DEC 3000 Model 400S/600S/700S AXP Rackmount Server Installation/Owner's Guide

Order Number: EK–RSNDP–IN. C01

Revision/Update Information: This is a revised document.

This document was prepared using VAX DOCUMENT Version 2.1.

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Preface

About This Guide

This guide, along with the following manuals as applicable, provides the necessary information to install and operate the DEC 3000 Model 400S/600S/700S AXP Rackmount Server:

- *DEC 3000 Model 400/400S AXP Owner's Guide*

- *DEC 3000 Model 600/600S/700 AXP Owner's Guide*

- *DEC 3000 Model 400/400S AXP Options Guide*

- *DEC 3000 Model 600/600S/700 AXP Options Guide*

This guide provides information for installing the DEC 3000 Model 400S/600S/700S AXP Rackmount Server. Also covered are items unique to the rackmount server, and the removal and installation instructions for failed or damaged Field Replaceable Units (FRUs).

Intended Audience

The instructions in this guide are for Digital service representatives and customer maintenance personnel who are familiar with computer hardware and operating systems. Personnel should be experienced and trained in installing computer and related equipment.

Structure of This Guide

This guide consists of five chapters and five appendices, and is organized into four parts as described in Table 1.

Table 1 Parts Description

Part	Titles	Description
I	Basic Operations	Chapters in Part I describe the DEC 3000 Model 400S/600S/700S AXP Rackmount Server and how to install it in a standard (RETMA) rack or cabinet. Additional information concerning installing, turning on, and maintaining the system are covered in Part I of the *DEC 3000 Model 400/400S Owner's Guide* or *DEC 3000 Model 600/600S/700 Owner's Guide* as applicable. Installation in a rack should be performed by trained service personnel.
II	Advanced Operations	Chapters in Part II provide information on how to gain access to the jumper that enables the Password Security Feature. A complete description of these features and other advanced operations for the system, including using console commands and the alternate console feature are covered in the *DEC 3000 Model 400/400S Owner's Guide* or *DEC 3000 Model 600/600S/700 Owner's Guide* as applicable. These chapters describe advanced system operations.
III	Handling Problems	Refers to Part III in *DEC 3000 Model 400/400S Owner's Guide* or *DEC 3000 Model 600/600S/700 Owner's Guide* as applicable for information on solving a system problem. The information is only applicable if the system is not working properly or if it is displaying errors.
IV	Options and Field Replaceable Units (FRUs)	Identifies options that are not applicable to the DEC 3000 Model 400S/600S/700S AXP Rackmount Server and provides information about the removal and installation of options and FRUs. This information is for trained service personnel.

Conventions

The following conventions are used in this manual:

Convention	Meaning
Note	A note calls the reader's attention to any item of information that may be of special importance.
Caution	A caution contains information essential to avoid damage to the system.
Warning	A warning contains information essential to the safety of personnel.
show config	Lower case letters in this format indicate a command that must be entered as shown. For example: the show config command.
rackmount server	This term refers to the DEC 3000 Model 400S/600S/700S AXP Rackmount Server system.

Important Safety Notes

The following symbols appear on the power supply. Please review their definitions below:

This Dangerous Voltage warning symbol indicates risk of electric shock and indicates hazards from dangerous voltage.

This Attention symbol is used to alert readers about specific safety conditions, and to instruct the reader to read separate instructional material.

_____ **Warning** _____

To avoid the risk of injury, do not remove modules, Integrated Storage Elements (ISEs), fans or the power supply. No user-serviceable parts are inside. Refer servicing questions to your Digital service representative or to your qualified self-maintenance personnel.

This equipment has not been designed for connection to an IT power system (a power system without a directly grounded neutral conductor). This equipment should be plugged into a properly grounded receptacle only.

_____

Part I

Basic Operations

Part I provides an overview of the DEC 3000 Model
400S/600S/700S AXP Rackmount Server and its configuration.
This part also describes how to verify an installation site
and install the system. Detailed information on performing
basic operations is contained in Part I of the *DEC 3000
Model 400/400S AXP Owner's Guide* or *DEC 3000 Model
600/600S/700 AXP Owner's Guide* and will be referred to as
applicable. This part includes the following chapters:

Chapter	Title
1	The DEC 3000 Model 400S/600S/700S AXP Rackmount Server
2	Preparing to Install the Rackmount Server
3	Installing the Rackmount Server

1

The DEC 3000 Model 400S/600S/700S Rackmount Server

Chapter Overview

Introduction

The DEC 3000 Model 400S/600S/700S AXP Rackmount Server (see Figure 1–1) is the rackmount version of the DEC 3000 Model 400S/600S/700S AXP Server described in the *DEC 3000 Model 400 ⁄ 400S AXP Owner's Guide* or *DEC 3000 Model 600 ⁄ 600S ⁄ 700 AXP Owner's Guide.* The systems are functionally the same.

Server Configuration

The DEC 3000 Model 400S/600S/700S AXP Rackmount Server is preconfigured as a server. It does not include a graphics card, and is not shipped with a monitor. The system is shipped with slide assemblies and a cable management system for rack installation. Chapter 2 and Chapter 3 provide information for installing the rackmount server system.

Refer to Chapter 1 in the *DEC 3000 Model 400/400S AXP Owner's Guide* or *DEC 3000 Model 600/600S/700 AXP Owner's Guide* as applicable for information about:

- System features

- Software product descriptions

- Operating systems

- Audio capabilities

- Available options

Figure 1–1   DEC 3000 Model 400S/600S/700S AXP Rackmount Server System
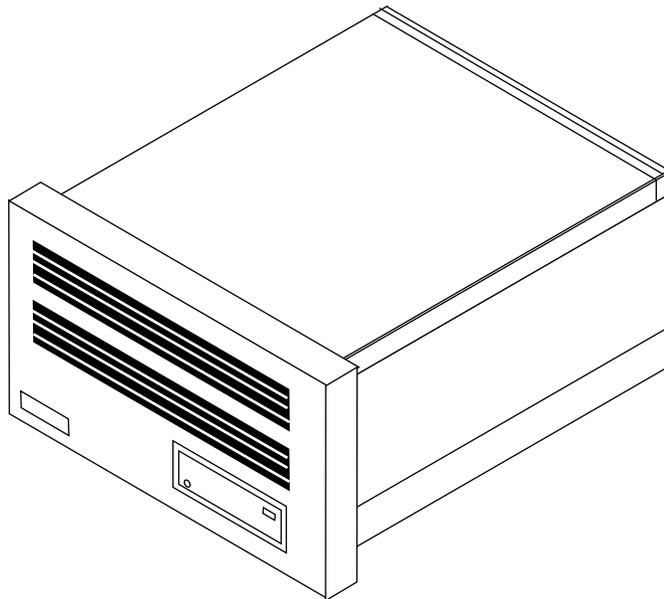
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2

Preparing to Install the DEC 3000 Model 400S/600S/700S AXP Rackmount Server

Chapter Overview

Introduction   Before installing the DEC 3000 Model 400S/600S/700S AXP Rackmount Server, it is necessary to verify the installation site, and be familiar with the system hardware.

In This Chapter   This chapter covers the following topics:

- Verifying the Site Preparation

- Unpacking the Rackmount Server System

- Location of Controls and Indicators

Verifying the Installation Site

Considerations

_____ Caution _____

Review your system warranty. It may require that a Digital service representative install your system to prevent damage to equipment or software.

_____

Before installing the rackmount server system, make sure:

- All cables that you plan to connect to the rackmount server are in place and clearly labeled:

  Terminal data cables
  Telephone cables
  Network cables

- The specifications and conditions listed in Appendix A are met. For additional information about planning and preparing the installation site for a computer network or free-standing system, refer to the *Site Environmental Preparation Guide* (EK-CSEPG-MA) (not shipped with the system).

- The system is located in an area that provides sufficient clearance for ventilation and servicing. Figure 2–1 shows the clearance required around the system.

—————————— **Caution** ——————————

Do not impede airflow by obstructing the front and rear of the unit. Exceeding internal thermal limits can affect system reliability/availability.

—————————— **Warning** ——————————

The system weighs 34 kg (75 lbs). To prevent personal injury and equipment damage, ensure that the system is contained in an enclosure that can be stabilized when the system is pulled out on its slides.

Figure 2–1 System Clearance Requirements

48.3 cm
(19 in)

61 cm
(24 in)

❶

61 cm
(24 in)

61 cm
(24 in)

68.6 cm
(27 in)

❷

61 cm
(24 in)

MK428-31
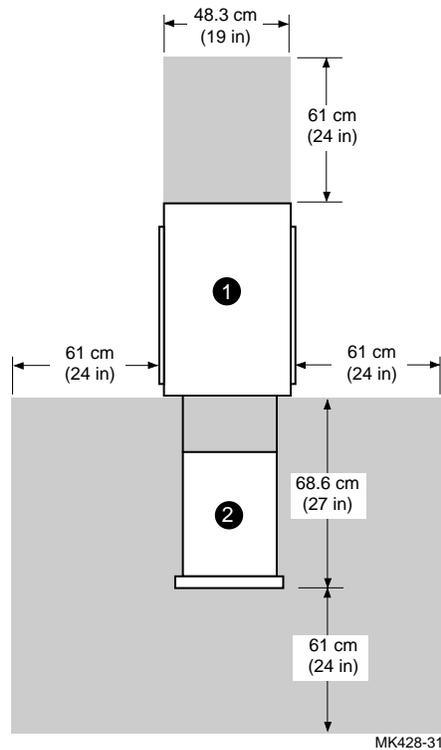
❶ Cabinet or rack   ❷ Rackmount server

Unpacking the Rackmount Server System

Checking the Shipment

_____ **Note** _____

Save all packing materials in case you need to return the system for service or reship the system.

_____

Before installing the system, see Figure 2–2 and check the packing list to ensure that all items listed have been received.

Your shipment may include several cartons. One carton contains the system, hardware documentation, software documentation, system software, diagnostic software, and software licenses.

Depending on your order, your shipment may also include some of the following devices:

- Terminals

- Printers

- Modems

- Options

_____ **Warning** _____

The DEC 3000 Model 400S/600S/700S AXP Rackmount Server weighs 34 kg (75 lbs). Digital recommends that at least two people remove it from the shipping box, as indicated on the packing carton.

_____

If Parts Are Missing

If any parts are missing or damaged, contact your delivery agent immediately, and contact your Digital sales representative.

Screwdriver and Antistatic Wrist Strap

The Phillips screwdriver, flat blade screwdriver, and antistatic wrist strap included in the shipment are for use when adding options or performing removal and installation procedures.

Terminator Connectors

Save the terminator connectors included in the accessory kit in a safe place. Only the Ethernet loopback connector is needed during system installation.

Rackmount Server Components and Parts

Table 2–1 lists the shipping contents shown in Figure 2–2.

Table 2–1   Shipping Contents

❶ Rackmount server (shown with front bezel attached)	❻ Network label
	❼ Antistatic wrist strap
❷ Ethernet loopback connector	❽ Screwdrivers (one Phillips, one flat blade)
❸ Owner's guides, options guide, other documentation	❾ Printer port terminator
	❿ 10BASE-T terminator
	⓫ Modem loopback connector
❹ System power cord	⓬ Pair of slides
❺ SCSI terminator	⓭ Cable carrier

Figure 2–2 Rackmount Server Components and Parts
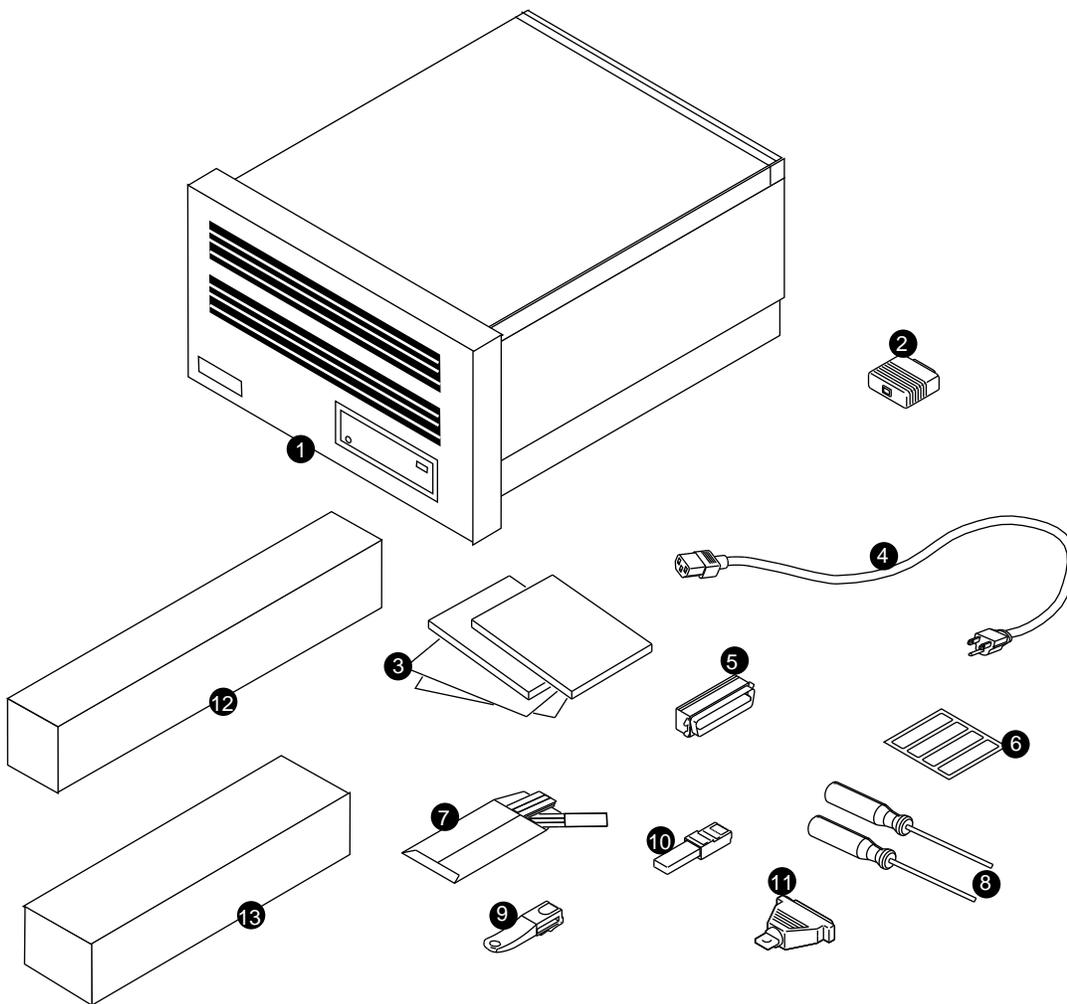
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**Mounting
Hardware**

Table 2–2 lists the mounting hardware included with the system
for installation into a RETMA standard 19-inch rack.

Table 2–2   Mounting Hardware

Description	Part Number	Quantity
Slide assembly	12-32764-05	1 pair
Cable carrier	12-26281-01	1

A Closer Look at the Rackmount Server System

Rear of the Rackmount Server System

The rackmount server has the same ports, switches, and indicators as on the desktop version of the server described in Chapter 2 of the *DEC 3000 Model 400/400S AXP Owner's Guide* or *DEC 3000 Model 600/600S/700 AXP Owner's Guide*. Figure 2–3 shows the location of the ports, switches and indicators at the rear of the rackmount server system; Table 2–3 describes their functions.

A Closer Look at the Rackmount Server System

Figure 2–3 Rear View of Rackmount Server System
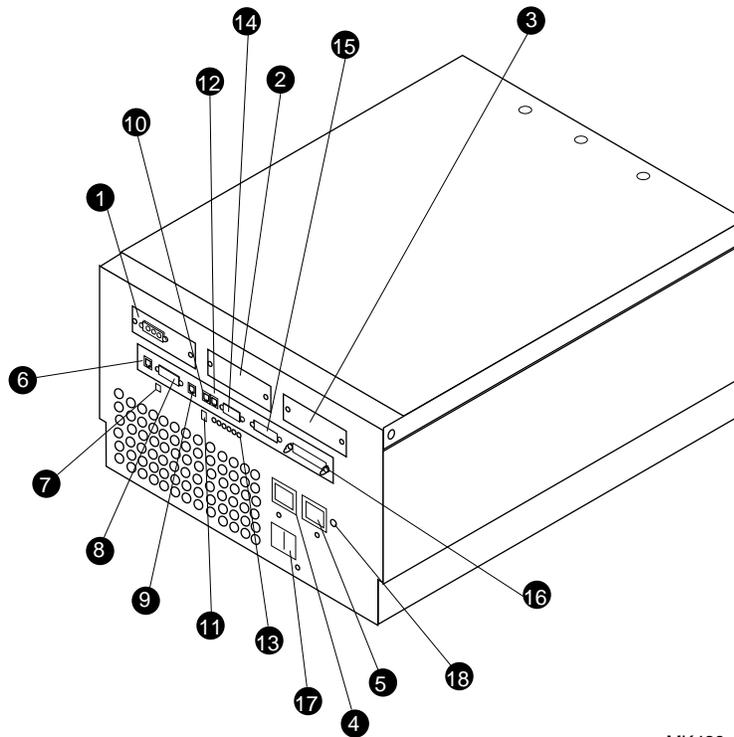
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Table 2–3 Rear Ports, Switches and Indicators

Index	Feature	Function
❶	TURBOchannel slot 0	For TURBOchannel options
❷	TURBOchannel slot 1	For TURBOchannel options
❸	TURBOchannel slot 2	For TURBOchannel options
❹	Auxiliary power socket [1]	To connect a monitor power cord so the monitor does not require a connection to a separate power outlet
❺	System power socket	To connect the rackmount server system power cord
❻	10BASE-T port	To connect a 10BASE-T Ethernet network cable
❼	Halt button	To place the system in console mode
❽	AUI Ethernet network port	To connect an AUI Ethernet network cable (sometimes referred to as standard or Thickwire Ethernet)
❾	ISDN port	Currently not in use
❿	Audio port	To connect the audio input and output adapter
⓫	Alternate console switch	Toggle switch to redirect console output from a monitor (switch up) to an alternate console such as a terminal (switch down)
⓬	Alternate console /printer port	To connect either a terminal as an alternate console, or a printer
⓭	Diagnostic display lights	Used for diagnostic testing purposes
⓮	Keyboard/mouse port [1]	To connect the keyboard/mouse assembly unit
⓯	Synchronous /asynchronous communications port	To connect a communications device such as a printer, plotter, modem, or console terminal
⓰	SCSI port	To connect Small Computer System Interface (SCSI) peripheral devices
⓱	Power On/Off switch	To turn the system unit power ON | and OFF (O)
⓲	Power On/Off indicator	When lit, indicates that the rackmount server is on

[1]Not supported in the DEC 3000 Model 400S/600S/700S AXP Rackmount Server

Rackmount Server System Symbols

The rear of the rackmount server has symbols next to most of the connectors and ports. These symbols are defined in Chapter 2 of the *DEC 3000 Model 400/400S AXP Owner's Guide* or *DEC 3000 Model 600/600S/700 AXP Owner's Guide* as applicable. These definitions also apply to the rackmount server.

Front of the Rackmount Server System

Figure 2–4 shows the front of the system. Table 2–4 describes the items shown.

Figure 2–4 Front View of the Rackmount Server System
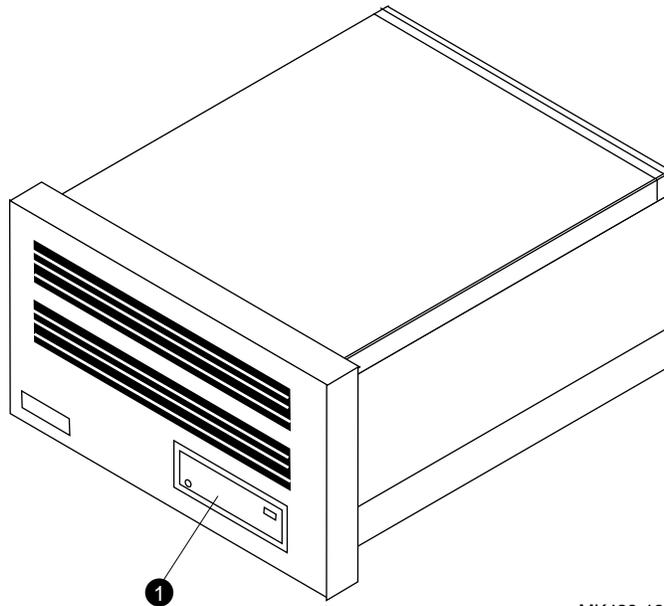
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Table 2–4 Front Controls and Indicators

Index	Feature	Function
❶	Optional removable media device slot	Slot for inserting: an RRD43 compact disc drive, an RX26 floppy disk drive, a TLZ06 drive, a TKZ10 drive, or a TZ30 drive.

3

Installing the Rackmount Server

Introduction

This chapter, along with the information contained in Chapter 4 of the *DEC 3000 Model 400/400S AXP Owner's Guide* or the *DEC 3000 Model 600/600S/700 AXP Owner's Guide* as applicable, provides the information to install the DEC 3000 Model 400S/600S/700S AXP Rackmount Server in a 19-inch RETMA rack.

In This Chapter

The topics concerning the installation of the rackmount server are listed below.

- Installing the System on Slides

- Installing the Cable Management System

- Connecting the Rackmount Server[1]

- Tying Off Cables to the Cable Management Arm

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[1] Instructions for connecting the rackmount server to your network are covered in the *DEC 3000 Model 400/400S AXP Owner's Guide* or *DEC 3000 Model 600/600S/700 AXP Owner's Guide* as applicable.

Installing the System on Slides

The rackmount server is shipped with one pair of slide assemblies (P/N 12-32764-05), which include:

- Two rear brackets.
- Two front brackets.
- Pair of slide assemblies.
- Attaching hardware.

Installing the system on slides, involves:

1. Preparing the Slides.
2. Attaching the Slide Races.
3. Attaching Slides to Rails.
4. Mounting System on Slides.

Tools Required   You need a flat blade screwdriver to install the rackmount server.

Preparing the Slides   Refer to Figure 3–1 and prepare the slides as follows:

_____ **Caution** _____

To avoid damaging the slides, it is important that the installation is performed as instructed in the following procedure.

1. Find the slide assembly ❶ labeled RH that is shipped with the system. (If the slide assemblies are not labeled, pull out the inside race ❷ until the arrow ❸ and locking lever ❹ are visible (**do not** remove the inside race). The RH slide is the one with the locking lever ❹ pointing to the left and the arrow ❸ next to it pointing upward as shown in Figure 3–1. Mark the slide RH.)

2. Pull out the inside race ❷ until in locks. **Do not** remove the race from the slide at this time.

3. Orient the slide so that the arrow ❸ next to the locking lever ❹ is pointing upward.

4. Slide the long bracket (rear bracket) ❺ on the rear of the slide assembly ❶ in the direction of the arrow.

Figure 3–1 Attaching Brackets to Slide Assembly
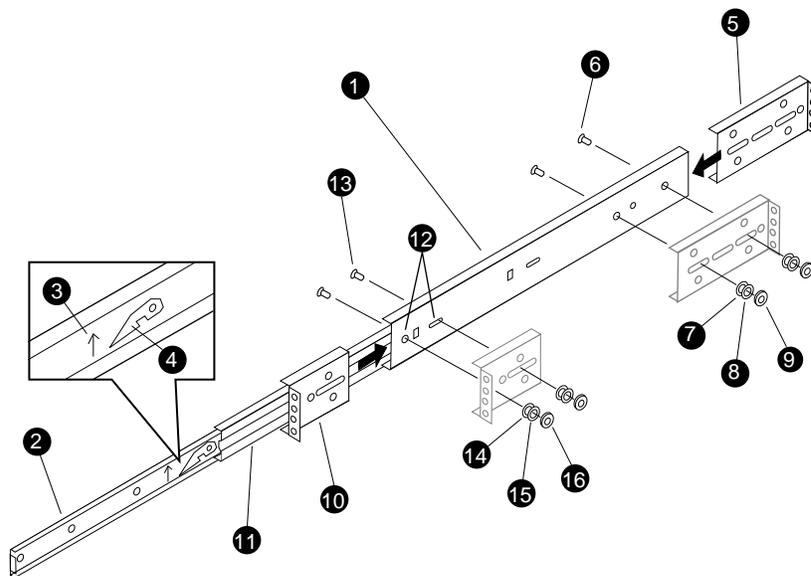
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5. Fasten the rear bracket ❺ to the slide assembly ❶ using two 8-32 screws ❻, flat washers ❼, lock washers ❽ and nuts ❾.

6. Press up on the locking lever ❹ (direction of the arrow ❸), and pull the race ❷ out of the slide assembly ❶.

7. Slide the short bracket (front bracket) ❿ on the front of the slide assembly ❶ in the direction of the arrow.

8. To fasten the front bracket to the slide assembly, proceed as follows:

   a. Pull out the inside slide ⓫ about half way, enough to align two half-inch access holes on the inside slide with the mounting holes ⓬ on the slide assembly ❶ and the front bracket ❿.

   b. Fasten the front bracket ❿ to the slide assembly ❶ using two 8-32 screws ⓭, flat washers ⓮, lock washers ⓯, and nuts ⓰.

   c. Slide the race ❷ back into the the slide assembly, making sure that the arrow ❸ is pointing upward and the locking lever is pointing away from the slide assembly.

   d. Set this assembly aside.

9. Find the slide assembly labeled LH that is shipped with the system. (If the slide assemblies are not labeled, mark the other slide assembly LH.)

10. Attach the rear and front brackets following steps 2 through 8.

Figure 3–1 shows how to attach the front and rear brackets to a slide assembly.

_____ **Caution** _____

To avoid damaging the slides, it is important that the installation is performed as instructed in the procedure.

_____

Attaching Slide Races to Chassis

To attach the slide races to the chassis, refer to Figure 3–2 and proceed as follows:

1. Remove the race from the slide assembly labeled RH.

_____ **Caution** _____

When performing the next step, make sure the arrow ❶ (shown in Figure 3–2) points upward and the slide lock ❷ points toward the front of the

system. Otherwise, the slide will be damaged when the system is installed on the slides.

2. Attach the right slide race ❹ to the right side of the system chassis ❸ using four pan head screws ❺.

3. Remove the race from the slide assembly labeled LH.

4. Repeat steps 1 through 3 to attach the left slide race to the left side of the system chassis.

Figure 3–2 Attaching Slide Races
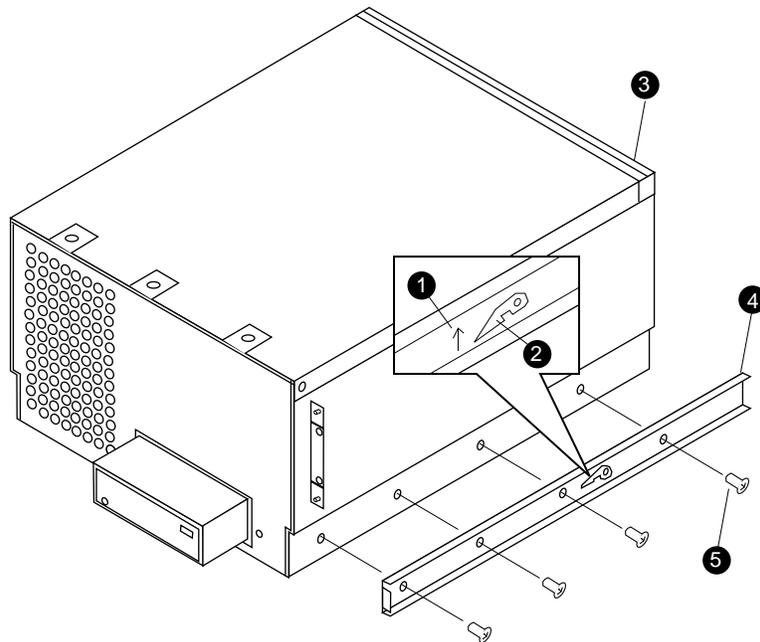
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Locating the Rail Mounting Holes

Before attaching the slides to the rack, you must first identify the system location in the rack and establish a datum line. The datum line serves as a reference to identify the mounting hole positions for the slide bracket, U-nuts and cable management bracket. To establish a datum line:

1. Determine the area of the rack where the system will be installed (22.23 cm [8.75 in] or 14 contiguous holes).

2. Refer to Figure 3–3. Establish a datum line ❶ at the base of the area between two holes with 1.3 cm (.5 in) spacing. The first hole above the datum line is identified as hole 1 ❷. This establishes the location of the bottom edge of the system.

The U-nuts are mounted using the 8th hole ❺ and the 11th hole ❻ on the front rails. The slides are installed using the 2nd hole ❸ and 3rd hole ❹ from the datum line. The mounting holes for the cable carrier are the 11th hole ❻ and 14th hole ❼ on the left rear rail (when facing rear of rack). The cable carrier is installed later in this chapter.

Installing U-Nuts

Four U-nuts must be installed on the rails to receive the screws that secure the system to the rails. To install the U-nuts, refer to Figure 3–3 and proceed as follows:

1. Locate the 8th hole ❺ and 11th hole ❻ on the front rails.

2. Install a U-nut over each mounting hole identified in step 1 by sliding the U-nut over the edge of the rail and aligning it with the hole.

Figure 3–3 Establishing Mounting Location

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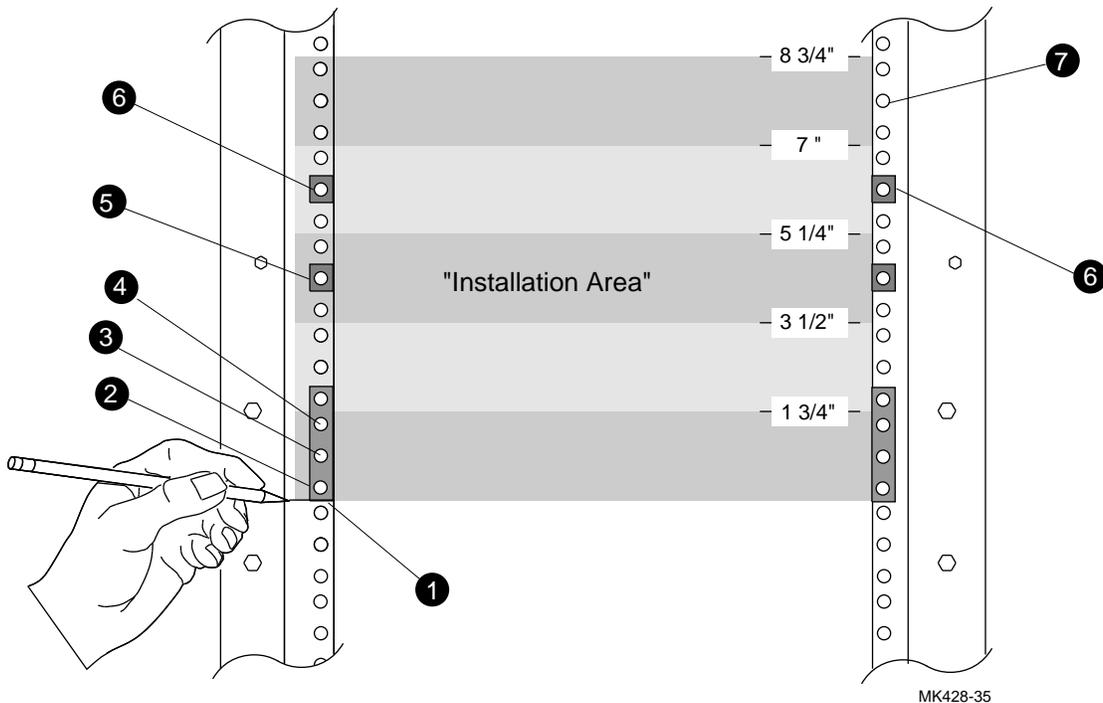
**Attaching the
Slides to Rails**

To attach the slides to the rails, refer to Figure 3–4 and proceed as follows:

1. Locate the slide assembly labeled RH. Attach the RH slide assembly ❸ to the right front rail ❷ (when facing front of rack) using two 10-32 screws ❶ and nut bar ❹. Do not tighten the screws at this time.

2. Attach the RH slide assembly ❸ to the right rear rail ❺ using two screws ❻ and nut bar ❼.

3. Tighten screws on the front and rear rails.

_____ **Note** _____

**Pull the slide upward when securing it to the rails.
Also, ensure that the slide is level and that the
slides are at the same height within the cabinet.**

_____

4. Repeat steps 1 through 3 to attach the LF slide assembly to the left rails.

Figure 3–4 Attaching the Slides to the Cabinet Rails
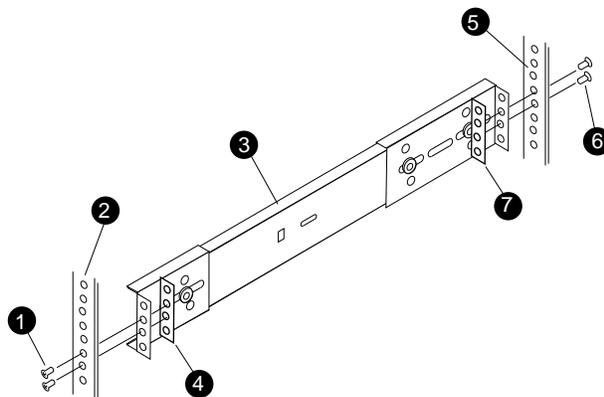
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Mounting the Chassis on Equipment Slides

To mount the chassis on the slides, refer to Figure 3–5 and proceed as follows:

Warning

Use sufficient personnel and proper equipment when lifting or moving the rackmount server system. The fully loaded system weighs 34 kg (75 lbs).

Stabilize the cabinet before installing the chassis into the cabinet. Figure 3–5 shows an example of a cabinet with the stabilizer foot ❶ extended.

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1. Pull both equipment slides ❷ out fully to their locked positions.

2. Lift the chassis ❸ and position it so that you can insert the slide races into the front end of the slides.

3. Push the system into the slides until it stops. Then push down on the two slide locks, and then push the system into the cabinet.

4. Secure the system to the front rails by installing four 10-32 screws through the system brackets and into the four U-nuts previously installed on the rails.

Figure 3–5 Installing System on Slides
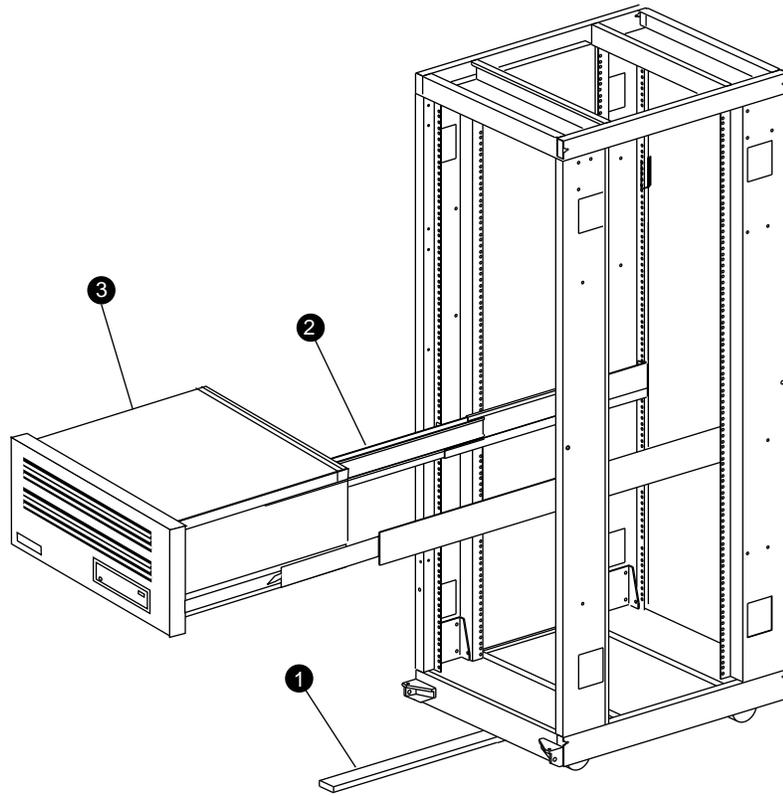
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Installing the Cable Carrier

To install the cable carrier, refer to Figure 3–6, and proceed as follows:

1. Push the system into the rack.

2. Using the top rear edge of the system chassis as a reference point, count downward to locate the first and fourth mounting holes ❶ on the left-rear rail (facing the rear of the rack).

3. Install a U-nut over each of the two mounting holes by sliding the U-nut ❷ over the edge of the rail and aligning it with the mounting hole.

4. Align the top and bottom mounting holes in the cable carrier bracket ❸ with the two rear-rail mounting holes ❶. Attach the bracket ❸ using two 10-32 screws ❹.

Figure 3–6 Installing the Cable Management System

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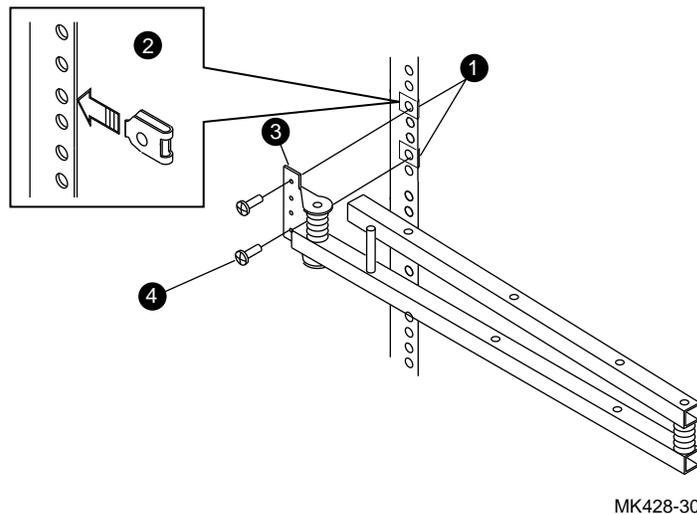
Connecting the Rackmount Server

Instructions for connecting the system are contained in Chapter 4 and Chapter 5 of the *DEC 3000 Model 400/400S AXP Owner's Guide* or *DEC 3000 Model 600/600S/700 AXP Owner's Guide* as applicable. In Chapter 4 follow these instructions:

1. Connecting the DEC 3000 Model AXP Server

2. Alternate Console Switch Setting

Then follow the instructions contained in Chapter 5 to connect the system to a network.

Tying Off Cables to Cable Carrier Arm

After performing the procedure described in Alternate Console Switch Setting (Chapter 4 of the *DEC 3000 Model 400/400S AXP Owner's Guide* or *DEC 3000 Model 600/600S/700 AXP Owner's Guide* as applicable), dress the system power cable and data cables along the cable carrier arm using tie wraps and holes provided in the arm. When the system is pulled out of the cabinet, the arm follows the unit with the cables attached.

Part II

Advanced Operations

This part contains Chapter 4. It describes how to access
the password security jumper in the DEC 3000 Model
400S/600S/700S AXP Rackmount Server.

A complete description of these features and other advance
operations are provided in Part II of the *DEC 3000 Model
400/400S AXP Owner's Guide* or the *DEC 3000 Model
600/600S/700 AXP Owner's Guide* as applicable, which includes
information about the following:

- Using console commands
- Changing environment variables
- Using the password security feature
- Using an alternate console

4

Using the Password Security Feature

Chapter Overview

Introduction   The password security feature lets you prevent unauthorized personnel from accessing privileged console commands on the server.

In This Chapter   This chapter directs you to information concerning:

- The password security feature

- How to gain access to the secure system jumper to enable (on) or disable (off) the feature

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Where to Go

The password security feature is the same as that described in Chapter 11 of the *DEC 3000 Model 400/400S AXP Owner's Guide* or the *DEC 3000 Model 600/600S/700 AXP Owner's Guide*. However, accessing the secure system jumper is different for the rackmount server. The top cover must be removed to gain access to the secure system jumper. To gain access to the secure system jumper, follow the instructions in Chapter 5 of this guide, Removing the Top Cover. Figure 4–1 shows the location of the jumper.

Figure 4–1 Location of Security System Jumper

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❶ I/O board
❷ Secure system jumper
(OFF position)

❸ Secure system jumper (ON
position)
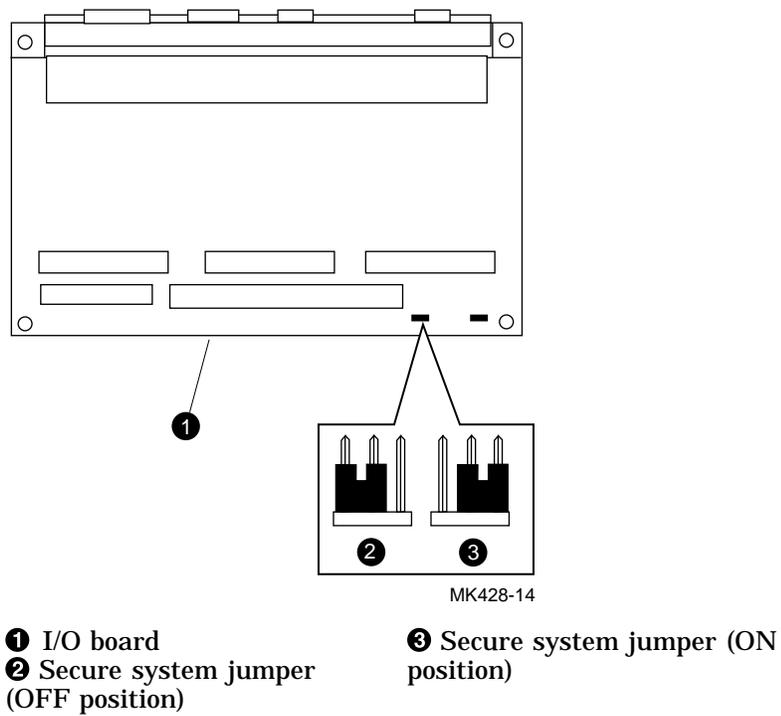
Part III

Resolving Problems

For information concerning resolving problems, refer to Part
III in the *DEC 3000 Model 400/400S AXP Owner's Guide* or
the *DEC 3000 Model 600/600S/700 AXP Owner's Guide* as
applicable, which includes information about the following:

* Identifying a problem
* Running diagnostic tests

Part IV

Option Removal and Installation Procedures

Part IV provides the module/subassembly removal and installation procedures for the DEC 3000 Model 400S/600S/700S AXP Rackmount Server.

Because the rackmount server has a different chassis for rack mounting, the procedures differ from the desktop products and should be performed by trained service personnel.

This part consists of Chapter 5, Removal and Installation Procedures.

5

Removal and Installation Procedures

Chapter Overview

Warning

The information in this chapter is for use by Digital service personnel and qualified self-maintenance customers.

Whenever performing any removal or installation procedure, ensure that the ac power On/Off switch located at the rear of the DEC 3000 Model 400S/600S/700S AXP Rackmount Server is in the OFF position and the power cord is disconnected from the ac power source.

This chapter describes how to prepare the rackmount system for service and how to remove and install recommended spare parts and options. For troubleshooting information, refer to Part III.

In This Chapter

This chapter describes how to prepare the system for service and how to remove and install the following items:

- Top cover
- Front bezel
- Removable-media devices
- Fixed-media devices
- TURBOchannel option
- SIMMs/MMB
- I/O board
- System board
- Power supply
- Fan

_____ **Caution** _____

Always follow antistatic procedures when handling media drives and other static-sensitive items. Refer to Antistatic Precautions for details.

Preparing for Service

Before You Start

Before removing or replacing defective parts, prepare the system as follows:

- Make sure the customer has backed up all their data files.

- Have the customer shut down their software.

- Record the present system configuration. Use the show config command to display the system configuration. For information about show config, refer to Chapter 15, Running Diagnostic Tests, in the *DEC 3000 Model 400/400S AXP Owner's Guide* or Chapter 13, Interpreting the Show Command Displays, in the *DEC 3000 Model 600/600S/700 AXP Owner's Guide* as applicable.

- Record environmental variable values. For information about environmental variables, refer to Chapter 10, Changing Environmental Variables, in the *DEC 3000 Model 400/400S AXP Owner's Guide* or the *DEC 3000 Model 600/600S/700 AXP Owner's Guide* as applicable.

- Halt the system by pressing the Halt switch located at the rear of the system.

Disconnect AC Power

Set the ac power switch to OFF (O) and disconnect the power cord from the power source and from the rackmount server.

Antistatic Precautions

Antistatic precautions should be taken whenever working with modules in the system. The following procedure lists the steps to use an antistatic kit:

Step	Action
1	Place the elastic end of the antistatic wrist strap on your wrist.
2	Attach the alligator clip to the system chassis.
3	Proceed with removing or replacing the part or module.

Removing the Covers

Introduction

Before servicing the system, the system must be pulled out of the rack on its slides and the top and front covers removed. In all cases the top cover is removed. Both top and front covers must be removed when removing or installing the fan or removable-media devices.

Removing the covers involves:

1. Pulling out the system.

2. Removing the top cover.

3. Removing the front cover.

Pulling the System Out of the Rack

It is necessary to pull the system out of the rack to gain access to the front and top covers for removal. To pull the system out of the rack, refer to Figure 5–1 and proceed as follows:

―――――――――――――― **Warning** ――――――――――――――

Stabilize the rack before extending the rackmount server on its slides.

――――――――――――――――――――――――――――――――――

1. Insert a flat blade screwdriver into the top-left slot ❶ of the front bezel ❷. Then push the screwdriver toward the system to release the top-left side of the bezel from the ball stud ❸ on system. (Figure 5–1 shows the top right ball stud.)

2. Repeat the procedure using the right slot ❹ to release the top-right side.

3. Grasp each side of the bezel and pull it away from the system.

4. Remove the four system retaining screws ❺ fastening the front of the system to the rails.

5. Pull the system out of the rack on its slides to the point where the two slide locks ❻ are locked. You can now access the front and top covers of the system.

Figure 5–1 Pulling Out the System
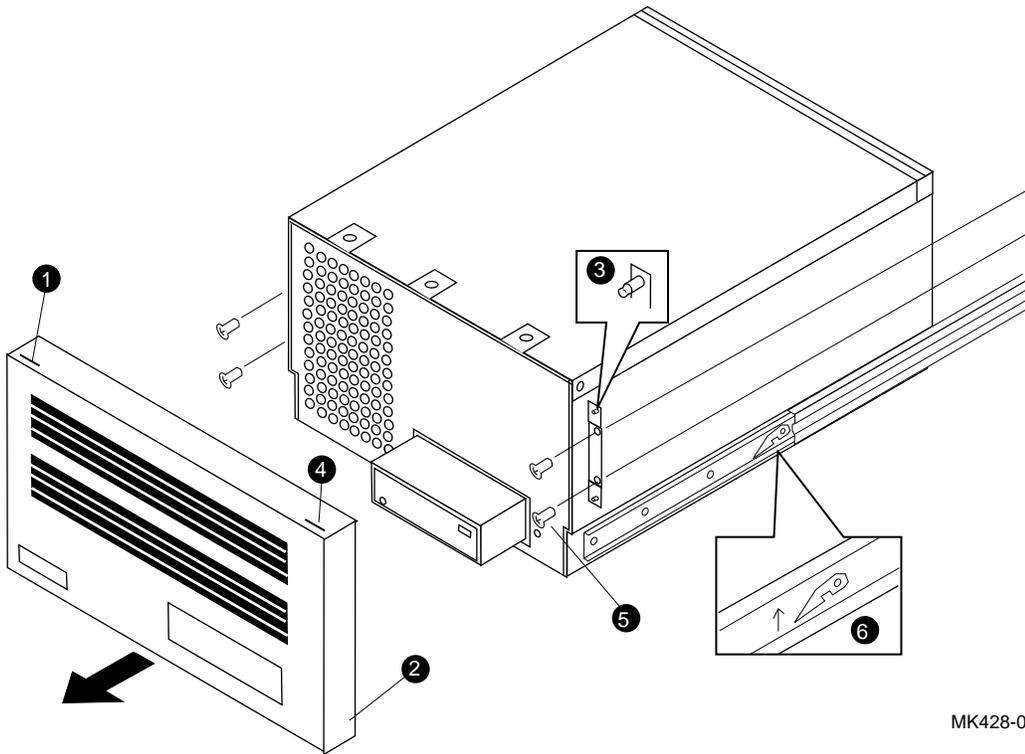
MK428-02

| **Placing the System Back into the Rack** | To place the system back into the rack, refer to Figure 5–1 proceed as follows: |

1. If the system was pulled out all the way, pull up on the slide locks ❻ before pushing the system back into the rack.

2. Install the four system retaining screws ❺ and tighten.

3. Install the bezel ❷ by aligning it with the four ball studs ❸ and pushing it into place.

Removing the Top Cover

—————————————— **Warning** ——————————————

Allow at least 5 minutes from the time the system unit power is turned OFF until you open the system unit. This gives the power supply capacitors time to discharge safely.

————————————————————————————————

To remove the top cover, refer to Figure 5–2 and proceed as follows:

1. Remove the front bezel and pull the system out on its slides as previously described in Pulling the System Out of the Rack.

2. Remove three screws ❶ fastening the front edge of the top cover ❷ to the chassis ❸.

3. Lift the front edge of the cover until the air deflectors (attached to the underside of the top cover) have cleared the sides of the chassis and then lift the cover off.

4. If the fan or a removable-media device is being removed, continue with Removing the Front Cover.

Installing the Top Cover

To install the top cover, reverse all the steps in the removal procedure for installation.

Figure 5–2   Removing the Top Cover
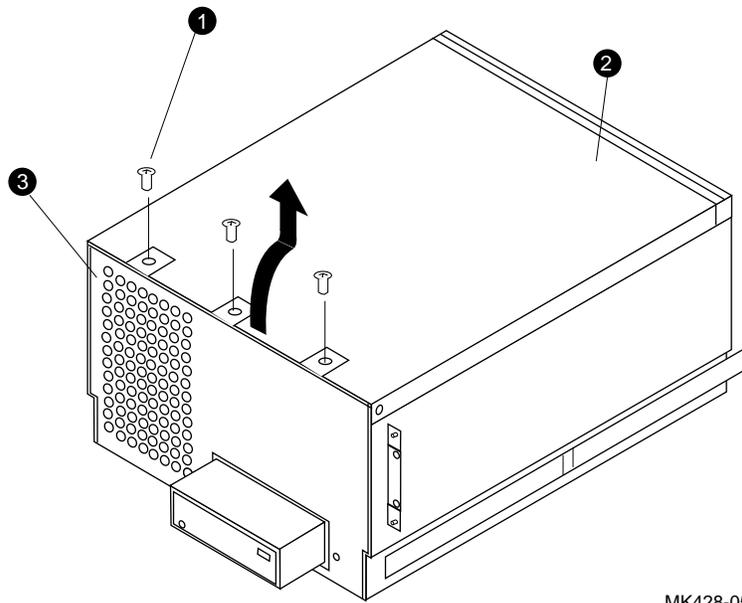
MK428-05

Removing the Front Cover

To remove the front cover, refer to Figure 5–3 and proceed as follows:

1. Remove five screws ❶ fastening the front cover ❷ to the system chassis ❸.

2. Pull the front cover out away from the front of the system chassis and remove.

Installing the Front Cover

To install the front cover, reverse all the steps in the removal procedure for installation.

Figure 5–3 Removing the Front Cover
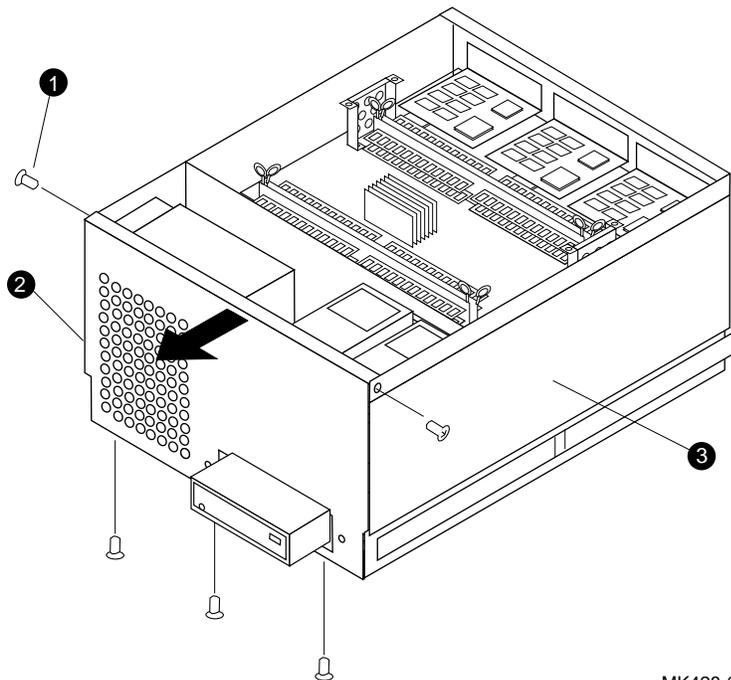
MK428-03

Removable-Media Devices

**Removing
Removable-Media
Devices**

—————————————— **Note** ——————————————

**If replacing a drive, record the switch settings
of the old drive. Set the switches on the new
drive according to these settings. To set the new
drive differently, refer to the *DEC 3000 Model
400/400S AXP Options Guide* or the *DEC 3000 Model
600/600S/700 AXP Options Guide* as applicable for
drive setup information.**

————————————————————————————————————

Use the following procedure to remove either a CD-ROM
(RRD43), tape drive (TZK10, TLZ06, or TZ30), or the fixed
half height 3 1/2-inch floppy disk drive (RX26). To remove the
removable-media device, refer to Figure 5–4 and proceed as
follows:

1. Prepare the system according to Preparing for Service earlier
   in this chapter.

2. Remove the front bezel, and top and front covers according to
   Removing the Covers earlier in this chapter.

3. Loosen the four screws ❶ holding the drive bracket ❷ in
   place. The screws come up through the bottom of the chassis.

—————————————— **Warning** ——————————————

**Beware of sharp edges when handling the drive
bracket.**

————————————————————————————————————

4. Lift the drive bracket ❷ off the locating pins (not shown
   in Figure 5–4), and pull it towards the front of the chassis
   enough to disconnect the power connector ❸ and the SCSI
   signal cable ❹ from the removable-media device ❺.

5. Remove the drive bracket from the chassis.

6. Remove the four retaining screws ❻ fasting the media device ❺ to the drive bracket ❷.

7. Remove the media device ❺ from the drive bracket ❷.

Figure 5–4   Removing Removable-Media Devices
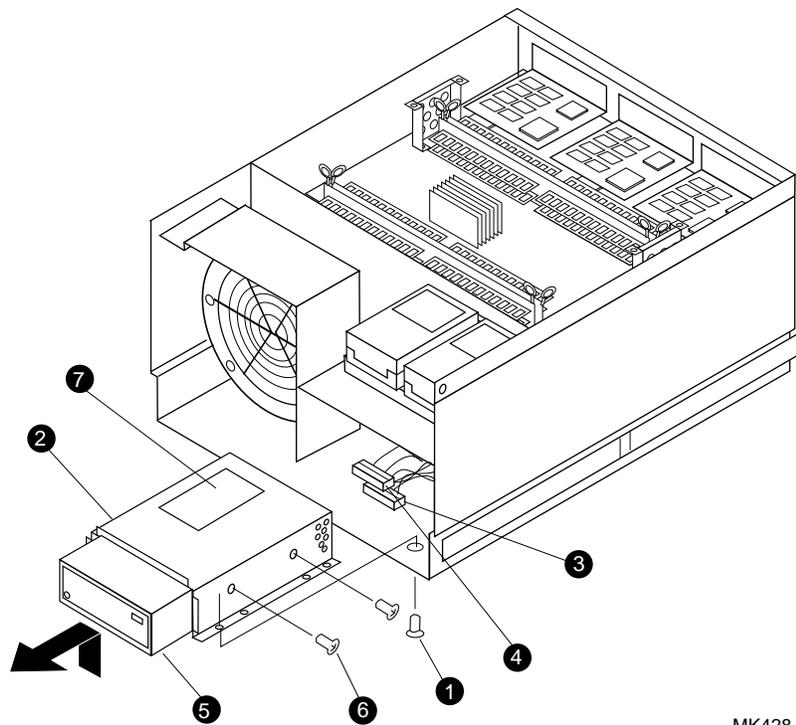
MK428-06

**Installing
Removable-Media
Devices**

———————————— **Note** ————————————

**Refer to the label ❼ on the bracket ❷ (see
Figure 5–4) for the correct mounting holes used in
attaching the media device to the drive bracket.**

———————————————————————————

———————————— **Caution** ————————————

**When installing the drive bracket ❷ in the chassis,
make sure the power cable ❸ and SCSI cable ❹ are
positioned so they are not pinched underneath the
drive bracket.**

———————————————————————————

To install the removable-media device, reverse the steps in the
removal procedure.

Fixed-Media Devices

Removing Fixed-Media Devices

————————— **Note** —————————

If replacing a drive, record the switch settings of the old drive. Set the switches on the new drive according to these settings. To set the new drive differently, refer to the *DEC 3000 Model 400/400S AXP Options Guide* or the *DEC 3000 Model 600/600S/700 AXP Options Guide* as applicable for drive setup information.

————————————————————————

To remove the fixed-media device, refer to Figure 5–5 and proceed as follows:

1. Prepare the rackmount system according to Preparing for Service earlier in this chapter.

2. Remove the front bezel and top cover according to Removing the Covers earlier in this chapter.

3. Disconnect the power cable connector ❶ from the drive(s) ❷.

4. Remove the SCSI signal cable ❸ from the drive(s) ❷.

5. Depress the retaining spring ❹; slide the drive toward the retaining spring and lift the drive out.

Installing Fixed-Media Devices

————————— **Caution** —————————

Take care in disconnecting or connecting power and SCSI cables to ensure SIMMs are not damaged.

Make sure the SCSI and power cables are positioned so they do not lay on or press against the SIMMs. Otherwise, the SIMMs may be accidentally disconnected or damaged.

————————————————————————

To install the fixed-media device, reverse the steps in the removal procedure.

Figure 5–5 Removing Fixed-Media Devices
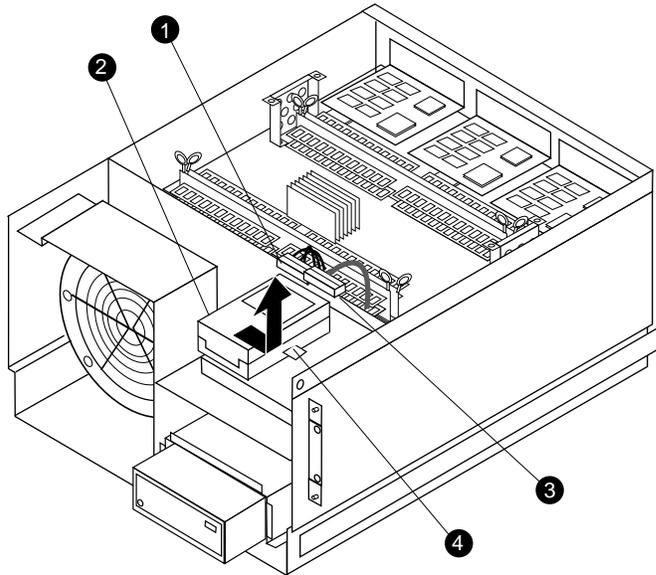
MK428-07

TURBOchannel Options

---------------- **Note** ----------------

Only standard height (1.36-inch) TURBOchannel options can be used in the rackmount server.

If a dual width TURBOchannel option is installed, it must be placed in slots 0 and 1. If necessary, move the single width TURBOchannel option to slot 2.

---------------- **Caution** ----------------

Follow antistatic precautions anytime a module is replaced in the system. Refer to Antistatic Precautions for details.

Removing TURBOchannel Options

To remove a TURBOchannel option, refer to Figure 5–6, and proceed as follows:

1. Prepare the system according to Preparing for Service earlier in this chapter.

2. Disconnect any external cables from the TURBOchannel option at the rear of the system.

3. Remove the top cover according to Removing the Top Cover earlier in this chapter.

4. If the TURBOchannel option is being replaced, note any switch settings or jumpers on the old TURBOchannel option and set the switches or jumpers to the same value on the new option. For other setup information, refer to the *DEC 3000 Model 400/400S AXP Options Guide* or the *DEC 3000 Model 600/600S/700 AXP Options Guide* as applicable.

5. Remove the screws ❶ located on the rear of the chassis that secure the TURBOchannel option ❷.

6. Lift the TURBOchannel option board off the standoffs ❸ and connector ❹ on the I/O module.

Figure 5–6 Removing TURBOchannel Options

MK428-08

Installing TURBOchannel Options

_____ **Caution** _____

Follow antistatic precautions anytime a module is replaced in the system. Refer to Antistatic Precautions for details.

To install the TURBOchannel option, reverse the steps in the removal procedure.

SIMMs

_____ **Note** _____

**If replacing one SIMM, make sure the replaceable
SIMM is the same memory size and speed of the
remaining seven SIMMs located on the same plane.**

_____ **Caution** _____

**Follow antistatic precautions anytime a module
is replaced in the system. Refer to Antistatic
Precautions for details.**

**Removing
SIMMs/MMB**

To remove single inline memory modules (SIMMs), refer to
Figure 5–7 and proceed as follows:

1. Prepare the system according to Preparing for Service earlier
   in this chapter.

2. Remove the front bezel and top cover according to Removing
   the Top Cover earlier in this chapter.

3. Remove the memory mother board (MMB) ❶ in which the
   SIMMs are mounted by pulling straight up on the tabs ❷ at
   each end of the MMB.

4. To remove SIMMs:

   a. Release the clip ❸ located at each end of the SIMM ❹

   b. Tilt the board to a 30° angle towards the top of the MMB.

   c. Pull the SIMM out.

Figure 5–7   Removing SIMMs/MMB
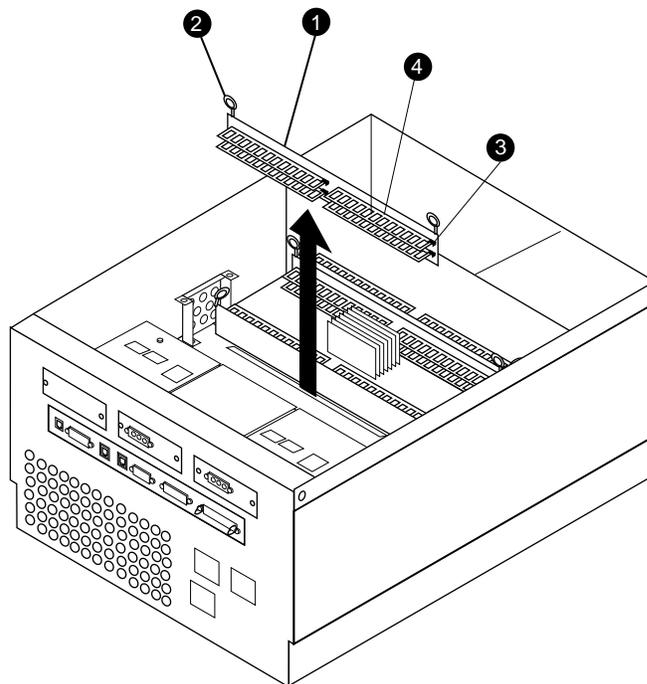
MK428-09

**Installing
SIMMs/MMB**

_____ **Caution** _____

**Follow antistatic precautions anytime a module
is replaced in the system. Refer to Antistatic
Precautions for details.**

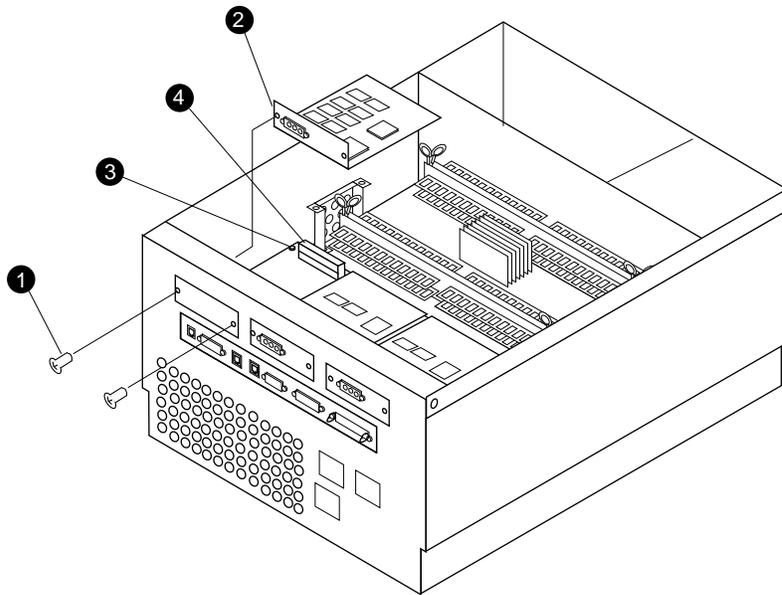To install SIMMs, reverse the steps in the removal procedure.

I/O Board

Note

When replacing the I/O board, make sure the I/O shield is installed on the replacement module.

Caution

Follow antistatic precautions anytime a module is replaced in the system. Refer to Antistatic Precautions.

Removing the I/O Board

To remove the I/O board, refer to Figure 5–8 and proceed as follows:

1. Remove any TURBOchannel options according to Removing TURBOchannel Options earlier in this chapter.

2. Remove the two MMBs ❶ located closest to the I/O board ❷. Refer to Removing SIMMs/MMB earlier in this chapter.

Caution

Take care in disconnecting or connecting the SCSI cable to ensure SIMMs are not damaged.

---

3. Disconnect the SCSI cable ❸ from the I/O board.

4. Remove four screws ❹ securing the two transport brackets ❺ (two screws each bracket).

Caution

Remove the transport brackets carefully to prevent damaging components on the system board ❻.

---

5. Locate the I/O board-to-system board connector on the underside of the I/O board (toward the front edge of the I/O board).

6. Apply equal upward pressure along the length of the I/O board-to-system board connector until it disconnects from the system board ❻.

7. Lift up on the edge of the I/O board that has the I/O board-to-system board connector and pull the I/O board away from the rear chassis opening. Remove the I/O board from the system.

Figure 5–8   Removing the I/O Board
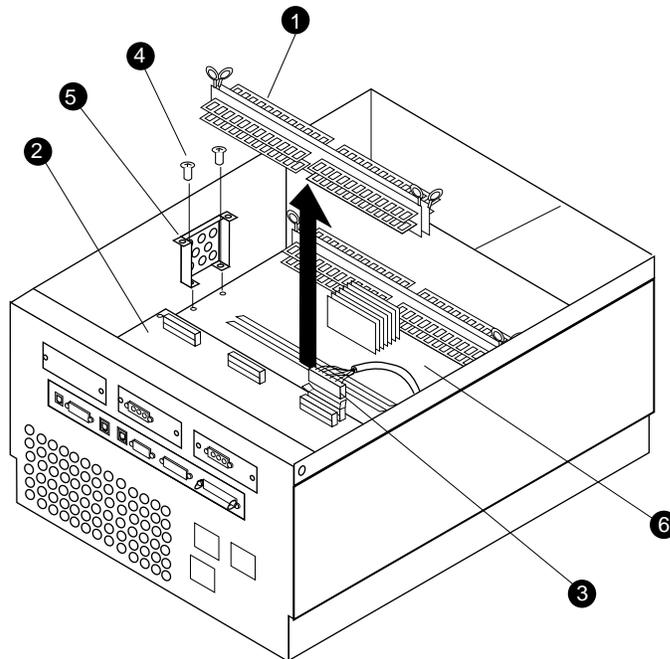
MK428-10

Installing the I/O Board

If the I/O board is being replaced by a new board, refer to Figure 5–9 and perform the following before installing the new I/O board:

1. Remove the Ethernet ROM Chip ❶ from the old I/O board and install it on the new I/O board ❷.

2. Check that the SECURE system jumper ❸ is installed correctly on the replacement module.

3. Check that the ROM upgrade jumper ❹ is installed correctly on the replacement module.

To install the I/O board, proceed as follows:

1. Carefully align the I/O panel (panel with I/O ports) on the I/O board with the rear chassis opening, just below the three chassis openings for the TURBOchannel ports. (It may be necessary to lift up on the I/O panel port connectors from the outside rear of the chassis to help with the alignment.)

2. Push the I/O panel into the rear chassis opening until its I/O board-to-system board connector aligns with the one on the system board. Then push down on the I/O board over the connector until it is properly seated.

3. Refer to Figure 5–8, and proceed as follows to finish the installation:

   _____ **Caution** _____

   When performing step a, take care not to damage components on the system board ❻.

   _____

   a. Fasten the two transport brackets ❺ to the system board using four screws ❹ (two screws each bracket).

   b. Connect the SCSI cable ❸ to the I/O board ❷.

   c. Plug in the two MMBs ❶ into the I/O board ❷.

   d. Install the TURBOchannel options according to Installing TURBOchannel Options earlier in this chapter.

Note

After installing the I/O board, set the environmental variables as they were on the board being replaced. For information on setting the variables, refer to the chapter, Changing Environment Variables, in the *DEC 3000 Model 400/400S AXP Owner's Guide* or *DEC 3000 Model 600/600S/700 AXP Owner's Guide* as applicable.

Figure 5–9 Ethernet Chip and Jumper Locations

MK428-45
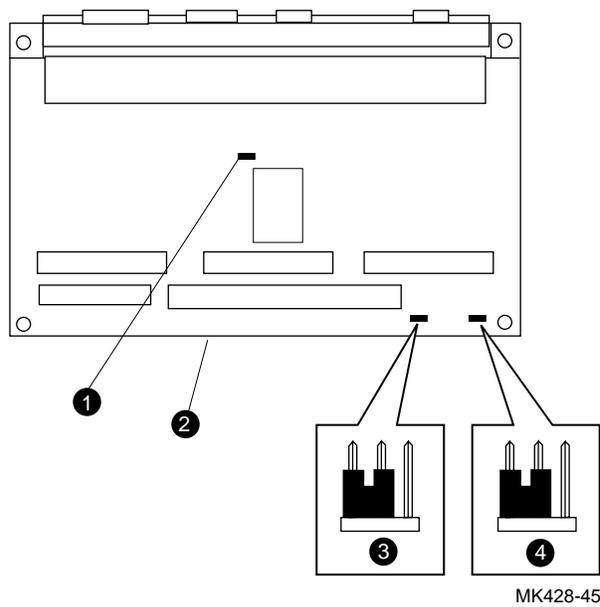
System Board

Note

Record the position of the switches on the system board being replaced. When replacing the board, set switches on the new board in the same position.

Caution

Follow antistatic precautions anytime a module is replaced in the system. Refer to Antistatic Precautions for details.

Removing the System Board

To remove the system board, refer to Figure 5–10 and proceed as follows:

1. Remove the I/O Board according to Removing the I/O Board.

2. Remove all MMBs with SIMMs installed according to Figure 5–7.

3. Unplug the power cable connectors ❶ to the system board ❷.

4. Remove seven screws ❸ fastening the system board ❷ to the chassis.

5. Lift the system board ❷ out of the system chassis.

Figure 5–10 Removing the System Board
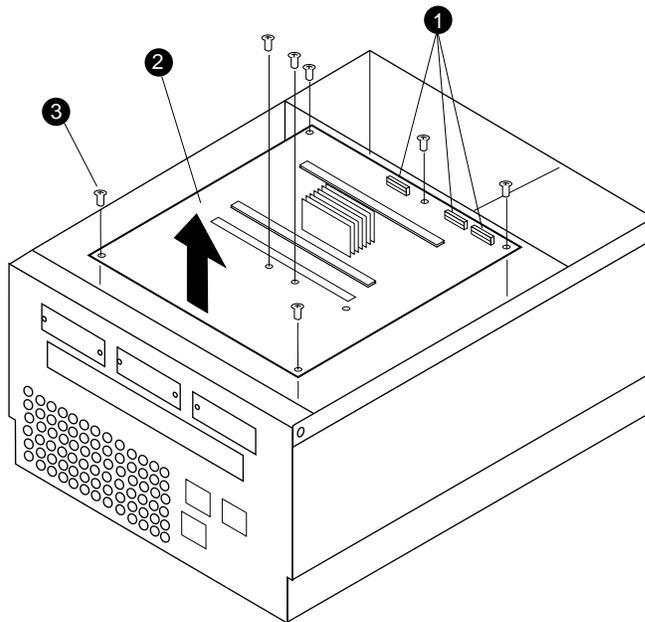
MK428-16

**Installing the
System Board**

_____ **Caution** _____

**Follow antistatic precautions anytime a module
is replaced in the system. Refer to Antistatic
Precautions for details.**

**Carefully align the Halt switch and LEDs with
the openings in the rear of the chassis to prevent
damaging the switch.**

**Make sure the two mounting screws directly
behind the I/O board-to-system board connector
are installed with nylon washers to prevent a short
circuit.**

_____

To install the system board, reverse the steps in the removal
procedure.

Power Supply

Removing the Power Supply

To remove the power supply, refer to Figure 5–10 and proceed as follows:

1. Remove the system board according to Removing the System Board, but do not remove the seven screws as instructed to release the system board from the metal shelf. Instead, loosen the four captive screws ❶ fastening the shelf ❷ to the chassis and then remove the system board and shelf as one unit.

2. Disconnect the power connector ❸ that supplies power to the drives.

3. Disconnect the fan power cable ❹ from the power connector ❺ attached to the chassis.

4. Release the power connector ❺ from the chassis ❻ by pressing on the power connector release tabs and pulling the power connector from the chassis wall (towards power supply).

5. Remove the five power supply retaining screws ❼.

6. Lift the power supply ❽ out of the chassis.

Installing the Power Supply

―――――――――― **Caution** ――――――――――

When installing the system board with the metal shelf, carefully align the Halt switch with the opening in the rear of the chassis to prevent damaging it and ensure that the rear edge of the shelf is inserted into the raised flange on the shelf bracket.

―――――――――――――――――――――――――――――

To install the power supply, reverse the steps in the removal procedure.

Figure 5–11   Removing the Power Supply
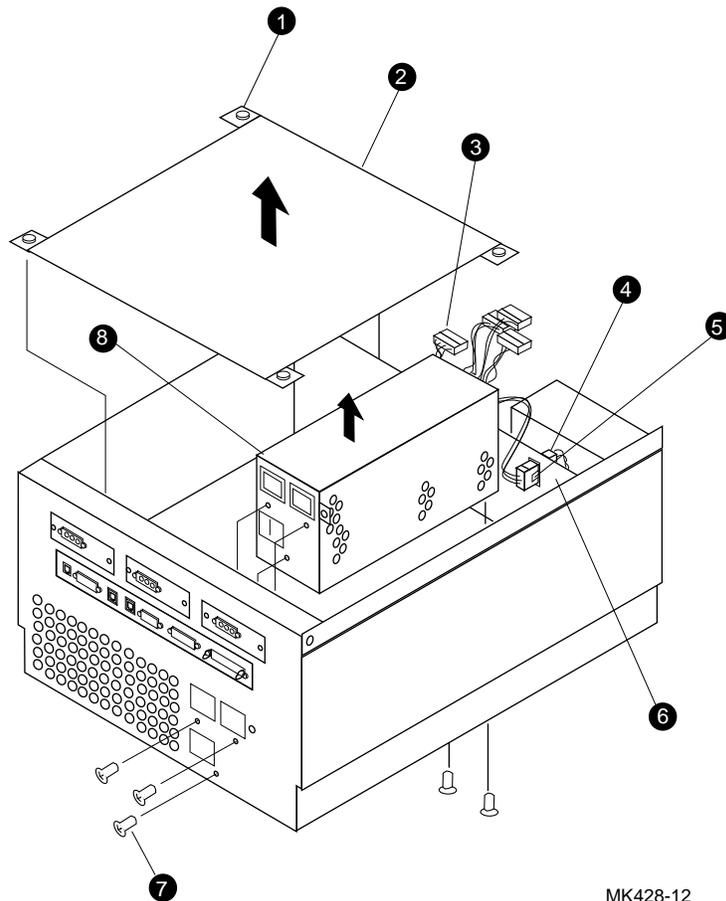
MK428-12

Fan

Removing the Fan

To remove the fan, refer to Figure 5–12 and proceed as follows:

1. Prepare the system for service according to Preparing for Service .

2. Remove the front bezel, top and front covers according to Removing the Covers .

3. Disconnect the fan power cable ❶.

    _____ **Warning** _____

    When working near or handling the fan, beware of the sharp edges and points of the fan blades.

    _____

4. Remove four sets of hardware fastening the fan to the chassis. Two sets each include a long screw ❷, flat washer ❸, and kepnut ❹. They fasten the fan ❼ to the chassis ❽ and do not secure the finger guards. The remaining two sets of hardware include only a long screw and kepnut. They fasten the two finger guards ❻ along with the fan to the chassis.

5. Remove the fan out through the front of the chassis.

Installing the Fan

_____ **Caution** _____

When installing the fan, ensure that the airflow direction indicator (arrow) on the bottom of the fan points towards the rear of the chassis.

Make sure the finger guards are installed so they do not touch the fan hub and blades.

_____

To install the fan, reverse the steps in the removal procedure.

Figure 5–12   Removing the Fan
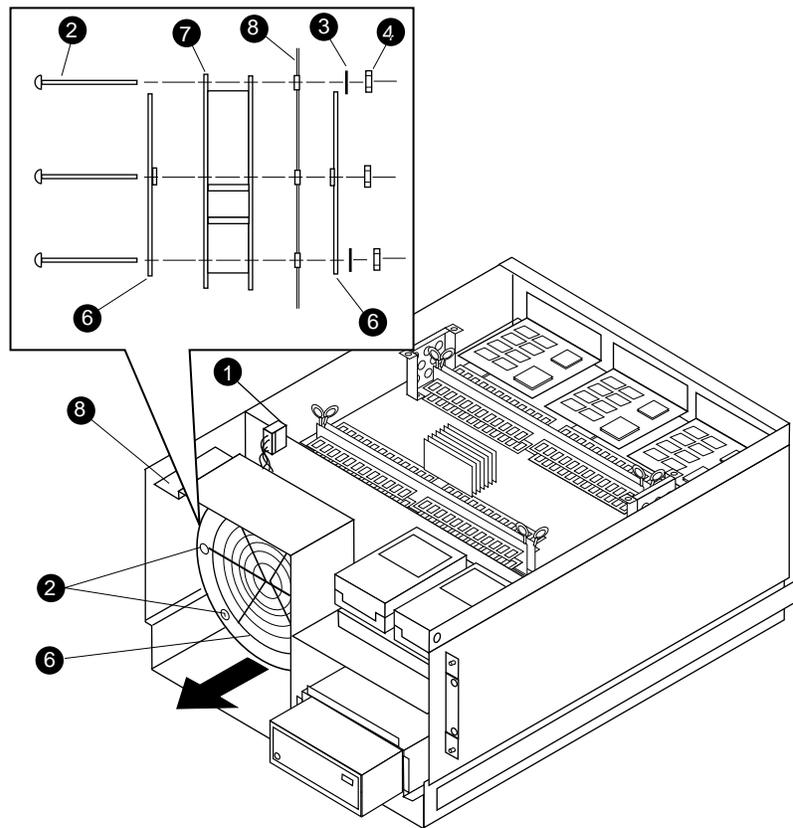
MK428-11

A

Hardware Specifications

Appendix Overview

Introduction

Unless noted otherwise the hardware specifications in this appendix apply to DEC 3000 Model 400S, 600S, and 700S AXP rackmount server systems.

In This Appendix

This appendix covers the following topics:

- System Dimensions
- General Specifications
- Electrical Specifications
- Environmental Limitations

System Specifications

System Dimensions

Table A–1 provides the rackmount server system dimensions.

Table A–1   Rackmount Server Dimensions

Weight	Height	Width	Depth
34 kg	22.2 cm	48.2 cm	63.7 cm
75 lb	8.75 in	19 in	25.1 in

Electrical Specifications

Table A–2 provides information about the various electrical specifications for the rackmount server system.

Table A–2   System Electrical Specifications

Input voltage	Automatically adjusting ac input for either 100-120 V ac or 220-240 V ac operation.
Frequency range	47 to 63 Hz
Power	420 watts input maximum, system only, power factor 0.6 minimum.

General Specifications

Table A–3, Table A–4, and Table A–5 provide various information about the DEC 3000 Model 400S, 600S, and 700S AXP systems and their components and options available at the time of print.

Table A–3 System Specifications (DEC 3000 Model 400S)

Processor	DECchip 2106 Alpha AXP microprocessor, with 8 KB data cache, 8 KB instruction cache and floating point unit, running at 133.33 MHz.
Secondary cache	512 KB
SIMM memory	32 MB minimum
Optional SIMM	512 MB maximum for system
ROM memory	512 KB
Optional fixed disk	Two 3½-inch fixed disks
Optional RX26 diskette drive	2.88-MB, 3½-inch, half-height diskette drive
Optional RRD42 compact disc	600-MB, 5¼-inch, half-height compact disk drive
Optional TLZ06 tape	2 to 4-GB, 5¼-inch, half-height tape drive
Optional TZK10	525-MB, 5¼-inch, half-height, quarter-inch cartridge (QIC) tape drive
Optional expansion box	DECstor/me Expansion Box, PMTCE-AA TURBOchannel Extender box
Interfaces	Two single-channel SCSI-II compliant controllers (one internal and one external), that support both synchronous and asynchronous devices, one 10BASE-T Ethernet port, one AUI Ethernet port, one ISDN port, one synchronous/asynchronous communications port, one printer port, one MMJ alternate console port, one audio handset port.

Table A–4 System Specifications (DEC 3000 Model 600S)

Processor	DECchip 21064 Alpha AXP microprocessor, with 8 KB data cache, 8 KB instruction cache and floating point unit, running at 175 MHz.
Secondary cache	2 MB
SIMM memory	32 MB minimum
Optional SIMM	512 MB maximum for system
ROM memory	512 KB
Optional fixed disk	Two 3½-inch fixed disks
Optional RX26 diskette drive	2.88-MB, 3½-inch, half-height diskette drive
Optional RRD42 compact disc	600-MB, 5¼-inch, half-height compact disk drive
Optional TLZ06 tape	2 to 4-GB, 5¼-inch, half-height tape drive
Optional TZK10	525-MB, 5¼-inch, half-height, quarter-inch cartridge (QIC) tape drive
Optional expansion box	DECstor/me expansion box, PMTCE-AA TURBOchannel extender box
Interfaces	Two single-channel SCSI-II compliant controllers (one internal and one external), that support both synchronous and asynchronous devices, one 10BASE-T Ethernet port, one AUI Ethernet port, one ISDN port, one synchronous/asynchronous communications port, one printer port, one MMJ alternate console port, one audio handset port.

Table A–5 System Specifications (DEC 3000 Model 700S)

Processor	DECchip 21064 A-225 Alpha AXP microprocessor, with 8 KB data cache, 8 KB instruction cache and floating point unit, running at 225 MHz.
Secondary cache	2 MB
SIMM memory	32 MB minimum
Optional SIMM	512 MB maximum for system
ROM memory	512 KB
Optional fixed disk	Two 3½-inch fixed disks
Optional RX26 diskette drive	2.88-MB, 3½-inch, half-height diskette drive
Optional RRD43 compact disc	600-MB, 5¼-inch, half-height compact disk drive
Optional TLZ06 tape	2 to 4-GB, 5¼-inch, half-height tape drive
Optional TZK10	525-MB, 5¼-inch, half-height, quarter-inch cartridge (QIC) tape drive
Optional expansion box	DECstor/me expansion box, PMTCE-AA TURBOchannel extender box
Interfaces	Two single-channel SCSI-II compliant controllers (one internal and one external), that support both synchronous and asynchronous devices, one 10BASE-T Ethernet port, one AUI Ethernet port, one ISDN port, one synchronous/asynchronous communications port, one printer port, one MMJ alternate console port, one audio handset port.

**Environmental
Limitations**

Table A–6 provides information about the environmental
conditions in which the rackmount server can operate.

Table A–6 System Environmental Specifications

Operating/Storage Conditions	
Temperature range	5°C to 50°C (41°F to 122°F)
Temperature change rate	11°C/hr (52°F/hr) maximum
Relative humidity	10% to 95% (noncondensing)
Maximum altitude	2400 m (8000 ft)
Maximum wet bulb temperature	32°C (90°F)
Minimum dew point	2°C (36°F)
Nonoperating Conditions	
Temperature range	-40°C to 66°C (40°F to 151°F)
Relative humidity	95% @ 66°C (150°F) (may condense)
Maximum altitude	4900 m (16,000 ft)

B

Port Pin-Outs

Appendix Overview

Introduction   Information is available on connecting communications devices
                      to all DEC 3000 Model 400/400S/600/600S/700 AXP systems.
                      The information explains the functions of pins on each port of
                      the system unit.

Where To Go   Refer to Appendix B of the *DEC 3000 Model 400 ⁄ 400S AXP
                      Owner's Guide* or *DEC 3000 Model 600 ⁄ 600S ⁄ 700 AXP Owner's
                      Guide* as applicable for pin-out information.

C
Associated Documents

Appendix Overview

Introduction This guide is used in conjunction with the *DEC 3000 Model 400/400S AXP Owner's Guide* or *DEC 3000 Model 600/600S/700 AXP Owner's Guide*, the *DEC 3000 Model 400/400S AXP Options Guide* or *DEC 3000 Model 600/600S/700 AXP Options Guide*, and other associated documents. For option and system hardware part numbers, consult your Digital sales representative.

In This Appendix This appendix provides a list of associated printed documents.

Associated Printed Documents

Related Printed Books   Table C–1 lists the associated rackmount server documents available in printed form.

Table C–1 Associated Printed Documents

Title	Order Number
DEC 3000 Model 400/400S AXP Owner's Guide	EK-SNDPR-OG
DEC 3000 Model 400/400S AXP Options Guide	EK-SNDPR-OP
DEC 3000 Model 400 AXP Setting Up Your Workstation	EK-SNDPR-QC
DEC 3000 Model 400 AXP Setting Up Your Server	EK-SNDPV-QC
DEC 3000 Model 400/400S AXP Service Guide	EK-SNDPR-SV
DEC 3000 Model 400/400S AXP Technical Summary	EK-SNDPR-TM
OpenVMS Factory-Installed Software (FIS) User Information	EK-A0377-UG
DEC OSF/1 AXP Factory-Installed Software User Information	EK-SFFIS-UG
DEC 3000 Model 600/600S/700 AXP Owner's Guide	EK-SNDPL-OG
DEC 3000 Model 600/600S/700 AXP Options Guide	EK-SNDPL-OP
DEC 3000 Model 600/600S AXP Service Information	EK-SNDPL-SV
DEC 3000 Model 600/600S and 800/800S AXP Service Guide	EK-FLSPC-SV
DEC 3000 Model 600/700 AXP Setting Up Your Workstation	EK-SNDWS-QC
DEC 3000 Models 700 AXP and 900 AXP Service Information Addendum	EK-FLSPC-AD

D

Special Installation Information for the United Kingdom

Appendix Overview

Introduction   The United Kingdom requires that certain installation
information be provided about the communications 54-21813
module, which is hosted within the rackmount server.

Where To Go   For this information refer to Appendix D in the *DEC 3000
Model 400/400S AXP Owner's Guide* or the *DEC 3000 Model
600/600S/700 AXP Owner's Guide* as applicable.

E

Recommended Spares List (RSL)

Appendix Overview

**In This
Appendix**   This appendix provides the recommended spares list (RSL)
and also a list of other FRUs unique to the DEC 3000 Model
400S/600S/700S AXP Rackmount Server system.

Recommended Spares

Table E–1 provides the RSL for the rackmount server system.

Table E–1   Recommended Spares List (RSL)

Item	Part Number	Quantity
Memory Board, 32 MB	MS15-CA	1 [1]
Memory Board, 64 MB	MS15-DA	1 [1]
Memory Board, 128 MB	MS15-EA	1 [1]
Memory Board, 256 MB	MS15-FA	1 [1]
CPU Board	54-21149-02	1[2]
I/O Board	54-21813-01	1[2]
CPU Board	54-23153-03	1[3]
I/O Board	54-21813-02	1[5]
CPU Board	54-23153-05	1[4]
MMB Module	54-21815-01	1
Power Cord	17-00083-58	1
Fan	12-23374-08	1
Power Supply	H7816-BA	1
Cable, disk power	70-30964-01	1
Cable, data	17-03801-01	1

[1]Memory boards can be mixed.
[2]DEC 3000 Model 400S AXP
[3]DEC 3000 Model 600S AXP
[4]DEC 3000 Model 700S AXP
[5]DEC 3000 Model 600S AXP or 700S AXP

Other Rackmount Server FRUs

Table E–2 lists other FRUs used in the rackmount server system.

Table E–2 Other FRUs

Fan Finger Guard	12-12561-00
Fingerstock, Top and Front Covers (cut-to-fit)	12-34888-09
Fingerstock, Removable Media (top/bottom)	12-28686-15
Fingerstock, Removable Media (sides)	12-28686-07
Shield, TURBOchannel	74-44251-01