

AlphaStation 600 to AlphaStation 600A

Upgrade Information

EK-AL655-UP. A01

January 1997

**Digital Equipment Corporation
Maynard, Massachusetts**

January 1997

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Preface

Introduction

This guide, intended for Digital service representatives and for customers, describes the procedure for upgrading the AlphaStation 600 system to the AlphaStation 600A system. The upgrade is a multi-step procedure requiring that you remove the system unit's left side panel, remove components from the system unit, replace the system board and CPU card, and reinstall components in the system.

Special Notices

In this guide, warning notices provide information to prevent personal injury, and caution notices emphasize important information that can affect the operation of your system. Notes are used to provide information of general interest. Conventions used in entering commands are shown in the table below:

Convention	Meaning
Ctrl/ <i>x</i>	Ctrl/ <i>x</i> indicates that you hold down the Ctrl key while you press another key, indicated here by <i>x</i> .
boot	Commands that you enter are shown in this special typeface. Commands shown in lowercase letters can be entered in either uppercase or lowercase. Commands shown in uppercase letters must be entered in uppercase for the command to work.
show config	Console command abbreviations must be entered exactly as shown.
[]	In command descriptions, brackets indicate optional elements.
{ }	In command descriptions, braces containing items separated by commas indicate mutually exclusive items.
<i>italic type</i>	Italic type in console command sections indicates a variable.

Preface

Additional Information

For additional information, consult the *AlphaStation 600 User Information* manual and *AlphaStation 600A User Information* manual, which contain information on how to start, use, update, troubleshoot, and configure your system. General system information such as console commands and care of the system are also available in the User Information manuals.

1

Preparing for the Upgrade

Upgrade Kit Inventory

Table 1 lists the contents of the AlphaStation 600 to 600A upgrade kit.

Table 1 Parts List for Upgrade Kit

Kit Item	Part Number	Comment
EMI shield	74-52196-01	Locate between CPU and 1st EISA Slot
EMI ground clip	74-52197-01	Locate top of I/O area
EMI ground clip	74-51392-01	Locate bottom of I/O area
CPU retaining bracket	74-50086-01	
One metal standoff	74-49394-01	
Finger stock (2)	74-46930-01	Clips on EMI shield
Power supply front cover	70-31343-01	
Main Logic Board - 600A	54-23499-02	
CPU module - 600A	54-24799-03	
10-mm screws: (2)	90-09984-21	
Conversion product ID label	36-46138-03	
FCC label	36-44492-05	
Cable assembly	17-04179-01	External drives to system board
Clip-on ferrite beads (2)	16-25205-18	For AC Power Cord

Preparing for the Upgrade

Table 2 Parts List for Upgrade Kit (cont.)

Kit Item	Part Number	Comment
Clip-on ferrite bead (1)	16-25205-14	For OCP cable
EMI gaskets (4)	12-46730-01, 12-46730-02	
Rubber bumpers (5)	12-28717-03	
Copper tape (1/2 inch)	12-23743-05	Add to sound card bracket
J55 jumper	12-18783-02	

Upgrade Kit Documentation

In addition to the items listed above, the following documentation is included in the upgrade kit:

Item	Part Number
<i>AlphaStation 600 to 600A Upgrade Information</i> manual	EK-AL655-UP.A01
<i>AlphaStation 600A User Information</i> manual	EK-AL655-UI.A01

Preparing the System

To prepare your system for the upgrade:

1. Shut down the operating system following the instructions listed in the operating system documentation.
2. Set the On/Off switches on all external options connected to the system to the off position.
3. Set the On/Off switch on the system unit to the off position. An interlocking sensor switch inside the system unit will automatically turn off the system if you remove the side panel and have not turned off the system.

Preparing for the Upgrade

Upgrade Task Summary

The steps required to complete the upgrade are summarized below:

1. Remove the following components:
 - memory tower brackets (discard)
 - memory towers (return to Digital--54-23244-01)
 - memory modules from the SIMM connectors (set aside for reuse)
 - option modules from the option slots (set aside for reuse)
 - the I/O subsystem module (set aside for reuse)
 - the drive assembly (set aside for reuse)
2. Disconnect the following cables:
 - power supply (3 cables)
 - interlock
 - speaker
 - OCP
 - fan
 - diskette drive
3. Remove the system module (return to Digital--54-23242-01, -02, or -03).
4. Prepare the chassis:
 - Add rubber bumpers to the rear wall.
 - Reposition the metal standoffs on the rear wall, adding one.
 - Reroute the diskette drive cable.
 - Attach three ferrite beads: two to the internal power supply harness (remove power supply), and one to the OCP twisted-pair cables and the OCP ribbon cable (remove OCP assembly).
6. For upgrades of Model 266 systems *only*:
 - Add EMI gaskets.
 - Reroute the OCP cable, and reposition the ferrite bead on the cable.
 - Remove the power supply front cover, and replace it with a new cover.
7. Before installing the new main logic board, attach the two clips with supplied mounting screws to the I/O area. Install main logic board, and install one jumper on the J55 connector.
8. Install the EMI shield directly under the CPU card guide on the main logic board. Attach the supplied 10 mm screw to the system board standoff, and one of the previously set aside screws through the rear of the system.

Preparing for the Upgrade

9. Install the previously set aside components on the new main logic board:
 - memory modules
 - option modules
- ☞ **Important:** Move both jumpers on the Microsoft sound card (part number AVA01-AA) one pin to the left, and install the card in EISA slot 2.
10. Install the I/O subsystem module in one of the first three (primary) PCI slots.
11. Connect one end of the new SCSI cable to the on-board SCSI controller, and install a bulkhead connector on the rear of the system to connect an external SCSI device.
12. Replace the drive assembly.
13. Reconnect cables.
14. Install the CPU card on the main logic board, and install the retaining bracket.
15. Replace the left panel on the system unit.
16. Connect a serial terminal to COM port 1 on the rear of the system unit.
17. Load new firmware from the diskette. Open the system unit, and move the J1 jumper on the CPU card to position 8 (fail-safe loader). Replace the left panel on the system unit. When the firmware is loaded, re-open the system unit and move the J1 jumper on the CPU card to position 1 (normal operation).
18. Replace the left panel on the system unit.
19. Run the EISA Configuration Utility (ECU) to disable the onboard graphics controller and select slot 2 for the Microsoft sound card.
20. Run system self-tests.
21. Run or install the operating system
22. Attach new FCC label and new product ID label.

Removing the Left Side Panel

To remove the left side panel, follow this procedure:

1. Unplug the power cord from the wall outlet.
2. Wait at least 15 seconds, to allow time for the power supply capacitors to discharge safely.
3. Unlock the left side panel by turning the key counterclockwise to a vertical position, as shown in Figure 1-.

Preparing for the Upgrade

CAUTION

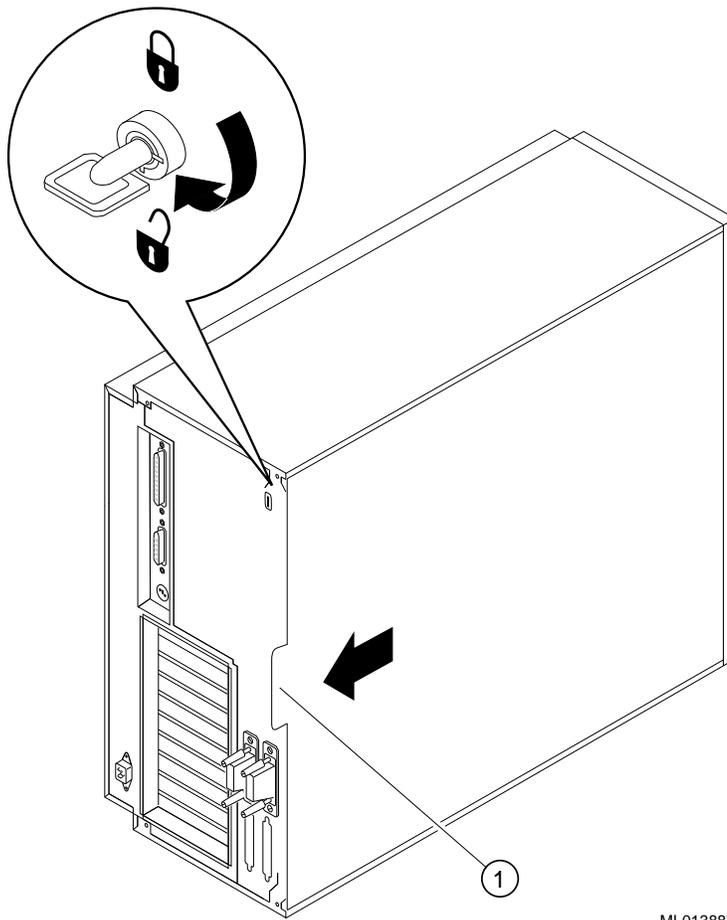
To avoid system damage from static discharge, wear a grounded wrist strap before you touch anything inside the system.

4. Slide the panel toward the rear of the system unit (as shown in Figure 1-) and remove it.

Note

The upgrade procedure requires a #1 Phillips screwdriver and a 5/16-inch nutdriver.

Preparing for the Upgrade



① Finger grip

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Figure 1-1 Unlocking and Removing the Left Side Panel

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Performing the Upgrade

Removing Components from the System Unit

The following components must be removed from your Model 600 system unit:

- Memory tower brackets (discard)
- Memory tower boards (return to Digital)
- Memory modules from the SIMM connectors (set aside for reuse)
- Option modules from the option slots (set aside for reuse)
- I/O subsystem module (set aside for reuse)
- Drive assembly (set aside for reuse)

CAUTION

To avoid electrostatic damage to components, wear a grounded wrist strap before you touch anything inside the system.

Removing a Memory Tower Board

To remove a memory tower board, refer to Figure 2-1 and follow steps 1 through 3.

Performing the Upgrade

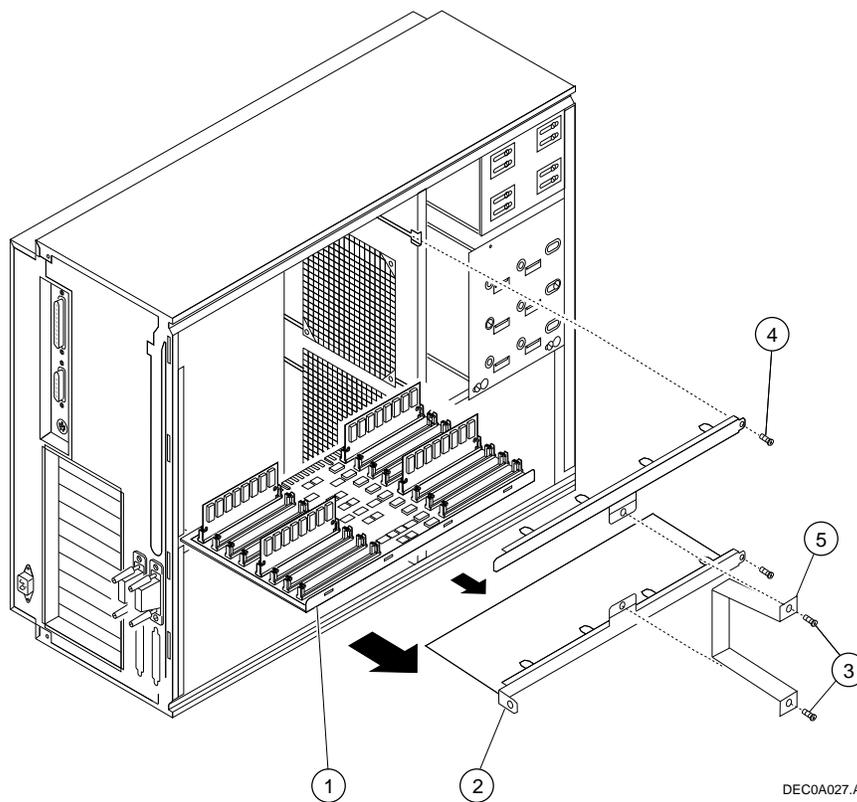


Figure 2-1 Removing a Memory Tower Board

1. Unscrew and remove the SIMM hold-down bracket mounting screws ③ and the SIMM hold-down bracket ⑤.
2. Remove the memory tower retaining-bracket mounting screws and the retaining bracket from the memory tower board (lower tower ②; upper tower ④).

Note

The lower memory tower retaining bracket has an integral shield and is secured to the system unit enclosure with two screws, one at each end of the bracket.

3. Hold the memory tower board ① firmly on both sides and pull it out of the system unit. Set the board aside for return to Digital.

Removing Memory Modules

Note the position of any memory modules that you remove.

Figure 2-3 shows the removal procedure for a memory module.

To remove a memory module:

1. Remove the appropriate memory modules by pressing the metal clips ① on both sides of the memory module connector to the side.
2. Tilt the memory module and lift it ② out of its connector.

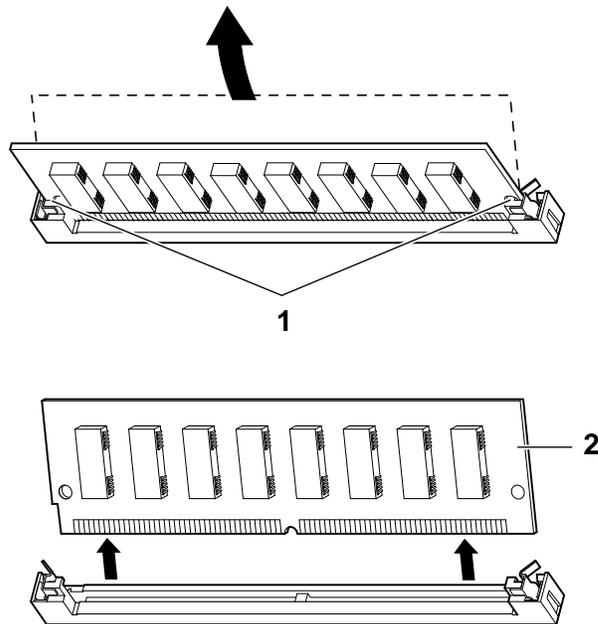


Figure 2-2 Removing a Memory Module

Performing the Upgrade

Removing Option Modules

To remove an EISA or PCI option module from the system board, refer to Figure 2-3 and follow steps 1 through 4.

1. Unscrew and remove the metal slot cover.
2. Disconnect any cables connected to the module you are removing.
3. Remove the screw at the rear of the module.
4. Gently pull out the module.

Refer also to Figure 2-4, which shows PCI slots ①② and the EISA slots ③ on the system module. Note that the slot configuration on the new AlphaStation 600A main logic module differs from that on the AlphaStation 600 system module.

Performing the Upgrade

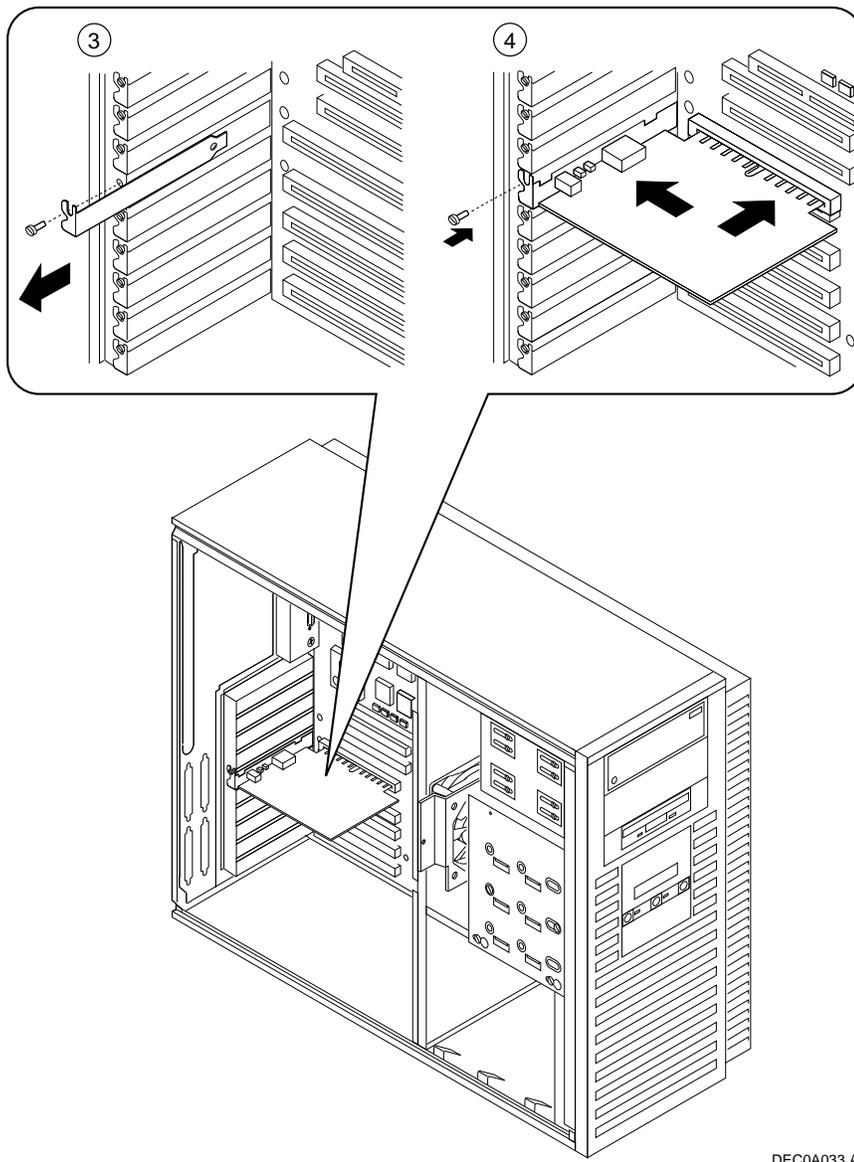


Figure 2-3 Removing an Option

Performing the Upgrade

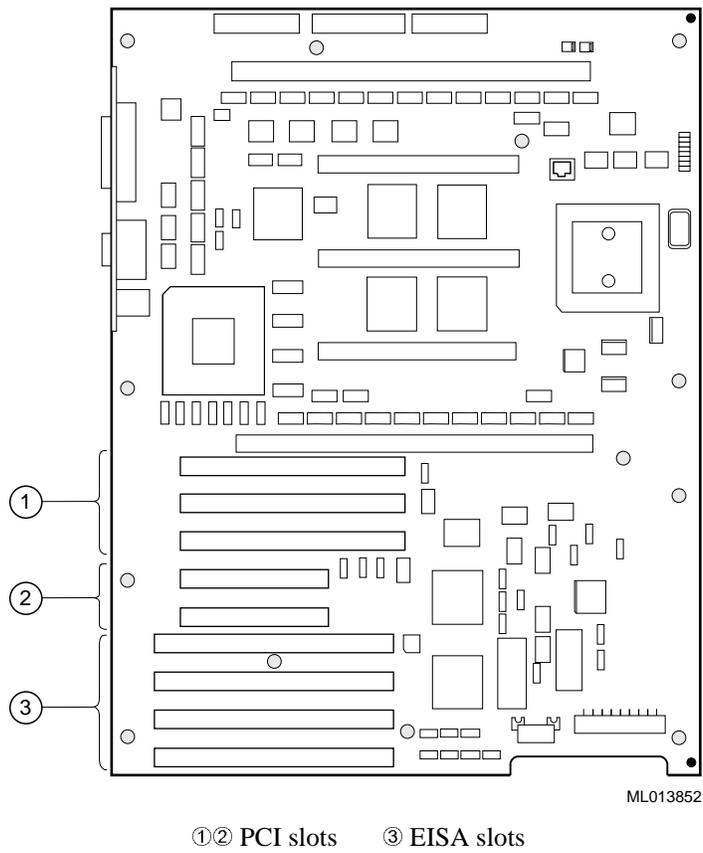
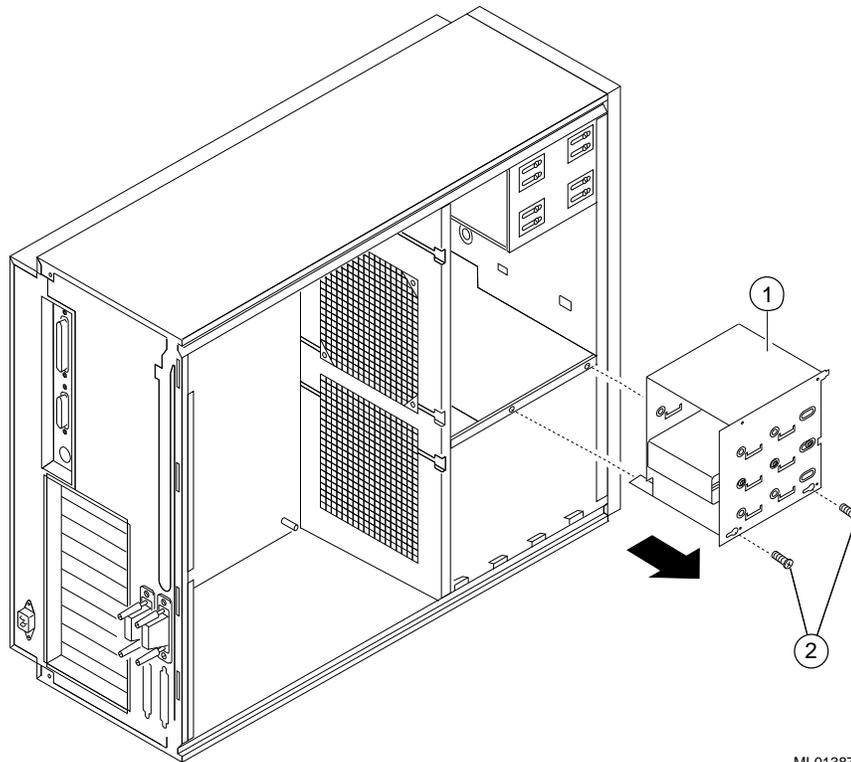


Figure 2-4 Option Module Slots on the Model 600 System Board

Removing the Drive Assembly

To remove the drive assembly from the system unit, see Figure 2-5 and follow this procedure:

1. Remove the SCSI and power cables from the devices in the drive assembly. Note the position of the cables so that you can reconnect them to the correct devices later.
2. Loosen the two mounting screws ② just above the power supply in the keyhole slots.
3. Slide the drive assembly ① toward the rear of the system unit and remove it.



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Figure 2-5 Removing the Drive Assembly

Performing the Upgrade

Disconnecting Cables

Refer to Figure 2-6 and disconnect the following cables:

- Power supply ①②③
- Fan ④
- Speaker ⑤
- Diskette drive ⑥
- OCP ⑦
- System interlock ⑧
- I/O Subsystem module cables ⑨ ⑩

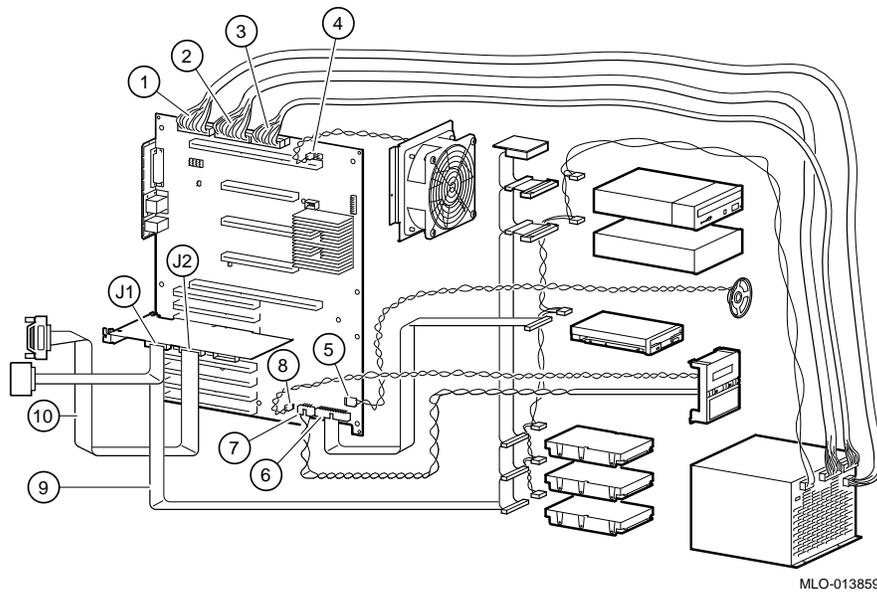


Figure 2-6 Disconnecting Cabling

Removing the System Board

To remove the system board, follow these steps:

1. Remove the 15 mounting screws.
2. To clear the external connectors on the upper left side of the board, pull the right side of the system board toward the front of the unit first.

Preparing the Chassis

To prepare the chassis for the upgrade, refer to Figure 2-7 and follow these steps:

1. Attach the five rubber bumpers provided in the upgrade kit (part number 12-28717-03) to the rear wall of the system unit. The bumpers are self-adhesive and should be attached at the five circular markings on the wall.
2. Reposition the metal standoffs on the rear wall and add one more, as shown in Figure 2-7.

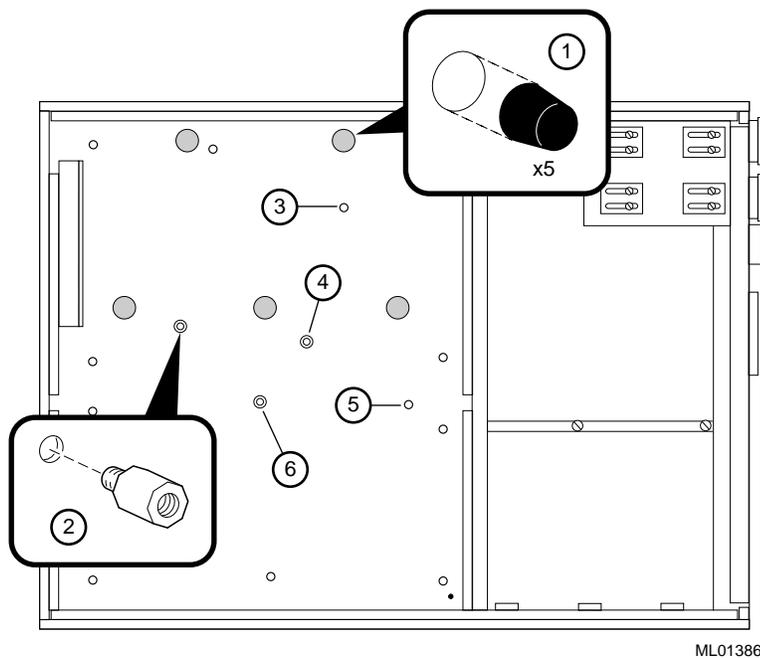
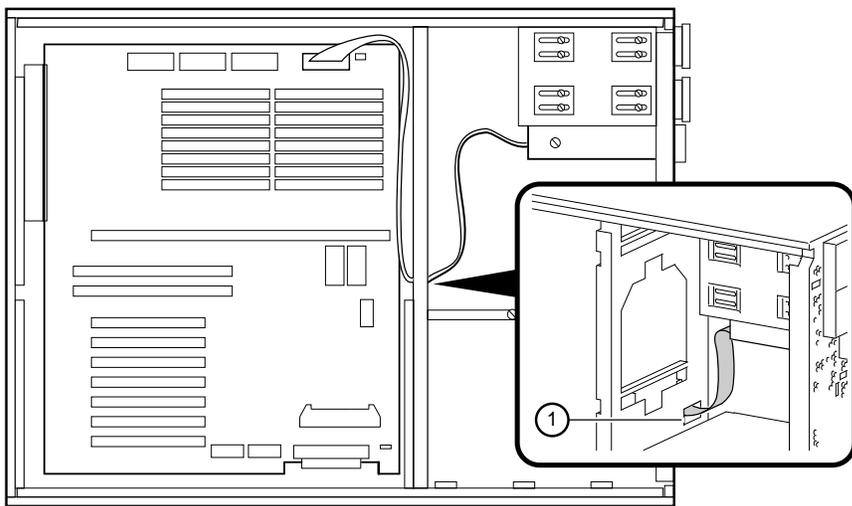


Figure 2-7 Rubber Bumpers and Metal Standoffs

Performing the Upgrade

3. Reroute the diskette drive cable as shown in Figure 2-8.



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Figure 2-8 Rerouting the Diskette Drive Cable

Performing the Upgrade

4. Remove the front panel cover as shown in Figure 2-9.

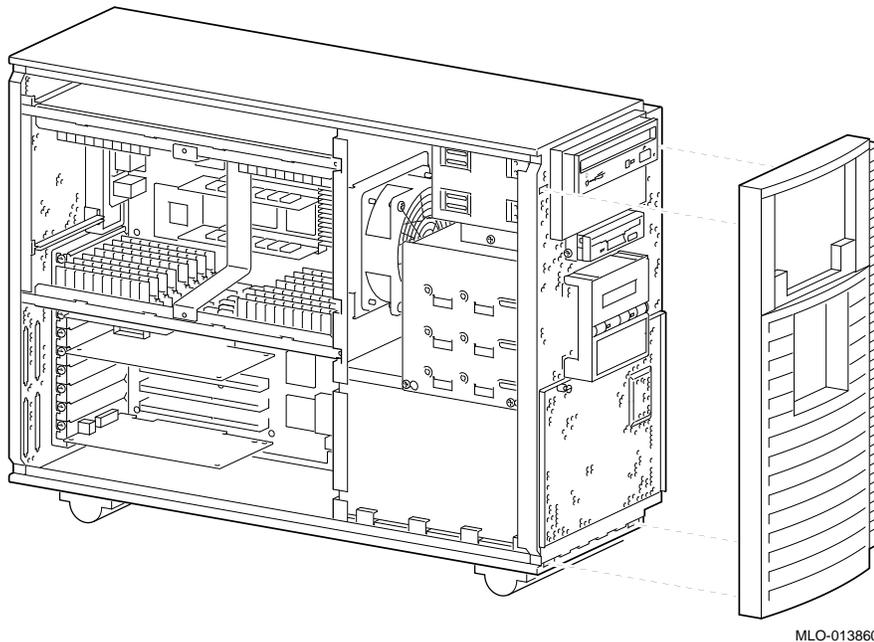
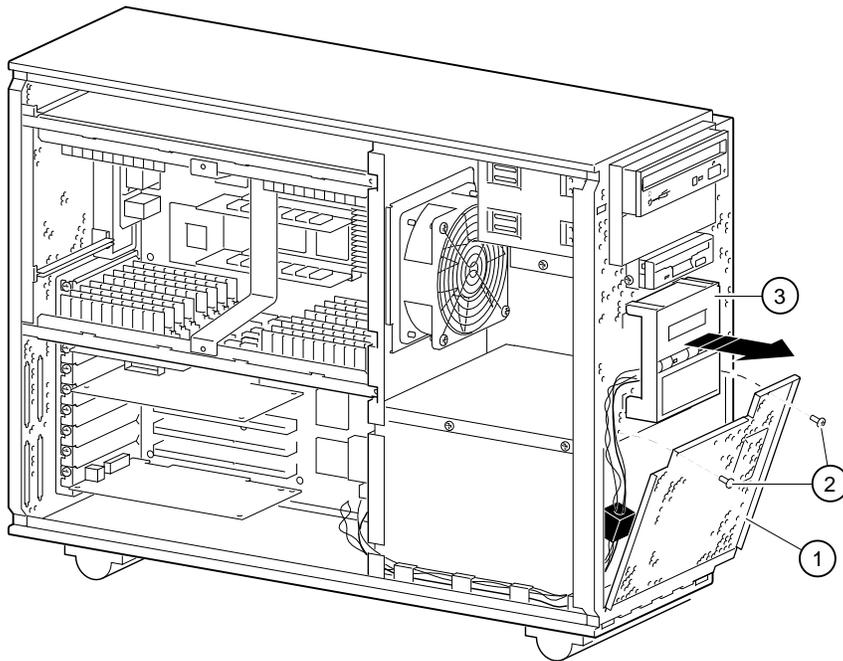


Figure 2-9 Removing the Front Panel

5. Refer to Figure 2-10 and remove the power supply cover ① by removing the two screws ②, as shown. Remove the OCP assembly ③.

Performing the Upgrade

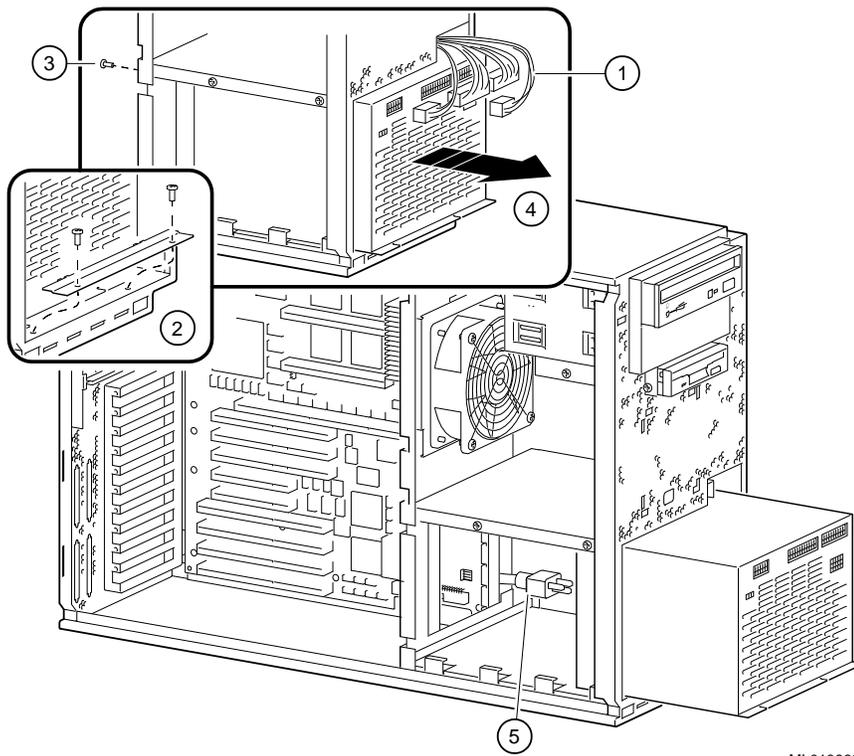


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Figure 2-10 Removing Power Supply Cover and OCP

Performing the Upgrade

6. To remove the power supply, refer to Figure 2-11 and disconnect the four external power supply harnesses ①; remove the hold-down bracket ②; disconnect the screw at the rear of the power supply ③; and slide the power supply forward ④. Disconnect the AC power cord ⑤, and set the power supply aside.



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Figure 2-11 Removing Power Supply

Performing the Upgrade

7. To attach the two ferrite beads to the power harness, refer to Figure 2-12. Attach two clip-on ferrite beads ③ to the harness, at the power supply end of the harness (inside the rear of system chassis). Power harness ① is secured to chassis with 2 screws ②.

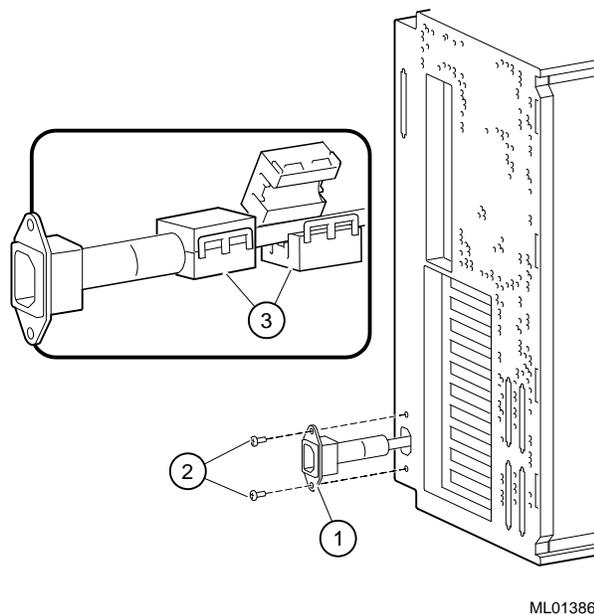
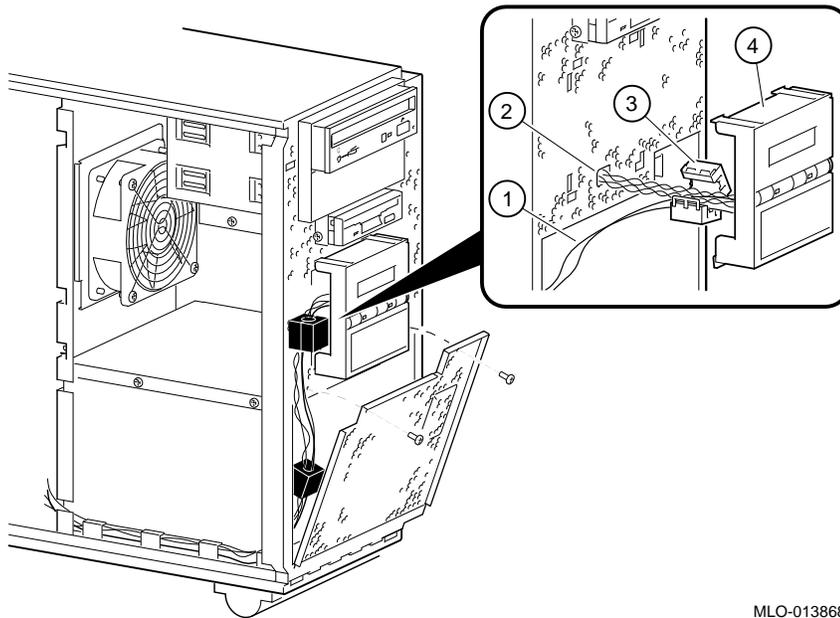


Figure 2-12 Attaching Ferrite Beads to Harness

8. To reassemble the power supply, reinsert the internal harness, reinstall the power supply, connect the AC power cord, attach the two screws, and reconnect the three power supply harnesses.

Performing the Upgrade

9. Gather the two OCP twisted-pair cables and the OCP ribbon cable; attach the other smaller clip-on ferrite bead to them, as shown in Figure 2-13. Position bead behind the OCP front panel, in the space below the OCP module.
10. Reattach the OCP; close front panel.



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Figure 2-13 Attaching Ferrite Bead to OCP Cables

Performing the Upgrade

For Upgrades of Model 266 Systems *Only*

If you are upgrading an AlphaStation 600 Model 300 or 333, proceed to “Installing Components.” If you are upgrading an AlphaStation 600 Model 266, perform the following tasks, then proceed to “Installing Components.”

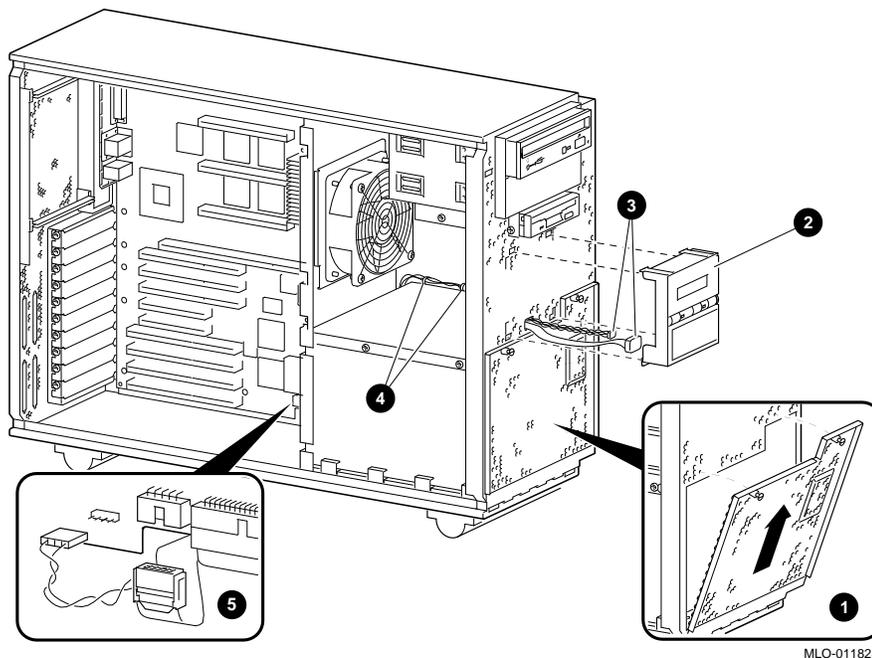
Model 266 Upgrade Tasks

- Add electromagnetic interference (EMI) gaskets.
- Reroute the operator control panel (OCP) cable and reposition the ferrite bead on the cable.
- Remove the power supply front cover, and replace it with a new cover.

To complete the tasks, follow these steps:

1. Remove the front bezel by unsnapping it from the front of the system unit.
2. Remove the two screws that secure the power supply front cover to the system unit. Tilt the cover out, then lift up until the tabs along the bottom edge of the cover come out of the slots at the bottom of the system unit (see Figure 2-14 ①).
3. Unsnap the OCP from the front of the system unit (see Figure 2-14 ②).
4. In the drive assembly area, disconnect the 2-pin safety interlock cable connector.
5. In the drive assembly area, unsnap and open the ferrite bead and unwrap the ribbon and twisted-pair OCP cables from around it.
6. Reach through the drive assembly area to the right side of the system unit and remove the ribbon and twisted-pair OCP cables from the two cable clips (see Figure 2-14 ④). One twisted-pair cable should remain in the cable clips.
7. While guiding the system board connector ends of the ribbon and twisted-pair OCP cables through the slot in the bottom right system board area (see Figure 2-14 ⑤), pull the ribbon and twisted-pair OCP cables out through the drive assembly area.

Performing the Upgrade



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Figure 2-14 Removing the OCP Cables

8. Place the OCP end of the ribbon and twisted-pair OCP cables on the open ferrite bead so that the OCP ribbon cable connector and the 4-pin twisted-pair cable connector are 16.51 cm (6.5 in.) from the edge of the ferrite bead.
9. Wrap the other ends of the cables one complete turn around the ferrite bead and pull them snug. (See Figure 2-15 ①)
10. Snap the ferrite bead closed on the cables.
11. Route the system board connector ends of the ribbon and twisted-pair OCP cables along the bottom left of the power supply between the power supply and the left side panel. (See Figure 2-15)
12. Install the new power supply front cover. Ensure that the ribbon and twisted-pair OCP cables fit through the notched cutout in the upper left part of the cover, and that the ferrite bead fits behind the protruding portion of the cover that is designed for it. (See Figure 2-15)
13. Pull the excess ribbon and twisted-pair OCP cables into the system board area and dress the cables under the flat metal fingers along the bottom left of the power supply. (See Figure 2-15 ②)

Performing the Upgrade

14. Feed the 2-pin safety interlock cable connector through the opening in the front of the system unit into the drive assembly area and reconnect it.
15. Reconnect the ribbon cable connector and the 4-pin twisted-pair cable connector to the OCP. (See Figure 2-15 ③)
16. With the ribbon and twisted-pair OCP cables extending out the left side of the OCP, snap the OCP onto the front of the system unit (see Figure 2-15).

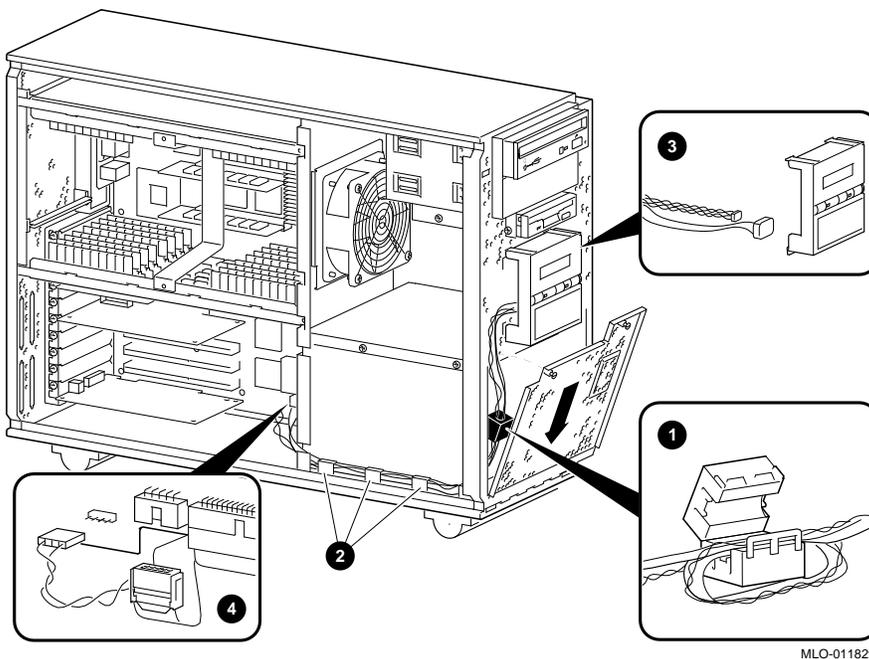
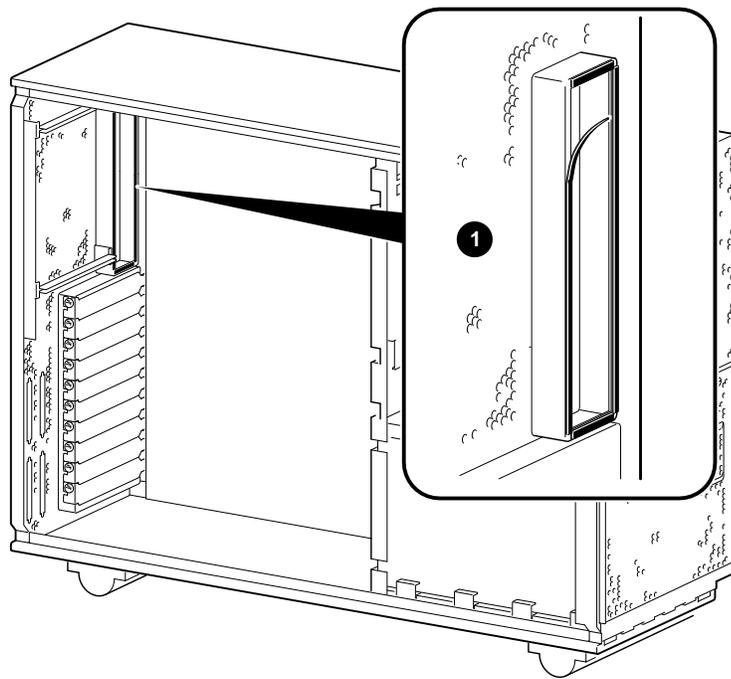


Figure 2-15 Rerouting the OCP Cable

17. Reinstall the front bezel on the front of the system unit.
18. Install the four pieces (two long and two short) of EMI gasket material around the system board I/O opening at the rear of the system unit by removing the paper backing from each piece and sticking them on the inside edges of the opening. (See Figure 2-16 ①)

Performing the Upgrade



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Figure 2-16 Installing the EMI Gaskets

Installing Components

The following components must be installed in the system unit:

- Model 600A main logic board
- Memory modules removed from the memory tower boards
- Option modules removed from the Model 600 system board
- Microsoft sound card
- I/O subsystem module removed from Model 600 system board

Installing the Main Logic Board

Before installing the main logic board, attach the two EMI clips to the board with the 6-mm screws that hold the I/O bracket to the main logic board, as shown in Figure 2-17.

Performing the Upgrade

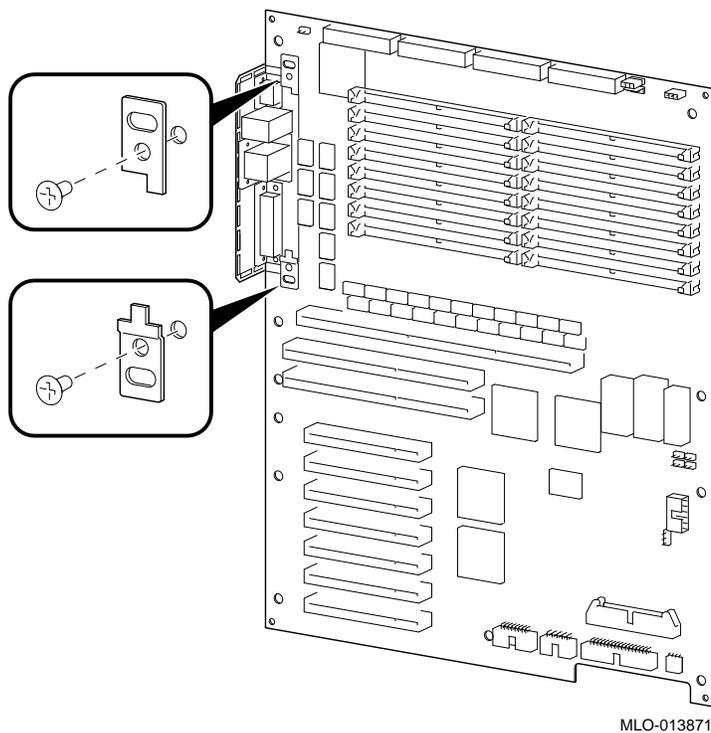


Figure 2-17 Attaching EMI Clips

To install the main logic board:

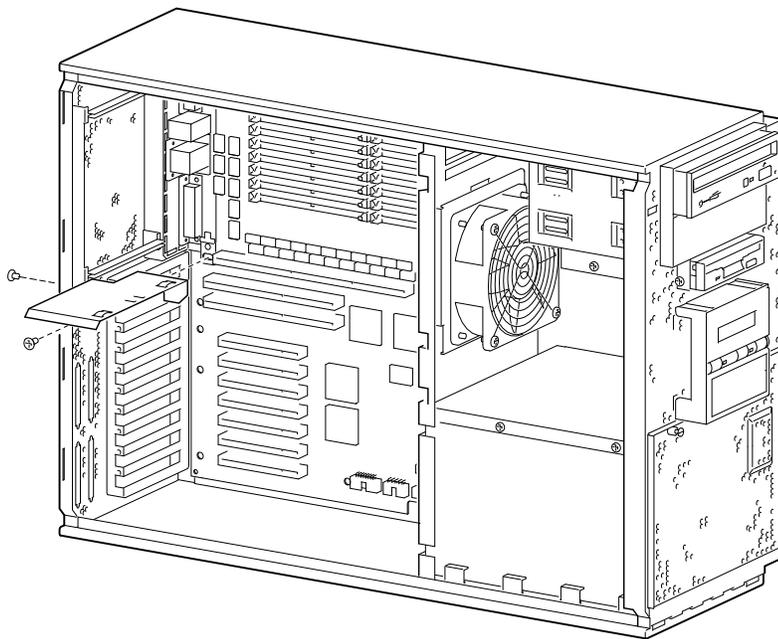
1. Insert the left side of the board first, so that the external connectors on the upper left side of the board can be positioned properly.
2. Ensure that the two locating pins attached to the back wall of the enclosure engage the two locating holes in the right corners of the system board.
3. Reinstall the 13 mounting screws
4. Ensure that the OCP ribbon and twisted-pair cables are properly reconnected to the new system board (See **Error! Reference source not found.**).

Performing the Upgrade

Installing the EMI Shield

The EMI shield must be installed directly under the CPU card guide on the main logic board. To install the shield, refer to Figure 2-18 and follow these steps:

1. Attach two finger stock clips to the EMI shield. Install in the top and bottom pair of holes.
2. Attach the shield with two different screws: one 10 mm screw supplied in the upgrade kit attaches to the system board standoff; one of the shorter screws removed earlier from the Model 600 system board attaches the shield through rear of the system unit.



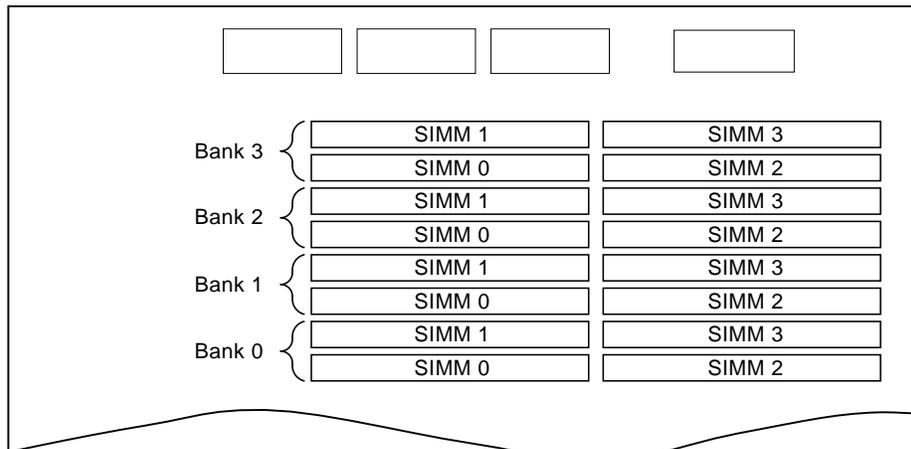
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Figure 2-18 Installing the EMI Shield

Performing the Upgrade

Re-installing Memory Modules

The AlphaStation 600A Series supports 16 single in-line memory module (SIMM) connectors on the system board. The SIMM connectors are grouped in four memory banks consisting of four memory modules. Figure 2-19 shows the four memory banks and their memory module connectors.



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Figure 2-19 Memory Banks and Connectors

The Model 600A system supports five sizes of memory options: 16, 32, 64, 128, and 256 megabytes. Using combinations of these five memory options, the system supports from 16 megabytes to one gigabyte of memory.

Keep in mind the following rules when installing memory modules:

A memory option consists of four memory modules.

Bank 0 must contain a memory option.

All memory modules within a bank must be of the same capacity.

Performing the Upgrade

To install a memory module, refer to Figure 2-20 and follow these steps:

1. Install the module in the socket at a 45-degree angle. Be sure that the notch ① is oriented as shown. Rock the module gently until it is seated evenly, and press gently so it slips over the two posts located at each end of the slot. Tip the module upright until both retaining clips at the ends of the socket engage.
2. Reinstall any memory modules you may have removed for access purposes.
3. Replace the system covers.
4. Test the memory configuration using the following commands:

```
>>> show memory  
>>> memory
```

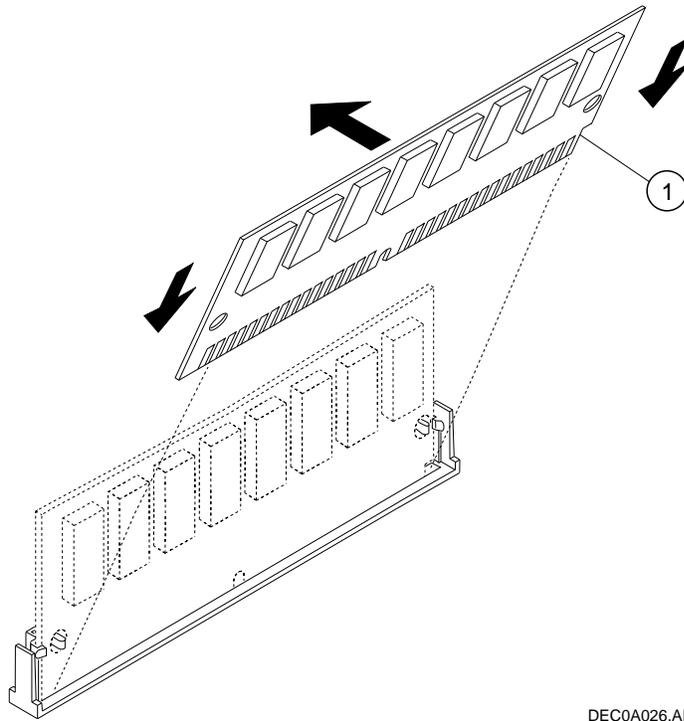


Figure 2-20 Installing a Memory Module

Performing the Upgrade

Re-installing Option Modules

To re-install an expansion module, see Figure 2-22 and Figure 2-23, and follow this procedure:

1. Unscrew and remove the metal slot cover ①, Figure 2-23.
2. Insert the new expansion module into the socket in the system board ②. Push the module firmly into the socket.
3. Replace the screw that formerly held the slot cover to secure the module ②.
4. Replace and lock the left side panel, as described earlier in this chapter.
5. Connect the power cord and plug it into the wall outlet and turn on the system.

Note

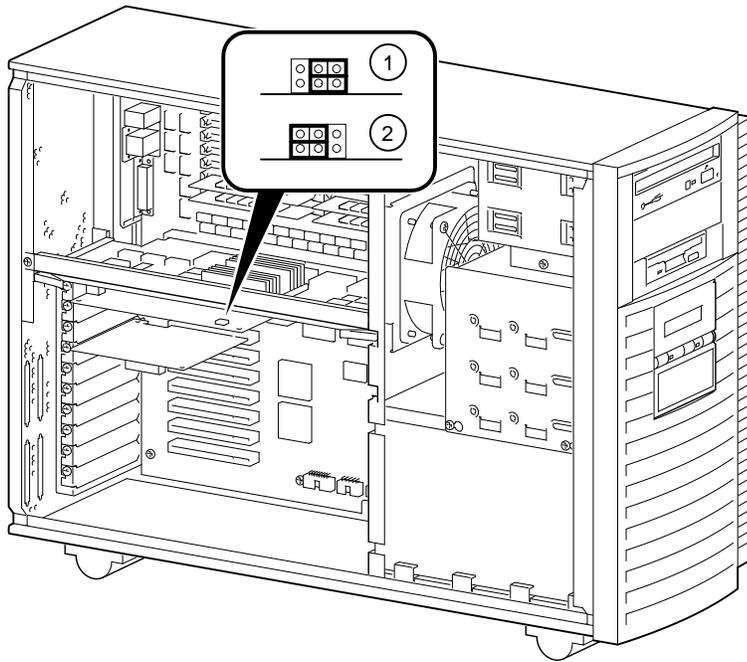
The I/O subsystem module should be installed in one of the first three PCI slots.

Microsoft Sound Card

The Microsoft sound card (part number AVA01-AA) should be installed in EISA slot 2 (see Figure 2-4).

 **Important:** Move both jumpers on the Microsoft sound card one pin to the left, as shown in Figure 2-21.

Performing the Upgrade



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Figure 2-21 Moving Sound Card Jumpers

Performing the Upgrade

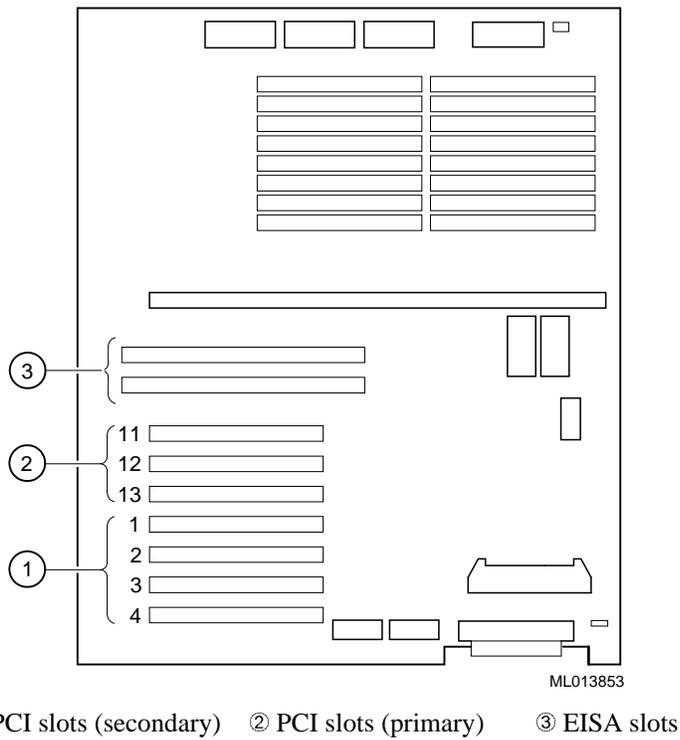


Figure 2-22 Option Module Slots on the 600A System Board

Note

For more information on operating system-specific options, refer to your operating system and option documentation..

Performing the Upgrade

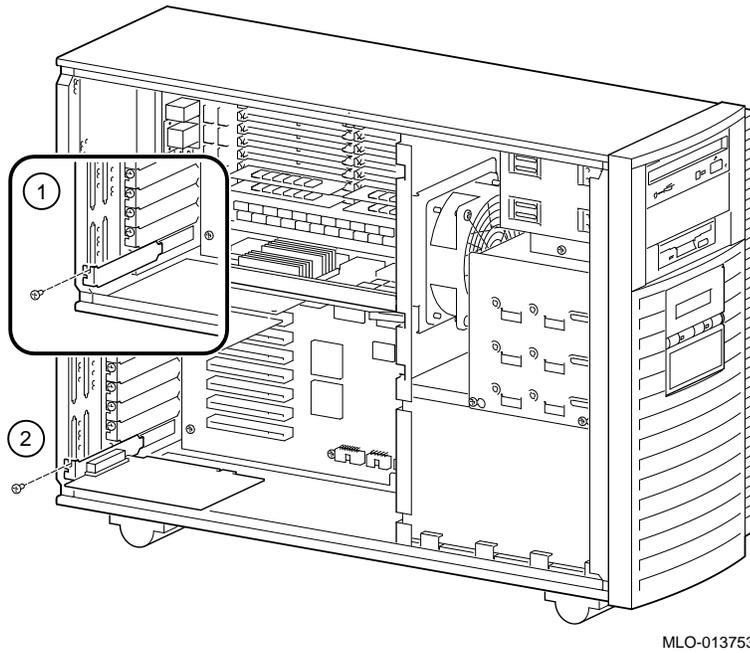
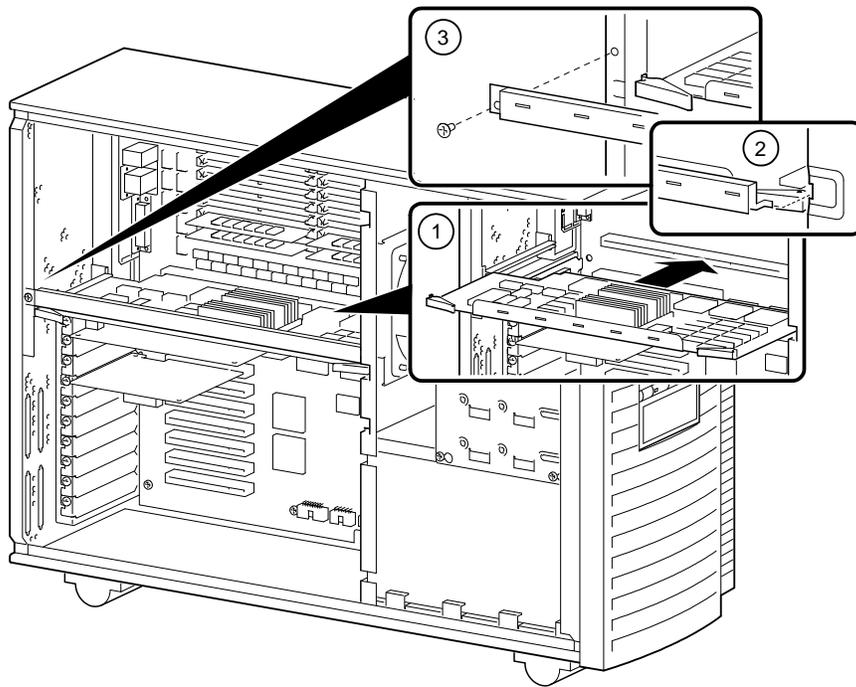


Figure 2-23 Installing Option Modules

Performing the Upgrade

Installing the 600A CPU Card

Install the 600A CPU card in the CPU slot as shown ① in Figure 2-24 . Position the retaining bracket ② as shown, and fasten the screws ③.



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Figure 2-24 Installing CPU Card

Replacing the Drive Assembly

To replace the drive assembly in the system unit, follow this procedure:

1. Slide the drive assembly ① into place toward the front of the system unit.
2. Fasten the two mounting screws ② just above the power supply in the keyhole slots.
3. Reattach the SCSI and power cables to the devices in the drive assembly.

Performing the Upgrade

Reconnecting Cables

Refer to Figure 2-25 and reconnect the power supply ①②③, fan ④, speaker ⑤, diskette drive ⑥, OCP ⑦, and interlock ⑧ cables. Install jumper on J55 ⑨ and external drive cable ⑩.

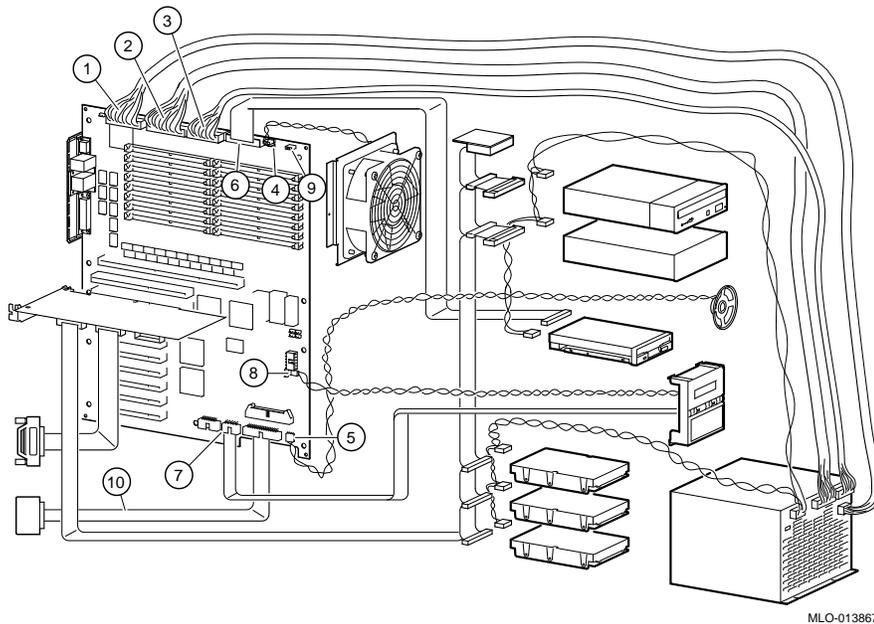


Figure 2-25 Reconnecting Cables

Performing the Upgrade

Using the Fail-Safe Loader to Load Firmware

The fail-safe loader (FSL) allows you to boot a firmware Update Utility diskette.

Note

To use the loader, you need to connect a serial terminal to the COM1 port on the rear of the system unit.

To activate the fail-safe loader:

1. Install the update utility diskette in the diskette drive.
2. Enable the fail-safe loader by moving the J1 jumper on the CPU card from the normal position (see Figure 2-26) to position 7.
3. Replace the left panel.
4. Turn on the system, and check the operator control panel for progress messages. The display reads "Floppy boot." Press Return.
5. Type the update command to update the firmware, as shown in the following example:

```
UPD> Update
```

```
Confirm update on:
```

```
ARC SRM
```

```
[Y/(N)] y
```

```
WARNING: updates may take several minutes to complete for each device.
```

```
DO NOT ABORT!
```

```
SRM Updating to V4.7... Verifying 4.7... PASSED.
```

```
ARC Updating to V5.26... Verifying 5.26... PASSED.
```

```
UPD>
```

5. After the update utility has completed, turn off the system.
6. Disable the fail-safe loader by moving the J1 jumper back to the normal operating position
7. Replace the left panel, and turn the system back on.

Performing the Upgrade

8. At the SRM console prompt, set the console to “graphics,” as shown in the following example:

```
>>> set console graphics
```

```
>>> init
```

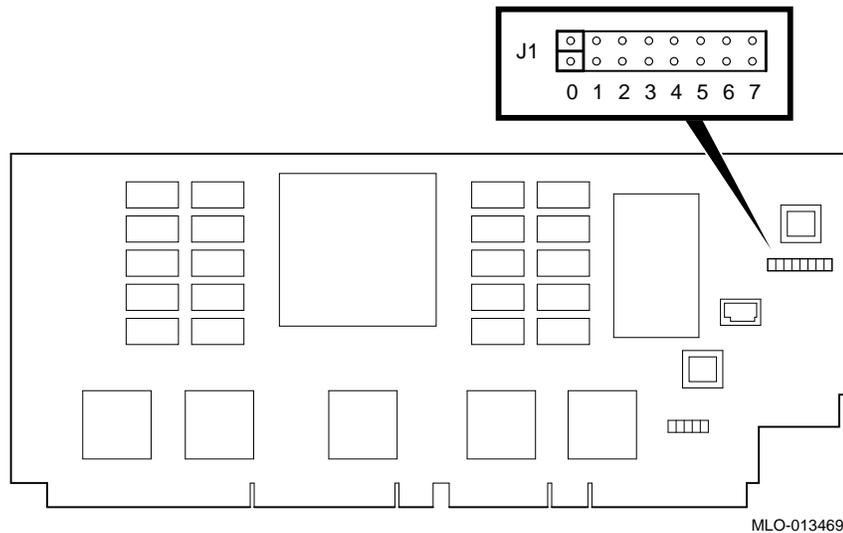
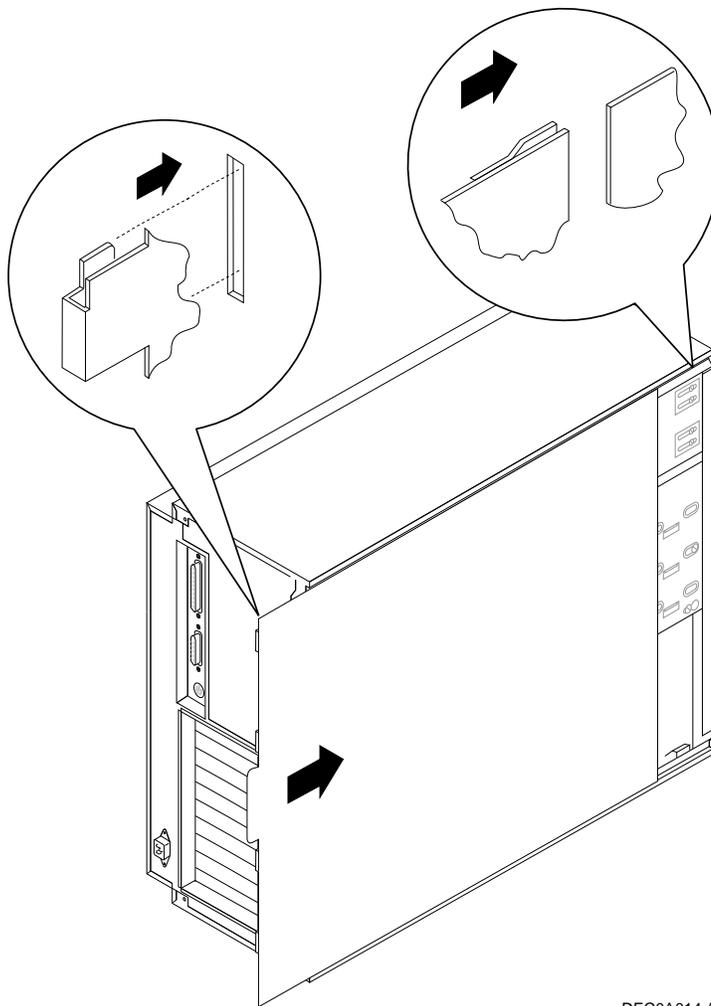


Figure 2-26 J1 Jumper on the CPU Card (Normal Position)

Performing the Upgrade

Replacing the Left Side Panel

Replace the left side panel, as shown in Figure 2-27, and lock it.



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Figure 2-27 Replacing the Left Side Panel

Running the EISA Configuration Utility

The EISA Configuration Utility (ECU) is run from the AlphaBIOS console. To switch from the SRM console and access the ECU, type the following command at the SRM console prompt: `ecu`.

From the AlphaBIOS Setup menu, follow these steps to run the ECU:

1. Select “Utilities.” From the submenu that appears, select “Run ECU from floppy.”
2. Select “View and edit details.” From the submenu that appears, select “VGA graphics controller,” and press Enter. From the next submenu, select “Disabled.”
3. Return to the ECU main menu and select “Add or remove boards.” From the submenu that appears, select “slot 2” and “Insert.” Press Enter.
4. Scroll through the list of option boards and select “Microsoft sound board.”
5. When the confirmation display appears, press Enter and the F10 key to save and exit.

See Chapter 5 of your *AlphaStation 600A User Information* manual for more information on the EISA Configuration Utility.

Note

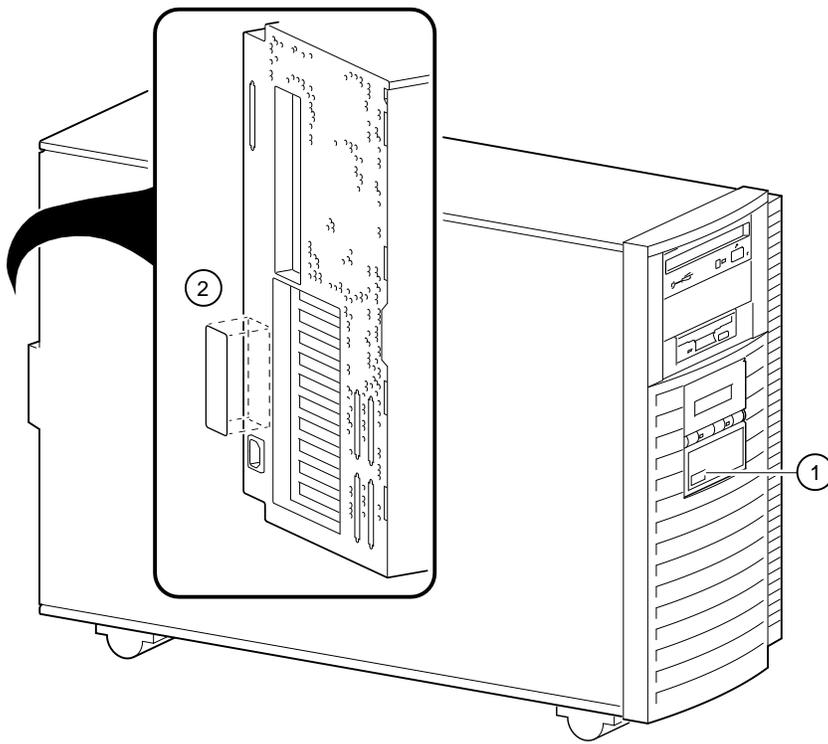
To update the system firmware, the flashROM enable jumper (J50) must be in the write-enabled (default) position.

Completing the Upgrade

To complete the upgrade, verify that the CPU is installed correctly by checking the operator control panel display:

1. Check that left side panel is in place and turn the system on.
2. When the startup procedure is complete, the operator control panel will display the message “AlphaStation 600A 5/500”
3. Run startup tests. (See the *AlphaStation 600A User Information* manual.)
4. Run or install the operating system. (See operating system documentation.)
3. Install the new product identification label over the old label on the front of the system unit. (See ① Figure 2-28.)
4. Install the new FCC label over the old label on the rear of the system unit. (See ② Figure 2-28.)

Performing the Upgrade



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Figure 2-28 Installing FCC and Product ID Labels