

# **Cache Memory Upgrade Guide**

## **D Class**

**HP 9000 Enterprise Servers**



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# 1

## Cache Memory Upgrade Guide

The Cache Memory Upgrade Guide contains procedures for adding Cache Memory (A3586A) to D220, D230, D320, and D330 models.

The additional Cache Memory is *required* for D230 and D330 models. Additional memory is *optional* for D220 and D320 models.

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### Who Should Use this Guide

The procedures in this guide are intended to be performed by a person who is qualified in the installation and servicing of computer equipment, and is trained to recognize the hazards involved. Memory is installed in an area of the product where energy levels considered hazardous may be produced.

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### Overview of Cache Memory Installation

The memory installation procedures are organized as follows:

- A. Be sure your system and data base have been backed up.
- B. Turn off power to the system.
- C. Remove the front bezel.
- D. Remove the side panel.
- E. Remove the EMI cover.
- F. Remove the Processor/Memory card.
- G. Install additional Cache Memory cards.
- H. Replace the Processor/Memory card.
- I. Replace the EMI cover.
- J. Replace the side panel.

K. Replace the front bezel.

After completing all installation procedures, proceed to the **Upgrade Verification** procedures for instructions on how to verify correct installation.

**Required Tools**

To perform the procedures in this upgrade guide, the following tools are required:

- Small flat-bladed screwdriver
- Torx driver, #15
- Phillips screwdriver

**Safety Considerations**

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**WARNING**

**The installation procedures in this guide require opening the system cabinet, which may expose you to high-energy (high-amperage) circuits, possible ejection of molten metal, and exposed sharp edges in equipment chassis. Be sure to remove all rings, watches, and other jewelry from fingers, wrists, and arms before opening the system cabinet.**

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**Electrostatic Discharge Precautions**

Electrostatic discharge can damage the integrated circuits on printed-circuit boards. To prevent such damage from occurring, be sure to observe the following precautions when handling and installing boards:

- Use a grounding mat and an anti-static wrist strap, such as those included in the ESD Field Service Kit (HP P/N A3024-80004).
- Wear the anti-static wrist strap to ensure that any accumulated electrostatic charge is discharged from you body to ground.
- Keep uninstalled printed-circuit boards in their protective anti-static bags until you are ready to install them.
- Handle printed-circuit boards by their edges after you have removed them from their protective anti-static bags.

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## Cache Memory Installation Procedure

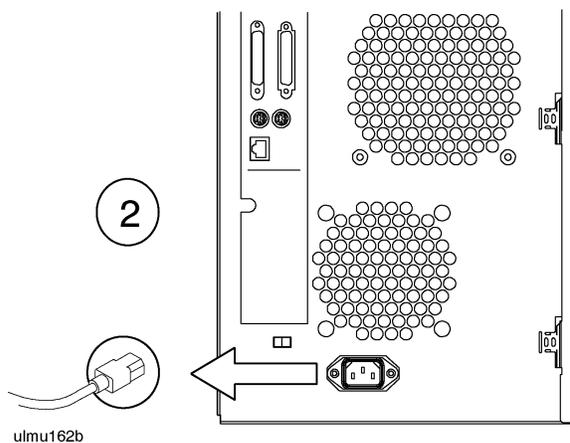
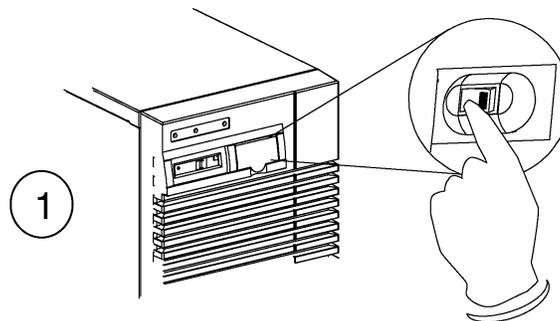
### A. System Backup

Before performing the procedures listed in this manual, be sure you have recently done a full system backup.

Refer to the appropriate System Administrators documents for performing a full system backup.

### B. Turn Off Power to the System

1. Set the Power switch on the server front panel to the OFF position. Wait for the green light to go out.
2. Disconnect the AC power cord from the system cabinet.

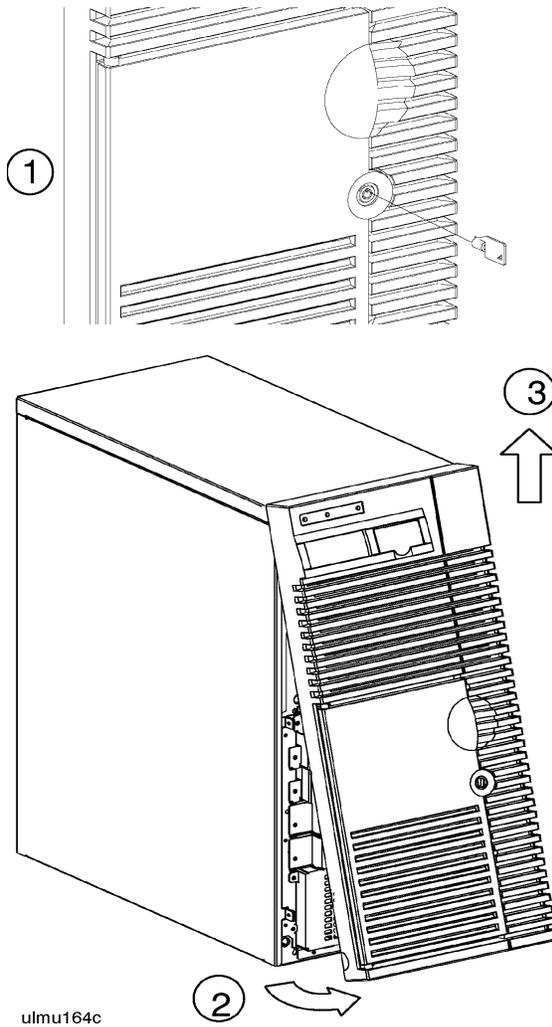


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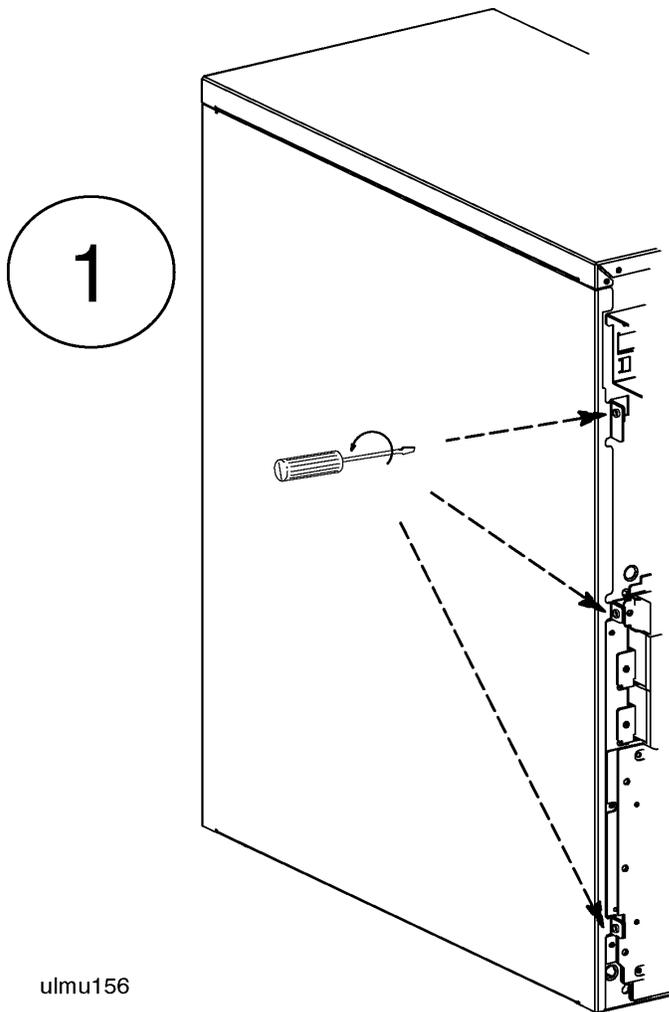
C. Remove the Front Bezel

1. Unlock the front peripheral door using the key that was shipped with your server.
2. Grab the bottom sides of the front bezel, and pull the bottom of the bezel slightly out from the cabinet.
3. Carefully push the bezel up so that the top of the bezel comes loose from the top of the cabinet, then pull the bezel away from the cabinet.



D. Remove the Side Panel

1. Loosen three captive side panel screws with a #15 Torx driver.
2. Grasp the front edge of the side panel and swing it away from the system cabinet.
3. Remove the panel by lifting it up so that its four hinge tabs come out of the slots at the rear of the cabinet.
4. Carefully set the panel aside.



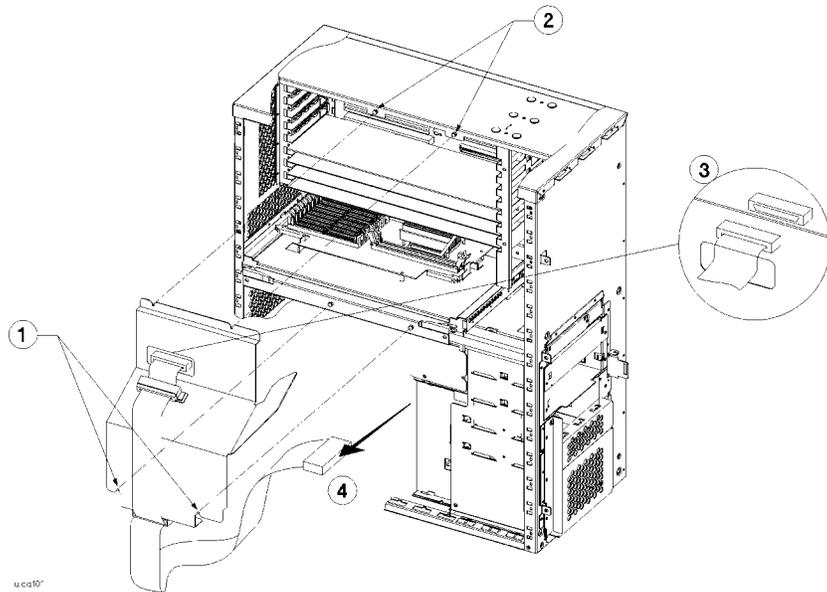
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E. Remove the EMI Cover

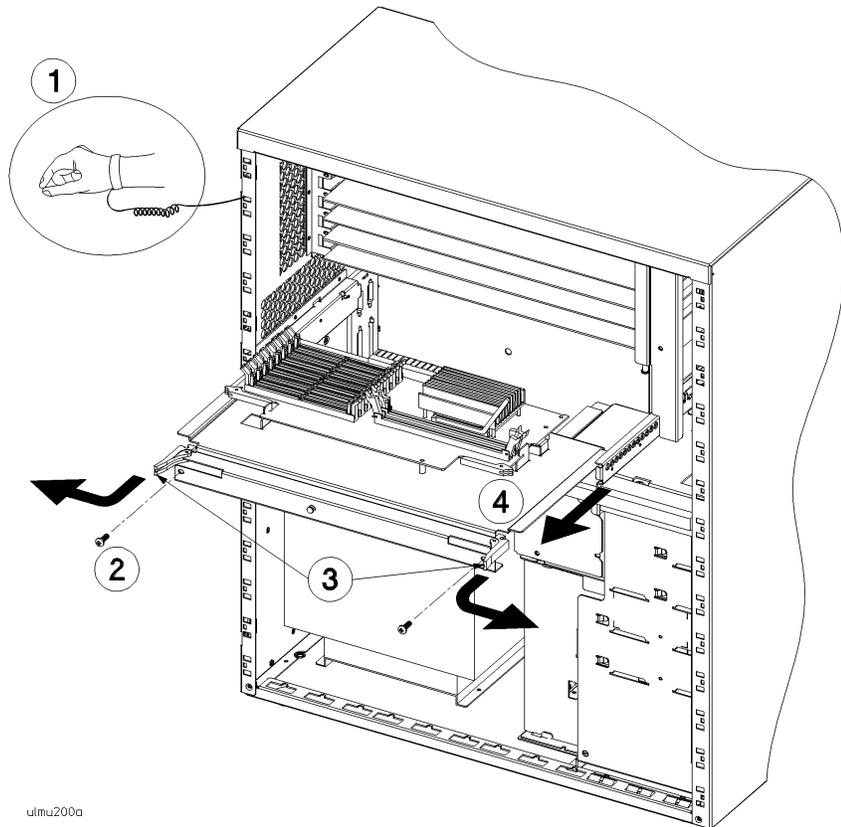
If an EMI cover is present, it must be removed.

1. Loosen the two notches at the bottom of the EMI cover from the tabs on the Processor/Memory card by pushing up and slightly flexing the EMI cover until the notches come loose.
2. Pull the EMI cover down slightly until the two notches at the top of the cover come loose from the tabs at the top of the server cabinet.
3. Loosen and remove the SCSI ribbon cable from the Fast/Wide SCSI card. **Be sure to note which Card the cable is removed from, so it can be reconnected later.**
4. Remove the other end of the SCSI ribbon cable from the connector on the hot- swap backplane, and set the EMI cover and ribbon cable aside.



**F. Remove the Processor/ Memory Card**

1. Attach an anti-static strap to your wrist, and ground it to the main chassis.
2. Loosen and remove the two (2) screws that secure the Processor/ Memory card to the chassis.
3. Pull out the two plastic levers on the front of the Processor/Memory card sheet metal bulkhead.
4. Pull the Processor/Memory card out of the system cabinet, and set it down on an anti-static mat



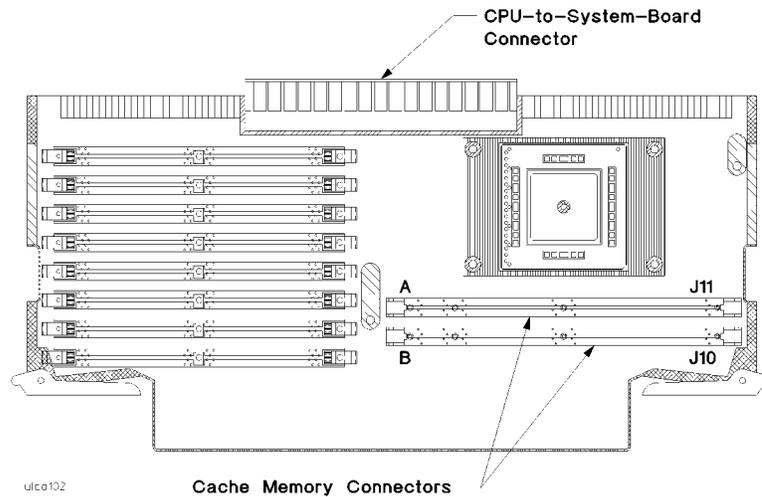
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Cache Memory Installation Procedure

G. Install Cache Memory Cards

1. Open the ejector levers (down position).
2. Orient the Cache memory card correctly, with the card edges in the connector and the edge key slots over the connector notches, over slot A or B (J11 or J10). Also refer to graphic on page 14.
3. Insert the Cache memory card into the connector until the fingers on the card edge just touch the connector.
4. Push the Cache memory card firmly and evenly into the connector until it clicks into place. The ejector levers should also close.

NOTE

Both Cache memory cards are required for the additional Cache Memory to function.

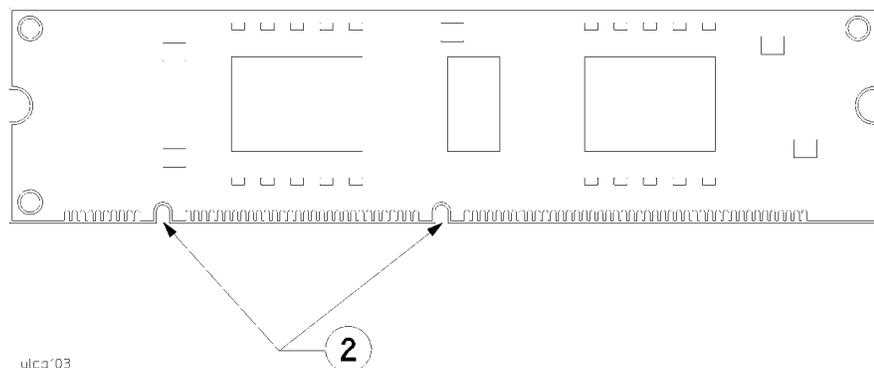


NOTE

The additional Cache memory cards can only be installed one way. The additional Cache Memory cards are also interchangeable, they can go in either Cache memory slot.

**H. Replace the Processor/ Memory Card**

1. Verify that an anti-static strap is still strapped to your wrist, and grounded to the cabinet main chassis.
2. Place the Processor/Memory card into the system cabinet so that the card rests on the metal rails with the large connector facing into the cabinet.
3. Pull the extractor levers on the Processor/Memory card out away from the card.
4. Slide the Processor/Memory card into the system cabinet until the large connector is properly seated in the corresponding system board connector.
5. Push in the two extractor levers on the Processor/Memory card.
6. Insert and tighten two screws to secure the Processor/Memory card in the cabinet



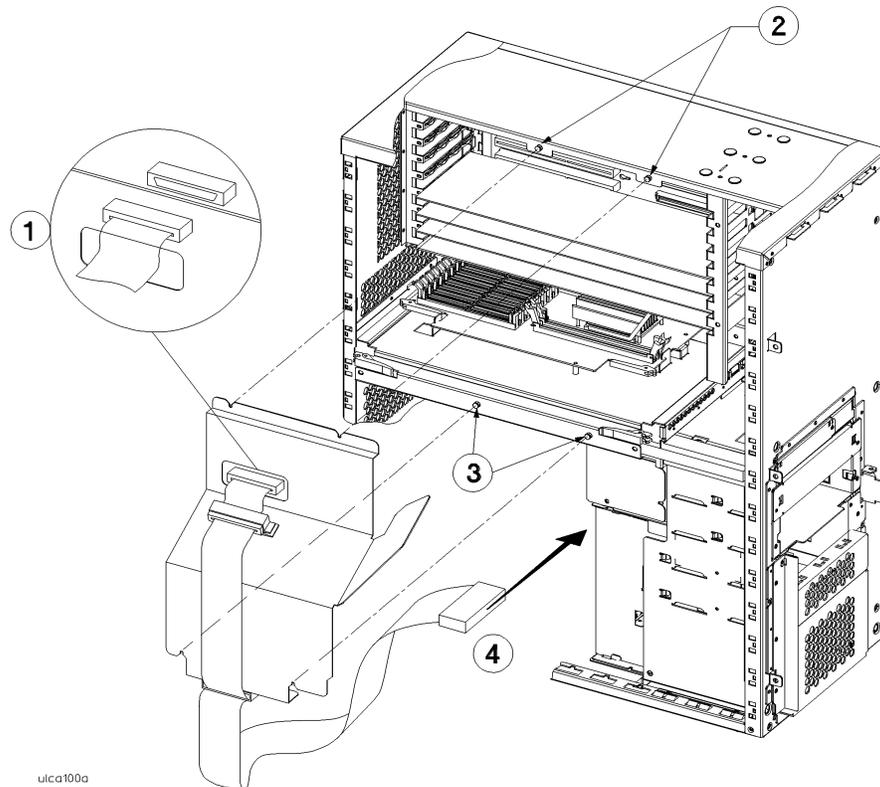
**I. Replace the EMI Cover**

If your server came with an EMI cover installed, and you removed it in step E, you must reinstall it. To reinstall the EMI cover:

1. Place the EMI cover and SCSI ribbon cable close enough to the upper cabinet to connect the upper end of the ribbon cable to the connector on the Fast/Wide SCSI card.
2. Insert the two upper notches of the EMI cover onto the tabs at the top of the server cabinet.
3. Flex the EMI cover slightly to insert the two notches at the bottom of the EMI cover onto the tabs of the processor/memory card.

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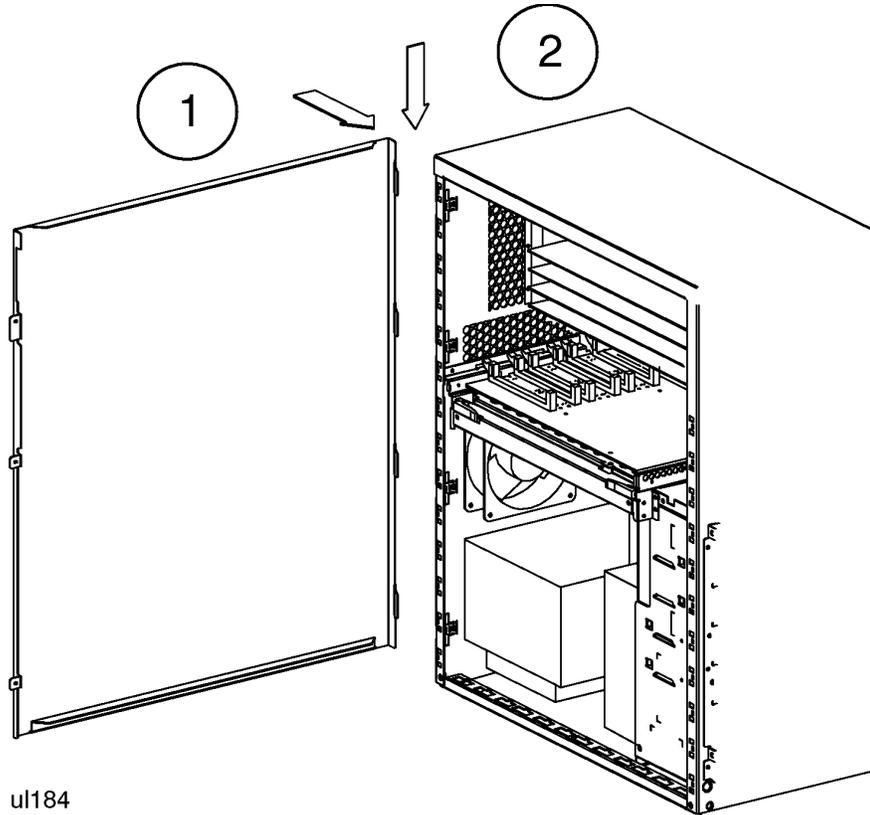
4. Connect the lower end of the SCSI ribbon cable on the EMI cover to the backplane connector on the Hot-Swap Module.



**J. Replace the Side Panel**

1. Position the hinge tabs of the side panel so that they go into the four slots at the rear of the system cabinet.
2. Lower the side panel until the hinge tabs are firmly resting in the slots.
3. Close the side panel.

4. Align and tighten the three captive screws of the side panel into the holes at the front of the system cabinet.

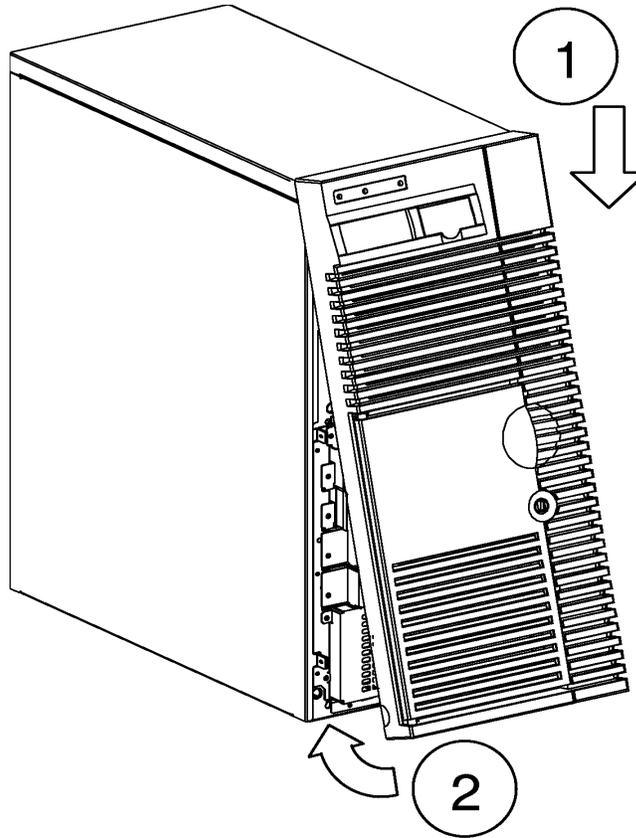


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K. Replace the Front Bezel

1. Place the top of the bezel down onto the top front of the system cabinet, and press the top of the bezel down until it clicks into place.
2. Push the bottom of the bezel into the bottom of the system cabinet front until it clicks into place.



This completes the system memory upgrade installation procedure. Proceed to the **Cache Upgrade Verification** procedure starting on the next page.

## Cache Upgrade Verification

### Overview

The following list is a summary of the verification process. Refer to the **Cache Upgrade Verification Procedure** below for detailed instructions.

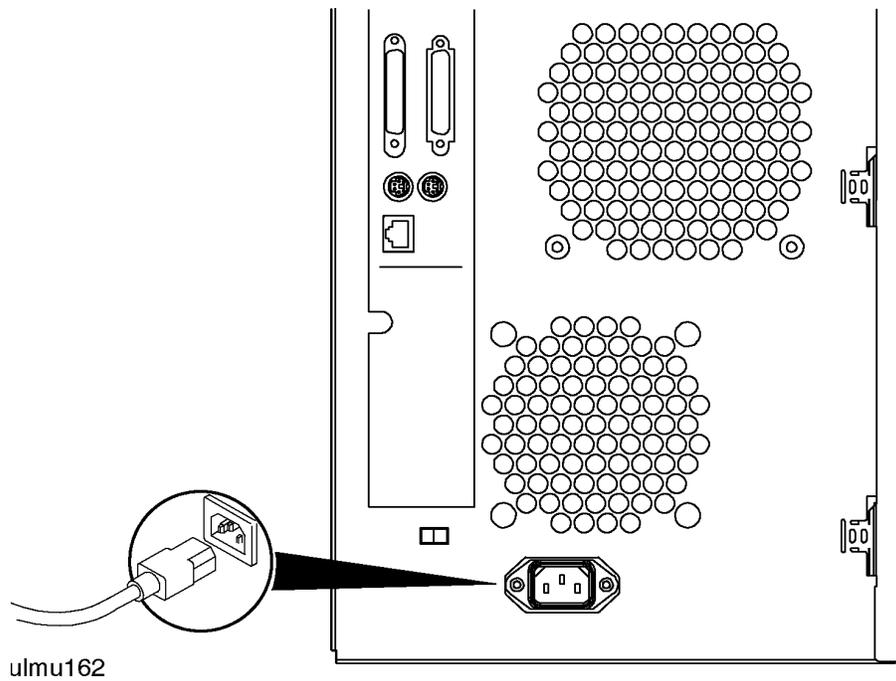
- A. Connect power cord.
- B. Turn on power to the system.
- C. Observe console display for self-test error messages.
- D. Halt boot process to get the Boot Console prompt.
- E. Verify Cache installation by running the proper Boot Console Handler process.

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## Cache Upgrade Verification Procedure

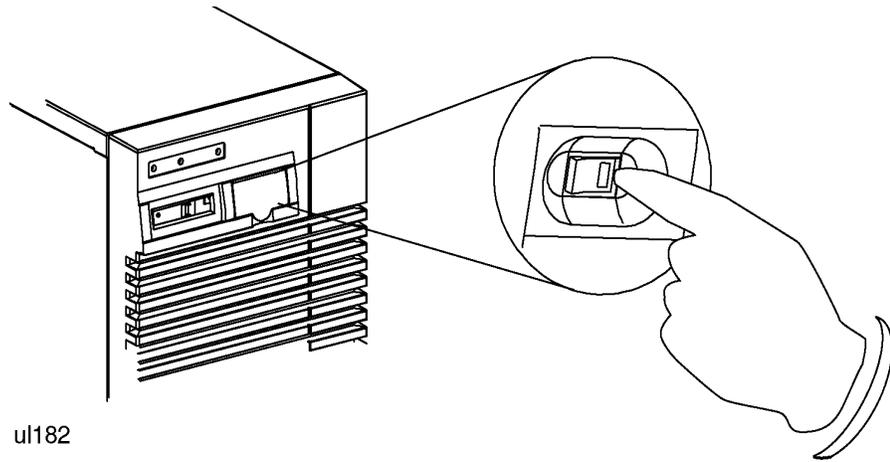
### A. Connect Power Cord

Connect the power cord to the system cabinet.



**B. Turn On Power to the System**

Set the front panel power switch on the system cabinet to the ON position.



**C. Check for Selftest Error Messages**

1. Observe console display for selftest error messages.
2. If warning messages appear, write them down and refer to the appropriate section of the D Class Operator's Guide (A3262-90013), or System Administrators documentation.

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Cache Upgrade Verification Procedure

**D. Halt the Boot Process**

If Autoboot is set to ON, you will have to interrupt the boot process to get to the Boot Console Handler, where you will have access to the commands for verifying the cache installation.

When prompted by the following message, halt the boot process by hitting any key on the keyboard.

Processor is booting from first available device.

To discontinue, press any key within 10 seconds.

Boot terminated.

----- Main Menu -----

| Command   | Description                        |
|---|------------------------------------|
| -----   | -----                              |
| B <code>O</code> ot [ <code>PRI</code>   <code>ALT</code>  <path>]  | Boot from specified path           |
| <code>P</code> Ath [ <code>PRI</code>   <code>ALT</code>   <code>CON</code>   <code>KEY</code> ] [<path>] | Display or modify a path           |
| <code>S</code> EArch [ <code>D</code> isplay  <code>I</code> PL] [<path>]                                 | Search for boot devices            |
| <code>T</code> OC   | Soft boot the system               |
| <br>  |                                    |
| <code>C</code> Onfiguration [<command>]   | Access Configuration menu/commands |
| <code>I</code> Nformation [<command>]   | Access Information menu/ commands  |
| <code>S</code> ERvice [<command>]   | Access Service menu/commands       |
| <br>  |                                    |
| <code>D</code> isplay   | Redisplay the current menu         |
| <code>H</code> elp [<menu> <command>]   | Display help for menu or command   |
| <code>R</code> ESET   | Restart the system                 |

-----  
Main Menu: Enter command >

**E. Verify Memory Installation**

If successful, the following steps complete the installation verification. If the verification is not successful, refer to the appropriate section of the D Class Operator's Guide (A3262-90013), or System Administrators documentation.

1. At the Main menu, type "in" to get to the information menu.
2. At the Information menu, type "ca" to get to the information concerning Cache sizes.
3. Confirm that the amount of memory listed in the cache information display is equal to the amount of additional Cache Memory installed in the system.

```
-----  
Information Menu: Enter Command > ca  
  
----- CACHE INFORMATION -----  
  
----- Instruction Cache Size      Data Cache Size      Additional Cache Size  
-----  
                128 KB                128 KB                1 MB  
  
-----  
Information Menu: Enter command >
```