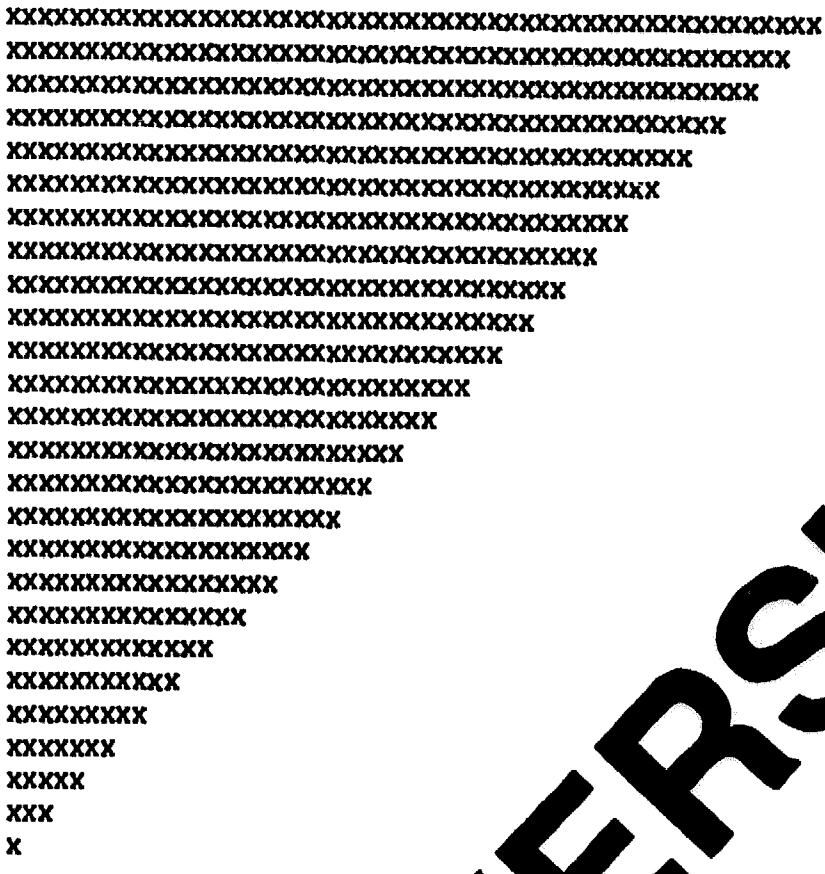

COVER
LETTER

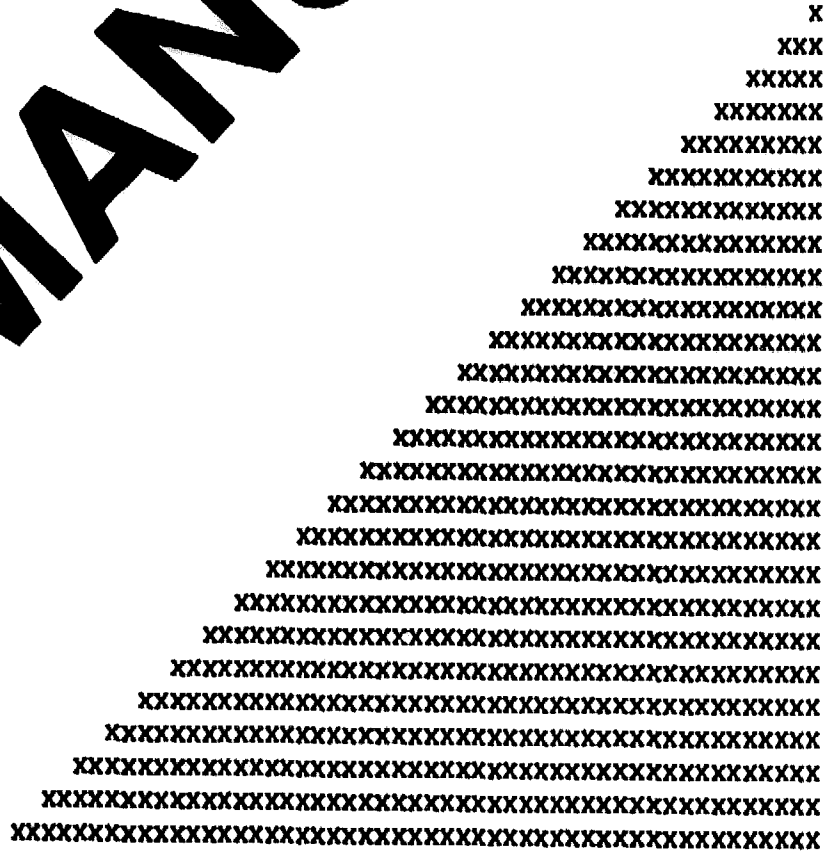
Cover Letter for the DECsystem 5400/5500 Upgrade Kit

This upgrade kit (Part # EK-D5455-KT) contains the following manuals:

EK-D5455-CG-001	DECsystem 5400/DECsystem 5500 System Conversion Guide
EK-427AA-CS-001	DECsystem 5400/5500 Operation Supplement



CONVERSION MANUAL



DECsystem 5400 to DECsystem 5500 System Conversion Manual

Order Number EK–D5455–CG–001

Digital Equipment Corporation
Maynard, Massachusetts

First Printing, August 1990

Printed in U.S.A.

The Reader's Comments form at the end of this document requests your critical evaluation to assist in preparing future documentation.

FCC NOTICE: The equipment described in this manual generates, uses, and may emit radio frequency energy. The equipment has been type tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such radio frequency interference when operated in a commercial environment. Operation of this equipment in a residential area may cause interference, in which case the user at his own expense may be required to take measures to correct the interference.

S1455

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Preface

Purpose of This Manual

This manual tells you how to install the DECsystem 5400 to 5500 conversion kit. The 220XR kit converts a DECsystem 5400 to a DECsystem 5500 system.

Who Should Use This Manual

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

Structure of This Manual

This manual contains two chapters, one appendix, and an index:

- Chapter 1 gives you an overview of the conversion process.
- Chapter 2 tells you how to install the conversion kit.
- Appendix A contains forms for the return of customer modules and a list of the Digital Customer Administrative Services (CAS) district offices.
- The Index can help you find the information you need.

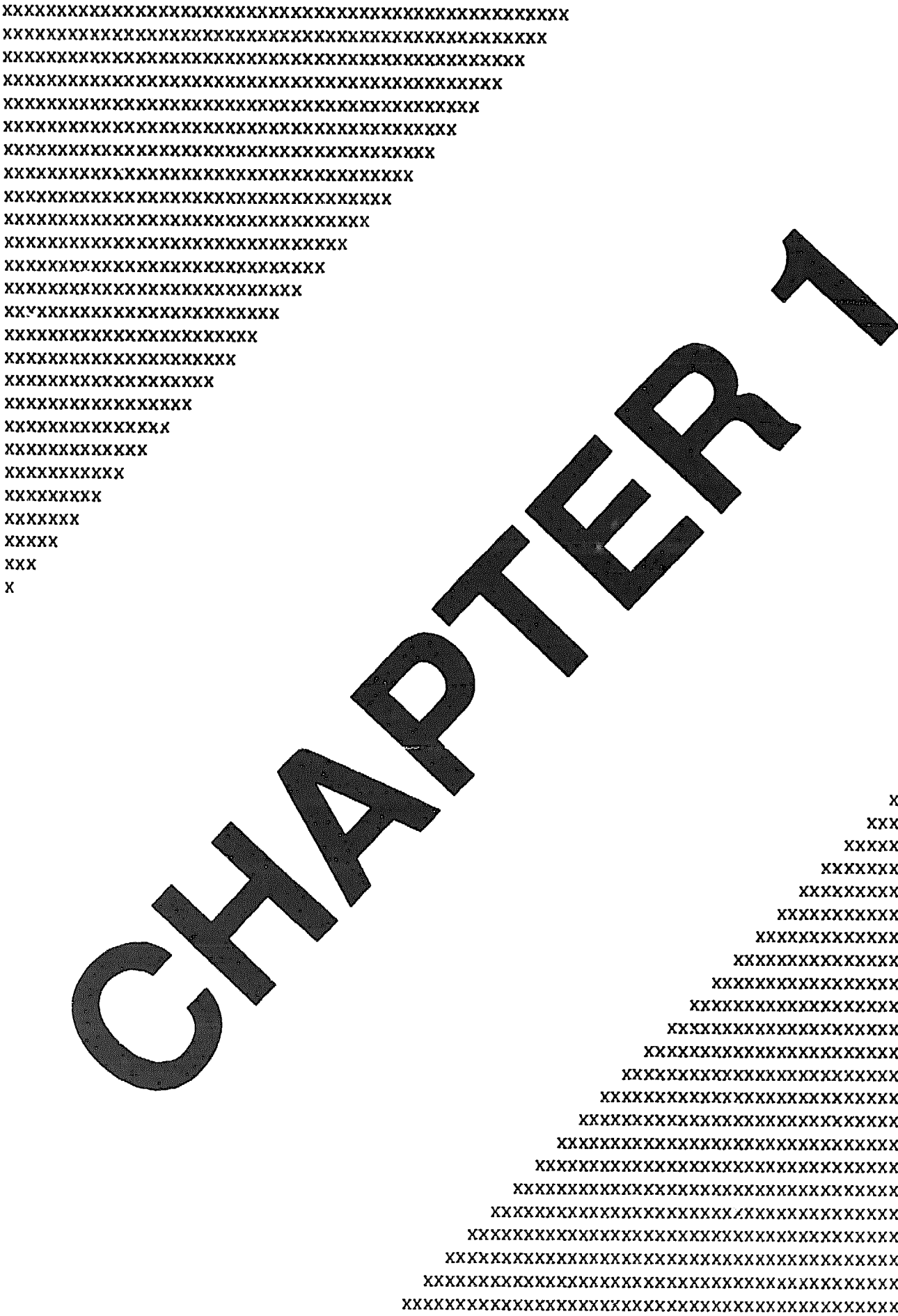
Conventions

Notes, cautions, and warnings in this document contain the following meanings:

NOTE provides general information about the current topic.

CAUTION provides information to prevent damage to equipment or software.

WARNING provides information to prevent personal injury.


CHAPTER 1

Chapter 1
Overview

This manual tells you how to install the DECsystem 5400 to 5500 conversion kit. The 220XR kit converts a DECsystem 5400 to a DECsystem 5500 system. This chapter includes the following sections:

- Customer responsibilities
- Digital Customer Services responsibilities
- Important forms
- Related documents

1.1 Customer Responsibilities

You, the customer, should not install a conversion kit unless you are a licensed self-maintenance customer. If not, you may call Digital Customer Services to schedule a system conversion. Only qualified maintenance personnel should perform the installation procedure.

It is your responsibility to perform a software backup before a Digital service representative arrives at your site.

When the conversion is complete, you may return the old CPU module (and any memory modules that were replaced) to Digital for credit. Appendix A contains forms for you and your Digital service representative to sign.

1.2 Digital Customer Services Responsibilities

To save time, you, the Customer Services representative, should contact the customer and assure that the system software is backed up before you arrive at the conversion site.

NOTE: *Before installing the conversion kit, make sure the system has:*

- *The correct memory variation: MS220–BA*
- *Operating system software at or above the minimum version: ULTRIX–32 V3.0*

Installation, conversion, and testing of the service software are not described in the hardware conversion procedure, but such tasks are part of the overall system conversion.

The customer should contact a Digital sales representative to transfer an existing software product services contract to the DECsystems group, if applicable.

1.3 Important Forms

After you install the conversion kit, complete the forms in Appendix A and remove them from this document by tearing them along the perforation lines. The following forms are required:

- Customer Services Worksheet
- Installation Receipt, both copies
- Return Material Checklist

Give the customer the signed Installation Receipt—Customer Copy. Include the signed Customer Services Copy with the CPU module (and any memory modules) you return to Digital to ensure that the customer receives credit.

Self-adhesive mailing labels are supplied on the last page of this document. Peel off those labels and attach them to the packages containing the old modules.

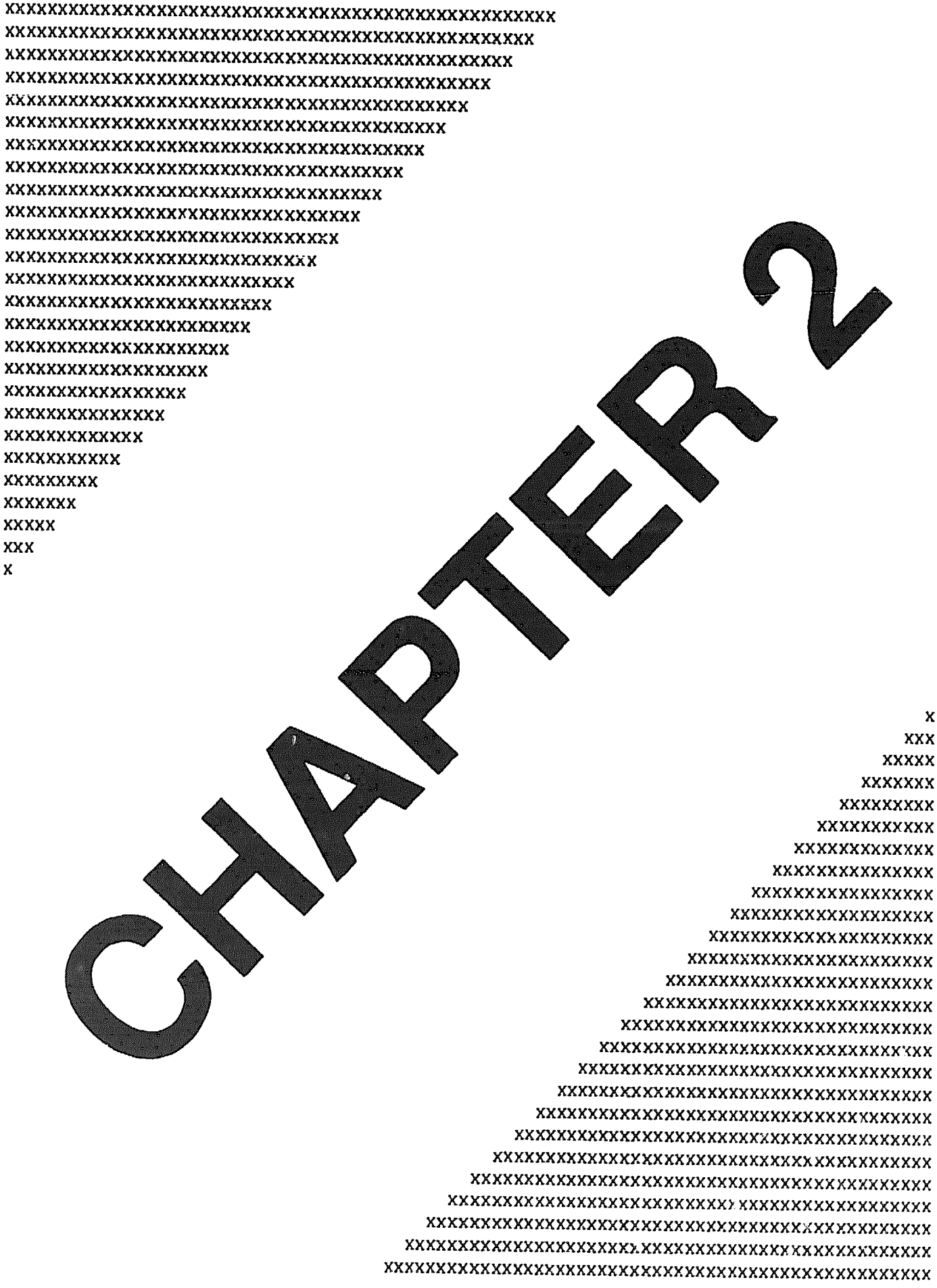
1.4 Related Documents

Table 1–1 lists additional information sources.

Table 1–1: Reference Documentation

Title	Order Number
BA213 Enclosure Maintenance	EK–189AA–MG
H9644 Cabinet Maintenance	EK–221AA–MG
KN220 CPU System Maintenance	EK–375AA–SM
KFQSA Storage Adapter Installation and User Manual	EK–KFQSA–IN

The last character in the 5-character part of the order number (the revision character) could be different, due to manual revisions. For example, EK–189AA–MG could be EK–189AB–MG, due to the revision of the *BA213 Enclosure Maintenance*. However, Digital will automatically ship the latest version, so there is no need to determine the revision level before you order a document.


CHAPTER 2

Chapter 2

DECsystem 5400 Conversion to DECsystem 5500

This chapter tells you how to install the 220XR kit, which converts a DECsystem 5400 to a DECsystem 5500. The following procedures are included in this chapter:

- Before installing the kit
- Unpacking the kit
- Installing the kit

CAUTION: *Memory modules MS650–BA will not function with a KN220–AA CPU module. When a KN210 CPU is removed and the system is converted to a KN220–AA (M7637–AA) CPU:*

- *The MS650–BA (16-Mbyte) memories must be changed to an MS220–BA (32-Mbyte) memory.*
- *The H3602–AB CPU I/O panel must be changed to an H3602–AC (or later) panel.*
- *The CPU module cable must be changed to the new type supplied.*
- *The proper type of memory cable for the number of memory modules need to be installed.*

2.1 Before Installing the Kit

1. Have the customer back up the system disk (usually before Customer Services arrives).
2. Turn on the system and run the diagnostics to verify system operation.
3. Turn off the system before installing the kit.

2.2 Unpacking the Kit

1. Check to be certain that your shipment container has arrived without any damage, such as dents, holes, or crushed corners. If the conversion kit is damaged, please contact your Digital Customer Services representative.
2. Unpack the conversion kit and check its contents against the shipping invoice to see if all the parts were received. Table 2–1 lists the contents of the kit. Table 2–2 lists the ULTRIX–32 software license numbers and gives a brief description of each license.

   CAUTION: *Modules can be damaged by static discharge. When handling them, use the antistatic wrist strap and the antistatic mat in the antistatic kit. That kit is part of the Customer Services toolkit.*

Table 2–1: Kit Contents

Part Number	Description
M7637–AA	KN220–AA CPU module
M7638–AA	KN220–AA I/O module
M7639–AA	MS220–AA 32-Mbyte memory module
70–25775–03	H3602–AC CPU I/O panel
36–26883–A0	Module number label, S-Box, KN220–AA I/O
36–26883–A1	Module number label, S-Box, KN220–AA CPU
36–26883–A2	Module number label, S-Box, MS220–AA memory
36–15946–03	BA213 from/to conversion label
36–15946–04	H9644 from/to conversion label
36–33180–10	Japan PTT number label, BA213

Table 2–1 (Cont.): Kit Contents

Part Number	Description
36–33180–11	Japan PTT number label, H9644
74–34425–44	DECsystem 5500 medallion
17–02700–01	Cable assembly, 50-conductor flat, W/2
17–02700–02	Cable assembly, 50-conductor flat, W/3
17–02700–03	Cable assembly, 50-conductor flat, W/4
17–02700–04	Cable assembly, 50-conductor flat, W/5
29–24262	Antistatic map and wrist strap
EK–D54AA–CM	DECsystem 5400 to DECsystem 5500 Conversion Manual (this document)

Table 2–2: ULTRIX–32 Licenses

ULTRIX–32 Number	Description
QL–VEYAB–BC	ULTRIX–32 2-user base license
QL–716AB–AA	DECnet–ULTRIX 32m license with warranty
QL–VEYAB–BH	ULTRIX–32 64-user upgrade license
QA–VEYA4–H5	ULTRIX–32 64-user TK50 upgrade
QA–VEYA5–H5	ULTRIX–32 unlimited TK50 upgrade
QA–VEYAB–H5	ULTRIX–32 TK50 console upgrade

3. After unpacking and unwrapping the modules, place them on the grounded antistatic mat.
4. Save the packing material to return old modules to Digital.
5. If any item is missing or damaged:
   - Contact the customer's sales representative.
   - Contact the customer's delivery agent.

2.3 Installing the Kit

After you have checked the kit contents against the shipping invoice and all parts are satisfactory, use the following procedure to install the kit.

The DECsystem 5400 system can be mounted in either a BA213 pedestal enclosure or an H9644 cabinet. This procedure covers both systems.

1. Turn off the system and any expanders.
2. Remove the front panel as shown in Figure 2–1, or open the cabinet door as shown in Figure 2–2.

Figure 2–1: Removing Front Panel

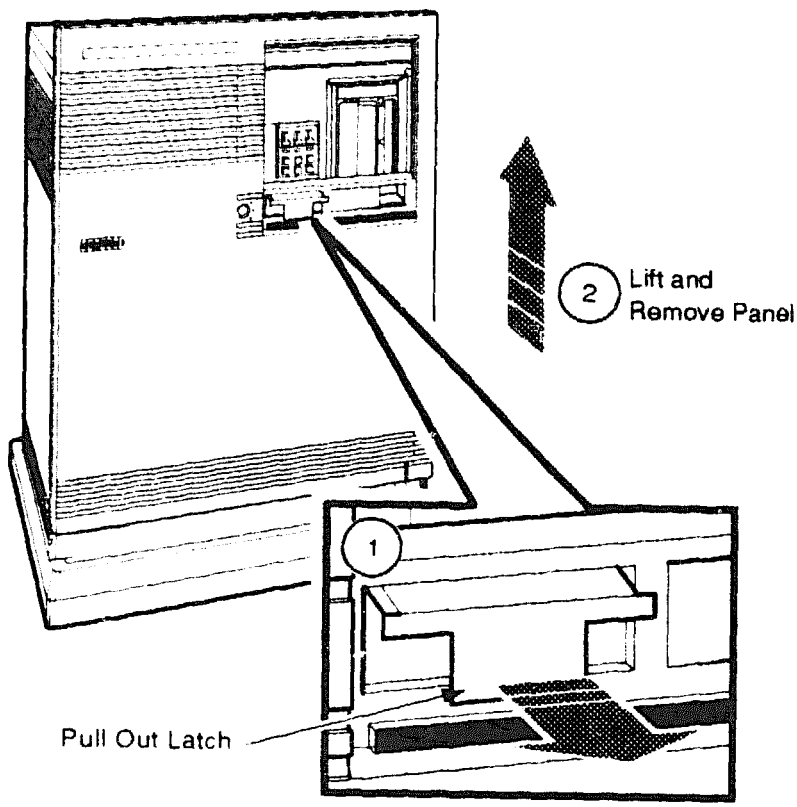


Figure 2–2: Opening Cabinet Door

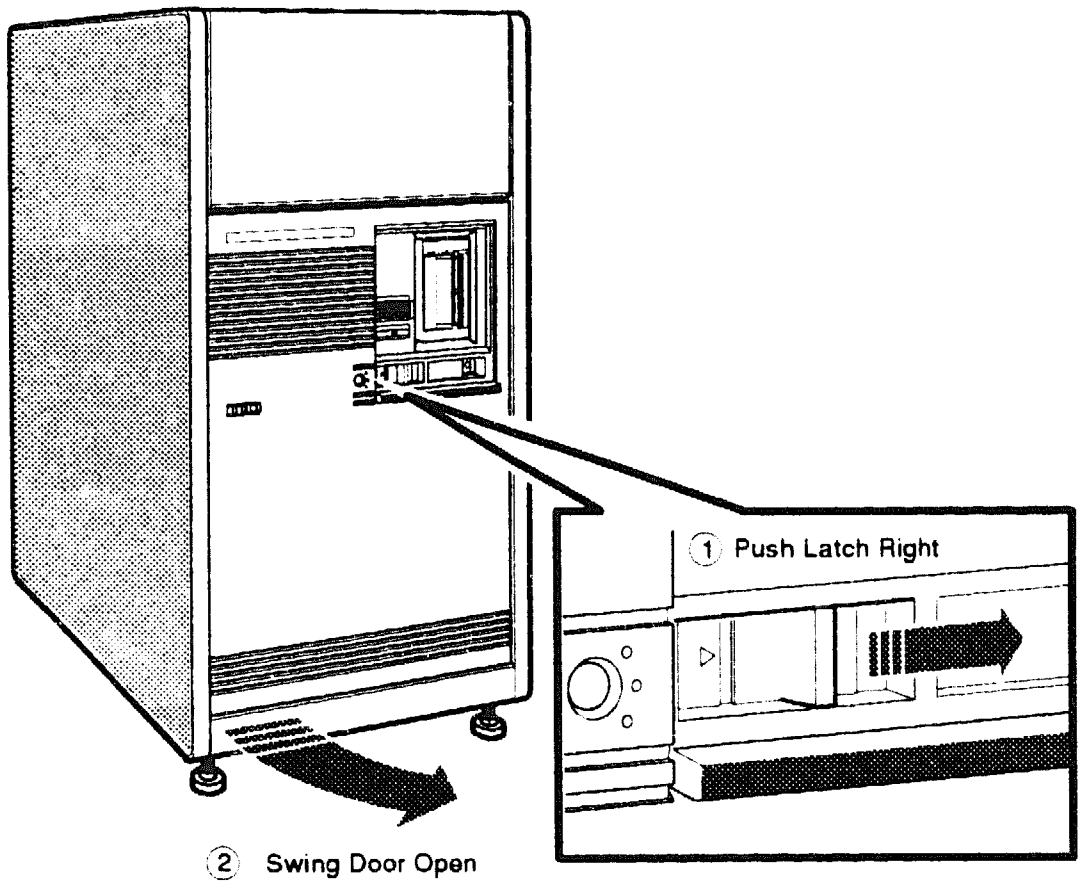
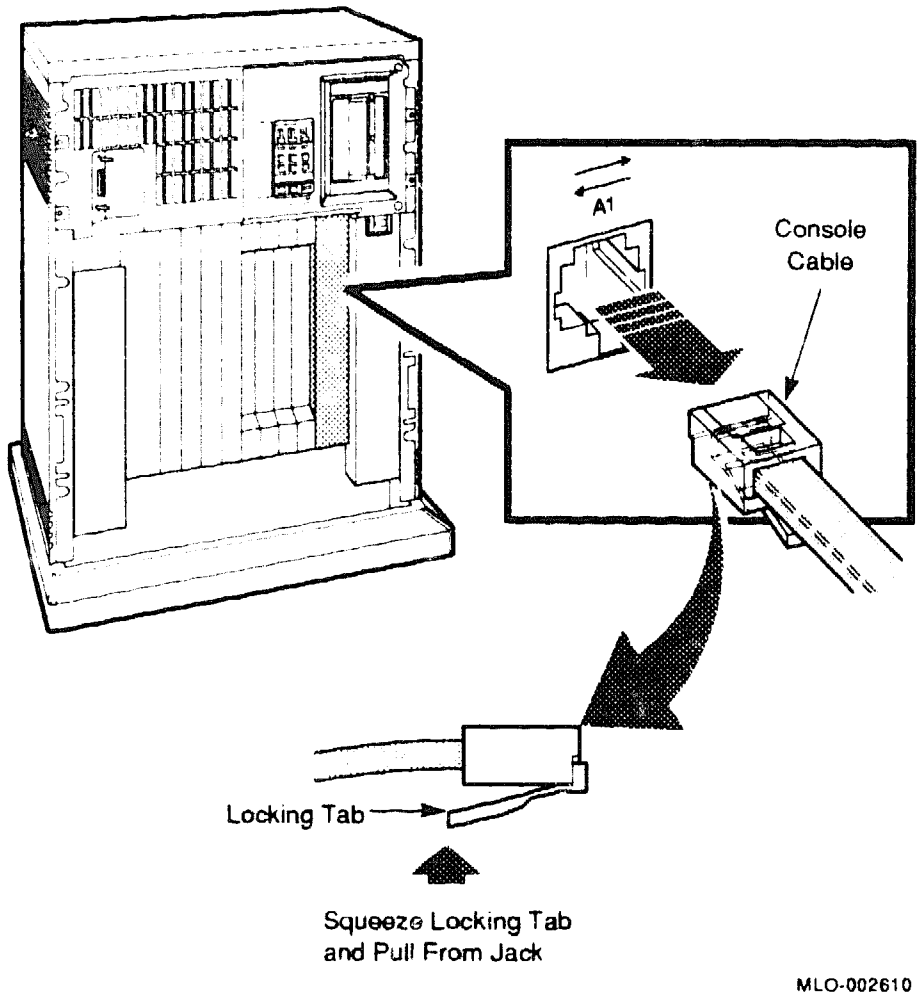


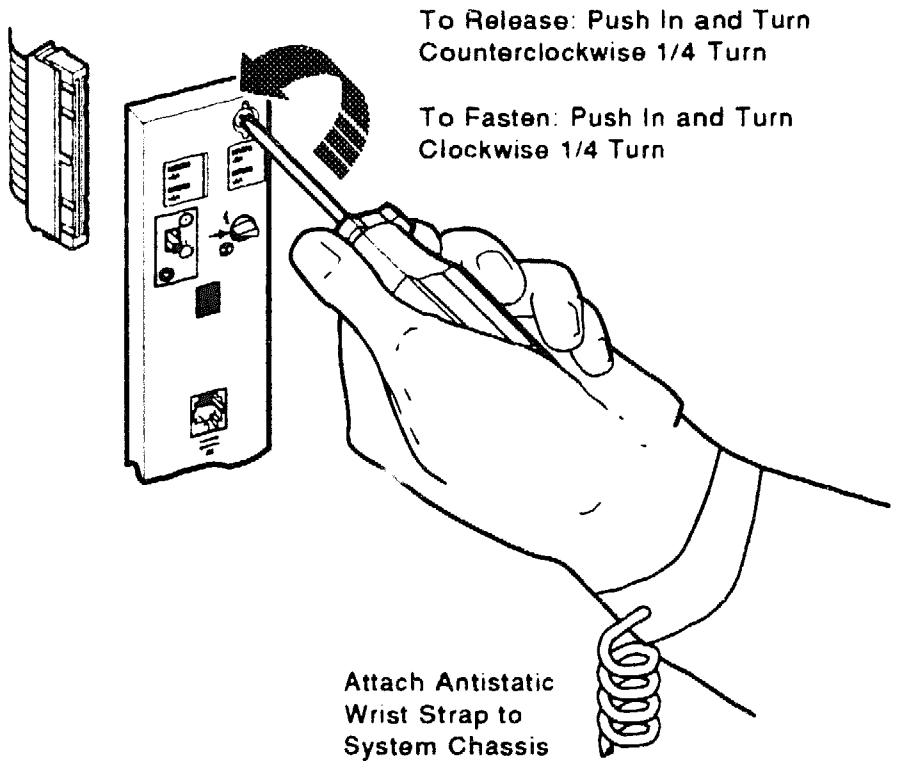
Figure 2–3: Removing Console Cable



3. Remove the console cable connected to the CPU cover panel as shown in Figure 2–3.

   CAUTION: *Use the antistatic wrist strap and the antistatic mat when working with modules.*

Figure 2–4: Removing CPU Cover Panel



4. Remove the CPU cover panel and disconnect the CPU cables as shown in Figure 2–4.

   You can then return the cover to the customer. It will no longer be needed for the conversion.

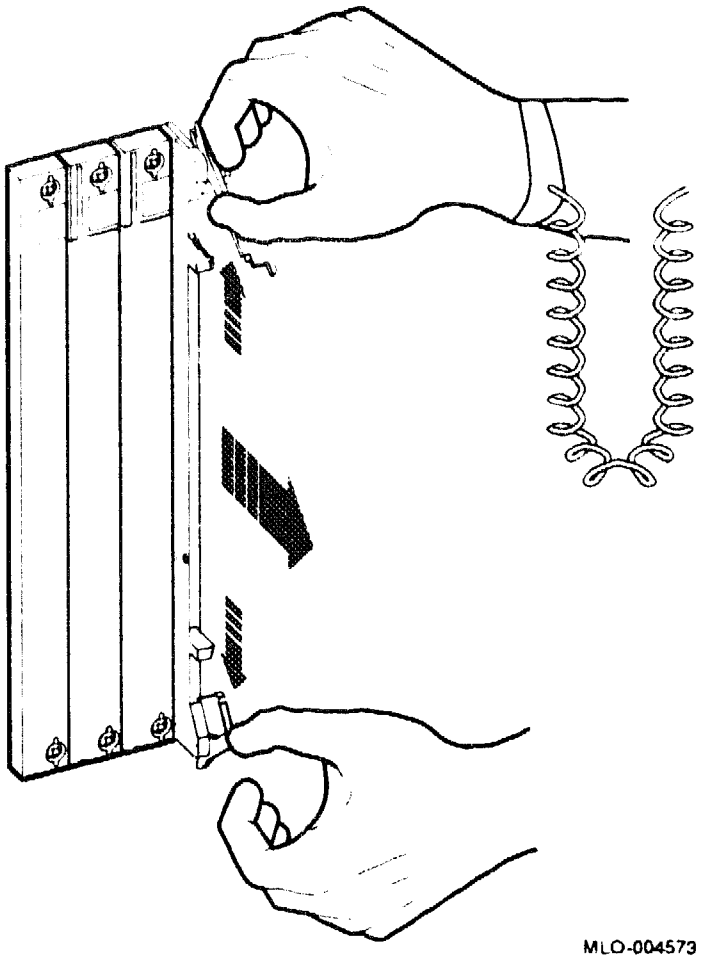
5. Remove the module covers from the memory slots.

   NOTE: *Memory cables are provided in the kit for a memory module connection. Memory conversion is required as part of the CPU conversion. Remove all the single-width memory module covers (70–23981–01) from the memory slots. In step 9 you will install the MS220–AA (M7639–AA) 32-Mbyte memory modules.*

6. Remove the 50-pin daisy-chain memory cable that connects the memory modules and the CPU module.

7. Remove the old CPU module from slots 1 and 2 by pulling them straight out as shown in Figure 2–5.

Figure 2–5: Removing the CPU Module



8. Install the new KN220–AA (M7637–AA) CPU modules (See Figure 2–6 for slot locations).
   - Install the M7638–AA I/O module in slot 1.
   - Install the M7637–AA CPU module in slot 2.
9. Install the MS220–AA memory modules.
10. Install the appropriate memory cable from the CPU to all the memory modules.

    Table 2–3 lists the cables that connect the CPU to memory.

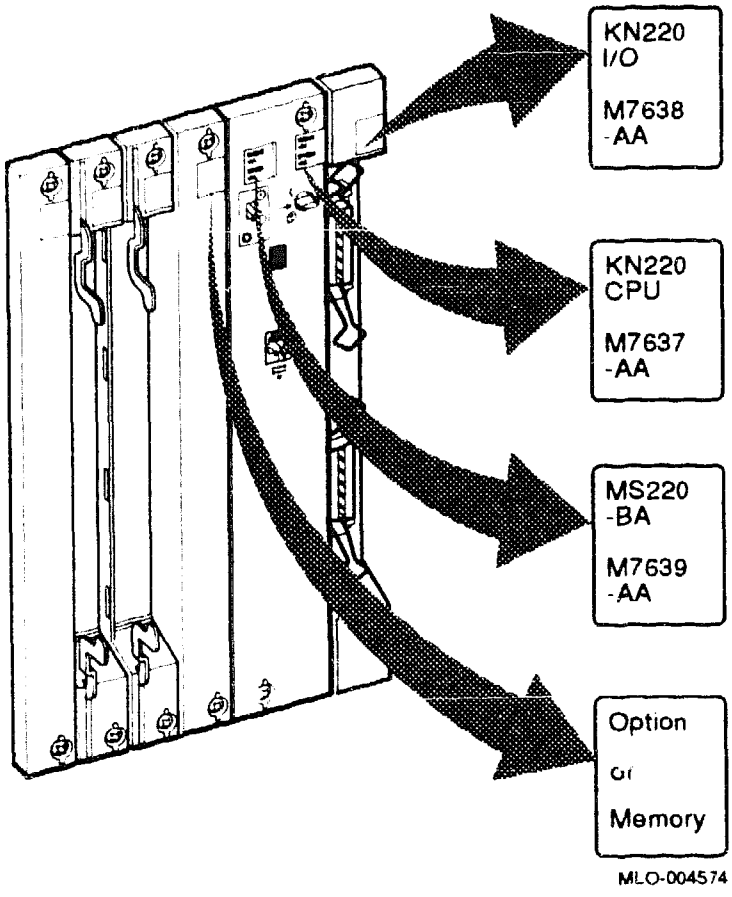
Table 2–3: CPU Cable Connectors to Memory Modules

Part Number	Description
17–02700–01	Cable assembly, 50-conductor flat, W/2
17–02700–02	Cable assembly, 50-conductor flat, W/3
17–02700–03	Cable assembly, 50-conductor flat, W/4
17–02700–04	Cable assembly, 50-conductor flat, W/5

Install the proper cable for the number of memory modules. There should be no spare connectors hanging free.

11. Install the new H3602–AC CPU cover panel by attaching the CPU I/O cable. Install the cover by turning the two screws clockwise at the top and bottom of the cover.
12. Reinstall all module covers and module cover labels.
13. Attach the console cable to the H3602–AC CPU cover panel.
14. Attach the new CPU I/O module label and the new memory module labels to the cover panel as shown in Figure 2–6. Then attach the new memory module labels to the other memory module covers as shown in Figure 2–6.

Figure 2–6: CPU and Memory Module Label Locations



15. Replace the front panel on the pedestal enclosure or close the cabinet door.
16. Turn on the system and run the system diagnostics to verify system operation. Refer to the *KN220 CPU System Maintenance* document for procedures on running system diagnostics and acceptance.
17. Boot or load ULTRIX to confirm proper system operation.
18. Attach the conversion label. Figure 2–7 shows the correct location for the labels on an enclosure and a cabinet system.

    Figure 2–8 shows the correct location for a rack mountable system without a front panel or door.

Figure 2–7: Conversion and PTT Number Label Locations

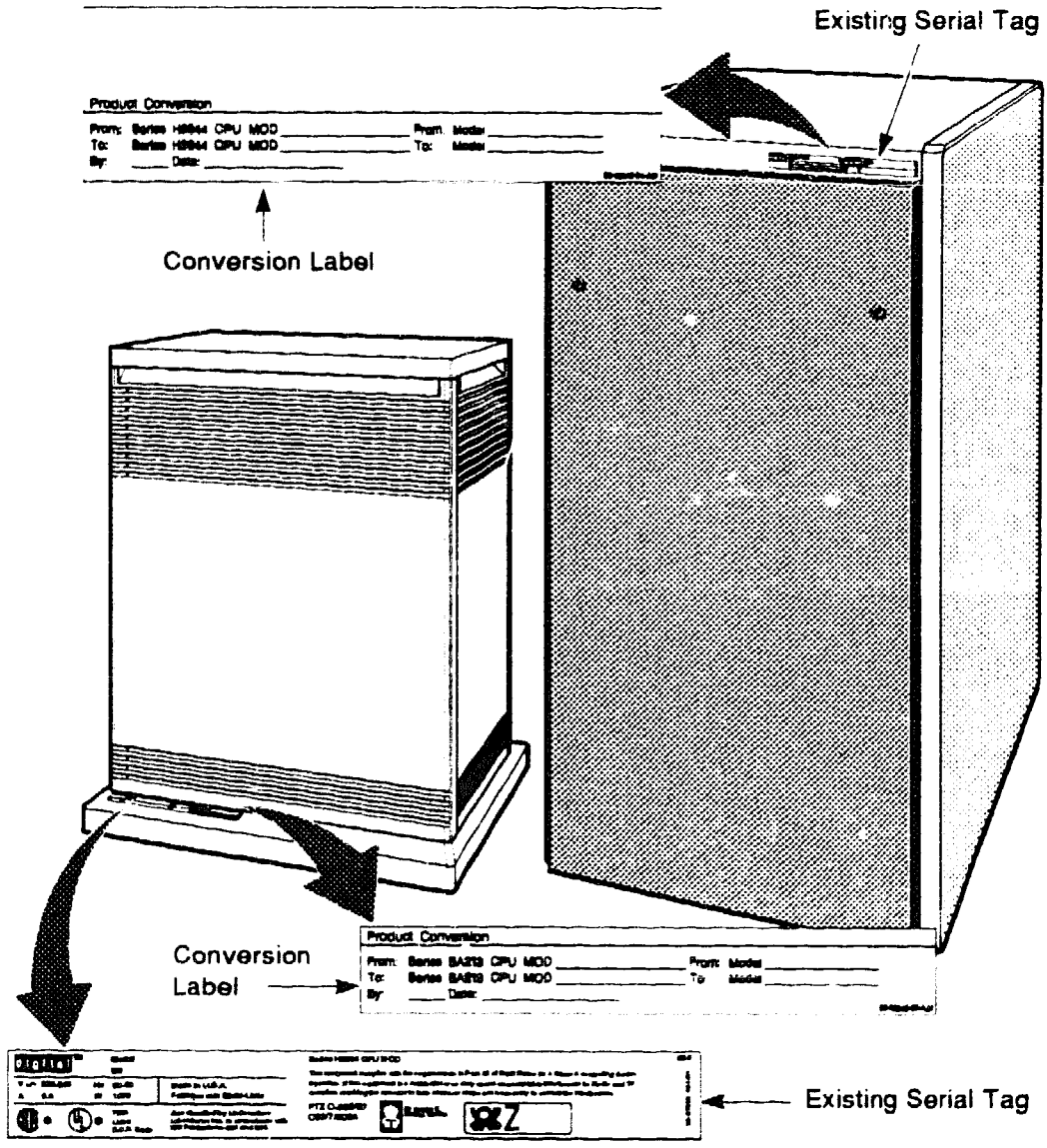
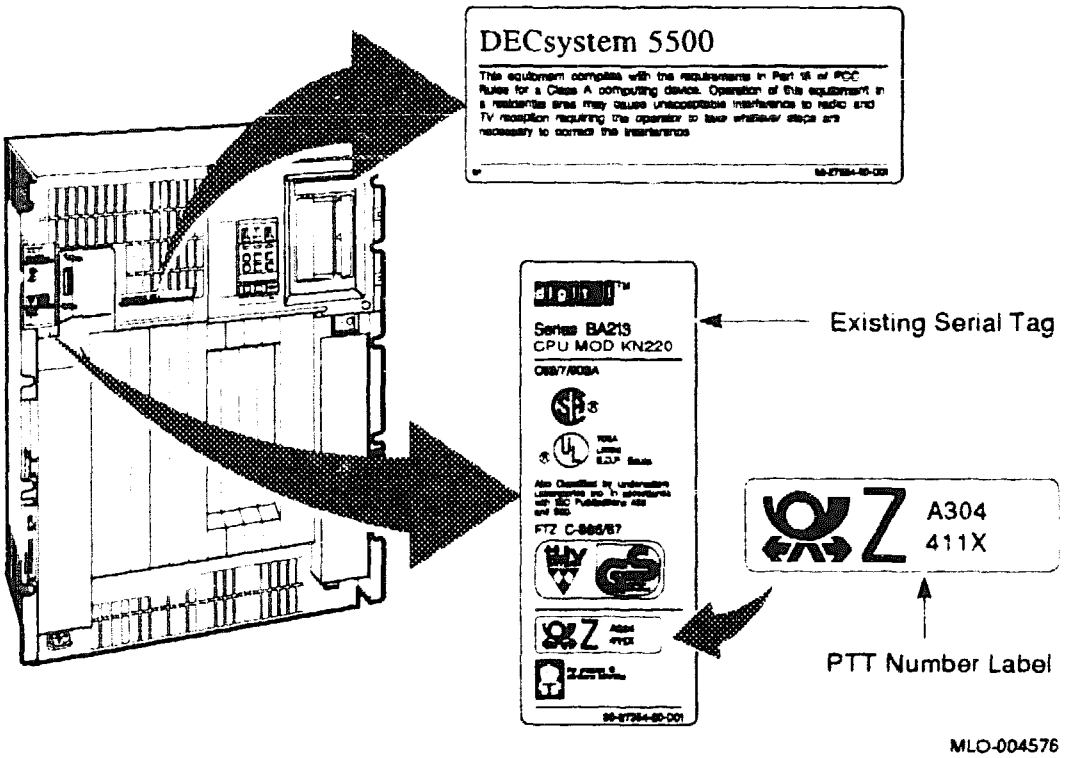


Figure 2–8: Label Locations on System Without Panel or Door

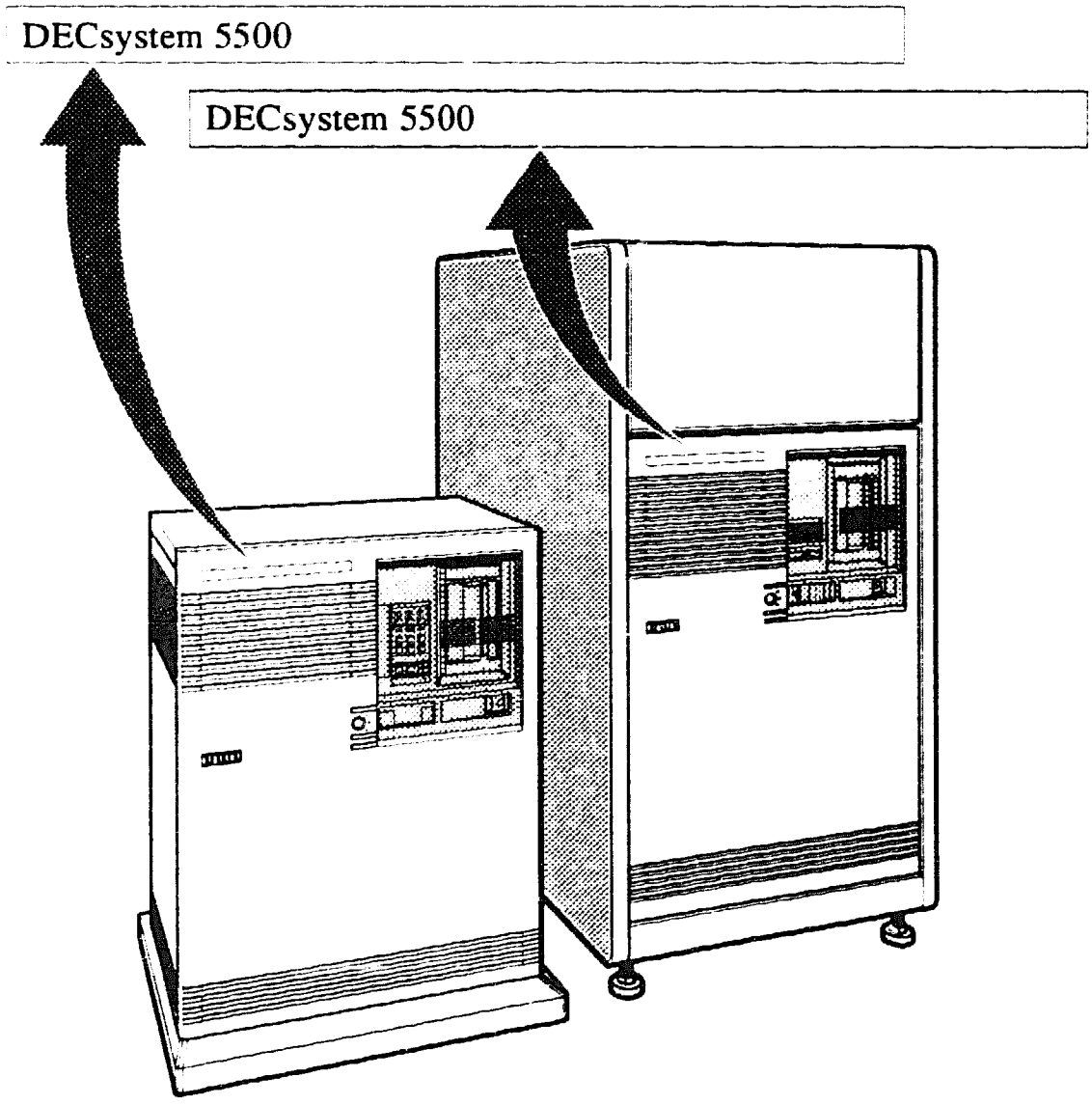


If the upgrade is in Japan, attach the PTT (Postal Telephone and Telegraph) number label shown in Figure 2–8 to the existing serial tag.

19. Remove the old medallion, using a flat-blade screwdriver to lift it off the front panel.

20. Attach the new medallion as shown in Figure 2–9.

Figure 2–9: Medallion Location



21. Have the customer reinstall the system software.
22. Complete and return the forms provided in Appendix A.


APPENDIX A

Appendix A
Module Return Procedure and Forms

Use the following instructions to repackage and return old CPU modules (and memory modules, if any) to Digital. The instructions apply only to U.S. area installations.

For installations outside the U.S. area, contact the local Digital office for return destination instructions. Do not use the mailing labels on the last page of this document.

A.1 Return Procedure

The conversion procedure is not complete until you take the following steps:

1. Use the packaging material set aside from the conversion kit to pack the old modules in the carton that contained the new modules (quad-height module box).

   Pack each module first in the nickel-plated bag, then in the pink plastic wrapping, and finally in the box.

2. Complete the Customer Services Worksheet provided in this appendix. It documents the work you performed.

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

3. Contact your local Digital Customer Administrative Services (CAS) office to obtain information for the Installation Receipt and the Return Material Checklist provided in this appendix. See the list of CAS district offices and their telephone numbers at the end of this appendix.

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

4. Complete both copies of the Installation Receipt.

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

   Return the second copy to Customer Services along with the old modules to ensure that the customer receives credit for the old modules.

5. Complete the Return Material Checklist.

   Return the checklist with the old modules.

6. Place the self-adhesive mailing labels on the last page of this document on the module boxes you are returning.

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

7. Seal the boxes for shipment.

Refer questions regarding the procedure to the local account representative.

A.2 Forms

This section contains the:

- Customer Services Worksheet
- Installation Receipt—Customer Copy
- Installation Receipt—Customer Services Copy
- Return Material Checklist

Customer Services Worksheet

DECsystem 5400/5500 Conversion

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

Customer: _____

System Serial Number: _____

Old System Name: DECsystem 5400

Old System Model Number: _____

Old CPU Module Serial Number: _____

New System Name: DECsystem 5500

New System Model Number: _____

New CPU Module Serial Number: _____

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Installation Receipt—Customer Copy

DECsystem 5400/5500 Conversion

This form acts as a customer receipt and as verification for Customer Services that conversion kit 220XR was installed.

Customer Services:	Complete both copies of this form. Then give a copy to the customer and a copy to the local CAS office for filing with customer documents.
Customer:	Digital will contact you within the next several days to arrange for package pickup and return. Keep this copy as your record of installation by Digital.

NOTE: *Contact the local CAS office to obtain the RA (return authorization) number. See the list of CAS district offices for the closest CAS office. You should have the Digital order number available from the customer order form. Be sure to note with whom you spoke.*

Name of CAS representative: _____ _____ Branch Office: _____, who will arrange for package pickup and return.

Return Authorization Number: _____

Digital Order Number: _____

Converted from: _____

Old CPU Module Serial Number: _____

Converted to: _____

New CPU Module Serial Number: _____

Installation was performed on this day: _____

Module Packed for Return: KN210 _____

Customer Name: _____

Telephone Number: _____

Signatures:

Customer: _____

Customer Services Representative: _____

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Installation Receipt—Customer Services Copy

DECsystem 5400/5500 Conversion

This form acts as a customer receipt and as verification for Customer Services that conversion kit 220XR was installed.

Customer Services:	Complete both copies of this form. Then give a copy to the customer and a copy to the local CAS office for filing with customer documents.
Customer:	Digital will contact you within the next several days to arrange for package pickup and return. Keep this copy as your record of installation by Digital.

NOTE: *Contact the local CAS office to obtain the RA (return authorization) number. See the list of CAS district offices for the closest CAS office. You should have the Digital order number available from the customer order form. Be sure to note with whom you spoke.*

Name of CAS representative: _____ Branch Office: _____, who will arrange for package pickup and return.

Return Authorization Number: _____

Digital Order Number: _____

Converted from: DECsystem 5400

Old CPU Module Serial Number: _____

Converted to: DECsystem 5500

New CPU Module Serial Number: _____

Installation was performed on this day: _____

Module Packed for Return: KN210 _____

Customer Name: _____

Telephone Number: _____

Signatures:

Customer: _____

Customer Services Representative: _____

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Return Material Checklist

Please check off the appropriate items.

KN210 CPU Module (M7635): _____

KN210 I/O Module (M7636): _____

MS650 Memory Module (M7622–AA) Quantity: _____

For DECsystem 5400/5500 Conversion

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

Return Authorization Number: _____

Digital Order Number: _____

Customer Name: _____

Customer Address: _____

Customer Contact: _____

********* INCLUDE THIS FORM WITH YOUR MODULE RETURN *********

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A.3 CAS District Offices

Name, Location	Telephone Number
Allegheny District, Pittsburgh	(412) 244–7410
Carolinas District, Columbia	(803) 798–6477
Chicago District, Chicago	(312) 806–2478
Connecticut District, Meriden	(203) 634–5325
CSS District, Nashua	(603) 884–6549
DECdirect District, Nashua	(603) 884–9115
Florida District, Tampa	(813) 882–6822
Greater Boston District, Waltham	(617) 895–5455
Great Lakes District, Detroit	(313) 344–2285
Los Angeles District, Culver City	(213) 417–4232
Midsouth District, Memphis	(901) 761–6712
New England District, Bedford	(603) 472–6061
New Jersey Commercial District, Piscataway	(201) 562–4728
New Jersey Financial District, New York	(212) 714–2648
New York Financial District, New York	(212) 714–2648
New York Suburban District, Tarrytown	(914) 524–5284
North Central District, Minneapolis	(612) 851–2225
North Texas/Oklahoma District, Dallas	(214) 404–6135
Northwest District, Bellevue	(206) 462–2540
Ohio Valley District, Cincinnati	(513) 984–7739
Philadelphia District, Blue Bell	(215) 834–4115
Rocky Mountain District, Englewood	(303) 649–3073
Santa Clara District, Santa Clara	(408) 496–4274
Southeast District, Atlanta	(404) 257–2282
Southern California District, Costa Mesa	(714) 850–7606
South Texas District, Houston	(713) 953–3918
Southwest District, Tempe	(602) 894–4747

Name, Location	Telephone Number
Upstate New York District, Rochester	(716) 385–7152
U.S. Distribution/Sales District, Marlboro	(508) 480–4259
Virginia District, Landover	(301) 306–2566
Washington DC District, Landover	(301) 459–2890
Washington DC District, FDA Landover	(301) 459–2292


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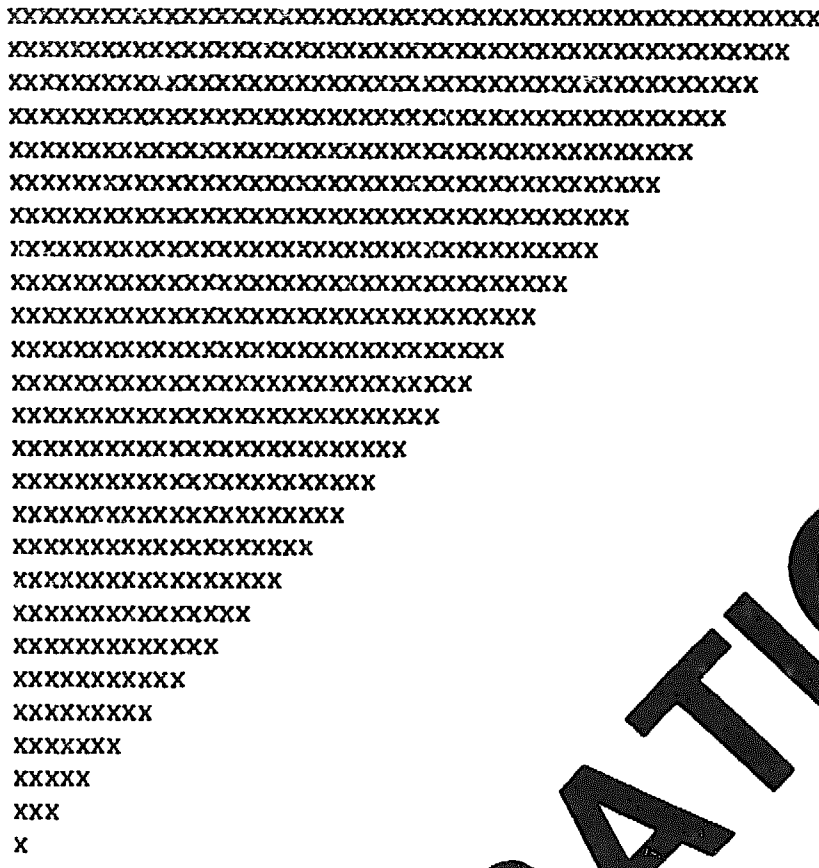
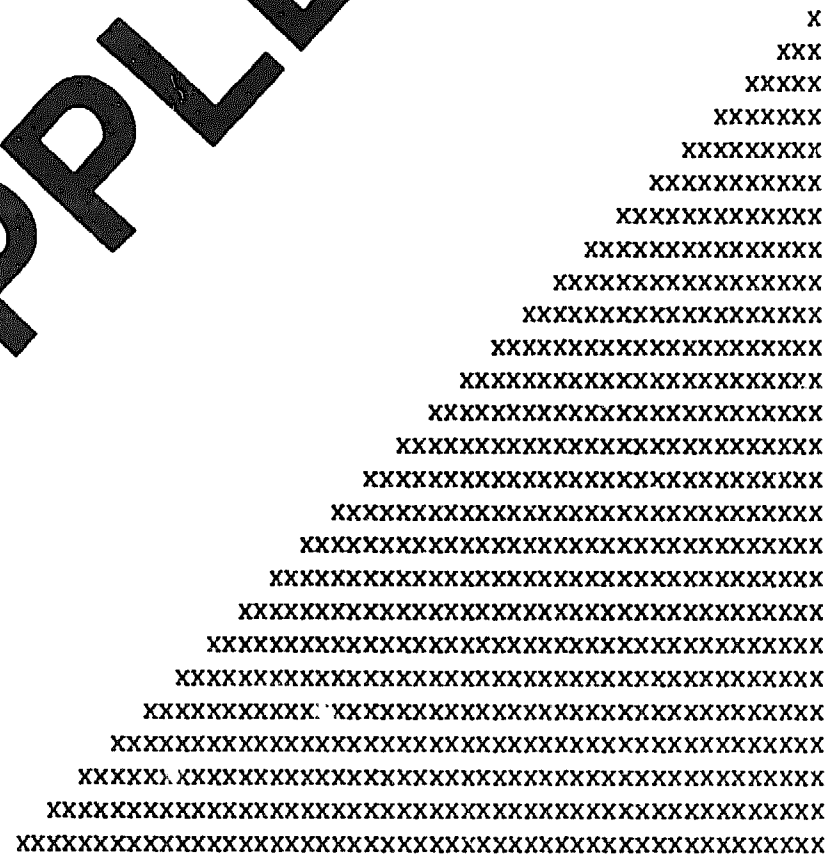


OPERATION SUPPLEMENT



DECsystem 5400
Operation Supplement

Order Number EK–427AA–CS–001

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Maynard, Massachusetts

First Printing, August 1990

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DECsystem 5400	Professional	VAXELN
DECsystem 5500	Q-bus	VAXlab
DECwriter	ReGIS	VMS
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Preface

This manual provides supplementary operation information for those customers who have upgraded their DECsystem 5400 systems with the 220XR–AA conversion kit, which uses the KN220 (DECsystem 5500) CPU module set.

The RISC-based KN220 module set provides additional firmware features and console commands.

The manual is structured as follows:

- Chapter 1 provides information on firmware and console commands.
- Appendix A lists related documentation.

Conventions

The following conventions are used in this manual:

Convention	Meaning
Return	A key name is shown enclosed to indicate that you press a named key on the keyboard.
Ctrl/x	A sequence such as Ctrl/x indicates that you must hold down the key labeled Ctrl while you press another key.
[ ]	Arguments enclosed in square brackets are optional.
Italic type	Italic type indicates an argument for which you must supply a value, environment variables, and references to other documents.
bold	This bold lowercase type indicates a command name. For example: The **setenv** command is described in the next section.

Convention	Meaning
bold user input	This bold upper or lowercase type indicates user input. For example: Type **maint** at the console prompt. or >>>**show device**
NOTE	Notes provide general information about the current topic.
CAUTION	Cautions provide information to prevent damage to equipment or software. Read these carefully.
WARNING	Warnings provide information to prevent personal injury. Read these carefully.

CHAPTER 1

Chapter 1
Operating the System

This chapter describes firmware features and console commands for your upgraded DECsystem 5400.

1.1 Before You Operate the System

This chapter assumes that your system has been properly installed. Installation includes running the diagnostic software shipped with your system and installing the ULTRIX operating system. To install the operating system or layered products, see the instructions in your system software installation manual or layered product installation manual. Some of the instructions may require you to remove the front panel of the system to change switch settings on the CPU cover panel.

NOTE: *The use of Prestoserve™ software, included with your operating system, requires a special CPU configuration. If the line*

```
?79 1 0A FF 0000 0000
```

is displayed during power-up tests, your CPU is not configured to run Prestoserve software. Contact your Digital service representative before running Prestoserve software.

The remainder of this chapter assumes that system software has been installed.

1.2 Switch Settings

Switch settings vary, depending on the operation being performed. The next two sections describe switch settings for normal and for special operations. Set the switches according to your needs.

1.2.1 Normal Operation

Switch settings for normal operation are the following:

- Digital recommends you run the system with breaks disabled (Function switch down, dot outside the circle) to prevent the user from

inadvertently halting the system by pressing Break on the console terminal. Halting the system causes all activity to stop.

- The Operation switch on the CPU cover panel is set to Normal (indicated by an arrow).
- The baud rate switch inside the CPU cover panel is set to 9600.
- The Write-Protect button for each RF-series ISE is set to out (not lit). This setting allows system software to write to the storage element.
- The Run/Ready button for each RF-series ISE is set to in (glows green when the storage element is not being used). This setting makes the storage element available for use (on-line).
- The Halt button on the SCP is set to out (not lit).
- For expanded systems using power bus cables to link an expander(s), the power switches on all expander power supplies should remain on (set to 1) at all times. The system power supply sends the power bus signal needed to turn the expanders on or off.

1.2.2 Special Operation

Certain operations require that you change some of the normal operating settings.

- If you need the ability to halt the system from the console terminal, for example, when installing system software or performing certain types of backup, set the Function switch to up (dot inside the circle). This allows you to halt the system by pressing Break on the console terminal.
- If you want data on a particular ISE to be write-protected, during backup procedures for example, you must set the Write-Protect switch to in (glows).

  NOTE: *ISEs containing system software and user accounts must remain write-enabled. ISEs containing applications or sensitive data may be write-protected.*

- If you want to use the Language Selection Menu to select a new language for the console program before you turn on your system, set the Operation switch to the Action mode. A human profile indicates the Action mode. Set the Function switch to down (dot outside the circle). When you turn on your system, a Language Selection Menu appears, as shown in Figure 1–1.

Figure 1–1: Language Selection Menu

```
KN220-A Vn.n
 1) Dansk
 2) Deutsch (Deutschland/Österreich)
 3) Deutsch (Schweiz)
 4) English (United Kingdom)
 5) English (United States/Canada)
 6) Español
 7) Français (Canada)
 8) Français (France/Belgique)
 9) Français (Suisse)
10) Italiano
11) Nederlands
12) Norsk
13) Português
14) Suomi
15) Svenska
 (1..15):
```

Select a language by typing in the number listed next to the language. Save the language you have selected by rotating the Operation switch to Normal mode, indicated by an arrow.

NOTE: *If you do not select a language within thirty seconds, the system defaults to English (United States/Canada).*

If the Operation switch is set to Normal mode (indicated by an arrow), then the language selected is saved and is automatically used during subsequent reboots of the system.

NOTE: *If the Operation switch is set to Action mode (indicated by the human profile) and the Function switch is set to down (dot outside the circle), the system will prompt for the language at each power-up.*

If your system has been turned off for more than 10 days, the battery unit that saves the system clock and the language selection may have run down. The Language Selection Menu will automatically display when you power up your system, regardless of the Operation switch setting. Once the system is booted, reset the system clock, as described in your system software manual.

1.3 Turning On the System

Once you have set the switches correctly, you are ready to turn on the system. Use the following procedure:

1. Turn on the console terminal and wait for it to complete its self-tests.
2. Turn on the system by setting the power switch to 1.

When you turn on the power, you should see the indications listed in Table 1–1.

Table 1–1: Normal Power-Up Indications

Indicator	Normal Indication
System DC OK lights (power supply and OCP)	Glow green
AC Present light (power supply)	Glows orange
RF-series ISE Run/Ready lights	Glow green steadily within 20 seconds
RF-series ISE Fault light	Lights temporarily at power-up.
TK70 tape drive indicator lights	Orange, yellow, and green lights glow during self-tests. The green light remains on.
TLZ04 tape drive indicators	Tape and drive indicators flash during self-tests. The drive indicator glows green when self-tests are successfully completed.

If you do not observe the indications in Table 1–1, refer to your system *Troubleshooting and Diagnostics* manual.

Every time you turn on your system, it runs a series of self-tests on the CPU and memory. Your console terminal first displays a line of information identifying the CPU, the version of the firmware, and the version of the hardware. In the sample screens provided in this chapter, the CPU is identified as a KN220–A, and the version of the firmware is indicated as Vn.n. Your system will display actual version numbers. The console terminal then displays a countdown as the system tests itself. Depending on the value of the *bootmode* environment variable, when the self-tests are successful, the system either autoboots system software or goes into console mode, as described in Sections 1.4.1 and 1.4.2.

If your system detects an error during its self-tests, it displays an error summary consisting of several lines of hexadecimal numbers and enters Maintenance mode (>>>). A Digital service representative can use the error

summary to diagnose the system. Depending on the type of error, one or more error summaries may display on the console terminal. A sample error summary is shown in Figure 1–2.

Figure 1–2: Sample Error Summary

```
KN220-A Vn.n
Performing normal system tests.
83..82..81..80..79..78..77..76..75. 74..73..72..71..70..69..68..67..
66..65..

?79 2 06 FF 0000 0007

P1 =28000000  P2 =2807FFFC  P3 =00000000  P4 =00000000  P5 =00000000
P6 =00000000  P7 =00000000  P8 =00000000  P9 =00000000  P10=00000000
P11=00000000  P12=00000000  P13=00000000  P14=00000000  P15=00000000
P16=00000000  P17=00000000  P18=00000000  P19=00000000  P20=00000000
gp =1C270008  sp =B8001B1C  fp =00000000  sr =B048FF04
epc=BFC2903C  badvaddr =00000000  cause =00000000
64..63..62..61..60..59..58..57..56..55..54..53..52..51..50..
49..48..47..46..45..44..43..42..41..40..39..38..37..36..35..34..33..
32..31..30..29..28..27..26..25..24..23..22..21..20..19..18..17..16..
15..14..13..12..11..10..09..08..07..06..05..04..03..
Normal operation not possible.

>>>
```

If possible, print out or copy down the error summary and give it to your Digital service representative.

1.4 Booting the System

DECsystem 5500 systems boot in one of two ways. You can manually boot the system from console mode or you can configure the system to autoboot on power-up. The value of the *bootmode* environment variable determines how the system boots.

1.4.1 Booting the System from Console Mode

When the *bootmode* environment variable is not initialized (as shipped from the factory) the system powers up to console mode (>> prompt) after successfully completing its self-tests.

NOTE: *The memory size and Ethernet address are displayed when self-tests complete successfully.*

Figure 1–3 shows a successful power-up to console mode.

Figure 1–3: Successful Power-Up to Console Mode

```
KN220-A Vn.n
Performing normal system tests.
83..82..81..80..79..78..77..76..75..74..73..72..71..70..69..68..67..
66..65..64..63..62..61..60..59..58..57..56..55..54..53..52..51..50..
49..48..47..46..45..44..43..42..41..40..39..38..37..36..35..34..33..
32..31..30..29..28..27..26..25..24..23..22..21..20..19..18..17..16..
15..14..13..12..11..10..09..08..07..06..05..04..03..
Tests completed.
Memory Size: 16777216 (0x1000000)
Ethernet Address: 08-00-2b-0c-c4-7a
>>
```

NOTE: *If the line*

```
?79 1 0A FF 0000 0000
```

is displayed during power-up tests, your CPU is not configured to run Prestoserve™ software. Contact your Digital service representative before running Prestoserve software.

Loading System Software

To load system software from console mode, use the command

boot [-f *file*] [-s | -m] [-n] [*arg*...]

For example,

```
>> boot -f tm(0,0)
```

tells the system to boot software from a cartridge in the TK70 tape drive. For a complete description of the **boot** command, refer to Section 1.6 on console commands.

Software manuals may instruct you to power up with the Function switch set to breaks enabled, or up (dot inside the circle), and to use the **boot** command.

1.4.2 Autobooting the System

By assigning values to environment variables, you can define a device from which the system will automatically boot at power-up. Use the **setenv** command to assign values to the *bootpath* and *bootmode* environment variables.

The *bootpath* variable specifies a device from which to autoboot. The *bootmode* variable must be set to *a* for the system to autoboot. For example,

```
>> setenv bootpath  rf(0,0,0)vmunix
>> setenv bootmode a
```

defines an RF-series ISE with controller 0, unit number 0, and logical block number 0 as the boot device; and a value of *a* (autoboot) is assigned to the *bootmode* variable. Now, when the system is powered up, the system runs self-tests and, on completion, attempts to load system software from ISE 0. For a complete description of the **setenv** and **unsetenv** commands, refer to Section 1.6 on console commands.

Figure 1–4 shows a successful power-up and automatic boot when a boot device has been specified.

Figure 1–4: Successful Power-Up and Automatic Boot

```
KN220-A Vn.n
Performing normal system tests.
83..82..81..80..79..78..77..76..75..74..73..72..71..70..69..68..67..
66..65..64..63..62..61..60..59..58..57..56..55..54..53..52..51..50..
49..48..47..46..45..44..43..42..41..40..39..38..37..36..35..34..33..
32..31..30..29..28..27..26..25..24..23..22..21..20..19..18..17..16..
15..14..13..12..11..10..09..08..07..06..05..04..03..
Tests completed.

Autoboot:Waiting to load rf(0,0,0)vmunix(CTRL-C to abort)...loading
```

NOTE: *If the line*

```
?79 1 0A FF 0000 0000
```

is displayed during power-up tests, your CPU is not configured to run Prestoserve™ software. Contact your Digital service representative before running Prestoserve software.

Changing the Boot Device

Once you have set the environment variables to recognize a boot device and to autoboot, the system autoboots from that device each time you turn on the system. These environment variables are stored in nonvolatile memory and will remain in effect until you change their values. You can change the variables by using the **setenv** command to assign a new boot device. To display console environment variables and their current values, use the **printenv** command at the console prompt (>>). For a complete description of each console command, refer to Section 1.6.

1.5 Using Console Security

DECsystem 5500 systems have a console security feature as part of the console firmware. The security feature allows you to secure the system. When the system is secure, unprivileged users (users who do not know the security password) are limited to just the **boot** command (with no arguments). Privileged users, knowing the security password, have access to all console commands.

Securing the System

To secure the system, use the **passwd** command as follows:

NOTE: *If unprivileged users are to be allowed to boot the system, the system manager should assign values to the bootpath and bootmode variables before securing the system. Once the system is secure, unprivileged users cannot issue the boot command with arguments.*

1. At the console prompt (>>), enter the set password command,

   passwd -s.

2. At the "New password:" prompt, enter a password of 8 to 32 characters.

   You must retype the password for verification.

3. After the password has been accepted, enter the command

   passwd -u

   which causes the console module to display the unprivileged console prompt (s>). Unprivileged users are limited to the **boot** command with no arguments.

   The following example shows how to secure the system.

```
>> passwd -s
New password:
Retype new password:
New password accepted
>> passwd -u
Memory Size: 16777216 (0x1000000) bytes
Ethernet Address: 08-00-2b-12-81-22
s>
```

4. To maintain security, the Operation switch should remain set to Normal mode (indicated by the arrow) and the front door or panel should be locked.

Privileged Users

By entering the security password, privileged users have access to all the console commands. In the example below, the **passwd** command is used to access the privileged console prompt (>>).

```
s> passwd
Password:
Password accepted.
Memory Size: 16777216 (0x1000000) bytes
Ethernet Address: 08-00-2b-12-81-22
>>
```

For a complete description of the **passwd** command, refer to Section 1.6.13.

Unsecuring the System

Privileged users can remove the security restrictions by using the clear password command, **passwd -c** at the console prompt (>>). For example,

```
>> passwd -c
>>
```

removes all security restrictions from the console firmware. The system is now unsecure.

If you forget the security password, you must use the following procedure to clear the password.

1. Set the Operation switch to the Maintenance mode setting (indicated by a T inside a circle).
2. Press the Reset button on either power supply for cabinet systems, or the Restart button on the Operator Control Panel (OCP) for pedestal systems.
3. After the system completes self-tests, enter the maintenance command **unpriv** at the Maintenance mode prompt (>>>).
4. Reset the Operation switch to the Normal mode setting (indicated by an arrow).
5. Press the Reset on either power supply for cabinet systems, or the Restart button on the OCP for pedestal systems. Wait for self-tests to complete. You can then assign a new security password.

For a complete description of the **passwd** and **unpriv** commands, refer to Section 1.6.

1.6 Console Commands

The console program displays the >> prompt when it is ready to accept commands. Observe the following rules when typing console commands:

- All commands typed at console level are case-sensitive. The console firmware does not recognize uppercase and lowercase letters as the same input.
- Command execution begins when you press Return.
- Enter numeric values as follows:
  - — Enter *decimal values* as a string of decimal digits with no leading zeros (for example, 123).
  - — Enter *octal values* as a string of octal digits with a leading zero (for example, 0177).
  - — Enter *hexadecimal values* as a string of hexadecimal digits preceded by 0x (for example, 0x3ff).
  - — Enter *binary values* as a string of binary digits preceded by 0b (for example, 0b1001).
  - — When reading or writing to memory, you have a choice of data sizes: byte, halfword, or word. Because a word is 4 bytes, successive addresses, when referenced by a word, are successive multiples of 4. For example, the address following 0x80000004 is 0x80000008. An error will occur if you try to specify an address that is not on a boundary for the data size you are using.

Conventions Used in This Section

- Letters in **bold monospace** type are to be typed exactly as shown.
- Letters in *italics* represent arguments for which you supply values. (Note that help and menu screens display these arguments in all capital letters.)
- Arguments enclosed in square brackets ([ ]) are optional.
- Ellipses (...) follow an argument that can be repeated.
- A vertical bar (|) separates choices. You can think of it as a symbol meaning *or*.

- Parentheses are used as in algebraic expressions. For example,

  -(b | h | w)

  means enter -b or -h or -w.

Getting Help

You can get help with console command syntax in several ways:

- You can enter **help** or a question mark (?) to display a menu of all console commands.
- You can enter the name of the command for which you want help as an argument to **help** or **?**.

  For example, entering **?** **e** at the console prompt (>>) displays the syntax for the **examine (e)** command:

```
e [-(b|h|w)] ADDR
>>
```

- If you enter an incorrect command line, you get a help screen.

  For example, the **e** command requires an *addr* argument. Entering **e** **-b** at the console prompt (>>) without entering an address causes the screen to display the correct syntax for the command:

```
e [-(b|h|w)] ADDR
>>
```

Console Commands

Table 1–2 lists the console commands.

Table 1–2: Console Commands

Command	Description
continue	Returns control to the processes interrupted by a **halt** signal
boot	Boots the operating system
d	Deposits data at a given address
dump	Dumps memory to the screen
e	Examines memory
exit[1]	Exits Maintenance mode and returns control to Normal console mode

[1]This command is only available in Maintenance mode.

Table 1–2 (Cont.): Console Commands

Command	Description
fill	Deposits data in an address range
go	Resumes execution of the program in memory
help	Displays the syntax of console commands
?	Displays the syntax of console commands
init	Reinitializes memory
maint	Causes the console to enter Maintenance mode
passwd	Allows you to use the console security feature
printenv	Displays console environment variables
setenv	Sets console environment variables
show device[1]	Displays a list of available devices, their unit numbers, and controller numbers
show dssi[1]	Displays a list of available DSSI storage devices, their unit numbers, and controller numbers
show ethernet[1]	Displays the hardware address of your Ethernet controller.
show scsi[1]	Displays a list of available SCSI storage devices, their unit numbers, and controller numbers
unpriv[1]	Sets the security password to zero
unsetenv	Unsets console environment variables

[1]This command is only available in Maintenance mode.

1.6.1 The boot Command

boot [-f *file*] [-s | -m] [-n] [*arg...*]

This command loads the file that contains the operating system.

- The optional -f flag followed by the *file* parameter specifies the file you want to use during a boot procedure. If you do not specify the -f flag and a file, the file specified by the environment variable *bootpath* is loaded.

  The *file* parameter has the format

  dev([*controller*][,*unit-number*] [,*logical block number*])[*filename*]

  — *dev* indicates the device from which you are booting the operating system. Typical devices are *rf* for RF-series ISEs, *rz* for RZ-series

ISEs, *ra* for RA-series hard disk drives, *tm* for a TK70 tape drive, *tz* for a TLZ04 tape drive, and *mop* for a network. Entering *mop* nullifies the other arguments in the list, so that *file* takes the form *mop*( ). Table 1–3 lists the device names for each device.

Table 1–3: Device Names

Device Type	Protocol	Number of Units	Device Name
RF-series ISE	DSSI	8	*rf*
RZ-series ISE	SCSI	8	*rz*
RA-series fixed-disk	MSCP	4	*ra*
TK70 tape drive	TMSCP	4	*tm*
TLZ04 tape drive	SCSI	2	*tz*
Ethernet adapter	MOP	1	*mop*
Ethernet adapter	TFTP	1	*tftp*

— *controller* indicates the ID number of the controller for the device from which you are booting the operating system.

— *unit-number* indicates the unit number of the device from which you are booting the operating system.

To display a list of devices, their unit numbers and controller numbers, enter Maintenance mode and enter the command **show device** at the Maintenance prompt >>>. After reviewing the display, enter **exit** and press Return to return to the Normal console prompt >>.

Example:

```
>> maint
>>>show device
DSSI Node 0 (R7QJNG)
 -rf(0,0,*)   (RF71)

DSSI Node 1 (TEST2)
 -rf(1,1,*)   (RF71)

DSSI Node 2 (BILLY)
 -rf(2,2,*)   (RF71)

DSSI Node 7 (*)

SCSI Node 0
 -tz(0,0,*) (.....) -DIA0
```

```
SCSI Node 1
 -rz(0,1,*) (RZ56 )

SCSI Node 7 (*)

Ethernet Adapter
 -mop() -EZA0  (08-00-2B-12-81-22)

VME Interface Board - Not Installed

>>>exit
>>
```

As in the preceding example, the **show device** command displays the device names followed by the controller number and unit number in parentheses. The asterisk indicates the logical block number variable, which is determined during installation of the operating system software.

— *logical block number* specifies the absolute block number from the beginning of the disk. Logical block numbers are only meaningful for disk devices.

— *file name* indicates the name of the operating system file.

— The optional -s flag causes the operating system to boot in single-user mode. Unless -s is specified, the system will boot in multiuser mode -m.

— The optional -n flag causes the specified file to be loaded but not executed.

— The optional *arg* parameter contains any information to be passed to the booted image.

Examples:

```
>> boot -f rf(2,2,0)vmunix
```

This command boots the file *vmunix*, located at logical block number 0 of the second RF-series ISE (unit number 2), using controller 2.

```
>> boot -f rz(0,2,0)vmunix
```

This command boots the file *vmunix*, located at logical block number 0 of the second RZ-series ISE (unit number 2), using controller 2.

```
>> boot -f ra(0,0,0)vmunix
```

This command boots the file *vmunix*, located at logical block number 0 of the first hard disk (unit number 0), using controller 0.

```
>> boot -f tm(0,0)
```

This command boots from a TK70 tape drive, which is unit 5 in this example.

```
>> boot -f tz(0,5)
```

This command boots from a TLZ04 tape drive, which is unit 0 in this example.

1.6.2 The continue Command

continue

This command returns control to the processes interrupted by a halt signal. Use this command if you inadvertently halt the system by pressing Break or the Halt button.

Pressing Break or the Halt button causes the system state to be saved in the halt state memory block. When you enter the **continue** command, the system state is reloaded and execution continued.

1.6.3 The d (deposit) Command

d [[-(b | h | w)] [*addr*]] | [-H *reg-name*] *val*

This command deposits a single byte, halfword, or word value at the specified address. If you repeat the command without specifying an address, the data will be deposited in the next word location.

The first parameter, which is optional, indicates the data size. If you do not specify a data size, a word is used.

- Use -b to deposit 1 byte of data.
- Use -h to deposit a halfword (2 bytes) of data.
- Use -w to deposit a word (4 bytes) of data.

The *addr* parameter indicates the address to which you want data written. System address space ranges from 0x80000000 to 0xbf000000.

The -H parameter specifies that the data is to be deposited to a register in the halt state memory block. This memory location is where all the R3000 internal registers are saved when the system is halted. The *reg-name* parameter specifies the name of the particular R3000 internal register for which you want data written.

The *val* parameter contains the data you want deposited at the given address.

Example:

```
>> d -w 0x80000000 0xffffffff
```

This command deposits the value 0xffffffff, with a data size of one word, at address 0x80000000.

Example:

```
>> d -H at 0x00ab
```

This command deposits the value 0x00ab, with a data size of one word, for the R3000 internal register named "at" currently stored in the halt state memory block.

1.6.4 The dump Command

dump [-H] | [[[-(b | h | w)] [-(o | d | u | x | c | B)]] | [-I]] *rng*]

This command shows a formatted display of the contents of memory.

The -H parameter displays the contents of the halt state memory block. All R3000 internal registers are stored in the halt state memory block when the system is halted. The -H parameter option cannot be used with any other command parameter.

The second parameter, which is optional, indicates the data size. If you do not specify a data size, the system uses a word.

- -b displays memory in bytes.
- -h displays memory in halfwords.
- -w displays memory in words.

The next parameter, also optional, determines how data is displayed.

- -o displays memory in octal format.
- -d displays memory in decimal format.
- -u displays memory in unsigned decimal format.
- -x displays memory in hexadecimal format.
- -c displays memory in ASCII format.
- -B displays memory in binary format.

If no format argument is given, hexadecimal format is used.

The -I parameter displays memory in assembly language format.

The *rng* parameter indicates the range of memory you want to see. You can specify the range in one of two ways:

- *addr#cnt* displays the number of addresses specified by *cnt*, beginning at *addr*.
- *addr:addr* displays all values between the specified addresses.

Examples:

```
>> dump 0x80000000#0xf
```

This command uses hexadecimal format to dump the first 15 words of memory to the screen.

```
>> dump -b 0x80000000#0xf
```

This command uses hexadecimal format to dump the first 15 bytes of memory to the screen. The dump display shows rows of address contents. The left-most column gives the address of the first field in each row.

```
>> dump -I 0x80030200:0x80030220
0x80030200:     c048228     jal         0x801208a0
0x80030204:        2021     addu        a0,zero,zero
0x80030208:    8fbf0014     lw          ra,0x14(sp)
0x8003020c:    27bd0018     addiu       sp,0x18
0x80030210:     3e00008     jr          ra
0x80030214:           0     nop
0x80030218:    27bdffe8     addiu       sp,0xffe8
0x8003021c:    afbf0014     sw          ra,0x14(sp)
>>
```

This command displays in assembly language format, all values between the specified addresses. The first column lists the memory location in hexadecimal, the second column lists the contents of the memory location, the third column lists the R3000 assembly language instruction, and the fourth column lists the corresponding operand.

1.6.5 The e (examine) Command

e [-(b | h | w)] *addr*

This command examines the byte, halfword, or word at the specified address. If you repeat the command without specifying an address, the next word location will be examined.

The first parameter, which is optional, indicates the data size. If not given, data size defaults to word. If you do not specify the data size, a word is used.

- -b indicates a single byte.

- -h indicates a halfword.
- -w indicates a word.

The *addr* parameter indicates an address in the range 0x80000000 to 0xbf000000.

When you enter the examine command, a display similar to the following appears:

```
0x80000005:  65 0x41    'A'
```

The left-most field echoes the address you entered.

The next three fields display the contents of the address in decimal, hexadecimal, and ASCII formats, respectively. If the ASCII character is unprintable, it is displayed as an octal value preceded by a backslash: for example, '\032'.

Example:

```
>> • 0x80000000
```

This command examines the word at address 0x80000000. The resulting display might look like this:

```
0x80000000:        1008385985      0x3c1abfc1      '\301'
```

1.6.6 The exit Command

exit

This command is used in Maintenance mode (>>>) to return control to Normal console mode (>>).

Example:

```
>>>exit
>>
```

1.6.7 The fill Command

fill [-(b | h | w)] [-v *val*] *rng*

This command writes a specified value to a range of memory. If you do not specify a value, the system puts zeros in the memory range.

The first parameter, which is optional, indicates the data size. If not given, data size defaults to word.

- -b indicates bytes.

- -h indicates halfwords.
- -w indicates words.

The optional parameter -v *val* specifies the numeric value to write to memory. If you do not specify a value, all zeros are written. If the size of *val* does not match the data size parameter, *val* is truncated or expanded as necessary.

The *rng* parameter indicates the memory range. You can specify the range in one of two ways:

- *addr#cnt* fills addresses beginning at *addr* and continuing for *cnt* locations.
- *addr:addr* fills all locations between the two given addresses.

Example:

```
>> fill -v 0xffffffff 0x80000010:0x800000ff
```

This command sets all bits to 1 at addresses 16 to 255.

1.6.8 The go Command

go [*pc*]

This command transfers control to the indicated entry-point address.

The optional *pc* parameter indicates the entry-point address you want to use.

If you do not specify an entry address, the system uses the entry point of the program module that was most recently loaded. If no program module was previously loaded, the system uses 0 as the entry-point address.

1.6.9 The help Command

help [*cmd*]

This command displays the correct syntax for the console commands.

The optional *cmd* parameter indicates the command for which you want information. If you do not specify *cmd*, the complete console menu appears.

1.6.10 The ? Command

? [*cmd*]

This command functions exactly like the **help** command.

1.6.11 The init Command

init

This command fully initializes the system.

The effect of the **init** command is identical to turning on the power or pressing the Reset button, except that the system does not execute its self-test. The memory size and Ethernet address are displayed.

1.6.12 The maint Command

maint

This command causes the console to enter Maintenance mode (>>>). This command must be used before entering Maintenance mode commands. Its companion command, **exit**, is used to return the console to Normal mode.

Example:

```
>>
>> maint
>>>
>>>exit
>>
```

1.6.13 The passwd Command

passwd [-s | -c | -u]

The four variants of this command are used to control the console security feature. Using the console security feature, you can secure the system and limit unprivileged users (users who do not know the security password) to just the **boot** console command. Refer to Section 1.5 for more information.

The use of the **passwd** command with flags [-s | -c | -u] is restricted to privileged mode (>>), while the use of **passwd** without flags is restricted to unprivileged mode (s>).

passwd -s —This command is used to set a new security password. The security password can be from 8 to 32 characters long. This variant is available only in privileged mode (>>).

passwd -u —This command causes the console user to be unprivileged. The unprivileged console prompt (s>) is displayed.

passwd —This command enables the console user to enter the security password to access the privileged console prompt (>>).

passwd -c —This command removes security restrictions by clearing the security password.

1.6.14 The printenv Command

printenv [*evar*...]

This command displays the current value for the specified environment variable, or for all the environment variables.

The optional *evar* parameter indicates the variable whose value you want to see. If you do not specify a variable, the complete environment variable table is displayed. A typical display looks like this:

```
bootpath=
bootmode=*
console=0
scsiid0=7
scsiid1=7
scsiid2=7
scsiid3=7
scsiid4=7
scsiid5=7
scsiid6=7
scsiid7=7
baud=9600
systype=0x820b0a00
bitmap=0xa3ff0000
bitmaplen=0x1000
memdescriptor=0x5
osconsole=0
```

There are three types of variables: volatile (lost when power resumes), nonvolatile (maintained after power resumes), and fixed (rebuilt when power is turned on). Table 1–4 lists the default variables.

Table 1–4: Default Environment Variables

Variable	Type	Description
bootpath	Nonvolatile	Indicates the default bootpath. The system uses this variable when you type the **auto** command. An example of a bootpath definition is: rf(0,0,0)vmunix.
bootmode	Nonvolatile	Determines what programs run when the system is turned on or reset. Use one of the following codes: *a* Autoboots the operating system using the *bootpath* variable *d* Bypasses self-tests, system enters console mode (>>).
console	Fixed	The system always selects TTY(0) as the console device.
scsiid#	Fixed	The SCSI controller number. The variable may be 0–7. The default value is 7.
baud	Fixed	The baud rate of the console terminal line is determined by the Baud Rate switch inside the CPU cover panel. The factory setting is 9600. For instructions on changing the baud rate, refer to your system *Technical Information* manual. Allowed values are 300, 600, 2400, 4800, 9600, 19200, and 38400.
systype	Fixed	Identifies the processor. Bits 24–31 contain the CPU type; bits 16–23 contain the system type (6 for KN220); bits 08–15 contain the firmware revision level; and bits 00–07 contain the hardware version level.
bitmap	Fixed	Indicates the address of the memory bitmap. The bitmap keeps track of good and bad memory pages. Each bit corresponds to one page in memory; 1 indicates the page is good, and 0 indicates the page is bad. Do not change this variable.
bitmaplen	Fixed	Indicates the length of the memory bitmap. Do not change this variable.
memdescriptor	Volatile	Used to describe the memory configuration of the system. This variable is set using test 9A in Maintenance mode.
osconsole	Fixed	The system always selects TTY(0) as the console device.

1.6.15 The setenv Command

setenv *evar str*

This command assigns new values to the specified environment variable. Refer to the discussion of the **printenv** command for a description of each variable.

- The *evar* parameter indicates the variable you want to set.
- The *str* parameter indicates the value you want to specify.

Example:

```
>> setenv bootmode a
```

The command in the above example assigns a value of *a* to the *bootmode* variable. This will cause the system to autoboot at power-up.

You can also add your own environment variables. These variables are stored in volatile memory. The environment variables table can contain up to 16 variables, for a total of 256 characters.

1.6.16 The show device Command

show device

This Maintenance mode command displays a list of available devices, their unit numbers, and controller numbers. The device names are followed by the controller number and unit number in parentheses.

NOTE: *This command may require a few minutes to list devices.*

Example:

```
>> maint
>>>show device
DSSI Node 0 (R7QJNG)
 -rf(0,0,*)   (RF71)

DSSI Node 1 (TEST2)
 -rf(1,1,*)   (RF71)

DSSI Node 2 (BILLY)
 -rf(2,2,*)   (RF71)

DSSI Node 7 (*)

SCSI Node 0
 -tz(0,0,*) (.....) -DIA0
```

```
SCSI Node 1
 -rz(0,1,*) (RZ56 )

SCSI Node 7 (*)

Ethernet Adapter
 -mop() -EZA0  (08-00-2B-12-81-22)

VME Interface Board - Not Installed

>>>exit
>>
```

1.6.17 The show dssi Command

show dssi

This Maintenance mode command displays a list of available DSSI storage devices. The device names are followed by the controller number and unit number in parentheses.

NOTE: *This command may require a few minutes to list devices.*

Example:

```
>> maint
>>>show dssi
DSSI Node 0 (R7QJNG)
 -rf(0,0,*)  (RF71)

DSSI Node 1 (TEST2)
 -rf(1,1,*)  (RF71)

DSSI Node 2 (BILLY)
 -rf(2,2,*)  (RF71)

DSSI Node 7 (*)

>>>exit
>>
```

1.6.18 The show ethernet Command

show ethernet

This Maintenance mode command displays the hardware address of your on-board Ethernet controller, as well as the address for any additional DESQA Ethernet controller in your system. As in the following example, the DESQA module is indicated by XQA0:

Example:

```
>> maint
>>>show ethernet
Ethernet Adapter
 -mop() -EZA0  (08-00-2B-12-81-22)

Ethernet Adapter 0 (774440)
 -XQA0 (08-00-2B-06-16-F2)
>>>exit
>>
```

1.6.19 The show scsi Command

show scsi

This Maintenance mode command displays a list of available SCSI storage devices. The device names are followed by the controller number and unit number in parentheses.

NOTE: *This command may require a few minutes to list devices.*

Example:

```
>> maint
>>>show scsi

SCSI Node 0
 -tz(0,0,*) (TLZ04)

SCSI Node 1
 -rz(0,1,*) (RZ56 )

SCSI Node 2
 -rz(0,2,*) (RRD40) -DIA2

SCSI Node 4
 -tz(0,4,*) (.....) -DIA4

SCSI Node 7 (*)

>>>exit
>>
```

A second variation of this command, **show scsi/full**, provides the following additional information for each SCSI device:

Device type
Storage capacity
Product identification
Revision number
Removable or fixed storage medium (r or f)

```
>> maint
>>>show scsi/full

Boot  Path    Dev     Cap (in Hex)       Product Id       Revs  r/f
-------------------------------------------------------------------
-tz(0,0,*)    TAPE       4B0 MBs      TLZ04 1989(C)DEC   0304   r
-rz(0,1,*)    DISK       27A MBs      RZ56      (C) DEC   0200   f
-rz(0,2,*)    CDROM      23B MBs      RRD40      TM DEC   250E   r
-tz(0,4,*)    TAPE        5A MBs      ................    ....   r

SCSI Node 7

>>>exit
>>
```

1.6.20 The unpriv Command

unpriv

This Maintenance mode command clears the security password by setting it to zero. This command is used to unsecure the console security feature if you forget the security password. To enter Maintenance mode, set the Operation switch to Maintenance mode (indicated by a T inside a circle). Press the Restart button on the OCP. After clearing the password, you must reset the Operation switch to Normal mode (indicated by an arrow) and press the Restart button again.

1.6.21 The unsetenv Command

unsetenv *evar*

This command removes the specified variable from the environment variables table.

The *evar* parameter indicates the variable you are removing. Refer to Table 1–4 earlier in this section for a description of each variable.

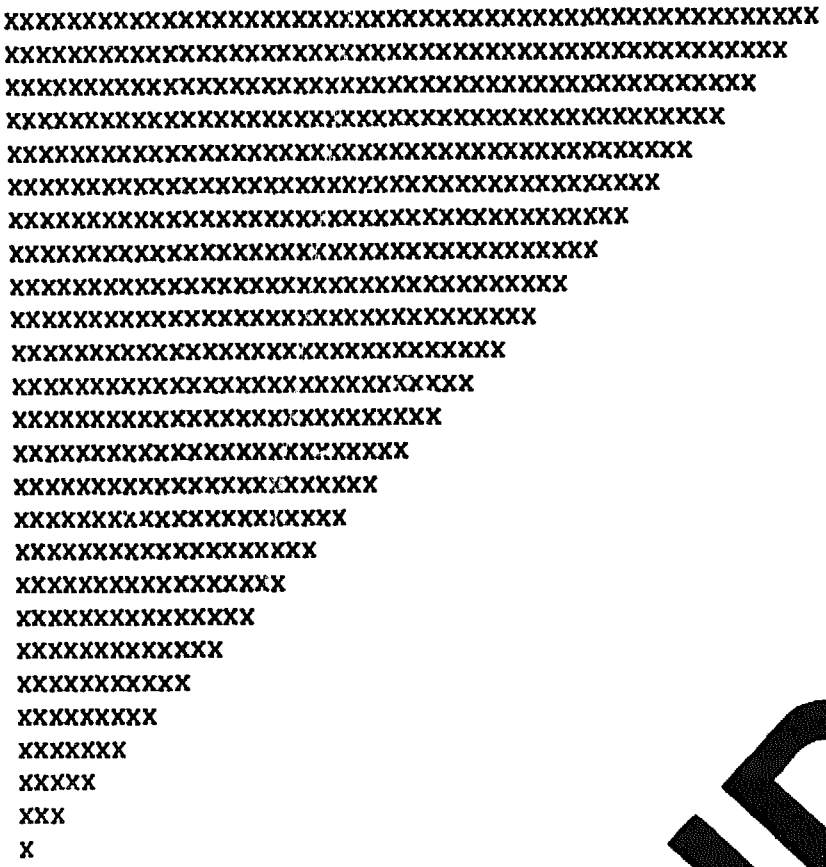
The **unsetenv** command does not affect the environment variables stored in nonvolatile memory. These variables are reset at the next reset or power cycle.

1.7 Control Characters

Table 1–5 lists the key combinations that have an immediate effect in console mode.

Table 1–5: Normal-Mode Control Characters

Character	Action
Return	Also <CR>. Ends a command line. Command characters are buffered until you press Return.
DELETE	Deletes the previously typed character. If you define the console terminal as hard copy (environment variable *term* set to *hardcopy*), the deleted text is displayed surrounded by backslashes. If the console terminal is a CRT (environment variable *term* set to *crt*), each delete is displayed with the sequence <BS><SP><BS>. Deletes received are ignored when there are no characters to be deleted.
CTRL/C	Causes the console to abort the processing of a command.
CTRL/O	Causes console output to be discarded until you enter the next CTRL/O or until the next console prompt or error message is issued. CTRL/O is also canceled when you enter CTRL/C.
CTRL/Q	Resumes console output that was suspended when you entered CTRL/S.
CTRL/R	Causes the current command line to be displayed without any deleted characters.
CTRL/S	Suspends output on the console terminal until you enter CTRL/Q.
CTRL/U	Discards all characters accumulated for the current line.
CTRL/V	Suppresses any special meaning associated with the next character.



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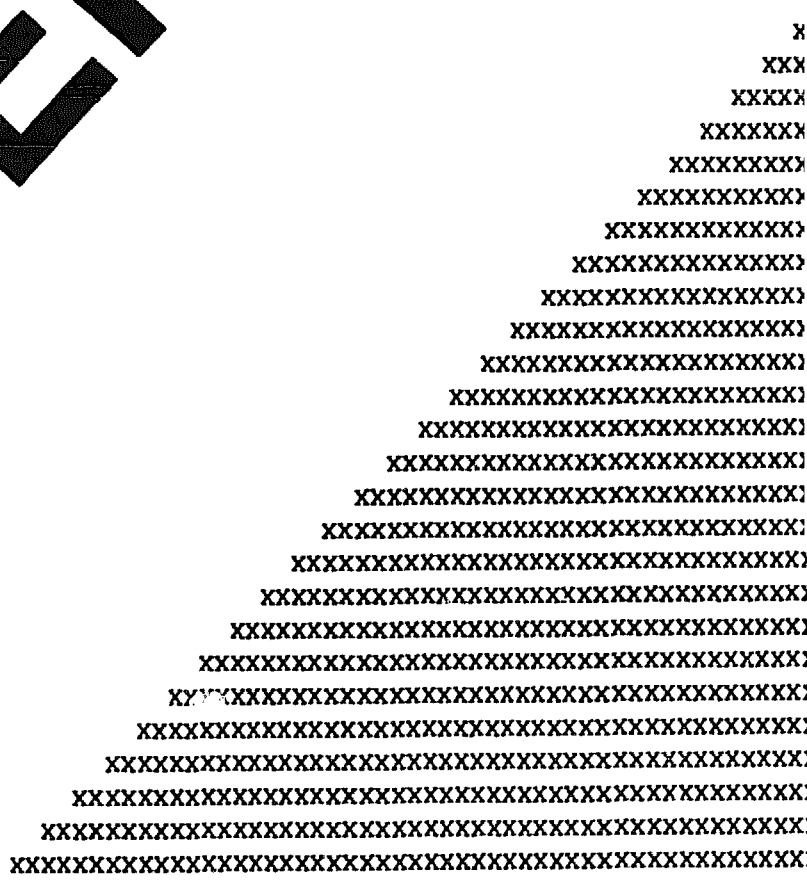

Appendix A
Related Documentation

Document	Order Number
Hardware Documentation	
KN220 CPU System Maintenance	EK–375AA–SM
RF30/RF71 User Guide	EK–RF71D–UG
Software Documentation	
ULTRIX Basic Installation Guide	AA–PBL0A–TE
ULTRIX Guide to System and Network Setup	QA–ME88B–TE
ULTRIX Reader's Guide	AA–ME82B–TE
ULTRIX Guide to Prestoserve for RISC	TBD

Documentation specific to supported options is listed with the option in your system *Technical Information* manual.


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