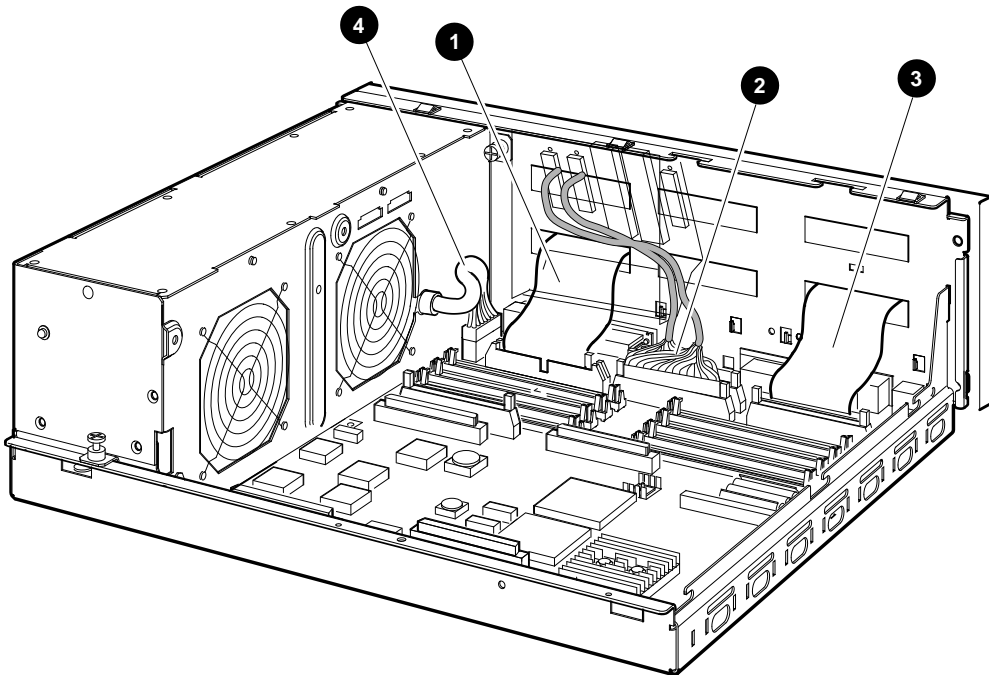
- ❶ DSSI connector
- ❷ Standoff removal tool
- ❸ Standoff
- ❹ Daughter card connector on the CPU module
- ❺ Single DSSI daughter card

## Upgrading the VAX 4000 Model 100A System

### 3.5 Installing the CPU Module

12. Remove all cables from the CPU module (Figure 3–11).
  - a. Disconnect the external SCSI cable, which runs from the port cover to the CPU module, at the connector on the CPU module.
  - b. Disconnect the Q–bus cable.
  - c. Disconnect any internal communications options cables that are present in your system from the CPU module.
  - d. Disconnect the CPU power cable from the CPU module.

**Figure 3–11** Disconnecting the Q–bus and external SCSI Cables



MLO-012308

- ❶ External SCSI cable
- ❷ Q–bus cable
- ❸ Internal communications option cable(s)
- ❹ CPU power cable

## Upgrading the VAX 4000 Model 100A System

### 3.5 Installing the CPU Module

13. To remove the CPU module, follow these steps.

---

**Caution**

---

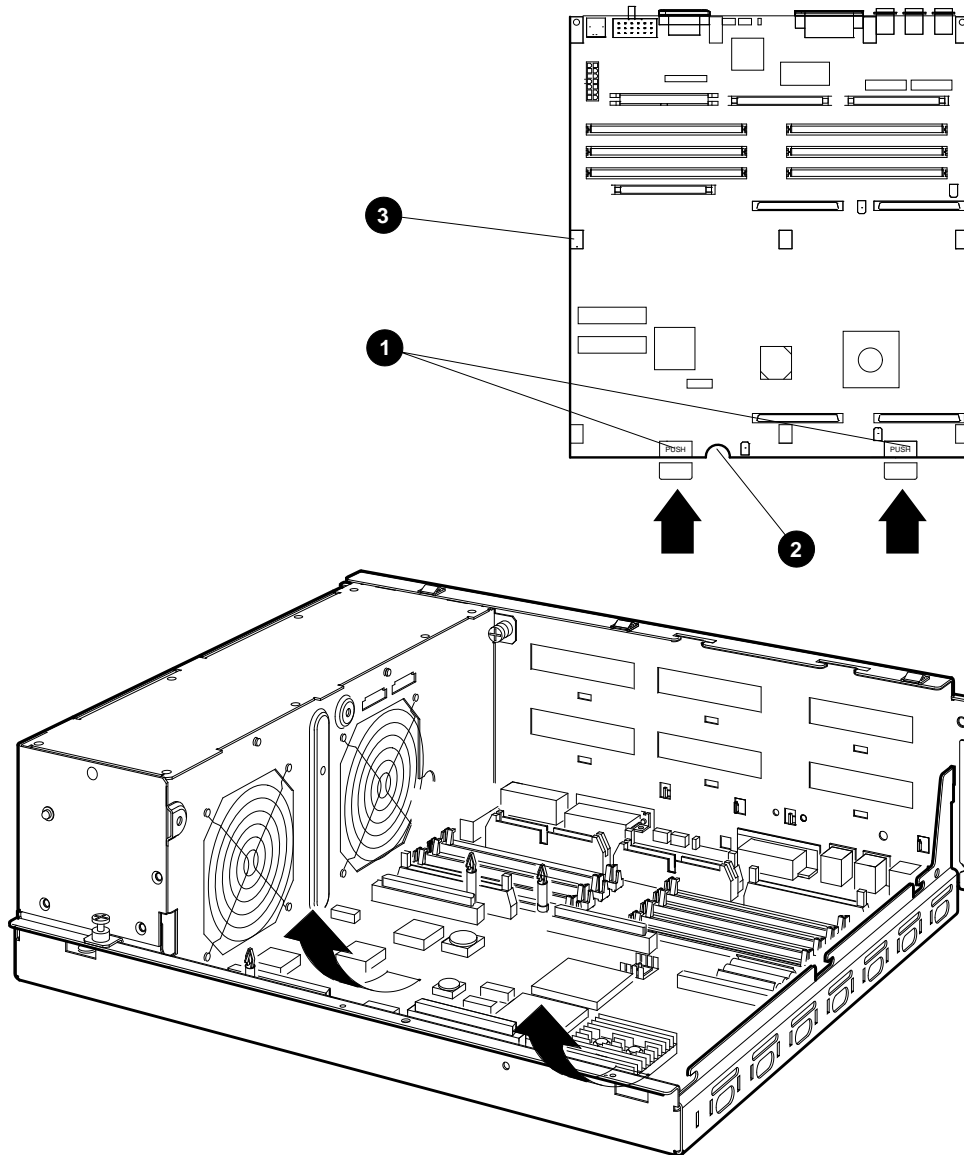
Ensure that you do not damage any of the CPU module components by exerting too much force on them.

---

- a. Press the two spring clips (marked by arrows in Figure 3–12) that secure the CPU module in position. The CPU module moves forward under the tension of the connector gaskets. If necessary, slide the CPU module back until it disengages from the ten keyhole cutouts (refer to Figure 3–12).
- b. Use your finger, in the semicircular cutout on the front edge of the CPU module, to lift up the front edge of the CPU module (refer to Figure 3–12).
- c. While supporting the front of the CPU module with one hand, guide the connectors on the back of the CPU module out of the corresponding cutouts on the back of the enclosure.
- d. Remove the CPU module from the enclosure.

## Upgrading the VAX 4000 Model 100A System 3.5 Installing the CPU Module

Figure 3-12 Removing the CPU Module



MLO-012295

- ❶ Spring clips
- ❷ Semicircular cutout
- ❸ Keyhole cutouts (10)

## Upgrading the VAX 4000 Model 100A System

### 3.5 Installing the CPU Module

14. To install the new CPU module, follow these steps:
  - a. Place the CPU module in the enclosure so that the connectors on the CPU module align with the corresponding cutouts in the back panel of the enclosure. Use the ThinWire Ethernet port as an anchor point to adjust the position of the CPU module correctly.
  - b. Align the keyhole cutouts in the CPU module with the corresponding standoff pillars in the base of the enclosure.

---

**Caution**

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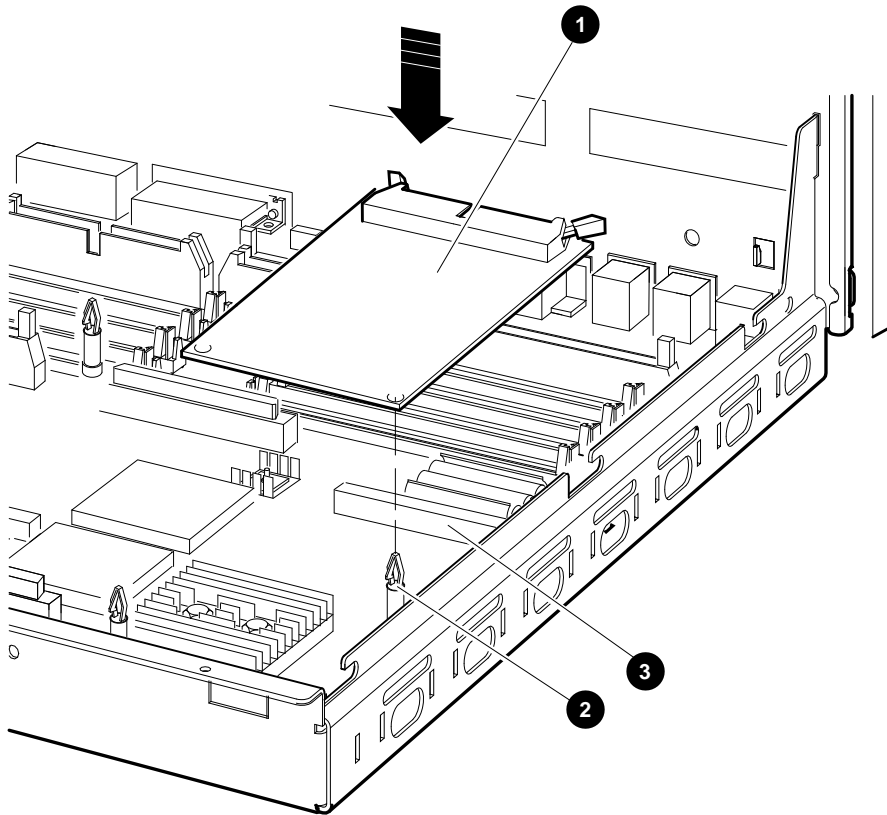
Ensure that you do not damage any of the CPU module components by exerting pressure on them.

---

- c. Press the CPU module at the two positions marked *push*. The spring clips push the standoff pillars into the keyhole cutouts that secure the CPU module in position. See Figure 3–12.
15. Install the DSSI daughter card onto the CPU module (see Figure 3–13). Align the card on the standoffs so that it is positioned above the CPU module connector, then gently seat it onto the connector and the standoffs.

## Upgrading the VAX 4000 Model 100A System 3.5 Installing the CPU Module

Figure 3-13 Installing the DSSI Daughter Card



MLO-012296

- ❶ Daughter card
- ❷ Standoff
- ❸ CPU module connector

---

### Note

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For clarity, cables not applicable to a particular step are omitted from some of the following illustrations.

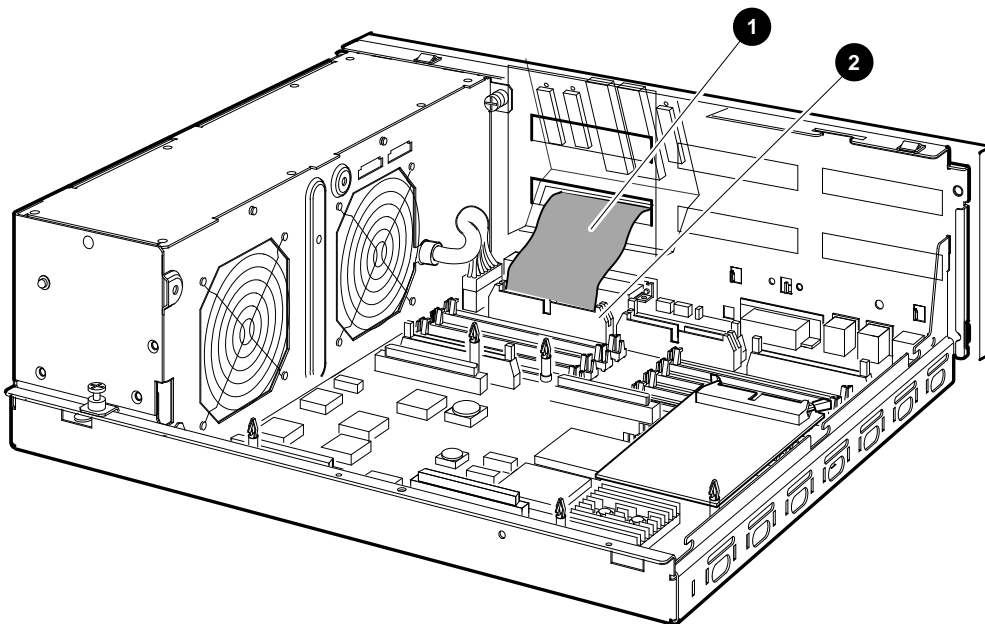
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## Upgrading the VAX 4000 Model 100A System

### 3.5 Installing the CPU Module

16. Connect the external SCSI cable (17-2944-01) to the CPU module (see Figure 3-14).

**Figure 3-14 Connecting the External SCSI Cable to the CPU Module**



MLO-012297

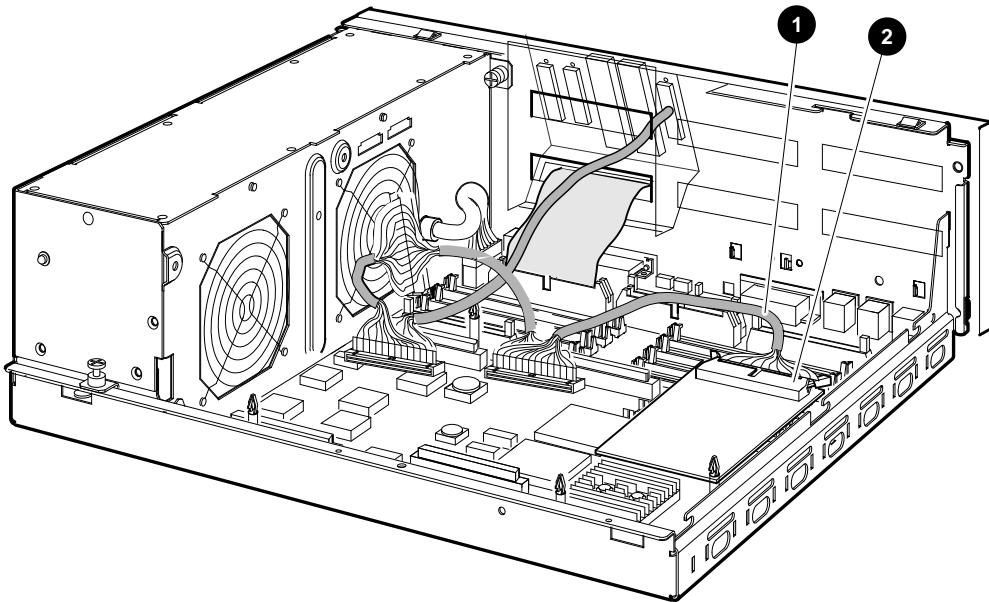
- 1 External SCSI cable
- 2 External SCSI connector on the CPU module

## Upgrading the VAX 4000 Model 100A System

### 3.5 Installing the CPU Module

17. Connect the DSSI cable (17-03544-01) to the connector slot on the DSSI daughter card (see Figure 3-15).

**Figure 3-15** Connecting the Single DSSI Cable to the Daughter Card



MLO-012298

- 1 Single DSSI cable
- 2 Rear connector slot on the daughter card

---

#### Note

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If your system has the dual DSSI option, run the dual DSSI in/out cable (17-03778-01) between the rows of memory module slots and connect it to the front connector slot on the DSSI daughter card (closest to the front of the enclosure).

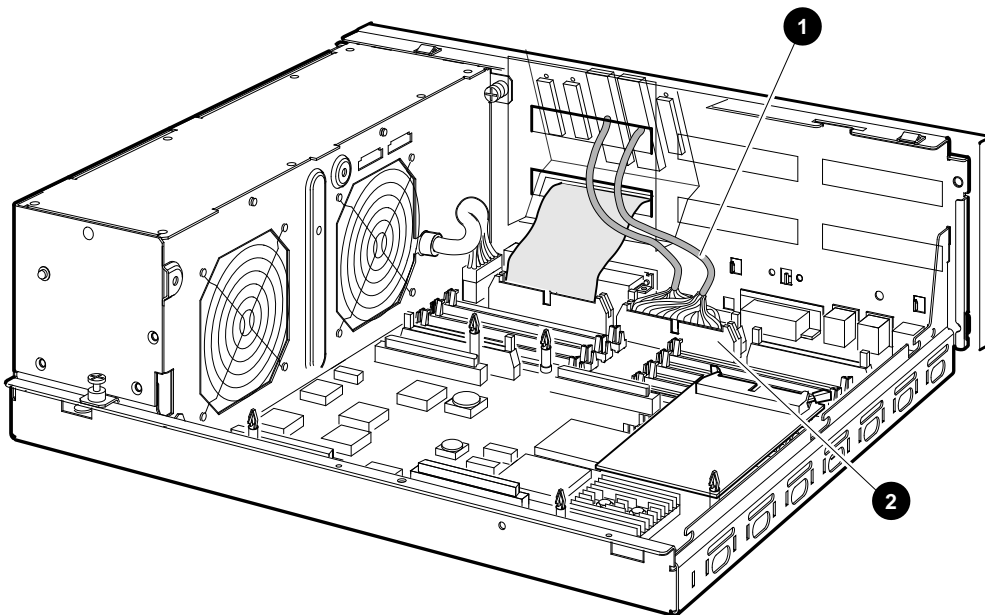
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## Upgrading the VAX 4000 Model 100A System

### 3.5 Installing the CPU Module

18. Connect the Q-bus cable (17-3545-01) to the Q-bus slot on the CPU module (see Figure 3-16).

**Figure 3-16 Connecting the Q-bus Cable to the CPU Module**



MLO-012299

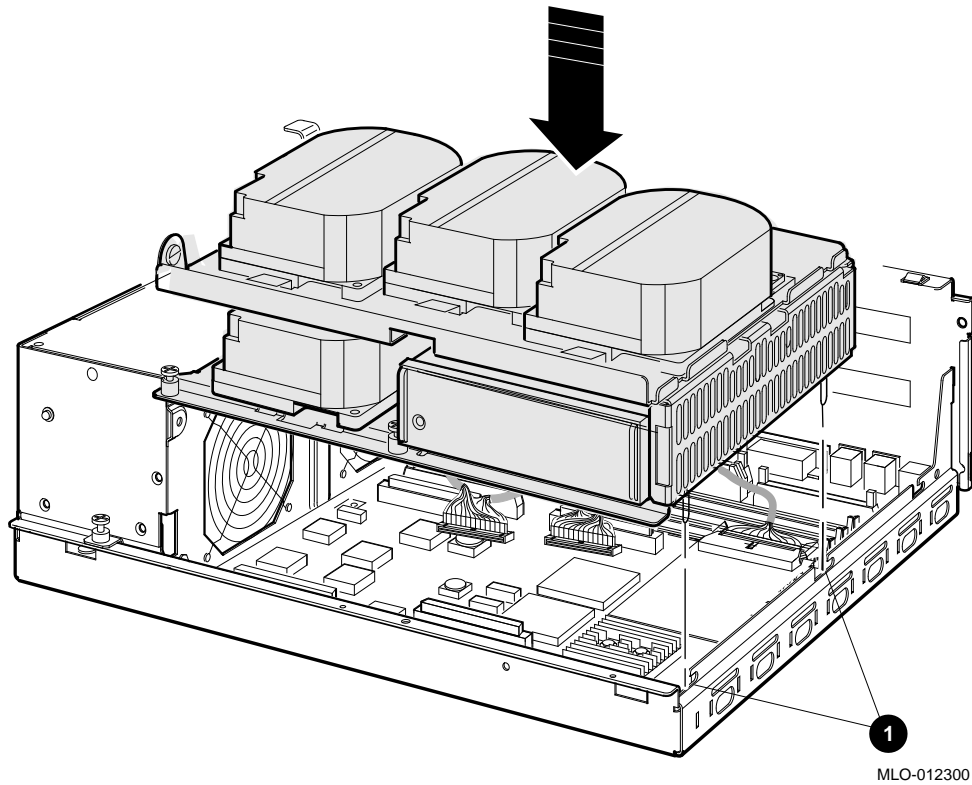
- 1 Q-bus cable
- 2 Q-bus connector on the CPU module

## Upgrading the VAX 4000 Model 100A System

### 3.5 Installing the CPU Module

19. Reinstall the upper and lower drive mounting shelves in the system box, and connect the internal SCSI cable (17-03587-01) to the CPU module.
  - a. Position the shelves by lining up the bracket tabs, but do not slide them rearward yet (see Figure 3-17).

**Figure 3-17** Aligning the Drive Mounting Shelves



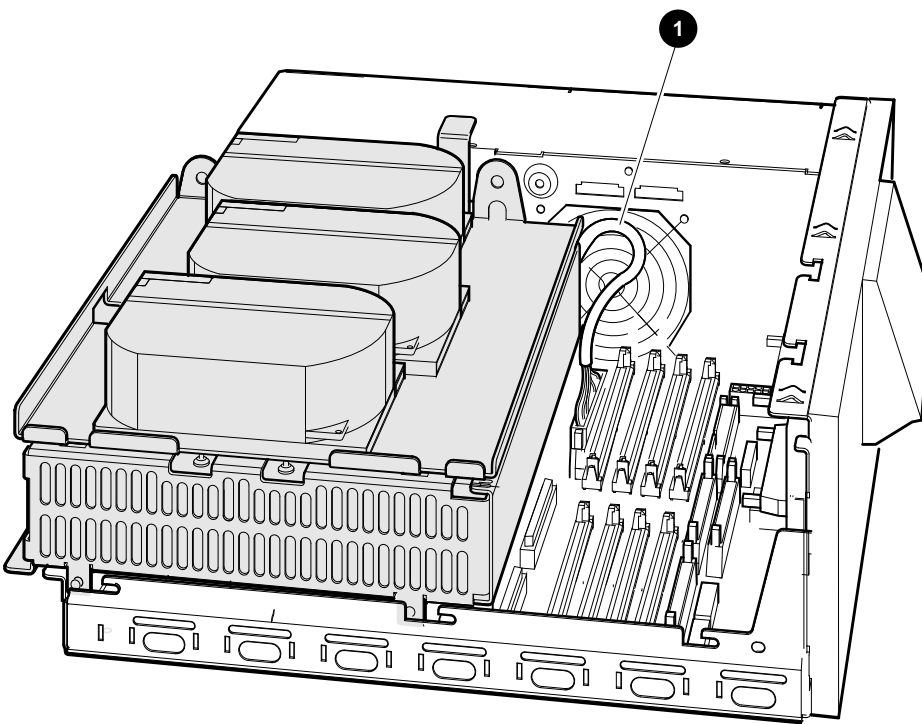
**1** Bracket tabs

## Upgrading the VAX 4000 Model 100A System

### 3.5 Installing the CPU Module

- b. Connect the internal SCSI cable to its connector on the CPU module (see Figure 3–18).
- c. Slide the shelves down and rearward into place so that the holes on the bracket tabs line up with their cutouts.

**Figure 3–18** Reinstalling the Drive Mounting Shelves



MLO-012305

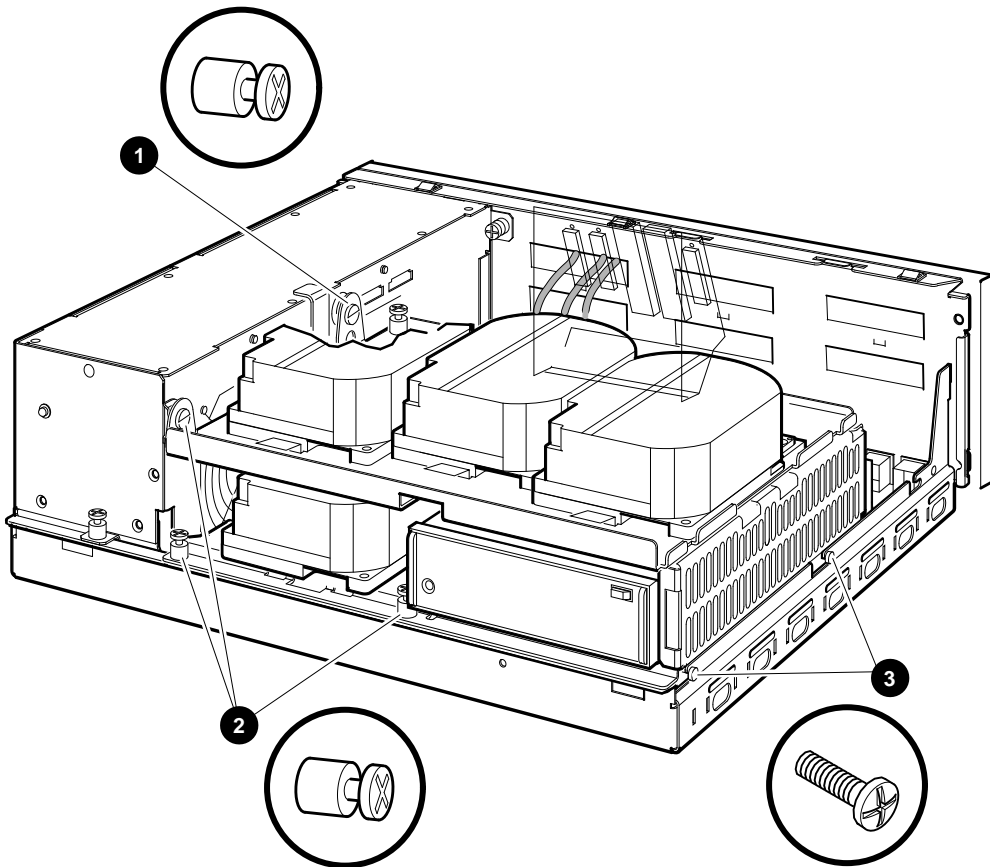
- ❶ Internal SCSI cable

## Upgrading the VAX 4000 Model 100A System

### 3.5 Installing the CPU Module

- d. Tighten the shelves in place using the six screws that held them in originally (see Figure 3–19).
  1. Tighten the topmost captive screw first so that the shelves do not fall and damage components underneath.
  2. Tighten the remaining captive screws.
  3. Replace and tighten the Phillips screws.

**Figure 3–19 Securing the Drive Mounting Shelves**



MLO-012302

- ❶ Topmost captive screw      ❸ Phillips screws  
❷ Other captive screws

## Upgrading the VAX 4000 Model 100A System

### 3.5 Installing the CPU Module

20. Reinstall the SIMMs as follows, beginning with the module closest to the front of the enclosure (Figure 3–20).

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#### Caution

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When installing a SIMM, note that the connectors on the CPU module are keyed so that you cannot install the module with an incorrect orientation. Do not try to force a module into a connector with an incorrect orientation.

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#### Note

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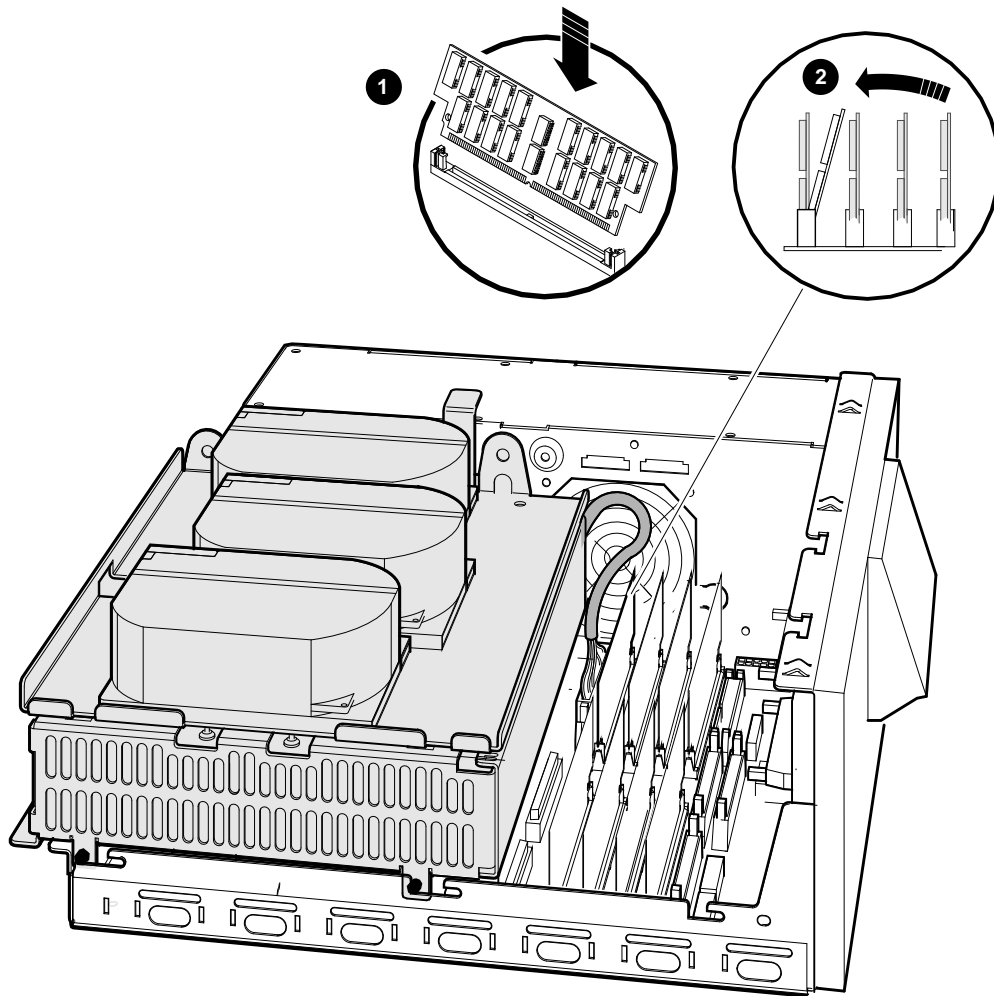
The SIMMs must be reinstalled into the same slots they came from.

---

1. Tip the memory module rearward.
2. Slide the module into its connector while still tipped rearward, and tip it back upright.

Upgrading the VAX 4000 Model 100A System  
3.5 Installing the CPU Module

Figure 3-20 Installing a Memory Module



MLO-012303

❶ Sliding the module in

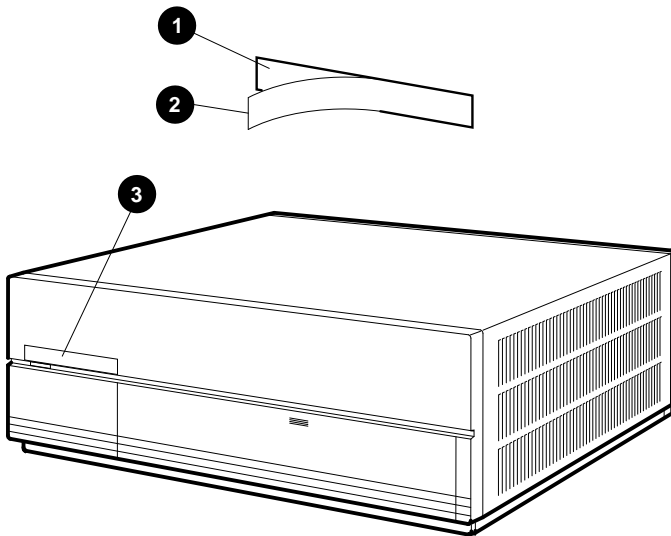
❷ Tipping it upright

## Upgrading the VAX 4000 Model 100A System

### 3.5 Installing the CPU Module

21. Reconnect the DSSI connectors to the drives (see Figure 3-5).
22. Reconnect the internal power cables (see Figure 3-4).
23. Reinstall the enclosure cover (see Figure 3-2).
24. Place the new label, 36-30382-23 (24), whichever is appropriate for your country, over the existing label.
25. Remove the system medallion and install the new one, 74-37642-32. See Figure 3-21.
  - a. Peel the backing off the new medallion.
  - b. Apply the new medallion in place of the original one.

**Figure 3-21 Applying the New Medallion**



MLO-010951

- ❶ Backing
- ❷ New medallion
- ❸ Medallion location

## **Upgrading the VAX 4000 Model 100A System**

### **3.5 Installing the CPU Module**

26. Apply the conversion label (36-15946-00) in any spot on the system box you wish.
27. Have the customer reinstall system data (if necessary).
28. Fill out the forms in Appendix A.
29. Return the original CPU module as instructed (see Appendix A).



# A

---

## Mandatory Return Procedure and Forms

The original CPU module must be returned to Digital Equipment Corporation. Digital Services personnel must follow the instructions for repackaging and returning the original CPU. The instructions apply only to United States area installations.

For installations outside the United States area, contact the local Digital Equipment Corporation office for return destination instructions.

### A.1 Return Procedure

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#### Note

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Customers who do not return their original CPU modules will be charged a fee.

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Return the original CPU module as follows:

1. Obtain the serial number of the system being converted. Customer Administrative Services (CAS) cannot process the order without this serial number.
2. Ensure that the serial number is on the purchase order.
3. Issue a hardcopy quotation to the customer, referencing the serial number, and state the following:  

"Return of the replaced modules to Digital is a condition of sale for this conversion. Failure to return the modules will result in a penalty charge. Installation of hardware by Digital Services personnel is required."
4. Pack the original CPU module using the packaging material set aside from the carton of the conversion kit.

## Mandatory Return Procedure and Forms

### A.1 Return Procedure

Pack the module first in the nickel-plated bag, then in the pink plastic wrapping, and finally in the box. Do not seal the box for shipping until you have included all necessary paperwork.

5. Complete the Digital Services Worksheet in Section A.2. It documents the work you performed.

Return the worksheet to your contract administrator at the branch office.

6. Contact your local Digital CAS office to obtain information for the Installation Receipt and the Return Material Checklist in Section A.2.

Ask the CAS representative for a return authorization (RA) number. CAS will contact the customer to arrange for carrier pickup and return of the module to Digital Equipment Corporation.

7. Complete both copies of the Installation Receipt.

The first copy is the customer's receipt. It shows that the installation was completed and that Digital Services contacted CAS.

Return the second copy to Digital Services along with the original CPU module card so that the customer does not incur a penalty charge.

8. Complete the Returned Material Checklist.

Return the checklist with the original module.

9. Place the self-adhesive mailing label on the box to be returned.

Write the return authorization (RA) number in the space provided on the label.

10. Seal the box for shipment.

Refer questions regarding the return procedure to the local account representative.

### A.2 Return Forms

This section contains the:

- Digital Services Worksheet
- Installation Receipt–Customer Copy
- Installation Receipt–Digital Services Copy
- Returned Material Checklist

**Mandatory Return Procedure and Forms**  
**A.2 Return Forms**

**Digital Services Worksheet**

This form acts as a verification of the work performed on the system and as a check on the procedures used. Please fill out this form and return it to your Contract Administrator for updating the customer's contract.

Customer: \_\_\_\_\_

Previous System Model Number: \_\_\_\_\_

Previous System Serial Number: \_\_\_\_\_

Original CPU Module Serial Number: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

New System Name: \_\_\_\_\_

New System Model Number: \_\_\_\_\_

New System Serial Number: \_\_\_\_\_

New CPU Module Serial Number: \_\_\_\_\_

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Mandatory Return Procedure and Forms**  
**A.2 Return Forms**

**Mandatory Return Procedure and Forms  
A.2 Return Forms**

**Installation Receipt—Customer Copy**

*For the upgrade of VAX 4000 Model 100 or VAX 4000 Model 100A to VAX 4000 Model 105A.*

This form acts as a customer receipt and as verification for Digital Services that the CPU module upgrade kit was installed.

Digital Services: Complete both copies of this form. Give a copy to the customer and a copy to the local CAS office for filing with customer documents.

Customer: Digital Equipment Corporation will contact you within the next several days to arrange for package pickup and return. Keep this copy as your record of installation by Digital Equipment Corporation.

\_\_\_\_\_ **Note** \_\_\_\_\_

Contact the local CAS office to obtain the RA (return authorization) number. You should have the Digital order number available. Be sure to note the name of the person you speak with.

\_\_\_\_\_

Name of CAS representative: \_\_\_\_\_

Branch Office: \_\_\_\_\_, will arrange for package pickup and return.

Return Authorization (RA) Number: \_\_\_\_\_

Digital Order Number: \_\_\_\_\_

Original CPU Module Serial Number: \_\_\_\_\_

Converted to: \_\_\_\_\_

New System Serial Number: \_\_\_\_\_

New CPU Module Serial Number: \_\_\_\_\_

Installation was performed on this date: \_\_\_\_\_

(See overleaf for signatures)

**Mandatory Return Procedure and Forms**  
**A.2 Return Forms**

CPU Module Packed for Return:

Customer Name: \_\_\_\_\_ Phone Number: \_\_\_\_\_

Customer Signature: \_\_\_\_\_

Digital Services Representative Signature: \_\_\_\_\_

**Mandatory Return Procedure and Forms**  
**A.2 Return Forms**

**Installation Receipt—Digital Services Copy**

*For the upgrade of VAX 4000 Model 100 or VAX 4000 Model 100A to a VAX 4000 Model 105A.*

This form acts as a verification for Digital Services that the CPU module upgrade kit was installed.

Digital Services: Complete both copies of this form. Give a copy to the customer and a copy to the local CAS office for filing with customer documents.

\_\_\_\_\_ **Note** \_\_\_\_\_

Contact the local CAS office to obtain the RA (return authorization) number. You should have the Digital order number available. Be sure to note the name of the person you speak with.

\_\_\_\_\_

Name of CAS representative: \_\_\_\_\_

Branch Office: \_\_\_\_\_, will arrange for package pickup and return.

Return Authorization (RA) Number: \_\_\_\_\_

Digital Order Number: \_\_\_\_\_

Original CPU Module Serial Number: \_\_\_\_\_

Converted to: \_\_\_\_\_

New System Serial Number: \_\_\_\_\_

New CPU Module Serial Number: \_\_\_\_\_

Installation was performed on this date: \_\_\_\_\_

(See overleaf for signatures)

**Mandatory Return Procedure and Forms**  
**A.2 Return Forms**

CPU Module Packed for Return:

Customer Name: \_\_\_\_\_ Phone Number: \_\_\_\_\_

Customer Signature: \_\_\_\_\_

Digital Services Representative Signature: \_\_\_\_\_

**Mandatory Return Procedure and Forms  
A.2 Return Forms**

**Returned Material Checklist**

*For the upgrade of VAX 4000 Model 100 or VAX 4000 Model 100A to a VAX 4000 Model 105A.*

This form must be filled out and returned with the original daughter card to ensure that the customer does not incur a penalty charge.

Return Authorization (RA) Number: \_\_\_\_\_

Digital Order Number: \_\_\_\_\_

Customer Name: \_\_\_\_\_

Customer Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Customer Contact: \_\_\_\_\_

**\*\*\*\*\* Include This Form With Your Module Return\*\*\*\*\***



## How to Order Additional Documentation

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### Technical Support

If you need help deciding which documentation best meets your needs, call 800-DIGITAL (800-344-4825) and press 2 for technical assistance.

### Electronic Orders

If you wish to place an order through your account at the Electronic Store, dial 800-234-1998, using a modem set to 2400- or 9600-baud. You must be using a VT terminal or terminal emulator set at 8 bits, no parity. If you need assistance using the Electronic Store, call 800-DIGITAL (800-344-4825) and ask for an Electronic Store specialist.

### Telephone and Direct Mail Orders

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Canada	Phone: 800-267-6215 Fax: (613) 592-1946	Digital Equipment of Canada Ltd. 100 Herzberg Road Kanata, Ontario, Canada K2K 2A6 Attn: DECdirect Sales
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Internal Orders <sup>1</sup> (for software documentation)	DTN: 264-3030 (603) 884-3030 Fax: (603) 884-3960	U.S. Software Supply Business Digital Equipment Corporation 10 Cotton Road Nashua, NH 03063-1260
Internal Orders (for hardware documentation)	DTN: 264-3030 (603) 884-3030 Fax: (603) 884-3960	U.S. Software Supply Business Digital Equipment Corporation 10 Cotton Road Nashua, NH 03063-1260

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<sup>1</sup>Call to request an Internal Software Order Form (EN-01740-07).



## Reader's Comments

VAX 4000  
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Thank you for your assistance.

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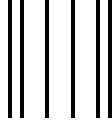
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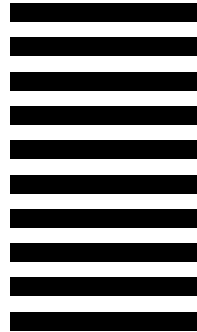
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