Printrak, A Motorola Company

MANUFACTURING SETUP PROCEDURE FOR THE ALPHASERVER 800 0603-00014 Rev B

Revised: 3/2/00

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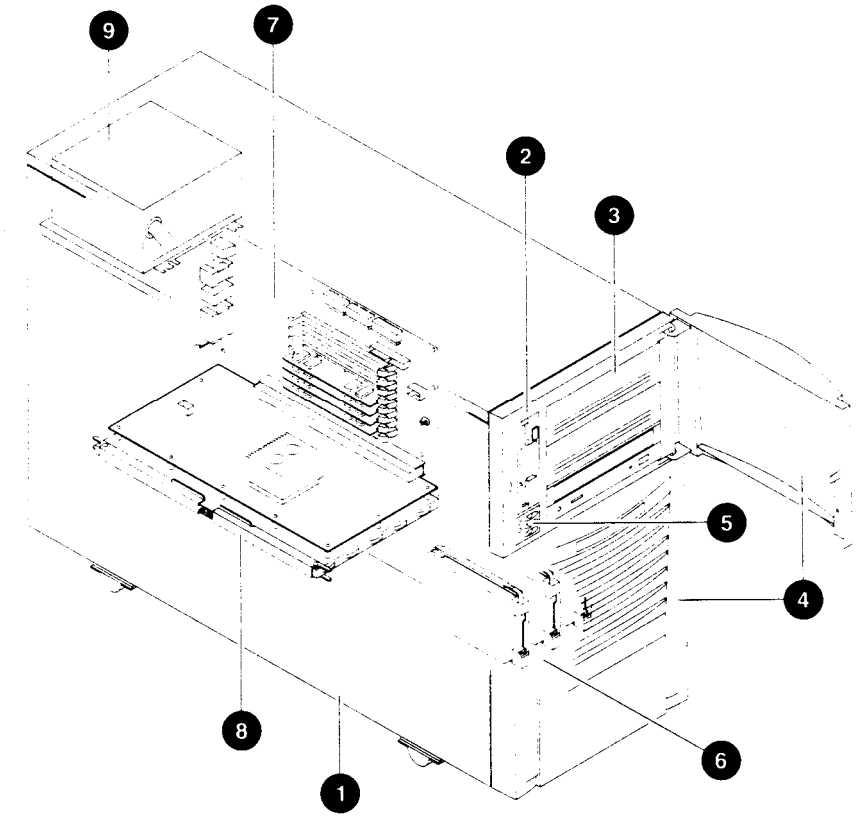
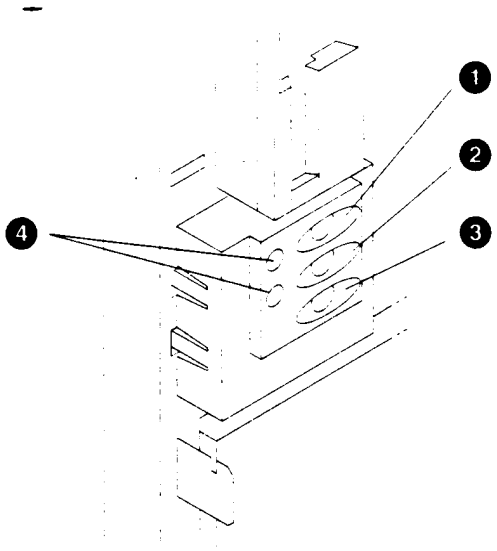
1.0 HARDWARE CONFIGURATION.

1.1 System Parts.



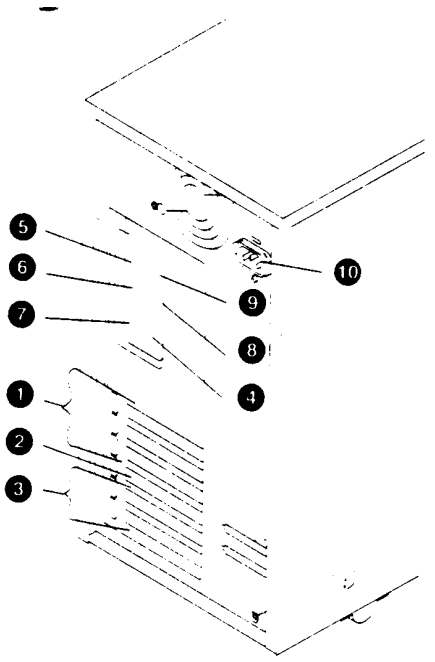
Item	Description
1	Removable side cover of system enclosure
2	Floppy diskette drive
3	Removable media drives
4	Lower and upper doors
5	Control panel
6	Hard disk drives
7	System board
8	CPU daughter card
9	Power supply

1.2 Control Panel.



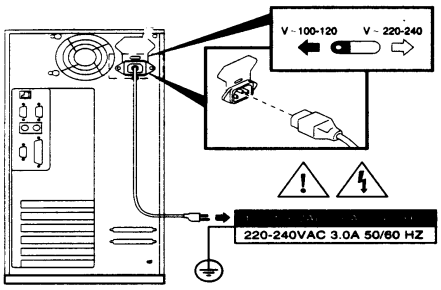
Item	Description
1	Power On/Off
2	Halt button (Amber light will indicate if this is active, which halts computer)
3	Reset button
4	Indicator lights (Green for power, amber for Halt)
5	Main Logic Board retainer bracket

1.3 Rear Panel Connections.

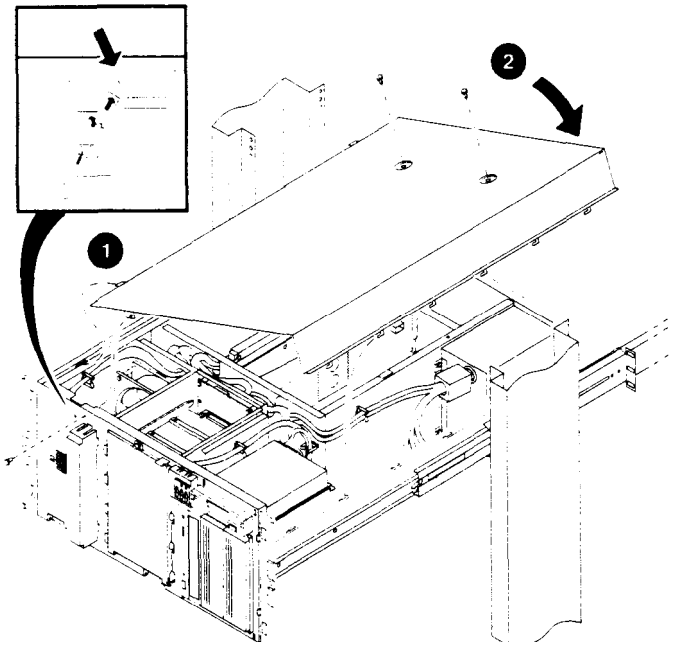


Item	Description
1	Three 32-bit PCI slots
2	One 64-bit PCI slot
3	Two EISA slots
4	Parallel port
5	Serial port (COM2)
6	Mouse port
7	VGA port
8	Keyboard port
9	Remote console modem port
10	Power outlet

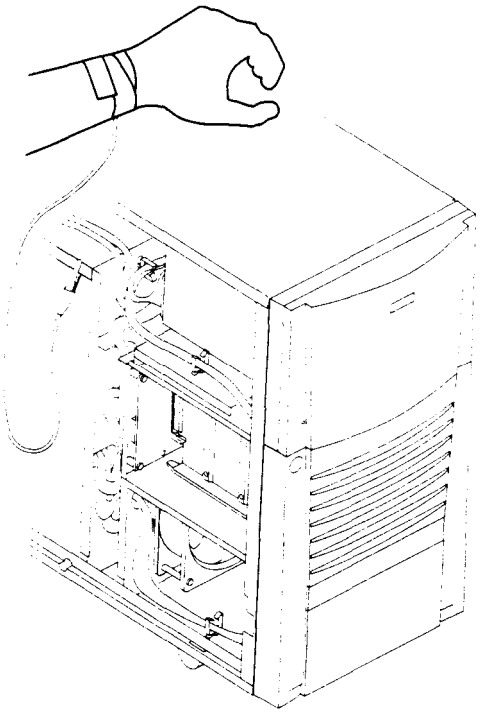
1.4 Power Supply Switch.



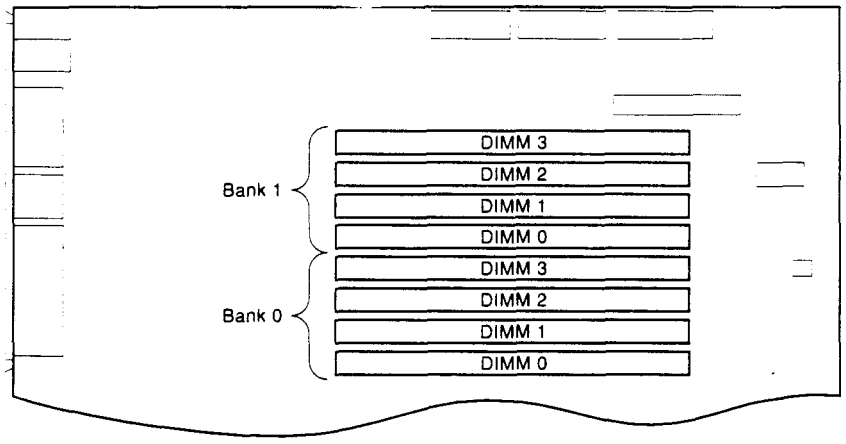
1.5 Remove the top cover by removing the screws identified in the figure below, then forcing the cover back, then up.



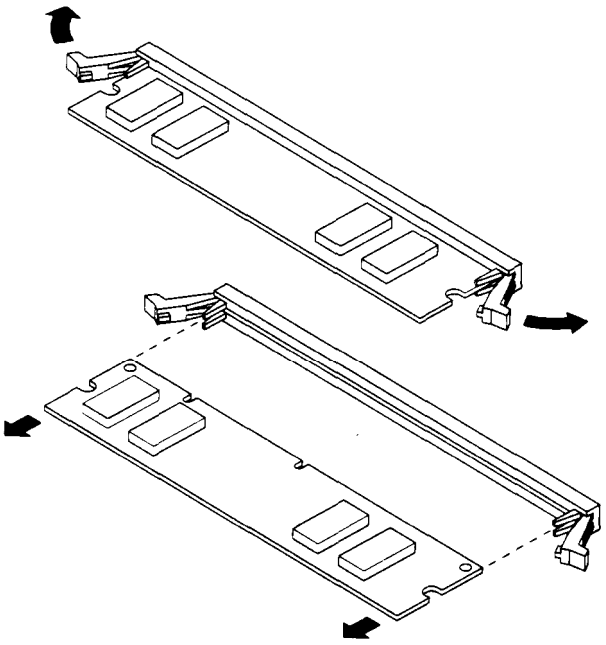
1.6 Attach an anti-static wriststrap to your wrist before proceeding as shown below.



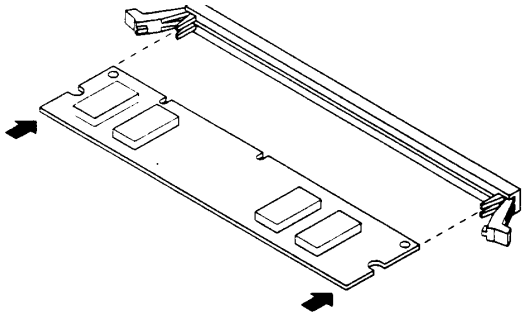
1.7 Memory Bank designations. Whichever bank is being used must have all four DIMM slots filled with the same size and speed-grade of DIMMs (ie, for a computer requiring 256 MBytes of 50 nS RAM, four DIMMs of 64 MBytes with an access time of 50 nS each would be needed in Bank 0, or eight DIMMs of 32 MBytes with an access time of 50 nS each would be needed in Bank 0 and Bank 1).



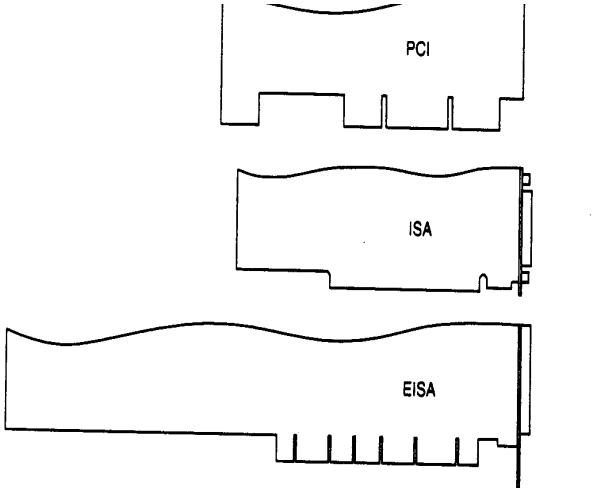
1.8 If any DIMMS need to be removed, release the locks as shown and slide the DIMMs out as shown in the figure.



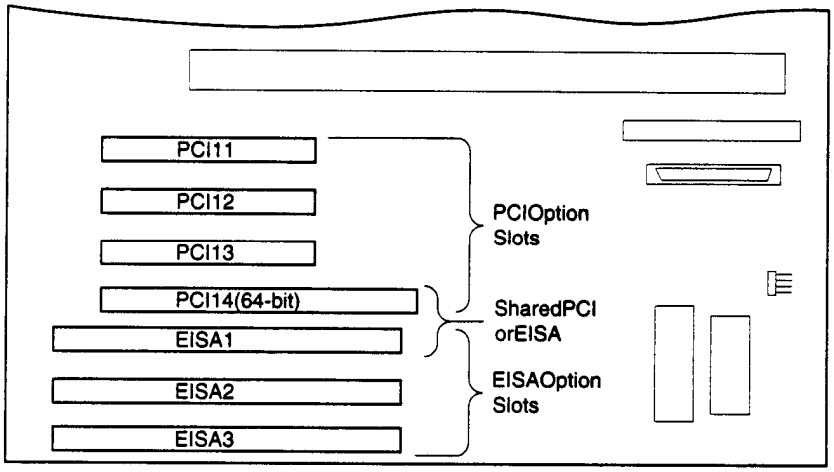
1.9 Insert the new DIMMs as shown below.



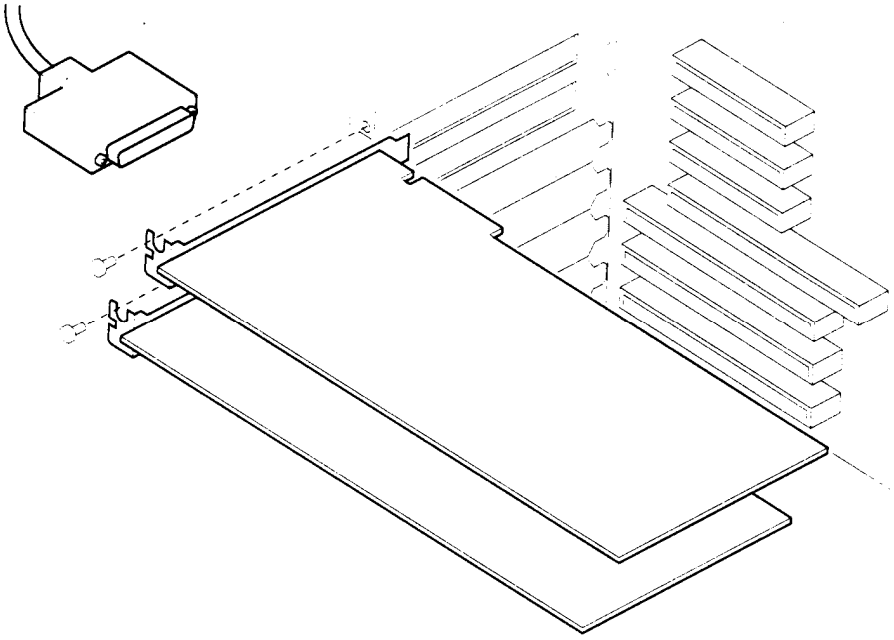
1.10 Three types of cards can be used in the computer. Outlines of these are shown below.



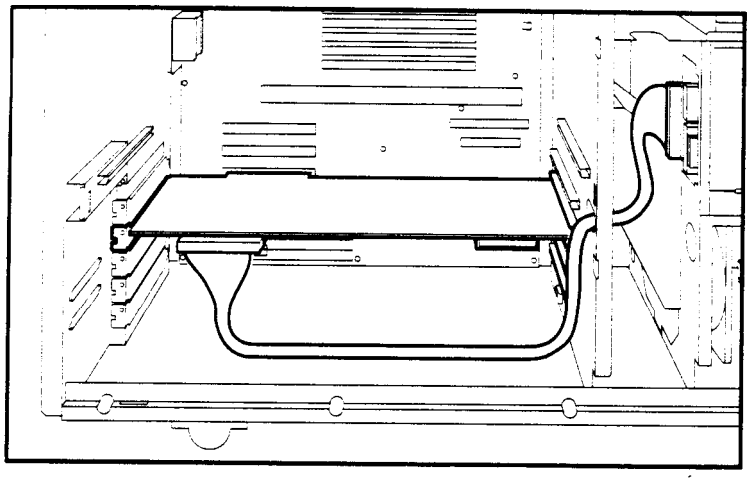
1.11 The PCI and EISA slots are located as shown below. Note that the 64-bit PCI slot (PCI14) is linked with EISA1. The slots are labeled the way they will show up with a **sho config** command (slots PCI11 through PCI14 are designated as slots 11-14 both prior to bootup and in the /usr/var/adm/messages file. This enables easier troubleshooting).



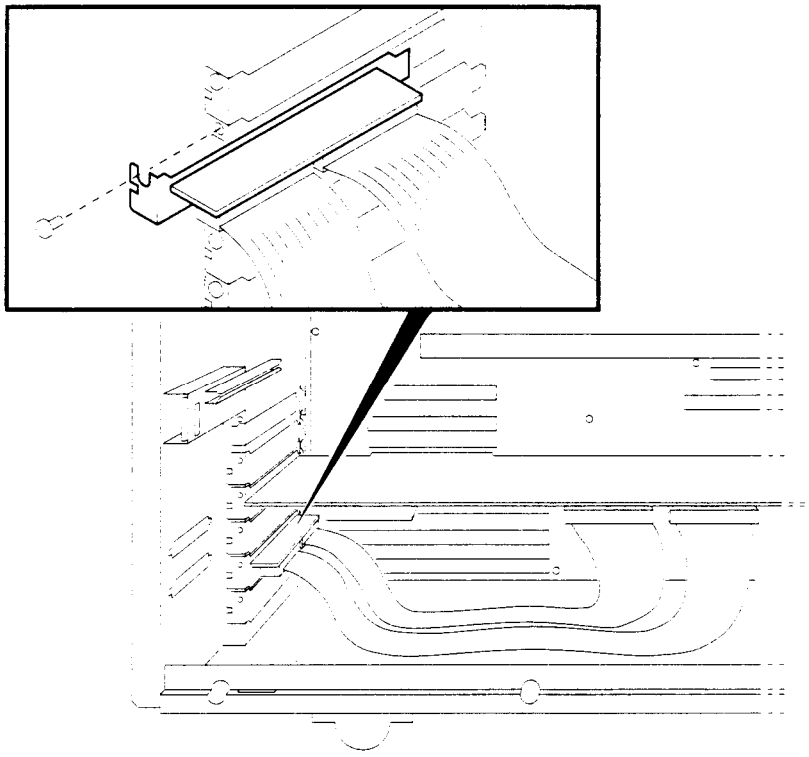
1.12 Install the option cards (SCSI controllers, VGA, Network, etc) in the appropriate type of slot as shown. NOTE: If a VGA card is being installed, the on-board SVGA must be disabled by changing the jumper on J27 (near the front of the motherboard on the right side) to *GND*. Conversely, if a VGA card is being removed, this jumper must be set to *VGAreset*.



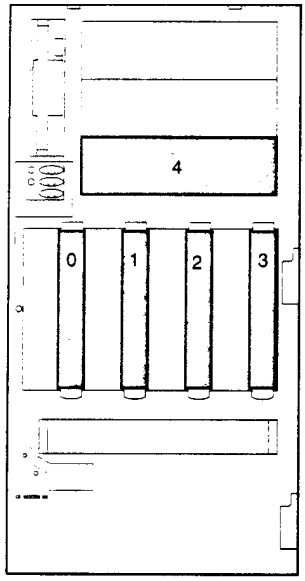
1.13 If this computer has an internal RAID controller for the internal disk drives, install it as shown in the figure below (the SCSI ribbon cable is normally attached to the motherboard and must be attached instead to the RAID controller card).

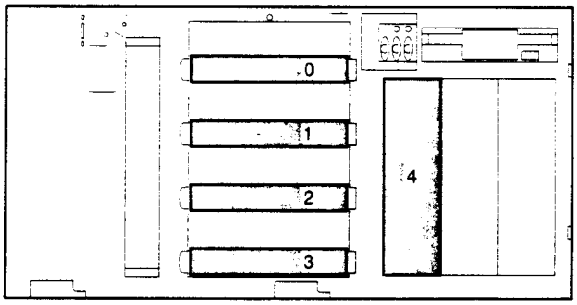


1.14 If an internal RAID controller for external disk drives is being used, it can be installed as follows (NOTE: For Mylex DAC960 3-channel RAID controllers, two cables ordinarily attach to the two connectors on the rear of the card and a third channel is attached to the BN31K-0E bulkhead connector, which has only one connector, not two as shown in the figure).

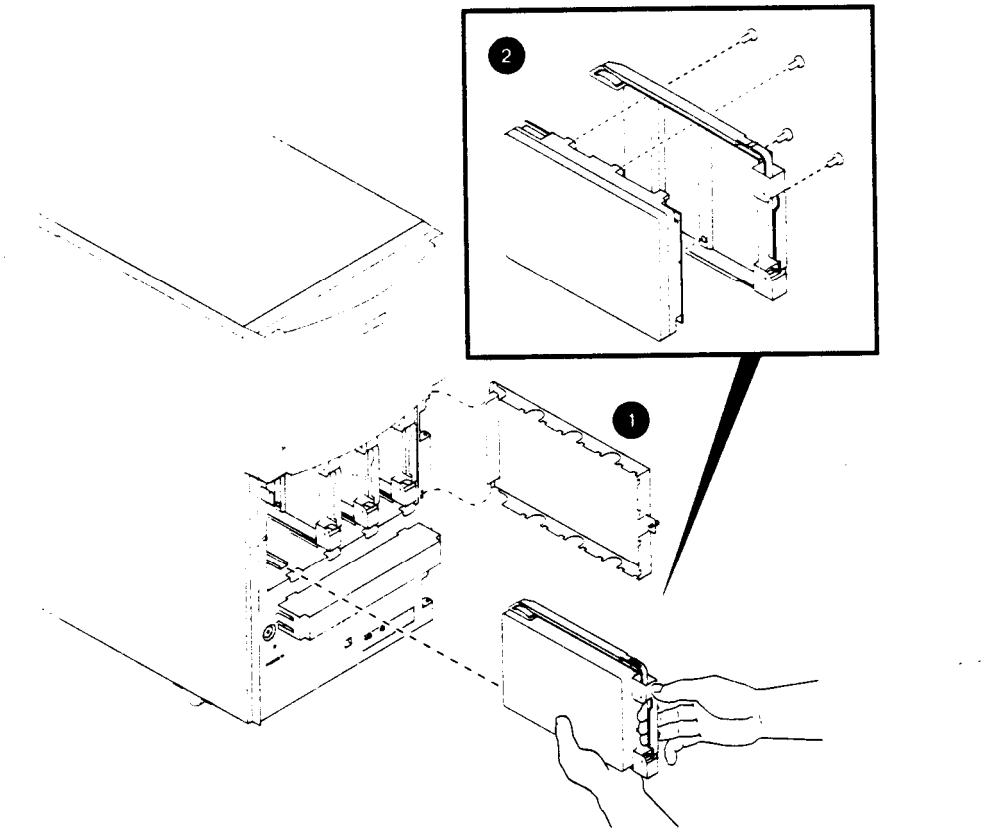


1.15 The SCSI IDs of the internal disk drives are determined by their physical location as shown below.



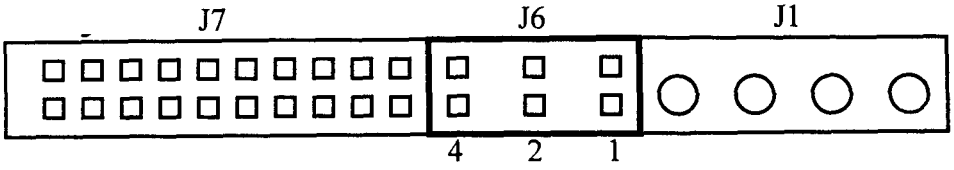


1.16 To install a drive in the carrier, the front panel of the AS800 must be removed, then the disk cage cover opened, and the carrier slid out of the appropriate slot. Attach the disk drive to the carrier with screws as shown.

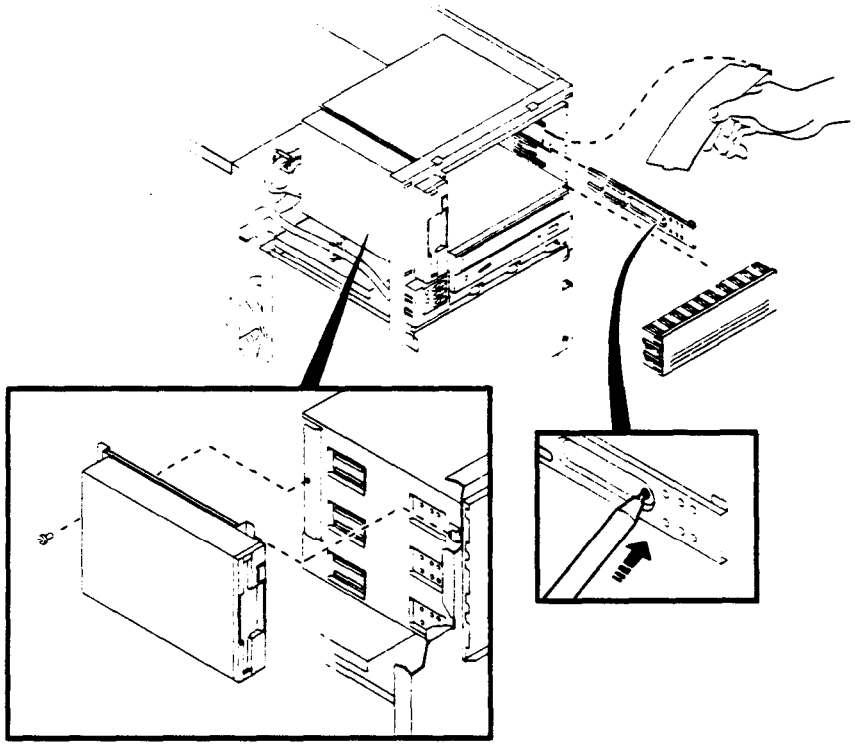


1.17 FP2000S Module Installation.

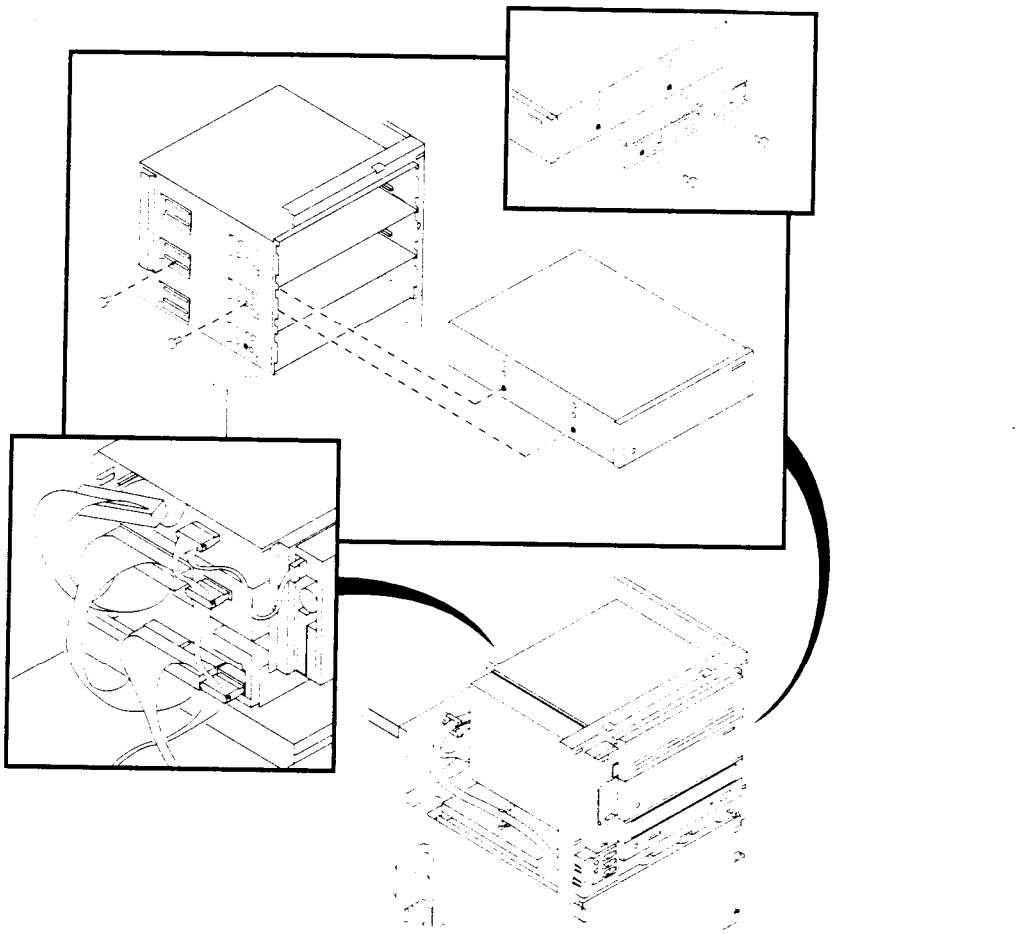
1.17.1 If there is only one FP2000S module being installed in this computer, skip to step 1.17.7.
1.17.2 Remove the two screws which secure the top on the FP2000S module.
1.17.3 Remove the top from the FP2000S module by sliding it backwards.
1.17.4 Remove the jumper from JP18 to disable the on-board terminator.
1.17.5 Verify that there is a jumper at JP17. If not, use the jumper removed from JP18 to jumper this connector.
1.17.6 Replace the top on the FP2000S and secure it with the two screws on the rear.
1.17.7 Set the SCSI ID of the FP2000S to **6** by installing jumpers on the left-most two sets of jumper pins of J6, located on the rear of the FP2000S next to the power connector (J1). (If a second FP2000S is being installed in this computer, set the SCSI ID on the second FP2000S to **5** by installing jumpers across the right-most and left-most jumper positions). See the diagram on the next page:



1.18 While the cover is still off of the front of the computer, any internal devices, such as tape-players or FP2000S modules can be installed. The filler panel must be removed from the appropriate slot, then the mounting bracket slid out. The floppy disk drive must be removed as shown to allow access to the screw holes on the left side of the device being installed.

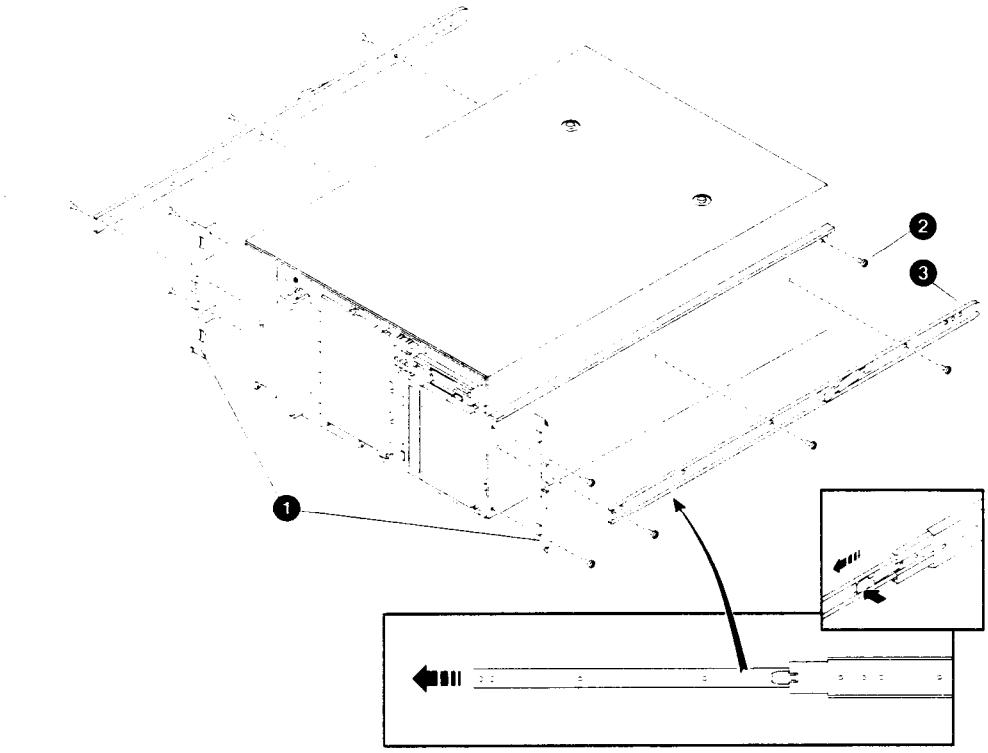


1.19 Connect the power and SCSI cables to the rear of the FP2000S or tape drive, then attach the bracket to the side of the device as shown, and slide it into the appropriate slot. Once it is in place, secure it with a pair of screws as depicted below. NOTE: Both the FP2000S and tape drives may be attached directly to the SCSI bus which the internal disk drives are on as long as they are not attached to a RAID controller. If a RAID controller is being used to access the internal disk drives, a separate wide-SCSI cable must be run from the motherboard's SCSI connector to the FP2000S or tape drive.



2.0 RACKMOUNT INSTALLATION.

2.1 Attach a front mounting bracket (item #1) to each side of the system using two 10mm screws per bracket.



2.2 Tighten the screws at the back end of the right side of the system (item #2).

2.3 Pull the narrow segment (item #3) of the chassis slide out of a chassis slide and detach it completely by pressing down the retainer spring and continuing to pull.

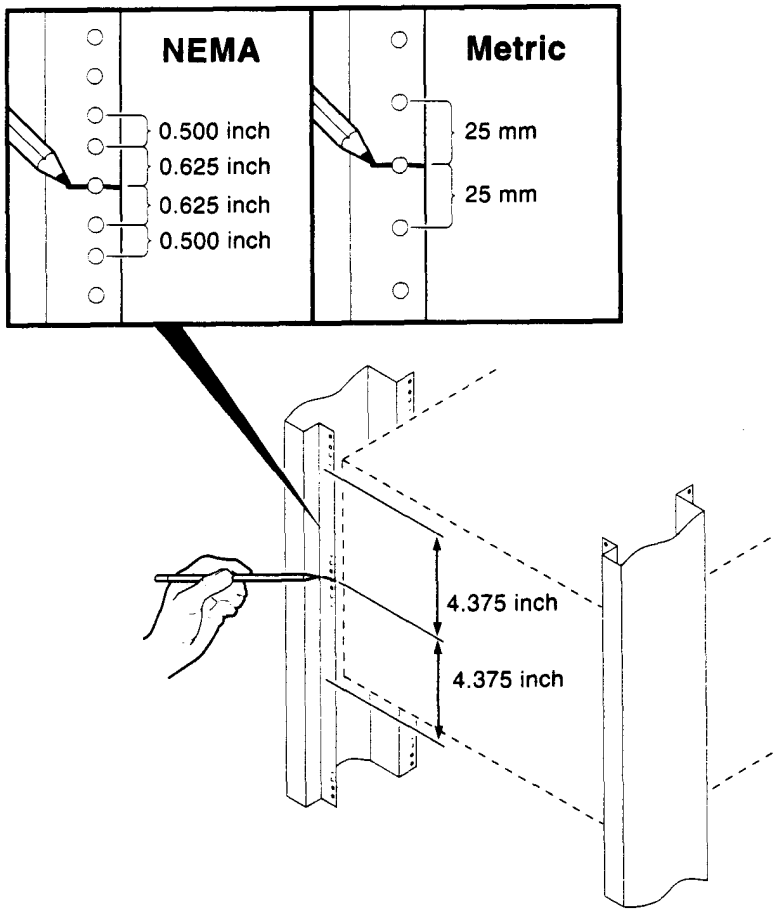
2.4 Position the chassis slide track so that the end of the chassis slide with three holes will stick out past the system.

2.5 Secure the chassis slide track to the system with three screws.

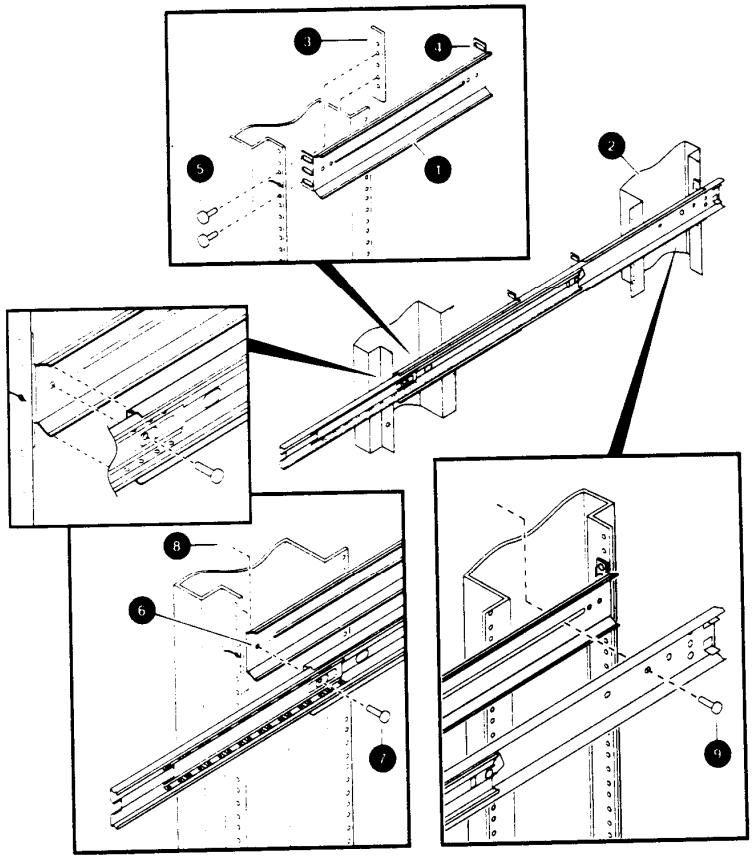
2.6 Repeat steps 2.3 through 2.6 for the other chassis slide.

2.7 Mark the midpoint hole on the vertical rail as shown below. The midpoint hole must be selected so that the holes immediately above and immediately below are equidistant (0.625 inches).

2.8 Mark the corresponding hole on the other three rails.



2.9 Attach a slide bracket (item #1) to each of the four vertical rails of the cabinet (item #2) using two 10-32 screws and one nut bar (item #3) per slide bracket.



2.10 The slide bracket installs behind the vertical rail of the cabinet and the nut bar installs behind the slide bracket, as shown above. (NOTE: The chassis slide bracket has two dissimilar ends. Flip the bracket and use the other end for larger hole spacing of 25mm, as shown at item #4).

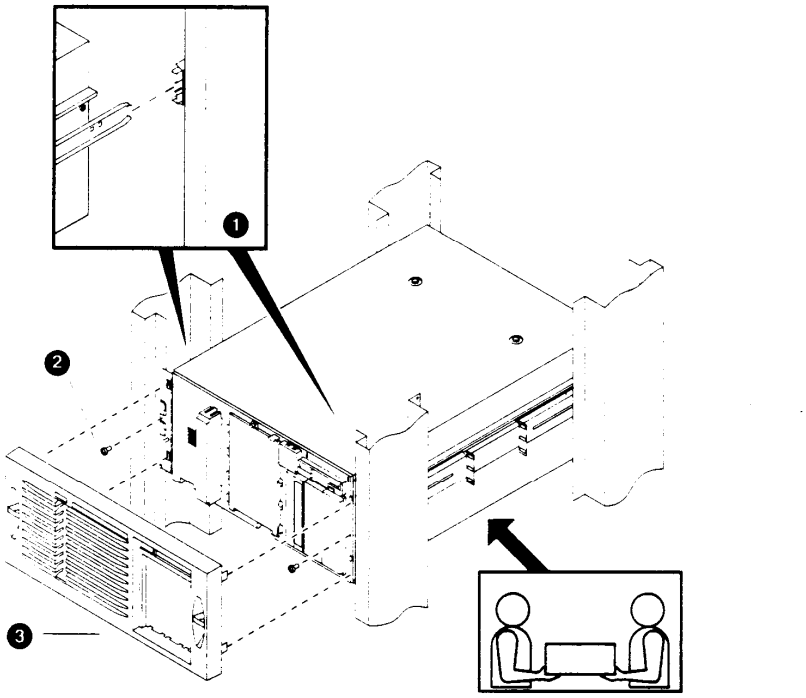
2.11 Locate the middle hole of the slide bracket and nut bar to the midpoint hole marked on the vertical rail of the cabinet. Tighten the screws (item #5) in the hole above and below the marked midpoint hole, leaving the midpoint hole empty.

2.12 Repeat steps 2.9 through 2.11 for the remaining rail.

2.13 Place the chassis slide into two brackets. Pull the inner slide out until the forwardmost hole in the stationary segment of the chassis slide is exposed. Align this hole with the forwardmost hole in the chassis slide bracket (item #6). Note that this happens when the stationary segment, the front of the slide bracket, and the mounting surface of the vertical rail are vertically aligned. Fasten one 10mm screw (item #7) and capnut (item #8) together. Place another 10mm screw (item #9) through a hole in the stationary segment of the chassis slide and the slot in the rear mounted slide bracket, and attach with a capnut.

2.14 Repeat step 2.13 for the other slide.

2.15 Lift the AlphaServer 800 up and align the narrow segment of the chassis slides attached to the computer with the chassis slides attached to the cabinet as shown below at item #1.



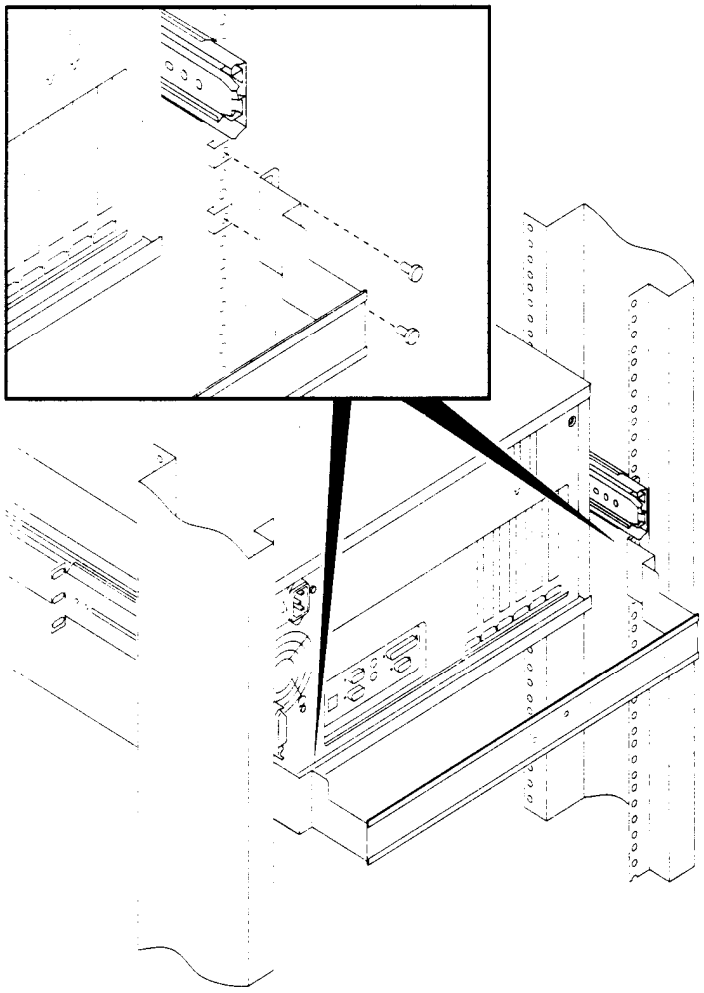
2.16 Slide the system into the cabinet.

2.17 Depress the retainer spring on both sides to slide the system completely into the cabinet.

2.18 Tighten the system to the chassis slides with two 10-32 screws (item #2), one on each side.

2.19 Align the front bezel (item #3) with the front of the system and snap it in place.

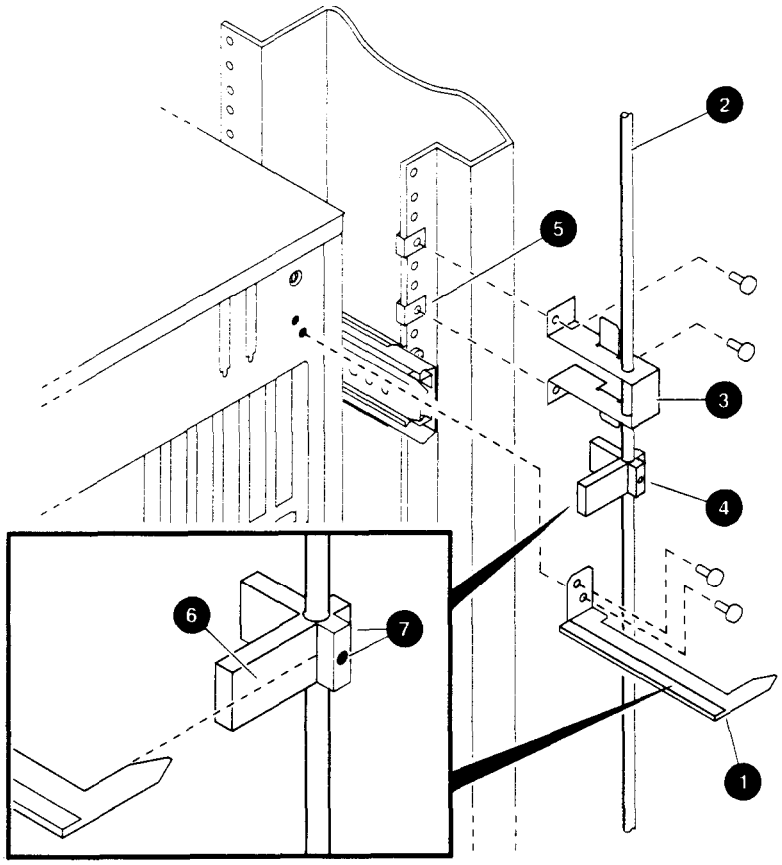
2.20 Install the cable management bracket to the rear of the cabinet with four 10-32 U-nuts and four 10-32 screws as shown below.



2.21 Clip the U-nuts over the holes in the vertical rail corresponding to the holes in the cable management bracket (two per vertical rail).

2.22 Attach the cable management bracket to the cabinet with four 10-32 screws.

2.23 Install the interlock mechanism on the cabinet by first installing the actuator trip bracket (item #1 below) on the rear of the system with two 10mm screws.



2.24 Free up the vertical bar (item #2) of the interlock mechanism.

2.25 Insert the stabilizer bracket (item #3) and the actuator (item #4) onto the vertical bar so that the actuator latch is below the stabilizer bracket.

2.26 Insert the vertical bar back in place.

2.27 Install a U-nut (item #5) onto the vertical rail in the second hole above the screw attaching the slide bracket to the cabinet rail.

2.28 Install a second U-nut three holes above the first.

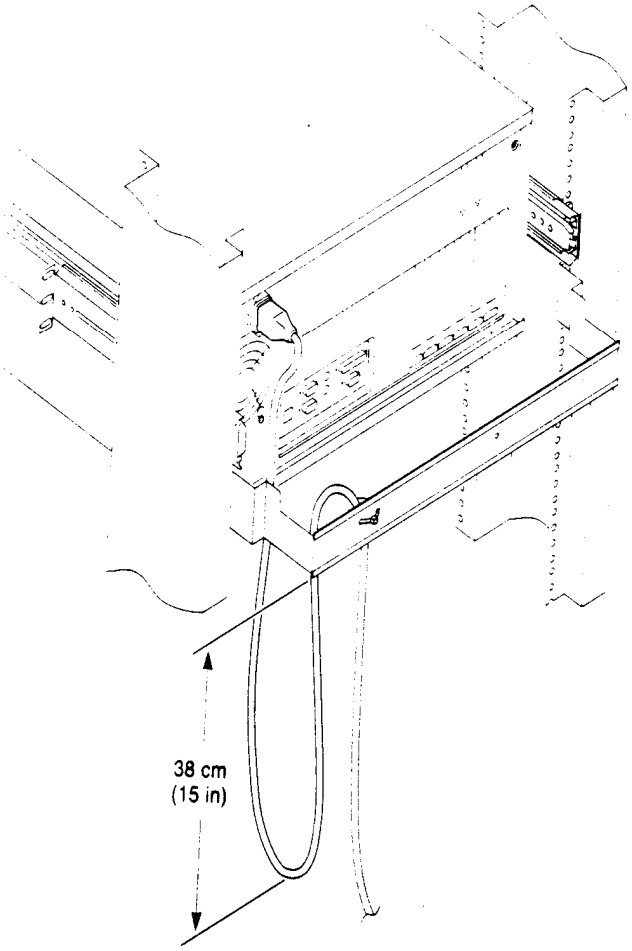
2.29 Secure the stabilizer bracket to the other cabinet rail with two 10-32 screws.

2.30 Vertically position the actuator latch such that the trip bracket aligns with the center of the actuator latch (item #6).

2.31 Rotationally orient the actuator latch like all the other actuator latches on the vertical bar.

2.32 Tighten the Allen screws (item #7) on the actuator latch.

2.33 Attach each cable to the rear of the system by first attaching it to the cabinet management bracket with a tie-wrap as shown below:



2.34 Make sure that a segment has at least 30 inches of cable available for extension so that the rackmount system can be pulled out of the cabinet.

3.0 MASTER DISK SOFTWARE CONFIGURATION.

If this system is being configured for the first time at a hardware integrator, the following section details how to configure the operating system software from a Master Disk.

3.1 With the AlphaServer 800 powered down, remove the front panel of the computer.

3.2 Remove the disk drive bay door.

3.3 Firmly insert the AlphaServer 800 Master Disk in the bottom disk drive slot (which is at SCSI ID 3). NOTE: If there is supposed to be a fourth disk in this slot, remove it until the Master Disk has loaded the system, then put the fourth disk back in prior to booting the system up.

3.4 Power up the computer.

3.5 Enter the command **sho | more** and confirm the firmware settings in Section 8.

3.6 Enter the command **b dka300** to boot up the computer from the Master Disk.

3.7 Login as **root** with a password of **Superuser**

3.8 Enter the command **cd /usr/local/bin**

3.9 Enter the command **./Uniclone**

3.10 Enter **ptds00** when prompted *Enter nodename for this computer:*

3.11 Enter **1.100.125.100** when prompted *Enter the IPAddress for this computer:*

3.12 Enter **y** at the prompt *The Subnet Mask is 255.255.255.0. Is this correct (y/n)[n]?*

3.13 Confirm your choice when the prompt *The Subnet Mask is 255.255.255.0. Is this correct (y/n)[n]?* appears.

3.14 There will be a momentary pause while the Master Disk interrogates the system hardware, after which information similar to the following will be displayed:

The following disks are available:

rz0 is a 4 Gbyte device
rz1 is a 8 Gbyte device
rz2 is a 8 Gbyte device

Which disk do you wish to use for the system disk?

3.15 Enter **rz0** for the system disk.

3.16 Confirm your choice when the prompt *You wish to use rz0 for the system disk, is that correct (y/n)[n]?* is displayed.

3.17 Once all choices have been made, a summary of these choices will be displayed:

```
System Name is:              ptds00
System IP Address is:        1.100.125.100
System Subnet Mask is:       255.255.255.0
System Disk is at SCSI ID:   rz0
WIP Disk is at SCSI ID:
System Disk size is:         4  Gbytes
WIP Disk size is:
System Disk type is:         rz29z
WIP Disk type is:
Load operating system only (no ngw, TP2000, etc.)

Is this information correct (y/n)[n]?
```

3.18 If this information is correct, enter **y** to proceed. If any of the data is incorrect, hit the **Enter** key to return to the beginning (steps 3.10 through 3.17 must be repeated).

3.19 Enter **y** at the prompt *The disks will now be formatted. Do you want to proceed (y/n)[n]?*

3.20 The disks will be erased and checked one last time to make sure they were not labeled incorrectly.

3.21 After about 30 minutes, the screen will clear and a set of instructions will appear on the screen indicating what final steps need to be taken.

3.22 Enter the command **halt** to shutdown the system.

3.23 At the >>> boot prompt enter the command **set auto_action boot** if you want the computer to bootup automatically at powerup.

3.24 Power down the computer.

3.25 Remove the AlphaServer 800 Master Disk from the disk drive bay.

3.26 Close the disk drive bay door and reinstall the front panel on the computer.

3.27 Power the computer back up.

3.28 If auto_action is set to halt, enter **b** at the >>> boot prompt.

3.29 The computer will now automatically rebuild the kernel, then reboot. This takes about 10 minutes to complete.

4.0 HARDWARE TEST.

4.1 At the login prompt, enter **root** with a password of **Superuser**

4.2 Enter the command **vetsetup**

4.3 Enter **y** at the prompt *Would you like to install the DEC VET database? Enter "y" or "n" [n]:*

4.4 Hit the **Enter** key at the prompt *Would you like the set up for distributed DEC VET support performed? Enter "y" or "n" [n]:*

4.5 Enter the command **vet** and observe a dialog box appearing which says *Running system sizer on node.....please wait.*

4.6 Click on the OK button when the dialog box *Sizer was unable to get information for all devices* appears.

4.7 Click on the icon which has the nodename next to it. This is located at the top of the *Device Work Area* box located directly below the title *NODE/DEVICE*.

4.8 Click on the **Select Devices** button at the bottom of the *Device Work Area* box. All of the devices shown in the *Device Work Area* box should now appear in the *Process Work Area* box in the lower half of the window.

4.9 Click on the word **Printer** in the *Process Work Area* box so that it is highlighted (you may have to use the arrows on the right-hand side of the window to scroll down the list).

4.10 Move the cursor to the top of the window and click on the word **Set Up** to activate this drop-down menu.

4.11 Click on the word **Deselect** to delete the printer from the list. The highlighted entry should disappear.

4.12 If only a single test pass is desired, go to step 4.14. If repetitive testing of the system is desired, click on the **Options** button and select **Set Passcount**

4.13 Enter the number of times the diagnostic needs to be repeated (entering a value of 100000 or more will put it into a near-continuous loop which can be stopped by hitting the **Stop All** button at the bottom of the DEC VET window).

4.14 Click on the **Start All** button at the bottom of the screen to begin the diagnostics.

4.15 Click on the **OK** button when the *DEC Vet: Error Log Filename* dialog box appears.

4.16 Vet will begin executing by creating two windows: *Vet_run* which displays Vet's progress; and *DEC Vet* which displays multi-colored test patterns. The xterm

window will also fill up with alphanumeric characters simulating the output to a VT monitor.

4.17 When the *DEC Vet* test patterns begin appearing, a dialog box at the bottom of the screen displays which test is running, along with two buttons for controlling this screen: The **Suspend** button will cause the test to loop continually at this location (it will break out of the loop when the **Continue** button is clicked) and the **Fail** button will cause the computer to fail this part of the video test. The video display can be expanded to full screen by clicking on the top right corner of the *DEC Vet* window.

4.18 When the video tests are done, the *Vet_run* window will reappear and will display each test as it is run.

4.19 When all of the tests are complete a summary of failures will be available in a file called *vet_error.log* in the current directory. These can be viewed by using the command **more vet_err.log**. Some samples of errors are displayed below:

```
*** SETUP ERROR 1 from process 1, group exer for device /dev/rz0g***
File vet_exer_disk, test 0, subtest 0 - Fri Aug 2 11:07:07 1996
Disk size is unknown
***End of error report from process 1***
```

This is a typical disk partition error. It is generated because Printrak disk partitions do not conform to standard DEC disk partition maps. The error simply says that the computer does not recognize this partition map. This error does not fail the unit.

```
*** SETUP ERROR 1 from process 1, group exer for device /dev/rz0g***
File vet_exer_disk, test 0, subtest 0 - Fri Aug 2 11:07:07 1996
Failure status returned from OPEN
Status returned: error code=16 (device busy)
***End of error report from process 1***
```

This error shows up once or twice during a diagnostic session. It simply means that the disk was busy when the diagnostic tried to query it. This error does not fail the unit.

4.20 Once the problem reports have been examined, click on the top left corner of the VET window to close it or click on the **File** menu pick and select **Exit** to shut the window (or if you are viewing the *vet_err.log* file, exit the editor).

4.21 If there is no FP2000S module with this AlphaServer 800, then the hardware test section is complete. Otherwise, proceed to Section 5.

5.0 FP2000S DIAGNOSTICS.

If this AlphaServer 800 has an FP2000S installed, the diagnostics listed below need to be run to confirm functionality.

5.1 If the computer is not booted up, enter the command **b** at the >>> boot prompt.

5.2 Login as **root** with a password of **Superuser**

5.3 Enter the command **cd /usr/fp2000/bin**

5.4 Enter the command **./fp_accept_test 0 6** (usually the FP2000S is on SCSI bus 0 at address 6 - enter the correct bus and address for the devices being tested).

5.5 At the question *Is this AFP or FP2000?: [a/f]*, enter **a**.

5.6 Enter the number of times the program needs to cycle at the prompt *Input the number of times you wish to run the test*:

5.7 To stop the utility at any time, execute **Ctrl-C** (hold down the *Ctrl* button and hit the *c* button).

6.0 TROUBLESHOOTING.

6.1 Beep Codes - *These may occur during powerup if hardware has failed.*

6.2 Troubleshooting Power Problems - *If the system fails to powerup, try these steps.*

Symptom	Action
No AC power	Check the power source and power cord.
	Check seating of E26.
	Check that the System cover is properly secured.
	An interlocking sensor switch shuts off power to the system if the cover is removed.
	Unplug the power cord for 15 seconds, then replug.
AC power is present, but system does not power on.	Check the On/Off button on the control panel.
	Check that the ambient room temperature is within environmental specifications (10-40ºC, 50-104ºF).
	Check the remote management console using the **status** command. Look for fan status, system temperature, power supply failure.
	Check that cable connectors on the system board are properly connected.
	Check that the internal power supply cables are plugged in at the right place on both the power supply and system board.
Power supply shuts down after approximately 10 seconds (fan failure).	Listen to hear if the fan is spinning at power-up. A failure of the fan causes the system to shut down after a few seconds.

6.3 Troubleshooting Console Problems - *If the startup screen does not appear, try these.*

Symptom	Action
Startup screen is not displayed.	Refer to Table 11-2 to interpret the startup beep codes.
	Check that keyboard and monitor are connected and functioning properly.
	Check that power is on.
	If the startup screen is not displayed, yet the system enters console mode when you press the Return key, check that the **console** environment variable is set correctly: **graphics** for a VGA terminal, and **serial** for serial terminal.
	If you are using other than the standard onboard VGA controller, the onboard S3 TR1064 VGA options must be set to disabled by grounding (GND) the VGA jumper (J27) on the right side of the system board, and the console environment variable set to **graphics.** Combining multiple VGA controllers produces unpredictable results.
	Try connecting a console terminal to the COM I MMJ port. Check baud rate setting for console terminal and system. The system baud rate setting is 9600. When using the COM I MMJ port, set the console environment variable to serial.
	If you have verified that there are no monitor, terminal, or keyboard problems, the problem may be with the firmware. Refer to Section 11. 13.
Startup screen displays error messages.	If startup screens or the console event log indicate problems with mass storage devices, or if storage devices are missing from the show config display. use the tables in Section 11.7 to determine the problem.
	If startup screens or the console event log indicate problems with EISA or PCI devices, or if EISA or PCI devices are missing from the show config display, use the tables in Section 11.8 to determine the problem.

6.4 Troubleshooting Boot Problems - *If the system will not bootup, try these fixes.*

Symptom	Action
The system cannot find the boot device.	Verify that your system recognizes the boot device, using the show device command.
	Check that the boot device environment variable correctly identifies the boot device:
	DIGITAL UNIX and OpenVMS: use the show bootdef_dev command to display the boot device.
	Windows NT: Select the AlphaBIOS menu options "Display Hardware Configuration" and "Set Default Environment Variables."
	Check system configuration for the correct environment variable settings:
	For DIGITAL UNIX and OpenVMS, examine the auto_action, bootdef_dev boot-osflags, and os_type environment variables.
	For problems booting over a network, check the ew*O protocols or er*O_protocols environment variable settings: Systems booting from a DIGITAL UNIX server should be set to bootp; systems booting from an OpenVMS server should be set to mop.
	For Windows NT, examine the FWSEARCHPATH, AUTOLOAD, and COUNTDOWN environment variables.
System does not boot.	Check that the Halt button is set to the "Off' position (out).
	Verify that you have not installed an unsupported graphics module or another type of unsupported adapter.
	For problems booting over a network, check the ew*O_protocols or er*O_protocols environment variable settings: Systems booting from a DIGITAL UNIX server should be set to bootp; systems booting from an OpenVMS server should be set to mop.
	Run the test command to check that the boot device is operating. See Section 11.4, Console Problems.
There is a software problem or the operating system is not installed correctly.	Refer to your operating system software information.
	Verify that you have the correct firmware revision for your system.

6.5 Operating System Problems - *These are some possible operating system problem fixes.*

Symptom	Action
System is hung or has crashed.	Examine the crash dump file. Refer to the *Open VMS Alpha System Dump Analyzer Utility Manual* (AA-PV6UB-TE) for information on how to interpret OpenVMS Alpha crash dump files. Refer to the *Guide to Kernel Debugging* (AA-PS2TD- for information on using the DIGITAL UNIX Crash Utility.
No startup display.	The console environment is set to **serial;** thus, the startup screen is routed to the COM1 serial communication port and cannot be viewed from the VGA monitor. If you are using a VGA monitor, set the console environment variable to **graphics (set console** **graphics).** See Section 11.4, Troubleshooting Console Problems.
Errors have been logged, and the operating system is up.	Have your service provider examine the operating system error log files to isolate the problem. If the problem occurs intermittently, have your service provider run an operating system exerciser, such as DEC VET, to stress the system. Refer to the *DEC Verifier and Exerciser Tool User's Guide* (AA-PTTMD-TE) for instructions on running DEC VET.

6.6 Mass Storage Problems - *If there are problems with disk drives or RAIDs, the following may provide a solution.*

Symptom	Problem	Corrective Action
Drives are missing from the **show config** display.	Drives have duplicate SCSI Ids.	Correct SCSI Ids. *NOTE: Internal hard disk drives are automatically assigned SCSI Ids 0, 1, 2 and 3 (from left to right for pedestal systems; and bottom to top for rackmount systems). The onboard controller is assigned SCSI ID 7, and the CD-ROM, SCSI ID 4.*
Drives are missing from the **show config** display/One drive appears seven times on the **show config** display.	Drive SCSI ID set to 7 (reserved for host ID) or Duplicate host Ids on a shared bus.	Correct SCSI Ids or change host ID through the **pk*0_host_id** environment variable (**set pk*0_host_id**) using the SRM console.
LEDs do not come on. Drive missing from the **show config** display.	Missing or loose cables. Drives not properly seated on the hard disk backplane.	Remove device and inspect cable connections. Reseat drive.
Drives disappear intermittently from the **show config** and **show device** display.	SCSI bus length exceeded.	The entire SCSI bus length, from terminator to terminator, must not exceed 6 meters for fast differntial SCSI connection, or 3 meters for fast single-ended SCSI connections.
Problems persist after eliminating problem sources.	SCSI storage controller failure or terminator(s) missing.	Call your service representative.

6.7 Troubleshooting EISA/ISA Bus Problems - *If there are problems with devices plugged into the EISA or ISA sockets on the motherboard, try these suggestions.*

Step	Action
1	Confirm that the option is supported. Check firmware and software versions.
2	Check that the EISA card and any cabling are properly seated.
3	Run the ECU to: • Confirm that the system has been configured with the most recently installed controller. • Check the hardware jumper and switch settings for each ISA controller. • Check the software setting for each ISA and EISA controller. See if the ECU deactivated (< >) any controllers to prevent conflict. • See if any controllers are locked, which limits the ECU's ability to change resource assignments. Ensure that IRQs are set correctly.
4	Confirm that hardware jumpers and switches on ISA controllers reflect the settings indicated by the ECU. Stan with We last ISA module installed.
5	Check for a bad slot by moving the last installed controller to a different SO.
6	Call the option manufacturer or your service representative for help.

6.8 Troubleshooting PCI Bus Problems - *If any of the PCI cards fail to operate correctly, try the following:*

Step	Action
1	Confirm that the option is supported, and confirm firmware and software versions.
2	Confirm that the PCI module and any cabling are properly seated.
3	Check for a bad slot by moving the last installed controller to a different slot.
4	Call the option manufacturer or your service representative for help.

6.9 Troubleshooting Monitor and Terminal Problems - *For monitor problems.*

Possible Cause	Action
The power cord is not connected. The power cord may be faulty. The power cord socket may not be working.	Make sure that all the power cords are connected correctly at both ends. Try a power cord that works or test the power socket with an appliance that works.
If you are using other than the standard onboard VGA controller, settings may be incorrect.	Make sure that onboard S3 TRIO64 VGA options are set to disabled through the ECU, the VGA jumper (J27) on the right side of the system board is disabled (GND), and the console environment variable is set to **graphics**. Combining multiple VGA controllers will produce unpredictable results, and use of multiple VGA controllers is not recommended or supported.
The terminal or monitor fuse may have blown.	Replace the blown terminal or monitor fuse. Refer to the terminal or monitor documentation.
The port to which the terminal or monitor connects may not be the correct one. The port to which the terminal or monitor connects may be faulty.	Ensure that your monitor cable is plugged into the correct graphics port if you have an optional graphics card installed. You should plug the cable into the connector of your option card, not the connector on the system board. Try connecting the terminal or monitor to another system using the same terminal or monitor cable. If the terminal or monitor works, the port to which the terminal or monitor was connected is faulty. Contact your service representative.
The monitor or terminal are not turned on.	Check that the monitor or terminal is turned on. Make sure that all cables are connected at both ends.
The monitor or terminal brightness and contrast controls are incorrectly set.	Adjust the terminal contract and brightness controls.
Incorrect graphics configuration	See Chapter 5.
The terminal cable is not connected to the correct serial port.	Check the serial port to which the terminal cable is connected. Make sure that it is connected to the left-hand serial port (COM1).
If you are using a console terminal, check the baud rate setting for the terminal and system. The system default baud rate setting is 9600.	Connect the console terminal to COM1 serial communication port and set the console environment variable to serial (**set console serial**).

6.10 Troubleshooting Keyboard and Mouse Problems - *If the keyboard or mouse fail to work as expected, try these solutions. NOTE: If this system is using a Raritan switchbox to connect several computers to one mouse, keyboard, and monitor, problems may develop with the keyboard and/or mouse if a Guardian module is not connecting the Alpha computer to the Raritan cables.*

Symptom	Possible Cause	Action
The mouse pointer is displayed on the monitor, but does not move correctly.	The mouse is connected incorrectly.	Make sure that the mouse cable is connected correctly in the mouse connector.
	The mouse ball is dirty.	Remove the ball from the mouse and clean it in a lukewarm, mild-soap solution. Dry the ball and replace it in the mouse.
The mouse pointer does not show on the monitor	The mouse is connected incorrectly or the mouse cable is loose.	Make sure that the mouse cable is connected correctly in the mouse connector.
	The system is in console mode.	The mouse pointer is displayed only when the operating system is running. Boot the operating system.
	The mouse is faulty.	Replace the mouse.
The monitor does not display the character that you type.	The keyboard cable is incorrectly connected or keyboard language is set wrong.	Make sure that the keyboard cable is connected correctly in the keyboard connector.
	The keyboard has failed.	Replace the keyboard. If the problem persists, contact your service representative.
The monitor displays a message indicating a keyboard error.	The keyboard is not connected correctly.	Make sure that the keyboard is connected to the keyboard port.

7.0 FAILSAFE LOADER.

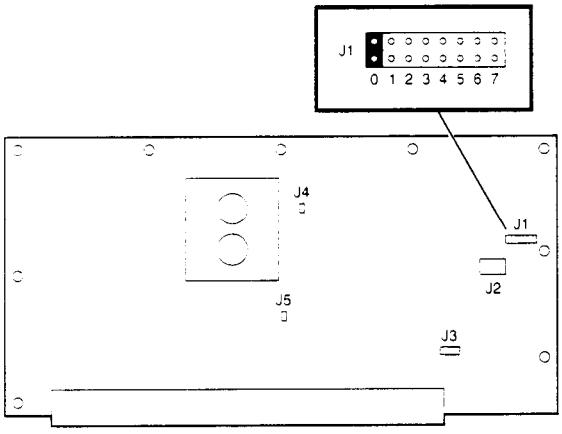
The fail-safe loader (FSL) allows you to boot an Update Utility diskette in an attempt to repair corrupted console files that reside within the flash ROMs on the system board. Use the FSL only when a failure at startup prevents you from accessing the console mode and you have checked the control panel for progress messages. To activate the FSL, execute the following steps.

7.1 Turn off the system.

7.2 Install the Update Utility diskette in the diskette drive.

7.3 Remove the top cover and side panels.

7.4 Enable the fail-safe loader by moving the J1 jumper on the CPU card from the normal position to the position nearest the edge of the motherboard as shown below.



7.5 Turn on the system and check the control panel for progress messages. Respond **yes** to the update prompt.

7.6 After the update utility has completed, turn off the system.

7.7 Move the SROM jumper to position 0 (where it started from).

7.8 Put the top and side covers back on the system.

7.9 Power the system back up.

7.10 Check the console prompt and configuration settings with the command **sho | more** and confirm that the settings are similar to those listed in Section 8.

8.0 FIRMWARE SETTINGS.

*In order to operate properly, the AlphaServer 800 must have the firmware configured correctly. The following information reflects a correctly-configured computer. The settings which are most important have been identified with **bold** text. The example here is **similar** to what a standard configuration would be. Your system may have some differences based on the original configuration. As an example, for a system setup to run on a 100-Base-T network, the entry for **ewa0_mode Twisted-Pair** would instead be **ewa0_mode Fast**.*

auto_action	halt
boot_dev	dka0.0.0.5.0
boot_file	
boot_osflags	**a**
boot_reset	ON
bootdef_dev	**dka0.0.0.5.0**
booted_dev	dka0.0.0.5.0
booted_file	
booted_osflags	a
bus_probe_algorithm	**new**
char_set	0
com1_baud	9600
com1_flow	SOFTWARE
com1_modem	OFF
com2_baud	9600
com2_flow	SOFTWARE
com2_modem	OFF
console	**graphics**
controlp	ON
d_bell	off
d_cleanup	on
d_complete	off
d_eop	off
d_group	field
d_harderr	halt
d_loghard	on
d_logsoft	off
d_omit	
d_oper	on
d_passes	1
d_quick	off
d_report	full
d_runtime	0
d_softerr	halt
d_startup	off
d_status	off
d_trace	off
d_verbose	0
dump_dev	
enable_audit	ON
ewa0_arp_tries	3
ewa0_bootp_file	
ewa0_bootp_server	
ewa0_bootp_tries	3
ewa0_def_ginetaddr	0.0.0.0

ewa0_def_inetaddr	0.0.0.0
ewa0_def_inetfile	
ewa0_def_sinetaddr	0.0.0.0
ewa0_def_subnetmask	0.0.0.0
ewa0_ginetaddr	0.0.0.0
ewa0_inet_init	bootp
ewa0_inetaddr	0.0.0.0
ewa0_inetfile	
ewa0_loop_count	2
ewa0_loop_inc	d0
ewa0_loop_patt	ffffffff
ewa0_loop_size	100
ewa0_lp_msg_node	8
ewa0_mode	**Twisted-Pair** *(or **Fast** on 100-Base-T networks)*
ewa0_protocols	BOOTP
ewa0_sinetaddr	0.0.0.0
ewa0_tftp_tries	3
fru_table	ON
full_powerup_diags	ON
kbd_hardware_type	**PCXAL**
language	36
language_name	**English(American)**
license	MU
os_type	**UNIX**
pal	VMS PALcode V1.20-3, OSF PALcode V1.22-5
pci_parity	off
pka0_host_id	7
pka0_soft_term	on
pkb0_fast	1
pkb0_host_id	7
pkb0_termpwr	1
pkc0_disconnect	1
pkc0_fast	1
pkc0_host_id	7
reset_boot_arg0	0
reset_boot_arg1	
reset_boot_arg2	
scsi_poll	ON
scsi_reset	ON
srm2ctrl	
srm2dev	
sys_serial_num	NI91506493
tga_sync_green	0
tt_allow_login	1
tty_dev	0
version	V5.3-101 Nov 9 1998 10:19:43

9.0 CONNECTIONS TO AN HSZ50 RAID.

If this AlphaServer 800 is connected by SCSI cable to an HSZ50 RAID controller, connection of a serial cable between the AS800 and the HSZ50 will allow the user to monitor and configure the RAID without the need of a RAID PC or VT monitor. The following steps detail how to accomplish this.

9.1 Connect a serial cable (DEC P/N BC16E-10, Printrak P/N 904-312) from the COM1 port on the AlphaServer 800 to the serial port on the HSZ50. NOTE: There may be a cable included with the HSZ50 controller which can be used. If this cable is connected to COM2 on the rear of the AS800 computer, then the *tty00* entry in step 9.6 must be altered to *tty01*.

9.2 Login on the AS800 as **root** with a password of **Superuser**

9.3 Click on the ***Applications*** button at the top of the screen.

9.4 Click on ***xterm*** to open an xterm window.

9.5 Enter the command **vi /etc/remote** to access the /etc/remote file.

9.6 If the two lines below do not exist anywhere in this file, go to the end of the file and insert them:

cli:dv=/dev/tty00:pa=none:br#9600:
:el=^D:oe=^D

9.7 Hit the **Esc** key to enter command mode.

9.8 Enter the command **ZZ** (that's shift-zz) to save and exit the file.

9.9 Enter the command **cd /dev** to switch to the /dev directory.

9.10 Enter the command **file tty00** (*or* ***file tty01*** *if COM2 is being used)* and verify that the *modem_control off* line appears. If it shows *on*, then you must repeat step 9.6 and change the *tty* entry to the other port.

9.11 Hold down the **Ctrl** button and click and hold the right mouse button. Make sure the screen size is set to *Default* (or *Small* for systems with a Raritan switchbox connecting several computers to one monitor). If the screen size is not set properly, scroll down the menu and highlight the correct size.

9.12 Enter the command **tip cli** to activate the utility. The computer will beep once and the message *connected* will be displayed.

9.13 Press the **Enter** key again and note the appearance of the *HSZ>* prompt.

9.14 To confirm functionality of the interface, enter the command **run cfmenu** to display the raid drive status. All of the HSZ50 commands are now able to be executed from the AlphaServer. The RAID can be monitored and/or altered as if this was being done on a VT or through a RAID PC. Refer to the five-book set of manuals included with each HSZ50 for an explanation of the various CLI commands and utilities available. The RAID GUI can also be accessed by telnetting into this machine from any telnet-capable port and entering the *tip cli* command. This allows remote maintenance of the RAID.

9.15 To terminate this utility, press the **~** key (**Shift-`**) followed by **Ctrl-d**

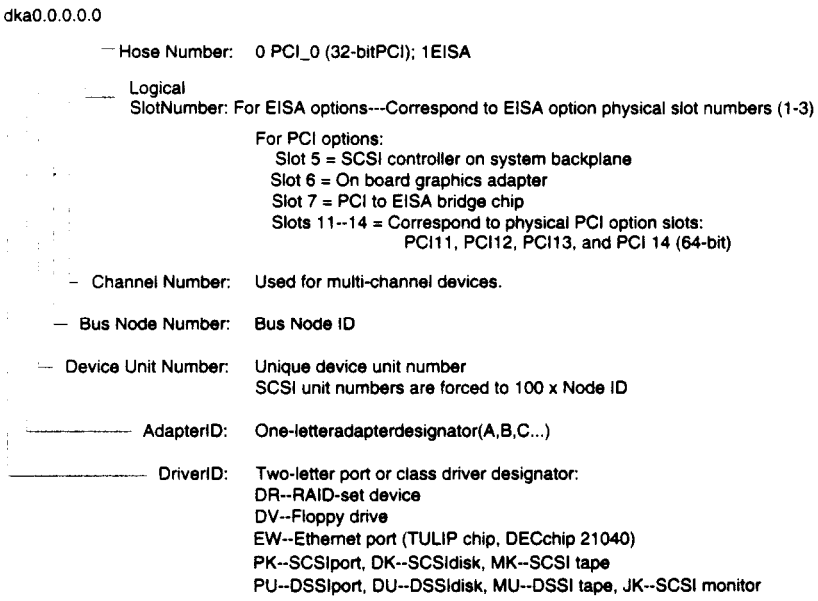
10.0 TYPICAL BOOT SCREENS.

10.1 Typical powerup screen (this can also be seen by entering the command **init**).

```
ff.fe.fd.fc.fb.fa.f9.f8.f7.f6.f5.ef.df.ee.f4.
probing hose 0, PCI
probing PCI-to-EISA bridge, bus 1
bus 0, slot  5 -- pka -- QLogic ISP1020
bus 0, slot  6 -- vga -- S3 Trio64/Trio32
bus 0, slot 11 -- ewa -- DECchip 21041-AA
bus 0, slot 12 -- pkb -- DEC KZPSA
bus 0, slot 13 -- dra -- Mylex DAC960
ed.ec.eb.....ea.e9.e8.e7.e6.e5.e4.e3.e2.e1.e0.
X4.7-3046, built on Dec  4 1996 at 01:56:52
Memory Testing and Configuration Status
     128 Meg of System Memory
     Bank 0 = 64 Mbytes(16 MB Per DIMM) Starting at 0x00000000
     Bank 1 = 64 Mbytes(16 MB Per DIMM) Starting at 0x04000000

Testing the System
Testing the Disks (read only)
Testing the Network
Change mode to Internal loopback.
Change to Normal Operating Mode.
```

10.2 SCSI Designation for Devices.



10.3 Sample Configuration Screen (enter **sho config** to see something similar).

```
>>> show config
                        Digital Equipment Corporation
                           AlphaServer 800 5/400

Firmware
SRM Console:    V4.8
ARC Console:    5.26
PALcode:        VMS PALcode V1.19-2, OSF PALcode V1.21-4
Serial Rom:     X0.4

Processor
DECchip (tm) 21164A-1  400MHz

System
Motherboard Revision: 0

Memory
     128 Meg of System Memory
     Bank 0 = 64 Mbytes(16 MB Per DIMM) Starting at 0x00000000
     Bank 1 = 64 Mbytes(16 MB Per DIMM) Starting at 0x04000000


 Slot   Option                 Hose 0, Bus 0, PCI
   5    QLogic ISP1020         pka0.7.0.5.0          SCSI Bus ID 7
                               dka100.1.0.5.0        RZ28M-S
                               dka200.2.0.5.0        RZ28M-S
                               dka500.5.0.5.0        RRD45
   6    S3 Trio64/Trio32
   7    Intel 82375EB          Bridge to Bus 1,

EISA
  11    DECchip 21041-AA       ewa0.0.0.11.0         00-00-F8-02-5C-D2
  12    DEC KZPSA              pkb0.7.0.12.0         SCSI Bus ID 7
                               dkb100.1.0.12.0       RZ28
                               dkb400.4.0.12.0       RZ28D
                               dkb600.6.0.12.0       RZ28
  13    Mylex DAC960           dra.0.0.13.0
                               dra0.0.0.13.0         1 Member JBOD
                               dra1.0.0.13.0         1 Member JBOD

 Slot   Option                 Hose 0, Bus 1, EISA
>>>
```

10.4 Typical Devices Screen (enter the command **sho dev** to see this).

```
>>> show device
dka100.1.0.5.0      DKA100                    RZ28M-S
dka200.2.0.5.0      DKA200                    RZ28M-S
dka400.4.0.5.0      DKA400                    RRD45   1645
dkc0.0.0.2003       DKC9                      RZ25    0900
dva0.0.0.1000.0     DVA0
ewa0.0.0.1001.0     EWA0          08-00-2B-3E-BC-B5
ewb0.0.0.12.0       EWB0          00-00-C0-33-E0-0D
ewc0.0.0.13.0       EWC0          08-00-2B-E6-4B-F3
pka0.7.0.5.0        PKA0              SCSI Bus ID 7   2.10
pka0.7.0.2002.0     PKB0              SCSI Bus ID 7   2.10
pka0.7.0.2003.0     PKC0              SCSI Bus ID 7   2.10

>>>
```

10.5 Display of Memory Configuration (as shown by entering **sho mem** at the prompt).

```
>>> show memory
     128 Meg of System Memory
     Bank 0 = 64 Mbytes(16 MB Per DIMM) Starting at 0x00000000
     Bank 1 = 64 Mbytes(16 MB Per DIMM) Starting at 0x04000000

>>>
```

10.6 Testing Hardware (executed by entering the command **test** at the >>> prompt).

```
>>> test
Requires diskette and loopback connectors on COM2 and parallel port
type kill_diags to halt testing
type show_status to display testing progress
type cat el to redisplay recent errors
Testing COM2 port
Setting up network test, this will take about 20 seconds
Testing the network
     128 Meg of System Memory
     Bank 0 = 64 Mbytes(16 MB Per Dimm) Starting at 0x00000000
     Bank 1 = 64 Mbytes(16 MB Per Dimm) Starting at 0x10000000
Testing the memory
Testing parallel port
Testing the SCSI Disks
Non-destructive Test of the Floppy started
serial port not used as main console - VGA test bypassed
Printer offline
file open failed for para
```

11.0 USING THE SRM.

11.1 The following list identifies all of the commands available from the SRM console.

Command	Function
alphabios	Loads and starts the AlphaBIOS console.
Boot	Loads and starts the operating system.
cat [filename]	Displays a file by scrolling.
clear envar	Resets an environment variable to its default value.
crash	Forces a crash dump at the operating system level.
deposit	Writes data to the specified address.
ecu	Runs the EISA Configuration Utility.
edit	Invokes the console line editor on a RAM file or on the nvram file (power-up script).
examine	Displays the contents of a memory location, register, or device.
help	Displays information about the specified console command.
initialize	Resets the system.
man	Displays information about the specified console command.
more [filename]	Displays a file one screen at a time.
memexer	Exercises memory.
memtest	Runs firmware diagnostics for memory.
ps	Displays the processor status.
set envar	Sets or modifies the value of an environment variable.
set host	Connects to a MSCP DUP server on a DSSI device.
show envar	Displays the state of the specified environment variable.
show config	Displays the configuration at the last system initialization.
show device	Displays a list of controllers and their devices in the system.
show memory	Displays memory module information.
show pal	Displays the version of PALcode.
show status	Shows system status during diagnostics.
show version	Displays the version of the console program.
test	Runs firmware diagnostics for the system

11.2 The notation formats to use with SRM commands are listed on this page.

Attribute	Conditions
Length	Up to 255 characters, not including the terminating carriage return or any characters deleted as the command is entered. A command longer than 80 characters and without the backslash character (see Table 6-3) causes display of an error message.
Case	Upper- or lowercase characters can be used for input. Characters are displayed in the case in which they are entered.
Abbreviation	Only by dropping characters from the end of words. You must enter the minimum number of characters to identify the keyword unambiguously. Abbreviation of environment variables is allowed with the show command.
Options	You can use command options, to modify the environment, after the command keyword or after any symbol or number in the command. See individual command descriptions for examples.
Numbers	Most numbers in console commands are in decimal notation. Two exceptions, both of which use hexadecimal notation, are addresses and numbers used in the deposit command. The default radix can be overridden by inserting %d before numbers you want to express in decimal, %b before binary, %o before octal, or %x before hexadecimal. Register names (for example, RO) are not considered numbers and use decimal notation.
No characters	A command line with no characters is a null command. The console program takes no action and does not issue an error message; it returns the console prompt. The console supports command line recall and editing.
Spaces or tabs	Multiple adjacent spaces and tabs are compressed and treated as a single space. Leading and trailing spaces are ignored.

11.3 A list of special characters which can be used with the SRM commands is shown below.

Character	Function
Return or Enter	Terminates a command line. No action is taken on a command until it is terminated. If no characters are entered and this key is pressed, the console just redisplays the prompt.
Backslash (/)	Continues a command on the next line. Must be the last character on the line to be continued.
Delete	Deletes the previous character.
Ctrl/A	Toggles between insert and overstrike modes. The default is overstrike.
Ctrl/B or up-arrow	Recalls previous command or commands. The last 16 commands are stored in the recall buffer.
Ctrl/C or Ctrl/P	Terminates the process that is running. Clears Ctrl/S; resumes output suspended by Ctrl/O. When entered as part of a command line, deletes the current line. Ctrl/C has no effect as part of a binary data stream.
Ctrl/D or left-arrow	Moves the cursor left one position.
Ctrl/E	Moves the cursor to the end of the line.
CtrI/F or right-arrow	Moves the cursor right one position.
Ctrl/H or Backspace or F12	Moves the cursor to the beginning of the line.
Ctrl/J	Deletes the previous word.
Ctrl/O	Stops output to the console terminal for the current command. Toggles between enable and disable. The output can be reenabled by other means as well: when the console prompts for a command, issues an error message, or enters program mode, or when Ctrl/P is entered.
Ctrl/Q	Resumes output to the console terminal that was suspended by Ctrl/S.

11.4 The following is an explanation of the environment variables accessible from SRM.

Environment Variable	Function
auto-action	Specifies the console's action at power-up, a failure, or a reset.
bootdef_dev	Specifies the default boot device string.
boot_osflags	Specifies the default operating system boot flags.
com1-baud	Sets the default baud rate of the internal COM I serial interface.
com2_baud	Sets the default baud rate of the COM2 serial port.
com1_flow or com2_flow	Indicate the flow control on the serial ports
com1_modem, or com2_modem	Used by the operating system to determine if a modem is present.
Console	Specifies the device on which power-up output is displayed (serial terminal or graphics monitor).
ew*0_mode	Specifies the connection type of the default Ethernet controller.
ew*0_protocols	Specifies network protocols for booting over the Ethernet controller.
kbd_hardware_type	Specifies the default console keyboard type.
language	Specifies the console keyboard layout.
os_type	Specifies the operating system and sets the appropriate console interface.
pci_parity	Disables or enables parity checking on the PCI bus.
pk*0_fast	Enables fast SCSI mode.
pk*0_host_id	Specifies the default value for a controller host bus node ID.
pk*0- oft-term	Enables or disables SCSI terminators on systems that use the QLogic ISP 1020 SCSI controller.
tga_sync_green	Specifies the location of the SYNC signal generated by the DIGITAL ZLXp-E PCI (PBXGA) graphics accelerator option.
tt_allow_login	Enables or disables login to the SRM console firmware on other console ports.

11.5 SRM variables usually have several options or flags. These are explained below:

11.5.1 *auto_action* specifies the action the console takes any time the system powers up, fails, or resets. When the setting involves autobooting, the system boots from the default boot device specified by the value of the *bootdef_dev* environment variable. The syntax is:

set auto_action *option*

where the options are:

halt - The system remains in console mode after powerup or system crash.
boot - The system boots automatically after powerup and halts after crash.
restart - The system boots automatically after powerup or system crash.

11.5.2 *bootdef_dev* specifies one or more devices for booting the operating system. When more than one device is listed, the system searches in the order listed and boots from the first device with operating system software. The syntax is:

set bootdef_dev *boot_device*

where the *boot_device* is the system disk (in most cases, dka0).

11.5.3 *boot_osflags* passes information to the *boot* command. That information is dependent on the operating system to be booted. The syntax is:

set boot_osflags *option*

where the options are:

a - Boot to multiuser mode (X-windows) using /vmunix as the boot file.
i - Boot to single-user after prompting the user for a filename (the file must be in the / [root] directory, such as vmunix or genvmunix).
s - Boot to single-user mode using /vmunix as the boot file.
D - Boot to single-user mode using /vmunix as the boot file. If the system crashes, it does a complete memory dump.

11.5.4 *ew*0_mode* sets an Ethernet controller to run on an AUI, ThinWire, or Twisted-Pair Ethernet network. The syntax is:

set ew*0_mode *option*

Note that the first network card is always *ewa0*. A second network card will show up as *ewb0*. A third would show up as *ewc0* and so forth. The options are shown below:

aui - For AUI devices.
bnc - For ThinWire devices.
fast - For 100-Base-T devices
fastfd - For full duplex 100-Base-T devices.
full - For full duplex 10-Base-T devices (Twisted-Pair).
twisted - For 10-Base-T devices (Twisted-Pair).

11.5.5 *ew*0_protocols* enables network protocols for booting and other functions. The syntax is:

set ew*0_protocols *option*

The options are:

mop - This is the default and sets the network protocol to mop (Maintenance Operations Protocol), the setting typically used with the OpenVMS operating system.
bootp - Sets the network protocol to bootp, the setting typically used with Digital Unix.
bootp,mop - When both are listed, the system attempts to use the mop protocol first, regardless of which is listed first. If not successful, it then attempts the bootp protocol.

11.5.6 *kbd_hardware_type* sets the keyboard hardware type as either PCXAL or LK411 and enables the system to interpret the terminal keyboard layout correctly. The syntax is:

set kbd_hardware_type *option*

Where the options are:

pcxal - This is the default type and selects the 102-type keyboard layout.
lk411 - Selects the LK411 keyboard layout.

11.5.7 *language* specifies the keyboard layout, which is language dependent. The setting of the language environment variable must match the language of the keyboard being used. The syntax is:

set kbd_hardware_type *option*
Where the options are shown below:

0 - No language (cryptic)
30 - Dansk (Danish)
32 - Deutsch (German)
34 - Deutsch (Schweiz)(Swiss)
36 - English (American)
38 - English (British/Irish)
3A - Espanol (Spanish)
3C - Francais (French)
3E - Francais (Canadian)
40 - Francais (Suisse Romande)
42 - Italiano (Italian)
50 - Japanese (JIS)
52 - Japanese (ANSI)
44 - Nederlands (Netherlands)
46 - Norsk (Norwegian)
48 - Portuguese (Portuguese)
4A - Suomi (Finnish)
4C - Svenska (Swedish)
4E - Belgisch-Nederlands (Dutch)

11.5.8 *os_type* specifies the default operating system. This variable is set at the factory to the setting for the default operating system purchased. This command is used to change the factory default setting. Whenever this option is changed, the system must be reset by using the **Reset** button or the **init** command. The syntax is:

set os_type *option*

Where the options are:

unix - Digital UNIX is the default operating system and the SRM firmware is started during powerup or reset.
openvms - OpenVMS is the default operating system and the SRM firmware is started during powerup or reset.
nt - Windows NT is the default operating system. The SRM firmware is started and it loads and starts the AlphaBIOS firmware during powerup or reset. (If the HALT button is pushed in so that the LED on the button lights, this environment variable is overridden, and the SRM firmware does not load and start the AlphaBIOS console).

11.5.9 *pci_parity* disables or enables parity checking on the PCI bus. Some PCI devices do not implement PCI parity checking, and some have a parity-generating scheme in which the parity is sometimes incorrect or is not fully compliant with the PCI specification. A side effect of this aberrant behavior is that superfluous PCI parity errors are reported by the host PCI bridge. In such cases, the device can be used as long as parity is not checked; disabling PCI parity checking prevents false parity errors that can cause system problems. The syntax is:

set pci_parity *option*

Where the options are shown below:

on - enables PCI parity checking.
off - is the default and disables parity checking.

11.5.10 *pk*0_fast* enables fast SCSI to perform in either standard or fast mode. If the system has at least one fast SCSI device, set the default controller speed to fast SCSI (1). Devices on a controller that connects to both standard and fast SCSI devices will perform at the appropriate rate for the device. If the system has no fast SCSI devices, set the default controller speed to standard SCSI (0). If a fast SCSI device is on a controller set to standard, it will perform in standard mode. The syntax is:

set pk*0_fast *option*

Where the options are:

0 - The controller is in standard SCSI transfer mode.
1 - The controller is in fast SCSI transfer mode.

11.5.11 *pk*0_host_id* sets the controller host bus node ID to a value between 0 and 7. Each SCSI bus in the system requires a controller. Buses can theoretically support up to eight devices; however, the eighth device must always be a controller. Each device on the bus, including the controller, must have a unique ID, which is a number between 0 and 7. This is the bus node ID number. On each bus, the default bus node ID for the controller is set to 7. The only reason to change the bus node ID is if two or more controllers are on the same bus. To list the controllers on the system, enter the command **sho device**. SCSI devices begin with the letters *pk* (for example *pka0*). The third letter is the adapter ID for the controller. The syntax is:

set pk*0_host_id *scsi_node_id*

Where the value for *scsi_node_id* is the bus node ID, a number from 0 to 7.

11.5.12 *pk*0_soft_term* enables or disables SCSI terminators for optional SCSI controllers. This environment variable applies to systems that use the QLogic SCSI controller, though it does not affect the onboard controller. The QLogic ISP1020 SCSI controller implements the 16-bit wide SCSI bus. The QLogic module has two terminators, one for the low eight bits and one for the high eight bits. The syntax is:

set pk*0_soft_term *option*
Where the option values are:

off - Disables termination of all 16 bits.
low - Enables low eight bits and disables high eight bits.
high - Enables high eight bits and disables low eight bits.
on - Enables all 16 bits (default setting).
diff - Places the bus in differential mode.

11.5.13 *tga_sync_green* sets the location of the SYNC signal generated by the optional ZLXp-E PCI graphics accelerator (PBXGA). The parameter is a bit mask, where the least significant bit sets the vertical SYNC for the first graphics card found, the second for the second found, etc. The default for this environment variable is *ff*. The default must be reset to *00* so the graphics monitor on a system with a ZLXp-E PCI graphics accelerator will synchronize. The syntax is:

set tga_sync_green *value*

Where the values are:

ff - Synchronizes the graphics monitor on systems that do not use a ZLXp-E PCI graphics accelerator.
00 - Synchronizes the graphics monitor on systems with a ZLXp-E PCI graphics accelerator.

11.5.14 *tt_allow_login* enables or disables login to the SRM console firmware on alternate console ports. If the environment variable *console* is set to *serial*, the primary console device is the terminal connected through the COM1 port. The command **set tt_allow_login 1** enables logins through either the COM2 port or a graphics monitor. The syntax is:

set tt_allow_login *value*

Where the values are:

0 - Disables login through the COM2 port or a graphics monitor.
1 - Enables login through the COM2 port or a graphics monitor (default).

12.0 LIST OF APPROVED WORKSTATION ABBREVIATIONS.

ad	Active Document Server
am	Adaptive Matcher
cs	Certification Station
cv	Civil Verification Station
dg	DSR/MSS
dm	DSR/MMC
ds	DSR2000 Data Storage and Retrieval Workstation
em	Expert Matcher
es	Enrollment Station
id	IDS2000 Identity Station
ls	LS2000 Latent Workstation
lv	LSS2000 Livescan Workstation
mc	MMC2000 Minutiae Matcher Controller
md	MDS2000 Mugshot Display Station
mg	MCS2000 Mugshot Capture Station
mp	MMP2000 Minutiae Matcher Processor
ms	MSS2000 Mugshot Server
na	NIST Archive
ns	NIST Server
qs	Queue Server
rg	SRG Report Generator
sr	Storage Retrieval Server (CHS)
tp	Transaction Processor
vs	VS2000 Verification Workstation
wf	Workflow File Server (CHS)
ws	IS2000 Input Workstation

13.0 LIST OF ASSIGNED SITE ABBREVIATIONS.

gu	Guam
nc	North Carolina
sc	Shelby County
kx	Knoxville
bu	Bullhead
ne	Nebraska
nm	New Mexico
al	Albuquerque
ss	Secret Service
pr	Puerto Rico
fc	File Conversion
sw	Switzerland
pc	Pinellas County
la	Louisiana Test Suite
gr	Greece
ca	Cambridge
na	Namibia
ir	Garda (Ireland)
fl	FDLE
nv	Novaris
ks	Kansas
wm	West Midlands
cz	Czech Republic
ma	Macau
nl	Netherlands
ok	Oklahoma
tb	Tennessee Bureau of Investigation (TBI)
br	Louisiana (Baton Rogue)
je	Louisiana (Jefferson County)
in	Immigration Naturalization Service (INS)